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THE BRICKBUILDER.

JANUARY,

1902.

CONVENT OF THE CELESTINES, TOURNAI, HOLLAND.

THE BRICKBUILDER.

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VOL. 11 NO. 1

THE BRICKBVILDER

JAN. 1902

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TESTS OF FIRE-PROOFING MATERIALS.

MR. EDWARD ATKINSON, the president of the Boston Manufacturers' Mutual Fire Insurance Company, who has been very thoroughly identified with the improvements in mill construction tending to reduce the fire hazard, has begun a series of investigations of the various so-called fire-proofing materials mainly devised for the protection of steel from heat. Such investigations are by no means new, but on the contrary have been pursued with the utmost care during the past decade in this country, with results which already have been published very fully from time to time in the columns of THE BRICKBUILDER, and the architect who is well posted and abreast of the times has very little difficulty in getting at a mass of data from which he can make an intelligent and scientific selection of fire-proofing materials. The only difficulty is in distinguishing between what is *bona fide* evidence and what is the result of advertising expediency. If we were to take the word of all the circulars which we find traveling around the country, there are at least ten distinct systems of fire-proofing now in vogue, each of which is claimed by its business backers to be absolutely the best; and furthermore each system has the indorsement, more or less ample, of the building inspectors in the various large cities. THE BRICKBUILDER has never expressed the slightest doubt as to what was the most suitable material for the protection of steel against the action of fire, and our conviction in favor of brick and burnt clay in various forms has been indorsed most unqualifiedly by the majority of the tests which have been conducted simply with a view to determining relative efficiency. We feel confident that Mr. Atkinson will approach the subject in his original way, and, viewing the facts as he will from the insurance interests, his conclusions are sure to be of value. In his circular he calls attention to the fact that in Great Britain it is said to have been proved that many of the concretes, some of which are there called breeze and of which coal ashes are the principal material, are very destructive to iron and steel. These ashes come from coals containing a good deal of material which may cause corrosion, and the long-continued contact even of dry ashes with iron and steel beams where thin plates are imbedded in them is said to cause oxidization. We have heard of one instance in which a building was fire-proofed with coke breeze concrete mixed, however, with so little cement that the construction actually took fire and burned as a result of an upset stove on one of the floors. There have been some forms of fire-proofing in which even coal dust was used, a material which would certainly be anything but fire-resisting.

Many investigations and reports have been made on the subject by representatives of special methods, but Mr. Atkinson states that he is not informed of any general report or conduct of tests corresponding to those now being made by the electricians and engineers who have organized the Fire Prevention Association of Great Britain.

PUBLIC ART SPIRIT.

WE are very prone to think of this as a prosaic, commercial age marked by acquisitiveness and material development rather than any popular enthusiasm for the fine arts. Such a characterization might undoubtedly be made with a good deal of truth of the century which has just closed, and while we cannot hope that mere changing from 1800 to 1900 is to mark an entire change of heart on matters of art, it nevertheless seems as though we were now in the midst of a spirit far more appreciative of the finer qualities of civilization and life than the world has seen since the days of the Italian Renaissance. Our cities are still horrible in many respects. Individualism will undoubtedly be rampant the whole length of Broadway for at least another century, and we can expect neither our postage stamps nor dollar bills to be exactly monuments of decorative art; but on the other hand there are not lacking signs which show at least the intent, and that is certainly half the battle. As our readers are doubtless aware, the United States government some time since appointed a commission consisting of Messrs. C. F. McKim and D. H. Burnham, the well-known architects, and Mr. F. L. Olmsted, the landscape artist, to make a careful study of the artistic possibilities of the city of Washington. The only parallel to this action which we recall at present is that taken by Napoleon III with the aid of Baron Haussman when he transformed Paris and laid out the magnificent system of boulevards which make Paris what it is to-day. But the scheme before the Washington Commission is at once more comprehensive and more interesting. Considered merely in mass and in its relation to its purpose, the United States Capitol has always appealed to us as one of the most magnificent buildings in the world. The city of Washington is superb. Many of its public buildings are marked exceptions to the rule regarding United States government work of the last century, and we know of no more fascinating problem than has been set before the members of this commission. Nor do we know of anything which could be more indicative of the spirit of the age than that the politicians at Washington should appoint a commission of this sort, for it shows not that the politicians themselves appreciate art so much as that the people who are behind the politicians demand that our capital shall be beautiful.

And the twentieth century is in our judgment to be marked by an artistic development in this country such as the world has never seen before. It will not be Roman art; it may be more like the best of the Italian Renaissance. The rewards to the artist to-day are all that one could wish. The great opportunities command great pecuniary profits. Our public spirit will probably never have the keenness of appreciation of the Greeks, but with a broader civic spirit than was ever possible during the Italian Renaissance, with unlimited material wealth at command, and with all the mechanical adjuncts which, while making our modern civilization so complex, also render possible the largest efforts with the least drain upon personal limitations, we ought to see the twentieth century develop very speedily an American art worthy of our fondest dreams.

THE TWENTIETH CENTURY CITY.

THE American League for Civic Improvement is doing missionary work by its pamphlet recently published, entitled "The Twentieth Century City: a Record of Work Accomplished for Civic Development." This cause is too well known to require extended comment. Its influence has been felt in all the leading cities of the country, and its objects are so thoroughly commendable in every sense that the League needs but be known to be well received. Any one who has been familiar with the aspect of central Illinois and western Indiana during the last ten or fifteen years can appreciate the possibilities of civic improvement which the League tries to foster. Only a few years ago this district of our country was an almost treeless prairie, broken only by thin fringes of vegetable growth along the river banks. To-day there is hardly a village that has not its avenues of thriving shade trees, and even along the country roads tree planting has been carried to a remarkable extent, with the result of completely changing the aspect of the country. Indianapolis in its abundance of trees is perhaps unequaled anywhere.

Of course tree planting is only one of the objects which the League tries to foster. It makes an earnest plea for better roads, better public buildings, better architecture generally, and in these respects it has been ably seconded by the efforts of the Architectural League in America, which has given earnest support to the movement for civic betterment.

There are about twelve other interesting specimens of old Dutch brickwork which will be presented during this year as frontispieces. The object in continuing this series is to make the collection of this charming old work nearer complete.

APPLIED PERSPECTIVE FOR ARCHITECTS AND PAINTERS. W. P. P. Longfellow. Boston: Houghton, Mifflin & Co.

It would almost seem that there is hardly demand for a work such as this, since the topic has been treated so thoroughly and exhaustively by others, but Professor Longfellow has approached the subject in a manner which makes it exceedingly interesting, and the work certainly deserves a more extended review than our columns would warrant. The value of the work is greatly enhanced by the character of the problems which are studied. While, in the nature of things, it is inevitable that there should be a certain amout of discussion of truncated pyramids, a cross on three steps, etc., very little space is given to such elementary, almost axiomatic work, and the bulk of the discussion is directed more to real problems in perspective, and actual, well-known buildings and effective portions of buildings are studied, working backwards, as it were, from the photograph to a constructive drawing. This is as it should be. The perspective which does not convey the same impression as a photograph, as far at least as pertains to drawing, is just to that extent false, and Professor Longfellow seems to be able to keep clearly in view all the time the real purpose of perspective drawing, namely, to correctly represent objects. He also presents a very careful analysis of perspective scales, including the introduction of human figures in drawings. As he very truly says, "the practice of perspective depends not so much on many principles as on the varied application of a few." He refers his readers to Professor Ware's "Modern Perspective" for a full, theoretical account of the science, this book being rather an attempt to show what trained draughtsmen actually do in laying out a drawing. The amount of mathematics required for a complete understanding of this subject is really very slight, and any intelligent reader who does not know geometry can find profit in the book and learn what is fundamental in it without unreasonable effort.

This treatise might very fairly be entitled a dissertation upon the art of perspective drawing as understood and applied by our best draughtsmen and painters, and as illustrated by photographs of actual buildings.

Architectural Engineering, with Special Reference to High Building Construction. By J. K. Freitag, B. S., C. E. New York: John Wiley & Sons.

This is the second edition of Mr. Freitag's well-known work, but it is so increased in number of pages and illustrations as to constitute practically an original volume. The first edition appeared in 1895, when high building construction found its best development in Chicago. Since then the Chicago methods have spread throughout the country and have been refined into a science which is admirably epitomized in this second edition. Our only criticism would take the form of regret that the author did not entirely discard the original layout and rewrite the whole book, though the interpolations are manifestly obtrusive in only a few places. This volume is a companion to the same author's work on the "Fire-proofing of Steel Buildings" and should be studied in conjunction therewith. Both are admirable in their ways, and in the few years they have been before the public have won a position as being standard. "Architectural Engineering" is, so far as we know, the best treatise which has ever been published upon the subject.

Light, Heat and Power in Buildings. By Alton B. Adams. New York: William T. Comstock.

The object of this volume is to present in a compact form the main facts on which the selection of sources for light, heat and power should be based. It includes a study of gas, electricity, steam and hot water, as well as the various fuels. The subject-matter is treated in a very clear, concise manner, and in the one hundred and two pages of the volume all of the leading facts pertaining to the subject are set forth in such a manner as to make them readily available for the electrician or the engineer. Mathematical elaborations of mere theory are entirely eliminated, and the solid, available matter is packed so closely that there is no waste space in the volume. It is a work thoroughly to be commended for its purpose.

The Builder's Handbook. By A. Roberts. Size 4 x 6½ inches; 220 pages. Price $1, delivered. A. Roberts & Co., Normal, Neb.

A pocket manual of information, facts, figures and memoranda such as a builder needs every day for reference and equally valuable to the owner or any one intending to invest money in building improvements.

The work has been carefully prepared by an architect of large experience who is also a practical mechanic, and is made for common everyday use by practical men. Most of the facts are not new, many of them you will already know, though these may be presented in a new light, but the multitude of facts and formulas required by the builder cannot always be remembered. The most skilled mechanic will find the book invaluable simply as an aid to memory.

Every subject has been treated in the simplest and clearest manner and fully illustrated with original drawings, making it easy to understand.

Colonial Brickwork of New England. II.

PORTSMOUTH, N. H.

BY WALTER H. KILHAM.

IT is a curious circumstance that the most important factor, that of simplicity, in the only style of architecture which is in any sense indigenous to our country, has never made any distinct impression on the style of

HOUSE AT PORTSMOUTH.

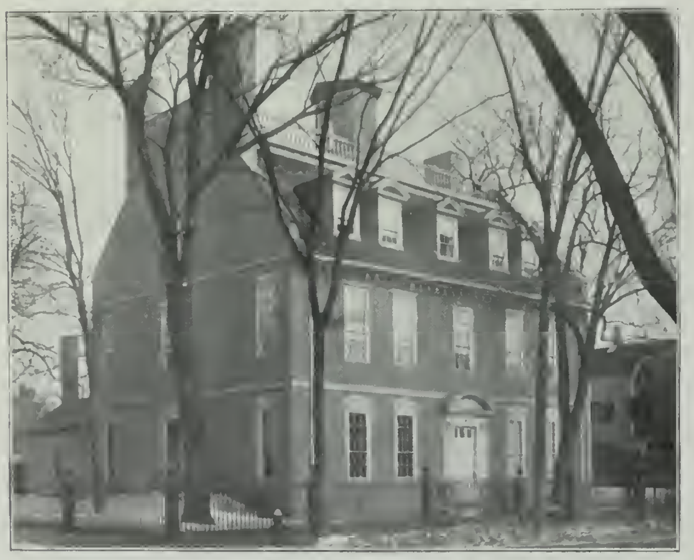
design practiced by later generations of architects. The layman who in response to his directions receives from his architect a square, box-like structure decorated with large pilasters, a deep porch, leaded bay windows, other windows of shapes varying from oval to square and a

HOUSE ON MIDDLE STREET, PORTSMOUTH.

large amount of papier maché garlandry distributed where it will do the most good, and fondly imagines that he is getting the real "Old Colonial," is not more to be blamed than the practitioner who places upon a single

PETTIGREW HOUSE, PORTSMOUTH.

forty-foot front all the decorations that originally grew in an entire city. Both have signally failed to grasp the reason of the charm that each has felt in the presence of the stately mansions which during the eighteenth century were erected in America. That charm is produced not by slender pillar or delicate molding, but first, last and always by the restrained use of one or two good architectural motifs, relieved against a façade otherwise almost entirely plain. Take the illustrations of the old Portsmouth houses which accompany this article. One house



WARNER HOUSE, PORTSMOUTH.

has a Palladian window over a porch as its motif; another has the front all of Palladian windows and no porch; another has a delicate pilaster treatment with perfectly simple windows. Seldom, we think, will be found any redundancy of ornament, any evidence of confusion or doubt in the mind of the designer. Simple, straightforward and direct, after a century of usefulness these charming old buildings stand quietly confounding the strenuous taste of the modern designers who go among them with sketchbook and camera and come away without having seen the simple fact at the bottom of all.

Standing on its rocky promontory, with the whirling tides of the Piscataqua eddying around the foundations of its weather-beaten brick warehouses the old city of Portsmouth stands as the most picturesque of the ancient New England seaports. It has no such regular and stately vistas of mansions as has Salem, but it replaces them by a no less pleasing irregularity which brings its splendid old houses into the most picturesque of poses.

The best type of Portsmouth house is rather prone to stand on a grassy terrace several feet above the street, from which it is approached by a succession of short flights of stone steps with chain fences at the sides.

TYPE OF DOORWAY, PORTSMOUTH.

The house is high and stately, with much arcaded shed work and stabling at the rear and a large garden enclosed by a tight board fence paneled on the street side, as in the illustration, and with urns on the posts. In the actual style of the houses there is much variety, ranging from the gabled two-story type of the Warner house to the square block of the Paddock or Pierce houses; and a number of motifs are used in the decorative architec-

DETAIL, OLD CUSTOM HOUSE, PORTSMOUTH.

PADDOCK HOUSE, PORTSMOUTH.

ture which from their frequency give the architecture a distinctly local flavor. For example, the Palladian window enclosed by a wide arch enclosing the entire motif and concentric with the arch of the central division occurs in Portsmouth quite generally, but in Salem it is almost wholly absent. Noteworthy examples of this occur in the façade of the Paddock house which we illustrate quite fully. Here the entire fenestration of the front is composed of these Palladian windows, beautifully spaced, which give a remarkably stately air to the elevation. The details are unusually simple, even for Colonial work. The central window space is

PADDOCK HOUSE, PORTSMOUTH.

enclosed by a marble frame. In the second story the side spaces are solidly bricked up. The whole is recessed and enclosed in an eight-inch arch ring set flush with the wall. Though the whole is exceedingly simple, much attention has been given to detail. For example, the central section of the window sill projects beyond the rest, and the proportions of the first story windows differ from those of the second. This establishment offers an interesting study in foliage and the placing of shrubbery, for which reason we show two views, one in winter and one in summer, the latter bringing out the effective shadows and masses of shrubs. The fence and flights of steps leading to the door are interesting.

Good examples of the Palladian windows above referred to are also to be seen in the house on Middle Street next to the old Academy building, and in the building known as the old Custom House, these latter having the arched space done in white plaster.

Another characteristic motif is the use of pilasters and panels on the façades, as in the case of the Pierce house (built in 1800) and others. This particular house is of wood, but it offers one of the best examples of the style.

Cupolas are common and are generally well designed and elegant.

PIERCE HOUSE, PORTSMOUTH.

The Pettigrew house may be taken as the representative of the type with which we have become familiar at Salem and elsewhere. Like several of the others it stands well back from the street on a raised terrace which seems to give an added dignity.

The stabling of many of the houses is as interesting as the houses themselves. We illustrate the stable and courtyard of the Paddock house, which has almost an old-world air of peace and seclusion. The stables were always given a regularity of design which consorted well with the façades of the mansions they served.

The ornamentation around the doorways has unusual delicacy. One of the best examples is the entrance to the Public Library, known as the old Academy, on Congress Street, built in 1809. The front entrance to the Pettigrew house on the same street has the same idea developed by bringing the columns forward clear of the wall and allowing the cornice section alone to form the roof of a small porch. The curved pediment is also consid-

COURTYARD OF PADDOCK HOUSE.

erably used, both segmental and broken, as well as the broken triangular pediment.

In the business section of the city other interesting examples of old brickwork are found. The streets which curve along the steep and rocky banks of the Piscataqua are closely lined with blocks of tall warehouses with steep roofs and brick gables built up in steps like those of

OLD BRICK CHURCH, PORTSMOUTH.

Holland, and whose seaward-looking faces have the rich red rust only given by the salt air of the Atlantic. From the old wharves the line of the warehouses as it sweeps out on to Church Point, with the square tower of the old church rising above the massive brick walls which cling to the rocks above the swiftly running tide, forms a composition as surprising and unusual as anything in America, and one which for picturesque outline compares with anything on the coast of Brittany. St. John's Church itself, which crowns the heights, is a good example of early ecclesiastical brickwork and has many interesting points of detail. It dates from 1808. Besides the wind-

THE OLD ACADEMY, OR PUBLIC LIBRARY, PORTSMOUTH.

ing streets of the water front there are several other wide and straight thoroughfares lined with blocks of weather-beaten brick houses, much resembling the old seaports of England.

In this section of the city stands the Warner house, built in 1718, and said to be the oldest brick house in Portsmouth. Captain Archibald Macpheadris, a wealthy merchant and member of the King's Council, was the original owner. As was common at that period, the bricks used in its construction, as well as the hearthstones, tiles, etc., were brought from Holland. Tradition has it that the lightning rods were put up by Benjamin Franklin in person in 1762. The interior is rich in paneling and carving, with wide halls and stately staircases. Some years ago the layers of wall paper which had accumulated on the walls of the lower hall were removed, exposing a remarkable series of pictures of landscapes, Biblical views, etc., painted on the walls by some long-forgotten artist.

Comparatively few of Portsmouth's brick buildings antedate the Revolution, if we accept the authority of General Washington's diary, the veracity of which natu-

ENTRANCE, OLD ACADEMY, PORTSMOUTH.

rally cannot be questioned. On his visit to Portsmouth in 1789 he was apparently not much impressed with the architectural achievements of the place, for he wrote: "There are some good houses, among which Colonel Langdon's may be esteemed the first, but in general they are indifferent and almost entirely of wood. On my wondering at this, as the country is full of stone and good clay for bricks, I was told that on account of fogs and damp they deemed them wholesomer, and for that reason preferred wood buildings." This ingenious excuse given by the citizens of Portsmouth may have saved their local pride, but we doubt if it convinced the astute general. The Langdon house referred to is of wood and is a remarkably fine example of Colonial architecture as well as an unusually historic old mansion, having sheltered no less notable persons than Washington, Lafayette, the Duc d'Orleans, later Louis Philippe of France, and many other famous Americans and Frenchmen.

The Town Hall Series.* I.

FOR A WESTERN TOWN.

BY A. O. ELZNER.

THE revised statutes of Ohio provide that the government of a village shall be vested in the following officers: a mayor, a clerk, a sealer of weights and measures, a treasurer and marshal, and a council composed of six members, or two from each ward where there are three or more wards. The offices of solicitor and street commissioner are optional, and the latter may be combined in the marshal. Council may by a special ordinance make suitable provisions for any other departments, such as police, fire, park, engineer, etc., as in its judgment may be deemed necessary.

Let us follow custom and therefore suppose in the present instance that the marshal will include the office of street commissioner, and that the office of solicitor will be taken care of by a private law firm in the hire of the council. It is customary furthermore for council to hire and provide an engineer, who takes charge of all public improvements but does not necessarily have a room in the town hall at his disposal. It is eminently preferable, however, that a room should be set aside for this purpose, and the plan of this town hall will so provide. It is not essential, however, that the room should be limited to the use of the engineer, for he will merely require a table and a writing-desk, including possibly a case of drawers for supplies. If council should decide to have a special street commissioner, such an officer could easily be furnished with desk room in the engineer's office or in the marshal's office. If a special police department be provided, it might easily be housed in the basement; although the fire department should be provided for in a separate building apart from the town hall.

There are other minor departments that might be created by council, although the above cover what is customary, and it would not be advisable to encumber the building with a lot of rooms that in all probability would remain idle and unoccupied. Far better it would be to limit the number of rooms and in case of necessity arrange elsewhere for emergencies.

This in general, then, constitutes what might be called the ordinary requirements for a village town hall, and our plan has been arranged accordingly.

Beginning with the basement we can suppose that there is ample floor space for the accommodation of the police, which would include merely a waiting-room with a desk for the officer in charge, and an adjoining small room with a few cells. A coat and wash room should be provided with lockers for the use of the patrolmen. Here would also be located the heating and ventilating apparatus, which would consist of an electrically driven blower fan and plenum chamber, from which flues can be taken to the various rooms. The air supply would be through a spray of water to thoroughly wash it, then through drying tubes and finally to the heating coils. Ventilating outlets would be provided in each room, the flues being all brought together in the roof space and combined in a ventilating lantern directly above the center of the assembly room. In the basement would also be located storerooms for fuel, implements and odds and ends, such as furniture, fixtures, etc.

The main floor is arranged with the entrance in the center of the front which leads through a vestibule 11 feet wide, thence in a lobby 22 feet by 42 feet, at one end of which is the staircase hall full width of the lobby, with a central staircase and returns leading to the second floor. Immediately on entering at the right of the entrance is the mayor's office, 15 feet by 22 feet, with a private office adjoining 14 feet by 20 feet; opening from this private office is a lavatory. Immediately on the left of the main entrance opposite the mayor's office is the marshal's office, a room 15 feet by 22 feet. Directly opposite the main entrance across the rear of the building is the council room, 22 feet by 42 feet, provided with two entrances from the lobby, one at each end of the room, so as to facilitate the entrance and exit of the public, who should at all times have free access to the meetings. The public space, however, is separated from the space occupied by the council by a railing. The council being limited to a few members, being generally six, and only occasionally a few more than this, would arrange itself around a long table, instead of having separate desks as would be the case in large bodies. In this way they would face the public, who would thus be able to follow all proceedings easily.

A committee room 14 feet by 20 feet is provided connecting with this council room, and from this committee room access is had to a private lavatory for the use of members.

At one end of lobby under the landing of main stairs is provided a public lavatory, and at the other end of the lobby across one end of the building are two rooms of equal size, 20 feet by 25 feet 6 inches each, the one for the use of the clerk, the other for the use of the treasurer; the latter has a connecting door leading into the council room for the purpose of affording easy facilities for referring to the books during council meetings. The clerk's office and treasurer's office also have communicat-

* PROGRAMME.

The problem indicated by the following programme is a town hall such as would be requisite in a village of five or six thousand inhabitants.

It is supposed to stand on the public square of the town, which square is quite closely built up with such buildings as would naturally be found in a locality of this kind. If there are any differences in grade, the town hall is supposed to occupy the highest portion of the land.

The contributors in this series represent different sections of the country, and each design will indicate not only in the matter of arrangement of plan but also in point of architectural style, the sort of thing that would be particularly appropriate for the section of the country in which the building is to be located.

In the matter of accommodations and of the sizes and disposition of the rooms, each contributor uses his own judgment, following out the idea indicated above by preparing designs particularly fitted for the various sections of the United States.

The principal hall in this building would probably be used as a place for certain public entertainments, theatrical and social, but no provision is made for county courts or library. Other departments are included at the discretion of the contributor.

The materials are to be, so far as the exterior is concerned, burnt clay in some of its forms, and the same materials may enter into the interior construction and decoration of the building at the discretion of the contributor.

The cost of the building, exclusive of furnishings, should not exceed $50,000. This sum, while perhaps large, is purposely made so with the idea of laying stress on the necessity of having a building of some richness to represent the town in its corporate capacity.

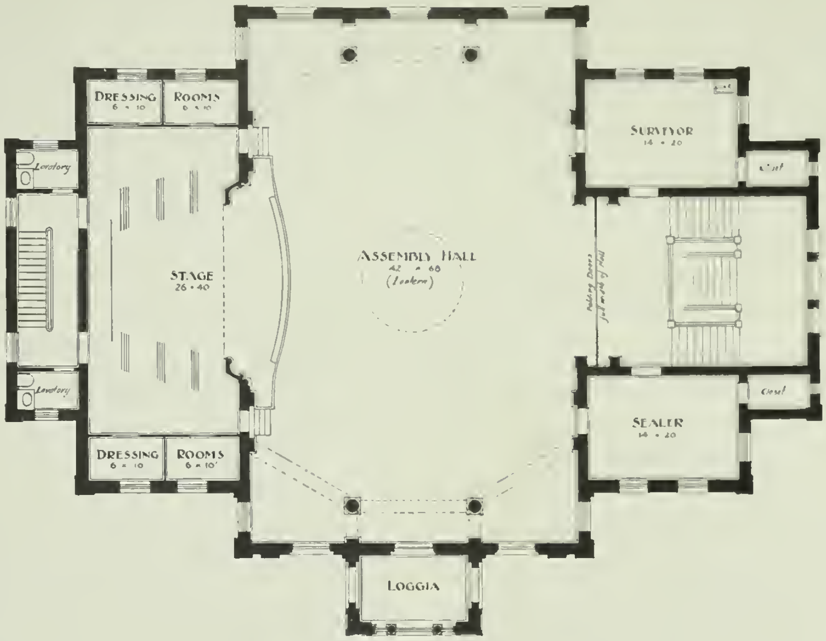
The idea is simply to suggest an appropriate treatment of a problem that frequently occurs for solution

DESIGN FOR A TOWN HALL.
A. O. Elzner, Architect.

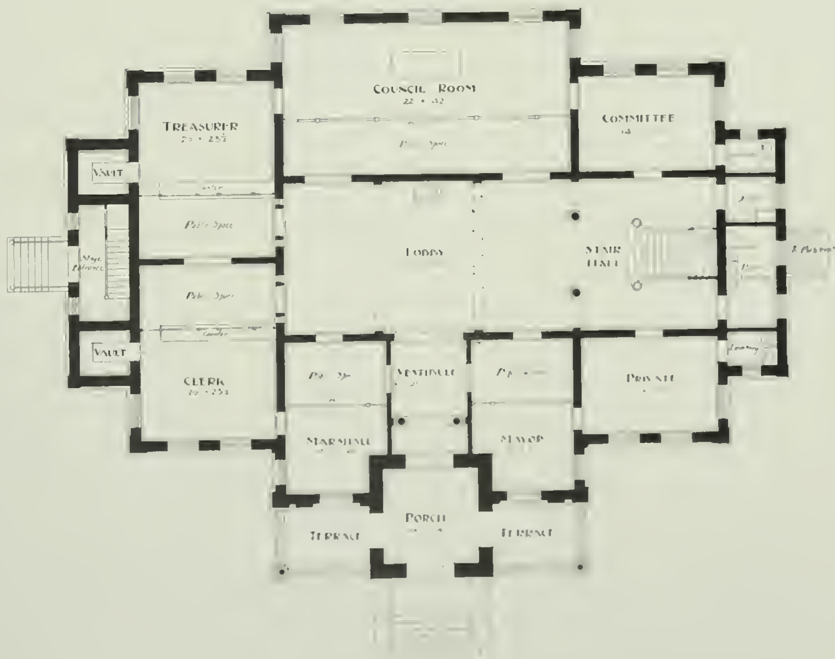
ing doors, so that the public can have easy access to both of these officials; each of these two rooms is furthermore provided with a vault. At this end of the building is placed a special staircase with an outside entrance leading directly to the stage above and to the basement below. This is for the use of persons taking part in any performance, and for the purpose of carrying scenery and other supplies to the stage.

The second story contains an assembly hall 42 feet by 68 feet, having a capacity of from 350 to 400 seats; this hall is provided with a stage 26 feet by 40 feet, with two dressing-rooms at each end 6 feet by 10 feet. Behind the stage is a staircase hall for the special use of the stage as previously mentioned, and from this hall open two lavatories, one for men and one for women. The main entrance to the hall is made full width of the staircase hall, 22 feet, and is arranged so that the doors can be folded back against the side walls at the close of an entertainment, opening up the entire space so as to facilitate the exit of the audience.

At the head of the stairs and adjoining the main entrance to the hall are two rooms, one on either side, 14 feet by 20 feet, each having a closet opening from it; one is occupied by the sealer of weights and measures, and the other, while not being assigned for any prescribed office, has been set aside for the use of the village surveyor. These two rooms have connecting doors leading into the assembly hall, and in case of a large gathering they could very nicely be used for reception rooms or cloak rooms. It would even be possible to use the one room for the preparation of refreshments on occasions, and for this purpose a sink has been provided



SECOND FLOOR.



FIRST FLOOR.

Opening from the assembly hall on the front of the building is a loggia, the use of which is essential to afford a place from which public speakers can address a gathering of citizens that might be held in the space in front of the building.

The exterior of the building has been treated in the style of the classic Renaissance, with a central tower having a clock and a chime of bells that are always desirable in a community. People like to hear the hours strike off as they pass by, and are fond of ringing out the bells on joyous occasions or celebrations of all kinds. It is also a comfort to be able to see a clock at a high elevation, from which all the timepieces in the town can be regulated. The design of the building is arranged with absolute symmetry to this clock tower, this idea being considered as most expressive of the quiet dignity of the government. The tower furthermore serves to mark the building from the distance, as it should be, for after all it is the most important building in the town, representing it in its corporate capacity, and should therefore be easily distinguished among all others by its magnitude and character.

The material used in the construction of the building is intended to be press brick of a warm buff-gray tone for the wall surface, and terra-cotta of the same finish as the press brick but of a very much lighter shade of color for all the architectural features, or trimmings, as they are called in the vernacular, comprising all moldings, columns, pilasters and other ornamentation.

The roof will be red tile, thus affording a pleasing but quiet color scheme.

Some Simple Lincolnshire Brickwork.

BY R. CLIPSTON STURGIS.

LINCOLN FROM THE BRAYFORD.

THROUGHOUT England one sees invariably in the older work the reflection of those days when railways were not, and fast freight and cheap transport did not exist. The buildings then were built necessarily of local material, and notwithstanding the modern facilities and local conditions one cannot help the feeling that this is right, and that buildings will seem more in harmony with their surroundings if they have that connection with the neighborhood which local material implies.

In and about Wells, a district abounding in good building stone, one finds stone used nearly everywhere, and the few brick houses which one finds here and there seem to strike a false note and look out of place. So marked is this use of local material in Somerset that one notes his advance across the country by the changing quality and color of the stone, and learns the geology as he rides. At Bath it is the familiar warm yellow of the somewhat perishable Bath stone; at Wells it is the cooler-colored, more durable Doulting. At Draycot even the cottages are built of the reddish conglomerate, which when polished can rank among the marbles. Further south one gets the rich yellow tones of the Ham Hill stone, and beyond Taunton the deeper yellows, merging as one nears the coast into red, marking the presence of iron.

FIG. 1. THE CHANCELLOR'S HOUSE, LINCOLN.

Throughout all this district stone is abundant and easily quarried and worked, but in Lincoln there are different conditions. It is true there is good stone, and near Lincoln itself there is some abundance, but there is also much clay, and brick is therefore the cheaper material. The city as a whole is a city of red houses, red brick and red tile; the great cathedral rising above the reds in warm yellow or cool gray, according to the light. Nothing could be more fascinating than this combination of the humbler buildings in the humbler material, and the magnificent minster church around which they cluster; the minster on its hilltop, the houses around and beneath it dotting the hill.

Nearly all the distant views of the cathedral are fine, but none more delightful than that from the Brayford, the pool where the barges from the Witham and the Fosse Dyke congregate. All the houses which form the foreground are brick, of many shades of red, and are roofed with tile.

To take the houses in detail: that of the Chancellor is one of the oldest and also one of the most interesting. It belongs to the end of the sixteenth century and is built of a red brick of very nearly the regulation modern English dimension and running four courses to eleven inches. All the cut work, coigns, door and window jambs, sills and mullions are stone. The plan follows fairly closely the original layout. Within the vestibule with the great doors — a most unusual feature for a mediæval private house — there are two small doors, one giving on the garden and serving as a tradesmen's entrance to the kitchen, and the other entering the house. On the ground floor, a little below the level of the street, were cellars, and above this the drawing-room. Originally, I take it, the two rooms on the front were one and, extending up to the roof, constituted the hall. Beyond this point the house is a series of surprises, for it stretches away in a long wing on the left — the north — and the lot gradually widens on the south so that the garden space is constantly increasing. The wing contains the modern dining-room, made out of an enlarged portion of the original cellars, the great kitchen, and the original chapel — quite recently discovered and restored. How amusing it must be to live in a house where any simple operation of repair or renewal may open up some forgotten treasure! This chapel had been ceiled down, the walls had been furred and papered on canvas, and nothing except the

FIG. 4. CASTLE HILL, LINCOLN.

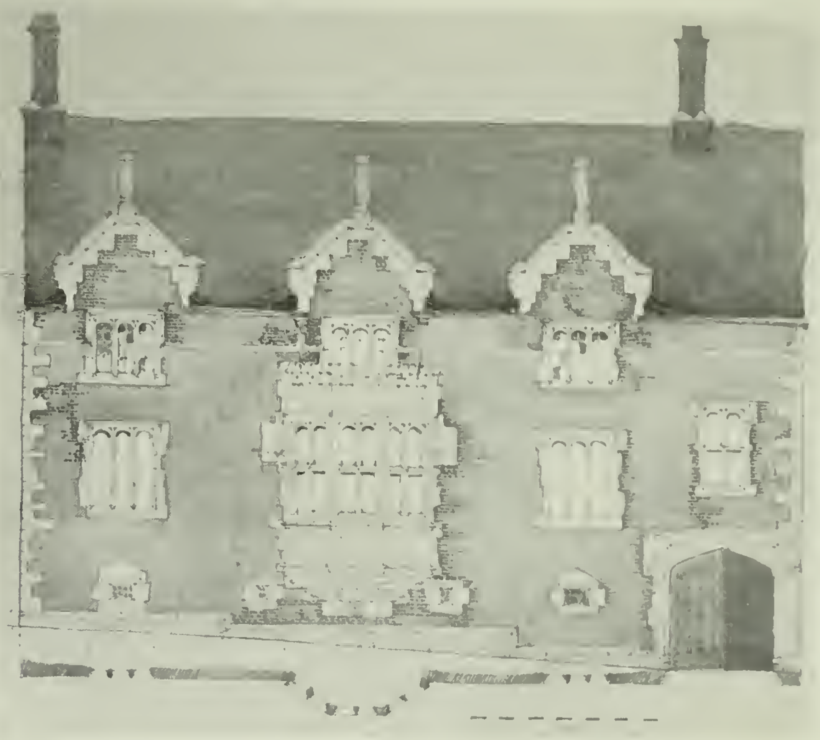


FIG. 2. THE CHANCELLOR'S HOUSE, LINCOLN.

somewhat elaborate windows — partly blocked — remained to show what it had been. Some years ago a chance revealed an aumbry, or closet, used for sacred vessels. This, however, might have been for common use, and nothing was then done; but three years ago another chance revealed a piscina, and there could then no longer be any doubt that the original chapel had been found It was then most carefully uncovered and restored. A finely executed wood screen forms the entrance. The walls are stone, the good windows are again opened out, and the removal of the plaster ceiling revealed a fine oak one. The house is so interesting that one is tempted to linger.

We pass from this mediæval house to one quite modern (Fig. 3). It stands to the north of the cathedral

FIG. 3. THE DOCTOR'S HOUSE, LINCOLN.

and has splendid views of the broad tower and the west towers. It is nothing remarkable, simply a quiet, unpretentious, comfortable house, such as looks well and wears well.

Between this, in time, is the good old red brick double house which stands next the half timbered house known in Lincoln as the Elizabethan house (Fig. 4). This is our familiar Georgian type, though the house, I fancy, dates before the Georges. The house with the simple attempt at Palladian windows is perhaps not quite so pleasing, because it attempts more (Fig. 5). Still it looks dignified and has an air about it which seems to proclaim gentle birth. Opposite it is another house which like the Chancellor's gives no hint of what lies behind. It is a mere city front on the street, but the garden side is almost country. (Fig. 6.)

The double house in the minster yard is one of those houses which makes one stop and wonder why it should interest one at all (Fig. 7). There is nothing architectural about it, — a plain three-story house with a simple roof. It must be the good proportion, the size, division and disposition of the windows, and perhaps, not least, the little set-back from the street which

FIG. 5. HOUSE ON THE EAST GATE, LINCOLN.

gives chance for a strip of grass and soil for the climbers which partly cover the front.

Almost the same might be said of the next house (Fig. 8), except that here we have the added interest of an unusual plan. The main house sets well back from the street, — some fifty feet or more, — and the wing comes forward on the north side to the street line. Thus the house encloses a little garden fore-court. Constructionally this house is even simpler than the last, for there is no stone at all. Heads and sills, jambs and coigns are all brick. The caps of the brick fence posts and the

FIG. 6. THE GARDEN FRONT A HOUSE IN LINCOLN.

coping of the wall are the only bits of stone, yet the whole place is thoroughly charming.

The last house will vie with either of the others for absolute simplicity, and in the face of these simple things one cannot but feel convinced that we are often too apt to spend time and money over elaborations which in no way repay the outlay they represent. (Fig. 9.)

In one respect all the buildings here shown drive home the lesson which our own best men have long been trying to teach, viz.: that no brickwork looks so well as that which shows the variety of surface and color

FIG. 7. DOUBLE HOUSE, MINSTER YARD, LINCOLN.

which is obtained by the differences in firing in the kiln. All these buildings are built of brick which have been used just as they came from the kiln; they were not even afraid of an occasional soft brick, and one has all the variety of color which this gives. One is inclined to think that we are often over cautious about soft brick, which are of fine color, and which, unless most unusually underburnt, will stand a good deal of wear and tear. The soft brick in its more rapid weathering often helps to vary not only the color but also the surface, and if in fifty or a hundred years it has to be replaced, after all that is no great price to pay for the pleasure it has given. In the judicious use of brick we are, I think, ahead of the English architects, who seem still bitten

FIG. 8. HOUSE AT POTTER'S GATE, LINCOLN.

with the philistinism which specifies brick culled to an even tone, but I don't think even the English architect has done what some of us have, *i. e.*, to make a very fine joint with mortar to match the brick and thus go as far as possible towards imitating a plain painted surface. However, there are all kinds of people and all kinds of tastes and room enough for all, and one is hardly justified in condemning what appeals to the taste of many people, but the old brickwork which most of us admire and love had no touch of the over refinement which tends to emasculate art.

FIG. 9. HOUSE OPPOSITE THE ARCHDEACON'S, AT LINCOLN.

Fire-proofing.

Tests of Fire-proof Partitions by the New York City Building Department.

A REMARKABLY interesting series of tests has been made recently under the supervision of the Department of Buildings, New York City, on fire-proof partition materials. Briefly stated, the purpose of the test was to record the effect of a fire of one hour's duration, commencing at 500 degrees Fahrenheit and increasing to 1,700 degrees Fahrenheit, followed immediately by the application of a stream of water from a hose on the exposed side for two and a half minutes. The areas of the partitions tested were 137.75 square feet, with a width of 14 feet 6 inches and a height of 9 feet 6 inches. The tests were made in a test house similar in design to those heretofore used for such tests. The following forms of partition were tested:

Bell Plaster Composition Blocks. — One partition of solid section 2 inches thick and one of hollow section 3 inches thick. The composition of the blocks was plaster of Paris and cinders. After the blocks were put in place they were covered with ½-inch coat "King's Windsor" plaster. Maximum temperature during test, 1,724 degrees Fahrenheit.

Metropolitan Partition. — Solid plaster composition blocks 2 inches thick. The composition of the blocks was plaster of Paris, wood chips, cocoanut fiber and asbestos. After the blocks were put in place they were covered with ½-inch coat "King's Windsor" browning. Maximum temperature during test, 2,030 degrees Fahrenheit.

Norman Partition. — Solid composition plaster blocks 2 inches thick. The composition of the blocks was plaster of Paris and wood fiber. The blocks were fastened together with rods and turnbuckles. After the blocks were put in place they were covered with a ½-inch coat of "King's Windsor" browning. Maximum temperature during test, 1,706 degrees Fahrenheit.

Sanitary Partition. — Solid composition plaster blocks 2 and 3 inches thick, fastened together with metal rods. The composition of the blocks was plaster of Paris, ashes and a fluid cement. After the blocks were put in place they were coated partly with common lime mortar and partly with Platt plaster. Maximum temperature during test, 1,832 degrees Fahrenheit.

White Partition. — Solid and cellular composition plaster blocks 3 inches thick. The composition of the blocks was plaster of Paris, asbestos and wood fiber. The blocks after being put in place were plastered with "Adamant" browning, ½-inch coat. Maximum temperature during test, 1,760 degrees Fahrenheit.

Freeman-Dobbin Partition. — Solid and cellular composition plaster blocks, the solid 2 inches thick and the cellular 3 inches thick. The composition of the blocks was plaster of Paris, silicate and carbonate of lime and wood fiber. The blocks after being put in place were plastered with a ½-inch coat gauged mortar. Maximum temperature during test, 1,760 degrees Fahrenheit.

Expanded Metal Lath and Plaster Partition. — Composed of expanded metal on 1 x $\frac{3}{16}$ inch metal studs at 12-inch centers covered with scratch and browning coat of "King's Windsor," making a total thickness of 2½ inches. Maximum temperature during test, 1,706 degrees Fahrenheit.

Moeslein Partition. — Metal lath and plaster partition, composed of perforated sheet metal attached to both sides of T iron studs 1 x ⅛ inch at 11-inch centers, forming an air space 1⅝ inches between the metal sheets, covered with "King's Windsor" scratch coat, making a total thickness of 3 inches. Maximum temperature during test, 2,021 degrees Fahrenheit.

Roebling Partition. — Wire mesh and plaster. Composed of two sheets of No. 22 wire ⅝-inch mesh, stiffened by ¼-inch steel rods 7 inches apart attached to 2 x ⅛ inch metal studs, forming an air space 2 inches wide between the metal sheets, covered on the inside with white putty coat of plaster, and on the outside with "Rock wall plaster" to a thickness of 3 inches. Maximum temperature during test, 1,994 degrees Fahrenheit.

Roebling Partition. — Wire mesh and plaster. Construction same as above, but of one sheet of wire mesh on ⅜ x ⅞ inch channel studs at 16-inch centers, covered with "Acme" patent plaster to a thickness of 2½ inches. Maximum temperature during test, 1,800 degrees Fahrenheit.

Averill Partition. — Metal lath and plaster. Composed of $\frac{3}{16}$ x 1 inch flat uprights at 12-inch centers fastened top and bottom to $\frac{3}{16}$ x 1 inch plates with Schratwieser metal lath on one side. The metal lath was plastered on one side, and the other side was filled in with sawdust and hydraulic cement composition flush with the metal studs. This was then plastered with a scratch and browning coat of sand and hydraulic cement, making a total thickness of 2½ inches.

Averill Partition. — Sawdust and hydraulic cement composition blocks 2 inches thick plastered with scratch and browning coat of cement mortar to a thickness of 3 inches. Maximum temperature during test, 2,102 degrees Fahrenheit.

Schratwieser Partition. — Metal lath and plaster. Solid and hollow partition similar to other metal lath partitions, plastered with "King's Windsor" asbestos cement to 2 and 3 inches respectively. Maximum temperature of test not taken because of accident to pyrometer.

Tile Block Partition. — Henry Maurer & Son. Porous terra-cotta cellular blocks composed of 12 x 9 x 2 inches hollow blocks with three air cells each, the walls of the blocks being about $\frac{11}{16}$ inch thick. In the horizontal joints a metal strap ⅞ inch wide of No. 24 United States gauge was laid. In another wall 8 x 12 x 3 inches semi-porous cellular blocks with two air cells were used without the metal strap. Both partitions were plastered with ½-inch "King's Windsor." Maximum temperature during test, 2,057 degrees Fahrenheit.

Brinkman Partition. — S. G. Brinkman's solid terra-cotta blocks composed of 15½ x 9½ x 2 inches blocks and 16½ x 10 x 1½ inches blocks, with a stamped metal I bar laid in the horizontal joints supported by metal uprights.

Each partition was covered with ½ inch of plaster on each side. Maximum temperature during test, 1,706 degrees Fahrenheit.

Concrete Block Partitions. — Sprickerhoff partitions. The composition of the blocks was one part Portland cement, one part of sand and five parts steam ashes, covered with ½-inch coat of "King's Windsor" browning mortar. Maximum temperature during test, 1,868 degrees Fahrenheit.

The result of the tests can be briefly summarized:

Composition Plaster Blocks. — All the composition plaster block partitions had the plaster coating calcined from their surface, and the body of the blocks was also calcined to a greater or less depth, generally from ½ to 1¼ inches, and this portion was washed away by the water. In no case did the fire or water pass through the partitions. It is interesting to note here that had the test been continued for a longer time the whole thickness of this composition plaster would have been calcined and therefore rendered incohesive and soluble.

Metal Lath and Plaster Partitions and Metal Lath and Cement Composition (Averill). — All the metal lath partitions had the plaster or cement composition calcined to a greater or less depth, part of which was washed away by the water, exposing in some places the metal work. In no case did the fire or water pass through the partitions. The same observation holds good here, as in the case of the plaster block composition blocks, that had the fire been continued for a longer time the whole thickness of the plaster would have been calcined and therefore rendered incohesive and soluble, and after this the metal work would have been directly exposed to the fire.

Tile Block Partitions. — Porous and semi-porous cellular terra-cotta blocks. The only effect of the fire and water on the terra-cotta cellular blocks, was to remove the plaster coating, leaving the stability of the wall intact and actual material of the block uninjured.

Solid Terra-Cotta Blocks with Exposed Stamped Metal I Beam Fastenings. — One effect of the fire and water had been to remove the plaster. Another effect was, the metal fastenings were slightly deflected in places. The blocks suffered no injury. In no place had fire or water passed through the partition.

The result of these tests makes one thing very plain, which was already well known to those having an elementary knowledge of chemistry — that plaster of Paris, lime plaster, carbonate of lime or any of its compounds are not fire-proof materials; that at best they are merely non-combustible and cannot resist the action of fire and water either separately or alternately. Therefore any partition depending upon these materials for its structure or its filling cannot be depended upon to endure great heat for any considerable length of time; and any partition whose metal structure is dependent upon an insulation of plaster and its compounds must fail by reason of the destruction of the insulating material and the exposure of its structure to the direct action of the heat. Another result which is also evident is that in the event of a fire not sufficient to totally destroy the plaster composition partitions, the repairs required to restore them to an acceptable condition would amount almost to a virtual replacement of many of the blocks of the block partitions and a refilling of the plaster body in the metal lath partitions, an item which must be considered in deciding on the relative merits of various materials.

In regard to the tests of the porous and semi-porous tile blocks, the solid tile blocks and the concrete blocks, had the test been carried further — to the point of failure of these two different materials — the result could be predicted almost to a certainty. The concrete blocks probably would have been affected first. The component parts of the concrete having different coefficients of expansion would have been under great strain, and upon the application of water, under the sudden cooling, would probably have developed cracks which would have impaired its structure. The calcining effects of the great heat would also have affected the cement to some extent (depending upon the temperature), and this would have impaired its bonding properties.

The porous and semi-porous cellular fire clay terra-cotta, being a porous homogeneous material, could have endured a continuous heat short of the vitrification point without any structural disintegration, and could then have passed through the water test without harm, because its porous structure would have allowed contraction of volume without great strain, as the introduction of pores or minute air cells into its structure permits sudden contraction without appreciable destructive effects.

All these results are what might have been expected. Fire clay needs no recommendation; its qualities are too well known to require it. The blast furnace, the steel converters, the open-hearth steel furnaces, and the dome and rotary cement kilns, all testify to the uses to which this refractory material can be put. It is not strange, then, that it endures where other materials fail.

In judging these tests, however, one fact must not be overlooked. All these partitions were without openings and rested upon a brick floor, or on steel members which rested on the brick floors. It is hardly necessary to point out that these conditions were highly favorable ones for the test, but one of these conditions, that of no openings, cannot always be realized in practice. The fact that it cannot be realized, however, makes it highly important that the openings be made as few as possible and that all openings be reënforced with metal frames covered with insulating material. The partition should be made as independent as it is possible to make it of any required additional stability, but as conditions sometimes make this dependence necessary, the metal frames around such openings should be carefully secured to floor and ceiling and thoroughly protected from sudden changes of temperature. The partition should also rest directly upon and be cemented directly to the incombustible floor material, so that the bond of these two can be depended upon. It is no uncommon thing to see partitions set upon a layer of dust, which of course prevents any possible bond between the floor and the partitions and may cause the partition to fall in case of strain. Partitions set upon wood or other inflammable material cannot be considered as any more than temporary non-combustible screens which may fall at a critical moment.

In conclusion it may be said that the porous fire clay material as a fire and water resisting medium has been proven. Now the fulfillment of its highest function depends entirely upon the intelligent use made of it by the architect and manufacturer.

Selected Miscellany.

NOTES FROM NEW YORK.

The Tenement House Commission, of which Mr. Robert W. De Forest is chairman, will have offices in the Telephone Exchange, southwest corner of 18th Street and Irving Place, and their duties hereafter will be much more important than heretofore. All plans for tenements will have to be filed with and approved by this commission as well as by the Department of Buildings before work can be commenced. In this connection I would say that owing to some of the absurd arbitrary conditions of the new tenement-house laws very little work in that line is now being projected, or is likely to be until the law is modified. If built strictly in accordance with this law they become so expensive to construct that the owners must perforce require a large rental to make them pay, and they are generally built in a locality where the occupants can afford to pay very little. Then the enormous light courts required make it almost impossible to plan a convenient tenement on a narrow lot.

HOUSE LOCATED IN A BOSTON SUBURB.
John A. Fox, Architect.

RESIDENCES, CITY OF MEXICO, MEXICO.
J. Edward Campbell, Architect

RESIDENCES AT MINNEAPOLIS, MINN.
F. B. & L. L. Long, Architects.

A revision of this law is an immediate necessity.

For many years we have felt the pressing need of enlarged post-office facilities, and with the aid of the press every effort has been made to secure this important result. It now looks as though our hopes would be realized, for bills have been introduced into both houses of Congress asking for an appropriation of $2,500,000 for the purpose, and although such bills have heretofore been defeated the "rural" members have promised not to oppose it this time. New York is the great clearing house for the United States in the reception and forwarding of its mails from and to all other nations, and the increase in the volume of mail matter keeping pace with the growth of the country and the expansion of its commerce is too obvious to call for comment. The promptitude and efficiency of the mail service throughout all the states therefore depends in a great measure upon the facilities afforded New York.

SUNDAY-SCHOOL CHAPEL, BILTMORE, N. C.
R. H. Hunt, Architect.

HOUSE FOR ROBERT RAMSEY, CINCINNATI, OHIO.
Elzner & Anderson, Architects.

SAVINGS BANK, ANSONIA, CONN.
Brown & Von Beren, Architects.

CAPITAL, STANDARD TERRA-COTTA WORKS, MAKERS.

Our architects are putting in all their spare time now in getting ready for the exhibition of the League which opens next month. They are having bird's-eye views prepared of the buildings which they showed last year in elevation and are dusting off and revarnishing old frames.

The League becomes more and more dignified each year and everything conducive to sociability and good fellowship is being weeded out. There was a time, which most of us recall with pleasure, when during the exhibition a "smoker" was held each Saturday evening, when formality was dropped and when a most innocent good time was enjoyed by everyone, but for some unaccountable reason these affairs have been cut out.

In an interview with Mr. Thomas Hastings published in a recent number of the *Scientific American* he makes an interesting suggestion in regard to the new post office. He proposes building it with a frontage on the East River at the foot of 41st Street, widening this street as far as 5th Avenue and thus making a fine boulevard with the post office at one end and the new Public Library at the other. A post office at this point would be central for the greater city, would make a beautiful and imposing appearance from the river, and foreign mail could be handled with the greatest convenience.

CAPITAL BY FULLER & PITCHER, ARCHITECTS.
Excelsior Terra-Cotta Co., Makers.

LEWIS & MAYCOCK BUILDING, NEW HAVEN, CONN.
Brown & Von Beren, Architects.

The members also were in the habit of decorating menu cards for the annual dinner, which were all handed in at the time and then distributed among those present, being pretty and appropriate souvenirs of the occasion. This pleasant custom has also been abolished, probably being considered undignified. We earnestly hope that

LIVING-ROOM.

DINING-ROOM.

HOUSE FOR L. D. DREWRY, CINCINNATI, OHIO.
Elzner & Anderson, Architects.

the younger members of the League will get together and revive a little of the life which it once possessed and enjoyed.

Last week Mr. Cass Gilbert gave a dinner at Sherry's to the employees of his office in honor of having won the competition for the Newark Court House. There were about twenty men present besides the guests of honor, Mr. Frank Miles Day and Mr. Warren P. Laird. Those who were fortunate enough to be present say that they had the time of their lives, and those who know Mr. Gilbert's capabilities as a genial host may well believe it.

A new building is to be erected at Broad and Beaver Streets which will be even larger than the Broad-Exchange Building, which is now the largest office building in the world. The building is being planned by Clinton & Russell, architects, for the George A. Fuller Company.

EAST BOSTON HIGH SCHOOL, EAST BOSTON, MASS.
John Lyman Faxon, Architect.
Built of Gray Brick made by the Kittanning Brick Company, Pittsburgh, Pa. Fiske & Co., New England Agents.

NEW LIBRARY AT WALLINGFORD, CONN.
Roofed with Celadon Roofing Tile.

The Goelet estate intends adding 211 feet frontage to the Hotel Imperial at Broadway and 32nd Street. McKim, Mead & White designed the original building and will draw plans for the addition.

NOTES FROM SAN FRANCISCO.

Building continues active, and the prospects for the new year are very bright. It is probable that this year would have been a record breaker had it not been for the protracted strike of the teamsters during the fall, which greatly retarded building operations.

The tendency is growing rapidly to build better; and particularly the more frequent use of fire-proof construction is very noticeable in mercantile buildings as well as in residences.

We are promised at no distant date new building laws which, let us hope, will be more explicit and comprehensive than the existing ones, which have outgrown their usefulness, if ever they had any.

The Board of Examiners for the Northern District of California held their first examination for architects under the new law the last week in October, in which they passed two candidates. The examination occupied a space of three days. Among the problems were designing and planning a large brick and terra cotta suburban residence; calculating foundations, piers, joists, girders, posts and columns, etc., for a heavy brick warehouse; plumbing and other specifications, and figuring out strains, etc., in a wooden truss and detailing same.

FIRE HOUSE, CAMDEN, N. J.
Thomas H. Stephen, Architect.
Built of "Ironclay" Fire Flash Brick made by the Columbus Face Brick Company, O. W. Ketcham, Philadelphia Agent.

NEW SCHOOLHOUSE AT INDIANAPOLIS, IND.
Adolph Sherrer, Architect.
Built of Norman Gray Brick made by the Columbus Brick and Terra-Cotta Company

A marked sign of the rapid growth in population of San Francisco is the large number of hotels and apartment houses under way in the offices of our architects and in course of erection. All through the city residences and flats are at a premium; rents are high, with a decided upward tendency.

The obliteration of "Chinatown," the show place and disgrace of the city, is a dream that our citizens hope soon to realize. We hope to

REAL ESTATE TRUST AND HALLOWELL BUILDINGS, PHILADELPHIA, PA.
Edgar V. Seller, Architect. Terra-Cotta furnished by the New York Architectural Terra-Cotta Company.

CASINO, 124TH STREET, NEW YORK CITY.
Alfred Zucker, Architect.
Brick furnished by the Ohio Mining and Manufacturing Company.

have one of the best business localities cleared of the unsanitary and ramshackle buildings now occupied by the "heathens," and modern improvements built thereon. The passage of the Chinese exclusion act will naturally hasten this blessing.

Architects Fred H. Meyer and Smith O'Brien formed a copartnership the first of the year, offices in the Chronicle Building.

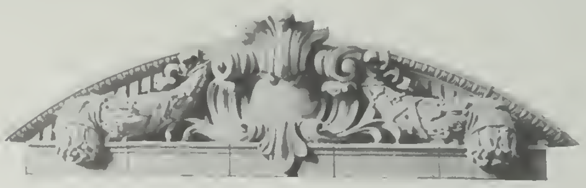
The San Francisco Architectural Club, a recent organization, have rented quarters at 14 McAllister Street, near the Hibernia Bank.

The competition for the new German Hospital ended in nothing, the jury, consisting of three architects, deciding that none of the plans submitted was worthy of being selected, so they awarded a second and third prize, against which decision the other competitors registered such a vigorous "kick" that the hospital committee decided not to award anything, so there the matter stands. It is probable an architect will be selected later without having recourse to another competition.

NEW YEAR'S GIFTS.

We have received from R. Guastavino Company, 19 Milk Street, Boston, and 49 East 19th Street, New York, a handsome calendar bearing a photographic illustration of an interesting piece of work which they have recently executed.

From Lesley & Trinkle Company, 22 South 15th Street, Philadelphia, Pa., a very novel calendar representing players at golf.



DETAIL BY HODDART & WARD, ARCHITECTS.
Northwestern Terra-Cotta Company, Makers.

DETAIL BY PHILIP H. JOHNSON, ARCHITECT.
New Jersey Terra-Cotta Company, Makers.

DETAIL BY FRANK FREEMAN, ARCHITECT.
B. Kreischer & Sons, Makers.

DETAIL BY BARNETT, HAYNES & BARNETT, ARCHITECTS.
Winkle Terra-Cotta Company, Makers.

DETAIL BY W. A. COOKMAN, ARCHITECT.
Perth Amboy Terra-Cotta Company, Makers.

From the Pope Cement and Brick Company, 421 Wood Street, Pittsburgh, Pa., a splendidly gotten up vest-pocket diary.

IN GENERAL.

Frank L. Packard, architect, Columbus, Ohio, successor to Yost & Packard, has taken offices in the new Hayden Building, 16 East Broad Street, Columbus.

Arthur B. Heaton, architect, Washington, D. C., has removed his offices to the Washington Loan and Trust Building, 1420 F Street, N. W., where he would like to receive manufacturers' catalogues.

Fred E. Field and Harry A. Slocomb, architects, Providence, R. I., announce a copartnership. Offices, 48 Custom House Street.

The terra-cotta used in the house at Cedarhurst, L. I.,

DETAIL BY J. T. W. JENNINGS, ARCHITECT.
American Terra-Cotta and Ceramic Company, Makers.

DETAILS BY BARNEY & CHAPMAN, ARCHITECTS.
Atlantic Terra-Cotta Company, Makers.

DETAIL BY JAMES BROWN LORD, ARCHITECT.
White Brick and Terra-Cotta Company Makers.

EXHIBIT OF THE BLUE RIDGE ENAMEL BRICK COMPANY AT PAN-AMERICAN. FIRST AWARD.

Barney & Chapman, architects, which is illustrated in the plate form of this number, was executed by the Atlantic Terra-Cotta Company.

"Harvard brick," supplied by Pfotenhauer & Nesbit of New York City, sole agents of the New England Brick Company for all states south and west of Massachusetts, will be used in a fine new residence at Westbury, L. I., of which Warren, Wetmore & Morgan are the architects.

Charles Bacon, Boston agent for Sayre & Fisher Company, will supply brick on the following new contracts: Meigs Building, Bridgeport, Conn., A. H. Bowditch, architect; schoolhouse, Tarrytown, N. Y., Wheelwright & Haven, architects; engine house, Cambridge, Mass., Robert Coit, architect; Weld house, Brookline, Mass., Peters & Rice, architects.

The Boston Paving Brick Company has been incorporated under the laws of the state of New Jersey with a capital stock of $150,000, and Messrs. Daniels & Co. of 6 Wall Street, New York, have charge of the disposal of the bonds. The offices of the company will be at 923 Colonial Building, Boston, and 8 Booth's Block, New Britain, Conn. Communications are invited in regard to machinery, shafting, pulleys, belting, kilns, etc., and should be addressed to Box 555, New Britain, Conn.

STOCK MANTEL NO. 19.
Made by the Hartford Faience Company.

The sixteenth annual convention of the National Brick Manufacturers' Association is to be held in Cleveland, Ohio, February 10 to 15 inclusive. Headquarters will be at the Hollenden Hotel, where the annual dinner will be held on Wednesday evening, February 12. The committee in charge are arranging a programme which will amply provide for the comfort and entertainment of the attending members.

A novel feature of the convention will be a display of brick representative of the brickmaker's art.

It is expected that many of the leading brick manufacturers of the country will be in attendance, and this in itself should insure a large attendance of manufacturers' agents. A feature of the programme will be an address by one of Cleveland's well-known architects and a paper by a prominent Cleveland builder.

THE BRICKBUILDER.

FEBRUARY,

1902.

A HOUSE ON THE LEFT BANK OF THE RIVER MEUSE, LIÉGE, BELGIUM.

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THE BRICKBVILDER

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THE BRICKBUILDER.

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ADVERTISING.

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STANDARD FIRE RESISTING BUILDINGS.

THE Fire Department of the Royal Insurance Company of Liverpool has sent out copies of specifications drawn up with the object of encouraging the construction of fire-resisting buildings. Fire-proof construction as a science develops more slowly in England than it has in this country, and many of the details, as we read them in the English papers, sound like old stories to us, simply because we have had to fight worse conditions here than have ever existed abroad, and what progress we have made in fire-proof construction has been forced upon us by dire necessity. But evidently the Liverpool company have taken a leaf out of our experiences, for their recommendations in regard to fire-proof building include practically all of the features which we have learned are of such vital importance. For example, doors and frames and window frames are to be of iron or other hard metal. Glass above the ground floor is to be not less than ¼ inch thick, in sections not less than 2 square feet, or if of wire glass, in sections not larger than 4 square feet. The height of buildings is not to exceed 80 feet, and the cubic contents of any one compartment are not to exceed 60,000 cubic feet. Brick, terra-cotta or concrete is to be used for external walls, except that stone may be used as a facing when it has a backing of not less than 13 inches of brick. As we understand it, these specifications were prepared to form a standard of fire-resisting construction so far as the insurance companies were concerned and to give direct encouragement to building owners by reducing the rate to those who would build in accordance therewith. We have always maintained that a general application of fire-proof constructive principles in large cities can be better brought about by the rulings of the insurance companies than by any municipal regulations, and our only regret is that the action of the insurance companies should not be more general and that higher premiums should not be put by them upon buildings of anything but the first class.

THE recent fire at Paterson, New Jersey, caused losses which conservative estimates made after the fire have not reduced materially below seven million dollars. Conflagrations relatively disastrous have occurred within a month at Norfolk, Virginia, and at Waterbury, Connecticut. These fires represent a loss to the nation without one single relieving feature unless they can furnish object lessons by which we can profit. There is no excuse for such fires, and there is no reason why the community as a whole should tolerate conditions which lead to them. They can be avoided, and to ascribe such disasters to mere accident is no more justifiable than it is to ascribe them to the hand of God. They are purely and simply the result not of ignorance so much as of selfish indifference to the public well-being, for while the responsibility for constructions which permitted a fire of this sort rests principally upon the owners of the property, the attendant suffering, if not pecuniary loss, comes chiefly upon those who have no hand in the conditions which made such disasters possible.

IN the training of a young child it becomes necessary to repeat and reiterate the ordinary commonplace lessons of growth and development over and over again, year after year, before the child appreciates even in a vague way what is wanted of him. This country with all its tremendous resources, its vast accumulations of wealth and its scientific attainments, is in some ways still very young, and the old familiar lessons of what constitutes good construction have to be reiterated again and again. The time was when property owners gave little thought to fire-proof construction, but we will venture the assertion that there is not a large holder of real estate to-day in any important city who is not at least sufficiently familiar with the distinctions between fire-proof and the ordinary constructions to know the value of each.

THERE are at least two factors which make for security against fire damage. The first is fire-proof construction itself, and the second is the attitude of the insurance companies towards fire risks. Let us consider them for a moment in detail.

Our cities will never be thoroughly safe while other than fire-proof materials are recognized as suitable for building purposes. This is so old a story that it seems idle to repeat it, and yet in all our large cities, especially in the East, we keep on adding year after year to our inflammable districts, and in many of the large cities in this country the greatest proportion of yearly growth is of this class of buildings which are a positive menace to the well-being of the community as a whole. This is purely and simply a case of selfishness. There is no more reason why a private citizen should be allowed to build a tinder box which may in the near future be a menace to a neighbor than that he should be allowed to maintain any other public nuisance. So long as private greed alone is to be considered, cheap construction will be the rule. A wooden tenement house, for instance, will frequently pay ten to fourteen per cent if constructed in the cheapest possible manner, while the same accommodation in a properly built, reasonably fire-resisting structure would imply an investment upon which the same rentals would give returns probably not over five or six per cent, but that is surely no reason why our communities should be exposed to such loss as is represented by the Paterson fire, and the public has a perfect right to demand that if people are to live in a city and enjoy the advantages thereof they shall be compelled to contribute towards the well-being of that city by using nothing but the right construction, even though that construction shall involve a lessening of return on their capital.

THE fact that proper constructions reduce the rate of dividends is no argument in favor of fire traps. Good sewerage, efficient water supply, sanitary surroundings, all these also reduce the earning capacity of the land, but no one would for a moment argue therefrom that the individual should have a right to neglect these considerations. If we are to be free from conflagration we simply must appreciate that it will be cheaper in the long run to pay the bills in advance by constructing our buildings properly than to wait until the whole property is destroyed and then face the results which follow in the wake of every conflagration. The poor construction, with its high rate of return, is cheaper and more profitable only for the passing time. In the long run the better constructions would be by all odds the most economical if carried out systematically and if neighborhoods as well as individual buildings were constructed properly. The truth of this is admirably shown by the report which has been issued by Mr. Edward Atkinson as president and treasurer of the Boston Manufacturers' Mutual Fire Insurance Company. During the past fifty-two years his company has received in premiums something over twenty-two million dollars and has paid in losses something over four million, returning the larger part of the remainder to the shareholders of the company as dividends. During the past year the premiums amounted to $1,151,000, while the losses were $47,343.74. The risks — for this company insures nothing but mill property — are extremely hazardous, notwithstanding the thorough manner with which the company has insisted upon the most improved forms of checking and combating incipient fires, and it would not be fair to compare the fire losses of this company with the risks of ordinary dwellings and commercial buildings. But notwithstanding this and very largely also because of the care which the company has exercised, if the fire losses in Boston alone had been on the same ratio as those of the Manufacturers' Mutual Company the entire loss would have been less than $150,000, while as a matter of fact they amount to ten times that sum. The point we would make is that if the builders were obliged in some way to use proper construction, even in the simplest kind of buildings, the initial cost, while greatly increased, would undoubtedly be more than offset by the actual saving in the reduction of fire damage.

THIS brings us to the second point, the insurance companies. This is a subject we have often referred to in these columns. While the actual responsibility for conflagrations should properly be placed upon those who knowingly construct inflammable buildings in the midst of a city, a very considerable degree of moral responsibility rests with the insurance companies themselves. If the companies would unite in putting the rates so high on non-fire-proof buildings that it would be practically impossible or unprofitable to insure them at all, while the first result would be a tremendous falling off in the business of the insurance companies, there is no doubt that in the course of a very few years there would be an equilibrium established, as has resulted from similar action of the insurance companies towards mill construction. The losses to the companies in premiums would be more than made up by the reduction in fire losses, and individual owners no less than the community would in the long run be vastly the gainers by such a course of decided unequivocal action by the insurance companies. We confess to an amazement that the companies have not taken just such steps. If a net per cent premium were put upon every wooden house, even if erected slightly outside of what we choose to call the business center of a city, we would see very few wooden houses erected within the next ten years. This may sound drastic, but is nowhere near as much so as such a fire as that at Paterson, at Chicago in '71, or in Boston in '72. We believe insurance companies alone can bring this about. Municipal regulations will continue to be very largely a reflex of individual thought, and that individual thought will be always influenced very largely by immediate returns on investment rather than the public welfare. No one expects his particular house to burn down, therefore he is willing to take chances, even though those chances may involve a neighbor who is equally trustful of the future. Furthermore, the average lawmaker follows rather than leads public opinion and is very loath to interfere with what we might call vested right, though there is surely no more deeply vested right than one of self-protection against neighbors who willfully ignore the demands of good construction.

Colonial Brickwork of New England. III.

PROVIDENCE, R. I.

BY WALTER H. KILHAM.

DOORWAY, BENEFIT STREET, PROVIDENCE.

THE adaptation of Colonial architecture to hilly and broken sites is a phase of the situation that has not been generally considered. We are accustomed to thinking of Colonial buildings as standing four-square on level plots of ground such as are usually found in New England seaports. Such is the case with the houses of Salem, Portsmouth, Newburyport, and was to a great extent the case with Boston houses before the encroachments of business had caused their destruction. That this state of affairs is not a necessary accompaniment of the style is shown by the pictures which we present of the old brick architecture of Providence, R. I., where the old mansions stand as gracefully on the steeply sloping hillsides as they do elsewhere on level streets.

The residential part of the city of Providence is built for the most part on a high and steep hill which rises along the left bank of the river. North and South Main Streets run along the river bank directly at the foot of the slope, and are lined with old buildings, many of which have been altered for business purposes. Those on the western side of the street are of ordinary construction, but on the eastern side they are built against the hill and the principal rooms are placed upon what appears from the street to be the second floor. The main entrance is on this level, generally at the side, and is approached by a long flight of stone steps. The stables were at the rear, at a considerably higher elevation than the street. This type of house appears occasionally also on Benefit Street, which is parallel to Main Street and, being one block higher up the hill, has not yet been given over to business.

The most interesting of the old buildings now remaining on South Main Street is that occupied by the Providence Bank, a three-storied brick structure with a curiously curved roof and quite elaborate cornice. It is said that the building was built as a private residence and that the entrance, which now is at the street level, was originally *au premier* and was approached by a high double flight of steps. The interior is quite elaborately finished with an elegance rather unusual in New England. The panels of the wainscot are of varying patterns, and Corinthian columns and high mantelpieces with pediments and pilasters are much in evidence.

OLD COLONIAL HOUSE, PROVIDENCE.

Along Benefit Street, in the vicinity of the First Baptist Church, are some examples of a class of house not altogether peculiar to Providence. These houses stand on or near the street line and have porches or flush entrances giving access to the basement, whence a stairway leads to the main floors. Some of the basement windows have graceful grilles, one of which we illustrate.

It is on Benefit Street and the streets above that the

OLD COLONIAL HOUSE, PROVIDENCE.

OLD COLONIAL HOUSE, PROVIDENCE.

best work of Providence is to be found. Here the stately old mansions are surrounded in many cases by ample gardens, and, standing well back from the street, are approached by handsome gateways and flights of steps. The always rising ground necessitates in most cases a system of retaining walls, topped with high iron or wooden fences, through which a graceful gateway and staircase gives entrance to the front yard, which in many instances is treated as a flower garden. At one side, usually the upper side, a large gateway affords an approach to the stable yard, around which the stables and offices are built, forming a sort of court enclosed on

COLLEGE BUILDINGS, PROVIDENCE.

three sides, of which the grouping and architecture are scarcely less interesting than those of the house itself. In almost all cases the stables are connected with the house and form part of the same composition. These houses which stand in large plots of ground have the usual central porch with the Palladian window over it, which varies only in detail from those in other places. The semi-elliptical transom of the Palladian window is usually entirely filled with leaded glass instead of being partly filled with carved woodwork, as was frequently the case in other cities.

At the summit of the hill the buildings of Brown University include some interesting old brick dormitories, not unlike those at Harvard, but treated with greater simplicity.

The architectural history of Providence cannot be told without reference to the name of Joseph Brown, one of four brothers who during their lifetime were among the most prominent citizens of the city. Joseph Brown was born in 1733 and died in 1785. He was distinguished by his philosophical tastes and pursuits. He early retired from business with his brothers to devote himself to his favorite studies. Like MacIntyre of Salem and Bulfinch of Boston, he successfully followed other branches

OLD COLONIAL HOUSE, PROVIDENCE.

of art and science, as is shown by his observing the transit of Venus in 1769, having imported the necessary

OLD COLONIAL HOUSE, PROVIDENCE.

astronomical instruments. The memory of this feat is perpetuated in the name of Transit Street. With James

OLD COLONIAL HOUSE, PROVIDENCE.

Sumner, he was the architect of the First Baptist Church, erected in 1774-75, and known as one of the finest examples of Colonial architecture in New England. It follows

HOUSE ON BENEFIT STREET, PROVIDENCE.

in a general way the famous church of St. Martin's-in-the Fields, in London, the masterpiece of Gibbs. The building before referred to, occupied by the Providence National Bank, on South Main Street, was also designed by him in 1774 as his home. In association with Stephen

HOUSE ON BENEFIT STREET, SHOWING SIDE ENTRANCE.

Hopkins he designed and built the Market House on Market Square, now the Board of Trade building, of

A TYPICAL PROVIDENCE ENTRANCE.

which the corner stone was laid in 1773 by his brother Nicholas.

In 1786 he designed for his brother John the house

WINDOW GRILLE, BENEFIT STREET, PROVIDENCE.

on Power Street known as the Gammell house and now undergoing repairs for a new owner. This house is one of the finest and most historic in Providence.

OLD COLONIAL HOUSE, BENEFIT STREET, PROVIDENCE.

On either side of the broad sweep of the retaining wall are two weather-beaten statues, which, according to

OLD PROVIDENCE BANK.

STABLE YARD, PROVIDENCE.

an old-time fiction of the children of Providence, were supposed to revolve at the stroke of twelve on Saturdays. Their failure to do this was always explained to the groups of children who would gather by telling them that they mistook the hour. The solid brick walls and partitions of the house are made of bricks imported from England, and the doors, stair balusters, newels, rails, etc., are of solid San Domingo mahogany brought to Providence in Mr. Brown's own ships. The door pediments, the mantelpieces, the wainscots and deeply embrasured windows are all on a scale of unusual elaboration and elegance, and formed a fit setting to the many distinguished guests that were entertained in the house, among whom was no less a personage than General Washington, who on his memorable tour in 1789 lodged here and rode in the owner's coach. It was here that at an annual commencement dinner of Brown University, with many ministers present, Obadiah Brown, a relative of the owner, is said to have given the toast, "Here's a short respite to the damned in hell." All joined in the toast, the host leading off, saying, "Truly, gentlemen, a most admirable sentiment, in which we can all heartily join."

COLLEGE BUILDINGS, PROVIDENCE.

Unlike Salem and Portsmouth, Providence has become a large and busy city. The old houses in the lower part of the town are fast disappearing, but on the steep residential streets above the tide of business the architectural relics of the last century still hold their ground and promise to delight the eye for years to come.

STABLE YARD, PROVIDENCE.

STABLE YARD, PROVIDENCE.

Formal Gardens.

BY SAMUEL PARSONS, JR.

LORD BACON says truly that the enjoyment of a garden is indeed the purest of human pleasures, the greatest refreshment to the spirit of man, without which buildings and palaces are but gross handiworks.

And although we are unquestionably impressed with these sentiments, we are not unnaturally moved to inquire just wherein lie the true spirit and proportion of this garden, the presence of which is so necessary to the perfecting of buildings and palaces. Doubtless the explanation

GLIMPSE OF GARDEN NEAR BOSTON.
C. A. Platt, Architect.

will be found in the fact that a man's home, be it ever so princely or ever so humble, if it possesses real value, if it expresses anything of his character or needs, if it be in a word a true reflex of his spirit and not a mere toy or trophy of his pride, will be a creation so designed and arranged as exactly to fit its surroundings and circumstances.

Physical needs and comforts should be so yoked with nature herself in the garden as to allow the latter always to retain the primacy and continually to exert her own influence, which, if it is given free play, will become all-powerful and all-pervading and, instead of straining the natural senses with violent delights, will affect us like the sweet odors from heaven, affording unconscious and wholly pure refreshment to the spirits and heart of man.

The object of this paper is the presentation of some general considerations which should be borne in mind before the development of the practical details of landscape gardening is undertaken. And first we should remember that a man's home, if it is to be an expression of his own needs and taste, will be a place of many different features and occupations, and among these, extremely valuable as it is, the garden will make but a single integral part, with definite metes and bounds, occupying a position secondary to the whole.

The house has its own special area which will be necessarily treated in various ways in accordance with the needs and tastes of the tenant. The sharp winds to the north and west are to be taken into consideration, the preservation of attractive outlooks is highly important, and there are objectionable features that require to be relegated to the kitchen side of the house. The roads and walks must be tolerated because they are necessary; naturally we would prefer green grass and shrubs and trees to their bare surfaces. In a hundred ways we shall find our ideas of beauty continually bounded and limited by our ideas of usefulness. How indeed can any beauty be genuine unless it fits itself to the surroundings and carries with it the sane and homely sense of usefulness? Therefore the home domain should be a place of comfort and convenience as well as of beauty, not all a garden, though certainly all a picture, abounding in agreeable sights and sounds. And if a picture, it will be evident that a definite unity and due proportion should be secured in the disposition of the lawns, roads, groves and gardens, the stables, barns, meadows, and different appurtenances

GLIMPSE OF GARDEN NEAR BOSTON.
C. A. Platt, Architect.

and domestic appliances that help to make up the opportunities of country life.

It will be readily seen that these opportunities become more and more various as the exigencies of modern life continue to increase. Tennis and golf, the bicycle and automobile, demand accommodation, as well as the saddle horse and the hackney. Cattle and sheep may be desirable on meadow and hillside, and farm life may be a feature to be accounted with. Fences and outbuildings of different shapes and forms and for different purposes will need to be designed and constructed. All these things and more may be accounted as part of the features of most country places, but while the garden is only one it is a most important one. Indeed it would be hard to overrate the æsthetic and useful value of the garden in the general economy of the country place; but it is only fair to the other features to place it in its due order and conjunction.

A distinct and well designed picture should evolve itself in the mind, as the unimproved territory and its possibilities spread themselves out before the eye, inviting the exercise of creative faculty in the making of a home. But this picture, if it is to be successfully evolved, should not be the hasty creation of an idle fancy or uninstructed imagination. It should grow slowly like most other good things. Laid out on a broad and simple plan, it should be inspired not alone by our own desires, but in good part by the suggestions of the shape and contour of the surface, the surrounding scenery and the character of the trees, rocks and soil.

LANDSCAPE WITH GARDEN IN FOREGROUND.
HOME OF CHARLES A. PLATT, ESQ., WINDSOR, VT.

It becomes evident from these considerations that the subject of the garden in any form should not be allowed to engross our attention before study has been given to the more general problem, — that of planning the arrangement of the entire country place or home territory, though it be no more than an acre in extent. Moreover it should not be expected that the details of such a scheme could be properly thought out in the beginning; nor would it be desirable, for room should always be left for the development of new ideas which will be sure to arise as the years go by and our natures and desires change.

BIT OF GARDEN WITH OPEN LANDSCAPE.
HOME OF CHARLES A. PLATT, ESQ., WINDSOR, VT.

But the main and dominant features should be early settled, — the position of the house, the extent and shape of the lawn, the main drive, the outlying or boundary plantations intended to limit and outline the house territory, the position of the garden, the stable and other important outbuildings.

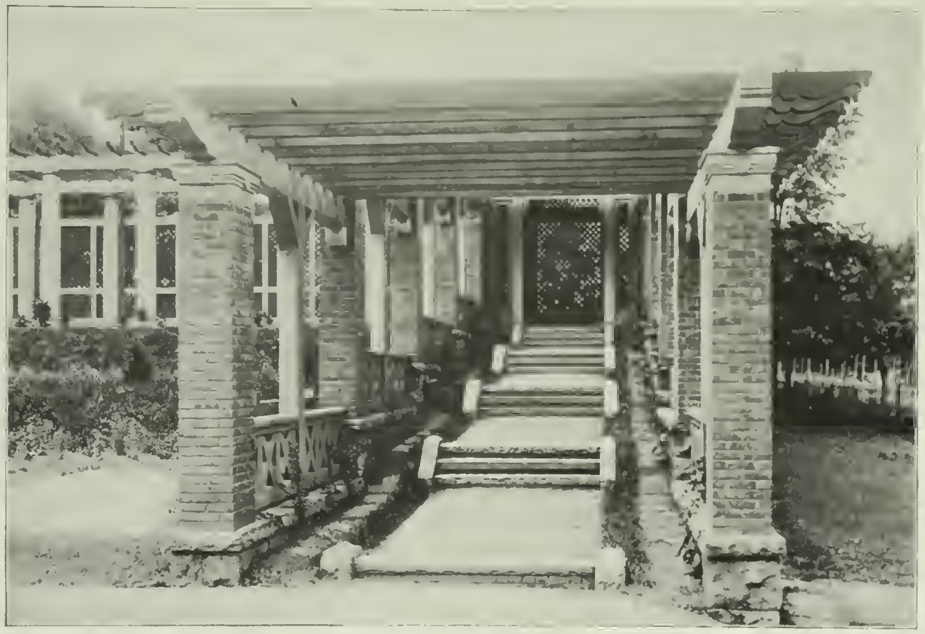
To discuss the treatment of all features of the country place or suburban home does not naturally come within the scope of an essay on "Formal Gardens," but it is necessary to realize the distinct correlation that should be set up between these features of landscape architecture before we can approach the subject of gardens in a satisfactory way.

This broad and inclusive treatment of the garden together with other features of a country place has not assumed a definite form until within two centuries. The use of the term "landscape architecture" belongs perhaps only to the last century. Yet it would not be right to say that no good landscape gardening existed before the eighteenth century, when the present phase of nature worship in art and letters assumed dominant shape.

Many of the Italian, French and Elizabethan estates show now the remains of landscape gardening of an exceptionally fine type.

The charm of many of these old places lies in their entire unconsciousness, breadth and simplicity, and they are also devoid of the meretricious display and lavishness which characterize so much of the landscape gardening of the present day. Conglomerate masses of flowers, evergreens, trees and shrubs, chiefly box trees and rhododendrons, with a few bits of marble ravished from Italian ruins, can hardly be said to constitute a satisfactory garden.

We do not know much of the gardens of ancient days, but they were probably formal arrangements of flowers and fruit trees, with a few evergreens and deciduous trees, and beyond a wilderness. Of landscape gardening and park making of the modern type we find little evidence, although the love and awe of nature, if less varied and conscious, was doubtless as great as that of our time. The ancients had wonderful fruit trees and flower gardens and medicinal herb gardens, and combined with them the most remarkable effects of sculpture and architecture. But to-day on the hills of Italy, where, after all, everything new seems a continuation of the old, or else the old under a new name, we find little suggestion of a special liking for natural effects as we now understand them. Pan is there without doubt, and also the sacred groves of oaks and chestnuts, but the human highly sophisticated note strikes us everywhere. Even if we lose ourselves in the forest, we seem aware always of haunting echoes and glimpses of sculptured and living creatures, half stone, half human, yet wholly divine. Ancient sculptured gardens — for such they seem to be— come down the ages to us almost unchanged in their statues and marble steps and balustrades, their gleaming fountains and ilexes, yews and box trees, and if we are fortunate, "roses, roses everywhere." Yet we would not give up one touch of these moss-grown, weather-stained, often ruined heritages of time for all the glowing parterres and showy horticultural parades that appear in astonishing profusion on the modern millionaires' ornate and expensive lawns.



VIEW OF PERGOLA, HOME OF MRS. FREDERICK BELL, MADISON, N. J.
Parsons & Pentecost, Architects.

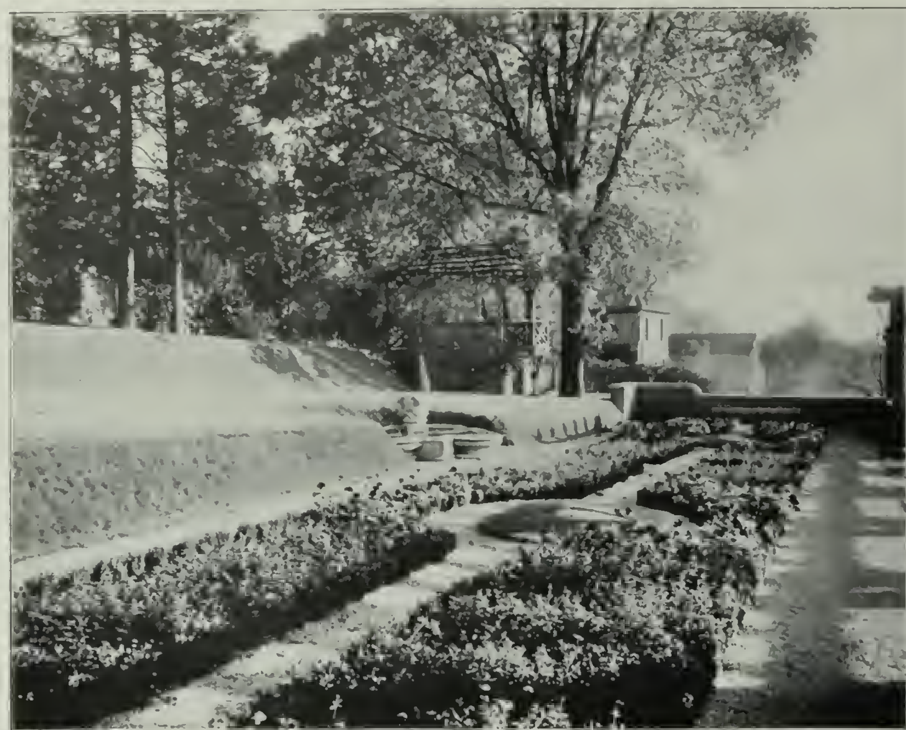
But while we are profoundly impressed with all the poetical charm, delicious melancholy and wholly delightful associations of the Italian villa or garden as it appears perched on the slopes of the Apennines, we feel, nevertheless, that this belongs to Italy and to another age when it was thought necessary to be always artificial. It would hardly do to assert that we are not artificial to-day, but it has grown to be a fashion, and perhaps a theory of life as well as of art, that we should aim to be more sane and natural than our fathers, or, at least, than the Italian nobles of the fifteenth century. It follows from this theory that our country places and recreation grounds should accept continual suggestions from the unsophisticated nature of our country. To transport an Italian garden of the fifteenth century to an American environment would be too much like putting nature in domino and mask to suit the sentiment of twentieth-century Americans.

TEA HOUSE, BIT OF PERGOLA AND GARDEN, HOME OF MRS. FREDERICK BELL.
Parsons & Pentecost, Architects.

The reader may believe and undertake to show that we already have Italian gardens in this country, but it will be necessary in face of indubitable facts to controvert this pleasing but incorrect belief.

It is true we have gardens and good ones; but because marble steps, balustrades and fountains and fragments of marble imported from Italian ruins have been employed in their arrangement, we should not flatter ourselves that the Italian garden has actually reached our shores, with its old-time trees and flowers and its tender grace of moss-grown beauty.

Our gardens may be and are "things of beauty and joy," and they have been benefited by many suggestions that find their sources in foreign lands; but if these suggestions have been inspired by any instinct for sound and sane art they will check the impossible attempt to realize the Italian garden under the widely different conditions of American soil and climate; while on the other hand they will aid the American garden to develop itself under American conditions and to harmonize with the native climate, soil and surrounding scenery.



VIEW OF DETAILS OF GARDEN FOR MRS. FREDERICK BELL, MADISON, N. J.
Parsons & Pentecost, Architects.

The American garden will be flanked and ornamented with arbors and pergolas made of native brick, terra-cotta and stone, wrought in all the beautiful designs that classic models enable us to produce, but nature will be encouraged to work her own will in well-ordered abandon, with roses, phloxes, sweet Williams, asters, junipers, yews and azaleas. For in spite of much fashionable classic aspiration, the Italian garden in America is a myth and will always remain a myth; for we cannot hope to attain even a far-away imitation of either its spirit or form.

VIEW OF PERGOLA, HOME OF WILLIAM A. BUTLER, ESQ., YONKERS, N. Y.
Parsons & Pentecost, Architects.

Turning therefore with respectful admiration from the gardens of other lands and days, we may gladly come back to the consideration of the garden of our own homes; not simply the garden with the house appended to it, but a separately embodied feature of the everyday economy and pleasure of home life.

Like the house, the situation of the garden needs to be selected with all due regard to the other features of the place. Very careful attention should be given to balance and proportion in its every relation to the home grounds, for it is in the just equilibrium of its various features that we shall find one of the chief charms of landscape art. Much study should be given to the successful blending of the lines of the garden and other divisions of the country place. Hard or inharmonious effects, startling contrasts and sudden violent transitions may be dealt with by melting, as it were, one distinctive feature of the place into the adjoining one by various devices of planting. Architectural divisions, such as walls, fences and steps, may be advisable or necessary, but in such cases the more or less rigid outlines should be softened and blended with neighboring effects by means of vines, shrubs and trees.

General rules can hardly be said to apply to the selection of a site for the flower garden, or, if you will, the formal garden,—a term used on account of the parallelograms, circles and ellipses that it makes use of,—further than the simple fundamental one that the surrounding features and home needs of every individual place should inspire and control the location of its various parts. One place may have its garden directly attached to the house and with most excellent effect, while another may be better placed a quarter of a mile away; and in like manner the materials of construction will vary in accordance with the peculiar needs and surroundings. Brick, terra-cotta, stucco and stone will be generally used to some extent in the construction of formal gardens, but it would be easy to imagine a place where all kinds of architectural work would only create a discord in the harmony, which, on the contrary, would be greatly enhanced and perfected by simple associations with trees and shrubs. Rules in the case of living beauty like that of trees and flowers are poor guides after all and are likely to fail one just at the moment when they are expected to prove especially useful.

DETAIL OF PERGOLA AND GARDEN FOR WILLIAM A. BUTLER, ESQ., YONKERS, N. Y.
Parsons & Pentecost, Architects.

DETAILS OF GARDEN FOR WILLIAM A. BUTLER, ESQ., YONKERS, N. Y.
Parsons & Pentecost, Architects.

The best method of laying out gardens, in the first place, is to depend on a few broad principles of design that will suit a large number of instances, but preparing ourselves to find the next gardening problem we meet entirely outside of our preconceived ideas and rules. Experience and many failures will eventually train one to undertake with some prospect of success the solution of such unfamiliar problems.

In the accompanying illustration, for instance, it will be readily seen that brick or stone commends itself for the uses to which it is turned, and that the secluded nook in the woodland just suits the formal garden, nestling as it does in a corner three hundred yards from the house and giving the feeling of retirement without loneliness by reason of its open, cheerful outlook over hillside and meadow.

So much for this particular garden; the next one may be different in every respect; but we shall hardly ever fail to find in all good examples of flower gardens such qualities as are expressed by the words *retiring, peaceful, harmonious, richly colored, sweetly scented, modest, dainty, finely proportioned and well balanced.*

The beautiful garden, in a word, is one in which the opportunity given by nature has been perfected, not perverted, by the hand of living art.

The Cantilever Arch Truss.

BY N. CLIFFORD RICKER, D. ARCH.

MANY railway stations have been built during recent years with their train sheds entirely open on three sides, instead of being enclosed by walls with wide openings for the passage of trains. The advantages of the open shed are obvious, for it is less costly and less liable to fire and other injuries. A terminal station usually has one end of the shed attached to the wall of the enclosed portion of the station containing offices and waiting rooms. For a through station the side of the shed is thus attached, or it may be entirely detached, only being connected with the waiting and baggage rooms by roofed platforms, likewise open at the sides.

For such a train shed, or even for any large enclosed hall, the balanced cantilever arch truss possesses many

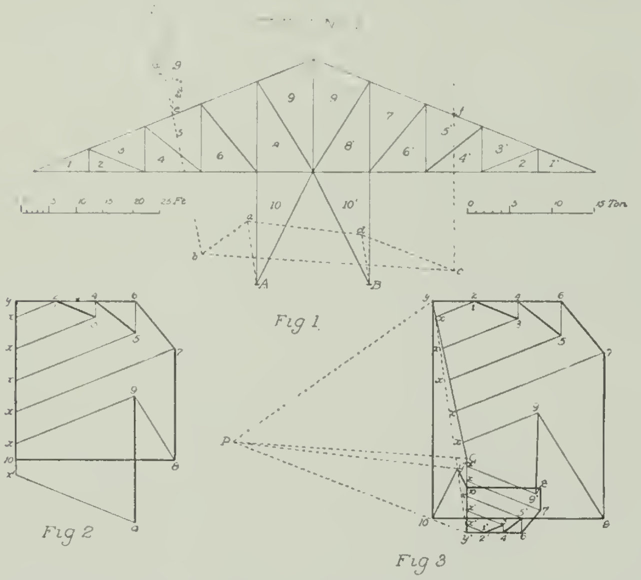


Fig 1. Fig 2. Fig 3.

advantages and merits careful study by architects and engineers. It has been employed but rarely, although a somewhat similar arch truss with three joints was used with great advantage in some of the larger buildings for the Columbian Exposition. The two examples of the cantilever arch truss best known to me occur in the Market House at Hanover, Germany, and in the Chicago station of the Illinois Central Railroad. It is possible that others have since been built in the United States.

A study of this form of truss soon revealed difficulties in applying the usual methods of Graphic Statics for stress diagrams, and a careful examination of all available publications on this subject failed to find any graphical solution for such a truss. A novel method was therefore devised which will probably be found interesting and useful in the study and design of this form of truss.

To simplify the problem, skylights and monitor roofs have been omitted in the example here worked out, although these are used in practice. The selected roof is of gable form, 100 feet span, 20 feet rise at center, and it is raised 20 feet clear above the floor. Trusses are of steel, placed 20 feet between centers, supporting steel I-purlins at each apex of principals, on which are fixed 2 x 6 pine rafters, set 2 feet centers. On these is laid ⅞-inch matched pine sheathing, covered with tin externally.

The maximum weight of snow is assumed to be 20 pounds per square foot of floor area. The maximum pressure of the wind on a vertical plane surface is taken at 40 pounds, making its normal pressure per square foot of the inclined surface of the roof 19.9 pounds by Hutton's Table.

The apex loads are computed in the usual manner, and it is also found that one 10-inch 25-pound I-beam will be required for each purlin supporting the rafters, weighing 500 pounds.

APEX LOADS.

Permanent or dead,	1.74 tons
Snow,	2.00 "
Total P. & S. load,	3.74 "
Wind pressure,	2.14 "
Resultant of P. & W. loads,	3.82 "

Since it is scarcely possible for the maximum snow load and wind pressure on the roof to occur together, the roof is studied under two conditions:

1. Supporting maximum permanent and snow loads on both slopes.

2. Supporting permanent load on both slopes and the maximum wind pressure on one side only.

The first condition usually produces the maximum stresses in the truss members, while the second shows whether these stresses are ever changed in character.

In order to make the method of treatment as clear as possible two somewhat similar types of trusses will be considered before taking up the balanced cantilever arch.

All truss and stress diagrams are drawn to uniform

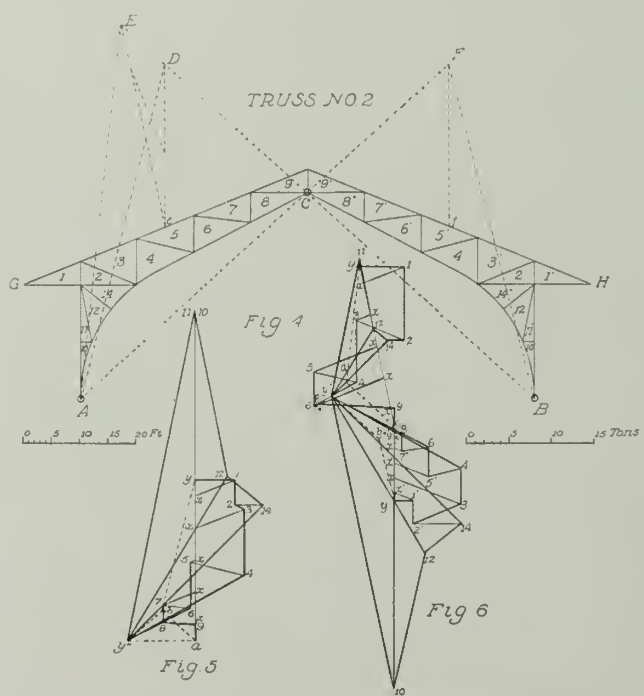


Fig 4. Fig 5. Fig 6.

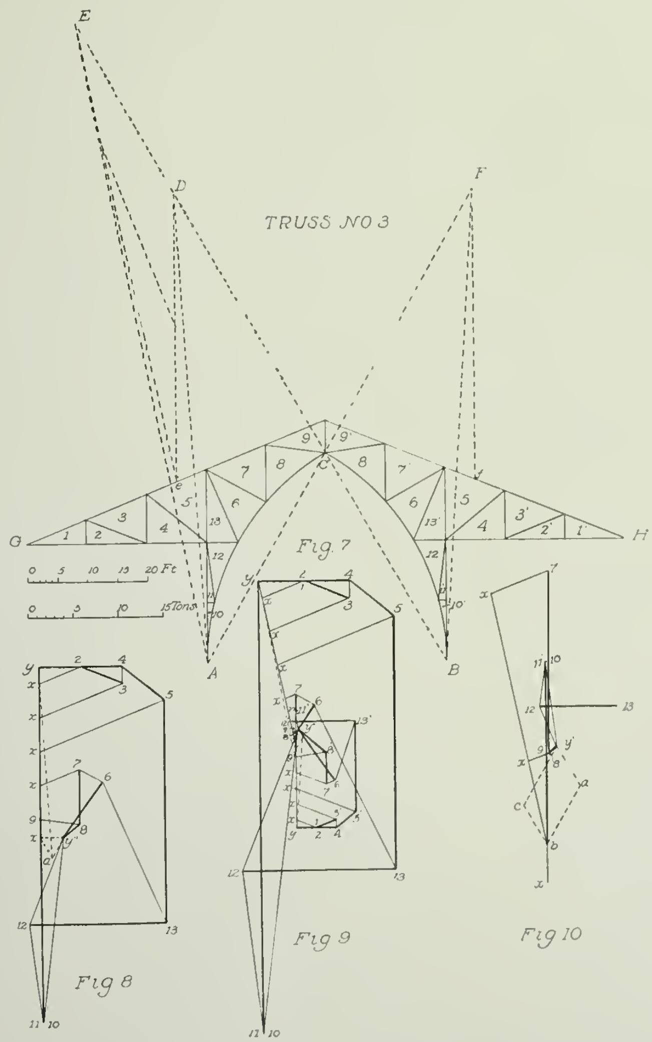
scales for the three types of trusses so as to permit easy comparison.

The system of notation used to indicate truss members designates the space on paper above the truss by X, that below it by Y; each triangle is numbered from the outer end of the truss. A member is then designated by the letter and figure, or by the two figures, denoting the surfaces separated by the member. The corresponding stress line in the stress diagram will have the same letter or numerals at its ends.

Fig. 1 represents a truss supported by two columns 20 feet between centers, their feet being tied to the middle of the lower chord to prevent overthrow by the wind. This is a simple and novel truss, never used within my knowledge.

For convenience the half load from each side of the roof is assumed to act separately at the ridge apex. Then five equal permanent and snow loads are supported by the left-hand half of the truss and also by the footing A.

Draw the P. & S. diagram by laying off in Fig. 2 the vertical load line $y10$, dividing it into four loads and two half loads. No stress is found in the member 1 2. The diagram is drawn in the usual manner as far as point 7,



when it becomes necessary to commence again at the footing A, where the reaction is vertical and $= y10$, so that no stress occurs in the diagonal $y10$. Stress lines 10 8 and 7 8 are then drawn and the diagram completed for left side of truss as shown.

For P. & W. diagram assume the wind to act on left side of roof. With P. & W. loads on left and P. loads on right the reactions at footings A and B are neither equal nor vertical. The resultant of the P. & W. apex loads on left acts at c, while that of the P. loads on right is applied at f.

Make yC and $Cy' =$ these resultants in Fig. 3, and divide as before. Join yy' and draw in Fig. 1 Aa and Bd parallel thereto. Beginning at any point a on Aa, draw equilibrium polygon $abcd$, obtaining the closing line ad, and draw py'' parallel thereto in Fig. 3, dividing the load line into the actual reactions at A and B. The stress diagram for P. & W. loads is then commenced at left end as before. But a stress must exist now in the diagonal $y10$, since the reaction at A is not vertical. In Fig. 3 draw $y10$ vertical and $y''10$ parallel to diagonal $y10$. Complete the diagram as before. The stress in vertical $y10' = y'10'$, and in diagonal $y10' = y''10'$. Points on right side of trusses are accented. Compression is denoted by heavy lines in all stress diagrams, tension by light lines.

This stress sheet shows stresses exceeding twenty-five tons in but two members, the vertical posts supporting the truss. The nature of the stress is changed in but two members, the diagonals from foundations to middle of lower chord.

Stress Sheet for Truss No. 1.

Member.	P. & S. Loads.	P. & W. Loads. Windward.	P. & W. Loads. Leeward.	Maximum.	Minimum.	
$x1$	+ 5.1	+ 5.0	+ 2.4	+ 5.1	+ 2.4	
$x3$	+ 10.2	+ 9.6	+ 4.7	+ 10.2	+ 4.7	
$x5$	+ 15.3	+ 14.2	+ 7.1	+ 15.3	+ 7.1	
$x7$	+ 20.3	+ 18.8	+ 9.6	+ 20.3	+ 9.6	
$x9$	+ 15.3	+ 9.3	+ 9.1	+ 15.3	+ 9.1	
$y2$	− 4.7	− 5.1	− 2.2	− 5.1	− 2.2	
$y4$	− 9.5	− 10.1	− 4.4	10.1	4.4	
$y6$	− 14.2	− 15.2	− 6.6	− 15.2	6.6	
$y10$	− 18.7	− 26.3	− 5.0	− 26.3	− 5.0	Vert.
$y10$	0.0	+ 6.7	− 2.4	+ 6.7	− 2.4	Diag.
1 2	0.0	0.0	0.0	0.0	0.0	
3 4	+ 1.9	+ 2.0	+ 0.9	+ 2.0	+ 0.9	
5 6	+ 3.7	+ 4.1	+ 1.8	+ 4.1	+ 1.8	
7 8	− 13.1	− 20.3	− 2.4	− 20.3	− 2.4	
2 3	− 5.2	− 5.5	− 2.4	5.5	2.4	
4 5	− 6.0	− 6.6	− 2.8	− 6.6	2.8	
6 7	− 7.4	− 7.9	− 3.5	− 7.9	− 3.5	
8 9	+ 8.9	+ 15.3	+ 0.6	+ 15.3	+ 0.6	
9 9′	− 15.1	− 9.5	− 9.5	− 15.1	− 9.5	

There are two members $y10$, one vertical, the other diagonal, both meeting at the joint A or B.

Fig. 4 represents an arched truss with joints at each footing and at apex C of the lower chord, the upper chord being separated at the ridge. There is a cantilever projection of 10 feet at each side.

Since the pressures produced at the pin C by the loads on one half of the truss must be transmitted to the pin at the footing in a straight line, the equilibrium polygon cannot be used for determining the reactions at A and B. Join AC and BC and prolong these lines. Intersect them by the lines of the resultants of the loads on the left and right sides at E, D, F. Join AE, AD, BF. Then, for example, the resultant of P. & S. loads on left side will act along the lines DA and DB, etc.

For the P. & S. diagrams lay off and divide the load line ya as before. Draw yb parallel to DA, ba parallel to DB, ay'' horizontal and by'' parallel to AC. Then $y''b =$ reaction at A along line AC, and $by =$ reaction along line AD.

Commence at y and draw stress lines $y1$ and $x1$.

Then begin at A, drawing stress lines $y''10$ and $y10$. Point 11 coincides with 10, since no stress occurs in member 10 11. After locating point 2 it will be more convenient to commence again at the ridge of the roof, where the half load is represented by $9a$ in Fig. 5, producing no stress in member $x9$. Draw 8 9 to intersect $y''8$, etc., completing the stress diagram.

The novelty of the method, then, consists in commencing the stress diagram at three different points instead of two, as for ordinary forms of trusses, checking its accuracy by the parallelism of the last stress line drawn to the corresponding member of the truss.

The P. & W. diagram in Fig. C is drawn in a similar manner. Draw the load line yc, cy' and divide it. Resolve yc into components ya and ac, acting at A and B; cy' into components cb and by', acting at the same points.

Draw ay'', by'' parallel to bc, ca, and $y''a$, ay will be the required reactions at A; $y'b$, by'' those at B. The stress diagram is then drawn by commencing at G, A, C for left side, and A, B, C for right side.

Excepting for the two members joining at A the stresses in all members are much smaller than found for corresponding parts of the preceding truss, as clearly shown by comparing the stress diagrams.

The only stresses exceeding 25 tons are those of 38.3 tons compression in the two lowest curved members of the truss, but the stress reverses in nearly half the members. This is of no importance if the truss be made of rolled shapes riveted together at joints. Proper allowances must be made for curvature of members in fixing their dimensions.

STRESS SHEET FOR TRUSS NO. 2.

Member.	P. & S. Loads.	P. & W. Loads. Windward.	P. & W. Loads. Leeward.	Maximum.	Minimum.	
x1	+ 4.9	+ 5.1	+ 2.4	+ 5.1	+ 2.4	
x3	+ 5.8	− 1.9	+ 8.6	+ 8.6	− 1.9	
x5	− 1.1	− 8.1	+ 4.2	− 8.1	+ 4.2	
x7	− 4.5	− 8.7	+ 0.8	− 8.7	+ 0.8	
x9	0.0	+ 0.5	0.0	+ 0.5	0.0	
y1	− 4.6	− 5.1	− 2.2	− 5.1	− 2.2	
y10	+ 18.8	+ 1.1	+ 22.0	+ 22.0	+ 1.1	Vert.
y10	38.3	− 16.7	− 34.9	− 38.3	− 16.7	Curved.
y12	− 22.5	− 9.8	20.8	− 22.5	− 9.8	
y14	22.5	− 9.9	− 20.8	− 22.5	− 9.9	
y4	− 15.2	− 3.5	− 17.5	− 17.5	− 3.5	
y6	7.7	+ 2.3	− 12.8	− 12.8	+ 2.3	
y8	4.1	+ 2.1	− 9.2	− 9.2	+ 2.1	
1 2	3.0	− 8.5	+ 2.5	8.5	+ 2.5	
3 4	− 7.9	− 7.3	− 4.3	− 7.9	− 4.3	
5 6	− 5.4	− 4.0	− 3.4	− 5.4	− 3.4	
7 8	− 2.0	+ 0.2	− 2.1	2.1	+ 0.2	
9 9′	− 1.9	− 2.1	− 0.9	− 2.1	− 0.9	
10 11	0.0	0.0	0.0	0.0	0.0	
11 12	− 18.7	− 8.1	− 16.6	− 18.7	− 8.1	
12 14	5.7	− 2.5	− 4.2	− 5.7	2.5	
14 2	+ 3.7	− 1.5	− 5.2	− 5.2	+ 3.7	
2 3	− 1.0	+ 5.9	− 6.1	− 6.1	+ 5.9	
4 5	+ 6.7	+ 5.3	+ 4.1	+ 6.7	+ 4.1	
6 7	+ 3.2	0.2	+ 3.2	+ 3.2	− 0.2	
8 9	− 4.2	− 9.3	+ 0.8	− 9.3	+ 0.8	

There are two members $y10$, one vertical and the other curved, both meeting at the joint A or B.

The balanced cantilever arch truss shown in Fig. 7 is evidently similar to that in Fig. 4, having pin joints at A, B, C and being divided at the ridge. The span of the equilateral arch is 40 feet and the side cantilevers overhang 30 feet each, so that each side nearly balances on the pin at its foot, producing very little pressure at C.

Since the vertical resultant cD falls outside the lines of action of its components, DH, DB, the pressure on A exceeds the resultant and that on B becomes a pull from B towards D. Their magnitudes are found in Fig. 8 by drawing ya and xa parallel to DH and DB. Then making xy'' horizontal and ay'' parallel to BD, the reactions at A are $y''a$, ay, etc. Commencing at G, proceed as far as point 5; commence at A and determine 13; then beginning at ridge, locate 6. The stress line 6 13 must close parallel to member 6 13.

The resultant cE of P. & W. loads on left side falls between its components EA and AB, producing a slight pressure on pin C. For clearness the middle portion of Fig. 9 is enlarged five times in Fig. 10. The line cb represents the push on pin C, produced by the P. & S. loads on left side; ba represents the pull on pin C, caused by P. loads on right side. The diagram is completed as in the last case.

The stresses in six members exceed twenty-five tons, those intersecting at A and B and in 5 13. Reversal of stress does not occur in any member.

STRESS SHEET FOR TRUSS NO. 3.

Member.	P. & S. Loads.	P. & W. Loads. Windward.	P. & W. Loads. Leeward.	Maximum.	Minimum.	
x1	+ 5.0	+ 5.1	+ 2.4	+ 5.1	+ 2.4	
x3	+ 10.1	+ 9.7	+ 4.7	+ 10.1	+ 4.7	
x5	+ 15.2	+ 14.3	+ 7.1	+ 15.2	+ 7.1	
x7	+ 4.6	+ 1.7	+ 3.3	+ 4.6	+ 1.7	
x9	0.0	+ 0.4	0.0	+ 0.4	0.0	
y1	4.7	5.0	2.2	5.0	2.2	
y2	− 4.7	− 5.0	− 2.2	− 5.0	− 2.2	
y4	− 9.4	− 10.3	− 4.4	− 10.3	− 4.4	
y10	39.7	49.5	12.0	49.5	12.0	Vert.
y10	+ 21.1	+ 33.1	+ 1.4	+ 33.1	+ 1.4	Curved.
y12	+ 10.9	+ 17.0	+ 0.6	+ 17.0	+ 0.6	
y6	− 7.3	− 3.9	− 6.5	− 7.3	− 3.9	
y8	2.1	0.2	3.7	3.7	− 0.2	
1 2	0.0	0.0	0.0	0.0	0.0	
3 4	+ 1.9	+ 2.0	+ 0.9	+ 2.0	+ 0.9	
5 13	− 25.1	− 28.5	9.5	− 28.5	− 9.5	
7 8	− 6.0	− 4.2	− 3.5	− 6.0	− 3.5	
9 9′	− 1.9	− 1.9	− 0.9	− 1.9	− 0.9	
2 3	− 5.0	− 5.5	− 2.3	− 5.5	− 2.3	
4 5	− 6.0	− 6.5	2.8	6.5	− 2.8	
12 11	+ 11.0	+ 17.2	+ 0.8	+ 17.2	+ 0.8	
13 6	+ 17.5	+ 20.9	+ 6.4	+ 20.9	+ 6.4	
6 7	+ 3.1	+ 2.4	+ 1.1	+ 3.1	+ 2.4	
8 9	+ 4.3	+ 0.3	+ 3.1	+ 4.3	+ 0.3	
8 10	0.0	0.0	0.0	0.0	0.0	

There are two members $y10$, one vertical, the other curved, both meeting at the joint A or B.

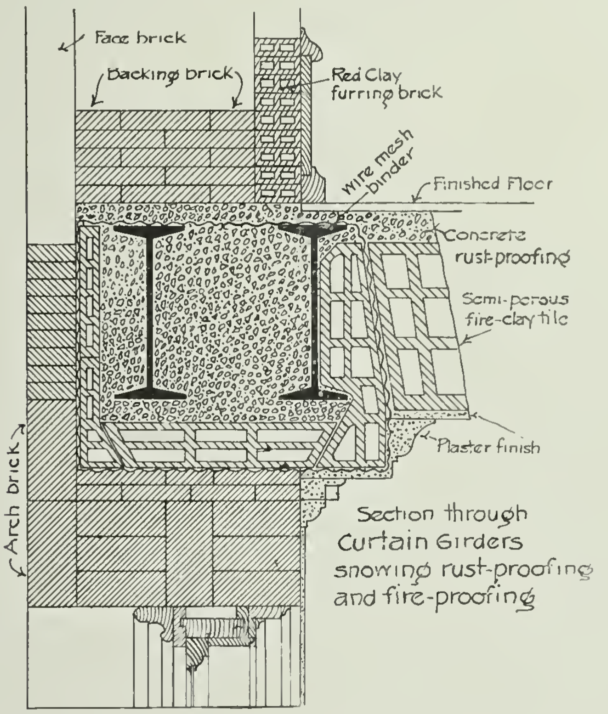
Therefore by proceeding in the manner indicated in this article the stresses in members of trusses of these types may be found as readily and accurately as for trusses of simpler and ordinary forms.

Fire-proofing.

RATIONAL METHODS OF FIRE PROOFING.

BY WILLIAM COPELAND FURBER.

IN the construction of modern buildings with the enclosing walls carried entirely on a steel framework, the framework in the division or party walls is more vulnerable than that in the exterior or street walls if the building adjoining this party wall has wood floor construction. The spread of the flames and rapid combustion of such a building are greatly augmented by the hot gases that are confined by the high walls which act as a chimney and carry these gases to a great height. Under these circumstances, the party or division wall is subjected to an intense heat, sufficient sometimes to vitrify



Section through Curtain Girders showing rust-proofing and fire-proofing

the brick, and if the wall is carried on a metal framework it will be likely to collapse unless the framework is amply protected by a sufficient thickness of non-conducting covering, both fire-proof and non-vitrifiable. The ordinary hollow tile furring or thin partition block is not capable of protecting the iron work under such an exposure, and a special covering should be devised.

From a fire-proofing standpoint it would be much better to build the party wall solid from bottom to top, resting on its own foundation and independent of the framework, with the exception of the lateral ties which secure the two together. This gives the metal framework the advantage of the full thickness of the masonry wall from a fire on the adjoining side of the wall, but it does not dispense with the necessity of fire-proof covering against possible fire on the inside, which might arise from the combustion of the contents of the fire-proof building.

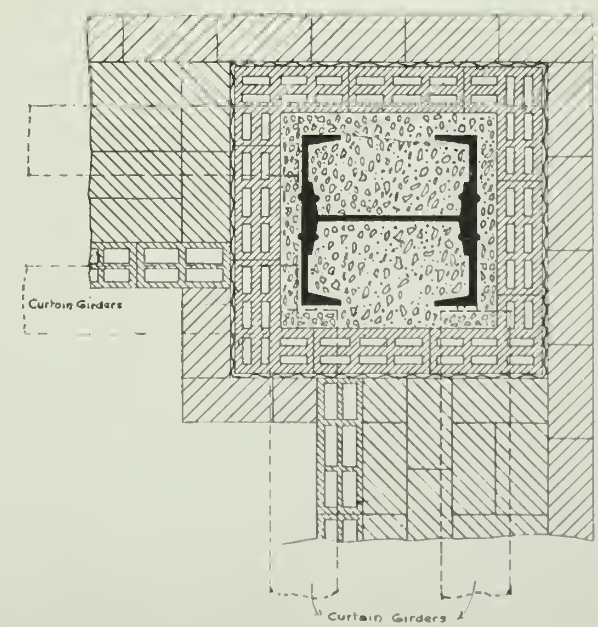
In the recent fire on Market Street, Philadelphia, the bricks in the party wall between the burning building and the non-combustible building to the east of it became so hot on the side toward the fire that when water was thrown on them they crumbled away to the depth of four inches. Had this wall been supported on an iron framework with the usual inadequate fire-proof covering, it would not have stood the trial to which it was subjected, and the non-combustible building on the east side of it would have collapsed, as this party wall was one of the supports for its single-span floor beams.

It is possible, however, to design the fire-proofing so that a division wall can be safely supported on iron framework if under certain conditions it seems desirable to build it so, but the question of the use of the solid party wall should not be negatively decided excepting under extraordinary circumstances. When these circumstances exist, the maximum temperatures that could result in case of fire must be considered and a covering designed to meet it which will resist the alternate action of fire and water without disintegration.

Porous hollow tile is undoubtedly the best material to use, for it can be heated to redness and then plunged into water without apparent disintegration; but it must be of sufficient thickness.

The use of the best materials, however, must be accompanied with sound constructional methods of attaching the covering to the steel members, or it will not endure the trial to which it may be subjected. Much remains to be done by the manufacturers of fire-proofing materials towards devising proper shapes and better methods of attaching them, and until this is done it is to be feared that a party or division wall should not be supported on an iron framework.

The manufacturers of fire-proofing materials owe it to themselves to improve their product, so that when a building is constructed with burnt clay coverings on a metal framework, its safety in case of fire is insured be-



Plan of external corner column

yond a question of doubt, and this cannot be until the coverings are made thick enough and of proper shape and form to permit a good job of setting to be easily made. It is also to the interest of the manufacturers, after they have provided proper materials, to see that the workmanship in setting it is of the best. A great deal of the so-called fire-proofing, particularly in columns, is put on with a "dash" (of mortar) "and a promise," and should any slight mechanical injury happen to any part of it, the blocks above are likely to come tumbling down, leaving the columns exposed.

The manufacturers suffer for all this kind of work, because when a fire occurs in a building fire-proofed in this manner and serious injury or failure results, the cry is immediately raised that "fire-proof" buildings are not fire-proof, and it is therefore a waste of money to spend an extra amount to fire-proof them when they will be injured or destroyed in case of fire, and it is cheaper to pay the insurance companies to take the risk; whereas if the truth was known, the fault lay entirely in the particular method employed and not in the system.

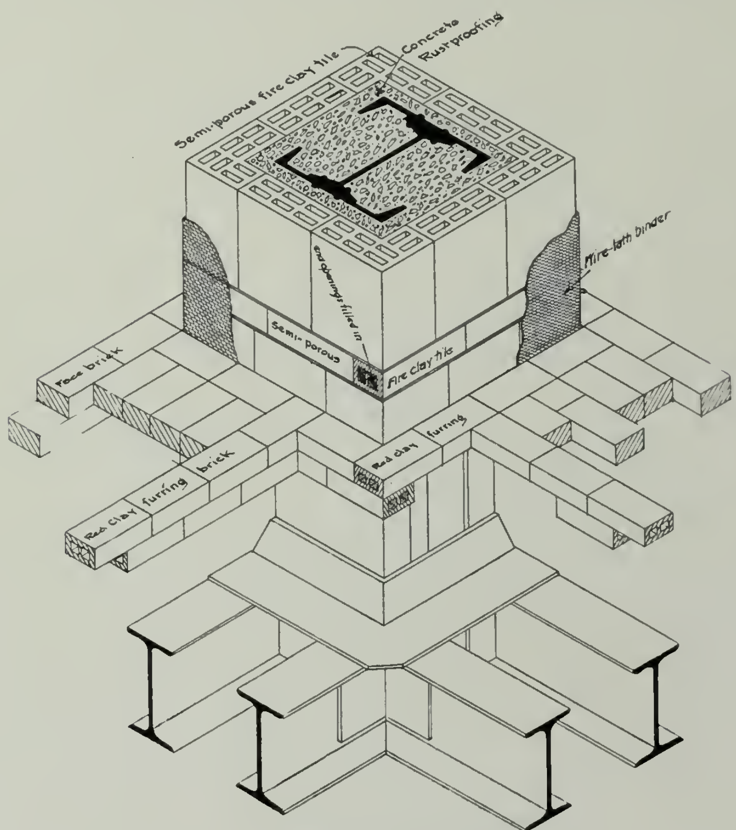
What the manufacturers need is the constant use of the testing laboratory and apparatus which should be a part of the essential equipment of every manufacturer. This equipment need not be a large one necessarily; an ordinary room with a furnace and fixtures and testing machines would serve very well, and this laboratory would be big enough to answer many questions. With such an equipment tests could be made on the transmission of heat, the resistance of materials to the action of fire and water, the weakening effect of heat on steel structural members, and the resistance of fire-proof coverings to mechanical injury. From these experiments data could be obtained which would place the whole matter on a scientific basis and remove it entirely from the domain of empiricism. Such experiments would not only give the facts required to convince the skeptical, but would also serve to convince manufacturers themselves that their product is actually worthy of serious consideration and that it could do what was claimed for it.

The Portland cement industry has been brought to a high state of development because its product has been required to pass certain tests of strength, of chemical composition, of manufacture, of fineness of grinding, etc., and as the cement improved in quality to meet these tests the requirements were raised. Manufacturers were therefore compelled constantly to be on the alert, not only to keep the product up to the requirements, but to be prepared to successfully meet the more exacting requirements which might be reasonably expected in the future. The study and investigation which were necessary in order to keep up with the specifications have been of invaluable benefit to the industry. Actual knowledge has taken the place of guesswork and mere opinion, so that to-day Portland cement is practically a fixed product of excellent qualities and deserves the high reputation it enjoys.

The burnt clay fire-proofing industry is greatly in need of the application of the same method. When the construction of buildings reaches a scientific basis and whims and opinions give way to facts and knowledge, then we can expect that specifications will call for fire-proofing to meet certain tests, such as degree of heat transmission within a given time per inch of thickness, resistance of the material to the disintegration under the alternate action of fire and water, resistance to breakage from mechanical injury, the shaping of blocks so as to discount poor workmanship in setting and permit the attachment of the material with the least labor, etc.

In the sketches accompanying this article an attempt is made to show how great an improvement can be made in fire-proofing columns and curtain girders on external walls by a better use of some of the present standard shapes of materials. These sketches are not put forth as suggesting ideal methods or even the best methods, but simply as a better method than those now commonly in use. An effort has also been made toward protecting the columns and beams in the external walls from corrosion by the use of a concrete envelope and filling. The use of Portland cement as a preventive of rust has already been explained and the chemistry of the subject touched upon in THE BRICKBUILDER for May, 1901, p. 98.

Another suggestion shown in the drawings is the metal lath binder around the terra-cotta tiles. This binder is an important detail of terra-cotta fire-proofing which is seldom, if ever, properly considered. Some



Detail of external corner column
Showing rustproofing and fireproofing and wire lath binder

burnt clay material with thin walls is brittle, be it fine china or terra-cotta fire-proofing, and being brittle, it is likely to be broken. The wire cloth binder, if properly applied, serves to distribute the force of any blow, and if the blow be great enough to break the tile, prevents the broken piece from falling out and exposing the metal work beneath it.

If the manufacturers of fire clay materials will only take up this fire-proof question in their laboratories and study the subject in a theoretical and practical manner and find out the best shapes of tile covering that will answer to the fullest degree the purpose for which it is intended, and at the same time they are finding this out find out how to make these shapes in a commercial way, they will be doing themselves a great deal of good and also rendering a great service to the community.

Selected Miscellany.

Mosaics.

THE art of producing artistic designs by setting small pieces of stone, glass, burnt clay or other materials of different colors so as to produce the effect of a painting or a decorative effect by means of conventional patterns is a very old one, and its origin is lost in antiquity. We know that it was much practiced by the ancient Greeks and Romans, especially for ornamental pavements. Later under the Byzantine Empire, it was much used for the ornamentation of churches, in which it formed a large portion of the wall decorations. It was reintroduced into Italy for the same purpose about the middle of the thirteenth century. Since then it has been brought to such wonderful perfection that large pictures can be minutely imitated by it, although it may be questioned if this is the most artistic use to which mosaics may be put. Mosaics have been used since the time of the ancients whenever decorations were needed that would resist wear, destruction by the elements and the decay of time. Because of its enduring qualities it has been the medium of color decoration in monuments and monumental buildings, for the idea of endurance which underlies monumental structures requires that the same enduring principles must extend also to their decorations. From the number of such works which remain to us from all periods of history of this art under the various conditions of wear and exposure under widely different climatic influences, we are enabled to point to the material which out of the many used for mosaic work has withstood destructive influences the best.

CAPITALS BY C. B. J. SNYDER, ARCHITECT.
New York Architectural Terra-Cotta Company, Makers.

The material which has most singularly resisted abrasion and disintegration is hard burnt clay. The remains of the pavements of the atria and aulæ of the Roman houses in England and Germany have shown that mosaics of burnt clay tesseræ were neither worn away by the treading of the feet nor disintegrated by the action of frosts, as were all those made from natural stones. The celebrated tile friezes of the Assyrians at Babylon and Susa, the wall tiles from the burial vaults of the Etruseans, are monuments to the permanent beauty and indestructibility of ceramic decorations, and like the pottery vases of the Greeks were unaffected by time and exposure amidst the crumbling and decaying marble and granite structures in which they were placed. It has been proven that in much frequented places, under the activity of modern intercourse, floors of wood, marble and cement, or composition pavements made of broken mar-

"WYNDHURST," HOUSE OF JOHN SLOANE, ESQ., LENOX, MASS.
Peabody & Stearns, Architects.

CAPITAL BY M. L. ENDICOTT, ARCHITECT.
New Jersey Terra-Cotta Company, Makers.

APARTMENT, AMSTERDAM AVENUE, NEW YORK CITY.
Neville & Bagge, Architects.
Built of Gray Roman Brick made by the Ohio Mining and Manufacturing Company.

ble and cement, soon become unsightly. The mosaics of colored marble set in cement, while resisting the wear of the Roman sandals, do not stand the severe and rough wear of the modern shoes with their metallic heel nails. Marble mosaics for a short time are more glossy on the surface than ceramic mosaic and for that reason may be thought preferable, but this appearance is due merely to the polishing produced by grinding the marble down to an even surface after it has been set in position, its face afterwards being coated with wax or oil; but the wax soon wears off and the oil collects dust, thus obscuring the design. The rubbing down reduces the particles of marble to a very thin shell, and when subjected to the wear of traffic the marble assumes an uneven surface and as it wears the joints become larger. Marble mosaic being cut with the blow of a hammer, the top is larger than the bottom. Expansion and contraction soon make large unsightly cracks in marble mosaic work, the reason being that marble is of a limestone formation and is much softer than Portland cement.

Marble mosaic to hold its position must be set in Portland cement, and as soon as the cement begins to expand the floor either cracks in the joints or more frequently straight across the marble itself, not only making the finished work unsightly but difficult and very expensive to repair. Ceramic mosaic is set at once with an even surface and cannot afterwards be ground down by rubbing, the material being too hard to be affected by any grinding which is employed on marble mosaic. It begins to polish the first time it is washed, and looks brighter and cleaner after every subsequent washing, gradually acquiring the face which is so pleasing when marble is new. This polish will not wear off, being preserved by the regular washing necessary to keep any floor clean.

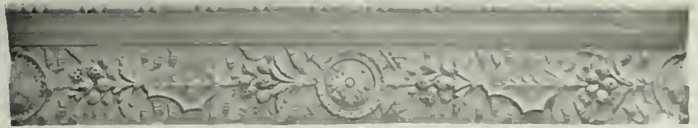
Ceramic mosaic is incomparably harder than marble mosaic, which can be proven easily by rubbing a piece of each of the two kinds together. The soft marble will grind away while the ceramic product remains unaffected. All of the varieties of color in marble are produced in ceramic mosaic, besides hundreds of other shades not found in the natural stone. Because of a peculiar quality in hard burnt clay, which may be described as a sort of toughened ceramic mosaic, when set in Portland cement it forms a durable covering for floors or walls, is not sensitive to brittleness, and being non-porous it has no superior as a sanitary article.

Glass mosaics will not last on floors. Owing to the extreme brittleness of glass the pieces used very quickly become chipped around the edges, thus widening the joints in an objectionable manner, a greater portion of the cement becoming visible where not intended, thus marring the design. The substance of which glass mosaic is formed is not solid, but contains small, flat, spherical air-holes, each increasing in size by chipping, just as do the edges of the pieces, thus affecting the color, and soon the floor assumes a dull and dead appearance.

A word about the setting of tiles and ceramic mosaics. Much prejudice and dissatisfaction has been caused by trusting this class of work to incompetent workmen (commonly Italian marble mosaic layers) who know nothing about ceramic mosaic, as their education is entirely on marble mosaic.

Sometimes aided by poor and insufficient material

MISSION HOUSE, THIRTIETH STREET AND THIRD AVENUE, NEW YORK CITY.
Howells & Stokes, Architects.
Built of Speckled Roman Brick made by B. Kreischer & Sons.



DETAIL BY FRANK R. WATSON, ARCHITECT.
Conkling-Armstrong Terra-Cotta Company, Makers.

for setting same, many a beautiful tile floor has thus been permanently spoiled. Sometimes it is because a good workman is in too big a hurry and slights his work. Few realize that tile work, when rightly set, will outlast the building which it decorates.

GEORGE M. FISKE ELECTED PRESIDENT.

The annual convention of the National Brick Manufacturers' Association was held at Cleveland, February 12-15. The attendance was greater than at any time since the organization of the association, an unusually large number of the leading clay workers of the country being in attendance.

The whole thought and purpose of the association is for the advancement of the science of clay working. In addition to the usual number of excellent papers treating the various problems of manufacture, the convention was honored by the presence of Architect J. Milton Dyer of Cleveland, who read an interesting paper on "Brick in Architecture." The bringing together of the architect and the clay worker for the discussion of matters of common interest is a new feature which has been recently introduced by Secretary Randall of the association, and judged by the interest manifested in Mr. Dyer's paper the results will be of inestimable value to both.

Needless to say, every detail of arrangement for the care of the attending members was planned and executed, under the direction of Mr. William H. Hunt, the retiring president of the association and the general manager of the Cleveland Hydraulic Press Brick Company, in a manner which left nothing to be desired.

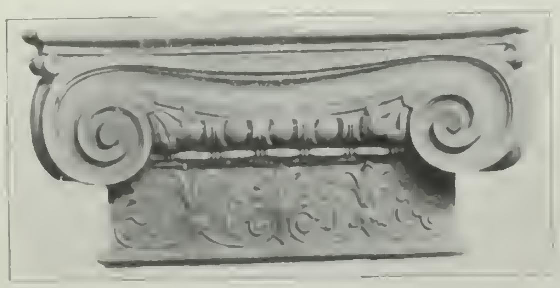
Mr. George M. Fiske of Boston was elected president of the association for the ensuing year. Mr. Fiske is the senior member of the firm of Fiske & Co., Boston, dealers in clay products of all kinds, and is numbered among the pioneers in the manufacture of front and ornamental brick, architectural terra-cotta and faience.

UNIVERSITY SCHOOL FOR BOYS, BALTIMORE, MD.
Joseph Evans Sperry, Architect.

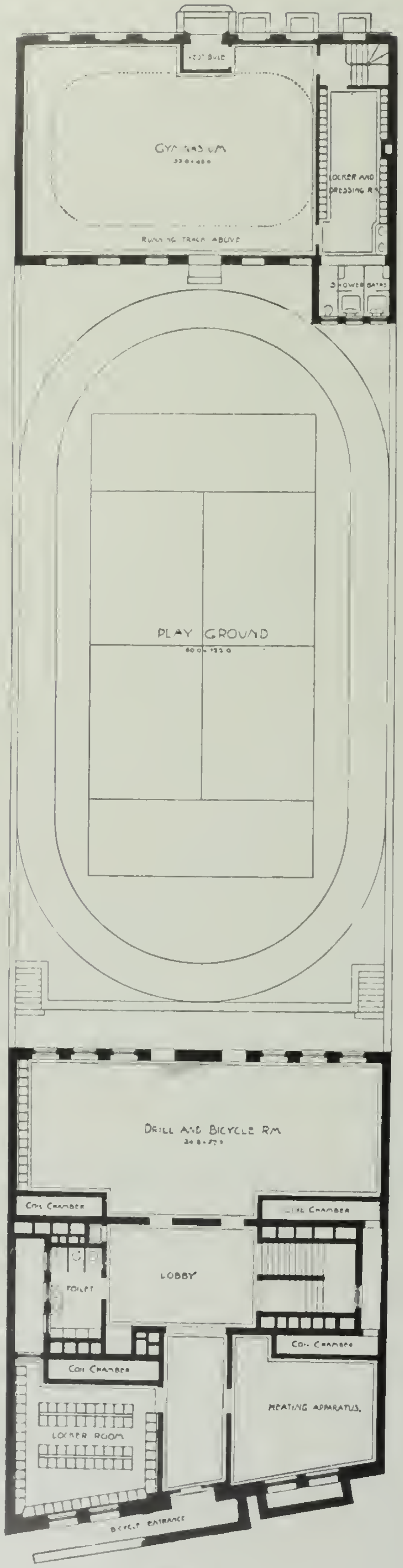
NOTES FROM NEW YORK.

As shown by the annual report of the Building Department, the cost of building operations in New York City in 1901 was nearly double that of the previous year. The total estimated cost in the city, including new structures of all classes and alterations to old buildings, was $150,072,657. For 1900 the total was $88,462,174. There seems to be no reason for this great increase over 1900 other than the growth of the city and a generally prosperous condition in all branches of the building industry.

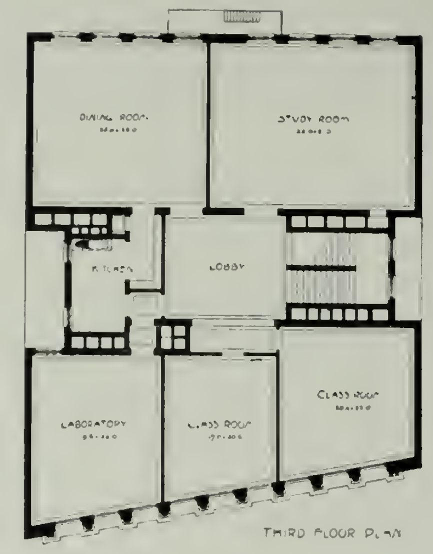
The effect of the tenement-house law, which went into effect last April, is shown in the report. It has

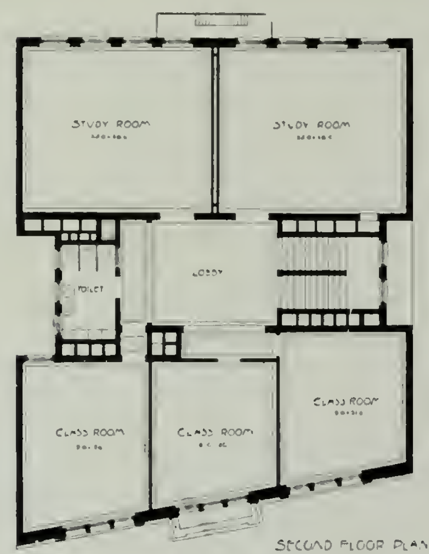


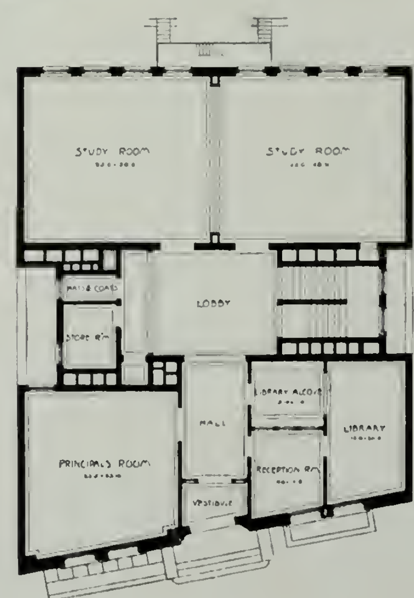
CAPITAL EXECUTED BY THE EXCELSIOR TERRA-COTTA COMPANY.



BASEMENT.







FIRST FLOOR.

PLAN, UNIVERSITY SCHOOL FOR BOYS, BALTIMORE, MD.

Joseph Evans Sperry, Architect.

greatly decreased the number of brick tenement houses and increased the number of frame dwelling houses and smaller family apartments.

One of the greatest merits of the present reform administration is the enforcing of all existing laws whether good or bad. Among the wise laws which have been absolutely disregarded is the one prohibiting persons from standing in the aisles and back of the seats in the theaters. Heretofore there has been no limit to the number of people who could be packed into our theaters, and it is terrible to think what might have happened in case of fire or panic in spite of the fact that most of our theaters have ample exits. The enforcement of this law has the approval of the general public.

STORAGE WAREHOUSE, CHICAGO.
Holabird & Roche, Architects.

Another matter which has endeared our present administration to the intelligent public as well as to the artistic class is their evident desire to coöperate in any attempt to beautify or improve the appearance of the city. The Municipal Art Society, which was organized with this idea in view, is for the first time recognized as a body of experts whose suggestions are of great value to the city.

As a beginning, the matter of street signs and lamp posts is now having serious consideration, and it will not be long before we will notice the improvement.

Among more costly improvements suggested are the public forum at Union Square, the raising of the Columbus monument and general improvement of the "Circle" at Fifty-ninth Street, the water gate and monument at Seventy-second Street.

The League exhibition is now opened and is a thoroughly fine one. The hanging committee are to be especially congratulated upon the pleasing arrangement of the pictures, as well as the decorations and sculpture.

Contracts have been signed with the Hecla Iron Works of Brooklyn for bronze marquises and other exterior decorations costing $300,000, for the new hotel which Colonel John Jacob Astor is building at a cost of $2,000,000 at the corner of Fifth Avenue and Fifty-fifth Street. This hotel will be a beautiful structure of the best type and will be completed by next September.

IN GENERAL.

The architectural terra-cotta with which the fronts of the Case and Advance Thresher Company buildings at Minneapolis were embellished was furnished by the Winkle Terra-Cotta Company of St. Louis. The illustrations appear in the plate form of this number.

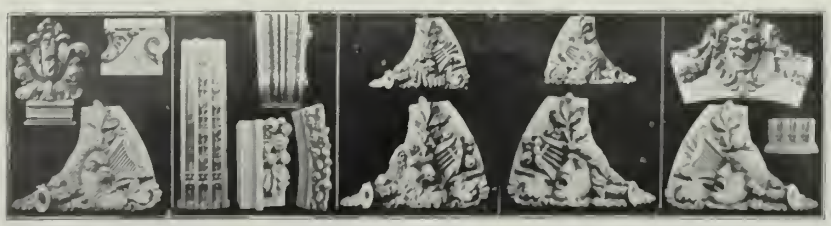
The Keith Company, architects, Minneapolis, Minn., are desirous of securing two or three competent architectural draughtsmen at once. Permanent positions are offered good men.

The catalogues of the architectural exhibitions given by the T-Square Club of Philadelphia are always interesting, and especially so is the one for this year. It includes an unusually large number of well-chosen illustrations, besides other matter which will be of interest generally to architects.

At the regular monthly meeting of the New York Chapter, A. I. A., held on the evening of February 13 there was considered an important proposition from the Fine Arts Federation to present to the legislature a bill to facilitate the selection of competent architects for municipal buildings of the city of New York.

Raymond F. Almirall, architect, New York City, announces the removal of his offices from 10 East Twenty-third Street to 51 Chambers Street.

Messrs. Sutter & Putnam, 44 Louis Block, Dayton, Ohio, announce that they have resumed an active business association for the practice of architecture.



DETAILS FOR NEW THEATER, BOSTON.
John Galen Howard and James M. Wood, Architects.
Atlantic Terra-Cotta Company, Makers.

Clarence A. Neff, formerly of the firm of Dwyer & Neff, and Thomas P. Thompson, Norfolk, Va., have formed a copartnership for the practice of architecture under the firm name of Neff & Thompson.

"Love's Dream" is the title of a very beautiful calendar which is issued by the Reese-Hammond Fire Brick Company of Boliver, Pa., one of which we have the good fortune to possess.

Fiske & Co., Boston, will supply brick for the following new buildings: House of Correction, Boston Harbor, A. Warren Gould, architect; residence, Brookline, Mass., Little & Brown, architects; municipal building, Dorchester, Mass., William H. Beserick, architect; business block, Deal Beach, N. J., Buchman & Fox, architects; office building, New York City, F. L. Ellingwood, architect; public school, New York City, C. B. J. Snyder, architect; two public schools, Brooklyn, N. Y., C. B. J. Snyder, architect; St. Paul Episcopal School, Concord, N. H., Henry Vaughn, architect; Hospital for Consumptives, Rutland, Mass., Kendall, Taylor & Stevens, architects; Children's Hospital, Boston Harbor, Charles Brigham, architect; Majestic Theater, Boston, Mass., Wood & Howard, architects; Y. M. C. A. Building, Fall River, Mass., Nat. C. Smith, architect; Boys' Club, Pawtucket, R. I., Stone, Carpenter & Willson, architects; office building, Pawtucket, R. I., Stone, Carpenter & Willson, architects; Colonial Trust Building, Waterbury, Conn., Davis & Brooks, architects; high school, New Haven, Conn., Brown & Von Beren, architects; Y. M. C. A. Building, New Haven, Conn., Brown & Von Beren, architects; grammar school, Springfield, Mass., E. C. & G. C. Gardner, architects.

DETAIL BY D. H. BURNHAM & CO., ARCHITECTS.
Northwestern Terra-Cotta Company, Makers.

DETAIL BY BENES & HUBBELL, ARCHITECTS.
Perth Amboy Terra-Cotta Company, Makers.

DETAIL BY R. M. MILLIGAN, ARCHITECT.
St. Louis Terra-Cotta Company, Makers.

MANUFACTURERS' CATALOGUES AND SAMPLES WANTED.

The following named architects would be glad to have manufacturers' catalogues and samples sent them: Broderick & Wade, Union Trust Building, St. Louis, Mo.; Rose & Eken, Columbia Building, Norfolk, Va.; Neff & Thompson, Columbia Building, Norfolk, Va.; Edwy E. Benedict, 43 East Main Street, Waterbury, Conn.; Adolph Mertin, 33 Union Square, New York City; Walter E. Pinkham, 511 Strangenwald Building, Honolulu, Hawaiian Isles.

THE BRICKBUILDER.

MARCH,

1902.

OFFICES OF THE SEIGNEURIAL CASTLE AT CLEYDAEL, BELGIUM.

VOL. II NO. 3

THE BRICKBVILDER

MARCH 1902

H. F. B.

THE BRICKBUILDER.

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ADVERTISING.

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Advertisements will be printed on cover pages only.

THE TWENTIETH-CENTURY RENAISSANCE.

THOSE who are in the midst of the march of progress can seldom fully realize the trend of events, nor can they often see the goal toward which they are moving, but it is impossible for any one who is wide-awake and who reads the magazines to-day to fail to appreciate that we are certainly on the road to something remarkable in the way of architectural development. With practically unbounded wealth, opportunities which are constantly enlarging, and an ability to grapple new problems which is every day increasing to meet the demand, we are now on the threshold of a renaissance in art. In every respect the existing conditions ought to be a source of satisfaction to the architect who loves his profession and his art. The time was not long ago when an architect could make a solid reputation and a financial success as a mere business man or as simply a practical constructor aside from his artistic ability, but that condition has in our judgment gone by. Practical knowledge and business ability always command respect and will always be at a premium, but the necessity for artistic power as a manifest demand upon our architects is something which cannot be ignored. Within two years a building firm known throughout the country has organized itself into an incorporated company with a capital of twenty million dollars. Other builders are following close behind, and these large concerns are so thoroughly equipped in every practical sense that they are able to attend to the material and business functions of building operations in a most thorough manner. The architect must understand these sides of his profession, but in the struggle for success the prizes of the future are undoubtedly to go to the man who can add the greatest amount of art to his practical business ability. The designer is coming to the front as never before, and he is coming with the help and backing of builders who are thoroughly trained to every part of their work, who have ample capital and command the markets of the world. The Centennial Exhibition opened the first artistic possibilities of this country. Viewed in the light of subsequent developments it was not in any sense an artistic exhibition. The buildings were beneath criticism, with a very few notable exceptions, and the whole show was characterized by crudeness rather than excellence, but it opened the eyes of the nation and gave us a beginning. The Columbian Exhibition was a beautiful dream. We called it in those days the dream city, and it was really a tremendous step in advance in its architecture. The greatness of that step, the influence it had on the country, is unquestioned, and the fair was undoubtedly in some sense a spontaneous architectural evolution which, while having perfectly recognized precedence in detail, was unique in ensemble. Now we believe the wave of progress has gone beyond the Chicago fair, and the most casual observation will show how much better our buildings are designed than they were even ten years ago, how much more thoroughly our young men are equipped and, perhaps more important than all, how much wider and more comprehensive is the appreciation of artistic effort by the average citizen. We have the money, the men and the public sentiment. The renaissance of art is here, is all around us in our big cities, and the next quarter century will undoubtedly see even a far greater advance than was marked by the last twenty-five years of the nineteenth century.

THE United States is probably to-day the richest country in the world, and it is piling up its wealth in almost a geometrical ratio, but if we continue our policy of indifference to fire loss and allow the expense account, due to indifferent construction, to augment at the rate it has grown during the past few years we will be forced to either radically change our methods or go into bankruptcy. The fire waste is something appalling. The New York *Journal of Commerce* places the aggregate fire losses of the United States and Canada for 1901 at $164,347,000. We are constantly improving our facilities for fighting fire, and our fire departments are quite as efficient as any in the world, but the damages by fire are increasing in all our large cities at a greater ratio than the increase of population. In 1896 the average loss per month was $8,810,000. By 1900 it had grown to $13,600,000. And during 1901 there were recorded eighteen separate fires in each of which the loss was over $500,000. The past year was probably the worst we have had for fire loss, notwithstanding that at the same time it witnessed a more extensive use of fire-proof construction than was known before. It is but natural, therefore, that the fire insurance companies, which after all are simply the collectors and distributers of the contribution which the country makes to imperfect construction, should be bound to raise their rates very materially. The companies have recently been paying out more money than they have taken in. Between twenty and thirty companies have within the past twelve months retired from the business, believing they could no longer afford to continue in it, and but for the increase in value of the companies' vested funds undoubtedly many more would have been forced either out of business or into assignment.

The trouble with our big cities is fundamental. It is a fact that the great majority of the buildings are relics of a time when fire-proof construction was unknown and insurance was far less extensive than it is at present. There are more fire-proof buildings to the square mile in the lower part of New York than perhaps anywhere else in the world, and yet there is not a single street below the City Hall, not even excepting Broadway, where conditions are as they ought to be. A large majority of buildings in this district are of second-class construction and poor of their kind at that. In Boston there are hardly more than a dozen fire-proof buildings in the immediate business heart of the city. All the rest are in a sense fire traps which ought not to be tolerated. In Philadelphia, the corner at Broad and Chestnut Streets and a few isolated spots along the lower part of Chestnut Street afford the only real bulwark against an extended conflagration. Chicago has a greater number of fire-proof buildings than Boston, but according to the area covered the risk is probably greater in the West than in the East. And all this is in the twentieth century when we are so busy with our schemes for model cities and know so well what to do. The fact is, all our great cities must be practically rebuilt before we can have any real assurance against extended conflagration.

We present elsewhere a very complete description of the Paterson, N. J., fire, which in some respects is probably the most impressive object lesson the world has seen since the Chicago fire of 1871. No building is absolutely fire-proof; there is nothing which could withstand heat if applied in sufficient volume and under the right conditions; but the experience of the City Hall at Paterson, which is one of the few structures of fire-proof construction, shows that the more general adoption of fire-proof principles would make such a conflagration as this utterly impossible. Large fires have never started in the construction of even a poorly planned fire-proof building. The dangers lie without or in the nature of the contents.

There is one feature of fire-proof building as at present very generally allowed in our cities which is not right and we know is not right every time we use it, and that is the use of wood for finish, especially about doors and openings in partitions. Nearly every fire of any magnitude which has started in fire-proof construction has been due to the nature of the contents, but its spread has been through these unguarded openings in otherwise fire-proof partitions. It ought to be the rule that all inside finish should be non-combustible, and that when it is considered absolutely essential that sashes should be placed in interior partitions, they should be glazed with wire glass, a material which is certainly not remarkable for its beauty as at present put upon the market, but which is not sufficiently offensive to make it seem out of place in an office building. As a matter of fact, however, most buildings when properly planned could dispense entirely with glass in partitions and thus eliminate one dangerous feature of our modern structures.

THE building laws of the city of New York provide for a board of building examiners who are empowered to hear and decide upon appeals from the decisions of the building department. Mayor Low has recently made some very wise appointments to this board, including Mr. A. F. D'Oench, who will be remembered for the excellent record he made as chief of the building department some years since and who is an architect of recognized standing and a fellow of the American Institute of Architects. The other members include Cornelius O'Reilly, representing the real estate interests; Warren A. Conover, representing the mechanics; William J. Fryer of the Society of Structural Iron Manufacturers; the chief of the fire department, Edward F. Croker; and Francis C. Moore of the New York Board of Fire Underwriters, who has been so well known for his studies of economic fire-proof construction. This board has a very large degree of power and is frequently called on to exercise considerable discretion in the interpretation and application of building laws. The board as constituted is certainly a strong one, and having the power to a very considerable extent to influence the development of new methods of construction it can easily be a prominent factor in the building industries of the ensuing years.

A CORRECTION.

Owing to a misunderstanding no credit was given, in the paper on Formal Gardens by Mr. Parsons, published in our February number, to Messrs. Carrere & Hastings as the designers of the pergolas, tea house and other architectural incidents of Mrs. Bell's garden at Madison, N. J., illustrated in connection with the article. Also by mistake Mr. Parsons was referred to as "architect" rather than by his professional title of "landscape architect."

Town Squares of North Italy.

BY WALTER H. KILHAM.

THE vast and fertile plain which stretches across the Italian peninsula, separating the great ranges of the Alps from the more southern peaks of the Apennines, has for a score of centuries supported an energetic and thrifty population which has ever been the balance wheel of the Italian states. Rome rose and fell and rose again with the revolutions of fortune's wheel; Venice became alternately one of the first cities in Europe and a quiet provincial town, vegetating in the afterglow of its decadence; but Milan with its busy workshops and Bologna with its lively population still flourish and accumulate wealth and power.

PIAZZA DELL' ERBE, VERONA.

While it was not given to all of the Lombard cities to retain their prosperity up to the present time, nearly all of them experienced periods of prosperity lasting long enough to permit of the erection of a large number of elaborate and magnificent buildings, most of which, owing to the nature of the country, were built of brick and terra-cotta. Verona, Brescia, Cremona, Piacenza, Bologna, are names which evoke thoughts of the finest productions of the Gothic and Renaissance periods as well as of the spirit of Italian independence.

Seven centuries ago the characteristic which most distinguished Italy from other European countries was the growing importance of the populations of her towns. This came about in several different ways. Some cities managed to retain the privileges which had been granted them ages before by the Roman government, and to keep them more or less intact through all the vicissitudes of the Dark Ages. Others, like Venice and Genoa, had grown up in secluded localities where they escaped notice until they were strong enough to assert their power. In regions where the central government was unable to exert its functions, these cities rapidly became strong and vigorous. Their citizens erected strong walls, and enacted their own laws and elected their own magistrates in safety. In the darkness of the general situation, these cities or burghs appear as the only luminous points. From their walls, which enclosed the houses grouped around their cathedral as a center, the burghers looked out on a country studded with the keeps of the feudal aristocracy lording it over the unconsidered serfs.

In general the bishops commanded more popularity in the cities than the outside nobility or counts, and in many cases the counts were driven to their castles, surrounded by the *contadini* or "counts' men," while the clergy remained to organize the town government of the richest and most influential burghers, or *popolo*.

The *popolo*, it appears, did not include the entire people, but was a close aristocracy of influential families who succeeded to the authority of the superseded count and held it by hereditary right. In those tumultuous times the remaining citizens were inclined to challenge this right, and from successive turmoils emerged the "commune," including the *popolo* of enfranchised burghers, and the non-qualified inhabitants, represented by consuls from the different quarters. The architecture of many of these towns where a "palazzo del popolo" and "palazzo communale" rise in different streets perpetuates the strenuous political life of those stormy times. Besides these bodies there were the councils, known by different names in different cities but perpetuating their history in the name of many a gorgeous hall

BRIDGE OF THE CASTEL VECCHIO, VERONA.

TOWER OF THE MUNICIPIO, VERONA.

and stately building, — the Parlamento, open to all inhabitants; the Gran Consiglio, only open to the *popolo;* and the Credenza, or private council.

The Crusades, which brought only ruin and wounds to the northern nations, brought business, wealth and luxury to the rising commonwealths of the Adriatic. Italian ships sailed on every sea, and the palaces of the Italian nobility were gorgeous with the brilliant products of eastern art, while the castles of France and England were but little better than hovels. Italian factories arose on every hand, and banks and money changers appeared in every city. Under these circumstances it is not strange that we find the sturdy municipalities of north Italy rivaling each other in erecting the beautiful series of town halls which still stand second only to the churches in architectural interest. The ground floors were often open, forming a loggia, under whose massive arches the citizens might stand sheltered from the weather and discuss the affairs of their city. Of this class were the buildings at Piacenza and Cremona. Grouped around the town squares, which were often outgrown by the increasing size of the city, stood the palaces of the municipality, the cathedral, the houses of the guilds and the dark-fronted dwellings of the powerful town nobles.

The Piazza dell' Erbe at Verona is one of the most picturesque of these old Italian town squares. Verona itself is a city of the most striking and varied physiognomy. It is divided into two parts by the turbid and swift-flowing Adige, which tears in a wide semicircle through the densely populated quarters, occasionally rising beyond its walls to leave unmistakable traces of its power in ruined bridges and crumbling houses, as well as certain significant water marks on sundry buildings along its banks. The central part of the city is a delightful assemblage of softly colored red brick and plaster buildings on narrow and curving streets. Beyond these are the wide and straight thoroughfares lined with the productions of San Micheli, cold, stately, grammatical and formal. These too are often of brick, but conceal their true construction under a mask of yellow stucco. Beyond these again are the ramparts with their remarkable Renaissance portals, again the work of San Micheli, the foremost military engineer of his time, from the top of which the snowy range of the Venetian Alps lies in full view not many miles away, together with the neighboring hillsides studded with walls and forts. For Verona is still a strong place, one of the most important bulwarks of power of modern Italy, and in her barracks an army of 6,000 soldiers is constantly maintained in readiness to protect the frontier.

The student who, after visiting Rome and Venice, starts on a tour among the north Italian towns, is apt to become somewhat indifferent to the often-repeated red brick palaces and churches which line the level streets of these cities of the plain. The details, while varying in different localities, yet have much the same general character and after a few repetitions fail to excite as much interest as they deserve. But it is safe to say that the most blasé traveler will experience a new thrill when he emerges from the Via San Sebastiano into the little vegetable market, the Piazza dell' Erbe of Verona. At one end rises the white marble pillar bearing the lion of St. Mark, the ancient cognizance of the republic of Venice which the Venetians were wont to erect in the market places of their subjugated cities. Dark and weather-beaten buildings surround the square — the gloomy Municipio with its great brick tower, the Gothic houses of the

STAIRCASE IN COURT OF MERCATO VECCHIO, VERONA.

merchants and the curious, baroque Palazzo Maffei which closes up the end. In the shadow of these houses rise a graceful shrine in the Venetian style, a canopied tribune with four marble columns, the old seat of justice, and an elaborate fountain. More in evidence than all these are the chattering market women with their loads of produce, the dusty squads of soldiers and the remarkable policemen with their long coats, tall hats and gold-headed canes. As a "town square" the Piazza dell' Erbe has an annex, the beautiful Piazza dei Signori, which is entered by a short passage. This is certainly the most dainty public square in all Italy. On one side is the charming Loggia with its delicately colored façade and tastefully restored chambers. The woodwork of the ceilings both of the outer loggia and of the interior is remarkably interesting and typically Italian in detail as well as in color.

COVERED BRIDGE, PAVIA.

Around the other sides of the place are the aged walls of the Mercato Vecchio and the Prefettura, and but a step removed are the famous tombs of the Scaligers, the renowned Ghibelline family who raised Verona to her greatest glory in the fourteenth century. Sitting at one of the tables in front of the Caffé Dante at the further end of the little square, the imagination may easily people the dark arches of the Prefettura with the retainers of the great Can Grande and Mastino, his nephew. Brilliant as was the Scala's career, the jealousies of the various sons brought it to an untimely end. Mastino had cherished the idea of an Italian kingdom, but before his dream could be realized he died, leaving the fortunes of his house in the hands of his three degenerate sons. The youngest killed the eldest; of the two survivors the stronger slew the weaker and then died in 1371, leaving his domains to two of his bastards one of whom, Antonio, emulating his father's example, killed the other in 1381 and three years later fell a prey to the Visconti.

INTERIOR S. ANASTASIA, VERONA.

The stately tower of the Municipio, which, like the Torrazzo of Cremona, seems to personify the spirit of the city, rises above the roofs with its walls of time-stained brick and the scattered puttock holes which somehow give so much effect to Italian buildings and yet are so much avoided by modern architects. These spots of black give a piquancy and brilliancy to the mass of brickwork, like the quick black touches of pen or pencil in a spirited drawing. It would seem as though we in our decadent period might endure the sight of a quality in buildings which gave no offense to the eyes of the master builders of the *quattro cento*.

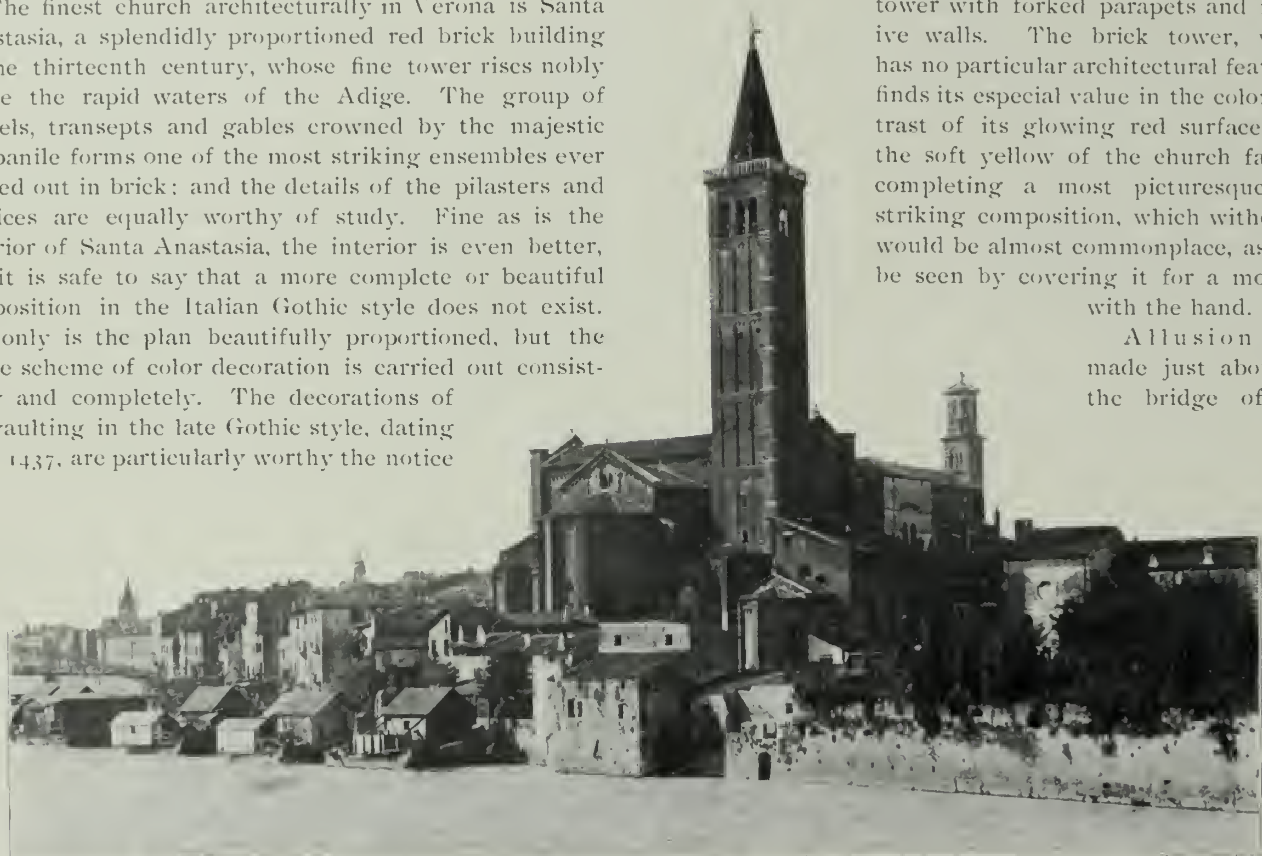
The old brick walls of the Mercato Vecchio alluded to above enclose in the courtyard one of the finest and most picturesque of the exterior stairways of Italy. The steps are covered with a finely proportioned ascending loggia, and the railings and balustrade are most charming in detail. The little shops which nestle under the arches complete the air of abandon which is so fascinating to our western eyes and which with the rapid progress of restorations is fast departing from the ancient buildings of Europe.

The finest church architecturally in Verona is Santa Anastasia, a splendidly proportioned red brick building of the thirteenth century, whose fine tower rises nobly above the rapid waters of the Adige. The group of chapels, transepts and gables crowned by the majestic campanile forms one of the most striking ensembles ever carried out in brick; and the details of the pilasters and cornices are equally worthy of study. Fine as is the exterior of Santa Anastasia, the interior is even better, and it is safe to say that a more complete or beautiful composition in the Italian Gothic style does not exist. Not only is the plan beautifully proportioned, but the entire scheme of color decoration is carried out consistently and completely. The decorations of the vaulting in the late Gothic style, dating from 1437, are particularly worthy the notice of the student of decoration. The church contains a large number of works of art and is full of interest in every corner. The great west door, for example, is a particularly attractive example of early carpentry work, with numerous small square panels and carved edges.

The river, which flows just behind the church, is one of the most picturesque features of Verona. Wide and strong, it courses foaming through the town, incidentally turning the wheels of a number of floating water mills which tug strenuously at their moorings and threaten momentarily to start down the stream. The newer bridges of the Adige show many marks of the violence of the stream in times of flood, but the old red brick Ponte del Castel Vecchio, one arch of which spans 160 feet, at the upper end of the town, still stands after six centuries as firm as ever and makes, with its Ghibelline parapets and grim brick castle, a splendid bit of color above the curving river. The old castle, the abode of Can Grande II, the greatest of the Scaligeri, from which the bridge leads to the opposite shore, is in itself one of the curiosities of Verona, but one which the public are not allowed to examine.

Beyond the Castel Vecchio you follow the embankment of the river for some distance, while the houses grow thinner, until, turning through a short street, past gardens and orchards, you emerge on the sleepy and grass-grown Piazza San Zeno, a spot the most typical of old Italy that is to be found in the entire peninsula. The quaint yellow marble façade of the church, richly stained by time, with its grotesque carved animals and figures, is balanced by a sturdy square brick tower with forked parapets and massive walls. The brick tower, which has no particular architectural features, finds its especial value in the color contrast of its glowing red surface with the soft yellow of the church façade, completing a most picturesque and striking composition, which without it would be almost commonplace, as may be seen by covering it for a moment with the hand.

Allusion was made just above to the bridge of the Castel Vecchio. The brick bridges of Italy might form the subject for a study which would reveal a mine of unworked material for the use of our latter-day practitioners in municipal art. I recall one at the entrance of the old town of Pavia, not far from Verona, which seems almost the ideal of what a bridge ought to be. The simple, powerful arches stride nonchalantly across the waters of the Ticino, carrying the delightfully quaint roof and bearing on their central pier the brick chapel which gives the central point of dignity and repose to the composition. The mediæval bridges, like those of Pavia and Verona and that of Montauban in France, seem to convey a most satisfying impression of quiet strength and suitability, forming a happy mean between the airy grace of the bridges of modern Paris and the sullen inertia of the structures of ancient Rome.



S. ANASTASIA, VERONA.

The Town Hall Series.* II.

A TOWN HALL IN CENTRAL MISSOURI.

BY EDWARD G. GARDEN.

THE very broad general requirements laid down by the editor of THE BRICKBUILDER for the "Town Hall Series" have enabled the author of the accompanying design (in order to produce a projet which has something of a local flavor from a Missouri standpoint) to formulate a further set of conditions based on the climatic and topographical state of affairs at least partially existent in a town on the Missouri River, which "for the sake of euphony" we will call DeSoto.

Central Missouri has a long, hot, dry summer, a comparatively open winter, and abrupt transitions from one season to the other, and being situated on about the same parallel of latitude as Spain, the general characteristics of thick walls, overhanging eaves and other protection from heat should strongly influence the expression in design of buildings in this district.

DeSoto originally had its being on account of an obstruction to navigation in the shape of a sand bar caused by an abrupt bend of the Missouri around a bluff on the south bank of the stream. This bar also furnished a practicable ford except in flood times, and the settlement rapidly became an important trading point.

With the growth of the town, houses were built upon the high ground of the plateau, and the road from the river bank naturally found its way by the easiest grade up a ravine or draw that is preserved to-day in the form of Bridge Street.

The bottom lands of the north bank, being subject to overflow, were not considered as a suitable town site, and finally the original strip of land at the foot of the bluff was given up to warehouses and simi-

A TOWN HALL FOR CENTRAL MISSOURI.

* PROGRAMME.

The problem indicated by the following programme is a town hall such as would be requisite in a village of five or six thousand inhabitants.

It is supposed to stand on the public square of the town, which square is quite closely built up with such buildings as would naturally be found in a locality of this kind. If there are any differences in grade, the town hall is supposed to occupy the highest portion of the land.

The contributors in this series represent different sections of the country, and each design will indicate not only in the matter of arrangement of plan but also in point of architectural style, the sort of thing that would be particularly appropriate for the section of the country in which the building is to be located.

In the matter of accommodations and of the sizes and disposition of the rooms, each contributor uses his own judgment, following out the idea indicated above by preparing designs particularly fitted for the various sections of the United States.

The principal hall in this building would probably be used as a place for certain public entertainments, theatrical and social, but no provision is made for county courts or library. Other departments are included at the discretion of the contributor.

The materials are to be, so far as the exterior is concerned, burnt clay in some of its forms, and the same materials may enter into the interior construction and decoration of the building, at the discretion of the contributor.

The cost of the building, exclusive of furnishings, should not exceed $50,000. This sum, while perhaps large, is purposely made so with the idea of laying stress on the necessity of having a building of some richness to represent the town in its corporate capacity.

The idea is simply to suggest an appropriate treatment of a problem that frequently occurs for solution.

lar structures, the public, business and residence buildings of the community being transferred to the plateau.

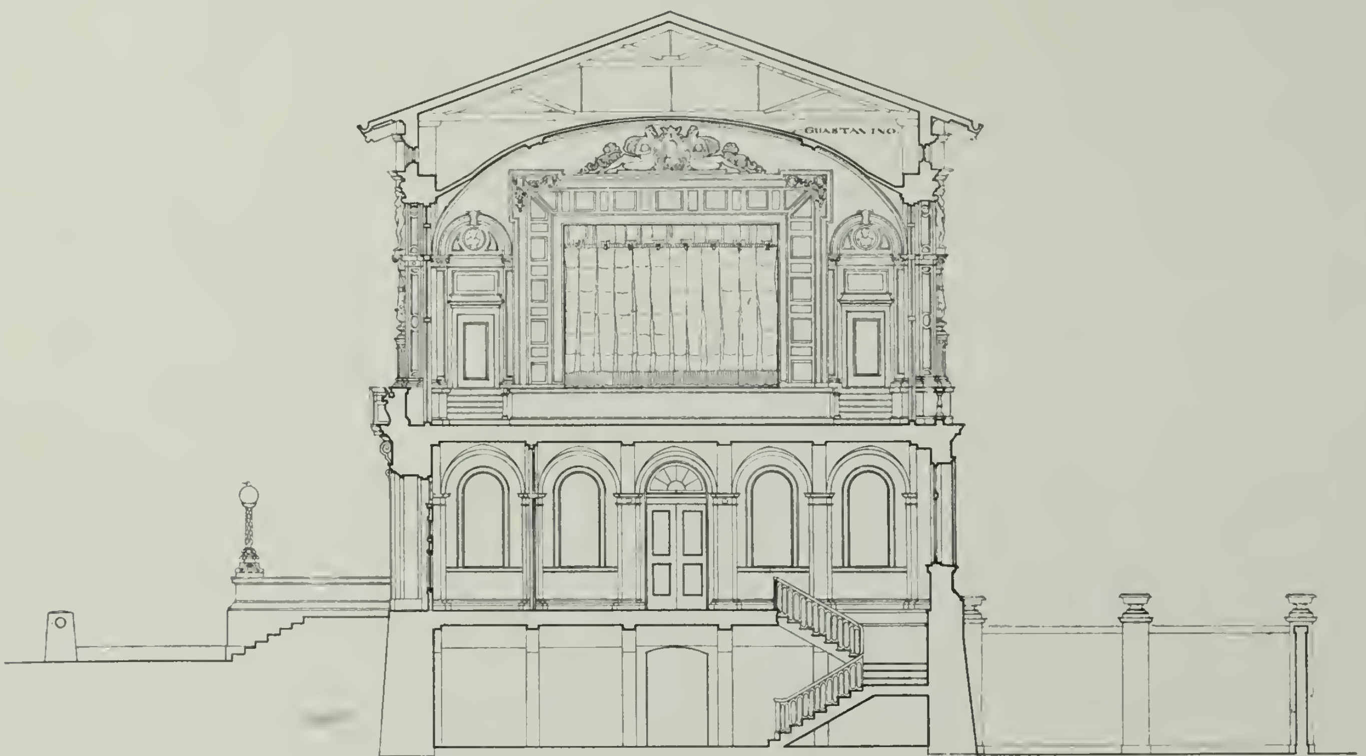
The advent of the railways on the north bank (made possible by the construction of a government levee or embankment) necessitated the building of a bridge and opened to manufacturing and commercial industries a practically unlimited opportunity for expansion, while the superior situation of the old town on elevated ground secures for it the more attractive elements of municipal life.

The public buildings, very fortunately, have been grouped around DeSoto Park, a small square bounded by the four principal streets, and the lot selected for the new town hall occupies a commanding position at the head of Bridge Street and on the corners of Prentice Avenue and Main and DeSoto Streets.

This room, with its accessories, occupies the second floor, and as this apartment gives its name to the whole structure, its level has been treated as the "*belle étage*" giving an abundance of light and ventilation through the large windows of the arcade.

The entire structure above the granite base course will be constructed of brick and terra-cotta, the interior walls of the corridors and assembly hall being of the same material, treated in glazes and color. The ceilings throughout will be built in the Guastavino method, and the roofs will be of tile.

The opportunities for a delightful color scheme, both inside and out, are sufficiently obvious to the educated eye, and within the limitations of black and white reproductions, and without the pen of a Ruskin, the author declines to commit himself.



SECTION, A TOWN HALL FOR CENTRAL MISSOURI.

The following description of the design will be made as brief as possible, the reader being referred to the drawings for all detail of arrangement.

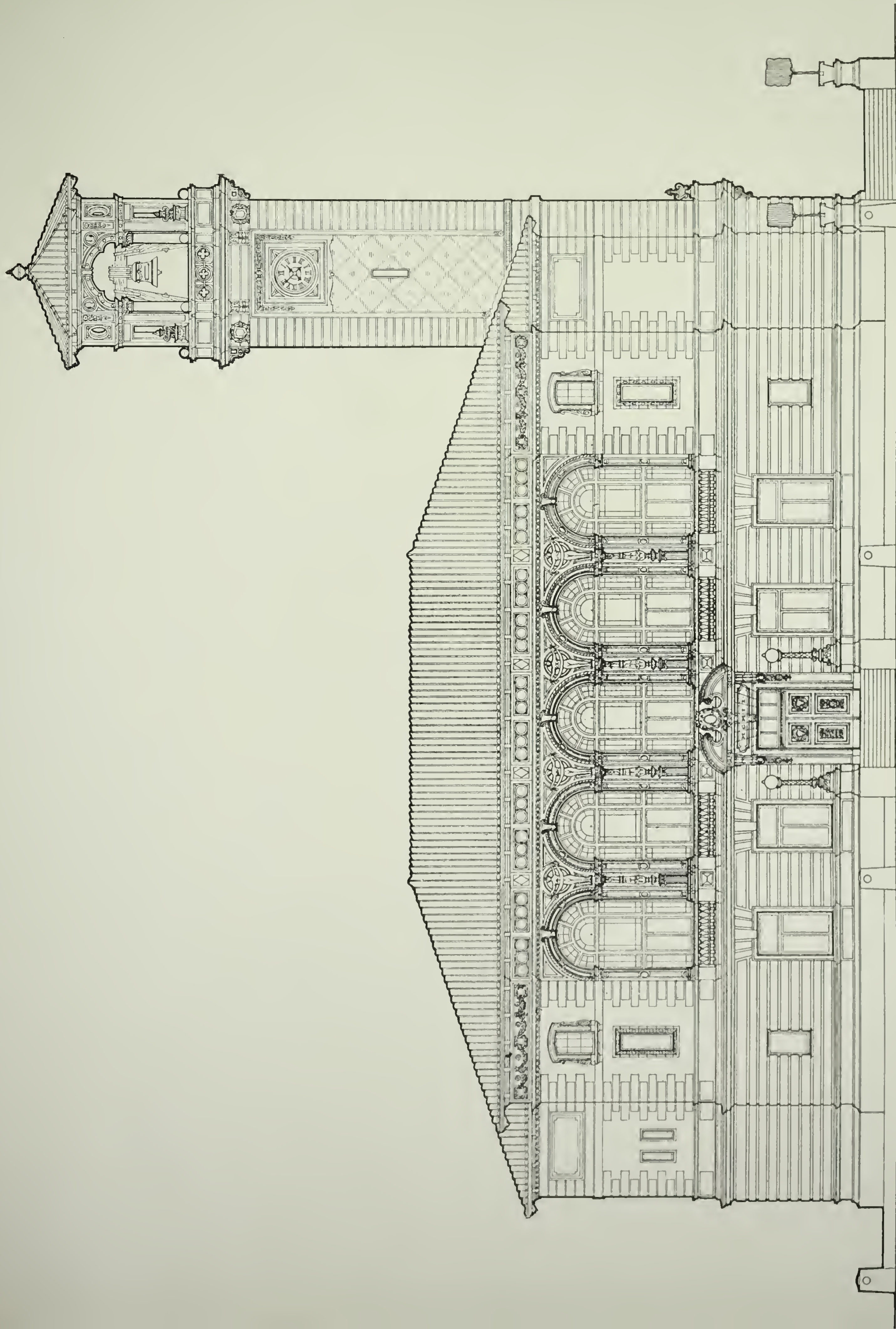
The building is to be two stories on the Main street frontage, and, owing to the slope of the ground, three stories are obtained on DeSoto Street.

The departments housed in the lower level are approached through a walled fore-court and are as follows: marshal's office, police cells, police court room and entrance to a private staircase giving access to the stage and dressing rooms of the assembly hall two stories above.

The main floor contains the usual town offices, mayor's rooms, and council chamber, reached by a public corridor on the north and south axis, while the entire frontage on Prentice Avenue is devoted to the entrance and staircase to the assembly hall.

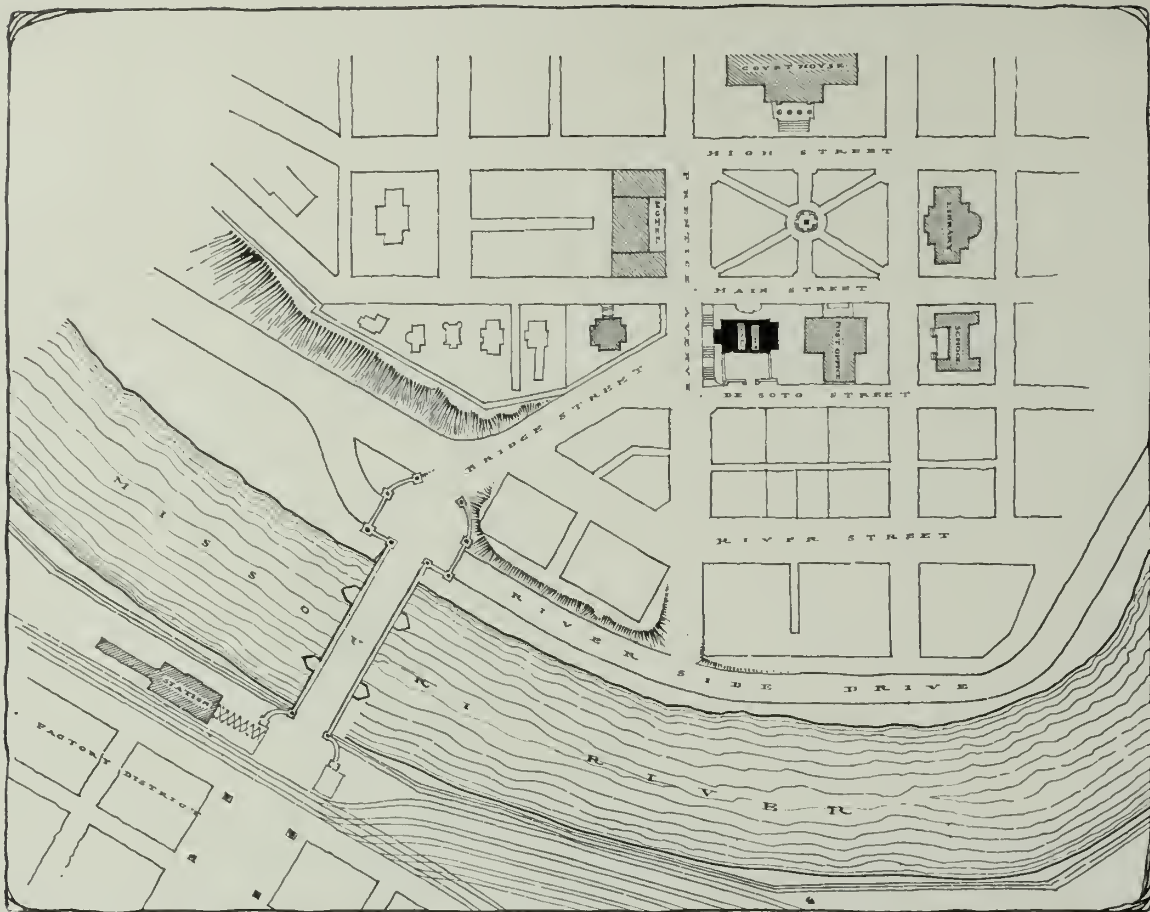
A study of the foregoing conditions will, I hope, justify the solution of the problem here presented, and in this hope I submit myself to the tender mercies of that most intelligent body of critics, the readers of The Brickbuilder.

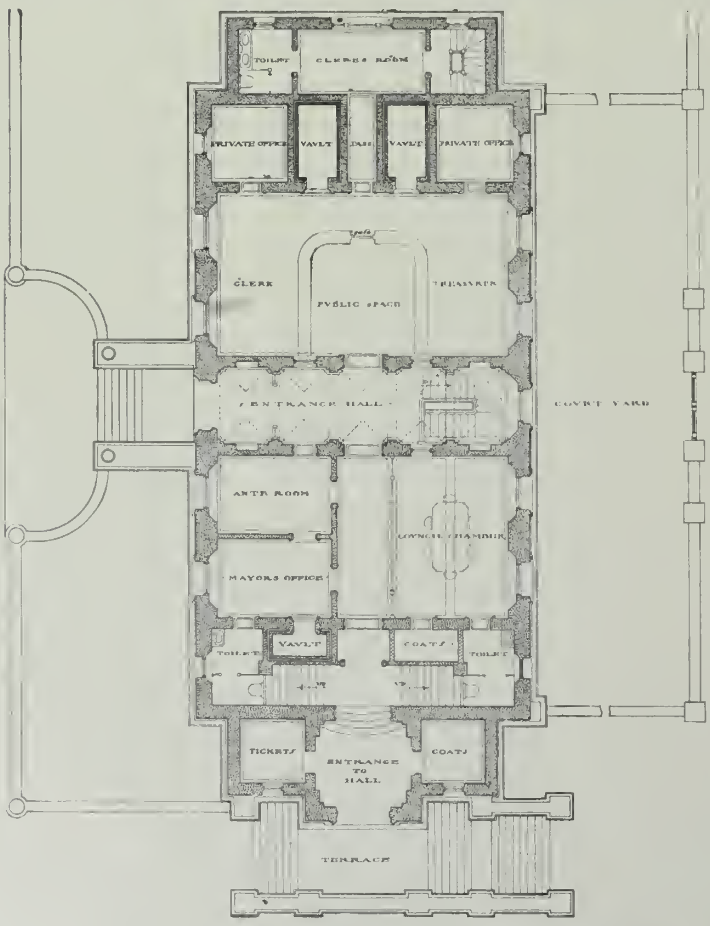
The Department of Architecture of the Lawrence Scientific School, Harvard University, following the example set by other similar institutions, publishes a pamphlet showing samples of students' work, together with a synopsis of the course of study and the work required. The pamphlet also contains an interesting description of the new building erected from the plans of McKim, Mead & White with funds donated by Mr. and Mrs. Nelson Robinson of New York. The examples of students' work are all that could be expected of a department so richly endowed and wisely directed as is this school.

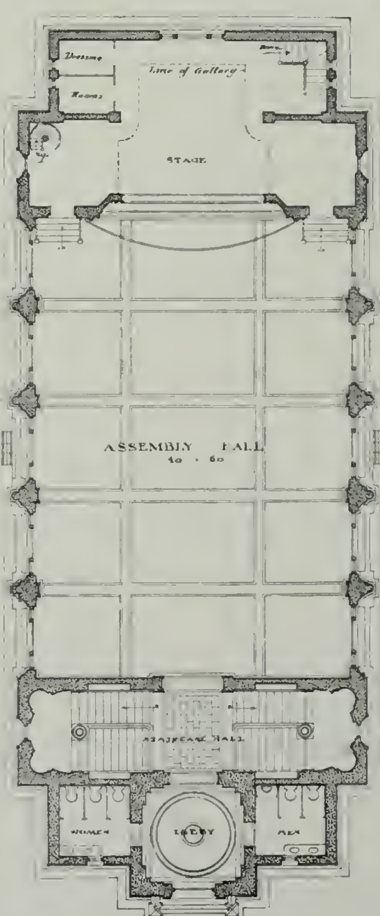


ELEVATION.

A TOWN HALL FOR CENTRAL MISSOURI. Edward G. Garden, Architect.







SECOND FLOOR PLAN.

PLANS, A TOWN HALL FOR CENTRAL MISSOURI.

Robbia Pavements. I.

BY ALLAN MARQUAND.

TWO facts are generally known concerning Robbia pavements: (1) that Luca della Robbia made a pavement for the "Scrittoio" of Piero de' Medici in the Medici palace at Florence; and (2) that Luca della Robbia the younger made pavements for the Vatican under the direction of Raphael. The Florentine pavement has completely vanished, and of the Vatican pavements only a few fragments remain. Hence those who concern themselves with the products of the Robbia school have been content to record the above-mentioned facts derived from Vasari, and make no mention of the Robbia pavements which still exist. In endeavoring to acquire some knowledge of this branch of Robbia work, we shall refer to these existing pavements as well as to the sculptural monuments which in their decoration show similar designs.

LUCA DELLA ROBBIA (1400–1482).

We can point to no existing pavement by the founder of the school, but there are several designs used by Luca in other applications which his successors employed for pavements. A design well adapted for pavements may be seen upon the background of a Madonna recently removed to the Museo Nazionale from the Galleria di Santa Maria Nuova, Florence. It consists of a connected series of circles enclosing quatrefoils. A finer development of this design occurs in the background of the Madonna on the exterior of Or San Michele. In his coffered ceilings at Impruneta, Luca uses a circular design inscribed within a square and emphasizes by an independent ornament the angles of the squares. At San Miniato the angles of the square compartments are modified so as to produce what Vasari admired as a most charming distribution of octagons. Such geometric devices are frequently employed in pavements as a framework to break the monotony of a mere repetition of conventional floral design.

FIG. 1. FROM LUCA DELLA ROBBIA'S CEILING OF THE PORTOGALLO CHAPEL AT SAN MINIATO.

We find again in the ceiling of the Portogallo Chapel at San Miniato a design which reappears in several Robbia pavements. Here square tiles imitate a mosaic colored and arranged so as to appear like a network of cubes. As a frame for the medallions of the same chapel he uses a reticulated fish-scale ornament (Fig. 1). Luca's Tabernacle at Peretola, his Tabernacle of the Holy Cross at Impruneta, the medallion of the Stone Masons on the exterior of Or San Michele, and the exquisite frame of Bishop Federighi's tomb at Santa Trinità furnish still further examples of designs which he might have modified for use in the borders of pavements.

ANDREA DELLA ROBBIA (1435–1525).

In the Collegiata at Empoli there is a chapel which contains a noteworthy statue of Saint Sebastian by Antonio Rossellino. Overhead is a tondo or circular medallion in glazed terra-cotta representing God the Father. On the sides of the statue are painted angels, attributed to Botticelli, and below it a predella assigned to Ghirlandaio. The medallion bears every indication of being an early work of Andrea della Robbia, made at a time when he was strongly under the influence of his uncle. At the foot of the altar is a pavement measuring 2.40 x 1.53 m., of which a portion is reproduced (Fig. 2).

The central part consists of hexagonal tiles exhibiting rosettes surrounded by a leaf pattern. Both the rosettes and the leaves remind us of the predella of Luca's Tabernacle at Peretola. The borders on each side represent a network of cubes, a design similar to that which Luca made for the vault of the Portogallo Chapel at San Miniato. The front border exhibits a narrow fringe-like design and a wider band of opposing palmettes and poppies. This border is not far removed in pattern from the friezes of Andrea's celebrated altarpieces at the Osservanza near Siena, at La Verna and Gradara Rocca. But the border as a whole is not very happily applied. It does not seem to have been originally designed for its present situation. Possibly Andrea adopted the very patterns which Luca used in the Medici palace and applied them here somewhat incongruously. That Andrea did not concern himself to invent the patterns of these tiles seems probable when we find him using essentially the same design on other occasions. Before a baptismal font set in a niche very beautifully decorated by him in the Pieve at Santa Fiora, are tiles of the Empoli pattern. Similar tiles are employed in a pavement before the altar of the Church of the Madonna della Neve at Santa Fiora, and in a pavement once in the Cappella Santa Fina at San Gemignano, now in the Museo della Biblioteca of the same city.

From the workshop of Andrea appear to have emanated the glazed terra-cottas in the Collegiata at Montevarchi. Here is also a tile pavement, the pattern of which is but a slight modification of that at Empoli. Essentially the same pattern is used also for the background of a niche containing the statue of Saint Peter Martyr in the Church of San Domenico at Arezzo.

In all these cases blue and yellow and green and violet are the colors used for the rosette and leaf pattern, also for the palmette and the fringe-like borders. The design is painted against a white ground. In the network of cubes at Empoli, Andrea used green, yellow and violet, the colors employed by Luca for the same pattern in the Portogallo Chapel. Elsewhere he sometimes varies the selection of colors.

If we should examine the monuments left us by Andrea della Robbia, we find that he used the reticulated cube ornament in other applications, — for wall decoration and for the predellas of altarpieces. And in these school. It consists of the so-called nail-head pattern, constructed here by dividing squares by means of their diagonals into four equal triangles colored respectively blue, green, yellow and violet (Fig. 3).

Many more pavements than the few we have mentioned may have been furnished by the atelier of Andrea. Under the constant wear to which they would be subjected in Italian churches and palaces, it would not take many centuries to remove the glaze and obliterate the design.

THE SONS OF ANDREA DELLA ROBBIA.

