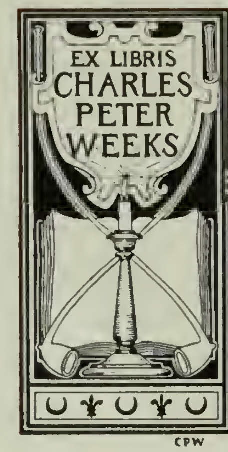
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THE BRICKBUILDER.

VOL. 13 JANUARY 1904 No. 1

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FROM WORK OF J. MILTON DYER, HEINS & LA FARGE, HERTS & TALLANT, TRACY AND SWARTWOUT.

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THE BRICKBVILDER

VOL. 13 No. 1 DEVOTED · TO · THE · INTERESTS · OF ARCHITECTVRE · IN · MATERIALS · OF · CLAY JANUARY 1904

THE BRICKBUILDER.

PUBLISHED MONTHLY BY

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ADVERTISING.

Advertisers are classified and arranged in the following order: —

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Advertisements will be printed on cover pages only.

RESULTS OF THE LIBRARY COMPETITION.

THE jury for the Library Competition has awarded first prize ($500) to Frederic C. Hirons, 3 North Washington Square, New York City; second prize ($200) to Calvin Kiessling, Ames Building, Boston; third prize ($100) to W. D. Crowell, W. S. Wells and H. W. Hathaway, who jointly submitted a design, 1 Somerset Street, Boston. Mention was given designs submitted by the following named: Claude Fayette Bragdon, Rochester, N. Y.; Eugene Talbot Parker, Washington, D. C.; Israel Pierre Lord, Somerville, Mass.; James B. Arnold, Rochester, N. Y.; William Gray Purcell, Oak Park, Ill.; Harry J. Schenck, Dayton, Ohio; George G. Hill, Boston; A. Philip Wadsworth, Boston.

THE APPLICATION OF THE TARSNEY ACT.

UNDER the provisions of the Tarsney Act the Secretary of the Treasury is empowered to intrust to individual architects the designing of such of the smaller government buildings as shall seem to him advisable, and in accordance therewith several post office buildings have already been given to individual architects. The act stipulates that these architects shall be of good professional standing and shall be selected as a result of the competition. So far so good, and the selections thus far have been such as could not be questioned, but the competitions have brought to light a practice which is not only questionable from an ethical point of view, but is such as ought to be considered very carefully in the application of the Tarsney Act. Shortly after the invitations were sent out for at least two of the recent competitions, the competitors received letters from parties in Washington offering their services in studying the problem and rendering the drawings, claiming that owing to their familiarity with government work and their close acquaintance with the needs of the Treasury and Post Office Departments they could be of very material aid to the competing architect. In each competition we are told that at least one of the competitors accepted this offer and had his drawings studied, made and delivered in Washington, taking practically no part in the competition himself. It is a satisfaction to know that in neither case did the vicarious competitor win the competition, and in general such practice is very apt to defeat itself; but we feel that the profession has a right to expect a little higher ethical standard of those who are to be admitted to competitions of this sort. There is not the slightest evidence that the officials of the Treasury Department had any knowledge of such a practice as this, nor is there any reason to believe that as a matter of fact the Washington parties so offering their services had or even claimed to have any personal influence which would be used in the matter. The point is simply that if our government architecture is to continue developing at the rate which has marked the administration of Mr. James Knox Taylor, the supervising architect, the government buildings should be intrusted to men who are architects themselves, rather than to those who merely hire some one to do architecture for them. The competitions are admittedly held to select an architect rather than to select plans, and any competitor whose ability is so slight, whose professional morals are so indifferent, that he will put in under his own name work which in any degree cannot fairly be called his own, is surely not the sort of person who can be classified as being in good professional standing. It is sincerely to be hoped that the Secretary of the Treasury may take this matter under advisement and find some means to eliminate from competition those architects who are mere brokers.

The series of articles on Hospital Planning by Bertrand E. Taylor will be resumed in THE BRICKBUILDER for February.

The Planning of Apartment Houses. IV.

BY WALTER H. KILHAM.

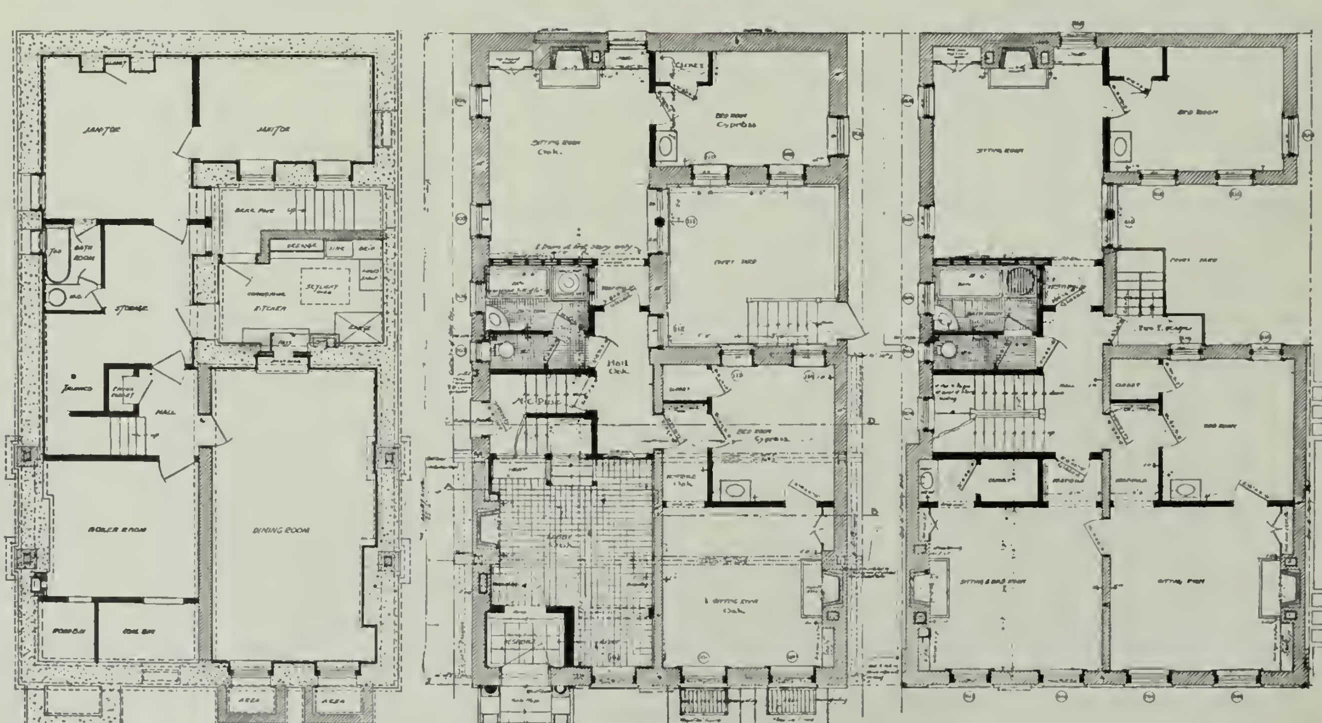
EQUIPMENT.

IN a general way it may be said that the equipment of modern apartments has kept well in advance of the planning. Arrangements of rooms are necessarily determined by more or less arbitrary considerations, such as ordinances, lot lines and areas and various housekeeping requirements, but there is no limit to the invention of mechanical conveniences. The original apartment house afforded to tenants the bare rooms with more or less janitorial service. Tenants brought their own furnishings. As competition became keener, enterprising landlords began to offer new attractions, and ranges and refrigerators were included in the rent of the housekeeping suite, equally appreciated by the young couple embarked on their first housekeeping venture and the experienced mover from flat to flat.

Great changes have been made in this direction, but there are signs that the limit has been reached and that future progress will be in the line of better planning rather than in equipment, which is over-costly to install and to keep in order.

An up-to-date house now is equipped with a long distance telephone in each suite and complete bell and annunciator arrangements. The bathrooms are finished in tile, with water-closets of as noiseless a type as possible, the flushometer, or similar valve, being frequently used. Bath tubs are of enameled iron and in some cases of solid porcelain. Those cemented direct to the floor are preferred on account of cleanliness. Shower baths should be provided either over the tubs or with independent

APARTMENT HOUSE, PHILADELPHIA, PA.
F. M. Mann, Architect.



BASEMENT. FIRST FLOOR PLAN. SECOND FLOOR PLAN.

PLANS, APARTMENT HOUSE, PHILADELPHIA, PA.
F. M. Mann, Architect.

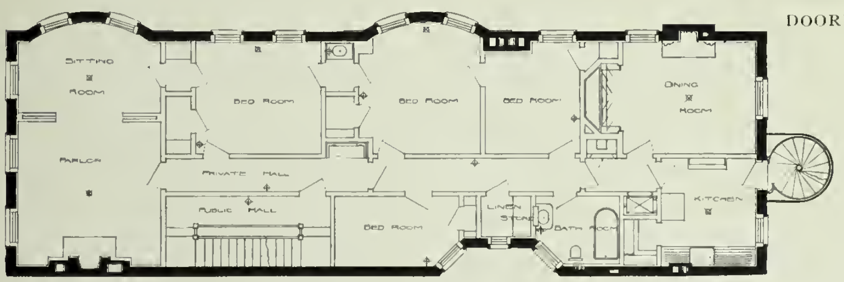
pans. Electric curling irons are provided. The bathrooms are better located so as to get outside light rather than that from a well. In some bachelor apartments a small tiled ice box is built in the tiled dado, cooled from a central plant where a cold bird or bottle may be kept on hand. The walls, if not tiled to the top, should be painted in oil, never papered. A small medicine closet, with inner closet for poisons, is added. A good building will have a mailing chute and deafened walls and floors. A place for a burglar-proof safe can generally be found. Continuous hot water supplied from a tank and small heater in the basement hardly needs mention, but filtering apparatus and iced and filtered water supply are newer introductions.

Most houses are still heated by the direct steam process, but some are supplying indirect heat with ventilation. In this case the air is generally taken in under the windows, as the space occupied by ventilation flues is still regarded as an obstacle. The heated riser lines, if exposed, are not only unsightly, but often heat an apartment when the radiators are shut off, and slots should be built or spaces furred in the walls so that they may be concealed. For greater cleanliness, radiators, if possible, should be hung to the walls, rather than rest on the floor.

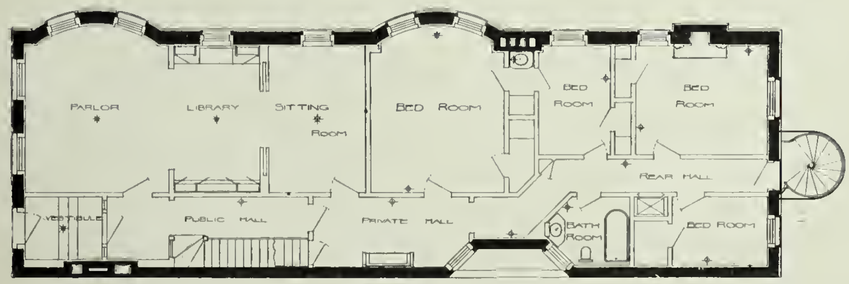
Elevators are of the plunger, hydraulic or electric type and are almost universally run by an attendant who performs some of the duties of a *concierge*. The type in common use in Paris, which needs no attendant and is operated by the passenger who pushes a button to indicate the floor at which he wishes to stop, is not yet in common use. There are obvious reasons on both sides why it is or is not desirable. The present American system involves the salary of an extra attendant, but if the main entrance is otherwise unguarded, his presence is certainly desirable. Moreover, there exists a certain timidity in the public mind regarding the handling of elevators, no matter how well they may be safeguarded.

The bicycle storage room of a few years ago is supplanted by the automobile garage in the basement. Where a direct runway cannot be had, a hydraulic lift takes the auto from the street or court to the lower floor. Houses having electric plants are able to charge batteries, and a washing floor is generally arranged. In houses having a café, the kitchens, laundry, etc., are generally in the basement on account of the value of first floor space. The conveyance of food from the ranges to the tables is a matter that needs very careful study. It will be found that in the usual family apartment house where table d'hôte meals are served or board is charged for by the week and waitresses are employed, that

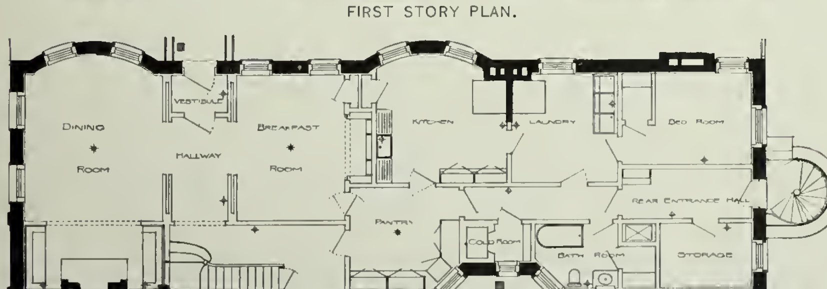
DOORWAY, APARTMENT HOUSE, PHILADELPHIA, PA.
F. M. Mann, Architect.



SECOND AND THIRD STORY PLAN.

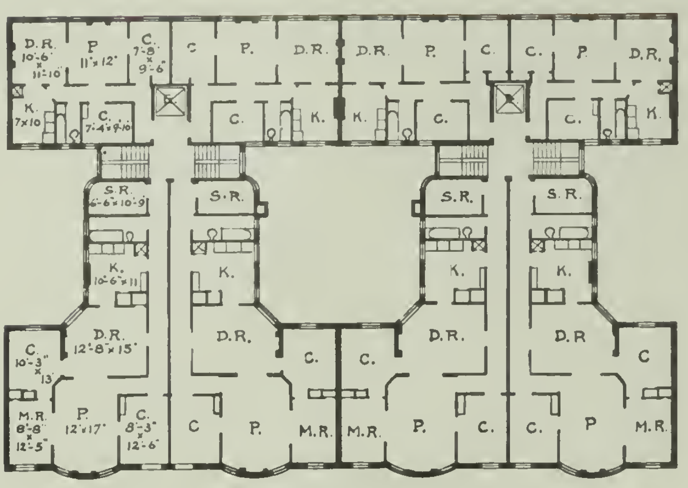


FIRST STORY PLAN.



BASEMENT PLAN.

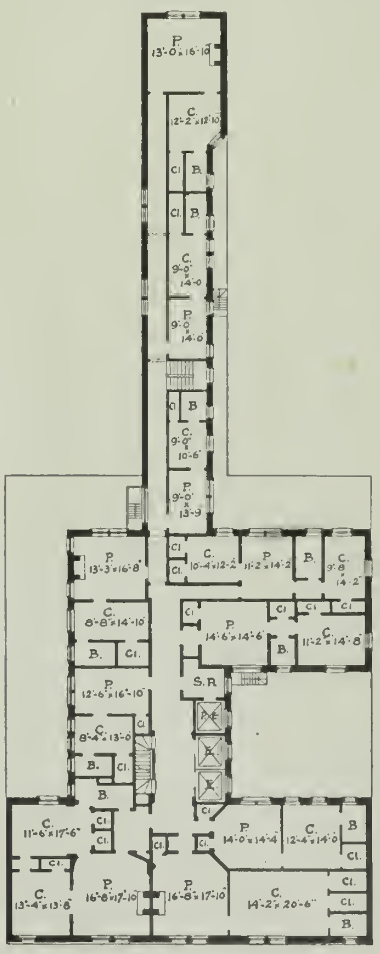
SMALL APARTMENT HOUSE, BROOKLYN, N. Y.
D. Everett Waid, Architect.



A MODERN APARTMENT HOUSE, NEW YORK CITY.

dumb-waiters will suffice to bring food from the basement, especially as the waitresses object to going over the stairs. The dumb-waiters, where possible of the electric pattern, run to a good-sized serving room containing the steam tables, washing sinks, coffee urns and plenty of shelf room with wide or preferably two doors for incoming and outgoing waitresses. The distance in the kitchen from the broilers and ranges to the dumb-waiter should be as short as possible, to enable the cook to put a chop or steak directly on the lift without leaving the fire or needing another man. Where higher-paid male waiters are employed, and in large houses where food is cooked to order, a wide stairway is built leading from the dining room to the kitchen, and the serving room is sometimes omitted. The refrigerators for meat and fish should be as near the kitchen as possible, but protected from the heat of the fire. In large houses they are frequently built in the kitchen, but in the smaller ones they are better kept separate, particularly if there is no refrigerating plant and ice has to be used. Ventilated or open wire work lockers for servants' wraps should be provided. Ample storage space for coal and supplies is highly desirable but seldom realized. Efficient ventilation of both the main and private kitchens is of the utmost importance. When a smoke pipe of plate iron is used for the boilers, it is surrounded by a brick shaft in which a powerful draught is induced by the radiated heat, and to this is led the vent duct from the hood over the ranges. The kitchen floor should be of tile or granolithic with cesspools for hosing out, and there should be a screw nozzle cock located for attaching hose. A good-sized storeroom is located adjoining the kitchen.

If the restaurant is run separately from the house, the connections should be made so that all water, both hot and cold, gas and electricity can be metered separately. The pipe trenches and all holes in foundation walls for pipes, etc., should be carefully stopped and the windows screened to keep out rats. The walls should be lined with enameled brick. Corners of walls and columns should be protected by wooden corner guards and steam returns protected by plank or otherwise where



THE SEYMOUR, NEW YORK CITY.
Ludlow & Valentine, Architects.

YPICAL FLOOR.
APARTMENT HOUSE, NEW YORK CITY.
Israels & Harder, Architects.

FIRST FLOOR.
APARTMENT HOUSE, NEW YORK CITY.
Israels & Harder, Architects.

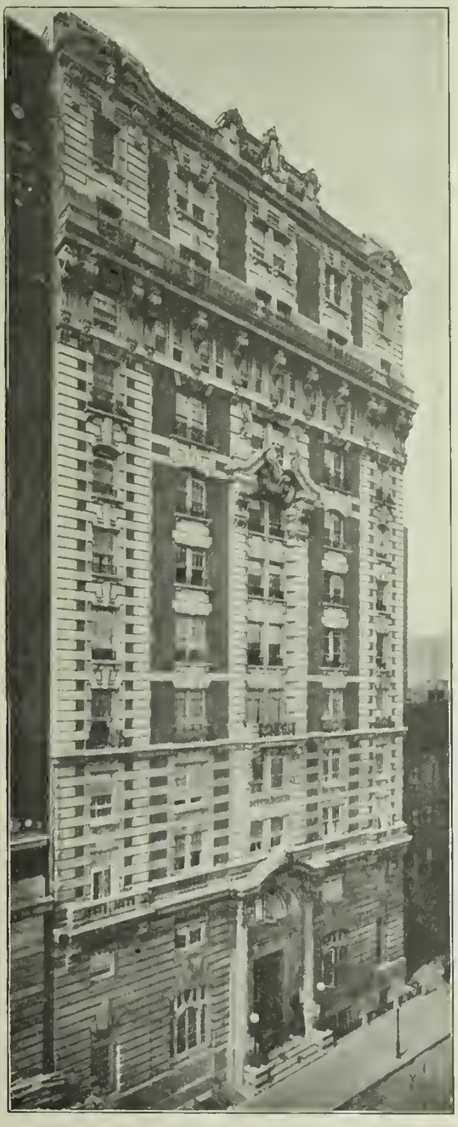
they are liable to injury, as in the coal bunkers or storage rooms. There should be only one rear entrance, and that where it may be watched by the checker or some responsible person as a guard against thieving by employees or the entrance of undesirable persons. A cold storage room for garbage is sometimes built.

The private kitchens are constructed in the same manner, except that wood floors are used and generally hard-wood dadoes. They each contain a sink and two laundry trays of enameled or porcelain ware. A cover is provided for the trays when not in use, and forms a convenient shelf. Ventilated coal, gas or electric ranges are provided. Steam or hot air laundry driers are being installed in many houses, thus avoiding the drying of clothes on the roof or balconies, which gives a tenement house appearance to the place as well as exposing the linen to soot and dust. Refrigerating compartments are placed in the pantries. The servants' chambers, adjoining, are provided with a complete bathroom only in the best houses, but water-closets are always installed, and in some cases bath tubs. The electric and gas meters in cabinets are located in the service hall.

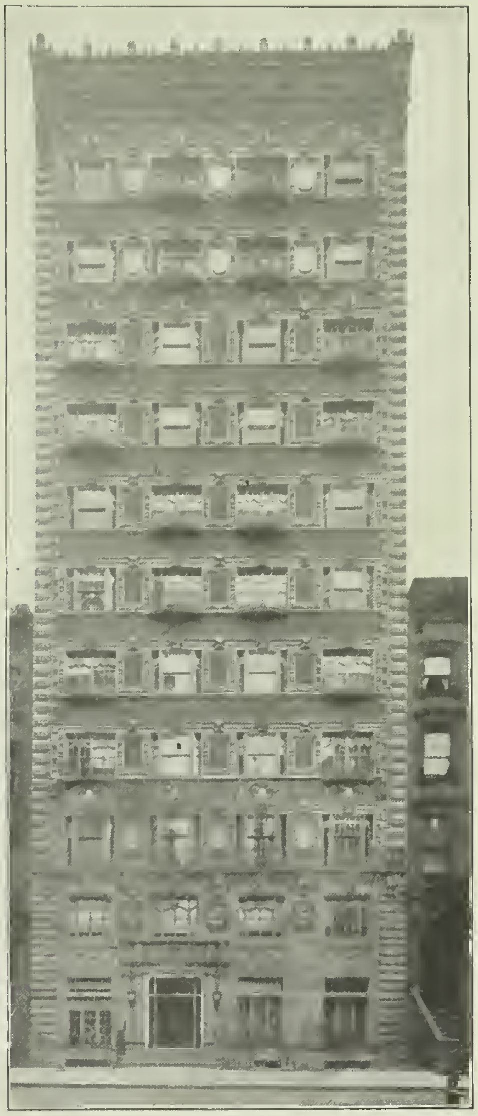
The bedrooms and living rooms are wired for reading lamps and in the best houses equipped with clothes-presses or wardrobes, in whose doors plate glass mirrors are sometimes set. Interior Venetian blinds are hung at the windows.

The amount of space on the street floor given up to the common use of the tenants varies, but in general it is on the increase. The palm room is almost inevitable, and a small reception room is generally added. Many houses have a large entrance hall furnished with rugs and large chairs. Much attention is given to the entrance. A handsome glass marquise shelters the doorway, and in some instances there is a semicircular driveway across the sidewalk and restricted space to the main steps. Electric lights on standards are nearly universal.

Balconies are useless, but owing to the temporary prevalence of French architectural models are frequently introduced, and for the same reason bay windows seem to have lost caste.



THE SEYMOUR.
Ludlow & Valentine, Architects.

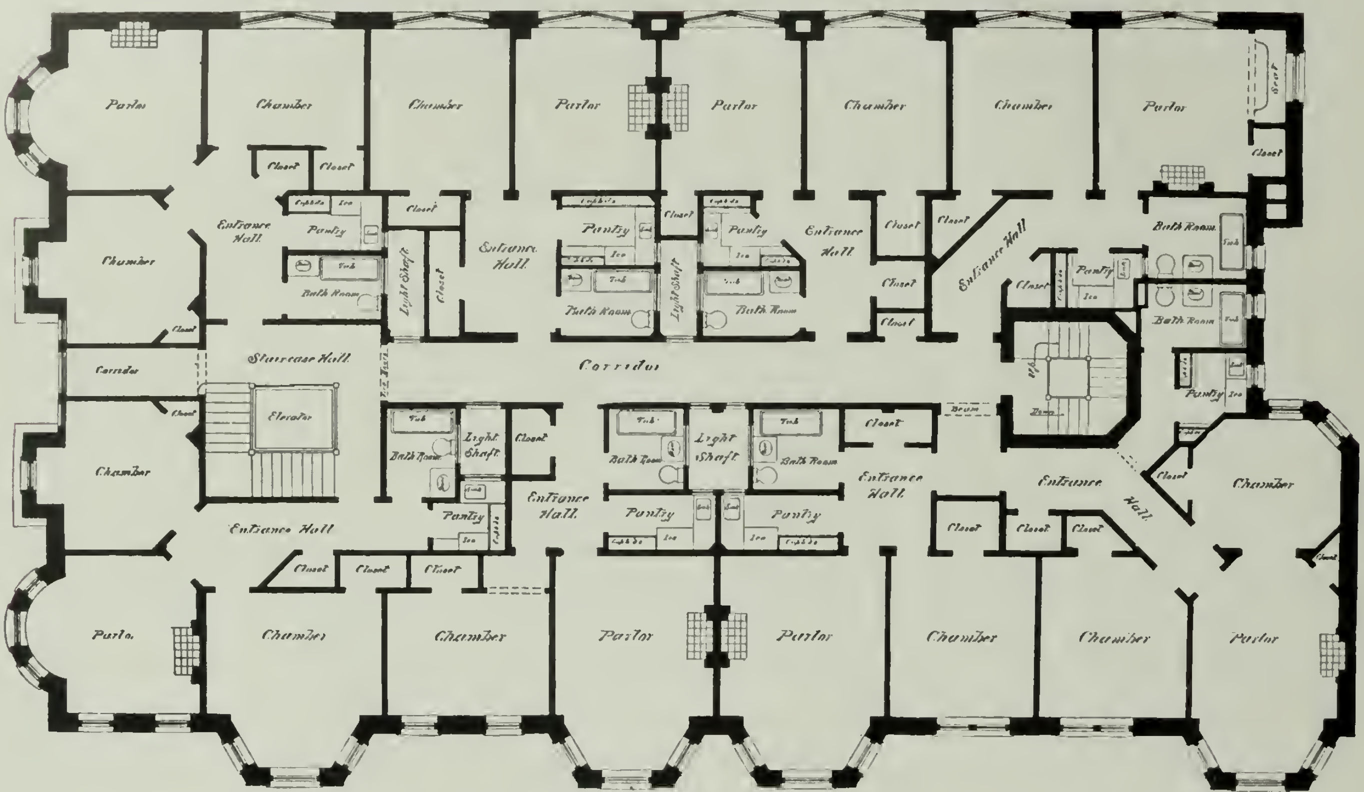


THE ARLINGTON.
Israels & Harder, Architects.

THE STANLEY.
Henry Anderson, Architect.

THREE APARTMENT HOUSES, NEW YORK CITY.

Finally each suite must be given good space in the basement for storage of trunks, furniture, firewood, coal, etc.

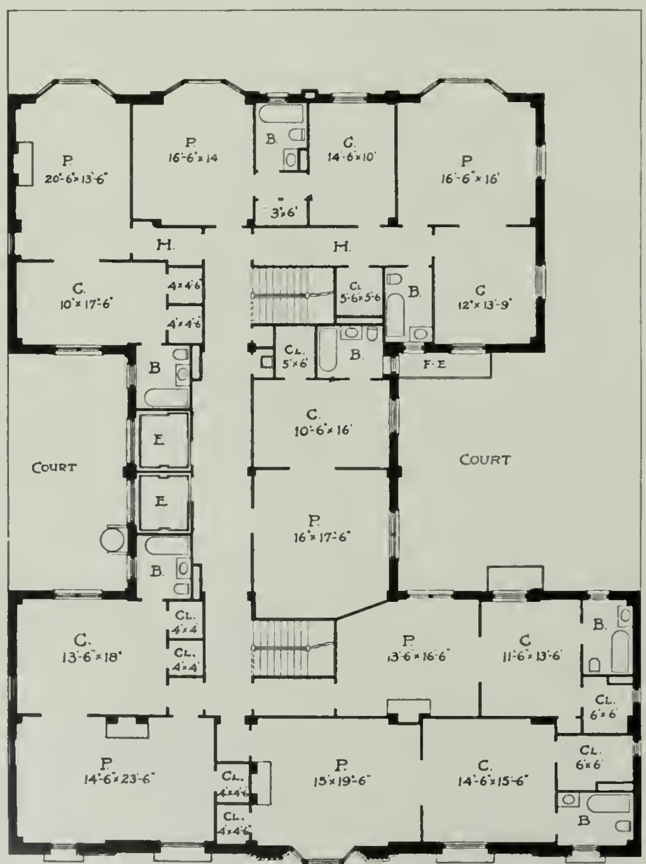


TYPICAL FLOOR PLAN.
A MODERN APARTMENT HOUSE, BOSTON.

Swimming tanks and squash courts, though sometimes built, are hardly yet considered as necessities.

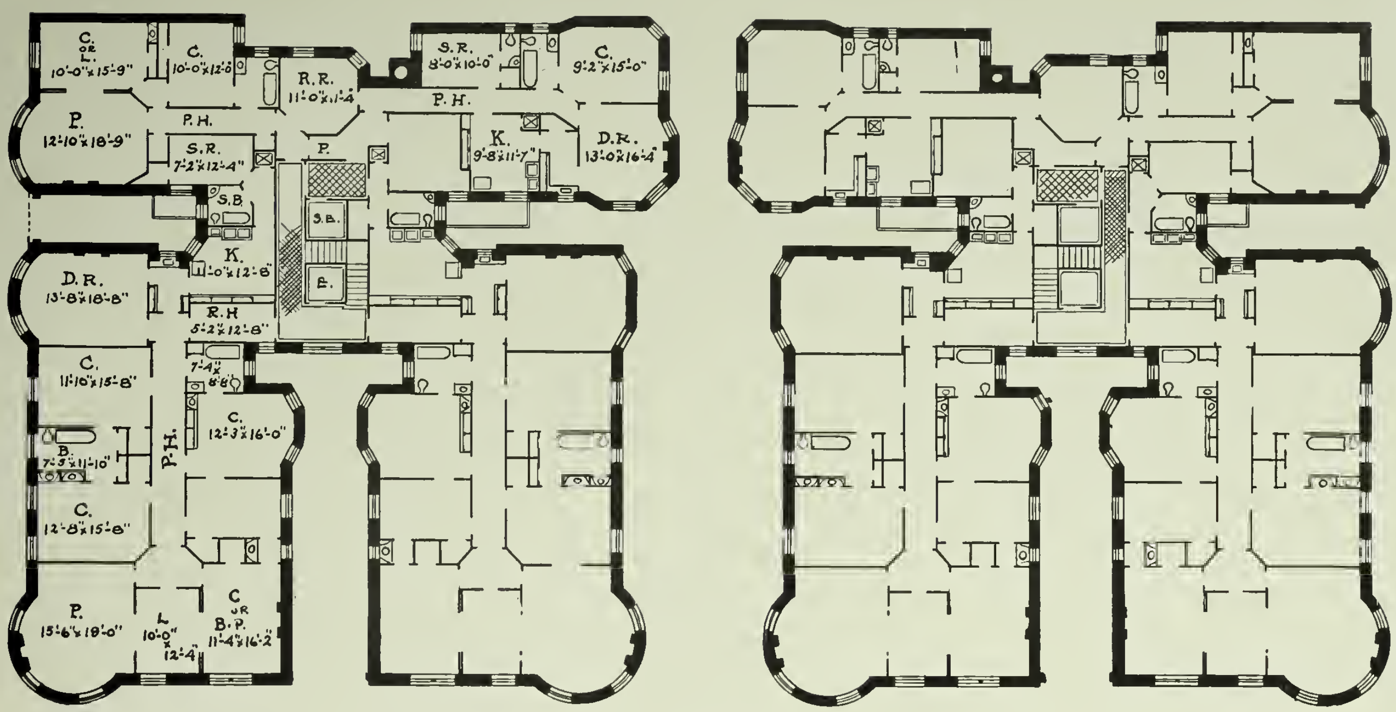
Whether or not an independent electric lighting or power plant should be installed is a much discussed question and one difficult to answer. Expert opinion can usually be had favoring either side. It certainly bears some relation to the size of the house, the character of the occupants and the local price of the street current. Roughly speaking, the writer is of the opinion that for houses of under ten thousand square feet in area and six stories in height an independent plant is not economical, and, as has been mentioned before, much depends on whether the house is built to run or sell.

In the construction not only durable and stable materials should be used in the frame and rough work, but in the finish, and they should be so disposed as to help the owner as much as possible in preserving the good appearance of the house.

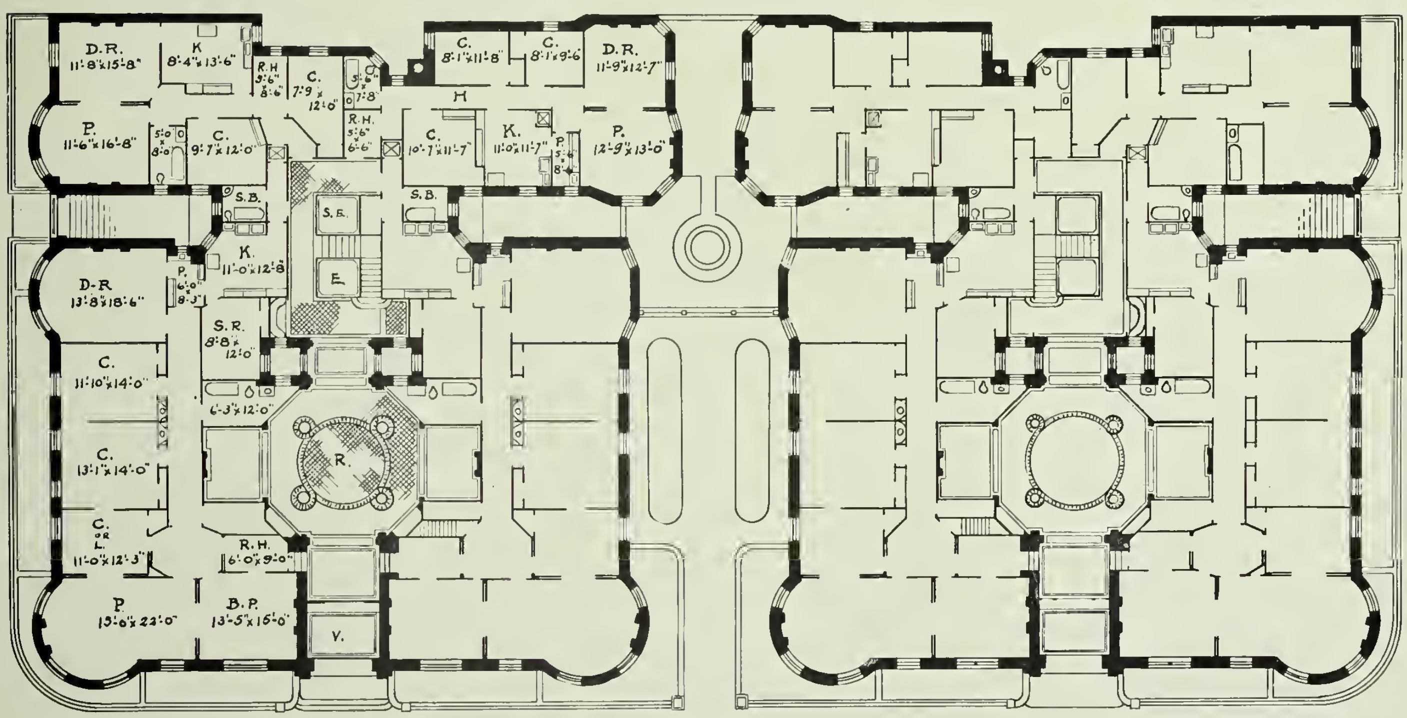


TYPICAL FLOOR PLAN.
THE WRIGHTWORTH, APARTMENT HOUSE, NEW YORK CITY.

If the prevailing fashion of white or light-colored paint is followed for the interior trim, a great saving can be made in operation if the doors, the most easily soiled parts of the house, are stained dark or made of dark wood. The contrast with light paint is agreeable and is founded on good precedent. In the same way, the baseboard can be made double, the lower section being dark and the upper painted in the general light color of the rest of the trim. Stair railings, mantel shelves, window sashes, wardrobe shelves and all other parts liable to be soiled or handled should be similarly treated. Plated hardware is not desirable. Glass is the most suitable material for door knobs in the main portions of the suites and may be cut or pressed according to the rents demanded. A proper number of master keys is desirable.

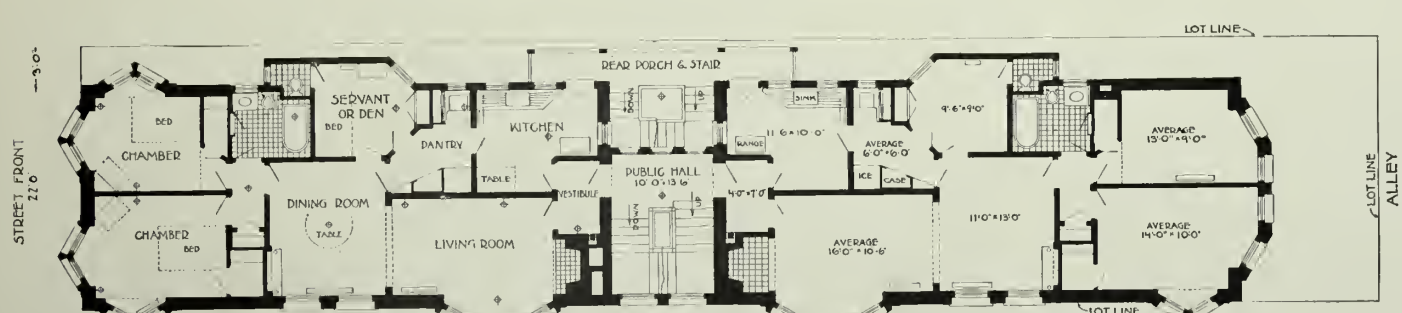


TYPICAL FLOOR PLAN.



FIRST FLOOR PLAN.

THE EL DORADO, APARTMENT HOUSE, NEW YORK CITY.

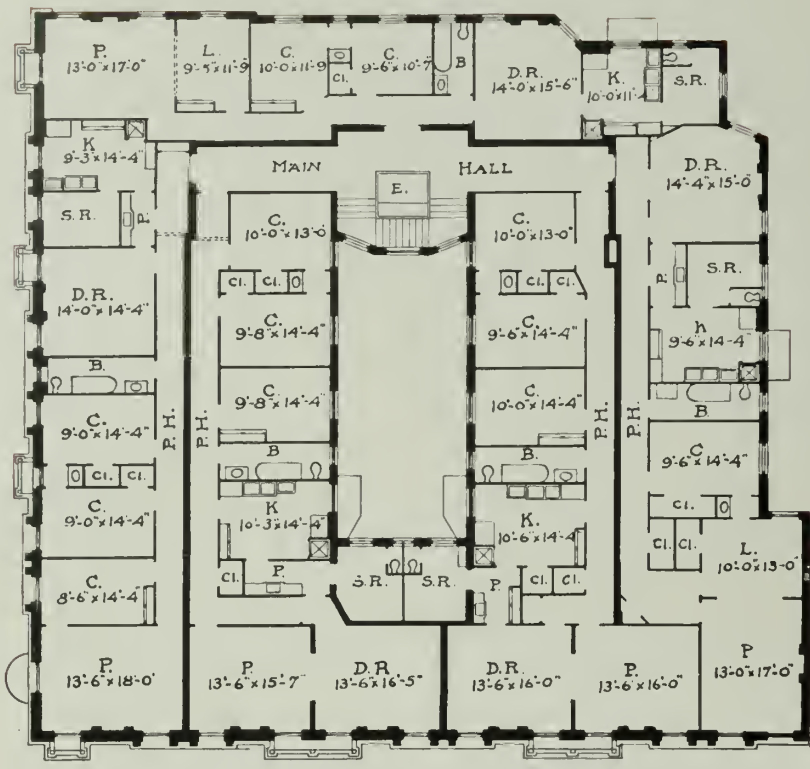


PLAN OF SMALL APARTMENT HOUSE, CHICAGO.

Myron Hunt, Architect.

Stair and corridor floors should be made of easily cleaned material. White marble, although very attractive, and especially good for stairs on account of the light, is hard to keep in order, and white tile or mosaic has the same difficulty. The more modest terrazzo is a very suitable and attractive material, as is colored mosaic.

Where interior light or ventilating shafts are necessary the skylight should be raised two feet or more from the roof, and louvres placed underneath, as the ordinary skylight ventilators are insufficient.



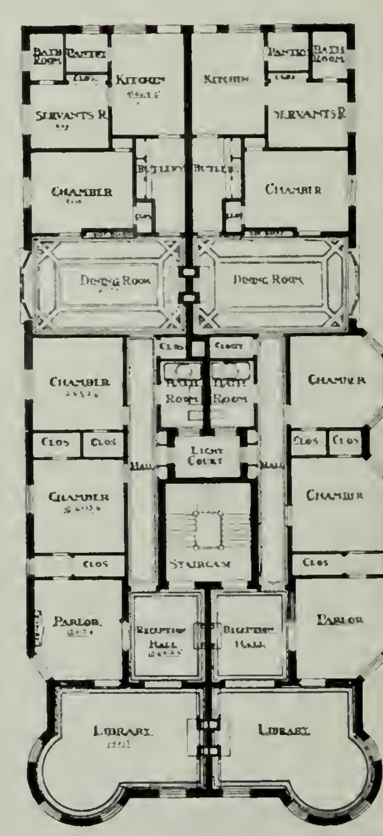
TYPICAL FLOOR PLAN.
THE SWEET WILLIAM, APARTMENT HOUSE, NEW YORK CITY.

A NOVEL CONSTRUCTION.

A WESTERN paper publishes a very interesting account of a house which was built in Nevada, the walls of which were constructed entirely of beer bottles. The inside of the walls was plastered with mortar spread to a depth sufficient to cover the protruding necks, thus making a smooth surface, and what seems like a mere eccentric necessity has been demonstrated to be warm and most habitable. This construction is analogous to that which was employed centuries ago in the dome of the Ravenna Cathedral, which was built very largely, if not entirely, of terra-cotta jars laid on their sides and cemented in place. In fact, the only difference in principle between the construction of the dome of the Ravenna Cathedral, the beer bottle house in Nevada, and such cellular wall construction as we described in our last issue under the name of Phœnix, is that in the latter the air cells are more or less continuous and the blocks are laid parallel rather than at right angles to the lines of the wall.

APARTMENT HOUSE,
NEW YORK CITY.
Israels & Harder, Architects.

SMALL APARTMENT HOUSE, BOSTON.
Robert Coit, Architect.

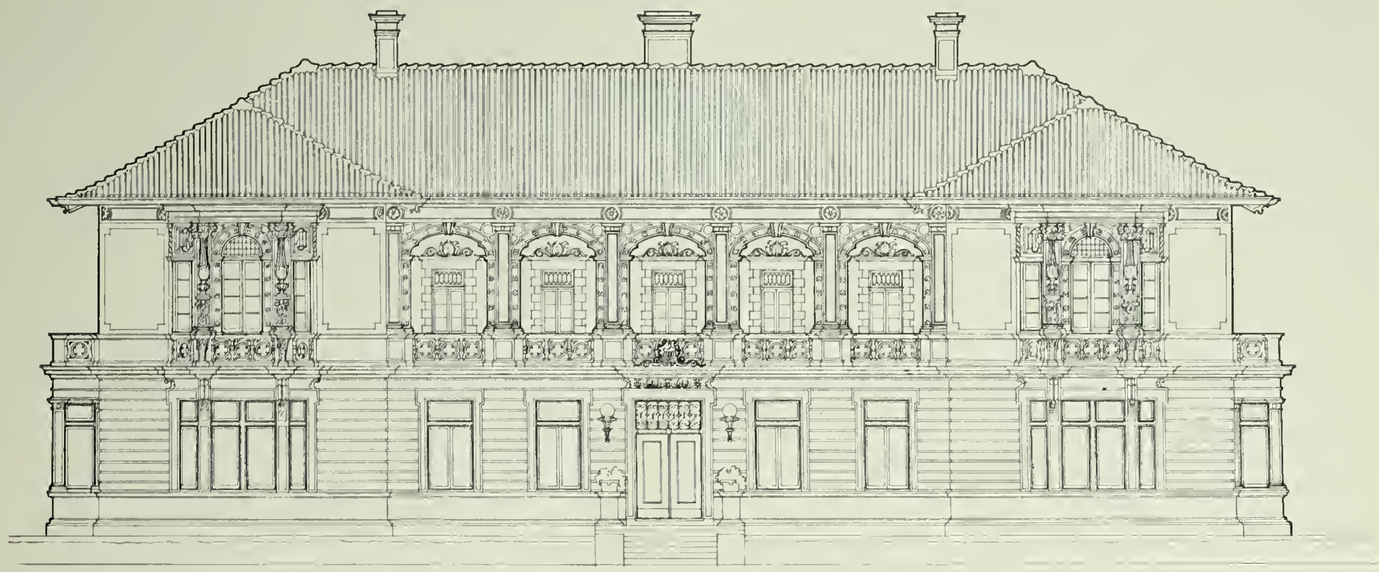


TYPICAL FLOOR PLAN.
A MODERN APARTMENT HOUSE,
CHICAGO.

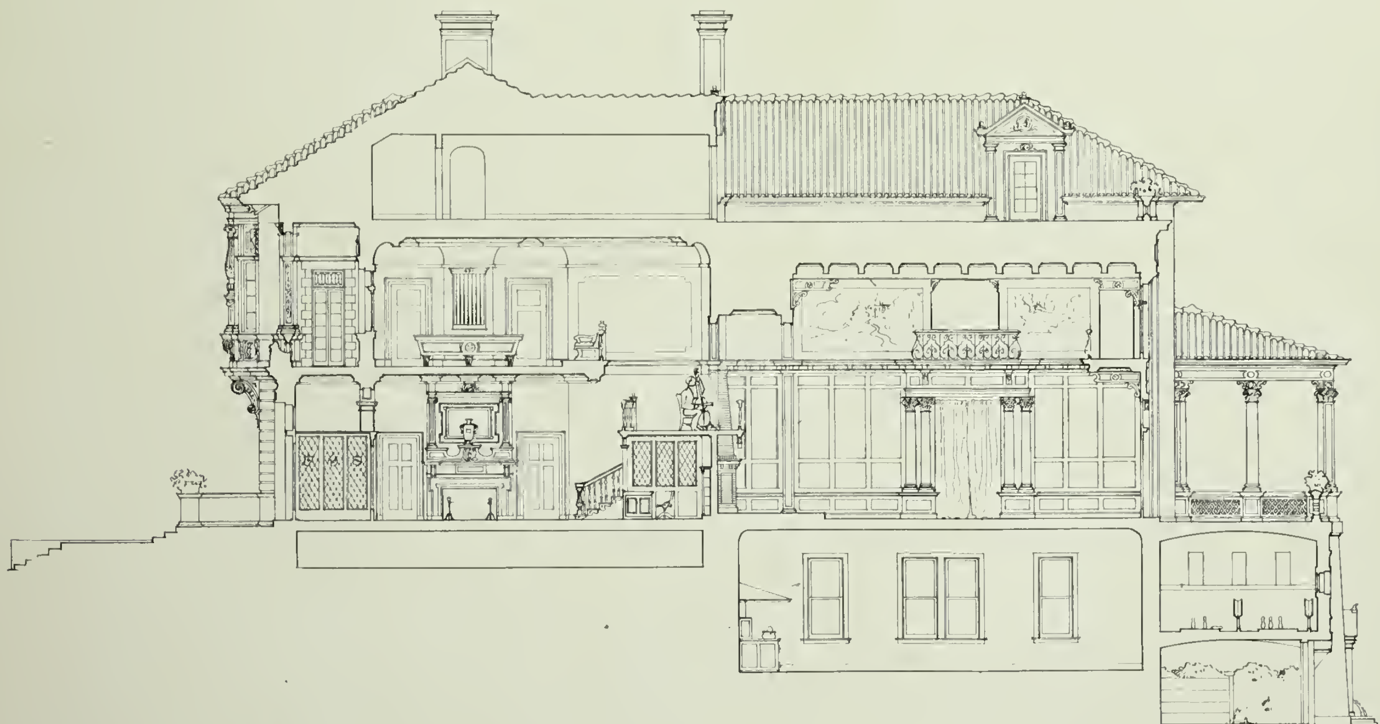
A Suburban Clubhouse.

BY JOHN LAWRENCE MAURAN.

NOT far from the business center of St. Louis, in the rolling country to the west runs the beautifully clear Meramec River. At a point easily reached by both trains and trolley and intersected by one of the fine state unconsciously, perhaps, by the surroundings of the Hub of the Universe. At all events, the broad macadam streets overarched with fine trees, bordered by stately places and more modest vine-clad cottages, are reminiscent of Brookline or Milton. The climate, however, has affected the architecture of hall and cottage alike, for as wood construction is neither cool enough nor sufficiently



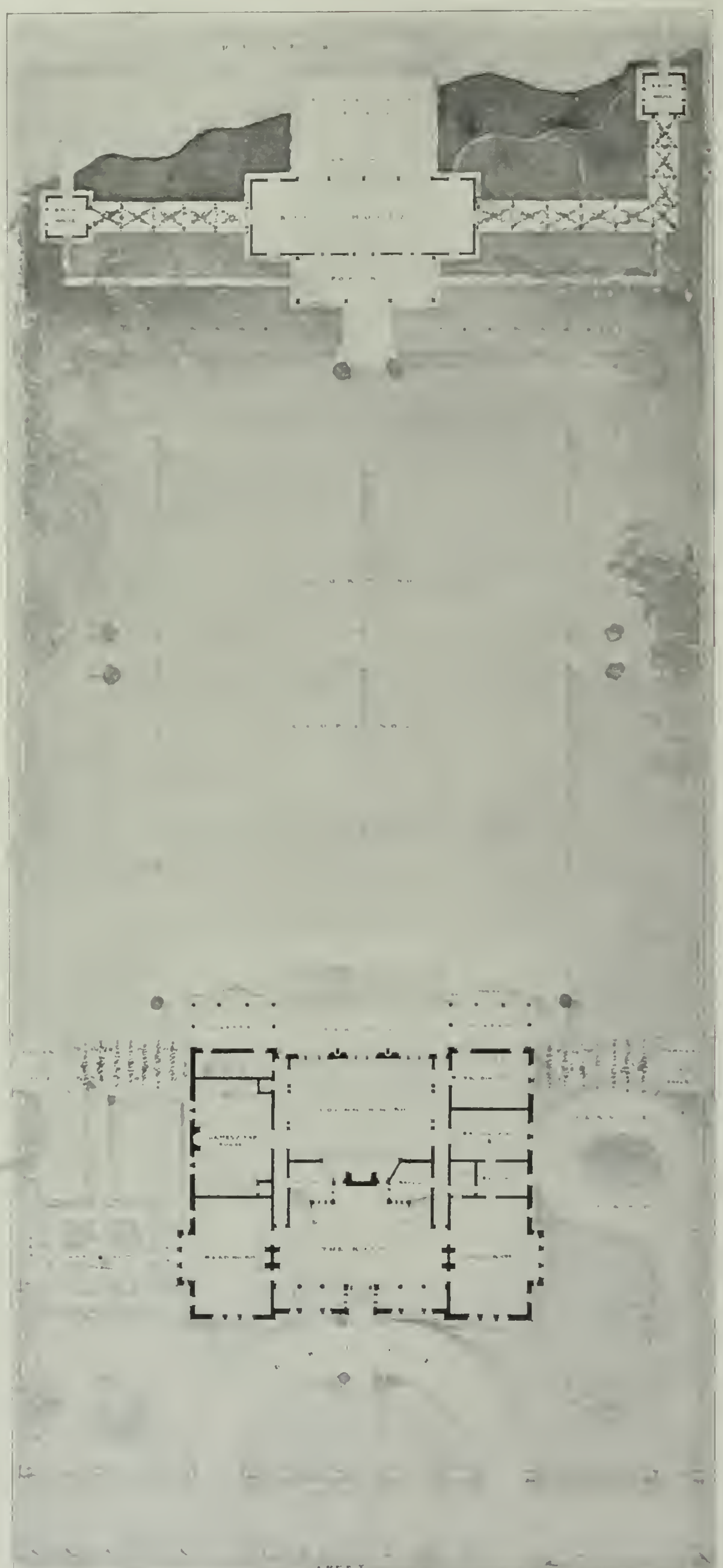
FRONT ELEVATION.



SECTION.

A SUBURBAN CLUBHOUSE.

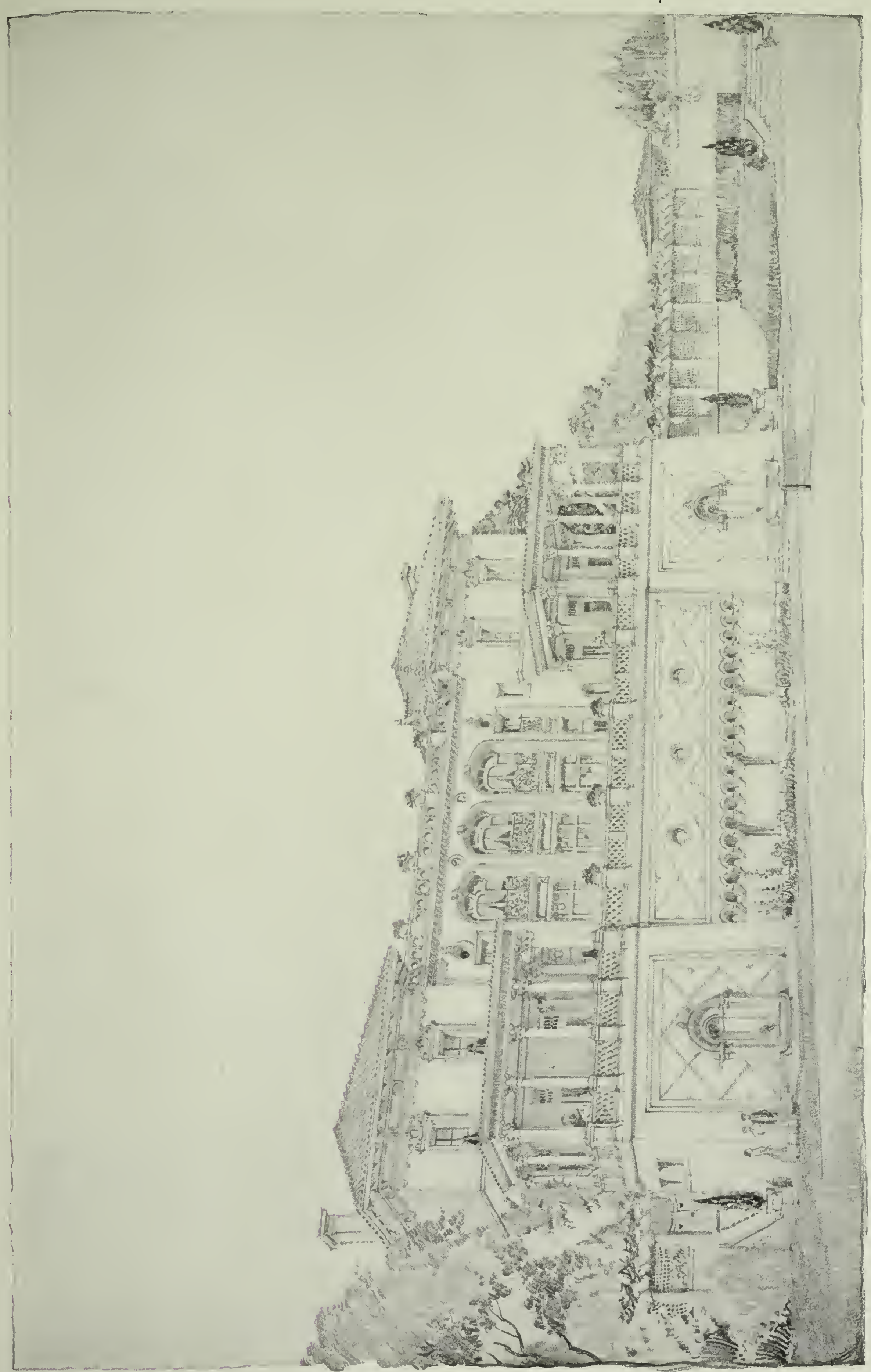
roads, perfect for motors, a goodly number of the sensible moneyed men of the city have established their homes and settled down to enjoy the good and simple things of this life, away from the noise, dirt and heat of the metropolis. Just as our New England forefathers brought many of their ideas of architecture and civic arrangement from the fatherland, so our Missouri colony has been influenced durable, and native granite difficult to quarry, the local material, clay, has lent itself admirably to a brick and terra-cotta expression of the solution of the same problem in "sunny Missouri," worked out so many years ago in Spain and Italy. Here vines run riot over masonry walls and festoon themselves with almost tropical luxuriance on pier and pergola. For the people themselves, it is only necessary to state that a Western cordiality combines with a Southern hospitality to create the necessity of a common meeting ground and a place to entertain friends and guests from far and wide. So much for the "*raison d'être*" of our clubhouse, its surroundings and architecture and its general prosperity. The Building Committee selected a lot fronting 200 feet on the Old Manchester Road, falling gradually for some 300 feet right to the bank of the Meramec River. Advantage has been taken of "the lay of the land" to take up the fall in the depth of the building, to secure a service yard at the basement level reached by a sloping service road, to provide a high and well-lighted basement containing the kitchens, pantries, fuel, heating apparatus, storage, etc., and to give a level space at the rear for the tennis courts. The basement is invisible from the front and is masked from the rear, which becomes from the very nature of its surroundings a principal façade. The committee wisely decided not only to use brick and terra-cotta for the entire exterior, but to employ the same materials for the mantels, they adopted a tile for the roof and fireproof construction throughout, including a Guastavino ceiling for the bowling alley to carry the terrace above. To provide diversion and comfort for both sexes as well as for old and young, and to secure the maximum amount of space for general entertainments within reasonable dimensions have been the governing factors in making the plan presented, and a general description of the various uses will serve to explain the scheme and enable the patient reader to secure all the privileges, except the creature comforts, which would be extended by a visitor's card to the Riverbank Club.



GROUND PLAN, A SUBURBAN CLUBHOUSE.

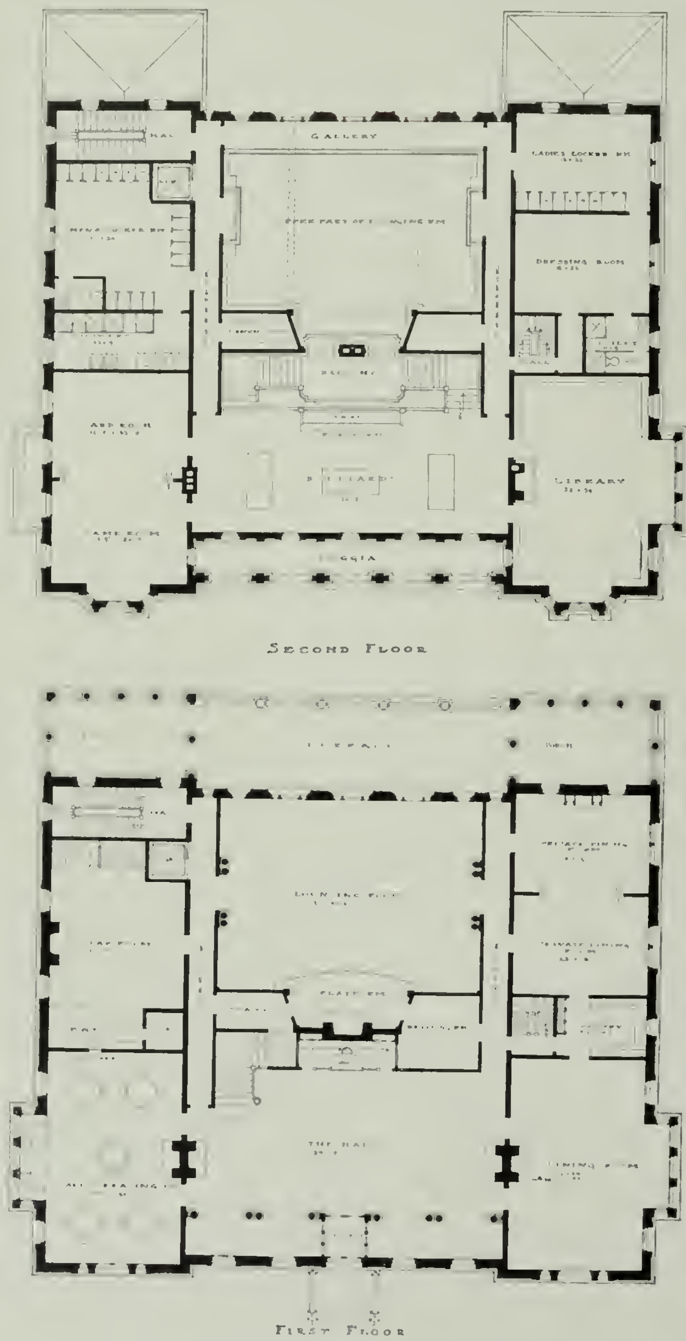
Perhaps the early afternoon train will bring a number of men intent on spending a few pleasant hours at the club before dinner, and while the younger ones are in their dressing rooms preparing for tennis or boating we will watch the "gathering of the clans." The first comer, evidently anxious for a rubber of "bridge," stations himself by one of the hall windows commanding the approach, while quite inconspicuous himself; the next two come together and enter the café and newspaper room for a "snifter" and a glance at the evening paper pending the arrival of friends whom they have invited to drive over to Meramec for the afternoon and the theatricals in the evening.

These guests arrive next and, making straight for the manager's desk opposite the entrance, are directed to the café, where one is seized upon to go upstairs for a game of billiards, while the other is taken down the stairs behind the taproom to bowl in the alleys provided just beneath the terrace. The next comer resolutely refuses to swell the nucleus for the rubber on the plea that he is preparing an article, for which much read-



DESIGN FOR A SUBURBAN CLUBHOUSE.
John Lawrence Mauran, Architect.

ing must be done, and he betakes himself to the quiet and well-appointed library on the second floor. Our whist fiend grows weary of his vigil and being drawn irresistibly toward the card rooms at the opposite side of the house from the library, he drops into the comfortable seat near the pool tables and varies the excitement of watching a good game by frequent trips to the cool and attractive loggia, in the hope of spying some one to make up a table. At last his efforts are rewarded and we will leave him to his game. As the twilight falls and the tennis players ascend to their shower baths and clean clothes, the men by one retired staircase, the girls by another, the little group watching the tennis from the terrace comes into the lounging room, where it is presently joined by the bridge players, the pool players, the bowlers and the freshly attired girls from the tennis courts. This is the common meeting ground, where men may smoke while they stand around the piano for a last song. The tennis men are organizing a tournament and seek the quiet taproom for a small drink while they discuss the details. There are a few stopping for dinner in addition to the members of the cast of the little play to be given later on, who are dining together in the private dining-rooms which have been thrown together for the occasion. By half past eight nearly the entire membership of the club with their visiting guests are assembled in the lounging room facing the platform, which is equipped with footlights and drop curtain while suspicious sounds emanate from the retiring rooms. As the evening is fine, a goodly number sit outside on the terrace, looking through the open French windows, while others still are whispering in the gallery opposite the stage. As the curtain rises it reveals a cleverly managed scene, masking the generous fireplace (which forms the center of the winter grouping of the room), and when the curtain is removed after the last act, the musicians take up their position on the main stair landing where a balcony is so arranged that the music can be heard equally well in lounging room and hall, so that there is ample floor space for the dance which invariably follows. After a supper in the dining room and tête-a-têtes throughout the house, the club closes to allow the tired manager and his wife to retire to their snug quarters on the third floor to gain strength for the round of pleasure which begins with each new day.



PLANS, A SUBURBAN CLUBHOUSE.

THE CAMPANILE OF ST. MARK'S.

THEY are having such trouble with the rebuilding of the Campanile of St. Mark's. There is so little building of any magnitude ever thought of in Venice that the mere size of this particular structure seems to appall every one who comes near it. First and last there have been several architects associated with it, and one after another have given up and disappeared. Now they seem to feel that the foundations must be increased in the spread, and accordingly piles are being driven outside of the present footings. Any one who is familiar with the extremely primitive way in which pile driving is accomplished in Venice, where such a thing as a steam pile driver or hammer weighing more than two hundred pounds is unheard of, will appreciate the questionable value of the piles, which, as reported, are only twelve feet long. Driving these piles will necessitate to a certain extent the uncovering of the old work, which was set in place something over a thousand years ago, and it is extremely likely that if the old piles are exposed to the air for any length of time they will suffer a rapid deterioration, whereas they would last indefinitely when kept under water away from the air. We have examined pieces of the St. Mark's piling which were taken out in 1885. When first removed the wood was very strong and tough, but it is now quite soft and punky. They certainly need an experienced engineer in Venice.

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

BY D. EVERETT WAID.

ARCHITECTS' CONTRACTS AND FEES — *Con.*

AS a part of this symposium it may be of interest and value for reference to include extracts from actual contracts for architects' services which have been made recently in New York and Boston. Incidentally they show that the Schoolhouse Department of Boston employs its own engineers to plan, specify and supervise the heating and electrical equipment and pays the architects two and one-half per cent in addition on the cost of the "domestic engineering"; that the city of New York has made contracts with architects to design four groups of hospital buildings, one (Bellevue) to cost over $3,000,000, and allows the architects two and one-half per cent in addition to the five per cent as compensation for the employment of consulting engineers on heating and ventilating work, power and refrigerating plants, plumbing and electrical work.

The Board of Schoolhouse Commissioners of Boston issues the following letter in making contracts with architects:

"*Gentlemen*, — You are hereby invited to accept the appointment of architect for
and your appointment is confirmed by the Mayor. In consideration of the fact that the Commissioners will lay down the requirements at the outset, will furnish information for the specification, will employ engineers to lay out heating, ventilation and electric work and write the specification therefor and that the working specifications will be printed by the city, the commission paid will be two and one-half per cent on the cost of the domestic engineering and five per cent on the cost of the remainder of the work.

"The architects will be called on to furnish to the Commissioners, for filing here, one set of tracing-cloth drawings, at one-eighth scale, floor plans, elevations and sections, and such details at a larger scale as may be necessary to explain the specifications; two sets of blue prints, on cloth-mounted paper, and one set of blue prints for the Building Department; also one set of tracing-cloth plans from which blue prints can be taken for the contractor. (These prints will be taken by the Commission.) Also one correct and complete set of specifications as copy for the printer.

"The services of the architects will be the usual full service, including specifications, full-size details and superintendence of the building complete, but the engineers will further superintend the domestic engineering. On completion of the work the tracing-cloth set on file in this office is to be corrected to agree with all changes made during construction.

"Payments will be two and one-half per cent on signing of all contracts, except those for heating, ventilation and electric work, and thereafter two and one-half per cent on the amount of certificates issued each month on all contracts.

"In regard to employing Messrs. Blank as consulting engineers, we beg to notify you that we shall expect this firm to examine the plans prepared for schoolhouses, to make complete drawings of the heating, ventilation and electrical work, and complete specifications, which shall form a basis for contracts. Messrs. Blank will also superintend the execution of this work.

"All payments in connection with this work will be on certificates issued by your office, but accompanied in each case by certificates of Messrs. Blank as vouchers.

"We enclose herewith general information regarding your building. . . ."

The city of New York has used contracts which were objectionable to architects doing work for the city. Recently a new form has been printed which, as the result of efforts of a committee from the New York Chapter of the American Institute of Architects coöperating with the Corporation Counsel, is considerably improved. The contract is drawn, of course, to safeguard the interests of the city. Each architect securing work from the city before signing seeks to have that department of the municipal government from whom he receives his commission make the modifications desirable to suit the case. For example, the printed form, in order to avoid abuses which might otherwise follow, does not allow for traveling expenses, for clerk of the works, or for any charge for monumental or decorative work beyond five per cent. Again, although the contract recognizes the principle of extra compensation for experts, yet it does not allow such compensation without a special agreement in each case. Some architects at present doing work for the city are much dissatisfied with some of the terms of this contract, notably paragraph fifteen. Public work seems peculiarly liable to delay in the letting, and they find it a hardship not to receive two and one half per cent at least when drawings are ready for bids.

Following are paragraphs from the above-mentioned contract as now used by the city of New York when architects are commissioned to design hospitals, engine houses, public baths, armories, etc.:

"4. The Architect(s) will thereafter, and within . . . days after notice of the final approval of the Commissioner(s), President, Board of the preliminary drawings and specifications (or the revision thereof), provide and furnish to the Commissioner(s), President, Board, complete plans, elevations, sections and drawings of the exterior and interior, and complete working drawings with construction details sufficiently shown, and with figured dimensions given so as, with the specifications to be furnished as hereafter required, to enable prospective bidders and contractors to make accurate and reliable estimates of the quantities, quality and character of the several kinds of labor and materials required to erect and complete the said building, structure and equipment in a first-class, workmanlike manner and for the purposes and uses intended.

"5. Thereafter and during the erection and construction of the above-entitled work the Architect(s) shall furnish all the detail and working plans necessary and proper to enable the Contractor to provide the material and apparatus, and to build, erect, construct and complete the said building or structure in a good, prompt, efficient and satisfactory manner; such plans and drawings shall include all the various parts and portions of the building, structure and equipment, and all features of decorations and ornamentation desirable and proper to make it an artistic, architectural or engineering production, but not including designs of pictorial, mural or ceiling decorations.

"6. Such plans and drawings shall include all air, gas, steam, hot and cold water, refrigerating, power, heating, ventilating, sanitary and electric pipes or conduits, and the location of all appliances and machines operated and supplied thereby.

"7. . . . Upon the final completion of the building, structure, works and appliances, and before the final payment to the Architect(s), the Architect(s) shall furnish to the Board a complete set of plans, elevations and sections revised and corrected so as to agree and conform to all material changes and alterations that shall have been made, so that such plans, elevations and sections shall show the dimensions, shapes and locations of the building or structure as built and completed and the operation of the works, plant or apparatus as it or they shall have been actually built and completed, with all connections, valves, gates, switches, cut-outs, etc., and with arrows or indexes to show the directions of the currents or flow when the plant or plants is (are) properly working.

"8. The Architect(s) shall prepare and furnish full and complete specifications in detail for the above-entitled work. Such specifications must be so drawn as not to violate the provisions of section 1554 of the Greater New York Charter.

"9. The drawings, including the plans, elevations and sections, and the specifications prepared, provided and furnished by the Architect(s), are instruments of service. The original plans and drawings and original specifications are to be and shall be taken to be and remain the property of the Architect(s) who reserve and retain all rights to the incorporeal designs exhibited therein and thereon, except as against the City of New York.

"10. The Architect(s) from the beginning of the work shall take full charge and supervision of the building, structure, plant, works, apparatus and equipment, and all necessary and proper instructions to the Contractor, his superintendents and foremen, shall be given by or through the Architect(s).

"11. . . . But such clerk of the works or superintendent shall not give orders or directions to contractors or interfere with the work except through the Architect(s) or his (their) superintendent or representative.

"12. In case the Commissioner(s), President, Board deem it advisable to retain the services of consulting engineers in respect to any feature of construction or equipment of the said building or structure, such consulting engineers may be retained and employed and their compensation shall be paid by the City. The persons so selected and employed shall be satisfactory to both the Commissioner(s), President, Board and the Architect(s).

"13. The City hereby retains and employs the Architect(s) to perform the aforesaid services, and for and in consideration of said services and of the observance and performance of all the conditions and stipulations herein contained agree to pay to the Architect(s) in full compensation therefor the following fees, viz.: Five per cent (5%) upon the total cost of the building, structure, works, plant, apparatus or equipment, including all fixtures necessary to render the building, structure, works, or apparatus complete for occupation or use; but not including any furniture, fixtures, heating, power, lighting, ventilating, electrical, sanitary or elevator equipment, plant or apparatus, for which designs and supervision are not provided and (the word "and" should be "or," a misprint in the contract which it is quite important to correct) furnished by Architect(s).

"15. Payments to the Architect(s) shall be made at successive stages of the work as follows: Upon the completion of the drawings and specifications called for in clause 3, one per cent (1%) of the estimated cost of the work; upon the completion of the drawings called for by clause 4, one-half of one per cent (½%) of the estimated cost of the work, and upon the execution and closing of the contract for the work by the City, an amount which, together with the amount already paid, shall be equal to two and one-half per cent (2½%) of the amount of the contract price, and thereafter the balance of the five per cent (5%) shall be paid to the Architect(s) in progress payments at the rate of two and one-half per cent (2½%) of the value of the work as certified to the Contractor for payment by the Architect(s) and the Commissioner(s), President, Board; such value to be the amount for which a certificate shall have been issued to the Contractor for work performed and materials furnished since the last progress certificate prior thereto, and in accordance with the terms of the contract for the erection and completion of the building or structure.

"18. If, for any reason, it becomes necessary to postpone, suspend, delay or abandon the building, structure, works or apparatus for which these services are engaged and employed, or in case the death of the Architect(s), the Architect(s) shall be paid such fees as they shall have earned, and such part of any fee as the work which they have done in any stage or part of the work as herein described bears to the whole work of that stage, and such fees or proportional part thereof as shall be due and owing by the express terms of this agreement, and such postponement, suspension, delay or abandonment shall not give any cause of action for damages or for extra remuneration to the Architect(s).

"20. The Architect(s) shall be liable to, and will indemnify the City for, any damages or loss resulting to it for any infringement of any copyright or patent right of designs, plans or drawings by the use or adoption of any designs, plans or drawings furnished by the Architect(s)."

Below is a modification of the above contract as signed a few days since by the four firms of architects for Bellevue and Allied Hospitals:

"Five per cent (5%) upon the amount of the total cost of the buildings, structures, works, plants, apparatus, equipment and fixtures, necessary to render the buildings structures, works and apparatus complete for occupation and ready for use, and an additional two and one-half per cent (2½%) as compensation for the employment of a consulting engineer upon the amount of the total cost of the heating and ventilating work, power and refrigerating plants, plumbing and electrical work, including all plants, apparatus, equipment and fixtures necessary to render these works complete for occupation and ready for use."

Another recent contract is that made by some gentlemen of Brooklyn acting as representatives of Andrew Carnegie, with five architects who are to design twenty library buildings in that borough. Following are extracts from the somewhat prolix instrument:

BROOKLYN CARNEGIE LIBRARY BUILDINGS.

"The Committee hereby retain and employ the architects to perform the aforesaid services and agree to pay to each of the several architects, parties of the second part, in full compensation therefor, five per cent upon the total cost of the library building by him designed and supervised, said cost to include all equipment, fixtures, fittings and accessories (but exclusive of carpets and movable furniture) necessary to render the building fit for occupation.

"And it is further agreed that if the architect shall be required by the Committee to design or to purchase carpets or movable furniture, he shall be paid for such service according to the 'Schedule of Minimum Charges' of the American Insitute of Architects.

"The Committee further undertake and agree to pay each architect for his services at the rate above specified as follows:

"One per cent on the proposed cost of the work upon the completion of the preliminary sketches, the amount so paid to be credited on the total commission of five per cent of the actual cost, whether the estimate of the cost of the building shall prove greater or less than the actual cost; one and one-half per cent on the amount of each contract duly awarded and made payable when such contract is awarded or made, or if the award be delayed more than thirty days after the submission of bids, then upon the lowest bid received; two and one-half per cent upon the amount of each certificate duly issued by the architects to contractors; any difference between commissions based upon the estimated cost and commissions based upon the actual contract price to be adjusted at the time of the third payment. For partial services in case of the abandonment of the work or its prolonged interruption or the termination of the services of one or more of the parties of the second part, such party or parties of the second part shall be entitled to their fee in accordance with the schedule of minimun charges adopted by the American Institute of Architects.

"It is further agreed that . . . when two or more libraries are erected from the same design the author of such design shall be employed at a commission which shall be for full services, four per cent for the second library building and three per cent for the third and subsequent buildings and for partial services in proportion.

"The Committee may, whenever it becomes necessary in their opinion, employ expert specialists, to be acceptable to the architects acting as an advisory commission, whose duties shall be to lay out a general scheme of plan and specification for heating and ventilating and for the electric lighting and machinery which shall apply to all library buildings, all engineers for any further or more detailed engineering work to be employed by the individual architect or firm of architects. The usual surveys of the sites shall be provided to the architects by the Committee.

[The clerk of works for each building is to be appointed on recommendation of the architect and paid by the Committee.]

"Five architects form an Advisory Board, who sign one common contract and allot the several buildings among themselves, select a successor to carry on his work in case of the death of one of the architects, and vote approval on each preliminary design before it is submitted to the Committee. They must also approve complete working drawings and specifications of each building."

The Committee engaged one engineer who laid out the general scheme of heating and ventilation for each of the several libraries, and for which they paid him two and one-half per cent. Several of the architects exercised their option and agreed to pay the same engineer two and one-half per cent additional for working out the scheme in detail, writing specifications and superintending installation.

For the Carnegie Library buildings which are to be erected in the Borough of Queens, New York, the following provisions have been made:

"Committee employs clerk of works, subject to approval of architect, and who shall act under the instructions of the architect. Fee, five per cent, paid one-fifth on completion of preliminary sketches, two-fifths 'upon the amount of each contract duly awarded,' balance upon amount of each certificate duly given by the architect to the contractors."

TAKING THOUGHT.

THE expression attributed to J. Pierpont Morgan descriptive of overloaded securities offered on the market can to a very considerable extent be applied to the architecture of to-day. It is undigested. We know pretty well what we want. We have abundant means to satisfy our desires and the opportunities have been simply enormous, especially in the large eastern cities; but if there is any one characteristic which stands out more prominent than another in current architecture it is lack of deliberate, serious thought. The lesson which must be impressed most strongly upon our rising young architects is to make haste slowly, to think by the way, and to hold themselves free from the kind of business rush which draws them into the commission of undigested architecture.

Fireproofing.

LESSONS DRAWN FROM THE IROQUOIS THEATER FIRE.

SO much has appeared in the daily press regarding the Iroquois Theater fire, and the papers have described so fully everything that took place, that we need notice in these columns only a few of the more salient points in connection with the disaster and present some of the most obvious lessons which this fire suggests. Some of the accounts have made a great deal of the fact that there was no fire alarm on the stage. That fact counts for but very little, in our opinion. The fire was caused by the heat of some improperly guarded arc lights which were being used to concentrate a gleam of light upon the singers in the center of the stage, and which set fire to a frayed drapery hanging over it. One of the stage hands tried to beat out the fire with his hands and with a stick, but it spread beyond his reach. Upon attempting to lower the asbestos curtain, it caught about twenty feet from the stage floor at one side. The fire did not spread, however, with such extreme rapidity but that a cool-headed stage hand with a supply of water at hand could have checked it at the start without the audience having been aware of any trouble. But the cool-headed stage hand was lacking, and apparently the water and hose pipe were lacking also, and when once under way the spread of fire was so rapid that no fire apparatus from without could have reached the theater in time to have averted the panic. Consequently it may be said that the chief lack was in cool-headed, intelligent effort on the part of the stage hands.

The rapid combustion of the scenery formed an immediate accumulation of gas in the upper part of the stage where it ought to have readily escaped, but the skylights, which were intended to be automatic, were either nailed up or were at any rate not in operation, and the explosion of the confined gases drove all the flame out into the auditorium, tearing away or consuming the partially lowered curtain and actually burning some of the spectators in their seats. Upon attempting to escape through the doors and windows which were marked exits, some of these doors were found to be securely locked and some of the windows were found to lead out on to exterior balconies, the stairs down from which had not yet been put in place. In other words, the theater building was not really completed, and it was a fatal crime on the part of whoever accepted the responsibility to allow the theater to be used in its unfinished condition. There is simply no excuse for this. The house was begun on the first of May and occupied shortly after the middle of November. It was a rush job from start to finish, and as far as its being opened on schedule time was concerned was a great achievement for the builders, the architect and the owner; but it was the kind of haste which made possible the awful loss of life.

THERE is every evidence to show that the theater was planned in liberal compliance with the building laws of Chicago relating to such structures. Whether such laws were adequate is entirely another question, and one which cannot be discussed *ex parte*. It has been stated that the fire demonstrated the excellent construction of the theater. In thirty minutes from the start of the first blaze the fire was entirely extinguished. Nearly everything combustible was consumed on the stage, but it required only half an hour to cool the walls. But there is no evidence that this short, quick blaze was any fair test of the fireproof system. Had the fire department been a few minutes later in reaching it the combustible material throughout the auditorium would all have been ablaze, and, in the opinion of the expert who examined the structure for THE BRICKBUILDER, the building would have been entirely wrecked. The seats were all stuffed and covered with plush; the entire building on all three floors was carpeted with Wilton carpet, laid on eight thicknesses of carpet lining fully one inch thick. These, together with the floors, would have made a conflagration hard to control. In addition, every door in the auditorium appeared to be covered with heavy plush portières. All this, in the absence of the fire department, would have threatened very seriously the fireproof construction, which is nothing more substantial than metal lath and concrete. The steppings are made of sheet iron, with floors of two thicknesses of seven-eighths boarding, with asbestos between. The main ceiling over the auditorium appears to have been constructed with light I beams filled between with concrete, and furred off on the under side with steel furrings and stiffened wire, plastered. But the fact remains that such fireproofing as this building contained was sufficient to enable a prompt department to save the building by quick action.

It appears that the stairways were sufficient in quantity and capacity to more than comply with the theater ordinances, but they were complicated and most of them were in short flights running east and west, rather than in the general direction of the main entrance and exit. Some of them commenced just outside the doors, and in the place where the greatest loss of life occurred there were three steps only. But when the most unfavorable criticism shall have been passed upon the arrangement of the theater, the fact remains that want of stage ventilation and proper fire appliances on the stage was the keynote of the whole disaster. An automatic sprinkler system acting promptly might have extinguished the fire. A few cool heads on the stage could surely have done so. But neither the sprinkler nor the cool heads were there, and when panic has once seized spectators in a theater there are very few arrangements of exits or corridors which would be adequate to prevent great loss of life. There was good construction in the shell, too much gorgeous material in the finish, and a wealth of upholstered gorgeousness over all; for the last of which the architect in all probability was not responsible. This disaster has demonstrated that carelessness, indifference, bad management, the misuse of safety devices and criminal negligence can set at naught all that the architect can do in the well constructed theater, and that no building can be constructed to prevent a panic. Much of the negligence in this case seems to have been due to the fancied security inspired by the supposition that the building was fireproof. The same idea seems to have possessed the audience, for the latest evidence shows that there was no panic until the so-called explosion filled the house with gas and flame in an instant.

A secondary but very obvious lesson of this disaster is that a theater should never be opened to the public until it is fully completed and equipped, no matter how urgent the demands of a rush theatrical syndicate.

THE report made to the mayor by the committee of architects and builders appointed by him to investigate into the causes of the disaster is especially valuable as pointing out defects which ought not to have existed. The following is a summary:

I. What was the primary cause of Iroquois Theater building fire?

Sparks or heat from an electric projector, spot or flood light, igniting draperies back of proscenium arch about twelve feet above stage floor.

II. Why did fire extend?

No adequate means at hand to extinguish same. (*a*) The kilfyre provided proved ineffective. (*b*) The absence of vertical standpipes containing water under pressure, provided and connected with hose on hose racks at convenient locations on flies and bridges. No automatic sprinklers. (*c*) The absence of hooks which could have been used to tear down the burning portion of the scenery.

III. Why did fire spread to auditorium?

1. The fire curtain did not operate effectively. The descent was probably interfered with by some projection. (*a*) On account of delay in attempting to operate same until fire had obtained some headway. (*b*) On account of insufficient provision for effectively operating same. (*c*) On account of air pressure producing friction against brick wall, due to expansion of air or gases resulting from burning of scenery. (*d*) Stage doors leading to outer air were open.

2. There was no outlet open at top of stage to permit escape of smoke and other gases and secure an upward draught on stage side of proscenium wall, the ventilator being closed and the automatic opening skylights provided for the purpose were prevented from operating by being fastened with wire and props. (*a*) Exits providing outlets for smoke and gases were provided at rear of auditorium at a height above proscenium arch, drawing the heated smoke, other gases and flames over and toward the people through the auditorium to these outlets. These outlets were some of the gallery or upper balcony exit doors. The gases produced by the fire, being highly heated and thus made lighter than the cold outer air, were forced upward by the inrush of the air to stage doors, and finding no opening above the stage, were forced into auditorium and compelled to find escape at the top of the house, following natural laws; in other words, it acted precisely as an open-grate fire would act, when the flue is closed.

IV. What caused the loss of life?

1. Panic. (*a*) Exits were not designated. (*b*) Steps in front of or in door openings. (*c*) Numerous exit doors being locked or bolted with devices not familiar to the general public. (*d*) All exits were not manned. (*e*) The independent gallery stairs required by law were closed against exit by a dead locked door at foot of top flight. The arrangement of these stairs was of faulty construction as to width, pitch, turns and railings. (*f*) The outer iron alley shutter, not being opened and swung back against the wall before the performance, when opened later during panic prevented people from continuing down the fire escape on account of the crossbars being

caught on the railing of the fire escape, thus effectually blocking the passage. [Note. — It should be noted that, in the majority of cases, stairways of ample width were provided, but these were, to excited people, whose natural inclination would be to leave the house by the same exit used in entering, confusing in arrangement. It should also be noted that ample exit provisions were made and that the doors in same were bolted with bolts, which could be operated from the auditorium side by any one, without the use of key, but that the public did not understand their use, and the ushers had not been drilled or instructed, and neglected to open a number of same.]

2. Asphyxiation. (*a*) First blast of smoke, gas and flame from stage.

3. Burning. (*a*) On account of exits being blockaded as the result of people falling. (*b*) On account of the fire escapes from the upper alley exits passing lower exits out of which flames were bursting.

THIS fire has been the means of developing an excess of zeal on the part of those who are charged with the enforcement of our laws, which is highly commendable and which, if at times a little misdirected, may still lead to good results. In Chicago the mayor precipitately closed a lot of the theaters, with the immediate result, it is said, of landing the city in a tangle of suits for damages. In St. Louis a somewhat more conservative course was followed, while in New York nothing appeared in public to show what was being done by the officials, all the investigations being conducted very cautiously. The great difficulty, however, in properly controlling theaters arises from the fact that in all our large cities the greater portion of the theaters are relics of a time, not so very long ago, when the theater regulations were very primitive. Thus in Boston, as an instance, there are only three theaters which have even attempted to conform to existing laws, while there are sixteen which were either alterations or were built before 1892, when the laws were very insufficient. Consequently, however desirous the building inspectors might be to insist upon ample protection for the public, it is found practically impossible to accomplish very much. The only hope is in the immediate passage of laws which shall be retroactive in that they shall apply to all buildings used as theaters or assembly halls, no matter under what law they may have been built. The laws in our larger cities are in the main carefully chosen and with some exceptions would furnish sufficient protection to the public if rigidly enforced, but it is asking too much to expect the building department to insist upon say fifty feet aggregate width of exits for a theater built this year, when its neighbor right across the street fully meets the law with twenty-five feet; or to insist upon asbestos curtains in three of the best theaters and the three in which fires and panic are least likely to occur, while allowing sixteen others, including all that are notoriously deficient in safety, to omit nearly every precaution which experience has shown should be taken. It is not well to amend any building laws hurriedly. This ought to be a matter for calm, deliberate judgment, and the results ought to be obtained by comparison with laws elsewhere, by studies of fact and by recognition of individual and public rights. But there is no reason to prevent the immediate passage of laws which shall compel all theaters to comply with existing laws which of themselves have been recognized as fitting and proper.

Selected Miscellany.

HOLLOW TILE FOR EXTERIOR WALLS.

HOLLOW terra-cotta blocks similar to those which are employed for floor and partition work have been used very successfully for the exterior walls of a large freight house erected in Chicago for the Illinois Central Railroad. The structure is three stories high, of steel frame and faced with blocks which form a total thickness of wall of about 12 inches. The exterior walls are finished a buff color throughout, the windows and sills being made of glazed tile. The blocks are of fire clay burned very hard so as to be quite impervious to moisture, and form a perfectly dry construction, giving not less than three dead air spaces. The Western Cold Storage Company has likewise erected a large building, faced throughout with 4-inch terra-cotta blocks, the cornice work and belts at each floor level being of pressed brick. In this case the tiles are set against the brick supporting walls of the building, and the spaces in the tiles are connected to openings top and bottom to allow of air circulation. The effect is a very satisfactory one and is one which we should imagine would be much more generally in favor with those who are to construct warehouses, mills or any building in which speed of erection, lightness of construction and thorough fireproofing are desir-

FARMERS' NATIONAL BANK BUILDING, PITTSBURG, PA.
Alden & Harlow, Architects.
Fireproofed with Burnt-Clay Tile.

DETAIL EXECUTED BY NEW JERSEY TERRA-COTTA CO.

able. In the hands of a capable designer this construction will also have great artistic possibilities. At a very slight added expense the exterior surfaces of the blocks can be glazed or enameled to produce a variety of effects.

THE HEIGHT OF A BUILDING.

When the first limitations were made upon the height of buildings of Boston the statute prescribed that the height should be counted from the highest grade of the principal street to the cornice. Those who desired a greater height than the law nominally countenanced thereupon immediately evinced a fondness for extremely tall roofs of sufficient height to conceal three or four extra stories, and accordingly the law was amended so that the height of a building should be the distance to the highest point of the roof. Then another question arose. In the old days houses were usually constructed with a pitch roof sloping back from the street, with the ridge parallel thereto, and as business moved out towards the residential district many buildings have been altered by simply constructing a flat roof at the same altitude as the ridge of the pitch roof, thereby gaining from one to three extra stories and in some cases even carrying the building up higher, for its class, than the law allowed. A decision has just been made, however, which stops this and does not give an owner a right to increase the size of his building by such changes in the roof, unless the building conforms to statute provisions. This is entirely as it should be, and while it works individual hardship in some cases, the public has a right to demand protection in what is in some respects the most dangerous fire district in any large city, namely, the region of dwelling houses reconstructed for business purposes and good neither for one nor the other.

APARTMENT, CHICAGO. D. E. Postel, Architect.
Built of "Shawnee" Brick, Ohio Mining and Manufacturing Co., Makers.

DETAIL EXECUTED BY ST. LOUIS TERRA-COTTA CO.

BRICKS WITHOUT STRAW.

Just what use the old Egyptians made of straw in the manufacture of bricks was always a puzzle to us until the London *Globe*, through one of its correspondents, made the discovery that by boiling straw in water and mixing clay with it a hard, shapely brick could be made which would not crack or deform in mortar, analysis proving that the effect was due to the tannin dissolved in the water, one per cent of which added very considerably to the resistance of bricks. As the yellow journalists say, this is important, if true. We know the good results of adding saccharine matter to lime mortar. If a little tannin can produce as good results in clay the discovery is well worth being acted upon.

IN GENERAL.

The residence at 43 Commonwealth Avenue, Boston, illustrated in THE BRICKBUILDER for December last, was the work of Julius A. Schweinfurth, and not Peabody & Stearns as stated.

The copartnership heretofore existing between Stephen S. Ward and Alfred C. Turner, architects, Boston, under the firm name of Ward & Turner, was dissolved January 12.

DETAIL EXECUTED BY WINKLE TERRA-COTTA CO.

AUDITORIUM FROM STAGE.

BY NIGHT.

THE LYCEUM THEATER, NEW YORK CITY. Herts & Tallant, Architects.

Messrs. Ward and Turner will each continue the practice of architecture with individual offices at 683 Atlantic Avenue.

A new club has been formed in New York City, with a membership limited strictly to architectural draughtsmen, with the objects of study and fellowship. A series of monthly sketch competitions are proposed, the first one being a seal or emblem for the club. On the 8th instant a nucleus of thirty members adopted the above name

DETAIL, EXECUTED BY CONKLING-ARMSTRONG TERRA-COTTA CO.

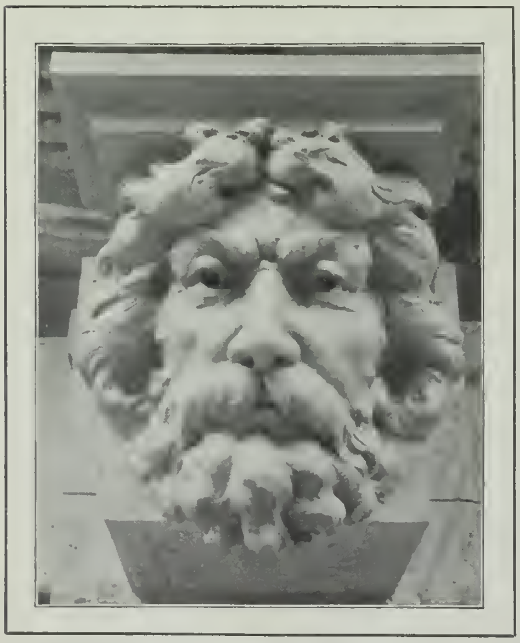
and a constitution and elected the following officers and committees to carry on the work: President, Lester A. Cramer; vice-president, Chas. H. Rosefield; recording secretary, Edwin H. Rosengarten; corresponding secretary, Walter Scott, 1133 Broadway; treasurer, Joseph Henry Hudson; chairman Current-Work Committee, John F. Nolan; chairman Entertainment Committee, A. Theo. Rose.

At the meeting of the Washington Architectural Club, held January 9, the drawings submitted in the second

ALBANY TRUST BUILDING, ALBANY, N. Y.
Marcus T. Reynolds, Architect.
Terra-Cotta made by New York Architectural Terra-Cotta Co.

competition for the Club Traveling Scholarship were exhibited. Mr. Theo. Pietsch gave a criticism on the drawings.

It is proposed to amend the by-laws so that the club may award each year one prize membership to a student of the Columbian University and to a student of the



DETAIL EXECUTED BY AMERICAN TERRA-COTTA AND CERAMIC CO.

METHODIST CHURCH, PLAIN CITY, OHIO.
Wilbur T. Mills, Architect. Built of "Ironclay" Brick.

DETAIL EXECUTED BY WHITE-BRICK & TERRA-COTTA CO.

Washington Atelier; said student to have been engaged for at least one year previous to the award of this prize membership as a regular or a special student in either the architectural course of the Columbian University or of the Washington Atelier. The awards to be made by the Board of Directors, from specimens of the students' work submitted by the Professor of Architecture of the Columbian University and the Patron of the Washington Atelier.

The Boston Architectural Club announces the following course of lectures to be given under its auspices in the public hall of the Boston Public Library: January 14, Introductory Lecture, C. Howard Walker; January 28, The Period of Pericles, Thomas A. Fox; February 11, The Period of the Cæsars, H. Langford Warren; February 25, The Middle Ages in Italy, Charles A. Cummings; March 17, Recent Syrian Excavation, Howard Crosby Butler; March 31, The Beginnings of Gothic, William R. Ware; April 14, The Gothic Ascendency, Ralph Adams Cram; April 28, The Italian Renaissance, W. P. P. Longfellow; May 12, The French Renaissance, D. Despradelle; May 26, Modern Initiative, Robert D. Andrews. These will be illustrated by stereopticon views and photographs specially selected from the library collection.

DETAIL EXECUTED BY NORTHWESTERN TERRA-COTTA CO.

The University of Pennsylvania announces the opening of an atelier for advanced work in design along lines similar to those pursued at the Ecole des Beaux Arts.

This atelier will be conducted by Professor Paul P. Cret of the School of Architecture, whose distinguished abilities, as evidenced by a career of unusual success at the Ecole des Beaux Arts, combined with an effective faculty for criticism, insure instruction of extraordinary value.

Membership is open to all architects and draughtsmen in responsible charge of designing, who are prepared by experience to pursue the work with profit, and to graduates of the University course in Architecture, or an equivalent course.

HOUSE AT WASHINGTON, D. C.
Heins & La Farge, Architects.
Built of Kreischer Gray Roman Brick.

Oscar G. Vogt, architect, Washington, D. C., has opened an office in the Corcoran Building, and would be glad to receive manufacturers' catalogues.

James Tyler, Jr., state architect, Lincoln, Neb., desires manufacturers' catalogues ard samples.

I. Jay Knapp, architect, formerly of Milwaukee, has located at 1112 E Street, Tacoma, Wash., and desires manufacturers' catalogues and samples.

DETAIL EXECUTED BY EXCELSIOR TERRA-COTTA CO.

DETAIL EXECUTED BY BRICK, TERRA-COTTA & TILE CO.

CITIZENS' NATIONAL BANK, EAST LIVERPOOL, OHIO.
J. E. Allison, Architect.
Terra-cotta made by Indianapolis Terra-Cotta Co.

Charles Bacon, 3 Hamilton Place, Boston, has been appointed local agent for the New York Architectural Terra-Cotta Company.

The firm of Martin & Buente, Pittsburg, by mutual consent having been dissolved, the firm of Martin Brick Company are successors.

DETAIL, EXECUTED BY ATLANTIC TERRA-COTTA CO.

F. E. Coombs, 294 Washington Street, Boston, has been appointed agent for the Excelsior Terra-Cotta Company.

The Brick Terra-Cotta and Tile Company, Corning, N. Y., will furnish the architectural terra-cotta for the new steam engineering building for the United States at the Charleston, S. C., navy yard.

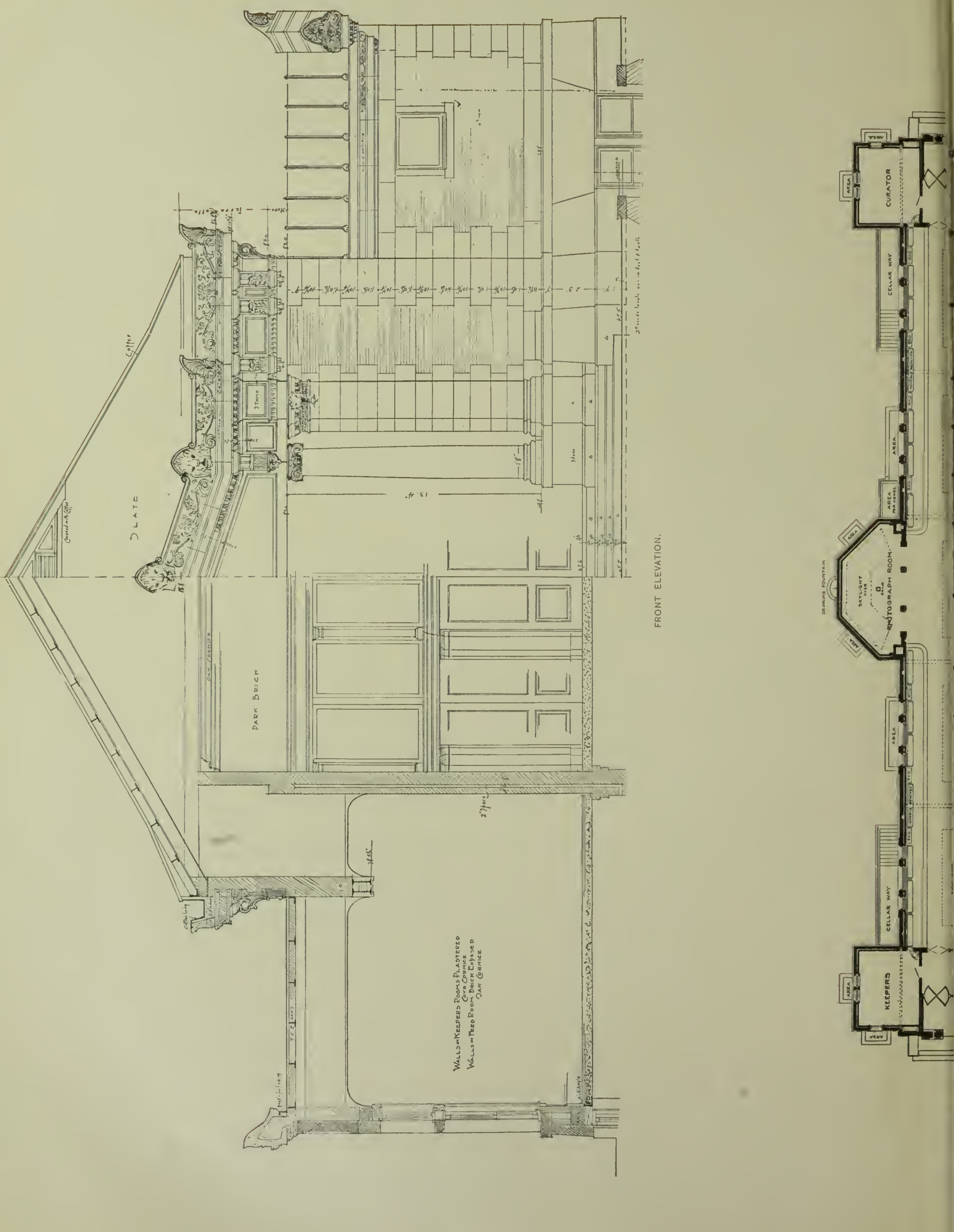
One hundred and fifty thousand enameled brick, supplied by Sayre & Fisher Company, will be used in the new John Hancock Building, Boston, Shepley, Rutan & Coolidge, architects.

Sayre & Fisher brick will be used in the new building for the Springfield Insurance Company, Springfield, Mass., Peabody & Stearns, architects.

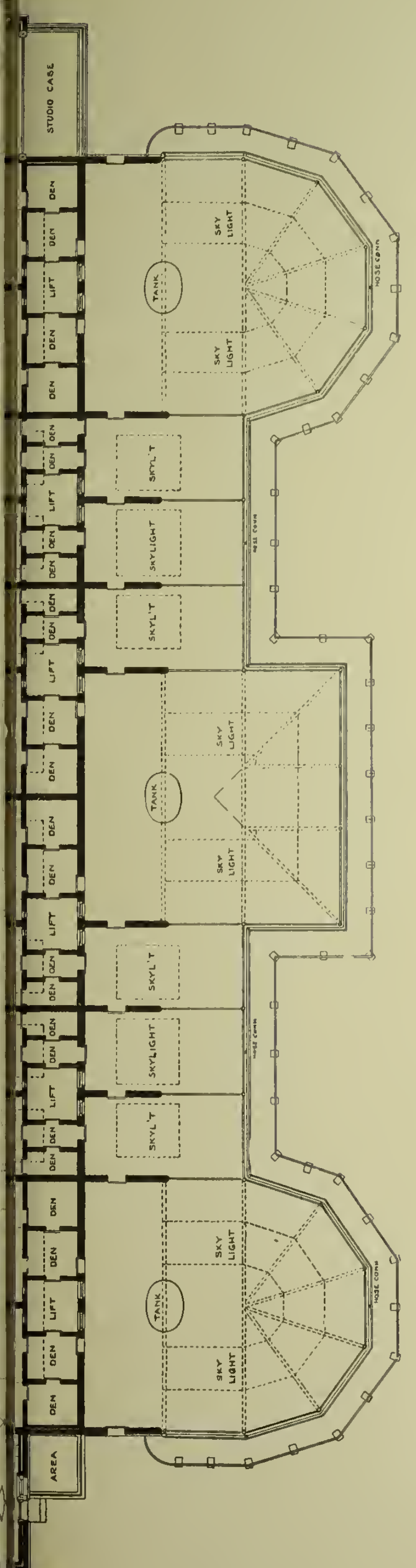
Celadon flat shingle tile, twelve by eight inches, will be used on a new residence at West Newton, Mass., J. E. Chandler, architect, and Savings Bank Building at North Easton, Mass., Shepley, Rutan & Coolidge, architects.

DETAIL, EXECUTED BY PERTH AMBOY TERRA-COTTA CO.

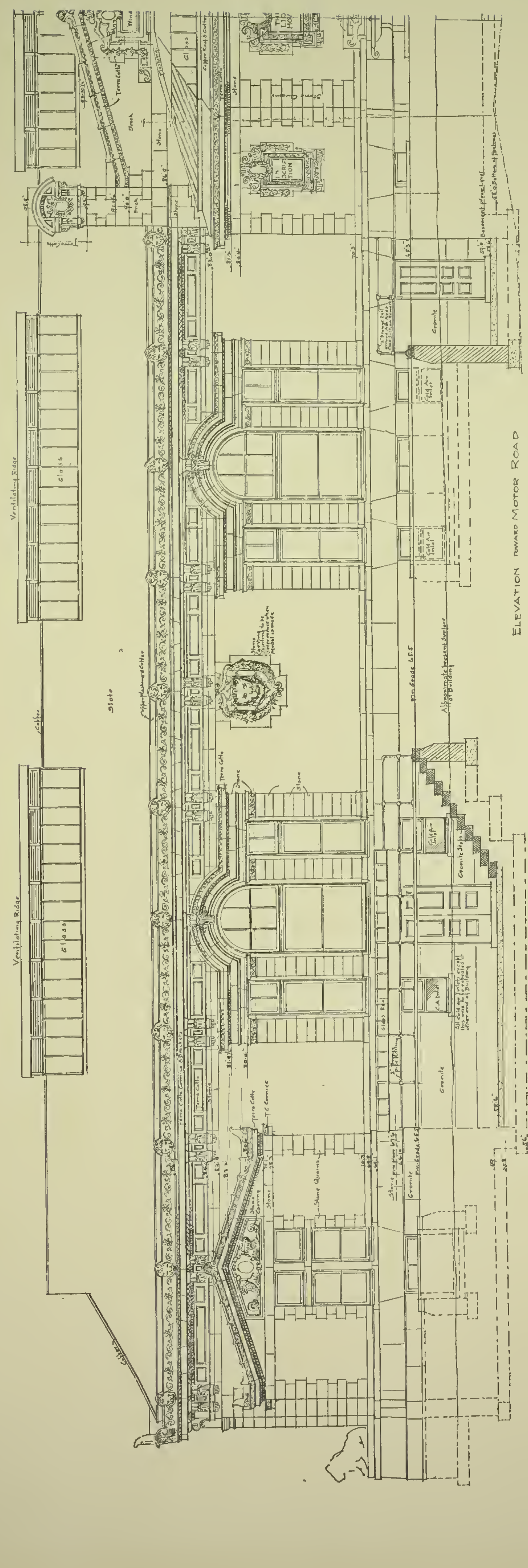
Facts concerning enameled brick and their use have an especial interest for architects and builders to-day because of the constantly increasing and varying purposes for which they are employed in immense quantities. No better source for information can be had than the manufacturer's catalogue, especially when the data is so concisely put and conveniently arranged as in the new one which has just been issued by the Tiffany Enameled Brick Company of Momence, Ill. It is a reference book which should be in every architect's office.


FRONT ELEVATION.
SLATE
DARK BRICK
CURATOR
KEEPERS
CELLAR WAY
CELLAR WAY
AREA
PHOTOGRAPH ROOM
SKYLIGHT
DRAWING FOUNTAIN
Walls in Keepers Rooms Plastered
Cove Cornice
Walls in Feed Room Brick Exposed
Oak Cornice

PLATES 3 and 4.



FLOOR PLAN.

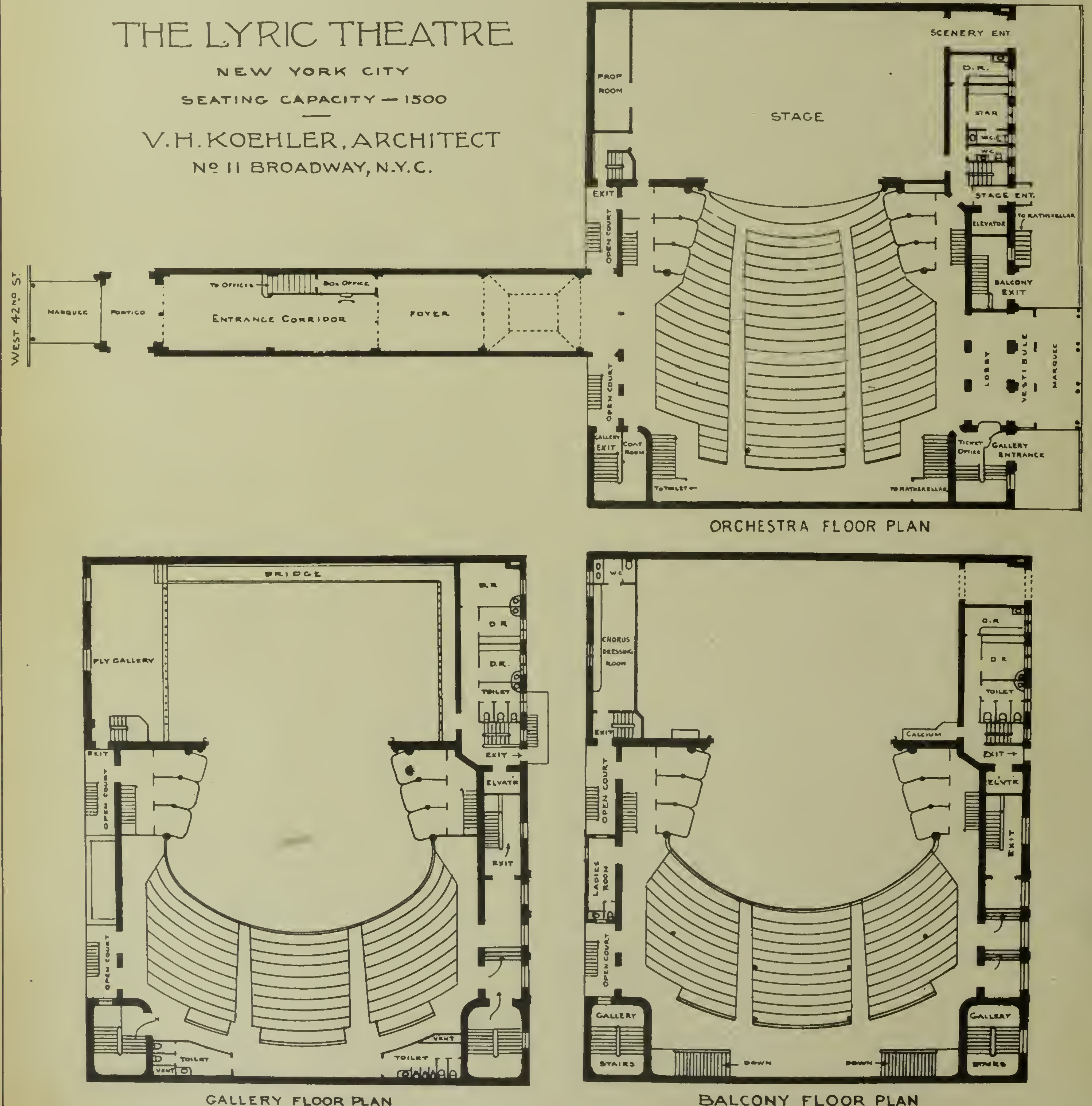


ELEVATION TOWARD MOTOR ROAD

SIDE ELEVATION.

LION HOUSE, BRONX PARK, NEW YORK CITY.

HEINS & LA FARGE, ARCHITECTS.



FLOOR PLANS, THE LYRIC THEATER, NEW YORK CITY
V. H. KOEHLER, ARCHITECT.

THE HERRICK LIBRARY, WELLINGTON OHIO.
J. MILTON DYER, ARCHITECT.

DETAIL OF MAIN ENTRANCE, LION HOUSE, BRONX PARK, NEW YORK CITY

HEINS & LA FARGE ARCHITECTS.

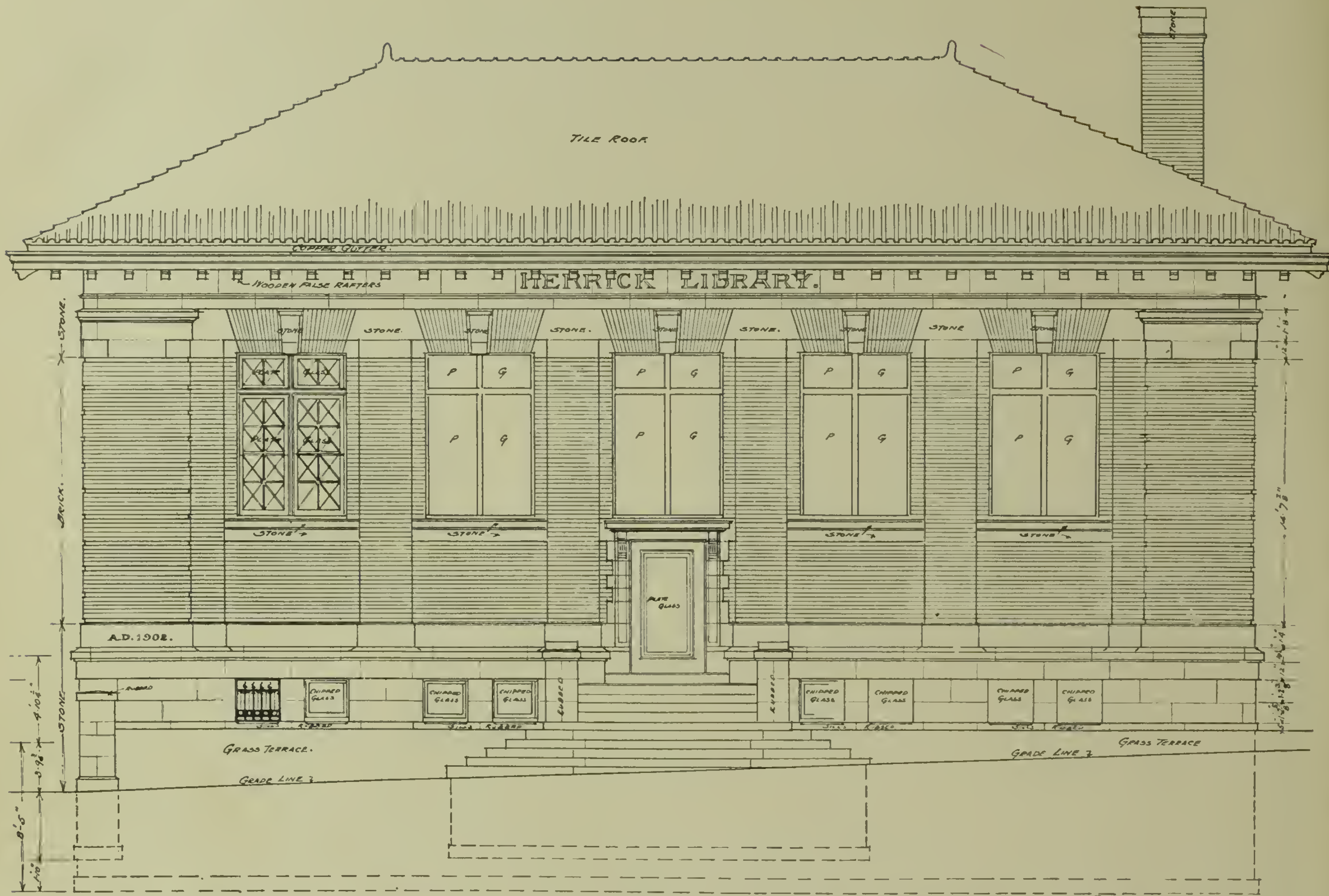
THE LYRIC THEATER, NEW YORK CITY.
V. H. KOEHLER, ARCHITECT.

THE LYCEUM THEATER, NEW YORK CITY.
HERTS & TALLANT, ARCHITECTS.

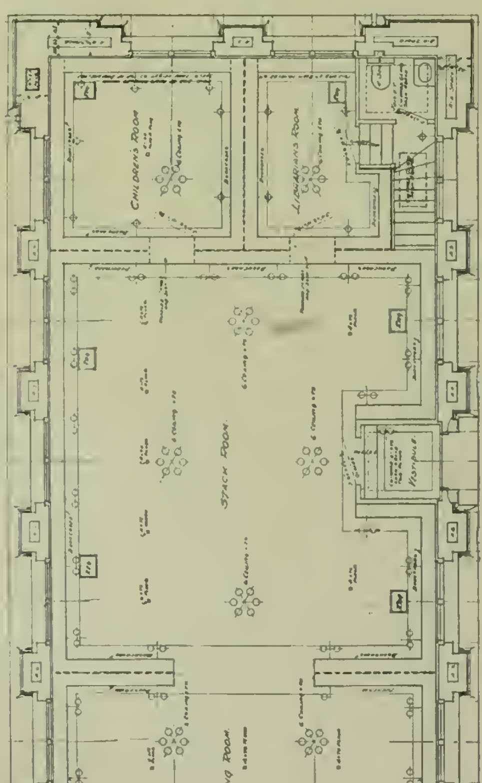
LION HOUSE, BRONX PARK, NEW YORK CITY

HEINS & LA FARGE, ARCHITECTS.

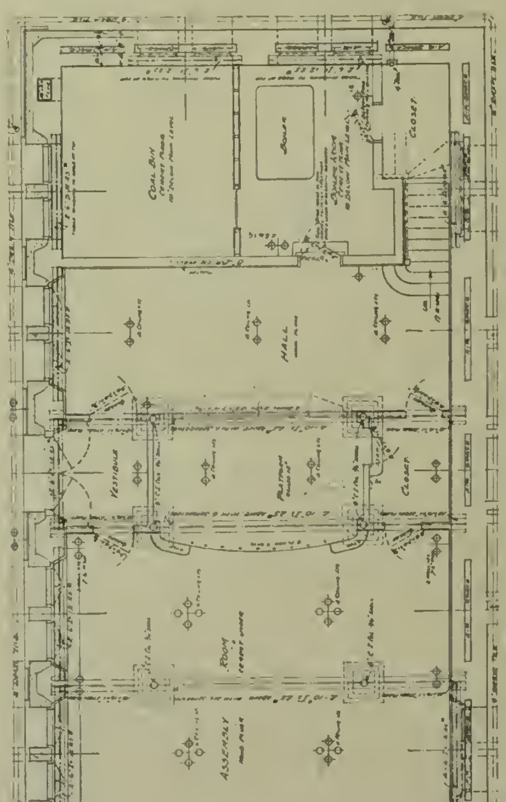
VOL. 13. NO. 1.



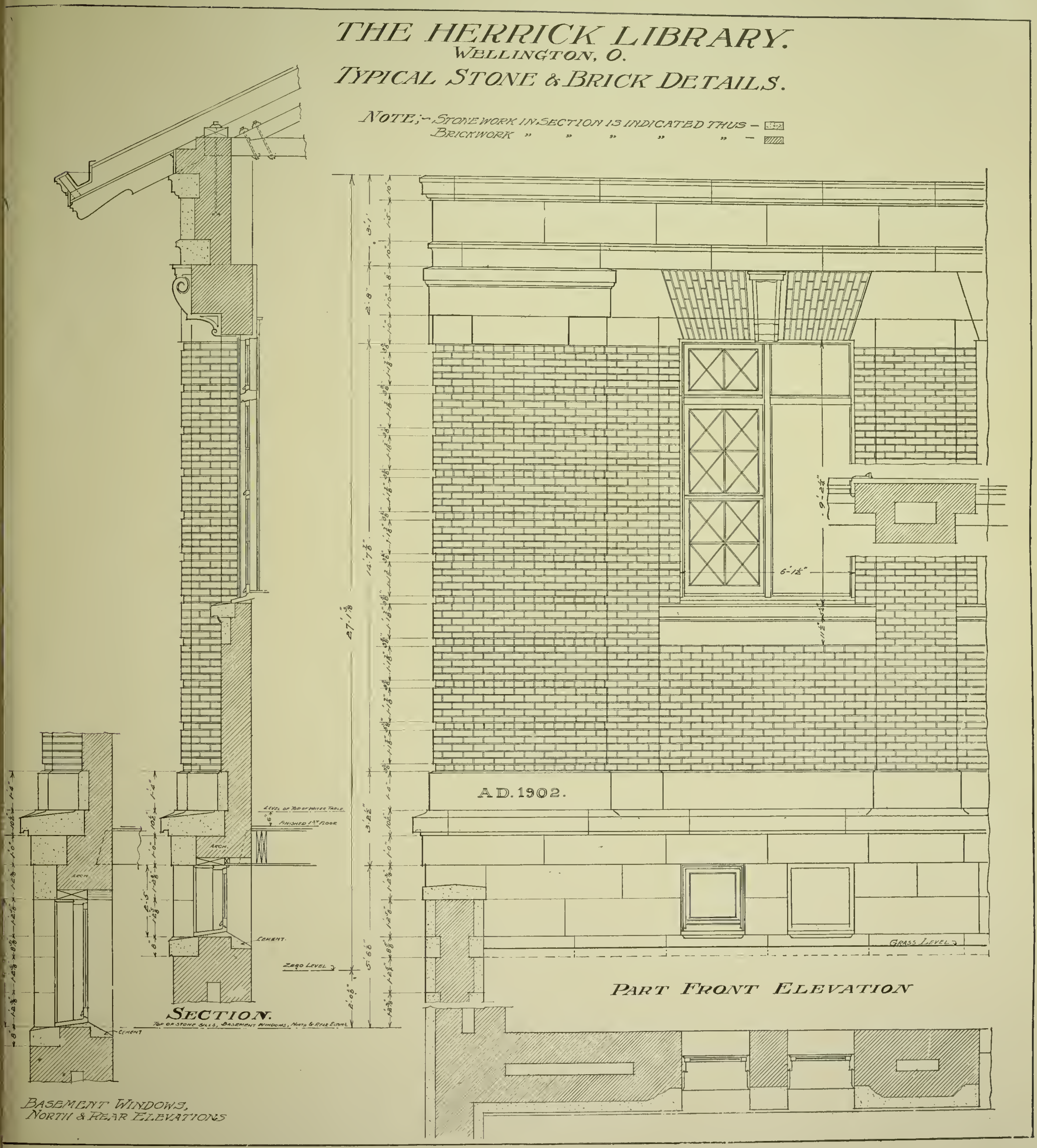
FRONT ELEVATION.



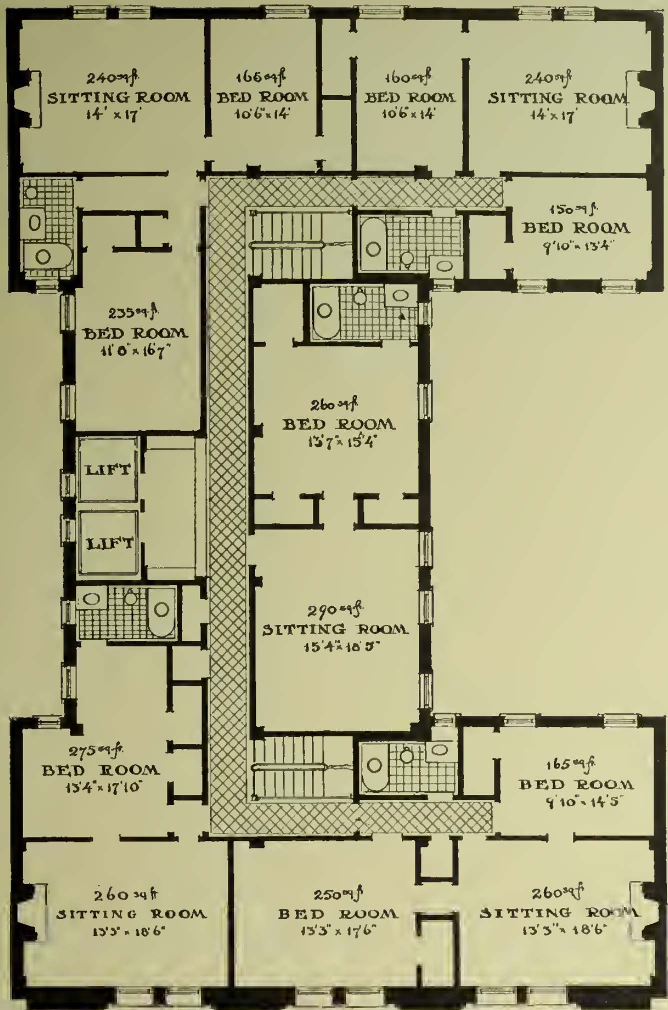
FIRST FLOOR PLAN.



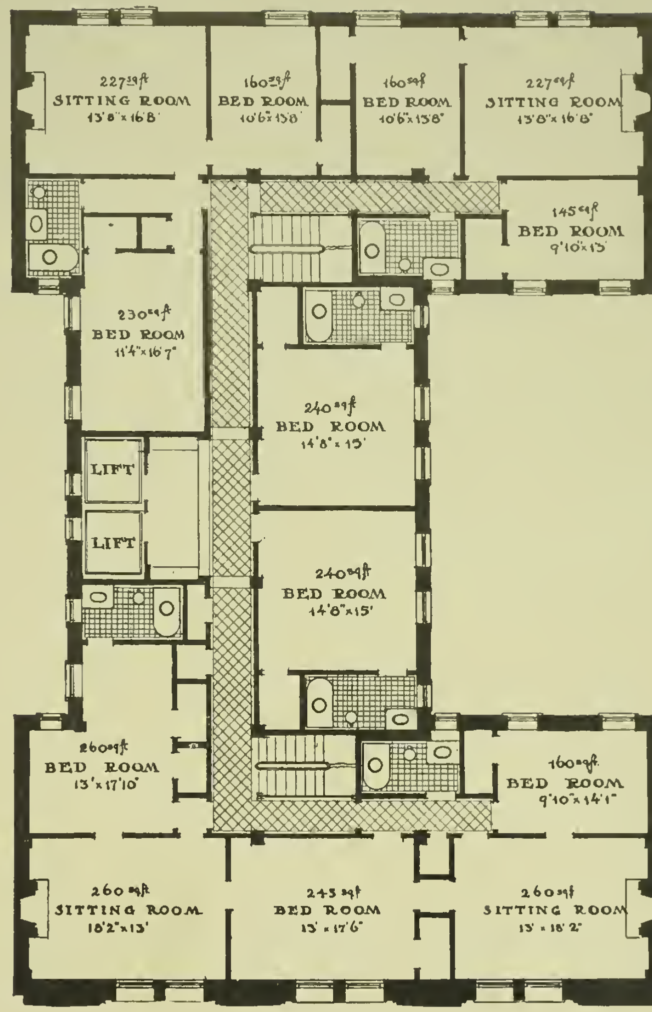
SECOND FLOOR PLAN.


THE HERRICK LIBRARY.
WELLINGTON, O.
TYPICAL STONE & BRICK DETAILS.
NOTE;- STONEWORK IN SECTION IS INDICATED THUS -
BRICKWORK " " " " " -
A.D. 1902.
PART FRONT ELEVATION
SECTION.
BASEMENT WINDOWS, NORTH & REAR ELEVATIONS
ZERO LEVEL
GRASS LEVEL

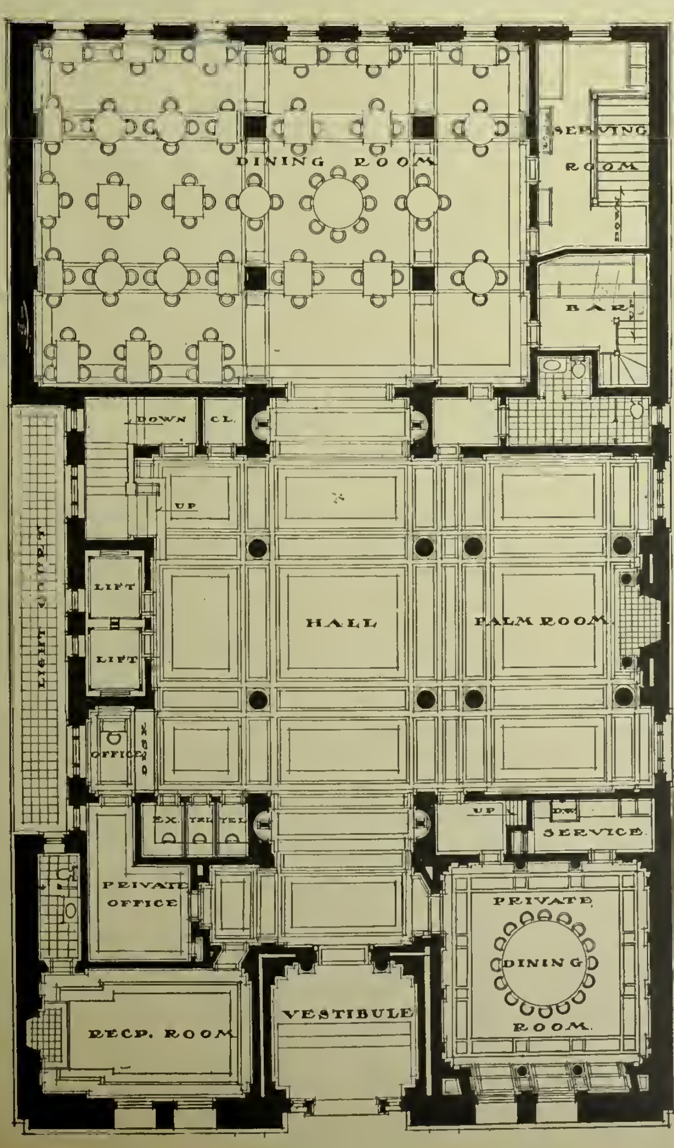
VOL. 13. NO. 1. PLATE 7.



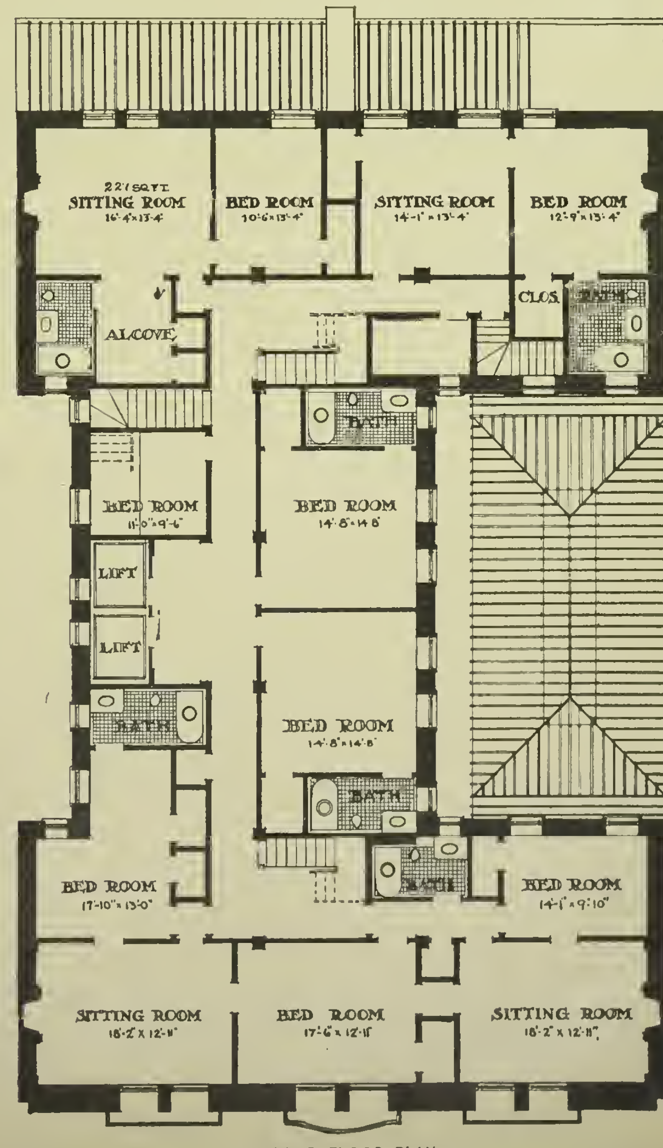
THIRD FLOOR PLAN.



TYPICAL FLOOR PLAN.



FIRST FLOOR PLAN.



SECOND FLOOR PLAN.

FLOOR PLANS, THE WEBSTER APARTMENT, NEW YORK CITY.

TRACY & SWARTWOUT, ARCHITECTS.

COPY OF THE PROGRAM

Competition for a Public Library

First Prize, $500 Second Prize, $200 Third Prize, $100

IT is assumed that a public library is to be presented to a town located in the middle west. This town occupies a picturesque position in a rolling country bordering one of the Great Lakes and is the seat of a small but important college. The public square is a park which is assumed to be 300 feet wide and upwards of 1,000 feet long. At one end is already built the town hall, and at the opposite end will be placed the library. The ground rises gently towards the proposed site, so that the position will be a commanding one. The whole frontage of 300 feet will be given to the library and its approaches, and the entire depth of the lot is 200 feet. The total rise from the curb line to the center of the lot is 10 feet, and the grade falls off towards the rear 1 foot in 40. Sidewise the grade falls off equally each way from the center 10 feet to the boundary lines. The building must set back a distance of 75 feet from the front line, and the approach must be treated in an architectural manner.

The exterior of the building is to be designed entirely in terra-cotta, and colored terra-cotta or faience may be introduced as a feature of the design.

The following accommodation is to be provided for in plan. The dimensions given are only approximate and may be modified as required by the exigencies of the design:

First Story. Vestibule, 200 sq. ft.; periodical room, 1,000 sq. ft.; reference library and reading room, 1,000 sq. ft.; general delivery room, 600 sq. ft.; trustees' room, 350 sq. ft.; librarian's room, 350 sq. ft.; stack room, 1,500 sq. ft.

Second Story. Children's room, 500 sq. ft.; music room, 500 sq. ft.; exhibition room, 500 sq. ft.; two rooms for special collections, 500 sq. ft. each.

It is assumed that the lavatories, storerooms, etc., are all to be located in the basement, which is to be raised sufficiently above the finished grade to allow of fair lighting. There are to be two flights of stairs leading to the second story, but they are not to be made a prominent feature. It will be assumed that the heating plant is entirely distinct from the building, there being consequently no provision made for a chimney, but space should be provided for ample ventilation flues.

Drawings Required. An elevation at a scale of 1-16 inch to the foot, which is to show the entire frontage of the lot, 300 feet, and to indicate the treatment of approaches. There are also to be sketch plans of the first and second floors at a scale of 1-32 inch to the foot, and details drawn at a scale of 3-4 inch to the foot showing the character of the design and the construction of the terra-cotta. The elevation is to appear upon one sheet, and the details and plans upon another. The width and length of each sheet shall be in proportion of three to four and not exceed 24 x 32 inches. All drawings are to be made in black ink without wash or color.

It must be borne in mind that one of the chief objects of this competition is to encourage the study of the use of architectural terra-cotta. No limitation of cost need be considered, but the designs must be made such as would be suitable for the location, for the character of the building and for the material in which it is to be executed. The details should indicate in a general manner the jointing of the terra-cotta and the sizes of the blocks.

In awarding the prizes the intelligence shown in the constructive use of terra-cotta will be a point taken largely into consideration.

Every set of drawings is to be signed by a nom de plume or device, and accompanying same is to be a sealed envelope with the nom de plume on the exterior and containing the true name and address of the contestant.

The drawings are to be delivered flat at the office of THE BRICKBUILDER, 85 Water Street, Boston, Mass., on or before October 31, 1903.

The designs will be judged by three well-known members of the architectural profession.

For the design placed first in this competition there will be given a prize of $500.

For the design placed second a prize of $200.

For the design placed third a prize of $100.

All drawings submitted in this competition are to become the property of THE BRICKBUILDER, and the right is reserved to publish any or all of them.

This competition is open to every one.

REPORT

OF THE

JURY OF AWARD.

THE jury in charge of the competition desires to express its appreciation of the happy initiative on the part of THE BRICKBUILDER in organizing the concours, thereby intelligently creating a movement of emulation in a direction of research and study, with a result which demonstrates the effort of which the young generation of architects is capable.

The drawings submitted are characterized by a note of care, of application, of a desire to do well, and in a certain measure by a degree of originality which augurs well for the future, expressing as it does a special character of art, of which the Americans themselves will be the best exponents.

It has been the endeavor of the jury to recompense a design impartially and in the most liberal spirit, whatever its source of inspiration.

Considering the program before everything else, it is forced to weigh the ensemble of qualities in the different projects, without forgetting, however, that the problem being placed before architects, they should, whatever the material employed, occupy themselves with the general composition of the work.

While the jury has been unanimous in its decision, it has been none the less unanimous in regretting that among the projects mentioned, certain of them presenting the greatest interest in intelligent and original research in the adaptation of terra-cotta, are unfortunately not the best composed and most complete designs.

FIRST PRIZE (pages 4 and 5). The design is coherent and consistent in its ensemble, and is clever and artistic in its character. The façade is of fine inspiration, well proportioned, with a consideration for the approaches which makes the design seem perfectly appropriate to the conditions of the problem. This is one of the very few designs submitted in which the author seemed to take marked advantage of the landscape possibilities. It is also one of the very few in which a deliberate attempt was made to indicate the use of color. The frieze in the peristyle is relieved in strong color and would constitute a striking feature of the central motive. The draughtsmanship and the composition of the detail sheet show a great facility on the part of the author, and present in a most charming manner the best points of the design. It is a design which, while not as markedly terra-cotta in its nature as some of the others, could be adapted to that material by proper study in detail. One criticism might be made in regard to the central feature of the façade, that it is too retracted in its lateral proportions to give the proper degree of dignity, and the whole entrance has a narrowness of expression which could have been relieved by enlarging the central motive.

SECOND PRIZE (pages 6 and 7) is a perfectly frank adaptation of a well-known historical motive, but the author has adapted so well and has shown such an appreciation of the problem and its application that he has quite gotten out of any suspicion of mere copying. The design is thoroughly suited to terra-cotta, charmingly drawn, and while inferior as a conception to the first prize, is perhaps more flexible for a design in artificial materials.

THIRD PRIZE (pages 8 and 9). The third prize design is conceived in the same general spirit as the first, but in a lesser degree. It is thoroughly academic, but somewhat lacking in inspiration, while the details do not present a sufficiently marked character.

In regard to the design given the FIRST MENTION (pages 10 and 11), the aim of the competition was a study in the use of a particular kind of material. At the same time it was intended that this particular use should be developed along the lines of architectural composition, and the competition was intended to call out special points of design for terra-cotta as architecture rather than as matters of decoration or of detail. In this first mentioned design the jury regretted very much that the manifest excellence of the detail, the surprising grasp of the character of the material shown on the detail sheet should not have been accompanied by an ensemble which would be as strong in design as the details. The exterior is so markedly terra-cotta in its character that it needed but a more architectural treatment to have placed it easily at the lead.

The jury insisted particularly upon the composition and the character of the ensemble. At the same time the details have been presented in this design so charmingly both in regard to draughtsmanship and the clever grouping of the detail sheet, the composition of the different features forming so intelligent a frontispiece treatment, that it was with regret the committee assign it no higher a place.

Second Mention (pages 12 and 13). In spite of the scheme presenting a rather large building on a small scale, the quality of the design is very excellent and especially the details, which are charmingly drawn and finely conceived. The fault is in too much architecture rather than too little.

Third Mention (pages 14 and 15). The third mention is thoroughly terra-cotta in sentiment. What is particularly interesting about this design is the manifest search for expression in the material as shown by the contrast between plain and ornamented surfaces, by the use of ornament in the detail and by the suppression of needless architectural features. The design as a whole is crude, but it shows excellent aim and effort.

The Fourth Mention (pages 16 and 17), while expressing the idea of terra-cotta in a very strong manner, is treated in effect in the style of a pavilion in a park or like a small oriental museum rather than as a public library. It shows, however, strength in detail and very excellent perception of required character.

The remaining designs the jury does not arrange in any order of merit, but an attempt has been made to point out some particular qualities of the designs which commend themselves as being specially successful. Mr. Purcell's design (pages 18 and 19) presents in the general conception of the façade a Moorish effect which hardly suggests a public library, but which might make a most fascinating building, especially when coupled with such charming use of details which are thoroughly terra-cotta in spirit. A special compliment should be paid the author for the way in which he has designed the cornice, frieze and details, which are full of color.

The design by Messrs. Schenck and Williams (pages 20 and 21) is conceived in a classic spirit, but is a trifle dry in details and too restrained.

Mr. Wills's design (pages 22 and 23) is very dainty, charmingly decorative in the use of color, and very acceptable, especially in the details, which are admirably chosen and drawn, with an excellent adaptation to the material.

Mr. Wadsworth's design (pages 24 and 25), while too elaborate in some respects and showing an entirely superfluous dome, is nevertheless well presented and has some well studied qualities.

The design by Mr. Rice (pages 26 and 27) is thoroughly classic, but with details and a sentiment which show a very skillful adaptation to the material. This would make a charming building.

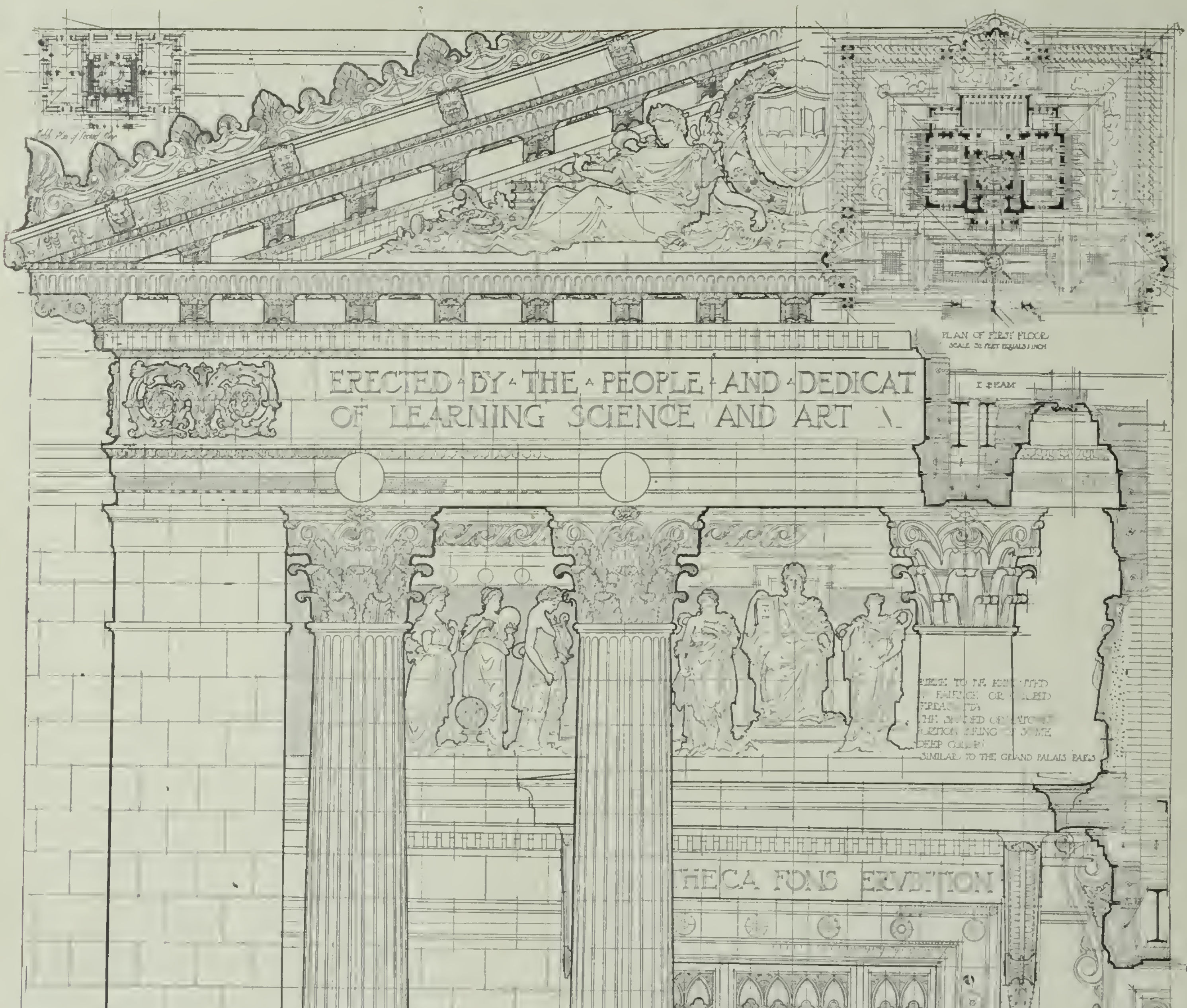
Mr. Ely's composition (pages 28 and 29) shows good training and good knowledge of architectural precedent, but lacks individuality.

The design by Messrs. Worthington and Ahrens (pages 30 and 31) contains an excellent idea inadequately presented; and it is delineated rather as the work of an illustrator than the design of an architectural craftsman. The effect of the windows, which in the design is really very good, is altogether lost in the rendering.

The design by Mr. Olmstead (pages 34 and 35) as well as that by Mr. Haskell (pages 36 and 37) comes very close to the type which has found favor for the smaller government post offices, but which hardly suits the character of this problem, even when accompanied by such clean-cut, well studied details as are shown by both of these designs.

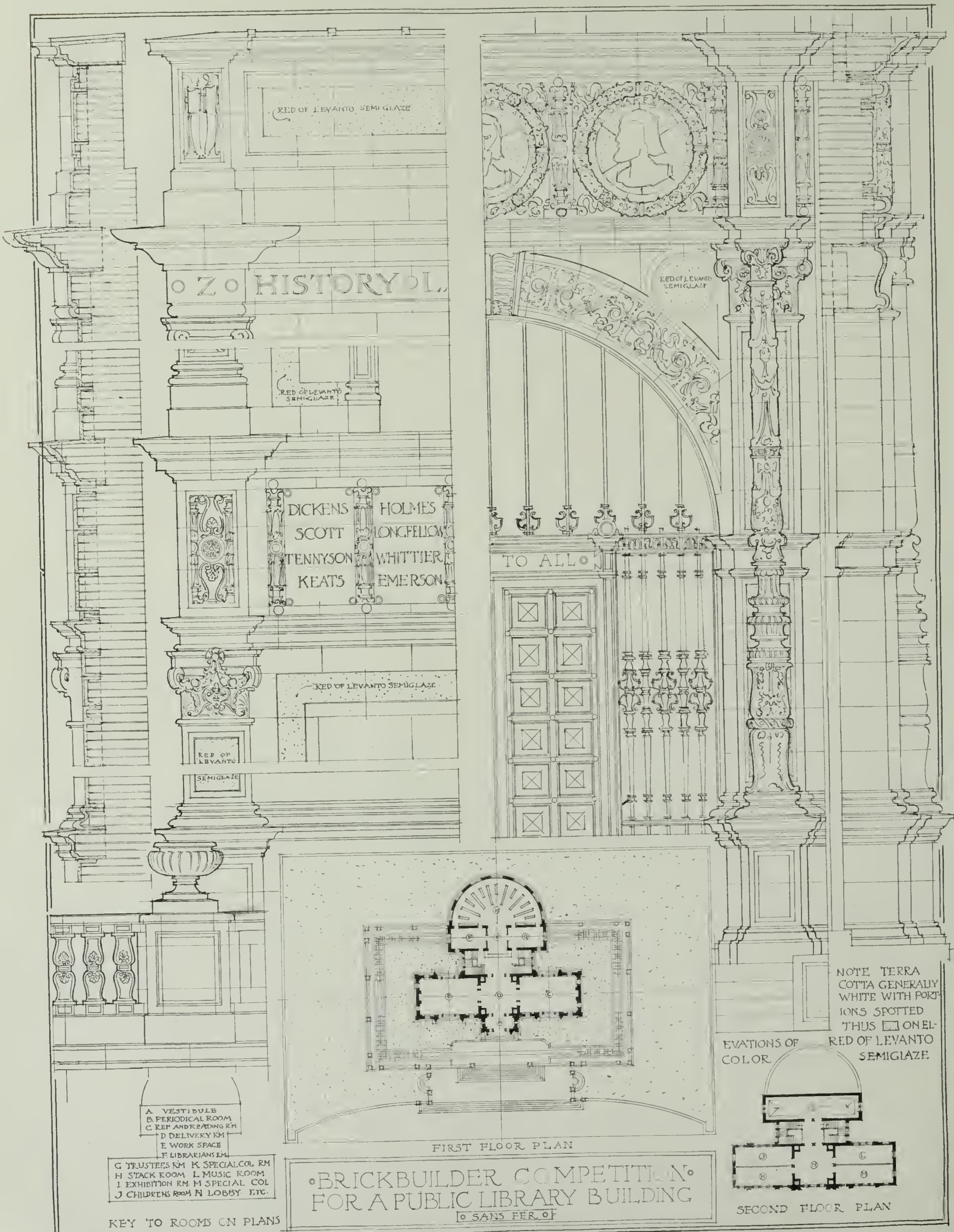
Mr. Semsch (pages 32 and 33) shows a very imposing building, — too large for the program, and with a wealth of approaches justified more by the design than by the requirements. There is good material here, but it needs pruning and restraint.

Mr. Smith (pages 38 and 39) has done what he could with a motif which at best is not easy to develop. He has shown, however, a good interest, which deserves mention.

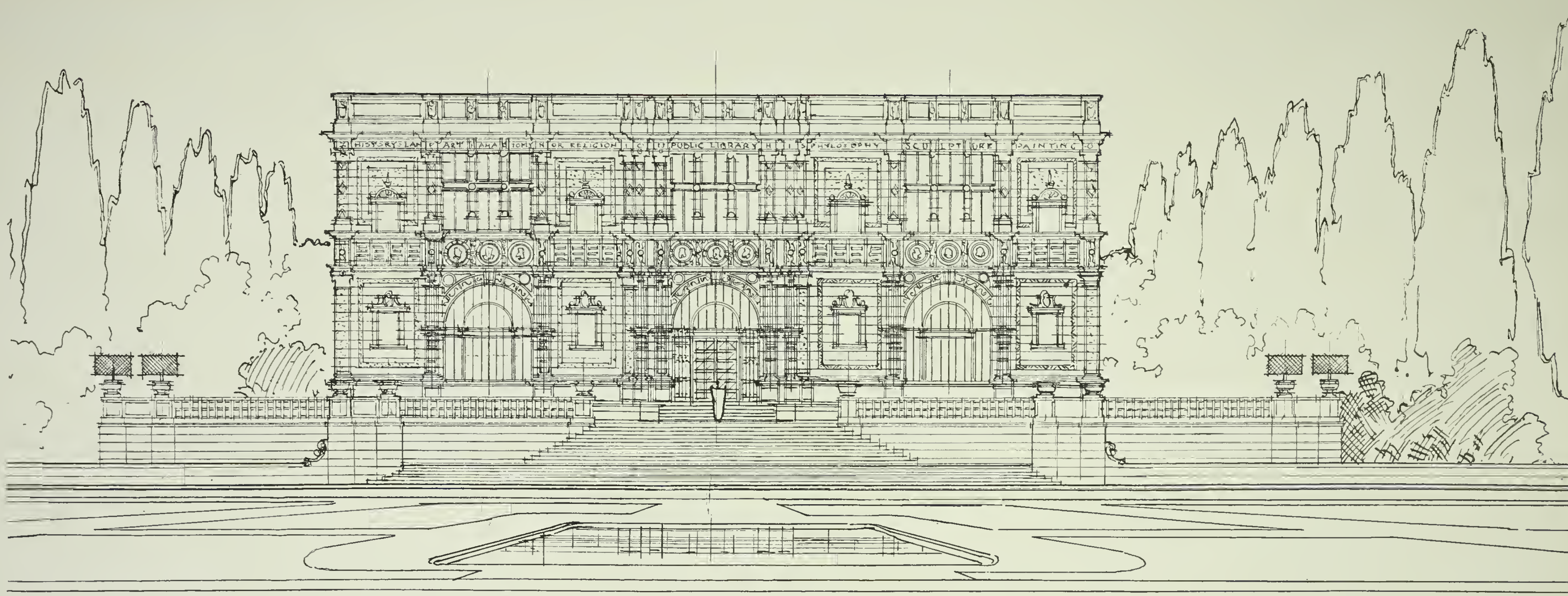


DETAIL BY FREDERIC C. HIRONS.

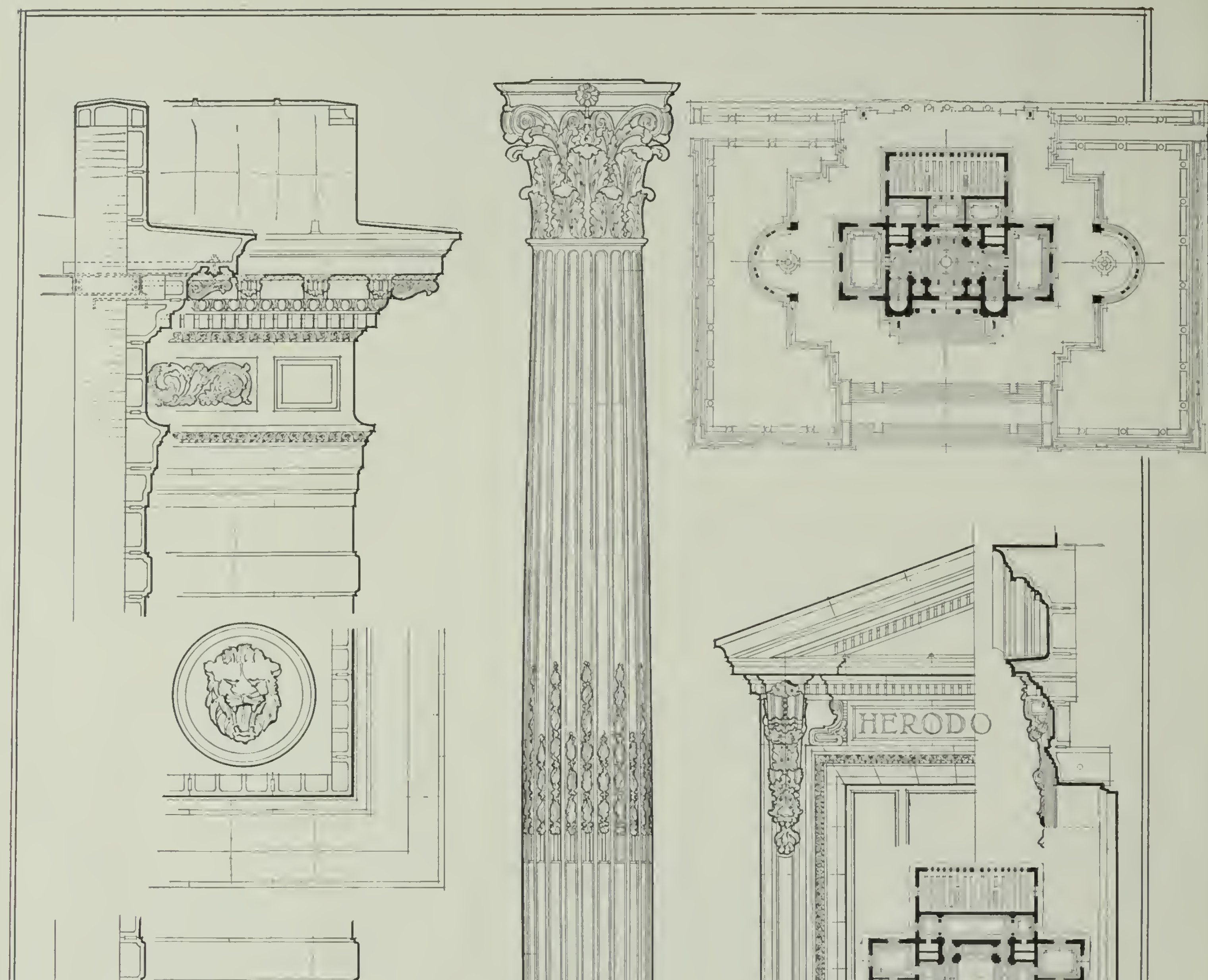
FIRST PRIZE DESIGN.
SUBMITTED BY FREDERIC C. HIRONS, NEW YORK CITY.



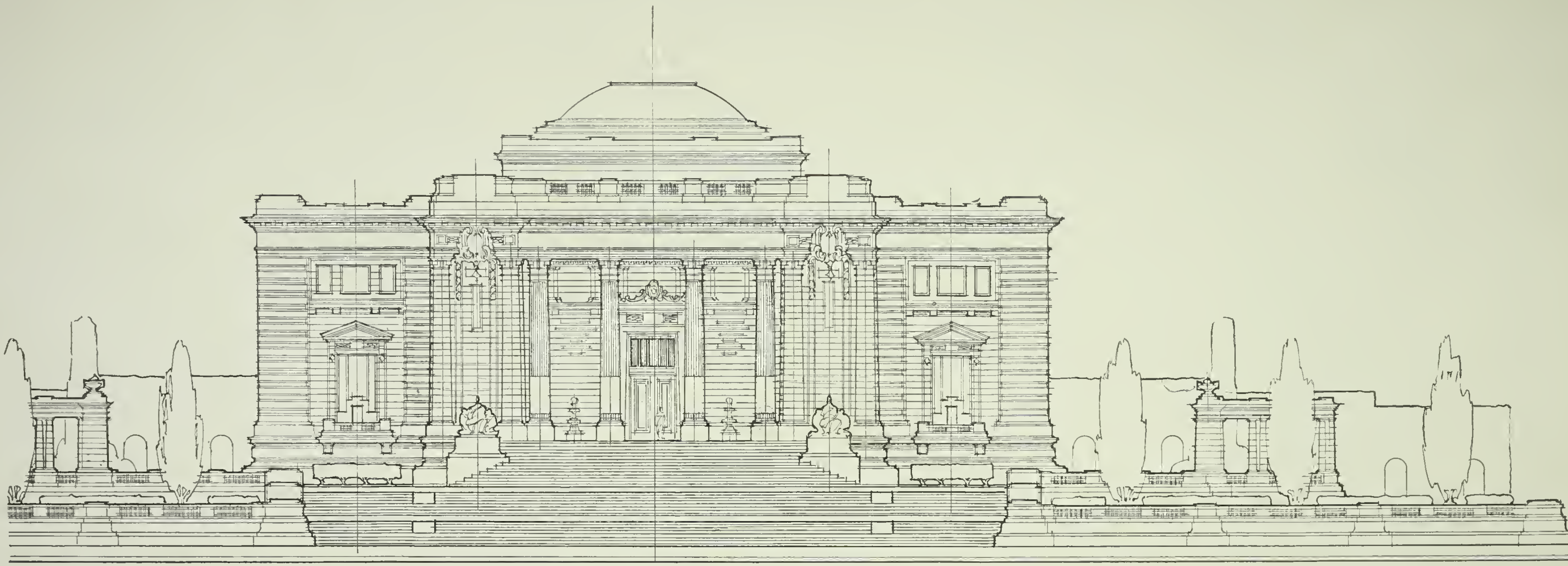
DETAIL BY CALVIN KIESSLING.



SECOND PRIZE DESIGN.
SUBMITTED BY CALVIN KIESSLING, BOSTON, MASS.

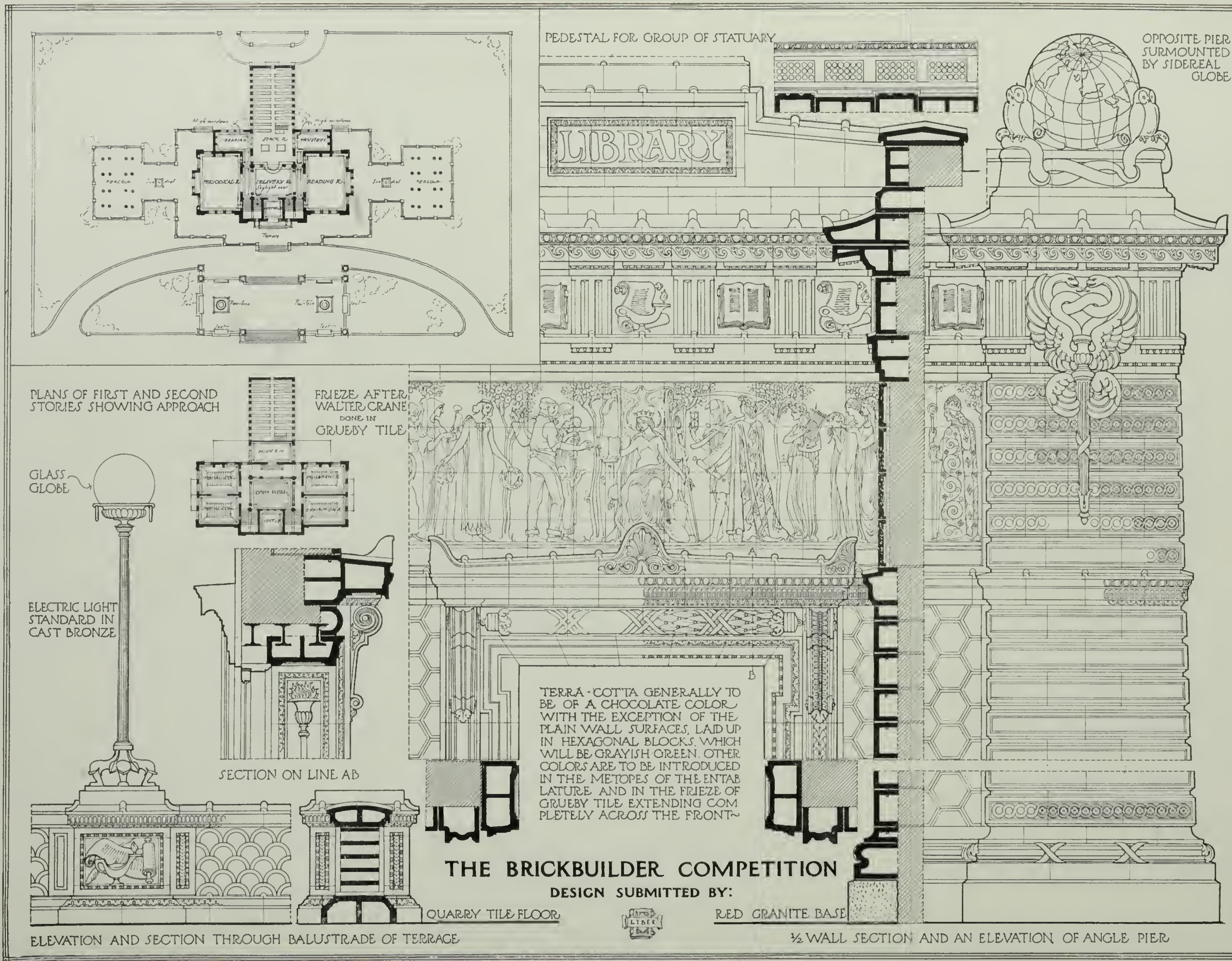


DETAIL BY W. D. CROWELL, W. S. WELLS AND H. W. HATHAWAY.

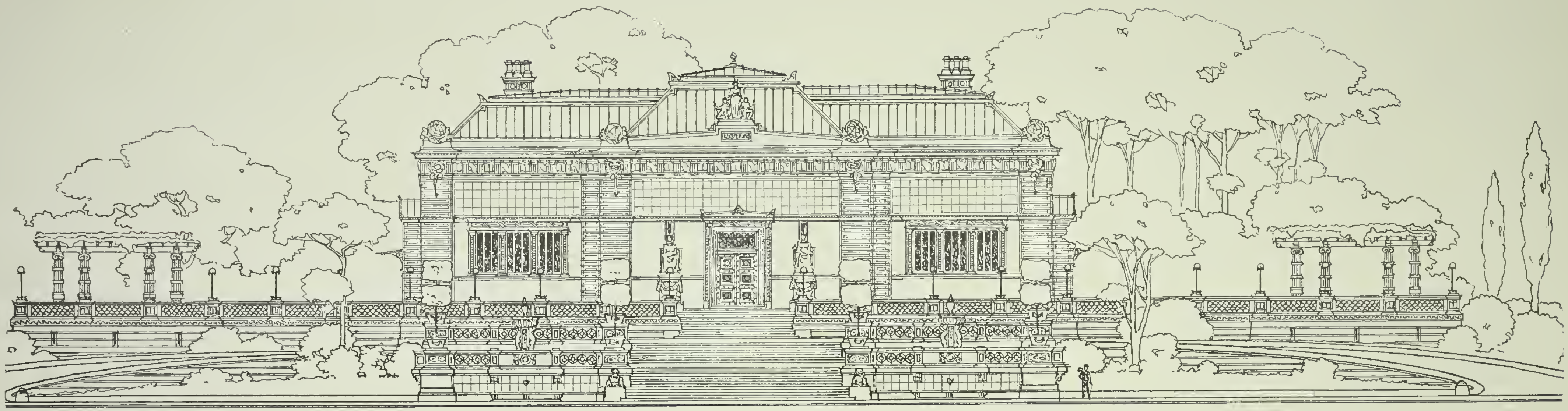


THIRD PRIZE DESIGN.

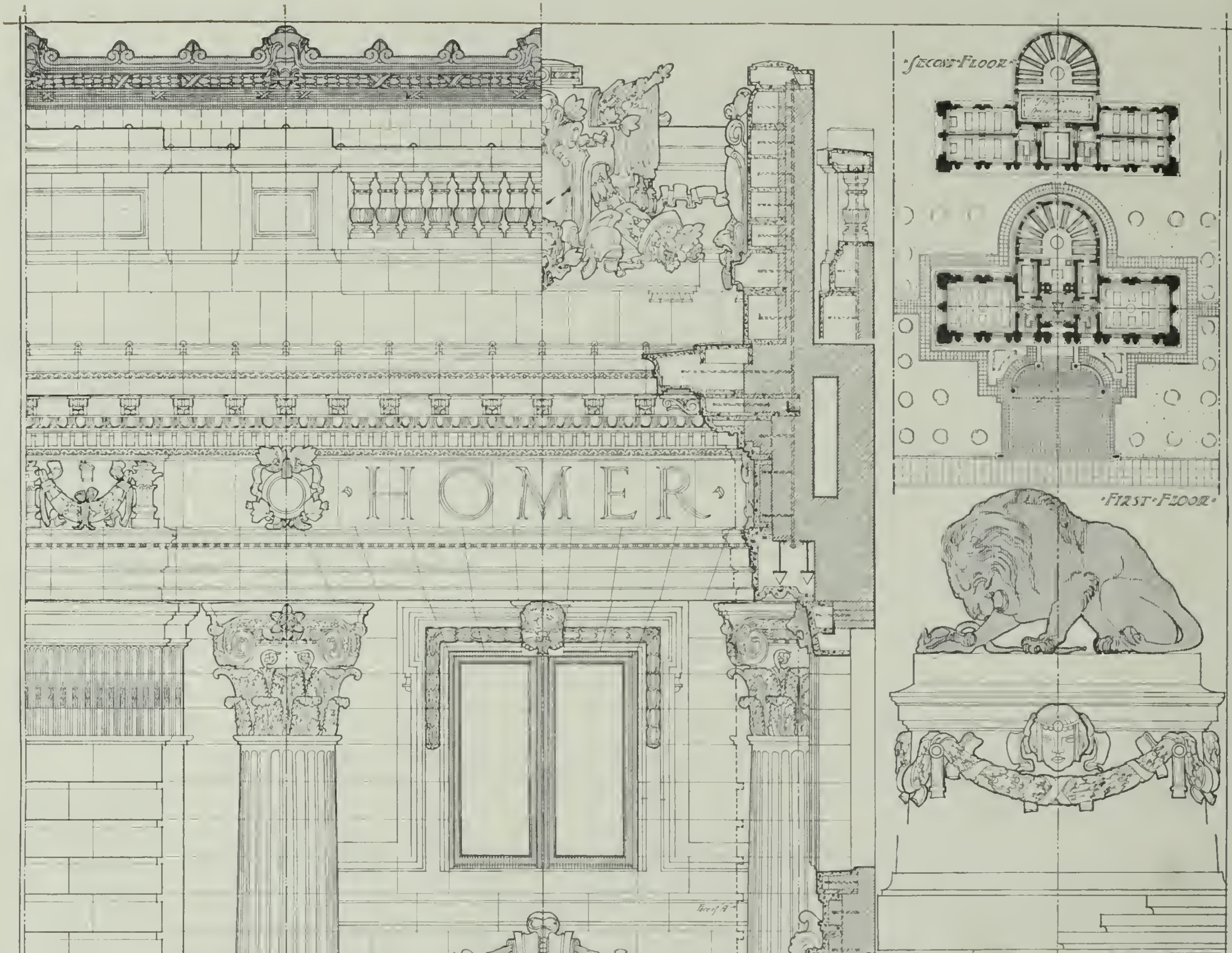
SUBMITTED BY W. D. CROWELL, W. S. WELLS AND H. W. HATHAWAY, BOSTON, MASS.