Of the seven or eight sons of Andrea della Robbia, at least five are known to have produced works in

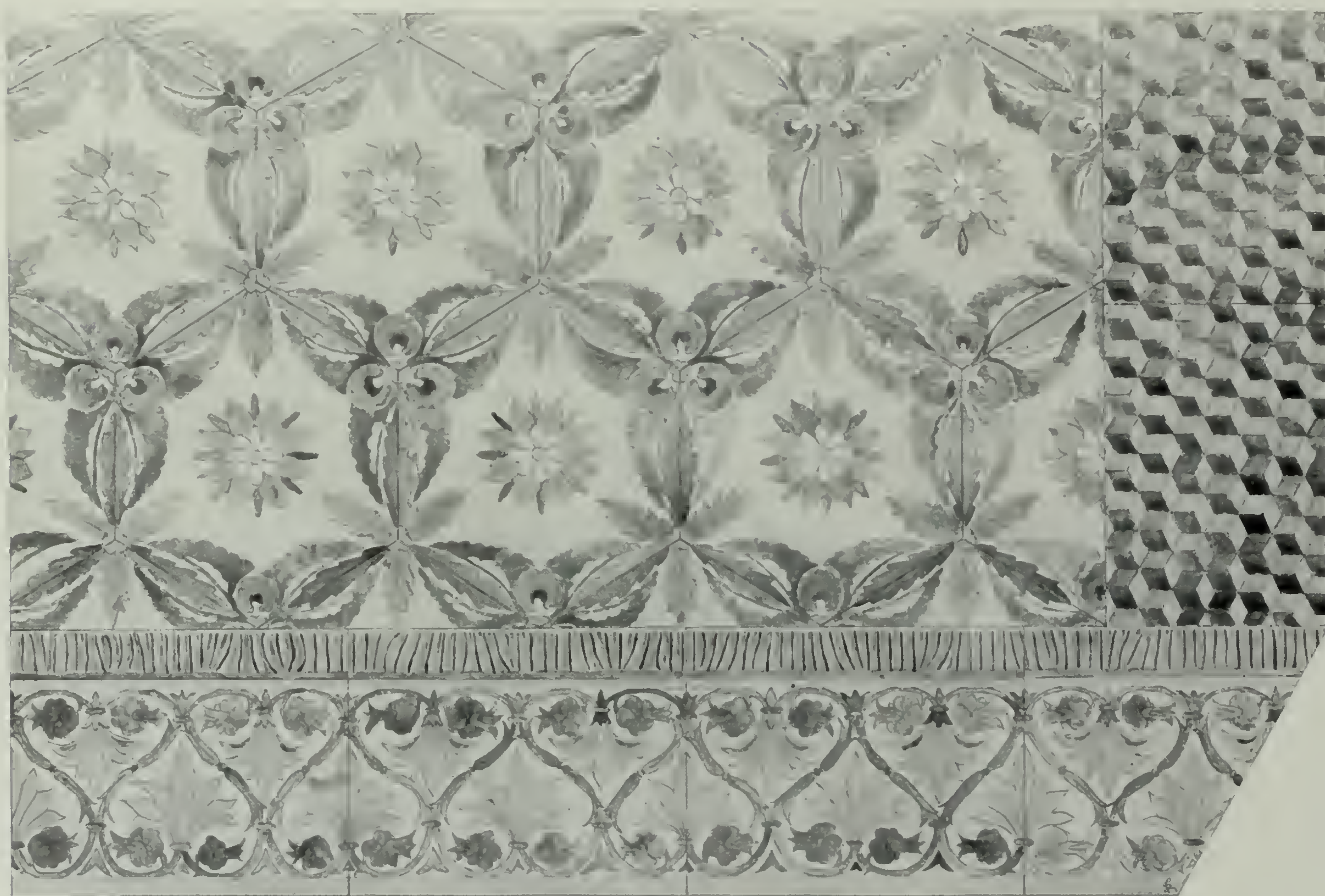


FIG. 2. FROM ANDREA DELLA ROBBIA'S PAVEMENT IN THE COLLEGIATA AT EMPOLI.

other applications we find another design well suited for pavements. This design is seen in Figure 3. It consists of a reticulated series of circles applied to a series of squares, each circle having as its radius one half the diagonal of the square. In the center of each square appears a disk surrounded by smaller disks or ovals. Andrea used this design for part of the wall-surface back of the font at Santa Fiora and upon the predellas of altarpieces at Arezzo, Foiano and Montepulciano. He passed it on to his son Giovanni, who used it in his celebrated lavabo at Santa Maria Novella in Florence.

Compared with the pattern of the Empoli tiles, this is more geometric and conventional. Behind the font at Santa Fiora we find still another design worthy of notice because it became part of the inheritance of the Robbia glazed terra-cotta. These are Giovanni, Girolamo, Fra Ambrogio, Fra Mattia and Luca. From the tile patterns which decorate the recesses of Giovanni's lavabo in Santa Maria Novella, we see that in 1497 he used the nail-head and the reticulated squares and circles, designs which Andrea had employed at Santa Fiora. He also uses the fish-scale ornament which Luca had employed at San Miniato and a simple quatrefoil, which may be considered a simplification of one of Luca's designs. The central decoration of the wall behind the lavabo, however, seems more original. Here the square tiles have what appear to be green leaves covering their edges, while in their centers the design suggests a pin-wheel.

A few years ago I saw in a shop in Paris (M. Löwengard's) a Madonna and Child by Giovanni, dated 1523, in which the background imitated a curtain, the pattern on which reminded me of the central tiles in the Empoli pavement.

Giovanni's designs, as well as his sculpture, were cruder than those of his father, and we have no reason to believe that his pavements proved an exception to the rule.

Girolamo's works are still an unknown quantity. He may have made many of the works which still survive in Italy, but it is hazardous even to attempt to identify these from the few fragments which remain of his work in France. At the Musée de Sèvres and at a restaurant

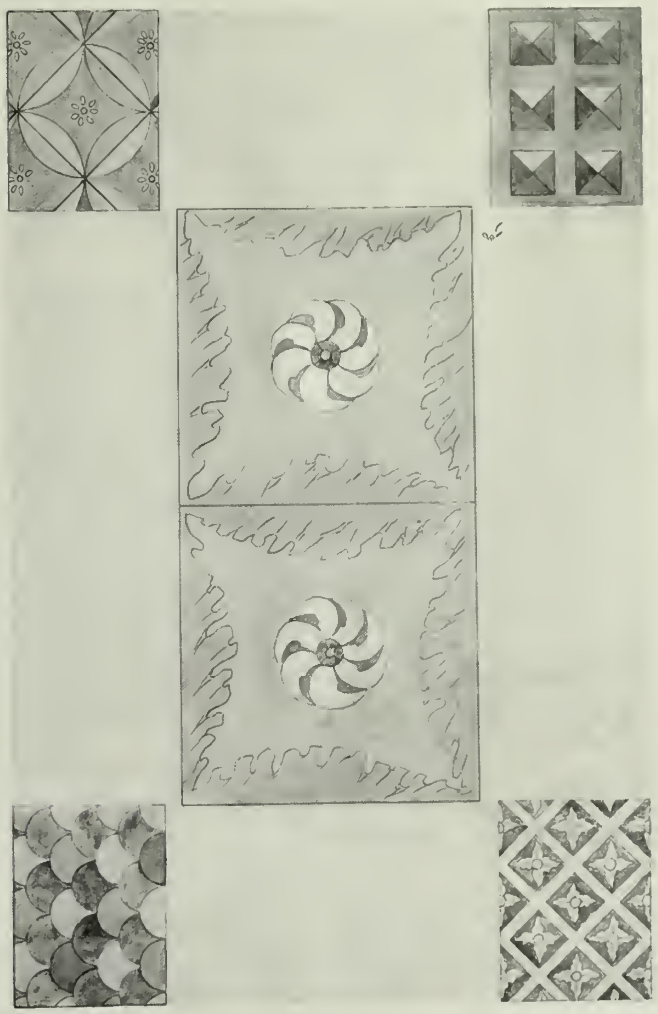


FIG. 3. FROM GIOVANNI DELLA ROBBIA'S LAVABO IN SANTA MARIA NOVELLA.

near the Bois de Boulogne are fragments of tiles said to have been saved from the Château de Madrid. The designs are here partly architectural, and amongst them we note a few, such as rosettes and nail-heads and braided ornaments, which appear to be part of the Robbia repertoire.

Too little is known of Fra Ambrogio or of Fra Mattia for us to venture even to guess what kind of pavements they may have made. More, however, may be learned concerning the work of Andrea's son, Luca. His connection with Raphael lends such an interest to his pavement that we may well consider his achievements in a subsequent article.

Fire-proofing.

The Conflagration at Paterson, N. J., February 8 and 9, 1902.

PATERSON, N. J.; Paterson the prosperous; Paterson the careless city, like Belshazzar, "praised the gods of gold and of silver and of brass, of iron, of wood and of stone," content in her fancied security; but also of Paterson, as of Belshazzar, in the same hour was written in letters of fire with fingers of flame the message, "*Mene, Mene, Tekel, Upharsin*," "Thou are weighed in the balances, and art found wanting."

Paterson the city with no rigid "fire limits," where the permit to erect a frame addition to an existing building was to be had almost for the asking, has paid the price

PATERSON SAVINGS INSTITUTION AFTER THE FIRE.

of her good-natured folly, and the reckoning of the cost is now going on.

Paterson, like a great many other American towns whose growth has been rapid but whose legal restraints have not kept pace with its growth, suffers, through the devastation of a conflagration, the penalty of temporizing, which could have been avoided by radical action and legislation.

The condition that Paterson was in previous to the fire is the condition that many towns in these United States are in to-day; and while in fancied security they trust to luck and the fire department, yet sometimes the "bluff" is called, and luck and the fire department are not sufficient to avoid the consequences of the lack of other resources.

In the fire which began on Saturday night, February 8, in a frame shed or car barn and swept over the business sections of the city, fanned by a forty-miles-an-hour gale, the city offered up a sacrifice of about $4,500,000 in the form of two hundred buildings covering an area of thirty acres and on which the insurance is approximately $2,500,000. The difference, or the uninsured part of this loss, or $2,000,000, the people of Paterson will have to bear, together with the loss of business and time in the interim of rebuilding. The $2,500,000. or the part covered by insurance, the people of other parts of the country will have to make good in the form of increased premiums on their property; or because Paterson, like many other towns of similar character, chose to indulge in folly, the other parts of the country will have to pay the reckoning, for this is simply what it comes to in the end. The insurance companies act merely as clearing houses; they do not make money themselves, but merely collect it in one place and pay it out at another. It may also be observed that the insurance companies are not wise and that they do not favor or insist upon the proper construction of buildings, and as a result of their lack of wisdom the burden is laid upon the shoulders of the innocent as well as the guilty.

Looked at in its broad relation to all the country, the fire at Paterson is a monument — evanescent though it will be — to the folly of the people, the legislative government and the insurance companies; or let us reverse the order and put the insurance companies first. Had they refused to insure property in this section or in any section similarly situated, legislative action would undoubtedly have followed, and then the citizens would have realized the hazardous position they were in; but in the competition of insurance agents for business almost any risk is insurable, and people blind to their danger rest in fancied security.

MAP OF BURNED DISTRICT, PATERSON, N. J.

When the truth of the interrelation of all commercial affairs is better understood and the value of true economy is appreciated in all departments of life, then intelligent business managers will select their insurance companies with the same degree of care that is given to the selection of their banking houses. Then insurance companies which insure poorly constructed buildings or buildings situated in localities menaced by poorly constructed buildings will be shunned for the same reason that banking houses are shunned when they are known to make loans on doubtful security.

The manufacturers' mutual insurance companies save themselves great losses and keep the cost of insurance at a minimum by declining to insure any building or plant in which the fire hazard is great, and as a consequence these companies are *sought* instead of their having to *seek* business, and their business is made up from subscribers who become mutually obligated for the losses; consequently losses seldom occur, and no reasonable precaution is neglected to prevent fire. Buildings insurable in these companies are designed to offer the least encouragement to fire, and apparatus and appliances are provided that automatically quench it in its incipient stages if it does break out; and while it is not to be recommended or suggested that buildings in cities should be built as isolated factories are built, on the "slow-burning construction" plan, yet the general policy should be followed as to permissible risks.

In view of this illustration no argument is needed to show that the policy of the "line" insurance companies actually encourages poor and inflammable construction, and therefore outside of intelligent, far-reaching and radical legislation no improvement in the conditions which prevail in the cities need be looked for until the "line" insurance companies change their business policy and offer inducements in the way of low premiums on fire-proof and non-combustible buildings.

If legislation could be enacted making any losses caused by fires of external origin recoverable by suit against the owner or occupant of the building in which the fire originated, there would be fewer fires, and the value of money and the products of labor which annually go up in smoke could be devoted to other useful purposes, and insurance companies which are founded on the principle of making one man pay for the losses caused by the carelessness of his neighbor would soon go out of business.

If it should be argued that when a city or town improves the quality of its buildings around or adjacent to old districts or buildings which offer opportunities for destructive fires, nothing can be done to compel unwilling owners to improve their properties and thereby lessen the fire hazards, the answer is, that it is within the powers of the Commonwealth, under proper legislation, to tax these buildings in proportion to the risk to which they subject the adjacent properties or the town, or by condemnation proceedings remove the menace. If the test of proper legislation is the measure of the greatest good for the greatest number, then under the most radical legislation on the subject the individual hardship and loss resulting would be trifling compared with the loss and destruction to which a community is subjected by a conflagration. The American policy of maintaining paid fire departments in cities and trusting to the fire departments to keep the possible destruction within narrow limits is a wrong one and is responsible for the many poor buildings and a great deal of waste. If the cost of the fire department were kept separate, as it equitably should be, and not combined in the general budget for city maintenance, there would soon be a complaint from the taxpayers that they were being unjustly compelled to pay for the carelessness of others. Also, if each city were compelled to insure itself or carry its own insurance or stand for its own losses, a great and immediate improvement in the construction of buildings would soon be apparent.

From another point of view the absolute reliance on the efficiency of the fire department can also be shown to be wrong; thus given a strong wind, a combustible section of a town and a fire with a fair start, and the fire department is helpless. The total amount of water that can be thrown by a score of engines on such a fire is insignificant in comparison with the amount of heat generated; and with a conflagration another very potent and irresistible factor enters into the problem, — the "regenerative" effect of the hot air on combustion. In the combustion of wood with an air supply of ordinary temperature 2,500 degrees Fahr. is a high limit, but with a heated air supply very much higher temperatures are not difficult to attain, which few materials are capable of withstanding.

A great many insurance men talk about the superior resistance of wooden girders and columns to iron in case of fire, and while this is true to a certain extent, because the maximum strength of iron is at about 400 degrees Fahr. and the resistance rapidly diminishes as the temperature is raised, yet they lose sight of the fact that though uncovered iron is not fire-proof, yet it is non-combustible, and while wood is capable of some resistance until it is destroyed, yet it carries within itself the elements of its own destruction and is at the same time a menace to materials yet untouched by fire; therefore to argue that wood is a better constructive material than iron is absurd, because iron can be covered with a non-conductive covering and insulated against injurious degrees of heat, and thereby become capable of resisting high temperature; but even without covering, a block of buildings of steel and brick without wood joist or floors would stop a fire in a conflagration, and though they suffered, they would not add fuel to the flames. In a business or closely built up section of a town, if all buildings were so constructed, fires of magnitude would be unknown.

PORTION OF BURNED DISTRICT, PATERSON, N. J.
CITY HALL IN FOREGROUND. SECOND NATIONAL BANK BUILDING AT RIGHT.

PORTION OF BURNED DISTRICT, PATERSON, N. J.
PATERSON SAVINGS INSTITUTION AT LEFT. CITY HALL AT RIGHT.

The specific lessons to be learned from the fire at Paterson are:

First. That ordinary buildings constructed of brick and wood, with or without columns and girders of steel, cannot resist a conflagration or prevent it from spreading.

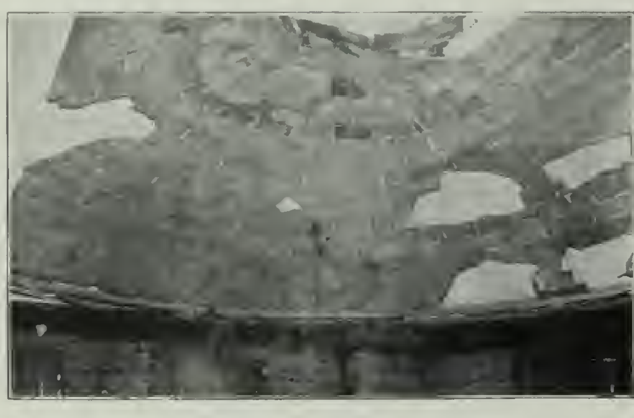
Second. That a conflagration is liable to occur in any town similarly constructed and at any time when the atmospheric conditions are favorable, and that under these conditions the fire department is impotent.

Third. In order to insure safety the closely built up portions of a town should be constructed entirely of fire-proof or non-combustible material, with restrictions as to height of non-combustible buildings; all buildings above a certain minimum height and area being required to be fire-proof and all buildings under this minimum to be of not less than non-combustible construction.

Fourth. Old combustible buildings coming within the fire limits to be taxed in proportion to the risk to which they subject adjacent buildings, or if very dangerous then to be taxed in proportion to the risk of the town; or as a wise precaution, to be subject to condemnation by the municipal authorities.

In the business sections of the burned district of Paterson there are but three buildings standing that were in the direct pathway of the flames and these three buildings are of what is commonly known as "fire-proof construction"; yet they were not strictly "fire-proof"; two of them might be termed "high class non-combustible," and the result of the fire shows certain defects which could have been seen quite as well before the fire made them apparent.

The City Hall is a three story and basement structure with flat roof, with the exterior of the basement faced with granite, and the first, second and third stories faced with Indiana limestone backed with hard red brick. The floors are of hollow tile, some of the floors covered with wood laid on sleepers in concrete; windows and door frames of wood; stairways of Guastavino tile and concrete, with marble facings; partitions of hard red brick. This building is what would be termed strictly "fire-proof," and the defects which the fire developed were due to the non-fire-proof character of the window frames, sash, glass and furniture.


UPPER FLOOR, PATERSON SAVINGS INSTITUTION, SHOWING GUASTAVINO TILE DOME AFTER FIRE. WHITE PATCHES SHOW PLASTER ON TILES.

The City Hall stands isolated in the center of a small open space and was in the direct path of the flames. The buildings on three sides of it were completely destroyed. The building on the right as you stand facing it is the Second National Bank and is the only building near it which was not destroyed. The City Hall and the Second National Bank building are two of the three buildings that were left standing in this section of the burnt district.

A careful examination of the City Hall will show that the damage was caused by the ignition of the wooden fixtures and furnishings, and that had the fixtures been of metal or even of fire-proof wood little damage could have resulted to the building. As it was, however, almost every piece of wood in the building was consumed, with the exception of the front door and a few window frames; even the sleepers in the concrete floor were burned up; the flames bursting out the openings disintegrated the stonework around them. In the basement the granite mullions of some of the windows are entirely destroyed. In the upper stories large spalls of limestone are broken off from around the windows, and the stonework is badly scorched and in some places entirely ruined.

The vertical supports of the floors of this building are the outside walls and internal brick partitions carried up from the ground. The outer walls are not damaged, excepting parts of the stone facing previously referred to. The internal brick partition walls are in good shape with one or two exceptions in the thinner partitions where cracks have developed.

The floors of flat arch hollow tile are in good condition excepting where the lower covers of some few of the tiles have fallen off, and even at these points the floor itself is not damaged beyond this and is structurally intact.

The temperature of some of the rooms of this building at the time of the fire is shown by the evidence to have been at least 2,380 degrees Fahr. — the melting point of glass — as the glass lights in the doors were melted and ran down and settled in little pools on the floor. The plaster is off in many places, and the interior of the building has been blackened in almost every part by the flames and smoke.

It is noticeable that the front door is not damaged, nor is the opening around it, which clearly shows that the damage to the building came from the combustion of the wooden fittings and furnishings, and this suggests the thought that had the windows been protected the building would have escaped damage; and while fire shutters are seemingly out of place on a monumental building, yet an efficient substitute for them can be provided in the form of "wire glass" and metal frames and sash for all windows, with metal-covered doors of wood.

To repair this building all the stone facings around the window openings will have to be replaced, the granite base almost entirely renewed, the wood flooring and sleepers replaced, all the window frames and sash replaced, some of the brick partitions will have to be rebuilt, and all of the interior fittings renewed.

Had this building been impervious to the entrance of the hot gas and flames, it would have suffered little if any damage, or had the window frames and sash and the interior fittings been of incombustible material, no great harm could have resulted, even had the glass broken and fallen out. An examination of the photographs will show that the damage which did result from the fire came about through the agency of this building's own defects in the form of wooden fittings.

The Second National Bank building, a seven-story office building, containing banking rooms on the first floor, stood opposite one side of the City Hall.

This building is faced with white marble to the fifth floor, the two other or uppermost stories are in the mansard roof. The floors of this building are Guastavino arches and concrete, with lower flanges of the iron floor beams unprotected. The partitions are hollow tile. The stairway is of Guastavino tile and concrete faced with marble. The roof was covered with slate attached to terra-cotta blocks set on iron purlins which in turn were attached to the iron structural work supporting the roof.

This building had two street exposures and two party line exposures. The rear end of the building toward the origin of the fire, containing the elevator and stair well, and also the back of the building, were subjected to a direct attack from fire in adjoining buildings.

The party line exposures of this building have window openings, some of which were protected with fire shutters, while others were not, or the shutters were open. The window openings on the mansard roof had no protection.

The fire entered through the unprotected openings in the walls and roof and burned out all the woodwork on the two upper floors and many of the window frames on the lower stories in the stair and elevator well. The hollow-tile partitions in the two floors on the roof fell down presumably because they were fastened to wood studs at the door openings. The ironwork in the mansard roof was exposed, and some of it is now out of shape as a result of this exposure.

The City Hall sheltered the marble face of this building on one side from the gases and hot air, and therefore no damage was done to the stonework below the mansard roof. In the roof the facings around the dormer windows are scorched and blackened from the fire inside the building.

In the mansard, on the other street front, the facings around the dormer windows are badly scorched. In the interior of the building many of the glazed tiles on the stair well have fallen off, and the stair well and toilet room adjacent are blackened with smoke.

HAMILTON, CLUB, SHOWING GALVANIZED IRON CORNICE.

The buildings adjoining this bank building on the side and rear were completely destroyed, as were also the buildings directly opposite to the bank building on the other side of Market Street.

The woodwork of the City Hall directly across a street was also burned out as previously referred to. This bank building then, it will be seen, had fire on four sides of it. Had it not been for the openings on the party wall sides and roof of this building, with the prevailing direction of the wind, it is probable that it would have escaped with but little damage; but even as it was five floors of the building, including the bank, were open for business on Monday morning, February 10.

Had the party wall of brick been carried up to the top of the roof, the building would probably have escaped with slight injury, but with no greater protection to the inside of the rooms in the roof than the two or three inch terra-cotta roof blocks and the slate the temperature must have been very high. Had the terra-cotta partitions been properly secured to the floor and ceilings, with non-combustible door frames and fastenings, the spread of the fire would have been greatly retarded; or had a perforated line of pipe connected to an "underwriters' pump" been attached to the party wall, so that a sheet or curtain of water could have been used to protect this exposure, there would have been but a minimum of damage.

The same criticism regarding wooden frames and sash applied to the City Hall is applicable to the bank building. Another fault of this building is the absence of proper coverings on the lower flanges of the I beams. While in this fire no injury was done to the floors, yet under other conditions the exposed beams might have yielded and serious damage to the building followed.

Summed up, the defects of this building as a high type of fire-proof construction can be said to be:

From external exposure —

First. Openings in party or division walls.

Second. Mansard roof on party line side with openings in roof on this side.

Third. Lack of protection to structural parts of roof.

Fourth. Lack of "water curtain" or horizontal distributing pipes on all exterior walls.

Fifth. Wooden window frames and sash.

From internal exposure —

First. Lack of proper coverings on lower flanges of floor beams.

Second. Wooden interior finish.

Third. Partitions improperly erected with wooden studs around doorways and not properly secured to floor and ceiling.

Fourth. Lack of protection to structural parts of roof.

Fifth. Lack of sufficient water supply for fire protection.

Paterson's Saving Institution, a five story and basement office building with flat roof, with banking rooms on the first floor faced with yellow brick and terra-cotta, is the third one of the three buildings left standing that were in the pathway of the conflagration. The walls of this building are of brick, the floors of Guastavino tile, with the lower flanges of the floor beams unprotected, the partitions of hollow tile.

This building has two street front exposures and two party line exposures. The buildings adjoining it on the party lines were completely destroyed. This building undoubtedly prevented the fire crossing Market Street at this point.

Had the party line exposures been without openings, or had the openings been protected with fire shutters, this building under the prevailing condition would have escaped without material injury. The fire entered the building from the openings into the stair and elevator hall in the rear party walls on the upper floors, and burned out the woodwork in the fourth and fifth stories and caused the hollow-tile partitions to fall, presumably because they were not properly secured to the floors and ceilings, and also because the door openings were framed with wood studs. The elevator and stair well is blackened with smoke and some of the glazed tile have fallen off. On the street fronts the outside brickwork around the windows in the two upper stories is blackened somewhat from the smoke and fire inside the rooms; barring this the building is not damaged and was open for business on the following Monday morning.

Had the partitions in this building been properly erected with non-combustible door frames and well secured to the floor and ceilings the fire could not have spread to any great extent; but this lesson, evident as it is, has not been learned, as the new partitions are again being erected with wood studs at the door openings.

The faults of this building can be summed up:

From external exposure —

First. Opening in party or division walls and exposed light well.

Second. Lack of water curtain.

Third. Wooden window frames and sash.

From internal exposure —

First. Lack of proper covering on lower flanges of floor beams.

Second. Wooden interior finish.

Third. Partitions improperly erected without being properly secured to floor and ceiling and with wood studs around door openings.

Fourth. Lack of sufficient water supply for fire protection.

The Hamilton Club. The shell of the Hamilton Club is standing. The walls are of light-colored terra-cotta and brick, the cornice was galvanized iron, the interior construction was wood joist on iron girders and columns. The roof and third floor are entirely burned out, and parts of the second and first floors destroyed. The iron girders and columns are bent and twisted; the window frames in third story are entirely burned out. The walls of the building are but little damaged. This building being on the edge of the conflagration and separated in a measure from the adjoining buildings on the side toward the fire, therefore escaped total destruction. Had the roof and floors been fire-proof or even non-combustible, under the prevailing conditions it is highly probable that the fire would have "passed by on the other side" without seriously harming it. As it is now, the interior construction will have to be entirely renewed. Had this building been in the direct pathway of the flames it is highly improbable, with its wooden internal construction, that its walls would be standing to-day.

Of course it is easy to "point a moral" after the facts are made apparent by such a calamity as this, but with all the disastrous fires that we have had recently is it not about time to carefully "take account of stock" of the conditions of buildings in our cities? Say the councilmen of our cities organized a "Board of Fire Examiners" with about the same powers as the Board of Health, does any one doubt that hundreds, possibly thousands of places would be found which are a standing menace to the property and the lives of our citizens? Smallpox, scarlet fever, diphtheria, etc., are isolated, quarantined and destroyed by radical municipal action, yet fire traps are permitted to exist without even a protest. When every man realizes that he is required to give an affirmative answer to the question "Am I my brother's keeper?" combustible buildings will give way to non-combustible buildings, and destruction by fire will be regarded as a crime.

Selected Miscellany.

A LESSON FROM THE PATERSON FIRE.

PUBLISHERS OF THE BRICKBUILDER:

Gentlemen, — Being in Paterson shortly after the recent fire which devastated the heart of the business district of that town, I took the opportunity of making a careful study of the fire-proof qualities of the materials that were called upon to withstand the extreme test of the flames. Many of the buildings were of the modern

DETAIL BY F. C. SAUER, ARCHITECT.
Conkling-Armstrong Terra-Cotta Company, Makers.

"fire-proof" type, and according to the testimony of eyewitnesses, these stood upright among the flames until they became seething furnaces within, owing to the great amount of inflammable material they contained. When the limit of endurance had been reached the steel frames buckled and fell, heavy steel girders and posts being twisted and knotted like whipcords. But to get down to the ability of the different materials to withstand the flames as evinced by the remains: In wander-

HOUSE, 15 EAST 84TH STREET, NEW YORK CITY.
Built of brick made by the Ohio Mining and Manufacturing Company.
Renwick, Aspinwall & Owen, Architects.

CHATILION APARTMENTS, RIVERSIDE DRIVE, NEW YORK CITY.
Built of Standard Size White Brick made by B. Kreischer & Son.
Hugh Lamb, Architect.

ing over the ruins I did not discover enough wood to make a match stick of, which fact may serve to give an idea of the tremendous heat that existed. One of the first things to be observed was the extent to which the stone had disintegrated under the heat. Granite and sandstone alike had failed to stand the test. Wherever they had been touched by the heat they scaled off in large sections and crumbled to dust. Heavy bearing blocks under iron columns had crumbled to pieces in many cases. The flames rushing out of the windows and doors of the City Hall had licked off corners, molds and cornices as though they had been of wet clay and some great thumb had smoothed them off to shapeless masses and rounded corners.

The heavy granite mullions dividing the basement windows of the City Hall had in some cases been wiped out of existence altogether by the flames. Almost without exception the steel work had been twisted and distorted into all sorts of grotesque shapes, giving one a much different impression of the strength of steel from that obtained by observing steel frame buildings in the course of construction. The manner in which cast-iron columns and girders withstood the flames is most marvelous. The great majority that I saw were not only intact but were as good as new, although some had apparently fallen from great heights. Without trying to reach any conclusions at all I would suggest that cast iron might well occupy a more prominent place in our thoughts when we contemplate the erection of fire-proof structures.

DETAIL BY HARRY HAKE, ARCHITECT.
Indianapolis Terra-Cotta Company, Makers.

DETAIL BY CHARLES B. MEYERS, ARCHITECT.
White Brick and Terra-Cotta Company, Makers.

To the most casual observer it was very evident that brick had proved itself the best fire resistant of all. Many walls fell, to be sure, because they were unable to withstand the pressure to which they were subjected and the leverage exerted upon them by falling floors, etc., but on every hand could be found evidence of the ability of brick itself as a material to resist fire. In the City Hall the interior walls and the backing of the outer walls are of brick, which has stood, although the building is entirely gutted. To repair the damage to the exterior of this building it will only be necessary to remove the veneering of stonework and replace same. It is to be deplored that we do not follow the example of other countries in building our brick walls of such thickness and framing the timbers in such manner that the walls would remain standing in the greatest fire, as they most assuredly would if properly constructed, to be themselves guards against the spread of the flames to other buildings beyond.

DETAILS BY HARDÉ & SHORT, ARCHITECTS.
Excelsior Terra-Cotta Company, Makers.

C. A. Ziegler, Architect.

Philadelphia, Pa., February 18, 1902.

NOTES FROM NEW YORK.

Over confidence, begotten of a fatuous reliance on the supposedly fire-proof quality of the building; defective construction of the elevators, and a too lavish use of wood: result—a holocaust of twenty-one victims. The Park Avenue Hotel is a massive structure, erected about thirty years ago, is a seven and eight story and basement building forming a hollow square.

DETAIL BY PHILIP H. JOHNSON, ARCHITECT.
New Jersey Terra-Cotta Company, Makers.

The floors consist of brick segmental arches between heavy iron beams, spaced about three feet six inches apart. The inside partitions, however, are of lath and plaster on wooden studs. The main stair, extending up to the seventh floor, is of iron, with iron treads up to the sixth floor; between the sixth and seventh, however, it is of wood, painted to imitate iron, and with wooden treads. On either side of the main stair are elevators running from the basement to the roof in brick shaft, but having wooden trim, doors, windows in each floor; with a window of wood and glass on each floor opening to the inner court for purposes of light. At the end of the two side wings of the hotel are two fire-proof stairs for use in case of fire. The doors of the elevators on each floor are of wood, with wooden trimmings. The fire was started at one of the elevators, although the lower portion of the same does not seem to be much damaged, running up the elevator and feeding on the superfluous wood. The damage appears to have been greater after the fourth floor and becoming worse as it proceeded further up, feeding on the wooden trimmings, doors and partitions. The main stairs being hedged in between two burning elevators, were rendered useless by the dense masses of smoke arising from the burning wood. The iron beams supporting the brick arches are unprotected by any fire-retarding material whatsoever, but owing to their massive construction suffered no damage, and the brick arches will need but little repair. Had the partitions been of fire-proof material and the doors and trimmings in the hallways fire-proof wood or metal covering, an altogether different story might have been told. Had the hotel been, as ordinary prudence would have dictated, provided on each floor with some one or other of the fire-extinguishing apparatus, and had standpipes with openings on each floor, to which hose ready for use was attached, any outbreak of flames could have been instantly extinguished. It will readily be seen that to have considered the Park Avenue Hotel a fire-proof structure in the present acceptance of the term is wrong, the fire-proof portion being confined to the arches and walls alone.

PANEL, STATE OF NEW YORK COAT OF ARMS.
George L. Heins, Architect.
Perth Amboy Terra-Cotta Company, Makers.

An attempt has been made to introduce a bill into the New York Legislature providing for an "eligible list of architects" from whom are to be chosen those who shall execute municipal work, and none others need apply. The bill is said to have originated with the Fine Arts Federation, who want to make a list of not more than one hundred and fifty architects, from which list the mayor is to select fifty as a permanent architectural "trust." I am exceedingly glad to be able to report that the Architectural League and the Brooklyn chapter of the American Institute of Architects have voted to oppose the bill with all their power. It is not difficult to anticipate the hard feelings and jealousies to which such an unjust act would lead, to say nothing of the injustice to the "dark horse" who is waiting for a fair public competition to show what he can do. Probably there is no other profession where the first opportunity means so much to a beginner as in our noble profession.

Among the items of new work are the following: James Brown Lord has completed plans for the first of the Carnegie libraries, which will be erected at Nos. 222 and 224 East Seventy-ninth Street.

Herts & Tallant have planned a new theater for Mr. Daniel Frohman to take the place of the old Lyceum. It will be built on Forty-fifth Street, near Broadway.

Charles I. Berg, architect, is drawing plans for a five-

DETAIL FOR BALCONY.
Robert W. Lyons, Architect.
Standard Terra-Cotta Works, Makers.

story brick and stone apartment to be built at Nos. 34 and 36 East Fortieth Street. Cost about $200,000.

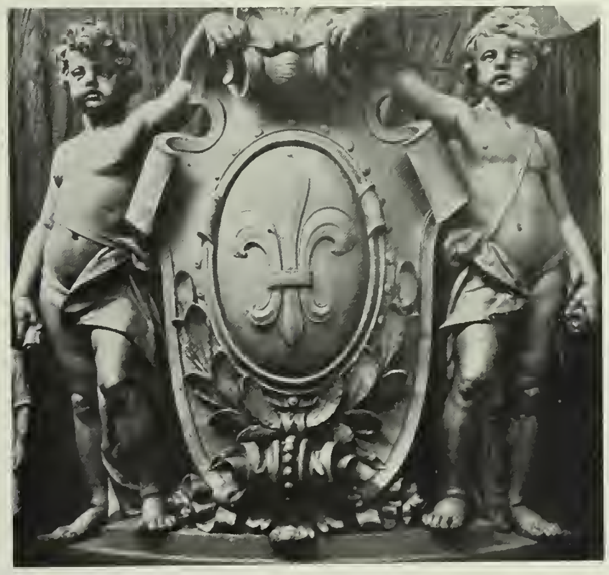
Trowbridge & Livingston have planned a nine-story hotel to be built at No. 6 East Fifty-fifth Street for Colonel J. J. Astor. Cost $150,000.

Hobart A. Walker has just completed plans for a brick and stone dwelling to be erected on Clinton Avenue, Brooklyn.

IN GENERAL.

James P. Jamieson has been admitted to partnership in the firm of Cope & Stewardson.

The annual exhibition of the St. Louis Architectural Club will be held at the St. Louis Museum of Fine Arts, Lucas Place and Nineteenth Street, April 3 to 14.



PARAPET PANEL FOR FLATIRON BUILDING, NEW YORK CITY.
D. H. Burnham & Co., Architects.
Atlantic Terra-Cotta Company.

The annual exhibition of the Boston Architectural Club will be held in the gallery of the Boston Art Club, Dartmouth Street, May 5 to 19. Entries must be made before April 15.

The Illinois Hydraulic-Press Brick Company of St. Louis are sending out a sample brick for which we feel certain there will be an unusual demand. It is a regular size brick, on one of the broad sides of which there is a convenient size cavity meant to hold matches. This "match case" is further embellished with four rubber tips securely fastened to the underside of the brick, which will prevent its scratching when moved about on a desk. Apart from this unique feature, as samples of brick they are interesting because of their texture and color, representing as they do in these respects the very acme of the brickmaking art.

The White Brick and Terra-Cotta Company will furnish the architectural terra-cotta for the following new buildings: High school, Watertown, N. Y., Wilson Potter, architect; amusement hall and café, Brooklyn, N. Y., Herts & Tallant, architects; residence for R. F. Schell at Northfield, Mass., Bruce Price, architect; store and apartment, corner Forty-fourth Street and Madison Avenue, New York, H. J. Hardenbergh, architect; Bates Building, Forty-third Street and Longacre

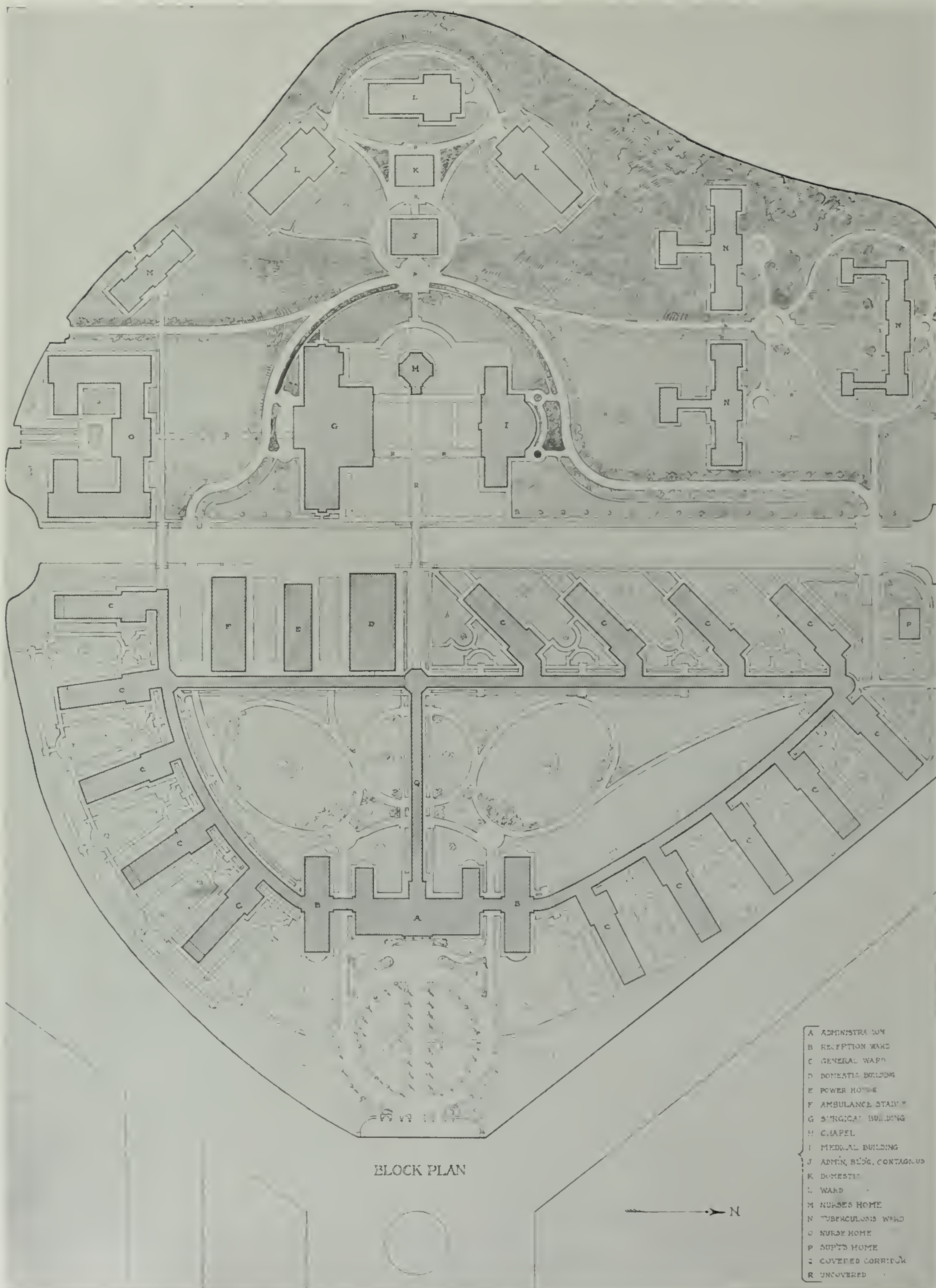
DETAIL BY H. J. HARDENBERGH, ARCHITECT.
New York Architectural Terra-Cotta Company, Makers.

Square, New York, F. L. Ellingwood, architect; residence, 123 and 125 East Thirty-fifth Street, Hoppin & Koen, architects.

The American Enameled Brick and Tile Company report the closing of two contracts; one for the District of Columbia Pumping Station in Washington, D. C., which George A. Fuller Company are erecting and in which there will be used about one hundred and fifty thou-

DETAIL BY D. H. BURNHAM & CO., ARCHITECTS.
Northwestern Terra-Cotta Company, Makers.

sand enameled brick; and the other in Baltimore for the United Electric Railway Company's new power house, for which they have just closed the second contract with Mr. John Waters for the use of over one hundred thousand second quality enameled brick. The first contract was for a like amount in a previously built portion of the power house.



COMPETITIVE DESIGN OF MUNICIPAL HOSPITAL FOR THE DISTRICT OF COLUMBIA, AT WASHINGTON.
Boring & Tilton, Architects.

THE BRICKBUILDER.

APRIL,

1902.

THE WEIGH HOUSE AT NIMEGUE, BELGIUM.

VOL. 11 NO. 4

THE BRICKBVILDER

APRIL 1902

H. F. B.

THE BRICKBUILDER.

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TERRA COTTA AT THE PATERSON FIRE.

IN reviewing the results of the Paterson fire one cannot fail to notice the extent to which terra-cotta proved itself worthy of all that has been claimed for it as a fire-proofing material. In the City Hall, which was strictly fire-proof as far as relates to construction, the flat terra-cotta arch tiles were not materially damaged at all, though the heat in some of the rooms was so great that the glass in the side lights of the doors was melted and ran down in pools on the floor. The Second National Bank likewise was severely injured, but the damage was not due to any defect in the terra-cotta fire-proofing, notwithstanding that the terra-cotta was not applied in the most intelligent manner to the beams.

Without claiming that the fire-proofing systems which employ terra-cotta have arrived at perfection, and while admitting that every fire of this kind teaches us new lessons, it nevertheless must be conceded that terra-cotta itself is about as near being absolutely fire-proof as any material which is at present known to the building trades, and even in cases where it has not been applied in the most thorough manner it is still a very efficient fire retarder, and it is very rare indeed to hear of a terra-cotta floor arch of any description being crippled in a fire. The Paterson experience emphasizes the necessity for more care in constructing partitions. The practice which is sometimes followed of setting the partition blocks upon a plank upper floor is a bad one and should not be tolerated. The use of wooden door frames in terra-cotta partitions is also a source of weakness which can very easily be avoided. The ideal office building is one into which no particle of wood enters for construction or finish. A few years ago such a building would have been commercially an impossibility, but now there are various devices which answer every purpose of finish without employing a particle of exposed wood. The practice of bedding sleepers in concrete over the terra-cotta and having an upper and under floor nailed directly to these sleepers is, in the light of the Paterson experience, an unwise procedure, and a far better plan is to use deeper terra-cotta blocks, cover them with a slight layer of concrete and apply over the concrete some form of monolithic construction which is not based upon the employment of wood, either tiling, cement or one of the magnesia compounds which can now be obtained in the market.

EXPERIENCES are of value only as we are able to draw from them lessons which are available for future use, and while it can hardly be said that the Paterson fire brought out any decidedly new facts, it certainly emphasized and corroborated the lessons of the past. A number of the burned buildings employed architectural terra-cotta. Very few of the buildings were really fire-proof in any sense, but comparing the effects of the fire it will be noted that in those buildings which were faced with stone nearly all of the exterior work was practically ruined, while on the other hand the total amount of damage done to exterior terra-cotta by the entire conflagration was very slight. Both the Paterson Savings Institution and the Hamilton Club, which were the most conspicuous examples of the use of exterior terra-cotta, suffered little damage that cannot be removed with a scrubbing brush. If it is a commercial necessity that our buildings shall be as nearly as possible indestructible by fire, — and the experience of last year certainly shows the desirability of such a condition, — there is no material except terra-cotta which can be absolutely depended upon. A degree of heat which would rend granite into a thousand fragments and which would reduce lime or sandstone to the consistency of chalk, would have hardly more effect on terra-cotta than to discolor the surface and burn out some of the pointings. And there certainly is no material except terra-cotta which would stand the combined action of fire and water. If terra-cotta were difficult of application, were expensive in first cost or of a nature which would not respond readily to the plastic feeling of the designer, there might be some excuse for using other material in its place, but where it meets so thoroughly the thought of the architect and answers so completely the exact requirements of the engineer, it is little wonder that in so few years it should have grown to be preëminently the material for the construction and embellishment of so many buildings.

THE urgent need in our great and glorious, but we fear still somewhat crude country, of some practical means for preventing the erection of architectural monstrosities is daily being emphasized by the many glaring, not to say brutal and wholly unnecessary offenses against good taste that are constantly being perpetrated from the Atlantic to the Pacific, from the Lakes to the Gulf.

It may be that the laws which formulate good taste and beauty cannot be so easily either codified or applied, and that much as we might wish to see an art censorship established which would make it impossible for even the most utilitarian Philistine to encumber the earth with an ugly building, we will not arrive at art achievements by municipal enactment, but will have to wait until the people are educated to a proper appreciation of the eternal fitness of art, and though the process will be a long one and the subjects difficult to handle, we cannot doubt that the result desired will come so long as we have faith in the virility of American art.

The buildings that offend most are, generally speaking, those devoted to commercial or business purposes, hotels and apartment or tenement houses. These buildings offend in every way possible — general outline, proportions of parts and details, materials and color. We have said the proportions offend, but take back that word; such buildings have no proportions. As a rule they are bald and dreary monotonous lumps of brick and stone and cast iron, without form and void. These buildings have not even the negative merit of being of ephemeral construction. They are well, too well, built and will probably cumber the earth for a century or more as monuments of the stupidity, cupidity and ignorance of those who in defiance of public and private opinion called into existence such misshapen and unlovely blots upon the fair name and fame of any city permitting their erection. Such buildings are a daily offense and irritation to those compelled to see them even from afar off. If such offenses were committed in private, if such buildings were put up in out-of-the-way places where none but their creators and accomplices were compelled to see them and suffer, there might be little cause for complaint. Unfortunately, important streets and conspicuous sites are almost exclusively selected to bear the brunt of this offending. In some cases buildings at least respectable even in their mediocrity have been removed to make room for malignant cases of commercialism run riot. In many instances those responsible for these architectural blunders are not confined to the class able to make the specious excuse that lack of means precludes the modest additional outlay necessary to raise their buildings from mere constructions to the plane of intelligent architecture. On the contrary, the worst and most persistent culprits are those who having ample means could at least put up, not monumental work, but inoffensive buildings temperately designed.

With regard to increased cost of buildings caused by reasonable architectural adornment, it has been calculated or rather demonstrated that five per cent added to cost of buildings will make the difference between a plain mill-like structure and an architectural creation.

It is not necessary in order to produce a pleasing design to restrict the height of buildings; still less is it necessary to confine the architect to any one style of architecture. Experiments as to proper limits of height and use of styles or style are to be desired. It is the function of art to solve just such problems. It is only the total disregard of style and want of invention or feeling to which objection is made.

Historical examples of street architecture, even where the façade has been a simple flat front, are numerous enough to convince one that the solution of such a problem in a satisfactory manner is entirely possible. And it is fair to say that modern examples of good and satisfying street architecture are by no means uncommon.

Is it not reasonable to believe that, even looking at the question of increased cost of architectural buildings from the financial point of view, at least a part of the interest on the money spent on adornment could be earned by the larger rents and more permanent tenants to be secured thereby?

THE fallacy of the very common idea that stone used in a building implies permanence and solidity has been well illustrated by Westminster Abbey. It is well known that the stone of which the western façade is constructed, while having all the appearance of solidity, has few of the elements of permanence and has required constant repairs almost from the time it was built. The stone employed is a material closely resembling the French Caen stone, but it is not identical therewith, and as early as 1713 Sir Christopher Wren reported that it was decayed four inches deep and was continually falling off in great scales. The amount of money which has been spent in the last two centuries to preserve this fabric is enough to have rebuilt the edifice several times over. Since 1888 an annual expenditure of over fifteen thousand dollars has been necessary, and there is no surety that this sum may not be required indefinitely. The acrid quality of the London atmosphere is sometimes charged with the responsibility for the decay of the stone, but it is doubtful whether the material would stand anywhere very much better than it does in Westminster. There are really very few natural stones which are suitable for securing permanence in building, and it may be stated as a general rule that any stone which is easy to work will decay readily. We have seen base courses of magnesian limestone which have been eaten away by the weather so that they looked like lump sugar which had been played on by a stream of hot water; and the experience of the last four centuries points pretty conclusively to burnt clay as almost the only building material which, when properly constructed and applied, can be absolutely depended upon.

The Business Side of an Architect's Office. I.

BY D. EVERETT WAID.

AN architect should be first of all an artist. If, however, his strength lies in his artistic perception alone, he is weak, and his designs will exist chiefly on paper. He must be a master builder, as his title implies; he must be an executor as well as a designer. Otherwise men without conception of the beautiful will continue to build ugly structures and perpetuate frozen discords instead of "frozen music."

Although the complex buildings of to-day are the product of many workers, all must be under the direction and control of the one mind which conceived the whole, if artistic results are to be achieved.

And yet this essential duty of the architect, that of general supervision, has its dangers, for under the stress of modern conditions the tendency is to divert the architect's artistic powers to the strictly utilitarian details of his practice. Instead of one building occupying several years, many buildings must be erected in one year. The multitude of details in one building multiplied by many buildings are beyond the capacity of one man, and the architect needs a simple system by which he can keep a finger on every part of his work and yet leave his mind free to give his best powers to the artistic development of his designs. The execution of even one building involves from first to last so many details that it is important so to organize one's office that bookkeeping, office records and the host of transactions required in letting contracts and superintending work shall be done by a machine. This machine should take care of the drudgery and do it so thoroughly and easily that its presence is hardly noticed. It should be so well oiled that no one apparently has anything to do with it except the office boy, and it should do its work so surely that drawings will be finished on time and never lost; that any letter or detail can be found at a moment's notice; that no mistake can occur in a certificate; that "work not according to contract" will be discovered in time; and that no bill for an extra will ever be presented without a written order.

It is easy for an architect to begin practice without any system and as business increases to adopt one device after another as need is felt. The result is that while work may be well done, yet complicated and burdensome methods of business have been developed. The point is that if a comprehensive scheme is adopted at the beginning of a small business it may be expanded to meet the wants of a large practice, and the inconvenience be avoided of making revolutionary changes at a later date.

The duties of architects lie in a more or less rigidly defined routine, from sketch designs to completed buildings. We may say that the functions of an architect's office from a business point of view are three and that these three functions represent three things which the architect as a skilled agent does for his clients: — first, designing buildings and making working drawings and specifications; second, taking estimates and letting contracts; third, securing proper execution of work and certifying when payments are due contractors.

It is proposed in these papers to consider the strictly business side of an architect's office and illustrate details of office practice involved in these various functions.

Beginning with the letter file — about the only essential piece of office furniture after the draughting table — it may be averred that an architect cannot be too punctilious in his correspondence. One may economize on rent, but he should not on postage. One's maxims should include not only "Keep engagements on time," but "Answer letters promptly." Starting with the time when one has been engaged to design a building and assuming that the circumstances have prevented the signing of a contract defining the architect's status and fees, he should write a letter to the owner mentioning in a gentle way the copy of his schedule of charges which he hands him "herewith" or referring to the recognized code of the Institute of Architects. After sketches have been submitted and approved it is well to write the owner apprising him of the understanding that he is now to proceed with working drawings on the basis of the last and approved set of sketches. Later on, particularly after working drawings are completed, a letter should be written to the owner every time that he gives instructions, placing them on record and doing it in such a way that the owner will be under no necessity of replying to the letter. When work is under contract the builder should receive frequent and full written warnings and instructions concerning work not properly executed, and all directions which involve extra work should state the fact in plain terms. In short, it is well to make the correspondence a very complete record of one's business, and very frequently such records are important not merely as safeguarding the client's interest but as affording protection to the architect's own good reputation.

Printed forms for extras and deductions are desirable for several reasons but are not essential. Whether forms similar to those to be illustrated in this series of articles are used, or letters, the architect should never fail to inform the owner of everything that is done, and obtain his consent before either extras or deductions are incurred. One prominent architect expressed himself on this subject thus: "I make it a point in my practice that not a dollar of bills for extras shall come in on any building without my client having had knowledge of it in advance, or without his having had an opportunity to know all about it."

In order to outline a scheme which has been found useful in conducting architects' offices we might glance at the correspondence file in an imaginary office. The first building in the office was numbered 1, and each succeeding commission as it came into the office was given the next higher number. On a shelf may be seen letter files marked on the backs with the names of the respective buildings and large numbers 1, 2, 3, 4, etc., and one file marked "Miscellaneous"; that is to say, there is one file for the correspondence of each building and a miscellaneous file to contain letters which do not relate to any particular building. There are no letter books, for letters are all written in duplicate or else copied on loose sheets, and copies of letters sent are filed with letters received, alphabetically and in order of date.

Drawings are filed away in large drawers or other chosen receptacles in similar order, all drawings for building No. 2 in drawer No. 2 and all for building No. 5 in drawer No. 5, and so on. In other words each building has its individual number, and that number serves as a file number for the identification and orderly arrangement of all drawings, correspondence and records of whatsoever sort which have to do with that particular building.

We may assume that two trays have been purchased, with a supply of 3-inch by 5-inch blank index cards. One of these trays is used for addresses and the other for registry of drawings. When addresses are entered one card is taken for each name. If John Smith is the name of a fellow architect who has written about some draughtsman or a Beaux Arts Society dinner, his letter and reply will be found under "S" in the miscellaneous file. If, however, John Smith happens to be a contractor, correspondence with him is found under "S" in the file of the particular building with which he is concerned. If perchance John Smith is a client, then on his address card a note is made of his building, with record of its number. This card tray, therefore, serves not only as a list of addresses, but as an index giving the number of every building. (Fig. 1.)

The other one of the two card trays contains cards (all the cards may be standard ruled stock or specially

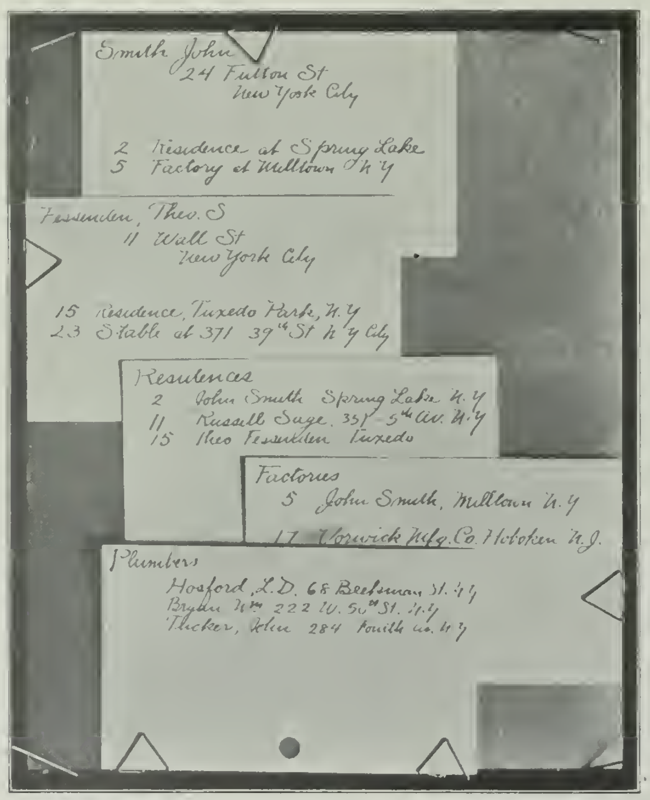


FIG. 1. CARD LIST OF ADDRESSES SHOWING MANNER OF ENTERING VARIOUS NAMES AND RECORDING BUILDINGS ERECTED FOR EACH CLIENT.

printed) for the registry of drawings. The exposed tabs of the guide cards show the name and number of all the buildings or commissions in connection with which the architect has made drawings or had correspondence. Each card back of the guide cards represents one drawing and shows the number and title, scale, date and author of its respective drawing. This idea was borrowed from Mr. Harold B. Magonigle, who gives each print of a given drawing a letter, and the card contains the names of those to whom the prints were issued, these entries being transcribed from the issue book. In my own experience I have found that drawings can be located in the issue book so easily that the transcription may be omitted and the registry card so simplified that each card will contain the record of ten drawings — five on each side.

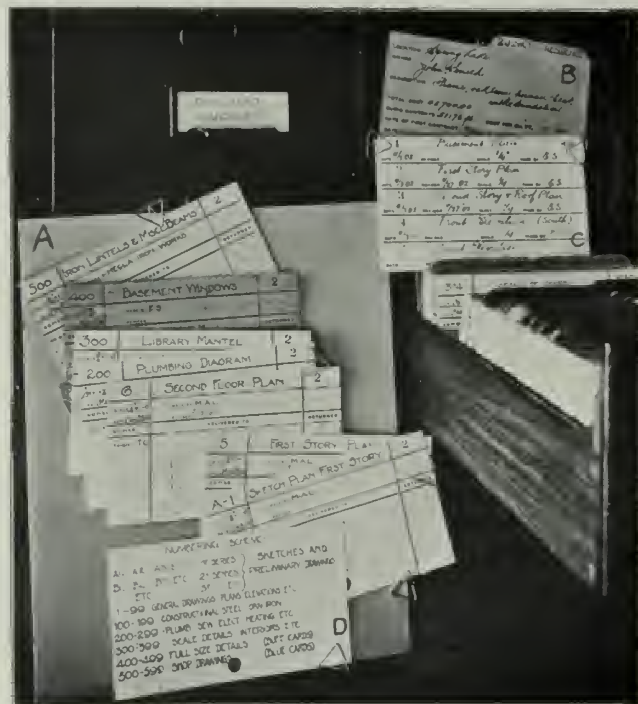


FIG. 2. REGISTRY OF DRAWINGS.

(Fig. 2. Each guide card represents one building, or commission.

Behind each guide card are placed the cards which show the list of all drawings made for that particular building.

As the guide cards are placed in order of the building numbers, the tray contains a chronological list of all work turned out by an office.

The cards at the left [A] represent various drawings for building No. 2. The guide card for same building is shown at the top [B]. Each guide card has on it a brief record showing location of building, brief description, cost per cubic foot, etc.

The lower card above the open tray [C] shows a form with spaces to register ten drawings, five on each side of the same card. The second card in the series for building No. 88 would contain record of sheets Nos. 11, 12, 13, etc., and the third card, 21, 22, etc.

The scheme for numbering drawings shown by the lowest card at the left [D] classifies the drawings in a convenient way for reference; and for a large building each group may have a drawer by itself.)

Thus much has been said about three necessary things in an architect's office, namely, a list of addresses, a list of drawings, and files for correspondence, to suggest that giving each piece of work a number which becomes at once a file number for all letters, drawings, specifications and records is a simple framework idea which can be elaborated to any extent. Illustrations will be given in succeeding papers showing the practical application of this scheme.

Town Squares of North Italy. II.

BY WALTER H. KILHAM.

UNLIKE the busy little town square of Verona, described in our previous article, the Piazza Vittorio Emanuele at Bologna is large, spacious and never crowded. The herd of little tram cars finds abundant room to wait under the façade of the Palace of the Podestá, and the prancing statue of the popular king seems almost lonely in the center of the great expanse of pavement. Coming from Tuscany, where the cities are paved with large blocks of hard stone beautifully fitted together, the small round cobbles of Bologna seem to give a mean scale to the streets and squares, unworthy of the majestic buildings with which they are lined.

The public square of Bologna is in a sense disappointing. Although a group of the most important buildings in Italy fronts upon it, the unfinished state of two of them and the rather unmonumental appearance of the third tend to take away the impressiveness which really belongs to them, and impart a note of sadness to the somber red façades. The Palazzo Communale, shown in the center

PUBLIC SQUARE AT BOLOGNA, WITH PALAZZO COMMUNALE.

of the illustration, is a building which contains an unusual amount of interesting brick detail. The trims of the windows and arches of the façade are especially dignified and simple, and the interior court contains still more of the best class of detail. The building, which has been lately restored, dates from 1290. On the right in the illustration is the imposing but incomplete façade of the Palazzo del Podestá, the tall tower of which rises picturesquely above the roofs as seen from the narrow streets at the back. The juxtaposition of these two buildings is an interesting example of the use of the different branches of the municipal government described in the preceding article. This façade with its powerful two-storied arcade is the most monumental on the square. Directly opposite rises the great mass of S. Petronio, which is the largest church in the town and is internally one of the finest in Italy. The beautiful marble Tuscan-Gothic west front was never completed above the plinths, and the vast mass

APSE AND CLOISTERS OF S. DOMENICO, BOLOGNA.

of rough brickwork rises boldly above the piazza. The sides, however, were carried out complete in brick, and present some notable though not always praiseworthy details. Our photograph shows a typical aisle window with mullions and tracery in molded brickwork and an attractive and simple rose in the tympanum. The whole effect is simple, dignified and easily executed. In contrast, at the left of the picture there is shown one of the absurdities that sometimes appear even in the works of the best masters. Nothing could be more ridiculous than the conception of placing a delicately traceried window at the angle of a great building and bending back the archivolts on the faces of two right-angled walls. The

WINDOWS OF S. PETRONIO, BOLOGNA.

WINDOW, PALAZZO PALLAVICINI, BOLOGNA.

interior of S. Petronio is remarkably well proportioned and lighted, and contains an unusual number of works of art, and particularly a very fine set of characteristic chapel screens.

Before speaking of the characteristic details of the buildings of Bologna which stand on its public square and in the immediate vicinity, it is well to mention the one feature of its architecture which places Bologna in a class by itself. Each city of the peninsula has some specialty in which it individualizes its architecture. Genoa has its splendid staircases; Florence its massive stone palaces and deep cornices; Venice its charming semi-oriental façades. Bologna has its arcades. Throughout the entire city the sidewalks are carried through the first floor of the buildings, the upper floors projecting to the curb line and resting on rows of graceful arches and pillars. The floors of these arcades are paved with brick or terrazzo, and the pillars are generally built of brick laid in a circular shape or whatever is desired. The graceful capitals of the pillars, which are often done in terra-cotta, have themselves a characteristic modeling, and are beautifully adapted for carrying the arches which spring from them. They have usually only one row of delicate leaves which rise straight from the necking, clinging closely to the vertical sides of the bell and supporting slightly projecting volutes. The result, as seen in the picture of the Palazzo Pallavicini, gives, for a Renaissance cap, a surprising impression of virility and sturdy strength. The usual Bolognese building is in three stories. The windows of the main floor rest upon a decorated string course which runs along above the arcade. These windows are usually of the type shown in the illustration — a wide archivolt made up of several patterns of bricks and with a little finial at the top of the arch which encloses a double motif, with either a slender pillar used as a mullion or a pendant terminating just below the springing of the secondary arches of the two divisions. This type, with slight variations, appears throughout the town, and is not, I think, characteristic elsewhere, especially in materials of clay. The upper or frieze story has circular or arched windows, much smaller, and is surmounted by an elaborately modeled terra-cotta cornice, with modillions and dentils, which terminates the composition, the projecting Italian eaves being omitted.

PALAZZO PALLAVICINI, BOLOGNA.

CHURCH OF THE MADONNA DI S. LUCA, BOLOGNA.

The Palazzo Pallavicini, shown in the picture, is a very good representative of this class of buildings. Except where there are shops there are few windows opening on the arcades and these are high and heavily barred, the ground-floor rooms receiving most of their light and air from the courtyards. In this connection it is worth while to take a look at the courtyard of the Palazzo Fava, one of the best of these buildings, which stands just around the corner from the great square. The court has a two-storied loggia of arches supported on most graceful round pillars of brick, with capitals of the greatest refinement. The brick walls of the building have at some period been given a light coat of lime wash which is wearing off and exposing the true construction. The

COURTYARD, PALAZZO FAVA, BOLOGNA.

upper loggia, in particular, is especially charming in detail and proportion. At the left are seen the remarkable corbels which support an overhang of the main floor. A general view of the façade has already appeared in The Brickbuilder but a detail is given to show the beauty of the ornament. These buildings give a very regular and uniform air to the older streets of Bologna, and the builders of the newer quarters have followed the same style, especially in the buildings on the streets leading from the station to the heart of the city.

Brickwork and terra-cotta in the Gothic style are well exemplified in the old Mercanzia and S. Petronio. The early Renaissance work in the same material is principally in evidence in the palaces of the Pallavicini class, and it only remains in this connection to show one or two specimens of the work of the eighteenth century in the same material. The Church of the Madonna di S. Luca, built by the architect Carlo Francesco Dotti in 1731, which stands on a high hill outside the city wall, is one of those

DETAIL, PALAZZO FAVA, BOLOGNA.

ambitious affairs which seem to recall the airy conception of an architectural school rather than a solid construction of brick and mortar. Nevertheless the first

PORTAL, PALAZZO PEPOLI, BOLOGNA.

view of it conveys a decidedly pleasing impression to the visiting architect, who seems to experience the sensation of seeing one of his student projets actually carried out before his eyes. The main dome of the church with its encircling loggias and pavilions, brilliant in light and shade, makes an extremely interesting composition, which, like all other unfinished buildings, gains in interest by leaving something to the imagination. The only other example that I shall show is the apse of S. Domenico, remodeled in the eighteenth century, and decorated with seven Doric pilasters. The best part of this illustration is the picturesque Italian cloister, whose ample aisles and groined ceilings seem to personify the very type of the monasticism of centuries.

The brick architecture of Bologna is always dignified. Very little of the riotous character of some of the northern work appears. The great portal of the Palazzo Pepoli,

PALAZZO COMMUNALE, PIACENZA.

a short distance from the Piazza, is one of the best examples of this. Nothing could be simpler or more powerful than the great plain arch rings of sturdy bricks, with the firm and decided lines of the encircling ornamentation; and what is found here is typical of all the rest of the Bolognese work.

The Public Palace of Piacenza has been so often illustrated that a lengthy description here would be out of place, and yet when the subject of Italian town halls is mentioned probably that at Piacenza springs first to every one's mind. Certainly no building expresses better the energy and independence of the old Italian municipalities than this glorious monument of Gothic art, a monument that stands as an eternal example of possibilities of good brickwork in the hands of a master. It is impossible for us to refrain from showing this grand old building, fronting sturdily on the market place of the brown old town above the rococo statues of the decadent worthies of a later age, as if to contrast the virile spirit of the early municipalities with their subjection under the later despotisms.

Architectural Practice,—an Art and a Business.*

"What is good for the swarm is good for the bee."

THERE exists a belief as vague as it is general and possessed of all the tenacity of an agreeable religious faith, that the practice of the architectural profession, that is to say, the designing of buildings and supervision of their construction, is a fine art; that it consists of certain mysticisms executed largely with pencil and paper, and is governed by an intangible something held rigidly fast by fixed recipes, either of ancient tradition or of modern schools, which must not be contravened; that the architect is a fantastic dreamer, and that ability in design and capacity for business are fatally antagonistic qualities and impossible of friendly association in the same brain; that architects, in order to be good architects, must be steeped in an intoxication of ornamental forms made respectable by old age, with minds almost closed against progressive thought, and above all without disciplined mentality or ordinary business habits. Also that an architect is some manner of picture maker, one who can tell plausible lies in perspective or in "rendered elevations with accurately cast shadows" with equal facility, and that he may ignore every tenet of manners, customs or of common sense which all other men following any other profession or business are bound to and do respect. In short, that the architect is a creature of moods and emotions, and as these elements have neither responsibility, quantity nor standard, he is therefore himself unaccountable, unsubstantial and unreliable. This is all pretty much a delusion, and although I am aware that it is a dangerous thing to disturb comfortable beliefs for the substitution of disagreeable facts, things which involve readjustment of personal philosophy and contain a promise of work ahead, because the fallacies are harmful and the causes of conditions that are deplorable and injurious to the profession and its practitioners and constitute obstacles to the progress of art which are otherwise insurmountable, they ought to be exploded. The first fact is that instead of our successful architects as a whole constituting a class of befogged dreamers they are in reality fully as keen and of as large capacity in the business of money getting as any other constituency in American affairs.

As we cast an eye over the personnel and work of the architects of the country of whom it may be said that they have achieved success, we find the number of those successful by artistic qualities alone a minority so small as to become relatively a negligible quantity. Upon the other hand a large majority have achieved worldly distinction as successful architects purely because of business capacity. In other words, the practice of architecture, by reason of conditions over which the profession as such had no control, has been a business rather than an art. In this connection it is perhaps proper to say that there is also a distinct class of practitioners who, owing their successes primarily to social position, make the simple error of ascribing their successes preferably to artistic

* A discourse before the New Jersey Chapter, A. I. A., April 17, 1902, by J. F. Harder.

merit. Of course without the quality of business acumen upon their own part or upon the part of friends or family the presumed artistic merit would have remained long in obscurity. The only point made here is that these instances should evidently be counted with the majority of business successes rather than otherwise. While there have been and are architects who adhere to the pet delusion before recited, and others who have conveniently indulged it for business profit, there are also those who with great sincerity make not the slightest pretense that their successes are founded upon anything other than superior business ability. Of these it may be said that they have no delusions at all and deceive neither themselves nor others. They were and are business men engaged in gaining money by practicing the business of architecture. They employed men of such artistic ability as were to be found, as their business demanded such, and paid them well. Now there are those who affect to believe that there is something in this last condition which is wrong and reprehensible. I do not share this belief. I cannot find reason to reproach those who achieve success because they are forceful business men, provided that they practice their business under fair and honorable methods and do not sail under false colors. I prefer to learn something from the evidence furnished by those examples of many of our architects whose names and works have become familiar. The deduction which I make is that the ordinarily accepted belief of a successful architect's composition is a delusion, and that business capacity on the part of the architect, under the organization of modern society, is a prerequisite to his success and consequently to the progress of architectural art. The reason for this is quite apparent. The architectural opportunities fall to those who are preëminent for business rather than artistic ability, and thus it is they who build the architecture of the country, good, bad or indifferent. The architect must be a business man first and an artist afterwards.

Now of course it must be admitted that the condition is a happier one when the architect-designer is at once his own business-architect, an individual fitted by understanding, character and training for the divers demands of daily practice. Environment and demand tend to produce the peculiar combination of equipment required, but right in this connection the peculiar anomaly is presented that normal evolution is often diverted by the errors of advisers and teachers who, themselves victims of hereditary prejudice and not sufficiently close to active practice, have failed to analyze and understand the precise position of the art in modern systems, do not know what is the matter, and have therefore driven unconsciously but persistently against the current of least resistance. No one can say that the pressure of active normal causes assisted rather than diverted by extraneous forces would not rapidly and adequately produce results qualified to fit the conditions of demand.

The practice of architecture is unique in that its function is so thoroughly misconceived by both practitioner and public. It is variously regarded as a business, a fine art, a science, a trade, an occupation, and often as a pastime and recreation. But it is the profession of architecture alone which is important and by which the body social is affected and involved. The profession of architecture results from the union of the art of architecture with the business of the architect. It is thus only by the advancement of the profession that the art may progress. It is only by the perfection of business discipline that the profession may be advanced.

All the discourses upon archæology and history, upon form and color, all the abstract theorizing concerning the beautiful, can have no material effect upon the art architecture of the nation. If this can be affected at all it could only be by some force acting upon the body of professional men who produce it and who are responsible for it in the sum total.

There is much thoughtless complaint and alarm at present concerning the growing invasion of commercialism into art. Analyzed this means nothing at all. Commercialism, far from being antagonistic, is, upon the contrary, friendly to art. Commercialism deals only with the finished product of art, and if it has any interest at all it would naturally be to desire the best art in order that it should command the largest profits. If commercialism could affect the conditions under which art is produced it surely could only be in the direction of improving those conditions and to accomplish the security and satisfaction of the producers to the end of encouraging the very highest quality of art production.

Let it be conceded that the condition thus proven by the past and present must inevitably continue in the future, and that the practice of the architectural profession is of such character, involving as it does business transactions of the highest importance committed to the care of its practitioners, that business methods and capacity on their part are inexorably demanded. It is this condition, peculiar to our profession, which makes the establishment of orderliness relative to business affairs particularly important, and it is to this demand for double qualifications upon the architect and the failure of the profession collectively to realize in a large sense either the condition or the demand that the deplorable lack of ethical progress in business questions relating to the profession is to be ascribed.

While it is true that architects individually have understood their business interests very well and have been at least as enterprising in advancing their personal affairs as most American business men, it is also true that collectively they have been and still are tardy in recognizing that advantage and advancement for the profession as a whole and to themselves as members of it which resides in collective action and agreement. They apparently are still unaware that the crude resultant of many individual self-interests is not identical with collective self-interest or the general welfare, and that collective self-interest is preferably to be intrusted with the welfare of the individual, even to the extent of guarding his selfish personal interest better. Society is founded on individual selfishness, but it is understandable that this may be either enlightened or ignorant.

What is good or bad collectively is also favorable or unfavorable individually; and what is to the advantage of architects as a whole is equally to the advantage of the individual practitioner. No one may violate the laws of good practice for presumed personal advantage without working a tenfold injury to the profession and thus to the cause of art advancement. In every case the injury reverts to the individuals, guilty and innocent alike. If all violate the tenets of good ethics, whether innocently or through intent or ignorance does not matter, then there can be no ethics or business orderliness and no foundation under the conditions of modern social organization for a wholesome development of characteristic architecture. How can a thinking and intelligent public be expected to respect and gain serious confidence in architectural art if its practitioners, although of great capacity individually, have not collectively reached a sufficiently elevated ethical plane to raise their profession out of the mire of degradation and suspicion and made it worthy, dignified and deserving? Now so far as questions relating to the art of architectural design are concerned these must remain with the individual alone. An art work is inseparably identified with the one who is responsible for its creation. This is a matter of personality and of the emotions, and is not amenable to rules, laws, codes and constitutions. The artist takes the raw material, infuses it with his glorious genius and there is created a work of art. Placed upon the market it at once becomes an article of merchandise. It is entitled to be created under the most favorable commercial conditions and to command the highest monetary reward that the market affords. The greater the remuneration the more substantial the recognition of and compliment to the skill of the artist. This consummation is a blessing both to the artist and to the public. But the questions of business, dealing not with the imagination or emotion, but exclusively with commercial relations, contracts, codes, charges, laws, ethics, rights, responsibilities and things of quantity and quality definitely fixed and tangible, under which, if rightly ordered, all are benefited, elevated and protected and under the neglect of which all suffer alike, are on the other hand, while also of individual concern, much more so that of the collective body and of the public as well as of the state. These are entitled to and they demand rigid establishment, maintenance and control.

The process known as architectural competition has worked more harm by degrading professional practice and corrupting practitioners than any other one cause, but the prevalence of these competitions and their attendant well-known gross abuses can be attributed to only two causes — the presumed necessity for them in public work under republican institutions and professional infirmity ethically on the part of architects collectively. The former is probably a fixed condition. The latter is one which can and must be removed. Is it not common knowledge that nine tenths of the competitions which take place are mere fraud and jobbery from inception? Then why do we permit the disgrace to continue? Is it because we are without the desire, or because we lack the moral courage to resist; or is it because such fine architecture results that the rotten system should not be disturbed? Because architects believed that by participating in these operations, often partaking of the nature of criminal conspiracies of more or less seriousness, where one hundred competed, one might to his immediate gain win a commission, although some one must have secured it eventually in any case, they have not learned that they injure themselves by destroying their prestige and by the loss of confidence and respect of the public. Competitions are not harmful when conducted under conditions recognized as just and equitable under the laws of contests and subject to conditions established upon ethical principles; that is to say, when conducted upon plain business principles and not upon architectural disorderliness.

Better conditions of practice under which the profession may improve and the art prosper can be obtained only at the cost of investigation, labor and time. The establishment and maintenance of sound business principles, ethics of professional conduct and standards of probity and fitness, although a long and difficult undertaking, should nevertheless be attacked with vigor. We must conquer hereditary prejudice and ignorance as well as the cowardice for which art is historically noted. The first step must consist in the recognition of abstract principles, their concrete application to the more grave existing evils, permanent relief from these, and finally the amelioration of lesser abuses and the establishment of advanced ethics. Among the specific measures awaiting action are: first, a wider, more representative and effective organization of practitioners; second, state regulation of practice and registration of practitioners; third, a code governing competitions; fourth, a code of ethics of professional practice; fifth, reconstruction of schedule of charges. All of these are important and each requires thorough analysis and enlightened treatment.

The closer consideration of each of these subjects passes the limits of general discussion; each requires official resolution and action by such organizations as already exist, and upon the part of active practitioners stirred by awakened conscience, interest and understanding. Ethical advancement depends upon something more, however, than mere advocacy. The action of individuals and organizations and the machinery of state power may contribute to its realization, but it can only result from deeper understanding upon the part of the practitioners collectively. A campaign of education is the first necessity. The debate must be before the forum of the entire profession, the men who build the nation's work in city and country, palace and barn. Enlightened self-interest must displace narrow individual selfishness. In this connection a recent discourse by President Hadley of Yale is interesting and prophetic. He says:

"People see the vast business corporations, they see these combinations in politics, they see what is and what is not accomplished by what the world calls success. Very few take these things to heart, but it is recognized that liberty won't do everything that was expected of it once. Some persons want to go back to authority, but that is past. What shall we do?

"We must rely upon the development within the individual of a sentiment identifying our welfare with that of the community. The lesson of trusteeship is what we need and what I believe the world is ready to accept as a principle."

Practitioners must eventually comprehend that they are best benefited individually by what is best for them collectively, and that what is best for them is also best for the public and for good architecture. While it is true that there will always remain some obstreperous practitioners, these will constitute a disappearing minority.

The assumption may be relied upon that enough self-respecting practitioners can be brought to agreement to develop a professional solidarity. While organizations must be relied upon to contribute much towards results, the professional organizations as existing at present are entirely insufficient either to establish or maintain new conditions. Upon the other hand it is not necessary to resort to the organization of a trust, monopoly or trades union, even were this possible in the premises, which is not the case.

Even the modern trust, however, does not attempt to stifle all competition. The fact is that there are many kinds of competition which not only kill the competitors but are hurtful to the community. The approved trust attempts to substitute for a faulty and destructive competitive system which does nobody any good, an orderliness and economy based upon a comprehensive and analytical understanding of the whole subject and all the parties affected, in which personal merit shall receive its full measure of opportunity and deserts, under which the greatest benefit may accrue to the largest number and which renders the best possible service to the public.

The business method of the nineteenth century found expression in the much-abused maxim, "Competition is the life of trade." When the competitive system wrought abuses which threatened to destroy and did destroy that which it was presumed to protect, the twentieth century adopted a modification of the system upon the discovery that "Competition is the death of the competitor."

Competition lies at the very foundation of human progress. It is a condition which is fundamental and must always remain. But its control may be perfected. No one can object to a just and reasonable regulation under which the greatest usefulness results to society and abuses are eliminated.

To sum up, the ethical advancement of the profession lies in the hands of its practitioners collectively; its members have proven by their great individual competence that they are fully able to deal with the subject effectively if they but will to do so. The profession owes this duty to itself and to the public, out of devotion to architecture and because of national patriotism.

As the past is brought nearer to us by wider investigation, and its glories are uncovered in their real significance, it becomes ever more apparent that the only art deserving of the name is that which is representative and expressive of its nations, peoples and races. The slavery to tradition, the mannerisms of schools, the fixedness of styles, contribute but an obstruction to normal evolution. The best of any art, and the only art that ever was, is that which nations, peoples and races had made for themselves out of themselves to meet their necessities, and not that which had been taken from others. Any kind of rationalism is better than all kinds of imitation.

May it not still transpire that it is not an idle dream that American architecture may yet be constituted upon truth instead of delusion, reality instead of imitation, knowledge instead of ignorance, art instead of mechanism, and beauty attendant with a capacity to enjoy it? that a people may have an architecture belonging to their own life, an attribute only of ancient civilizations and a distinction belonging to no nation of to-day?

Fire-proofing.

The Insurance Companies *versus* the Insurers and the Building Laws.

BY WILLIAM COPELAND FURBER.

THROUGHOUT the principal cities of the East and possibly also the South and West a heated discussion has been going on regarding the recent action of the insurance companies in raising the rates of insurance on property in the business sections of the cities and in sections contiguous thereto, and a great deal of this discussion has been futile because the facts were unknown and therefore the discussion was beside the point, or if the facts were known, then the remedy which is in sight was ignored. Some of the discussions led to suggestions for legislative action which would compel the insurance companies to cease acting in harmony in maintaining the rates, etc., and other discussions attempted to establish the proposition that with the increasing size of floor areas in buildings with wooden interiors such additional precautions were always taken by the occupant that the increased hazard was eliminated by the use of fire-fighting apparatus, etc.

The discussion in Philadelphia has been widespread, and a great deal of it unreasonable, in condemning the insurance companies as a "trust" in arbitrarily raising the rates because they had the power; and it must be admitted, if this were true, that this sort of discussion might have weight and be worthy of consideration if there were no justification for such action on the part of the insurance companies; because trusts of all kinds which for their own profit arbitrarily raise the price of commodities are to be condemned as doing monstrous moral wrong to the communities which are dependent upon them; yet before the objectors to, and critics of, the present policy of the insurance companies can have proper grace to present their grievances they must show first that their alleged grievances are just and that they themselves are not wholly responsible for the deplorable condition in which they now find themselves with practically uninsurable risks on their hands.

The moral of the Biblical story of the foolish man who built his house upon the sand, which the rains and the floods washed away, is not wholly inapplicable in a somewhat parallel case to the man who constructs his building of inflammable material and then complains of the extortion of the fire insurance companies when they charge a high rate of premium for a risk which he himself is afraid to carry.

Insurance companies are not charitable institutions, and while there may be much to criticise in their methods of doing business and their almost entire lack of inspection of their risks, yet it must be conceded that they cannot be run as commercial propositions if they are run at a loss.

The figures compiled for one of the state governments seem to indicate that the insurance companies have been doing business at a very great loss in the business sections of some of the principal cities, and show that but for the premiums collected in the residence sections there would have been a much greater deficit than now appears.

To take Philadelphia as an illustration: Since 1895 the insurance companies have been obliged to make reports of the premiums collected in that city. These reports show for seven years, from 1895 to 1902 inclusive, that the aggregate losses in the whole city have been $2,904,-370, and the aggregate profits have been $2,147,755, making a net loss on the whole city of $756,615.

Table A shows the business in the city of Philadelphia for a period of seven years. The figures cannot be had for a longer period because it was not until 1895 that companies were obliged to make returns of the premiums collected in said city.

TABLE A.

Underwriting Results in Philadelphia for Seven Years.

Year.	Premium.	Losses and Expenses.	Increased Liability.	Total Losses, Expenses and Increased Liability.	Balance.	
					Profit.	Loss.
1895........	$3,345,371	$2,678,425	$100,361	$2,778,786	$566,585	....
1896........	3,449,089	2,855,679	34,490	2,890,169	558,920	....
1897........	3,474,154	3,643,007	69,483	3,712,490	....	$238,336
1898........	3,452,878	2,576,794	138,115	2,714,909	737,969	....
1899........	3,525,420	5,051,989	176,217	5,228,106	....	1,602,786
1900........	4,184,627	5,038,644	209,231	5,247,875	....	1,063,248
1901........	4,259,036	3,761,804	212,951	3,974,755	284,281	....

Of the total fire losses in the city during the last ten years, about 40 per cent (or $8,076,496) occurred in the congested district; it is estimated that the premiums collected in that district did not exceed 22½ per cent of the total.

In the "congested district" alone the report shows that for the same period the aggregate losses have been $4,116,315, and the aggregate profits have been $505,904, making a net loss in the congested district of $3,610,411.

Table B shows the business in the so-called congested district for a period of seven years. Figures for the preceding years are not accessible for the same reasons as stated in Table A.

TABLE B.

Showing Results in the Congested District of Philadelphia for Seven Years.

Year.	Premiums.	Losses and Expenses.	Increased Liability.	Total Losses, Expenses and Increased Liability.	Balance.	
					Profit.	Loss.
1895........	$669,074	$503,444	$20,072	$523,516	$145,558	....
1896........	689,817	404,286	6,898	411,184	278,633	....
1897........	694,830	1,949,182	13,896	1,963,078	....	$1,268,248
1898........	690,575	589,219	19,623	608,842	81,713	....
1899........	705,084	2,083,339	35,254	2,118,953	....	1,413,869
1900........	1,046,156	2,404,496	52,307	2,456,803	....	1,410,647
1901........	1,277,710	1,239,306	61,965	1,301,261	....	23,551

It will be noticed that the net losses in the congested district are almost five times as great as the total net losses; and this is because the premiums in the city taken as a whole reduced the loss in the city taken as a whole.

It is also estimated that for the eleven years 1890 to 1900 inclusive the profit and loss on the underwriting business in the United States has been: Aggregate losses, $64,097,569; aggregate profits, $37,151,764; net loss in eleven years, $26,945,895; estimated total loss in 1901, $19,000,000.

Table C gives the results of the business throughout the United States at large. It is compiled from the records of the insurance department of the state of Pennsylvania, and contains the total business, wherever done, by all the companies that report to that department. This is for a period of eleven years.

TABLE C.

Underwriting Results for Eleven Years.

Year.	Premiums.	Losses and Expenses.	Increased Liability.	Total Losses, Expenses and Increased Liability.	Balance.	
					Profit.	Loss.
1890........	$108,575,963	$97,985,373	$5,689,278	$103.674,651	$4,901,312	....
1891........	115,360,298	112,323,698	10,884,979	123,208,677	....	$7,848,379
1892........	127,378,316	124,828,489	9,399,022	134,227,511	....	6,849,195
1893........	129,868,228	134,922,806	5,259,759	140,183,215	....	10,314,337
1894........	127,048,726	121,372,431	2,834,926	124,207,357	2,841,369	....
1895........	129,846,968	120,194,471	3,690,444	123,884,915	6,042,053	....
1896........	131,582,111	119,485,940	1,267,969	120,753,909	10,808,202	....
1897........	135,544,253	120,485,351	2,400,074	122,885,425	12,558,828	....
1898........	136,192,286	133,698,958	5,050,194	138,749,152	....	1,556,866
1899........	142,064,985	157,447,554	7,086,799	164,534,353	....	22,469,365
1900........	141,076,787	149,768,793	6,367,821	156,136,214	....	15,059,427

The *third* column, "increased liability," shows the difference in liabilities of the companies at the close of the several years by reasou of increased premium reserve, unpaid losses, etc. The *fourth* column aggregates the losses, expenses and increased liability; the difference between this column and the *first* column shows the profit or loss for the year in the underwriting business.

The result for 1901 by "The Spectator" tables shows a loss on the underwriting of $11,290,109, to which must be added the increased liability (column 3 above), say $7,500,000, or a total loss for 1901 of about $19,000,000.

These figures are taken from a circular compiled by Mr. George E. Wagner, president of the Philadelphia Underwriters' Association, on "Why the Rates have been Advanced." Where estimates have been made they are believed to be correct; where other figures are given they are taken from the records filed with the state government.

One does not have to be so very bright or apt in figures to see that the insurance business has not been exactly a money-making enterprise and that it might have been better for the companies had they indulged in some pleasanter way of spending their money; therefore one cannot fail, in the face of these figures, to understand why the rates of insurance have been advanced.

Having taken a look at the facts, let us now look about for the causes which have produced these results and see if a remedy can be found. Let us say first that the losses which the insurance companies have suffered they partly deserve to suffer; and if that seems harsh or severe let us modify it just a little by saying that perhaps they brought it about, or part of it about, by their own shortsightedness, acting in ignorance of the inevitable result; or if that statement makes it appear as if the critic considered himself superior, let us say that in the commercial instinct to get business, fire-proof buildings not affording a sufficiently lucrative field, they rather favored less imperishable forms of construction, basing their judgment on the past, when buildings occupied relatively small areas and losses were few; but their recent experience has proved that their judgment was wrong and that large premiums are frequently followed by large losses.

Let us be reasonable and say that the insurance companies were acting on what they thought was good business judgment in giving such rates of insurance on buildings with interior construction of combustible material, that the owner found it also good business judgment to allow them to take the risk, and pay the premium on such risks out of the money he saved on cheap construction; but the figures show that the insurance companies have paid very dearly for their experience.

Now that we have progressed thus far, we have the facts which show the losses; we also now know that the insurance companies have realized that they were wrong in making the premiums so low on combustible buildings that it led to the multiplication of such buildings, and we also now know that in endeavoring to make themselves whole they have advanced the rates enough to make good their losses, which is the only natural thing for them to do; and while this action on their part may seem harsh, yet it must result in better construction of buildings, which might have come about long ago had the insurance companies been wise; but as hindsight is easier to the eyes than foresight we will not discuss this point any further; and if a better class of buildings result from their action we must thank them, even if they have been delinquent in deserving our thanks.

If the insurance companies make reply, as they do, that they are not responsible for the present state of affairs, that they can only insure what they find, let the answer be this: that they have now discovered the premium they were charging on combustible risks has not been sufficient to cover these risks and that they are now trying to make a rate that will cover them; consequently, as their rates are now high, it does not take a prophet to discern that having now discriminated against this form of risks the man who proposes to build will consider his insurance more carefully than he formerly did, and that as a result of this consideration wooden interior construction will give way to fire-proof or non-combustible construction.

But entirely aside from the insurance phase of this discussion, the community itself should take action and by proper laws prevent the waste now going on in our cities caused by these unnecessary fires.

With the increase of the size of establishments for retail and wholesale trade and manufacturing purposes in the cities demanded by modern conditions, the fire hazard has been so enormously increased that combustible buildings should not be allowed to be used for such purposes; for with these great areas, if fire once obtains a headway it is impossible to extinguish it because of the inability, on account of the heat, to get close enough to put on water, and it must therefore burn itself out before it can be controlled. When the floors of buildings were only say 50 feet wide by 150 or 200 feet in length, enclosed by brick walls, it was not a difficult thing for the firemen to keep the fire entirely confined to the building in which it originated; but with the areas of 80,000 square feet, not divided by fire walls, a condition not uncommon in our large department stores, the spread of the flames would be so rapid that before the firemen arrived the building would probably be doomed, and the loss of life which would undoubtedly result and the damage to which such a fire would subject the surrounding property, are sufficient excuses for the most radical legislation on the subject of large areas in combustible buildings.

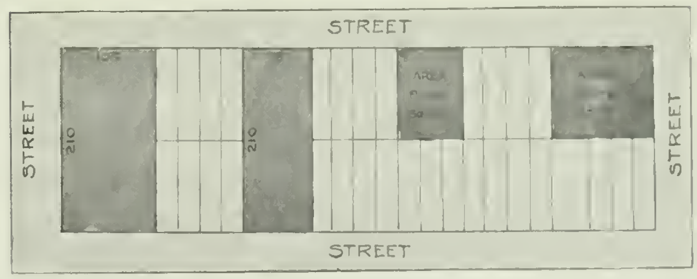
Philadelphia is suffering at present from a lack of proper building laws to meet the modern conditions. The existing laws were framed when the congregation of large department stores around a common center could not have been foreseen; but owing to the lack of preventive legislation the business section of the city, now called "the conflagration district," has been called upon to pay an increase of insurance in district menaced by the department stores. Buildings with wooden interior construction, with great undivided areas, form such a serious and threatening danger to the neighborhood that the business section of the city is now at the mercy of the owners of these buildings. It is needless to point out that this danger could have been avoided had it been foreseen, but having now been demonstrated, the remedy is to restrict the size of the floor areas or to insist upon absolute fire-proof construction.

In this connection it is interesting to note the provisions of the building laws of Greater New York on the permissible areas of non-fire-proof and fire-proof buildings.

"Non-Fire-proof Buildings.

"In all stores, warehouses or factories, in case iron, steel or wood girders, supported by iron, steel or wood columns or piers of masonry, are used in place of brick partition walls —

"The building may be seventy-five (75) feet wide and two hundred and ten (210) feet deep. When extending from street to street, or when otherwise located, may cover an area of not more than eight thousand (8,000) square feet.



LIMITING AREAS OF NON-FIRE-PROOF BUILDINGS IN NEW YORK CITY.

"When a building fronts on three streets it may be one hundred and five (105) feet wide and two hundred and ten (210) feet deep.

"Or if a corner building fronting on two streets, it may cover an area of not more than twelve thousand five hundred (12,500) superficial feet, but in no case wider nor deeper, nor to cover a greater area except in the case of fire-proof buildings.

"An area greater than herein stated may, considering location and purpose, be allowed by the Board of Buildings when the proposed building does not exceed three stories in height."

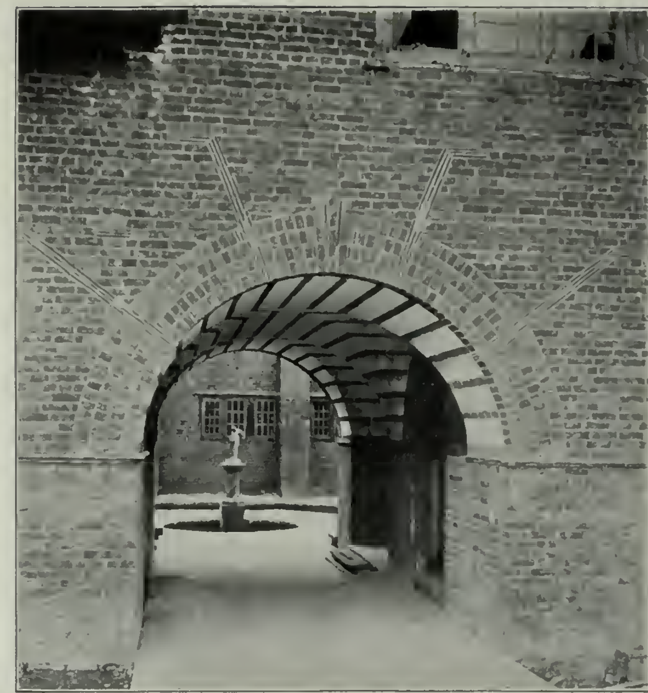
It will be noticed that the building laws make no restriction on the ground areas of fire-proof buildings, and if a further argument in favor of fire-proof construction is needed here it is.

The New York City building laws in this respect furnish a model which may profitably be followed by other cities. The conditions under which many business enterprises are conducted to-day require large floor areas unobstructed by walls, this fact is recognized by these laws and concession made to it by permitting such areas under the only condition upon which they are safe, — which is, that the structure shall be fire-proof.

Architectural and Building Practice in Great Britain.

BY OUR SPECIAL REPRESENTATIVE.

FOR some months past the problem of bricklaying has been before the public. The discussion was started by the *Times*, whose statements, despite all the generalizations of labor leaders and socialists, have been upheld; and very serious statements they are. The *Times* contended that there was a steadily growing disposition among bricklayers to "ca' canny" or "go easy" and that trade-unionism was responsible for it, the system in its mildest form keeping the strong, efficient and willing worker down to the level of the weakest and most inefficient, and in its worst aspect amounting to deliberate loitering. Moreover, wages and the price of materials have both substantially increased of late years; so that the combined effect has been to increase the cost of building enormously. Ten years ago a plain brick wall could have been erected for £12 ($60) per rod (272 feet); to-day the same wall would cost £20 ($100). Allowing for the increased price of bricks the average cost of labor alone in brickwork (exclusive of pointing) has risen from £3 ($15) to £6 ($30) during the period mentioned. Innumerable instances could be cited to prove the truth of these statements, but I will content myself with one more only, taken from the experience of a Leeds master builder. Two years ago he had a certain contract in hand which cost about £70 ($350) in labor. At the beginning of this year he was carrying out an identical contract, but the labor cost £15 ($75) more, "on account of the men not doing the work as they should do." No reasonable person with a knowledge of the facts would deny that the workmen have just as much (if not more) right as the masters to combine into unions, and they have doubtless secured many benefits from such an amalgamation; but it is impossible to shut one's eyes to the present condition of things, a condition under which both masters and men regard one another with suspicion and distrust, resulting in disputes and lockouts which are detrimental to the best interests of both parties. At Bath a short time ago one hundred masons and bricklayers left a job rather than work with five society men who had not paid certain penalties. The five refused to pay, the firm would not discharge them, and so the whole one hundred struck work and remained out till ordered to return by the local officials. This is what is constantly happening. To make matters worse a dispute often occurs among the different trades as to who should do certain work: a plasterer may object to a bricklayer putting down some "granolithic" stable-paving, or the bricklayer may take it into his head that roof-tiling is his work and not the tiler's. There are many unwritten laws among the bricklayers, and one of them is concerned with the mystic words "sail-ho" and "spell-ho." The former is the signal that the foreman or employer is in the vicinity, and then the clink of the trowel can be heard one hundred yards off; but when the overseeing presence has departed the latter word brings the men back to their normal slow speed of work. One bricklayer has attempted to explain why fewer bricks are now laid by instancing the nine-hours day as against the ten and one half of old, and the disappearance of the jerry-built front with its stucco veneer; but this is not a satisfactory explanation, though partially true. That a much greater number *can* be laid by British bricklayers is now proved at the immense new works being erected by the Westinghouse Company at Manchester. Here the men are paid good wages, they are well supervised and



ENTRANCE TO COURTYARD, HOUSE AT SONNING.

GARDEN FRONT, HOUSE AT SONNING, READING, ENGLAND.
E. L. Lutyens, Architect.

they are aided with mechanical appliances, with the result that instead of three hundred or four hundred or even six hundred, we find each man laying an average of eighteen hundred bricks a day *on face work* — as many as twenty-two hundred and fifty are laid on common work. These are American methods, and their effectiveness is in marked contrast to the ordinary conservative methods of this country.

One of the most able of modern English architects has recently died — J. F. Bentley, a great builder in brick, like the late James Brooks. Mr. Bentley was a man of strong individuality and masterly talent, in this respect resembling Butterfield; but owing to a retiring nature and a rooted dislike of publicity his work is comparatively little known even among architects, though latterly his great Roman Catholic cathedral at Westminster has brought his name before the public. Architects of his character become famous only after they are dead. Mr. Bentley resembled Mr. H. Wilson in his versatility, for in addition to being an architect he was a painter, a worker in stained glass, a designer and a craftsman, and one could wish for no better example of this wide range of talent than the Church of the Holy Rood at Watford in Hertfordshire. He will, however, be chiefly known by his cathedral at Westminster, into which he "built his life." Mr. Bentley's death was tragic. To all appearances he was well and hearty on a Friday, yet the next night he died of paralysis in a friend's house in London. He had been seized on two previous occasions, and one who knew him well has set down how Bentley would stand evening after evening in the shade of his great tower, gazing long and fixedly at its gradual advance to completion and then turning away with a sigh at the belief that he would not live to see his designs carried out in their entirety. Moreover, the tragedy was heightened by the fact that on the following Monday a special meeting of the Royal Institute of British Architects had been convened for the purpose of nominating him as the recipient of the Royal Gold Medal "for his work as an architect"; but he is now beyond such honor. Americans may perhaps like to know that he left completed designs for the new Roman Catholic cathedral to be erected at Brooklyn.

"CROOKSBURY," FARNHAM, SURREY, ENGLAND. E. L. Lutyens, Architect.

One of the finest buildings being completed in London is that for Lloyd's Register of British and Foreign Shipping, designed by Mr. Collcutt, the architect of the Imperial Institute at South Kensington. In richness of ornamentation and detail there is only one other commercial building in the city that can compare with it — the Hall of the Institute of Chartered Accountants, on which the late Harry Bates did such splendid work. Mr. Collcutt has called in the services of Mr. George Frampton, A. R. A., to execute the sculptured frieze on the main façade, the gates and other metal work, while Professor Moira (professor of design at South Kensington), Mr. F. Lynn Jenkins, Mr. Henry Pegram and other well-known artists have combined to produce a very beautifully decorated interior.

In February last a paper of unique interest was read before the Architectural Association, unique as being the first paper read by a lady before such an association in this country. The subject was "A Plea for Women Practicing Architecture." The results of women candidates at university examinations are indeed remarkable, and there is no denying the possibility of similar success being attained by them in architecture. There are, however, limitations of sex, not the least of which concerns the necessity of going on works and directing contractors. The subject is too wide to discuss here, and I will therefore simply sum up the opinion that if women enter the profession they will probably find it inevitable for them to restrict themselves to the office or to decorative work, leaving the rougher and outdoor work to "mere man." Several ladies have passed the architectural societies' examinations here, but none really practice on their own account.

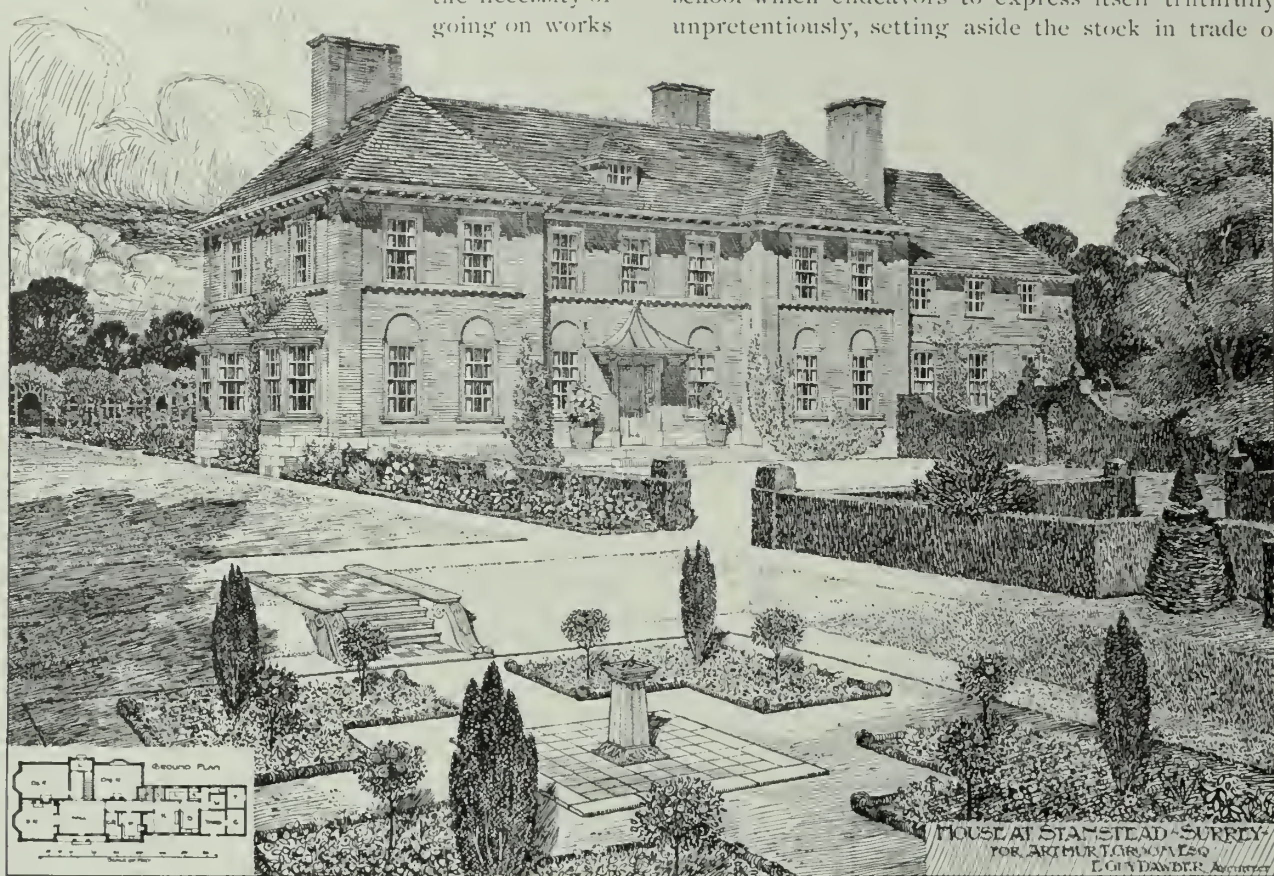
Besides what I have already mentioned there is nothing of special interest to record. The Queen Victoria Memorial Fund has not yet reached £200,000, so there is little hope of the work being completed; it has not been begun up to the present. For similar reasons the new cathedral at Liverpool, about which there has been so much controversy, is not likely to be built just yet.

In conclusion I may refer to the accompanying illustrations:

Mr. Lutyens is a brilliant member of that younger school which endeavors to express itself truthfully and unpretentiously, setting aside the stock in trade of the ordinary architect. The examples illustrated clearly show this. The house at Sonning derives its beauty from the excellent proportion observed and the "function" expressed in each feature. The lighting of the inner courtyard, with its little statue, is particularly happy.

Mr. Guy Dawber is well known as an architect of country houses, and the design of the house at Stanstead is a good example of his work. The plan of the house is evident from the exterior, which is treated in that restrained, almost severe manner that lends such dignity to the houses of the Georgian period.

Shoreditch Public Library, Baths and Wash-houses are built of bricks and Burmantofts terra-cotta. Some of the interior decorative work is by Professor Moira and Mr. F. Lynn Jenkins.



HOUSE AT STANSTEAD, SURREY. E. Guy Dawber, Architect.

SHOREDITCH LIBRARY AND BATHS, LONDON, ENGLAND.
Henry T. Hare, Architect.

Selected Miscellany.

Color in Architecture.

BY H. B. PENNELL.

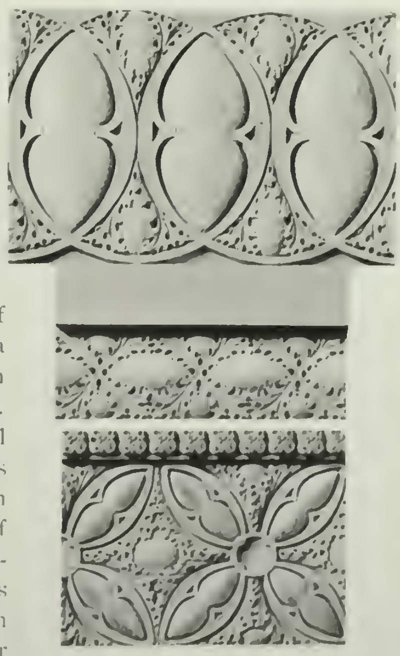
BOSTON, like many other American cities, was once a city of red brick and brownstone, but now it is fast losing this character, owing to the larger use of light-colored building materials which the architecture of to-day has demanded. Then, too, the great wealth and variety

DETAIL BY SASS & SMALLHEISER, ARCHITECTS.
New Jersey Terra-Cotta Company, Makers.

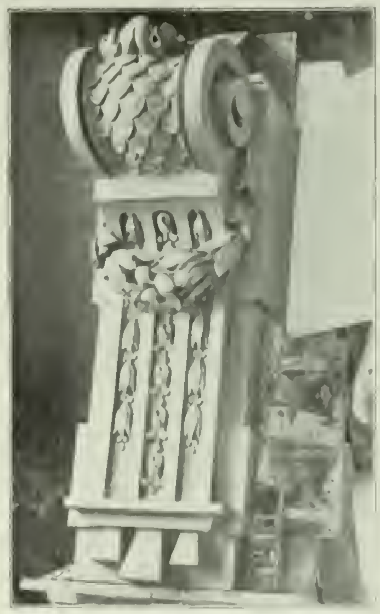
of building materials in America has been an important factor in changing the use of color in cities, and is largely responsible for the present patchwork appearance of our streets. Add to this the individualism, the keynote of American life, which is felt even in our architecture, and we can readily see why uniformity of color is not possible and not to be expected in our buildings, even if that were an artistic necessity. There are those who maintain that monotone is the only ideal and dignified treatment of an exterior. There are countless examples in architecture, both here and abroad, which could be cited to substantiate this theory; but dignity and grandeur are not the only possibilities in architecture — there are picturesqueness and quaintness for example, which, in their proper places, have a charm of their own.

DETAIL BY E. J. LENNOX, ARCHITECT.
Perth Amboy Terra-Cotta Company, Makers.

Paris is an example of a city whose buildings are largely monotone, owing to the uniform use of Caen stone. The impression of Paris is that of a soft gray city, from one end to another. In the slums as well as on the Champs Elysées the warm neutral color of buildings is wonderfully harmonious with Nature, with its gray skies or blue, in summer or in winter, by night or by day, and makes a background for the innumerable trees, bright-colored awnings, shutters, balconies, and the color in its street life. It is safe to say that this ensemble of neutral color, enlivened by brilliant bits of color, is one of the lasting impressions of this gay city.



DETAILS EXECUTED BY EXCELSIOR TERRA-COTTA COMPANY.



DETAIL EXECUTED BY THE NEW YORK ARCHITECTURAL TERRA-COTTA COMPANY.

The reasons for this color are evident. The quarries are close by, the stone when quarried is very soft and easily worked, and the building laws are also rigid in prescribing the use of material as well as the height of a building. There are many towns in Italy and Spain where the materials closest at hand have determined the characteristic color of the place; but these instances of uniformity, attractive as they are, do not mean that London is not quite as interesting from its variety of color and architecture, or that an architect should always work in one material. It would be quite as logical to expect an artist to paint pictures only in monochrome.

Building materials make up an architect's palette just as pigments are used by an artist. Marble, granite, limestone, brownstone, various colored bricks, terra-cottas in many shades, bronze and wood, are only a few of the colors in an architect's workbox. The difference between the artist and the architect is that the former applies color to surfaces and the other constructs color, that is, if the color effect is obtained by the use of natural materials. Whether the color of the building is natural or applied will depend largely on its cost and the climate. In the South, pigments can easily form a large part of exterior decoration, while in the North they could only be used in loggias, friezes and soffits. The sky and atmosphere of southern

PANEL BY BARNETT, HAYNES & BARNETT, ARCHITECTS.
Winkle Terra-Cotta Company, Makers.

BUILDING, HUNTINGTON AVENUE, BOSTON, MASS., BUILT OF FISKE & CO.'S ROUGH TEXTURED RED ROMAN BRICK.
Arthur H. Vinal, Architect.

countries also permit of very brilliant colors, while in the North quiet colors have to be used.

The contrast of colors used in large masses must be very slight, and strong contrasting colors used only in small points to give brilliancy. But the effect of strong colors on duller hues has always to be carefully considered.

The size of a building is also necessary to be considered. A small building may be a glowing mass of color, while a large one constructed in the same material would be tiresome. The choice of the dominant color for a building should be most carefully chosen, and theoretically should depend on the surroundings of adjacent objects and buildings; but the real estate of our cities is not yet sufficiently settled to make even this a safe rule. All other things being equal, the juxtaposition of colors is one of the most important elements to be considered, and if harmony is to be the result it should be decided by the architect and not chosen by whims of clients.

One of the niceties of color work in surfaces is this variation in color within certain limits, as Nature varies her colors by many differences in shades and tints. It is this that gives beauty to color in brick walls and tile roofs, and one of the chief differences between artistic and mechanical results.

This principle is perhaps best shown on color of exterior in laying brickwork and terra-cottas in diaper patterns. In order to obtain this result the color of the design should receive careful consideration from the first, as the color is quite as important a factor in effect as form or proportion, line or mass. If vivid colors are to form a part of a scheme, large simple masses of color must surround them, and color focused at one point as carefully as an artist would focus the light and color in

DETAIL BY BOLL & TAYLOR, ARCHITECTS.
St. Louis Terra-Cotta Company, Makers.

EPPS BUILDING, BOULEVARD, CHICAGO.
Henry R. Newhouse, Architect.
First story, dark Norman brick. Upper stories, light gold stretchers with dark green, salt-glazed headers.
Furnished by the Columbus Face Brick Company.

BELVIDERE COURT, BROOKLINE, MASS. A MODERATE RENTAL APARTMENT.
Parker & Thomas, Architects.

composing a picture to form a climax. Color should also have a constructive value just as distinct as certain architectural forms express a purpose.

A pier, a dome, a pendentive, a frieze, a lunette, all mean something in architecture, and the color they bear must express this purpose or their meaning is lost. Just how this meaning is obtained is best learned from precedent and history, from which also we find the best authority for the use of color in exterior decoration.

BOOK REVIEW.

AMERICAN GARDENS. Edited by Guy Lowell. Boston: Bates & Guild Company. 1902. Price, $7.50.

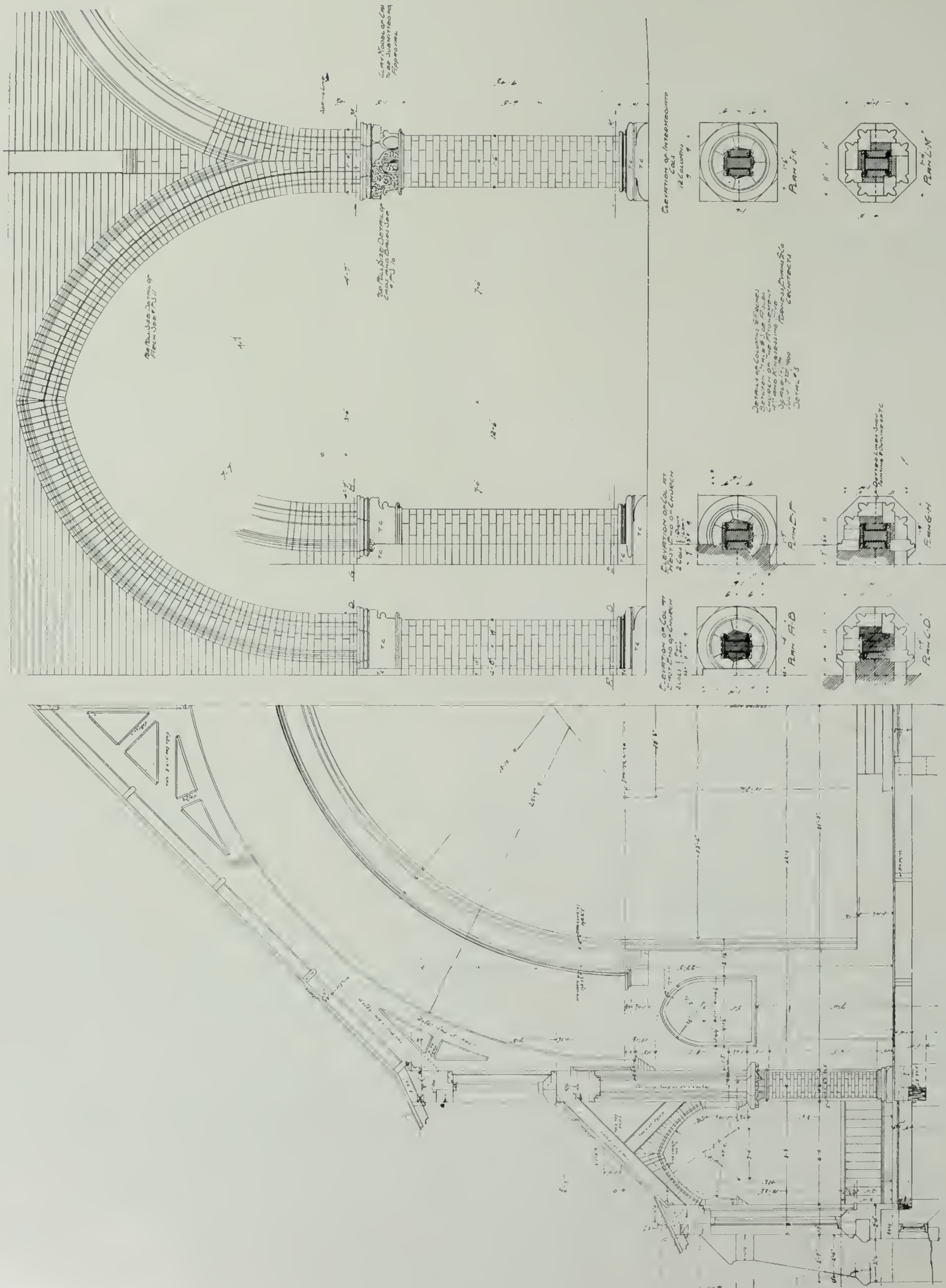
An examination of this volume leaves one amazed at both the quantity of excellent work of this particular description which now exists in our country and also at the admirable manner in which the publishers have been able to present the subjects. A garden has always been a favorite theme and it suggests combinations of light and shade, color and form, which are always entrancing; but in this collection of one hundred and twelve photographs every one is a picture, and a very interesting picture, by

FLATS, ST. GERMAIN STREET, BOSTON, MASS.
Parker & Thomas, Architects.

itself, aside from its merit as a representation of gardening. The views have been beautifully and most artistically chosen, and it is a delight to turn over the pages and study the pictures as works of pure art. It was a thorough artist who stood behind the camera for these plates; none other would be able to choose such a view as plate 47

DETAIL, MONKEY HOUSE, BRONX PARK, NEW YORK CITY.
Heins & La Farge, Architects.
Atlantic Terra-Cotta Company, Makers

RESIDENCE AT GLENSIDE, PA.
H. A. Jeckel, Architect
Built of Kittanning Roman-size brick. O. W. Ketcham, Philadelphia Agent



CROSS SECTION, LOOKING EAST.

DETAILS OF COLUMNS AND ARCHES BETWEEN NAVE AND SIDE AISLES.

CHURCH OF THE ATONEMENT, PHILADELPHIA, PA.
Furness, Evans & Co., Architects.

in the wild garden of the "Old Place" in Brookline, with its delicious foreground of texture-like tree trunks and fern banks. Carrère & Hastings's work at Indian Harbor has been published before to a slight extent. The Foster house at Lenox is also known in a general way, but aside from these two nearly all of the views are of work which is little known and which needs a publication of this sort to properly present it. We are not disposed to find fault with anything about the work; we could only wish that the estate of "Rohallion" at Seabright might have been more fully illustrated, and the single view of the Hunnewell estate in Wellesley is tantalizingly inadequate to show all its beauties. But, on the other hand, it would be difficult to make a selection of any plates which might be omitted, and even a work of this kind must have its limits. We unreservedly commend this book to our readers.

INTERIOR VIEW, CHURCH OF THE ATONEMENT, PHILADELPHIA, PA.
In which a warm buff shade of brick made by the Kittanning Brick Company (O. W. Ketcham, Philadelphia Agent) was used.
Furness, Evans & Co., Architects.

NEXT ANNUAL CONVENTION OF THE ARCHITECTURAL LEAGUE OF AMERICA.

The fourth annual convention of the Architectural League of America will be held at Toronto, Canada, on Thursday, Friday and Saturday, May 29, 30 and 31, 1902.

The Architectural Eighteen Club of Toronto, hosts for the occasion, and the various committees are endeavoring to secure good speakers and to make the occasion profitable and entertaining.

The topics for discussion will follow in the main those of last year, special attention being given to municipal improvement, architectural education and the various departments of architectural club work.

MANUFACTURERS' CATALOGUES AND SAMPLES WANTED.

The following named architects would be glad to have manufacturers' catalogues and samples sent them: Max O. Jordan, 280 Broadway, New York City; Crowe & Crowe, Wallace Block, New Castle, Pa.; F. F. Parsons, 53 Bitting Block, Wichita, Kan.; Joseph Bell De Remer, Herald Building, Grand Fork, N. D.; Vierheilig & Clarke, 74 Houseman Building, Grand Rapids, Mich.

CRUSHING TESTS OF THE AKRON STAR BRAND CEMENT.

REPORT of crushing tests made by the United States government at the Watertown Arsenal, Watertown, Mass., of concrete blocks made during years 1900 and 1901 with the Akron Star-Brand Cement, the blocks being cubes 12 inches each way, thus making each block one cubic foot of concrete.

There were three blocks of each kind, making 45 blocks in all.

Crushing strength is average of the three.

CEMENT.	SAND.	GRAVEL.	BROKEN STONE.	30 DAYS.	7 MO.	1 YEAR.
				LBS.	LBS.	LBS.
1 Part.	1½ Parts	0 Part	4 Parts	215.833	321.833	332.333
1 "	3 "	0 "	7½ "	150.367	299.167	366.667
1 "	2 "	3 Parts	4 "	161.200	319.867	320.500
1 "	2 "	7 "	0 "	110.267	239.533	264.700
1 "	2¼ "	8 "	0 "	100.467	225.733	232.733

The above report shows the great strength and hardness of the Akron Star-Brand Cement.

The manufacturers claim that no other natural cement

DETAIL BY LOUIS LEHLE, ARCHITECT.
Northwestern Terra-Cotta Company, Makers.

DETAIL BY WILLIS G. HALE, ARCHITECT.
Conkling-Armstrong Terra-Cotta Company, Makers.

INTERIOR OF A PUMPING STATION, PHILADELPHIA.
Lined with Enameled Brick made by the American Enameled Brick and Tile Company.

can show anywhere near such strength and but few brands of Portland cement can go beyond it. A large mass of such concrete could not be crushed with all the weight possible to be placed on it. It can therefore be used with safety for foundations in the largest buildings or other heavy work.

IN GENERAL.

The Ohio Mining and Manufacturing Company will remove their New York offices May 1 to 96 Wall Street. Messrs. Pfotenhauer & Nesbit, 1133 Broadway, New York, have been appointed general sales agents for their brick, the "Shawnee."

DETAIL BY GEORGE K. THOMPSON, ARCHITECT.
Standard Terra-Cotta Works, Makers.

The business carried on for the last three years as B. Kreischer & Sons, P. Androvett, proprietor, has been organized into a stock company under New York state laws, with the following officers: Peter Androvett, president; James Murray Androvett, vice-president; Charles H. Puls, secretary and treasurer. These gentlemen also constitute the board of directors. The increased growth of the brick-making part of their business has made necessary the addition of new machines and kilns and the discontinuing of their architectural terra-cotta department.

DETAIL BY BARNEY & CHAPMAN, ARCHITECTS.
White Brick and Terra-Cotta Company, Makers.

The New Jersey Terra-Cotta Company have furnished recently the architectural terra-cotta for the following buildings: Mercantile building, Cedar and William streets, New York City, Goldwin Starrett, architect; residence, Elberon, N. J., Carrere & Hastings, architects; residence, 64 East Fifty-fifth Street, New York City, Raleigh C. Gildersleeve, architect; addition to public school, New York City, Charles B. J. Snyder, architect; naval storehouse, Navy Yard, Brooklyn, Mordecai T. Endicott, government architect; bath house, Philadelphia, Philip H. Johnson, architect; fire house, Philadelphia, Philip H. Johnson, architect; high school, Coatesville, Pa., Albert W. Dilks, architect; apartments, Newark, N. J., Oscar S. Teale, architect; apartments, Brooklyn, Sass & Smallheiser, architects; eight apartments, New York City, F. H. Amsler, architect.

PRESS ROOM, PRUDENTIAL INSURANCE COMPANY BUILDING, NEWARK, N. J.
Lined with "Blue Ridge" Enameled Brick.
George B. Post, Architect.

THE BRICKBUILDER.

MAY,

1902.

FAÇADE AT NIMEGUE, HOLLAND.

VOL. 11 NO. 5

THE BRICKBVILDER

MAY 1902

H.F.B.

THE BRICKBUILDER.

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ADVERTISING.

Advertisers are classified and arranged in the following order:—

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Agencies. — Clay Products	II	Cements	IV
Architectural Faience	II	Clay Chemicals	IV
" Terra-Cotta	II and III	Fire-proofing	IV
Brick	III	Machinery	IV
" Enameled	III and IV	Roofing Tile	IV

Advertisements will be printed on cover pages only.

THE Architectural League of America is to hold its third annual convention at Toronto on the 29th, 30th and 31st of this month. There has been held during the last fortnight, in Boston, a convention of civic improvement societies which has been largely and enthusiastically attended and has awakened much popular interest. The Rotch Traveling Scholarship, in some respects one of the most potent educational factors for the profession in this country, has just made its annual award. These are three notable occurrences in one month selected out of many which give us cause for a certain taking stock, as it were, of the existing architectural conditions. This is the springtime, when human nature is temperamentally optimistic, when life and our profession all seem hopeful, and the world is too small almost for the energies of the enthusiasts who do so much to keep alive the spirit of progress. We can look forward with every hope for future possibilities. We can also look backward with a considerable degree of satisfaction to the progress which we can actually trace. It is by measuring our past successes and failures that we are able to rightly meet the problems of the present and prepare for those of the future. Even the most autumnal pessimist would find it difficult to complain of the past.

THE Architectural League of America, though hardly three years old, has become a vital factor in the professional growth. It is not always easy to measure forces of this kind, and the architects in New York, Philadelphia, Boston or Chicago might very readily fail to appreciate how much the League stands for to the architects in other cities. It is not good for man to be alone in any department of human thought, and the League is able to bring about a very considerable degree of community of interests which makes for a broader feeling, a more keenly sensitized public spirit and an enlarging of the hopes and aspirations, if not the actual possibilities, of architects both young and old; and, after all, the spirit of hopefulness is what we sometimes most need. To show how others meet their problems; to make possible a personal acquaintance with those who are called on to battle just as we do; to sharpen æsthetic appreciation by contact with keen minds; and to broaden and unify the processes of architectural education, especially among the vast number of those who are perforce educating themselves, these we take to be the objects of the Architectural League. These are surely included in the list of work which the League is accomplishing, and the gathering at Toronto will be more than a mere pleasant reunion. Those who remember the convention at Philadelphia last year will recall the excellent spirit which prevailed through all the meetings, and how we parted with a sense of moral bracing, with increased self-respect, which was sure to react on our professional work. And while the convention of the League does not intrench upon those strictly professional aspects which are peculiarly a function of the American Institute, it has stepped into a field of its own in the fostering and encouragement of a mutual desire for the best architecture by the younger members of the profession.

THE Civic Improvement Convention is another sign of the times. This convention was not architectural except as an incident. It appealed to every one who, accepting conditions as they were, has any desire to make them better; and the man or woman who cannot be classed in this category must be blind indeed to all that is going on around us. The civic improvement work has swept like a wave over this country during the last year. Residents of the few larger cities hardly appreciate what has been done, for the work has grown almost entirely in the small towns and cities. It has transformed many towns of the western and middle states from dreary, uninteresting aggregations of houses to tree-embowered parks. The architecture itself in these towns is not yet much better than it was, but that the public sense is aroused, and the fact that any considerable proportion of the community desires better things, is one of the most hopeful signs of the times marking the new awakening which has accompanied the growth of this nation in its material aspects. The work of civic improvement is closely paralleled by the work of the Architectural League and of the other art associations throughout the country. Its effects have come to stay, and we can never fall back into the dreary civic indifference of twenty or twenty-five years ago.

CIVIC improvement has been largely a matter of the smaller cities and towns. The large cities, however, up to a certain extent caught the spirit. Our municipalities during the last year have recognized as never before the necessity for selecting good men and having their work done right. St. Louis has made a splendid stand in schoolhouse improvement by placing it so largely in the hands of Mr. Ittner. In Boston Mr. R. Clipston Sturgis, who is so well known to the profession, has been made a member of the schoolhouse commission, the body which has immediate charge of the erection of school buildings. Some time ago Mr. George L. Hines accepted an appointment as state architect for New York, which implies, if the politicians do not interfere too much, that the state may be at least saved from some of the public atrocities which have disgraced the past. In New York City Mr. William Martin Aiken, who made such a good record as architect of the treasury department, occupies the position of consulting architect for the building department. These are only a few indications that our municipalities are learning how to get the best and that they mean to retain it.

NOR is our national government behind in the race. In the former times when the government wished to make a local improvement it was placed in the hands of the politicians, or at the most, and what amounts to practically the same thing, it was handed over to a commission of lawyers. Now, when the feeling for civic improvement stirs our national capital, Congress appoints a commission composed entirely of experts, including men at the very top of the architectural profession, and this commission is given the freest hand to study and report upon the very best possibilities. The result is the splendid collection of drawings and photographs which Messrs. McKim, Burnham, Olmsted and St. Gaudens have brought together to show what might be done to beautify Washington. And our strenuous President has resolutely tackled the time-worn problem of how to increase the capacity of the White House and, seeking advice, has looked not to politicians but to those who make it their business to study just such problems and solve them successfully. Mr. McKim has been commissioned to design a separate building, removed from the White House, to which the business offices for the President will be transferred. He is also employed to study the remodeling of the White House itself, and in his hands we can be sure that the interiors, which have before been so unworthy of our President's office and the nation, will be made all that they should be. These appointments are also signs of the times.

WHEN the Rotch Traveling Scholarship was founded twenty years ago it was alone of its kind. For nearly a generation it has been stimulating the zeal of our broadest young men and holding up to the juniors of our profession a prize which has almost invariably when won been used in the best possible manner. Now there are many scholarships, and every year an increasing number of picked young men are sent abroad to study, and come back to take their places in the development of our national art. It has quite recently been proposed to establish a national scholarship, and there have been steps taken looking toward the founding of an American academy abroad endowed and sustained by our national government. This would have been an absolute impossibility twenty-five years ago or even less, but the growth of public spirit has recognized the national necessity for fostering of the fine arts. One of the subjects to be discussed at the convention of the League is an American Art University. And all these influences in a sense have grown out of a feeling which in its earliest form gave rise to the Rotch Scholarship.

THIS country is still young in one sense. For that matter the world is young in the same sense, for all over the world humanity is daily learning new lessons and art is seeking new expression. But there is a freer field here, our youngness troubles us less where we have less tradition to bind us, and looking from what the past has brought into our national development towards the possible future which may lie before us, we can feel nothing but hope for the architectural profession. Our opportunities will be larger, they will be better met; our measure of growth will be greater than ever before; and though many of us will make mistakes and successes may turn our heads, the resultant of all our strivings, our conventions, our scholarships, our public civic spirit and individual enthusiasm, is bound to be in the right direction.

OUR architectural accomplishments are very creditably presented in the pages of the Architectural Annual, edited by Mr. Albert Kelsey of Philadelphia, the appearance of which has been timed very happily to coincide with the other occurrences of this month. Mr. Kelsey is nothing if not enthusiastic. He views everything in the strong hopeful light of the man who loves his work and his fellow workers and who delights in the zest of competition just for its own sake. His criticisms of current architecture are frank and straight from the shoulder. Whether we agree with him in detail or not, we recognize their honesty and the attempt of their author to look every problem square in the face and seek for the best there is in it. In turning over the three hundred odd pages of this Annual one has a feeling that the author has during the year been on the alert to cull out everything from modern architecture which seemed to him thoroughly good and to present it here in its most attractive form. We do not unreservedly assent to either the choice or the criticisms. There would be no growth if we all felt alike, and differences of opinion give to our thoughts the glow of health; but the spirit that prompted the compilation of this Annual is surely worthy of encouragement if for no other reason than that it helps to keep things going, prevents moth and rust and the theft of our best intent.

The Business Side of an Architect's Office. II.

BY D. EVERETT WAID.

THE three functions of an architect's office named in the first of this series may enable the reader to discern some order in these scattering considerations. First, then, the preparation of drawings.

If certain little details become the rule or habit of a draughting room, some of them prevent awkward omissions, some are matters of business convenience, and still others are as important as is the phrasing of a contract, of which they in reality form a part.

Every sketch even should have a date, for the lack of a date sometimes becomes a matter of considerable moment. The other features of the title of a drawing illustrated (Fig. 1) are matters of more or less importance and convenience. Even in small offices it is well to have initials signed to show who made a drawing, who checked it and on whose approval it was issued. It certainly should be a rigid rule that no drawing or sketch, however abbreviated (except those copied as parts of letters), is to go out of the office without being entered in the list of drawings.

For purposes of record, ordering blue prints, etc., no title at all is needed save a circle with sheet number in it, building number above it and date below it. (See Fig. 1.) The pencil drawing in the illustration is, as indicated by its number, sheet 2 of the second series of sketches for a country cottage. It was building number 533 and was made February 5, 1902. The title below it in the illustration is copied from a regular working drawing.

For convenience of reference in correspondence the numbering of all windows and doors on the plans is a useful device. On the basement plan all openings are numbered in rotation from 1 up; on first-story plan from 100 up (or for a large building 1,000 and up); second story, 200 and up, and so on.

If the various rooms lack distinctive names, it is convenient oftentimes to number each one with a broad-faced figure or a Roman numeral.

In placing dimensions on drawings it is a good rule to run two complete lines of figures on all four sides of the building, particularly on both basement and first-story plans. This allows a contractor to check the figures and avoid a mistake which sometimes results from the blurring of a figure on a blue print by an accidental drop of lime For the same reason, interior lines of figures should run through to the full totals. Never depend on a single figure to locate a partition. Another good office rule is to have all figures checked by a different person from the one who made them.

Although it is usually impracticable to adopt a uniform size for all drawings, it is a matter of convenience to adhere to one size for all the drawings of a particular building, or, in the case of full-size details, some multiple of the adopted size.

It seems to be common practice to file drawings of current work in drawers. In A. J. Manning's office, New York, after a building is completed, one set of drawings is preserved, folded and placed in a special file similar to a letter file but the size of legal cap. All documents, correspondence, specifications, etc., are placed with the drawings in the same box, and the long row of such boxes, the accumulation of years, in the order of the building numbers makes a tidy-looking library.

Kendall, Taylor & Stevens, Boston, file their drawings flat, all hung in cupboards, which serve as a file for completed work as well as for work under construction. (Fig. 2.) The drawings hang vertically by means of wood strips between two of which each set of drawings is bound.

C. H. Blackall, Boston, has varied their idea and in a large cabinet has hinged a lot of stock doors. (Fig. 3.) These doors hang six inches apart at the back and have hooks screwed to their faces on which are hung the office copies of drawings. Each set of drawings is secured to a stick $\frac{1}{2}$ inch by $1\frac{1}{2}$ inches by 3 feet long by means of small bolts and washers and thumb nuts. In the top edge of the stick two screw eyes are placed to engage corresponding hooks on the doors. Five sets of drawings

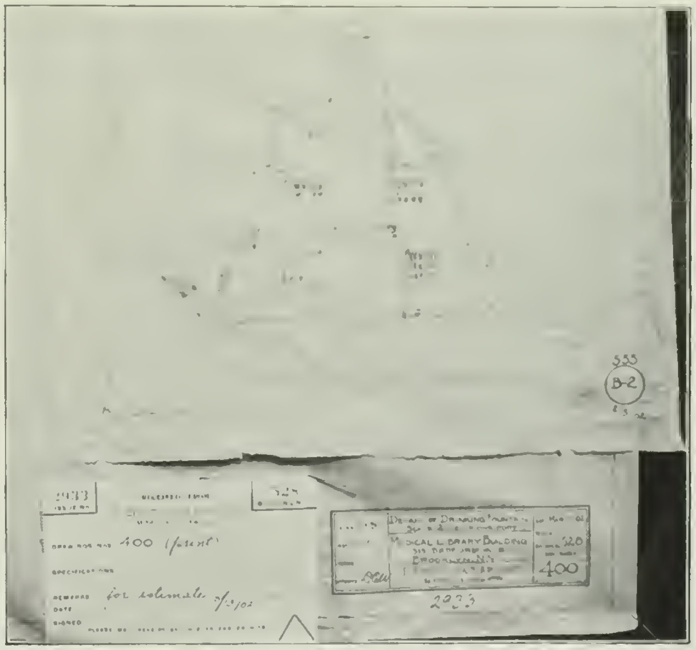


FIGURE 1.

can be hung on each side of each door, and any set is easily lifted out or replaced without disturbing the others. Often they can be consulted in place by swinging the doors apart. Sets of drawings for current work are kept in this cabinet for convenient reference. When a building is completed the drawings are removed from the sticks and filed away flat in drawers. A number of large offices have done away with the method of keeping drawings rolled, and file them flat. Some place their drawings in large folders or big "home-made" envelopes. In this shape they can be filed most compactly either in drawers or on shelves and of course in order of the respective building numbers.

Without launching into a treatise on specification writing, it may be remarked briefly that a few considerations should be kept in mind for business reasons. One may indulge in very comprehensive general clauses in his specifications for the purpose of guarding against omissions and throwing responsibilities on contractors. But if one does not follow these with painstaking, specific provisions he is likely either to make the work unduly expensive to the owner or get caught with some awkward oversight, or perhaps both.

For example, the following two phrases are suggestive of a desirable method: "This contractor shall furnish and set all glass needed fully to complete the building, with exceptions specifically mentioned herein," and "All glass not otherwise specified shall be best quality polished American plate." Such clauses guard against the possibility of finding that no glass has been provided for essential parts of the work, but such general provisions should be followed by detailed requirements, otherwise plate glass will be used where other kinds should have been used and in some places where cheaper glass might have been used; and there may be a dispute over mirrors because they were not definitely mentioned. This is given simply as an illustration applying to specifications for the various branches of work.

The matter of shop drawing is one that should be emphasized strongly in specifications of steel and iron work, cut stone, etc., if one wishes to avoid disappointment in the execution of his designs. Slight, easily made changes in iron drawings may prevent humiliating and serious disfigurements. Cut stone contractors are prone to arrange the jointing and the thickness of ashlar in a way to save stone and thus make the work cheap in appearance as well as unsubstantial structurally; their drawings should be submitted to the architect.

All shop drawings should be scrutinized carefully. But during a rush of work some shrewd or careless provisions in shop drawings may easily slip the architect's attention. A valuable safeguard in this matter is one used by Frederic Thomas, who gives contractors written notice holding them responsible for departing from the architect's designs. I have thought it wise to use his idea in specifications and make it read somewhat thus:

"Shop Drawings. — The contractor shall submit all shop drawings to the architect for approval before execution. Each drawing shall be submitted in duplicate, and one of the copies will be returned to the contractor with approval or corrections noted thereon. The architect will not be responsible for the checking of figures on shop drawings. The contractor shall not make any deviation from the architect's drawings without calling the same to the attention of the architect in writing, and he may be required to replace work for which no permission has been obtained to make such deviation."

Without discussing specifications further in this connection the following are given as useful preliminary paragraphs which, with slight modifications, can be used in writing specifications for any branches of work. A large part of the following has been borrowed from the specifications used by George B. Post, whose courtesy is hereby acknowledged.

General Conditions. — The contract based on this specification will include the furnishing by the contractor of all material, labor, scaffold and other apparatus necessary properly to prosecute and fully to complete the entire painting and glazing as herein described or shown on the accompanying drawings, Nos. ———, and including everything necessarily involved or which reasonably can be inferred, with exceptions mentioned hereinafter. All necessary freights, cartage and cost of handling materials shall be paid by the contractor. All notes, figures and details on said drawings shall be followed and executed by the contractor as a part of these specifications without further mention.

On drawings concrete is shown in section dotted, brickwork hatched and stonework more coarsely hatched.

Complete full-size detail drawings will be furnished by the architect, and the contractor must apply for same before executing work. If the contractor considers anything in any full-size detail as beyond the requirements of the contract he shall at once notify the architect. Failure to make such claim within ten days after receipt of any detail shall constitute an acceptance of the same. Large scale and full-size drawings shall be followed in preference to small scale drawings. Shop drawings, templets, models and all necessary measurements at the building shall be made by the contractor. Figured dimensions on the drawings shall be followed in all cases in preference to scale measures.

The contractor shall be responsible for the correct execution of this work according to the drawings. Any

FIGURE 2.

apparent error in the drawings must be reported to the architect at once, and the contractor shall not proceed with the work or make any variations from the drawings without written orders. The contractor shall be responsible for verifying all measurements at the building and reporting any inconsistencies or errors of other contractors before executing his own work.

Any work made without or not in strict conformity with the drawings or which differs from the requirements of the drawings and the specifications will be rejected, and must be removed and replaced with work in conformity with the contract. All work injured or destroyed thereby shall be made good at the contractor's expense. The owner, through the architect, reserves the right to cancel the contract in case the contractor neglects or refuses to remove rejected work, and to replace the same in accordance with the above specifications.

No extra work shall be done without written order from the architect, and all such orders must be referred to by numbers in bill rendered before final certificate is issued. Special emphasis is laid on the requirement that no extra work shall proceed without written order except in an emergency, and then it must be followed immediately by the written confirmation.

All material and workmanship shall be new and the best of their respective kinds and subject to the approval of the architect.

No work shall be sublet without written approval by the architect of the parties to be employed as subcontractors. The contractor shall submit with his estimate the name of the subcontractor for each principal branch of the work. Failing to do this, he shall be limited in the taking of sub-bids to the list of contractors approved by the architect.

When more than one kind or manufacture of a material is specified the option shall be with the contractor. When one kind or "equal" is specified no change may be made without written consent of the architect, who may select an equivalent if requested by the contractor.

Each contractor shall be responsible for the protection of his own work until the final completion of the building, and each shall be responsible for and shall make good at his own expense any and all damages done or caused by his workmen or due to the execution of his contract.

In order to insure consideration all bids must be made out in accordance with the form accompanying this specification and with all items of prices, etc., filled out.

A schedule of the prices on which the contract is based must be furnished to the architect before the contract is signed, which schedule shall be the basis for all payments on account of the contract.

The owner, through the architect, reserves the right to reject any or all bids.

Time of Completion.—The entire building shall be completely finished and delivered ready for occupancy on or before the first day of ———, 190 .

The work included in this specification must be prepared and erected in its various stages at such times as may be necessary to complete the building by the time mentioned and without interfering with or delaying the progress of the work of other contractors.

The contractor shall provide all necessary night and overtime work without extra charge.

If any delay occurs in the progress of this work or if the work of other contractors be delayed on account of delay in the painting and glazing work or on account of replacing or altering defective or rejected work, the contractor shall pay to the owner, or if so directed by the architect, to the general contractor, the sum of one hundred dollars ($100) as liquidated damages for each day that he so delays the work of another contractor as to interfere with the completion of the building at the time specified or for each and every day that the various parts or stages of the work included in this specification may be unfinished after such times as may be determined by the architect as necessary for the erection of such parts or stages of the work.

Payments will be made only on the certificate of the architect.

On or about the first day of each month a certificate will be given by the architect for a payment on account of the contract of eighty-five per cent (85%) of the value of the work furnished and put up at the building, provided the contractor has made application over his signature on or before the twenty-fifth day of the preceding month and that a schedule has been furnished as before specified.

A certificate for the balance will be given by the architect upon completion of the contract in conformity with the drawings and specifications, application having been made as before specified.

No certificate will be given in case any work is furnished not in strict conformity with the drawings and the specifications, until defective work has been removed and replaced as specified and to the satisfaction of the architect.

Any certificate given or payment made on account of the contract for work furnished and erected at the building does not act as an acceptance of any materials or work which subsequently may be found to be defective by reason of existing defects at the time such certificate is given or payment made or defects arising from accidental injury or otherwise until the completion of the contract.

The contractor shall replace all defective work on which payments have been made before final certificate will be issued.

FIGURE 3.

Subcontract.—The contract for the painting and glazing work will be made at the option of the owner a subcontract to the general contract for the erection of the building, and all payments, in the manner described, will be made by the general contractor, and the contractor shall be liable to the general contractor for the proper performance of the contract, and shall not be relieved from any of the obligations herein specified.

Cutting.—Each mechanic or material man shall do all cutting in his line to accommodate the work of others, and shall repair his work after all other mechanics.

Superintendence.—The contractor shall give his own personal supervision at the site and at shops. He shall place a competent foreman in charge at the building, who shall remain in charge constantly throughout construction, or until replaced on written consent of the architect.

Rubbish.—The contractor shall remove his rubbish from the building or premises as often as directed by the architect. On completion the contractor shall leave his work clean and whole, and satisfactory in every way to the architect.

Guarantee.—The contractor shall be responsible for and must make good any faults appearing in his work within eighteen (18) months after acceptance, if due to any defects of material or workmanship.

A French Gothic Cathedral in Brick.

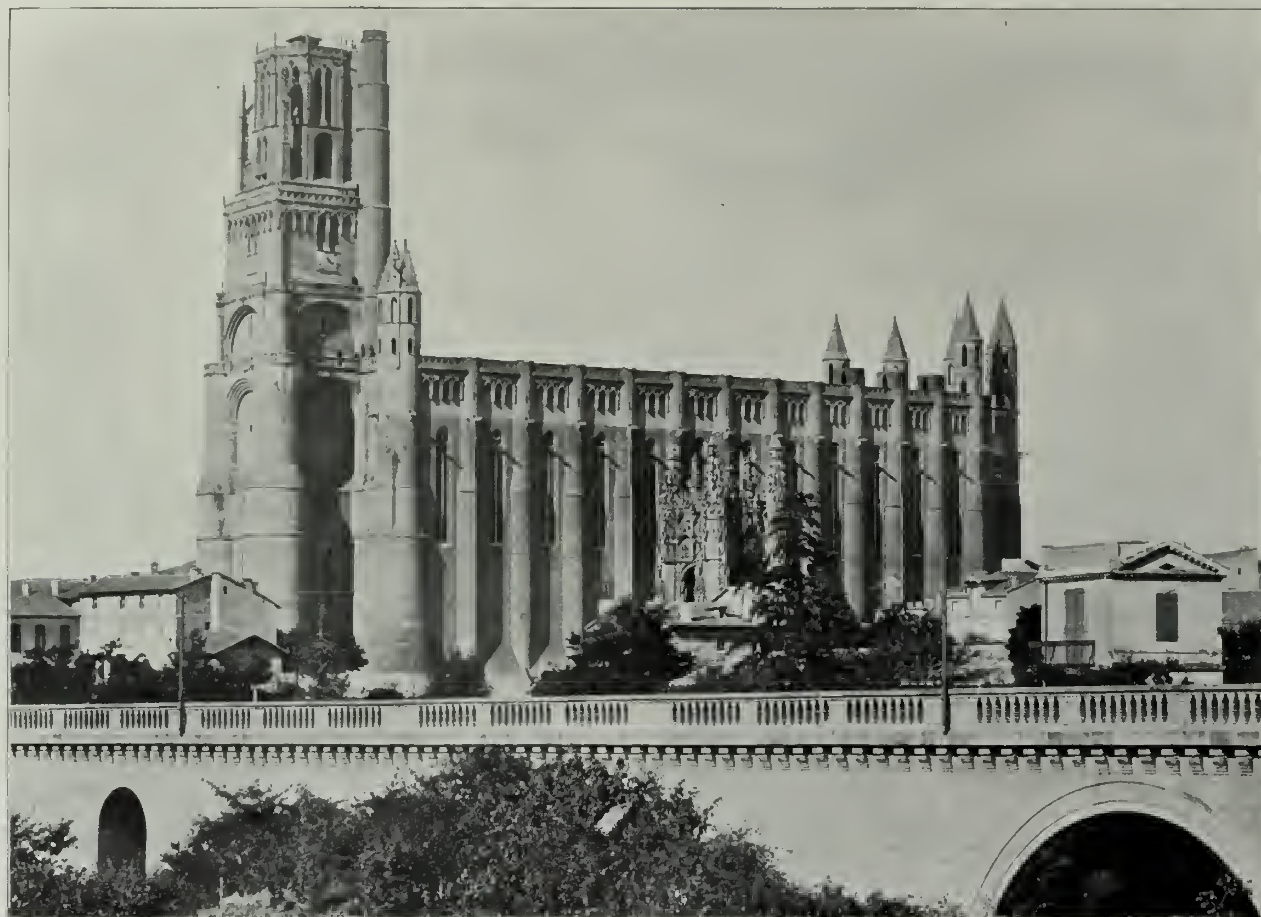
BY JEAN SCHOPFER.

ALBI CATHEDRAL.

THE Gothic style of architecture is, as everyone knows, primarily a style of architecture in stone. When at the beginning of the twelfth century the problem of vaulting large areas in the cheapest and at the same time strongest manner — the problem which had exercised the minds of the mediæval architects — was solved in France by constructing vaults on independent arches, on ogival arches (from *augere*, to increase, *i. e.*, increasing the strength of the vaults), stones of small dimensions were used for the purpose. Vaulting on independent arches constitutes the very essence of the system of building absurdly called Gothic and which ought to be called the "French" style, for it came into existence in the Isle of France and its finest examples are to be found in France.

In the Isle of France the builders had stone of first-rate quality at their command. All the principal edifices of the twelfth century and the early part of the thirteenth were built of stone. So excellent was the Gothic system that its forms were adopted throughout Europe. First England, then Germany and then Italy copied the new style from France and applied it in their own ways. The Italians, who on various occasions used brick instead of stone, lacked the frankness to avow it, and covered the walls with a plating of marble, as can be seen in the case of the Florence Cathedral, for instance, which is completely clothed with slabs of black marble and white, the commonplace arrangement of which causes one to think of a set of gigantic dominoes.

In the southwest of France brick has always been the favorite material. No good building stone is to be found there, and besides in the Middle Ages the means of transport were very inadequate, so that it was necessary to be content with the materials that were near at hand. The admirable Romanesque architecture at Toulouse and in fact in all the southwest is in brick. Saint-Sernin, the only Romanesque church with five naves, is constructed in brick.



SAINT CECILE'S CATHEDRAL, SOUTH SIDE, ALBI.

We know how this part of France was ravaged by the religious wars. After the great expansion of Romanesque art a series of calamities afflicted this unfortunate region, and no sooner had religious strife ceased than the Hundred Years' War broke out between France and England.

The troubles of this period had a great influence upon the development of architecture in the southwest. Almost all the churches in that part of France were fortified, and even the smallest village protected itself by a wall. Fortified, too, was Saint-Cecile's Cathedral at Albi, which we now introduce to the readers of THE BRICKBUILDER.

This building was begun at the end of the thirteenth

INTERIOR OF NAVE, SAINT CECILE'S CATHEDRAL, ALBI.

century, Bernard de Castanet having laid the first stone thereof on the fifteenth of August, 1282. The work of erection was carried on very slowly, with occasional stoppages. Two centuries later, namely in 1480, the church was consecrated, but the building was not entirely completed until the year 1512.

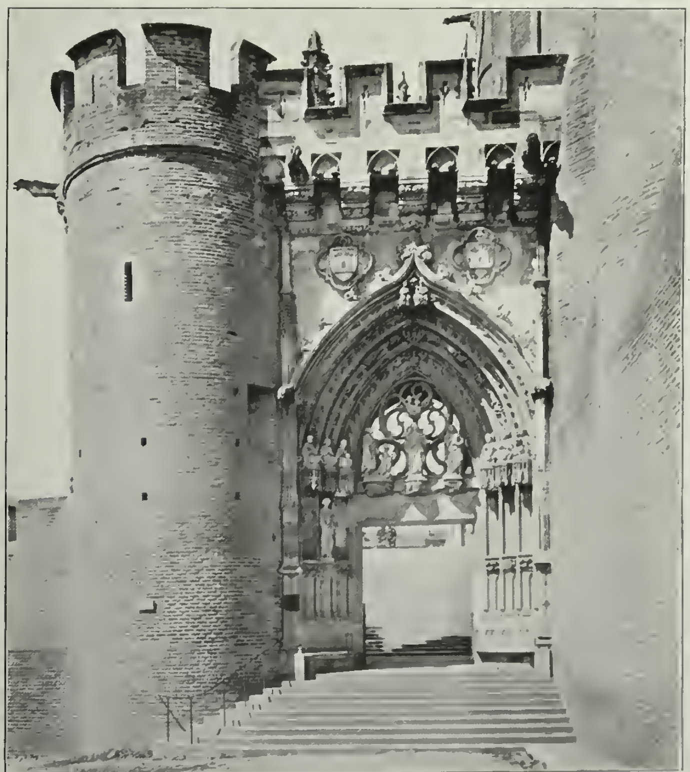
The various views which we reproduce show the striking appearance presented by this cathedral-fortress. Located in the very heart of the region where the most formidable outbreak of heresy of the Middle Ages took place, and erected at a time when the war between France and England was covering French soil with ruins, it has not, as far as its exterior goes, any of the graces of pointed architecture.

SAINT CECILE'S CATHEDRAL AND ARCHBISHOP'S PALACE, ALBI.

THE ARCHBISHOP'S PALACE, ALBI.

SAINT CECILE'S CATHEDRAL, ALBI.

The walls are flanked at regular intervals by towers, the windows are narrow and placed high above the ground, while a gallery with machicoulises runs round the edifice. The five towers at the apse are crowned by sentry boxes. In front there is a square bell-tower which with its massive corner turrets is more like a dungeon than the tower of a church. This tower rises to a height



GATE, DOMINIQUE DE FLORENCE, SAINT CECILE'S CATHEDRAL, ALBI.

of 74 meters; at the top there is a platform 64 square meters in area. It is only at the height of thirty meters from the ground that this tower assumes an appearance of lightness and elegance and is pierced by elongated bays.

The different views of the cathedral enable the reader to see the beauty of the bond and the masterly way in which brick was employed by the builders of the Middle Ages.

Here, as almost everywhere in the south of France, a brick of somewhat large dimensions was used. It is almost square, measuring 13 inches by 10, with a thickness of 2.4 inches. The mortar is of excellent quality and the mortar bed particularly thick.

Thus Albi Cathedral is noticeable for the severe plainness of its walls, for its series of towers and for its narrow bays. No counterforts are to be seen, no buttresses for the enemy to damage. It is certainly a thorough cathedral-fortress, and one cannot help admiring the fine

INTERIOR OF CHOIR, SAINT CECILE'S CATHEDRAL, ALBI.

architectural arrangement of the work. The lateral faces and the apse deserve to rank amongst the best examples of Gothic buildings, and can lay claim to a foremost place in the history of edifices in brick.

In the beginning of the fifteenth century a charming doorway was added on one of the sides, after a design by an Italian, Domingo di Fiesole. This was done at a period when monumental statuary was flourishing again in a magnificent manner on the walls of the French cathedrals. As regards the necessary statuary, this doorway, as can be seen, was constructed in stone.

On going inside the cathedral we are struck by the astonishing richness of the decoration. The architects made up for the absence of ornamentation without by bestowing a profusion of it within. Albi Cathedral, though utterly bare outside, is one of the most remarkable in

France as far as its internal decoration is concerned. Architecturally its arrangement is interesting. It has only a single nave, a very wide one, and the counterforts and other buttresses which, as we have said, could not be placed on the outside, are placed inside those turrets whose picturesque effect we have noticed. This is an ingenious arrangement.

In the next place we must mention the evidences of the survival of Roman methods of building. The vaults are built by concretion; they are massive, and only the revetment panels are in the Gothic style. In the fifteenth century an extremely rich rood screen in stone was put up for the purpose of separating the choir from the nave. It is one of the most celebrated screens of the period. The sculptures on the choir stalls are equally remarkable.

CHURCH OF SAINT SALVY, ALBI.

The vaults are entirely covered with frescoes consisting of gilded arabesques standing forth on a sky-blue ground.

Thus Albi Cathedral presents the piquant contrast of a plain, military exterior and an interior of dazzling richness.

We have grouped around the cathedral a few views of Albi, which possesses numerous fine mediæval buildings in brick. One of these views shows the river, the old brick ramparts, the archbishop's palace, and at the top of the city the cathedral. Another illustration gives a near view of the archbishop's residence, a noteworthy construction in brick. Like the neighboring cathedral, it is solidly built and in appearance bears a close resemblance to a dungeon. Lastly, the Church of Saint-Salvy, also partly built of brick.

Robbia Pavements. II.

BY ALLAN MARQUAND.

THE PAVEMENTS OF LUCA DI ANDREA DELLA ROBBIA.

VASARI informs us in his life of Luca della Robbia that the younger Luca, son of Andrea and grandnephew of the elder Luca, was most active in the production of works in glazed terra-cotta, and that he made for Pope Leo X pavements for the loggie of the Vatican under the direction of Raphael, as well as pavements for various other apartments in which he placed the insignia of that pontiff. These pavements doubtless centered in Bramante's buildings about the Cortile di San Damaso. There still remain some tiles in the rooms known as the Greek and the Secret Libraries on the ground story. As similar tiles are supposed to have been used in the first loggia and the Borgia apartments, the new pavements of the Sale Borgia have been made in accordance with this pattern. Giovanni Tesorone, to whom the restoration of the Borgia pavements was intrusted, considers them to have been made in Perugia or Deruta or some other Umbrian town. They are published by Paul Fabre in the *Mélanges d'Archéologie et d'Histoire* of the French School for 1895. They have little in common with Robbia designs.

The tiles for the second loggia, known as Raphael's loggia, were undoubtedly made by Luca della Robbia the younger. This we know not only from the statements of Vasari in his lives of Luca della Robbia and of Raphael, but also from the official archives from which the following entries are published by Müntz in his *Raphael*, page 452, note 1: "*1518, 5 Agosto. E più a mº Luca de la Robia che fa el pavimento de la gran logia per parte di pagamento ducati 200. 1518, 10 Settembre. E più al frate de la Robia, per el pavimento ducati Venticinque.*" These entries raise some difficulties in interpretation. Is the Luca of the first entry the same person as the *frate* of the second? Or are they different persons? Whichever alternative we select, we do not leave the difficulty completely solved. It is perhaps best to assume that the younger Luca was the individual by whom the pavement was made. Fra Ambrogio della Robbia seems to have acted as fiscal agent for his father in connection with the lunettes made for Santa Maria della Quercia at Viterbo, and possibly performed the same offices for his brother Luca when the latter was away from Rome.

Within the memory of living persons the pavement of the loggia of Raphael was still *in situ*, though much effaced. But now its last vestiges have been removed. Is it possible for us to restore its appearance to our imagination?

An important step in this direction has been taken by Giovanni Tesorone in a pamphlet entitled *L'Antico Pavimento delle Logge di Raffaello in Vaticano*, Naples, 1891. He not only searched the Vatican for existing remains of pavements, but gathered from an aged custodian, Achille Costantini, and from Professor Mantorani their recollections of the now vanished pavements. In his search of the Vatican apartments he discovered, in a room adjoining the Sala dei Chiaroscuri, a pavement in fairly good state of preservation. In the center was a medallion containing the insignia of Leo X. This was on a ground of lozenge-shaped tiles, colored green and blue and yellow, arranged so as to give the appearance of a reticulated system of cubes. This design was common property of the Robbia school. The outer border is a Greek meander with insignia of Leo X. There is nothing here that suggests design on the part of Raphael. This is probably one of the pavements adorned with the insignia of Leo X of which mention is made by Vasari.

Tesorone attempts to restore to our imagination the pavement of Raphael's loggia. On the center of each compartment he places a medallion with the papal arms set in a general ground of plain blue tiles. The border is a narrow one, consisting of two intertwining oak branches of green, which enframe a series of yellow-edged violet disks. Border tiles of this character were found in one of the corridors of the Vatican, and are now preserved in the Borgia apartments. This border reminds us of Florentine designs by the elder Luca, although the *rovere*, or oak branch, appears in decorations of the Vatican made by Roman artists in the time of Julius II. The long corridor of the loggia is divided into a series of bays by means of broad pilasters which mark the divisions of the vaulting compartments of the ceiling. Extending across the corridor from the outer to the inner pilasters were on the pavement broad bands of tiles which separated the nearly square compartments of the pavement. These broad bands Tesorone restores as ornamented by four green oak stems or branches forming a braid with square openings, in the centers of which were violet disks. This quadruplex braid is somewhat complicated, but is analogous to the two-strand braid of the narrow border. If Luca the younger might naturally have been the author of the square compartments, it seems unnecessary to suppose that he should have called upon Raphael to design the broad dividing bands.

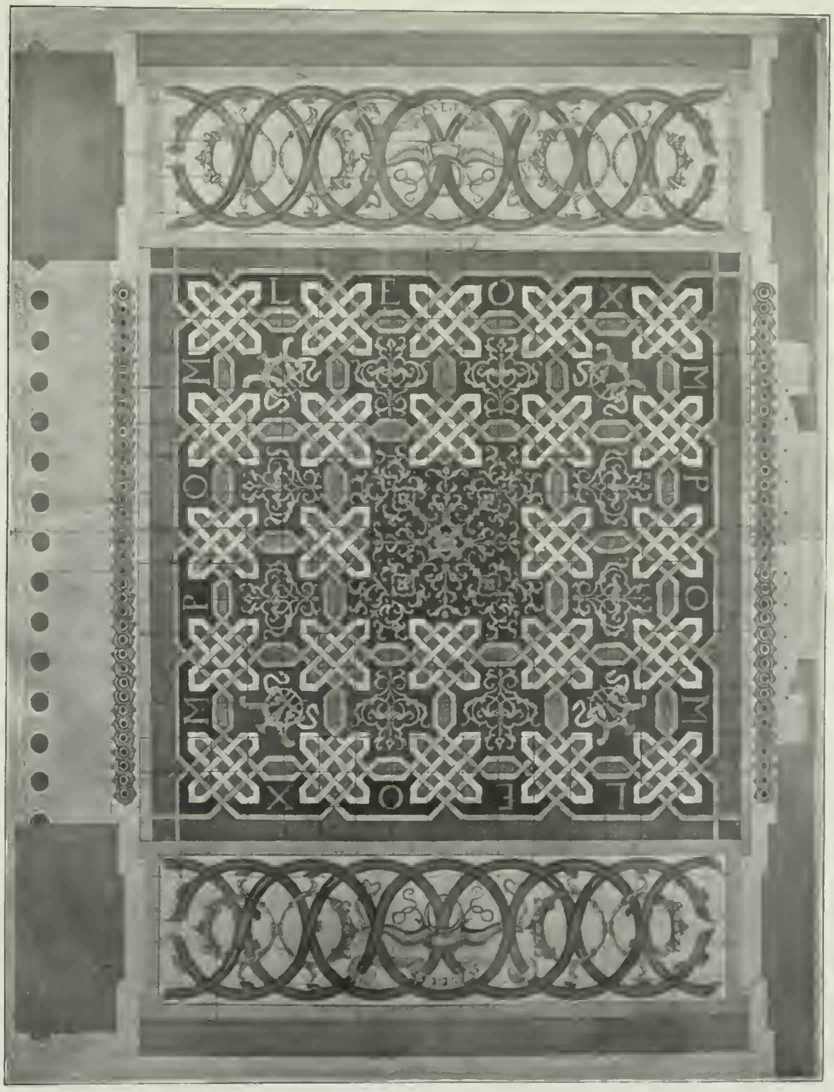


FIG. I. PAVEMENT FROM RAPHAEL'S LOGGIA OF THE VATICAN BY LUCA DI ANDREA DELLA ROBBIA. FROM A DRAWING BY FRANCESCO LA VERGA, 1742.

There is a document, apparently unknown to Tesorone, which removes the design of at least a portion of this pavement from the region of hypothesis to that of certain fact. This is a drawing made by Francesco La Vega, a Spanish painter, in 1742 and preserved in the Vatican Library. A photograph of La Vega's drawing, by Tuminello, was published by Emma Perodi in the first volume of *Arte Italiana Decorativa e Industriale* (1892), and is here reproduced (Fig. 1). The drawing was a pen and wash drawing and was one of a series presented by Cardinal Silvio Valenti Gonzaga and his nephew under the title "*Disegni della prima e seconda Loggia Vaticana fatti da Francesco La Vega, pittore Spagnuolo, anno 1745, per ordine ed a spese dell' E^mo Signor Cardinale Silvio Valenti Gonzaga, Segretario di Stato della S. M. di Benedetto XIV e dell' E^mo nipote di lui Cardinale Luigi bibliotecario di S. E. e protettore della Biblioteca Vaticana, donati a questa l'anno 1802 nel giorno medesimo nel quale n'ebbe il solenne possesso.*" The date 1745 represents evidently the date when this series of drawings was completed. The drawing displays one compartment of a pavement with its broad dividing bands. On these lateral bands the design consists of a quadruplex braid of *rovere* branches intertwined with Medici rings and the yoke with Leo's motto, *Suave est* (*jugum meum*). The central compartment has on two sides a narrow border of a two-strand *rovere* braid, and in the interior an elaborate design consisting of a system of interlacing bands such as Italian and Saracenic designers alike derived from Byzantine sources. Between these geometric patterns is an elaborate arabesque such as we see on Italian Renaissance pottery and which would have brought the pavement into harmony with Giovanni da Udine's elaborate stuccoed ornamentation of the loggia. Near the four angles of the square are Medici rings combined with Medici plumes and the motto *Semper*. Near the border is inscribed "Leo X M[edicis] Po[ntifex] M[aximus]." If it be true as Vasari in his life of Raphael states, that these pavements were ordered from Florence, then such a design as this may well have been furnished by Raphael or by one of his assistants. But it seems more probable that Luca della Robbia the younger came to Rome and made these various pavements, and at the same time the large medallions with papal insignia now in the Museo Industriale in Rome, perhaps also the medallions and pavements at the Monte Oliveto in Naples. That La Vega's design represents the real pavement seems to be substantiated by fragments of tiles still existing and exhibited in a case in the Sala Borgia. There are here exposed two tiles about 0.20 m. square with Leo X insignia. One contains the ring and feathers, the other the yoke. These two tiles correspond in size and design to the tiles discovered by Tesorone in the room near the Sala dei Chiaroscuri. The remaining tiles in the case are somewhat larger, measuring as nearly as I could estimate about 0.225 m. square. In design, four correspond with La Vega's drawing of the central compartment and exhibit parts of the braided bands, one with his representation of the narrow border and one corresponds in general, though not absolutely, with his reproduction of the broad band between the pilasters. According to Tesorone it would require seventeen tiles measuring 0.227 m. square to reach from pilaster to pilaster across the corridor. It may be noticed that precisely this number of tiles appears in this position in La Vega's drawing.

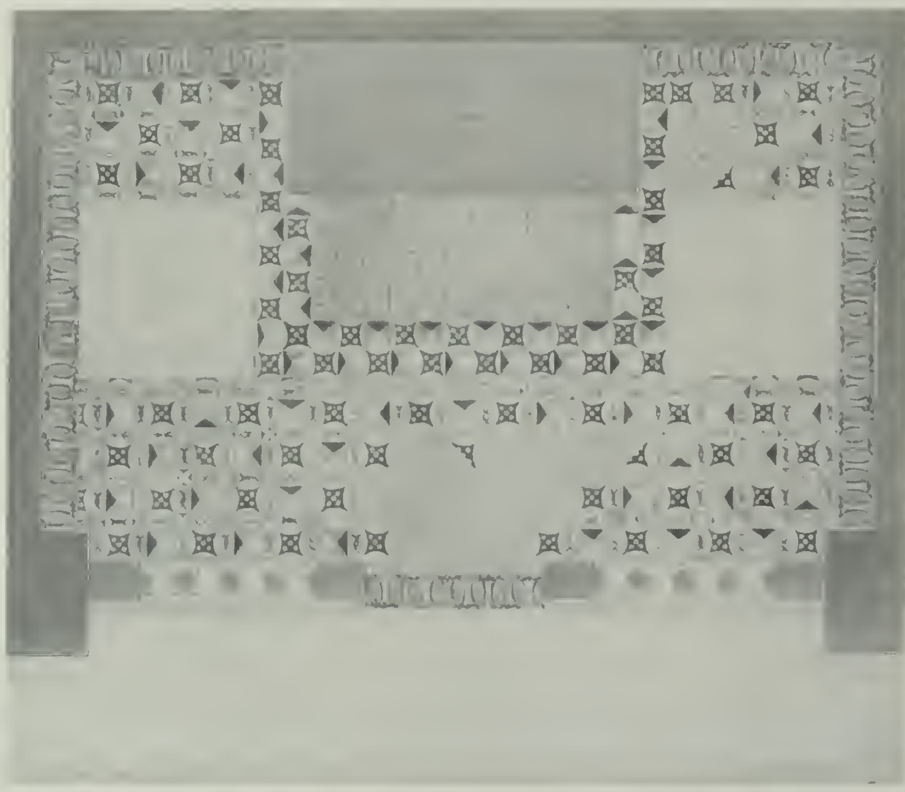


FIG. 2. PAVEMENT IN THE SAN SILVESTRO AL QUIRINALE, ROME, BY LUCA DI ANDREA DELLA ROBBIA. FROM A DRAWING BY COUNT VESPIGNANI.

From the fragmentary tiles preserved in the Sala Borgia we may obtain a partial notion of the coloring of the pavement. In the central compartment the general ground was blue and the interlacing network yellow, and in the broad dividing bands between the pilasters green *rovere* branches appeared against a white ground, and the whole was framed in yellow. The narrow *rovere* braids on the other two sides of the central compartment are clearly to be reproduced from existing tiles. Here two green *rovere* branches were braided against a white ground, showing a series of violet *oculi*, each of which is framed with a circular band of yellow. We may infer from the drawing that yellow was the color used for the arabesques and inscriptions, and that white was employed for the Greek crosses which appear at regular intervals and form one system with the interlacing yellow network. The tiles from the Sala dei Chiaroscuri, the medallions in the Museo Industriale and other tiles in San Silvestro al Quirinale enable us to determine the coloring for the Medici insignia. We cannot be far wrong, therefore, if we restore the rings in yellow, the feathers maroon, white and green, and the motto *Semper* black on a white scroll. Thus the entire color scheme may be reëstablished with almost absolute security.

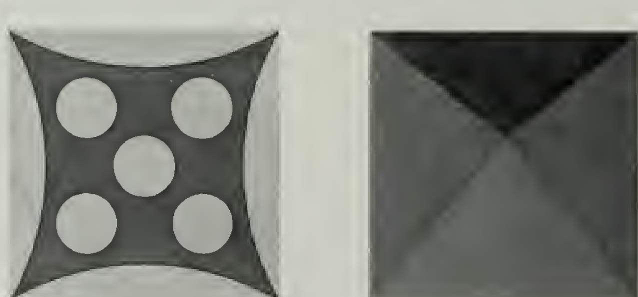


FIG. 3. DETAIL OF PAVEMENT IN SAN SILVESTRO AL QUIRINALE.

Tiles which would seem to have been made by the younger Luca della Robbia may still be seen in at least two other places in Rome — in the Pantheon and in the church of San Silvestro al Quirinale. The tiles in the Pantheon are to be found in a dark stairway which starts from the porch and leads up to the rooms of the Accademia di San Luca. These tiles, though set in the floor, serve no useful or decorative purpose. They are evidently mere mementos transported thither after they had exhausted their usefulness elsewhere. There are seventeen of these tiles preserved in whole or in part. They measure 0.28 m. square and are decorated with green *rovere* designs on white ground. Here and there remains a blue border. The *rovere* design does not follow curved lines as in La Vega's drawing, but straight lines with angles. These tiles are larger than those preserved in the Sala Borgia and are not adapted for the dimensions of the Vatican loggia.

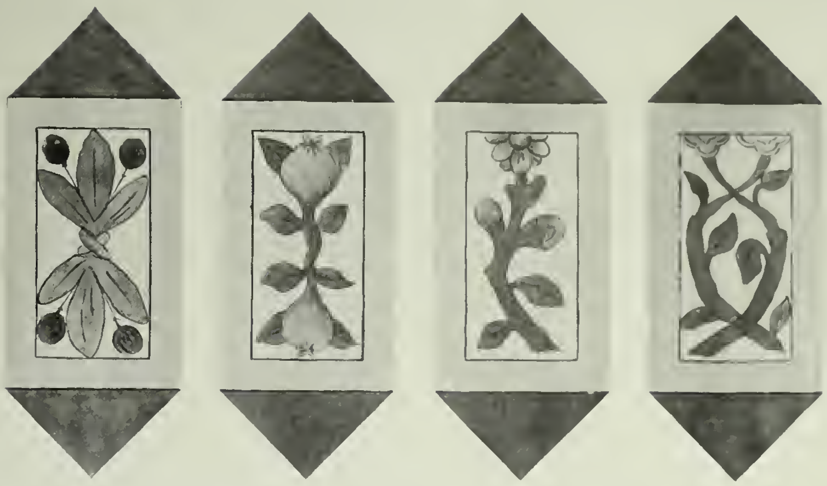


FIG. 4. DETAIL OF PAVEMENT IN SAN SILVESTRO AL QUIRINALE.

In color and design, however, they are not far removed from the pavement of Raphael's loggia, and may well have been removed from some apartment of Julius II or Leo X.

The tiles at San Silvestro al Quirinale are arranged as a pavement in the Cappella Santa Caterina, where was buried Frate Mariano Fetti, a follower of Leo X. The tiles are noticed by Professor Gnoli in an article entitled "Raffaello alla Corte di Leone X," published in the *Nuova Antologia* for 1888, also in an article on "La Cappella di Fra Mariano del Piombo" in *Archivio Storico dell' Arte* for 1891, and again by Professor Tesorone in the pamphlet above mentioned. The very beautiful drawings here reproduced (Figs. 2 to 6) were executed by Count Vespignani, architect to the Pope. The border consists of a series of interlocking Medici rings, with the diamonds pointing alternately up and down. Behind each ring are the three Medici feathers, green and white and maroon. The background on some of the tiles is green and on others blue. Viewed as a whole, it is evident that these tiles were not originally designed for the space they now occupy. At the angles of the pavement the tiles do not unite naturally, but have been cut down to fit the new position. The number of tiles with the blue background is larger than that with the green, and these two varieties are arranged without reference to each other. When shown these tiles Costantini recalled that some of the compartments of pavements of the loggia had borders of this design instead of the two-strand *rovere* braid. He recognized, however, that these tiles are smaller than those which occupied a similar position in the loggia pavement. The central compartment consists of square tiles surrounded by oblong tiles. The square tiles are considerably smaller than the border tiles, measuring only 0.125 m. They are ornamented either with blue Medici diamonds or with five white Medici disks upon a blue background. The smaller tiles are decorated with intertwining fruits, flowers, feathers and *rovere* branches or rings.

FIG. 6. DETAIL OF PAVEMENT IN SAN SILVESTRO AL QUIRINALE.

It seems evident that these tiles were made originally for Leo X or other member of the Medici family. In color, in design, in technique they betray the workmanship of the younger Luca della Robbia. We cannot be far wrong in supposing that they also were made for some room in the Vatican.

If we consider as a whole the information we have been able to gather concerning the Vatican pavements, we cannot be far wrong in concluding that the designs, as well as the execution, are to be ascribed, not to Raphael, as is popularly supposed, but to Luca di Andrea della Robbia.

An account of the Robbia decoration of the Innocenti and the San Paolo Hospitals in Florence, and the Ceppo Hospital at Pistoia, will be given in another article.

FIG. 5. DETAIL OF PAVEMENT IN SAN SILVESTRO AL QUIRINALE.

The Permanency of Steel Skeleton Construction.

BY J. K. FREITAG.

A FEW weeks ago, in an address before the Chicago Real Estate Exchange, General William Sooy Smith, member Western Society of Engineers, gave some opinions regarding the probable life of steel buildings, which, on those at least who are unfamiliar with the subject, or even on architects and investors who have attached no importance to questioning the permanency of our present methods of construction, must either have made a great impression or else have been soon dismissed as the visionary opinions of an alarmist.

But, unfortunately, even if one cannot agree with many of General Sooy Smith's deductions or with his apparent distrust of the majority of steel-constructed buildings, his warnings are only too well founded in many particulars, and his criticism cannot be met by simply ignoring the points at issue or by disregarding statements. It will therefore be the object of this paper to consider General Sooy Smith's opinions, and to see what assurances, if any, may be found to justify the better methods of present-day steel skeleton construction, and to ascertain what causes, if any, contribute to rapid or alarming deterioration.

Evidently what General Sooy Smith intended principally to emphasize was the distinction between cheap and wretchedly poor steel building construction, built for immediate profit only, without regard for the future, and structures which are built with care upon as accurate and scientific knowledge as may be possible to derive from past experience and conservative practice. General Sooy Smith drew attention, as he has done before, to the great difference, in the probable ultimate life and safety, between a steel skeleton building of good and careful construction, in which the metal framework is given adequate initial protection against rust or other deterioration, as well as permanent protection by means of adequate coverings of cement masonry, and those other buildings which receive little or no early consideration as to the quality or protection of the metal work, and which are then covered up by inadequate envelopes which hinder inspection without accomplishing their protective functions. It was stated that the first class of buildings was good for a life of two thousand years, while in the latter and probably much more numerous class deterioration proceeds with such rapidity that failure may be expected at any moment, or certainly within a very few years.

We have not seen any published account of General Sooy Smith's remarks which gives either the authority for his opinion that steel imbedded in cement masonry will safely withstand for two thousand years the corrosive tendencies incident to our modern methods of buildings, or his investigations of existing structures which reveal such rapid and dangerous decay or deterioration as to warrant the belief that many structures stand by the barest possible margin of safety, and that they are on the verge of collapse at any time. It would certainly be interesting and of great scientific value to know the precise facts or experiments upon which such statements are founded; but the writer believes that it is impossible at the present time to prove either of these extreme positions *as applied to modern conditions*. From certain known facts under *other* conditions, and from certain partial deductions drawn from the range of a comparatively few years, it will be safe to assume that certain buildings, built with all due regard to this but imperfect knowledge, are secure and reasonably permanent; while others, built with little or no thought of permanency beyond the time necessary for the mere building operation and the subsequent sale or transfer to other hands, may properly be questioned and looked upon with deserved distrust.

It has been said that the ultimate life of steel buildings under modern conditions is not calculable, and this does not overlook the possible, but very improbable, actual immediate investigation of all steel skeleton buildings which have been built perhaps fifteen or twenty years.

Such an examination would prove the safety or danger at the present time of the *structures examined*, but of those built very recently the elapsed time has been too short to warrant any absolute conclusions, and to judge present methods of construction by deductions drawn from earlier and different constructions would be manifestly unfair. Many improvements differing radically from earlier methods would be sufficient to change entirely the power to resist corrosion or deteriorating influences. The absolute result is therefore to be had with time only.

It may be urged that the action of other metallic structures, such as bridges, viaducts, piers, etc., may be taken as sufficient basis upon which to work, but this is a comparison of little value, due to the great difference in the character of the exposure. Any and all experience gained from a study of bridges or other metallic structures is of undoubted value as fixing their action and wear under the various circumstances in which they were used, but the deteriorating conditions in buildings are of a different character, and it is therefore reasonable to presume that the effects may be different in both kind and degree.

Bridges are always open to inspection, and repainting is an easy matter as soon as traces of rust are discovered. Such structures are also subject to alternate wetting and drying, rains, fogs and severe heat and cold. Are these conditions more or less severe than those affecting the framework within a building? In the latter class of structures the steel is covered from sight, and frequent inspection or repainting is impossible; but while the temperature is probably much more even, no winds or circulating air act to dry the moisture which may be constantly penetrating the envelope after each rain or storm.

It has also been stated that whereas engineers usually count on an average life of about forty years for bridges, etc., with their accessibility for inspection and repainting, a life of much more than forty years is expected of buildings, without the possibility of inspection or renewal. This is not a fair comparison, as the length of life in our bridges and viaducts has been determined rather by the great increase in rolling loads and the attendant overstraining of the parts than by causes of deterioration.

Assuming now that the more alarming conditions of which General Sooy Smith speaks are true, — and it is to be supposed that actual investigations are the cause of so radical a statement, — it might be well to consider the probable effect arising from the possible collapse or even partial failure of some great steel skeleton building. It is to be devoutly wished that actual investigations by individual owners be at once undertaken, but it is to be feared that such a proceeding, involving even a most moderate expense for removing a few of the column coverings in the lower story or stories, would seem a useless expenditure to owners who begrudge such inexpensive and yet such vital initial features as adequate inspection and painting for the steel frame. Such an investigation would be a comparatively simple matter, involving as it would only the uncovering of a few typical members of the construction in any locations or under any special conditions which it might be thought would be especially liable to show more marked effects in deterioration. This could be accomplished with little or no fear of criticism or apprehension on the part of tenants; and while investigation might only serve, as the writer believes it would, to increase the faith or to quiet the fears of owners of good buildings, it *might* also serve to show the owners of a different class of structures the folly of a penny wise, pound foolish policy which could better be corrected at once than after some dire calamity had thrown distrust upon all steel structures.

Let us now consider some definite criticisms which have been made against skeleton construction and some actual cases of the deterioration or preservation of metal work which intimately bear upon this discussion.

First, as regards the recent criticisms by General Sooy Smith, something more definite to work upon than his late opinions may be found in a paper which he delivered some years ago before the Western Society of Engineers.* From that article we quote as follows:

"The rate of corrosion of iron and steel varies greatly under different circumstances. In pure water containing no free air, with an air-tight covering of paint or imbedded in quicklime, it scarcely corrodes at all, but when in the open air, particularly when alternately wet and dry, it rusts quite rapidly, and when exposed to steam and sulphurous fumes it is eaten away by corrosion at the rate of one-eighteenth of an inch per annum, as was the case in the floor system of the viaduct in Milwaukee Avenue, Chicago, under which locomotives were passing frequently; and corrosion at the same rate occurred in a portion of the western approach of the Eads bridge at St. Louis, where the same circumstances exist.

"As the metal in a steel column is usually not more than one-half inch thick, corrosion at the above rate would make a steel building unsafe in less than twenty years.

"In an iron or steel skeleton building the columns starting at the basement floor or at the floor at street level extend to the top of the building. They are hollow and painted only on the outside and this with paint that is so perishable that it will afford no protection from corrosion after the first five or ten years. The girders are nearly as much exposed as the columns, while the beams are generally bare on the top and bottom surfaces of the flanges and sometimes over a considerable part of the webs."

Now, as we have seen, it is manifestly unfair to make any comparison between the rates of corrosion for viaducts over railroads and for buildings, but here we seem to have one of the principal arguments upon which General Sooy Smith bases his prediction of failure of buildings "in less than twenty years." Again, the mention of floor beams which "are generally bare on the top and bottom surfaces of the flanges and sometimes over a considerable part of the webs," and the mention of columns which are assumed to be protected by a doubtful coating of paint only, indicate most exceptional practice, if indeed precisely such cases could be found.

Examples from building practice of actual corrosion have from time to time been brought to public attention by architects and engineers, notably in discussions on the permanency of skeleton construction before the American Institute of Architects * and before the American Society of Civil Engineers.† In the former instance the principal example of corrosion was cited by Mr. Post, where the condition of certain beams taken from the old New York Times Building was mentioned. These iron beams, which had been in use some twenty-five or thirty years, had carried brick arches over a boiler room and kitchen, and the *unprotected lower flanges*, exposed to the action of steam and cooking gases, were found to be nearly destroyed, while the corrosion had also extended upwards between the iron and brickwork until the beam webs were almost entirely worthless.

Other similar instances of corrosion were brought forward at this discussion, and, without a single exception we believe, their *unprotected* condition could lead to nothing but deterioration sooner or later. But such examples as these are about as worthless as the comparisons to railroad viaducts, and that Mr. Post attached no importance to the action of such unprotected members may be judged from his later statements before the American Society of Civil Engineers, when he said:

"While the speaker was not a great admirer of steel in concrete, the evidence of the last few years seemed to him to prove forcibly that where iron or steel is in direct contact with masonry it is thoroughly protected from corrosion. In pulling down the first Herald Building, which was over thirty years old, he directed the inspector to bring him the worst corroded pieces of iron he could find in the building. There were no bad examples found, and where the mortar had been in absolute contact with the paint, the paint itself was preserved. All the reliable evidence obtainable goes to prove that cement mortar has the faculty of preserving iron and steel to a great extent from corrosion, and certainly of preserving from injury the paint which it covers." ‡

Such testimony as this from the very wide experience of Mr. Post, and the testimony of others who have cited remarkable instances of the preservation of iron within cement or concrete, — as, for instance, Mr. W. L. B. Jenney, who mentions the excellent condition in which

* See "Fireproof Construction and Prevention of Corrosion," by General William Sooy Smith. "Journal of the Western Society of Civil Engineers," April, 1898.

* See The Brickbuilder, November, 1891.

† See "Transactions American Society of Civil Engineers," Vol XXXV.

‡ See "Transactions American Society of Civil Engineers," Vol XXXV, p. 472.

a piece of iron was found after being imbedded some one thousand years beneath the Egyptian Obelisk now in Central Park, N. Y.; and the practically perfect condition recorded of iron after a four hundred years' entombment in cement concrete beneath water, — such testimony must show that the reasonable permanency of the better class of skeleton construction is not only possible but probable. While this may not be susceptible of actual proof, it will still be a pretty safe guide to follow well-proven facts regarding the known actions of iron or steel under certain conditions; and if all causes are avoided which have apparently produced bad effects, and other examples of unquestioned preservation are profited by, there would seem to be little doubt that the result will be a permanency equal to the space of time within which any building would naturally outgrow the usefulness for which it was erected. What these well-proven facts seem to establish we will now briefly enumerate.

First, as to the causes of corrosion or deterioration. From the very beginning of service all metals suffer a diminution of strength, however slight or slow in action, due to the corrosive or deteriorating influences of moisture, deleterious gases, vibrations or shocks, or possibly electrolysis. These influences may be initial — that is, existing only or with greatest force at the time of placing in position — or permanent or progressive, due to the continued conditions during use. It must also be remembered that initial rust will almost certainly lead to permanent and progressive rust.

The question of vibration or shock is not pertinent to this article, while electrolysis is only vaguely to be estimated and is also questionable in degree or importance. The principal deterioration to be feared is therefore rust, due either to lack of initial protection of the steel work, to moisture arising from the employment of mortar during building or to moisture which either penetrates the protective coverings during service or else emanates from piping within the structure.

Considering now the phenomenon of rusting, we know that iron and steel are but very slightly oxidized or rusted under the action of pure air or pure water, but when the air becomes moist so that it condenses on the surface of the metal, or when water becomes impure or acidulated, oxidation is speedily established, and when once started the ultimate destruction of the metal is assured unless the process is arrested.

As to the materials ordinarily employed, — iron, steel, stone, brick, terra-cotta, concrete, lime or cement mortar, — if these can be so selected as to better withstand corrosion or be less liable to promote corrosion in other materials, the initial choice is as important as later considerations of protection.

It is now generally considered that under usual conditions the corrosibility of cast iron, wrought iron and steel will be about the same. Under very trying conditions, as for instance in salt water, cast iron will show the best results, but in protected building work the reliability of steel far offsets any possible slight advantage which cast iron might possess in the power of endurance.

In selecting the class of masonry or terra-cotta to be used it should be remembered that limestone must never be employed in locations where there is any possibility of contact with the steelwork or where moisture could penetrate the joints and then reach the steel frame, for experience has shown that anchorage cables of suspension bridges have been badly corroded and even entirely severed where imbedded in limestone masonry or concrete made with limestone. If limestone is used, a thick layer of cement mortar should first surround the metalwork. Brickwork should be built of dense and hard brick with a vitrified appearance and with a minimum of soluble salts. Terra-cotta protections should preferably be of a porous variety,* both on account of the ready evaporation of moisture from the mortar used in setting and the evaporation of penetrating dampness from without, to say nothing of fire-proofing qualities. Regarding lime *versus* cement mortar there are great differences in opinion. Many claim that lime mortar is an excellent preservative of steel, and this opinion is believed to be substantiated by examples. Other authentic cases, however, tend to show that, under certain conditions at least, lime mortar is not to be depended upon. On the other hand cement mortar or concrete is now generally regarded as a most perfect conservator of iron and steel. Mr. Post's conclusions as to cement mortar have been previously quoted, and Mr. J. Newman † states that "iron imbedded in properly made and mixed water- and air-tight Portland cement concrete has not yet been shown to rust, and the preservative effects of such concrete may be considered to be established, provided the surface of the metal was clean and dry on the Portland concrete coating being applied and free from corrosion."

Proper materials, however, may be rendered nugatory through improper usage. A few words, therefore, concerning the methods of use to secure both initial protection and permanent effectiveness.

When delivered from the rolls which form them to the cooling beds all steel plates and shapes are largely covered with scales which are only partially attached to the surface and hence form cracks for the ready formation of rust. If such plain material is then handled or stored out of doors before being painted, rust will quickly start beneath the scales, and if allowed to become well developed any subsequent painting will never arrest the oxidation which proceeds under cover of the paint. The first essential, therefore, for effective painting is the early removal of all mill scale, rust, grease, etc., and here the services of a careful mill or shop inspector are worth the entire charge made for inspection. A coat of pure boiled linseed oil is generally specified for the material before shipment, to be followed as soon after erection as practicable by at least two coats of different colors of almost any of the better grade paints, oxide of iron, red lead, asphalt or graphite paints, *provided the oils and pigments used are of the best quality*, and provided the painting is done in dry weather on dry surfaces.‡

In designing the steelwork a minimum area should be presented to corrosive influences, as the ratio of exposed surface to sectional area largely determines the amount of

* For reasons, etc., see the author's "Fire-proofing of Steel Buildings," pp. 115 to 118.

† See "Metallic Structures: Corrosion and Fouling and their Prevention."

‡ For a more extended discussion of paints and painting see the author's "Architectural Engineering," revised edition, 1901.

the corrosion. The practice of using very thin columns of large areas in exterior walls, like vertical plate girders, is to be avoided, as this presents large areas to exposure and possible corrosion. Columns should be as compact as possible, open where practicable, in order that all surfaces may be protected. When used in closed or boxed section the interiors should be filled with cement mortar or concrete.

In using masonry or terra-cotta envelopes or coverings, either exterior or interior or around foundation members, the function of excluding all possible moisture or air should be borne in mind. The masonry should be thick enough, laid in cement mortar, all joints carefully laid and repointed from time to time, and where in contact with the steel a heavy coating of cement mortar, asphaltum or other impervious covering, preferably a casing of hollow terra-cotta laid in cement mortar, should first surround the metalwork. Floors should protect the entire beam or girder surfaces, the upper and lower flanges as well as the webs; column coverings should extend from floor to floor without any holes or openings at the various floor levels; and in fact every precaution should be taken to surround the steelwork with as air- and water-tight a covering as possible, this covering to have some acceptable material everywhere *in contact* with the metal frame. Architects Holabird & Roche, who have designed many notable high buildings in Chicago, state as the result of their extended practice: "We have found that in fire-proofing, wherever the terra-cotta shapes are so arranged that the entire surface of the beams, girders, columns, etc., is covered with the mortar or cement in which the fire-proofing is to be set, practically no oxidation takes place, and that such beams, girders and coulmns are in perfect condition after twelve to fifteen years; while beams, girders and columns that are simply protected, without having the mortar in contact with the steel, have been found somewhat seriously oxidized."

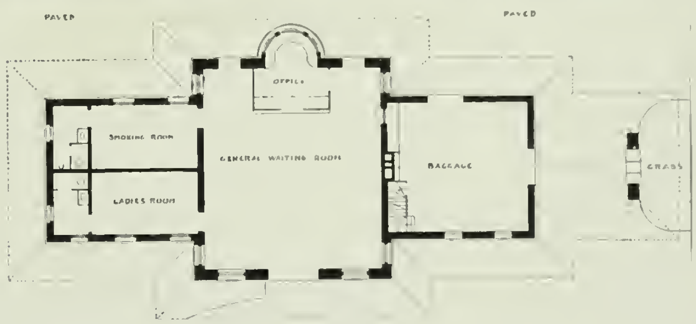
Finally, the detrimental radiation of moisture or the leakage of gases from pipes, vents, etc., can be avoided by placing all piping in separate chases, shut off from the metal columns by means of masonry or terra-cotta coverings. In many early examples of high building work the piping was run up alongside the metal columns, within the same enclosure, and certain column forms have been recommended for use because they allowed space between the flanges for the running of pipes. The writer even knows of instances where the column cap-plates were cut with slotted holes to permit pipes to pass up close to the shaft. This is a most dangerous practice, and owners of buildings where such methods have been followed would do well to make investigations without delay.

The conclusion therefore seems tenable that skeleton construction *can* be made safe and permanent. There are certainly flagrant examples of poor, cheap and even insecure construction, but wide-sweeping condemnations of skeleton methods cannot be drawn from the shortsighted practice of careless or ignorant investors. If the proper materials are used, with adequate care for initial protection and for permanent preservation, we can see no reason to question the ultimate wisdom of present conservative methods.

Selected Miscellany.

ROTCH TRAVELING SCHOLARSHIP.

The nineteenth Rotch Traveling Scholarship has this year been awarded to Mr. J. F. Clapp, a graduate of the Institute of Technology and a student employed in the office of Shepley, Rutan & Coolidge. Mr. Clapp is thoroughly equipped for the prize which he has won, and will go abroad under the most favorable circumstances. The



PLAN.

RAILWAY STATION, MOLINE, ILL.
O. Z. Cervin, Architect

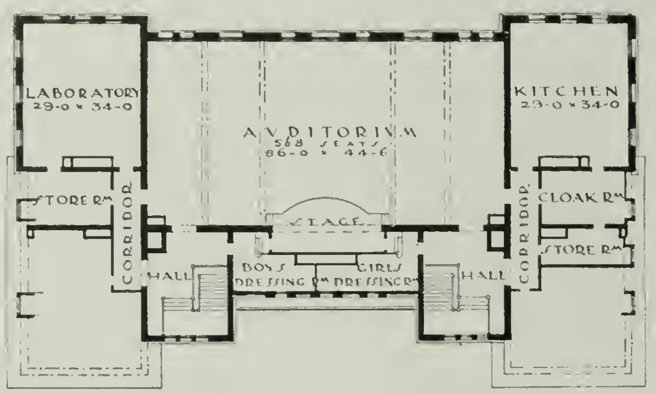
problem for the competition in design was a city hall such as would be required by a municipality like Boston, Buffalo or Cleveland. The jury consisted of Messrs. E. R. Willson of Providence, A. W. Lord of New York, and W. E. Chamberlin of Cambridge. Mr. Lord was

ROOF OF UNITED STATES POST OFFICE, MADISON, IND.
Covered with Ludowici Roofing Tile

the fifth holder of the Rotch Scholarship. The custom has been started of including in the jury each year one past holder of the scholarship. There were seven competitors for the scholarship this year.

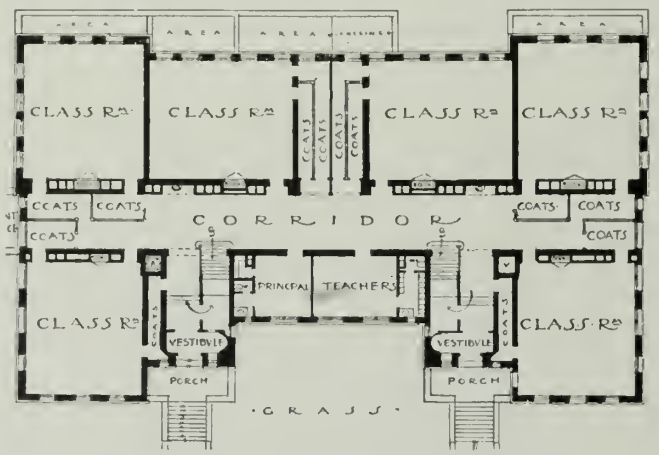
NELSON ROBINSON, JR., HALL AT HARVARD.

The Department of Architecture which Harvard University has established upon so thorough a basis dedicated its new building on May 22. This structure, known as the Nelson Robinson, Jr., Hall, is probably the most thoroughly equipped structure for the purpose in



THIRD FLOOR PLAN.

SECOND STORY IS A DUPLICATE OF THE FIRST EXCEPT IN PLACE OF TEACHERS' ROOMS THERE ARE SEWING ROOMS.



FIRST FLOOR PLAN.

PIERCE GRAMMAR SCHOOL, BROOKLINE, MASS.
J. A. Schweinfurth, Architect.
(SEE ILLUSTRATION IN PLATE FORM.)

the country. It was built entirely with funds given to the university for the purpose, and there has apparently been no limit to the amount available for every reasonable demand. The structure was designed by McKim, Mead & White, and has been illustrated in past numbers of The Brickbuilder. The department, under the fostering care of Prof. H. Langford Warren, has developed in an eminently satisfactory manner and in spite of the limited accommodations with which it has heretofore been provided. Its material surroundings are now so ideal that we may reasonably expect a large access to its growth.

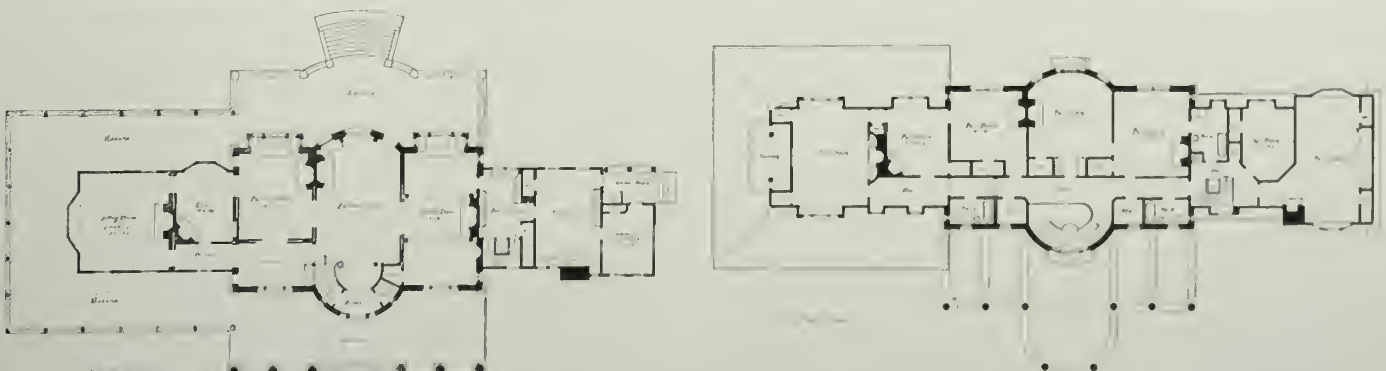
HAMILTON STORAGE WAREHOUSE, NEW YORK CITY.
Built of Brick made by Ohio Mining and Manufacturing Company.

ART NOUVEAU.

PROF. A. D. F. HAMLIN of Columbia University recently delivered before the Boston Society of Architects a very interesting lecture upon the subject of the particular manifestation of design which the French have characterized as L'Art Nouveau. In the course of his lecture he took occasion to call attention to some of the work in this country which in his judgment, if it had been executed abroad, would have attracted much notice and would have been classed within the province of the New Art. The inference which might be drawn from Professor Hamlin's statements is that the New Art

INTERIOR VIEW, PUMPING STATION, PHILADELPHIA, PA.
Lined with Brick made by American Enameled Brick and Tile Company.

HOUSE AT BRYN MAWR, PA. Newman, Woodman & Harris, Architects.



HOUSE AT GLEN COVE, LONG ISLAND. C. P. H. Gilbert, Architect.

(SEE ILLUSTRATION IN PLATE FORM.)

HIGH SCHOOL AT CHILLICOTHE, OHIO. Frank L. Packard, Architect.
Roof covered with 10-inch Conosera Tile, made by Celadon Roofing Tile Company.

was practically a product of this country; that its earliest manifestations would include the work of Mr. Sullivan of Chicago, the Transportation Building, and would even include certain phases of the work of such men as Wilson Eyre and Frank Miles Day. We have been producing a New Art in this country without making any of the fuss or feathers about it which the French seem to find so necessary, and our Art Nouveau, while having much of the element of protest and the direct return to natural forms which has won such favor abroad, has been to a very large extent free from the mere eccentricities of design which have prejudiced the French manifestation.

WE were interested a short time since in an editorial which appeared in the New York *Sun* under the title "Carved New York," which gave the impression that ornamental terra-cotta, the use of which was characterized as the first step in the break from the old-time baldness of design, is rapidly disappearing before the demand for the more expensive and more substantial forms of adornment. As the yellow journals say, this is important if true. But if the *Sun* writer could have used his eyes a little more intelligently he would have appreciated that much in recent building work which he took to be elaborately carved stone was in reality terra-cotta. We cannot altogether blame our designers if so

SCHOOLHOUSE, HYDE PARK, OHIO.
Dornette & Sheppard, Architects. Roofed with American S Tile.

BUILDING FOR ASTOR ESTATE, BROADWAY, NEW YORK.
Clinton & Russell, Architects.
Built with Red Stretcher and Black Header Brick, made by Sayre & Fisher Company.

RESIDENCE AT WASHINGTON, D. C.
James G. Hill, Architect.
Built of Columbus Face Brick (Ironclay).

much of the terra-cotta passes under casual observation as stone, for to the average observer everything which is not red is of stone or iron, and nothing but the old, time-honored Peerless brick color passes for terra-cotta. The differences would be at once perceptible to the trained architectural mind. The editorial in question was admirable. Its only slip was in assuming that all the good architecture was necessarily of stone, which is not the case. Actual count shows that an increasing proportion of the modern buildings are yearly being adorned with terra-cotta. We quote: "Gradually the feeling of respect and appreciation for professional skill and expert advice in matters pertaining to the parks and other public properties is spreading among the people, in spite of occasional outbreaks of well-meant but destructive ignorance. The day of haphazard blundering has gone by. The public eye has been educated to a standard demanding something better than architectural misfits or statues made by stone masons." What is true of New York is equally true of all our large cities. Terra-cotta has not only come to stay but it has ceased to be in any sense a sketch material. It is a finished product.

DETAIL BY SASS & SMALLHEISER, ARCHITECTS.
New Jersey Terra-Cotta Company, Makers.

IN GENERAL.

Heins & La Farge, architects, New York City, have removed their offices to 30 East Twenty-first Street.

J. M. McCollum and Press C. Dowler have formed a copartnership for the practice of architecture: offices, Bank for Savings Building, Pittsburgh, Pa.

Joseph L. Neal and George M. Rowland announce the formation of a copartnership for the practice of architecture under the firm name of Neal & Rowland: offices, 215 Fourth Avenue, Pittsburgh, Pa.

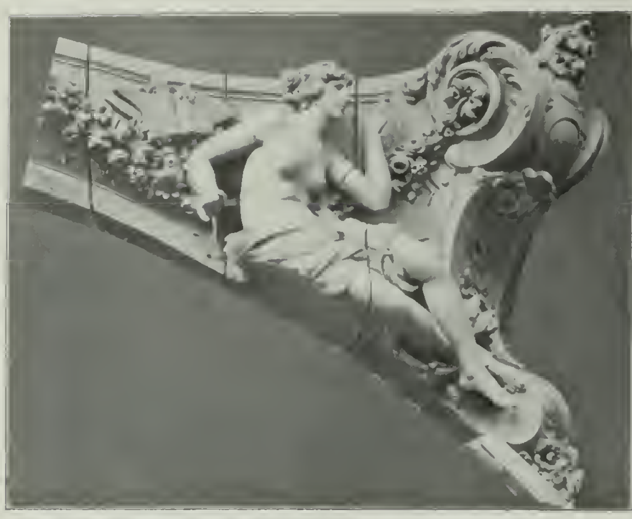
DETAIL BY DONALDSON & MEIER, ARCHITECTS.
Atlantic Terra-Cotta Company, Makers.

J. A. F. Cardiff, architect, Jersey City, N. J., has removed his office to 288 Monmouth Street. Manufacturers' catalogues desired.

At the annual meeting of the Detroit Architectural Club, held April 14, the following named were elected as officers for the ensuing year: president, Cheri Mandelbaum; vice-president, G. H. Ropes; secretary, Edward N. Schilling; treasurer, John J. Frauenfelder; directors, John G. Gillard and Adolph Eisen.

The New York office of the National Fire-proofing Company has been moved from 874 Broadway to 170 Broadway, corner of Maiden Lane.

Frank C. Manson has been appointed manager of the newly opened office of the Ludowici Roofing Tile Company, Townsend Building, Twenty-fifth Street and Broadway, New York City.



DETAIL BY BRUCE PRICE, ARCHITECT.
Conkling-Armstrong Terra-Cotta Company, Makers.

The National Fire-proofing Company have secured the contract for fire-proofing the Farmers' Deposit National Bank Building, to be erected at corner of Fifth Avenue and Wood Street, Pittsburgh, Pa. The building is to be twenty-four stories high. Alden & Harlow, architects; George A. Fuller Company, general contractors.

What is to be one of the finest buildings in Canada is now under construction at Quebec for the Metropolitan Life Insurance Company of New York, from plans of Messrs. N. Le Brun & Sons. It is to be faced with rough-textured, red-face brick, furnished by Messrs. Fiske &

DETAIL BY MARCUS T. REYNOLDS, ARCHITECT.
Excelsior Terra-Cotta Company, Makers.

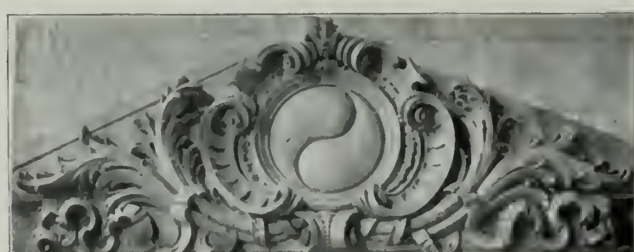
Co., Boston, Mass. The effective qualities of this brick are attested by the ever-increasing demand for it, it being shipped to all sections of the country.

To meet the demands of a rapidly increasing business the Atlantic Terra-Cotta Company has been obliged to make extensive additions to its plant. Two seventy-ton kilns and necessary shop rooms are now being erected. The plant when completed will be one of the very largest in the country. As is well known, the company is supplying a very superior grade of terra-cotta to the market. Among the most recent buildings on which they are supplying terra-cotta are the following: Studebaker Building, New York City, James Brown Lord, architect; Marie Antoinette Hotel, New York City, C. P. H. Gilbert, architect; Berkshire apartment house, New York City, H. Fairchild Steven, architect; Asbury Hospital, Minneapolis, Minn., E. P. Overmire, architect; Pennsyl-

DETAIL EXECUTED BY THE NEW YORK ARCHITECTURAL TERRA-COTTA COMPANY.

vania Building, Philadelphia, Pa., H. L. A. Jekel, architect; Belvidere Hotel, Baltimore, Md., Parker & Thomas, architects. The company is making a specialty of semi-glazes and dull enamel. The terra-cotta which they are furnishing for the Flatiron Building, Twenty-Third Street and Fifth Avenue, New York City, is an example of the dull enamel terra-cotta manufactured by them.

WANTED — Thoroughly experienced architectural draughtsman for general office work. Apply, stating qualifications and salary desired, to Albert Kahn, 1117 Union Trust Building, Detroit, Mich.



DETAIL BY REED & STERN, ARCHITECTS.
Northwestern Terra-Cotta Company, Makers.

THE BRICKBUILDER.

JUNE,

1902.

CHURCH AT HAARLEM, HOLLAND.

VOL. II
NO. 6

THE BRICKBVILDER

JUNE
1902

H. T. B.

THE BRICKBUILDER.

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ADVERTISING.

Advertisers are classified and arranged in the following order:—

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" Terra-Cotta	II and III	Fire-proofing	IV
Brick	III	Machinery	IV
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Advertisements will be printed on cover pages only.

THE recent convention of the Architectural League of America was notable for a marked improvement in the work of the constituent clubs as shown in their reports. A broader scope, a wider range of effort, was evinced, and if equal progress is maintained in coming years it will be difficult to set any limitations to the achievements of the League. In a broad way the following topics were discussed by the convention: Education, —and its possible betterment through the founding of an American Art University, —Architecture and Citizenship, Landscape Architecture and Municipal Improvements. It was of interest to see how the vigor and activity of individual clubs had anticipated in practical work the points covered in the discussion. It was shown that diligent effort had been made to get the best information from foreign sources, and as usual the most marked activity in this direction was displayed by the Philadelphia T-Square Club. To obtain accurate information of foreign work, traveling scholarships have been established by various clubs, notably by Chicago and Philadelphia. Nearly every club maintained classes and many held monthly meetings and competitions with beneficial results. The monthly meetings were often but an excuse for a technical paper or a lengthy discussion upon some leading topic of the day.

Interest in municipal improvements was most notable, and the reports showed that clubs, particularly the Chicago Architectural Club and the St. Louis Architectural Club, had successfully coöperated with the city authorities in many reforms and improvements accomplished during the recent year. The grouping of public buildings in Cleveland, discussed at the first convention of the Architectural League of America, is now an accomplished fact, due in no small measure to the untiring energy of the Cleveland Architectural Club.

The report from Washington was made doubly interesting from the fact that the projected replanning and improvement of that city now under contemplation were shown during the convention by an elaborate series of lantern slides and explained by an interesting lecture. This work, whether executed or not, demonstrates a marked advance in conception, as well as increased public interest in the planning of cities.

An interesting feature of each year's work is the circuit exhibition, and reports from the various cities told of difficulties encountered and successes achieved. To improve and perfect this exhibition was one of the most important results of the convention. After full and deliberate discussion it was recommended that for the coming year the main feature of the exhibition be photographs of the executed work. The Toronto Architectural Club demonstrated in their local exhibition held in the rooms of the Ontario Society of Artists the possibilities of such a collection. Many of the difficulties and objectionable features of the circuit exhibition would be removed by the adoption of this recommendation. It will be the aim of the committee having this work in charge to secure a representative collection of photographs of foreign works, securing them if possible from Germany, France, Italy and England. The circuit exhibition will probably be accompanied by a lecture on municipal improvements, with the necessary lantern slides and explanatory photographs. This could be given in every city and modified in each municipality to fit the local conditions.

Endeavor will be made to have a committee on municipal improvement in each city so that those desiring to obtain information on this most interesting question can do so with as little trouble as possible. The interest of the country at large in the work of the League was shown by the numerous communications received, notably the series of letters from professors and art teachers on the advisability of founding a national university of art. It is hoped also during the coming season to establish a system of inter-club self-education by means of which the most advanced information on architectural and artistic questions may be rapidly forwarded from one club to the other.

Fourth Annual Convention of the Architectural League of America.

REPORT

BY OUR SPECIAL REPRESENTATIVE.

THE fourth convention of the Architectural League of America, held in Toronto, Canada, in the last days of May, proved an extremely interesting meeting. The gatherings of the League since the first convention held three years ago have never failed to bring together many of the younger men of the profession. As a body, the men who have formed and maintained the new organization may perhaps be classed as "protestants" or "secessionists." They are young, sane, intensely American, ambitious and discontented. Since their organization they certainly have given every evidence of being very much alive, of knowing what they wanted and sometimes succeeding in negotiating their desires. They have done some thinking, and if the architectural history of the past few years is read aright they have also been the cause of more thinking on the part of others. There are in evidence much individuality of character, fearlessness of expression, and a fine disregard for a multitude of things which are generally accepted but not proven. All these qualities came out strongly in the course of the discussion upon the report of the committee on education and in the election of the new president. All precedent and prejudice were cast to the winds when a president was elected who was "not an architect." The discussion upon education revealed that the League has a decided leaning to the belief that students should be taught first to work with their hands before the refinements of brain operations are undertaken; that the art of architecture consist of building in execution and not of draughts on paper; and that the workshop rather than the draughting room lies at its foundation.

In advocating a national art university strong emphasis was laid upon the necessity of workshop instruction as fundamental to art training and for the development of character and individuality. The school should produce the skilled mechanic and craftsman first, from the ranks of whom alone should spring the master artist, be he architect, painter, sculptor or artisan.

There can be no doubt but that such an order of things would revolutionize present systems of art education and have a most beneficent effect upon the art of the country. The thought occurs at once that men so trained would inevitably extend their influence to all articles of manufacture, for instance, as to which the lack of design has been so frequently deplored but no remedy for the condition ever presented. We may reflect upon the vast output of manufactured articles issuing from American workshops and factories utterly lacking the touch of the skilled designer, all of which could so readily be improved and made more useful and valuable under the hand of the trained artisan. If the influence of the school extended in this direction alone, enough would be accomplished; for after all is it not more important that the common things which are in our constant sight and with which we are in daily contact should be made refined and beautiful rather than that more great paintings and sculptures should be collected and housed in museums? The denial of this proposition would seem to be equivalent to denial of the seriousness of art itself.

The fact is not sufficiently remembered that the men who wrote the great books that make the libraries of to-day, themselves saw comparatively little of libraries. The men who designed and carried to execution the great buildings which we now declare to constitute the architecture of the world were themselves master mechanics rather than draughtsmen. Now we rise up and call them great. They were not so sure that they were great. They built their architecture along the lines of a normal evolution, and they were artists who were at home in the workshop with chisel and mallet, anvil and sledge.

It is probable that ignorant labor carried the hod in Egypt, Greece and Rome, but it is not possible that the architectural triumphs of the past were created under the conditions of ignorant workmanship and untrained artisanship which prevail to-day. The art of building in all its departments stands in sore need of some vigorous external influence to supply the unsatisfied demand for skilled labor in the arts.

It is a well-known fact, deplored generally by contractors, owners, architects and all in authority in building operations, that ignorance and indifference among mechanics in the building trades are becoming more and more marked. Men are indifferent because they do not know their work, do not respect it, have no love for it nor for their finished handiwork. What architect but can recite instances of wanton defilement of work by the very men who created it? Nothing has as yet taken the place of the ancient and efficient system of apprenticeship, and it is one of the wonders of our age that the great building enterprises — in a commercial sense at least the greatest which history records — are brought to completion by practically unskilled and uninterested labor. There is food for a tremendous amount of reflection in this condition of affairs, and it is not at all out of place that systems of education, and particularly higher education, should take note of it.

It is the function of schools to educate. It is the function of all the schools to supply education to all the people. It is a reflection upon a school system as well as upon a nation if at a certain development its youth must be sent to a foreign land among a strange people to be educated. No reason exists why the American people could not or should not provide at once every advantage and facility for higher art education equal to that possessed by any other nation, or all others together for that matter. The only answer which we hear to this is: "Oh, but the museums! What about the archives of the past?" Now of course we should dislike to be compelled to worry along without these dear old relics, but would their absence be really such a material disadvantage? Let us consider that the designers who produced the extremely interesting exhibits worthy of preservation under glass were actually under the same disadvantage. If the Gothic engineer-architects had been surrounded on every hand by museums filled with casts of the Elgin marbles, by photographs and measured drawings of the Athenian acropolis, and a thousand professors pointing out with menacing finger each line and shadow, would the molded pier and vaulted roof, the flying buttress and glorious window ever have been achieved? No; the education of the library and the museum is sleepily agreeable, but it is not essential to the training which achieves results.

Mr. Dwight Perkins read a paper under the nominal title of "Architecture and Citizenship," in the course of which he made some very frank and outspoken criticism of current American architecture and architectural practice, particularly as it is found in the East, though by no means sparing much of the work which is found in his own city of Chicago. Honest difference of opinion is always welcome, and even though we may feel a good deal like the old Quaker in regard to the queerness of all the world except himself and his wife, with a doubt regarding the wife, at the same time progress and entire self-complacency are hardly compatible, and we need good, vigorous expressions straight from the shoulder, such as Mr. Perkins has delivered so tellingly, to make us not only appreciate our own blessings, but to keep us awake to the necessities of development. The mere question of style in architecture is a convenient peg upon which to hang an unlimited amount of conflicting criticism, and the question as to whether Mr. Sullivan's style is essentially American in spirit, or whether in order to be true we must shut our eyes to or at least close our sketch-books against all antiques, is one really, as we conceive it, of far less fundamental importance than the deeper question of whether we shall have ideals and stick to them. And because architects like Mr. Wright, Mr. Maher and Mr. Sullivan of Chicago have ideals, or at least view points, quite different from those of men like Cass Gilbert, Frank Miles Day or Mr. McKim, that does not in the slightest degree alter the fact that both ideals are of value to our national growth, and that from each arise sources of strength to our national architecture. It is the so-called business architect who is to-day the greatest menace of our artistic growth; the one whom Mr. Perkins characterizes as being "primarily constructive and money-making. He is not emotional in politics; he is content to let well enough alone and does not allow principles to interfere with his practice. He usually votes, but does not allow civic duties to divert his attention. He watches the trend of public affairs closely in order to determine where they can serve his own interests. He does not care about design and is not identified with important work except as the partner or employer of some other architect. He comes nearer to contentment than any other type."

To quote Mr. Perkins further: "The young man ambitious to become an architect studies building construction and structural design. He becomes familiar with processes and problems, and when he can design a structure that will not fall down, that fulfills the practical requirements and conforms to some scheme of proportion and embellishment, he considers himself an architect and is so considered by the majority of people.

"But is that all — has he yet distinguished between mere building and architecture? It seems to me that architecture is something belonging to the mind, that it is an idea which finds its expression on paper and its manifestation in stone, iron and wood. Ideas and ideals are the materials of architecture; stone, iron and wood are the materials of building."

Mr. Perkins's paper is to a very considerable extent one of protest, and he asks some questions which he himself is unable to answer. Just why some architects find their best expression in a blind subservience to the past, while others feel it their duty to be original even at the expense of being good, and still others try to follow up what they consider a logical development of the past into the needs of the future, is something which lies at the base of temperament, and the conflict between two schools of this sort is an ever present one. We would not wish it to be less, and it would be a calamity if all of us felt the same upon this subject.

There is one aspect of Mr. Perkins's paper which ought to receive most hearty commendation from every one and it is really the kernel of his thought as we understand it. "Work has been done that can be commended, but it is frankly the purpose of this paper to emphasize our duties as citizens in regard to bad work and the public misapprehension resultant therefrom. Is it not the duty of an organization like our League to criticise fairly but fearlessly prominent current work? If a committee report or criticism were expected at each convention I believe keen interest would be taken in its findings and that the publication of that report by the League after deliberation in convention would be of telling benefit to the public. Then we would be citizens acting in a body.

"I was asked to write a paper for this convention on architecture as practiced by an educated architect of advanced standing. I cannot better state the basis for my conception of such an architectural practice than to say that in my opinion the time is coming when we cannot be architects alone, but that we must also be conscious and conscientious citizens.

"Architecture practiced by such an architect would include both architecture and citizenship, creation and criticism, individual work and civic performance. It would involve the broad study of modern industrial conditions and an effort to perform his own peculiar tasks in the light of public needs as well as private interests. It would also involve a closer acquaintance with politicians, and, too, the joining with them, making their causes our causes, as well as gaining their coöperation for the things we desire.

"We have in this and all our conventions indorsed and applauded municipal improvement and we have justly assumed a right to speak on that subject. We are in danger of having our offers of advice and service accepted. Disaster to the cause, our profession and ourselves is impending unless we rise to high citizenship of the type described. It is not enough to be good architects unless the other is added.

"If we were really public-spirited citizens endowed with eyes to see, minds to think with, training with which to serve the public, and with courage to speak, we would protest against the ghosts of Roman temples now masquerading as banks."

After all, there is a good deal of hope for American architecture. And whether we turn our eyes backwards for inspiration to the noble works of those who have gone before us, or whether we feel that we must individually hew out an ideal path, forgetting the things that are past and looking only to nature for innate originality, we can say of our national architecture as a whole much as Milton said of himself, that it is not what it ought to be, it is not what it might be, and surely not what we would hope it to be, but it surely is not what it was, and grace to the earnest efforts of both classicist and idealist it is what it is.

And both schools will surely agree with the closing statement of Mr. Perkins's admirable paper. "If we found our work upon the principles which have been exemplified in every age, instead of merely copying or adapting their forms, we may proceed in the faith that good work is certain to result.

"In the presence of so much that is bad and selfish we may receive inspiration from the infinite truth and beauty in the works of nature surrounding us in profusion, we may receive encouragement from the engineering and industrial arts because they are free, and lastly, we may receive guidance from antiquity and the middle ages wherever the spirit of art was the master and the form was the tool. Architecture and citizenship have gone hand in hand in the best work of the past. It would be impious to doubt that they will do so again."

The Architectural League of America is an organization composed not of individuals but of clubs. Its latitude and scope of organization are as broad as those of the clubs themselves. It is quite remarkable that almost without exception these clubs sprang into life in all the larger cities, out of similar conditions, in a similar manner, produced similarity of results and progressed along similar lines. These clubs nearly all started as sketch clubs among draughtsmen, and were founded upon a desire for coöperation, social contact, advantages for self-education and advancement of common interests. Nearly all developed through reorganization from sketch clubs into "architectural clubs," and consciously or unconsciously patterned themselves after the Architectural League of New York. Their distinctive features consist of the holding of exhibitions, various methods of self-education, social intercourse, the possession of clubrooms and the admission to membership of practitioners in the fine arts allied to architecture. The wide usefulness and generous democracy of such a scheme of organization are thoroughly progressive and in accord with the spirit of the times. It recognizes that the technical architect alone cannot produce the best obtainable results, and that he must be supported by able allies in the various departments which contribute to the successful execution of architectural works. There cannot be too much contact and perfect understanding between the architect and the workers who depend upon him and upon whom he must eventually rely.

Art education must ultimately be advanced by the work done in its behalf by all the clubs, and especially valuable in this regard were the information and suggestion received from Urbana through its delegate, Professor Newton Wells. A suggestion was made for a possible curriculum for a national university which would greatly aid the advance so much desired. Architecture as a whole will shortly feel the benefit of the energy of Toledo, Detroit, Washington and the many affiliated societies.

In the election of Frederick S. Lamb as its president, the League found a man who personifies its ideals. Everybody who knows Mr. Lamb knows of his enthusiastic devotion to decorative as well as structural art. He brings to the office a ripe experience gained in many organizations, and it would be difficult to find another who can so accurately gauge the position of the League. He can be depended upon materially to strengthen and advance its interests. He is a past master of diplomacy, has good executive ability and a wide acquaintance among specialists. Mr. Lamb is an M. A. in the true sense and directs a workshop of his own. It is to be expected that some disappointment will be felt and that even a note of discord may be heard when it is fully realized that a "decorative artist" and not an "architect" has been elected president of the League. But the League is in a splendid position to meet the issue in the particular instance with the man. At any rate architects elected him, and the remedy, if one is needed, is to provide in the future an abler *man*, incidentally an architect.

The broad lines of work as shown in the three days' session of the convention must commend themselves to all and eventually attract to the Architectural League of America the support of all organizations having the permanent welfare of the art development of the country at heart.

Nothing could better exemplify the social side of the work of this organization than the hospitable way in which the Toronto Architectural Club entertained the delegates "within their gates."

Papers of the Convention.

SUBJECT, "EDUCATION."

Introductory : Three functions of the science of education.

(*a.*) *The information of knowledge.*
(*b.*) *The discipline of human faculties.*
(*c.*) *The nurture of character and individuality.*

BY LOUIS H. SULLIVAN.

AFTER the long night and longer twilight we envisage a dawn-era — an era in which the minor law of tradition shall yield to the greater law of creation, in which the spirit of repression shall fail to repress.

Man at last is become emancipated and now is free to think, to feel, to act — free to move toward the goal of the race.

Humanitarianism slowly is dissolving the sway of utilitarianism, and an enlightened unselfishness is on its way to supersede a benighted rapacity, and all this, as a deep-down force in nature, awakens to its strength, animating the growth and evolution of democracy.

Under the beneficent sway of this power the hold of illusion and suppression is passing; the urge of reality is looming in force, extent and penetration; and the individual now is free to become a man in the highest sense if so he wills.

There is no estoppel to his imagination.
No limitation to the workings of his mind.
No violence to the dignity of his soul.

The tyranny alike of church and state has been curbed, and true power is now known to reside where forever it must remain — in the people.

Rapidly we are changing from an empirical to a scientific attitude of mind, from an inchoate to an organic trend of thinking. Inevitably we are moving toward the larger significance of life and the larger relations of the individual to that life as embodied in the people.

Truly we are face to face with great things.

The mind of youth should be squarely turned to these phenomena. He should be told, as he regards them, how long and bitterly the race has struggled that he might have freedom.

His mind should be prepared to coöperate in the far-reaching changes now under way, and which will appear to him in majestic simplicity, breadth and clearness, when the sun of democracy shall have arisen but a little higher in the firmament of the race, illuminating more steadily and deeply than now the mind and will of the individual, the minds and wills of the millions of men, his own mind and his own will.

He should be shown, as a panorama, as a great drama, the broad sweep and flow of the vast life in which he is a unit, an actor; and that of a vital necessity fundamental principles must nourish the roots of his life work and permeate its branches, just as they must animate the work and life of the neighbor, for the general harmony, the good of all.

He must be shown what the reality of history shows, namely, that optimism is an abiding emotion in the heart of the race, an emotion arising from the constant pressure of aspiring democracy seeking its own.

He must be imbued with that pride, that sure quality of honor, which are the ethical flower of self-government and the sense of moral responsibility. He must be distinctly taught his responsibility to his fellow-men.

He should be taught that a mind empty of ideals is indeed an empty mind, and that there will be demanded of him, if not self-sacrifice, at the least self-restraint, self-denial, and that the highest of ideals is the ideal of democracy.

To this end history must be illumined for him and the story of his own day clarified.

To this end he must be inspired first and always with a clear, full conception of what democracy truly means, what it has signified and now signifies for the emancipation of man; what its cost in time, blood and sorrow that it might emerge from the matrix of humanity; how priceless is it as a heritage — the most priceless of heritages ; and how valiantly, how loyally, how jealously should he as copartner in its beneficence cherish its superb integrity.

He, born into democracy and therefore especially apt to deem it negligible, must be taught with persistent, untiring assiduity, by constant precept, warning and eulogy, that its existence, its perpetuation, its development, is as necessary to the fullness of life as is the physical air he breathes.

The beauty of nature should most lovingly be shown to him, and he encouraged to venerate and to prize that beauty.

He should be taught that he and the race are inseparably a part of nature and that his strength must come of her bounty.

His mind and heart should be opened to the inspiration of nature, his eye directed to the borderland of that infinite and unknown toward which she leads the thoughtful view, that he may know how great is man and yet how fragile, so will he see life in its momentous balance.

He should be taught that the full span of one's life is but a little time in which to accomplish a worthy purpose; and yet should he be shown what men have done, what man can do.

An art of expression should begin with childhood, and the lucid use of one's mother tongue should be typical of that art.

The sense of reality should be strengthened from the beginning, yet by no means at the cost of those lofty illusions we call patriotism, veneration, love.

He should be taught that high ideals make a people strong.

That decay comes when ideals wane.

He should be taught that civilization has a higher reach than the goal of material things, that its apex lies in the mind and the heart.

He should be taught common honesty and that there is but one standard of honesty.

He should be taught to despise hypocrisy and cant.

This in my view is the fundamental of education because it leads straight to manhood, because it makes for the moral and mental vigor of the race, because it leads toward a constantly expanding sense of humanity, because under its ægis a true art may flourish.

I am not of those who believe in lackadaisical methods. On the contrary I advocate a vigorous, thorough, exact mental training which shall fit the mind to expand upon and grasp large things and yet properly to perceive in their just relation the significance of small ones, — to discriminate accurately as to quantity and quality, — and thus to develop individual judgment, capacity and independence.

But at the same time I am of those who believe that gentleness is a greater, surer power than force, and that sympathy is a safer power by far than is intellect. Therefore would I train the individual sympathies as carefully in all their delicate warmth and tenuity as I would develop the mind in alertness, poise and security.

Nor am I of those who despise dreamers. For the world would be at the level of zero were it not for its dreamers gone and of to-day. He who dreamed of democracy far back in a world of absolutism was indeed heroic, and we of to-day awaken to the wonder of his dream.

How deep this dreamer saw into the heart of man!

So would I nurse the dreamer of dreams, for in him nature broods while the race slumbers.

So would I teach the art of dreaming as I would teach the science of thinking, as I would teach the value of action.

He who knows naught of dreaming can, likewise, never attain the heights of power and possibility in persuading the mind to act.

He who dreams not creates not.

For vapor must arise in the air before the rain can fall.

The greatest man of action is he who is the greatest and a lifelong dreamer. For in him the dreamer is fortified against destruction by a farseeing eye, a virile mind, a strong will, a robust courage.

And so has perished the kindly dreamer, on the cross or in the garret.

A democracy should not let its dreamers perish. They are its life, its guarantee against decay.

Thus would I expand the sympathies of youth.

Thus would I liberate and discipline all the constructive faculties of the mind and encourage true insight, true expression, real individuality.

Thus would I concentrate the powers of will.

Thus would I shape character.

Thus would I make good citizens.

And thus would I lay the foundations for a generation of real architects — real because true men and dreamers in action.

(*d.*) *Is a national American Art University a desirable or necessary institution?*

(*e.*) *Should the art education of a nation be centralized in one great school, and therefore the present schools be united with such central school and detached from their present associations with other fields of instruction?*

BY HERBERT B. BRIGGS.

(*d.*) In the discussion of this phase of our general subject we can very appropriately turn to the growth of the American liberal educational systems as typifying the true possibilities of united, intelligent, scholarly effort directed toward a desired end.

Tracing the educational history of America through the country school, the grammar and high schools, the small college, the technical school, the post-graduate institution and the great university, we find an uninterrupted forward movement, irresistible in its giant force, going from poor or unorganized effort to perfected organization. In all this growth, one of the most potent factors in its success has been the connection and relation of the municipal, state and, in a way, the national governments to the public school, college and university.

But our educational systems have tended more to the business than to the æsthetic development of the masses. In America the business idea predominates; the purely utilitarian means to the end is all-sufficient; a college education is a good *business* investment; art has not been considered necessary to make brick, raise wheat, roll I beams, sell beef, refine coal oil, pave streets, run electric cars, make pressed carved furniture or build a country schoolhouse.

The question arises, why this condition? Who, if any one in particular, is at fault? Not the farmer, the manufacturer, the mechanic, the business man. They have neither the time nor the inclination to develop the art side.

The answer lies deeper, in the very necessary slow formative development period, as in all great, lasting movements for the upbuilding and betterment of mankind; in the chaotic "catch as catch can" art educational methods of the past, and the lack of united effort and co-operation in those of the present. But the continued growth of a better appreciation of good art; a disapproval of the bad; the organization and successful operation of art schools; the attention and space devoted to art literature in the popular magazines; the encouragement given the various arts and crafts societies; the growth of the science and beautification of cities; the increasing number of students studying in Europe; the influence of the art and architectural clubs and societies; the great improvement and opportunity in government buildings, their embellishment and surroundings; and a general quickening of the American art pulse,— all indicate that the harvest is ripe, and we must look about for the proper implements to garner it and safely house it for the future.

These conditions, with the ingenious American mind, the fundamentals of our government, the age and wealth of our nation, make possible, if the proper methods are pursued, the beginnings of the greatest art era the world has ever known.

As have grown the American popular educational systems, so should American art education grow. America can bequeath to coming generations an art inheritance such as Greece and Rome gave to the world, if she will but grasp her opportunity. A national American Art University is a desirable and necessary institution in crystallizing and systematizing the art idea along lines of the greatest attainment.

All permanent institutions must be builded upon the broadest possible foundation, fostered and maintained from sources which shall not be hampered by financial limitations, administered by the greatest minds of their age, supplied with every facility necessary to the fullest and most exhaustive study, and clothed with such legal powers as shall insure respect, consideration and results.

The national government can alone successfully meet all these essentials.

(*e.*) The national university should lead, direct, foster, encourage, create, supervise. Present art schools should not be detached from their present associations. They should continue their work in their own localities; they should be tributary to the national school, ever working in harmony with it.

The university should be post-graduate in its work, offering opportunities for advanced study and research. It should encourage the organization of schools in every part of the country, so that students of small means might enjoy the opportunity of proper training.

In a word, the national university should be the great art center of the nation, whose influence should radiate in living, working institutions.

(*f.*) *Should the national government have connection with and jurisdiction over a national art university, or should the organization and control be similar to that now existing in American universities?*

(*g.*) *Would the artistic growth of the nation reach its highest development without a great national centralized university?*

(*h.*) *Could the present centers of art education, scattered in reference to locality and influence and developing more or* *less independently, attain to as high a total of efficiency and accomplishment?*

BY PERCY ASH.

(*f.*) It seems to me that a great art university, in order to be national and to exert the influence that such an institution should exert, must by all means be under the jurisdiction of the national government. However valuable and important the courses in architecture at our universities are, the very nature of their surroundings precludes their exerting an influence wide enough to become national.

The influence that our universities exert depends largely on tradition, endowment and location, and in this respect no one college preëmpts a field unapproachable by the others. In fact the course in architecture at most of our universities is far from equaling in importance the course in the arts or belles-lettres. The schools of architecture and engineering being parallel courses of distinctly less importance than those of Greek and Latin, the atmosphere at our great universities is therefore that of scholarship rather than art, and until the art atmosphere dominates the entire school or university its influence can in no sense be national. Columbia College is the first of our great universities to recognize the importance of the art atmosphere for a school of architecture. There they have recently separated the architectural course from that of the civil engineering and have started a new school of art, with course in architecture and music, soon to be followed by course in painting and sculpture; and in doing this Columbia College is the first of our universities to recognize the fact that an architect is an artist and not a business or professional man in the usual acceptance of the term — a fact but scantily recognized in this country.

A school of painting, sculpture, music and architecture, subsidized by the government, located in New York City and controlled by our most distinguished painters, sculptors, musicians and architects, with the resultant atmosphere of art, would attract the most active minds from all parts of the country. The influence for good that such a national school would exert would be incalculable, harmonizing discordant ideas and allowing the national characteristics to develop in time to a distinct national style or manner.

(*g.*) Individual effort, however well directed or tirelessly sustained, has never accomplished as much as well-directed united effort. Therefore I do not think the highest artistic growth of the nation can be reached without a great centralized national university. At present the architects of America are groping, "blind followers of the blind," without a definite end in view. That they are seeking the ideal is the one saving element. Among the warring styles which have appeared for a brief season, only to be cast aside when their incongruities have become apparent, may be numbered the Neo-Greek, the Gothic revival, the Romanesque, the Italian Renaissance, etc. Now we have the French manner of the "Beaux Arts" student, the archæological manner of the purist, the stony manner of the engineer and the nameless manner of the untaught; but the manner or style in thorough harmony with our civilization and environment the most charitable will admit that we have not. Only in the country house does one see the first glimmering of a distinctly national art of architecture.

A great national school of art, supplementing the work of our separate universities and colleges, teaching the basic principles of all living art and imbuing its students with the splendid enthusiasm necessary for the production of any great work of art, would accomplish in one decade what our present systems could not accomplish in ten.

(*h.*) Sporadic effort has never accomplished as much as united effort. Then, too, the establishment of a great centralized university will not necessarily rob our architecture of the variety due to local color. Local color is not style, only variation of style. Venice and Florence produced distinct varieties of Italian Renaissance, not two distinct styles.

It is true that in the fourteenth and fifteenth centuries the independent cities of Italy reached a very high degree of development through individual effort. But Italy in the fifteenth century is not comparable with America in the twentieth. Art was almost a passion with those people, "a people who invested every form and variety of intellectual energy with the form of art." With us it has hardly touched the great mass of the public. Italy produced intellectual giants in those days, men who set a world's pace for generations to follow and hope to equal. Then, too, they were united in this: they were working on the broad field, first, of Italian Gothic and later of Italian Renaissance — always Italian, whether the type be that of Venice or Florence or Rome.

What but a great and essentially national school of art can hope to produce harmony from the present discord, to breathe life into the dry bones of the "copyists," to clothe the foreign style with a national garb, to stimulate a new American Renaissance, having the old of Italy for its mother, beautiful with her beauty, grand with her grandeur, but imbued with life and courage, expressing not the civilization and life of Italy in the fifteenth century or of France in the seventeenth, but American civilization of the twentieth?

(*j.*) *What should be included in its curriculum?*

(*k.*) *Should art artisanship, namely, the art crafts, be included?*

(*l.*) *Should a national university be one primarily for the arts and crafts, and secondarily for the fine arts?*

BY JOHN W. CASE.

(*j.*) The curriculum of a national American Art University should include the study of the methods of expression of all the fine arts, for all art is one at soul, whether expressed in poetical words, or in musical sounds, or with a chisel or brush, or in building stone.

A university worthy the name is a seat of the highest culture, its courses of study cap the climax of educational effort, and requires from intending competitors for its honorary degrees comprehensive and thorough entrance qualifications. This is especially true of an art university, where the aim must be quality rather than quantity.

An American university of art should exact, as an entrance qualification in architecture, the diploma of graduation from a recognized school of architecture or a successful examination covering the same ground.

This is the province of the university, to supplement the instruction of the college; and it will allow the schools of architecture to lay broader foundations than at present, and leave to the university the study of specialties.

The college graduate will not be obliged to go to Paris to perfect himself in architectural rendering and design. The university course will embody the highest principles of the æsthetics of architecture and the allied arts, and also a complete knowledge of the mathematics of architecture.

The schools of architecture should be encouraged and broadened, their art influence extended. They should be tributaries to the university, whose doors should be open only to those who have already distinguished themselves.

As an encouragement to undergo its long and arduous course of study, competitive examinations might be held each year to select those artists worthy of government patronage and of travel abroad.

(*k.*) The arts and crafts should be included in the curriculum of a national art university; not at all from the standpoint of a trade school, nor to teach an apprentice his trade; but on the contrary, the courses of study in arts and crafts should appeal to the exceptionally gifted artisan. They must give him the opportunity to meet the architectural student, and with him study the æsthetic qualities of his trade, the possibility of its future development, and its relations to its fellow arts.

Such a course requires a professor with broad views, an inventive and enthusiastically creative art mind, that such courses might become creative sources of a characteristic and living art.

If the arts and crafts are not instinct with art, the abstract art will not be great.

Every epoch that produces great abstract art is a period of spontaneous and widespread appreciation of art by the masses of the people, as it was in the days of Greece and in the time of Gothic art and as it is to-day in Japan.

Hence the arts and crafts at such epochs are spontaneous, indigenous in the sense of being characteristic and instinct with art.

When such an epoch arrives in America the brickbuilder will produce brick beautiful in color and in texture, possibly in shape.

The steelmaker will produce beautiful forms not to be hidden in mock masonry.

The plasterer will produce work beautiful in color, texture and surface pattern. And so on through all divisions of the arts and crafts, each will be art.

(*l.*) So-called fine art, produced in a period when the arts and crafts are dead, is mere dry rot.

All great art (fine or otherwise) has its source in and owes its being to a widespread and deep-rooted art instinct in the people.

Great art is produced only in periods when art is living and indigenous in the sense of being characteristic. Such is not the character of our day. Our period has no widespread and deep-rooted art instinct, and no effort of the fine or luxurious arts will ever produce a widespread and deep-rooted art instinct in the people. But this art instinct will be created by the widespread influence of a living, growing art impulse in the arts and crafts, and this is the duty of our day.

The most able architects of the day in designing their buildings consider the grouping of the parts of the building in satisfying the practical requirement of the uses of the building. They study the proportions of the masses; the openings and wall spaces; the texture and color of the building material; the light and shade of the moldings; the decorative use of marbles, carving, color, etc. The elevation grows out of and is the result of the plan and not simply an antique building adapted to a new use. But when all this is done the important part is left out. That which makes *great* art is still lacking.

To all these essential qualities must be added character. Characterization in terms of beauty is the soul of art.

The majestic intellectuality of the Greek temple and the poetical sublimity of the Gothic cathedral are great characterizations of art.

Will fine proportions make a great work of art? Is there any absolute law of proportion? Are the proportions of a Greek temple any better than those of a Gothic cathedral? and yet how different!

Though the arts and crafts have proportion, color, texture and all else and lack character, character as Japanese art shows it to-day, they are nothing and utterly inadequate to a glorious opportunity. For architecture has a new constructive system and material, — the steel frame, invented by the engineer, secreted by the architect, — but as yet the arts and crafts are unable to imprint upon this constructive system any form of beauty.

The creative artistic imagination is necessary to every great work of art. It is the essential element in all periods of living art, the highest attribute of the artist's mind, the most to be desired and the least sought after. A few projects will not develop this great power in the architectural student, nor will it be developed by the prosaic routine of office work. It is the very life of the arts and crafts, without which they are dead. In studying to put new life in the arts and crafts the student is gaining the power of characterization; he is developing the creative artistic imagination; he is gaining the power to create, to endow art with life. The architect of to-day has a great moral obligation to fulfill, a duty to his art, to his day, to his fellow-men. His influence, if rightly exerted, can exercise a great power in the nascence of art. He must attempt to exert an art influence in every branch of the building trades, that their results may become spontaneous art.

This influence is widespread and extends through many branches, which once become spontaneous will exert a powerful influence in creating an epoch of spontaneous, characteristic art, a great art period.

Therefore it is of great importance that the arts and crafts be studied from the artist's point of view by present and future architects.

This is said commonly in cold words lacking power to stir the imagination. It should be written in characters of fire of entrancing hue to the eye and sounds of thunder in harmonious cadence to the ear.

(*r.*) *Can a system of self-education by means of club association be permanently established?*

(*s.*) *Is such a system demanded by present conditions?*

(*t.*) *Would such a system, seriously undertaken, self-supporting, and maintaining itself by methods of self-gov-*

ernment, be productive of commensurate results, both of quantity and quality?

(*u.*) *What should be the plan and scope of such a system of club and inter-club self-education?*

(*v.*) *Can a connection be established between such a system and the architectural educational institutions?*

(*w.*) *What could and should be the nature of such a connection?*

BY GEORGE BISPHAM PAGE.

It is difficult to determine when the education of an architect terminates, or, indeed, whether it may ever be said to have terminated, as is evidenced by many instances where an architect has done or is doing his best work only after many years of practice, and this, too, in face of the commonly accepted supposition that his education has long since been completed. But the thinking architect in the course of his practice is continually developing new ideas, and perhaps unlearning many of the rules he had been brought up to believe hard and fast, and to take a broader and more modern view of the subject. This development is largely, or one might say almost entirely, due to the conscientious and logical solution of problems arising in his practice, and the more frequent and varied these problems the more facile will he become, the more rapid will be his development and the sooner will he reach a higher plane of architectural education. To this end, then, it is most important that the architectural draughtsman or student should avail himself of every opportunity to exercise his ability and train his mind in the solution of problems carefully drawn up for the purpose of bringing out those qualities tending towards his development to a degree that it is almost impossible to attain in the routine work of the office, which (as far as that which falls to his share is concerned) may be of a very limited and far from stimulating character.

(*r.*) We are asked, "Can a system of self-education by means of club association be permanently established?" It would seem that such a system by such a means could be established on a permanent basis by the coöperation of the clubs forming the Architectural League of America if taken up seriously by the administrative bodies of the individual clubs, and the interest of the members aroused in the formation of the necessary classes that would be required in order to attain the best results.

(*s.*) That this system is actually "demanded by present conditions" is not, perhaps, to be so affirmatively stated as it might have been a few years since, in view of the numerous and excellent schools of architecture established in different parts of the country.

But the fact remaining that such schools do not as yet exist in many localities, and also that there are many draughtsmen who are unable for various reasons to avail themselves of these opportunities where they do exist, it would seem that the establishment of such a system would be most excellent and beneficial.

(*t.*) That such a system to be a success must be seriously undertaken, goes without saying.

It could certainly be carried out on a practically self-supporting basis and, it would seem, "be productive of commensurate results, both of quantity and quality."

(*u.*) Now, then, we naturally come to the consideration of "what should be the plan and scope of such a system of education" in order to bring it to a practical working basis, avoiding anything that would cause complications or discourage possible candidates; in other words, to make it as attractive as possible to all, and more especially to induce the younger element of the clubs to enter into it enthusiastically and not to be discouraged by competing with older men who have had greater experience and possibly already some school training. Mapping out a scheme in general terms, let us consider the system as consisting of a two years' course; the subjects of study being papers in the form of compositions on various architectural topics, construction in its various branches, the history of the different periods, etc., water-color and pencil sketches, studies from the model and problems in design; that a scholarship of some sort be awarded to the student who shall have made the best general showing in his work and who shall have performed all the work prescribed for the full course of two years in the most creditable manner. In the formulation of a few simple rules for a basis upon which to establish this system it might be suggested that —

No student shall become a second-year man until he shall have completed the full course of the first year, and no student shall be an eligible candidate for the scholarship who shall not have completed the full course of both the first and second years.

The names of all candidates shall be enrolled with the central committee at the commencement of each year. It seems that these conditions would serve to bring out and encourage a greater number of younger students and at the same time insure the serious application of all who should enter, whereby alone the best results are to be attained. This would also preclude the possibility of some one man entering at random and perhaps, by a few lucky strokes, winning over those who for general excellence were more deserving. In addition to the award of the scholarship, first and second honorable mentions might be awarded in the two classes.

The various topics as above mentioned on which the students would prepare papers would be propounded by a central committee or board of governors and examined by them and each student given a mark according to the merit of his composition, these marks to be taken into consideration in determining his standing at the end of the year.

Sketch and life classes should be established in the various clubs, and each student should submit to the central committee at the end of the year examples of his work in these classes, which would also be taken into consideration in determining his standing.

There should be five problems in design in each year, and in order that these subjects might also be made a part of the regular work of the individual clubs as a part of their regular club competitions it would be expedient that the same subject be given both the first and second classes, each drawing properly marked to designate to which class it might belong. These drawings would then be voted upon in the various clubs at their meetings and first, second and third mentions awarded in each class, and these mention drawings sent to the central committee to be examined at the end of the year to determine the student's standing. After the central committee shall have made the award of the scholarship all these mention drawings shall be sent from club to club, forming the circuit exhibit of the Architectural League of America.

(*v*, *w*.) That connection be established between a system of club and inter-club self-education and the various institutions of architectural education does not seem altogether feasible, unless it be that such a connection be established by having the central committee composed of professors from the various architectural schools, whose experience in educational matters and ability to turn the thoughts of the student in the proper channels would be a distinct advantage and practically insure the successful working out of the system as suggested by the educational committee in the questions to which it has here been sought to give a practical solution.

ADDRESS BY FREDERICK S. LAMB.

This question is one of great interest to us, because the future of all the professions depends in great measure on the system of education as established. In listening to the papers which have been read, particularly the papers of Mr. Sullivan of Chicago and Mr. Robinson of Rochester, it seems to me we have had presented a difficulty which is likely to confront us in the future. We have heard a number of statements which show the influence of the sociological tendency of the present time; and it has occurred to many of us that if this is allowed to influence the curriculum or system of art education throughout the country, the progress of educational effort will be delayed by overweighting the professional man with a task which will be more than he can possibly accomplish. For instance, we are called upon as professional men to solve questions of sanitation and engineering; we have thrust upon us questions of clean streets, model tenements, bridge-building, and many others which as a matter of fact are not within our province.

A brief summary of what has been accomplished in the past may in a measure indicate to us what may be accomplished in the future. In looking back we find that the guild system produced a state of civilization which created one of the greatest arts the world has ever seen. The Florentine guilds — to take probably the best example — by a system of organization, intercommunication and correspondence, practically controlled the art development of the world for two hundred years. In fact, they went further: they enunciated a principle which in time controlled the political development of the countries in which they existed. From the time of the guilds we come to the Middle Ages, in which fortunately we find none of those distinctions or differentiations in art with which we are afflicted to-day. In the Renaissance there was no such thing as fine art distinct from the arts and crafts — no such distinction as we are to-day trying to build up and with which we are confusing ourselves. The men of those days started as apprentices, worked up through the various stages of their craft and did their work as craftsmen, and future generations regarded them as great. I do not think any of those men considered themselves great. They were simply answering the questions asked in the country and the day in which they lived, and future generations referred to them as masters.

After the Middle Ages we come to a larger form of development and consolidation. I might say parenthetically that even so great a movement as the Crusades was practically organized, promoted and carried out by the commercial interests of the times. It came to me as a great surprise when I discovered that motive power behind this great religious movement. As a matter of fact the Crusades were financed in Florence, and were projected as a great commercial venture. There can be, in fact, no true art that does not conform to the requirements of the age in which it exists. In that deduction we have the answer to one half of our questions. It is impossible to-day to dictate methods in the art of to-morrow. These must be formulated to meet the needs of their own time. Now, we have a problem much larger than any that was ever given to any group of art workers in the world's history. Within the last fifty or sixty years two great forces have been harnessed and practically made subservient to the government of men. I speak of steam and electricity. The moment we realize this fact, that moment we must recognize the influence of machinery on art products; and hence we must realize that all former systems of art education fall to the ground, and that any reference to precedent is a waste of time. Any system of education, whatever it may be, whether under government auspices or under private control, must take into consideration these great forces which are molding and guiding the development of the present day.

We have another point to consider: while we refer to the precedents of the past, we must recognize, in watching the development of art from the time of the Florentine guild to the present day, that the so-called art of that time was deflected and lost touch with the development of the world as a whole. We find, in watching this to the present day, that we have created, through three or four hundred years of development, what is called a great Salon picture. We had a striking illustration of one at the Pan-American Exhibition at Buffalo in Rochegrosse's painting "The Fall of Babylon." He had been one of the brightest pupils in the European schools of art, carrying off all the medals, and had been hailed as one of the greatest of modern painters. Yet his great picture was exhibited in the Midway at an entrance fee of ten cents, and practically took its place with The Trip to the Moon and The Land of the Midnight Sun. In that case we have a striking example of the so-called modern development of art. The man who has followed art for art's sake, who has created an aristocratic atmosphere, who locks himself up in his own little studio and produces something dictated by himself, for which he formulates the conditions under which it is produced, is a false product of the times, and is a thousand miles away from the product as it ought to be. We have a partial solution of the question presented in a very remarkable way in the development of the exposition idea. The one sign of hope which we have at the present time is this great art development, which is nothing more nor less than a result of commercial enterprise in the form of a great exposition. The first exposition in France produced the Trocadero, which was left by the promoters of that exposition as a permanent asset to Paris, and which established a style of architecture which up to that time had been unknown. The first exposition of any importance in England, the Crystal Palace Exposition, practically founded the South Kensington school. Englishmen recognized how much

England was behind the continent in various designs of the arts and crafts, and after that exposition they founded the South Kensington school and all that it implies. Coming to this country, we find that the Centennial Exposition left us as its permanent contribution the Art Gallery in Philadelphia. We find that the promoters of one of the later French expositions attempted a most elaborate system of sculpture applied to architecture. In our Pan-American Exposition we find not only sculpture but color as an adjunct to architecture experimented with. The promoters of the St. Louis Exposition are going one step further, and instead of having an art department, like previous expositions, they are having an art department so broadened as to include decorative arts and the arts and crafts.

In the matter of education much can be done by such organizations as the Architectural League of America. The point of view not only of colleges and universities but of the public schools must be such as to recognize that a true art education must be established on a broad basis and answer fully the demands of the particular time and age in which it exists.

Just one word on the question of style. We have had the injunction telegraphed to us: "Put yourselves on record in favor of a national art." Mr. Perkins very truly and wisely suggested that we should favor art, not a national art; that we should speak of style, not a national style. Every one of us has been more or less confused by constant changes in style. We find a style of art springing up, arousing widespread interest for a time, then suddenly losing its popularity, declining and ultimately disappearing. The truth is that art must return to nature and be revivified by a constant contact with and study of nature in order to live; and the reason a style becomes effete and lacking in interest is that the custom prevails of the student merely copying the master without understanding the purpose of the master or the sources from which he draws his inspiration. The result is that the student merely retains the mannerisms of the master while losing his spirit. The student copies the master and then the student copies the student, and when that happens you have the death of the style. Any movement in art which is to be of advantage to the world at large must sooner or later return to nature to be revivified and refreshed. If we keep this point before our eyes we shall have no difficulty in defining the curriculum and the necessary course to be pursued in order to establish a system of art education which will be a great success.

You may say that I am indulging in generalities. I will give you a concrete example of what I mean. There is no doubt in my mind that there should be in this country a great national center for the development of art — a university which should deal with it upon broad, general lines. Such an institution would have its annexes or departments relating, for instance, to textiles, metals, glass, and other specialties. These departments could be easily classified, and to them only those men should devote themselves who intend to pursue them as their life work. Yet these departments would be merely addenda or annexes to the general school, the purpose of which would be to teach the fundamental principles of art on broad, simple lines.

Civic Art as Evolution, not Revolution.

BY CHARLES MULFORD ROBINSON.

I WISH to suggest for your consideration civic art as the latest step in the course of civic evolution, that the flowering of great cities into beauty is the sure and ultimate phase of a progressive development. Consider how it has represented the crown of each successive civilization. If decadence has followed it; if the beauty of Babylon, the storied splendor of Carthage, if the chaste loveliness of Athens and the magnificence of Rome marked in each case the culmination of an empire, it has been through no effeminacy and weakness inherent in the development itself. Rather has it been because the glory showered upon these cities was a concentrated expression of the highest civilization and the highest culture of which the empire was capable.

All that is best the city draws to itself. As magnets acting on filings of steel, the cities attract from their dependent fields whatever there be of learning, culture and art. The adornment that was lavished upon Venice, Florence and the minor city-republics of Italy, and again upon the Flemish cities, represented not weakness but the virility and rich abundance of those qualities of mind and heart which expressed themselves in the southern and northern renaissance. Had the cities been less beautiful, the renaissance had been less notable. They mutually interpret each other; and cities begin to bud and flower in beauty only when learning, culture and art are flowering around them. As long as these grow in might, cities grow in nobility, being concentrated expressions of these forces.

The development will differ, of course, in aspect as the civilizations differ in character. The art of Greece was sculpture, and the glory of Athens in her golden age was the chiseled art of the Acropolis. Rome was imperial, and her glory found expression in construction that was colossal and magnificent. The art, again, of the southern renaissance was painting, and we find in frescoes and in the more delicate, more pictorial phases of architecture the triumph of the Italian republics. To-day the spirit of the time is commercial and industrial, and our modern civic art expresses itself in terms that commerce and industry comprehend. That our civic art must differ from that of other times does not mean, therefore, that it is not art, or that the new day for cities will be less brilliant than of old. Rather, if truly the heir of the past, it must be the new glory of a new time.

Commerce and industry now express themselves, in the realm of city æsthetics, in great highways, in commercial palaces, in bridges and wharves and stations. The love of nature, the lately aroused consciousness of what we may call the sentiment for landscape, brings vegetation into the busy city to soften and brighten; and then the spirit of practical philanthropy, so evident to-day, plants playgrounds, builds schools, and insists that modern civic art shall pervade all quarters of the town, remodeling alleys as well as avenues.

If, in general, civic art be a phase of urban evolution, it should be possible to trace the steps by which it is approached. In the new rise of cities, consider what these have been. There came first the aggregation. Where no city had been the people flocked — the reason need not now concern us — until there was a city. The aggregation continuing led quickly to congestion, at least in parts of the community, and close upon congestion came squalor. We had now a large city, a crowded city and a miserable one. Out of misery came corruption, debauch of the popular conscience, and, from such favorable conditions, political knavery. These, swiftly, are the steps of the downward course. But all the time there were forces at work for good. The very evil into which affairs had passed created a disgust that vastly aided the reform endeavors. So reform efforts gained gradually in importance.

Ideals were put before the people, and to some extent assimilated. There had already been evidences of æsthetic aspiration, first noted in those quarters in which was congregating wealth, that wealth which had begun to accumulate in accordance with the laws the foreseeing of whose operation had induced the forming of the city. But such is the force of good example that the æsthetic aspirations had spread broadly through the town. Elementary construction, also, had begun. At first this was for the sake of the traffic and of sanitation, but by degrees it had a more distinctly æsthetic purpose. Of these forward steps, some of course were taken coincidently with the backward, for the community did not march first one way and then the other. Two forces were pulling in opposite directions, and if political knavery turned constructive efforts in the public works to its own evil purposes, the physical condition of the town in its turn gained something from the official eagerness to rob it and the stupid dormancy of the popular conscience that afforded the opportunity for such outrage in ordinary constructive work. Thus the early improvements were purchased at an immensely extravagant price; but there were improvements and they were hastened.

With varying celerity the conscience now awakens. The reform efforts enlisted individuals, and then associations of individuals, who were concerned in bettering not alone the government, but the aspect, of the town. Where officials were distrusted and individuals and associations tried to act by themselves, or where the trust in officials was misplaced, there followed necessarily much waste, extravagance and positive injury by poor taste. As the like result followed either of these choices, we find its expression indeed almost universal. Then came another phase in the civic development. This was perception of the waste, extravagance and lack of artistic judgment, and a willingness to seek their correction by submission to expert guidance. With this come coöperation, eagerness to learn the experience of other places and to profit by it, and dependence on those authorities whose knowledge, genius or talent is broadly recognized. With this new chapter, wherever it is now entered upon, begins modern civic art as distinguished from merely the improvement of cities.

In the broad field of cities examples can readily be found to illustrate the successive steps in this general evolution. The phases will differ slightly here and there as national and local peculiarities stamp the development, but the course is clear, essentially uniform, and leading surely to civic æsthetics as its visible crown. So civic art properly stands for more than beauty in the city. It represents a moral, intellectual and administrative progress as surely as it does the purely physical. It stands for conscientious officials and for public spirit. Where officials are elected by the people it must be an evidence also of an aroused and intelligent populace.

Perhaps the steps of this civic evolution will stand out more clearly if we turn from abstractions to the concrete.

The census bulletins of the United States show that in that country during the nineteenth century there came into existence 533 communities of 8,000 or more inhabitants each. If we call them all by the name that doubtless four fifths of them claim, we shall group them as cities, and can say, in the census phrase, that in 1800 the urban population was contained in twelve communities and represented four per cent of the total population, while in 1900 it constituted 545 communities containing more than thirty-three per cent of the total population.

This is a group of statistics that illustrates conveniently that nineteenth-century phenomenon which is known as the "urban drift," and which was no more marked in the United States than in other nations — most notably in Germany and England. This, as representing the "aggregation," constitutes what we may call the first step in the civic evolution.

To find some of these communities that are yet in the earlier stages of the subsequent development we may turn with best assurance to the western states. In the newer towns congestion will not, happily, be revealed; but that is a spectacle too familiar in cities of all nations and all times to need illustration, and dreariness has not waited upon congestion. We find the town growing on lines determined partly by accident and partly by the push of enterprising real estate holders, not at all according to artistic design. There is little that can be reasonably called architecture. If a man wants a store, a barn or a house, he goes to the carpenter, and the carpenter puts up the long, single-gabled frame structure that is the simplest and cheapest. Possibly, if the owner be a merchant and ambitious to have his emporium impressive, a square front, built to the height of the roof peak, may be put before the skeleton structure, but this, misleading no one, hardly serves to change the type. If there be no time to build attractive houses, certainly there is none in which to plant gardens. People have not come to live in the place because it is pretty, but because they want to make money, and they have not learned yet to love the town. It will not even represent "home" to them for several years. Clearly, civic æsthetics are at the antitheses of this phase; we are yet at the beginning of urban development. In fact such public spirit as there may be is so crude and sordid that it counts anything — even a water tank — as growth. The moral, intellectual and political conditions in this dreary town need not here concern us. But they cannot be high.

We may pass now to those thriving cities of about thirty thousand inhabitants which, met so frequently in the more closely settled portions of a country, well represent another stage in the development. In the United States they are frankly industrial communities. Political affairs are in that condition when out of the sore need of reform endeavors there is a more or less continuous series of spasmodic reform efforts. But the physical improvement of the town has gone steadily though expensively forward. The town is well lighted; most of the important streets are paved, and there are rather more sewer and water pipes than perhaps are needed, — or if the aggregate be not excessive, their location is not of the best, for they have been extended on some streets that may not be built up for a decade at the expense of others that are populated. The industry of the town has begun to roll up the expected private gain. The old type of building has given way again and again to something ornate, garish and showy. Iron is favored because it can be made to suggest stone, while being cheap. There are stores with cast-iron fronts; there are lawns with red iron deer; there is a soldiers' monument of iron. It is the iron age. The houses are now of all kinds. From the extreme of monotony the town has reacted, seeking the extremes of originality. But the residence streets are lined with trees, the square in front of the court house is kept in order, and most of the houses stand in little gardens that add much to the attractiveness of the place. The people have begun to love their city. It is their home, and they like to have strangers call it "attractive." There are distinct yearnings toward better things. Æsthetic ambition has been born.

The next step in the evolution develops rapidly. A park is laid out. If it is done somewhat apologetically with a pushing forward of philanthropic reasons, no one is deceived as to the relative importance of these. Gifts are made to the town. The memorial fountain is really stone, for the iron age has passed; and the new public library is so unmistakably a thing of beauty that although it did not cost as much as the post office, it is shown to the visitor with no less pride. The new public schools are not barracks within and do not resemble factories on the outside. The factories themselves are improving; and public sentiment has so crystallized that a society has been formed to insist that rubbish be not thrown into the street, that the station grounds be improved, that flowers be generally grown, and the waste places taken care of.

This improvement effort is, however, unguided. There is immense scope for the poor taste of untrained individualism. And as the city grows larger and its resources increase, the public works become more spectacular and are striking. The need of artistic guidance both in public and private affairs is more keenly felt; the extravagance and wastefulness of duplicated effort is realized; the value of an authoritative æsthetic control is perceived, and it is appreciated that to make true advance in civic art — which is now frankly a goal — there is needed something more than means and impulse.

Various efforts are made to provide the required artistic supervision. If these are reasonably successful, the city — now rich, self-confident, ambitious for its higher life and its development in beauty — has reached an advanced and healthy phase in its evolution. Without much regard as to what the means are, so long as they are successful, there dawns a period of civic art.

The plan may be to elect as administrative officers of the city persons whose education, refinement and culture, as well as executive ability and business sagacity, are a guarantee that the right things will be done and done well. This has been for the most part the outcome of the civic reform efforts in Great Britain, and has hastened the dawn among British cities of a civic art based on business principles. In France, under the leadership of Paris, the method has been to summon to the services of the municipality in an advisory capacity the best experts and artists of the city; and the result has been the development of civic æsthetics on thoroughly artistic lines. In the United States, where the effort has included the appointment of "art commissions," the banding together of cities and of conscientious city officials in leagues, the association for the public good of artists and architects, and an immense amount of effort by popular improvement societies — with the usurpation by them of critical functions — the tendency, so far as there may be said to be a tendency, is toward federation, coöperation and the exchange of experiences, to the end that there may be evolved so precise a science of city building that henceforth no community need be ugly.

The German theory of city administration is based still more emphatically on scientific principles, almost to the exclusion of other considerations, but it differs from the American in that its dependence is not so much upon a science as upon scientists. The burgomaster and his magistrates are the best experts procurable, and the council of the latter does not pretend to be citizen-representative, but is made up of honored, highly paid, professional and permanent employees trained to the work of city administration. In Germany, therefore, civic art takes on something of the thoroughness and exhaustiveness of German science.

The varying national developments of this late phase or urban evolution are thus interesting mainly as emphasizing the fact that the modern movement toward civic art is international. They reveal, too, that however the exact course of the evolution may vary in different places, municipal æsthetics — the flowering of cities in beauty — is the ultimate, the highest step. It is the phase toward which all the other urban changes tend. It is the goal toward which we are swiftly moving and which is to mean more perhaps to architects than to the members of any other one profession. Its coincident demands upon them will be many, and in its gradual rounding into completeness they will find much for them of lofty inspiration.

The officers of the convention were Ernest J. Russell, St. Louis, speaker, and Albert E. Skeel of Cleveland, secretary.

There were no other League officers elected besides Mr. Lamb as president, as the remainder of the executive committee are to be elected by the new president in conjunction with the organization which he represents.

The next convention of the League will be held in St. Louis during the month of October, 1903. It was thought advisable to hold the convention there at that time, that the work of the Louisiana Purchase Exposition might be studied in its progressive stages, rather than to wait until 1904, when the work will be completed and the Exposition itself would offer attractions to visiting members which would possibly jeopardize the interests of the convention.

Building Construction and the Insurance Companies.

THE recognition of the duty of the community to protect its inhabitants against inflammable construction has been already delayed too long. In times of plague and pestilence the apprehensions of the people demand radical measures for the elimination of the threatening danger; yet the dangers of conflagration are continually overlooked, and fires are regarded as inevitable.

That the community looks upon destruction by fire with easy toleration is due to the ignorance of the possibilities of fire prevention and retardation, as well as the belief that if the building is insured there will be no loss, because the insurance company will pay it. It is surprising to learn the prevalence of the belief that no loss is incurred if the building is insured, and before any popular realization of the actual destruction by fire can be hoped for, this widespread belief must be shown to be erroneous.

The old adage that "it makes all the difference in the world whose ox is gored" finds its confirmation in the easy acceptance of the losses of the insurance companies by the people who thoughtlessly believe that the insurance companies pay the losses, and as long as this belief finds ready acceptance, natural selfishness and indifference to the losses of others will retard the progress toward the better construction of buildings.

When the actual truth is recognized that the insurance companies merely perform the office of collectors, and that the community pays them not only for doing this service but also pays all the losses as well, we may then hope for a better state of affairs.

The first demand which the community will then hasten to insist upon, through the promptings of what the statesmen call "enlightened selfishness," will be the establishment of a "Board of Fire Prevention." Millions of dollars are annually spent in maintaining men and fire-fighting apparatus, yet who has ever heard of a cent spent to prevent the conditions which give rise to fires? We have our Boards of Health, which promptly abate nuisances and abolish the causes which produce them, and who frame regulations which prohibit the construction of apparatus or fixtures which tend to cause insanitary conditions; we have our boiler inspectors to prohibit the use of unfit boilers; our building inspectors to guard against the use of inferior materials in the construction of buildings; our steamboat inspectors to prevent the use of dangerous vessels; our street-cleaning inspectors to certify that the streets are clean; we have inspectors of the poor and coroners for the investigation of sudden deaths; yet we have no officer corresponding to that of coroner to investigate the cause of sudden fires and fix the blame and prescribe the penalty for their occurrence.

It hardly needs an argument to show that if a fraction of the money which is now spent in maintaining fire departments were spent in the inspection of buildings already erected and occupied, thereafter less money would need to be spent on the fire department, because there would be less need of its services, and as an outcome of this pre-fire inspection the inferior construction of buildings and the condition that gives rise to fire would become so manifest that an immediate improvement in building construction could be looked for.

Let us for the present pass over these manifest duties of the community to itself and look at the conditions as we find them to-day, and see if there is a remedy at hand, and if so how it can be applied.

The remedy which first suggests itself is this: Let a rate be made which discriminates against poor construction of all kinds. Let also an agreement be made specifying the kinds of construction which are hazardous and prohibiting the placing of insurance on such properties. It would not be long after such an agreement had been made and lived up to before a howl would arise from the owners of uninsurable property against the insurance companies, and this howl would serve a twofold purpose — of not only calling the attention of the neighbors and the community to the hazardous condition of the property in question, but it would also convince the public that the insurance companies were looking after their (the people's) welfare in not accepting hazardous risks; and from this agitation the public attention would be called to lax laws which permitted such construction, and an intelligent public sentiment in favor of safe construction would be formed.

If the insurance companies could reach such an understanding regarding the non-insurable risks, — and such an agreement should be much easier of attainment than the existing requirements as to rates, — it would of course put upon them the responsibility of formulating or determining a set of building laws which would have to be followed out in order to obtain insurance, and such a responsibility would have to be met in the most intelligent manner.

The recent meeting of the National Fire Protective Association in Philadelphia demonstrated the necessity of the widest knowledge in attempting the framing of laws or requirements governing the construction of buildings. Without this knowledge all regulations will fail of acceptance because of their unreasonableness or their manifest inapplicability to the structural and economic requirements. Requirements that are based on mere whim or prejudice or on unanalyzed experience will not be accepted by reasoning and analytical designers, and therefore it behooves the insurance companies to see that their requirements can stand analysis and demonstration.

As an illustration of this point, the underwriters require in the case of what is known as "Standard Mill Construction," that the posts shall rest end on end, and that all girders shall be self-releasing. This requirement practically prohibits the use of continuous columns and girders, and at the same time prevents all lateral stiffness in the interior construction and compels reliance on the walls alone for all resistance to lateral distortion. This failure to utilize the stiffness of the interior construction requires the outer walls to be needlessly increased in thickness and greatly increases the cost. The design of high buildings has necessitated the study of winds and other forces acting on them tending to cause lateral distortion or overturning, and as a result of this study the building laws of most cities require provision for these forces in determining the sections and the connections of the columns and girders.

If a high mill building constructed under the present specifications of the underwriters were subjected to analysis for these lateral forces, it would be found to be inadequate to resist them, and the only reason it does stand is because it is not exposed to them; but the fact that it is not capable of withstanding the same forces which a skeleton building would be designed to resist, shows the necessity of using the internal construction to help resist these lateral forces.

The conditions under which mill buildings are designed to-day under the underwriters' specifications, which ignore the question of lateral stability, produce a similar type of buildings in structural design to those we formerly had under the cast-iron-column system, which type was abandoned by structural designers, for one reason, because of the impossibility of securing adequate connections between the abutting columns and between the column and the girder.

A much better type of connection is possible than that now prescribed by the underwriters, and it is to be hoped that the insurance requirements will be so amended as to permit it.

This illustration is brought forward merely to show that if the responsibility of better constructive methods is to be assumed by the insurance companies, in order for it to be effective it must in the first place be right and in the second place be reasonable.

It is quite easy for any one in authority or any body of men who have power to control the placing of insurance to arbitrarily frame regulations and give no more demonstration of their necessity than to say, "I want it so," or for a body of men to vote upon regulations or requirements influenced by and depending upon the judgment of one or two men of their number.

It is also quite easy to legislate other people's money away in making requirements which place an unwarranted burden on the owners of buildings, and that without any corresponding good to the owners or to the community.

By study, knowledge and experience the structural engineers and the railroad and bridge companies have been able to frame a general specification governing the design of steel bridges which will insure the construction of a bridge for any span, etc., meeting all the requirements of good practice; and practically the same thing can be said of the steel frame of the modern skeleton building. It is of course an easier matter to write such a specification for a bridge with its simple requirements than it is for a building with its multitudinous requirements and its various shapes and sizes, but much can be done in this direction if the attempt is made in a broad-minded way and the results of science and knowledge utilized and empiricism and mere opinion excluded.

If such an outline specification could be prepared, the insurance companies would immediately have the coöperation of the intelligent designers of buildings, and insurance companies would then be able to hold up the hands of the designers and strengthen them against the parsimonious, ignorant or selfish owners who might otherwise insist upon cheap construction; and if such reasonable specifications existed, the designer who attempted to evade them would immediately write himself down not merely as Dogberry wanted to be written down but as an irresponsible practitioner as well and in the same class with the "Jerry" builders.

In attempting to frame such a specification the self-styled, self-lauded and self-satisfied "practical" man should be eliminated in the work of preparation. Much harm is done and many people are unwarrantably deceived by the empirically minded man who only "knows what he has seen" and who cannot analyze or formulate the results of his experience, so that no matter how extensive his experience may have been, it is almost useless in framing requirements which involve the underlying principles of design which are to govern the erection of structures which may differ widely from their predecessors both in purposes and in the conditions under which they are to be built.

It is a noticeable fact that a prejudice exists in the minds of many insurance men in favor of wood construction and against iron, and if this prejudice is analyzed it will be found to rest upon the fact that large sticks of timber are slow burning and that *exposed* ironwork is not a stable material in event of great heat; but the temporary superiority of wood to iron beams rests upon the employment of automatic fire-quenching apparatus and the question of the timely arrival of the fire department.

One way to get at the solution of a proposition which is not evident is to reduce it to its limits; so, applying this method to the question of wood *versus* uncovered iron, we find that if the element of time is eliminated it will be seen that whatever superiority wood may possess over uncovered iron at first, its superiority is but temporary, and that after this short period wood construction becomes a menace and contributes its share of fuel to the flames.

Iron construction without covering, it is true, is not a proper material to use to support floors if surrounded by inflammable materials, but if two blocks of building, one of the slow-burning type and one of the all-iron type, were stocked with the same goods and allowed to burn, it does not need a prophet to predict the total destruction of the one, with its risk to the neighborhood, and the possible distortion of the other, with no risks to the adjoining property.

It should, however, be laid down as a cardinal principle of construction that no ironwork of any kind should be left unprotected; as ironwork possesses its maximum strength only at about 400 degrees Fahrenheit, it therefore becomes necessary to cover it to prevent it from exceeding this temperature. So while slow-burning construction is immeasurably superior to joist construction, yet iron construction properly covered is immeasurably superior to both.

It is an unfortunate fact that at this time when fireproof construction is most sorely needed, the cost of iron is so great, and that any argument in favor of fireproof construction is met by the unanswerable one of cost, and thus the practical cornering of the iron market in this country by an enormous trust works not only a hardship to the users of this material, but at the same time, by the excessive prices of iron, compels the employment of inferior materials of construction; and while people who cannot help themselves are paying the interest on watered securities, the surplus products of the trust are sold in European markets at prices below those charged American consumers, and communities are suffering now and will suffer hereafter because of the enforced employment of wooden structural members.

Selected Miscellany.

FLOATING FOUNDATIONS.

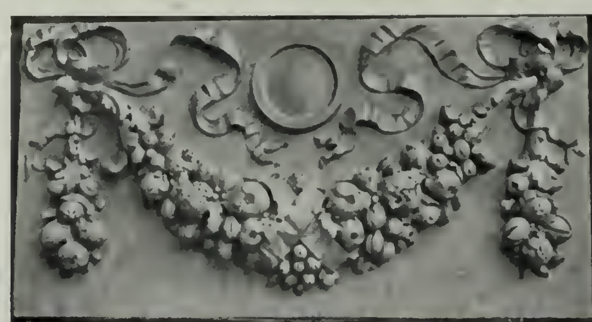
WE sometimes pride ourselves on our ability to grasp quickly, assimilate and put in practice an idea, but after all, looking back at progress, we find that some new ideas are accepted very slowly. It was Frederic Bauman who first scientifically studied and applied the principle of isolated pier construction for foundations of a heavy building on the Chicago soil, and the so-called floating foundation has been for the last twenty-five years considered as the only feasible one for a large building.

DESCHLER BUILDING, MINNEAPOLIS, MINN.
Mark Fitzpatrick, Architect.
Terra-Cotta made by the Winkle Terra-Cotta Company.

The original surface of the ground in Chicago was so slightly raised above the level of the lake that under exceptional conditions what is now the heart of the city would be entirely under water, and as the apparent soil was a thick layer of alluvial deposit over a rather soft bed of mud it was assumed that foundations could not be carried more than twelve or thirteen feet below the curb grade. Consequently nearly all of the buildings which have been built in Chicago of recent years have basements hardly more than ten feet high in the clear, and the foundations are of the grillage type, proportioned so that the building will settle uniformly throughout. Some extremely clever work has been done in this respect by the Chicago constructors, but it is now beginning to be felt that the assumptions have been wrong and that there is no intrinsic reason why buildings should not be built

DETAIL BY GEORGE W. BOWER & SON, ARCHITECTS.
Perth Amboy Terra-Cotta Company, Makers.

in Chicago with sub-cellars carried to any desired depth, these sub-cellars being perfectly dry and sanitary. Under the layer of mud upon which past foundations have rested there begins a deposit of blue clay which at a certain depth below the curb, varying from twenty to thirty feet, is found to be very compact and dry. The rock is reached at a depth of from sixty to one hundred feet. In the more recent buildings the practice seems to be to sink open wells down through the blue clay and into the thoroughly hard compacted mass toward the bottom, filling these wells with concrete to form huge piers which directly support the building. These piers are sunk with very little trouble from water, as the blue clay itself is so strongly compacted as to prevent infiltration, and no caisson work seems to be required. This system of foundations was carried out by Holabird & Roche in the new Tribune Building, the sub-cellar of which is something over thirty feet below the sidewalk, and the same architects are applying the same construction to a building under process of erection at the corner of Monroe Street and Wabash Avenue. In the eastern cities there has been little difficulty in sinking cellars from



DETAIL BY KILHAM & HOPKINS, ARCHITECTS.
Standard Terra-Cotta Works, Makers.

fifteen to thirty feet below tide water, and the fact that for all these years Chicago real estate owners have contented themselves with cellars not more than ten or eleven feet in height shows how an idea will sometimes persist.

DETAIL BY SASS & SMALLHEISER, ARCHITECTS.
New Jersey Terra-Cotta Company, Makers.

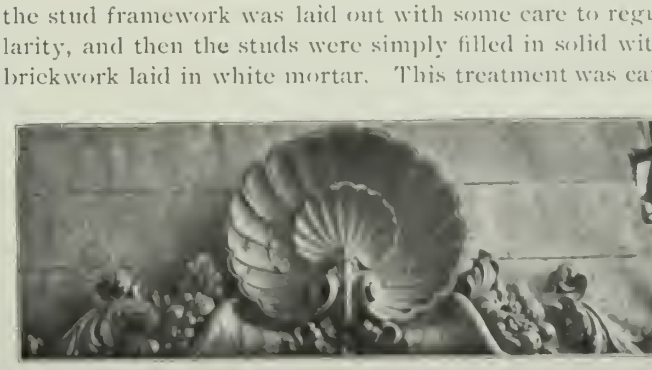
TERRA-COTTA WALLS.

IN most of our cities the laws prohibit the erection of wooden structures of any sort within the business and manufacturing districts. We have recently had occasion to notice the extent to which terra-cotta blocks have been used for constructing the walls of one and even two story buildings of a more or less temporary nature. The blocks are of the same style that is made for partition work, except that the exterior surface is glazed and the blocks are made of uniform size and laid up with a plumb bond. Such a wall is very quickly erected and is impervious to the weather both by reason of the glazed surface on the exterior and of the hollow spaces in the blocks themselves, while the roughness of surface gives a pleasing texture to the wall which goes nicely with the necessarily rather large joints. There is no reason why terra-cotta of this description should not be used quite extensively for the exterior walls of mills, offices and such structures not over two stories high, and used with great economy of first cost and with very decided artistic possibilities as to appearance. Such tiling could also be used very advantageously for fence work. The color of the glazes which we have seen on the market for this work is a dull reddish brown, but of course this could be varied with very slight expense, and such construction suggests very entertaining possibilities.

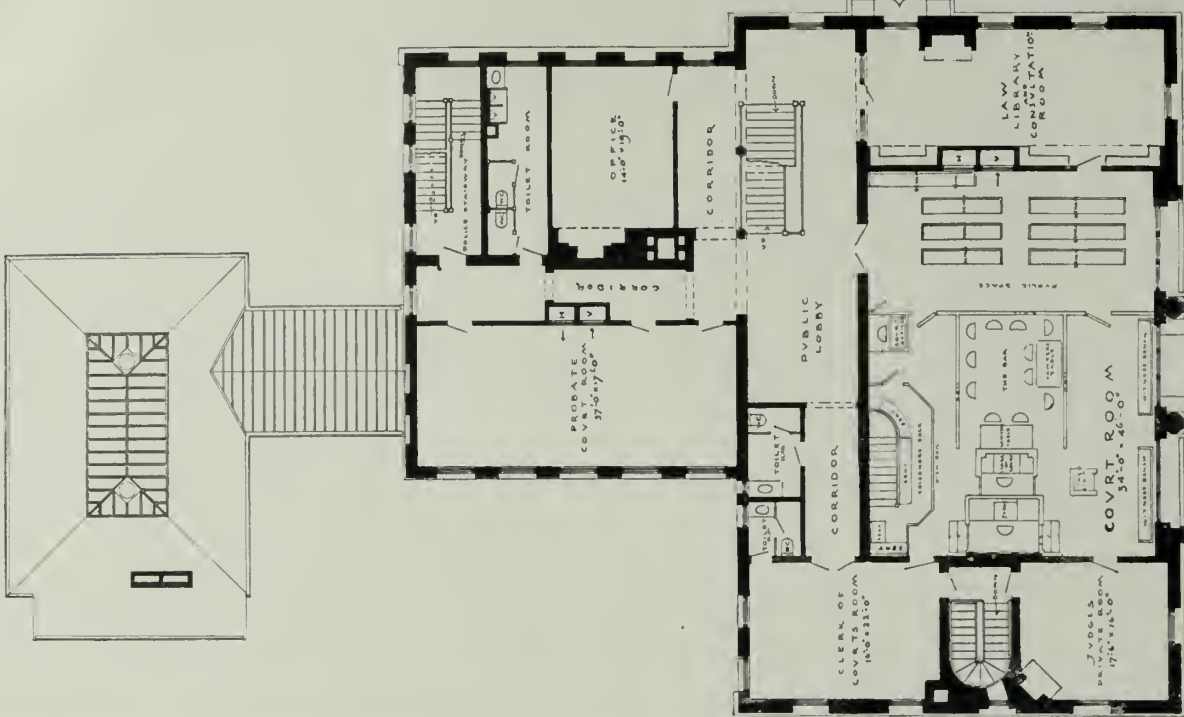
POLICE STATION AND COURT HOUSE, BROOKLINE, MASS.
J. A. Schweinfurth, Architect.

THE USE OF PLASTER.

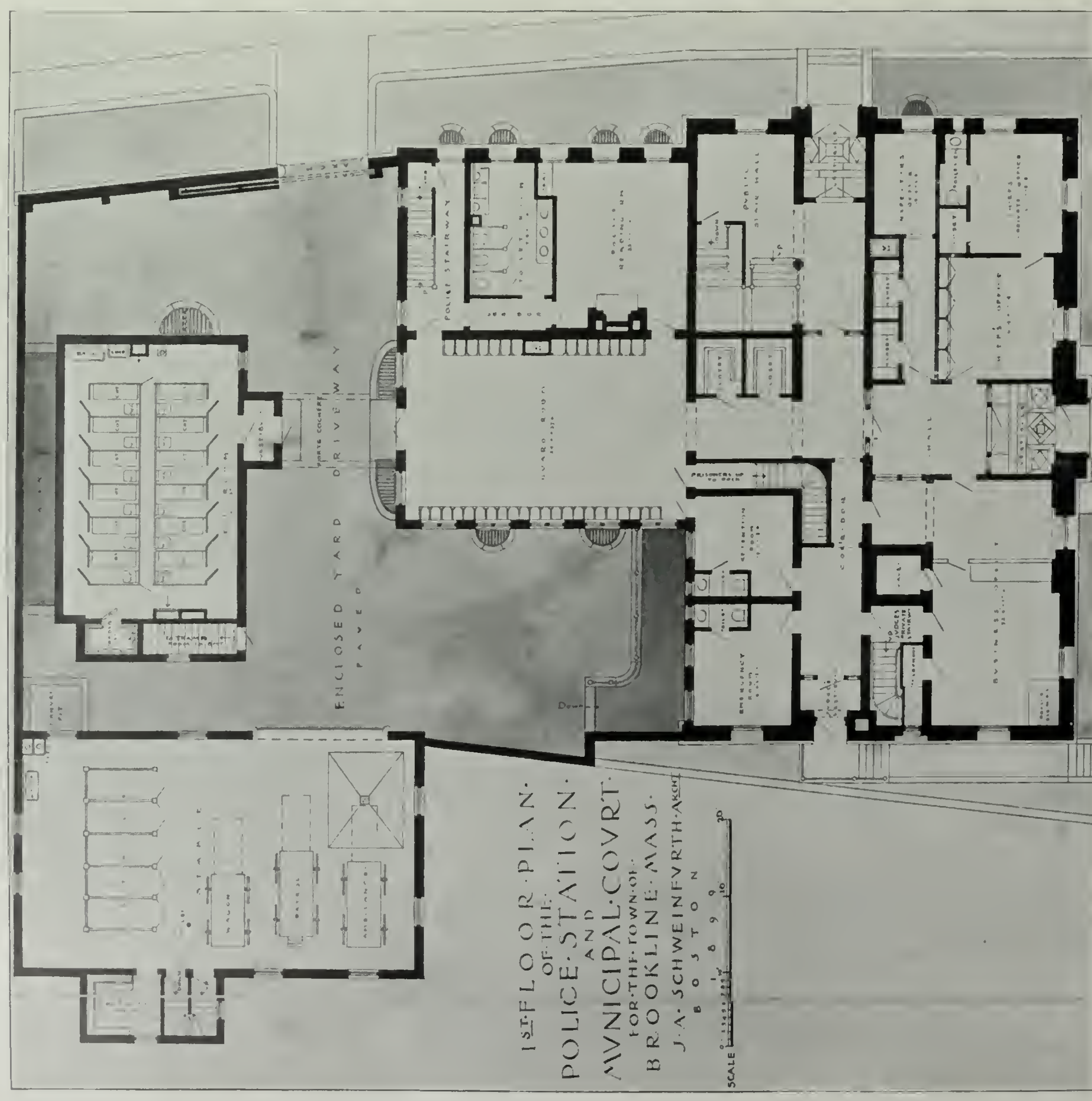
WE have repeatedly had occasion to notice the extent to which other materials than plaster are used for the finish of inside partitions and walls. The only real advantage of plaster is its cheapness and the ease with which it is applied, but when one considers the readiness with which it is broken by slight settlements and its inability to resist dirt unless painted at frequent intervals one is inclined to be surprised that it should so often be used in public buildings. In a private residence its use is inevitable, but even in domestic work there are many opportunities where brick or terra-cotta in some of its various forms might take the place of plaster for wall treatment without any very serious added expense, but with the result, however, of securing almost absolute permanence. We recall at this moment a very entertaining dining-room built by one of our artist friends in which the stud framework was laid out with some care to regularity, and then the studs were simply filled in solid with brickwork laid in white mortar. This treatment was car-



DETAIL BY F. B. & L. L. LONG, ARCHITECTS.
Northwestern Terra-Cotta Company, Makers.



SECOND FLOOR PLAN.



FIRST FLOOR PLAN.

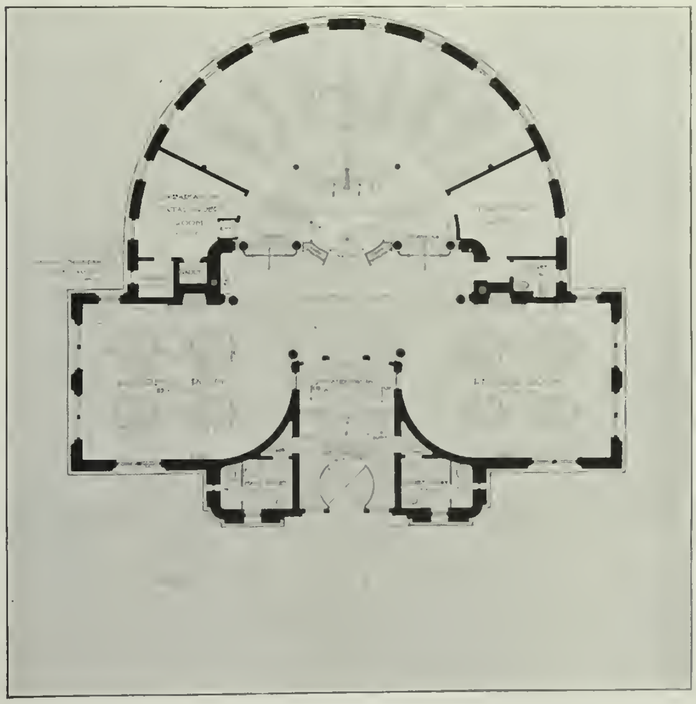
POLICE STATION AND COURT HOUSE, BROOKLINE, MASS.

J. A. Schweinfurth, Architect.

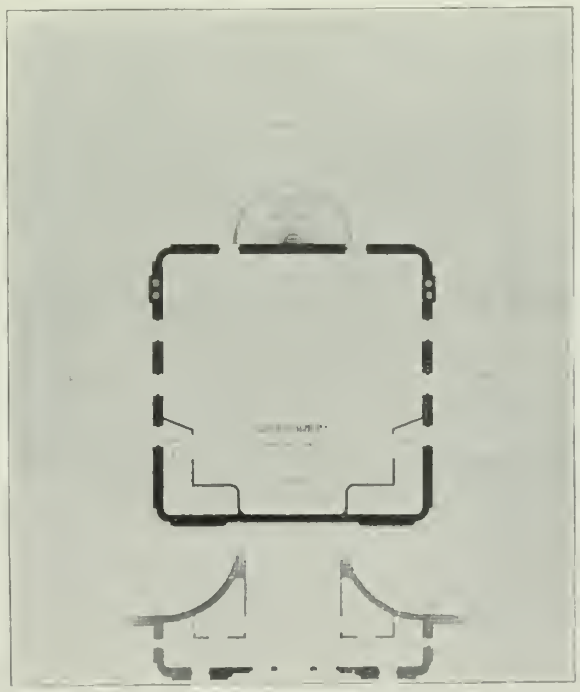
ried over the entire wall, and a dado was applied directly over this work consisting of Guastavino tiles set in plaster of Paris. The effect was an exceedingly pleasing one, and the added expense was very slight. The effect of the room was of an old-fashioned half-timbered interior.

entirely offset by a very clever introduction of dull oak and low-toned gilding in connection with cornice and ceiling work.

There was a time when it was quite the fashion to build churches showing brickwork inside, and Maginnis, Walsh & Sullivan have recently made some very interest-



FIRST FLOOR PLAN.



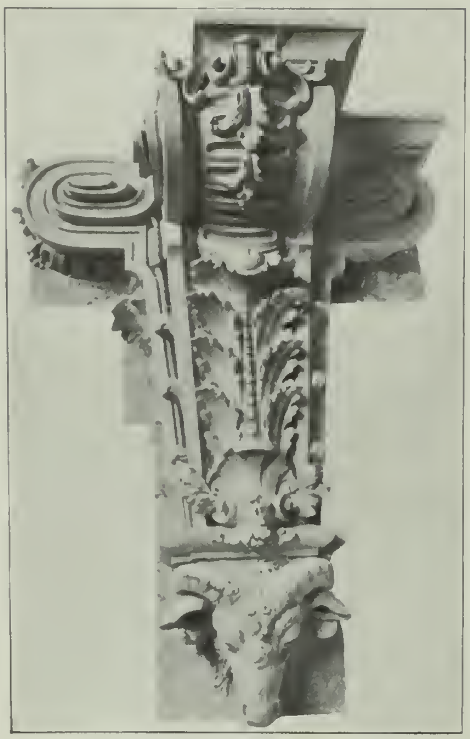
SECOND FLOOR PLAN.

FREE PUBLIC LIBRARY, MANKATO, MINN.

Jardine, Kent & Jardine, Architects.

On a larger and much more ambitious scale Carrère & Hastings have recently finished the interior of the large dining-room which forms a part of the Memorial Hall at Yale University. In this interior the walls are of a dull red brick and the ceiling is open timber work, recalling somewhat in the decorative treatment the roof of San Miniato at Florence, but any crudeness in the tone of the brickwork is

ing studies in this direction which have been published in THE BRICKBUILDER. The field for decorative interior treatment of walls with enameled and glazed terra-cottas is almost unlimited. Plaster of Paris is, aside from wood, almost the only practical material for ceilings, but surely for walls there is no reason why the more durable bricks and terra-cottas should not entirely supplant plaster for public buildings.



DETAIL BY SEYMOUR AND PAUL DAVIS, ARCHITECTS.
Excelsior Terra-Cotta Company, Makers.

WE wish to call the attention of our readers to the competition for the selection of an official emblem for the Louisiana Purchase Exposition. The programme as set forth in the circulars which have been issued leaves every latitude to the designer. Judgment is to be made by a jury composed of two painters, Frederick Dielman and John LaFarge; two sculptors, J. Q. A. Ward and Lorado Taft; two architects, Charles F. McKim and Wilson Eyre; and a historian, Professor Alcée Fortier; a prize of two thousand dollars being awarded to the design placed first. This is a very entertaining problem and one from which the best results ought to be obtained. Drawings are to be sent to Budworth & Son, New York, between Saturday, November 1, and Wednesday, November 5. Further information can be obtained of Mr. Walter B. Stevens, secretary Louisiana Purchase Exposition, St. Louis.

ARCHITECTS MUST BE LICENSED TO PRACTICE IN NEW JERSEY.

The State Board of Architects for the state of New Jersey — composed of the following named gentlemen: Charles P. Baldwin, president; Hugh Roberts, secretary and treasurer; Arnold H. Moses, Charles Edwards and David B. Provoost — have issued the following notice under date of May 19:

"Notice is hereby given to all architects practicing the profession of architecture in the state of New Jersey as defined in 'An Act to regulate the practice of Architecture' (approved March 24, 1902) and in effect July 1, 1902, that they should now apply for a certificate to practice architecture under Sections 9 and 10 of said law.

"For the information of those who desire to secure certificates the act has been printed in full by the State Board of Architects, and copies will be furnished on application, together with a form with affidavit attached that has been approved by the board.

"The privilege extended to practicing architects by Sections 9 and 10 of said law will expire July 1, 1902, after which another form of application for examination under the provisions of the act will be furnished when requested.

"All certificates issued on the present form of application and affidavit will be forwarded to the applicant after the payment of the registration fee of $5, said amount being payable after notice of acceptance of application is received by the applicant from the secretary. All certificates issued are subject to the powers of revocation vested in the board by the above mentioned act."

The office of the board is located at 1 Exchange Place, Jersey City.

DESIGN FOR THE ALBANY TRUST COMPANY'S BUILDING, ALBANY, N. Y.
C. G. Ogden, Architect.

THE CLEVELAND ARCHITECTURAL CLUB ELECTS OFFICERS.

At the annual meeting of the Cleveland Architectural Club, held

DETAIL BY THE NEW YORK ARCHITECTURAL TERRA-COTTA COMPANY.

SIXTY-FIFTH PRECINCT POLICE STATION, NEW YORK.
Horgan & Slattery, Architects.
Brick furnished by the Kreischer Brick Manufacturing Company.

May 22, the following officers were elected: President, F. W. Striebinger; vice-president, G. B. Bohm; secretary, L. Fewsmith, Jr.; treasurer, William H. Nicklas; librarian, William A. Bohnard; chairman of current work committee, G. W. Andrews; chairman of entertainment committee, V. E. Rondel.

A NEW CATALOGUE.

Another of the large clay-working concerns of the country, the Kreischer Brick Manufacturing Company of New York, has issued a catalogue which shows in a most admirable manner its extensive plant and product. One of the valuable features of this new work is the illustration of the stock shapes of their molded brick. This is

DETAIL BY F. C. SAUER, ARCHITECT.
Conkling-Armstrong Terra-Cotta Company, Makers.

also true of the illustrations of their front brick in color. It is a trade publication in which the manufacturer has presented to the busy architect and builder those essential facts relating to his product in such clear and concise form that it cannot fail to have a value for all parties interested.

IN GENERAL.

E. J. Weber has been elected to be this year's vacation traveler of the Boston Architectural Club.

Samuel Alexander Hall, architect, formerly with F. J. Osterling, has opened an office in the House Building, Pittsburgh, Pa., and will be glad to receive manufacturers' catalogues and samples.

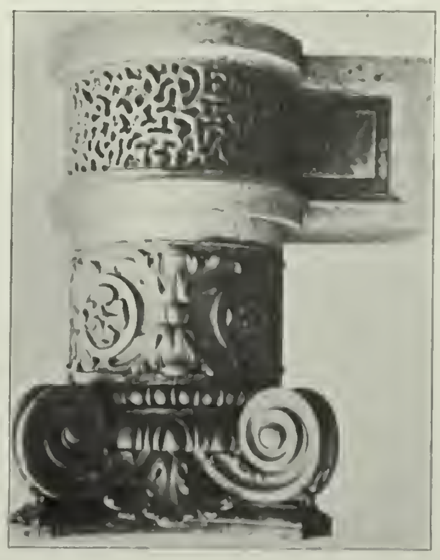
Clarence R. Ward, architect, has succeeded to the practice of the late Edward R. Swain of San Francisco,

HOUSE AT AVONDALE, OHIO.
Des Jardines & Hayward, Architects.
Roofed with American S. Tile.

and will continue same at his former offices, 227 Crocker Building, San Francisco.

The new warehouse for Hibbard, Spencer, Bartlett & Co., which will be one of the largest of its kind in the West, will be fire-proofed by the Pioneer Fire-Proofing Company.

Charles Bacon, Boston representative for Sayre & Fisher Company, reports the following new contracts: Face brick — for the new gymnasium at Groton, Mass., Peabody & Stearns, architects; Divinity School, Harvard, Peabody & Stearns, architects; enameled brick — for engine house, East Boston, J. A. Fox, architect; engine house, Boston, A. H. Gould, architect; Technology Chambers, Boston, Kilham & Hop-



DETAIL BY BRUCE PRICE, ARCHITECT.
White Brick and Terra-Cotta Company, Makers.

kins, architects; Conservatory Apartments, Boston, E. T. Barker, architect; Massachusetts General Hospital, Wheelwright & Haven, architects; and power house, Navy Yard, Boston.

RAYMOND HOTEL, PASADENA, CAL. Hunt & Eager, Architects.
Roofed with Ludowici Roofing Tile.

ROOFING TILES IN BRITTANY.

IN Brittany there are a number of churches erected during the past thirty years. A journey during the Easter vacation has given us an opportunity of studying some of these buildings, and we have not failed to notice that not only in churches but in many recently erected

DETAIL BY D. H. BURNHAM & CO., ARCHITECTS.
Atlantic Terra-Cotta Company, Makers.

other public buildings prominent use has been made of red and ornamental tiles. With the slate of Angers not far off we were rather agreeably surprised to find that this is the case. Inquiry amongst the very obliging clergy shows that warmth in effect of the buildings has practically led the architect to abandon the dull slate roof wherever possible, even though the cost of building was enhanced. This is the right spirit. Anything more monotonous than a blue-black slate roof on a big church or town hall can hardly be conceived. It may be argued in reply that red tile roofs also are monotonous. So they are, when they are first put up. But in course of time they become irregularly vegetated, and a few years suffices to render them quite picturesque, especially when the tiles are of a roughened, sandy character. These tiles on various churches to the north of Rennes, at St. Aubin, St. Brieuc, St. Quay and near Laval, impart quite an antique appearance to the edifices, even when the stone in them is as fresh as when erected. There is another aspect in these buildings which, however, is a purely architectural matter — they are grand buildings and show that the Bre-

DETAIL BY ROOT & SIEMENS, ARCHITECTS.
St. Louis Terra-Cotta Company, Makers.

tons have an eye for the beautiful. Some of the village churches, in which so much claywork has been employed, would be called "cathedrals" in some other countries. — *The British Brickbuilder*.

THE BRICKBUILDER.

JULY,

1902.

TYMPANUM, HOSPITAL ST. JEAN, AT BRUGES, BELGIUM.

VOL. II NO. 7

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JULY 1902

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ADVERTISING.

Advertisers are classified and arranged in the following order:—

Advertisements will be printed on cover pages only.

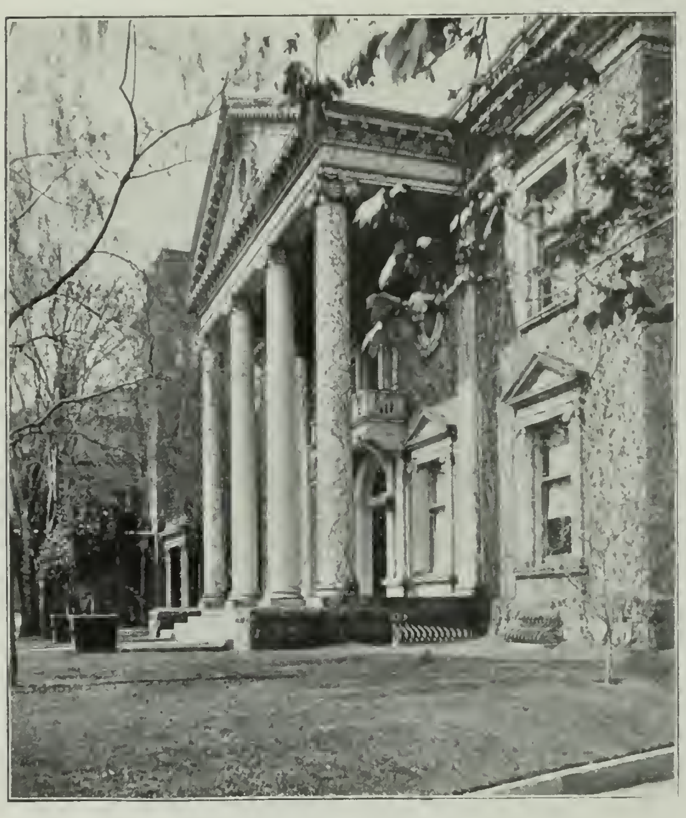
A CONTEMPORARY recently published a very doleful article by Mr. F. W. Fitzpatrick in which he painted a most alarming picture of the future of the architectural profession, which to him is rapidly degenerating into a condition where business hustle counts for everything, and art for art's sake commands nothing more than a feeble weekly stipend in a subordinate position, while the future seems to point to a time when there will be no architects, but the great building corporations which it is assumed will then exist, will buy up art by the year and turn it out by the bushel, at command, the individual artist being allowed full sway only on paper and even then being limited by the most severe practical considerations. We cannot help a sort of feeling that Mr. Fitzpatrick's acquaintance among the architects has been somewhat limited and that his dark forebodings are reflections of observations upon a really extremely limited class of practitioners. There certainly was never before a time in the history of the world when the pecuniary rewards of those of our architects who have the largest practice were as great and as sure as they are at present. Furthermore, there has never been a time when there were so many architects who were able for one reason or another to earn a handsome living, and one has but to mention names like Peabody & Stearns, McKim, Mead & White, Bruce Price, Carrère & Hastings, Cope & Stewardson, Frank Miles Day, Shepley Rutan & Coolidge, Ernest Flagg, Babb, Cook & Willard, Clinton & Russell, Holabird & Roche, D. H. Burnham, and perhaps altogether a score of others, to appreciate that though these twenty or thirty names are but a fraction of the total number of architects they certainly serve to show what architecture as an art and profession may be, both pecuniarily and artistically. And it would be unfair to deny to any one of these firms the quality to being primarily artistic in their intents and their aims. It would not be possible to select a dozen names in any other country in the world to-day which would include so much real talent and financial success; and yet certainly a generation ago there was hardly an architect either at home or abroad who could begin to show the work in either quality or quantity which is yearly turned out by most of these firms. It is a very common mistake for a draughtsman to think that because his employer does not spend eight or ten hours over his drawing-board every day, or because he allows the draughtsman to exercise a very considerable degree of artistic latitude, therefore the architect in question is not the real artist but only the chief manager, and that the real art comes from the underling. But somehow we notice that when these same underlings leave their nests and strike out for themselves, their work, while often better than the earlier work of their former employer, is very apt to be far behind the kind of work these same draughtsmen themselves turned out while in a subordinate position. The difference between a good design and a poor design is often very slight, so slight that a beginner fails to appreciate it, and when suggestions come to him from his employer he does not realize their full import.

We claim distinctly that the profession of architecture never was in as healthy and promising a condition as at present; that so far from there being any observed tendency towards the builders absorbing the architects, we believe it is far more likely to be the other way; and that the educated architect, the thoroughly posted man who knows what he wants and how to get it, will stand far more chance in the keen competition for business when he is equipped as an architect than when he is at the head of a large building company. These building companies have been a great help in the development of our country and they will continue to be. There never has been a time when there were not plenty of so-called architects-and-builders, and if the modern instances of this kind are far more efficient, better equipped and better organized than their predecessors, the same can surely be said of the modern architect to even a greater degree. So while we regret Mr. Fitzpatrick's pessimistic forecast, we cannot take it very seriously, for the facts are dead against it.

Recent Interesting Brickwork in Buffalo.

RESIDENCES.

BUFFALO, the city of frame houses, is awakening to the possibilities of brickwork. True, we have had brick buildings in Buffalo always, and some good ones, but, as the exception proves the rule, they are the proof. For example, one of our oldest buildings, and one archi-



PORCH, FORMAN HOUSE.
Green & Wicks, Architects.

tecturally good, is the historic Wilcox house, to which, it will be remembered, several pages of history were added last year when President Roosevelt took the oath of office. But strip it of its woodwork and what have we? Blank, characterless brick walls, and painted at that. So it is with many of our new buildings; but, as already stated, Buffalo is awakening, and now we have brick buildings possessing character in the brickwork; the woodwork, in fact, may be entirely removed, still the walls will be interesting. And now that Buffalo has started in the right direction, she is to be congratulated, for truly there is no building material wherein lie such possibilities as are to be found in brick.

It might be said that some one is to blame for the poverty of our earlier brickwork. Who is it? Is it the public? Goodness knows, the public is blamed for a great deal that is bad in architecture, and perhaps justly so in many cases; but our public is young in this country, and with decided notions, be they good or bad. But we cannot lay the blame there; we can but deplore the fact that it takes so long to bring the public to a proper appreciation of the good and bad in architecture. And that there is improvement is a matter for congratulation. Can we blame the bricklayers? Yes and no. With few exceptions they do not know how to lay brick, but it is not their fault. They never have been taught, and it takes time to get them out of old ruts. Then whom can we blame, the architects? Perhaps with some justice we can, and still how can they be expected to get artistic work from inartistic bricklayers? Just as they are doing now. It is a long and discouraging task, but time and patience, with intelligent direction, will work wonders. By spending an hour or two with the men when they begin a piece of brickwork, and directing every moment, explaining why a certain brick or joint is best in a certain place, then by avoiding absolute uniformity of shade in the bricks, microscopic joints, the false, so-called American bond, etc., until eventually the bricklayers will understand what is required of them, the public will know good from indifferent, and the architect will be rewarded for his pains. The transition is coming, slowly but surely.

A charming example of brickwork, well laid, is the residence of Mr. Carlton Sprague, from plans of Babb, Cook and Willard. Here we have a pleasing variety in the brick, the color values are good and the texture satisfactory.

In contrast to the variety of tone is the residence of Mr. C. H. Williams, designed by McKim, Mead & White. In this building a uniform red brick was used, relying upon the white stone trimmings and white mortar joints for the pleasing color effect obtained.

The residence and stable of Mr. William Hamlin, from designs by the late Marling & Burdett, demonstrate the pleasing effect in detail obtainable with brick. The photograph of the front porch shows this clearly, the ornament being entirely of brick.

A very interesting example of brick used in a somewhat unusual way is the picturesque colonial porch to

WILCOX HOUSE.

Mr. George V. Forman's residence, planned by Green & Wicks.

The little Elizabethan cottage designed by Lansing & Beierl for Mr. John A. Mann is an example of effective brickwork obtained by a judicious use of common brick.

Another example of brick used to good advantage is the residence of Mr. Harlow C. Curtiss, from designs of Boughton & Johnson. This charming colonial residence

GEORGE L. WILLIAMS HOUSE.
McKim, Mead & White, Architects.

SMITH HOUSE.
Swan & Falkner, Architects.

GATES, GEORGE L. WILLIAMS HOUSE.
McKim, Mead & White, Architects.

WILSON HOUSE.
Esenwein & Johnson, Architects.

GOODYEAR HOUSE.
Green & Wicks, Architects.

WILSON STABLE.
Esenwein & Johnson, Architects.

BRICKWORK IN BUFFALO, N Y

emphasizes the fact that it is not so much the quality of the bricks used, especially from the manufacturers' viewpoint, as the manner in which they are used.

The stately mansion of Mr. George L. Williams, from plans of McKim, Mead & White, demonstrates that no work is too good or too imposing to be executed in brick. The Roman brick of a warm cream tone, with variation enough to avoid monotony, a white mortar joint and white marble trim, make a dignified, imposing and harmonious structure.

An effective example of wide mortar joint is shown in the unfinished residence of Mrs. Robert P. Wilson, from plans of Esenwein & Johnson. A warm brown to yellow-

SPRAGUE HOUSE.
Babb, Cook & Willard, Architects

brown, iron-spotted Roman brick, with plenty of variation, and 5/8-inch to 3/4-inch black mortar joint, are used in this building with excellent effect. The same brick in standard shape and a somewhat narrower black joint were used in the stable, where the effect of the widely overhanging cornice is shown by the heavy shadows, catching the Italian spirit nicely.

A dignified building in the Italian Renaissance, built of a very light cream, almost white, brick, is the residence of Mr. William C. Warren, designed by George Cary.

Another example of a light cream brick is the colonial residence of Mr. Robert K. Root, from the plans of McKim, Mead & White. The garden front is shown, and with the cream and white in combination with the dark green tile roof a most pleasing color effect is obtained.

The other extreme, a black brick or nearly so, is the Renaissance stable designed by George Cary for Dr. Charles Cary, — a very satisfactory piece of brickwork.

Some very interesting English pattern brickwork is shown in the new residence for Mr. George B. Mathews planned by Green & Wicks. Unfortunately this building is not far enough along to photograph, but a pencil sketch, kindly furnished by the architects, shows it very clearly. A promising bit of detail from this building is shown and will bear examination, the brickwork being unusually well laid, the texture good and the color values excellent.

Another example of pattern brickwork, planned by the same architects, is the residence of Mr. Charles W. Goodyear, unfinished, but far enough along to get a fairly good idea of the excellent effect obtainable by a judicious use of brick and mortar. It will be noticed that the walls of many of these buildings would still be interesting if every vestige of trimming were removed.

A simple but pleasing colonial residence by Esenwein & Johnson is that of Mr. Clarence L. Bryant. This building, like the last two, is built of paving brick, which seem to be more satisfactory in the walls of a building than for the purpose for which they were originally intended.

A charmingly located colonial cottage, snugly placed in a grove of trees, is the residence of Dr. A. M. Curtiss, planned by J. A. Johnson. No small amount of credit is due the fence in front of this building for its share in the general effect.

The value of some architectural line surrounding their grounds was recognized by Messrs. G. L. and C. H. Williams, who permitted their architects, McKim, Mead & White, to provide for this effect, which they did very cleverly, assigning brick to the principal rôle, as is shown by the entrance gates.

Examples of simple brickwork dependent largely upon the wood trimmings for effect are the French Renaissance residence of Mr. George W. Derrick, designed by Lansing & Beierl; the colonial residence of Mr. R. W. Pomeroy, from plans by Boughton & Johnson; and the colonial residence designed by Swan & Falkner for Mr. John H. Smith, this last building being an example of veneered work.

An excellent example of English half-timbered work is the stable designed by Green & Wicks for Mr. J. J. Albright.

DR. CARY'S STABLE.
George Cary, Architect

The vine-covered cottage with the many peaks and roofs is an excellent example of brickwork, designed by J. L. Silsbee for Mr. C. D. Arnold.

The residence of Mr. C. E. Walbridge, from plans by M. C. Miller, was unfortunately wedged in between its neighbors so closely that it does not do its author justice.

MANN HOUSE.
Lansing & Beierl, Architects.

PORCH, HAMLIN HOUSE.
Marling & Burdett, Architects.

ROOT HOUSE.
McKim, Mead & White, Architects.

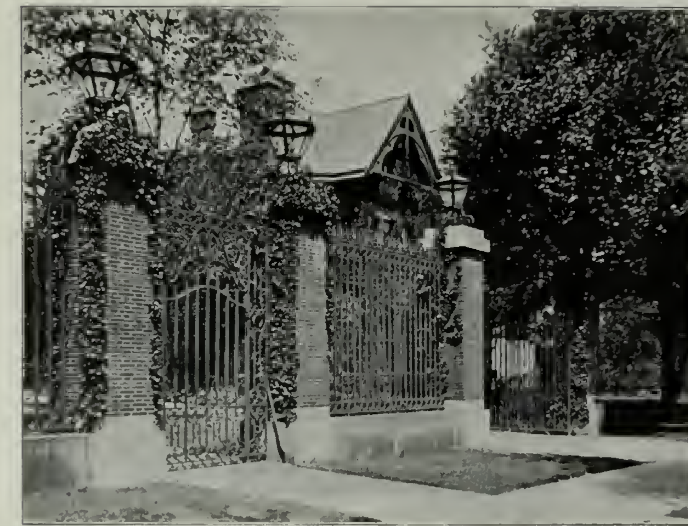
HAMLIN STABLE.
Marling & Burdett, Architects.

HAMLIN HOUSE.
Marling & Burdett, Architects.

WARREN HOUSE.
George Cary, Architect.

BRICKWORK IN BUFFALO, N Y

DETAIL, MATHEWS HOUSE.
Green & Wicks, Architects.



GATES, C. H. WILLIAMS HOUSE.
McKim, Mead & White, Architects.

CURTISS HOUSE.
Boughton & Johnson, Architects.

ALBRIGHT STABLE.
Green & Wicks, Architects.

DR. CURTISS HOUSE.
James A. Johnson, Architect

ARNOLD HOUSE.
J. L. Silsbee, Architect.

BRICKWORK IN BUFFALO, N. Y.

BRYANT HOUSE.
Esenwein & Johnson, Architects.

WALBRIDGE HOUSE.
M. C. Miller, Architect

DERRICK HOUSE.
Lansing & Beierl, Architects.

POMEROY HOUSE.
Boughton & Johnson, Architects.

MATHEWS HOUSE.
Green & Wicks, Architects.

C. H. WILLIAMS HOUSE.
McKim, Mead & White, Architects.

BRICKWORK IN BUFFALO N Y

The "Settlement House." I.

BY ALLEN B. POND.

IN the year 1884 a group of young English university men under the leadership of Rev. Samuel A. Barnett, the then vicar of St. Jude's, established their home in the Whitechapel district, London. The purpose underlying this enterprise was the desire on their part to bring themselves to bear the more effectively as individuals on the lives of some of their less fortunate fellows; to share their culture, the fruits of their opportunities for education and reading and travel, with men who had been barred by the accident of birth and environment from any chance at life in its larger meaning. They sought to with the man who had received the least, and to let the relation thus established evolve the determination of the next step. It converted philanthropy of the immovable fortress and heavy artillery type into philanthropy of the light cavalry type; it rendered philanthropy flexible and responsive to a more subtile need than was being met through its established channels.

That the new enterprise, unique though it might be, was not fantastic but was in fact the timely issue of a situation already ripe, was shown by the immediate response. Toynbee Hall, through activities social, recreative and educational, became rapidly an integral part of its neighborhood, enlisting the hearty coöperation of those whose cramped and somber lives it had been its

TOYNBEE HALL, LONDON, ENGLAND.

fulfill this purpose in part by quasi formal agencies, but always and emphatically by personal contact, by neighborliness. It was in consonance with this purpose that Mr. Barnett in that year dedicated Toynbee Hall, the first settlement, "to social unification."

The enterprise that was thus happily launched, by contrast with the ordinary machinery of organized philanthropy, was curiously unique. It did not aim at religious conversion — indeed sought rather to avoid any connection with sects or creeds. It did not aim at the promulgation of specific political or economic doctrines. It did not seek to enter the field of those institutions and organizations that were already engaged in some specialized form of philanthropy. It sought to bring the man who had received the best that the social organization had to offer into a natural and enduring personal relation

purpose to broaden and to cheer. It furnished a vivid illustration of a way in which one of the most difficult problems of philanthropy might be approached — the problem of creating an organization that should have sufficient coherence for effectiveness without losing the individual in the institution, and that should afford the opportunity of sharing one's best self instead of merely doing or giving things. It became at once a type and an ideal. It drew the eyes of many who were eager to lend help lest the modern city should become in very truth that vision of the poet, a "city of dreadful night." By the year 1900, that is, within sixteen years after the founding of Toynbee Hall, some one hundred and fifty similar enterprises had been inaugurated in the larger cities of England and the United States.

By an analogy not far to seek, the descriptive name

SIDE ELEVATION, NORTHWESTERN UNIVERSITY SETTLEMENT, CHICAGO.

FRONT ELEVATION, NORTHWESTERN UNIVERSITY SETTLEMENT, CHICAGO.

"university settlement" was applied to Toynbee Hall. But the essential characteristic of the movement was not in the fact that it was set on foot by university or college trained men, but in the fact that men who by ability and opportunity had received much from life, had devised a new method of reaching in a normal and intimate way the daily lives of men who had received little. Out of that intimate personal relation would naturally arise the seeking of wholesome recreation, the lending of books, the discussion of books and of topics of the day, the study of vital conditions, the effort to better environment in whatever way the particular situation and immediate need might suggest. Such a movement was manifestly open alike to the college-bred man and the non-college

GERARD RECEPTION HALL,

RESIDENTS' DINING ROOM,

NORTHWESTERN UNIVERSITY SETTLEMENT.

man, to men or women or both together, to the married or the unmarried or both together, to him who could give his whole time or only the leisure that remained after his own hours of bread earning. So that the general movement has come to be known as the "settlement movement" and such social centers to be known as "social settlements," whether founded by men or women, by the collegian or the non-collegian.

It needs but a moment's consideration to see what a wide and varied field of activity opens before such an enterprise. The activities will vary as do the abilities, training and interests of the groups that organize or make up the several settlement centers or homes, and will be still further varied by the reaction on each of these diverse groups of the environment and the capacities and particular needs of those with whom the group is brought into contact and into coöperation. Everywhere there will surely be clubs for reading and study and debate, lectures, concerts and distinctively social gatherings whose major purpose is frankly recreative. In this place or in that will surely be billiards, bowling, dancing, gymnastics, baths, laundries, kindergartens, crèches, classes in handicrafts, amateur dramatics, cooking schools, coffee houses, resident nurses and doctors and lawyers, penny savings banks, etc. In some places religious work has been superadded to the kind of activities that are more peculiarly the function of the social settlement, resulting in a hybrid enterprise that partakes in part of the character of a settlement and in part of that of the parish house or institutional church.

FIRST FLOOR PLAN.

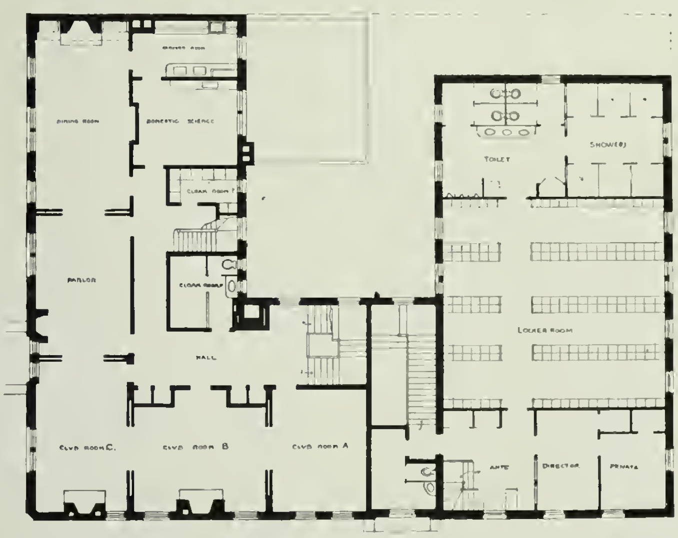
GROUND FLOOR PLAN.

It is natural, indeed almost inevitable, that a true social settlement should in its inception feel its way through small beginnings. It stands for personal contact and must make its first appeal through unostentatious neighborliness. This vantage ground once gained, it will by observation and experiment find its way to broader activities. It has thus happened that with few exceptions each new social settlement at its inauguration has been housed in some already existing building. For its immediate purposes there are to be desired a modicum of creature comfort for the "residents," — that is, the members of the new community,— a certain relative spaciousness to adapt it to larger social uses, and a form, external and internal, expressing, or capable of being made to express, hospitality and homelikeness. Many of the settlements have found the fulfillment of these first requisites in some old mansion that had seen better days; others, environed from the outset in some wholly squalid city wilderness, have had to make the spirit of hospitality atone for the forbidding shell.

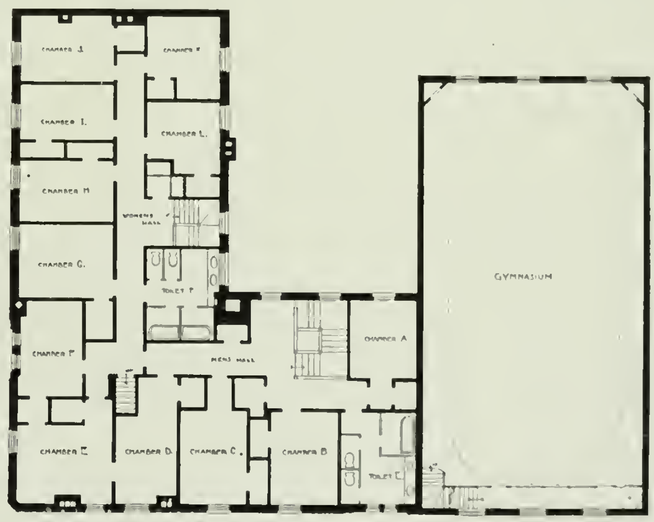
Occasionally a settlement has expanded its influence and activities through a considerable number of years without material or conspicuous change in its first chosen home, — such, for example, is the case with the "College Settlement" at No. 95 Rivington Street, New York City. Sometimes a settlement, holding to its first home and keeping that still as the focal point of its life, has gone on widening its territorial boundaries as it has widened the scope of its activities, — such, for example, is Hull House in Chicago, which at first occupied a portion of an old family mansion and which now occupies with its various buildings the whole frontage of a city block. Other settlements, finding their first habitat for one reason or another unsuited to their work, have moved into buildings built for them and expressly designed for their work. This is probably the experience of the average settlement that has passed the perils of adolescence and has established some claim to permanence; and among frequent examples of this class are "Passmore Edwards House," Tavistock Place, London; "University Settlement," 184 Eldridge Street, New York City; "Goodrich House," 368 St. Clair Street, Cleveland; the "Chicago Commons," at Morgan Street and Grand Avenue, Chicago; "The Northwestern University Settlement," at Augusta and Noble streets, Chicago.

This last, "The Northwestern University Settlement," by virtue of limitations, in part self-imposed and in part, perhaps, the result of circumstances, conforms more closely to the strict type or form of the social settlement than either of the other Chicago settlements above referred to. Originally housed in a small, three-story, flat building with a twenty-foot front and overflowing with its boys' clubs into an adjacent basement, it moved last fall into its present quarters in a building newly erected for it. The lot, situated at the northwest corner of Augusta and Noble streets, has a south exposure of seventy-nine feet on Augusta Street, from which is its principal entrance, and an east exposure of one hundred and twenty-five feet on Noble Street, from which is an auxiliary entrance and from which, also, by an alley in the rear (north), access is had for fuel and for housekeeper's supplies. In planning and designing this building it was at the outset made a fundamental postulate by the architects that the premises were in essence to be a home, and that an air of homelikeness was to be secured outside and inside in the highest degree compatible with be had, plans to be devised, records to be kept, and the like; and an office must be provided which shall be devoted to this side of the life and work. It is highly desirable that this should be in a position that is accessible, and if it is not a contradiction to say so, where it is both commanding and unobtrusive. In this instance it is sought to meet these requirements by placing the office at the far end of the reception hall, where it opens into the reception hall and also into the thoroughfare leading to the principal staircase, and where, by a set of interior windows, it gives upon the lobby that leads from the auxiliary entrance to the auditorium, the gymnasium and the basement clubrooms. The telephone room opens from the office. Opening from the reception hall is a coat room and lavatory primarily intended for men visitors.

The third story is entirely devoted to the bedrooms of the residents, with the requisite accompaniment of bath, toilet and linen rooms. The south and west portion, allotted to women, is reached by a supplementary stair extending only from second to third story. The north and



SECOND FLOOR PLAN.



THIRD FLOOR PLAN.

the conduct of the necessary quasi formal functions and with the limitations imposed by space. A comparison of the photographs of the exterior with the plan will show that at present the portion of the building north of the east entrance is yet to be built. The east entrance, which incidentally serves to give a more direct access to the men's clubrooms in the basement, is primarily intended as an entrance to the auditorium and gymnasium that are to be installed in the fragment yet to be erected. The south entrance leads directly into a large reception hall which is intended to be so designed and so furnished as to serve the double purpose of reception room and drawing-room, effectually doing away with anything tending to impart a formal or institutional flavor. Quiet can hardly be expected to be found on the drawing-room floor of a settlement that has really struck its roots deep down into its neighborhood, but the little library at the right of the entrance is partly detached from the hall and its constant current of active life. Although the family life and the easy friendliness give the settlement keynote, they are only the framework in which other activities are set; incessantly there are serious things to be done, puzzling questions to be faced, quiet interviews to

east portion, reached by the principal staircase, is allotted to men.

At the west end of the second story are the residents' dining-room and its serving-room. The remainder of the second story is chiefly given to a series of clubrooms or parlors opening one into another and thus capable of being used singly or in pairs or in groups as the occasion requires. The corner room is provided with a special equipment of hanging rods and gas lighting for use of the "circulating picture gallery." Opening from the hall are a series of closets and lockers for the storage of the apparatus and equipment appertaining to the work of the several clubs and classes that must necessarily share the use of particular rooms on different evenings. In addition to this series of rooms there are in the second story a small domestic science room, — inadequate, but as large as available space permits, — a residents' private coat room where each resident has a locker for wraps, etc., and a general toilet and cloak room for women visitors.

In the basement are the men's clubrooms, reached by the stairs from the auditorium lobby and by the principal staircase, and the kindergarten rooms, which, in addition to access from inner corridor, are reached through a vestibule from a separate outer entrance under the main south entrance. To insure abundant light and cheeriness in the kindergarten its windows to the southward give on a sunken garden. The basement also contains

COFFEE ROOM,

COFFEE ROOM,

NORTHWESTERN UNIVERSITY SETTLEMENT.

general toilet room for men, special store and toilet rooms for the kindergarten, storeroom for housekeeper's supplies, locker and toilet room for servants (for the most part not living on the premises), and in the angle to the northwest, boiler, engine and coal rooms in a fireproof basement and half-story portion. The circulating library is provided for in the outer kindergarten room, where a collapsible folding counter and rail are installed on occasion.

When the north wing shall have been built it will provide on the ground floor an auditorium with a small stage adapted for lectures, concerts, amateur theatricals and the like, and in the top story a gymnasium, its noise shut off from the auditorium by an intervening story given to locker, shower bath and physical director's rooms. When thus completed the plant will still lack, owing to inadequate size of building resulting from limited available funds, one or two much to be desired features — *e. g.*, more ample space for cooking-school, boys' clubs and manual training facilities, and a laundry where neighborhood people can have use of tubs and driers. However, with-

KINDERGARTEN ROOM,
NORTHWESTERN UNIVERSITY SETTLEMENT.

KINDERGARTEN ROOM,

CLUBROOMS,

NORTHWESTERN UNIVERSITY SETTLEMENT.

out these desirable features the building will afford in fair proportion a good working equipment for a social settlement with functions somewhat closely limited to the settlement form.

In addition to the above features there is also on the first floor a small public café, the kitchen for which is at one and the same time the kitchen for the residents' private table. This feature is no essential part of a well-equipped settlement plant, and in a small building it may be questioned whether the required expenditure of space is wholly justified. However, its advantages, provided it can be made self-supporting, are obvious. As placed in this instance it has its own street entrance at the extreme southwest corner, and it also opens through a wide door (double set of sliding and folding, to shut off noise and odors) into the reception hall in such a way that it easily serves as the dining-room on the occasion of large receptions or entertainments, and may be used after close of business hours for club and other purposes. It has its own toilet room, and the kitchen for all uses is directly in the rear of the café, service to the residents' dining-room being by dumb waiter to the upper serving-room.

The number of people who throng a settlement building and the personal habits of some of them make some form of indirect heating with plenum or exhaust change of air exceedingly desirable. In this instance, for that matter in most instances, the funds are insufficient, and a fairly successful substitute has been provided by the use of direct-indirect radiation and numerous fireplaces, the latter serving the double purpose of aiding ventilation and of adding in a marked degree to the homelike aspect of the various rooms. Considered with reference to homelikeness of exterior aspect, the building has the advantage of lowness; and the design has been cast in a style that lends itself to a broad, simple treatment favorable to the desired effect. The walls are of brick trimmed with stone. Basement and rusticated work are faced with a purplish gray brick and the masses above with a red brick of mottled shading, the diaper pattern being in buff brick. The stone is "blue" Bedford limestone. The mortar is uncolored except for admixture of some Milwaukee hydraulic cement to the lime. The slopes of the roof are covered with "unfading green" slate. There is yet to be provided the iron fence surmounting the walls of the sunken garden and enclosing the bit of turf at the street corner.

LONDON ARCHITECTS.

THE *British Architect* quotes the statement that a Building Trades Directory indicates the addresses of some sixteen hundred architects in London. In some of our newer towns we occasionally see a statement to the effect that there is not as much opportunity in the older cities as there is in the growing West because the old cities are already built over and there is not so much demand for an architect's services; but the number of London architects, who are in the ratio of about one architect for about every two hundred and fifty families, would seem to indicate that the demand for such services as they can offer has not entirely ceased. It is stated also that there are only four landscape gardeners in London, and two of these are father and son.

Fire-proofing.

THE FIRE PROOFING OF HIGH OFFICE BUILDINGS.*

THE high office buildings have been made a success by the possibilities of construction that have been developed with them. They were first built with brick walls, and the highest reached to sixteen stories with this material for support on the outside, as at Chicago, even with its compressible soil and floating foundations. Skeletons of cast-iron columns and rolled-iron beams were going up to the same height at the same time. The whole-steel skeleton came when the introduction of rolled steel superseded rolled iron, and it has continued to be the standard construction for these and many other kinds of buildings ever since.

But the possibility to attain this great height with safety came with the inventions of the fire-proofers; to speak more accurately, the inventors of light hollow-tile systems of floor construction. The weight of floors was reduced before the weight of walls. Up to 1881 the average of fillings between I beams of buildings having combustible floors was seventy pounds, whether with brick arches or with corrugated iron covered with concrete. They were at one stroke reduced to thirty pounds by the use of flat hollow-tile six-inch arches in the nine-story Montauk Block at Chicago. You all know what that means in computing the strength of foundations, walls and columns. From that time the number of distinctively high office buildings increased rapidly. Other inventions followed, though as a matter of history the iron rail and concrete foundation (now nicknamed the "floating" foundation) was first used under the same building. It was one of the accidents of my life that I supplied both.

The steel skeleton having become an accepted fact, heavy walls, both exterior and interior, have been practically abolished. The earliest high office buildings had not only exterior but interior walls of brick wherever the conditions of the plan would make their use practicable. In addition they were filled with stacks of heavy brick vaults which were permanent fixtures placed where it was supposed there would be a demand for them. Tenants had to select such quarters as suited them according to the original plan of the building, as changes in plans were very expensive and often impracticable. But when the all-steel skeleton abolished the heavy wall it also abolished the vault, and in abolishing the vault it warned all concerned that the fire-proof qualities must be of such a high grade that the whole building would be a fire-proof vault. So the fire-proof closet had its birth. This was one stimulus to a greater study of fire-proofing conditions.

The modern office building so far as it can be seen when completed is practically built by the fire-proofer. His methods render common bricks, on which the main dependence was formerly placed, quite unnecessary. The first great change after the all-steel skeleton was de-

* By Peter B. Wight, F. A. I. A., Consulting Architect. Read before the Engineers' Society of Western Pennsylvania, Pittsburg, May 20, 1902.

veloped was the substitution of the hollow fire-brick, or "hollow tile," as it is called, for the common brick ; and this was only possible by the use of refractory clays instead of brick clays. It was carried to such an extent in the erection of the eighteen-story Fisher Building at Chicago that in this building, which fronts on three streets, there are no bricks except a few that the contractor for external terra-cotta used in filling chinks behind his terra-cotta wall. Even the dead wall is all built with terra-cotta (meaning thereby that made by the contractor for exterior work) and hollow tiles. This illustrates to what extent the hollow tile (meaning such as is made by the fire-proofer), as well as the manufactured terra-cotta, have contributed to the development of the high office building.

I am aware that it is contended by many men of your profession that concrete in combination with metal is a better fire-proof material for constructive purposes than hollow building tile. I agree with you that in some cases it is, and therefore will not seek to provoke discussion. But the fact remains that the hollow building tile made of refractory clay is the material which has actually developed the high office building as we find it to-day, and I think it will always hold the most important place in such constructions. For while the common brick has been to a great extent supplanted, the wall and the arch have not gone out of use. The wall has only been reduced in thickness and in weight, and the weight of it has been reduced in greater proportion than the thickness. Long walls and high walls unsupported are no longer necessary, but they cover just as many superficial feet in height and breadth as before. The mason with his trowel is just as necessary ; and while there are many ingenious methods for constructing subsidiary partitions without hollow tiles and without the help of the mason, there is still no way known for building the exterior walls or the main interior division walls of a building with the greatest rapidity in all kinds of weather and without the use of unnecessary quantities of water except with previously prepared dry blocks of refractory material, and of such only are the hollow tiles of burnt clay. Where an arch of large span is required, whether it be a large door, a dome or a wide span between deep floor beams, there has not yet been invented anything that is lighter for the work required, drier, more fire-proof, more rapidly constructed and cheaper than the products of fire-clay set in good cement. Yet there are substitutes, and they have their value, and for special purposes are desirable.

The special qualities and true value of this material and the kinds that are most reliable for fire-proofing purposes will be considered when the conditions affecting a truly fire-proof office building are considered.

The main conditions to be considered are (1) the plan, (2) the materials, and (3) the constructive methods.

THE PLAN.

The plan belongs to the architect, and if he consults his engineer it will be a very simple one. It is safe to say that the best planned office building on a rectangular lot will be one that is worked out on a system of smaller rectangles into which the lot is subdivided, with a column at each intersection. The main thing to do is to ascertain the best proportionate dimensions for these rectangles. If they are all the same there will be only two dimensions for all the girders and beams in the building. Such an arrangement will result from making several sketch plans upon different subdivisions into rectangles until the best one is discovered. If this is found to be impracticable the system should be abandoned; but if possible the girders should be in straight lines, and the width of the exterior bays should be controlled by the spacing of interior columns. The general dispositions of the plan being adopted, the next thing to do (and one which few architects ever consider) is to study all the contingencies that would permit fire to attack such a plan from without or invade it within. Every high office building is by its nature a flue, and the problem has heretofore been how to make it less so. So many have despaired of this that I am inclined to say that what might be possible in a great warehouse, in which vertical draughts can be avoided, need not be thought of lest the true value of the building as an investment be destroyed. I would therefore advise that the natural flue conditions of a high office building be improved by planning it so that the natural draughts which carry fire upward will as far as possible be directed away from the inhabited rooms and allowed to escape harmlessly through the top of the building. This can be accomplished by permanent flues built of double air-space hollow tiles running through the offices where they are least likely to interfere with future changes of partitions. These flues can be covered at the top with skylights of thin glass which would break in case of fire, while permanent capped pipes, also at the top, would serve for ordinary ventilation. The openings from the offices into these shafts should be permanent, and close to the ceilings. Such flues would carry fire and smoke through the roof and prevent it from spreading laterally. Large glass-covered courts should be avoided, as they tend to carry smoke and fire to upper stories and smother the occupants. As elevators may become as valuable as stairways for means of escape, they should if possible be placed not in one stack but in two, and as far apart as practicable. In large buildings this would be a convenience to tenants in reaching their rooms expeditiously. Every large office building should have two entrances connected by a common hallway, and it is equally important that it should have two stairways from the second story to the top and as far apart as possible. They should not be in position where a rising current of air can involve both a stairway and a stack of elevators. Theorists have sometimes claimed that stairways and elevators should be individually isolated. Such a disposition would so injure the value of the investment that it should not be considered. Besides, an isolated stairway in case of a panic would be unknown to most of the occupants or visitors to such a building. With two vertical stacks of stairways and two vertical stacks of elevators, all connecting with corridors, it would be practicable to place spring doors across the corridors which would isolate each stairway and each stack of elevators. Such cut-offs in the corridors should be entirely made of light metal frames and polished wired glass. This latter material will also be considered later on in connection with "Materials of Construction," but as part of the plan of the roof it should take an important place. There are many instances in which the study of the natural action of fire in the top of a building shows that it is desirable to use glass that will break as soon as attacked by fire, so as to let the flames and smoke escape. The indiscriminate use of wired glass, therefore, because it will admit light and still resist a current of fire is not to be encouraged, and it is easy to see that it might be the cause of many deaths from the accumulation of smoke which cannot escape. It is much more important that skylights should be of breakable glass, and to prevent injury caused by its fall they should have wire nets suspended beneath them. There should be such skylights over every elevator and every stairway, and if skylights are not required over them, as in the case of their being next to outer walls with windows, they should have large ventilators running through the roofs.

Any suggestions as to the capacity of elevators, stairways, corridors and doors seems hardly necessary here, for they are the important considerations which enter into the planning of every building and are equally if not more important in a high office building than any other. The objects of a properly built high office building other than the interest of the owner as an investment are safety to human lives and safety to the property contained in the building, as well as the building itself, as against fire.

THE MATERIALS.

This brings us to the second consideration — materials. That such a building must consist of fire-proof materials reënforced with the commonly accepted steel frame has been said. For the exterior, terra-cotta and brick take first place, but these are not necessarily backed with brick. Where they are not, the only material that has been used successfully is hollow fire-clay tile. I have never yet heard it suggested that such materials as concrete or hollow plaster blocks should be used. It is now customary in the best buildings to construct the floors and protect the columns and girders before the exterior is covered. The exterior walls are not sufficient to protect the exposed columns and beams at the outer line of the structure. They are only a mask and may fall away, exposing the structure. These columns and girders should be first protected exactly as are those of the interior. Various methods are in use. By some it is advocated that they should be encased in Portland cement concrete, completely buried in it, but it is not suggested that any fastening is required other than the adhesion of the cement to the steel and its own monolithic character. This method denies the necessity for any non-conducting air spaces. I know of only one building in which this was ever done; it was owned by a fire insurance company in New York, and it was done twenty years ago. The columns, which were of the Phœnix pattern, were covered with Portland cement run from a cornice mold and showing a molded finish all around. By others it is proposed to plaster the columns with cement on a lathing of wire or other perforated metal, and where one process like this is not considered sufficient it is proposed to repeat it twice and even thrice. This is frequently done, and its chief merit is its cheapness. The common method is to build hollow-tile blocks around the columns like a wall, and in some cases two courses of these are used. In severe fires which have occurred in several buildings it has been demonstrated that the exterior layers of these crack, for the reason that the exterior expands, while the interior is cool. The worst defect in the use of hollow tile around columns is that no provision is made for longitudinal expansion. They are built from the girder of one story to the girder next above. As a result it was demonstrated in the last fire that occurred in the Horne Department Store at Pittsburg that before the steel columns had absorbed enough heat to cause expansion the hollow-tile coverings were so badly crimped by expansion against the unyielding girders that many of them fell off. In an earlier fire in the Horne Office Building at Pittsburg, in 1897, the column coverings, which were of thick slabs of semi-porous terra-cotta built as a wall around them, were uninjured. My earliest practice was to use solid blocks of a very high grade of porous terra-cotta both for columns and girders. For column coverings I always secured them to the iron with tap screws. For girders I made the blocks to fit the sections of I beams, and found that no fastenings were needed, for the form of the I beam is such as to hold the blocks tight between the flanges when well bedded in cement. Cast-iron columns, covered with porous terra-cotta two and one half inches thick, fastened to the iron with tap screws, were tested in a fire in the Grannis Block at Chicago in 1885, where they were pulled out of the ruins with all the fire-proofing attached. There was nothing fire-proof in that building except the columns. I am now satisfied from experience of all the known materials in actual fires that the softness of porous terra-cotta is almost as objectionable as the brittleness of hard-burnt, thin-bodied tiles, and that the best fire-proof material is the medium between them, and that is semi-porous, hollow tiles with walls at least three fourths of an inch thick. The best illustration of their efficiency was seen in the Horne Office Building at Pittsburg in 1897, the material having been made in your own city, Pittsburg.

Whenever a contract is let for the fire-proofing of a building with clay products, the lowest bidder who secures the contract executes it with the kind of material he can make to the best advantage — it is the product of the clay he happens to mine. It may be suitable for the high-grade porous material or only for hard-burnt tile. But the best material to produce the results above suggested can only be made by mixing clays — in their natural state they are not suitable. This should be a subject for investigation and study by every manufacturer, so that a reasonably uniform standard article can be produced. It was the good fortune of the Pittsburg Terra-Cotta Lumber Company, which made the material that went into the Horne Office Building, to produce a tile with their own natural clay which filled every requirement for a fire-proof material, and which had the necessary toughness and refractory powers to resist extreme heat. Other clays may resist heat, but lack toughness; they become brittle and are not fit for hollow tiles with thin walls. Others again can be burned with large quantities of sawdust, and are wonderful non-conductors, but are too soft and not suitable for resisting severe strains. My own observation has shown that in most localities shales may be obtained which, when ground and burned with low-grade fire-clays, produce the best material for semi-porous terra-cotta.

Too little attention has heretofore been given to standard qualities in burnt-clay fire-proofing. When a standard is established, recognized and insisted upon by architects, there will be some hope for uniformity in results. As it is, there may be several kinds of burnt-clay fire-proofing used in one city, and I know of some buildings in which the clay used was not above the grade required for ordinary flower pots. Where used, however, it was the result of indiscriminate competition and want of investigation. As a matter of fact most of the buildings fire-proofed with burnt clay contain the highest grade of material. But the world will never see this fact demonstrated by the ravages of fire. It has never given the fire-proof office buildings that have been erected within the last fifteen years the credit that is due them, and it never will. It only hears of the occasional one that shows failure in a crucial test. Those that have resisted the elements are dismissed with a paragraph. An occasional failure is not a demonstration that others may be expected. When it betrays the fault or the weakness it should be an object lesson that is profitable. I regret, however, that this is not always the case. I wish the men of my own profession would take as much interest in scientific investigation as you do.

The value of wired glass has been referred to. In an office building it will prove to have its greatest value when used in vertical positions where glass is necessary. It should also be used in all external windows wherever possible. But it should always be set in metallic sashes and frames. The supposed necessity for using wood in partitions, for door and window frames, has led to many demonstrations of the fact that this use has helped to destroy the efficiency of the fire-proof materials of which they have been constructed. Experience has also shown that wood should be practically abolished from the interior finish of office buildings, and this can be done now without raising any objections on the part of the tenants. Recent inventions have supplied all that is wanted. There is no longer any necessity for wooden floors. Notwithstanding it has been claimed that they will not burn, they *do* burn, and the oil and varnish which saturate the modern hard-wood floors carry fire with great rapidity. The tenants have already anticipated the change, for they have abolished carpets and substituted rugs. If marble and tile are too expensive for floors, cement can be used. A very valuable substitute for cement finish has recently been invented, called "monolith." Doors need no longer be made of varnished wood, but of common wood covered with sheet brass and hung to metallic frames built in fire-proof partitions.

THE CONSTRUCTIVE METHODS.

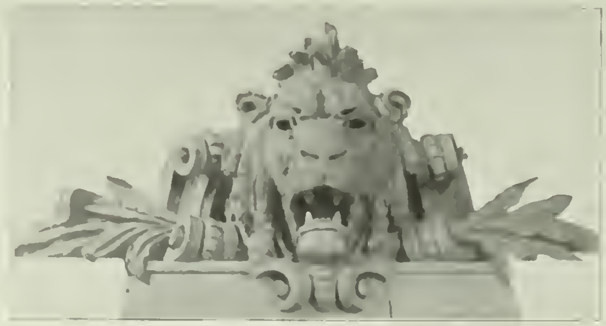
Referring now to the third division of my subject — constructive methods — I feel compelled to tread my path with caution, for I may be invading the domain of the C. E. All discussion of constructive methods in fire-proofing seems to lead to the building of floors, and this is where the C. E. has crossed the path of the architect more than once. The fact that extraordinary strength has been developed in constructions in which various combinations of Portland cement, sand and steel have entered, has made them very attractive to gentlemen of your profession. I admit the strength and the ability to prevent fire from passing from one story to another within a given time, and to one who seeks only for these results they are satisfactory. But house building has many ramifications. The conditions under which houses are built are various. Among the most important of these are *time* and *climate*. Another one is permanence. The oldest of the indestructible manufactured materials known to exist on the face of the earth is burnt clay. Time may show that the high grades of cement made at the present day come next to it, but we cannot wait for the outcome. Finely divided steel, with which it is combined, is a very delicate material, and scientists all over the world are discussing the question "What is the best material to paint steel with?" — even where it is used in heavy members of construction. At such a time you will see if you look at nearly all of the high office buildings that have been erected and are now being erected, that the architects who have to do with those buildings pin their faith to burnt clay. They have no time to wait and see whether the cement will eat the steel or preserve it, but they know that they have a good thing in clay, and as long as it is the only material which makes possible the building of furnaces in which iron can be made into steel, they will continue to build it up around the steel skeleton; and I hope it will preserve the steel skeleton for all time. For as the steel must be protected from fire and every inch of it covered, it is certain that when protected from one element it will be found to be pretty well clothed against the storms that try to beat against it and the insidious dampness that steam heat expels. However, I suppose that the discussion about corrosion will last until we have steam-heated bridges, and about electrolysis as long as we have damp cellars.

I have said that the architect will always be a believer in *the brick* and its substitutes, and his affection will always cling to his brother, the mason, even though houses may be built without heavy walls. With these materials and his skillful assistants he does not fear that terrible enemy to cement, Jack Frost, and he can get his work done fast enough to suit his client, which is saying a great deal. These are the convincing arguments for the use of burnt clay. My only plea is that this most important and universal material may be in the future the object of greater study for the purpose held in view in this paper; that as much investigation and experimentation will be devoted to the determination of the proper methods for manufacturing of clay products into fire-proofing material as has been given to the adaptation of clay for use in the manufacture of steel. Its indestructibility is admitted; but it has a different office to perform in the burning building from what it has in the open hearth furnace. It can be made, for it has been made, to withstand water as well as fire. By proper mechanical means it can be made to keep its place under all conditions. It has also a field in constructive work such as has been developed by no other material, in the building of domes such as those erected by Guastavino. Whatever apparent failures there may have been in this as a fire-proofing material are exceptions to the general practice that has been followed in its use, and only serve as a warning against its unscientific and unpractical application.

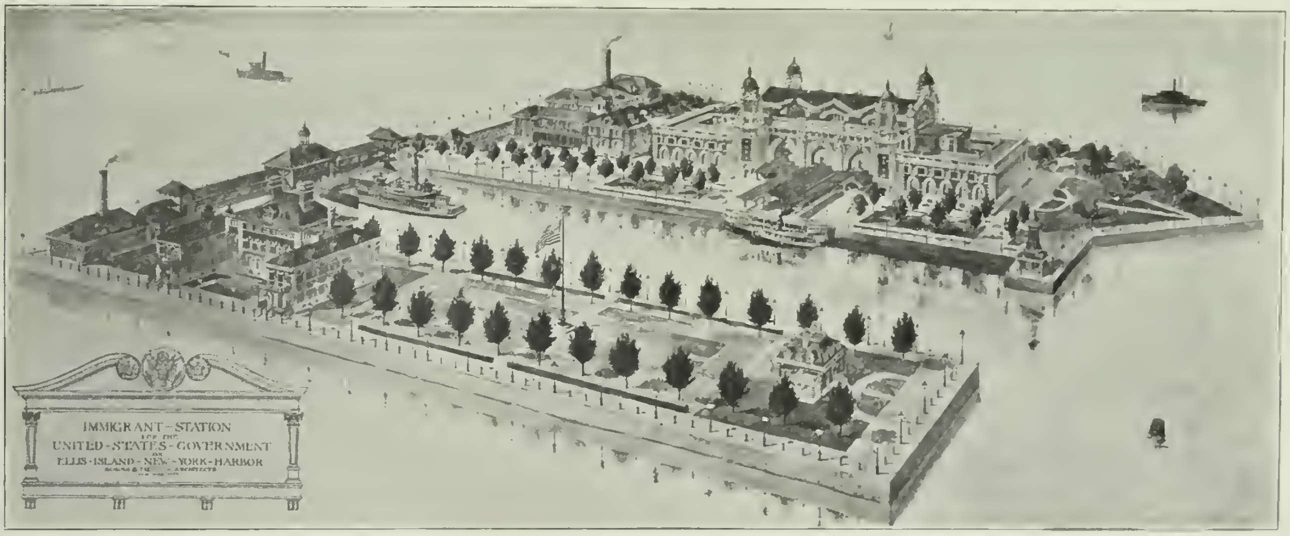
Selected Miscellany.

FALL OF THE CAMPANILE.

AS we go to press, the daily papers publish telegrams from Venice stating that the Campanile of St. Mark's has collapsed into a heap of ruins. This structure was begun in the year 888, but in its present form it dates from the close of the fifteenth century. It consisted essentially of a plain shaft of brick, broken only by slight projections on each face, carried up to form a series of pilasters connected by arches at the top, the whole crowned by a quite elaborate loggia or upper story of stone, consisting of an order with full entablature and a high attic, above which was a pyramidal roof. The published details so far are too meager to assign any cause for the break. The body of the tower was very solidly constructed, with walls about five feet thick built out of flat, square bricks, giving an effect on the exterior similar to what we now style the Roman brick, though the bricks were actually some sixteen inches square in plan. Inside of the tower is a ramp which extends from the ground floor to the loggia, on a gentle incline, being enclosed towards the center by continuous piers and arches which are also solidly constructed. The destruction of a monument of this sort is a great loss to the artistic world. It could very easily be replaced, but it is doubtful if Venetian finances would make such replacement probable unless outsiders gave their aid.



DETAIL BY CLINTON & RUSSELL, ARCHITECTS.
Excelsior Terra-Cotta Company, Makers.



DETAIL BY PARISH & SCHROEDER, ARCHITECTS.
New Jersey Terra-Cotta Company, Makers

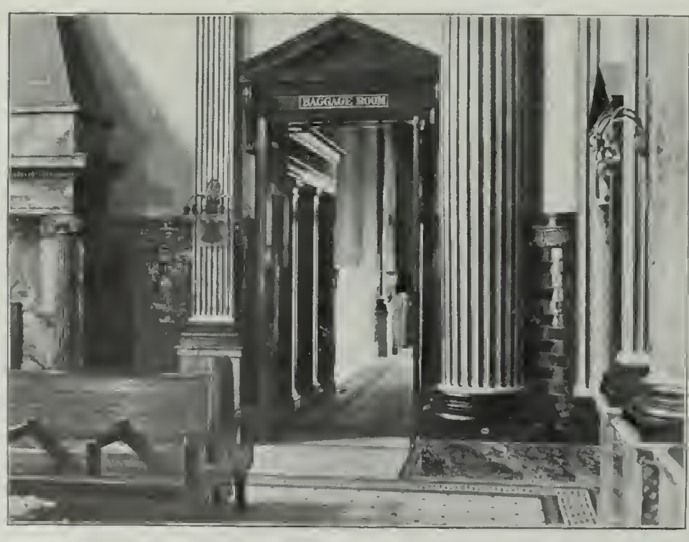
PERMANENCE IN BUILDING.

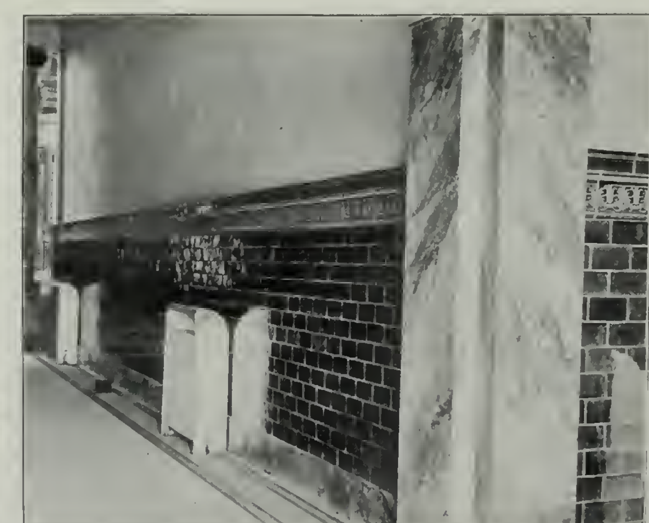
APROPOS of the fall of the Campanile of St. Mark's, we were asked by an inquisitive reporter whether the buildings which are built to-day would stand any better or longer than the buildings dating from the period of the Campanile construction. In these days of large building enterprises, when, especially in commercial buildings, everything has to give way to considerations of return on the money invested, and where time is of such tremendous importance, it is very easy to slight the hidden portions of a building and it is also easy to greatly overestimate the importance of saving time; or, in other words, time saved in the rate of construction does not always imply money saved in the long run. We believe that the best of our modern buildings are far better constructed than the best of the buildings erected during the time of the Italian Renaissance; but a very considerable number of our recent structures are hurried to such an extent that while the immediate safety of the building may not be impaired, its life is undoubtedly shortened. The head of one of our largest building concerns, who has won a reputation of doing more work in less time than any other one contractor in the country, recently made the statement that in his judgment it was not possible to build a commercial building well in less time than one year. He had repeatedly done it in less than seven months, but always under protest and with the conviction that the best interests of the investors were not considered If we build our large buildings to last twenty or thirty years the masonry can be thrown together in almost any way, but if they are to be built with the idea of permanence, time is worth far more put into good construction than a few thousand dollars earnings the first year.

VALUED INSURANCE.

IT is some years since the legislature of New Hampshire passed the law providing that "if insured buildings are totally destroyed, the sum insured shall be taken to be the value of the insured's interest therein, as such interest is described in the policy, unless over-insurance thereon was fraudulently obtained. If they are only partially destroyed, the insured shall be entitled to his actual damages not exceeding the sum insured." Under this law policies issued in New Hampshire are what are known as valued policies. The passage of this law called forth very strong protests from the companies interested, who claimed that it provided an opportunity for excessive over-insuring, but the report of the insurance commissioner, which has just been issued, seems to show that the statute as a whole has not been a disadvantage either to the insurance companies or to the insured. Such a law throws on the insurance companies the burden of valuing the property before it is insured. In other words, they have to act exactly as a loan or mortgage company does before it will make any advance of money upon real property. In other states a man can buy as much insurance as he chooses to pay for in premiums, but when it comes to a loss the company will pay no more than the actual proved damages. This very often works a hardship, which is entirely obviated by the New Hampshire law, for there, if a company is willing to accept premiums on a one hundred thousand dollar policy, for instance, and there is a total loss, the company is obliged to pay the whole face of the policy. It can readily be understood that such a law, given a combination of agents only desirous of writing large policies, and owners who are quite ready to see their property disappear in smoke, would result in excessive frauds; but on the other hand it can fairly be claimed to be the business of the companies not to over-insure. They have to settle the losses in case of fire, and they ought to be equally competent to determine the value of the property in advance. In the case of an honest man who is desirous of protecting himself it would seem no more than fair that he should have the measure of protection that he pays for; and accordingly, while recognizing that there are outs from both standpoints, it is our conviction, based especially upon the results of the application of the law in New Hampshire, that the valued policy is a move in the direction of protecting the interests of the honest insured person, and that its extension to other states would work good rather than harm.

MASONIC TEMPLE, MERIDIAN, MISS.
Krouse & Hutchisson, Architects.
Built of Brick made by the Hydraulic-Press Brick Company.



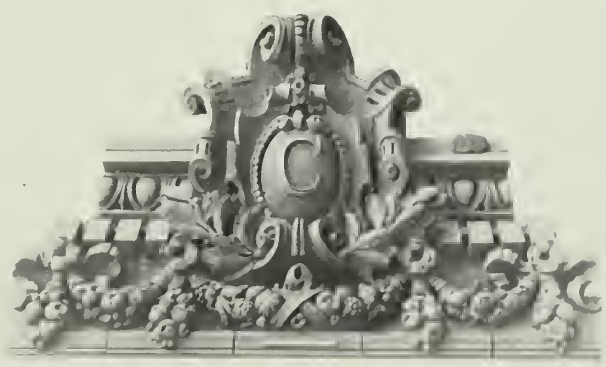


INTERIORS OF RAILWAY STATION AT DAYTON, OHIO, SHOWING TILE WORK BY HARTFORD FAIENCE COMPANY.
Elzner & Anderson, Architects.

BRIDGE DESIGN.

A CONSIDERATION for æsthetics is surely not the strongest feature of an engineer's practice, and very few of the large bridges which have been erected in this country have the slightest pretense to beauty. The Brooklyn Bridge has been cited as an example of harmonious lines, and seen at a distance, where its magnitude can be viewed by comparison with cities on each side, it certainly appears as an admirable feature, but it hardly would be fair to ascribe any innate æsthetic qualities to the towers, and the beauty of the lines of the cables is due to nature far more than to art. There has been growing, however, a feeling that our bridges are public monuments, and that they demand a certain artistic treatment in their design. The new bridge over the Charles River, between Boston and Cambridge, has been designed by Mr. Edmund M. Wheelwright and promises to be one of the handsomest structures of its kind in this country, if not in the world. The new East River Bridge between New York and Brooklyn is a colossal monument of engineering ugliness, but evidently the Boston example is not without its weight in New York, for we notice that Mr. Henry F. Hornbostel has been appointed consulting architect to the New York Department of Bridges. How much this may mean remains to be seen; but all those who know Mr. Hornbostel will feel that if the New York bridges of the future are not materially better than those in the past, in an æsthetic sense, it will surely not be his fault, for he is exceptionally well trained for just this kind of work.

HOUSE AT LAWRENCEVILLE, LONG ISLAND, N. Y.
T. Henry Randall, Architect.



DETAIL BY ALDEN & HARLOW, ARCHITECTS.
Perth Amboy Terra-Cotta Company, Makers.

DETAIL EXECUTED BY THE NORTHWESTERN TERRA COTTA COMPANY.

BRICKS WITH TAR.

A NOTICE in one of the recent architectural papers refers to a patent which has been taken out in Germany for a kind of brick made with porous concrete and

PORTICO, BAPTIST HOME, BROOKLYN, N. Y.
W. E. Parfitt, Architect.
Terra-Cotta made by New York Architectural Terra-Cotta Company.

saturated with tar, for building into walls in place of the ordinary wood brick for nailing grounds and finish. The use of wood bricks at all or anything like them is hardly a commendable practice from a fire-resisting point of view, but to manufacture bricks out of concrete and tar is courting disaster. We remember some years since a fire which occurred in a building, supposedly of fire-proof construction, but in which the filling between the beams was composed of cinders mixed with quite a proportion of coal screenings, with the result that the so-called fire-proof construction actually took fire and was partially consumed. It is pretty hard to improve on terra-cotta as a fire-resisting material, and its quality surely would not be enhanced by the addition of any such construction as coal tar.

PLUNGE BATH, GYMNASIUM, COLUMBIA COLLEGE, NEW YORK CITY.
McKim, Mead & White, Architects.
Enameled Brick used made by American Enameled Brick Company.

BOOK REVIEW.

ESTIMATING FRAME AND BRICK HOUSES: a Practical Treatise on Estimating the Cost of Labor and the Quantities of Materials in the Construction of Frame and Brick Houses, and of Stables, Barns, etc. By Fred T. Hodgson, Architect. Second edition, revised and enlarged. With scale drawings and other illustrations. New York: David Williams Company, publishers. Price $1.00.

A book of this sort can be a great help to a builder and often is of advantage to an architect in making rough estimates. Such a work has naturally to be used with discretion, and no hard and fast rules can be laid down by which one can say in advance what a contractor will probably charge for a house. The personal equation enters into all such things and cannot be described in books. We remember one builder who habitually never figured a building in detail, but looked the plans over very carefully and compared them with structures he had built, thereby arriving by a species of deduction at a contract price, and he was uniformly successful in being able to build his buildings at a profit. But ordinarily one has to take everything in detail, and for such purposes this book is a very valuable guide. The architect's work is far easier when the builder is able to form a logical, intelligent estimate, and a good deal of trouble with extras is obviated if the builder is able to follow a systematic method in taking off his quantities, such as is set forth in this book.

PATROL HOUSE, CINCINNATI, OHIO.
Boll & Taylor, Architects.
Roofed with American S Tile.

ADDENDA.

In the preparation of the designs submitted by Mr. Herbert D. Hale in the competition for the Government Hospital at Washington (see illustrations in plate form of THE BRICKBUILDER for June) Mr. Hale was assisted by Mr. George B. de Gersdorff, formerly with Messrs.

RAILWAY STATION, LEBANON, PA.
Wilson Bros. & Co., Architects.
Built of "Ironclay" Bricks made by the Columbus Face Brick Company.

McKim, Mead & White but now located in Washington. This fact was not noted in connection with the illustrations, at time of publication.

IN GENERAL.

John Galen Howard announces the removal of his office to 156 Fifth Avenue, New York City.

Elmer L. Gerber and Louis Lott, architects, have formed a copartnership, with offices in the Reibold Building, Dayton, Ohio.

The following is the complete list of officers and committees of the Architectural League of America for the year 1902–3:

Executive Committee: President, Frederick Stymetz Lamb, New York; vice-president, Clarence H. Blackall, Boston; treasurer, Julius F. Harder, New York; corresponding secretary, H. K. Bush-Brown, New York; recording secretary, William E. Stone, New York; Frederic Crowinshield, New York; David Knickerbacker Boyd, Philadelphia.

Publicity and Promotion: Ernest J. Russell, chairman, St. Louis; Joseph C. Llewellyn, Chicago; Frederick Stymetz Lamb, New York.

Codes of Ethics and Competition: Julius F. Harder, chairman, New York; Frederick W. Striebinger, Cleveland; Charles M. Shean, New York.

RAILWAY STATION, ROCK ISLAND, ILL.
O. Z. Cervin, Architect.

CITY HALL, BIRMINGHAM, ALA.
D. A. Helmick, Architect.
Built of Gray Speckled Brick made by the Columbus Brick and Terra-Cotta Company.

Exhibition Circuit: William Laurel Harris, chairman, New York; Walter H. Kleinpell, Chicago; Carleton Monroe Winslow, New York.

Current Work: Charles C. Pfeil, chairman, St. Louis; William C. Hays, Philadelphia; J. P. Hynes, Toronto.

Education: Emil Lorch, chairman, Detroit; Percy Ash, Washington; John W. Case, Detroit.

Publicity and Records: Emil Lorch, chairman, St.

PLAN.

Louis; Albert E. Skeel, Cleveland; Herman Kregelius, Cleveland.

Supplementary Committee on Publicity and Promotion: David Knickerbacker Boyd, chairman, Philadelphia; Clarence H. Blackall, Boston; James M. Hewlett, New York; Albert E. Skeel, Cleveland; Dwight Heald Perkins, Chicago.

TEMPLE FOR THE CONGREGATION ANSHE (RUSSIAN), NEWARK, N. J.
Nathan Meyers, Architect.

The Blue Ridge Enameled Brick Company was awarded the gold medal for enameled brick at the South Carolina Interstate and West Indian Exposition, Charleston, S. C.

Pfotenhauer & Nesbit, manufacturers' agents, New York City, report the closing of contracts on the following list of new work: Front brick — Battery Place Building, New York City, H. J. Hardenbergh, architect; Republican Club, New York City, York & Sawyer, architects; Bank of Metropolis, New York City, Bruce Price, architect; residence of James A. Burden, Jr., New York City, Warren & Wetmore, architects; telephone buildings, New York City, C. L. W. Eidlitz, architect; residence for Mr. Blumenthal, New York City, Hunt & Hunt, architects; Young Men's Christian Association Building, New York City, Parish & Schroeder, architects; Old Ladies' Home, Harrison, N. Y., Bruce Price, architect; C. B. Newbold's residence at Jenkintown, Pa., Guy Lowell, architect, Boston; residence for Hugh D. Auchincloss, New York City, R. H. Robertson, architect; residence at Morristown, N. J., George A. Freeman, architect; Home for the Aged, Brooklyn, N. Y., Lord & Hewlett, architects. Roofing tile contracts — Hall of Records, New York City; United States Printing Office, Washington, D. C.; power house, New York City; Saks & Co., mercantile building, New York City; residence at Tuxedo Park, N. Y.; residence at Fisher's Island, N. Y.

DETAIL BY JAMES H. WINDRIM, ARCHITECT.
Conkling-Armstrong Terra-Cotta Company, Makers.

The Standard Terra-Cotta Works have completed the terra-cotta work for the following new buildings: R. H. Macy & Co. building, Broadway, New York City, De Lemos & Cordes, architects; Century Building, 72 Broadway, New York City, Bruce Price, architect; Pitcairn Building, Arch Street, Philadelphia, Hewitt Bros., architects.

DETAIL BY WINSLOW & BIGELOW, ARCHITECTS.
Atlantic Terra-Cotta Company, Makers.

DRAUGHTSMEN WANTED.

Draughtsmen Wanted — Familiar with architectural terra-cotta work. Apply by letter. Perth Amboy Terra-Cotta Company, Perth Amboy, N. J.

We require an additional draughtsman in our drawing department. Permanent position. Address Excelsior Terra-Cotta Company, 105 East Twenty-second Street, New York City.

THE BRICKBUILDER.

AUGUST,

1902.

DETAIL, CHURCH OF ST. MARTIN, YPRES, BELGIUM.

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AUGUST 1902

H. F. B.

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Advertisements will be printed on cover pages only.

THE CAMPANILE OF ST. MARK.

NOTHING that has happened for a great many years seems to have so profoundly impressed the art-loving public both at home and abroad as the recent collapse of the tower which for so many hundred years has stood watch over the Piazza of San Marco. While the campanile was by no means a monument of the first order of architectural merit it was an exceedingly interesting composition and one which will forever be associated with the Venice we have known in the past. From a purely artistic standpoint its total destruction does not imply such a very severe loss to the art treasury of the world, but at the same time it is a monument which we have every hope will be speedily replaced in its former condition and will continue to serve the purpose for which it was so fittingly adapted. The world does not build towers of that description now, and we trust that the work of reconstruction will not only be undertaken at once but will proceed with more speed than is usually characteristic of Italian public works.

A loss of this kind is so unexpected, and it is so hard to realize that a structure which seemed to be so stable in its build should be entirely destroyed, that it is small wonder some of the newspaper correspondents and even some of our artists should become slightly hysterical in regard to it. We have seen it stated very gravely that the cost of rebuilding will be anywhere from a million to a million and a half dollars. If this amount were in francs instead of dollars it would even then be far in excess of what such a structure ought to cost. A little calculation will show how absurd are the reported estimates. The tower was approximately 42 feet square and 323 feet high. As considerable of this height was pyramidal roof and open loggia it would be fair to assume the cube of the building at not over 550,000 cubic feet. There was almost no finish whatever about it except what appeared on the outside. The construction is of the kind that could be pushed with almost any desired rapidity, the foundations are all ready to begin on, and by all methods of comparison we cannot feel that a building of this sort ought to cost at the very outside over twenty-five cents per cubic foot. We have had estimates from builders as low as fifteen cents per cubic foot for just such work. At twenty-five cents the total cost would be $137,500. This is a long ways from the $1,200,000 which some of our friends are claiming should be subscribed for at once by every lover of art throughout this country and Europe.

The foundations of the campanile, we have every reason to believe, are in perfectly good condition. The tower is built upon oak piles which were driven into the mud, the tops being cut off about seventeen feet below the piazza level or ten or twelve feet below the water line. These piles were uncovered and examined by Mr. C. H. Blackall in 1885 and were then found to be in apparently perfect condition. Some pieces of the piles which were broken off at that time as a souvenir are apparently now as well able to resist such loads as were put upon them as if they were of new wood. Above the piles was a double grillage of larch or hard-pine timbers about 6 x 8 inches each, and on this grillage began the solid stone foundation work. The foundations are perfectly good for another thousand years at least, and the failure of the superstructure was in no wise due to any insecurity or any settlement of the foundations. The whole of the Istrian coast about the mouth of the Poe has been settling at a known rate ever since the time of the Romans, but the subsidence has been so gradual that so far as is known there have been no displacements of buildings.

LIKE most all calamities which when they occur seem like dispensations of Providence, the cause for the falling of the campanile is an extremely simple one and the conditions giving rise to it were due entirely to human negligence or carelessness. By summing up the reports which we have received it appears that the Logetta on the side of the campanile toward St. Mark's was under the care of one engineer or director, while the campanile itself was controlled by another, a duality of management which is by no means uncommon in Italian cities. A fireplace was cut out of the inner surface of the outer wall of the campanile on the side towards the loggia and the flue from the fireplace was carried across the wall towards the corner so as to almost entirely cut away the inner half of the wall. The patching was undoubtedly done in such a way as to take little account of careful pinning. Next, a course of stone which was built into the outer wall of the campanile so as to form a portion of the roof of the Logetta was to be taken out and metal flashing substituted therefor. This stone course was several inches thick and the stones ran quite a distance into the wall. Instead of shoring up the building before these were removed or taking out alternate stones at a time, apparently the whole course was removed, with the immediate result that the tower wall settled and began to crack. Even then the structure could have been preserved if there had been some one on the spot with nerve and knowledge sufficient to take proper precaution, but apparently no one knew how or dared. The piazza was cleared of people and the helpless engineers and constructors stood around wringing their hands and waiting for one of their grandest monuments to tumble into dust, which of course it did in a leisurely, regretful way, not falling in a mass but apparently squashing out into a misformed heap. There was so little lateral motion in the collapse that the large statue which formerly crowned the apex of the roof of the tower came down and imbedded itself in the débris within a few feet of the foundations, and the adjoining buildings were but slightly injured. The mortar in which the brickwork for the tower was set appears to have been entirely of lime and sand and was dried almost to a powder without hardening, so that it possessed practically no binding quality, but there is little doubt that if the cutting into the base on both sides had been done with any degree of foresight or if there had been some one on hand who understood how to shore up the building the tower would never have collapsed.

IF there are any more such towers in Venice — and to judge by newspaper scare lines they are nearly all of this kind — it is high time the Venetian authorities sent off to America for some capable builder's foreman who would know how to protect such structures and to keep them from tumbling into the street.

There is every prospect, however, that the tower will be rebuilt at once. With commendable despatch, and emulating the historical personage who so carefully locked his stable door after the thief had paid his visit, the Venetian authorities have placed what is left of the campanile under the care of Sig. Giacomo Boni. Sig. Boni was associated with Mr. Blackall in the investigations of the foundations in 1885. At that time he was in charge of the repairs of the Ducal Palace. Since then he has had an important post in Rome in charge of the antique monuments of the Eternal City. He is a man who is well educated, well posted and thoroughly competent to take care of the work and prevent such accidents in structures under his care. We very much doubt if the campanile would have fallen at all or been endangered had it been under his direction, and the city of Venice is certainly showing most commendable wisdom, even if it be somewhat late, in summoning such a man to its aid. Subscriptions have been opened calling upon the public for funds to aid the rebuilding, and unless the reconstruction is going to be on a scale of magnificence far beyond anything that existed in the past the money will be very soon forthcoming.

WHY A BUILDING DID NOT FALL.

APROPOS of the fall of the campanile and the paralyzed manner in which the Italian authorities seem to have been unable to avert the calamity, we are reminded of an incident which occurred in connection with the erection of one of the large office buildings in New York City some twenty years ago. This structure was one of the first of the heavy office buildings, and while by no means as tall as what we have become familiar with since, the column loads were very considerable and required some careful manipulation. The building was partly on made and partly on natural ground, and for some reason the foundations were partly upon the earth and partly upon piles. It is a well-known quality of piles driven into the earth that after they have once acquired a set they can be very heavily loaded without any appreciable settlement until the load becomes so great that the skin friction and resistance of the soil are overcome, when the pile suddenly settles very perceptibly until it comes down to a bearing. In other words the pile presents considerable inertia to the load. This is what happened in this case, and after the masonry was all in place and the columns very heavily loaded one of these columns under an inner corner of the building began to give way. We remember the very graphic description of what happened given us by the builder who had charge of the work,— how he stood beside the column putting his ear to the ironwork and could hear it snapping and giving way, and how he took a stand at the entrance to the building with a crowbar and by sheer pluck and muscle forced the badly terrified workmen to get the necessary shores in place and hold up the building. He was successful. The building did not go down, but he did not have many seconds' leeway, and it was a kind of experience which left its mark upon him for years.

THE AMERICAN PARK AND OUTDOOR ART ASSOCIATION.

THE meeting of the American Park and Outdoor Art Association in Boston August 5 was the occasion for presenting to the public some very interesting facts in regard to the growth of the public park system in this country. Of all our civic improvements the public parks undoubtedly appeal most strongly to the greatest number. Quite aside from the physical well-being of the populace which these parks minister to there is the large question of æsthetic cultivation and growth in civic spirit which is fostered by a well-ordered, well-designed and well-kept park system. President Eliot delivered the principal address before the association, and it is especially fitting that he should do so, both as a representative Boston citizen and also because of the deep interest which he took through his son, the late Charles Eliot, in developing some of the most beautiful park systems in our country.

The Business Side of an Architect's Office. III.

BY D. EVERETT WAID.

SEVERAL large contractors in New York have their own draughting rooms where a dozen or more draughtsmen are at work, not making shop drawings, but redrawing architects' details. The details which come from many architects' offices are so inaccurate, incomplete and impracticable that they win very disrespectful remarks from contractors and make necessary the maintenance of draughting rooms as above remarked. From this it is an easy step for influential contractors to offer to furnish to owners the entire architectural service. Such offers will be listened to if owners know too many instances like one in which an inexperienced architect with a "social pull" designed a heavy warehouse; the steel work in his building was re-designed in a way to effect a saving of $50,000. When the artist comes to believe that construction or disagreeable "engineering" is not an essential part of his art, then will architecture be emasculated, and architects may seek employment under contractors and engineers. If this digression may be pardoned, to emphasize the importance of the architect being thoroughly trained and fully informed in practical construction, some remarks concerning drawings and specifications may be made in continuation of those in the May issue.

GUARANTEES. — If a contractor is to be put under a guarantee enforceable in law some discretion must be granted to him by the specifications; at the same time it must be kept in mind that guarantees in general are unreliable and architects are not safe in trusting too much to them. After trying to make a contract binding, however, one might have serious cause to regret it if he specified for example a "granolithic" or "kosmocrete" walk with a five-year guarantee. The exact constitution of the concrete should be given in detail; it may be made richer but not poorer, and the top finish may be thicker but not thinner than specified.

A heating contractor may be required to stand behind his work if he has had the option of increasing the amount of radiation or increasing the size of the fan; but not so if he has been allowed no discretion in the design of his installation.