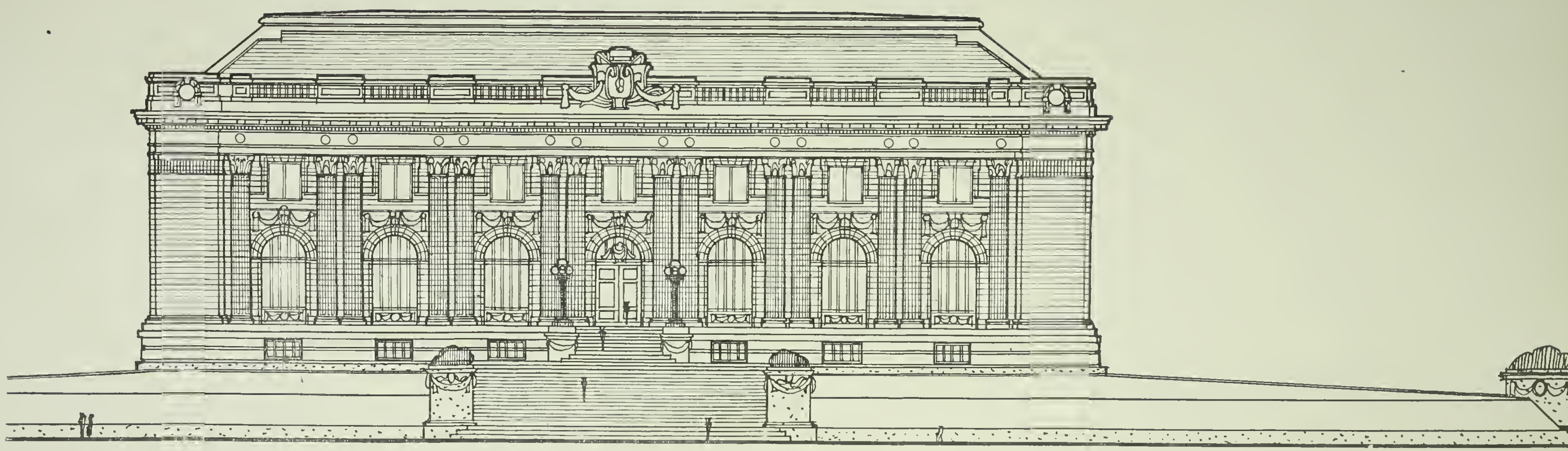
DETAIL BY CLAUDE FAYETTE BRAGDON.



FIRST MENTION.
SUBMITTED BY CLAUDE FAYETTE BRAGDON, ROCHESTER, N. Y.

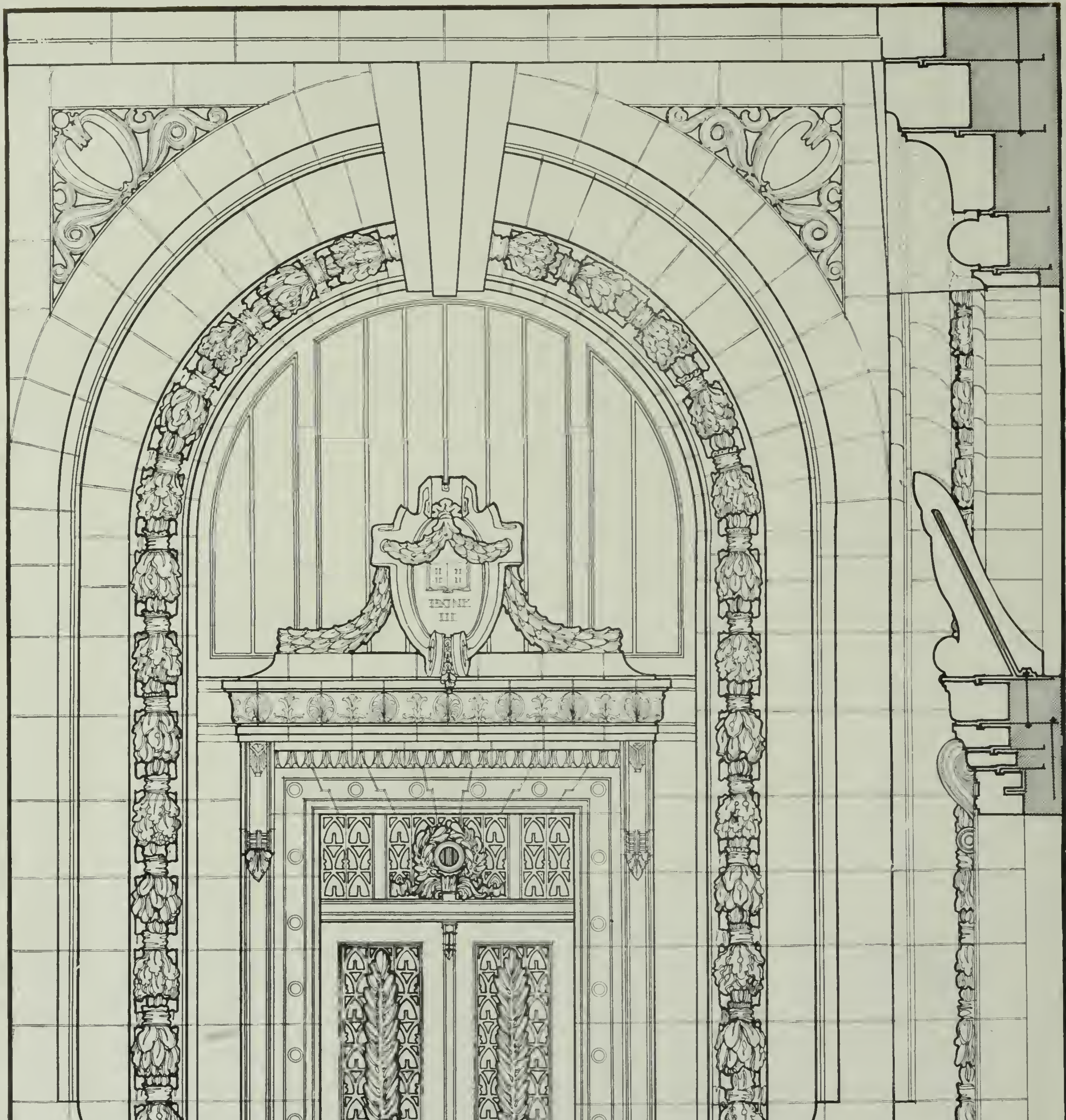


DETAIL BY EUGENE TALBOT PARKER.



SECOND MENTION.

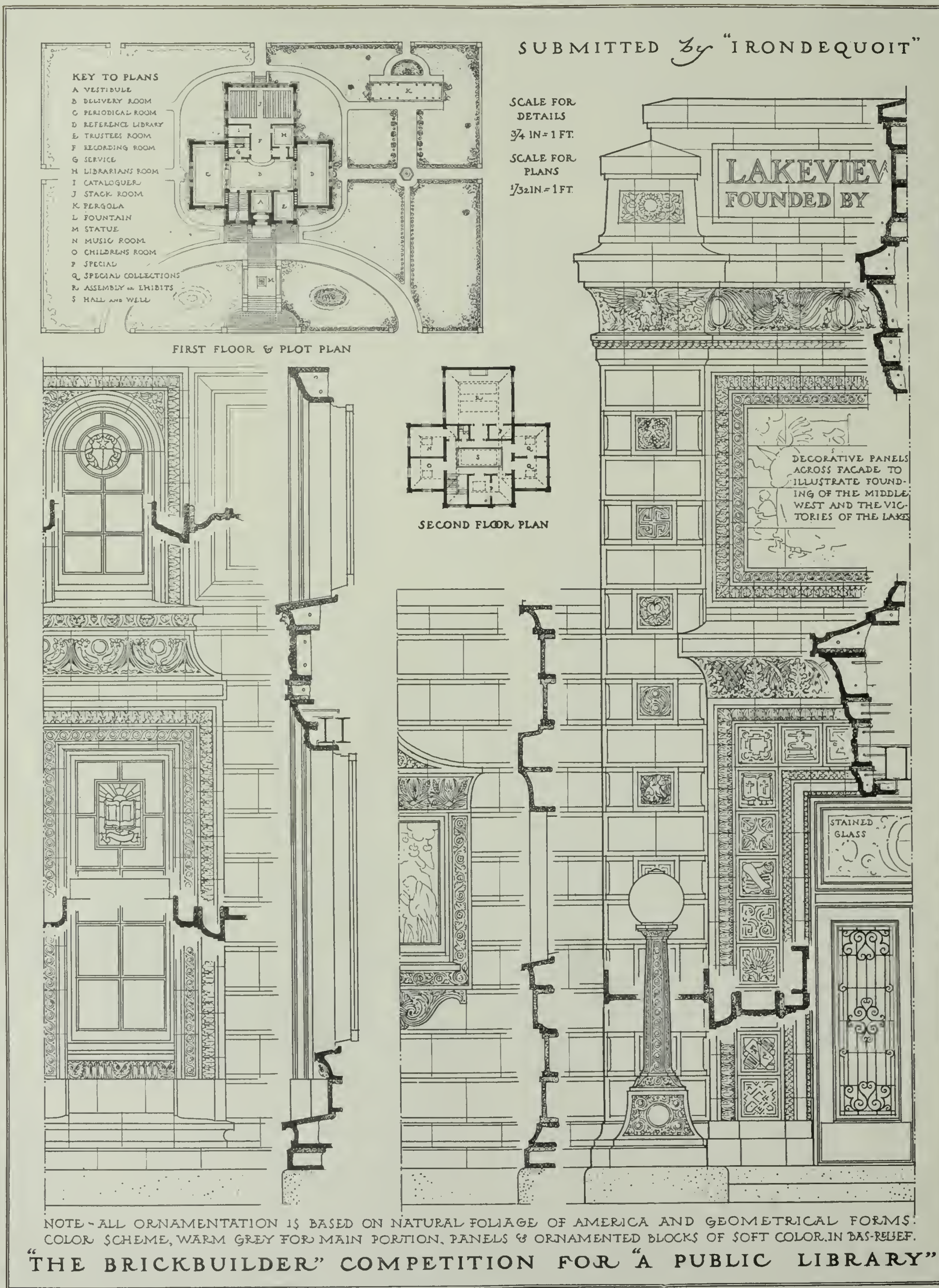
SUBMITTED BY EUGENE TALBOT PARKER, WASHINGTON, D. C.



DETAIL BY ISRAEL PIERRE LORD.

THIRD MENTION.

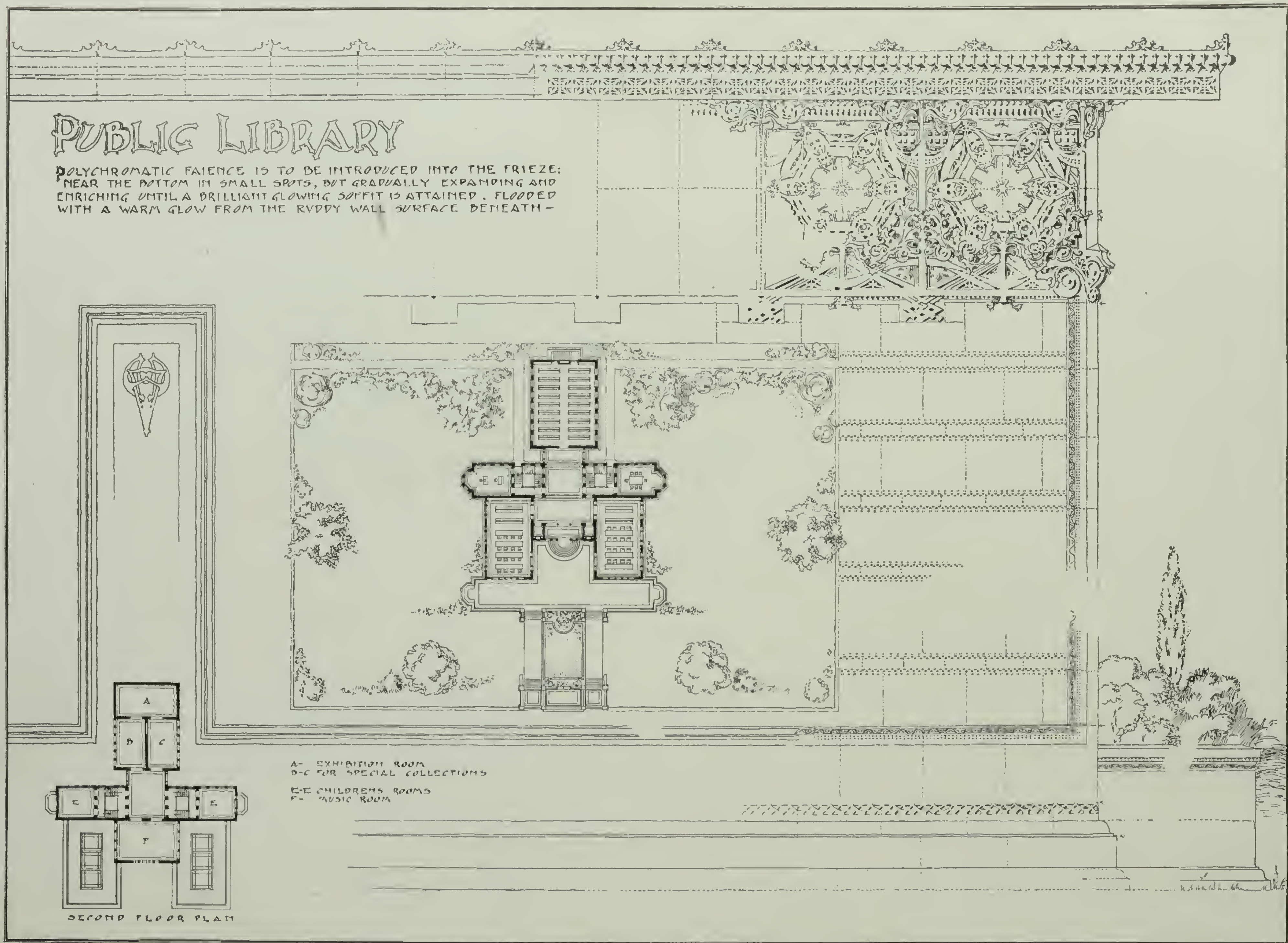
SUBMITTED BY ISRAEL PIERRE LORD, SOMERVILLE, MASS.



DETAIL BY JAMES B. ARNOLD.

FOURTH MENTION.

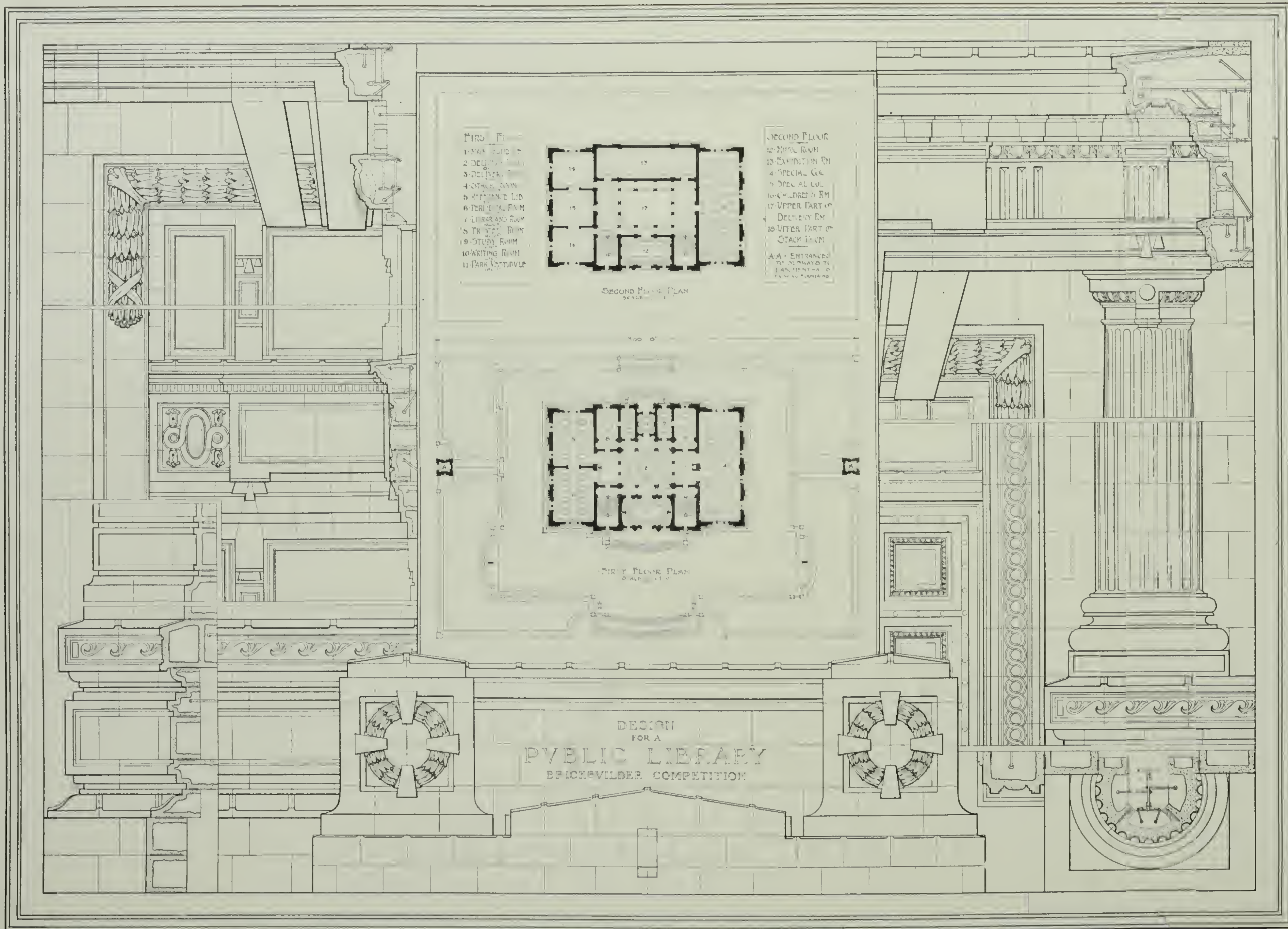
SUBMITTED BY JAMES B. ARNOLD, ROCHESTER, N. Y.



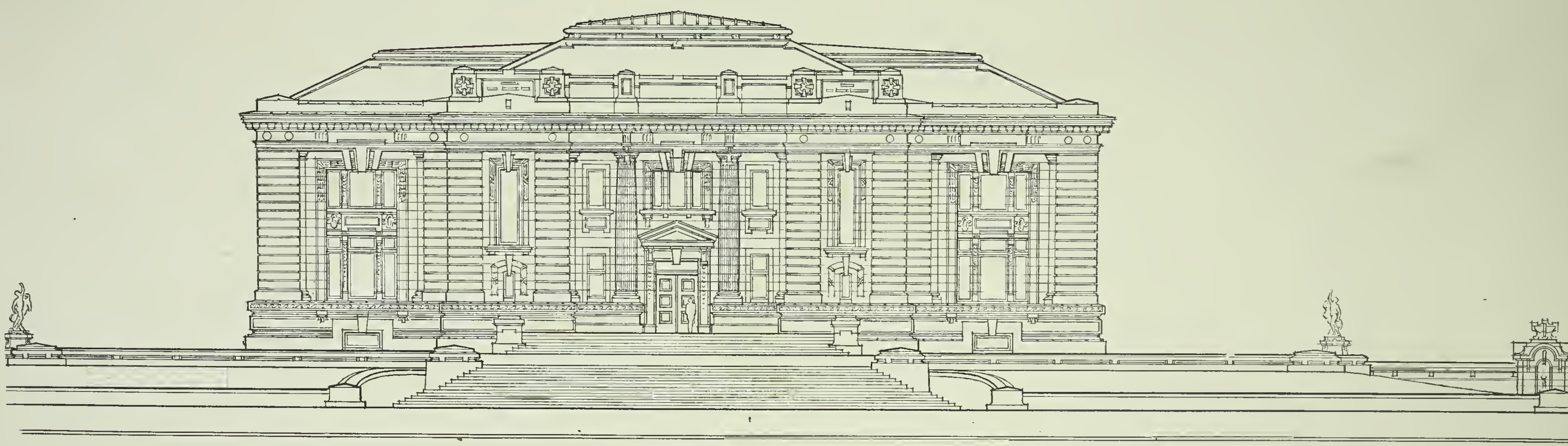
DETAIL BY WILLIAM GRAY PURCELL.

MENTION.

SUBMITTED BY WILLIAM GRAY PURCELL, OAK PARK, ILL.

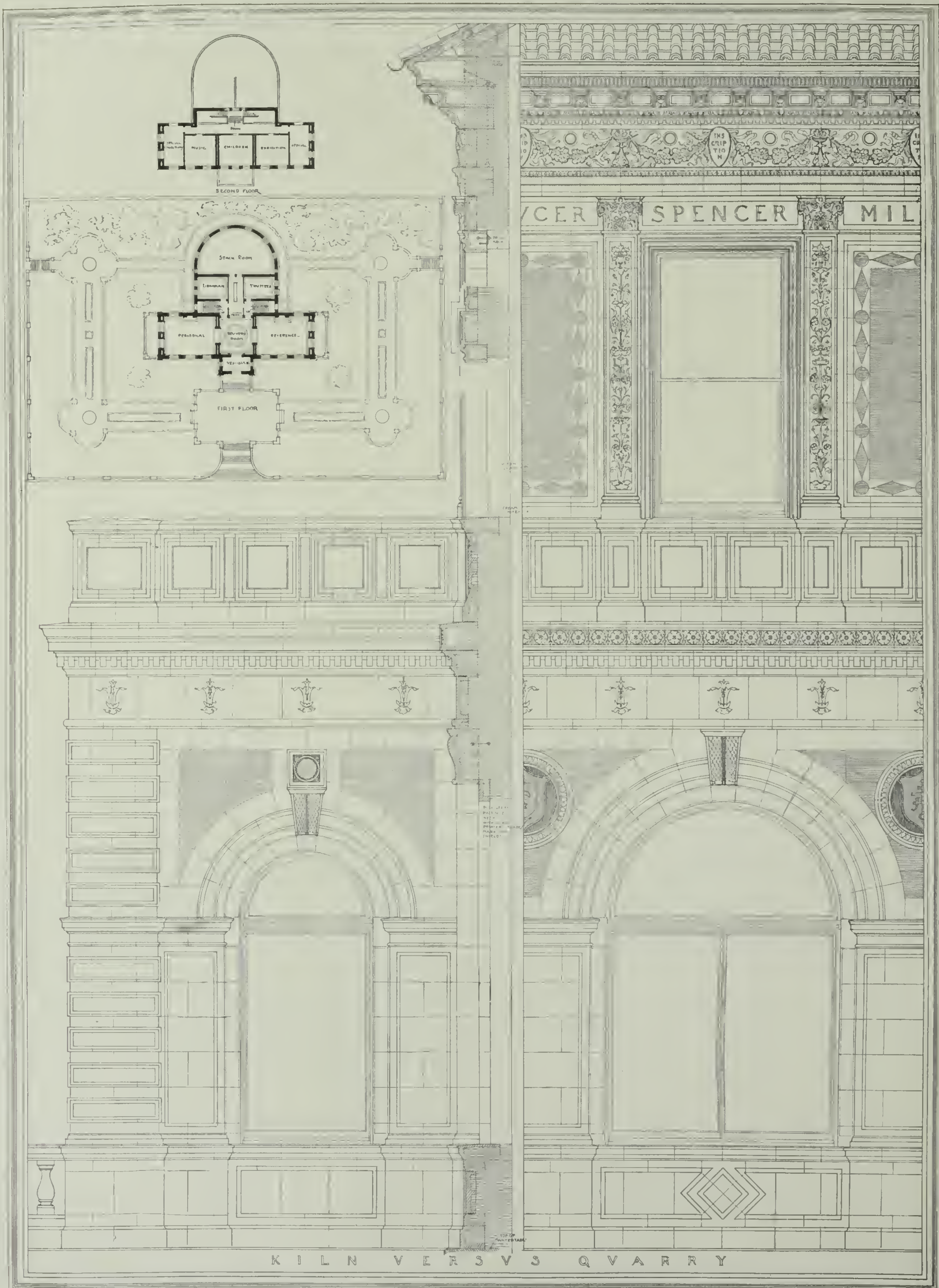


DETAIL BY HARRY I. SCHENCK AND HARRY J. WILLIAMS.

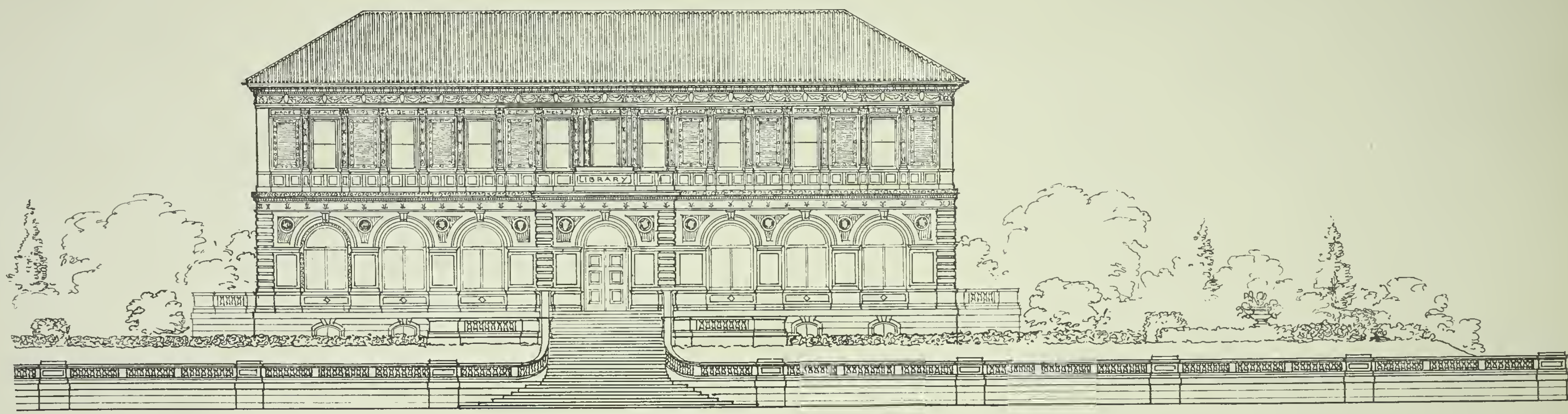


MENTION.

SUBMITTED BY HARRY I. SCHENCK AND HARRY J. WILLIAMS, DAYTON, OHIO.

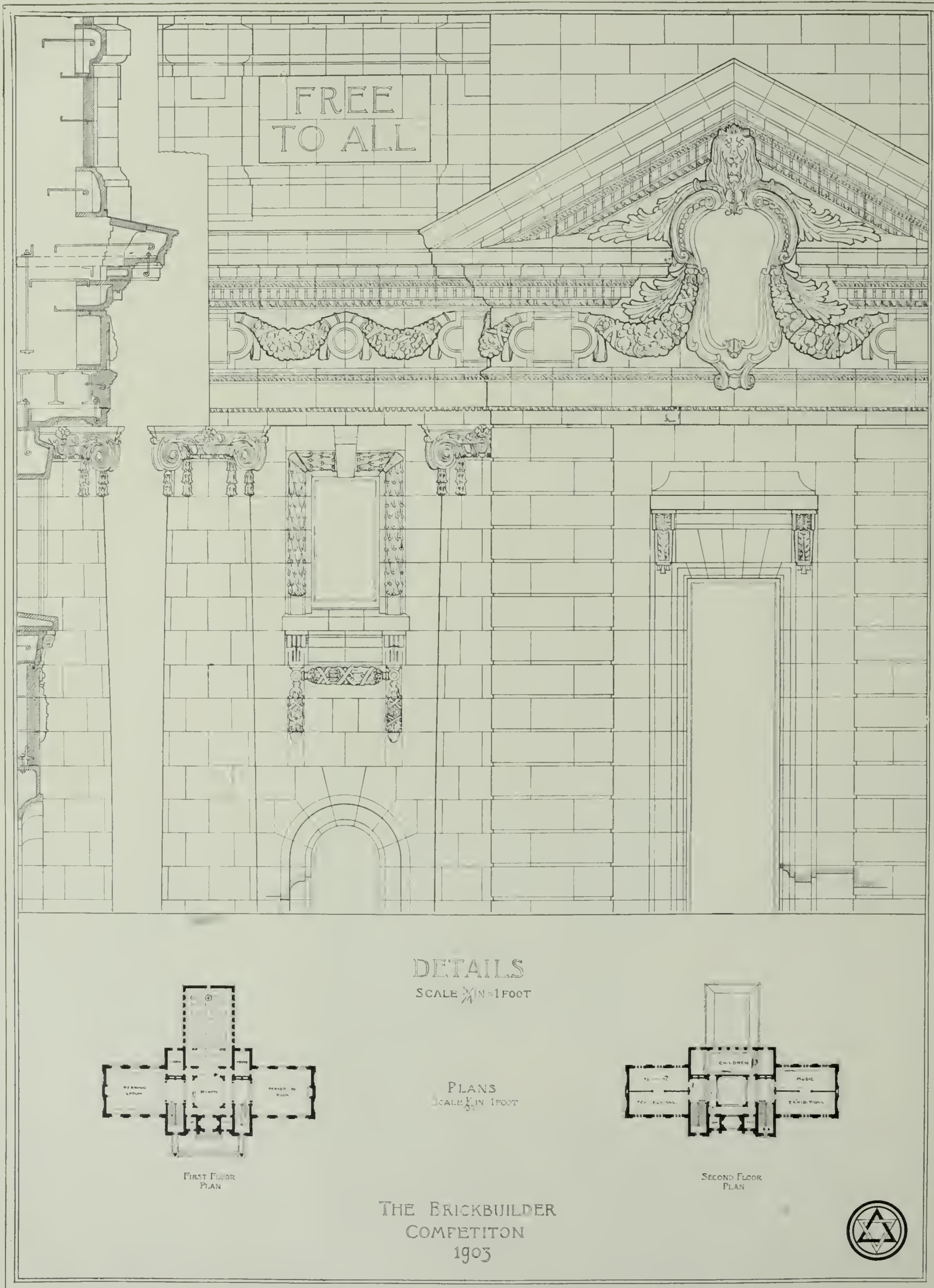


DETAIL BY GEORGE G. WILL.



MENTION.

SUBMITTED BY GEORGE G. WILL, BOSTON, MASS.



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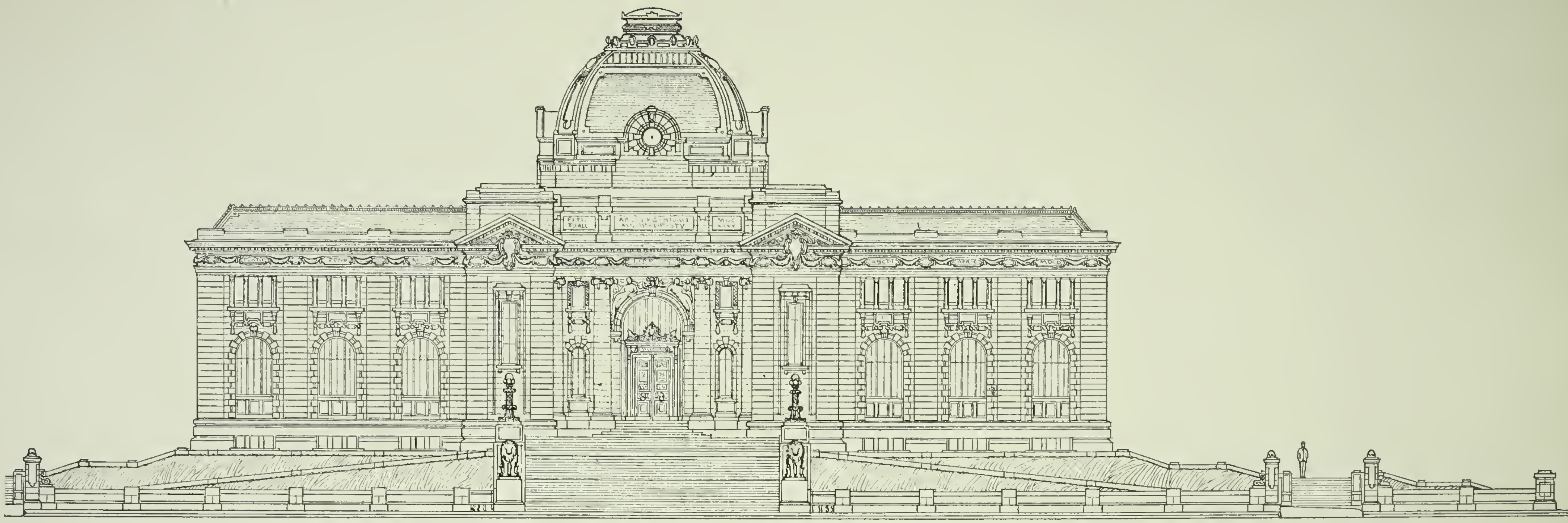

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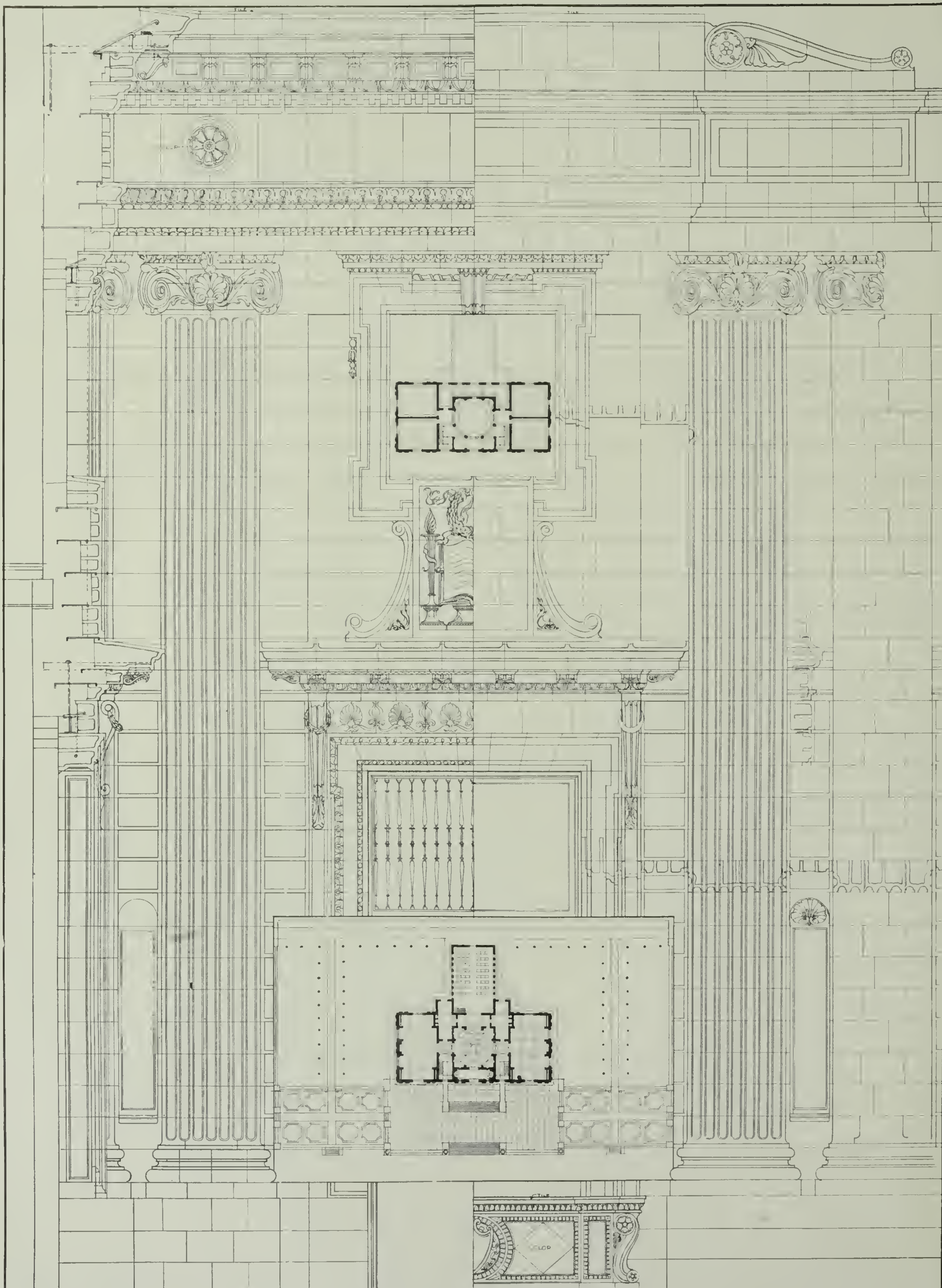

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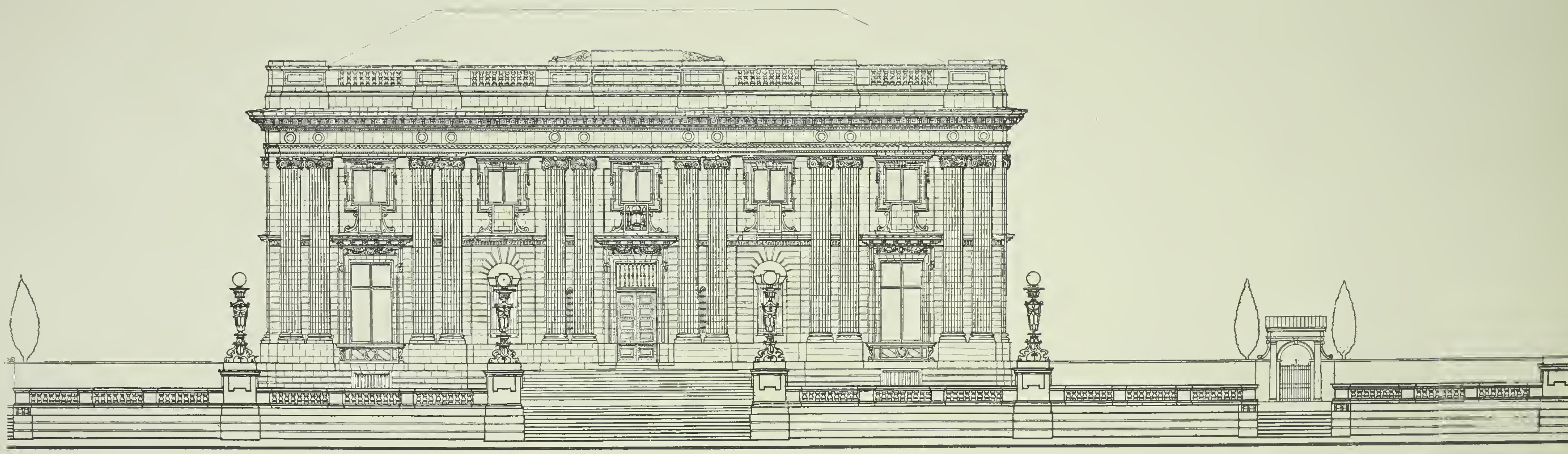

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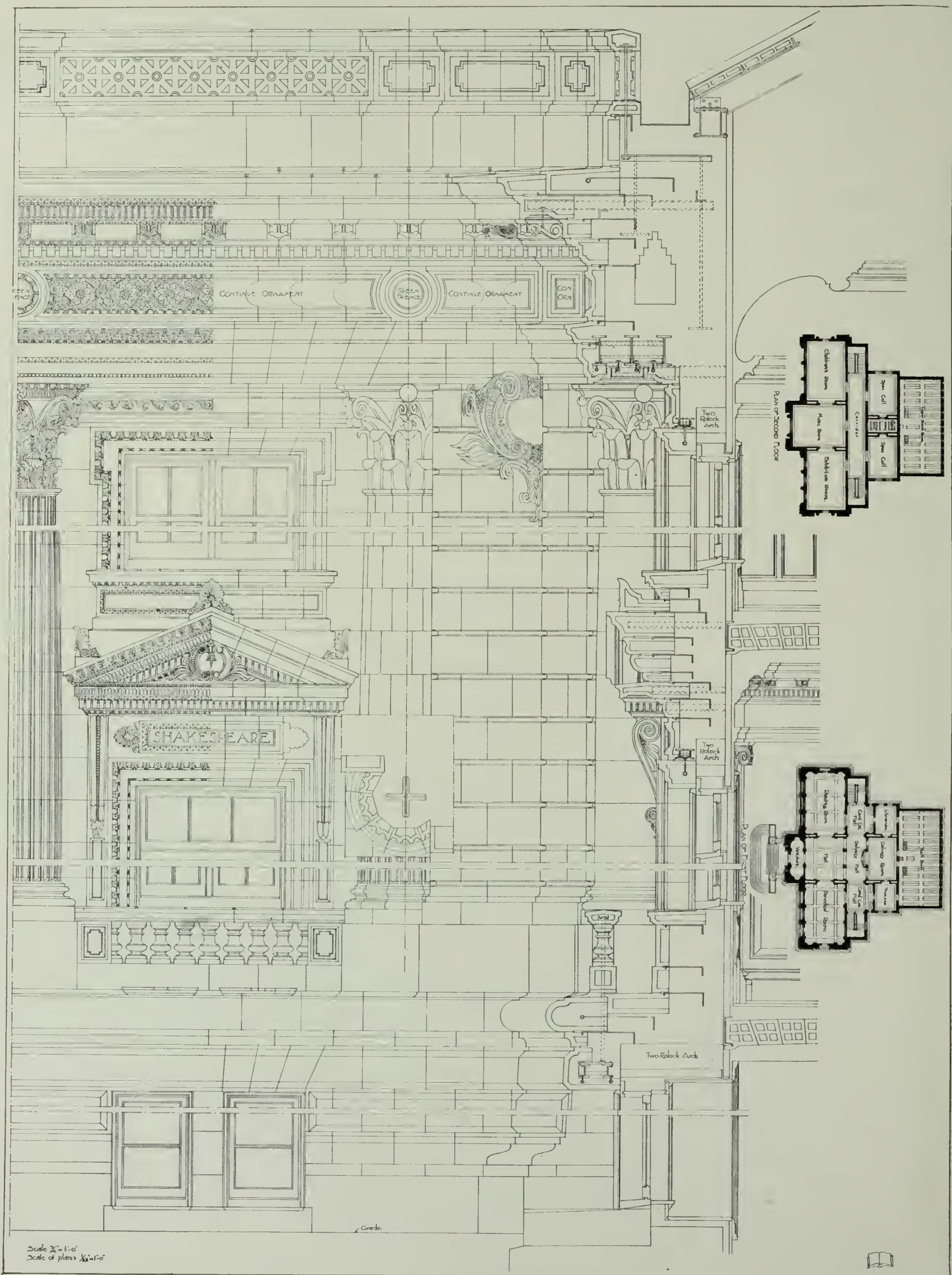

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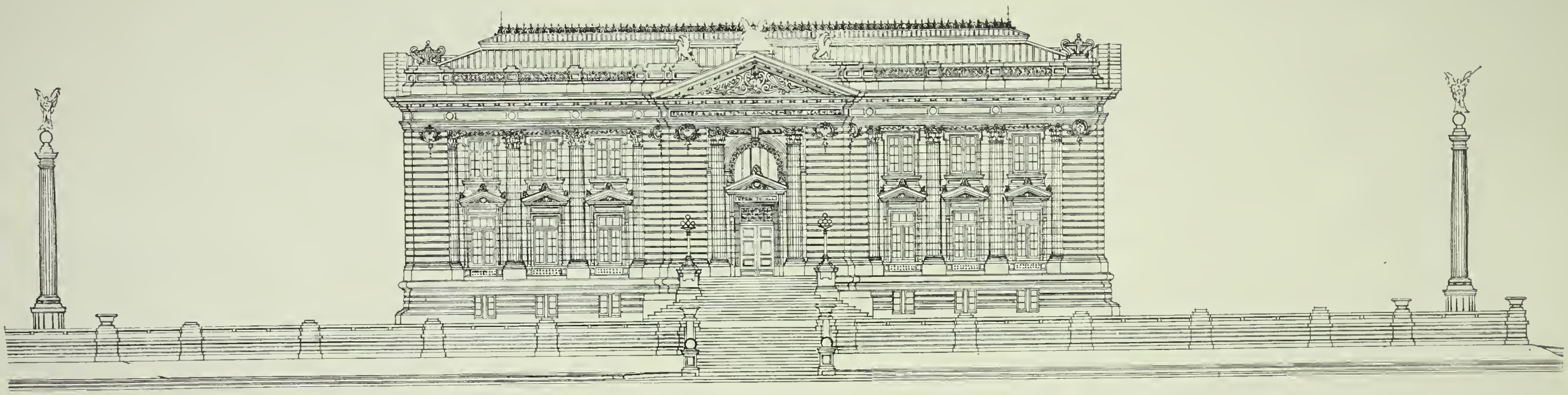

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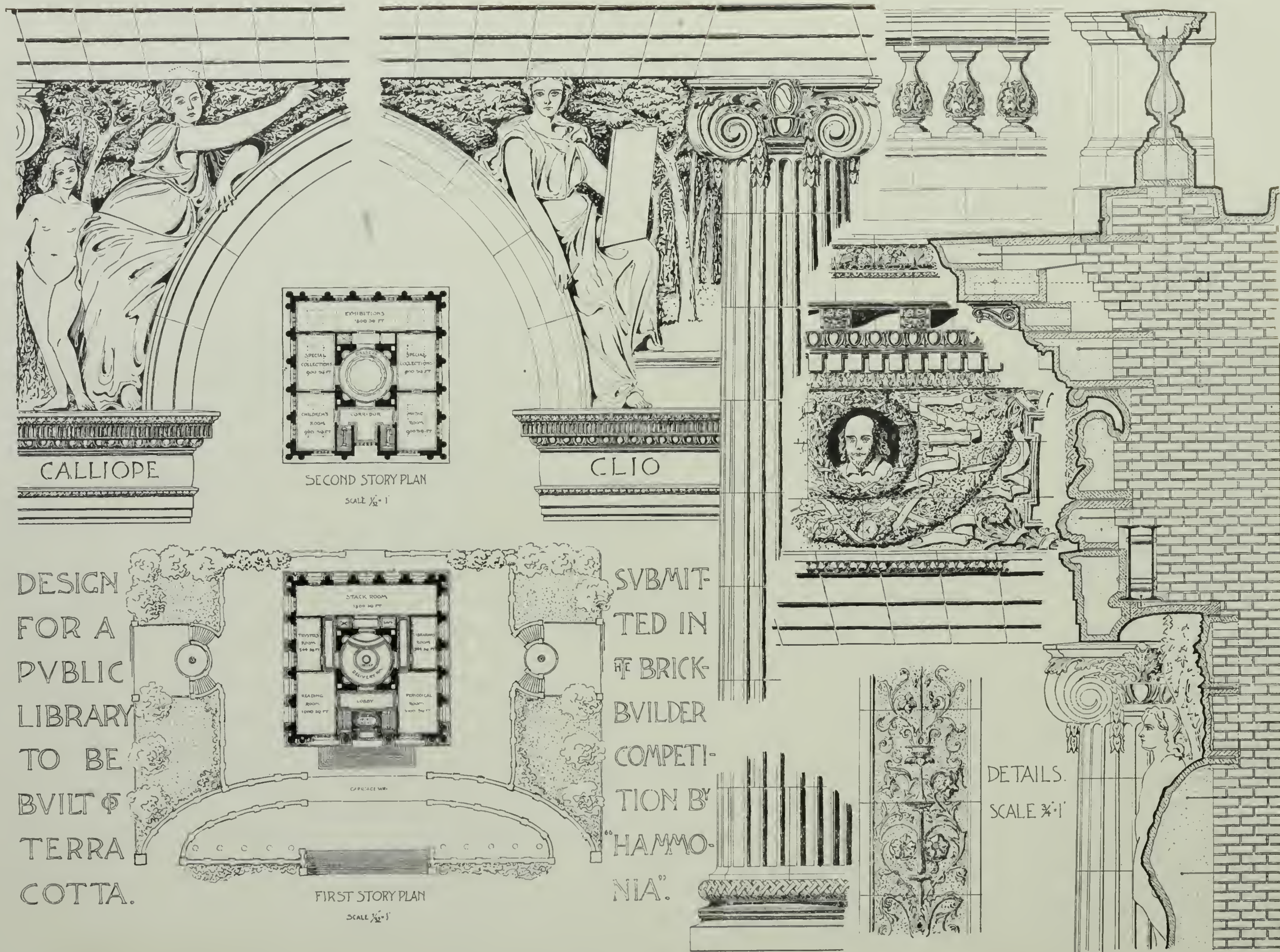

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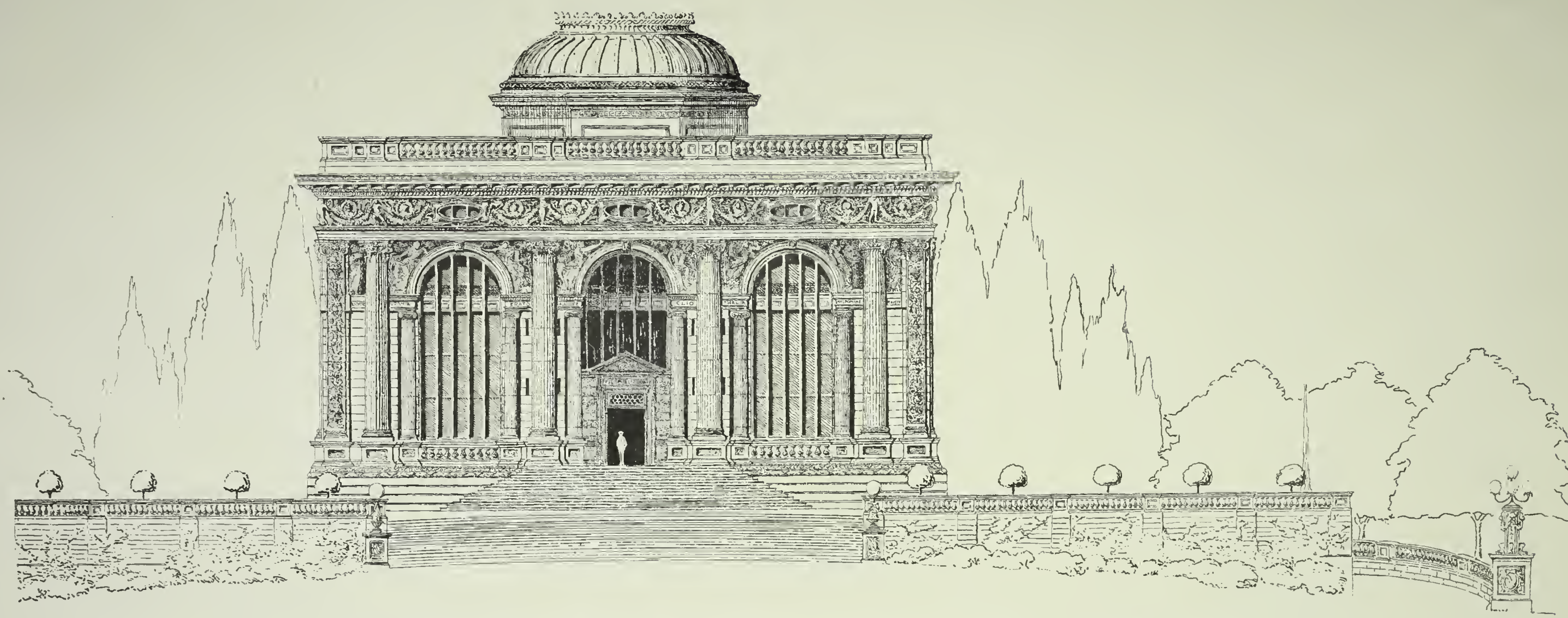

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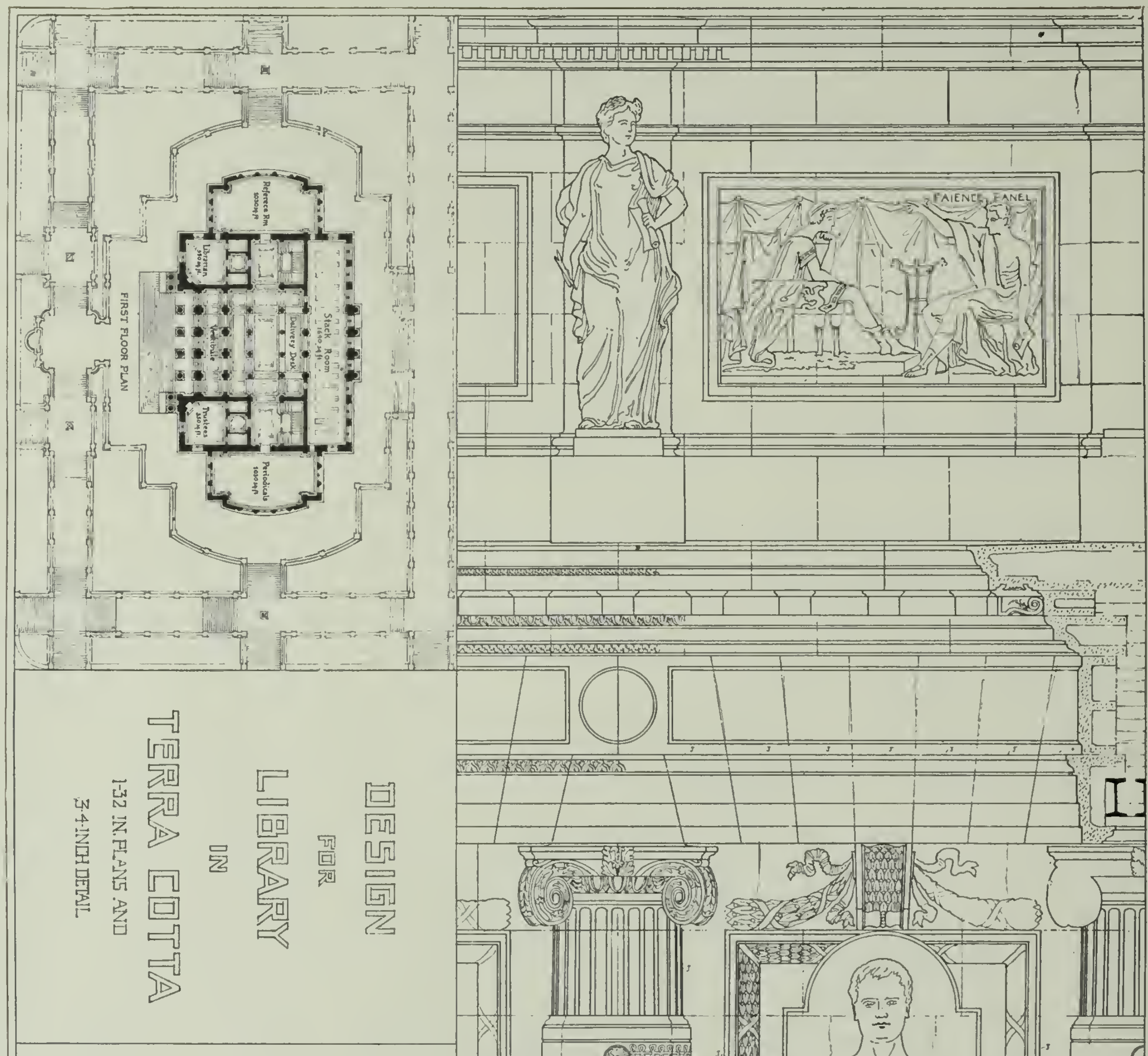

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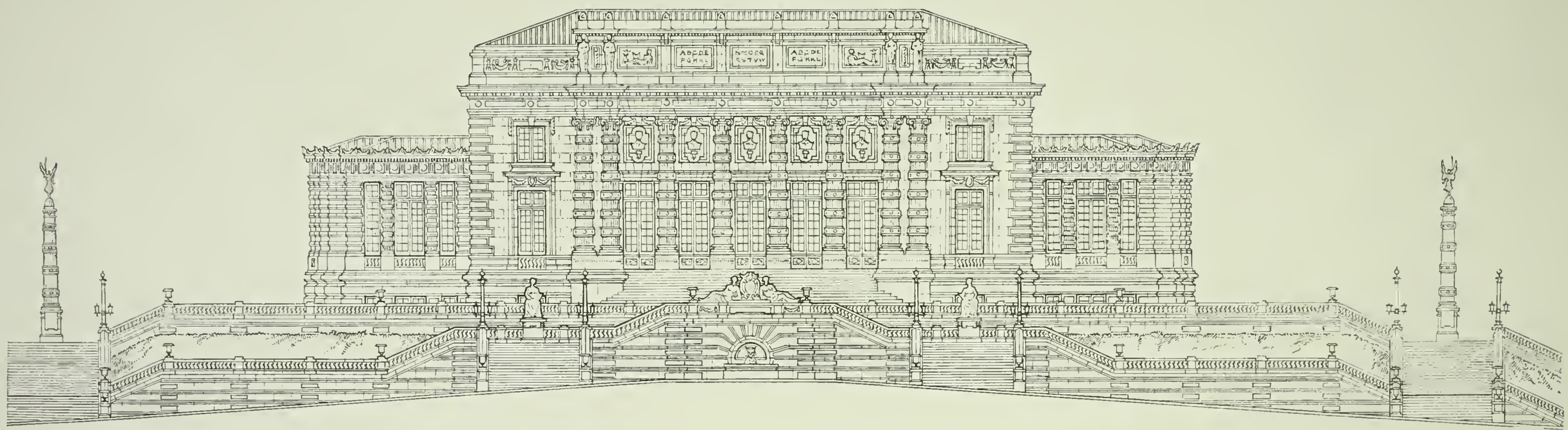

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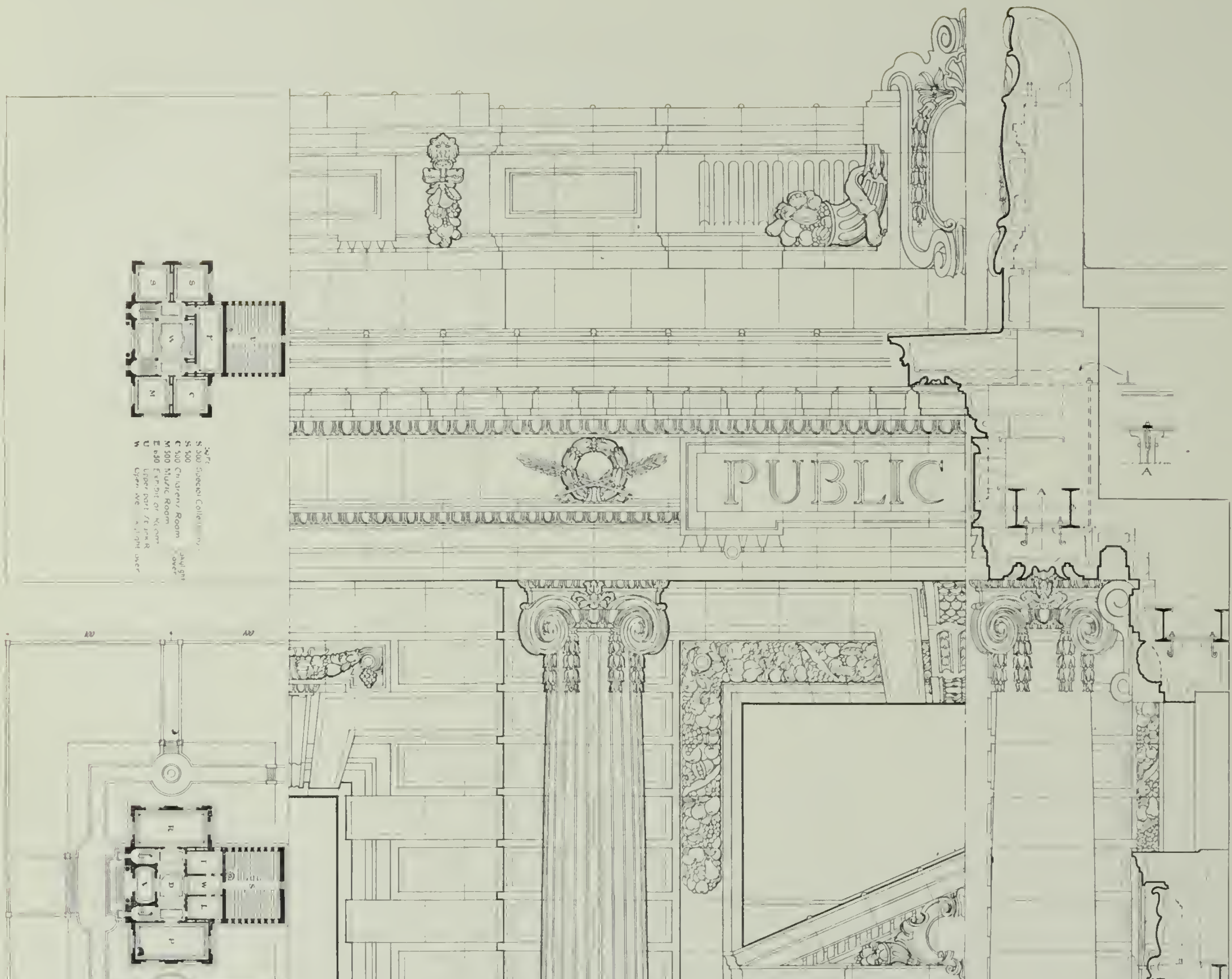

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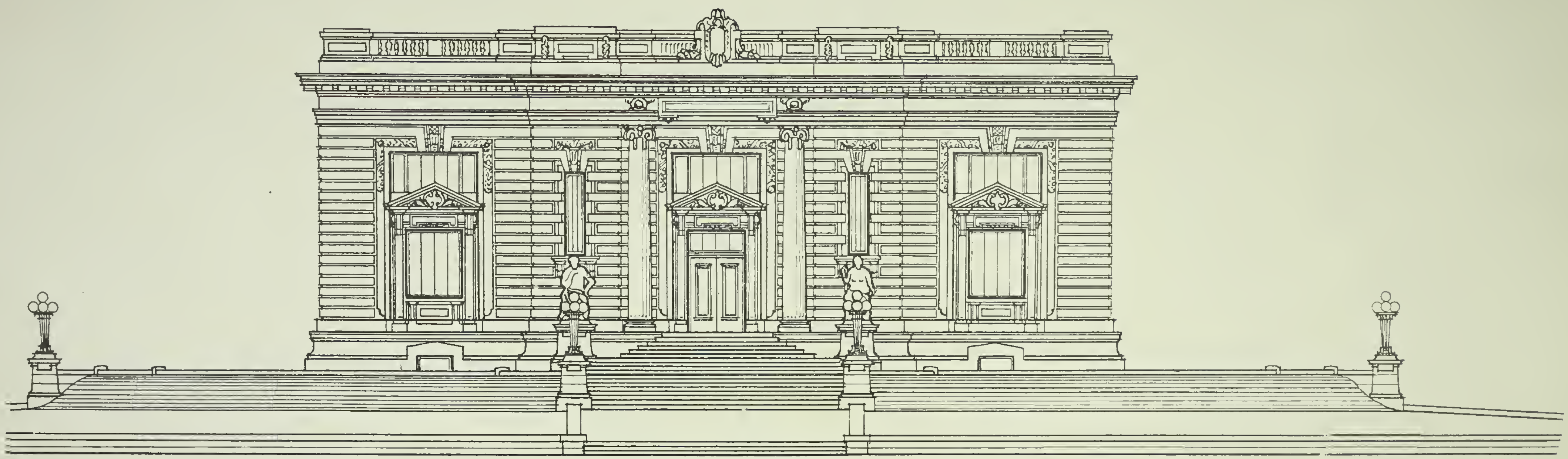

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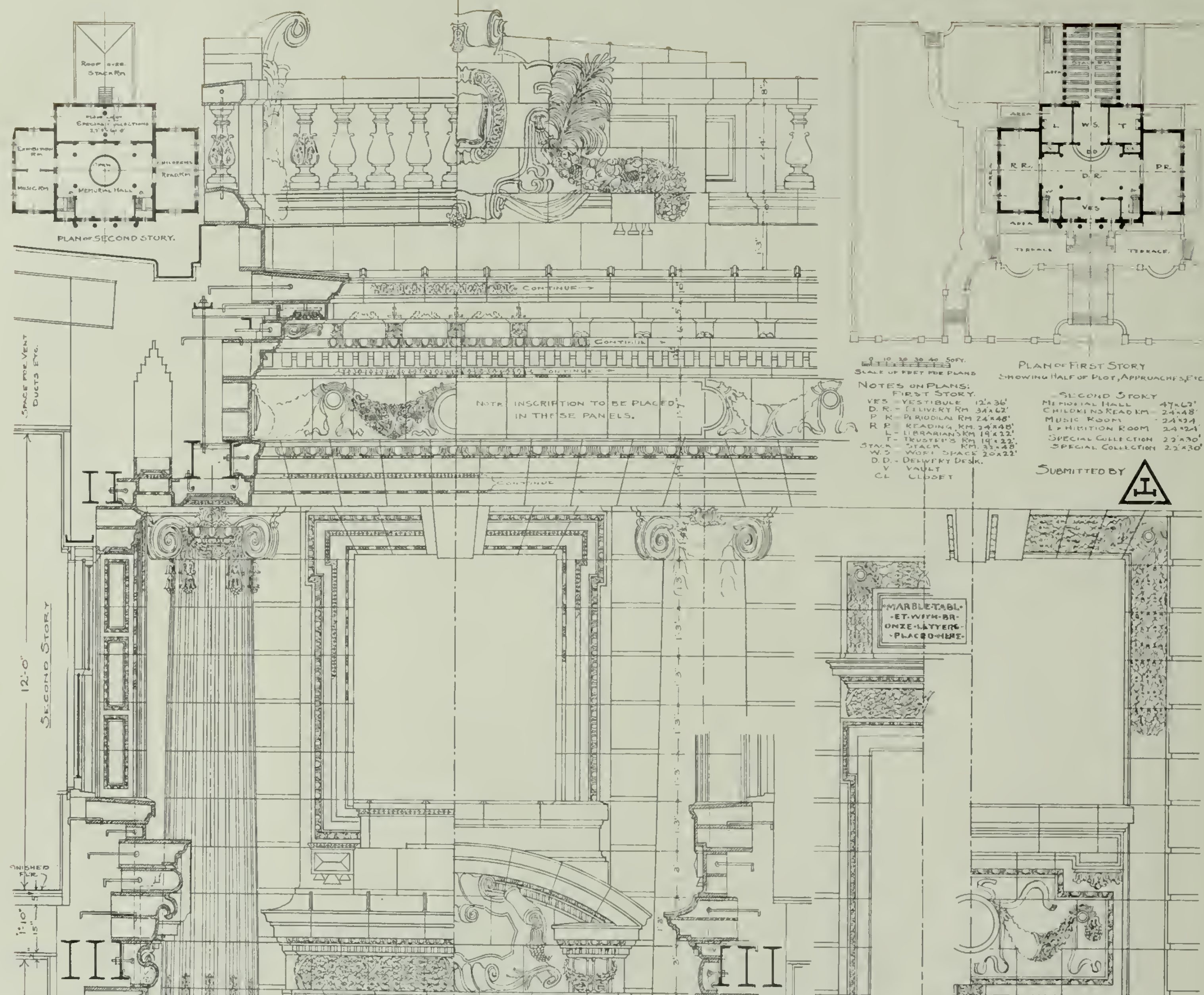

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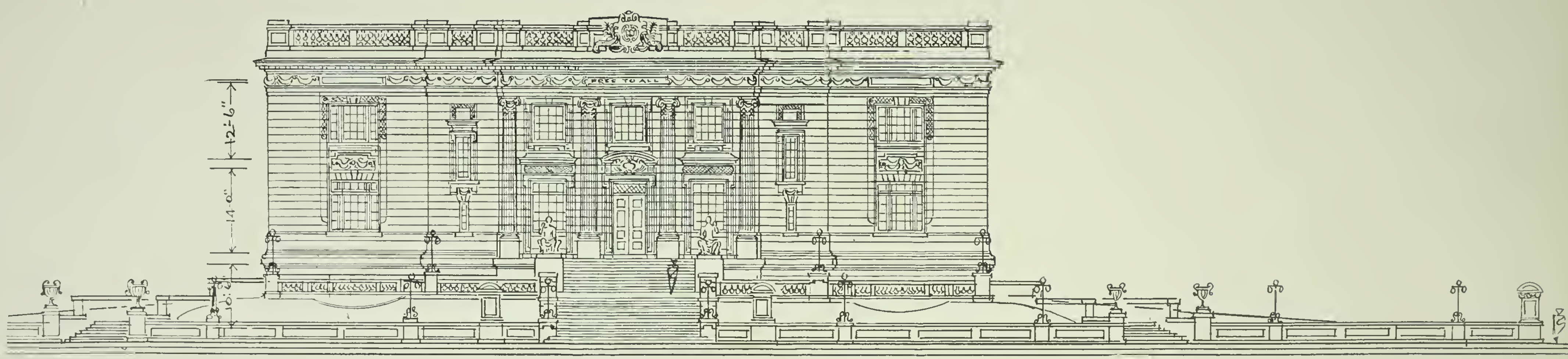

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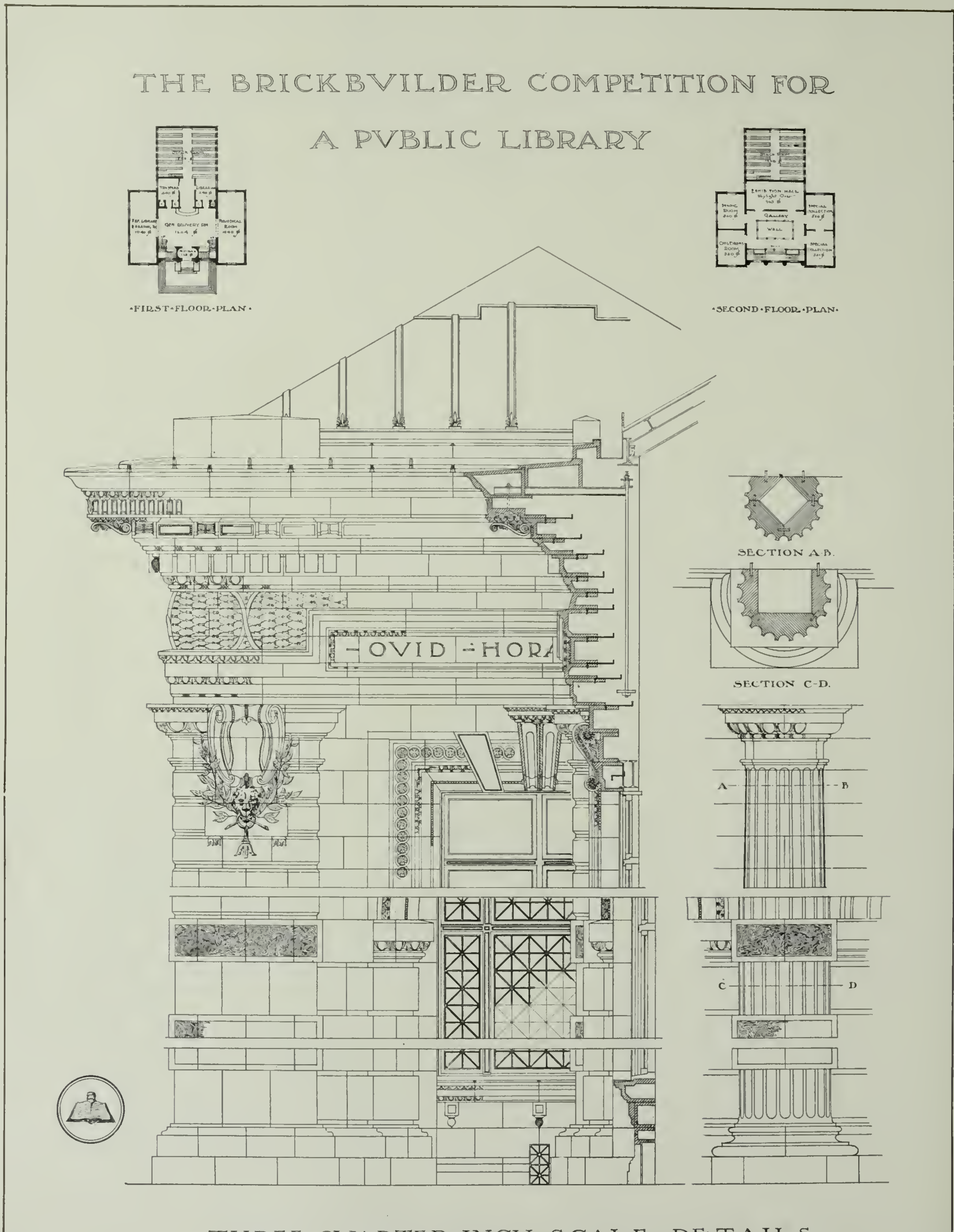

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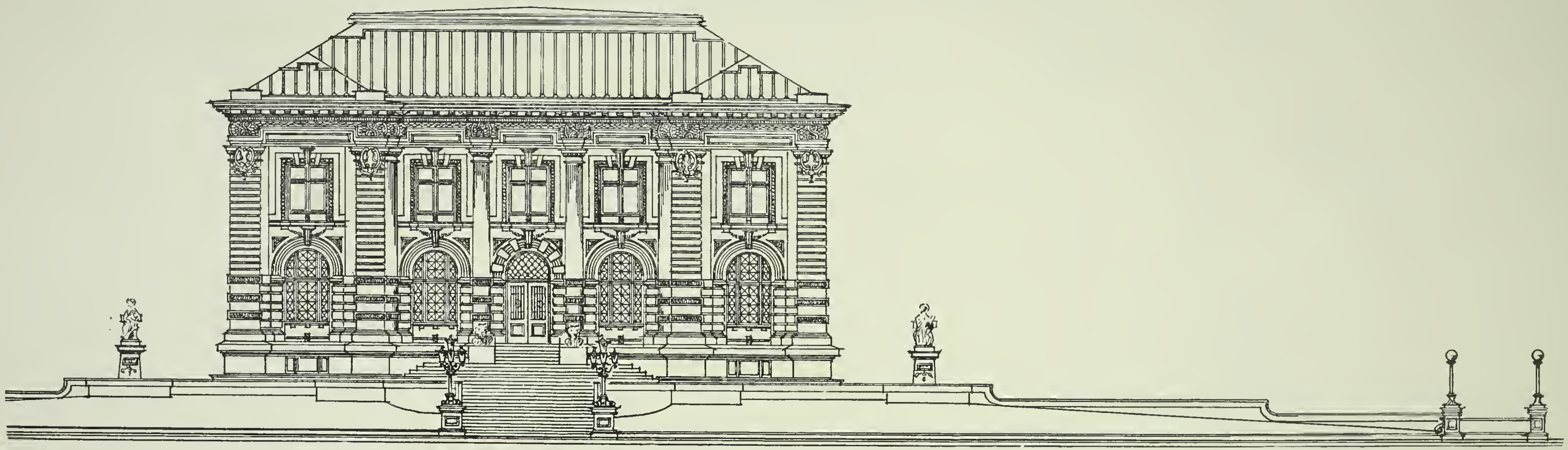

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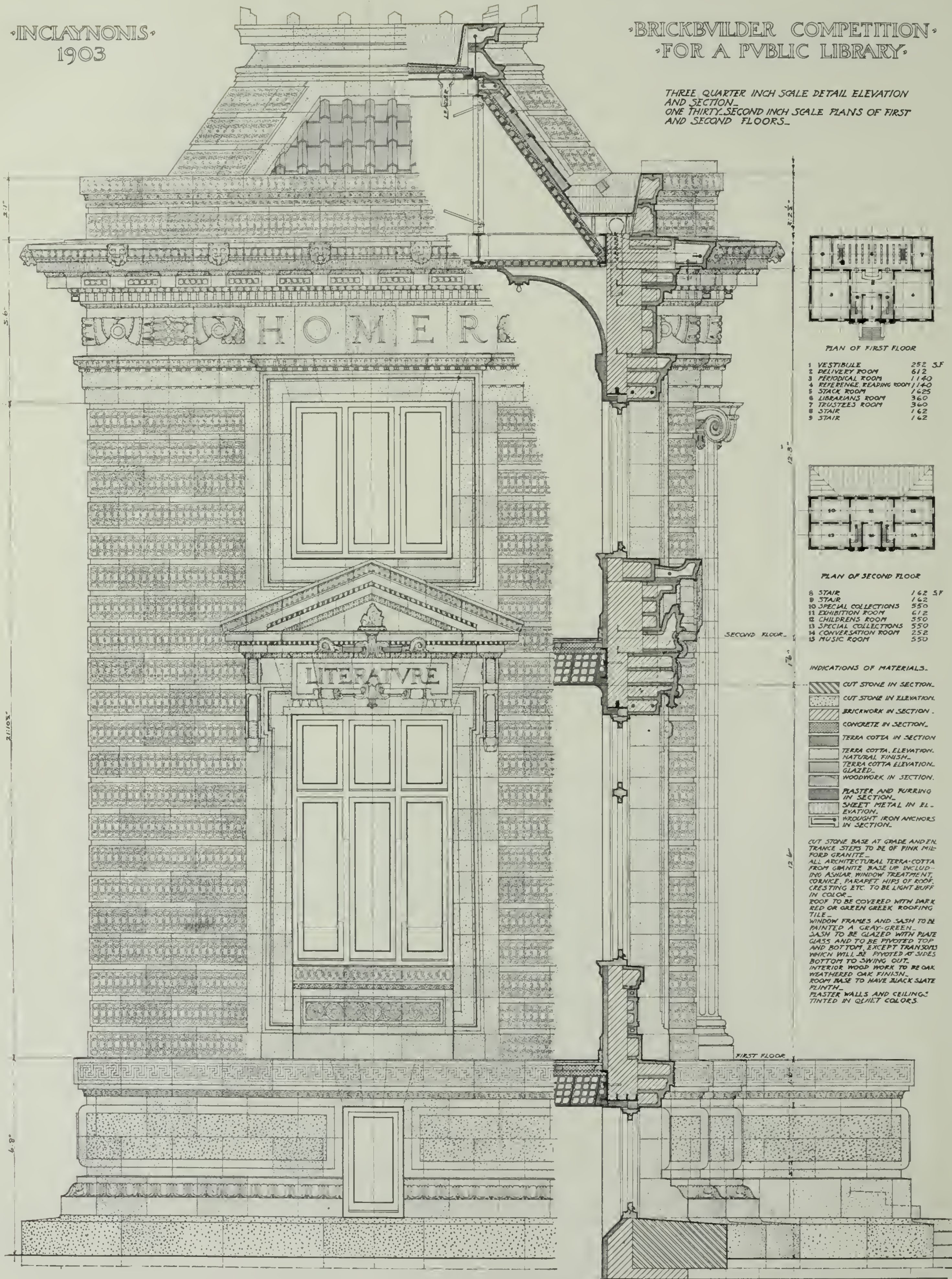

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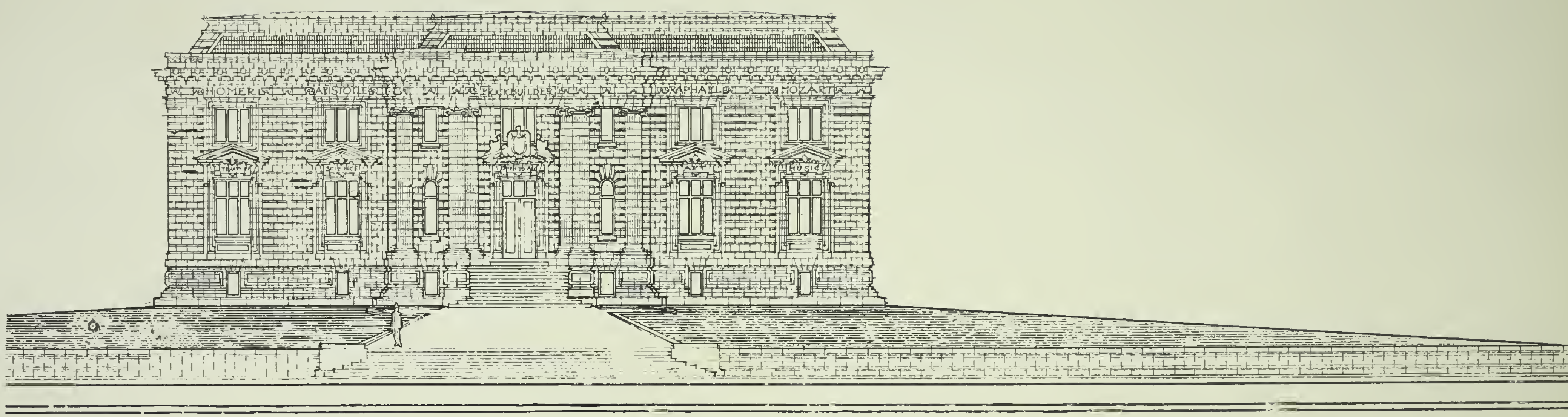

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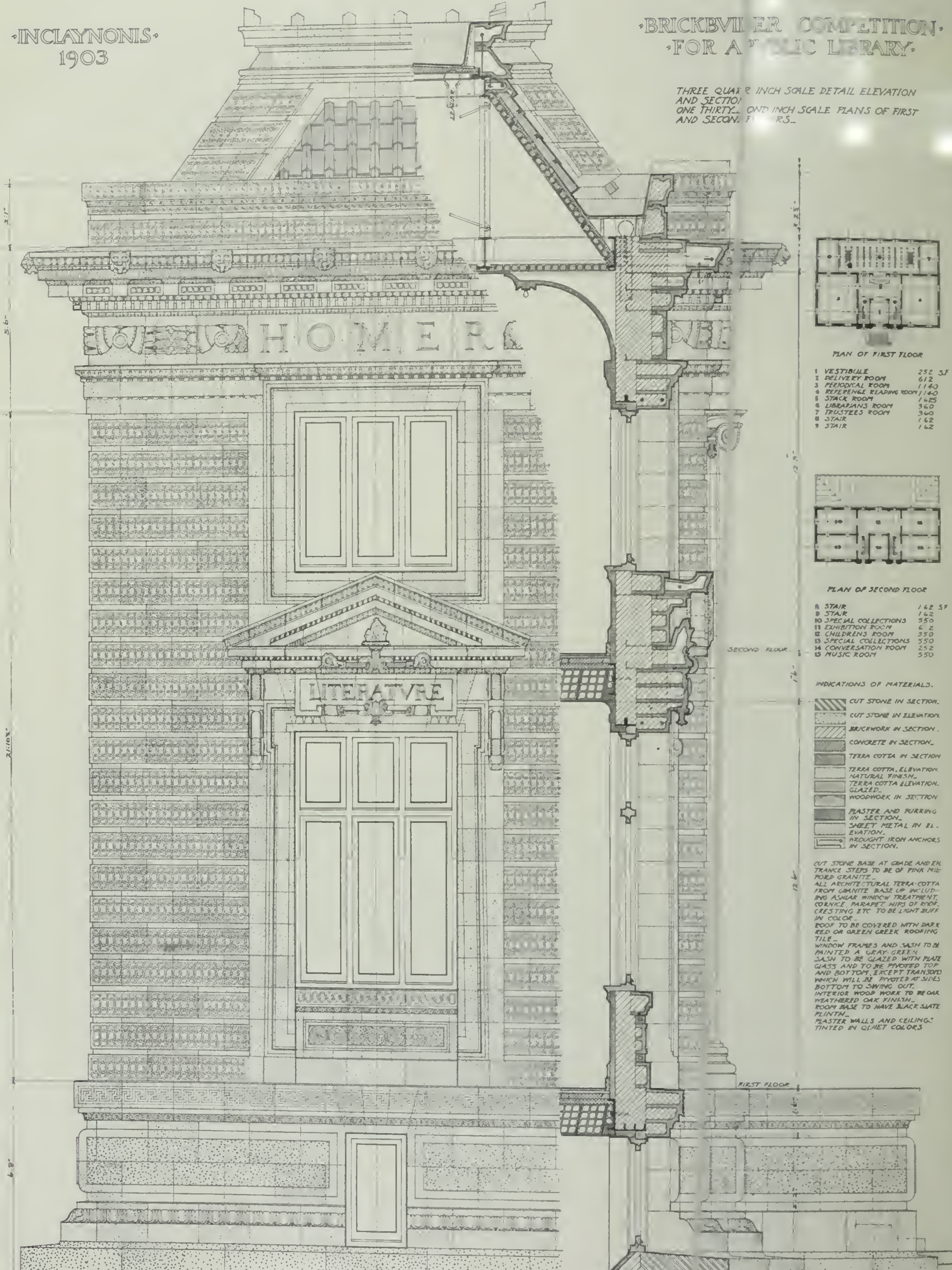

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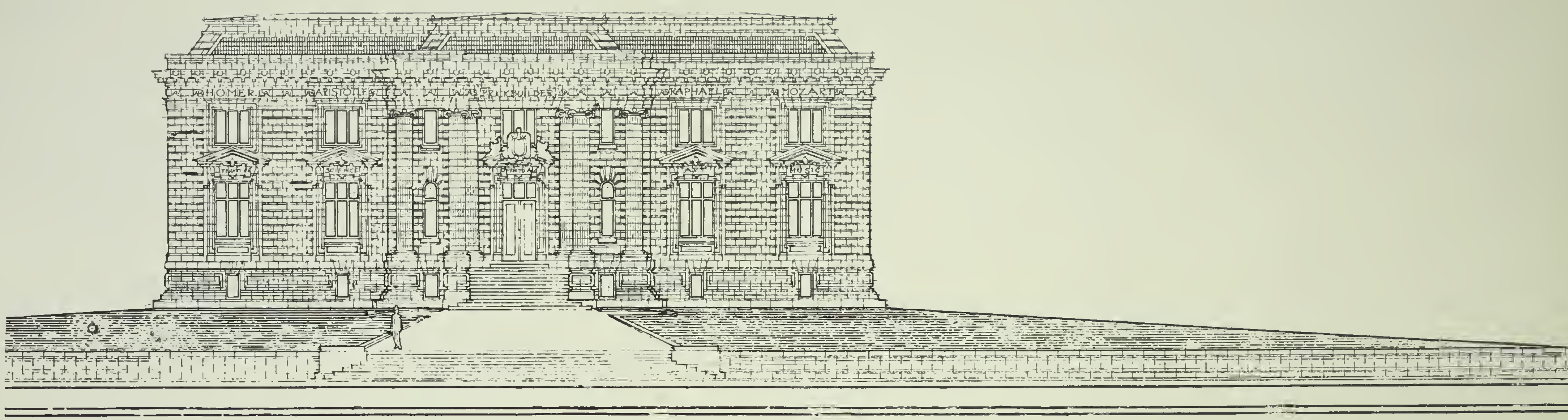

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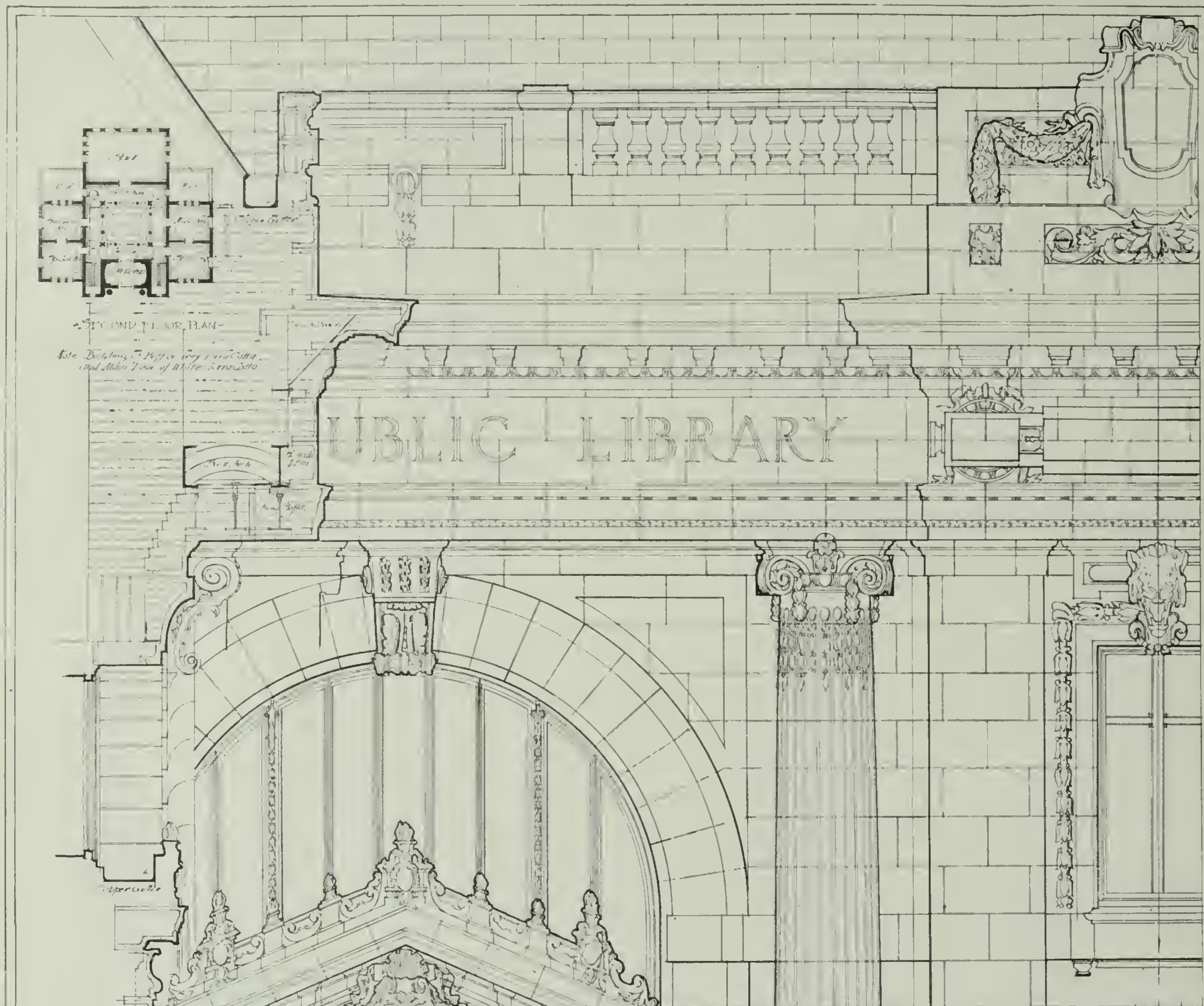

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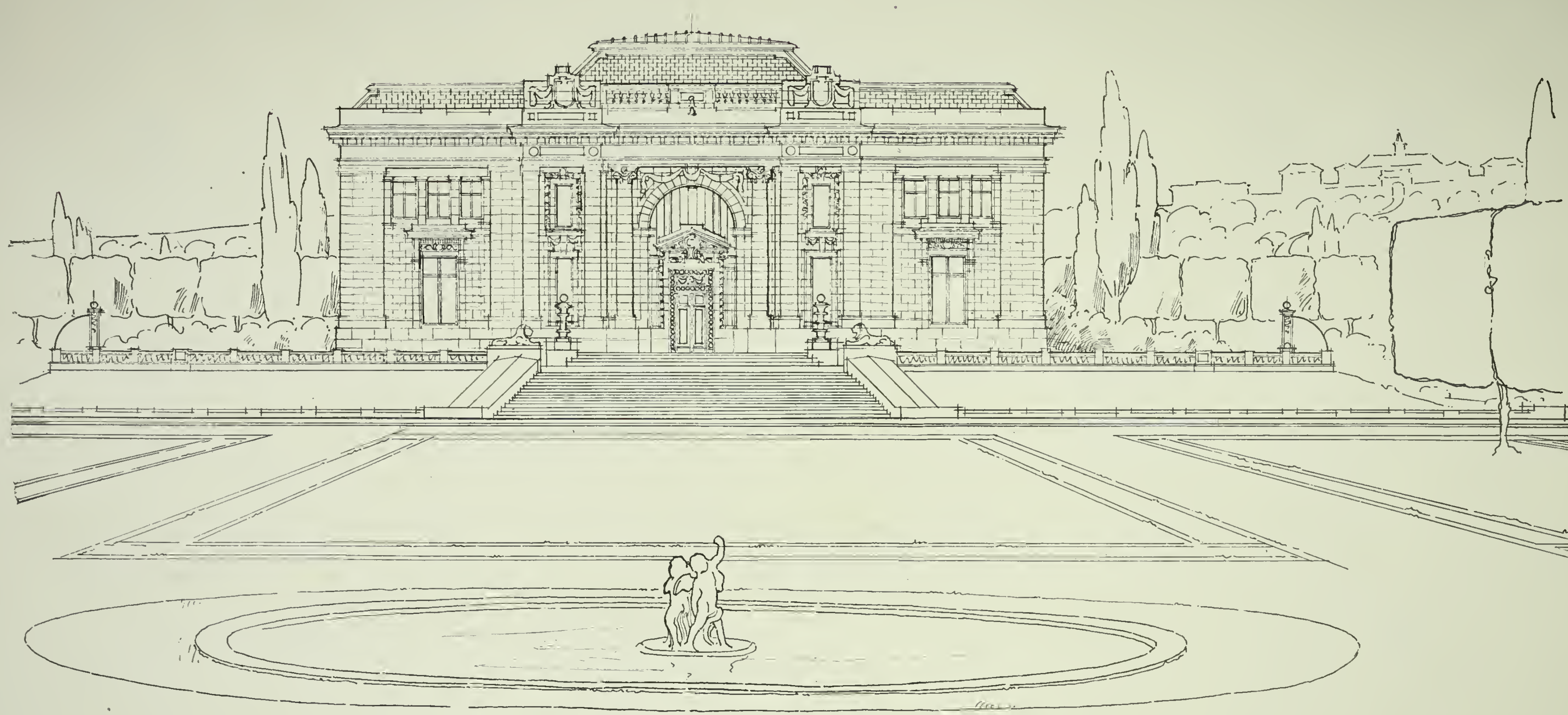

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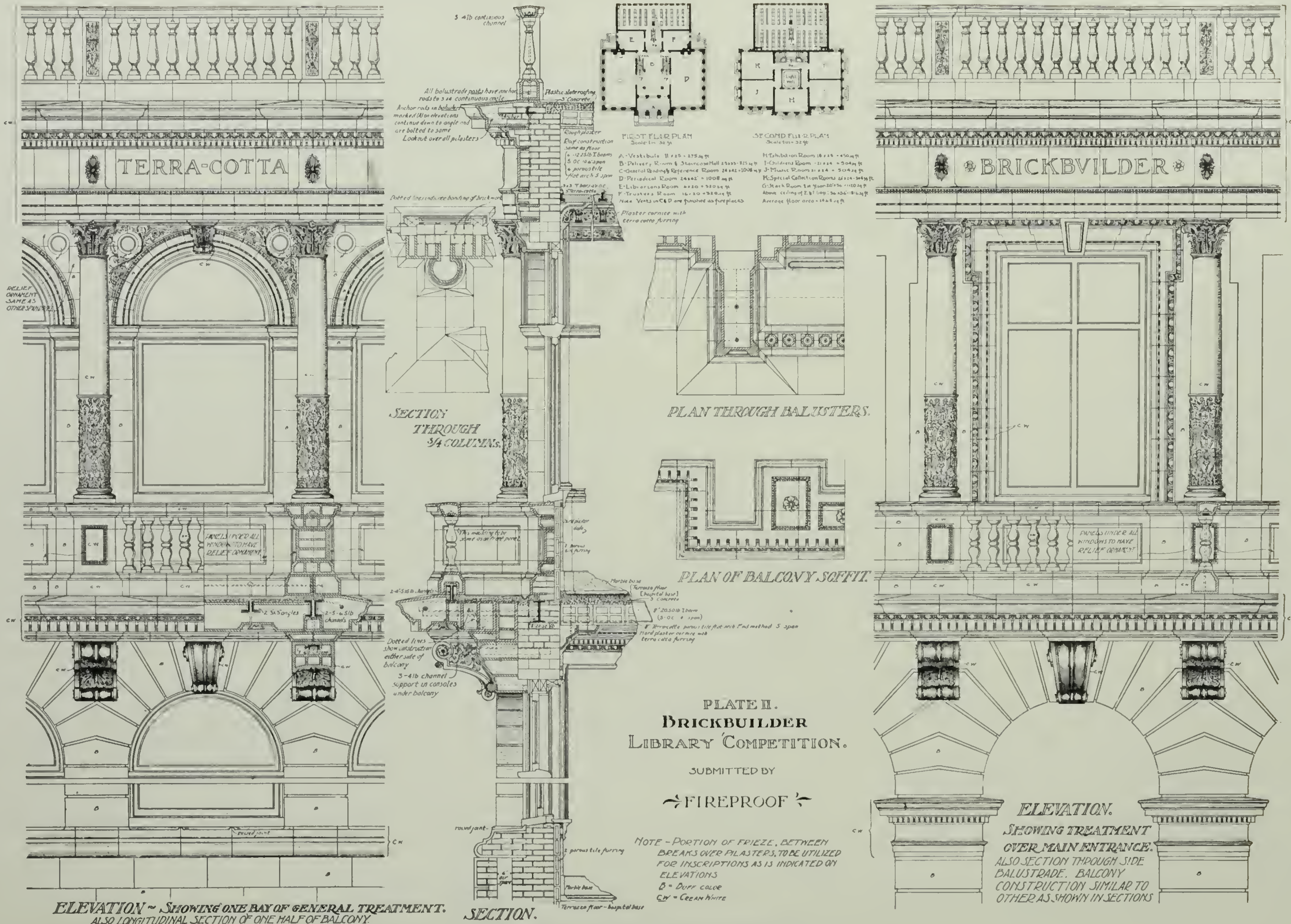

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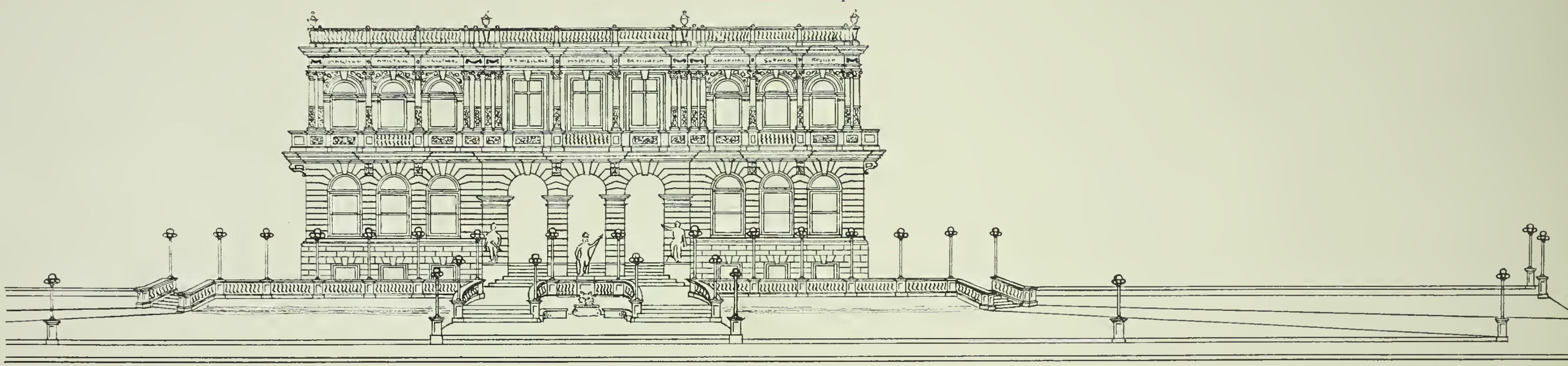

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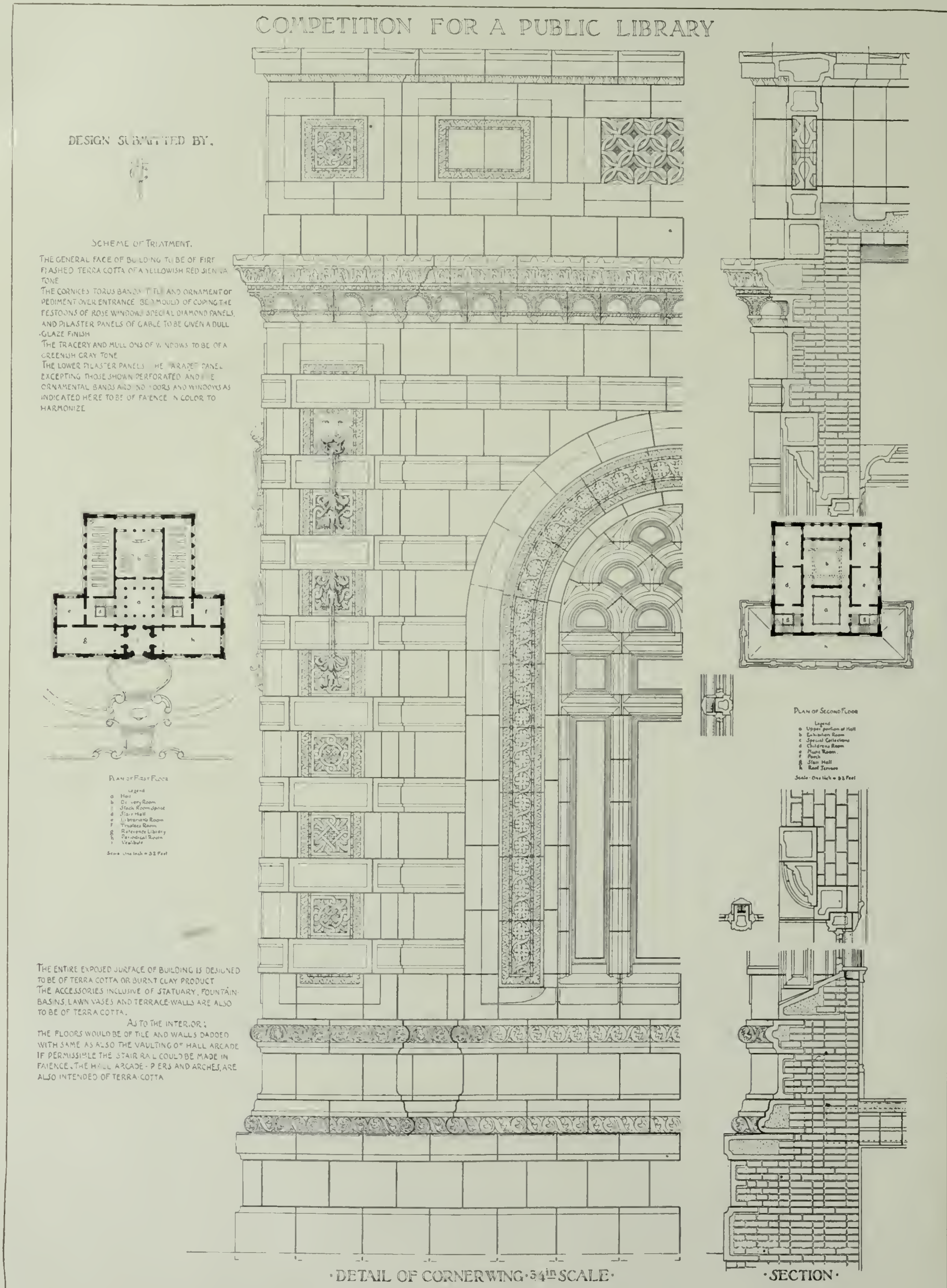

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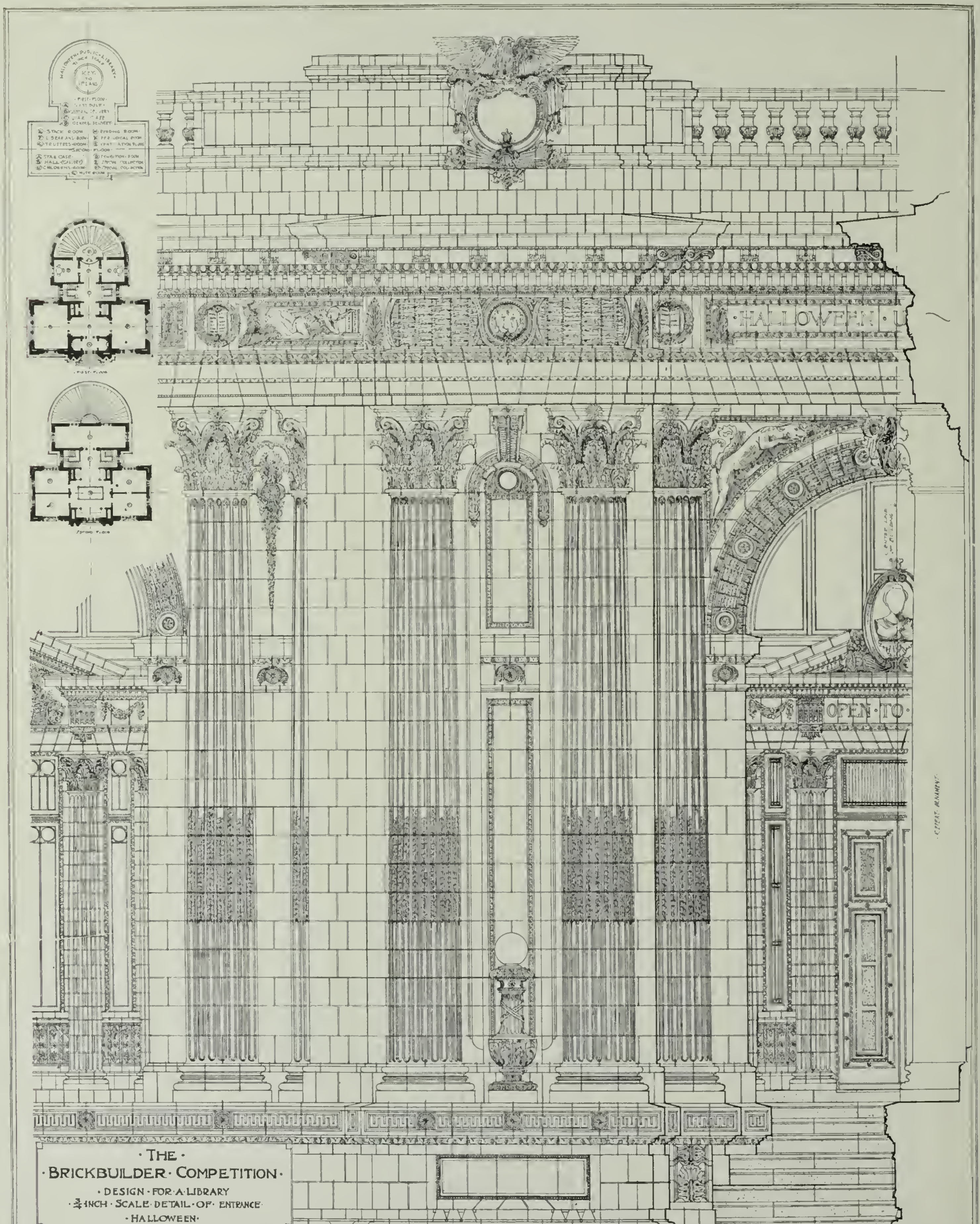

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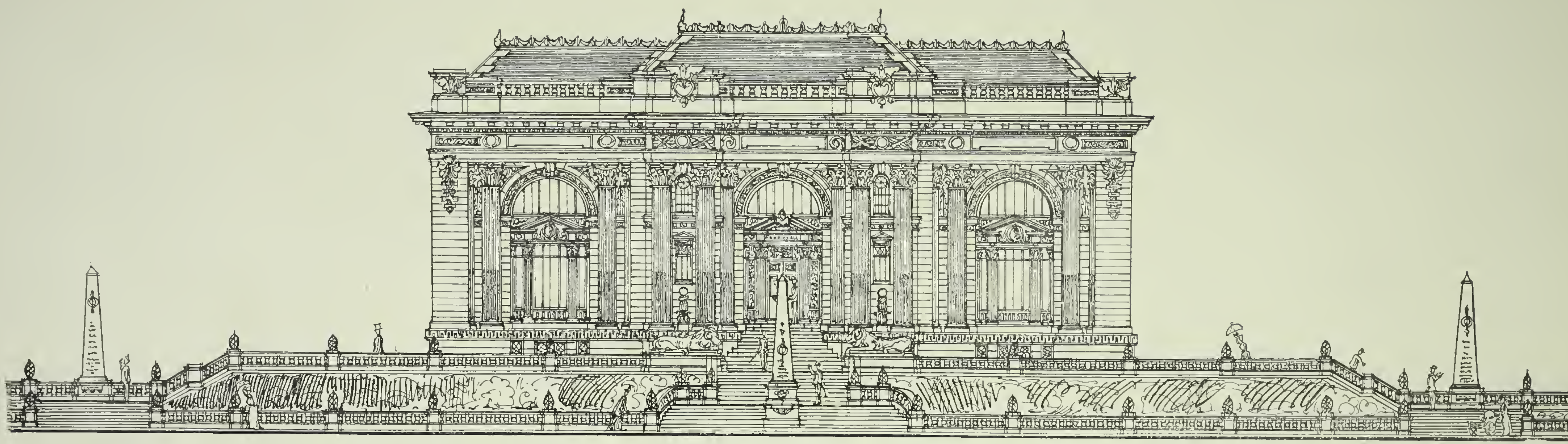

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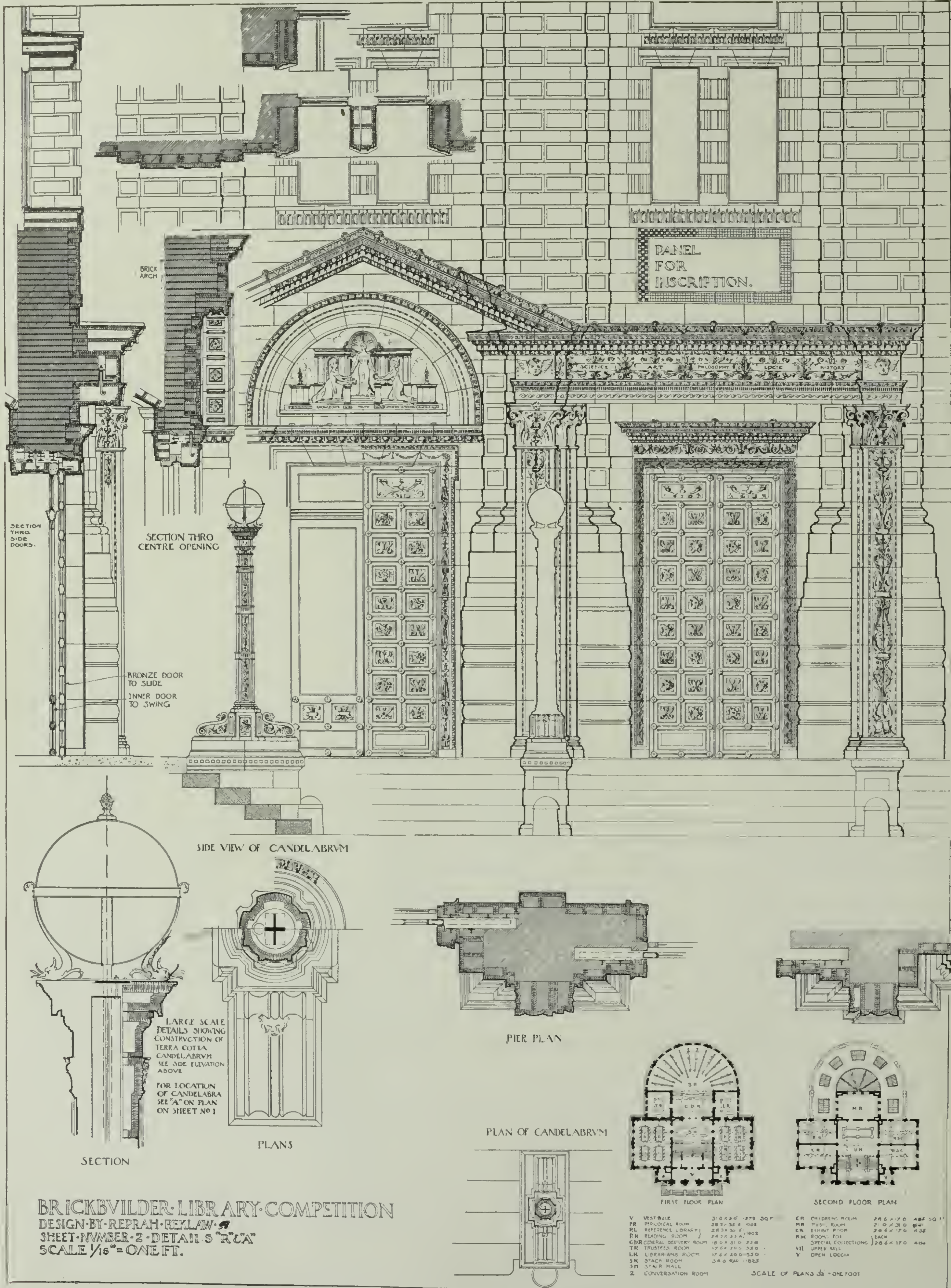

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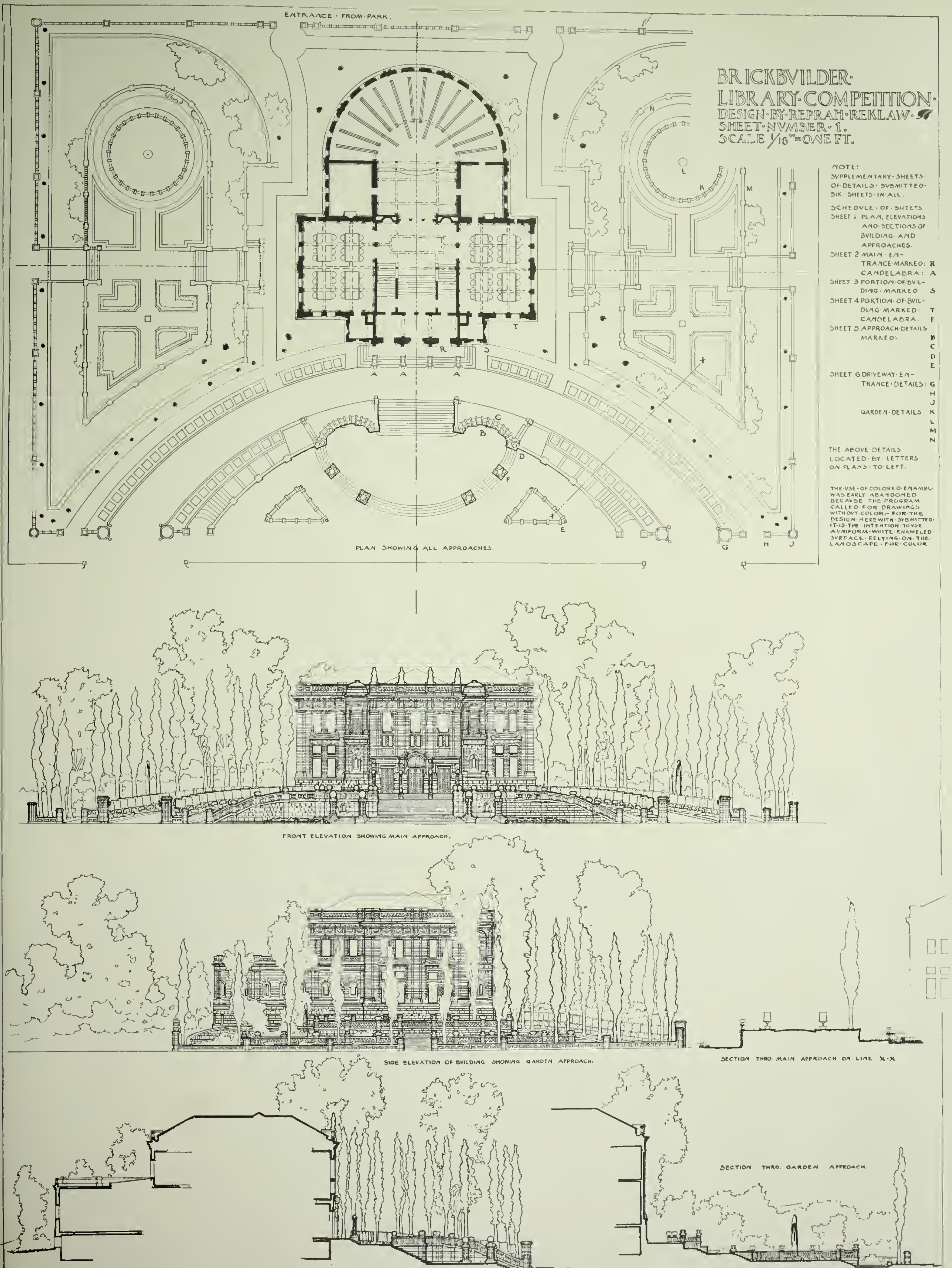

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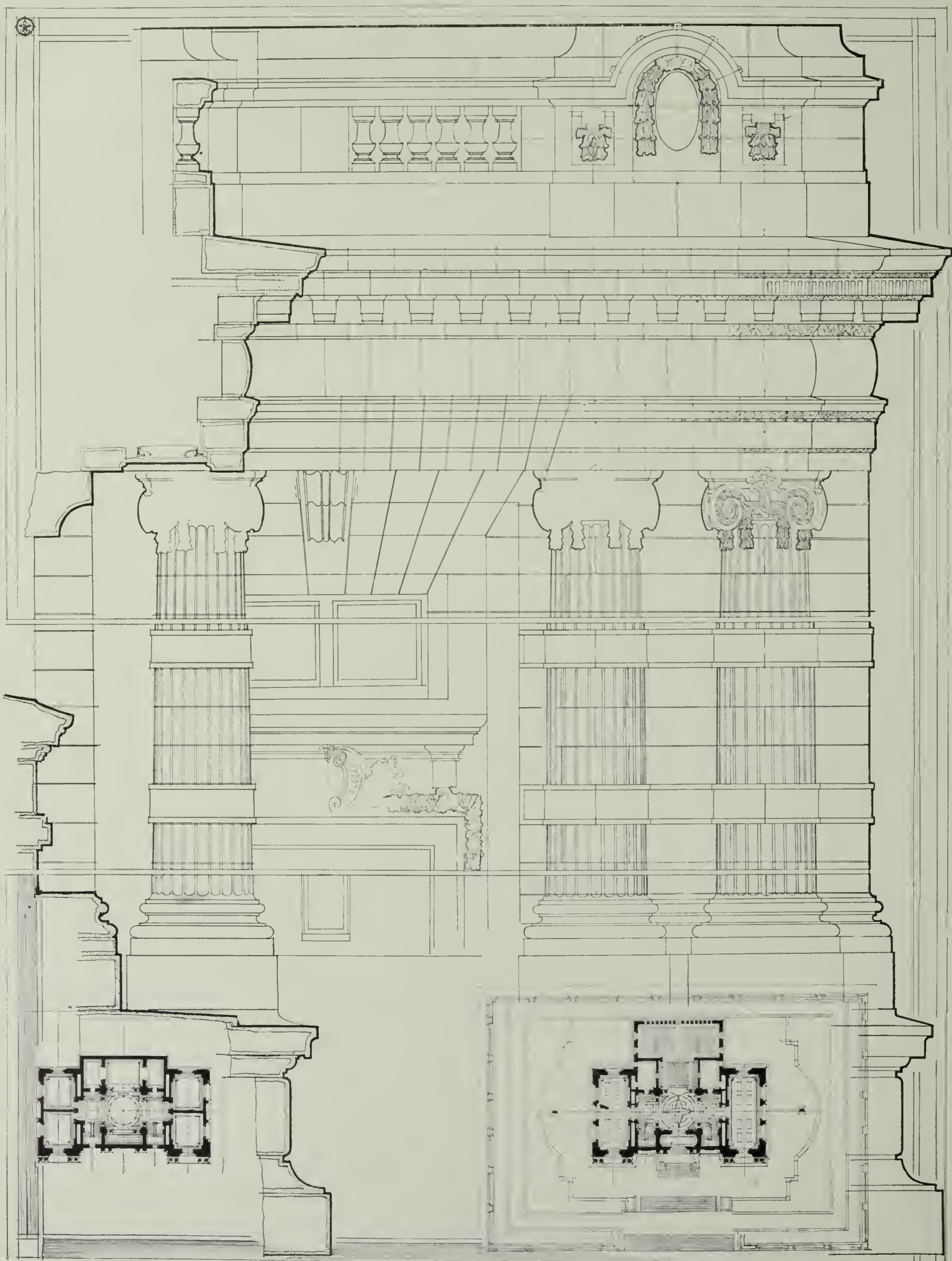

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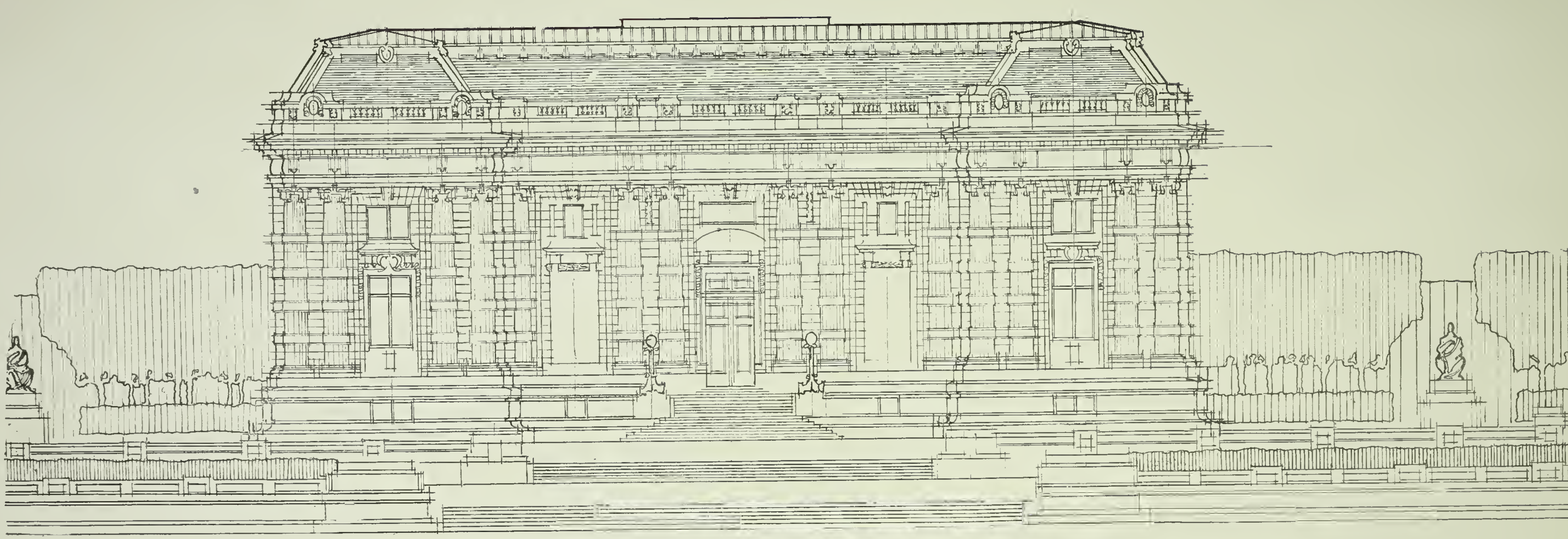

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THE BRICKBUILDER.

VOL. 13 FEBRUARY 1904 No. 2

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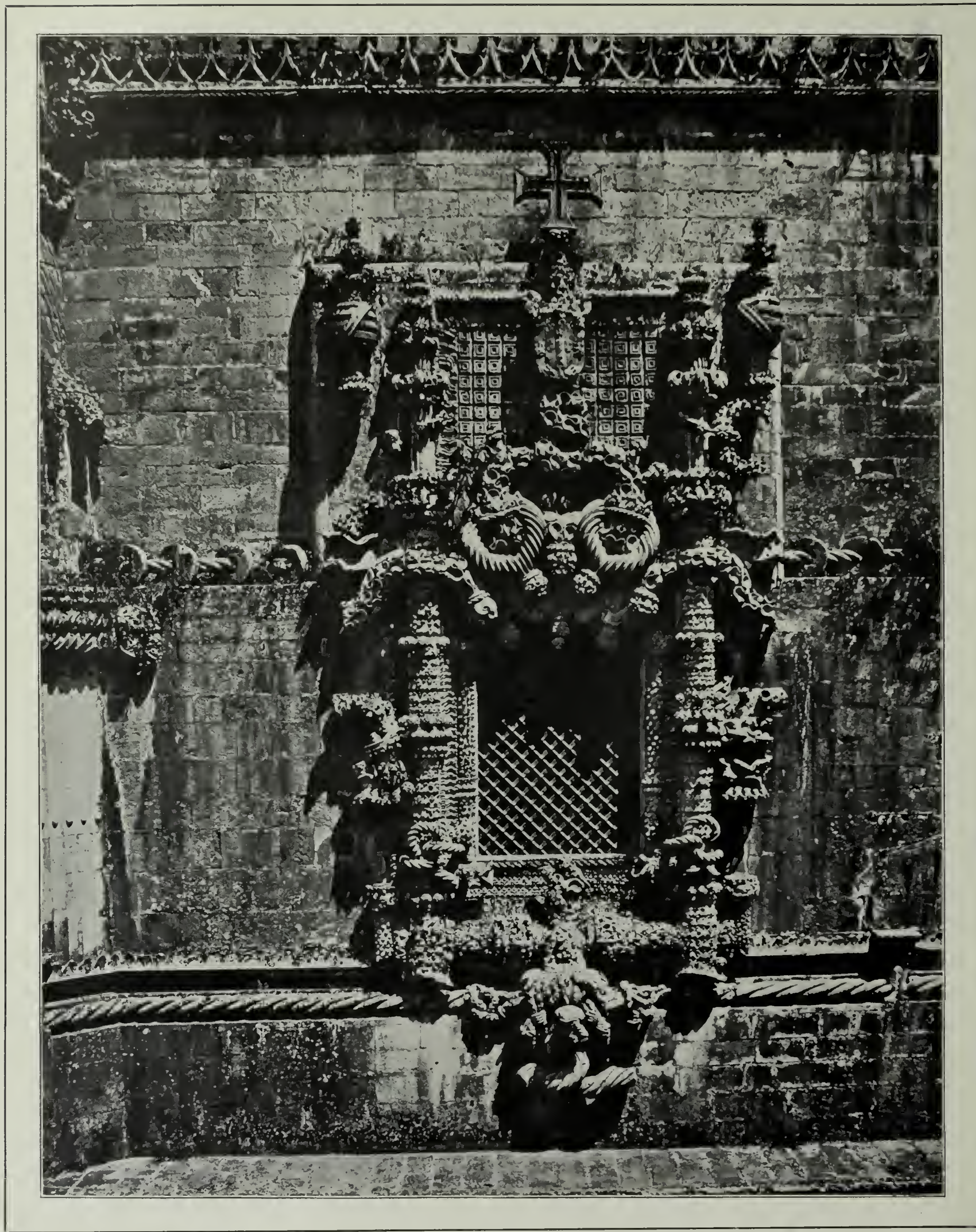

WINDOW IN THE CONVENT OF CHRIST, THOMAR, PORTUGAL.

THE BRICKBVILDER

VOL. 13 No. 2 DEVOTED · TO · THE · INTERESTS · OF ARCHITECTVRE · IN · MATERIALS · OF · CLAY FEBRUARY 1904

THE BRICKBUILDER.

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Advertisements will be printed on cover pages only.

THE BALTIMORE FIRE.

THE terrible fire which has wiped out the heart of the business center of Baltimore offers the first opportunity which the country has had for observing the action of a thoroughly modern steel frame structure when exposed to the terrific heat of a general conflagration. The most valuable lessons, however, of this fire are not to be gleaned by a casual visit or inspection of the smoking ruin. The reports of the fire which have appeared in the daily press have been entirely from a popular standpoint and have presented the impressionistic aspect of a great calamity, but almost without exception have been very misleading in specific details. Particularly as regards the action of burnt clay, the daily press has in most instances been either silent or sweepingly incorrect. The fire has beyond a question demonstrated the fact that burnt clay will amply protect the structure of a steel frame building, and is the only fire resisting material available for external use. The exact action of burnt clay in this fire has already been carefully studied on the spot by members of THE BRICKBUILDER'S staff, but in order to more thoroughly cover the ground and to be able to present a comprehensive study to our readers, more time is needed to prepare in a complete form all that can be gleaned from the lessons of this fire.

It is of interest to note that the authorities at Baltimore appear to be keenly alive to the possibilities within their reach. All building permits have been revoked, and the authorities are deliberately and intelligently considering what changes, if any, should be made in the street lines or in the arrangements of the principal avenues, and a commission, including many of the best architects in the city, is carefully studying the building laws with a view to their revision. All of this will be considered in detail in future issues of THE BRICKBUILDER.

IT is reported that the authorities having charge of the new building for the Department of Agriculture in Washington have insisted upon locating the building in such manner as to result in reducing the width of the Mall by two hundred feet. This is a move which ought to receive the prompt and emphatic condemnation of every one interested in the artistic welfare of our capital. It is directly contrary to the suggestions of the commission, which recently made such an admirable report upon the improvement of Washington, and seems such a needless piece of intrusion that it is hard to have any patience with such shortsighted action. Washington has been named the City of Magnificent Distances, and all its parks and avenues were originally laid out on a scale of lavish magnificence which, while totally out of place for the small village which in the early part of the last century formed itself between the White House and the Capitol, is by no means out of scale with the city which is now rapidly rising to completion and which in a few years ought to be the most magnificent city in the country. The Improvement Commission recognized all the possibilities of Major L'Enfant's original plan, and the splendid proportions of the Mall were preserved and amplified rather than restricted. It seems to be a government propensity to tinker with well-constructed plans, and if we had in the presidential chair a man with less force of character and one less alive to æsthetic possibilities it would be idle to expect any continued carrying out of the commission's report; but it is to be hoped that President Roosevelt will promptly veto any encroachment on the Mall. There is plenty of room for the Agricultural Building, and we understand that the architects of the edifice are themselves strongly opposed to the new location. The American Institute of Architects, which has done so much to bring about the formation of the Improvement Commission, would be perfectly justified in protesting against this impending disregard of the commission's wise recommendations.

Hospital Planning. II.

SUBURBAN HOSPITALS.

(*Continued.*)

BY BERTRAND E. TAYLOR.

THAT the suburban hospital, properly planned, located amid ideal surroundings, possesses essential advantages over city hospitals, large or small, must be evident to all. However perfect the scheme of ventilation, it is absolutely impossible to rival or approximate to the vitalizing, bracing and life-giving purity of the air of an elevated country hospital site. Considering the vile combination of deadly gases, the myriad of germs and micro-organisms and the great amount of filthy dust that compose so large a per cent of the air in our large cities, — elements, to be sure, that can be partially negatived by straining and washing, by elaborate and expensive devices, — we can but feel, then, that there are vastly more reasons, and these of more vital importance, for patronizing a small country hospital, especially for surgical work or any disease having the possibility of a long convalescence, than there are for going to the country for the usual recuperative purposes of a holiday vacation.

During the Civil War the army hospital statistics showed startling contrasts in favor of the hospitals located back in the country, at an elevation, among the hills.

It may possibly be worth while to consider a few of the early American suburban hospitals.

The only one in a specially designed plant built previous to 1880, viz., the one at Pittsfield, Mass., was very crude and incomplete, although it had the inestimable advantages of the isolation of patients in individual rooms.

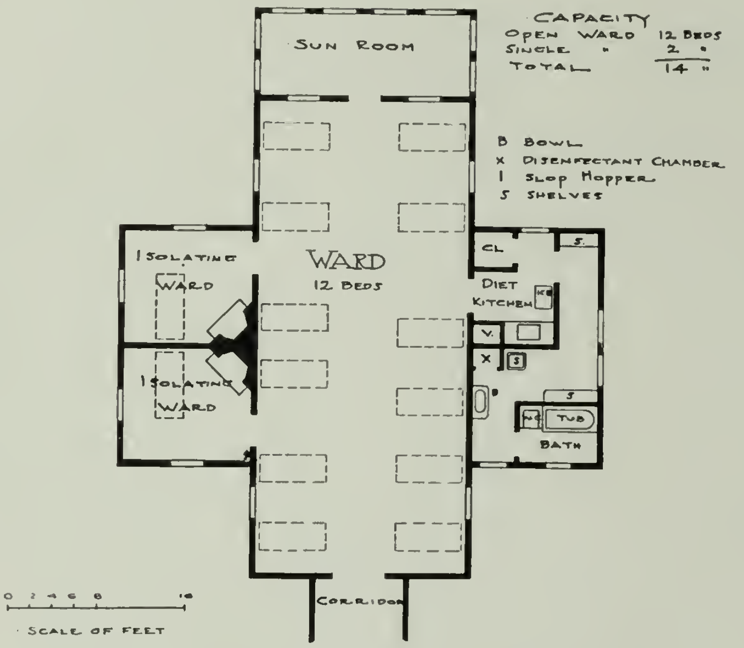


FIG. 9. THAYER WARD, HOSPITAL, NEWTON, MASS. (1884.)

Most of the American suburban hospitals of the period 1880–1890 are of comparatively little interest to us to-day, except as types showing the tentative struggles after the ideal and generally studied, with little or no improvement on the English models of the previous decade.

There are, however, a few that are of some interest and that are accessible, and a short description of these, with plans, is presented.

One of the pioneer suburban hospitals in America is the Newton Hospital. It was organized in 1880 and incorporated in 1881 as a

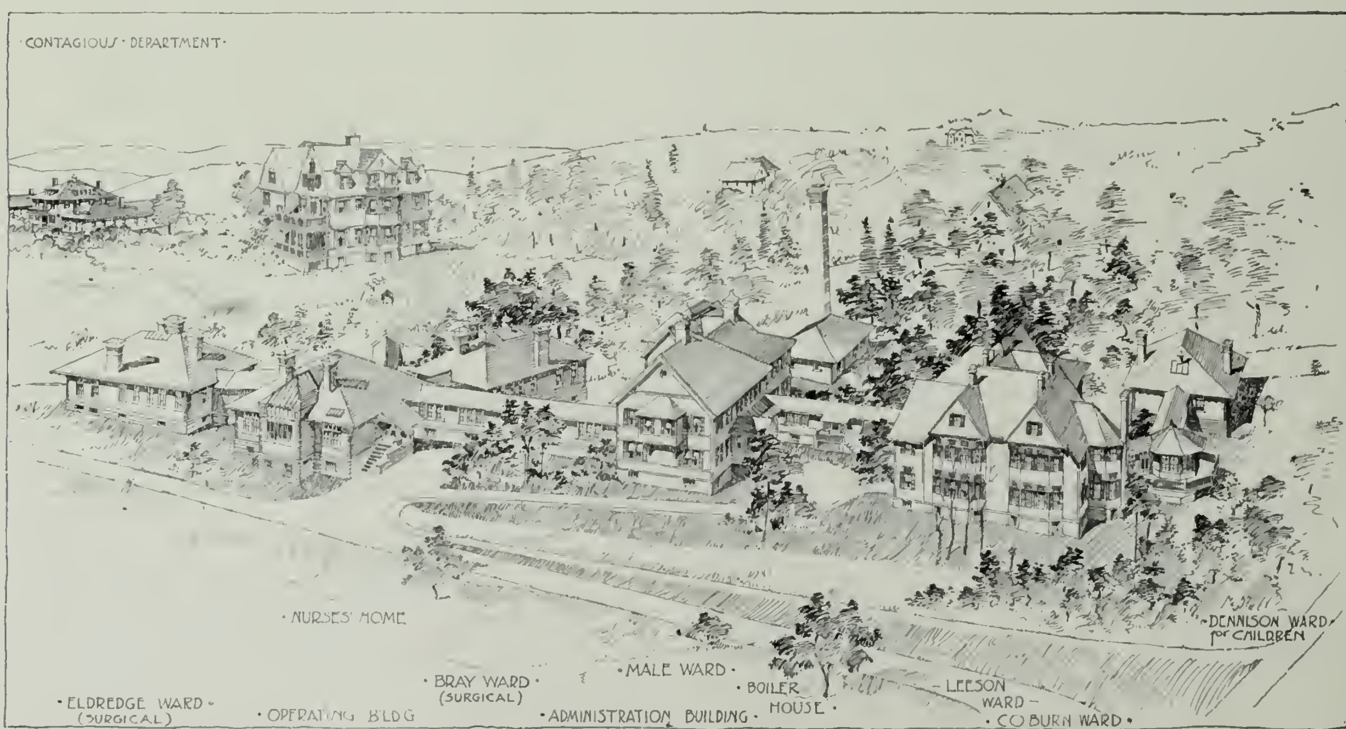


FIG. 10. NEWTON HOSPITAL, NEWTON, MASS.
Kendall, Taylor & Stevens and W. P. Wentworth, Associate Architects.

"cottage hospital." Nine acres of land were purchased and two small buildings, very cheaply constructed of wood, were built and opened to the public in 1886. The pavilion, known as the Thayer ward (Fig. 9), was very badly arranged as will be seen by reference to the plan, but the open ward was in itself quite an impressive little ward, with gable ends and an elliptical vault carried into the roof, and was quite well lighted in spite of the fact that the private or isolating rooms and the diet kitchen, toilet and bath seem to have been placed so as to cut off as much light as possible. The use of the diet kitchen as a passage to the toilet, bath and service room is about as bad as it could be, also the serving of the isolating rooms across the ward.

FIG. 12. CITY HOSPITAL, QUINCY, MASS.

The operating room was located in the Administration Building, and was small and poorly lighted. It was beside the front and main entrance and had few conveniences, yet in spite of all the deficiencies good work was done in this room for twelve years until the new surgical department of three buildings was dedicated in 1898.

The hospital has continually grown from that day to this until now there is a capacity of one hundred and twenty-five beds in the general hospital and sixty beds in the isolating department for scarlet fever, diphtheria and smallpox; and a well-equipped school for training forty nurses per year. The appreciation of the service is so great that many other additions and improvements are designed and will soon be executed. (Figs. 10 and 11.)

The plan of the Quincy (Mass.) Hospital is interesting as showing one of the comparatively early types of American village hospitals built about 1890, having a good general scheme, but showing the little advance in operating facilities in the ten years or so after Mr. Burdett's plan was published. (Figs. 12 and 13.)

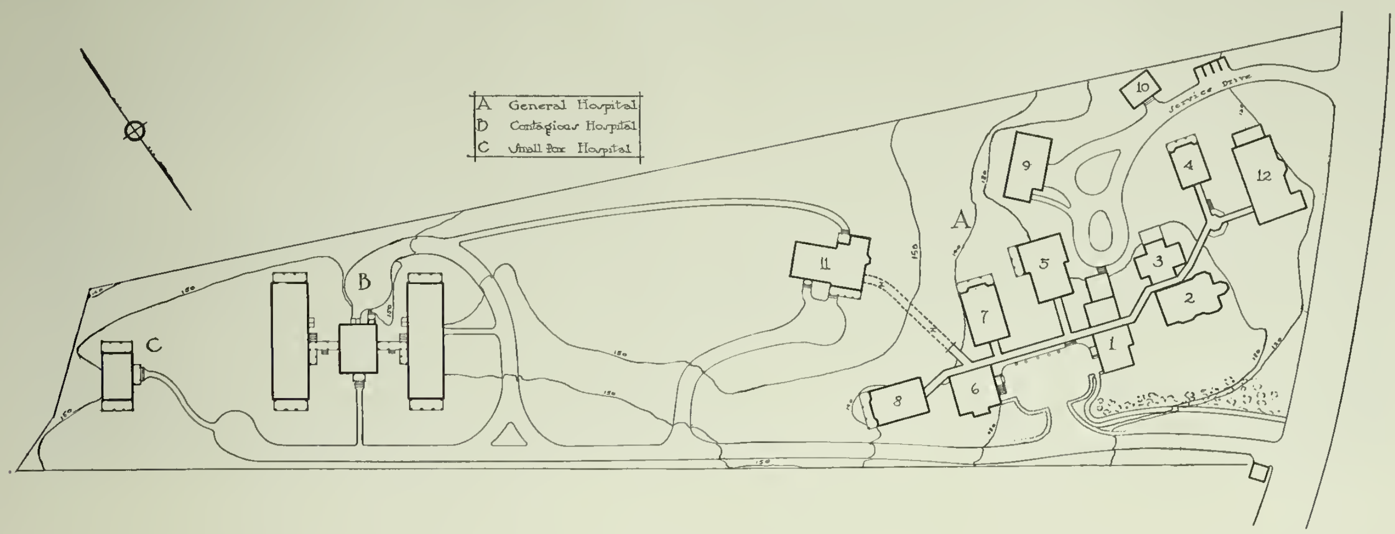


FIG. 11. NEWTON HOSPITAL, GROUND PLAN.

Key.—1. Administration and Service. 2. Private Pavilion. 3. Female Medical Pavilion. 4. Children's Pavilion. 5. Male Medical Pavilion. 6. Operating Building. 7. Male Surgical Pavilion. 8. Female Surgical Pavilion. 9. Boiler House and Laundry. 10. Morgue. 11. Nurses' Home. 12. Maternity Pavilion. XX. Subway.

The Cambridge (Mass.) Hospital is undoubtedly the very best of the early suburban hospitals. (Fig. 14 and 15.) It was opened in 1886, and comprised three buildings. It had the advantage of expert medical advice and careful planning on the part of its architect, Mr. William L. Chamberlain; and the result was naturally a great success, both as to general convenience for its special work and its dignified and artistic exterior.

The greatest deficiency, as compared with the requirements of the present day, is, in common with all hospitals designed previous to 1890, the almost total lack of any adequate provision for operations. This may be accounted for, to a degree, by its contiguity to the large Boston hospitals; but that this fact did not preclude the possibility of a more perfect and complete operating

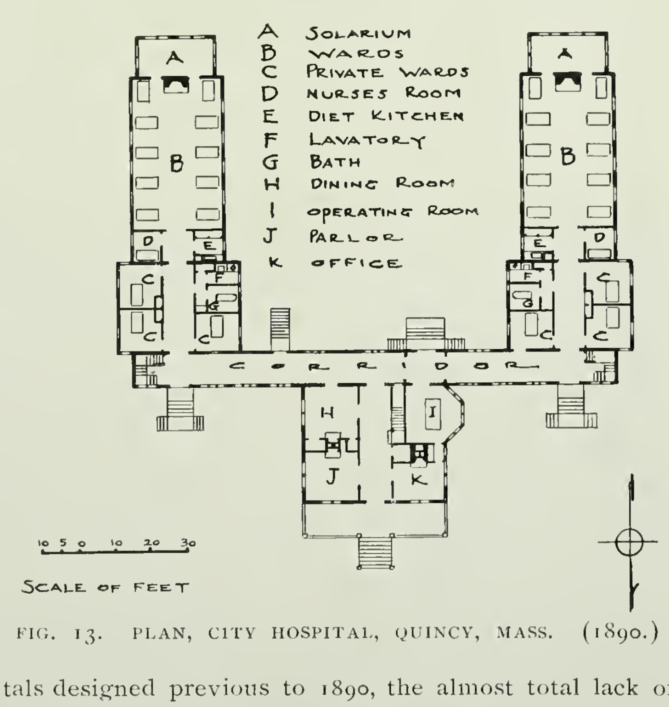


FIG. 13. PLAN, CITY HOSPITAL, QUINCY, MASS. (1890.)

department is shown by the fact that such a department was added in a separate special pavilion in 1898, at a cost of twenty thousand dollars.

A fairly complete isolating department of sixteen

FIG. 14. CAMBRIDGE HOSPITAL, CAMBRIDGE, MASS. William L. Chamberlain, Architect.

beds was built on the rear of the lot in 1891, and this was one of the earliest and best contagious departments of any small hospital in America.

A large and very imposing nurses' home was built in 1896, and the institution still maintains a leading position among hospitals of its class.

The Hitchcock Memorial Hospital at Hanover, New Hampshire, was designed in 1890 by Rand & Taylor, architects (see Figs. 16, 17 and 18), and was undoubtedly the first small hospital in America built of absolutely fireproof materials. The Guastavino laminated tile construction was used throughout, with practically no steel except the roof. The plan is of the usual four pavilion type, administration and service, male pavilion, female pavilion and operating building, this latter unusually pretentious for a hospital

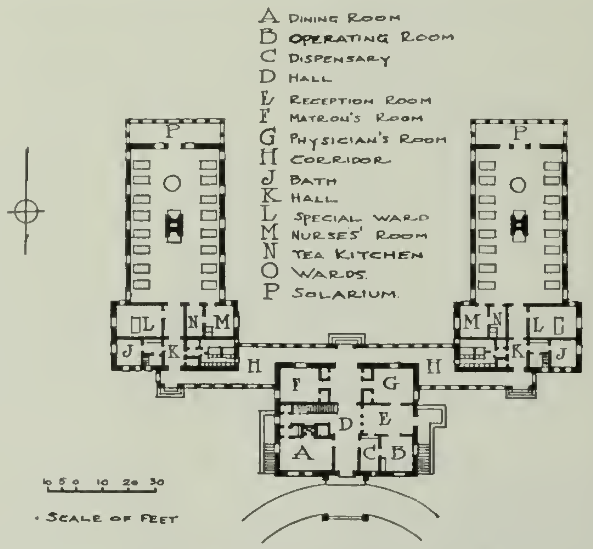


FIG. 15. PLAN, CAMBRIDGE HOSPITAL, CAMBRIDGE, MASS. (1886.)

of but thirty beds, as it contains a large clinical amphitheater for the use of the medical students of Dartmouth College.

A novelty in the way of a conservatory was introduced, a feature that must be a source of great interest and pleasure.

The sun rooms, instead of being at the south end of the open wards, are simply the expanded, thoroughly lighted connecting corridors. (Fig. 19.) They serve this purpose admirably, are more convenient for both open ward and private ward patients, and are much more pleasant to walk through than the partly lighted tunnels one sometimes sees. (Fig. 20.)

FIG. 16. HITCHCOCK MEMORIAL HOSPITAL, HANOVER, N. H. Rand & Taylor, Architects.

This hospital shares with all three or four pavilion hospitals the inevitable defect of crowding, as the administration, the best private patients' rooms and the nurses each have their respective floor in the Administration Building, while the matron, head nurse and servants all have to be housed in the service extension at the rear over the dining room and service portion. These various uses, especially the introduction of patients' rooms, are to a degree incongruous and it is impossible to properly provide for them all in one building.

The Waltham (Mass.) Hospital was built in 1892, and is quite unique in being built of the so-called slow burn-

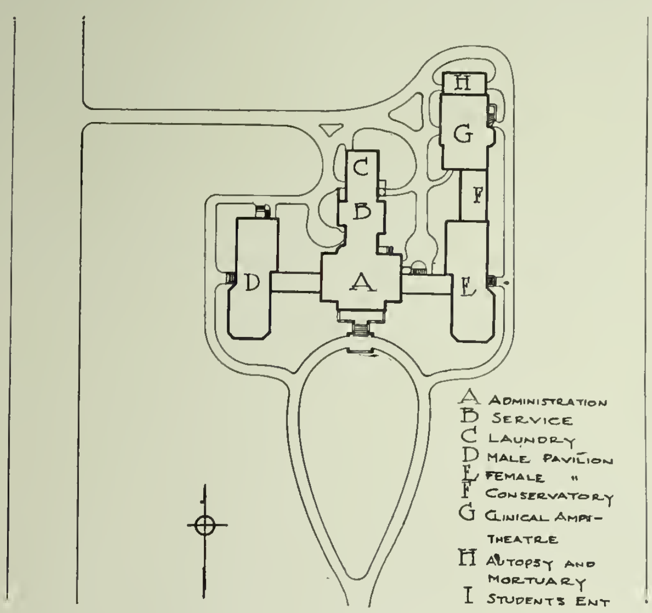


FIG. 17. HITCHCOCK MEMORIAL HOSPITAL, HANOVER, N. H.

ing or mill construction. It was designed by Mr. William Atkinson, architect, and although the mill idea is carried even to the flat roof with no attempt at ornamentation, the scheme is very interesting and practical. (Figs. 21, 22 and 23.)

A very unusual feature is the little brick operating room, entirely isolated by a brick enclosed cut-off, and the

FIG. 20. HITCHCOCK MEMORIAL HOSPITAL.

FIG. 19. HITCHCOCK MEMORIAL HOSPITAL.

lavatory tower, also absolutely isolated, a very common and in fact the almost invariable custom in Great Britain, but seldom seen here. The conveniences almost invariably found in the pavilion — viz., the diet kitchen, linen room, clothing room, medicine closet, etc. — are not provided for here, possibly because the connecting corridor between pavilion and Administration Building is so short. One feature of this plan, quite unique, is the janitor's office by the main

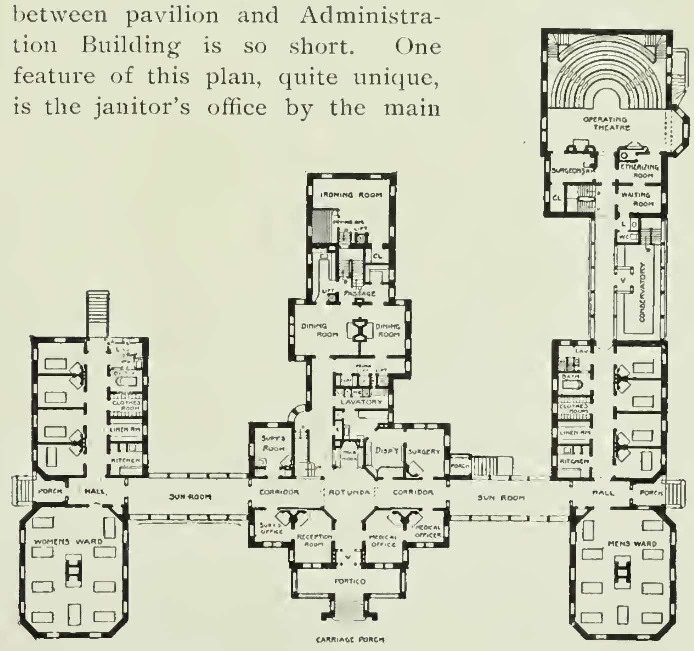


FIG. 18. PLAN, HITCHCOCK MEMORIAL HOSPITAL, HANOVER, N. H.

entrance, like that for the Parisian *concierge*. It will be observed that the kitchen, laundry and servants' rooms are on the third floor, certainly a very unusual scheme for any country building; but there are many reasons why this disposition of these very necessary accessories is a good one, especially on a lot of restricted area.

The Watts Hospital, built by Rand & Taylor, architects, in Durham, North Carolina, in 1893, was an attempt to build an ideal small hospital for about $20,000. (Figs. 24 and 25.)

It will be seen that the classification was carried as far in this little hospital as it had at that time been carried in any suburban hospital, with the exception that, as the colored servants of the South sleep at home, there was no necessity of providing special servants' quarters. The land sloping away to the rear (north), the basement of Administration Building and corridor was utilized for kitchen and laundry. The little isolated operating building was modeled on the McLean operating building of the Roosevelt Hospital, New York, at that time considered the most perfect of its class in the country. The connecting corridors were provided with removable glazed sash to provide sun rooms in winter and open air in summer.

The Heaton Hospital, Montpelier, Vermont (Figs. 26 and 27), was built by Rand & Taylor, architects, in 1894, and is of essentially the same general type as the Watts Hospital, and, like the Hitchcock and Watts hospitals, fronting south. The site is ideal on a hill overlooking the city.

This and the Watts Hospital were, of necessity, built of wood.

The Malden Hospital, designed by S. Edwin Tobey, architect, in 1894, is quite similar in general plan to the Cambridge Hospital. It is of a very substantial brick type. (Figs. 28, 29 and 30.) The original hospital was of the usual three pavilion groups with the obvious limitations before noted. The site was most happily chosen on a high wooded elevation, isolated from the thickly settled portions of the city, with ample grounds. The hospital has been added to at various times and now has an isolated boiler plant, laundry, nurses' home and a just completed private patients' building. The most interesting and unique feature of this hospital is the convalescent patients' cabin (Figs. 31 and 32), a most valuable addition to the accessories of a suburban hospital in a direction that should be emulated.

The Portsmouth (N. H.) Hospital is simple and dignified in exterior effect and is of the general three pavilion type. A plan is not available, but the illustration (Fig. 33) gives a good idea of the general scheme. The pavilions are quite small, giving room for comparatively few open ward beds, but the purpose of the structures is evident, although there seems to be no airing balconies or solaria.

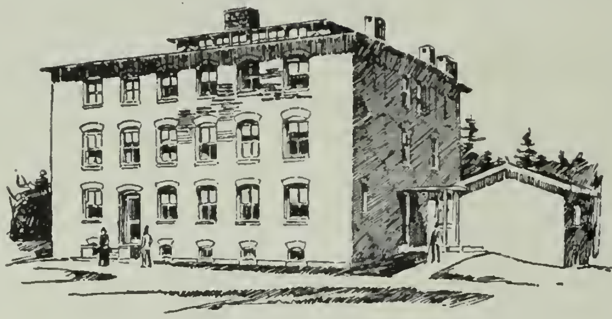


FIG. 21. HOSPITAL, WALTHAM, MASS.
William Atkinson, Architect.

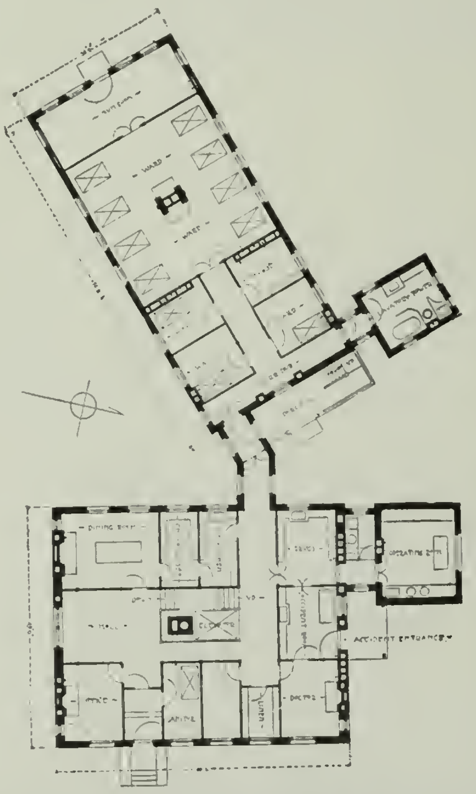
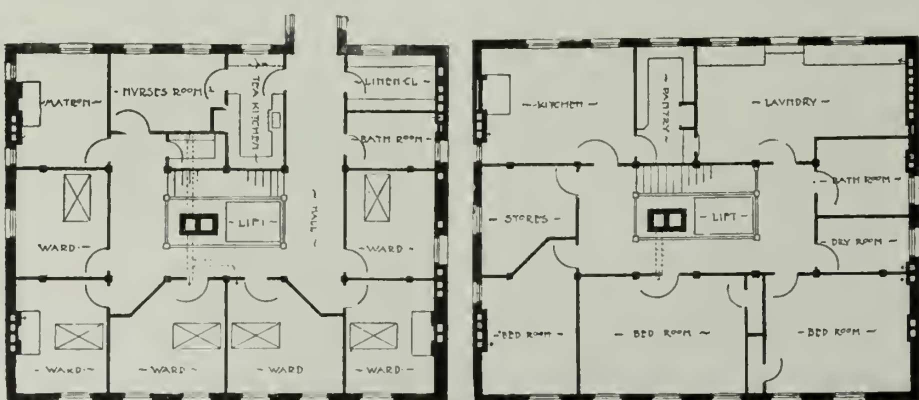


FIG. 22. PLAN, FIRST FLOOR, MAIN AND WARD BUILDINGS, HOSPITAL, WALTHAM.



PLAN, SECOND FLOOR. PLAN, THIRD FLOOR.

FIG. 23. MAIN BUILDING, HOSPITAL, WALTHAM, MASS.

The Allentown (Pa.) Hospital (Fig. 34) is an interesting example of a larger hospital of the same three pavilion type, the pavilions connected by short corridors back of airing balconies. The general scheme is clearly expressed by the illustration, and it certainly looks like a hospital.

The Ogden Arnot Hospital, Elmira, New York (Figs. 35 and 36), is evidently beautifully situated amid broad lawns with proper isolation from incongruous surroundings, and looks a hospital, but the plan could scarcely be worse in several respects. The operating room is in the corner of the public hall, with no adequate accessories and an almost impossible connection with the east surgical pavilion. The medical pavilions are inadequately isolated from the administration portion and are too intimately connected with the toilet rooms.

The Margaret Pillsbury Hospital, Concord, New Hampshire (Fig. 37), would make an admirable school building possibly, but it can scarcely fulfill the demands of a general hospital, for in a block plan of this type there can be no proper isolation or classification of sex and disease. This is an extreme type, and fortunately there are few like it that are so intentionally.

The old Anna Jaques Hospital (Fig. 38) at Newburyport, Massachusetts, represents one of a large class of hospitals that make use of an old dwelling house as an expedient, and, in my judgment, a most justifiable one. Here, as in all such hospitals, the male and female wards and single rooms, the surgical and medical cases, the maternity and the children's departments, the typhoid and the D. T.'s, if they have them, are more or less mixed up and all somewhat interfered

FIG. 24. WATTS HOSPITAL, DURHAM, N. C.
Rand & Taylor, Architects.

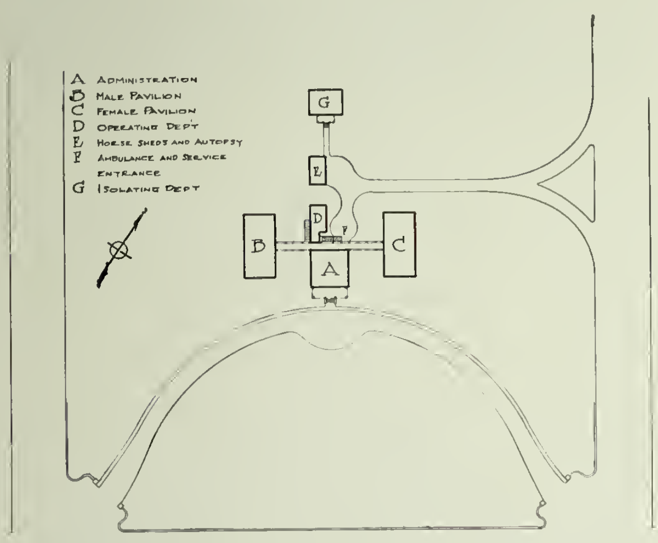


FIG. 25. PLAN, WATTS HOSPITAL, DURHAM, N. C.

with by the necessary movements of the management, the visitors and the contiguity of the operating department, which is generally limited to a moderate sized room.

All these limitations are very evident and very annoying and difficult to harmonize, but the temporary character of the occupation justifies the use.

The other extreme, possibly, is shown in the interesting plan of the Backus Hospital, Norwich, Connecticut (Figs. 39 and 40), built by Gardner, Pyne & Gardner, architects, where, instead of the one building of the "block" type or the prevailing three building type of most hospitals previous to 1900, we have seven distinct buildings separated by unusually long corridors. This represents a long look ahead, and although this is scarcely a strictly "village" hospital, yet its units are small and the total number of beds is not large.

The Springfield (Mass.) Hospital (Figs. 41 and 42), by

FIG. 26. HEATON HOSPITAL, MONTPELIER, VT.
Rand & Taylor, Architects.

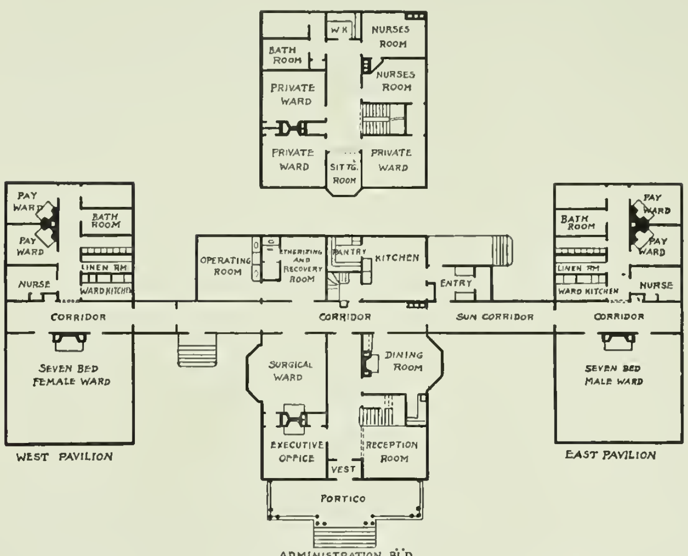


FIG. 27. PLANS, HEATON HOSPITAL, MONTPELIER, VT.

the same architects, is a very unique plan with a picturesque exterior.

The Burbank Hospital, Fitchburg, Massachusetts (Figs. 43 and 44), was built in 1899 by Kendall, Taylor & Stevens, architects. The site was an irregular elevated plateau facing south, backed by a wooded hill.

FIG. 28. FRONT VIEW.

FIG. 29. REAR VIEW.

HOSPITAL, MALDEN, MASS. S. Edwin Tobey, Architect.

The conditions thus are unusually ideal, especially as the grounds are of many acres.

The materials of the buildings are brick with granite trimmings, slate roofs, etc. On account of the great area of the grounds and the open character of the surroundings, a formal garden enclosure was suggested with inclined planes leading down from each sun room. This garden with the nurses' home, the private pavilion, are yet to be built.

The foregoing examples represent fairly the general condition of suburban hospital architecture in America up to the year 1900.

COMPARISON OF ENGLISH AND AMERICAN BUILDING METHODS.

A VERY interesting lecture was recently given to the members of the Institute of Builders at the Society of Architects, London, by Mr. Charles Heathcote, F. R. I. B. A. We are inclined to assume a certain infe-

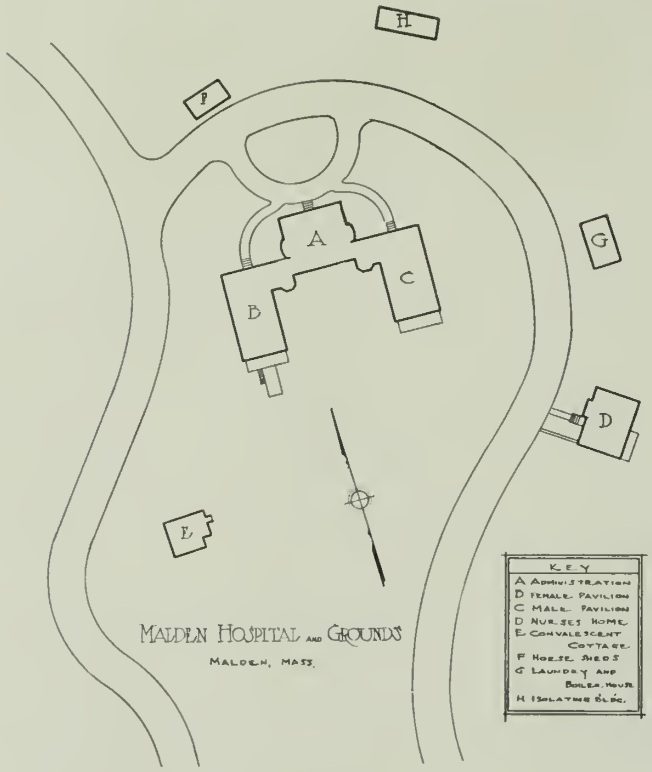


FIG. 30.

riority on the part of the average British workman, and just at present seem inclined to overestimate the ability of the average American contractor. While we do many things excellently here, and while, when it comes to a case of hustle, we can give points to the world, it by no means follows that our methods and manners are perfected. Mr. Heathcote, while praising very highly American methods and holding them up as examples for his English brethren, shows by citations from his own work that English methods are far from being behind the times. The oft-cited case of the speed with which bricks were laid in the Westinghouse plant near Manchester is not altogether an illustration of American hustle. The material was all on the ground before the American contractors took hold of it, there was no lack of money or men, and all conditions were favorable for the most rapid progress. Mr. Heathcote cites several purely British instances which show just as great rapidity in execution and with possibly even better quality of work. Speaking of methods to facilitate speed, he states it as a practice that in his own buildings he prepares what he terms progress plans giving the dates at which certain parts of the work are expected to be completed, and he makes it the duty of the superintendent of any one part to see that such time instructions are carried out. This is organization. It saves confusion, enables the architect and the builder to check the progress of the work, and intelli-

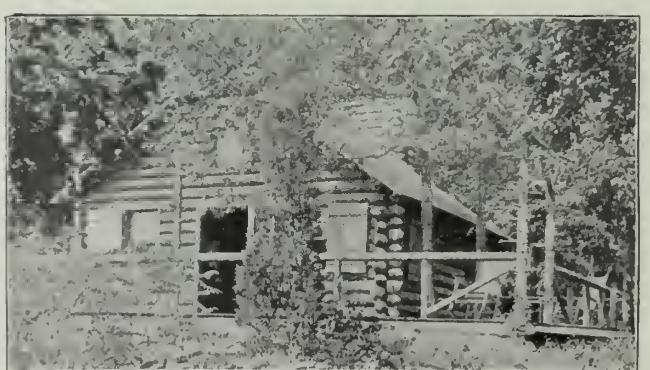


FIG. 31. CONVALESCENT BUILDING, HOSPITAL, MALDEN, MASS.

FIG. 32. INTERIOR CONVALESCENT BUILDING, HOSPITAL, MALDEN, MASS.