INSPECTION. — Specifications should be very explicit and rigid in requiring inspection and tests of materials. Some of the best-known offices include in their specifications very full descriptions of requirements for cements, and then follow them up by making some of the simpler tests in their own offices or by employing experts. Frank Miles Day & Bro. have this provision: "Tests shall be made by chemists named by the architects and paid by the contractors, upon the approval of the bills by the architects. The following allowances shall be made and shall be paid for all cement tested, whether accepted or rejected. If in barrels, six cents per barrel for all lots of 300 barrels or more and nine cents per barrel for all lots of 200 barrels or less . . . " etc.

INSURANCE. — In the matter of insurance the last-named architects, who have a most carefully written "General Conditions" of some six or eight pages, specify as follows:

"INSURANCE. — Each contractor shall insure his work while in his charge against damage or destruction by the elements, and for any loss of the contractor the owner will not, under any circumstances, be accountable; but when payments shall have been made, the owner will protect himself by insurance to cover the interest which he has acquired in the building."

DETAIL DRAWINGS. — Cope & Stewardson and some other offices have reduced the inconvenience of full-size detail drawings to a minimum by using sheets of bond paper 27 inches by 40 inches, with a blank title printed in one corner. These sheets stand rubbing and hard usage and give good prints from lead pencil lines. Surprisingly few full-size-details actually need to be larger than 27 inches by 40 inches, and such can be folded to the standard size.

ORDERING BLUE PRINTS. — The order book illustrated (Fig. 1) is made of alternate yellow and thin white leaves. Carbon paper and pencil are used to write the order in

Office of D. EVERETT WAID, ARCHITECT, 156 FIFTH AVE., NEW YORK. Archts. Order No. 315

Order for Prints to Soltmann Date 3/1-4 1902

BLOC NO	SHEET NO	COPIES	KIND	ON	SIZE	SQ. FT
526	3	2	Blue	paper	32 x 40	8.88
"	7	"	"	"	" "	"
532	107	1	Blue	cloth	18 x 24	3
"	108	"	"	"	" "	"
"	109	"	"	"	" "	"

N. B. BILLS MUST SHOW ORDER NO AND BLDG NO WITH EACH ITEM

FIG. 1. FORM FOR USE IN ORDERING BLUE PRINTS.

duplicate, and the use of "building" or "commission" numbers makes the writing of an order a simple operation. The perforated yellow leaf is torn out and sent with the tracings. By means of a table of sizes, the area of any drawing can be read at a glance and the order made complete. The bills at the end of the month are quickly checked over with the order book.

ISSUE AND RECEIPT OF DRAWINGS. — The illustration (Fig. 2) shows a book which has proved to be simple and satisfactory for recording the issue or receipt of drawings, or in fact anything which goes from the office or comes into it, even to samples of hardware. Each entry has an "issue number" written by hand or with a numbering machine. Printed receipts bear corresponding numbers (see Fig. 1 in the May BRICKBUILDER), and each drawing is marked with the respective issue number. If one drawing is issued more than once it will bear corresponding issue numbers which, by reference to the book, show to whom that identical drawing went. When a drawing is brought back the issue number locates the place in the book where the credit should be given and the date of return is entered instantly. A receipt is sent for every drawing received and one is required for every one sent. The signed receipts are filed in a box or tray in order of the issue numbers, and can be found quickly when it is desired to convince a contractor that he really did have a certain drawing. When a receipt arrives a check mark is made opposite the book record. If any receipt fails to come, a duplicate receipt is forwarded, with request for information if the drawing has not reached its destination. This book, strongly bound in cloth, lies always on the office counter and entries are made in ink by the office boy just when the issue occurs. There are no transcriptions or memoranda to be posted afterward. It is quick work to run one's eye down the columns to find a given name or a given drawing in answer to either of two frequent typical questions, namely, "What contractors have had sheet No. 4," of a certain building, or "Has sheet No. 17 been sent to Brown and Smith?"

This issue book has proved so satisfactory in use that the writer has been disposed to congratulate himself on the issue numbering scheme. But he is not the less pleased to find that Cope & Stewardson also originated the same device and that they are equally well satisfied with its use. In the issue book shown in the illustration (Fig. 2) it is intended to run the series to 9999, the limit of a four-figure numbering machine, and then begin over again.

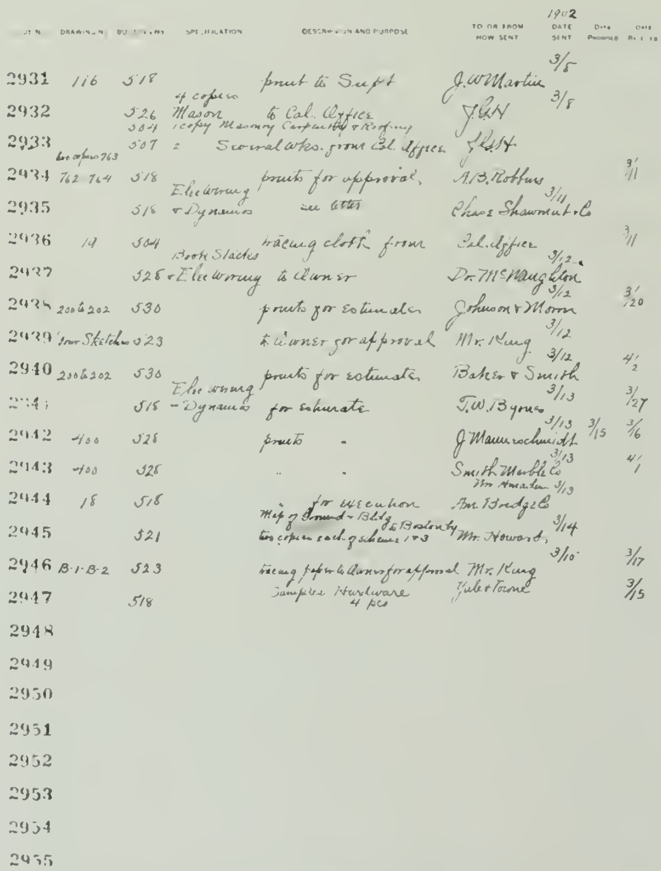


FIG. 2. A PAGE FROM THE "ISSUE BOOK."

While enumerating matters incidental to the preparation of drawings and specifications, note may be made of a good habit to establish in an office in order to record the things which should be recorded but which escape the correspondence. This is referred to in the office as the "Memo-Record." — An admirable method of preserving memoranda has been developed in Mr. George B. Post's office. A thin flat blank book about letter size is used, one for each building. If a client calls, the fact, with date, is noted in this book, together with memoranda of any instructions which he gave. Rough sketches, scraps of paper bearing telephone messages, or notes made outside the office are pasted into this little book. The manager of the office reads over these memoranda, dictates such letters as they suggest, and sends the book by an office boy for the inspection and instruction of all concerned, and the draughtsman, the engineer and the superintendent read them over and each signs his initials opposite each entry in which he is interested, as evidence that he has received his instructions. This excellent idea is doubtless used in some form in every office. Instead of a book we may tear off a leaf from a yellow pad, as needed (it is well to buy yellow pads, letter size, too, by the gross and have them everywhere, ready for use on the draughting tables, where they may be used for calculations, etc.), give it date and building number, and it finds its place in the file, and the boy can pin the sheets together as they accumulate in the file. A pad is lying on the reception room table, and after the client's departure the date, etc., is stamped at the top of the pencil memoranda and the record is preserved without transcription. When one has returned from meeting a building committee his rough notes may be filed just as he made them or he may dictate a fuller account to the stenographer, who typewrites the record on the same yellow pad paper.

A useful memorandum book to be kept by the office boy is a record of every caller (save solicitors who fail to obtain interviews). A blank book is ruled off in columns with headings at top of page, thus:

Name	Called	Departed	Asked for	Saw
Mrs. Tuxedo . . .	2.30	3.30	Mr. S.	Mr. A.

This memorandum book, which takes an inappreciable part of the office boy's time, has been found incidentally useful in convincing clients of the justice of charges for consultation, — clients who had no realization of the number of their calls and the hours of the architect's time occupied by them.

Taking Bids. — For convenience in tabulating bids and getting a list of possible deductions from the estimate as per specification, a form of tender is often written and bound with the specifications.

Some architects take sub-bids, even when work is to be let to a general contractor. Frank Miles Day & Bro. follow two methods. In some cases they send lists of acceptable sub-contractors to all the invited general contractors and no other sub-contractors are considered. In other cases, and this method they prefer, they take all the sub-bids and give out only the lowest bids to the general contractors. In the event that revised estimates have to be taken, no one besides the architects knows who the lowest bidders were on the first competition. This method involves painstaking labor, but Mr. Day considers that they are well rewarded in securing execution of work by reliable sub-contractors.

Extras. — The most fruitful causes of discord between client and architect are extras. Not because of their amount, which may be trivial, does the trouble arise, but because they were unexpected, or incurred without permission. If an extra is necessary because of some oversight of the architect he should be frank with the owner or else pay the cost from his own pocket on the spot. He should not "squeeze" the contractor as is too often done, and he should put behind him as satanic the temptation to trade off for the extra some deduction which can be easily made; frequently the latter thing is advisable, but it is dishonest if done without the owner's knowledge.

The same question of ethics comes up in connection with changes in kind of materials or manufacture. It is a good policy, when practicable, to give the contractor the choice between two kinds. But when the specifications do not permit such option, the architect cannot be too annoyance even of signing orders. The form or order illustrated in Fig. 3 has been found satisfactory with two exceptions, — it is too much labor to write the same order over three times, and more space is needed for describing the work required. Alden & Harlow have overcome these objections admirably by using a form which is printed on thin strong paper and is folded accurately so that by the insertion of carbon sheets three copies are written at once. If they are made two thirds the size of a letter head, each order folded once will be the right size for the contract folder and the document file. The order blanks may be printed with copying ink, and letter-press copies are taken, so that a record is kept in the office even when the three copies are out for signature. Having the press copy, only brief entries need be made on the stubs,

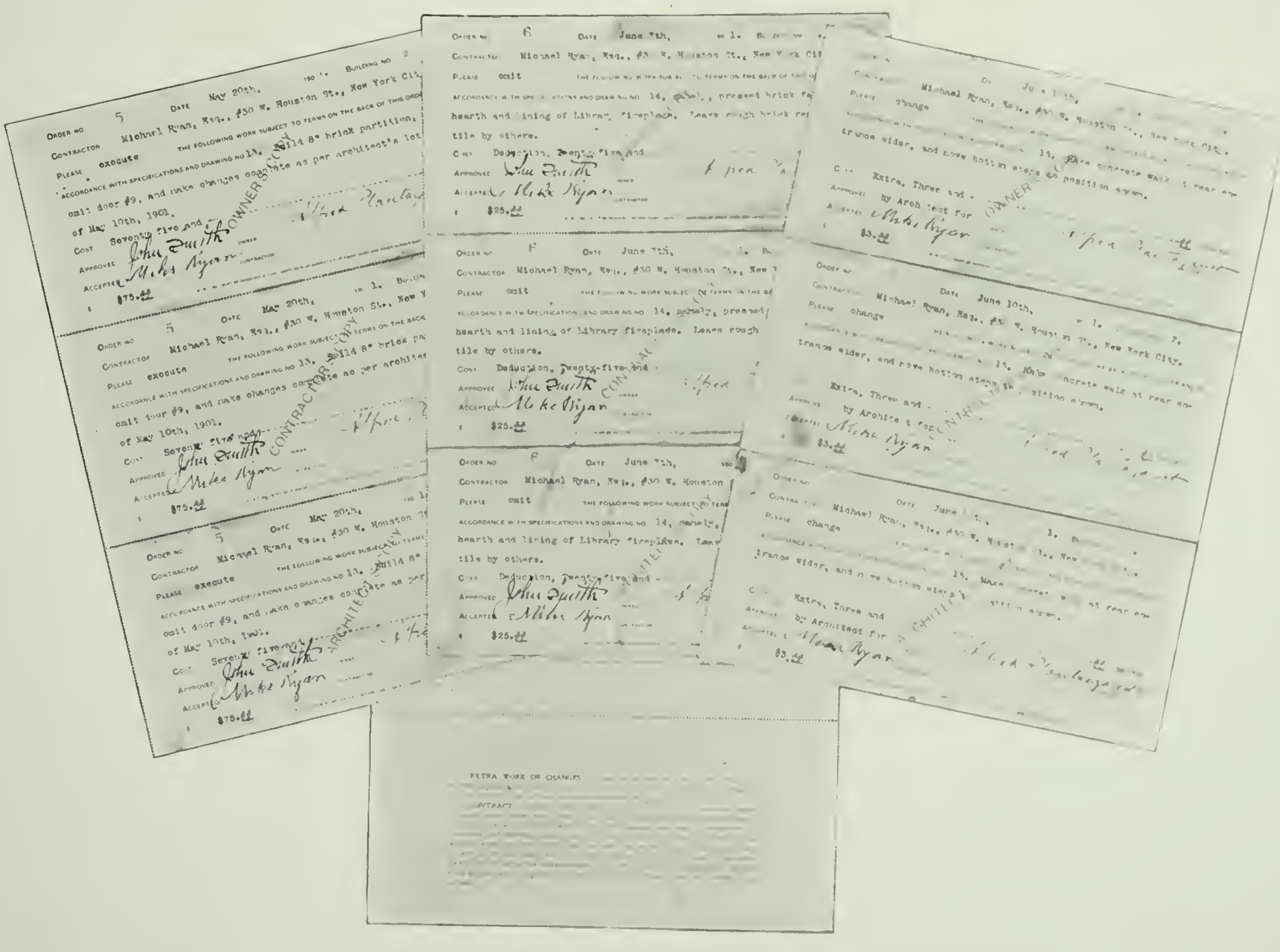


FIG. 3. ORDERS FOR EXTRAS, DEDUCTIONS AND CHANGES.

careful about allowing a change. He should always make such authorization in writing and should not forget to obtain the owner's approval. Cases have occurred in which an owner required his architect to pay for a difference in cost between the thing specified and the thing used.

Printed forms are desirable which can be used for extras, or deductions, or changes involving no difference in expense. It is well to make them in triplicate, and one should be sent to the owner for his information even if the circumstances are such that the architect is authorized to order extras and does not wish the owner to suffer the thus minimizing labor and chance of error. The orders should state extension of time, if any is to be allowed. The printed matter shown on the backs of these orders makes them useful for original contracts. In other words, for minor works each of these order forms constitutes a complete specification and contract.

R. W. Gibson uses a printed form which serves first as a request for an estimate, then as a bid, and finally, when signed by owner and architect, it goes to the contractor as an order for extra work. At the bottom of the order is printed the following: "No work will be certified as Extra Work beyond contract unless an order on this form has been given. The application for an estimate is in no case to be considered as an order for the work."

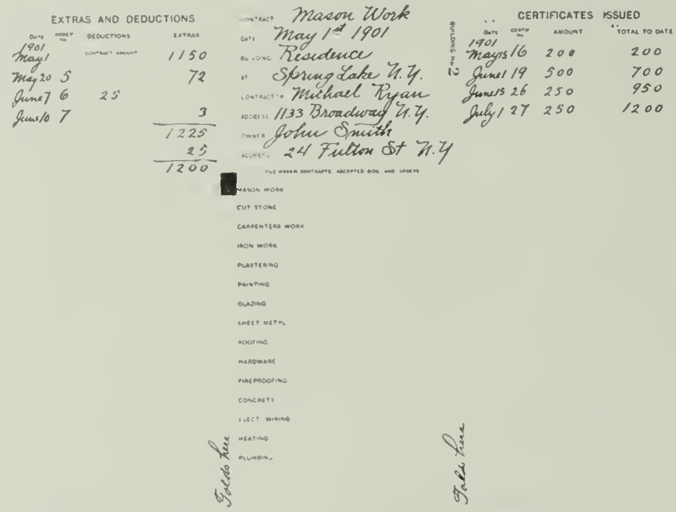


FIG. 4. THE CONTRACT FOLDER, USED INSTEAD OF A CONTRACT BOOK. CONTRACTS AND ORDERS ARE KEPT IN THE FOLDERS.

CONTRACT RECORD. The "Contract Folder," or jacket, shown in the illustration (Fig. 4) takes the place of a book, and has the advantage of elasticity. One folder is used for each contract. When general contracts are let, one may be used also for each sub-contract. Copies of contracts, orders and accepted estimates are kept together in the respective folders. The bunch of folders having to do with one building is secured with a rubber band and placed in special drawers or pigeon-holes or a regular document file. This method of keeping contract accounts, one of the most satisfactory features in the office, has been in use for some years. The first architect to use it, I believe, was H. K. Holsman of Chicago. He originated a convenient little device by which the folders are self indexing. In whatever order they happen to be one can pick out instantly the particular folder wanted by means of the black spot on the edge, which is opposite the corresponding name in view in the list of contracts on the top folder.

ONE of the greatest engineering achievements which the world has ever witnessed has just been completed in so quiet and unostentatious a manner that only those who have been following it closely are aware of its termination. The dam, or barrage, which has been built across the Nile at Assuan is now ready to begin its work of impounding the waters of the Nile, and the good which will undoubtedly result from this magnificent piece of engineering will go a long ways towards offsetting the misery which the South Arican war has caused to humanity. The administrative genius of the Anglo-Saxon race has never been more brilliantly demonstrated than by the results of the British occupation of Egypt, and though there is still a political fiction of Egypt being a dependent of Constantinople, it is to all intents and purposes as much a British province as India or New Zealand, and the British have certainly proven their right to it by making even the desert to bloom like a garden.

The "Settlement House." II.

BY ALLEN B. POND.

THE Chicago Commons, opened in May, 1894, in scanty quarters in West Erie Street, in the fall of that same year established its lares and penates in a sadly dilapidated but roomy old mansion at No. 140 North Union Street. To this old brick mansion, fallen on evil times, there had previously been added a ramshackle wooden extension of barracks-like character. Here for seven years the Chicago Commons carried on a work conforming closely in methods and range to the settlement norm. In the early summer of 1901 the Commons moved into its new building, plans and photographs of which are reproduced in these articles. To these new quarters, with more comfort for the residents and with greatly increased facilities for work, the Commons has transplanted its former activities unchanged in spirit. But the terms of the leasehold of the new premises prescribe that in any building to be erected thereon, there shall be provided an audience room suitable for religious worship, and that religious services, under the auspices of an organized church, shall be held therein once on each Sabbath and once on one other day of each week. This has resulted in placing the Chicago Commons in the hybrid class of which mention was made in considering the range of activities germane to the settlement idea. The reason for the digression into this piece of otherwise irrelevant history is found in its immediate consequence in materially complicating the planning of the building.

The lot is rectangular, having a north frontage of seventy-six feet on Grand Avenue and a west frontage of one hundred and seventeen feet on Morgan Street. The building could not be of fire-proof construction for financial reasons; and in a building not of fire-proof construction, the municipal ordinances provide that an auditorium seating more than five hundred persons shall be on the first floor. The problem of planning required taking into account, among other things, the following desiderata: The auditorium, by virtue of its independent use for distinctively church purposes, should have its own well-marked appropriate entrance; and, for a safeguard from fire or panic, a subordinate exit and entrance. Other suitably disposed rooms should be available for Sunday-school purposes. The auditorium during much the larger part of the week would be merely an adjunct of the settlement equipment, and should be detachable, but yet not wholly detached, from the remainder of the building. There should be also a separate residential entrance to a part of the building, which should have, if attainable, markedly the aspect of a home, to the end that this less formal approach, and the treatment of the first-story rooms giving directly on it, may offset the somewhat institutional aspect likely to inhere in the auditorium entrance. For the rest, it is desirable to give the men of the neighborhood freedom from constraint in access to their clubrooms; to permit large classes to go to and from the gymnasium with the minimum disturbance of groups occupied in pursuits needing quiet; and, generally speaking, to keep the other activities as closely allied to the home life and spirit as is practicable without a degree of noise or confusion that would defeat the purposes sought. In the solution of the problem it was found that, after providing the required seating capacity in the auditorium, the smallness of the ground area would leave scant space for the first story of the residential part. The further demand was made that from this scant residue be provided one room of considerable dimensions, that could be shut off on occasion for use of some special group of people. When these requirements had been met, and the inexorable vestibules, staircases, elevator well and office had claimed their share, greatly less space remained than was desired in order to give within the home entrance that appearance of openness and flexibility so desirable in imparting an air of hospitality. To this extent the solution is not successful in the degree sought.

The plans as finally determined on give the following dispositions of space: In the Grand Avenue wing are basement and five stories; in the Morgan Street wing, owing to height of auditorium and gymnasium, are basement and but four stories. In the Grand Avenue (or residential) wing are an electric elevator and residents' staircase from basement to fifth floor; in same wing, contiguous to the Morgan Street (or auditorium) wing, is a public staircase from basement to third floor, accessible in basement and first stories from outside public entrances and from the residents' wing, in second and third stories communicating only with Morgan Street wing; at extreme south of Morgan Street wing is a staircase from auxiliary street entrance to third floor, accessible from first, second and third stories.

In the Grand Avenue wing, in the basement are cooking-school, cold storage, general toilet rooms for men and for women, elevator machinery; in the first story are reception room, drawing-room and office; in the second story are residents' parlor, dining and serving rooms and kitchen; in third story, for the "warden" or head resident (a married man with family), a flat containing parlor, library, three bedrooms and bath room; in fourth story, seven rooms for women in residence, with bath and toilet rooms; in fifth story, three rooms for women in residence, with bath and toilet room. In the Morgan Street wing, in the basement are clubrooms for men and boys, fire-proof boiler and coal room, and laundry in one-story lean-to; in first story is the auditorium; in the second story are two class or club rooms and the kindergarten with its own cloak and toilet rooms; in the third story are, in north half, women's clubrooms with kitchen (across hall), and, on the side hall, two chambers and bath for men in residence, and, in south half, manual training, lockers and showers; in fifth story are, in north half, five bedrooms for men in residence, with bath room, and in south half, the gymnasium. In the second story of Morgan Street wing, which is also used for Sunday-school purposes, is one room (northeast corner) devoted in part to kindergarten uses and in part to storage of Sunday-school and sewing-school apparatus. Access to the gymnasium is had only by stairs from the locker room, to which access is commonly had by the south auxiliary stairs, but which may be reached from the main public stairs via the women's club corridor. Usual access to kindergarten and (temporary) manual-training classes is also by south stairs, with possible access via main public stairs. The office, although subordinated, is readily accessible from either the residential reception hall or from the hall of main public staircase, to both of which it is immediately contiguous.

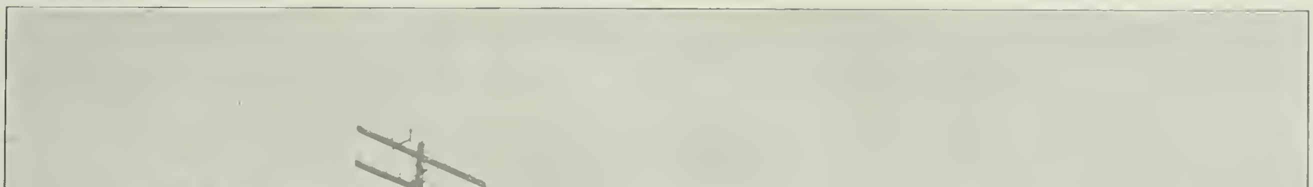

FRONT ELEVATION, "CHICAGO COMMONS."

Among the defects in the present equipment are: inadequate facilities in gymnasium locker and shower rooms; apparatus room for gymnasium; inadequate space for manual-training work; unsuitable rooms for men's club; inadequate laundry facilities. After the present building was well under way, the Commons Association secured by purchase a narrow strip of land twenty feet by one hundred and sixteen feet adjoining the present building on the south. In a building to be built thereon it is proposed to place: on ground floor (front) a bowling alley and corridor; in first story (front) a clubroom at level of auditorium stage and capable of being opened into auditorium full width of stage; in second and third stories (front) men's and boys' clubs with toilet rooms; in fourth story (front) gymnasium apparatus room opening into present gymnasium by wire doors and panels; in basement and first story (rear) a laundry; in rear above first story, apartments for men in residence. This will set free the entire south half of Morgan Street fourth floor for locker and shower rooms (see plan), the entire Morgan Street basement (except boiler room) for manual training, the present temporary laundry for its intended purpose — machinery and engineer's workshop, and will give increased accommodations for women in residence in Grand Avenue wing. The plant thus completed will be fairly adequate for carrying on those activities that are in America already recognized as closely germane to the ideal of settlement life and work.

IGNORANCE or carelessness is responsible for much destruction of art terra-cotta when the latter is being put into buildings. If the sculptor has carved a panel in tough granite and it is being put into place, it is almost wrapped in wadding during the process, and is carefully guarded until the building is being cleaned down. We do not often see this great care exercised over terra-cotta work. It is no uncommon thing to see small projecting pieces in an elaborate ornament broken off before the building is finished. Minor ornament is often sculptured in freestone, such as Bath or Portland, after the roof of the building is on and the face is being cleared. As this is impossible with terra-cotta the latter should be specially guarded. We make these observations, as only a few days since we saw some very good terra-cotta work being patched up. Such a procedure does credit neither to the maker nor to the architect. — *The British Brickbuilder.*

PLANS, "CHICAGO COMMONS."

DETAIL OF ENTRANCE.



"CHICAGO COMMONS," CHICAGO, ILL.
Pond & Pond, Architects.

WOMAN'S CLUBROOMS.

MEN'S CLUBROOM.

KINDERGARTEN DETAIL.

KINDERGARTEN ROOM.

NEIGHBORHOOD PARLOR.

WARDEN'S PARLOR AND STUDY.

AUDITORIUM.

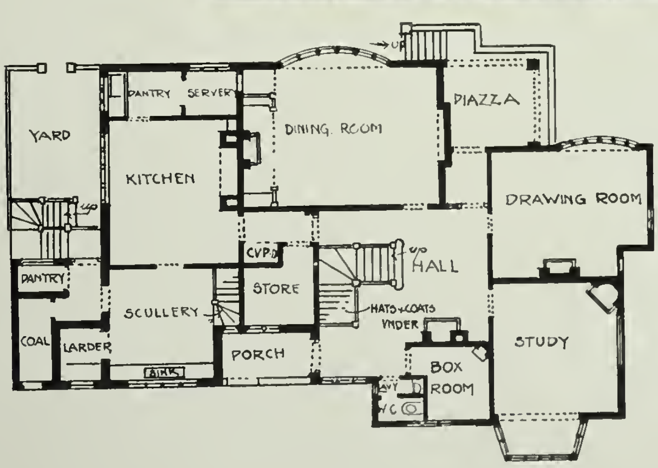
RESIDENTS' DINING ROOM.

INTERIORS, "CHICAGO COMMONS."

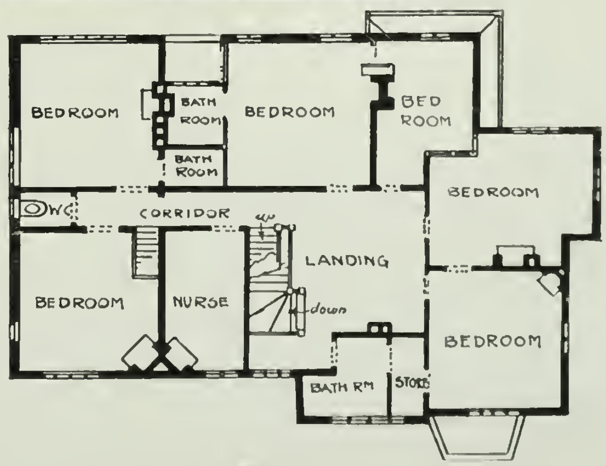
Architectural and Building Practice in Great Britain.

BY OUR SPECIAL REPRESENTATIVE.

"WHAT is the finest sight in the world? A coronation. What do people talk most about? A coronation." So wrote Horace Walpole in his foolish house at Strawberry Hill in 1761, that specimen of gingerbread Gothic with pie-crust battlements. But the divine gossiper's words had a bitter meaning, for, speaking of George the Third's coronation, he adds: "A trial of a peer, though by no means so sumptuous, is a preferable sight, for the latter is interesting. At a coronation one sees the peerage as exalted as they like to be, and at a trial as much humbled as a plebeian wishes them." Those may have been Walpole's sentiments — and he was a wag with the best of them — but they are certainly not those of the British public to-day, and no greater grief at the postponement of King Edward's coronation was felt than among the "plebeians."



GROUND PLAN.



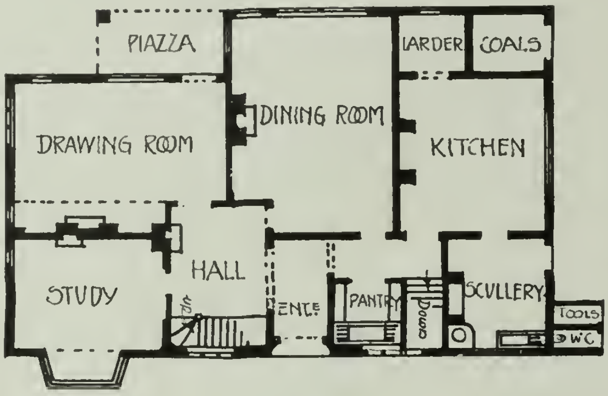
FIRST FLOOR PLAN.

HOUSE AT KENILWORTH, WARWICKSHIRE, ENGLAND.
Buckland & Haywood-Farmer, Architects.

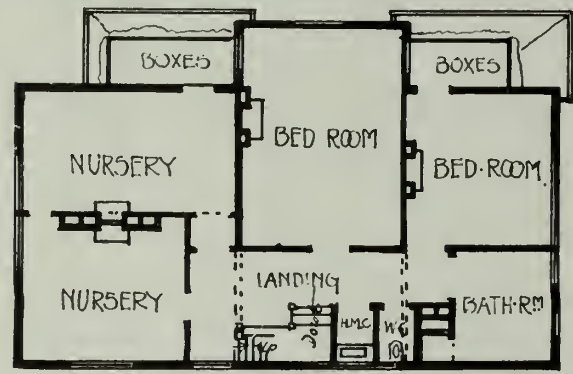
On art and architecture in London the preparations for the great event have had little effect. The majority of the schemes of decoration were garish, in some cases bulky, but not effective. Westminster Bridge, however, must be counted an exception, for there a very notable scheme was carried out by the students of the Royal College of Art Modeling School under the direction of their eminent professor, Lantèri. This scheme, for which the London County Council voted £750, was perhaps the best of its kind carried out in this country for many years. Of the many other schemes there is no necessity to speak, though one proposal is perhaps worth noting — that for lighting up St. Paul's Cathedral at night by arranging fifty or eighty searchlights in the surrounding buildings.

It is opportune to mention that among the coronation honors was Mr. William Emerson's, now Sir William Emerson, the retiring president of the Royal Institute of British Architects. There are other architects who have done more for architecture, but it is certainly gratifying to see the profession thus recognized. There are now two "Sirs" among the architects, the other being Sir Thomas Drew, an Irishman.

Since the publication of my last letter in THE BRICKBUILDER the Royal Academy exhibition has opened and closed. The architectural room contained no great design, but the domestic work was, as a whole, very satisfactory, its general feeling being one of simplicity and thoroughness. Among the ordinary run of people, plainness, *i. e.*, non-ornamentation, is synonymous with ugliness, and consequently when they see a piece of unadorned brickwork, however good it may be, it displeases them and they hanker after fripperies. But to the man with a love of the genuine there can be no such disparagement, and it is gratifying to see that English architects are producing a type of country house which, while in every way conforming to modern requirements, is thoroughly quiet withal. On the outskirts of our towns we see the speculative builder's brick boxes with slate lids defacing the fair fields; houses proper they are not fit to be called, for they are neither good to live in nor to look at. They are built at the very lowest possible cost, and yet one finds them all bespattered with paltry carved door and window heads, with inane finials on the roof and foolish panels in the walls, all useless and worse than useless additions to the expense. And even among those "most desirable residences" of villadom, where the middle class live, the taste is no better. To ascribe the blame is neither a sure nor a productive occupation, for each person considers himself in the right, and fashion suggests fashion; but there can surely be no better guide than fitness. A good brick, for instance, should be sound and of a pleasing texture and color. Allow it to remain and it will be satisfactory; but tinker with it, paint it or scratch it, with the idea of improving its appearance, and it loses its charm immediately. It is the same throughout the whole of architecture. Truth and fitness are essential to lasting beauty. So that, looked at from this standpoint, it is satisfactory to see the better domestic architecture now produced in this country leaving those false mimicries of palaces and mansions and substituting a simpler, more homely and truer basis of design.



GROUND PLAN.



FIRST FLOOR PLAN.

HOUSE AT EDGBASTON, ENGLAND.

HOUSES AT CHELSEA, LONDON, S. W.
Balfour & Turner, Architects.

Among the Academy exhibits there were many examples of this. To enumerate them would, however, be of little interest to American readers, which is the reason why I have generalized and not particularized.

In my last letter I referred at some length to the bricklaying question and its relation to trade unionism. I may now put a new question, which has been answered by a town councilor of Taunton. It is: "How many bricks can be laid per day per master builder?" This councilor is building some houses on the Somersetshire coast, and at six o'clock one morning he started to lay one thousand bricks, having a friend to carry materials and so to represent the unskilled laborer. The two men took an hour for breakfast and had another fifteen minutes at eleven o'clock for a hasty lunch. The last brick was laid at a quarter past two, so that the work was finished in seven hours. I do not say the councilor's day was a better one than the average British bricklayer's with his four hundred bricks. I only institute a comparison.

Two important schemes have recently had renewed attention given to them — the first that of the competition for the buildings at the Strand end of the new street now being formed from Holborn, the second that of the Liverpool Cathedral (this on account of the sending in of designs). As to the former there is no more to say than

GARDEN FRONT.

HOUSE AT EDGBASTON, ENGLAND.
Buckland & Haywood-Farmer, Architects

that the Council's competition was a fiasco and resulted in nothing more than eight architects receiving £250 each for submitting designs. As to Liverpool Cathedral, Mr. Shaw and Mr. Bodley, the two architects appointed by the committee, after much harassing, to act as profes-

NEW POLICE STATION, LONDON.
J. Dixon Butler, Architect.

sional advisers, are busy with the portfolios and sets of designs sent in. There are one hundred and two sets, seventeen from abroad and eighty-five from Great Britain. From amongst them a selection will be made of three, and the authors will be requested to submit designs for the cathedral itself and will be paid for their work whatever happens. The purchase price of the site (St. James's Mount) has been fixed at £10,000.

In London building operations are being extensively carried out. The new offices for the Prudential Assurance Company are being completed according to Mr. Alfred Waterhouse's designs, in red terra-cotta, and close by the immense block of the Birkbeck Bank has been finished, a monstrous structure in glazed tile work; the color is pleasing, but the decoration is more adapted to a wedding cake. In the Strand the new front of the Cecil Hotel has been built in brick and stone, but this is also devoid of merit. Outside London the new schools at Horsham have been opened for the Bluecoat boys, — a fine work by Mr. Aston Webb, A. R. A., and Mr. E. Ingress Bell. It is perhaps interesting to note that in the construction of these schools the following quantities of materials have been used: 20,000,000 bricks, 1,500,000 tiles, 31,000 tons of sand, 5,000 tons of cement, 15,000 tons of shingle, 5,000 tons of coke breeze, 21,000 yards of wood-block flooring (equivalent to five acres) and 100,000 cubic feet of Bath, Portland and York stone, in addition to which there are forty miles of hot-water pipes and ninety-eight miles of electric wires.

The British Fire Prevention Committee have continued their tests and have latterly devoted attention to jarrah and karri woods. Two tests of doors of these woods have been carried out by them. The first was with 1¾-inch doors having solid panels, and the result of an hour's fire was the burning of holes through the joints and rails of both. In the second test 2-inch four-panel doors were tried. At the end of the hour the jarrah door was still standing, though the slamming stile was burnt through in two places, much bulged and the joints open, but the door and frame of the karri were practically destroyed. Another test was with a jarrah floor. At the end of two hours there were numerous holes in it, and the post, beams and joists were reduced in size and charred to a depth of ¾ inch. As Mr. Max Clarke observes, there is a great difference of opinion among experts as to whether fire-resisting construction should be really "fire-resisting" or "slow-burning"; and it is to this task, among others, that the committee devotes itself.

A new process for the production of facing bricks has been adopted at Peterborough by which they can be turned out nearly as easily as the common Fletton brick, thus increasing their value from fifteen shillings (about four dollars) to thirty-five shillings and up to forty-five shillings per thousand. Under the old system yards making facing bricks could never be sure of the quantity which would come from the kiln fit for outside work, the average perhaps being only fifty per cent; but by the new process it is claimed that ninety-nine per cent can be turned out in any yard where the clay will burn red inside. The importance of the invention will be appreciated when it is stated that the output of the Fletton brick fields last year was about 500,000,000 bricks, of which 400,000,000 were used in London and district,

BATTERSEA BRIDGE DWELLINGS, LONDON.

where the brick is preferred to the old Kent stock. For the new War Office in Whitehall 25,000,000 Fletton bricks have been ordered for inside work.

In conclusion I may briefly refer to the accompanying illustrations. The new police station by Mr. J. Dixon Butler, F. R. I. B. A., is in Cannon Row, just opposite Mr. Norman Shaw's "New Scotland Yard," with which building it harmonizes, similar materials (red brick and Portland stone) being used in both. It is the largest station in the Metropolitan Police District.

The houses off the Chelsea embankment by Messrs. Balfour & Turner, it will be noticed, are treated exceedingly plainly, though boldly. The heavy cornice with stout corbels adds greatly to the design. At first sight one might not suppose the Battersea Bridge buildings to be working-class tenements. They are, however, similar to those on the Millbank estate and the Boundary Street area in the East End of London, and certainly reflect great credit on the Architect's Department of the Council.

Mr. Buckland's houses in brick and rough-cast speak

POWER STATION, "FERRY WORKS."

for themselves, and the plans show the accommodation provided. The house at Edgbaston, Birmingham, was built for the architect himself, and its roof is covered with brindled tiles. It is a comfortable abode in winter, as all the flues are on the inside walls and thus help to keep it warm.

The "Ferry Works" at Queensferry, Flintshire, were designed by Mr. Bulkeley Creswell and have been laid out for the manufacture of Niclausse water-tube boilers. The form of the building was indicated by the necessity for large lights high up in the walls, and the battered piers express the constructive needs of the walls, which give lateral support to a large area of light-glazed roofing supported on cast-iron stanchions, and also support girders on which the traveling cranes run. The battered piers also enabled the footings to be reduced, as they spread the weight. The nature of the ground was such that it was necessary to keep the foundations near the surface. The bottom of the concrete foundations is less than two feet from the surface under the walls and only four feet under the tower. The latter is attached to the power station and contains hydraulic accumulators giving a pressure of two tons to the square inch. The centers of the large piers are filled with concrete up to the level of the plinth course. The building is faced with purple brindled bricks made from the fire-clay measures occurring locally in coal mines. The whole of the door jambs, strings and copings are made from the same clay burnt hard and having a vitrified surface.

REPORTS have appeared in the papers concerning a machine which has been devised by some ingenious mechanic in Canada which will lay brick at the rate of four to six hundred per hour and is worked by two men and a boy. The machine even accommodates itself with a slight lessening of speed to corners and openings. It claims to be adapted to any kind of work where plain walls are required without too much break in the surface. If the machine can be depended upon to properly bond the work and to thoroughly fill all the joints with mortar it might be a great relief to the mind of the architect and superintendent, but we remain somewhat skeptical of its value for anything except the commonest kind of work, and even there would question whether it could seriously compete with the kind of labor which is usually employed for such work.

It is, however, an interesting attempt. We now manufacture our bricks by machinery, handle them mechanically from the machine to the dry house, from the dry house to the kiln, from the kiln to the boat or car, and the bricklaying machine is another step in the substitution for hand labor. We do not fancy, however, that bricklayers as a trade will need to yet be specially alarmed by the appearance of the alleged bricklaying machine.

"FERRY WORKS" AT QUEENSFERRY, FLINTSHIRE.
Bulkeley Creswell, Architect

Fire-proofing.

THE DESIGNING OF BUILDINGS WITH REFERENCE TO INSURANCE REQUIREMENTS.

THE recent action of the Massachusetts Institute of Technology in establishing a department of insurance engineering is the first attempt which has been made toward establishing on a rational basis the essential requirements for fire-proof construction and all that pertains thereto in fire prevention and retardation.

One reason perhaps for the general lack of knowledge and the incredulity with which many of the tests which have been made have been received, is due to the fact that they were made by or under the auspices of the parties interested and oftentimes moreover with little attempt at getting at the fundamental facts underlying the method of the manufacture of the materials tested.

The honest seeker for information as to the best way of designing a building with due regard for economy and non-combustibility or fire-resisting qualities, is in some respects greatly at a loss as to how to advise his client to spend his money to the best advantage.

On the one hand the insurance companies have framed a schedule of rates and penalties which has been written no doubt with the idea of keeping themselves safe at any cost, and it is reasonable to suppose that in framing their schedules they were acting on the best information obtainable, and that in general these ratings were intended to be fair and proper; but in the domain of insurance schedules and rating there is an immense amount of information yet to be obtained on the behavior of non-combustible and fire-resisting materials under the action of fire, and this service of obtaining such information bids fair to be well performed under the impartial action of an institution devoted to the ascertainment of fact and the elimination of error.

And if this work is carried on under the care of men of experience, it will prove of great benefit to the public, the insurance companies and the architects.

Under such auspices the determination of facts ordinarily not otherwise ascertainable can be undertaken and the result published with the certainty of having respectful attention paid to them.

It seems like a work of supererogation to detail here the enormous losses by fire which almost every daily paper chronicles, and the scant attention paid to these evidences of waste by the readers shows how imperfectly the public realizes the facts underlying the causes of this waste.

If it were possible to apply the communistic idea to the matter of fire waste, then each man could realize that the waste of the substance of the community was also the waste of his substance as one of the parties of the community, but where each man regards his property as his own, and his neighbor's as a thing apart, it is impossible to make him take any other than a shortsighted, selfish view of the situation.

With increasing knowledge of the possibilities of fire prevention made possible and public by an institution of learning and reputation, it is to be hoped that the rising generation may find the problem of fire prevention not such a hard one as it is now supposed to be, because ignorance will have given way to knowledge and prejudice to reason.

It is through the insurance companies, however, that the first signs of the new education will become apparent, and through them the owners of buildings will be brought to treat with respect the new order of ratings made possible through increased knowledge, when the present arbitrary methods of classification and penalties arising largely from the results of unanalyzed practical experience shall have been brushed aside with the passing of the old order of things.

If an unprejudiced observer will carefully study the universal schedule or in fact any other schedule of rates, he will begin to wonder why the schedules on many items were made; for if a method of construction is inferior or bad and the method of construction is at the same time a vital one, he will wonder why the building is insurable at all. Take for illustration the open elevator well. A record of a great number of fires in buildings which reached destructive proportions could be traced to this vital defect; yet the insurance companies merely add a charge of ten cents per $100 for these vertical flues and fire spreaders, and after this is done the building is supposed and admitted by reason thereof to be as good a risk as a building with enclosed shafts. It takes but little consideration to see that such a method of classification as this lowers the standard of the whole schedule and makes it difficult to make logical men regard it seriously. If a thing is bad it is bad, and merely adding a handicap does not raise it to the level of a good thing.

If life insurance companies treated their risks in the same way fire insurance companies do, a man with an incurable disease likely to terminate his life at any time under certain conditions, such as an incurable consumption, would be regarded as quite as good a risk as a thoroughly sound man, upon the payment of a larger premium than a sound man would be required to pay. If the fire insurance schedule is viewed in the same light as the life insurance schedule, the method of rating fire risks is seen to be not only totally illogical but also unfair to its patrons. A life insurance company doing business on the same principles would soon be regarded with distrust; and if by good luck it escaped failure, the number of bad risks on its books would retard its growth if the facts regarding its condition were known. Yet the fire insurance companies will insure any risk, and when the inevitable loss results sooner or later, reimburse themselves by raising the premium on the unburnt property.

If the insurance schedules were properly and intelligently made up, and made so that their charges commanded the respect of the thinking part of the community, it would not be long before owners in self-protection would insist upon their architects observing the requirements of the schedules; for after all if a thing has to be done in a certain way or a certain construction followed out it is the designer's business to so treat it that it will not be an eyesore, but rather as a utility treated with due recognition as a utility and at the same time treated with some regard to architectural fitness.

A second illustration may be drawn from the rating on open stairways — the schedule charge is five cents per $100. The open stairway is not quite so serious a defect from a fire-retarding standpoint as the open elevator shaft, yet it is serious enough to warrant a more prohibitive charge than the schedule imposes. And it is hardly reasonable to say that by adding the charge of five cents the building is then as good as one with enclosed stairways, and as good a risk from the fire insurance standpoint.

The spreading of fire from floor to floor of any building can be prevented only by making the floors without openings or enclosing the necessary openings by fireproof division walls. Stairways can be enclosed as readily as elevator shafts if their design is studied out with care, and the necessity of such treatment is admitted.

Some of the newest department stores in New York City show that where this necessity is recognized, means can be found not only to meet this necessity but to meet it without sacrificing any æsthetic requirement.

The treatment of an enclosed stairway is not by any means a difficult problem or one that even an ordinary designer should make objection to. "Wire glass," a fire-resisting medium, can be made in plate glass with a highly polished surface, and with the wire encased in it lends itself to a decorative treatment. Metal-covered doors can be treated with due regard to their emergency function and yet be made not unattractive. Metal frames for supporting the hollow tile filling and the wire plate glass, properly covered with fire-proof material, can be treated without difficulty.

The whole matter of meeting the insurance schedules resolves itself into, *first*, making the schedules reasonable and logical, making bad construction and bad planning uninsurable, and *second*, making the recognition of such reasonable schedules part of the specification for the design of a building. Under this very reasonable requirement losses by fire would soon be reduced to a minimum and good design would become the rule, to the benefit of all concerned.

If such a state of affairs can be brought about through universities taking up the study of insurance engineering, much good must result to the community. And if a word of warning must be uttered, it is that the study shall be pursued on a broad basis — not simply with the one idea of making a building non-combustible without regard to any other consideration, but with the clear understanding that many things have to be dealt with to meet the requirements of various businesses, and if the studies are to prove of value all this must be borne in mind.

SMALL BRICK COTTAGES, NASHVILLE, TENN.
Robert Sharp, Architect.

Selected Miscellany.

NOTES FROM NEW YORK.

A STRANGER in New York would doubtless be impressed and surprised at the unusual activity in building operations which is apparent on every hand, and which is truly remarkable, especially during the hot summer months and at a time when building materials are high and building is an expensive luxury. I cannot recall any summer when there has been so much activity in the down-town district. The new Hanover Bank building, corner of Nassau and Pine streets, is nearing completion and is a handsome structure, towering above most of its neighbors. The Chamber of Commerce is almost completed, and the Custom House is slowly but surely showing itself above ground. There are several office buildings under way on Broadway and the neighboring streets.

DETAIL BY FRED GRAF, ARCHITECT,
Northwestern Terra-Cotta Company, Makers.

DETAIL BY GEORGE KRAMER THOMPSON, ARCHITECT.
New York Architectural Terra-Cotta Company, Makers.

DETAIL BY MEADE & GARFIELD, ARCHITECTS.
Atlantic Terra-Cotta Company, Makers

The city is terribly cut up at present by the ugly excavations for the subway, but the work is progressing favorably, and we can feel sure that the city will not suffer artistically by reason of this work, in fact there are certain improvements which will naturally develop. The City Hall Park, which will be the terminal of the subway, will be cleared of all unnecessary buildings and made a better park than at present. The old Hall of Records is now being removed, for which we should be thankful. There has been some opposition to this from some people who have an absurd idea that there is something about the looks and associations of the building which warrants its preservation. Its present appearance is entirely uninteresting and it dates from one of the worst periods of American architecture. By its removal a splendid view will be obtained of the new Hall of Records on Chambers Street, a splendid monument to the memory of the late John R. Thomas. Fortunately, also, there is a good chance that another fatal obstruction will be removed, viz., the train shed at the bridge terminus. The station of the Manhattan elevated road will remain, but it will not be conspicuous.

ST. CHARLES HOTEL, NEW ORLEANS, LA.
Thomas Sully, Architect.
Brick manufactured by Hydraulic-Press Brick Company.

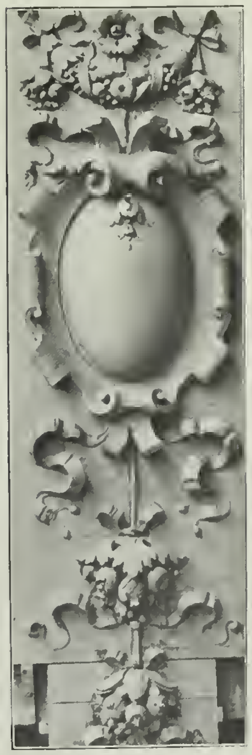
Mr. John M. Carrère has purchased the plot at No. 101 East Sixty-fifth Street and will erect thereon a five-story brick and stone apartment house, for which he is now preparing plans. McKim, Mead & White have been selected architects for the new buildings connected with the army department at West Point. A wiser appointment could not have been made, and all true lovers of American architectural development should rejoice. Surely if we want real American architecture anywhere we want it in our government buildings.

BANK AT MOLINE, ILL.
Harry W. Jones, Architect.
Built of Terra-Cotta made by Winkle Terra-Cotta Company.

MORTAR JOINTS.

A VERY simple device for very greatly increasing the effectiveness of plain brickwork consists in raking out the mortar from the joints to a depth of half or three quarters of an inch below the surface of the brick, the mortar in the joint being afterward pointed with a special tool which bevels the joint slightly so as to throw the water slightly from each brick course. Work laid in this manner simulates to a certain extent the effect of the old brickwork which has stood for generations and from which the mortar has dropped out. The mere imitation of the old work of itself is not necessarily an advantage, but by accentuating the joints, especially if the joints are laid pretty full, the surface of the wall is broken up in such manner that it is impossible for it to have a monotonous appearance, each brick casting a sharp, well-defined shadow. Such a method of course would be impracticable for a public building or any large structure, but it lends itself very successfully to a picturesque treatment, and especially when the bricks are laid with the Flemish bond is the effect very satisfactory. The average mason is apt to make his joints too thin and to bring the pointing out beyond the face of the brick or at least make a broad tuck joint which loses itself with the face of the brick and is apt to be characterless. In the early days of the use of pressed brick in this country it was quite the custom, and is still, for that matter, in some cities, to paint the entire surface of the brick wall with red paint matching the color of the brick and afterward line off the joints in black paint. This was about as reprehensible a practice from an artistic standpoint as could be imagined, but where smoothness and a monotonously even appearance were desired such procedure was quite to be expected. There is no handsomer surface considered as a wall texture than well-laid brickwork, and especially if the joints are accentuated in the manner just described the surface can be a delight to any one who appreciates artistic effects.

HOUSE AT LAKE GENEVA, WIS.
Jarvis Hunt, Architect. Roofed with Ludowici Roofing Tile.



DETAIL BY E. J. LENNOX, ARCHITECT.
Perth Amboy Terra-Cotta Company, Makers.

TERRA COTTA AND LANDSCAPE GARDENING.

EVERYBODY knows of the effective use of terra-cotta statues and statuettes in landscape gardening, but few are aware of a further aid to the architectural beauties of a house in the shape of terra-cotta borderings in advantageous positions. We do not mean a mere plain edging such as may be produced by short tiles. These latter hold their own entirely in that particular field. But we refer to deep-molded borders which stand a foot or so above the surface of the path level. For garden terraces and the like these moldings have been much employed, but they are chiefly, if not always, of cement or stone. These latter are altogether too cold, and the cement certainly does not possess that same finished appearance that well-made terra-cotta does, neither does it harmonize with the lawn or flower plots which it skirts. We are strongly in favor of terra-cotta for the purpose, and the color of that material must, of course, harmonize with the building near by. When the bordering is away from the principal house, however, and forms part of a general landscape garden, the tint of the terra-cotta should harmonize with the general surroundings, and it will be found for warmth and varying effects of light and shade that buff terra-cotta is more suitable for that purpose than either red or white stone. There is no occasion for formal moldings several hundreds of yards in length. A master molding will, of course, find a natural place in a scheme, but it should be broken up here and there by little bays slightly elevated above the general level of the run of moldings, or by the insertion of entablatures of floral patterns, which should not be duplicated. — *The British Brickbuilder.*

DETAIL BY FRANCIS L. ELLINGWOOD, ARCHITECT.
White Brick and T rra-Cotta Company, Makers

IN GENERAL.

Felt & Heim, architects, 51 Ballinger Building, St. Joseph, Mo., have dissolved partnership. J. H. Felt will continue the business at the same address.

The San Francisco Architectural Club, which was organized in September, 1901, with fifteen charter members, has now a membership of thirty-six. The officers are: A. O. Johnson, president; E. G. Bolles, vice-president; George Wagner, secretary; H. G. Corwin, treasurer.

Edward R. Diggs & Co., Washington, D. C.,

DETAIL BY BRUCE PRICE, ARCHITECT.
Conkling-Armstrong Terra-Cotta Company, Makers.

ST. MALACHI CHURCH, PHILADELPHIA, PA.
H. D. Dagit, Architect.
Built of "Ironclay" Brick made by Columbus Face Brick Company.
O. W. Ketcham, Philadelphia Agent.

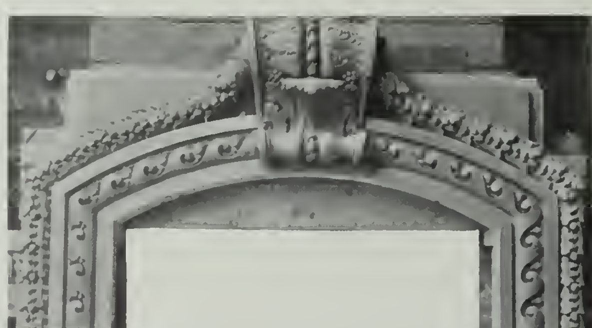
have removed their offices from 1216 G Street to 716 Thirteenth Street, N. W.

The Pioneer Fire-proofing Company of Chicago have closed contracts for the following new work: Tribune Building and Trude Office Building, Chicago, and the Burton Boulevard Bridge, Kansas City.

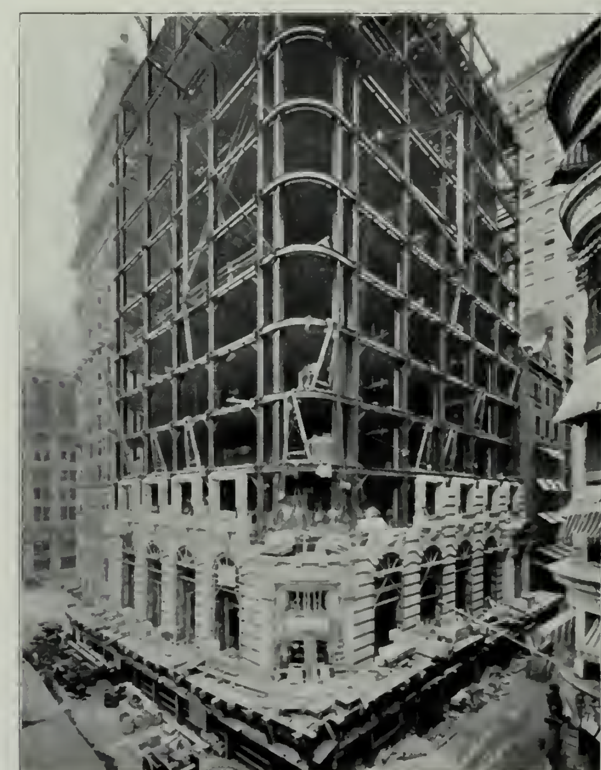
The New Jersey Terra-Cotta Company, New York City, have furnished the architectural terra-cotta for the following new buildings: Brewery and ice house, Newport News, Va., C. F. Terney, architect; residence, Washington, D. C., Waddy B. Wood, architect; hotel at Atlantic City, N. J., A. W. Barnes, architect; Nelson, Morris & Co.'s warehouse, Philadelphia, E. J. Allsebrooke, architect; and these in New York City: Y. M. C. A. Building, West Twenty-third Street, Parrish & Schroeder, architects; improved flats, West Sixty-second Street, Howells & Stokes, architects; ambulance building, Flower Hospital, George E. Teets, architect; warehouse, Nos. 84 and 85 South Street, G. Curtis Gillespie, architect; two apartment houses, West One Hundred and Eighteenth Street, Harde & Short, architects; apartment house, West Fifty-first Street, Charles B. J. Meyers, architect; apartment house, Seventeenth Street, near Irving Place, Sass & Smallheiser, architects; apartment house, Stuyvesant Street, George F. Pelham, architect. They have recently completed large improvements and additions to their plant, which is located at Perth Amboy, N. J.

DETAIL BY W. ALBERT SWASEY, ARCHITECT.
St. Louis Terra-Cotta Company, Makers.

Blue Ridge enameled brick will be used in the following new work: Power house, Niagara Falls, N. Y.;



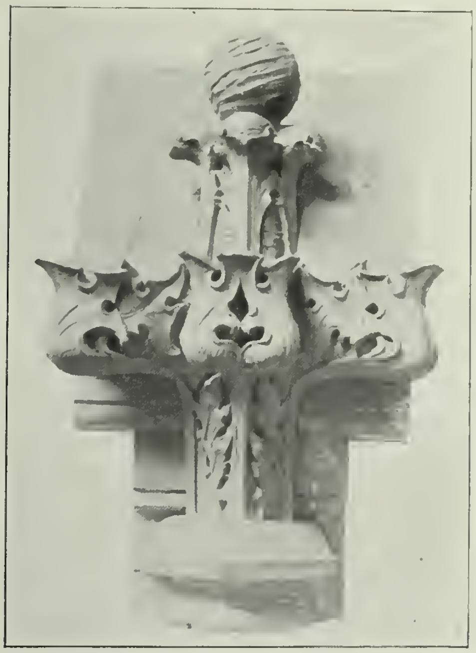
DETAIL BY PARRISH & SCHROEDER, ARCHITECTS.
New Jersey Terra-Cotta Company, Makers.



HANOVER NATIONAL BANK BUILDING, NASSAU STREET, NEW YORK CITY.
Fire-proofed by the National ("Raritan") Fire-proofing Company.

FRIENDSHIP SCHOOL, ALLEGHENY, PA.
C. M. Bartberger, Architect.
Brick manufactured by Columbus Brick and Terra-Cotta Company.

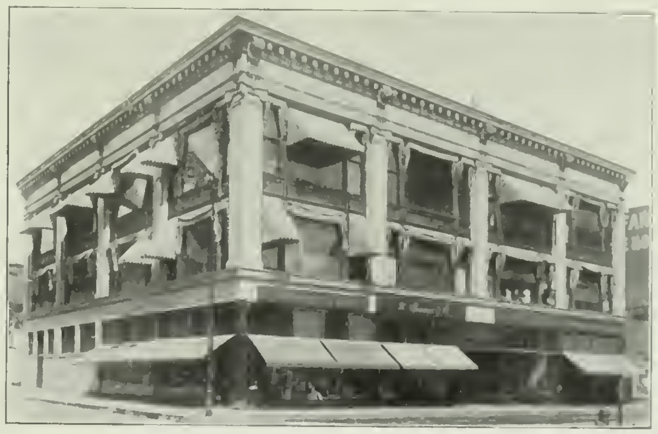
addition to Metropolitan Life Insurance Building, New York City, N. LeBrun & Son, architects; Widner Memorial Home, Philadelphia, Pa., Horace Trumbauer, architect; King Edward's Hotel, Toronto, Canada, E. J. Lenox, architect; residence, James A. Burden, Jr., New York City, Warren & Wetmore, architects; residence, J. S. Peters, Islip, Long Island, Harney & Prudy, architects; government buildings, New London, Conn.; residence, S. Gardiner Cassatt, Philadelphia, C. M. Sutton, architect; residence, Col. H. A. DuPont, Winterthur, Del., Perot & Bissell, architects; residence at Glen Cove, Long Island, McKim, Mead & White, architects.



DETAIL BY GEORGE H. STREETON, ARCHITECT.
Excelsior Terra-Cotta Company, Makers.

DETAIL BY E. C. & G. C. GARDNER, ARCHITECTS.
Standard Terra-Cotta Works, Makers.

During July the Perth Amboy Terra-Cotta Company closed the following new contracts : Gateway for George J. Gould, Lakewood, N. J., Bruce Price, architect; eighteen houses for Clarke estate, West Seventy-fourth Street, New York, N. Y., Percy Griffin, architect; office building, Eleventh Street and University Place, New York, N. Y., Goldwin Starrett, architect; new Lyceum Theatre, Forty-fifth and Forty-sixth streets, east of Broadway, New York, N. Y., Herts & Tallent, architects; hotel, northwest corner Seventieth Street and Amsterdam Avenue, New York, N.Y., H. B. Milliken, architect; American Insurance Company office building, Park Street, Newark, N. J., Cass Gilbert, architect; St. Joseph's School, Convent Station, N. J., George W. Bowers & Son, architects; Public Library, Middleboro, Mass., F. N. Reed, architect; Tennis and Racquet Club, Boston, Parker & Thomas, architects; Carnegie Library, Perth Amboy, N. J., Howard Greenley, architect.



STORE BUILDING, ST. PAUL, MINN.
Mark Fitzpatrick, Architect.
Front of Buff Semi-Bright Glazed Brick made by Tiffany Enameled Brick Company.

POLICE STATION, FORDHAM, NEW YORK CITY.
Hogan & Slattery, Architects.
Brick made by Kreischer Brick Company.

ENGINEERING BRICKWORK.

WE have recently been inspecting some new specimens of engineering brickwork in connection with bridge building. The particular wall, which we may describe as a type of several others on the same large contract, is about twenty feet in height and seven feet in thickness. This is how it was built: A foundation about eight feet in depth of good concrete was first put in; upon this the wall rose. The outside vertical faces were faced with brindles and the interior filled up with common red bricks. So far, so good. But the thickness of the reds was a little less than that of the brindles, consequently in the absence of sufficient infilling concrete there will always be internal strains and stresses of no ordinary character as long as the wall lasts. If these circumstances do not lead to the facing bricks being cracked or forced outwards it will be a marvel. Again, there is considerable difficulty in preserving the regular courses of the bricks in this wall, owing to the fact that one half of the wall has to be built before the other half and the latter half has to be joined to the former. There would of course be no difficulty in joining the two halves together if the thickness of the red were the same as that of the brindles. As it is, the wall has to be much thicker than would be the case were the bonding perfectly true. On the score of using more bricks than need be for simple building construction the clay worker cannot complain; but it is unfair to him to point out, as the engineer will probably do later on, that his bricks are not strong enough for general engineering purposes. Everybody knows that the coefficient of expansion of steel is not the same as that of bricks, no matter of what kind. Engineers are so well aware of this fact that they have for years past allowed for the movement of the girders, as the latter are affected more rapidly by extremes of change in temperature than are bricks. When that movement is not compensated for in some way the brickwork or stonework on which the girders are placed occasionally shows signs of bulging, but more frequently becomes cracked. — *The British Brickbuilder.*

DAIRY, HOUSE FOR F. W. VANDERBILT, ESQ., HYDE PARK, N. Y.
Alfred Hopkins, Architect.
Finished with Blue Ridge Enameled Brick.

PUBLIC SCHOOL, MADISONVILLE, OHIO.
Samuel Hannaford & Sons, Architects.
Roofed with American S. Tile.

ROMAN MASONRY.

ARCHITECTS have often wondered why Roman masonry has stood so well. Of course only the most durable remains, the jerry-built houses, if there were any in Roman times, having long since disappeared. Some light has recently been thrown on the problem by investigations carried on with some ancient Roman mortar from the palace of Constantine in Trier. The mortar is of an ordinary description; the sand employed consists of partly rounded and sharp flint and chert fragments. The proportion of these latter is about two to one of lime. The chief interest in the investigations, however, lies in the circumstance that they have shown it is in the highest degree probable that some saccharine material was mixed with the mortar; and following experience gained in India and Siam it is found that a little sugar certainly adds to the durability of mortar and is a good thing all round. — *The British Brickbuilder.*

APARTMENTS, NEW YORK CITY.
Brick made by Ohio Mining and Manufacturing Company.

THE BRICKBUILDER.

SEPTEMBER,

1902.

MARKET HOUSE AT BLÉS À DELFT, HOLLAND.

THE BRICKBVILDER

VOL. 11 NO. 9

SEPT. 1902

H. F. B.

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ADVERTISING.

Advertisers are classified and arranged in the following order:—

Advertisements will be printed on cover pages only.

FIRES IN FIRE-PROOF BUILDINGS.

TEN or fifteen years ago a fire-proof building was a novelty. To-day it is an accepted fact and it is no longer a question as to what method of construction shall be adopted for a commercial building. Aside from the statutes which prescribe that buildings above a certain height shall be of fire-proof construction, business prudence calls for this and for nothing else in first-class buildings of to-day. It was long ago discovered, however, that a fire-proof building did not imply immunity from fires, and hardly a week passes that we do not see reports in the papers of a fire in a fire-proof building. Contradictory as this may sound it is perfectly logical. Scientific construction has been developed to such a certainty that we can absolutely protect the structure of any building from material damage by even an excessive conflagration, under normal conditions, but while we continue to use wood in finish and fill our offices or stores with highly combustible material, we must expect continual fires which will consume the contents. Rarely, however, does a fire in a fire-proof building extend beyond the room in which it starts, and only in such extreme hazard as is typified by the Horne Buildings in Pittsburg is there any liability of structural damage. We are therefore perfectly safe in claiming that fire-proof construction is to-day an exact science, that the application of brick and terra-cotta has been perfected to a point which insures absolute protection, and that if fires continue in our fire-proof buildings it is in no sense because we do not know how to thoroughly protect them. It is unfortunately still cheaper in some cases to pay insurance than it is to use the precautions which we know will protect, but, given an owner who is willing to pay the bills and an architect who understands his business, there is not the slightest difficulty in so building that every chance of fire shall be eliminated.

A POSSIBLE FUNCTION OF THE ARCHITECTURAL LEAGUE.

WHEN the Architectural League of New York was founded in 1880 its membership was limited to those who were directly connected with the practice of architecture. In fact it was originally started simply as a draughtsmen's club, but it did not succeed on this basis and after a somewhat spasmodic existence of several years it was reorganized in its present shape, its membership including not only architects as such, but all those who are interested in the allied arts. The Architectural League of America is an association primarily of the architectural clubs. We believe we are right, however, in saying that with the single exception of the Architectural League of New York all of the bodies which compose the national League are strictly architectural in their character. The present president of the League is a decorator, being elected as a member of the New York League. It is a question whether the national League would not wisely follow the example set years ago of the New York League and include in its membership the societies of artists which are so numerous throughout the country and which when brought into membership with the League could be so valuable an addition to its strength and influence. We have always felt that the Architectural League of America stood for far more than a mere association of draughtsmen or young architects, and the experience of the New York society has certainly proven that coöperation between the allied arts is to be desired in every respect. And we venture as a suggestion that if the constitution of the national League is, or could be amended so as to be, sufficiently elastic to admit the art societies to its membership its field of usefulness and its essentially national character could be greatly enlarged to the benefit alike of the art societies, who, we believe, would be very glad to come into its ranks, and also greatly to the advantage of the architects from whom its ranks are now drawn.

The Settlement House. III.

BY ALLEN B. POND.

HULL HOUSE, whose career as a settlement began in September, 1889, amicably disputes with the College Settlement at No. 95 Rivington Street, New York, the claim of being the first social settlement in the United States. In the year 1856 there was erected at No. 335 South Halsted Street a home for one Charles J. Hull. The builder and owner was a successful man in the yet new West, and the house was spacious for that day and excellently built. In addition to the drawing-room, library, dining-room and the other usual apartments of a northern house of the period, there was an octagonal office in a one-story wing to the south, opening from the library and on to the veranda. The material was a purplish-red brick, in texture and color not unlike the common brick of Sayre & Fisher. On three sides of the house were broad verandas; a low-gabled roof covered the high attic surmounting the second story, and the wide eaves were carried by heavily molded brackets. Indeed, after the mode of the time, columns, lintels, casings and cornices were all heavily molded; the interior door and window casings being some 12 inches wide by 8 inches deep and elaborately built up of rope and other moldings.

Then the house stood proudly alone, flanked by the almost unbroken prairie. In the fall of 1889, when Jane Addams and Ellen Gates Starr quietly established their home in the second story of the house, dingy, forlorn and prematurely old, the first story was used as the office of a furniture factory — a wooden shell that crowded up against the rear of the mansion; and the second story, drenched by the rains that poured through innumerable holes in the neglected tin roof, had long been the home of shifting and shiftless tenants. The meadows and prairie had been swallowed up in a wilderness of brick and lumber; close against the house on the north stood a shabby frame shed which housed an undertaking establishment; on the south were toppling and decayed frame buildings used by dealers in coal, hay and feed and second-hand bottles, with upper floors given over to tenements. The unhappy mansion, setting a little back from the highway, still preserved a conspicuous individuality; and though its builder had long been dead and the heirs of his estate had fled to a more congenial neighborhood, the old house was still known to the neighborhood as

DETAIL OF COURT ON HALSTED STREET, HULL HOUSE.

HALSTED AND POLK STREET FRONTS.

EWING AND HALSTED STREET FRONTS.

HULL HOUSE, CHICAGO. Pond & Pond, Architects

"Hull's House." Its new second-story tenants during the winter acquired the use of the old drawing-room occupying the north half of the first-story front; in the following spring secured the lease of the entire house; and, dropping into the speech of the neighborhood, fell to referring to their home as "Hull House." And in time this name became an accepted and irrevocable part of the "good will" of the premises, even to the extent that on the continent of Europe it has taken on a generic significance; and "a Hull House" is, in sociologically inclined quarters, the understood designation of social enterprises of a similar type.

A year and a half after its foundation, Hull House, feeling the need of more room than the old house afforded, ventured, on the strength of a four years' lease, to erect its first building — "Butler Gallery" — a two-story structure cheaply built of common brick, with unpaved, partially excavated basement. Here in the first story, now the lesser lecture room and on occasion the supplementary drawing-room, was at the outset a branch station of the public library; and in the second story, now given up to chambers of men in residence, were two "galleries" for loan exhibitions of pictures and for use of clubs in the interim.

PLAN, HULL HOUSE.

Its next enterprise, in 1893, on the strength of a seven years' lease, was the first coffee house and gymnasium,— a two-story brick building which during the year 1901 was moved, raised, remodeled and converted into a three-story building facing north on Polk Street, just across the alley to the west of Hull House. This new Gymnasium building is put to various uses. On the first floor are: in front, the labor museum — to illustrate and in the mind of the worker integrate the various industrial processes from the raw material to the manufactured article through crude early hand processes to modern power machinery; back of this, the cooking school — used also by dressmaking classes; in the south end, the shops for classes in mechanical drawing, wood and metal working and pottery molding. On the second floor are the studio for classes in drawing and modeling, the book bindery, the physical director's room and the locker and shower rooms. On the third floor are gymnasium and boxing rooms. In the partial fourth story are gymnasium gallery, supplementary studio and casting room and storeroom. That same year, 1893, the first boiler house was built and steam heat replaced the furnaces until then in use. Shortly thereafter a dynamo was installed for generating current for incandescent lighting. This year, 1902, the boiler house and heating and lighting plant, outgrown, are to give place to the plant indicated on the block plan. The boiler and engine rooms are to be in a semi-detached building a basement and half story high, whence are to be furnished heat and hot water for the entire group of buildings, including the proposed Crane Tenement, and where will be located also a central garbage crematory in which garbage will be utilized as fuel for heating water for the plumbing system. High pressure steam will be employed for production of electricity, for operating blower and for cooking; the heating will be by low pressure and exhaust steam, the return circulation being facilitated by vacuum pump.

In 1895 a third story was placed on Hull House itself to provide additional chambers for women in residence; and both before and since that time the old mansion has

AUDITORIUM.

RESIDENTS' DINING ROOM.

GYMNASIUM.

THE COFFEE HOUSE.

LABOR MUSEUM.

SHOPS.

INTERIORS HULL HOUSE

been subjected to much remodeling. The old dining-room has become the residents' library; where the old kitchen, laundry and back staircase were is now the residents' dining-room, some 31 feet long and served via a small pantry from the coffee-house kitchen; the partition between the old drawing-room and the somewhat narrow front stair hall has been almost wholly cut away so that the old drawing-room now forms merely part of a large reception hall, the front end of which is a thoroughfare to the Auditorium and Children's House. The old house in its present form affords: on its first floor, reception hall, parlor, library, office, residents' dining-room; and on its second and third floors, fourteen bedrooms and four bath rooms, besides a trunk room and linen and housemaids' closets.

In 1895 the Children's House was built at the northeast corner of the block, in contact with Hull House only at its southwest corner and without direct access from Hull House. Here, on the first floor are two boys' clubrooms; on the second floor the crèche with its two bedrooms, dining-room, kitchen, toilet room and "sunshine porch" guarded by wire netting; on the third floor the kindergarten with its toilet rooms and balcony; on the fourth, three rooms used for children's music classes. The following year a third story was put on the "Butler Gallery" for men in residence; and now, as remodeled, there are provided on the second and third floors of the Butler Building eight rooms for men with requisite bath and toilet rooms.

One of the earliest enterprises fostered by Hull House was the founding of the working girls' coöperative home which was organized and incorporated under the name of the "Jane Club." This club, whose purpose was to show that working girls could have a home of their own conducted at scarcely greater expense than the poorest boarding house entailed, was launched in six flats opening on a common staircase in a three-story building on Ewing Street not far from Hull House. In 1898, the Jane Club, having demonstrated its ability to sustain itself in quarters ill suited to its needs, was provided with a building specially designed for its uses and erected on land bought for the purpose under the auspices of friends of Hull House. The Jane Club building faces Ewing Street, just across the alley west of Hull House, and is separated from the Gymnasium building by a public alley parallel with Ewing Street and running west from the alley back of Hull House. In the basement and three stories are: laundry, trunk room, kitchen, serving-room, dining-room, drawing-room, library and bedrooms for thirty girls, — twenty single and four double rooms, — with ample bath and toilet facilities.

In 1895 Hull House secured a twenty-five years' lease of the premises having a frontage of 118 feet on Halsted Street and extending westward some 162 feet on Polk Street. It seemed warrantable to build more substantially thereafter than on the short leases ruling hitherto. There was urgent need of an auditorium to relieve the constant demand on the gymnasium room to do double duty; the coffee house no longer met the needs of the patrons; and in 1899 a fire-proof building was erected north of Hull House and west of the Children's House and in contact with each. The main entrance is from Polk Street, but by a vestibule in its southeast corner an exit and secondary entrance were provided for the Auditorium building through the Children's House vestibule, and an opening at this point to the old drawing-room afforded the first under-roof connection between Hull House and the Children's House. The Auditorium, with a view to its frequent use for amateur theatricals, was equipped with a stage having movable scenery and contiguous dressing-rooms. In the gallery, at the end opposite the stage, space is arranged for future installation of a pipe organ. The walls of both coffee room and Auditorium are faced on interior with a dull-red pressed brick; the ceiling of the coffee room is formed by the actual tile arches that support the second floor, and these tiles, washed and treated to a single coat of boiled oil, ranging in color from a light whitish buff to a deep sienna, make a very effective and architectural ceiling, demonstrating the possibilities of the material now universally hidden by plaster.

In the fall of 1900 Hull House acquired a fifty years' lease of the ground already under lease until 1920 and of the remainder of the block bounded by Halsted, Polk and Ewing and the first alley to the west of Halsted and of forty feet on Polk west of this alley. The terms of the lease required the opening of this west alley and necessitated the moving of the Gymnasium to which reference has already been made. In the fall of 1901 Hull House began the erection of a building on the south end of the block for the purpose of providing through rentals an income to be applied toward the maintenance of the House. On the first floor at the north end of the Halsted Street wing are three rooms (conversation, billiard and reading), with coat room, shower and toilet rooms for use of the neighborhood "Men's Club," which had had quarters in the first Gymnasium building. The remainder of the building is given to flats for housekeeping and to bachelors' apartments. These latter open through a fire door to the second story of the Butler Building and are intended to supplement the space given to men residents, though their use is not restricted to actual residents of Hull House. The outcome of the occupancy of these flats, completed this spring, will have a certain social interest, as the tenants literally come from all ranks of society above the very poorest, and the settlement theory of "social unification" will be put to an extreme practical test.

The Jane Club and the Hull House Association apartment building are, literally speaking, no part of Hull House, the "social settlement," though they are part of the Hull House group of buildings and owe their existence to the creative inspiration of Hull House. This year it is expected that there will be added to the group yet another building which will sustain to Hull House much such relation as does the Jane Club. Plans are now under way for the Crane Tenement, to be erected next west of the Jane Club on a piece of land having a south frontage of 100 feet on Ewing, a depth of 104 feet to the alley and bounded on the west by another alley. This building, in quadrangular form, will have basement and four stories on the north and basement and three stories on the south, east and west. It will contain on the first floor front a playroom for older children, on the second floor front a crèche, on the third floor front a kindergarten. The crèche will be more than double the size of the Hull House crèche, and the kindergarten some twenty per cent larger; and on the completion of this new building the crèche and kindergarten in the Children's House will be discontinued and the space devoted to children's clubs and classes. In addition to these special features the Crane Tenement will contain twenty-six flats (three of them capable at need of subdivision into six) which it is proposed to rent to the poorest families that can pay rent at all. In the tenement, as in the Hull House apartment building, there are no light wells, and each stair hall, living room, bedroom and bath room opens directly on to the outer air; the central court in the tenement will be 50 x 55 feet. The entire group thus has a frontage of one block (226 feet 4 inches) on Halsted Street, of 122 feet 9 inches on Polk and Ewing back to the first alley, of 126 feet 6 inches additional on Ewing from the first to the second alley, and of 40 feet additional on Polk west of the first alley.

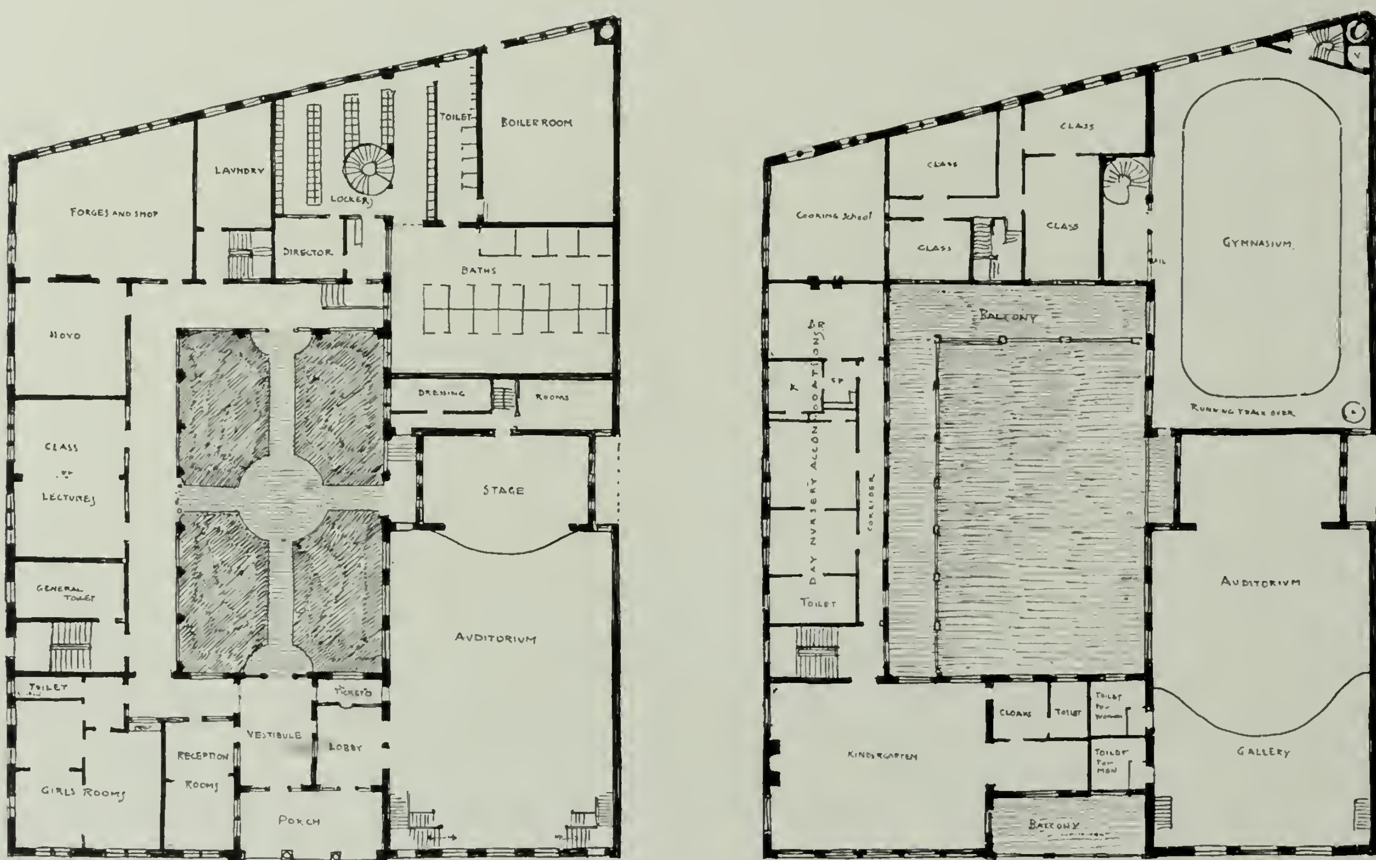
This rapid survey of the origins and history of the several buildings that comprise the Hull House group will have made it clear that the plant as a whole cannot lay claim to being a closely knit, highly developed organism. And this, I take it, is one of the reasonable tests of a building — that when it must necessarily be made up of parts having special functions but still inter-related and severally interdependent, this inter-relation, as in a closely knit organism, shall be achieved in a most direct and natural way, so that the functioning of the parts and of the whole shall be in a logical process and without waste. Judged by this test a building must be held to be successful in proportion as its uses flow easily and without cross currents through their destined channels, so that it shall seem to the close observer that the ends sought were clearly foreseen and that the means of meeting them were evolved as a whole and not patched together on straggling afterthoughts. In short, when we study a building from the standpoint of plan considered as the crystallization of uses, its logic must convince us by its directness, its simplicity, its clarity. If this standard is severe it is nevertheless a wholesome thing for architecture. And if when applying it we recall our own experience with instances of problems whose inherent difficulties were aided and abetted by the idiosyncrasies of owners or committees, it should be possible for us to judge a building rigorously and yet without expressing condemnation of the architect, whose warrantable plea of confession and avoidance may not have reached our ear. Judged by this test Hull House is plainly rather an aggregation of partially related units than a logical organism. It is, however, only fair that this rigor of judgment shall be somewhat abated for a building or group of buildings that has grown by a long series of wholly unforeseeable accretions to an original accidental unit.


DETAIL ON HALSTED STREET, HULL HOUSE.

Architecture is, morever, many-sided and appeals not only to dispassionate reason, but to sentiments that can with difficulty be rationalized. Continually in the Old World we chance upon some building that cannot stand a critical analysis from the view point of clarity of plan, that bears the marks of changes and additions wrought by successive generations of users, but whose heterogeneous whole has an indisputable homogeneity that defies logic and triumphs over cross currents and contradictions; each set of occupants, intent on their own immediate need or whim, has changed the uses of parts, has added other parts, working with diverse materials and in divergent styles; and through it all the building has somehow preserved a certain unity and individuality of its own. We are accustomed to finding this sort of subtile process taking place in buildings evolved during a considerable period of time. As a matter of fact Hull House in the period of twelve years has gone through just such an evolution as these Old World buildings have in as many generations. Neither the faith nor the fantasy of its founders anticipated so diverse and so great a growth. Therefore the successive steps in building did not logically look forward to or prepare the way for those that followed. But there is a certain homogeneity, almost an individuality, to the group; and it is said to have something of charm to the public and of interest to the architect by reason of the handling of materials. Although Hull House, in the range of its activities, covers a far wider field than inheres in the settlement idea as first conceived, the spirit and methods of Hull House are distinctively those of the social settlement; and, when adding to its buildings, it has measurably succeeded in avoiding an institutional and formal aspect.

The comment naturally suggests itself that, in the case of each of the three settlements whose plans have been considered in detail, there were peculiar local conditions that affected the result. Each was a solution in a way of its own problem; but does any of them approach closely to a satisfactory ideal solution of the general problem of social settlement planning? Hull House, starting in an old mansion, lacking prescience of its future and limited at first by short land tenure and cramped ground area, was without organic systematization in its growth. The Commons problem is complicated by the injection of the necessity of providing for the requirements of the church society on an already insufficient ground area. Even at the Northwestern, although the problem is simplified from the fact that the work holds quite closely to the usual settlement type, the ground area was too small and the available funds for building quite inadequate. Suppose that there is presented the problem of planning and designing a building for a settlement, and that, within reasonable limits and short of extravagance, land and money are available, is there any sort of scheme that seems peculiarly fit? Before attempting to answer this query, it may be interesting to make the further inquiry whether the social settlement, admittedly unique among modern philanthropic enterprises, is wholly without parallel in the past.

A backward glance will at once suggest, it seems to me, a striking analogy between the social settlement and the distinctively missionary monastic foundations of the Christian church. I say "missionary" monasteries, because the settlement plainly bears no resemblance whatever to those anchorite or ascetic monastic communities whose members sought by distance and thick walls wholly to detach themselves from the world. There is another sort of monastic establishment, great missionary settlements whose members, in addition to their religious functions, were students, teachers and craftsmen. The members of these communities did for the Europe that was being evolved out of the chaos of war and barbarism that followed the "wandering of the nations" an inestimable service — preaching the sacredness of human life, teaching letters and fostering literature and ideas, and, not least, teaching by example the dignity of labor. Great Britain was dotted with these missionary settlements, bulwarks against barbarism, forerunners of civilization. They also believed and taught the efficacy of creeds and formulæ; and to them the thought of a future life was an omnipresent and all-potent factor in the present life.



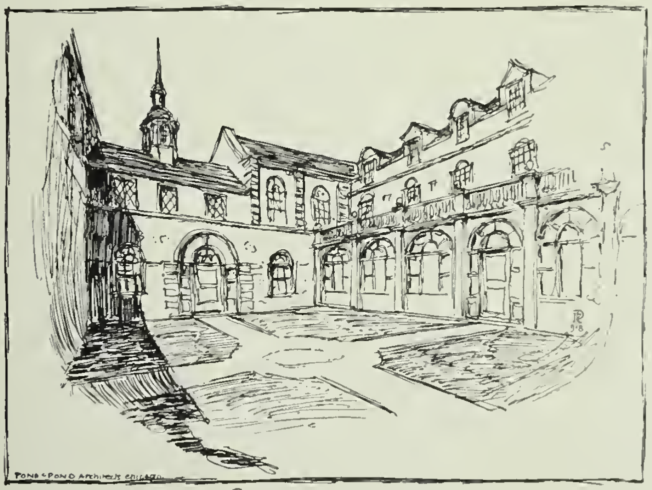
FIRST FLOOR PLAN SECOND FLOOR PLAN

FLOOR PLANS, STUDY FOR DAVID SWING SETTLEMENT.

A change has come over the spirit of the western world; less and less weight is given to creeds; and it is tacitly admitted that our business in this world is with this life in its larger meaning, and that when we get to another world it will be time enough to deal with questions of a future life. We find that at the very core of our civilization, in the great cities that are the nerve centers of the commercial and industrial life that we boast, masses of men and women and children are in a condition of mental and moral and physical deprivation compared with which the militant barbarism of the pre-feudal and feudal ages seems almost benign. The social settlement in our unevangelical, scientific, industrial age is the legitimate sociological successor of the evangelizing and teaching and working monastic establishment of the earlier and middle Christian centuries. The monastic quadrangle, with its combination of refectories, assembly rooms, libraries, shops and individual bedrooms, is the analogue of the settlement building to-day. Long before the thought of this analogy had been suggested to me, when as yet no Chicago settlement had essayed a building built for its own uses, our firm was called upon to make tentative sketches for two settlements, and in both instances, without knowledge of existing models, had settled down on the quadrangular form. Neither project was carried out. The earliest was for a settlement soon thereafter inaugurated in a shabby old dwelling; but when, some years later, it made a beginning of building for itself, the work fell into other hands. The other — the proposed David Swing memorial settlement — was abandoned entirely. The rough studies for this latter scheme are reproduced with these articles. I incline strongly to the opinion that the quadrangular type is peculiarly adapted, — perhaps, given space and money, best adapted to express the settlement spirit in a plan wherein the differentiation of functions can be achieved without loss of organic coherence. In the quadrangle, livableness and homelikeness are readily made to coexist with the sheltering of the necessary formal functions. It is curious to note in this connection that Toynbee Hall — the first settlement to be founded and perhaps the only one that made its original début in quarters built expressly for it — is a quadrangle, although for quite other reasons than the ones that led our firm to hit on the quadrangular type. In the case of Toynbee Hall the founders conceived it to be a part of the settlement idea that those who founded a settlement should transplant in their new location the exact mode of life that they had been leading and should share this as well as themselves with their neighbors. They were university men; and, in consonance with this theory, Toynbee Hall was patterned on the quadrangular scheme of an English college. Whether, had the Toynbee men not been English university men, they would still have hit on the quadrangular type, is a wholly speculative question. They would indeed have lacked the particular reason that did decide them to use it; but as Englishmen they were familiar with monastic and college quadrangles, and the peculiar appropriateness of the scheme would be quite as likely to have occurred to them as it did to us who, knowing nothing at that time of the plan of Toynbee Hall and never having lived in a college quadrangle, still came by a logical process to the same result.

(CONCLUDED.)

STREET FRONT.



VIEW IN QUADRANGLE.

VIEW IN QUADRANGLE.

STUDY FOR DAVID SWING SETTLEMENT.

THERE have been many attempts to discover and put upon the market a substitute for our ordinary white glazed or enamelled wall tiles, but so far with very little success. Glass, cork, enamelled zinc plates, stamped steel, and paper specially treated have all made their appearance, but there is nothing yet put forth that on the whole answers successfully so many conditions as the common glazed terra-cotta or tile which has been in use for so many centuries. No material can be expected to meet absolutely all conditions, and nothing is perfect, but a glazed tile surface certainly comes nearer to perfection than anything with which we are at present familiar.

Recent Interesting Brickwork in Buffalo.

APARTMENT BUILDINGS AND CLUBHOUSES.

BY ULYSSES G. ORR.

APARTMENT houses in Buffalo are like churches in Brooklyn, to be found on nearly every corner and in the middle of the block as well. There are, of course, good, bad and indifferent, the bad largely predominating, as they no doubt do in all cities. Until recently Buffalo was a city without apartment buildings, but some one thought the town metropolitan enough to support an apartment house, when, lo and behold! the multitude rose and did likewise, some with better results than others, however.

The Algonquin, designed by F. H. Loverin, shows a pleasing effect in rough brick, a dark wash brick in basement story and a lighter brick of good texture above.

Some very pleasing brickwork of good texture and satisfactory color combination is shown in the interiors of the annex to the Markeen, from designs by Esenwein & Johnson. The interior brickwork is fully as pleasing as that outside, and is as interesting as it is original.

A simple little building planned by George W. Graves is the Windsor. It will be noticed that the corners of this building seem amply strong, and thereby hangs a tale. When this building was being built, the famous Fargo mansion was razed and the owner saw on the bargain counter, at a price which simply could not be resisted, a number of beautifully cut quoins. An older architect would not have permitted them to be used.

THE MELTON MANOR.
W. L. Schmolle, Architect.

One of the earlier buildings, the Lenox, planned by Loverin & Whelan, developed happily. Built on one of the finest residence streets, North Street, near Delaware Avenue, it naturally disturbed the peace of mind of near-by residents. But they took the matter philosophically and now have little to complain of.

The Colonial, by James A. Johnson, is one of our Delaware Avenue apartments, and is an interesting example of the style after which it is named. A dark brown wash brick with dark joints in first story and red brick with white joints above, together with the white marble trimmings, make a pleasing combination.

A charming little building on Delaware Avenue is the Morey, designed by H. Osgood Holland, who endeavored to disfigure the street as little as possible by giving his design the appearance of a residence as nearly as might be.

The Touraine, Buffalo's newest apartment building, is a simple but pleasing design by Esenwein & Johnson. Unfortunately for photographing buildings in summer, Buffalo has an overabundance of trees, but the view from Johnson Park shows what the view from Delaware Avenue does not.

A homelike little building in buff brick is the St. Croix from plans by John S. Rowe. The wall surfaces in this building are broken up very satisfactorily.

The Irving, a small building behind the trees, is from plans by H. G. Larzelere, and is built of light buff brick, white joints and buff terra-cotta trim.

Some very satisfactory brickwork is shown in the La Salle, planned by F. H. Loverin, a light buff brick with lighter trimmings making a combination of excellent color value.

THE ALGONQUIN.
F. H. Loverin, Architect.

Another example, from the plans of John S. Rowe, is the Roanoke, in which two shades of buff brick were used with pleasing results.

THE LA SALLE.
F. H. Loverin, Architect.

The Hudson, a pompous little building by F. H. Loverin, has some clever brickwork.

THE HUDSON.
F. H. Loverin, Architect.

THE MOREY.
H. Osgood Holland, Architect.

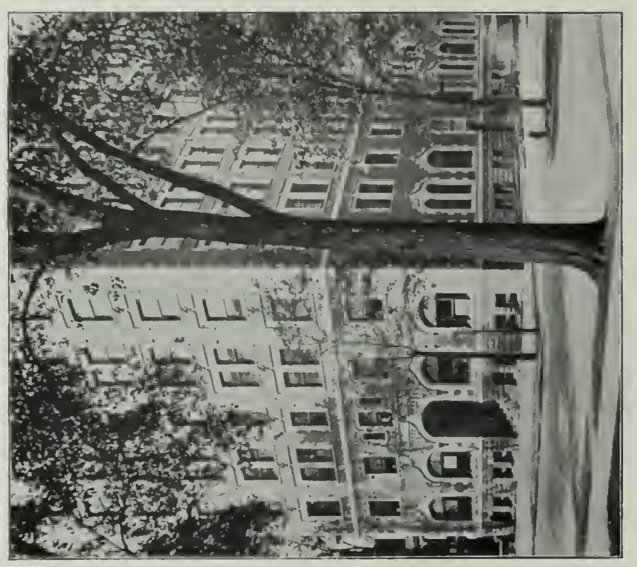
The Melton Manor, from plans by W. L. Schmolle, occupies an entire block and presents a very pleasing front. Built with a buff brick, light joint and buff trim,

THE TINDLE.
Metzger & Greenfield, Architects.

depending upon the lights and shadows from the various projections and recesses for its variety of tone.

THE WINDSOR.
George W. Graves, Architect.

THE TOURAINE.
Esenwein & Johnson, Architects.



THE TOURAINE.
Esenwein & Johnson, Architects.

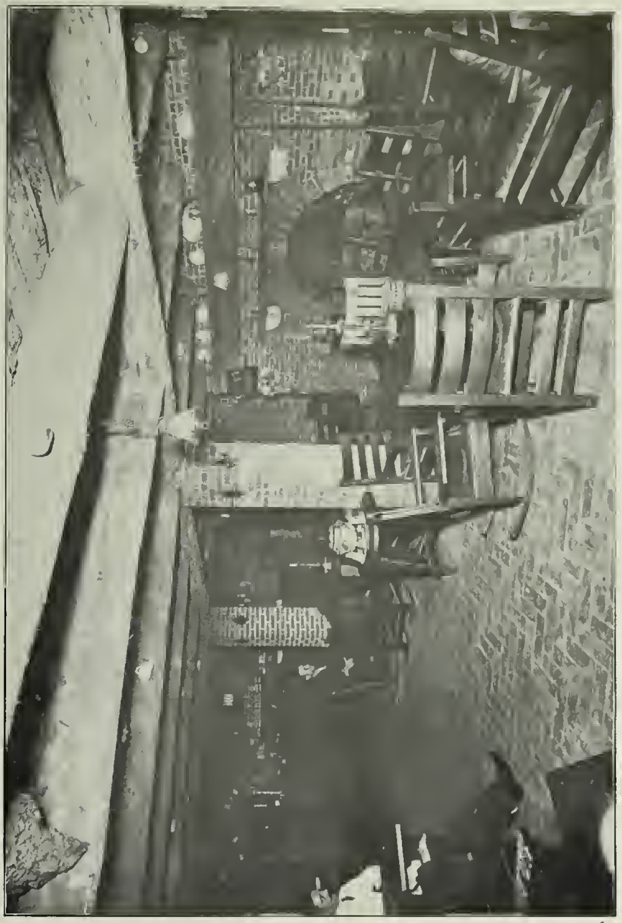
THE LENOX.
Loverin & Whelan, Architects.

THE ST. CROIX.
John S. Rowe, Architect.

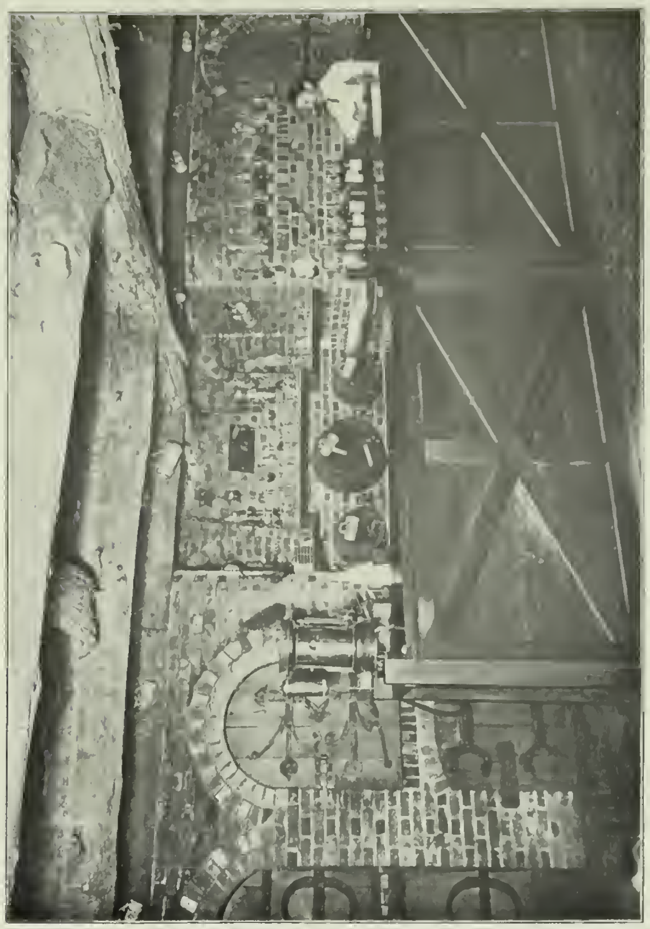
THE ROANOKE.
John S. Rowe, Architect.

THE COLONIAL.
Broughton & Johnson, Architects.

APARTMENTS, BUFFALO, N. Y.



FIREPLACE IN RATHSKELLER.



BAR IN RATHSKELLER.

MANTEL IN DINING ROOM.

MUSIC GALLERY, DINING ROOM.

INTERIOR VIEWS, THE MARKEEN APARTMENT, BUFFALO, N. Y.

Esenwein & Johnson, Architects.

An example of pattern brickwork is the Tindle, by Metzger & Greenfield. Golden-brown shades were used with good effect except where plain wall was desired. The mixing of shades was left to the bricklayers, in this case with fatal effect.

Of the clubhouses in Buffalo, all the better class are built of brick.

The Saturn Club, designed by Marling & Burdett, is an excellent demonstration of the fact that the manner in which a brick is used has more to do with the successful appearance of a building than the quality of the brick. Common brick were used in this building with admirable effect. The detail of main entrance shows this clearly.

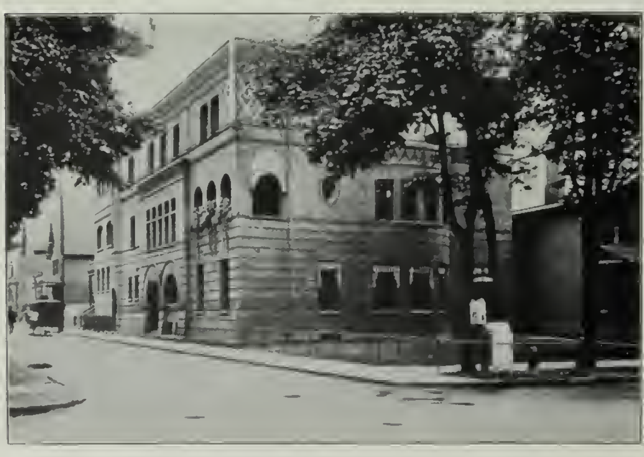
OTTOWEGA CLUB.
Green & Wicks, Architects.

A simple and dignified building is the Twentieth Century Club, from designs by Green & Wicks. A pink brick with some variety of shade, neutral joints and light buff stone and terra-cotta trimmings make a pleasing color combination.

The Gymnasium and Natatorium of the Buffalo Club, designed by Green & Wicks, is a satisfactory job of brickwork. A red brick with variation enough to avoid monotony, laid up in white mortar, and the second story filled in with stucco, makes a very pleasing combination.

BUFFALO CLUB, GYMNASIUM AND NATATORIUM.
Green & Wicks, Architects.

TWENTIETH CENTURY CLUB.
Green & Wicks, Architects.



SATURN CLUB.
Marling & Burdett, Architects.

MAIN ENTRANCE, SATURN CLUB.

The Ottowega Club, a splendidly designed building, with just brick enough to admit of its associating with brick buildings, is from the plans of Green & Wicks.

The Business Side of an Architect's Office. IV.

BY D. EVERETT WAID.

CONTRACTS. — Many architects, and a few of the prominent ones, use the "Uniform Contract." But a majority of the well-known firms have their own special forms, some of them objecting to the "Uniform" on account of features that it either does or does not contain.

It is well to have contracts made out in triplicate, a copy each for owner, contractor and architect, attaching to the office copy the bid and memoranda showing how the contract sum was arrived at. The specifications and the drawings also should be identified by the signatures of the contractor. A set of blue prints as being less susceptible of alteration is set aside for the signed office copy. The tracings are thus left free for subsequent revision and new prints if desired, each revision being shown by a date on the drawing. If desired, notations may be made in ink on the signed set to call attention to changes, but care should be taken to date and initial each correction. This prevents any question as to whether a change was made before or after the original contract was let or whether it was included in any subsequent order.

It is well to have the client's attorney in consultation in letting contracts, particularly if any provisions are to be made outside the usual. Insurance against accident and the elements should be provided, the contractor being made responsible for the former and the owner for the latter. Dates should be stated in the contract for the completion of various stages of the work, for its moral effect as well as to give a basis on which to forfeit a contract if proper progress is not made. Very frequently the contract stipulates that certain payments shall be made when the building reaches certain stages of completion, but on the whole perhaps the best provision in this matter is as follows:

"Payments shall be made only upon the certificate of the architects as follows: 85 per cent of the value of labor done and materials delivered or of materials delivered and built in as estimated by the architects at reasonable intervals."

Delays may be avoided and the contractor encouraged to order materials well in advance by making payments on materials delivered and before erection, but care should be taken that all such materials are definitely listed in the contractor's application for certificate, otherwise there may be difficulty in establishing ownership and preventing removal of materials by subcontractors in the event, for instance, of the failure of the contractor. Legal advice should be had on such points.

In order to bind a contractor to fulfill his agreement the following provision

SUPERINTENDENT'S REPORT ON BUILDING BLDG NO.

A. J. MANNING, Architect,
147 Fifth Avenue, New York

190

Weather conditions

How much time lost owing to bad weather

Number of men at work What doing

Work done since last report

Materials delivered since last report

Materials wanted on the work now

Materials not on the ground that will be required two weeks hence

Mechanics wanted on the work

Mechanics that will be needed two weeks from this inspection

If work is delayed or will be delayed for want of materials, details or for ... state for what, and include any remarks not covered by above inquiries

Superintendent, Clerk of Works, or Foreman.

(ORIGINAL SIZE, 13 X 8 INCHES.)

FIG. 1. A FORM FOR SUPERINTENDENT'S REPORTS.

House for
Mrs. Geo. B. Post, Jr., No. 20. New York 27th Nov. 1901. 19

I submit the following report of the progress of the work on the building, from 22d Nov. 1901 to date

EXCAVATION Excavating for foundation of the house has been commenced and has advanced to a depth of about two feet.

MASON WORK. No work at present on outside walls. Mason cutting away brick pier in cellar on side of Kitchen chimney to allow space for dumb waiter to be run down to cellar. Concrete flooring has been set in cellar in the place where the furnaces are to be set. Mason should be notified to protect the terra cotta pieces at ...

CARPENTER WORK. Third floor beams have been set in northwest corner over Mr. Post's room. Rest of work about as per last report. Carpenter is waiting for stirrup irons for hanging third floor beams, and for mason work to advance in main part of house. First floor beams in Kitchen have been shored up temporarily where girder is to be moved to allow dumb waiter to be run down to cellar.

HEATING The three Richardson & Boynton furnaces have been delivered at building, two of which have been set up in place.

GEO. B. POST Esq., Architect.

FIG. 2. A TYPICAL REPORT BY AN ARCHITECT'S SUPERINTENDENT.

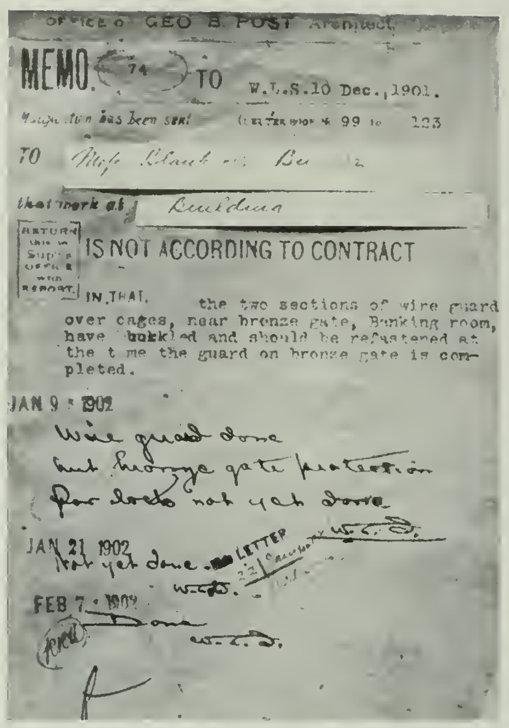


FIG. 3. SAMPLE OF INSTRUCTIONS TO ARCHITECT'S SUPERINTENDENT REGARDING DEFECTIVE WORK.

is frequently written into the contract: "The contractor agrees to give a bond acceptable to the owner binding himself in the sum of (usually a third of the contract price) to fulfill the terms of this contract and complete the ( ) work free of all liens."

EXECUTION OF WORK. — In large offices the supervision of construction is attended to by superintendents who do nothing else. It is not safe to leave this duty to the man who made the drawings for a given building, as he may be unfit by temperament or experience to superintend. On the other hand, it is a policy mutually beneficial to allow to the draughtsman a share of the oversight of the execution of work. He should try to get the mechanic's point of view at every opportunity. An occasional visit to the works, too, by the one who made the drawings will reveal errors or deviations which escaped the eye of even the skilled but busy regular superintendent, who may have a lot of buildings in hand at once. Some of the most successful offices have not only regular superintendents, but others, McKim, Mead & White, for instance, allow joint oversight by the regular outside man and the draughtsman who had charge of the drawings of the particular piece of work.

R. H. Robertson has the execution of his work looked after by regular superintendents, who keep in touch of course with the office. He has found that it is demoralizing for draughtsmen to attempt to do both office work and outside superintending.

SUPERINTENDENTS' REPORTS. — Superintendents' reports may be kept in a manner exactly similar to the "Memo Record" (previously described) rough pencil note records of progress of a building or more elaborate and formal reports, as one prefers. In one large New York office these reports are watched very carefully. An "N. C." is stamped opposite every paragraph which records any work *Not according to Contract*, and those "N. C.'s" are never lost sight of until subsequent reports show that defective work was made good and how.

The writer uses a rubber-stamp heading on the aforesaid yellow-pad paper for superintendents' reports. Some

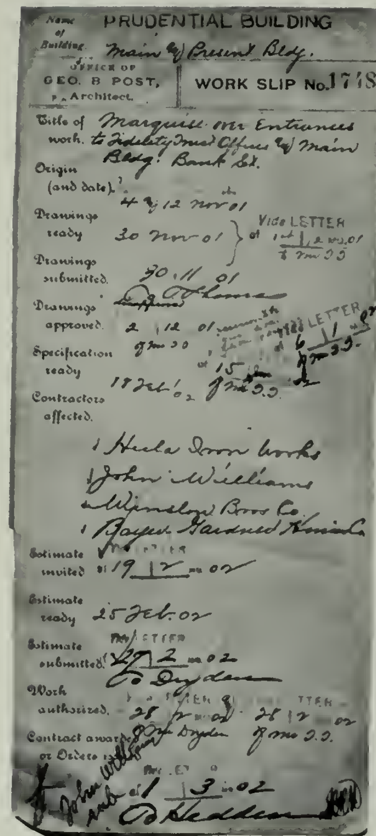
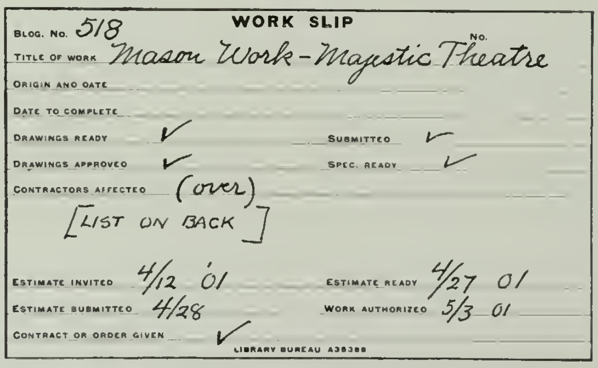


FIG. 4. WORK SLIP.

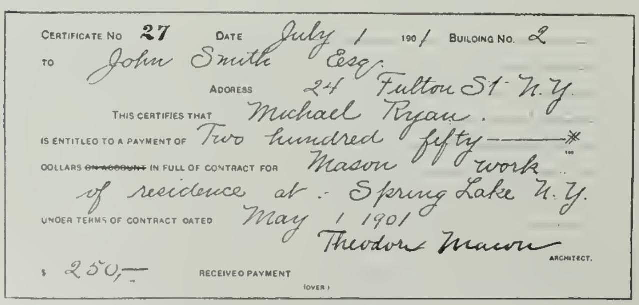


WORK SLIP			
BLDG. NO. 518			
TITLE OF WORK Mason Work - Majestic Theatre			
ORIGIN AND DATE			
DATE TO COMPLETE			
DRAWINGS READY	✓	SUBMITTED	✓
DRAWINGS APPROVED	✓	SPEC. READY	✓
CONTRACTORS AFFECTED	(over) [LIST ON BACK]		
ESTIMATE INVITED	4/12 01	ESTIMATE READY	4/27 01
ESTIMATE SUBMITTED	4/28	WORK AUTHORIZED	5/3 01
CONTRACT OR ORDER GIVEN	✓		

LIBRARY BUREAU A38388

(ORIGINAL SIZE, 5 X 3 INCHES.)

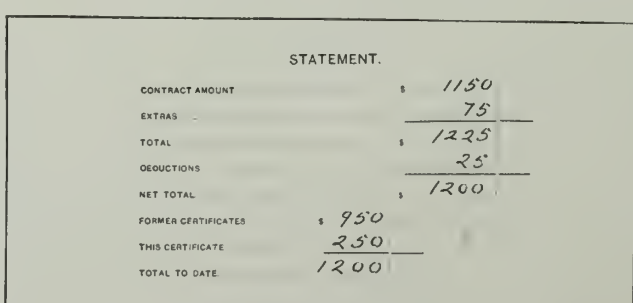
FIG. 5. WORK SLIP. LIST OF CONTRACTORS INVITED TO BID MAY BE WRITTEN ON BACK OF CARD.



CERTIFICATE NO 27 DATE July 1 1901 BUILDING NO. 2
TO John Smith Esq.
ADDRESS 24 Fulton St. N. Y.
THIS CERTIFIES THAT Michael Ryan.
IS ENTITLED TO A PAYMENT OF Two hundred fifty
DOLLARS ~~ON ACCOUNT~~ IN FULL OF CONTRACT FOR Mason work
of residence at Spring Lake N. Y.
UNDER TERMS OF CONTRACT DATED May 1 1901
Theodore Mason ARCHITECT.
$ 250.— RECEIVED PAYMENT
(OVER)

(ORIGINAL SIZE, 8 X 3¾ INCHES.)

FIG. 6. A CERTIFICATE.

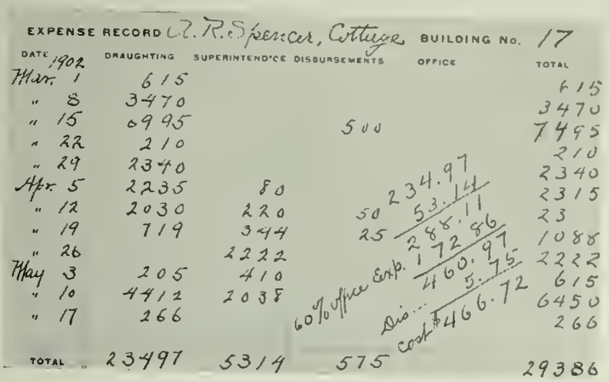


STATEMENT.

CONTRACT AMOUNT		$ 1150
EXTRAS		75
TOTAL		$ 1225
DEDUCTIONS		25
NET TOTAL		$ 1200
FORMER CERTIFICATES	$ 950	
THIS CERTIFICATE	250	
TOTAL TO DATE	1200	

(ORIGINAL SIZE, 8 X 3¾ INCHES.)

FIG. 7. REVERSE SIDE OF CERTIFICATE SHOWN IN FIG. 6. THE FIRST FIVE LINES OF THE STATEMENT ARE USUALLY LEFT BLANK EXCEPT IN THE FINAL CERTIFICATE.



EXPENSE RECORD R. R. Spencer, Cottage BUILDING No. 17

DATE 1902	DRAUGHTING	SUPERINTEND'CE	DISBURSEMENTS	OFFICE	TOTAL
Mar. 1	615				615
" 8	3470				3470
" 15	6995		500		7495
" 22	210				210
" 29	2340				2340
Apr. 5	2235	80			2315
" 12	2030	220	50		23
" 19	719	344	25		1088
" 26		2222			2222
May 3	205	410			615
" 10	4412	2038			6450
" 17	266				266
TOTAL	23497	5314	575		29386

(ORIGINAL SIZE, 5 X 3 INCHES.)

FIG. 8. EXPENSE RECORD CARD. BOTH SIDES RULED ALIKE.

architects have quite elaborate printed forms. An excellent simple printed form which serves at once as instruction to an unskilled superintendent and a reminder to an experienced man is that used by A. J. Manning. (See Fig. 1.)

The writer would insert two lines in this form as follows:

"Work not according to contract . . . ."

"Defective work formerly reported made good and how. . . . ."

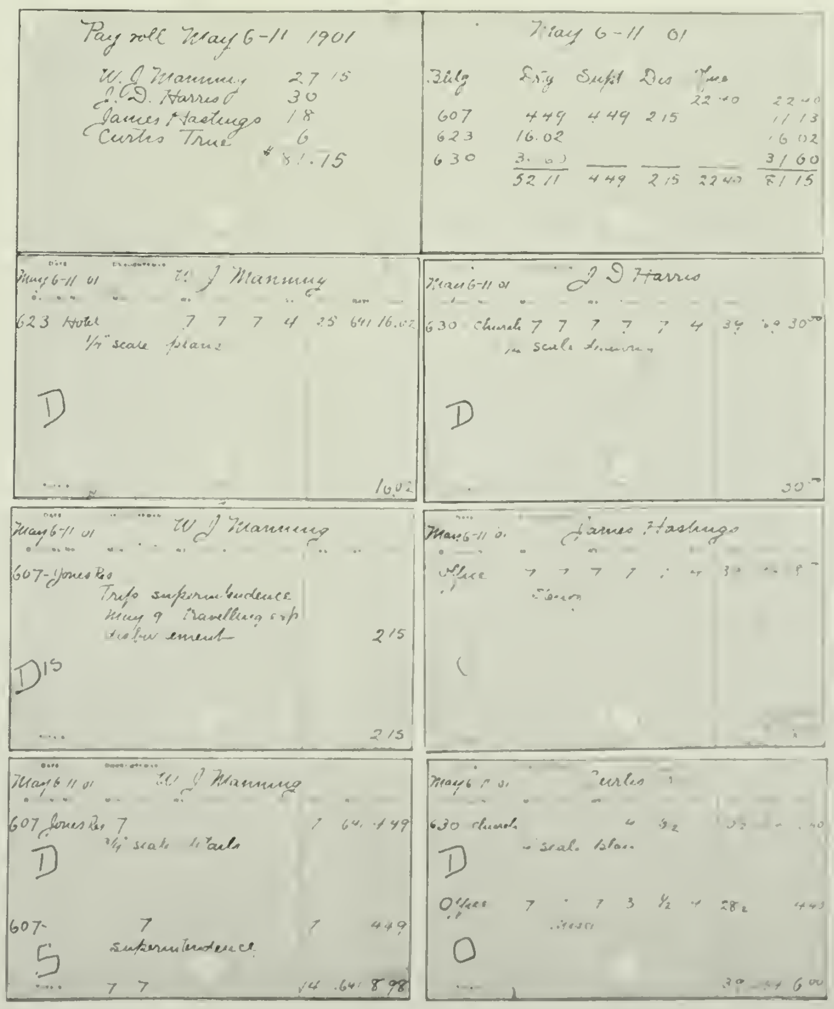
Many of the most successful architects attend personally to the supervision of contractors' work. But by whomsoever done it is most important to keep a written account of every visit or inspection of work in progress, — a "diary" some call it, — let us say "superintendence record."

Work Slips. — "Work slips" are a convenient device in a large office, or in a small office where one person has many duties to carry. If an owner decides during the erection of his building that he would like a marquise over an entrance he writes his architect, or perhaps calls and informs him verbally, as was doubtless the case in the instance illustrated (Fig. 4). This is a slip photographed in Mr. Post's office. From the office record of the client's call as evidenced by the "Origin, Memo Record 4 and 12 Nov. 01" (there were *two* calls, it seems), the slip was started and became at once a means of following up the piece of work and a history of what was done. As each step in the office was accomplished, "Drawings made," "Drawings submitted," "Drawings approved," etc., the fact was noted, and when finally "Contract awarded" was reached the active usefulness of that particular slip was ended and it was filed away. In a large office one clerk may give a large part of his time to a stack of these work slips. In a moderate-sized office the writer has found the same idea useful (see Fig. 5, which is a form printed on 3 x 5 cards). I have a small tray of these cards on my desk grouped behind pencil-labeled guide cards, one for each of the buildings in hand. One card is made out for each original contract to be let on each building, as well as any changes, extra work, etc., which may come up during construction. One has thus under his finger for instant reference a list of the contractors selected to bid on each work, and a memorandum which will prevent embarrassment from a drawing not being made at the proper time or bids not being invited or any part of the work being forgotten.

Certificates. — I have a large collection of certificate blanks which are very similar, naturally, in matter but range in size from very diminutive slips to 8 x 10 inches. The form illustrated (Figs. 6 and 7) is an average and is a size, 3¾ x 8 inches, convenient for mailing as well as for filing in the owner's document file or contract folder. Stub records may be brief, simply certificate number, building number, date, amount and contractor's name. A letterpress copy of every certificate should be kept, and it is made clearer for reference if the blank is printed in copying ink; many architects, by the way, are having various forms printed in aniline for this purpose.

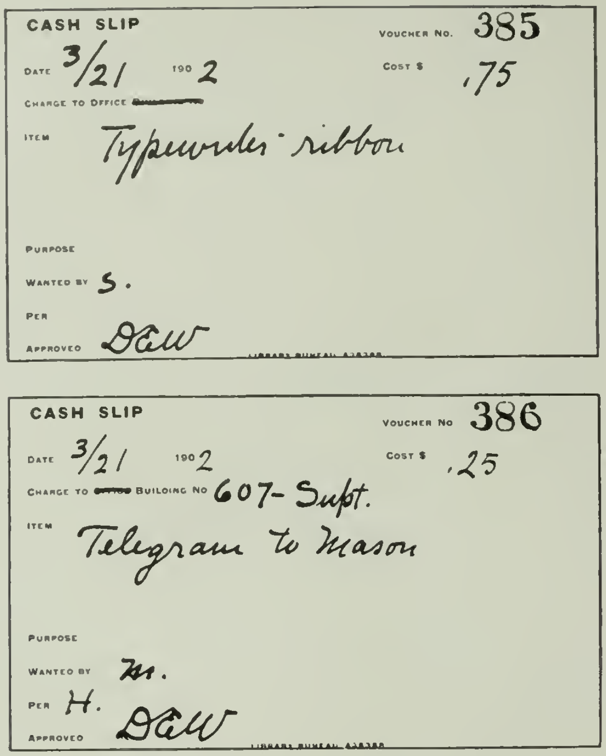
Cass Gilbert has printed at the bottom of his certificates the following:

> This certificate, whether issued as final or otherwise, is an opinion only, and is in no sense a guarantee on the part of the Architect. It is not to be interpreted as an acceptance of any work or material which



(ORIGINAL SIZE, 5 X 3 INCHES EACH.)

FIG. 9. TIME CARDS WITH SUMMARY OF ONE WEEK'S PAY ROLL. OVERTIME IS RECORDED IN SAME FORM, PRINTED ON RED CARDS.


CASH SLIP VOUCHER NO. 385
DATE 3/21 1902 COST $ .75
CHARGE TO OFFICE
ITEM Typewriter ribbon
PURPOSE
WANTED BY S.
PER
APPROVED DCW

CASH SLIP VOUCHER NO 386
DATE 3/21 1902 COST $ .25
CHARGE TO BUILDING NO 607- Supt.
ITEM Telegram to Mason
PURPOSE
WANTED BY M.
PER H.
APPROVED DCW

(ORIGINAL SIZE, 5 X 3 INCHES EACH.)

FIG. 10. VOUCHER CARDS.

is defective, or which is not in accordance with the contract, and in making payment under it the Owner reserves the right to hold the Contractor strictly responsible for defective work or material, or for any violation of the contract.

. . . . 19. . .

The receipt of the amount of $ . . . . , in accordance with the above certificate, is hereby acknowledged, and the work and material furnished by the undersigned is hereby guaranteed to be the best of its kind and strictly in accordance with the contract.

. . . . Contractor.

Frank Miles Day & Bro. print on their certificates:

NOTICE AS TO INSURANCE

On making this payment the Owner should assure himself that his interests are protected by insurance sufficient to cover his liability in the increased amount resulting from this payment.

They have also a perforated attached form which is torn off and mailed to an owner as soon as a certificate is issued, thus:

No. . . . .

Philadelphia. 190

Mr. . . . .

Dear Sir:

We have this day issued to

. . . .

a certificate of payment on account of . contract for work on your

. . . .

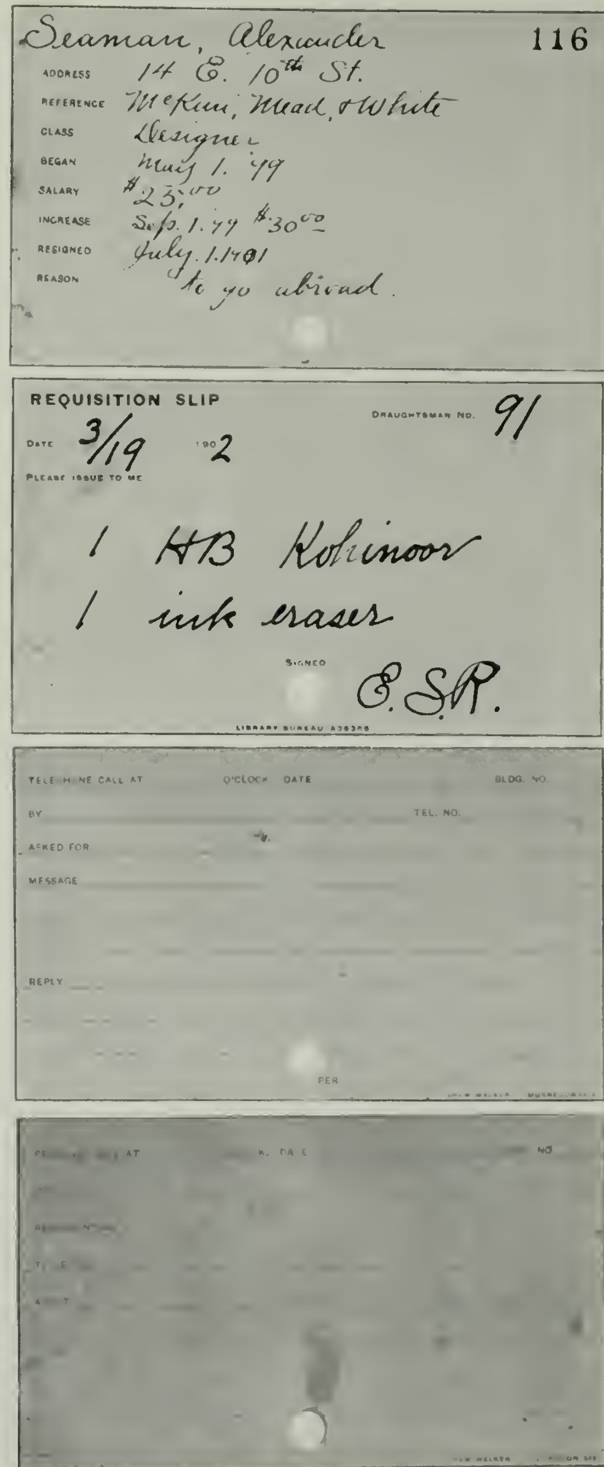
We call your attention to the insurance clause of your contract and to the notice as to insurance upon the certificate.

Yours truly,

Expense Record. — An architect is a professional man and does not do business strictly on a commercial basis. He is always striving toward an ideal and insists on making a drawing over and over as often as he pleases, even if it costs twice his fee. At the same time it is nothing more than simple good business to keep tab in a general way on expenses.

If it is found that one class of work cannot be done satisfactorily on an office cost of less than 5 per cent, it might be considered time to raise the fee for that particular work to 7½ or 10 per cent.

The "Expense Record" card shown in Fig. 8 assumes that every expenditure in an architect's office comes under one of four divisions: 1. "Draughting," — salaries and all expenses incident to preparation of drawings which can be charged to a particular building, even a telegram or a frame for a perspective; 2. "Superintendence," — including salaries and car fares in connec-


Seaman, Alexander 116
ADDRESS 14 E. 10th St.
REFERENCE McKim, Mead, & White
CLASS Designer
BEGAN May 1. 99
SALARY $23.00
INCREASE Sep. 1. 99 $30.00
RESIGNED July. 1. 1901
REASON to go abroad.

REQUISITION SLIP DRAUGHTSMAN NO. 91
DATE 3/19 1902
PLEASE ISSUE TO ME
1 HB Kohinoor
1 ink eraser
SIGNED E.S.R.

TELEPHONE CALL AT O'CLOCK DATE BLDG. NO.
BY TEL. NO.
ASKED FOR
MESSAGE
REPLY
PER

(ORIGINAL SIZE, 5 X 3 INCHES EACH.)

FIG. 11. MISCELLANEOUS FORMS.

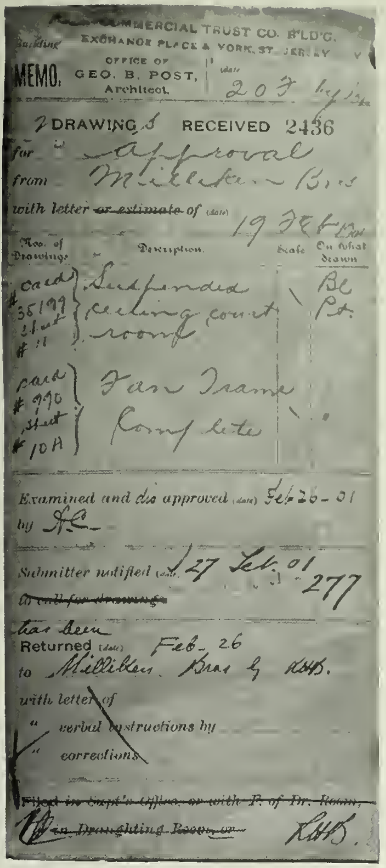

COMMERCIAL TRUST CO. B'LD'G.
EXCHANGE PLACE & YORK ST. JERSEY
OFFICE OF
MEMO. GEO. B. POST, Architect.
DRAWING RECEIVED 2436
for approval
from Milliken Bros
with letter ~~or estimate~~ of (date) 19 Feb
No. of Drawings — Description — Scale — On what drawn
Examined and dis approved (date) Feb 26-01
Submitter notified (date) 27 Feb. 01
277
Returned (date) Feb. 26
to Milliken Bros
with letter of
verbal instructions by
corrections

FIG. 12. HISTORY OF SHOP DRAWINGS SUBMITTED FOR ARCHITECT'S APPROVAL.

tion with the execution of work; 3. "Disbursements," — salary of clerk of works, fees to experts and other expenditures charged to owner at exact cost without profit to the architect; 4. "Office," — rent, supplies, salaries of office force, etc. It is well to include in this item also a sum as an allowance for one's own salary.

By taking the "Office Expense" for a whole average year and finding what ratio it bears to "Draughting" plus "Superintendence" a close approximation can be determined of the portion of office expense chargeable to any given building. Some architects figure this at 50 per cent, others 60 per cent. If, then, the record card for one building shows the cost of the first two items to foot up $1,000, add 60 per cent say, and $1,600 plus disbursements represents a fairly accurate statement of actual cost for the architectural service on that building.

Time Cards. — Time cards or sheets in use by architects are of all sorts and sizes. Some have none at all or very abbreviated ones, while others have both time sheets and time books, and add to the clerical labor by transcribing from both and carrying a ledger account with each draughtsman besides.

The time cards shown (Fig. 9) are given to the junior draughtsman, who distributes and collects the cards late every afternoon. Each draughtsman records his time, and notes under the hours charged to each building the work on which he is engaged. The bookkeeper adds the rate and figures the amount on each and makes up the summaries of the week's pay roll. The bunch of cards for each week, with a paper band about it, is dated and dropped into a card index drawer. This method requires the least amount of clerical labor, as nothing is transcribed save the summaries, and combined with the "Expense Record" cards makes it easy to tell at any time just what the office cost is on any particular building. If one happens to have a piece of work on a salary (or honorarium) and disbursement basis (exposition buildings for example), separate time cards are kept for that piece of work and made in duplicate, one card for each man, and receipted by each and sent as vouchers to the owner. These time cards, too, are convenient in that various partnership arrangements on different buildings in one office can be kept account of easily and without confusion.

Office Accounts. — The accounts should be kept in a systematic way but as simply as possible to require the least possible amount of clerical labor. The stenographer should be free to give more time to specifications and correspondence than to bookkeeping. Some offices have a double-entry system of bookkeeping as formidable as that of a mercantile concern. The essential books are, however, a cash book (also a cash-drawer book), a ledger and a bank-check book. Every expenditure and every receipt should show on the stubs of the bank-check book and be compared once a week with the cash-book balance, and once a month comparison should be made with the pass book balanced by the bank. When a payment is made by check the stub shows for what and to what account it should be charged. For example, when the month's blue-print bill is paid notation is made on the check stub:

Building No. 88 blue prints,	$23.00
Building No. 529 blue prints,	2.14
Total,	$25.14

From the stub entry is then made in the cash book.

The voucher cards shown (Fig. 10) are useful in a large business in enabling the head of the office to keep easily *au courant*. Whenever a payment is made from the cash drawer a card is placed on his desk, and at his convenience then or afterward he initials each to show that he was cognizant of the transaction. An important use for these voucher cards is in connection with a branch office. A card is made out for every expenditure and receipt, and once a week a bunch is sent along with the pay-roll cards to the main office together with a brief statement like this:

Balance on hand last report,		$784.00
Received as per voucher,		350.00
Total,		$1,134.00
Paid out, pay roll week ending Aug. 30,	$130.00	
" as per vouchers,	73.00	
		203.00
Balance on hand,		$931.00

In the ledger, aside from the account opened with each client, there appears a "Personal Account" showing cash advanced for use in the business or amounts paid out for private use, "Profit Account," "Expense Office," "Expense Disbursement," "Expense Superintendence," "Expense Draughting," "Account Receivable — Commission," "Account Receivable Disbursements."

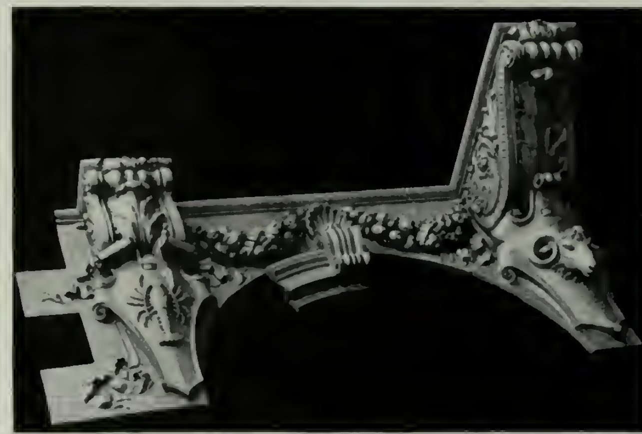
The last two accounts named are credited whenever bills are rendered to clients, and the client's account is credited when the bill is paid. A trial balance (a very simple matter in an architect's small ledger) should be taken once a month or once a quarter at most.

Selected Miscellany.

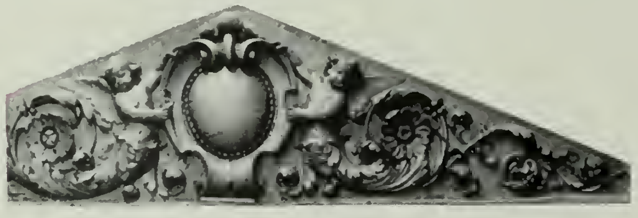
THE following is the contents of a circular letter which has been sent out under date of September 9, 1902, by the Architectural League of America, and will have an interest no doubt for many who will not receive the letter.

The Committee on Circuit Exhibition begs to have the coöperation of your club in making the coming exhibition of the circuit a success. Fortunately, by the coöperation of the Architectural League of New York, it will be possible to have as one of the features of the exhibition a representative collection of photographs of foreign church buildings.

In the last few years the Architectural League of New York has been actively engaged on the subject of municipal art, and has been the leader of a number of conferences on this important question. Much of the information in reference to the planning of cities which has resulted in the replanning of Washington and other important projects of a similar nature was discussed in a preliminary way at the rooms of the Architectural League of New York. At various times the question of parks, transit, bridges, tunnels, public buildings and the rearrangement of streets has been taken up.



DETAIL BY CHARLES I. BERG, ARCHITECT.
Atlantic Terra-Cotta Company, Makers.



DETAIL BY A. C. LYONS, ARCHITECT.
Perth Amboy Terra-Cotta Company, Makers.

DETAIL BY W. ALBERT SWASEY, ARCHITECT.
St. Louis Terra-Cotta Company, Makers.

This year a special committee has been appointed to take up the question of semi-public buildings, and the subject of church architecture will be given particular attention.

The committee is pleased to state that in answer to numerous letters the replies received show that the question of better architecture and the methods of obtaining it is agitating Europe. Replies have been received from many prominent dignitaries and officials, notably His Eminence Cardinal Richards of Paris and His Grace the Archbishop of Bordeaux.

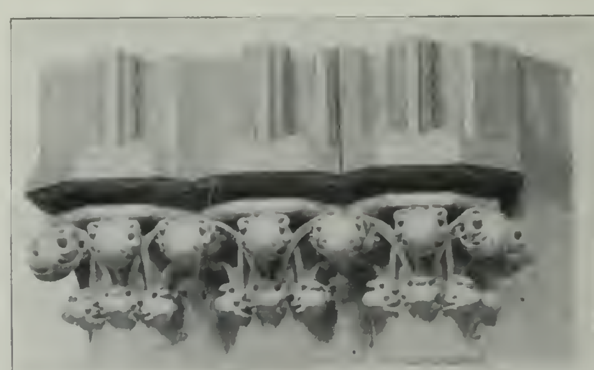
A communication has been instituted with societies having the betterment of church architecture in view. These societies have the benefit of the influence of the important personages affiliated with them. Thus in the movement we find the names of Comte Guy de Larouchefoucault, president of the Society for the Betterment of Ecclesiastical Buildings; Prince A. d'Arenberg, member of the Institute and a representative of the Artistic Society of Amateurs, — both societies of France; His Grace the Archbishop of Munich, of the Ecclesiastical Society of Germany; and the Archbishop of Glasgow, of the Church Craft Society in England. And as well there are to be found the names of many prominent artists, as for example: Paul Dubois, director of the Ecole des Beaux Arts; Charles Lehmaire; Albert Maignan, secretary of the Society of French Artists; and G. Rubrich Robert, architect-in-chief of Historic Monuments.

In the many letters received from these and other individuals the importance of improved methods of architectural education is dwelt upon, and the committee of the Architectural League of America hopes by making this branch of architecture a feature of the coming circuit exhibition it will secure the interest and coöperation of each city in which this series of photographs is exhibited. Already photographs have been promised of the new Westminster Cathedral, Notre Dame de la Carde, the Great Basilica at Lyons, the Sacré Cœur of Paris and many others. And it hopes to secure, through the cooperation of each club, representative photographs of what is now being done in the United States.

The importance of this question cannot be overestimated, and the subject has been taken up most earnestly by the Architectural League of New York. On the committee having this work in charge is Mr. George L. Heins, New York State Architect.

The results of the efforts of this committee will be exhibited in the rooms of the Architectural League of New York at a conference of all those interested.

No better statement as to the importance of this question can be given than the one made by Mgr. Paulinier, Archbishop of Besançon, in his circular letter in which he says that the neglect of the study of architecture has exposed the precious heirlooms of the past to a double peril: they are either lost by a lack of appreciation and



DETAIL BY GEORGE H. STREETON, ARCHITECT.
Excelsior Terra-Cotta Company, Makers.

allowed to be dissipated, or they are destroyed by so-called restoration. To show the inertia existing in Europe at the present time he states that from eight hundred custodians communicated with but two really intelligent replies were received.

It is the hope of your committee that you will attempt to make this exhibition of church buildings representative of the work in America.

RAILWAY STATION, RICHMOND, IND.
W. S. Kaufman, Architect.
Built of Hydraulic-Press Brick, Roofed with Celadon Roofing Tile.

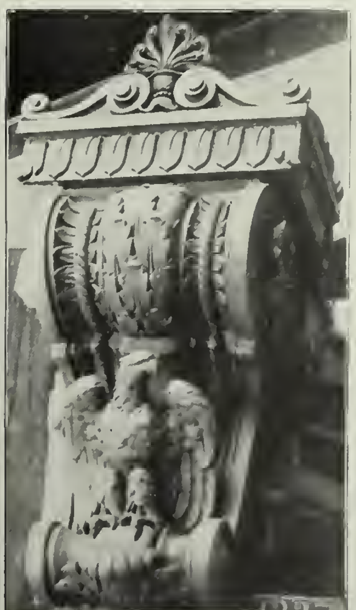
This can be accomplished by collecting from the work of those in your club and immediate vicinity such photographs as will be representative of what is being done in that section of the country. It is suggested by the committee that the best method of doing this would be for your club to appoint one competent representative with power, and that he secure the necessary photographs and see that they are forwarded to the committee in New York on or before October 20.

It is of course understood that while it is the desire of the committee to have as complete an exhibition of church architecture as possible, it is not the intention of the committee to restrict the circuit exhibition to this specialty. Photographs, therefore, or any work selected by the representative of each club will be included in the regular exhibition.

The size of photographs should not be over two feet in the greatest dimension.

Photographs should be forwarded to William Laurel Harris, care of the Architectural League of New York, 215 West Fifty-seventh Street, New York.

DETAIL BY FRANKLIN BAYLIES, ARCHITECT.
Standard Terra-Cotta Works, Makers.



DETAIL BY McKIM, MEAD & WHITE, ARCHITECTS.
New York Architectural Terra-Cotta Company, Makers.

BOOK REVIEW.

MODERN CARPENTRY AND JOINERY. — A Practical Manual. By Fred T. Hodgson. Frederick J. Drake & Co., Chicago.

The book is copiously illustrated with diagrams and figures showing the solution of many intricate problems in geometry, roofing, carpentry, joinery and stair work. The illustrations and descriptive matter are clear, simple, definite and easily understood.

The work is divided into four parts, namely:

Carpenter's Geometry; Timber Framing and Carpentry; Joinery and Joiners' Work; and lastly, Rules and Tables for Measuring and Estimating Woodwork Generally.

A NEW TERRA VITRÆ TILE.

THE Hartford Faience Company have put upon the market a terra-vitræ tile which is new because of its thickness, or rather its thinness, it being only half an inch thick, the usual thickness for such tile being three quarters of an inch. This not only makes the price of the tile less, but considerable is saved in freight charges. They are prepared to execute promptly any orders for special sizes, but carry a stock of size 6 x 3 inches in ten colors — seven in the gloss and three in the dull finish. Caps and bases to match these tile, for wainscot work, are also carried in stock.

There is a nice distinction about a burnt-clay tile which carries its own recommendation, and their increased use by architects generally is a matter which is gratifying to all concerned.

IN GENERAL.

The house in Brookline, Mass., illustrated in the half-tone plate form of our August number was by William Whitney Lewis, architect, Boston.

DETAIL BY JAMES H. WINDRIM, ARCHITECT.
Conkling-Armstrong Terra-Cotta Company, Makers.

Celadon Roofing Tile — Charles Bacon, Boston agent — will be used on the following new work: Lodge at Bunker Hill, Boston, A. H. Vinal, architect; Gate House, Waterbury, Conn., D. W. Cole, city engineer; three

COURT OF AN APARTMENT, CHICAGO, SHOWING USE OF WHITE ENGLISH-SIZE ENAMEL BRICK OF SECOND QUALITY INSTEAD OF COMMON BRICK WHITEWASHED.

buildings for Mr. Larz Anderson, Brookline, Mass., Fox & Gale, architects; Library, Grand Rapids, Mich., Shepley, Rutan & Coolidge, architects; group of hospital buildings, Washington, D. C., Shepley, Rutan & Coolidge, architects. The last named will require nearly twenty-five hundred squares of tile.

Charles Bacon, Boston agent, reports the following new contracts for Sayre & Fisher Company brick: Carney Building, Boston, Hartwell, Richardson & Driver, archi-

DETAIL BY LOUIS CURTISS, ARCHITECT.
Northwestern Terra-Cotta Company, Makers.

DETAIL BY AMOS W. BARNES, ARCHITECT.
New Jersey Terra-Cotta Company, Makers.

tects; Old Colony Trust Building, Boston, Shepley, Rutan & Coolidge, architects; Foster Building, Boston, Winslow & Bigelow, architects; Mercantile Building, Cambridge, Mass., J. A. Schweinfurth, architect.

ASPHALT.

THE term asphalt is used improperly to designate a variety of substances ranging from a coal tar compound so soft that on a warm day it is easily punctured by an umbrella stick, to a material so hard that it appears to have all the wearing qualities of granite. Properly speaking, asphalt is a product obtained by crushing a

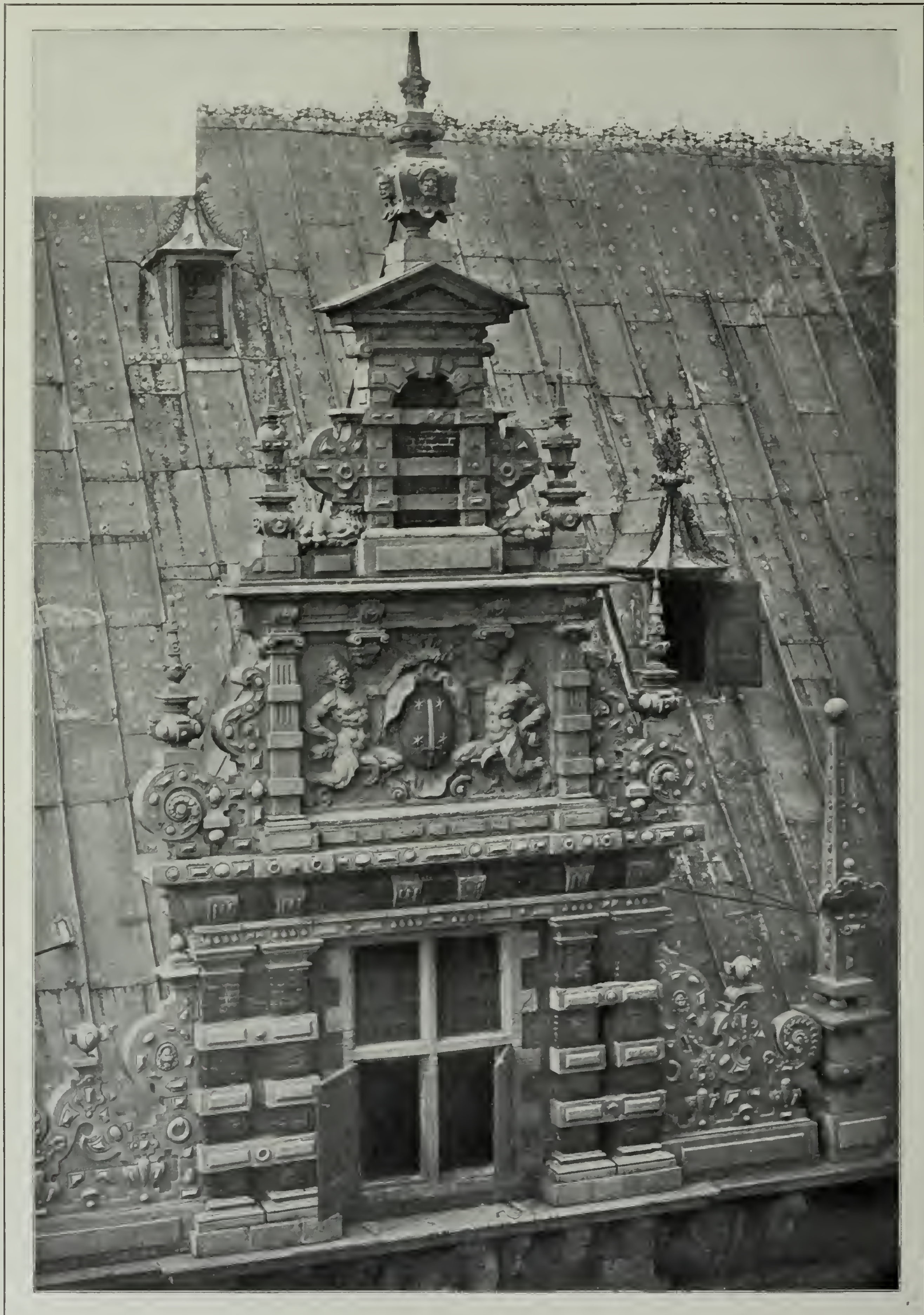
SUBWAY, SOUTH TERMINAL STATION, BOSTON.
Shepley, Rutan & Coolidge, Architects.
Lined with American Enamel Brick and Tile Company's Brick.

species of limestone which is very strongly impregnated with mineral oil and mixing it with a natural pitch which is collected in the remarkable asphalt lake of the island of Trinidad opposite the mouth of the Orinoco. An oil is added for a flux, the whole is melted together and then mixed with a certain proportion of sand. Next to thoroughly hard-burned paving brick, asphalt is probably one of the best materials for covering sidewalks and roadways which we have. A comparison, however, of even the best of asphalt and the paving brick shows that the former is not only far more expensive but is more difficult to lay properly, and is not so durable, while paving brick for public highways is practically the only material which can be satisfactorily patched after being cut into.

THE BRICKBUILDER.

OCTOBER,

1902.



DORMERS OF AN ANCIENT MARKET HOUSE, HAARLEM, HOLLAND.

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NO. 10

THE BRICKBVILDER

OCT.
1902

THE BRICKBUILDER.

PUBLISHED MONTHLY BY

ROGERS & MANSON.

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WE received a call the other day from a young man seeking a situation as a draughtsman, who announced as one of his strong qualifications for the position that he was a graduate of the Mechanic Arts High School. We have the greatest respect for the work which has been accomplished by the high schools of this description which have sprung up so numerously in our larger cities within recent years. They are to be encouraged in every respect and the men they turn out are usually a credit to the institution from which they graduate, but to assume that such schools are intended to turn out architects is, in our opinion, to entirely misunderstand the aim of such establishments. In all of these we believe a certain amount of architecture is taught in more or less detail, and quite rightly, but the curriculum is, or at least should be, planned with the idea of making educated, intelligent mechanics rather than architects. The paths of study of the builder and the architect overlap at times and each has need of some portion of the training specially devised for the other, but it is not being fair to our young men to let them imagine that the training they can obtain in the Mechanic Arts School is such as could properly fit them for the practice of architecture, unless it is supplemented by a course of study at one of the regular architectural schools. Architecture is an extremely fascinating profession and the architect occupies a position which might strongly attract a young man who has his own way to make in this world. We frequently find such whose ambition is larger than their pocketbooks undertaking to follow the evening courses of the high schools and hoping, having graduated therefrom, to work into the profession through the routine of the draughtsman's work. But we feel that it is no more than fair to such young men that they should be plainly told of the unlikelihood of their achieving any measure of success in architecture without architectural training at a regular architectural school. The way is long, tedious and costly, but the time has gone by when mere ambition and willingness to work can lift one to an honored position in the profession unless it is accomplished by a thorough and fundamental training. The Mechanic Arts High Schools are not for architects. We believe a young man will waste his time going to these schools as compared to attendance at one of the architectural colleges, and the practicing architect who every week has to encounter young men who are anxious to begin the strife which for years has absorbed so much of his energies is doing nothing but a kindness when he paints in the strongest colors the absolute necessity of architectural school training.

THE country is certainly to be congratulated upon the move which has been made at Washington to adequately equip and furnish the Presidential Mansion. The work has been most thoroughly designed by McKim, Mead & White and it is being carried out in a way which insures its being lasting in its character. The President lives in the White House only during his term of office, and apparently never before has a President felt enough personal interest in the building to have it put in proper order. The dignity of the office requires that the nation should have a suitable official residence for its head magistrate. The changes which McKim, Mead & White are making, while extending even to fundamental matters of construction, leave the essential characteristics of the White House untouched. It is not generally understood that the present front entrance of the mansion was originally intended as a service entrance, the idea being to have the house face on the magnificent lawn which sweeps down towards the Monument. Questions of convenience and the development of Pennsylvania Avenue have reversed conditions somewhat, but the present alterations are intended to in a measure revert to the original arrangement. It is interesting, by the way, to note that the legend of the White House being copied from some manor house near Dublin has been definitely exploded. Mr. McKim, we have been told, has had a number of photographs taken of the reputed prototype of the White House, which show a very different structure from the Presidential Mansion.

The Crematorium.

BY JOHN W. CASE, R. S.

THE design for a crematory which is here illustrated is intended to be an example of the æsthetic use of scientific building construction, in forms peculiar to metal and burnt clay, freed from archæological influence. The building material throughout is incombustible; the framework of metal covered with burnt clay fire-proofing; the walls, ceiling and floors finished in tile, marble or cement, affording no lodgment for germs and permitting frequent cleansing. The exterior of this crematorium consists of glazed burnt clay products, colored delft blue and white.

In plan the design contemplates an advance on present methods of incineration, for the building is planned for a process which will reduce the body to a sanitary condition for earth burial at a maximum time of thirty minutes. The hearse drives into the basement of the building, the body is removed and placed in the receiving room connected with a pharmacy and a room for autopsy. Delicate electrical tests are here made to detect suspended animation. The body is then placed in a vault awaiting the time of incineration, or the relatives and pallbearers attending in the waiting-room proceed with the body to the chapel where the friends of the deceased are assembled. Here the body is placed in the upper part of the incinerator in full view of those assembled in the chapel. The incinerator is then closed, so that the actual process of incineration is not seen. During the funeral service the incineration is completed, and at its close the remains, enclosed in a small metal receptacle, are removed from the incinerator in full view of the chapel so there can be no question as to the identity of the ashes, which are at once placed in the columbarium or committed to the earth in the beautiful grounds surrounding the crematory, thus obviating the doubtful practice of removing the ashes of the deceased to a private dwelling. As this crematory is designed to prepare the body for a sanitary earth burial in place of the horrible earth burial as now practiced, it is not necessary that the calcareous parts be reduced to a powder. The body thus returns to nature whence it came, and the crematory becomes a temple dedicated to eternal life.

The development of cremation is not due to sentiment, but is the result of necessity. The practice of burying the dead is a relic of barbarism. Placing the body in the ground to undergo the revolting process of decomposition is an indignity to the dead and a source of deadly contamination to the living. That the cemeteries are breeding places of disease was recognized in Europe about 1800. The danger of burying the dead was realized and the necessity of cremation became apparent. One of the earliest crematories in Europe was built at Milan, Italy, in 1874. Now nearly every important town in Italy has a crematory. The first modern crematory in Germany was built at Dresden in 1874. In Paris the crematory at Père la Chaise was built in 1887. The first crematory in the United States was built at Washington, Pa., in 1876. In 1900 there were 24 crematories in the United States. From 1876 to 1883 25 cremations took place in the United States. In the year 1900 2,414 cremations took place in the United States. These figures show a large percentage of increase, but it is surprising that the increase is not larger. The reasons are simple. Few people realize the horrors of earth burial and few understand but vaguely the process of cremation. The custom of earth burial has been established for hundreds of years. People hesitate to change the custom of earth burial and dread to take active means which change the form of the dear departed, although a most horrible change takes place from earth burial. If resurrection of the body is to take place in the exact likeness of its earthly form, still resurrection is a miracle, whether from dust of the earth or ashes of cremation.

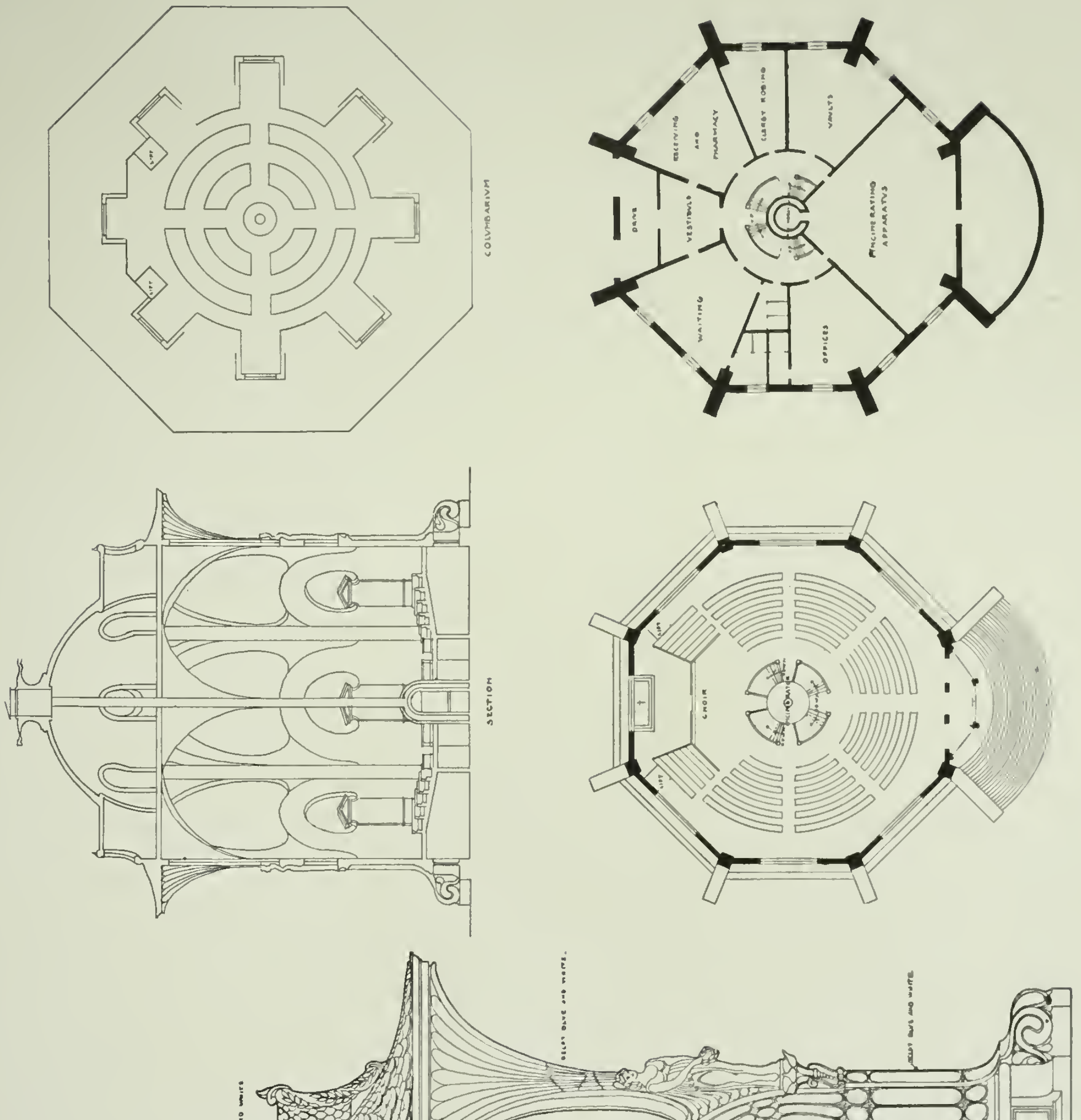
Modern cremation dates from about 1870, but cremation has been practiced by all races of people from the most ancient times. The Egyptians, Greeks, Romans, Chinese and other nations of antiquity practiced cremation by means of the funeral pyre, a primitive and barbarous method, which was alternated according to the belief of the ruling class from cremation to earth burial or embalming. In Greece the origin of cremation was due probably to the custom of burning the dead on the field of battle.

In both cremation and earth burial the process is one of burning: in the earth slow, repulsive, dangerous; in cremation, quick, scientific, sanitary. In cremation the intense heat causes oxygen to unite with the carbonaceous elements of the body; the resulting carbonic acid gas, ammonia and water are driven out into the air. In the retort are the ashes, pure oxide of lime. Thus the elements of which man is made are quickly and decently returned to the source from which they came, clean and pure. The water ascends to the clouds, while the ammonia and carbonic acid return to the soil to nourish the plant. The lime remains to be returned to the earth.

It hardly seems possible that earth burial can continue, but the love of the cemetery, the hallowed spot, occupies the mind and glosses over its real character. It is the family burial place, with its green mounds shaded by drooping boughs casting shadows across the gray stones inscribed with revered names. Religion, poetry and custom hallow for us this quiet resting place, emblem of eternal repose. Many a man has turned back to a better life, animated with hope and high resolve after such a visit. But if the mind's eye should penetrate beneath the flower-strewn sod to the festering mass below, what a revolting contrast would result! Let us keep this sacred, hallowed spot, but let us dispel its pestilential horrors and make it a worthy place of eternal rest by placing there the pure and wholesome ashes after purifying the body with the cleansing fires of cremation.

The method of cremation must be improved, the time shortened. Before cremation becomes a universal custom several of its present conditions will undoubtedly be modified. Although the time required for complete incineration has been reduced from four hours at the Washington crematory, the first one built in America, to one and one half hours, the time required by a modern incinerator, the time is still excessive, but with the perfection of new systems the time will probably be reduced to an outside limit of thirty minutes. It does not seem necessary to reduce the mineral parts, the bones, to a powder.

Earth burial should accompany and supplement cre-



DESIGN FOR A CREMATORIUM. John W. Case, Architect.

mation. The practice of placing the ashes in urns to be taken to the dwelling of the relatives or to be placed in a specially constructed building, the columbariun, is subjecting these remains to the possibility of indignities, due to the vicissitudes of fortune, the change of the dwelling place with its consequent confusion. The columbarium itself may outlast several generations, but cannot be permanent, and ultimately the ashes will return to the earth, where indeed they belong. How much more fitting it seems to lay the ashes at once in the earth, with appropriate ceremony, where they may resume their functions in nature's system.

The idea of burning, the annihilation by fire, is an extremely repugnant and painful one, which should be replaced by the idea of chemical change. The words incinerator and incineration are not so vividly suggestive of flames, but still embody the idea of burning. Crematory and cremation are words sufficiently abstract. Some new process of chemical dissolution may furnish better terms to characterize the process, as, for instance, vaporization.

In nearly all modern crematories the body is lowered through the floor of the chapel in which the services are held to the incinerating chamber below. Although a glass plate in the incinerator allows the process to be seen by a few persons, still there is the possibility of a doubt in the minds of the persons who remain in the chapel as to the identity of the ashes. The incinerator should be placed in the chapel itself where all present may see the body placed in the incinerator and the ashes removed therefrom, although the actual change of form of the body should not be seen.

DATA.

The modern crematory furnace requires about six hours of heating to generate sufficient heat for the incinerator, between two thousand and three thonsand degrees Fahrenheit. The time required to incinerate the body varies according to the weight, from forty-five minutes to one and one half hours. The amount of fuel varies in the different kinds of furnaces. The Davis furnace at Lancaster, Pa., requires for an incineration two hundred and fifty pounds of coke and two hundred and fifty pounds of anthracite coal. The remains of incineration, which consist of pure oxide of lime, calcined bones, weigh from four to six pounds. The average charge for an incineration in America is twenty-five dollars. At Père la Chaise, Paris, the actual cost of an incineration, after the furnace is heated, is sixty to eighty cents.

SYSTEMS OF INCINERATION.

The European systems of incineration are more expensive in construction than the American. The principal ones are the Gorini and the Venini. The Gorini system uses an artificial bath of lava in which the body is consumed. The resulting ashes are lighter than the lava and float on the top. The Venini system is used at the Buffalo, N. Y., crematorium. The time required to heat the furnace to twenty-five hundred degrees Fahrenheit is one and one quarter hours. The body is consumed in about one hour. The fuel required, one half cord of wood. The process consists of two operations — the generation of gas and the cremation. The gas generator, A, located in the basement, is a fire pot four feet high and two feet wide. Air for combustion is admitted at the bottom, where the small fire distills the wood above. These gases pass to the rear end of the incinerating chamber, B, where they meet heated air from another chamber and are ignited at the point of union by an auxiliary flame. The Bunsen flame thus made is projected across the incinerating chamber, thence by the flue F it passes to a chimney and is again burned by an auxiliary Bunsen burner in the flue and in the chimney. In this system the flames come in direct contact with the body wrapped in an alum cloth. The Schneider system used at Cypress Lawn Cemetery, San Francisco, and at Hamburg, Germany, is similar to the Venini.

At Mt. Auburn, Cambridge, oil is used for fuel. It is blown in a fine mist into the chamber, where it burns readily, the heat being intensified by the addition of air under a pressure of eighteen ounces. A temperature of three thousand degiees Fahrenheit is obtained. To insure the complete combustion of all the gases from the body they are forced into a second chamber where the burning is duplicated. The power to force in the air and oil is obtained from an electric motor in a subcellar forty feet from the incinerator, so that no noise of active operation may be heard.

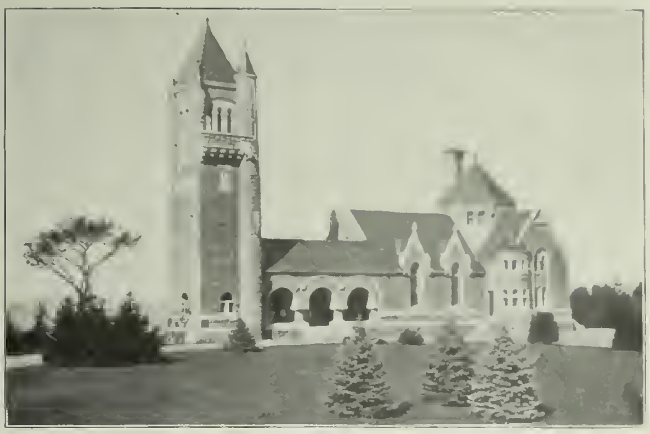
The Davis system is used at Lancaster, Pa. The furnace is constructed of fire brick. Outside dimensions, 10½ x 6½ feet. Cost of furnace, $1,200 to $1,500. The flames do not come in contact with the body. The chimney projects but a few feet above the roof. Combustion is complete. No injurious gases are given off.

In all these systems the time required to incinerate an adult is about one hour and a half, which is too long by half. The body, too, is almost invariably lowered from the chapel to the incinerating room, where the process can be seen by few.

The discovery of liquid air gave promise of better results. Liquid air is to be used as a means of obtaining liquid oxygen, which, injected into the electric furnace, greatly increases the intensity of the furnace. As liquid air vaporizes, the nitrogen and other gases evaporate first, leaving the oxygen to be brought into the incinerating process. Combustion under these conditions would be very rapid.

REQUIREMENTS OF THE INCINERATOR.

There are several important considerations in regard to the construction of a furnace. It must be built economically and also must operate economically. The walls should be built to retain the heat, that no loss may be sustained by radiation. They must also sustain the great strain of alternate heating and cooling without dislocation. The furnace should be able to incinerate several bodies at the same time, keeping the ashes separate and allowing for their removal, so the furnace may be operated continuously, for the initial heating requires most of the heat. After the furnace is heated, but little fuel is required for the incineration itself. Combustion must be complete so that no poisonous gases or smoke may escape into the atmosphere. The incinerator should be located in a chapel so that all present may see the body placed in the incinerator and the ashes removed, that no doubt may arise as to the identity of the remains. The actual disintegration of the body should not be seen.



THE GARDNER EARL MEMORIAL CHAPEL AND CREMATORIUM, TROY, N. Y.

A sheet soaked in alum water will retain its shape until disintegration is complete.

TYPES OF CREMATORIES.

There are several types of crematorium plans. The Buffalo crematory is a church plan. The preparation room, B, is located at one side of the chancel, C, and the incinerating room, D, at the other side of the chancel. The body is placed on a car, G, is rolled into the chancel, where the service is said, and then rolled on into the incinerating room. The congregation are seated in the body of the chapel, A. The building is 70 x 60 feet, built of stone, picturesque roofing. It is a stock company, capitalization $15,000.

In both the Milwaukee crematory and the crematory recently finished at Montreal, a conservatory for plants is one of the main features. At Milwaukee there are two conservatories, one at each end of the chapel, so arranged as to form part of the chapel by moving a glazed partition. At Montreal the conservatory is the principal part of the design. It is built of steel and glass,

RECEPTION ROOM — SHOWING INTERIOR OF RETORT, GARDNER EARL CREMATORIUM.

82 x 41 feet. It is used as a waiting-room and connected to the crematory by an antechamber.

The New York crematory is surmounted by a dome which admits light and also serves as a columbarium The first and second stories open into one another and are encircled by a gallery.

In the crematories at San Francisco, cement and tiles have been extensively used. The floors are cement covered with rubber matting; the walls are covered with glazed tiles, which form a good substitute where the more expensive construction cannot be used. A crematory for contagious disease is built in connection with the San Francisco crematory but entirely separated by a brick wall. The floors, walls and ceilings are of cement. The columbarium built in connection with the San Francisco crematory is in plan a Greek cross, the ends of the arm connected by two concentric circular walls. The construction is of steel and cement, the walls completely indented with niches for urns, reached by stairs and galleries.

INTERIOR OF CHAPEL — LOOKING SOUTH FROM CHANCEL, GARDNER EARL CREMATORIUM.

The St. Louis columbarium has the receptacles for urns along the walls. A marble wainscot five feet high is divided three feet above the floor by a horizontal slab, vertical divisions three feet apart, from compartments within which are small vaults. The largest ones at the bottom lease for ninety-nine years for $100 to $150; the ones above, $45 to $60. Stairs and galleries give access to similar smaller compartments surfaced with oxidized bronze. These lease from $25 to $40. The basement is fitted with japanned metal shelves which lease for $10.

REQUIREMENTS OF THE CREMATORY PLAN.

An auditorium or chapel where the funeral oration or religious services may take place, capable of seating three hundred to five hundred people; with organ, choir seats, altar, robing rooms, etc

Incinerator located in the chapel, where it can be seen, and connected with apparatus and fuel rooms below

Waiting-rooms connected with chapel and with toilet rooms.

Vaults where the body may be kept awaiting the time of incineration.

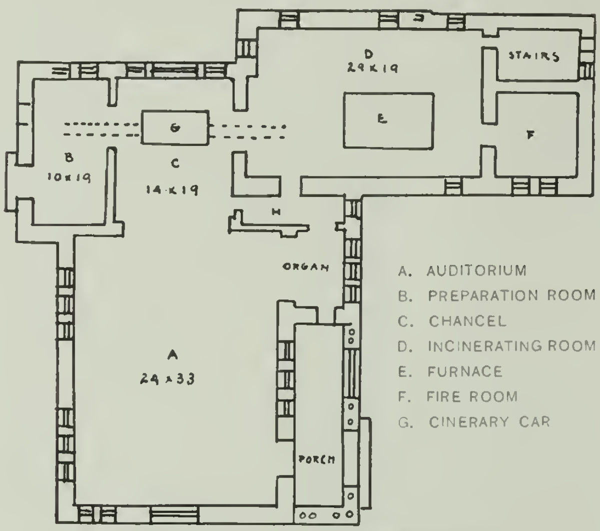
Receiving room connected with pharmacy and provided with delicate apparatus for detecting suspended animation and administering restoratives.

Dissecting room where autopsies may be conducted to discover poisoning cases, etc.

Office for registration, payment of fees, etc.

Power plant, at a distance that no noise may be heard, to furnish power for heat, light, forced draught, etc.

The system of construction should be fire-proof, at least in all parts of the building in immediate connection

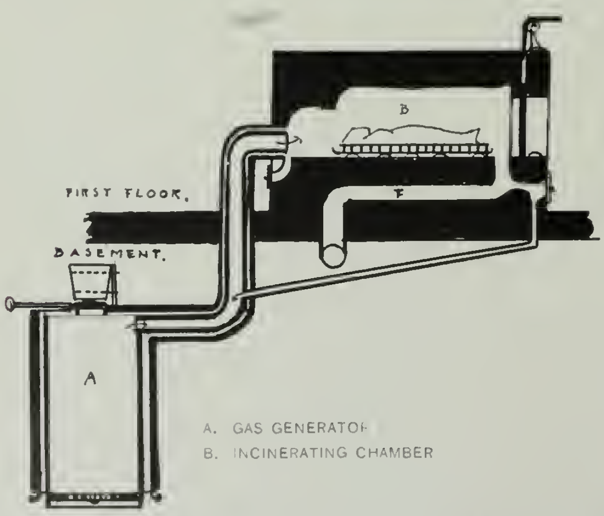


GROUND PLAN, BUFFALO CREMATORIUM.

with the furnace, and it should be sanitary, allowing no lodgment for disease germs, and admitting frequent and convenient cleansing and disinfecting. The ceilings, walls and floors should be marble, tile or cement; the floors should be covered with rubber tiling to prevent noise. All operations should be noiseless, signals being used to obviate talking by the operator.

Space should be allowed for additional incinerators due to increased demand.

In connection with the receiving room a courtyard or enclosed part of the building might be arranged into which the hearse enters before removing the body, thus securing privacy and protection from the weather.

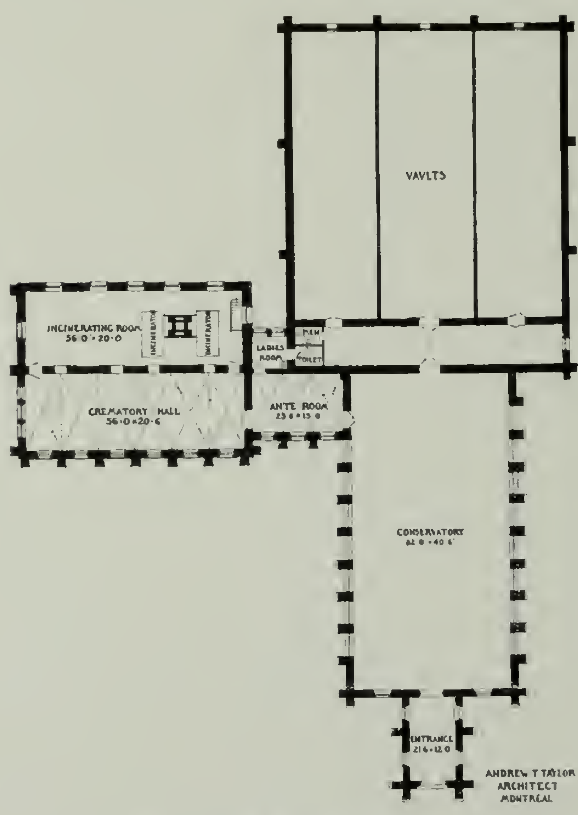


FURNACE OF THE BUFFALO CREMATORIUM, VENINI SYSTEM.

The body, properly prepared at the house, should be free from further handling, subject, however, to the tests for suspended animation. No preparation of the body could take place until the physician's certificate of cause of death had been procured. If incineration is not to take place immediately, the body so soon as received should be placed in a strong vault where it may remain in absolute security. The responsibility of the undertaker ceases when the body is received in the crematorium, which must be in charge of a thoroughly efficient officer.

The architectural form of the crematory must express the character of cremation, not in gloom, not in repellent somberness, but with hope and confidence in a new and higher life.

Sorrow at parting with the physical form of the loved ones is to be replaced with consolation of the spirit freed from its physical infirmities. The crematory cannot be a mere burning place; it must be a sacred temple dedicated to the eternal resurrection, scientific or theological, still one in essence.



PLAN, CREMATORIUM, MOUNT ROYAL CEMETERY, TORONTO, CANADA.

Such a building cannot be placed brutally on an open street subject to the vicissitudes of every passing accident. Embowered in its sacred enclosure, approached by a dignified and monumental way through lawns where repose the ashes of former generations, its noble and beautiful walls enriched with tablets commemorative of the illustrious dead, the crematorium becomes a hallowed place incentive of great and noble aspirations and an emblem of the life eternal.

BIBLIOGRAPHY.

For a very complete account of cremation see Dr. Hugo Erichsen's "Cremation of the Dead." Detroit: Haynes & Co. For a description of crematories, statistics and bibliography see "A Quarter Century of Cremation in North America," by John Storer Cobb. Boston: Knight & Millet.

The Interesting Tile Work of "Dreamwold."

FIREPLACE tile are usually one of three varieties, — unglazed, bright glazed or those having a dull glaze on surface. Of these the unglazed tiles have generally the same material throughout. Among these may be included the brick facings and tiles made in the shape of bricks. The bright tiles would include plain tiles and those having a pattern stamped from an iron die and baked to a biscuit. The glaze or surface to either of these varieties would be applied afterwards and the entire tile baked until surface material is fused to the under tile.

There is, however, no reason why this modeling should not be done by hand and the quality of the workmanship bettered, but the question of glaze is another matter, for the hard glassy surface rarely seems to fit into the home, but to stand out bright and staring instead of remaining in the plane of the fireplace.

In the dull glazed tile these objections are removed and the surface of the facing seems to form a part of the adjacent walls and to rest within its fireplace framing as though perfectly contented. Such a tile with its dull surface resembling the pile of a velvet with all its deep tones, in mossy green, warm gold, deep or cool blues, grays and purples, has been for several years used extensively in the better class of work, but in Dreamwold, the farm of Thomas W. Lawson, Esq., at Scituate, Mass., the architects have tried to get away from this conventional treatment.

For the dining-room fireplace an excellent model was made by the sculptor, Russell G. Crook, and then most wonderfully glazed by the manufacturer. A word as to the design of the room that contains this facing may be in order. The walls are paneled to the ceiling and have a color resembling sandalwood. On these panels are painted conventionalized bunches of grapes, ears of corn and other farm products. The chandelier is a huge pumpkin, and the breakfast alcove chandelier and also the wall brackets are made up of pumpkin blossoms and leaves in their natural colors. To harmonize with this the fireplace facing starts on each side with a huge golden pumpkin on a very dark blue background. On this background the vine wanders over the top with its green leaves and bright yellow blossoms and even flows out on to the hearth with a few leaves that seem to keep the pumpkin just where it was intended to be. By means of these dull tones the fireplace, although singing in the highest tones of yellow and green, still remains a fireplace, facing on the same plane as the wall paneling and embracing the two huge bears by Crook that form the andirons.

Particular mention is perhaps due to this facing because it marks a new era in tile work, — the introduction of hand-molded and hand-decorated work in high relief, in what has up to this time been occupied by the plain tiles or a highly glazed machine product.

The facing of the living-room fireplace shows a grapevine in relief on a light gray-blue background with purple grapes and green leaves, while two small bunnies are playfully introduced near the floor.

In the library and other rooms of the house a different phase of tile work is introduced which can be best compared to the Japanese cloisonné ware, which is made on a copper background with little rules or cloisonnés of copper separating the different parts of the design. Into these various spaces formed by the cloisonnés is poured the enamel, and these lines keep the various colors each in their separate compartments and form a golden line between them. The manufacturers have taken this idea and have applied cloisonnés of the tile material to the biscuit tile. In between these lines all painted in flat tones are the colors that form the pictures. The effect of the heavy lines is most interesting, and in some ways they resemble the strong outline of a Dürer print.

Just in front of the first pair of oxen shown in the library fireplace can be seen five different planes of landscape and these all stay in their proper relations to each other, and despite these planes the facing is a purely mural decoration which stays on the wall like a Puvis de Chavannes.

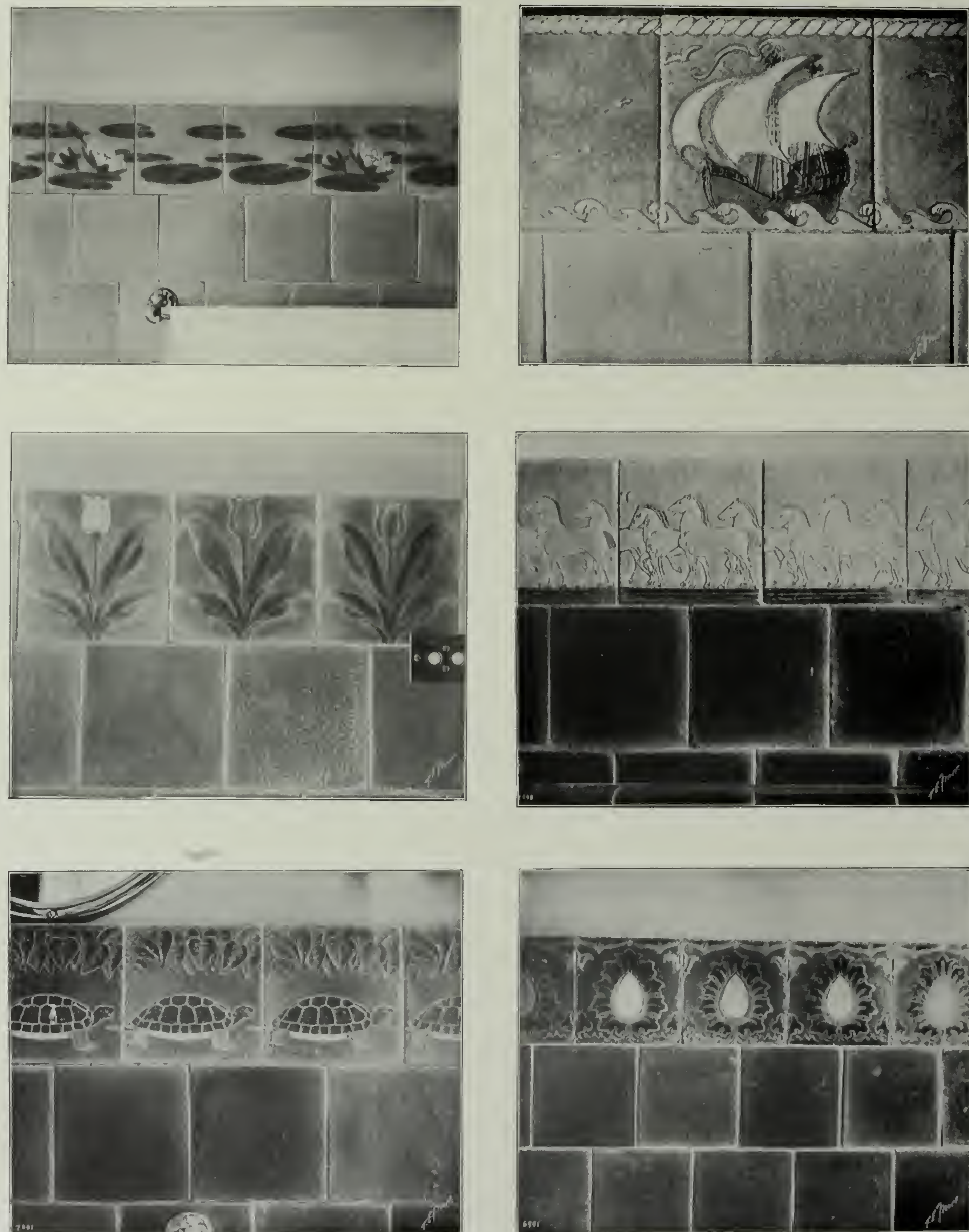
The fireplace having the design of a tree on the left-hand side, with the river winding back of it, is by Vesper George and shows a wonderful distance from the immediate foreground to the deep purple mountains with the cloudy sky beyond. Another of Vesper George's designs is the one representing the spinner and the nurse. Another is a half-burnt candle in a green candlestick on a gray-green background, and still others represent haycocks and apple trees.

One of the most interesting features of the house is the tile decoration of the bath rooms and the conservatory that are tiled up about four feet high with specially designed cappings. One of these designs represents a line of turtles walking on the golden sands of a tropical desert, while over them hangs rather primitive leaf work in green. Another bath room has a line of galleons separated by tiles whose only decoration is formed by a few gulls flying over the conventional water, in a lighter tone of blue than the blue of the background of the ships. One of the most effective patterns is formed by three separate tiles which make an interchangeable pattern of water lilies so that the flowers themselves can be put at the most interesting points on the wall and the filling formed by the plain green lily leaves on a gray-blue water, which forms the wall tile. Another bath room shows the tulip in alternating purple and yellow blossoms, with the leaves and background in two shades of green: still another has a more or less Persian ornament in purple, yellow and green; while the owner's own bath room is a never ending procession of horses, as a suggestion of Dreamwold's hundreds of horses, on a light blue background, with the walls and floor of a green tile.

Floors of all these bath rooms are in the same tile as the walls except that they are very much larger and that the conservatory has a gray floor tile without glaze.

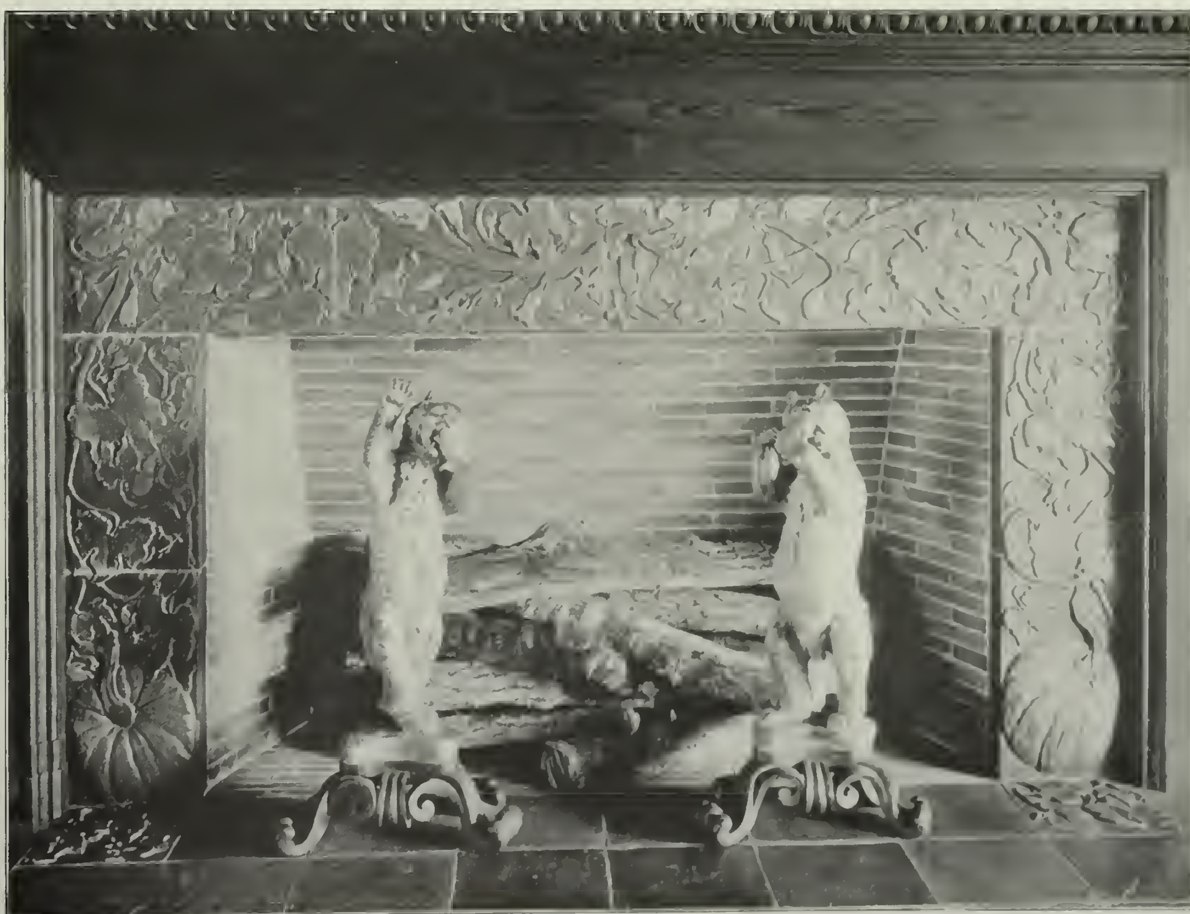
The tile work in the bath rooms is not more expensive than the best quality of white tile and is far more beautiful. The designs for the caps are all made especially for the place, and as these were in repeating patterns with few variations the cost was not excessive. The mantel facings vary in cost a great deal and it is impossible to give any schedule, but it may be safely said that they are not too expensive for the better class of houses.

This entire work was executed by the Grueby Faience Company. Coolidge & Carlson were the architects.



DETAILS OF TILE WORK IN BATH ROOMS, FARMHOUSE FOR THOMAS W. LAWSON, ESQ., SCITUATE, MASS.
Coolidge & Carlson, Architects.

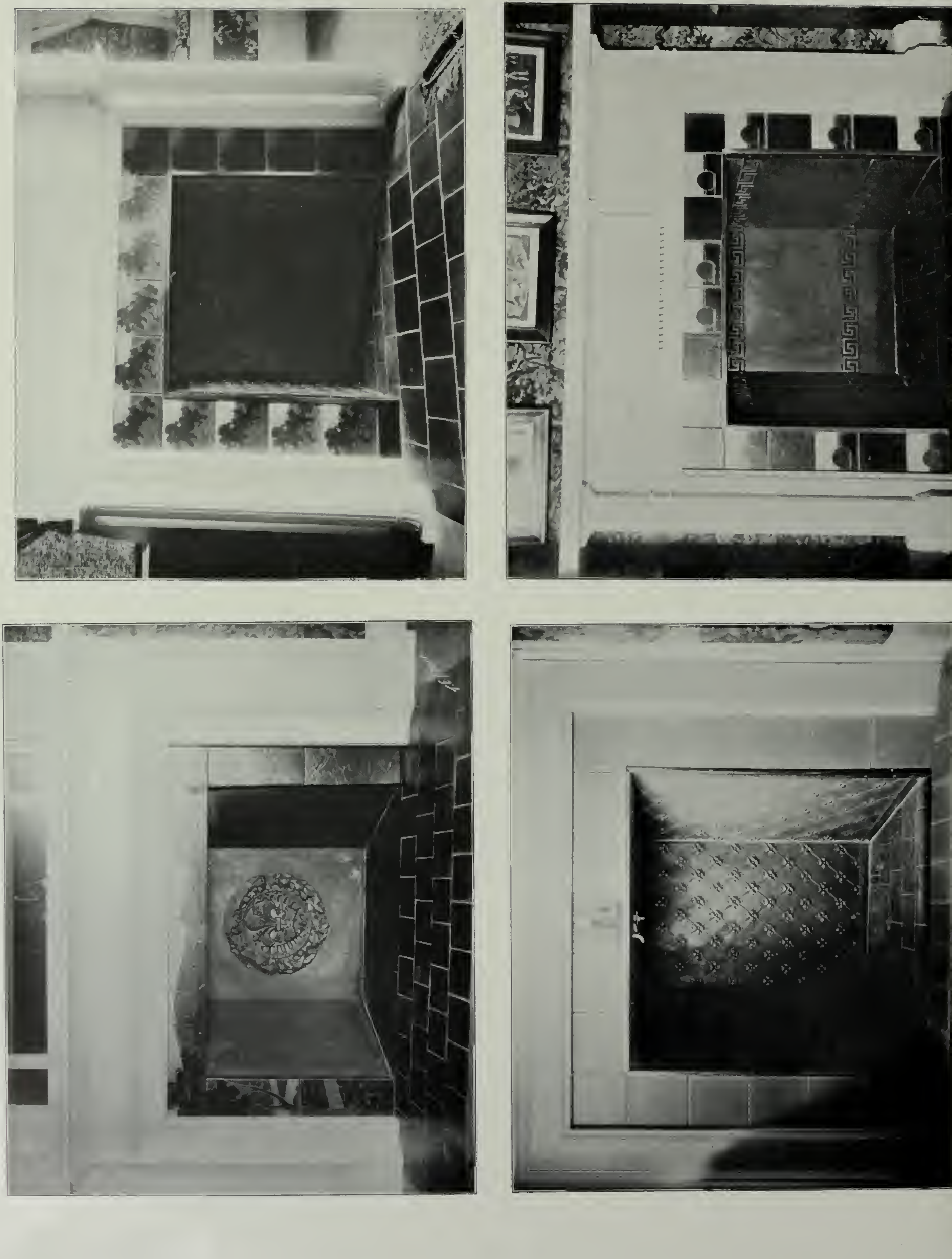
MANTEL IN LIBRARY.



MANTEL IN DINING-ROOM.

MANTELS IN FARMHOUSE FOR THOMAS W. LAWSON, ESQ., SCITUATE, MASS.

Coolidge & Carlson, Architects.



MANTELS IN FARMHOUSE FOR THOMAS W. LAWSON, ESQ., SCITUATE, MASS.
Coolidge & Carlson, Architects.

MANTEL IN CHAMBER.

MANTEL IN LIVING-ROOM.

MANTELS IN FARMHOUSE FOR THOMAS W. LAWSON, ESQ., SCITUATE, MASS.

Coolidge & Carlson, Architects.

Interesting Brickwork in Buffalo.

MUNICIPAL BUILDINGS, INSTITUTIONS, MERCANTILE BUILDINGS AND CHURCHES.

BY ULYSSES G. ORR.

THE larger buildings of Buffalo are almost entirely of brick, there being but one or two of stone in each of the various classes and but few of all terra-cotta. Brick seems to be the building material preëminent. It is used in the smallest as well as in the largest buildings; none are too good for this material, none too poor. It is the building material of the aristocrat as well as the plebeian, and no wonder; brick can be obtained of any desired color

FIDELITY TRUST COMPANY'S BUILDING.
Green & Wicks, Architects.

and of any texture, from the rough, multicolored wash brick through the various grades of pavers to the smooth, close-grained, even-toned brick, or it may be had enameled in any color, with a "wash its own face" surface admirable for some purposes. Buffalo has them all, and a pleasing variety they make.

The newest important municipal building in Buffalo is the Lafayette High School, from designs by Esenwein & Johnson. The detail of main entrance shows the character of the brickwork admirably. A golden-brown Roman brick, with brownstone and terra-cotta trim, was used.

Some clever brickwork is shown in the Public Bath, from plans by Lansing & Beierl. The Morgue, by the same architects, is a combination of brown sandstone and red brick, and would have been much more attractive had the same design been carried out entirely in brick.

The building for Chemical No. 5, planned by E. A. Kent, is a simple and satisfactory example of brickwork in which a standard red brick and red mortar joint were used.

The casino and boathouse at Delaware Park is from plans by Green & Wicks and is laid up in very light cream brick, which, with the red tile roof, has a very pretty setting in the green foliage.

The institutions of Buffalo are almost entirely of brick, and many of them are decidedly interesting.

St. Vincent's Female Orphan Asylum, from plans by Green & Wicks, shows some beautiful brickwork. A standard-shape brick of good texture was laid up in white mortar, with stucco work in the attic story, producing most satisfactory results, as may be seen clearly in the detail views.

The right wing of the Buffalo General Hospital, from plans by George Cary, shows some interesting brickwork in a light buff brick, and gives promise of a very interesting building on the completion of the other wings.

The Buffalo Public Library, designed by Cyrus Eidlitz, is a highly satisfactory job of brickwork done in brick of standard shape.

The Grosvenor Free Library is also in brick and is from plans by R. A. Waite.

The Buffalo Catholic Institute, designed by Metzger & Greenfield, shows some satisfactory brickwork in a light mottled, warm buff brick.

Some very interesting brickwork is shown in Buffalo's medical college, the University of Buffalo and its branches, the Gratwick Laboratory and the Dental School, all from plans by George Cary. A chocolate-colored wash brick of beautiful texture was used in the main building, shown nicely in the detail of main entrance, and pavers, with plenty of variety of tone, were used in the Laboratory and Dental School.

Only a few of the mercantile buildings can be included in this article, space not permitting of a fuller representation, and the larger buildings have been omitted as being hardly suitable for reproduction at the small scale necessary.

One of the newest of these buildings is the Fidelity Trust Company's building, not yet completed, from de-

MAIN ENTRANCE, LAFAYETTE HIGH SCHOOL.
Esenwein & Johnson, Architects.

signs by Green & Wicks. A red brick of good color laid up in Flemish bond in white mortar makes a simple wall surface of excellent texture.

The Chapin building, designed by E. A. Kent, shows some interesting brickwork in a light buff Roman brick.

The Palace Arcade, designed by Green & Wicks for Mr. George B. Mathews, is an interesting example of light golden Roman brick with plenty of variation.

PUBLIC BATH. Lansing & Beierl, Architects.

MORGUE. Lansing & Beierl, Architects.

BUFFALO GENERAL HOSPITAL. George Cary, Architect.

UNIVERSITY OF BUFFALO. George Cary, Architect.

WELCOME HALL. Green & Wicks, Architects.

BUFFALO CATHOLIC INSTITUTE. Metzger & Greenfield, Architects.

CASINO AND BOATHOUSE. Green & Wicks, Architects.

PALACE ARCADE. Green & Wicks, Architects.

BRICKWORK IN BUFFALO, N. Y.

AMERICAN EXPRESS COMPANY'S BUILDING.
E. H. Kendall, Architect.

CHEMICAL NO. 5.
E. A. Kent, Architect.

MILLER STABLES.
Lansing & Beierl, Architects.

CHAPIN BUILDING.
E. A. Kent, Architect.

DETAIL, J. N. ADAM BUILDING.
Green & Wicks, Architects.

GRATWICK LABORATORY, UNIVERSITY OF BUFFALO. George Cary, Architect.

MAIN ENTRANCE, UNIVERSITY OF BUFFALO. George Cary, Architect.

DENTAL SCHOOL, UNIVERSITY OF BUFFALO. George Cary, Architect.

GLENNY BUILDING.
Green & Wicks, Architects.

BRICKWORK IN BUFFALO, N. Y.

ST. VINCENT'S FEMALE ORPHAN ASYLUM.
Green & Wicks, Architects.

DETAIL, CHAPEL, ST. VINCENT'S.
Green & Wicks, Architects.

MAIN ENTRANCE, ST. VINCENT'S. Green & Wicks, Architects.

BUFFALO PUBLIC LIBRARY. Cyrus Eidlitz, Architect.

GROSVENOR FREE LIBRARY. R. A. Waite, Architect.

FIRST BAPTIST CHURCH. R. A. Wallace, Architect.

CHURCH OF THE MESSIAH. Green & Wicks, Architects.

FIRST CONGREGATIONAL CHURCH. C. D. Swan, Architect.

BRICKWORK IN BUFFALO, N. Y.

The American Express Company's building is an excellent example of brickwork of good character, from plans by E. H. Kendall.

An interesting combination of golden Roman brick and white glazed terra-cotta is shown in the detail of the J. N. Adam building, designed by Green & Wicks.

The Miller stables, from plans by Lansing & Beierl, is an interesting example of red brickwork.

More of Buffalo's churches are of stone than any other class of buildings. The later ones, however, are of brick.

The Church of the Messiah, from plans by Green & Wicks, shows some beautiful brickwork in light golden shades, Roman brick of good color and excellent variety of tone having been used.

One of the modern ideas in church architecture is shown in the spireless First Baptist Church, in which a pleasing light golden Roman brick of excellent texture and good variety of tone was used.

CHURCH OF THE DIVINE HUMANITY.

He is, in truth, a dull man who never takes time to smile, and a good laugh is excellent medicine. So the Church of the Divine Humanity is offered, with due apologies to the architect, whosoever he may be, to furnish good and sufficient provocation for at least a smile. When this church was being built a description, most carefully and laboriously prepared, was published in the local papers, and an extract is now quoted on the principle that when one runs across a good thing it should be passed along.

"The building is constructed with a skeleton framework of built-up timbers formed and interlocked in such a manner as to make it exceedingly strong. It is composed of dry scantlings and plankings dressed to uniform size and doweled together with wire nails. This frame is covered with matched plankings, dressed, forming the interior wall finish. This is covered externally with damp-proof felting and faced with an epidermis of pressed-brick work anchored to this wood framing, . . . and is considered a better non-conducting jacket than the ordinary stone or brick wall."

Fire-proofing.

The Johnson System of Floor Construction.

BY PETER B. WIGHT.

THE progress of economic fire-proof floor construction has of late years taken the direction of an endeavor to do away with I beams as far as possible. The modern fire-proof building consists of an exterior wall of any approved material and construction, and an interior carried on the requisite number of steel posts. It is divided into rectangles by these posts which stand at their corner intersections. These interior posts stand at distances apart in both directions which are the result of a just compromise between the exigencies of the plan and the method to be employed in the floor construction. Up to this point the construction of fire-proof buildings is practically uniform because interior dividing brick walls have been practically abolished.

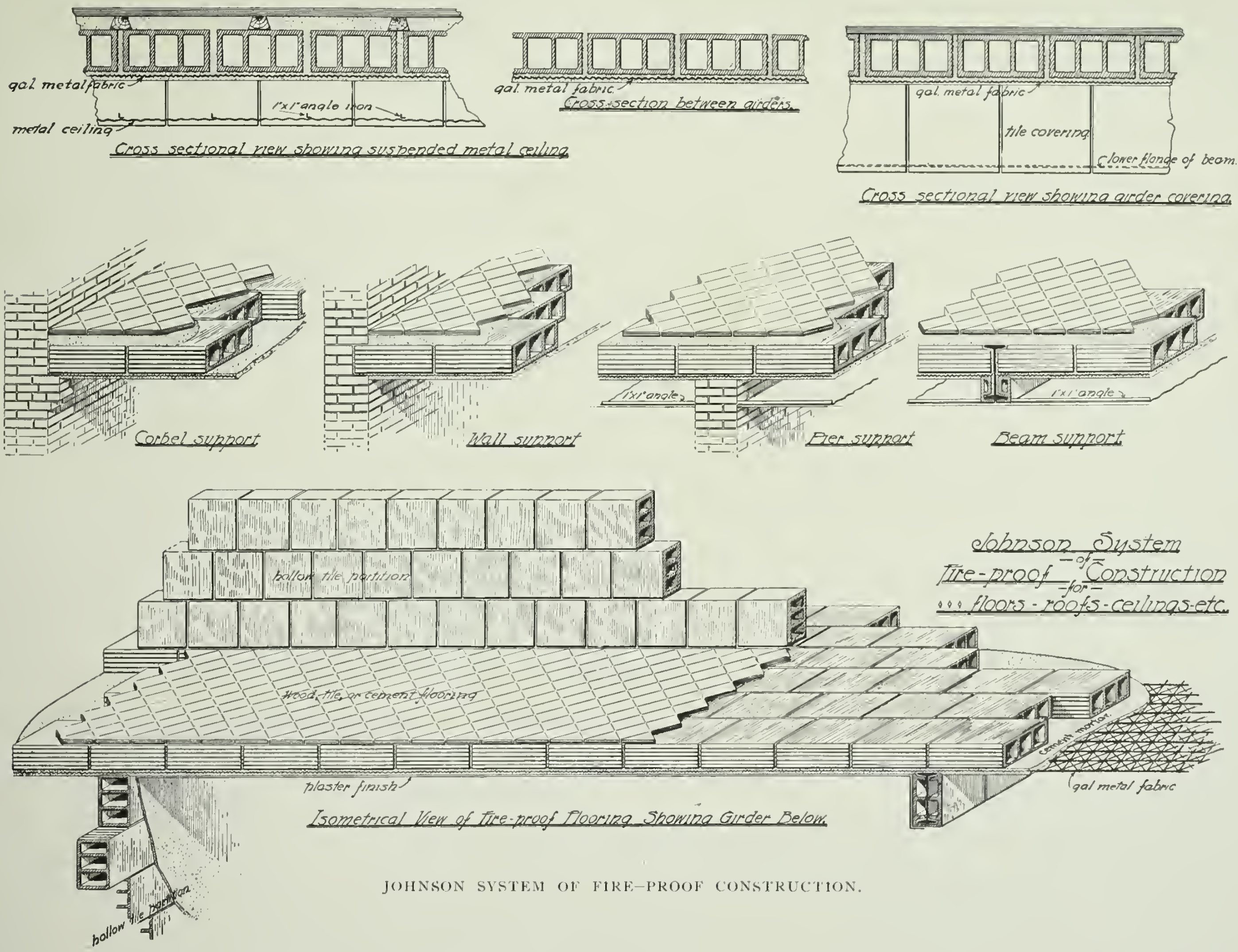
In determining what system of floor construction to employ a departure may now be made in at least three directions. The time-honored system of girders in one direction, to take the whole weight of the floors, crossed by I beams in the opposite to support fillings between them, is generally used. In this the beams also carry the whole weight of the floors, while the fire-proof filling carries mainly the weight between the I beams, though acting as a stiffener in both directions. This system admits of long bearings for girders and wide spaces between them spanned by the I beams which range up to about twenty-four feet. It is the most extensive of the systems now used.

Another system admits all the girders and I beams, and introduces struts from column to column in both directions, which are not subjected to transverse strains but act both in tension and compression according to circumstances. The remainder of the floor construction consists of a laminated domical arch of slight elevation, made of hard tiles, the thrust and weight of which are carried directly to the steel posts. This is known as the Guastavino or timbrel construction, and has already been described in THE BRICKBUILDER (see issues of April, May, September and October, 1901). It has been used for floor subdivisions up to 19 x 25 feet.

A third method retains the steel girders and seeks to do away with the I beams entirely, only retaining small I beam struts between the columns in opposite directions to the girders, for maintaining the rigidity of the steel skeleton. This method has been the occasion for a vast amount of experimentation during recent years. The possibility of doing away with the expensive I beams entirely and still preserving the flat ceilings has been too great a prize to escape the observation of inventors, and grievous have been the blasted hopes of some who have failed in the attempt to solve the problem. It is the object of this article to give some account of one of the solutions of it, which is also the most recent and practicable.

After an experience of twenty years in doing every kind of fire-proof work with burned clay, Mr. E. V. Johnson of Chicago became convinced of the practicability of doing away with much of the steel that had previously been used in floor construction, even though he had seen many others fail in the attempt. It was purely a question of economics with him. If he could build as good a floor without I beams as with them he would be satisfied; otherwise he would still advocate the old methods. For no one disputes that the floor constructions with I beams spaced from four to eight feet and filled with flat hollow tile arches of porous or semi-porous burned clay are still the standard constructions for fire-proof buildings of all kinds. Side construction flat arches had been safely

It was about four years ago, when Mr. Johnson conceived the idea that the resistance to compression of hard-burned tiles and Portland cement concrete could be united in a nearly homogeneous body, that he commenced his experiments. If he could succeed in this he would have an advantage over all cement constructions by saving a large amount of weight at the neutral axis by the amount of the hollow spaces within the tiles. He also decided to make the floor practically monolithic by using the concrete in such a way that every tile would be surrounded by it, thus making a decided advance by not



JOHNSON SYSTEM OF FIRE-PROOF CONSTRUCTION.

built up to spans of ten feet. Then came the experimentation with end construction tiles which dates from the Denver tests of 1890. These flat arches developed such an amount of superfluous strength, as compared with the transverse strength of the I beams with which they were used, that attention was directed to developing this into systems of floor construction which would admit of such great spans that the arches could be turned around and built from girder to girder provided their distances apart were within practicable limits. Several inventors were at work at it ten years ago. Not only had the enormous strength of hard-burned tile to resist compression been discovered, but concrete made of the highest grades of Portland cement was in favor with some inventors, who used various forms of steel for the tensile member.

relying wholly upon the cement joints between the ends of the tiles to resist all of the compression. He found by tests that the contact between the side of a tile and good cement would resist more than an end joint between the narrow edges of the tiles. Besides, he was able to lay all the tiles breaking joints, which had not been found to be practicable with end pressure flat arches. The result was that he abandoned all idea of the flat arch with skew backs and substituted for it a monolithic plate of the hardest material that could be made, capable of the greatest compression at the top, reënforced with tension members of steel placed beneath the tiles, and bedded in concrete which became attached to the underside of the hollow tiles. This system called into use the hardest kind of tiles, to which no objection could be made on account of brittleness

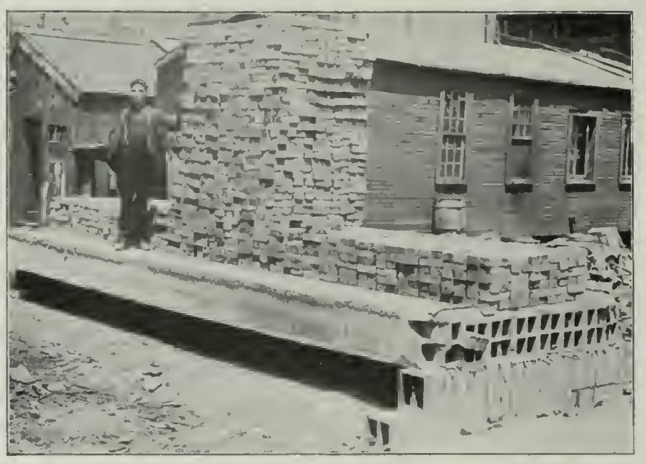


FIG. 1. TEST OF JOHNSON SYSTEM OF FLOOR CONSTRUCTION AT AKRON, OHIO, JULY, 1898.

because they are covered at top and bottom with thick beds of cement.

His first experiments were made at Chicago in the spring of 1898, and were carried out on a larger scale in July of that year at the factory of H. B. Camp at Greenstown, Ohio.

He built an experimental section of floor at Akron, Ohio, in May, 1898. It had a clear span of 20 feet, which was uniformly loaded with 500 pounds per superficial foot. As a result he received the contract for all the floors in the Hamilton office building in that city. The first public test of this invention was made on the site of the Hamilton Building in July, 1898. (Fig. 1.) Work on the building was commenced March 15, 1899, under the direction of Mead & Garfield, architects, Cleveland, Ohio. The architects, under the advice of a well-known engineer, declined at first to take any responsibility for the work, but it is to the credit of Mr. Christy, president of the Hamilton Building Company, to say that he had faith in it, and the work was carried on to completion. Of the floors in this building the architects say: "The fire-proof floors in the Hamilton Building at Akron have given perfect satisfaction in every respect. The average span between bearings is 17 feet 6 inches, and in several cases spans of 19 feet in the clear were built. This work was finished during the summer of 1900, and upon recent inspection of the work we find the ceilings in perfect condition, no cracks or deflections of any kind having appeared. These floors were severely tested during the erection of the work, and we have no hesitancy in recommending the system as first class in every particular."

The general interior construction of the Hamilton Building is with 15-inch I beam girders 17 feet 7 inches apart carried on cast-iron columns tied in the opposite direction with 5-inch I beam struts. The floors were built story by story as fast as the walls went up, the floor of each story being laid before the walls of the succeeding story were built. The tiles used were 9 inches deep. First the girders were covered as to their bottom flanges with shoe tiles, on which were laid a course of hard bricks. The floor construction rested on the ledges thus formed and the exterior walls, but not on projecting ledges on the brick walls. The edges of the floors were built into the walls as each successive story was built.

First smooth board centerings were built up from below, and these were covered with oiled paper. On this was laid loosely two thicknesses of galvanized high carbon steel fabric, each made up of longitudinal strands of No. 7 steel four inches from centers, tied together diagonally with No. 14 wire. This provided one No. 7 steel rod for every two inches. Then a bed of a full inch of rich Portland cement concrete was laid over the fabric, burying it from sight, and the 9-inch tiles were set in courses one inch apart, each breaking joints with the next course. The ends of tiles had buttered joints and were set close. Next the spaces between tiles were grouted with rich cement, which was spread over the tiles to a thickness of one inch. On removal of the centering, after leaving the work a few days to set, and taking off the oiled paper, the ceiling exhibits a smooth cement surface which can be finished with one coat of plaster. All the fabric had meanwhile disappeared from sight, the cement having passed around and under it. The fire-proof construction was covered on top with 2-inch floor strips and deafening and double-thick hard-wood flooring.

After giving the work time to harden, each section of the floor was tested. An iron roller weighing 2,290 pounds was used. It was 4 feet in diameter and measured 14 inches on the face. This was rolled over all the floors longitudinally and transversely. (Fig. 2.)

FIG. 2. ROLLER USED IN TESTING FLOORS OF HAMILTON BUILDING, AKRON, OHIO, BEFORE TILES WERE COVERED WITH CONCRETE.

The above description of the first building in which this floor system was used will suffice for all that succeeded it.

In 1901 the Pioneer Fire-proofing Company of Chicago, acting under Mr. Johnson's patents, built all the floors of the Otis apartment building at Woodlawn and Lake avenues, Chicago, the same being 17 feet 6 inches span. The roofs of the United States government building at Chicago are now being built in the same manner.

The largest piece of work on this principle that has been executed is in the New Gayosho Hotel at Memphis, Tenn., designed by M. E. Bell, formerly Supervising Architect of the Treasury Department, which was built to replace one destroyed by fire in 1901. Mr. Bell says of it: "The floors were adopted subject to a test of 200 pounds per square foot, on spans of 17 feet. Since their construction they have proved to be all that was claimed for them, and we are more than satisfied with their strength and perfect fire-proof qualities."

A public test of the Johnson floor construction was made at Minneapolis, August 7, 8 and 9, 1901, under the direction of Prof. W. R. Hoag, C. E., of the University of Minnesota, James G. Houghton, Inspector of Buildings at Minneapolis, and Harry W. Jones, architect.

FIG. 3. PUBLIC TEST OF JOHNSON FLOOR CONSTRUCTION MADE AT MINNEAPOLIS, AUG. 7 9, 1901, AS REPORTED BY PROF. W. R. HOAG.

(See Fig. 3.) A section of floor was built which according to the reports made by Mr. Hoag was 16 feet square independent of the supports, which were dwarf walls built of 12-inch hollow tiles. The floor was supported on all four sides, and overhung the supports 4 feet on two sides. It was built like a plate on top of the walls without abutments. The temporary platform and oiled paper having been laid, a half inch of Portland cement mortar was spread. Three eighths inch steel rods were laid 3 inches apart and a half inch of cement mortar spread over them. One course of steel fabric as heretofore described was laid over this with the heavy wires in the direction of the steel rods, and another crosswise. On this were set courses of 8 x 12 inch hollow tiles on edge $\frac{3}{4}$ inch apart, with butt joints in each course, and afterwards grouted and plastered over with a thin coat of Alpha Portland cement four to one. The floor was about 13 inches thick. With a distributed load of sand bags equal to 378 pounds per superficial foot, which it required two days to place, the deflection was $\frac{9}{64}$ of an inch. On the third day the load was increased to 750 pounds per superficial foot and the total deflection was $\frac{13}{32}$ of an inch. The test was not continued beyond this point and a photograph shown in the illustration Fig. 3 was taken. No evidence of failure was seen. The conclusion of Mr. Hoag's report is as follows:

"The test has proved conclusively that as an engineering structure it is a scientific assembling of material which secures at once great strength and remarkable rigidity, and under this length and depth of span will safely hold 150 pounds per square foot and give a factor of safety of five. As to how much more this system will sustain, or how much lighter it may be made and yet safely carry this load, will require further experiments to determine."

It will be observed that in the above test the floor was supported on all sides and one course of wire fabric was bedded transversely.

On the 10th and 11th of November, 1901, a test was made by James G. Houghton, Commissioner of Buildings of Minneapolis, of a section of floor 16 x 16 feet in the clear built alongside of that last described. In this floor the straining members consisted of $\frac{3}{8}$-inch steel rods and one course of steel wire fabric imbedded in $1\frac{1}{4}$ inches of Alpha Portland cement mortar, and similar tiles, 8 x 12 inches in dimension, were laid on their flat sides. Then three inches of Portland cement concrete was laid over the whole, forming the main compressive member. This concrete was made of four of cinders, three of sand and one of cement. The following extract is from the signed report of Mr. Houghton:

"The load was applied gradually in the shape of bags filled with sand weighing 115 pounds each piled up in separate piles of six with a space of 6 inches between same, sixteen of these piles to the floor surface, making ninety-six bags per tier. Seventeen tiers in height were placed on the floor, giving a total load of 187,680 pounds, or 733 pounds per square foot.

RESULT.

"The effect of the load as gradually applied resulted as follows:

350 pounds	Deflection	$\frac{1}{8}$ inch scant
733 pounds	"	$\frac{1}{4}$ inch full"

FIG. 4. TEST MADE AT MINNEAPOLIS, NOV. 10, 1901, BY JAMES G. HOUGHTON.

Fig. 4 is from a photograph taken after the load of 733 pounds per superficial foot had been applied.

Floors similar to the last described are now being built in the Methodist Episcopal Deaconesses' Hospital and Home at Minneapolis, where I have seen the work in progress. In these floors 8 x 12 x 18 inch long tiles are used in the rooms, which are 18 feet wide, and 6 x 12 x 18 inch long tiles are used in the corridors, where they rest on I beams crossing the same. They do not touch the corridor walls, a space being left on each side for the heating and ventilating flues. Two courses of steel fabric in one direction and no rods are used; in the rooms the floors rest on the brick walls, and no beams are used. Edwin P. Overmire of Minneapolis is the architect.

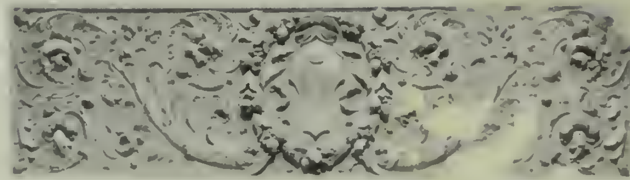
Selected Miscellany.

BABYLONIAN FAIENCE.

VISITORS to the Museum of the Louvre are familiar with the extraordinarily interesting collection of enameled or glazed wall tiles from Nineveh, Khorsabad and other Babylonish cities. There has recently come news of the discovery on the site of what is assumed to be the Babylonian palace of Nebuchadnezzar, of a quantity of encaustic tiling which in fineness of glazing and coloring seems almost perfect. While the other materials entering into the construction of this palace have crumbled into dust, the bricks and burnt clay products alone appear

JEFFERSON BANK, NEWPORT NEWS, VA.
P. T. Marye, Architect.
Entire Front of Terra-Cotta, executed by Perth Amboy Terra-Cotta Company.

to have survived their centuries of burial, and in many cases their colors and even the surface of the enamel is as fresh as much of our modern work which is less than a year old. It was the beautiful, velvety surface of these old enamels which first suggested the idea of our modern dead-finish faience.



DETAIL BY JOSEPH EVANS SPERRY, AR[illegible].
Conkling-Armstrong Terra-Cotta Compa[illegible]s.

A PECULIAR AND INTERESTING TEST OF BURNT CLAY FIRE-PROOFING

TO THE EDITOR THE BRICKBUILDER:

In experimenting lately to find wheth[illegible] po[illegible]us hollow brick could not be utilized for heating purposes, in view of the prohibitive cost of coal at present, I found that a porous hollow brick of Haverstraw size (8 [illegible] 2¼ inches) would absorb in a few seconds enough [illegible]sene oil to give out when ignited a bright flame a[illegible] great heat lasting about thirty minutes. When the flame had exhausted itself I plunged the brick into a pail of water to cool, and, soaking it again in the oil for a few minutes, was able to relight it and continue the process

RAILWAY STATION, MARION, IND.
W. S. Kaufman, Architect.
Built of Hydraulic-Press Brick. Roofed with American S Tile.

indefinitely without the slightest injury to the brick barring blackening of its surface.

Taking an old cylinder stove, I placed one of the bricks inside of it standing on end, and lighting it, soon had the stove red hot. By having a relay of these bricks at hand, one could secure a continuous fire at a very slight cost.

While tests of fire-proofing material again seem to be the order of the day, surely the above should demonstrate that porous terra-cotta is indestructible by ordinary means, being able to withstand unharmed the alternate application of great heat and cold.

Yours truly,
A. MULLER.

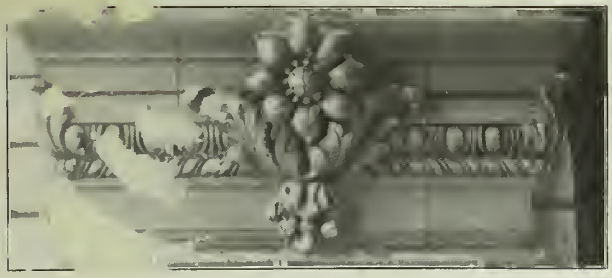
New York City, Oct. 10, 1902.

DETAIL BY WINSLOW & BIGELOW, ARCHITECTS.
Atlantic Terra-Cotta Company, Makers.

IN GENERAL.

Everett & Mead were the architects of the original Runkle School Building, illustrated in the plate form of THE BRICKBUILDER for September. Peabody & Stearns were the architects of the new buildings A and B.

D. Everett Waid has been commissioned supervising and consulting architect to the Bond and Mortgage

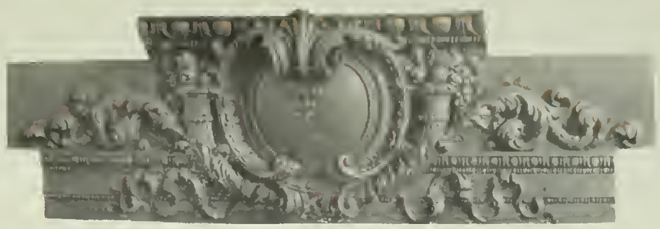


DETAIL BY CHARLES EDWARDS, ARCHITECT.
New York Architectural Terra-Cotta Company, Makers.

Division of the Metropolitan Life Insurance Company of New York City.

The Akron Star-Brand Cement, made by the Union Cement Company of Buffalo, has been manufactured for more than sixty years. It is not only very strong, but is also very adhesive and clings with great tenacity to any material with which it comes in contact, and when it once gets hard it never softens or disintegrates, as some cements do, but it continues to increase in strength and hardness until it becomes like a very hard stone. It is very uniform in quality and can be relied upon every time to do good work.

DETAIL BY EDWIN D. PRESTON, ARCHITECT.
New Jersey Terra-Cotta Company, Makers.



DETAIL BY F. B. & L. L. LONG, ARCHITECTS.
Northwestern Terra-Cotta Company, Makers.

Among the contracts recently booked by Fiske & Co., Boston, are the following: For rough-textured red brick: Long Island City High School, Long Island City, N. Y., C. B. J. Snyder, architect; Public School No. 141, Brooklyn, N. Y.; Public School No. 188, New York City, N. Y.; several blocks of apartment houses, Brookline, Mass., Benjamin Fox, architect; mercantile building, Waterbury, Conn., Curtis & Johnson, architects. For smooth-textured red brick: parochial residence, Mission Church, Boston, J. F. Untersee, architect; blocks of ten apartment houses, Dorchester, Mass., George W. Johnston, architect. For gray brick: Public Library, Shrewsbury, Mass., Barker & Nourse, architects; Old South Building, Boston, A. H. Bowditch, architect; Woman's Club, Boston, C. H. Blackall, architect; India

OTTAUQUECHEE SAVINGS BANK, WOODSTOCK, VT.
William W. Clay, Architect.
The columns are 28 feet long, made in three pieces in the full round. Executed in a dull enamel finish.
Work by the American Terra-Cotta and Ceramic Company.

DETAIL BY HERTS & TALLANT, ARCHITECTS.
White Brick and Terra-Cotta Company, Makers.

Building, Boston, Peabody & Stearns, architects; Beacon Building, Boston, Goodwin & Siter, architects. For buff and mottled bricks: Summer Hospital for Children, Boston, Charles Brigham, architect; Westfield Hospital, Westfield, Mass., Gardner & Gardner, architects; Clapp Memorial Building, East Weymouth, Mass., J. Sumner Fowler, architect; Hartwell Building, Waltham, Mass., Hartwell, Richardson & Driver, architects; Normal School Dormitory, Westfield, Mass., Gardner & Gardner, architects; Camp Building, Waterbury, Conn., Griggs

ENTRANCE, BY LOUIS SULLIVAN, ARCHITECT.
Terra-Cotta Work by the Winkle Terra-Cotta Company.

DETAILS BY GEORGE H. STREETON, ARCHITECT.
Excelsior Terra-Cotta Company, Makers.

& Hunt, architects; warehouse, Boston Wharf Company, South Boston, M. D. Safford, architect.

AN ENAMEL BRICK FRONT, WHEELING, W. VA.,
Gresey & Farris, Architects.
Brick of Cream Satin Finish, Columns of Special Radius Brick. Tiffany Enameled Brick Company, Makers.

THE BRICKBUILDER.

NOVEMBER,

1902.

DORMERS OF HOUSE AT FURNES, BELGIUM.

VOL. 11 NO. 11

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NOV. 1902

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PROFESSOR A. D. F. HAMLIN contributes to the "School of Mines Quarterly" of Columbia University a very interesting discussion of the much-mooted construction of the dome of the Pantheon, Rome. It has been assumed, chiefly on the authority of Piranesi and Viollet-le-Duc, that the construction consisted of a series of arched ribs connected by relieving arches, the intermediate spaces being filled solid with concrete. The fact that the caissons which appear on the inner surface of the dome do not seem to in any wise agree with the assumed system of construction has been one of the enigmas not easy of solution. Professor Hamlin's conclusion is quite a striking one, namely, that the dome as constructed in the time of Hadrian was internally a smooth vault and that at some time subsequent to its completion, very probably in the time of Septimius Severus, the existing panels were hewn out of the brickwork and the present surface coat of stucco applied thereto. This is a very interesting conclusion and seems to go further towards according the conflicting facts than any other theory proposed, but its final demonstration would be impossible unless the entire inner surface of the dome could be stripped and the masonry examined in minute detail. In many respects this is the most interesting example of masonry construction in the world. Viollet-le-Duc's hypothetical solution of the problem was an extremely ingenious one and was thoroughly in accord with Roman traditions and with the construction as observed in other similar monuments, and if the dome were to be reproduced in modern times it is doubtful if any improvement could be made upon Viollet-le-Duc's scheme. But unfortunately it does not fit the exact conditions, and Professor Hamlin's investigations, which were conducted both on the spot and by comparison with other investigations of the monument, constitute a very important addition to our literature upon the Roman vault construction.

ABOUT one hundred tenement houses six stories in height are now being built according to the provisions of the new tenement-house law, in New York City, at a total cost of $4,104,000. Nearly all of these houses will be about 40 x 100 feet on lots 50 x 100 feet. Only a few tenement houses are being erected on lots having a twenty-five foot frontage. For a time it looked as if operators in this class of buildings had shut up shop, says a contemporary. In the last few months, however, trading in tenement-house properties has been vigorous. This fact, together with the vast sum of money the operators have decided to invest in the building of model tenement houses, is taken as proof positive that there is no longer any doubt that the modern tenement house can be made to pay as well as the old type of building.

AT a special meeting of the Philadelphia chapter of the American Institute of Architects called to take action upon the death of Mr. Walter Cope the following resolutions were adopted:

Resolved, That in the overwhelming sadness which the death of our friend and associate, Walter Cope, has cast about us we still rejoice in the beauty of his life and his labors, which leave behind them so precious a memory and so stimulating an example. Deeply skilled in his art, there were brought to him from far and near problems of ever-increasing difficulty and importance. He bore joyously the burden of these many tasks and stood before us steadfast in the discharge of duty, untiring in the pursuit of excellence and beauty, firm in upholding a noble standard of conduct. And yet it is not his work as an architect, distinguished as it is by volume and quality, that leaves with his companions the deepest impression of him, but rather his constant sincerity, his limpid truthfulness, his spontaneity and frankness, his joy in art, his splendid scorn of wrong.

Resolved, That in the death of Walter Cope the architects of America have lost one of the ablest of their number, and that we, his immediate associates, mourn him, not alone as a fellow artist, but as a friend tried in many ways and true in all.

These resolutions will surely find an echo in the hearts of all the numerous friends Mr. Cope has left behind him. It is seldom that a career has been so uniformly successful, not merely in the purely architectural sense, but also in the finer qualities of personal character. His practice was individual to a marked degree, and he possessed the rare balance of mind between the artistic temperament and the severely practical bent which enabled him to give to his architecture the stamp of the very highest character.

The Decoration of the Ceppo Hospital at Pistoia.

BY ALLAN MARQUAND.

THE Ceppo Hospital at Pistoia was founded as early as 1218, and for several centuries was controlled by Augustinian brothers of the society known as Santa Maria del Ceppo, or St. Mary of the tree trunk. In the closing years of the fifteenth century the city of Pistoia suffered much from fire and plague, also from political dissensions. The Ceppo Hospital suffered with the rest, until in the early years of the sixteenth century its administration passed into the hands of the Florentines and Frate Leonardo Buonafede was placed in charge. Buonafede was wealthy and a patron of art. As abbot of the monastery at Badia Tedalda he had donated to that church three altarpieces of Robbia ware, and again at Galatrona

CEPPO HOSPITAL, PISTOIA.

he had presented the church with a baptismal font and other objects made by Giovanni della Robbia. Buonafede was appointed by Leo X in 1522 the administrator of the Hospital of S. Maria Nuova at Florence and of the Ceppo at Pistoia. In Florence the hospitals of the Innocenti and of San Paolo were provided with loggie the spandrels of whose arches were decorated with medallions by Andrea della Robbia. It was therefore natural that his first work for Pistoia should have been to order for the Ceppo Hospital a loggia decorated with glazed terracotta. It is probable, therefore, that the loggia of the Ceppo Hospital does not antedate 1522, and it must have been built by 1525, as this date is found on one of the medallions which decorate it. This date, however, does not imply that the decorations were all in place at that time. In fact the archives of the hospital indicate that payments were made to Giovanni della Robbia from 1525 to 1529. The amounts and purports of these payments,

MEDALLION OF THE ANNUNCIATION, BY GIOVANNI DELLA ROBBIA.

Milanesi informs us, were recorded in a book which is now lost; hence Giovanni's share in the decoration of this hospital must be determined by the characteristics of the work itself.

Do the records throw any further light on this subject? We might think of connecting the name of Benedetto Buglioni with these decorations. He had already been employed in the decoration of the Ceppo Hospital. At least we assume that Milanesi, in a note to Vasari's account of Luca della Robbia, derived from some documentary source the information that Benedetto Buglioni made in 1510 a "Nostra Donna" for the façade of the hospital. Possibly this is the lunette, representing the Coronation of the Virgin, above the door of the hospital chapel. He also made in 1515, to celebrate the arrival

GIVING DRINK TO THE THIRSTY, BY FILIPPO PALADINI.

of Leo X, figures of Charity and Hope, and we note that these figures occur also in the Pistoia frieze. But Benedetto Buglioni died March 7, 1521, a year before Buonafede planned a loggia for the Ceppo Hospital. His pupil and successor, Santi Buglioni, lived as late as 1568, and the records of S. Maria Nuova imply that he was also employed (at what date?) at Pistoia. How far he may have been concerned in the decorations of the Ceppo Hospital does not appear. The records therefore, so far as published, leave the question of authorship an unsettled problem. Hence we find the Ceppo frieze variously ascribed to Luca and Andrea della Robbia (P. Contrucci and G. Pellegrini), to Agostino della Robbia (the *libro d'oro* of the hospital), to Giovanni della Robbia (Bode, Marcel Reymond), to Giovanni and his brothers (Murray), to Giovanni aided by his sons or by Santi Buglioni (Cavacalluci and Molinier).

What have the decorations themselves to say in regard to their origin? If we take more than a casual glance at these striking and most effective decorations, we cannot fail to perceive in them the handiwork of three different artists. The medallions are evidently the work of a single mind. They form in themselves a complete scheme of decoration. Here are medallions of the Annunciation, Visitation and the Assumption, in honor of the patroness, Santa Maria del Ceppo; a medallion with the Medici arms, in honor of the family through which the hospital derived security and prosperity; a medallion containing the arms of the hospital; and at either end half medallions making together the arms of Pistoia. This is a scheme such as Leonardo Buonafede might well have planned for the decoration of the loggia. It may be noted that these medallions are completely glazed, and that both in modeling and in color they are very different from the frieze above them. We do not have far to go to discover their authorship. In the Museo Nazionale of Florence there is a large altarpiece of the Nativity, signed by Giovanni della Robbia in 1521, and in the Via Nazionale is his masterpiece, the Tabernacolo delle Fonticine, executed in 1522. In the Pistoia medallions, a few years later, Giovanni reproduces the same Virgin, the same angel, the same details of ornament. Even without the suggestion afforded by the documents, we could not fail to recognize in these medallions most characteristic examples of the workmanship of Giovanni della Robbia.

The style of the frieze is by no means the same as that of the medallions, and its color scheme, notably the yellows, quite different. The medallions are completely glazed, whereas the frieze suggests a style of later period, since the faces and hands, and in one panel the entire figures, are unglazed. The medallions are conventional in spirit and feeble in execution. The frieze is vigorous, well composed, in general well modeled, realistic and full of pathos. The contrast in fact between frieze and medallions is so striking that we are surprised to find writers still attributing the entire decorations to the same author.

Having satisfied ourselves that the frieze is not a work by Giovanni della Robbia, let us consider it by itself and in its relation to other monuments. If we examine the frieze with reference to its style we cannot fail to notice that the last relief to our right is to be distinguished from all the rest. Not only are the figures unglazed, but the composition is more crowded, and the principal figure of the other panels is here changed. The authorship of this panel is known by documentary evidence. Contrucci publishes (*Monumento Robbiano nella Loggia dello Spedale di Pistoia*, p. 87, note 1) from the archives of the hospital, records of payments made to Maestro Filippo di Lorenzo Paladini from May 14, 1584, to August 2, 1586, for making various figures, the final entry defining the purpose, viz., for the completion of the frieze of the loggia. During this period, 1584 1586, Bartolomeo Montechiari was in charge of the hospital, and it may be that he is portrayed here as the central figure. Filippo Paladini was a Florentine painter, noted, according to Lanzi, for his graceful figures and excellent coloring. His panel, however, lacks the clearness and dramatic force of the others, from which it differs also in technical execution. So far as the question of authorship is concerned, we have reached this conclusion: to Giovanni della Robbia may be ascribed the medallions, and to Filippo Paladini one panel of the frieze.

The remainder of the frieze is the work of a realistic

CEPPO HOSPITAL, PISTOIA.

sculptor by no means blind to decorative effect. The general design is evident. Over each opening of the loggia is represented one of the Seven Deeds of Mercy. These are divided from each other by narrow upright panels representing figures of Virtues. At the extreme ends of the frieze, instead of Virtues we find this inscription, half at one end, half at the other: *Beati mundo corde quoniam ipsi deum videbunt. MDLXXVI.* Whether this date be that of the original frieze or only of its completion by Paladini we cannot now determine. The subjects represented succeed each other in the following order: On the short side of the loggia, near the church, we find a fine panel on which is represented the Clothing the Naked. At the corner is a sphinx bearing the arms of the hospital. On the façade of the loggia we find, reading from left to right, Receiving Strangers (Prudence), Visiting the Sick (Faith), Visiting the Prisoners (Charity), Burying the Dead (Hope), Feeding the Hungry (Justice), Giving Drink to the Thirsty.

CLOTHING THE NAKED.

It is unnecessary that we should describe these in detail. It is evident that the sculptor understood the value of varying his compositions, his relief, his coloring, and that he had a deep realization of human life and character. Some of these figures are doubtless portraits of well-known persons. The monk who is the principal figure in five of the panels may well be Leonardo Buonafede, donor of the loggia. He was a Carthusian monk and here wears the Carthusian robe and dark cowl. In a funerary relief by Francesco da San Gallo at the Certosa, Buonafede is represented as bishop of Cortona wearing a miter, but we cannot fail to recognize that he has the same features as those of the monk of the Ceppo frieze. The priest with a nimbus in the Visiting the Prisoners may be the sainted Pistoian bishop, Beato Andrea Franchi, who did much to relieve his people in time of distress. Christ is figured in one panel as a Pilgrim and in another as a Prisoner, and St. John the Baptist is evidently the Stranger whose feet are being washed by the charitable Buonafede. But who is the central figure clad in blue in the panel of the Strangers, and who is the distinguished figure at the front of those who are about to bury the dead? These are questions which some day may be answered. The sculptor of this frieze, whoever he may have been, seems to have received some of his inspiration at least from Florentine sources. The first figure to the left, now headless, in the Clothing of the Naked, was evidently made by some one who had seen and admired Michelangelo's David (1503), and the costume of the nuns, in the same panel, is said by Contrucci to be that worn in the Hospital of S. Maria Nuova, adopted by the nuns of the Ceppo Hospital in 1540.

A broad survey of the works of the Robbia school still leaves the authorship of the frieze an unsettled problem. Luca, Andrea and Giovanni della Robbia are not to be thought of in this connection. Could its author have been one of Giovanni's brothers? Certainly not Fra Ambrogio, author of a miserable Nativity at S. Spirito, Siena; certainly not Luca, the younger, author of a signed Madonna in the Vatican; certainly not Fra Mattia, author of a large altarpiece at Monte Cassiano. Was it Girolamo, who went to France, where he decorated the Château de Madrid for François I? Unfortunately nothing is left of his works which we can apply as a test to this question. Could it have been either Benedetto or Santi Buglioni? A few monuments, more or less analogous to the Pistoia frieze, remain which may be attributed with more or less security to these sculptors. But on the whole it may be said that neither Benedetto nor Santi Buglioni has elsewhere shown anything like the power exhibited in this frieze. Hence for the present the authorship of the frieze remains for us an unsolved problem.

DETAIL FROM VISITING THE PRISONERS.

DETAIL FROM BURYING THE DEAD.

SPOTLESS TOWN is brand new. But unlike Carnegietown, furnaces are but the means of life, not the objects to which life is sacrificed.

It is traversed by William Penn Road, which, while within the corporate limits, is an up-to-date, symmetrical, tree-lined city street, paved with vitrified brick, drained with the latest type of sewer, and tunneled with the most accessible man-run for the installation of pipes and wires. It is sprinkled by day, flushed by night, and yet, notwithstanding its fierce electric lights and rapid traffic, it remains an organic part of the old dry, dusty turnpike.

The "pike" is very old. It takes its way across the fertile fields of York and Lancaster counties, whose inhabitants still perpetuate ancient rivalries by emblematic use of the red and white roses of the royal families after which their lands were long ago named.

The settled, substantial character of the country and a hundred unmistakable signs like the elsewhere obsolete tollgate, link the present to that strange twilight time filled with fantastic shapes of imagination and pious enthusiasm, to which belongs the Ephrata Monastery with its gowned and hooded Protestants, the nuns and monks employed about monastic duties and occupations, while the brothers harnessed to the plow proved their earnestness upon the rugged earth.

PLAN OF CIVIC CENTER.

This same primitive spirit appears in the religious character of the settlements of the Dunkards, the Mennonites, or "Manisten," as they are often called in Pennsylvania, and the Moravians. And notwithstanding the English names of the counties, the descendants of these early sectaries remain as a preponderating German element, particularly in the older settlements and in the less accessible regions. But their influence is now less religious than moral. With all the old earnestness of their race they have become the richest and most powerful class in the agricultural community, at once conservative and progressive, accepting the advantages of modern invention, but always insisting that it shall not be at the expense of accustomed ideals of life.

So although Spotless

PROGRAMME.

The problem indicated by the following programme is a town hall such as would be requisite in a village of five or six thousand inhabitants.

It is supposed to stand on the public square of the town, which square is quite closely built up with such buildings as would naturally be found in a locality of this kind. If there are any differences in grade, the town hall is supposed to occupy the highest portion of the land.

The contributors in this series represent different sections of the country, and each design will indicate not only in the matter of arrangement of plan but also in point of architectural style, the sort of thing that would be particularly appropriate for the section of the country in which the building is to be located.

In the matter of accommodations and of the sizes and disposition of the rooms, each contributor uses his own judgment, following out the idea indicated above by preparing designs particularly fitted for the various sections of the United States.

The cost of the building, exclusive of furnishings, should not exceed $50,000. This sum, while perhaps large, is purposely made so with the idea of laying stress on the necessity of having a building of some richness to represent the town in its corporate capacity.

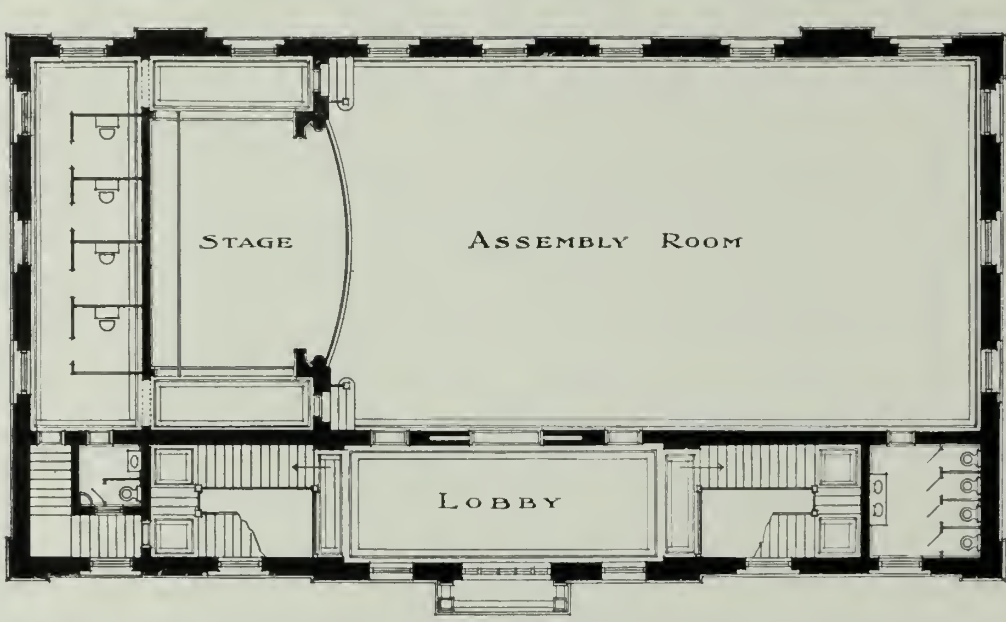
The idea is simply to suggest an appropriate treatment of a problem that frequently occurs for solution.

Town is not old, it is largely the outcome of a people that has taken time to think.

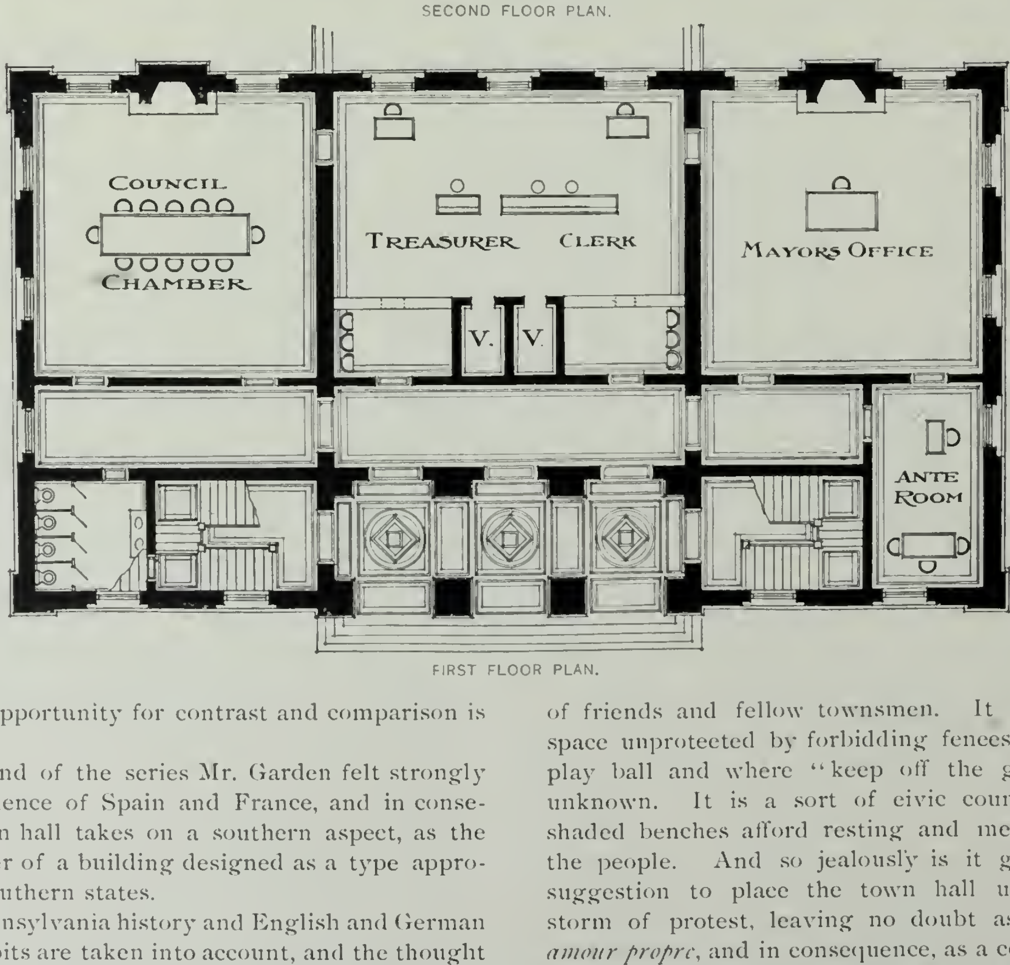
Instead of a haphazard agglomeration of grimy dwellings strewn along an arid waste of railway embankments, dominated by belching steel works, it is an orderly community and a pleasant place to live in, for here smoke consumers and skillful stoking are made matters of public concern. In fact the whole environment suggests self-reliance and a proud American spirit where manhood is at a premium and "pauperizing philanthropies" are unknown.

A closely built up square, approached by broad, tree-lined streets, forms the civic centre, the treatment of which is the subject of our project.

In the programme the editor has once more shown his discernment and judgment by making actual conditions the real impulse back of each town hall design, and moreover by inviting designers from widely separated localities to solve the same problem with reference to their own local conditions and requirements, an admirable opportunity for contrast and comparison is effected.



SECOND FLOOR PLAN.



FIRST FLOOR PLAN.

In the second of the series Mr. Garden felt strongly the Latin influence of Spain and France, and in consequence his town hall takes on a southern aspect, as the logical character of a building designed as a type appropriate in the southern states.

In ours, Pennsylvania history and English and German out-of-door habits are taken into account, and the thought suggested in the programme of an assembly hall to be used for theatrical and social entertainments is made a keynote to the scheme. This is a happy thought, for within a month at Columbia, Pa., the second largest town in Lancaster County, the advantages of public ownership of a playhouse were conclusively demonstrated. Theirs is leased, season by season. This year the manager offended the decency of the community by billing the town with objectionable posters. A protest was raised, with the result that a special meeting of the town council ordered the advertisements down and closed the Opera House.

The social life of the community is to be served first, the governmental needs being quite subordinate to it.

With this in view it was deemed of importance to consider the town hall as only a part of a social center which as a whole exercises a daily influence over the population. And this was right, for civic pride attaches itself firmly to Franklin Common, a great open green for outdoor recreation where the band plays, and where the militia drills under the eye of friends and fellow townsmen. It is a great open space unprotected by forbidding fences, where the boys play ball and where "keep off the grass" signs are unknown. It is a sort of civic country club, whose shaded benches afford resting and meeting places for the people. And so jealously is it guarded that the suggestion to place the town hall upon it raised a storm of protest, leaving no doubt as to the people's *amour propre*, and in consequence, as a conciliatory move, it was decided to even enlarge the appearance of the common by acquiring the property on the opposite side of Penn Road. Thus by continuing the double rows of trees across this thoroughfare an integral effect was obtained which, moreover, insured a suitable background for the building itself.

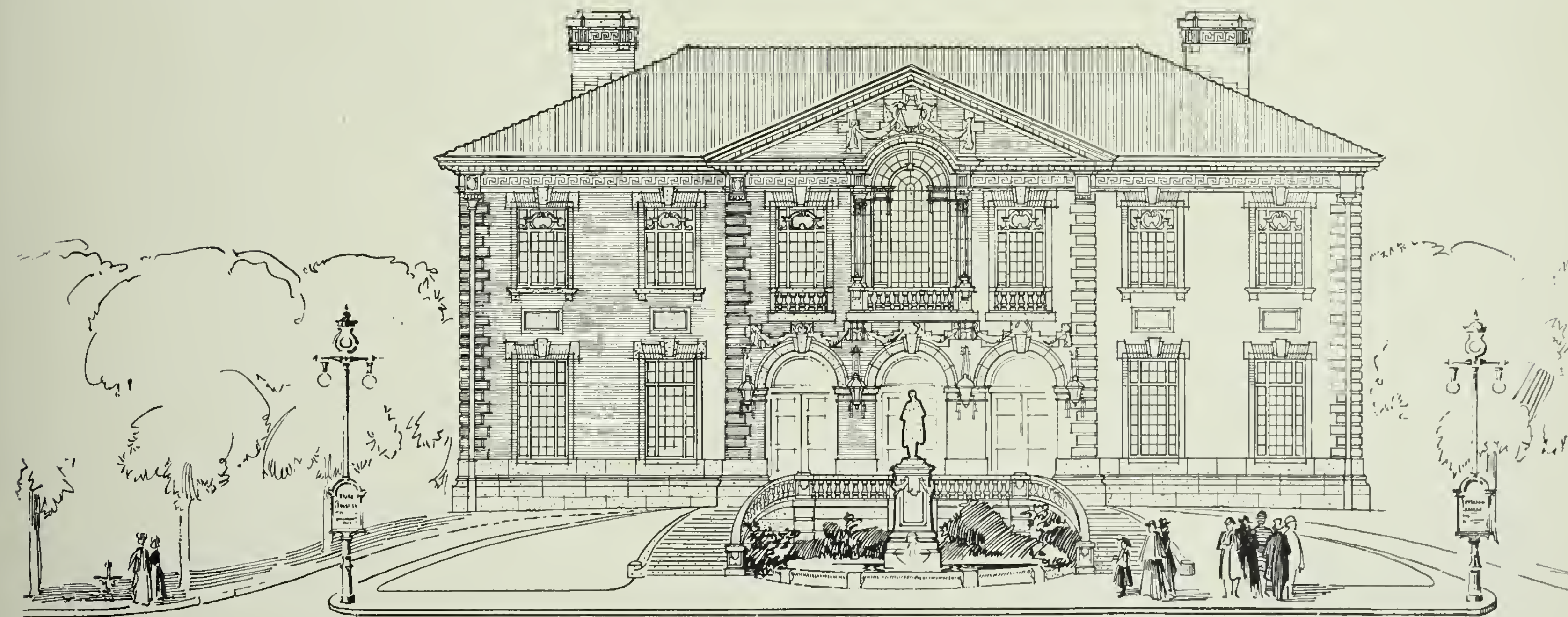
The site rises a few feet, its ramped approach showing how a simple building may be set off and given added dignity by skillful grading. Here stands the only statue, directly in front of the town hall and reflected in the lily pool beneath. It is a bronze figure of the public-spirited ironmaster and founder for whom the engirdling park system of the town is named.

On approaching, driving or afoot, an appearance of perfect orderliness and symmetry is everywhere to be seen. Even the low shrubs, the flowers and aquatic plants within the wing walls and curb of the basin are studied to enhance the architectural effect, and the trees bordering the service road at the rear, as already pointed out, which extremes of luxury and squalor are nowhere to be found.

Immigration to the great cities receives but few recruits from Spotless Town, and those who go often return, amazed to find how much more it means to them than the metropolis; how much more each inhabitant is entitled to for a minimum tax rate; and how much more healthful it is as a place of residence.

The true sense of proportion which dictated that the town hall should be an all-around benefit by giving importance to its social function, precluded a subordinate entrance to the assembly hall. The triple arches form one main entrance for both departments, though they are independent, each occupying a separate floor.

The character of the building is reminiscently colonial but distinctly modern, wood being largely replaced by white terra-cotta, shingles by tiles, and floor joists by Guastavino arches. Materials of clay are used nearly ex-



TOWN HALL AND ASSEMBLY BUILDING FOR A SMALL CITY IN PENNSYLVANIA. BY ALBERT KELSEY.

frame in the picture, excluding a view of the private properties beyond.

The light-standards with their bulletin boards and other street fixtures are of a uniform special design, and each, according to its function, is placed at the proper interval with great precision. Overhead construction of all kinds is prohibited on the public domain, and hence the tree-lined lawns are unobstructed.

The deep-seated optimism of the people made it a comparatively easy matter for the founder to take advantage of a period of unusual prosperity to command the interest and coöperation of the citizens in his efforts to make a model city of the town; but unfortunately space does not permit a description of all the problems solved nor even a list of the conveniences, embellishments and amusement features which have been made permanent additions to the city system. Suffice it that through him the people came to know the new order of things whereby all, from the richest to the poorest, are brought within a real community of interests in clusively, and in the decorative treatment faience as beautiful as Luca della Robbia's majolica is freely used to recall the history of the high road, and Moravian tiles of special design record local tradition, while rich glazes revive emblems and make the county arms familiar to all. Mural paintings depict the steel industry upon which the life of the town depends, and a more powerful and sympathetic allegory would be hard to find.

Within and without there is nothing superfluous, nothing without reason and meaning, and as the building proudly faces the common — not the plaza, nor the esplanade, nor the garden, but merely the common — it looks its part and nothing more.

Character is the great thing in life, in art, in city making. Character rules in everything. It is not the result of a whim nor the product of spurious imitation. Character epitomizes conditions, and those of the democracy of Spotless Town are worthy of profound study, notwithstanding this imperfect characterization of them in a design for its town hall.

Interesting Brick Architecture in Pittsburg, Pa. Domestic.

THE lower part of Pittsburg is shut in on two sides by the Allegheny and the Monongahela rivers, which meet at "The Point" to form the Ohio. Now the lower part of the business section, in early times this district was the residence section. Growth was possible in but one direction, and owing to the lack of transportation facilities a great expansion even in this direction was impracticable. Swept by the fire of 1845, in rebuilding the houses were largely of the city-front type, and many of them show the influence of the Greek revival which was so popular at that time, — simple brick fronts with but little elaboration and that usually around the entrance. Many of them have, too, beautiful examples of iron railings and balconies.

Smoke and dirt had always operated to discourage anything but the simplest exteriors, but in 1886 the introduction of natural gas as a fuel cleared the air for better things; business was encroaching more and more here, street cars were opening up districts heretofore almost inaccessible, and there was a general exodus to these newer districts. But the reaction from the crowded condition of the older town has been permanent, and to-day in new work we have hardly an example of the city front. Incidentally we have hardly an example of the modern French school.

Pittsburg is a city of hills and of many splendid views, too often, it is true, cut off in the distance by a cloud of smoke, but the immediate vicinity of its homes has been neglected and only recently have the services of the landscape architect been sought.

CHILDREN'S PLAYHOUSE AND GYMNASIUM.
Alden & Harlow, Architects

The accompanying illustrations have been chosen to show some of the more recent work here.

The house at Sewickley, Proctor, Wass & Tufts, architects, is particularly successful, the long ridge being very effective and the proportions between the wood and plaster good, though the appearance would probably have been improved had the plaster been rougher and kept back slightly from the face of the wood. The bricks are laid with joints deeply raked out and window frames set flush with the outside of the wall; the fact that the design of the chimneys is varied adds a small note of interest.

The house at Sewickley by Alden & Harlow is a simple, vigorous treatment of a colonial plan, in which the fineness of detail of colonial work has been avoided, and an interesting feature made of the large chimney at the end. The brick is laid in English bond.

The house at St. James Street and Fifth Avenue, McClure & Spahr, architects, is built with gray brick, the woodwork stained dark brown. There is a simple brick cornice and several bands of brick on edge, which, however, are almost lost, the brick and mortar being of the same color.

In the house near Sewickley by Rutan & Russell the brickwork is laid in Flemish bond.

The house at 5050 Forbes Street is built on the top of a hill, and in order to make a driveway it was necessary to build the terrace in front, which cuts off, in the view, so much of the first story and overpowers the entire house.

HOUSE, MOREWOOD PLACE.
Rutan & Russell, Architects.

Had an open balustrade been used in place of the brick wall, the effect would probably have been better.

The house at 4902 Forbes Street is on another hill and also difficult to show in a photograph. It is built of dark brown brick and red sandstone. The brick porches and terrace wall have a vigorous air, and the round tile valleys give the roof a broad, simple effect which cannot be obtained when metal valleys are used. Alden & Harlow were the architects.

The house at Colonial Way and Ellsworth Avenue, George S. Orth & Bros., architects, is one of two similar houses on opposite corners. Both are built of gray brick and light stone. The stone portico does not tie in well with the house, due largely to the lack of pilasters, but the general effect of the two houses is good.

The house at 5426 Fifth Avenue and the posts and wall at the entrance are built of light buff brick and terra-cotta of about the same color.

The residence on Morewood Place by Rutan & Russell is built of rough red brick and black headers laid in Flemish bond; the stonework is light gray. The house suffers from the lack of foliage around it.

A playhouse, gymnasium and bowling alley from the office of Alden & Harlow is here illustrated. The low tile roof, the chimney at the end, and the bowling alleys with the roof cut off at the end, give it an informal air which the problem seems to demand.

The house at Richland Road and Penn Avenue, Peabody & Stearns, architects, is built of dark gray brick, the woodwork stained dark brown. The detail of the bargeboards is interesting and in excellent scale; the inspiration for the work in the gables has been found in the

HOUSE AT SEWICKLEY, PA. Proctor, Wass & Tufts, Architects.


House, 718 Bidwell Ave. Peabody & Stearns, Architects.


Rear of House, 5050 Forbes St. Peabody & Stearns, Architects.


House, Richland Road and Penn Ave. Peabody & Stearns, Architects.


House, 651 Morewood Ave. Peabody & Stearns, Architects.


House, 5426 Fifth Ave. Alden & Harlow, Architects.


House at Duquesne. Alden & Harlow, Architects.


House, Colonial Way and Ellsworth Ave. Geo. S. Orth & Bros., Architects.


Entrance to 5426 Fifth Ave. Alden & Harlow, Architects.

HOUSE, HIGHLAND AND WELLESLEY AVENUES, PITTSBURG, PA. Alden & Harlow, Architects.

old half-timbered work, but the background is here filled in with wood and the beams left in high projection.

The large chimney on the front of the house at Duquesne forms an interesting feature. The brick terrace wall gives a strong base to the building, and the slight use of half-timber work adds interest. Alden & Harlow were the architects.

HOUSE, ST. JAMES STREET AND FIFTH AVENUE.
McClure & Spahr, Architects.

The large residence at the corner of Highland and Wellesley avenues is built of dark red brick and light stone. The two-story portico on front is marble, but does not seem to tie in well with the rest of the house, and the central gable of the front seems too small.

Another house on Penn Avenue by Alden & Harlow is built of dark red brick laid in Flemish bond, with light terra-cotta quoins, caps and cornice. The treatment of the large chimneys shows what may be done with what are usually regarded as necessary evils. Round valleys have been used in the tile roof.

HOUSE, PENN AVENUE.
Alden & Harlow, Architects.

The house at 651 Morewood Avenue, by Peabody & Stearns, with the two large gables on front and the dormer between, is generally successful, though the detail around the windows seems too fine. Doubling the slate every fifth course adds interest to the roof, and the hood over the front entrance and the porch on the side are in good scale and interesting in detail.

Fire-proof Grain Storage Buildings.

THE evolution from the farmer's barn and the loft filled with fat sacks of grain to the modern elevator with its storage capacity of 1,000,000 bushels or more and its wonder-working machinery has for a long time been considered one of the marvels of the latter part of the nineteenth century, but during this time the study of one of the most important elements involved in the handling and storage of our most important production has been going on with slight interruption. Up to 1865 the modern grain elevator had been developed almost to the condition in which we see it to-day in all the large grain-handling marts. It is a structure of wood, some-

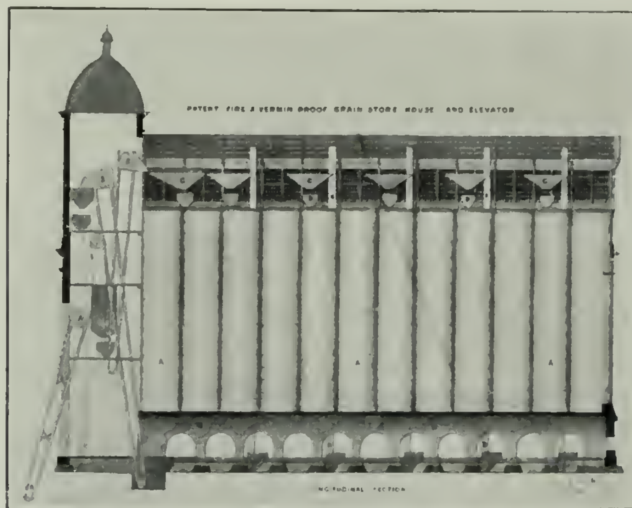


FIG. 1. LONGITUDINAL SECTION OF FIRST BRICK GRAIN ELEVATOR, BUILT AT BUFFALO, N. Y., 1869.

times enclosed in a brick wall or covered with sheet metal, having a long narrow cupola, so called, on top which contains the machinery for handling grain, which is held in deep square bins. These are made with solid walls of wood six inches thick, built by nailing 2 x 6 scantlings one on top of another and breaking joints at the corners and intersections. They form a nest, like pigeon holes set on end. These bins are generally set on

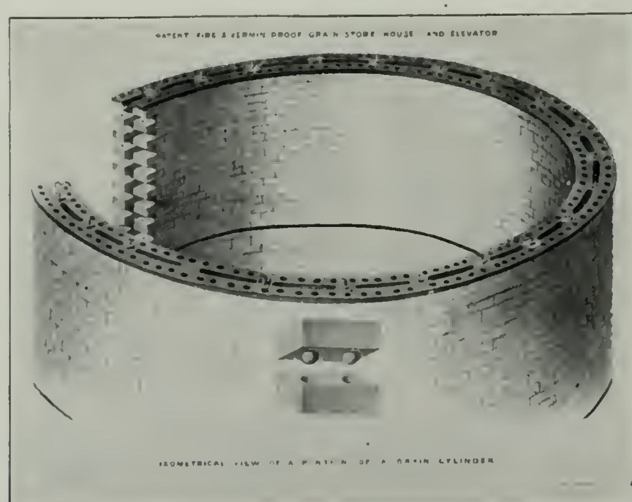


FIG. 2. DETAIL OF BIN CONSTRUCTION OF FIRST BRICK GRAIN ELEVATOR, BUILT AT BUFFALO, N. Y., 1869.

very heavy clustered wooden posts, rarely on iron ones, and require very massive foundations. Railroad tracks are laid between the posts, and at one end of each elevator is the boiler and power house with its high brick smokestack.

Such a structure is one of the most combustible and dangerous inventions from the point of view of fire risks ever conceived by man, and there are those who have claimed for the last thirty years that it is not capable of improvement from that or any other point of view except in small detail, such as mechanical operation.

In 1865 the late George H. Johnson was and had been for many years the draughtsman of the Architectural Iron Works of New York, founded by D. D. Badger, though he was educated as an architect in England. In the course of his duties he had frequent occasion to visit Chicago to supervise the erection of some of the largest "cast-iron fronts" ever put up. His attention was thus called to the operation of the Chicago grain elevators, then the largest in the United States, and their dangers as fire risks. At that time iron, being incombustible, was regarded as a fire-proof material and was the main dependence for the supposed fire-proof qualities of buildings erected by this company. His studies in fire-proofing commenced with grain elevators, and his determination to improve their construction was the main bent of his mind for twenty years thereafter and almost to the day of his death. It was during this time also that he made many of the early inventions and applications of burnt clay to fire-resisting constructions which were the bases of most of the valuable methods in use at the present time.

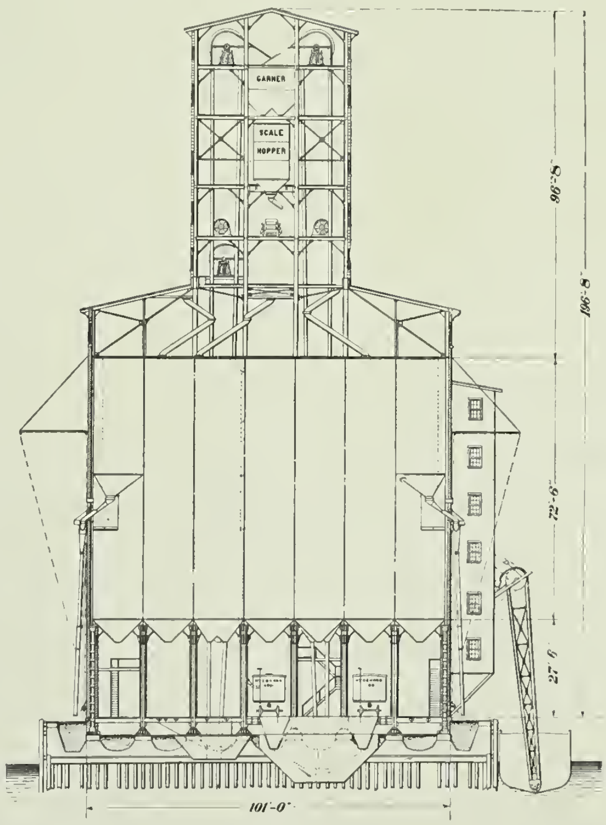


FIG. 3. CROSS SECTION OF ELEVATOR FOR WEST SHORE RAILROAD, WEEHAWKEN, N. J. BUILT OF STEEL ENCLOSED WITH BRICK WALLS AROUND MAIN STRUCTURE AND HOLLOW TILES AROUND CUPOLA. ROOFS OF BOOK TILE.

Believing at first that iron was the main basis of fire-resisting construction, he determined to get some one to erect an iron elevator in an eastern city, where the wooden constructions of the middle West were considered to be dangerous to contiguous properties in closely built cities. In fact there were no grain elevators in the seaboard cities, and grain which was handled scientifically and economically in the interior was handled very awkwardly and expensively at the East in lofts of buildings, while it was generally placed in sacks for transport abroad.

The result of Mr. Johnson's exertions was — to make a long story short — that in 1865 two iron elevators were built from his plans, — one at Brooklyn, N. Y., for the United States Warehouse Company, and the other at Philadelphia for the Pennsylvania Railroad Company. In the large volume on Iron Architecture published by the New York Architectural Iron Company in 1865 are an elevation and two detail drawings of these elevators. One of the details shows in section the foundation built with counter arches in both directions; the cast-iron columns, tied together in two directions with iron rods; the brick groined arches supporting and forming the bottoms of the bins, where they take the form of hoppers; and the boiler-iron cylindrical bins. The exterior walls of these buildings were rectangular; but in one respect they were novel, and may be said to have been steps leading to modern skeleton construction. They consisted of a framework of cast-iron uprights, in the form of pilasters with horizontal cornice members, all bolted together, forming panels of about 15 x 15 feet, which were filled in with twelve-inch brick walls. The whole looked like five-story buildings without windows. The Brooklyn building was 107 feet wide and 125 feet long, and was surmounted by an iron roof and lantern skylight covering the conveying machinery. No wood was used in the construction. The Architectural Iron Works in their published description make the confident claim that the "entire structure is absolutely fire-proof and indestructible. Besides these advantages, the grain is secured from the ravages of animals and insects and also protected from heating by arrangements made for its drying and ventilation."

The erection of these elevators created a storm that was unexpected. Every other elevator interest in the country decried them, and it was asserted that the grain would heat and become useless. This deterred shippers for a long time from sending consignments to them and they did a poor business for several years. But ultimately they proved to be not detrimental to the grain, and the "iron elevators" have been successful ever since.

But the two here mentioned are all that were built of that kind. Mr. Johnson's inventions soon after their erection took the direction of clay systems, when he had become convinced that clay was to be the future material for fire-proof constructions. He therefore proceeded to invent a grain storage house to be entirely built of brick, and bent his energies towards having one built. After several years of effort the Tifft Iron Works of Buffalo became interested, and as a result the famous Plympton elevator in that city was erected in 1869. From an old circular are reproduced a vertical section of the building and a detail drawing of one of the tanks. (Figs. 1 and 2.) This elevator has no exterior wall above the ground story, the exposed exterior of the tanks forming a corrugated surface. In addition to the brick tanks the interstices between them, formed by four quarter circles reversed, were used as tanks, so that the house could be filled solid. On the detail (Fig. 2) the bricks are shown with knobs on the bottom and recesses on the top; but I am informed that standard common bricks were used. The walls are ten inches thick, being of two

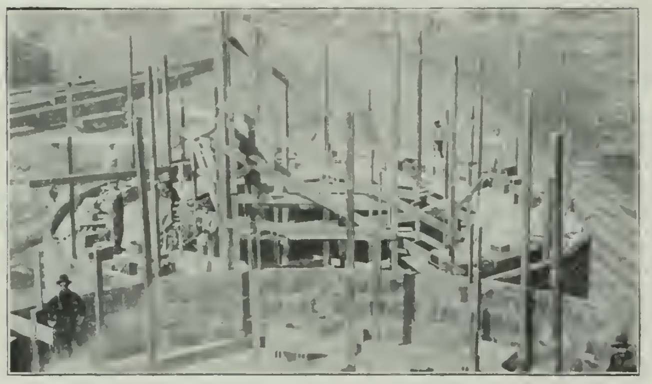


FIG. 4. GREAT EASTERN ELEVATOR TANKS, MINNEAPOLIS. SEEN FROM INSIDE DURING CONSTRUCTION.

courses of brick with a two-inch space between. At intervals of eighteen courses they are reënforced with cast-iron bond plates which are bolted together horizontally. Each course of bond plates is bolted to the next course of plates both above and below with vertical iron rods in the air spaces around each circle distant from each other about twenty inches.

This building has stood until the present time and is only to be removed to make changes in the right of way of the New York Central Railroad. Standing for thirty-two years, it has been the only grain elevator that could have been called fire-proof up to the last two years. Notwithstanding its great cost it has been a paying investment on account of the great sums that have been saved in reduction of insurance, not only on itself, but on the enormous quantity of grain that has been stored in it during these years.

Mr. Johnson did not accomplish anything more in fire-proofing grain elevators until he moved to Chicago in 1872 and was engaged in organizing a fire-proofing business for the use of hollow tiles. In that year he built the cupola of Vincent, Nelson & Co.'s wooden elevator at Archer Avenue and South Branch with hollow tiles. This is the first elevator in which hollow tiles were ever used for their fire-proof qualities. He also built the first hollow-tile floor arches at Chicago in the Equitable Building. He died at Chicago in 1879.

Hollow tiles were not used again for covering the exteriors of elevators of the wooden-bin construction until 1890, when Elevator A of the New York Central & Hudson River Railroad Company, designed by J. T. Moulton & Son of Chicago, was built at Sixtieth Street and Hudson River, New York City. The first story of this building is enclosed with brick walls. Above this story all of the bins and the cupola are covered with salt-glazed hollow tiles. When built it was the largest example of the use of salt-glazed hollow tiles for fire-proofing the exterior of a building.

A remarkable example of elevator construction is now being erected at Weehawken, N. J., for the West Shore Railroad Company. It is an elevator structure of 2,000,000 bushels' capacity which is being erected entirely of steel. A cross section from the drawings for this elevator is here given. (Fig. 3.) The bins are of steel and rectangular. For fire-proofing purposes it is protected on the outside with enclosing brick walls up to the eaves of the roof. The roof over the bins and cupola is built with book tiles laid between T irons, and the cupola is enclosed with a wall of eight-inch hollow fire-clay tiles. These will be coated with cement plastering on the outside. It was designed by George M. Moulton & Co. of Chicago.

Circular steel tanks for the storage of grain were erected at Buffalo in 1895 and have been extensively used since then, not only at Buffalo, but at South Chicago and in a few instances at Minneapolis. They have been favored by reduced rates of insurance over that charged for elevators of wooden construction, the rate for which is from $2\frac{1}{2}$ to $3\frac{1}{2}$ per cent, according to methods of covering on the exterior and external exposure.

It is the main purpose of this article to describe the evolution from the Plympton brick elevator designed by George H. Johnson, of a practicable system of grain storage designed by his son, Ernest V. Johnson, with the collaboration of James L. Record, an elevator architect of Minneapolis, which it can be truthfully said is *fire-proof*, and has been in use for the past two years only. This is the opinion of those who have heretofore looked to policies of insurance quite as much as to the grain itself for security against loss, — the great banks of the

FIG. 5. GREAT EASTERN ELEVATOR TANKS, MINNEAPOLIS.

Northwest, whose largest investments are advances on certificates of grain in storage. As far as known the hollow-tile grain tanks now to be described do not carry any insurance.

In 1898 Ernest V. Johnson commenced experimenting on a system of grain tanks to be built of hollow burned clay building tiles, following the method adopted by his father for brick bins. In that year he took out a patent for building square tanks of the shape always employed in wooden elevators. But he soon abandoned the idea and took up the study of round tanks. In 1899 he determined to build an experimental tank, and in December of that year, with the assistance of James L. Record of Minneapolis and Horace B. Camp of Akron, Ohio, he built a single tank on the grounds of the Osborne-Mc-

Millen Elevator Company at Minneapolis, and presented it to that company to use for demonstration. This tank was 20 feet in diameter and 60 feet high, which gave it a capacity of 20,000 bushels. It was erected in extremely

FIG. 6. ST. ANTHONY ELEVATOR COMPANY'S TANKS, MINNEAPOLIS.

cold weather and was allowed to stand only thirty days before it was filled. It was built of 3 x 13 inch book tiles, 12 inches long, in two courses, with one inch of grout between, which made the wall 7 inches thick. The tension was taken up by steel bands varying in section from 2 x $\frac{3}{16}$ inch to 2 x $\frac{1}{8}$ inch, and between them were 7 x $1\frac{1}{2}$ inch solid tiles used as binders.

This tank was filled with grain and has been used ever since. Most elaborate apparatus was set up by Messrs. Johnson and Record to determine all the strains to which this tank could be subjected, especially the pressure of the grain at various points and the effects of its action when filling and discharging. Fire tests were also made on a section set up for that purpose.

Everything being satisfactory to the inventors, the Barnett & Record Company of Minneapolis assumed all the responsibilities of contractors, fully guaranteeing these tanks, and in less than a year from the date of the first test were erecting four tanks of great size for Nichols & Taylor's Great Eastern Elevator at Minneapolis. These

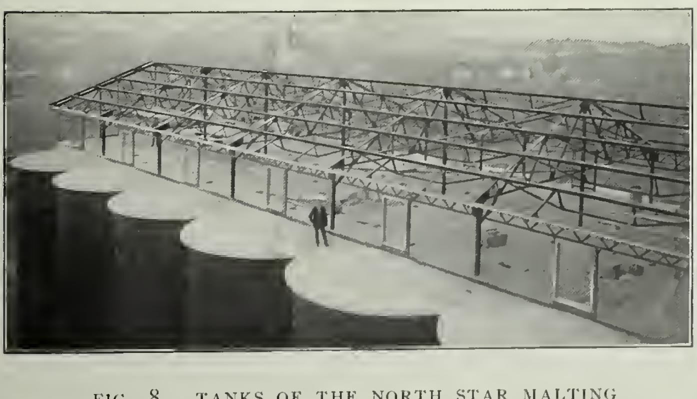


FIG. 8. TANKS OF THE NORTH STAR MALTING COMPANY, MINNEAPOLIS.

tanks are forty-six feet in internal diameter and eighty-five feet high, with a capacity of 100,000 bushels each — five times as large as the experimental tank. The weight of the grain carried in each of them is 2,800 tons. They were built with a single wall of six-inch hollow tiles, lined with two-inch split furring tiles on the inside. A course of 6 x 12 x 12 inch tiles with four cells in each was alternated with a course of 4 x 6 inch tiles made in the form of a continuous trough. These were set on their backs. In these troughs steel tension bars are set on edge, three near the bottom of tank and two in the upper part, laid in loose, breaking joints like the tiles, and buried in Portland cement grout. The trough being filled solid with cement, the next course of 6 x 12 inch tiles is set on edge, then trough tiles and steel bars, and so on to the top. There are of course other details connected with the work. Usually there is a stone water-table at the bottom of each tank and a molded tile cornice at the top.

Two illustrations will show how the work was done on the Great Eastern tanks. Figure 4 shows the work in progress on the last two tanks at the end of the row, and Figure 5 shows the tanks in their present condition since they have been painted. Comparison can be made with the size of freight cars which are nearer to the spectator. The machinery building is not shown in the picture except by part of the connecting bridge. In this case the endless belt for filling passes through the upper part of the tanks, and there is no cupola. The grain is withdrawn by a similar belt underground, which is connected with pits into which the grain is discharged.

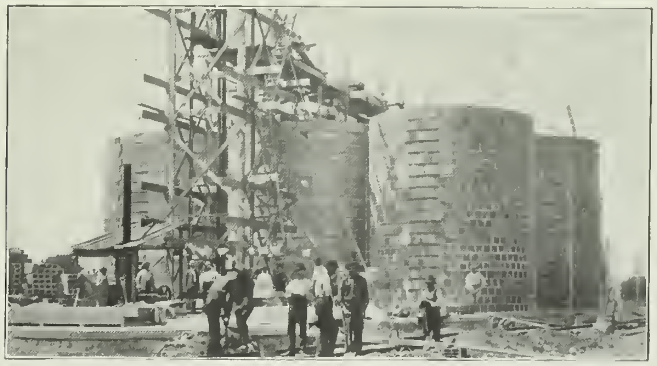


FIG. 7. TANKS OF NORTH STAR MALTING COMPANY, MINNEAPOLIS, IN PROCESS OF CONSTRUCTION.

Mr. Johnson's idea of lining the tanks with furring tiles was never repeated, and all that have been built since that last described are covered with two-inch hollow salt-glazed furring tile on the outside, which are secured during the progress of the work to the tank wall with galvanized steel anchors. These give protection from exterior fires to the wall which constitutes the actual construction, and if damaged in any way can be replaced. They are also an additional protection from the rays of the sun to which all the tanks are subjected.

In the years 1900 and 1901 this system of tanks was erected by the Barnett & Record Company for three plants at Minneapolis, and one each at Appleton, Wis.; Rosedale, Kan.; Milwaukee and Detroit. They were: for the St. Anthony Elevator Company at Minneapolis, twelve tanks 50 feet internal diameter and 90 feet high each; for the North Star Malting Company, Minneapolis, eighteen tanks 22 feet internal diameter and 80 feet high each; for the Victoria Elevator Company, Minneapolis, two tanks 50 feet internal diameter and 90 feet high each; for the Wisconsin Malting and Grain Company, Appleton, Wis., nine tanks 22 feet internal diameter and 80 feet high; for the St. Louis & San Francisco Railroad Company at Rosedale, Kan., two tanks 46 feet internal diameter and 86 feet high, and two tanks 50 feet internal diameter and 68 feet high; for the Pabst Brewing Company, Milwaukee, fourteen tanks 14 feet internal diameter and 70 feet high; and for the David Stotts Milling Company, Detroit, four tanks 14 feet internal diameter and 70 feet high. The following have been erected during the present year or are under construction: for the St. Anthony Elevator Company, Minneapolis, four tanks 50 feet internal diameter and 90 feet high; for the St. Louis & San Francisco Railroad Company at Rosedale, Kan., three tanks 46 feet internal diameter and 85 feet high; for Bernard Stern & Son, Milwaukee, nine tanks 19 feet internal diameter and 85 feet high; and for the Canadian Northern Railroad Company, Port Arthur, Canada, a cluster of eighty tanks 22 feet internal diameter and 80 feet high.

An illustration is given in Figure 6 of the St. Anthony tanks nearing completion. In Figure 7 the tanks of the North Star Malting Company are shown in process of construction, and Figure 8 is a view of the tops of the same with the structural steel of the superstructure for distributing the grain in position. The roofs of the tanks are formed with ⊥ irons supported by steel trusses having their bearing on the tile walls. Between the ⊥ irons 2 x 12 x $17\frac{1}{2}$ inch hollow book tiles are set in cement, and a composition roof covers the whole as a weathering. The superstructure is enclosed with hollow tile and roofed in the same manner. In the North Star plant the interstices between the tanks are also used for storage purposes, and for this purpose they are all tied together. This system is used where the circular tanks have an internal diameter of twenty-two feet. The tanks of forty-six to fifty feet internal diameter are built isolated, with passages around and between them.

The first of these fire-proof tank elevators to be erected in Chicago has just been commenced. Figure 9 is an illustration of its construction and method of operation taken from the preliminary design. It is for the Northwestern Yeast Company, on North Ashland Avenue. James L. Record of Minneapolis is the architect.

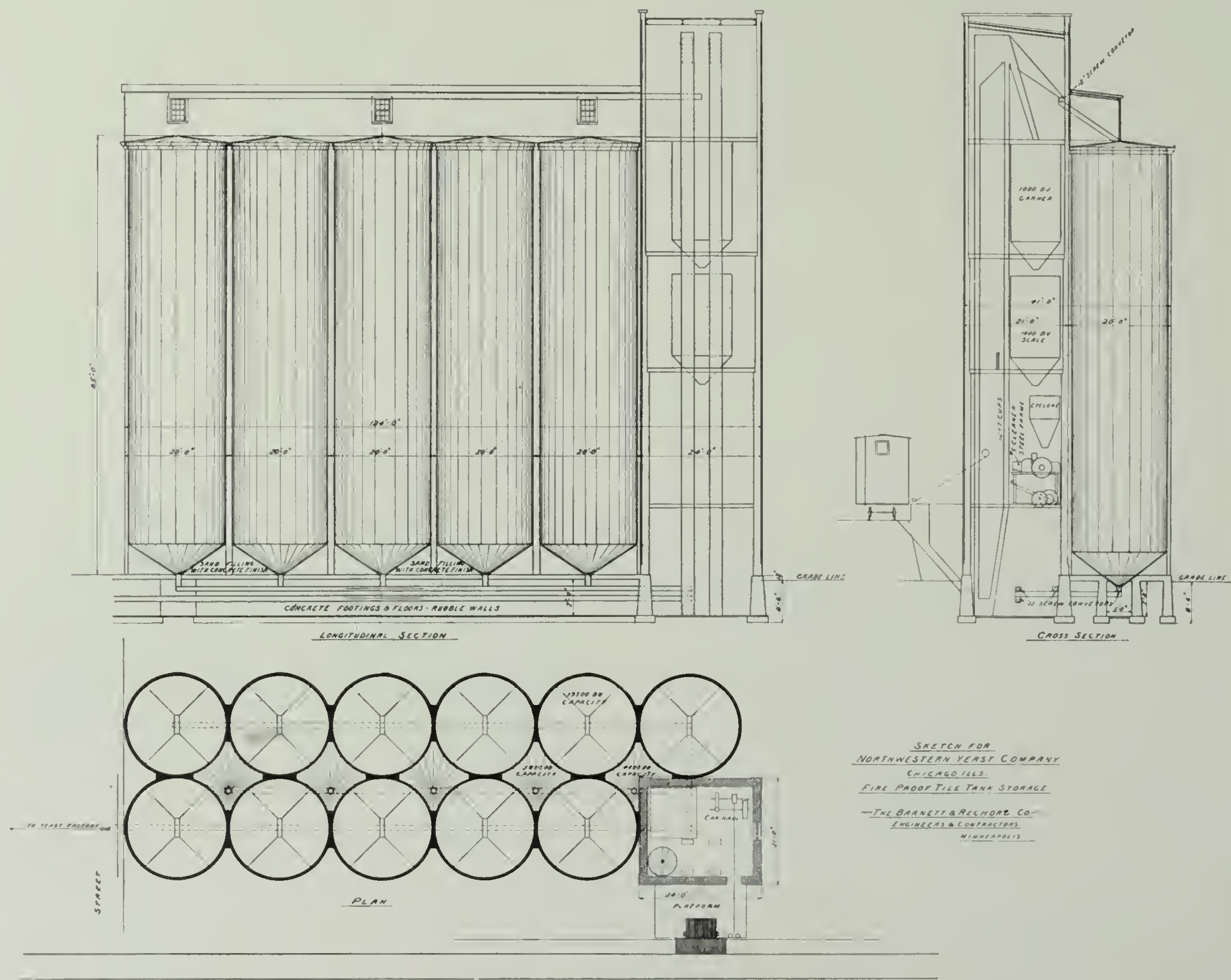


FIG. 9. PLANS OF TANK STORAGE SYSTEM FOR THE NORTHWESTERN YEAST COMPANY, SHOWING METHOD OF CONSTRUCTION AND OPERATION.

Selected Miscellany.

ST. PAUL'S, LONDON.

THE authorities in charge of the cathedral of St. Paul seem to be thoroughly alarmed as to the condition of the structure and have obtained expert advice as to what can be done. It was reported that an expenditure of something like three hundred thousand dollars would be required to make the edifice secure. The fall of the Venice campanile seems to have been a very forcible object lesson to custodians of prominent buildings throughout the world, and whatever danger may threaten the London cathedral it is hoped it may be averted in season to prevent any serious calamity. The strengthening of a large building of this sort so as to make it safe beyond peradventure is by no means an impossibility. The construction of the dome of St. Paul's is exceedingly daring and at the time it was built it was far in advance of any theoretical knowledge possessed either by Sir Christopher Wren or his contemporaries. Judging from the reports which reach us, the weakness lies rather in the foundations than in the dome itself, but any settlement of the former would doubtless be very disastrous to the latter. The west porch, which was at one time reported to be in danger of collapse, is not a very heavy structure and there ought to be very little difficulty in making it absolutely secure. The construction of a tunnel in the immediate vicinity of one of our modern first-class office buildings would probably not be attended with any hazard to either the tunnel or the building, for the reason that although the loads in a modern office building are enormous and far beyond anything to which the architects of the past were accustomed, they are so easily concentrated or distributed that they never need unduly load the subsoil. In the case of St. Paul's, however, too much reliance appears to have been placed upon a soft subsoil, and the building of tunnels in the vicinity has drained this area so thoroughly that it is feared the soil can no longer withstand the unit stress upon the foundations.

U. S. POST OFFICE, ANNAPOLIS, MD.
James Knox Taylor, Architect.

LIBRARY AT ALBANY, N. Y.
Marcus T. Reynolds, Architect.
Brick furnished by Pfotenhauer & Nesbit, New York City.

FIRES IN HIGH BUILDINGS.

THE Mills Building, 35 Wall Street, New York City, is a fire-proof building erected some twenty years ago, which has had recently an experience in the immunity from fire loss secured by terra-cotta construction. It is being added to by three additional stories, and during the construction a temporary wooden roof and house were erected for protection, extending nearly the width of the building, and utilized by the contractors for storage.

The iron beams and girders for the addition were in place and the terra-cotta material for the floors had just been set on Saturday, October 25, the temporary wood centers being still in position to allow the cement time for setting, when on the following evening, Sunday, October 26, a fire broke out in the temporary structure referred to — the cause not ascertainable — and fed by the quantity of lumber and other inflammable material in the structure and centers, burned fiercely for several hours, three fire alarms being sounded.

Despite the intense heat, the mass of water thrown against the ceiling and floor, the efforts of the firemen using their axes and hooks to tear down the wood centers, a surprisingly small amount of damage was inflicted on the arches, and that was easily repaired.

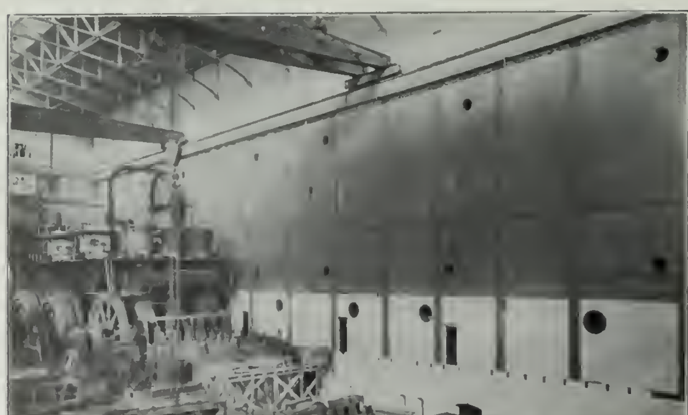
EXECUTED IN TERRA COTTA BY CONKLING ARMSTRONG TERRA COTTA COMPANY.
Bruce Price, Architect.

REMOVAL OF A BOSTON CORRESPONDENCE SCHOOL TO CHICAGO.

THE American School of Correspondence of Boston, believing that correspondence instruction in technical subjects can be made more efficient and helpful beyond what has heretofore been accomplished, has made an arrangement with the management of the Armour

DETAIL BY ROOT & SEIMENS, ARCHITECTS.
St. Louis Terra-Cotta Company, Makers.

Institute of Technology whereby the professors and instructors of engineering of the faculty of the Armour Institute will constitute a board of instruction, revision and examination for the American School of Correspondence. In accordance with this arrangement the American School of Correspondence has removed to Chicago to commodious quarters, 3321 Armour Avenue, adjoining the main building of the Armour Institute of Technology. The work satisfactorily done by correspondence students according to this new management will be accepted and credited at the Armour Institute of Technology when students desire to complete their course by actual residence there. The management of the Armour Institute of Technology coöperates to conduct this educational enterprise by correspondence in the hope of bringing to wage earners of all ages the results of the most complete resident school laboratory work. The change will in no way affect the individuality of the American School, but is made with the idea of harmonizing correspondence instruction with resident instruction, thus insuring correspondence school students a high standard of instruction. The advantages offered students unable to attend a resident school are evident, and the plan shows in the most striking manner the wonderful advance in



ENGINE ROOM, EDISON ELECTRIC POWER HOUSE, NEW YORK CITY.
Lined with Enamel Brick furnished by the American Enameled Brick and Tile Company.

the educational possibilities of the people in recent years. Young men who are unable to give up four years to obtain a technical education can, by first taking a correspondence course, reduce the time required for obtaining a complete course and a resident school degree. The step marks a new era in the educational possibilities of mechanics, and will be watched with great interest by all thinking people.

NEW METHODS IN BRICKMAKING.

THE Fiske Brick Company has recently completed its new plant at Dover, N. H., in which will be manufactured hard-burned common red building brick. The success of this enterprise, which seems to be assured, marks a new epoch in the brickmaking industry of the country. Hand labor, which in the ordinary brickyard

BUSINESS BLOCK, KANSAS CITY, MO.
Louis Curtis, Architect.
Veneered with American-size White Enamel Brick made by Hydraulic-Press Brick Company.

constitutes about one half the entire cost of manufacture, is here almost entirely eliminated, the bricks being handled through nearly the entire process in large masses by electrically driven machinery under control of one operative, the bricks being touched by hand but once until they are delivered in the storage house as finished product.

Mr. J. B. Parker Fiske, son of Mr. George M. Fiske (Fiske Brick Company, Boston), is the inventor and patentee of the devices used. He is a graduate of the Massachusetts Institute of Technology, and was formerly connected with the Westinghouse Electric Company of Pittsburg.

Probably no series of inventions which have had to do with the clay-working industry have attracted such widespread attention as have these, and the great saving which is made in the cost of manufacturing common brick by this process will undoubtedly largely increase the use of that material.

THE LEAMY HOME, MT. AIRY, PHILADELPHIA, PA.
Cope & Stewardson, Architects

COMMERCIAL TRUST COMPANY BUILDING, JERSEY CITY, N. J.
Brick furnished by The Kreischer Brick Manufacturing Company
Terra-Cotta by the Atlantic Terra-Cotta Company.
George B. Post, Architect.

SUNDRY ITEMS OF INTEREST.

John T. Comes, architect, has opened an office at 341 Sixth Avenue, Pittsburg, and would be glad to receive manufacturers' catalogues.

DETAIL BY APPLETON P. CLARK, JR., ARCHITECT.
Atlantic Terra-Cotta Company, Makers.

The Class Committee of the Boston Architectural Club has arranged for two classes during the present season (1902–3), one in Planning and one in Construction. A charge of $7.50 is made to each member wishing to join the class in Planning, and $5 to those who join the class in Construction.

The Ingalls Building, Cincinnati, which will be some fifteen or sixteen stories high, Elzner & Anderson, architects, will have two of its façades built almost entirely of a satin-finish, granite-shade, English-size enameled brick, which will be furnished by the Tiffany Enameled Brick Company of Chicago.

The Cincinnati Roofing Tile and Terra-Cotta Company, manufacturers of the American S Roofing Tile, have just issued an interesting catalogue illustrating and describing the tile which they make and also giving much valuable information concerning the use of tile on roofs. The manufacturers of this tile have been engaged in the roofing business for many years, being one of the largest concerns of the country in that line of work, consequently their suggestion as to how tile should be laid will have more than the usual interest and value.

HOUSE, MT. HOLLY, N. J.
T. H. Prior & Sons, Architects.
Built of Iron-Clay Brick, made by Columbus Face Brick Company.

The large new Astor Hotel, Broadway, New York City, Clinton & Russell, architects, will have about 250,000 repressed red brick in its front walls and 400,000 light buff brick in the courts, same being supplied by the Sayre & Fisher Company.

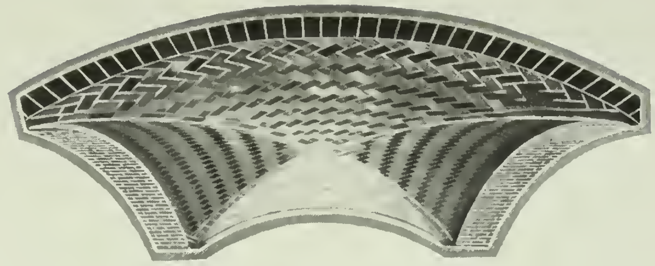
One hundred thousand light gray bricks, furnished by the Sayre & Fisher Company, were used in the facings of the Flatiron Building, New York City, D. H. Burnham & Co., architects.

Three hundred thousand light gray front brick, 500,000 buff brick and a large quantity of light and brown enameled brick will be used in the new power house for the Underground Rapid Transit Road, New York City. These bricks

DETAIL BY LUDLOW & VALENTINE, ARCHITECTS.
New York Architectural Terra-Cotta Company, Makers.

will be furnished by the Sayre & Fisher Company. This is said to be the largest power house in the world.

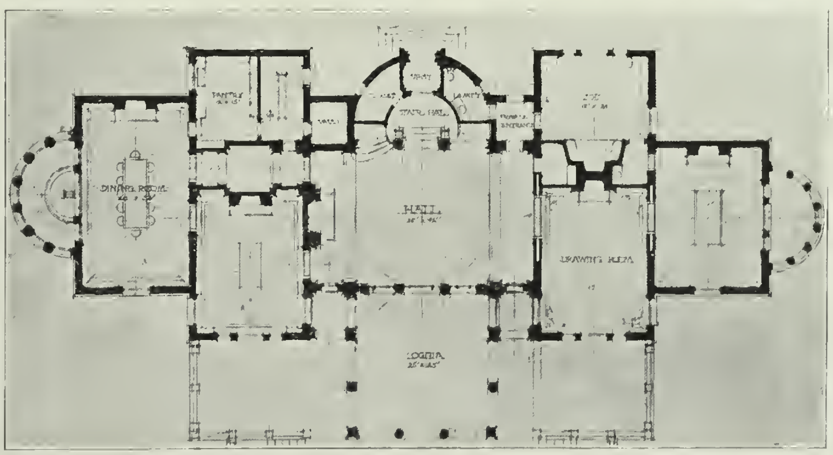
The American Enameled Brick and Tile Company will furnish enameled brick for the Charles Schwab house, Riverside Drive, New York City, Maurice Hebert, architect; also for the National Savings Bank and New York State Bank, Albany, N. Y., for linings of walls in storage room and basement; Race Street Pumping Station, Philadelphia; extension to Harrisburg Railroad depot; and the Busy Bee Candy Kitchen Company, Columbus, O. The smallest of these contracts is for 25,000 brick, and others run up to 200,000.



GUASTAVINO CORRUGATED GLAZED TILE CEILING, MINNESOTA STATE CAPITOL, ST. PAUL.
Cass Gilbert, Architect.

They have also supplied the United Engineering and Contracting Company with about 175,000 enameled bricks which were used in both the New York and Brooklyn terminals of the new East River Bridge.

Among the new contracts now being served by the Sayre & Fisher Company are the following: Blair Building, New York City, Carrère & Hastings, architects, white semi-glazed brick for interior work; white front and white enameled brick for the Vanderbilt houses, Fifth Avenue, New York City, Hunt & Hunt, architects; white semi-glazed brick for the courts and white enameled brick for the basements of the new Mutual Life Building, New York City, Carrère & Hastings, architects; white enameled brick for the basement and vaults of the new R. H. Macy Building, New York City; 150,000 white brick for the interior and sides and 150,000 white enameled for basement and vaults of the new Stock Exchange Building, New York City, George B. Post, architect.



FIRST FLOOR PLAN.

INFIRMARY AT VASSAR COLLEGE, POUGHKEEPSIE, N. Y.
York & Sawyer, Architects.

The Atlantic Terra-Cotta Company reports that it is now executing work on the following contracts: The Battery Place Building, Battery Place, New York City, H. J. Hardenberg, architect; Kuhn-Loeb & Co. Building, William and Pine Streets, New York City, James B. Baker, architect; Antelope House, Bronx Park, New York City, Heins & LaFarge, architects; City Club Building, West Forty-fourth Street, New York City, Lord & Hewlett, architects; Metropolitan Life Insurance Company Building, Cleveland, Ohio, Meade & Garfield, architects; Old South Office Building, Washington Street, Boston, Mass., Arthur H. Bowditch, architect; Bellevue-Stratford Hotel, Broad Street, Philadelphia, Pa., G. W. & W. D. Hewitt, architects; Home Savings Bank Building, Massachusetts Avenue, Washington, D. C., A. P. Clark, Jr., architect; Carnegie Library, Huntington, W. Va., J. B. Stewart, architect; Lyceum Building, Pittsburg, Pa., John T. Comes, architect; residence for John A. Yates, Esq., Detroit, Mich., Kastler & Hunter, architects.

47 FEET LONG, 11 FEET HIGH.

TYMPANUM EXECUTED IN TERRA-COTTA BY EXCELSIOR TERRA-COTTA COMPANY.
J. Mills Platt, Architect.

DETAIL BY PEABODY & STEARNS, ARCHITECTS.
Perth Amboy Terra-Cotta Company, Makers.

Among the recent contracts awarded to the Tiffany Enameled Brick Company are those for the First National Bank Building, Chicago, and the Land, Title and Trust Building, Philadelphia, D. H. Burnham & Co., Chicago, being architects for both buildings, besides the following: The Lake Shore and Rock Island depot, Chicago, Frost & Granger, architects; the Commonwealth Electric Power House, Chicago, Shepley, Rutan & Coolidge, architects; McKinley Park Bath House, Chicago; fire engine house No. 62, New York City, Alexander Stevens, architect; fire engine house No. 9, New York City, Alexander Stevens, architect; eastern pumping station, Cincinnati Water Works, California, Ohio; Grand Trunk depot,

DETAIL BY WATSON, HUCKLE & CO., ARCHITECTS.
New Jersey Terra-Cotta Company, Makers.

Flint, Mich., Spear & Rohns, architects; dynamo room, Leslie E. Keeley Company, Dwight, Ill., Julian Barnes, architect; Y. M. C. A. swimming pool, Terre Haute, Ind.; Boylston Building, Boston, Clinton J. Warren, architect; addition to the Trude Building, Chicago, Jenney & Mundie, architects; addition to the Tribune Building, Chicago, Holabird & Roche, architects; city hospital power house, St. Louis, Mo., C. F. Longfellow, architect.

Charles Bacon, Boston representative for Sayre & Fisher Company, reports the following new contracts for their brick: residence, Commonwealth Avenue, Boston,

DETAIL BY HOLABIRD & ROCHE AND SANGUINET & STAATS, ASSOCIATE ARCHITECTS.
Northwestern Terra-Cotta Company, Makers.

Peabody & Stearns, architects; State Mutual Building, Boston, Andrews, Jaques & Rantoul, architects; bank building, Leominster, Mass., Hartwell, Richardson & Driver, architects.

AN OLD FIRM WITH A NEW NAME.

The Columbus Face Brick Company of Columbus, Ohio, has changed its name to that of The Ironclay Brick Company, this latter name having always been the trade-mark title for its product. There will be no change in the personnel of the company or the product, except that the latter will be largely increased because of greatly increased facilities.

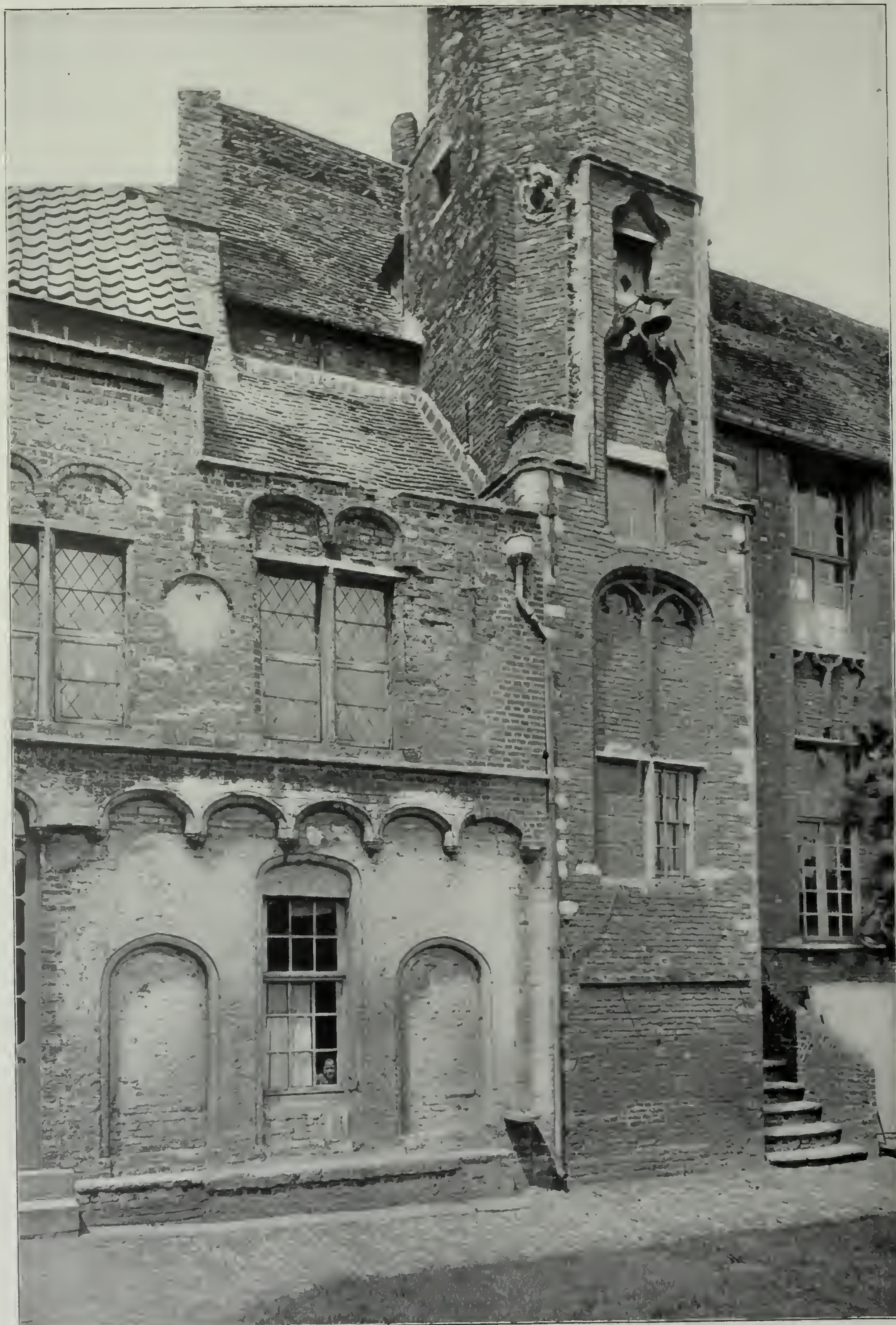
WANTED. — A Draughtsman of experience and judgment, at present head designer for one of the leading firms of architects in Chicago, desires an opening as a junior partner with an established architect. Address

"Draughtsman,"
Care of The Brickbuilder.

THE BRICKBUILDER.

DECEMBER,

1902.



DETAIL OF HOUSE AT BRUGES, BELGIUM.

VOL. 11 NO. 12

THE BRICKBVILDER

DEC. 1902

H. F. B.

THE BRICKBUILDER.

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ADVERTISING.

Advertisers are classified and arranged in the following order:—

Advertisements will be printed on cover pages only.

THE thirty-sixth annual convention of the American Institute of Architects was held at Washington, D. C., December 11, 12 and 13. It was, we believe, the largest in point of attendance that has ever been held. The chapters were very fully represented, and when it is remembered that these conventions are entirely delegate bodies, the number of delegates being proportioned to the membership of the various chapters, it will be seen that the attendance of something over one hundred indicates a very gratifying growth on the part of the various chapters. At one stage of the convention an amendment to the by-laws was introduced providing that all members of the Institute at a convention, whether delegates or not, should have a right to vote in the election of officers. This amendment, however, was voted down by a very decided majority, and it was manifestly the feeling of many of the architects that the delegate system during the two years in which it has been in operation has proven in every way a complete success.

Of strictly routine business there was not a great deal of importance transacted at the convention. The report of the Board of Directors provoked a certain amount of discussion relative to the expediency or even the possibility of admitting graduates of certain colleges to candidacy for associate membership without their being obliged to pass the prescribed examination, and, incidentally, the discussion which followed this proposal brought out the fact that the number of architectural schools throughout the country has increased enormously during the past few years. There is hardly a college of any importance now which does not strive to include a certain amount of architectural instruction in its fine arts courses. There are, however, only a comparatively few schools which are sufficiently serious in their work to earn an exemption of their graduates from the entrance examination to the Institute, and we believe the special committee to whom the directors' report was referred acted wisely in declining to make any specific recommendations, leaving the matter rather in the hands of the board, who are already empowered to make selection of such colleges for this purpose as in their judgment shall seem fit.

THE convention very appropriately took notice of the death of Senator MacMillan by passing a resolution introduced by Mr. Peabody expressing the Institute's appreciation of the services Senator MacMillan has rendered to the cause of good architecture in general and the improvement of Washington in particular. If the projected improvements are ever completed their realization will be due to Senator MacMillan more than to any other one individual, for without his appreciative and persistent work in Congress the appointment of the commission which took up the matter would have been impossible.

Only one amendment to the by-laws was passed at the convention, providing that members of the Institute shall be members of the nearest chapter in the district wherein they reside. This amendment rather unexpectedly encountered practically no opposition. It will readily be admitted that there are some chapters of the Institute which have done very little work and in which the members seem to have so little interest in the welfare of the profession as a whole that membership therein offers relatively few advantages, but as one of the officers of the Institute very rightly put it, when a chapter is dead in that sense it is a duty as well as the privilege of the live architects to take up its cause and revive the lagging interest, rather than to draw away and claim membership in the Institute without accepting the obligations towards the local chapter.

The Institute elected to honorary membership Mr. Samuel A. B. Abbott, who was chairman of the board of trustees of the Boston Public Library during the period in which that building was built, and who since then has been the director of the American Academy at Rome; also Mr. Emile Vaudremer, the noted French architect; and Mr. Andrew Carnegie, the election of the latter being justified by the incentive which his gifts have aroused in the designing of public libraries.

It will be remembered that a short time since the

American Institute purchased the so-called Octagon House, a beautiful mansion dating from the latter part of the eighteenth century, the intention being to use this as headquarters for the Institute. As the Institute is by no means a wealthy body, a subscription was taken during the convention to provide for the first payment on the sale, and fifteen thousand dollars was subscribed at once, with the promise of more to follow. The committee which had this matter in charge announced their intention to secure an endowment fund of a quarter of a million to provide for both the care of the Octagon House, its furnishing, and the erection of suitable accommodations for holding conventions.

THE papers presented and the discussions which followed them very naturally centered to a large degree around the plans for the improvement of Washington and the report of the commission through whose agency these plans were prepared. F. L. Olmsted, Jr., read a very interesting paper detailing the work which was done by the commission, and D. H. Burnham, the chairman, in a very pleasing manner described how the commission went to work, how the problem was studied from every point of view, and also spoke of what had been the actual practical outcome. In a landscape sense nothing has yet been achieved, but the removal of the tracks crossing the mall and the building of the new station to the north of the Capitol have already been determined upon, the building for the Department of Justice in the square opposite the Capitol corresponding to the Congressional Library is now an assured fact, and the building for the Department of Agriculture has been located and plans accepted. All of these follow directly in lines of the recommendations of the commission, and whatever is done in the future will undoubtedly be along these same lines. The report is so comprehensive and seems to meet the needs of the problem so thoroughly that so far we have heard practically no adverse criticism. The improvements of the Anacostia are well under way, also following the general lines of the commission's report, and the White House improvements can certainly be termed to be thoroughly in harmony with the recommendations of the commission. Also the Lincoln and the Grant monuments, while not actually under way, are being studied and prepared for, and the National Museum, though not carried out in the scale of finish which was contemplated by the commission, follows the general lines marked out by them. It will therefore be seen at once that, taking into view the inertia of a body like the United States Congress and the magnitude of the interests involved, really a great deal has been accomplished already as a direct result of the work of this commission. The Institute before the close of its convention passed a resolution unanimously requesting Congress to approve the recommendations of the commission as a whole, and it is certainly to be hoped that no attempt will be made to materially alter the scheme which has been so thoroughly studied and laid out.

Following directly upon the lines of thought suggested by Mr. Burnham came a most admirable paper by Mr. W. B. de las Casas, the chairman of the Boston Metropolitan Park Commission, describing and illustrating what has been accomplished in Boston, and also an equally interesting paper by Mr. Albert Kelsey illustrating what other cities in various parts of the world have accomplished along the same lines.

A PAPER was read by Captain John Stephens Sewell, Engineer Corps, United States Army, on the Relations of the Architect and the Engineer. This paper might with more reason have been styled "An Exposition of the Alleged Fact that an Architect Does not Know His Own Business." The cool assumption that a public building can be well constructed only when under the autocratic control of an army engineer who shall have full power to make contracts and disbursements, while the architect shall be nothing but an adviser, is one which we can afford to pardon, having in mind the youth of the speaker and his evident lack of experience. No one will question for a moment that an army engineer when intrusted with the care of a large building operation has almost invariably done well, chiefly because there have been so few cases in which such appointment was necessary that none but the best men have been selected. But to claim that an architect is really incapable by reason of his training and profession of attending to the practical and business details of even a large structure simply implies dense ignorance on the part of the speaker. Captain Sewell was reminded later in the convention of one architect who has handled in the past year a business running up to over thirty million dollars, quite as economically directed as the best of the government buildings, and with a coherency of purpose and intent quite equal to what was accomplished in that monument to the army engineer, the Congressional Library. But eloquently as this latter building speaks in praise of the engineer, it fairly howls with its lack of architectural and artistic harmony, and that is invariably the result when a work of art is bound hand and foot and turned over to the merciless direction of an engineer. We want the engineers' help, their advice and their keen efficiency, but architecture is far more than engineering, as Captain Sewell would speedily find if he came out from the officialism of the United States Army.

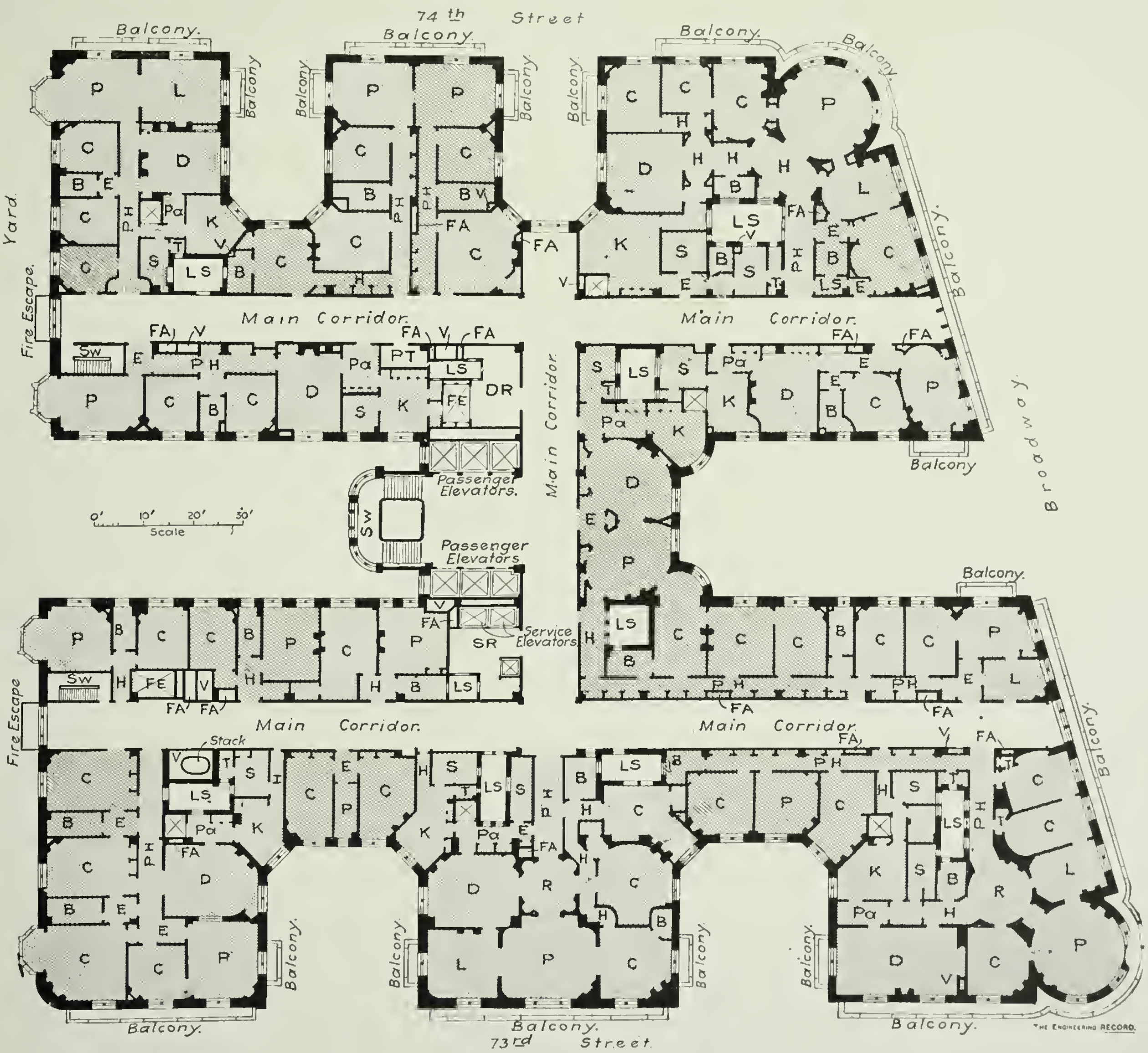
The Chicago chapter, through Mr. Mundy, presented an extremely interesting account of the work which it has accomplished in the way of lectures on architecture delivered by members of the chapter to the mechanic apprentices. This work was supplemented by lectures on construction given by members of the Master Builders' Association, with a result that though the time spent each year is not large, in four years an apprentice will have received the equivalent of one entire year's architectural instruction. This has brought about a most encouraging feeling between the architects and the mechanics and goes a long way towards offsetting the baleful influence of some of the walking delegates. Anything which brings the craftsman and the designer more closely in touch is surely to be welcomed, and Chicago seems to have gone a long way towards breaking down the isolation between the two.

The convention closed after deciding upon Cleveland as the place for the next convention and electing Mr. Charles F. McKim president, Mr. Alfred Stone of Providence vice-president, and Mr. Glenn Brown secretary and treasurer.

The Planning of Apartment Houses.

BY WALTER H. KILHAM.

THE increasing cosmopolitanism of our people and their growing tendency to a form of life less purely local in character and influenced to a greater extent by continental customs is marked in a most distinct manner by the growth and development of apartment house construction during the last ten years. Forced partly by the enormous price of land in the vicinity of the centers of large cities, partly by the increasing cost of all the necessaries and luxuries of life, as well as the annoyance and difficulty of securing competent service, our American families have been compelled to abandon their natural preference for private and individual abodes and enter upon what is probably an early phase of the coöperative living which will very possibly be one of the principal developments of the twentieth century. The buildings devoted to this coöperative living may be generally divided into two classes, in one of which the coöperative idea is so far developed that the necessary cooking and laundering for the occupants of the building is done in common either in or outside of the building, in which case a large dining-room is essential, while in the other case the apartments constitute a series of domiciles complete with kitchens and all the necessaries for complete housekeeping; the benefits of the communal idea in this case being chiefly the possibility of living in the central part of the city, in a house frequently luxurious beyond the purse of the private owner, and free from the cares connected with heating, cleaning hallways, clearing snow and many minor duties which devolve upon the independent householder.



TYPICAL FLOOR PLAN.

THE "ANSONIA," NEW YORK.

In this housing of several distinct family units under one roof several things immediately become essential, —

First. Complete separation of each group from the others. The hall door must become a complete barrier, giving no hint of the life behind. Walls and floor between apartments must be deafened where practicable, and the windows of one apartment should on no account overlook or give on the windows of another.

Second. Each suite must have as cheerful and sunny an aspect as is possible, with all the light and air that it can possibly get. To secure to each suite its fair proportion of sun is one of the hardest tasks of the architect. The writer recalls an instance of a suite of eight or nine rooms in a large and handsome apartment house renting for $1,500 per year, only one room of which had any opening on the exterior air.

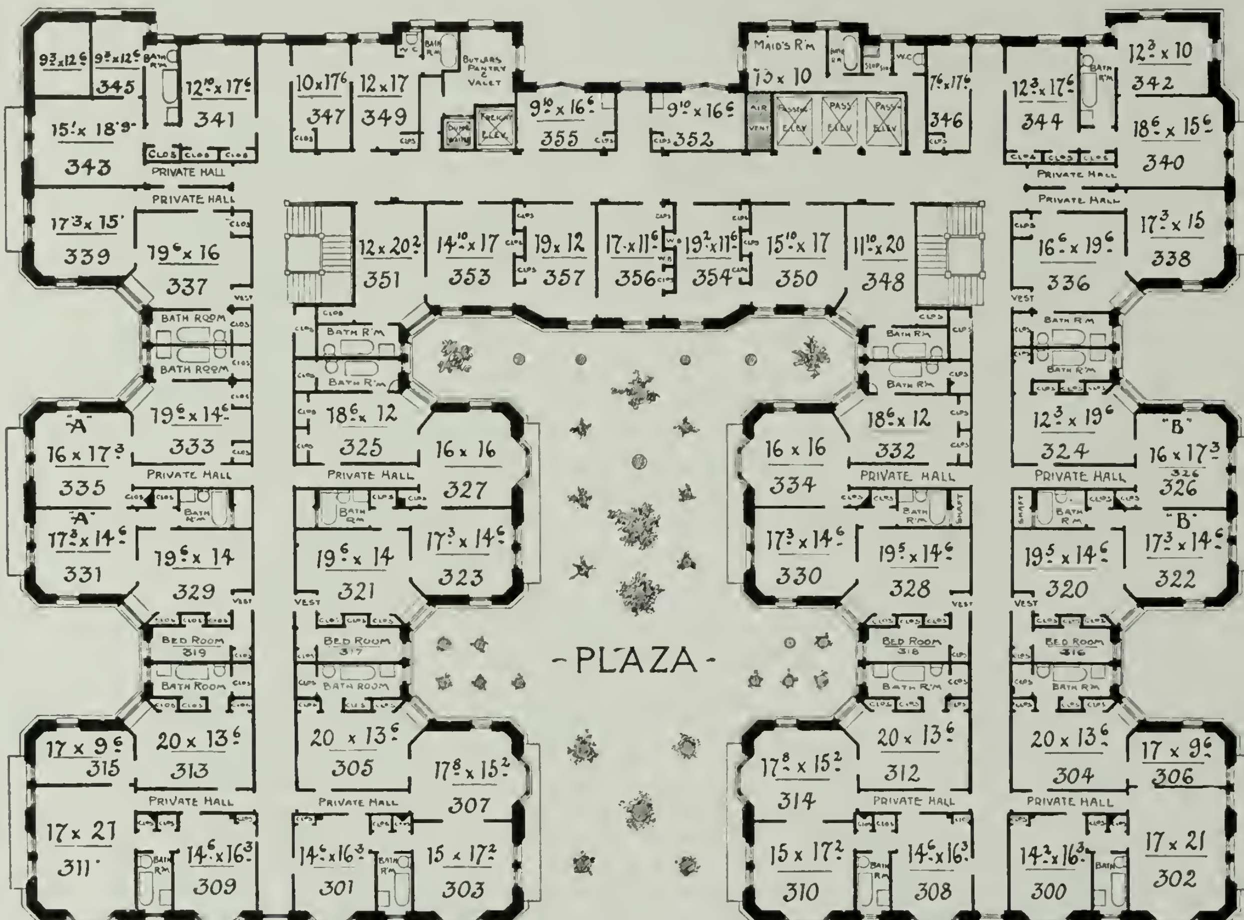
Third. In housekeeping apartments the kitchen and service portions must be effectively separated from the living portions. Ways of accomplishing this will be discussed farther on.

Fourth. Those rooms destined for the essentially private life of the family — chambers and bath rooms — must be secluded.

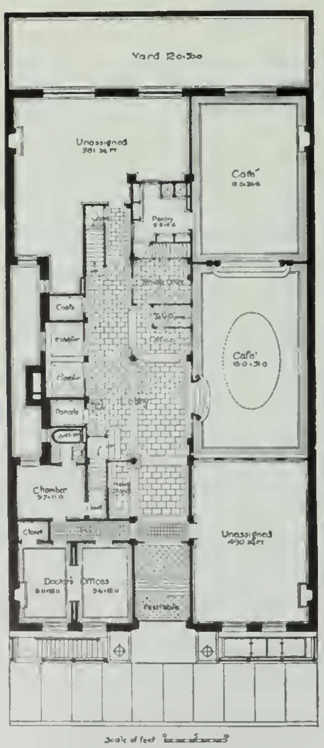
Fifth. The construction must be solid and fire-resisting, with means of egress safe in case of fire.

Sixth. After all the above has been arranged regard must be had for exterior appearance. In particular the entrance must be as attractive as possible to satisfy the *amour propre* of the tenants. An experienced real-estate man remarked the other day: "Put your money into the entrances and bath rooms, and the suites will rent every time." All the money that can be spared should be lavished about the main doorway and corridor, for the American, in spite of frequent denials, dearly loves display and delights in a showy exterior.

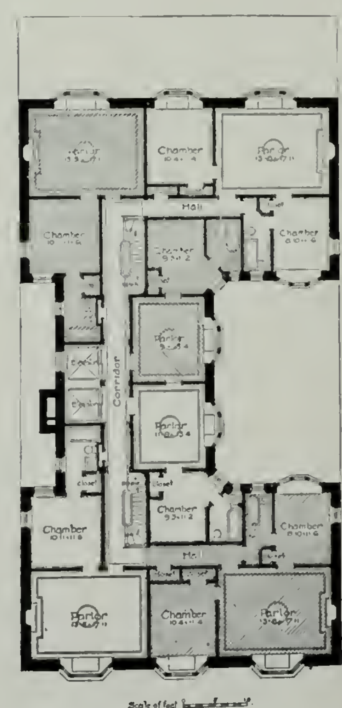
Seventh. The part devoted to administration must be convenient and well designed. The boiler



TYPICAL FLOOR PLAN.
THE "MAJESTIC," NEW YORK.



FIRST FLOOR PLAN.
THE "MANSFIELD," NEW YORK.



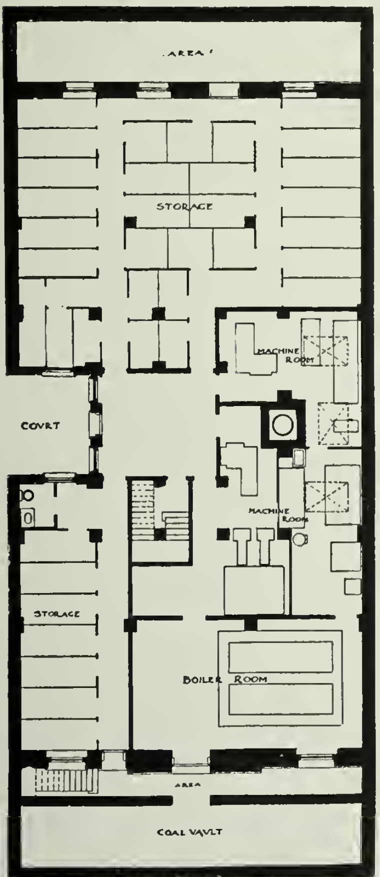
THIRD FLOOR PLAN.
THE "MANSFIELD," NEW YORK.

room must be large and convenient; there must be ample room for stocking up with large supplies of coal; if there is a restaurant in the building the arrangement of the kitchen and dining-room must be carefully studied. The valuable land placed at the disposal of the architect must be utilized in such a way as to ensure to the owner the largest possible return upon his investment.

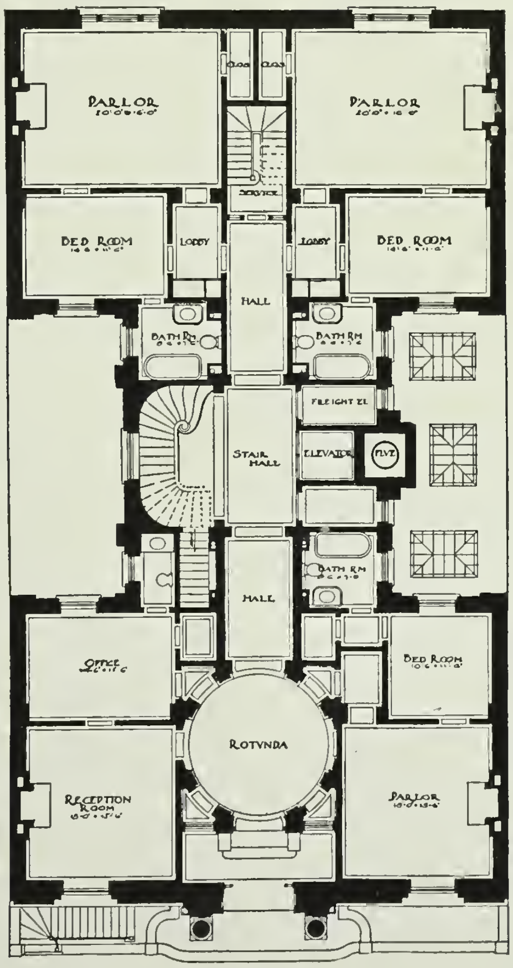
In the preparation of these articles the writer is under obligations to the managements of the various buildings mentioned, to Messrs. Marsh, Miller & Co. and Messrs. Slawson & Hobbs of New York, and to the architects who have kindly loaned their plans and given him valuable information.

NON-HOUSEKEEPING APARTMENTS.

First in importance among apartment buildings is the great city apartment hotel, covering a block of ground,

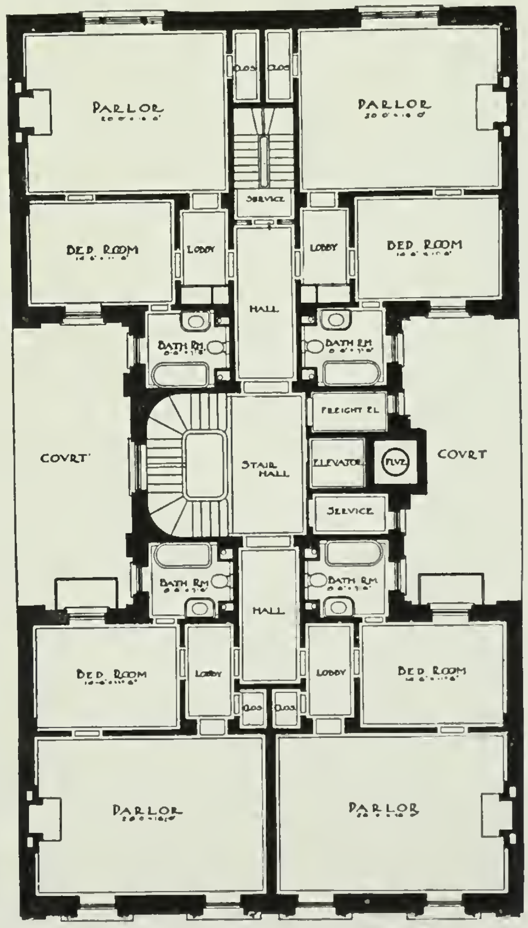


BASEMENT PLAN.



FIRST FLOOR PLAN.

THE "McVICKAR," 15 EAST FORTY-EIGHTH STREET, NEW YORK.



TYPICAL FLOOR PLAN.

with light on all sides and sheltering hundreds or even thousands of persons.

For various reasons suites planned for complete housekeeping are rarely constructed in such large aggregations. The latent antipathy felt by each family unit for every other becomes accentuated when all the details of the life of a hundred families are carried on in close proximity to each other, and disputes or animosities between tenants are likely to ensue to the great annoyance and loss of the owner. Moreover, the odors from cooking, which are easily removed when produced in one room, are much more difficult of removal when produced in a series of small and frequently poorly ventilated kitchens, and they become disseminated through the buildings, growing more pronounced each year as they are absorbed by the walls and floors. Large collections of private servants are moreover difficult to manage, particularly when employed by different families.

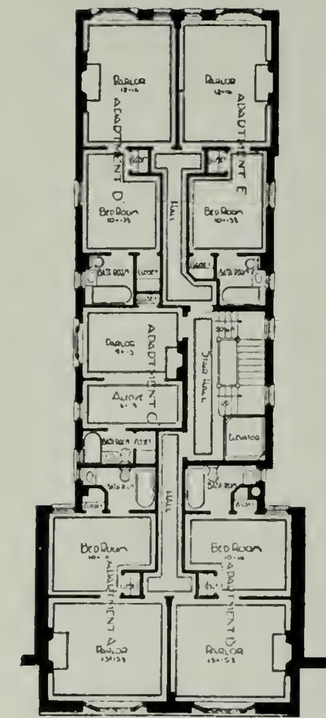
For these and other reasons the largest apartment houses are generally devoted merely to living suites, with common dining-rooms for all the lodgers.

One of the most complete apartment houses ever built is now nearing completion on Broadway, New York, between Seventy-third and Seventy-fourth streets. Some idea of the size of the "Ansonia," as it is called, may be gained from the statement that the seventeen stories above ground contain no less than twenty-five hundred rooms. Reference to the very well studied plan will show the ingenious yet simple arrangement of the rooms. There are no tortuous passages. Two long and straight corridors ten feet in width, running to daylight at the ends and connected by a cross corridor at the center, give access to all the chambers. The cross corridor is approached by the six public elevators and an ample staircase, all of which are placed against the outside light, giving at once a cheerful impression of the building and ensuring good ventilation of the halls. A dark elevator shaft is usually unavoidable, but when possible it is much better to place the elevators where they will get outside light. The "Ansonia," W. E. D. Stokes, owner and architect,

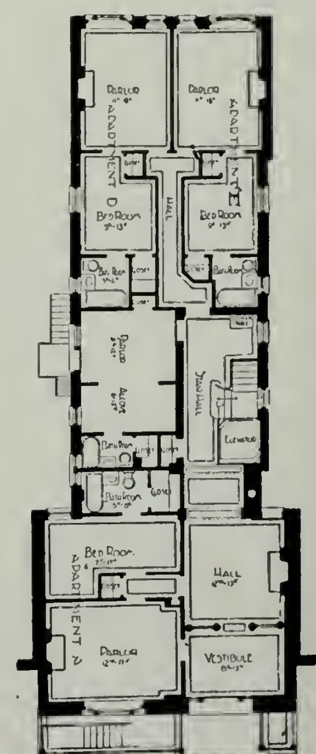
BACHELOR APARTMENTS, FORTY-SIXTH STREET AND SIXTH AVENUE, NEW YORK, "THE HOLLAND."
Israels & Harder, Architects.

constitutes an exception in the larger class of buildings. The suites vary from bachelor suites of one room and bath up to housekeeping suites of fourteen rooms, three baths and four toilets. Subdivision of the larger suites is accomplished by a secondary corridor running parallel to the main corridor and giving access to the various rooms. Along the corridor wall are placed wardrobes, arranged alternately for shelving and for hanging clothes. The device of a foyer is used to break the too sudden entrance from the hall to the parlors. This foyer, as it is called, consists of a room, in many cases circular in plan, from which the dining-rooms, parlors and libraries are entered. This room, from the fact of having no outside light, is somewhat gloomy by day, but in the evening this defect is obviated. Fireplaces are provided and the walls are handsomely decorated. The kitchens of the housekeeping suites are effectively separated from the living portions. Each kitchen contains a ventilated gas or electric range, with porcelain sink and porcelain washtub. Steam clothes dryers are provided in the basement for the tenants' use. In the pantries are refrigerating compartments with appliances for freezing artificial ice upon the spot. Servants' chambers and servants' bath rooms form parts of the suites. Each suite is supplied with warm fresh air in winter and cold air in summer, in addition to the heat supplied by radiators in the window seats. Doors are of mahogany throughout, with cut-glass knobs and French hardware. Several of the suites have private elevators. Filtered iced and hot water is supplied to each suite.

A partial enumeration of the conveniences planned for the tenants of this building will serve to show the requirements of modern apartment house planning. When finished the basement will contain a swimming pool one hundred and six feet in length, Turkish baths, storage, repair and charging room for automobiles,—a lift being provided to take them from



TYPICAL FLOOR PLAN.
THE "HOLLAND," NEW YORK.



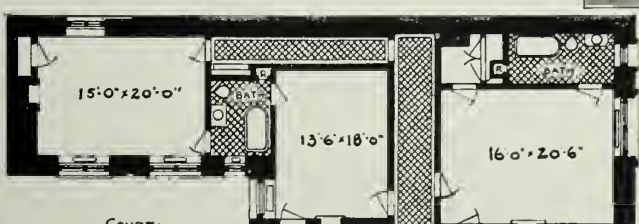
FIRST FLOOR PLAN.
THE "HOLLAND," NEW YORK.

the street to the basement, — a grocery department, including a butchery, bakery and milk depot where housekeeping tenants can obtain supplies, barber shop, manicuring parlors, safe deposit vaults, cold storage room for furs, another for beer, etc., laundry, kitchens, etc., for the public dining-rooms, electric lighting and refrigerating plants, as well as the usual batteries of pumps and boilers. Sixteen elevators are operated. From the manager's office pnuematic tubes run to each serving room, and in it various dials record humidity and temperature of air, steam pressures, etc.

On the seventeenth floor is a conservatory dining-room, to which express food lifts run at a speed of five hundred feet per minute.

It will be noted that in spite of the large area at the disposal of the architect he has not availed himself of the interior court idea, but has instead deeply indented the façades with courts open to the street, which from their ample size admit light and air to the very center of the building. We think it is doubtful if the continental idea of a large central court ever becomes popularized in America. Where the central court is employed some suites must necessarily give up their view of the street and confine themselves to an outlook only on the court. In France, through centuries of training, the people are accustomed to dwelling in courtyards, just as they are accustomed to dining bareheaded on the sidewalks in January, but the usual American matron prefers a view of the boulevard, be it ever so narrow. Moreover, the enormous height of our buildings converts the most ample courtyard into a species of

THE "ESSEX," MADISON AVENUE AND 56TH STREET, NEW YORK.
Howard, Cauldwell & Morgan, Architects

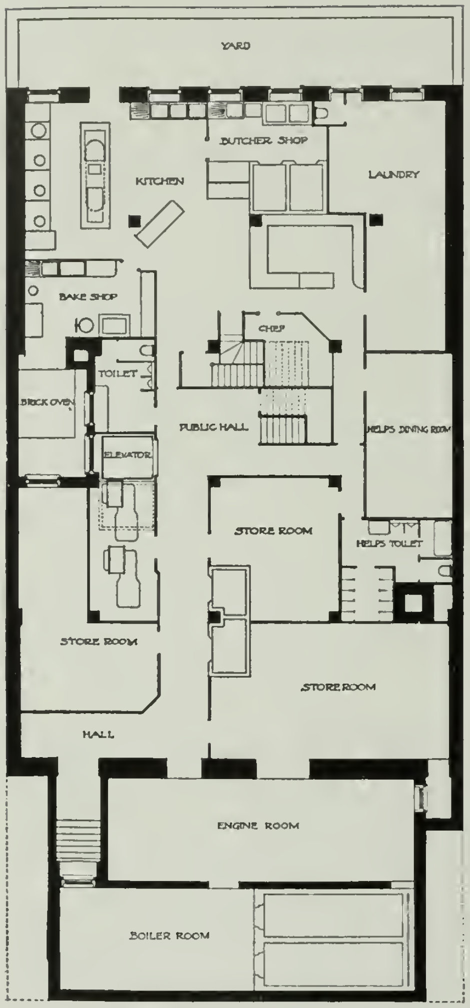


TYPICAL FLOOR PLAN. THE "ESSEX," NEW YORK.

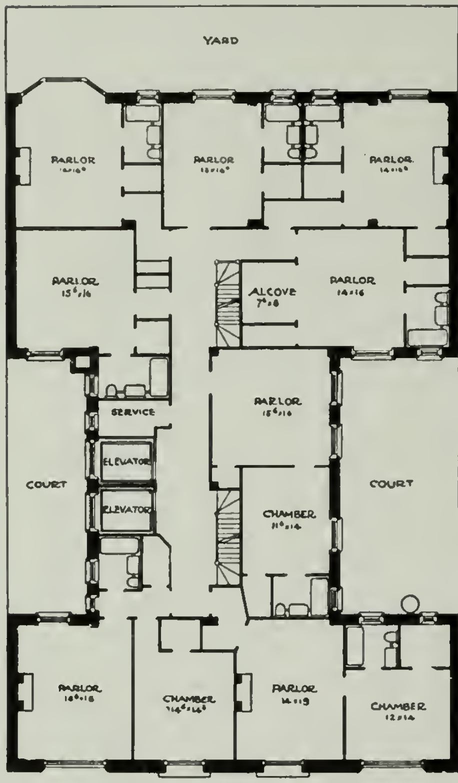
well, dark and sunless, while for circulation of air the court open at one side is immeasurably superior to one enclosed on all four sides.

An interesting parallel to the plan of the "Ansonia" is afforded by that of the "Majestic," built a few years ago and likewise planned upon the open-court system. An inspection of the plan reveals a very unusual amount of light in the rooms. Every room and bath opens directly to the outside air, without the use of any light wells whatever. The corridors, however, have corners which require artificial light. Features of the planning of the "Majestic" are the bowling alleys, ballroom, card rooms, and the roof garden and conservatory with vaudeville stage at an elevation of three hunded feet above the sea level. The "Dakota," directly opposite, has the interior court.

It is of course impossible to recommend anything approaching a standard plan for apartment houses. The problem varies with each opportunity. Size and shape of the lot, the points of the compass, the position of the adjoining buildings,

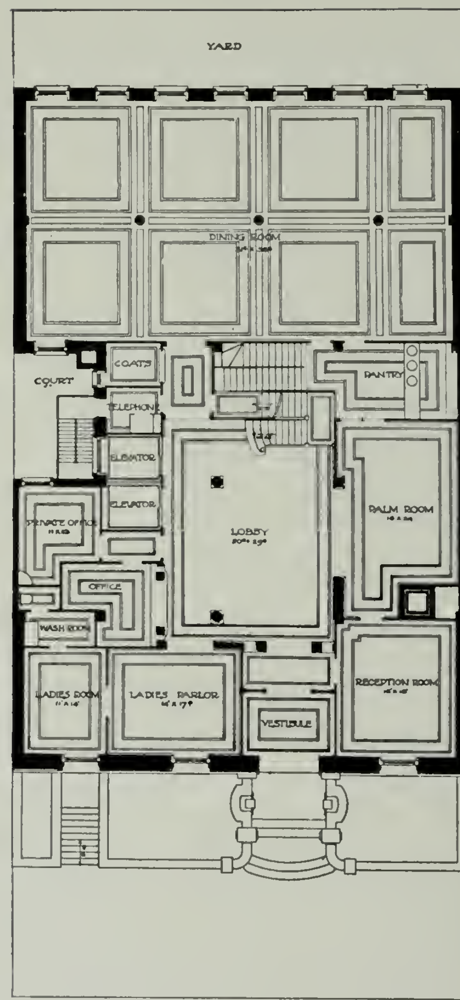


BASEMENT PLAN.



TYPICAL FLOOR PLAN.

THE "ST. HUBERT," NEW YORK.



FIRST FLOOR PLAN.

all combine to affect the situation, and the successful architect is he who seizes upon the strategic points of the plot and turns seeming obstacles to his client's advantage.

Turning to apartment buildings of lesser size we find a type of plan suited for an inside fifty-foot lot well represented by such houses as the "Mansfield," Renwick, Aspinwall & Owen, architects, and the "McVickar," Liebau & Nash, architects, of which plans are annexed. With some variations this plan will be found frequently repeated in New York. The suites are mostly of two rooms and bath, and the elevators and stairways are placed back at the center of the building and are well lighted by the courts which give the building its dumb-bell-like shape. It will be noted that none of the rooms give on air shafts, but all open on good-sized open courts or else the front and rear.

One of the best of the higher class of apartment houses in New York is the "Essex" at the corner of Madison Avenue and Fifty-sixth Street, designed by Howard, Cauldwell & Morgan. Its plan is a good example of the development of the possibilities of a corner lot. The rooms are of ample size, averaging fifteen by twenty feet, with bath rooms about ten feet by ten feet. Each floor contains nine rooms and five bath rooms, served by two elevators. The equipment of the "Essex" is of the most elaborate description, and the decorations are in remarkably good taste. The handsome façades are built of Harvard brick and light stone.

The "Holland," Israels & Harder, architects, is an example of the use of a thirty-five-foot lot with narrow courts on each side. The stairways, elevator and bath rooms all get outside air and light.

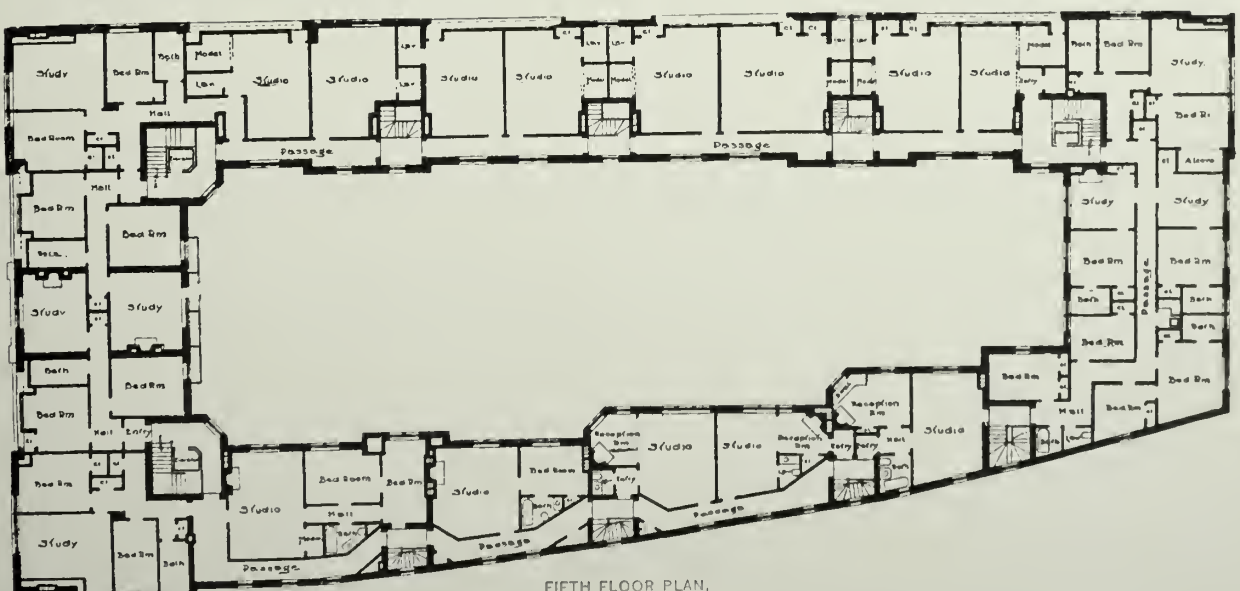
The "St. Hubert" is a building of considerably plainer construction, but yet well planned and lighted. The lot is some sixty feet front, and the dumb-bell plan is used, with the result as usual that the corridors and elevators are flooded with light, and the resulting impression is most agreeable. The first floor is particularly pleasing in its cosey and homelike effect.

In the city of Boston a house has lately been built which combines with the attractions of a non-housekeeping suite the advantage of a small pantry, or "kitchenette," containing cupboards, sink, ice-box, etc., where light lunches or supplies may be prepared. These pantries with the bathrooms are lighted from wells. This arrangement has proved popular and the house has rented well.

Trinity Court in Boston, Ball & Dabney, architects, is a good example of the enclosed court idea successfully used, and is free from the objection that some of the suites have an outlook only on the court. In Trinity Court all the suites extend clear across the wings, so that a cross draught is possible and an exterior outlook can be had.

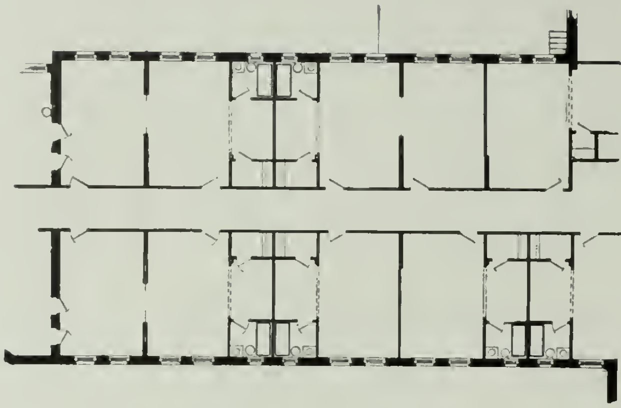
FIRST FLOOR PLAN.

SECOND FLOOR PLAN.



FIFTH FLOOR PLAN.

"TRINITY COURT," BOSTON.

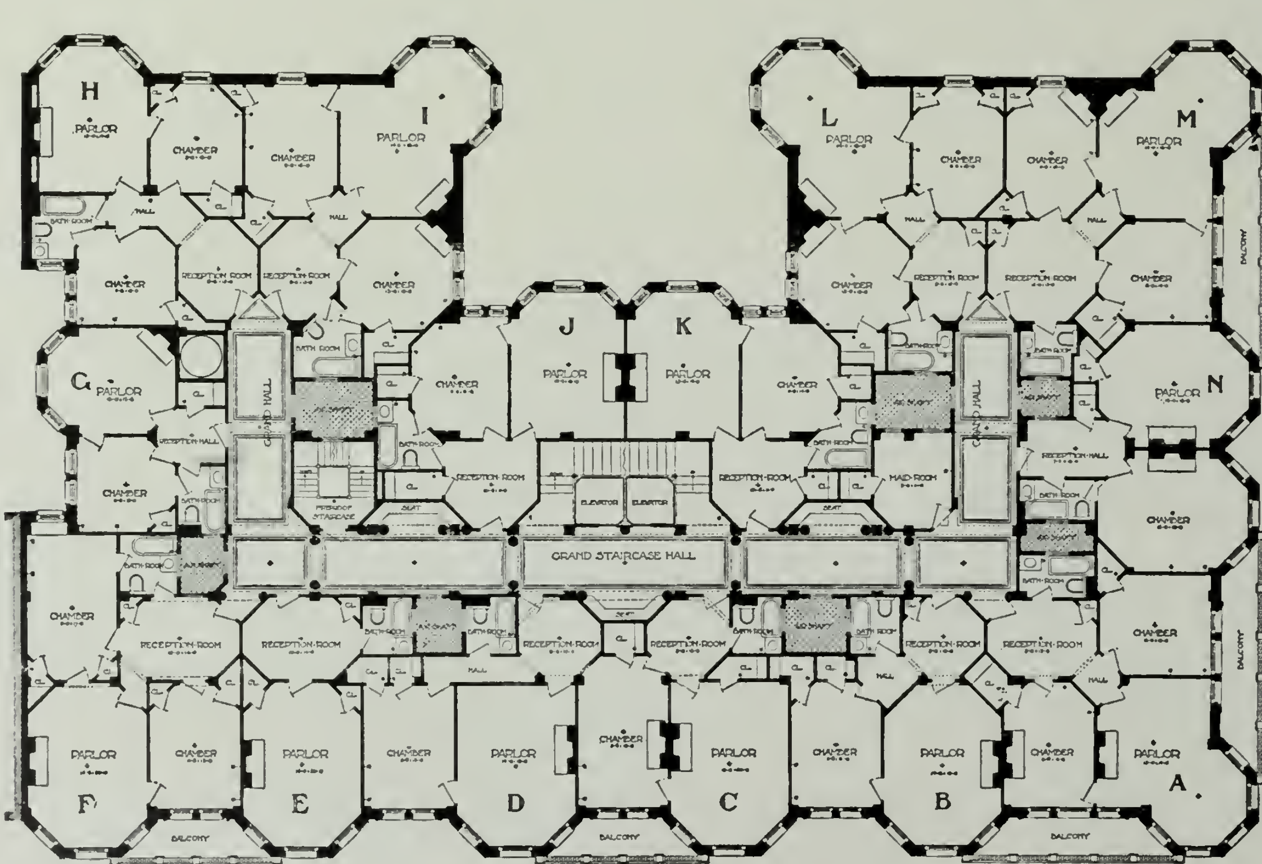


PORTION OF TYPICAL FLOOR.
"MASSACHUSETTS CHAMBERS," BOSTON.

This very desirable feature is obtained by an ingenious arrangement of halls and stairways having separate entrances on the court, which is handsomely laid out and treated as a garden. The various divisions of the house are named after Presidents of the United States. The suites are mostly of two and three rooms and baths, number of well-arranged studios. The picturesque façades and court elevations in the English style form one of the most striking architectural compositions in Boston.

The alcove bedroom system is well illustrated in the portion of the floor plan of the Massachusetts Chambers, now in process of construction in Boston from plans by Clinton J. Warren, architect. This arrangement combines great renting power with the utmost simplicity in construction and framing. The regular widths of the rooms permit equal spacing of the girders and beams and allow interchangeability of pieces, a great help to rapid construction. Rooms of this character can generally be rented in any large city as fast as they can be built. The arrangement is such that any number of rooms can be coupled together to form a suite of any size.

The Westminster Chambers in Boston, designed by H. A. Cregier, architect, utilize the somewhat dark interior portions of the plan as reception rooms, similar to the foyers in the "Ansonia." The bath rooms are almost entirely placed on the air shafts, reserving the exterior light for living rooms. Better air and outlook are



TYPICAL FLOOR PLAN.
WESTMINSTER CHAMBERS, BOSTON.

though there are several variations. This arrangement has proved very popular and the house has been successful. The basement contains kitchens, laundry, storage, bowling alleys and bicycle rooms, besides the necessary space for boilers and machinery. The building accommodates a private school, and in the upper story there are a assured by a large number of bay windows. For some reason the indented court idea, as applied to the plans of the "Ansonia" and "Majestic," has never been popularized in Boston, although a number of buildings have been built of sufficient size to permit it.

(To be continued.)

Interesting Brick Architecture in Pittsburg, Pa.

PUBLIC AND COMMERCIAL.

BRICK and terra-cotta naturally commend themselves for building materials in a city where smoke and dirt soon cover with a uniform coating of black everything that will catch and absorb them. Formerly popular opinion seems to have decreed that stone was the only suitable building material for work of a public or commercial nature, and the use of brick and terra-cotta was generally confined to domestic work and a few of the smaller buildings of a public character, but that their ad-

CHAPEL, MT. ALOYSIUS ACADEMY, CRESSON, PA.
Alden & Harlow, Architects.

vantages and beauties are being more and more appreciated is evident from the increased use in the newest office buildings, churches, etc.

Brickwork has in Pittsburg too often meant small, thin joints, the old, or rather the new, blind bond, and colored mortar, and those who have no means of knowing the beauties of a good brick, well laid, can hardly be expected to appreciate them.

One of our oldest and most interesting buildings, St. Paul's Roman Catholic Cathedral, is a brick structure. The detail, especially around the transepts, is very quaint and interesting.

The illustration of the Carron Street Baptist Church and that of the chapel and rectory of SS. Peter and Paul show two interesting buildings in entirely different styles. Beezer Bros. were the architects of both. The inspiration for the Church of St. John the Baptist, also from the office of Beezer Bros., has been sought in the old brickwork of Lombardy. Some polychromatic effect has been attempted by the uses of alternate bands of light and dark brick. The interior has been treated in a straightforward, structural way, by the use of a high brick dado with a plain wall surface above and an open timbered roof, while the piers which support the clerestory arches are of alternate bands of brick and stone.

The Carnegie Institute has a number of branch library buildings throughout the city, all of which have been built from a very similar floor plan.

Interest has been added to the brickwork of the Hazelwood Building by the use of header courses and the introduction of the brick and stone panel in the pediment over the main entrance. The Carnegie Library at Oakmont is another interesting treatment of a small brick and terra-cotta building. Alden & Harlow were the architects of these buildings.

The view of the Mount Washington Branch Library shows a simple, straightforward building where the brick has been laid in English bond, and bands of brick patterns and header courses introduced.

The Allegheny United Presbyterian Seminary, from the office of Struthers & Hannah, is built of dark brown Roman brick and red terra-cotta.

The Wilkinsburg Presbyterian Church, an interesting suburban building, is built of dark brown brick and terra-cotta. The stone foundations under the windows of the front and side gables seem rather unfortunate. The materials used in the North Presbyterian Church, Allegheny, are a light brown Roman brick and terra-cotta trimmings of about the same color. Vrydaugh & Wolfe were the architects of both these churches.

The Western Pennsylvania Institute for the Deaf and Dumb is built of red brick laid in white mortar and white terra-cotta. Header courses have been introduced at the top line of each quoin. Alden & Harlow were the architects.

The Chartiers Trust Company Building at McKee's Rocks is an interesting brick structure, from the office of

WILKINSBURG PRESBYTERIAN CHURCH.
Vrydaugh & Wolfe, Architects.

Rutan & Russell. The materials are a dark brown brick and gray terra-cotta.

The Phipps Botanical School, a building with an English feeling, built of light brown brick and sandstone, is also from the office of Rutan & Russell.

The location of the Pennsylvania National Bank Building has offered the opportunity for an unusual treatment of a building very suitable for a small suburban bank. Beezer Bros. were the architects.

The Commercial National Bank is in general a very successful building of light buff brick and terra-cotta. The terra-cotta is particularly well modeled and interesting in detail. Alden & Harlow were the architects.

In the new Union Station for the Pennsylvania Railroad Company, D. H. Burnham, the architect, has had to handle the difficult problem of designing a railway station and a high office building, either one of which is difficult enough in itself. Distinctly the most successful portion is the cab stand at the main entrance; built almost entirely of terra-cotta, the detail is interesting, while the interior is particularly successful. The main waiting-room and the vestibules of the station are good examples of the uses of glazed colored terra-cotta, but, unfortunately, good views could not be obtained of them.

The broad simple wall surface of the chapel for the Mount Aloysius Academy at Cresson, Pa., with the brick laid in Flemish bond, is very effective. Alden & Harlow were the architects.

The East Liberty Market House, from the office of Peabody & Stearns, is built of light buff brick and white terra-cotta.

ST. PAUL'S R. C. CATHEDRAL.

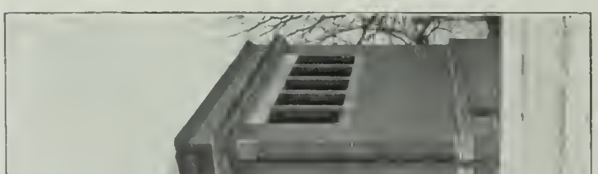
CARRON STREET BAPTIST CHURCH, PITTSBURG.
Beezer Bros., Architects.

CHURCH OF ST. JOHN THE BAPTIST. Beezer Bros., Architects.

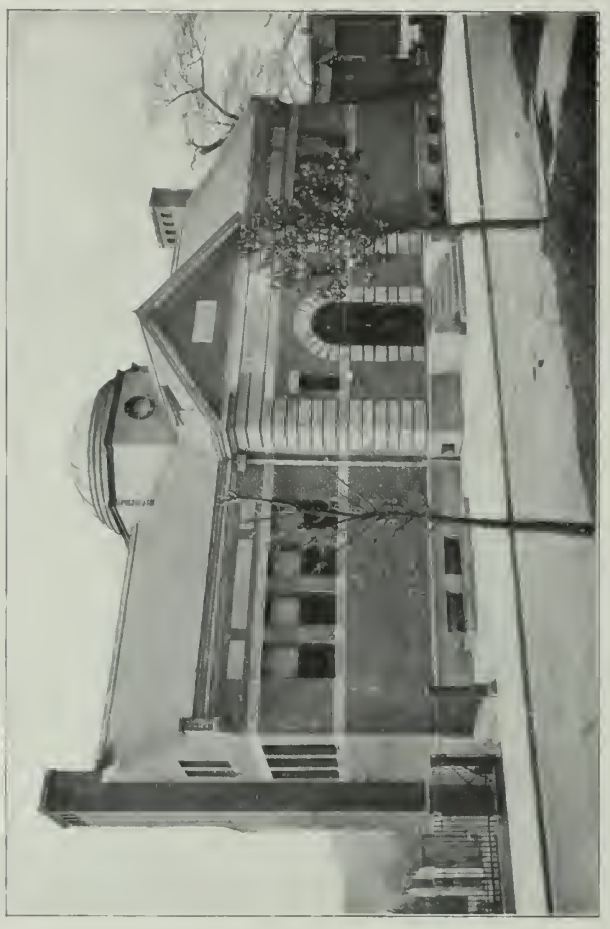
MARKET HOUSE, PITTSBURG, PA. Peabody & Stearns, Architects.

INTERIOR OF CAB STAND.

CAB STAND, PENNSYLVANIA RAILROAD STATION, PITTSBURG, PA. D. H. Burnham & Co., Architects.



MT. WASHINGTON BRANCH, CARNEGIE LIBRARY.
Alden & Harlow, Architects.



HAZELWOOD BRANCH, CARNEGIE INSTITUTE.
Alden & Harlow, Architects.

CARNEGIE LIBRARY, OAKMONT, PA.
Alden & Harlow, Architects.

WESTERN PENNSYLVANIA INSTITUTE FOR DEAF AND DUMB.
Alden & Harlow, Architects.

WESTERN PENNSYLVANIA INSTITUTE FOR THE DEAF AND DUMB.

names of several architects from whom he was to get terms, that this particular one was the first he had interviewed, and that it would be a pity for him to neglect so excellent an opportunity for him to rise in the world. But our architect still failed to appreciate the largeness of the opportunity and dismissed the representative with the statement that he, the architect, had always received his employment directly from the owners of the property and could not feel that he was either self-respecting or was true to his principles if he should undertake to act as an architect while really simply an employee of the builder. The profits from building operations when properly conducted are large. It is quite natural, therefore, that an enterprising capitalist should imagine that he could organize a construction business on much the same plan that he would organize a railroad or a trust

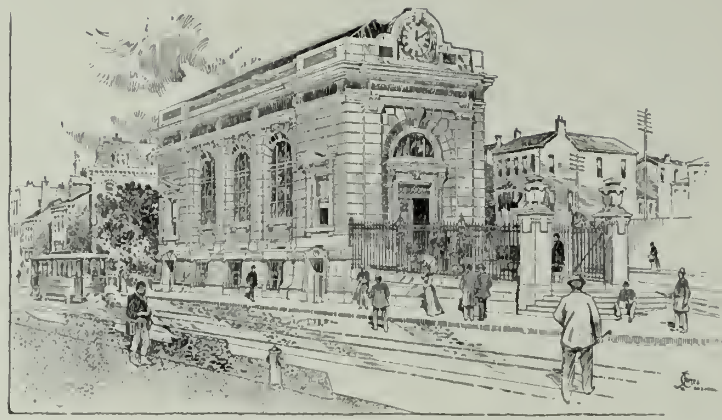
THE NORTH PRESBYTERIAN CHURCH, ALLEGHENY, PA. Vrydaugh & Wolfe, Architects.

THE ARCHITECT AND THE BUILDER.

A SHORT time since a prominent Boston architect was approached by an individual who announced himself as a representative of a great building company about to be organized in Boston for the purpose of undertaking a general building and promotion business and who wished to know under what terms the said architect would associate himself with the company as their chief designer, announcing at the same time that they would have the entire selection of the architect for their buildings and that they did not propose to let the choice go out from their office, but rather to appropriate everything that was in it. Our architect friend very naturally replied that he had not yet got so far as that and was not prepared to either consider or make any offer of any sort whatever. The representative politely suggested that the architect was making a mistake, that this was a rare opportunity, that he had been given the

ALLEGHENY UNITED PRESBYTERIAN SEMINARY.
Struthers & Hannah, Architects

company. There are a few men in this country able to manage large building operations. We say a few, and by that we mean not more than three at the most. There are, however, plenty of imitators who will strive to do what has been done so well by men like Norcross or Fuller, and who will succeed most illusively while times are good and buildings are being demanded faster than they can be constructed. But to argue that such a concern can endure through hard times is to be strangely blind to the actual conditions of building operations. It is also often assumed that the profits of an architect on a large building are something tremendous and that the architect's five per cent can be turned into the coffers of the adventurous builder. But in such an operation as



PENNSYLVANIA NATIONAL BANK, PITTSBURG, PA.
Beezer Bros., Architects.

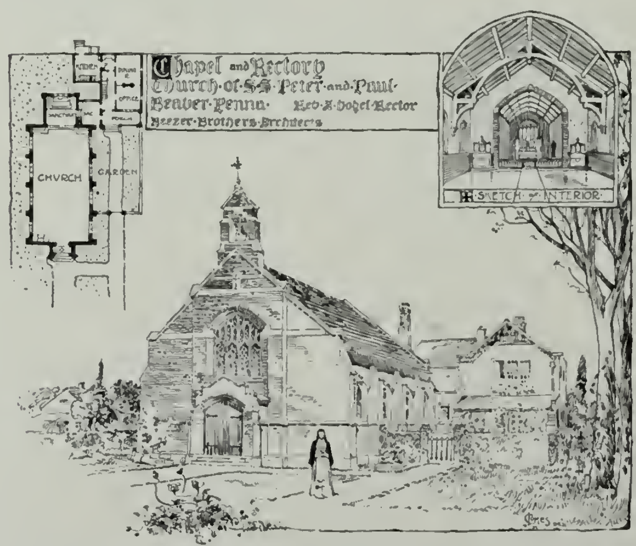
COMMERCIAL NATIONAL BANK, PITTSBURG, PA.
Alden & Harlow, Architects.

this the owner, the man who pays the bills, the one who has to suffer for shortcomings of the builder and omissions of the architect, disappears entirely as a factor, and while promotion companies just at present seem to have abundant capital, the real money must in the long run come from the owners of property rather than from the exploiters, and so long as an owner wants a building built it is fair to assume that he will want some one to look after his interest who is in his own pay rather than in that of the builder. The large building companies have stimulated the practice of architecture. They have been an incitive to the architect to know more thoroughly what he has to do, and have in many cases taught him how to do his work properly. The best of these companies have been decidedly influences for good architecture, structurally and commercially, but there is not the slightest reason to suppose that the future will see any subdivision of the work essentially different from that which exists at present.

WHEN a brick is selected for its color it is desirable, of course, that it should retain its color in the work — either unchanged or else only softened by age and exposure, says a writer in a contemporary. Dark-colored bricks can in general stand some stains without detracting much from the appearance of the work, but light bricks which have turned green or greenish yellow and then a dirty gray, or which are so porous that dust and soot literally wash into them at every rain, soon present an appearance of faded finery which is far from pleasing, regardless of any excellence in the design and original color scheme.

With the exception of long time tests, the best guide to the selection of a bright-colored brick which will not change seems to be the degree to which the brick is burned. The more nearly vitrified the brick the more permanent is its color likely to be.

Fire-flashed bricks of all shades seem to be quite permanent, which is probably due to the fact that the face in this case is practically vitrified. However, even vitrification may not always be a sure preventive of discoloration; though the writer has never seen a vitrified brick change color himself, he is informed that such cases are on record and well authenticated. On the other hand, many bricks which are not vitrified are very permanent in their coloring.



CHAPEL AND RECTORY, CHURCH SS. PETER AND PAUL.
Beezer Bros., Architects.

Fire-proofing.

Corrosion of Steel Frames of Buildings.

WE give below a synopsis of report No. 4, issued by the Insurance Engineering Experiment Station, Boston, September, 1902, taking the salient features thereof for ready reference. It will, we believe, furnish food for serious thought on the part of the architect.

"The constantly increasing use of steel as a structural member in modern buildings has led to many questions as to the permanency of the steel as sometimes used for this purpose. The examinations of buildings ten to fifteen years old when, during alterations, the steel framework has been exposed to view, reveal all stages and conditions of disintegration of the steel. So great has been the corrosion even in this short time in some cases that a note of alarm has been sounded by some engineers most familiar with the subject. When a steel plate ½ inch in thickness loses more than ⅛ inch in five years there arises a question as to the ability of the structure to last more than twenty-five years."

With this note of warning, the report goes on to describe the results of different experiments made to ascertain the effect on steel of various mixtures of concrete, as also of neat Portland cement. The concretes consisted of Alpha or Lehigh Portland cement, a sharp, clean sand and a hard, clean broken stone, the larger part being fragments of flint and trap rock; also cinders from the sugar refinery or Boston & Albany locomotives. The steel was scoured, then pickled in hot dilute sulphuric acid and finally dipped into hot milk of lime. When cold, the lime was removed with a wire brush, leaving the steel clean and bright.

The report then goes on to say:

"It has been held by several engineers that the mere alkaline nature of Portland cement was a sufficient guarantee of its protecting steel from rusting. There is, of course, good chemical reasoning for this. . . . This would seem to settle the matter once and for all were it not a fact that steel bedded in concrete has corroded very rapidly while other steel in a different concrete of the same kind of cement stands without change for ten years or more."

This apparent discrepancy between the action of neat Portland cement and concretes of different mixtures suggests the effort to discover why concrete is apparently unreliable and what causes corrosion in some cases, and here the report furnishes evidence:

"An examination of several cases where expanded metal had been imbedded in concrete showed plainly that wherever the steel was exposed through cracking rusting began, even though the cracks were very fine. . . . The specimens which were mixed of neat cement can be dismissed without discussion, for the protection was perfect; the steel was as bright as when put in. . . . Of the remaining specimens, hardly one had escaped serious corrosion; the location of the rust spot was invariably coincident with either a void in the concrete or a badly rusted cinder. In the more porous mixtures the steel was spotted with alternate bright and badly rusted areas, each clearly defined. In both the solid and the porous cinder concretes many rust spots were found, except where the concrete had been mixed very wet, in which case the watery cement had coated nearly the whole of the steel like a paint and protected it."

This would seem to demonstrate beyond peradventure that neat Portland cement is an infallible preventive of rust, and the following conclusions are drawn from the examination of several hundred briquettes:

"Neat Portland cement, even in thin layers, is an effective preventive of rusting.

"Concretes to be effective in preventing rust must be dense and without voids or cracks, and should be mixed quite wet where applied to the metal," and that "it is of the utmost importance that the steel be clean when bedded in concrete."

In actual work it is seldom practicable to make sure that the last proviso is carried out, and it would be physically impossible in a building to clean all the structural steel as thoroughly as was done for the tests at the experiment station, but it is quite desirable to make the attempt to cleanse the surface of the metal as far as practicable, and it is surely worth while, in the light of the conclusions arrived at in these tests, for the architect to rigidly reject all steel which comes to the building in a dirty or rusty condition. Taking into account also the fact that under some conditions steel rusts quite rapidly, it naturally follows that any system of construction which admits of a reduction in the amount of steel required in a building is very deserving of study.

There have been several systems placed upon the market lately which propose the use of terra-cotta as a fire-proofing material combined with cement as a protective for the steel, and some of these systems have been used successfully with spans as high as twenty-five feet in the clear, as was the case at one of the Buffalo Exposition buildings (the "Herculean" system). In fact the limits of the spans possible in such constructions have not been reached, and when it is remembered that thorough protection is furnished the steel by the cement coating, while the effect of heat is guarded against by an amount of porous terra-cotta never less than two inches thick, these constructions, all of which are perfectly practicable, certainly offer possibilities of which the architect ought to be quick to avail himself. It must be remembered, however, that cement, like charity, can cover a multitude of constructive sins and that unless the surface of the steel is properly prepared and the cement of the best quality the amount of resulting protection would still remain quite problematic.

IN many partitions doors are necessary, and if the framing around them is properly made, with fire-proofed iron frames substantially fastened to the floor and ceiling, it will probably be the best arrangement that can be devised; but after this is provided for, the doors and the architraves, or "trim," and the glass therein, and the transoms with their glass, call for particular attention.

The not uncommon practice of putting sash in partitions to transmit light through to halls or rooms without direct light of course seriously weakens the partition as a fire-resisting medium, and where this cannot be avoided the sash should be metal or non-combustible wood, with frames of the same material glazed with wire glass. It must be observed, however, that in most instances inside rooms which have to be lighted indirectly through other rooms are evidence of poor planning which might have been avoided by a more intelligent study of the conditions.

Selected Miscellany.

THE A. I. A. CONVENTION, WASHINGTON, DECEMBER 11, 12 AND 13.

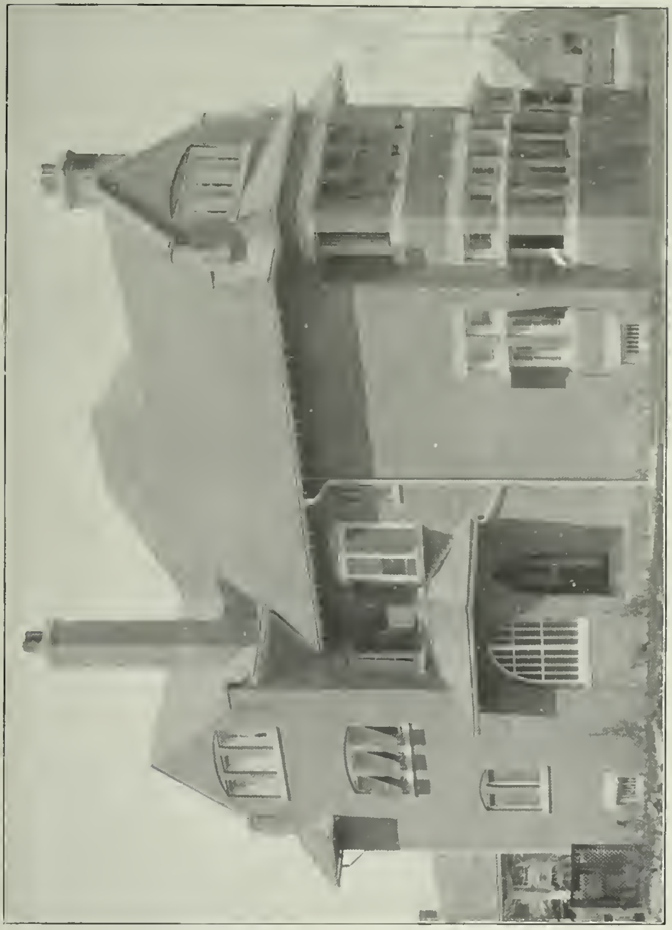
WITH an attendance of about one hundred delegates representing its twenty odd chapters, the thirty-sixth annual convention of the American Institute of Architects opened on December 11, at Washington, D. C., President McKim in the chair. Welcomed by Colonel John Biddle, U. S. A., Engineer Commissioner of the District of Columbia, addressed by Captain John S. Sewell of the U. S. Engineer Corps, and with a night session at the Congressional Library to inspect the models, plans and photographs of the proposed plan for the development and improvement of the national capital, it was evident that the subject of city-making had been chosen to dominate the deliberation of the convention, in order to assist in formulating that public sentiment which should lead to favorable legislation for the remodeling of the city of Washington.

In his annual address Mr. McKim congratulated the Institute upon its large attendance and upon the acquisition of the Octagon, which it had been decided to purchase for $30,000. Papers on the improvement of the city of Washington were read by Daniel H. Burnham, Frederick Law Olmsted, Jr., and Charles Moor, while the same movement was reënforced by a paper entitled "The Organization for Municipal Improvements" by W. B. de las Casas, and another by Owen Fleming, read by Edgar V. Seeler, entitled "Improvements in London," England. Albert Kelsey of Philadelphia discussed the development of the city from every possible point of view. The lantern slides with which he illustrated his lecture were made from pictures taken in every city of the world, and illustrated the best ideas of municipal improvement along true architectural lines. During the

CHURCH AT BERLIN, ONT. Eden Smith, Architect

HOUSES, TORONTO, ONT. Eden Smith, Architect.

APARTMENT, THE CARLTON, BOSTON, MASS.
A. H. Bowditch, Architect.



HOUSES, TORONTO, ONT. Eden Smith, Architect.

21 FEET LONG, 7 FEET HIGH.
DETAIL BY W. H. DUNN, ARCHITECT.
Excelsior Terra-Cotta Company, Makers.

course of his remarks he said that what the people of the United States want is new and real architecture along original lines. When the American architects were called upon to design a building and its approaches and were given free rein, they invariably selected a style or

STORE BUILDING BUILT OF A LIGHT GRANITE SHADE ENAMELED BRICK MADE BY TIFFANY ENAMELED BRICK COMPANY.

type that has survived from the time of some great, licentious and luxury-loving monarch of Europe. The taxpayer is not going to stand for such things.

Modern ideas are what are needed in American architecture, he declared, and if these were properly presented and worked out the acceptance of them by the people who pay the freight cannot be doubted. He asked that modern themes be seized upon and worked out in the preparation of new designs. He showed on his screen a picture

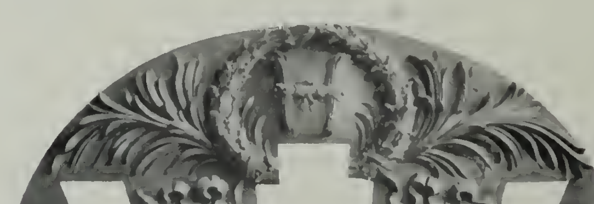
PANEL, EXECUTED BY NEW JERSEY TERRA-COTTA COMPANY.

CHURCH AT CALADONIA, WIS.
Peter Brust, Architect.

of the famous frieze around the Palais de l'Industrie at Paris. This, he said, was the development of a humanitarian idea. It was proper that the architect of to-day should look to some of the things of to-day to secure ideas for the modern building. Turning from the friezes of the great Paris building, Mr. Kelsey showed a picture of

TELEPHONE EXCHANGE, CINCINNATI, OHIO.
George W. Rapp & Son, Architects.
Roofed with American S Tile.

the interior of an operating room in one of the modern hospitals. This, he said, was an unlimited field for use in the development of ideas. He said that the pictures that artists refuse to work up are modern happenings and everyday occurrences which are replete with color and inspiration.



DETAIL BY BRUCE PRICE, ARCHITECT.
White Brick and Terra-Cotta Company, Makers.

RAILWAY STATION ON NEW YORK CENTRAL RAILROAD.
Reed & Stern, Architects.
Roofed with Ludowici Roofing Tile.