FIG. 33. COTTAGE HOSPITAL, PORTSMOUTH, N. H.

FIG. 34. HOSPITAL, ALLENTOWN, PA.

FIG. 35. ARNOT OGDEN MEMORIAL HOSPITAL, ELMIRA, N. Y.

gently plans for continued speed rather than irregular spurts. And while possibly some of our more highly organized building companies may have a similar plan of operation, it is very seldom that our architects do

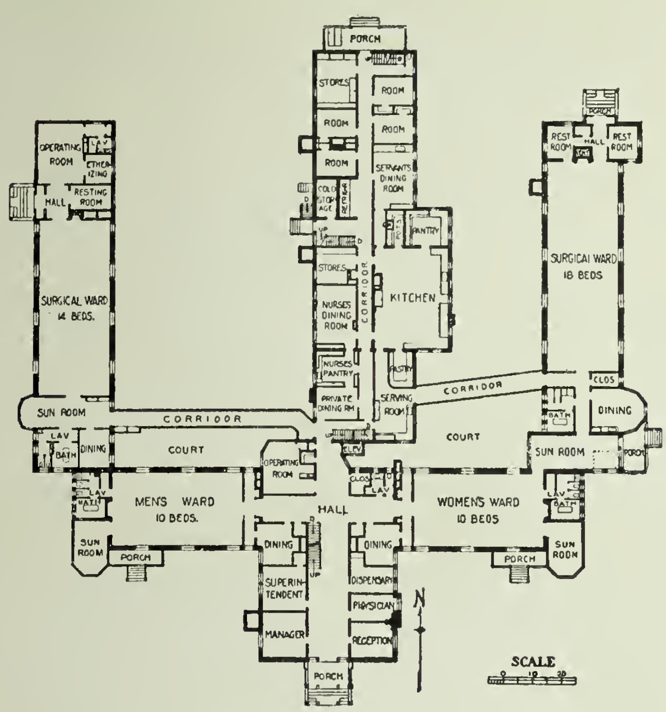


FIG. 36. PLAN, ARNOT OGDEN MEMORIAL HOSPITAL, ELMIRA, N. Y.

such things, though it is clearly a part of their work to plan both the building itself and its execution.

The picture he draws of the freedom of the American workman unfortunately does not altogether apply to our large cities. It is a fact that our workmen are better paid, and generally speaking they give more for their money

FIG. 37. MARGARET PILLSBURY GENERAL HOSPITAL, CONCORD, N. H.

than can be had abroad, but if the building trades continue to be burdened with walking delegates in the manner in which they have suffered during the past year, our superiority in building methods will speedily dwindle to the vanishing point.

FIG. 38. ANNA JAQUES HOSPITAL, NEWBURYPORT, MASS. ESTABLISHED 1884.

OBJECTIONS TO CONCRETE.

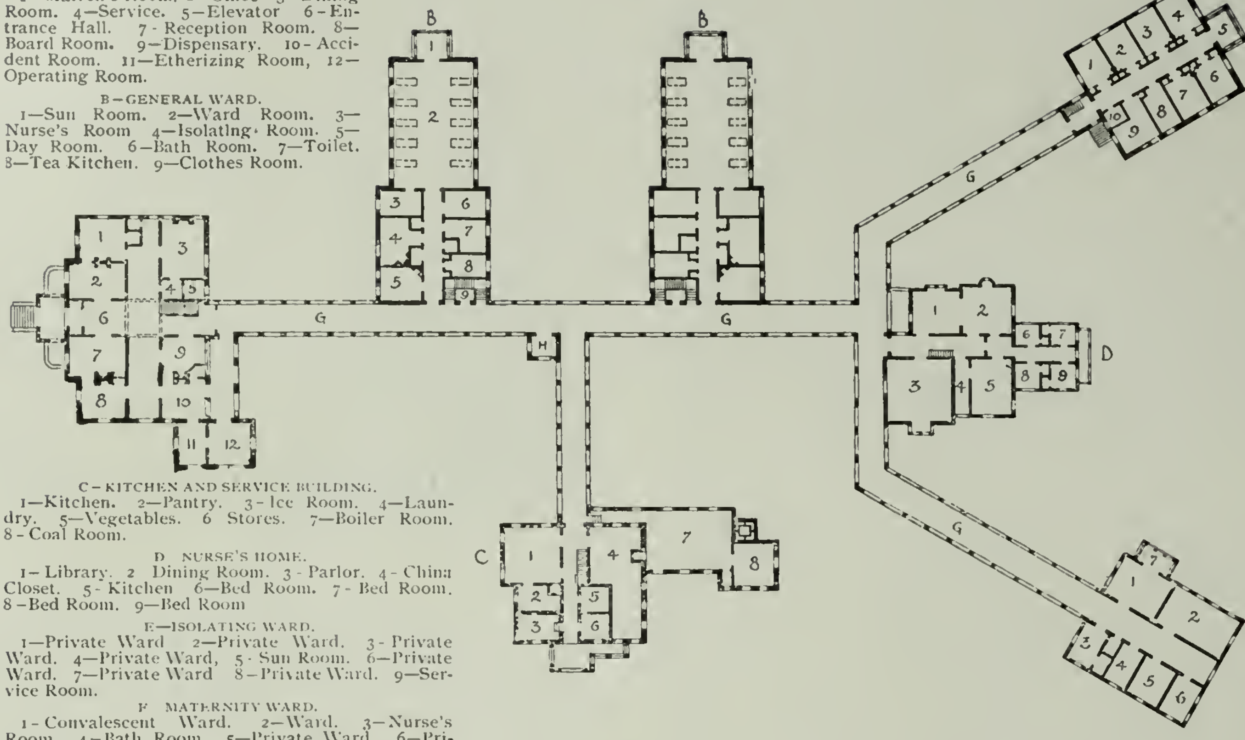
WE have been asked to state succinctly our objections to the use of concrete for floor construction and our attention has been called to the successful use which was made of this material by the Romans. Our preference for terra-cotta is a perfectly logical one. However excellent concrete may prove in some cases, terra-cotta is more so. If there were no other reason we would prefer a terra-cotta block flooring for the reason that the ever present danger from non-skilled labor which has to be employed in connection with setting such work is far less with terra-cotta blocks which are made and thoroughly finished before being brought to the building than with a construction such as concrete in which the carelessness of a single workman may result in weaknesses which would

FIG. 39. BACKUS HOSPITAL, NORWICH, CONN.
Gardner, Pyne & Gardner, Architects.

not be reasonably expected until after a time when the building should properly be completed. There is the further pecuniary objection that concrete sets up slowly and does not attain its maximum strength for a number of months after it is put in position, thereby delaying the building, whereas a few days will suffice to thoroughly set the relatively slight amount of mortar which is used in setting terra-cotta blocks. As regards the success which attended the use of concrete in Roman construction it must be remembered that in the Roman systems concrete was a mere filling, that its surface was invariably protected by a soffit of brick or terra-cotta, that in Roman

A—ADMINISTRATION BUILDING.
1—Matron's Room. 2—Office 3—Dining Room. 4—Service. 5—Elevator 6—Entrance Hall. 7—Reception Room. 8—Board Room. 9—Dispensary. 10—Accident Room. 11—Etherizing Room, 12—Operating Room.

B—GENERAL WARD.
1—Sun Room. 2—Ward Room. 3—Nurse's Room 4—Isolating Room. 5—Day Room. 6—Bath Room. 7—Toilet. 8—Tea Kitchen. 9—Clothes Room.



C—KITCHEN AND SERVICE BUILDING.
1—Kitchen. 2—Pantry. 3—Ice Room. 4—Laundry. 5—Vegetables. 6 Stores. 7—Boiler Room. 8—Coal Room.

D NURSE'S HOME.
1—Library. 2 Dining Room. 3—Parlor. 4—China Closet. 5—Kitchen 6—Bed Room. 7—Bed Room. 8—Bed Room. 9—Bed Room

E—ISOLATING WARD.
1—Private Ward 2—Private Ward. 3—Private Ward. 4—Private Ward, 5—Sun Room. 6—Private Ward. 7—Private Ward 8—Private Ward. 9—Service Room.

F MATERNITY WARD.
1—Convalescent Ward. 2—Ward. 3—Nurse's Room. 4—Bath Room. 5—Private Ward. 6—Private Ward.

G—CORRIDOR. H—ELEVATOR.

FIG. 40. PLAN, BACKUS HOSPITAL, NORWICH, CONN.

A—MEN'S WARDS.

1—Drying Room.
2—Nurse (Isolating Ward).
3—Toilet (Nurse).
4—Bath (Medical Ward).
5—Medical Ward.
6—Sun Room.
7—Nurse (Medical Ward).
8—Toilet.
9—Toilet.
10—Nurse (Surgical Ward).
11—Bath (Surgical Ward).
12—Tea Kitchen.
13—Linen Closet.
14—Surgical Ward.
15—Sun Room.

B—ISOLATING WARD (MEN).

C—ADMINISTRATION BUILDING.

1—Operating Room.
2—Reception Room.
3—Dining Room.
4—Dispensary.
5—Consulting Room.
6—Board Room.
7—Matron's Room.
8—Matron's Bed Room.

D—ISOLATING WARD (WOMEN).

E—WOMEN'S WARDS.

F—KITCHEN AND SERVICE.

G—CORRIDOR.

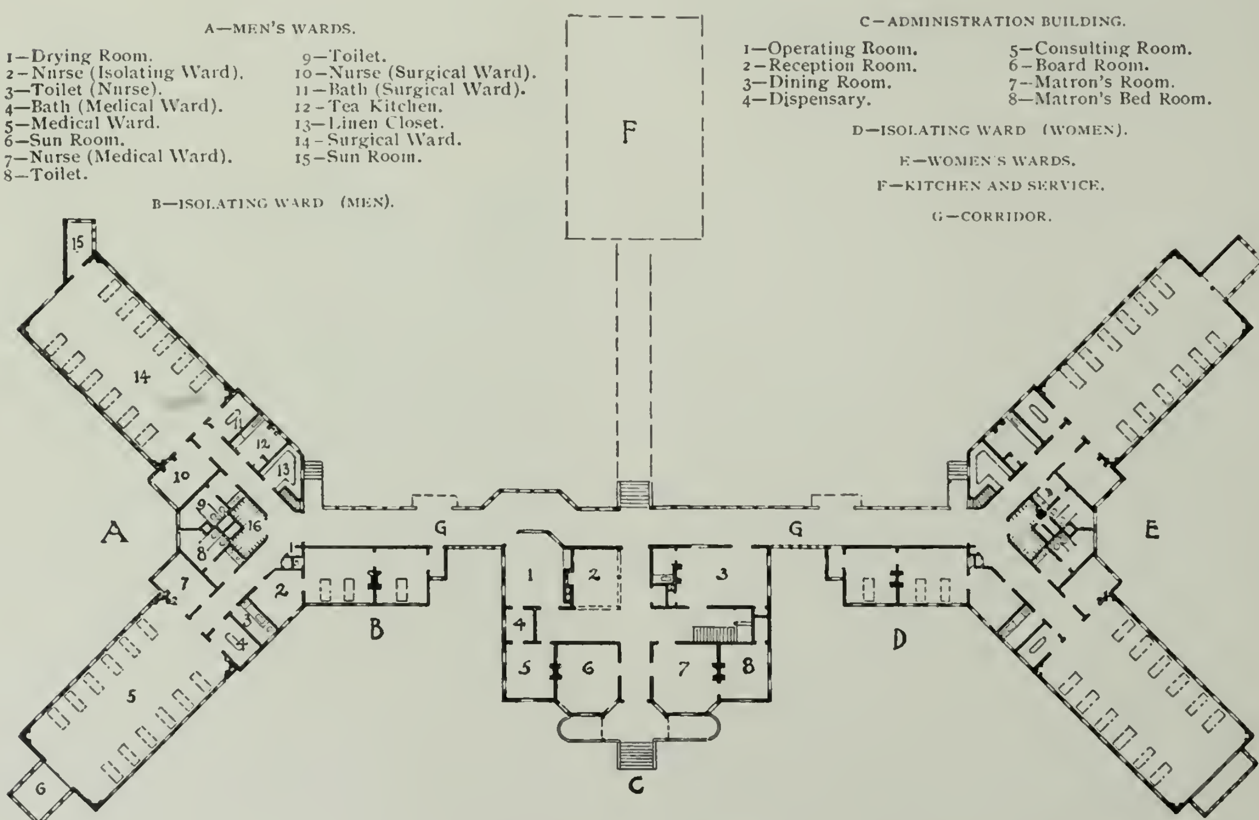


FIG. 42. PLAN, CITY HOSPITAL, SPRINGFIELD, MASS.

FIG. 41. CITY HOSPITAL, SPRINGFIELD, MASS.
E. C. Gardner, Architect.

vaulting a skeleton of brick was first laid and concrete deposited around the same, and that fundamentally reliance was placed upon the inert mass and weight of the material reinforced by enormous buttressing rather than upon mere cohesion or tensile strength. Only rarely are such conditions possible in modern work. Never are they practicable in a modern office building. Settlements or slight movement in the frame of a building which would badly crack and render insecure a reinforced concrete floor construction would simply wedge more tightly together the members of a terra-cotta arch. There must of necessity be a certain amount of elasticity in the filling of a steel frame structure, and this elasticity cannot logically or practically be obtained by the use of any material on the market except terra-cotta.

DEVELOPMENT BY MISTAKES.

A PROMINENT architect some time since made the assertion that the profession was working itself out of commissions in one sense by building modern buildings in such enduring form, and that in a comparatively few years our large cities would be fully supplied with commercial buildings for several generations hence and the architects would find themselves minus employment in those particular lines. We are interested in noting that Mr. Edward Atkinson, in a paper read before the International Fire Prevention Congress at London, presented the point that what may be called unsafe methods of construction have been both necessary and expedient in the progress of the development of the country, and that more permanent buildings which would have absorbed a much greater part of the small capital available would have been an encumbrance rather than a benefit. Our belief, however, is that good construction and good architectural methods have never been helped on the one hand by poor or inefficient construction of any sort and that architects have very little to fear from building too well. The good construction of to-day may be out of date and rejected in a very few years but we can not feel that there is any likelihood of the profession working itself out of a job by building too well, nor can it be assumed that because progress is to be made towards a higher state of perfection a poor building to-day can be in any sense justifiable. We learn a great deal from our failures, but we learn more from our intelligent well-directed successes.

FIG. 43. BURBANK HOSPITAL, FITCHBURG, MASS.
Kendall, Taylor & Stevens, Architects.

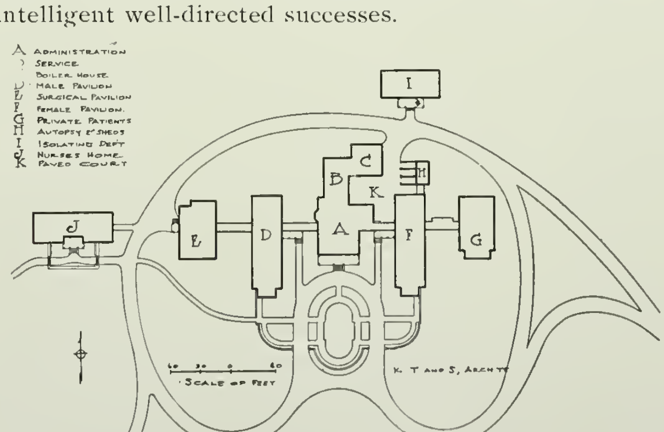


FIG. 44. PLAN, BURBANK HOSPITAL, FITCHBURG, MASS.

Brickbuilding in Normandy.

BY JEAN SCHOPFER.

I CONTINUE my journey through the provinces of France for the benefit of the readers of THE BRICKBUILDER.

In March we visited Toulouse and saw its monuments in brick that range from the eleventh century to the nineteenth, almost without interruption. To-day we will stop in Normandy. *Paulo minora canamus.* The monuments that we shall visit are of less importance than those of Toulouse, but they are nevertheless interesting as examples of brickbuilding. Several of them are even excellent models that one cannot recommend too highly as subjects for the meditation of architects who employ bricks as material for their buildings.

There are two things to be considered in brick architecture.

In some cases bricks are employed to fill up the space between chains of white stone. One obtains in such a manner a very pretty effect from the red color of the bricks and the white of the stone, but these effects have been used to excess, especially in France. Besides, one must remark that brick employed in this way offers no interest to the architect who wishes to learn the special treatment of bricks, as it could be replaced by any other material for filling up.

On the other hand, bricks have been often employed by people who have not tried to reproduce, by the aid of bricks, methods of construction special to stone, but have used them for original work. I will cite, for example, in modern building the Lycee Lakanal, near Paris, built by M. de Baudot, of which I wrote two years ago in THE BRICKBUILDER. Here the decoration is precisely the outcome of a rational and architectural use of brick. The fact that one must keep in mind is that bricks are a material of a small size, as they generally measure eight inches by four and two inches thick. Consequently they are admirably fitted for taking certain architectural forms and refuse to take others; they can be made in four or six tones of color, varying from light yellow ochre to the darkest brick red, and also can be enameled. All this being established, it is easy to see that good brick architecture must be original and must not imitate the ways and fashions of stone architecture.

These facts were well understood in Normandy in the sixteenth century, and excellent decorative effects were produced by bricks employed architecturally, besides having all the resources of coloring that bricks offer the builder.

THE BRICKBUILDER has already published several articles on Norman castles of that epoch. I wish to-day to draw the attention of its readers to some more unpretending monuments, that are nevertheless of great interest to us on this special point. I mean the brick pigeon houses that we still find often in Normandy. The one at Boos has already been reproduced in THE BRICKBUILDER. Those that I give to-day are more important. They belong to the manor of Ango at Varengeville, near Dieppe, and to the one of Ste. Marguerite. Both of them are of the sixteenth century.

FARM BUILDINGS OF MANOR OF ANGO.

Pigeon houses in ancient France had a special meaning. Only nobles had the right to keep pigeons, and consequently to build pigeon houses to shelter them. The middle and the lower classes had no right to raise pigeons or to kill those which belonged to the nobles. These, on the contrary, were allowed to raise as many as they chose, and their pigeons lived on the crops and corn belonging to their serfs and vassals. There is a fable of La Fontaine on this subject.

For us to-day this fact remains, that wherever we find an ancient pigeon house we are certain that it belonged to a lord of the manor, that it was built by those who had the power and the means to build in the most "approved style," as the saying is.

The first of these pigeon houses belongs to the manor of Ango at Varengeville. Ango was one of the greatest shipowners of the sixteenth century and possessed one of the largest fortunes of France at the time when

Dieppe was the most important French port on the Atlantic coast. Havre had not yet been founded, since it dates from Francis the First. Ango had a large mansion at Dieppe and a country house at Varengeville, five miles from Dieppe. He chose for the site of his country house such a lovely cliff, southwest of Dieppe, that one of our greatest modern landscape painters, Claude Monet, has reproduced it again and again in his pictures.

The Normandy farms have always been renowned for their beauty. They are built in a large square space, always surrounded (nowadays also) by a shallow moat, where there is now no water, and by a low bank on either side of which are planted four or eight rows of forest trees, which form an almost impenetrable bulwark against the high winds from the sea. The center of the square space is occupied by the orchard, with apple and pear trees; the cattle feed there all day long. The farm and buildings belonging to it occupy the middle of one of the sides of the large square space. In the Middle Ages the moat, the embankment, the trees made a kind of fortification, behind which the people living in the farm were sheltered from tramps and from the bands of armed men who lived by pillage and violence.

Such is the plan of the manor of Ango, of which we give two views. The whole is shut in as described above. The buildings and the farmhouse itself form a large square whose entrance doors can be easily defended. Architecturally the manor of Ango was constructed, as far as the farm itself is concerned, with a wooden framework. It is an excellent specimen of that style of building, which has been imitated so very widely and poorly too in contemporary English rustic architecture, where the wooden beams are merely decorative, whereas in ancient times they were the frame itself supporting the house.

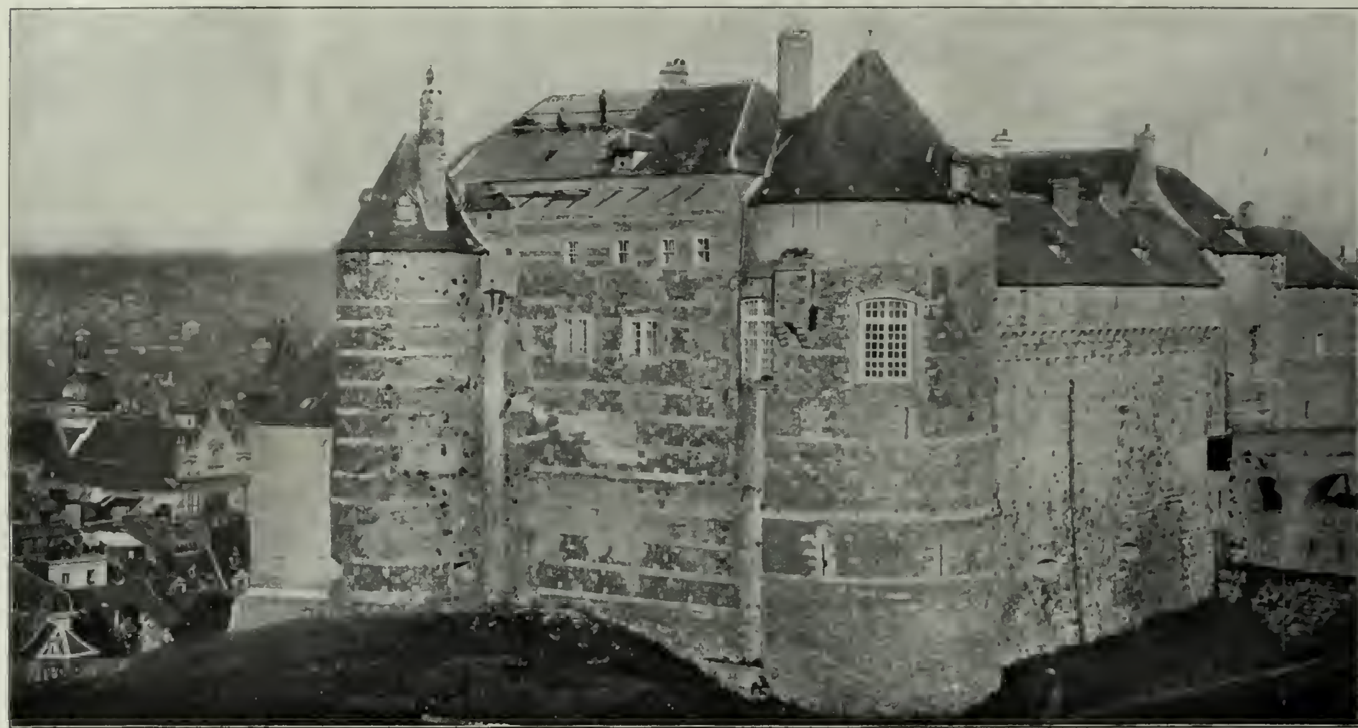
The dwelling part of it was constructed of bricks and stone. The bricks were often enameled to give the most charming effect of color and picturesqueness. On the ground floor a hall in form of an open loggia, with round arches borne by columns and pilasters and with medallions, shows the penetration in Normandy of the Italian Renaissance. The steep roofs are always admirable and adapted to the necessity of a rainy climate.

PIGEON HOUSE OF MANOR OF ANGO.

The second plate gives us an exact view of the pigeon house, which is the finest pigeon house in brickwork that has been preserved of that epoch.

It has been classed, as well as the one of Ste. Marguerite, which we also reproduce, among the historical monuments of France, which are placed under the supervision of the architects of the state, who have the care of their preservation.

It is a model and an epitome of the different ways of combining bricks architecturally and decoratively. The basement is in red bricks placed flat; then comes a band of lozenges whose center is a square white enameled brick. A cornice protects the basement, then a line of squares arranged as on a chessboard, then a band of flat bricks, then again a line of white lozenges framed in dark ones, these being formed by four bricks showing their ends only, then flat bricks placed so as to let air penetrate into the interior of the pigeon house; then again a new and narrower line of lozenges surmounted by a row of bricks placed corners outward that gives strong relief to the whole and constitutes a decoration that is peculiar to brickwork. The cornice supporting the roof is very elaborately decorated.



THE CASTLE OF DIEPPE.

THE CASTLE OF DIEPPE.

The architects who wish to employ bricks cannot study too carefully the different ways in which bricks have been employed in this pigeon house of the Ango manor. The variety and ingenuity displayed are wonderful, and always the decorative effect is produced, not artificially, but by the way the brick is used architecturally. That is the rule of all good architecture, too often forgotten, alas! in modern times.

The pigeon house of Ste. Marguerite is not far from Varengeville. It is in a slightly less ornate style, but

CHAPEL OF THE COLLEGE D'EU.

nevertheless of excellent brick construction and beautiful decorative effect. There is a stone doorway of the Renaissance period which contrasts unfavorably with the brickwork. It is still used as a pigeon house.

THE BRICKBUILDER has published already the pigeon house of Boos. With these three buildings its readers have the most interesting monuments of this type that exist in France.

Nobody builds pigeon houses in our time. Architects will not therefore be tempted to copy those that we reproduce; but they can study to their great advantage the remarkable way in which bricks were used at the end of the Middle Ages and in the first times of the Renaissance. They will learn there and understand all the numerous resources that bricks offer to those who know how to use them.

PIGEON HOUSE OF STE. MARGUERITE.

I give also a picturesque *ensemble* of the old manor of Turpes, at Bures, same county. It is of the sixteenth century, and has become a farmhouse now. It is built in brick, with very handsome wooden framework, with an open gallery, often seen in Swiss *chalets*, but rarely in France.

OLD MANOR OF TURPES AT BURES.

The Castle of Dieppe, of which I give two views, is also a most picturesque *ensemble*. It is of the fifteenth century, and is classed as an historical monument. It is high above the town. The houses are grouped around it. It was a strongly fortified place, which had to bear many assaults. The castle is built mostly in bricks, whilst horizontal lines of white stone separate the flat spaces of brickwork in a fashion picturesque and original enough to be noticed.

Lastly, there is another historical monument in the same county, also in brickwork, but of a very different style. It is the chapelle of the College d'Eu. It belongs to the seventeenth century. It is of the purest *jésuite* style, and the different orders in stone triumph on the brick façade. According to the rules of Italian Renaissance, each story has a different order, first the Doric, then the Ionic, then the Corinthian, the whole being crowned by those consoles which Leon Battista Alberti was the first to employ, in the first half of the fifteenth century, at Santa Maria Novella, in Florence, and which since then have had such an immense and deplorable success in architecture.

Such are the monuments in brickwork in this part of Normandy which to-day constitutes the department of the Seine-Inférieure. We find them worthy of being placed under the eyes of the readers of THE BRICKBUILDER.

Fireproofing.

THE 25th of January, 1904, was a memorable day in the history of Chicago, so far as concerns the protection of human lives in buildings. The two most important events were the verdict of the coroner's jury, fixing the responsibility for loss of life in the burning of the Iroquois Theater, and the passage of a resolution by the Board of Education providing that all schoolhouses hereafter erected shall be of fireproof construction throughout. On the same day also the City Council made its final corrections to the new theater ordinance which had been adopted one week previously, and fixed new conditions according to which the theaters, all of which had been closed for three weeks, might be reopened. At the same meeting of the City Council an amendment to the building ordinance was adopted in which it is provided that *all elevators* in existing nonfireproof buildings must have fireproof enclosures and doors, excepting only those in buildings which are equipped throughout with automatic sprinklers. This exception will leave out some of the largest and newest department stores and many wholesale stores which are thus equipped.

On account of the great prominence given by the daily papers to the verdict of the coroner's jury, the other important acts have attracted little attention. The verdict placed the blame on the president of the theater company and several of its employees, the mayor of the city, the Building Commissioner and one of his inspectors, and the chief of the fire department. The mayor has already been vindicated by order of one of the courts, and the chief of the fire department may escape on a technicality. The Building Commissioner and the theater management will probably have to take the whole responsibility. The architect and builders of the Iroquois Theater were not mentioned in the verdict.

THE week previous to January 25 was also remarkable for an instructive fire test at Chicago. A very severe fire occurred on the fifth floor of the Masonic Temple. This building, rated at three hundred and sixty feet high, was when erected the highest building in the world, but has since been exceeded in this respect by several in New York. It was erected in 1891, and is the first building in which fifteen-inch end pressure arches were used in the floor construction. These are of dense hollow tile made by the Pioneer Fireproof Construction Company, and of spans about eight feet. They have side pressure skewbacks. The fire occurred in a suite of rooms occupied as a laboratory and salesroom for X-ray apparatus. All the windows of this suite faced upon State and Washington streets, and as they were on a corner, the only exposure on the interior was a large double door with fanlight, set anglewise on the corridor around the great central court. The fire was sudden and spectacular, and poured out of all the windows on the street side. The only damage on the corridor side was the breaking of glass in the fanlight. The fire was confined to the rooms in which it started, and all the other damage was caused by water. It is enough to say that the hollow tile partitions and floor arches above prevented the spread of fire in every direction, though the contents of the rooms were almost completely consumed. A few of the bottoms of the ceiling arches were flaked off, and that was all the damage to the fireproofing. While the fire was not so high up as to prevent the fire department from operating on the outside, it was some time before the mechanical standpipe was used from the street. The outside of the Masonic Temple is of gray fire brick, and such trimmings as were used are of terra-cotta. Only a few chips were flaked off from the latter. This has been one of the best illustrations of effective fireproof construction that Chicago has experienced.

THE INFLUENCE OF BUILDING LAWS ON FIREPROOF CONSTRUCTION.

ANY one who has carefully studied the building laws of our large cities must acknowledge that in nearly every instance the scientific development of fireproofing methods has been injured rather than helped by legislative or municipal enactment, the building laws having invariably lagged several years behind the scientific development. It is hardly too much to say that most of the improvement which has been brought about in fireproofing methods has been to a very considerable extent in conflict with at least the letter of existing laws. This is a natural condition and would not of itself necessarily imply any injury to the cause of fireproofing, but unfortunately few of our building law makers have been men possessed of sufficient technical knowledge to enable them to so draw up an enactment that it cannot leave loopholes for poor or vicious construction, and the results have certainly been in some of the cities that the minimum requirements which will satisfy the inspectors make it possible for some extremely unscientific methods to be accepted. The building market is at present filled with a great assortment of so-called fireproofing constructions depending upon the use of concrete. No one will seriously question the fact that under some conditions concrete can be used safely, economically and with due regard to fire protection, but on the other hand there are many forms of concrete construction which no disinterested engineer would for a moment class as fireproof or scientific and yet which will comply with the letter of the law in most of our large cities. For example, a fundamental principle of fireproofing is that structural steel shall be protected by a direct covering of some nonconducting material. In some of the recent buildings we have known of a construction which included simply bare steel beams with a 3½-inch concrete slab continuous across the tops of the beams and a metal lath ceiling suspended below the same. Again, we have seen so-called cinders concrete in which the quality of cinders was such that the compound could actually be set on fire. So long as the building laws let down the bars to pass indiscriminate compounds of concrete mixed by unskilled labor and applied without special supervision, so long will it be possible for buildings to be fireproofed in accordance with the law and yet be thoroughly dangerous as fire risks.

Selected Miscellany and Editorial Comment

CINCINNATI HOSPITAL.

IT is proposed to build a large hospital near Cincinnati, and we regret to say that those having the project in view seem to feel that the proper course to pursue is to "invite the best architects in the country to submit plans." Whether such invitation will be accepted we should very much doubt. The newspaper reports intimate that large prizes will be offered for suitable designs, and then state that "the plans will be the property of the commission, and a composite plan will probably be evolved from them." We sincerely trust that in this respect the newspaper reports are wrong. Such a method of procedure would not call for the kind of response which the people of Cincinnati would expect, and no money prize would be an inducement to many of our leading architects to sell plans from which ideas were to be culled for a so-called composite. The question of competition for a building of this sort is always a hard one to properly meet. The position of the architect is that he does not feel justified in merely scrambling for work, and in nearly every kind of building better results are accomplished by making a careful selection of an architect, and having him study out the problem thoroughly in conjunction with the commissioners. A competition means more or less a snap judgment on the part of the competitors and the judges, and that is not the most satisfactory way to obtain ideal results. We sincerely trust that the newspaper reports are all wrong in this respect, and that the gentlemen who have the project in charge will see fit to either

DETAIL BY EXCELSIOR TERRA-COTTA CO.
John D. Allen Co., Architects.

MEDALLION BY LOUIS POTTER, SCULPTOR.
Executed in Colored Faience by Hartford Faience Co.

DELIVERY ROOM, HUNTINGTON LIBRARY, HAMPTON, VA.

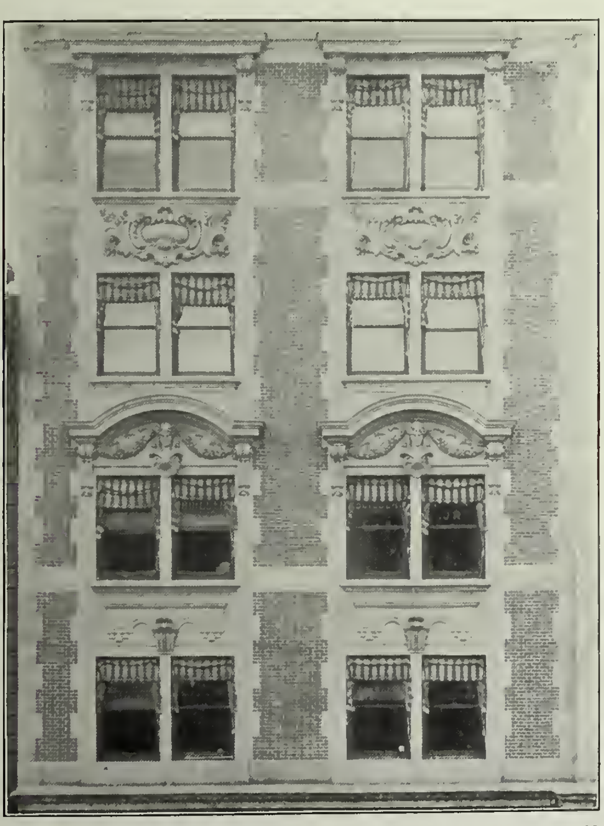
STABLE FOR HOWARD GOULD, ESQ., PORT WASHINGTON, L. I.
View of roof construction showing supporting masonry ribs and hangers from same, partially carrying floor below. Spans about 50 feet. Guastavino construction.

ORPHANS' HOME, CHICAGO, ILL.
Shepley, Rutan & Coolidge, Architects. Terra-Cotta furnished by Northwestern Terra-Cotta Co.

conduct a competition in the manner which has been so wisely recommended by the American Institute of Architects for such cases, or, better yet, to make a deliberate selection of an architect and trust him fully with the work.

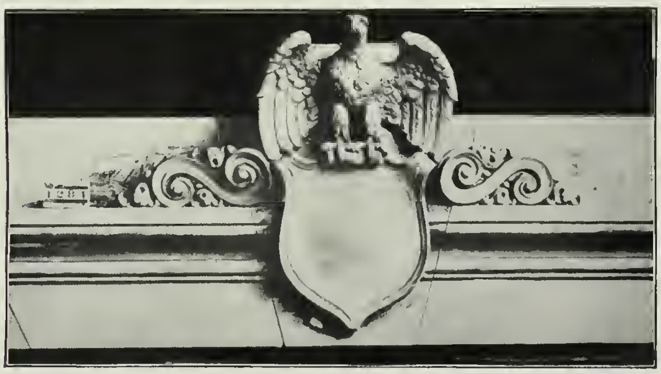
PENALTIES FOR DELAY.

A CORRESPONDENT writes us in regard to the possibility of collecting damages or a forfeiture from a contractor for delay in completion of a contract beyond a certain specified time. This is a subject upon which there seems to be a considerable amount of misapprehension on the part of many architects and builders, and there is a legend that decisions of the Supreme Court have held that a forfeiture clause in a contract is invalid unless the contract likewise provides a bounty or bonus for completion of the building or the work before the time specified. As a matter of fact, without the sanction of a properly constituted court no agreement can be made which will enable one party to collect a penalty from another, and if the contract is so worded as to imply that in case of delay the builder is to be called upon to pay a penalty, such penalty can never be legally collected. On the other hand, it has been established, not only by court decisions but by actual practice, that if in advance a certain amount per day or



DETAIL OF FRONT, ALBANY TRUST BUILDING, ALBANY, N. Y.
Terra-Cotta by New York Architectural Terra-Cotta Co.
Marcus T. Reynolds, Architect.

DETAIL BY PERTH AMBOY TERRA-COTTA CO.
James G. Hill, Architect.

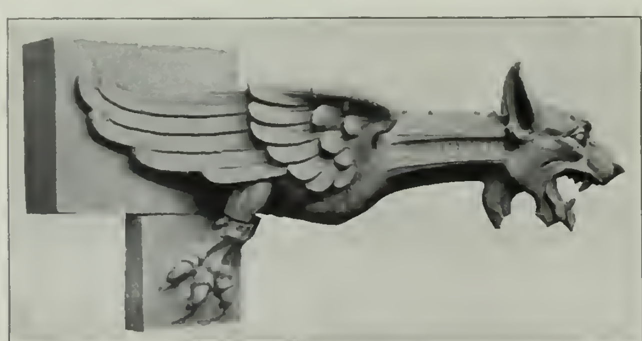


DETAIL FOR WINDOW HEAD.
R. Thomas Short, Architect. New Jersey Terra-Cotta Co., Makers.

BATTERY PLACE BUILDING, NEW YORK CITY.
H. J. Hardenburgh, Architect.
Fireproofed with Burnt Clay Tile.

POWERS BUILDING, CHICAGO.
Holabird & Roche, Architects.
Built of Light Gray Brick, Made by Columbus Brick and Terra-Cotta Co.

per week shall be agreed upon as constituting the actual damages which the owner would sustain from delay, and the amount of such damages is properly incorporated in the written contract, signed by both parties, such damages can be collected, and it is in nowise necessary that there should be a corresponding bonus for completion of the work in advance. It is entirely a matter, not of penalty, but of damages. It is often of no value whatever to an owner to have a building completed before a certain date, while any delay beyond that time might entail serious pecuniary loss. It does not at all follow, then, that in equity and certainly not in law should a contractor be entitled to a premium unless it is distinctly so stated in the bond. Great care should be taken in framing such a contract that the amount of damages is expressly agreed upon as "in liquidation of actual loss and not as a penalty," and in any case an architect who undertakes to put such a clause in a contract should not fail to first obtain the best legal advice upon the subject.



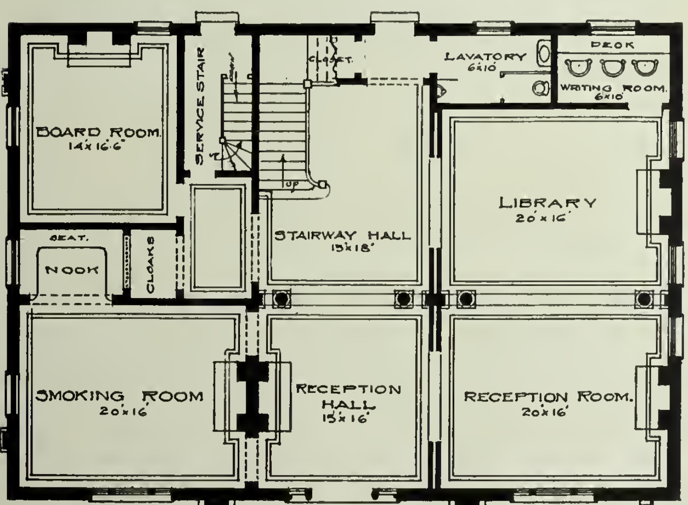
DETAIL BY CONKLING-ARMSTRONG TERRA-COTTA CO.
Snelling & Potter, Architects.

DETAIL BY ATLANTIC TERRA-COTTA CO.
Augustus N. Allen, Architect.

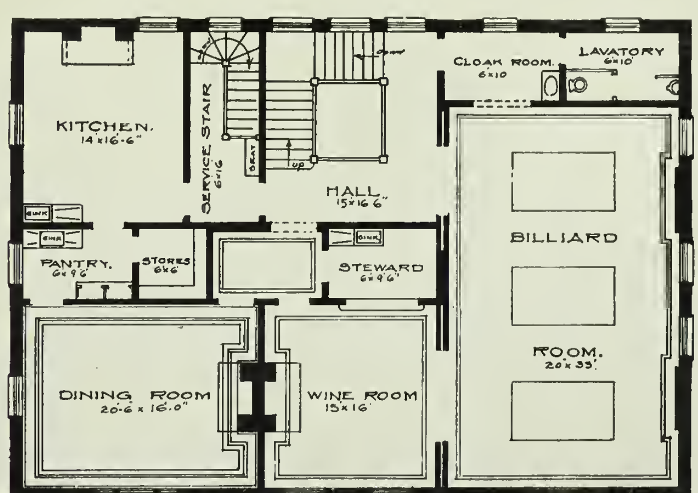
ENAMELED TILE IN THE BOSTON SUBWAY.

IT is expected that cars will be running through the East Boston tunnel under the harbor by the 1st of August. The walls of the station which has been constructed immediately under the Old State House are now entirely faced with their final veneer of white enameled tiles, and present a very attractive appearance. The roof of this station, which is of concrete, will not be tiled, but will be painted in a soft gray. The arched roof of the station at Atlantic Avenue, however, will be tiled as well as the walls. Enameled tile and brick have been used in nearly all the stations of the Boston Subway, and with extremely satisfactory results. The tiling has been in place for about five years, and seems to have stood perfectly in every respect. When the subway was under passengers will use tobacco, and dirt and dust will accumulate, nothing but a clean enameled surface which can be readily washed off will answer for such work. New York seems to be profiting by Boston's experience, and is using enameled brick and tile to a larger extent and with very marked success.

PIEDMONT CLUB, LYNCHBURG, VA. Frye & Chesterman, Architects.



FIRST FLOOR PLAN.



SECOND FLOOR PLAN.

PIEDMONT CLUB, LYNCHBURG, VA.

process of construction we expressed in these columns the hope that enameled brick would be adopted for the entire length. The subway commissioners made experiments with a number of materials and finally decided to face the walls with enameled tile at the stations but to paint elsewhere, and the result has shown that nothing but enameled brick can really be kept clean. So long as

BURNED CLAY FOR BUILDING PURPOSES.

THE rapid growth of our towns and cities in connection with the great prosperity enjoyed during the past few years has largely increased the demand for substantial and comfortable homes and buildings of every description. The almost total extinction of our large

RAILWAY STATION AT CONNEAUT, OHIO.
Folsom Snow Guards used on Roof.

forests, thereby increasing the value of wood, has made it necessary to adopt other products to supply the demand for first-class yet inexpensive materials for building construction.

Among the most essential and important of these products is that of burned clay, which is now used quite extensively in all of the larger as well as in many of the smaller buildings throughout the country, for fireproofing and ornamental purposes, as well as for the foundations and walls of buildings.

Within the past few years the Hollow Block branch of the clay business has grown to very large proportions, and at the present time in the state of Ohio alone — which is the center of production for the United States — there are a number of large plants, equipped with the latest and most improved machinery, employing hundreds of men, producing thousands of tons of these blocks annually.

A booklet has recently been issued by the National Fireproofing Company of Pittsburgh, which describes and illustrates in a most interesting manner the shapes and methods employed in the use of these blocks.

There are also illustrated some thirty buildings, varying in character, which have been constructed of this material. It is a valuable epitome, treating of a new development in structural material.

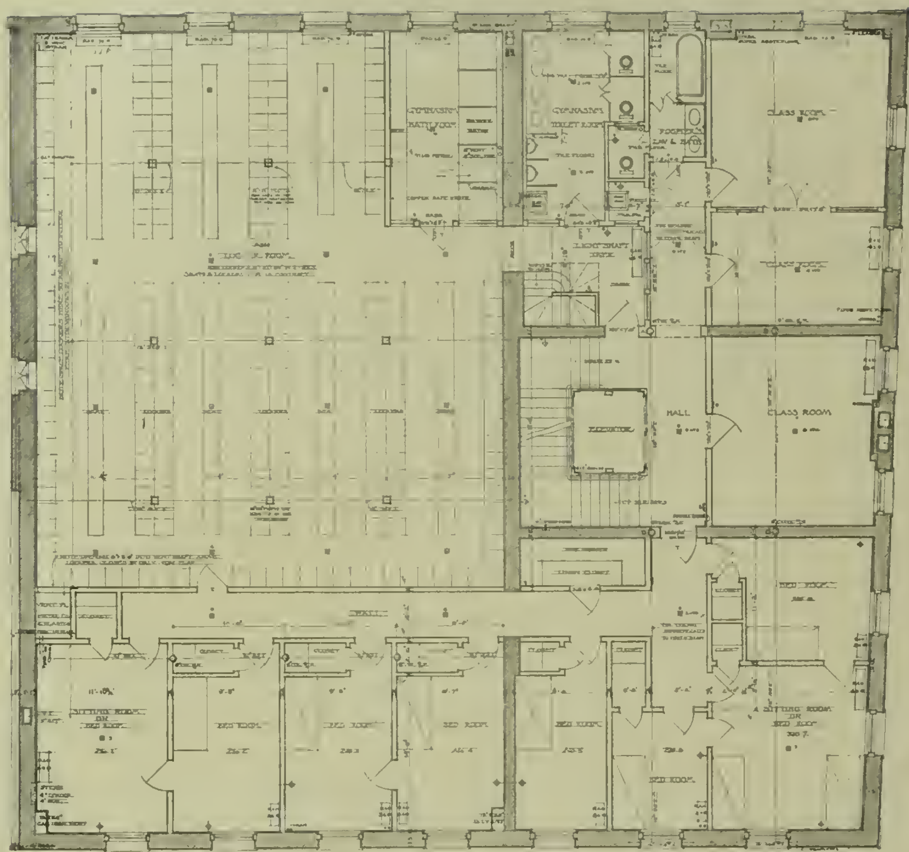
STOWERS BUILDING, HOUSTON, TEXAS.
Green & Fvarz, Architects.
Faced with American Size White Enameled Brick, made by Hydraulic Press Brick Co., St. Louis.

IN GENERAL.

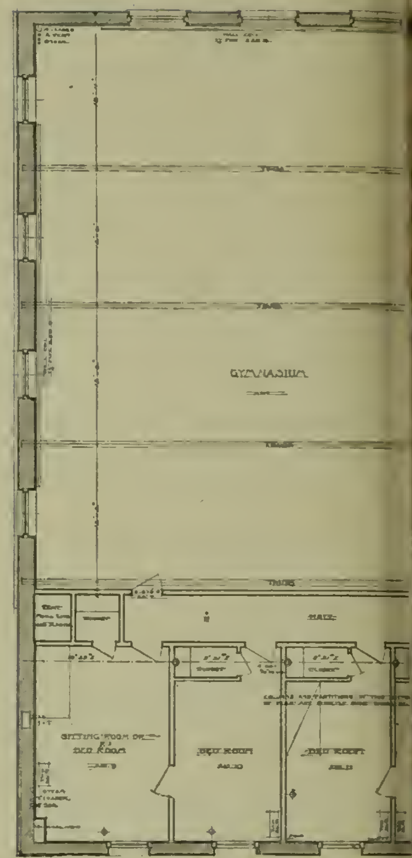
Frank Miles Day lectured before the Washington Architectural Club at the Octagon, Saturday evening, January 30, on the Park Systems of America.

D. H. Burnham & Co., architects, will on March 15, 1904, move their offices in Chicago from 1142 The Rookery, to 1417 Railway Exchange Building, corner of Jackson and Michigan Boulevards. Permanent telephone, 4145 Harrison.

CITIZENS' NATIONAL BANK BUILDING, DES MOINES, IA.
Liebbe, Nourse & Rasmussen, Architects.
Built of "Ironclay" Brick.



THIRD FLOOR PLAN.



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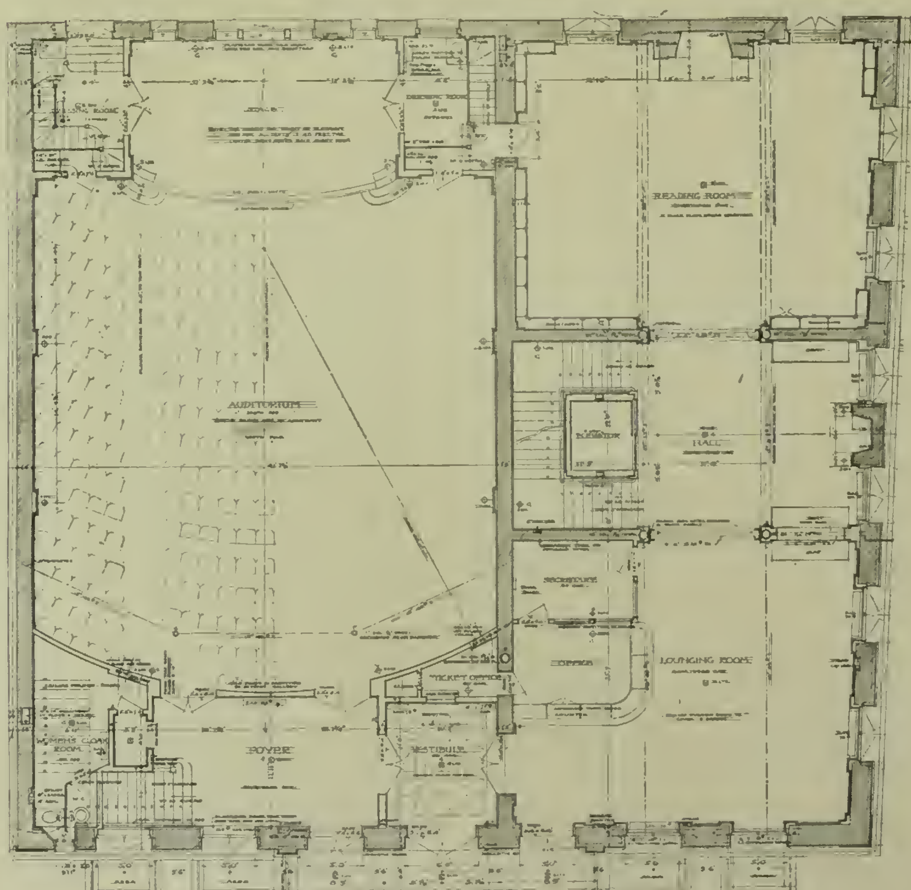

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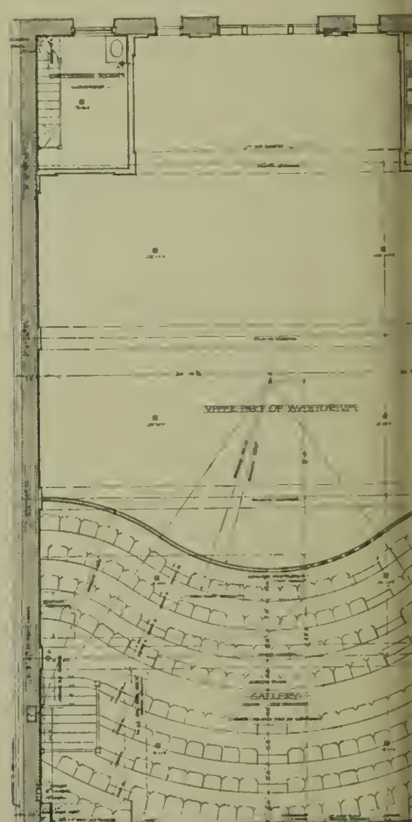

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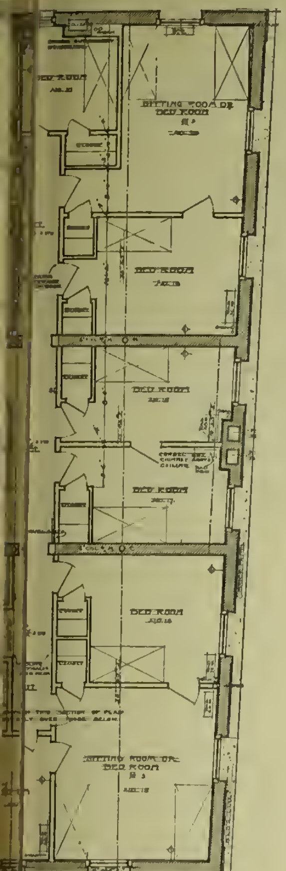
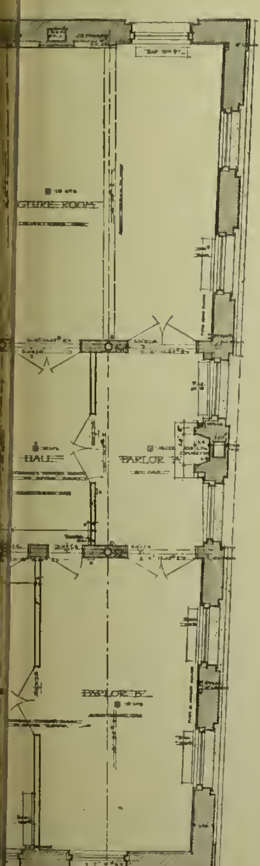
PLATES 15 and 16.

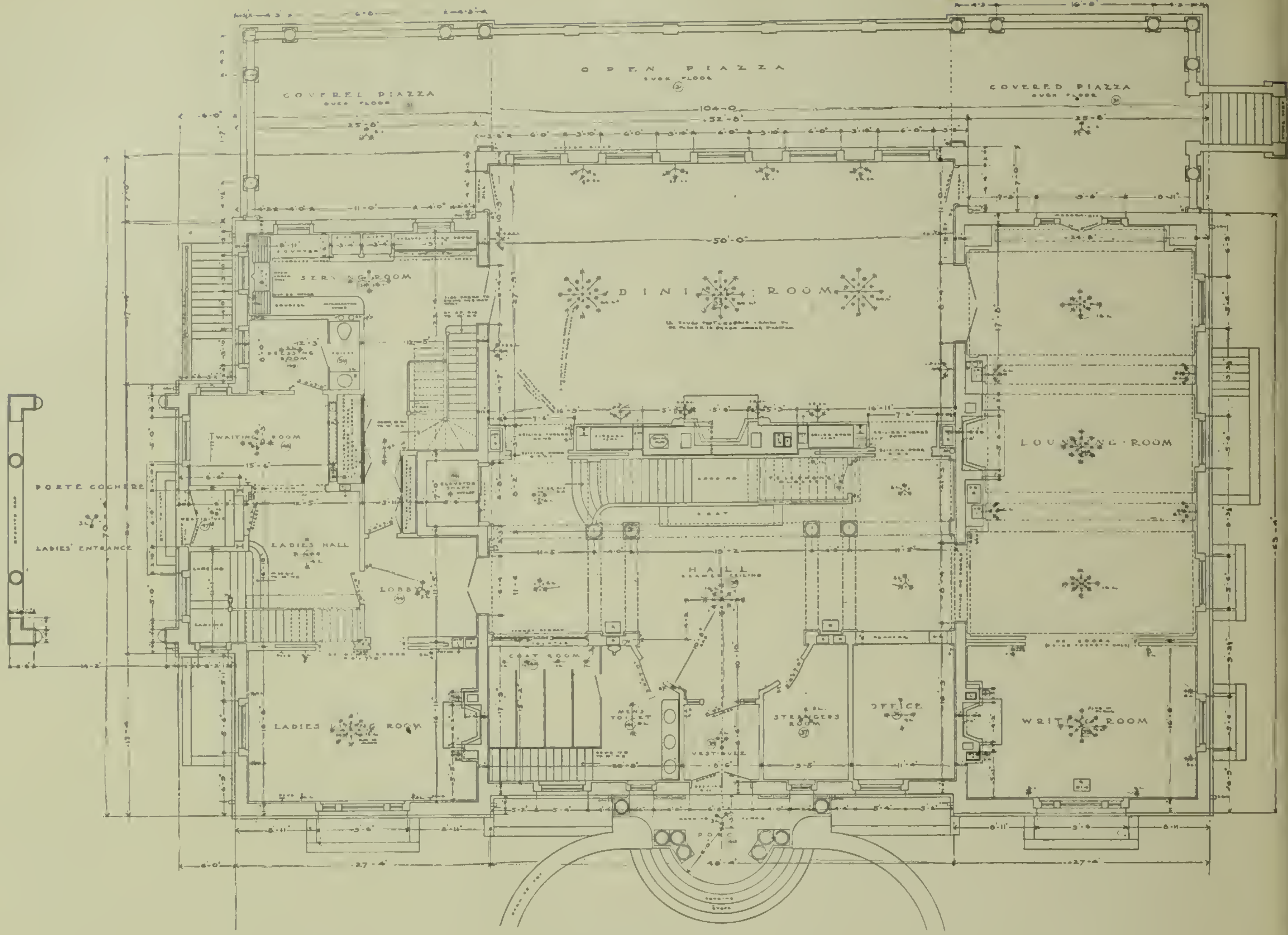




HALF OF FRONT ELEVATION.

SBURG, PA.

S.



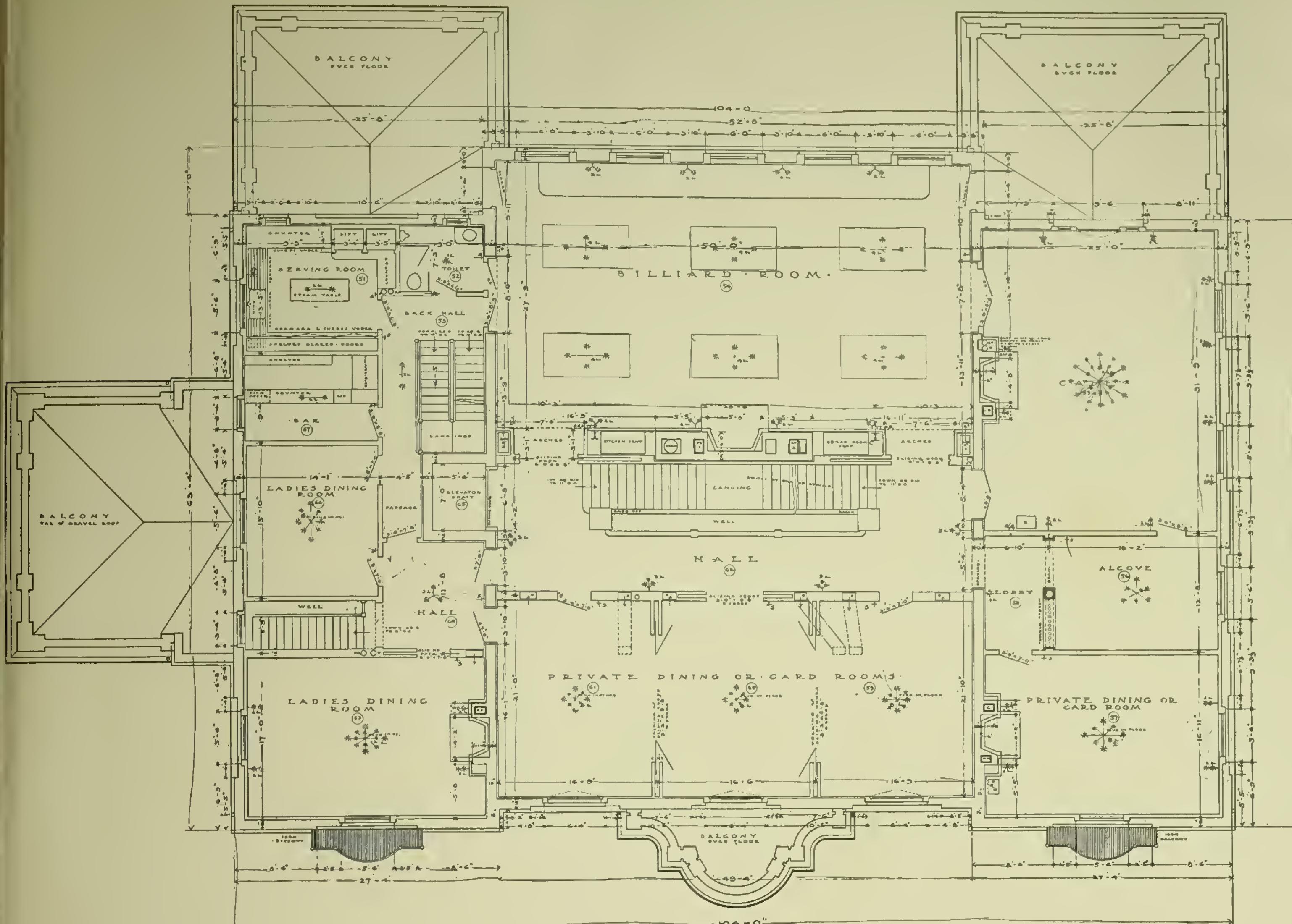
FIRST FLOOR PLAN.

HARTFORD

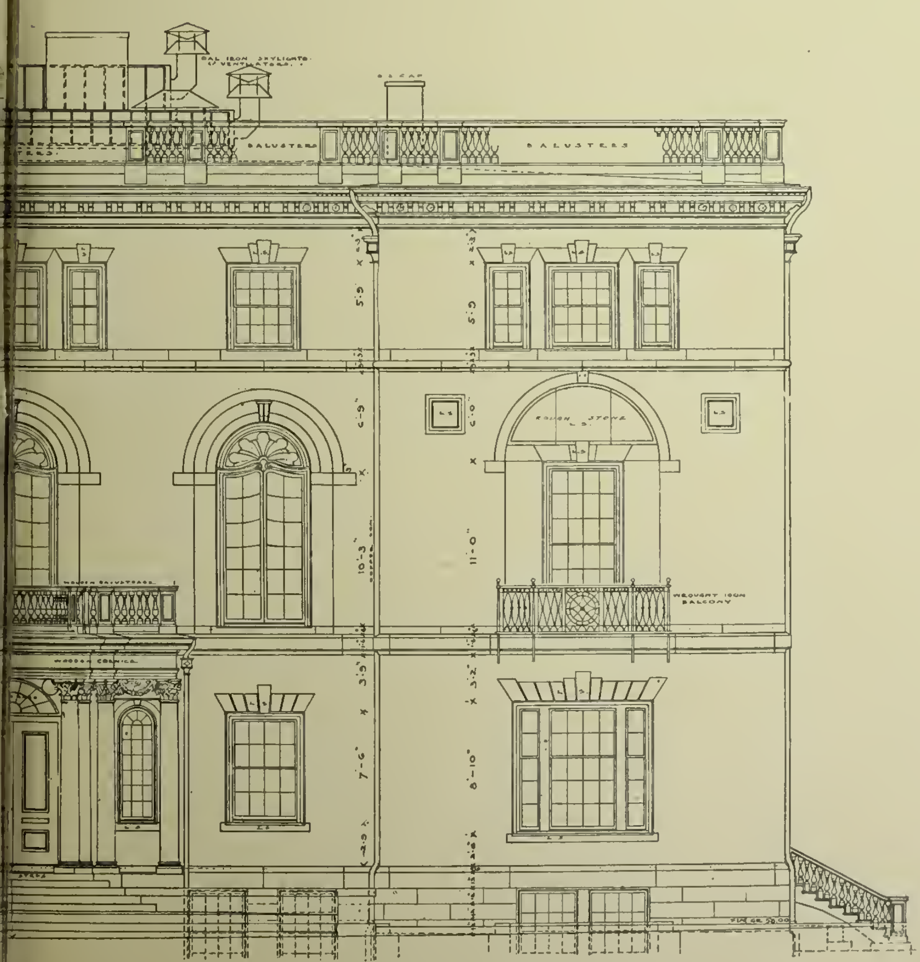
ANDREWS, J

DER.

PLATES 13 and 14.

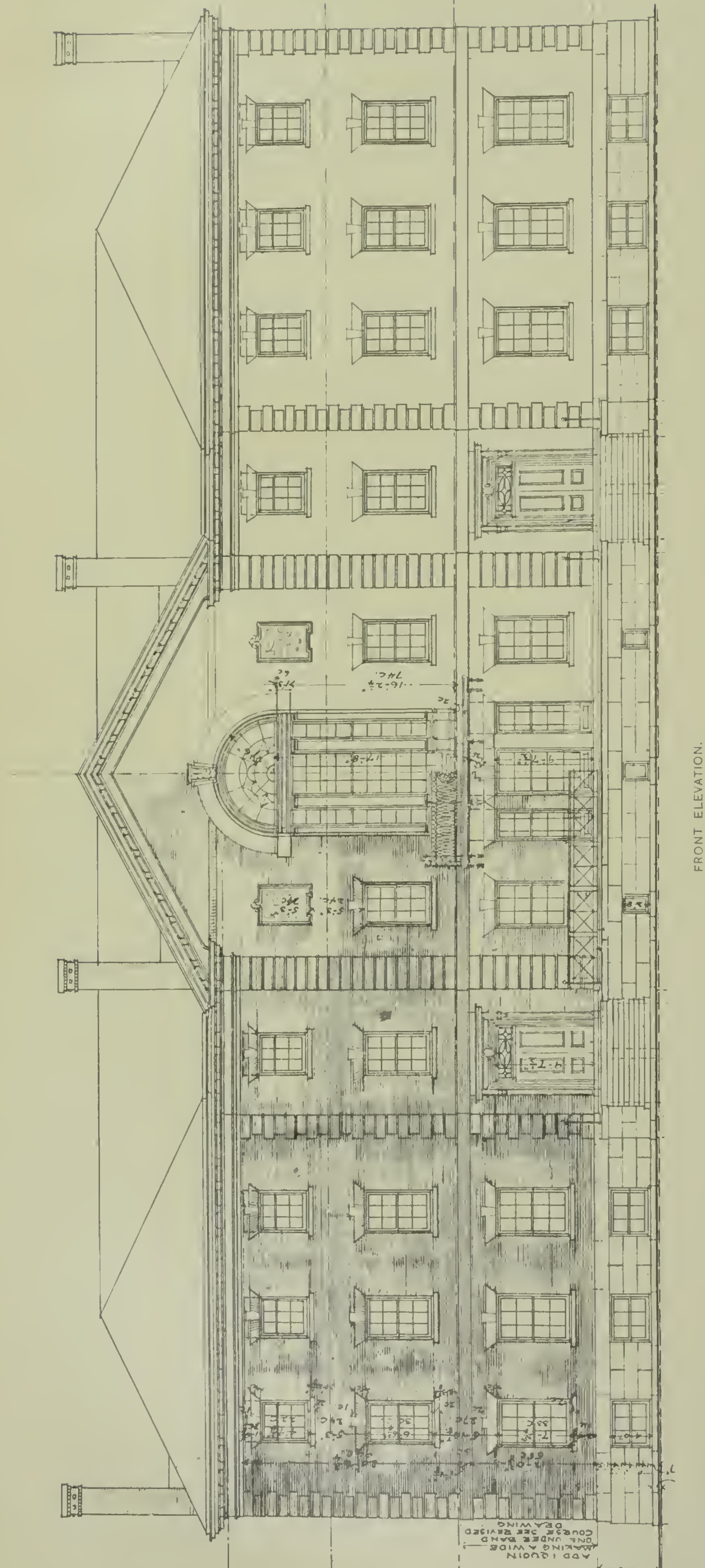


SECOND FLOOR PLAN

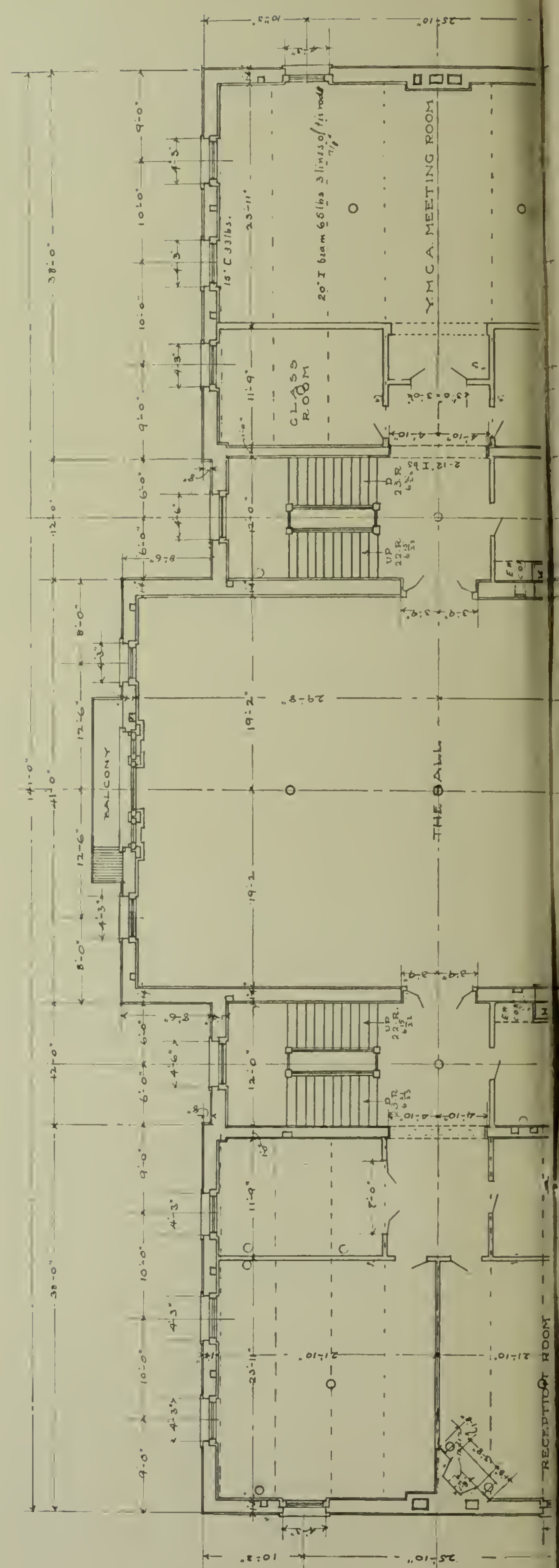


ORD, CONN.

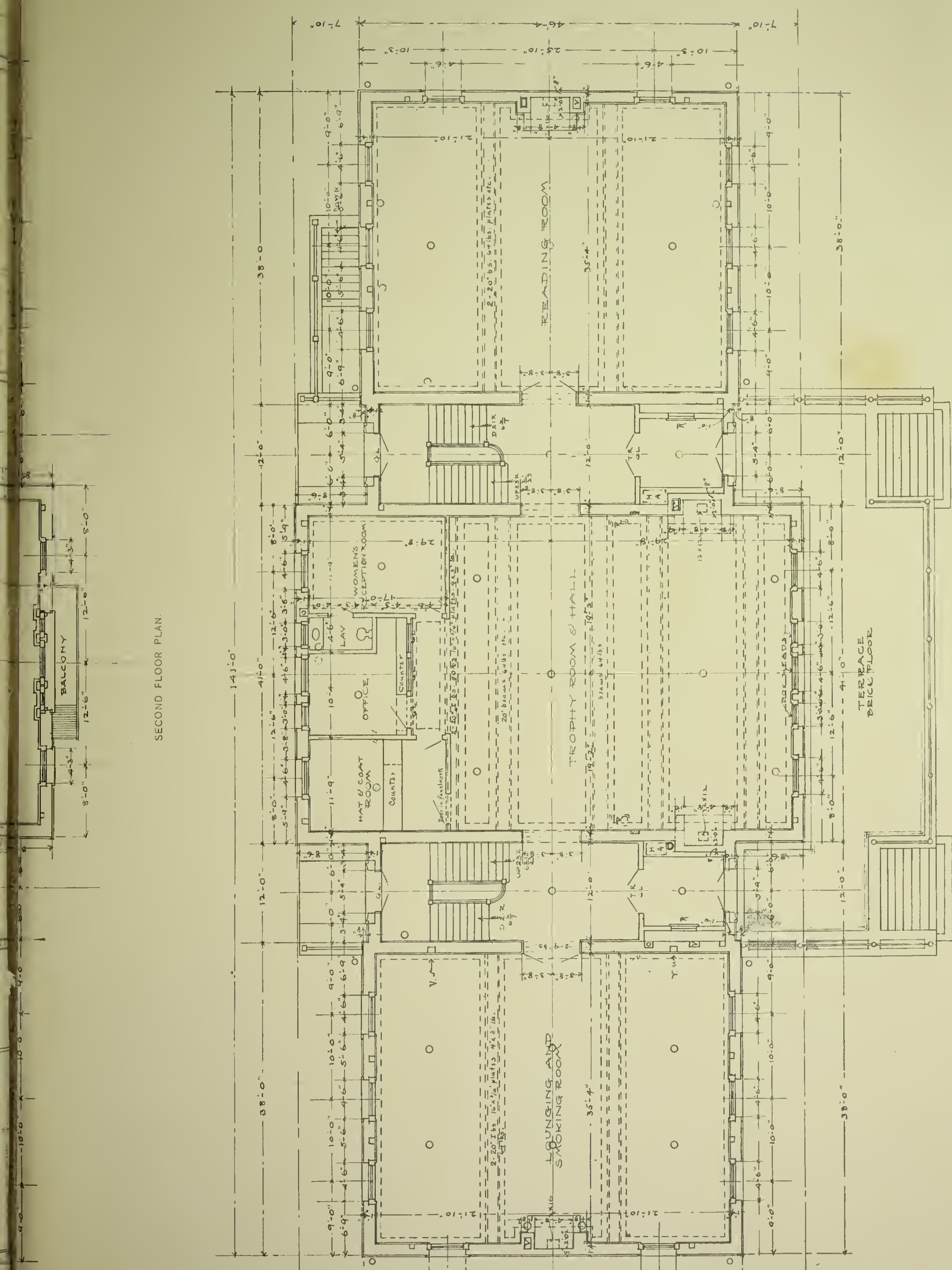
RCHITECTS.



FRONT ELEVATION.



PLATES 11 and 12.

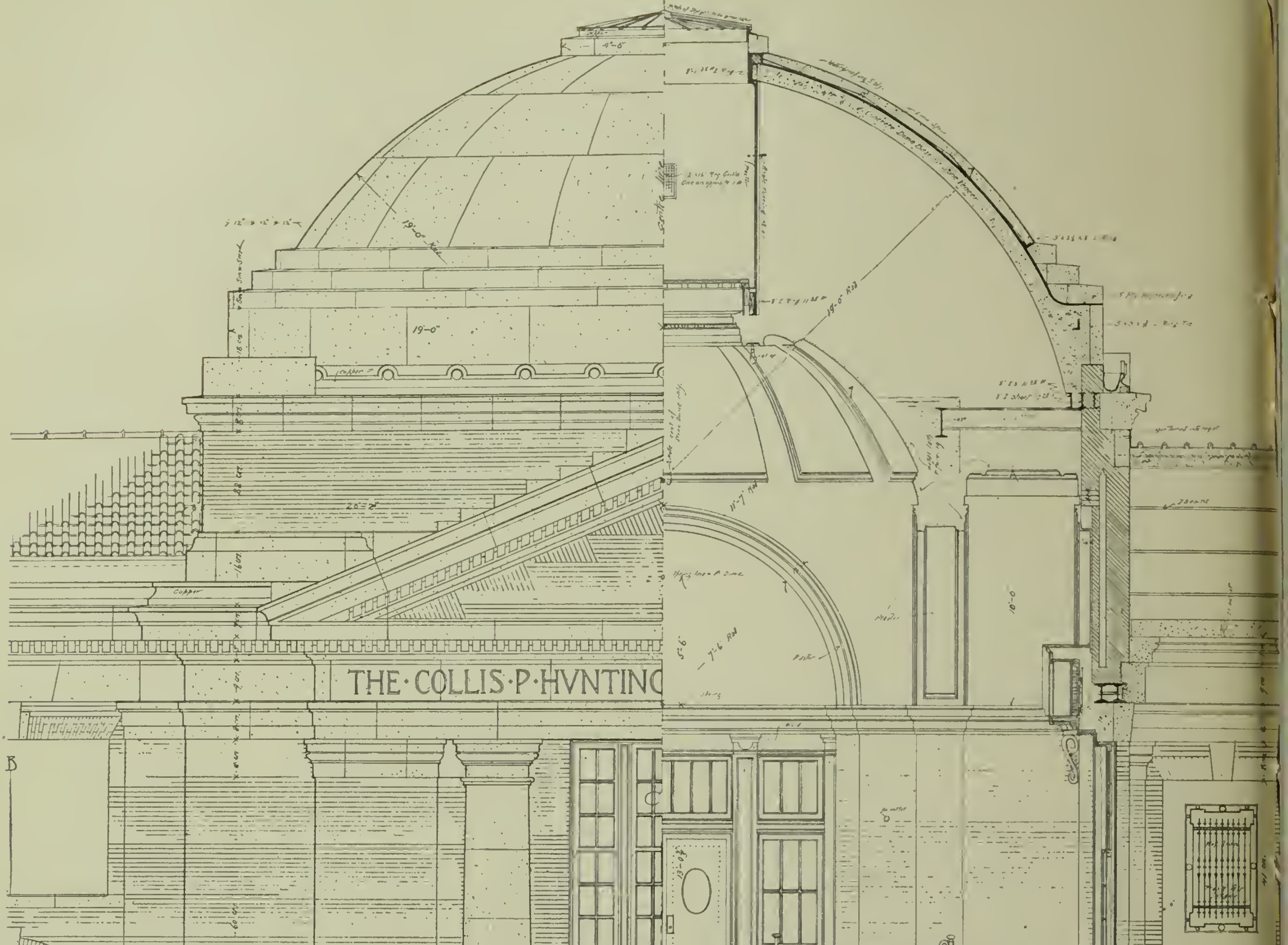


SECOND FLOOR PLAN.

FIRST FLOOR PLAN.

ROCKEFELLER HALL, BROWN UNIVERSITY, PROVIDENCE, R. I.

McKim, Mead & White, Architects.

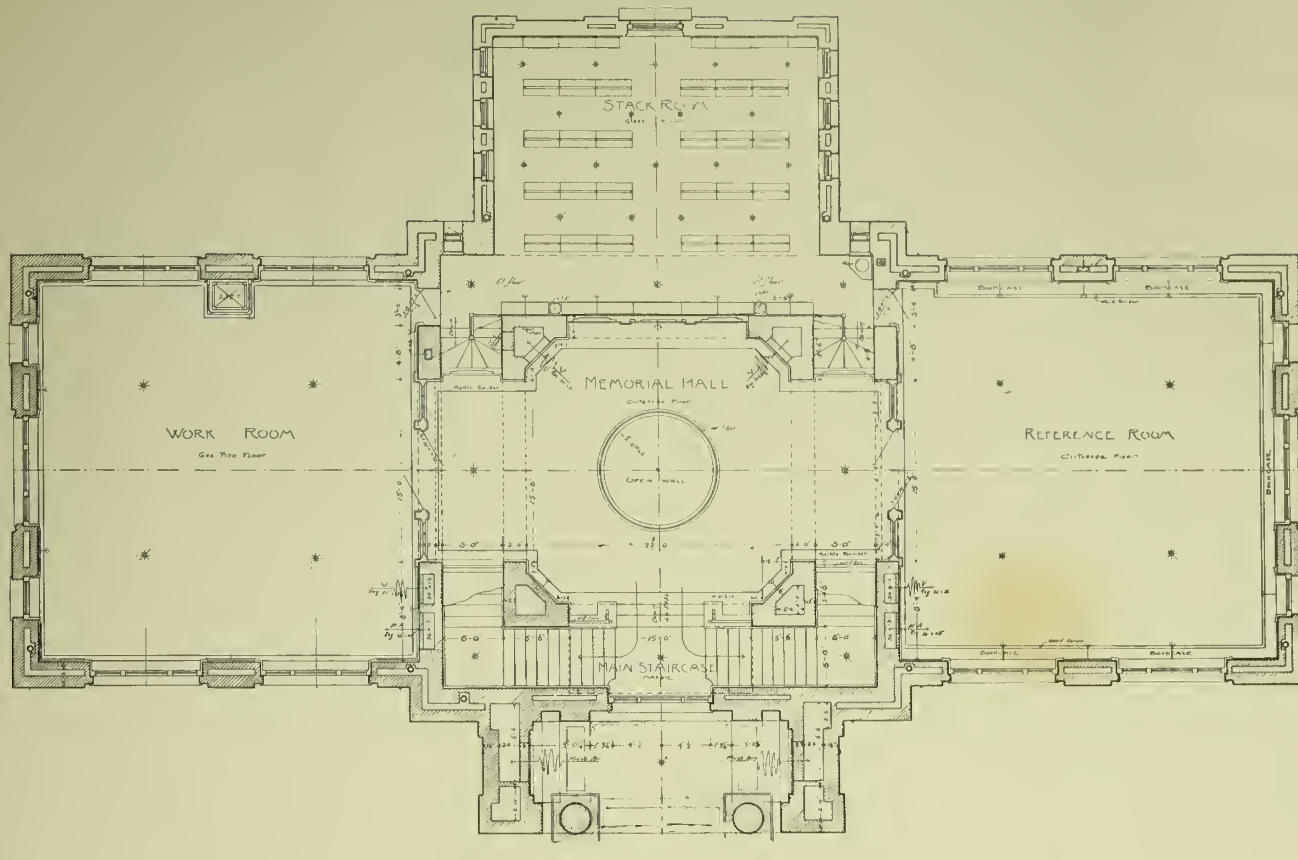


HALF ELEVATION OF CENTRAL PAVILION.

THE COLLIS P. HUNTINGTON MEMORIAL

DAVIS &

PLATES 9 and 10.



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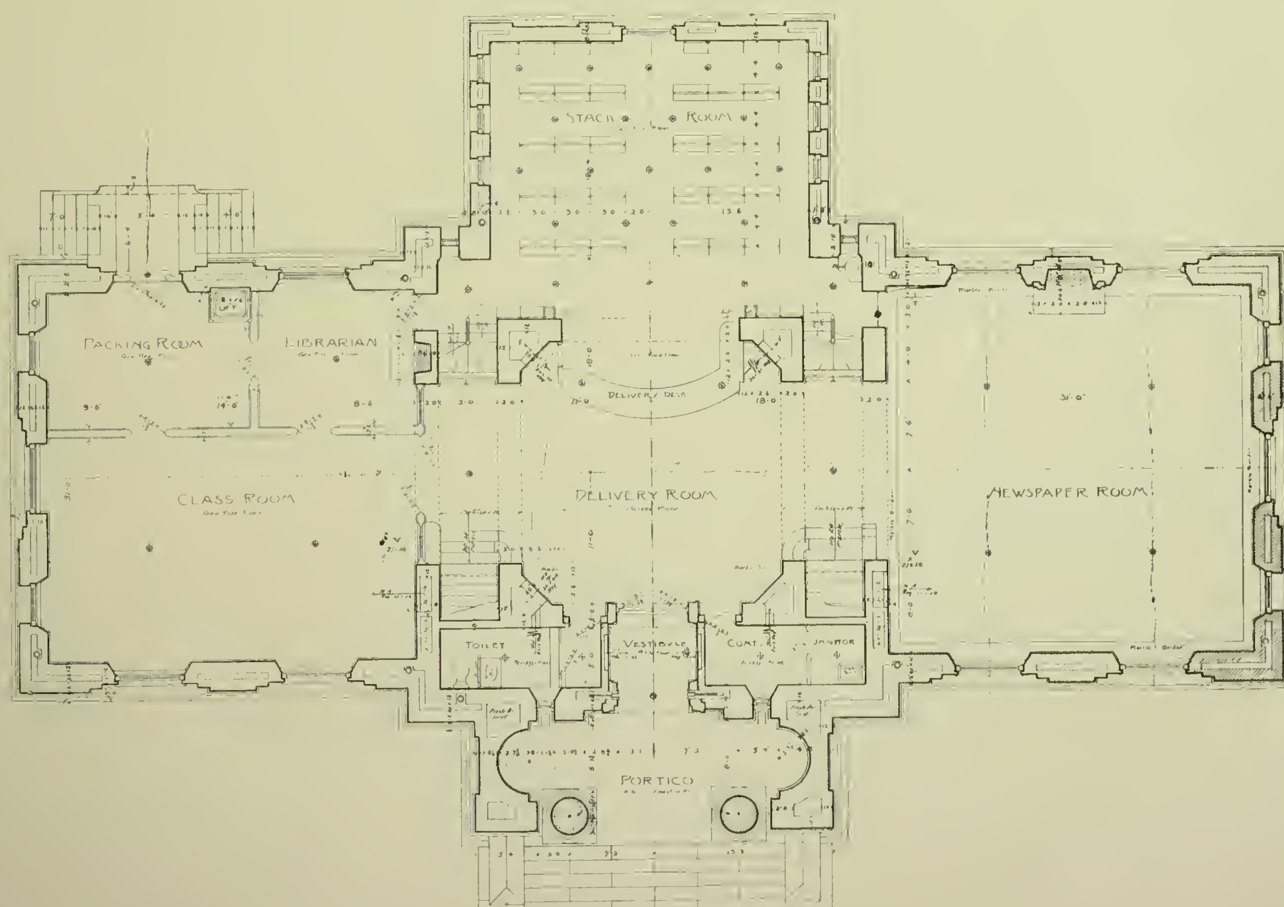

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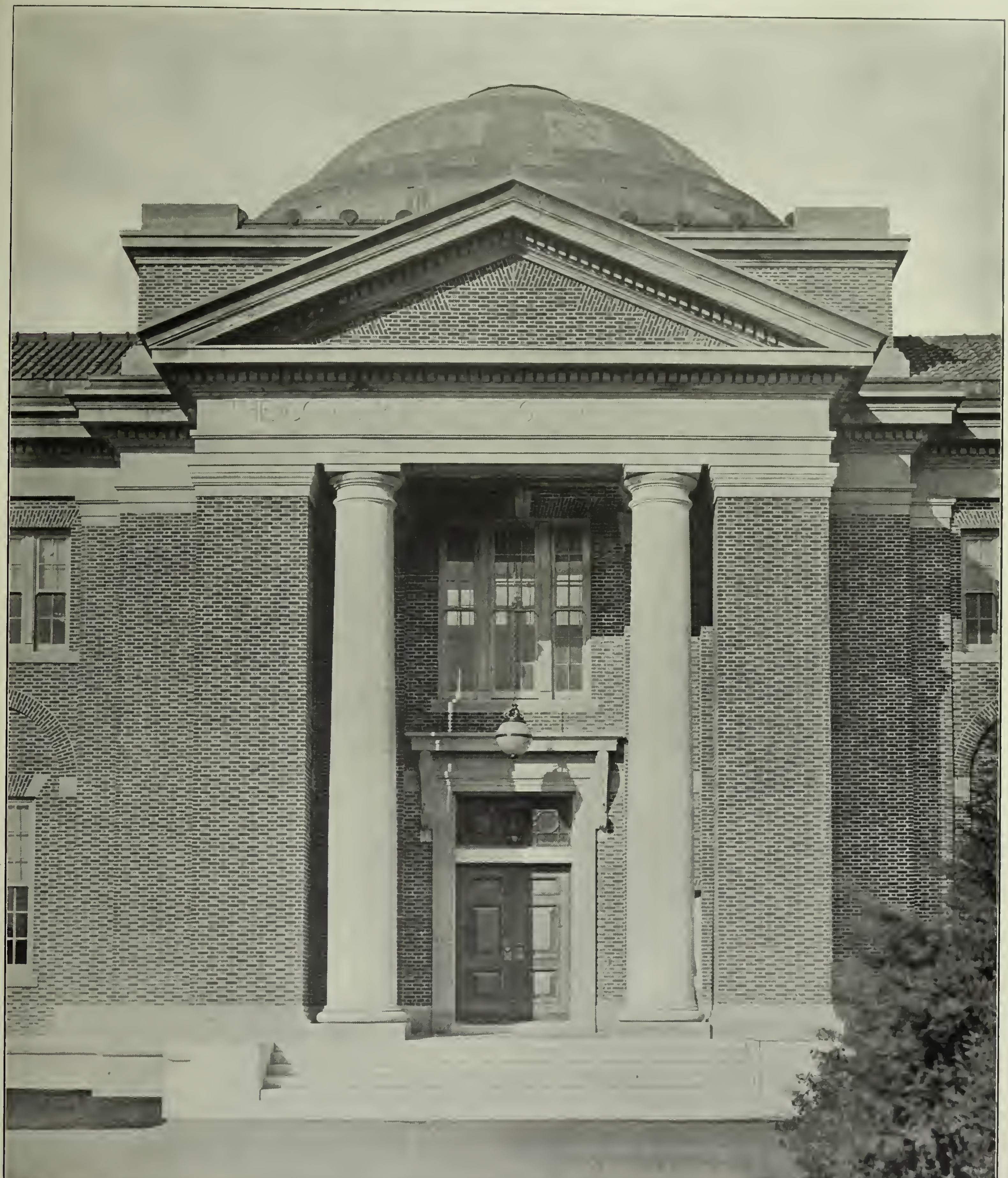

DETAIL OF PORTICO, THE COLLIS P. HUNTINGTON MEMORIAL LIBRARY, HAMPTON INSTITUTE, HAMPTON, VA
DAVIS & BROOKS ARCHITECTS.

THE COLLIS P. HUNTINGTON MEMORIAL LIBRARY, HAMPTON INSTITUTE HAMPTON VA.

DAVIS & BROOKS, ARCHITECTS.

THE BRICKBUILDER,
FEBRUARY,
1904.

HARTFORD CLUB, HARTFORD, CONN.
ANDREWS JAQUES & RANTOUL, ARCHITECTS.

ROCKEFELLER HALL, BROWN UNIVERSITY, PROVIDENCE, R. I.
McKim, Mead & White, Architects.

HARTFORD MEDICAL CLUB, HARTFORD, CONN
McKim, Mead & White, Architects.

Y. M. C. A. BUILDING, HARRISBURG, PA.
York & Sawyer Architects.

THE BRICKBUILDER,
FEBRUARY,
1904.

THE BRICKBUILDER.

VOL. 13 MARCH 1904 No. 3

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FROM WORK OF DWIGHT & CHANDLER, MEADE & GARFIELD, POND & POND, CHARLES A. RICH, JAMES GAMBLE ROGERS.

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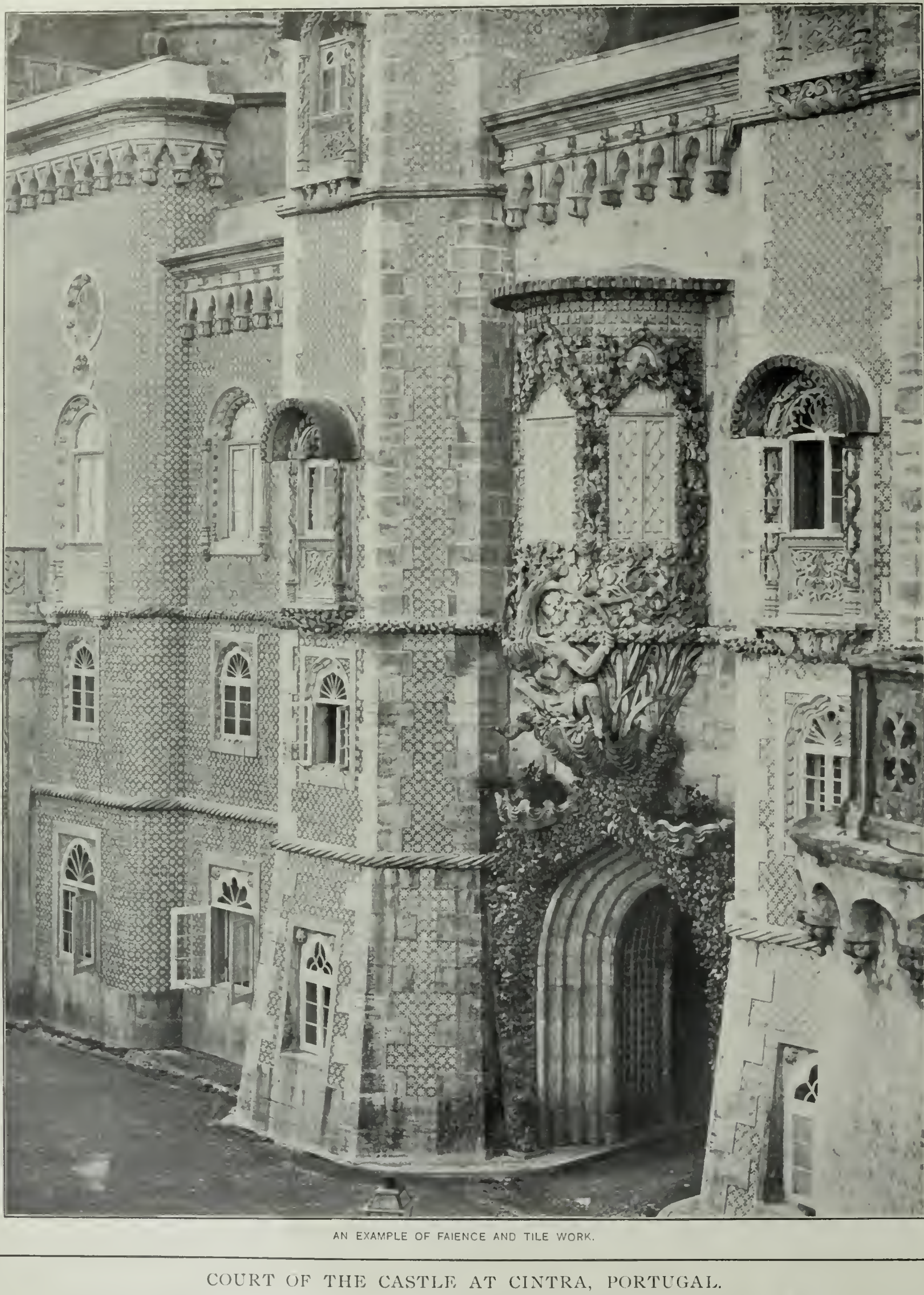

AN EXAMPLE OF FAIENCE AND TILE WORK.

COURT OF THE CASTLE AT CINTRA, PORTUGAL.

THE BRICKBVILDER

VOL. 13 No. 3 DEVOTED · TO · THE · INTERESTS · OF ARCHITECTVRE · IN · MATERIALS · OF · CLAY MARCH 1904

THE BRICKBUILDER.

PUBLISHED MONTHLY BY

ROGERS & MANSON,

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Advertisements will be printed on cover pages only.

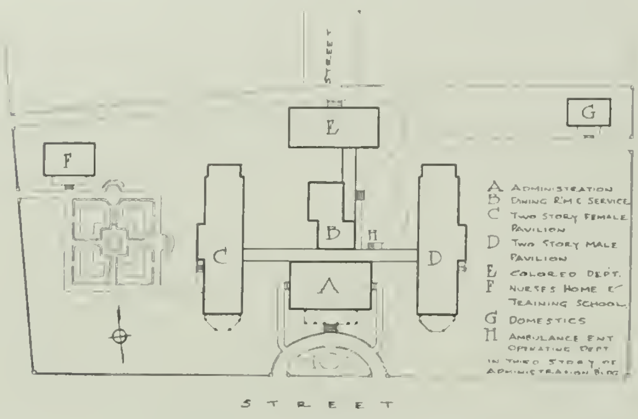
THE BALTIMORE FIRE.

IN view of the importance which attaches to the test of architectural construction and building materials generally at the Baltimore fire, we have decided to publish a special number of THE BRICKBUILDER devoted entirely to the subject. This number is now in process, and will be mailed to all of our regular subscribers within a week.

FUTURE DISASTERS.

THE past decade has witnessed an extraordinary amount of tall office building. The number of such structures in Boston has more than doubled in that period. In New York it has increased nearly five fold, and in other cities the increase in the number of supposedly first-class tall structures has been enormous. It has seemed at times as if we could not build fast enough nor often enough to meet the demand. A spirit of contagion was constantly urging us to larger, higher and more speedily erected buildings, so that the efforts of architects and of the old-fashioned building contractor who has had his hand on every portion of the work, were not sufficient to meet the demand, and construction companies with large paper assets, realty companies able to float anything, from a duck to a man-of-war, and syndicates of building jobbers ready to cover the earth with tall steel frames sprang into existence with a mushroom growth which is not easy to entirely explain. We are just beginning, in our opinion, to pay the price of this sudden expansion. The collapse of the Hotel Darlington in New York, the bad fire in Rochester, when the whole front of a building collapsed into the street, and other occurrences which are whispered among the contractors and builders but have not yet appeared in print, are to our minds a measure of the terrible price we may have to pay for the extraordinary development of steel frame construction during the decade just passed. These disasters and many of our fires in so-called fireproof buildings are but the precursors of a tremendous series of failures in steel buildings, and these failures will be chargeable directly to our extraordinary hustle and desire to build quickly. It is safe to say that a large proportion of the steel frame buildings which have been put up in our large cities during the past five years have not only been markedly inferior to the average of the five years just before, but have been constructed in so slipshod and dangerous a method that it is only good luck or chance that has prevented some of them from falling down before they were completed. We are not alarmists, nor do we take a pessimistic view of the future. When the steel frame first made its advent among us it was a problem handled by specialists who understood their business. It is still a problem for the specialist; but the realty companies, with their architects and engineers hired by the year, the shyster builders who mortgage and sell out quickly have no use for an expert, and the result is such absolutely preventable accidents as happened in New York. There are plenty of well constructed, durable, first-class steel frame buildings in all our cities. Unfortunately, in the public mind they are classed with the shoddy constructions that are beginning to be the majority. We can only hope that as disasters inevitably overtake the wretchedly thrown together buildings, they may come in such manner as to prevent at least the continual foisting of such structures onto the community under the name of first-class buildings. There are two popular delusions to-day; one seems to be that every large building which catches fire is a fireproof structure, the second is that every building which has a steel frame must necessarily be well constructed. For both of these delusions the popular press is largely to blame.

absolutely vital reasons for separating the various diseases and the sexes, and providing entirely isolated buildings for each class and department, each thoroughly equipped for its special work, we continually meet people who are prone to argue in favor of a single building, on the score of less cost to build and maintain.



PLAN, NORFOLK PROTESTANT HOSPITAL.

Now let us consider the question of cost of construction. At first glance it would seem to be much cheaper to build one large structure than several small ones, but a careful study of the problem will convince one that this is not always true.

In the first place a large building seems to require a large expense for ornamental features in the way of breaks in the exterior walls, gables, cupolas, belt courses, etc. Unless it is treated in a comparatively ornate manner it is quite apt to look like a factory.

Again, if a large and high building, the construction must necessarily be of a heavier and more expensive character.

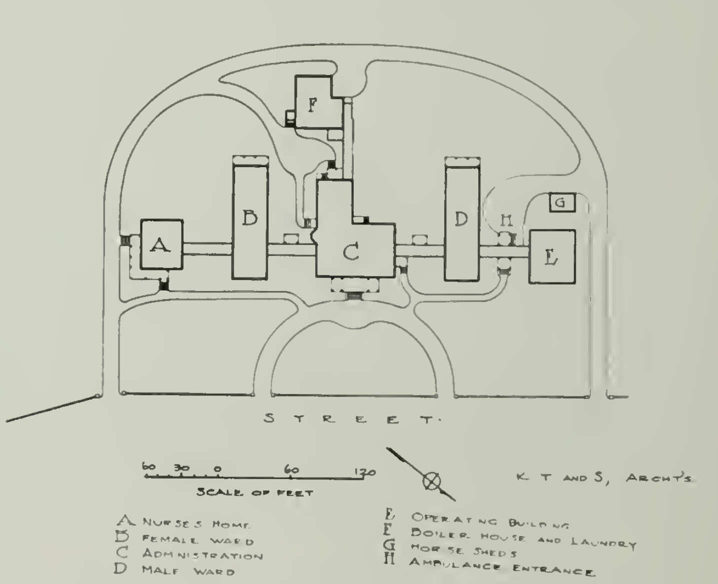
In a group of several small buildings there seems to be little or no need of strictly ornamental features. The natural grouping and lights and shades of the various pavilions connected by the corridors, varied by the necessary solaria and airing balconies, give all the picturesque elements that can be desired, and the general effect should be attractive, looking the hospital, yet unassuming, homelike, and not enough institutional to be repellent.

Again, few if any hospitals are built and finished complete to the ultimate capacity at once. In a small town of a stationary character as regards increase in population, or in case of a hospital for a special purpose or one built and endowed by an individual, it is possible and necessary to limit the growth and usefulness of the institution by arranging for a completed whole to be immediately realized. In the general hospital of popular character the ultimate possible growth must be carefully calculated and the entire proposition in all its varied elements and possibilities carefully planned; then if funds for but one or two buildings are available, these can be temporarily adjusted to the requirements of complete hospital use, and the remaining buildings added as the funds are supplied and the needs are made evident. It is thus clear that the pavilion principle of planning is the only possible solution of the problem in at least nine-tenths of the cases one meets in general practice, and in several of the plans used to illustrate this article but a portion of the scheme is at present developed and the additional buildings will be built as needed.

A study of the various illustrations will show that it is quite possible, and in fact quite customary at the present day, to build a hospital of fifty to one hundred beds in six or eight buildings. There should be an administration building, with a detached or semi-detached service building; in the rear of this group should be the boiler house and laundry, with the autopsy, mortuary and garbage crematory. There should be a pavilion with open ward and private rooms and all conveniences on each side, one for male and one for female patients. There should be a complete operating building, and, if possible, male and female special pavilions with open wards and private rooms and all the general conveniences, so as to isolate these surgical cases, as in the Newton Hospital. (See Article II, THE BRICKBUILDER for February.) If this is not possible, certain rooms must be reserved in the male and female pavilions for surgical cases that would be unsafe in a general ward.

There should be a nurses' home with training school accessories, and, if possible, a pavilion for private cases. As the hospital grows and develops there will be needed also a maternity pavilion with free beds, open wards, private rooms, a small operating department for a delivery room, a baby room and all accessories.

When a hospital gets to this stage of development, a special children's pavilion will be found to be an absolute necessity, and in fact the disposition of the children otherwise than in a special pavilion, where they will not be an annoyance to very sick patients, will tax the ingenuity of all concerned. The usual custom is to place a small children's ward in the female pavilion, but a better place until the children's pavilion is built is in the rear of



PLAN, ANNA JAQUES HOSPITAL, NEWBURYPORT, MASS.
Kendall, Taylor & Stevens, Architects.

the service wing of the administration building on the second floor, away from other patients.

Horse sheds will need to be provided, also an ambulance stable, unless the local livery, as is quite customary, runs the ambulance.

It is quite evident that, to properly do its work with the greatest success and comfort, a one hundred bed hospital should have all these buildings and at least a small isolating department of one or more buildings for cases developing in the institution, or a complete fever, or as we term it, an isolation hospital of three buildings and a smallpox hospital of at least one building, if these are not maintained by the municipal authorities elsewhere.

The little village hospital of ten to twenty beds has to grapple with the same problems as the large hospital of one hundred or more beds, yet it is absolutely impossible to subdivide and classify to any great extent. The little Watts Hospital (see Article II, THE BRICKBUILDER for February) shows a possibility, but there are many hospital organizations that cannot afford to spend even $20,000 for buildings, and therefore it seems absolutely necessary to condense these ten or twelve buildings into one, thereby getting an economical, comfortable arrangement, cheaply built and handled, with small expense for nurses and service. The plans of the Exeter Hospital and of the Windsor, Nova Scotia, Hospital illustrate this effort to reduce the problem to the lowest terms, and although they are very comfortable little hospitals, yet a few hundred dollars invested in corridors and the isolation of departments would make them much safer and certainly more comfortable for the patients. It will be noted that in all these small hospitals the operating department is a complete specialized department separated from the remainder of the hospital in a pavilion or a wing, where this vitally important work can be done free from intrusion and with all the accessories and conveniences at hand. This most essential and interesting special hospital department will be treated at length later.

In designing a hospital scheme the future should be discounted for at least twenty-five years, if possible. In some cases this is very easy, for the community may be a stationary one with no great possibility of growth. In such cases it is quite obvious what to do, and the realization of a complete perfect scheme would simply depend on the architect and the money.

In many places, however, there is an evident need of possibly a twenty-five bed hospital to start with, and a just as evident probability of a need for a one hundred

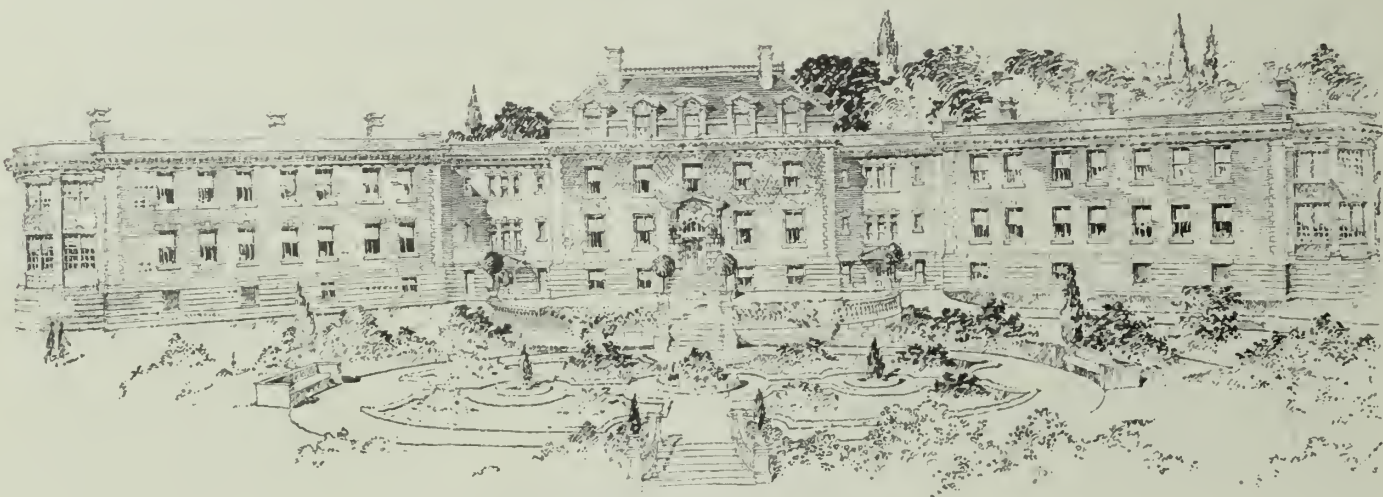
NORFOLK PROTESTANT HOSPITAL, NORFOLK, VA. (1901).
Kendall, Taylor & Stevens, Architects.

THE ANNA JAQUES HOSPITAL, NEWBURYPORT, MASS.
Kendall, Taylor & Stevens, Architects.

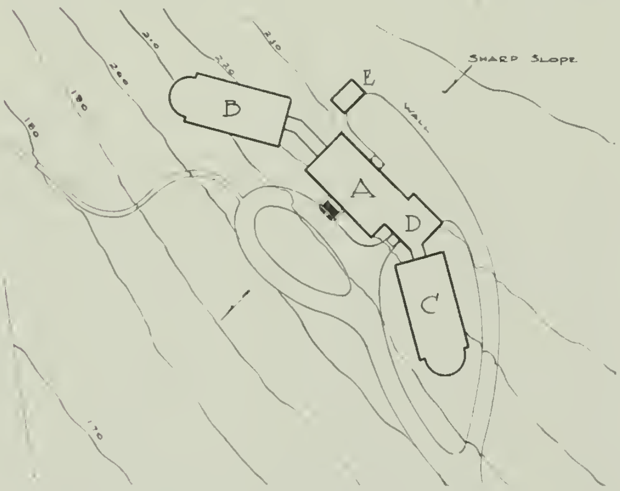
bed hospital within fifteen or twenty years. In such cases the only safe economical proposition is to lay out as complete and highly specialized a scheme as is possible, and to build and develop along the lines of this scheme as the funds come to hand and the needs manifest them-

His most interesting essay was fully illustrated by plans and photographs of one of the most novel hospitals of the day, designed by him and completed and opened to the public last summer.

An extended description of this interesting and



FAULKNER HOSPITAL, WEST ROXBURY, MASS.
Kendall, Taylor & Stevens, Architects.



PLAN, FAULKNER HOSPITAL.

selves. Much trouble has ensued and much money has been wasted by not following this, the only rational or businesslike course.

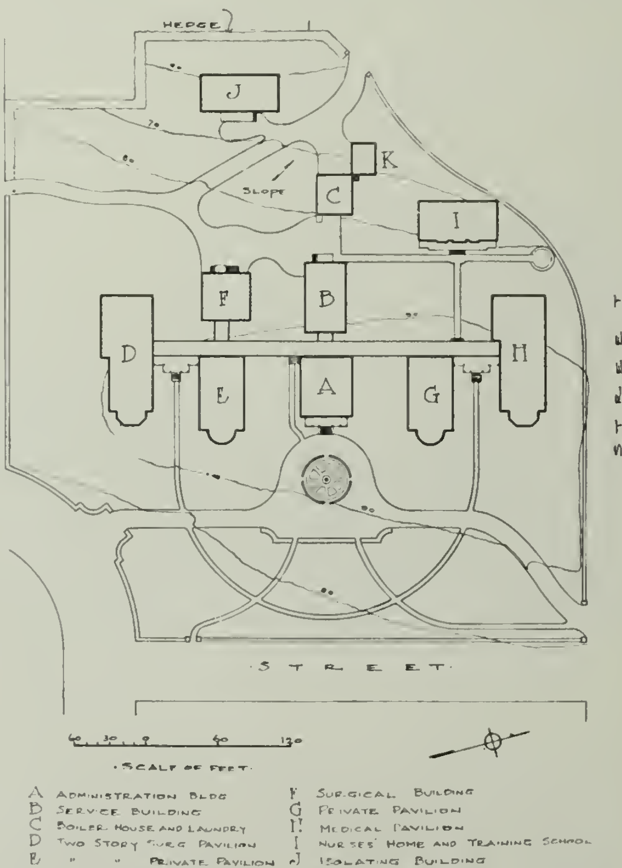
The various plans and perspectives used to illustrate this article have been designed and built, in whole or in part, during the past three or four years; and although no one plan can be considered as attaining in all respects the ideal, yet most of them show a decided advance in many respects, especially in the direction of classification and specialization.

It is possible that the foregoing reasoning is fallacious, that we are wrong in our deductions, and that, on the whole, a block plan hospital can be so arranged as to be, in many regards, decidedly preferable. There is another side that can be argued, and this has been done in a very thorough and effective manner by Mr. Henman, at a recent meeting of the Royal Institute of British Architects.

Mr. Henman is the architect of the General Hospital at Birmingham and, therefore, well and favorably known as a hospital architect.

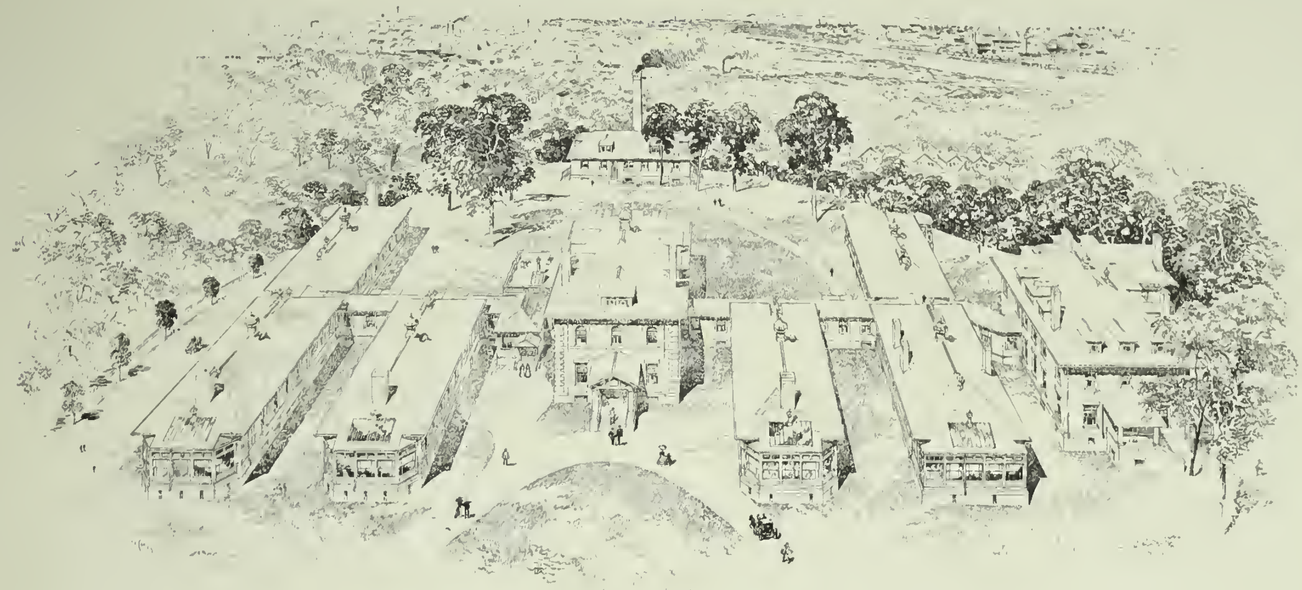
almost, as I may say, revolutionary experiment would be entirely out of place in the present series, as it has to do with a metropolitan hospital of three hundred beds. I desire, however, to take note of some of the points advanced by Mr. Henman and to raise the question as to their application in smaller hospitals.

This is the age of machinery and of power, and



PLAN, THE SAMUEL MERRITT HOSPITAL, OAKLAND, CAL.
Kendall, Taylor & Stevens, Architects.

In a small hospital there is no possible excuse for not securing a large lot of land, the more the better, for the distances are so short that land can be purchased just outside the general building limits that, as the place grows, will gradually become more accessible relatively, and thus more valuable. For a hospital of fifty to one introduction of judicious planting and little formal gardens with walks and seats for convalescents. As long as it is impossible to introduce decorative details and accessories in the patients' rooms, every possible use should be made of the opportunity to make the immediate surroundings as beautiful as possible.



HOSPITAL AT YOUNGSTOWN, OHIO. Dwight & Chandler, Architects.

hundred beds there should be from five to ten acres of land. The smaller the community the cheaper the land, therefore the nearer possible to obtain a maximum of nature per bed.

The ideal location is a hill lot, making it possible to build above the general lay of the town, giving greater isolation, better views and air and better drainage. In most towns and small cities there is just such a lot. The grades should not be too steep and the general slopes to

HOSPITAL, WINDSOR, N. S.
Kendall, Taylor & Stevens, Architects.

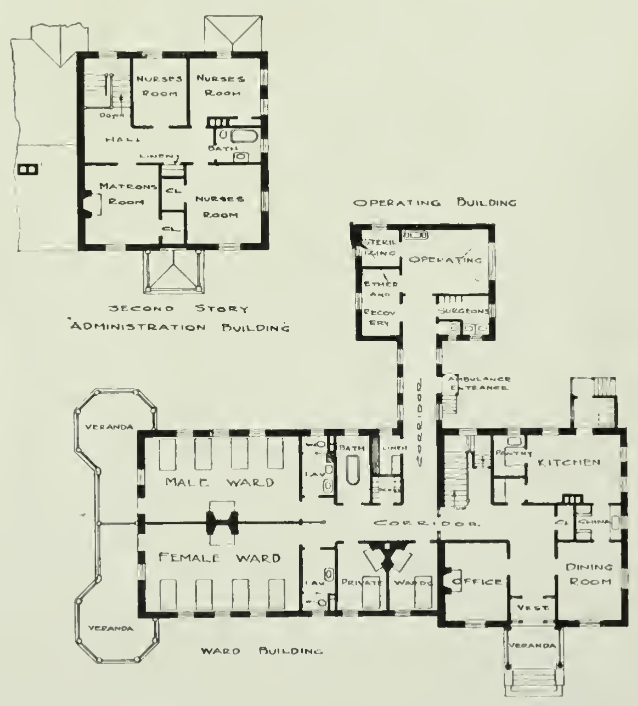
the south, but it is very nice to have a good drop to the rear, so as to get the boiler house well out of ground and the boiler below the returns.

Grounds and Accessories.

One feature of hospital planning that has thus far received too little attention is that of grounds and accessories. There are very few hospitals that have made use of evident possibilities in landscape architecture.

If the grounds are restricted or the outlook undesirable in any direction (although these two faults should not exist), everything possible should be done by the

There should be an inclined plane from every solarium or airing portico to enable convalescents to walk or be wheeled down to the garden paths or out over the lawns.



PLANS, HOSPITAL, WINDSOR, N. S.

It makes little difference how the proposed hospital lot lies with reference to the street or streets, the general axis of the group of buildings should be east and west, and the entrance and service drives can be handled in a formal or informal manner as the contour of the site may permit.

Brick Architecture in and about Chicago. III.

BY ROBERT C. SPENCER, JR.

WHILE this series of articles has thus far dealt chiefly with comparatively recent work, favoring the examples least hackneyed through publication, it would be incomplete without the remarkable group of three houses on the Lake Shore Drive, designed by Francis M. Whitehouse. These are the McClurg, Armour and Selfridge houses. Although built in 1890 92, shortly before the withdrawal of Mr. Whitehouse from his practice, these houses are among the best in Chicago and will be among the best many years hence, because of the originality and simple dignity of their composition; this without disparaging the detail, which is refined, delicate and well placed. The most northerly of these houses was built for the late Gen. A. C. McClurg, and is of a light pinkish red Roman brick and buff Bedford stone.

The Armour house is built of a rich ruddy tan speckled Roman brick, — the first fire-clay brick used in Chicago. These bricks were made especially for Mr. Whitehouse by the Illinois Fireproofing Company. Similar bricks were used later by the same architect in the Loomis and McBirney houses. With its red sandstone basement and trimmings and roof of red shingle tile, its sharp, clean gable and its symmetrically disposed bays covered with "Boston ivy," it forms an effective center for the group.

The Selfridge house to the left, of dull cream-colored Roman brick above with buff limestone base, is equally interesting and successful in composition along very different lines. The denticulated borders and bands in molded brick are effective.

The reticence of the entrances to these houses, particularly in view of the period in which they were built, is as noteworthy as it is commendable.

Over on Astor Street, looking upon a charming walled garden, is the Bowen house, another of Mr. Whitehouse's designs which makes a picture when glimpsed through summer foliage from the garden side. The garden wall, with its undulating profile, is an interesting if rather too unquiet a foil to the formality of the house.

The houses 576 and 610 North State Street and Mrs. Emmons Blaine's house at Rush and Ontario streets illustrate the quality of the brick domestic work done in the Chicago office of Shepley, Rutan & Coolidge. The first mentioned is built of a pinkish tan Roman brick with terra-cotta cornice, red sandstone basement and doorway; the latter showing a rather original scheme of treatment in the feeling of some of the north Italian early Renaissance work, which would have, perhaps, been more pleasing if dropped a foot or two nearer the street level. The cornice is bold and good in scale. No. 610, farther north, is of a light tan Roman brick, combined with buff Bedford stone and buff terra-cotta, with a Renaissance cornice with a wide "swag" frieze and a porch on columns with very pleasing caps.

The Blaine house is somewhat after the older Richardsonian manner, with its rather refined and delicate Roman-

MRS. EMMONS BLAINE'S HOUSE, GARDEN FRONT.
Shepley, Rutan & Coolidge, Architects.

MRS. EMMONS BLAINE'S HOUSE.
Shepley, Rutan & Coolidge, Architects.

HOUSE, WOODLAWN AVENUE.
Patton & Fisher, Architects.

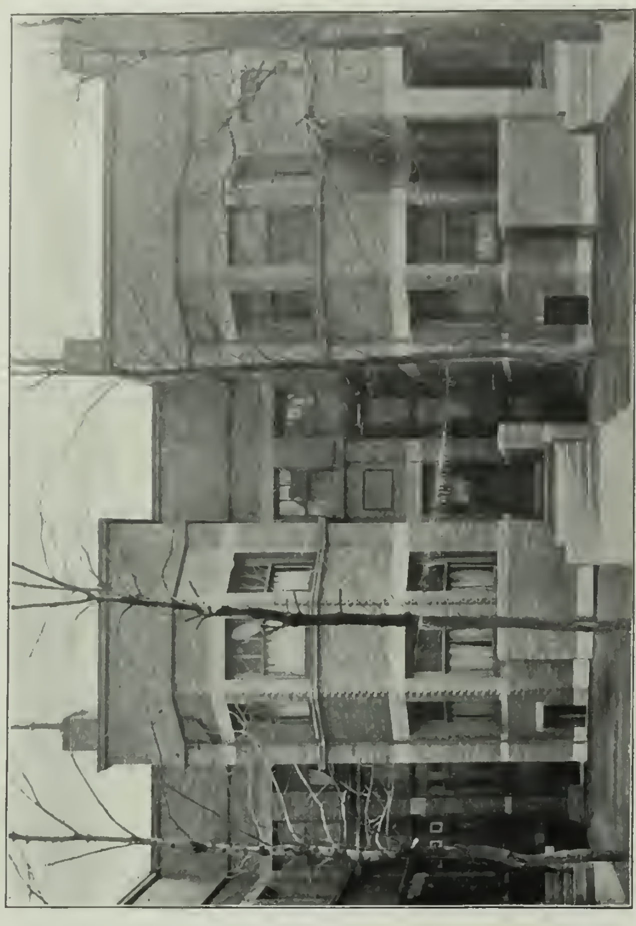
CHURCH AT RAVENSWOOD.
Henry K. Holsman, Architect.

CHURCH, FIFTY-SEVENTH STREET AND LEXINGTON AVENUE.
L. E. Stanhope, Architect.

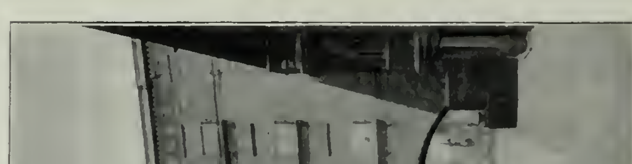
CHURCH AND PARSONAGE, WOODLAWN AVENUE AND SIXTY-SECOND STREET.
Waid & Cranford, Architects.

QUADRANGLE CLUB, D. H. BURNHAM, ARCHITECT.
Enlarged and rebuilt by Howard Shaw, Architect.

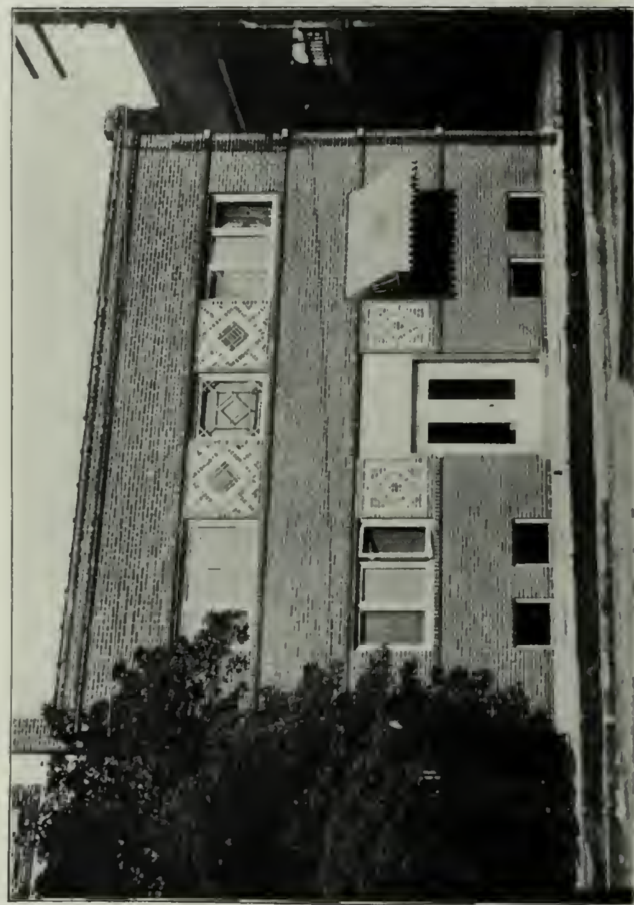
HOUSES, 5719–5721 WASHINGTON AVENUE.
R. C. Spencer, Jr., Architect.



HOUSES, 5719–5723 WASHINGTON AVENUE.
R. C. Spencer, Jr., Architect.



COURT, BOULEVARD TERRACES.
Henry K. Holsman, Architect.



FLAT BUILDING, 6109 NORMAL AVENUE.
R. C. Spencer, Jr., Architect.

Mr. Henman characterizes a hospital as a "health factory," and he has developed and built this hospital along the lines of a one-story mill or factory. The general hospital portion is about 116 feet wide and 245 feet long and one story high. The administration, nurses' building and other wings are two to four stories high, and the boiler house, laundry, pathological department, porter's lodge and two small isolation pavilions are isolated structures. The wards are about 25 by 60 feet, accommodating fourteen beds. These open wards are side by side, with partition walls between, and a window ten feet wide opening south on a balcony between the two toilet towers, in the usual English manner. This window gives the only view of mother earth and the only chance for direct airing, but the rooms are evidently perfectly lighted by plate glass skylights running the entire length on each side of a vaulted ceiling.

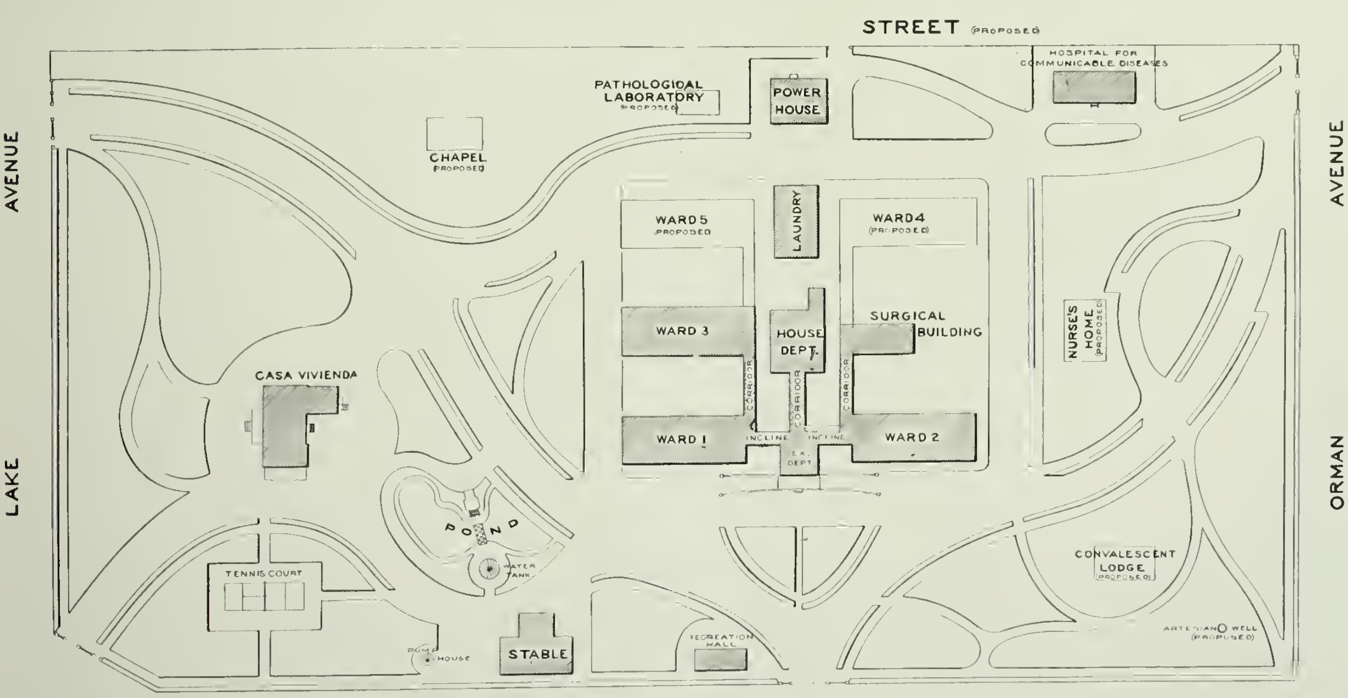
MINNEQUA HOSPITAL, PUEBLO, COL.

The various accessory rooms and conveniences, which are less than would be considered essential in America, are grouped together back of the open wards, all of them — isolating rooms, doctors' rooms, operating rooms, clinical or lecture rooms, baths, etc. — being inside rooms with top light only.

Outside windows, cut-off or isolating corridors and doors, except where it is best to cut off view or maintain a different temperature, are deprecated on the ground that they interfere with the proper circulation of air and thorough ventilation.

The entire scheme is based upon what the architect terms "plenum ventilation," claimed to have been designed by an engineer in Edinboro, some twelve years ago, and it is quite evident that if it is desirable to maintain an absolutely perfect engineering plant, winter and summer, feeding each patient just so many cubic feet of air per hour of this or that combination and degree of heat or cold, this "health factory" is most perfectly designed.

The space occupied by the hospital is practically the same as though these wards were placed in three-story pavilions with the alternating areas fifty feet wide, open to the south in the conventional manner.



PLAN, MINNEQUA HOSPITAL.

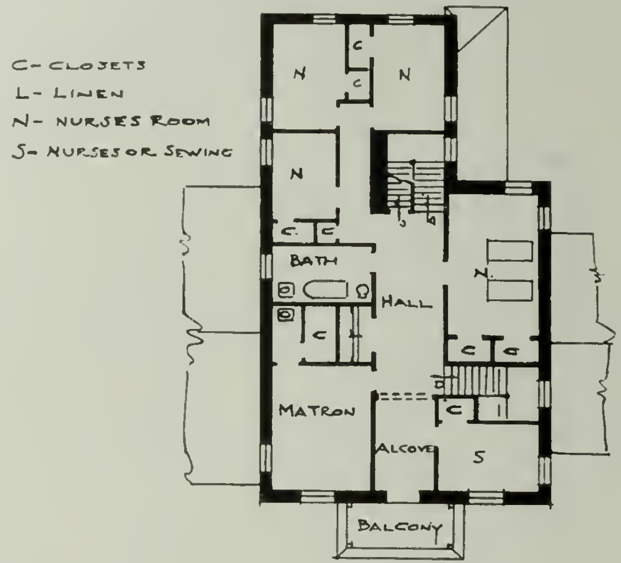
The argument is that such a hospital is cheaper to build and more economically administered.

There is about three times the amount of basement area, although not quite three times the cost. There is three times the roofing area, and this of great expense for steel in the vaulting and for skylights, but a considerable saving is made in exterior walls.

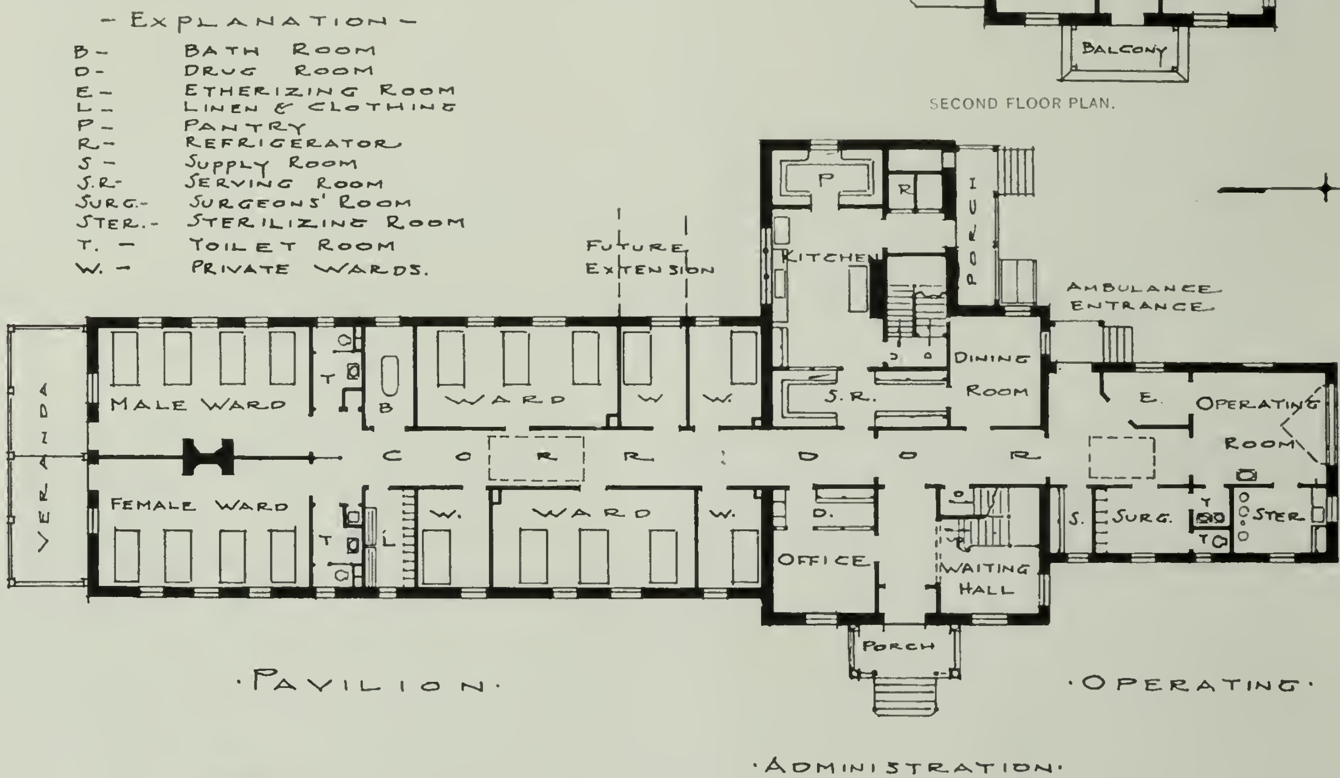
As the hospital covers the same ground, the distance a physician or officer has to travel from the entrance to any given bed is practically the same as in the general pavilion hospital, but he is saved the time of going up one or two stories on an elevator. There is some economy in heating, but the radiation from the enormous skylight area must be nearly equal to that from vaulted walls and double glazed windows.

Here, then, are the two extremes, congregation highly developed, and segregation.

As the author interprets the signs of the times, the latter is the most promising and is gradually obtaining. The so-called sanatorium treatment for tuberculosis has demonstrated the possibilities of the open air, sun and diet "medicine," and it seems to be gradually dawning on the medical fraternity that these methods, that were thought so extravagant and extreme when they were demonstrated by the cranky German enthusiasts fifteen or twenty years ago, are, to a greater or lesser degree, applicable to disease all along the line.



SECOND FLOOR PLAN.



FIRST FLOOR PLAN, HOSPITAL AT EXETER, N. H. Kendall, Taylor & Stevens, Architects.

A hospital has a broader and more complicated work to perform than has a sanatorium, yet a hospital must be also essentially a sanatorium, a place where normal, natural conditions of health can be attained by most careful and scientific eradication of all causes leading to a defection from the normal, as well as the supplying of all natural conditions the absence of which allowed the abnormal conditions to obtain. Health is an inherent condition of nature and cannot be manufactured by man, therefore the name and the idea of "health factory" are repellent.

The time to retain the services of an architect is before the lot is selected. If he has had the proper training and experience to fit him to properly design and construct the various buildings for the institution, that same education and experience will enable him to render invaluable expert service in the selection of the lot. In the experience of the author many mistakes have been made by the best intentioned trustees in this most important matter. In many cases it was quite easy to demonstrate the folly of building on the lot selected, and a new lot with the greatest number of desirable points was finally found and purchased, but in some cases this is impossible, and it is much wiser and more economical to start right.

A study of existing hospitals in this country and Europe seems to demonstrate the fact that in nine cases out of ten the lot of land originally purchased is too small; this is especially true of British and European hospitals, where in numberless instances the buildings cover a very large per cent of the land.

This may be necessary to a degree in the largest cities, but even then it is possible, by taking a broad view and discounting the future, to so locate the institution that there will be room for growth.

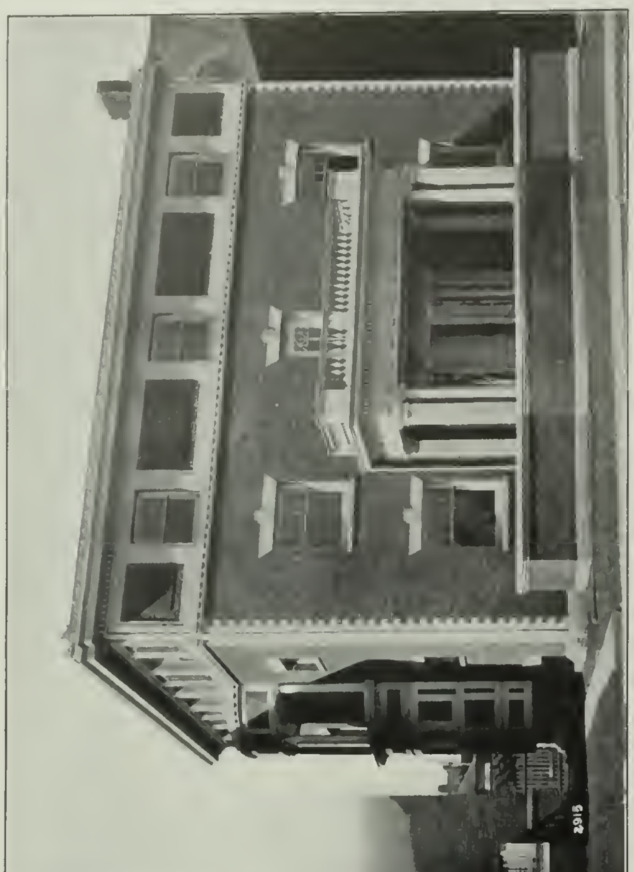
ARMOUR HOUSE, LAKE SHORE DRIVE.
F. M. Whitehouse, Architect.

BOWEN HOUSE, ASTOR STREET.
F. M. Whitehouse, Architect.

APARTMENT HOUSE, FORTY-FIRST STREET.
Henry K. Holsman, Architect.

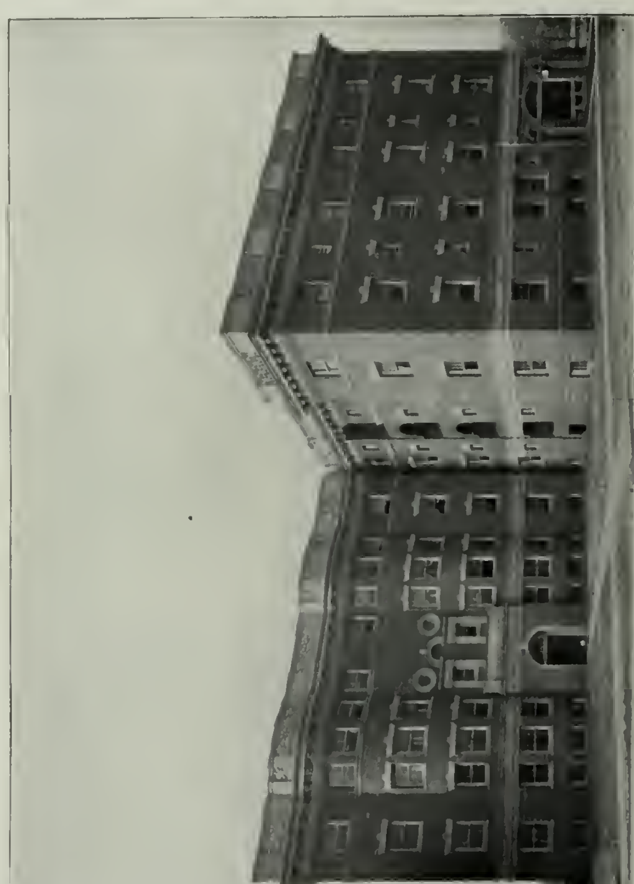
SELFRIDGE HOUSE, LAKE SHORE DRIVE.
F. M. Whitehouse, Architect.

HOUSE, HINSDALE, ILL.
J. C. Llewellyn, Architect.



HOUSE, 5124 CORNELL AVENUE.
Henry K. Holsman, Architect.

BRAINERD APARTMENT, FORTY-FIRST STREET AND PRAIRIE AVENUE.
Henry K. Holsman, Architect.



AMARILLA APARTMENTS, GARFIELD BOULEVARD.
Henry K. Holsman, Architect.

esque detail. A picturesque roof of red shingle tile with rolled hips covers the walls of "Norman" shaped New England red bricks. The dormer treatment of the bays on the garden front, particularly as to the roofing, is ingenious, and the general effect of the building, with its great chimney on the west end, is decidedly domestic and quite refreshing after one has been passing block after block of formal façades.

At Astor Street and Burton Place is the most noteworthy of several houses done in this city by McKim, Mead & White. Of deep brown tan mottled Roman bricks, brownstone and terra-cotta, it compares favorably with the best Eastern work inspired by the palaces of Italy, and embodying some of the traditional severity of Colonial brickwork. Now owned and occupied by Mr. John H. Wrenn, this house is best known as the "Patterson house."

McCLURG HOUSE, LAKE SHORE DRIVE.
F. M. Whitehouse, Architect.

On the south side, near the Chicago Beach Hotel, are several good houses, designed by Henry K. Holsman. One of these, No. 5124 Parnell Avenue, is of dull red brick in dark gray mortar with white brick piers in trimmings. The denticulated bonding of the bricks at the corner of the building and the clever disposition of the down spout at that point are to be commended; also the detail of the stringcourse below the attic sills.

The "Amarilla" apartments at Garfield Boulevard and Indiana Avenue and the apartment building at Forty-first Street and Prairie Avenue are typical of the better class of simply treated conventional Chicago apartments. The former being, however, unusual in the liberality of its plan, while the latter is rendered attractive by a pattern of delicately contrasting bricks on the parapet wall, one element being rock-faced.

An example of the bold use of light and dark bricks as pattern and trimming is the apartment building by the same architect just around the corner at 547 Forty-first Street.

Mr. Holsman's church at Ravenswood is an interesting

HOUSE, 576 NORTH STATE STREET
Shepley, Rutan & Coolidge, Architects.

HOUSE, 610 NORTH STATE STREET.
Shepley, Rutan & Coolidge, Architects.

DETAIL, HOUSE, ASTOR STREET AND BURTON PLACE.
McKim, Mead & White, Architects.

piece of well-composed straightforward brickwork in a city where good churches are few. The interior as well as the exterior is largely of brick, another unusual thing in Chicago, although it is not easy to understand why.

Another good one is the red brick church and parsonage at the corner of Woodlawn Avenue and Sixty-second Street, of which Waid & Cranford were the architects. The little church at Fifty-seventh Street and Lexington Avenue, designed by L. E. Stanhope, is very pleasing in mass. The even-colored red pressed brick in white mortar is not particularly interesting, however, although the white woodwork gives it some "go."

In Patton & Fisher's Woodlawn Avenue house, near the University, we have a very nice bit of Italian Renaissance built of Roman bricks of a soft tan color, very prettily rusticated in the lower stories and refined as to detail. Several years ago the Quadrangle Clubhouse at the University, designed in Mr. Burnham's office, was burned. The view of the south side facing the tennis courts shows the present structure rebuilt on the original lines with an addition by Howard Shaw.

The Washington houses and the little flat building at 6109, 6111 Normal Avenue, designed by the writer, are unpretentious brick buildings in which quiet effects have been sought at a minimum of expense.

The former are built of kiln-run medium "Fallston" impervious bricks of a soft pinkish tan color, with a delicate running diaper pattern in lighter and darker bricks of harmonious shades in the parapet wall.

The latter is of kiln-run Danville red brick in light gray mortar with panel patterns in red, light gray and nearly black bricks. All sill courses are of bricks on edge in cement, and the cornice is brick with vitrified tile coping. The alley side of the building, contrary to the usual Chicago practice, is built and finished as well as the front, the same brick being used. It may be of interest to mention the fact that this is probably the only building of its class in the city having casement windows, although their superiority for hot weather ventilation is unquestionable.

NEW BOOKS.

FREE-HAND LETTERING. — A Treatise on Plain Lettering from the Practical Standpoint for Use in Engineering Schools and Colleges. By Victor T. Wilson, M. E., Author of Free-Hand Perspective. 13 full-page plates. Cloth, $1.00. New York: John Wiley & Sons.

The student who takes up the study of lettering, as outlined in these pages, will not find it to consist of a set of copies which, if reproduced carefully, will give proficiency in the subject; copy work seldom yields more than a meaningless result, it does not lead to independent and creative work. Erroneous conceptions have grown out of the idea that letters are standard, that they are rigidly fixed in their forms; the truth is there are no really fixed forms. Variety will be found to some degree in all lettering; each line of it the draughtsman makes is creative work.

HOUSE, ASTOR STREET AND BURTON PLACE.
McKim, Mead & White, Architects.

Fireproofing.

RESULTS OF THE FIRE AT ROCHESTER, N. Y.

THE fire which occurred in Rochester, N. Y., on the 26th of February has been described so fully in the public press that THE BRICKBUILDER will present only some of the more salient technical facts in regard to the effects produced upon the fireproofing materials. The only building in this fire of technically first-class construction is known as the Granite Building. It is a twelve-story structure and was designed by Mr. J. Foster Warner. It is located at the northeast corner of St. Paul and Main streets. The two street fronts are of brick and terra-cotta, and were very little damaged. The fire started in adjoining premises, communicating to this building by openings in the basement and first story, and also by a bridge connecting it with the building on the north. The firemen were able to throw water up as high as the seventh story, but from the eighth to the twelfth story apparently no water reached the building, and in this portion of the structure all the contents were entirely consumed, and even the plastering is burnt off the walls and ceilings. The building is of semi-skeleton construction, the outside walls being independent of the framing. Cast-iron columns were used and are covered with segmental two-inch thick porous terra-cotta blocks. The floors throughout are twelve-inch end construction porous terra-cotta flat arches, the bottoms being kept one inch below the beams and the skewbacks beveled to carry a beveled flange slab one inch thick. The girders are encased below the twelve-inch arches with one-inch porous tile. All partitions are of porous terra-cotta blocks, and all of the brickwork and the fireproofing was laid up in cement mortar.

THE GRANITE BUILDING, ROCHESTER, N. Y.
(From photograph taken after the fire.)
J. Foster Warner, Architect.

The structure of the building seems to be intact so far as the steel floor beams and columns are concerned. The exterior walls on the two street fronts appear to be perfectly sound, except that in the upper story the wall has gone out about one-half an inch at the line of the partitions and interior columns. The fire was hottest in the twelfth story. Here some of the ceiling arches are cracked or broken away on the lower flanges, but the strength of the construction is not impaired. The partitions in the top story will all have to come down, though only a small proportion of the individual blocks themselves are injured. The girder casings, which are one inch thick, were almost entirely destroyed, but endured long enough to amply protect the steel frame. In the eleventh story about fifty per cent of the arch plates are broken, but most of the partitions are standing in good order. The eighth, ninth and tenth stories show the fireproofing intact, except in a few places where the fire was unusually hot. Below the eighth story very little of the fireproofing is damaged at all, and below the fourth story a considerable portion of the finish was not touched. In the first story the stock was entirely destroyed, but the building is not damaged.

REAR OF THE GRANITE BUILDING.
Showing the manner in which the structure withstood the attack of a fierce fire.

Running along the north side of the Granite Building is a thirty-foot alley. Across the alley was the seventy-foot front seven-story wholesale department of Sibley, Lindsay & Curr. This building was connected by bridges to the Granite Building. The floors were of six-inch segmental arch, with no protection on the beams. The columns were round cast iron, without any protection. These columns failed, and the entire interior collapsed, except one bay in front. In the rear of this building was a storehouse and stable of the same construction for five stories with two stories recently added of Roebling flat arch wide span construction about eleven feet between girders. Some of the columns failed and the whole building collapsed, except one span on the front, which now shows five tiers of six-inch segmental arches and two floors and roof intact.

Mayor James B. Cutler, who is one of the leading architects of Rochester, is quoted as saying that the damage to the Granite Building can be repaired at an expense not exceeding twenty-five per cent of its original cost. Had there been no openings between the Granite Building and the adjoining structure, the flames would probably never have reached the former. From its construction, being practically undivided, the Granite Building was a huge chimney that drew to it flames from the adjoining buildings. The walls of the structure are perfectly safe, and will probably need no repairs.

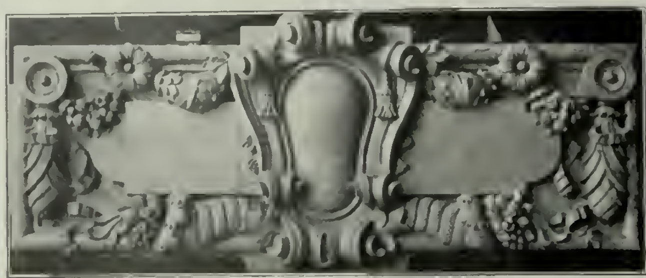
It undoubtedly saved the city from a very general conflagration, though in this respect it was helped by the climatic conditions, as most of the roofs of adjoining buildings were covered with snow, and there was no high wind at the time. It is interesting as a remarkable illustration of the non-conducting qualities of hollow terra-cotta arches that the bank of snow on the roof of the Granite Building remained in place to a considerable extent after the fire had entirely burned out the interior.

Terra-cotta has again demonstrated its fire-resisting qualities, and has shown that it is perfectly able, even under very adverse conditions, to fully protect the steel frame and be thereby the means of very materially reducing the fire loss. If there are defects in the material itself, they surely have not shown themselves in any of the recent fires, and the defects in manner of application or in constructive detail are sufficiently obvious in each conflagration to serve as helps towards the developing of more perfect methods. This fire has also emphasized the weakness of the ordinarily constructed terra-cotta partition. It has, at the same time, shown that even without the concealed steel framework in the partition blocks, which in our judgment is essential to stability against the attack of fire, a block partition, when laid up with cement mortar, will stand an extraordinary amount of fire. When the columns and beams collapsed in the Sibley Building they struck against a four-inch partition, separating it from another structure, tearing holes therein and seriously threatening the stability of the structure; but notwithstanding the intense fire on one side, this four-inch partition of terra-cotta proved to be an almost effectual stop against the spread of the flames, and from behind it the firemen were able to completely check the progress of the conflagration.

Selected Miscellany and Editorial Comment

CAST-IRON COLUMNS IN BUILDINGS.

CAST-IRON columns were used in buildings before steel beams were even thought of. Experience has shown that a cast-iron column is less liable to rust than steel, and at times such columns can be more readily obtained in the open market. Furthermore, cast-iron



DETAIL BY ISRAELS & HARDER, ARCHITECTS.
New Jersey Terra-Cotta Co., Makers.

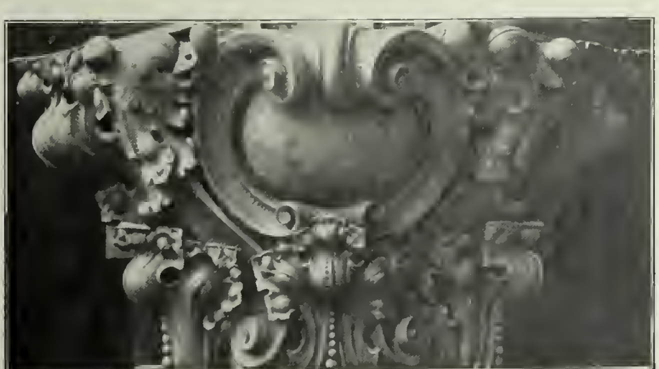
columns can be erected without requiring special riveting or steel connections. The steel column of built-up sections is an advent of the last twenty years or more, and is far superior to the cast iron in a structural sense, being of more reliable composition, admitting of greater

HOUSE, WASHINGTON, D. C.
Marsh & Peters, Architects.
Light gray brick furnished by Kreischer Brick Manufacturing Co.

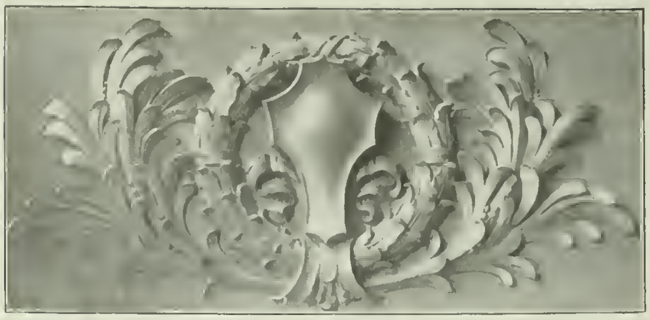
variety of shapes, fitting more closely into the construction itself and proving more adaptable to all conditions of loading and bracing, so that there is no excuse for any

DETAIL BY H. LUCAS, ARCHITECT.
New York Architectural Terra-Cotta Co., Makers.

continued use of cast iron, notwithstanding the few excellent qualities enumerated as being possessed by the cast material. The use of cast iron ought to be prohibited by law in any structure where there is the slightest possibility of tortional or bending strain coming upon a column or where the integrity of the frame as a whole is relied upon for the stability of the building. The failure of the Hotel Darlington in New York was due to such manifest natural causes that they hardly admit of discussion. For purposes of economy and rapidity of erection the skeleton frame of this building was constructed with cast columns, which were poorly connected at the joints, and run up in great haste. The fireproofing was cheapened to the last degree, and a great load of material was piled on the framework in the upper story. The frame, in the absence of the brick filling, had no more rigidity than one would naturally expect who was at all familiar with cast column construction; and the overloading in the upper story, which would not have been serious had the frame been well knit together, was sufficient to start a portion of the structure, and the whole inevitably and naturally fell in a tangled heap to the cellar. The lesson is a severe one, but it is to be hoped that the



DETAIL BY CYRUS L. W. EIDLITZ, ARCHITECT.
Perth Amboy Terra-Cotta Co., Makers.



DETAIL BY EAMES & YOUNG, ARCHITECTS.
Winkle Terra-Cotta Co., Makers.

Hotel Darlington is the last example we shall see of an attempt to use cast-iron columns in place of steel for a skeleton frame. They are really about as archaic as would be a Hodgkinson cast girder if used to-day in a steel frame building.

TESTS OF BUILDING MATERIAL.

EVERY new device which is put upon the market, if it is intended to supply a want in the building industries, is usually subjected to tests designed to show what the material or construction will stand. Without taking into account the tests which are made by interested parties, the usual tests which are made by architects and builders are intended to be perfectly fair and to develop the ultimate possibilities of the material or construction under consideration. As a matter of fact, however, few such tests of building materials are conclusive. Actual conditions such as exist in a finished building can rarely be reproduced on a scale that will admit of a ready test in a factory or a yard. This is especially true of fireproofing materials. A conflagration such as that which took place at Baltimore shows most conclusively that laboratory tests are not altogether to be depended upon. A great fire has a way of searching out weak joints, of uncovering the defence-

DETAIL BY HILL & KENDALL, ARCHITECTS.
Excelsior Terra-Cotta Co., Makers.

DETAIL BY FRED WESLEY WENTWORTH, ARCHITECT.
Brick Terra-Cotta & Tile Co., Makers.

less positions and of showing in unexpected ways how a material which might have stood the most rigid tests to the satisfaction of architects, builders and inspectors

HOUSE, CHICAGO, ILL.
Nimmons & Fellows, Architects.
Brick furnished by Ohio Mining and Manufacturing Co.

would at the crucial moment be found wanting. As a matter of fact we can only infer what might be the exact conditions in a great fire; and after all, when our manufacturers talk of temperatures running over two thousand degrees, there is a great deal of conjecture mixed with their statements. It would not follow from this that tests of building materials are of no value. On the contrary,

STABLE FOR ELBRIDGE T. GERRY, ESQ., NEW YORK CITY.
McKim, Mead & White, Architects.
Lined with Tiffany Dark Granite English size Enamel Brick.

they have a great deal of value, and they cannot be too strongly insisted upon; but they do not always reproduce conditions which may afterwards obtain in actual practice with the material or construction under observation. It has become almost a trite saying that no fireproofing material will stand fire unless it is itself a product of fire. In the light of recent fire experiences we should say that the only fair way to test any building material for its fire-resisting qualities is to actually test it to destruction, just as we do with beams and columns, and if it is to be a fire test raise the temperature until the material melts to pieces if necessary; if a load test, not be satisfied with mere cracks and deflections, but finally break down the construction.

THE ARCHITECTURAL LEAGUE.

THIS year's exhibition of the Architectural League of New York was marked by a care in the selection which resulted in reducing the number of accepted compositions to an unusually small number, but which at the same time produced a very choice and interesting collection. The Vanderbilt Gallery was moderately well filled with architectural drawings. The exceedingly clever studies for the new City Hall build-

DORMITORIES, YALE UNIVERSITY.
Cady, Berg & See, Architects.
Ludowici Tile and Folsom Snow Guards used on roofs.

ings in New York were among some of the most interesting contributions, the designs themselves being admirably presented; and if such an aggregation of buildings must be, Mr. Hornbostel has certainly handled his problem very effectively. There are also some charming interior studies for the Government building at Cleveland by Mr. Brunner, rendered in a most striking manner in pencil, about as good architectural drawings as we

STAIRCASE, GUASTAVINO CONSTRUCTION, FIRST CHURCH OF CHRIST, SCIENTIST, NEW YORK CITY.
Carrère & Hastings, Architects.

remember ever to have seen. In one corner of the room was hung the original drawing for the front of the Ponce de Leon Hotel, at St. Augustine, made by Mr. Masqueray for Carrère & Hastings way back in the eighties, a drawing which deserves to be preserved as in one way illustrating what proved to be the beginning of our modern artistic development of architectural terra-cotta.

The bulk of the space in the League rooms was occupied with the exhibition of industrial and decorative art. A notable feature was the display of the enameled terra-cottas, tile and faience work for the New York Subway Station, by the Grueby Faience Company, the Rookwood Pottery Company, and the American Encaustic Tiling Company. None of these stations are as yet open to the public, but to judge from the examples at the League

STTE MUTUAL BUILDING, CONGRESS STREET, BOSTON.
Andrews, Jaques & Rantoul, Architects.
Built of brick made by Sayre & Fisher Co.

some very excellent work has been done by the architects in charge, and we may look for an illustration in New York of what we might have had in Boston had our Subway Commission been willing to consider art as well as utility.

OF INTEREST.

Joseph Evans Sperry (of Baltimore) and York & Sawyer (of New York) announce that they have formed a copartnership for the practice of architecture in Baltimore.

John Galen Howard and D. Everett Waid, architects, have dissolved partnership. Mr. Howard is professor of

UPPER STORIES OF DORRANCE BUILDING, HOUSTON, TEXAS.
Green & Svarz, Architects.
Gray brick furnished by Hydraulic Press Brick Co., St. Louis.

architecture in the University of California, and will make Berkeley, Cal., his home. Mr. Waid will continue the New York practice and retain the offices at 156 Fifth Avenue.

Edward T. Wilder and Thomas Wight announce that they have formed a partnership for the practice of architecture under the firm name of Wilder & Wight. Offices, 316 Dwight Building, Kansas City, Mo.

HERMAN BUILDING, MILWAUKEE, WIS.
Jenney & Mundie, Architects.
Terra-Cotta furnished by Northwestern Terra-Cotta Co.

Linn Kinne and Harold B. Brady have formed a partnership for the practice of architecture, under the firm name of Kinne & Brady. Offices, Grange Building, Herkimer, N. Y.

Messrs. Delano & Aldrich, architects, 9 East Forty-first Street, New York, would be glad to receive manufacturers' samples.

Temple, Burrows & McLane, architects, McManus Building, Davenport, Ia., desire manufacturers' catalogues and samples.

Myron Hunt, architect, announces the removal of his offices from 123 La Salle Street, Chicago, to 126 West Third Street, Los Angeles, Cal.

DETAIL BY PEABODY & STEARNS, ARCHITECTS.
Atlantic Terra-Cotta Co., Makers.

Louis C. Spiering, having completed his work with the Louisiana Purchase Exposition, has opened an office for the practice of architecture in the Chemical Building, St. Louis.

Henry A. Koelble, architect, has taken a new suite of offices at 103 East 125th Street, New York City.

R. L. Lessel, architect has opened an office in the Roy Building, Halifax, N. S., and desires manufacturers' catalogues and samples.

The San Francisco Architectural Club desires to receive, for purposes of reference, manufacturers' catalogues and samples.

The members of the Chicago Architectural Club dedicated their new clubrooms in the Dexter Building, 84 Adams Street, on the afternoon of March 12.

The Boston Architectural Club will hold an exhibition at the gallery of the Boston Art Club, Dartmouth Street, Boston, from May 2 to May 14, 1904, inclusive. Special Exhibition Committee: Edward Percy Dana, chairman; Hubert G. Ripley, Louis C. Newhall. Jury and Hanging Committee: Robert S. Peabody, R. D. Andrews, A. W. Longfellow, H. B. Pennell, Timothy F. Walsh, H. C. Dunham, George H. Hallowell, Boston; Julius F. Harder, New York; Edgar V. Seeler, Philadelphia.

The annual dinner of the Atelier Donn Barber, in honor of the patron, was given at the Café Liberty, New York City, on February 19. During the evening Mr. Barber spoke very encouragingly of the work done in the New York Ateliers, under the guidance of the Society of Beaux-Art Architects. Among the guests were Mr. A. J. Sauer, treasurer of the Philadelphia T Square Club, and Mr. Birch Burdette Long, holder of the Chicago Architectural Club's Scholarship, who spoke upon similar work in their respective cities.

The Fourth Exhibition of the Brooklyn Chapter of the American Institute of Architects will be held at the Pouch Gallery, 345 Clinton Avenue, Brooklyn, from Tuesday, May 3, to Saturday, May 21 inclusive.

DETAIL BY G. W. & W. D. HEWITT, ARCHITECTS.
Conkling-Armstrong Terra-Cotta Co., Makers.

The Fourth Annual Exhibition of the Washington Architectural Club will be held in the Corcoran Gallery of Art, beginning March 28.

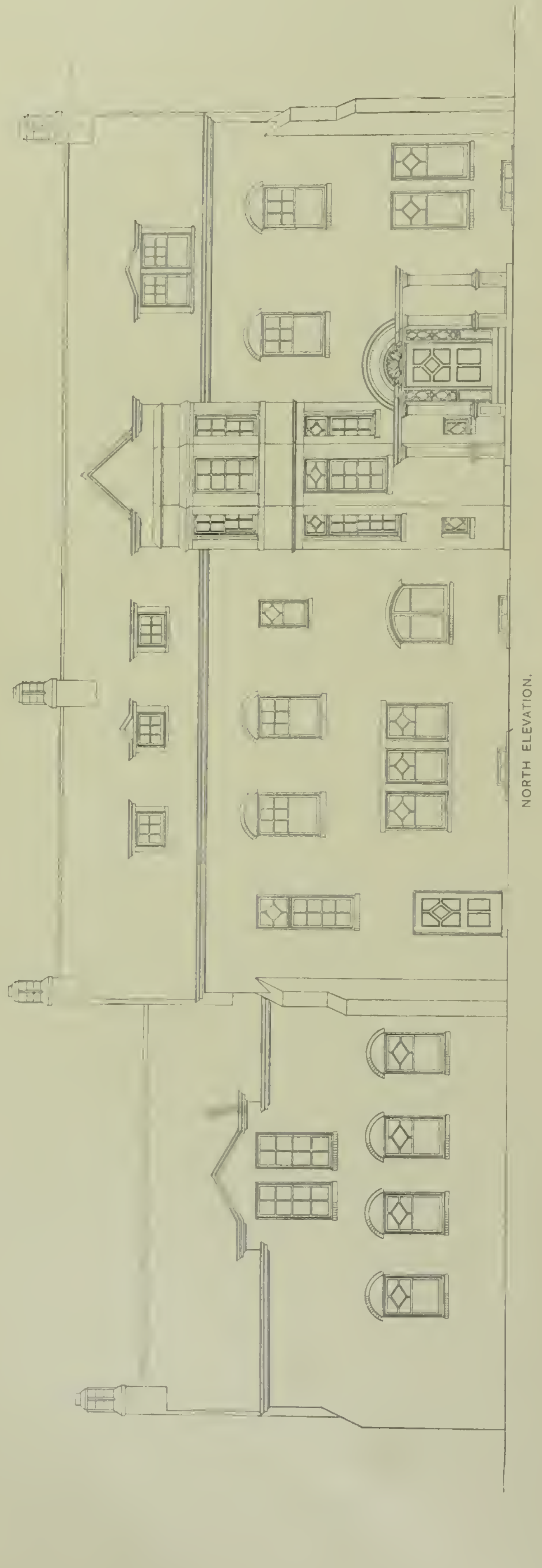
The next Competition for the Rotch Traveling Scholarship will be held in Boston, April 18, 19 and 23. Detailed information concerning the scholarship may be obtained by applying to Clarence H. Blackall, Secretary of the Committee, 1 Somerset Street, Boston.

WANTS.

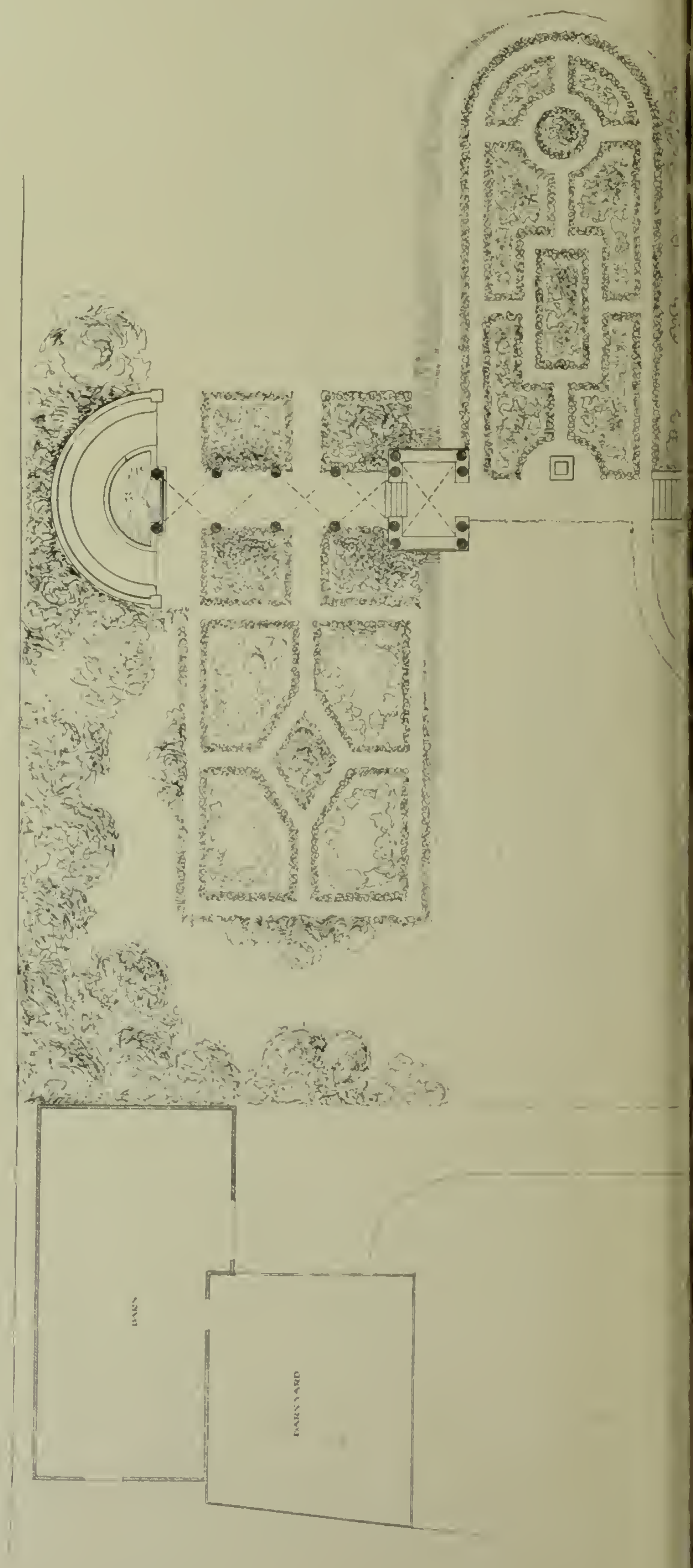
AN ARCHITECTURAL TERRA-COTTA DRAUGHTSMAN of ten years' practical work in terra-cotta, and five years' in architecture would like a position. Best of references. Address A. E. H., Box No. 104, Clayton, Mass.