The competition drawings for the new Municipal Building for the District of Columbia were on exhibition. A visit to the White House was the pleasantest feature of the convention, the nearly finished interior evoking general admiration for its purity of design, simplicity and real American character.

Mr. McKim was quite properly reëlected president of the Institute, and his work on the executive mansion adds perhaps the best achievement to his long list of triumphs. The next convention will be held in Cleveland.

IN GENERAL.

Will Christen, architect, has opened an office at 116 West Oklahoma Avenue, Guthrie, Okla., and will be glad to receive manufacturers' catalogues and samples.

The drawings submitted in the competition for the design of a decorative vase, cash prizes for which were offered by the American Terra-Cotta and Ceramic Company to the members of the Chicago Architectural Club, will be illustrated in THE BRICKBUILDER.

On the evening of December 8 Thomas J. Morgan, Esq., attorney at law, addressed the Chicago Architectural Club on "The Economic Position Held by the Architectural Profession."

The members of the Chicago Architectural Club are deeply interested in the revision of the building ordinance of that city, and took an active part in a meeting recently held in the city council chamber for the purpose of discussing the matter.

The Perth Amboy Terra-Cotta Company was recently awarded the contract for supplying the architectural terra-cotta for a large hotel which is soon to be erected on the Pacific coast. It is estimated that nearly $300,000 worth of this material will be required in the work. This is undoubtedly the largest terra-cotta contract ever awarded in this country.

The Atlantic Terra-Cotta Company during 1902 was awarded four contracts for supplying architectural terra-cotta, which were of unusual size and importance. They were as follows: Flatiron building, New York City, D. H. Burnham & Co., architects; Old South Building, Boston, Arthur H. Bowditch, architect; Belle-

BATH HOUSE, KIRKBRIDES ASYLUM, PHILADELPHIA, PA.
Addison Hutton, Architect.
Interior finished with Blue Ridge Enameled Brick. Exterior of Brick made by Columbus Brick and Terra-Cotta Company, O. W. Ketcham, Philadelphia Agent.

WYMAN SCHOOL, ST. LOUIS, MO.
B. W. Ittner, Architect.
Face Brick made by Hydraulic-Press Brick Company.

PANEL BY EDWARD STOLTZ, ARCHITECT.
Northwestern Terra-Cotta Company, Makers.

vue-Stratford Hotel, Philadelphia, G. W. & W. D. Hewitt, architects; Belvidere Hotel, Baltimore, Parker & Thomas, architects.

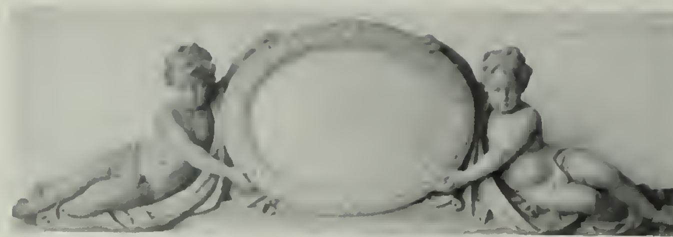
The heavy fall of snow throughout the country during the month has emphasized the absolute necessity of protecting the public from snow slides from pitched roofs. There is but one known device which is effective, and

DETAIL BY BRUCE PRICE, ARCHITECT.
Perth Amboy Terra-Cotta Company, Makers.

that is so simple and inexpensive that it would seem as though it ought never to be dispensed with on either a new or an old roof. We refer to the snow guard which is manufactured by the Folsom Snow Guard Company of Roslindale, Mass. This particular guard has been upon the market for years, and is specified and respecified by the leading architects of the country. It does what the manufacturers claim it will do, with never an instance of failure.

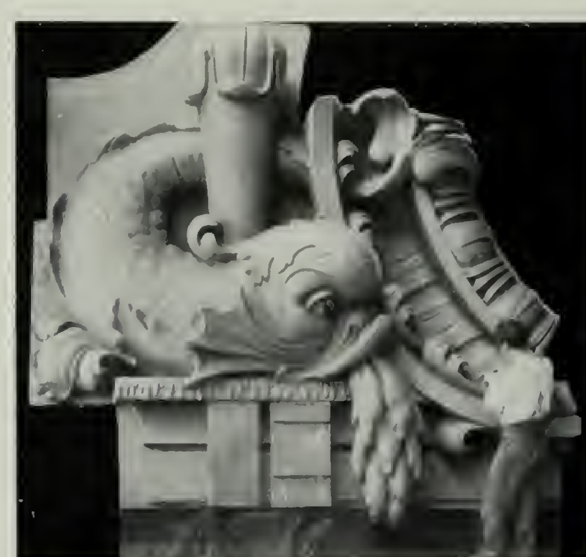
In the new Hanover Bank Building, New York City, James B. Baker, architect, 450,000 granite shade brick will be used; in the New York Chamber of Commerce Building, New York City, just completed, James B. Baker, architect, a large quantity of white front and white enameled brick were used; in the new Corn Exchange Bank, New York City, Robertson & Potter, archi-

DETAIL BY PARK & HOWE, ARCHITECTS.
Standard Terra-Cotta Company, Makers.



DETAIL BY CONKLING-ARMSTRONG TERRA COTTA COMPANY.

tects, a large quantity of white semi-glazed brick was used; in the new Astor Hotel, New York City, Trowbridge & Livingston, architects, 300,000 light gray brick will be used in the courts; in the new Hotel Belmont, New York City, Warren & Wetmore, architects, a large



DETAIL BY H. J. HARDENBERGH, ARCHITECT.
Atlantic Terra-Cotta Company, Makers.

quantity of gray front brick will be used; in the new Phipps mansion, New York City, Trowbridge & Livingston, architects, a large quantity of white enameled and white semi-glazed brick will be used; and in the United States Army Building at West Point, McKim, Mead & White, architects, a large quantity of front brick, specially made to match the granite, will be used. All these bricks were, or will be supplied by the Sayre & Fisher Company.

The Old Brick Architecture of Holland and Belgium

"DID you ever notice a little touch of art which shows itself in the way they lay their brick bond as differing from the English? Both use most generally the so-called English bond,—continuous rows, first of stretchers, then of headers. The English lay these rows all alike, but the Dutch break joint with the stretcher rows, thus keeping the same structural strength, but varying the lines of the vertical joints and giving regular diagonal lines which are very pleasing. It adds just that touch of art which we find all through Dutch work when compared with English of a similar period. Where Tudor work is coarse (picturesque and strong, it is true), the Dutch is refined and executed with the skill of an artist, and even where the Dutch run into vagaries, they are such as artists use, and one can well pardon a little frivolity in art to a people who have had so much stern reality in their daily lives.

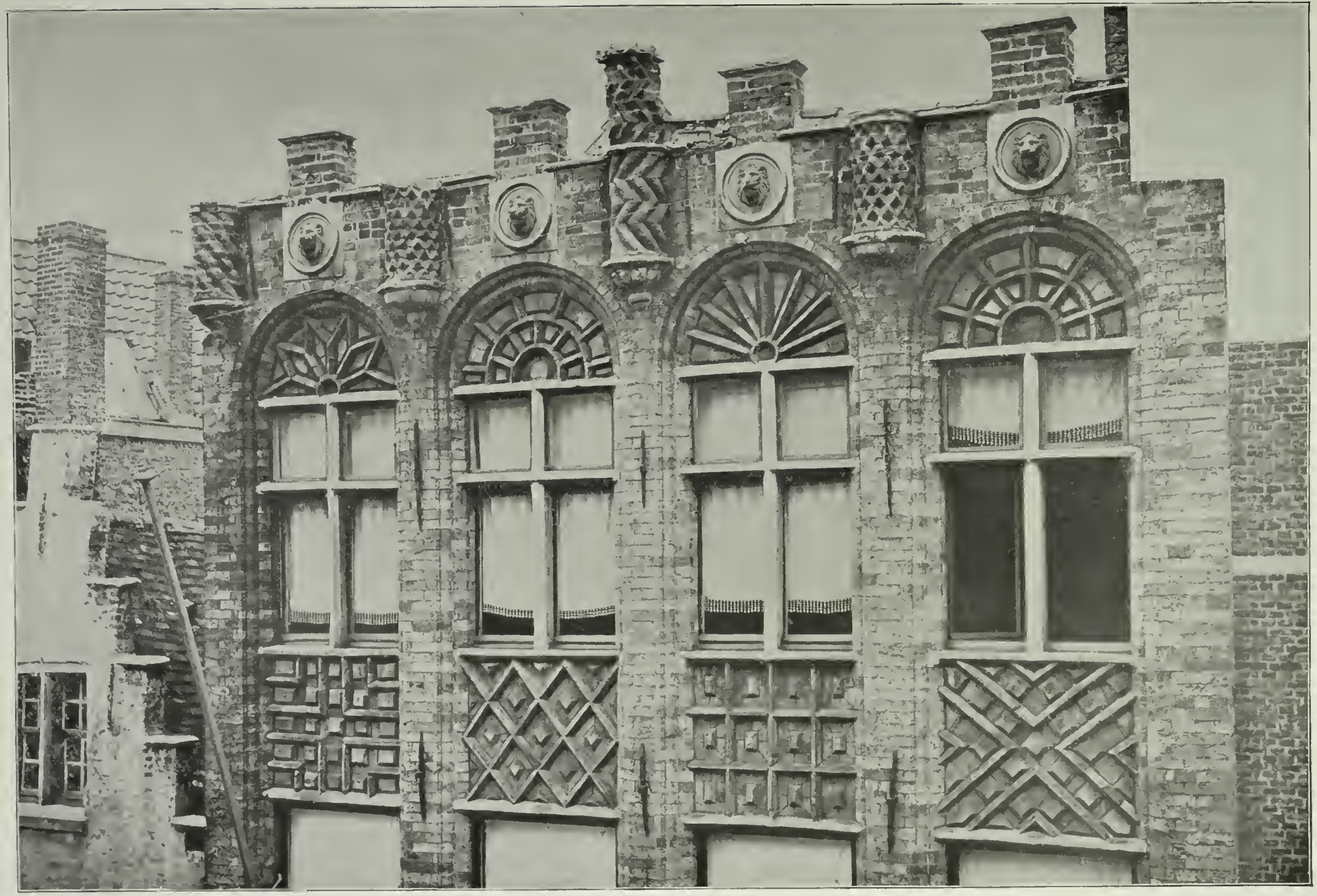
"Then one is struck by the fact that they never try to do with brick what it is unsuited for — they never try to conceal joints and make their walls look smooth and unbroken, like a surface of cement, and they never attempt any ornament which is not a legitimate constructive use of brick; but they make the most of every opportunity which the material affords to a skilled workman."

DORMERS, HOUSE AT BRUGES BELGIUM.

HOUSE AT BRUGES, BELGIUM.

DETAIL OF HOUSE AT BRUGES, BELGIUM

FAÇADE OF THE PALACE OF THE FRANC, BRUGES, BELGIUM.

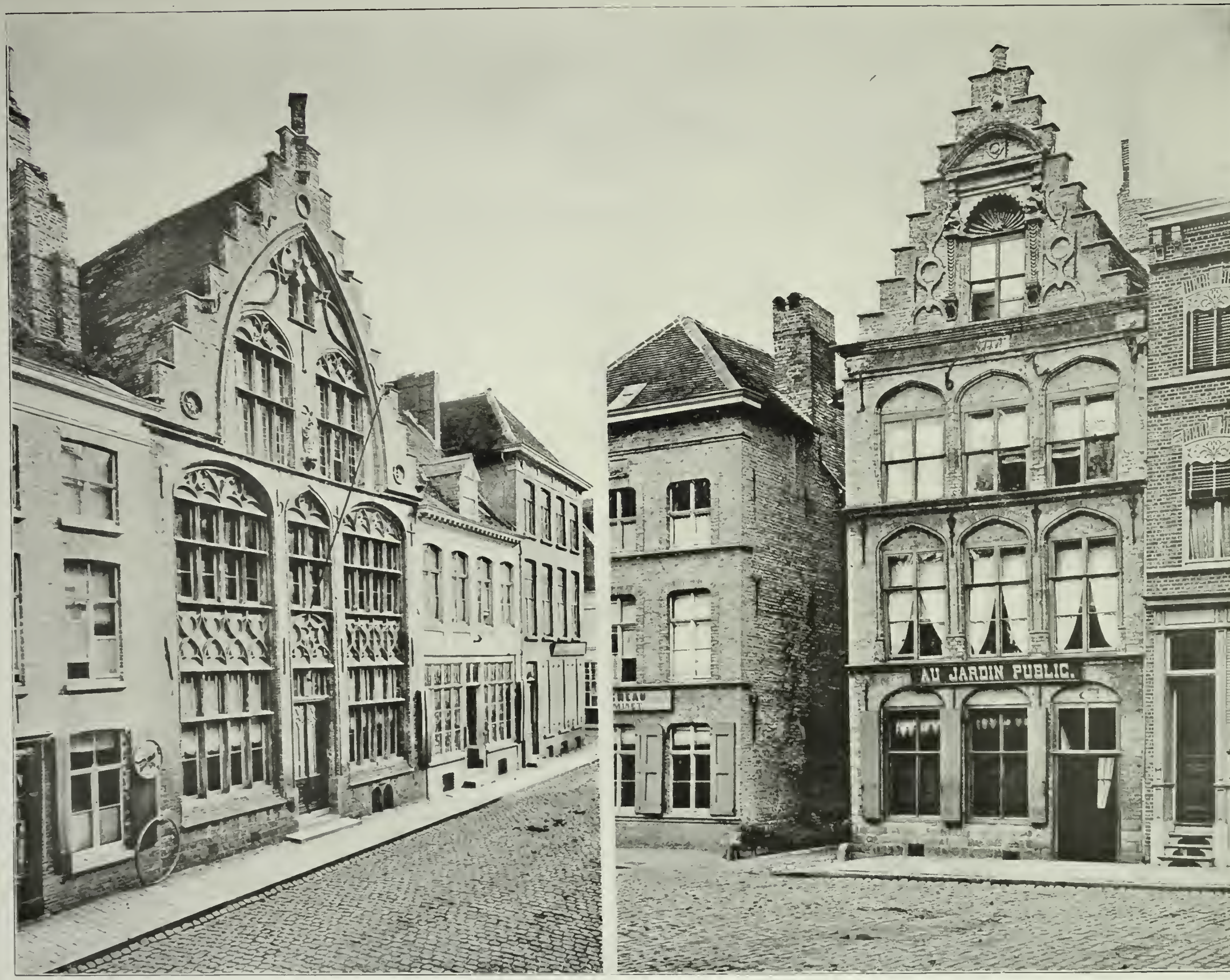


WINDOWS OF HOUSE AT BRUGES, BELGIUM.

HOUSE AT BRUGES, BELGIUM.

TYMPANUM, HOSPITAL ST. JEAN, BRUGES BELGIUM.

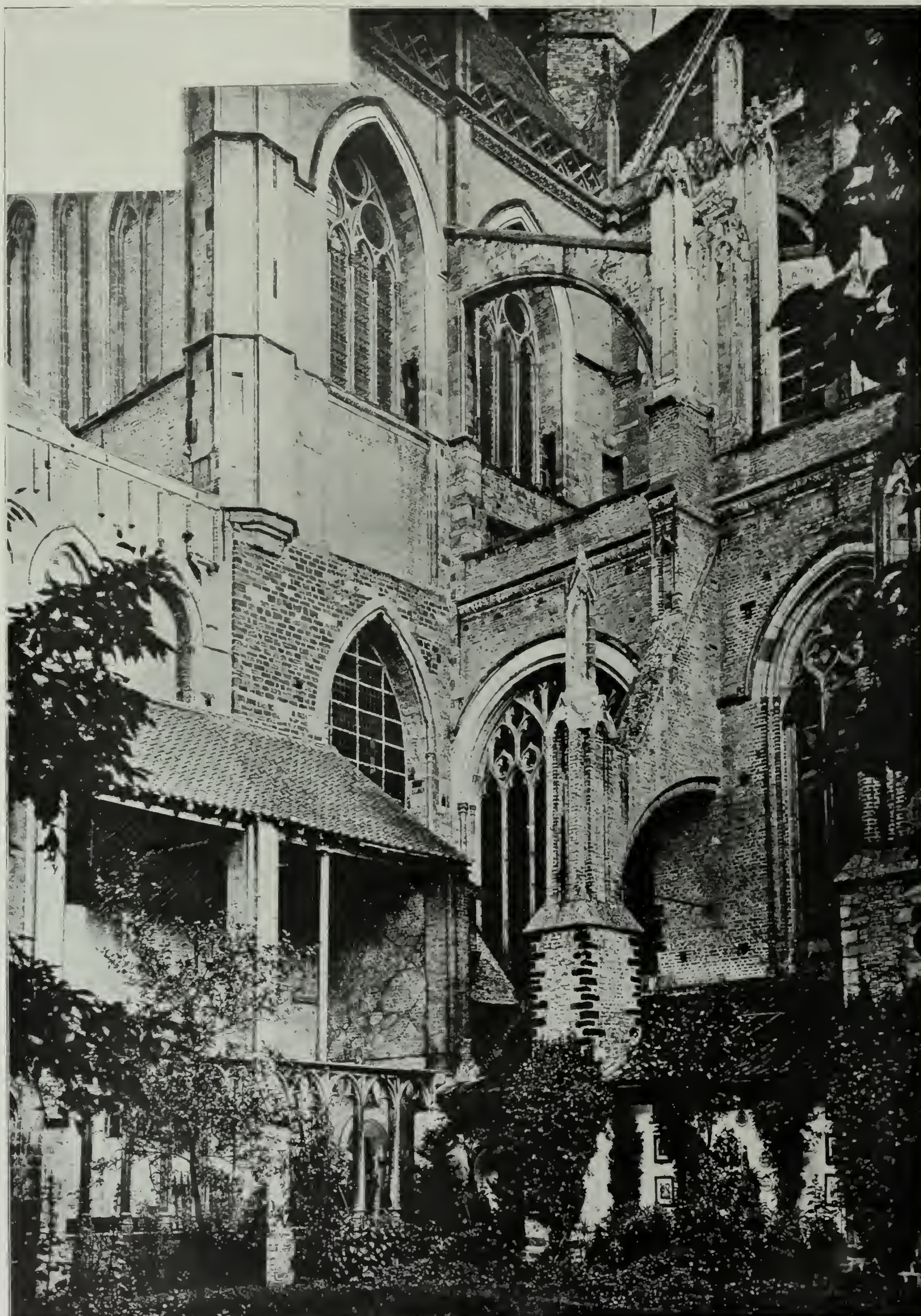
HOUSES, YPRES, BELGIUM.



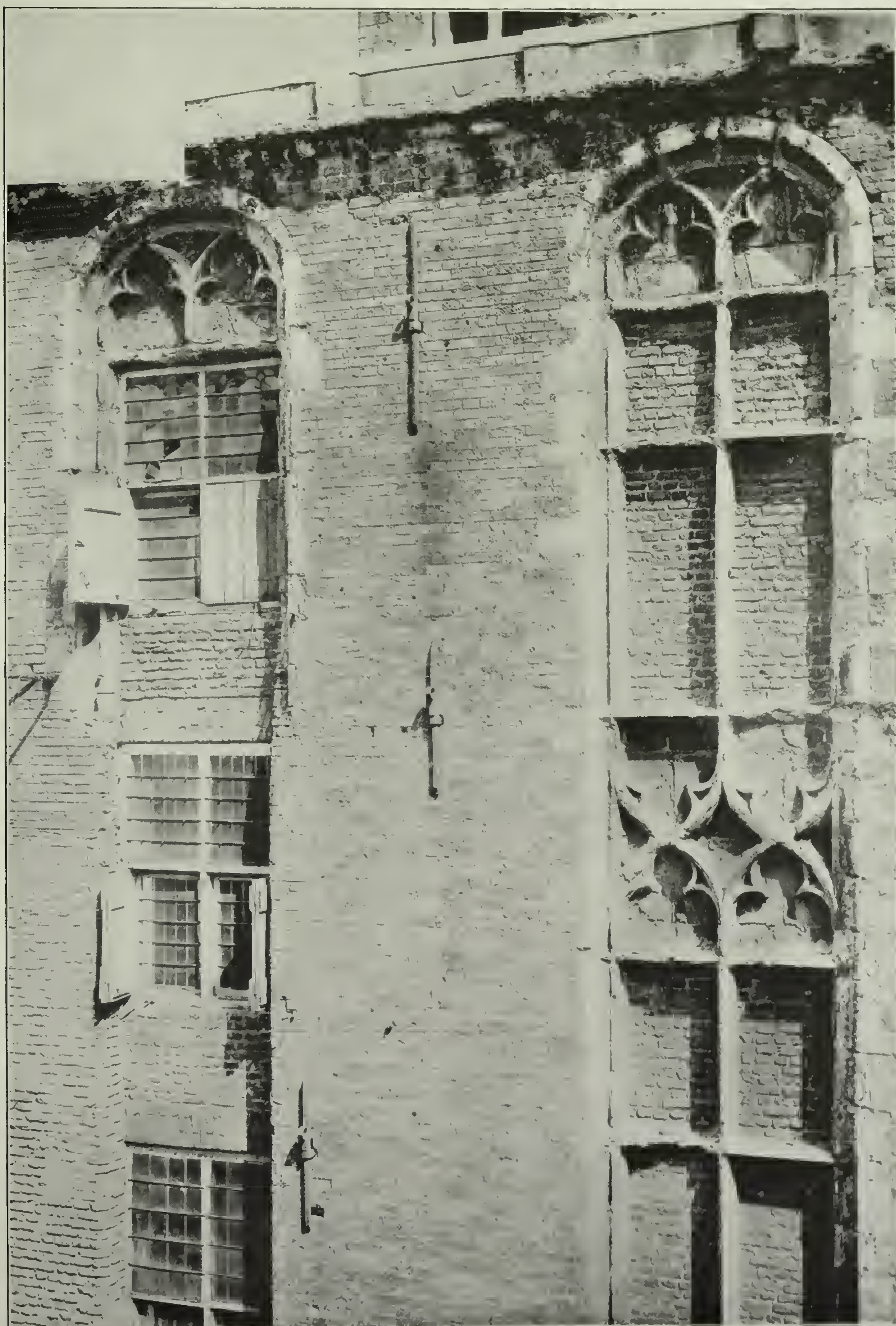
HOUSES YPRES BELGIUM.

HOUSES, YPRES, BELGIUM

MARKET AT YPRES BELGIUM.

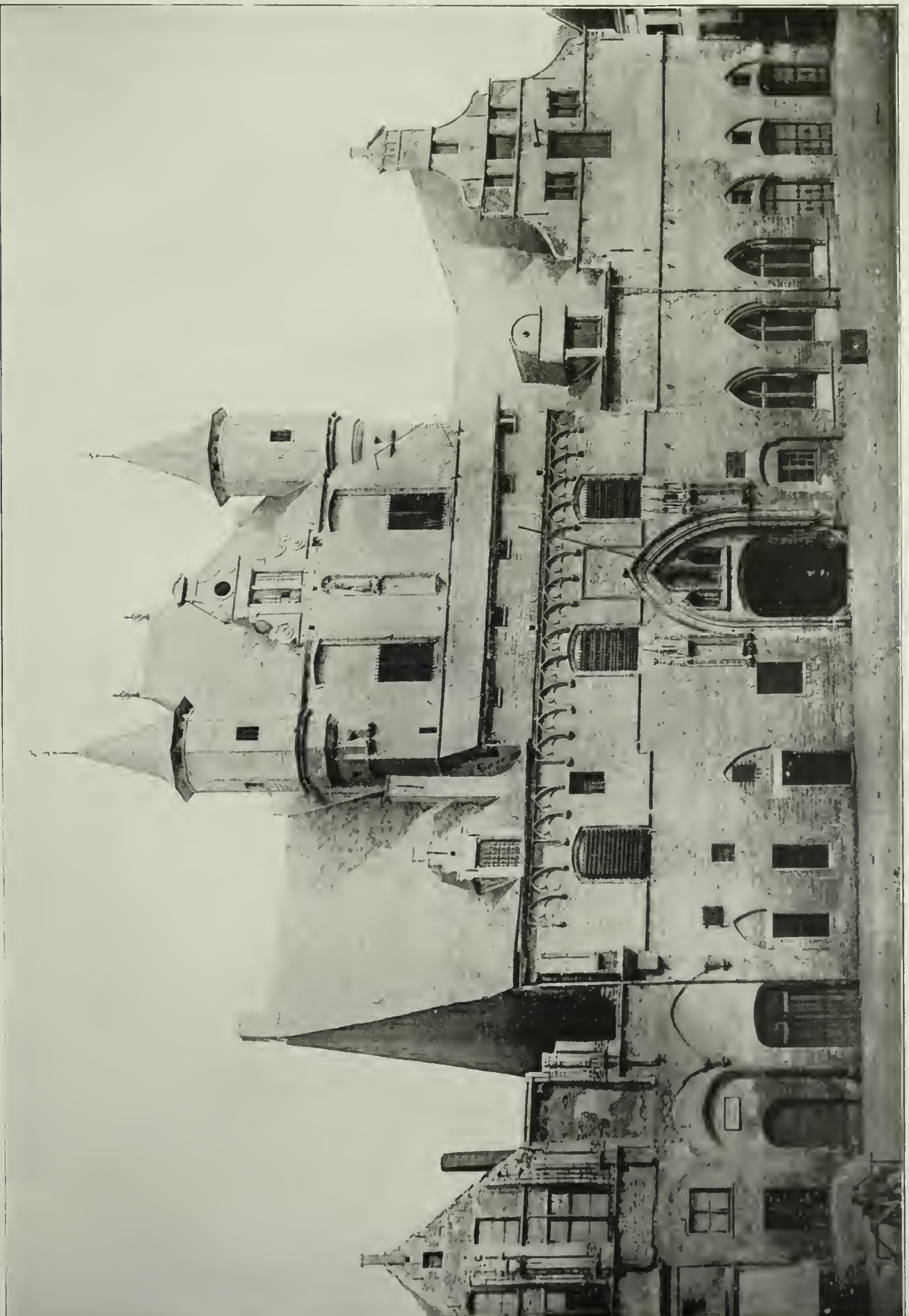


DETAIL, CHURCH OF ST. MARTIN, YPRES, BELGIUM.



WINDOWS IN ANCIENT HALL, FURNES, BELGIUM

DORMERS OF HOUSE AT FURNES, BELGIUM



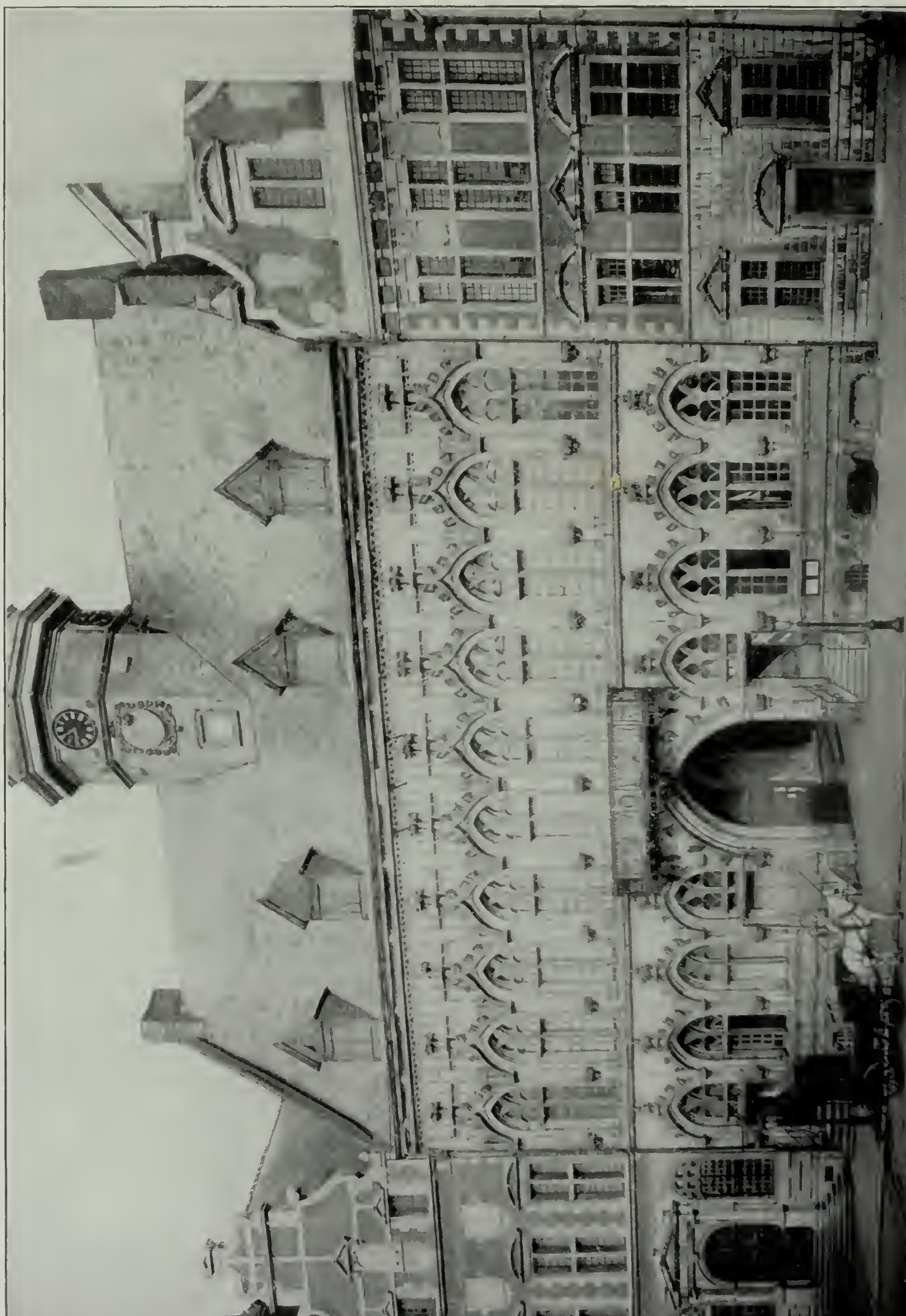
HALL AT MALINES, BELGIUM

PALACE OF MARGARET OF AUSTRIA, MALINES, BELGIUM.

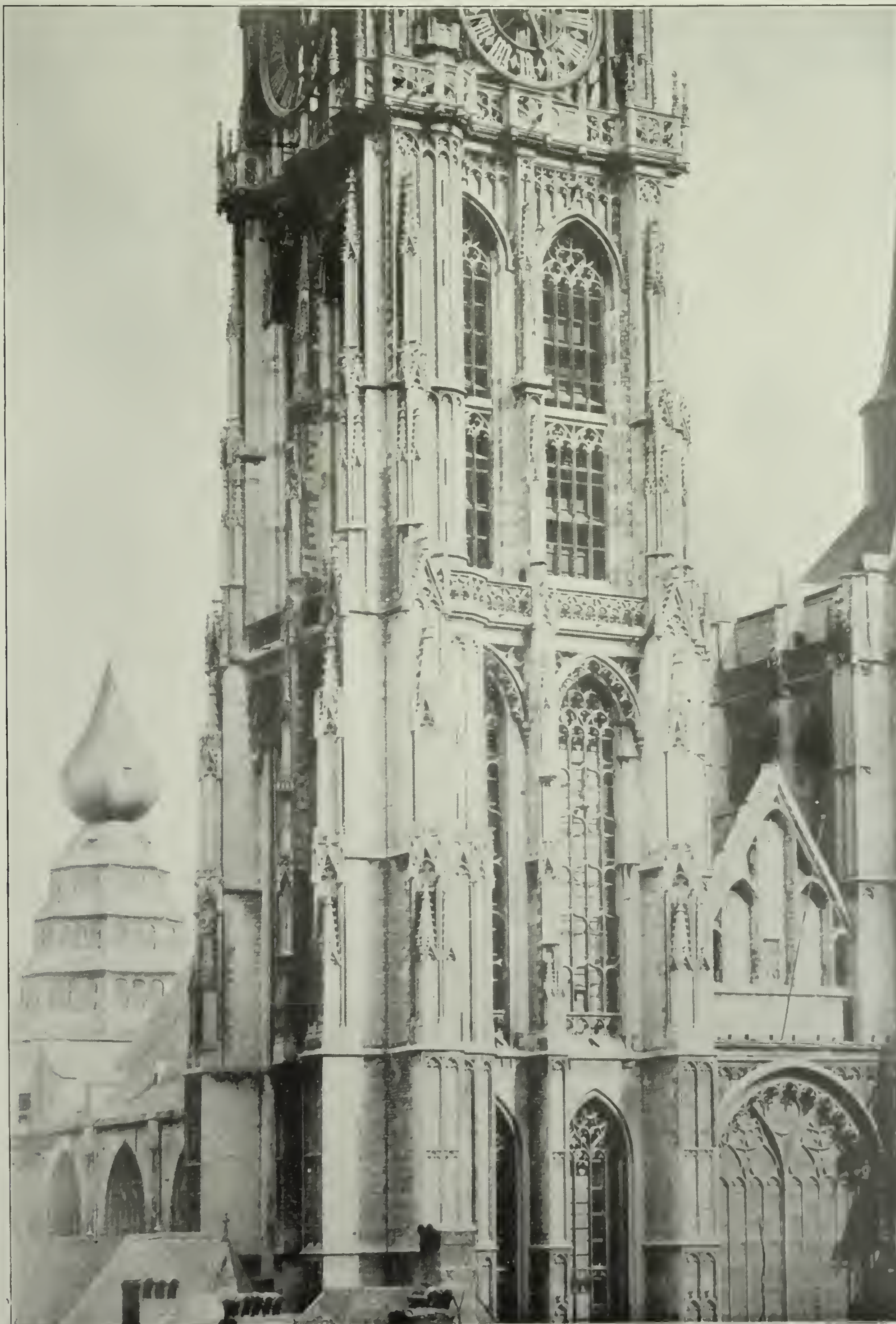
A HOUSE ON THE LEFT BANK OF THE RIVER MEUSE, LIÉGE, BELGIUM.

BANK AT LILLE, FRANCE, NEAR BELGIUM

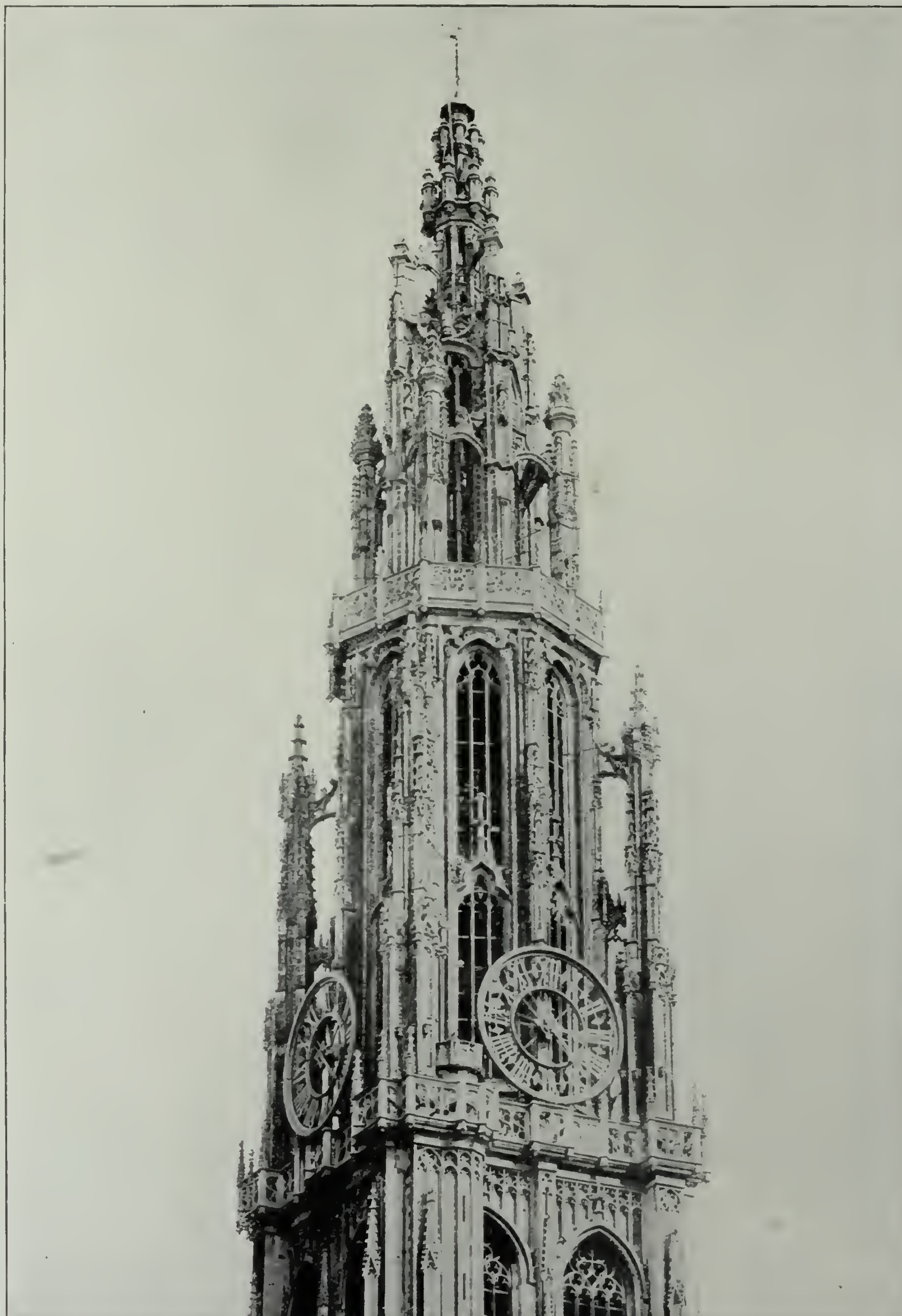
OFFICES OF THE SEIGNEURIAL CASTLE, CLEYDAEL, BELGIUM



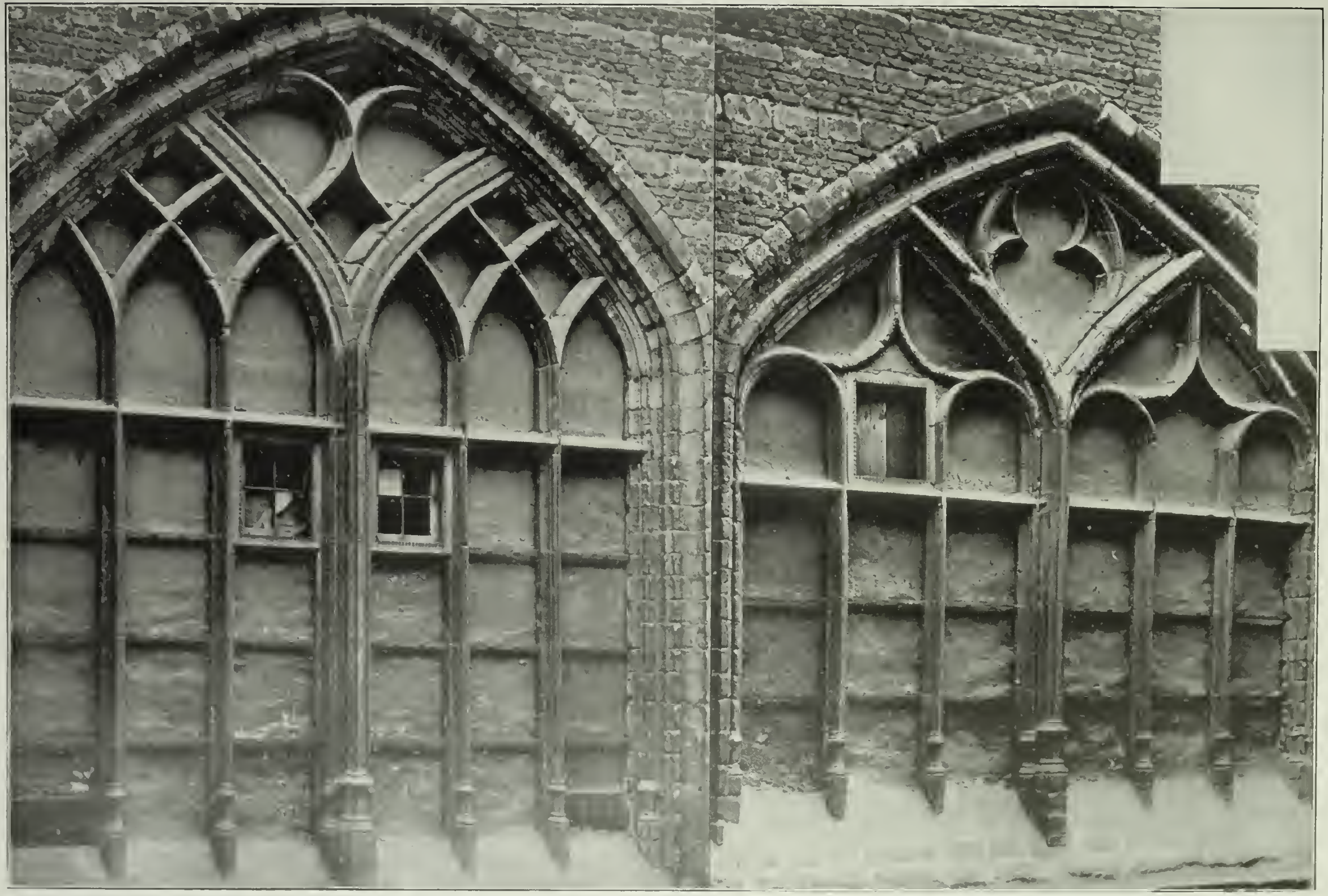
TOWN HALL AT MONS, BELGIUM



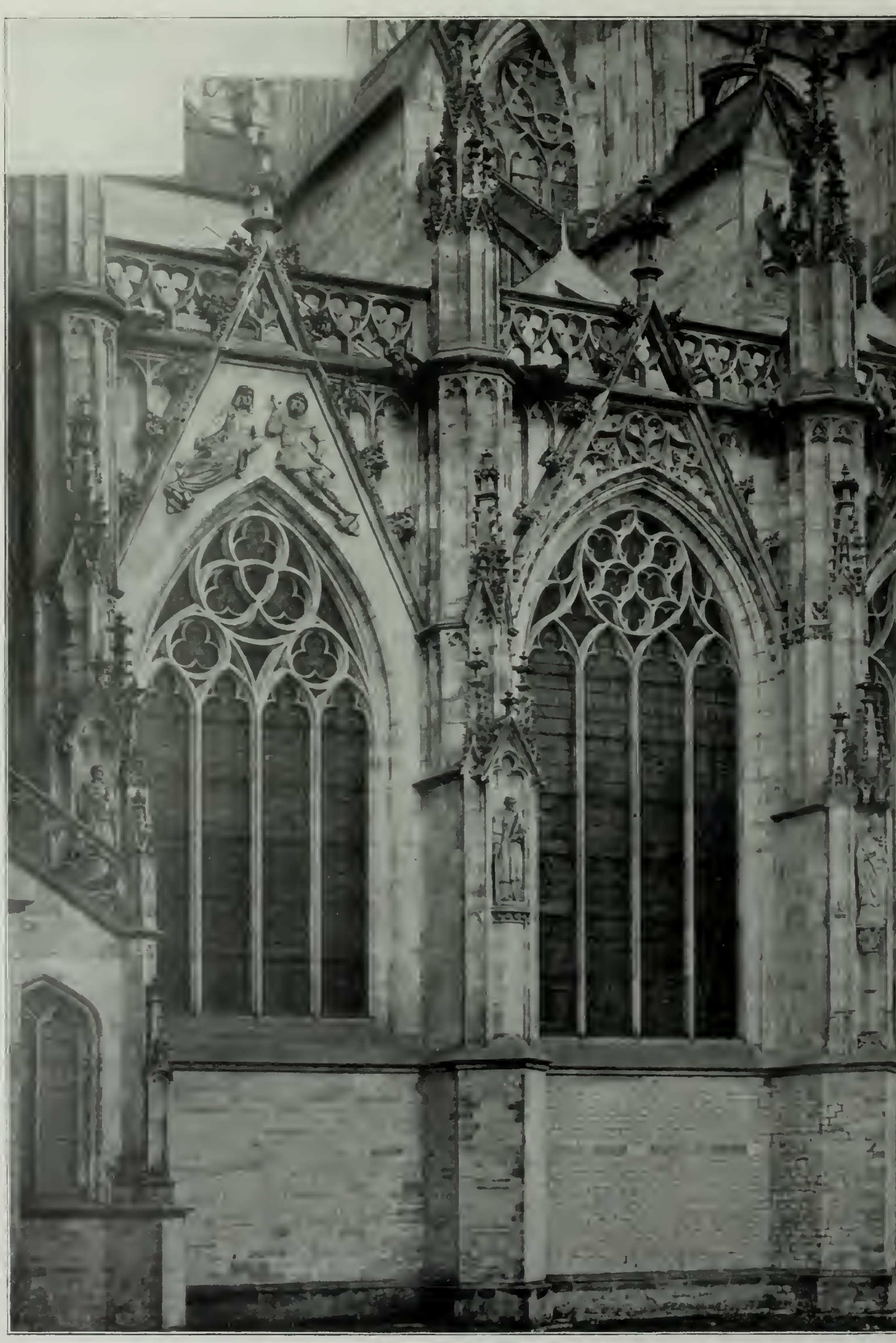
TOWER, CHURCH OF NOTRE DAME. ANTWERP BELGIUM.



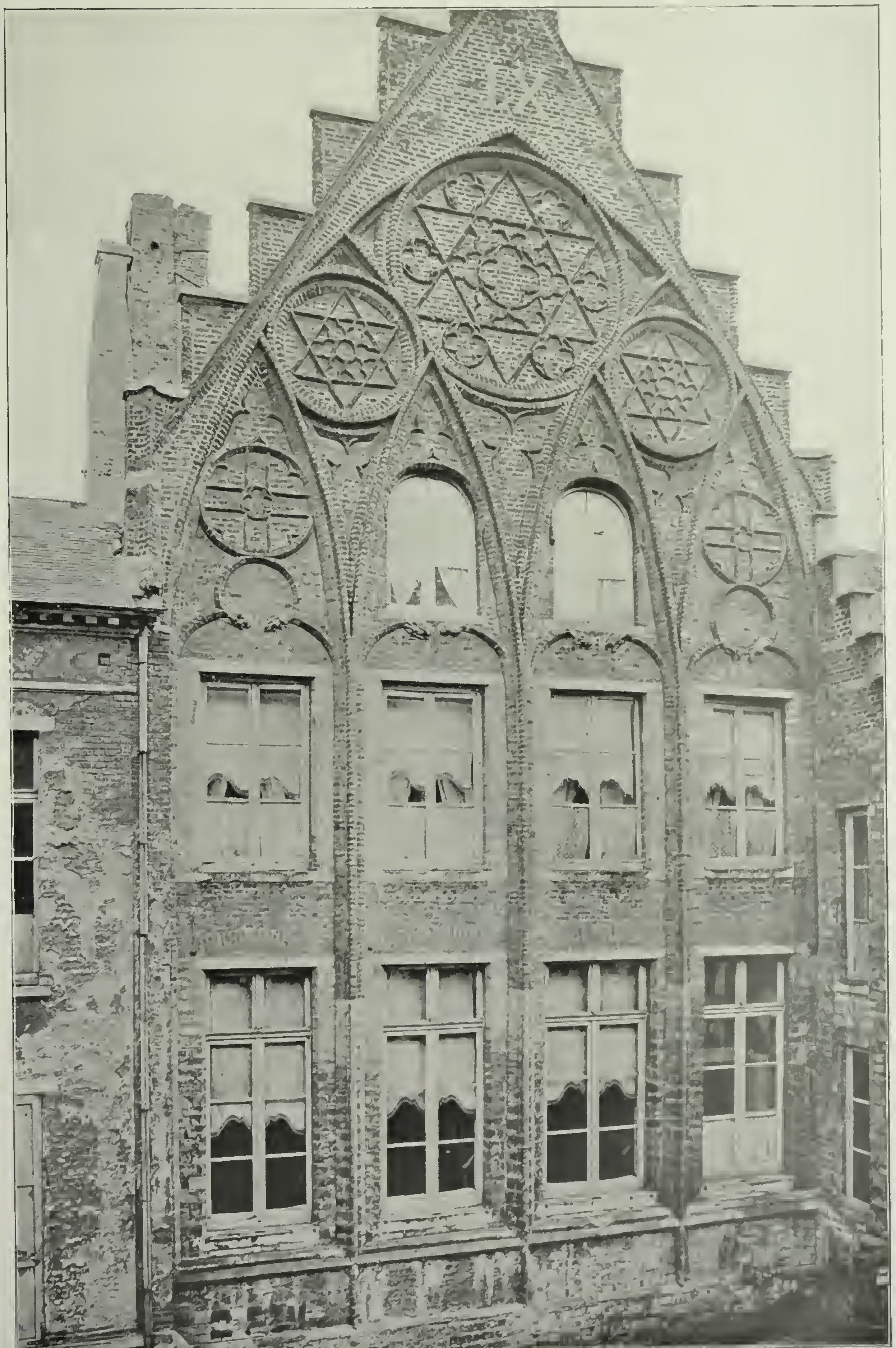
TOWER, CHURCH OF NOTRE DAME, ANTWERP, BELGIUM.



WINDOWS IN MARKET AT ANTWERP, BELGIUM



TRANSEPT OF CATHEDRAL AT BOIS-LE-DUC, BELGIUM.



HOUSE AT LOUVAIN, BELGIUM.

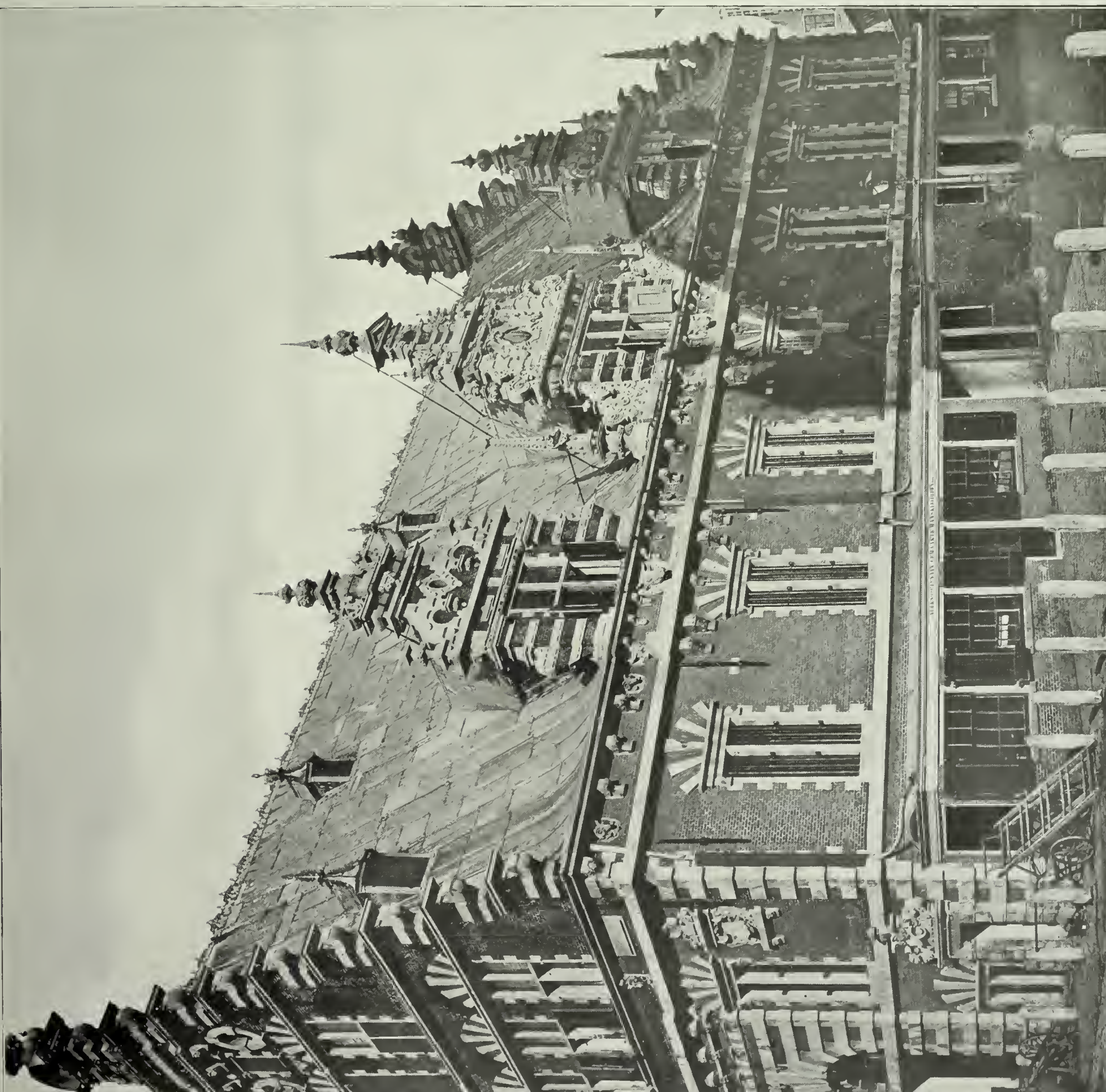
HOUSE AT GHENT, BELGIUM.

HALL AT TERMONDE, BELGIUM.

HOSPITAL SAINT JEAN, HOORN, HOLLAND.

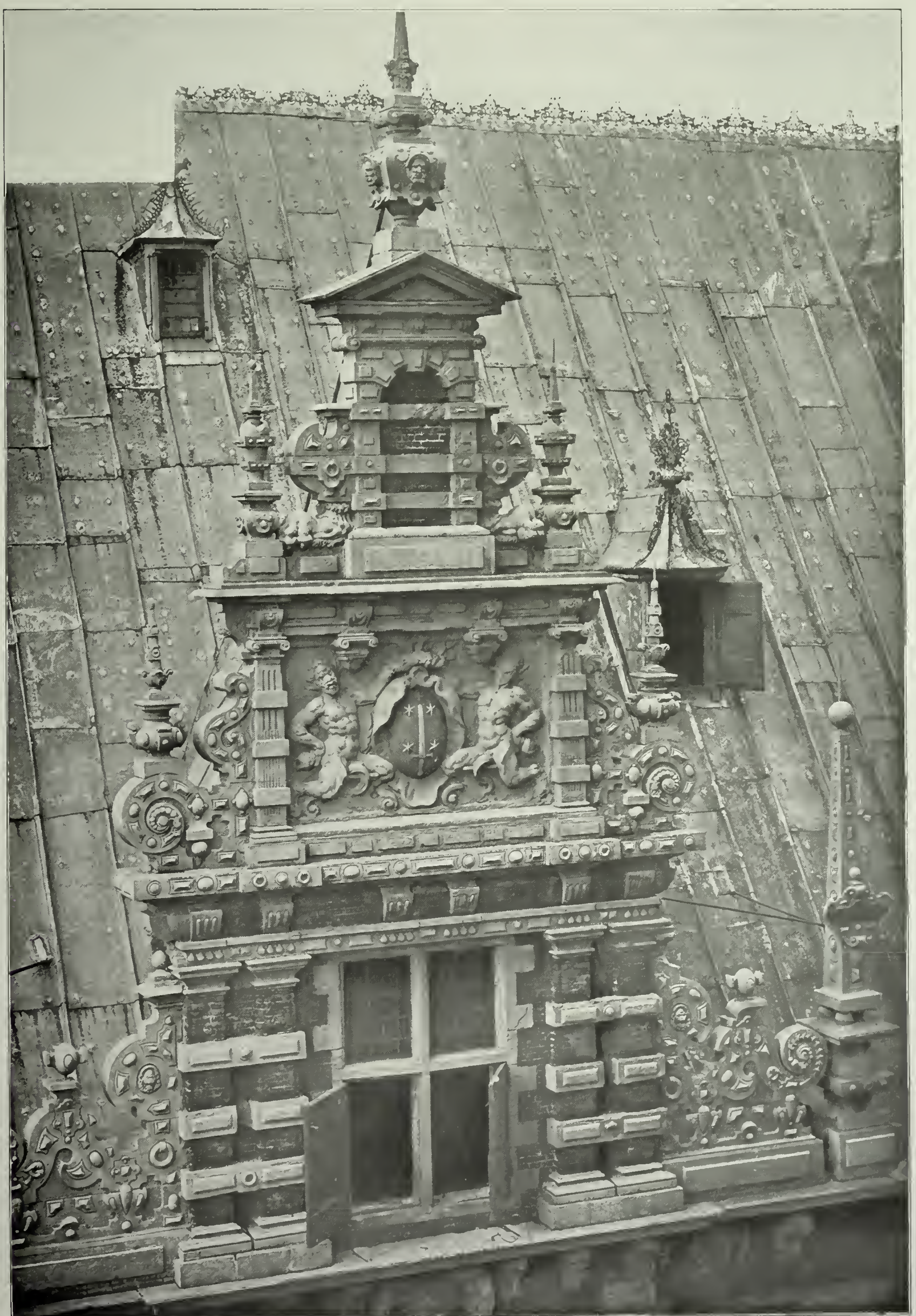
TOWN HALL, HOORN, HOLLAND.

CITY GATE AT HAARLEM, HOLLAND.



MARKET AT HAARLEM HOLLAND.

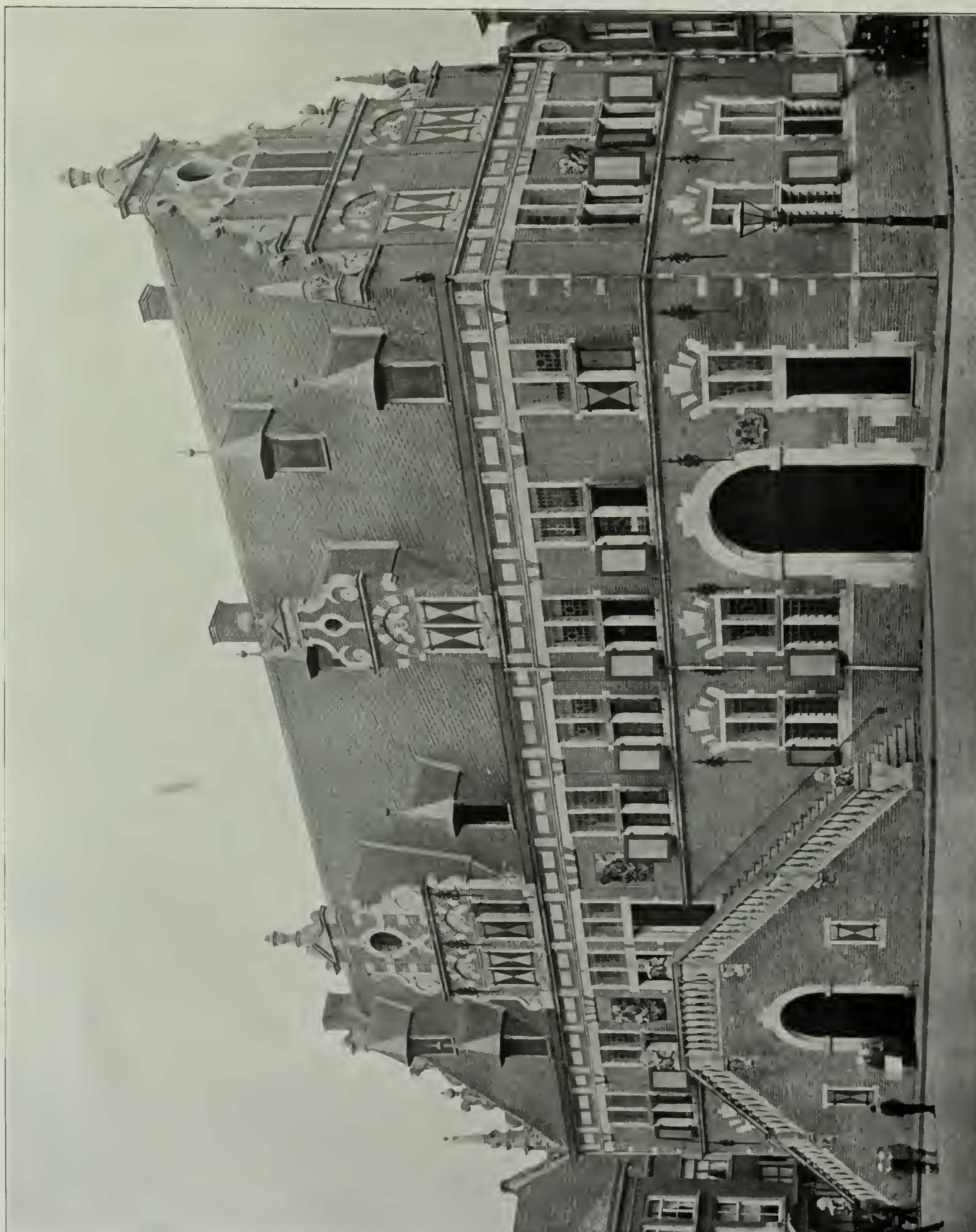
CHURCH, HAARLEM, HOLLAND.



DORMERS OF AN ANCIENT MARKET HOUSE, HAARLEM, HOLLAND.

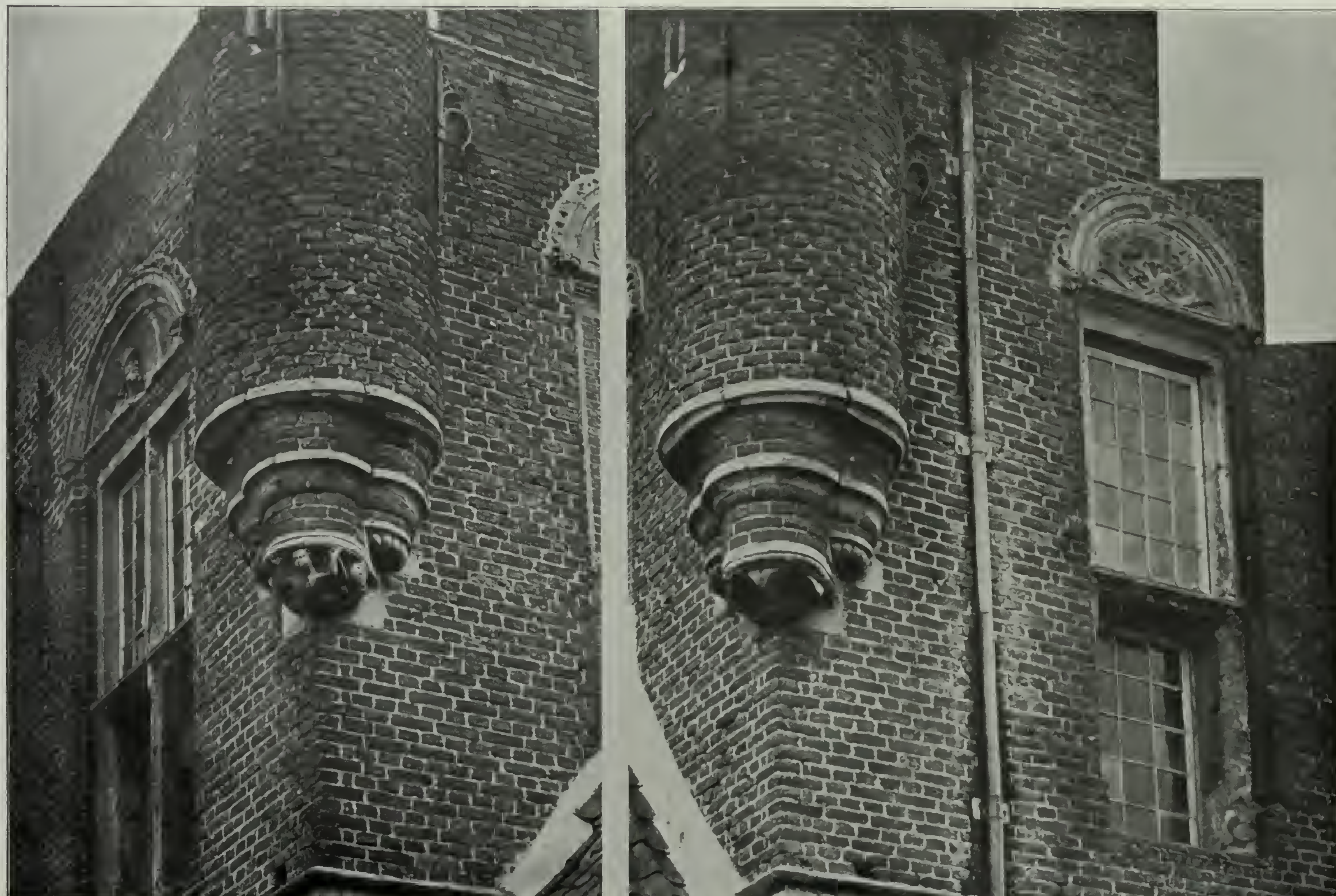
DETAIL, HOUSE AT NIMEGUE HOLLAND.

FAÇADE AT NIMEGUE, HOLLAND.



THE WEIGH HOUSE, NIMEGUE, HOLLAND.

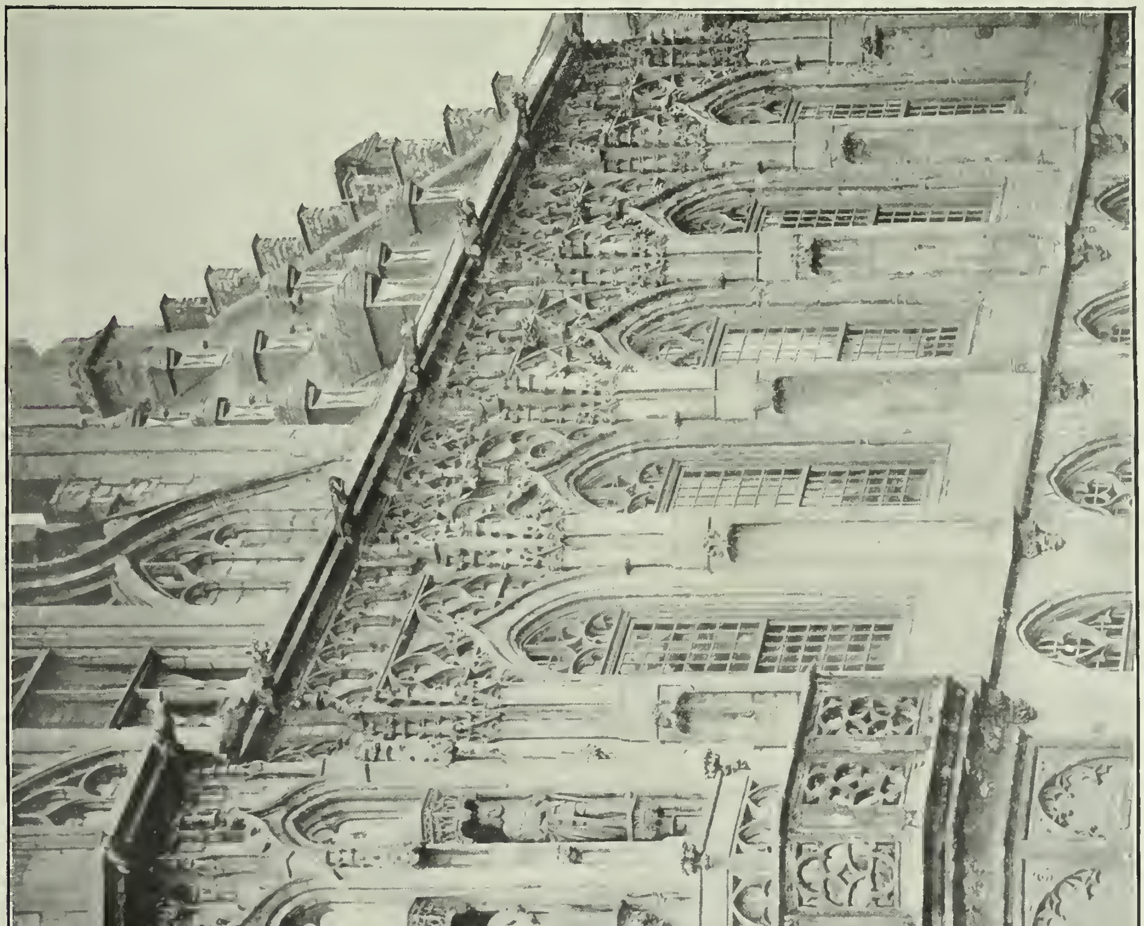
TYMPANS IN FAÇADE OF HOUSE AT ZALTBOMMEL HOLLAND.



CORBELS, HOUSE AT ZALTBOMMEL. HOLLAND.

HOUSES, ALKMAAR, HOLLAND.

TOWN HALL AT DEVENTER, HOLLAND.

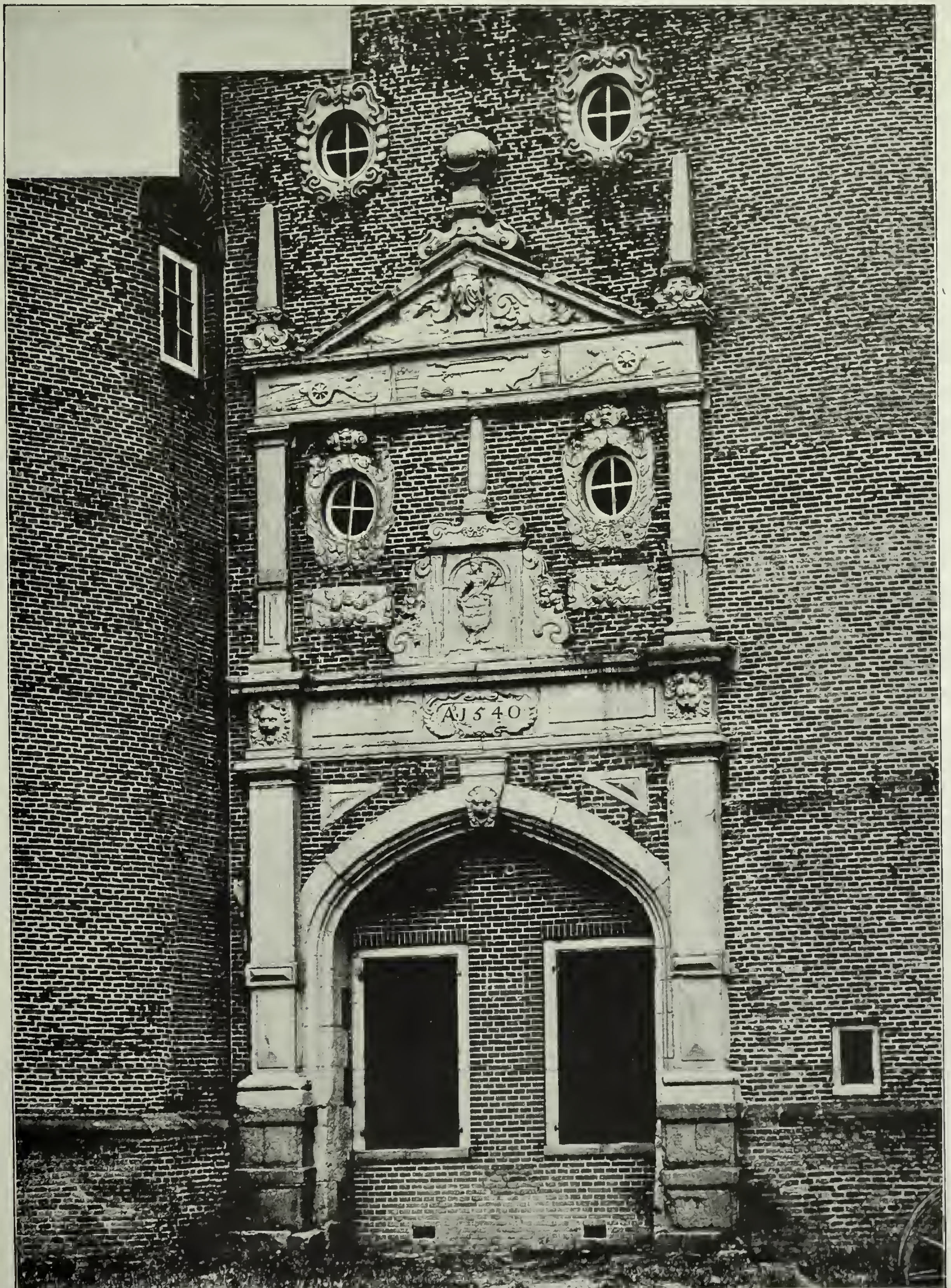


DETAIL OF TOWN HALL AT MIDDELBOURG HOLLAND.

ENTRANCE TO ORPHAN ASYLUM, LEYDEN, HOLLAND.

HOUSE AT DORDRECHT, HOLLAND.

TOWN WEIGH HOUSE, ENKHUYZEN, HOLLAND.



TOWN GATE AT ENKHUYZEN, HOLLAND.

CONVENT OF THE CELESTINES, TOURNAI, HOLLAND.

MARKET HOUSE AT BLÉS À DELFT, HOLLAND.

CHATEAU D'OYDONCK, BACHTE, MARIA-LEERNE, HOLLAND.

TOWN HALL AT BOLSWAERT, HOLLAND.

NORTH TRANSEPT, CHURCH OF SAINT MARIE MADELEINE, GOES, HOLLAND.

HOUSE FOR HON. LEVI P. MORTON, FIFTH AVENUE, NEW YORK, N. Y.
McKIM, MEAD & WHITE, ARCHITECTS.

HOUSE LOCATED IN A BOSTON SUBURB.

JOHN A. FOX, ARCHITECT.

HOUSE AT CEDARHURST, LONG ISLAND, N. Y.
BARNEY & CHAPMAN, ARCHITECTS.

HOUSE, BAY STATE ROAD, BOSTON, MASS.
PETERS & RICE, ARCHITECTS.

HOUSE AT CEDARHURST, LONG ISLAND, N. Y.

BARNEY & CHAPMAN, ARCHITECTS.

THE BRICKBUILDER,
JANUARY,
1902.

HOUSE AT PHILADELPHIA, PA.
HORACE W. SELLERS, ARCHITECT.

THE BRICKBUILDER,
JANUARY,
1902.

CORN EXCHANGE NATIONAL BANK, PHILADELPHIA. PA.

Newman, Woodman & Harris, Architects.

THE BRICKBUILDER,
FEBRUARY,
1902.

"WYNDHURST." HOUSE OF JOHN SLOANE, ESQ., LENOX, MASS.
PEABODY & STEARNS, ARCHITECTS.

THE BRICKBUILDER,
FEBRUARY,
1902.

DETAIL OF ENTRANCE TO ADVANCE THRESHER COMPANY BUILDING, MINNEAPOLIS, MINN.
KEES & COLBURN, ARCHITECTS.

"WYNDHURST." HOUSE OF JOHN SLOANE, ESQ., LENOX, MASS.

PEABODY & STEARNS ARCHITECTS.

THE BRICKBUILDER,
FEBRUARY,
1902.

THE BRICKBUILDER,
FEBRUARY,
1902

TOWN HALL, EAST ORANGE, N. J.
BORING & TILTON ARCHITECTS.

DETAIL OF ENTRANCE TO J. I. CASE BUILDING, MINNEAPOLIS, MINN.

KEES & COLBURN, ARCHITECTS.

FRONT ELEVATION, ADMINISTRATION BUILDING.

COMPETITIVE DESIGN OF MUNICIPAL HOSPITAL FOR THE DISTRICT OF COLUMBIA, AT WASHINGTON.

BORING & TILTON, ARCHITECTS.

INTERIOR. BANK BUILDING FOR ALEX. BROWN & SONS, BALTIMORE, MD.
PARKER & THOMAS, ARCHITECTS.

THE BRICKBUILDER,
MARCH,
1902.

BOSTON CITY HOSPITAL RELIEF STATION, HAYMARKET SQUARE, BOSTON, MASS.
KENDALL, TAYLOR & STEVENS, ARCHITECTS.

THE BRICKBUILDER,
MARCH,
1902.

FRONT ELEVATION, ADMINISTRATION BUILDING.

FIRST HONORABLE MENTION.

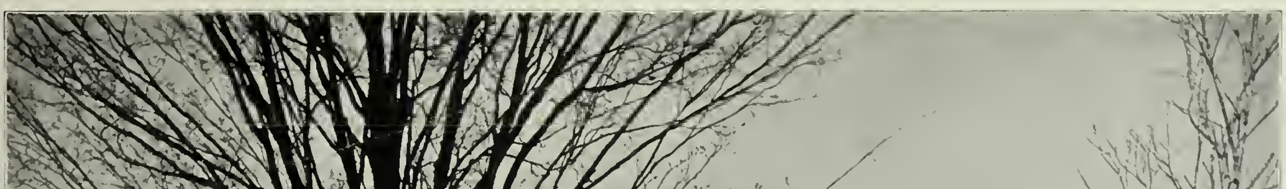
COMPETITIVE DESIGN OF MUNICIPAL HOSPITAL FOR THE DISTRICT OF COLUMBIA, AT WASHINGTON.

CHASE & AMES AND LEON E. DESSEZ, ASSOCIATE ARCHITECTS.

BANK BUILDING FOR ALEX. BROWN & SONS, BALTIMORE, MD.

PARKER & THOMAS, ARCHITECTS.

THE BRICKBUILDER,
MARCH,
1902.



MEMORIAL HOSPITAL AND SANITORIUM, MONTAGUE CITY, MASS.

PLANS ILLUSTRATED IN THE BRICKBUILDER FOR JUNE, 1900, PLATES 44 AND 45.

WILSON EYRE, JR., ARCHITECT.

SETTLEMENT HOUSE FOR FIFTH AVENUE BAPTIST CHURCH, 10TH AVENUE AND 50TH STREET, NEW YORK CITY.

YORK & SAWYER, ARCHITECTS.

HOUSE, 1630 LOCUST STREET, PHILADELPHIA, PA.
COPE & STEWARDSON, ARCHITECTS.

HOUSE FOR HON. WAYNE MAC VEAGH, WASHINGTON, D. C.
APPLETON P. CLARK, JR., ARCHITECT.

HOUSE 23 WEST 52ND STREET, NEW YORK CITY.
C. H. P. GILBERT, ARCHITECT.

HOUSE FOR PRIMATES, BRONX PARK, NEW YORK CITY.

HEINS & LA FARGE, ARCHITECTS.

STORE AND APARTMENT BUILDING, 11TH STREET, PHILADELPHIA, PA.
HAZLEHURST & HUCKEL, ARCHITECTS.

HOUSE, 5 EAST 63RD STREET, NEW YORK CITY.
HEINS & LA FARGE, ARCHITECTS.

PIERCE GRAMMAR SCHOOL. BROOKLINE. MASS.

J. A. SCHWEINFURTH, ARCHITECT.

THE BRICKBUILDER,
MAY,
1902.

HOUSE, BAY STATE ROAD, BOSTON, MASS.

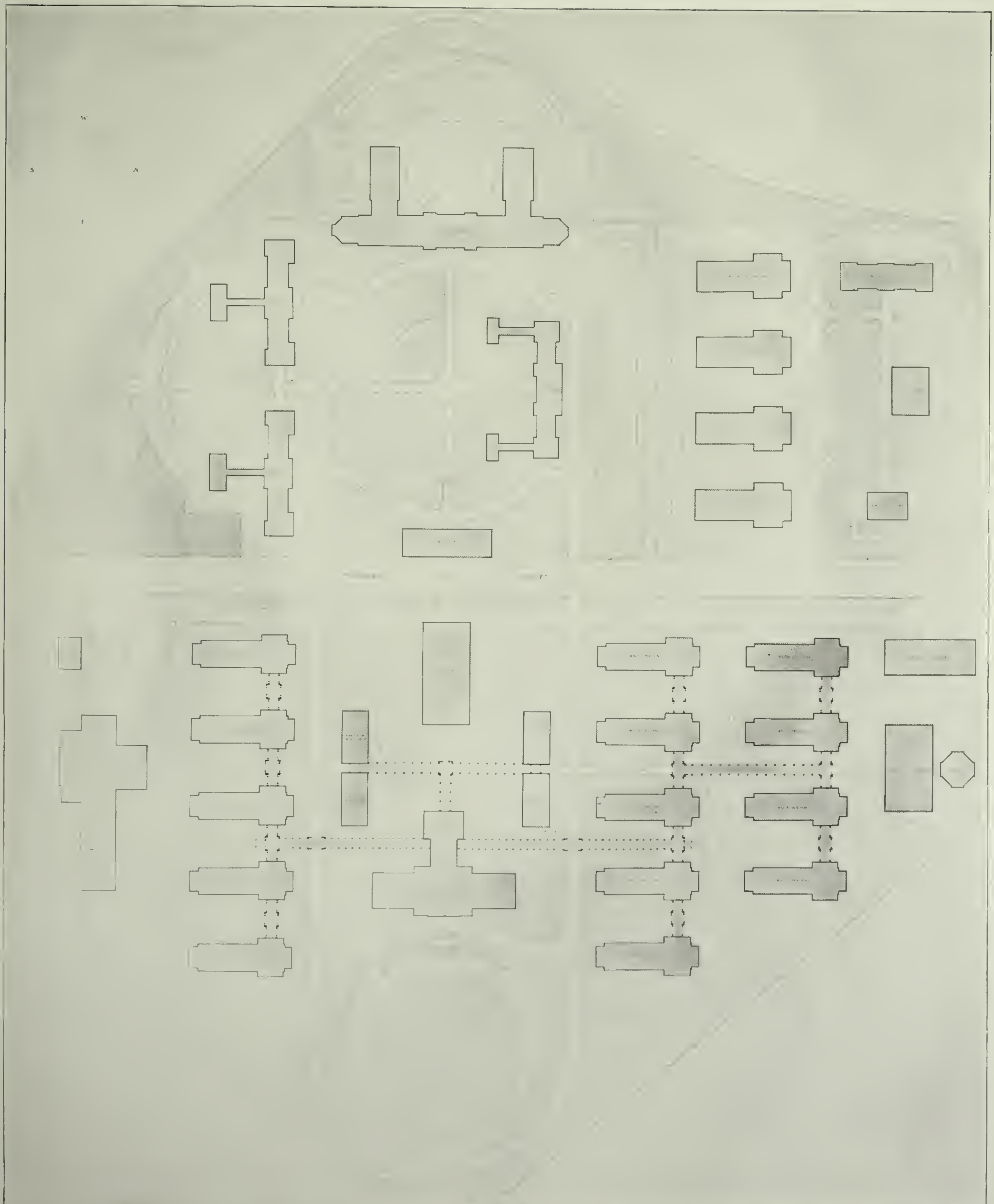
Shepley, Rutan & Coolidge, Architects.

HOUSE AT POUGHKEEPSIE, N. Y.
HORACE TRUMBAUER, ARCHITECT.

HOUSE AT GLEN COVE. LONG ISLAND.

C. P. H. GILBERT, ARCHITECT.

HOUSE, BAY STATE ROAD BOSTON, MASS.
LITTLE & BROWNE, ARCHITECTS.

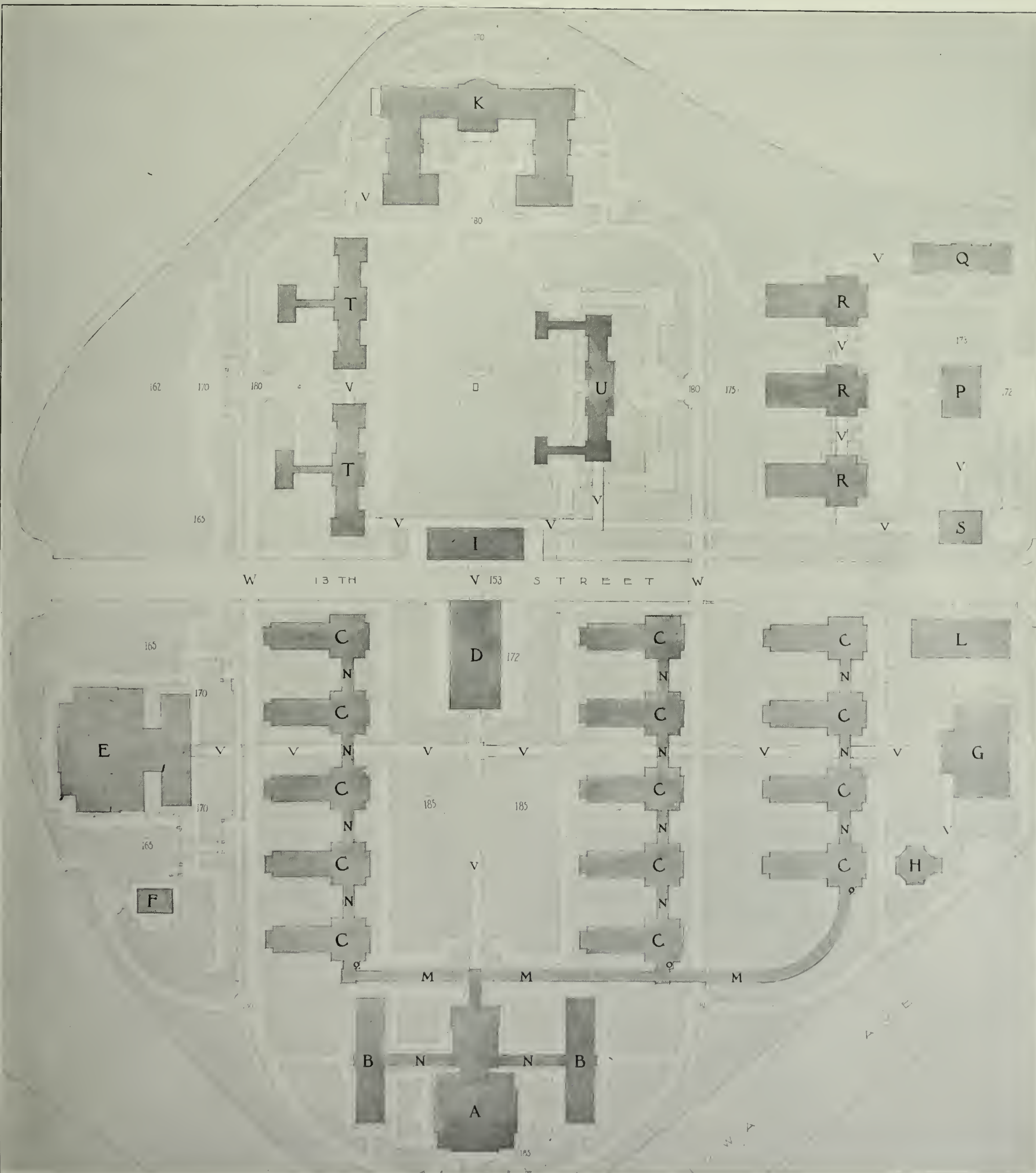


BLOCK PLAN.

DESIGN FOR MUNICIPAL HOSPITAL FOR THE DISTRICT OF COLUMBIA, AT WASHINGTON.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

EARL HALL, Y. M. C. A., COLUMBIA COLLEGE, NEW YORK.
McKIM, MEAD & WHITE, ARCHITECTS.



BLOCK PLAN. GATEWAY AND APPROACH TO ADMINISTRATION BUILDING NOT SHOWN ON PLATE.

LEGEND.

General Hospital: A, Administration Building; B, Receiving Ward; C, Ward Buildings; D, Domestic Building; E, Clinical Building; F, Superintendent's House; G, Pathological Building; H, Chapel; I, Power House; K, Nurses' House; L, Ambulance Stable; M, One-story Covered Corridors; N, Two-story Covered Corridors; O, Elevators. Contagious Hospital: P, Administration Building; Q, Nurses' House; R, Ward Buildings; S, Domestic Service Building. Tuberculosis Hospital: T, Large Ward Building; U, Small Ward Building; V, Uncovered Connected Corridors; W, Bridges.

DESIGN FOR MUNICIPAL HOSPITAL FOR THE DISTRICT OF COLUMBIA, AT WASHINGTON.

HERBERT D. HALE, ARCHITECT.

DORMITORIES, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA.

COPE & STEWARDSON, ARCHITECTS.

THE BRICKBUILDER,
JUNE,
1902.

ADMINISTRATION BUILDING.

DESIGN FOR MUNICIPAL HOSPITAL FOR THE DISTRICT OF COLUMBIA, AT WASHINGTON.

HERBERT D. HALE, ARCHITECT.

ADMINISTRATION BUILDING.

DESIGN FOR MUNICIPAL HOSPITAL FOR THE DISTRICT OF COLUMBIA, AT WASHINGTON.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

SURGEONS' HOUSE.

HOSPITAL BUILDING.

IMMIGRANT STATION FOR THE UNITED STATES GOVERNMENT, ELLIS ISLAND, NEW YORK HARBOR.

BORING & TILTON, ARCHITECTS

DORMITORY, BARNARD COLLEGE, NEW YORK, N. Y.
BRUCE PRICE, ARCHITECT.

THE BRICKBUILDER,
JULY,
1902.

ADMINISTRATION BUILDING.

IMMIGRANT STATION FOR THE UNITED STATES GOVERNMENT, ELLIS ISLAND, NEW YORK HARBOR.

BORING & TILTON, ARCHITECTS.

NEW HAVEN SAVINGS BANK, NEW HAVEN, CONN.
BRITE & BACON, ARCHITECTS.

HOUSE AT LAWRENCEVILLE, LONG ISLAND, N. Y.
T. HENRY RANDALL, ARCHITECT.

NORTHWESTERN UNIVERSITY SETTLEMENT, CHICAGO, ILL.
POND & POND, ARCHITECTS.

THE BRICKBUILDER,
JULY,
1902.

CONTAGIOUS HOSPITAL, BROOKLINE, MASS.
SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

LIBRARY, WESTON, MASS.
FOX, JENNEY & GALE, ARCHITECTS.

FIRE STATION, BROOKLINE, MASS.
G. FRED CROSBY, ARCHITECT.

CONTAGIOUS HOSPITAL. BROOKLINE. MASS.
SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

INTERIOR OF DINING-ROOM, MEMORIAL HALL, YALE UNIVERSITY
SHOWING USE OF BRICK FOR INTERIOR FINISH.
CARRÈRE & HASTINGS, ARCHITECTS.

THE BRICKBUILDER,
AUGUST,
1902.

HOUSE, BROOKLINE, MASS.

Y. M. C. A. BUILDING, ORANGE, N. J.
McKim, Mead & White, Architects.

BRICK BRIDGE, O'DAY ESTATE, DEAL BEACH, N. J.
G. K. THOMPSON, ARCHITECT.

THE BRICKBUILDER,
SEPTEMBER,
1902.

RUNKLE SCHOOL (BUILDING B), BROOKLINE, MASS.
(PRIVATE SCHOOL.)
PEABODY & STEARNS, ARCHITECTS.

THE BRICKBUILDER,
SEPTEMBER,
1902.

NAVAL BRANCH, Y. M. C. A. BUILDING, BROOKLYN, N. Y.
PARISH & SCHROEDER, ARCHITECTS

RUNKLE SCHOOL (BUILDING A), BROOKLINE MASS.
(PRIVATE SCHOOL.)
PEABODY & STEARNS, ARCHITECTS.

RUNKLE SCHOOL, BROOKLINE, MASS.
(PRIVATE SCHOOL.)
PEABODY & STEARNS, ARCHITECTS

CHURCH AT NORTHAMPTON, MASS.
MAGINNIS, WALSH & SULLIVAN, ARCHITECTS.

REAR AND SIDE VIEW.

HOUSE AT ALLENHURST, N. J.

GEORGE K. THOMPSON, ARCHITECT.

THE BRICKBUILDER,
OCTOBER,
1902.

CHURCH OF THE BLESSED SACRAMENT, PROVIDENCE, R. I.

HEINS & LA FARGE, ARCHITECTS.

CHURCH OF THE BLESSED SACRAMENT, PROVIDENCE, R. I.
HEINS & LA FARGE, ARCHITECTS

THE BRICKBUILDER,
OCTOBER,
1902.

FRONT VIEW.

HOUSE AT ALLENHURST, N. J.

(RESIDENCE OF PETER FISHER, ESQ., OF SAYRE & FISHER COMPANY.)

GEORGE K. THOMPSON, ARCHITECT.

THE BRICKBUILDER,
OCTOBER,
1902.

HOUSE AT MIDDLETOWN, R. I

WINSLOW & BIGELOW, ARCHITECTS.

THE LEAMY HOME, MT. AIRY, PHILADELPHIA, PA.
COPE & STEWARDSON, ARCHITECTS.

HOUSE, 5050 FORBES STREET, PITTSBURG, PA. PEABODY & STEARNS, ARCHITECTS.

HOUSE AT SEWICKLEY, PA. ALDEN & HARLOW, ARCHITECTS.

HOUSE AT SEWICKLEY, PA. RUTAN & RUSSELL, ARCHITECTS.

MAIN ENTRANCE OF U. S. POST OFFICE AT ANNAPOLIS, MD.

James Knox Taylor, Supervising Architect.

PRESS BUILDING. CHICAGO UNIVERSITY, CHICAGO, ILL.
SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

THE LEAMY HOME, MT. AIRY, PHILADELPHIA, PA.
COPE & STEWARDSON, ARCHITECTS.

HOUSE, MOREWOOD PLACE, PITTSBURG, PA.
RUTAN & RUSSELL, ARCHITECTS.

HOUSE, 4902 FORBES STREET, PITTSBURG, PA
ALDEN & HARLOW, ARCHITECTS.

MAIN ENTRANCE.

CASE MEMORIAL LIBRARY, AUBURN, N. Y.

CARRÈRE & HASTINGS, ARCHITECTS.

PHIPPS HALL OF BOTANY, SCHENLEY PARK, PITTSBURG, PA.
RUTAN & RUSSELL, ARCHITECTS.

CHARTIERS TRUST COMPANY'S BUILDING, McKEE'S ROCKS, PA.
RUTAN & RUSSELL, ARCHITECTS.

HOUSE FOR ANDREW CARNEGIE, ESQ., NINETIETH STREET AND FIFTH AVENUE, NEW YORK CITY.
BABB, COOK & WILLARD ARCHITECTS.

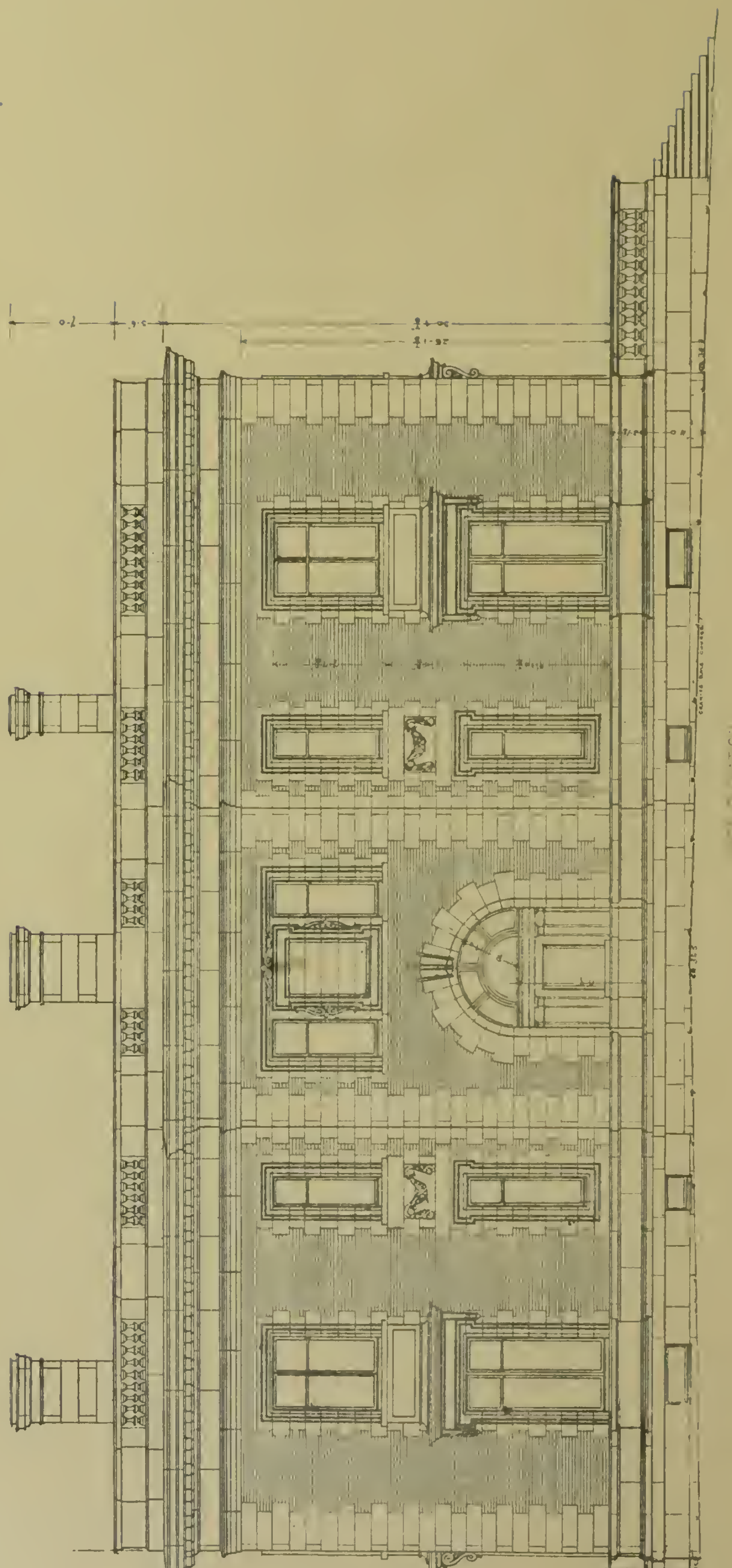
THE BRICKBUILDER,
DECEMBER,
1902.

HOUSE FOR ANDREW CARNEGIE ESQ., NINETIETH STREET AND FIFTH AVENUE, NEW YORK CITY.
BABB, COOK & WILLARD, ARCHITECTS.

CASE MEMORIAL LIBRARY. AUBURN, N. Y.
CARRÈRE & HASTINGS, ARCHITECTS

GYMNASIUM AT LAWRENCEVILLE, N. J.

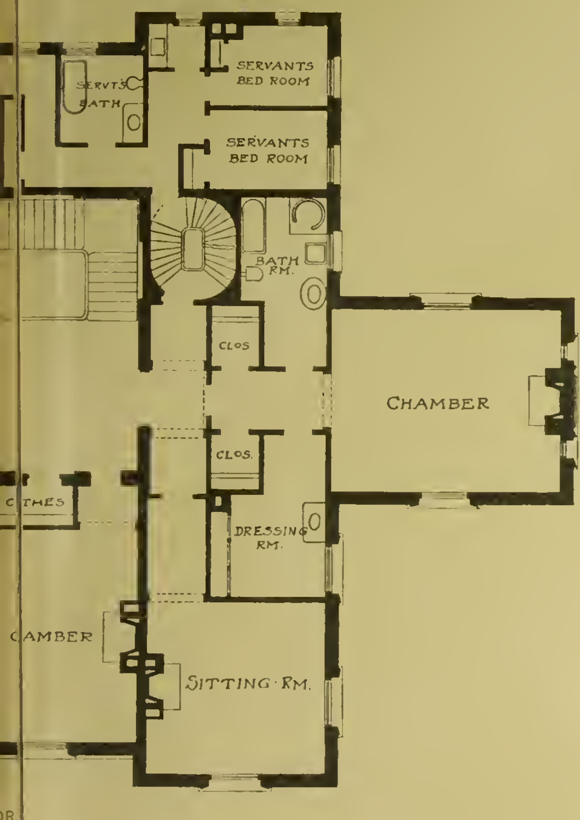
PEABODY & STEARNS, ARCHITECTS.

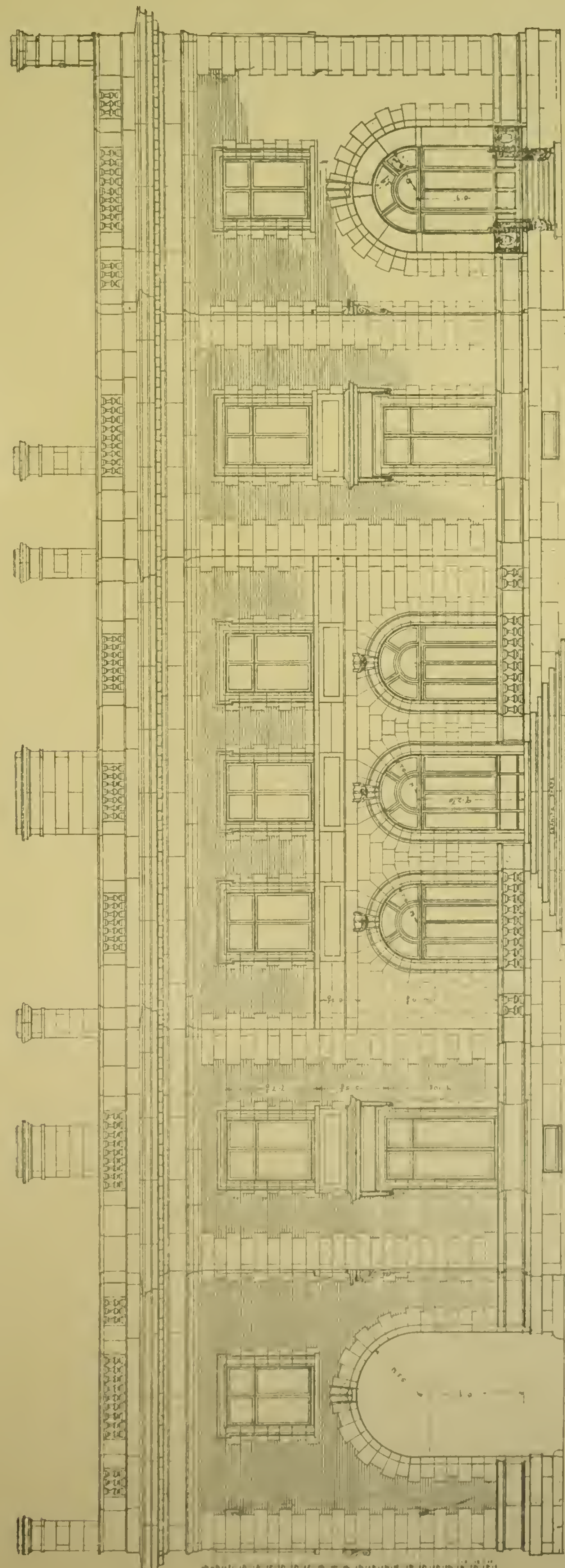



CHAMBER
SERVANTS BED ROOM
BATH RM.
CLOS.
CHAMBER
DRESSING RM.
CHAMBER
CHAMBER


STUDY
LAUNDRY
LAVATORY
PORTE COCHÈRE
VEST.
COAT RM.
RECEPTION ROOM

PLATES 4 and 5.

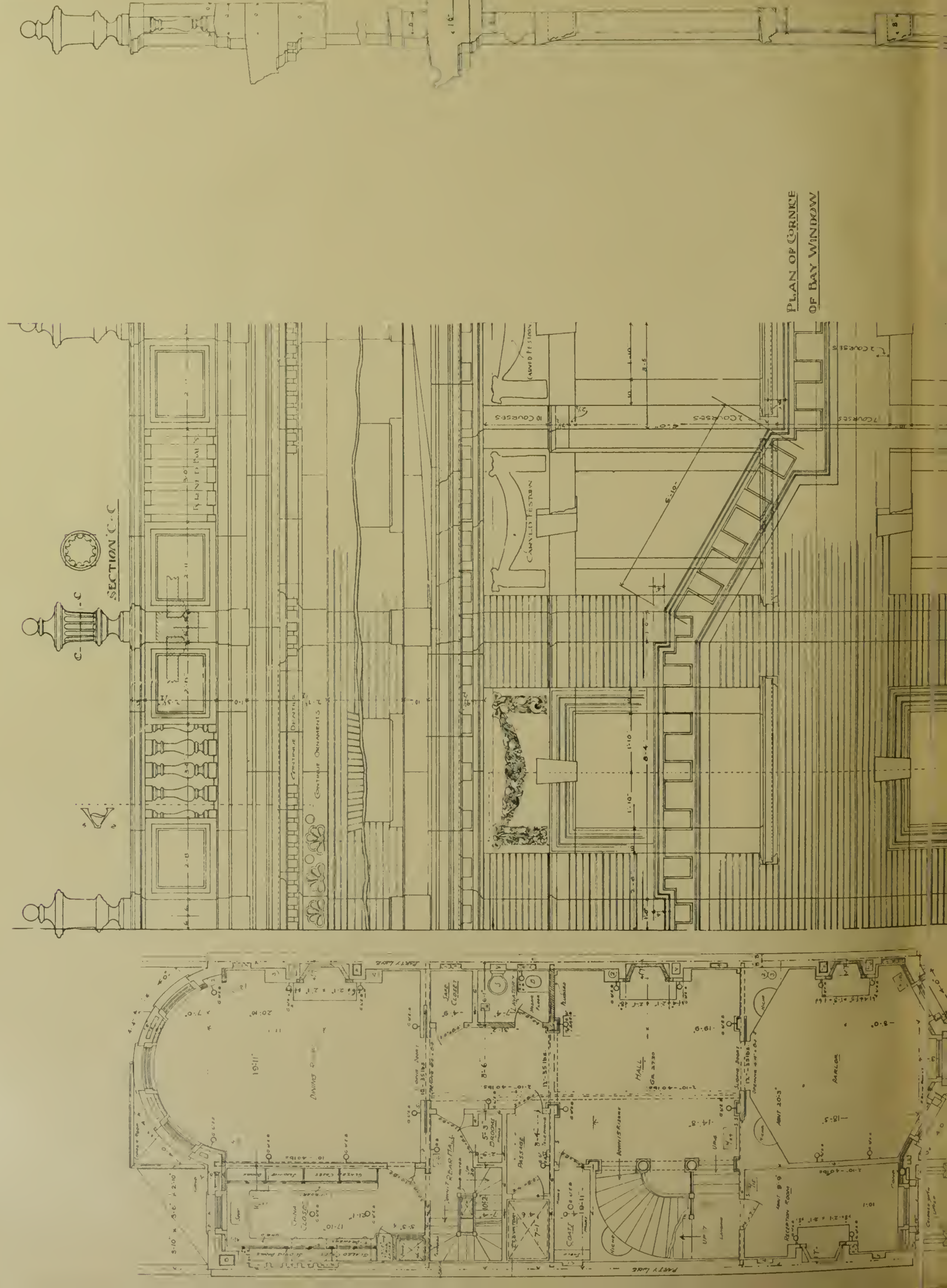




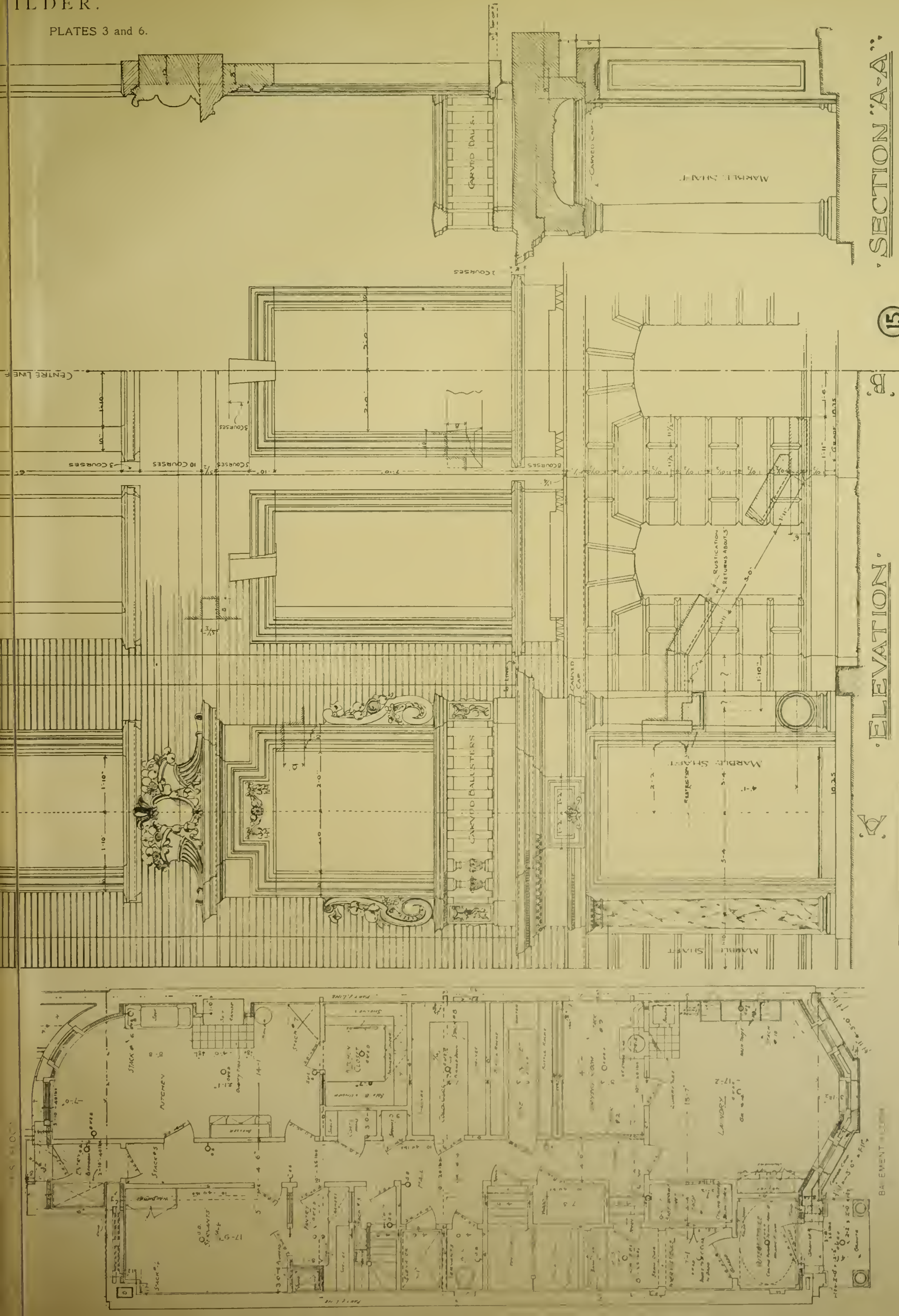
FRONT ELEVATION.

HOUSE AT BROOKLINE, MASS.

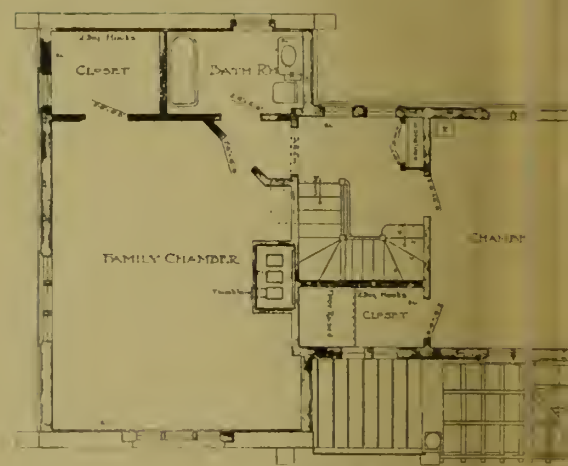
SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.


PLAN OF CORNICE
OF BAY WINDOW
SECTION C-C
CARVED FESTOON
CONTINUOUS DENTILS
CONTINUOUS ORNAMENTS
HALL
PARLOR
DINING ROOM
CHINA CLOSET
PASSAGE
PARTY LINE

PLATES 3 and 6.

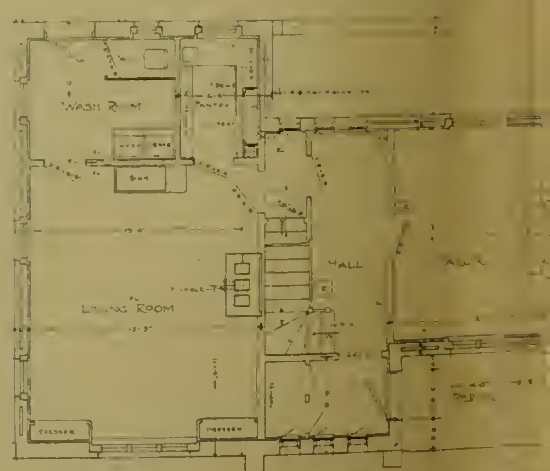


REAR ELEVATION.



SECOND FLOOR.

FRONT ELEVATION.



FIRST FLOOR.

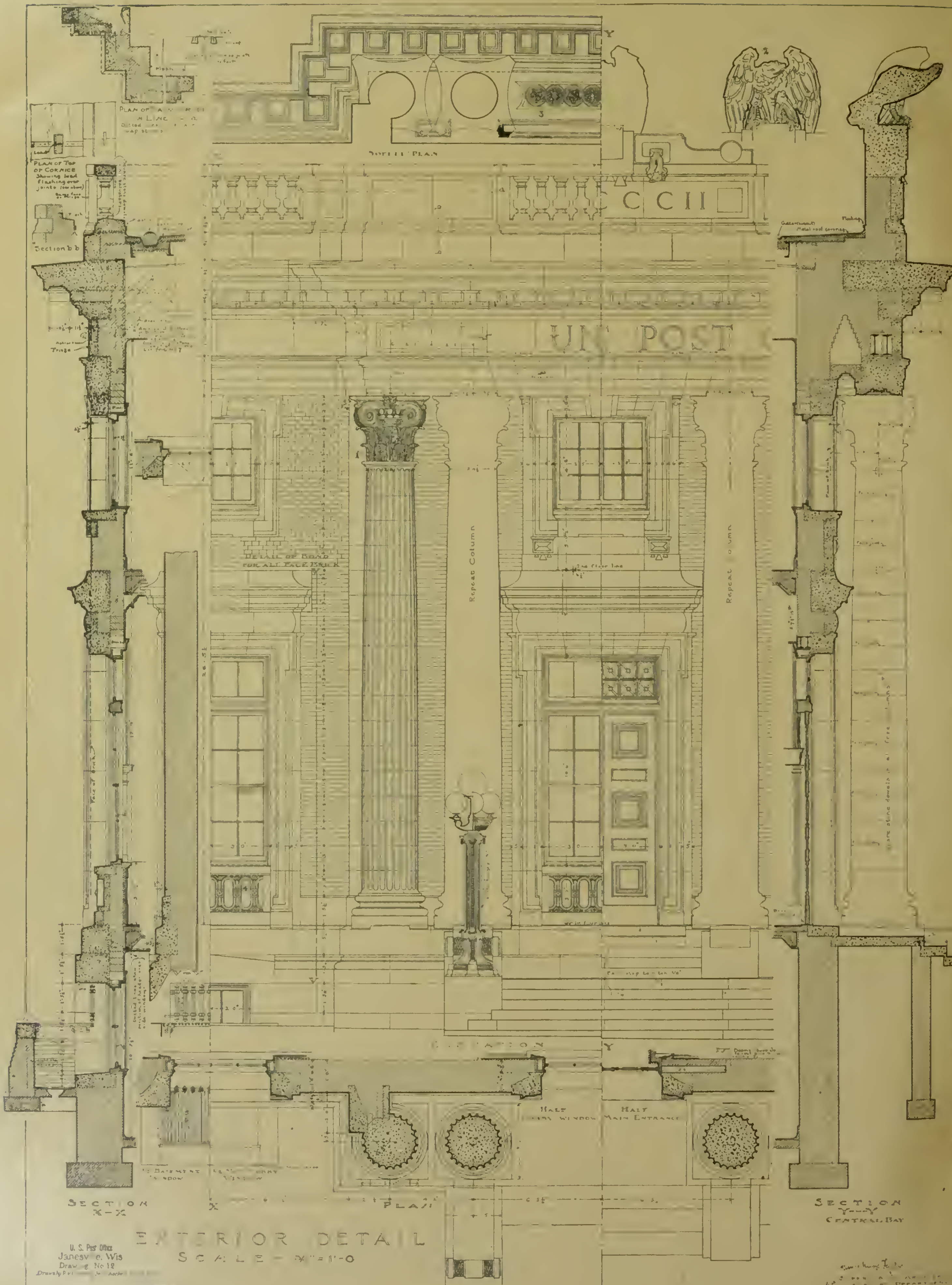
HOUSE LOCATED IN [illegible]
JOHN A[illegible]

PLATES 2 and 7.

DETAIL OF FRONT ELEVATION

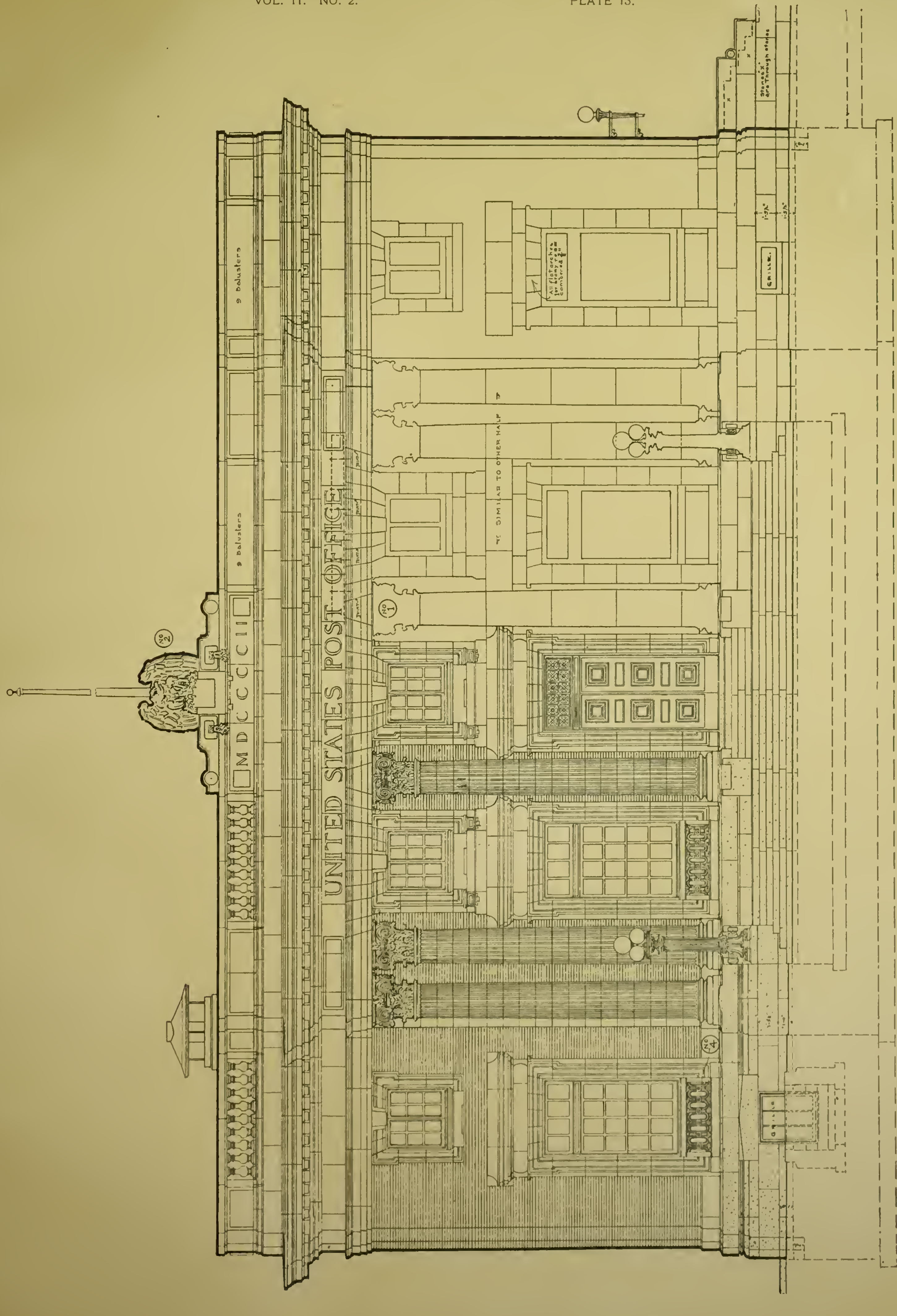
BOSTON SUBURB

CHT T.



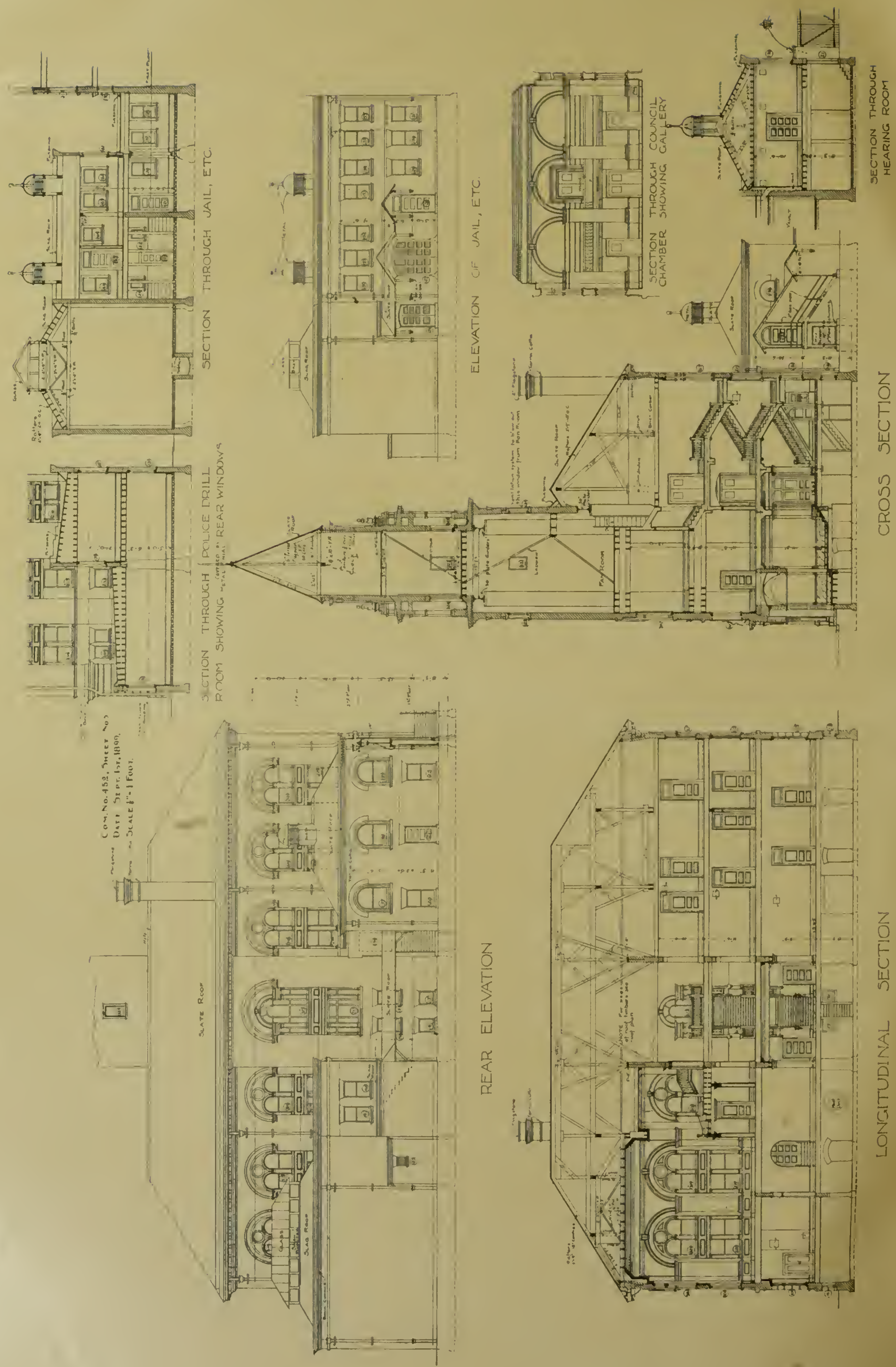
DETAIL OF FRONT UNITED STATES POST OFFICE AT JANESVILLE WIS.

JAMES KNOX TAYLOR, ARCHITECT.



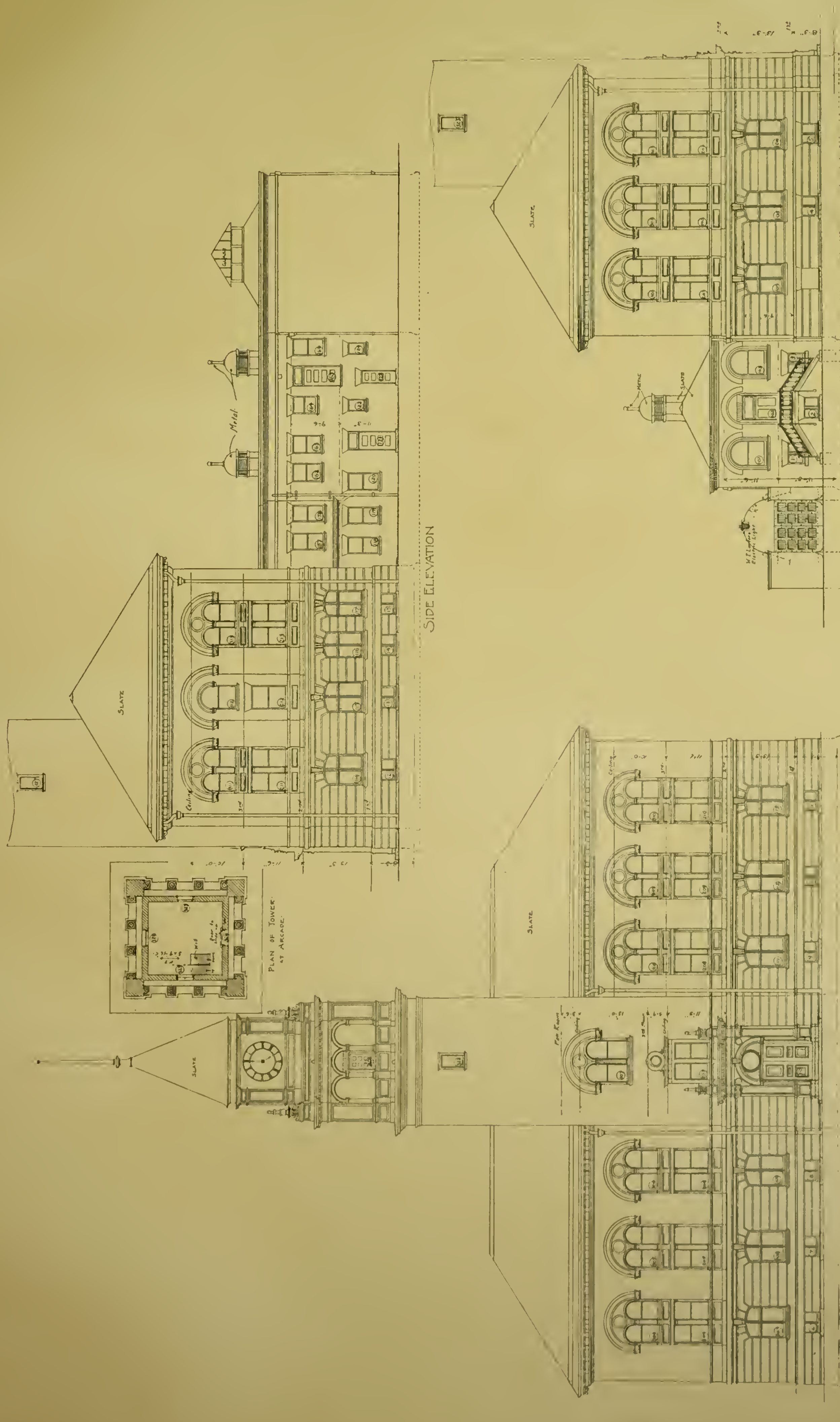
UNITED STATES POST OFFICE AT JANESVILLE, WIS.

JAMES KNOX TAYLOR, SUPERVISING ARCHITECT.



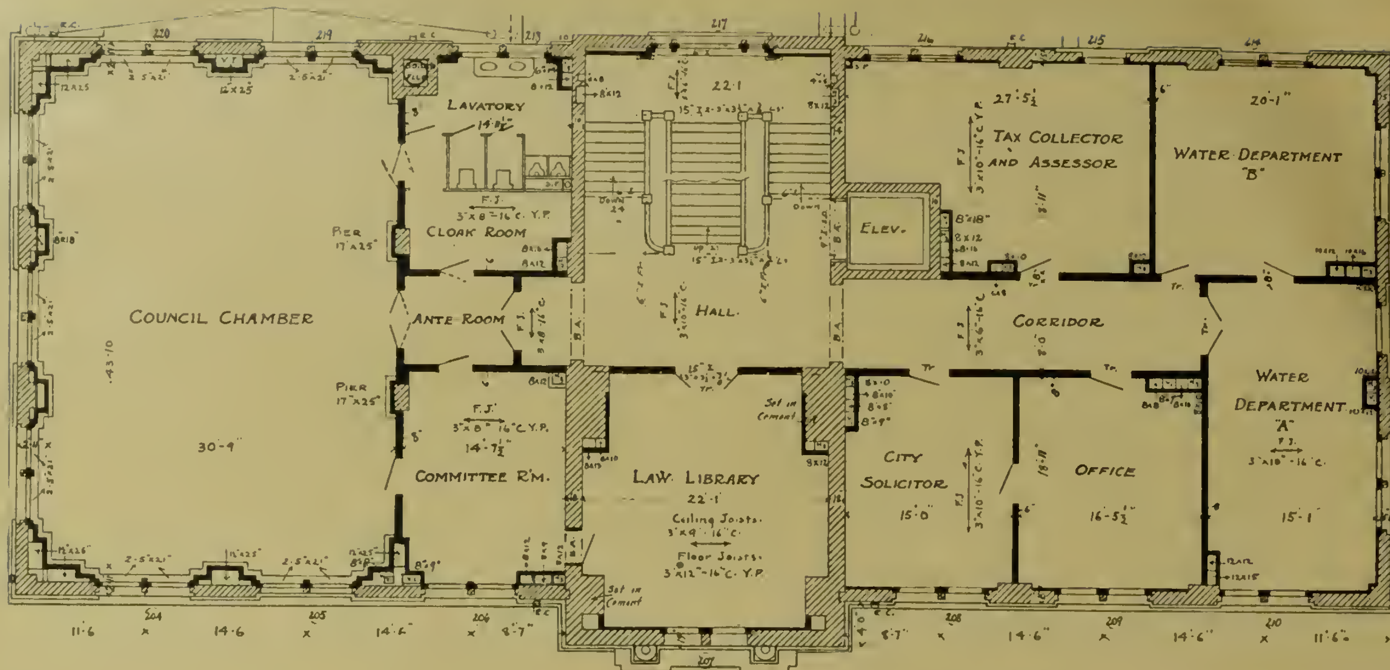
A NEW CITY HALL

COPE & STEWARDSON, ARCHITECTS.

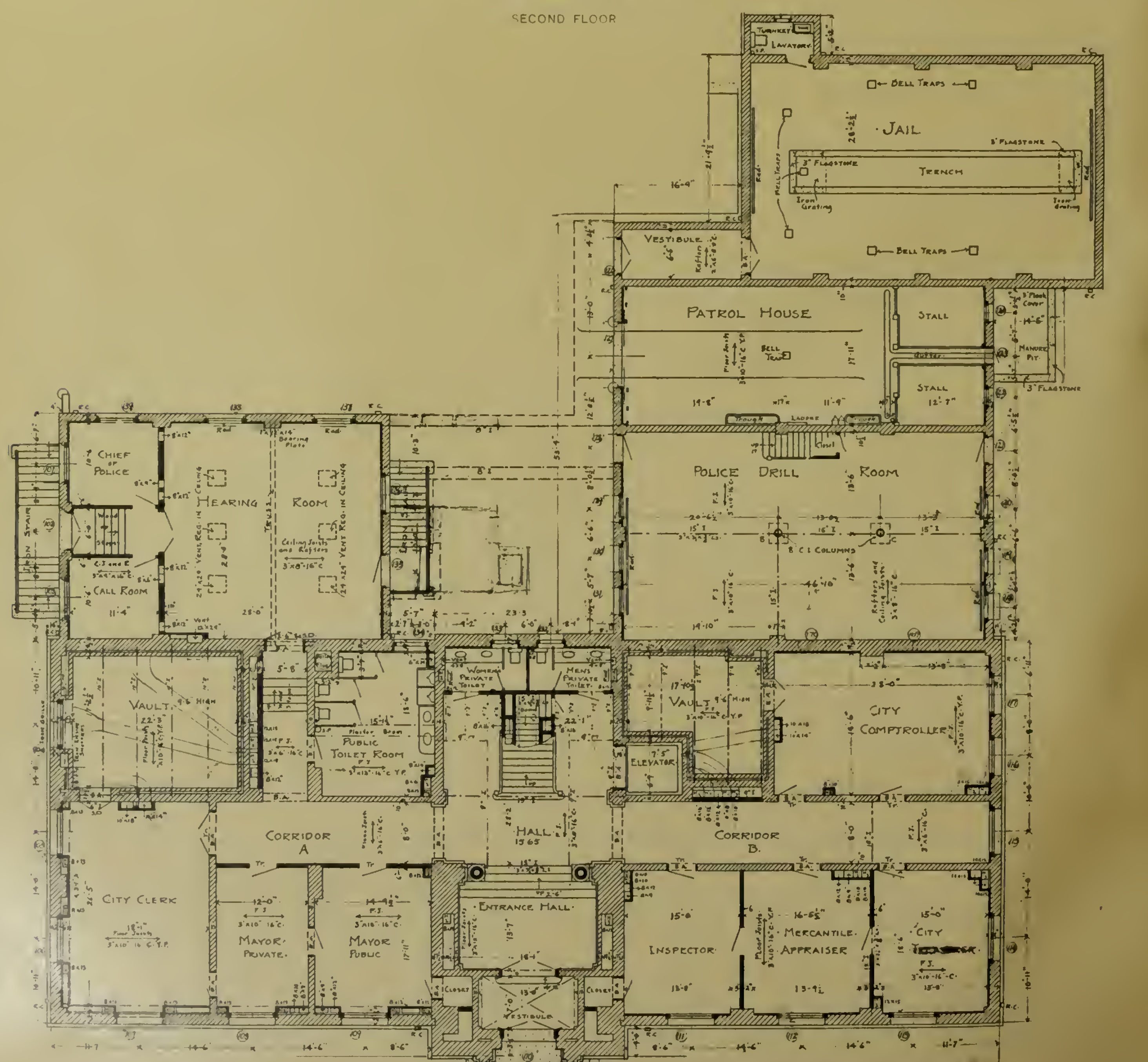


A NEW CITY HALL

COPE & STEWARDSON, ARCHITECTS.



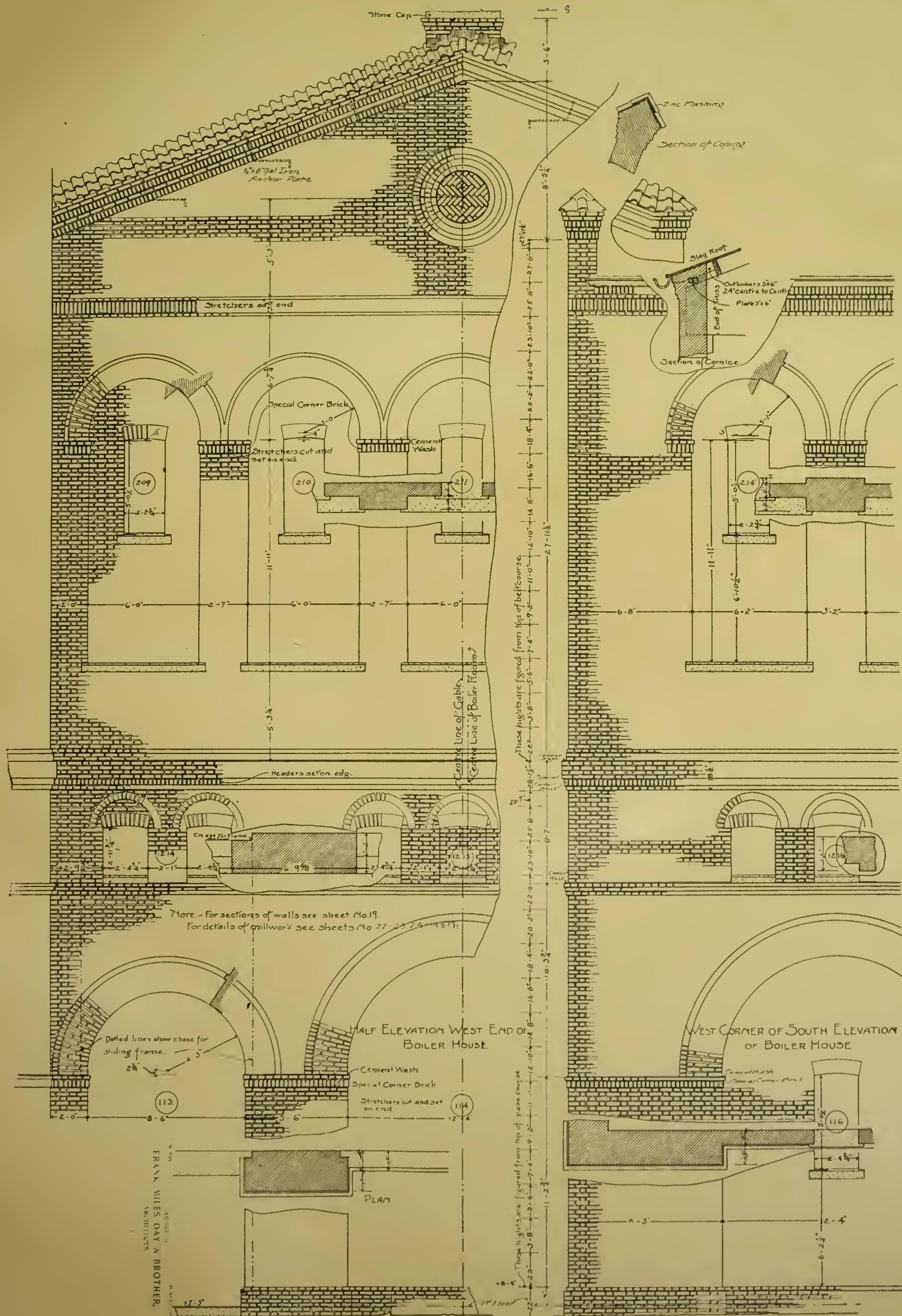
SECOND FLOOR



FIRST FLOOR.

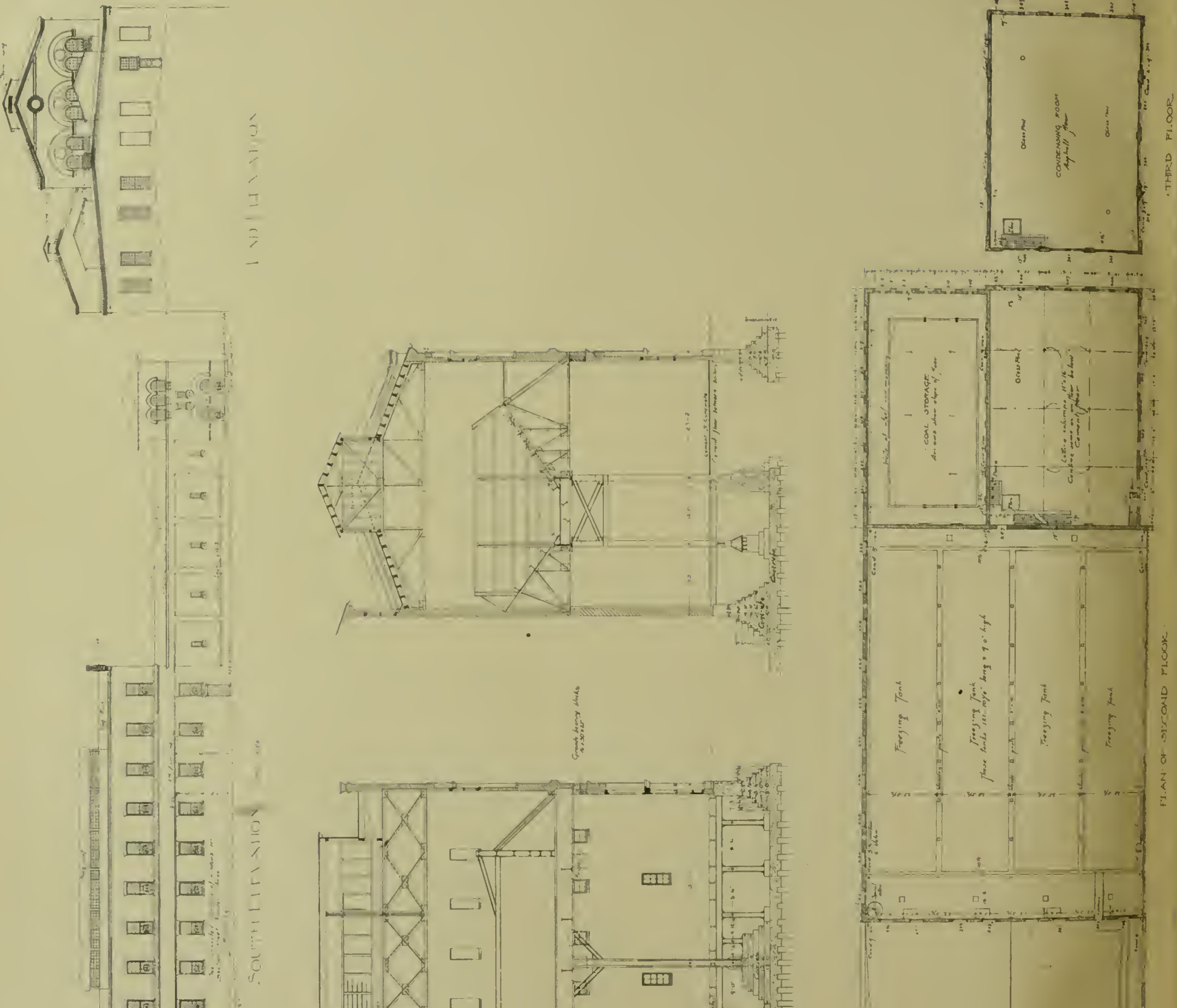
A NEW CITY HALL

COPE & STEWARDSON, ARCHITECTS.

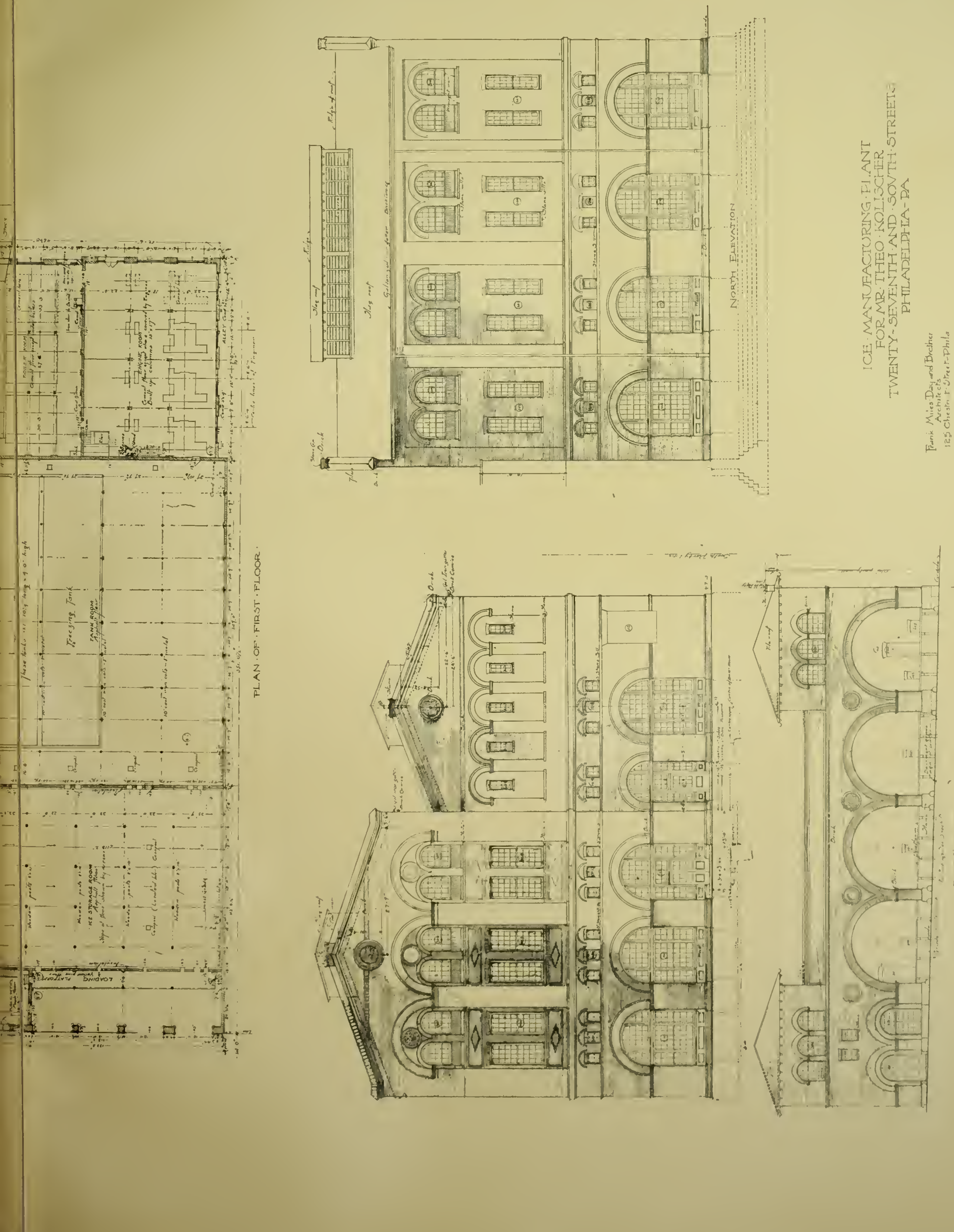


DETAIL OF FRONT ELEVATION ICE-MANUFACTURING PLANT PHILADELPHIA, PA

FRANK MILES DAY & BROTHER, ARCHITECTS.

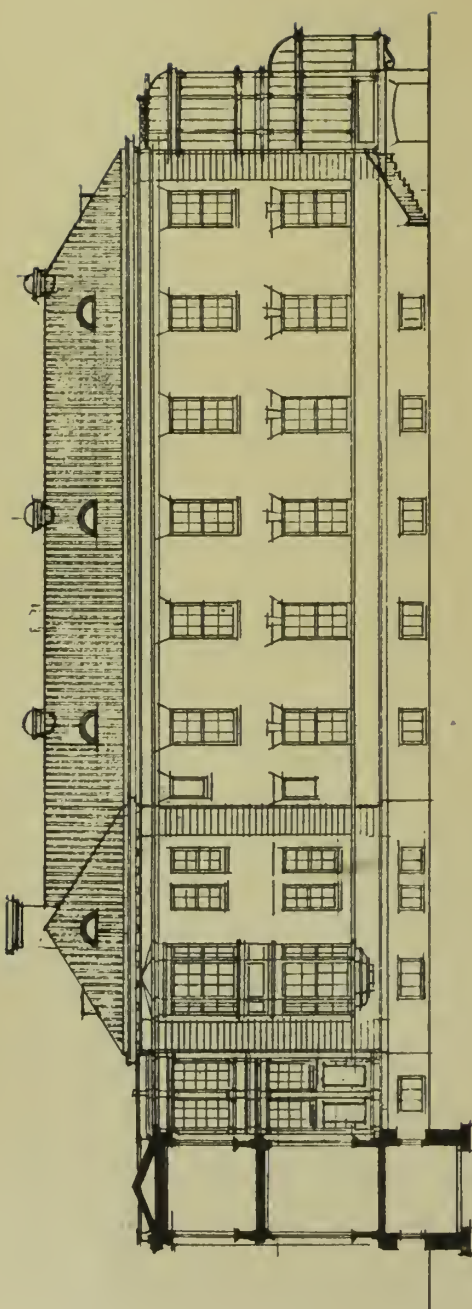

END ELEVATION
SOUTH ELEVATION
COAL STORAGE
CONDENSING ROOM
THIRD FLOOR
PLAN OF SECOND FLOOR
Freezing Tank

PLATES 9 and 16.

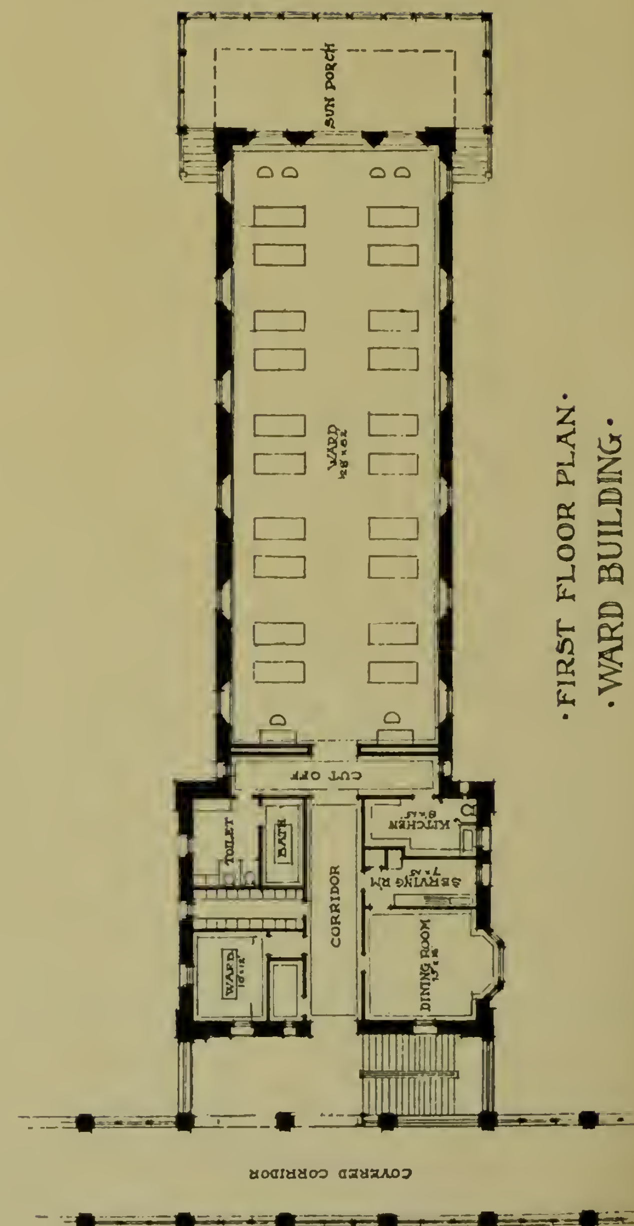


ICE-MANUFACTURING PLANT, PHILADELPHIA, PA.

FRANK MILES DAY & BROTHER, ARCHITECTS.

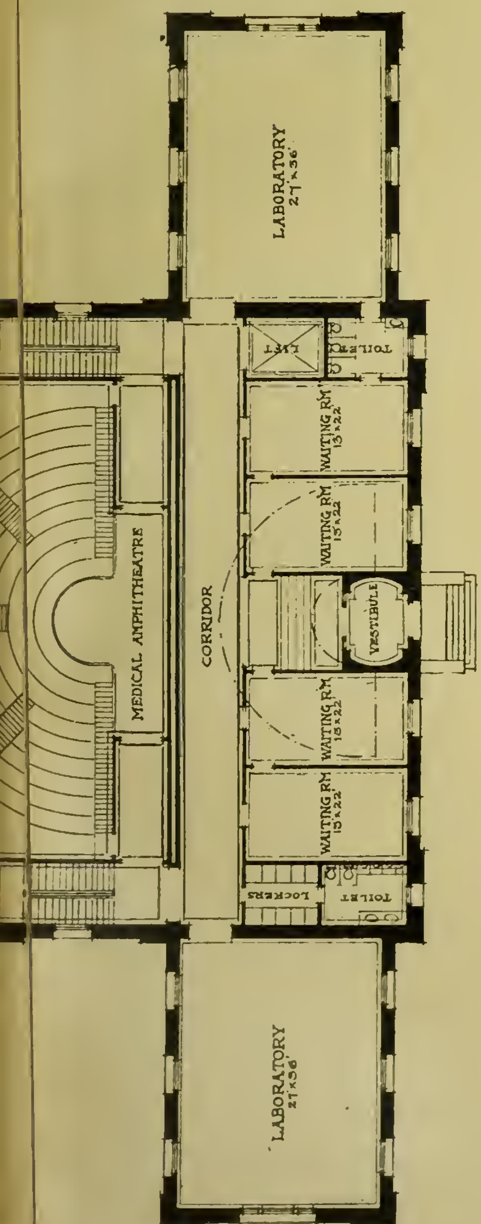


ELEVATION.

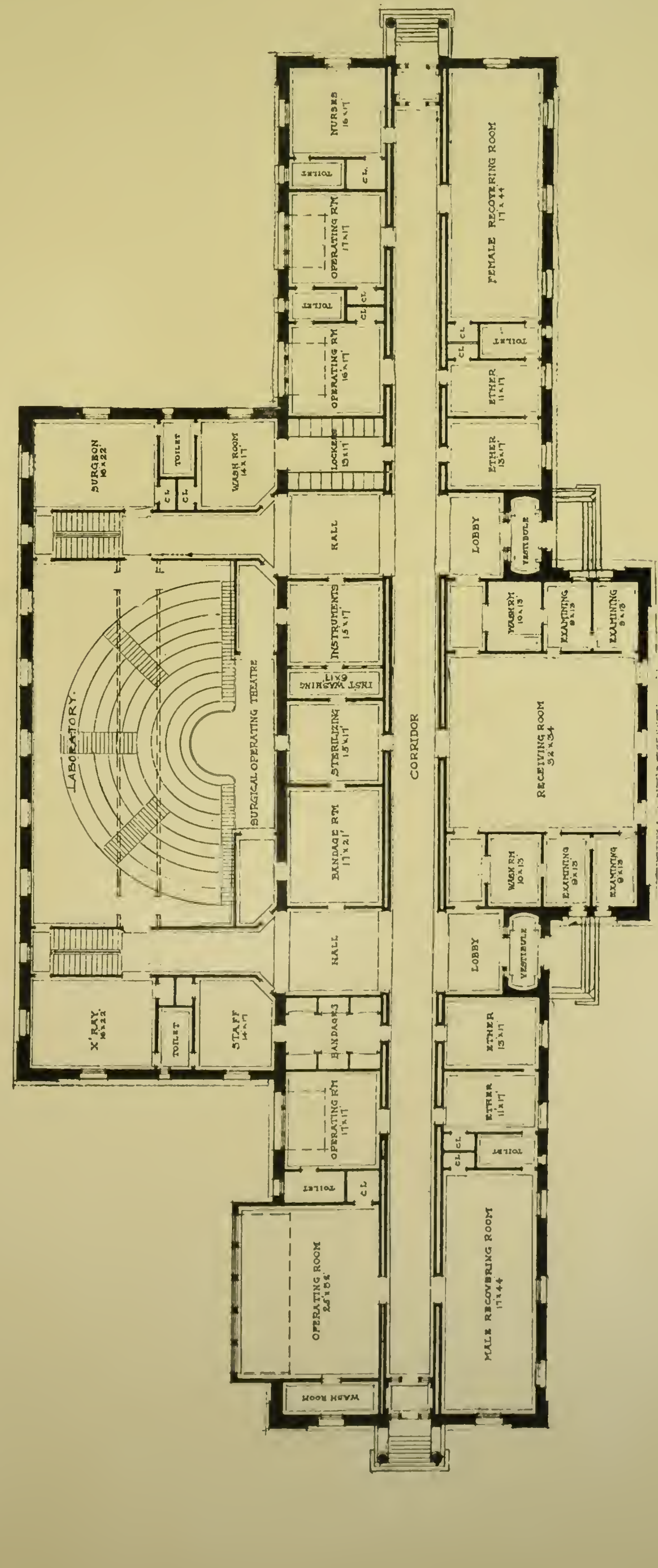


·FIRST FLOOR PLAN·
·WARD BUILDING·

PLATES 17 and 24.



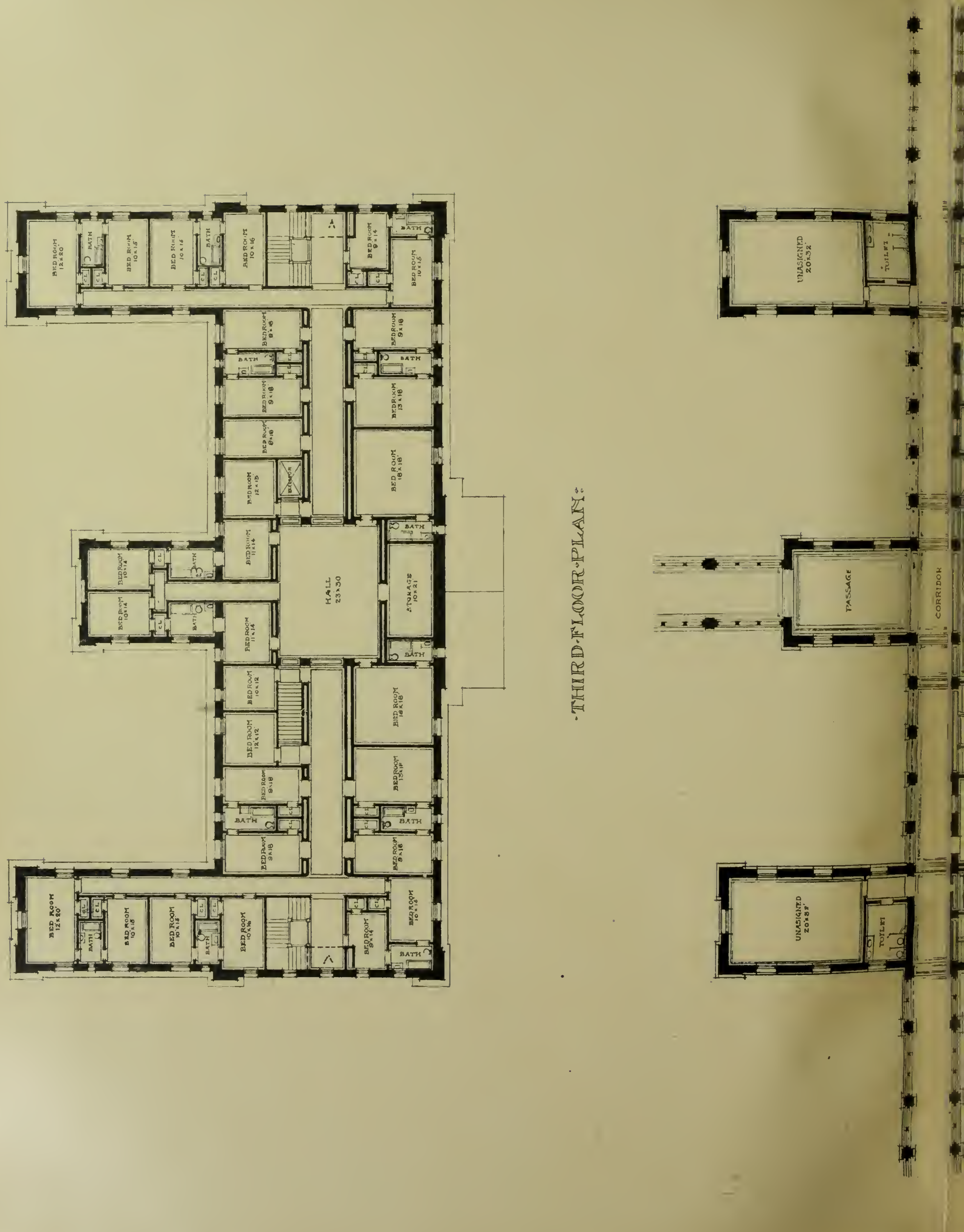
MEDICAL BUILDING



PLAN, SURGICAL BUILDING.

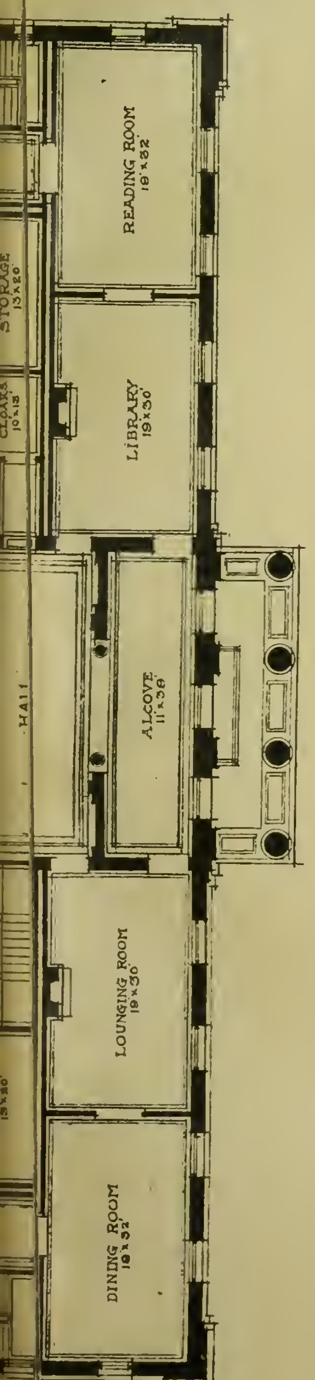
COMPETITIVE DESIGN OF MUNICIPAL HOSPITAL FOR THE DISTRICT OF COLUMBIA, AT WASHINGTON

BORING & TILTON, ARCHITECTS.

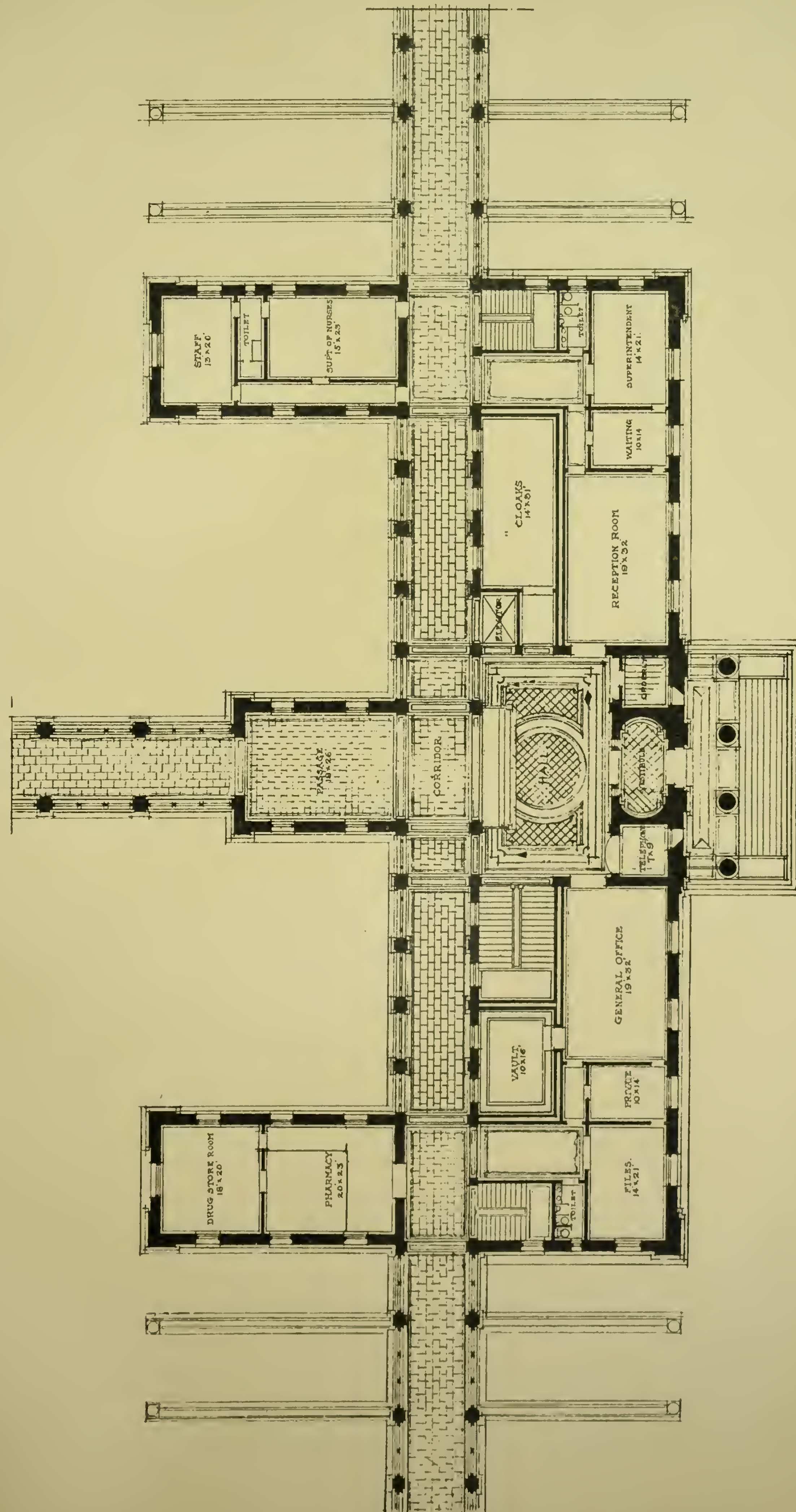


·THIRD·FLOOR·PLAN·

PLATES 18 and 23.



SECOND-FLOOR-PLAN



FIRST FLOOR PLAN, ADMINISTRATION BUILDING.

COMPETITIVE DESIGN OF MUNICIPAL HOSPITAL FOR THE DISTRICT OF COLUMBIA, AT WASHINGTON.

BORING & TILTON, ARCHITECTS.

VOL. 11. NO. 3. PLATE 19.

ELEVATION

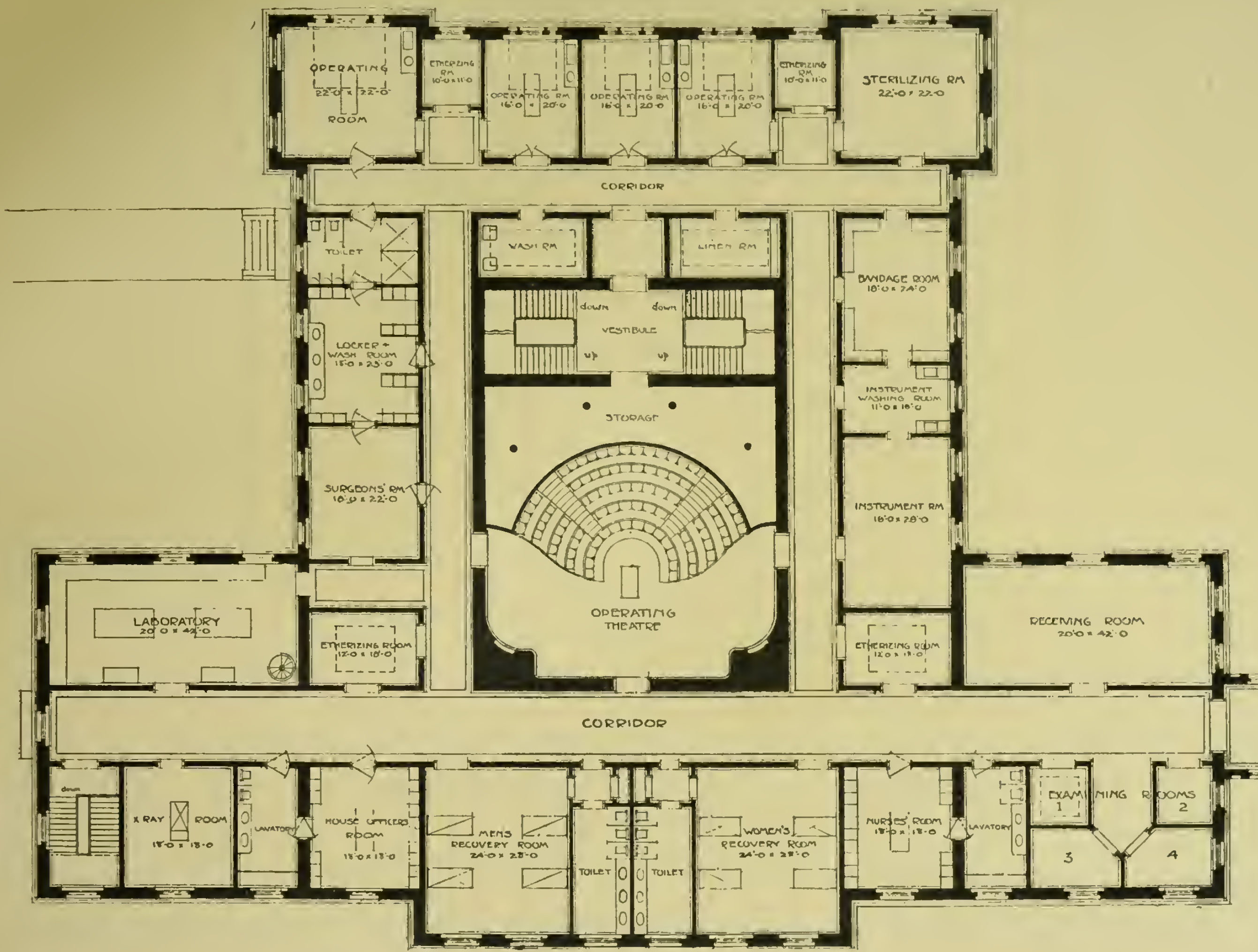
PLAN, TYPICAL WARD BUILDING.

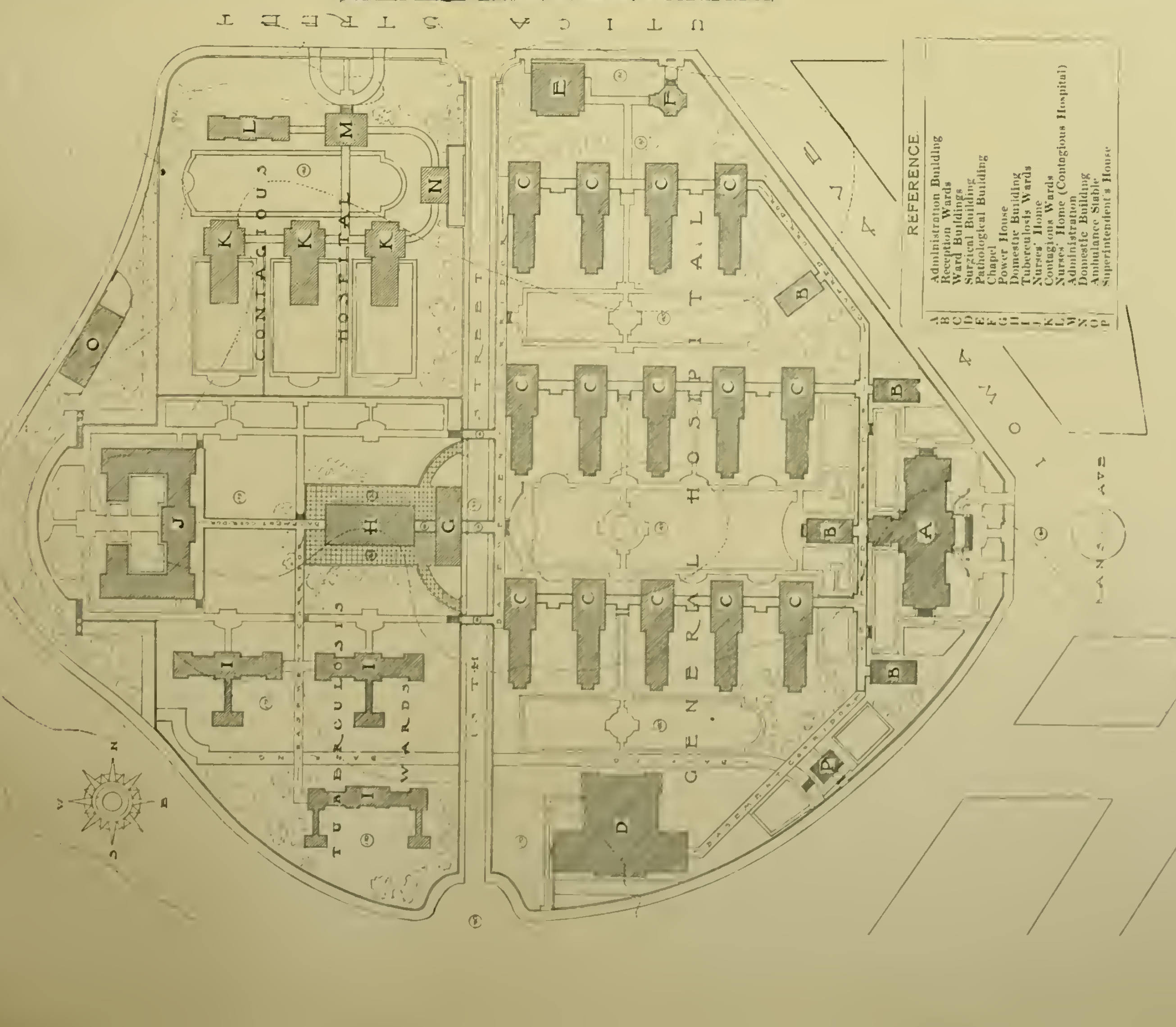
FIRST HONORABLE MENTION.

COMPETITIVE DESIGN OF MUNICIPAL HOSPITAL FOR THE DISTRICT OF COLUMBIA, AT WASHINGTON

CHASE & AMES AND LEON E. DESSEZ, ASSOCIATE ARCHITECTS.

VOL. 11. NO. 3. PLATE 22.





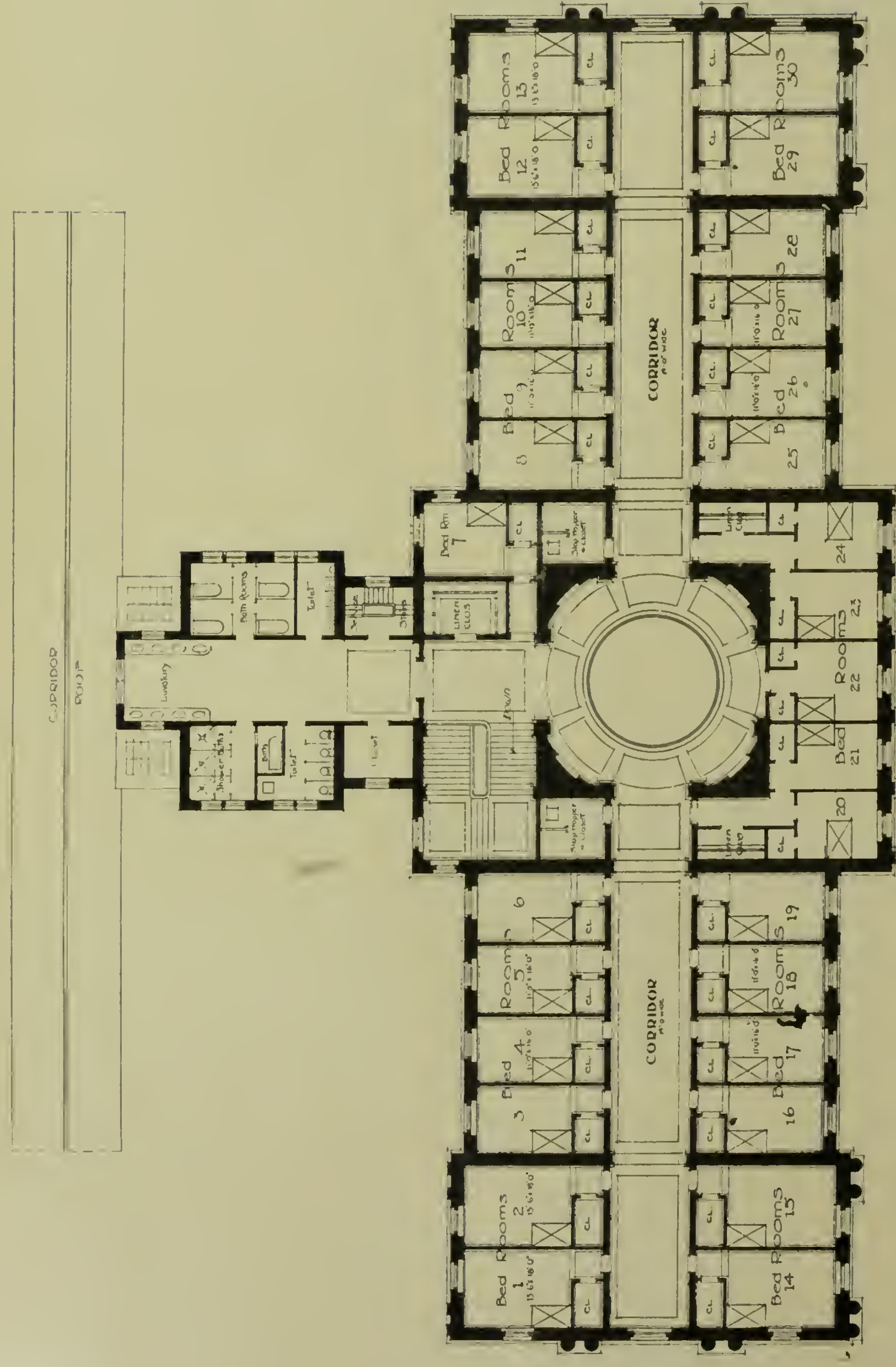
PLAN, SURGICAL BUILDING.

GROUND PLAN.

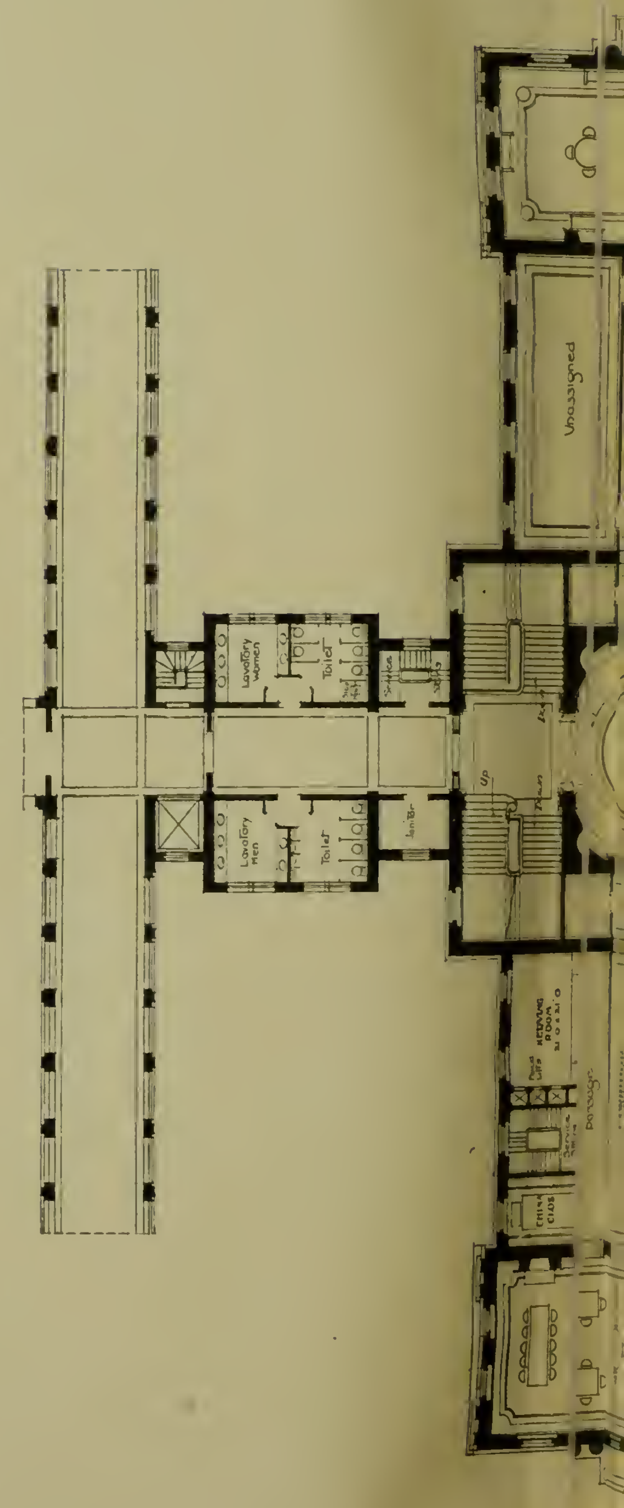
FIRST HONORABLE MENTION.

COMPETITIVE DESIGN OF MUNICIPAL HOSPITAL FOR THE DISTRICT OF COLUMBIA. AT WASHINGTON

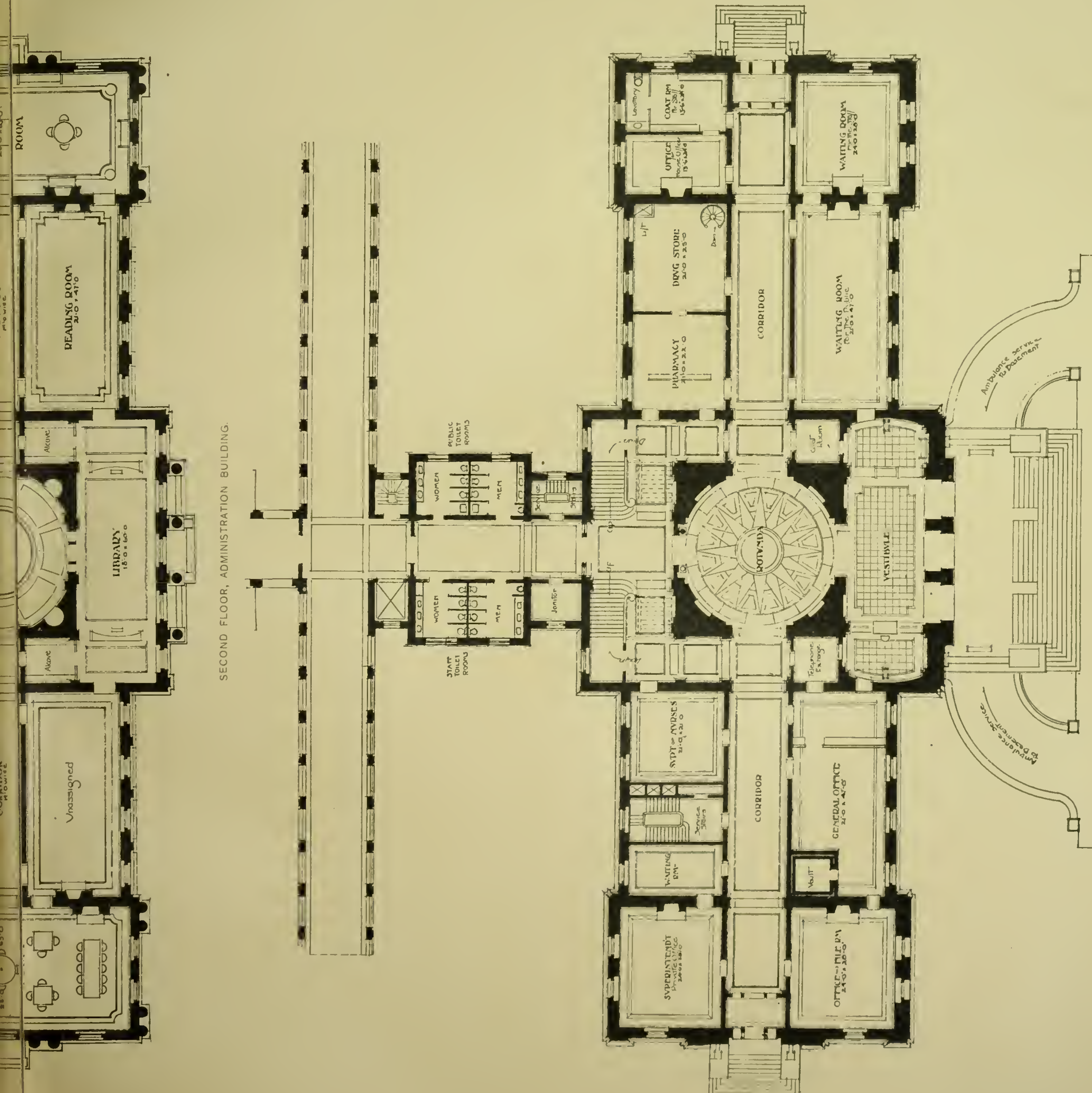
CHASE & AMES AND LEON E. DESSEZ, ASSOCIATE ARCHITECTS.



THIRD FLOOR, ADMINISTRATION BUILDING.



PLATES 20 and 21.

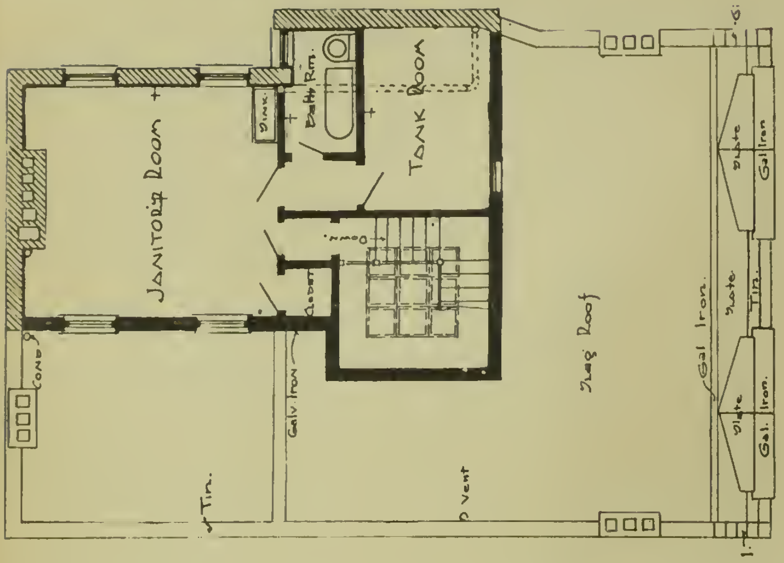


FIRST FLOOR, ADMINISTRATION BUILDING.

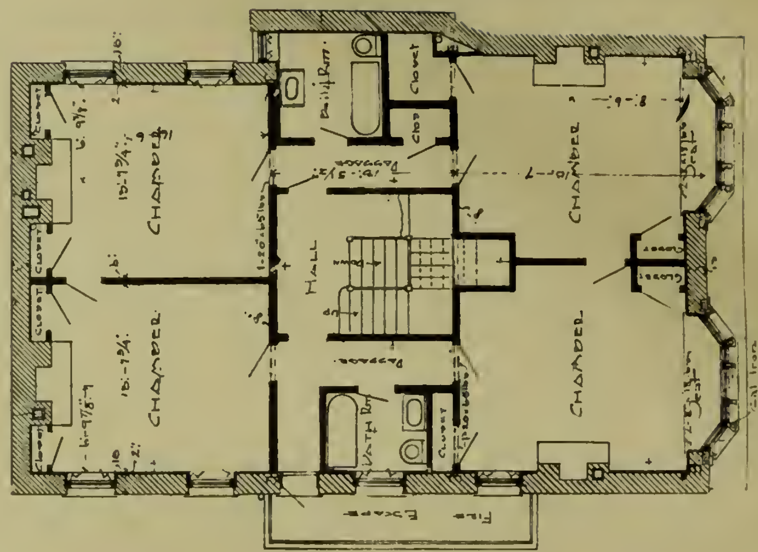
FIRST HONORABLE MENTION.

COMPETITIVE DESIGN OF MUNICIPAL HOSPITAL FOR THE DISTRICT OF COLUMBIA AT WASHINGTON

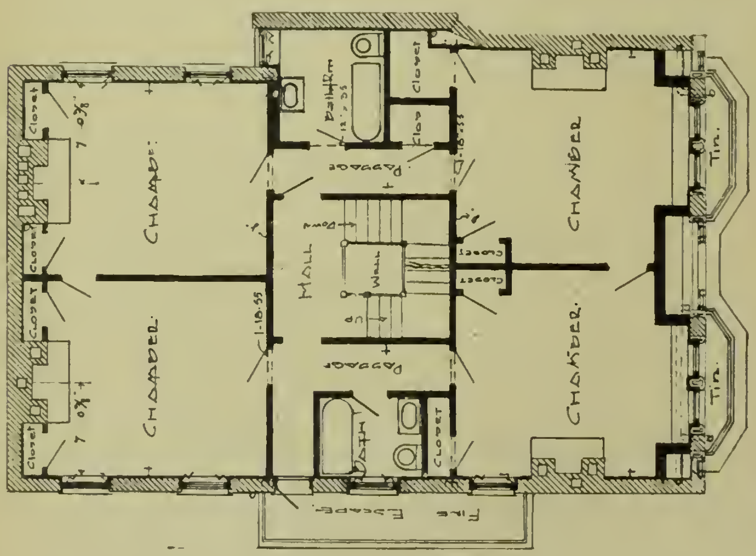
CHASE & AMES AND LEON E. DESSEZ, ASSOCIATE ARCHITECTS.



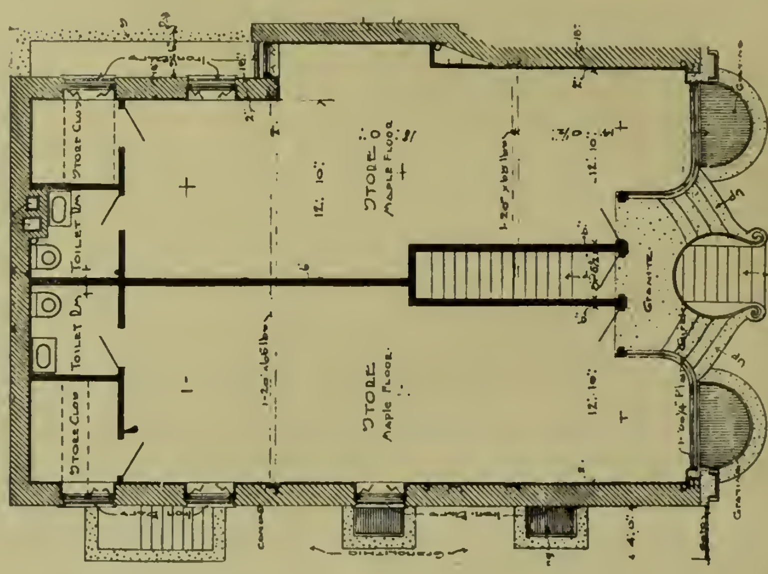
FIFTH FLOOR.



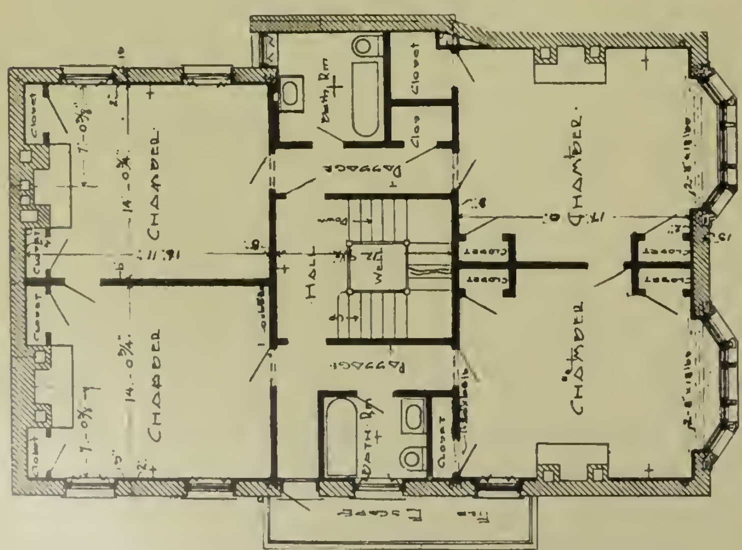
SECOND FLOOR.



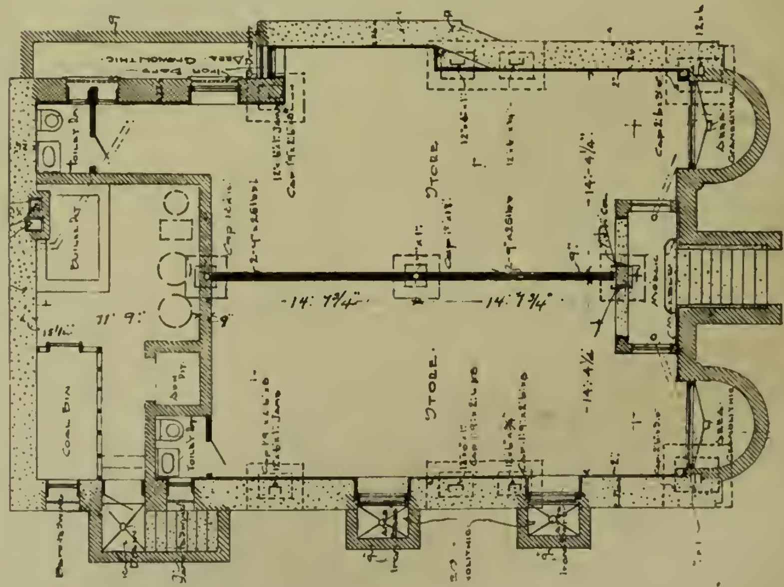
FOURTH FLOOR.



FIRST FLOOR.



THIRD FLOOR.



BASEMENT.

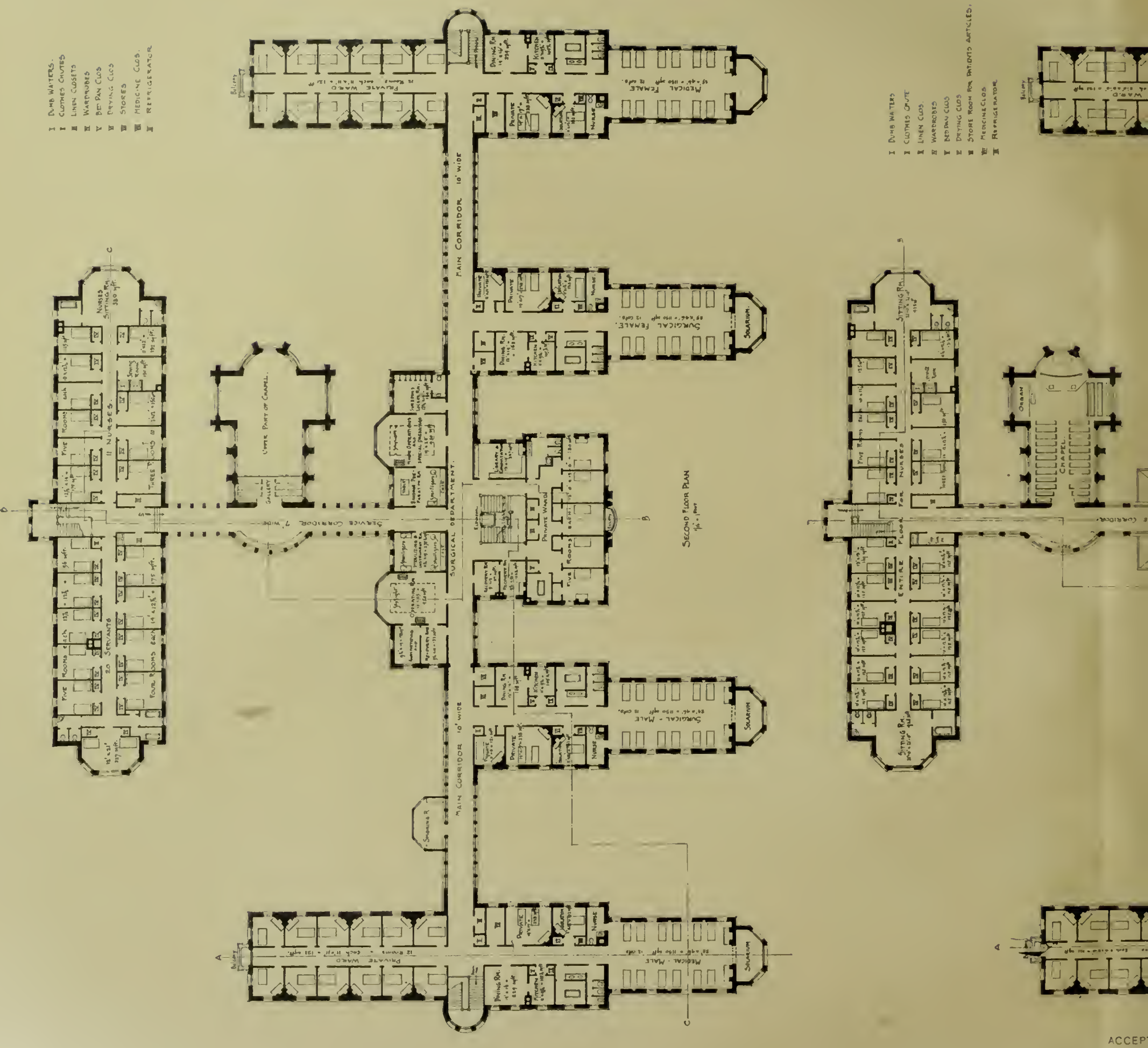
PLANS, STORE AND APARTMENT BUILDING, ELEVENTH STREET, PHILADELPHIA, PA

HAZLEHURST & HUCKEL, ARCHITECTS.

PLANS, SETTLEMENT HOUSE FOR FIFTH AVENUE BAPTIST CHURCH, NEW YORK CITY.

YORK & SAWYER, ARCHITECTS.

VOL. 11. NO. 4.



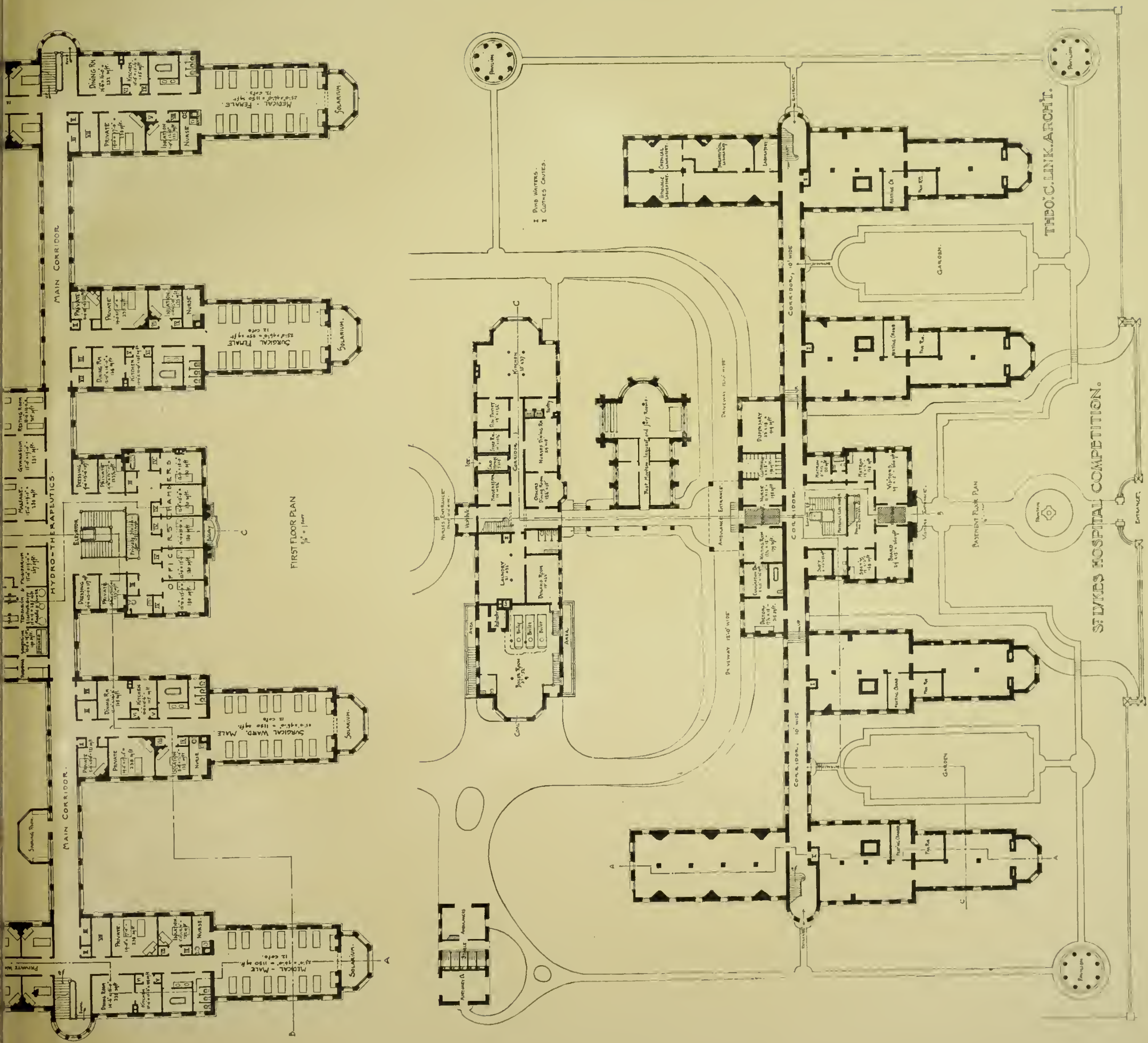
ACCEPT

PLANS. COMPETITIVE DESIGN FOR

THEO' C. L

UILDER.

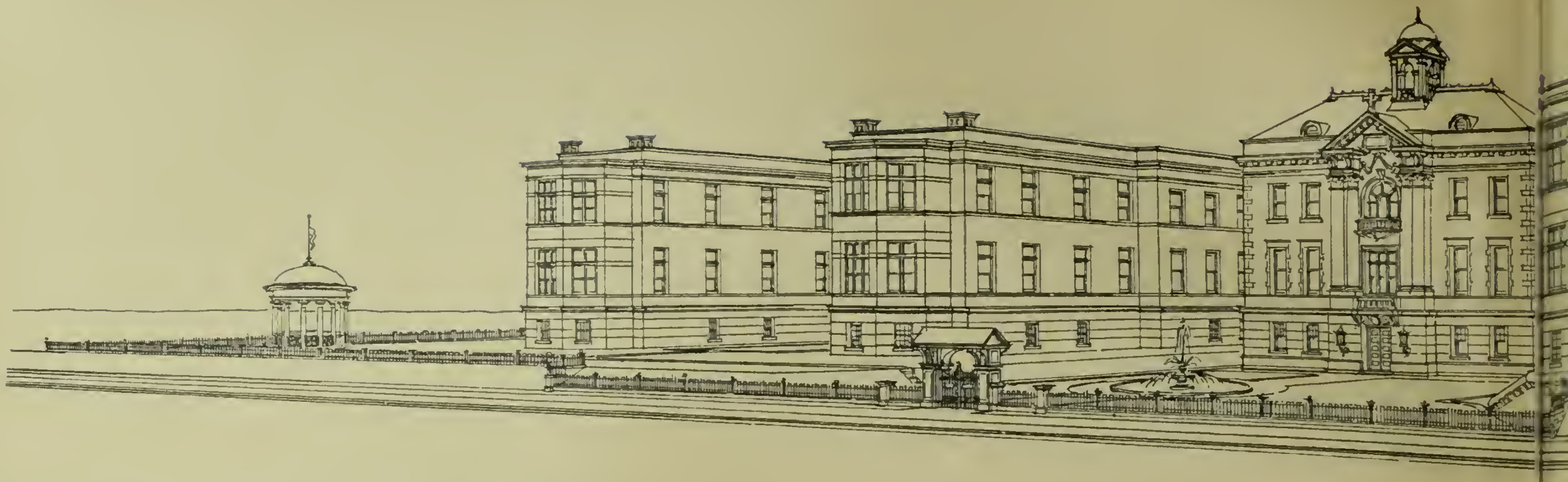
PLATES 26 and 31.



ESIGN.

LUKE'S HOSPITAL, ST. LOUIS. MO.

RCHITECT.

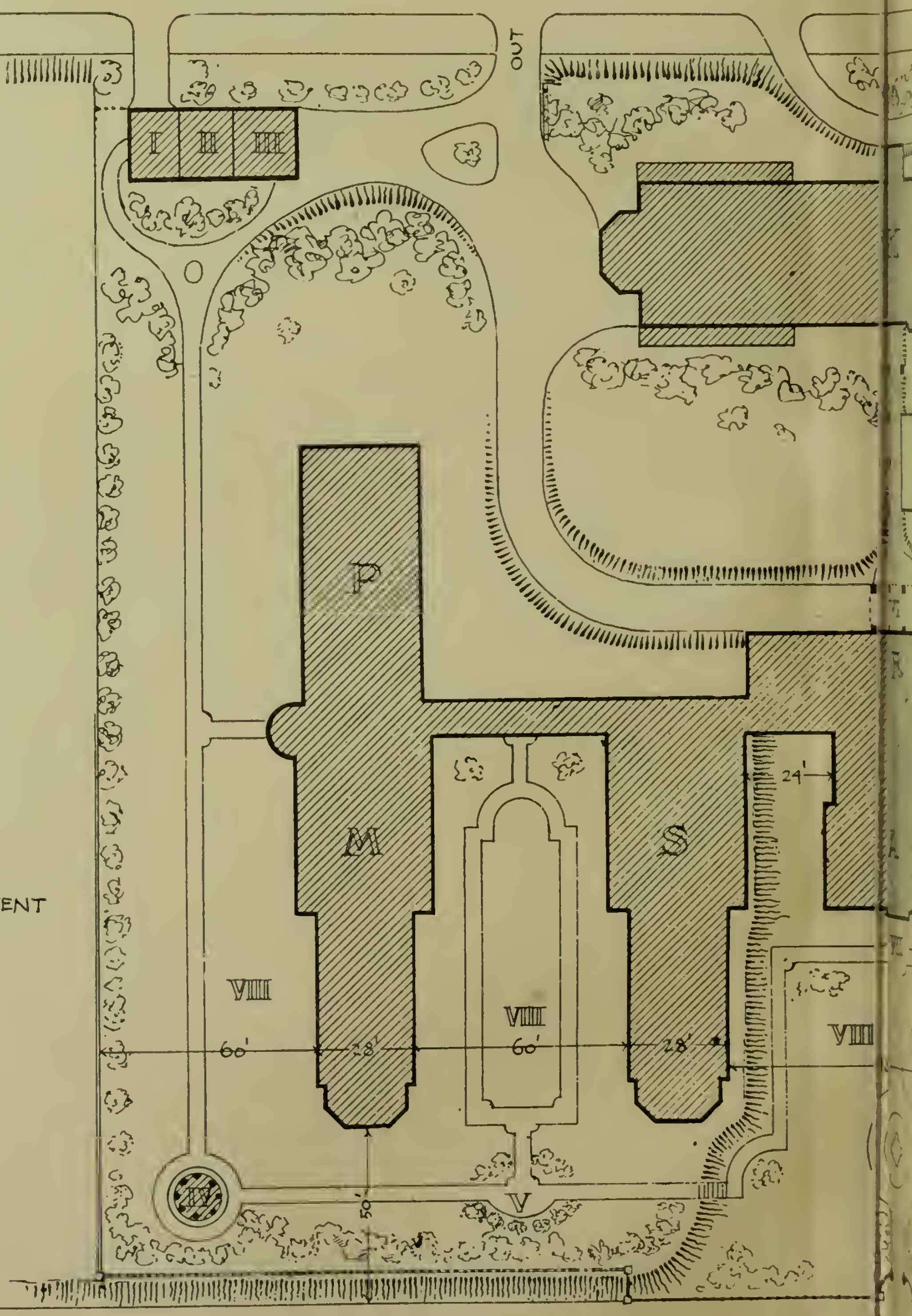


PERS

LEGEND:

- A : ADMINISTRATION.
- K : SERVICE WARD.
- R : RECEIVING WARD.
- M : MEDICAL WARDS.
- S : SURGICAL WARDS.
- P : PRIVATE WARDS.
- C : CHAPEL.
- I : MORTUARY
- II : STABLE.
- III : BARN.
- IV : PAGODAS.
- V : UMBRELLA SEATS
- VI : PORTE COCHERE.
- VII : VISITORS ENTR.
- VIII : PARTERRES.

HATCHED BLOCKS SHOW THE EXTENT OF INITIAL IMPROVEMENTS.



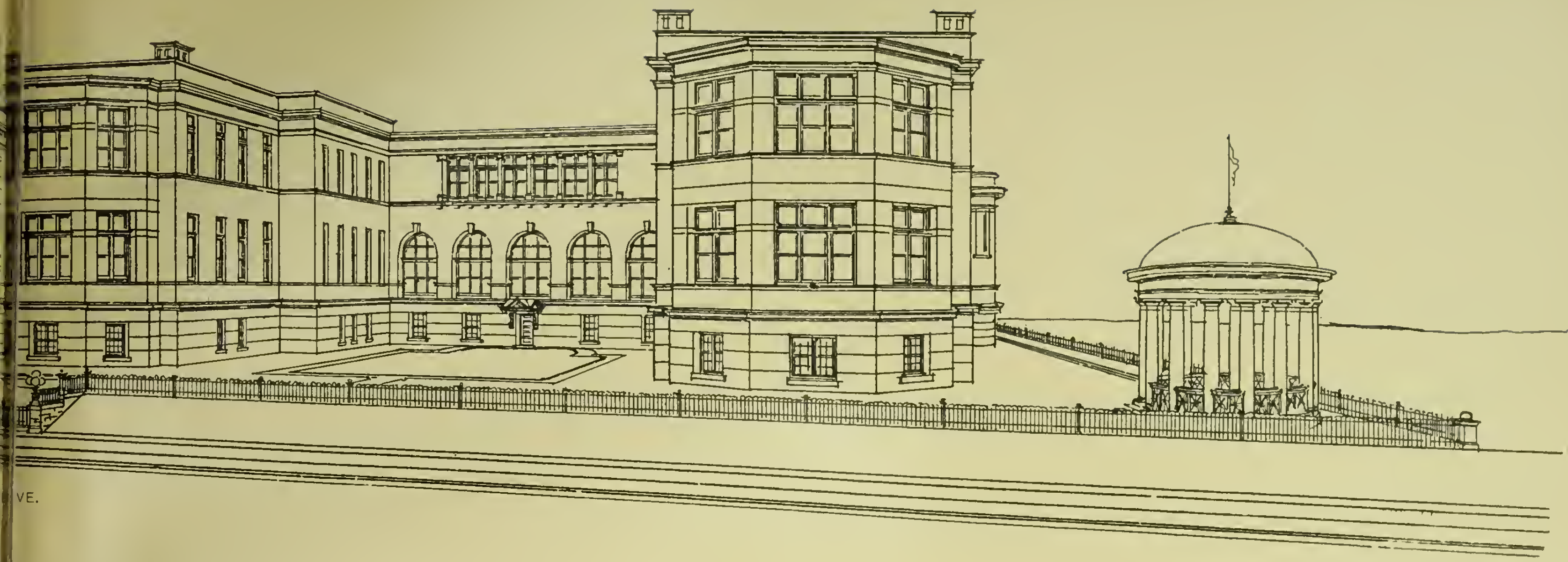
BLOCK PLAN

ACCEPTED

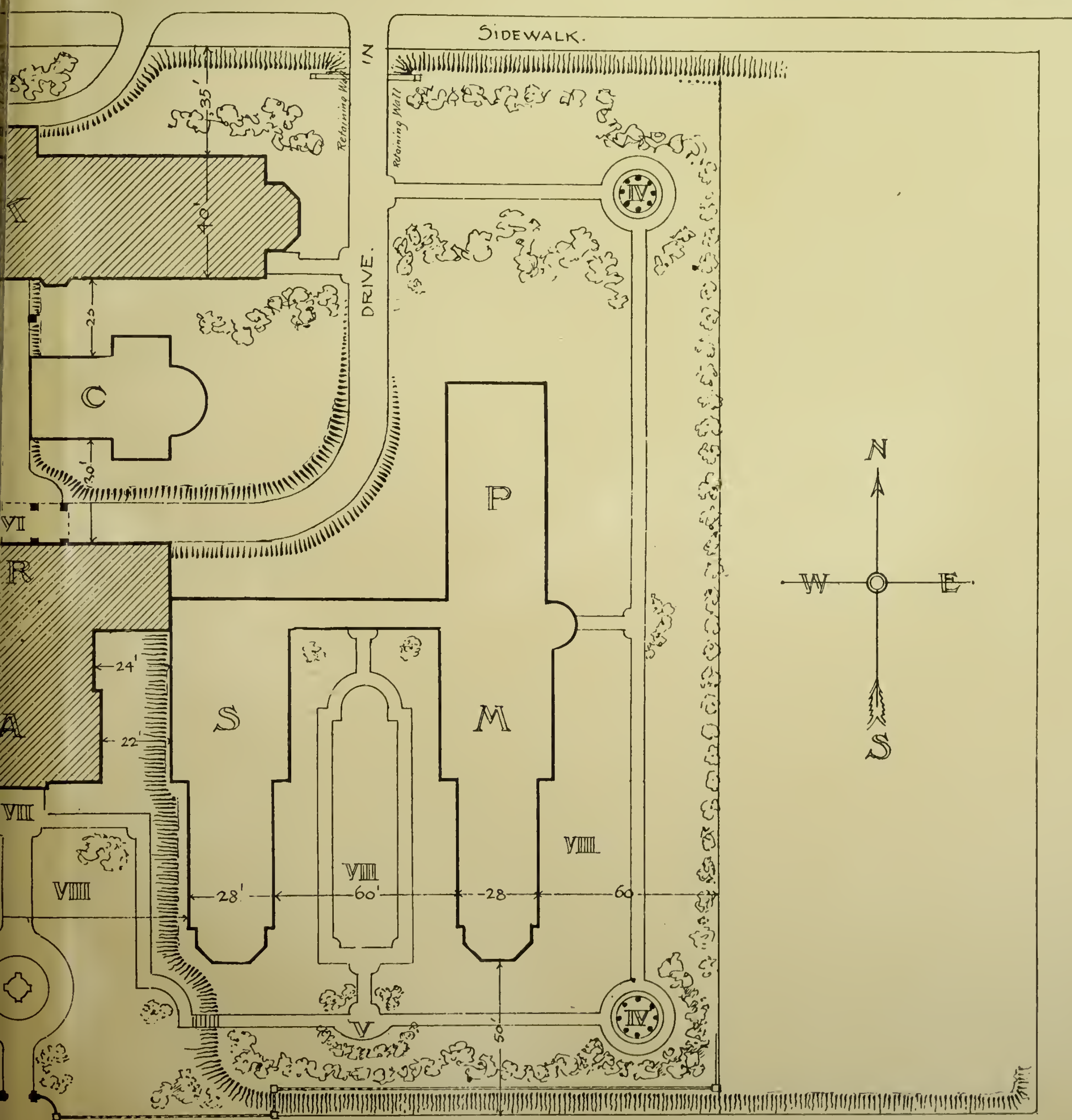
COMPETITIVE DESIGN FOR ST L

THEO' C. LINK

PLATES 27 and 30.



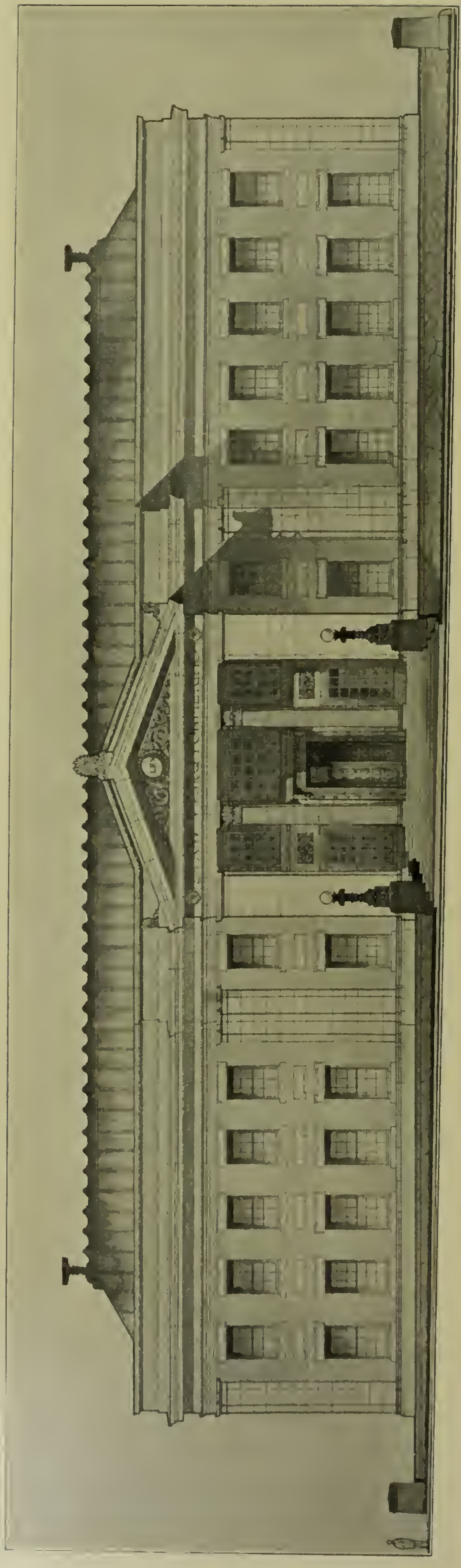
VE.



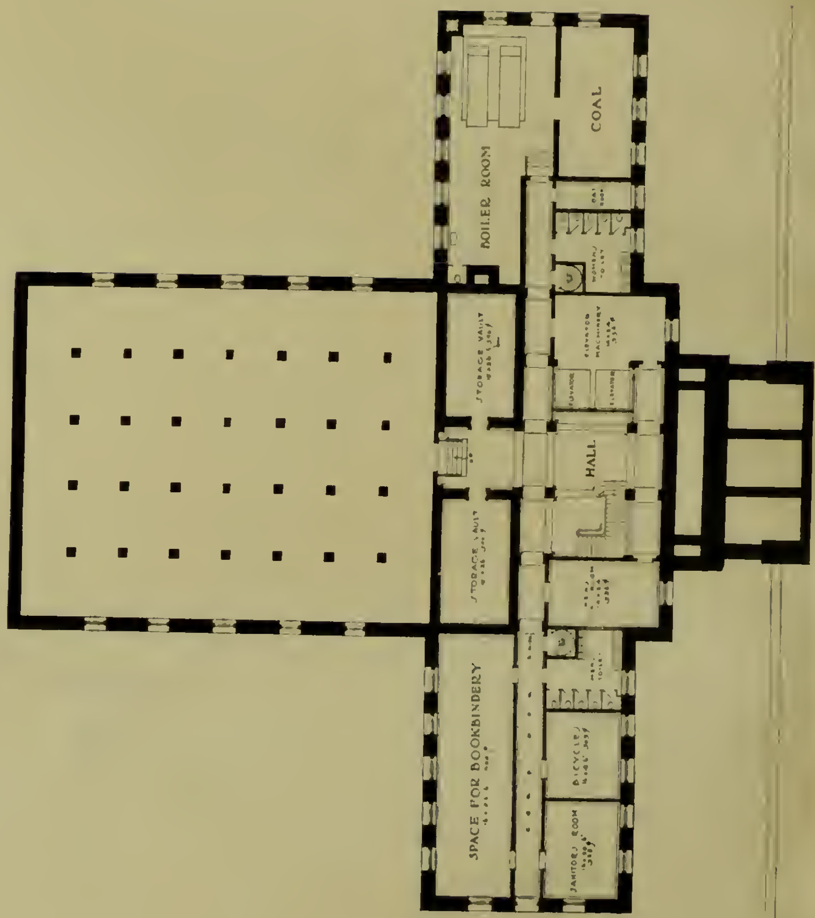
GN.

E'S HOSPITAL, ST. LOUIS, MO.

HITECT.

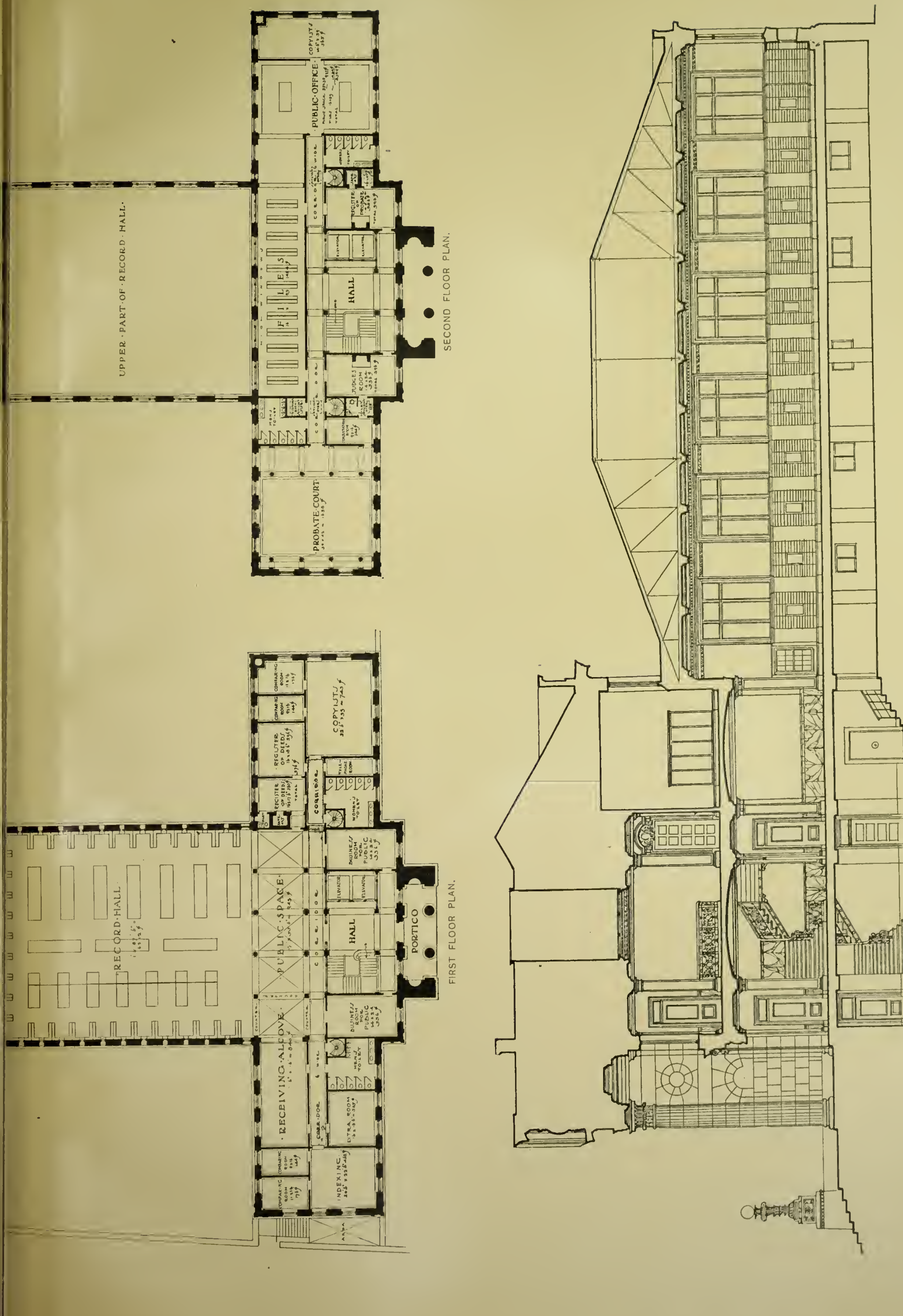


FRONT ELEVATION.



BASEMENT PLAN.

PLATES 28 and 29.



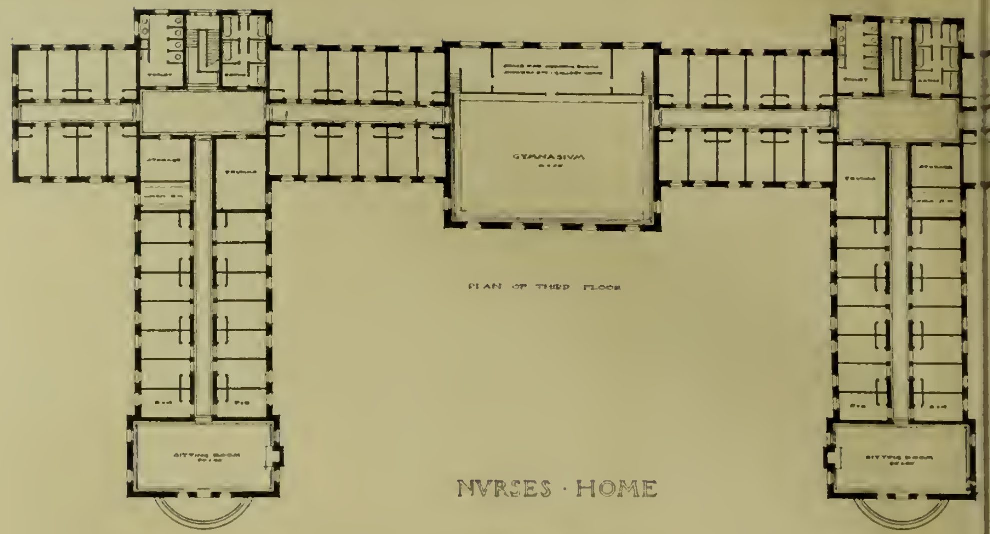
SECTION THROUGH RECORD HALL.

ACCEPTED DESIGN.

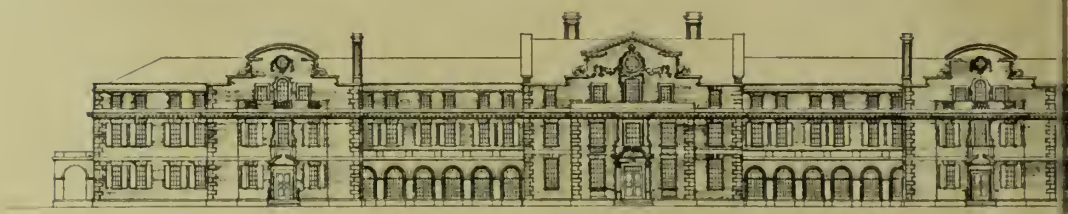
COMPETITION FOR NORFOLK COUNTY REGISTRY OF DEEDS. DEDHAM. MASS.

PEABODY & STEARNS, ARCHITECTS.

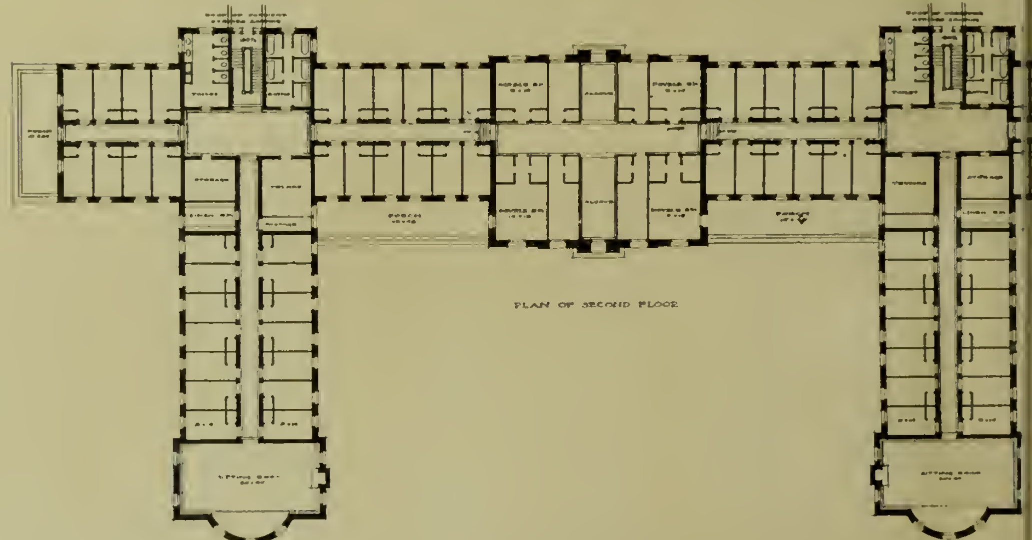
VOL. 11. NO. 5.

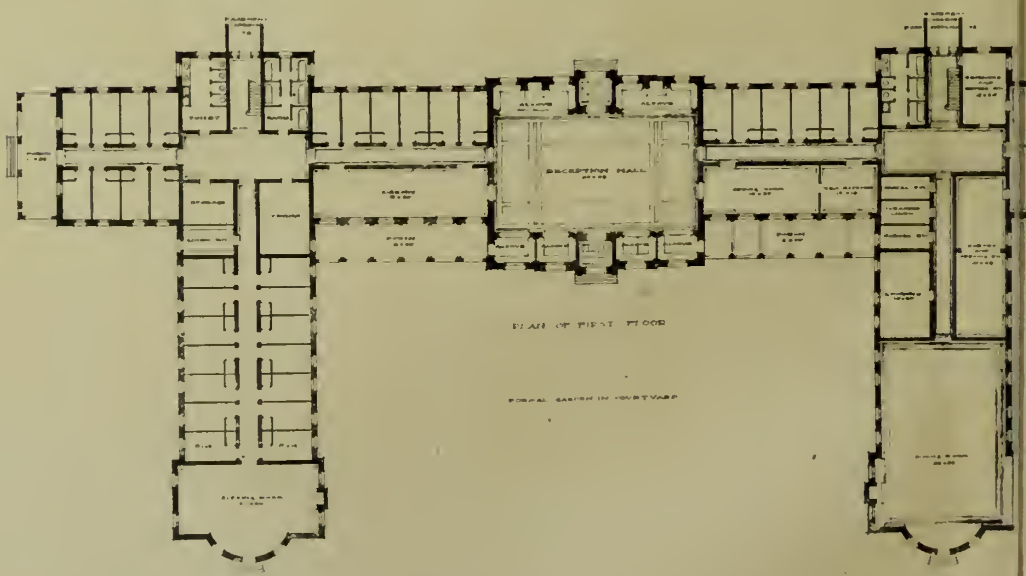


NVRSES · HOME



· ELEVATION TOWARDS THE · SOVTH

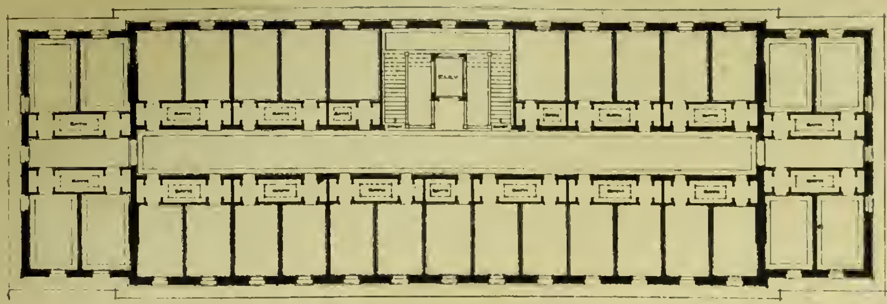




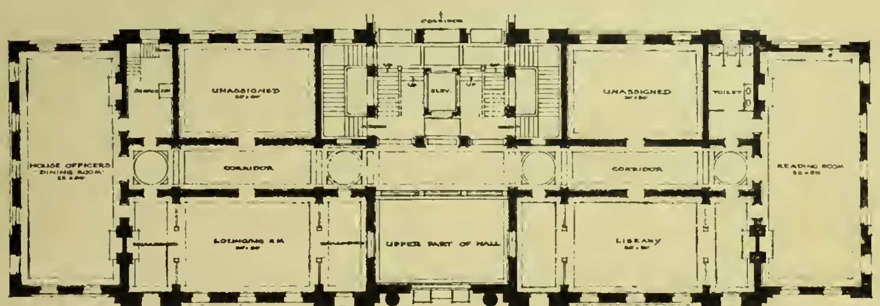
ACCEPTED DESIGN FOR MUNICIPAL HOSPITAL F

FRANK MILES DAY

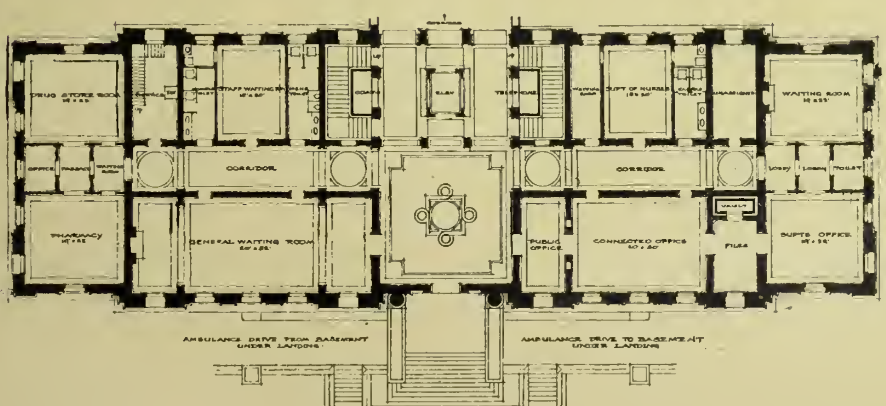
PLATES 33 and 40.



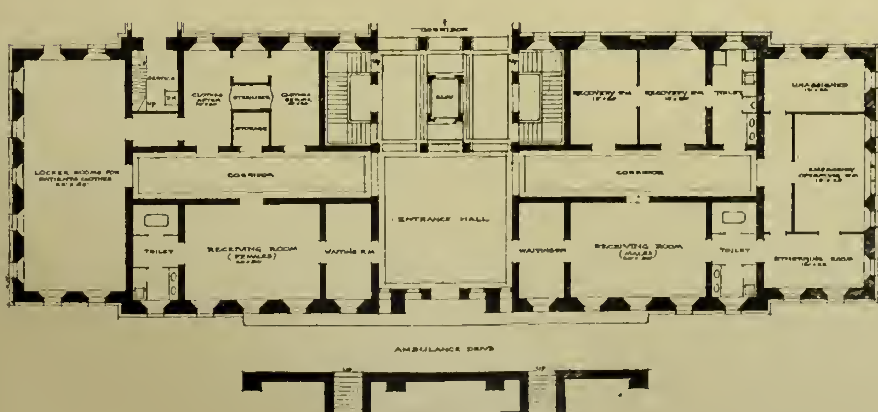
PLAN · OF · THIRD · FLOOR ·
(HOUSE OFFICERS BED ROOMS)



· PLAN · OF · SECOND · FLOOR ·



· PLAN · OF · FIRST · FLOOR ·

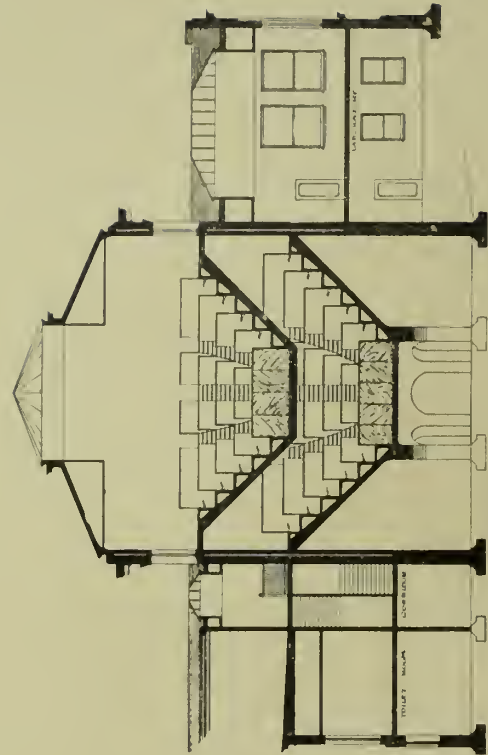


PLAN · OF · BASEMENT

THE DISTRICT OF COLUMBIA AT WASHINGTON.

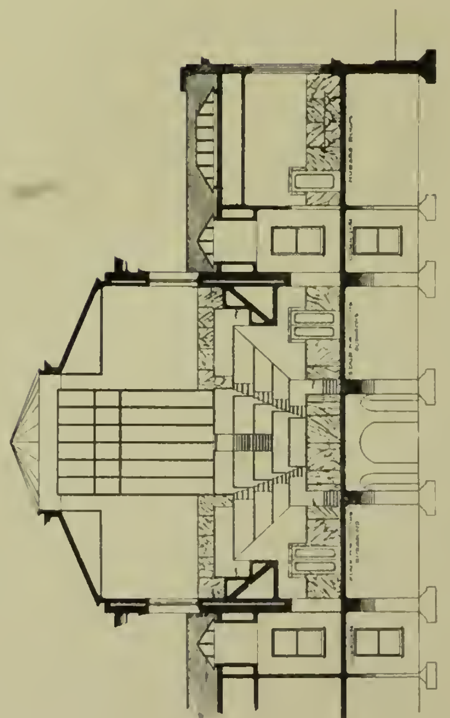
ROTHER, ARCHITECTS.

VOL. 11. NO. 5.

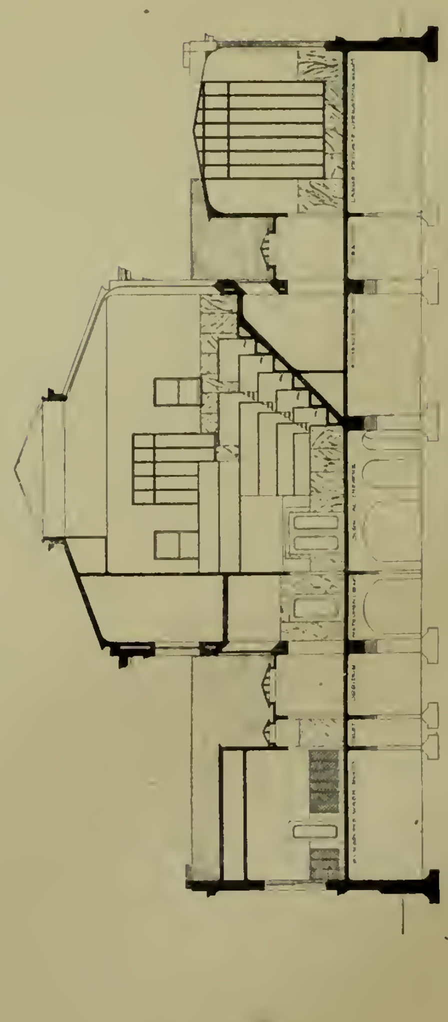


TRANSVERSE SECTION THROUGH MEDICAL & AUTOPSY THEATRES

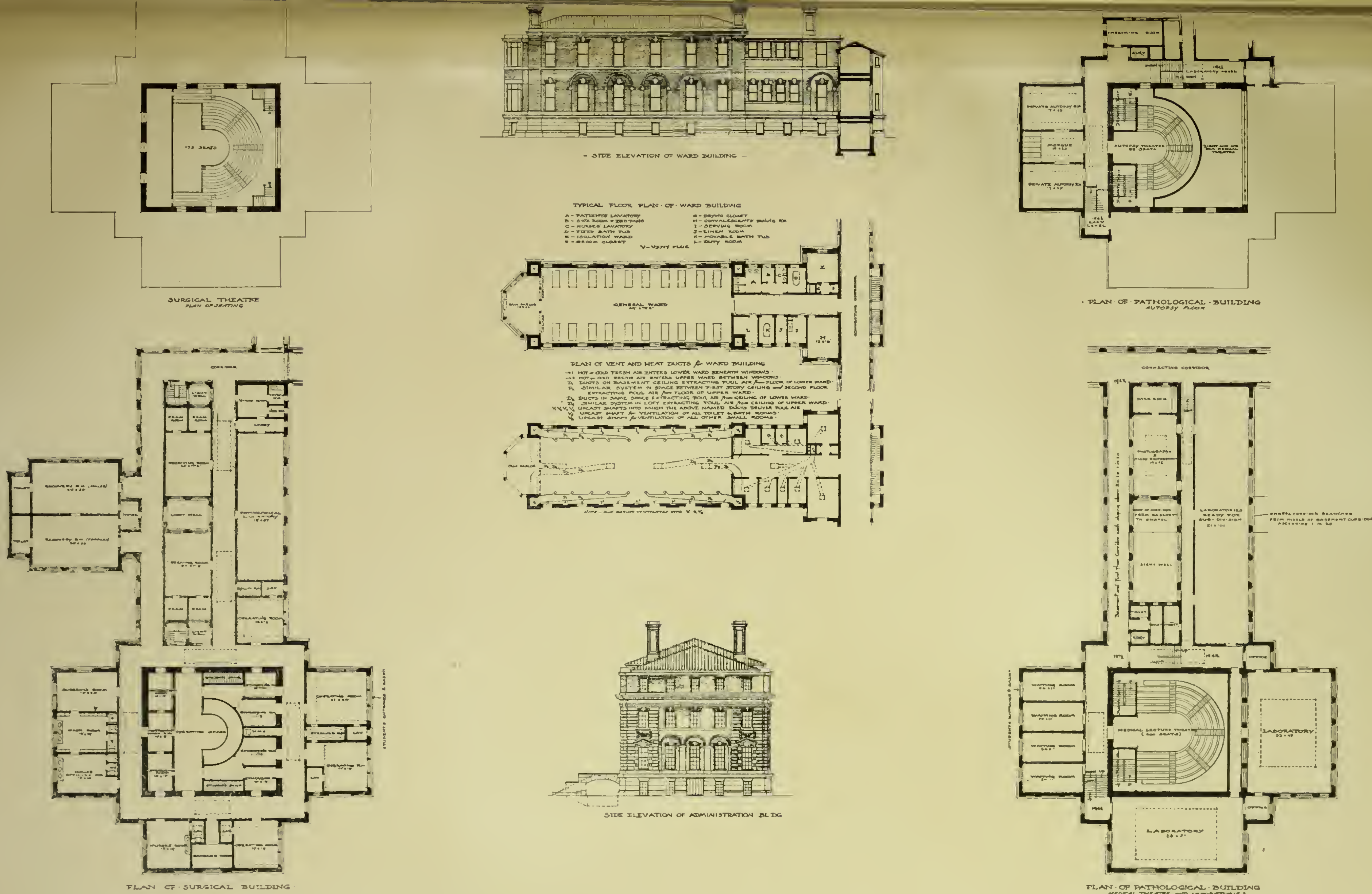
LONGITUDINAL SECTION THROUGH MEDICAL & AUTOPSY THEATRES



TRANSVERSE SECTION THROUGH MEDICAL THEATRE



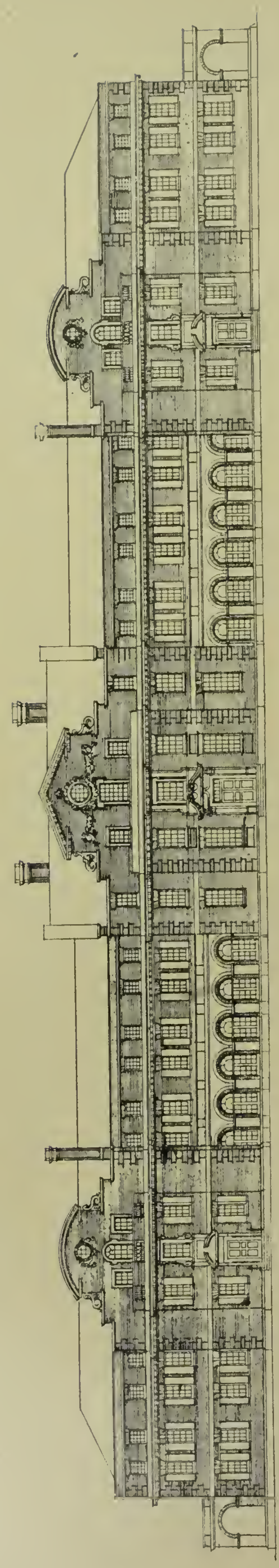
LONGITUDINAL SECTION THROUGH SURGICAL THEATRE



ACCEPTED DESIGN FOR MUNICIPAL HOSPITAL FOR THE DISTRICT OF COLUMBIA AT WASHINGTON.

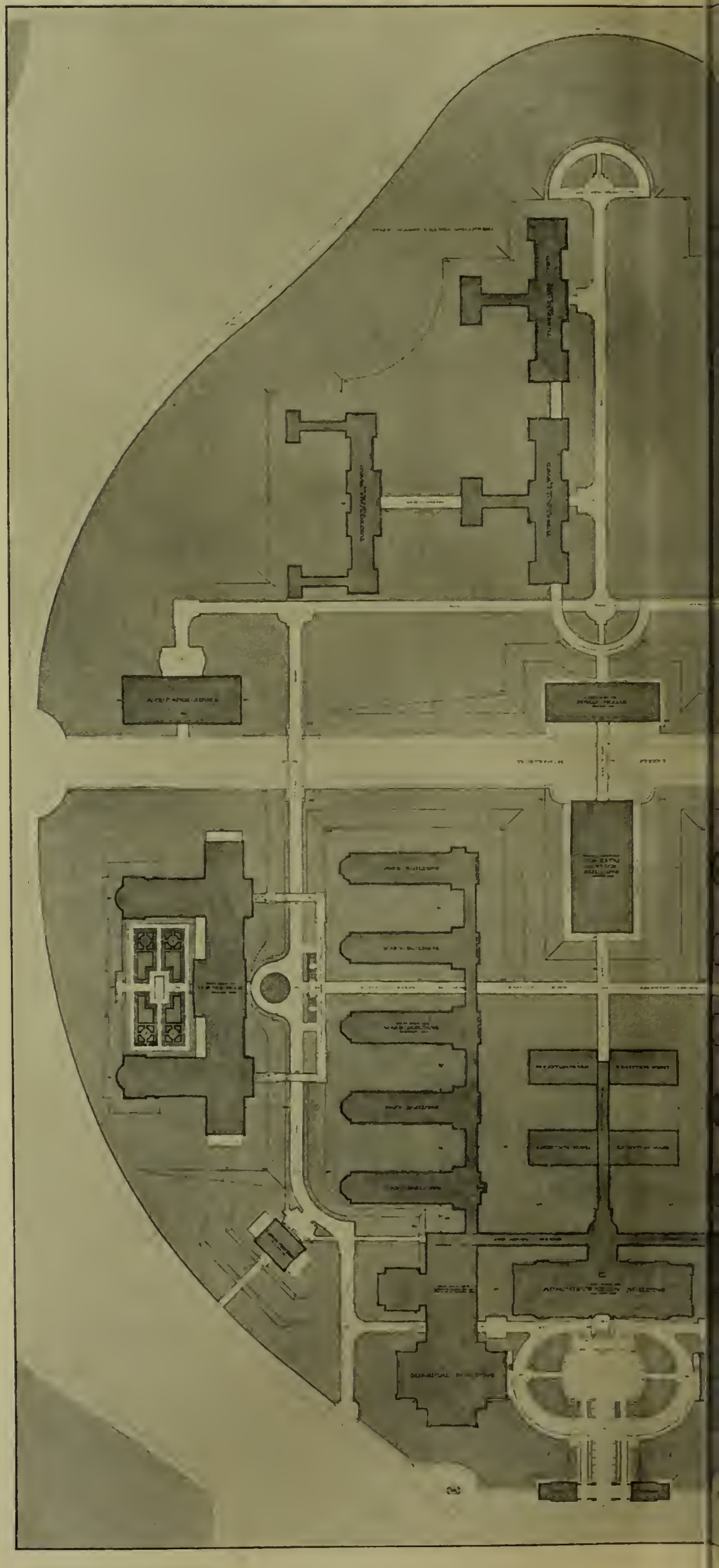
Frank Miles Day & Brother, Architects.

VOL. 11. NO. 5.



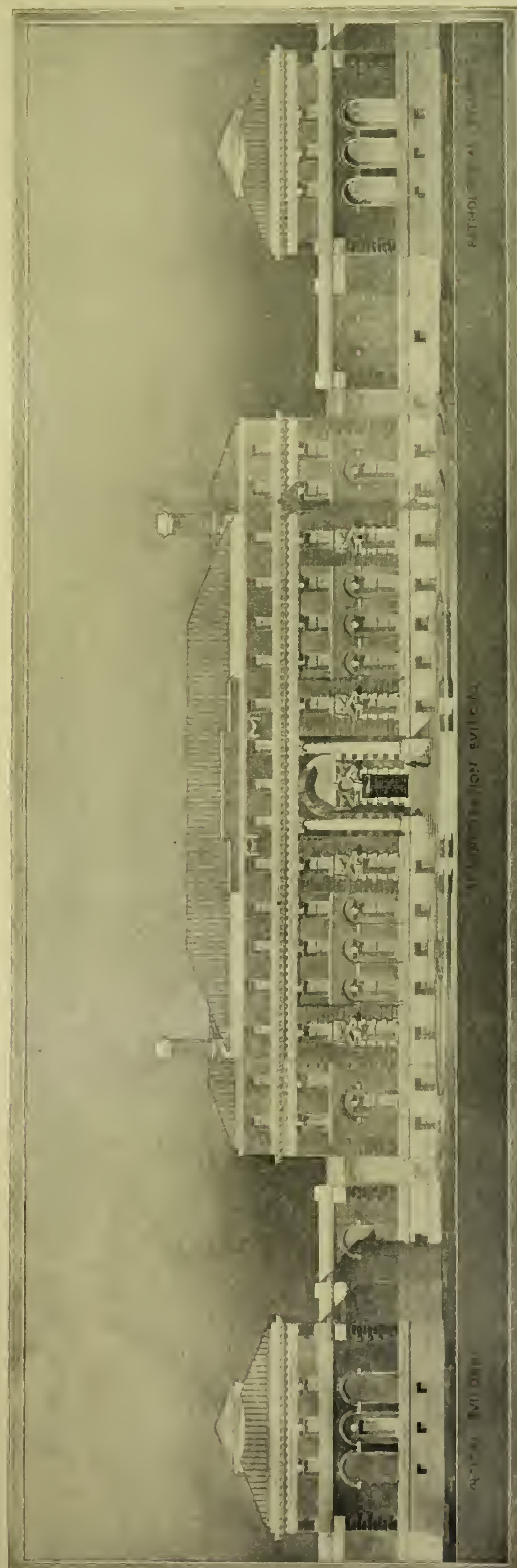
ELEVATION TOWARDS THE SOUTH

NURSES' HOME.



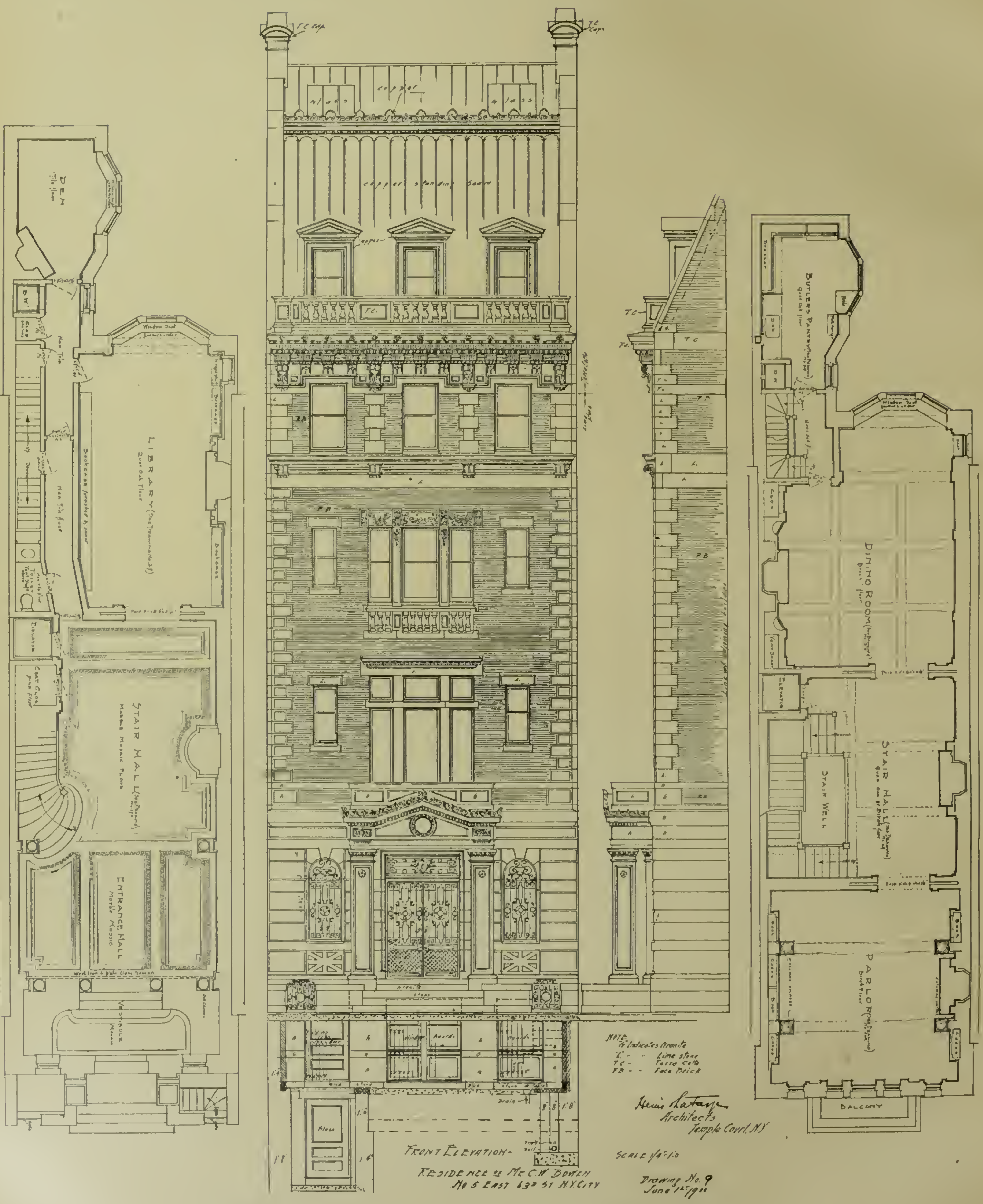
PLATES 35 and 38.

GROUND PLAN.



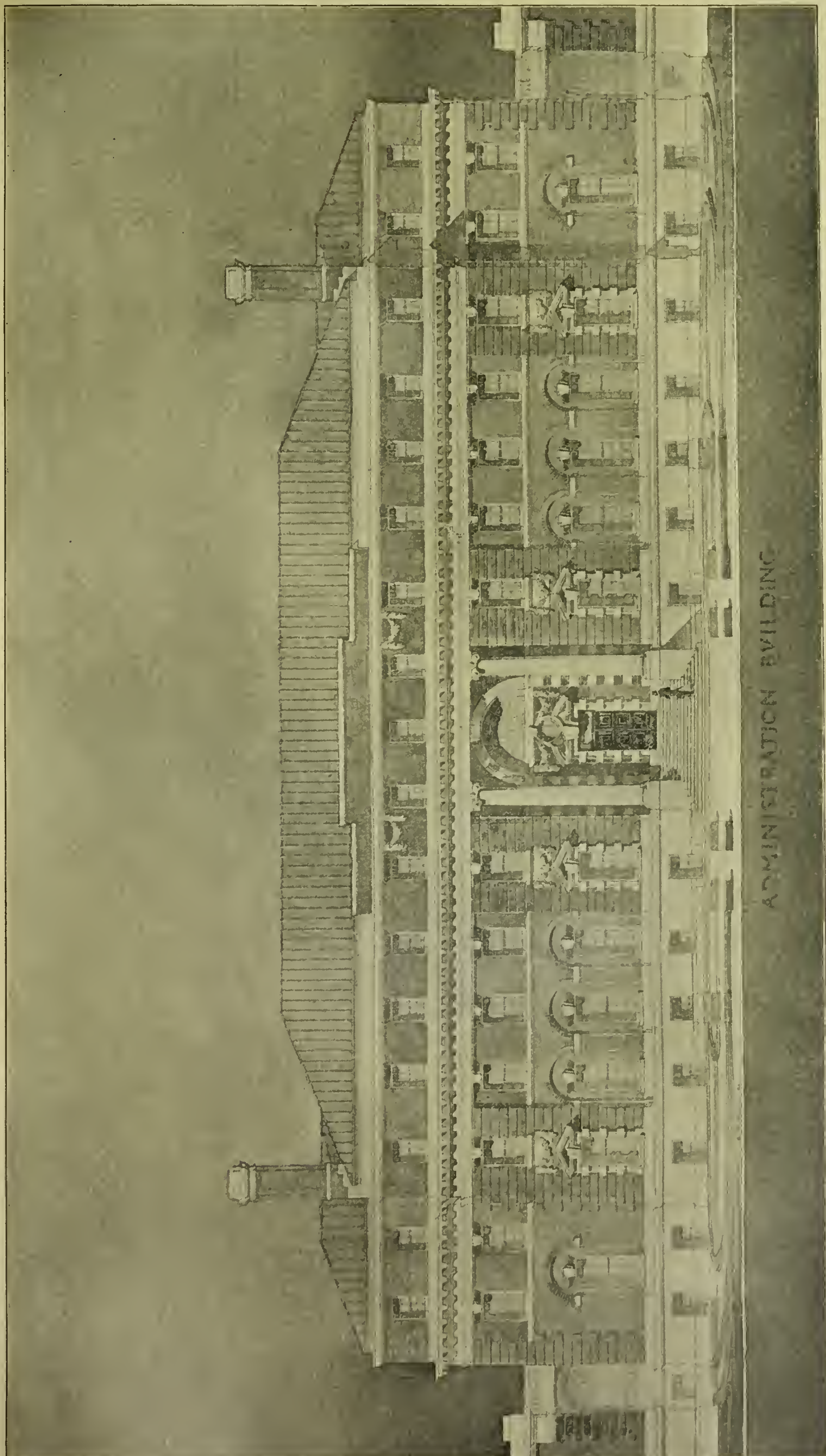
ACCEPTED DESIGN FOR MUNICIPAL HOSPITAL FOR THE DISTRICT OF COLUMBIA AT WASHINGTON

FRANK MILES DAY & BROTHER, ARCHITECTS.



HOUSE. NO. 5 EAST SIXTY-THIRD STREET, NEW YORK CITY

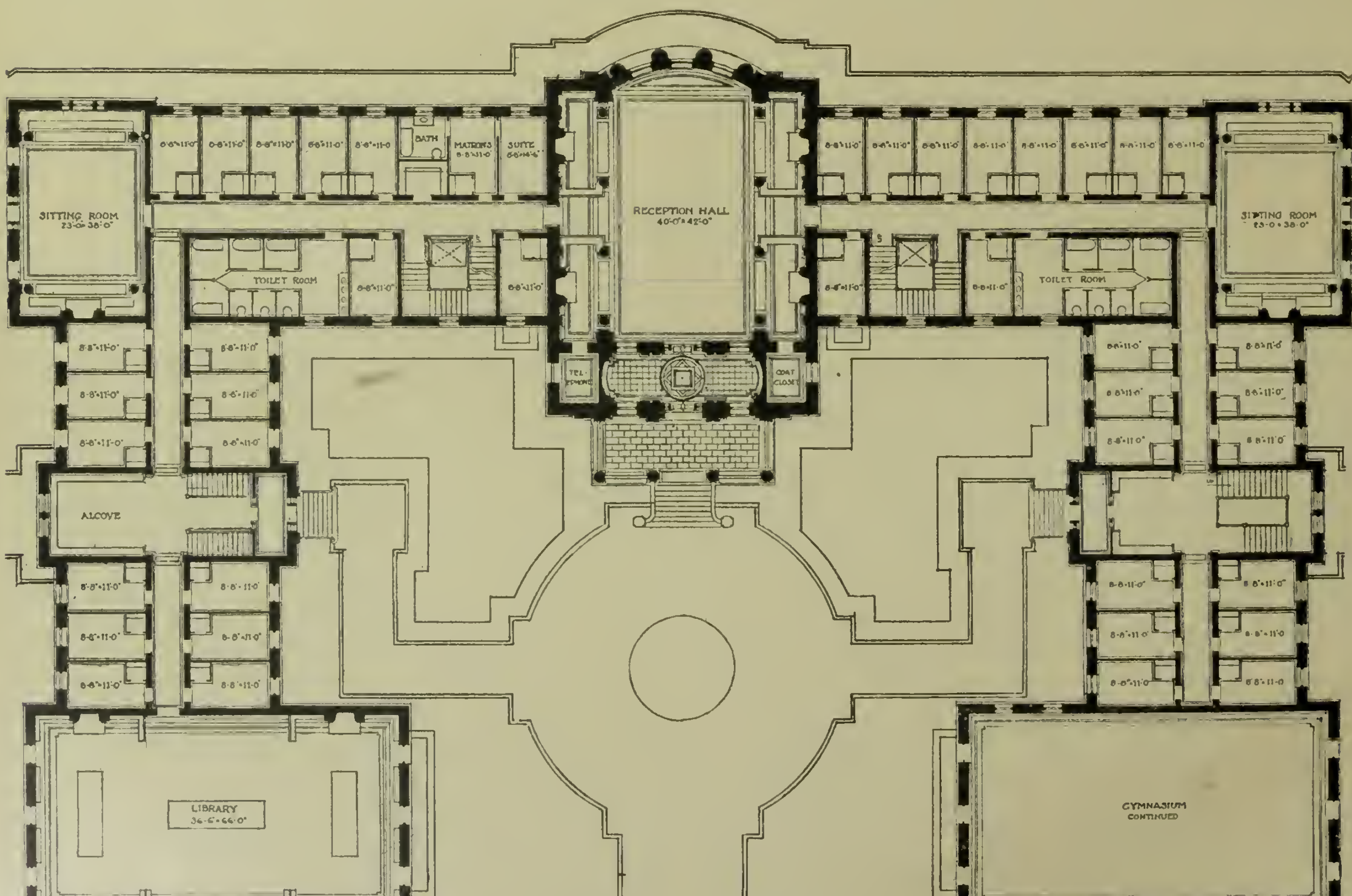
HEINS & LA FARGE, ARCHITECTS.



ACCEPTED DESIGN FOR MUNICIPAL HOSPITAL FOR THE DISTRICT OF COLUMBIA AT WASHINGTON.

FRANK MILES DAY & BROTHER, ARCHITECTS.

FRONT ELEVATION

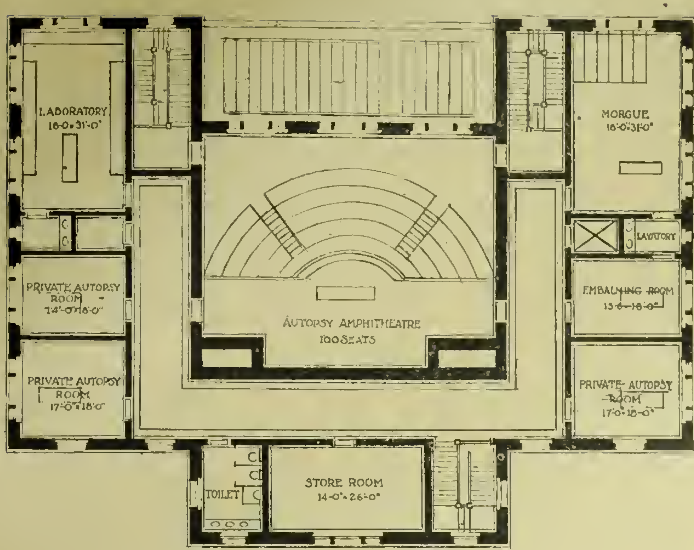


FIRST FLOOR PLAN.
NURSES' HOUSE.

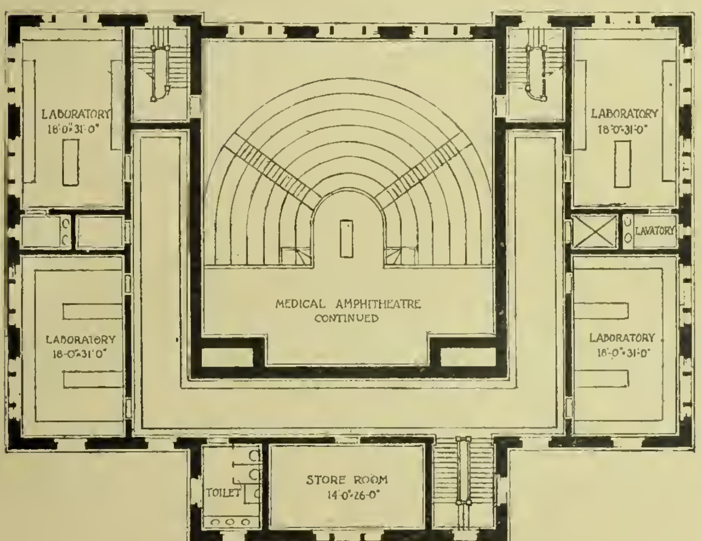
DESIGN FOR MUNICIPAL HOSPITAL FOR TH

HERBERT D. H

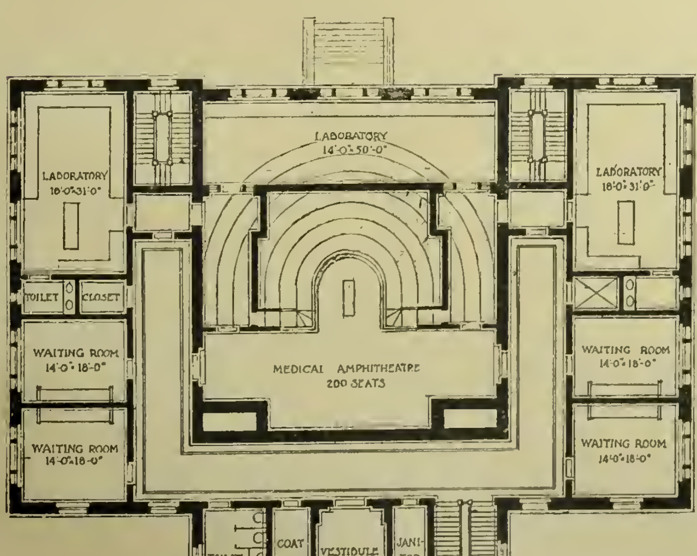
VOL. 11. NO. 6. PLATE 48.



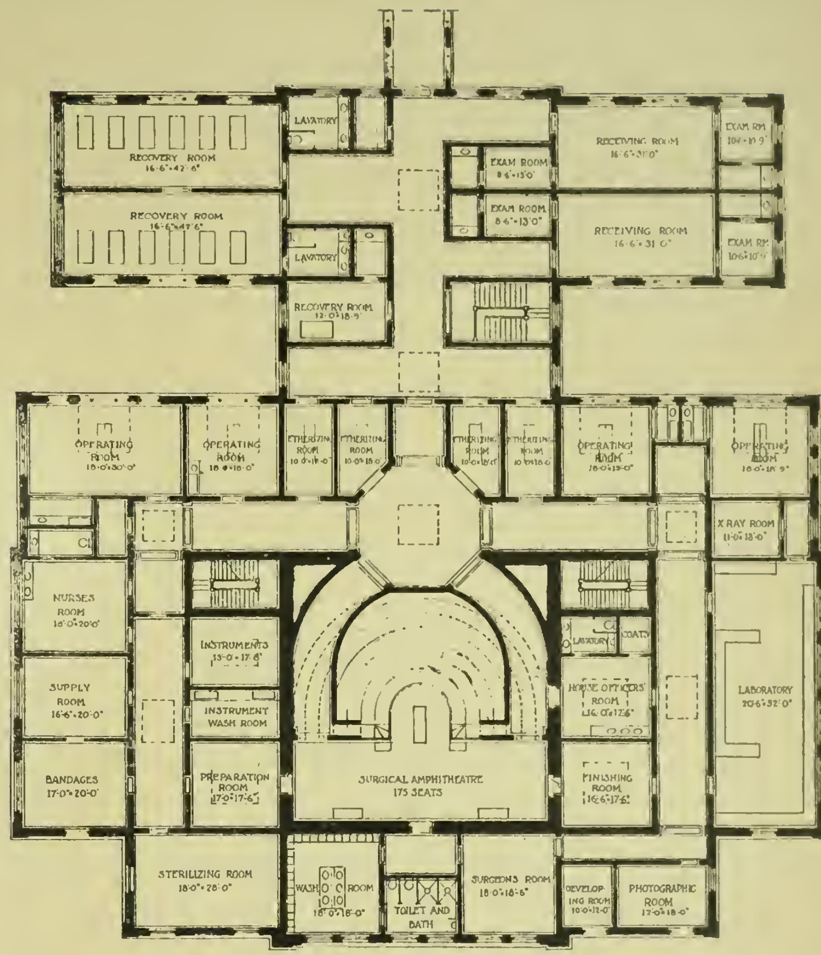
PLAN OF SECOND FLOOR



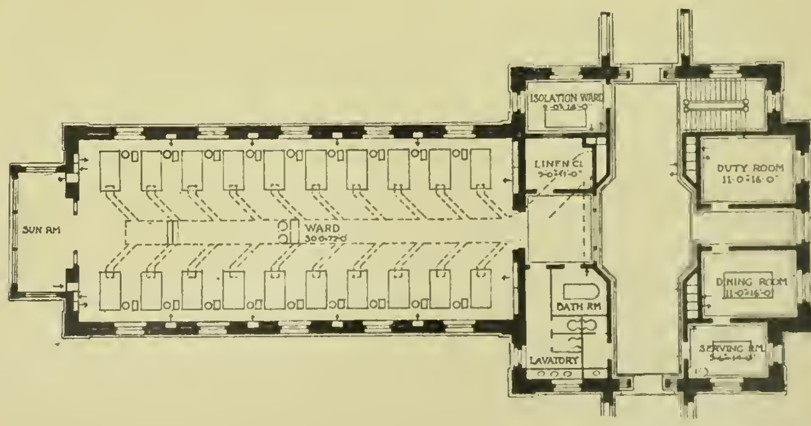
PLAN OF MEZZANINE FLOOR



PLAN OF FIRST FLOOR.
PATHOLOGICAL BUILDING.



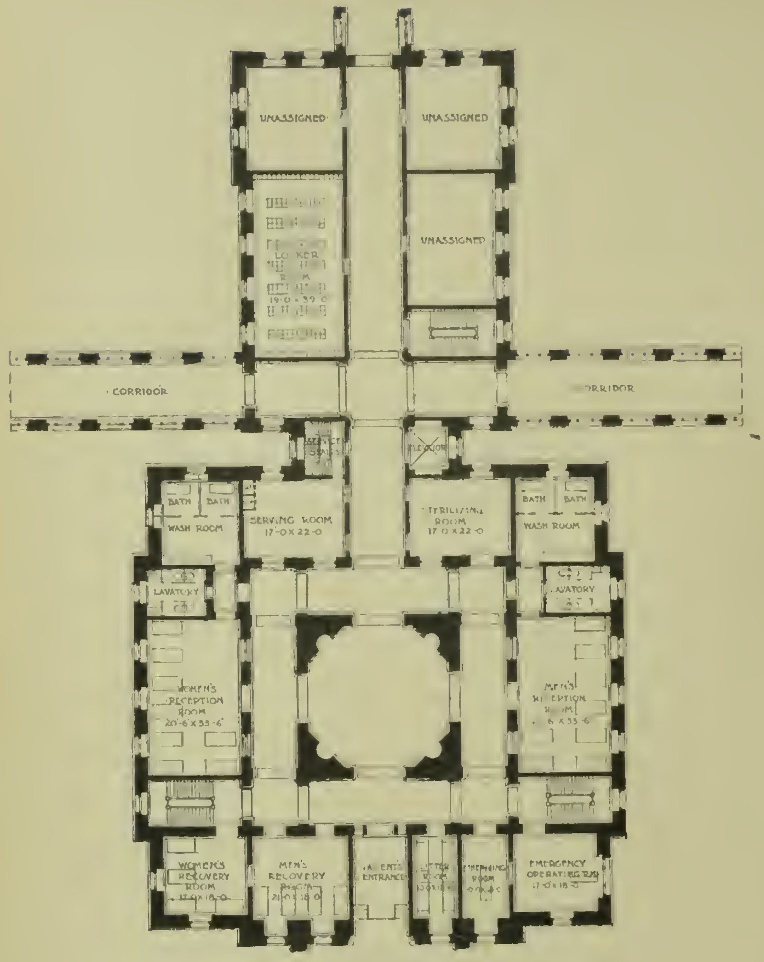
FIRST FLOOR, SURGICAL BUILDING.



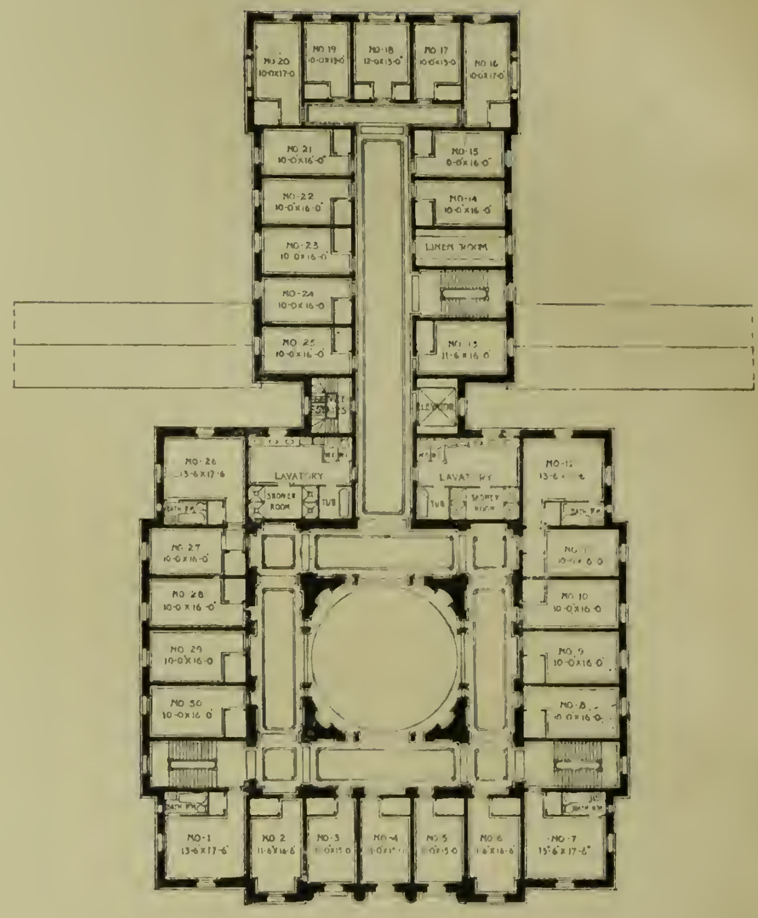
PLAN, WARD BUILDING.

ELEVATION, WARD BUILDING.

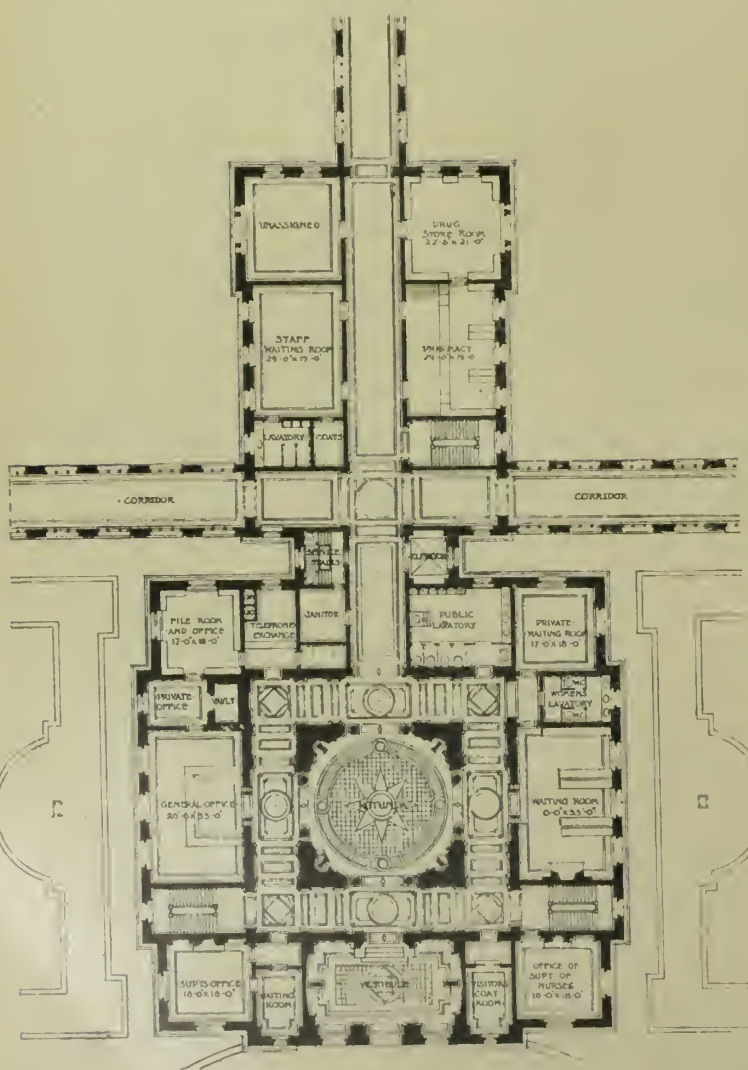
ISTRICT OF COLUMBIA, AT WASHINGTON.
ARCHITECT.



BASEMENT.

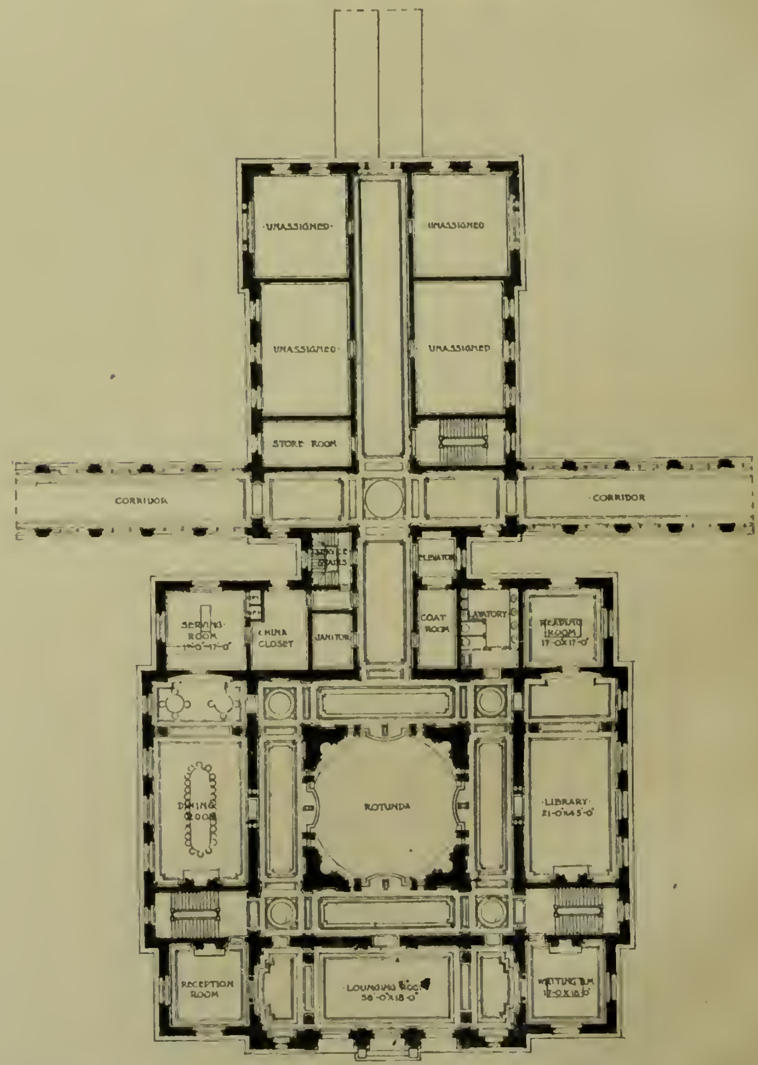


THIRD FLOOR.



FIRST FLOOR.

PLANS, ADMINISTRATION BUILDING.

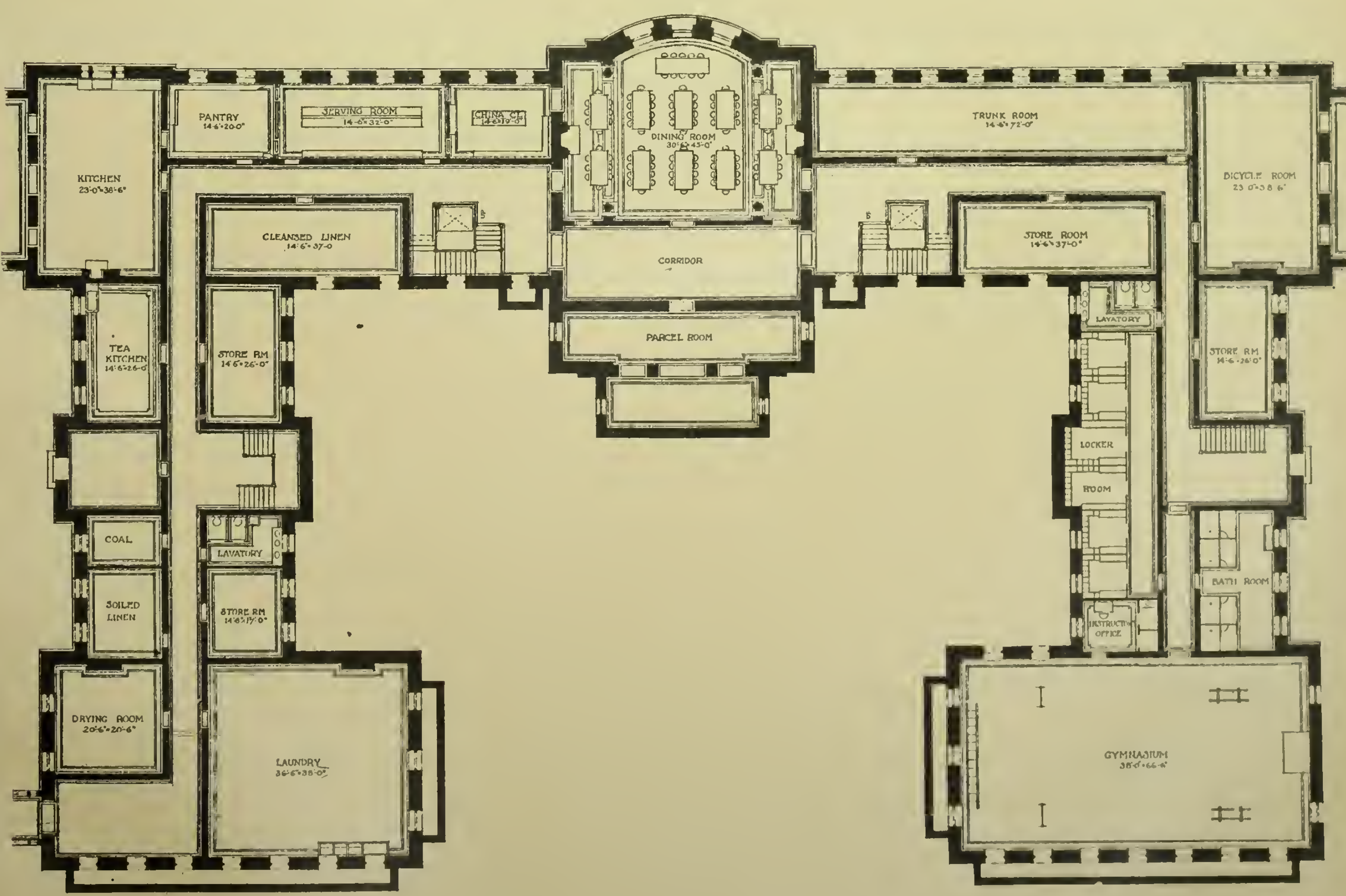


SECOND FLOOR.

DESIGN FOR MUNICIPAL HOSPITAL FOR

HERB RT

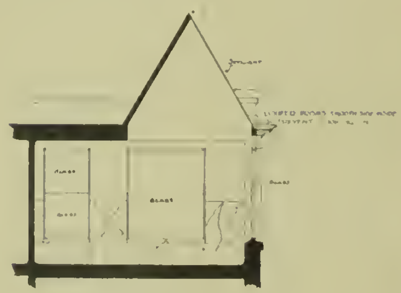
SECOND AND THIRD FLOORS.



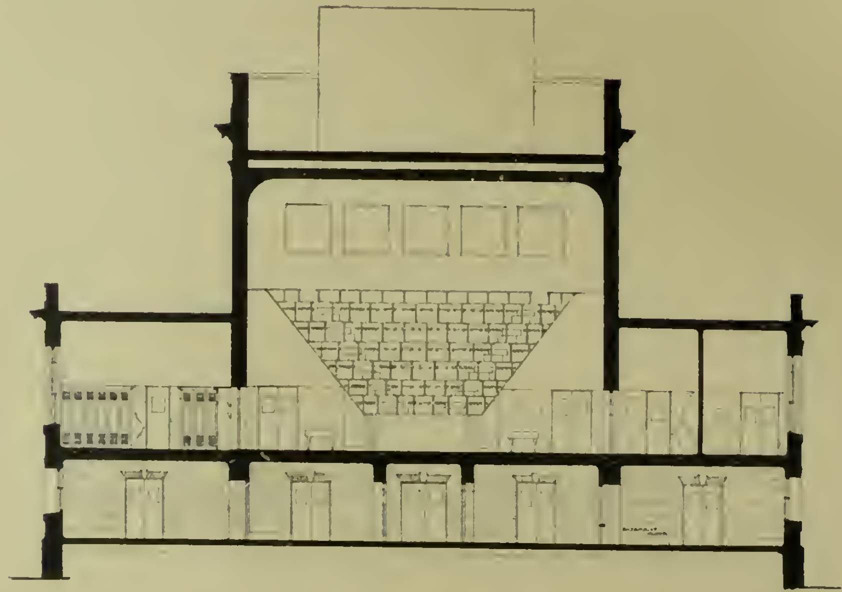
BASEMENT.

PLANS, NURSES' HOUSE

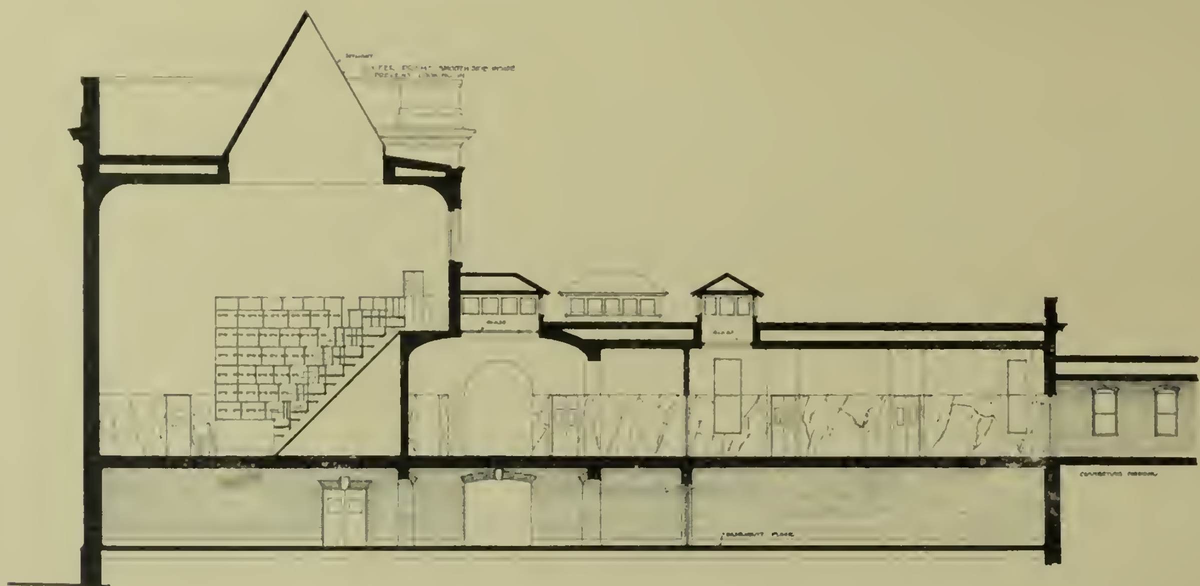
LARGE OPERATING ROOM
TRANSVERSE SECTION



LARGE OPERATING ROOM
LONGITUDINAL SECTION



LONGITUDINAL SECTION



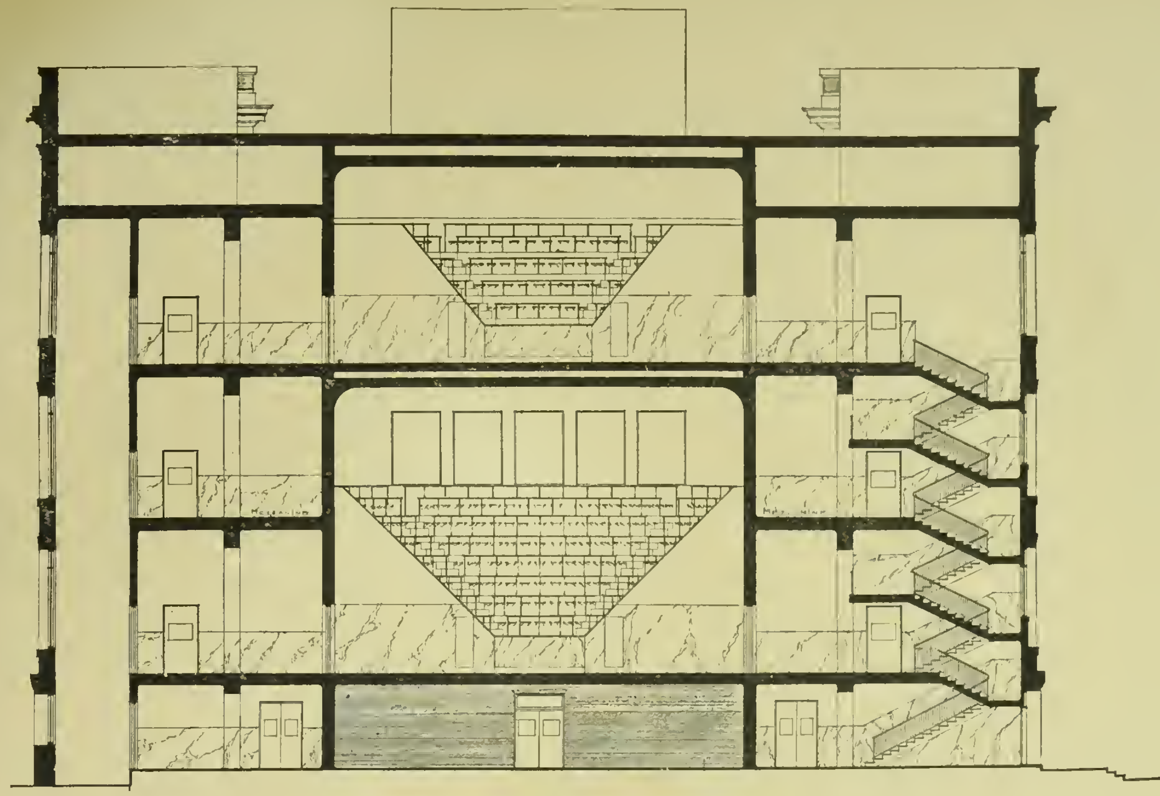
TRANSVERSE SECTION

FIRST FLOOR PLAN.

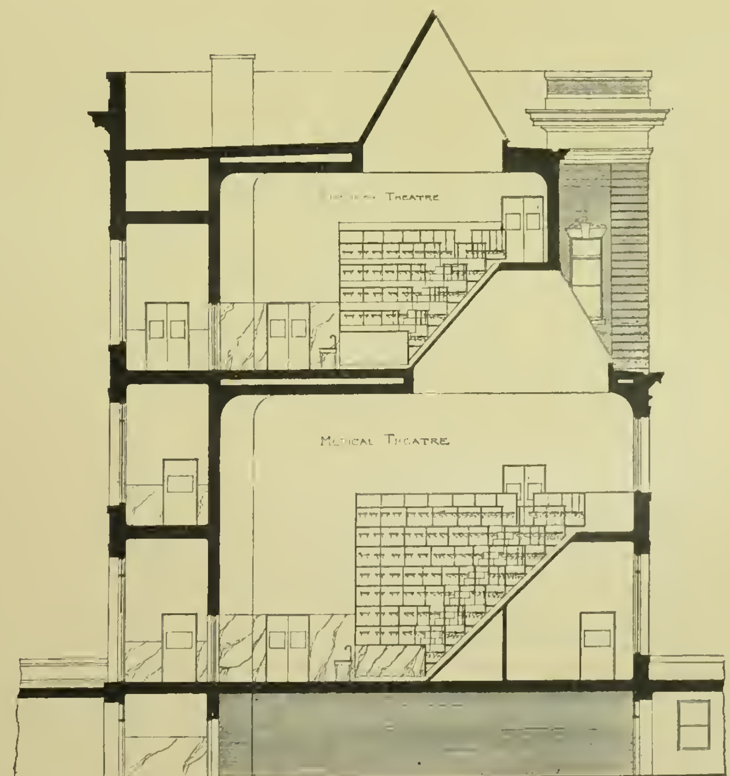
PATHOLOGICAL BUILDING.

DESIGN FOR MUNICIPAL HOSPITAL FOR THE DISTRICT OF COLUMBIA, AT WASHINGTON

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.



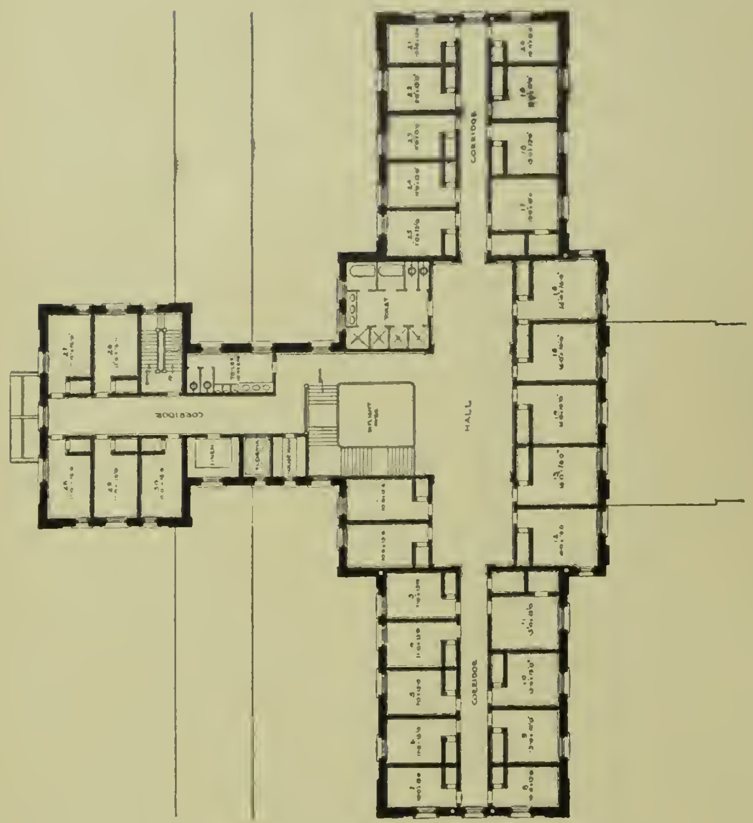
LONGITVDINAL SECTION



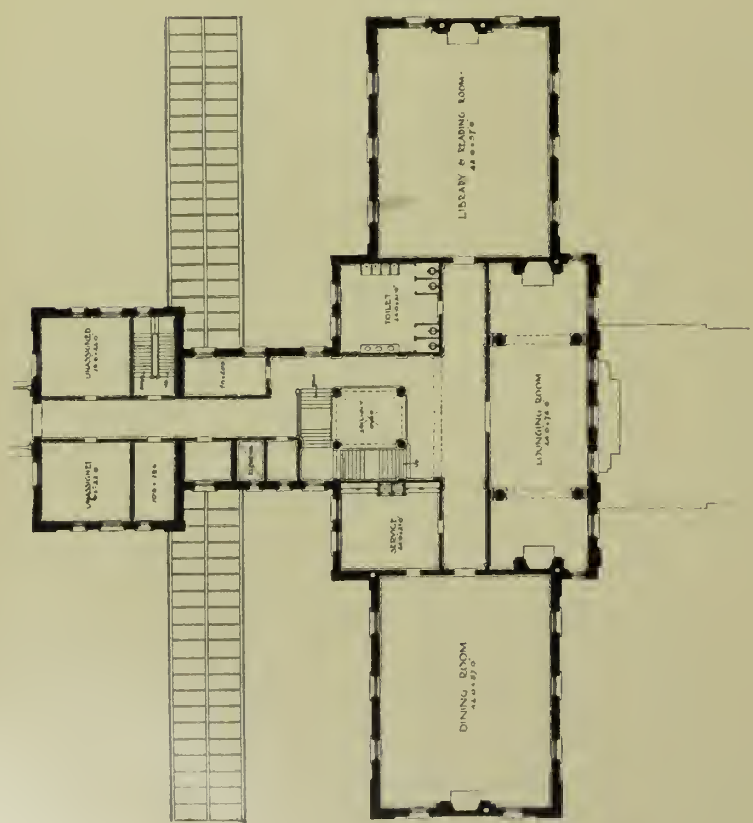
TRANSVERSE SECTION

CLINICAL BUILDING.

DESIGN FOR MUNICIPAL HOSPITAL FOR THE DISTRICT OF COLUMBIA, AT WASHINGTON.



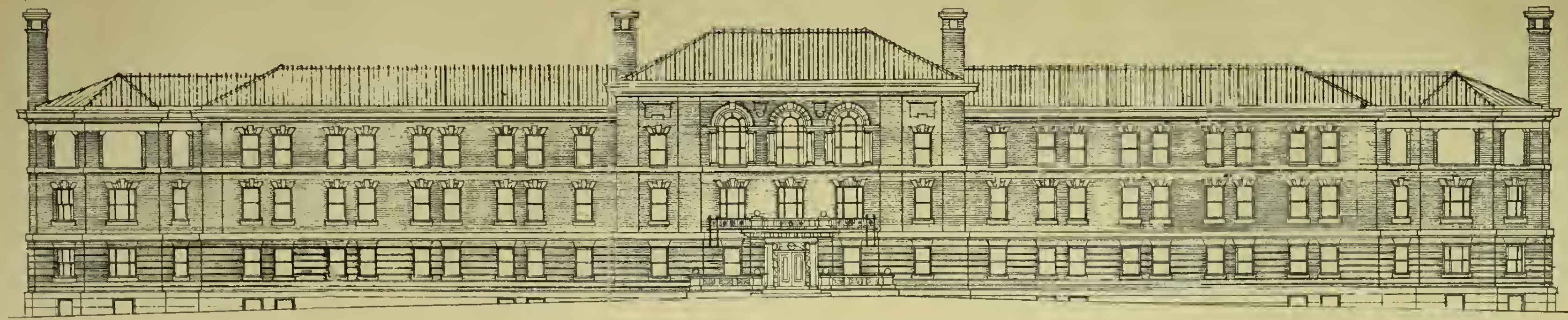
THIRD FLOOR.



SECOND FLOOR.

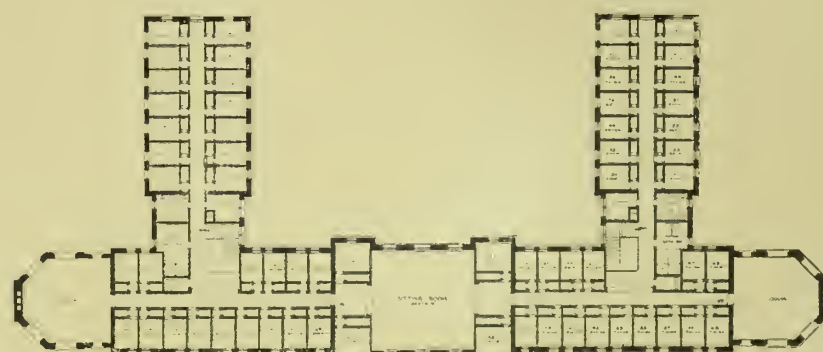
BASEMENT.

PLANS, ADMINISTRATION BUILDING

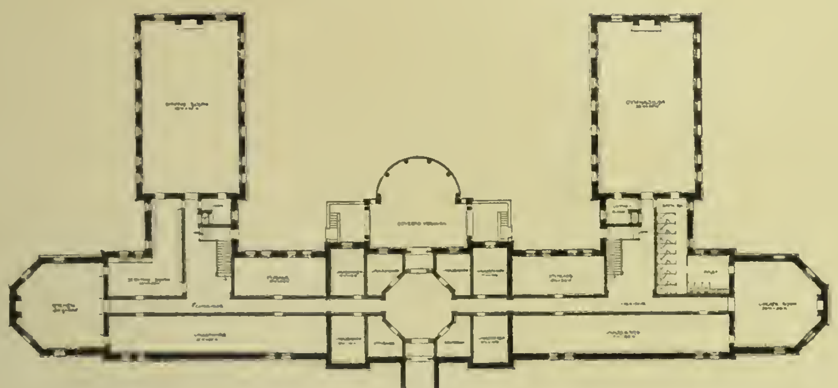


FRONT ELEVATION.

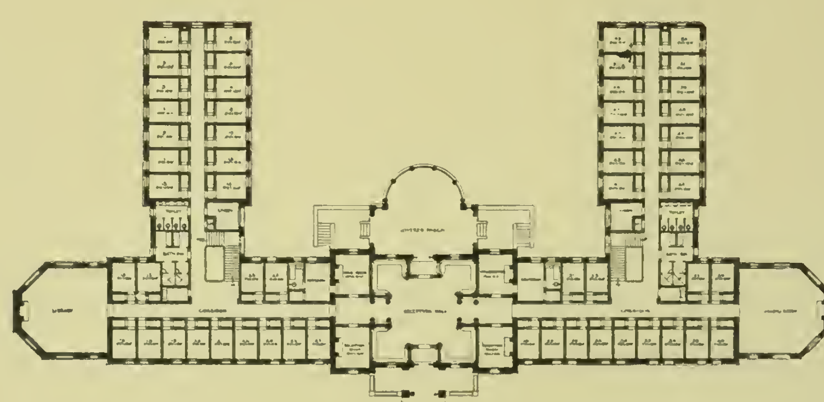
SECOND FLOOR.



THIRD FLOOR.



BASEMENT.



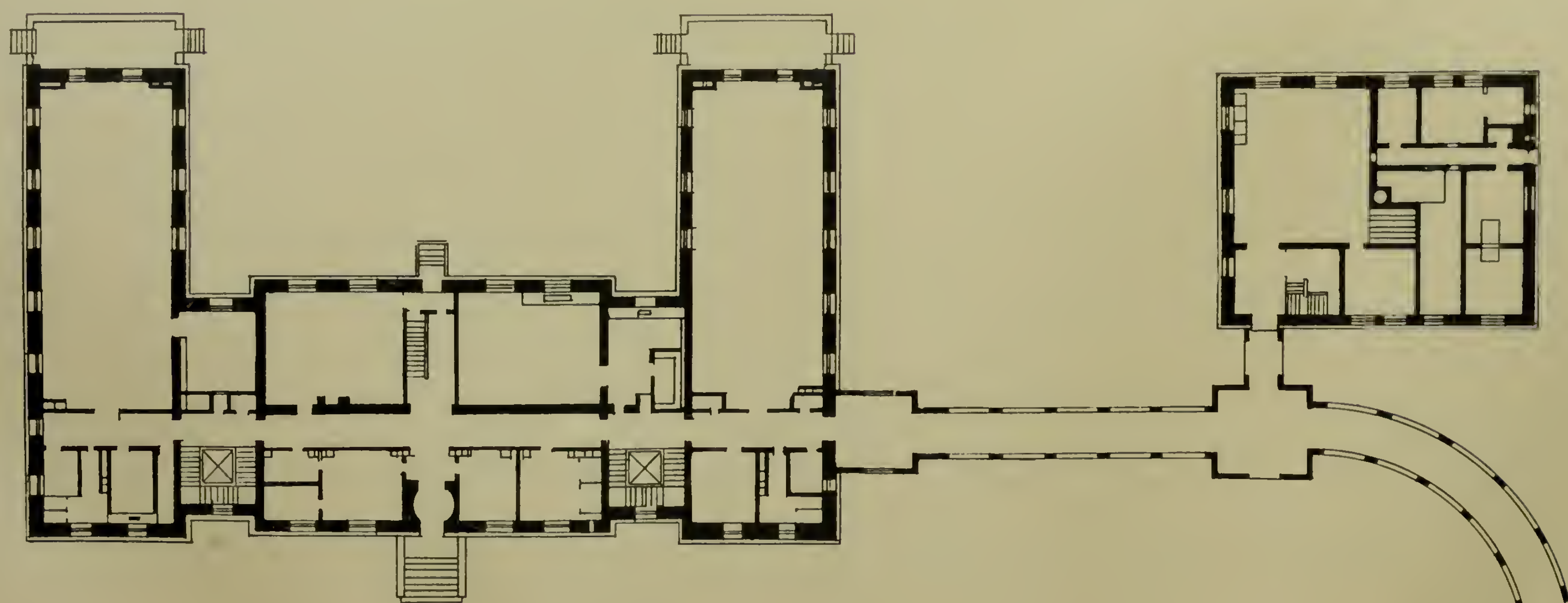
FIRST FLOOR.

ELEVATION AND PLANS, NURSES' HOUSE.

DESIGN FOR MUNICIPAL HOSPITAL FOR THE DISTRICT OF COLUMBIA, AT WASHINGTON.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

VOL. II. NO. 7. PLATE 49.

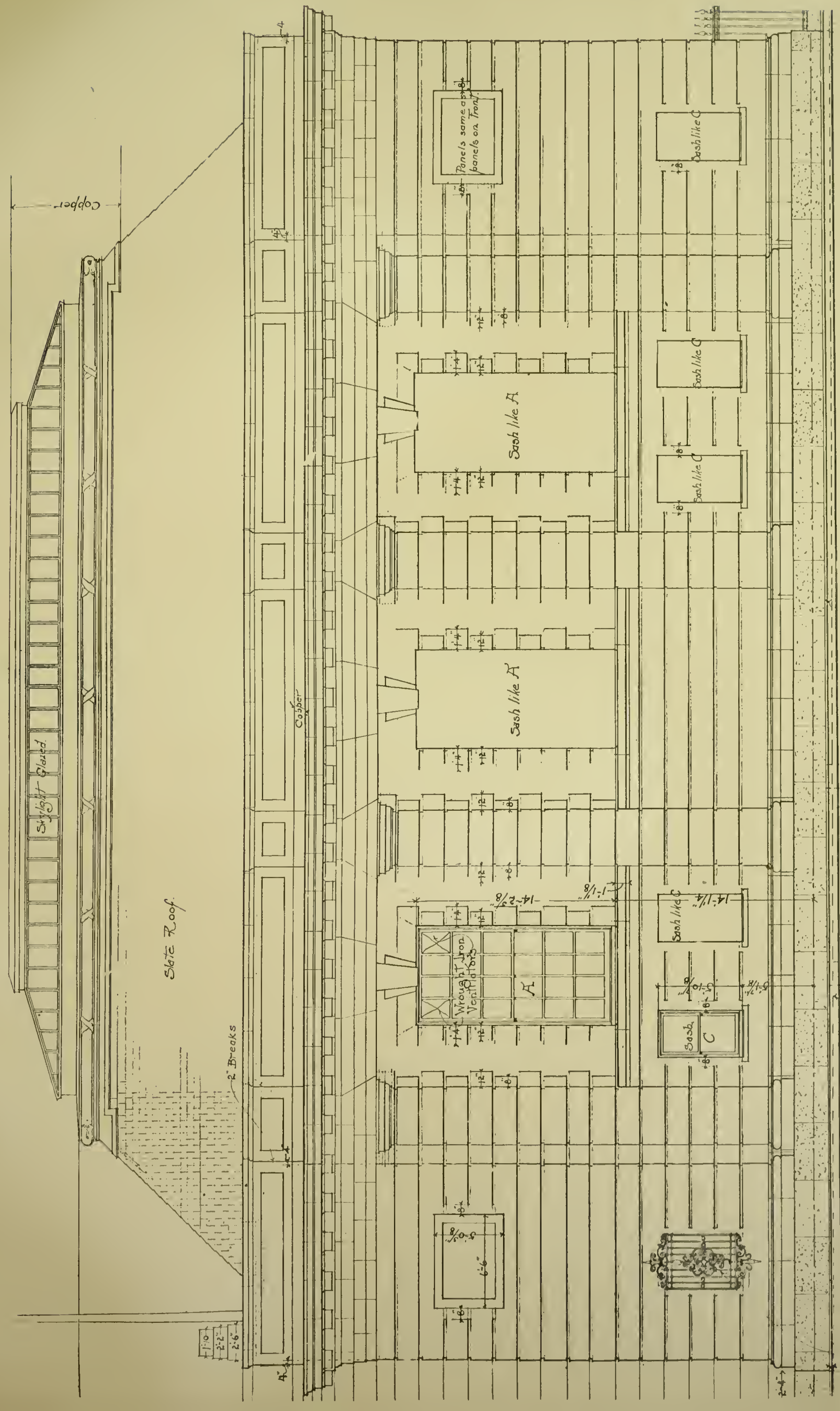


FIRST FLOOR PLAN.

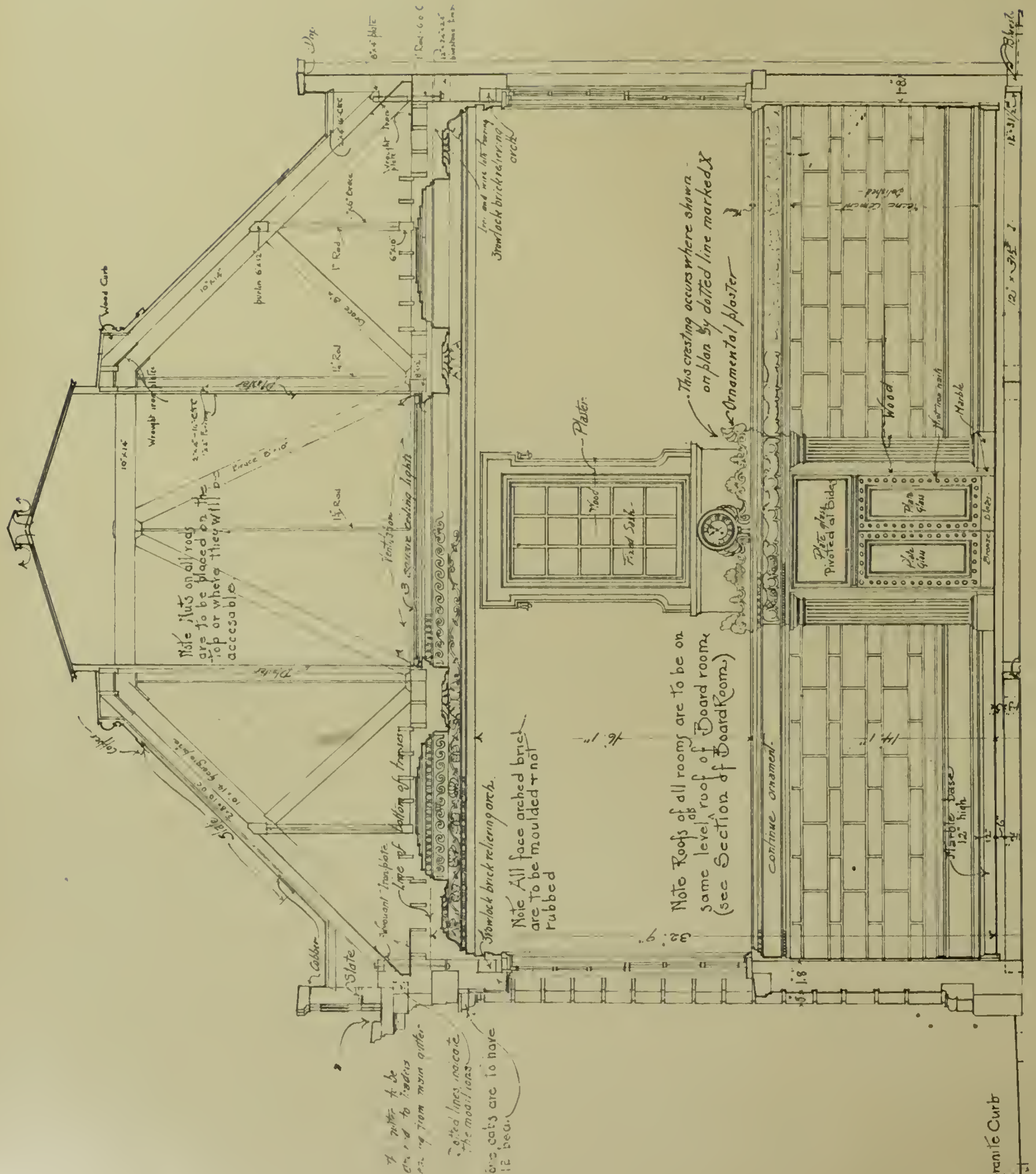
HOSPITAL BUILDING FOR IMMIGRANT STATION FOR THE UNITED STATES GOVERNMENT, ELLIS ISLAND, NEW YORK HARBOR.

BORING & TILTON, ARCHITECTS.

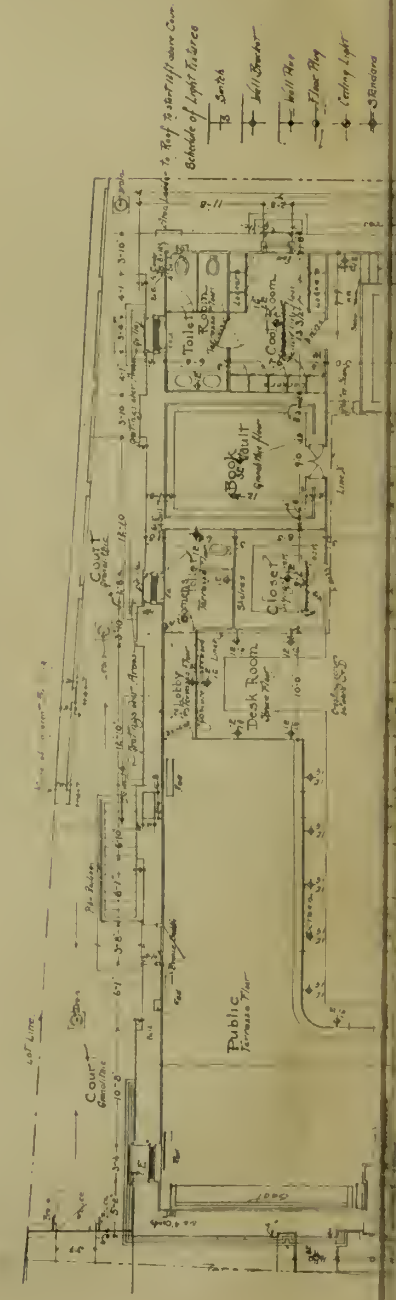
VOL. 11. NO 7. PLATE 56.



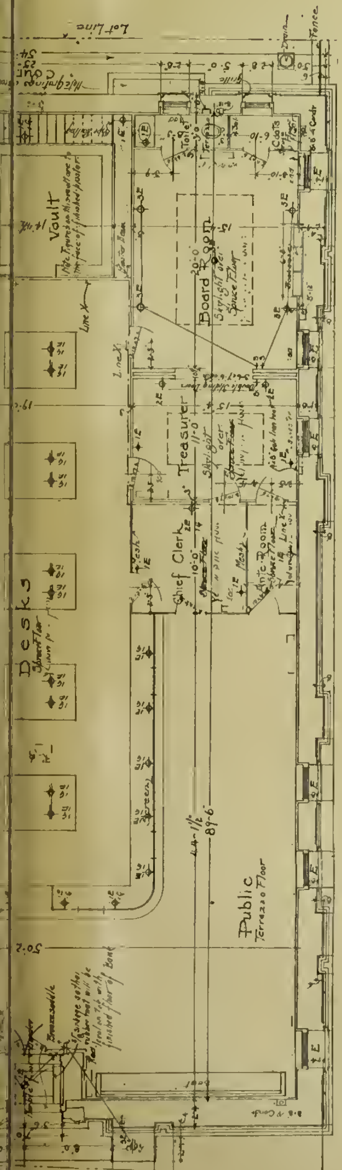
SIDE ELEVATION.
NEW HAVEN SAVINGS BANK, NEW HAVEN, CONN.
BRITE & BACON, ARCHITECTS.



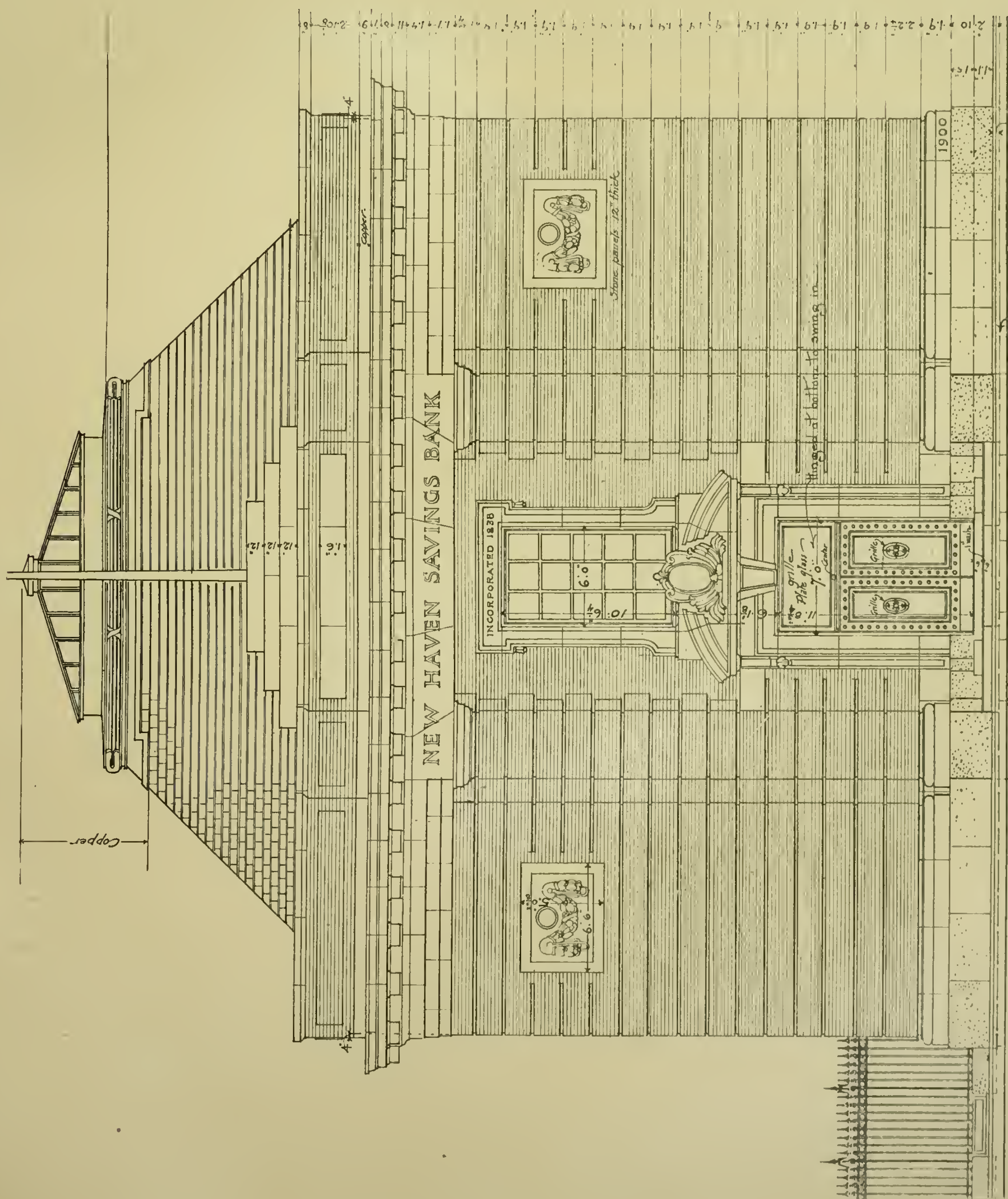
SECTION THROUGH BANKING ROOM.



PLATES 50 and 55.



FIRST FLOOR PLAN.

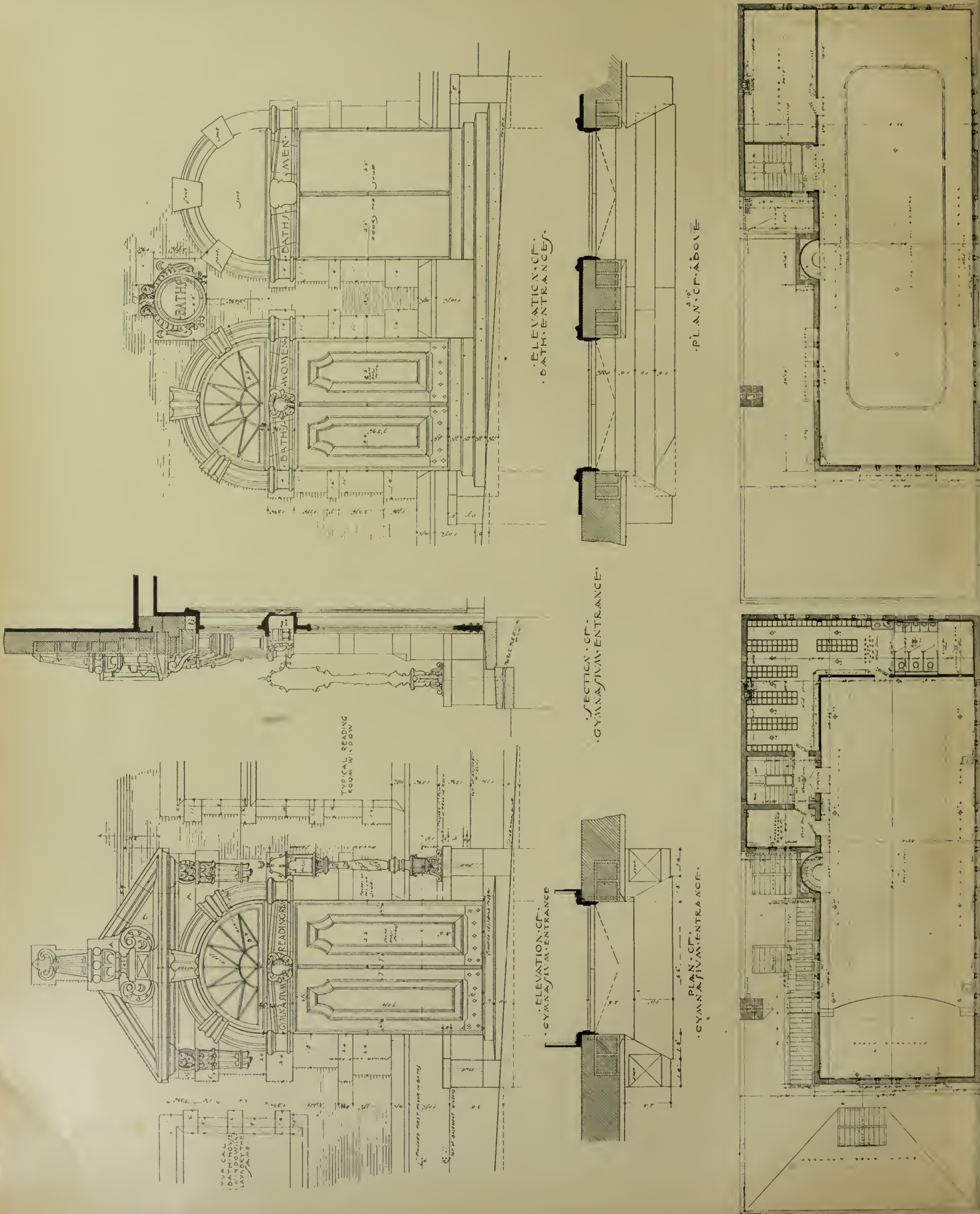


FRONT ELEVATION.

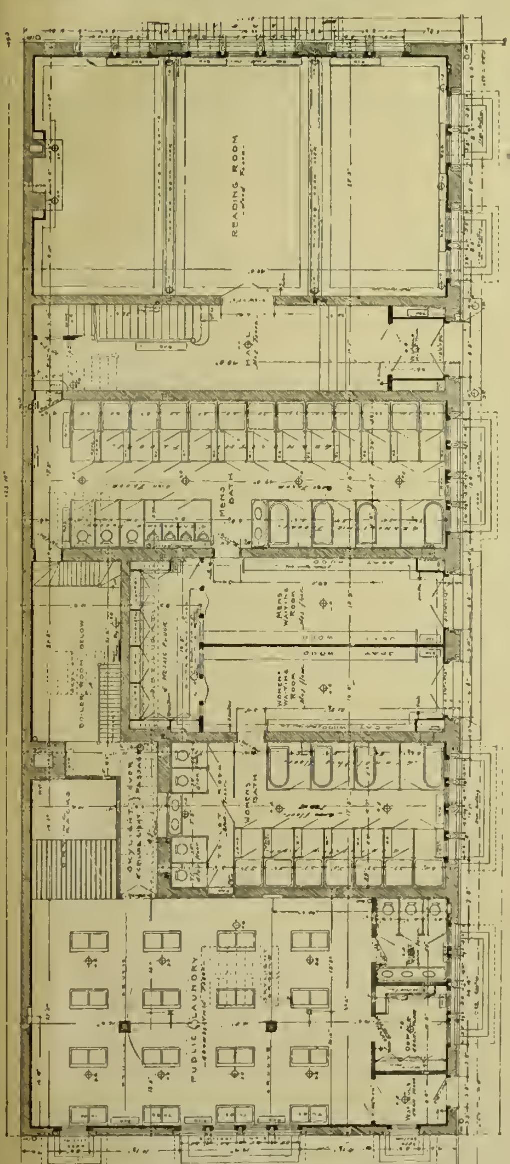
NEW HAVEN SAVINGS BANK, NEW HAVEN, CONN.

BRITE & BACON, ARCHITECTS.

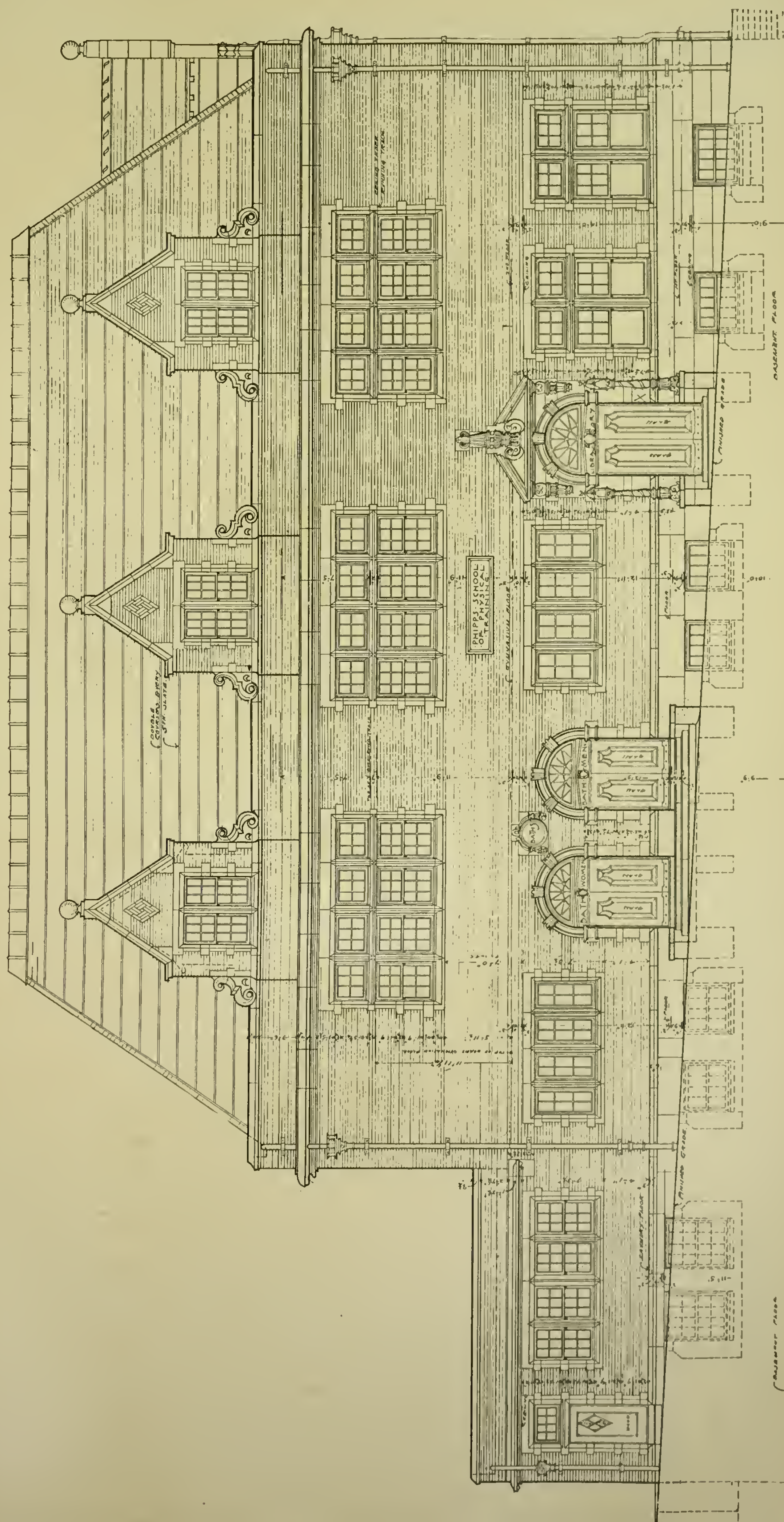
VOL. 11. NO. 7.


BATHS MEN
BATHS WOMEN
BATHS
ELEVATION OF BATH ENTRANCE
PLAN OF ABOVE
SECTION OF GYMNASIUM ENTRANCE
TYPICAL READING ROOM WINDOW
GYMNASIUM READING
ELEVATION OF GYMNASIUM ENTRANCE
PLAN OF GYMNASIUM ENTRANCE
TYPICAL BATH HOUSE WINDOW LAUNDRY THE SAME

PLATES 51 and 54.



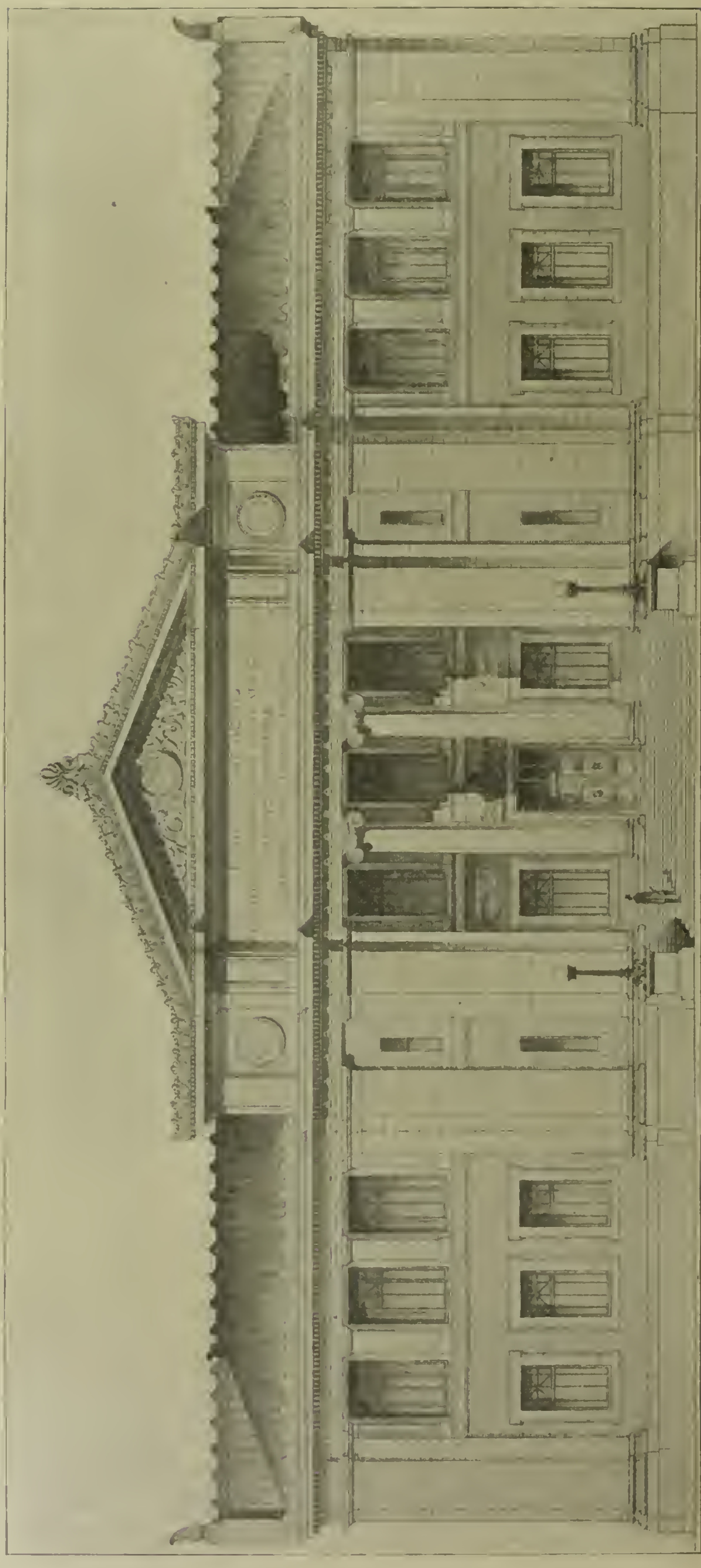
FIRST FLOOR PLAN.

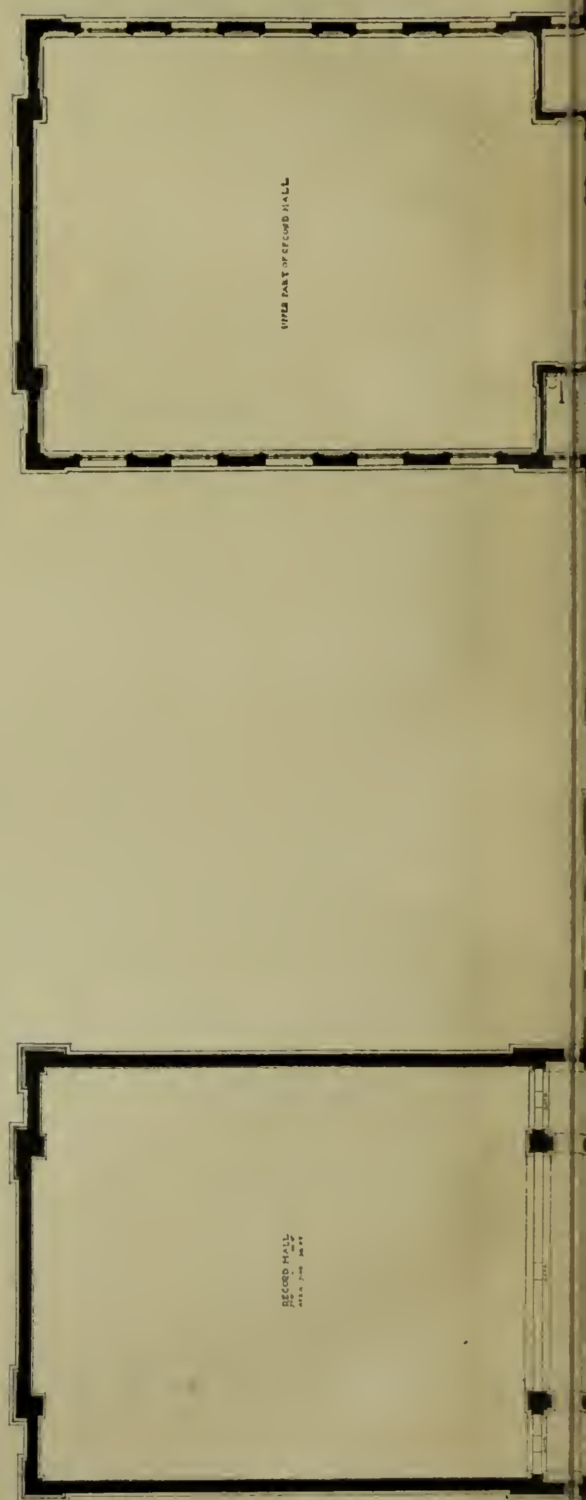


FRONT ELEVATION.

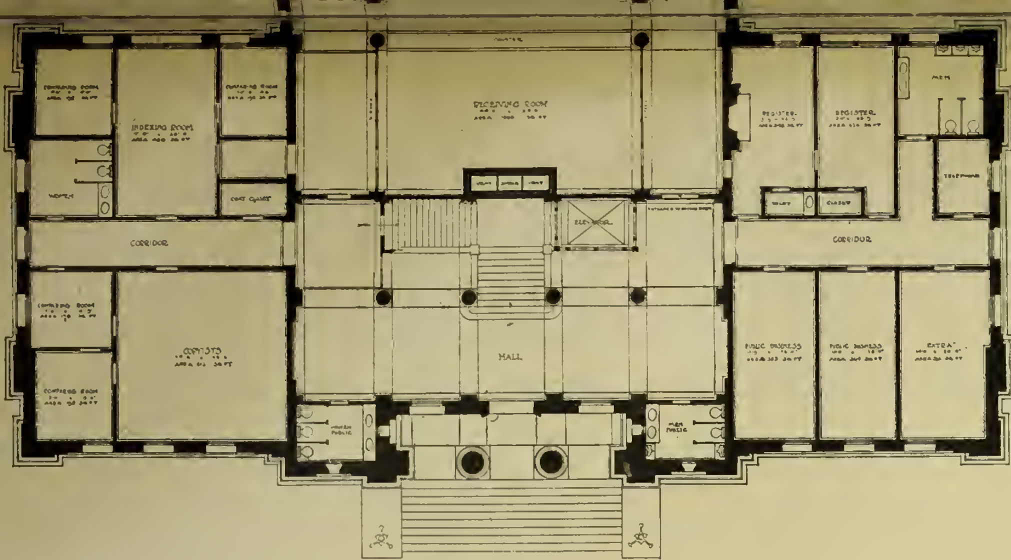
PHIPPS SCHOOL OF PHYSICAL TRAINING. ALLEGHENY. PA

RUTAN & RUSSELL. ARCHITECTS.

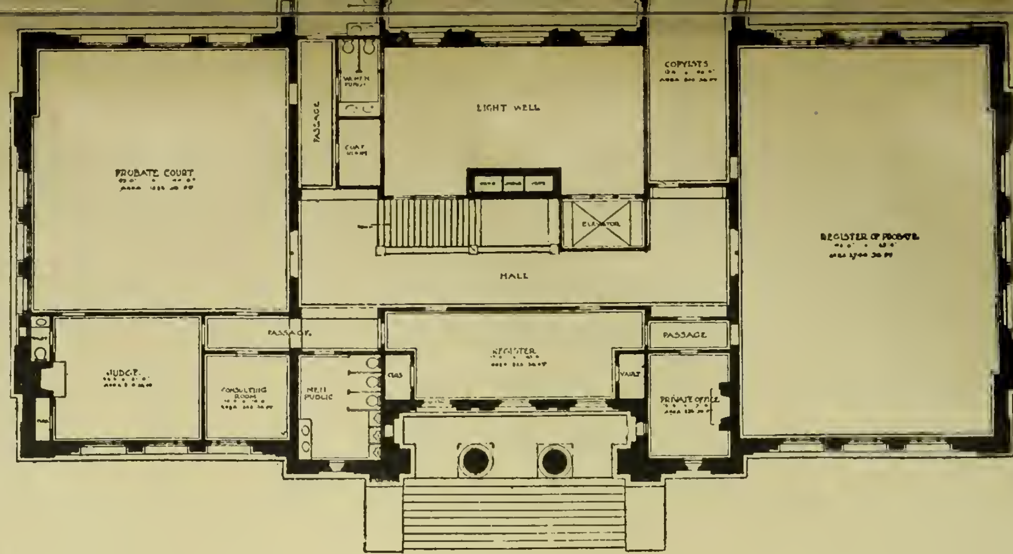




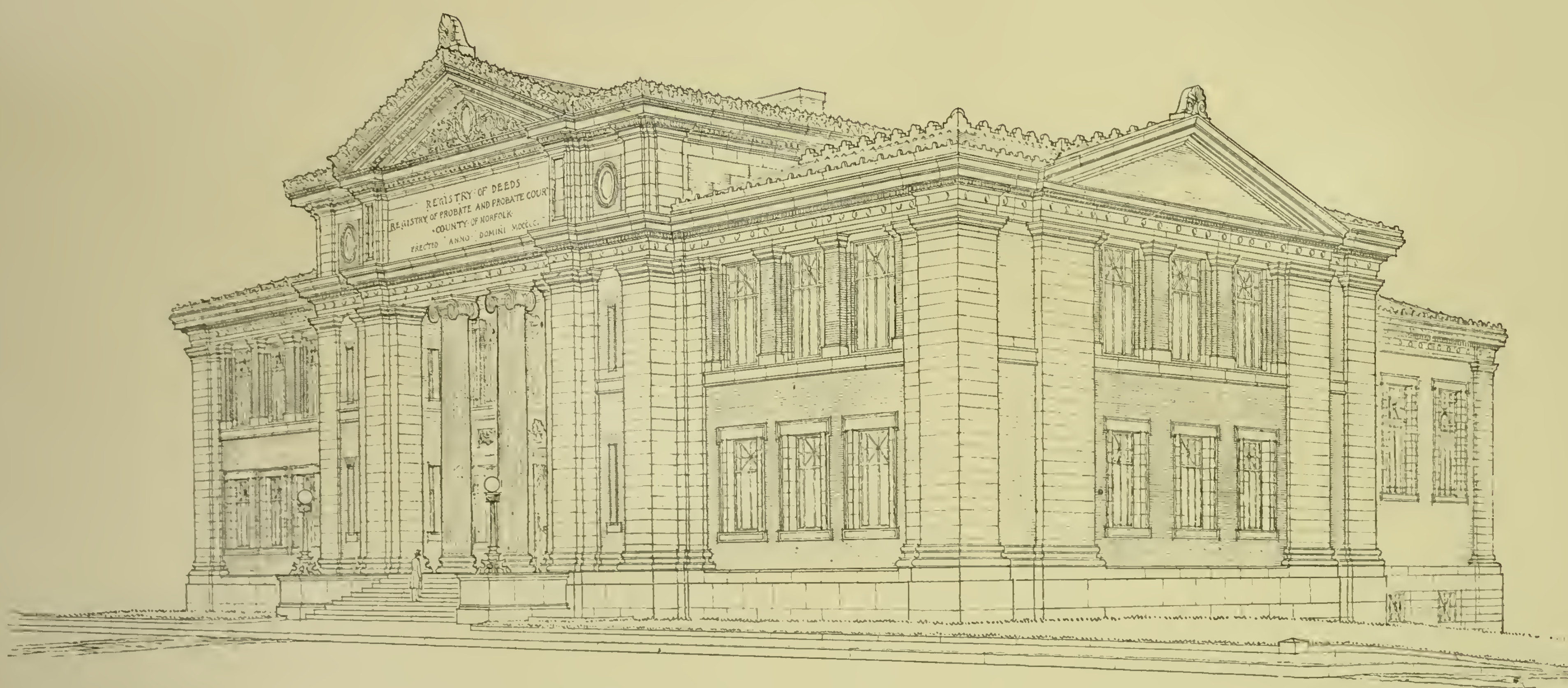
PLATES 52 and 53.



FIRST FLOOR.

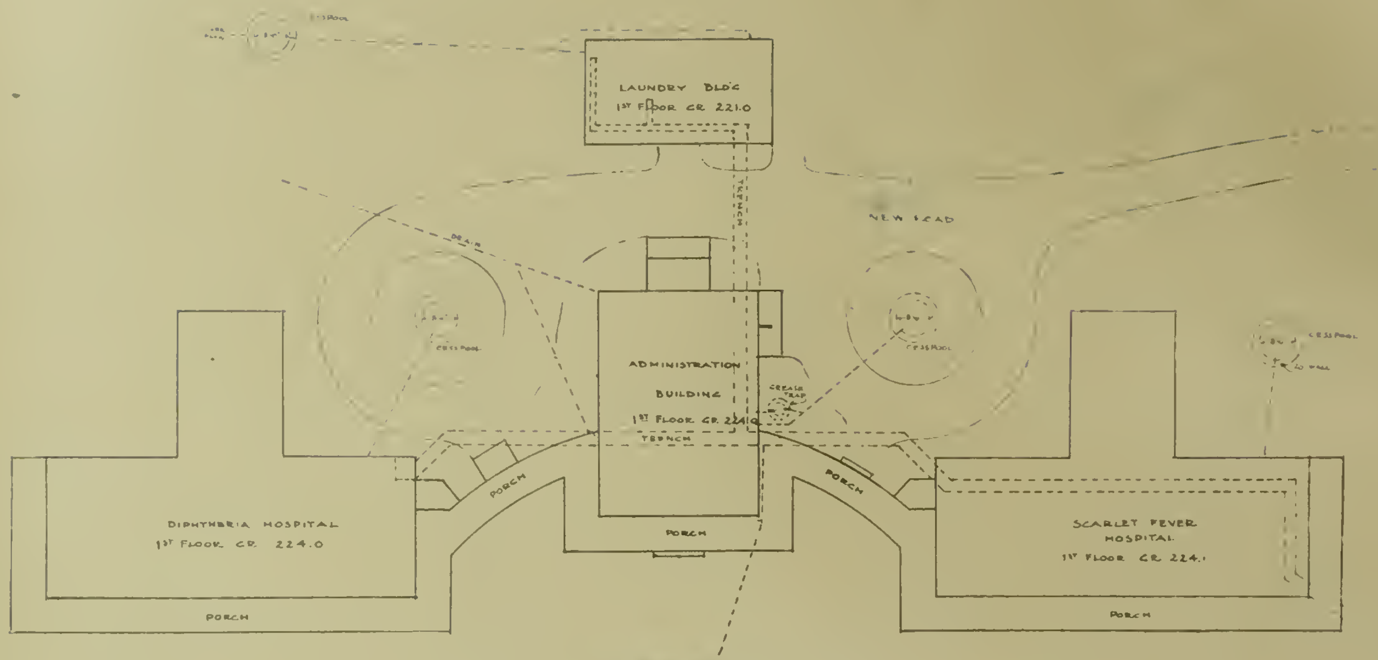


SECOND FLOOR.

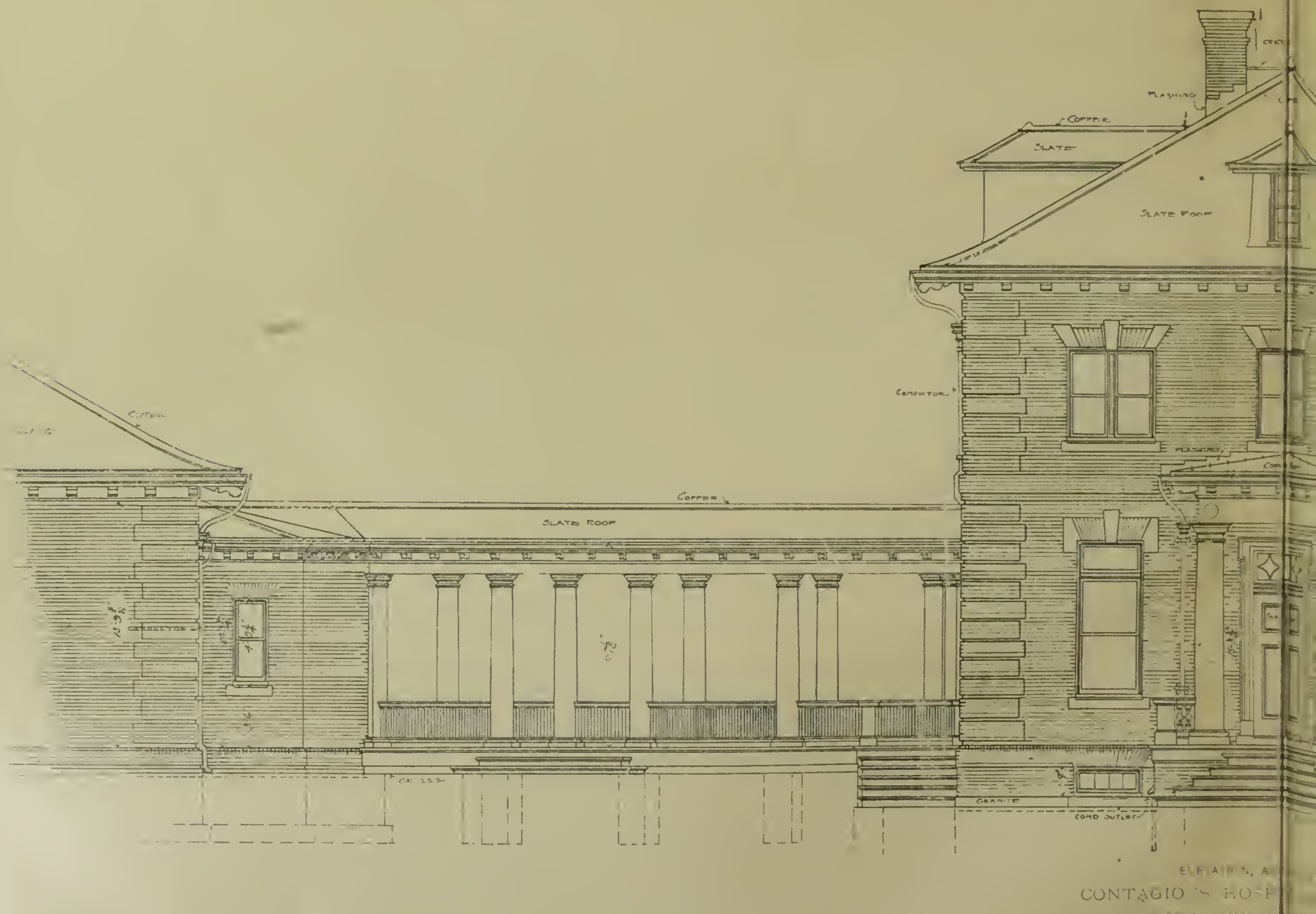


DESIGN FOR NORFOLK COUNTY REGISTRY OF DEEDS, DEDHAM, MASS.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.



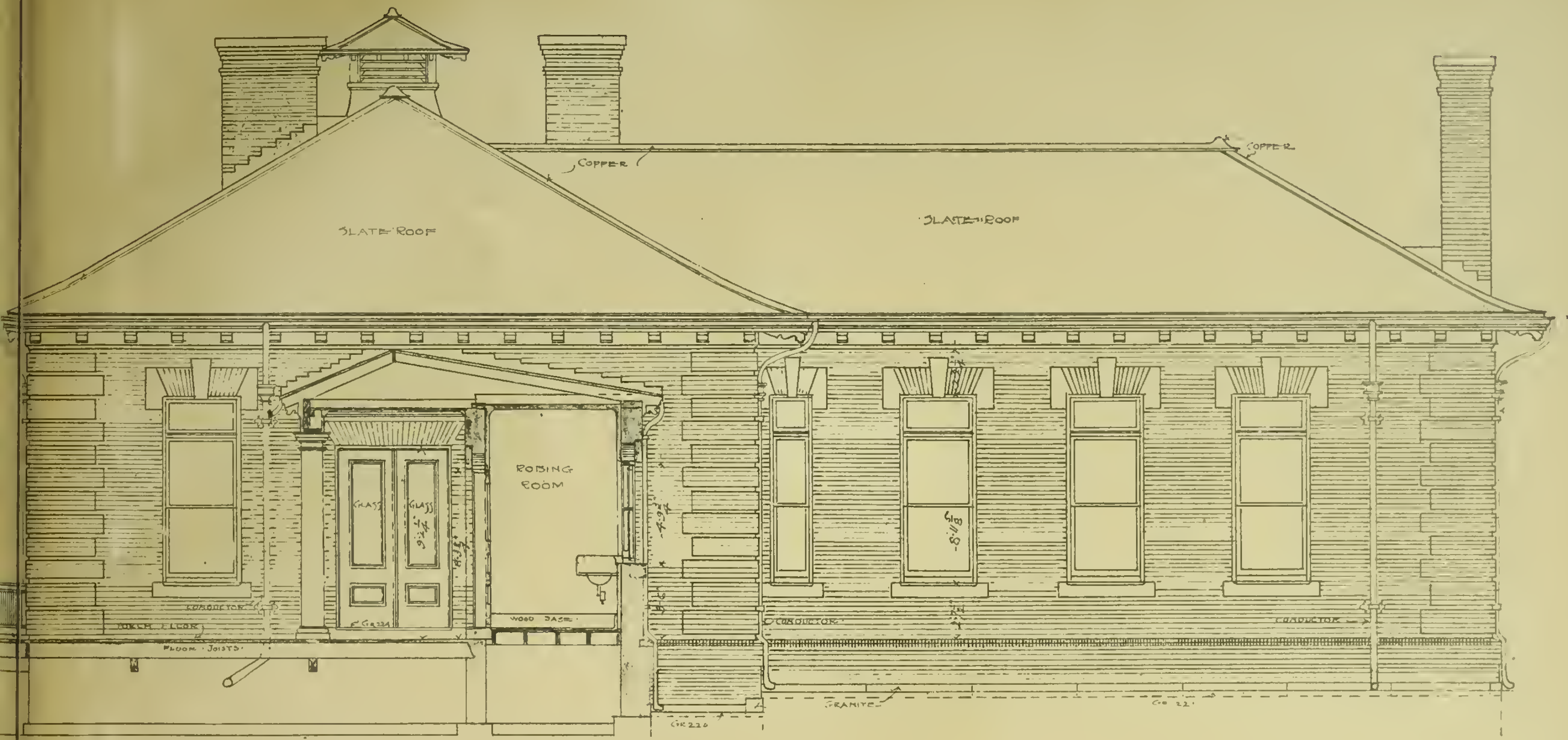
GROUND PLAN.



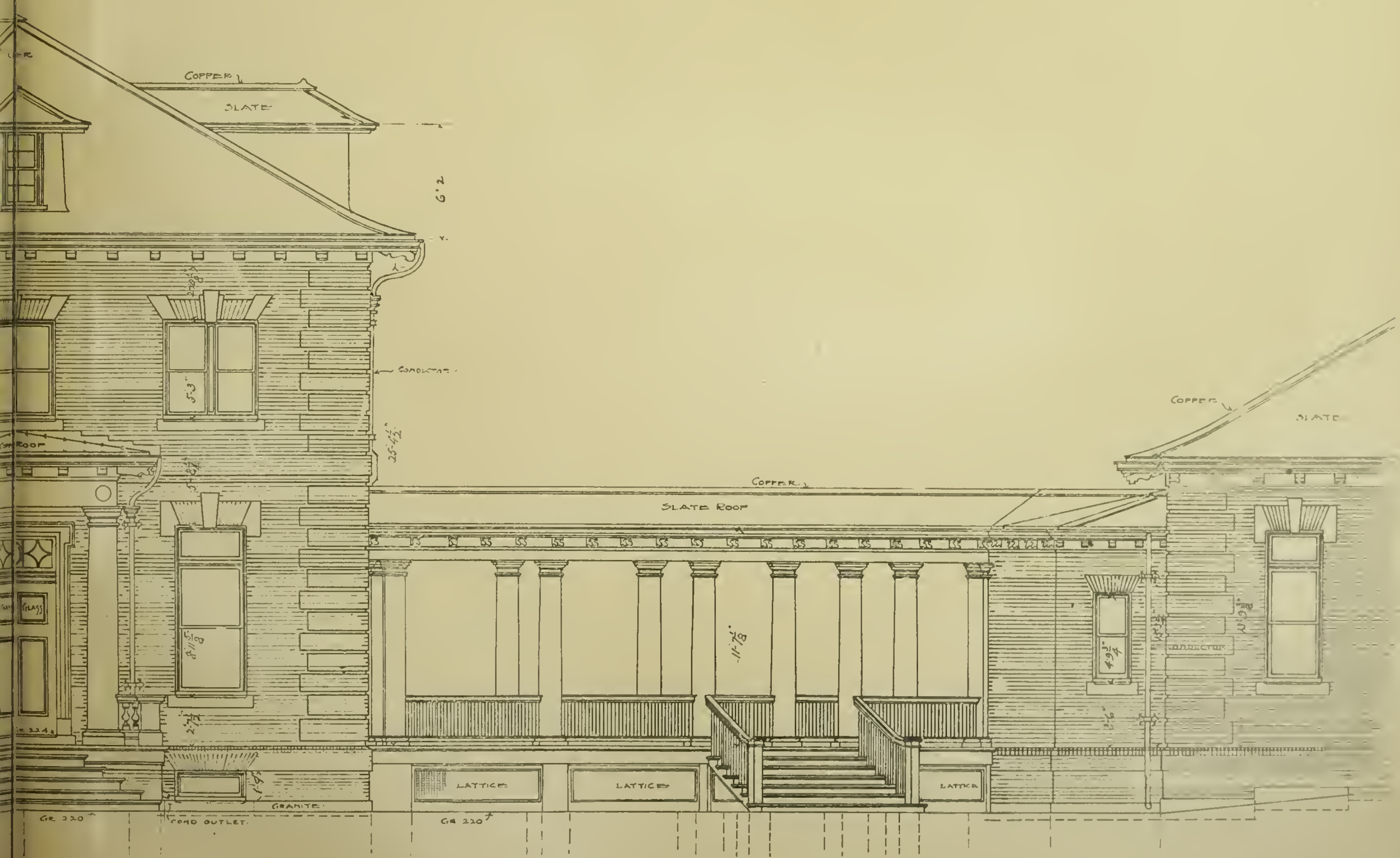
ELEVATION, A

CONTAGIOUS HOSP

PLATES 60 and 61.



ELEVATION, DIPHTHERIA HOSPITAL.

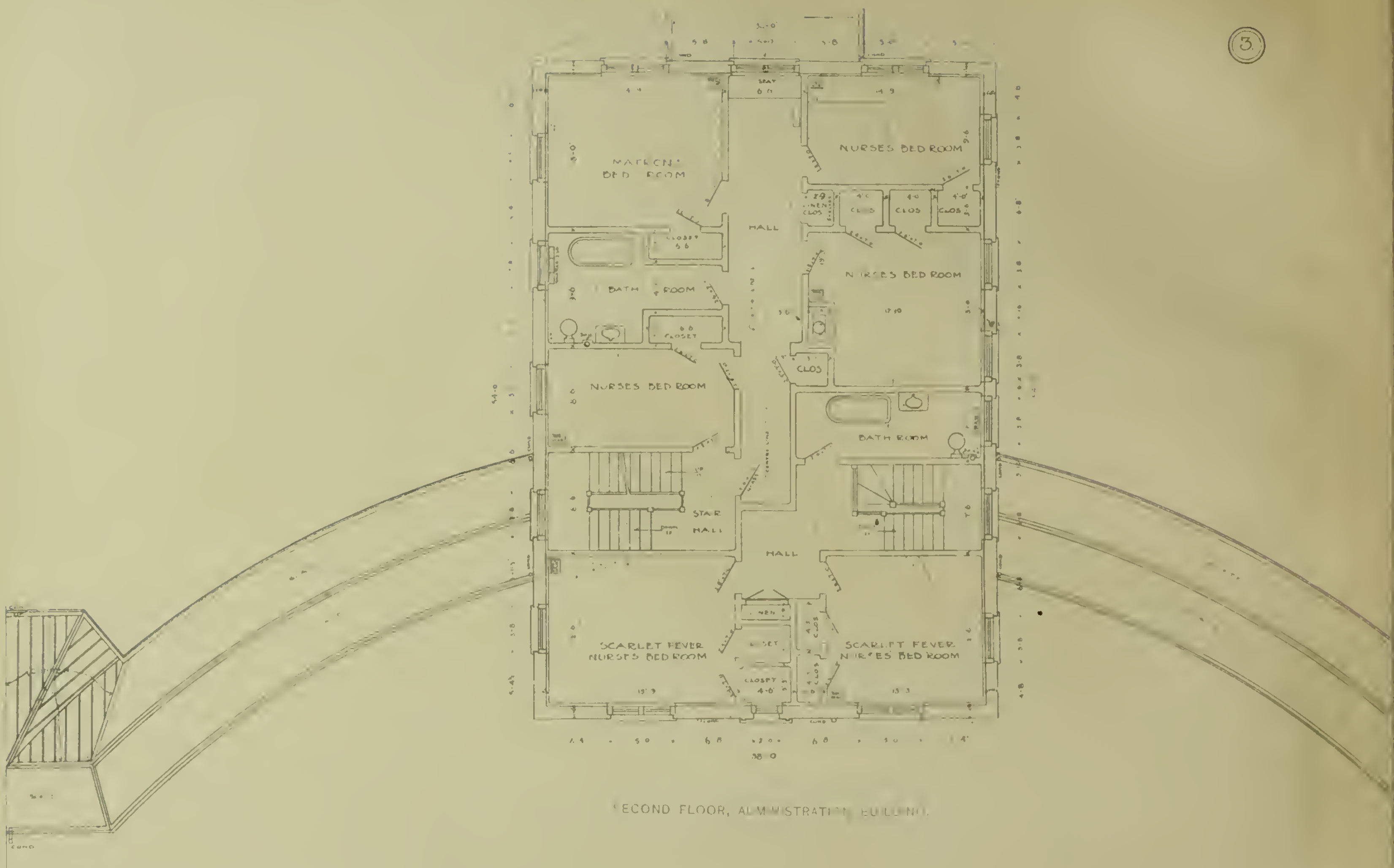


STRATION BUILDING.

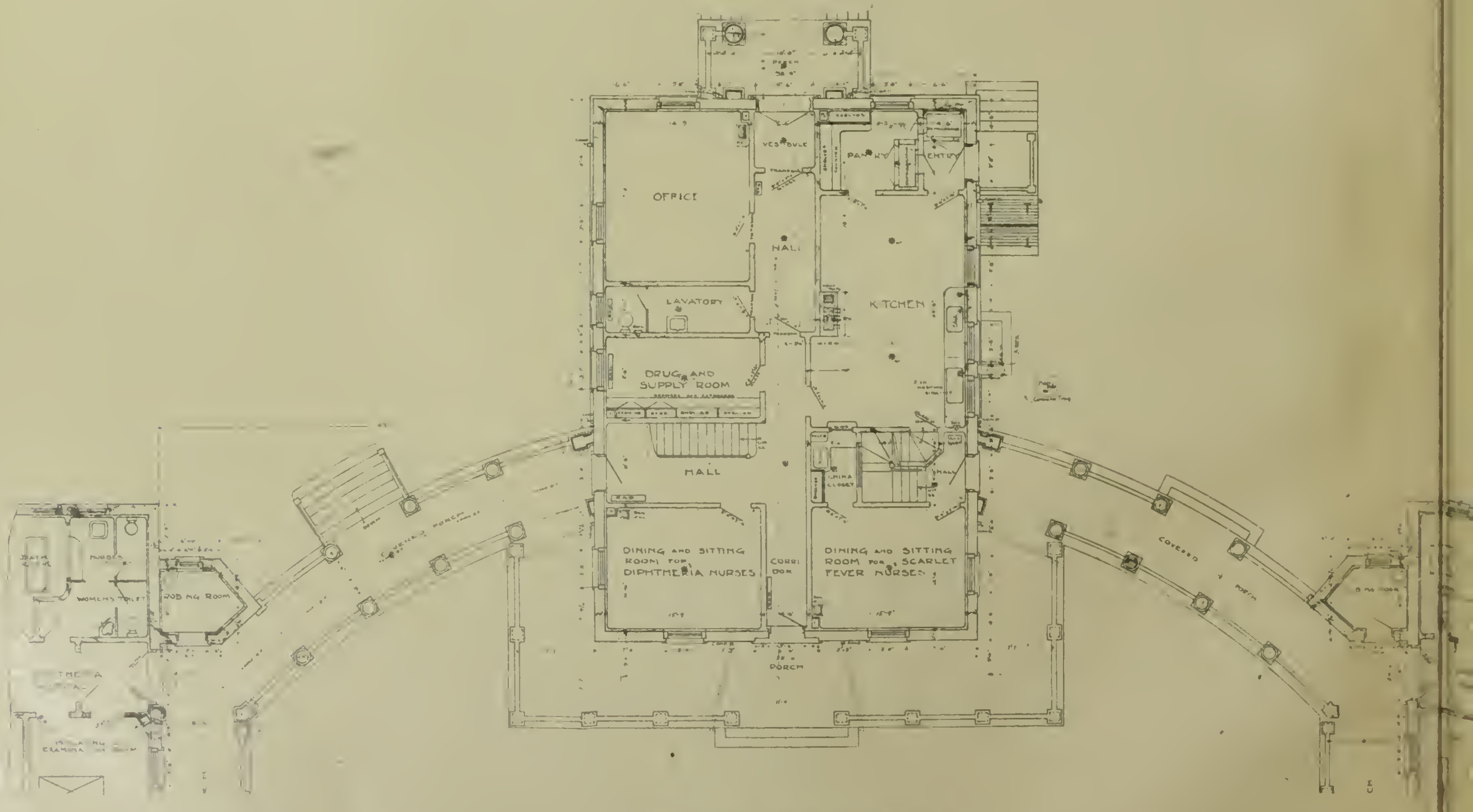
AL. BROOKLINE. MASS

IDGE, ARCHITECTS.

(3)



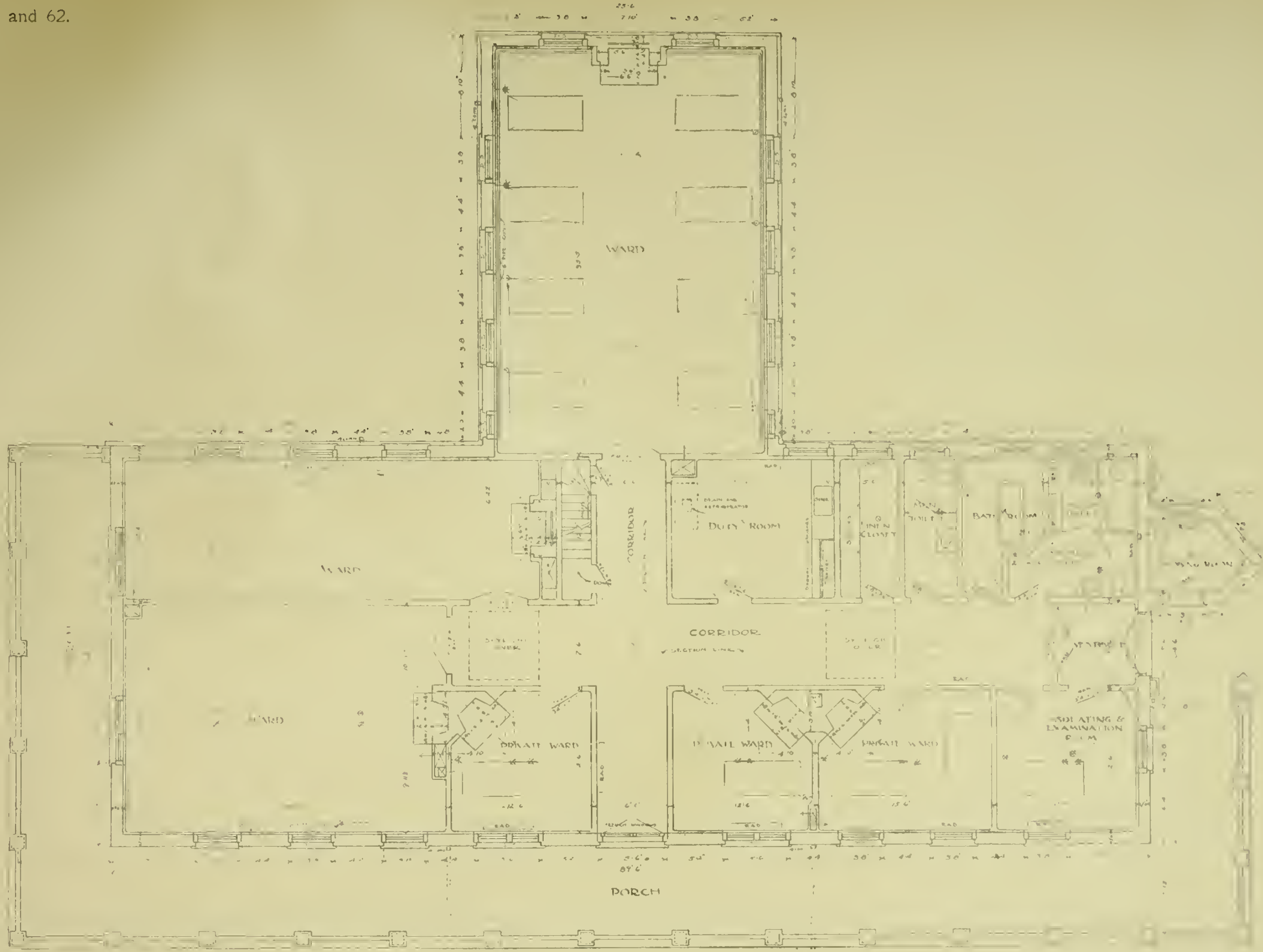
SECOND FLOOR, ADMINISTRATION BUILDING



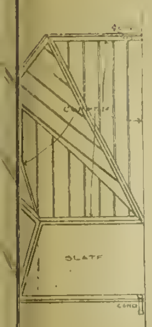
FIRST FLOOR, ADMINISTRATION BUILDING

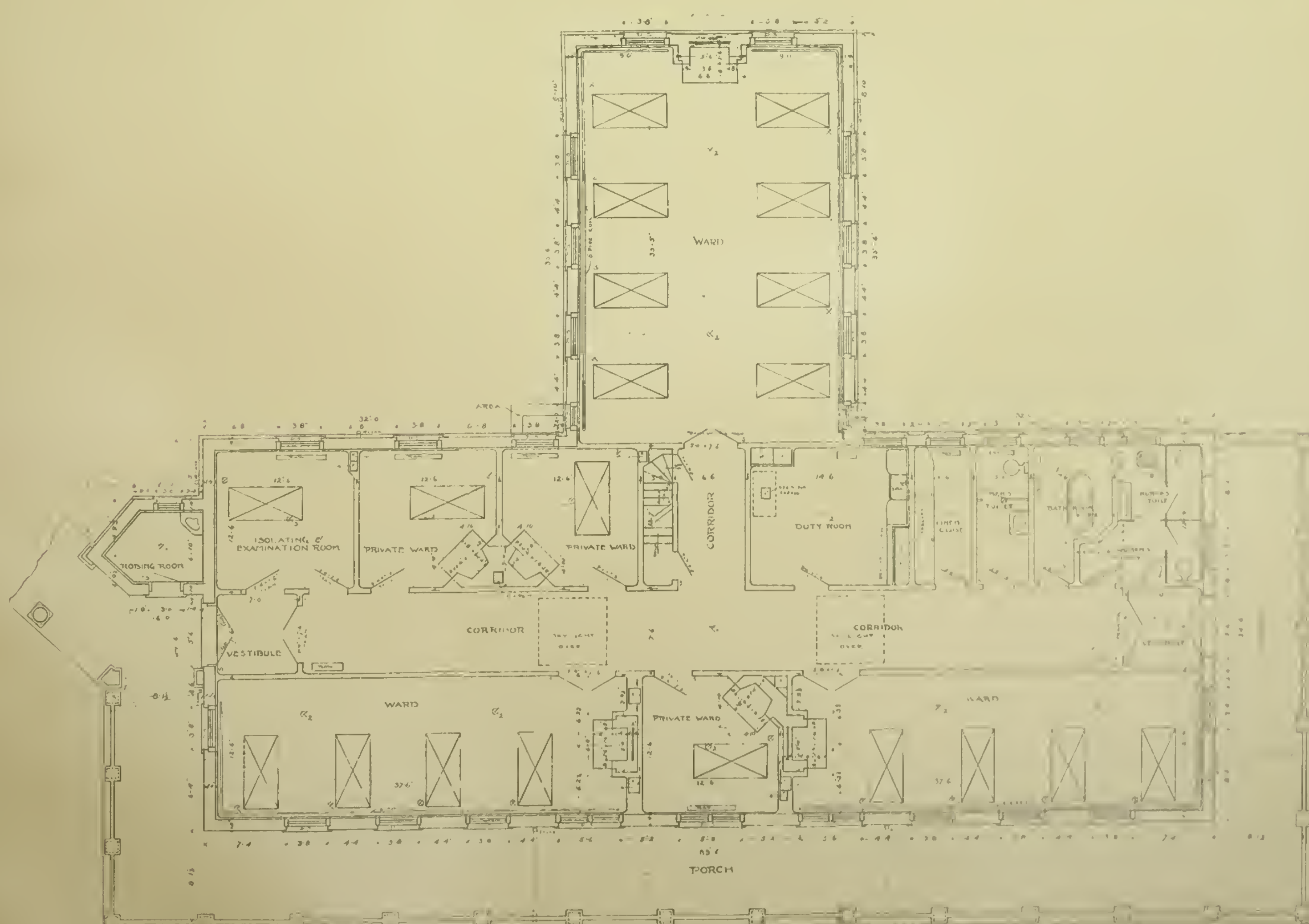
FLOOR PLANS CONTAGIOUS
SHEPLEY, RUTAN &

PLATES 59 and 62.