GRADUATE CIVIL ENGINEER, age thirty, some architectural training, experienced in structural design and construction, desires position with firm of architects or construction company handling large work. Address C. E., Room 52, 85 Water Street, Boston, Mass.

WANTED — A COMPETENT ARCHITECTURAL DRAUGHTSWOMAN, one who is familiar with all branches of office work. State salary wanted. Address DRAUGHTSWOMAN, care THE BRICKBUILDER.



NORTH ELEVATION.



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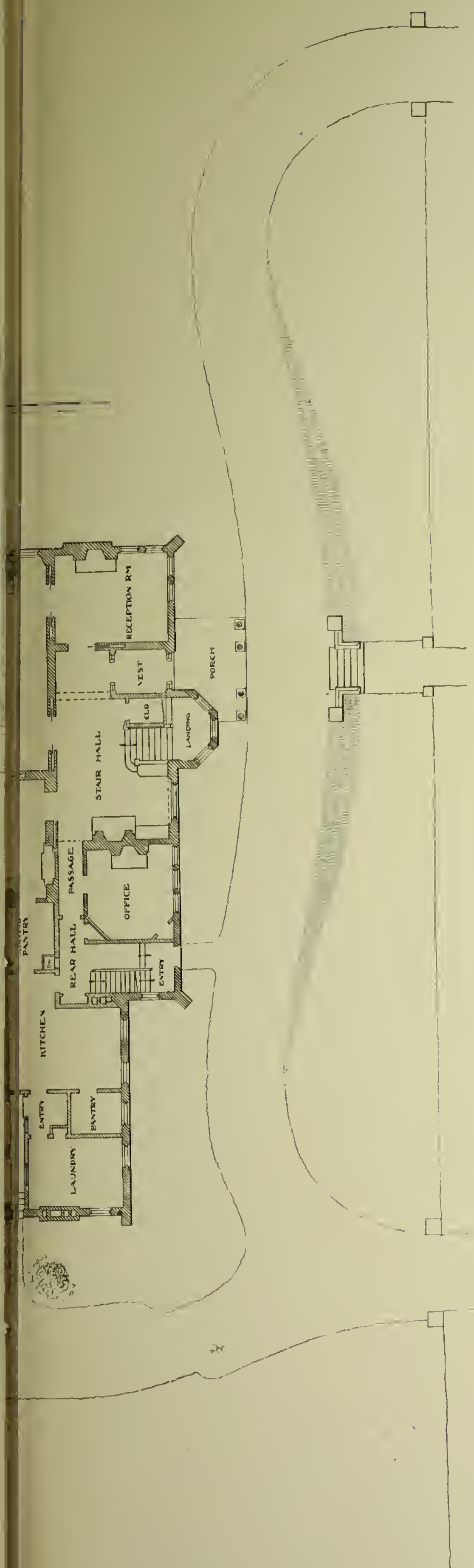
PLATES 19 and 20.



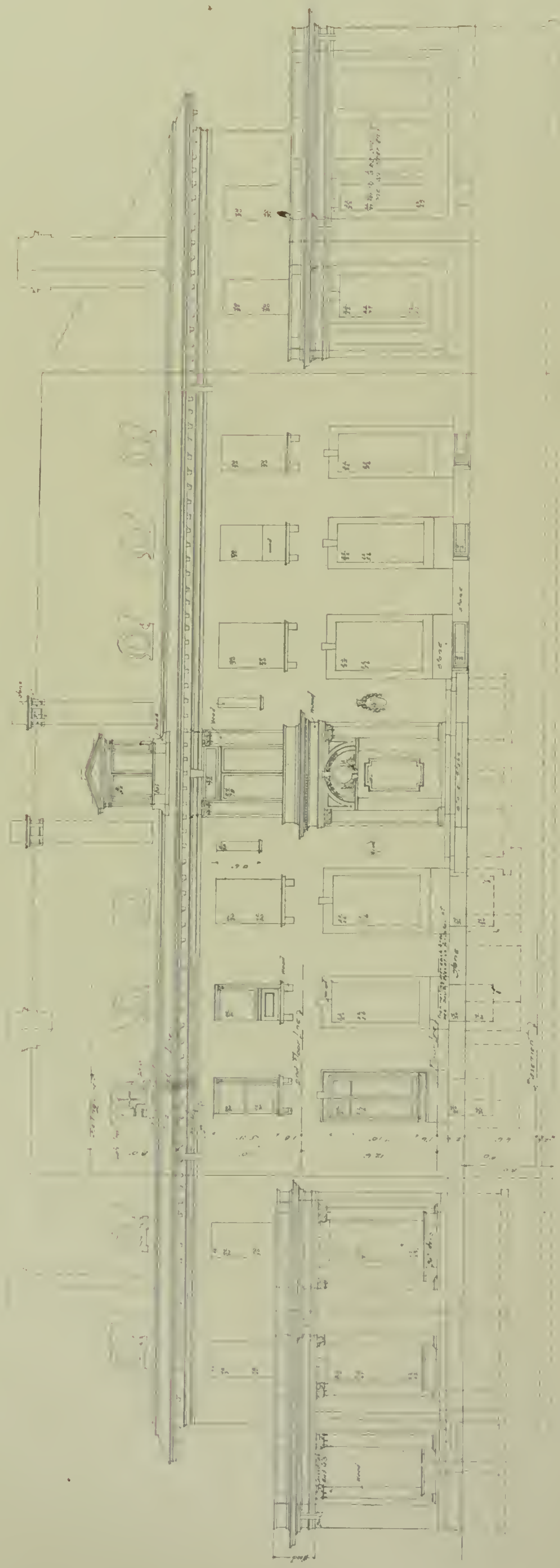
GROUND PLAN.

SOUTH ELEVATION.

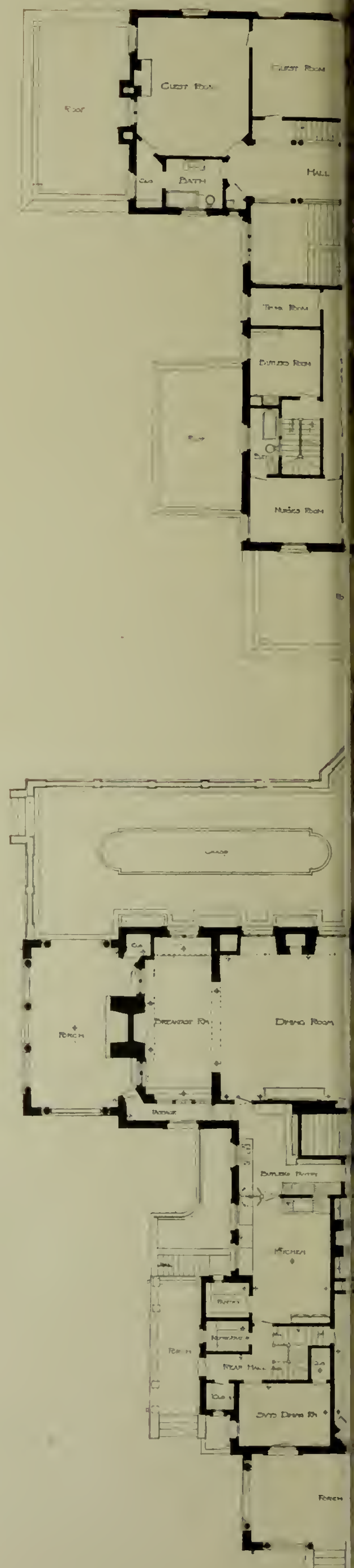
HOUSE AT LA SALLE, ILL.

POND & POND, ARCHITECTS.

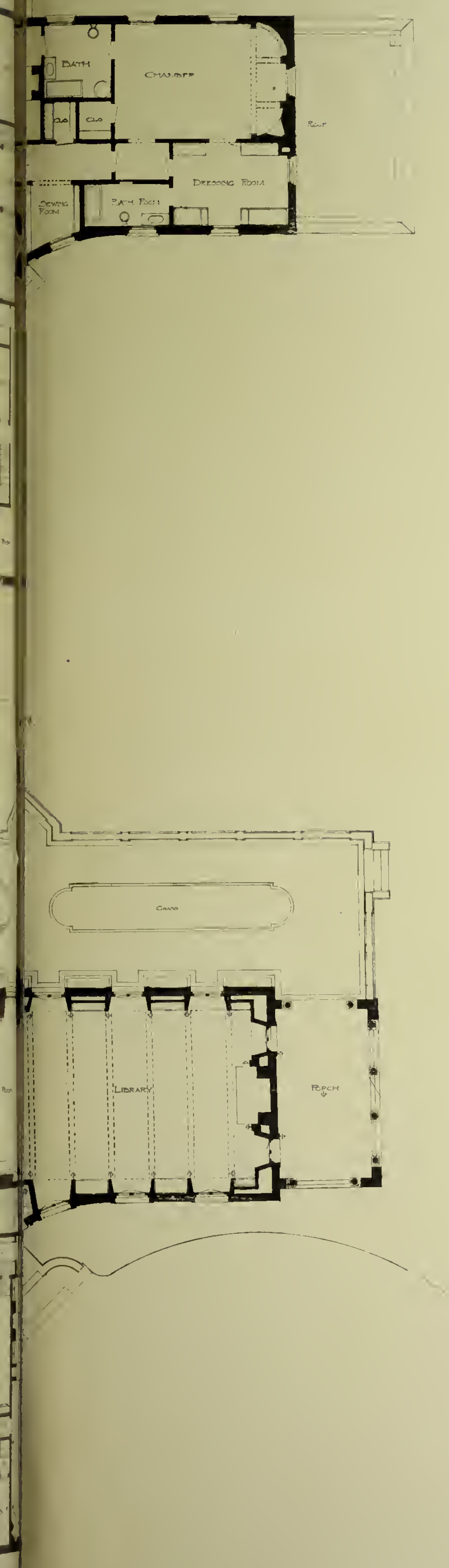
THE
VOL. 13. NO. 3.



SOUTHWEST ELEVATION.



PLATES 17 and 18.



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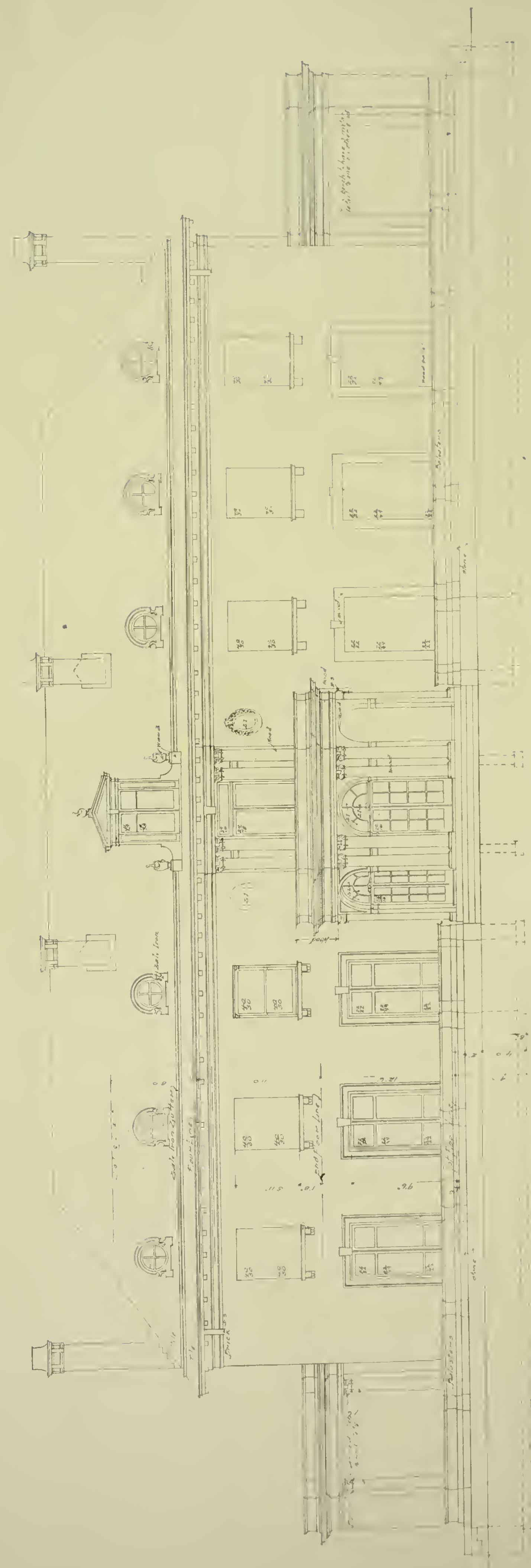
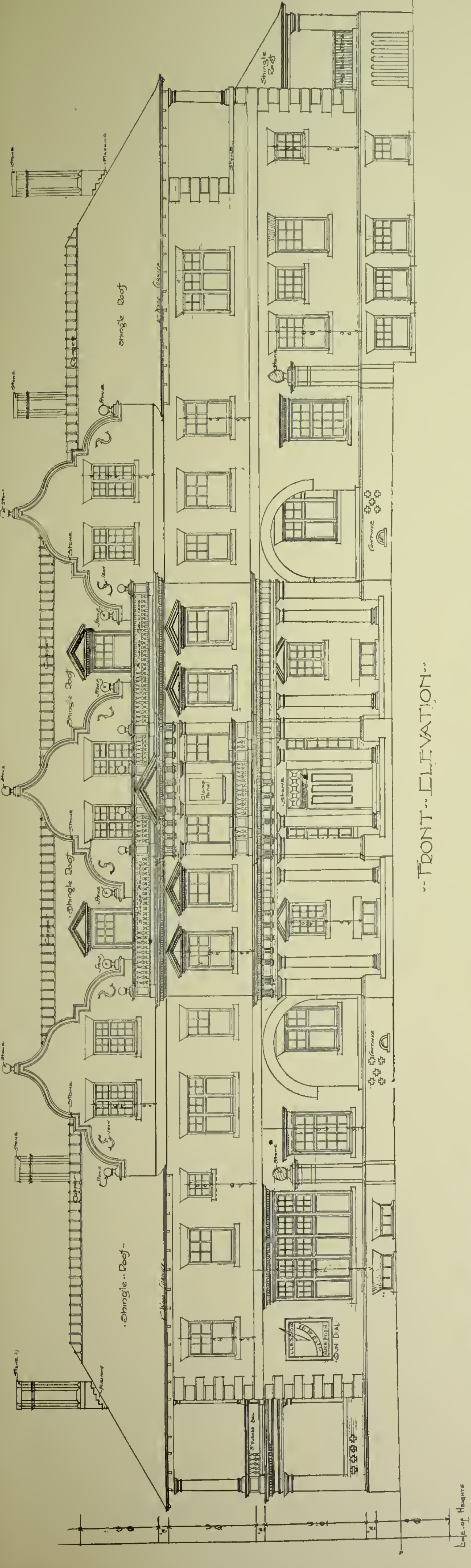


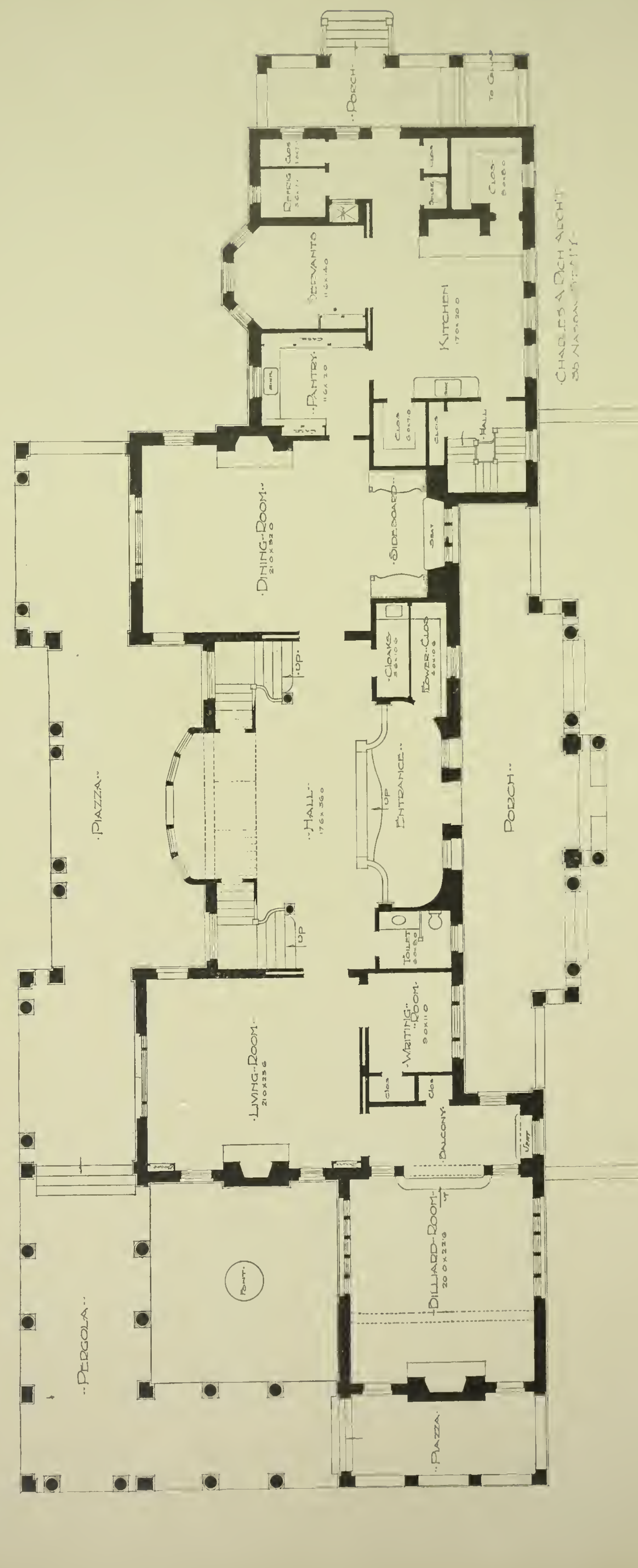
EAST ELEVATION.

HOUSE AT LAKE FOREST, ILL.

JAMES GAMBLE ROGERS, ARCHITECT.

VOL. 13. NO. 3. PLATE 21.





HOUSE AT PEACOCK POINT, LONG ISLAND, N Y.

CHARLES A. RICH, ARCHITECT.

FRONT VIEW.

GYMNASIUM, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PA.

FRANK MILES DAY & BROTHER, ARCHITECTS.

HOSPITAL AT YOUNGSTOWN, OHIO.

DWIGHT & CHANDLER, ARCHITECTS.

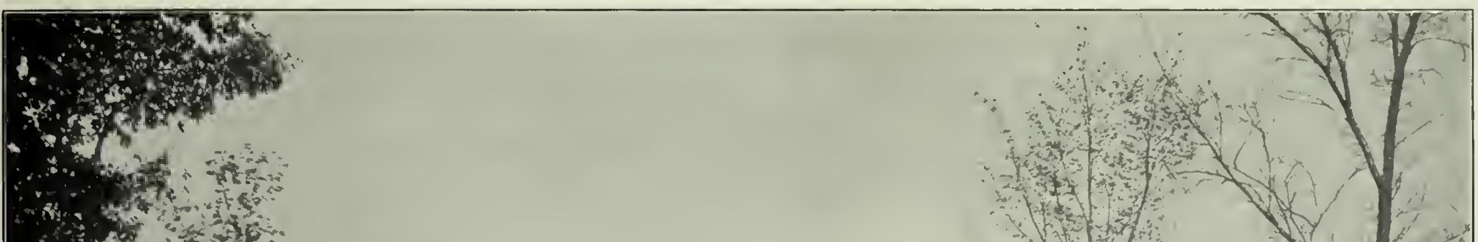
Central building is an altered residence, and is used in second story for private wards, and in third story for nurses' rooms.

PLAN. LAWRENCE GENERAL HOSPITAL, LAWRENCE, MASS.

DWIGHT & CHANDLER, ARCHITECTS.

HOUSE AT LA SALLE, ILL.
POND & POND, ARCHITECTS.

STABLE, HOUSE AT LAKE FOREST, ILL.
JAMES GAMBLE ROGERS, ARCHITECT.



ENTRANCE GATES, HOUSE AT LAKE FOREST ILL.
JAMES GAMBLE ROGERS, ARCHITECT.

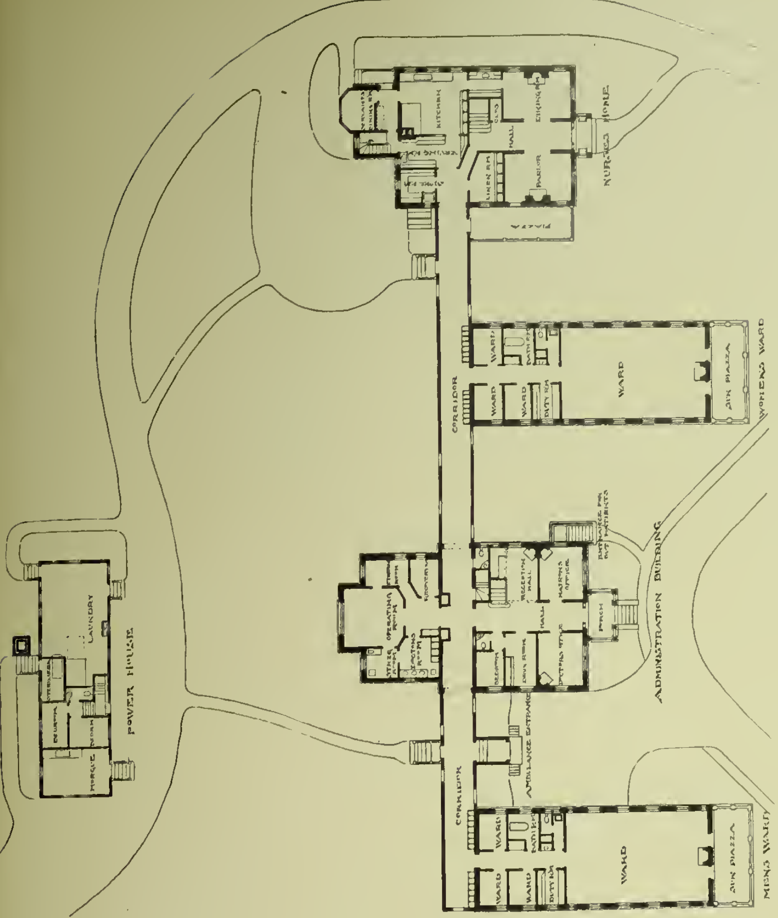
HOUSE FOR H. C. WICK, ESQ., CLEVELAND, OHIO.
MEADE & GARFIELD, ARCHITECTS.

HOUSE FOR H. S. PICKANDS, ESQ., CLEVELAND, OHIO.
MEADE & GARFIELD, ARCHITECTS.

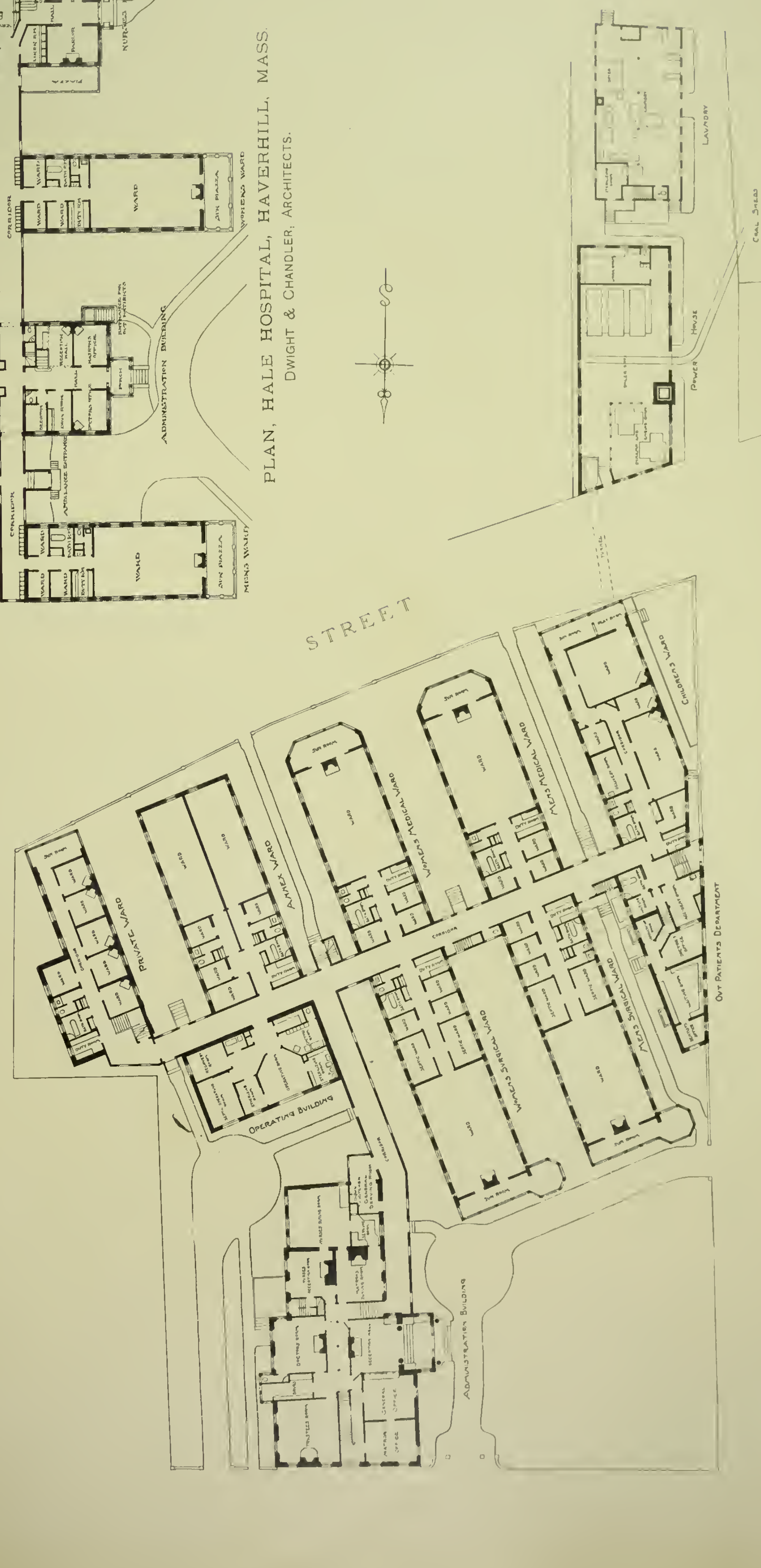
HOUSE AT LAKE FOREST, ILL.
JAMES GAMBLE ROGERS, ARCHITECT.

HOUSE AT PEACOCK POINT, LONG ISLAND, N. Y.
CHARLES A. RICH, ARCHITECT.

HOUSE AT PEACOCK POINT, LONG ISLAND N. Y.
CHARLES A. RICH, ARCHITECT.



PLAN, HALE HOSPITAL, HAVERHILL, MASS.
DWIGHT & CHANDLER, ARCHITECTS.



The Administration Building was formerly used for patients as well, but is remodelled for administration purposes in first story, and for doctors, nurses and servants' quarters in second and third stories.

PLAN, SALEM HOSPITAL, SALEM, MASS.
DWIGHT & CHANDLER, ARCHITECTS.

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WASHINGTON MONUMENT. HOTEL STAFFORD. MOUNT VERNON PLACE M. E. CHURCH.

MOUNT VERNON PLACE, BALTIMORE.

THE BRICKBVILDER

VOL. 13
Extra Edition to No. 3

DEVOTED · TO · THE · INTERESTS · OF ARCHITECTVRE · IN · MATERIALS · OF · CLAY

MARCH 1904

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 BALTIMORE FIRE: A RECORD OF ACHIEVEMENT.

WE present herewith to our readers a special edition of THE BRICKBUILDER, containing a full account of the Baltimore fire and of its action upon the structural and architectural materials which this journal specially represents, while at the same time the general results of the conflagration upon all classes of buildings are presented in a fairly complete manner. In preparing this number we have enlisted the coöperation of specialists in each line, and our staff was at the city immediately after the fire for a preliminary observation, besides which a second and longer visit was devoted to a more careful investigation of the results after the first excitement had subsided and architects, engineers and contractors had had ample opportunity to collect their ideas, formulate them and feel reasonably sure of their deductions. We have endeavored to present the facts in an entirely unbiased manner and to look at the lessons of this fire from an architectural standpoint, so gathering the array of documents that this special issue of THE BRICKBUILDER shall be a complete epitome of this most unusual test of building materials.

In the course of our investigations we have been enabled to confer at first hand with those who watched the fire from its sudden beginning until its wearily drawn out close, and have collated the opinions of fire chiefs, city engineers, the police and military authorities, as well as of the architects, engineers and builders who have been on the spot and have given it such close attention. THE BRICKBUILDER feels itself deeply indebted for many courtesies received at the hands of the Baltimore officials and others who have, with characteristic southern hospitality, aided the representatives of this journal in every possible way to get at the exact facts in every direction. We wish particularly to acknowledge the courtesies of Colonel J. Frank Supplee of the United States Fidelity and Guaranty Company, his Honor Mayor McLane, Captain Joseph W. Shirley of the Topographical Department, ex-Fire Marshal McAfee, who was in charge of the fire brigade during most of the conflagration, Mr. Joseph Evans Sperry, Mr. Douglas H. Thomas, Jr., Messrs. Wyatt & Nölting and of many other public-spirited Baltimoreans who gave us freely of their time and made it possible for us to collect the detailed information herein printed.

FACTS WHICH THE FIRE ESTABLISHED.

THE most characteristic feature of the material development marking the close of the nineteenth century was the application of the steel frame construction to the necessities of modern business. The tall office building is essentially an outcome of the needs of the times, and with the steel frame has necessarily arisen the parallel development of the burnt clay products. When one considers how really little these products were actually tested before their use, and how academic and in a way inconclusive were all deductions from which architects and engineers could draw their lessons, it is readily seen that the fireproofing methods have been almost self-evolved and that, by reasoning only from probabilities, we devised the systems for safeguarding the enormous structures which our architects have been called upon to erect. The Baltimore fire is really the first instance in which not one, or two, but a number of scientific, logically constructed buildings have been carefully, completely and exhaustively tested. The record which this number presents shows beyond question the extent to which our academic reasonings, our accumulations of processes have been based upon correct principles. THE BRICKBUILDER has ever striven to present and advocate the burnt clay products from an impartial, reasonable standpoint. These materials have been used under the greatest variety of circumstances. The best of architects and constructors have applied them thoughtfully, intelligently, and with the utmost success. And again, elsewhere they have been used indifferently, carelessly and illogically, with inevitable resulting dissatisfaction. We have never claimed perfection for the special materials for which we stand, but it is not too much to maintain that every possibility which THE BRICKBUILDER has presented in favor of the burnt clay products has been unreservedly substantiated by the record of the Baltimore fire.

If there is one lesson which stands out more prominently than all others, which is shown in every picture and which our readers will find echoed by nearly every special contributor to this number, it is, first, that the material, terra-cotta, when rightly used is the most perfect building material we to-day possess; and, second, that there is considerable room for improvement in methods. We can well afford to acknowledge every case in which terra-cotta has suffered. The lines are right, the direction of growth has been always consistent and persistent, the material itself gives us all the scope we want, but the immediate result of this terrible test of the materials ought to be a more intelligent use thereof, and a more scientific application.

It must not be expected, however, that this fire is to immediately produce many radical changes. There is nothing in the record of the fire which warrants such change, nor is intelligent development to be attained by moving too quickly. The principles involved in the use of terra-cotta are correct. That is beyond question. The material itself is all that could be expected. It is in the minor features that we must look for improvement, and particularly in the setting of the blocks and in that attention to details which are so wearisome and which are yet so important. In the haste and drive inevitable to the practice of architecture in these days, so much is included that it is hard to always appreciate the necessity for the utmost care, especially as involved in parts of a structure which are absolutely concealed from view. And yet it is the hidden column casing, the concealed wall construction, the soffits which are covered with plaster, that constitute the danger spots in a steel frame structure and which demand the greatest care. Terra-cotta has absolutely protected the frame. It has been injured surprisingly little itself, and with relatively trifling exceptions even in the most exposed circumstances the damage is slight; but when the next conflagration comes, as come it undoubtedly will, and when the history of the next great fire is written in these pages, we look to see not merely that terra-cotta has stood the best of all materials exposed, but that fire has made practically no impression upon it whatever. It is logical to expect this. The Baltimore fire shows abundantly that it can be looked for, and if our architects and constructors demand and are willing to pay for thorough terra-cotta construction, the resulting protection can be made absolute.

We feel that much of the assumed rivalry between stone and architectural terra-cotta has been due to a feeling that terra-cotta is a cheap substitute for other materials. It is really nothing of the sort. There should be no rivalry between architectural terra-cotta and stone. The former is the only material which is in every respect suitable to the modern commercial work if we are to expect absolute fire resistance; and if incidentally the material is any less in price, it is simply another advantage and not the main reason for its choice. And a similar comparison can be made between terra-cotta floor construction and its rivals.

So that in conclusion our summary of the Baltimore fire may be presented as follows: Architectural terra-cotta received the most severe tests and suffered the least of any material involved, its total damage being but a slight percentage of the entire cost of the building, while a considerable proportion of such damage can be traceable to methods which, had they been pointed out before the fire occurred, would undoubtedly have been condemned as involving a certain risk. The fire is sure to increase the use of the material, as it has been shown to be the only one which will stand against a conflagration.

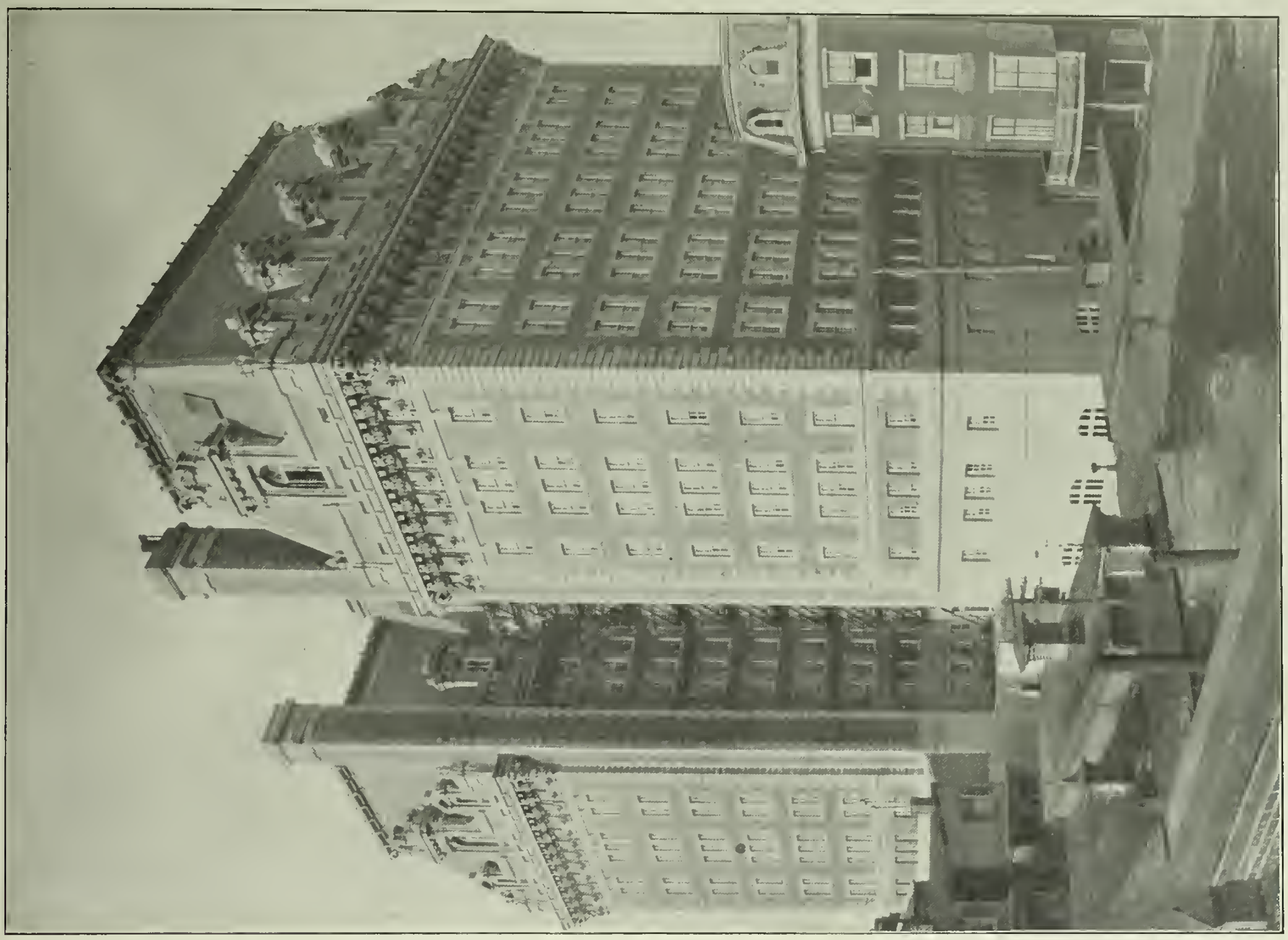
Structural terra-cotta served all of its functions of protecting the frame, and was not affected disadvantageously by the fire at any point. The few failures which occurred in floor arches, as notably in the Equitable Building, can be traced directly to faulty use of both steel and terra-cotta. Elsewhere none of the arches are structurally weakened and in a surprisingly few instances were any of the flanges destroyed. The terra-cotta partitions were not built in a logical manner. They offer a striking instance of a good material wrongly used, and the failures are so apparent that it ought not to be difficult to reconstruct these partitions with terra-cotta so as to be impregnable. Regarding the exterior or architectural terra-cotta, 'tis our firm belief that had it failed to properly protect the steel members next the outer walls, or had these buildings been faced with stone, this disaster would have furnished far different results with which to reckon. To state the case in a single sentence, the Baltimore fire demonstrates that terra-cotta, both architectural and structural, when rightly used will stand the fiercest attacks of fire, and that even when wrongly or carelessly used it is able to protect the frame and will not be structurally destroyed.

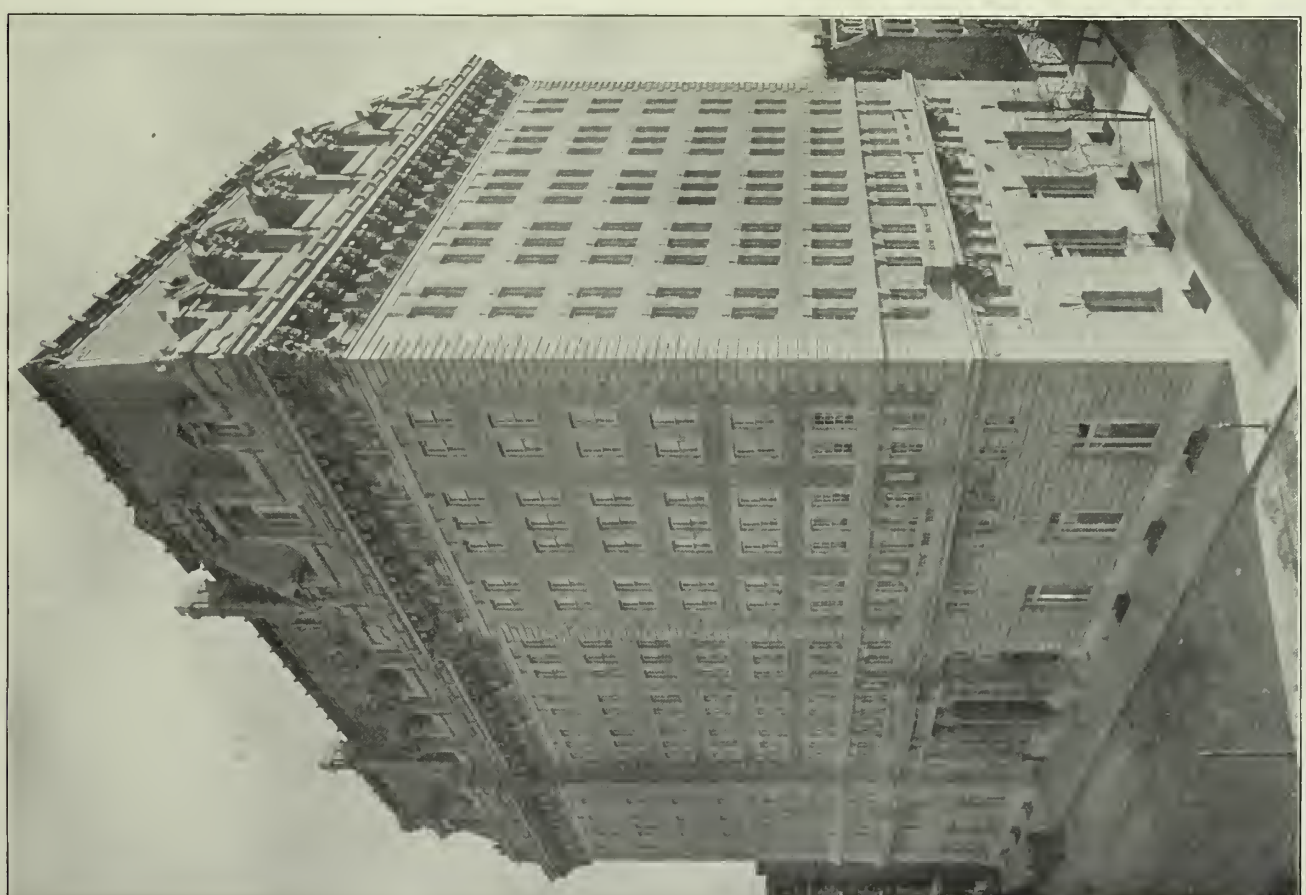
THE OTHER ILLUSTRATIONS.

WE present to our readers in this issue a number of interesting illustrations of Baltimore besides those which specially illustrate the structures which so bravely withstood the attacks of the fire. We cannot leave a city so full of fine architecture, a city known throughout the country for its beauty and for the many examples of excellent architecture which have there been created, without doing more than showing only the scarred relics of the great fight, and we have accordingly gone outside of the fire limits and have collected photographs of some of the interesting Baltimore architecture, which we believe will be of value and profit to our readers.

THE FIRE AS AN OBJECT LESSON.

WHEN a great conflagration such as occurred in Baltimore on February 8 attacks a modern city, sweeping everything in its path, leaving only the walls and the framework of even the best constructed buildings, our first feeling is that it is an exceptional calamity which is so out of the ordinary run that in making provision against fire such extreme cases need not necessarily be seriously considered. As a matter of fact, however, within the present generation there have been five disastrous conflagrations in large cities. The Chicago fire came too soon to be of immediate practical value to the country in an architectural sense, though it was a great object lesson which resulted in the development of terra-cotta as a fireproofing material. The Portland fire left





HOTEL BELVEDERE. Parker & Thomas, Architects.

no record of improvement behind it. The Boston fire, though terribly destructive in a money sense, did not materially affect either the city or the development of architecture as a whole. The Paterson fire offered a good many lessons, by some of which we have greatly profited; but the Baltimore fire is really the first which presents itself in such manner and in which the problems are of such a nature that it can be made of great value to the architectural profession and the building industries. We have here a most severe test of modern methods. In one respect only, by the addition of possible water damage, could the test have been any more severe, and the fire has aroused an interest far beyond that of any other conflagration in the world's history. And it is safe, moreover, to predict that very important structural and architectural improvements will very shortly manifest themselves as a direct result thereof. The fire has been studied as never fire was studied before. For a fortnight after, the Baltimore hotels were crowded with engineers, constructors, architects and insurance representatives, who had come from all parts of the country to see to what extent our most improved methods of construction could endure the attack of a conflagration. And with so many keen minds eagerly scanning the bulwarks which so stoutly endured, it is not likely that any lesson will be lost.

In judging of the results of the fire, one must bear in mind that a conflagration of this sort cannot be compared to a huge roaring blast furnace. The ruins show all manner of strange freaks. The fire in some places would be so hot as to melt cast-iron radiators, while in perhaps the same room a thermometer would hardly be damaged. And so in one street we would have on the one hand a fireproof structure stripped bare of all finish and contents, while right across the way may be a simple building of ordinary construction on which the paint is hardly scorched. Consequently, if any one attempts to study this fire with a bias he can prove anything he wishes. Any material can be claimed to be absolutely the best or any other absolutely the worst, unless the materials and the construction are measured under exactly similar conditions. Then it is, we believe, that the unquestioned superiority of the burnt clay products is manifested beyond question.

BALTIMORE'S OPPORTUNITY.

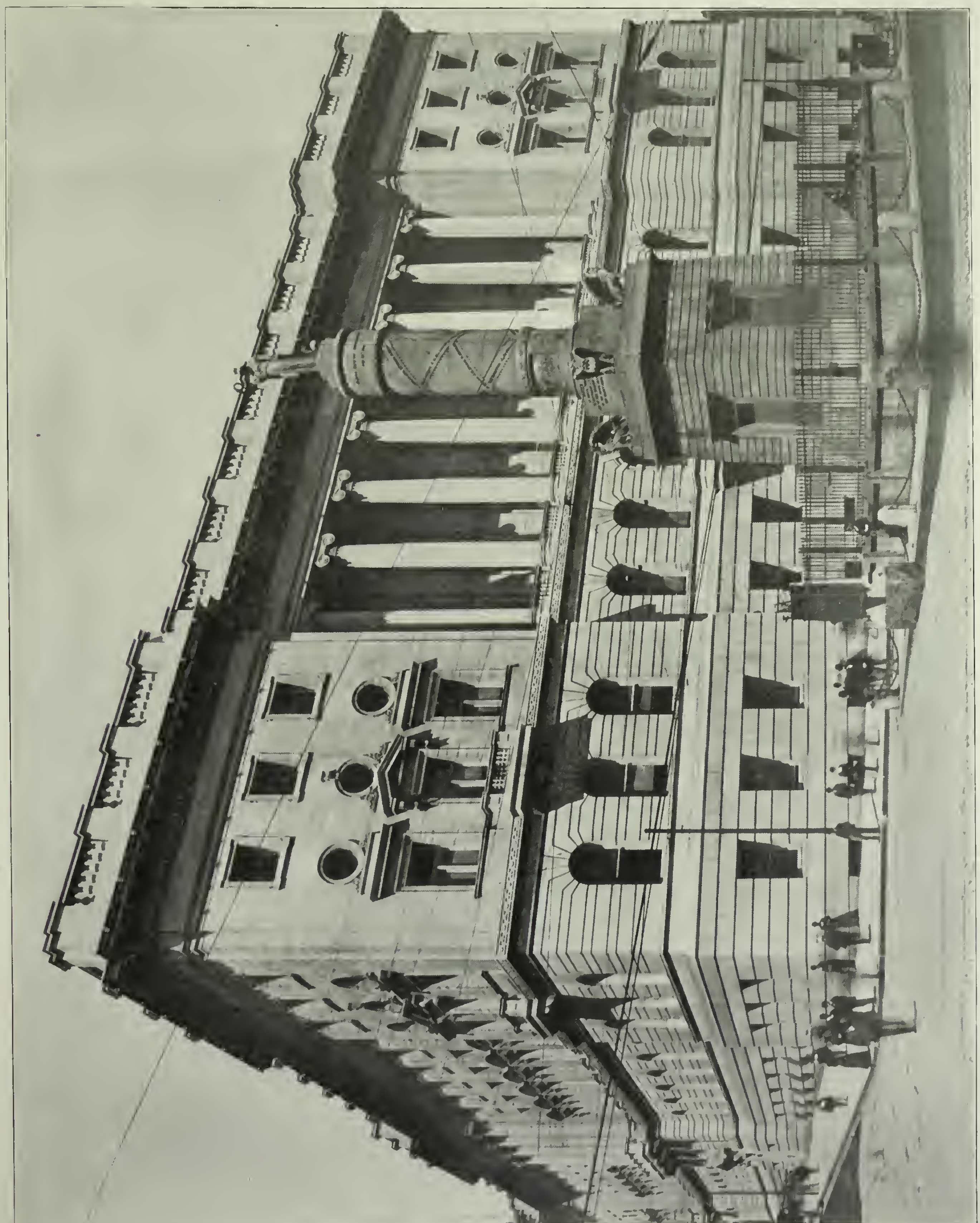
THE city of Baltimore has a great opportunity before it. With all but a dozen buildings of its business center flat on the ground, it becomes a relatively simple matter to make straight the crooked places, to enlarge the narrow streets and to do away in a measure with some of the troublesome grades which are such a feature of Baltimore streets. There is an opportunity for a beautiful commercial city to arise from the ruins of this great fire, and it can certainly be said that the city authorities so far have not been blind to their opportunities. Nothing is being done in a hurry. Time is taken for deliberation, and even the merchants who have found themselves houseless are disposed to think pretty carefully before committing themselves or the city to unwise lines of rebuilding. A legal decision has put it that the city authorities cannot refuse a permit to build if such permit is in accordance with the terms of the law, but all the permits so far issued have been coupled with a reservation that in accepting the permit the property owner agrees to hold the city harmless for any damages by reason of any change in street lines or grades, and to promptly change any building erected to conform to new street lines or grades. Such a proviso practically renders the permit of so little value that up to the present time few builders have begun operations. And it is pretty safe to say that when the lines are finally laid down, unless political influence intervenes, the new city may easily be all that its most ardent admirers would ask for it.

FALSE IDEAS OF THE FIRE.

THE descriptions which have appeared in the daily papers of the manner in which Baltimore buildings of first-class construction have withstood the action of fire have illustrated a very peculiar phase of the human mind, namely, the inability to clearly distinguish between the imaginative and the real. Even so cautious a paper as *Harper's Weekly* permitted itself to refer editorially to the manner in which "the tallest and best constructed of the Baltimore buildings melted away before the flames like wax." A builder, who has certainly had sufficient experience to let his reason tell him better, gravely asserted to us that he stood on one of the Baltimore streets and watched the approach of the flames to one of the tall office buildings, saw it catch on fire in several places, be rapidly consumed and sink away in nothingness like a pile of kindling, every wall flat on the ground. As a matter of fact, the amount of actual *structural* damage to all of the Baltimore buildings of first-class construction would be covered by a few thousand dollars, representing a small per cent of the value of the edifices themselves. But notwithstanding this the newspapers have continued to report that fireproof buildings did not stand the fire, and that actual observation showed they had failed before the fury of the fiery blast. And we have no doubt such writers really thought they saw what they described. If any one stands at the base of a tall chimney or looks up at the height of a shaft like Washington Monument, it is very hard to persuade him that the whole structure is not moving over bodily at the top, and is about to fall and crush him. If, on a clear day, such impressions are given by a perfectly stable structure, it is very easily seen how, in the excitement of a great fire, with everybody tense with alarm and with buildings on fire at every hand, the six or eight isolated buildings of first-class construction might not only be merely confounded with the cheaper constructions which did go down like wax, but might even themselves at times appear to be on the verge of dissolution.

METAL WALL TIES.

ONE feature which showed conspicuous failure in the Baltimore fire was the metal wall ties. On several of the buildings the exterior brickwork was bonded to the backing only by the regular wire metal ties, and the result in nearly every case was disastrous. On the rear of the Continental Trust Building over large areas of the wall the face brickwork was entirely gone, and in no case was the mere metal tie found to be of sufficient reliance for holding the face brickwork in place. The use of such ties ought to be prohibited. In some cities the laws distinctly provide that the brick facing shall be bonded to the body of the wall by brick header courses, as in no other way can a homogeneous and satisfactory construction be secured.



THE NEW COURTHOUSE. Wyatt & Nölting, Architects. BATTLE MONUMENT.

The Story of the Fire.

AT 10.50 A. M., Sunday, February 7, the first alarm of the great Baltimore fire was received by automatic box 854, located in the warehouse of J. E. Hurst & Company at the southeast corner of Liberty and German streets. This was a large department store of ordinary second-class construction, some six stories high and open on three sides towards the street and with windows on the fourth side. The building was practically undivided in each story and was packed from cellar to roof with goods of a highly inflammable nature. The fire department was upon the ground very promptly and ran a chemical and a two and one-half inch hose through the doorway into the basement, where the fire was found among the packing boxes near the elevator shaft, towards which the flames were drawing.

At 10.51 a second alarm was sent in and a few moments after a general alarm calling out the entire department was sounded. The fire in the Hurst Building apparently communicated to goods which speedily filled the building with a dense body of smoke, and in seven minutes after the receipt of the first alarm by the automatic an explosion of the smoke took place which lifted the roof, tore out all the glass in the building and burst into flames which enveloped the entire structure and pierced the buildings on the opposite sides of Sharp, German and Liberty streets.

A municipal ordinance of Baltimore prohibits the storing of explosives in buildings, but allows the same to be kept in suitable receptacles on the sidewalk. According to the statement of one who witnessed the beginning of the fire, gunpowder was stored in a case on the sidewalk opposite the Hurst Building. This was ignited by the flames, resulting in a second explosion, which not only materially hampered the efforts of the fire department, but smashed in adjoining windows and allowed the fire to spread; so that in fifteen minutes after the first alarm the buildings on the northeast and northwest corners of Liberty and German streets and the northwest, northeast and southeast corners of Sharp and German streets were on fire. The heat spread so quickly that two of the fire engines were set on fire and could not be rescued. The Hurst Building had not been burning ten minutes before the roof and parts of the walls fell in. The atmospheric conditions were peculiarly favorable to the spread of fire. There had been quite a drenching rain the day before, but this seems to have had no effect in retarding the conflagration. A high wind accompanied by low temperature was prevailing at the time. The wind was cyclonic in nature, and at the beginning of the fire was blowing from the southwest. The flames spread from building to building, baffling all the attempts of the firemen to even get their apparatus in position quickly enough to make any effectual stand. Within half an hour the authorities had telegraphed to Philadelphia, Washington and New York for help, which was being rapidly pushed towards the doomed city.

The Hurst Building was about in the center of the retail district, and the fire swept from it in a northeasterly direction towards the group of buildings which included the magnificent Courthouse, the Post Office and the City Hall. As will be seen by the map accompanying this issue there existed what might be termed a chain of modern first-class constructed office buildings, including the Union Trust, the Herald, Calvert, Equitable, Baltimore and Ohio, Continental Trust and Maryland Trust. These structures, roughly speaking, were stretched as a barrier directly across the path of the flame. The Union Trust received the attack first and was the most seriously damaged of any. By the time the flames had reached the Herald Building the authorities seem to have been considerably demoralized. This structure was thoroughly well built, of approved fireproof construction, and undoubtedly in a measure protected the Courthouse immediately across the street from it, but the authorities attempted, very unwisely it seems, to blow up the building, with the thought that a ruined structure would be more of a check to the spread of fire than a structure in which neither the walls nor the floors were likely to be totally destroyed. Dynamite had been previously used to demolish a building at the corner of Charles and Fayette streets, the only results of the explosive charges being to shatter all the glass in the Union Trust Building windows directly opposite, and to materially aid in the spread of the fire. Three times were dynamite charges exploded about the Herald Building, but they entirely failed to accomplish any result whatever. About this time, however, the wind in its course had shifted slightly, so that the full brunt of the blast of the fire was no longer directed toward the Courthouse, but played with full force against the westerly front of the Calvert Building, completely gutting the structure from top to bottom in less than an hour, passing straight through it from side to side, and cleaning out the entire contents of the immediately adjoining Equitable Building. By this time the fire extended in a rough semicircle, starting from the Hurst Building and reaching around to the Equitable, and with the shifting of the wind so as to blow finally towards the east and later towards the southeast, it seems as if the circle of fire was drawn bodily across the whole of the heart of the business section of the city. Then it was that the Continental Building received its fiercest attack. From this structure to the line of the upper edge of the fire, which was still blazing fiercely, was a distance of nearly half a mile, which had been covered entirely by buildings either very low or of nothing but the ordinary construction. These structures went down like cards and left nothing but a vast mass of flame, which beat with inconceivable fury against the entire west front of the Continental Building. From there the fire jumped on, performing some curious freaks, sparing a few structures which one would not have expected to resist, and gutting in a few minutes other buildings which were constructed with the utmost care.

The fire raged almost without check until it reached the narrowing triangle towards the southeast, where the arm of the harbor and a narrow creek known as Jones's Falls come together. Here were located the large power house of the Electric Street Railway, the Union Dock, the Merchants' and Miners' Transportation Company's pier and a quantity of smaller and more inflammable structures. Here the most determined stand was made against the fire, and it was at this point that the New York firemen who had come down by special train put up a splendid resistance, and undoubtedly kept the conflagration from spreading across Jones's Falls into the densely built residential quarter towards the east. All of the engines which could possibly be spared from the edges of the devastated area were placed along the course of Jones's Falls, each bridge being made a point of vantage. By two A. M. of Monday it was evident that the fire had been stopped at the foot of Union Dock, very largely because of the splendid work which was done by the fire boat "Cataract." The fire, however, leaped across the falls at four

MAP SHOWING THE DISTRICT DESTROYED BY FIRE IN BALTIMORE, FEBRUARY 7, 8, 1904.

places, and at times the fate of East Baltimore trembled in the balance. It was late Monday afternoon before the great fire was conquered, and the city was not really safe until Tuesday, while isolated structures continued to blaze all the week, and as late as the 4th of March, nearly a month after the fire, the ruins in places were still smoking, and in a few isolated cases flames continued to burst from beneath indistinguishable piles of brick.

In a space of about twelve hours the fire had done its greatest damage, wiping out the very heart of the retail, financial, wholesale and shipping districts of Baltimore, devastating an area of over 150 acres, destroying more than 2,500 buildings in 70 city blocks and causing a financial loss estimated all the way from $90,000,000 to $150,000,000. Besides this, the indirect loss through interference with commerce has been about a million dollars a day since the fire. And before the fire is forgotten it is estimated that the entry on the debit side of the city ledger will be nearly $200,000,000, or an average loss of over $300 for every man, woman and child in Baltimore. Of the total loss probably not over $35,000,000 or $40,000,000 will be recovered from the insurance companies.

The city was immediately placed under martial law and a strong cordon of soldiers encircled the whole burnt district. Military protection was kept up until the 1st of March. There have been, so far as recorded, no casualties to life as a direct result of the fire. Two deaths were reported as a result of exposure, but these might be traceable to other

SMALL OFFICE BUILDING, 213 COURTLAND STREET.

causes as well. The city of Baltimore certainly managed the fire admirably and has shown itself since perfectly able to give a good account of itself. By Wednesday morning wrecking crews had been organized by the city to clear the streets in the burnt district and demolish the dangerous ruins, and the work of these crews was carried on continuously until about the 10th of March, by which time all of the unsafe walls, chimneys and vaults had been demolished and the streets cleared so that traffic could proceed through them. There is one respect, however, in which the city authorities failed to use good judgment, and that was in the use of dynamite. It would not be strange if a fire of this sort should produce a somewhat hysterical state in the minds of those who should undertake to stop its course, but as far as can be ascertained by comparison of results the use of dynamite was absolutely uncalled for. Not in a single

THE SHOT TOWER FROM THE COURTHOUSE.

case did it have any effect in checking the spread of fire and in nearly every instance was it a direct aid to the spread of combustible material. The high wind fanned the flames to a degree which is hard to appreciate. Flying embers and even large masses of burning wood were carried high over the tops of ordinary buildings, and the fury of the blast was such that an open space of even 150 feet was quickly jumped by the flames. This was shown in the case of the markets in front of the Street Railway Power Station, a group of one-story structures in a space perhaps 200 feet wide. The flames jumped clear over these and destroyed buildings on the opposite side before the markets were fairly ablaze. The ruined walls of a second-class building would have been a better check to the fire than the same open space filled with the inflammable débris which would result from the blowing up of such a structure with dynamite, and if fire fighters are to take a lesson from this conflagration it would be never to undertake to check the spread of fire by the use of explosives.

This conflagration has been called a rich man's fire, in that at no point did it attack the poorer or the residential quarters. The first direction of the fire was towards the finest residential district. At the close of the fire it was heading directly for the cheaper residential quarter, but so far as is known no one was rendered homeless and the loss is confined exclusively to the business district. The financial center of the city was at German and Calvert streets, directly opposite the Continental Trust and in the heart of the hottest portion of the fire.

OLD UNITARIAN CHURCH, CHARLES AND FRANKLIN STREETS.

Architectural Terra-Cotta in the Baltimore Fire.

BY C. H. BLACKALL.

IF any one were to investigate the results of the Baltimore fire with the expectation of finding that any building material was impregnable or withstood in perfect condition the utmost assaults of the conflagration, he would surely be disappointed. The endurance of all materials is relative rather than absolute. Under conditions such as prevailed at times and at special places in this fire there is no known material which would be entirely unharmed. It is only when one examines at close range the half dozen fireproofed buildings which were exposed to the conflagration, and especially when one goes into the upper stories and looks out of the scarred window openings or considers the ornamental portions and the extent of their damage, that one realizes fully, first, how terrible was the test to which these buildings were subjected; and, second, how, notwithstanding its failure in places and under some conditions, one material, and only one, can be said to have put up any effective resistance against the fire. This material is terra-cotta. And when one compares the damage which it has suffered with that which has befallen every other building material exposed to the flames, one appreciates how, admitting all its limitations, it has shown itself to be the most nearly perfect fire-resisting medium which we now possess. That it can be improved upon goes without saying; but its weaknesses as developed in this test have been due far more to the manner in which it has been used, to the particular form of construction, than to the composition or quality of the material itself.

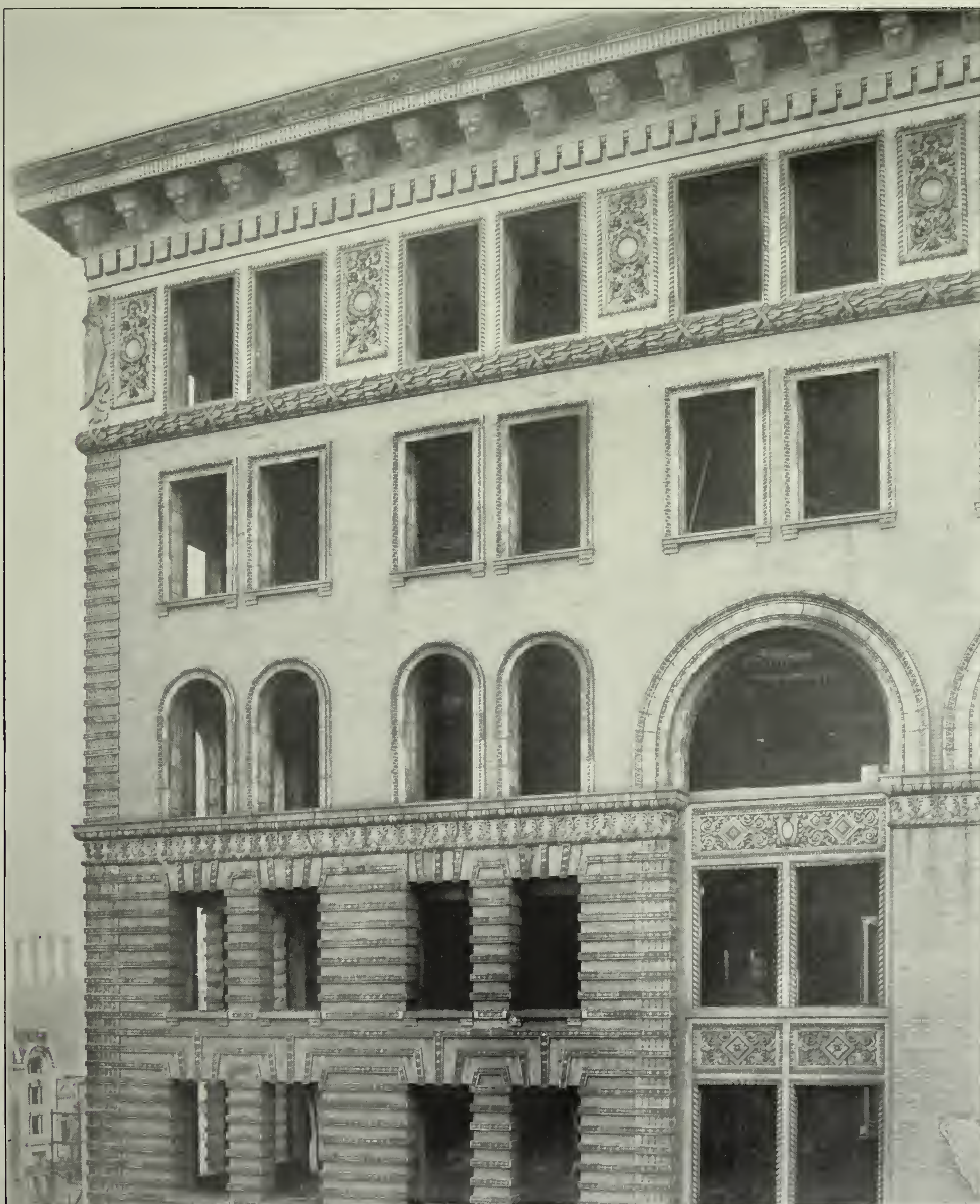
In one respect the fire was inconclusive. It spread so rapidly and the huge buildings were so speedily enveloped in flames that the fire department had little opportunity to play streams upon them, and consequently they have little to tell us of what would be the combined effect of heat and water on architectural terra-cotta. It is extremely doubtful, however, if the result would have been materially different had the constructions been deluged with water. The fire came on a very cold night and was accompanied by a high wind, which gave to the traveling flames the force of a blast furnace, heating the exposed terra-cotta to a sufficient degree in places to fuse the surface. But the greatest damage to the material came apparently after the fire had passed, when the cold air struck upon the heated surfaces, causing much of the shattering and damage we now find. A stream of water could hardly have had any more disastrous effect than the cold air. We must therefore be justified in accepting the actual conditions as representing the utmost to which terra-cotta would ever be exposed, and the degree to which it has successfully endured may be taken as an index of what we have a right to expect from it hereafter.

What damage there is can be classed in one of three categories: first, the direct eating away of the surfaces or of the edges by direct flame; second, the shattering due to the combined effect of excessive heat and low temperature; third, the mechanical damage caused by poor construction or the effect of the expansion of the steel frame.

The damage due to the first condition is surprisingly slight. Some of the architrave moldings in the Union Trust Building and a few of the jambs on the long side of the Maryland Trust Building are almost the only instances found by the writer, after most careful examination, wherein terra-cotta could be said to have been eaten away by the direct action of flame or heat. The damage due to the second condition, of combined heat and cold, is most marked in the court of the Calvert Building and in the upper portion of the north end of the Continental Building. By far the greater portion of all damage is traceable, however, to the third condition. The tendency has been to treat the material too much as a mere mantle and to ignore its self-sustaining qualities. Wherever it is found reënforced by the use of exposed iron, as in the case of mullions or lintels, and the construction is exposed to heat, the expansion of the iron, which is inevitable, constitutes a serious menace to the material. This has been demonstrated beyond a doubt in all the buildings at Baltimore.

An interesting feature in all these buildings is that, with very trifling exceptions, the cornices, which in each case are terra-cotta throughout, were hardly damaged at all, and this notwithstanding the fact that the greatest amount of heat seems to have been directed against the upper portions of the buildings; in fact, we know that as a rule the low buildings in the burned district escaped with trifling injury. We know further that the lower stories of the fireproof office buildings bear marks of a very much less degree of heat than is shown in the upper portions, and yet the cornices are practically intact.

The Union Trust Building, at the corner of Fayette and Charles streets, constructed from the plans of Winslow & Bigelow of Boston, was the first of the tall buildings to be attacked, and suffered the most severely in the fire. The flames reached it early Sunday afternoon, first from the southwest and then from the west. The building directly opposite was occupied by a large toy establishment, which the city authorities, in a frantic attempt to do something, tried to destroy by the use of dynamite, succeeding, however, only in wrecking all of the glass in the Union Trust Building and effectually spreading the fire instead of stopping it. This building was constructed with the lower three stories of stone with brick walls and terra-cotta finish above, and a wide projecting terra-cotta cornice over the whole. Many of the windows above the first story had cast-iron mullions, and in nearly every case these mullions, expanding by the heat, were forced up into lintels and down into the sills, breaking the terra-cotta, though the spandrel panels were apparently uninjured. In the three upper stories the mullions were of terra-cotta backed by steel, and all but five of these mullions are ruined. The surface of the terra-cotta work around the windows was gone in many places, so as to show even the cross partitions of the terra-cotta backing, and the brickwork immediately adjoining is damaged quite severely, showing how excessive must have been the cutting action of the heated blast. The windows on each side of the central portion of the long front had brick jambs. In every one was found a crack running the whole height of the window opening, and about four inches away from the jamb, showing apparently that the ironwork within had been heated enough to push out the brick. Of the entire cornice only three brackets were broken, and these only in part. The band course below the line of the ninth-story windows was broken slightly in four places. Aside from the damage caused by the expansion of the ironwork, only about seven and a half per cent of the terra-cotta was injured, and nearly all of this injury was on the jambs. This building is to be rebuilt from plans of



DETAIL, THE EQUITABLE BUILDING.

Parker & Thomas, and carried several stories higher, and all of the facing, including both terra-cotta and stone, has been entirely removed, leaving nothing in place but the brick backing and the casing of the structural steel.

The Herald Building was designed by Joseph Evans Sperry. It was attacked on two sides. It undoubtedly formed a buffer between the fire and the Courthouse, and the exterior is in a very fair condition to-day, requiring but little work to make it as good as new. The two lower stories are of stone, the upper stories of brick and terra-cotta. There are no iron mullions anywhere, and apparently not a single terra-cotta lintel on either front is at all damaged, and there was found only one jamb where the terra-cotta was slightly abraded. The cornice seems to be intact, all the elaborate frieze appears unbroken, and there is not one per cent of the architectural terra-cotta which will need to be replaced.

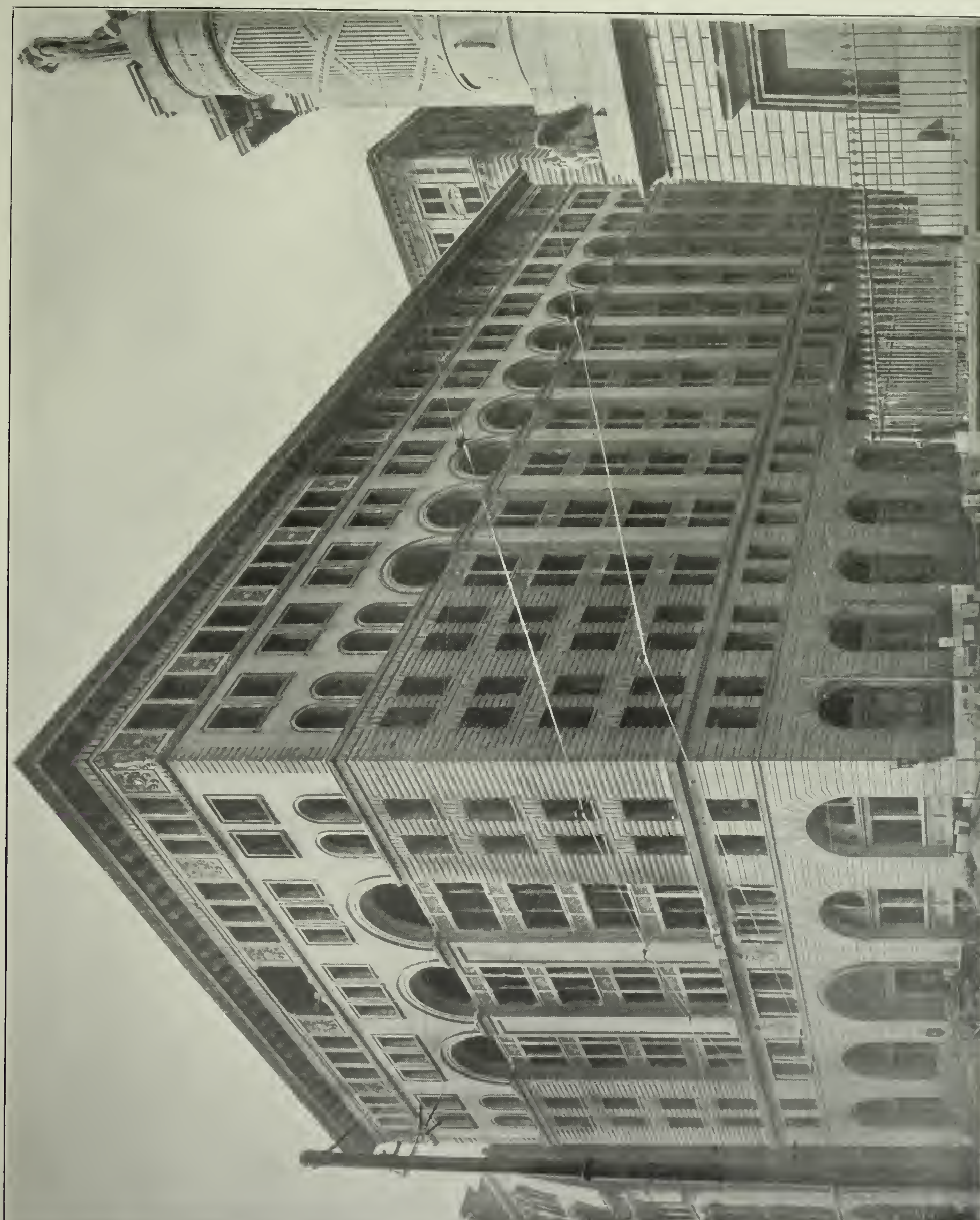
The Calvert Building was also designed by Mr. Sperry. It is a twelve-story steel frame structure, faced with stone in the two lower stories and with brick and terra-cotta above. The fire entered from the west, and on this front the damage is so slight that one would not notice it had ever been through the fire at all. The closest inspection cannot show as high as two per cent damage to the terra-cotta. Throughout this building iron mullions were used, and in a few instances they seem to have acted as the mullions in the Union Trust Building by pushing up and down and wrecking the terra-cotta, but these mullions were not constructive and there was not a great deal of this sort of damage. The west portion of the Fayette Street front shows the effect of great heat. The brick have suffered quite as much as the terra-cotta. Some of the lintels in the eleventh story of the right wing are sufficiently damaged to require being replaced, and quite a quantity of the plain band work in terra-cotta, which is bedded in the solid brick wall, is destroyed on the surface. The cornice is considerably blackened by the heat, but does not appear to be injured. The left portion of the front is hardly injured at all. The greatest damage occurred in the courtyard. The flames sweeping through the building emerged into this court, transforming it into a huge blast furnace, and in some places the terra-cotta was actually fused upon the surface. Very little of the cornice is injured, however, but nearly all of the architectural treatment of the upper two stories is damaged beyond repair, and there are a number of breaks in many of the windows on both sides of the court. In a rough way probably about fifteen per cent of the terra-cotta in this building as a whole is ruined, but the bulk of this damage occurred in the court.

The condition of the Equitable Building, immediately adjoining the Calvert, is a good deal of a surprise. On the side towards the Calvert Building, whence the fire came, while the granite sills and some of the brickwork are damaged, the terra-cotta shows hardly any signs of mechanical injury. The modeling is sharp and clear, there do not appear to be any cracks and no evidence of anything approaching disintegration or melting. Likewise on the long Fayette Street front the terra-cotta has the appearance of being uninjured, except by smoke. It is only on the Calvert Street front, opposite the long end of the building, that the damage is noticeable, where the flames burst out from the windows with all the added fury of the combustible contents and the floor material of the building itself, and in the seventh, eighth and ninth stories several of the mullions and a few of the jambs are badly damaged, but even here the damage to the architectural terra-cotta could be repaired at a comparatively slight cost.

In the Maryland Trust Building, designed by Baldwin & Pennington, the terra-cotta on the narrow front was very little exposed, but on the long front it had a double attack. The fire from within was very fierce, and the buildings directly opposite were of a nature to generate an intense heat, so that between the two the jambs of the windows in most of the stories have suffered badly and will probably all be replaced. The highly ornamental spandrel panel work, however, which is full of delicate detail, seems upon inspection to be almost entirely uninjured, the cornice shows no signs of damage, and in a rough way twenty-five per cent would be the extreme of damage to the architectural terra-cotta.

The Continental Trust Building is a sixteen-story structure, designed by D. H. Burnham & Co. In some respects it was the most severely tested of all. It was directly in the path of the hottest portion of the fire, and it seems to have been caught in an eddy, so that when the flame struck it the fire did not catch in one story and spread from floor to floor, but each story ignited spontaneously under the tremendous blast, and the fire rushed through from side to side of the building with hardly any hindrance. There has been a great deal of controversy about the condition of this building. Immediately after the fire various statements were made, that the framework was twisted, that the exterior facing would all have to come off and was injured beyond repair, and that the building would be a total loss. The writer made a most careful examination of the architectural terra-cotta and was not content with observing merely the surface, but with the aid of a coupling pin which was found in one of the rooms vigorously attacked any cracked or checked blocks in an endeavor to find out to just what extent the terra-cotta was injured. Every story was taken in turn and a most thorough investigation made of the whole. On the long west front there is no sign of a single break of any description in the cornice or the frieze. A few of the mullions are split in places by the heat and will have to be replaced ; but in every case the terra-cotta seems to have broken because of the alternate heating and cooling effect, and there is no visible deterioration of the quality or any evidence of it having yielded to fire as such. On the narrow front towards the north the columns in the upper stories are so badly wrecked that they cannot be repaired ; also in several of the lower stories the mullions are ruined, but even on this front the cornice is uninjured. The total damage to the architectural terra-cotta is surprisingly small. Pieces which have been broken off give a good clear ring when struck with a hammer, and even the most severely damaged columns of the north front show not a trace of any disintegration in the material itself. Nor do the surfaces show any fire checking due to the conflagration, nor any cracks into which frost or water might work. Surely hardly anything more could be expected of any material.

On South Street, between Baltimore and German streets, is or was all that is left of the building of the Maryland Life Insurance Company, showing a five or six story front, with stone in first story and brick and very finely designed terra-cotta above. The interior of the building is a complete wreck, even the party wall is down, the stone is badly injured, but the terra-cotta is apparently in perfect condition, without a break. The front wall is all that is standing, and the terra-cotta could be used in a new building without a dollar of loss beyond the cost of handling.



THE EQUITABLE BUILDING. Carson & Sperry, Architects.

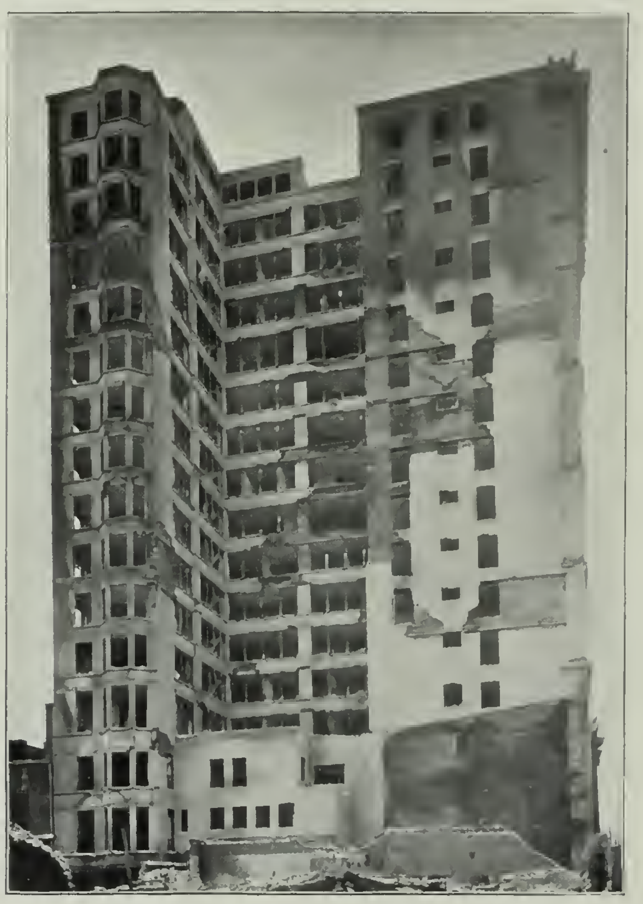
Fireproof Buildings Tested.

REPORT BY OUR STAFF ENGINEER.

THE winter of 1903–04 will certainly become historic in the annals of fireproofing.

First, in Chicago, the Iroquois disaster, in which nearly six hundred lives were sacrificed within a single building, and now, in Baltimore, a far-reaching conflagration, in which one hundred and forty acres are devastated, but without the loss of a single life.

If such visitations of death to humanity and destruction to property are not sufficient warnings to awaken the seeming public apathy regarding fireproof construction, then a miraculous writing of fire on the wall would not accomplish more.



COURT OF THE CONTINENTAL TRUST BUILDING.

The Iroquois Theater horror has already done much to awaken the public conscience in regard to the measures which are necessary for safety in all of our places of public amusement or assemblage, and at least a temporary stimulus has been felt in the enforcement or in the improvement of municipal regulations. This is true not only of theaters in large cities, but fortunately the effect is being felt in towns and even villages, in schoolhouses and town halls. The lesson here was plain — every known or reasonable precaution must be taken to assure the safety of human life. If the laws are sufficient, they must be enforced; if insufficient, they must be revised.

The Baltimore conflagration teaches a different lesson. Here the question of safety to human life has not been much in evidence, although if the fire had occurred on any other day of the week than when it did the result might have been far different. The merchants and bankers of Baltimore are much more concerned at the present time with the destruction of property.

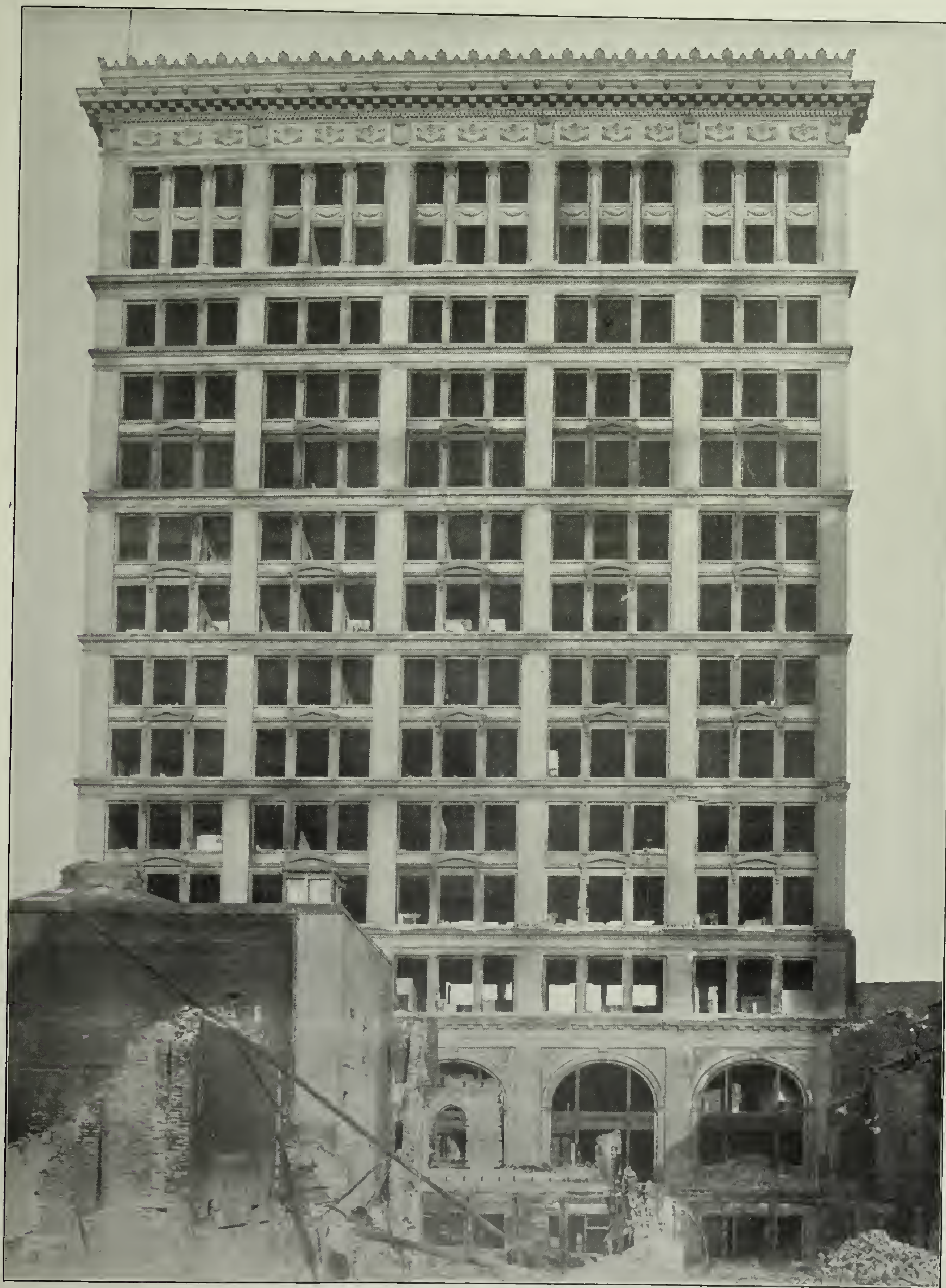
From the early accounts which were sent out describing the far-sweeping results of this fire, the faith of those who had heretofore trusted in the efficiency of fire-resisting construction was rudely shaken. Alarming reports as to the utter collapse of steel buildings, and the immediate necessity for dynamiting the ruins of others which were declared to be in a dangerous condition, struck wonder to the hearts of those who had looked for better things; and when the writer visited Baltimore a few days after the cessation of the conflagration, the first general impression was certainly not reassuring. The acres upon acres of smoldering ruin and the utter desolation of the fire-swept area were overpowering. Here were one hundred and forty acres, in the very heart of Baltimore's most prosperous commercial quarter, laid in ashes, with tottering brick walls, warped and twisted iron and steel work, fragments of granite or marble, and here and there a burst of flame still showing forth.

But as one became more accustomed to the magnitude of the disaster, a vague impression of which may be conveyed by the illustrations given, the realization became more and more apparent that all this wreck and ruin on every hand were but the ever-to-be-expected result from non-fireproof "mill-building," or "slow-burning" construction under such a test as this. These structures, generally leveled to the ground, constituted no test of fire-resisting methods; and if they had been classed as "fireproof" by those writing of the disaster, no wonder faith was shaken and fears awakened.

Turning, then, for some structures worthy of interest from a fire-resisting standpoint, the attention is quickly awakened by the sight of several buildings on the extreme northern boundary of the fire area, — towering structures, almost in the heart of the burned district. At first view these appeared to have escaped the almost universal devastation. A closer examination, however, shows that these structures, too, have suffered the terrible baptism of fire, and then it is that one realizes that here is the test, not simply of one fire-resisting building, greater in extent and importance than those heretofore memorable fires in the Home Insurance Building, the Horne buildings and others of similar character, but the test of *many* fireproof buildings, some side by side and even connected, others isolated amid ruin on all sides. Instead of wrecked or collapsed frameworks, these buildings are found to be not only standing but structurally sound.

The contrast between non-fireproof construction or "mill construction" and the protected steel frame structures is here strikingly shown. The sixteen-story Continental Trust Building, the highest building to undergo the ordeal, is a typical example of modern skeleton construction (having been built in 1902, 1903), with exterior walls of stone in the lower stories, brick and terra-cotta above, steel frame and terra-cotta floor arches and partitions. The exterior walls on all sides are provided with the largest possible window areas, to provide maximum light to all offices.

The exterior stonework in the lower stories, in common with the granite, sandstone or marble façades of nearly all other buildings which were exposed to fire, has suffered material damage and will require partial renewal. This is not so difficult nor so expensive an operation in a skeleton or "veneer" structure



THE CONTINENTAL TRUST BUILDING, WEST ELEVATION.
D. H. Burnham & Co., Architects.

as in those cases where the walls are solid or load-bearing, but the lesson is obvious, namely, that with the use of granite, sandstone or limestone, renewal *must* be expected after exposure to fire. This is certainly no new experience, as the damage to the marble front of the Home Life Insurance Building in New York established this fact most conclusively several years ago; but the many cases exhibited in the Baltimore fire bring home the fact as never before.

The brick and terra-cotta walls also show serious damage in many instances, due to the light construction employed and the absence of proper tying in and bonding, rather than to any fault of the materials themselves. The principal damage occurred in the rear and side court walls, where the buckling of T-shaped cast-iron mullions and the expansion of iron lintels served to push out the light veneer, thus detaching large areas of face brick from the brick backing. The metal wall ties used to secure the facing to the backing are still in place, thus proving that they are a poor substitute for "headers." The general condition of the exterior walls of this building would seem to warrant the conclusion that the veneer covering has been made too light, possibly in the attempt to provide a maximum of light for the interior, or possibly in the effort to economize to the utmost in available floor space. Had the enclosing walls been more substantial, with more attention paid to bonding and tying them more firmly to the steel frame, much injury would undoubtedly have been avoided. The steel frame has been declared practically perfect after a critical examination by the architect. A few slightly deflected beams are to be seen in the unfinished attic space, and some of the spandrel or lintel beams are warped and buckled, but it is publicly stated that the owners have relinquished *all claim* upon the insurance companies for any damage to the steel work.

Not a vestige of woodwork is to be seen above the first floor banking room. The wood floors and floor screeds were so thoroughly consumed as to leave but empty grooves in the cinders concrete filling, in spite of which the terra-cotta floor arches are everywhere intact. As far as the writer could learn, not a single safe fell, and even the scaling of any of the lower webs of the arch blocks was rare. A notable feature in this building was the uniformly intact condition of the plaster ceilings. Whether this was due to the character of the terra-cotta floor blocks, or to the mixing or application of the plaster, could not be determined.

A good example of false deduction from wrong premises is illustrated by a photograph which has been published and extensively commented upon, showing one of the basement corridor ceilings in apparently very bad condition, due to the presumed scaling off of the lower webs of the arch blocks under the test by fire. As a matter of fact, the present condition of these arch blocks is in no way due to the effect of fire, as the writer noticed this condition of the ceiling in question and made inquiries about it. The superintendent of the building stated that the damage was done during *building operations*, by the contractors for the marble work. Their figured headroom in the corridor was insufficient, so the lower webs of the overhead arches were trimmed away to allow the placing of the marble ceiling slabs. The failure of this marble work under fire exposed the previous damage done, and the present appearance is pointed out by unfair

DETAIL, THE CALVERT BUILDING.

THE CALVERT BUILDING, WEST ELEVATION.
Joseph Evans Sperry, Architect.

CHESAPEAKE AND POTOMAC TELEPHONE BUILDING.

critics as a sample of the conditions existing *throughout the building*.

Of the terra-cotta block partitions few remained standing, at least along the corridors. This, as in almost every other fireproof building, was due to the use of wood sash or top lights, for transmitting borrowed light from the offices to the corridors. Far different conditions might have resulted in many of these buildings had the partitions been more firmly built, and provided with metal frames, wire glass, and stamped steel or other fire-resisting doors. Not only would enormous damage to the partitions themselves have been avoided, but it is very probable that such construction would have served so to break the fire into separate compartments (where the entire building was subject to a severe exterior exposure) as to greatly diminish the severity of the fire and its effects upon the structure attacked.

One of the most striking facts in the interior of the Continental Trust Building was the absolute destruction wrought in marble work by fire. Immense quantities of marble wainscots, bases, floors and stair treads were strewn in absolute ruin; hardly a single surface in its original position, save in the lower story. In some buildings the writer observed the curious phenomenon of warped or buckled marble, notably in the Union Trust Company's building, where large slabs of marble wainscot had bellied out, but without a crack.

Where used as stair treads and platforms the treads were generally cracked but passable, but platform areas were gaping voids. This was true in almost all of the prominent buildings, thus attesting the wisdom of the New York building law in requiring sub-treads of solid or perforated metal under all stair treads and platforms of slate or marble.

Another very interesting test of fire-resisting construction is to be seen in the twelve-story Calvert Building. This and the adjoining Equitable Building are both of even larger area than the Continental Trust Building, though not so high, and had it not been for the fire-resisting character of these structures and the Baltimore Herald Building, diagonally opposite the Calvert Building, there is little doubt but what the beautiful $3,000,000 Courthouse would have burned, and beyond that no one can even estimate how far the conflagration might have spread. Had these three buildings, the Calvert, the Equitable and the Herald, been of a like construction with the Law Building (directly opposite the west frontage of the Courthouse), which soon collapsed as a result of its "mill construction," nothing could have prevented the fire from crossing Fayette Street. But although completely swept by fire, these three buildings remain standing as a testimony to the value of fire-resisting buildings as a fire-stop. The only damage done the Courthouse was directly opposite the Law Building, where the marble cornice was calcined and some few windows burned out.

From a little distance it would hardly be apparent that the Calvert Building had been through a severe conflagration, were it not for the entire absence of window frames and sash, except two in the top story. A closer examination, however, shows that the stonework of the lower stories is considerably damaged, and that the brick walls with terra-cotta trimmings, in the open court over the front entrance rotunda, are considerably injured. This is undoubtedly due to the severity of the flames in sweeping out of the court windows against the opposite court walls, for the brick and terra-cotta street walls are in admirable condition and will require little repair to make them as good as new. In fact, court walls, where the flames could beat from the windows to near-by opposite walls, were almost everywhere damaged much more than was the case with the outside street-facing walls.

In this building, also, both the steel frame and the fifteen-inch semi-porous terra-cotta arches of end construction seem in admirable condition, considering the great evidences of heat everywhere apparent. Some of the floor arches have the lower webs scaled off, but the deep and substantial character of the arches should not only show them safe for renewal but render such damage as was done easy of repair.

On one floor, where large quantities of paper supplies were evidently stored, one column had settled about four inches from the extreme heat, after the failure of the column covering. From examples made apparent in this fire, it is evident that still more care is required in the construction of terra-cotta column coverings or casings. These should be built independent of adjoining partitions, so as not to be pulled down by possible faulty construction in the partitions, and they should also be made solid or backed up, so as to resist shock from falling material. Another point which has not generally been considered heretofore is the liability of waste or vent pipes, when enclosed within the column covering, to so expand from heat as to dislodge the enclosing blocks. If pipes are run within the casings, reasonable play should be allowed for such expansion, but the columns should preferably be cased first, and entirely independent of separate outside pipe chases. The interior partitions were also largely down, again owing to the introduction of wooden top-light sash.

The Equitable Building, ten stories high, corner of Calvert and Fayette streets, covers an area of nearly twenty thousand square feet. The exterior self-supporting walls of this building are in excellent condition, save the inevitable damage to portions of the granite work of the lower three stories, and a stretch here and there of the ornamental terra-cotta used as a trimming in the upper stories of buff brick; but the interior is practically worthless, save most of the cast-iron columns and a portion of the steel girders. This is due to three main causes: first, the steel floor beams and girders were designed too light for commendable construction; second, the floor arches were entirely too light and of improper construction; third, Lime-of-Teil or plaster block partitions were employed.

The interior iron framework consisted of cast-iron columns, spaced about 15 feet centers, with generally 9-inch beams spaced from 6 feet 5 inches up to 8 feet 2 inches centers in cases. This framework was, it is said, designed for a very light system of floor construction, but at the last moment it was decided to use terra-cotta, and a terra cotta system was therefore devised to suit the conditions of the ironwork. This entirely reverses the usual procedure of designing the steel work to suit the type of floor construction actually used.

To make a terra-cotta construction light enough to suit the strength and spacing of the steel beams, it was decided to construct the floor arches of four-inch hollow terra-cotta partition blocks, laid end to end in the form of a segmental arch, the end or "skewback" blocks simply resting upon the lower flanges of the supporting beams, with a rise at the center of about four inches. Then, to economize still further, it was evidently thought unnecessary to fill in the haunches with concrete, for a rough flooring of two-inch plank was simply laid over the beams and upon a thin layer of cinders concrete at the crown of the arch. The inevitable result followed. On

THE MARYLAND TRUST BUILDING.
Baldwin & Pennington, Architects.

the burning out of the rough plank and finished flooring, the large number of private safes used throughout the offices in this building were allowed to fall or cant upon the terra-cotta arches, a considerable distance at the haunches, owing to the absence of the concrete which would have acted both as a filler and as a distributer. The floor arches were too light to withstand such shocks, or even such concentrated loads, and as a result many bays of arches are completely gone in all floors, and safes and vault doors are buried with other débris in the basement.

Another great fault in this floor construction lay in the fact that no adequate protection was afforded the lower flanges of the supporting beams; for while it was evidently intended to cut the skewback blocks so as to make small beveled lips to help support soffit tile, this was naturally found impracticable, and plastering was generally the sole soffit protection provided. This, and the falling of safes, have seriously deflected a large number of the floor beams, which will have to be replaced — with a better floor construction, it is to be hoped.

The interior partitions were built of Lime of Teil blocks, a variety of hollow plaster block. Many of the offices were only about seven feet wide, and the absolute failure of this material precipitated a great quantity of débris about the floors which remained, or into the basement. The material was reduced to a powdery and lifeless mass, through which the finger could often be pushed with ease. The same conditions applied to the partitions built of the same material in the Herald Building.

Conditions more similar to the Calvert Building or Continental Trust Building were found in the Maryland Trust Company's ten-story and attic building, in the Herald Building, in the Merchants' National Bank Building and others, but space does not permit of a detailed account of each. Conditions of great interest and value were to be seen on every hand, — strange freaks of the conflagration in passing by the frescoing of a reception room in one corner of the Continental Trust Company's building, while completely burning portions of the large banking room, also on the first floor; the effective protection afforded by metal sash and wire glass in windows on the rear of the Merchants' National Bank; the strange and fantastic forms to which incandescent lamps or lamp globes were reduced by the heat; the apparent uselessness of metal or tin covered shutters under conflagration conditions. Enough has been said, however, to indicate the very creditable showing made by the steel frame fire-resisting buildings, at least where the protecting terra-cotta was intelligently used; for not only did no steel frame and terra-cotta building collapse, but, saving the Equitable Building's abnormally light construction, no serious amount of reconstruction will be necessary in the terra-cotta floor systems, while several of the buildings will show a very considerable salvage on the partitions and column coverings. In one building particularly, the Chesapeake and Potomac Telephone Building, the side construction, heavy material, porous terra-cotta floors appear as perfect as the day they were laid, and the terra-cotta partitions also, built solidly to the ceiling, are both intact and rigid.

The Baltimore fire establishes the fact, beyond peradventure, that buildings can be built so as to be fire-resisting, at least as far as the structural entirety of the building is concerned; but that, to be most effective, fire-resisting structures must be made the rule and not the exception, thus mutually protecting one another.

It also teaches that this fire-resisting construction can best be attained through the use of terra-cotta and brick as protective media, but that even more care than is ordinarily given in present practice is necessary to secure the best results. Floor arches should be of heavier porous material, with thicker webs and partitions, and well-rounded fillets. The soffit protection of the beams should be more carefully looked to, and have, preferably, not less than one and one-half inches of terra-cotta, with an inside air space if practicable, and with no question as to the security of position. Partitions should be built solidly, upon the floor beams or arches (and not upon wood under-floors or cinders concrete), should be wedged at the top with slate chips to provide rigidity, and should have metal frames and wire-glass windows, and some form of metal-covered or incombustible doors. Column coverings must be built independent of partitions, as the failure of faulty partition construction was responsible for many cases of failure in column coverings.

Finally, still greater improvement is necessary in the further elimination of all possible combustible interior trim and fittings, if any security is to be provided for the contents of the building as well as for the structural parts of the building itself; and more thought must be bestowed upon the question of external hazard. The large unprotected areas of glass in modern design must be replaced by metal frames and sash and wire glass, or else the risk of serious damage from external exposure must be assumed with a full knowledge of possible consequences.

Wood Construction in Fireproof Buildings.

EXPERTS who have examined the remains of the Baltimore buildings are unanimous in condemnation of the extent to which wood was used in these buildings. The Alexander Brown Building appears to have been the only structure in which an attempt was made to use metal sash. All of the tall office buildings were equipped with wooden sashes and frames, wooden finish, wooden doors and wooden floors. The amount of wood was particularly exaggerated in the Equitable Building, which had a two-inch under-floor and a one-inch wearing floor, or the equivalent in every floor of 3 x 12 timbers, 12 inches on centers. In the Calvert Building there was a single flooring nailed to sleepers, but the finish in all these structures was not restricted in size and was sufficient in quantity to furnish abundant fuel for the flames. By actual observation the contents and fittings of the Calvert Building were consumed in three-quarters of an hour, while the Equitable Building burned for two hours and a half. It is contrary to reason to expect any structure with such quantities of wood entering into its finish to be in any sense fire retardent. We have spent a great deal of ingenuity and achieved marked success in fireproofing our frames and in constructing the exterior of our buildings, but in very rare cases have we gone the step further, which would seem so perfectly logical, and omitted entirely wood floors, to say nothing of omitting the wood finish. Until we can be content to use other material than wood for our interior finish and floors, we will be liable to disasters of this sort to our buildings. The Equitable construction was particularly aggravating, and one which no one would dream of using again.

THE HERALD BUILDING.
Joseph Evans Sperry, Architect.

The Protection to the Steel Construction.

BY WILLIAM W. CREHORE, M. AM. SOC. C. E.,
CONSULTING ENGINEER.

To the Editor of THE BRICKBUILDER :

It gives me great pleasure to comply with your invitation to review the Baltimore fire in its bearing on fire protection to steel construction.

The first important feature to be noted seems to be that this conflagration was very much hotter than any other of which any record is available, and naturally was hotter in some localities than in others. The fusing of the steel frames of typewriting machines into a shapeless mass of molten metal indicates a temperature of at least 2,600 degrees Fahrenheit. This is the fusion point of pretty hard tool steel, whereas the softer steel used for structural purposes requires a temperature of nearly 2,700 degrees Fahrenheit for fusion, it being the fact that the harder the steel the lower the fusion point is. The quality of the steel in typewriter frames is somewhere between these two, and would therefore require a temperature above 2,600 degrees Fahrenheit for fusion. As the heated air rises higher and higher in a tall building, accumulating energy from the combustion of its less lofty neighbors and being fanned by a furious draught from below like a huge chimney or blast furnace, it is not improbable that extreme temperatures were attained, in some places exceeding 3,000 degrees Fahrenheit, and continuing for periods of from one to three hours. To convey an adequate idea of the intensity of this heat, it may be noted that the temperature of the Bessemer converter at the end of a blow is 2,900 degrees Fahrenheit, and that of the open hearth furnace at the moment of casting is about 2,750 degrees Fahrenheit. The Department of Buildings in New York City has for several years required of all fireproofing systems a fire and water test in which the system must be subjected to a temperature averaging 1,700 degrees Fahrenheit for four hours and then must successfully withstand the application of a stream of water under sixty pounds' pressure continuing for fifteen minutes. Occasionally in these tests the temperature rises to 2,200 degrees Fahrenheit, the fusing point of ordinary cast iron, but usually 2,000 degrees Fahrenheit is not much exceeded, the assumption being that this temperature is very much above that of any possible conflagration. So much for the unusual intensity of the Baltimore fire.

Under the circumstances it is to be regretted that burnt clay was the only fireproofing material present in sufficient quantities to give value to any conclusions based on its performance. It would have been interesting and instructive to have had a fair comparison with other fireproofing systems under these exceptionally severe conditions. In order to appreciate the great value of terra-cotta as a non-conductor or fire-resisting medium, let us think of the terrific heat of this fire, — about 3,000 degrees Fahrenheit, — raging on all sides of a steel column which would bend under its own weight at a temperature of 1,250 degrees Fahrenheit, and yet which continues to carry a hundred times its own weight practically unaffected by the heat although separated from it by *only two or three inches* of terra-cotta. From our daily contact with different substances it is hard to imagine one that cannot conduct heat, or which does it so slowly at the high temperature of 3,000 degrees Fahrenheit that the amount is inappreciable after a lapse of time. Yet such is the performance of the terra-cotta which protected the columns and beams in some of the buildings in the Baltimore fire. A wonderful and highly significant performance it is, when one considers the probable fate at that enormously high temperature of a concrete system, two of whose constituent elements, sand and cinders, fuse at temperatures less than 2,900 degrees Fahrenheit.

It is not well to attach too much importance to the absence of the water test on this occasion, since such high temperatures are likely to be attained, if at all, only near the tops of high buildings beyond the reach of water pressure, even if it were possible for hose to be brought within range of such flames. It is, moreover, quite improbable that a stream of water could be brought to bear on a fire at 3,000 degrees Fahrenheit under any conditions whatever. Hence an inquiry as to how the material would behave in this event is unimportant.

The more minutely one studies the results of the Baltimore conflagration the more he becomes impressed with the remarkable power of burnt clay to resist high temperatures. The protected skeletons of many steel frame buildings which endured that terrific heat for hours and remain standing to-day practically unharmed, ready to be used again as originally designed, are monuments to the superb properties of terra-cotta as a fireproofing system. Whatever faults its critics may find with terra-cotta as a fireproofing system, the quality of the material itself for this purpose cannot be called in question. The friends of terra-cotta would do well, however, to open their eyes and hearts to well-meant criticism and to apply themselves at once to remedying defects in methods of construction and workmanship which are plainly apparent.

Quantities of flooring fell out and column covering peeled off because of poor workmanship in selecting and setting the blocks and leaving open joints insufficiently grouted. More than any other one thing such a showing as this tends to encourage competitors and to render the general public more and more timid about the use of burnt clay for floor construction. It furnishes some excuse for such silly and extreme views on the merits of terra-cotta flooring as one the writer once heard an architect express, viz., that in his practice when using terra-cotta floors he always made the sleepers strong enough to carry the load above and let the blocks drop out if they wanted to. To equal the quality of the material the best of workmanship is none too good. Competitive systems are laid by skilled workmen under careful supervision ; why then should every small contractor or speculative builder be allowed to set his tile blocks in any way he likes, regardless of consequences and to the great injury of the manufacturer's reputation ?

In many instances in the Baltimore fire the soffits of the floor blocks were destroyed and the covering over the soffits of the beams dropped away, leaving the arches otherwise undisturbed. This action was confined exclusively, so far as observed, to arches of end construction, and never happened to arches of side construction. It confirms other instances of the comparative behavior of side and end construction in a hot fire, and yet the end construction tests better when laid for the purpose. All this points strongly to the necessity for greater skill and care in laying the end construction than is usually engaged. The side construction blocks can be laid with smaller joints, because the sides of a block are straight and true, and close joints are desirable even with the very

THE UNION TRUST BUILDING.
Winslow & Wetherell, Architects.

best of Portland cement in them, because if the adhesion be not perfect the joint is a very vulnerable point in a hot blaze. The end construction blocks, on the other hand, must be laid with cell opposite cell and web against web with great care, or else the stresses in the arch will not be distributed continuously over the skewbacks and tend to disrupt individual blocks.

Such disasters as the Baltimore fire always have been and always will be of great benefit to mankind in general. This one is so far from being an exception that it may become an exceptional benefit, and by the very fact that it was so severe its lessons will be applicable, if properly interpreted, in perfecting fireproofing beyond the limits of endurance required for ordinarily large fires, since it has furnished us with the results of a test of far greater intensity and severity than it would have been possible to make without enormous expense and loss.

Freaks of the Fire.

WHILE the Baltimore fire was apparently resistless in its might, it performed some very queer freaks, leaving untouched structures and objects which one would suppose would melt like wax, and utterly destroying others which seemed impregnable. Most of the electric light wires were buried in the ground, but the street lamps were hung from poles, and it was a frequent spectacle to see block after block of buildings entirely destroyed, with only partially consumed wooden electric light or telegraph poles at the junctions of streets.

In one story of the Calvert Building a single corner office was passed by almost untouched by the flames, even a drawing board and some paper tacked thereon not being scorched, while right next door and across the corridor every room was swept clean.

In another room in the same building every vestige of contents, of wood finish, and nearly all of the plastering even were absolutely annihilated, the partitions were down on three sides, but on the remaining partition, directly opposite the window through which the fire entered, one of the Johnson electric control thermostats was intact, with the mercury still in the bulb of the thermometer.

In the Continental Building on one of the upper stories the heat was so intense that a couple of typewriting machines were melted together in an indistinguishable mass right in front of a vault constructed of only four inches of terra-cotta, within which were preserved records, several thousand pounds of silver money, and books that were in no way injured.

The fire ruined every one of the elevator grilles in the Continental Building, broke up all the marble tiling, but in one story spared a considerable portion of the rubber mat in front of the elevator doors.

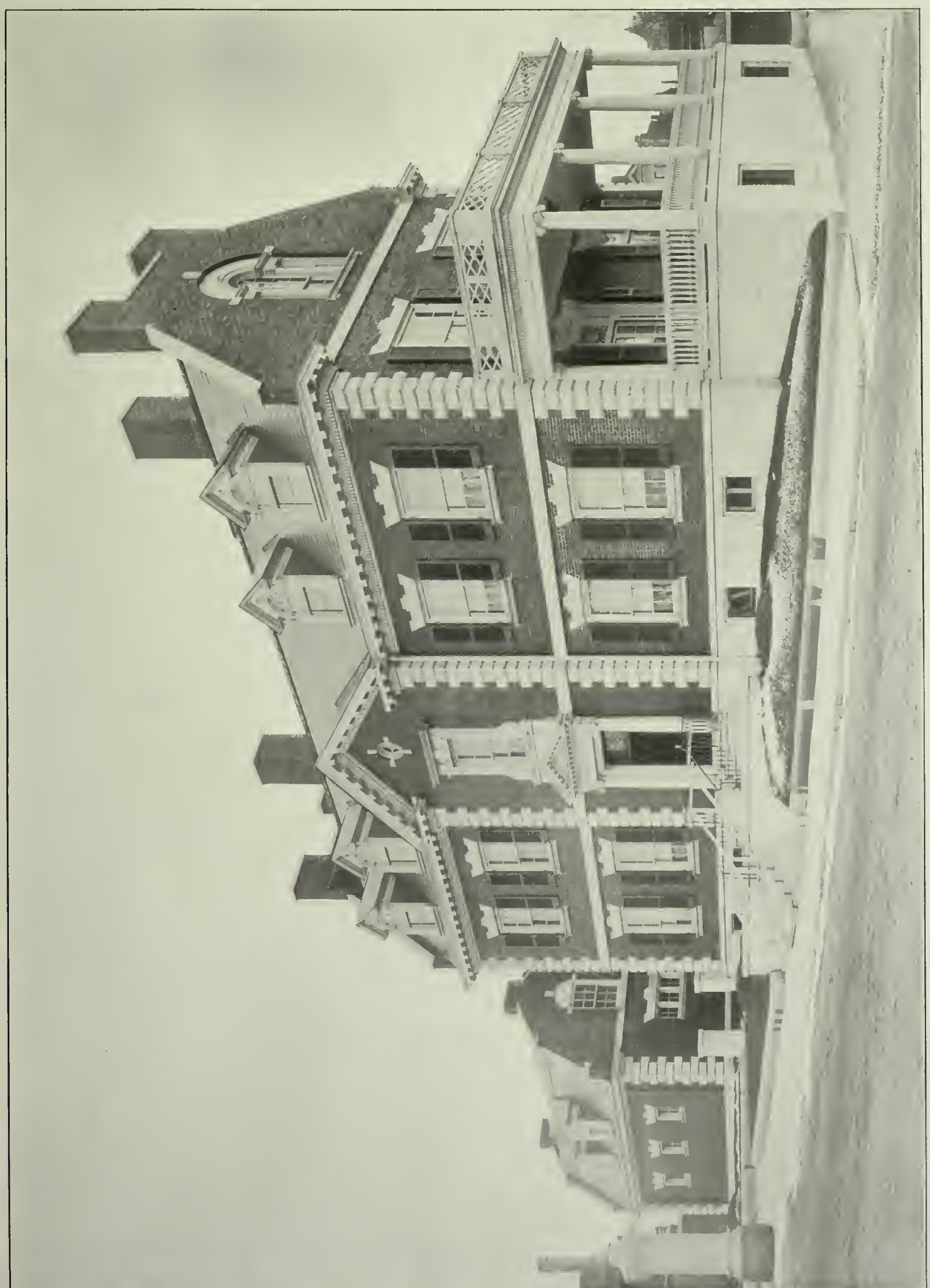
At the corner of Fayette and North streets stands still a three-story brick structure of very ordinary construction. The fire passed completely round it and left it with hardly a scorch on the paint and not a light of glass broken. The corner immediately below it to the south was the center of the newspaper district. On the southeast corner of Baltimore and South streets was the office of *The Baltimore Sun*, of which to-day hardly a vestige remains. It was one of the early iron-front buildings and was utterly ruined. Immediately adjoining it is the building of the Safe Deposit Company, a one story structure built externally of brick and stone, which is only slightly damaged. The interior of the structure reveals only the slightest traces of fire, and business could have been continued uninterrupted during the whole time of the fire, though everything was destroyed on all sides of it.

In one of the offices of the Union Trust Building a sample glass door knob had been placed underneath a safe. The glass was melted down into the body of the brass plate which held it, though the iron safe was practically uninjured.

In one story of the Continental Building a vault had been constructed of four-inch terra-cotta blocks in one of the offices. Inside of the vault was an ordinary fire and burglar proof safe. In the safe was a compartment containing a wooden drawer. In the drawer was a seal ring. When taken out after the fire the contents of the vault were destroyed, the safe was ruined, and the seal ring was melted down to a button of gold, though on the floor immediately above a vault of exactly the same construction was uninjured.

BURNT CLAY VERSUS STONE. GRANITE COLUMNS SUPPORTING BRICK ARCHES IN THIRD STORY OF UNITED STATES APPRAISERS' WAREHOUSE.

The fire ruined a considerable portion of the granite facing of the new Custom House under process of erection, but did not even break the glass in the little old-fashioned windows of the Appraisers' Stores, diagonally across the street. There are many other freaks which might be noted in connection with this fire which go to show that any estimate of the effect of this fire upon material is a false one, unless one takes into account the exact conditions to which the material has been exposed.



HOUSE NEAR DRUID HILL PARK. Joseph Evans Sperry, Architect.

Changed Views as a Result of the Fire.

BY JOSEPH EVANS SPERRY.

THE Baltimore fire has greatly modified my views regarding the best materials and construction for so-called fireproof buildings. It has fully demonstrated the folly of attempting to arrive at definite conclusions from experiments made in a small way to determine the resistance of building materials to fire.

About eighteen years ago, at the request of the Building Committee of the Mercantile Trust and Deposit Company, I made a fire test of several building stones, including granite, marble, limestone and sandstone, in order to select a suitable stone for their building. Cubes about six inches square were placed in a furnace, and two samples of sandstone from different quarries were heated to red heat and dropped in a tub of water; they both stood this severe test. The blocks of marble, limestone and granite were, of course, destroyed by the heat. Sandstone was used in this building which was set on fire in the late conflagration by bricks falling from the higher building on the north crushing through the skylight and leaving the room exposed to the burning materials which showered through the opening. A sandstone mantel in the president's room was completely destroyed by the fire, though no water was thrown on it.

I have always been a strong advocate of terra-cotta, not as a cheap substitute for stone, but as a legitimate building material worthy of an artistic expression of its own, and have watched the development of its manufacture with the greatest interest. Here I thought we had the real fireproof material; and though it has stood the fire better than any of the building stones, it has failed to measure up to expectations. This is not wholly the fault of the material: its failure is due in part to our method of construction. Thin shells of terra-cotta suspended from steel supports or resting on exposed ironwork is bad from an æsthetic point of view, and very bad when subjected to intense heat. The results of the fire convince me that it is most important to make architectural terra cotta self-supporting, and to eliminate as far as possible the use of steel and iron in connection with it. The sills and key-blocks on the Calvert Building were evidently crushed by the expansion of the cast-iron mullions.

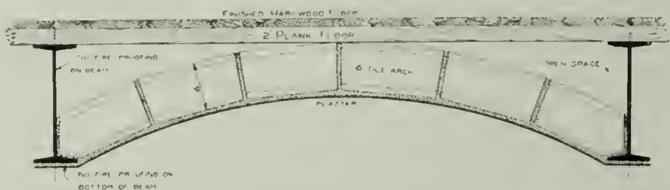
An interesting fact in regard to the Calvert Building is that on the west side, where the terra-cotta was gradually heated by the approaching fire, the damage is slight; and on the opposite, or east side, where the walls were chilled by the cold weather then prevailing, and subject to sudden and fierce heat through the windows of the burning building, the terra-cotta is badly damaged.

The terra-cotta on the Calvert Building has suffered more than the same material on the Equitable Building. Whether this is the result of the mixture of clay or the temperature at which it was burned, I am unable to say; both were made by the same manufacturer. About two-thirds of the terra-cotta on the Calvert Building is apparently uninjured, but this cannot be determined until a thorough inspection is made from a scaffold erected for the purpose. The terra-cotta remaining on this building can be readily cleaned by a sand blast, which will not injure its surface and will effectually remove all traces of the fire. The face bricks are badly damaged in places; and the fact that exposed cast iron in both buildings is fused will give an idea of the intense heat to which the materials have been subjected.

In regard to floor construction, partitions and column protection, I would advise the use of porous or semi-porous terra-cotta. The fire has fully demonstrated the value of this material. Hard tile has been damaged under the sudden expansion, and the bottom plates of the floor arches in large areas have been broken; this did not occur with the porous or semi-porous material.

I should also advise the use of side construction bonded floor arches. While the end construction blocks, if properly set, will carry a greater load, exact mechanical accuracy is required in the size of the blocks and in placing them in position, — both difficult to obtain in actual work.

With the exception of one column on the eighth floor, the structural steel in the Calvert Building has not been injured, and the column referred to can be replaced at a cost of eight hundred dollars. The cast-iron stairway has not been injured, and the elevator fronts but slightly damaged. Every particle of woodwork and other inflammable material in the building, except in one room on the third floor and two small rooms on the first floor, has been entirely consumed. The sleepers were bedded in cinders concrete, and the wood floor laid on concrete and nailed to the sleepers, there being no space left between the bottom of the floor and the concrete. The floor and sleepers were entirely destroyed, and not even a trace of charcoal or ash left. The furrows in the concrete where the sleepers had been are left perfectly clean. If buildings are to be fireproof, all inflammable material, including wood frames and sash and wood floors, must be eliminated. If wood floors are demanded, however, I do not know any better way of laying them.



TYPE OF ARCH USED IN THE EQUITABLE BUILDING.

The fire has certainly shown room for improvement in the treatment of column casings. Many of these were damaged in the Calvert Building, where the effort was made to save floor space by placing the plumbing pipes and conduits for electric wiring in the recesses formed by the channel columns, and then covering both columns and the piping with the terra-cotta protection. Throughout the Calvert Building the wood boxes for the electric conduits were built into the column casings. These boxes were destroyed by fire on different stories, leaving an open flue between the column and column protection, which under some circumstances might have proved very disastrous to the steel. Fortunately, the only damage done was to the column in the eighth story, where the distortion of the pipes forced off the column casing and left the column entirely exposed. One effective way of avoiding this danger in future work, and at the same time securing protection against rust, would be to fill the space between the column and its protection with Portland cement mortar. This could easily be done, as the blocks are set around the column. After the blocks are in place they should be bound with wire before being plastered. This method would give a cement casing to the column in addition to the terra-cotta hollow blocks. The pipes should be exposed, or have a separate casing entirely independent of the column protection.

The partitions in the Calvert Building have nearly all failed. They were built on the floor blocks in some cases, and in others on the cinders concrete filling. Their failure is due entirely to the wood framework around the doors and large window openings in the corridor partitions. I shall certainly try in the future to build partitions self-supporting, using as little wood around the openings as possible.

The failure of the terra-cotta floor arches in the Equitable Building, erected about thirteen years ago, requires a detailed explanation. The girder beams were designed by the architect to carry a total load of two hundred pounds per square foot, and the floor beams a load of only one hundred pounds per square foot, his intention being to use a Guastavino arch, transmitting a part of the load to the girder. Unfortunately, for reasons of economy, a different form of arch was adopted, and in order to reduce the weight as much as possible the haunches were not filled and the flanges of the beams were not protected. Over the arches, resting on the beams and the crown of the arch, a two-inch spruce floor was laid, and over this a finished floor one inch thick, leaving the terra-cotta as a mere ceiling arch. This system of construction has long since been abandoned, though I believe the two-inch under-floor is still being used in Boston.

In this building there was a total thickness of three inches of wood flooring over the entire area. If this flooring were cut in strips twelve inches wide and turned on edge, it would be equivalent to 3 x 12 inch joists placed 12 inch centers, — about as much woodwork as used in any ordinary warehouse. Portable iron safes were placed on the wood floors. As the floors burned from under the safes, they toppled over, in some cases carrying the arches with them from the top floor to the basement. The column casings and partitions were of Lime of Teil, and the ceilings in the first and top stories were of Mac-Ite boards. The Mac-Ite boards and Lime of Teil were entirely destroyed. The cast-iron columns were left entirely exposed, and one of the most remarkable exhibits of the fire is these columns which are apparently uninjured, except in the top story where three columns are distorted, one of which is partly melted No one would undertake to replace this obsolete form of floor and partition construction in the building. It is thoroughly illogical and bad, besides being far from fire-resisting.

In the interest of good brickwork it is well to note the effect of heat upon face bricks secured to the body of the wall by metal ties. In the Continental Building and in the court walls of the Equitable Building, where metal ties were used,

BUILT OF WHITE DULL-GLAZE TERRA-COTTA.

NATIONAL HOWARD BANK, BALTIMORE.
Joseph Evans Sperry, Architect.

large areas of the face bricks have fallen off, and most of those remaining are loose, necessitating their removal. Face bricks should be bonded to the body of the walls with bricks and not with metal ties.

The only buildings left standing in the burned district are the so-called fireproof buildings: all others have fallen or been pulled down. All the remaining buildings are to be repaired, and, in the light of our recent experience, will be far better than they were originally.

In discussing the many freaks of the fire we are told that certain buildings stopped the fire from spreading. The owner of a building on Lexington Street, opposite the Law

A NEW STORE BUILDING.
Joseph Evans Sperry, Architect.

Building, stated to me that his building with its wood cornice stood the fire better than the fireproof Courthouse, both being approximately the same distance from the fire.

The building on the corner of North and Fayette streets, with wood cornice and wood trims around the windows, is left standing, the fire destroying the buildings on the side and rear of it. The Safe Deposit and Trust Company's building on South Street, with the greater part of its roof of glass, is comparatively uninjured, and the stone on the front only slightly damaged — the same stone that is entirely destroyed in the Baltimore and Ohio Building.

The building on the north side of the transformer station on McClellan's Alley, with outside blinds of wood, is not materially damaged, though the building opposite and only twenty feet away is entirely destroyed.

In considering all these freaks it is well to remember the direction of the wind, which was blowing at the rate of about thirty miles an hour from the southwest when the fire started; when it reached Charles and Lexington streets the wind changed to the west, then veered to northwest and finally to north. The fire seemed irresistible, and nothing stopped it until it reached the water's edge. The heat was so great that plate glass began cracking when the flames were a block away. No water was thrown on any of the larger buildings while they were on fire, as the heat was so intense the engines could not approach near enough to render effective service.

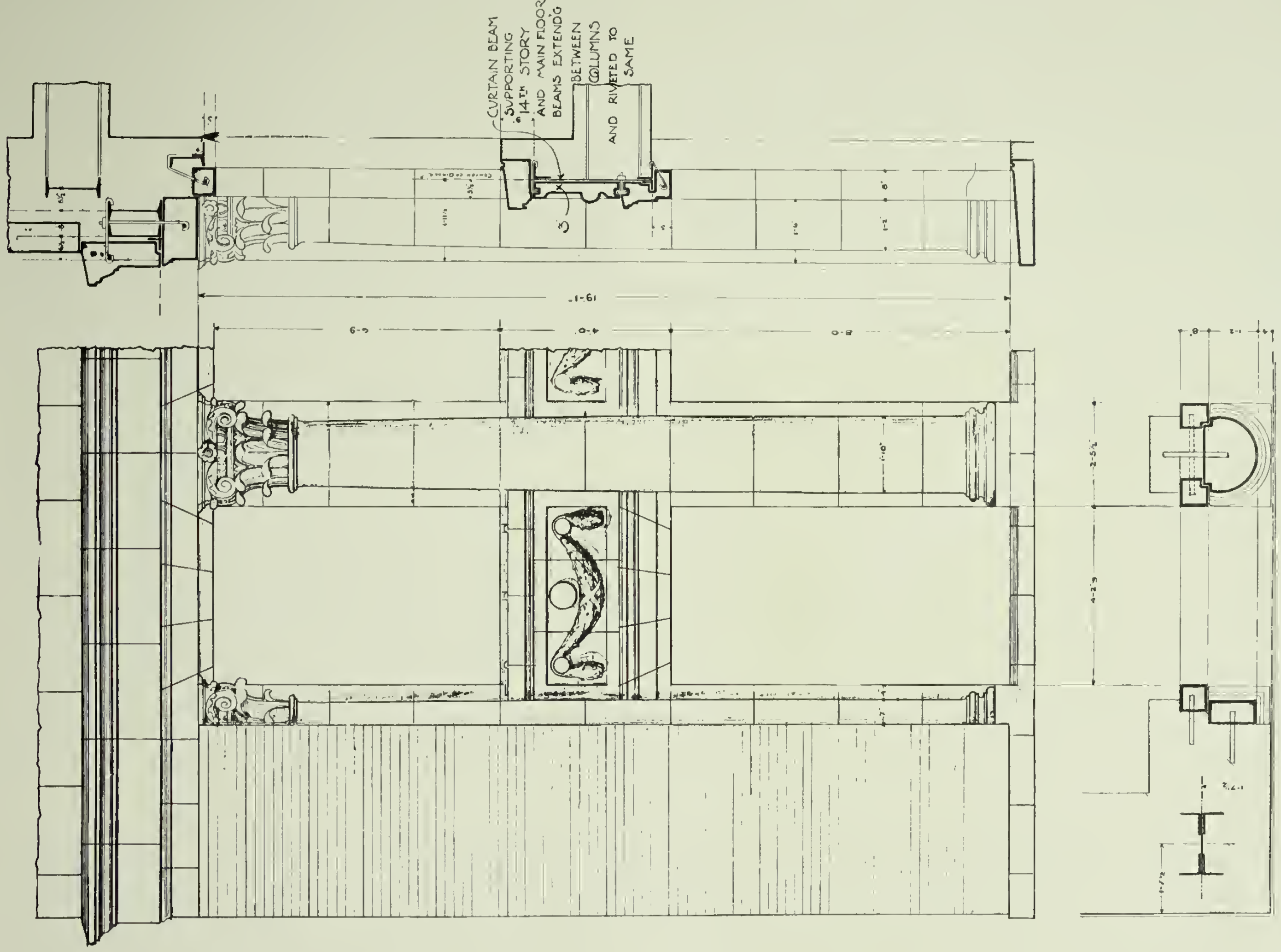
I regret that I am unable to give the exact percentage of damage to the buildings left standing. This is now being determined by representatives of the insurance companies and the owners.

The Protection given by the Exterior Terra-Cotta.

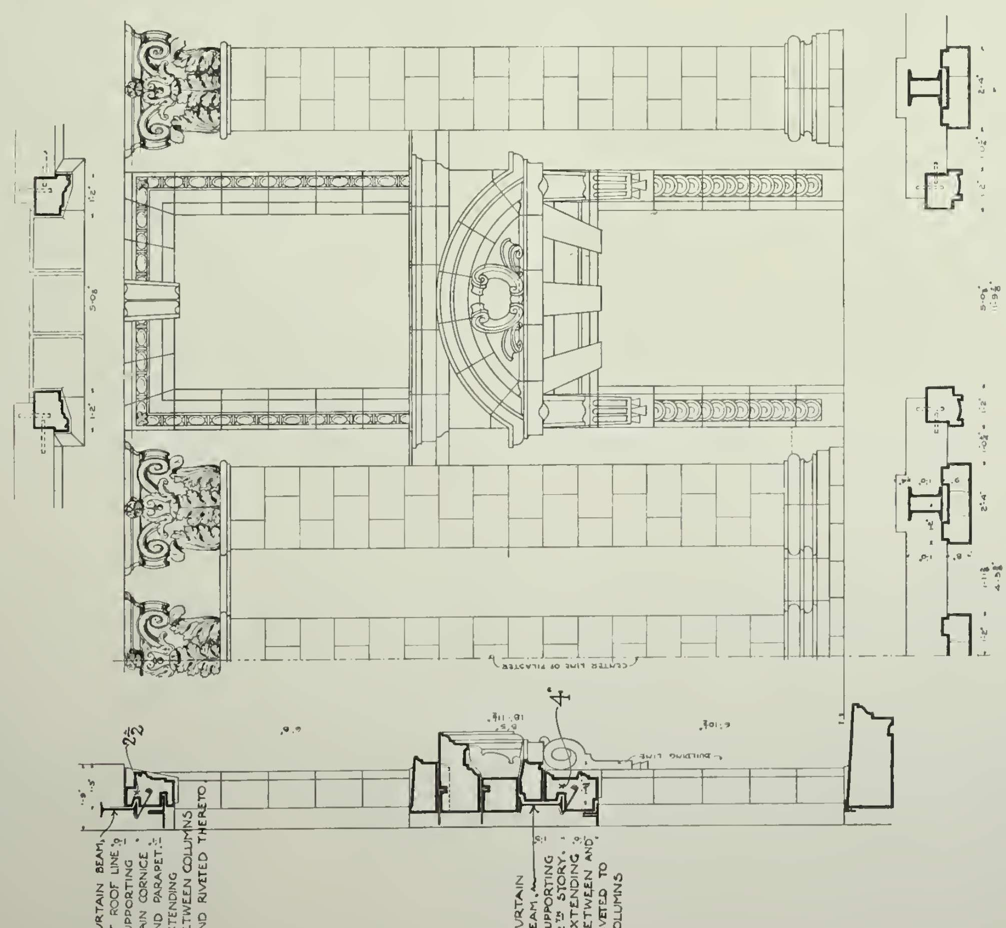
WE illustrate herewith the wall construction of portions of the Continental and the Calvert buildings. These drawings will be of special interest as showing the extent to which the architectural terra-cotta served as a protection for the framework of the building. It will be noted that in the Continental Building the curtain beam between the thirteenth and fourteenth stories, which is riveted at each end to the wall columns, and which directly supports the floor beams, is run in the panel sections between the terra-cotta columns within three inches of the face of the terra-cotta. Had this architectural terra-cotta not properly withstood the tremendous fire test to which it was subjected, these curtain beams would have been exposed, thereby endangering the structural steel frame of the building. It must be remembered that the fire at this portion of the Continental Building was so intense that on the north front the columns shown in this illustration were quite ruined in places, the material spalling off in large fragments. The spandrel sections were badly burned in places but effectually preserved their shape and position and protected the steel.

By reference to the detail drawing of the Calvert Building it will be seen that similar conditions therein existed. The spandrel beams were four inches from the face of the terra-cotta, and in no case were any of the beams exposed as a result of the terra-cotta yielding. The columns of the steel frame, it will be seen, were protected only by the eight-inch terra-cotta pilasters, and had these yielded the steel columns would have been exposed.

Considering the fact that the portions of the exteriors of these buildings shown by the drawings received as fierce a heat as has been noted in any part of the fire, it will readily be seen that the architectural terra-cotta should have a large credit for having properly protected a most important part of steel structures, and that this test really came before the interior structural coverings had received their fiercest attacks. Had the architectural terra-cotta not so fully performed its work in this respect, the damage to the interior structural steel work would undoubtedly have been much greater than it was; and from all the indications which have been observed, stone work in similar relation to the structural steel work would have been of no value whatever.



TYPICAL ELEVATION, PLAN AND SECTION THROUGH THIRTEENTH AND FOURTEENTH STORIES, CONTINENTAL TRUST BUILDING.



TYPICAL ELEVATION, PLAN AND SECTION THROUGH THIRTEENTH AND FOURTEENTH STORIES, CALVERT BUILDING.

The Test of Fireproof Construction at Baltimore.

BY CORYDON T. PURDY, C. E.

THE art of fireproofing is not practised as well as it is understood. That is probably due to two reasons: the importance of good fireproofing in a steel frame building is not appreciated as much as it ought to be; the advantage of good protection to both beams and columns is not realized. Then there is the other reason almost always in evidence, — the pressure to keep the cost of the building as low as possible. In general, owners of buildings are not willing to spend as much money in fireproofing as really first-class work requires. Occasionally an architect is instructed to design a building just as well as he knows how, but such instructions are exceptional. If the importance of good construction was more widely appreciated, probably there would be less pressure to reduce the cost by economizing in this particular.

Some men will take chances anyway, but better work would probably be done in many cases if the owners and the architects concerned fully appreciated and realized to how great an extent the security of the entire property depended upon this particular department of the construction. We do not want fires to occur for our education, but we ought to get from them when they do come a new realization and a new appreciation of the office which fireproofing material is designed to fulfill, and a great fire like that of Baltimore ought to be followed by better construction in many particulars.

The Baltimore fire does not afford us as many opportunities for comparisons as some other fires have offered, but there were more steel frame buildings in this fire than were ever burned before at one time. We will not be able to learn so much from it, but the need of building well ought to be emphasized by this experience as the subject never was emphasized before.

There are various objects to be accomplished in the use of fireproofing material, and the man that designs wisely will recognize them all. It is very easy for us to get interested in some particular consideration of the matter, and become entirely forgetful of the others. This is particularly true of the covering of columns. Again and again column covering is designed with reference to the protection of the column from fire, without any thought that the fireproofing ought also to protect the column from corrosion.

A good fireproof floor as ordinarily used in large city buildings should —

First. Be strong enough to carry its load with the required factor of safety.

Second. It should provide a continuous level ceiling.

Third. It should fully protect the beams from injury by fire, and particularly the lower flanges of the beams.

Fourth. The character of the material should be such that the arch itself will not be injured by fire.

Fifth. The construction as a whole should afford a good protection to the beams against corrosion. If the arch is not sufficient in all these respects it does not come up to the mark of good construction.

The arches in the Baltimore buildings, excepting in the Equitable, were satisfactory in the first two respects, and fairly so in the third respect. In the fourth they proved to be unsatisfactory; and in the fifth, of course, the fire put them to no test.

It is the writer's opinion that the semi-porous material will preserve its own structural integrity much better than the hard material used in these buildings. It is true that in every case the arches were still able to carry their load; but in every building the ceilings will have to be reënforced, more or less, with metal lath if the old arches are retained. The broken floors in the Equitable Building prove nothing either for or against the use of tile, except that a tile arch will not withstand a falling load. Where the arches in this building were not injured by the safes nor by bent beams, they remained intact. The condition of the floor, however, emphasizes the fact that the bottoms of the beams must be protected, just as the same fact has been demonstrated again and again ever since beams were rolled, half a century ago. In this building they were designed for a Guastavino arch, but a five-inch segmental arch was used instead; then, to prevent overloading, the floor was finished with a two-inch plank and one inch of flooring, without any filling material between the arch and the plank, while the bottoms of the beams were not covered at all. The plastering followed the soffit of the segmental arch.

The best protection against corrosion is Portland cement mortar; and if arches are well laid in that mortar, with a layer of the mortar between the fireproofing and the beam at every point of contact, the maximum protection against corrosion will be obtained. The weak point in this particular in every tile arch is the bottom of the flange, and that is often the most exposed part of the beam. In ordinary buildings there is not so much danger of corrosion in the ceiling as there is of corrosion on top of the beam, particularly around column connections; but over rooms used for kitchens or over boilers or places where gases are generated or steam escapes, the bottom flanges of beams are particularly exposed to corrosion. In such places the ordinary tile covering on the bottom of the beam, without any mortar behind it, is a construction that should not be allowed. In more than one case that has come under the writer's observation beams in locations of this character have corroded so badly on their bottom flanges that their strength was materially depreciated.

Column covering was often badly done. It is only now and then a building where real good work in that respect is undertaken. It seemed to the writer that the building in the Baltimore fire that had the best column covering was the building that suffered most, the Union Trust Building. When he examined the building, a few days after the fire, the column covering almost everywhere remained intact. Good work in this respect requires:

First. That nothing should be covered by the fireproofing except the column.

Second. That the space between the covering and the metal should be solidly filled with Portland cement mortar or fine concrete.

Third. That the space around the bottom of the column should be made entirely of concrete, in order to afford the largest possible protection against corrosion. There is no place where fireproofing is so easily injured by water as around the base of a column, and no place where it is more important that corrosion should be prevented. There can be no objection to omitting the fireproofing for the first few inches above the finished floor on the question of fire protection, because the exposure to fire at this point must always be comparatively slight.

Fourth. The writer also believes that it would be well to wrap all the columns, after they are fireproofed, with wire. If some method could be devised for tying or binding the different blocks together, the object of using the wire would be obtained. It is particularly noticeable that fires often loosen the blocks. Simply breaking joints in the ordinary way does not seem to be sufficient structurally. In nearly all the buildings in Baltimore the column coverings were more or less injured by the fire. It is true that in almost all cases the columns were not injured, but the covering of the columns was not perfect, not even reasonably perfect. If all the points named above had been covered by the specifications, the result would have been altogether better, in fact probably no column would have been uncovered, to say nothing of being injured.

INTERIOR VIEWS, THE HERALD BUILDING.
Showing complete destruction of everything except the burnt clay fireproofing, which enveloped the structure.

As a whole the fireproofing may be said to have protected the steel frames in the Baltimore buildings, and to that extent it may be considered a success. The fireproofing, however, ought to have remained intact everywhere, but it failed to do so, largely because the hard material was used instead of a semi-porous or porous material. Elsewhere it was due to the bad use of the material. Of course, the complete protection of a building from fire involves other and serious questions. It involves the protection of windows, the making of borrowed lights fireproof, and the use of little or no combustible material in the finishing of the building; but if the building is not to be made fireproof in these and other important respects, there is all the more reason why the fireproofing in the building should be made the best that it can be.

The Test of Building Materials in the Baltimore Fire.

BY J. B. NOEL WYATT.

SOMEBODY has said, perhaps it was Dr. Holmes, that the surest way for a man to perpetuate his name for all time would be to scratch it on a teacup and have it baked, on the same principle that led the ancient Egyptian to consign his last will and testament or his love letters to the surface of a brick, and very much the same results would follow as obtained in Moore's famous bit of bric-a-brac, when he tells us,

> "You may break, you may shatter the vase if you will,
> The scent of the roses will hang round it still."

This is the story of terra-cotta in a nutshell, and the story of the Baltimore fire does not apparently contradict the general theory and actual fact, however devoid of the poetic sentiment. But the Baltimore catastrophe has also a somewhat biblical characteristic, in the fact that, by reference to isolated instances, as to separate paragraphs alone, without the aid of context, almost any one of many conflicting and contradictory theories or facts, which an advocate starts out with, may be more or less definitely proved or disproved, at least to his own satisfaction.

An illustration of this is the behavior of granite, and indeed of all other stones, under the extraordinary tests they have just been subjected to here, and as examples one may cite two buildings situated within two blocks of each other, the First National Bank on South Street and the partially completed new United States Custom House on the corner of Gay and Water streets, the work on which had attained about the same height as the bank building. All buildings on either side, in the rear and opposite to both of these structures, were destroyed, but the front wall of the bank is standing apparently intact, so far as the condition of the granite is concerned, while the stone of the Custom House is so defaced that a bill is now before Congress to reimburse the contractors for the loss to the amount of $200,000, and the walls of this building had only reached a comparatively moderate height, no part was enclosed or under roof, and therefore not subjected to any heat from within.

The same conditions may be shown to exist in regard to white marble, strikingly illustrated in the walls of the Courthouse, which, with the exception of the west façade, was entirely uninjured. The fire raged directly opposite on both the west and south sides, in some of the tallest buildings of the city, where the heat was most intense; but while the marble of the west front crumbled and chipped and flaked off to the extent of forty or fifty thousand dollars damage, the south side shows no trace of injury of any kind. In separate buildings white marble tells the same story; the walls of the majority of them have entirely disappeared, while the entire front of the new Commercial and Farmers' Bank is standing with comparatively little injury. All this apparently conflicting testimony can, in most cases, be explained by the different degrees of heat and length of time the several buildings were subjected to it, under varying conditions recognized on closer consideration, such as even slightly differing widths of streets, different heights of surrounding buildings and the nature of their contents, and, most important of all, the temporary shifting of the direction of the wind from time to time during the fire.

When we remember that the origin of the whole enormous catastrophe was the sudden bursting into flames of a very large warehouse, in which a fire may have been gathering force for hours previously, followed by violent explosions, scattering burning brands over wide area in the teeth of a strong wind, bearing the flames into the most compactly built section of the city, where big warehouses and great office buildings filled with every kind of burnable material were surrounded by a mass of old structures, which although not of frame were veritable tinder boxes; when we know that in many instances glass fused and at some points cast iron melted and where also such "freaks" are reported as that of a row of water pails, water and all, standing undisturbed in a room where a safe became red hot, or of the old frame shanty immediately opposite to where the conflagration burst out catching fire and going out again (while "fireproof" or "slow-burning" buildings near by were in process of utter annihilation), we realize that while all these conditions and results, as noted above for other materials, must necessarily have obtained in varying degree in the case of all brick and terra-cotta work throughout the burnt district, it is manifest that it was subjected to extraordinary ordeals and peculiar phenomena which have had no exact precedent and which it is devoutly hoped by the law of probabilities will not occur in the same combination again, and from which it is impossible and unnecessary to formulate any very accurate statistics for future guidance *under similar circumstances.* Among the many buildings where terra-cotta constituted an important part of the structure in various forms and quantities, THE BRICKBUILDER would have no difficulty in pointing to numerous instances where it bore the test apparently unharmed, while the owner of a granite, marble or sandstone quarry might lead one around the corner and point to examples of quite different results. The important point, however, is this: what lessons may we learn, what positive opinions can we form and what accurate deductions can be made in regard to the use of terra-cotta as a non-combustible building material under conditions not utterly abnormal, but altogether possible, and which may occur at any time in any city, and the actual facts by the consensus of opinion of those who have examined the conditions most carefully seem to be these: While it has been found that other materials, granite, marble and sandstone, have gone through a process of almost entire destruction, wood of course disappearing, and unprotected iron acting as was naturally to be expected, brick and terra-cotta, while in many instances broken, defaced and otherwise injured beyond possibility of continued use, have in many other instances been so little harmed that they may be left in position with little repair beyond cleaning, and much of this was about the upper part of the buildings, where the fire was fiercest (it generally attacked the highest points and burned downwards), while other material succumbed near the ground where the heat was less intense. And just here it may be noted that as the revised building laws will probably prohibit for the future the use of all wooden "outlooks" or framing for sheet-metal cornices, the difference in cost between the metal and terra-cotta may be sufficiently lessened to lead to a more general use of the latter in cornice work than heretofore. Another fact is that while other materials disintegrated readily when only one flat surface was exposed, brick under the same relative conditions was in majority of cases only destroyed when it showed more than one exposed surface, such as jambs, angles or projecting moldings, etc., etc. This, however, may be partly accounted for by the differing texture of the bricks used at different points in the same wall, for it has been very generally noted that the more ordinary brick, that is, the more porous and less compact (and this also obtained for terra-cotta), was the better preserved, as illustrated in cases where a rear or side wall, of a cheaper brick, and regarded as "inferior," showed much less signs of injury, though subjected to greater heat, than the more expensive finer quality and more ornate front walls of the same building.

The simple conclusions to be deduced from these facts are these: first, that as yet science knows of no materials or methods of construction capable of withstanding such a conflagration as has lately visited Baltimore; and next, that among the so-called "fireproof" materials brick and terra-cotta are better than others, and with them, used alone or in combination with metal framing, in approved methods, better architectural results can be obtained, both in construction and ornamentation, and at less expense, than can be had from other tested materials now in general use.

Great catastrophes and emergencies are great levelers in all fields, in the material world as well as the moral, and we are apt to find in both physics and ethics that there is not quite as much difference between the very good and the very bad as we had thought there was; the sinners are not entirely depraved and the saints not perfect, and architects and builders, like other ordinary mortals, can only take what intelligent observation seems to point out as the best.

THE ARUNDEL APARTMENT. Wyatt & Nölting, Architects.

Wire Glass.

THE Baltimore fire has again demonstrated the value of wire glass as a fire retardent. The rear windows of the Alexander Brown Company Building, a one-story structure, were glazed with wire glass in large sheets. The action of the fire softened this glass so that it crumpled on itself and slid out from the grooves of the metal sash, but before doing this it served as an excellent retardent of the fire and undoubtedly saved the interior. On the roof of the Continental Trust Building there were two large skylights both glazed with wire glass. One was over a series of lavatories which had only one small window to leeward of the fire and was not injured at all by the fire; even the woodwork of the water-closet seats and the paper were not touched. The other skylight was over a storeroom, and fire was communicated from the rear windows to this space, so that the glass in the skylight was subjected to intense heat on both sides. It melted and dropped out, allowing the room below to be entirely wrecked, while under exactly similar external conditions the glass in the other skylight was not injured at all.

It is the general feeling that an office building properly equipped with wire glass windows would have been a very effectual bar to the spread of the fire.

A Lesson from the Remains of the Baltimore Fire.

BY J. HOLLIS WELLS, C. E.

THERE are many lessons to be learned from the Baltimore fire. Marble, granite, limestone and, in some instances, ornamental terra-cotta, in the order named, have been destroyed. Brickwork, where properly laid in cement mortar and bonded, has withstood the ravages of the fire better than any other material, and in many instances, when cleaned off, will require no further repairs than repointing. Iron shutters, mullions and window frames stood not at all, and the flames swept interior and gutted it from cellar to roof

VIEW OF THE FIRST FLOOR OF THE CONTINENTAL TRUST BUILDING, SHOWING THE EFFICIENCY OF THE FIREPROOFING.

of every vestige of woodwork or other inflammable material. And yet the skeleton of steel work stands erect and practically uninjured. That modern methods of fireproofing the steel work in the floors and round the columns are success was demonstrated beyond peradventure.

In all of the high buildings a burnt clay arch has been used, and in some of the buildings it has stood the test better than in others. That this is due to methods of construction and to the materials used there is no doubt. In one building a six-inch segmental arch was used with no concrete filling over it. A heavy plank floor was laid over the top, and where this was burned away the floor beams deflected and nearly the entire interior of the building was destroyed. This is the only instance in which there is evidenced any material injury to the steel work. It was not the fault of the materials used, but of the way in which they were used. In the other fireproof buildings where hollow tile arches were used the blocks were either of the hard burned material from Ohio, light in construction and inferior in design, or of the semi-porous Pittsburg manufacture, somewhat similar to the tile used in the East. The Ohio tile has stood up wonderfully well, considering the thin flange and single web, but much of it must be replaced in reconstruction. It has served its purpose, however, as a fireproofing material, but it does not compare favorably with the eastern tile. It would be ridiculous to say that the floor systems are intact. There is no question that on some floors where the fire was the hottest the mortar between the blocks has been destroyed and there is no bond to speak of. This, however, is again a matter of construction, and had the work been more carefully laid up in the first instance, and with proper cement mortar, the greater the salvage would have been.

It is the same old fault, careless bricklayers with ever ready hammers, improperly wedged keys, and badly bedded soffits; it is wonderful how well it all stood.

A most self-evident fact, even to the casual observer, is that of all the materials used for column covering the only one that stood the test at all was hollow tile, and where this was properly set, with at least three inches of thickness round the column, it stands intact. There are many instances here, also, of bad construction. In one case, where the columns were furred round in order to obtain a minimum diameter, the edge of the Z bar flanges was flush with the furring, leaving a straight joint from floor to ceiling. These joints opened, the covering fell off, leaving the columns exposed. Fortunately this happened generally on the first story, where the heat was least fierce. Again, heating and other pipes were built in, not behind, the covering, and per-

A ROOM IN THE MERCHANTS' NATIONAL BANK BUILDING, SHOWING PERFECT CONDITION OF THE FIREPROOFING.

haps a bare three-quarters inch of material covered the pipe. In every case this opened up a joint and the covering has fallen away.

In the largest of the buildings fireproof safes built of hollow tile are intact, except in one instance where many valuable war records were lost, unfortunately. A wooden closet was built adjoining this vault, and a wash basin with its plumbing pipes was installed. Careless plumbers and wood workers cut away tile, and what little was left cracked and fell away, and the result was total loss.

Long and unbraced lengths of partitions were thrown down; burned floors, wood bucks and heads dropped others, so that a small percentage of the partitions remain intact.

Hollow partition blocks made of plaster and cinders have been utterly destroyed, as are also metal lath partitions. Hollow tile blocks, except where broken by the fall, can be used in rebuilding. The deductions, therefore, to be made are these:

First. That in a hollow tile floor system the end construction semi-porous blocks, laid up in full beds of Portland cement mortar, will be fireproof and strong enough to resist intense heat successfully. These blocks should not be less

THE CORRIDOR OF THE CONTINENTAL TRUST BUILDING. CEILING, WALLS AND FLOORS FINISHED IN MARBLE.

In fastening the marble to the ceiling, holes were broken into the terra-cotta hollow tiles, which weakened them considerably under the conditions imposed by the fire and caused their lower surface to fall with the marble. The steel bars, which also held the marble in place, twisted considerably when left exposed to the fire.

than eight inches in depth and should be well wedged in with slate.

Second. That soffits and flanges of all beams and girders should be protected.

Third. That column covering should be of hollow tile not less than three inches in thickness, and that this covering should cover all pipes at columns.

Fourth. That partitions should be of hollow tile not less than four inches in thickness, and should start on a firm foundation, preferably on top of the arches.

Fifth. That wooden floors and sleepers should not be used in high buildings. The floors should be of cement or some other fireproof material.

It must again be said that hollow tile construction has proven its worth as a fire resistant. The test was as severe as could be, and had the general work of setting equalled the materials used, the salvage would have been very much greater. That the arches stand at all where the fire was hottest and walls and partitions fell upon them is astonishing. That the skeleton is intact is wholly due to the brick and hollow tile encasing the beams, girders and columns. Let us hope that constructors will profit by the lessons taught, and that the buildings erected in the future will show that, with a large experience, has come a more conservative and painstaking spirit. There is no reason why a single beam should deflect or an arch collapse where honest labor has been performed.

Slow-Burning Construction.

THE Baltimore fire, while frightfully destructive of property and seemingly irresistible in its progress, was not particularly rapid in its spread, notwithstanding the high wind which was raging at the time. The total distance traveled in an air line was hardly more than a mile, and the fire was about ten hours in covering this distance. The reason for its irresistible quality is found in the quantity of inflammable material spread along its path, which constantly added fuel to the flames at a rate which made it impossible for any fire department to stand against them. We are not prepared to say whether or not there was any building of so-called slow-burning construction in this fire. If there was, it shared the same fate as the most shoddily constructed shanty. There was one building which was equipped with outside sprinklers which has been quoted as an example of resisting the fire most successfully, but this was on the northerly edge of the fire district, and the wind shifted early in the course of the conflagration, so that this particular structure, while truly protected by the sprinkler service, might have been saved even without it, but of slow-burning construction not a vestige remains anywhere. It is a favorite argument of those who advocate mill construction that a fire will not spread readily downward through solid wood, that in fact a heavy plank floor is a very efficient fire stop. Indeed the building laws in some cities try to recognize this by allowing the omission of certain fire stops on the floors when the planking is sufficiently thick and the ceiling is unplastered beneath. That this is rank fallacy is abundantly demonstrated by the Baltimore fire, for not only did the fire absolutely consume from two to three inches of solid wood in close contact with a cement floor, but even ate out every trace of the sleepers underneath and licked into every corner to find out and consume utterly the last splinter of wood. Any construction which employs wood cannot fairly be called slow burning in the face of the testimony here of-

"SLOW-BURNING CONSTRUCTION."

fered, and even in a slight fire any one who undertakes to assume that fire will not spread downward through even a solid wood floor several inches thick will have to reckon without the light of the Baltimore experience and will be woefully deceived.

The fact is we are approaching a state of perfection, from a fireproofing standpoint, all too slowly when we ignore the lessons of this and other fires and continue to erect buildings of slow-burning construction in the business sections of our cities.

Structural Steel Failures in the Fire.

A STUDY of the effects of the Baltimore fire would be incomplete without some account being taken of the extent to which structural steel failed. The easterly wing of the eighth story of the Calvert Building was occupied by the Baltimore and Ohio Railroad Company, and at one point documents, files, etc., were piled from floor to ceiling for a considerable distance around one of the columns. This column was protected in the usual manner by terra-cotta, but the casing had been cut away to receive the wooden electric cut-out box. The fire was burning around this column for about four days with great intensity. The wooden cut-out box was speedily consumed, leaving a gap in the fireproofing which soon became enlarged until nearly all the blocks were dislodged. The heat was so intense that the column, which was constructed with two channels and two plates riveted together, was thoroughly heated at one point and gave way, allowing the plates to buckle and the flanges of the channels to straighten out. It is a property of iron that it expands under heat, but does not necessarily come back to its original dimension upon cooling; and though this column was so weakened by heat as to give way in the manner described, the actual settlement to the building was only trifling. Mr. Sperry, the architect of the building, has obtained an offer from a reliable contractor to repair all of the damage caused by the failure of this column for $800, and that is the total extent of the structural damage to the Calvert Building.

In the Equitable Building the floor construction consisted of terra-cotta arches turned between the beams, as explained by Mr. Sperry in his article elsewhere in this issue. This is considered a very defective construction. Probably twenty-five per cent at least of the girder beams in this building will have to be replaced and about ten per cent of the smaller floor beams. There are also two columns somewhat injured by the heat. The walls are self-supporting, the floor columns being placed just inside of the outer walls. One of the columns is squashed out of shape, much like the column in the Calvert Building. With these exceptions, however, the structural work in the Equitable Building is in good condition.

The only damage to the structure of the Maryland Trust Building was in the attic roof space, where there are some long columns consisting of two light channels bolted back to back, without any fire protection. Around one of these columns a mass of books or papers had been stored which was entirely consumed, heating the column so that it settled into the shape of a letter S, letting the roof down nearly a foot at this point. The column, however, did not entirely yield and no further damage was done to the frame.

In the Continental Building the windows on the rear were quite close together, being separated only by cast-iron mullions. These mullions were badly bent out of shape by the action of the fire, and in bending in some places pulled off the brick facing of the spandrels, and some of the spandrel beams are slightly bent and need to be replaced. Otherwise the structure of the Continental Building seems to be in perfect condition.

The above includes, as far as is known, all of the structural damage to the framework of all of the steel frame buildings which passed through the fire, and is a remarkable testimony to the efficiency of the fireproofing systems employed. The total cost of the six tall fireproof structures we have particularly discussed was something over four million dollars. Of this amount the steel was represented by at least $200,000. The combined damage to the frames caused by this tremendous conflagration was less than five per cent, and had the construction been throughout as well protected as it was in the Union Trust, the Telephone and the Herald buildings there would have been little or no damage.

So-called Fireproofing Material Which Failed.

AT the time the Calvert Building was erected it was anticipated that the supply of offices would be greater than the demand, and consequently in many of the stories the partition work of terra-cotta, which had been originally provided for, was omitted. After the building had passed out of the hands of the architect the owners had an opportunity to purchase quite a quantity of Mac-Ite and Lime-of-Teil partition and floor blocks. These were stored in an unfinished room in the basement, and the supply was drawn upon from time to time for a certain amount of partition work in the offices as rented. The action of the fire upon these materials is exactly what would have been expected. Diligent search failed to find a single block of sufficient strength to hold itself together. Wherever the fire had struck, even in a slight degree, the material was so soft that one could walk right through it, and in the pile in the basement some fireproofing experts amused themselves by thrusting a sounding rod clear through a solid mass of the material without encountering any resistance. None of the Lime-of-Teil or Mac-Ite partition blocks remained in place, and as they fell upon the floor from the impact of the fire they were broken into indistinguishable fragments. This is one of the materials which absolutely failed to stand fire.

In nearly all of the buildings the finished floor boards were nailed to sleepers bedded in a filling of cinders concrete over the terra-cotta arches. This concrete in the Calvert Building is so soft, as a result of the fire, that in walking across it the hollows left by the comsuming of the sleepers are crushed out of shape and most of it everywhere is so soft it can be readily shoveled out of place. In some cases even the furrows of the sleepers have disappeared and the mass has fallen together. In the Continental Building the concrete filling is of a better quality, but even there it is seriously disintegrated by the action of the fire and has lost a great measure of its strength. Cinders concrete has been conclusively shown by this fire to be worthless as a fire-resisting material.

The Chesapeake and Potomac Telephone Building.

IMMEDIATELY to the south of the Calvert Building and enclosed by it on two sides is the building of the Chesapeake and Potomac Telephone Company, designed by Joseph Evans Sperry, a six-story structure which has made a most remarkable exhibition of fireproof qualities. The floors are constructed of steel beams with semi-porous terra-cotta arches, and the partitions are built of four-inch porous terra-cotta blocks. The building was surrounded by flames on two sides, and was gutted of everything inflammable, not a vestige of anything combustible remaining in any story of the building. The structure across the alley towards the south entirely disappeared, and the Calvert Building was a mass of flames throughout its entire height. So far as could be ascertained by inspection none of the fireproofing in the Telephone Building had suffered any damage. The ceilings appeared to be in perfect condition throughout, none of the partitions have when it was put in; and as the exterior of the building is injured but slightly, the repairs are simply a question of interior finish and plastering. The partitions were all self-supporting. No evidence was found of any reënforcement by iron, but the blocks were carefully keyed together, the openings for doorways were laid with carefully broken joints overhead, and the blocks were set in an excellent manner

INTERIOR VIEWS, CHESAPEAKE AND POTOMAC TELEPHONE BUILDING.

The fire in this building was terrific, as indicated in the illustrations. The terra-cotta fireproofing, however, is practically uninjured.

fallen, although a few of them have sprung, and altogether it was a most remarkable demonstration of the extent to which a properly constructed building can withstand the action of heat. There was found through the building the usual assortment of partially melted typewriters, steam pipes twisted out of recognition, glass ink wells melted into an indistinguishable mass, marble burned to powder, and concrete filling hardly holding its shape, but the terra-cotta appears to be as good to-day as so that when the wooden frames and finish were burned away, the overhead work did not settle. The partitions between the offices and the corridors were pierced by no windows, and no cases were found of the blocks being carelessly or badly cut away for the electric work. In fact, the fireproofing in this building was applied in exactly the manner an expert would advise to secure the best results, and it naturally has stood in first-class shape.

Clay Products Tested by Fire.

BY THOMAS CUSACK.

PATERSON FIRE RECALLED.

THE costly but instructive fire test at Paterson, N. J., in February, 1902, received less attention from the professional press than it deserved. The daily papers, of course, gave us pages of flamboyant generalizations which went off in smoke, leaving no tangible record and no lasting impression. Even treated as a spectacle they were too pyrotechnic and not sufficiently technical. The people most intimately concerned made their own deductions from what remained after the ruins had cooled enough to permit inspection, and the outcome showed that, on the whole, they made them correctly. Those more remotely situated, however, were left in doubt, many of them in utter ignorance as to the strong and weak points revealed in buildings of comparatively recent construction. The main facts may now be briefly recalled in reviewing what has happened in Baltimore on a still larger scale, where object lessons that have cost millions, covering an area of one hundred and fifty acres, are open to investigation.

CRUCIAL CHARACTER OF THE TEST.

In Paterson three buildings of modern construction, two of them supposed to be fireproof, stood in the very heart of the section that was destroyed. The Savings Institution and the Second National Bank were brick and terra-cotta above the first story. On the Hamilton Club these materials were used exclusively from water table to roof. They were surrounded by old buildings, few of which made any pretense of being even fire-resisting. The flames, fanned by a stiff breeze, spread among them in rapid succession, enveloping the three that were comparatively fireproof. We say comparatively, for the windows were shutterless, the glass was not wired, and the wood frames not protected by anything save paint. The glass melted, where it did not crack and fall down; the inflammable contents of the rooms burned until exhausted, while the conflagration continued to rage on all sides; yet the floors, walls and exterior features withstood the ordeal. The Club building had wood floor and roof beams, which, falling in, left nothing but the four outer walls. Scorched and discolored, it is true, but these buildings were there the day after, grim and defiant, the center of attraction in a scene of widespread devastation. They stand there to-day in eloquent, unanswerable testimony to the efficiency, if not the invulnerability, of burned clay. A few pieces of balustrading, weighing in all about five hundred pounds, had to be replaced during the progress of cleaning and restoration on the bank, while the other two buildings did not require a single block of new work.

TERRA-COTTA AND BRICK IN CONTRAST WITH STONE.

The new City Hall, standing between two of these buildings, but isolated on all sides, suffered very extensively. The granite flew off in splinters, the limestone calcined as easily as marble, flaked and, after absorbing moisture, moldered into dust. These contrasts did not pass unnoticed by the architects and people of Paterson. They took up the work of rebuilding with a spirit and enterprise that may be emulated by the older and more wealthy city of Baltimore, but can hardly be surpassed. Brick and terra-cotta became more popular than before; while stone, with the exception of what was used in re-facing the City Hall, has not been in general demand. Recent information would indicate that stone is not now considered the only badge of respectability in Paterson.

Similar contrasts obtrude themselves on every hand in Baltimore, where they are equally striking and ten times more numerous. There are buildings on which hardly a single stone has escaped injury, while in some places the destruction amounts to almost total annihilation, and so cannot be reproduced by camera. The new Custom House, of which two stories have been built, had no fire of its own to trouble about, but heat radiating from across the streets has defaced it in spots. Granite blocks piled on the sidewalk close to the building line and five or six feet high, cased with corner strips and bound with hoop iron, behaved very discreditably. Some of these one-inch casings burned off, but many or them remained only slightly charred; yet the granite is calcined and splintered in all directions,— a phenomenon for which few people would have been prepared. Any number of such freaks have been noted, but this is hardly the time or place for their recital.

WHAT SAVED THE COURTHOUSE.

The new marble Courthouse was saved chiefly by a change in the direction of the wind, in addition to which it was shielded by the Herald on one side, with the Calvert and Equitable buildings on the other. As it is, a portion of the architrave, cornice and parapet on the St. Paul Street front was calcined by heat from the Law Building on the opposite side. What must have happened had the Courthouse itself caught fire will not tax any one's imagination. Placed on the other side of Fayette Street, where the Equitable and Calvert buildings received the full force of concentrated flame, then at its highest intensity, we think there would not have been much left for salvage. On the other side of St. Paul Street, where stand the brick and terra-cotta walls of the Herald Building, substantially intact, it is obvious that nothing could have saved the $3,000,000 marble building from the fate that befell the Law Building, which was stone and without fireproofing.

FURTHER CONTRASTS CONSIDERED IN DETAIL.

There are stone sill-courses on the Herald Building with a terra-cotta egg and dart bed molding below; one has been taken and the other left. The same thing has happened on the Maryland Life Building, the façade of which is the only part left standing. This one remaining wall is brick and terra-cotta above the first story; the fluted columns, capitals and main cornice are intact throughout. A small portion of fillet has been broken on one column, whether by heat or falling débris is uncertain. Not a particle of the more delicate ornament has perished, even the abacus of the capitals appears uninjured, but the devouring element picked out with wonderful discrimination the stone sill-courses for its prey.

WHERE THE STONE WAS SHIELDED.

Some of the structures that were largely of stone have entirely disappeared, but the Rialto and the Hambleton buildings are types of what remain. When used on the lower stories only, the stone was shielded somewhat, the flame sweeping over the tops of low buildings and striking with redoubled force against the tall brick and terra-cotta barriers, a fact that gives the contrast additional significance. Modern construction, on the whole, gave a good account of itself. That such buildings did not show a greater immunity from risk or remain unscathed was due to the fact that there were not enough of them to leeward of the spot where the fire originated. An editorial in the New York *Tribune* of the 19th inst. sums up the situation as follows :—

" Fire insurance experts of the highest ability and of long experience do not like to see granite buildings of importance going up in this era. A monumental public structure of great size may be safely built of granite if it stands alone, with wide spaces all about it, say in the center of a park. But the great fires in Chicago, Boston and Baltimore prove beyond question that thick walls of granite crumble and flake, disintegrate and tumble, when beaten upon by tempests of flame."

RELATIVE MERITS OF BURNED CLAY.

The material that shows to best advantage in Baltimore, that receives unstinted, unanimous recognition alike from disinterested onlookers and critical investigators — the word of five letters that is on everybody's tongue — is *brick.* Next comes architectural terra-cotta generally; floor arches, partition blocks, column casing, etc., all of burned clay. But for the protection afforded by these materials not one of the great " sky-scrapers " would have survived. In numerous places — far too numerous, indeed — where fireproof casing may never have been put on, where it had not been properly secured, and where it had been forced off by exploding and expanding steam and water piping, enclosed alongside the columns, structural members wilted under their load, assuming forms that showed how nearly they had reached a welding heat. Steel beams left naked would have wilted at points where the white and blue flame impinged, and the whole structure would have first sagged on the side that was hottest, then lurched and finally toppled over to leeward. We say leeward, not at all on the score of wind pressure. In every instance the flame was hottest on the leeward side of the tall buildings. Entering them first by the windows on the windward side, the inflammable contents of every room blazed up simultaneously, the flames being carried through the windows opposite with the reducing force of a blast furnace. Every window became a blowpipe under forced draught, but instead

THE RIALTO BUILDING, SHOWING THE EFFECT OF FIRE ON STONE.

of cool air they were fed by induced currents of white heat, generated some distance below and rushing upward with a suction and cumulative force that hardly anything save fire clay could withstand. The cast-iron sash weights and radiators in some places showed signs of fusing. Even terra-cotta jambs and lintels could not, in all cases, stand the rapid unequal expansion. They did not fuse, crumble or disintegrate, but the suddenly heated face scaled or parted from the

THE MARYLAND LIFE INSURANCE BUILDING.
This building was not fireproof. Note condition of terra-cotta columns. Demolition had begun before photograph was taken.

backing and fell off. Mullions, behind which were a naked channel, an I or a T section, unprotected except by the wood frames which furnished additional fuel, were pushed out by the buckling ironwork.