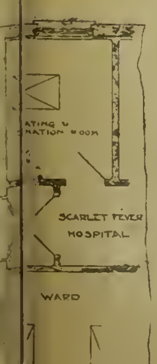


FIRST FLOOR PLAN, DIPHTHERIA HOSPITAL.

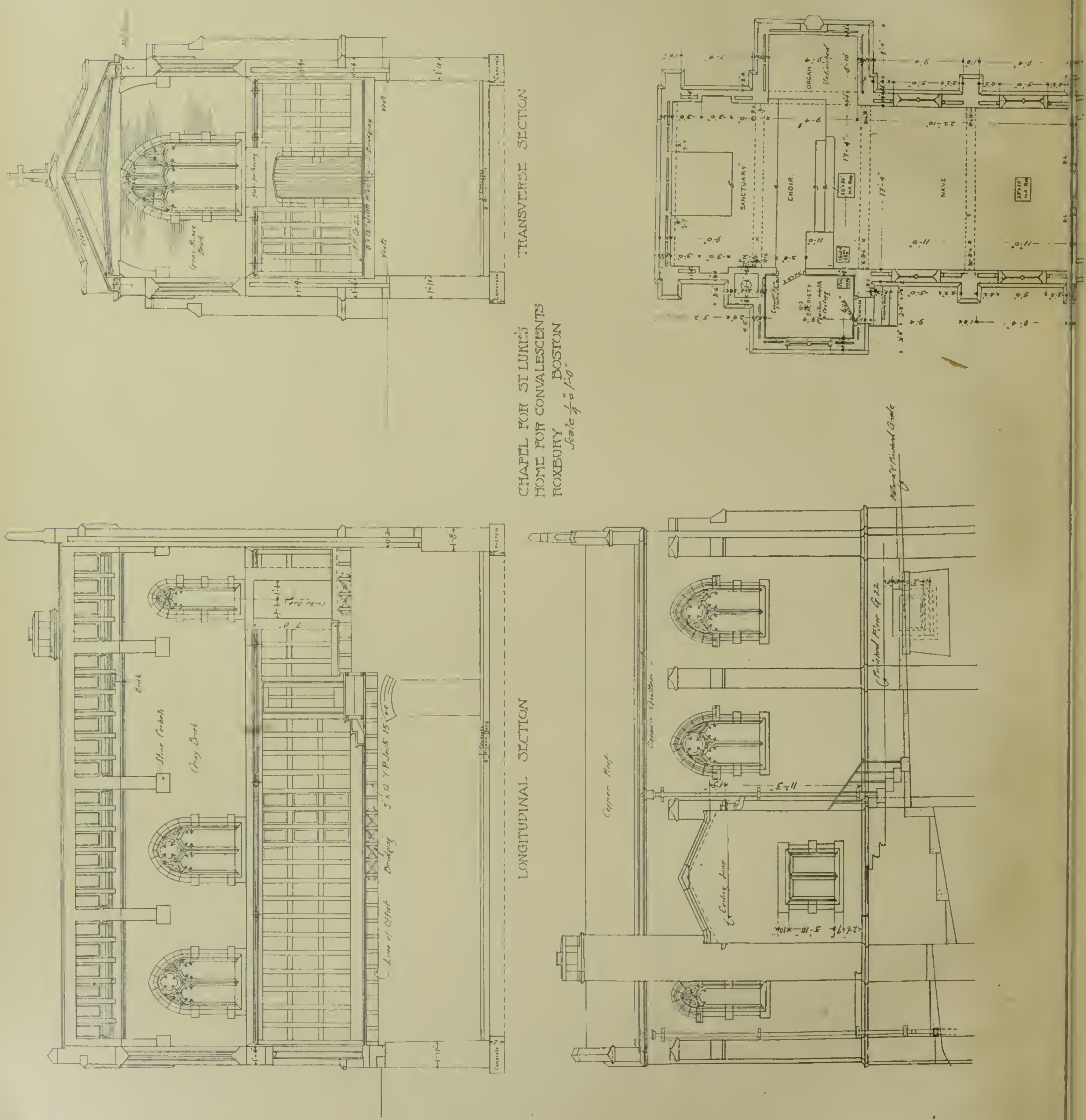




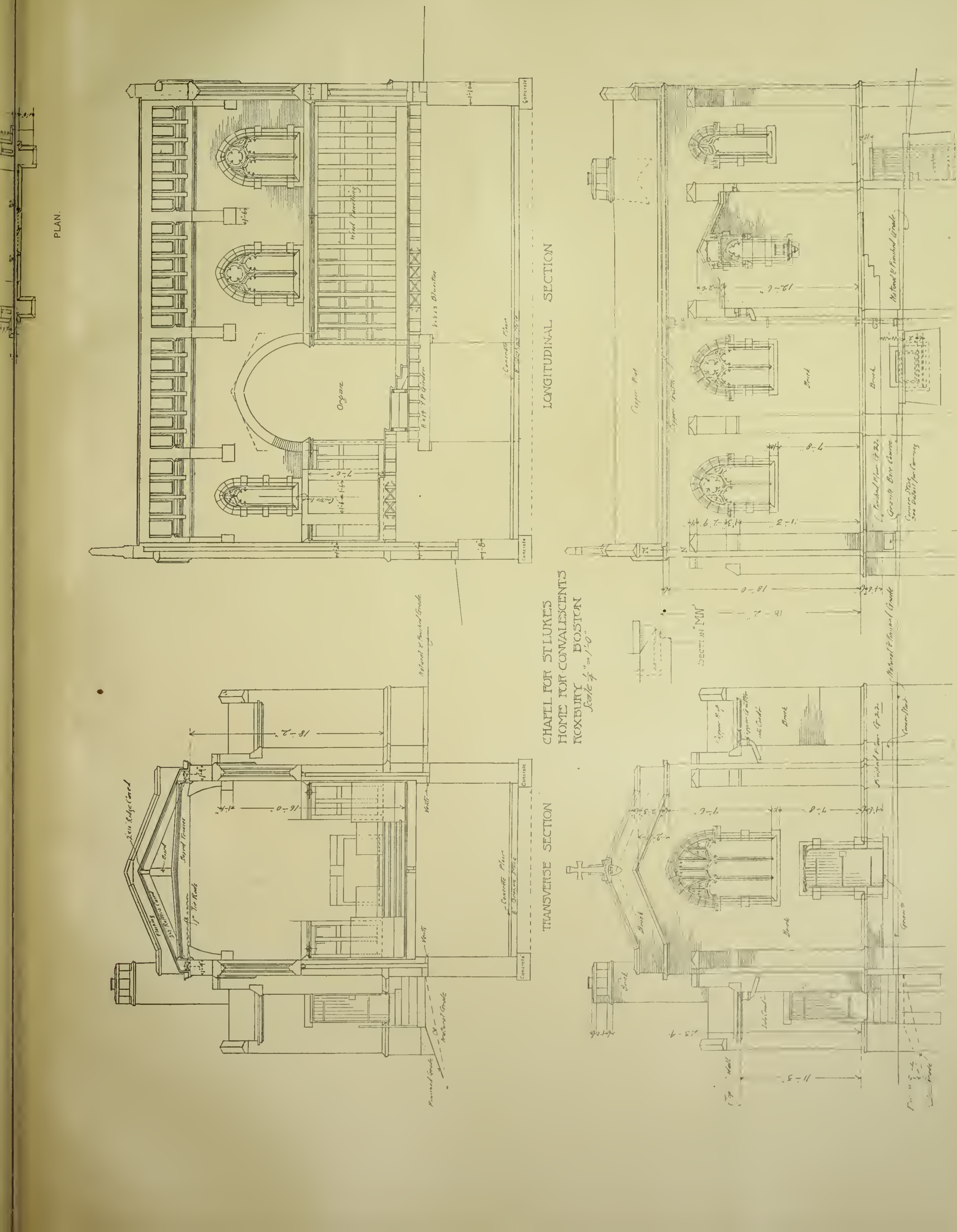
FIRST FLOOR PLAN, SCARLET FEVER HOSPITAL.



SPITAL BROOKLINE MASS


TRANSVERSE SECTION
LONGITUDINAL SECTION
CHAPEL FOR ST LUKE'S
HOME FOR CONVALESCENTS
ROXBURY BOSTON
Scale 1/4" = 1'-0"
SANCTUARY
CHOIR
NAVE
ORGAN
SACRISTY
Copper Roof
Gray Brick
Stone Corbels
Ceiling Line

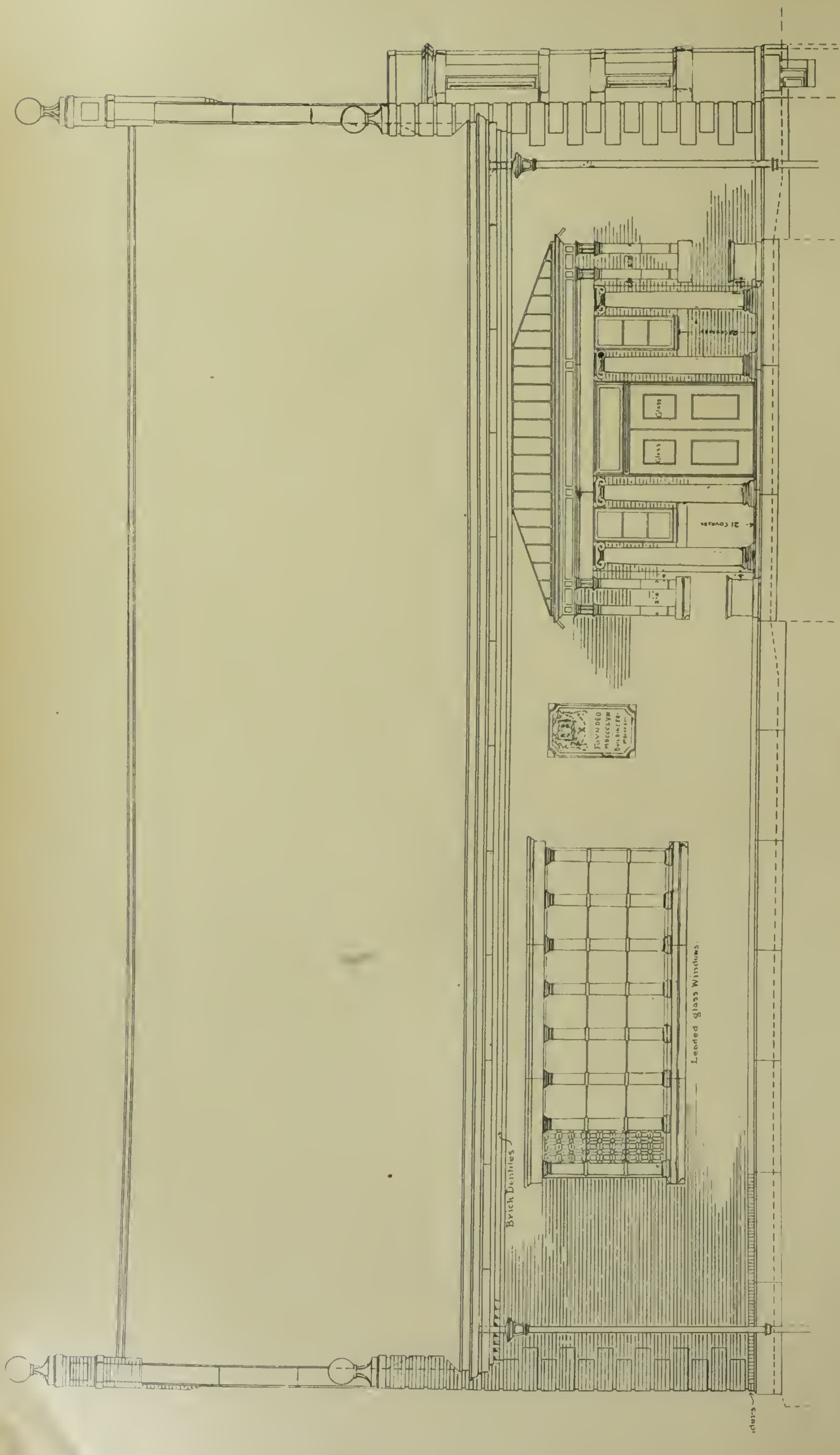
PLATES 58 and 63.



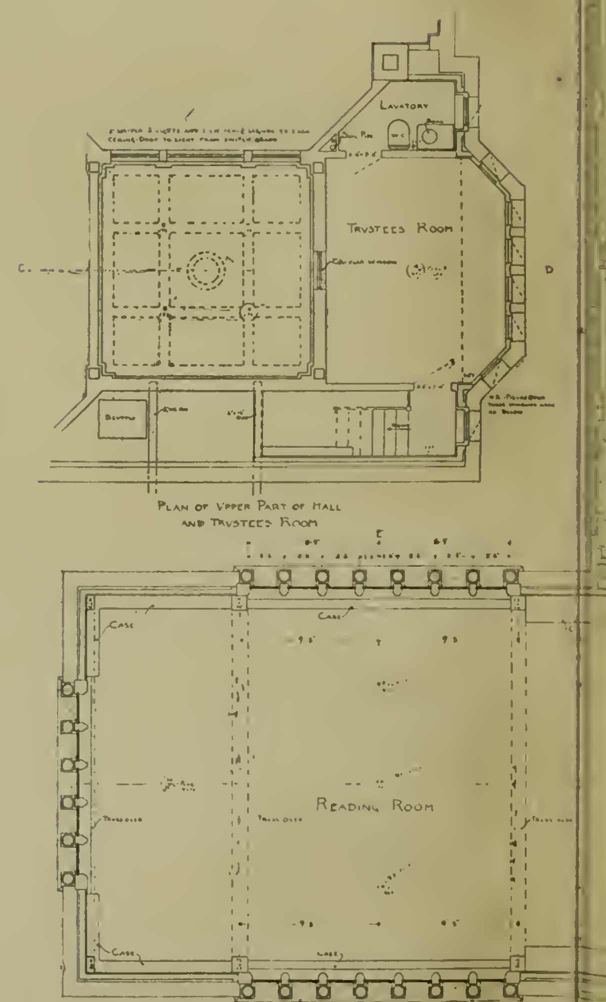
CHAPEL FOR ST. LUKE'S HOME FOR CONVALESCENTS, BOSTON, MASS.

CRAM, GOODHUE & FERGUSON, ARCHITECTS.

VOL. 11. NO. 8.



FRONT ELEVATION.



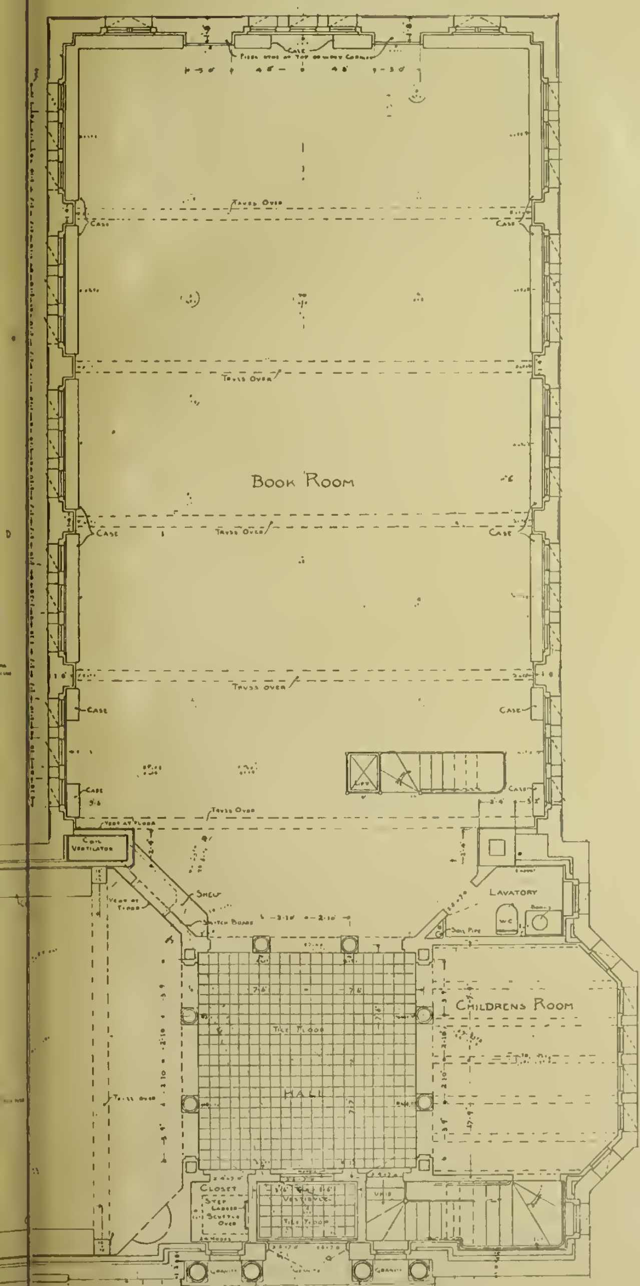
PLAN OF UPPER PART OF HALL AND TRUSTEES ROOM

FL

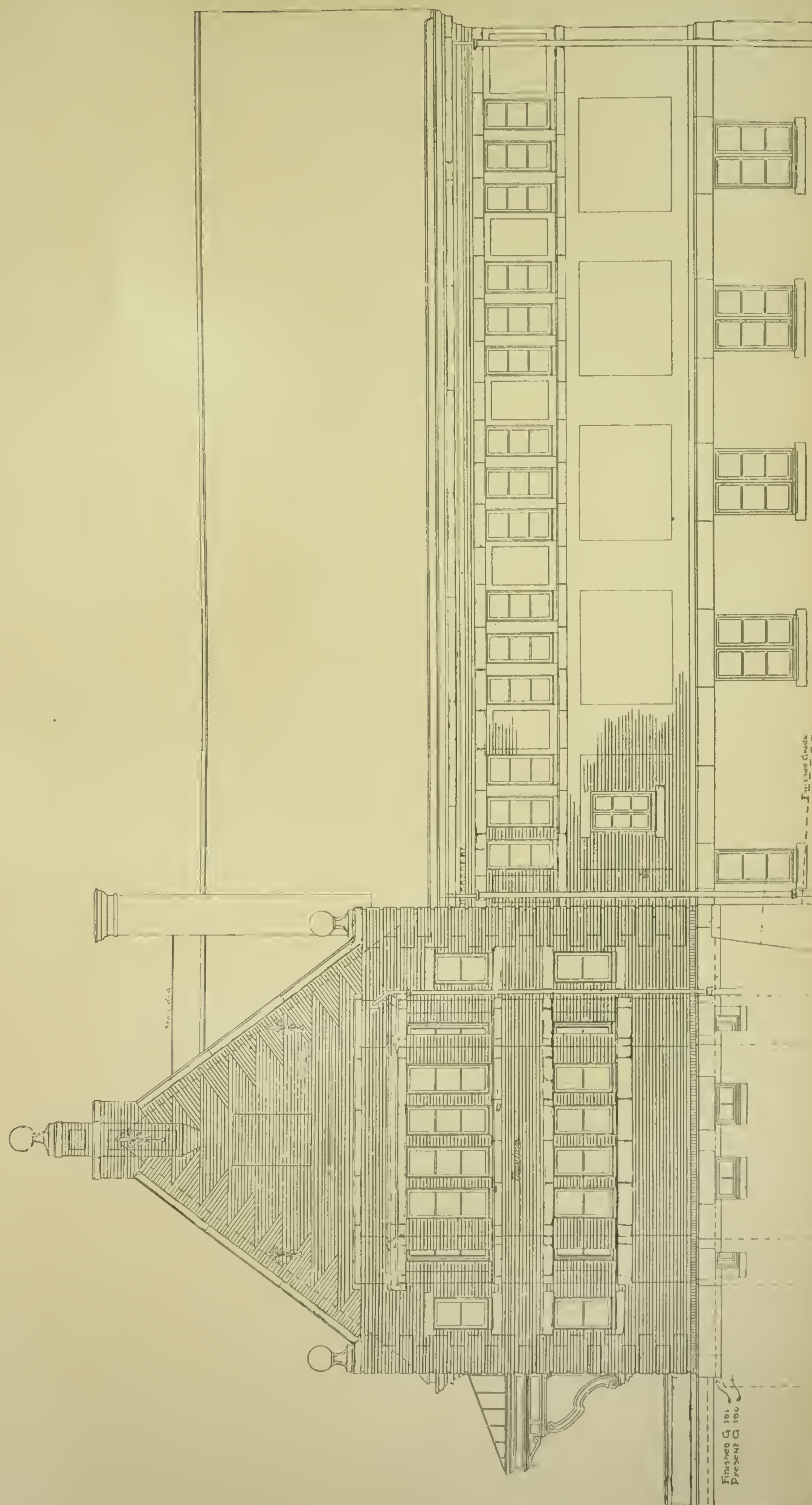
LIBRARY, V

FOX, JENNEY &

PLATES 57 and 64.



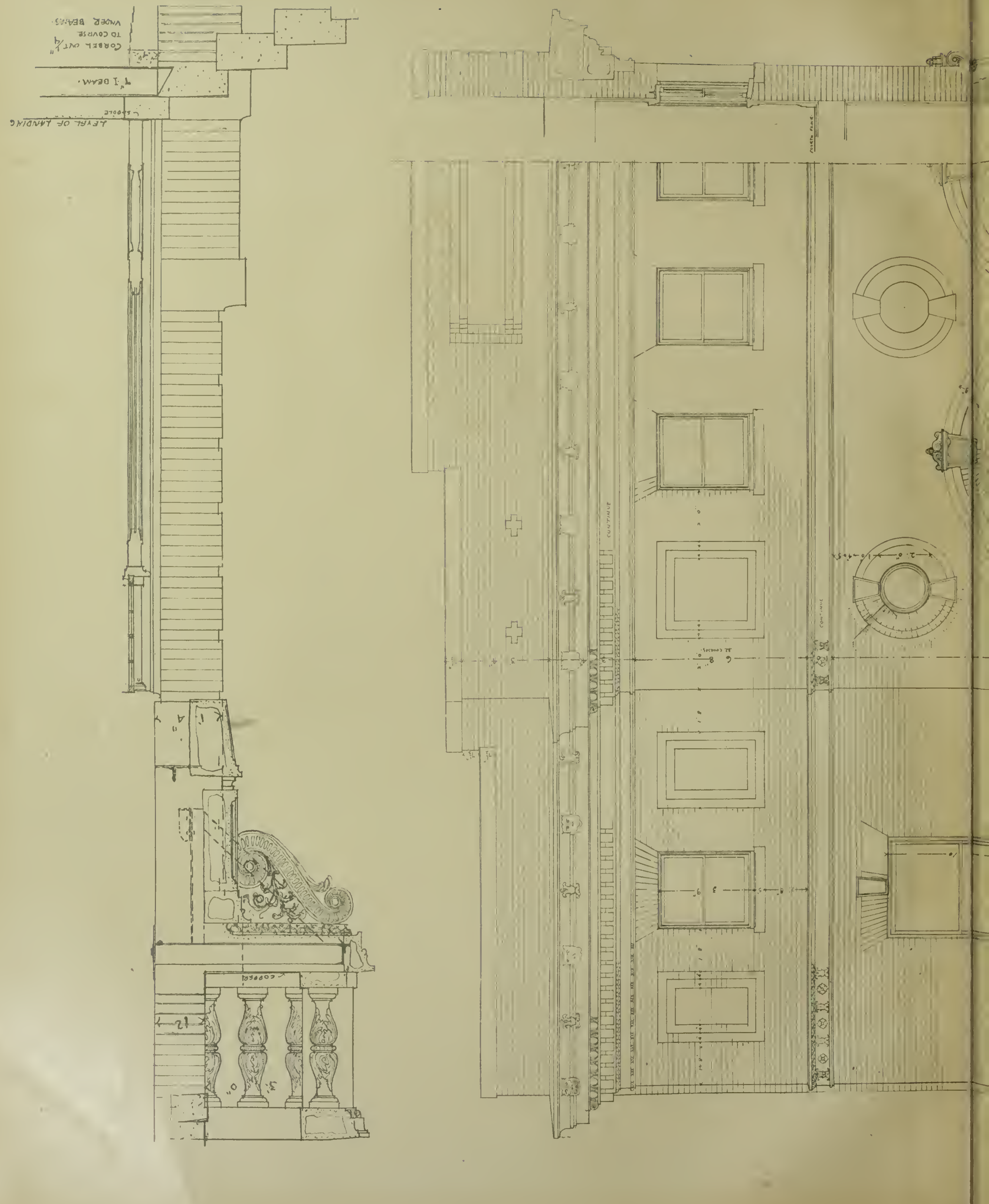
FL PLAN.



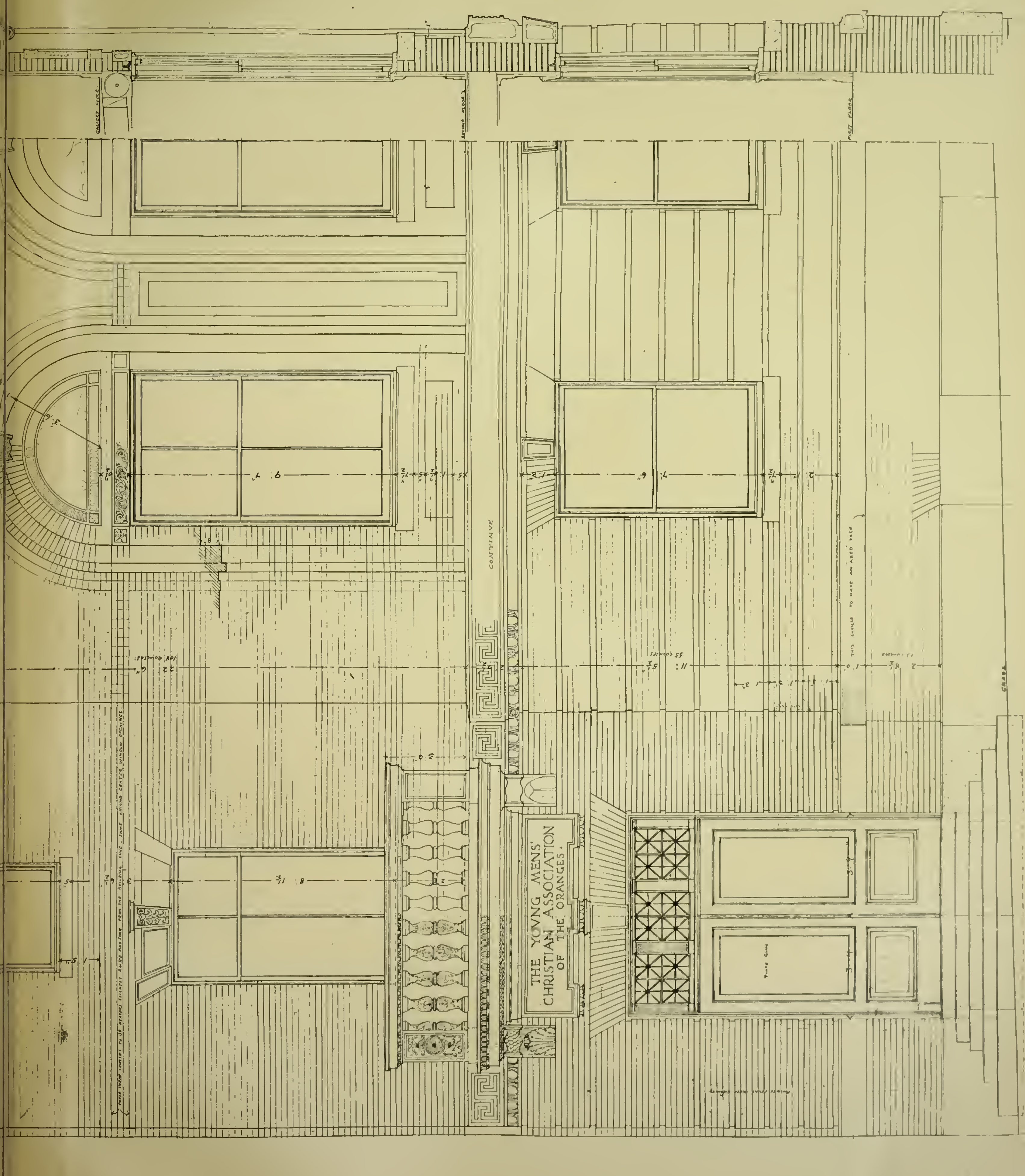
SIDE ELEVATION.

STON, MASS.

ALE, ARCHITECTS.

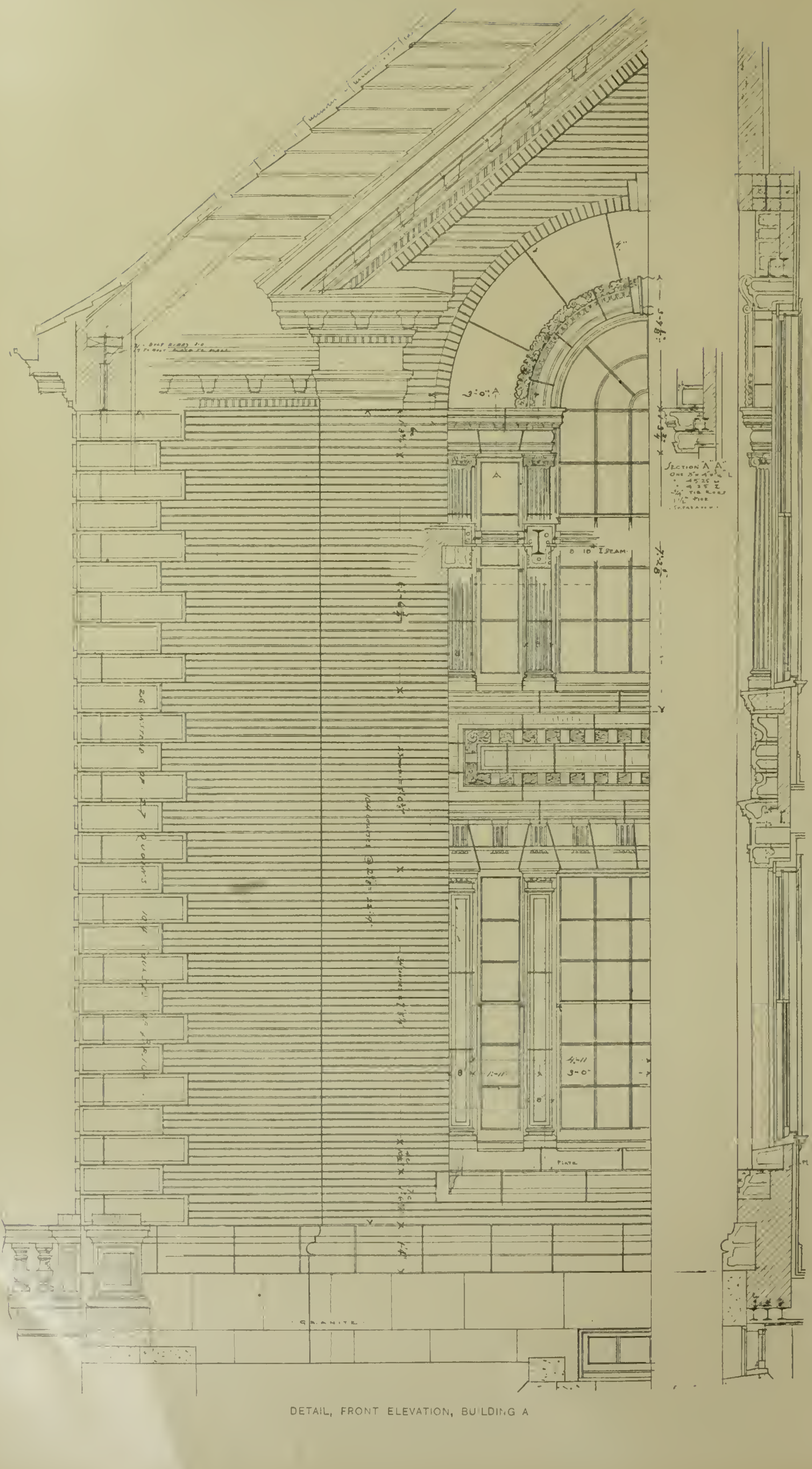


PLATES 68 and 69.

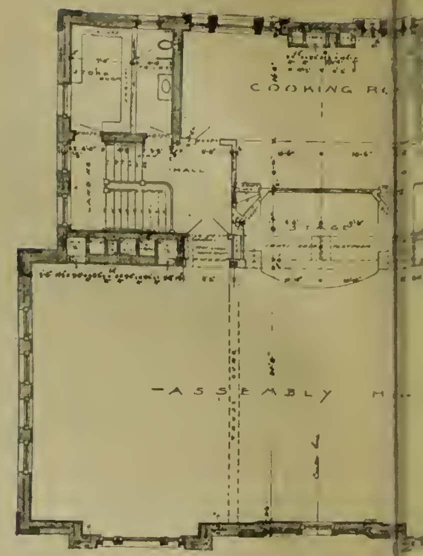


DETAIL. MAIN FACADE, Y M C A, ORANGE, N. J

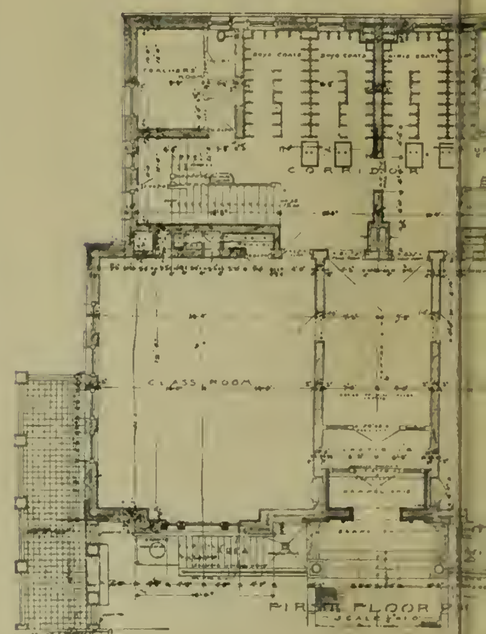
McKIM, MEAD & WHITE, ARCHITECTS.



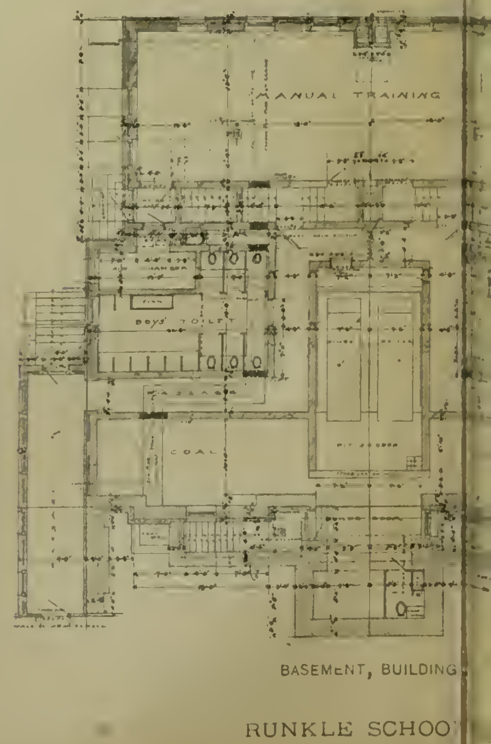
DETAIL, FRONT ELEVATION, BUILDING A



SECOND FLOOR, BUILD



FIRST FLOOR, BUILDIN

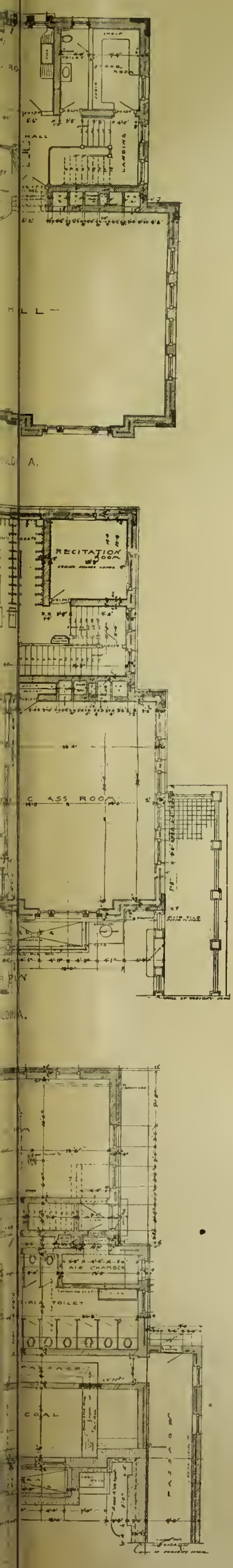


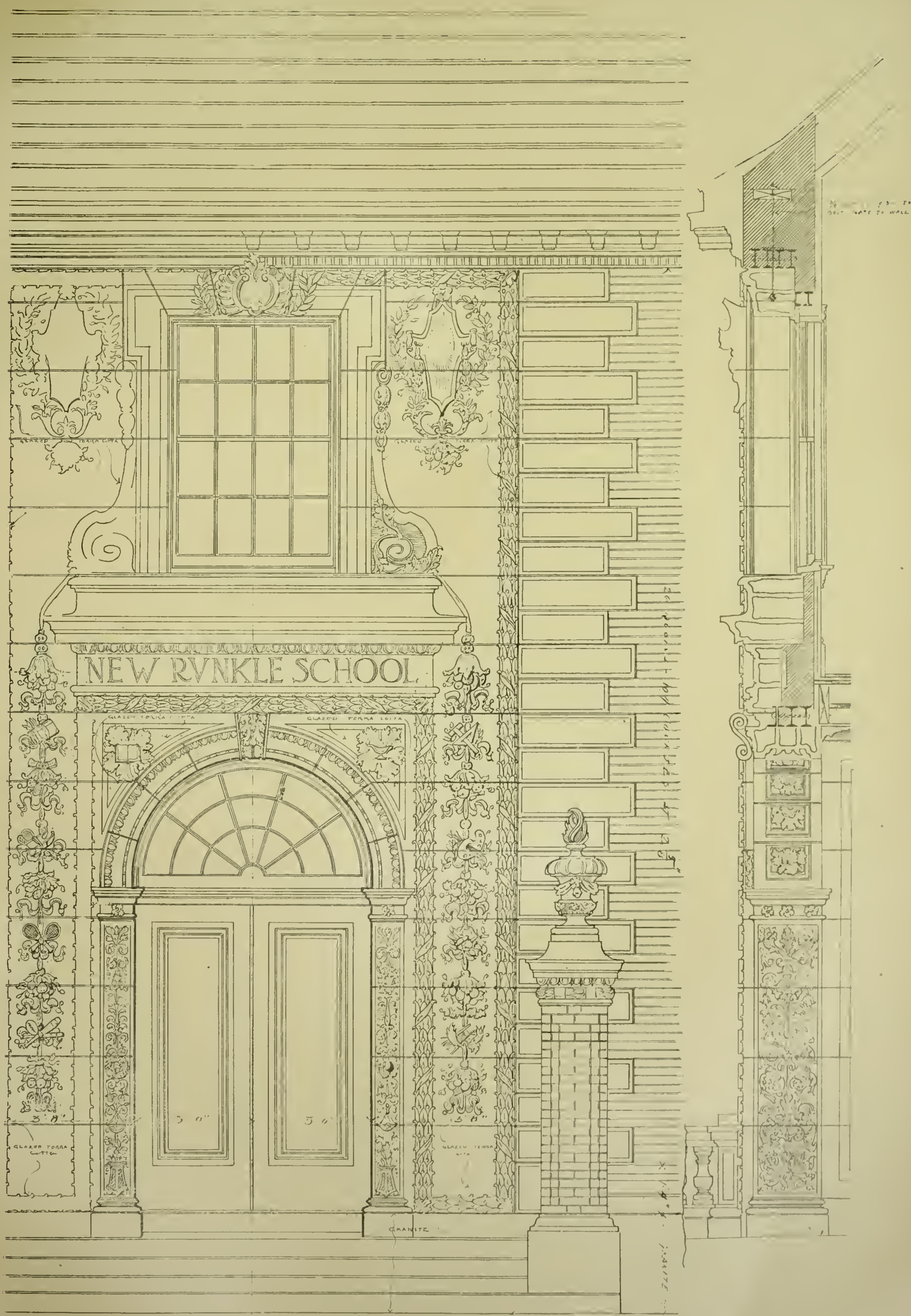
BASEMENT, BUILDING

RUNKLE SCHOO

PEABODY &

PLATES 67 and 70.

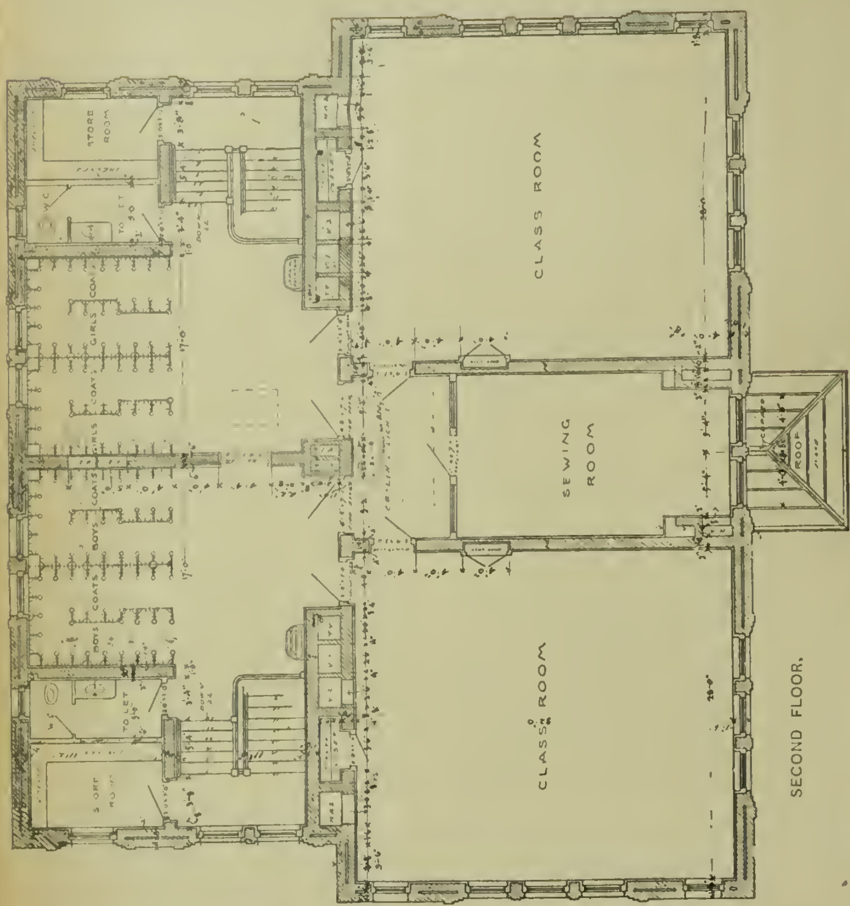




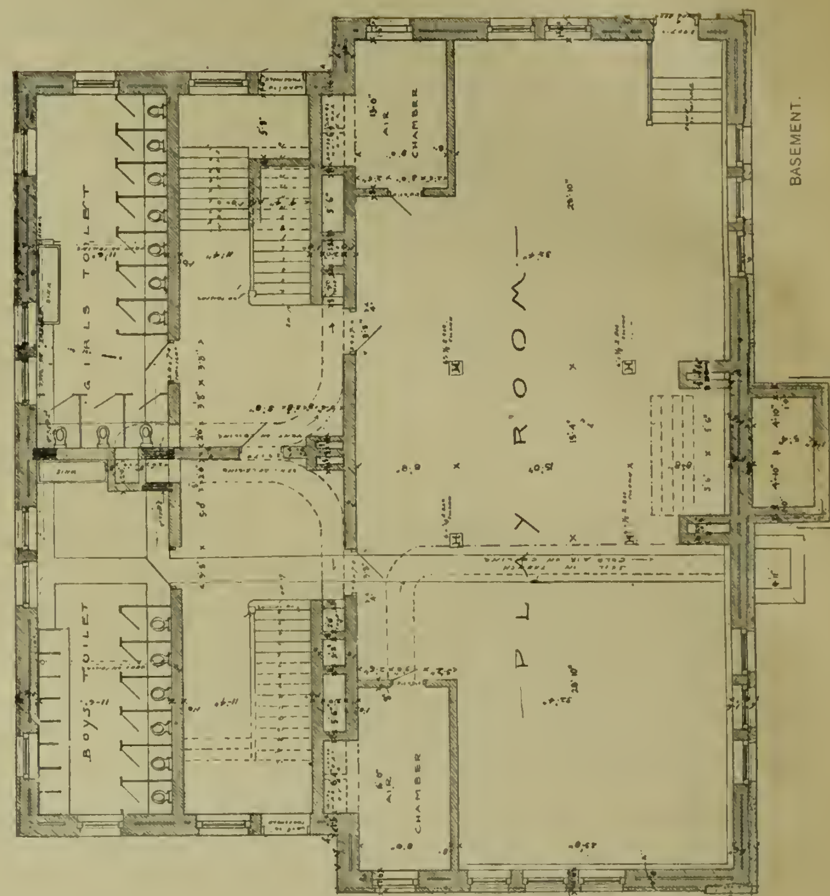
DETAIL, MAIN ENTRANCE, BUILDING A.

BROOKLINE, MASS.

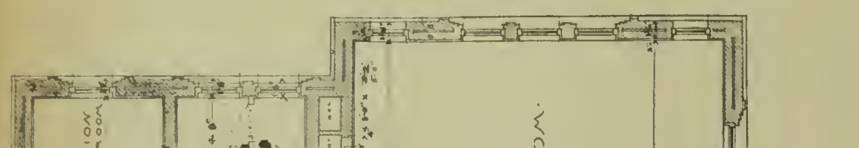
RNS, ARCHITECTS.



SECOND FLOOR.



BASEMENT.



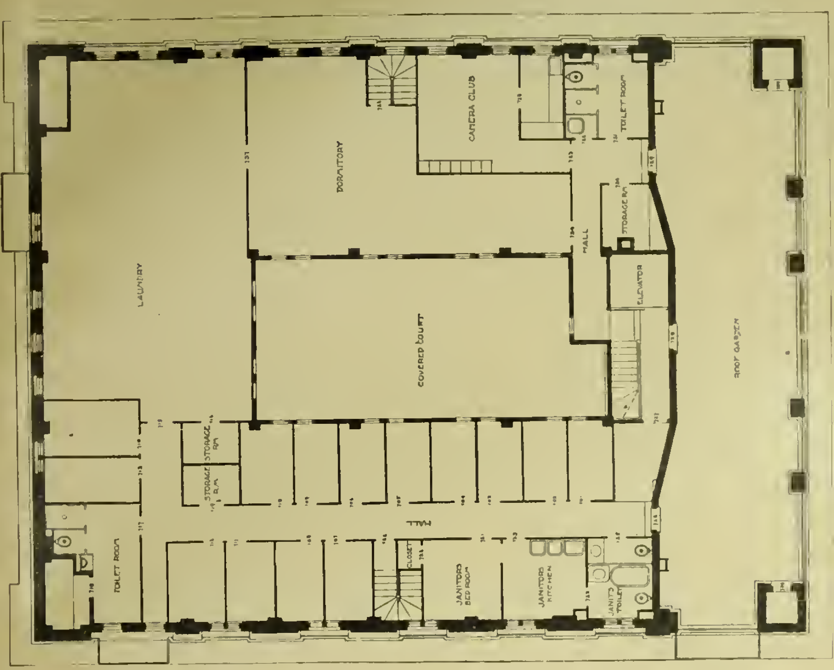
FIRST FLOOR.

GROUND PLAN.

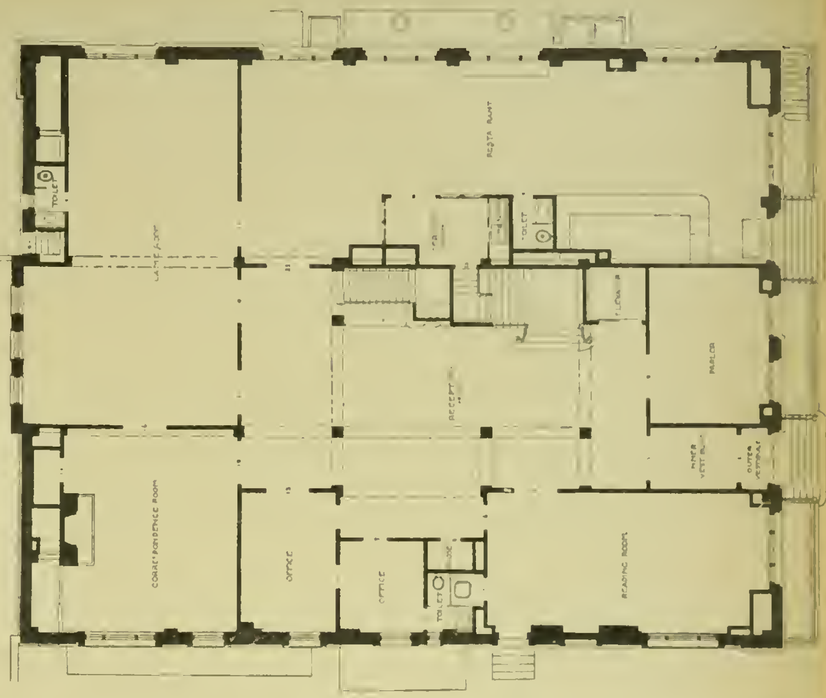
FLOOR PLANS, BUILDING B.

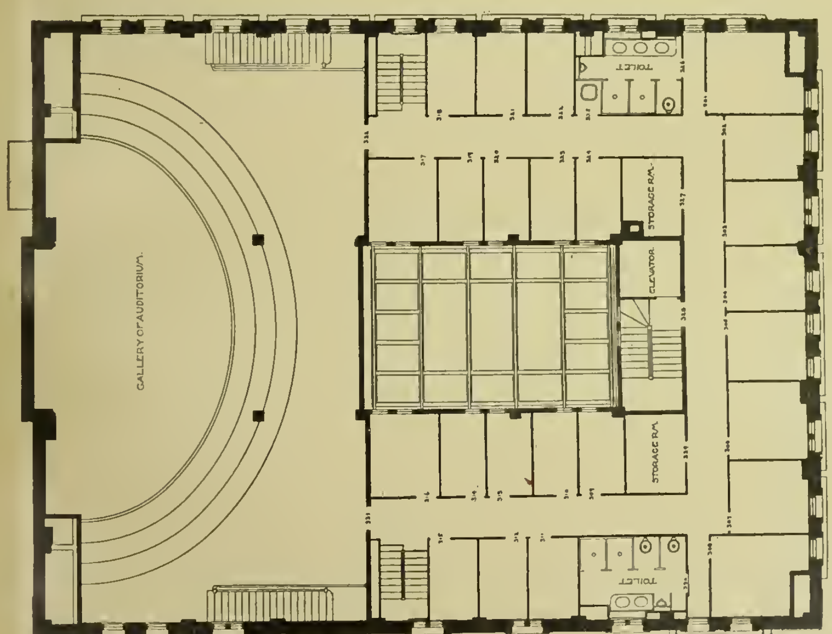
RUNKLE SCHOOL, BROOKLINE, MASS.

PEABODY & STEARNS, ARCHITECTS.

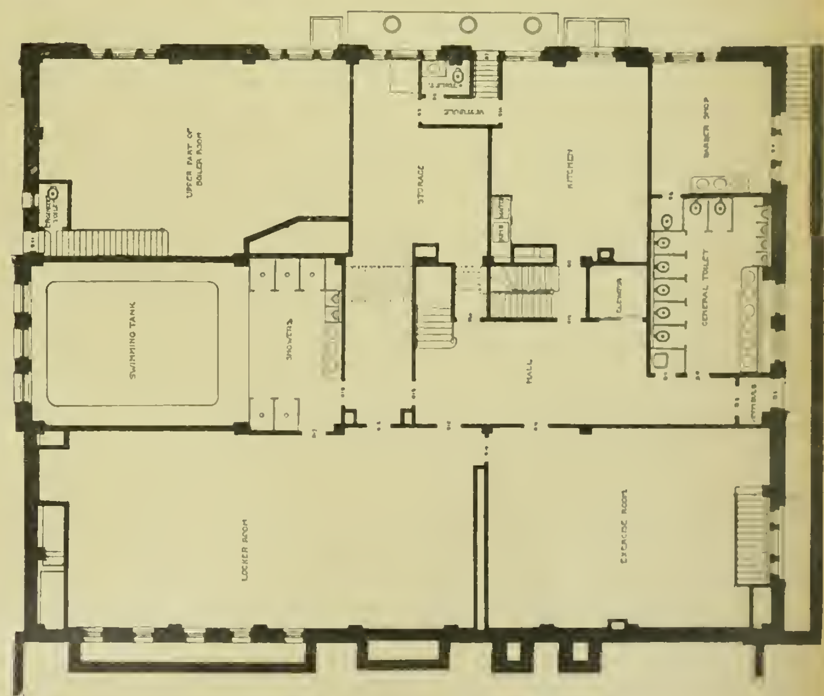


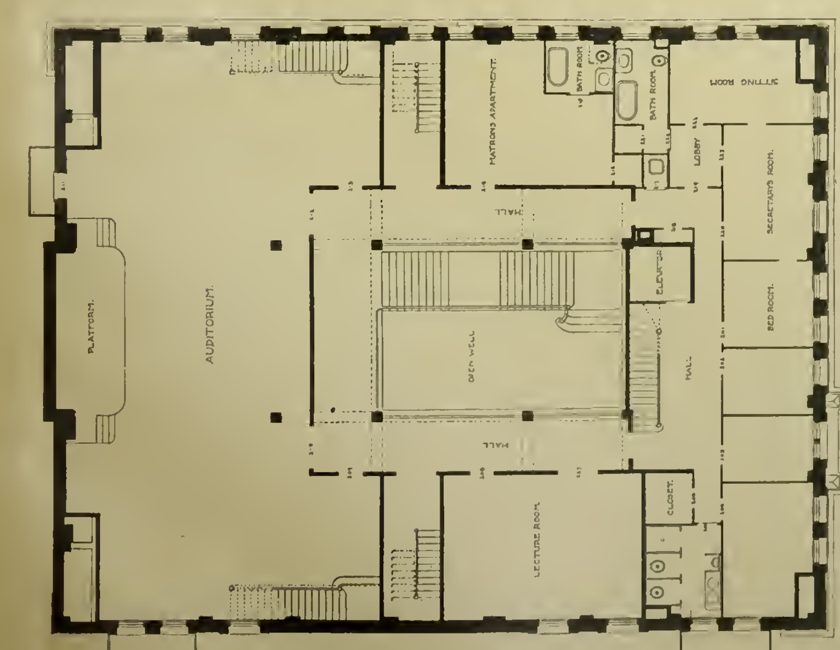
SEVENTH FLOOR.





THIRD FLOOR.



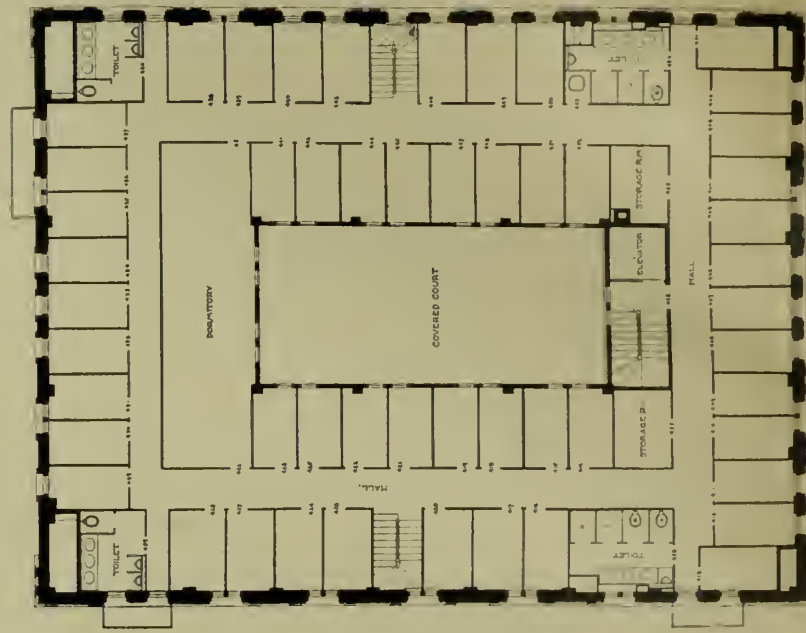


SECOND FLOOR.

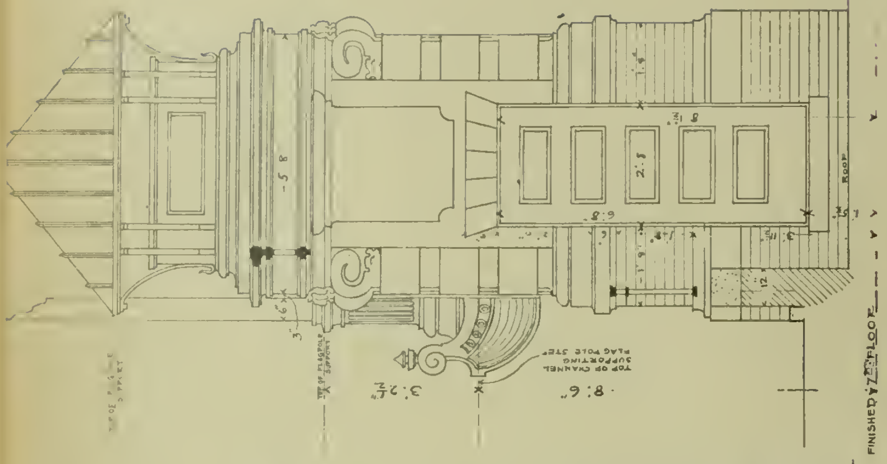
PLANS, NAVAL BRANCH, Y. M. C. A. BUILDING BROOKLYN, N. Y.

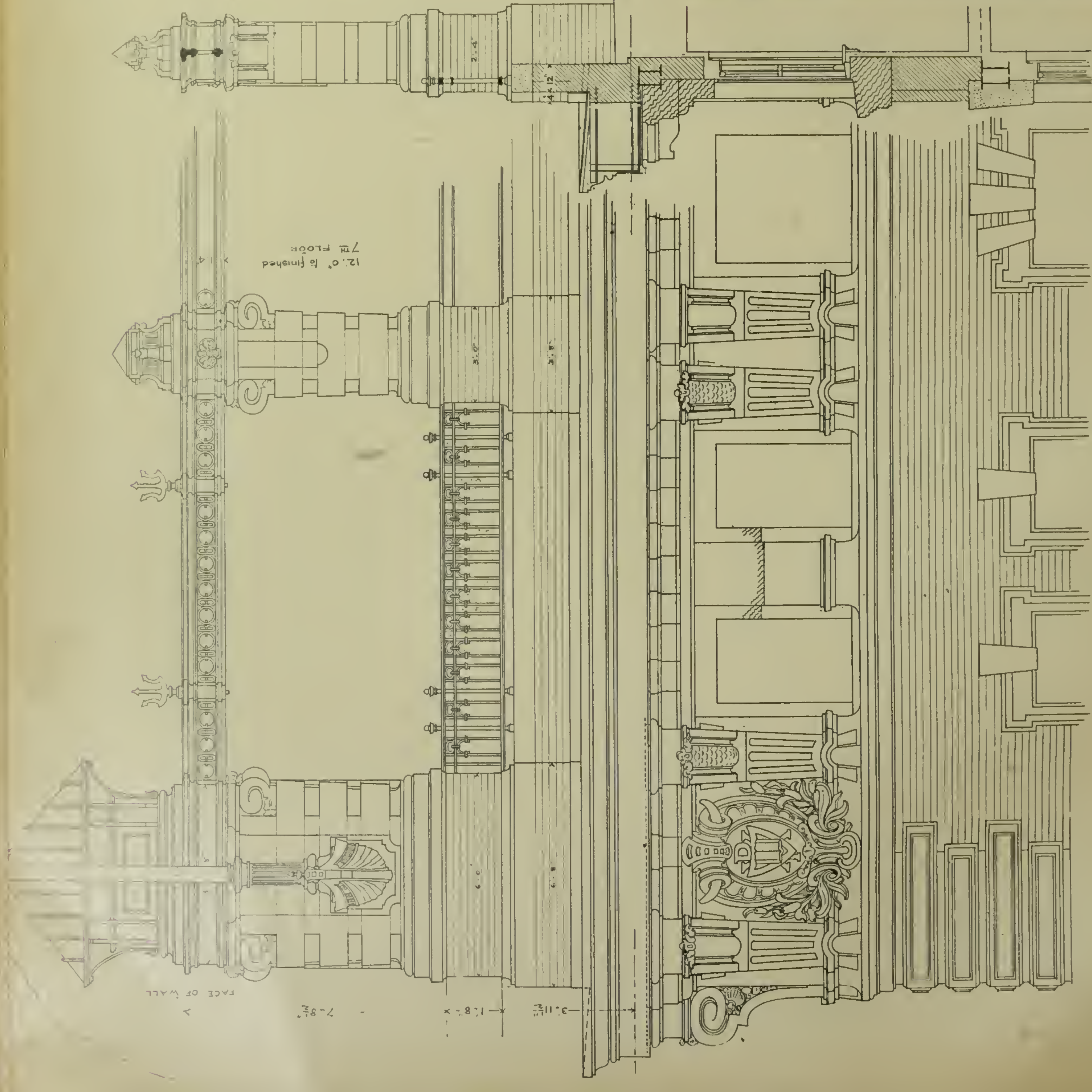
PARISH & SCHROEDER, ARCHITECTS.

VOL. 11. NO. 9.



FOURTH, FIFTH AND SIXTH FLOORS.

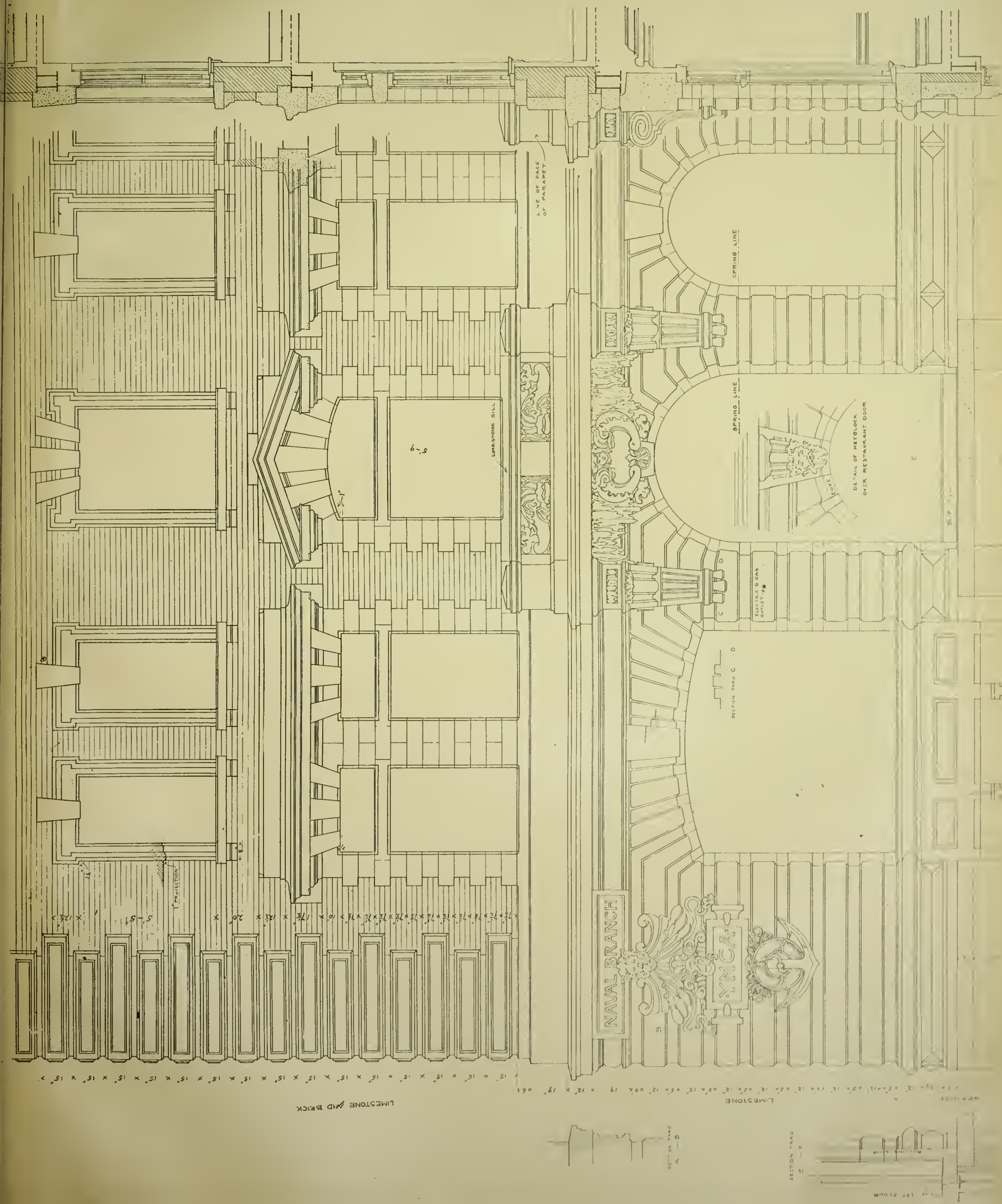




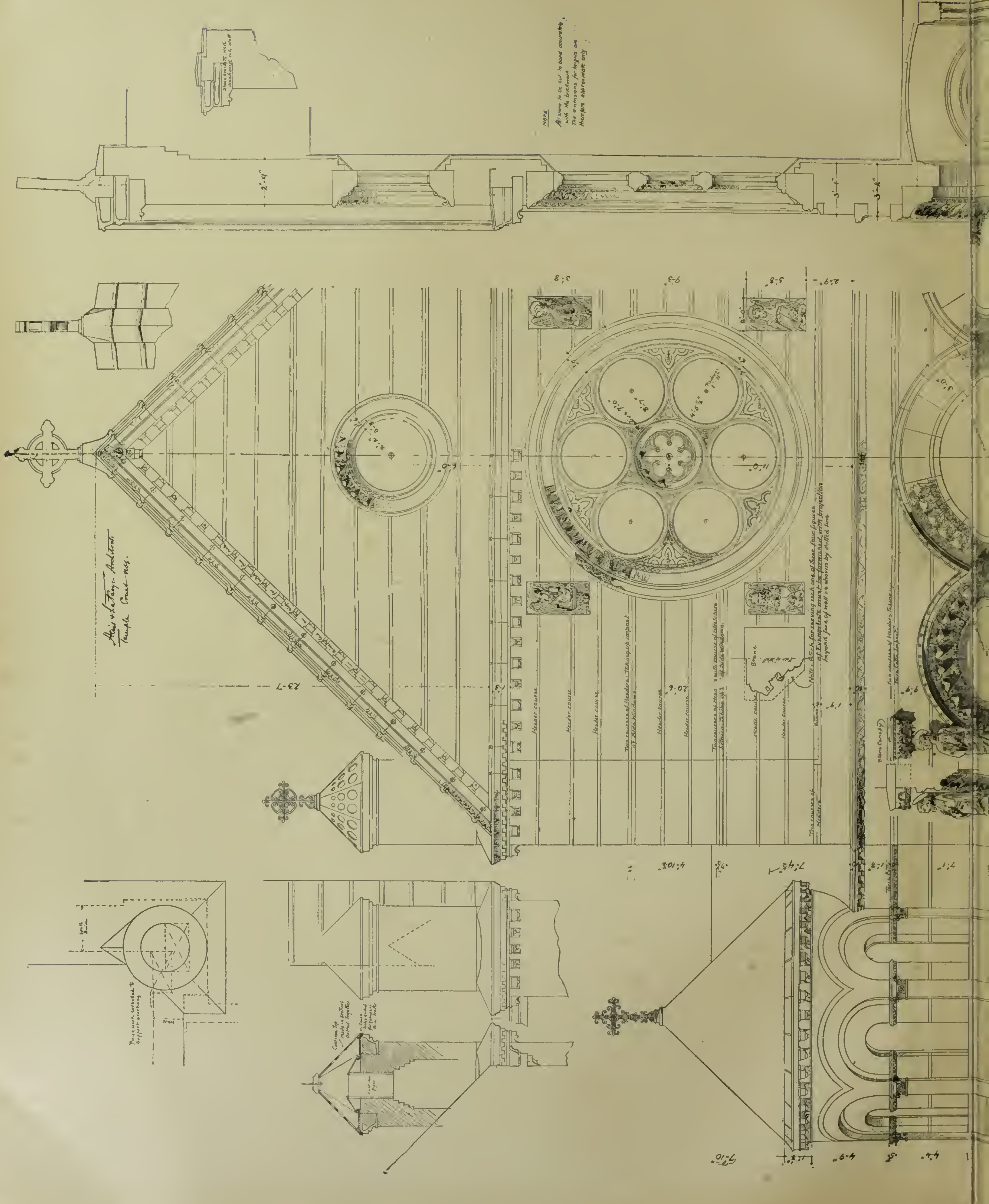
UPPER EXTERIOR, DETAILS.

RIC BUILDER.

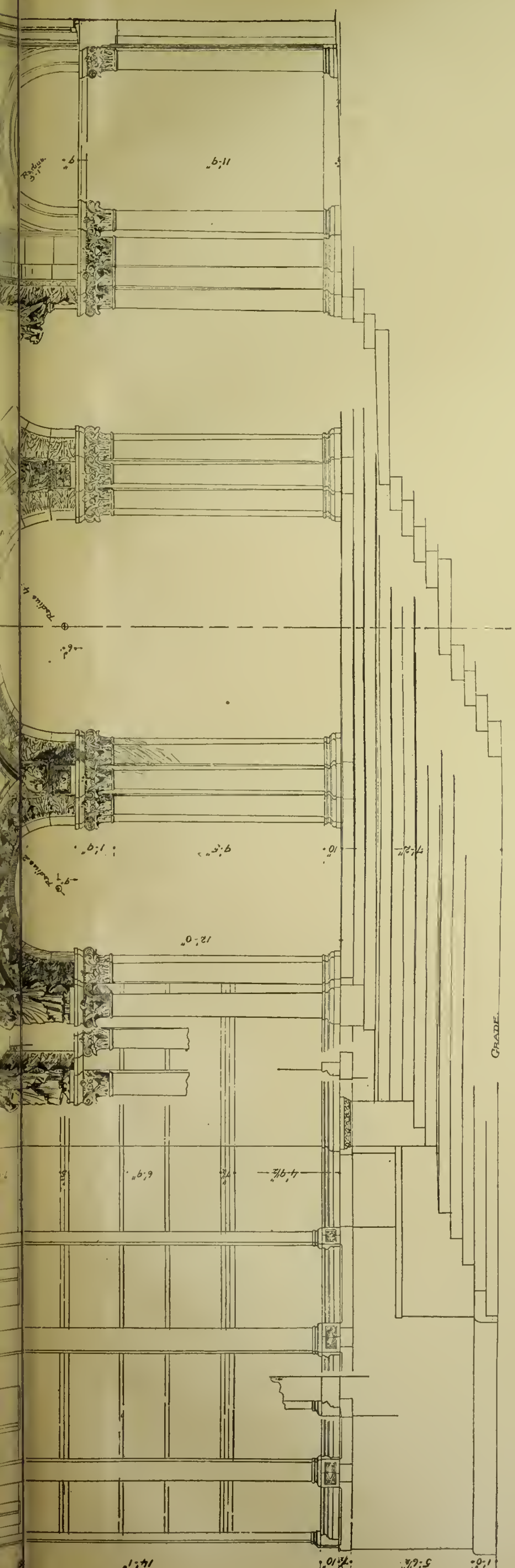
PLATES 65 and 72.



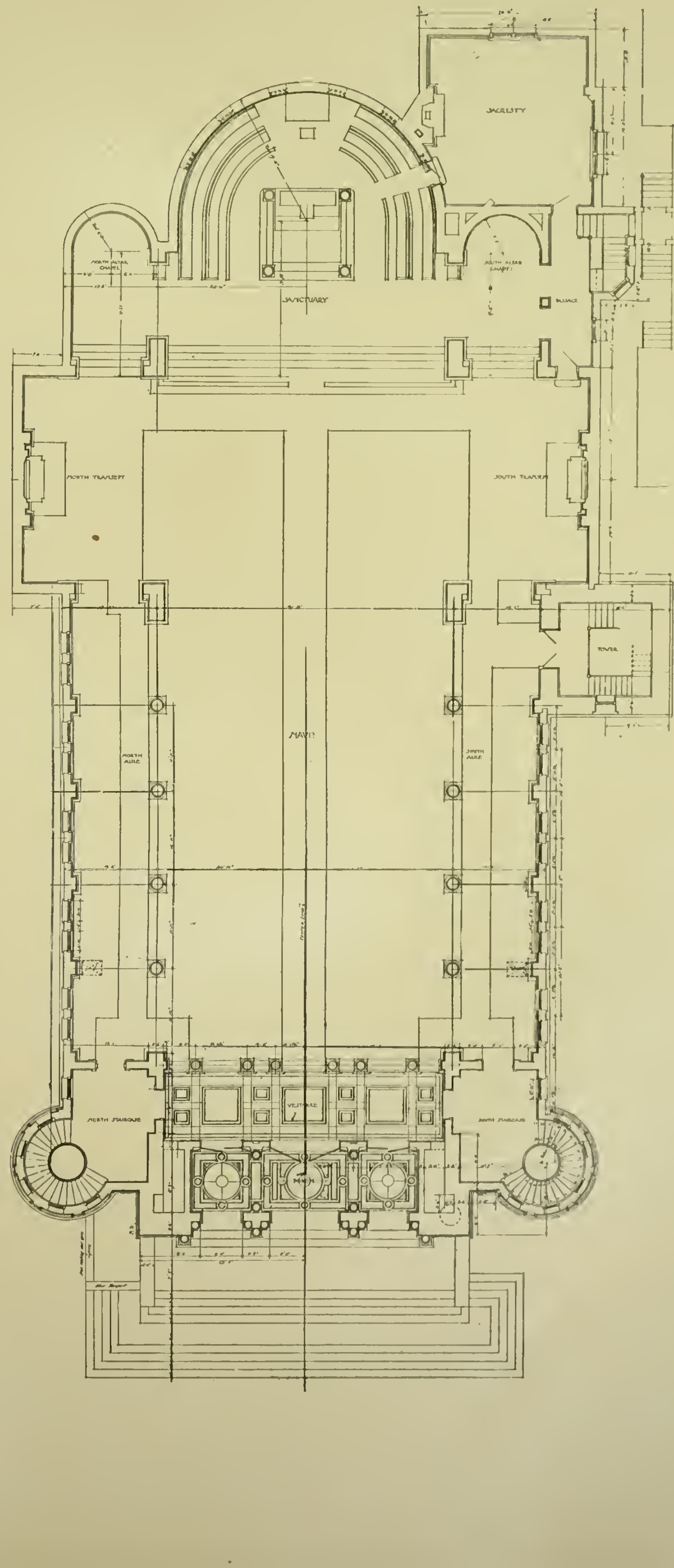
VOL. 11. NO. 10.



PLATES 76 and 77.



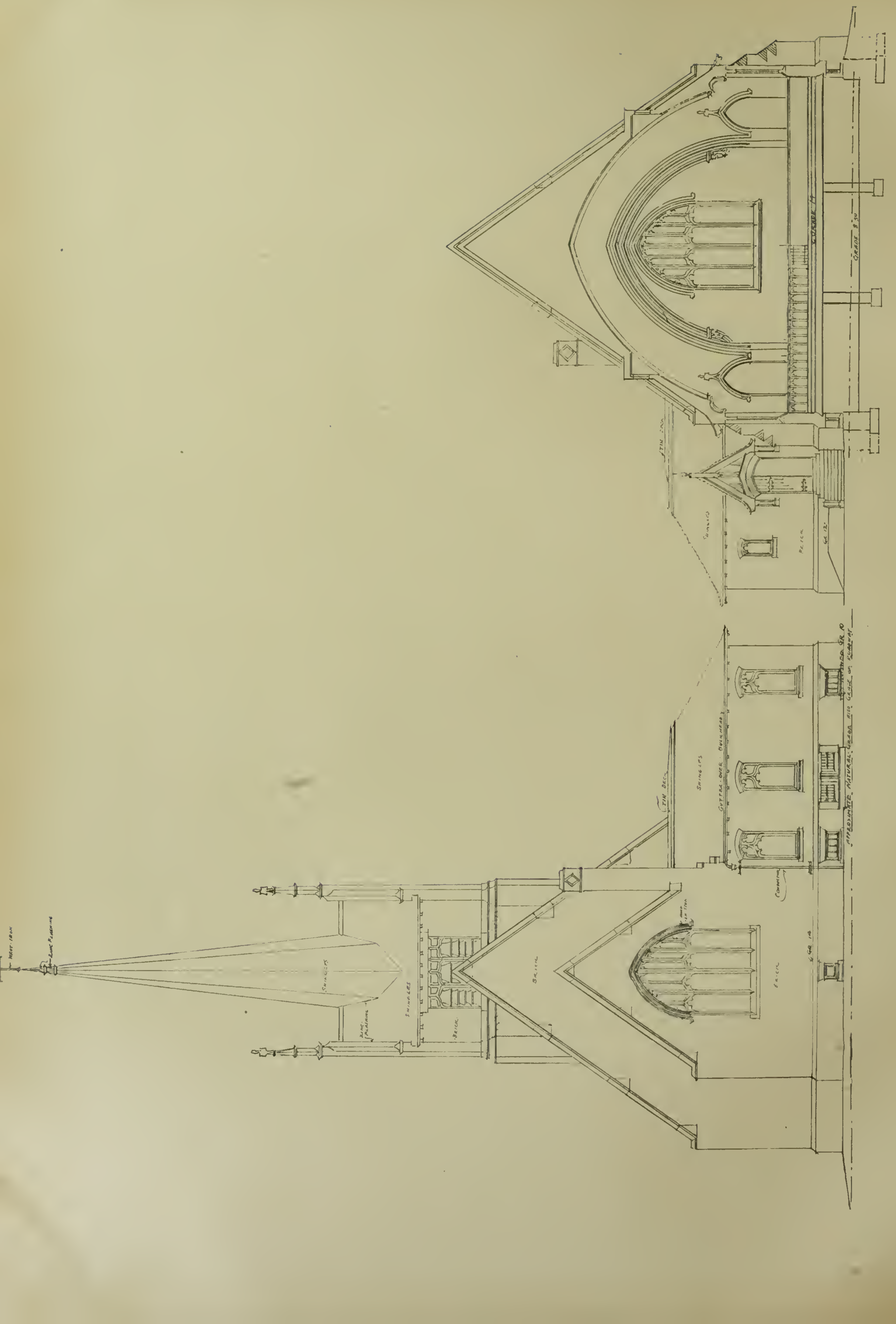
DETAILS OF FRONT ELEVATION.



PLAN.

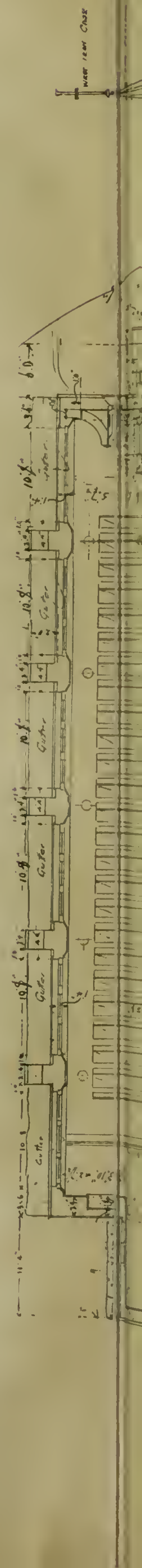
CHURCH OF THE BLESSED SACRAMENT, PROVIDENCE, R. I

HEINS & LA FARGE, ARCHITECTS.

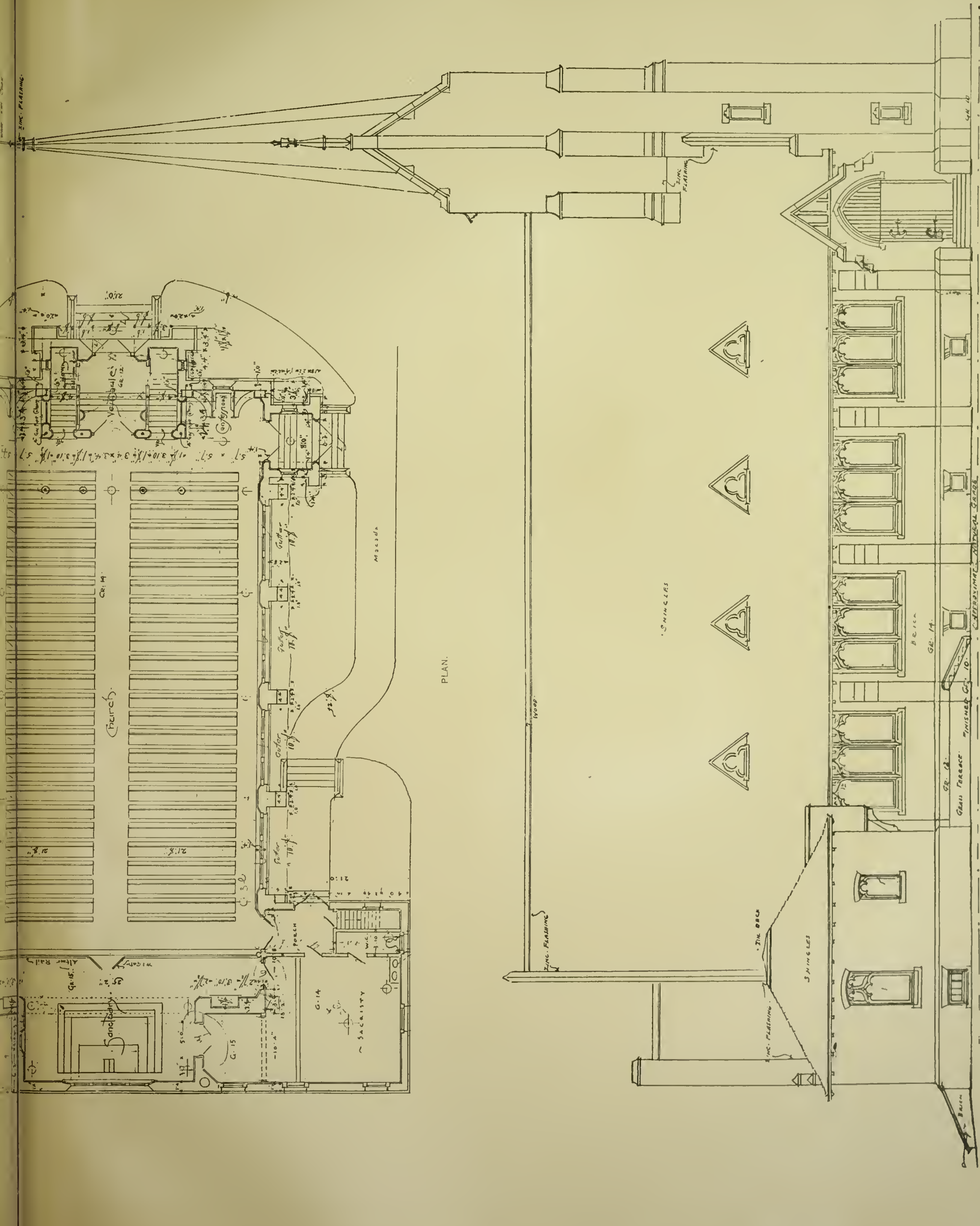


SECTION.

S. W. ELEVATION.



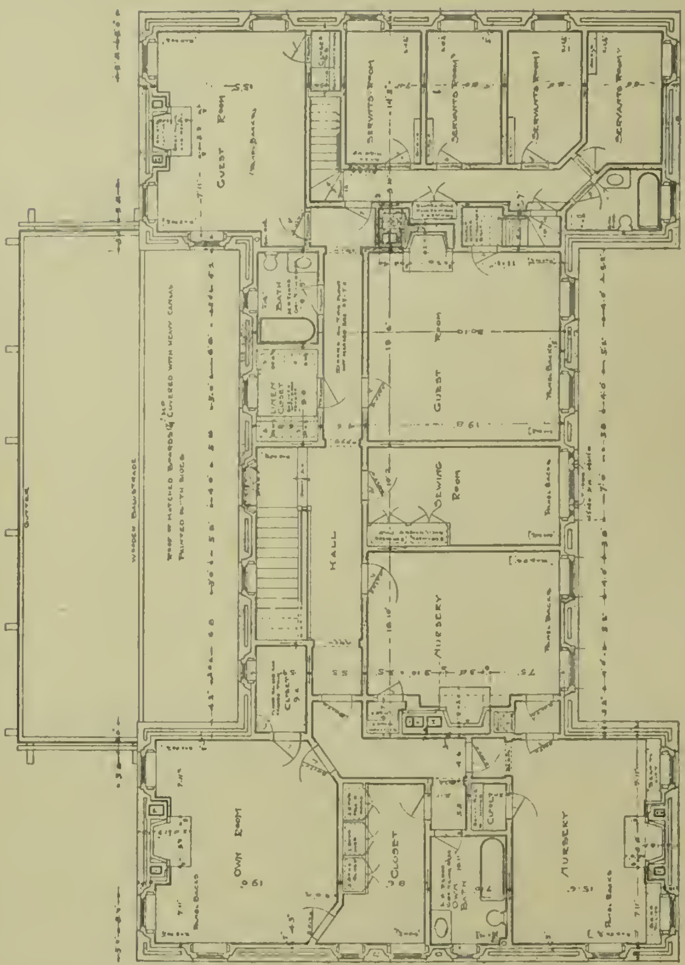
PLATES 75 and 78.



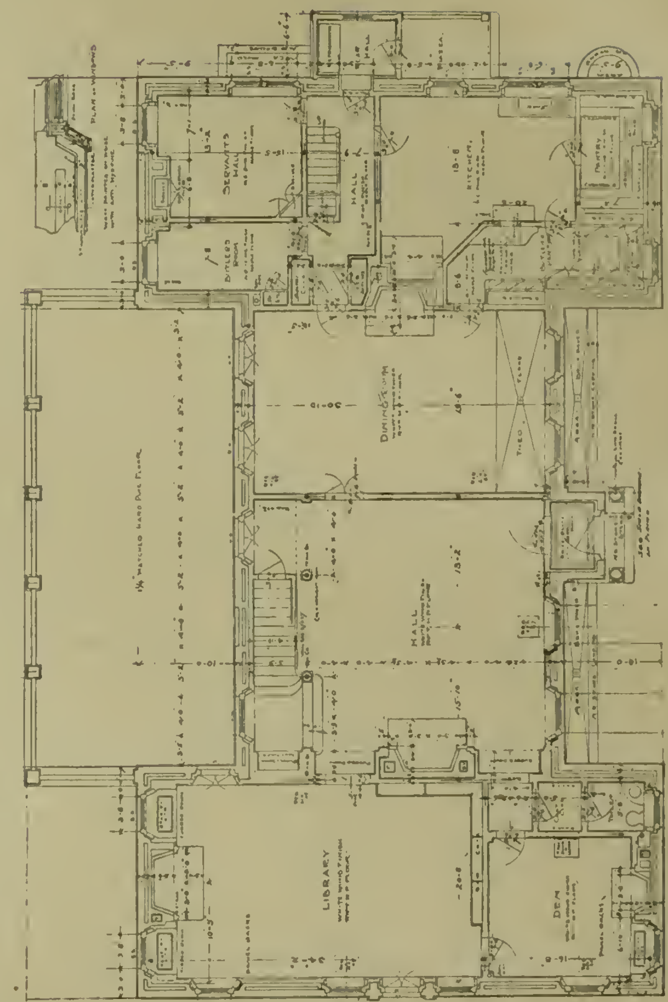
S. E. ELEVATION.

CHURCH AT NORTHAMPTON, MASS.

MAGINNIS, WALSH & SULLIVAN, ARCHITECTS.



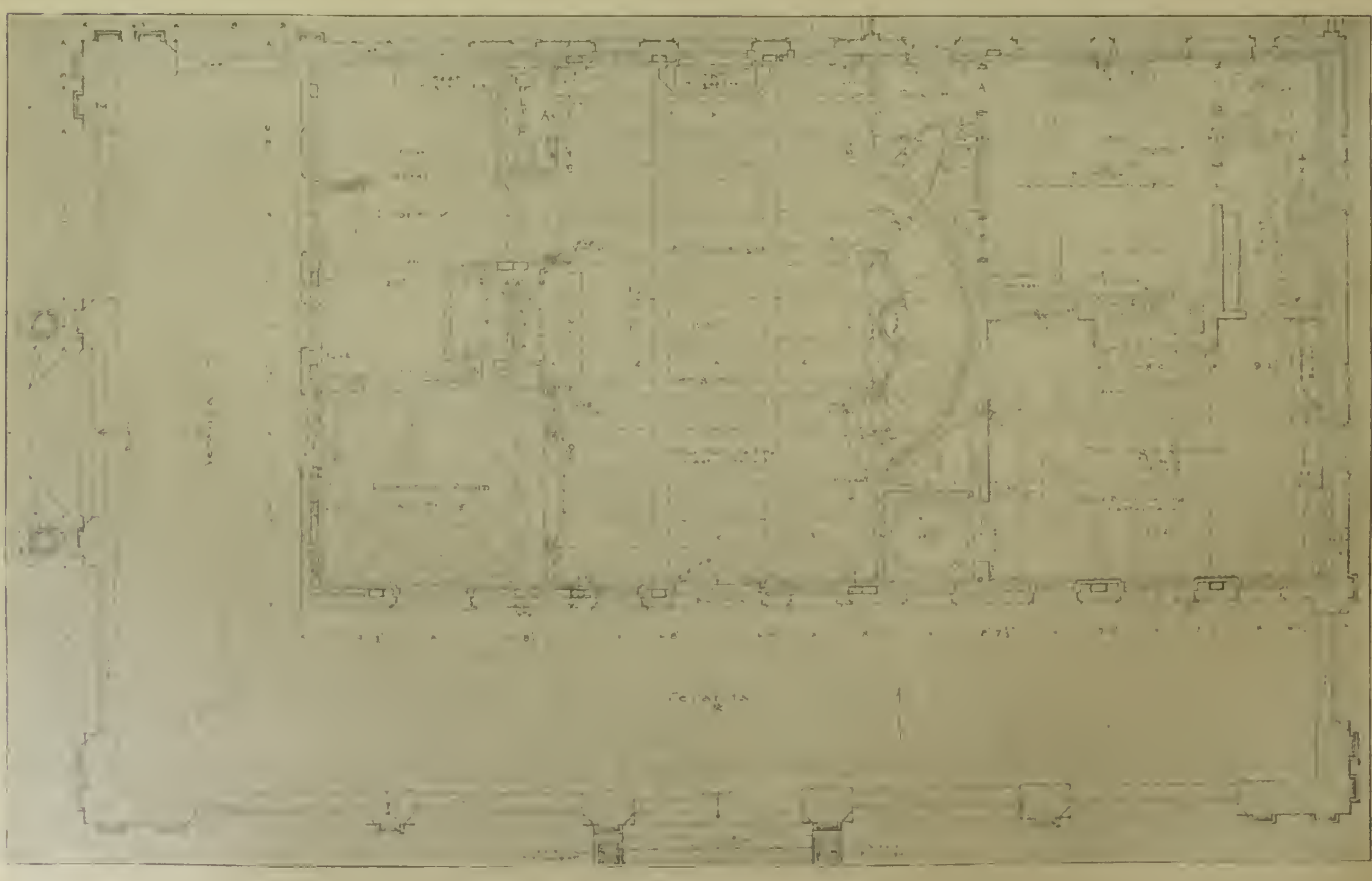
SECOND FLOOR PLAN.



FIRST FLOOR PLAN.

HOUSE AT MIDDLETOWN, R. I.

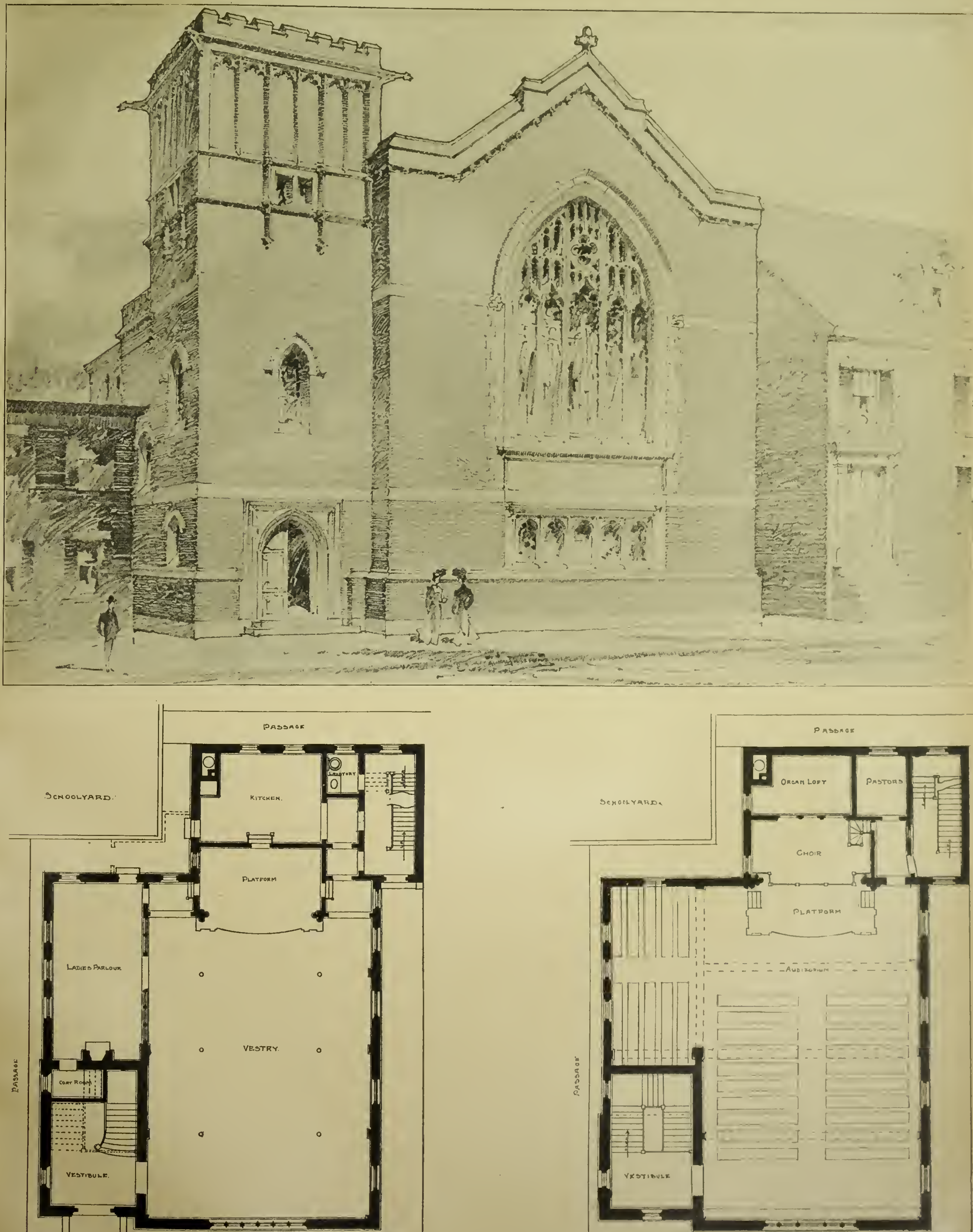
WINSLOW & BIGELOW, ARCHITECTS



FIRST FLOOR PLAN.

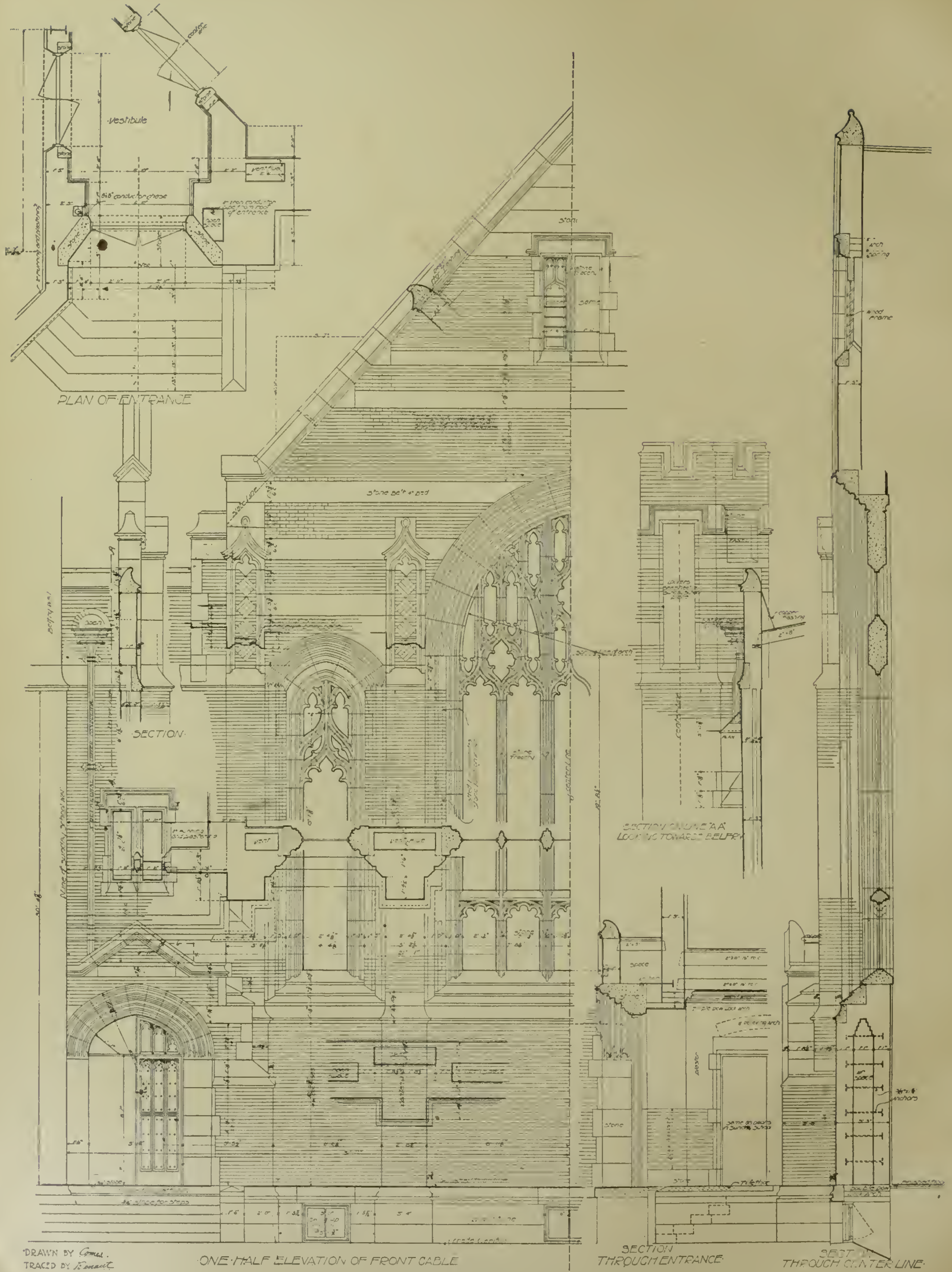
HOUSE AT ALLENHURST, N. J.

GEORGE K. THOMPSON, ARCHITECT.



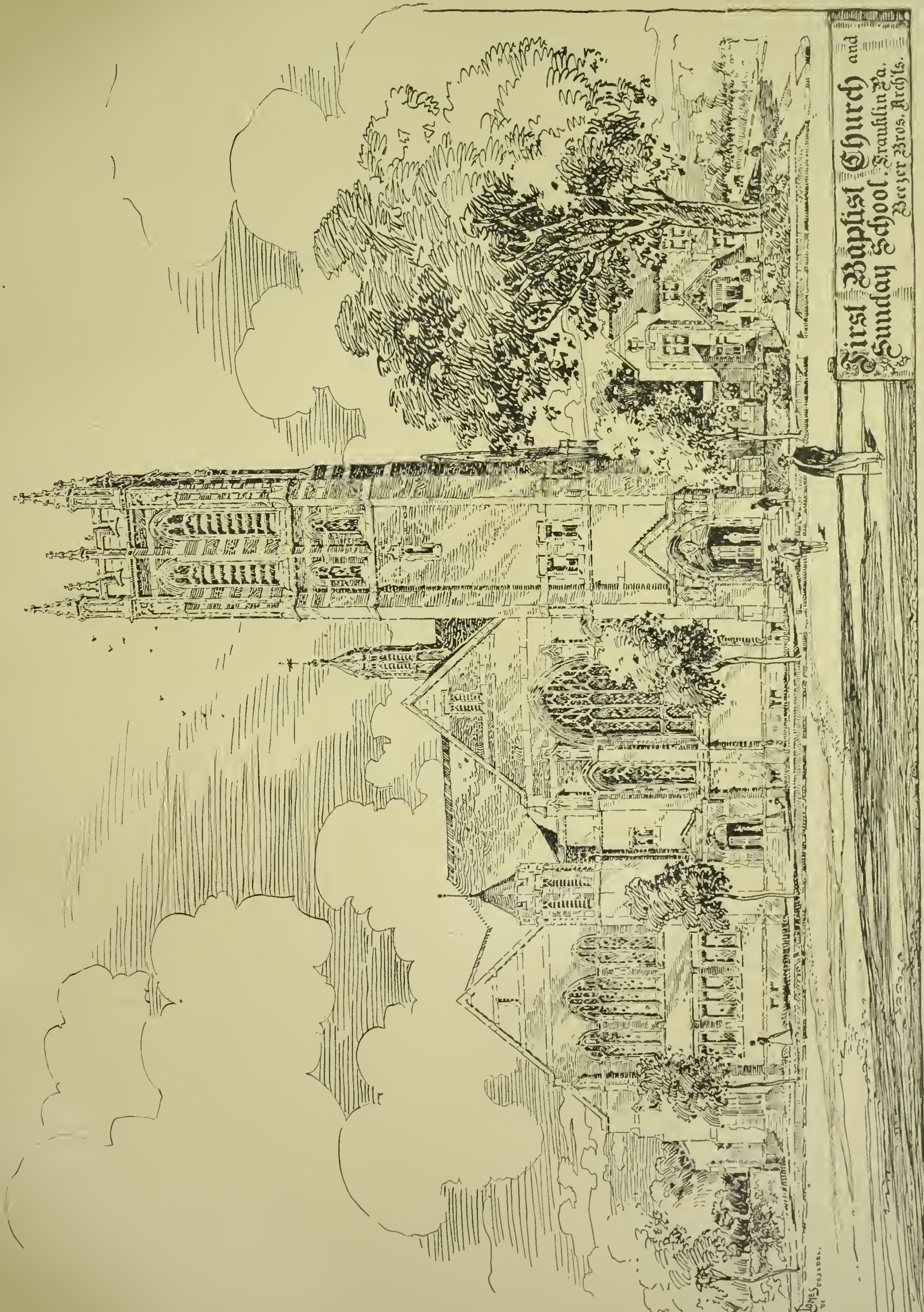
CHURCH FOR FIRST UNITARIAN SOCIETY, EAST BOSTON, MASS

WALTER ATHERTON, ARCHITECT



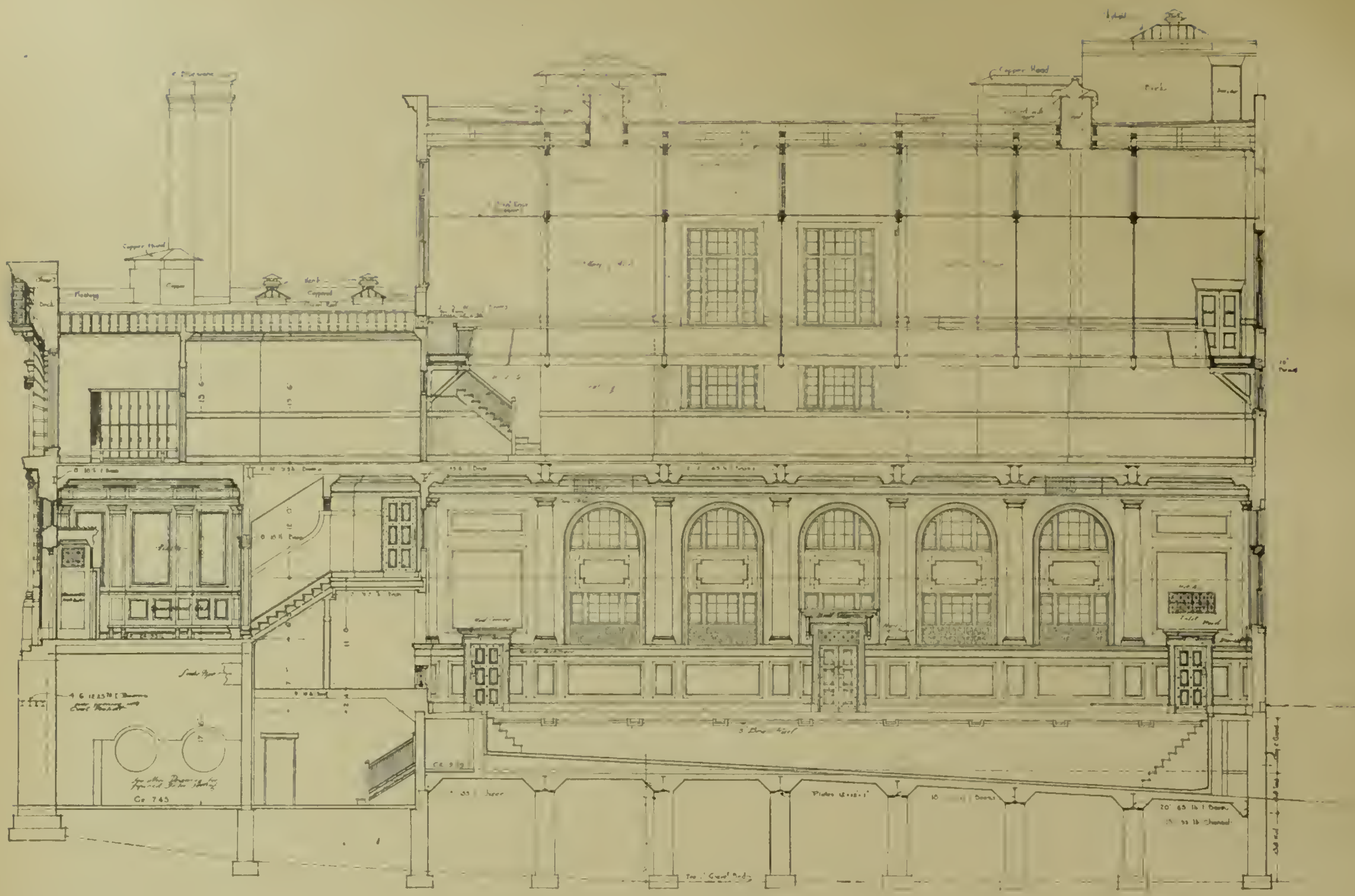
FIRST BAPTIST CHURCH, FRANKLIN, PA.

BEEZER BROTHERS, ARCHITECTS.

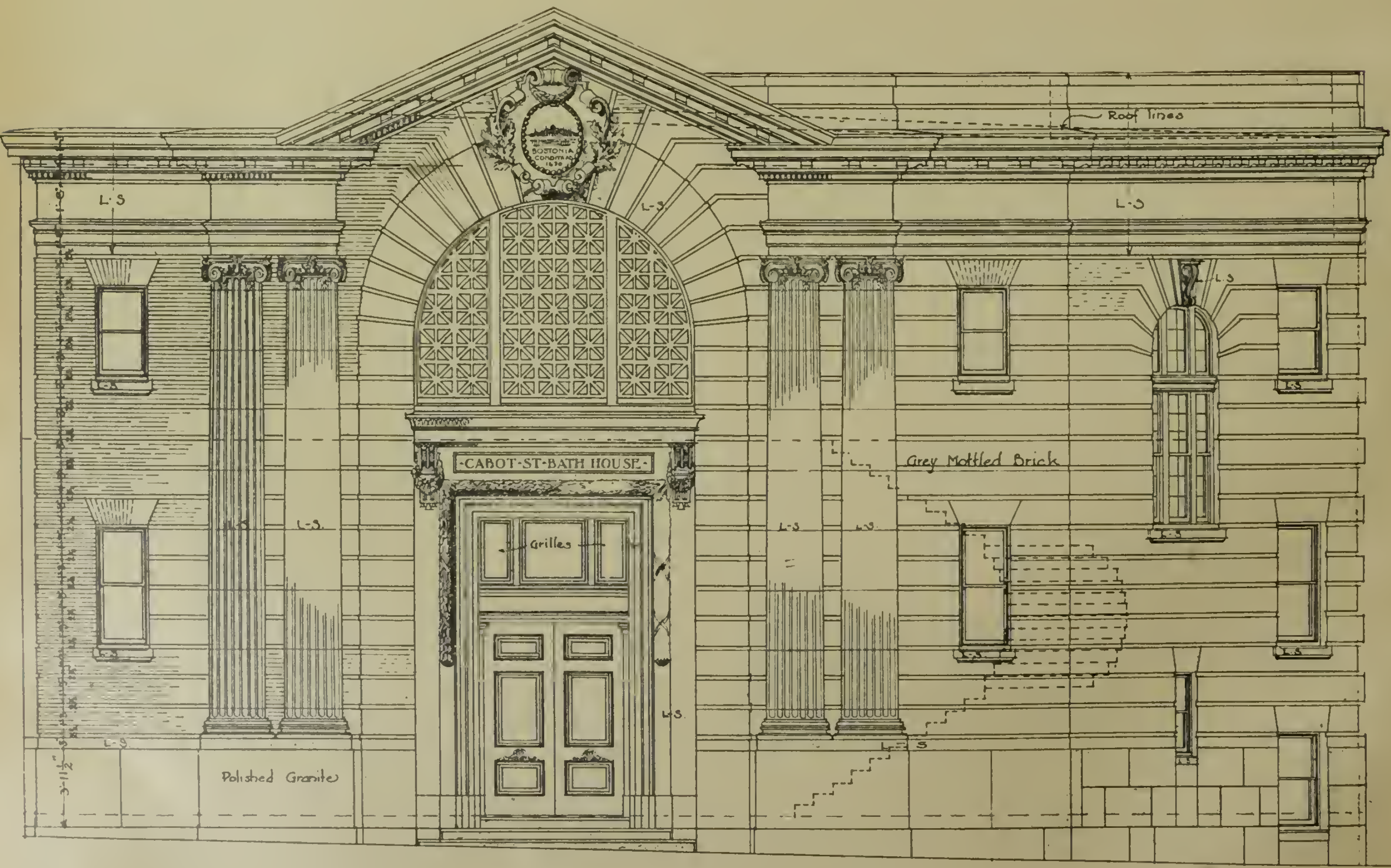


FIRST BAPTIST CHURCH, FRANKLIN, PA.

BEEZER BROTHERS, ARCHITECTS.



LONGITUDINAL SECTION.

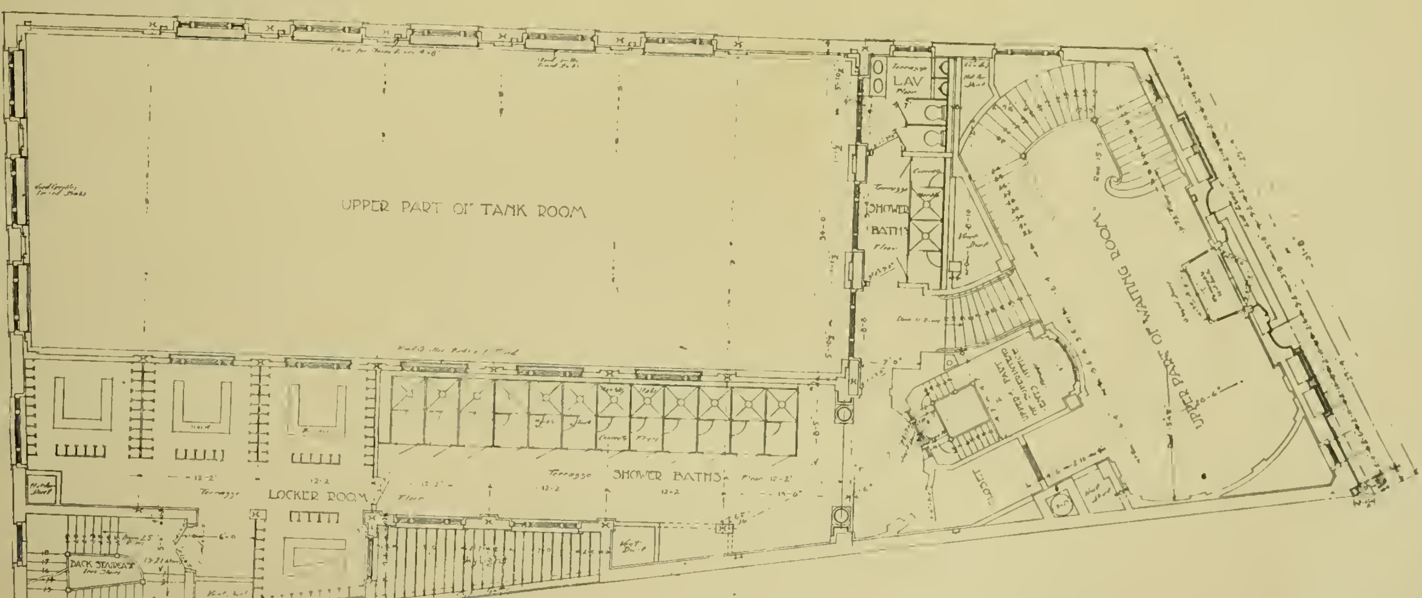


FRONT ELEVATION.

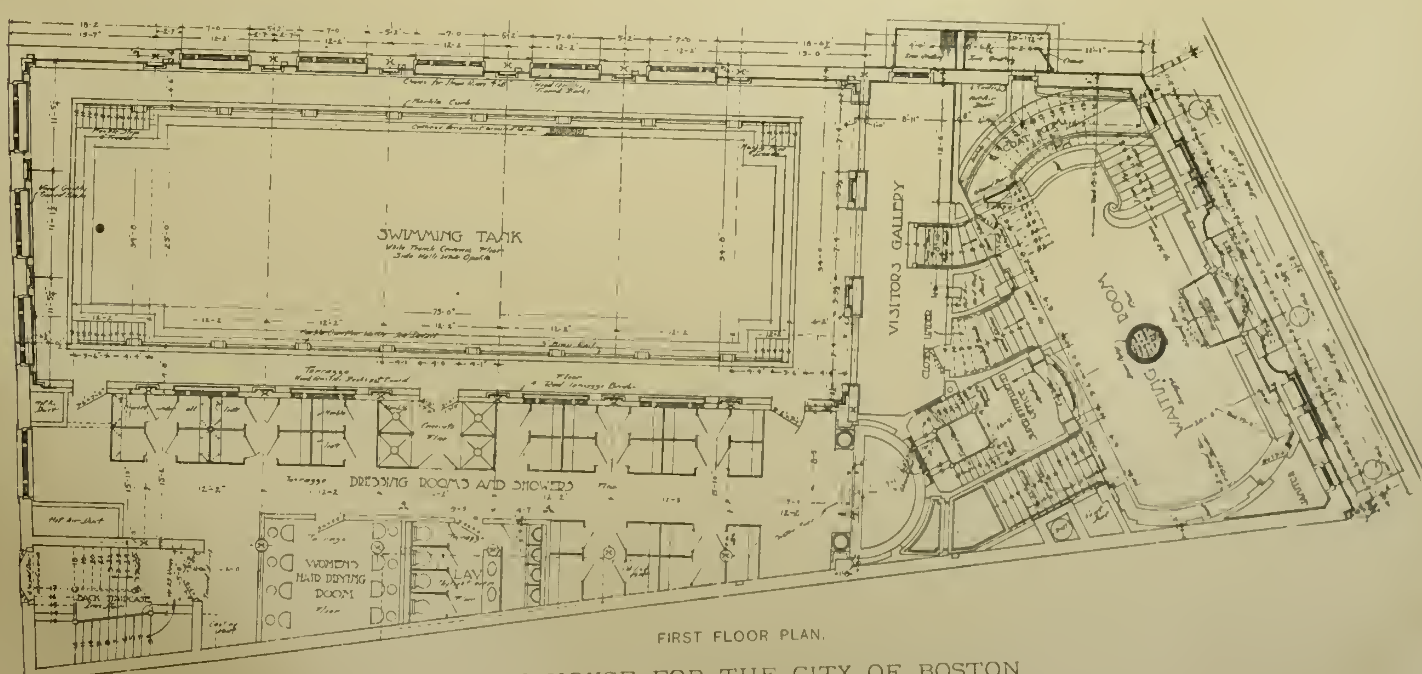
BATH HOUSE FOR THE CITY OF BOSTON.

HERBERT D. HALE, ARCHITECT.

GYMNASIUM FLOOR PLAN.



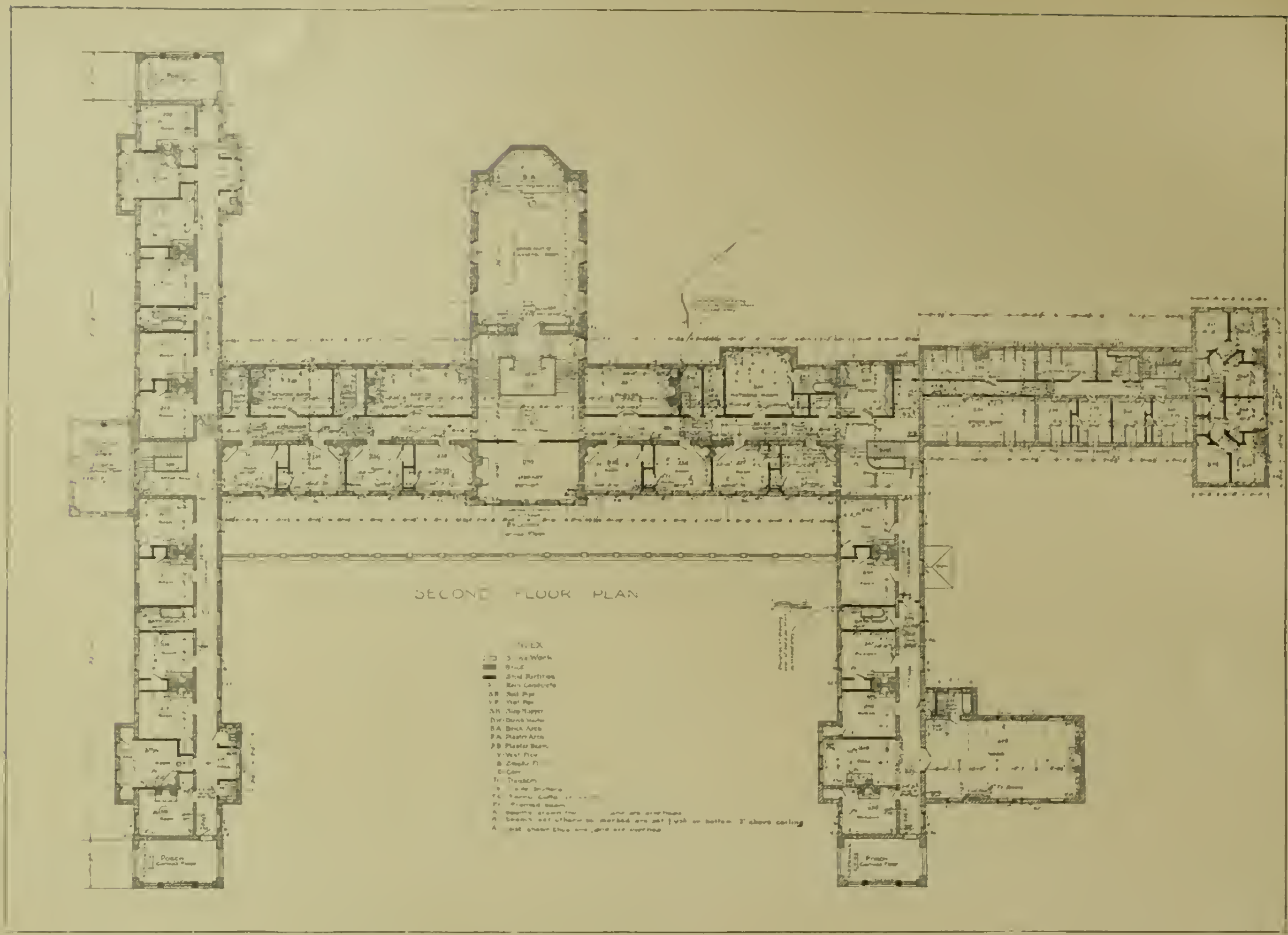
MEZZANINE FLOOR PLAN.

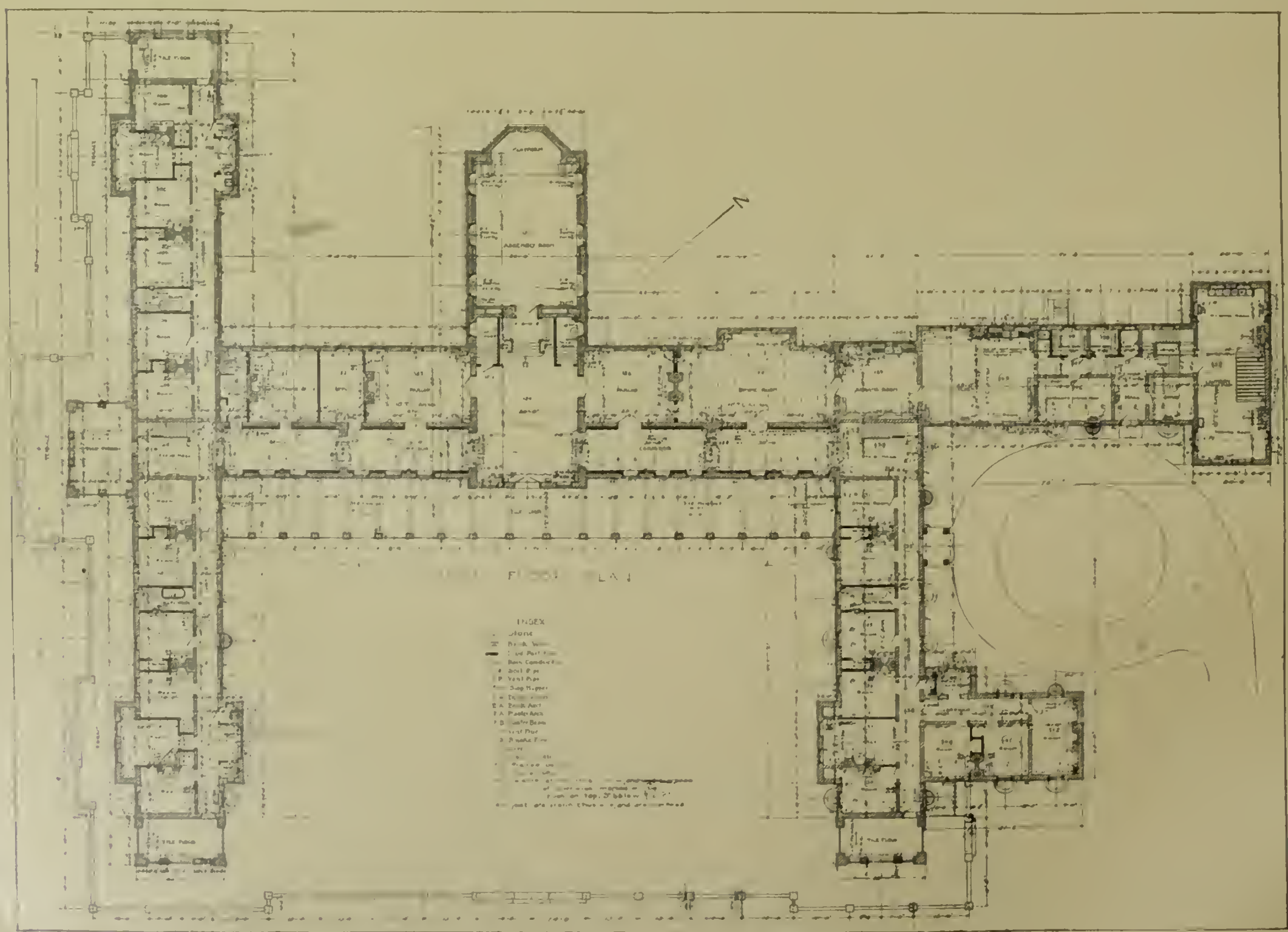


FIRST FLOOR PLAN.

BATH HOUSE FOR THE CITY OF BOSTON

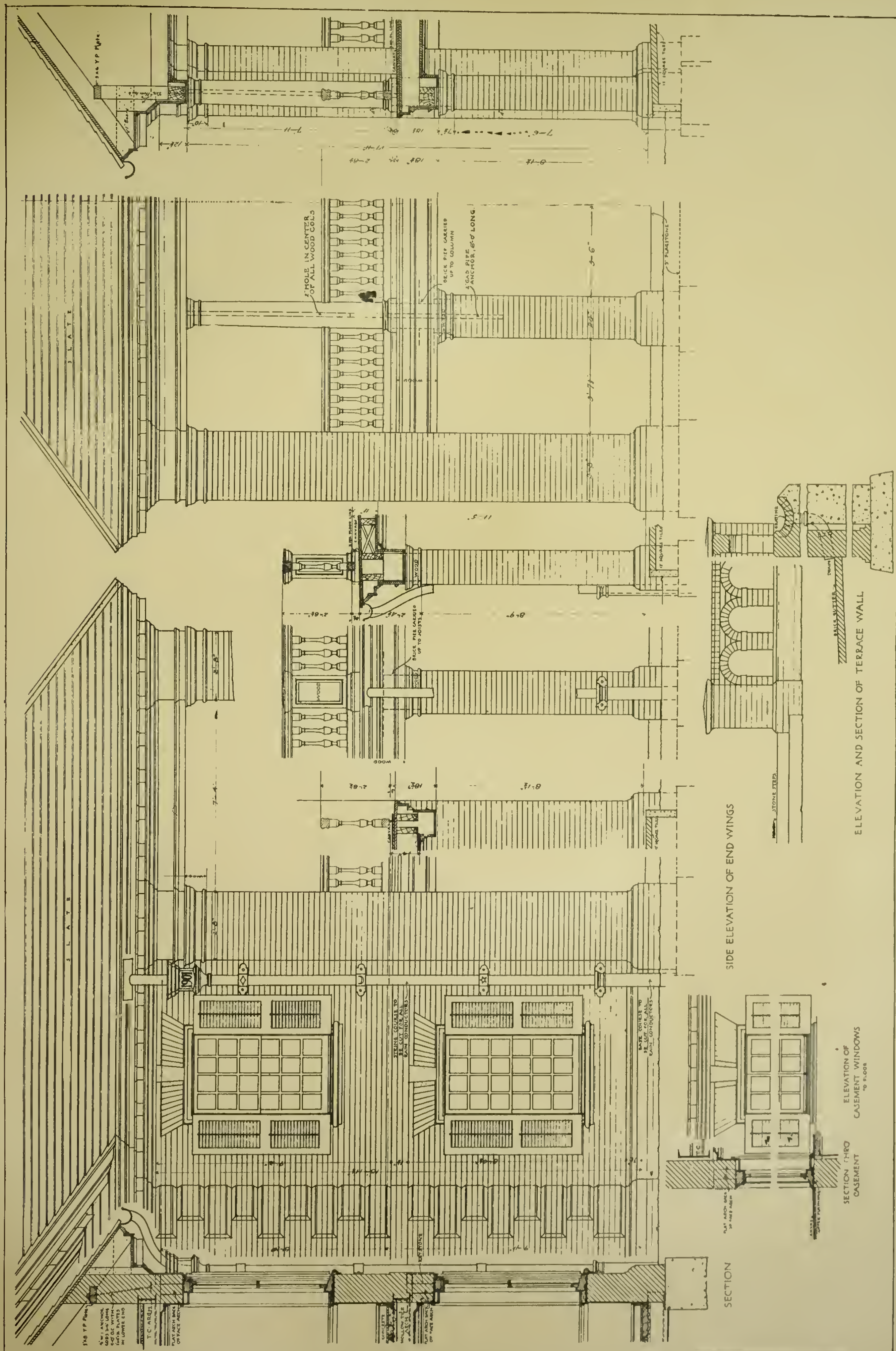
HERBERT D HALE, ARCHITECT.





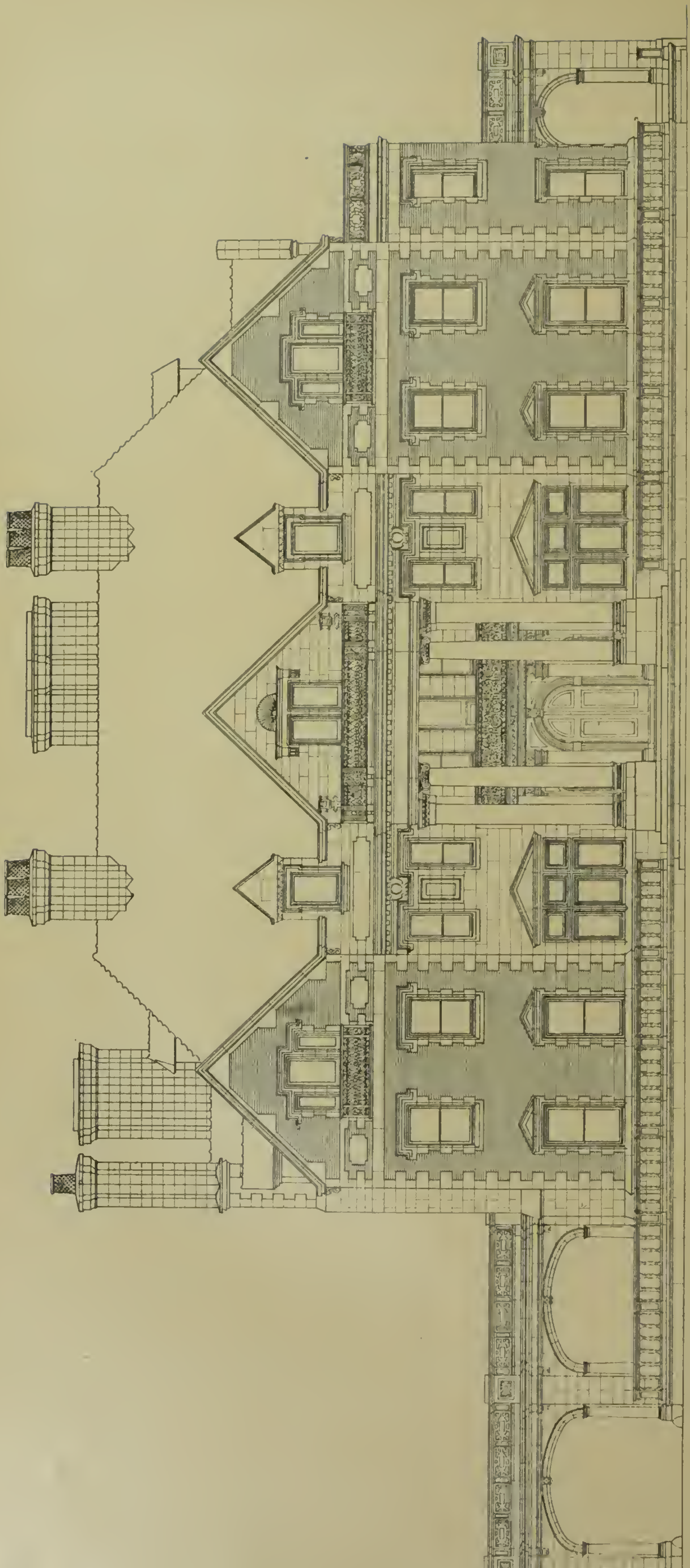
PLANS THE LEAMY HOME. MT. AIRY, PHILADELPHIA, PA

COPE & STEWARDSON ARCHITECTS



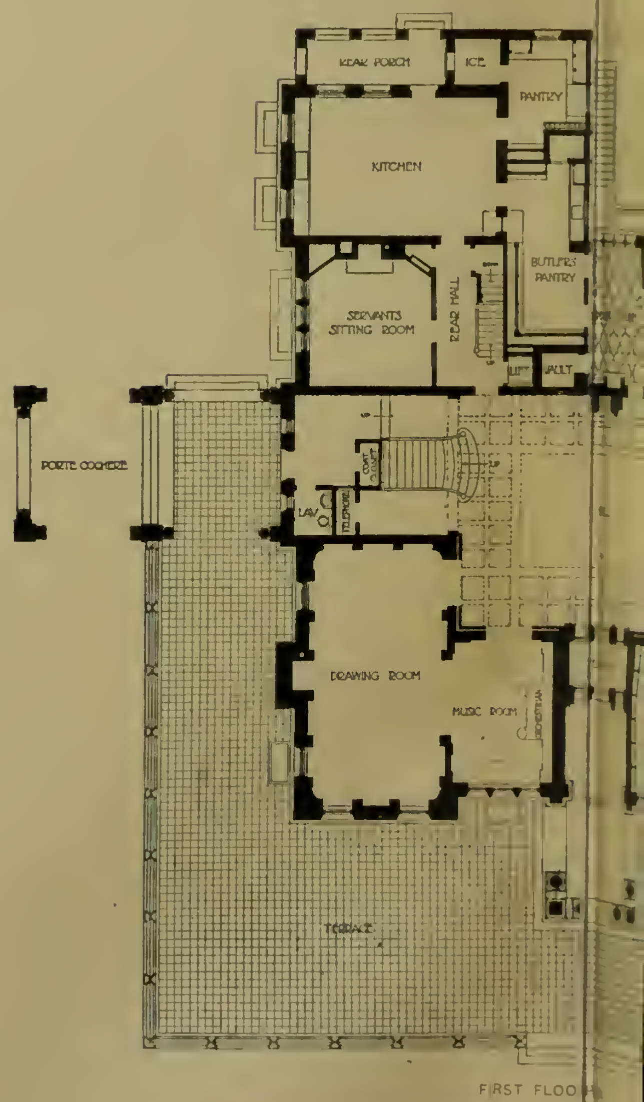
DETAILS, THE LEAMY HOME, MT AIRY, PHILADELPHIA, PA

Cope & Stewardson, Architects.



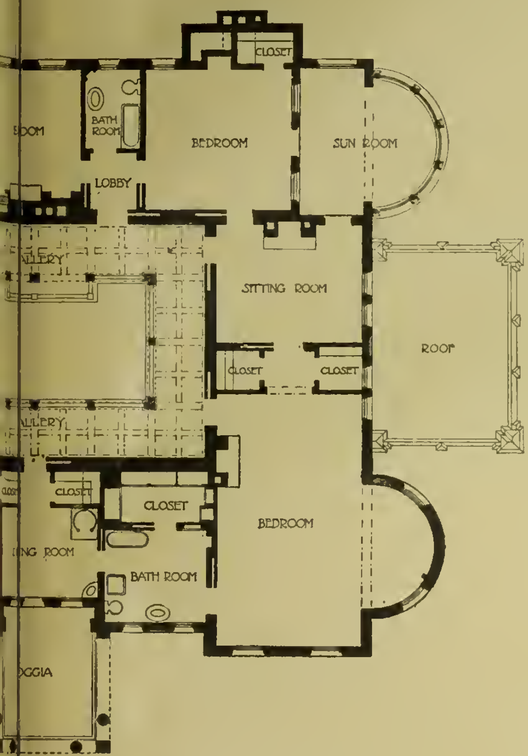
FRONT ELEVATION

SECOND FLOOR

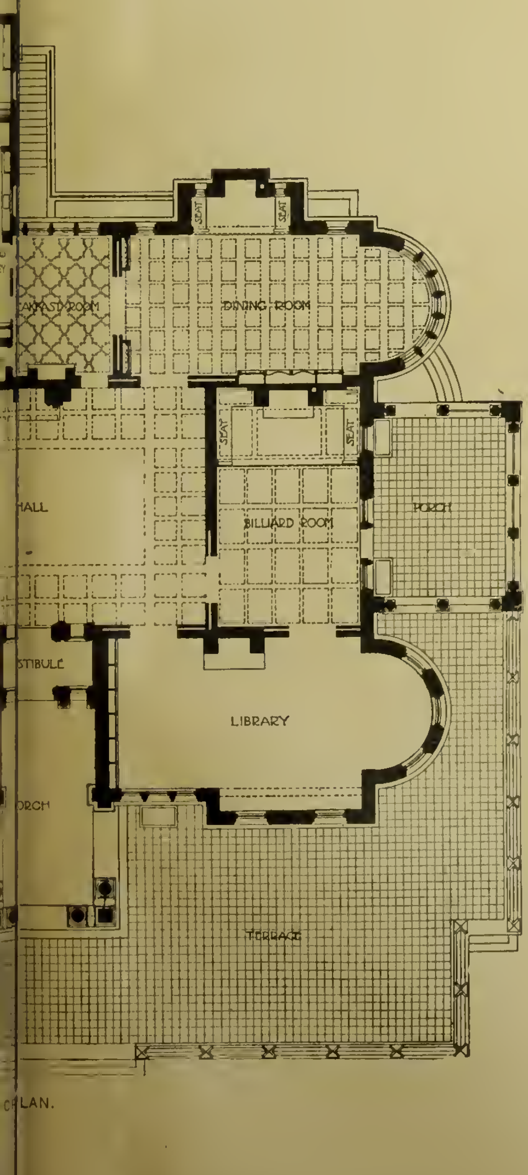


FIRST FLOOR

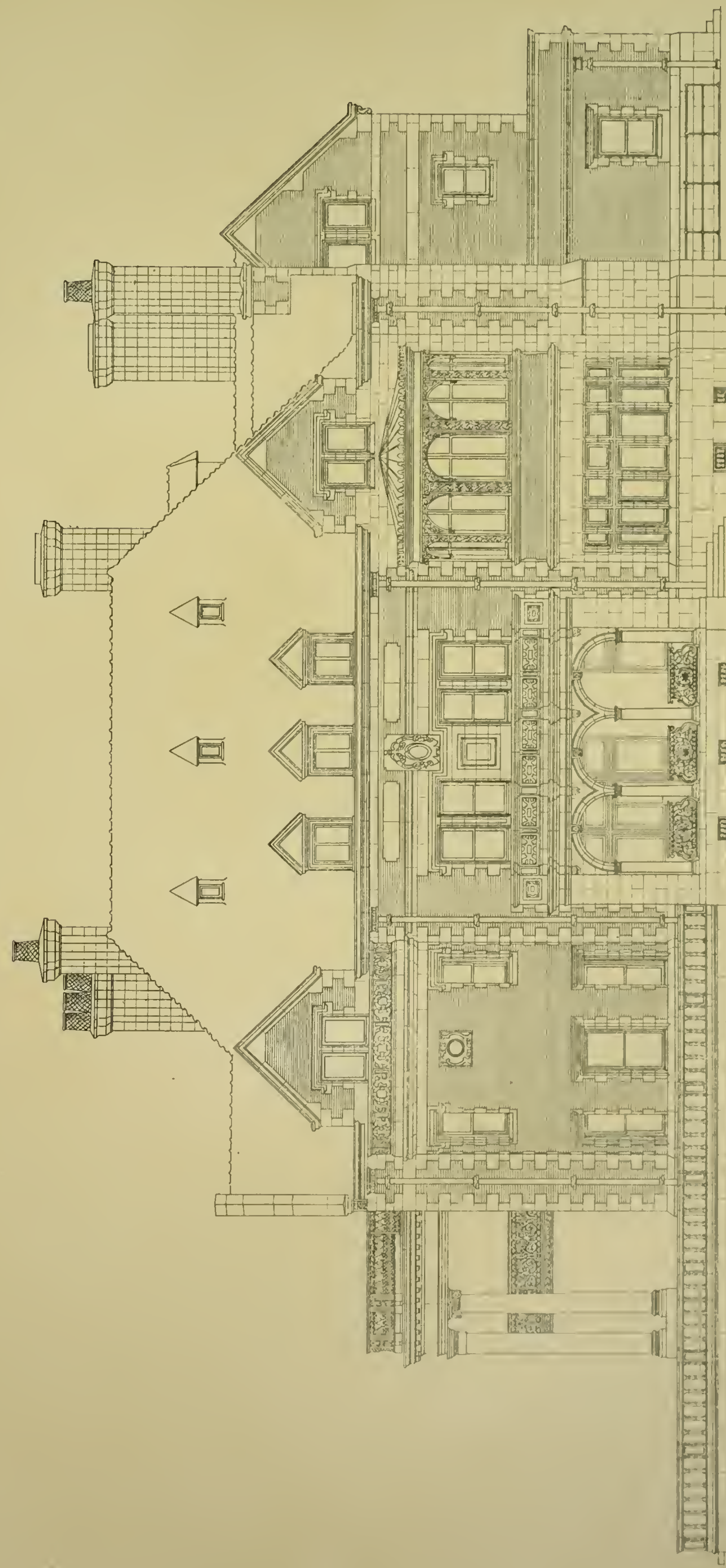
PLATES 82 and 87.



AN.



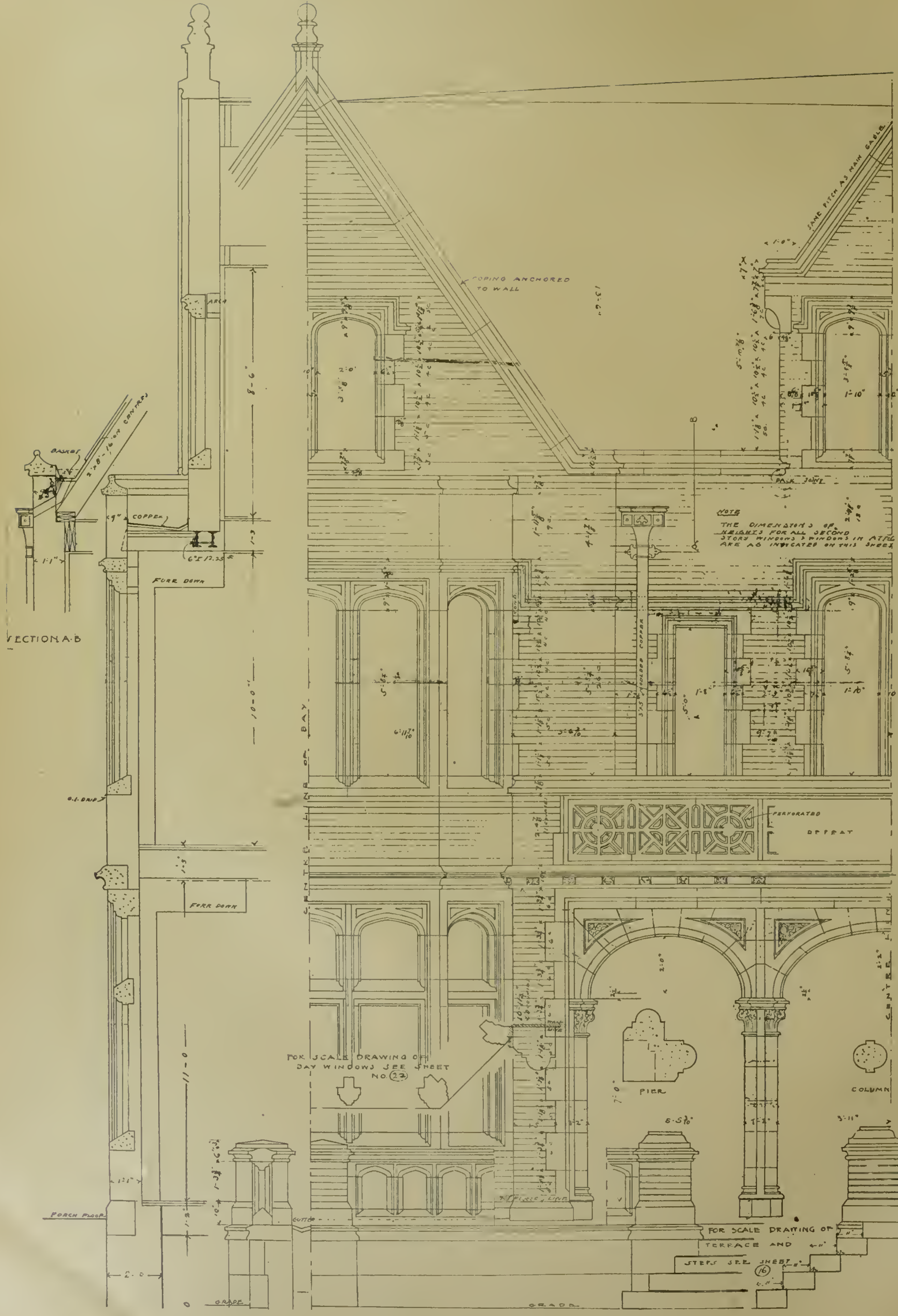
LAN.



SIDE ELEVATION

HOUSE HIGHLAND AND WELLESLEY AVENUES, PITTSBURG, PA

ALDEN & HARLOW, ARCHITECTS

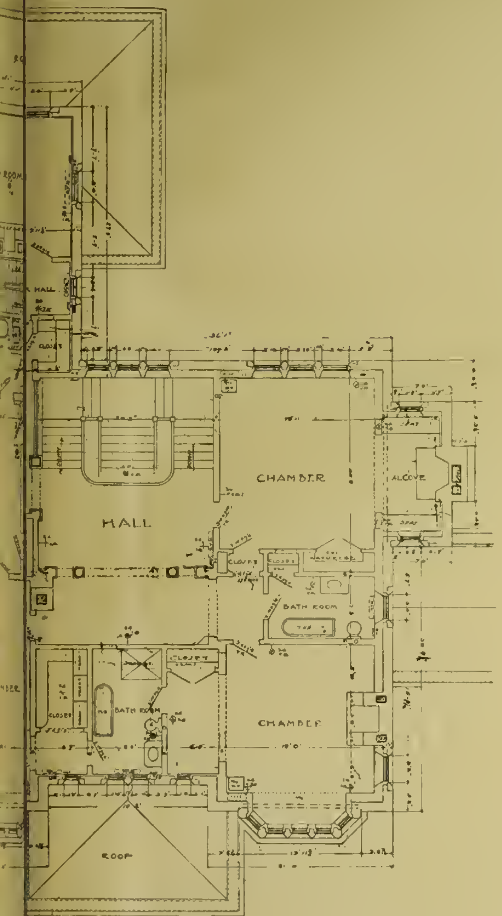


DETAIL OF FRONT

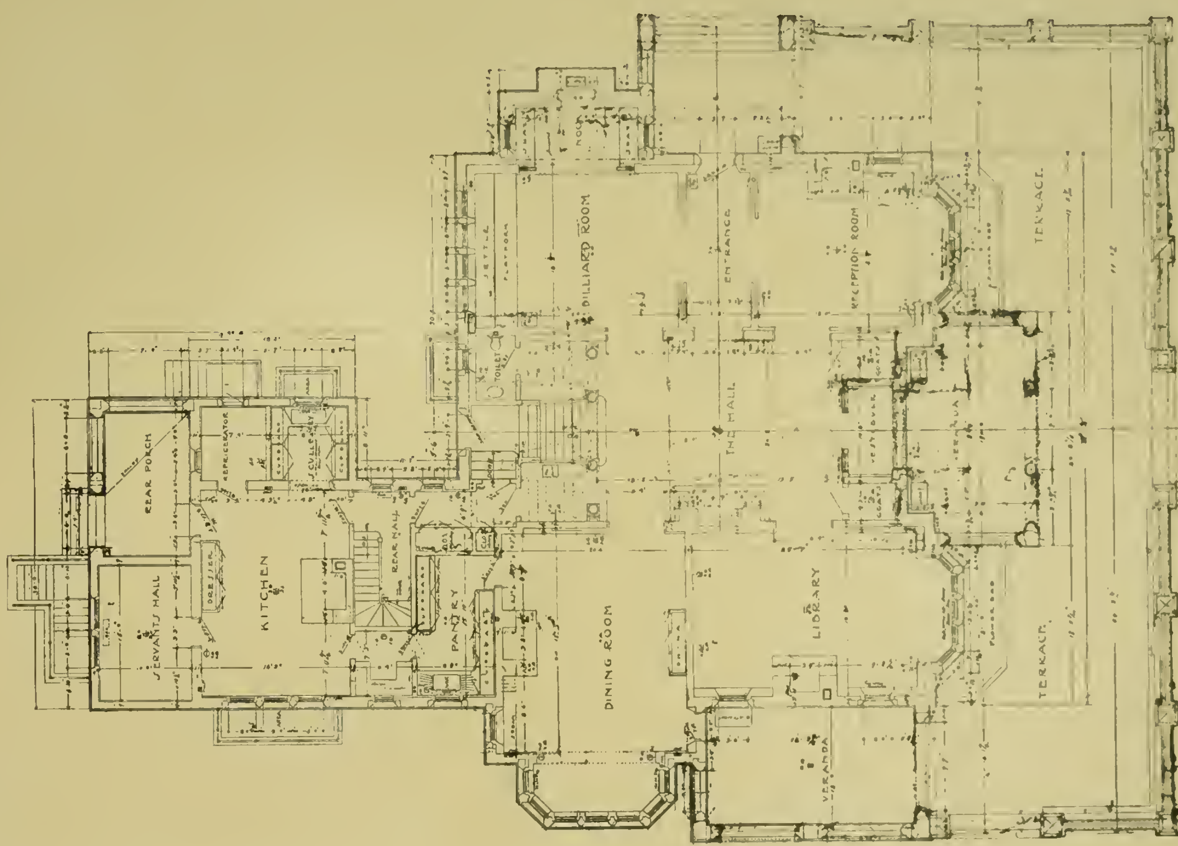
HOUSE, MOREWOOD

RUTAN & RU

PLATES 81 and 88.



SECOND FLOOR PLAN.

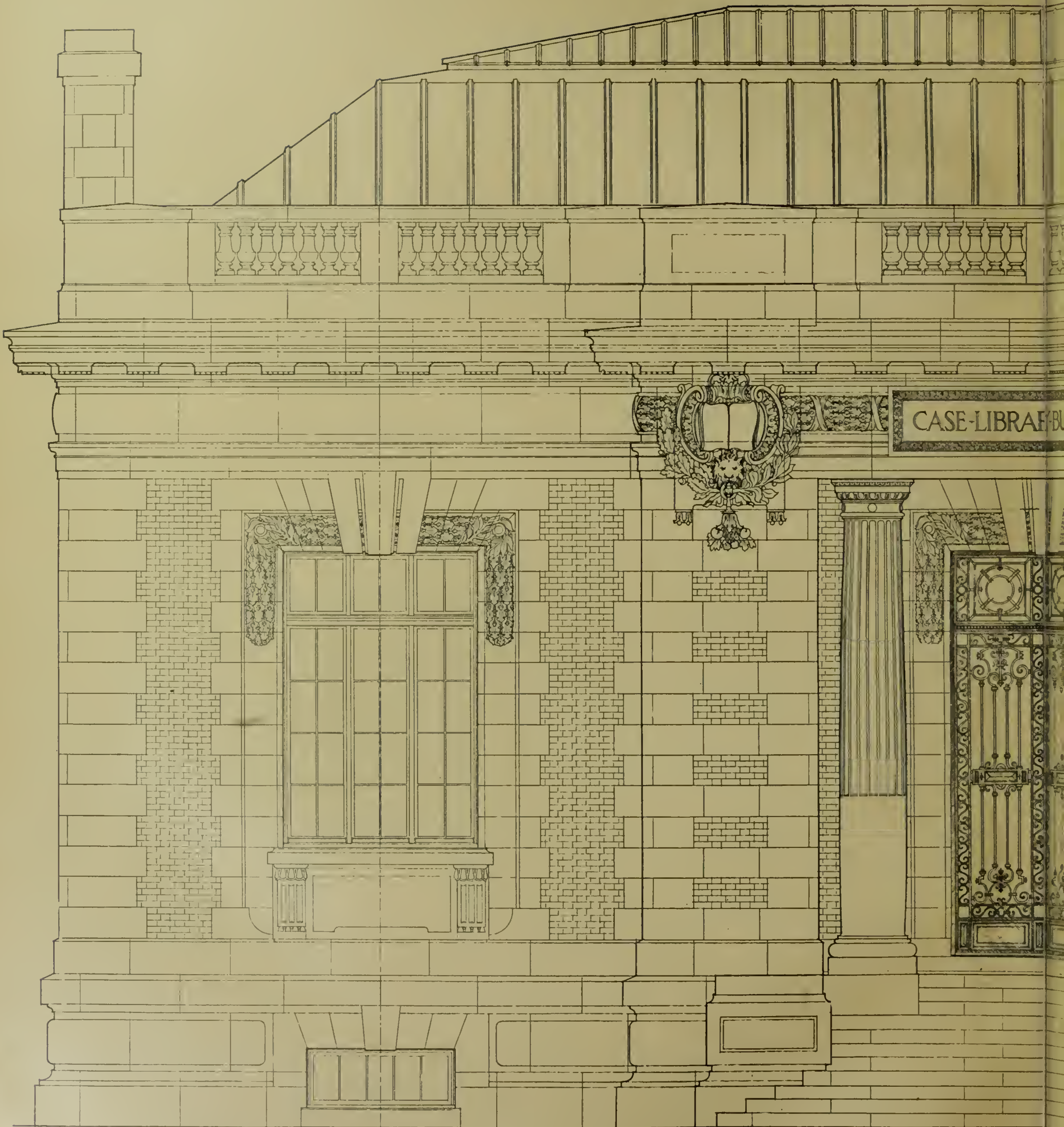


FIRST FLOOR PLAN.

SOUTH ELEVATION

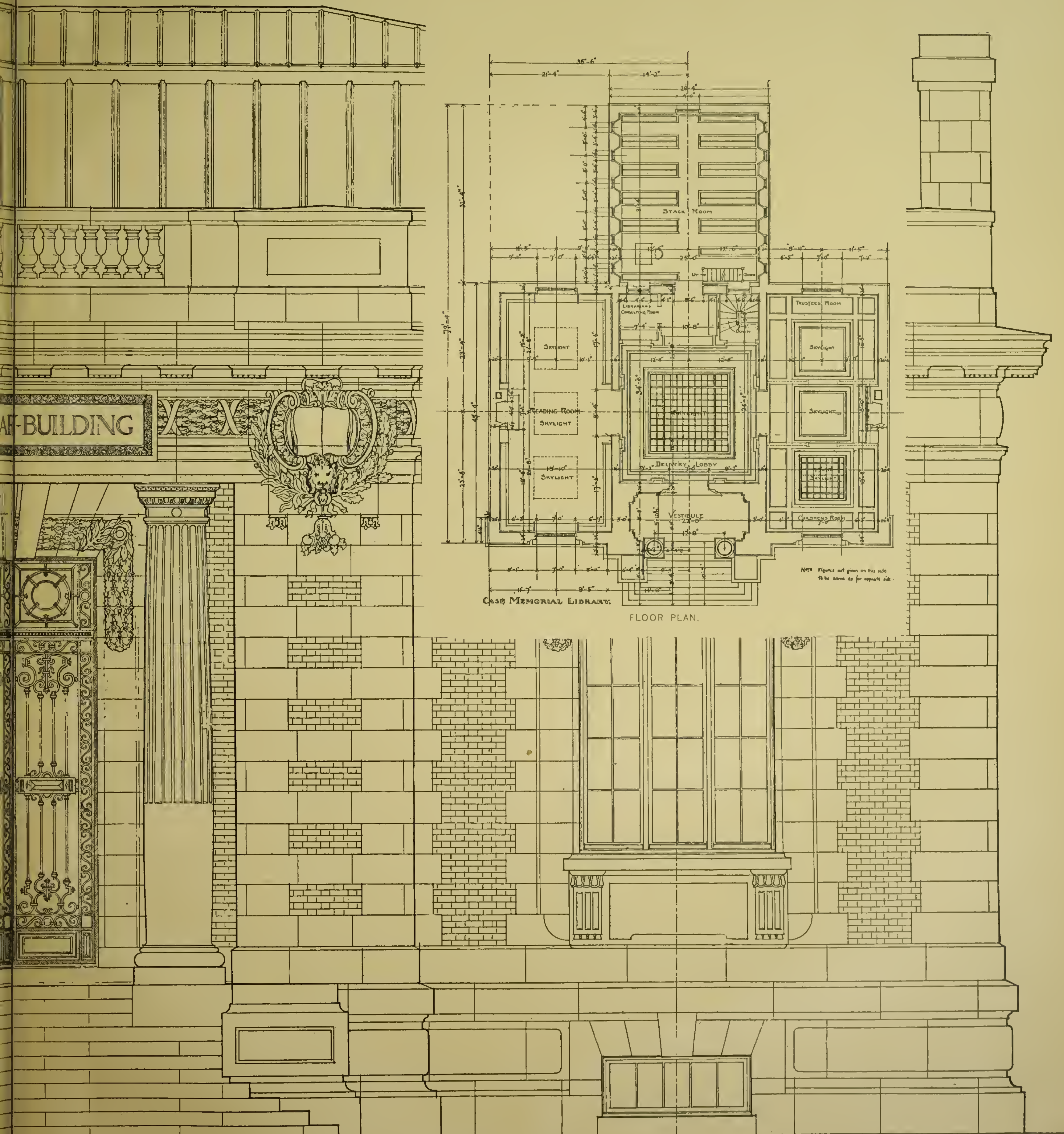
OD LACE, PITTSBURG, PA.

.L, ARCHITECTS.



FRONT ELE
CASE MEMORIAL L
CARRÈRE & H

PLATES 92 and 93.

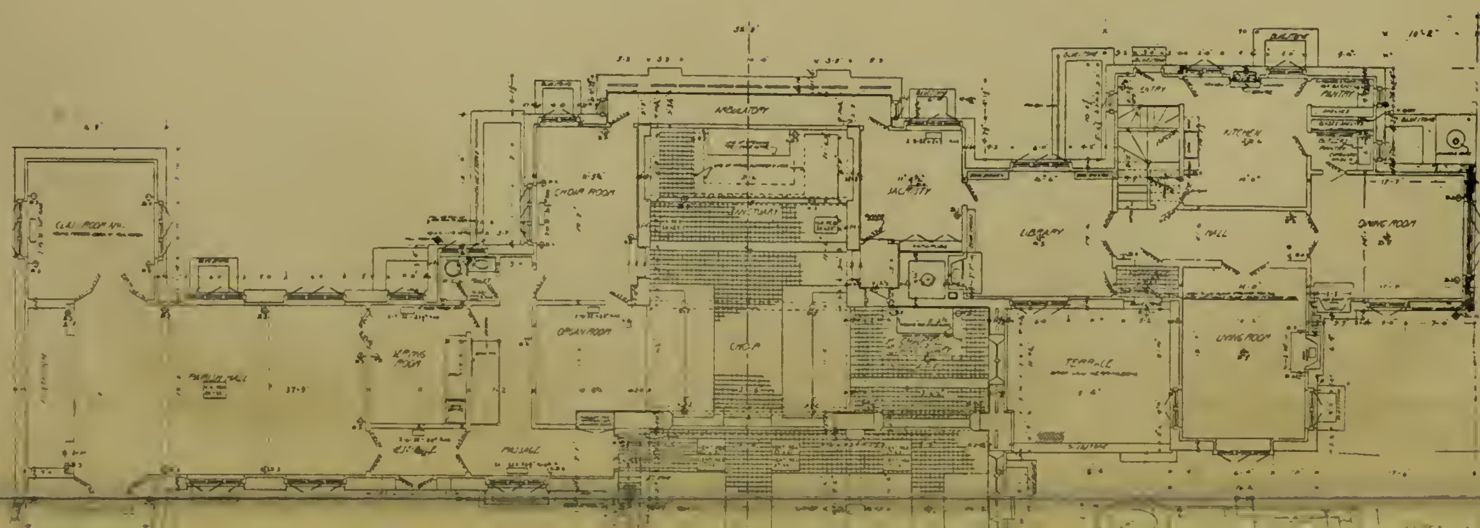


EL ION AND PLAN.

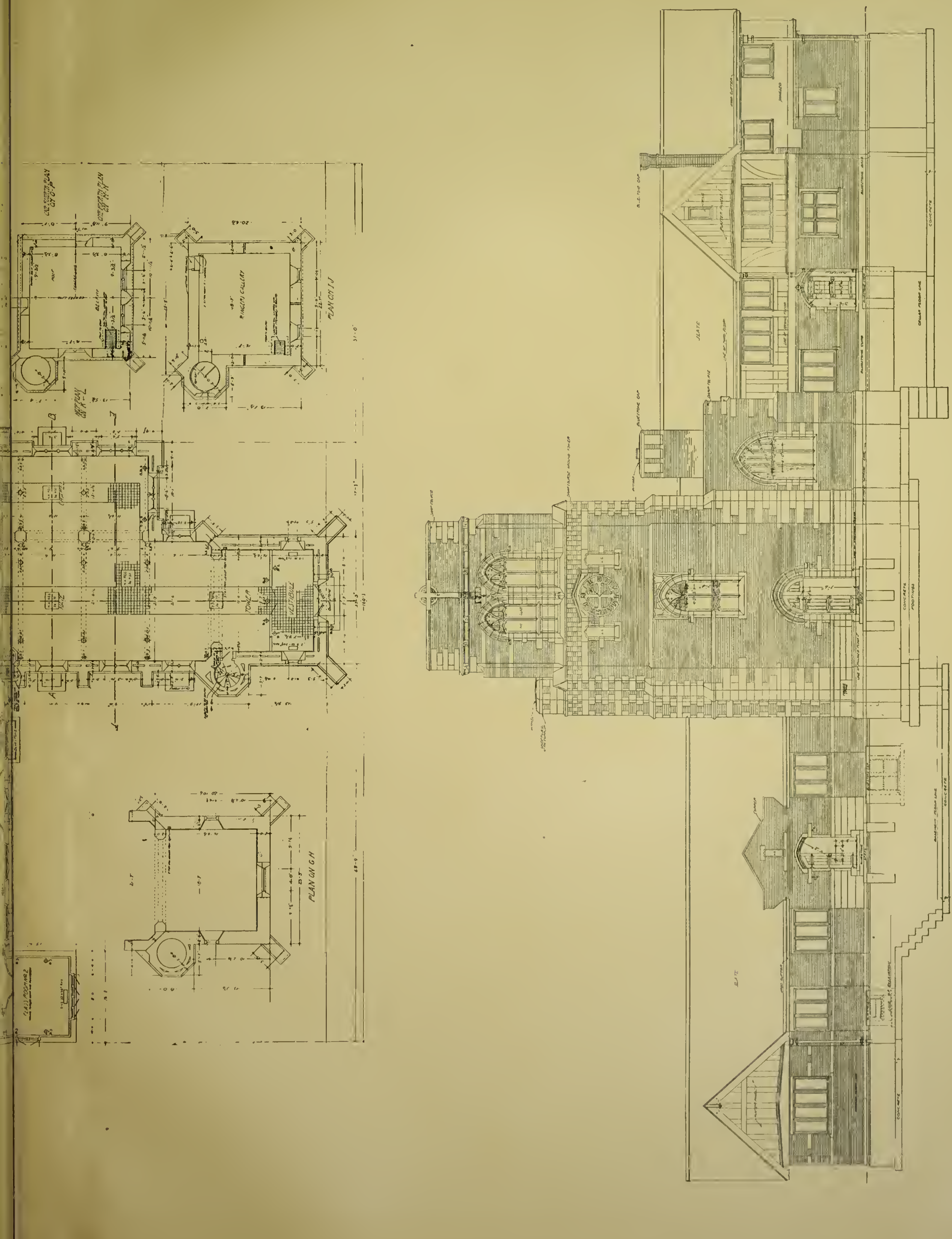
L BRARY, AUBURN, N. Y.

H INGS, ARCHITECTS.

CRAM GOODHUE & FERGUSON–ARCHITECTS–BOSTON

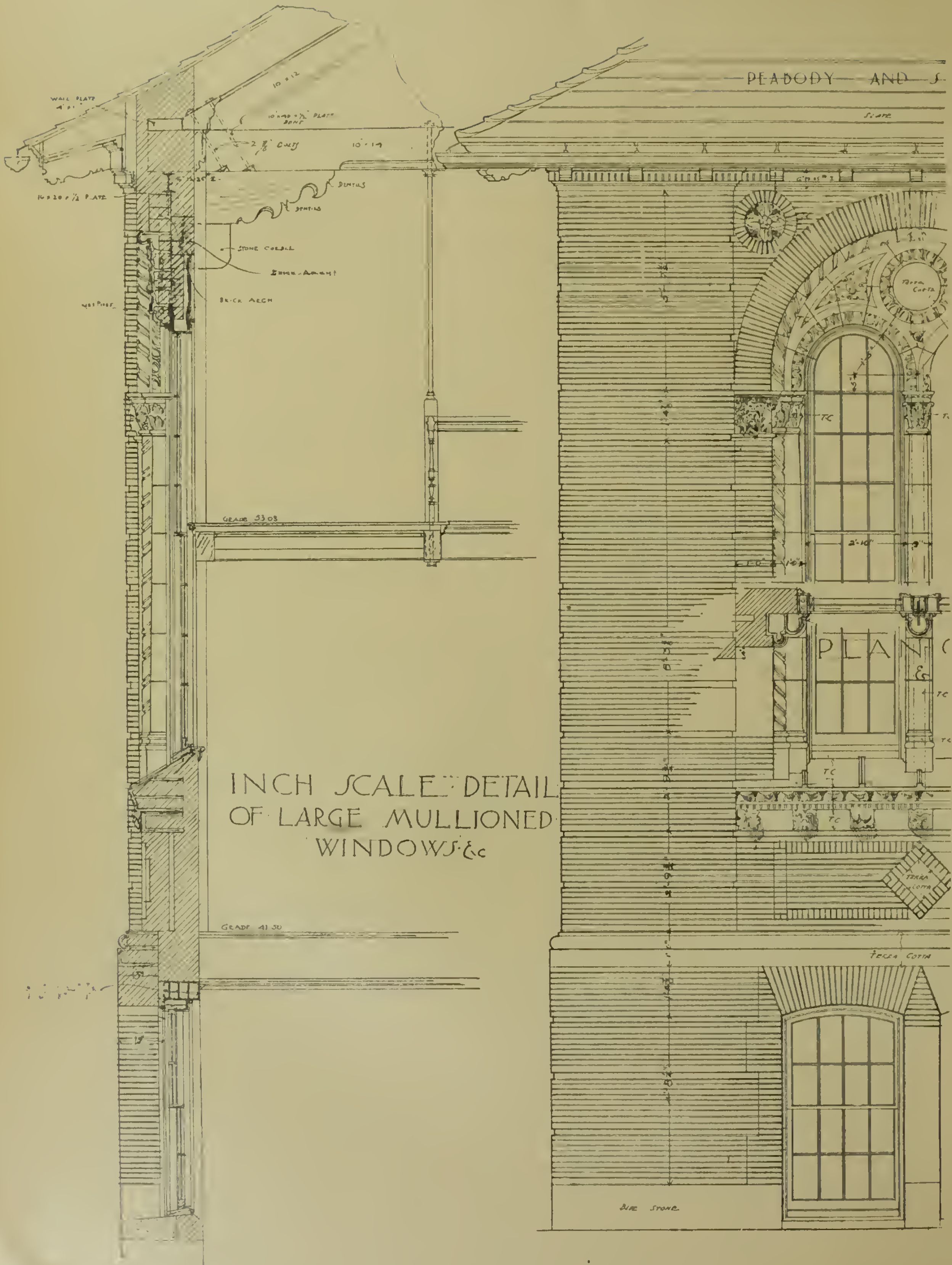


PLATES 91 and 94.

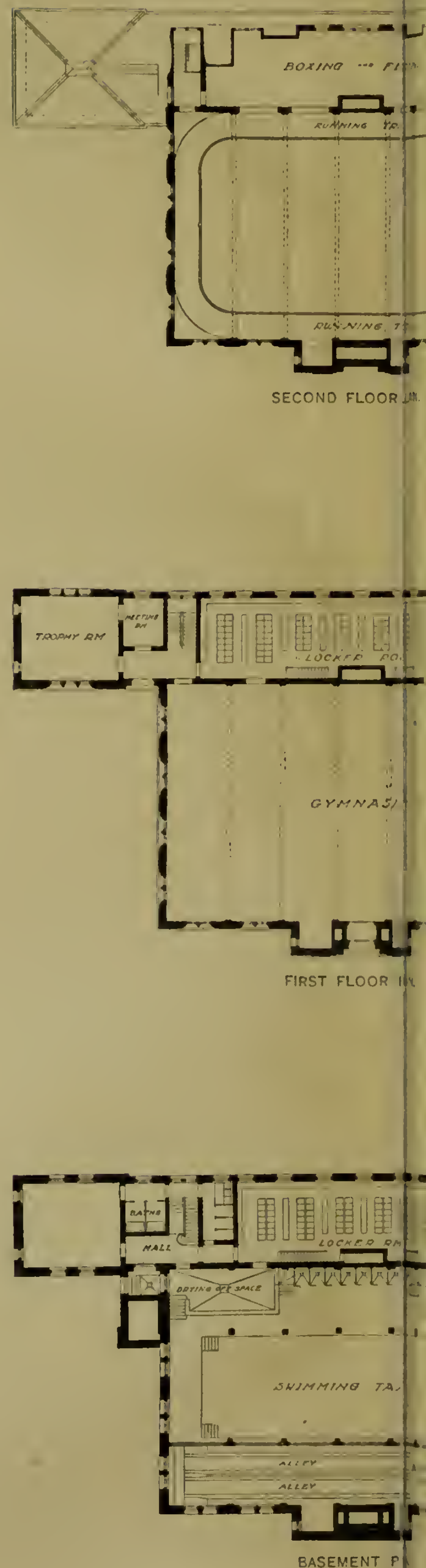


SAINT MARY'S CHURCH, PARISH HOUSE AND RECTORY, WALKERVILLE, ONT.

CRAM, GOODHUE & FERGUSON, ARCHITECTS.



DETAILS.

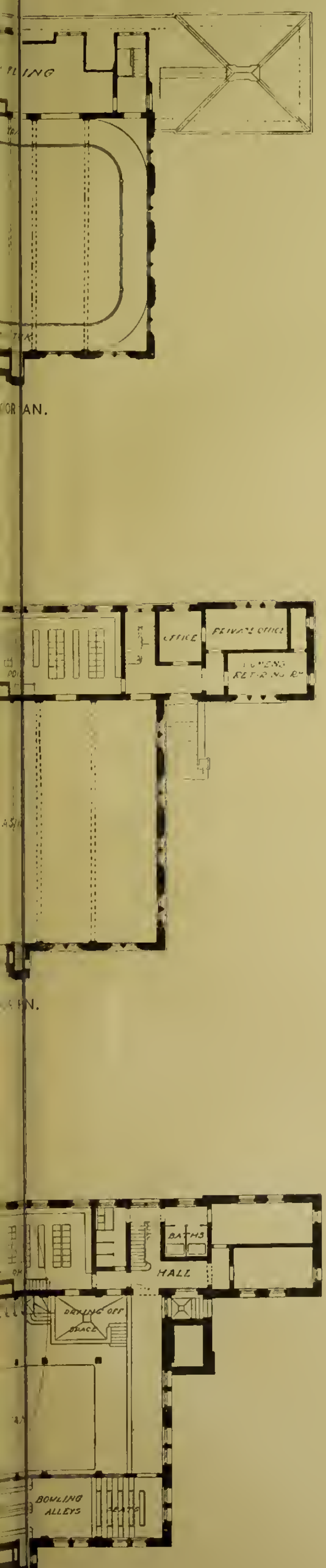


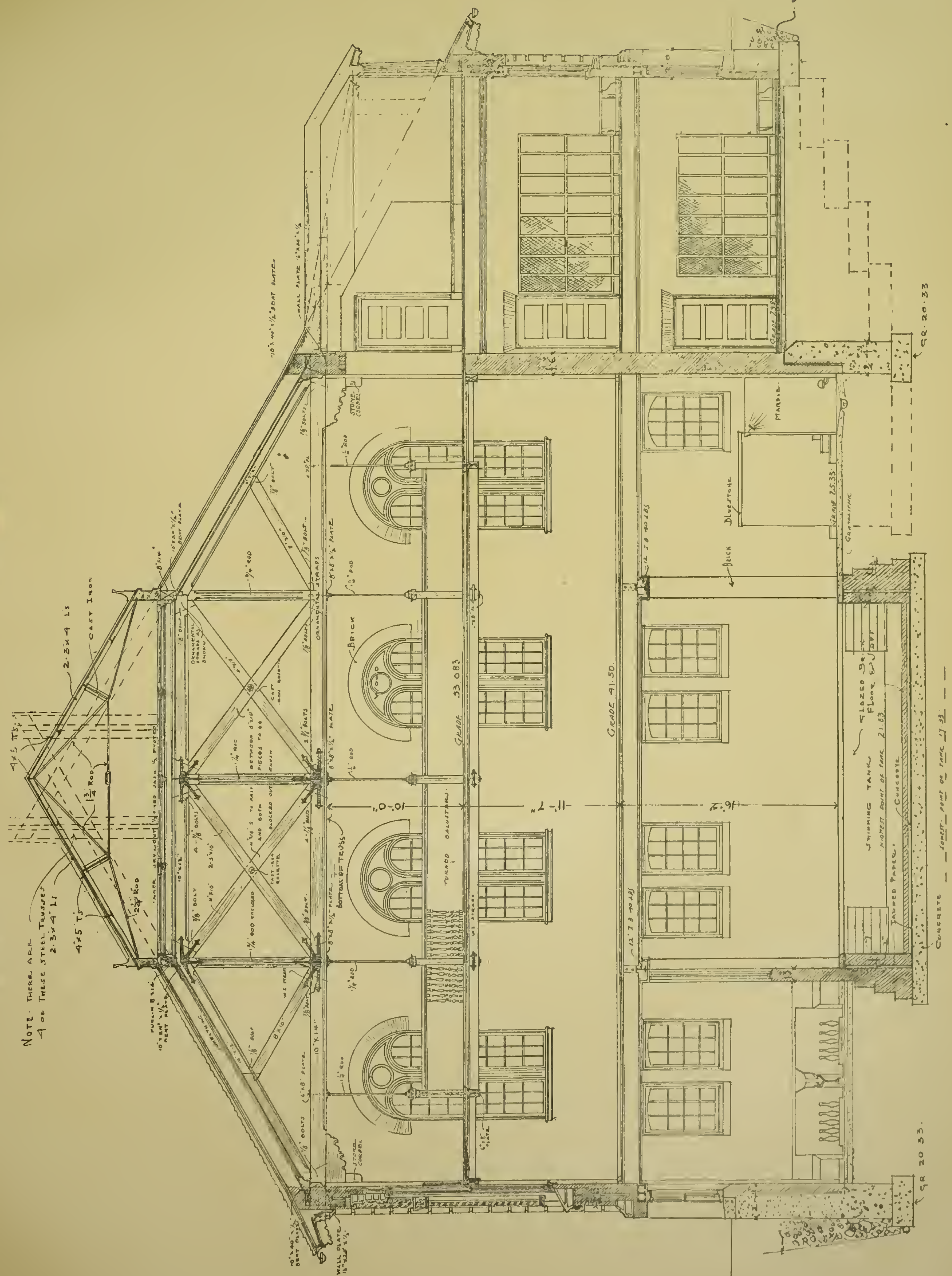
PLANS

GYMNASIUM FOR LAWRENCEVILLE

PEABODY & STEAR

PLATES 90 and 95.

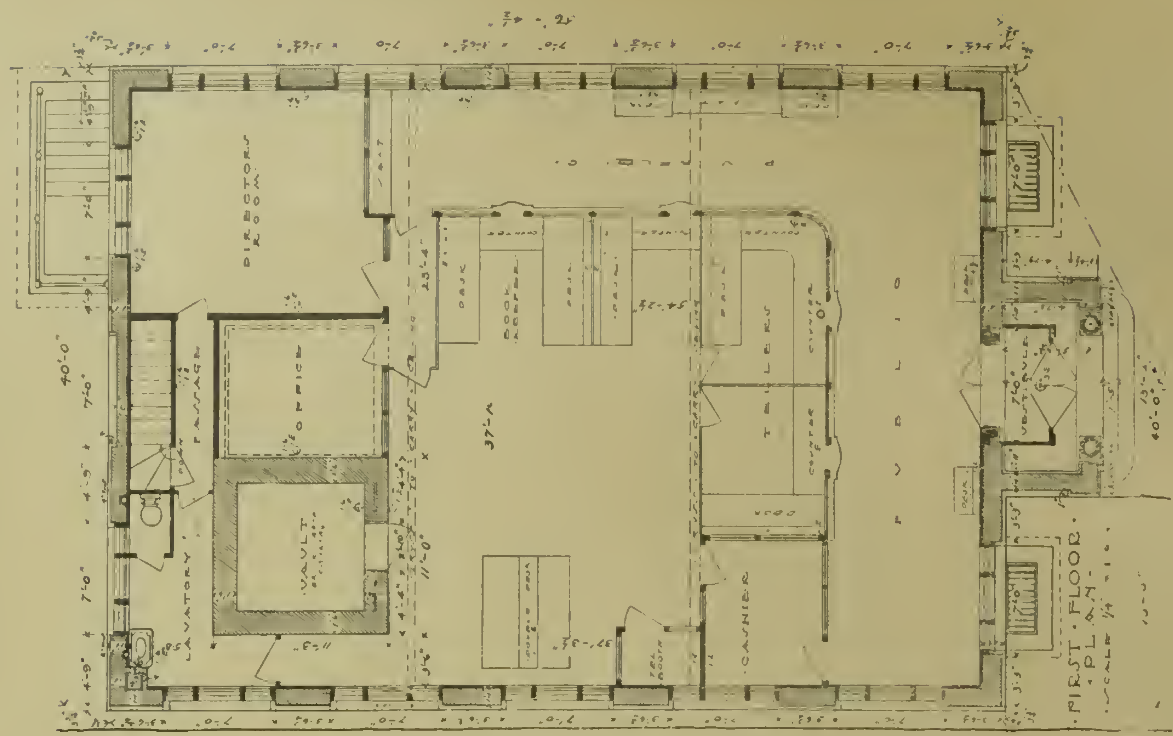




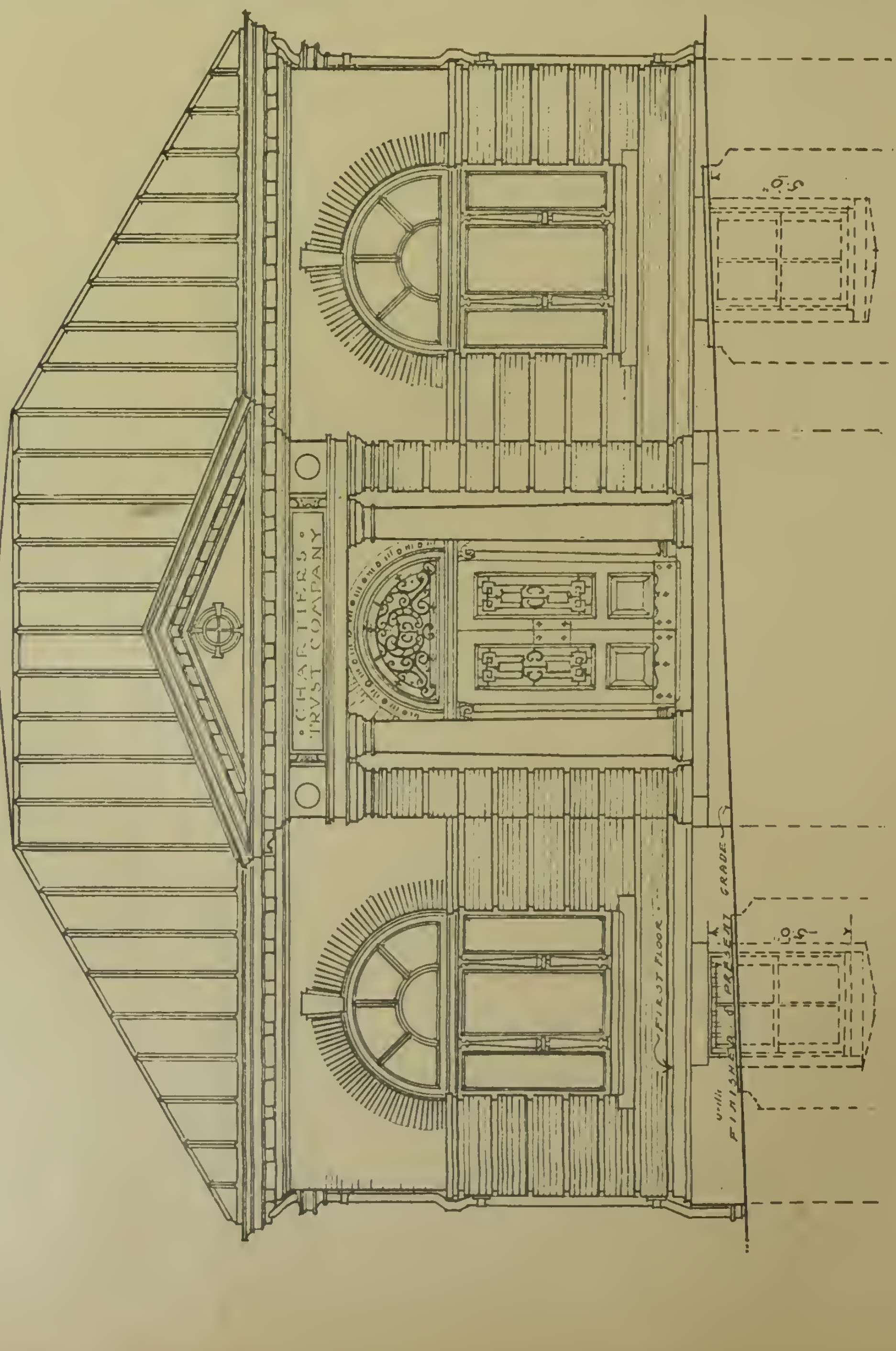
SECTION.

SCHOOL, LAWRENCEVILLE, N. J.

ARCHITECTS.



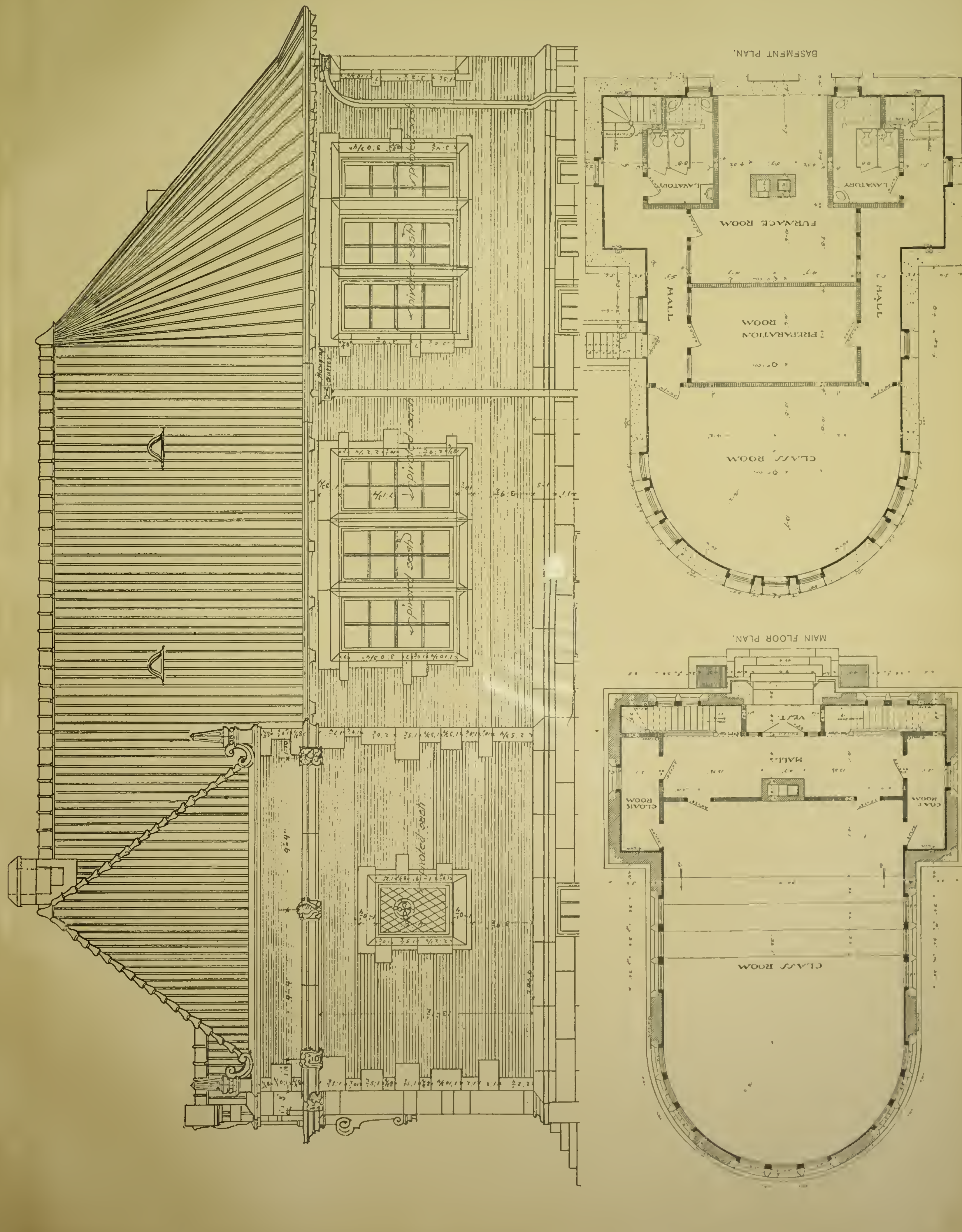
FIRST FLOOR PLAN.



FRONT ELEVATION.

BANK BUILDING FOR THE CHARTIERS TRUST COMPANY McKEE'S ROCKS, PA.

RUTAN & RUSSELL, ARCHITECTS.



SIDE ELEVATION AND PLANS.

PHIPPS SCHOOL OF BOTANY, PITTSBURG, PA.