INJURY FROM MISPLACED IRONWORK.

The one lesson that this fire forces on the attention of practical terra-cotta men calls for the elimination of ironwork in window lintels. As a rule, lintels having eight or twelve inch reveals can be made perfectly self-supporting. In openings of extreme width, where a channel or I beam may be introduced, it should be placed behind or above the terra-cotta, built over in brick and cased on exposed sides with fireproofing. On no account should it be *slotted into* the lintel, architrave or voussoirs. We have from time to time convinced architects on this point; one of them only a few weeks before the fire, enabling him to obtain a handsome rebate for two sets of beams, extending all the way around an important public building, which were not only superfluous, but would have been positively injurious, had they been used as at first intended. Apart from its behavior in case of fire, ironwork of this kind reduces terra-cotta members to a shell, the soffit flange being rendered weak, and liable to fall off from a chance knock or during settlement of the building. The habit of placing beams within four inches of the wall line should be strenuously opposed. Four inches on paper often becomes one or two inches on the building, owing to irregularities in the ironwork. The steel skeleton may be more or less out of plumb and is invariably at fault in lateral alignment. The mason, whatever his shortcomings, adheres to his line and plumb-rule, even if by so doing the flanges should come clear through the face of terra-cotta. A fitter is sent for and the blocks are slotted out to within an inch of the face, sometimes less, in total disregard of consequences, be they remote or imminent.

When the section of a mullion is not of sufficient area to stand by itself, the iron reënforcement should be cased before the frames are set. The tile need not be more than an inch in thickness, but it should not be omitted, as it was on the Continental Trust Building and with disastrous consequences, for which see view of rear elevation. A safe rule for the terra-cotta man to observe in all such work is that where iron, of the kind just referred to, is not really necessary it is an unjustifiable expense and an unmitigated nuisance.

FAKES THAT HAVE BEEN FOUND OUT.

Stretcher bond, with clip headers and metal ties, against all of which so much has been said and so little done, has surely sounded its own death knell in Baltimore. The four-inch veneer has fallen off, not merely by the square yard, but by the square. This is one of the worst of several discreditable survivals in the building practice of to-day. In Europe it is known only as a criminal offense of American invention — one that has not as yet gained a foothold elsewhere, unless it has been transplanted in the much-talked-of Westinghouse brickwork at Manchester, England. Why the accursed thing should be winked at by reputable architects, why it should not be penalized and prohibited, is beyond comprehension. In the same category may be placed all kinds of partition blocks into which lime, plaster or partly burned coal in the form of cinders enters as an ingredient.

POROUS AND SEMI-POROUS FIREPROOFING.

The conclusions reached in relation to fireproofing, by architects, engineers and insurance experts, are decidedly in favor of porous or semi-porous terra-cotta. The hard dense bodies did not have sufficient resilience to take up the inevitable expansion. As a result of this, the soffits cracked soon after the plaster had fallen off, allowing flame to enter the open chambers. An independent examination extending over two days enables the writer to vote with the majority in favor of porous terra-cotta, without doubt or reservation. Some architects, following the same line of argument, endeavor to reach similar conclusions in regard to exterior ornamental terra-cotta. At that point we part company.

ARCHITECTURAL TERRA-COTTA MUST NOT BE POROUS.

We have listened to the demands of architects on this and the other hemisphere during the past thirty years for hard homogeneous goods with an absolutely impervious face, and for a good portion of that time have helped to supply the want. Having reached the long-sought goal, at which we can pause and challenge the red ink test, shall we from this date retrace our steps and consider "love's labor lost"? Are we to turn back the clock a score of years to the discarded specimens that disgraced the industry up to, say, 1893, when the porous surface had to be painted to prevent disintegration during recurring winters? Suggestions such as this, even from an architect, remind us that "too far east is west." Fireproofing that is not exposed to rain or frost may be as porous as you please, but architectural terra-cotta belongs to a different family. It must be hard, non-absorbent, smoke-proof and self-respecting under the most variable climatic conditions. Every company in the business has been gradually approaching such a standard, having most of them reached it some time ago. They will continue to perfect their output along the same lines in the light of recent experiences; to which end, experiments are already in progress.

A BOON TO BALTIMORE AND ELSEWHERE.

The disaster will, in time, be accepted as a blessing to Baltimore, for in a new and even better sense she will rise and renew her title as the Monumental City. Cities, no less than men, "may rise on stepping-stones of their dead selves to higher things." So far she has furnished an exhibit of unexampled magnitude, costly to those at whose immediate expense it has been made, but free to all who are themselves free to profit from it. It is certainly proving a liberal education to all kinds and conditions of men connected with building, who at this writing have added considerably to her floating population. Some are there for data, some for ducats, but whatever their mission they are getting experience at first hand from which to revise and readjust their theories. Let that be done frankly, without regret and without delay, seriously as a task and hopefully as an inspiration.

BALTIMORE AND OHIO BUILDING.
Showing utter ruin of stone trim around openings.

Building Materials which did not Stand the Fire.

IT has been said that a fire such as this could be made to prove almost anything, and if one were to simply look for confirmation of preconceived ideas it would be very easy to find such ideas verified by the results. The terra-cotta undoubtedly had to withstand the fiercest attacks of the flames. In nearly every building it was noticeable that the fire was much more destructive at the top than at the bottom, and it was fortunate for all the steel frame structures not only that so little stone was used, but also that when used it was chiefly in the lower portion.

GRANITE ON GROUND AT CUSTOM HOUSE, BADLY SPALLED, THOUGH HEAT NOT INTENSE.

The Merchants' National Bank is an eight-story steel frame building on Water Street, extending from South to Holliday Street. The exterior is faced entirely with a pink granite. The fire came from the South Street front, swept through the building, practically wrecking everything except the construction, and went out through the Holliday Street windows. On the South and Water Street fronts the granite is very little injured, but on the Holliday Street front it is so shattered by the heat that very little of it remains, and what is there is barely hanging in place. The fire attacked but slightly the other two fronts, as is shown by partially consumed woodwork around the windows and by some of the glass not being broken. It is evident from the condition of the Holliday Street front that had all the fronts received an equal assault from the flames none of the granite would be intact to-day.

The United States Custom House is in process of construction on the square bounded by Water, Gay and Lombard streets and an alley. The exterior is entirely of a cold, close-grained granite, and the structure is carried up to about the middle of the second story. Along the Gay Street front a spur track has been put in place upon which at the time of the fire were some freight cars loaded with stone partially crated. There was also quite a quantity of granite piled in front of the building close to the wall and bound with wood to protect the edges. The fire here was manifestly not very destructive, and yet wherever it touched the granite the stone was ruined, and the total damage to the building will be very large.

In the Maryland Trust Building the stonework of the lower story is very badly broken, notwithstanding that all of the woodwork of the sashes about the entrance and in fact the whole of the entrance hall is almost uninjured. In the upper stories one and one-half inch slate sills were placed over the terra-cotta as a protection against the weather. This slatework is in nearly every case shattered by the heat so as to be useless.

In the Equitable Building the stonework was very little exposed and suffered very little in the lower stories, but where the flames actually struck the building, especially on the side towards the Calvert Building, the granite sills and the terra-cotta finish were subjected to an equal degree of heat. Here the terra-cotta is practically uninjured, while the granite in nearly every case is ruined.

In the Herald Building almost the only structural damage is to the stonework in the lower stories. On the Fayette Street side the finish about one of the windows is cut off clean, flush with the face of the wall, as if done with a tool. The balcony on the Fayette Street side, which is of stone, is badly broken in several places, and in the upper stories where stone sills and the terra-cotta received an equal exposure the terra-cotta suffered not at all and several of the sills were ruined.

DETAIL, CALVERT BUILDING, SHOWING BADLY SPALLED STONE.

In the Calvert Building the two lower stories are of stone. On the west front, while the terra-cotta of the upper portion, which received the most heat, is hardly injured at all, nearly every individual stone in the lower two stories is cracked or broken so it will have to be removed. In the hall in first story there were a number of columns of solid white marble. These have gone to pieces like plaster and some of them are hanging in shreds ready to topple over at the least touch.

The new Courthouse is built of white marble. The front on Fayette Street was partially protected by the Herald Building, but the adjoining Law Building on Lexington Street was a total wreck, and the flames here had a chance to attack the Courthouse with a result that the surface of the ashlar, the cornice and the balustrade above are all badly damaged. This work is now being replaced by the city. This Courthouse, by the way, affords an illustration of the fact that the effect of the fire blast was upward. The greatest damage was to the cornice.

The Union Trust Building was of limestone in the three lower stories. There were perhaps a dozen stones which the fire left intact. All the rest were broken beyond repair.

Adjoining the Equitable Building on Calvert Street is a structure occupied by the Baltimore and Ohio Railroad. This

CORNICE OF THE NEW COURTHOUSE, SHOWING DAMAGE TO THE MARBLE.

is an old-fashioned design of brick and sandstone with a Mansard slated roof. There is considerable stone finish about all the windows and the whole building is an utter wreck. There is not a single piece of stone that isn't hopelessly ruined and the slates are all gone to fragments.

The lower portion of the Continental Trust Building is of stone. It escaped any serious damage simply because the exposure was but slight. Directly opposite the Continental Trust was a bank building with a most elaborate carved front of limestone or sandstone. It looks like a frost-bitten apple now, and the details are hardly traceable through the wreck. The same is true of the stonework of the Commercial and Farmers' Bank Building, the First National Bank, the National Bank of Commerce, and in fact in every structure throughout the burnt district the fire had but to touch the stone and it split to pieces or crumbled away. Marble was even less reliable than granite.

The International Trust Building is a one-story bank, fireproof in construction. The roof was broken in by the fall of the adjoining building, and the fire burned out most of the interior fittings. The front is quite elaborate and of white marble, which is white no more, but has been turned a beautiful light yellow by the effect of the heat and in a number of places had been badly spalled and checked by the fire. Pieces of white marble picked up in the street close by the International Trust Building, but not necessarily from this one, would crumble between the fingers like soft lump salt.

The building of Alexander Brown & Co., a one-story structure opposite the end of the Continental Building, was only slightly damaged by the heat on the interior, and the exterior is practically intact. It is a marble and brick building. Toward the rush of the fire there was presented a solid brick party wall, but where the flames licked around the corner of this wall on Baltimore Street the marble is eaten out and spalled in a number of places. Had this been terra-cotta it is doubtful if the entire structural damage would have been more than a very few hundred dollars.

One of the most picturesque examples of the action of the fire on stone is afforded by the United States Appraisers Stores at the corner of Lombard and Gay streets. This is a very simple four-story structure with small windows glazed with common glass, most of which is still in place, the wood sash even not being consumed. For the interior there is an elevator well running through all stories, capped by a skylight. The floors are constructed with groined brick vaultings in bays about twelve feet square in plan, springing from piers of granite about two feet square. The fire entered through the elevator skylight, worked down into the third

DETAIL, THE HERALD BUILDING, SHOWING BADLY SPALLED STONE.

story and consumed the contents, but not sufficiently to wreck the building. Some of the granite piers, however, which were surrounded by fire are badly damaged. One went to pieces entirely, leaving the brick vaulting hanging in place, and several of the others are so badly spalled away that the remaining stonework is barely six inches square.

Marble tiling suffered in every building where it was exposed to fire. In many cases the marble was reduced to fine powder. In others the marble would seem to swell under the action of heat and buckle out of shape, not coming back to its original size upon cooling. Often the marble would thus swell and cool without cracking. This was particularly noticeable in one of the lavatories of the Continental Building, where the marble slabs on the ceiling expanded under the heat and hung down in great scallops without breaking. This shows that under sufficient heat marble becomes quite flexible, and also that it does not regain its shape upon cooling.

HAMBLETON & COMPANY'S BANK BUILDING, SHOWING THE EFFECT OF FIRE ON LIMESTONE.

The failure of the marble columns in the Calvert Building hall has already been referred to. The principal room on the first floor of this building is occupied by a bank. The bank screen, which was of marble, has been so used up by the fire that it is hard to find even fragments. The fire in this room must have been very hot, as is evidenced by electric light bulbs melted down in fantastic shapes, and the plate glass windows which were blown in by the force of the fire and melted in place on the floor. The floor tiles of marble are badly buckled out of shape, and many of them are reduced to powder.

In most of the fireproof buildings the floor boards were nailed to sleepers imbedded in cinders concrete. In no case did this stand well. The best example was in the Continental Building, and even there the concrete filling was so broken up by the heat that a slight push with the foot would cause it to crumble.

The list might be extended indefinitely. If there is any one unmistakable lesson of the Baltimore fire it is that stone of any kind is absolutely unreliable even under the conditions of an ordinary fire, and that in a conflagration of this sort it is sure to suffer total wreck.

Fireproof Partitions.

THE behavior of the partition work in the six prominent fireproof buildings in Baltimore has not been in every instance a conspicuous success, although this was due to no fault in the material itself. Many of the partitions are down as a result of the fire, though the unbroken individual blocks are in as good average condition as those which would be delivered to a new building. The failure is due almost wholly to the manner in which the material was used. In most of the buildings the openings in the partitions were framed with wooden studs, which burned away, allowing the blocks to sag out of shape. In none of the buildings was the plastering of sufficient strength to afford any reënforcement after the fire had struck it and after the wooden doorposts had burned away. Even where partitions were unbroken between rooms, in some cases they are found to have been put up without the use of cement mortar and were not braced except by their own keying. Where the partitions had been shifted after the building was completed it is sometimes found that the blocks had been laid, not upon the fireproofing, but upon the upper flooring, which would burn away, allowing the partition to sag, with the result that a slight blow would demolish the whole. Another defect was that most of the partition work was started, not upon the arching, but upon the cinders concrete filling, which was so ruined by the fire that it became a wholly unsuitable foundation to support even so light a structure as a four-inch partition. Partitions so constructed in these buildings offered but slight resistance to the spread of fire. It must be remembered that the greatest damage in all of these structures was caused, not alone by the fire coming from without, but by the added degree of heat contributed by the combustion of the wood flooring, the finish and the contents of the building. There is no reason why a terra-cotta partition should not be so built that it will withstand practically any degree of heat from a fire without yielding. But we cannot expect a construction to be fireproof when it is founded upon either wood or cinders concrete, or when it is cut full of holes after being set. Furthermore, a common practice, which is observed at Baltimore quite as much as anywhere else, is to score out the face of the terra-cotta partition work for the electric ducts and outlet boxes. A partition constructed in the manner described is weak enough to start with, without deliberately sacrificing a portion of strength in this way, and no amount of patching with metal lathing and plastering would ever make up for the destruction of the terra-cotta itself.

It would seem as if the best form of construction used for partitions were one which was braced between each course with metal studs, continuous from the top of the arch to the soffit and buried in the thickness of the terra-cotta block. Then all the openings ought to be framed with iron continuous from floor to ceiling, and if to this were added the security of metal doors and trim, and no openings were allowed except the doors between the corridor and an office, it would be almost impossible for any fire to spread through such construction. The manner in which the partition work stood in the Telephone Building is ample proof that terra-cotta is a wellnigh perfect material for partitions when used properly, while the experience of all the other buildings is that no other material has stood at all.

A good fireproof partition should have no combustible material incorporated into its construction. Openings should be framed with iron. The material should be thick enough to make the wall strong laterally. In the writer's opinion it would be better made of porous or semi-porous material than of hard-burned. The Baltimore fire emphasized the importance of the first observation. In all these buildings the doors and windows in the partitions were framed of wood. This wood was almost everywhere completely consumed, and, in consequence, the partitions as a whole were almost a complete wreck. The falling away of half-burned timbers in the partition carried with it the blocks of terra-cotta that ad-

THE COMMERCIAL AND FARMERS' NATIONAL BANK BUILDING.
Wyatt & Nölting, Architects.
Showing damage to stone where licked by flame.

joined it, and wherever the blocks were built over wooden material that burned away they fell down. Between these two effects the partitions were ruined.

WIRE glass is now manufactured in polished sheets, and one arrangement which has been proposed for the rebuilding of one of the large buildings in Baltimore contemplates the use of three sashes, one glazed with clear glass to be down during the day and serve for the lower sash. The upper sash is glazed with polished wire glass, and has beside it a third sash with wire glass which slides down at night so as to completely cover the opening.

Ideas Gathered at the Fire.

BY D. EVERETT WAID.

FIRST. — It is safe to say that the Baltimore fire did not discover to thoughtful students of fireproofing methods any startling new facts; but it emphasized in a startling way the importance of not neglecting already known safeguards. The most serious charge against burned clay protection for structural steel does not relate to its fire-resisting qualities, but rather to defective design and construction. Sufficient study is not ordinarily given to the anchorage of fireproofing. Where fire is hottest and lack of protection is most serious — as in the case of lintels, roof trusses, and soffits of beams — metal clips or anchors whose free ends soften and give way in flame should not be trusted. Wire is cheap: let every unit of fire clay covering be secured with wire twisted into a continuous band which will not part even if heated to incandescence. Let column coverings be bonded with broken joints and be wired in addition, to withstand the shock of a stream of water.

Speaking of column coverings recalls another Baltimore lesson. There were instances in the best of the Baltimore office buildings in which column fireproofing formed flues about the naked steel. Let there be an air-tight cut-off at each floor at least, if you will not fill all the space around the column with concrete to serve at once the double purpose of backing up the tile and preventing corrosion.

Second. — Stairs. One of the latest of Baltimore's skyscrapers had just one little narrow staircase and that open to the adjoining elevator shafts, whose blast of flame would have sacrificed hundreds of lives if the fire had occurred on any day but Sunday. A building with two thousand people in it surely should have *one* enclosed staircase as far removed from other shafts as possible.

After the fire in Baltimore one could look down through marble stair landings as through a shaft. That city should, as does New York, require iron treads under the marble.

Third. — Fire Screens. Non-combustible contents are not among things to be hoped for. Hence the principle of divisions for fire stops should be kept constantly in view. Partitions should be anchored more securely at the top to withstand the physical impact of fire and water, and windows in corridor partitions should be omitted if possible or made fire-resistant.

Fourth. — Floor Surfaces. A newspaper in a stove will make a roaring furnace and throw out a surprising amount of heat for a few seconds. So 100,000 feet of lumber required for the mere surfacing of floors in a small office building is enough fuel to roast or smother all the people in the structure. Let floors be surfaced more generally with incombustible material.

Fifth. — Windows. Why not aim to make all windows in all commercial buildings effective fire stops? If they have not to keep fire in, they should be ready to keep it out. So long as transparent wire glass is prohibitively expensive, small lights of ordinary glass in metallic sashes are a great advance over unprotected large sheets of plate glass. Why not for an office building use common wire glass in small panes for the upper half of windows, and the usual plate for the lower half? Outside iron shutters deteriorate rapidly, even when not out of the question for other reasons. Inside iron shutters may be used in some form, folding, rolling, sliding or hinged. If you can have none of these, why not consider wire mesh screens, either iron inside to roll like a spring shade, or copper outside to protect from flames on the principle of the miner's safety lamp? On court walls a single screen could drop from the top of a building like a rope ladder or a rolling fire escape, and cover a row of windows.

For the fronts of office and other commercial buildings, however, may we not hope to see more serious efforts to design windows desirable from all three points of view, — that of the fire fighter, of the inside observer, and of him who sees the exterior of the building? In such an effort small panes set in metal might be grouped agreeably about larger panes located where the view should be least obstructed.

Sixth. — We wait for great disasters to impress upon us the importance of guarding against dangers which we already know. If a theater fire and a fearful sacrifice of life are necessary to bring about the enforcement of existing laws meant to protect against well-recognized dangers, must we conclude that other disasters are to come before even laws can be formulated against other dangers just as real as fire? Corrosion of structural steel is a danger ever present to engineers, and one which is guarded against in railroad bridges, but not as it should be in buildings.

COLLEGE OF PHYSICIANS AND SURGEONS.
Joseph Evans Sperry, Architect.

Speculative-built hotels and apartment buildings are going up in New York City alone to the extent of many millions of dollars in cost every year. Paint is often paint only in name, and structural members are rusting before they are built in. When they are enclosed, the envelope in many places is but a thin veneer of porous brick with almost open joints. There is nothing to prevent corrosion going on indefinitely, and it can proceed with surprising rapidity under favoring conditions. The writer recently inspected for a prospective purchaser an office building in Chicago which he had observed carefully during its erection ten years previously. In one instance he lifted off two thick rust scales one above the other and each one and one-half inches by twelve inches. The thick lower flange of a twelve-inch beam was nearly half gone.

One need not claim to be a prophet to predict that before many years have passed, if no accidents have happened, it

BALTIMORE ATHLETIC CLUB.
Parker & Thomas, Architects.

will be because expensive renewals and repairs have been made in anticipation of disaster from corroded structural parts.

FOR the first fortnight after the fire the authorities refused to issue any permits to rebuild, but subsequently, acting upon legal advice, the city issued permits for reconstruction, but all were coupled with the stipulation that in accepting them the owner bound himself to hold the city harmless from any damages caused by change in grades or street lines, and the effect of such restrictions was to practically stop all attempts at rebuilding. Plans, however, are under way for the reconstruction of nearly all the prominent buildings, and several new structures are contemplated. There seems to be a disposition, however, to go very slowly in the matter of rebuilding, and it would not be surprising if many years would elapse before the burnt district assumes anything like a finished appearance; and it is quite probable also that the effect of the fire will be to move the center of business farther towards the northwest, leaving more space for the shipping and commercial districts.

Interviews.

THE fire was of such an extraordinary nature that it drew to Baltimore experts from all parts of the country. The insurance interests were especially well represented by men who gave most serious thought to the problems involved, and acting individually and on the various committees of investigation and adjustment they were able to form very definite conclusions as to actual results. Many of the insurance men were interviewed by THE BRICKBUILDER, and from a number were selected two as in a way representing in their utterances the point of view which was found to be held by nearly all their colleagues. The insurance companies, as is usually the case in adjusting the loss in a conflagration, pooled their issues to a very considerable extent and minimized the labor of adjustment by dividing the work among committees. Major Charles F. Hard, of the Continental Insurance Company of New York, is the chairman of the joint committee having general supervision of the settlement of the fire losses. He was seen some two weeks after the fire and expressed himself as follows:

MAJOR CHARLES F. HARD.

"I think that after this and as a result of the lessons of the Baltimore fire the insurance companies will be ready to penalize in their rates everything except terra-cotta and brick. Stone is absolutely no protection, and the evidence shows that in all the buildings terra-cotta was subjected to a very severe test. I do not see how any building could have had a worse test than that to which the west front of the Continental Building was subjected, and yet the terra-cotta on this structure has stood very well and is all that could have been expected of it. There are very few places where the terra-cotta dropped off, and if the building had been faced with stone there would probably have been nothing left of it at all. The value of the Continental Building is in round numbers $1,000,000. The total damage claimed by the owners is $720,000. It is too early as yet to say what the actual appraisal damage will be, but it will probably not exceed $450,000, including the damage to all of the machinery, the interior finish, steam work, wiring, etc. The constructive terra-cotta appears to have perfectly protected the frame and is but very little damaged. The plastering on the ceilings is most of it in place, but can be easily removed by sand blast, leaving the soffits all ready to plaster. In like manner, also, the exterior terra-cotta can be speedily and satisfactorily cleaned by the sand blast. In the light of experience here, as well as elsewhere, I should employ terra-cotta by all means for the exterior of a building rather than any other material."

SWIMMING POOL, BALTIMORE ATHLETIC CLUB.

In adjusting the losses the insurance companies called to their assistance a number of expert appraisers, of whom one of the best known is Mr. Samuel R. White, a builder of Bloomington, Ill., who for a number of years has been associated with the various insurance companies as a general appraiser, having examined and adjusted losses in nearly all parts of the country. He was an appraiser of the losses in connection with the Horne Building at Pittsburg some years since, also the Iroquois Theater at Chicago, and has been retained as appraiser for the insurance companies on the Continental and the Union Trust Buildings in Baltimore.

SAMUEL R. WHITE.

He stated that the first newspaper stories were so inaccurate regarding the damage to fireproof buildings that he did not expect to find anything to appraise when he reached Baltimore, but these reports were altogether wrong. He has always contended that the insurance companies should give better rates on a well-constructed building independently of the material, and the same rate ought not to be given to a granite or stone building as to one of terra-cotta. This fire means a tremendous readjustment of insurance rates both as to exposure and as to construction, and stone will undoubtedly be more heavily penalized in the future. Terra-cotta is used more and more every year, and its use will grow as a result of calamities of this sort. We have passed the experimental state and know perfectly well of what the material is capable. The plain terra-cotta of course stands the best, and in proportion as the projections are increased the risk of partial or complete damage is greater. He was not prepared to state the extent to which the buildings are damaged, as the official investigations are still under way, but even the most casual inspection shows that terra-cotta has stood the best of any materials employed. The fire, furthermore, is a splendid test of the resisting qualities of wire glass. When properly employed this material has been most useful in checking the spread of fire, and it would seem to be highly desirable to employ it for all windows in buildings which are to be of fireproof construction.

He further called attention to the manner in which shutters had proven of little value in this fire. The ones which have resisted the best are the standard tin-covered wood shutters, but in a heat so intense as prevailed in this conflagration the wood was simply charred and went to pieces behind the tin, which of course then had no sustaining qualities. The shutters in the Herald Building appear to have all been closed before the fire and were of this description, but every one of them was destroyed, leaving nothing to protect the openings. Had the windows been further protected with wire glass, the glass might have melted, but it would have served as a check to the spread of fire. In Mr. White's judgment the plastering upon the inside of the buildings, instead of being of ordinary lime mortar, would have stood far better if it had been of cement applied directly to the terra-cotta blocks, and all of the partition work should have been set in Portland cement mortar. The spread of fire through the fireproof buildings was due in large measure to the repeated yielding of the block construction, rather than to any insufficiency in the terra cotta itself.

FRANCIS H. KIMBALL.

Mr. Francis H. Kimball, of New York, is an architect who is known throughout the country for the high character of his work and for the care with which he studies the architectural and constructive detail. He made a close examination of the structures which survived the fire at Baltimore, and stated to The Brickbuilder that he had made up his mind to pin his faith hereafter to flat arch terra-cotta construction floors. He could not see that there was any fault to find with the action of architectural or structural terra-cotta in the Baltimore fire. Both had stood all that he had expected, and the few failures were due to methods of use rather than to the materials. He should advise eight-inch terra-cotta protection for the structural columns instead of four-inch, and would have all the column casings not only keyed together and set in Portland cement, but also strapped with metal ties. The use of stone for the lower stories on the exterior will undoubtedly not be greatly modified as a result of the Baltimore fire, but it will hereafter have to be used with full knowledge that it would yield in a fire and that nothing but terra-cotta could be depended upon to resist the flames.

D. H. BURNHAM.

Mr. D. H. Burnham, the eminent Chicago architect, wrote the following letter in reply to an inquiry from Mr. S. Davies, the president of the Continental Trust Company of Baltimore, whose building Mr. Burnham designed:

Dear Sir, — I have minutely examined the steel structure of your building on the corner of Baltimore and Calvert streets from the basement to the roof, and find the same intact and good as the day it was put up. This applies to the supporting columns, the girders and joists. A few of the apron beams between the supports of the windows of one story and the sills of windows above in the court must come out as they are warped. These, however, have nothing to do with the main structure, as they only carry said aprons, and they can be taken out story by story without reference to any other part. The structural part of the floors of the building are unaffected and need no removal. I advise you to at once proceed to repair this building.

Very truly yours,
D. H. Burnham.

Mr. William Barclay Parsons, so well known for his work in Boston and New York in connection with the Rapid Transit Commissions and one of the foremost engineers in the country, went to Baltimore especially to study the fire and is quoted as follows in the New York *Tribune* of February 16:

WILLIAM BARCLAY PARSONS.

"I found that all the modern, really fireproof buildings had come out of the conflagration practically unscathed and intact, the first reports to the contrary notwithstanding.

"By really fireproof buildings I mean those where the steel frames are protected by non-combustible material, such as brick and terra-cotta, with a thin curtain wall on the outside attached to the steel frame and with floors and partitions of brick or terra-cotta. There were a number of such buildings, from twelve to sixteen stories in height, within the fire zone, and I visited a number of them. I found them structurally substantially uninjured. The steel frames were not distorted, and the fireproof partitions and floors were all in place, except occasionally, when a heavy safe had broken through the flooring and fallen two or three stories.

"In these fireproof buildings everything combustible had been absolutely destroyed; every vestige of furniture, doors, trim and floor was gone. To give you an idea of the intensity of the fire which raged within these buildings let me tell you that even the sleepers, which are the long pieces of wood encased in the concrete floor and to which the transverse flooring is nailed, had been consumed, and this notwithstanding the fact that they were protected on three sides from contact with the flames by non-combustible concrete and were detached from one another. As for the walls, I found that those in which the chief component part was brick stood the ordeal best. As in other fires, the walls made of granite fared worse. Under the influence of the extreme heat the granite scaled badly and practically all the walls in which granite was used will have to be replaced.

"Terra-cotta, as a general thing, stood well, the damage to the exteriors composed of that material being chiefly due to falling débris of near-by buildings."

HARRY D. GUE.

Mr. Harry D. Gue is one of the many prominent fire-insurance engineers who have studied most carefully on the spot all of the conditions following the fire. He is quoted as follows in an interview published in the Baltimore *Herald:*

"The most obvious lesson to be drawn from the conflagration in Baltimore concerns itself with the fatal weakness presented by window openings in the outside walls of buildings unprotected against the attack of fire from without.

"Buildings having brick or stone walls, when erected in accordance with the laws of any city in America, are of sufficient strength to withstand the attack of ordinary neighboring fires, provided the outside window and door openings are made as fire resistant as the walls they pierce.

"Such protection is thoroughly practical and may be accomplished by either of two means: by iron shutters or by wire glass windows in metal frames. Both types of protection are approved by fire underwriters, although wire glass windows are preferred by many on account of their obvious advantages. They do not require to be closed in a moment of emergency, being an integral part of the building they are not subject to corrosion, they are eminently sightly, and when made of polished plate are suitable for use in building fronts where iron shutters are quite inadmissible; and, above all, they offer a degree of fire resistance equal to the wall in which they are set.

"Had the buildings contiguous to the structure in which the Baltimore fire originated been provided with efficient window protection there is every reason to believe that they would have withstood the contribution of flame until such time as the fire department could have controlled the original blaze. Taking fire almost immediately, however, the firemen's attention was diverted largely, and soon a conflagration which no human power could stay was in progress."

PEREZ M. STEWART.

A large company of builders and contractors came to Baltimore shortly after the fire and made a quite lengthy stop, investigating conditions very thoroughly. One of the number was Mr. Perez M. Stewart, formerly building inspector of New York, a builder who has had a wide experience with large work. In a letter to the New York *Times* he is quoted as follows:

"The most important lesson to be drawn from the Baltimore fire is that of the exposure hazard. Rising sheer from the widespread area of devastation are a number of buildings of the so-called fireproof type. As regards a fire originating within their own walls, they are fire resistant in high degree, but by reason of their size they present a great area of wall space to the attack of flame from without. It is the unanimous opinion of the fire engineers whom we have met that had the Calvert, the Equitable, the Continental Trust and the few other steel frame buildings in the city been provided with efficient window protection, such as wire glass in metal or metal-protected frames, with some type of fire-resisting shutters, they would have suffered no more serious damage than the chipping of corners from the stone facing of their lower floors, and some of them would have escaped that. In every instance where modern practice in covering the steel frame and in constructing floor arches and partitions had been honestly followed, the damage suffered has been relatively small. Every form of construction recognized as weak by experts failed in Baltimore, while the several systems which past experience in experimental test or practical application have won confidence again demonstrated their efficiency."

Editorial Comment.

WITHOUT exception, the architectural, engineering and constructional publications throughout the country have given a great deal of space to consideration of the Baltimore fire. From the many editorial utterances we have space to quote but a few as in a way expressing the sentiment which finds an echo in nearly all of the technical journals.

The *Engineering News* of New York, in its issue of February 18, comments as follows:

ENGINEERING NEWS.

"The story has gone abroad that fireproof building construction is a failure when tried by fire. To one who watched these buildings endure the flames at Baltimore, or who sees them now looming up, with unbroken walls from pavement to cornice, a solitary figure in a scene of chaotic destruction and desolation, they must excite admiration and pride in the structural soundness that enabled them to stand where all else was leveled to the ground. In all of these the steel framework is intact and plumb, and with a new member in one or two places will be as good as new; in all of them the exterior walls are structurally sound, although exhibiting surface blemishes due to spalling in all but one, ninety per cent of the floor arches are intact, and of the remaining arches not more than a quarter will have to be wholly rebuilt; in all, every window is gone, and every item of finish and contents has been destroyed; in all, ignition resulted from the flames of adjacent non-fireproof buildings breaking through the unprotected windows. This is the record of the fireproof buildings in the Baltimore fire."

The *Iron Age* of February 25 contained a very complete account of the fire with a full description of the action of the various materials exposed therein. From its long and very able editorial statements we quote as follows:

IRON AGE.

"The modern steel frame building has under this latest fierce test vindicated its existence. If properly protected from the direct contact of the flames, steel will withstand the effects of fire. If the lessons taught by the Baltimore catastrophe be followed, we possess in the modern protected steel frame a structure which can be absolutely relied upon to withstand the most serious conflagration.

"After the smoke of the Baltimore conflagration had commenced to lift, when the ruins began to cool and after the daily prints had proclaimed that 'the steel frame fireproof buildings in Baltimore burned up as if they were made of *papier-maché*,' engineers and architects of world-wide reputation assembled to climb over the *débris* and ascertain why their efforts of years should have been 'destroyed like grass in a prairie fire.' And they found, instead of the picture first held before them, just the reverse conditions. For towering above low mounds of brick and stone and an occasional fragment of upright wall, they saw the giant structures standing erect as monuments to the efficiency of the fireproofed steel cage type of construction. Those structures had stood a test for which no building was ever designed, and with devastation all about them they pointed not only to their own superiority, but told the story of the awful test which they had survived structurally intact.

"The best evidence possible of the fireproof qualities of these edifices is found in the fact that they still stand, while all around was destroyed. That was as much as could possibly have been expected, for they were fireproofed only so far as the steel structure itself is concerned, and this was saved."

The daily press in writing of the Baltimore fire has seldom gone beyond reportorial feats. The problems involved are admittedly too technical to be tackled successfully by the average reporter, and most of the newspaper accounts have been purely descriptive or have limited themselves to liberal quoting from the opinions of experts. The New York *Sun*, however, has a most excellent editorial upon the subject in its issue of February 14, in the course of which it states as follows:

NEW YORK SUN.

"In the Baltimore fire modern fireproof construction was for the first time subjected to a supreme and convincing test. The result was a complete demonstration of the effectiveness of this form of construction. Indeed, the fire-resisting qualities which it developed surpassed the expectation of experts. It had been generally conceded that an excessive heat like that generated in the storm fanned Baltimore fire might destroy the life of the steel in a steel frame building, even if the protecting walls of brick should withstand the disintegrating effect of the flames. But the framework of the steel buildings in Baltimore remained uninjured, though attacked by the heat both from within and without."

The Brooklyn *Eagle* published an editorial which is almost an expert opinion popularly expressed, as follows:

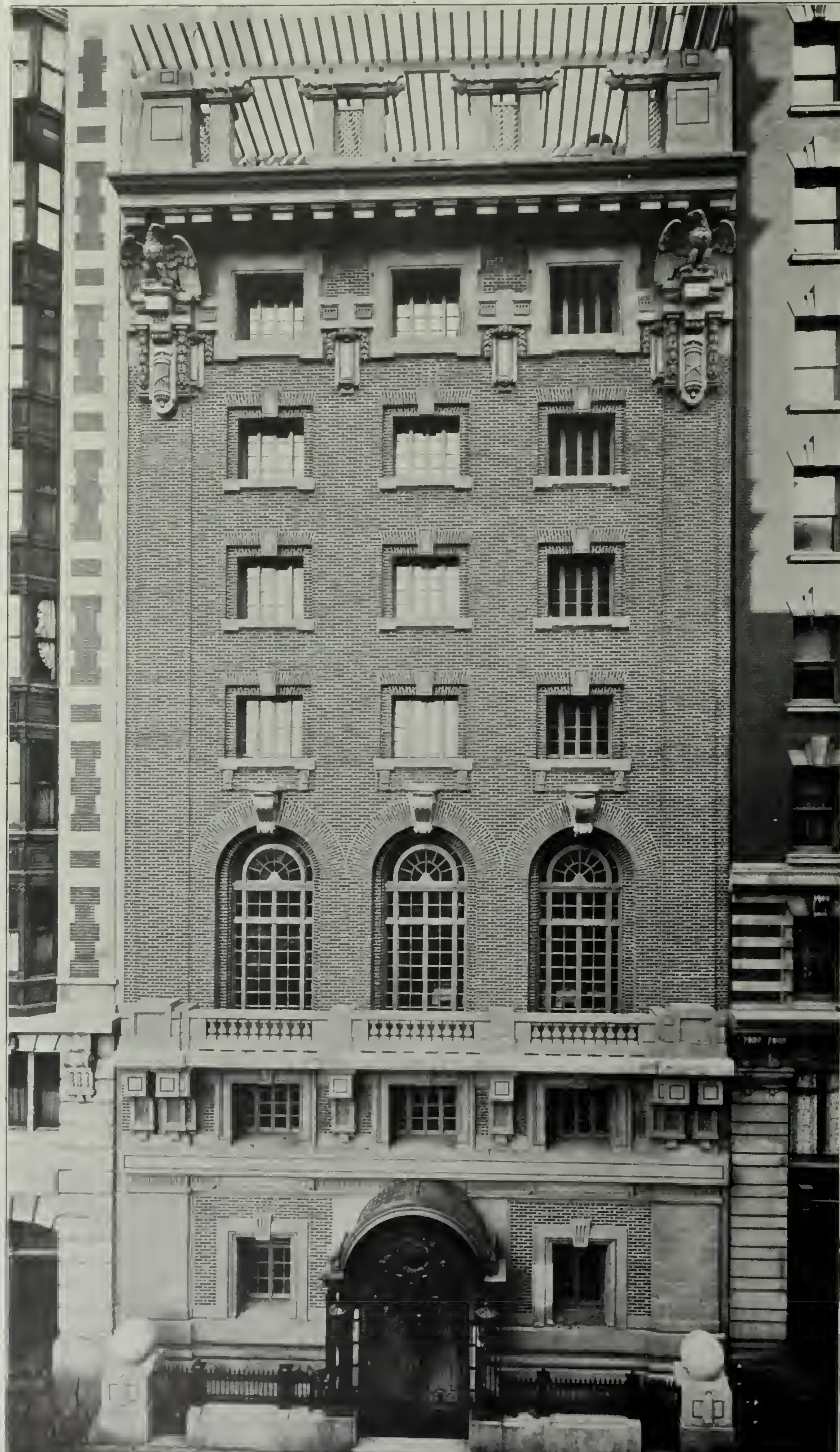
BROOKLYN EAGLE.

"If the big Baltimore fire did nothing else it did prove to the satisfaction of insurance men, architects, engineers and building contractors that there was something in fireproofing, after all. The lesson is so plain that perchance the general public, which has made a mock of the terms 'fireproof' and 'fireproofing,' may take it in. The half dozen big, modern fireproof buildings of which Baltimore boasted stood the test — and it must be admitted that it was as severe a one as buildings are ever likely to be subject to — splendidly. They came through it practically unscathed as to structure, though everything about them that was combustible burned so completely that not even the ashes remained.

THE BURNT CLAY LINE OF DEFENSE AGAINST THE CONFLAGRATION.

"At first, in the excitement of the great calamity, it was said that they had been destroyed. And the public, once more communing with itself and with its neighbor, remarked, 'Fireproof, humph! Nothing is fireproof!' But the public, as frequently happens, was mistaken and misled by the mistakes of others. But before the ruins had well cooled, government experts, leading engineers, architects, builders, insurance company experts were down there studying the lessons of the fire. Their reports demonstrate beyond question that sky-scrapers protected by real, non-combustible fireproofing remained intact, and that they are the only buildings that did survive the ordeal."

BUILDING FOR ETHICAL CULTURE SOCIETY, 63RD STREET AND CENTRAL PARK, WEST NEW YORK CITY.
CARRÈRE & HASTINGS, ARCHITECTS.



CITY CLUB 55 AND 57 WEST 44TH STREET, NEW YORK CITY.
LORD & HEWLETT, ARCHITECTS.

THE BRICKBUILDER.

VOL. 13 APRIL 1904 NO. 4

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FROM WORK OF RAYMOND F. ALMIRALL, COPE & STEWARDSON, GEORGE LYON HARVEY, HOWELLS & STOKES, KILHAM & HOPKINS, McKIM, MEAD & WHITE.

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THE BRICKBUILDER

VOL. 13 No. 4 DEVOTED · TO · THE · INTERESTS · OF ARCHITECTURE · IN · MATERIALS · OF · CLAY APRIL 1904

THE BRICKBUILDER.

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Advertisements will be printed on cover pages only.

MODEL WORKINGMEN'S HOUSES.

THE housing of workingmen is a subject which has engaged the study of a great many careful thinkers at different times and in different countries. Nearly every large manufacturer likes to see his employees well taken care of and, as far as the men will allow him, takes an interest in putting up tasteful, well-arranged houses for them. The extent to which we in this country can profit by the experience abroad in these lines is not very large. We print elsewhere a very interesting account of some of the results accomplished in England. It will be noticed in this article that in the cheaper houses described the bathroom facilities are extremely primitive. The idea of a tub being sunk in the floor of the kitchen near the hearth and covered by a standing or draining board may meet the requirements of the English laborer, but would surely not answer in many of our manufacturing towns. Furthermore, in figuring out the returns from these workingmen's houses evidently the land is not considered at all and nothing is allowed for depreciation, and even our most philanthropic mill owners would be hardly satisfied with an investment of that sort.

There is one point about these English cottages, however, which is certainly deserving of imitation by us, and that is the use of brick for the external walls. The average workingman's house hereabouts costs from twelve to fifteen hundred dollars for five rooms and bath. Usually the houses are built for two families, one above the other, making the total cost for the house itself in the vicinity of three thousand dollars. Upon such houses there does not seem to be a great deal of difficulty in obtaining a return of five hundred dollars a year, which will easily net nearly six per cent. Now if our philanthropically inclined mill owners could feel disposed to pay the slight additional advance in cost for constructing the outside walls in brick, which for the average house probably would not exceed two hundred dollars, while the income derived therefrom would probably not be at all increased, the cost of repairs would be diminished, the life of the structure would be greatly increased, and the resulting appearance to the community would be vastly better.

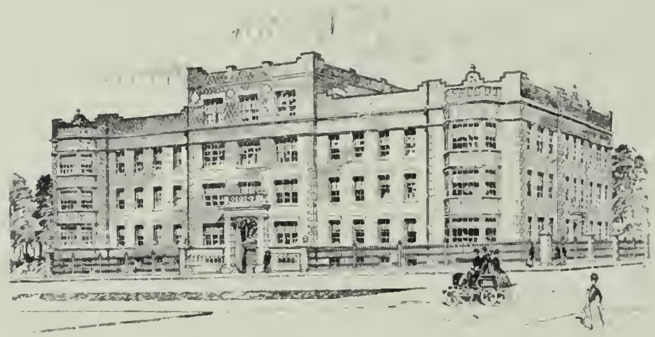
It has been our fortune to visit many of the workingmen's colonies in the United States and in foreign countries, and the difference between what is expected here and what is found abroad is that, generally speaking, the foreign colonies present a very attractive external appearance, especially in England and in Italy, and are more or less surrounded by judicious planting, but the personal comforts of the interior are quite restricted, and the arrangement of rooms is what we should call decidedly crude. In this country, on the contrary, our workingmen have a good bathroom with open plumbing and a very attractive interior, but the exterior aspect of our colonies is usually most hopelessly uninteresting, and there is seldom much attempt at gardening or planting of any description. Where our workingmen's houses attempt to be picturesque they generally hopelessly fail. The English cottage is reduced to its simplest factor,— the wall of brick full of texture, a simple, unbroken roof and a lot of green foliage and flowers. These give the picturesque grouping which every visitor admires, and if we can only couple our internal arrangements with English external simplicity and charm our workingmen's dwellings ought to be models for the world.

We allow it to be our specific purpose to present the merits of burnt clay in architecture, and when the charm of good brickwork is made manifest there is certainly sufficient justification.

Hospital Planning. IV.

BY BERTRAND E. TAYLOR.

THERE can be no doubt but that the general hospital of the future will be a pavilion plan hospital, except in the case of the smaller ones, those of twenty beds or less, when the limitations of money or land necessitate the adoption of what may be termed the semi-isolated pavilion type of the block plan. It seems to be advisable to make use of the single building or block plan type when the conditions named are imposed, if, as is quite possible, the absolutely necessary departments are isolated by means of fire walls and doors, as shown in the Windsor and Exeter plans illustrated in



NEW ENGLAND DEACONESSES HOSPITAL, LONGWOOD, MASS.
Kendall, Taylor & Stevens, Architects.

Article III of this series (pages 52 and 53, THE BRICKBUILDER for March, 1904).

These plans illustrate possibilities of a development of this idea in the case of a small hospital that is likely to grow little in its scope, especially when the funds are limited.

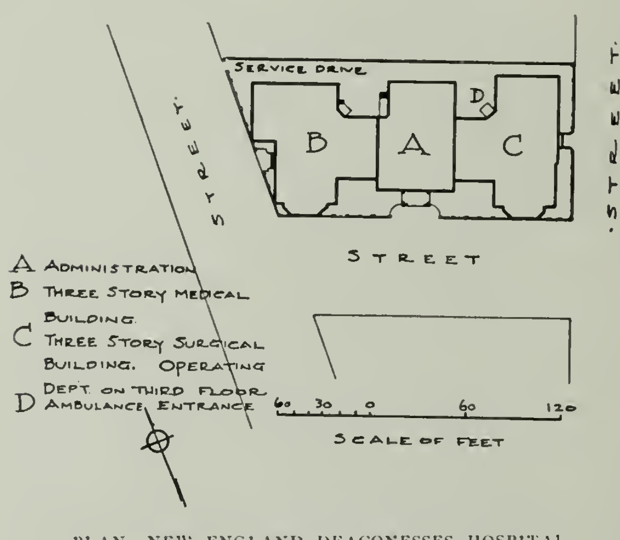
The plans of the Deaconesses Hospital, Longwood, Mass., and the Union Hospital, Fall River, Mass., two urban hospitals of about one hundred beds each, illustrate the possibilities of the adoption of the pavilion idea to the block plan when the number of beds required is large and the area of available land is small.

The La Crosse Hospital, designed by George L. Harvey of Chicago, was built as a small block plan hospital with the idea of future extension by the erection of two wings, as shown on the block plan. This hospital when thus completed would make possibly a one hundred bed hospital of the semi-isolated pavilion type.

These five hospitals are just as surely pavilion hospitals in most of the essential elements as though they were made up of three separate buildings with connecting corridors. They show that it is possible to obtain a number of the vital elements on a restricted lot, but not all, and that fully isolated pavilions should be adopted wherever possible.

In a comparative analysis of existing pavilion hospitals we observe several radical differences in the general arrangement. We see that in some hospitals the general pavilions are invariably of one story, while in others they are of two stories. For a number of years the popular idea has been that a pavilion should never be over one story in height, and this rule has been followed until within a short time, almost invariably in the smaller hospitals. Even in some of the large hospitals the prejudice in favor of one-story pavilions has been so strong that such pavilions have been built even where pavilions of two or more stories were needed. To-day it seems to have been fully demonstrated that, if properly arranged, there can be no objection to a pavilion of two or even four or five stories. The upper wards are always more attractive, better lighted and have better air, less dust and noise than the lower. In a very small hospital, there is no room for argument, one-story pavilions will always be the ideal scheme, but when we come to consider a hospital of fifty or one hundred or more beds on a restricted area or on a sharp slope that does not admit of an extended scheme, then it will be wise to consider two-story pavilions.

In such cases we must either cover the lot at once, thus effectually preventing expansion, which is always an extremely shortsighted policy, or we must crowd the pavilions together so near that the wards and rooms get the sun but a very short time, and in the summer when windows are open everything happening in a pavilion is unpleasantly apparent in the one adjoining. Again, the strict adherence to the one-story pavilion hobby not only induces these evils, but occasionally necessitates the building of pavilions facing north, when the general scheme has pavilions properly designed with a southerly extension and solaria, and these northerly projected pavilions have north solaria, which are ideal for a photograph gallery or studio, but hardly for a hospital. The plans shown in Article III fully illustrate and demonstrate these points, and seem to show conclusively that



PLAN, NEW ENGLAND DEACONESSES HOSPITAL.

under the conditions outlined above a two-story pavilion scheme would be decidedly preferable to a crowded one-story scheme.

The principal objection to a two-story pavilion seems to be that an elevator will be necessary for use in moving patients. A few years ago this would have been a very serious matter, but to-day with the automatic electric and extremely simple and safe hydraulic plunger elevators that require no attendant and the slightest engineering attention, there can be little objection to an elevator. The first cost is not a large per cent of the cost of a hospital of any size, and the cost of running and maintaining is very small unless it is in continual use, a condition that would hardly be likely. Without an elevator the service would be no more difficult over one flight of stairs than through the forty or fifty feet to the same ward if it were in an adjoining pavilion. The elevator, however, is necessary for the patients.

Regarding the question of distance between pavilions, the old rule was that this space should be at least twice

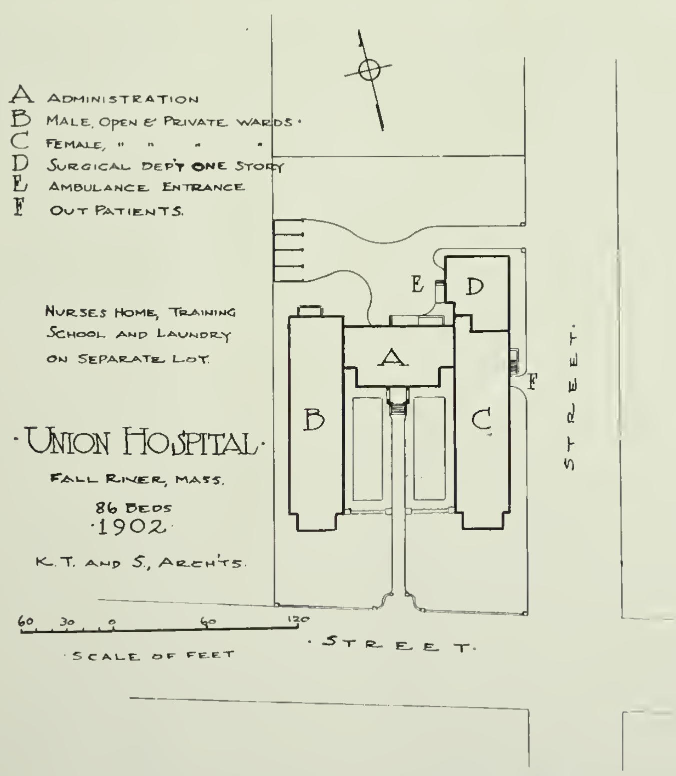
UNION HOSPITAL, FALL RIVER, MASS. Kendall, Taylor & Stevens, Architects.

the height, — that is, if pavilions were twenty feet high the distance between should be at least forty feet, — and it is quite evident that wherever possible forty feet should be the minimum.

These remarks concerning the spacing of pavilions have special reference to parallel pavilions, and obviously do not apply to the case of pavilions projected diagonally from the corners of the administration building, or what might be termed the diagonal pavilion type, like those of St. Luke's Hospital, New York, in which case a short corridor is quite admissible, and the space thus obtained from pavilion to pavilion is ample.

The "radial" pavilion type, a variation of the parallel pavilion type, first demonstrated by the Duke of Galliera in the San Andrea Hospital, Genoa, Italy, admits of a closer spacing of the pavilions at the connecting corridor line, and the possibility of a better general direction, more sun, circulation and view and greater isolation, for a given cost of construction. (See examples illustrated.)

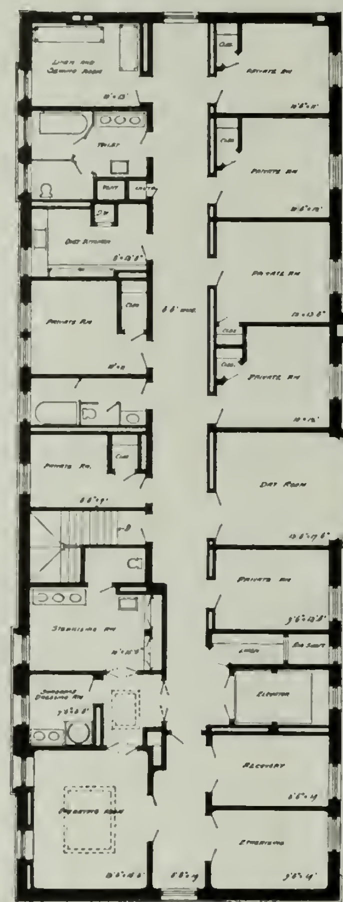
The administration building is the entrance to the hospital, the centre of administration, the business office and home of the superintendent or matron, of the house physician or interne, the meeting place of the corporation and committees, and the only place where the public have a right to enter until permission is granted for further inspection. The general purposes are the same in a large or small hospital, but in a small hospital various other departments of hospital work have of necessity to find a place under the roof of the administration building.



PLAN, UNION HOSPITAL, FALL RIVER, MASS.

A large city general hospital has a lodge at the entrance, with officials to direct the coming and going of all persons. There are also the out-patient medical and the out-patient surgical departments, each generally housed in a special pavilion with intricate, special subdepartments all adapted to their special work, a pathological building, a library building, nurses' home, etc. There is the administration building with the large entrance lobby and waiting rooms, the office for the assistant superintendents and house staff, and the business organization office, file room, vault, etc., the office for the superintendent, with outer office for special stenographer and bookkeeper, telephone room, the board room, superintendent of nurses, housekeeper's room, toilets, waiting rooms, etc., etc., all on the first floor. In a very small hospital all these various departments must necessarily be condensed into one building, and quite generally the service department, kitchen, laundry, heating plant, dining rooms, nurses' home and training

SECOND FLOOR PLAN.



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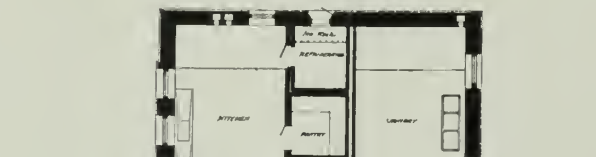


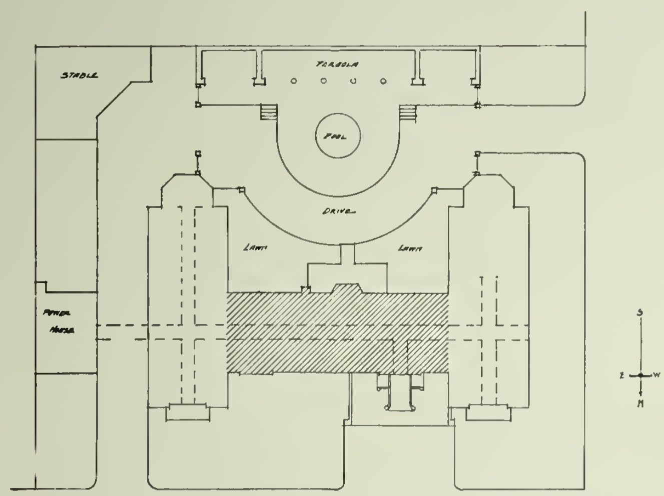
BASEMENT PLAN.

FIRST FLOOR PLAN.

LA CROSSE HOSPITAL, LA CROSSE, WIS.

school, residence of superintendent and interne, servants' rooms, etc., must all be added in a rear extension, so that the work that should be done in eight or ten buildings must be done in one.

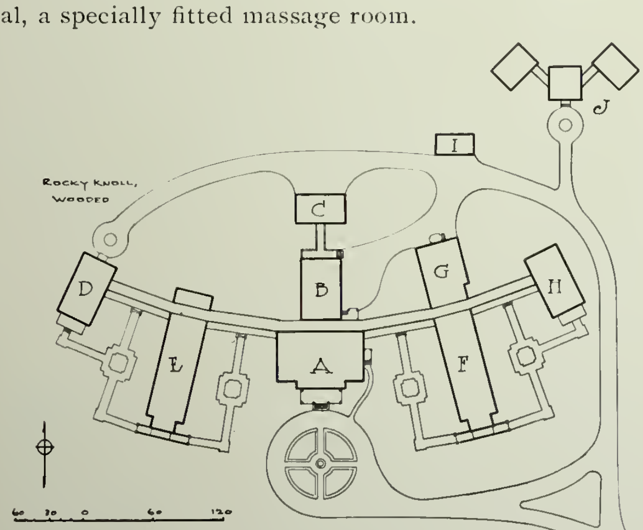
There is a tendency to magnify the administration building, to make it a more imposing and seemingly



PLAN, LA CROSSE HOSPITAL, LA CROSSE, WIS.
George Lyon Harvey, Architect.

important central feature in the group. On æsthetic grounds this is quite pardonable, and most of our large general hospitals have very imposing administration buildings that have fulfilled the artistic requirements much more successfully than the practical.

An unusally interesting and simple little administration building is that of the Bradford, Pa., Hospital. This has the usual office and reception room, a physician's room with toilet, lockers, etc., a filing and telephone room and pharmacy or drug room, a public toilet, and at the rear of the transverse corridor a dining room with pantry and an out-patient department with examination room, eye and ear dark room, and X-ray room and, what is very important but rarely seen in a small hospital, a specially fitted massage room.



PLAN, SYMMES HOSPITAL, ARLINGTON, MASS.
Example of the Radial Pavilion Type Area of lot about 8 acres.
Kendall, Taylor & Stevens, Architects.

A, Administration and Out-patients; B, Service Building; C, Boiler House and Laundry; D, Nurses' Home and Training School; E, Two-Story Medical Pavilion; F, Two-Story Surgical Pavilion; G, Surgical Department; H, Private Pavilion; I, Horse and Ambulance Sheds; J, Isolation Department.

This hospital is unique in having the entire kitchen department in a very complete little fireproof building entirely isolated from the usual position at the rear of the administration building, the food evidently having to be taken to the administration building as well as to pavilions through open corridors in heated food wagons.

The second story of the administration building has the usual rooms for matron or superintendent and house physician or interne with private baths, — unusually ample quarters which are to be commended. There is also a very ample laboratory and pathological room, a special room and a director's room that can be used for a lecture room, also a woman's toilet for visitors.

All this is a very simple and practical gathering together of the few rooms that should be in a central location and allowing all others to be isolated.

The other extreme and more usual type is well illustrated by the plans of the Leonard Morse Hospital, Natick, Mass., designed by Shaw & Hunnewell in 1898, which is planned as an interesting twenty-five bed hospital. The proposed completed scheme is shown, but the administration building only has been built, and this is run quite successfully as a twelve-bed block plan hospital. In order to get this number of beds some of the

SAN ANDREA HOSPITAL, GENOA, ITALY.
The Radial Pavilion Type

A, Fuel; B, Gardener's House; C, Upholstering Department; D, Laundry; E, Mortuary, Dissecting Room and Museum; F, Students' and Lecture Room; G, Wards; H, Chapel; I, Administration Building; J, Convalescent Paying Patients.

nurses' rooms in the third story have to be used for patients. The plan does not show the temporary arrangements for operating department, but this is installed in the end of the sun room and passage. The exterior is artistic and dignified, and if the building were more perfectly adjusted to its limited work it would make a most interesting example of a palatial small hospital.

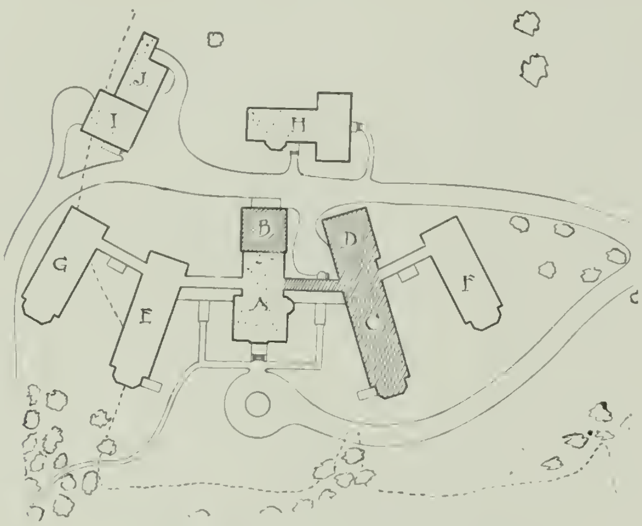
Most administration buildings are burdened with an assortment of private rooms on the second floor, which are never properly so placed. If a special pavilion cannot be built, an isolated portion of a general pavilion can be specially arranged for private patients desiring extra care, better rooms and isolation from free or open ward patients.

There are many objections to the prevalent use of the second story of the administration building for private wards. The necessary business of the institution, the constant coming and going of doctors, visitors, messengers, the continual use of the telephone, are all more or less disturbing to the occupants of second-floor rooms.

The matron or superintendent must have the privilege of entertaining friends at times, and it is absolutely impossible to do so with any comfort either to themselves or the patients, as absolute quiet must be maintained.

There must be times of relaxation for both officers and nurses, and if it is impossible to talk freely and laugh at the table the value and success of the service are certainly diminished.

If patients' rooms are placed on the second floor and nurses' or servants' rooms on the third floor, as is usually



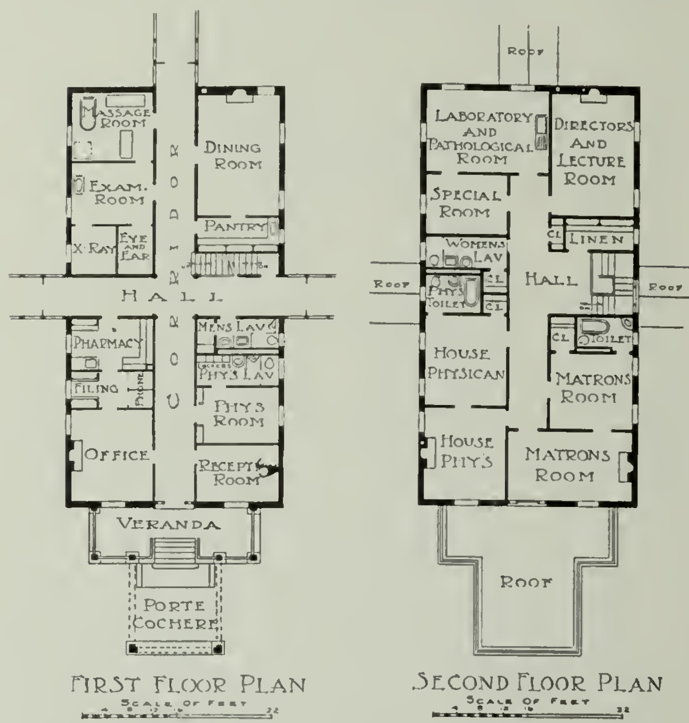
PLAN, LOWELL GENERAL HOSPITAL, LOWELL, MASS.
Kendall, Taylor & Stevens, Architects.
A, Administration (Old Mansion); B, Brick Kitchen; C, Surgical Pavilion; D, Operating Department; E, Medical Pavilion; F, Private Pavilion; G, Children's Pavilion; H, Nurses' Home; I, Heating, Laundry and Servants; J, Stable.

the case, the patients, and these too paying the largest price per week, are between two sources of annoyance that the most careful management cannot wholly eradicate.

It sometimes happens that, owing to the restrictions of the lot, it is necessary to depart from the ideal in respect to location of the operating department.

One of the most practical and least objectionable dispositions of the operating department, where the lot is limited and an elevator is used, is that shown in the plans of the Norfolk Protestant Hospital and the Menominee, Mich., Hospital. In both of these hospitals the operating department is placed on the third floor of the administration building. As it is quite necessary to have an elevator in every hospital of more than one story, the place for that elevator, if there is but one, is in the central or administration building, and an operating department is thus easily reached through the connecting corridors and elevator and is thoroughly isolated and perfectly lighted and very convenient for surgeons and nurses.

The plans of the Hale Hospital of Haverhill (see plate 24, THE BRICKBUILDER for March, 1904) show a unique disposition of the operating department in the rear of and, apparently, a component part of the administration building. This location fulfills all the points of convenience and gives proper lighting, but it would be much better placed a few feet farther back and connected by a short corridor, as the same architects have wisely

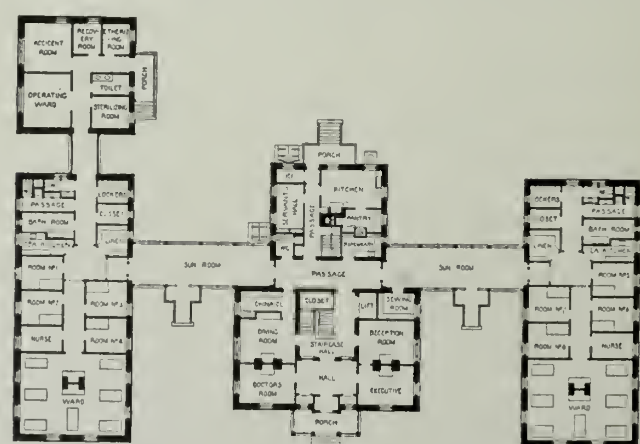


PLANS, ADMINISTRATION BUILDING, BRADFORD HOSPITAL, BRADFORD, PA.
Green & Wicks, Architects.

shown in their plans for the Lawrence General Hospital (see plate 23, THE BRICKBUILDER for March, 1904).

These plans and the plans by the same architects of the hospital at Youngstown, Ohio, show an interesting and unique disposition of the kitchen department. In each case the kitchen department is in the nurses' home.

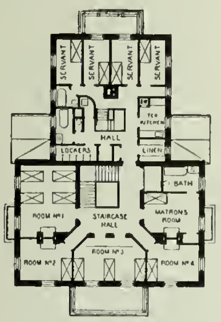
ADMINISTRATION BUILDING, LEONARD MORSE HOSPITAL, NATICK, MASS.
Shaw & Hunnewell, Architects.



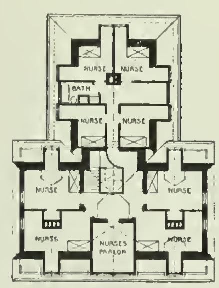
FIRST FLOOR PLAN FOR LEONARD MORSE HOSPITAL.

This is an economical arrangement and has some good points, but would be better placed in a separate pavilion. In the plan for the Lawrence General Hospital the kitchen department is in a new extension of the southeast pavilion, — a unique idea that would seem to be questionable.

In the pavilion hospitals illustrated in these articles we find various ideas concerning the arrangement of the connecting corridors. The generally accepted standard for northern latitudes seems to be a one-story enclosed corridor with a basement corridor for piping, service, etc. There are, however, several instances where one-story open corridors have been in use for many years with apparently perfect satisfaction, and for perfect isolation open corridors are most desirable; the basement corridor being fairly convenient for use during stormy weather.



SECOND FLOOR.



THIRD FLOOR.

ADMINISTRATION BUILDING, LEONARD MORSE HOSPITAL.

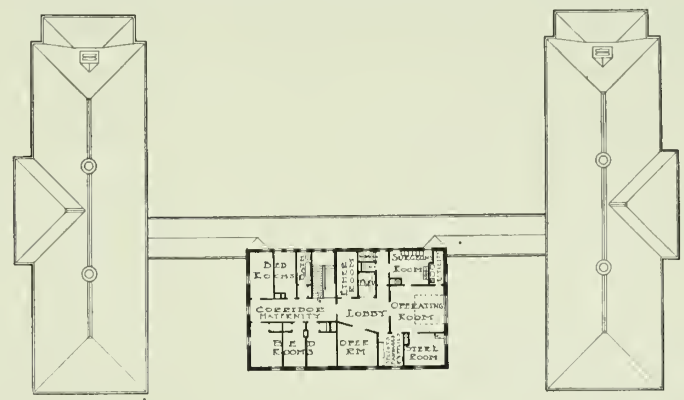
The Boston City Hospital has had such connections for the past forty years, and nearly all of the recent buildings have been connected in the same way. The Cambridge Hospital has open corridors connecting all its buildings, and the matron recently said she saw no objection to them. In some few cases buildings are connected by a subway, either wholly or partially underground, lighted by top lights. One of this type is shown in process of construction in the photograph of the subway of the Newton Hospital, leading to the nurses' home, and very economically and successfully built of the Guastavino laminated tile.

Two-story corridors for a two-story scheme are convenient, but look very awkward if enclosed, and they cut off so much sun and air as to seriously interfere with the use of rooms in any north extension of the pavilions. It seems better, therefore, to keep the corridor one story and, if necessary to connect the second floors, to use an open balcony on a flat roof.

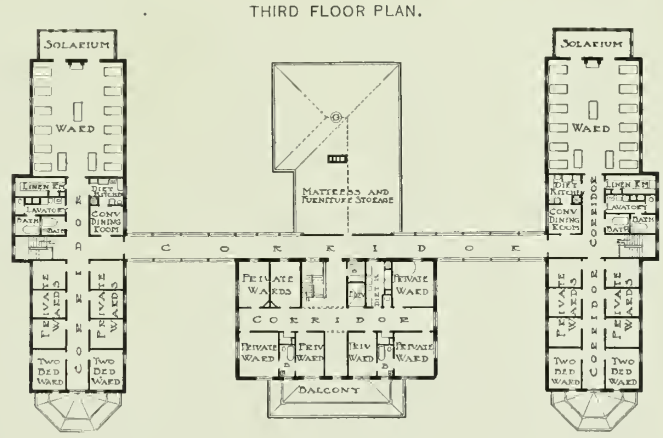
NEW BOOKS.

THE NONMETALLIC MINERALS. Their Occurrence and Uses. By George P. Merrill, Curator of Geology in the United States National Museum, etc., etc. New York: John Wiley & Sons. Price $4.00.

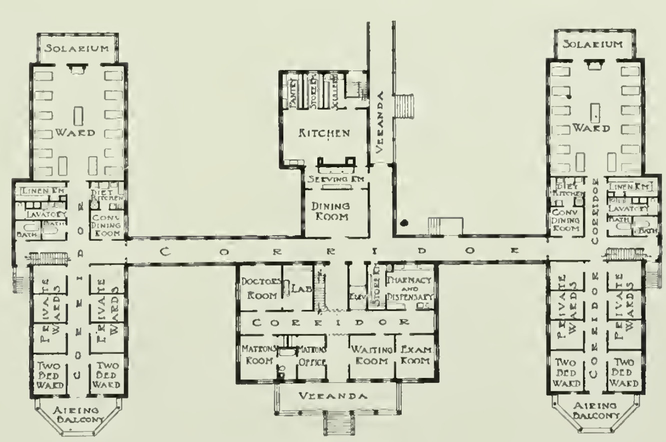
Mr. Merrill's previous excellent work upon the stones for building and decoration has been noticed in these columns. The present volume is in a sense a continuation, taking up very exhaustively the various nonmetallic minerals which are used so extensively in the arts and sciences, such as the carbon compounds, the various oxides, sulphides and arsenides which enter into the compositions of paints and dies, the tripolites, emery, carbonates, silicates, etc. The list is a long one, and the casual reader will be surprised to see how many of the natural products are utilized directly and indirectly. The list includes also the grindstones, molding sands, polishing stones and road-making materials. Under the general classification of silicates there is contained a great deal of valuable information in regard to the clays, which are defined as "heterogeneous aggregates of hydrous and



THIRD FLOOR PLAN.



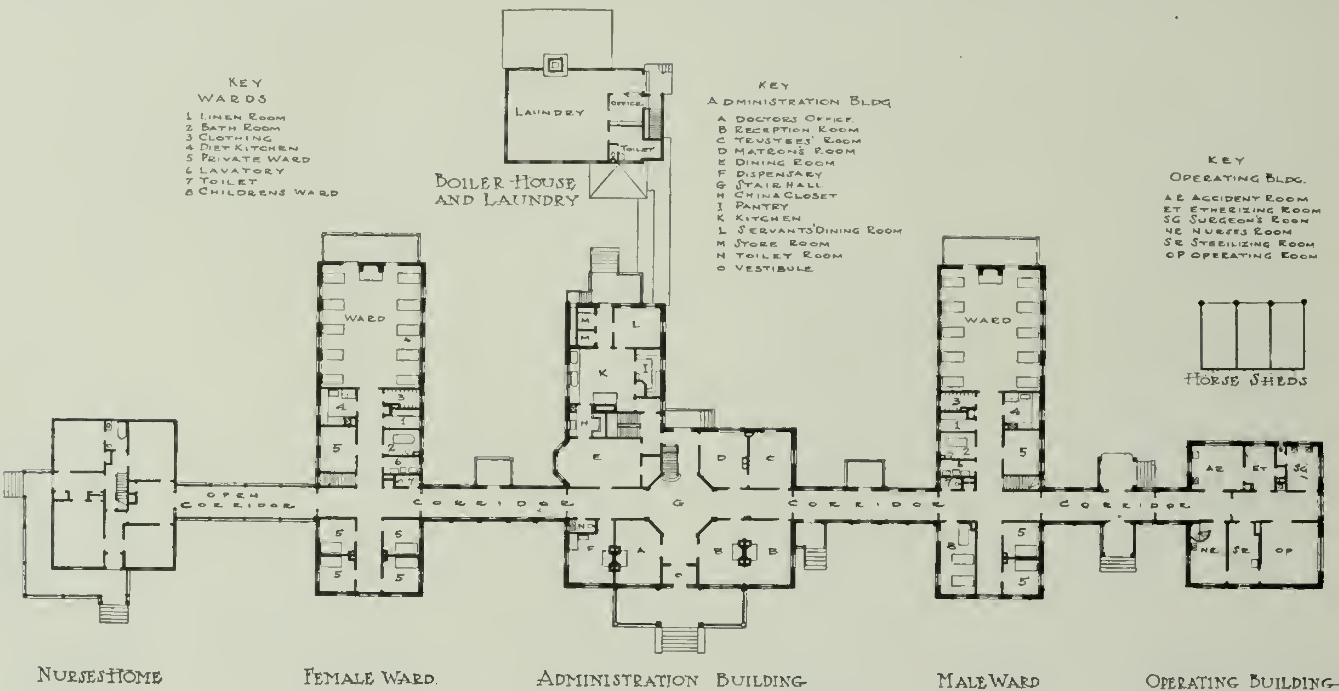
SECOND FLOOR PLAN.



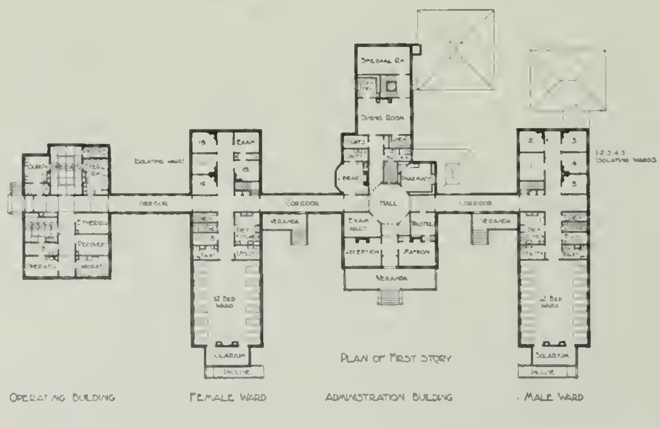
FIRST FLOOR PLAN.

NORFOLK PROTESTANT HOSPITAL, NORFOLK, VA.
Kendall, Taylor & Stevens, Architects.

anhydrous aluminous silicates, free silica, and ever-varying quantities of free iron oxides and calcium and magnesian carbonates, all in a finely comminuted condition." This is a definition which we never heard duplicated, but which, in spite of its long words, is very comprehensive and exact. The whole chapter on clay is most excellent. We notice one correction of a very common error. A number of the technical reports on the results of the Baltimore fire account for the occasional cracking or breaking away of the bottom flanges of the terra-cotta floor arches by the assumption that the material under the action of heat would expand, causing a compressile strain between the members, resulting in the shearing away of the terra-cotta. Mr. Merrill states distinctly that "a clay, when all the water of crystallization is expelled, will not shrink any more at red heat, but with increased heat will shrink more and more up to the moment of fusion. A pure kaolin apparently shrinks when heated a second time, even if the water is all expelled by the first heat, though it is practically impossible to fuse it." We have seen this statement challenged by some pretty good scientific authority, but the author of this book does not seem at all in doubt as to the facts.



PLAN, THE ANNA JAQUES HOSPITAL, NEWBURYPORT, MASS.
Kendall, Taylor & Stevens, Architects.

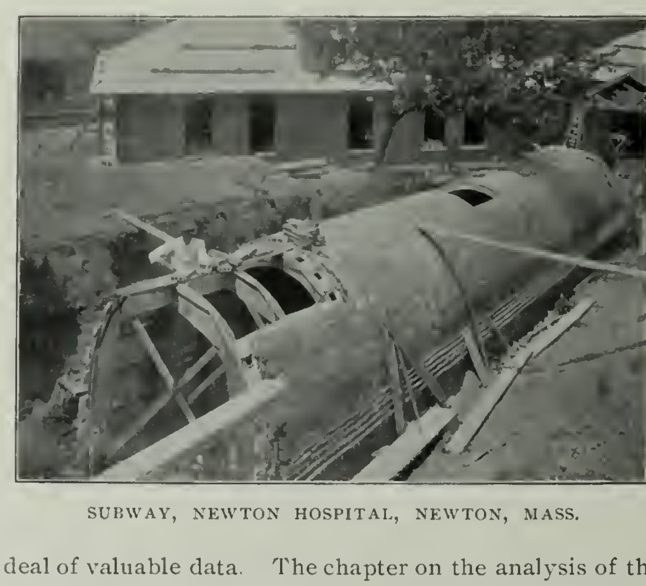


PLAN, BURBANK HOSPITAL, FITCHBURG, MASS.
Kendall, Taylor & Stevens, Architects.

The volume is very profusely illustrated, with maps showing the location of the principal deposits, very clear photographs of the working beds, and diagrams of the geological deposits and formations. It is a work which will interest a great variety of professional and practical men and ought to find a place in the library of every architect.

Graphic Statics, with Applications to Trusses, Beams and Arches. By Jerome Sondericker, B. S., C. E., Associate Professor of Applied Mechanics, Massachusetts Institute of Technology, New York: John Wiley & Sons, 1903.

This book is the outgrowth of a long experience at the Massachusetts Institute of Technology, and presents in very clear and concise manner the methods of solving problems such as are encountered in building construction. There is very little superfluous matter in the volume and it embodies in a practical, usable form a great deal of valuable data. The chapter on the analysis of the connections between trusses and supporting columns is an original discussion of a very important factor in building calculations. The book is thoroughly to be commended.



SUBWAY, NEWTON HOSPITAL, NEWTON, MASS.

A Suburban Clubhouse. Article II.

BY J. H. FREEDLANDER.

[PROGRAM. The location is supposed to be in a semi-rural district, ten miles or less from the center of a large city where everybody goes to do business, the suburb being chiefly a place of residence. The club is therefore used for many social purposes by both sexes, — dancing, musicals, singing clubs, dramatic performances and lectures, as well as for occasional dinner parties and the customary games. The lot is big enough for tennis courts, being 200 feet front by 300 feet deep, with the gardens of detached houses on both sides. There are no sleeping rooms in the club except the apartment for the steward and his wife, who live there. The ground falls gently towards the rear, permitting a well lighted basement behind, with level approach in front. The number of members belonging to the club is not large, and all are supposed to be known to each other, so that many rooms are not required. The success of the plan will depend chiefly upon the skill with which the same rooms are made to serve the convenience and enjoyment of large and small parties in turn. Two stories with the basement ought to provide sufficient space.

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, not including furnishings or land, should not exceed $25,000.]

THE chief requirements in a clubhouse of this nature are, first, the accessibility of the rooms; and, second, that they shall be made to serve easily for large and small gatherings.

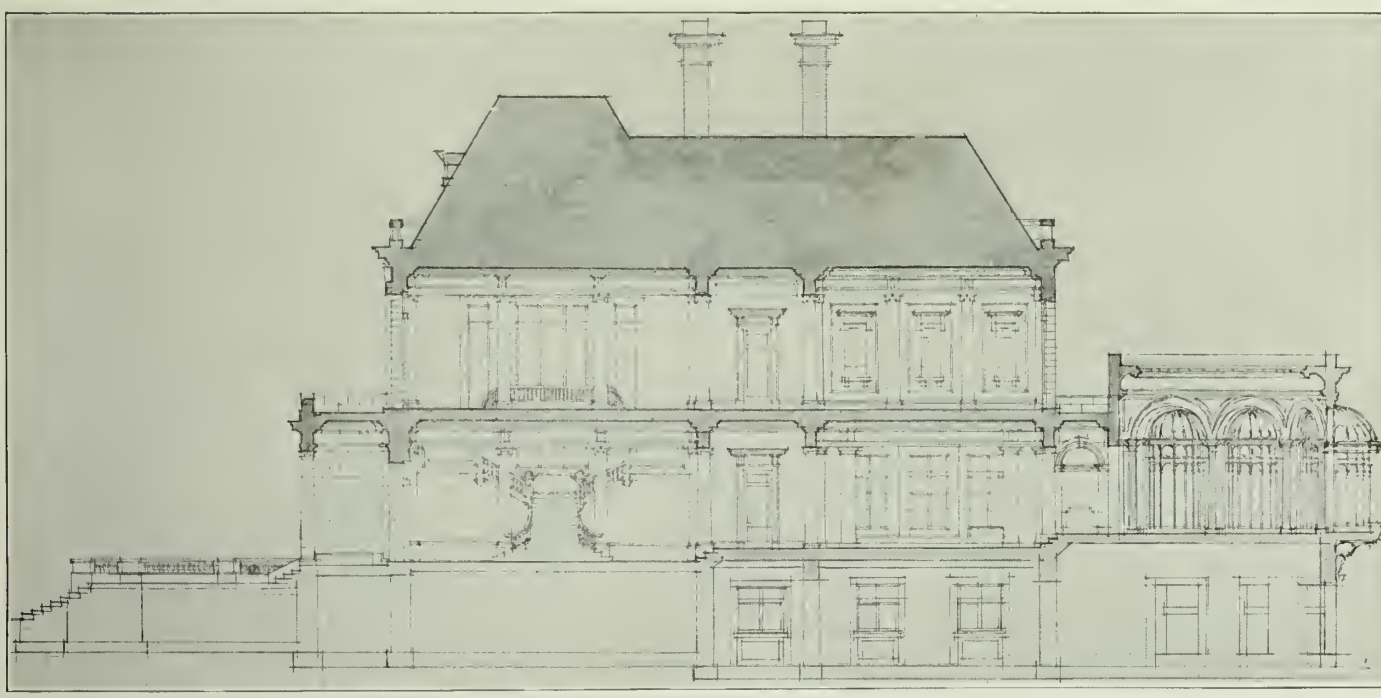
The rooms should be exceptionally well lighted and the window openings large and numerous, so that members may enjoy a view of the surrounding country from every point of the building.

Being in the country we desire to live out of doors as much as possible. It is for this reason that I have provided a veranda, a most essential thing in an out of town club, a sort of open air living room.

As the cost of the building is not to exceed $25,000, the façade is naturally modest, so that I depend somewhat upon the color scheme for desired effects. The exterior materials are brick and terra-cotta. The coins on the corners are of a light gray brick laid in mortar of the same color, with close joints. The filling in of the panels is of Harvard bricks, and the keystone, cornices, caps, ballusters, etc., are of terra-cotta to match the light brickwork.

The roofing tile is to be of a light green color without glaze. The conservatory in the rear of the building is built of iron, very light in construction.

Passing into the building through the vestibule we enter the main hall. Here we have a clear view of about one hundred feet; the conservatory with its small trees and many blossoms acts as a background. We have just entered the building and are already under the impression that it is well adapted to social purposes. The openings between the rooms are wide and the communications easy.



SECTION, A SUBURBAN CLUBHOUSE.

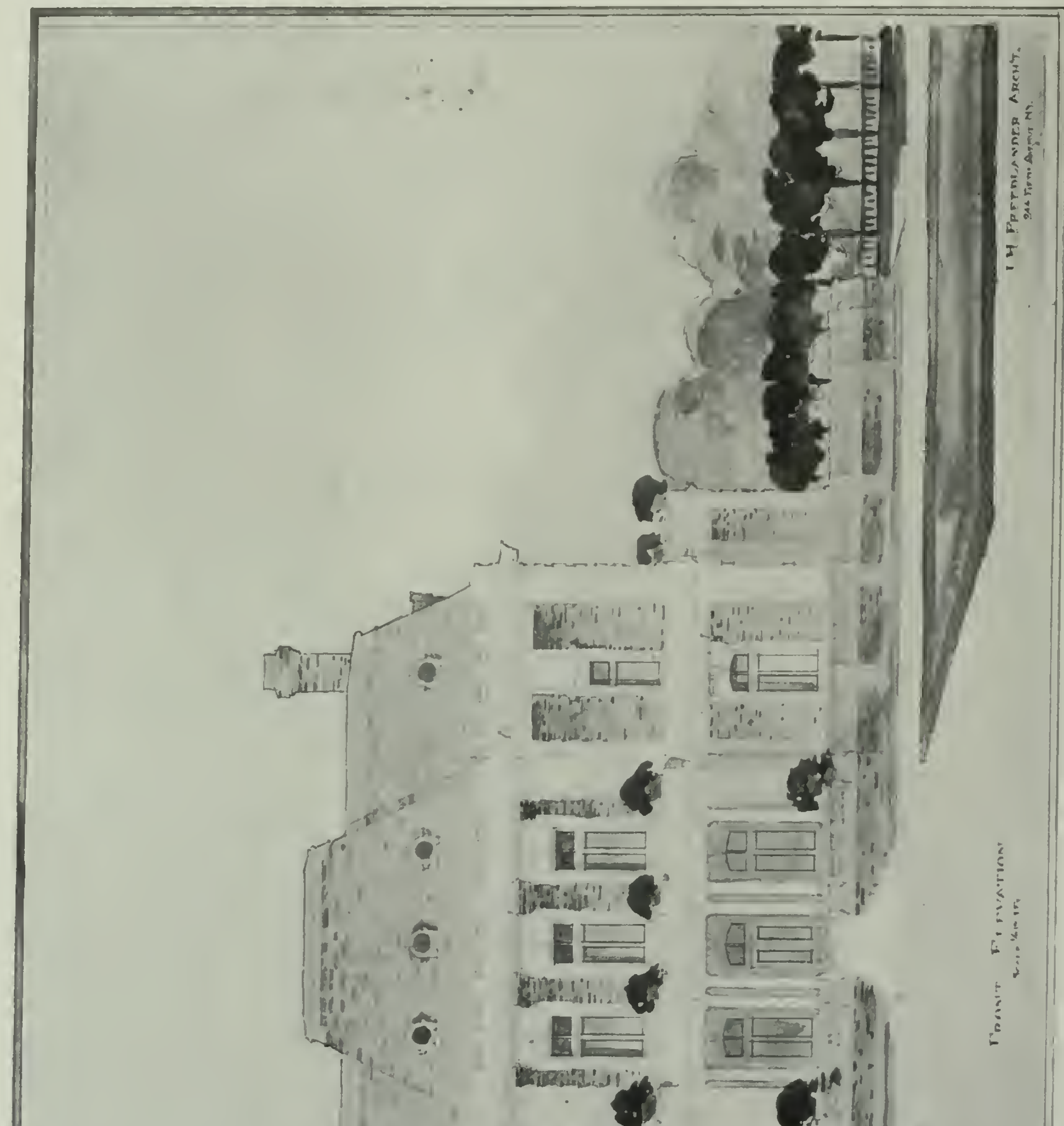
The plan has but three axes, making it necessarily simple and compact. The main axis, running through the hall, is about one hundred feet long and the transverse axis about eighty feet.

These long sweeps of rooms, with their large window openings, allow a thorough circulation of air.

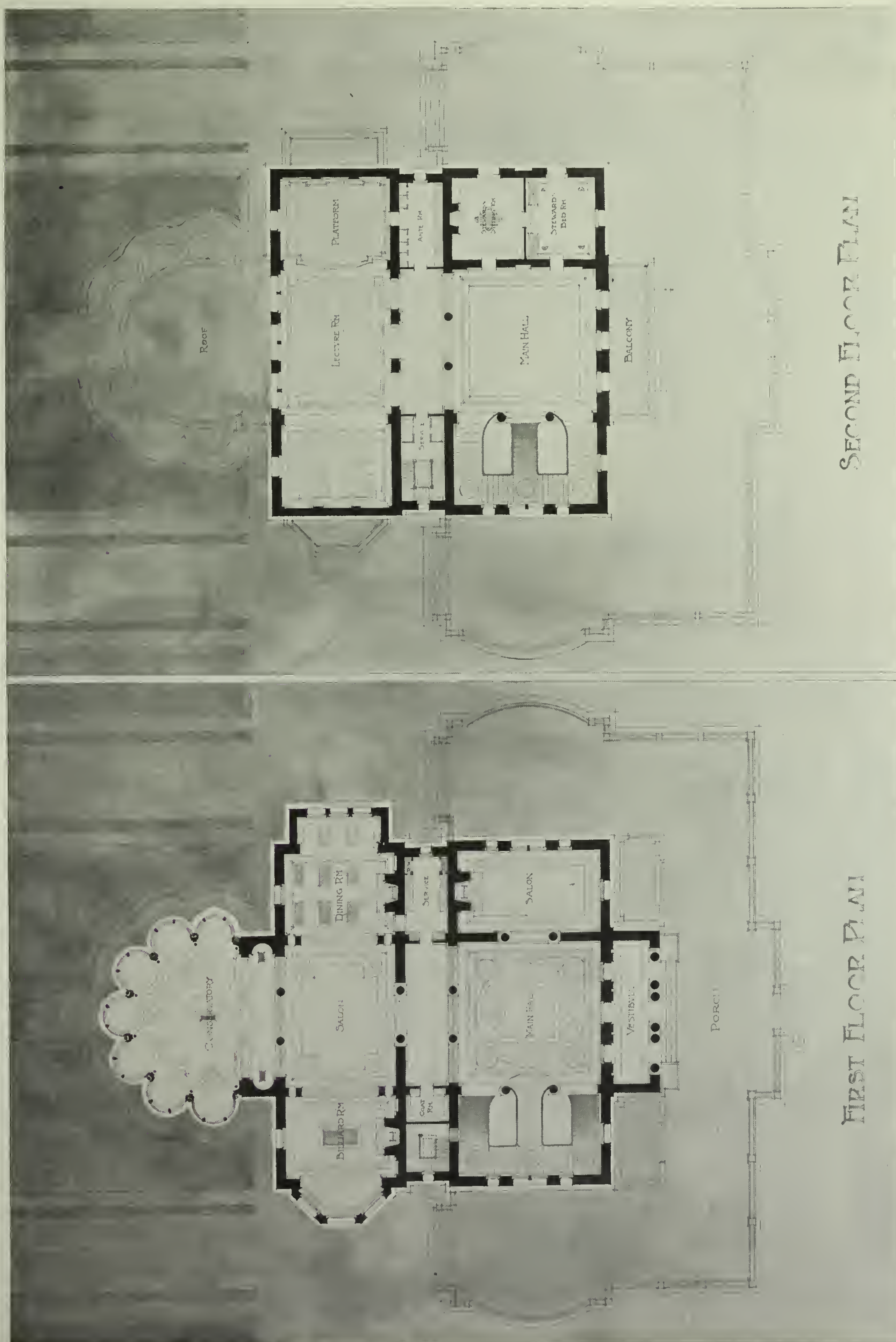
The hall is well lighted from all sides, it is centrally located, and with its staircase makes a very comfortable and cool lounging room. It is simply and classically treated with Ionic columns and cornice, all in Keene cement.

The reception room is to the left of the hall, and is the only quiet part of the clubhouse, well adapted to a reading and writing room. It contains a small open fireplace built entirely of brick.

The hall, reception room and conservatory floors are



A SUBURBAN CLUBHOUSE. J. H. Freedlander, Architect.



FLOOR PLANS, A SUBURBAN CLUBHOUSE.

to be of burnt clay mosaic, the rest of the flooring throughout to be of wood.

The salon, dining room and conservatory form an open suite of rooms, well adapted to the club purposes. The dining room is small, but in case of dinner parties the salon adjoining could be used, thereby accommodating about one hundred persons. Serving the dining room is a comfortable pantry with dumb waiters, etc.

The billiard room is placed to the left of the salon. It contains but one table and a platform for spectators in bay window recess. The bay windows in both dining and billiard rooms are very open, thereby well lighting the suite of three rooms.

The main staircase is six feet wide and occupies the full width of the hall, and finishes on the second floor with a double run.

The main hall on the second floor would be used principally as a quiet sitting room. It contains three large window openings and a small balcony over the vestibule.

In case of receptions, dances, etc., the hall would make a comfortable lounging room, as it adjoins the lecture room.

The lecture room, besides being used for dances, lectures, etc., would serve the purpose of exhibition room for paintings, etc. There is ample wall space, and the pictures would receive an abundance of light from skylight. Adjoining the lecture room is a small anteroom.

The steward, being the only person living at the club, has an apartment on the second floor, consisting of a chamber and sitting room.

The kitchen, laundry, etc., are situated in the rear of the basement. The entrance to these rooms is in the rear.

The interior finish throughout is to be, wherever practicable, of burnt clay in its various forms, such as enameled terra-cotta, faience, brick, tile, etc. The dining room and billiard room will have a wainscoting four feet high.

HOUSES, HOLLY GROVE, BOURNVILLE.

A New English Village.

JUST outside Birmingham, the well-known firm of chocolate manufacturers, Messrs. Cadbury Brothers, Ltd., have built a model village for their employees, following, no doubt, the example of Messrs. Lever Brothers at Port Sunlight near Liverpool. This new village is called Bournville and is of quite recent development, the whole of it having been built since 1895. Mr. Cadbury's object is to alleviate the evils which arise from the unsanitary and insufficient housing accommodation of large numbers of the working classes, and to secure to workers in factories some of the advantages of outdoor

DOUBLE HOUSE, BOURNVILLE.

village life, with opportunities for the natural and healthful occupation of cultivating the soil.

At the beginning of February this year W. Alex. Harvey, the young architect to whom the work of its design was intrusted, read a paper on the subject before the Architectural Association of London, and we are able to give a summary of it in this issue of THE BRICKBUILDER, supplemented by plans and photographs.

Bournville has now more than five hundred houses. Most of those built before 1901 have two sitting rooms, a scullery, three bedrooms and the usual conveniences. Larger ones of later date have four, five and six bedrooms, and a bathroom supplied with hot and cold water. During the last two years several cottages have been built with one large living room instead of two smaller ones, a scullery with bath sunk in floor or disposed of in other ways to economize space, three bedrooms, and in some cases an attic. Others are now built with two bedrooms, for small families.

There is an average garden space allowed each house of six hundred square yards, which is found to be as much as one man can attend to. The rents range from \$1.50 a week (rates included) to \$3 (rates not included), and there are a few houses of a larger class at higher rentals. The village is served by Birmingham with gas, water and sewers.

Although much has been said of higher percentages, four per cent on the outlay is the most that should be expected in building houses of this class. The profit on the outlay is often exaggerated, and it may be well to point out that six per cent gross will rarely pay four per cent net, as is often stated.

In building a street of houses the expense would of course be very great if, to get variety, we employed a different plan and different details for each house. We have recourse to other methods. In the case of fifty houses one might suggest getting as many details as nearly the same as possible, such as windows, doors and door frames (or, at any rate, half of one kind and half of another), avoiding the monotony by a variation of the disposition of these features. An extensive elevation may also be made interesting by the treatment of a porch here, the addition of a bay window there, and the use of rough-cast somewhere else. In a block of three cottages a pleasing effect is gained by projecting or recessing the middle one, or putting one the long way on and so forming a forecourt.

To say that care should be taken to well ventilate

HOUSES, LINDEN ROAD, BOURNVILLE, BACK VIEW.

HOUSES, LINDEN ROAD, BOURNVILLE, FRONT VIEW.

floors is almost a platitude; nevertheless this is sometimes overlooked in the effort to save a trifling expense, in spite of the fact that in the long run, when dry-rot sets in, a considerable expense is inevitable. There should be a bed of concrete over the whole site, and plenty of air-bricks should be employed to thoroughly ventilate ground-floor joists, and the same (or whatever groundwork is used under joists) should be, if possible, above the level of the ground around the house. This prevents any chance of water collecting under floors.

The following is the accommodation of one of the smallest types of cottages erected at Bournville (in blocks of four):

Ground Floor:

- Living room, 13 feet 6 inches by 12 feet 6 inches.
- Scullery, with cabinet bath, 10 feet 6 inches by 7 feet.
- Larder under stairs.
- Coals and water-closet.
- Small paved yard.
- Lobby.
- Size of garden, 600 square yards.

First Floor:

- Front bedroom, 13 feet 6 inches by 12 feet 6 inches.
- Back bedroom, 16 feet 6 inches by 7 feet.
- Small linen closet.

Total cost, including laying out of garden and all extras, about $850 per house.

Estimated net return, $34 per house, equivalent to four per cent.

At Bournville eight per cent gross yields about four per cent net.

This type is of the smallest possible dimensions and simplest construction; the roof runs uninterruptedly from end to end, and the building throughout is of a very inexpensive character. In this class of design every simplicity should be studied: unnecessary roof complications should be avoided, and the chimneys, in order to diminish trimming, flashing, etc., should be grouped together and brought to the highest point of the roof to avoid down draughts and smoky flues. If efficient ventilation is provided it is not essential that each bedroom should have a fireplace. Nooks and recesses doubtless make a room interesting, but in small cottages of this kind they are too expensive to introduce and, instead, the best must be made of materials, color and proportions if we are to secure four per cent on the outlay.

A very important point to emphasize regarding cottages of all sizes is *compactness of plan*, and there should be an aim at getting wall lines as long and as unbroken as possible. Where practicable all outbuildings should be arranged under the main roof, otherwise when cottages are semi-detached one of them must suffer through the projecting roof of the other. This precaution also admits of a better view of the garden from the living rooms, and the glimpse of green is no small consideration in the building of cottage homes. Care should be exercised in the planning of corner cottages to avoid the yard being exposed to the road, and where necessary it should be enclosed, so as to keep the week's wash away from public gaze.

It should be remembered that the position of the larder, which when possible should be north or north-east, is of no small domestic importance.

Another type of cottage built at Bournville has the following accommodation:

Ground Floor:

- Living room, 17 feet by 16 feet, with inglenook and bay.
- Scullery, 13 feet by 10 feet 6 inches, having bath sunk in floor.
- Larder, 5 feet by 6 feet.
- Coals, water-closet and small paved yard.
- Veranda in front.

First Floor:

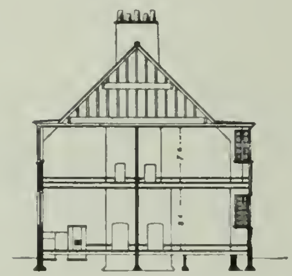
- Bedrooms, 17 feet by 13 feet 6 inches, 8 feet 6 inches by 9 feet 6 inches and 13 feet by 8 feet 6 inches.
- Small box cupboard.
- Attic, 16 feet by 17 feet.

Total cost, about $1,500.

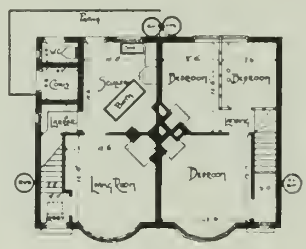
In view of the advantage of one spacious and healthy living room over the parlor plan, this class of cottage has been largely introduced at Bournville.

Mr. Harvey considers that the heights of 8 feet 6 inches for ground floor and 8 feet for bedrooms are quite adequate for the average cottage, so long as sufficient ventilation is provided. Floor space is the most important consideration in the economic building of cottage homes.

FRONT ELEVATION.



SECTION.

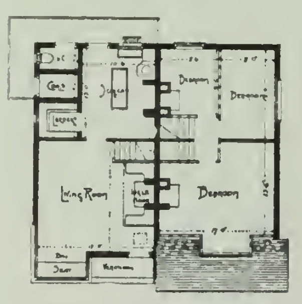


HALF GROUND AND CHAMBER FLOOR PLANS.

BACK ELEVATION.

FRONT ELEVATION.

BACK ELEVATION.



HALF GROUND AND CHAMRER FLOOR PLANS.

SECTION.

COTTAGES, WILLOW ROAD, BOURNVILLE.

He also observes that the cottage with the long sloping roof, of which there are many examples at Bournville, has one great advantage, for if the front walls were carried up level with the ceiling line of bedroom, besides the building suffering in lack of proportion, the expense of extra brickwork would be considerable. Generally speaking, the height of bedrooms to the point of intersection of the roof and wall need be no more than 5 feet 6 inches. Ample ventilation may be got by the simple insertion of a 9-inch by 7-inch air-brick in the outside wall and a tobin tube within, about 5 feet 6 inches from floor, the cost of the latter being only about three shillings.

The cottage is not of a size to admit of a bathroom, so that the bath has to be sunk in the floor of the kitchen near the hearth, which is covered by what may be used as a standing or draining board, or if sufficient room not sunk, but covered by what can be used as a settle or table. In some cases the patent adjustable bath has been used, being hinged at one end in order that it may be raised and lowered from a cabinet, the upper portion having shelves and forming a cupboard, where it is kept in a vertical position, much room being saved thereby.

The following is an example of a cottage where a clear four per cent is made on the outlay. A large number have been built to this plan at Bournville. The accommodation is:

Ground Floor:

Parlor, 13 feet 6 inches by 11 feet 3 inches, and bay.
Living room, 14 feet 6 inches by 11 feet 9 inches. (French window.)
Kitchen, 12 feet 3 inches by 10 feet 6 inches.
Larder, 6 feet by 6 feet 3 inches.
Porch and hall, and cloak space under stairs.
Tools, water-closet and coals enclosed yard, and 600 square yards garden.

First Floor:

First bedroom, 13 feet 6 inches by 11 feet 3 inches.
Second bedroom, 14 feet 6 inches by 11 feet 3 inches.
Third bedroom, 10 feet 6 inches by 8 feet 3 inches.
Bathroom (hot and cold water).

Total cost, including laying out of garden and all extras, about $1,925 per house.

Estimated net return, $77 per house, which is equal to four per cent.

A good window sill is formed of calf-nosed bricks set on edge in cement, with two courses of tiles beneath, which forms a drip under sill, and a backing of slate, also in cement. By bringing the window frame forward to reduce the size of the top of the sill, two curses of small property — damp and driving in of rain at this point — are prevented.

SEMI-DETACHED COTTAGES, WILLOW ROAD, BOURNVILLE.

As to wall decoration in interiors for small cottages, Mr. Harvey has found it advisable to use papers instead of color wash, as the latter is very soon soiled by children. In the better houses a color wash may be at first used and a paper added later, with a frieze. A good effect is also obtained by bringing down the white from the ceiling as far as the picture rails; these latter should be placed in the smallest houses, if only to save the plaster.

With regard to bricks, as far as possible he uses the brindled Staffordshires. They are suitable for cottage building, because a pleasing variety of color is introduced at a low cost, the tints being a bright cherry red, blended with purple and blue — the last of which is quite different from the indescribable vitreous blue.

There is a strong temptation to introduce a variety of colors upon exteriors, but with cottages of the class being dealt with it is advisable to refrain from doing so. Mr. Harvey's experience has been that it is best to get the color in masses, treated broadly, not in bits — say, each house of one color; for where the cottages stand close together, or even where they are semi-detached, the contrast or relief is borrowed from the neighboring one, and

THE INN, BOURNVILLE.

in the case of a village a much better general effect is thus gained.

With regard to the thickness of walls, his opinion is that a nine-inch wall outside is quite sufficient and is to be preferred to the cavity wall. Southwest fronts should be protected by overhanging eaves, but where this is impossible the face should be whitewashed, by which not

COTTAGES, BOURNVILLE.

only is damp largely prevented, but an effective appearance gained.

Half-timber for exteriors he does not recommend. District councils insist on a nine-inch wall being at the back; thus not only is its use false art, but an unwarranted present and future expense; besides, an effect equally as good is obtained with rough-cast or whitewash. Half timber one lives to regret, for the weather tells sadly, and it demands constant repair.

A garden arrangement largely adopted at Bournville is as follows: At the bottom are eight apple and pear trees and fruit trees, which, besides being reasonably expected to bear fruit, form a screen between houses which are back to back. The paths are made of six inches of ashes and three inches of gravel. The position of the grass plot and ornamental bed at the top permits a little soothing green and flash of color to be seen from within the house.

Given a plot of land upon which four houses are to be erected, it is advisable, in order to more equally distrib-

SMALL COTTAGE, BOURNVILLE.

ate the garden space, say, of about five hundred or six hundred square yards per house, to spread them laterally by arranging the staircase, not between the rooms, but between the houses, thus widening (not lengthening) the building. This, bringing the remote houses nearer the

PART OF DOUBLE COTTAGE WITH GARDEN, BOURNVILLE.

extremity of the land, not only gives the garden plot the preferable straightness, but a breadth of view upon same is obtained from within, and the yard space is materially widened.

Fireproofing.

FALSE ECONOMY IN FIREPROOFING.

IN a building erected some years since which cost complete three hundred and sixty-five thousand dollars, the contract price for the terra-cotta floor blocks was seventeen thousand dollars, or 4.65 per cent of the total cost of the building. In another building erected only a short time since, quite elaborate in its design and constructed with an exterior entirely of granite and hence quite expensive in price per foot, the total cost was one million dollars, while the entire fireproofing was contracted for at thirty-eight thousand dollars, or 3.8 per cent of the cost of the whole. It is probably safe to say that the whole expense of fireproofing need never exceed five per cent of the cost of any building, this price of course covering merely floors and other protective work, but not the beams or columns themselves. The difference between the very cheapest forms of so-called fireproof construction and the very best which scientific ingenuity has thus far evolved would be represented by a sum considerably less than one-half of one per cent of the total cost of the ordinary building. And yet the security of the entire structure is often very correctly measured by the quality of the fireproofing. Under such circumstances it seems the height of folly to consider anything but the best when fire protection is desired. Rather than to cut on so relatively inexpensive a factor of the whole cost of the building, our architects and constructors ought to feel justified in considering that in this part of the work the question of expense does not cut any figure, and that the most careful study of each problem ought to be made to solve it in just the right way, rather than to adopt the least expensive method, because at the very most the best way does not involve such a large amount of money, and the best is none too good to serve its purpose. During the past year the country has had a great deal of very stirring practical experience in connection with fireproofing construction and methods, and with each recurring fire or conflagration the testimony of architects, engineers and all who have given such questions serious study has been to emphasize the necessity for more care, better methods and more complete protection. If therefore we are to rightly profit by all these examples it is beyond question the duty of the architect and the engineer to advise his client to pay for what gives the most for his money, and under no circumstances to curtail this most essential feature of the building.

There is another direction in which a great deal of false economy is practised. In the days of not so very long ago, before architectural engineering was an exact science, many of our best builders seemed to possess a sense by virtue of which they could tell by merely looking at it whether a beam or a column was sufficiently strong. They often made mistakes, but on the whole it is doubtful if their mistakes were any more far-reaching than such as have occurred more recently as a result of too close shaving in the calculations of an engineer. Beam and column calculation has been brought to a nicety. The factor of safety is no longer a real factor of ignorance, as was so often the case in the past, but we must not save in our steel beyond reasonable limits, and it is a question whether our engineers do not figure too closely and not make sufficient provision for shocks, for unexpected loads or even for indifferent workmanship. There are some cases where the trained judgment of a practical builder is worth more than a set of Carnegie tables, and the Hotel Darlington accident has shown how quickly a steel frame building may collapse.

SETTING OF TERRA-COTTA FIREPROOFING.

NO matter how complicated may be the setting of a piece of terra-cotta nor how necessary it may be to fit terra-cotta fireproofing for a certain place in a way which might best be appreciated by those who designed it, it is nevertheless impossible to have this work done under the immediate direction of the manufacturers who are most interested in having it done right. The result is constant vexation and disappointment to every architect and manufacturer who know how well terra-cotta may be set by experienced hands. The recent strike of the bricklayers in New York virtually hinged upon this question. The terra-cotta manufacturers from the very first have insisted that their specially trained men are most competent to handle their material; but between the subcontractor, who has only a reflected obligation to architect and owner, and the labor unions, who in their blind conceit are bound to conquer or destroy the labor market, the terra-cotta manufacturer and the building itself generally suffer. If the time should come when the owner, who is the one who after all pays the bills, will have the courage to take a determined stand and insist upon his work being done by trained men, or if the labor unions could by some wise dispensation of providence come under the sway of capable men, there would be hope that we might have this very important portion of the work done as it should be. The terra-cotta manufacturers want it, and it is not in any sense a question of cost. It is merely a blind, unreasoning prejudice on the part of the unions, which results in a loss to every one concerned, the owner, the architect, the builder, the mechanic himself, and, as has been often shown by our large fires, the insurance companies are also sufferers by this mediæval rule.

There was a time when terra-cotta was the only fireproofing material in general use. During the past decade, and more especially the latter part of it, the patented systems of reinforced concrete have been studied very thoroughly by engineers, and a great deal has been made of them. The weak point in terra-cotta fireproofing is the setting, never the material itself. And yet every now and then a fire reveals careless setting and indifferent filling of joints, which the constructor and the superintendent thoroughly deplore, which every fireproofing company knows full well how to avoid, but which with the existing sentiment of the bricklayers really cannot be avoided. The bricklayers are very shortsighted if they cannot reason it out that it is more to their own selfish interests to have terra-cotta used and used rightly than it is to have our contractors turn for relief from the poor setting to a use of concrete in which they can employ trained labor.

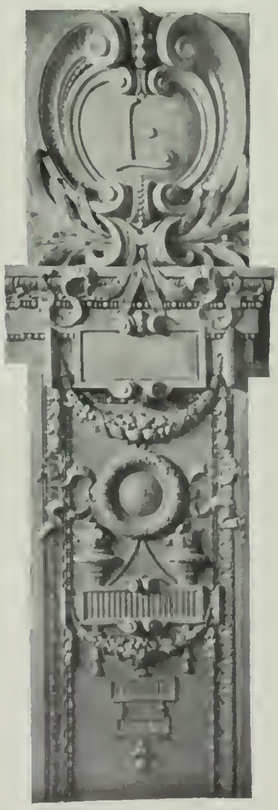
Editorial Comment and Selected Miscellany

THE HOTEL DARLINGTON.

WE are interested to note that the grand jury acting upon the loss of life in the case of the collapse of the Hotel Darlington, New York, has condemned the present system of the building bureau in New York and recommend the removal of Inspector French. The sub-contractors for the steel and iron work were not indicted, and the jury explained it partially by stating that in the case of one of them "his ignorance was so great and his intelligence so limited as to render him practically incapable of appreciating the responsibility of his undertaking." The real responsibility the jury placed upon the owner, who induced such a contractor to undertake a task for which he was so manifestly unfit. The jury condemns the whole building inspection system as being grossly inadequate, the number of inspectors absurdly small, and the compensation allowed them insufficient to secure men of the requisite intelligence and capacity. French, the inspector whose duty it was to examine the condition of the steel and iron work on the hotel, was characterized as grossly negligent in the performance of his duties and as a person entirely unfit for his position. The jury makes, among others, some most excellent recommendations. They state emphatically that the erection of steel or iron buildings without the immediate supervision of the original architects or a competent expert in such construction, licensed by the city of New York for that purpose, should be prohibited by law, and the jury deplores the practice of some architects in selling their plans without supervision. Another excellent recommendation is that the inspectors employed by the Building Department be required to be competent engineers of experience who shall receive adequate compensation. We should be interested to know who were the members of this grand jury. Their recommendations sound as if they had been prompted by some very clear-headed and fearless architect or engineer. The average jury does not usually rise to great keenness of discernment. The case in this instance is stated so clearly, the troubles and their remedies are so patent to every one who knows anything about the conduct of building operations, that the authorities in New York City certainly do not lack for precise instructions as to how to avoid such disasters in the future.

DETAIL BY MULLIKEN & MOELLER, ARCHITECTS.
New York Architectural Terra-Cotta Co., Makers.

TECO VASES, MADE BY AMERICAN TERRA-COTTA AND CERAMIC CO., CHICAGO.
Designed by W. B. Mundie (Jenny & Mundie).

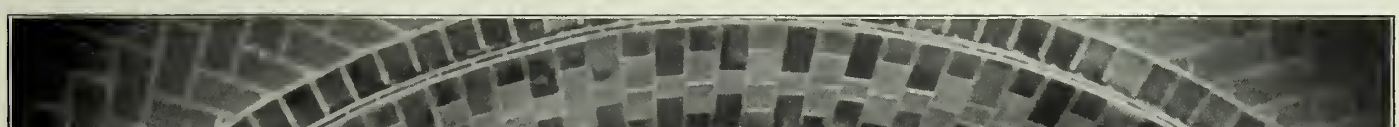


DETAIL BY F. H. KIMBALL, ARCHITECT.
Excelsior Terra-Cotta Co., Makers.

A FAIENCE MANTEL.

We illustrate on page 87 a panel which forms the top of a mantel which will be exhibited by the Hartford Faience Company at the St. Louis Exposition.

DETAIL BY PALMER, HALL & HUNT, ARCHITECTS.
Northwestern Terra-Cotta Co., Makers.



CITY HALL STATION OF THE NEW YORK SUBWAY, SHOWING GUASTAVINO CONSTRUCTION.
Heins & La Farge, Architects.

DETAIL BY C. B. J. SNYDER, ARCHITECT.
Atlantic Terra-Cotta Co., Makers.

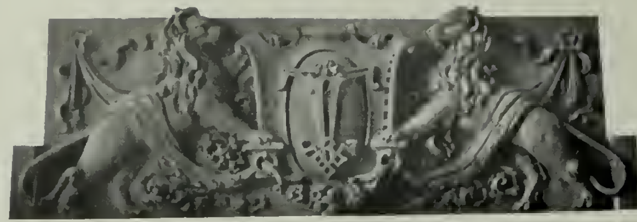
The whole mantel is treated after the Della Robbia style, the subject of the design being the Fire-Worshipers, a religious sect composed mostly of Arabs in Persia and Arabia. The panel is nine feet long and five feet high, the figures being in high relief. The ground is dark brown, the figures in three shades of brown, ranging from very dark to very light, the bodies and faces being the darker; the leaves are green, while the sun is a warm, strong yellow, and the sky is graduated, being about the same color as the sun near it, and shading up almost to a white at the top and the extreme sides. As executed it is a splendid representation of a sunrise with worshiping figures and with its soft colors and graceful modeling presents a beautiful picture. The modeling was done by Louis Potter, sculptor, New York City.

DETAIL BY U. J. L. PEOPLES, ARCHITECT.
Conkling-Armstrong Terra-Cotta Co., Makers.

OF INTEREST TO ARCHITECTS WHO WILL VISIT THE ST. LOUIS EXPOSITION.

The Hydraulic Press Brick Company, St. Louis, Mo., extends to you a cordial invitation to use its offices, twelfth floor, Missouri Trust Building, as headquarters during your visit to the Louisiana Purchase Exposition, 1904. Writing materials, telephones and the services of stenographers will be pro-

DETAIL BY PAUL C. HUNTER, ARCHITECT.
Standard Terra-Cotta Works, Makers.



DETAIL EXECUTED BY ST. LOUIS TERRA-COTTA CO.

vided, and arrangements made to receive and care for mail.

The large and well-appointed offices of this company are centrally located in the business section of the city, and will afford ample accommodation to all who are desirous of availing themselves of the opportunities offered.

IN GENERAL.

Richard Keeler Mosley, architect, announces the removal of his offices from Produce Exchange Building to No. 1 Nassau Street, New York City.

A. I. Lawrence and Howland C. Bates have formed a copartnership for the practice of architecture, with offices at Berlin, N. H.

Frederick F. French, architect, formerly of Bradford, Pa., is now located in the Bessemer Building, Pittsburg. Manufacturers' catalogues and samples desired.

William Emerson, architect, has opened an office at 81 Madison Avenue, New York City. Manufacturers' catalogues and samples desired.

An architectural department has been established in connection with The Craftsman Workshop at Syracuse, N. Y. Manufacturers' catalogues and samples desired.

DETAIL EXECUTED BY NEW JERSEY TERRA-COTTA CO.

The Boston Architectural Club gave a complimentary dinner on the evening of April 23 to Mr. Ralph Adams Cram, who is about to sail for Europe. During the evening Mr. Cram gave a talk on the Architecture of Japan.

The Cincinnati Roofing Tile and Terra-Cotta Company has been awarded one of the largest, if not the largest order

TOP PANEL OF A MANTEL, REPRESENTING THE FIRE-WORSHIPERS.
ABOUT 9 FEET LONG BY 5 FEET HIGH.
Executed in Faience by the Hartford Faience Co.
Louis Potter, Sculptor.

for roofing tile that has ever been placed in this country. It is for the Battle Mountain Sanitarium, Hot Springs, South Dakota, Thomas Kimball, architect. The contract will require about forty-eight carloads of roofing tile.

The following letter, signed by the president of the Safe Deposit and Trust Company of Baltimore, is perhaps as valuable in many respects as a report would be if made by an engineering expert:

BALTIMORE, March 5, 1904.

MESSRS. HENRY MAURER & SON, New York.

Gentlemen, — It gives us great pleasure to testify to the manner in which the porous hollow tile material furnished and erected by you in the roofing of the Safe Deposit and Trust Company of Baltimore Building stood the terrific heat to which it was subjected by the fire which so lately wrecked so many of the buildings of this city.

The fireproof roof of your "Eureka" design, on account of its fireproof quality and also owing to its strength and first-class construction, though severely tested by the heat and the weight of falling material from adjoining buildings, helped to prevent ingress of the flames and contributed to the saving of our building.

Very truly yours,
MICHAEL JENKINS, *President.*

Lewis Warren Pulsifer, architect, formerly of Boston, has opened an office in the Majestic Building, Denver, Colorado, and will be glad to receive manufacturers' catalogues and samples.

Henry Mauer & Son, 420 East 23rd Street, New

FRISCO BUILDING, ST. LOUIS, MO.
Eames & Young, Architects.
Built of gray speckled brick furnished by Columbus Brick and Terra-Cotta Co.

DETAIL OF FOUNTAIN DESIGNED AND MODELED BY
R. HINTON PERRY, SCULPTOR.
Executed in Glazed Terra-Cotta by Perth Amboy Terra-Cotta Co.

STABLE FOR JOHN D. ROCKEFELLER, ESQ., TARRYTOWN, N. Y.
York & Sawyer, Architects.
Covered with American "S" Tiles furnished by Cincinnati Roofing Tile and Terra-Cotta Co.

York City, wish it announced that neither their firm nor their business is in any way connected with the National Fireproofing Company. This announcement is made for the purpose of correcting a wrong impression.

Mulliken & Moeller announce a removal of their office from 7 East 42nd Street to 7 West 38th Street, New York City.

ALGONQUIN HOTEL, WEST 44TH STREET, NEW YORK CITY.
Fireproofed with Burnt Clay Tile.

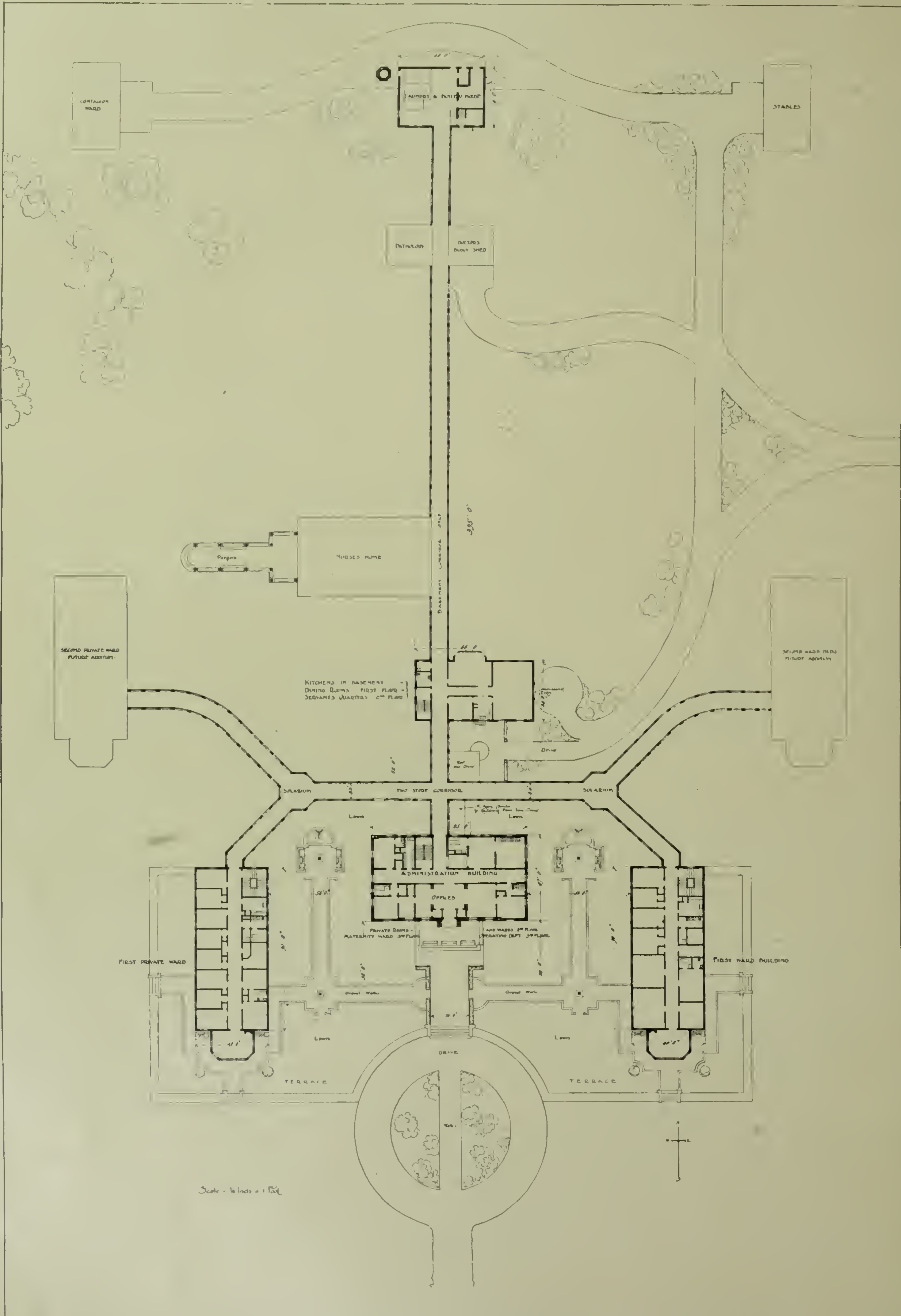
The trustees of the Carnegie Technical Schools have outlined the terms of the architectural competition for the proposed new buildings, which are expected to be the largest and most complete of their kind in the world. The purpose is to select an architect for the buildings through the designing of a scheme for the entire group. Five architects have been selected and invited to prepare competitive designs and have accepted. They will be paid $1,000 each. Other architects, when approved by the committee, will be permitted to enter the competition. To these competitors awards are offered of $1,000 each for the five plans first in order of merit. Architects may address A. A. Hamerschlag, director of the Carnegie Technical Schools, Pittsburg, for competitive blanks.

COMPENDIUM OF DRAWING. Compiled from the Courses of the American School of Correspondence at Armour Institute of Technology, Chicago, Ill. In two volumes.

These volumes include the regular instruction papers in the mechanical engineering and draughting courses of the American School of Correspondence, indexed and bound together in convenient form for ready reference. Although published primarily to acquaint the public with the practical value of the courses and the instruction offered by the School of Correspondence, and representing only a small portion of the complete courses, these volumes contain a great deal of condensed practical information which would be of immediate value to the draughtsman, student or teacher. The scope of the two volumes includes an admirable treatise on architectural lettering, also shades and shadows, architectural perspective, machine design and drawing, sheet metal pattern making and pen and ink rendering. The good which the correspondence schools can accomplish is seldom fully appreciated. They reach not only the class of busy young men who have had neither the time nor the money to follow the courses in a technical school or university, but they are also great helps to the professional man as supplementing his earlier technical training. The courses are so entirely devoid of mere padding and the information is so condensed to its most readily appreciated factors that the information imparted is quickly assimilated by any one who really wants to acquire the knowledge. These volumes are thoroughly to be commended.

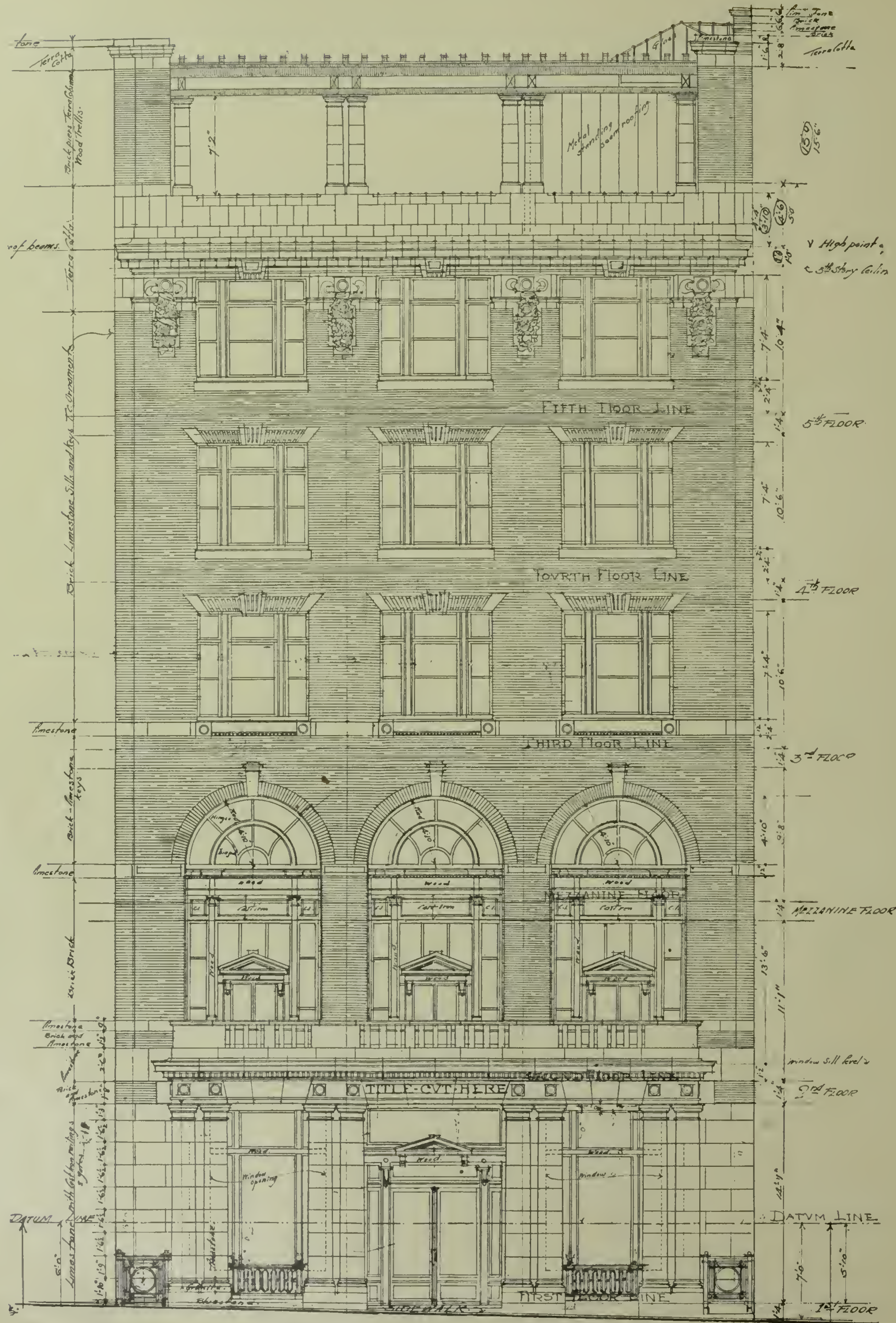
An architect on Fifth Avenue, New York, is willing to share, or sublet a part of, his suite of offices which are in a desirable location. Inquiries may be addressed to THE BRICKBUILDER.

VOL. 13. NO. 4. PLATE 25.



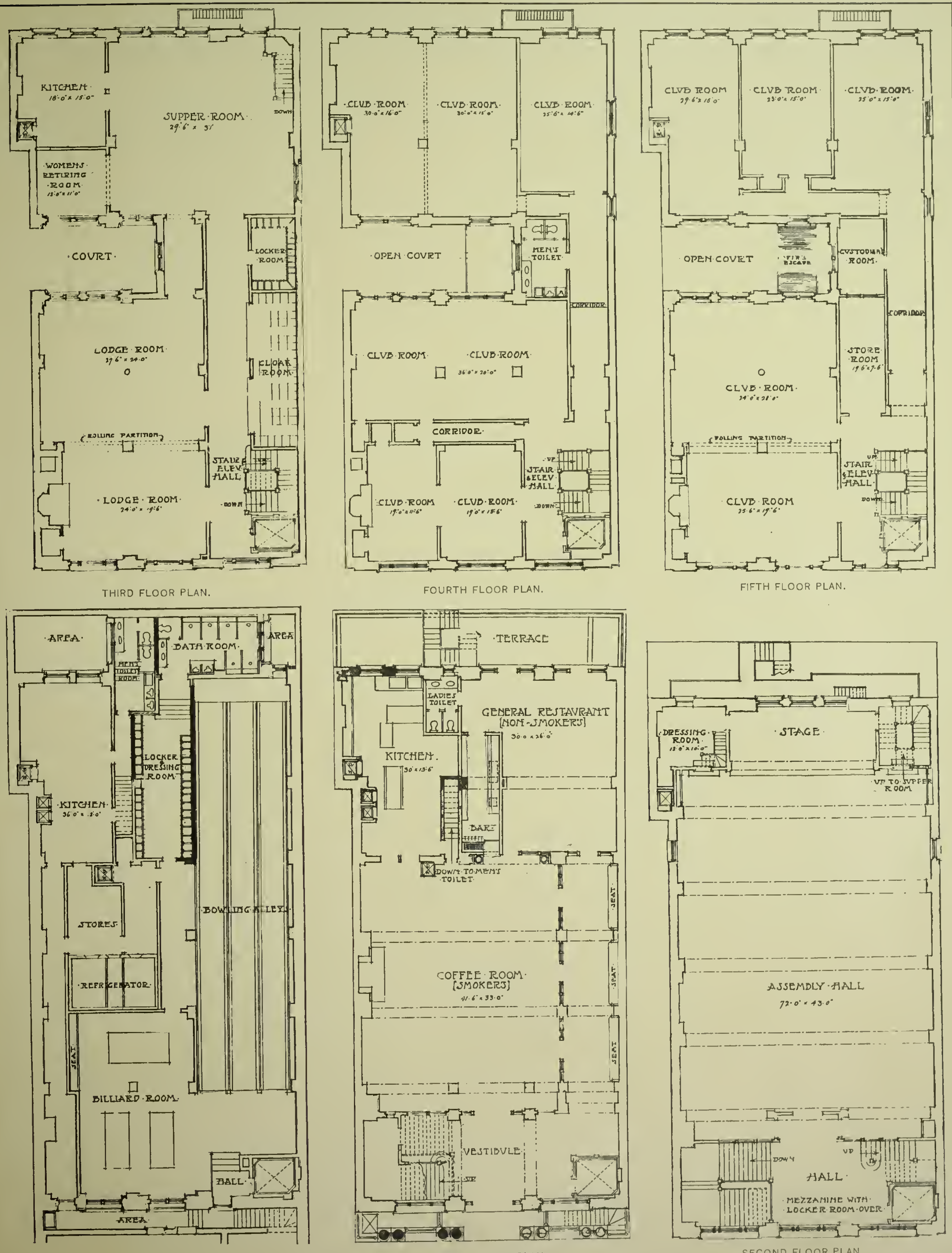
PLAN, HOSPITAL AT MENOMINEE, WIS.

George Lyon Harvey, Architect.



FRONT ELEVATION, CLINTON HALL, CLINTON STREET, NEW YORK CITY.

HOWELLS & STOKES, ARCHITECTS.



FLOOR PLANS, CLINTON HALL, CLINTON STREET, NEW YORK CITY.

HOWELLS & STOKES, ARCHITECTS.

THE MESS HALL, VIEW OF EAST PORCH.

NATIONAL HOME FOR DISABLED VOLUNTEER SOLDIERS, JOHNSON CITY, TENN.

(ELEVATION AND PLANS ILLUSTRATED IN THE BRICKBUILDER FOR APRIL, 1903.)

J. H. FREEDLANDER, ARCHITECT.

HOUSE FOR SPENCER P. SHOTTER, ESQ., SAVANNAH, GA.
INGLE & ALMIRALL AND RAYMOND F. ALMIRALL, SUCCESSOR, ARCHITECTS.

HOUSE FOR SPENCER P. SHOTTER, ESQ., SAVANNAH, GA.

INGLE & ALMIRALL AND RAYMOND F. ALMIRALL SUCCESSOR, ARCHITECTS.

HOUSE AT PRINCETON, N. J.
COPE & STEWARDSON, ARCHITECTS.

THE BRICKBUILDER.

Vol. 13 MAY 1904 No. 5

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From Work of WILLIAM ATKINSON, ERNEST FLAGG, J. H. FREEDLANDER, K. M. MURCHISON, YORK & SAWYER.

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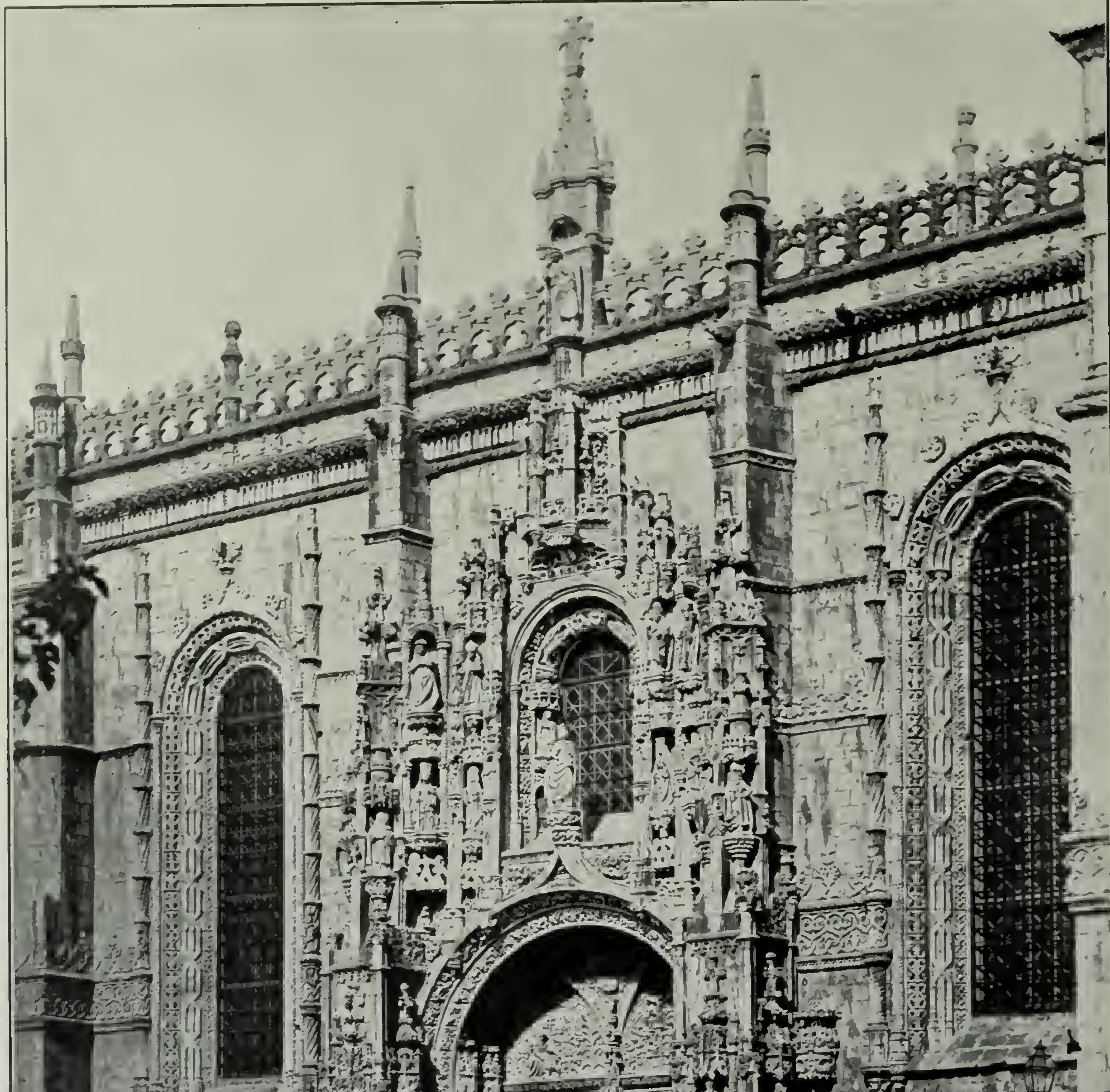

PORTAL OF THE CHURCH OF BELEM, NEAR LISBON, PORTUGAL.

THE BRICKBVILDER

VOL. 13 No. 5 DEVOTED · TO · THE · INTERESTS · OF ARCHITECTVRE · IN · MATERIALS · OF · CLAY MAY 1904

THE BRICKBUILDER.

PUBLISHED MONTHLY BY

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HARVARD AND THE INSTITUTE OF TECHNOLOGY.

HARVARD UNIVERSITY and the Massachusetts Institute of Technology are mutually considering the advisability of some form of combination of interests, and joint committees have been appointed from the two institutions to take the matter under advisement. The public announcement of the fact that some such action is under consideration has aroused a great deal of interest, and in some cases has called forth very decided expressions of opinion on the part of the alumni of the Institute, who have been heard from very emphatically as being in great part opposed to any form of union. The alumni at Harvard do not seem to have much to say upon the subject. Just why there should be any opposition to a combination of interests is not easy to explain, except on the assumption of a class spirit which would be more powerful than any real desire to advance the cause of education. There is an admitted element of unnecessary waste in conducting two institutions of such similar character so close together. The Lawrence Scientific School of Harvard University is richly endowed with money and everything that money can give. The Institute, on the other hand, has a splendid record of achievement, with rather limited means and inadequate equipment. The tendency is growing every year to consider engineering and architecture as properly post-graduate studies, and the desirability of a young man who shall enter either of these professions having first taken his degree at a university is more and more admitted, and if these studies are to become, as seems quite likely, functions of post-graduate work, we cannot see wherein the Technology would be any loser by a combination with Harvard, while it is beyond question that students would profit greatly by coming under the ægis of the older and richer school. The Technology would undoubtedly lose a certain amount of its independence by the merger, and yet the Harvard Medical School, the Harvard Law School and the Lawrence Scientific School are each known as distinct institutions, though they are parts of Harvard University. The deciding question really ought to be whether or not the cause of education would be advanced by the union rather than whether an institution or a name will be to a greater or lesser degree modified, and to that proposition there can be really only one answer. It is our sincere hope that opposition to this union may take only such form as will result in bringing about the very best and most effective form of alliance.

ROTCH TRAVELING SCHOLARSHIP.

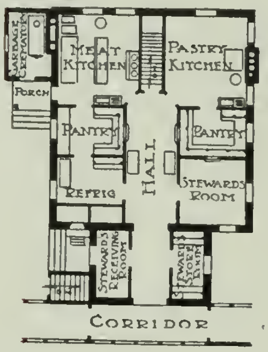
THERE are two points in regard to the Rotch Traveling Scholarship which with each succeeding year are made more manifest. It was undoubtedly the expectation of the Rotch heirs when this prize was founded that its beneficiaries would be drawn to a certain extent from a number of those young men who had not been able to profit by instruction in the regular architectural schools. As a matter of fact, however, out of the twenty-one who have won this prize sixteen were educated at regular architectural schools, and of the remaining five, three had received a technical engineering education, only two of the whole number having been limited in their architectural education to the opportunities of office practice. Another point is that though from year to year different architects have been called upon to judge the designs submitted in competition, and though the character of the problems has varied greatly, almost without exception the basis of the awards has been along pretty strict academic lines, and excellence of planning, correlation between the design and the plan, and academic design have apparently in every case been considered of far more importance than mere tricks in rendering or facility in drawing. This is certainly as it ought to be, and the Boston Society of Architects is to be congratulated upon the manner in which, through all these years, the scholarship has been directed along uniform lines.

Hospital Planning. V.

BY BERTRAND E. TAYLOR.

THE early hospitals contained only congregated wards and very seldom, if ever, rooms or wards for single beds.

In America there has been a gradual evolution from the pavilion with an open ward and toilets to a highly perfected scheme with open wards, solaria, nurses' room, toilet and bath, two-bed wards, isolated private wards with special toilet, bath and solaria, with the necessary diet kitchen, linen and clothing room, etc., as shown, for instance, in the male and female medical and surgical pavilions of the Bradford, Pa., Hospital.



FIRST FLOOR PLAN
SCALE OF FEET

KITCHEN BUILDING, HOSPITAL AT BRADFORD, PA.
Green & Wicks, Architects.

In the early hospital it is a great question how they did the work with absolutely no conveniences; and as we study the plans of recent hospital construction abroad, it is evident that the evolution has progressed more slowly there than in the United States, and that there has been comparatively little change in the general plan of a pavilion in the past twenty years.

There was a time when travelers were willing to sleep in a hotel room with several fellow travelers in separate beds in the same room. Two-bed rooms are still quite common in some parts of the country to-day. Not so very long ago one bath to a floor did very well in the average hotel. To-day, however, travelers demand a separate room and generally a private bath, and they are willing to pay the extra price.

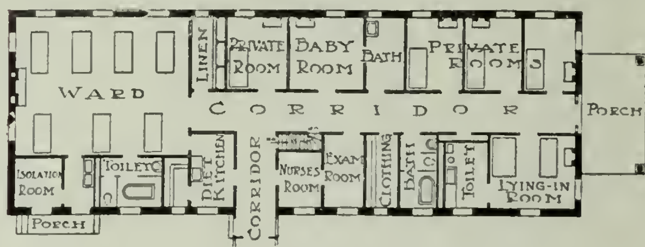
So in hospitals a few years ago all patients suffered, were interviewed by friends, examined by the medical staff, consoled by the minister and generally died in public, as it were, the subject of interest to fellow sufferers on all sides; sometimes protected by a screen and sometimes not.

The uneducated and the poorer classes seem to prefer the open ward, but the more intelligent, more sensitive and highly organized demand the private room or, if unable to pay for this, the small two or three bed ward.

Thus, as shown in the Bradford Hospital pavilion, there are twenty-four open-ward beds, eight two-bed wards, and three single-bed private wards, that is, nineteen practically private beds to twenty-four public or open-ward beds.

In the Merritt Hospital, designed in 1902, but on account of strikes, etc., but just started, there is, in the two-story pavilion shown, twelve open-ward beds and sixteen single-bed private rooms, an unusual example of this development in a general hospital.

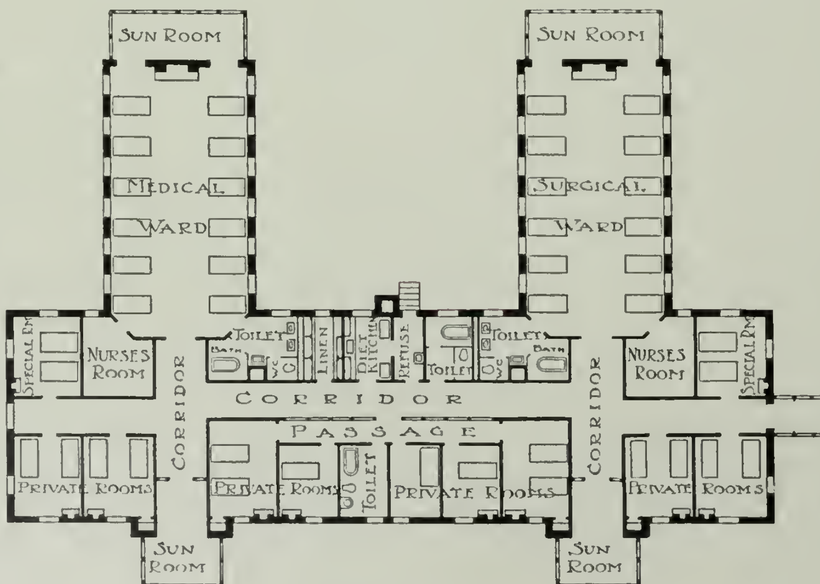
The Norfolk Protestant Hospital (illustrated on page 73, THE BRICKBUILDER for April, 1904) shows this development also, but to a less degree than the Merritt. Here we have in each two-story pavilion thirty open beds and twenty single-bed private rooms.



FIRST FLOOR PLAN
SCALE OF FEET

MATERNITY PAVILION, HOSPITAL AT BRADFORD, PA.
Green & Wicks, Architects.

In the one-story pavilion of the Brattleboro, Vt., Hospital this idea is also developed to an unusual degree, there being ten open-ward beds and nine or ten private-room beds. This pavilion is like that of Bradford, a double or composite pavilion, but the isolation is sufficiently perfect, and there is a great economy of service when few beds are occupied.

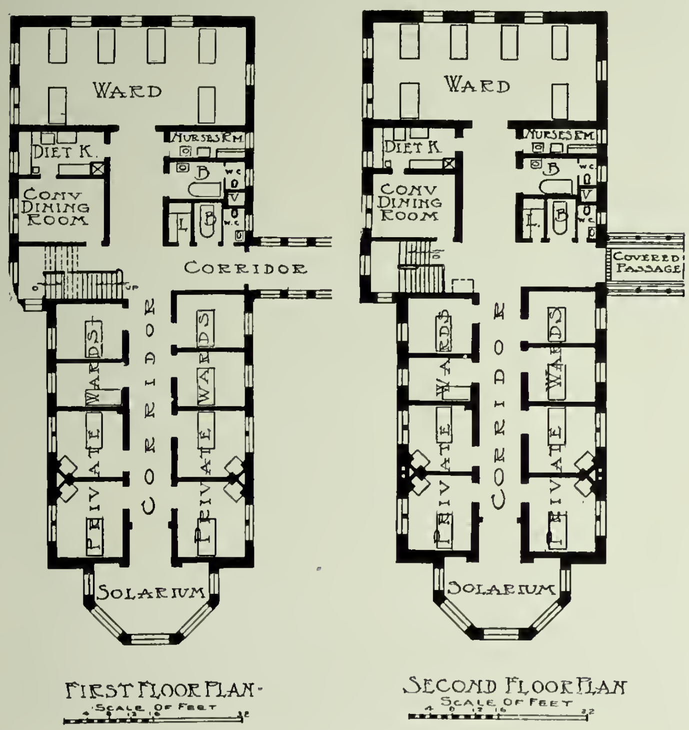


FIRST FLOOR PLAN
SCALE OF FEET

MEDICAL AND SURGICAL PAVILION, HOSPITAL AT BRADFORD, PA.
Green & Wicks, Architects.

A novel feature in this plan is the nurses' toilet and dressing room, which every pavilion should have; also the open-air balcony in addition to the two sun rooms and the inclined planes down which patients can reach the ground and rest under the shade of a marquee or a grove of trees.

The two-story pavilion of the Lynn, Mass., Hospital is a little unusual in that it has the open ward on the first story and the private rooms on the second, an automatic electric elevator connecting the two floors, and each, as will be seen, being fully provided with every possible convenience and accessory. The solaria have fire escapes of iron and are unusually spacious. The diet kitchens

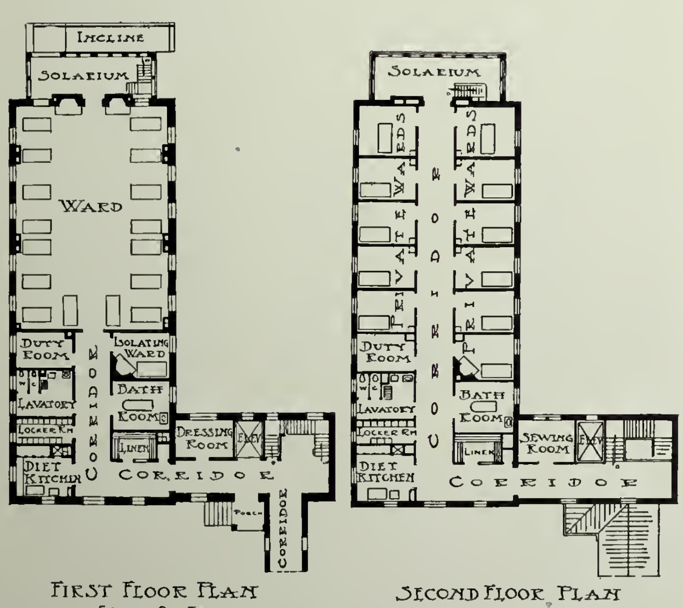


WARD BUILDING, SAMUEL MERRITT HOSPITAL, OAKLAND, CAL.
Kendall, Taylor & Stevens, Architects.

have enough room, which is quite an unusual condition, and there is a surgical dressing room for the nurses.

The Newport, R. I., Hospital, designed by William Atkinson, architect, is a very interesting exemplification of this developed pavilion idea.

The special feature to be noticed in this interesting plan is the semi-isolation of the toilet rooms, the entrance being by a passage out into and through a circular bay back into the main body of the pavilion. The scheme is evidently intended to provide a lighted and aired cut-off

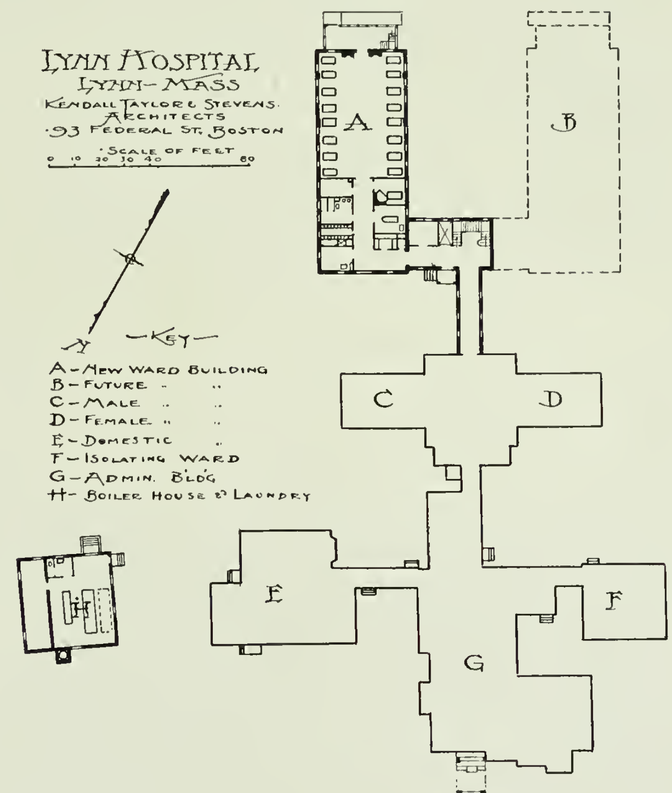


WARD BUILDING, HOSPITAL, LYNN, MASS.

between the corridor and the toilet. This is a mean between the extreme isolated English or Scotch tower connected by an aired passage, and the toilet opening directly from the ward, as found in some important work.

It seems to the writer that the isolated toilet pavilion or tower, almost invariably found in the British hospitals, is an acknowledgment of bad plumbing and no ventilation. With first-class plumbing and perfect ventilation in the toilet rooms and perfect ventilation of the corridor connecting the wards, there can be no possible danger in the usual American custom of planning in this regard.

As the British hospitals have no generally isolated or private rooms, their customary location of toilets at the



PLAN, HOSPITAL AT LYNN, MASS.
Kendall, Taylor & Stevens, Architects.

outer end of the pavilion answers as far as convenience goes, but with the private rooms found necessary here, a double outfit would be needed, and this would call for one or two more towers being added to the two already provided.

As the British pavilion usually has its longitudinal axis east and west, these towers are not as objectionable as they would be if added to a pavilion extending north and south in the American manner, in which case they would cut off the sun from the open ward a great part of the day and cast shadows that would be very objectionable.

The invariable and seemingly necessary conveniences, such as medicine closets, clothing rooms, linen rooms and solaria, are scarcely ever found in British pavilions; sometimes an airing balcony, but not always, and never, so far as I have seen, any opportunity to get the patient into the air in a bed.

The plan of the Eastern District Hospital, Glasgow, Scotland, shows a portion only of the male and female surgical pavilions and operating block, and is interesting in having the staircase and lift in an isolated tower connected by short corridors with the pavilions, — an economical expedient for serving four buildings with one staircase and one lift, but chiefly of value in making each floor absolutely isolated from the one above and below.

In this plan we note the lack of general conveniences,

SOLARIUM, LYNN HOSPITAL.

such as nurses' room, linen closet, clothing room and solaria or airing balcony. There is, however, a day room and an isolating ward.

Comparatively few plans of British hospitals designed within five years have been published, but all but one

OPEN WARD, MT. SINAI HOSPITAL, NEW YORK.
A. W. Brunner, Architect.

that have appeared have followed quite closely the prevailing type. This one exception is the Royal Victoria Hospital at Belfast, Ireland, referred to in part III, which is a radical departure only in the unique placing of the wards side by side, with the resulting necessity of end and top light only.

The placing of the toilets in corner towers and the general scheme of accessories and conveniences follow closely the conventional.

The surgical pavilion of the Charing Cross Hospital, designed in 1901 by H. Saxon Snell, the well-known hospital architect and one of the authors of "Hospital Construction and Management," clearly shows that the best authorities in England do not consider it necessary to have the private rooms or the other conveniences or accessories thought so essential in this country.

This pavilion is, like those of the Eastern District Hospital, Glasgow, connected with an isolated staircase and elevator tower that serves, also, two other buildings. It has, also, two fire escape bridges leading to other buildings. Both of these are very admirable features.

In a careful examination of reports and illustrations of the rural or cottage hospitals of Great Britain, the same condition is quite evident, namely, little or no development during the past ten years.

It is quite probable that there have been built small

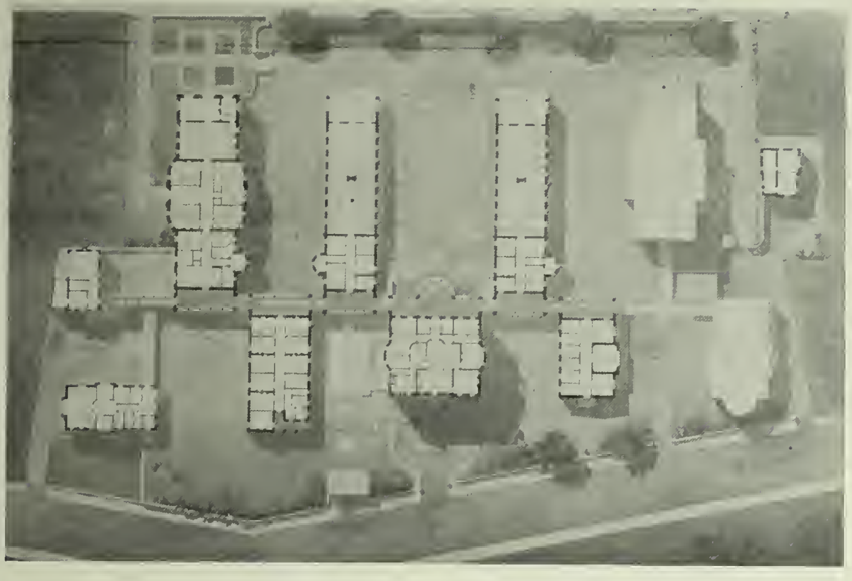
PRIVATE WARD, LYNN HOSPITAL.

hospitals that are a great improvement on Mr. Burdett's model plan of 1877, but most of those that have been published are decidedly inferior in general scheme, although possibly improved in some of the details.

It is evident from the foregoing that here in America the large open ward with no isolating rooms is a thing of the past in any except large public hospitals; that

DIET KITCHEN, LYNN HOSPITAL.

there will be more single and two or three bed wards; and that although this will increase the cost of the nursing service, it will diminish the chance of disease being communicated from one patient to another, and will assist very materially in the isolation and classification so desirable, yet so almost impossible in a hospital with only open wards.



PLAN, NEWPORT HOSPITAL, NEWPORT, R. I.
William Atkinson, Architect.

These wards, large and small, should be as sunny, bright and cheerful as possible. They should have open fireplaces with a simple mantel of faience or of Keene's cement, enameled.

There should be twelve hundred to fifteen hundred cubic feet of air per patient, with adequate indirect heat and ventilation.

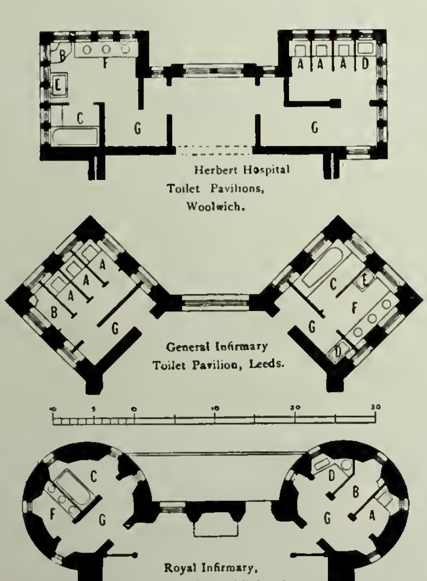
If it is desirable to have a bay window in a sitting room or bedroom in a house or hotel, it seems as though it would be doubly desirable for a hospital ward, for there is so much more need of sunlight and air.

The surgical pavilion (two story) of the Lowell General Hospital is of an unusual type, as it has to fulfill all the functions of several small isolated pavilions, it being necessary, for certain reasons, to build one structure and only one at this time.

The first floor is for female patients, with open ward, two bed and private rooms and a small maternity department in the rear. Each of these four sections is by itself, entirely cut off from the other. The second story is for male patients and the rear portion is the operating department.

The private rooms have fireplaces and bay windows and the open wards have large bay window solaria that can be cut off from the ward by screens when desired.

The open-ward patients and the private ward patients each have separate toilets.

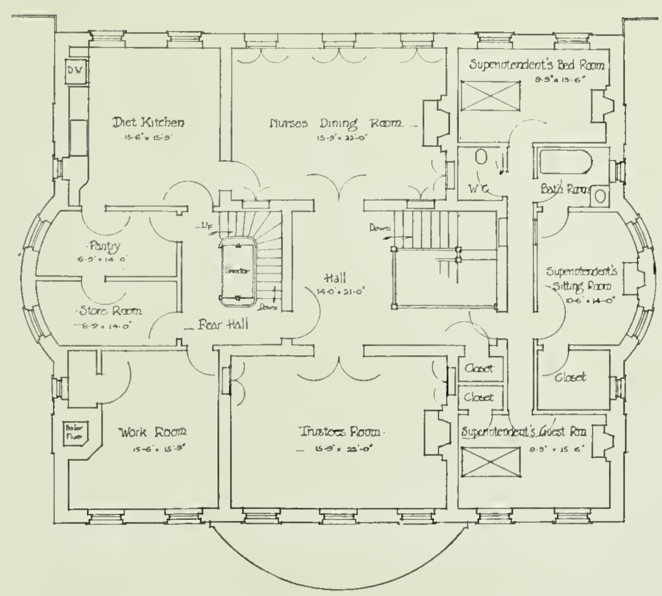


A, Water Closets; B, Urinals, C, Bath Rooms; D, Slop Sinks; E, Sinks; F, Wash Stands; G, Lobbies.

TYPICAL TOILET TOWERS.

The diet kitchen is a most necessary feature of the pavilion and is generally too small. It should have a complete equipment for preparing and serving all the meals for the patients. A few years ago a small steam jacket kettle answered for all cooking; now, however, a steam table with porcelain covered jars, gas stove, toaster and broiler, with covered meat platter and hot closet under all, thoroughly heated by gas or steam, is required. There is also needed a completely equipped dresser with china closet, tray racks, porcelain lined refrigerator, and a large sink for washing dishes. In addition there must be a large worktable with a top of marble or metal, and a table for loading of trays. If the general kitchen is not on the same floor there needs to be a food lift, which should be of metal.

The nurse in charge should have a toilet and dressing room, but it is best to have the nurses' table, records, medicine closet,

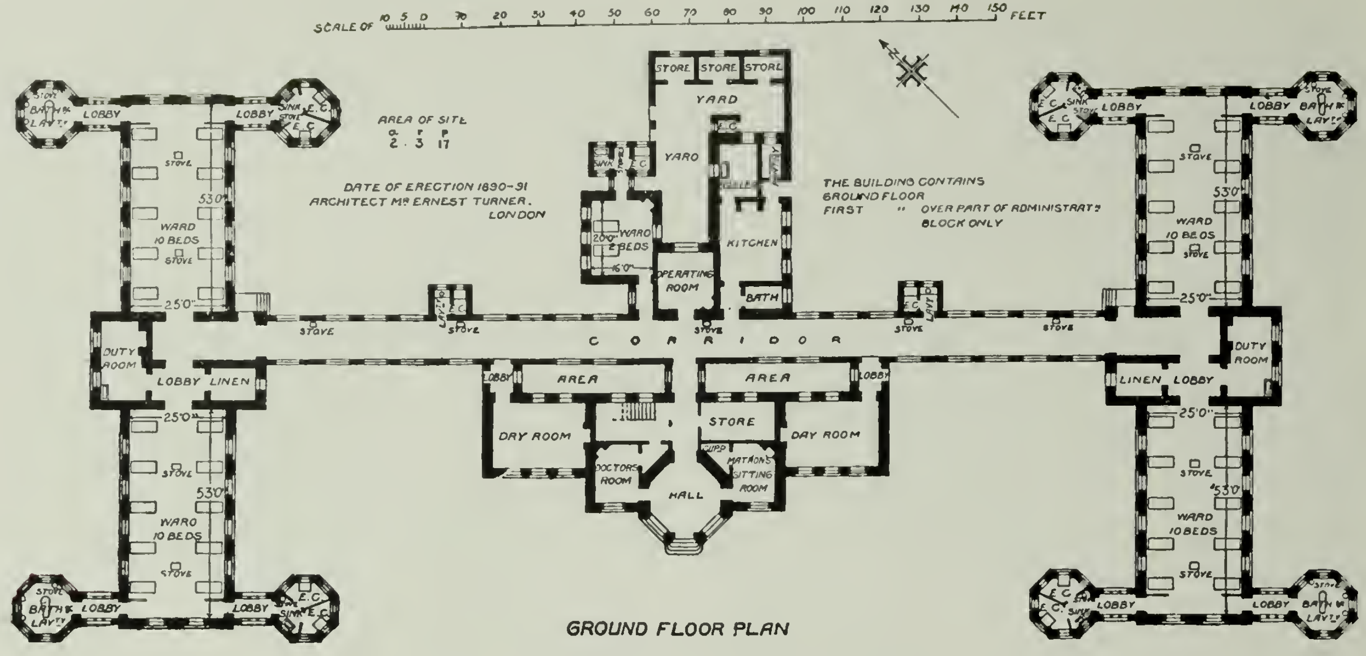


SECOND FLOOR PLAN, NEWPORT HOSPITAL, NEWPORT, R. I.
(Kitchen and Servants' Rooms on Third Floor.)

bells and telephone at a convenient well-lighted point in the corridor, rather than in a room, as has been the custom. The reason is that she would be in closer touch with her business here than in a room, and less apt to neglect her duties. As all corridors should be eight feet wide, there would be ample room.

There should be an electric pressile attached to a plug on the base at the head of each bed to ring an annunciator at the nurses' table.

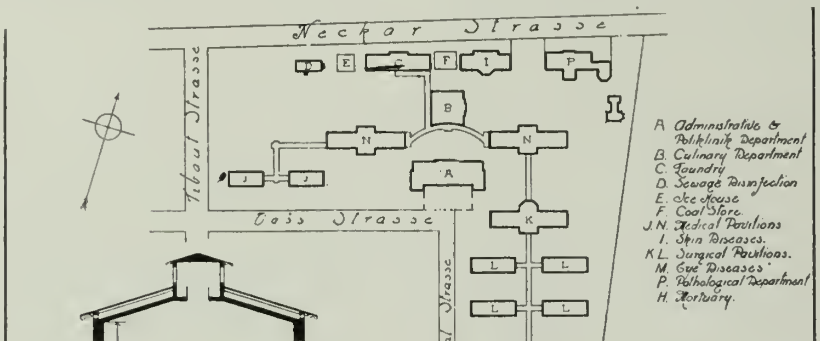
PORTION OF PLAN OF EASTERN DISTRICT HOSPITAL, GLASGOW, SCOTLAND.



TEHERAN HOSPITAL, PERSIA.

In considering the best form for a pavilion or ward building for a hospital, one finds that there have been many experiments with circular, octagon, square and oblong rooms, and that these experiments seem to demonstrate that the only form to seriously consider is the rectangular, with the longest axis approximating north and south, varying to southeast or southwest to advantage. The extreme width should not exceed thirty feet for economy of construction and successful lighting, the length to depend on the number of beds.

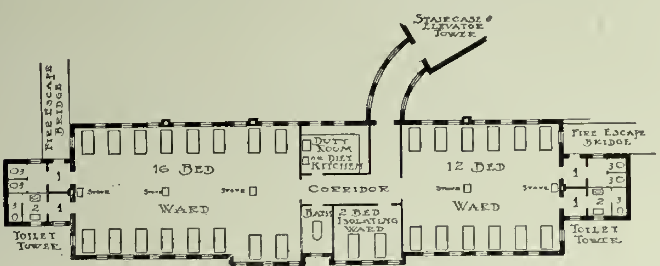
If the pavilion is two stories in height there should be a fire escape and the staircase should be isolated. The isolated tower serving several pavilions, as before noted, is a good scheme where the pavilions are close together on a restricted lot, but this crowding of pavilions is a practice that should be deprecated. It should be unnecessary to state that the second floor of a two-story pavilion should be thoroughly sound-proof, and that the walls and partitions should be as nearly sound-proof as possible.



HEIDELBERG UNIVERSITY HOSPITAL.

HOSPITAL ARCHITECTURE.

THE series of articles on Hospital Planning which has been running in these columns has been of a nature which must interest the reader, but the architect cannot fail to notice the extent to which architecture as a fine art is subordinated in the planning of this class of structures. Our hospitals, as customarily built, might be almost anything as far as their external appearance would indicate, and in the desire for simplicity the hospital authorities have managed to almost entirely eliminate the element of beauty, and to so curb their architects that the results are utilitarian often to a painful degree. We want our hospitals scientifically the best, but there is no good reason why the most rigorous demands of science should not be coupled



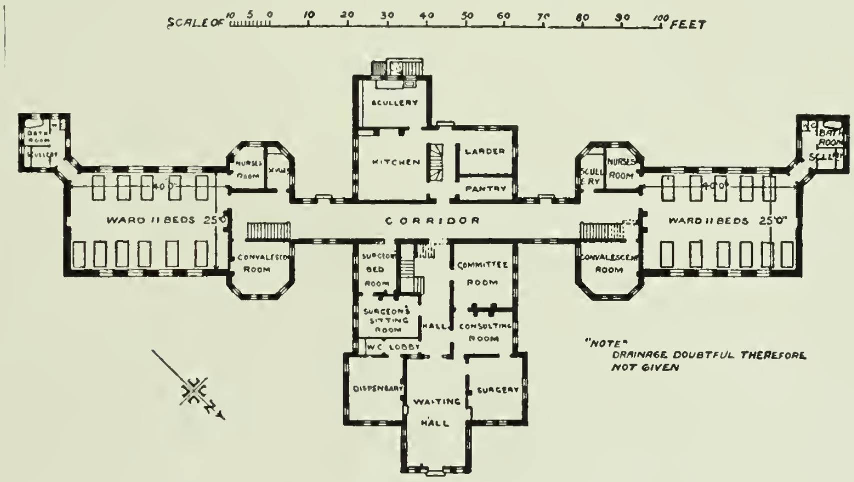
KEY. 1, CUT-OFFS; 2, SINKS; 3 WATER-CLOSETS.

PLAN OF SURGICAL PAVILION, CHARING CROSS HOSPITAL, LONDON.
A. Saxon Snell, Architect.

with architecture of a tpye which shall be pleasing to the unhappy mortals who are doomed to live within their walls. This does not imply elaboration, but neither does it limit a choice to plain bare walls and plaster.

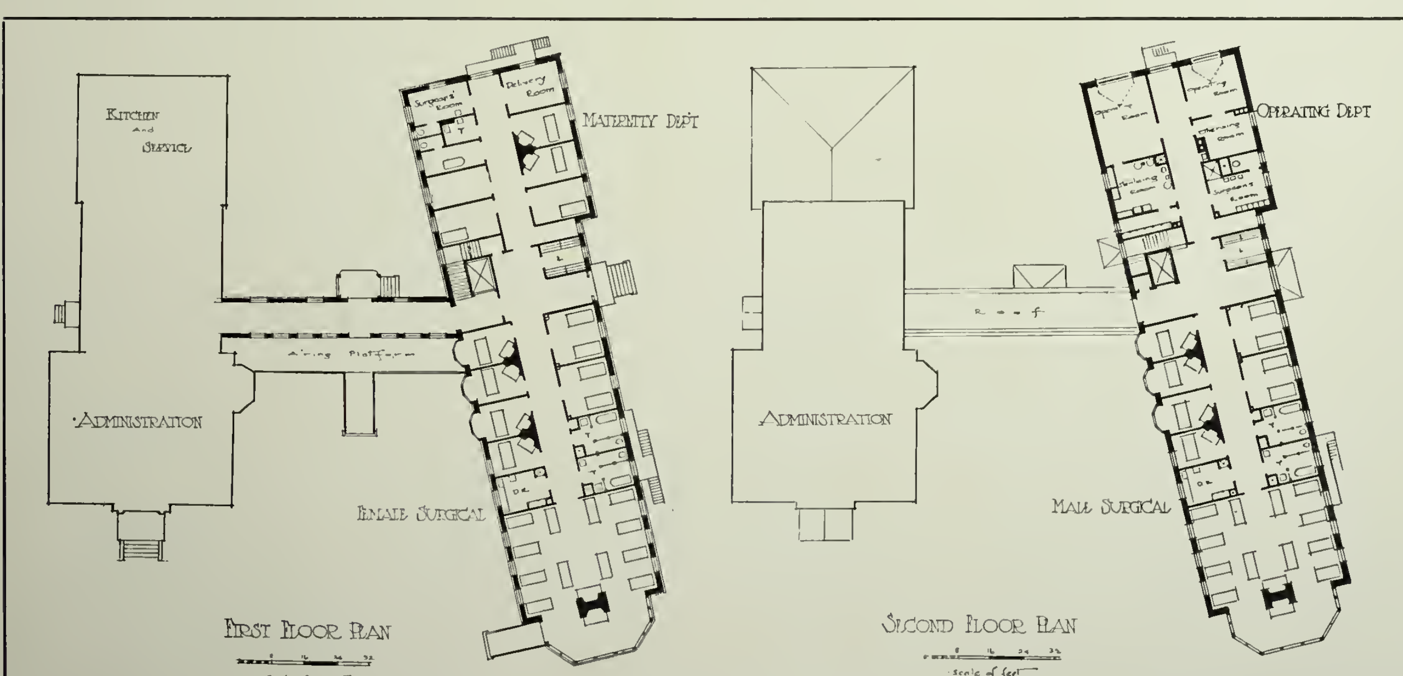
A hospital offers an excellent opportunity for the employment of color in the shape of faience. Some of the most successful treatment of terra-cotta and faience during the period of the Italian Renaissance was in connection with hospitals, and architectural faience naturally suggests the work of the Della Robbias at Pistoja, in the Innocenti, and elsewhere.

It would seem as though in the design of a hospital some of our highest ideals of architecture and building construction might be realized, and in faience we have a material which is exceptionally adaptable both for its sanitary qualities and the beautiful effects which it can give in shape and color, — effects which are lasting and which are obtained at a relatively slight expense. Especially is this true as applies to interior work. We are not doing enough for the great majority of sick people by merely attending to their physical wants. Pleasant, congenial surroundings play a very important part in the healing processes. In many of our cities this has been recognized to the extent of adorning the walls with beautiful photographs, but there is surely just as much reason for beginning more fundamentally and building with beautiful material in appropriate design. No one now questions the necessity of beauty as an educational factor in our schools, but surely the average sick person is in a pretty receptive condition during convalescence. Here the influence of artistic surroundings might count very strongly for good, and there is every reason why a beautiful hospital should be assigned a definite educational value.



GROUND FLOOR PLAN

WEST BROMWICH DISTRICT HOSPITAL, ENGLAND.



SURGICAL PAVILION, LOWELL GENERAL HOSPITAL, LOWELL, MASS.
Kendall, Taylor & Stevens, Architects.

Proposed Cragmor Sanatorium.

THE proposed Cragmor Sanatorium for the treatment of tuberculosis is to be located on a piece of land one hundred acres in extent and situated several miles northeast of Colorado Springs, Col., at the foot of a bluff which will shelter it from the north. The building is to face south-southwest and is a flat segment in plan, thus obtaining shelter from side winds and at the same time retaining the advantage of the south aspect. The building is approximately one thousand feet over extremities, and it has been a matter of difficulty to fit this great length to the irregular contour of the site without undue expense, but this has been accomplished on a line making the building face exactly south and southwest, and in this direction a magnificent view of the mountain range is obtained. To reduce length of building to about seven hundred feet an alternate plan for the wings is considered, making these three in place of two stories high, and thus retaining the same number of patients' rooms.

The center portion of the building is mainly occupied on the first floor by the public administrative rooms. The dining room has been placed so as to obtain the full advantage of the morning sun. The main entrance is placed at the north of the building. This is done to avoid the dust and traffic which would obtain were the entrance placed in the front of the building.

A garden or fore court, at a level of about six feet below main floor of building, is placed opposite the center portion of the building and is enclosed at the ends by cloister features projecting from the ends of central feature. A gateway marks the center of the front wall of garden.

The building will accommodate one hundred patients, eighty-eight of these having special suites, consisting of a sleeping porch, private bath and a room which is meant to be a dressing or sitting room rather than a bedroom, the idea being that patients will sleep outside in the porch. Alongside this room is placed the sleeping porch, with the private bath behind. Each room is provided with a fireplace. Cross ventilation can be obtained by the windows on the two sides, and each bathroom has a special ventilating flue.

This unit of patients' suite has been carried throughout the entire front of the building, in the two upper stories of central building, and in the two stories of the wings. To prevent one patient disturbing another it was necessary to separate the sleeping porches and to avoid one adjoining another either horizontally or vertically. It will be seen from examination of floor plan that horizontally the sleeping porches are all separated from the room intervening, and that no porch is built over another. In this way any disturbance of one patient by another will be reduced to a minimum.

All staircases are shut off from hallways, so that the air will not penetrate from lower into upper stories. In addition, the building is divided into sections by means of doors in the corridors, and each section can be ventilated by itself. Accommodation for nurses and dietary kitchens are provided for each section.

An ample number of porches are provided, consisting of one along the front of central feature, and the two cloisters at the lower level at each end of the garden or fore court will serve also as porches. Several north porches are provided at each section of the building, which will be very desirable during the summer months, and these accommodations will give patients every choice of position.

The external walls will be faced with buff or cream colored brick, and roofs generally will be covered with Spanish tile.

The entire building is heated by direct radiation, and to insure a positive circulation with low pressure in a building of this length is connected with the Paul System of steam heating.

The boilers, which are located beneath the dining room, supply the power for the refrigerating system, the laundry (located some distance from the main building) and the heating system. In order that dust and dirt may be easily removed from around the radiators these are of the cast iron, sectional type with plain surfaces, long nipples and high supports. While the general temperature of the building will be 68 degrees Fahrenheit, all patients' dressing rooms and bathrooms can easily be heated to a higher temperature if desired.

In the basement of each wing is located a tank for supplying the hot water to the plumbing fixtures. These tanks are heated by live steam coils connected direct with the boiler, and the piping from the tanks to the various fixtures is arranged so as to give a continuous circulation. A similar tank in the boiler room provides for the fixtures in the kitchen and main building.

The building is designed to accommodate the best class of patients, and the climate of Colorado being peculiarly favorable to the open-air treatment, the sleeping porches have therefore governed the idea of the scheme. Funds have been donated towards beginning this work, and the idea is that revenue from this undertaking will be devoted to providing accommodations for the poorer class of patients.

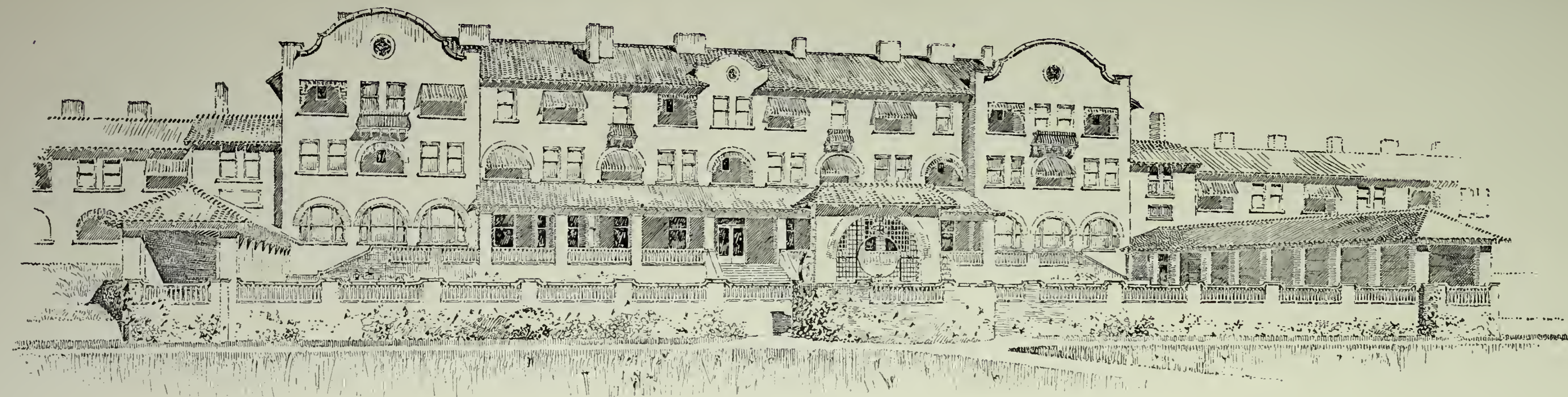
Estimates have been obtained for parts of the building and the whole structure as well, the scheme being laid out so that it can be built in sections if necessary. The total cost will amount to $300,000. The architect of the building is T. MacLaren, of Colorado Springs, and the plans have been prepared in consultation with Dr. S. Edwin Solly, vice-president of Cragmor Sanatorium Company.

LOST ART OF BRICKMAKING CLAIMED TO HAVE BEEN DISCOVERED.

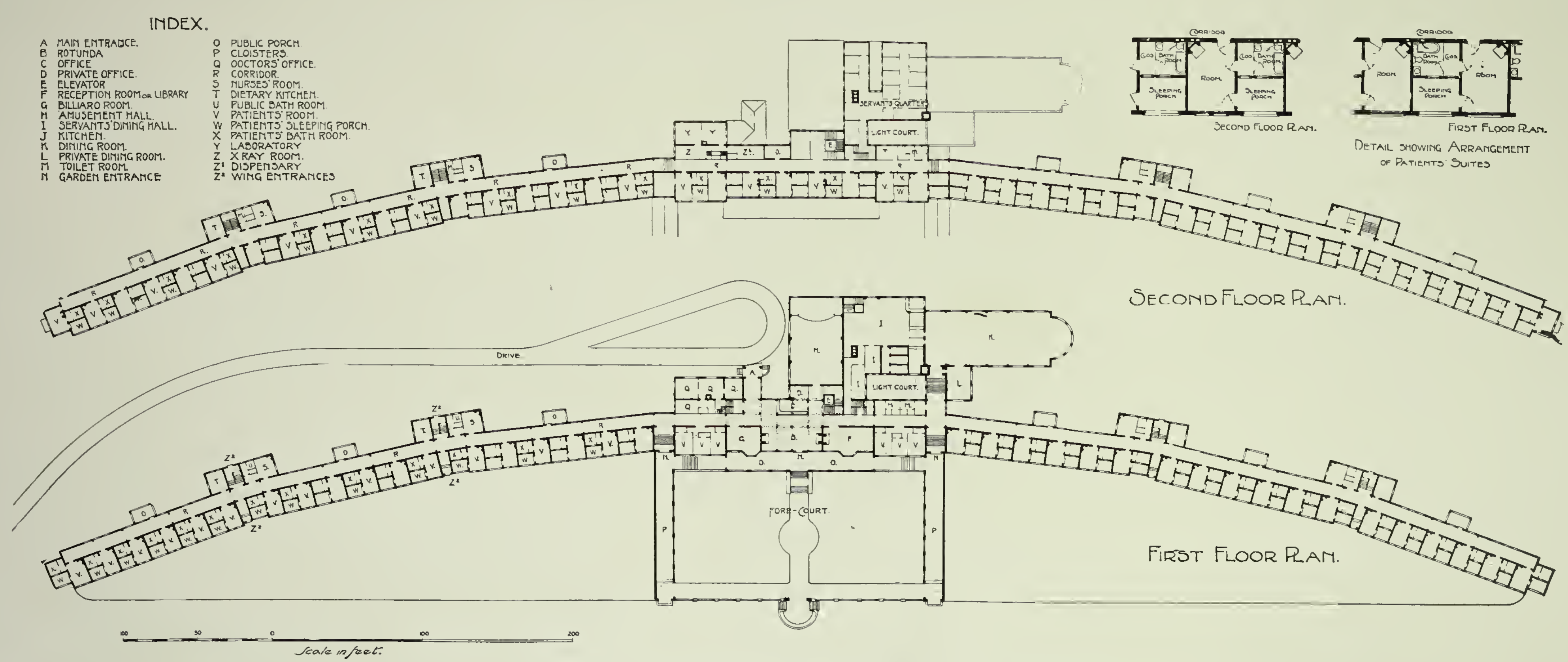
ALMO DE MONCO, M. D., a ceramicist, of Denver, has made exhaustive research, which has resulted, he claims, in the reclamation of the lost art of plaster and brick manufacture as practised by the Babylonian builders and potters.

The plaster as made under De Monco's formulas is exactly the same as that which was used in the manufacture of the ancient tablets upon which was engraved the records of the ancients, and which were unearthed by representatives of the University of Pennsylvania.

As a result of his experiments he can produce a plaster of any degree of hardness from a puttylike paste to a hard-glazed stonelike form as indestructible as adamant. It can be made of any tint, and the surface when smoothed off glistens beautifully without the aid of surface treatment or dressing. It can be made to absorb water or to be entirely waterproof. It can be rolled as thin as a Japanese eggshell cup, and can be used for the crudest gas retorts.



FRONT ELEVATION.



CRAGMOR SANATORIUM (FOR THE TREATMENT OF TUBERCULOSIS), COLORADO SPRINGS, COLORADO.
T. MacLaren, Architect.

A Suburban Clubhouse.
Article III.

BY WILLIS POLK.

THE country club, having become an institution in American life, has developed itself so that the problem of designing a suitable house for such a purpose has become a definite one. Perhaps one of the most successful so far established is that at Burlingame, Cal. In presenting a plan to The Brickbuilder I have followed in general the lines of that club.

The house itself, besides providing the usual comforts of a country home, must allow for large gatherings at the luncheon hour, for which purpose a piazza 132 feet in length by 20 feet in depth on the southerly front should be the principal feature of the main floor. Here all members may assemble for luncheon, or to view the arrival of carriages, etc., overlook the golf links, or witness the annual open-air horse show, which is held immediately in front of the club, and on all occasions this piazza would be the center of activity in country club life.

Entering the house, the main hall is ample for evening gatherings, and, combined with the reading room and dining room, makes a spacious floor for the annual club or hunt ball and for the usual private balls that occur from time to time.

Such a club does not require a large dining room, the number dining there generally being limited to those members who live in the near-by city, the majority of whom return to the city for dinner and to keep other engagements.

Besides the usual rooms, which, of course, include a billiard room, reading room, service departments, etc., the squash court is an essential feature, also locker rooms for golf players.

A private reception room, dressing room for ladies, and a staircase to a limited number of bedrooms must also be provided.

Besides the principal club building, stables should be so arranged that the club coach and bus and other necessary vehicles may be housed, with stabling not only for club horses, but for about twenty polo ponies. Kennels should also be built for fox hounds, with a cottage for the keeper.

Besides the polo field and golf links, tennis courts must be laid out.

To carry out such a project would require an expenditure of $150,000 as follows :

100 acres of land at $300 per acre	$30,000.00
Water system and sewerage	10,000.00
Gardening	10,000.00
Club building	75,000.00
Furnishing	10,000.00
Stabling	15,000.00
Total	$150,000.00

A SUBURBAN CLUBHOUSE. Willis Polk, Architect.

The funds could be provided as follows :

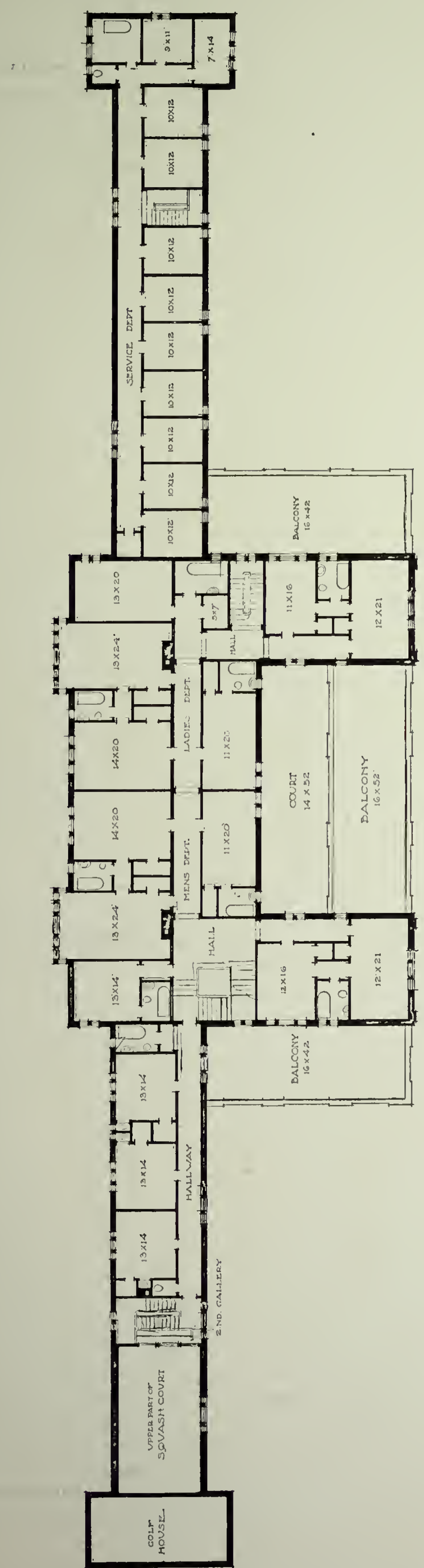
300 charter members at $250 each,	$75,000.00
Bonds secured by property and improvements	75,000.00
Total	$150,000.00

Maintenance :

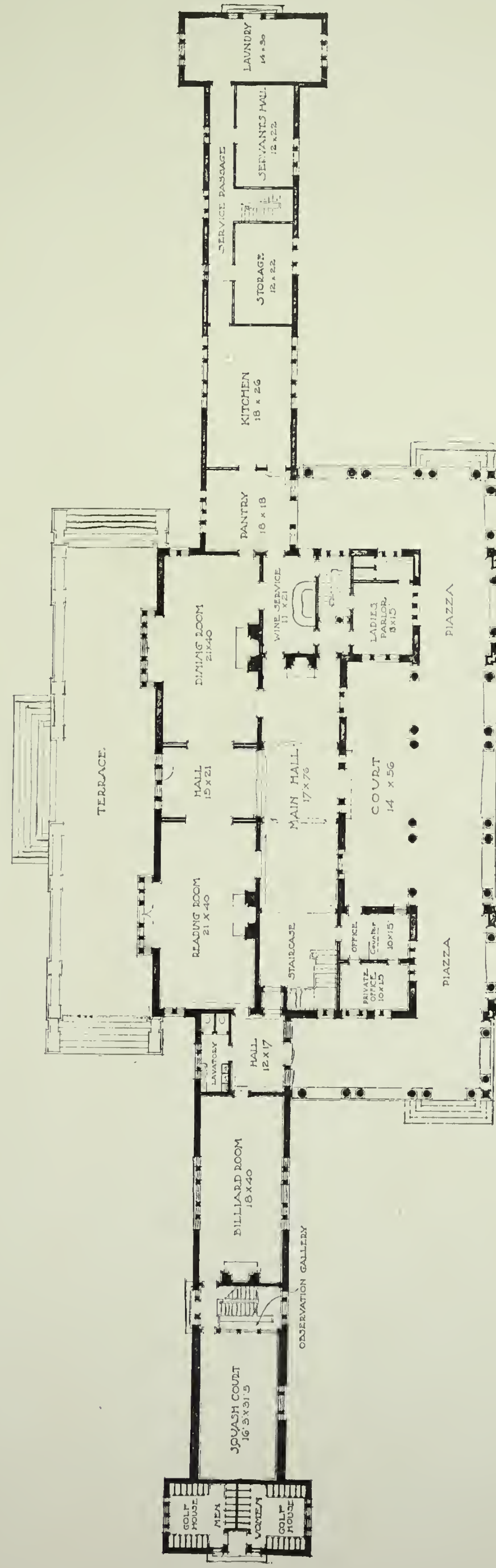
Dues from 300 members at $5 each per month	$1,500.00
From which interest on the bonds could be deducted at the rate of, per month	375.00
Sinking fund to retire bonds, per month	375.00
Fixed expenses of the club, per month	750.00
Total, per month	$1,500.00

Beyond that the restaurant ought to maintain itself and afford with the bedrooms a profit as well.

Fees from the squash court, tennis court, stabling, polo field, etc., should make all these departments independent.



BEDROOM FLOOR PLAN.



MAIN FLOOR PLAN.

A SUBURBAN CLUBHOUSE. Willis Polk, Architect.

Architects' Specifications According to the Practice in the City of New York I.

BY JOHN CASSAN WAIT.

ARCHITECTS' specifications are to be recognized chiefly by the character of the individuals who prepare them, as exhibited therein, and are not as a rule to be distinguished by features peculiar to any locality. The specifications in use in the city of New York are familiar to the author, and he therefore limits his criticisms to the practice in that city, but with the feeling that without doubt like stipulations prevail in the specifications of other cities, where architects will have an equal interest in their construction and effect. It seemed also appropriate to take the specifications in use in New York, as they are probably most followed and copied throughout the country at large.

The author being in the position of a critic, and being required in his office as assistant corporation counsel in charge of contracts, etc., constantly to seek and to point out the objectionable features of contracts and specifications, he begs to be forgiven if he has not described the excellent qualities belonging to the practice of New York architects. It may, however, be understood, without saying so, that those features which are not criticised are considered good.

It is the practice among architects in New York to provide in their specifications that the drawings are to remain the property of the architect and are to be returned to him or accounted for by the contractor before the final certificate for payment will be issued, and the architects expressly reserve to themselves all rights in and to the said drawings. This clause, if interpreted to mean that the contractor shall return all blue prints, drawings, sketches, etc., by which the building or structure has been erected (and I regret to say that it is frequently so construed by architects), is a burden and unreasonable provision in a contract, for the reason that it takes from the contractor his best evidence of the instructions, directions and orders which he has received from the architects during the construction of the building. As well might the owner or the architect require that the contractor should surrender the contract itself, for the drawings are usually, by express provision, made a part of the contract. Some architects also require that specifications shall be returned before the final certificate will be issued. This is going a step further.

If extra work has been ordered or damages have arisen from the wrongful or neglectful acts of the architect, it is extremely doubtful if any court would enforce this provision, for such drawings and specifications are always produced in multifold copies, and there is no ostensible reason why such drawings and specifications should be surrendered by the contractor, at least until all differences and litigation arising out of the contract have been settled or determined. That cannot be until the final certificate is issued and the contractor is paid in full for his work. Such a clause is unreasonable and reflects upon the architect, unless he can explain his purpose in inserting the provision.

It is the popular belief among architects that they have a right to and in the incorporeal designs or creations embodied in their drawings, not only as against the contractor, but as against all others, in some instances even as against the owner who has employed them to prepare and make such drawings. This question had not been determined squarely by any court of record, but it was recently decided in the Appellate Division, Second Department, of the New York Supreme Court, which held that "Where the architect prepared plans and specifications for a client, for which he was paid his fee, and said plans and specifications were filed with the building department of the city in which the residence was constructed, the architect thereby published the said plans and specifications and had no further property rights in them sufficient to entitle him to recover for the subsequent use thereof in the construction of another building by a third person, and if there was any property in said plans and specifications after their publication, it was in the client and not in the architect." (Wright *v.* Eisle, 83 N. Y. Supp. 887.)

In view of this decision it would seem necessary that architects should copyright their plans if they hope to retain any rights in the incorporeal designs displayed or shown. If the architect has no common law rights in such plans and specifications, the stipulation referred to and which is so popular with architects would seem to be of no force, and if it be used with knowledge of such decision of the courts there would seem to be but one natural conclusion, viz., that it was used to protect the architect and the owner from litigation on the part of the contractor, and therefore is a weapon with which to drive the contractor to at least an amicable if not an enforced settlement. Such practices are to be regretted, and the use or this clause should, in the opinion of the author, be abandoned.

Another practice among architects which leads to strife and is unfortunate for the contractor is that which reserves to the architect the right and power to select the subcontractors. This is particularly burdensome to a contractor who has been required to compete with other bidders for a public work or for private work let to the lowest bidder. When contractors have made such proposals they are usually based upon bids obtained from subcontractors and material-men and the aggregate of which, with a percentage of profit, comprises the builder's proposal. Such being the case it is unreasonable and arbitrary for an architect to insist upon any particular subcontractor, or to refuse to approve of those subcontractors who have submitted bids to the principal contractor. It takes from the contractor the benefit of prices and conditional contracts which he may have made at advantageous rates or prices and places him at the mercy of the architect and his favorite subcontractors. Business cannot be done fairly upon such a basis, and a stipulation which gives to an architect the arbitrary selection of subcontractors and material-men under a contract awarded to the lowest bidder is mischievous, unreasonable and unbusinesslike. Architects may insist that this clause is a beneficial one to the owner and to the work, as it empowers the architect to dismiss and get rid of irresponsible and disagreeable subcontractors, but it is contended that the contract usually makes provision for this very situation, and that the contractor should be made solely responsible, and all business and work should be done through him and his authorized superintendent, and the architect has no right to interfere, molest or dictate to the employees, servants and subcontractors of a principal contractor unless they commit depredations, trespass or assaults, for which they are amenable to the law, and that this may better be provided for by a stipulation to the effect that the architect may dismiss employees of the contractor if, in the opinion of the architect, they are drunken, disorderly or disposed to foment trouble.

There are other and further objections to the use of this clause, one of which is that if the architect, as the agent of the owner, be permitted to select subcontractors or even to approve of them, it may destroy the character of an independent contractor, which is the principal object of making and executing a contract for public or private work. The groundwork upon which the owner escapes liability by letting his work to an independent contractor is that he has not the selection of the servants and workmen, skilled or otherwise, who do the work and commit the wrongful act, and that he has not control of such persons. If therefore the architect, as agent of the owner, has the selection and control of such employees, the owner is responsible for their acts or neglect.

Another unfortunate stipulation in the specifications of architects for public work is to the effect that the architects may, in their discretion, substitute other and different building materials and different apparatus, fixtures, appliances, etc., provided the market price thereof be the same as the material or equipment specified. Some of the objections of the foregoing paragraph apply equally to this provision. The contractor may have made terms and obtained prices for a certain class or brand of material or for the product of a certain manufacture, and at low prices and under favorable circumstances. To deprive the contractor of that advantage, when he has based his proposal or estimate upon such prices and advantages, is extremely unreasonable and places him in a position wherein he may be taken advantage of by the architect; or if he be a favorite contractor, changes may be made greatly to his advantage; thus giving to architects powers and privileges of determining who the builder shall be or who shall be the lowest bidder, for the reason that after contractors have had one unpleasant experience they will refuse to bid for the work of the same architect, thus depriving the owner of free competition and giving to the architect a reputation with everybody to whom the contractor may freely express himself. Of course it is well understood that architects defend this practice by alleging that frequently materials cannot be had such as are specified, or that the whims or tastes of the owner may require the change. The answer to that is that if the owner's tastes change with the wind or weather, he should pay for such whims and fancies, and not the contractor, who is not responsible for them; and that if such materials cannot be obtained, then certainly the contractor is not likely to insist upon furnishing them. If, on the other hand, the architect has discovered, upon further study or observation, that the materials which he has specified are not the best for the purpose and that he wishes to change, then again the owner should pay for such lack of previous knowledge or observation, and should pay for the better class of materials determined upon, or for the more important apparatus or fixtures, and not the contractor who undertook to do only what the contract and specifications required and in the precise terms thereof.

Architects, in their desire to protect the interests of their clients, are likely to forget that the contractor has equal rights so far as the contract obligation holds or binds, and that, if any one is to suffer from the errors or lack of foresight of the architect, it should be and must be the client who employs him, and that his reputation is as much in the hands of contractors who may be called upon to do his work as in the hands of the owner who employs him, and that no architect can long exist who stands in the eyes of contractors as a dishonest, incompetent or arbitrary and unreasonable man.

The specification of patented or proprietary articles and materials is a subject deserving of the careful consideration of architects, and there is no part of an architect's specification that is the subject of more variety and more entertaining reading than this specification of particular brands and qualities of materials. The difference of opinion of educated and talented members of an honorable profession in this particular is surprising, and especially to one who has daily to study specifications of different architects for like materials. What one architect specifies and declares to be the best, another condemns and would not have; and what one's experience teaches him is totally unfit for the purpose, another will declare is the only material in the market which can reasonably and properly be specified. This condition arises in the subject of cements, both Portland and Rosendale, and as architects usually specify cements by name of the manufacturer or the brand, it is, to say the least, amusing to compare their specifications.

This practice of specifying materials by their trade names is to be deplored, and especially if it be not accompanied by a specification of tests of the strength, durability and wearing qualities of such materials. Materials cannot be judged by the name; as frequently, either from a lack of care in the manufacture or the failure to properly protect and preserve from weathering, they are inferior and sometimes worthless. When specified by the name alone the contractor has fulfilled his obligations by furnishing the brand described, and if they prove defective and worthless the owner has no remedy and no defense to the claim of the contractor for the contract price. Cements are often injured in the burning or by exposure in the process of grinding and packing, and may be sent out without discovery on the part of the manufacturer. Nevertheless, if the contractor supplies the brand required by the specifications, he cannot be held responsible for the quality or sufficiency of it. To avoid this many architects refrain from specifying the brand or kind of cement, but require that it shall conform to the tests specified and required by the American Society of Civil Engineers, which printed tests are frequently given in the specifications. These tests require cement to be of a certain fineness and tensile strength and certain properties of temporary and permanent setting, and any cement which meets the requirements thereof should meet the favor and approval of architects.

Another practice of architects is to specify particular types of apparatus, fixtures and equipment by reference to figures or pages of trade catalogues, which catalogues show in detail the products and appliances of a particular manufacturer. This may be done for private work, but it should not be the practice for municipal and state work, where there are ordinances and laws forbidding the purchase of patented and proprietary articles, as it gives to certain manufacturers an advantage in obtaining the award of the contract, which may be required to be given to the lowest bidder. If, on the other hand, the provision against patented articles be applied to the details of a building it becomes vexatious and annoying, as nearly all building materials, fixtures and appliances are the subject of a monopoly if not of patent right and copyright; and when the materials themselves are not the subject of a monopoly the machines upon which they are made or produced are likely to be patented; in which case, under a recent decision of the Supreme Court of the state of New York, they cannot be used under a provision of a charter providing that

"Except for repairs, no patented pavement shall be laid and no patented articles shall be advertised for, contracted for or purchased, except under such circumstances that there can be a fair and reasonable opportunity for competition, the conditions to secure which shall be prescribed by the Board of Estimate and Apportionment."

Under this provision of the charter it was held that expanded metal could not be specified in a contract for a fire house, notwithstanding the fact that the original patents on expanded metal had expired and that the patent on the original machine had lapsed, and that the United States court had declared that the original idea of manufacturing expanded metal had been anticipated by another than the parties who at present control the output of expanded metal, and that the patent had been declared invalid. The ground upon which the decision was based was that the machine, by which this particular expanded metal described as weighing eighty-five pounds per hundred square feet was made, was covered with patents, and that in consequence of the raw material being so thick, no one else had designed a machine strong enough and heavy enough to cut, slit, expand and stretch the material in one operation, as is done by those machines owned, patented and controlled by the expanded metal companies. If this decision should be extended it would seem to deprive the city of the privilege of purchasing the most common necessaries of life and the most ordinary building materials. Boots, shoes, nails, sugar, structural iron and nearly everything comprising a building are doubtless made upon patented machines or by patented processes. A reasonable interpretation of the law requires that all materials should be specified in the alternative so as to open the competition to at least two manufacturers or producers.

Architects' specifications as a rule are drawn in the most concise and abbreviated manner that the circumstances will permit. Sentences are begun without subjects, and where contractors and subcontractors, plumbers, carpenters, etc., are mentioned in the same chapter it is frequently confusing and sometimes impossible to tell who is to undertake to do and to perform certain classes of work. Instead of saying that the contractor, the plumber or the carpenter shall do certain work or provide certain materials, sentences are begun somewhat after the following manner: "Paint all ironwork with two coats of red lead and pure linseed oil," etc., or provide that "All materials, articles and utensils necessary for," it not being stated who shall paint or who shall provide, etc. Another weakness in the specifications of architects is that they are not imperative. They recite that the contractor, painter or plumber *is to* do certain things, instead of that he *shall* do said things; or that the carpentry *is to be* first class, instead of saying, in the future imperative, that the carpentry *shall be* first class. Another omission in architects' specifications which is general is the failure to number the paragraphs so that they may be referred to without needless description. Upon the work, in the office and in court, it is frequently required to refer to parts of contracts or specifications, and it is therefore a great convenience to have the paragraphs numbered or lettered. A good practice prevails in the departments of the city of New York, where the contract clauses are lettered and the specification clauses are numbered.

An architect's specification is usually calculated to describe and specify the materials and work which shall comprise the building, and the contract is to describe the contractual relations and obligations assumed by the contractor to the owner and *vice versa*. If architects would appreciate this and confine their attention in the specifications to the materials and work, and leave questions of their powers and the contractor's general obligations, provisions as to time, delay, extra work, payment, the requirements of the law and ordinances, to the contract, they would save much litigation and trouble, especially in contracts with muncipalities, the state and the United States. Many of the contract clauses of municipalities are inserted in contracts, because they are required to be inserted by the charter of the city or by the laws of the state or ordinances of the municipality. It is a good practice to use in such clauses the precise language of the act or ordinance or clause of the charter which requires it, or to employ language that shall meet the construction placed upon such clauses by the courts in their decisions. When the law department of a municipality has given perhaps years of attention and close study to framing such clauses, it is extremely annoying to have architects rewrite such contract provisions in their specifications and to render the clauses in the contract ambiguous and uncertain by modification. Many architects, who consider only their own protection and powers, seek to enlarge upon the provisions of contracts by being more explicit or more exacting. This is especially true of clauses giving them the power to dismiss unpleasant employees or to select subcontractors or to determine questions of acceptance or rejection of material and work. The results of reserving to the architect increased power to accept or dismiss employees has already been discussed. It is suggested that one general clause in the contract giving to the architect the powers of an arbitrator, to determine any and all questions as to the work and materials and as to the interpretation and construction of the specifications, and that the work or any part thereof shall be done to the satisfaction of the architect, is sufficient without repeating it in every specification for every class of work, and that the constant repetition of such powers and privileges does not add anything to a general provision in the contract.

Fireproofing.

SETTING OF TERRA-COTTA FIREPROOFING.

New York, May 12, 1904.

Editors of The Brickbuilder.

Dear Sirs: I have read with much interest the editorial in your April number on the setting of terra-cotta. What it says of the bricklayers rather falls short of the truth, particularly so far as it speaks of our men in New York. I beg leave to make reply, and ask that the same find space in your coming issue. The recent trouble in our trade in this city had only an imagined connection with the subject of fireproofing. I shall not presume to take up you space with any recital of the causes that brought about this difficulty; sufficient is it to say that the question of fireproofing had no part in it. It may interest you to know that the convention held by our parent body at Trenton in January ordered, in effect, that manufacturers of fireproofing may set their own material, and that our members may work for them so long as they subscribe to the rules and conditions agreed to by the regular contractors. True, this order has stirred up some feeling in this city, the only one, to my knowledge, affected by it; and, without any desire to enter into the merits of the case, this was to be expected. Any one taking a contrary view would need to be informed that the clause, or a similar one, had been included in the agreements between the mason builders and the bricklayers' unions of New York, which they have had consecutively during the past twenty years; and that anything that would set any sort of restriction on these agreements was liable to cause some feeling. However, this feeling, so far as I am informed, is gradually lessening. It should also be understood that this clause, like the others in these agreements, was, needless to say, inserted by mutual consent, and of course regarded as of mutual interest.

It is not necessary that the fireproofing companies should carry about the country men who do fireproofing exclusively, and any attempt to introduce this system into New York the bricklayers here will, in all likelihood, resist most vigorously. What they fear is, that, if this system be permitted here, men who are not bricklayers will gradually get into the work, and finally seek work in different parts of the country as competent bricklayers. It is pretty well understood that this has happened in other cities. Our New York men feel that they are able to do this work quite as well for the fireproofing companies as they have been doing it for the mason builders. And this is my personal view of the matter, for I also have had some experience at this work, and the only difference I have been able to see was, that the men who are sent about the country are somewhat faster than local men. But where there is plenty of this kind of fireproofing (the only kind, we all agree) the local men very quickly develop equal speed.

I am in entire agreement with you that much of the inroads made by the so-called fireproofing systems are explained largely by the slipshod manner in which the real fireproofing has been installed. But I am far from being so when you state that this poor workmanship is chargeable to the workmen. Far from deploring unfilled joints, etc., quite a number of superintendents drive the men so hard that quality is sacrificed almost entirely to quantity. This charging the workmen with all the sins of poor construction is mere subterfuge. Only the other day a contractor in Philadelphia advertised for men, stating that no men with plumb rules need apply. Whether it is fireproofing or the building of walls, the average workman strives to do at least fairly good work; and when work of an inferior quality is seen it should not be charged up to him, but to the rushing methods that have done so much to injure the best interests of the building industry.

EDWARD A. MOFFETT,
Editor The Brickbuilder and Mason.

(The official journal of the Bricklayers' and Masons' International Union.)

The last paragraph of this letter is of special interest as touching really the vital point in regard to the setting of terra-cotta. It is not fair to charge the mechanic with all of the poor workmanship which is so often found in connection with some forms of fireproofing, and we are fully aware that the fault is quite as often due to the urging of the superintendent. We believe the average workman really strives to do at least fairly good work, and that as far as his experience and knowledge can carry him he would rather turn out a good quality of masonry, whether fireproofing, brick or terra-cotta, than to be a party to slipshod, indifferent ways; but Mr. Moffett's letter is a strong argument in favor of restricting the setting of terra-cotta fireproofing to the employees of the companies who manufacture the product. In proportion as the responsibility for the work is carried away from the manufacturer, away from those who are interested in having their product presented in the best manner, so will the tendency to haste and resulting carelessness be predominant. It is exactly the superintendent who wishes to hurry his work, who does not want "men with plumb rules," to which we object. In most of our large modern work the mason is a subcontractor, is directly responsible to neither the architect nor the terra-cotta manufacturer, is the one from whom the architect and the owner have most to fear, and is often unfortunately the one with the least incentive beyond the financial one involved in his contract. If organized labor can bring about such a separation of mechanics that trained labor can be put to its best uses we would be the first to welcome it.—Editors.

SAFES AND VAULTS IN THE BALTIMORE FIRE.

We print herewith a very instructive letter written by Mr. George L. Damon, the eminent safe and vault engineer, and which will be read with much interest by every one who has followed the reports of the Baltimore fire. The damage to well constructed vaults on account of fire has been surprisingly small in all the recent large conflagrations, and the science of vault construction must be admitted as being upon a perfectly reliable basis.

Boston, May 4, 1904.

Dear Sir: Doubtless you feel interested to know how the bank vaults of the fire district of Baltimore stood the test, their construction, etc. I have spent much time in the ruins, minutely studying results, not only regarding vaults, but "safes" in general. It was my privilege to personally inspect like work in Portland, Chicago and Boston, object lessons from ruins aggregating an area of more than six hundred and fifty acres, with losses upwards of five hundred and twenty-five million dollars.

The contents of the twenty-two burned national and savings banks' and trust companies' vaults were in every instance found to be in perfect condition. A majority of the vaults were of comparatively recent construction (five being of my own fitting up). A few vaults were located in basements, others on first, and still others on second floors. In each case the fireproof protection was of surrounding walls averaging about sixteen inches in thickness, built up solidly of hard brick, laid in cement, free of any built-in ironwork strengthening. All the vaults were supported on brick foundations built up from cellar bottoms. Several of the vaults were unfavorably located, subjecting them to a degree of heat hardly imaginable. In one of the latter was found an illustration, showing that at some time during its test the interior temperature had been sufficient to cause the upper portion of a candle left in the top of the safe to bend over and rest in the pan of its holder.

The contents of a large number of mercantile vaults were intact, but there were also many losses resulting from faulty and cheaply constructed doors, and in several cases where fairly good doors had not been properly secured to masonry; losses resulted also where vault doors and vault walls were so connected with the falling building walls that they fell with them.

There were no bank or mercantile vaults with fireproofing constructed of concrete, as some vaults have very recently been constructed in other localities. The ruins show total destruction of plastic and coarse mixture materials to an extent that would lead me to place unqualified reliance in no fireproof vault construction other than hard burnt brick, honestly laid in best cement. With good brick and cement furnished a mechanic, there is not the possibility of improper work, as might follow in the formation of concrete. Both constructions costing practically the same, and considering the all-important fact that the only materials which resisted extreme heat were those manufactured by heat, such as brick and terra-cotta, the preference in construction is decidedly in favor of brickwork for absolute fireproof protection. Ironwork of any kind incorporated in or forming part of fireproofing structures, expanding, causes cracking and weakening of walls, vitally impairing their security in a conflagration of magnitude.

Vaults properly constructed of brick on second and third floors possess unquestioned security against such fires when built up on brick foundations extending from the basement, not substantially connected with the main walls of buildings, and free of built-in ironwork.

As to results with portable safes, called "fireproof": Carefully collected statistics gathered in the Boston fire showed that sixty-eight per cent of their number were a total loss. I believe that the percentage of loss was as great in the Portland and Chicago fires, and that the loss was fully as large, if not greater, in this fire, again establishing the fact that the protection such safes afford is measured by a limited exposure to heat, and that absolute protection exists in nothing short of brick vaults with substantially constructed iron vestibules having inside and outside doors provided with properly designed and proportioned bolt work.

The contents of a large number of safes were lost by their being opened before they had been allowed a sufficient time to cool off. Caution should be exercised in opening vaults and safes which have been subjected to a great heat.

GEO. L. DAMON,
Safe and Vault Engineer.

THEATER FIRE PROTECTION.

THE Iroquois Theater disaster of last winter aroused such widespread distrust of present conditions and laws relating to theater construction that in nearly every large city and most of the states of the Union many measures were introduced to amend or repeal existing statutes. Massachusetts was one of the first to consider the matter, and from public and private incentive a quantity of very ill-considered legislation was proposed, all of which was referred to the Committee on Cities. This committee has finally reported a bill to provide for greater protection against fire in theater buildings. It is so difficult to persuade the average legislator that he does not know everything about every possible measure that could come before him that there is no wonder the bill should show such evident marks of unbalanced judgment and insufficient provision. The committee had given a number of hearings to those who were interested in obviating the manifest defects of the present laws, and the Boston Society of Architects, through its legislative committee, had strongly seconded the recommendations of the governor that all these bills, together with other measures tending to further modify the general provisions of the bulding law, should be referred to a special commission of experts. Apparently such advice has not been followed, and the measure if enacted would mean a distinct lowering of the standard of theater construction in the larger cities, a loss which would not be compensated for by the raising of the standard for such structures elsewhere.

There are a few good points about the proposed measure. The bill strictly defines a theater, a definition which is lacking in the present law, and in its application the law would extend to any auditorium capable of seating four hundred or more persons instead of eight hundred, as at present. There is nothing said in the law about fireproof construction, but it does require that all scenery and stage woodwork shall be thoroughly soaked in fire-resisting material. This is already called for in all of the large cities, but as far as we know has never been enforced. The new law provides for illuminated sign exits, for a water curtain and two-inch standpipe. According to this law the proscenium may be of other material than brick, and is not necessarily carried up above the roof. Beyond these few points the law simply takes some of the general provisions already incorporated in the Boston law and extends them to the whole state; but as this law will apply to all cities quite as well as to the small towns, the probable inference is that the present Boston law will be superseded thereby.

The building law of Boston is far from being adequate for its purpose, but it has some provisions entirely lacking in the new law and which ought not, under any circumstances, to be abrogated. Every theater in Boston must be a first-class structure, namely, of so-called fireproof construction throughout. The new law will allow theaters to be built with wooden floor beams and ordinary combustible cellular construction. The Boston law does not allow a theater to be built with a stage more than five feet above the level of the principal street. According to the new law a theater can be constructed at the top of a ten-story building. The Boston law provides certain wise, if slightly ambiguous, conditions as to access to the theater, stipulating that it shall have a frontage the entire width of the auditorium and passages upon a street, court, passageway or area open to the air and at least thirty feet wide opposite the whole frontage. According to the proposed law a theater could be built in the center of a great block of buildings, where it would be extremely difficult for the fire department to combat even a small blaze. The only clauses in the new law which are not already in the Boston law appear to be the exact definition of what constitutes a theater and the requirements for illuminated exit signs.

We sincerely hope this law will fail to pass. Human life is just as precious in a small town as in a great city, and its value is often even greater, while the liability from fire, and certainly the danger from panic, are, we imagine, on the whole rather greater in the smaller community. We do not believe that it is a fair argument that small towns cannot afford the price for fireproof construction of a theater. In many of our large cities there are fireproof theaters which are run successfully on admission prices ranging from ten to seventy-five cents, and in which the average attendance is by no means more than could be expected in smaller cities ; and the extra cost of building a theater fireproof is not enough in the long run to render impossible a safe investment from the real estate standpoint. The suggestion has been made that there should be two laws, one pertaining to the large cities and the other to the smaller ones, but the difficulty about this is that our small cities are very apt to grow, and the danger element in any auditorium is not measured by the size of the town in which it is located, nor even wholly by the size of the audience, but is preeminently a factor of constructive and exit conditions.

The great trouble is not that our laws are at present inefficient, but that they are not efficiently administered, and the legislative committee has met this by a report of a bill on the petition of Edward Atkinson to provide for the inspection of theaters and public halls, which would make the parties obtaining the licenses civilly and criminally responsible for non-compliance with existing laws, and which provides that the licensing officer shall make a complete inspection of all such places at least once a month. There ought to be no reasonable objection to this law. As a matter of fact, the authorities under the existing laws could exercise just such powers, and it is to be questioned whether additional legislation will necessarily secure better enforcement of the laws, but at least such a law could do no harm and would often strengthen the hands of a zealous and public-spirited official.

PROTECTING THE CONTENTS OF A BUILDING.

BEFORE the Baltimore fire a fireproof building would have been defined as one in which all the structural steel was protected with at least one inch of terra-cotta set in cement mortar, in which the amount of wood was limited to finish and the upper and under floor nailed to sleepers, and in which the exterior walls were faced with brick or terra-cotta. It would have been commonly stated by nine architects out of ten, at least, that a fire could not cause material damage within or without such a structure; that while it might catch from without and its contents be partially consumed, the fire would spread very little, if at all, from story to story, and each room would simply burn itself out without affording an opportunity for fires to spread through it to adjoining structures. Fireproof materials have abundantly demonstrated their ability to protect the steel frame and, used on the exterior of a building, to withstand a very considerable amount of heat without material damage. But from the point of view of the tenant who hires an office in such a structure, and tells his agent that because he is in a fireproof building he does not need to carry insurance on the contents of his offices, it is not enough to merely protect steel in which he has no personal interest. The education of the country proceeds slowly. We have seen intelligent business men who have visited such ruins as to-day exist in Baltimore, and have come away with a freely expressed belief that because the contents were all consumed, therefore fireproofing involved a needless waste of money. That is thoroughly selfish, every man for himself and the insurance companies will pay the bill policy, which needs only to be stated to be condemned. The right way is to admit that in our large fires the fireproofing methods have never been able to do any more than protect the frame, and that therefore in all our congested business districts we simply must be more careful about the contents of our buildings. This is not an impossibility. It is a practical necessity which every man ought to be obliged to recognize. The owner and the insurance companies can make the frame, the structure and even the finish practically incombustible. It is the duty of the city authorities to insist upon the diminution of the fire risk by the elimination of inflammable contents, and their right to do so ought to be just as unquestioned as the right to prohibit the storing of gunpowder or naphtha.

FIRE LOSSES.

We give herewith a diagram illustrating the aggregate fire losses in the United States for the twenty-eight years from 1877 to 1902. The solid black line shows the property loss, the broken line the insurance loss. The total of property loss for this period is $3,092,630,171.00,

DIAGRAM SHOWING PROPERTY AND INSURANCE LOSSES BY FIRE, 1877–1902.

while the insurance loss amounts to $1,828,539,628.00. During the past ten years the average loss has been $146,000,000.00, or, relatively speaking, a tax of about $9.00 upon each family in the United States. This is a pretty stiff bill to pay for what in the vast majority of cases was preventable.

Editorial Comment and Selected Miscellany

THE STANDARD SIZE BRICK.

BY H. D. SEARLES-WOOD, F. R. I. B. A.

THE Royal Institute of British Architects' standard size of bricks is the outcome of the measurement of bricks all over the United Kingdom, and the size may be fairly said to be an average of the London stock sizes.

The whole réason for a standard size is to have bricks that will bond even when they are gathered from different parts of the country; the Royal Institute of British Architects is now in communication with the manufacturers of glazed bricks, with a view to the standard being equally applied to this class of bricks, for in using glazed bricks at the present time great difficulty is experienced by those who wish to make good sectional bond, and some serious failures have occurred in walls built with glazed brick internal facings and ordinary walling bricks at the back, owing to the unequal shrinkage of the mortar joints, due to the fine joint of the glazed bricks and the thick joint of the ordinary brick necessary to make them work with the courses of the glazed bricks.

KEY AT ENTRANCE.
J. H. Freedlander, Architect.
Excelsior Terra-Cotta Co., Makers.

INGALLS BUILDING, CINCINNATI, OHIO.
Elzner & Anderson, Architects.
William H. Ellis & Co., Builders.

Except in the lower stories this building is laid up with a light granite, satin finish enameled brick made by the Tiffany Enameled Brick Co., and trimmed with a terra-cotta of similar finish furnished by the American Terra-Cotta Co.

Some architects are opposed to the depth of bricks being brought into the standard and to the mortar joint being regulated, but it is obvious if bricks from various districts are to be used together, the three dimensions of width, length and depth must all be fixed by the standard.

DETAIL EXECUTED BY ST. LOUIS TERRA-COTTA CO.

Other architects prefer the bricks which work five to the foot, and there is no reason why they should not have bricks made to any size that may suit their fancy, and if they preserve the proper proportion between header and stretcher, just as good bond can be made. There is not the slightest reason why the fixing of a standard size should prevent or hinder the production of any fancy sizes, and if the demand for them is sufficient there will be plenty of brickmakers ready to supply them.

On the other hand, the value of a recognized standard of size and method of measurement cannot fail to be of the greatest advantage both to the brickmaker and architect, and to such allied trades as the terra-cotta maker and mason.

The brickmaker who makes a standard article can rely on a larger market than the local demand, while the architect can employ various classes of bricks for different parts of his building, selecting each class of brick for the purpose for which it is best adapted, without any fear of getting bad bond and consequent loss of strength in his walls.

The terra-cotta maker can prepare his models on a scale that will make the terra-cotta bond properly when set in the wall, and probably in certain classes of work he could stock a sufficient quantity of terra-cotta to avoid the delay in delivery, which is the great drawback to its use at the present time. The mason, in the same way, can, when the standard bricks are used, absolutely rely on his detail in preparing his stones so that no making-up shall be required; the work, when it is set on the wall, rising truly and solid with the brick backing.

JEFFERSON HOTEL, ST. LOUIS, MO.
Barnett, Haynes & Barnett, Architects.
Built of gray Roman brick made by Hydraulic Press Brick Co.

The method of measuring the bricks, as set out in the standard, is as follows:

(1) The length of the brick should be double the width plus the thickness of one vertical joint.

(2) Brickwork should measure four courses of bricks and four joints to a foot.

Joints should be ¼ inch thick, and an extra 1-16, making 5-16, for the bed joints, to cover irregularities in the bricks. This gives a standard length of 9¼ inches center to center of joints.

DETAIL BY GEORGE F. PELHAM, ARCHITECT.
New Jersey Terra-Cotta Co., Makers.

The bricks, laid dry, to be measured in the following manner:

A. Eight stretchers laid square end and splay end in contact in a straight line to measure 72 inches.

B. Eight headers laid side to side, frog upwards, in a straight line to measure 35 inches.

C. Eight bricks, the first brick frog downwards and then alternately frog to frog and back to back, to measure 21½ inches.

A margin of 1 inch less will be allowed as to A and ½ inch less as to B and C.

This is to apply to all classes of walling bricks, both machine and hand-made.

DETAIL BY A. P. VALENTINE, JR., ARCHITECT.
Atlantic Terra-Cotta Co., Makers.

The standard has been agreed upon between the Royal Institute and the Institute of Clayworkers, and has been draughted in consultation with these bodies and with representatives of the Institution of Civil Engineers.

It has been ordered to come into force on May 1, 1904.

The council recommend that members should insert this standard in their specifications under the title of "The R. I. B. A. Standard Size of Bricks."

BORDEN BUILDING, FRANKLIN STREET, NEW YORK CITY.
Front brick furnished by Robert C. Martin & Son,
160 Fifth Avenue, New York.

HOUSE AT CHICAGO.
H. K. Holsman, Architect.
"Shawnee" brick made by Ohio Mining and Manufacturing Co.
Furnished by Thomas Moulding Co., Chicago, Agents.

BIG INCREASE IS SHOWN IN BUILDING OPERATIONS.

BUILDING for the month of April in twenty-three of the principal cities of the country shows a gratifying increase. Permits were issued, according to the official reports to the *Construction News*, for 10,046 buildings, at an estimated cost of $38,239,294, as against 7,849 buildings, at an aggregate cost of $31,453,976, for the corresponding period a year ago, being an increase of 2,197 buildings and $6,785,318 in cost, or an increase of twenty-one per cent.

Thirteen of the twenty-three cities show gains varying from twelve to thirteen per cent. Brooklyn shows the greatest prosperity, permits having been taken out for the construction of 963 buildings, involving $6,260,965, against 658 buildings, costing $2,645,870, for the same month a year ago, an increase of one hundred and thirty-six per cent. In the boroughs of Manhattan and the Bronx the increase is about twenty-seven per cent.

HOUSE AT CHICAGO, ILL.
Edmund R. Krause, Architect.
Covered with American S Tile, made by Cincinnati Roofing Tile and Terra-Cotta Co.

Cincinnati shows a gain of one hundred and thirteen per cent, as against the same month a year ago. Other cities in which remarkable increases are shown include Omaha, eighty-two per cent; Seattle, seventy-five; San Francisco, fifty-seven; Indianapolis, fifty-one; Memphis, thirty-two; Detroit, thirty-one; Los Angeles and Milwaukee, thirteen.

St. Louis shows the most remarkable decrease, sixty per cent. Buffalo has a decrease of thirty-two per cent; Minneapolis, twenty-eight; Cleveland, eighteen; St. Paul, nine; Kansas City, eight; Philadelphia, seven; Atlanta, six; and Louisville, three.

DETAIL OF BUILDING BY H. B. MULLIKEN, ARCHITECT.
Terra-Cotta executed by New York Architectural Terra-Cotta Co.

"In the leading cities the gains," says the *Construction News*, "are no more remarkable than in the small cities, from which it is impossible to obtain definite statistics. It is believed that the activity will not only continue, but in all likelihood will increase in volume from this on."

ROTCH TRAVELING SCHOLARSHIP.

THE Rotch Traveling Scholarship has this year been awarded to F. C. Hirons, who is an Englishman by birth but has been a Bostonian for the last twelve or more years. He began his architectural studies in the office of Herbert D. Hale, and supplemented his practical training by a special course at the Institute of Technology,

THE UNION BUILDING, ANDERSON, IND.
Richards, McCarty & Bulford, Architects.
Built of "Ironclay" Brick.

where he received the prize of the Boston Society of Architects for the most meritorious work in design. Mr. Hirons will be remembered as the winner of the prize of five hundred dollars offered recently by THE BRICKBUILDER for the best design for a small library constructed of terra-cotta. In all his work thus far he has shown exceptional ability and his record has been a most brilliant one. Mr. Hirons was also fortunate in winning a place in the final competition for the traveling scholarship of the Society of Beaux Arts Architects, but has surrendered his chance to accept the Rotch Scholarship. He wlll go to Europe admirably prepared for his foreign studies, and he ought to be able to send back work of a very gratifying character during his two years abroad.

WARD LINE BUILDING, WALL AND WATER STREETS, NEW YORK CITY.
Fireproofed with Burnt Clay throughout.

THE architectural competition for the Engineering Building and the Engineers' Club Building, New York City, has been finally arranged and a printed program has been issued by the committee in charge. The following six selected firms of architects are to take part in the competition, and each will receive the sum of $1,000: Ackerman & Partridge, Carrère & Hastings, Clinton & Russell, Lord & Hewlett, Palmer & Hornbostel, and Whitfield & King. If the design of one of these firms is chosen, the $1,000 payment will apply on his commission. In addition, any reputable architect or firm of architects which has been two years or more in practice may submit designs, and the best four of such designs submitted will receive four equal prizes of $400 each. All designs must be submitted on or before June 20 next, and the examination and award will be made as soon as practicable thereafter. The architect in whose hands the work is placed will receive a commission of five per cent of the total cost of the work. The secretary of the committee in charge of the competition is Prof. F. R. Hutton, 12 West 31st Street, New York City.

ENTRANCE, UNION BUILDING, ANDERSON, IND.
Terra-Cotta furnished by Indianapolis Terra-Cotta Co.

BOOK REVIEWS.

AMERICAN RENAISSANCE. A Review of Domestic Architecture. Illustrated by ninety-six half-tone plates. By J. Wheeler Dow, architect. New York: Wm. T. Comstock. One large 8vo volume. Gilt top. Price, $4.00.

In taking up the subject of architecture in this coun-

PANEL FOR STABLE.
Louis Lehle, Architect.
Northwestern Terra-Cotta Co., Makers.

try the author has endeavored to show that, by adaptation of the various styles to the needs of our people, there has been developed a special style which he terms American Renaissance.

The popular idea of American Renaissance, if the term were ever to become general, would be represented by the sumptuous estates of America recently erected in great numbers by millionaires; but strangely enough, it would seem, after a perusal of this latest commentary, that most of this distinctly modern architecture was designed in defiance of the vital theory of a dwelling-house, namely, the Anglo-Saxon home principle, and that it expresses American ostentation more often than American Renaissance.

The author subdivides the subject into well-defined periods, such as "The Grand Epoch," relating to the prosperity of the American colonies immediately preceding the Revolution and following it, and the "Reign of Terror," for instance, of exemplifying the culmination point of the outrageous circular work and the cupolas. The chapter upon "Adaptation" is particularly interesting.

As a book of reference the work is enhanced in value by a copious index, where every item of interest, every allusion bearing upon the author's theory of architecture has been catalogued. The selection of illustrations is especially noteworthy, embracing many rare and beautiful examples of American domestic architecture.

DETAIL BY JOHN E. SCHARSMITH, ARCHITECT.
Brick, Terra-Cotta and Tile Co., Makers.

DETAIL BY BARNEY & CHAPMAN, ARCHITECTS.
Conkling-Armstrong Terra-Cotta Co., Makers.

REMOVAL NOTICES.

The Excelsior Terra-Cotta Company, of New York City, has taken new offices in the Johnston Building, 1170 Broadway, corner 28th Street.

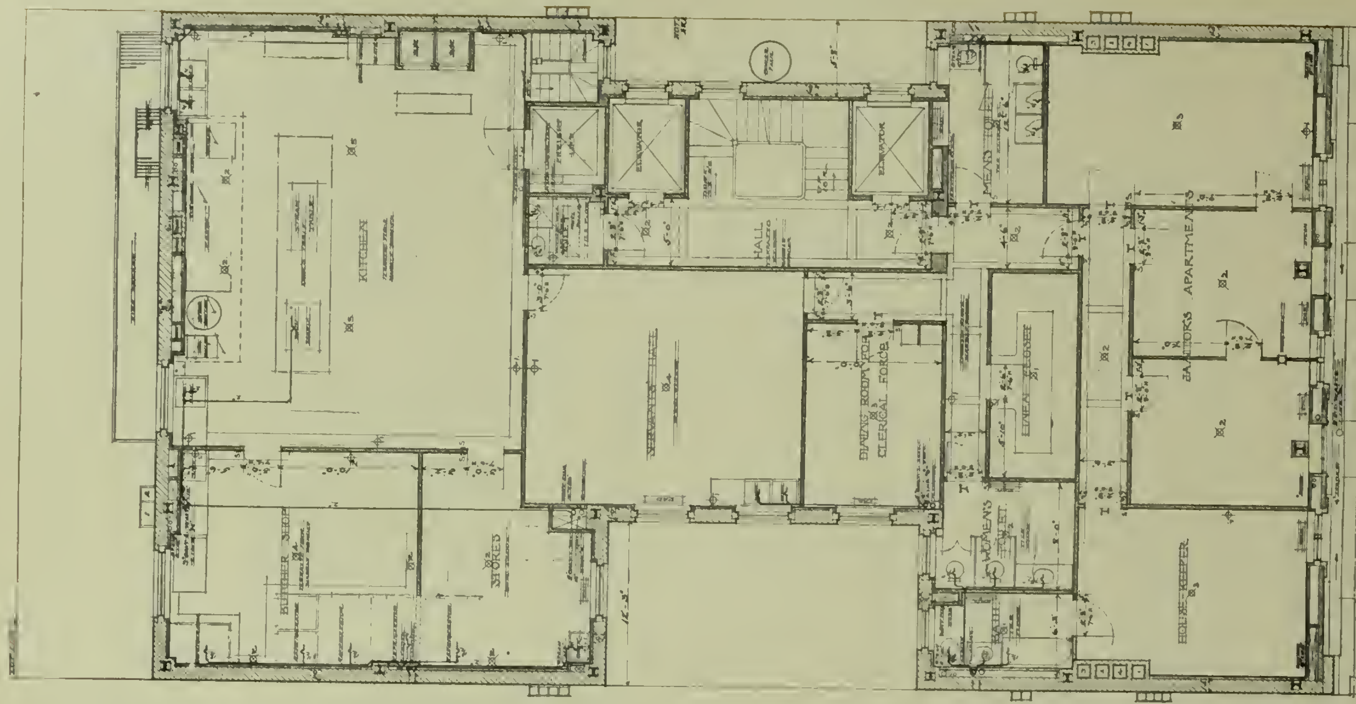
Barney & Chapman, architects, New York, announce the removal of their offices to 520 Fifth Avenue.

Thomas Nash, architect, New York, announces the removal of his office to 1170 Broadway.

STATUE EXECUTED IN TERRA-COTTA BY WINKLE TERRA-COTTA CO.

THE PARIS CONTEST IN WINDOW-SILL DISPLAY.

A PLEASING spring feature of Paris is the flowered window-sill contest arranged by a committee of architects and painters, including Philpot, Dagnan-Bouveret, Gervex, Cheret, Louise Abbema, Mlle. Dufau, Claude Marlef and others, and supported by Premier Combes, by the Minister of Fine Arts and by the Prefect of the Seine; the idea being to encourage masses of flowers on balconies and in windows to beautify Paris streets. At a given date the jury will travel all over Paris in a procession of automobiles, noting all the shows, from the humblest to the most elaborate, and will give awards proportionately to the taste displayed by the competitors and to the means they had at their disposal. Five thousand dollars will be distributed in prizes. The poor and rich alike are invited to take part in the contest, and the municipal horticulturists have agreed to supply seeds, bulbs, cuttings and pots of rich soil free to competitors who cannot afford to buy them. — *New York Tribune.*



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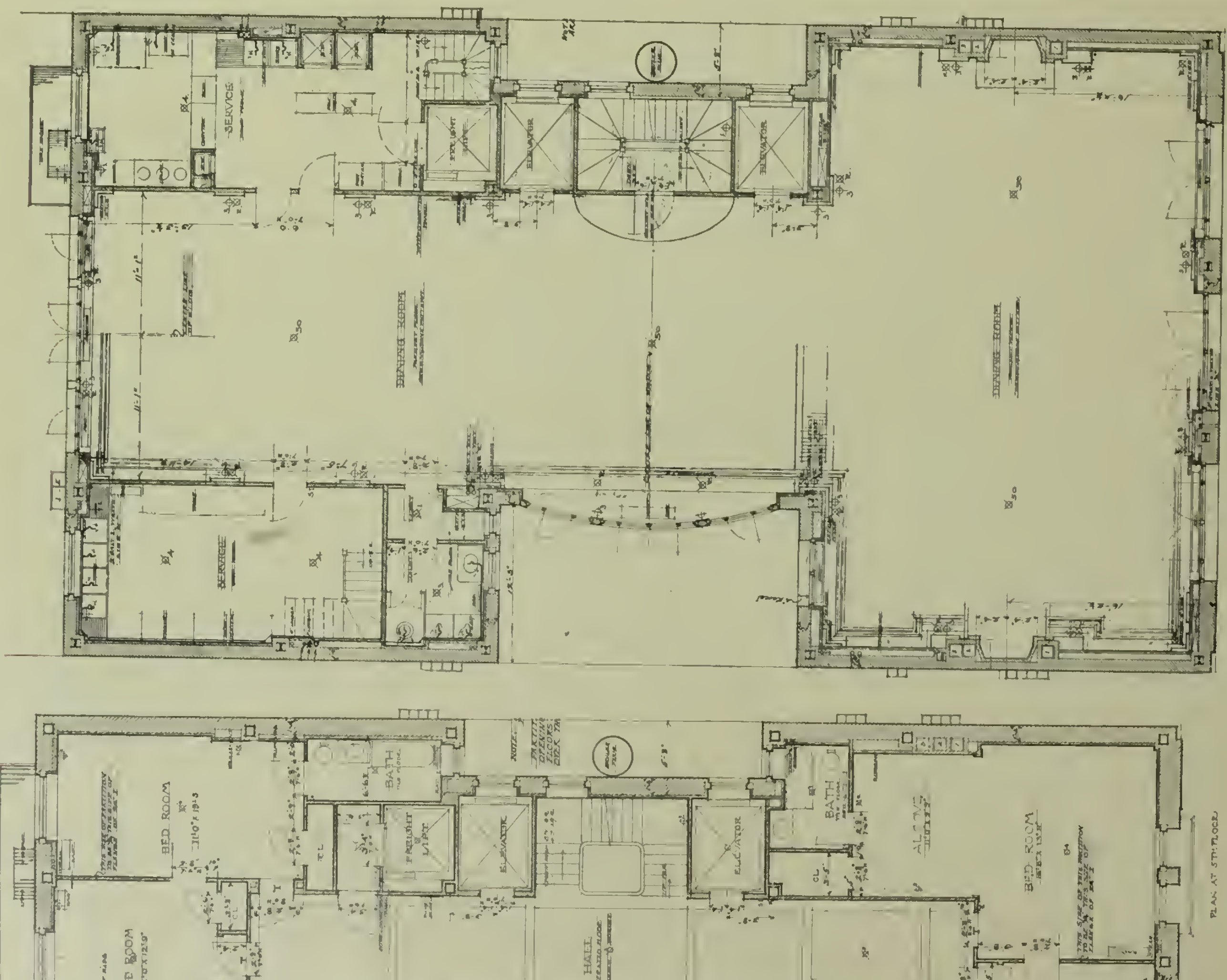

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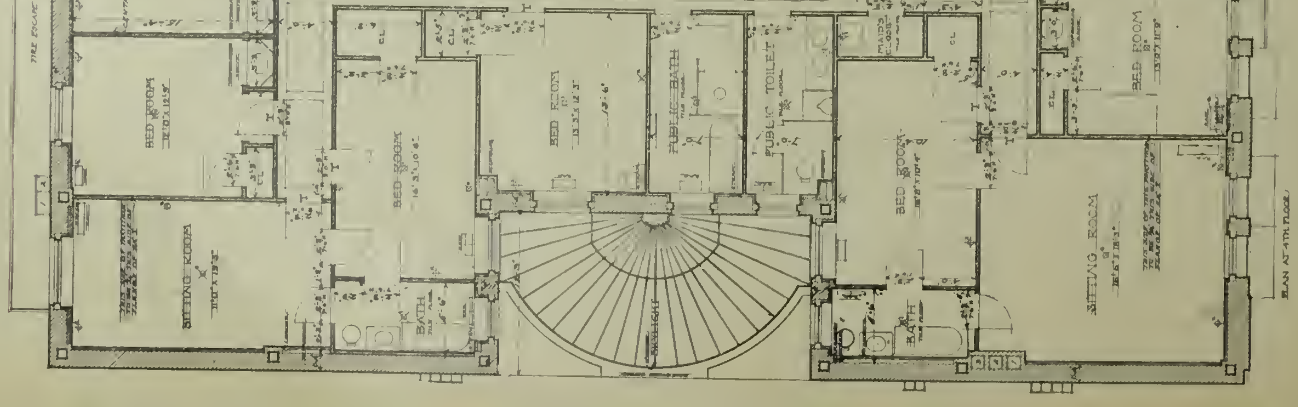

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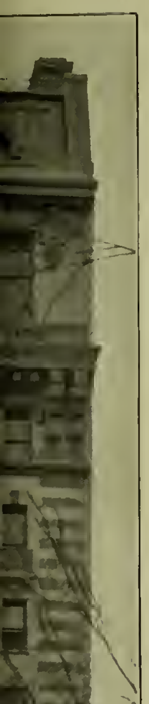

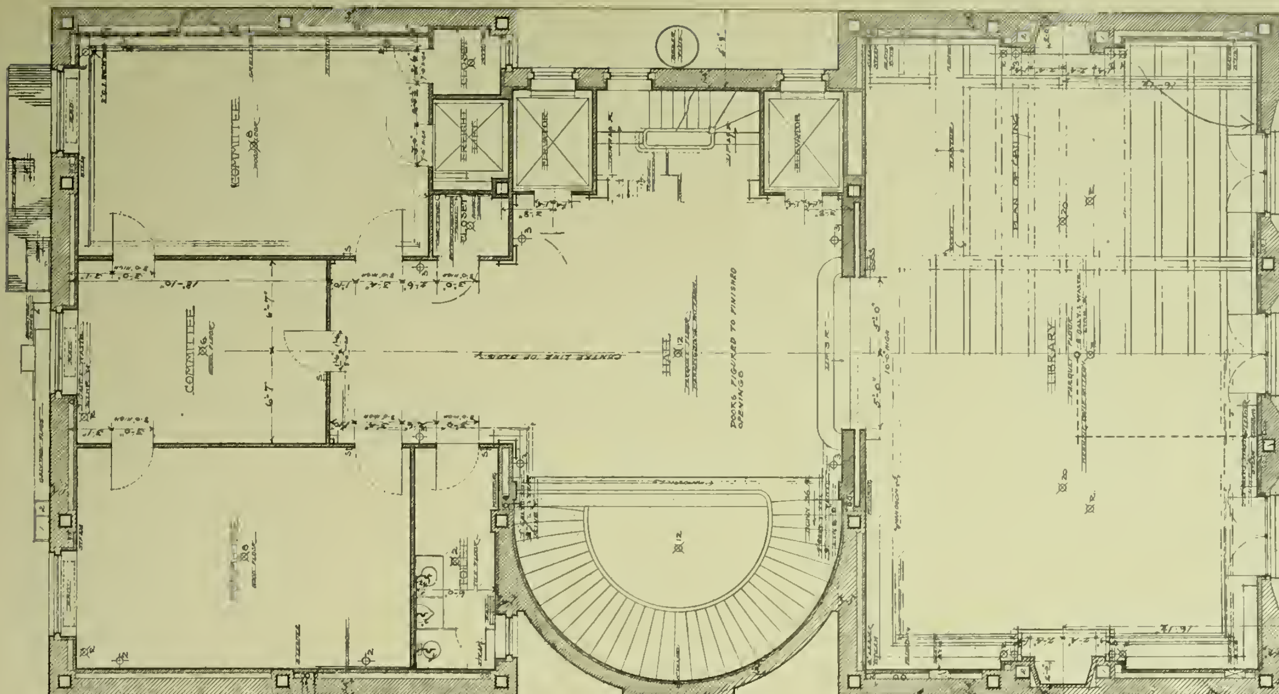

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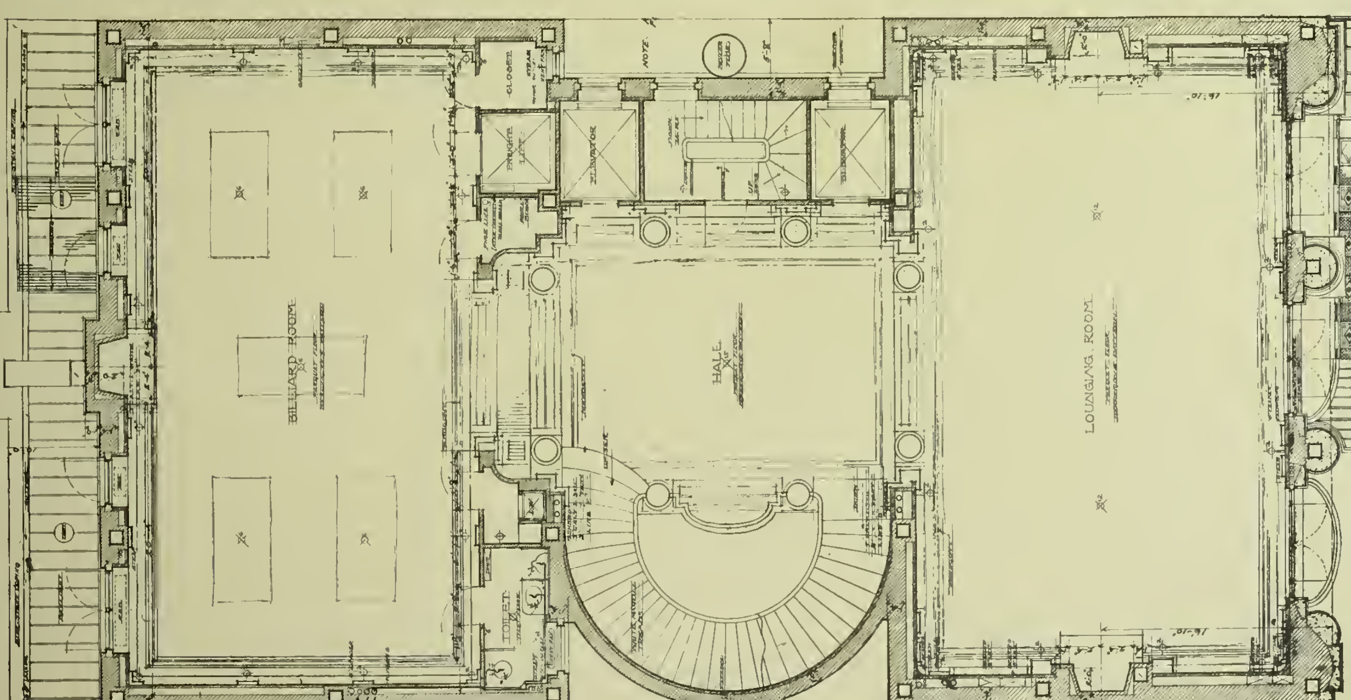

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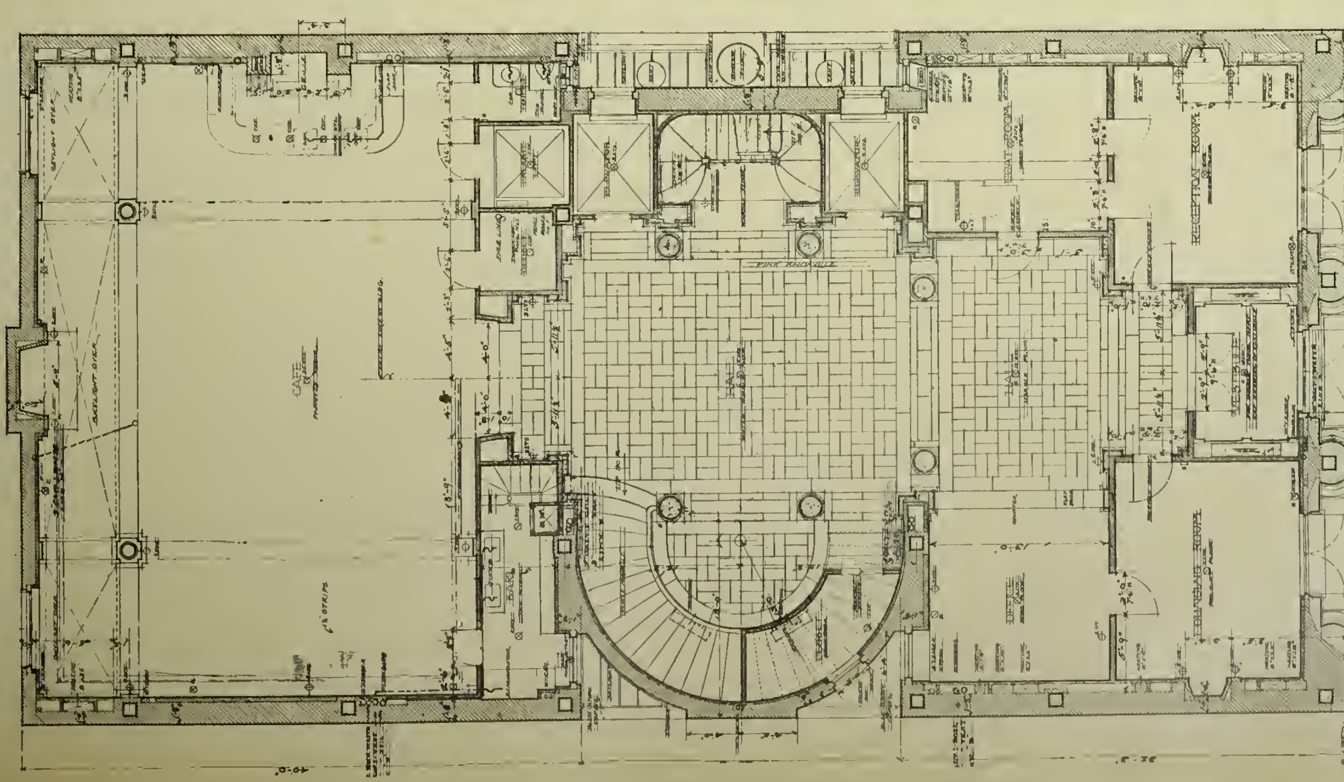
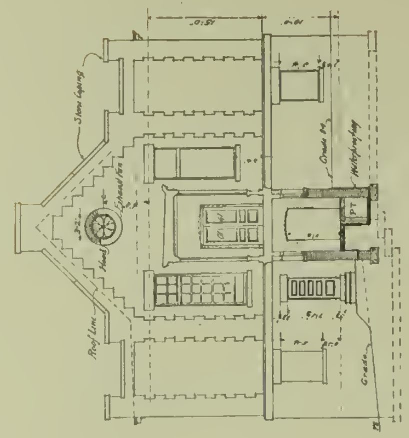
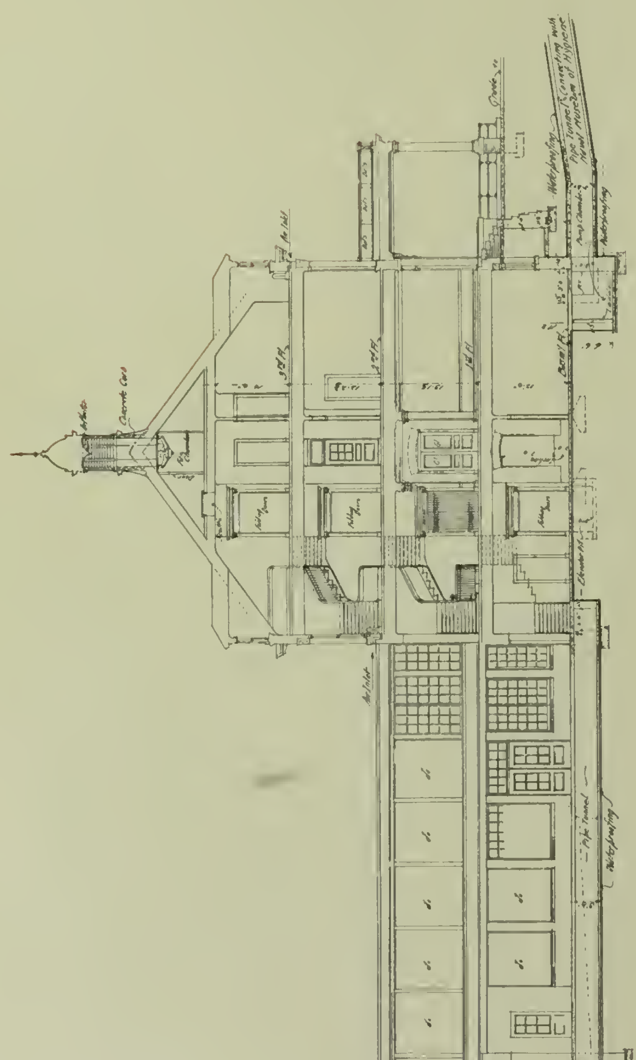


FIRST FLOOR PLAN.

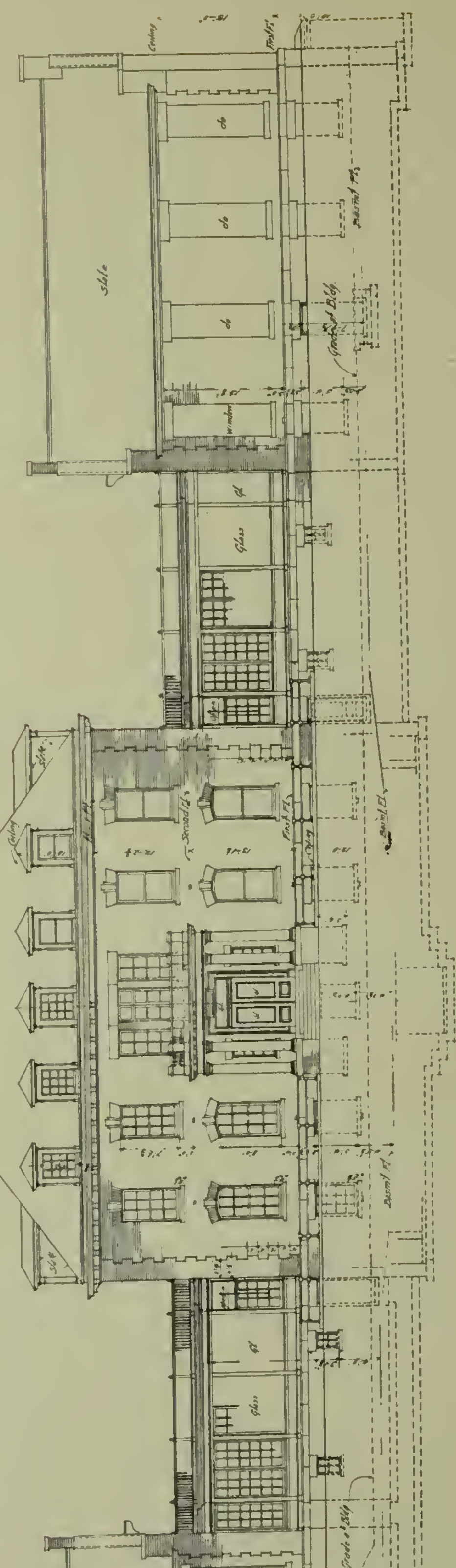
PLANS. REPUBLICAN CLUB BUILDING, NEW YORK CITY.

YORK & SAWYER, ARCHITECTS.





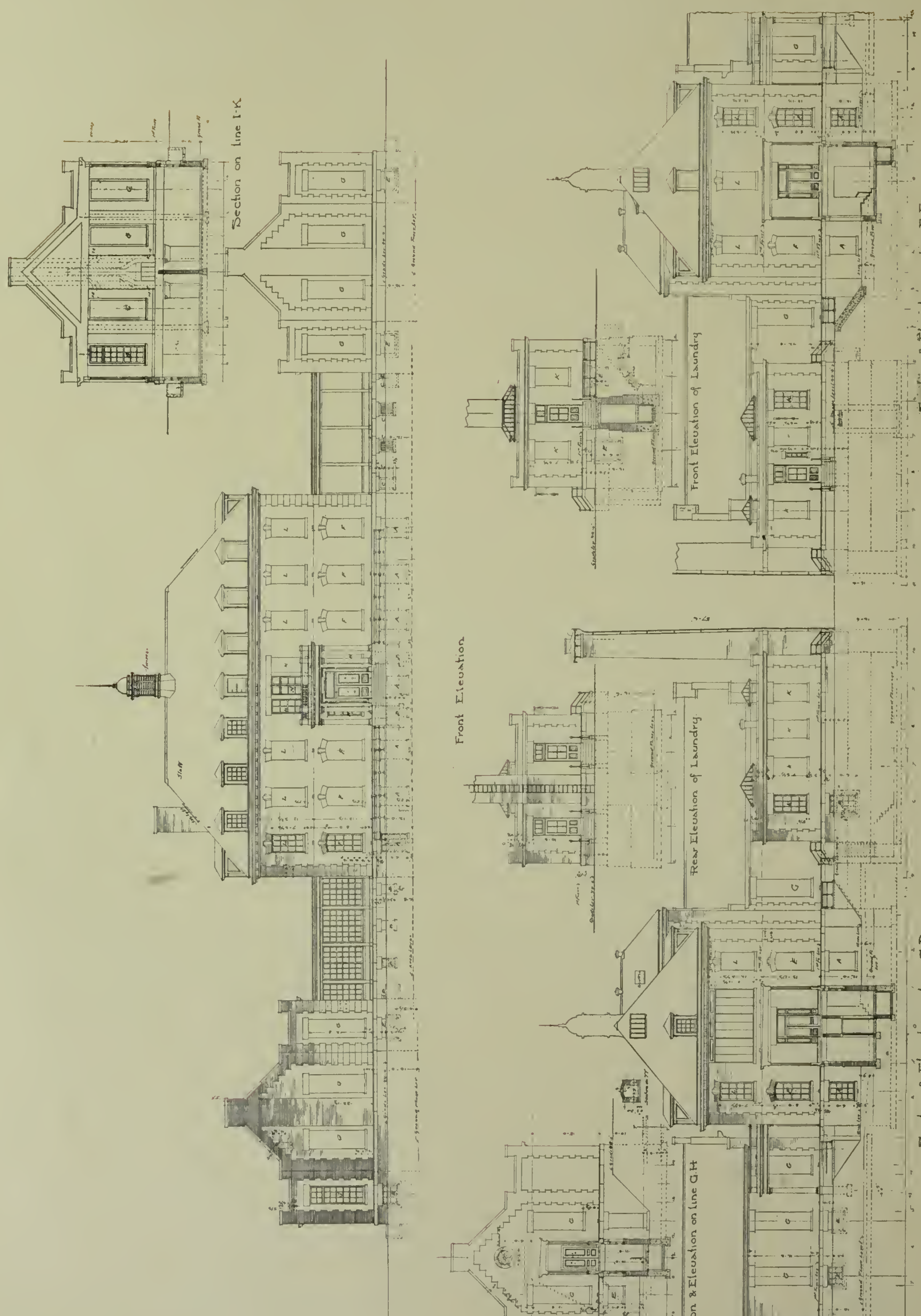
TRANSVERSE SECTION.



FRONT ELEVATION.

UNITED STATES NAVAL HOSPITAL, WASHINGTON, D. C.

ERNEST FLAGG, ARCHITECT.



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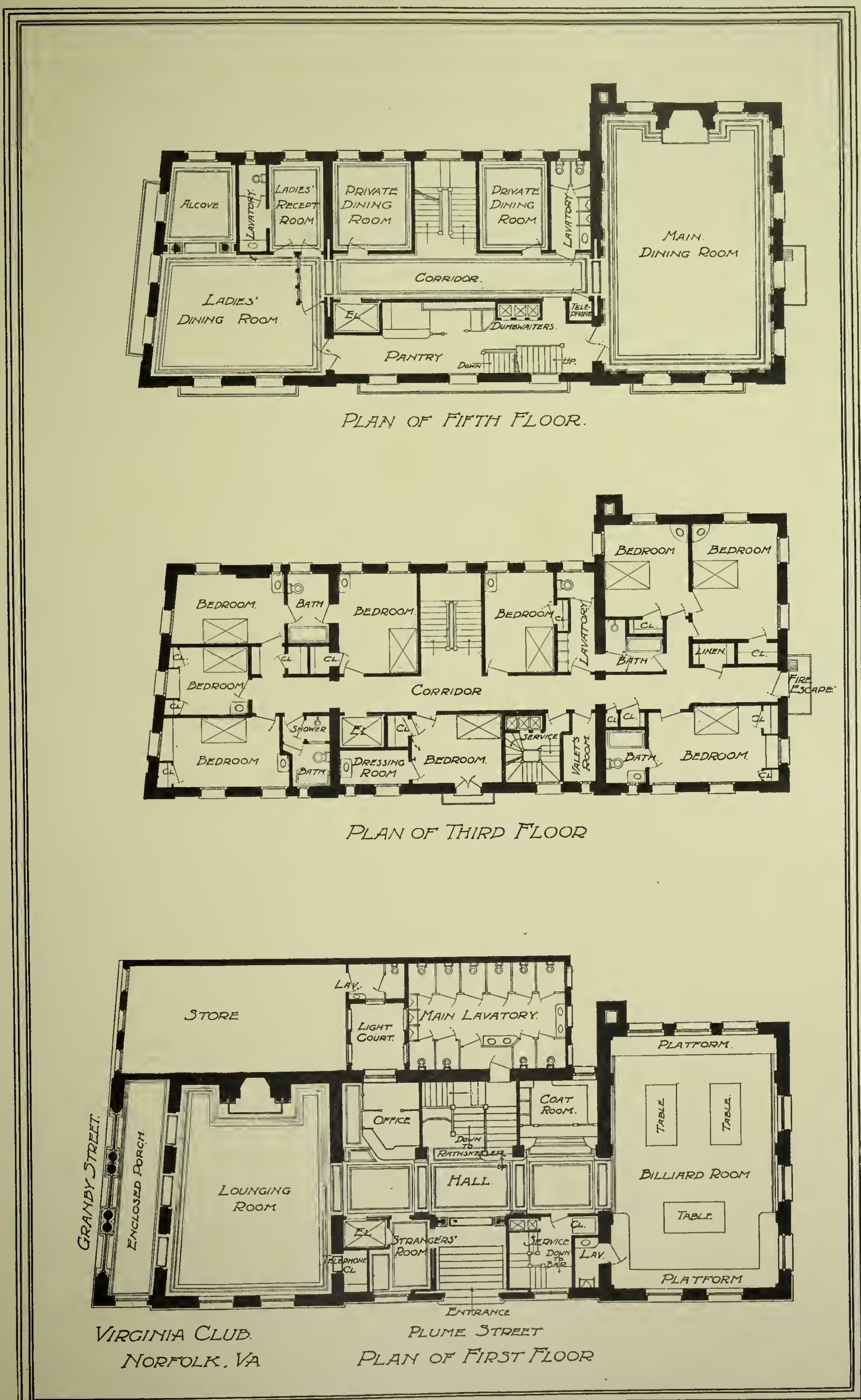
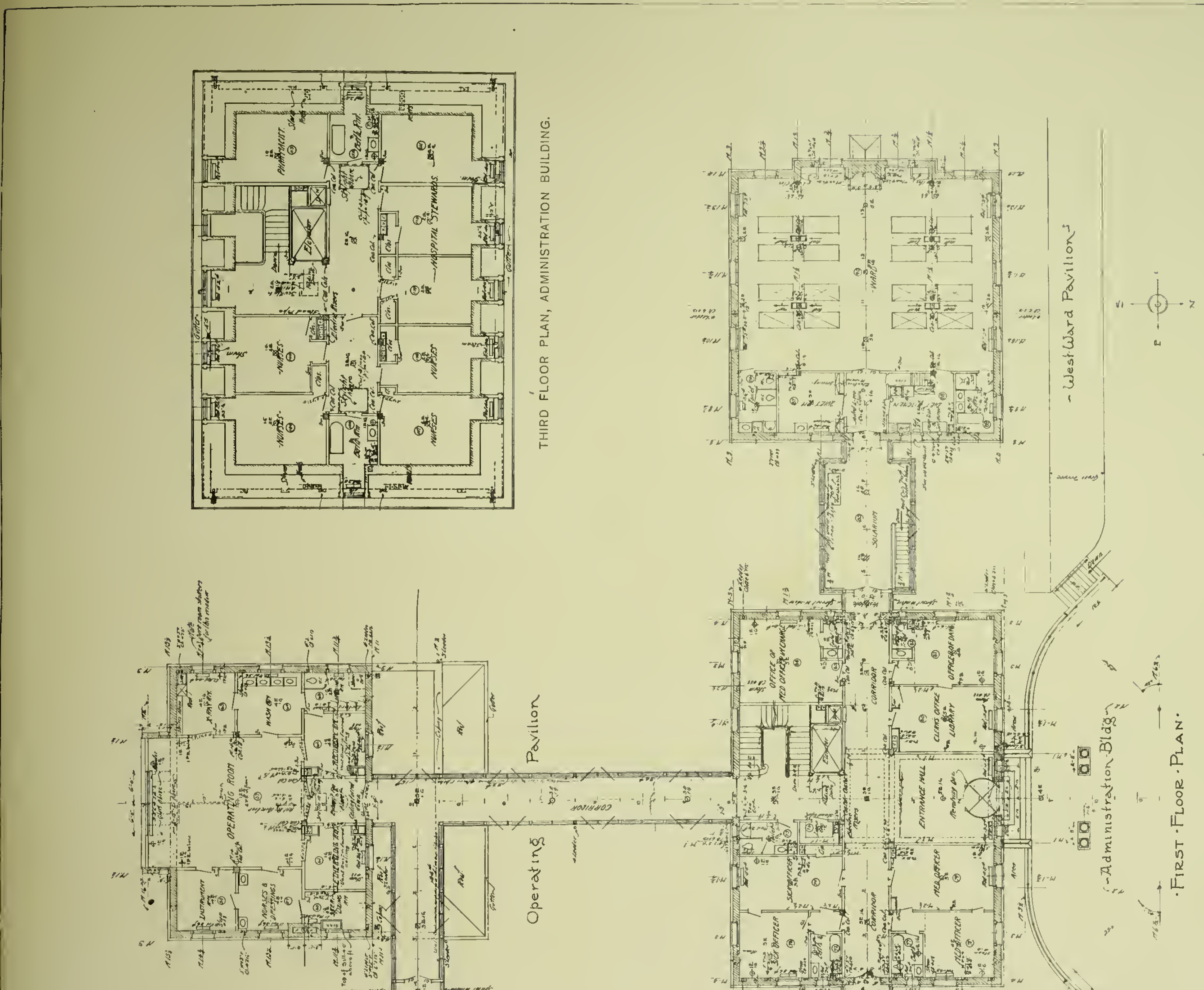


VIRGINIA CLUB, NORFOLK, VA.

K. M. MURCHISON, JR., ARCHITECT.



PLANS, UNITED STATES NAVAL HOSPITAL, WASHINGTON, D. C.

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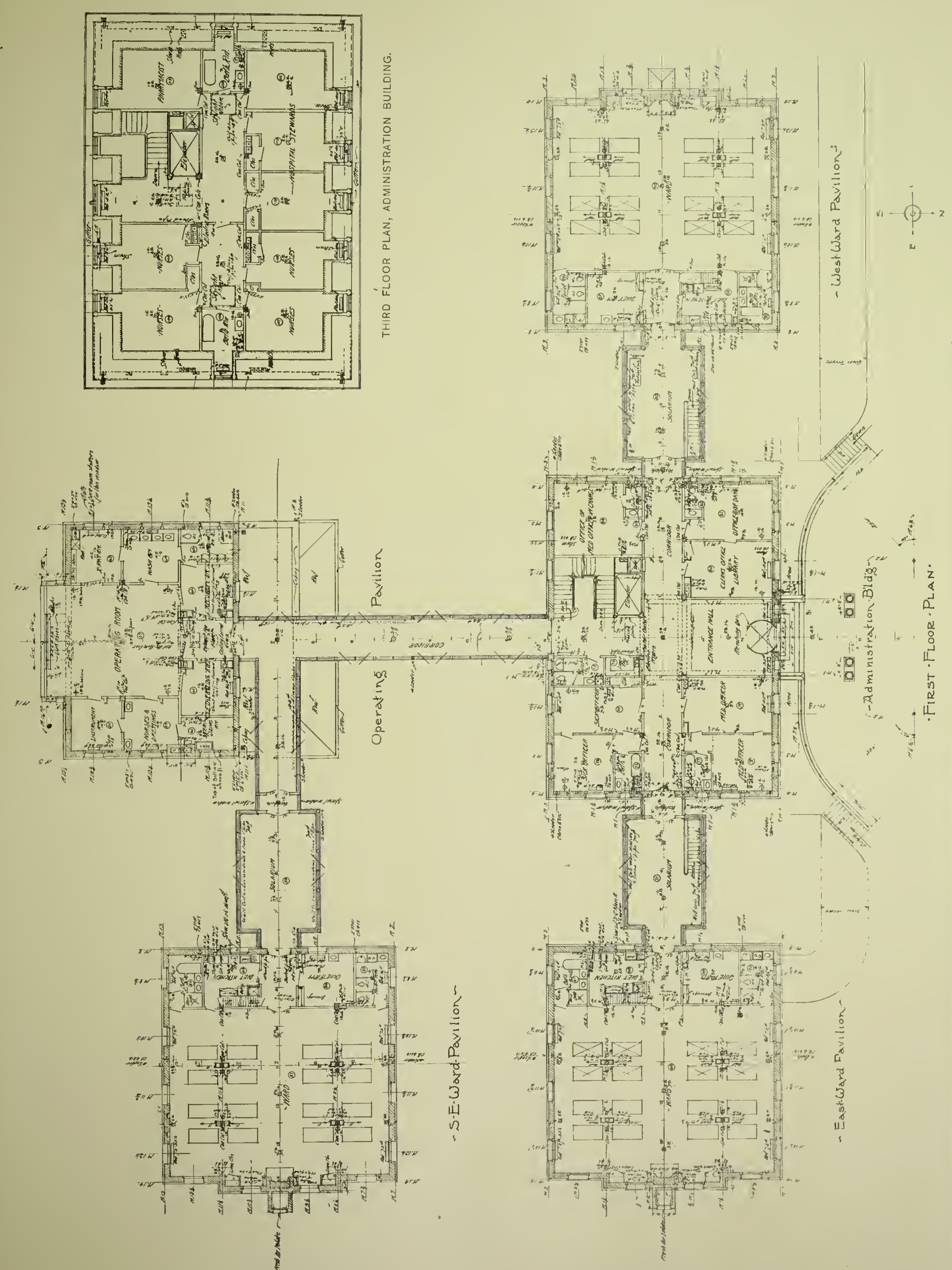

PLANS, UNITED STATES NAVAL HOSPITAL, WASHINGTON, D. C.

ERNEST FLAGG, ARCHITECT.

THE OPEN COURT

HOSPITAL AT NEWPORT, R. I.
WILLIAM ATKINSON ARCHITECT.

VIRGINIA CLUB, NORFOLK, VA.
K. M. MURCHISON JR., ARCHITECT.

TOWER OF MESS HALL.

NATIONAL HOME FOR DISABLED VOLUNTEER SOLDIERS, JOHNSON CITY TENN.

(ELEVATION AND PLANS ILLUSTRATED IN THE BRICKBUILDER FOR APRIL, 1903.)

J. H. FREEDLANDER ARCHITECT.

THE BRICKBUILDER.

VOL. 13 JUNE 1904 No. 6

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TOWER OF THE CHURCH OF SAN MIGUEL, SARAGOSSA, SPAIN.

THE BRICKBUILDER

VOL. 13 No. 6 DEVOTED · TO · THE · INTERESTS · OF ARCHITECTURE · IN · MATERIALS · OF · CLAY JUNE 1904

THE BRICKBUILDER.

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ARCHITECTS' SPECIFICATIONS.

THE first installment of Mr. Wait's paper, which appeared in our last issue, has called forth, as we anticipated, many comments, especially from our New York readers. The legal criticisms which he makes upon architectural practice are in the main admirable and are far more useful than such as are usually received from lawyers. In fact, while we would dislike to offer the writer a *quid pro quo*, we are sure that if there is anything misleading, confusing and generally verbose it is a lawyer's statements of matters architectural or structural. It is only exceptional that the legal fraternity takes as clear and reasonable views of requirements and how to state them as are evinced by Mr. Wait, and he explains this very naturally by his long and varied experience with architects' specifications, an experience which has corrected the diffusion of the average legal mind. There are a few points, however, on which we find some of our correspondents take a distinct issue. The clauses criticising the requirement that drawings shall be returned to the architect seem uncalled for in Mr. Wait's judgment, but when he further states that at least one court has decided that an architect has no property rights in his drawings and can claim no compensation in case a subsequent use thereof in the construction of another building is made by a third person, the reason for requiring the return of the drawings is made very apparent. This might make hardship for the builder in some cases, but the buildings regarding which there are serious disputes are after all in the minority, and generally the settlement of accounts between the builder and the owner through the architect is a perfectly amicable proceeding, and no injustice would be done to either by returning the drawings to the architect.

The criticism which Mr. Wait makes of the reservation by the architect of the right and power to select subcontractors is a perfectly fair one. On the other hand, the architect should distinctly have the right of limiting the selection to properly experienced subcontractors, and this is done in many cases by requiring the contractor to ascertain before committing himself to a subcontractor or a bid as to just what parties will be acceptable to the architect. There is no known legal remedy that will compensate an owner for the results of ignorant or malicious work on the part of a subcontractor. While such acts render the subcontractor possibly amenable to law, certainly New York is almost the last place in the world where an owner could obtain commensurate justice. Nowhere else are the law's delays so outrageous and so hard to prevent, and any compensation which after years of litigation might be awarded an owner for the results of bad workmanship would be vastly incommensurate to the vexation and all the hundred incidental troubles which arise in a large building from bad workmanship. A building is built certainly at least for a lifetime, and if some things are wrong no money payment can make reparation therefor. Consequently, as prevention is far more efficacious than legal cure or remedy, the requirements as to the right of the architect in the selection of subcontractors ought, in equity and fairness, to be made more rigid rather than less, provided, of course, that restrictions are so named in the specification as not to work hardship to the builder.

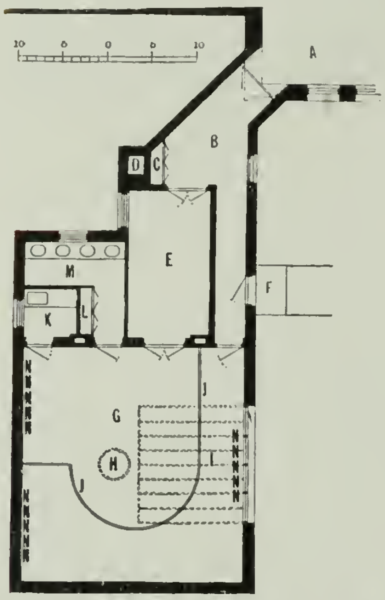
It is noticed that Mr. Wait refers to the architect as the agent for the owner. This is an unfortunate assumption which is only too common in the minds of the legal profession. It is absolutely wrong in fact and in theory. The architect should properly never be considered the agent of the owner. When he becomes such he loses all character as an arbitrator or judge between the parties, and he has no right morally or legally to judge any question in dispute when his decision might be contrary to the wishes or instructions of a dishonest owner, and we all know how frequently the architect must take a position of direct championship for a builder. The architect is first, last and always an adviser, and any one who admits any other position is very likely to come to grief.

Hospital Planning. VI.

BY BERTRAND E. TAYLOR.

THE OPERATING DEPARTMENT.

THERE is no department connected with a hospital that has shown such development as has the operating department during the past twenty-five years. The science of surgery has developed wonderfully and the everyday successes of the humblest practitioners of today in every part of the world were not thought possible by the great specialists of twenty-five years ago.



PLAN OF McLANE OPERATING ROOM, ROOSEVELT HOSPITAL, NEW YORK.

With this wonderful development has come a demand for more perfect and comprehensive arrangements, and a more careful study and classification of every accessory help connected with operations.

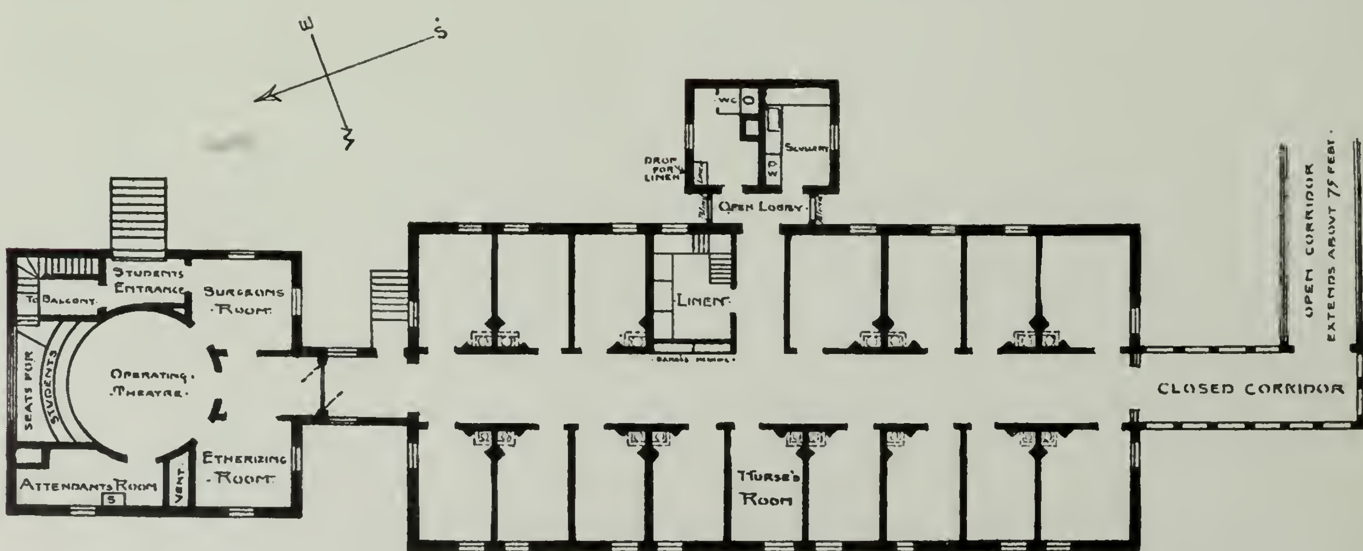
Even a small hospital should have a complete operating or surgical department in a separate pavilion, or if this is not possible on account of the expense, in a semi-isolated wing of the administration building. In a hospital large enough to have a special department of male and female surgical wards and private rooms, which is, of course, most desirable, the operating pavilion should be so located as to be especially accessible but well isolated by ventilated corridors. The wall of the building having the large operating room windows should face north, and the ambulance entrance be so located as not to be visible from the patients' rooms.

BRADLEE WARD AND OPERATING THEATER, MASSACHUSETTS GENERAL HOSPITAL, BOSTON.

The central and most interesting feature of this department is the main operating room. This room should be at least fourteen feet by eighteen feet in area and have a coved ceiling fourteen feet to eighteen feet in height. Good work can be done in a smaller room, but when there is an important case, and possibly a renowned specialist from the city performs the operation, the local practitioners desire to be present, and with the nurses and the various accessories needed in the room the above size is none too large.

In addition to the main operating room it is almost absolutely necessary to provide a smaller operating room to be used for septic or unclean cases and for accident cases that would infect the main operating room, which must be kept absoutely aseptic for major operations. Not only must the walls, floors, furniture and every little accessory be absolutely clean and aseptic, but for abdominal surgery even the air itself must not be polluted by the previous presence of the unclean, except when absolutely unavoidable.

These rooms should each have a large north window continued into a large skylight, double glazed in cold



FLOOR PLAN, BRADLEE WARD AND OPERATING THEATER, MASSACHUSETTS GENERAL HOSPITAL.

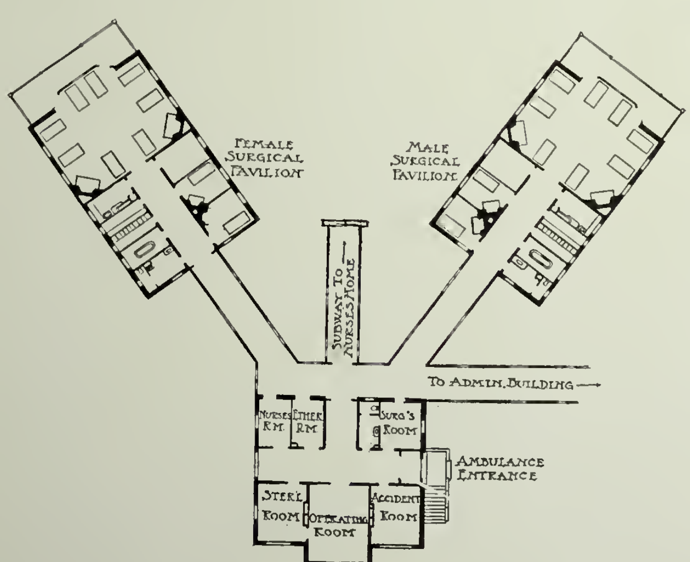
climates with sheets of plate glass, far enough apart to admit of easy cleaning, with portions to open for airing in hot weather, the inner plate to be ground to temper the light and obscure vision where needed.

The lighting should be special, both artificial and natural, and too great attention cannot be paid to this fea-

OPERATING ROOM, MATTEAWAN HOSPITAL.

ture. Most operating rooms are deficient in light, and one with too much light, if concentrated, does not exist.

But a few years ago a hospital had simply an operating room with few or no accessory conveniences. The McLane operating room at the Roosevelt Hospital in New York City was considered the model operating room in America. This room is by itself in a small isolated pavilion, which contains, in addition, a preparation and etherizing room, a cleaning-up room and a surgeon's room. This was considered ample fifteen years ago.



PLAN, SURGICAL DEPARTMENT, NEWTON HOSPITAL.

About the same period was built "The Bradlee Surgical Ward and Operating Theater" of the Massachusetts General Hospital. This, like the McLane, is a small clinical operating room, but with more elaborate arrangements for students. It is interesting to note the crudity of the fittings of this room, the heavy wood furniture, the buckets, basins and pitchers contrasting strangely with the light enameled steel and polished plate glass accessories of the present day.

Many small hospitals built within a few years have no specially arranged room or department for surgical work. A room that might be used for an office, a parlor or a dining room is fitted up and does duty as an operating room. An example of such a room is the one at Matteawan.

The floor may be of terrazo, the base may be coved, the corners rounded and the walls enameled, but these features in themselves are not sufficient to insure a successful workroom in which to treat such a very intricate organism as the human body.

The perfect operating room floor is yet to be invented, although nearly everything has been tried. The vitrified tile frequently used is beautiful and clean in appearance and absolutely perfect in itself, but has been found objectionable on account of the innumerable joints which not only absorb grease and all kinds of offensive substances, but are impossible to clean, and they become in a few months absolutely black from dirt and continual scrub-

OPERATING ROOM, NEWTON HOSPITAL.

bing. If vitrified tiles are used, large, thick ones, to reduce the number of joints and give greater strength, are preferable.

Terrazo has been used in many operating rooms, but it has little to recommend it except its cheapness. It wears fairly well, but the smaller pieces of marble easily work loose, leaving innumerable small depressions that get filled with dirt and are impossible to clean. In fact the sand and cement matrix forming a large per cent of the surface and body is very absorptive and impossible of absolute cleanliness. If terrazo is to be used it should be laid in squares, subdivided by four to six inch strips of Tennessee marble, or the unavoidable cracks will zigzag across the room and reappear as fast as they are cut out and patched.

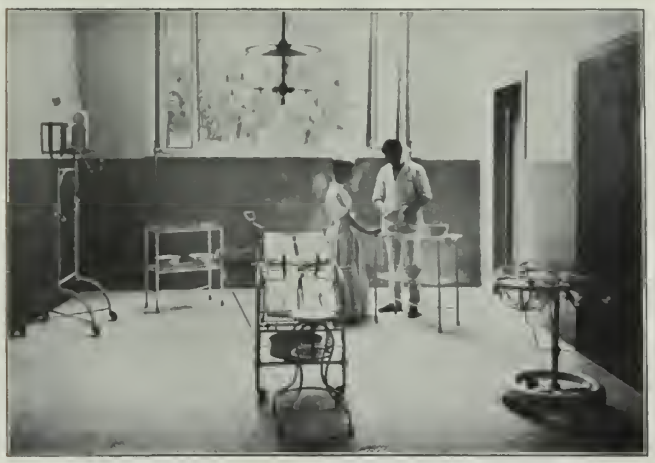
An almost ideal material for the floor under the operating table is ground plate glass in large sheets painted dark red on the under side, with ground joints, set in cement, the remainder of the floor to be pink or gray Knoxville marble, in large slabs to save joints, with coved bases flush with plastering, and flat thresholds of the same material.

There can be no criticism of the sanitary perfection of the glass, and the Tennessee marble is very hard and fine

OPERATING ROOM, HITCHCOCK HOSPITAL.

grained, of unexcelled wearing qualities, shows practically no absorption when immersed for a week in oil and is very easily cleansed. The color is fine, and in all these points it seems to be preferable to white marble, especially as to wear and absorption.

Lead has been tried in a large hospital in Colorado, laid in sheets without visible joints for floors and in fact



OPERATING ROOM, BURBANK HOSPITAL.

for the entire room, including walls and ceiling. This material is undoubtedly sanitary and free from some of the objections found in the use of other materials, but to one who remembers the old-fashioned lead safes, invariably used under plumbing fixtures fifteen or twenty years ago, the proposition is not an alluring one. A large number of patent floors have lately been introduced, all of which are claimed to be the perfect and long-sought floor. Most of them are combinations of cement with sawdust, asbestos, sand, etc., etc., and are all laid in a plastic state with a trowel on concrete or wood construction. When properly set they are ground down and polished or treated with wax or varnish.

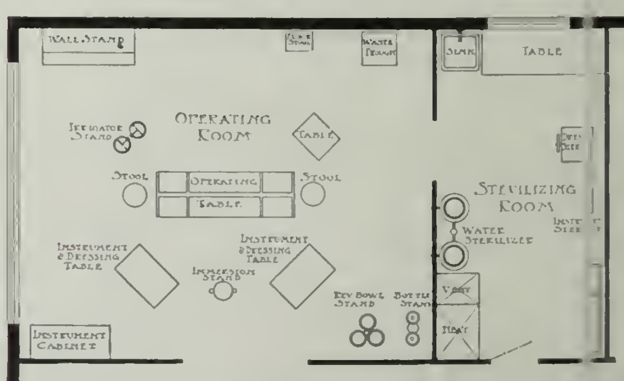
None of these monolithic floors, as far as can be learned, have been wholly successful. Some have stood fairly well, while others have absolutely failed.

The monolithic idea is a good one, and when a floor is devised that will have no joints, that will wear for an indefinite period without disintegrating or even pitting, and which will require no extraneous coating of varnish that needs continual renewal, the inventor will find an unlimited demand.

An opaque glass called "Novus" has been lately perfected for floors and walls, and it is a most beautiful and perfect material. It is made in large sheets of prac-

SPECIAL OPERATING ROOM, MEDICO-CHIRURGICAL HOSPITAL, PHILADELPHIA.

tically unlimited size, has perfect ground joints and resembles, with its honed surface, the finest and most beautiful white statuary marble. Whether this surface is too delicate for ordinary usage is a question which only use will demonstrate. The well-known tendency of glass to chip at the edges seems probable in this glass, although the manufacturers claim to have obviated this to a degree by an annealing process. It seems impossible thus far to manufacture a cove of this material, so corner and

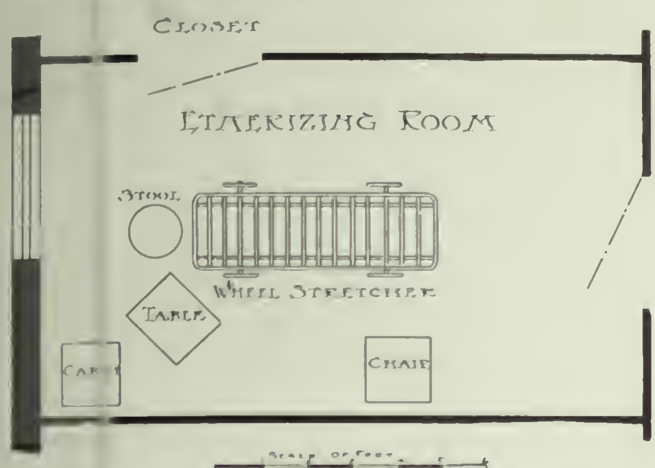


PLAN, OPERATING ROOM, MT. SINAI HOSPITAL.

bases must be square or, what is of no special benefit, a forty-five degree angle.

Some of the operating rooms of the large hospitals, clinical amphitheaters and small operating rooms as well have be finished throughout in marble, even the doors, walls an ceilings.

One the finest operating buildings is that of the Medico-hirurgical Hospital at Philadelphia, designed by Frank M es Day & Brother. In this structure the oper-



PL , ETHERIZING ROOM, MT SINAI HOSPITAL.

ating roo s are entirely finished in Italian marble with Knoxvill marble trimmings, and the idea of excluding all pluml ng fixtures has been quite generally adhered to.

The n w Mt. Sinai Hospital, New York City, A. W. Brunner, rchitect, has a most perfectly designed clinical amp theater, lofty and imposing. The lighting is absolut y perfect and the finishing, even of the lofty ceiling, i of white Italian marble. The floor is, however, of uare vitrified tiles that are already somewhat chipped, d there are a number of exceedingly complicated plu bing fixtures having a great amount of apparently un essary brass work with consequent complication of ints and parts difficult to clean.

Walls a height of five feet six inches (the highest point a n se can reach comfortably in daily cleansing) are usuall covered with glazed white tiles and sometimes large slal of Italian or Tennessee marble. Opaque glass tile has sometimes been used, but experiments show that these glass tiles are apt to loosen from the wall and come off, as there is no suction, and that they sometimes craze, chip and crack. They are also very sharp at the joint, and not being absolutely smooth might inflict injury. If this material could be set in large thick slabs, like marble, and be fastened in place, it would be ideal.

PLAN, RATING BUILDING, BRA ORD HOSPITAL.

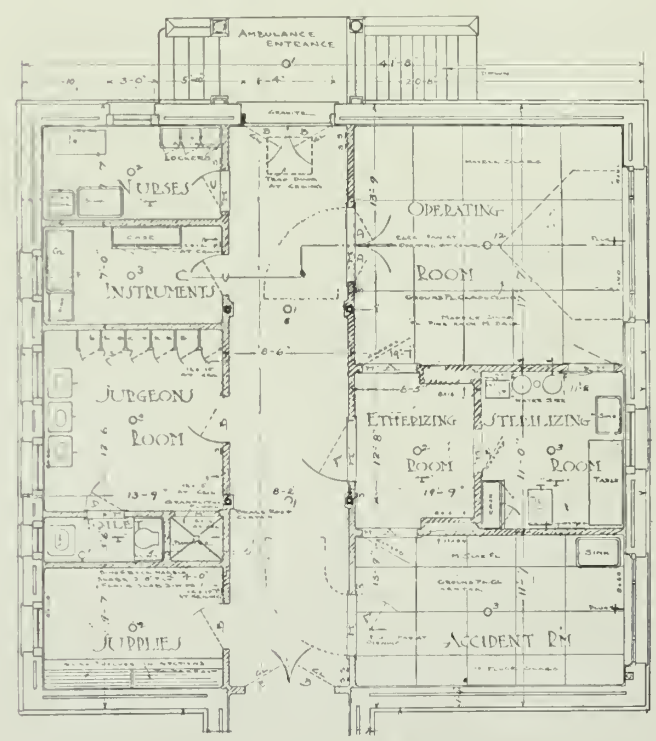
In a small hospital the walls and ceilings of the operating department should be finished with three coats of patent plaster on metal lath, and then when thoroughly dry have two coats of best lead and oil paint and two coats of best enamel paint. This, carried down to the hollow base, is just as sanitary and aseptic as the elaborate and expensive marble or tile treatment, is much less expensive and more easily kept clean. If an accident occurs and a crack or abrasion appears, the surface is quickly and easily repaired.

There seems to be a great variety of opinion and practice regarding the fitting up of operating rooms; some experts claim that no plumbing fixture should be set up, and that the room should be absolutely bare, thus capable of being easily cleansed and made absolutely aseptic and sterile.

If it is unsafe to have plumbing fixtures in an operating room, it is certainly unwise to tolerate a cesspool for floor drainage. Floor drainage is entirely unnecessary. It is much safer to have the floors scrubbed and the slops emptied into a slop-hopper, properly located outside.

Everything used in an operating room should be aseptic and sterile, and should be movable so as to be readily cleaned and kept in absolutely safe condition.

As will be seen in the accompanying illustrations, the needs of twentieth-century surgical practice require a complicated outfit of furniture for the operating



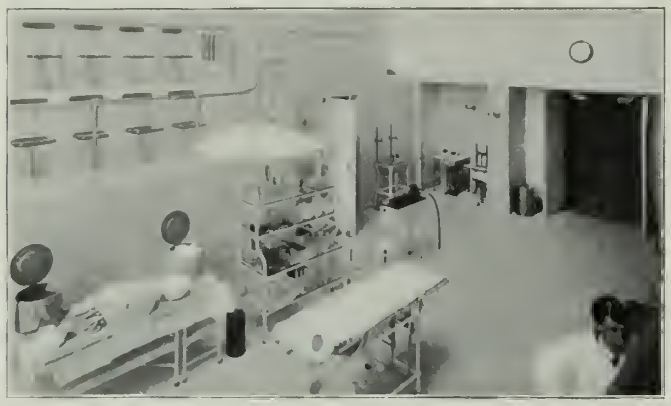
FIRST FLOOR PLAN, OPERATING BUILDING, SAMUEL MERRITT HOSPITAL.

department; and to more clearly demonstrate the needs in planning this department it has seemed wise to publish some plans of rooms in a small operating department showing the furniture in place ready for work. It may be remarked, however, that current practice varies very considerably in this as in all other details.

In connection with this subject the views of the autopsy room and the morgue of the new Mt. Sinai Hospital will be of interest as showing the fittings of these necessary adjuncts in a large hospital.

MORGUE, MT. SINAI HOSPITAL.

In a small hospital the requirements in this direction are very simple and are usually provided in the basement of the operating department or in an adjoining



OPERATING ROOM, MT. SINAI HOSPITAL.

building, and usually consist of one or two rooms arranged with sinks and special drainage from table, with good natural and artificial light, special ventilation, and walls and ceilings enameled white.

AUTOPSY ROOM, MT. SINAI HOSPITAL.

The Town Hall of Copenhagen.

BY JEAN SCHOPFER.

THERE is a celebrated verse of Voltaire praising the great Empress Catherine for the efforts she was making to develop arts and sciences in Russia, — a verse which has become a proverb and would be in its place as a heading to this article:

"To-day, it is from the North that light comes to us!"

FIG. 1. THE TOWN HALL, COPENHAGEN, DENMARK.

I do not believe that there exists in all modern Europe a building made of brick of greater importance than the New Town Hall of Copenhagen, the "Raadhus" work of Mr. Martin Nyrup.

As we know, bricks were used in Europe in the Middle Ages and at the Renaissance for many different types of buildings.

FIG. 2. FROM THE PARK.

One cannot deny, however, that since the triumph of the Neo-classical theories which the Italian Renaissance imposed on the world, new ideas came into favor on what was supposed to be a rich and noble style.

Granite, stone and marble became in the eyes of many the only materials that were suitable for an architect that had returned to antique traditions. One could

FIG. 3. INTERIOR OF COURT.

not imagine in brickwork the five orders expounded by Vitruvio, —colonnades, capitals, friezes could only be constructed in stone or in marble, —and as outside Vitruvio there was no salvation, bricks were disdained by the austere architects who believed they were going to give the world a renewal of antique beauty.

It is useless to say that no theory, especially if it is false, can change the economical conditions of a country! So where there was no stone to be cut or carved, bricks were employed; but when there was a sumptuous monument to be constructed, architects preferred sending for stone or marble at a great price to give it the noble aspect which tradition attached to these expensive materials. This is the reason for which, in modern times, the history of brickwork counts but few great municipal monuments, and this is why the Town Hall of Copenhagen deserves a special mention. (Fig. 1.)

The "Raadhus" is an important and considerable monument by its size and by the care and richness of its construction. It rises grandly as a symbol of the power and of the wealth of a great city and of its ancient privileges. In modern times the town hall has taken the place held during the Middle Ages by the cathedral, where all met, not only for worship, but to discuss subjects of common interest, and which under its lofty stone vaults sheltered the soul of the nation during centuries of faith.

The town hall in its turn becomes the center of the city. It is there that decisions are taken on subjects concerning the community; everywhere in Europe the burghers, the middle classes, have chosen to prove their power and their wealth by building grand and handsome town halls. Every one understands the use of money spent for that purpose, and subscribes it willingly; the custom has prevailed to this time. Copenhagen has built a Town Hall, and placed important sums at the disposal of the architect, Martin Nyrup. The first thing for which Mr. Nyrup is to be praised is for having created something quite original, though still according to the traditions of the North. There is no dearth in France or in Italy of municipal palaces that could serve as models to architects of our day, and that are built according to classical formulas taught in schools. Mr. Nyrup has refused to attempt a reconstruction, under a northern sky, either of the Palace of the Cancelleria de Bramante at Rome or of the Capitol, and we are grateful to him accordingly. It would be unfortunate indeed if there were in the world only one style of architecture, and that different coun-

FIG. 4. INTERIOR OF COURT.

tries should lose their traditions and their chief characteristics.

The work of Mr. Nyrup belongs essentially to his country by the choice of the material employed, which is dark red brick, and by the general spirit of the monument. It is an imposing and solid mass with strongly slanting roofs crowned by monumental chimneys that

FIG. 5. DETAIL OF MAIN ENTRANCE.

stand out in profile against the sky in the newest and most picturesque manner. I do not know of any other monument in which there exists such an uninterrupted line of chimneys right at the top of the roof and extending on the four sides of the building. It is a happy thought that is both ingenious and picturesque, and by its character quite in keeping with an edifice built in a northern climate.

A large square tower, a belfry, carries its bold spire to three hundred and sixty feet above the ground. It is very simple. Above a little loggia is a large clock with

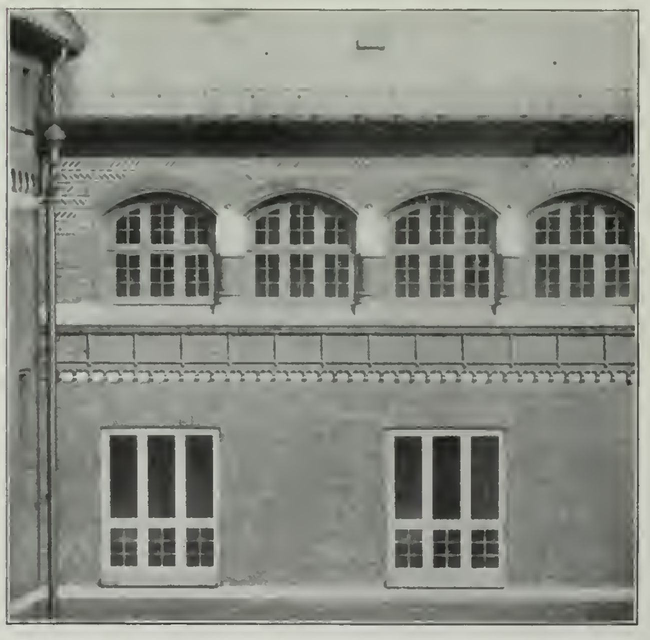


FIG. 7. DETAIL OF FAÇADE.

a gilt face, and the spire is covered with sheets of copper which take a beautiful patina in the open air. Four turrets mark the four angles of junction of the roof, and add a picturesque feature to the summit where, in one angle on the roof, the Scandinavian bear shows its vigorous silhouette. Facing the square, the ground floor and entresol are occupied by the different offices of the town; above them is the story that Italians call "noble," "piano nobile," in which are the reception rooms and the councillors' meeting rooms.

We will examine later the interesting details of this façade; for the moment let us look at the façade fronting the park. (Fig. 2.) The chimneys continue on the ridge of the roof the broken line of their battlements. The roofs themselves are treated differently and receive from place to place sharp gable-ends. On this side one

FIG. 6. DETAIL OF FAÇADE.

sees, even better than on the other façade, the very large dimensions of the building, its general character, and the determination to decorate it in a sober, rational and elegant manner.

The two views of the interior courts (Figs. 3 and 4) show us how Mr. Nyrup intermingles white stone with the red bricks. The basement of the building is of granite; then are placed up to the first floor thin lines of white stone, whose proportions with regard to the layers of brick are excellent. The arches of the windows of the ground floor have keys in white stone that alternate with those of the second story of which the windows are built with a discharging arch in relievo; lastly, in the story that is under the roof, a series of ornamental arcades in brick, on a light ground of white stone, form a decoration special to brickwork, which the architect has employed most skillfully.

The courts of the "Raadhus" show us, also, that one has not tried to establish an absurd symmetry in the design of the façades; on the contrary there, as in the Middle Ages, the different interior parts are distinctly seen and provided for from the exterior, realizing a most picturesque

FIG. 8. DETAIL OF DOORWAY.

dissymmetry. For example, the small turret in the fore part (Fig. 3) has not attempted to have its windows at the same height as the windows of the façades; on the contrary, the windows are not on the same level. Why so? Because this turret was built to contain a staircase, and, far from hiding it, it confesses it ingenuously. As soon as one sees the windows rising one above the other, one understands to what use the turret is put. In the same manner the windows on the two façades of the court are not all alike according to the destination of the rooms, either for offices or council chambers or reception rooms. It seems as though I was quoting a truism; in fact, nothing is more rare in the architecture that the seventeenth century has given us. In Neo-classical architecture, which, notwithstanding all efforts to the contrary, reigns supreme in the schools of art of our day, the principle of symmetry and uniformity of the façades is absolute. One seeks to hide all the different functions under apparent uniformity. Looked at from this point of view the Palace of the Cancelleria de Bramante at Rome, or better still the Palace of Versailles, you will find the confirmation of this rule.

In this palace could one suppose in looking at the exterior that there are inside reception rooms, living rooms, staircases, passages, servants' rooms and dressing rooms? No, all along this interminable façade the same large openings, the same windows, as if in the interior was one immense room or gallery. It is only by this uniformity of design that it seemed possible to attain the majesty of the "noble style." In the Middle Ages it was not so, neither during the first French Renaissance. I will only mention as proof the staircase of the mansion of Jacques Cœur at Bourges, and the celebrated one of the Château de Blois, that has been copied in the United States in the residence of Mr. George Vanderbilt, "Biltmore." Here at least staircases do not hide themselves from view!

It is so in the Town Hall of Copenhagen, where the result of the fitness of the façades to the different services they cover has created an architectural work full of animation, life and picturesqueness, with roofs of different degrees of steepness, towers, turrets, monumental dormer windows, chimneys in full evidence; here corbeling bow windows, there loggias with balconies above an entrance.

We must now look at it in detail; the principal doorway on the square (Fig. 5) is surrounded by a frame of enameled bricks, and the way the bricks are placed form the decoration. Above it is a small balcony, that is almost superfluous, on each side of which are two statues in bronze, and above this, robed in his sacerdotal garments, stands forth in glory the gilt statue of the Bishop Absalon, founder of the town. The way in which the arches above the windows are treated is worthy of remark, then the small ornamental arcades that mark the last

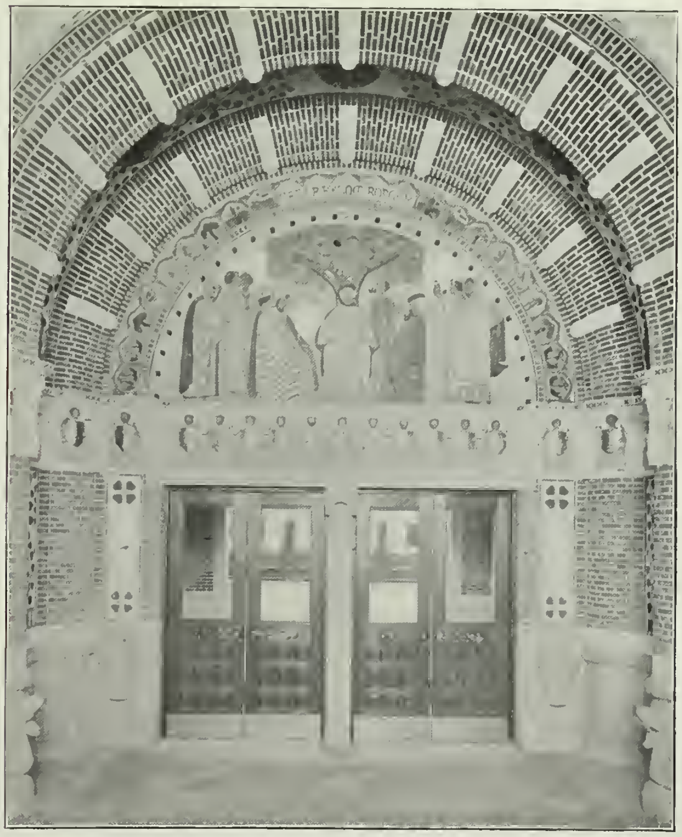


FIG. 9. DETAIL OF INTERIOR DOORWAY.

story, and lastly, under the roof, the frieze of dark bricks in design upon the lighter ones placed in zigzag. Everywhere, as is plainly seen, the decoration is taken from the material itself; it belongs to brickwork; it is one with the edifice; it is not put on as a decoration; and that is an essential quality of all good architecture. Figures 6 and 7 show in detail, on the other façades of the building, the application of the same excellent principles, and all architects would derive benefit from the study of it.

Figure 8 is an example of a series of doors which, by the way they are designed, constructed and decorated, are worthy of attention.

Such is the exterior of this monument. It is serious and sober, as it should be, according to the northern climate in which it is built, but we have seen that this soberness of construction does not exclude a style of decoration in happy harmony with the lines of the edifice and with the material employed.

FIG. 10. DETAIL OF INTERIOR DOORWAY.

In the interior we have, on the contrary, a brighter style of decoration, gayer and lighter, and to complete which the architect and his helpers have often had recourse to enameled bricks and faience. The folding doors at the entrance (Fig. 9) are a sumptuous composition: a basrelief in terra-cotta by Miss Agnes Slott-Muller represents in their antique costumes the magistrates who were in ancient times the town councillors, and forms a link between the present and the bygone past. Above this basrelief, saints and bishop, seated under small arches, are the protectors of Copenhagen. The whole thing is of great richness in many colors, set in the frame of the archivaults of brick and white stone.

Another door in a semicircular arch in the interior of the hall is covered with enameled plates (Fig 10) made by the famous ceramist, glory of Danish ceramic, Emile Koeller! The design, which is difficult to understand in our plate, represents flying sea gulls. To be noted above are very delicate romanesque arches, supported by small columns. This door leads into a large glazed hall shown in Figure 11. It is large enough to shelter a crowd of people and is paved with a brilliant mosaic ; a balcony runs round it, and above opens a very large gallery with semicircular arches that rest on small colums of granite. The design of the arches in brick and white stone, their way of leaning on the small columns, the composition of the rose in the tympan, show with what taste, what understanding of color, what a delicate feeling of decoration the smallest details of the monument have been conceived.

The readers of The Brickbuilder are now able to see in what way the interior decoration of the Town Hall of Copenhagen has been understood. I am certain that it will awaken in them some instructive reflections. We all know how the interior decoration of a large monument is generally understood. The great Washington Library, opened a few years ago, or the Hotel de Ville of Paris, shows it to us in the clearest manner. I name these two monuments, I could mention many others. Marble and gilding shine with unrivaled brilliancy in these edifices; the ceilings, the tympans, the panels above the doors are cumbered with allegorical figures in stucco, in the richest of frames; garlands of roses, nude children at play, reclining figures of women, grotesque masks, etc., etc ; a profusion of carvings, heart-shaped festoons, egged moldings, palm ornaments, rounded or carved pediments, heavy brackets and always and everywhere the inevitable gilding, unmerciful and crushing. Nothing can be more monotonous, in its richness, than the luxurious decoration of modern palaces. It is worthy of remark that it is always alike, it has no nationality, and that we find it the same, producing the same *ennui* at New York, Paris or Berlin. Mr. Nyrup at Copenhagen had the courage not to follow the fashion; he was not fascinated by the glittering tinsel of modern decoration. He had conceived an original and national monument; and he held fast and was true to himself in the interior decoration of the Town Hall.

Such is the work of Mr. Nyrup. As I said at the beginning, the Town Hall of Copenhagen, opened in 1903, is one of the most considerable monuments of modern times, and most likely the most important of the edifices built in brick. For this reason it was worthy of attracting and retaining the attention of the readers of The Brickbuilder. As we have seen, it is not only the cause of brickbuilding that this monument serves to illustrate and defend, but in general the wider cause of all good architecture.

FIG. 11. A HALL.

Examples of the Greek Revival Period in Alabama.

BY J. R. KENNEDY, JR.

TUSCALOOSA.

IN the great wilderness of western Alabama, at the falls of that charming little river, the Black Warrior, the town of Tuscaloosa sprang almost mushroom-like into existence.

Founded and laid out into streets in 1819, it grew rapidly, and in 1826 was chosen as the capital city to supersede Cahawba. In 1828 it was chosen as the site for the State University.

These two influences — the gatherings of prominent men of the state, men of wealth and refinement and chiefly of the planter type, together with the faculty and student body of the University — undoubtedly gave to Tuscaloosa its air of refinement and culture which it holds to this day, — culture and refinement not only in a social meaning, but in literature and architecture. The revival of Greek architecture came along in the early part of the eighteenth century with the revival of Greek literature. Thus we find here the Greek architecture on every hand. Every house has its Greek temple portico, sometimes small, sometimes immense, sometimes built to the largest brick or stucco mansion and sometimes to the smallest one-story cottage, but invariably we find the white-pillared portico to the *ante bellum* house. As to the order used, we find them of all types, Doric, Ionic and Corinthian.

The most important of the old buildings in Tuscaloosa to-day is the State Capitol, built in 1826 at a cost of $250,000. It served as the Capitol building until 1846, when Montgomery superseded Tuscaloosa as the capital city. Since then the grand old pile has been almost forgotten until recent years and now is used as a college for girls. The architect was a Mr. Nichols, an Englishman brought here from Philadelphia by the state to do this work and the buildings of the State University.

It is situated at the end of Broad Street, a sleepy old thoroughfare, on a commanding site, overlooking the Warrior River and the suburb of Northport. In plan the building is a Greek cross, with an excellent dome at the intersection of the arms. The lantern of the dome is eighty-five feet above the first floor, the brickwork of the dome rising to the height of the entablature of the Corinthian order. From this line upward the dome is a wooden shell. The decorative work, as in the rest of the building, is white or cream-tinted stucco. The order used in the dome is of the Corinthian, of the Choragic Monument of Lysicrates type. The shafts of the pilasters are buff colored and the capitals bronze.

THE STATE CAPITOL, TUSCALOOSA. (1826.)

The Senate Chamber, of goodly proportions, is now used as the "Concert Hall" of the girls' school. These old walls, which once thundered with the fiery eloquence of Clement C. Clay, William R. King and William L. Yancey, have descended to the realm of the *sonata* of the novice at the pianoforte, or to the thesis of the girl graduate.

In the House of Representatives, directly opposite the Senate Chamber, a circular row of Corinthian columns supports the floor above. The columns, both capitals and shafts, are really good and the idea not a bad one.

THE PRESIDENT'S MANSION, UNIVERSITY OF ALABAMA. (1828.)

THE BATTLE HOUSE, TUSCALOOSA. (1840.)

The brick used in the exterior walls is of a dark red, native burned, and laid up in white joints. The stonework, which is good, is a light-colored, rough-grained sandstone, quarried only a few miles from Tuscaloosa.

The south portico (the north portico is a duplicate of the south) is of the Greek Doric order from the Parthenon, except that the lower third of the shaft is unfluted.

The "Cochrane Place" — what a scene of hospitality this name must bring to the mind of the old inhabitant, who perchance was a guest there in the old days! But now what a change! Its hospitality is of the past. It is used for a negro school. It was built by Dr. William Cochrane in 1840. The shafts of the Corinthian columns are brick, the fluting cut *in situ*, the large capitals being of cast iron. Each column is said to have cost the owner six hundred dollars. The door knobs and escutcheons were until recently of sterling silver. Now the grand old place is much dilapidated; the quaint evergreen hedges of the front garden have been cut down, the many rose bushes and violet beds have been trampled upon, the massive old mahogany furniture is gone. Still the memory of its old times seems to hang around the place; one feels somewhat awed when he looks upon what is and thinks of what was.

THE CHRISTIAN HOUSE, NEAR TUSCALOOSA. (1835–38.)

"COCHRAN PLACE," TUSCALOOSA. (ABOUT 1839.)

The Battle house on Greensboro Street is one of the most charming of the old houses of Tuscaloosa. Situated in the center of a block, it is surrounded by a well-kept old-fashioned garden, — a garden cut up by little walks of white sand, teeming with rose bushes and violet beds. The outer edge of the garden is formed by a high evergreen hedge, thus securing privacy to its shaded depths. The brickwork of the house has been painted many times; originally it was red and pointed white. The large white wooden columns are of good proportion. It was built by Dr. Alfred Battle in 1840; and while it has been kept in excellent repair, no restoration has been done to the house proper.

THE POST OFFICE AND HOSPITAL, UNIVERSITY OF ALABAMA. (1831.)

Besides the State Capitol, Nichols was the architect for the buildings of the University of Alabama, the construction of which was begun in 1828 and finished about 1831. Most of the buildings of the University proper were destroyed by fire during the Civil War; two of them, however, escaped the conflagration. These two were the President's Mansion, and the Post Office and Hospital, now the residence of the librarian of the University. The entablature of the President's Mansion is not of Greek origin, as most of them of that period were, and particularly so of the work of the architect Nichols; this entablature is an almost exact copy of that in the Basilica at Vicenza by Palladio.

Considering these old houses of Tuscaloosa as a whole, they are much better in detail, more dignified in design, than those found elsewhere in the South, with the exception of Savannah, Charleston and surrounding country. We find here better copies of the Greek detail and fewer architectural aberrations. As is well known, the classic revival in the South was not bookishly pure as in the East. The old builders here took greater liberties with the accepted authorities of the style than did those in the East.

The plans of these houses were all on about the same order, a wide hall down the center and rooms on either side. The kitchen was usually in an outbuilding, a few yards from the "big house." This was done to keep a multitude of servants from tramping through the halls, and to eliminate the odors of the kitchen as much as possible.

Outside the few important buildings, such as the old Capitol and University, the houses were built without architects, the builder himself being the designer and superintendent. As has been said before, men of that time were men of leisure, culture and education; were fond of Greek literature and quite naturally of Greek architecture. Thus with a goodly number of slaves — and many of the slaves were fair mechanics — they were able to build for themselves houses after their own ideals — houses of great proportions, high ceilings, large and many windows, thick walls and immense rooms; a house that is, above all things, in perfect harmony with the climate.

THE Boston Board of Appeals, which is the body empowered to decide matters of controversy between owners or architects and the building department, has recently made an interesting decision as to what constitutes a building. The question was brought before the board by Spofford & Eastman, architects, on an appeal from the building commissioner's refusal to permit the erection of a block 228 feet long and 56 feet deep, divided into nine separate and individual sections, three stories high and covered with a flat roof. Each section had six separate apartments, two on each floor. The basement in length and width was entirely open, affording free communication to all parts of it. The architects claimed that this structure, with its four external walls, was a single house and not a block, and that therefore the section of the building law with regard to brick party walls did not apply. This contention was sustained by the Board of Appeals, who ordered the permit for the structure as a single building to be issued.

Architects' Specifications According to the Practice in the City of New York. II.

BY JOHN CASSAN WAIT.

THE practice which is becoming quite prevalent in New York among architects is to require the contractor to make the surveys and all measurements of the work and to hold him responsible for any error that may arise in the erection of a building. This has also been supplemented by a requirement that the contractor shall make and provide all the working and shop drawings and models required for the full performance and completion of the work. This, it is assumed, is the outgrowth of a practice among the iron mill owners who, having certain machinery adapted to certain classes of work, prefer to join the members of a roof or a superstructure by processes of their own, and they therefore universally prefer to work out such details according to their own methods and the equipment which they have, than to leave it to architects who are less informed in the matter and less able to design structural details.

It is common practice with steam heating, electrical and plumbing concerns to provide architects with their own plans for heating, plumbing and lighting buildings. Indeed, it has become almost the rule in some places to invoke the services of large steam heating, plumbing and electric lighting companies to furnish architects with complete plans and specifications for plants required for buildings. Such companies keep a large corps of engineering experts for this work. It is a great accommodation to some architects, enables them to earn their fees without much labor or knowledge, and it is also a benefit to the company or contractor who specifies and designates his own apparatus, connections, couplings, etc. It, however, does not conduce always to healthy competition in public work where contracts are expected to be awarded to the lowest bidder, as it gives to favored contractors an advantage in having their own materials specified and their own methods and processes described. This practice is so prevalent that professional mechanical engineers who make a specialty of steam heating, ventilating, plumbing and electric lighting have been deprived of a substantial part of their professional practice; and when a clause in a contract for architects' services prohibited architects from requesting or requiring contractors and subcontractors to prepare and furnish plans and specifications for heating, plumbing or electrical plants to architects, it raised opposition upon the part of the architectural profession, leading to the appointment of a committee who petitioned that the same clause forbidding such practice should be omitted from contracts for their services. This only illustrates the tenacity with which professional men adhere to practices which must be acknowledged to be vicious and in many instances against the interests of the client or owner, where the practice is to the pecuniary benefit of the professional man. A practice which puts the architect under obligations to the contractor or a subcontractor, and by which the architect materially profits at the expense of the contractor or subcontractor, is a misfortune to the owner and at times, at least, to the architect, who may thereafter be required to assert himself against the interests of the contractor. How can an architect accept plans and drawings of a complete system of heating, lighting or ventilating for which he received his regular commission, as if he himself had designed and furnished the same, and thereafter conduct the work, if it need be, against the interests of the contractor and for the protection of the owner? The architect holds a fiduciary relation to the owner, and in such a capacity he should maintain such relations with the contractor as will enable him at all times to fulfill all his obligations to the owner. Does he do that if he accepts material profit and advantage at the hands of the contractor?

Architects are very much inclined to exact from contractors so-called "guaranties" as to the workmanlike character and superiority of the materials and work. This word "guaranty" is a misnomer; the proper word is "warranty." Architects usually do not embody the warranty in the contract or specifications, but provide that the contractor shall furnish "a written guaranty" (warranty) to maintain secure, tight and in perfect condition the work, roof or other structure built, for a period of from one to five years. The criticism of this practice is that it leaves to the owner or to the architect the duty and obligation of securing from the contractor the said written warranty, which the contractor may not freely give or may insist upon terms suited to his work and his interests. A much better practice is to embody the warranty in the contract or specifications itself, and to say that the contractor shall and does hereby warranty that the work shall remain in good repair, water tight, etc.

It is a mistaken notion that an architect may by his specifications require that work shall be done in accordance with his plans and specifications, naming certain materials and the performance of certain work to make waterproof or water tight a roof or cellar, with a guaranty of the roof or cellar for five years, it being the popular impression that such a contract requires the contractor to produce and deliver a waterproof structure.

It has been repeatedly held by the courts that such a specification and warranty do not require the contractor to do anything except to furnish the materials required to build according to the plans and specifications, and that the architect or owner assumes the responsibility for the structure's being water tight or waterproof. It has been held that a specification that all the work shall be done in good, workmanlike manner and of suitable material, and each part shall be adequate in design, strength, capacity and workmanship for the purposes for which it is intended, and that the work shall be examined by the superintendent and finally accepted if satisfactory, was not a warranty that the plant as a whole should be adequate in design, strength, capacity and workmanship for the purposes for which it was intended.

These decisions are based upon the legal principle that a warranty will not be implied, and that it must be so explicit as to leave no doubt in the mind of the court that a warranty was intended. The same criticisms will apply to cases where an architect submits plans and specifications and specifies certain materials to secure certain results, and then adds to his specification that the contractor shall give a written guaranty or does hereby warranty that the said structure shall be safe, sound and secure, and shall support . . . pounds per square foot or per lineal foot.

It is needless to say that when an architect requires a contractor to do work in a certain manner, of certain materials, dimensions and weight, and according to a plan furnished, he cannot hold the contractor responsible for the safety of the structure or for the sufficiency of his plans if it fall, unless he be given freedom to change, modify and adopt his own views and ideas, the result of his training and experience. However unreasonable it may look when thus stated clearly, it is nevertheless a fact that architects of high professional standing have done and do these very things, as a close study of their specifications will prove.

These faults and weaknesses in architectural specifications do not often come before the profession at large, because architectural specifications are usually typewritten in triplicate or quintuplicate, and are not distributed to the profession or to the public, or, so far as the author knows, is it a practice of the architectural leagues and societies to publish and open to discussion the practices and preferences of architects as outlined in their specifications, as is done and is the practice in the engineering societies, civil, mechanical and electrical. The author is well satisfied that if the architectural societies would give some time to the publication and open discussion of their specifications and of the best practices in the art of building, it would result in much good to the profession at large as well as to individual members. If architects were required to support their professional practice and their selection and adoption of certain materials and styles of construction before fellow members of their profession, as in open court, it is confidently believed that they would profit thereby, and that the specifications of architects would not be so much at variance nor so subject to adverse criticism. Attendance at some of the meetings of the engineering societies, and listening to the discussions upon papers presented at those societies, would be salutary experience to any architect, and would rouse him to an appreciation of the extreme care with which engineering specifications are prepared and of the skill with which members of that profession protect themselves by experiments, tests and watchful experience, and by which they justify the specification and use of certain practices, materials and apparatus.

A feature of specifications from the offices of large firms or very busy architects is a clause delegating to representatives, clerk of the works, inspectors and assistants the duties and powers of the architect. This is an extremely bad practice and frequently leads to litigation and to unsatisfactory results, both to the owner and the contractor. Representatives and superintendents of architects frequently report and describe circumstances and conditions in their own way and in their own colors to the architect, who, wishing of course to support his own representative or employee, makes decisions which he afterwards finds difficult to sustain, especially in court, where his powers are curtailed and he has not the determination of the whole question. That this often happens has come to the observation of the writer, and with architects of high standing in the profession; and contracts should not be written delegating important duties to assistants who have neither the training nor the experience of the architect himself, and by whose judgment the contractor never intended to be bound or concluded. Of course the author understands as well as anybody that an architect cannot attend to all the details of the many pieces of important work that he may have in hand, but in the contemplation of the law he does individually pass upon such work when it is measured, examined and reported to him, and every contractor can reasonably insist that matters of importance should receive the personal attention and determination of the architect. If it were otherwise the architect could select men of the most inferior accomplishments and training to represent him upon the work, and neither the contractor nor the owner would have any redress, and it is within the reasonable construction of the contract that when the owner and contractor agree to abide by the decision of an architect whose name and experience are known to both, as is usually the case, they should have the honest, free and unbiased judgment of that architect, and the architect should provide and furnish competent, trained, skillful and experienced representatives or superintendents to measure, examine and report to the architect the actual, uncolored conditions that prevailed at the work.

A recent decision in the United States Supreme Court has held that a contractor is entitled to the judgment of the particular officer designated to pass upon and determine questions in connection with the work, and that the contractor is not bound by the judgment of another substituted.

It is customary to define and describe plans and specifications in a contract and to make them a component part of the contract, and it is also a good practice to describe in the specifications the contract to which they belong by the parties and the date thereof, and to also identify the plans by which the work is to be done and by which the contractor submitted his bid or proposal.

A good practice recently adopted in the contracts of the city of New York is to make one covenant or agreement clause at the beginning of the contract, making the obligation bilateral or mutual, and in consideration of the mutual promises or covenants, and then to omit any further clauses embodying a covenant or a consideration. This practice avoids the use of introductory clauses for each paragraph of the contract or specification in the form of "And it is hereby further undertaken, promised, agreed and covenanted by and between the parties hereto that." This is a great saving in reading matter and in printers' bills in any long contract. The same policy has been followed in regard to the duties and powers of the architect or engineer, it being the practice to provide in one clause in the contract that the architect shall have the determination of all questions in regard to the work and materials or of the meaning of the plans and specifications, and shall determine every question arising in regard to the work, and that all work and materials must be to the satisfaction of the architect. This being embodied in the contract proper saves the constant repetition in the specifications and the repeated application to every kind of work and materials of the clause "whose decision shall be final and conclusive," or of the phrase "to the architect's satisfaction."

Much might be said in general criticism of the tendency of architects to reserve to themselves almost unlimited powers in the determination of questions regarding the building or structure, and the least experienced seems most inclined to reserve to himself the exclusive power to arbitrarily and conclusively determine everything, as if the experience of builders went for nothing. Frequently such architects find it necessary to call upon the builders to help them out before the structure is completed, and to fall back upon old methods and practices and to gladly abandon new and much lauded processes, materials and theories. Architects and contractors would both derive much benefit if they would mutually aid one another, and a great step toward a mutual understanding between them will be made when architects cease to distrust builders and regard them as untrustworthy. Some architects show this distrust in every page of their specifications, and in such cases is it any wonder that the builder feels under suspicion and looks out for himself? A criminal is given the benefit of the doubt, and architects should not deal with their bidders and contractors as if convicted of bad practices before they start their work.

Without going into further detail it may be gathered that it is the author's feeling that architects' specifications as employed in the city of New York need revision in many respects, and that something more than individual effort is needed to obtain practical results. Committees should be appointed, as is the practice in the engineering societies, to determine the best results in the use and manipulation of materials, such as hydraulic cements and Keene's cements; in the application of the various patent plasters; in the adoption of the several floor and partition systems and the various roofing processes; and especially the practices to be adopted in hospital and asylum structures, where no angles are permitted, but everything is rounded or curved. As it is now, no standard of practice exists, and every architect carries out his own methods, based upon his individual experience, which may be much or little. Architects need the assistance of one another and should profit by each other's experiences, unhappy as well as successful, which they cannot do unless they are communicated one to another.

(*Concluded.*)

BRICKS COMPULSORY IN NORWAY.

A BILL is being, if it has not already been, laid by the Norwegian government before the Storthing making it compulsory for brick to be used for buildings throughout Norway. Hitherto the municipality boards have had the power of deciding whether brick or wood is to be used. The recent conflagration at Aalesund, together with an alarming number of rather serious fires in several parts of the country, has brought about a revulsion against houses constructed of timber, which naturally prevail in a country like Norway, where wood is so plentiful. The news of the new bill has been received with general satisfaction. — *The British Brickbuilder.*

Two Expert Reports on the Baltimore Fire.

ARCHITECTS and engineers have awaited with a great deal of interest reports from two prominent bodies who were known to be making most careful investigations of the Baltimore fire. These were the Committee on Fire-Resistive Construction of the National Fire Protection Association, which is an organization of fire insurance underwriters and allied interests, with headquarters at Chicago, and the Insurance Engineering Experiment Station of Boston, which is directed by Edward Atkinson, with Professor Charles L. Norton in charge, and which is supervised by the Board of Directors of the Boston Manufacturers Mutual Fire Insurance Company. The report of the latter is characterized by much of the dogmatic element which has made some experts question so strenuously the conclusions enunciated. Mr. Atkinson, in presenting Professor Norton's report, sweeps pretty near everything out of existence, declares that terra-cotta has failed, that he knew it would fail, and was able to predict just where the fault was, and why it was so thoroughly bad; on the other hand, claiming that concrete is everything that is good and nothing that is bad, with a conclusion that as yet no fireproof building has been constructed for general purposes, while admitting that a practically fireproof office building may be constructed and so occupied as to be proof against fire generated within or even against a conflagration without. When it comes to presentation of facts, Professor Norton seems strangely at variance with the majority of other observers. For instance, he makes the statement that while in general the steel frames of the fireproof buildings were not injured more than ten per cent and in some cases by much less, the loss of terra-cotta beam and post covering was at least seventy-five per cent. Nowhere else have we seen any official statements of damage to terra-cotta floors amounting to even forty per cent, while in the great majority of buildings the damage to terra-cotta fireproofing was but trivial. And he concludes that the general condition of fireproof building is such as to indicate to his mind the unfitness of terra-cotta for beam and post covering and floor construction when compared with concrete or brickwork. One cannot read his report without regret that so much careful thought, time and study should have been expended in endeavoring to establish what were apparently preconceived opinions at the expense of ignoring what actually occurred, and to our mind, admitting the conscientious work which we know Professor Norton has put into this report, and his perfect willingness to seek for the truth, we feel that his conclusions are so far from those of the majority of engineers who have studied the Baltimore fire that the report of the Engineering Experiment Station is practically worthless as a study.

On the other hand, the report of the National Fire Protection Association is characterized by the utmost care in every respect, there is not the slightest evidence of personal bias one way or the other, and the whole evinces an earnest attempt on the part of the committee to state the truth, the whole truth and nothing but the truth, and to put it in such way that real lessons can be drawn therefrom. Their conclusions were not unexpected. The defects of fireproofing which the committee found were those which have been repeatedly criticised in nearly every engineering and architectural paper. It is admitted freely that no one material passed unscathed through the Baltimore fire. It was a crucial test in every respect, and the fact that the proportion of damage to concrete work is less than that to burnt clay is logically explained by the fact that in none of the severely tested buildings was there an exhaustive test of the former material. Ordinary red brick laid properly in cement mortar was unquestionably the least affected of any material. It offered nothing for the fire to attack, and it would have been a great surprise had it been affected to any material extent. Where tile proved defective the cause was never found in the material, but entirely in the details of construction, and especially in the very crude methods of building wood, either as furring or as finish, into the material which was intended to serve no purpose but protection for the framing. Tile floor arches suffered more from their thinness than any other material, and one cannot read through this report without appreciating that the Baltimore fire showed that burnt clay is beyond question the nearest approach to a perfect fire resistant now at our disposal, though it is too often misused by those who put it in place.

It is a source of personal gratification to this journal to compare this report with the opinions of our experts in our special Baltimore fire number. The very names of the gentlemen who filled these columns in that issue were a guaranty of at least an honest expression of opinion, and while we have felt it our province to present the best possibilities of burnt clay rather than to simply enumerate the extent to which it could be damaged, we would recognize throughout the good points of other materials. That is precisely the attitude taken by the National Fire Protection Association, and their report is a very commendable one and constitutes a pamphlet which must find a place in the library of every engineer.

COMPARATIVE FIREPROOFING METHODS.

MR. EDWIN O. TORBOHM, inspector in Greater New York for the Home Insurance Company, has prepared a standard by which a grading of buildings as fire risks may be effected. It is expected of the modern fireproof construction that the damage to the structure itself shall be small and the loss or damage to the various contents in direct proportion to the quality of the fireproofing separating the several rooms and floors one from another. Beginning with the structural frame, he ranks cast iron first, wrought iron or steel second and built-up steel third in relative desirability. This classification may be correct simply from a fireproofing standpoint, but it is certainly wofully behind times in every other respect, and in fact the experience of several recent catastrophes has shown that cast iron is the most unsafe material which can be used for a skeleton frame, notwithstanding its slightly greater resistance to heat and rust. Under the heading of column protection, he mentions as the order of desirability:

(1) Terra-cotta; porous or semi-porous, three to four inches thick, or the same two inches thick.

(2) Solid concrete; enclosing thoroughly all surfaces of the column, concrete and metal in contact, or encircling the column with a wall of two inches or more of concrete on or between sheets of metal lathing.

(3) Plaster; solid or hollow plaster and metal lathe enclosure not less than four inches in total thickness, or same not less than three inches thick, or plaster or composition blocks two to three inches thick, or close finish plastering.

For the protection of girders and beams he indicates the following order of preference:

(1) Terra-cotta skews or web blocks and soffit tile.

(2) Concrete arch or plate extension in concrete systems.

(3) Plastering on wire mesh or expanded metal variously spaced from the beams or girders.

(4) Close finish plastering.

The neglect of adequate column, girder and beam fireproofing is the most serious in effects and the one least noticed in the finished structure. Plaster, however liberal in its application, is of unknown and uncertain value. While it will stand some heat it will stand very little water, and after once being exposed to fire its usefulness is generally ruined.

For floor arches the specification includes in order of excellence:

(1) Hard-burned brick — by which is meant the old-fashioned solid brick arch; not the modern combination of brick with light steel T bars and cinder concrete.

(2) Porous terra-cotta; end construction or side construction.

(3) Dense or hard-burned terra-cotta.

(4) Reinforced Portland cement concrete; gravel or crushed stone concrete (barring limestones) or cinder concrete. Approved systems only, such as Roebling, Columbian, Expanded Metal Company's, etc.

(5) Calcined plaster; cast blocks or made-up systems, such as Metropolitan.

Burnt clay is also classed first in order of preference for partition work, the various materials for which are classified as follows:

(1) Brick or terra-cotta not less than four inches thick; porous preferred to dense or hard tile.

(2) Brick or terra-cotta not less than three inches thick.

(3) Terra-cotta two inches thick, or plaster or composition blocks, or expanded metal with concrete or plaster filling and finish at least three inches thick.

(4) Plaster less than three inches thick.

Some of his remarks in regard to the construction of terra-cotta partitions are of interest:

"All partitions," he declares, "should be built up from the permanent structure and not from the wooden flooring or on wood sleepers, as so often found. Wood studding and wooden framing for doors and windows are not approved. Metal-clad strips bolted to protected angle or channel iron, extending the entire distance from floor to ceiling where properly fastened, present an easy and safer method. Partition walls above large openings should be arched or equally well supported by non-combustible material; never by wood. Terra-cotta blocks or tiles, even when not in excess of two inches in thickness, when properly supported by non-combustible reinforcement, may be considered as superior to most of the plaster or composition blocks used in partition work. A double wall of plastered wire lathe or expanded metal framed in channel or angle iron and four inches or more in thickness, filled or unfilled, is acceptable for small dummy enclosures or similar moderate area, where not subject to mechanical injury, but should not be relied upon for large partitions. Terra-cotta and composition blocks, although of adequate thickness, are frequently set to form large partitions without reinforcement or satisfactory bracing. This is particularly noticeable in corridor partitions. When so arranged they must be considered defective. Wooden studding as bracing for fireproof blocks or other forms of construction in partitions is not satisfactory, as the thin plastering will not prove a sufficient protection to the wood enclosed."

He also presents an interesting summary of the relative undesirability from the underwriter's point of view in risks assumed on buildings or their contents:

(1) Unprotected iron or steel.

(2) Hall or interior partitions containing wooden sash or doors.

(3) Well holes or light shafts.

(4) Continuous hollow spaces under wooden flooring.

(5) Wall or ceiling finish, or wainscoting of wood.

(6) Wooden decks or galleries; wooden partitions or shelving in excessive quantity.

(7) Stone trim or ashlar, especially on exposed sides. Also unprotected or poorly protected iron or steel in exterior walls.

(8) Stocks generally above sixth floor, except in the very best risks.

EXPERT ADVICE.

EXPERT advice prepared under the immediate direction of the interested parties has always to be taken with a very large latitude. The manufacturers of reinforced steel concrete construction have made a great deal of capital out of the manner in which the building occupied by the United States Fidelity and Guaranty Company in Baltimore appears to have stood the action of the flames. This structure was of ferro-concrete floor construction throughout, and has been previously described in these pages. The Ferro Concrete Company made an offer to restore all the work in this building for the sum of $650, and this offer was duly heralded as a measure of the extent to which the building has endured the test. We have, however, recently received word from Baltimore that the entire building has been condemned, and is to be taken down and rebuilt, the concrete, upon closer examination, showing such defects that it was not considered wise to retain it at all. This shows the value of some expert advice, even when backed up by a bid.

Again, in some of the official reports on the condition of the Union Trust Building, Baltimore, it has been stated that the damage to the terra-cotta floor arches amounted to forty per cent. As against this we have received word that most careful tests have been made of the entire floor construction, one section being loaded with a weight equivalent to seven hundred pounds per square foot, while a moving load of two hundred and fifty pounds, or more than three times the required live load, was applied to all of the floors throughout, with a result that the floor construction has been passed as being in perfectly usable condition.

Selected Miscellany

METHODS AND COST OF SODDING.*

THE best sod is generally composed of blue grass and red top, with some white clover, and is found in its greatest perfection in upland pastures fully exposed to the sun, which have been grazed over for years. The constant trampling and cropping seem to consolidate the roots and exterminate the weeds, and sod cut from such

FAIENCE TILE USED IN NEW YORK SUBWAY.
Grueby Faience Company, Makers.

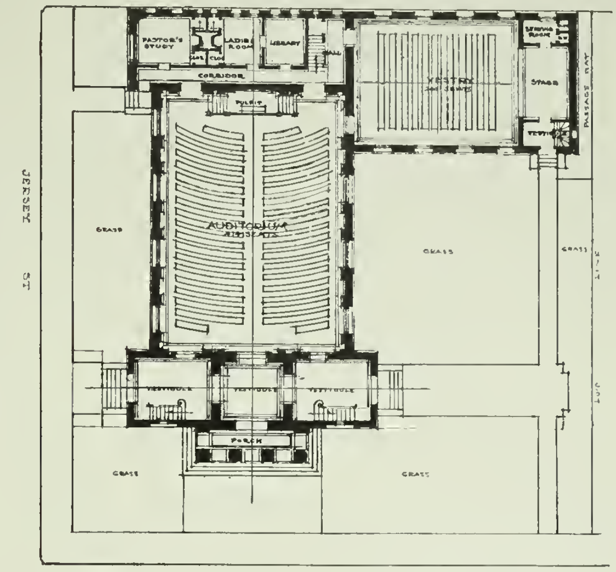
a place "rolls like Brussels carpet." Wood sod, or even that cut under isolated trees, is apt to be patchy and rotten.

The tools of the sod cutter are few and simple, and any ordinarily intelligent laborer can cut good sod with proper instruction and a few days' practice. The best sod shovel is the one called a "molder's shovel," a flat steel shovel, ten inches wide and twelve inches long.

TYMPANUM FOR CHURCH ENTRANCE.
Edward Stotz, Architect.
Northwestern Terra-Cotta Company, Makers.

These are thick on the edge when bought, and should be drawn out cold on an anvil, sharpened on a grindstone, and kept sharp by the frequent use of a flat, smooth file.

In beginning operations the sod cutter marks off a



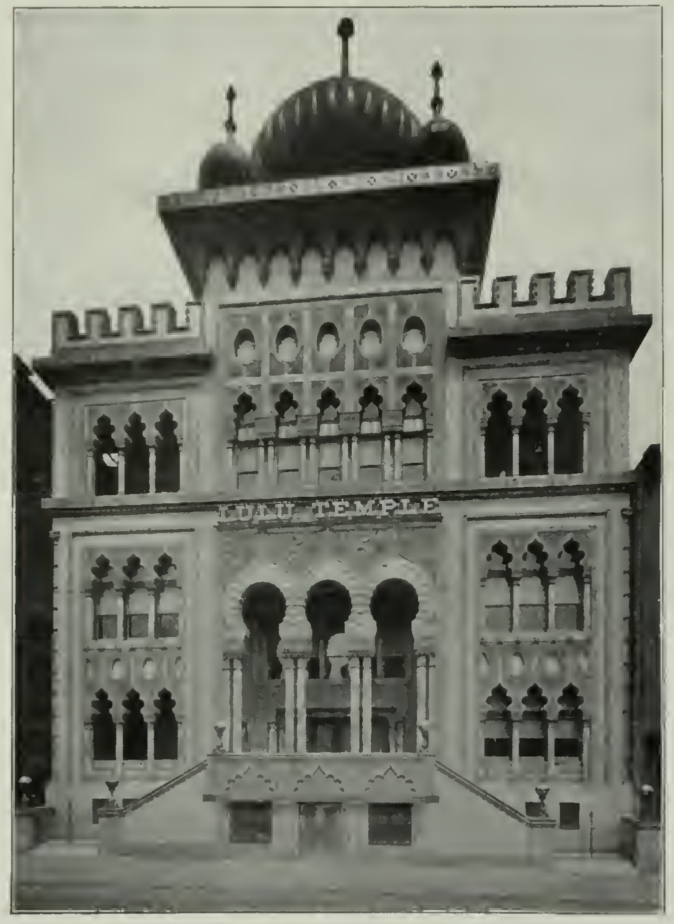
PLAN, CHURCH OF THE DISCIPLES, BOSTON.
Purdon & Little, Architects.

line with the edge of his shovel, six to fifteen feet long, and another one the same length, parallel to it, at a distance of about twelve or fourteen inches. The lines are cut through the sod with the shovel held at an angle, and not perpendicularly, so that the roll is beveled at the edges, and when the sods are laid the edges slightly overlap. This makes a better joint and keeps water from working under the sod and washing the bank. The lines being marked, the sod cutter holds his shovel nearly flat and, thrusting it under the sod, cuts the roll loose from the side, the width of the roll being regulated largely by the length of the shovel. Then he makes a square cut at the end and rolls the sod up, pulling out any weeds he encounters and cutting the roll off when it reaches a convenient size. Such a roll is generally called a yard, and is supposed to be a foot wide and nine feet long, but the usual size is about fourteen inches and seven to eight feet

DETAIL OF SUBWAY STATION, NEW YORK CITY.
Heins & La Farge, Architects.

* Extract from a paper by Arthur Hay, Engineer of Parks and Boulevards, Springfield, Ill., published in *Engineering News*.

long, or slightly less than a yard. (One hundred of these rolls is a good wagon load, eighty being about the usual load.) The sod cutter, now having an opening, continues



LULU TEMPLE, PHILADELPHIA, PA.
Milligan & Webber, Architects.
Built largely of Kittanning brick furnished by O. W. Ketcham, Philadelphia Agent.

his cutting, taking care always to bevel his rolls in the same direction and to roll from the same end relative to the bevel, so that the rolls when laid will overlap properly.

DETAIL OF CORNICE, INGALLS BUILDING, CINCINNATI.
Elzner & Anderson, Architects.
Terra-cotta made by Northwestern Terra-Cotta Co.
(Not American Terra-Cotta Co., as previously stated.)

Sod should be cut as thin as possible, say one and one-half to two inches thick. This has several advantages: the sod rolls better and more can be carried in a wagon load, but chiefly such sod laid on a bank quickly sends out fibrous roots from the cleanly severed ends of the old ones and takes such a hold that in a few weeks it is an integral part of the bank and can neither be pulled nor washed loose. Sod cut thick, with the idea of saving all the roots, on the contrary never unites with the bank, and in some heavy rain, perhaps months later, the water works under it and the whole mass slides to ruin. Cutting the sod thin has the further advantage, if appearances are a consideration, that the roots remaining in the ground sprout again; and if the season is favorable and a little grass seed is sown, the unsightly scar disappears in a few weeks under a fresh growth of grass.

DETAIL BY CHARLES BICKEL, ARCHITECT.
New York Architectural Terra-Cotta Company, Makers.

The bank should be graded and smoothed preparatory to the laying of the sod, and if the soil is very hard and sunbaked, as the banks of a cut in clay soil are apt to be, it should be sprinkled and the surface loosened with a garden rake. The sod is unloaded at the top of the bank and the rolls laid beginning at the top and unrolling down hill, taking care to have the bevels overlap as previously explained. If a road or gutter is at the bottom of the bank, as is frequently the case, it is a good plan to run a roll of sod horizontally along it and to make the joint of the ends of the vertical rolls with this, instead of the gutter direct, as this makes a neater job. Sods are cut to fit and joints made with an old butcher knife, and all holes are filled with the scraps cut off, pounded down with the fist. Fine dirt should be sifted into any cracks between the rolls.

If the weather is dry after the sod is laid it must be watered two or three times a week until it starts to grow. A mere sprinkling will not do, but the sod must be soaked until the water penetrates clear through to the soil beneath. It is well also, a week or two after the sod is laid, to go over

DETAIL BY C. B. J. SNYDER, ARCHITECT.
Atlantic Terra-Cotta Co., Makers.

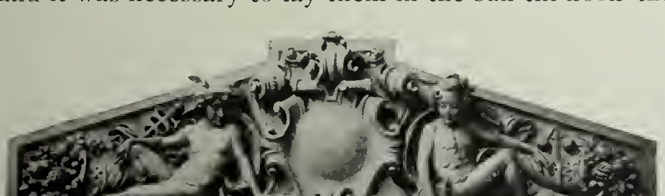
CARLETON BUILDING, ST. LOUIS, MO.
Mauran, Russell & Garden, Architects.
Brick furnished by Hydraulic-Press Brick Company.

the bank just after a heavy shower and beat it all down again with the spatter. If the sod cannot be pulled loose by dragging at it with both hands it is a pretty good indication that the roots have taken hold, and from that time on the sod will take care of itself.

Spring and fall are the best seasons to lay sod, but it can be done nearly every month in the year except when

DETAIL BY F. H. KIMBALL, ARCHITECT.
Excelsior Terra-Cotta Company, Makers.

the ground is frozen hard and the few hot and dry weeks in July or August, when the water used for sprinkling scalds the roots. The writer has seen sod laid successfully in December, when the rolls froze hard every night, and it was necessary to lay them in the sun till noon the



DETAIL BY CARL P. BERGER, ARCHITECT.
Conkling-Armstrong Terra-Cotta Company, Makers.

DETAIL BY KERBY, PETIT & GREEN, ARCHITECTS.
Standard Terra-Cotta Works, Makers.

next day before they were thawed sufficiently to unroll; and he recalls an instance when sod cut the preceding fall remained frozen all winter in the roll, and was laid and grew beautifully in the spring. The following details of cost are derived from the data obtained from laying about twenty thousand square yards of sod in Washington Park in the city of Springfield, Ill.:

Cost of cutting	$0.016	per sq. yd.
" " hauling	.009	" " "
" " laying	.026	" " "
" " watering	.006	" " "
" " spatting	.001	" " "
Total cost	$0.058	" " "

Men were paid one dollar and fify cents per day of eight hours, and the sod cutters had a theory very difficult to break up, that seventy-five "yards" or rolls cut should

BESSEMER BUILDING, PITTSBURGH, PA.
Grosvenor Atterbury, Architect.
Fireproofed by National Fireproofing Company.

FIGURES IN THE CORNICES OF THE NEW BUILDINGS FOR THE COLLEGE OF THE CITY OF NEW YORK.
George B. Post, Architect. Executed in Terra-Cotta by the Perth Amboy Terra-Cotta Company.

constitute a day's work. As in most public work the men were inclined to take it easy, and a contractor who could work longer hours and drive his men a little could probably better these figures. It may be stated for purposes of comparison that sod contractors in this vicinity pay one cent a square yard for sod on the ground, and that ten cents a square yard is the ordinary price charged for furnishing and laying sod complete.

FAIENCE TILES MADE BY HARTFORD FAIENCE COMPANY.

IN GENERAL.

Myron Hunt, formerly of Chicago, and Elmer Grey, formerly of Milwaukee, are now associated for the practice of architecture at Los Angeles, Cal.

The Bruce Architectural Company, Birmingham, Ala., has been selected as architect for the new courthouses at Winona, Miss., and Wynne, Ark.

At the annual meeting of the Cleveland Architectural Club on June 9 the following officers were elected:

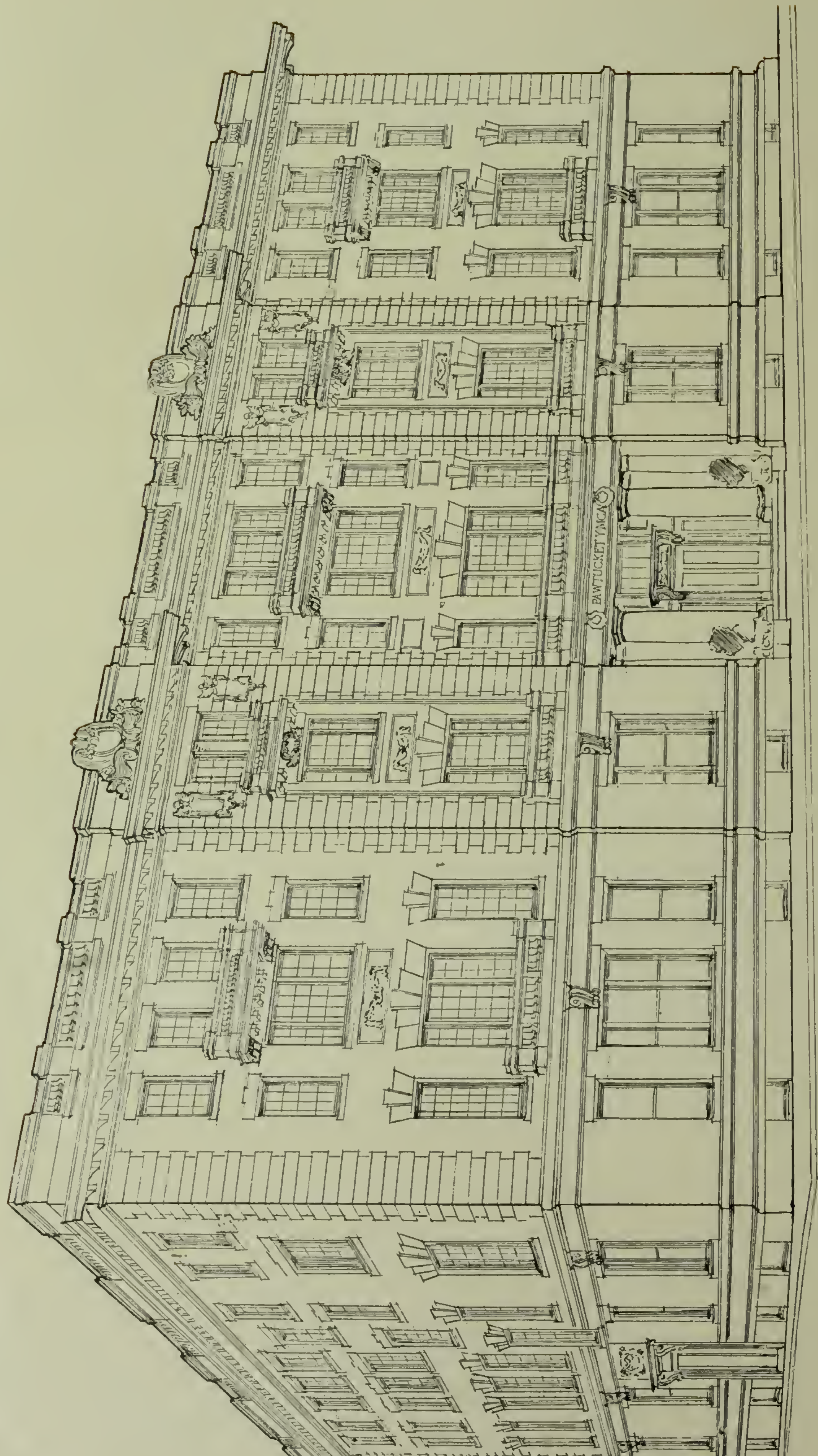
DETAIL EXECUTED BY NEW JERSEY TERRA-COTTA COMPANY.

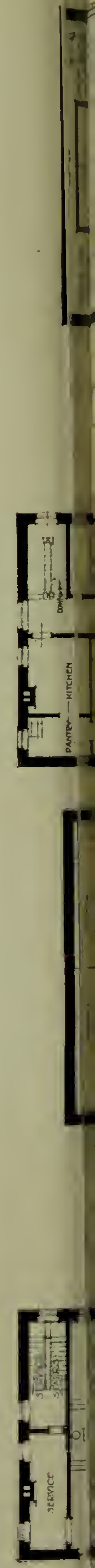
President, Charles S. Schneider; vice-president, Raymond Parsson; secretary, Alex. C. Wolf; treasurer, M. James Bowman; librarian, R. M. Hulett; chairman of Current Work Committee, S. C. Gladwin; chairman of Entertainment Committee, Herman Kregelius. These will constitute the new Executive Board.

LOWER PORTION OF ORIENT BUILDING, NEW YORK CITY.
Front brick made by Kreischer Brick Manufacturing Company.

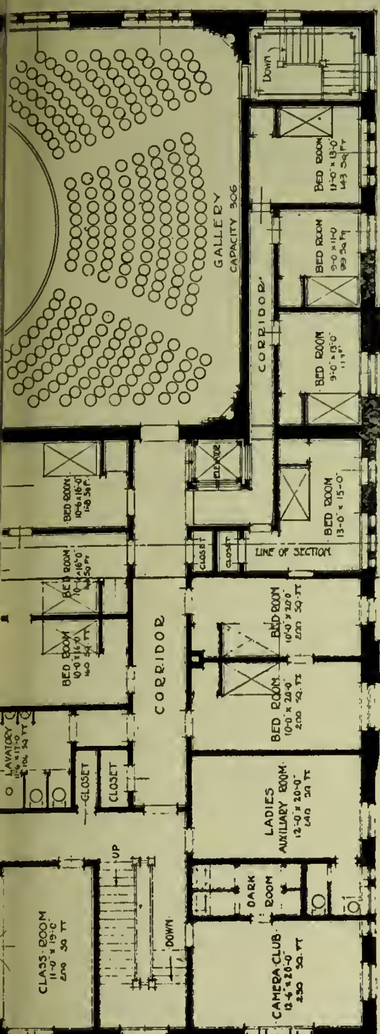
THE THREE-COLOR HALF-TONE PLATE.

THE colored plate which is presented with this month's issue of The Brickbuilder is from a colored drawing by Mr. Gregg of the winning design, submitted by Purdon & Little, in the competition for the Church of the Disciples, Boston. The reproduction was made by the three-color half-tone plate process, and is an almost perfect representation of the original. The color plates were made by the Boston Colorgraph Company, and the presswork was done by The Bartlett Press.

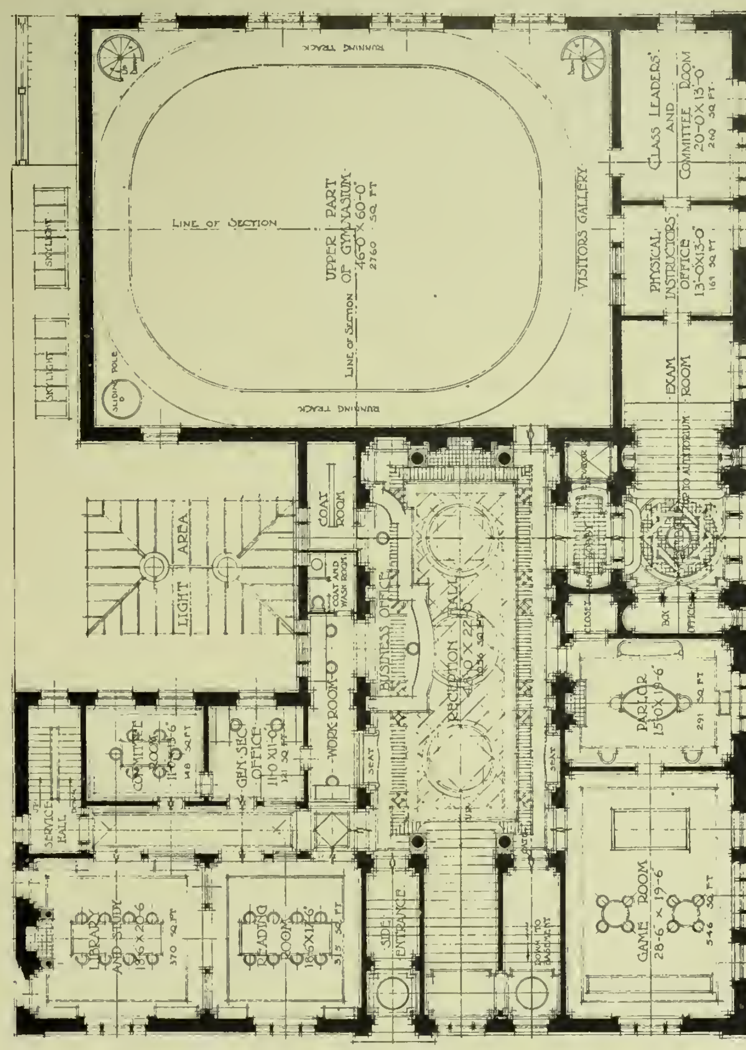

PAWTUCKET Y.M.C.A.


PANTRY
KITCHEN
SERVICE

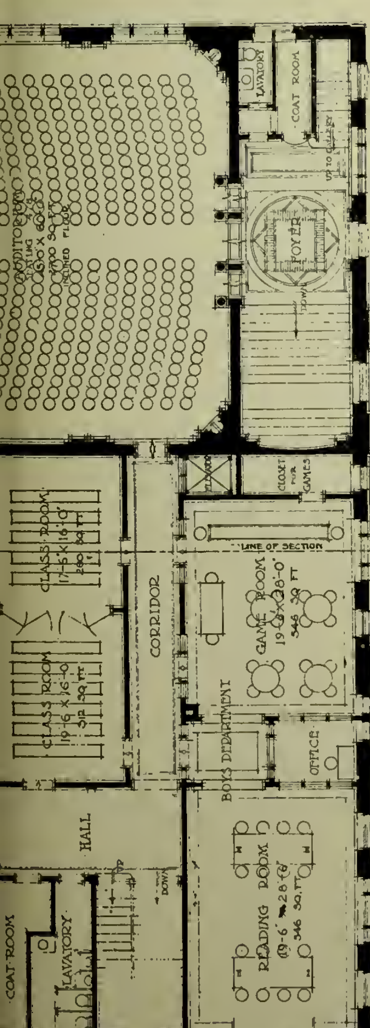
PLATES 43 and 44.



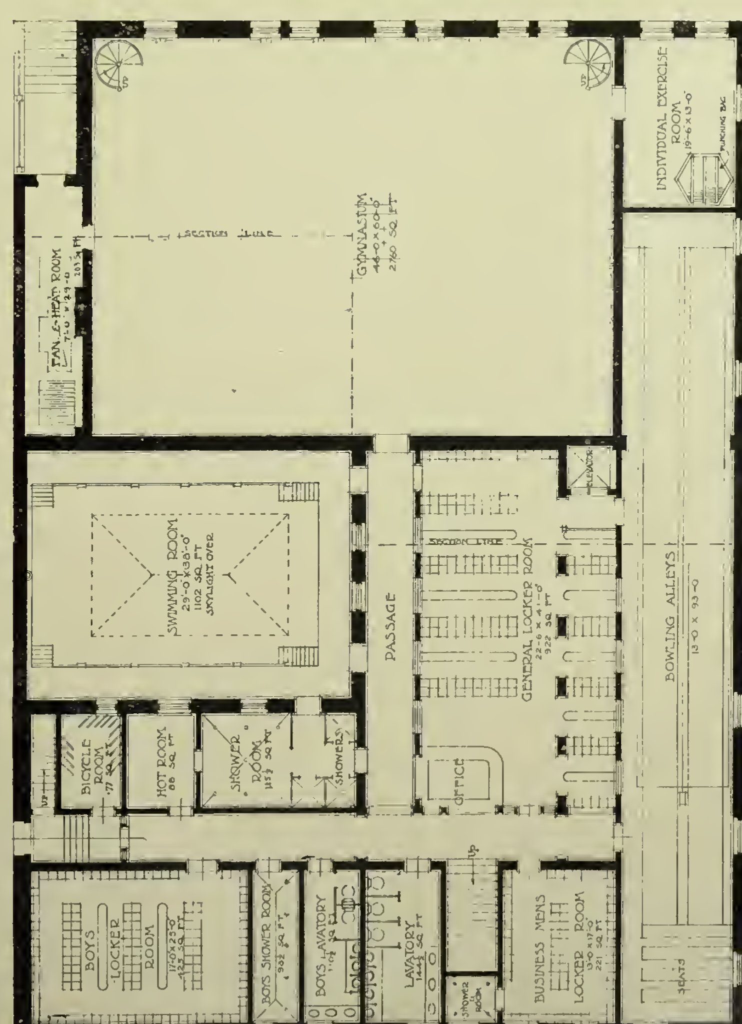
THIRD FLOOR PLAN.



FIRST FLOOR PLAN.



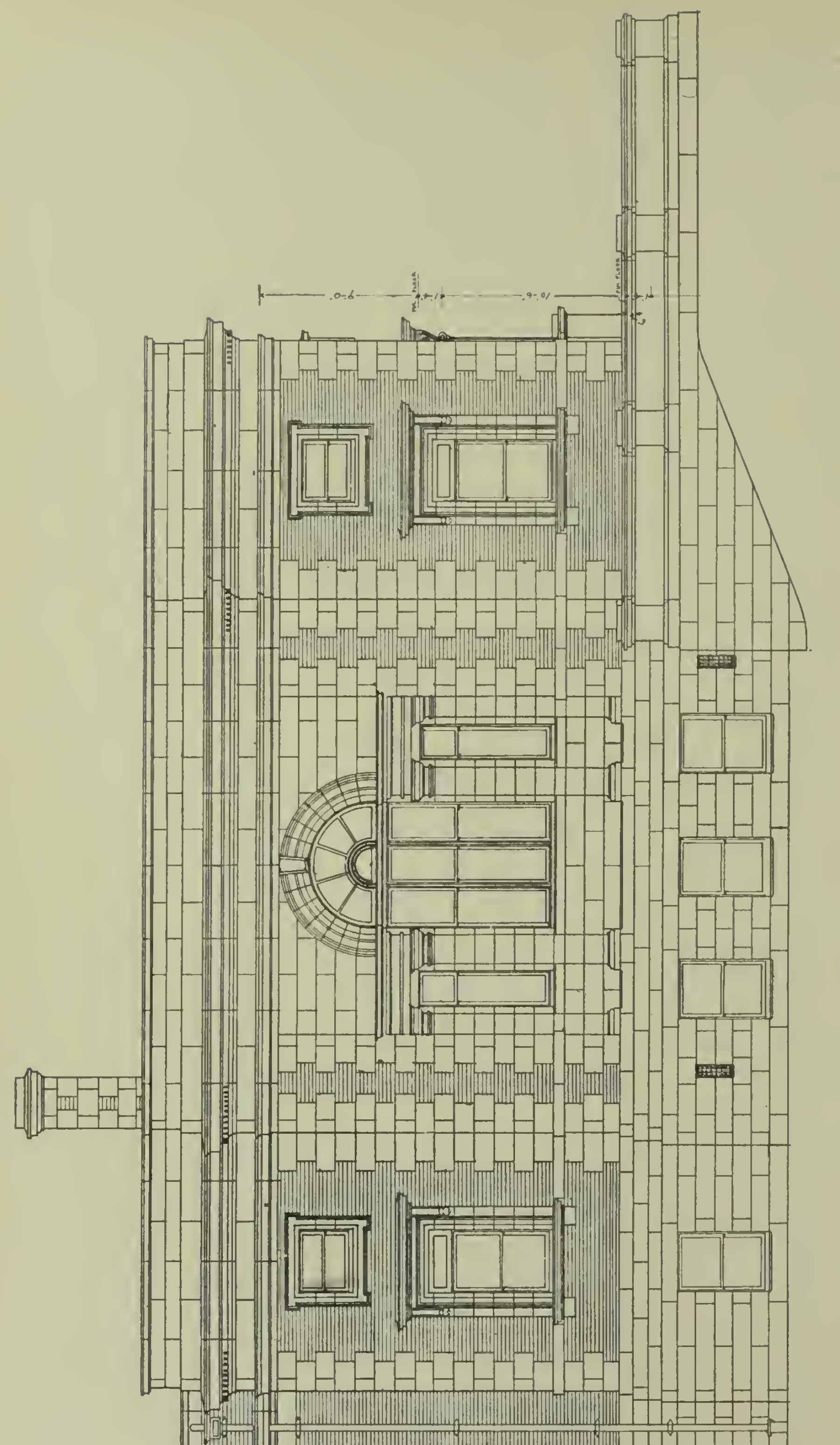
SECOND FLOOR PLAN.



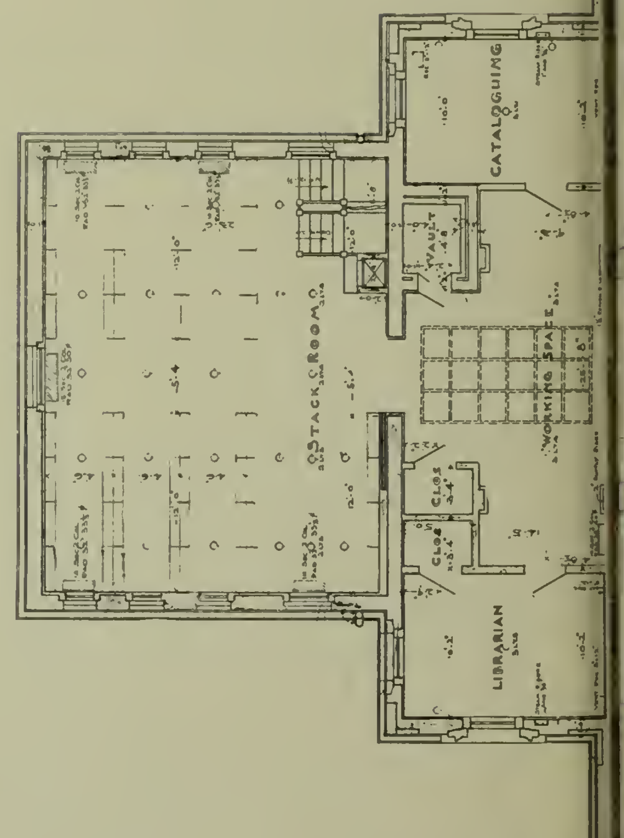
BASEMENT PLAN.

ACCEPTED COMPETITIVE DESIGN FOR Y. M. C. A. BUILDING, PAWTUCKET, R. I.

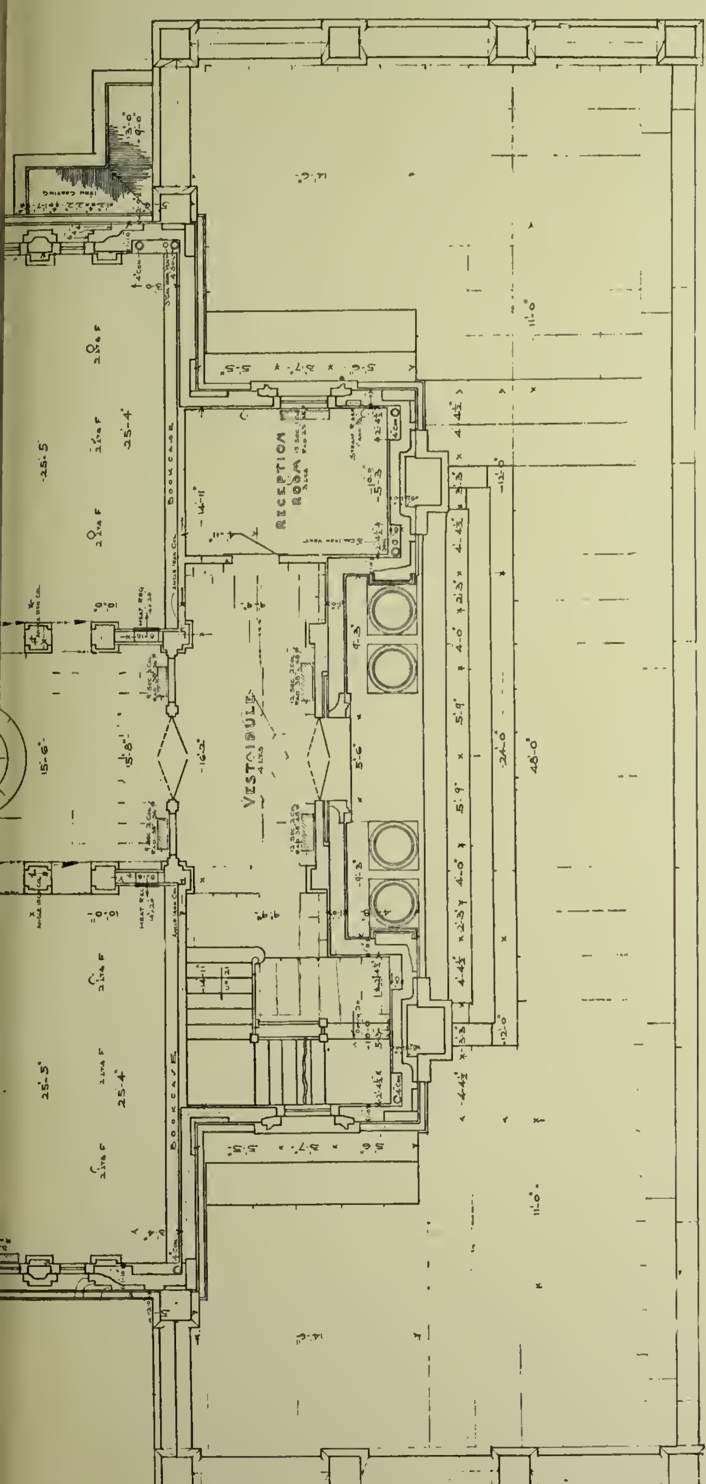
WALTER ATHERTON AND HERBERT D. HALE, ASSOCIATE ARCHITECTS.



SIDE ELEVATION



PLATES 45 and 46.



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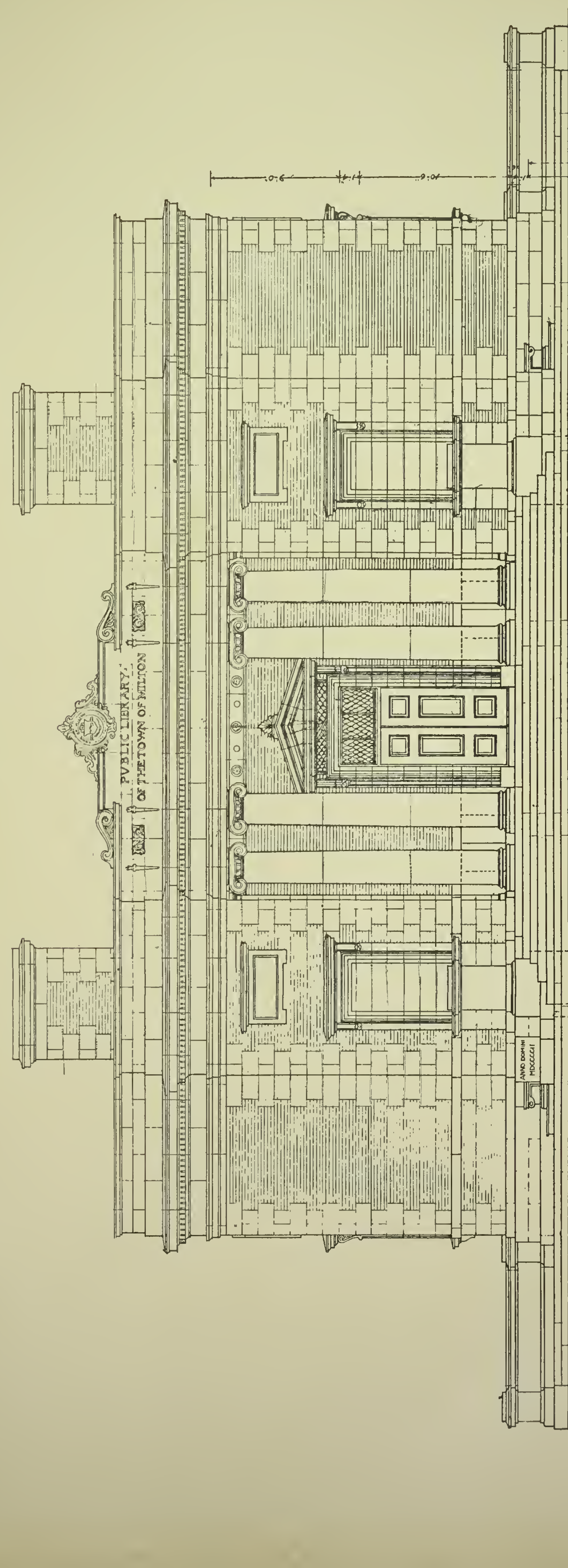


FRONT ELEVATION.

PUBLIC LIBRARY, MILTON, MASS.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

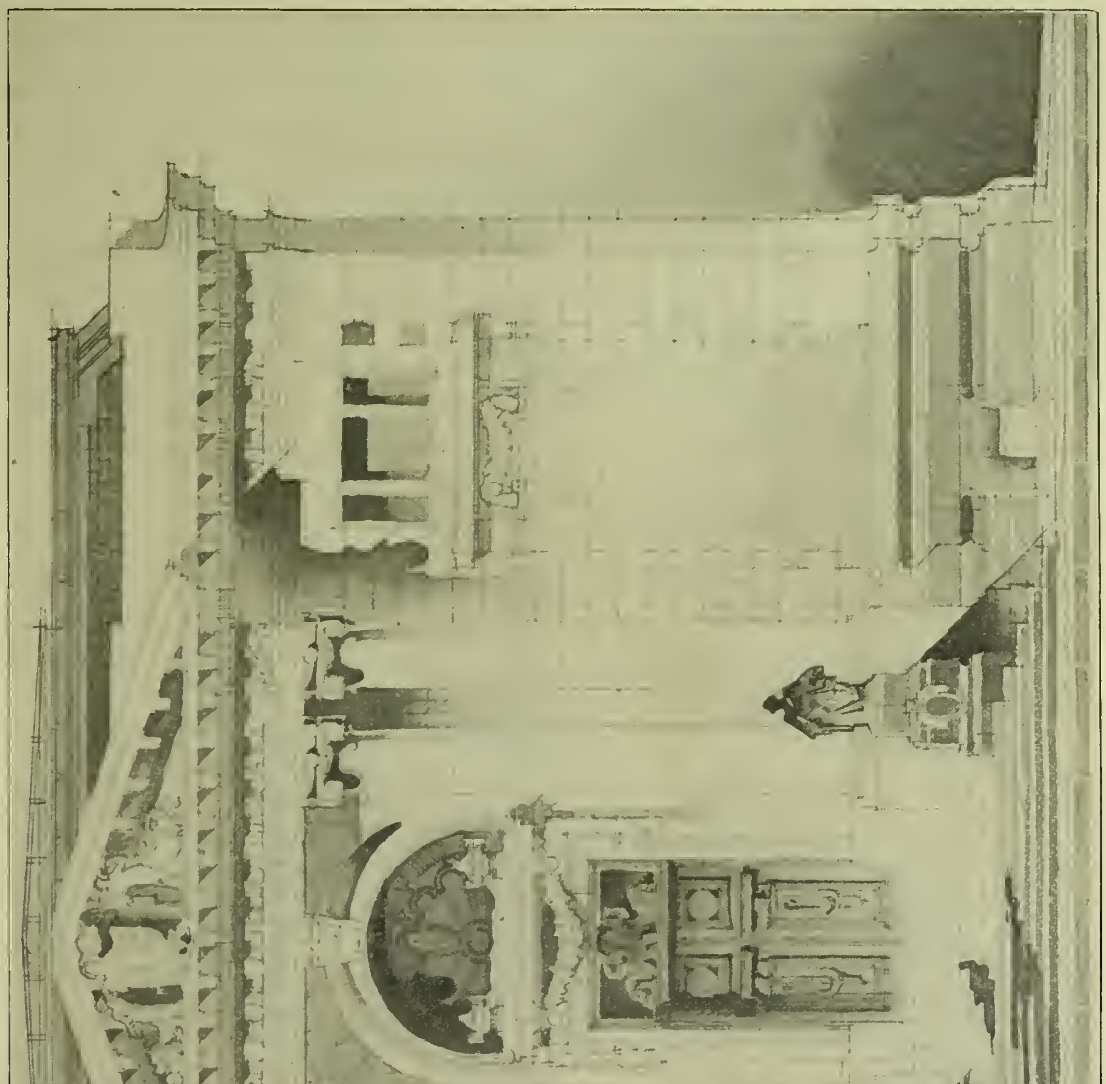
MT. SINAI HOSPITAL, NEW YORK CITY.
ARNOLD W. BRUNNER, ARCHITECT.

STABLE, PITTSBURG, PA.
MACCLURE & SPAHR, ARCHITECTS.

NEWPORT TRUST COMPANY BUILDING, NEWPORT, R. I.
WARREN & WETMORE, ARCHITECTS.

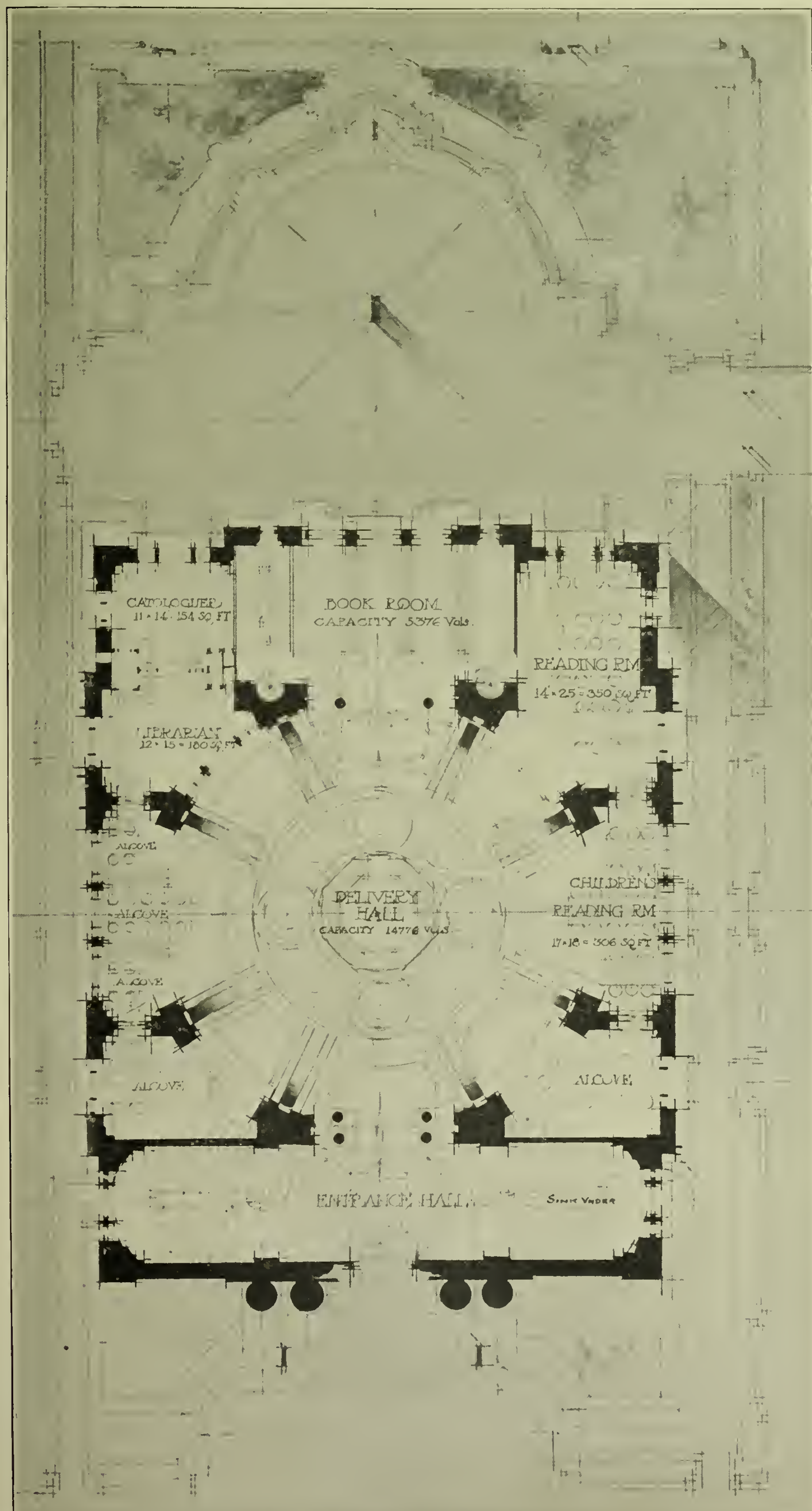
PUBLIC LIBRARY, MILTON. MASS.
SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

PUBLIC LIBRARY, MILTON, MASS.
SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.



ACCEPTED COMPETITIVE DESIGN FOR PUBLIC LIBRARY, CAMDEN, N. J.

HERBERT D. HALE, ARCHITECT; HENRY G. MORSE, ASSOCIATE ARCHITECT.

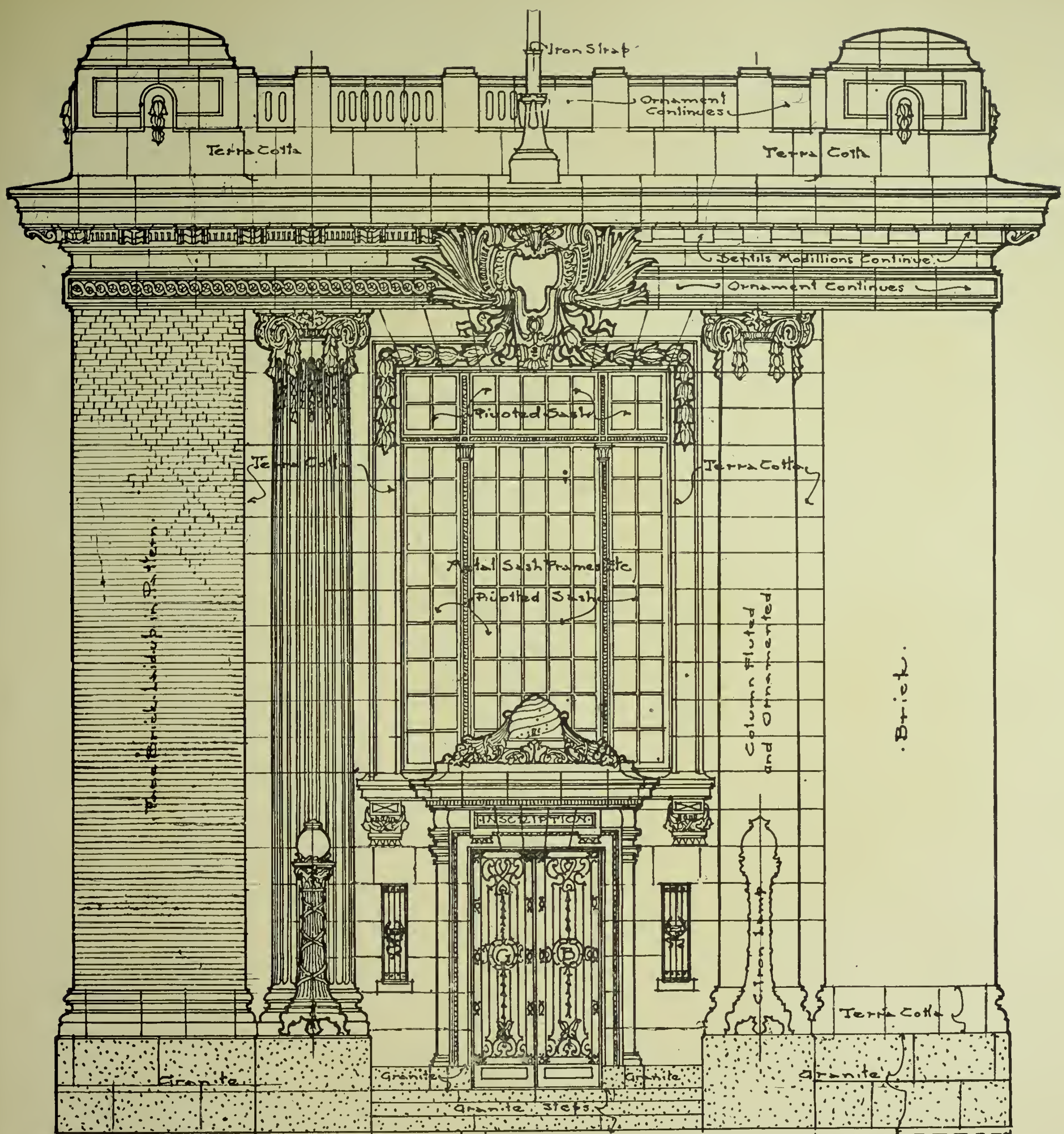


MAIN FLOOR PLAN.

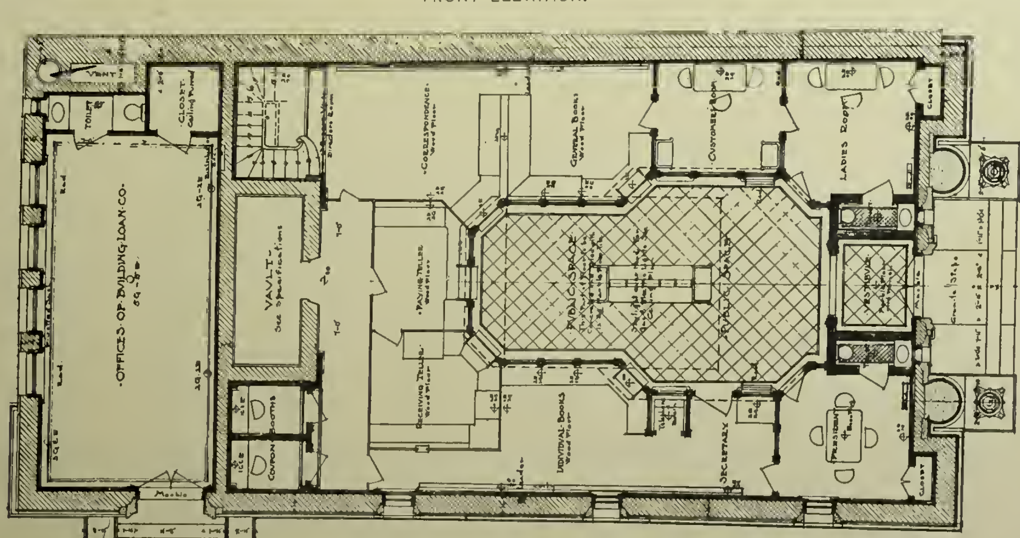
ACCEPTED COMPETITIVE DESIGN FOR PUBLIC LIBRARY, CAMDEN, N. J.

HERBERT D. HALE, ARCHITECT; HENRY G. MORSE, ASSOCIATE ARCHITECT.

VOL. 13. NO. 6. PLATE 47.



FRONT ELEVATION.



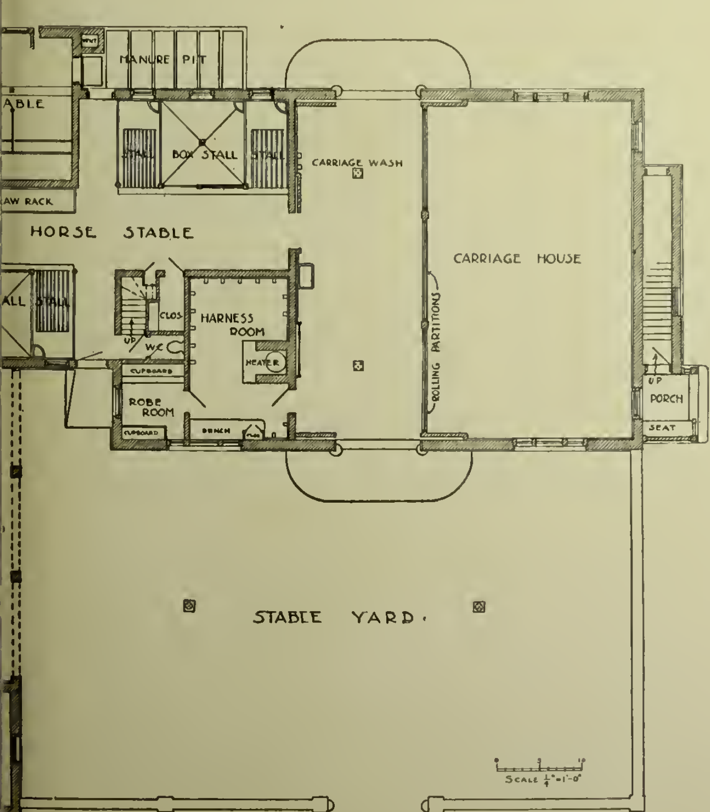
FIRST FLOOR PLAN.

GARFIELD BANK BUILDING, GLENVILLE (CLEVELAND), OHIO.

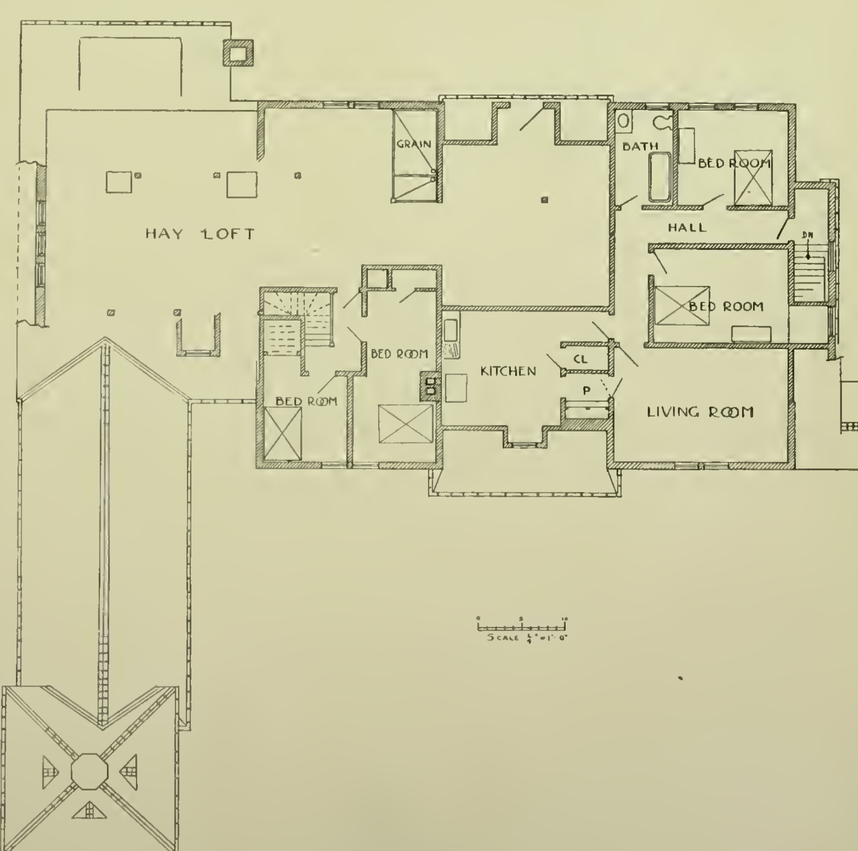
WARD W. WARD, ARCHITECT.

GARFIELD BANK BUILDING, GLENVILLE (CLEVELAND), OHIO.
WARD W. WARD, ARCHITECT.

FRONT ELEVATION.



FIRST FLOOR PLAN.



SECOND FLOOR PLAN.

STABLE, PITTSBURGH, PA.

MacClure & Spahr, Architects.

THE BRICKBUILDER.

VOL. 13 JULY 1904 NO. 7

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FROM WORK OF ATHERTON & HALE, ASSOCIATED, RENWICK, ASPINWALL & OWEN, SHEPLEY, RUTAN & COOLIDGE.

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COURT OF THE IRISH COLLEGE, SALAMANCA, SPAIN.

THE BRICKBVILDER

VOL. 13 No. 7 DEVOTED · TO · THE · INTERESTS · OF ARCHITECTVRE · IN · MATERIALS · OF · CLAY JULY 1904

THE BRICKBUILDER.

PUBLISHED MONTHLY BY

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COLORED BRICK.

THERE has been during the past year or more a very marked tendency to the extensive use of plain red brick in some of our large cities, and we have frequently been asked whether in our opinion bricks of other colors have had their day, or in other words whether the better class of architects who are now using red brick in many of their buildings will abandon entirely other colors. Our opinion, based upon knowledge gathered from visits to the offices throughout the country, is that the particular style of brick is influenced a good deal by the prevailing fashions, but that in no case do we find an architect ready to say that he would be satisfied under all conditions with any one style or color. While very many red bricks are being used, the demand for the best of other colored bricks has increased considerably, and we have yet to hear of a single firm which has restricted its work to the use of red brick. On the other hand, many who have used red brick to a large extent for a year or more are again using other colors in some of their more important work. A few years ago a certain style of rough brick was manufactured for use in one of the buildings of Harvard University. The design called for a wall with a great deal of texture, and this was so admirably supplied by the rough dark burnt clay that for some styles of buildings the so-called Harvard brick has been very generally adopted. Like all good things its use developed in time into a fad and was carried to excess, but we believe it is fair to say, however, that in very many cases the plain red brick has been used as a substitute for stone rather than as a substitute for brick of other colors, and that the demand for the varied colors has steadily increased year by year.

With the present tendency to introduce color into our architecture, and we believe this to be no passing fad, we feel certain that our best architects will continue to use, as they have in the past, bricks of those colors which have a dignity and fitness for special purposes. It would be idle to specify these colors, for the reason that it is not our purpose in answering these questions to provide a palette from which the architect may choose. We will, however, venture the opinion that a well-made clay brick of any of the standard colors or shades now used will in the future find a greater market than has existed in the past, and that no color or style of brick will be adopted to the exclusion of all others.

MUNICIPAL ART.

THE action of the New York Art Commission in absolutely vetoing the proposed design for one of the Brooklyn bridges is a very encouraging sign of the extent to which municipalities are accepting the idea of artistic control for public functions. It is no longer admitted that the individual can entirely please himself when he offends the art convictions of his neighbors, and municipal art societies have multiplied very considerably even within the last five years. One form of such society has appeared in the city of Cambridge, Mass., where a league, including representative citizens, has been formed to influence public taste. This society has not attempted to work for the appointment of an art commission which shall have legal rights throughout the city, but works in the more easily accomplished channels of dealing directly with the individuals, offering advice gratis on matters of external art, and seeking to influence the efforts of the municipality as far as relates to parks, signs, lamp posts, street improvements, etc. This is purely a civic improvement society, and is but a type of many which have sprung into existence elsewhere. They are needed in every growing city, and so long as the founders do not make the mistake of imagining that only painters, sculptors and architects can truly be artists, which we really feel is the weak point in the organization of the New York Municipal Art Society, a great deal of good will be accomplished by these local attempts.

Hospital Planning. VII.

BY BERTRAND E. TAYLOR.

HEATING AND VENTILATION, PLUMBING AND LIGHTING.

HOSPITAL engineering problems, construction, heating and ventilation, plumbing and lighting, are specialties requiring long study and much practical experience. An architect can scarcely afford to take the time to absolutely master any one of them in detail, but one must be thoroughly familiar with the requirements and possibilities in order to be able to direct the general scheme. Not only this, but every detail must be carefully examined and checked, or the result will be far from satisfactory, as the requirements of the best hospital practice are very different from those of any other class of work.

Construction.

All will agree that whenever possible every building occupied by a number of human beings should be fireproof. If this is true generally, how much more necessary it is to protect in every possible manner the lives of those who are helpless. Every month chronicles the burning of several hospitals, accompanied usually by loss of life. There are at present not many more than half a dozen small hospitals in the country that are fireproof, one of the first being the Hitchcock Memorial, which was built by the writer some ten or twelve years ago at Hanover, N. H., although there are several being constructed at present. There is no good reason why a hospital costing from $50,000 to $100,000 should not be fireproofed. The day is not far distant when wood construction will be intolerable and will be barred by statute in this class of buildings. Fireproof construction is not only desirable and necessary as a protection to life and property, but its absolute rigidity and staying qualities make it a necessity in hospitals where the cracks and joints due to the invariable shrinkage and settling of wood joists are a constant menace.

Again, it is almost impossible to make a wood construction vermin-proof or as sound-proof as the usual fireproof constructions. Where it is absolutely impossible to construct a fireproof hospital, the administration building can be of ordinary second-class construction, and the pavilions for wards and surgical department can be fireproofed at a comparatively small additional expense, as they are generally but one story in height.

If the exterior walls are of brick, vaulted for an air space and the interior partitions of brick or tile, the floors of steel and tile, the ceilings of metal lath hung to steel channels, the plastering on metal lath and directly on the brick and tile, there is generally no possibility of cracks.

In my practice I have found that occasionally the conditions are such that a practically fireproof construction seems to cost little more than second-class construction, and a report on the cost of various school buildings recently erected for the city of Boston shows that in several instances fireproof schoolhouses have been erected at a less cost per cubic foot than others of a second-class construction. This certainly is encouraging and indicates a great progress in the right direction.

Floors.

There is probably no one detail of hospital construction that has created so much discussion, that has been the subject of so many expensive and generally disastrous experiments as that of the material for floors. The common and time-honored floor material in America is wood. Wood is an organic material and as such is a harbor and breeding place for all sorts of micro-organisms. When the bacteriologist informs us that a crack in a wood floor sometimes, and possibly generally, swarms with an incredible number of yeast and fermentation cells, bacteria, micrococci, etc., it shows us where some of the cause of the "institution smell" is located.

As it is wellnigh impossible to prevent at least small cracks, and the protection of the surface of the floor by varnish and antiseptic scrubbing is a question of eternal vigilance, it makes a problem the perfect solution of which is not yet in sight. The walls are covered with an inorganic material giving no lodging place and furnishing no food for germs, moreover there is practically no wear or possibility of cracks; but the floors are subjected to continual wear and continual scrubbing that are ruinous to the surface of any material except terrazzo, vitrified tiles or possibly a new composite floor.

The common flooring material is rift sawed Georgia pine, and if the surface is fully protected by continual varnishing the floors are kept in fairly good condition. If varnishing is neglected the scrubbing will soon disintegrate the wood and the floor is ruined. Rock maple, if "bone dry," makes an admirable floor, and it will stand more hard wear and neglect than yellow pine, as the wood is closer in grain. It will hold its color better than pine, but is more difficult to get absolutely dry.

Baths, toilets, diet kitchens and special rooms should have floors and bases of a material that will stand hard wear and scrubbing, require no varnishing and be waterproof. Terrazzo, marble, either Italian or Knoxville, alberene (a very hard soapstone), slate, etc., are used.

Terrazzo is the cheapest and is most commonly used. Marble is better in every way, it looks cleaner and is more impervious to moisture and grease and is very easily cleaned. Alberene shows dirt very quickly, but is almost absolutely impervious to any but surface action of acids, grease, etc. It is quickly cleaned, wears well and is capable of being fitted absolutely tight with an ideal joint, making a more perfect union than is possible with any other material. Dissecting tables, made of alberene, that have been in use for five years in one of the New York clinics look as clean and perfect to-day as when the stone left the quarry.

A slab of marble under and back of toilet fixtures looks well and is a cheap sanitary expedient when it is not possible to have the entire floor of enduring material.

In all rooms where special floors are used the base should be of the same material as the floor, as it is just as necessary to have that hard and aseptic as the floor. This base does not need to be high or expensive to be perfectly sanitary, nor does it need to have a large cove. A base four inches in height with a cove of one inch

NOTE. — In Part VI of this series the two plates showing the furniture in position in an operating room, a sterilizing room and an anæsthetizing room were incorrectly designated as being rooms of the Mount Sinai Hospital. They are instead plans of rooms in a small country hospital which the author is just fitting up.

radius is better than an expensive base with a cove of two or three inches, as there is less fouling surface. This base should be flush with the plaster line and continuous at the jamb, with no joint or plinth. There should be thresholds of marble of full thickness set flush with the top of the floor.

Floors in basements should be of Portland cement, coved at walls. As the basements of pavilions or ward buildings cannot properly be used for any purpose except heating and plumbing pipes, stacks and plenum chambers, it is obviously a waste of money to provide deep basements. Again, it is claimed that the air is contaminated and rendered to a degree damp and unhealthy if the excavation is carried much below the surface. The first floor of a hospital should therefore be from four to six feet above the finish grade, and this will also insure large windows that will aerate and purify the basement air. The need here is, as in the sick rooms, "more light."

Heating and Ventilation.

The successful heating and ventilation of a hospital is a vital problem, and the only absolute rules that can be laid down are those treating, not of manner or detail, but of practical results.

The requirement is, for all northern latitudes, from three to five thousand feet of air per patient each hour, warmed indirectly to at least seventy degrees Fahrenheit, whatever the outside temperature. This means an expensive plant and an enormous coal consumption, also every precaution in the way of double run of sash or double glazing, vaulted walls, etc., to assist as much as possible in preventing the loss of heat through unnecessary radiation.

In warmer climates construction can be simpler and cheaper, and the radiation can be less with more "direct" work, relying largely on natural circulation for ventilation.

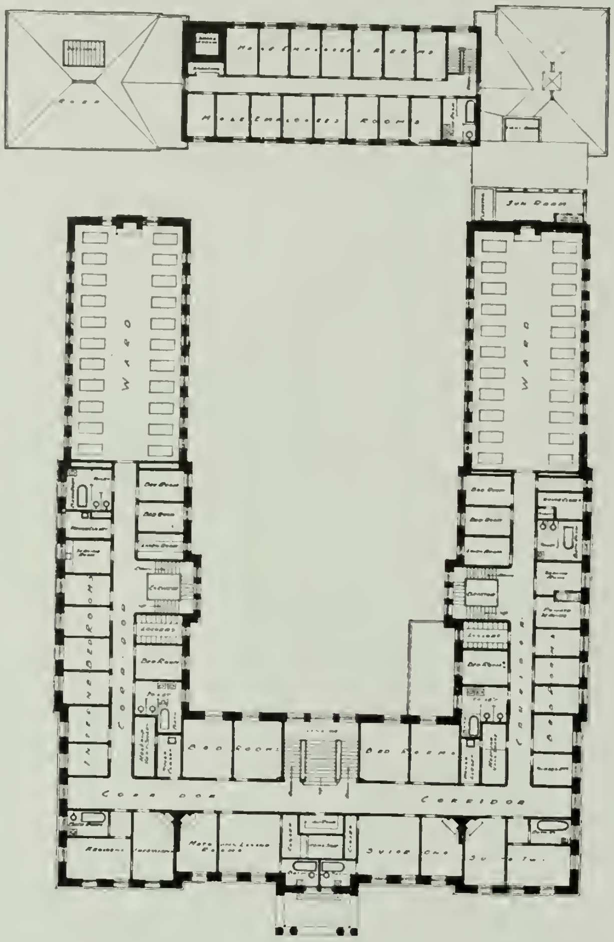
Some authorities maintain with considerable force that the sick wards should not be maintained at an unvarying temperature, that nature in its continual change of many degrees from noon to midnight shows that there is a necessity in this direction. If this varying condition is necessary in maintaining health in well people, why not in restoring health?

ALLEGHENY GENERAL HOSPITAL, ALLEGHENY, PA. Beezer Brothers, Architects.

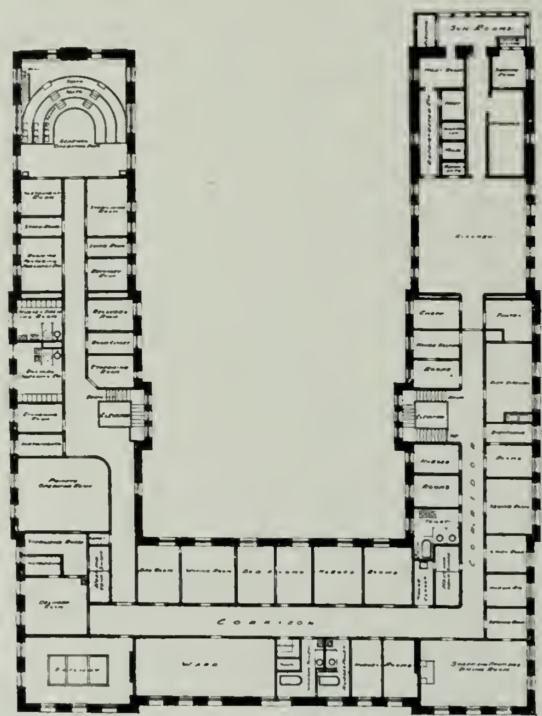
The perfect heating plant will be in a special building by itself or one having the laundry in a second story. It should be installed under one of the hospital buildings only as a temporary expedient when the finances absolutely preclude a special building.

High-pressure steam should be installed in a complete, perfected plant, to be used for power, laundry machinery, electric light, ventilation and sterilizing as well as for heating.

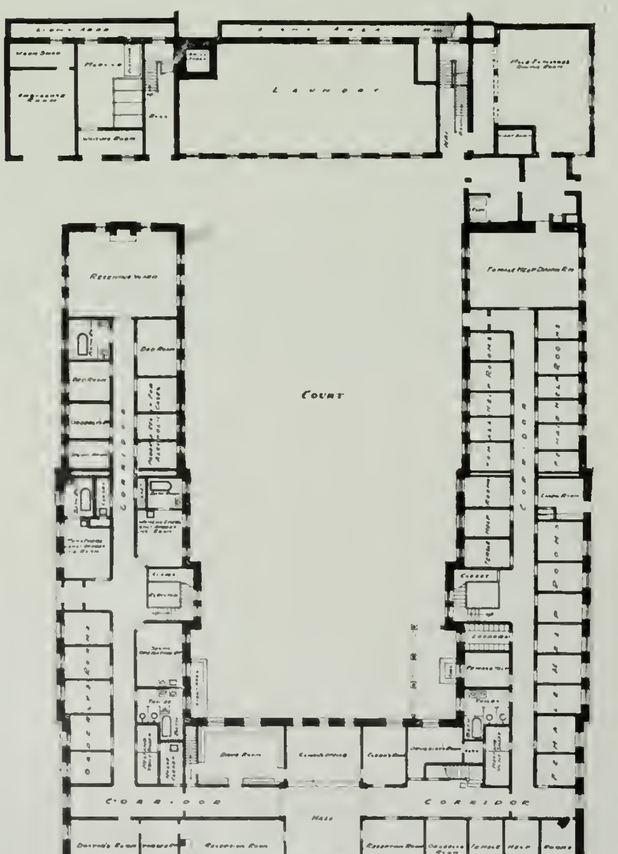
If the institution is too small to employ an experienced engineer, a low-pressure steam boiler can be installed for heating and a small high-pressure boiler can be used for the other purposes enumerated.



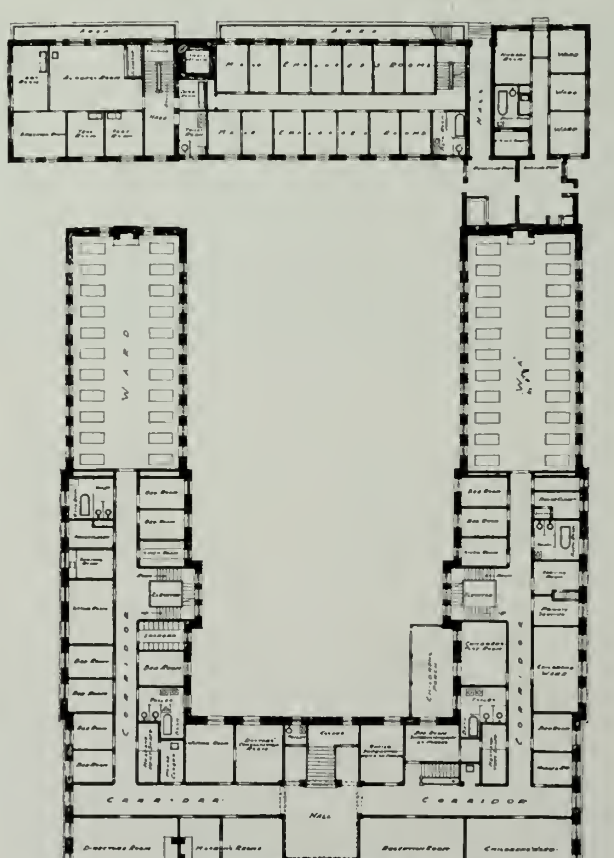
SECOND AND TYPICAL FLOOR PLAN.



SIXTH FLOOR PLAN.



GROUND FLOOR PLAN.



FIRST FLOOR PLAN.

FLOOR PLANS, ALLEGHENY GENERAL HOSPITAL.

In small hospitals it will generally be found best for economical reasons, both as to installation and maintenance, to install a low-pressure system. This will give no power for laundry machinery, which in a very small plant must be omitted, and it will give no high-pressure steam for disinfecting, sterilizing or for inducing draught in the vent flues, all of which are quite necessary, but are impossible without considerable expense. The sterilizing can be done quite as successfully by gas, and in the summer the ventilation can be by means of the windows and doors and special flues in toilets, heated by Bunsen burners. Whenever possible it is wise to install a small high-pressure boiler in addition to the low-pressure heating boiler for the various purposes named above.

Some of the most expensive and elaborate schemes of ventilation are often found to be perfect in theory but very defective in actual use. It takes coal to run a perfect system of heating and ventilation, and the engineer is apt to try to show his great worth by saving coal and by cutting off the electric fans as much as possible. In an institution inspected some time since, where the superintendent was very proud of his ventilating scheme by which the foul air was drawn up into the loft by electric fans and discharged through roof ventilators, it was suggested that sometimes these fans were found entirely cut off, with no ventilation at all. He was sure that his never were, and went up to the loft to investigate and found, what was apparent from the stagnant air in the wards, that they were not running.

While inspecting last year one of the finest and newest hospitals in a remote section of the country, I found very small hot-air inlets and vents and foul air everywhere, and apparently no ventilation at all. Expressing to the engineer a desire to make a study of his heating and ventilating plant, he informed me that they had the most complete and expensive scheme in the entire West, laid out by the best engineers, and that the results were perfect. Replying to my statement that the air seemed bad and the ventilation poor, he said: "These fans will do it and do it quick. Why, you can imagine how thick the air gets in the wards by morning. You can almost cut it with a knife. I start the fans, and in half an hour the air is as pure and sweet as outdoors." To run the fans half an hour, morning and night, may be ventilation, but it ought not to be so considered. What is needed is not fresh, pure air in two half-hour periods per day, but all the time.

The details of a perfect scheme should be the subject of an exhaustive special article entirely beyond the scope of the present papers, but there are a few points that might be mentioned. In a small hospital situated in a broad expanse of green lawns, the necessity of taking the air for the heating coils from an elevation is not as necessary as in the city hospital, where the air at the ground level is full of dust and dirt and all manner of impurities.

Under these ideal conditions the introduction of the air through wire mesh covered openings directly to the stacks serves the purpose very well, but a dust-settling chamber that has the bottom hinged for cleaning is a safeguard, and the stacks should have slides so placed that every portion of the rough dust-collecting castings can be thoroughly brushed and cleaned. When the basement under the pavilion is used as a plenum chamber, as is quite commonly the case, the entire room should be finished as smooth as possible with a plastered ceiling, smooth pointed walls covered with a coat of limewash and a coat of cheap waterproof enamel, with a smooth cement concrete floor sloping to a catch-basin and drain, so that it can be thoroughly cleansed and purified with a hose. Usually the heating and ventilating flues are entirely inaccessible, and are therefore never cleaned. The register faces are screwed in place and never removed. They are generally so constructed as to be specially fitted to catch and hold dust and filth and be almost impossible to thoroughly cleanse, and the flues are loaded with filth that can never be removed.

The best practice is to omit, as far as possible, the register face entirely, and thus to open both the heating flue and the vent flue to inspection and dusting. When the heating flue enters the room, as it should, at least eight feet from the floor, there is no danger of its being used by patients to throw rubbish into, and the vent flue opening at the floor is much more easily adjusted without a register.

The mixing valve under the control of the nurse can be arranged to the amount and quality of the air admitted.

Plumbing.

No problem connected with hospital construction is so vital as that of the plumbing. Possibly no problem is understood less by the average practitioner. A set of plans showing the water supply and drainage systems of a hospital, drawn with anything approaching the accuracy of other branches of engineering, is comparatively rare. In common practice the size and material for piping are specified and the schedule of goods made by the manufacturer or jobber which has favor in the office is noted, and the plumber does the rest.

It is obviously unnecessary to state here that the soil pipes should be extra heavy, the drains straight and never buried beneath a building, but strongly hung to ceilings with a good fall and clean-outs at every angle.

The most practical hospital engineers agree that all piping should be exposed, whether in basements or finished rooms, that no piping should be in slots or partitions, except to pass through a floor or partition. All supplies, hot and cold, should be heavy brass pipe. The custom has been to put in polished piping, but this means an endless amount of work in cleaning and polishing. Paint is affected by heat, but aluminum bronze looks well, is sanitary and is easily kept clean.

It may be safely stated that nothing is too good for a hospital. Every portion should be of the best, put together and put up in the strongest and most substantial manner. Complications should be avoided, and the most expensive is not necessarily the best.

The fixtures in common use abroad are generally extremely heavy and often very complicated, lacking the simplicity of those of American manufacture. On the other hand, American goods in current use are frequently too light in weight and wear out too quickly.

All cocks, wastes, traps, etc., should be of brass of the plainest possible design, so as to be easily cleaned. Portions continually handled should be of porcelain. Hard or red brass wears much longer than yellow brass, cleans readily, but looks very badly when not clean. Possibly this is a good quality, as it necessitates continual cleaning.

Nickel-plated work should never be used in a hospital, as the necessary cleaning soon wears through the thin plate, showing the deception, and the nickel surfaces quickly corrode and become rough and black unless continually cleaned. If a plated effect is desired it can be obtained by using a solid white metal that will wear and look well and be easy to keep clean.

There has been little effort on the part of the manufacturers to perfect and put on the market ideal hospital fixtures. The specialist has been obliged to design his own fixtures or use the elaborate, heavy, showy goods which are found in stock.

The endeavor has been, apparently, to make as much show as possible to account for the tremendous cost; to make as many complications as possible to add to the service account; and to make the parts as weak as possible to insure continual repairs. However this may be, it is almost impossible to find a perfect plumbing fixture, that is, of the utmost simplicity; and it will be well worth the serious effort of the plumbing goods manufacturer to produce practical, simple and durable special hospital fixtures.

An innumerable number of fixtures are made here in America that vary little except in name.

So-called "solid porcelain" is the best material so far devised for lavatories, sinks, tubs and slop hoppers, but the name is a misnomer. The porcelain consists of a very thin film, clear on the surface and opaque inside, covering a very coarse yellow body. It is extremely smooth and beautiful, but the glaze is brittle and easily fractured by rough usage, and a fracture will absorb ink, grease or dirt, and absolute cleansing is then wellnigh impossible. In sinks and even in lavatories the glaze frequently wears off in a few years, showing the yellow body and giving a very disagreeable soiled appearance.

Some of the best English ware, although not so smooth or straight, having not a brilliant but rather a dull eggshell surface, is found by experiment to be much more durable, will stand much harder treatment and wear longer, and breaks in the surface are less easily made and are less absorptive. An almost ideal ware for hospital use is the "vitrified." It has fewer of the objectionable features found in the "solid porcelain," being a fine-grained, non-absorptive material throughout, with no tendency for the surface to wear off. The objections noted thus far are that the pieces have a tendency to warp in the firing, and there is a limit to the thickness. Some special pieces recently manufactured from designs by the author seem to demonstrate that this ware is ideal for all hospital purposes, as its strength is much greater than any other material.

The enameled iron ware is little used except in cheap work, is liable to the objections noted above, and the additional objection that the so-called enamel is not generally hard enough to stand hard usage and will crack and chip and rust if water gets at the base.

The plumbing in the administration building, not being subjected to the continual hospital cleansing treatment, can approximate to a good, simple and substantial residence type.

The safest fixture is the water-closet, because the trap is a part of the fixture, and there is therefore no fouling surface open to the room but not in sight.

The tank almost invariably used is up out of reach, and an investigation will generally develop the fact that it is full of dirt and dust and in a condition that would be disgusting if it were on the floor. For this reason, coupled with the fact that the one, two or three connecting pipes on the wall need to be clean, a "low-down" covered tank or a good type of flush valve is a great improvement in reducing and simplifying the fixtures in the room, as well as in making it possible to easily get at a complicated piece of mechanism.

The flush valves so far produced do not seem to be absolutely safe, as a grain of sand or brass filing will allow a continual waste of water that is difficult to detect.

A new sink trap has been arranged to screw directly to the bottom of the sink, so that the water in the trap is visible and all portions can be cleansed.

Lavatories, trays and slop hoppers should all be built on the principle of the water-closet, with every surface, down to and including the water seal, in sight. Then, and only then, can we be sure of clean sanitary fixtures.

Lighting.

Wherever possible the lighting should be done by electricity, and no gas piping should be introduced except for range in diet kitchens, for duplicate lighting for emergency in the operating rooms, for sterilizers, gas crematory, etc. Sometimes a Bunsen burner is introduced in a toilet vent for acceleration during the summer, if no high-pressure boiler is used.

Gas pipes are apt to leak at the joints, and fixtures will generally wear at the cocks and eat out at the joints, which will in time allow the poisonous gas to slowly pollute the air.

The outlets should be generally at the head of the bed, so as to keep the light from shining directly in the patient's eyes. If a chandelier is desired, an inverted cone shape of opaque glass, green outside and white inside, will throw the light up, lighting the room without troubling the patients. When this style is adopted a movable electric lamp, with a cord and plug and shade, can be used at the bed for examinations, etc. This can be used also to run an electric fan when desired.

Each bed should have a cord and pressile communicating with the annunciator at the nurse's table to call the nurse when needed.

The electric fixtures should be made as simple as possible to accomplish the purpose. They should be of heavy brass thoroughly enameled white, so as to be easily cleaned. The usual lacquered brass fixture soon becomes soiled, and continual cleaning quickly wears off the lacquer, leaving the brass in an unsightly condition, partly bright and partly dull. This may be clean, but it looks quite the reverse. With porcelain key sockets and shades to control the direction of the light, simple, practical and not inartistic results are possible.

A complete system of intercommunicating telephones should be installed in every hospital, however small, with a phone in every department. The item of labor is the largest portion of the cost of running a hospital, therefore every labor-saving device should be introduced.

(*Concluded.*)

The Work of an English Hospital Architect, H. Percy Adams. I.

BY R. RANDAL PHILLIPS.

IN no science has so great an advance been made during the past century as in medicine and surgery. Time-honored opinions and practices have been discarded and new systems evolved in place of them; old ideas have been swept from the category of modern medical men; and the most minute care has been given to details which were formerly not considered sufficiently important to merit much attention. Correspondingly, the planning and fitment of hospitals and kindred buildings have changed; in fact, the process goes on unceasingly as new facts are discovered, so that the hospital architect needs to keep in close touch with all that is being done towards the advancement of both medicine and surgery, so far as relates to details of planning and arrangement.

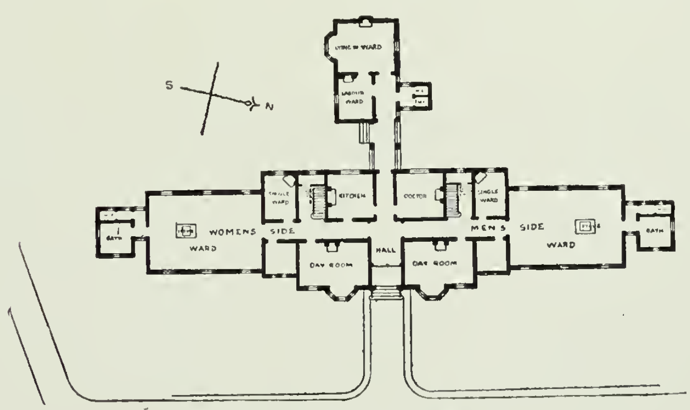
DORKING INFIRMARY.

In Great Britain very great advances in hospital planning have been evolved, and one calls to mind the names of many men to whom are due the excellent institutions in the principal cities of the kingdom. It is to such men, studying the latest developments and keeping themselves in every respect up to date, that we may look for the provision of hospitals designed in accord with modern science. Of all things, hospital work is not a text-book affair; it is the outcome of progressive experience, intelligent observation of what has been and is being done, and the application of personal ability to the solution of a problem that is never the same.

Prominent among architects in England who have gained a reputable position as able designers of hospitals is H. Percy Adams, F. R. I. B. A., who has especially distinguished himself in his later work for a refinement and freshness in design, as well as excellence of plan.

Among his earlier buildings is the Poor Law Infirmary at Ipswich (designed in conjunction with Mr. W. L. Newcombe). In connection with this hospital it is worth noting that the Local Government Board mentioned the buildings as the best existing models of their kind, and the architects were asked to supply the Empress of Russia with copies of the plans.

Bedford County Hospital is perhaps the earliest of Mr. Adams's important works. The design was accepted in limited competition among six architects chosen out of sixty-nine who submitted their names. This hospital was begun in 1897 and cost about $150,000. From the accompanying plan it will be seen to comprise a central administrative block connected by a long corridor with the four ward blocks in the rear, the out-patients' department being on one side at the front, and the operating theater between it and the administrative block. Such a disposition is of course especially adapted to an open site like that at Bedford. It will be noticed that the administrative building is three stories high, there being a large board room on the first floor* and bedrooms for the matron and house surgeon, the second floor being occupied with servants' bedrooms. The kitchen department is behind this central block and is only one story high; the right-hand corridor shown on the plan is used by servants and tradesmen only, while that on the left-hand side is for the staff, patients and visitors, its lobby being the casualty entrance. The male and female wards are sixty-nine feet long, twenty-seven feet wide and thirteen feet high, accommodating sixteen beds each, with the surgical cases on the ground floor and the medical above. The children's ward is the same length and height, but only twenty-four feet wide; here again picture tiles have been introduced. The walls have dadoes of glazed brick five feet high, as commonly employed in hospitals, finished with Parian cement above, except in the children's ward, which has the tiles already referred to. The floors are of terrazzo (I may here mention that in one or two of Mr. Adams's hospitals where such floors were laid they have been covered with linoleum or some other material which gives a better foothold, though the best surface seems to be hard wood blocks polished with wax). An isolation building is provided at some distance from the other buildings at Bedford, containing four isolation

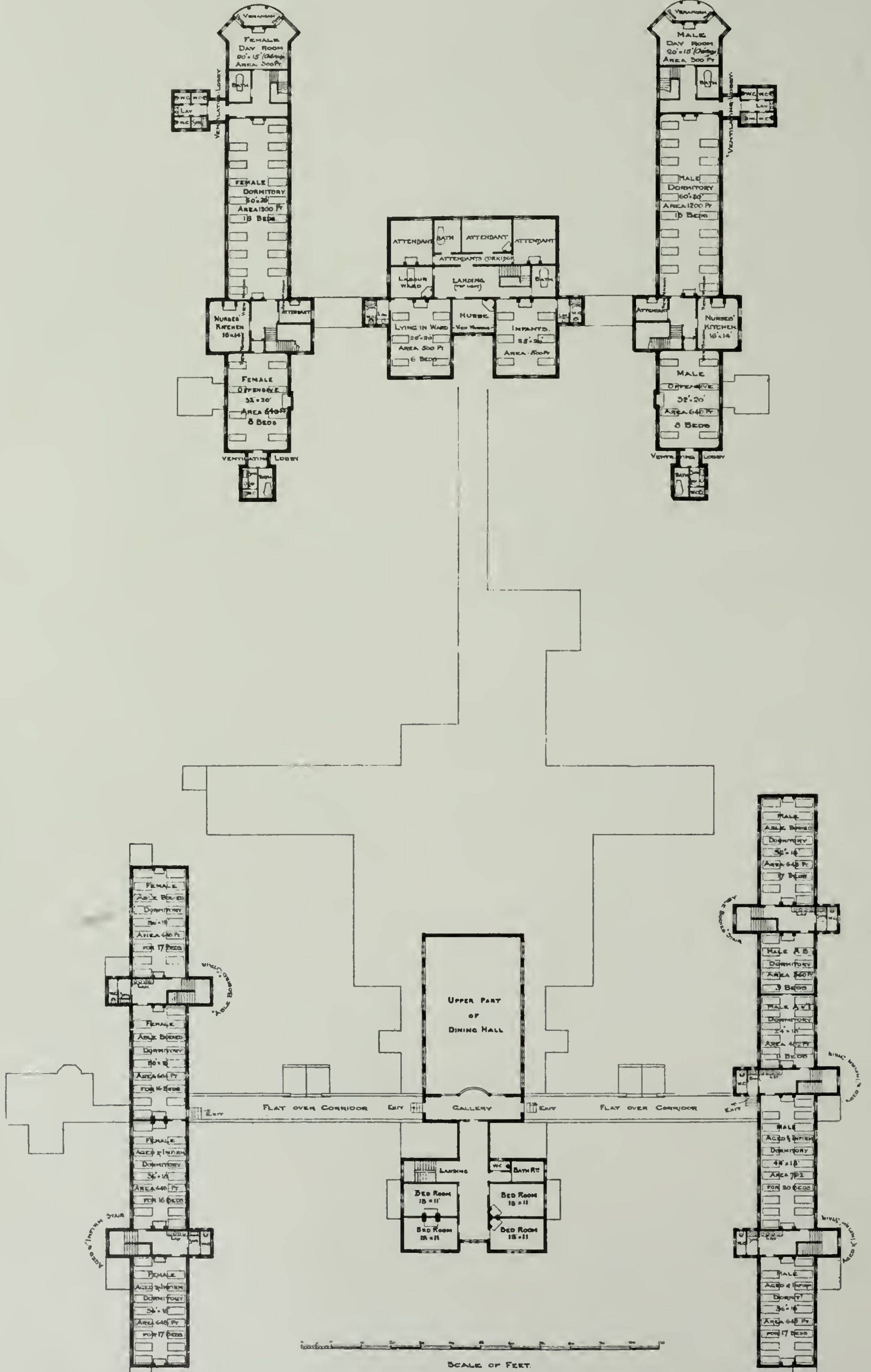


PLAN, DORKING INFIRMARY.

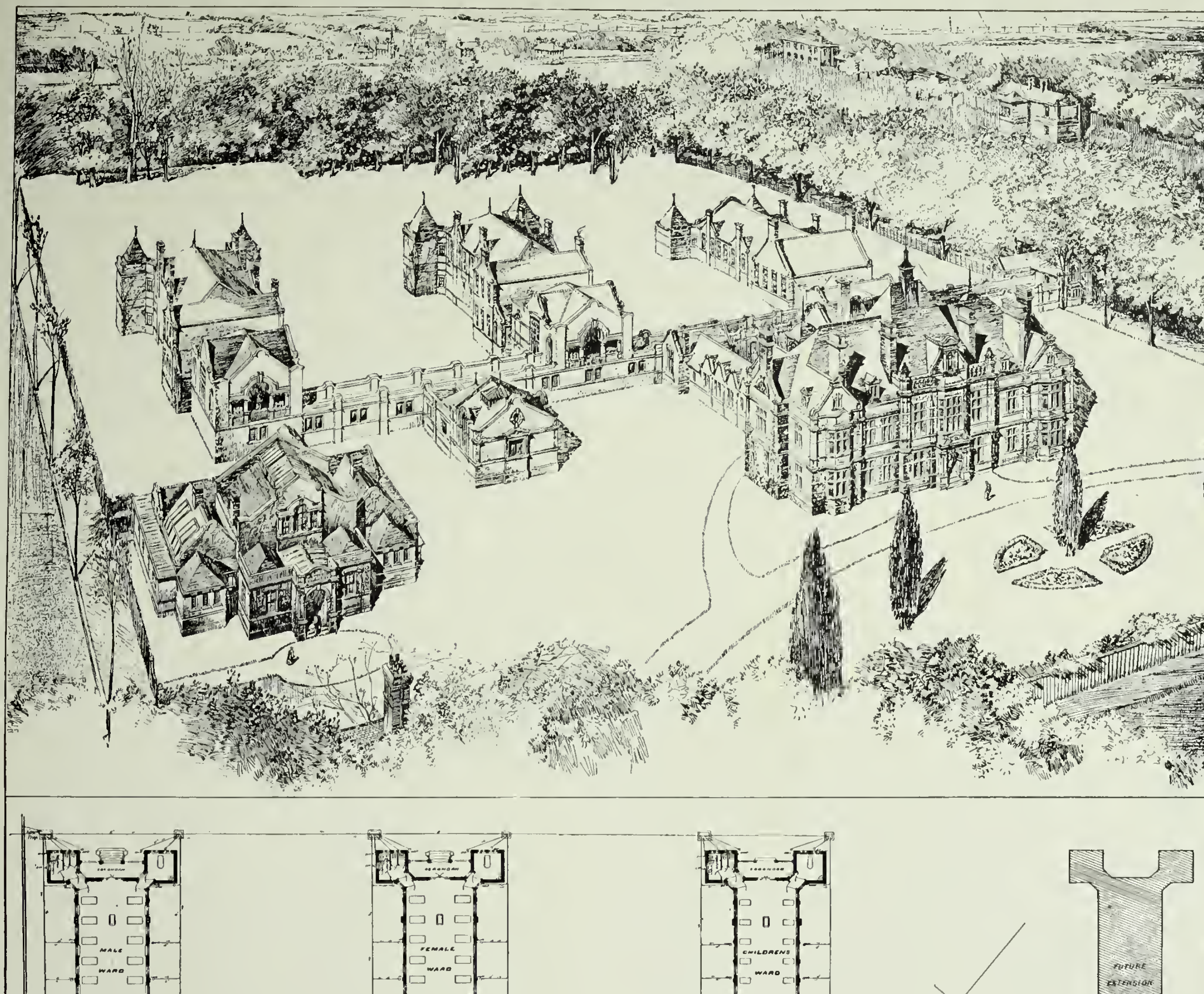
rooms fourteen feet six inches by fourteen feet, with a nurse's room, etc., to each two.

At Dorking, in Surrey, an interesting ward block with nurses' rooms, etc., has been erected from Mr. Adams's design, providing sixty beds in connection with the old workhouse. This also was the result of a competition in which sixty three designs were submitted. In these wards terrazzo floors were again provided. The walls have a salt-glazed brick dado, while the corridors are painted white, the woodwork being painted an apple-green color. Heating is by low-pressure hot water and central ward stoves. The cost of the block was $45,000. The accompanying plan shows the arrangement of the wards, the men being on one side and the women on the other. On the first floor there is an open balcony for each sex, having a beautiful outlook.

*This would be called the second floor in America. In England the floor on a level with the ground is called the ground floor, not the first floor.

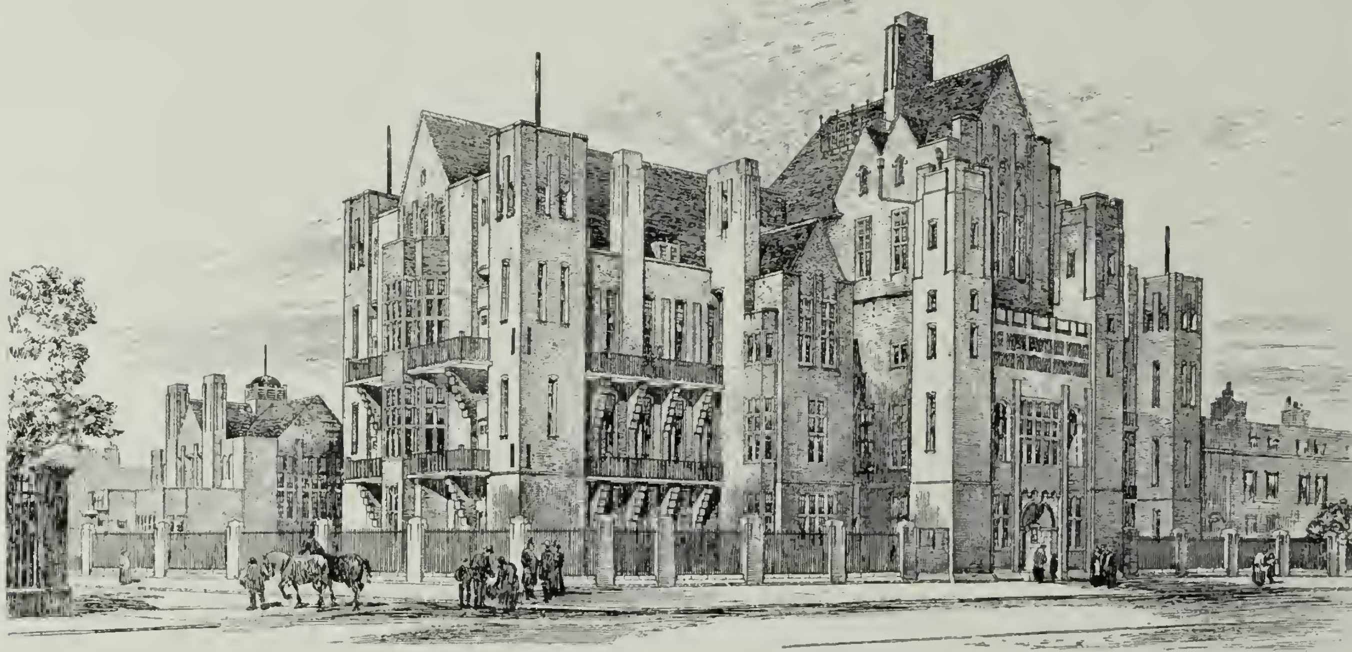


PLAN, IPSWICH POOR LAW INFIRMARY.

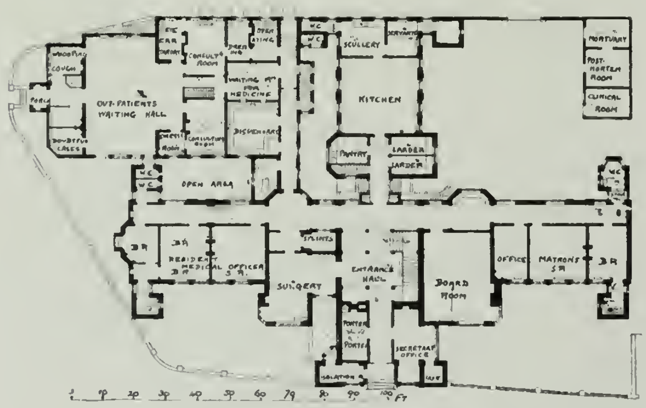


THE BEDFORD COUNTY HOSPITAL.

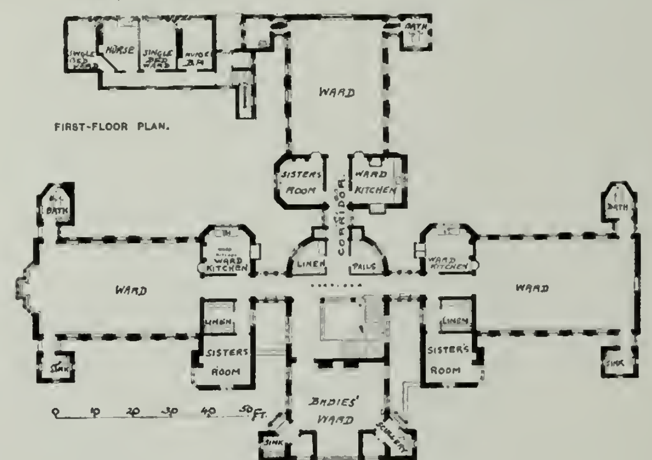
I may next deal with a very interesting and important work by Mr. Adams, the new Belgrave Hospital for Children at Kensington, in the southeastern district of London. The original contract for the building work was $245,000, but that included the west wing, a duplicate of the east wing, which has not yet been erected. When completed the total accommodation will be for seventy-eight cots, with all necessary offices for staff and equipment. Turning to the plans of the hospital, in the basement, in one corner on the back frontage, is an isolation room which can be used for some suddenly discovered case of infectious disease. Coming to the ground floor it will be seen that an isolation room is provided just inside the entrance. This is a provision against any infectious case that may be discovered when children are brought to the hospital, in which event they may be immediately taken away by the side door, — a very important point when it is remembered how easily infectious diseases spread among sickly children. The entrance passage has a porter's room on one side, connected by telephone with all parts of the hospital, and a secretary's office on the other. The passage is barrel-vaulted, the vault being covered with glass mosaic of a very beautiful blue tint, laid in lines parallel with the axis; the walls being lined with marble. This treatment is carried out in the entrance hall beyond. In the kitchen glazed tiles are placed under the grill, so that grease may be easily cleaned off, and the sinks in the scullery are of pitch pine with teak tops. To the left is the out-patients' department. Here again provision is made to check any cases of infectious disease, anterooms being arranged on each side where children may be examined. The out-patients' waiting hall is a large, well-lighted room, with the usual consulting rooms adjoining; it will be noticed, too, that a staircase leads down to the isolation room in the basement already mentioned, this also having a separate external exit. Patients pass from the hall into the medicine room (where they are served through two hatches from the dispensary) and so into a corridor that leads out at the back of the hospital. Thus the out-patients' department is kept quite distinct and separate.



BELGRAVE HOSPITAL FOR CHILDREN, LONDON.



GROUND FLOOR PLAN.

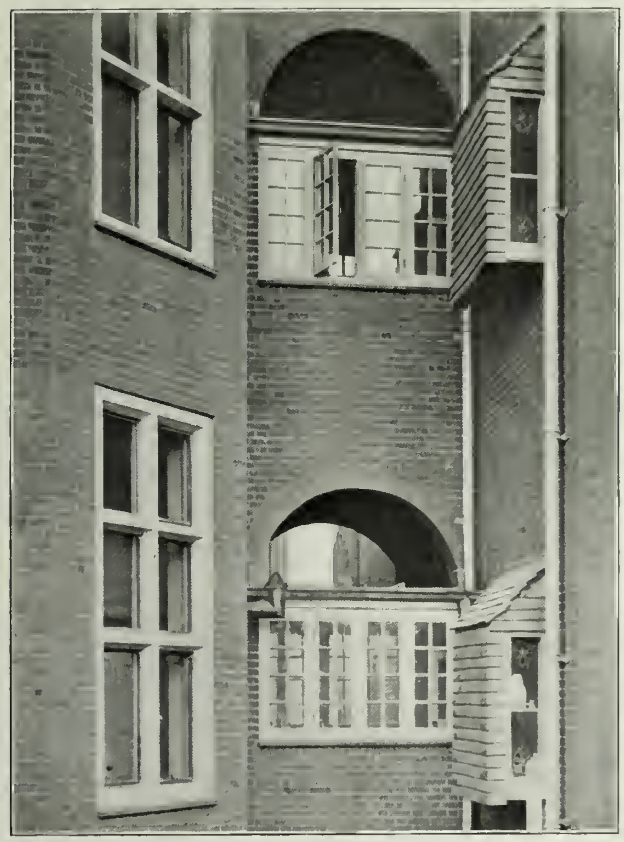


FIRST FLOOR PLAN.

PLANS, BELGRAVE HOSPITAL FOR CHILDREN, LONDON.

A special feature of the hospital is the main staircase that rises from the entrance hall. This is entirely of teak, jointed in places with ebony keys, and has solid treads thirteen and a half by six and a half inches; these latter are quite unusual. The staircase is carried independently of the walls, with a stout newel running to the top of the building, and being of solid hard wood is considered to be very fire resisting.

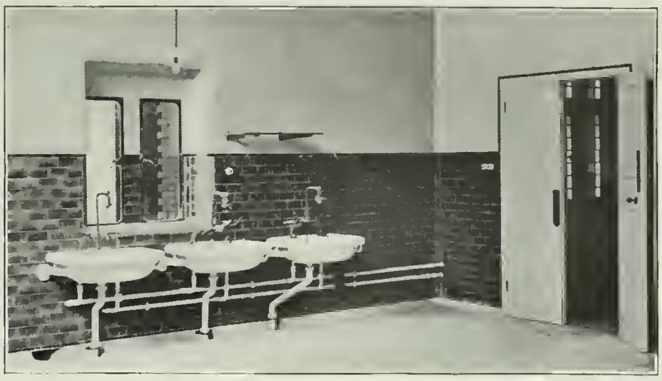
The wards are on the first and the second floors; they are laid with teak blocks and lighted with six windows on each side and a large bay at the end. For about half their height the walls are covered with tiles of a soft blue-green tint with dark-green border and capping,



CROSS VENTILATED LOBBIES AND OUTSIDE HANGING LARDERS TO WARD KITCHENS, BELGRAVE HOSPITAL FOR CHILDREN.

being enamel-painted cream above. The windows are sash windows with large fan lights over. A double line of two-inch hot-water pipes runs along the sides and one end, while in the middle is a tiled stove. Adjoining each ward is the nurses' kitchen, with range, dresser and sink. Attention is drawn to the special cupboards or larders, which are hung outside the building and can thus be kept admirably ventilated. The inspection eye into the ward is also a feature, because instead of being a flat sheet of glass it is carried into the ward as half an octagon, which enables the nurse to see the whole of the cots at a glance. Besides the main wards on the first floor is a very bright babies' ward lined entirely with cream-colored tiles and having tile picture panels illustrative of children's stories.

The second floor is practically a duplicate of the first, except that an operating theater takes the place of the babies' ward. This theater has a north light along the whole of one side. The doors shut quite flush and have no moldings. The floor is of marble mosaic and has a



OPERATING THEATER, BELGRAVE HOSPITAL FOR CHILDREN.

channel under the basins into which the overflow discharges, being carried along into the washing-up and sterilizing rooms on either side, and there trapped. The wall shelves are of half-inch glass held on brass arms. This theater is ventilated on the plenum system, air being forced in through a brass netting about eighteen inches below the ceiling (after having been washed and warmed) and withdrawn at floor level through mica flaps. The operating theater is the gift of Mr. Clinton Dent of St. George's Hospital, and according to his suggestion the basins have levers that can be worked with the elbows, thus leaving the hands free; there are no plugs to the basins, for the reason that surgeons now regard it as safer to wash their hands in running water.

ENTRANCE HALL, BELGRAVE HOSPITAL FOR CHILDREN.

The third floor is occupied with bedrooms for the nurses, and the fourth floor, which carries the center pile to nearly one hundred feet, with cubicles for the servants.

It may be mentioned that the architect designed not only the fabric of the building, but all its interior finishings, down to the door knobs, electric fittings and the tile covering for the ward stoves.

Examples of the Greek Revival Period in Alabama. II.

(*Article I on page 121.*)

BY J. ROBIE KENNEDY, JR.

THE BLACK BELT.

ACROSS the middle portions of the Gulf States of Alabama, Georgia and Mississippi stretches the black-soiled prairie and rolling land of the Black Belt,— a land that was and is to-day prolific in the production of cotton and corn by reason of its climate and its soil. This country naturally figured prominently in the earlier settlement of the South. It was the goal and the paradise of the cotton grower and the planter.

The early settlers were from Virginia and the Carolinas, — from lands which were becoming comparatively overcrowded and from soils which were somewhat worn out. Since prosperity came to these people so quickly and so permanently, their first object seems to have been to erect for themselves homes,— homes that were according to their ideas of good architecture and their taste and refinement. It must be remembered here that the principles of good architecture were pretty well understood in the home states of these emigrants of Virginia and the Carolinas, and the houses which they built speak in a way for their character. Why they chose the Greek Revival style in preference to the Georgian architecture of the homes of their ancestors has been set down in the preceding article in The Brickbuilder on this subject.

PAVILION, "GAINESWOOD."

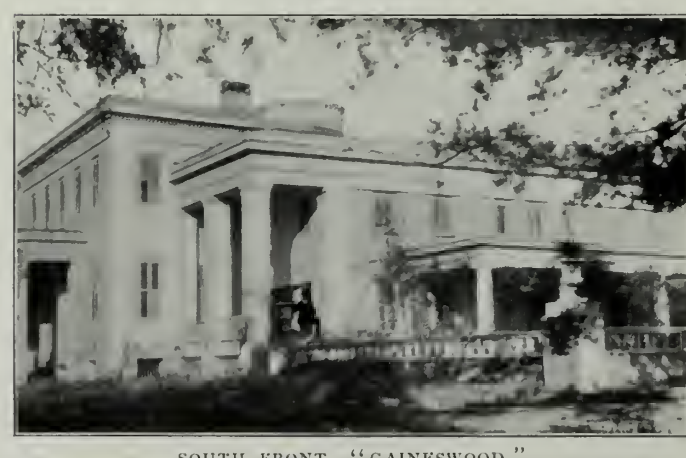
One is strangely impressed, after studying the Greek Revival as it was practised in the Black Belt, with the liberties these old builders took with the accepted standards of the orders. They were not wont to copy lavishly the details, as the architects of the northern states did. In "Gaineswood" we find the omission of triglyphs and metopes of the Greek Doric order used in the portico on the north front, and the guttæ continue in a band in the architrave as if they served as a band of dentils. It is not uncommon to find Ionic bases under Corinthian shafts, and why? Because the Ionic bases were easier of construction, the moldings not being of such a complex nature. Still these alterations are not to be despised; although the purist may sniff scornfully at these little grammatical slips, it is such pieces of architectural *naïveté* that make southern work all the more interesting.

In one respect the builders in the Black Belt of Alabama outdid their fellow planters, and that was in the composition of their plans. They were not satisfied with the wide hall down the middle of the house, with rooms on either side, and as a consequence their arrangement of the rooms shows more architectural character. Thus we see in "Gaineswood" a mezzanine floor to the second story, with windows opening on the north portico, which, while not obstructing the free passage of air, prevents the glare of the hot southern sun.

NORTH FRONT, "GAINESWOOD," DEMOPOLIS.

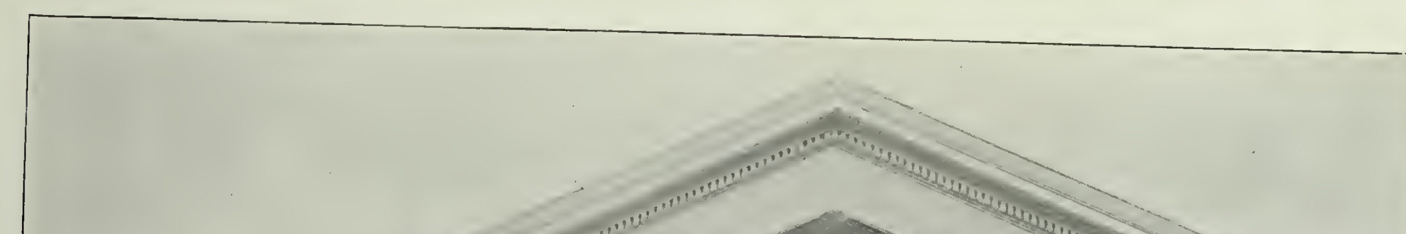
In the Otts place, in Greensboro, the kitchen and pantries are not to the rear of the main house, as we usually find them, but are to the left, saving the house proper the mortification of having a rear with its rubbish and uncleanliness which are unavoidable with negro servants. In addition to removing the kitchen, etc., to the side, the rear elevation was made a duplicate of the front,— an excellent portico of the Greek Ionic order.

The season of the year in which the Black Belt should be visited is in the early spring. At this time the vegetation is luxurious and forms the setting which contributes in a large measure to the good *ensembles* of these old places. The great variety of exquisite shades of green make it a real delight to live outdoors. The white jessamine comes first in point of time as well as in beauty and perfume. Then there is the Cherokee rose, which climbs with its strong arms the fences and trees and droops in festoons of glossy dark green leaves and snow-white blossoms. Smilax, with its fragrance, climbs rampant over



SOUTH FRONT, "GAINESWOOD."

PERRY COUNTY COURTHOUSE, MARION.



THE OTTS HOUSE, GREENSBORO.

the wide verandas and their white pillars. The surroundings of these southern homes owe their beauty to the shrubbery and flowers, for here we do not find good lawns; the hot sun is quick in its work of drying and withering the grass, which is thick and stubble and has not that softness and greenness found in northern climates.

The town of the Black Belt which has the most interesting beginning is Demopolis, situated in the very heart of this rich farming district high up on the banks of the Tombigbee River near its confluence with the muddy waters of the Black Warrior.

Early in the last century, about 1815, a party of Frenchmen, almost all of whom were exiles from the court and army of Napoleon, sought refuge on our American shores. Here in Alabama they were given a large tract of land by the Federal government on condition that the vine and olive should be cultivated. This offer they accepted, but their project was not a successful one; the grapevines were killed by insects and the olive trees by the winter frosts. One by one they returned to their native soil or went to other parts of America, leaving perhaps a few dozen of the original settlers in Demopolis and Marengo County. One is disappointed at not finding here some houses of French character; although in the excellence of detail found in the Whitfield place, called "Gaineswood," one is tempted to believe that French workmen or French designers were brought into use. This theory, however, cannot be substantiated, as the common tradition of the town is that the house was designed by a daughter of the builder and owner, General G. B. Whitfield. This last theory is not improbable, as the women of *ante bellum* days were quite the equal of the men in their enthusiasm for building and for classic architecture. The house has a picturesque setting, in a grove of luxurious cedars. The grounds are entered through massive gateways; the surmounting ornaments of the pillars are of good detail, and although made only of stucco they have stood the test of time and the elements wonderfully well. We have yet to find a house better in detail and in composition than this home of the Whitfield family, and it is perhaps the only one to which such a *porte-cochère* was built.

MARION MILITARY INSTITUTE.

"BLUFF HALL," DEMOPOLIS.

There seems to be no accepted front to the building, the elevations appear to be all of equal importance. The north front, as it faces the gateways, was perhaps considered the *real* front. To the right of the entrance gateways is the little lodge-keeper's house with the ever-present portico, the thing that is most characteristic of southern Greek Revival.

The interior of "Gaineswood" is quite the equal, from an architectural standpoint, of the exterior, with the difference that it is far more elaborate. The stucco ornament, always white, has been used very freely, but still not enough to overstep the bounds of good taste and refinement. The mantels of the more prominent rooms are of particularly good design, and of the white marble which came undoubtedly from the Carrara quarry. The reception or ball room, opening off the north portico, is perhaps the largest and best designed room in the house, the wall spaces being divided by Greek Corinthian pilasters and the ceiling divided by deep studded beams treated with the honeysuckle ornament in relief, while the doorways are flanked by detached Corinthian columns.

Another place in Demopolis which is worthy of mention is "Bluff Hall," the seat of the Lyons family, built about 1831. Situated on the banks of the Tombigbee River, it has a charming view from its rear and side verandas. The order used in the front portico is evidently of Doric origin; district; that is, the whitewash stucco front and columns, while the sides and rear show the natural brick without paint or wash.

Passing down one of the sleepy old thoroughfares, one cannot fail to be attracted by the Otts house, at the end of a vista of dense green magnolias and smaller shrubs. The garden at its front has the old-fashioned walks wandering about in the cool shade of the magnolias and between the many flower beds.

One lamentable feature in the design of the Greek Revival houses is the utter neglect shown for the side and rear elevations. There are, however, a few exceptions to this rule. The average builder of that day seems to have thought that no one ever looked at the rear or the side of his house, and perhaps this accounts for the long rows of oaks and cedars that we find flanking

THE HOBSON HOUSE, GREENSBORO.

the immense pilaster columns are in fact piers, and the capitals are composed of only a few moldings. The interior of the house, however, makes up for the defects of its exterior. The library is perhaps the best designed of the many rooms. It is divided by columns and pilasters, the origin of which is undoubtedly the order used in the Tower of the Winds in Athens. The brickwork of "Bluff Hall" is of the common variety found in the Black Belt, the bricks being of a dark chocolate or dull brown color, of a rough surface, but uniform is size and laid up in thick white mortar joints.

A little to the north of Demopolis about twenty or twenty-five miles we come to Greensboro, a town very characteristic of this region. The old residences are situated far back from the streets and far enough apart to give that secludedness which the people of the old *régime* desired. For Americans this little town has some interest, it being the birthplace and home of Richmond Pearson Hobson, of *Merrimac* fame. The home of the Hobson family is a type of house found much in this the entrance driveways, and the massing of trees at the sides of the house, evidently to detract the eye from the errors of the design, and to focus it to the show elevation — the front. It is hard to trace back such a custom. Certainly it was not from the eastern states of the South, and it cannot be traced to the Greek Revival in Europe. The few exceptions to this rule are notable ones, being "Gaineswood" and the Otts place in Greensboro.

At the town of Marion, fifteen or sixteen miles from Greensboro, are found two examples worthy of note, the Perry County Courthouse and the main building of the Marion Military Institute, dating from 1820 and 1826 respectively. The courthouse impresses one at first sight by its simplicity of design and its air of repose and dignity, its large Ionic columns standing out in dazzling white against the rich foliage of the live oaks. The building of the Marion Military Institute was in the *ante bellum* period a college for girls, and was used for this purpose up to the beginning of the Civil War.

(*Concluded.*)

Shutters and Other Devices for Protection against Exposure-Fires.*

BY JOHN R. FREEMAN.†

A POINT which interested me exceedingly, in studying the Baltimore ruins, was to see whether thin wrought iron or steel plate, such as is used for covering fire-shutters, had at any point been heated to a temperature where its power of resistance was seriously impaired. The ordinary underwriters' fire-shutter depends for its strength and its resistance upon its thin covering of very soft mild steel coated with tin. I examined thin sheet-steel lamp shades, thin bands for pipe coverings, tin boxes, filing cases, and dozens of shutters themselves. In no place did I find any indication that metal of that quality had been so softened or had reached such a heat that it would be seriously impaired for the purpose of fire shutters, and one of the great lessons that I brought away from the Baltimore fire was that our standard tin covering for the underwriters' shutter is all right, and that this covering material has sufficient power of resistance to withstand the fiercest heat of a great conflagration, but that we do need to find some better material than pine wood to fill it with. I also made careful examinations of copper in flashings, cornices, etc., to see if it had melted. In a few small spots in rare instances fusion had begun, but in general I found it had ample resistance to fusion, so that it can prudently be used for covering fire-shutters, where something more ornamental or weatherproof than tinned plate is desired and expense is no bar.

The standard underwriter shutter of wood covered with tin did not give a very good account of itself in the Baltimore fire, and I think it can be said, without fear of serious contradiction, that the endurance of the ordinary underwriters' shutter of tin-clad wood is limited to not more than about half an hour's endurance of a temperature of 1,500 degrees Fahrenheit, and that this limit is often passed in the heat of an ordinary conflagration, and that in many of the cases where single doors or shutters have shown up so well there has happened to be an incoming air current that has helped to cool the shutter.

The limitations of the tin-clad wooden shutter were shown at one corner of the burned district in Baltimore. A large shirt factory, whose windows were protected by wooden fire-shutters, had a very close call. By heroic efforts, with private pump and hose streams, the employees saved the factory. I took particular interest in examining those shutters, and although this was not at the hottest part of the fire, I found, in parts of the shutter at the hottest exposure, that the pine wood was charred entirely through and all gone.

This matter of better shutters is one on which we should set some of our best talent at work in the experimental way. Although the present shutter and the present approved form of fire-door are all right nine-tenths of the time and perhaps nineteen-twentieths of the time, they are not all that we need in a great conflagration.

I have said that buildings can be made fireproof against bad exposures. The possibility of making them so is found largely in the development of a superior thin form of fire-shutter, and in educating the architects and owners of buildings toward building a shape of window that is easily protected by the fire-shutter, and a neat window jamb formed to receive this shutter when folded back inside the window.

Windows of suitable size for all ordinary office purposes can easily be so designed that they can be protected by fire-shutters, and that the shutters when open and folded back on the inside will not be obtrusive or unsightly. When a bad exposure fire comes the ruin of the sash and glazing can be paid for cheerfully if the contents of the building are saved.

I was very much interested in the efficiency of the plain steel plate shutters on the inside of the windows in the Safe Deposit and Trust Company Building. These kept the fire out very successfully, notwithstanding that the large non-fireproof building of the Baltimore *Sun*, which was entirely wrecked, and was one of the hottest parts of the entire conflagration, was only ten feet away. The damage was so imminent that the police ordered the men to leave the Safe Deposit Building, and the heat melted the lead sash-weights within the cast-iron window casings, destroyed the sash and glass, and chipped the brick walls, but the damage on the interior of the building was almost nothing. These steel plate shutters were so set that they were free to expand, and they were free from ribs, and of a form not likely to warp much, and they did in fact warp but little, and the casing and jamb were of such form that this warping of the shutter off its seat did not open a wide crack, and there was no combustible material near them on the inside to receive their radiant heat.

Ribs are dangerous unless very carefully designed and attached, and, as generally applied, increase the liability to warp. I happen to have been an eyewitness of the fire twenty or twenty-five years ago that gave to the tin-clad shutter its great start on the road to popularity. This fire was in the Pacific Mills, at Lawrence, Mass. In that case there was a tin-clad wooden fire-door, of what has since become standard construction, standing immediately beside a steel plate shutter that was heavily ribbed on the edges. Apparently it was a fair comparative test for the two shutters. The ribbed steel shutter warped away from its bearings two or three inches, as I now remember it, in a way that let the fire play freely around its edges, while the tin-clad wooden shutter remained in place without warping and was in good working order when the fire was over, the tin covering intact and the wood charred only about half an inch deep. These results were published far and wide, and this gave the first great impetus to tin-clad wooden shutters.

There have since been hundreds of demonstrations of the endurance of tin-clad shutters in fires, and I have taken advantage of many opportunities to examine carefully into the conditions under which they have been exposed. The result of these examinations has been to convince me that the endurance of the tin-clad shutter is limited; that its limit of endurance is often passed; that for severe cases we do need something better than the ordinary underwriters' tin-clad wooden shutter; and that

* Extract from an address at the annual banquet of the National Board of Fire Underwriters, New York City, May 12, 1904.

† Consulting engineer, Providence, R. I.

we do need something very much better than the ribbed steel shutter or the rolling jointed steel shutter.

At present the best we can do in any important case is to use two fire-shutters or fire-doors, one outside and another inside; one will receive the brunt of the onslaught, and perhaps in the course of half an hour or an hour warp or break down; the second, shielded behind the first, will stand up to its work until any ordinary fire is over.

It seems to me that the main reason why those steel shutters in Baltimore, at the building which I have just mentioned, performed so well was that they were free from ribs, and thus became heated more uniformly, with but very slight warping; that they happened to be so fastened to a frame that they were free to expand, and their seat happened to be of such a shape that, although the shutter did warp a little, this did not open much of a crack, and that there was no combustible material close to them on the inside.

The path of safety from exposure fires for office buildings and the like lies in a window casing formed so that we can attach to it a shutter of a form similar to the ordinary inside house blind. Our ordinary business buildings have walls thick enough, so that by making the shutter in four folds, or leaves, two being hinged together, and these two in turn attached to the wall, making each fold in the shutter only about fifteen inches wide, the window will be wide enough for all practical purposes, and we can fold the shutter back within the window jamb, very much as we do the inside blind.

To do that with the present ordinary tin-clad shutter would be almost impossible, because of the thickness of that form of shutter. It can be done with a steel plate shutter without ribs, and the radiation from the inside can be checked by some thin incombustible porous covering like asbestos board. If in our underwriters' laboratories, in our technical schools, and in our tours of survey we can direct attention to these views and urge the solution of the problem of how to make an efficient fire-shutter which shall only be three-fourths inch or one inch in thickness, I believe that before long the problem of protecting an office building against exposure fires will be found solved.

It is entirely possible to design a window opening adapted to receive a safe shutter, so that it will be just as convenient for ordinary business purposes as the type now common. I think it probable that the best place for the shutters is inside the glass, sacrificing the glazed sash outside them in case of any great conflagration.

We hear a good deal nowadays about "water curtains," and I would like to say just a word on that, because I think there is a great deal of misapprehension about their efficiency. I would like to say a word about wire glass also, because, although in general excellent, I think there is a great misapprehension as to what wire glass can do.

I began experimenting with wire glass very soon after it first came out, and I have used it in numerous instances, and it is a most excellent material in its way, but it has its limitations; it has the same limitations that a water curtain has, and that is, that it does not stop the passage of radiant heat.

You all have noticed how, when you are traveling in a railway train, perhaps at sixty miles an hour, and they happen to be burning a pile of ties along the track, that although your face is directed towards your newspaper, you will feel the flash of heat passing through the car window and striking against your face as you go past that pile of burning ties. That simply illustrates the great ease and rapidity with which radiant heat passes through glass.

Now, radiant heat passes through glass with wire netting in it almost as easily as it does through any other glass, and the record made by wire glass in a certain building in Baltimore, which is pointed to with so much pride, is, I think, simply due to the fact that it was at a place where nothing combustible was immediately behind it. If you have a stock of dry goods, or wooden ware, or baled cotton or hemp just inside a wire glass window without shutters, and there is a hot fire across the street, these can probably be set on fire with much promptness by the radiant heat passing through the glass, and the subject should be thoroughly studied on a large scale in our underwriters' laboratories. For safety there must be something which will stop the radiant heat, and that can only be in the form of a shutter, and, by virtue of stopping the heat, the shutter will become hot.

The case with the water curtain is very much the same as with the glass. Water is diathermous, as physicists call it; that is, radiant heat passes through water very easily. We must, I believe, set down these stories that have been told about the efficiency of water curtains as being mainly fairy tales.

This supposed efficiency of the water curtain is another topic which I hope that some one of our underwriters' laboratories and some of our schools of applied science will take up and investigate with precision of measurement.

The window sprinkler came in for a good deal of praise in certain quarters in Baltimore. I took particular pains to investigate that, because I wanted to find just how far they merited it, and I have no doubt they did some good, but they are not entitled to anything like the glory that is claimed for them. They will tell you a great deal about the remarkable work done by the window sprinklers in the Toronto fire. Now, I sent a bright young engineer up there especially to investigate that question and to go into it in detail, and to take photographs of the individual windows and to get right down to the bed-rock facts, and, from the mass of evidence that he brings back, I do not doubt that they did some good; but the inside ordinary automatic sprinkler near each of these windows did very much more good.

In short, if you want to provide against an exposure fire, I believe the only way to do it is:

First, by a wall either of brick or cement concrete.

Second, by properly designed window openings and window casings; and

Third, by good shutters in those windows.

In the absence of shutters, automatic sprinklers, supplemented by heroic efforts with hose streams on the inside, may sometimes save the day, with great expense for water damage; but where exposures are bad, a good shutter on a proper window should be the first care of architect and owner.

Selected Miscellany and Editorial Comment

BUILDING COMMISSIONS.

THREE important commissions have in the past month been appointed by the State of Massachusetts. One is a special commission to consider and revise the building laws of the Commonwealth, which has authority to summon witnesses and to recommend changes in the law as it deems expedient, and is to report the draught of a new law to the next General Court on or before January 11. There is no doubt but that this commission will prepare and submit the draught of a law which will be admirably suited for its purposes. It remains to

OLD SOUTH BUILDING, BOSTON.
(Built around Old South Church.)
Brick furnished by Fiske & Co., Manufacturers' Agents, Boston.
Terra-Cotta by Atlantic Terra-Cotta Company.

be seen, however, whether the legislators will have the good sense to keep their hands off of the report or whether, as has usually been the case in the past, they will amend the report until much of the virtue is eliminated therefrom.

Another commission has been appointed which includes the secretary of the Boston Board of Fire Underwriters, the fire commissioner, and the building commissioner of the City of Boston. This commission

DETAIL EXECUTED BY ST. LOUIS TERRA-COTTA COMPANY.

DETAIL BY EAMES & YOUNG, ARCHITECTS.
Winkle Terra-Cotta Company, Makers.

is formed to pass upon applications to build mercantile structures with an undivided area exceeding 10,000 square feet on any one floor. The Legislature, by a recent amendment of the law, increased the limit for such structures from 10,000 to 20,000 square feet, provided that all buildings of over 10,000 square feet shall have an equipment of sprinklers, brick partition walls, exits and other fire protections satisfactory to this special commission. The alteration of the law was due probably in great part to the desire to erect for a dry goods company a building which would have a large undivided area, a condition not possible under the old statute; and the first building this commission will have

PENN MUTUAL BUILDING, BOSTON.
E. V. Seeler, Architect.
Built of Hydraulic-Press Brick laid Flemish Bond.
Terra-Cotta made by Conkling-Armstrong Terra-Cotta Company.

to pass upon will be this department store. The decisions of the commission will be looked for with great interest, and will be reported as far as possible in these columns.

A third commission has been appointed and has already largely completed its work. According to the

FAIENCE MANTEL IN DULL FINISH GREEN TILE.
Hartford Faience Company, Makers.

recent building laws, the height of buildings in Boston was fixed at two and one-half times the width of the principal street, or a maximum not exceeding one hundred and twenty-five feet. This maximum has already been cut down by a special enactment, so that buildings facing on parkways can be only seventy feet high and buildings on Copley Square only ninety feet high. As

DETAIL OF SUBWAY STATION, NEW YORK CITY.
Heins & LaFarge, Architects.

the law now stands, however, the city is divided into two districts, one of which is practically considered as devoted purely to business, and the other is considered as devoted purely or potentially to residential purposes. In the former district the old maximum height of one hundred and twenty-five feet prevails throughout. In the latter district the maximum is cut down to eighty feet.

The first work of the commission was to establish bounds for each district, and, roughly speaking, the division between the two cuts across the peninsula following the line of Charles Street to Park Square, thence by way of Pleasant Street and Broadway to the harbor. This arbitrary division is bound to work hardship. The extensive region fronting upon Park Square, now occupied in large part by the deserted station and yards of the Providence Railroad, is all in the eighty-foot district. The land values in Boston during the last twelve years, or since the introduction of steel frame construction, have been very generally readjusted upon the basis of an earning capacity as derived from a building one hundred and twenty-five feet in height. To have this possible limit cut down forty-five feet means a reduction of not less than thirty per cent in the earning capacity of the building, and in many cases would mean the difference between success and failure. We feel that this limitation is in the wrong direction, that it will decidedly hurt real estate values,

FAIENCE TILE USED IN NEW YORK SUBWAY.
Grueby Faience Company, Makers.

and will tend to retard natural development without offering any real compensation. If the law had been restricted in its application to hotels and apartment houses, there might be more reason for it, though the position of this journal has always been very clear that the height of a building ought not to be fixed arbitrarily, independent of its surroundings and location, but should be fixed by relation to the street or open space in front of it. The commission having charge of the administration of this law is prepared to consider requests for changes in the

WARD BUILDINGS, MINNEQUA HOSPITAL, PUEBLO, COLO.
Entire group of buildings roofed with Ludowici Roofing Tiles.

WAITING ROOM IN RAILWAY STATION.
Showing effective bonding with Tiffany Enameled Brick.

DETAIL BY GEORGE S. MILLS, ARCHITECT.
Northwestern Terra-Cotta Company, Makers.

districting, but the fact that such limitations exist has always made it hard to dispose of some pieces of real estate in the so-called residential district and will undoubtedly operate as a hardship to real estate owners.

HOUSE AT AVONDALE, OHIO.
C. M. Foster, Architect
Roofed with American S Tile, made by Cincinnati Roofing Tile & Terra-Cotta Company.

MEMORANDA ON THE COMPETITION OF THE CARNEGIE TECHNICAL SCHOOLS.

THE Carnegie Technical Schools will provide a comprehensive system of secondary technical education based on the needs of workers in the industrial field generally.

There are at present numerous industrial schools throughout the country organized for work along definite and more or less restricted lines. But a new significance attaches to the organization of the Carnegie Schools, for the scheme of instruction is arranged to meet an expressed demand. This was brought about by a thorough canvass of the industrial workers in Pittsburg, and the younger people in the public schools from whom the ranks of the workers are to be recruited. These people were individually asked by the committee to state the particular calling for which they desired to be trained, and upon the basis of some 15,000 replies thus received the courses of instruction now announced have been arranged. These are no fewer than seventy in number, covering practically the entire range of the manufacturing industries of Pittsburg, and thus presumably very broadly those of the country at large.

The scheme upon which the work is to be administered was outlined by a commission composed of Messrs. Arthur L. Williston of the Pratt Institute, Brooklyn; Arthur A. Hamerschlag of the New York Trade Schools (now the director of the Carnegie Technical Schools); and C. B. Connelly of Pittsburg.

The problem laid before the architects is that of providing for the instruction, under this scheme, of 4,000 students.

DETAILS BY GEORGE B. POST, ARCHITECT.
Perth Amboy Terra-Cotta Company, Makers.

DETAILS BY KEES & COBURN, ARCHITECTS
American Terra-Cotta & Ceramic Company, Makers.

ARMORY, MEDFORD, MASS.
Shepley, Rutan & Coolidge, Architects.
Built of Sayre & Fisher brick. Roofed with Celadon Roofing Tile.

The program states in an appendix the general character of the work to be done in the schools.

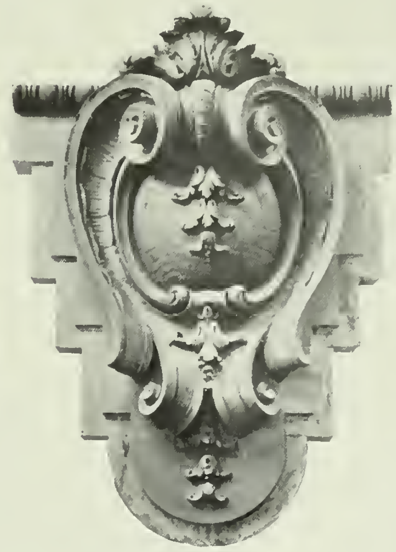
The plot of ground reserved for the schools is thirty-two acres in extent, and it is probable that the actual ground area covered by the buildings will be between ten and twelve acres. This includes extensions of shops, etc., for which provision must be made in the preliminary design. The total floor area of rooms (exclusive of hallways and other auxiliary spaces) will possibly reach a total of 1,000,000 square feet.

The probable cost of buildings and equipment is not stated in the program, it being the desire of the committee to secure an architectural scheme suitable for carrying into effect the educational plan of the schools; but it is quite certain that an expenditure of several millions of dollars will be required to construct and equip the buildings called for by the program.

NEW HOSPITAL AT ALLEGHENY, PA.

THE new Allegheny General Hospital, Beezer Brothers, architects, illustrated on page 135 of this issue, accommodates about 420 patients, 208 of which are ward patients.

In the rear of the main building is a four-story power and service building, containing boiler room, electric lighting plant, refrigeration plant, laundry, morgue, ambulance room, dining room for help, contagious department, pathological department, and thirty-five bedrooms for help.



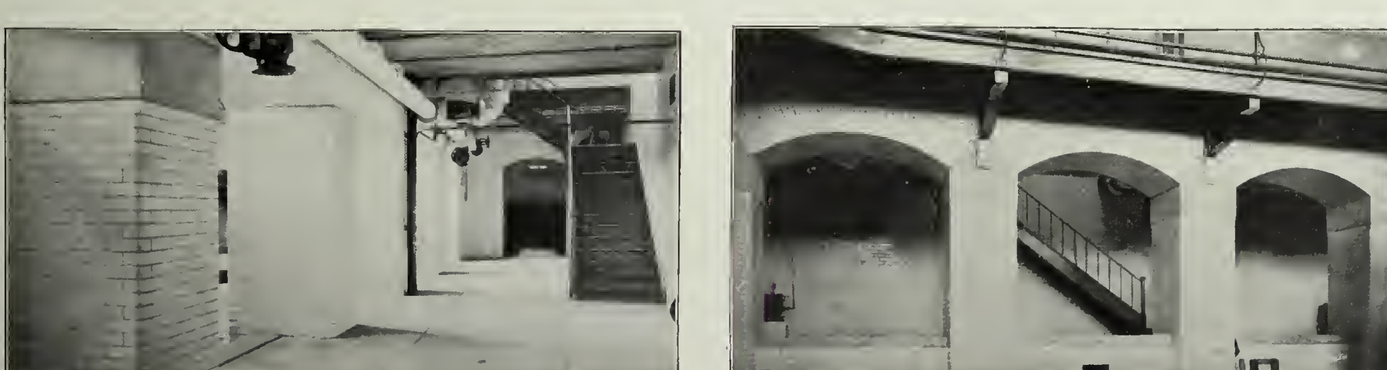
DETAIL BY D. D. KIEFF, ARCHITECT.
Brick, Terra-Cotta and Tile Company, Makers.

A very careful study was made of the heating and ventilating system. The cost was about $90,000, the total cost of the building, exclusive of furnishings, being $625,000.

The building is fireproof throughout, the Johnson long span system of hollow tile being used. The fireproofing was furnished and set by The National Fireproofing Company.

ENAMELED BRICKWORK IN THE NEW PUMPING STATION AT WASHINGTON.

THE illustrations of this work which appear in this issue do not adequately represent its character, which is rather unusual. Great care was taken in gauging and laying the brick, the gauging being done on the job and not at the factory. By this method the best results are assured. Again, great care was taken in the



INTERIOR VIEWS OF THE NEW PUMPING STATION AT WASHINGTON, WHICH WILL SERVE THE DISTRICT OF COLUMBIA WITH ITS WATER SUPPLY.
125,000 first quality enameled bricks furnished by American Enameled Brick and Tile Company.

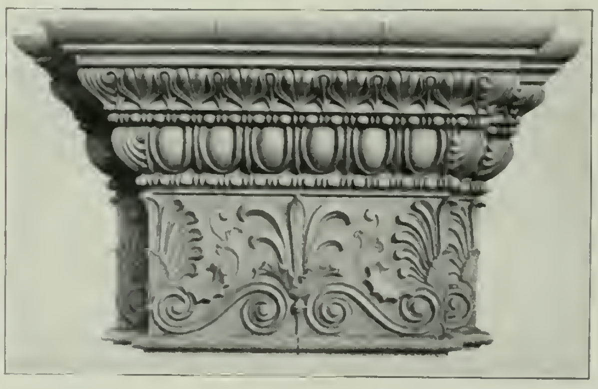
sorting of the brick, which has resulted in a uniformity of shade which is seldom seen. The joints, both vertical and horizontal, are of uniform width, which adds much to the appearance of the work. The arches are as nearly perfect as can be. Full size shrinkage scale drawings for every arch were made by the manufacturer from the architect's drawings. The location of each brick was indicated on the drawings, with a corresponding mark on each brick.

We have given this description of the work by way of suggestion to those who have similar work to do and are desirous that it should be done in the best manner possible.

IN GENERAL.

Totten & Rogers, architects, have removed their Washington office to 808 Seventeenth Street.

Mr. G. L. Hamilton has been elected vice-president of the Grueby Faience Company.



DETAIL BY C. K. PORTER & SON, ARCHITECTS.
Excelsior Terra-Cotta Company, Makers.

Rand & Skinner, architects, Boston, have dissolved their copartnership. Theodore H. Skinner will continue the practice, with offices at 364 Boylston Street.

T. A. Morrison & Co. have been appointed agents for the American Enameled Brick and Tile Company at Montreal, Canada.

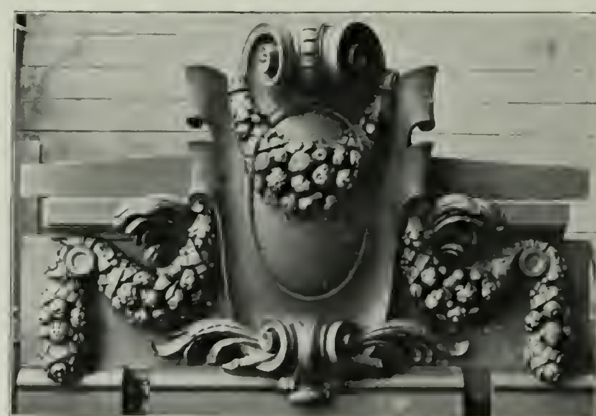
The group of Government Hospital Buildings for the Insane at Washington, D. C., illustrated in this month's issue of THE BRICKBUILDER, were roofed with Celadon tiles.

DETAIL EXECUTED BY NEW JERSEY TERRA-COTTA COMPANY.

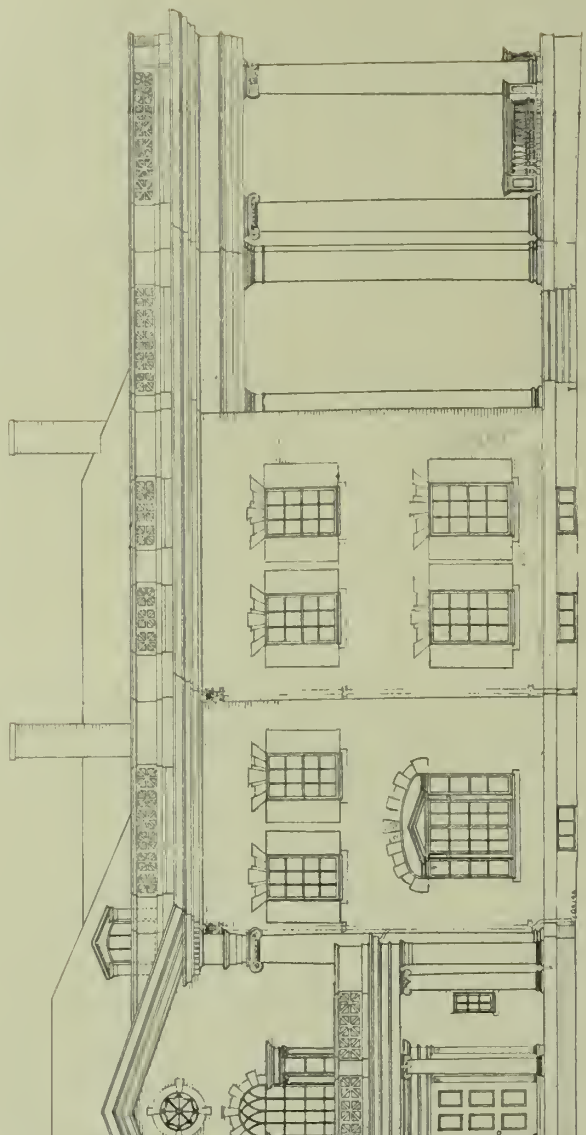
Herbert D. Hale, Boston, has won the competition for the United Engineering Building, to be erected in New York through the generosity of Andrew Carnegie. The cost of the building will be about $1,000,000.

DETAIL BY H. B. MULLIKEN, ARCHITECT.
New York Architectural Terra-Cotta Company, Makers.

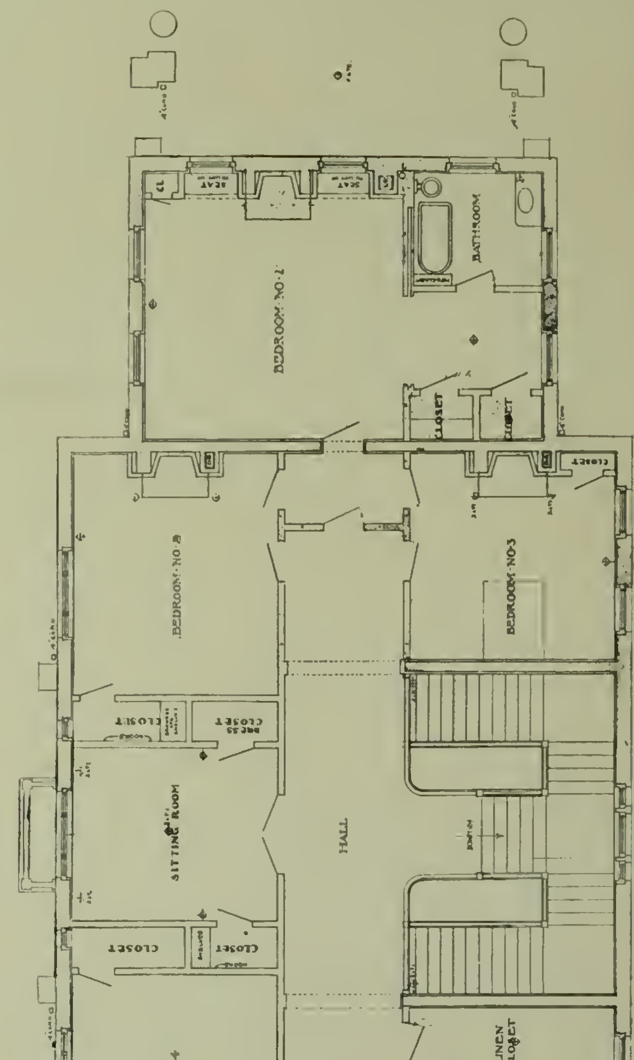
The American Enameled Brick and Tile Company have supplied nearly 400,000 enameled bricks for the new Bellevue-Stratford Hotel at Philadelphia; 25,000 enameled bricks for the exterior of an office building in Lima, Ohio; 40,000 enameled bricks for the Naval Barracks Training Station at Newport; 15,000 bricks for the new vaults in the machine shop at the Charlestown Navy Yard; 30,000 seconds for the new Commercial High School Building, Brooklyn, and 40,000 bricks for the exterior of the Minific Building at San Francisco, Cal. Fifty thousand of their bricks will be used in the Williamsburg Bridge No. 2.



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

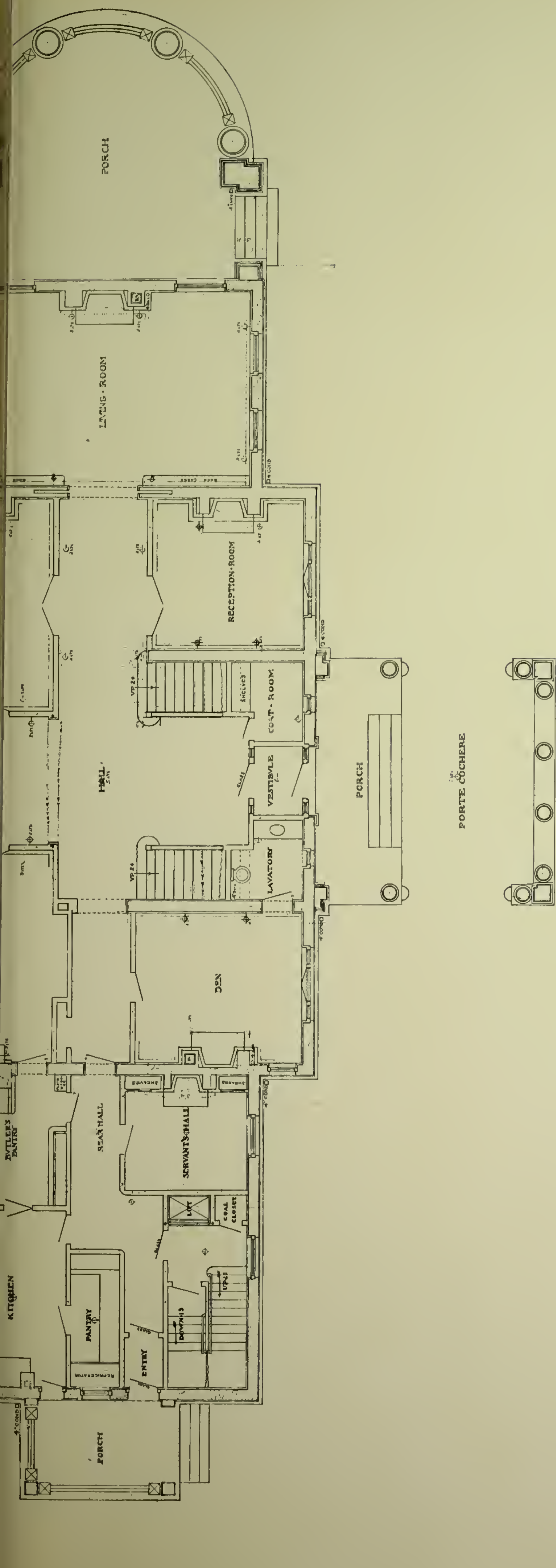


NORTH ELEVATION.



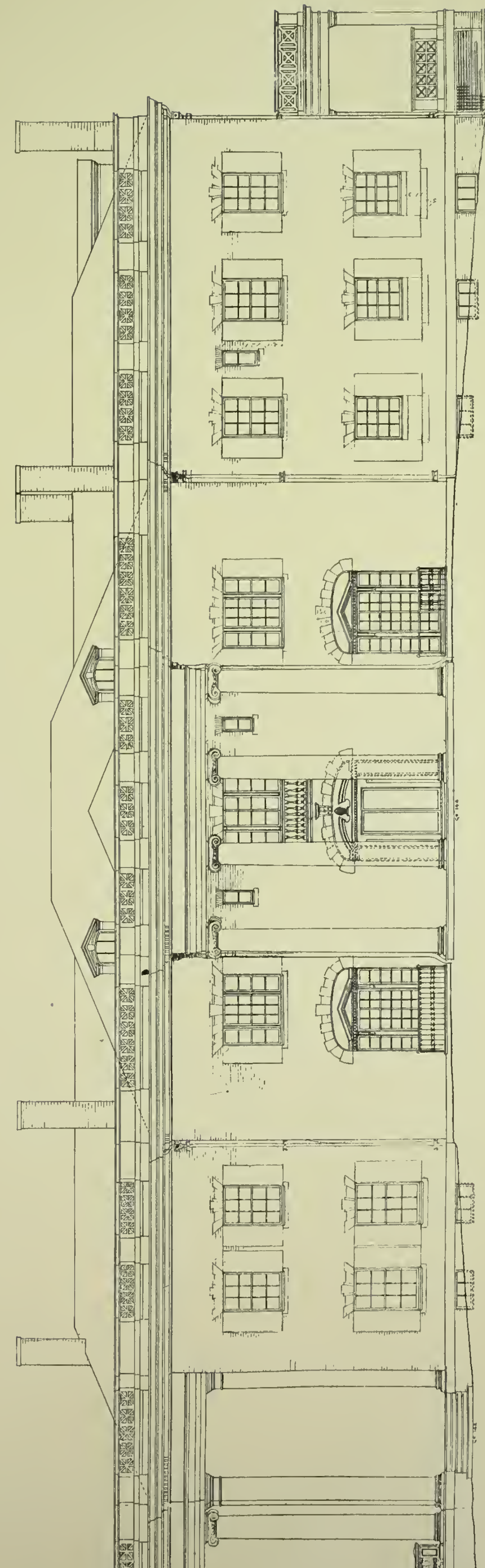
SECOND FLOOR PLAN.

PLATES 53 and 54.



B

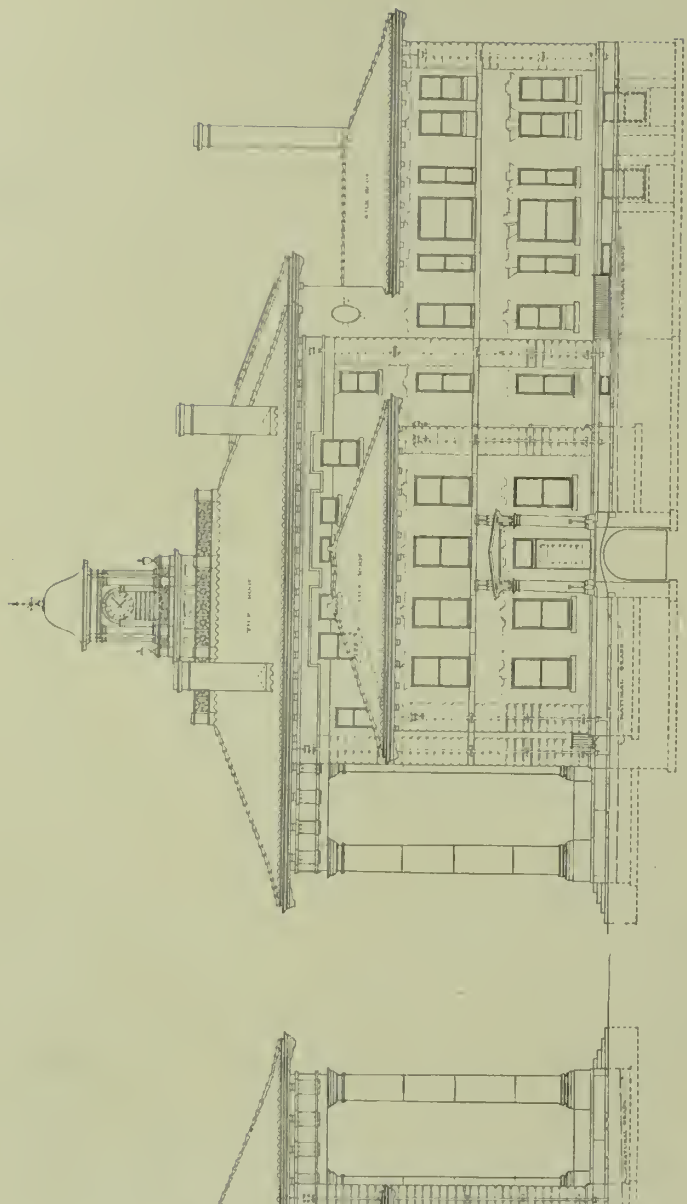
FIRST FLOOR PLAN.



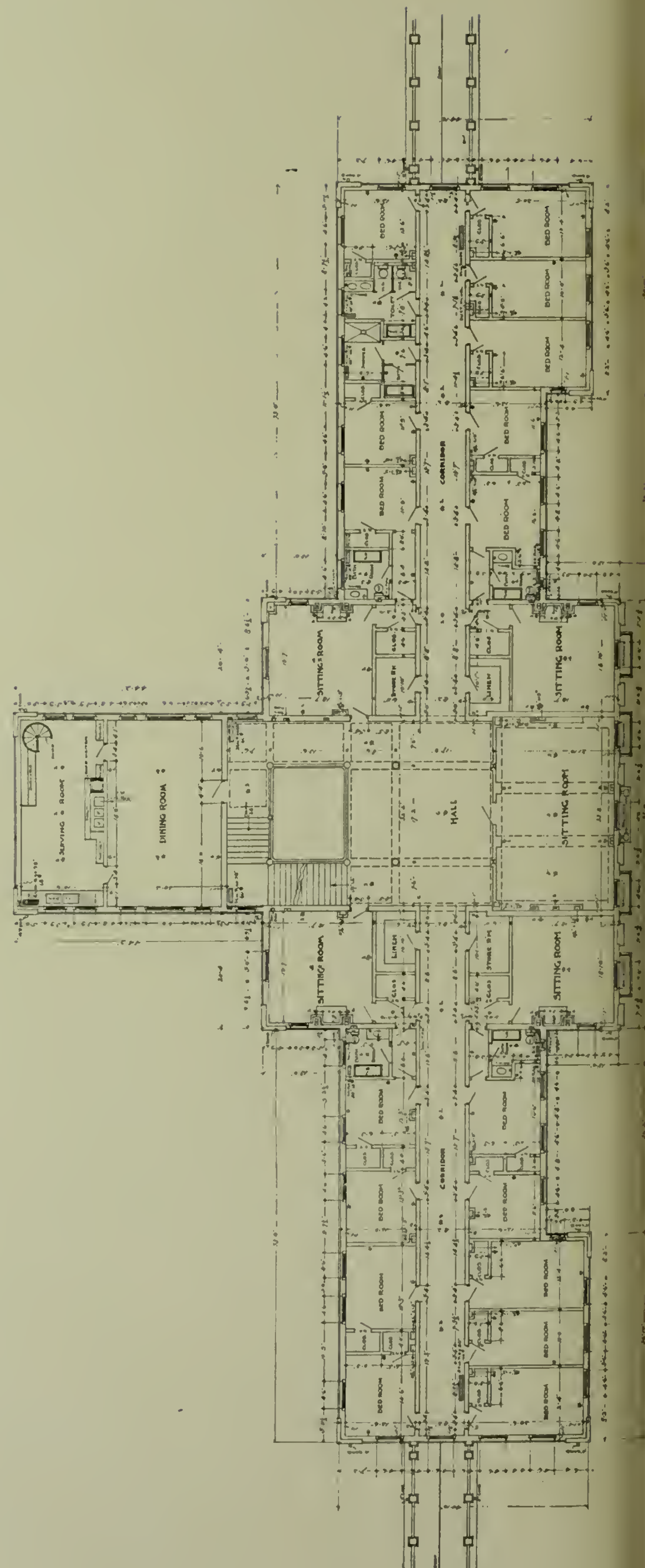
SOUTH ELEVATION.

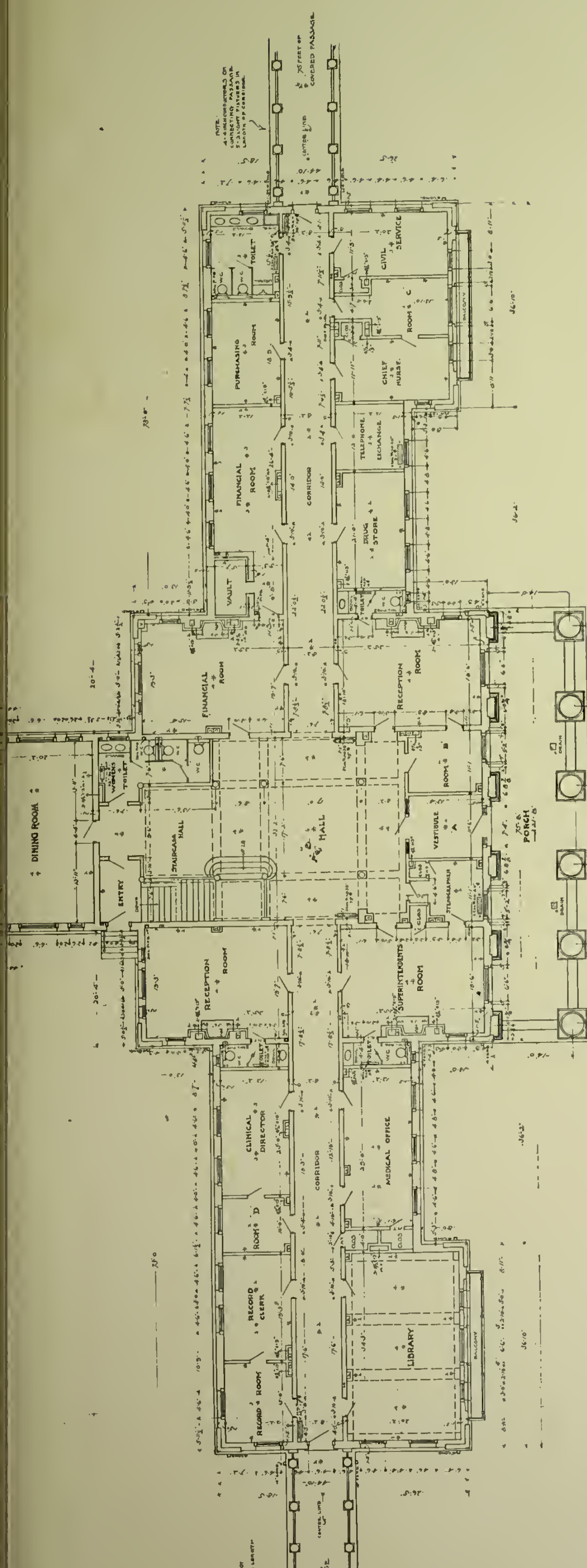
HOUSE FOR G. W. NORTON, ESQ., LOUISVILLE, KY

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

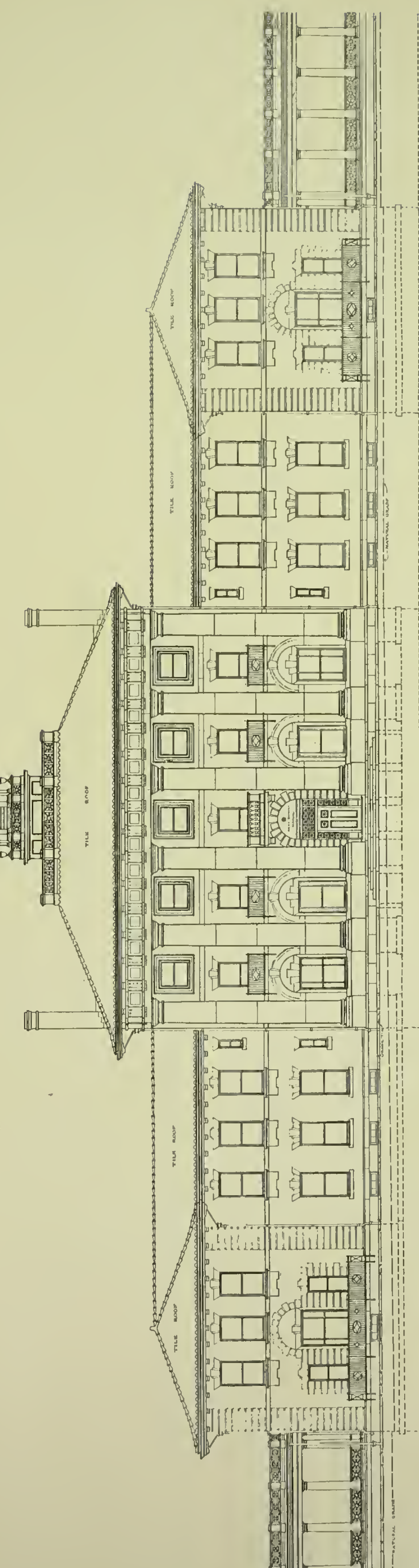


SIDE ELEVATIONS.





FIRST FLOOR PLAN.



FRONT ELEVATION.

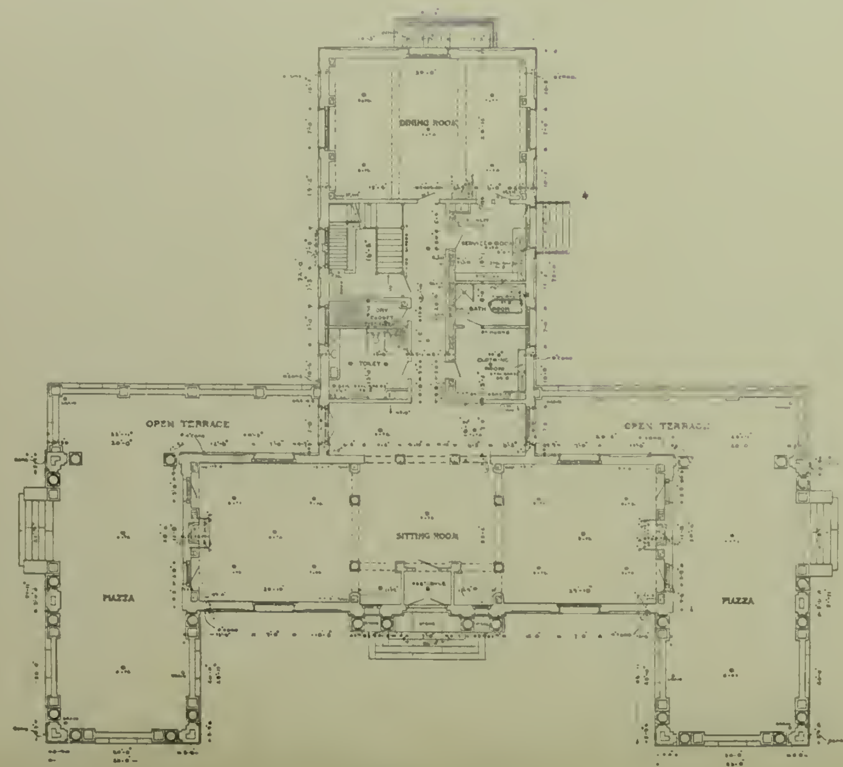
ADMINISTRATION BUILDING, GOVERNMENT HOSPITAL FOR INSANE, WASHINGTON, D. C.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

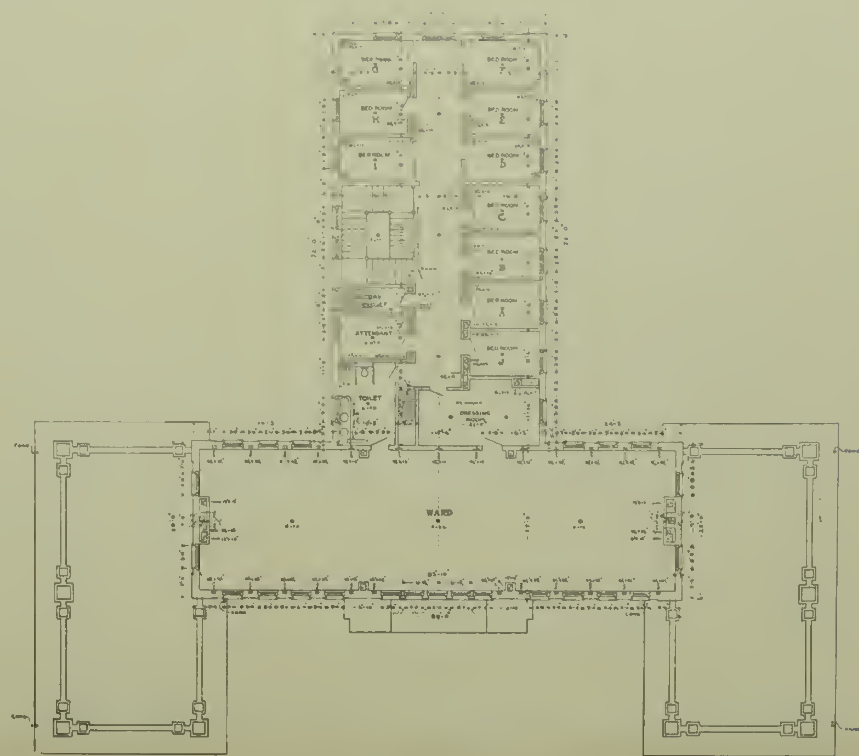
PERSPECTIVE. ACCEPTED COMPETITIVE DESIGN FOR Y. M. C. A. BUILDING, PAWTUCKET, R. I.

WALTER ATHERTON AND HERBERT D. HALE, ASSOCIATE ARCHITECTS.

FRONT ELEVATION.

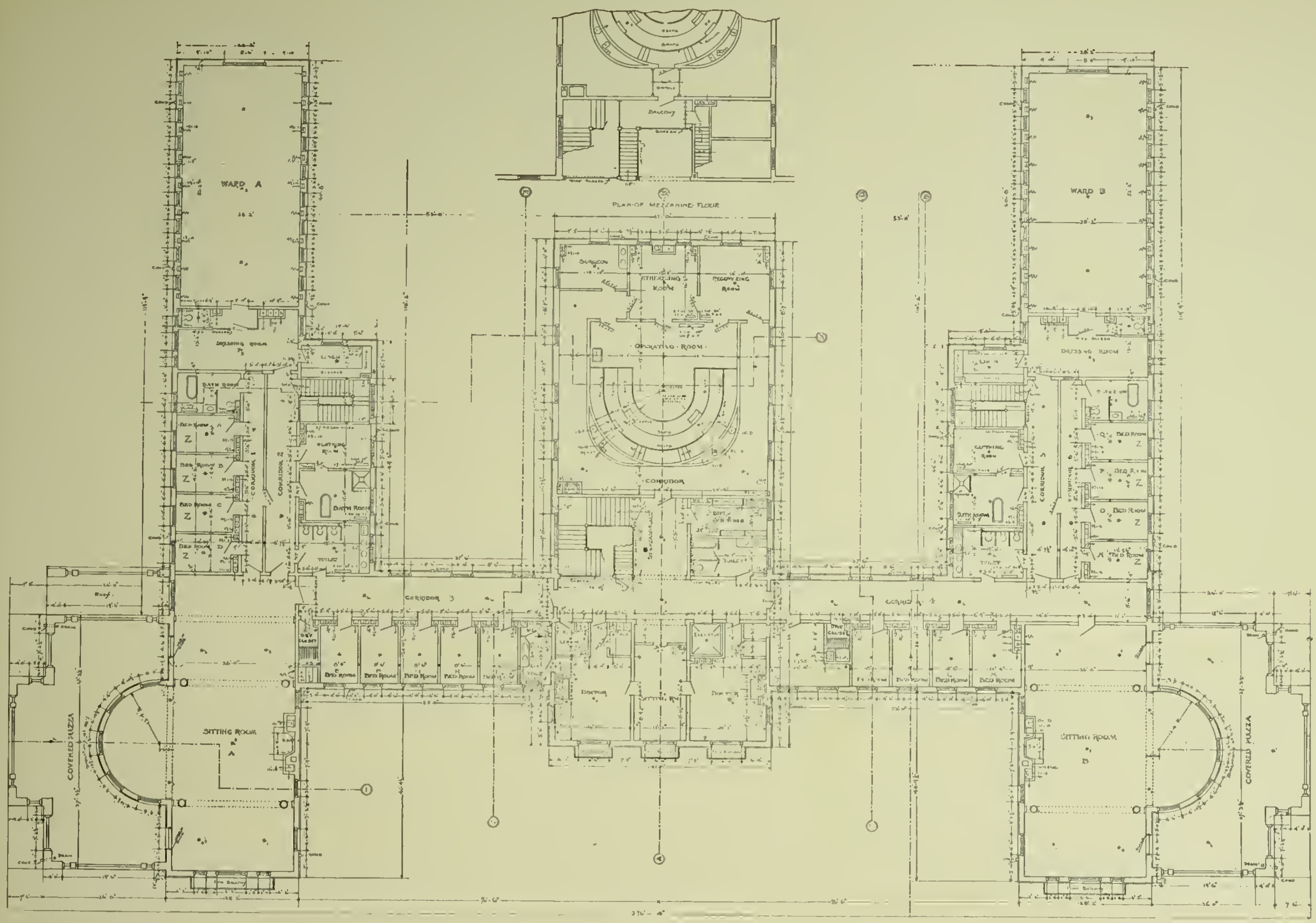


FIRST FLOOR PLAN.

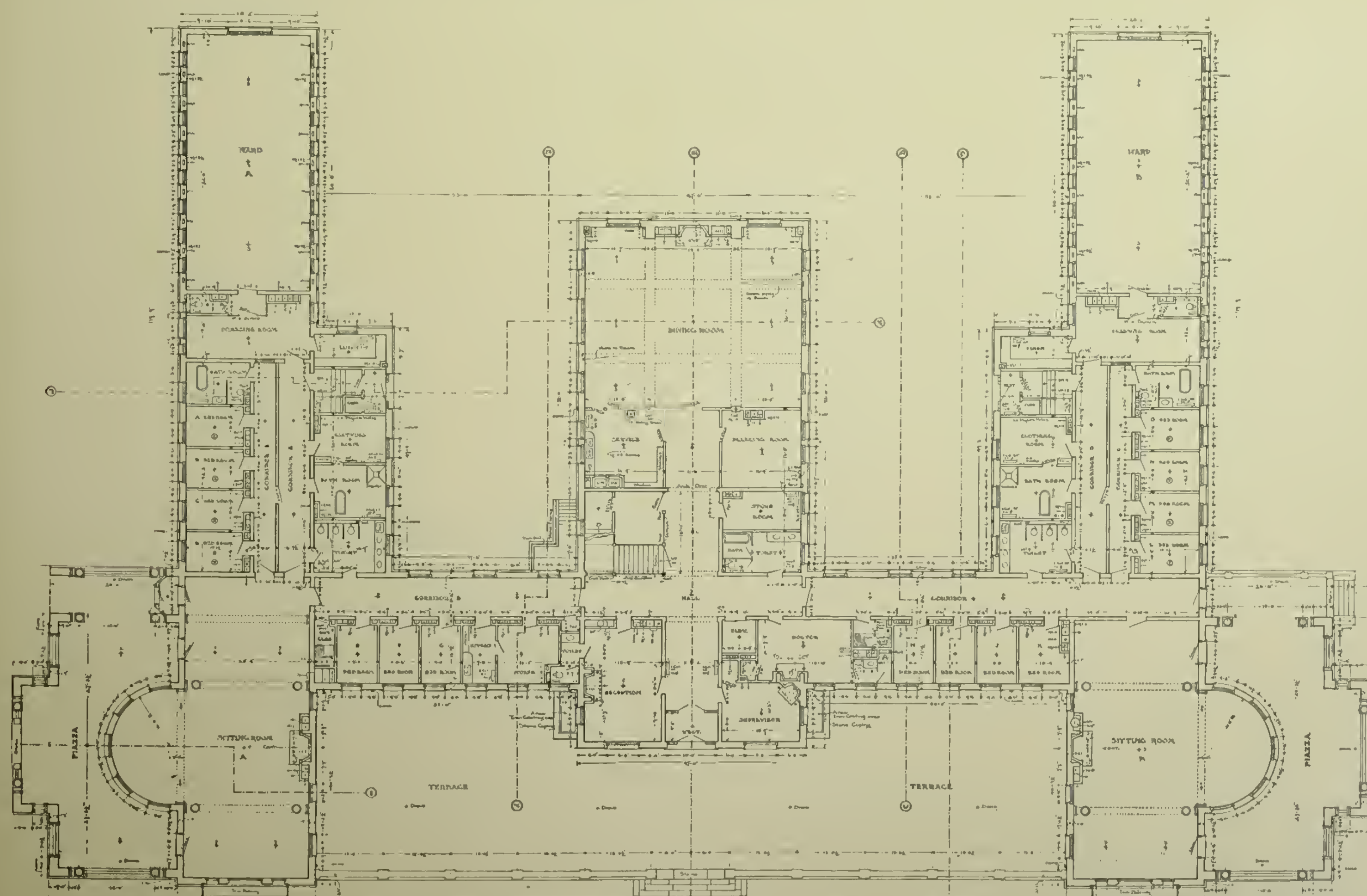


SECOND FLOOR PLAN.

COTTAGE FOR EPILEPTICS, FEMALE, GOVERNMENT HOSPITAL FOR INSANE, WASHINGTON, D. C.



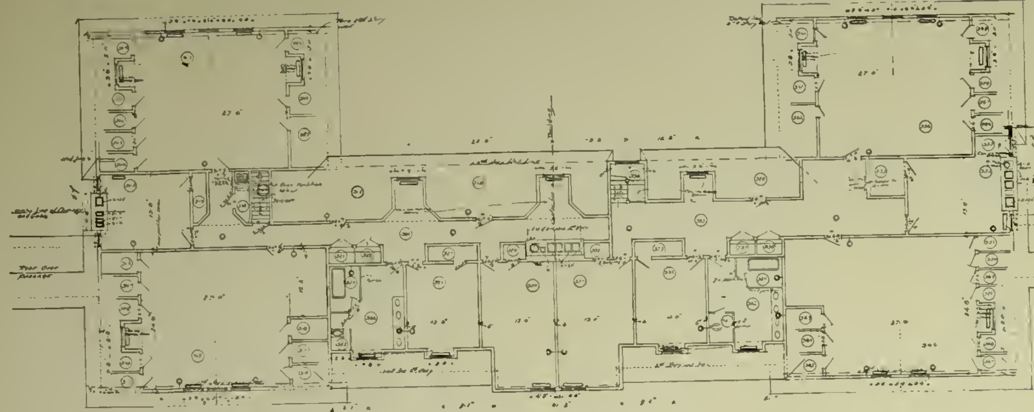
SECOND FLOOR PLAN.



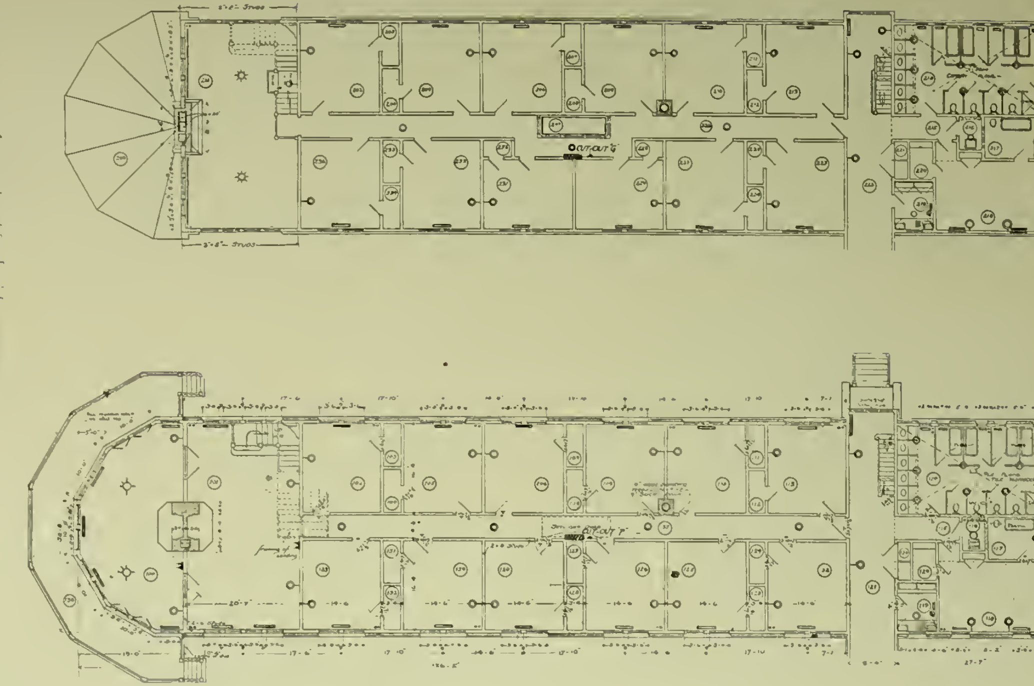
FIRST FLOOR PLAN.

PLANS, HOSPITAL FOR FEMALES, GOVERNMENT HOSPITAL FOR INSANE, WASHINGTON, D. C.

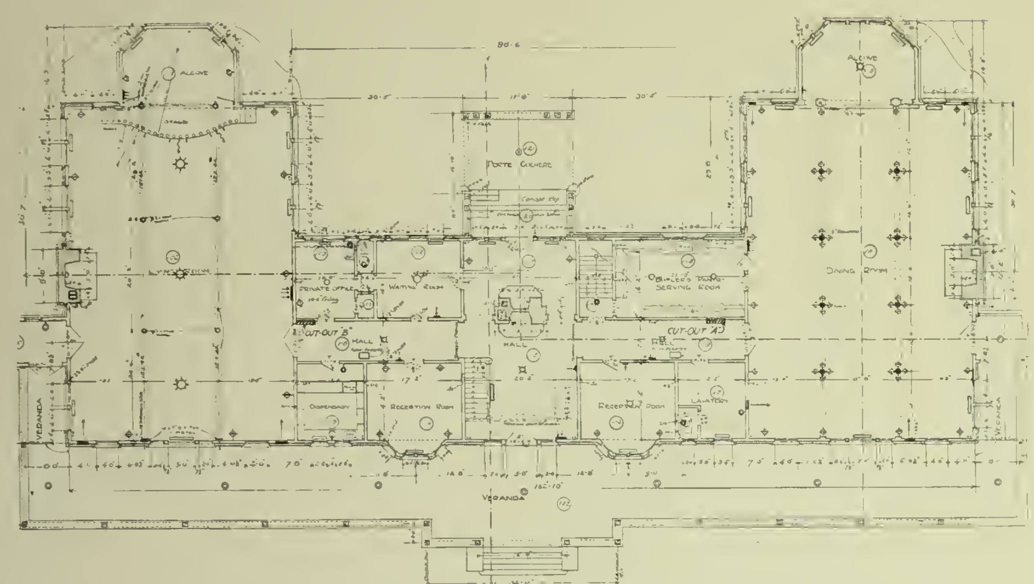
SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.



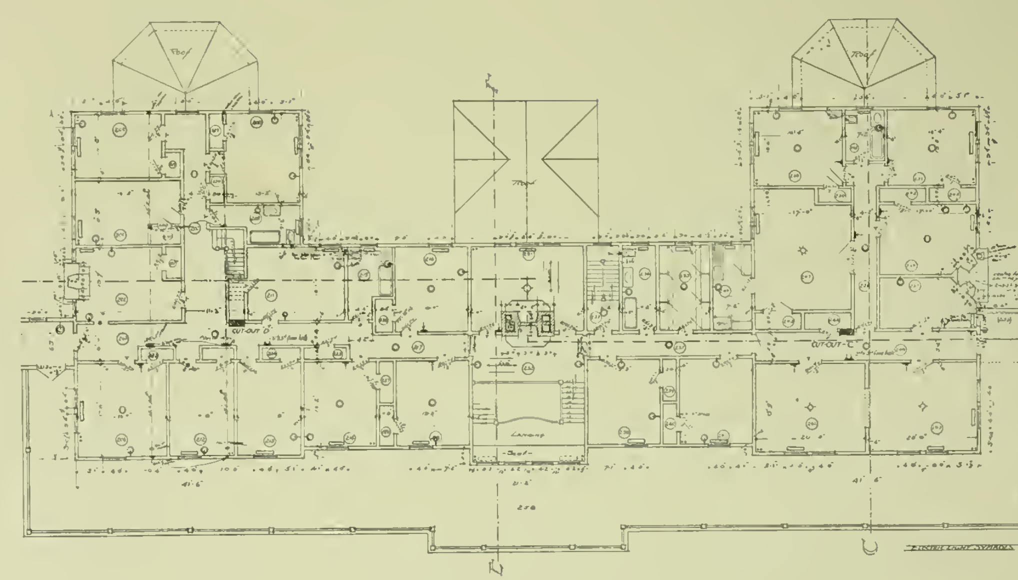
THIRD FLOOR PLAN, MAIN BUILDING.



FIRST AND SECOND FLOOR PLANS, BUILDING "A."



FIRST FLOOR PLAN, MAIN BUILDING.



SECOND FLOOR PLAN, MAIN BUILDING.

PLANS, STONY WOLD SANATORIUM, KUSHAQUA LAKE, N. Y.

RENWICK, ASPINWALL & OWEN, ARCHITECTS.

NOTE.—Kitchen, Bakery and Storerooms in basement. Second floor, rooms 236 and 242 to 255 inclusive are apartments for the superintendent; 234, bathroom for resident physicians: 235, linen closet; 231, sitting room for physicians; 211, 214, 215, 216, 218, apartments for the working staff; 200, 201, 202, 206, 208, 209, 212, 213, rooms for visiting friends of resident patients. Third floor, rooms 311 and 315, dormitories for female help; 305, 326 and 330, rooms for housekeeper and heads of departments; 354 and 346, dormitories for male help; 331, 336, 352, for chef and cooks; 319, 328, 332 and 339, closets; 324 and 342, washrooms; 301 and 365, closets. Building "A" is a room dormitory for patients. It is proposed to add dormitories "B," "C" and "D" at a future time similar in size to "A."

STONY WOLD SANATORIUM, KUSHAQUA LAKE, N. Y.
RENWICK ASPINWALL & OWEN, ARCHITECTS.

COTTAGE FOR EPILEPTICS—FEMALES.

COTTAGE FOR EPILEPTICS—MALES.

COTTAGE FOR MEDIUM CLASS—FEMALES.

GOVERNMENT HOSPITAL FOR THE INSANE, WASHINGTON, D. C.
SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

BUILDING FOR DISTURBED — MALES.

BUILDING FOR UNTIDY AND DESTRUCTIVE — MALES.

GOVERNMENT HOSPITAL FOR THE INSANE WASHINGTON, D. C.

SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

THE BRICKBUILDER,
JULY,
1904.

ADMINISTRATION BUILDING.

HOSPITAL FOR FEMALES, CONNECTED WITH AND AT RIGHT OF ADMINISTRATION BUILDING. HOSPITAL FOR MALES AT LEFT.

GOVERNMENT HOSPITAL FOR THE INSANE, WASHINGTON, D. C.

SHEPLEY RUTAN & COOLIDGE ARCHITECTS.

THE BRICKBUILDER
JULY,
1904.

HOUSE FOR G. W. NORTON, ESQ., LOUISVILLE, KY.
SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS.

HOUSE FOR G. W. NORTON, ESQ., LOUISVILLE, KY.
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THE BRICKBUILDER.

Vol. 13 AUGUST 1904 No. 8

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From Work of H. PERCY ADAMS, BARNETT, HAYNES & BARNETT, COPE & STEWARDSON, MEADE & GARFIELD, POND & POND, W. G. RANTOUL, TRACY & SWARTWOUT.

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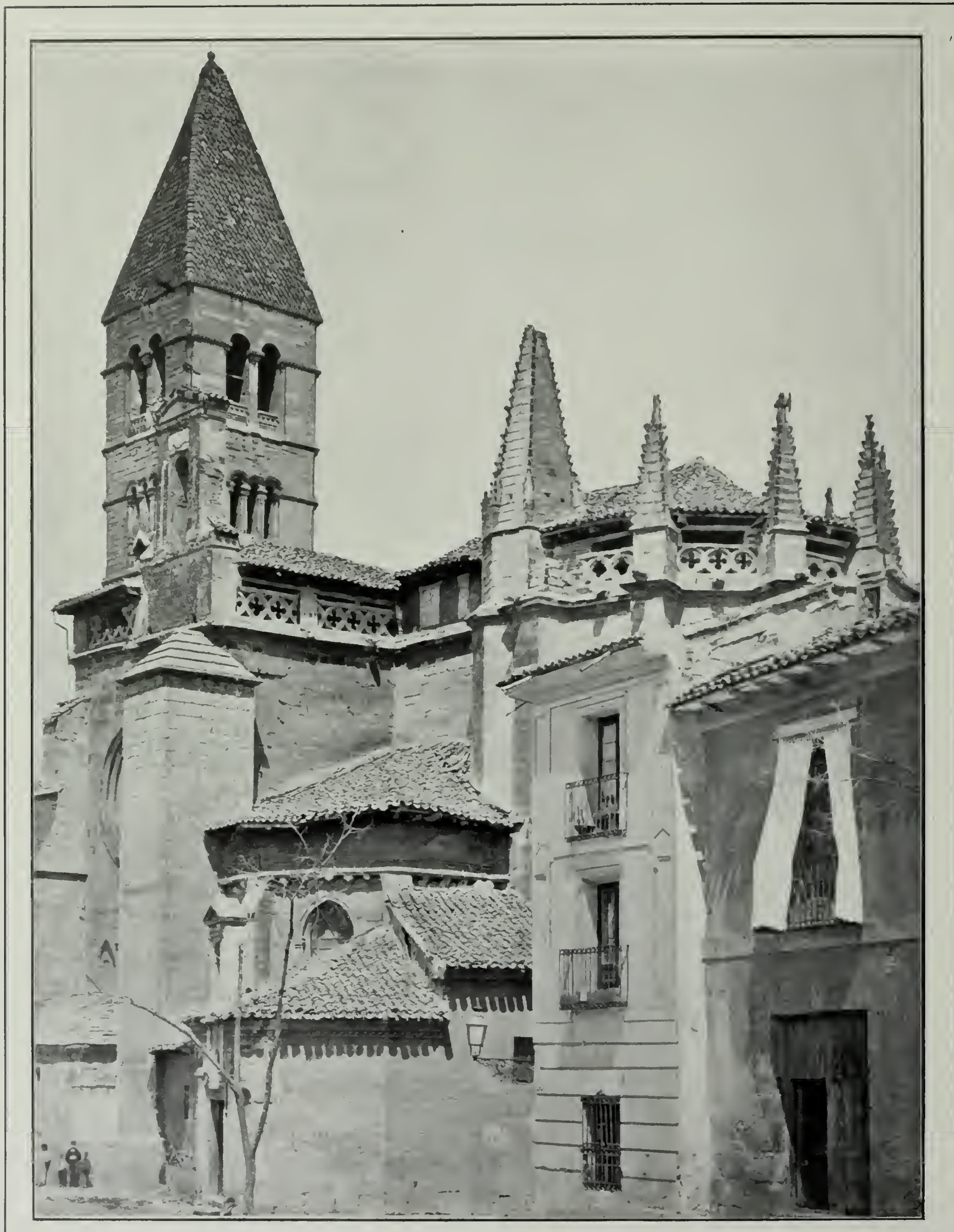

PARISH CHURCH OF LA ANTIGUA, VALLADOLID, SPAIN.

THE BRICKBVILDER

VOL. 13 No. 8 DEVOTED · TO · THE · INTERESTS · OF ARCHITECTVRE · IN · MATERIALS · OF · CLAY AUGUST 1904

THE BRICKBUILDER.

PUBLISHED MONTHLY BY

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ARCHITECTURAL EXHIBITIONS.

THE Architectural League of America includes in its membership the leading architectural clubs of the country. Each year the League has been instrumental in organizing a series of exhibitions of architectural drawings. These exhibitions have reached and gladdened the hearts of many architects whose opportunities are restricted and who welcome every chance to see what their more fortunate brethren are accomplishing in the larger cities. But each year the League exhibitions have failed to reach the public or to interest to any considerable extent those outside of the profession of architecture. It is not enough, in our opinion, that drawings should be made and hung in these exhibitions for the mere purpose of calling together members of the profession for a discussion of the merits of the different designs exhibited. A close study of the important work which has been done in a large city during the year is undoubtedly of interest and value to the architects of that locality, but it is not enough, and if the Architectural League of America will at its next convention devote a portion of its time to a serious consideration of public exhibits it ought to be possible to evolve some method of operations by which a service can be rendered to the public, while at the same time the exhibitions would be of greatly enhanced value to the architects themselves. We would have the character of these exhibitions changed very materially, so that they would be attractive to laymen and would have both interest and educational value for those who either build houses for themselves or are associated in the construction of buildings for business purposes. It is a well-known fact that the average layman has very little knowledge of what constitutes good architecture, but it is this class which is usually called upon to act as building committees for churches and other buildings of semi-public nature, and if our exhibitions can be of such character as to interest the average layman, there would be little difficulty in getting a large attendance from this class. It can not be hoped that the merchant or man of affairs will in any great measure improve his mind by studying books on architecture, and we are not arguing that he shall be educated sufficiently to dominate the work of the architect, but rather that he shall have set before him the kind of selection of good works of architecture which can appeal to his reason and help him to discriminate between good and poor design, between fitness and unfitness. The larger education of the average citizen will of course come from the perpetual reminder afforded by good works of architecture actually constructed, but in even the best of our cities the good is often hopelessly mingled with the bad, and we must therefore depend upon the architectural exhibitions to set the standard in such way that it can not be misunderstood. The conduct of these exhibitions is a duty which the profession owes to the public.

The trouble with the most of our exhibitions is that they are generally resolved into mutual admiration or slaughtering societies, and the great public which pays the bills and which really wants good architecture seldom seeks for it in the architectural clubs. But to accomplish a reform in this respect, or rather to start a new movement, it is necessary that the architectural societies should take the initiative and should make of these annual exhibitions something in which the public will have an interest and present it in a manner which will make it attractive to all. Possibly one of the first steps might be to admit to the managing committees some shrewd business men who would look at the thing from the public standpoint. The exhibitions of the Copley Society, in Boston, have been markedly successful, and some one has been unkind enough to suggest that a possible reason for this success is the fact that no painter or artist has the management. They interest the public in just the way our architectural exhibitions might and ought to attract general attention, and certainly the desired end would not be accomplished by holding the exhibitions remote from the beaten paths of the community, by charging admissions except to a favored few, or by treating the exhibition as a matter of purely professional moment in which the public has no part.

We may argue for a new style and new forms or for an old style and old forms in our architecture, but we can not hope to create an architecture which shall fairly represent the average intelligence of the American people until the public has a better conception of the fundamental principles upon which good architecture is created.

The Hospital "Unit."

BY GEORGE H. M. ROWE, M. D., MEDICAL SUPERINTENDENT, THE BOSTON CITY HOSPITAL.

THE motto of a famous scientist was, "Prove and prove again." This might well be the guiding idea of the hospital expert. Only long extended tests can vindicate what is best, either in method or result. The laboratory rule of "Observe, record, collate, conclude," applies to hospital construction as it does to most other lines of investigation.

The progress since the Civil War in building hospitals has given great impetus to broadening some of the general principles of their construction. Formerly they were not so often or so well constructed, because there were fewer standards. Medical science grew slowly, and naturally hospitals had a parallel development. Since the advent of aseptic surgery new principles have been evolved, revolutionizing old tenets and throwing new light upon the fundamental laws of construction. Even in my own time I have seen these principles pass through three stages: first, a "heap of buildings" full of ornamentation, with extension of surface in every conceivable form, both outside and inside the walls; second, the assumption that a building for sick people must necessarily become so choked and impregnated with disease germs as to be surgically unclean and hence unfit for safe occupancy, and that inexpensive one-storied buildings should be erected, these to be destroyed and renewed every ten or twelve years. But the advent of aseptic surgery soon taught us that it was not the germs lodged in a building that brought disaster, but the want of surgical cleanliness in all the persons and things that had to do with the patient. This aseptic surgical period brought a departure from the one-story building to those with several stories; but, recognizing new hospital principles, they combined every feature ingenuity could suggest for the cleanliness of buildings, as well as the absolute cleanliness of persons, instruments, beds, linen and utensils. This new point of view, together with the extended uses of steam, with electricity which permitted power to be transmitted where previously steam was impracticable, combined with new and well adapted building materials in the surgical sense, gradually evolved a better type which is now accepted as the present standard. The general arrangement of a hospital group, the various ends to be attained for the different kinds of work, have become better understood. It is now clearly appreciated that hospitals, like other architectural specialties, are a distinct class by themselves, and require a specific treatment quite different from other buildings.

In the previous articles that have appeared in THE BRICKBUILDER certain general principles of hospital construction have been ably set forth, and I do not intend to rehearse what has been so well said. I shall attempt briefly to elaborate some of the fundamental needs of construction and to deduct from my own hospital experience some conclusions, the result of a somewhat extended hospital service.

I take it for granted that the pavilion system is now conceded to be the best type of hospital economy, and my suggestions apply to a hospital, say, of 250 to 500 or more beds. As a numeral represents the definite number of units that compose it, so a hospital is a composite of the wards it contains. By the word "unit" is implied the large room or ward of standard size devoted to one class or sex of patients treated in one group, with the necessary accessories for the proper treatment of that group.

A hospital of any class or size, to be successful in its work, must in every case conform to at least three well-recognized curative agents:

First, plenty of sunlight. Each year of my experience emphasizes the importance of this factor. The architect should study and restudy his problem, "prove and prove again," keeping this as the first and greatest principle to which he must adhere; and just in proportion as he departs from it will his building be a failure.

Second, every part of a hospital, so far as possible, and especially all rooms in which the sick are treated, should have a plentiful and assured supply of *pure air* of standardized quantity, temperature and humidity. Most architects expend more labor in the attempt to attain this well-recognized desideratum, and give to it more thought than to the question of sunlight.

Third, in the general arrangement of the building and in all the details, outside as well as inside, the greatest consideration should be given to the problem of how to promote and insure cleanliness. An exterior laden with architectural ornamentation may be pleasing to the eye, but may not conduce to cleanliness. So, also, all interior details must be tested by the ease with which they may be kept clean, every part being continuously free from whatsoever impairs the cleanliness of patients according to the highest standard, — the room they occupy, the air they breathe, the multifold things used for their recovery, and obviously also the most careful personal hygiene of doctors and nurses. A hospital so constructed that it cannot supply these three indispensable factors is a departure from the best type. To these three essentials, sunlight, pure air, cleanliness, we may well add a fourth, fireproof construction. History shows that all wooden hospitals are ultimately destroyed by fire, and sometimes, alas! their occupants are also consumed.

It being assumed that one ward may now be safely superimposed upon another, the inquiry arises how many wards and how many sick persons may safely be placed in one building So many local restrictions obtain that various types of buildings result. Economy in first cost tends to create three and four story buildings. Limited sites, insufficient means, cost of land, and many other complications in thickly settled sections tend to multiply stories, and we find in some large cities hospitals of five, seven and nine stories, and one hospital about to be built will venture to run up to eleven stories. Such plans take the risk of more or less danger, although a thorough adherence to the principles of asepsis lessens the possibilities of the danger formerly so fatal. But even if the dangers are diminished, the administration of buildings with many stories must be much more costly. Comparison of different hospitals is oftentimes difficult, because the conditions and details vary so much, especially in cities.

The writer believes that when reasonable opportunities exist, even in city locations, hospital buildings should be upon the pavilion plan, not over three stories for wards of twenty-eight or thirty patients each, with a lower floor available for purposes directly connected with the wards, but not for the continuous treatment of bed patients, thus making an aggregate of about ninety patients in each building. Any considerable excess of this number of patients under one roof approaches a danger line.

It is a well-attested experience that when too many sick persons are massed in one building the conditions operate against the very purpose for which a hospital exists, that is, the cure of the sick. It was observed during the Civil War that the wounded soldiers who were treated in temporary shelters showed the smallest mortality; those who occupied farmhouses or other permanent structures were next in the percentage of deaths; while it was in the large barracks purposely constructed for hospital use where the mortality was in many cases enormous. Crowd poisoning resulted in epidemics of hospital gangrene, erysipelas, surgical sepsis, typhoid fever and a long list of other infections. History points out many hospitals, both military and civil, which have verified this experience.

Whether the building should be one, two, three or more stories, there is a standard justified by experience for the details of arrangement which ought to be found in every ward.

What should be the best width, length, height, square feet of floor space, cubic feet of air space, and other standards of construction in the hospital unit? The arrangement of wards should not only conform to the correct standard for the recovery of the sick, but economy of administration. Florence Nightingale in her "Notes on Hospitals," a book of paramount value to every hospital worker, points out that if the cost of nursing in a large hospital be capitalized, and if the total number of patients be divided into wards varying in number of patients in each ward, it would be found that if the hospital were divided into uniform wards containing nine patients each, the cost of nursing would be £428, or $2,140 per bed per annum; but if divided into wards of twenty-five patients each, the cost would be £231, or $1,155 per bed per annum; and if wards contained thirty-two beds the cost would be £220, or $1,100 per bed per annum. These figures have proportionately advanced in the forty-one years since her book was written. The architect should therefore endeavor, the factors of land space permitting, not only to arrange the wards according to sanitary and economic principles, but also to see to it that they are planned so as not to involve the management in avoidable expense in their administration. Architects sometimes fail to remember that they have it in their power to lessen or increase the annual expenditure.

In deciding upon the number of beds in each ward, several factors enter into the proposition. First, floor space. Too much attention, as a rule, is given to cubic air space and too little to floor space. A sufficient amount of floor space is one of the most important considerations. A ward, when other standards are met, may be 28 feet wide, and for these reasons, viz., two standard hospital beds (6 feet 6 inches long) on opposite sides of a ward, with 2 feet between head of bed and the wall, will require 17 feet, and 11 feet has proved a suitable distance between the ends of beds for ordinary ward work; but if clinics with large numbers of students must be provided for, then more space is necessary. The modern tendency is against large student clinics in wards. This makes a total of 28 feet transverse linear measure from wall to wall. Economy in expenditure of force on the nursing staff must not be forgotten. Nurses always dislike to be assigned to circular wards, and naturally, as the excess of labor required for the same number of patients in a circular ward over that in an oblong ward makes an appreciable waste of their strength, without any better results for the patients.

The number of beds intended for a ward should somewhat influence the width, it being evident that a ward of six beds requires less width than one of twenty-eight. The distance between beds, from center to center, sometimes spoken of as "wall space," on the same side of a ward, is worth attention. The distances vary in different hospitals; some are as low as 6 feet and others as high as 9 feet 10 inches. The distance of 8 feet from center to center of bed is considered a fairly liberal standard for the average ward devoted to acute medical and surgical cases. But highly infectious cases, or offensive septic diseases, such as smallpox, empyema, etc., should be given 12 feet of wall space. Allowing the width of a ward to be 28 feet, with 8 feet from center to center of beds, gives a floor space of 224 feet for the two beds opposite each other, or 112 feet for each bed; and this estimate is fully up to the average first-class ward.

In determining the height of a ward, several things are to be considered, — the amount of air available and used by the patient, the distribution of air as to direction and diffusion, the supplying of fresh air and the removal of vitiated air. This problem of ventilation was practically demonstrated by Dr. Edward Cowles, formerly superintendent of this hospital, in 1879, and the details of his demonstration may be found in the tenth annual report of the Massachusetts State Board of Health for the year 1879, page 231. These experiments proved that at or near the floor the movement of air was entirely lateral; at three feet, lateral and slightly upward; at five or six feet, upward and lateral; but at fourteen to fifteen feet the movement was entirely upward and not lateral at any point: indicating that all the air above fifteen feet was of no practical value to the patient, for want of diffusion. If, therefore, we place the height of a ward at fourteen feet six inches and multiply it by the one hundred and twelve feet floor space per bed, we obtain 1,624 cubic feet of air space per bed; and yet many hospitals of good repute have only 1,200 cubic feet per bed in wards for ordinary acute disease.

Having determined the proper floor space, the height of ward and the distance of beds from center to center, the legitimate length of the ward for twenty-eight beds is easily determined. Taking the beds from one to fourteen on each side, and allowing lateral space for each end bed, would make a total of one hundred and twelve feet as the desirable length for an oblong ward. These general dimensions may be compromised by cutting down the length from one hundred and twelve to ninety-eight feet; this slightly shortens the bed spaces and cubic contents, and yet does not depart too much from good standards. If any one rule must be maintained at the expense of any other, the distance between bed centers should be the last to be disturbed.

Sunlight being one of the three important factors in good hospital construction, then properly designed windows should receive due attention. There should not be less than one square foot of glazed window to every seventy-two feet of cubic contents in each ward. Many of the older wards maintain this standard, with seven windows on each side of the ward or one window for every two beds. But a better arrangement is to have thirteen windows for fourteen beds; these obviously are smaller windows and are apt to be opposed by architects, partly because they lessen the architectural effect of the exterior and also increase the cost. The windows should have an overhead transom, opening inward from the top, and within one foot of the ceiling. The objection to overhead drafts is less than is generally supposed, when the nurses understand the meaning of windward and leeward. The sill of the windows should be low enough to permit the patient to easily look out of doors when in bed, about thirty inches from the floor being a good height. While a plentiful supply of sunlight obtains as a rule, there are times when it is desirable to temporarily exclude it, for instance in high temperatures in summer days or where the condition of patients' eyes forbids bright light. Blinds upon the outside are dirt catchers, are troublesome in high winds and not easily managed by women nurses. Inside blinds of all patterns afford needless extension of surface for the collection of dirt, and the ward maid in cleaning only reaches the lower part. I know of no more practical way than to install cheap roller shades of light color, reversing the top and bottom at the end of one year and destroying and renewing with new ones at the end of two years. A second dark shade should be furnished to windows from which bright light must be excluded as stated above.

In mild climates the French window with door sashes opening outward, or for the whole distance to floor opening upon a balcony, are every way desirable, but this is not usually practicable in the average urban hospital. Of course this does not apply to wards with delirious or untrusty patients. In this climate double sashes in rooms occupied by the sick are not only desirable but absolutely necessary. It is easily demonstrated that with the same temperature and velocity of wind, the difference between single and double sashes varies from four to seven degrees Fahrenheit. They also assist much in allowing direct-indirect ventilation to "flush" a ward without draughts.

The general interior construction of a hospital ward should compass two desirable features: First, as far as possible, the materials used should be non-absorbent and free from all extensions of surfaces and angles or ornamentations. The walls should be of plastic finish, and there are several desirable materials now in the market which are hard, non-absorbent and ultimately covered with oil paint or enamel flat finish. The perpendicular and horizontal lines of wall finish should be coved and the windows of the simplest finish. The doors should have pine cores and be veneered, so as to be without a line or moulding. Doors properly constructed of oak or ash, when well finished and varnished, have a beautiful appearance. They should be not less than three feet and four inches wide to easily admit litters, beds and wheeled chairs.

Materials for ward floors seem to be a stumbling-block in the way of fairly good results at reasonable cost. Encaustic tiles are probably, all things considered, the most desirable; they have the drawbacks, however, of being expensive at first cost, requiring frequent repair, and are hard on the nurses' feet. Oak floors are expensive at the outset and need the best of care to justify their installation; maple and birch are not attractive in color or appearance, except selected birch, which is more or less expensive. Maple twists and curls at edges and shrinks lengthwise. There are new plastic floors in the market, ending with the inevitable "lith," which have many desirable qualities. They are not very expensive, have a fine "feel" under the feet, are not slippery, are noiseless and look well; but unfortunately, however laid, they soon crack. I know of no better material for ward floors at the present time, all things considered, than the best quality of clear rift, southern hard pine, strictly free from all defects, tongued and grooved, blind nailed, thoroughly kiln-dried and if possible laid in winter season. If properly put down, they are readily kept dressed by an inexpensive class of labor and look well enough for any grade of hospital ward. Hospital superintendents generally concede that the ideal floor still waits for an inventor.

Each ward of a large general hospital invariably requires special rooms adapted to the work of nursing. The room most in evidence day and night is the nurses' service room. It has different names in different hospitals and countries, such as duty room, service room, serving room, tea kitchen or scullery. By whatever name it is called, it should not be a scullery nor serve any purpose so that food cannot be decently served in it, which is its chief function. For a ward of thirty patients it should not be less than sixteen by sixteen feet, or two hundred and fifty-six square feet of floor in other proportions. Many architects of hospital plans, not knowing the daily ward routine, do not allow sufficient space. Often four or five nurses are distributing food on trays at the same time. To do this work properly, ample space must be allowed. The more complete service room should invariably have a terrazzo, tile, mosaic or non-absorbent floor of some kind; a dado five feet six inches high of glazed tiles, the walls above and ceilings to be well covered with enamel paint.

The service room should contain a suitable gas stove of liberal size for making hot food and drinks, with ovens for keeping broths or dishes warm, and similar uses, at all hours of day or night, and a plate warmer is also a first-class requisite.

A portable refrigerator of liberal size for keeping milk, butter, fruit, beer, etc., must be at hand. Better still is a refrigerator built into some suitable corner of the service room, with walls of the same construction as the rest of the room. It should have at least four or five compartments, each lined with slate or thick milch glass with shelves of slate or galvanized removable iron mats. If the hospital has a refrigerating plant, it might be utilized here, promoting suitable cold and cleanliness, since ice in refrigerators tends to much moisture and uncleanliness.

Dumb waiters from the basement are necessary for quick conveyance of hot food. There should be preferably one for each story only, and some recently invented electrical dumb waiters work admirably, permitting both use and control by women nurses in each ward, instead of the heedless hand methods, which porters control in the basement. It is unnecessary to say that the car should be of metal, finished with enamel paint.

A porcelain sink for dish washing, of liberal size, with hot and cold water and attached drip boards, is indispensable. A flue twelve by sixteen inches is a desideratum for the drying of dishcloths, as they quickly become foul with organic matter in their ordinary use, and they often pollute the air of a service room when everything else is clean. Dishcloths dried on suitable racks, on a sunlit balcony, is better than all other ways. Shelves for ward crockery and cupboards for dishes for special patients and for nurses' use complete the list of furnishings usually necessary. The things to be avoided in a service room are broom closets, numerous drawers, and, above all, the use of poultice dishes, fomentation cloths and the various utensils which come in contact with patients. Construction not only, but furnishing, is conspicuously important here, as it affects cleanliness.

Every well-arranged ward should be provided with a linen closet; a counter shelf on one side only of a narrow room for the folding of linen for ward and general use, with slatted shelves above, and cupboards, and a few drawers beneath. Here, also, are kept in labeled boxes, required articles for general use, but not necessarily bed linen. Pegs, hooks and similar fixtures are placed on the opposite wall for hanging splints, surgical cradles, crutches, etc., thus saving the nurses many steps in obtaining them from more distant places.

If it can be suitably arranged, a utility closet at the opposite end of the ward from the linen room, for keeping such articles as are used in bed-making, is desirable, and saves a nurse's strength.

Concerning the bathroom little need be said, except that the building materials should be non-absorbent, light in color, with white floor and walls, so as to easily show dirt. The tub, preferably of porcelain, should always be placed in the center of the floor, and accessible on all sides for the lifting of patients. A utility sink for nurses' use may be installed here, if room cannot be found elsewhere. Such work as cleansing rubber sheets, washing surgical dressing basins, making poultices, washing catheters and patients' toilet basins, and much other indispensable ward work obviously must not be done in the service room sink. But inevitably this work will be done there or in the bath tub, if a proper utility sink is not provided.

It is now generally understood that water-closets, urinals, etc., should have the same building materials as the bathrooms. Some hospital superintendents are omitting urinals, which are so difficult to keep clean, and unless perfectly kept they become the most offensive fixture of the ward. Slop hoppers, suited to the use of bedpans and urinals, must be placed here. A ventilated closet, for dejections to be inspected by the doctors, is a hygienic and desirable feature.

Toilet basins for patients should not be combined with the bathroom nor with the water-closet, but in a room or alcove by themselves. Apparatus for hydrotherapy, X-ray or crematories for ward refuse should not be a part of the ward outfit, but are best arranged as a separate equipment or department, to which patients or materials may be taken from many wards. This plan is better for the patients, as well as for economy of administration.

A few other helpful things are necessary to make a perfected ward. A room for patients' clothes is required, with suitable metal stalls where the clothing may be hung up and exposed to the air, thus promoting cleanliness. Patients' clothing should never be done up in bundles nor placed in small "cages." This room is best when not heated, but requires a liberal fresh air inlet, and an outward "vent" that ventilates.

Hospitals vary in the method of installing what is comprehended by the words "medicine closet." Some keep the medicines in a conspicuous part of the open ward. The writer believes this to be a bad practice for reasons that cannot be elaborated here, and unfortunately sometimes it is entirely overlooked in the building plan. It should also not be placed in the service room. The best location is in the corridor, at or near the main entrance to the ward, the doors opening at the wall line, and constructed into some room space but accessible only from the corridor.

It should have a counter shelf of slate or dark marble with a fourteen-inch aluminum set bowl, with hot and cold water, drainage and one electric light pendant. The shelves should be of slate or glass, both above and below the counter shelf. Such an arrangement is a help to cleanliness, promotes greater certainty in its work, and saves undue expenditure of effort on the part of the nurse. A special inside closet with alarm or other control is desirable, in which to seclude medicines marked "Poison."

In the larger teaching hospitals a special room for surgeons or physicians is considered necessary, in which patients may be examined or dressings changed. Indeed this is desirable in most wards, if the floor space permits. In small hospitals one or two isolating rooms for special cases should not be forgotten.

A caution is necessary in planning a ward lest, in taking the floor space required for all these special objects, the length of a ward becomes unwarrantably long, or that floor space that should be given to patients is cut down; in either case the construction cost per bed would be somewhat larger than the *pro rata* which usually obtains. Not more than twenty per cent to twenty-five per cent should be allowed for rooms not devoted to patients' beds. This is one of the causes of increased cost of hospitals, but surely it is just these things that make hospitals of the best type, just as the up-to-date business office block is more costly but more efficient than the former styles.

The topics of stairways, fire escapes, elevators, roof airing courts, heating, ventilation, operating rooms and hospital administration, as well as ward furniture and equipment, are indirectly connected with the title of this paper; a part is technical, but belongs to general building construction and requires careful consideration, but cannot be discussed here. From observation and the records of experience I have brought together briefly the essential features of a hospital unit, intended to secure the three great essentials for the cure of the sick, sunlight, fresh air and cleanliness.

The Work of an English Hospital Architect, H. Percy Adams. II.

(Article I on page 139.)

BY R. RANDAL PHILLIPS.

A DESIGN which has attracted a great deal of attention is that for the King Edward VII Sanatorium, now being erected at Midhurst in Sussex. About two years ago a competition was held for the best essay on a sanatorium for consumption in England, Sir Ernest Cassel having placed $1,000,000 at the disposal of his Majesty the king "for any philanthropic purpose he might have in view." The prize of $2,500 was duly awarded, but the sanatorium is not being built according to the prize plans, but from those prepared by Mr. Adams, who paid a special visit of inspection to the most modern sanatoria in Europe last summer; so that his plans may be considered as embodying the best and latest practice in this branch of hospital work.

The site consists of one hundred and seventy-one acres and is four hundred and ninety-five feet above sea level, backed and protected by a lofty pine grove. The sanatorium will have accommodations for one hundred patients — fifty male and fifty female. The original intention was to provide for those belonging to a class just above the very poor, such as teachers, governesses, clerks and shop assistants; but his Majesty did not think it right that those who could afford to pay for skillful treatment should be excluded from the benefits of the institution, and so, of the one hundred beds, eighty-eight will be assigned to the more necessitous classes and twelve to the well to do.

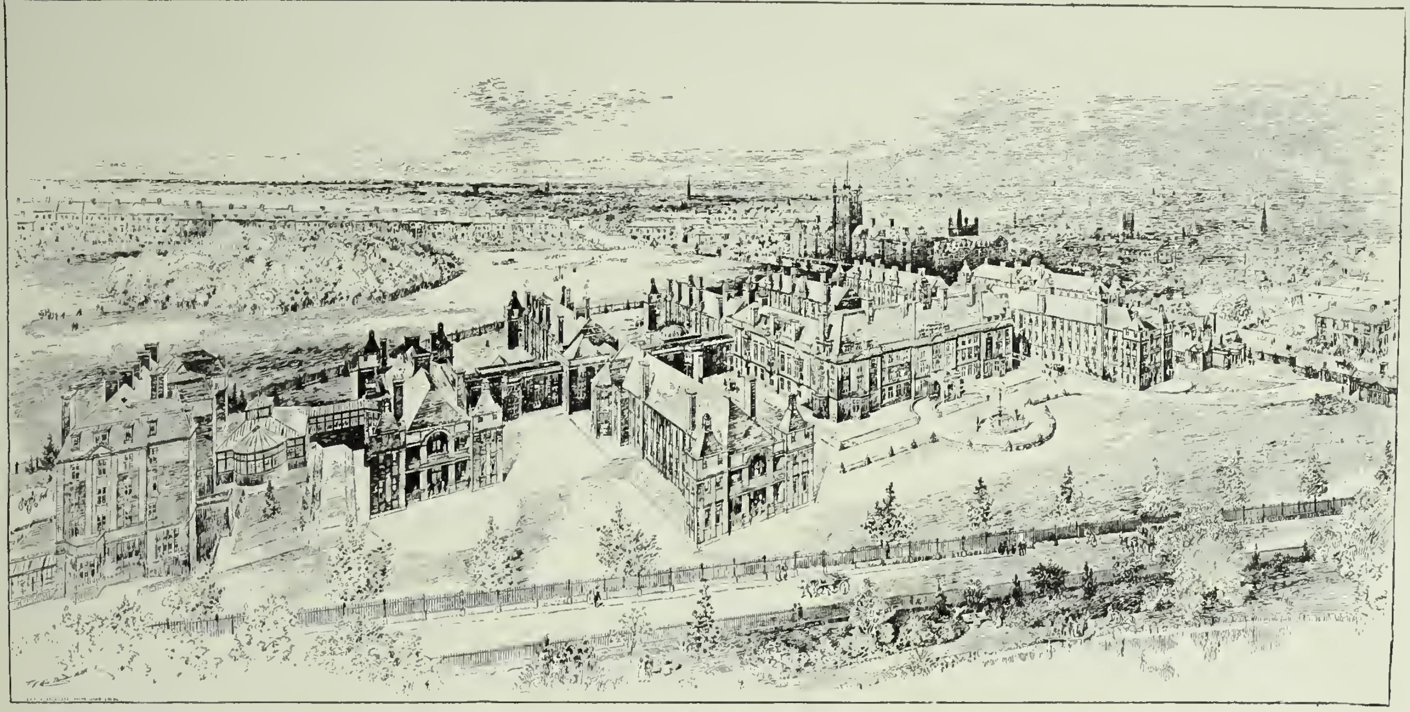
The sanatorium itself will be divided into two distinct parts: (1) the administrative building and (2) the patients' building, these being connected by a broad central corridor enclosed on the ground floor only. Both buildings are planned on parallel lines east and west. The accommodation provided in the administrative building is shown by the accompanying plans. On the lower ground floor, under the medical officers' apartments, are the porters' rooms. On the second floor are the thirteen nurses' bedrooms, facing south and west, with two bathrooms attached; while on the first and second floors, reached by a separate staircase, are bedrooms for nineteen servants.

The patients' building is divided into three distinct blocks, connected by corridors on each floor. On the first floor of the center block are fourteen bedrooms (two as spare rooms for the well-to-do class), each fourteen by eleven feet three inches and eleven feet high, thus allowing 1,730 cubic feet per head. There are also two sitting rooms. All these rooms have a balcony, eight feet wide,

THE KING EDWARD VII SANATORIUM AT MIDHURST.
(For elevations and plans, see plate form.)

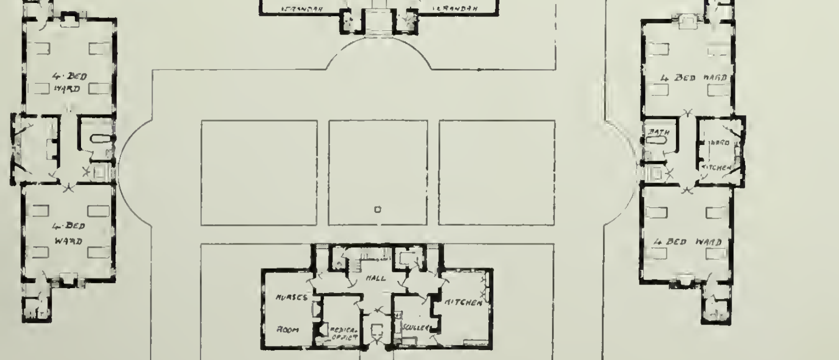
facing south, and it is arranged that each patient shall have a part screened off for his or her use with canvas fall-down blinds. A bathroom for every three patients is also provided, and an attendant's room. There is a covered promenade fifty feet long, for use in wet weather. It will be noticed that the well-to-do patients have separate access to the grounds, the hydro-therapeutic department, medical consulting rooms, dining hall and main entrance.

On the top floor of the central block is accommodation for twenty-two necessitous cases and one spare room. These wards are each thirteen feet six inches by eleven feet six inches and eleven feet high, giving 1,700 cubic feet space per head. They are intended for patients too ill to leave their rooms and are provided with a balcony. Owing to their central position they can be easily served from the kitchen (a subway connecting the two food lifts); they are also accessible from the medical officers' and nurses' quarters and are near the passenger lift. The wing on each side of the central block has a covered promenade one hundred and fifty feet long. On the ground floor, but raised at least seven feet above the



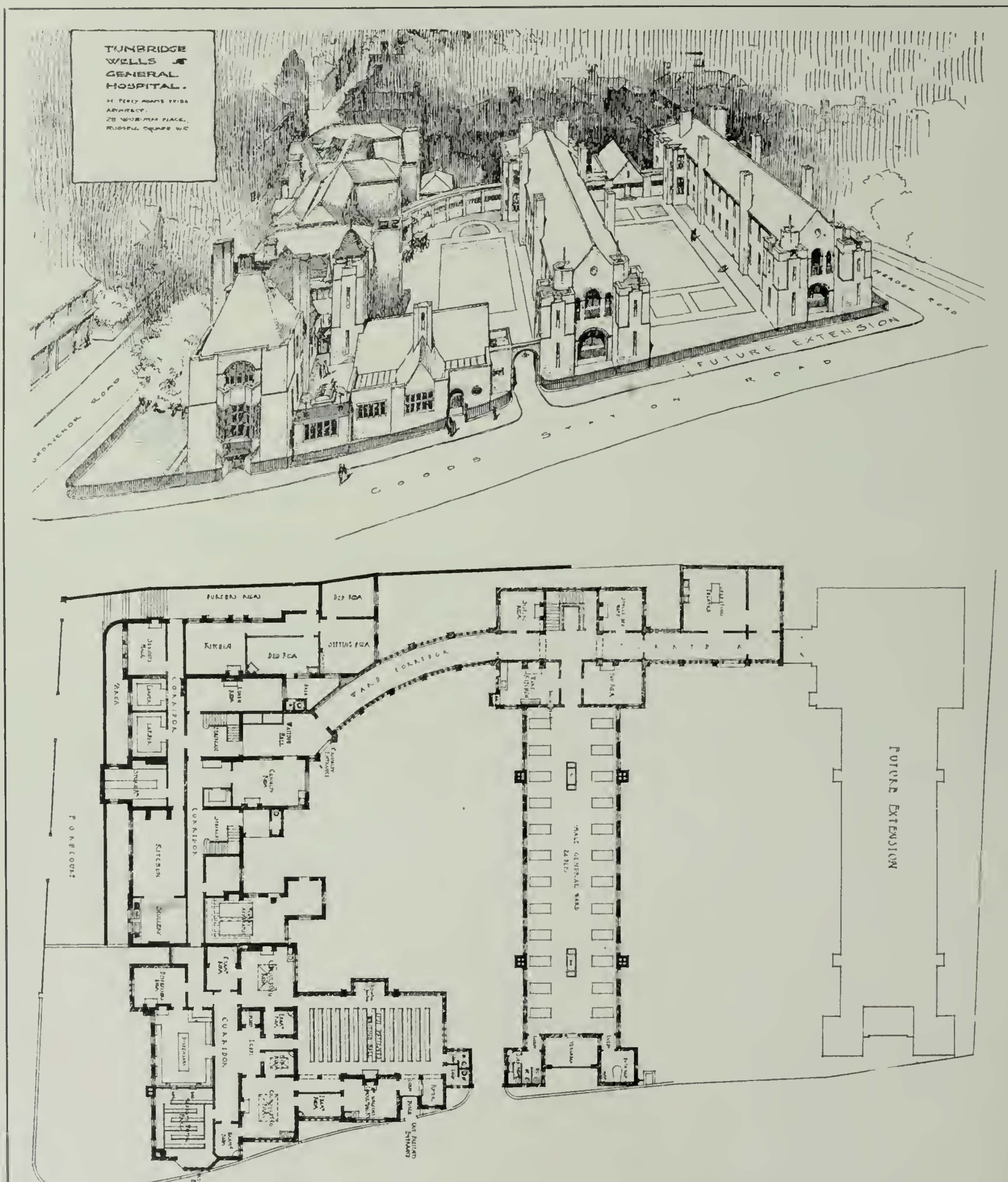
THE ROYAL VICTORIA INFIRMARY, NEWCASTLE-UPON-TYNE.

ground, are sixteen bedrooms, sixteen feet by eleven feet three inches and eleven feet high, giving 1,980 cubic feet per head, with a terrace eight feet wide in front and with nurses' rooms, linen rooms, bathrooms, etc., arranged similarly to those on the first floor, though the balcony is here smaller (four feet three inches wide). At the extreme ends of the buildings are small fire-escape staircases giving access to the shelters or *liegenhallen*, which it is contemplated to build. On the male patients' side workshops have been provided in the basement. The cost of the sanatorium is estimated at $375,000. The chapel is a very interesting building, in shape like a Y, the men being in one arm of the fork and the women in the other. The arms have open arcades, and thus the patients are kept in the fresh air while at service. In summer time the preacher will occupy a pulpit in the open space between the arms.



PLAN, AMPTHILL ISOLATION HOSPITAL.

At Newcastle-on-Tyne the very extensive Royal Infirmary is being completed from the designs of Mr. Adams and Mr. Newcombe. This has been in progress of erection for four years and will involve an expenditure exceeding $1,250,000. The site is on the Leares. Altogether there will be four hundred and fifty beds, two hundred and twenty of which will be for surgical cases and one hundred and eighty for medical, the former being accommodated on the ground floor and the latter on the first floor, with the fifty children in a separate pavilion. These beds are contained in eight ward pavilions running parallel with one another and axially due north and south. The pavilions are spaced at intervals of seventy feet and are two stories high, except at the lower end of the site, where an additional story is provided. The wards are one hundred and two feet long, twenty-seven feet wide and thirteen feet high, and accommodate twenty-four beds each; this gives an area of 1,492 cubic feet per bed, the window space being in the proportion of one square foot to every sixty-four of cubic air space. The wards are self-contained and can be shut off from one another in case of need. The administrative department is centrally placed



GENERAL HOSPITAL, TUNBRIDGE WELLS.

among them and contains all the necessary rooms for officers and staff as well as students. Here the kitchen is on the second floor. A main corridor runs the whole length of the buildings. At the extreme west end of it, on the highest part of the site, is the nurses' home, accommodating over one hundred nurses, and at the opposite end of the corridor the out-patients' department, one story high. On the north is a chapel to seat one hundred and fifty patients, with a gallery for nurses. The rooms for the reception of accidents, etc., are at the rear of the administrative block, and the laundry and boiler house are at the southwest corner of the site, this being the lowest level. The elevations are of red brick and stone, and the roofs are covered with Westmoreland slates. It is expected that the hospital will be ready for opening in August, next year. The operating theater is interesting for the gallery arranged about seven feet from the floor. This has been provided for the students and dressings and tiled roofs, teak floors, walls lined with glazed brick dadoes painted with enamel paint above, except the bathrooms, which are tiled. Ventilation is provided by fresh-air inlets at floor level and extracts at the ceiling. The cost of the hospital will be $50,000.

The cottage hospital erected at Woburn for the Duke

CHILDREN'S WARD, GENERAL HOSPITAL, TUNBRIDGE WELLS.

OUT-PATIENTS' HALL, GENERAL HOSPITAL, TUNBRIDGE WELLS.

gives them an excellent view of the table, a desideratum not always secured by the usual tiers of steps. The introduction of this gallery was decided upon after Mr. Adams had made investigations into all the other arrangements adopted in hospitals throughout Europe, and it is expected that it will be very satisfactory, he having already built one on a similar plan at Westminster Hospital.

An interesting little infectious diseases hospital is being erected from Mr. Adams's designs at Ampthill in Bedfordshire. The accompanying plan shows that the buildings are arranged around an open square, the administrative block being on one side and the ward blocks on the other three, a laundry and mortuary being arranged adjoining. The buildings are of brick, with Bath stone

of Bedford is quite a different kind of building. Here the architect had practically a free hand. The site itself is a beautiful one, facing due south. All walls are of brick rough-casted on the outside with solid half-timber work — oiled oak — around the entrance, and the roofs covered with red Broseley tiles. The ward floors and staircases are of teak. The wards and the operating theater are tiled for a height of five feet. It will be observed that at each end of the building is a ward one story high, the kitchen at the rear being also of one story only. In the basement of the latter are the boilers for heating and hot-water services, and also complete plant for lighting the rooms by electricity and pumping the water from a supply nearly half a mile away. The sketch plans were made by the

COTTAGE HOSPITAL AT WOBURN.

Duchess of Bedford, though of course all the working-out of them and the designing of the elevations was done by Mr. Adams.

The General Hospital at Tunbridge Wells, in Kent, has been considerably enlarged by the erection of new wards for all the patients, with out-patients' departments, operating theater, etc. The old hospital will in future be used solely for administration purposes, and contains all the rooms for the committee, medical officers, matron, nurses and servants, as well as the kitchen department and the hot-water and heating plant. The disposition of the rooms on the ground floor is shown by the accompanying plan, and it is only necessary to add that the children's ward comes over the dispensary, etc., and that above the long male ward is one exactly similar for women. I need not enlarge on the finishings of the hospital, as these are much the same as those I have described in connection with the Belgrave. The buildings are of red brick with tiled roofs and will cost about $120,000.

Of hospitals being, or to be, erected from Mr. Adams's designs, other than those already mentioned, are the Bristol Poor Hospital, a very large building providing eight hundred and fifty-two patients' beds and estimated to cost $750,000; the British Hospital at Constantinople; new nurses' home, operating theater, etc., at the Women's Hospital in Marylebone Road, London; and the rebuilding of the Women's Hospital in Soho Square, London. It will thus be seen what a number of important hospitals Mr. Adams has designed. His plans show a consummate knowledge of the requirements and are symmetrically arranged in every case, while the elevations are essentially distinctive; they especially exhibit a fine feeling for proportion, and there is a total absence of the hotchpotcheries unfortunately so characteristic of many architects who have large practices. Mr. Adams's buildings mass and group well, and though they may not always meet with the approval of the man in the street, the architect has the satisfaction of knowing that his work is appreciated by those of his fellows whose good opinion he might rightly cherish, and that, after all, is the greatest satisfaction any architect can have. (*Concluded.*)

PLANS, COTTAGE HOSPITAL AT WOBURN.

HALLWAY, COTTAGE HOSPITAL AT WOBURN.

The "Place Royale" in Paris.

BY JEAN SCHOPFER.

AT the beginning of the seventeenth century, under the reign of King Henry the Fourth, restorer of religious peace in the Kingdom of France, one began to build again, after a long period of civil war, during which all great architectural enterprises were abandoned.

After so many struggles and so much agitation, money was scarce, it was impossible to be sumptuous and extravagant in architecture. On the other hand, the taste for constructions in brick had been developed in France by the theories of the Italian Renaissance. Being cheap and being the fashion, brick was the material chosen and preferred at the beginning of the seventeenth century.

The Place Royale is interesting in several ways. In the first place, it has been entirely built at the same period and on the same plan. We have here, and perhaps for the first time, a square planned in its *ensemble* where all the houses have uniform façades, with a central pavilion in each side. Here then great symmetrical effects are sought for, as they will be later, on the Place Vendome, and we have a large square, the handsomest in Paris at that period, that shows us architecture of red bricks and white stone combined.

In the second instance, this Place is for us full of historical recollections. It has been *the* Place of the seventeenth century; it is there that society met, that rendezvous were given. How many comedies of Molière have as stage scenery this row of houses? Madame de Sévigné lived there; the arcades of the ground floor sheltered many adventures of young noblemen; Mascarille intrigued there; young girls sighed and waited in its shadow. All the brilliant, witty life of that period had for outward frame these red and white houses.

THE PLACE ROYALE, PARIS.

Bricks mixed with stone were used in a simple style of architecture, that had but rarely recourse to sculptured decoration, and drew its greatest effects from the harmonious blending of the bricks and the stone. One obtains in this way buildings that have bold lines and a cheerful aspect, that cost but little. It is on these lines that, in 1604, Henry the Fourth planned the new Place Royale.

An old engraving says that the king had the intention of using these houses for workmen. It is almost superfluous to say that it never was the intention of the king, for in the seventeenth century still less than in our days one did not build houses for work people with ceilings fifteen feet high and rooms measuring thirty by twenty-two feet. No, the plan of the houses of the Place Royale, that is now called "Place des Vosges," shows sufficiently that they were built for rich tenants, nobles or wealthy commoners.

Architecturally the houses of the Place Royale are built on a uniform plan. Arcades on the ground floor run all around the Place; they rest on massive pillars and are groined vaulted.

The idea of arcades around a square is excellent; Bologna is entirely planned in this manner. It is unfortunate that in modern cities there are so few sheltered promenades. In the houses of the Place Royale one can reach the foot of the staircases in a carriage, so you see that the custom of permitting rich tenants to enter their carriages under shelter does not date from to-day in Paris.

Another plate shows one of the houses with a double façade, one on the Place Royale, and the other on the rue de Biragne. On the façade rue de Biragne the ground floor is ornate with four pilasters; on the frieze the decoration bears the royal H; the windows are framed in white stone, and on the roof are handsome dormer windows.

In the façade of the Place Royale the keystones of the archivolts are in relief, and chains of stonework continue up to the roof the pillars of the first floor. The roofs — and that is very characteristic of the period — are high and steep. They are the roofs of the Middle Ages, of a period when common sense and experience reigned all powerful in architecture.

In France, as in all countries situated in the same

DETAIL, THE PLACE ROYALE.

latitude and near to the sea, heavy rains are frequent in the bad season; in consequence, to protect their buildings, architects built high and steep roofs, so that the water should be carried off rapidly. These roofs are the only ones in French architecture during the Middle Ages; architects made virtue of necessity, which ought always to be the rule, and drew superb and architectural effects from these great inclined roofs; chimneys became monumental, dormer windows also, and we see these beautiful and picturesque roofs that last all through the sixteenth century in the French castles and houses.

New ideas came into fashion with the so-called Italian Renaissance; flat roofs and even terraces had been built in the Orient, in Greece and in Rome in pagan times; the Renaissance sought to imitate antiquity, and soon it was decreed that Italian terraces and flat roofs were alone noble. Leaving aside the fact that Paris was in a very different climate to Athens, roofs were diminished, became low and even flat, as though they were ashamed to be seen, like those of the palace of the Louvre or of Versailles. The palaces of the sixteenth and seventeeth centuries show us terraces and balustrades.

Nevertheless the meteorological law of France had not changed with the public taste; it continued to rain as in the past, as in the Middle Ages, as it had always rained and as it will always rain in France. Terraces were very difficult to keep free of water; the pipes leading downwards from them got choked by the leaves in the autumn, and large pools of water were formed above the apartments; infiltrations occurred, and ceilings were seriously damaged, which necessitated costly repairs. All these facts were not taken into account, and the noble style reigned supreme. The steep and picturesque roofs, with their monumental chimneys, were things of the past.

Still it was cold in winter, and rooms had to be heated. To have fires one must have chimneys, and for chimneys to draw well they have to be a good deal higher than the roof, or the smoke is forced down into the rooms. A cruel conflict exists between fashion, that declares that it is contrary to the noble style to see chimneys on the roof, and the need of comfort that requires warm rooms and fireplaces that do not smoke. One has arrived at this absurd arrangement to place small chimney tin pipes that crown noble and majestic buildings covered with terraces; they may be seen on the fine palaces of Gabriel, the glory and ornament of the Place de la Concorde in Paris.

At the beginning of the seventeenth century it is established that the good and sensible traditions of the Middle Ages were not extinct. The roofs of the Place Royale are high and picturesque, with monumental dormer windows. In the old engraving that we give one can see how the buildings stood in olden times; the line of the roofs and of the chimneys is fine and well balanced; the arrangement of the dormer windows is also to be noted. The high price of living and the want of space, the two evils that all modern towns suffer from, have obliged the landlords of these houses to locate apartments in the large lost spaces of these roofs; thence the disorderly aspect of the actual roofs of the Place des Vosges, whereas formerly they offered a fine symmetry of dormer windows, oval windows and monumental chimneys.

To be noted also in the illustration is the way in which the frame of the windows is continued from story to story. It is a tradition dating from the sixteenth century. When it was wished to let air and light into the dark castles of the Middle Ages large pieces of stonework were opened up from the ground floor to the roof, and for long afterwards in French architecture the custom was kept up of marking the framework of the windows from story to story.

The center of the Place was surrounded by fences; a statue of Louis the Thirteenth was placed in the middle; then an iron railing was put around it. The Place was bare in the seventeenth and eighteenth centuries; now it is planted with trees, it has become a green and shady space where the children of the neighborhood play. Victor Hugo, already famous though young, lived in one of the mansions of the Place des Vosges. The house has become a museum in which have been placed a hundred tokens of the art and of the life of the great poet.

ARCADES OF THE PLACE ROYALE.

THE PLACE ROYALE.

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

BY D. EVERETT WAID.

A WELL-KNOWN architect writes me concerning the fact that clients often trespass upon the architect's time. He says: "In my own schedule of charges I have a clause stating that an additional charge will be made for material alterations to a design once approved by the owner, but I am not always able to enforce payment. In one case, for instance, after the contract had been signed, the owner found that for about $2,000 he could change the rear wing of the building from wood into stone. This necessitated discarding all the original scale and full-size drawings and a general refiguring of the entire set of plans, and yet I received no extra compensation for this work other than the increase in the regular commission, which was not enough to pay for the additional work; nevertheless the owner felt convinced that I was making an excessive demand in asking for something above the five per cent on the extra cost."

Before commenting on this matter I will mention some other grievances of architects to which my attention has been called. One complains of the time consumed in shopping trips for the selection of tile work, hardware, etc.; clients insisting on having special devices designed when it is usual to specify those in stock and on the market; clients requiring consultations at their residences (often at night), which are looked upon as a matter of professional practice rather than as an accommodation. One architect writes me of another of our troubles as follows: "One hears a great deal about architects leading their clients into excessive expenditures, far beyond their contemplated investment. To cite an opposite case I had a client who made it very plain, both verbally and in writing, that he would not spend more than $10,000 in altering his house, and certain requirements were insisted upon which compelled the use of inferior materials. No sooner was the contract signed than he immediately commenced to add to the building, so that there was scarcely anything left of the original contract when the alterations were completed. Nearly every drawing had to be discarded in the process of elaborating the building; dozens of drawings were made over and over again, and finally, after three years, this alteration was completed at a cost of nearly $24,000. Naturally there had been considerable waste of time and money, many things were not as they would have been had the building been properly planned with the view of spending somewhat less than was ultimately spent, and I did not receive anything more than the regular commission for all this nonsense."

Speaking in a general way, every line of work has its drawbacks, and injustice plays a part in every man's business. A contractor has to figure on contingencies which in one case bring him a larger profit than he estimated, and in another make him congratulate himself if he got out even without a dead loss A real-estate broker will make a deal in which his percentage will net a handsome fee with but little effort, against another deal consummated after long, tedious and expensive effort and with small return. A merchant gets larger profits on some goods than others, and a physician does a lot of his hardest work for little or nothing. This is not to say that architects should not try to right wrongs and stand together as a profession to improve conditions. But we may say that architects must recognize that they should take a businesslike view of their work,— look at it from the clients' side as well as their own, and be ready to pocket a loss calmly as an investment which may bear fruit in the future.

There are frequent discussions in the professional press as to the proper basis of architects' charges. One states it as a "fundamental fact that the five per cent rule has now been raised to the dignity of a principle," but denies that it is defensible as such. There are troubled inquiries into the increasingly complicated demands on an architect; discussions of expert fees, shop drawings and quantity surveying. There is, too, an unjust disparity evident when one sees on the one hand a successful architect with a million-dollar building which he places in the hands of a general contractor who relieves him of an immense amount of detail work and even supervision; while on the other hand, another architect painstakingly sublets less important work, and practically superintends as well as supervises the execution; and yet both draw five per cent. But after all is said, the percentage system seems as simple and fair as anything that can be devised. One architect is ready to give over fees and accept a salary; perhaps he would expect $5,000, and perhaps $100,000. Another says to his client, "Pay all my expenses and give me as much more." Who shall say that the percentage system is not most just to both sides? The one lesson I would draw is that architects should keep their office records with sufficient accuracy to know exactly what all the expenses on a given work have been; to thus learn whether his usual charges are on a fair basis, so as to be able to say to a reasonable client in any special case, "My actual outlay due to revising finished and approved working drawings was so much."

This brings us back to the grievances quoted in the beginning of this chapter. Let us constantly try to right the wrongs. Clients will meet us halfway when they are made to understand the true conditions. But at the same time let us remember that a five per cent fee or a ten per cent fee is not an absolutely scientific thing, subject to the last analysis. For example, the careful selection of hardware and writing of detailed specification for same may, on a given building, cost the architect fifty per cent of the entire cost of the hardware. On the same building the time given to selection of a lot of expensive mantels may happen to be very trifling. The average, when struck on the whole building, gives fair results; but the illustration shows how unjust it is on the part of a shrewd client to say that he will himself select the mantels or let certain contracts himself without the architect's aid, with the purpose of cutting the architect out of his commission on those particular parts of the building.

As to the client who expects calls at his own home or the unreasonable man who makes changes and doubles the cost of his work, these are matters of "the personal equation"; each case must be dealt with on its own merits, with all the tact and diplomacy at command.

(*Concluded.*)

Fireproofing.

MORE LESSONS OF THE BALTIMORE FIRE.

IF all the published comments on the lessons of the Baltimore fire were to be collected in a volume it would be a most stupendous affair and beyond the patience of any one reader. We will burden these columns with but one more notice on the subject. Captain John Stephen Sewell, U. S. A., gave an address at the annual banquet of the National Board of Fire Underwriters, in the course of which he presented several very carefully considered conclusions. He claims that it is evident no building stone of any kind is even reasonably fireproof. The amount of stone should be kept down to a minimum, and it should not be used at all above the second story except possibly for window sills. More mass is required to resist a fire than to carry superimposed loads. In the craze for lightness and cheapness the modern fire-resisting building has been reduced to a degree of flimsiness wholly inconsistent to satisfactory behavior in a severe fire. The minimum thickness of an outside wall should be from sixteen to eighteen inches. Outside walls only a brick and a half thick were badly cracked at Baltimore. They had not mass enough. Yet their behavior indicated that another half brick would have made them thick enough in the upper stories at least.

The standard of workmanship in these buildings was very low, often criminally so. It may be said that much of the damage at Baltimore was due to poor workmanship as well as to flimsy design. Many terra-cotta partitions and column coverings were so loosely laid up that they were entitled to fall down without any other excuse at all. There were cubic yards of brick in the walls of the Continental Trust Building which were simply thrown in loose without any pretense of laying. It should be remembered that good workmanship may save a defective design, but no excellence of design can adequately protect against dishonest work.

The foregoing we quote from Captain Sewell's address.

EXPERIMENTS WITH CAST IRON.

THERE was recently published in the *Journal of the Franklin Institute* an exceedingly interesting report of some experiments made by Alexander T. Outerbridge of Philadelphia, on the action of cast iron under alternate heating and cooling. The fact that iron will increase in bulk quite perceptibly by repeated heating and cooling has been known for a long time, and this property has been made use of in many ways, as in fitting portions of machinery together or in fitting vault doors to their frames, when the metal is frequently fitted roughly quite loose and then by judicious heating is coaxed up to an exact fit. So far as we know, however, no scientific investigation of this property of iron has been made before Mr. Outerbridge's experiment. In one experiment two test bars were cast from one ladle of iron in one mold from patterns of same dimensions, 15 inches long and 1 inch square in section. When the bars were cleaned and measured they were found to be exactly 14 3-16 inches long and 1 inch square in section. One bar as exhibited at the Institute remained exactly as cast. The other had been caused to grow gradually in cubical dimensions until it was 16½ inches long and 1⅛ inches cross section. The bar so enlarged weighed precisely the same as it did before growth, but the specific gravity was of course less than before. A quarter-inch section of a similar test bar before expansion was found to have a specific gravity of 7.13, which would mean a weight per cubic foot of 444¾ pounds. A similar section of the same bar, after having been expanded about thirty per cent in cubical dimensions, was found to have a specific gravity of 6.01, which would mean a weight per cubic foot of only 375½ pounds, a difference of 69¼ pounds per cubic foot.

The experiments which led up to these results appeared to show that there is a certain critical temperature which produces the greatest degree of expansion per heat. The bars to which reference was made were heated in a casehardening furnace provided with a pyrometer. In order to prevent scaling or oxidation of the surface the bars were enclosed in an iron pipe, the ends being stopped with clay. Successive heatings at a temperature of about 1,200 degrees for one hour required nearly a hundred heats to obtain an increase in length equivalent to about one inch per foot. When the temperature was increased to 1,450 degrees Fahrenheit a much greater gain in dimensions occurred, averaging about 1-16 inch per heat.

The sample bar which had been increased 1 11-16 inches in length and ⅛ inch in cross section had been heated twenty-seven times at the temperature of 1,450 degrees. The experimenter stated that it had not yet ceased growing, and there is no exact knowledge as to what limits the total possible expansion. Experiments are still being made in this direction. This extraordinary increase in volume is not accompanied by any evidence of any disintegration of metal, and but slight changes in structure are visible to the naked eye. The bars are smooth, straight and have sharp corners.

A PROPHECY OF THE BALTIMORE FIRE.

WHEN a great conflagration such as the Baltimore fire sweeps through a city, the first feeling experienced by the community is one of surprise that it should have happened at all, and this is followed by a wholesale production of wise rules for avoiding such fire in the future. These rules, however, are promptly forgotten within a very short time, and the next conflagration finds the public and often the profession in the same surprised mood. We were impressed with this by reading an interview which appeared in the Boston *Herald* over three years ago, in the course of which John S. Damrell, who was at that time the Commissioner of Buildings in Boston, made a number of statements in regard to fire hazard which were exactly along the lines of what we have seen so constantly this year in the technical papers apropos of the Baltimore fire. It will be remembered that Captain Damrell was the fire chief in command at the time of the Boston fire in 1872, and he speaks in the light of his experience in that capacity as well as his knowledge of building operations. The behavior of exposed metal, of stone and marble and all forms of combustible material in a great fire was the same ten years ago that it is to-day, and as it undoubtedly will be ten years hence. It is only lack of knowledge which keeps the public from building in a thoroughly fireproof and fire-resisting manner. The daily press occasionally indulges in spasmodic editorials against the methods practised by architects, but citizens need not be reminded that architects are like other men, good and bad as well as indifferent, and that when citizens desire good work, when fireproofing is really asked for by the public, good architects, perfectly able to design and construct such buildings, can always be secured. Just after a great fire the public wants the best, but when the bids come in, unfortunately, fireproof construction often has to give way for a cheaper and less resisting medium. We do not anticipate that Baltimore will really profit by her disaster to the extent of so rebuilding as to prevent entirely a repetition. So long as insurance companies exist and private greed is willing to saddle on the community at large the individual losses, just so long will it be possible to predict future disasters of this sort, and the most we can hope is that, by constant reiteration of the moral of such fires, in time a public sentiment may be cultivated to the point where it can no longer be a question of what the individual thinks he can pay for, and the absurd provision existing in nearly every city that fireproof construction shall be mandatory only in buildings above a certain height shall have given way to the more rational conception that in a great city, with its immense chances for loss, the fireproofing ought to be by districts horizontally, rather than measured in feet vertically.

BEST KIND OF FIREPROOF BUILDING.

THE best kind of fireproof building is one surrounded by fireproof buildings. But in a new building to be erected in a dangerous district, or a structure that is to contain a very large amount of highly combustible material, greater precautions ought to be taken with the tile construction than now obtain in the manufacture of the cheapest fireproof tile that conditions compel manufacturers to make. People will not pay for any better, or at least the ordinary run of people will not; and while the manufacturers are undoubtedly public-spirited men, their zeal for the public welfare does not extend to the point of giving gold where silver is demanded and paid for.

The trouble is with the architect, and I must say too with the underwriter and the building ordinances, and not with the principle of fireproof construction as far as the structural portion of the building goes. Tile floors and tile partitions can be made to meet any condition that the mind of man can conceive as possible. The principle of the thing is sound, and the application, I must say, in spite of the conditions that obtain, is far better than should be expected for the price paid. Many city ordinances and some of our insurance experts make a general class, a hodgepodge, of fireproof construction. Anything that does not actually burn they call fireproofing. Tile work is bundled in with ordinary cinder concrete and all sorts of inferior constructions, and there you are. Why, it is only within the last two years that some companies have gotten over the notion of classifying alleged slow-burning timber construction *ahead* of steel and tile, a preferred mode, a better risk! We know that people, particularly those of speculative intent, will only build as well as they are compelled to by law or by the rules made by those who will indemnify them in case of loss. — *Insurance Engineering.*

SAFETY FROM FIRE IN THEATERS.

WE are glad to state that the proposed Massachusetts enactment intended "to provide for greater safety from fires in theaters," to which we referred in our last issue, failed to pass the Massachusetts Legislature, though the bill introduced by Edward Atkinson, to enforce a more rigid inspection of theaters, has fortunately become a law. It is not too much to say that there is not a theater in any large city in this country which in every respect fully complies with the spirit and intent of existing laws. After the Iroquois Theater disaster, Boston as well as many other cities made a brave showing of zeal in the inspection of its places of amusement; but the reports of the special examiners for this purpose have never been made public, nor are there any marked signs of improvement in the existing conditions. It remains to be seen whether Mr. Atkinson's bill can go any further than to provide another office to be filled.

FIRE RESISTIVE.

IT seems to be no longer the correct thing to speak of a fireproof building, since so many of them have been called upon to endure not only the scathing effects of a conflagration, but also the burning criticism of experts, and accordingly a new word has been coined which seems to fit the case exactly and which has been adopted out of hand by many of the technical writers. Hereafter we shall not build fireproof structures, but we will erect *fire-resistive* buildings, and our *fire-resistive* materials can thereafter never be charged with having fallen short of whatever was claimed for them.

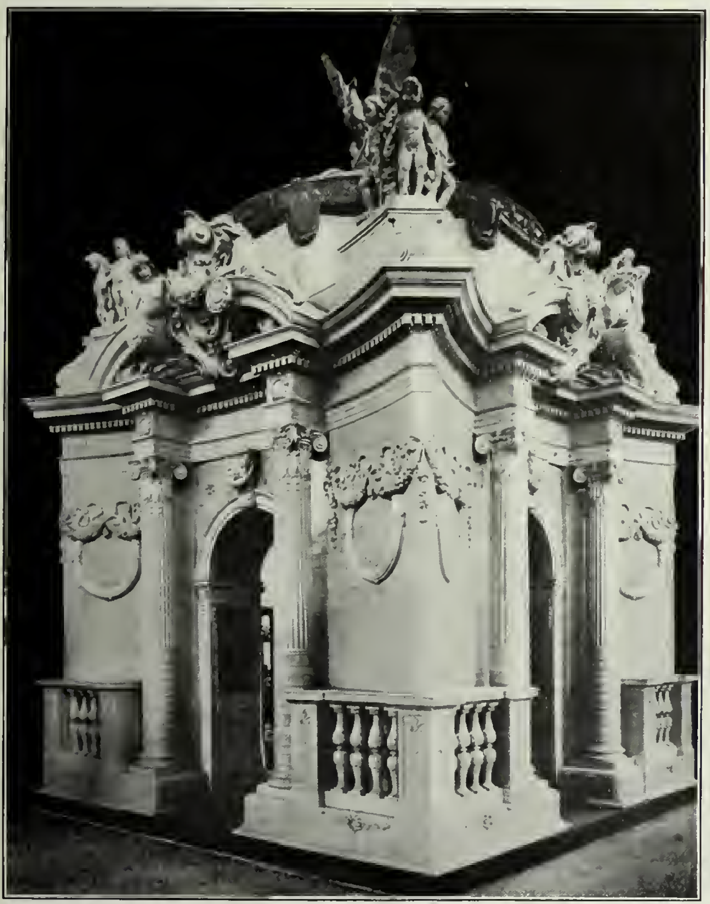
FIRE-RETARDING WOOD.

DURING April a fire occurred in the Flatiron Building, New York, which was quite a satisfactory test of the qualities of the wood which was used for the trim, all of which has been treated so as to be fire resisting. The fire broke out on the twentieth floor, and the damage was confined entirely to one room. Furniture and other contents were consumed, and the heat was sufficient to melt the glass of the chandelier. The fire did not spread beyond the room in which it started, was extinguished with hardly any notice thereof by tenants below, and the wood finish was only superficially charred.

Editorial Comment and Selected Miscellany

OAKLAND, CAL., SCHOOLHOUSE COMPETITION.

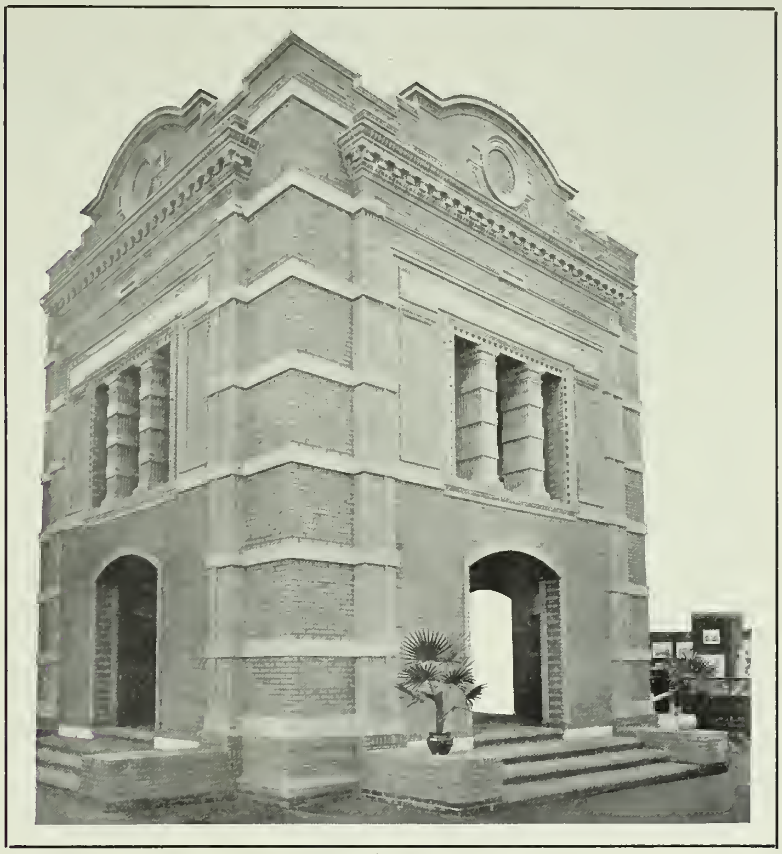
WE have received from our San Francisco correspondents a printed "notice to architects," sent out by the Oakland, Cal., Board of Education, calling for competitive plans for six different schoolhouses, aggregating in cost about $600,000. This notice contains a number of provisos which are quite objectionable from the professional standpoint, and which have called forth from the San Francisco Chapter of the American Institute of Architects a vigorous protest embodied in a series of resolutions. The really vital points of objection are



TERRA-COTTA PAVILION, WORLD'S FAIR, ST. LOUIS.
Exhibit of the Northwestern Terra-Cotta Company.
The exterior of this pavilion is cream-colored enamel terra-cotta up to the base of the dome. The crestings are gilded green glaze, and the top of the dome is a lighter green glaze. The interior shows several colors, the ceiling of vault being blue, with gold stars.

that no assurance is given that any competing architect will be awarded the work, the identity of competitors is not concealed, there is no provision for expert advice in judging the drawings, and the competitors are made pecuniarily responsible for the cost of the buildings, though they are not allowed any control of conditions and do not themselves obtain the bids by which the cost is to be ascertained.

The other objectionable points are of relatively minor importance and could be conceded by architects without



PAVILION AT WORLD'S FAIR, ST. LOUIS.
Exhibit of the Hydraulic Press Brick Company.

serious compromise, though they are far from satisfactory, — as the calling for a bond from the successful competitors, and the reservation by the Board of the right to change the plans without proviso for correspondingly changing the established price. The resolutions include

DETAIL OF HOUSE, ST. LOUIS, MO.
Barnett, Haynes & Barnett, Architects.
Terra-cotta made by Winkle Terra-Cotta Company.

EXHIBIT OF THE TIFFANY ENAMELED BRICK COMPANY AT WORLD'S FAIR, ST. LOUIS.
Mauran, Russell & Garden, Architects.
Satin finish light mottled blue and buff shades used.

a request to the Board that the program be modified to conform with the code for competitions of the American Institute of Architects, and the services of a member or members of the Chapter are tendered, free of charge, to aid and advise the Board in formulating a program in conformity with the customary and usual practice of the profession.

We fully appreciate the position of both the Board and of the Chapter. In the notice there is no indication that the Board means to be unfair to the architects from its standpoint, or that it is actuated by any other motive than a desire to obtain the best results for the city. It evidently has the mistaken idea that a competition can be depended upon for the choice of plans rather than for the choice of an architect, and it accordingly makes the competitor's task unnecessarily hard, while it binds itself to nothing at all. The whole burden is upon the architect. At the same time, the imposed conditions are fairer than many which we have seen nearer home than San Francisco, and it would seem as though there ought to be some way by which the requirements could be modified to meet the very reasonable objections of the Chapter. Unfortunately few laymen appreciate the professional point of view unless they have had personal relations with architects of high standing. The protest voiced by the Chapter is not actuated by spleen or any clan feeling, but is based on the experience of the profession all over the country, and it is to be hoped that two such reasonable bodies as the Board and the Chapter are shown to be by their printed utterances may be able to meet on common grounds, adjust the manifestly inexpedient conditions, and select an architect in a competition which would be a credit to all concerned.

DETAIL BY L. C. HOLDEN, ARCHITECT.
EXCELSIOR TERRA-COTTA COMPANY, MAKERS.

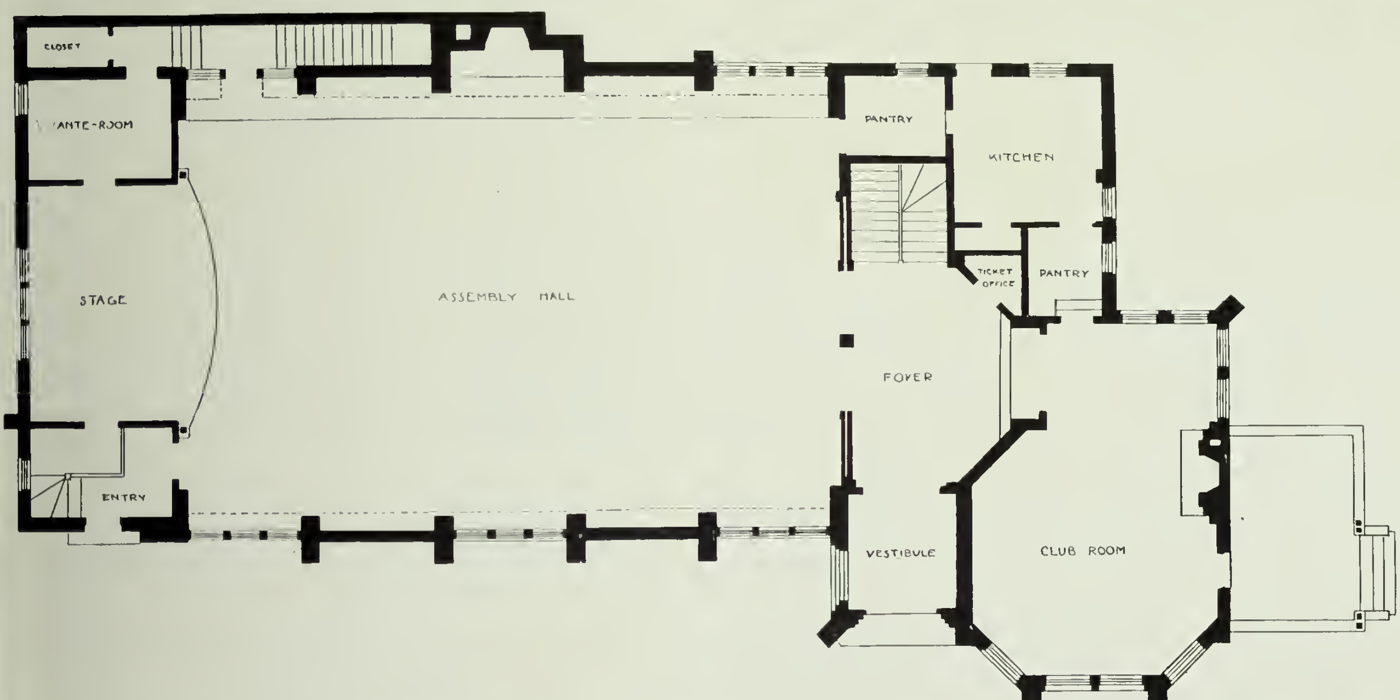
INTERIOR OF PAVILION BUILT OF TIFFANY ENAMELED BRICK AT ST. LOUIS FAIR, DARK GREEN AND BUFF SHADES USED.

LINDEN AVENUE SCHOOL, PITTSBURGH, PA.
Ellsworth Dean, Architect.
Fireproofed with Johnson System Long-Span Construction.
National Fireproofing Company, Contractors.

THE CLEVELAND BUILDING CODE.

THE city of Cleveland has just passed an entirely new building code, which in some respects is the most complete and com-

"THE HALL."



FIRST FLOOR PLAN, "THE HALL."

HOOK AND LADDER HOUSE.

"THE HALL" AND HOOK AND LADDER HOUSE, WYOMING, N. Y.

POND & POND, ARCHITECTS.

JERSEY CITY TRUST COMPANY BUILDING.
Mowbray & Uffinger, Architects.
Built of Gray Roman Brick made by Kreischer Brick Manufacturing Company.

prehensive that has ever been put forth in behalf of any municipality; indeed, we are inclined to question a little whether it is not too complete and whether, because of going so thoroughly into the most minute details and covering so many points which would ordinarily be matters of contract and specification rather than of code, the new law may not prove too cumbersome and inflexible to meet the varied demands of building operations in a large city. This would be almost our only criticism of the law. It has evidently been prepared by experts and does not show any of the indications of the vicious tampering which so often destroys the efficiency of our municipal building laws. The new code is manifestly the product of engineering skill rather than of political influence.

The code is organically well conceived, though not yet entirely finished. The portions now put forth include Part 2, Buildings and Structures; Part 3, The Occupancy of Public Property; Part 4, Fire Protection; and Part 5, Elevators. The remaining four portions, having to do respectively with Organization and Administration, Plumbing, Electricity, and Smoke Abatement and Boilers, are in course of preparation.

As would be expected, the ordinance contains a number of provisions which are not found in the older codes. It stipulates that bricks to be used in buildings shall be of such quality that in the ordinary course of handling they shall not break up into more than five per cent of bats, a very wise precaution, but which we have never before seen in a building ordinance. The law also makes a new definition, designating "cement mortar" as being a mixture in equal parts of lime, Portland cement and sand, restricting the words "Portland cement mortar" to a mixture of pure cement and sand. This definition we believe to be somewhat misleading.

FAIENCE TILE USED IN NEW YORK SUBWAY.
Grueby Faience Company, Makers.

ENTRANCE CITIZENS' NATIONAL BANK, EAST LIVERPOOL, OHIO.
J. E. Allison, Architect.
Terra-Cotta made by Indianapolis Terra-Cotta Company.

The law carefully specifies how concrete shall be mixed, providing that the cement and sand shall be first made into a mortar and then incorporated with the crushed stone. We consider this a mistaken view. We have repeatedly watched attempts to make good concrete in this way, and we believe the more common plan of mixing the three ingredients dry and then turning them over wet produces better results. This is one of the many cases in which the new law apparently does not allow any latitude whatever and leaves nothing to the discretion of either contractor or supervisor.

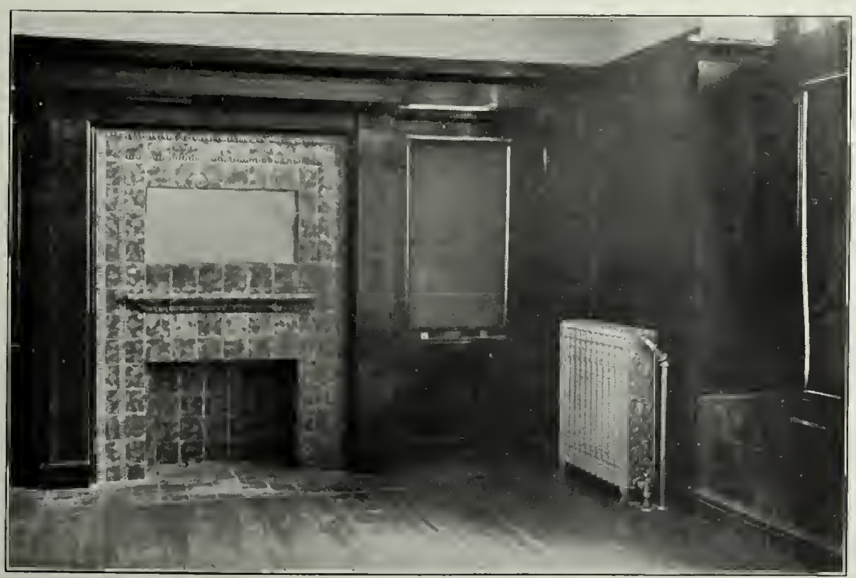
All structural material is required to be tested before its use will be approved. This is following somewhat in the line of the New York law, and is a wise or unwise proviso depending upon the experience and honesty of the individuals who will have to pass upon the results of tests. It has by no means worked always to advantage in New York. Furthermore, the law is very sparing in unit stresses, but is very exact in specifying the factors

HOUSE AT WASHINGTON, D. C.
Marsh & Peter, Architects.
Built of Sayre & Fisher Company's Repressed Red Brick.

of safety. Herein it is radically different from the Boston building law, and there is a chance for a good deal of difference of opinion and of serious trouble in the application. Our knowledge of steel and wood, to say nothing of other materials, is not yet sufficiently exact to enable us to define limits of ultimate strength, and we believe the Boston building law is better in this respect in that it avoids any controversy of the sort by specifically stating unit stresses. Terra-cotta blocks, by which is meant architectural terra-cotta for the exterior of buildings, is restricted by the Cleveland code to unit loads of five tons per foot unfilled or eight tons per foot filled, which is practically the same as the unit loads for hard brick laid up in lime mortar. Clay blocks or tiles, by which is meant the ordinary interior partition blocks, are limited to a safe crushing resistance of 5,760 pounds per foot for porous material, 8,640 pounds for ordinary hard material and 11,520 pounds for hard fire-clay blocks. This latter amount is a trifle more than the load allowed on unfilled terra-cotta blocks.

DETAIL BY W. E. PARFITT, ARCHITECT.
New York Architectural Terra-Cotta Company, Makers.

The matter of unit floor loads is specified to an extent unusual in building laws, and these loads are scaled down considerably below the New York and Boston laws, and, indeed, below the ordinances of most of our cities. Thus, schoolrooms, assembly halls and theater auditoriums call for only eighty pounds per foot; offices are passed at sixty, and the halls of office buildings at one hundred, while hotels and tenement houses are considered safe at fifty pounds for the rooms and eighty for the corridors. In addition, the law allows these floor loads to be scaled down quite materially for columns and girders. This is a good practice and we believe would receive the commendation of every engineer. The unit loads are certainly far higher than the actual loads which ever occur. The law, however, does not go far enough in attempting the scaling down of the floor loads for the foundations, the maximum reduction being fifty per cent of the live load. Eighty per cent reduction is none too much, and we have known of cases where the live loads have been entirely disregarded in designing the foundations.



FAIENCE MANTEL IN MOTTLED BROWN TILES WITH WATER-TIGHT WINDOW FLOWER TROUGH TO MATCH. OPENING LEFT IN MANTEL FOR MIRROR.
E. R. Liebert, Architect.
Hartford Faience Company, Makers.

The section relating to Fireproofing is very comprehensive, and from the standpoint of THE BRICKBUILDER is quite satisfactory. A number of materials are absolutely prohibited for fireproofing purposes, including plaster of Paris, sulphate of lime and cinders or other similar material which would be combustible at 1500 degrees. The accepted materials are stated in the code in the following order: Brick, porous terra-cotta, semi-porous terra-cotta, dense terra-cotta, concrete and plastering on metal lath.

All fireproofing is required to be at least two inches thick and for column casings there

DETAIL FOR CHURCH, JOHN T. COMES, ARCHITECT.
Atlantic Terra-Cotta Company, Makers.

must be two two-inch casings thoroughly secured in place. The constructive restrictions throughout are quite abreast with the most advanced knowledge upon the subject and are fairly the embodiment of the best practice throughout the country.

The law is unreservedly a good one: whether, in application, it will be found cumbersome remains to be seen. It certainly will call for pretty thorough knowledge on the part of the supervisors and of the architects to comply with all its regulations.

IN GENERAL.

A partnership for the practice of architecture has been formed between Wm. C. Brocklesby of Hartford, Conn., and H. Hilliard Smith. Offices in the Connecticut Mutual Building, 36 Pearl Street, Hartford, Conn.

That some large work is in progress is attested by the fact that Fredenburg & Lounsbury of New York have closed, within a few days, three large contracts; one of 400,000 Harvards for the Dormitory of Columbia University, another of 200,000 Harvards for the Cottage

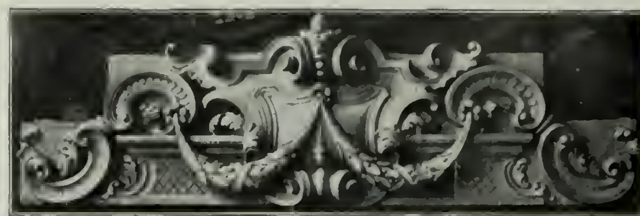
DETAILS BY GEORGE B. POST, ARCHITECT.
Perth Amboy Terra-Cotta Company, Makers.

Club at Princeton University, for both of which McKim, Mead & White are the architects; and an order of 200,000 enameled brick for the towers of the Blackwell's Island Bridge.

The Tiffany Enameled Brick Company reports a steady growth in the demand for their satin finish brick for fronts of office, bank, library, residence and apartment buildings and a larger use of their second quality brick for swimming pools, light courts, elevator shafts, gymnasiums, schools, engine and boiler rooms.

Their bricks are being used in the following new buildings:

First National Bank, General Henry Strong's Office Building, Ryerson Office Building, Chicago & Northwestern Railway Office Building, South Park Toilet Building, Chicago; Illinois Steel Company's Power House at South Chicago, Ill.; Abattoir for New York Butchers Dressed Meat Company at New York City; Keys Building, Central Trust Building, Harrison Building, Cincinnati, Ohio; Security Trust & Savings Vault Company's Building and Lexington City National Bank at Lexington, Ky.; Elgin National Watch Company Factory, Elgin, Ill.; Natatorium Swimming Pool at Reading, Pa.; Schoolhouse at Webster, Mass.; Somer-



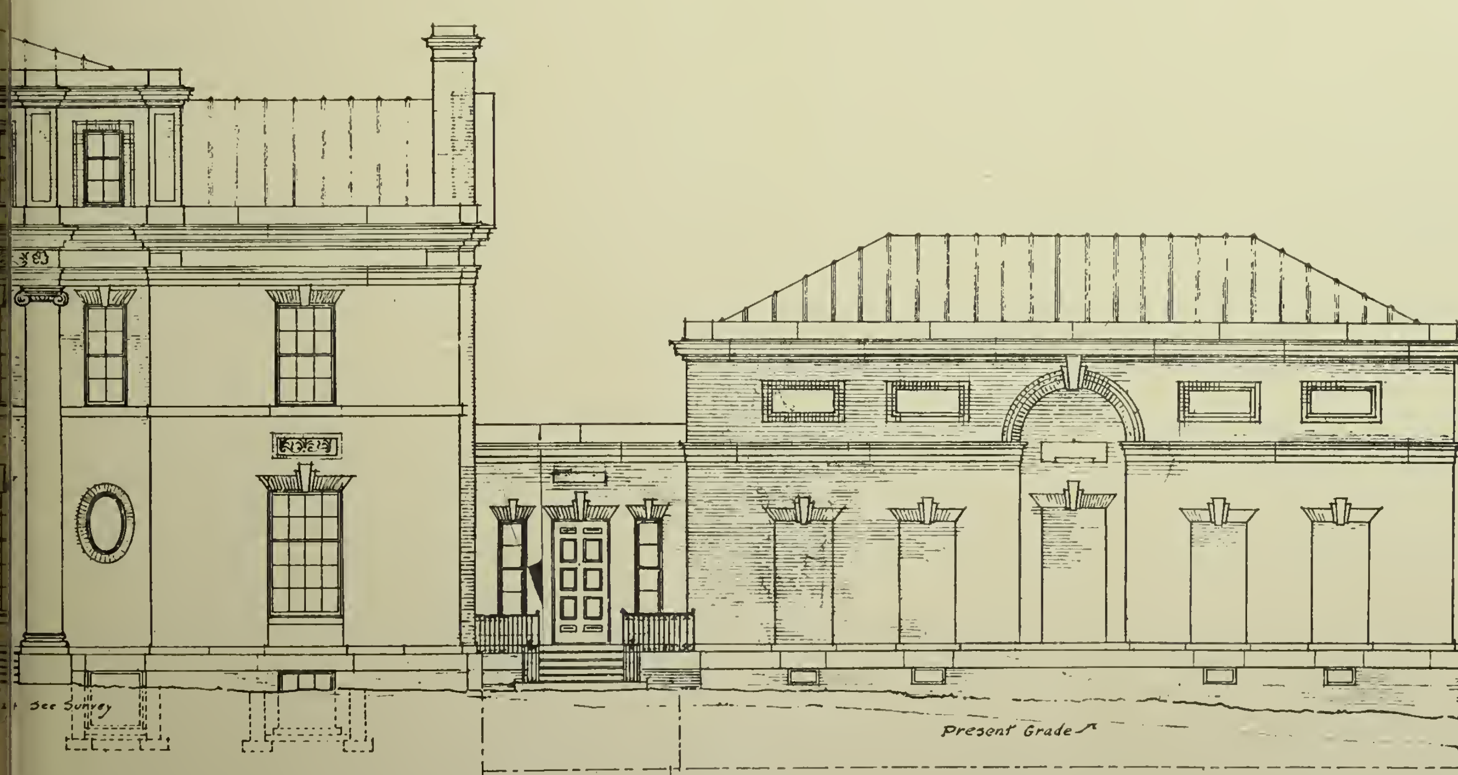
DETAIL, EXECUTED BY NEW JERSEY TERRA-COTTA COMPANY.

ville Fire Station, Boston, Mass.; Reibold Building at Dayton, Ohio; Atlanta Terminal Depot, Atlanta, Ga.; Sims Library, Waxahachie, Tex.; United States Mint and Evans School at Denver, Colo.; General William J. Palmer's residence, Glen Eyrie, Colorado Springs, Colo.; Quincy School, LaFayette School and Manual Training High School at Topeka, Kan.; State Normal School, Cedar Falls, Iowa; Grant County Jail, Marion, Ind.; and Laundry Building, Soldiers' Home, Danville, Ill.

VOL. 14. NO. 2.

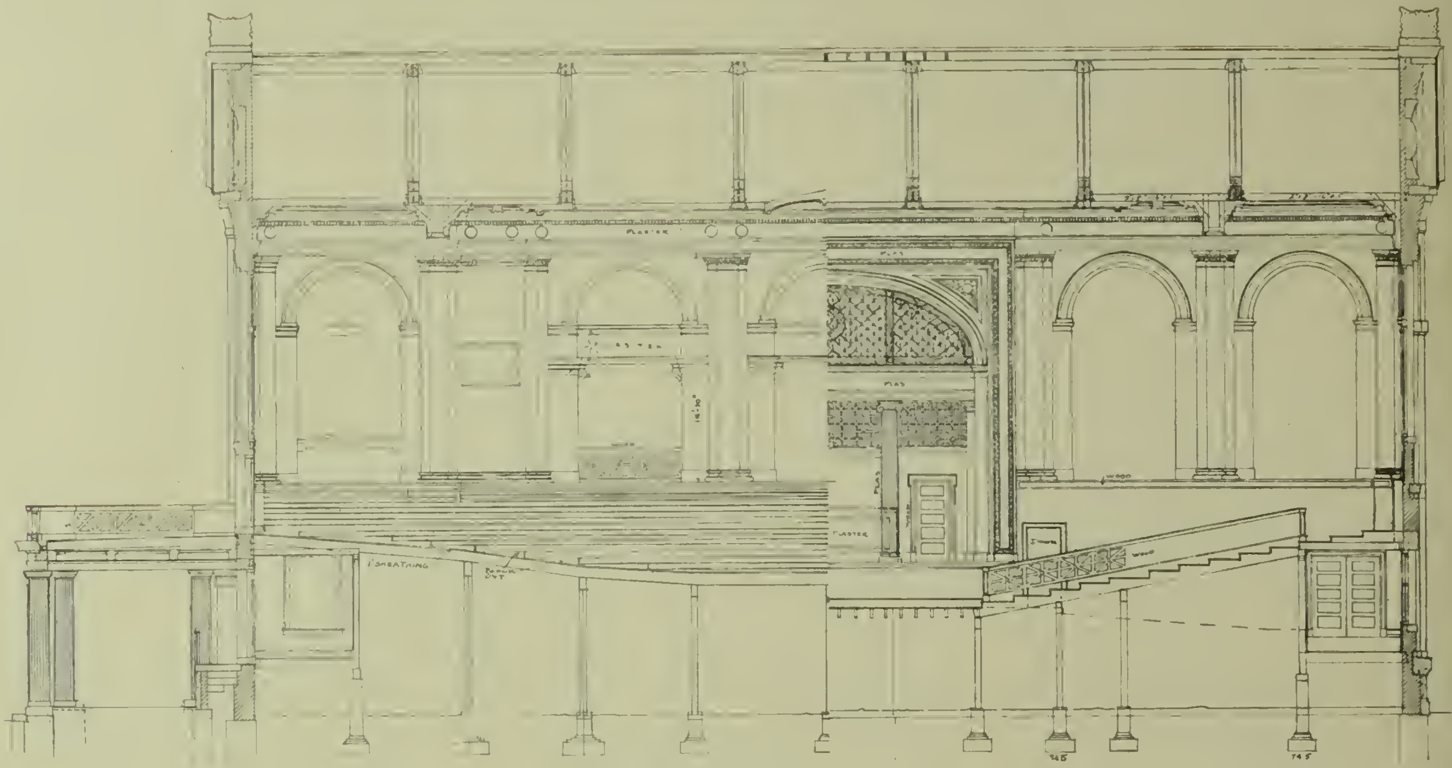
ELEVATIONS, HOUSE FOR T. JEFFE

McKim,



, ESQ., AT MANCHESTER, MASS.
S.

MAIN ENTRANCE TO ANTELOPE HOUSE, BRONX PARK, NEW YORK CITY.
HEINS & LA FARGE, ARCHITECTS.



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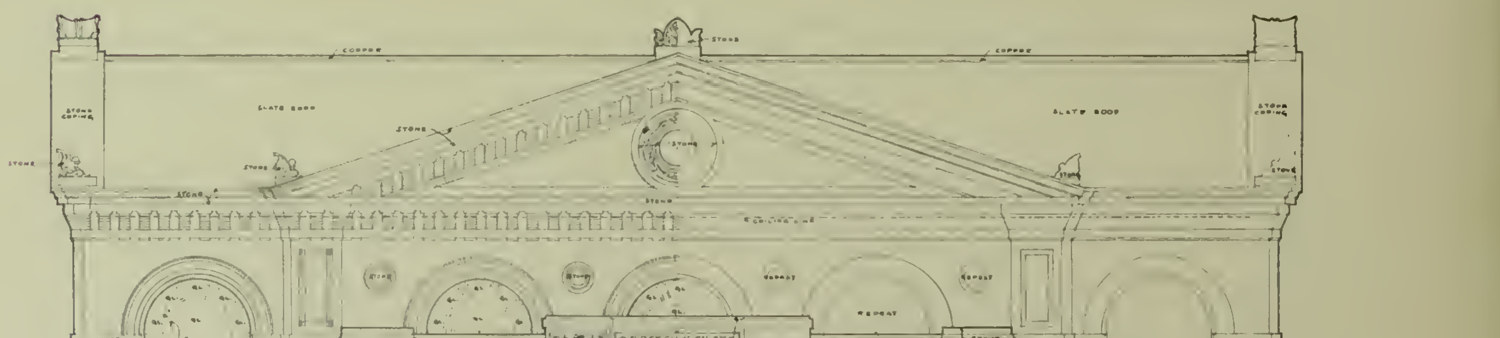
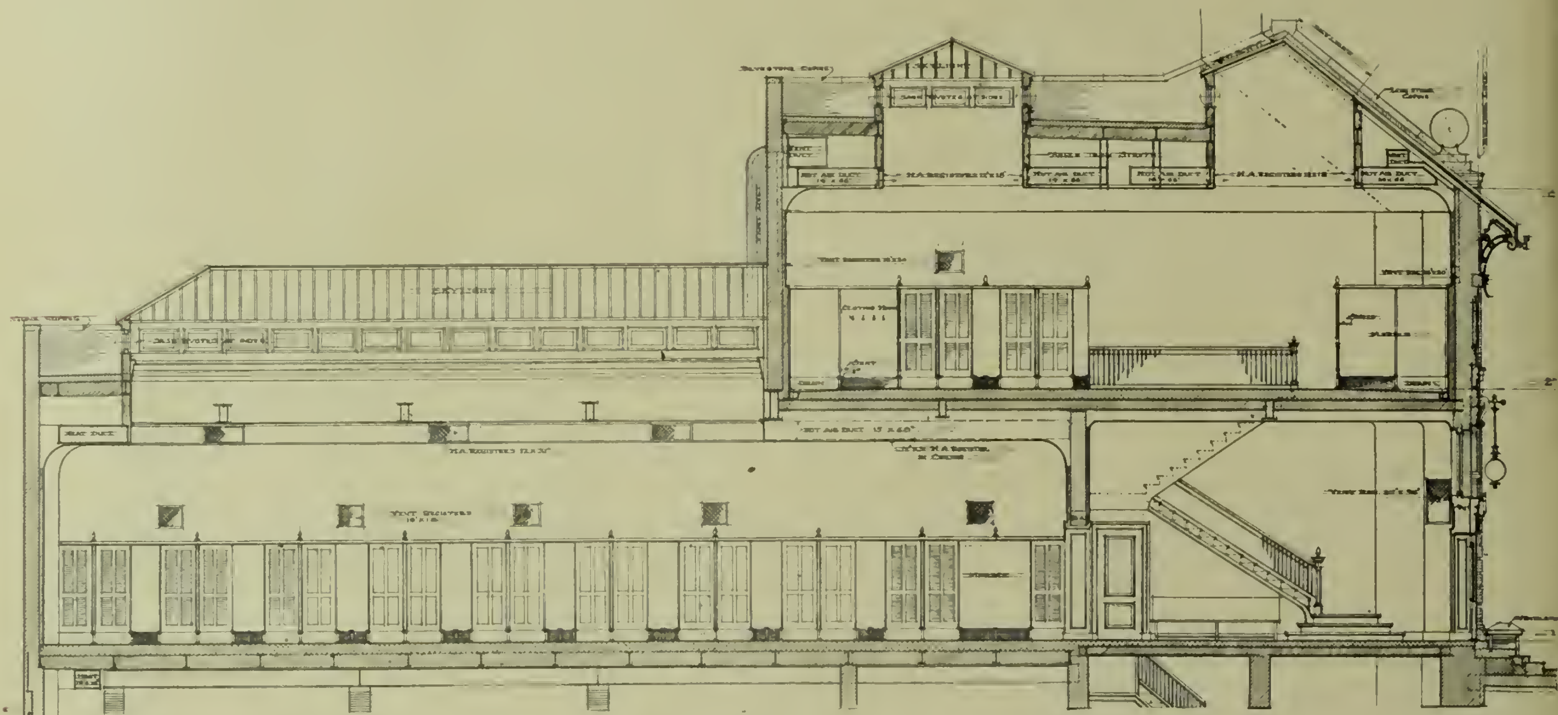


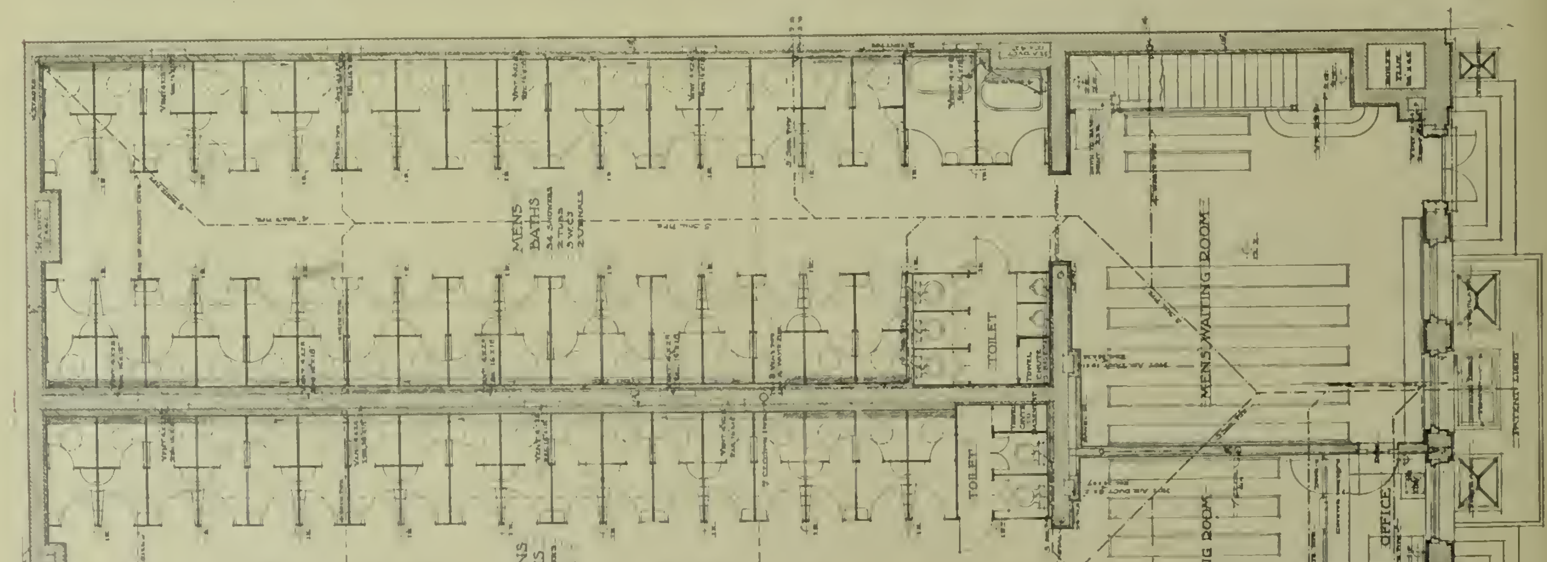
FRONT ELEVATION.

FIRST CHURCH OF CHRIST, SCIENTIST, ST. LOUIS, MO.

MAURAN, RUSSELL & GARDEN, ARCHITECTS.



LONGITUDINAL SECTION.



FIRST FLOOR PLAN.

FREE PUBLIC BATHS, 41ST STREET, NEW YORK CITY.

YORK & SAWYER, ARCHITECTS.

SECOND FLOOR PLAN.

HOUSE AT SEWICKLEY HEIGHTS PA.
RUTAN & RUSSELL ARCHITECTS.

THE BRICKBUILDER,
SEPTEMBER,
1904.

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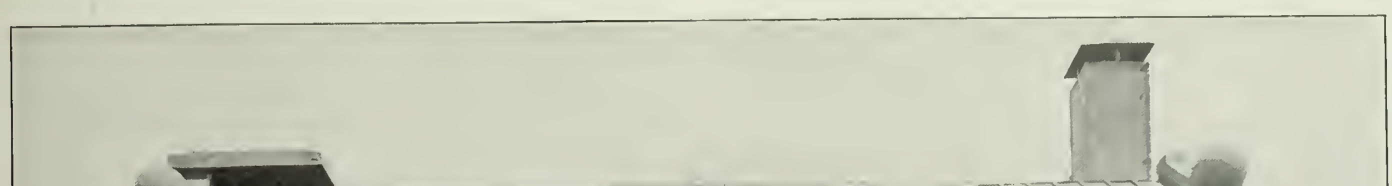

FREE PUBLIC BATHS, 109TH STREET, NEW YORK CITY.
YORK & SAWYER ARCHITECTS.

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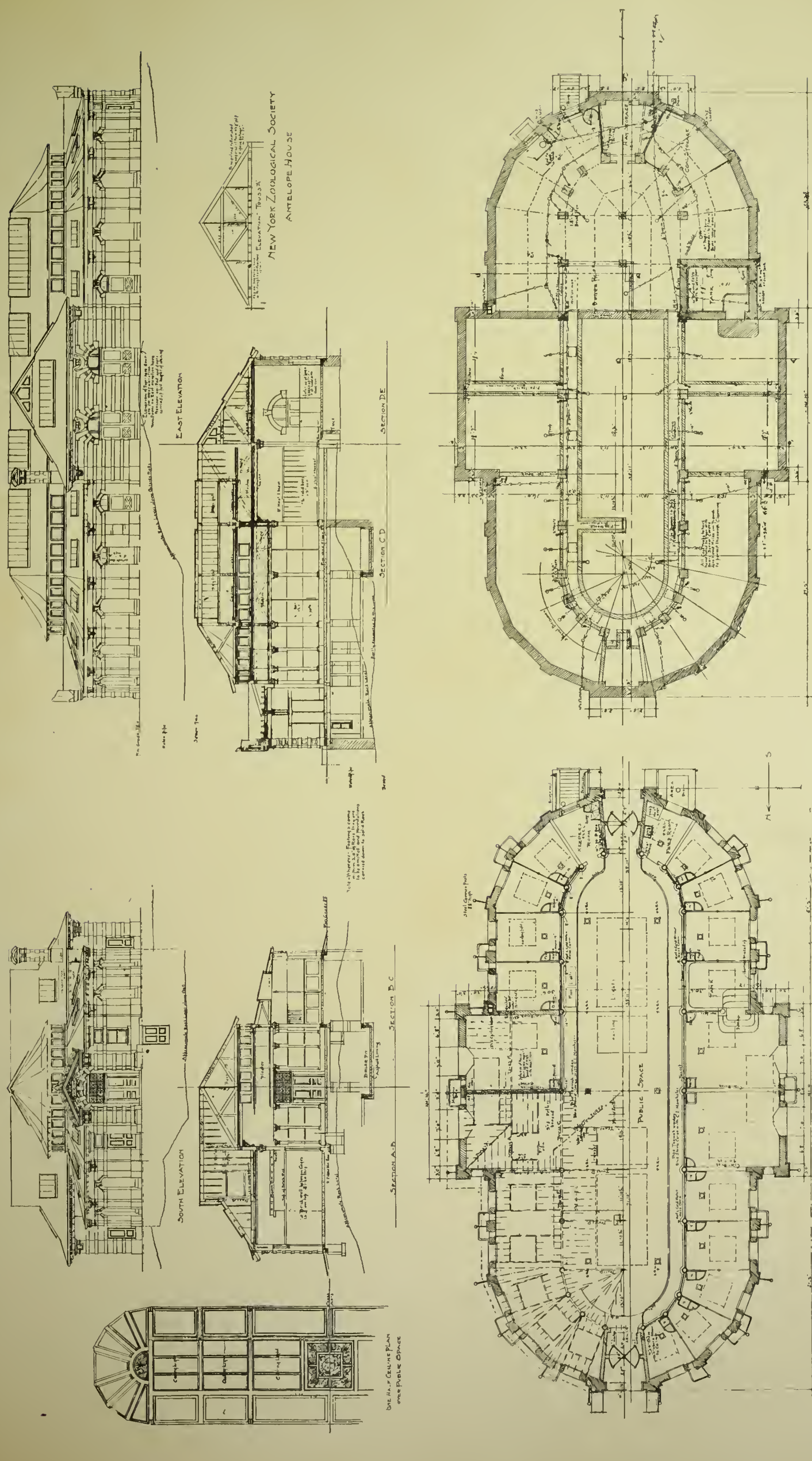
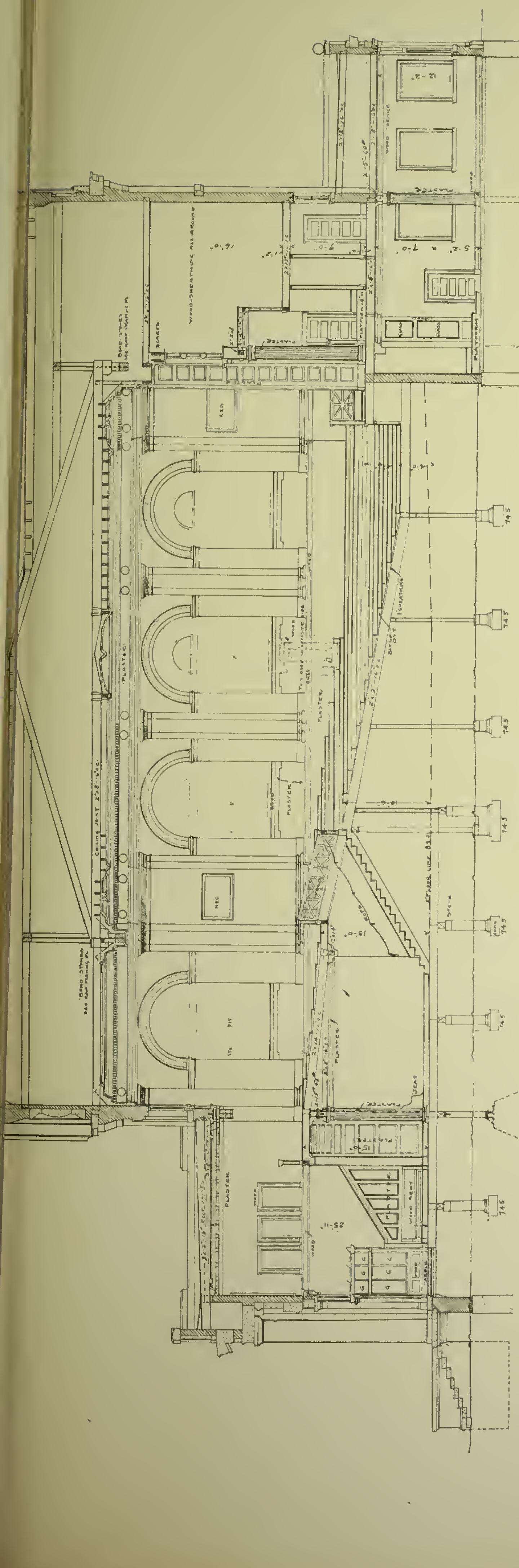


ANTELOPE HOUSE, BRONX PARK, NEW YORK CITY.

HEINS & LA FARGE, ARCHITECTS.



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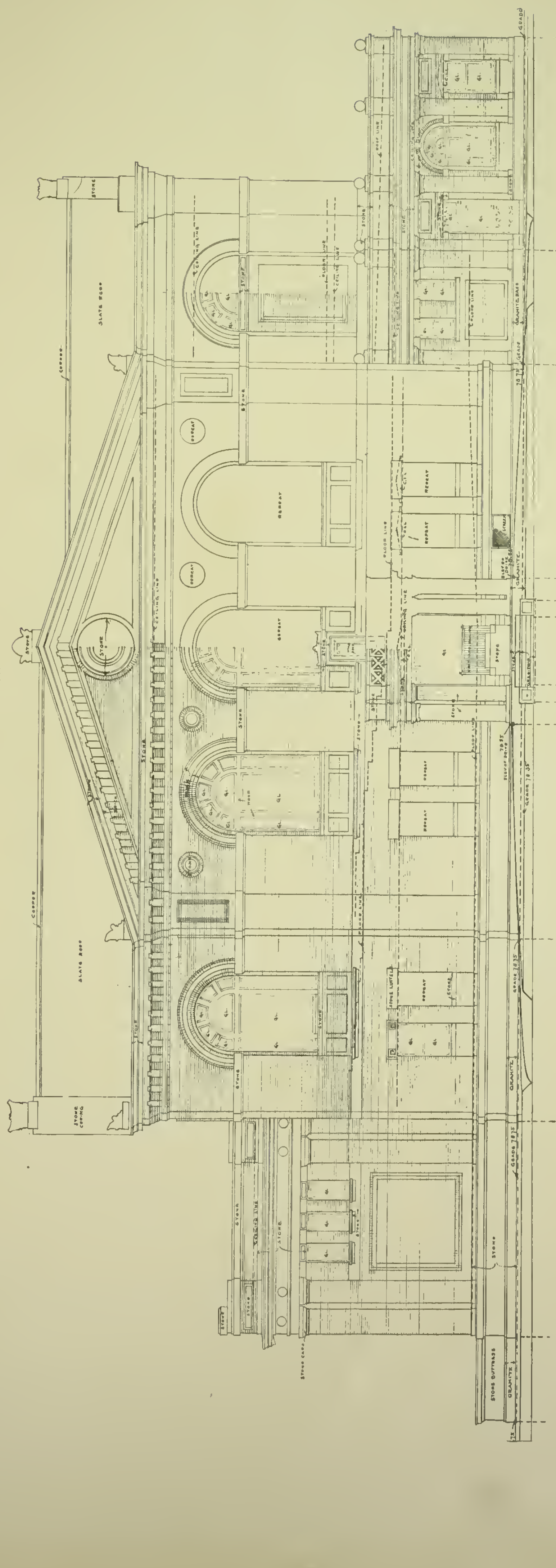

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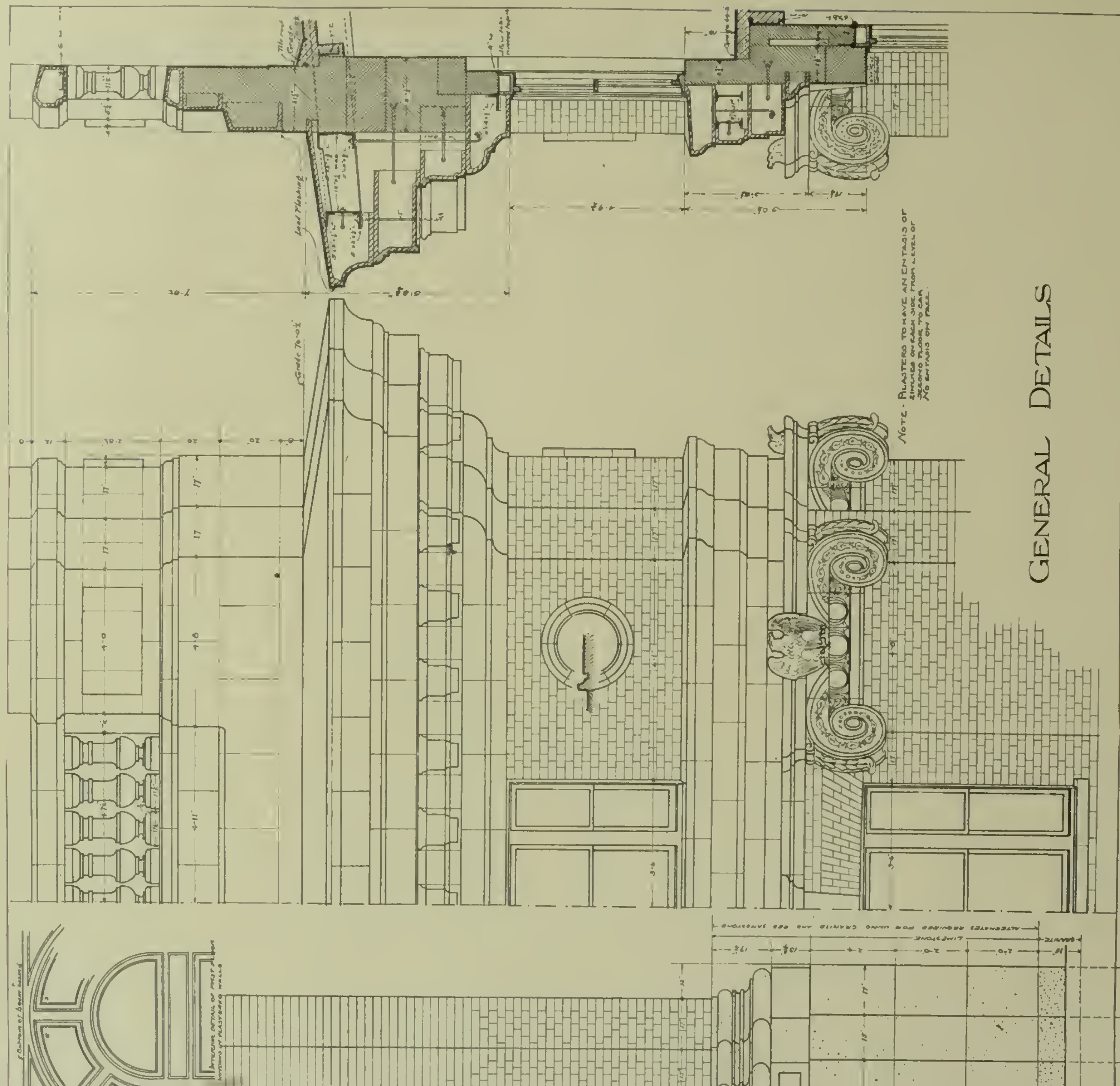
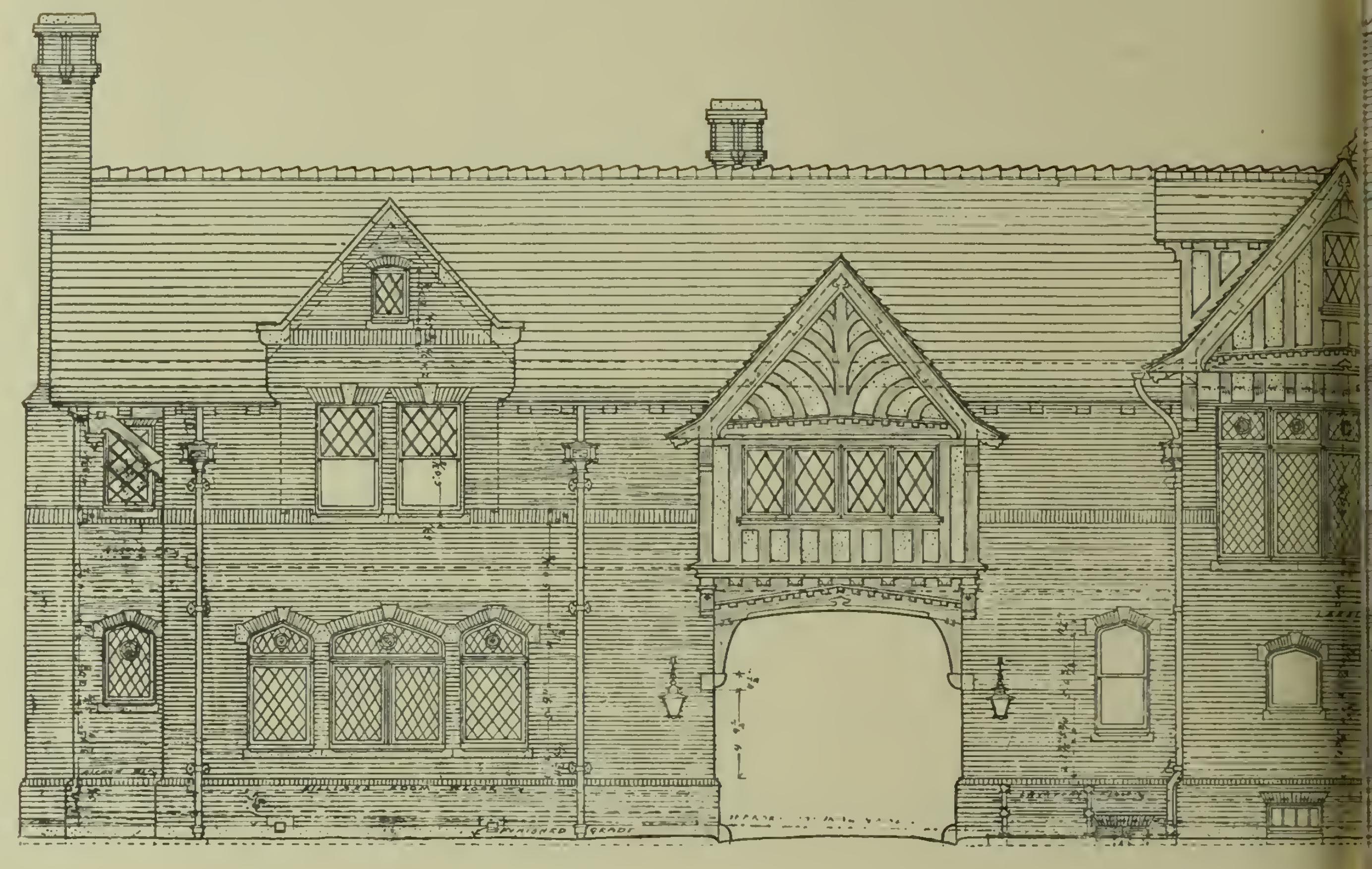
MAURAN, RUSSELL & GARDEN, ARCHITECTS.


GENERAL DETAILS

FRONT ELEVATION.

BUILDING FOR UNITED STATES QUARTERMASTER'S DEPOT, PHILADELPHIA, PA.

RANKIN, KELLOGG & CRANE, ARCHITECTS.

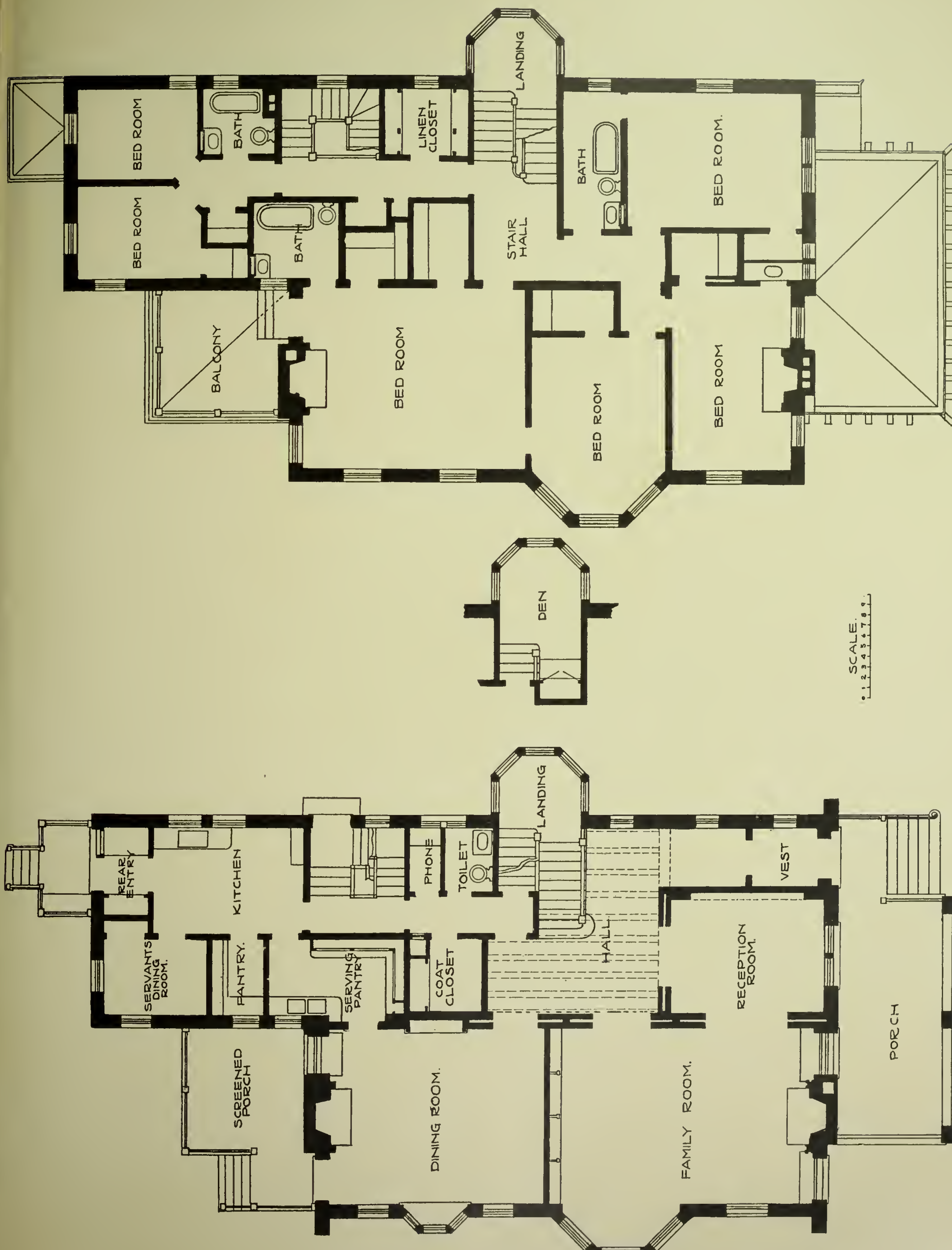


HOUSE AT SEWICKLEY

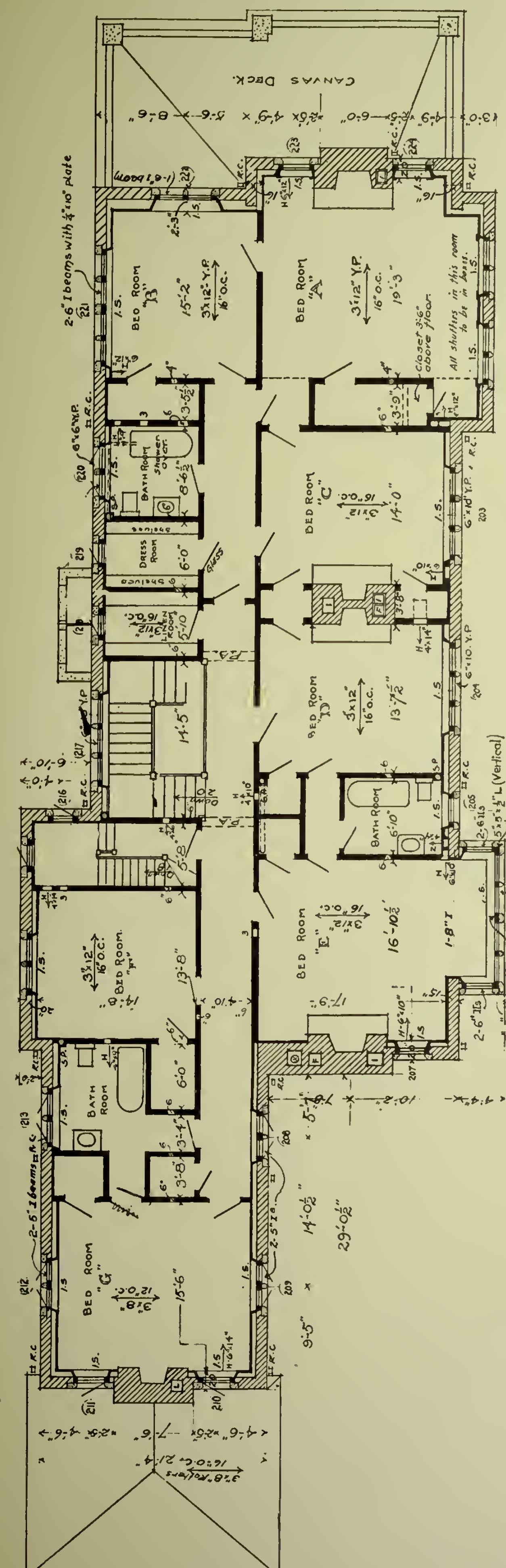
IER.

PLATES 65 and 66.

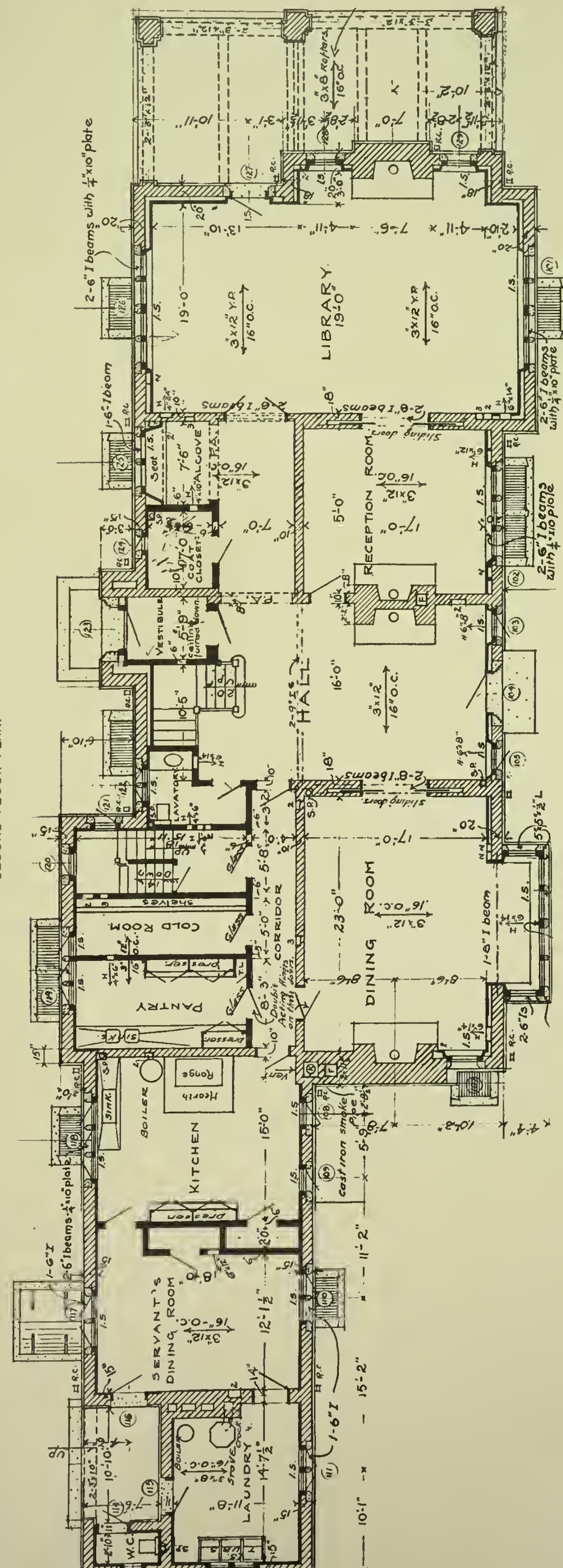
UTAN & RUSSELL, ARCHITECTS.



FLOOR PLANS. HOUSE AT LA SALLE, ILL.
POND & POND, ARCHITECTS.



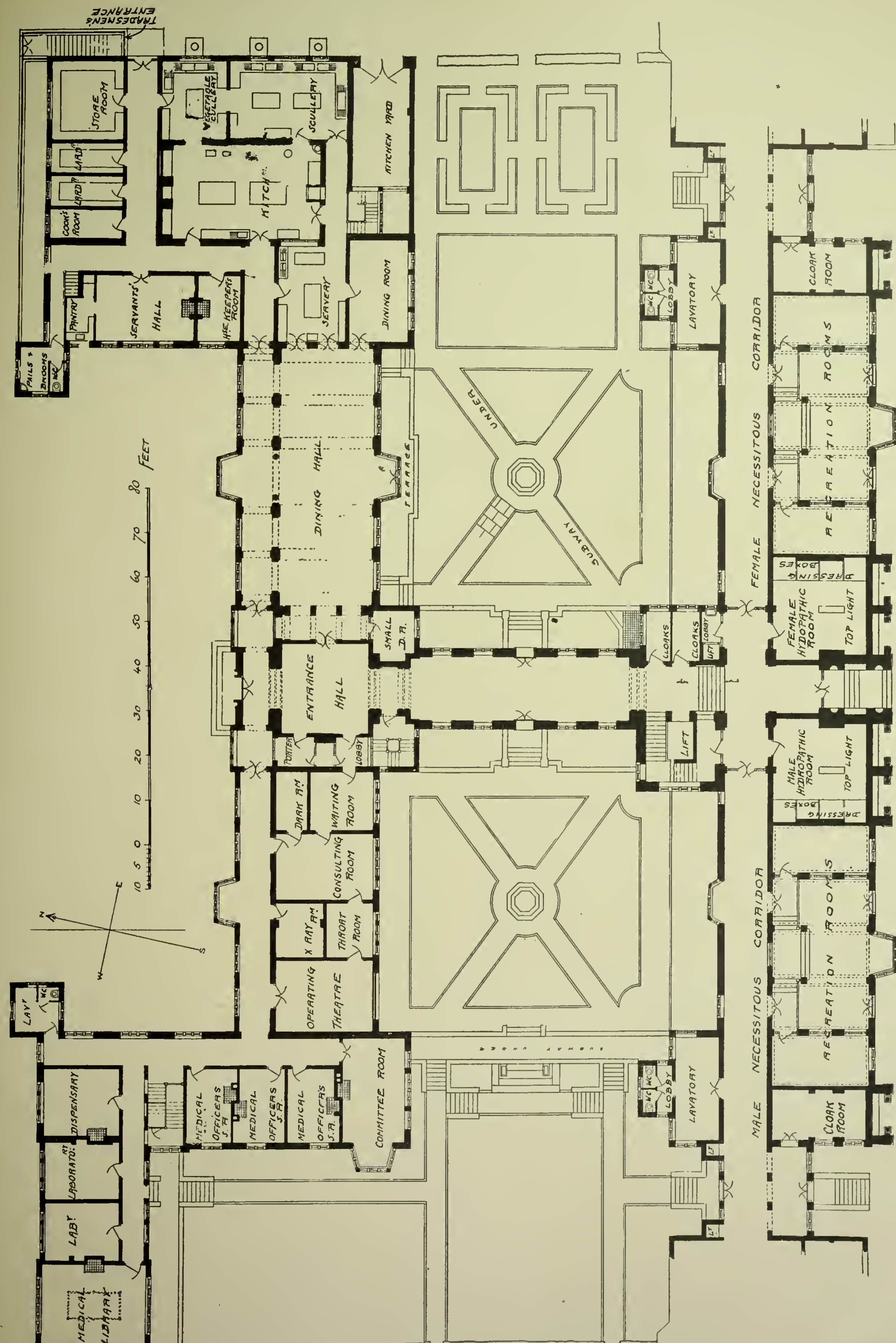
SECOND FLOOR PLAN.



FIRST FLOOR PLAN.

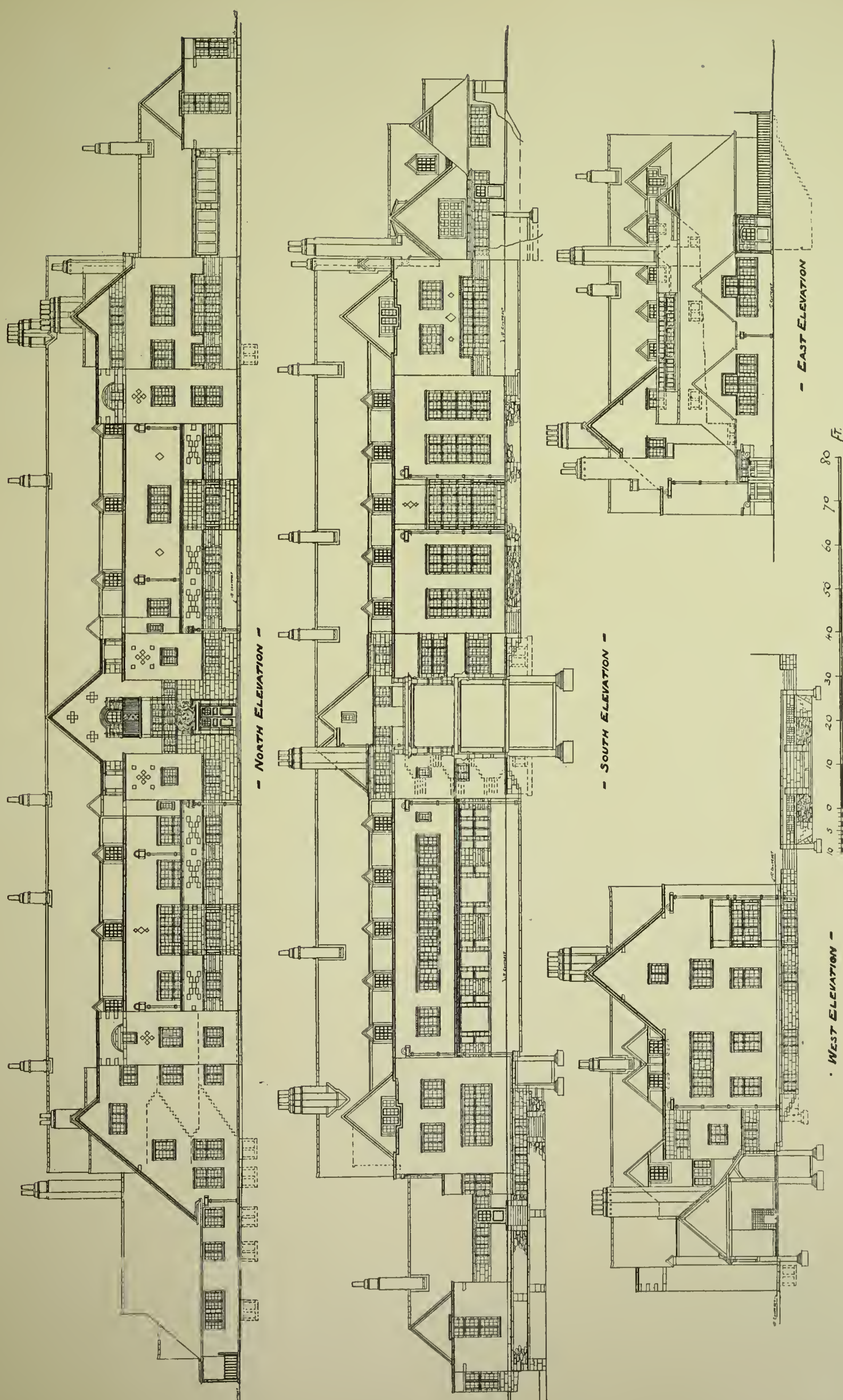
FLOOR PLANS, HOUSE AT CHESTNUT HILL, PA.

COPE & STEWARDSON, ARCHITECTS.



GROUND FLOOR PLAN OF ADMINISTRATION BUILDING AND PATIENTS' CENTRE BLOCK.

THE KING EDWARD VII. SANATORIUM AT MIDHURST, ENGLAND.



ADMINISTRATION BUILDING, THE KING EDWARD VII. SANATORIUM AT MIDHURST, ENGLAND.

H. PERCY ADAMS, ARCHITECT.

HOUSE AT ST. LOUIS, MO.
Barnett Haynes & Barnett, Architects.

HOUSE AT PLAINFIELD, N. J.
TRACY & SWARTWOUT, ARCHITECTS.

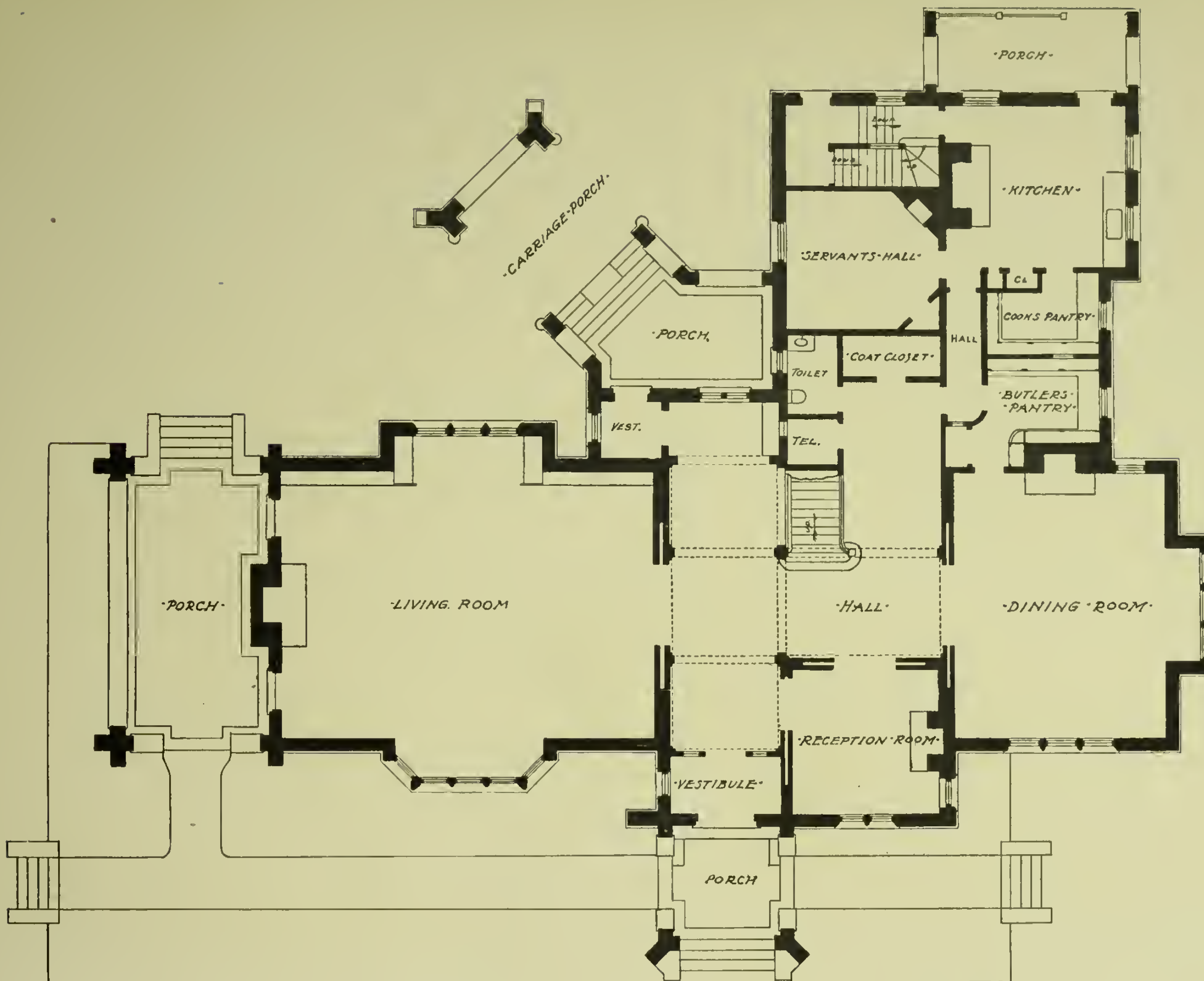
HOUSE AT CHESTNUT HILL, PA.
COPE & STEWARDSON, ARCHITECTS.

HOUSE AT BROOKLINE, MASS.
WILLIAM G. RANTOUL, ARCHITECT.

HOUSE AT LA SALLE, ILL.
POND & POND, ARCHITECTS.

TWO HOUSES AT CLEVELAND, OHIO.

MEADE & GARFIELD, ARCHITECTS.



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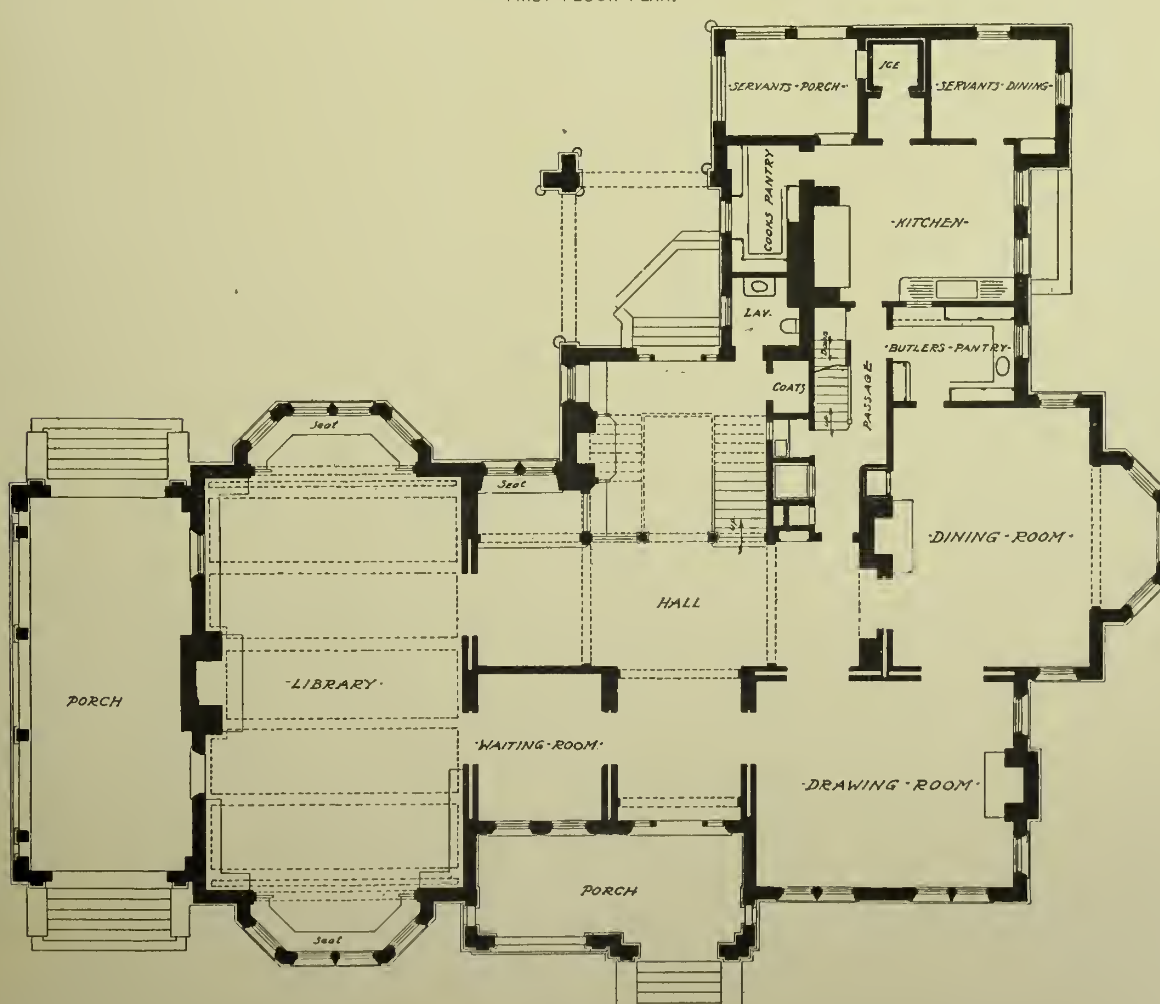
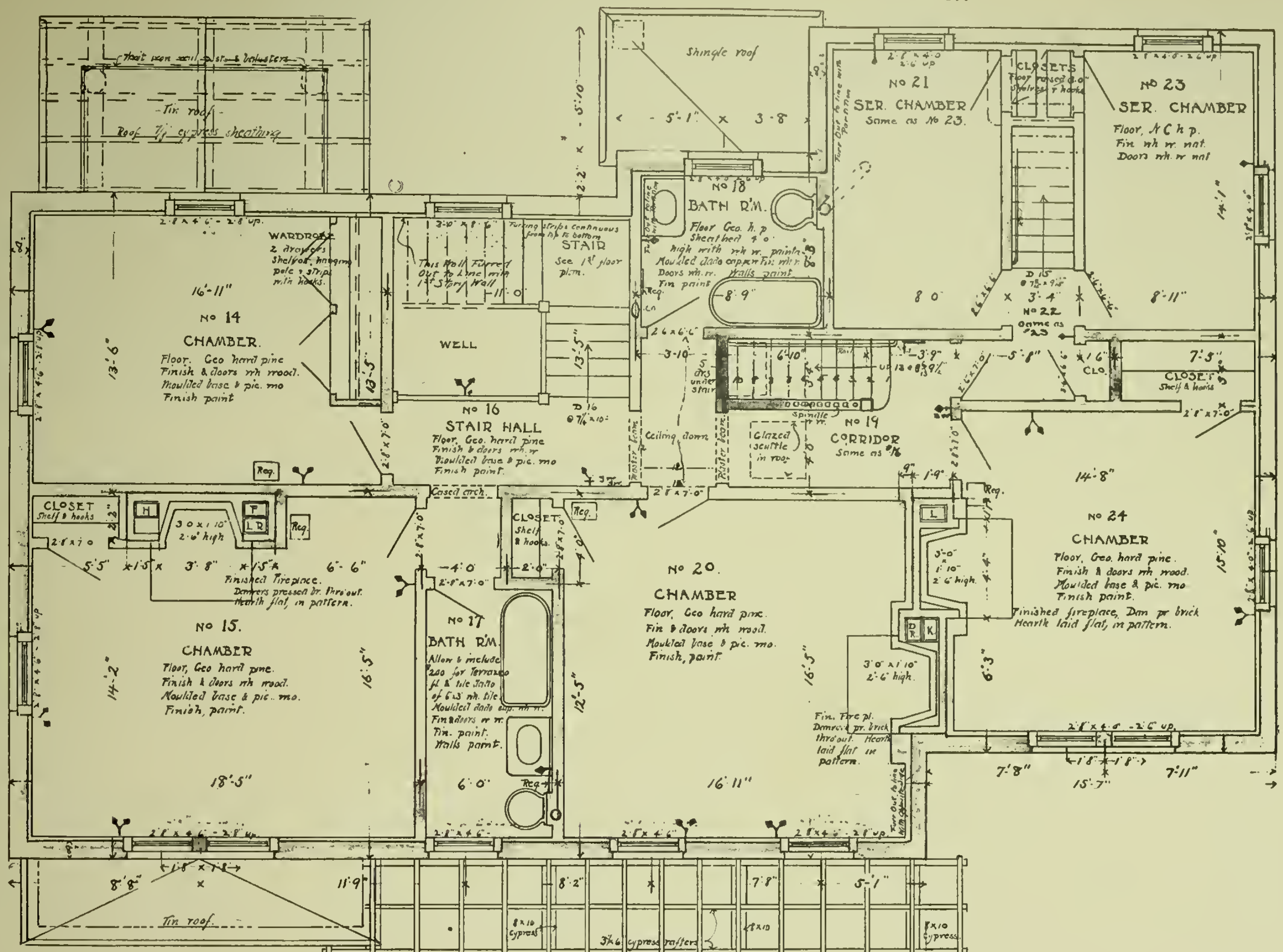


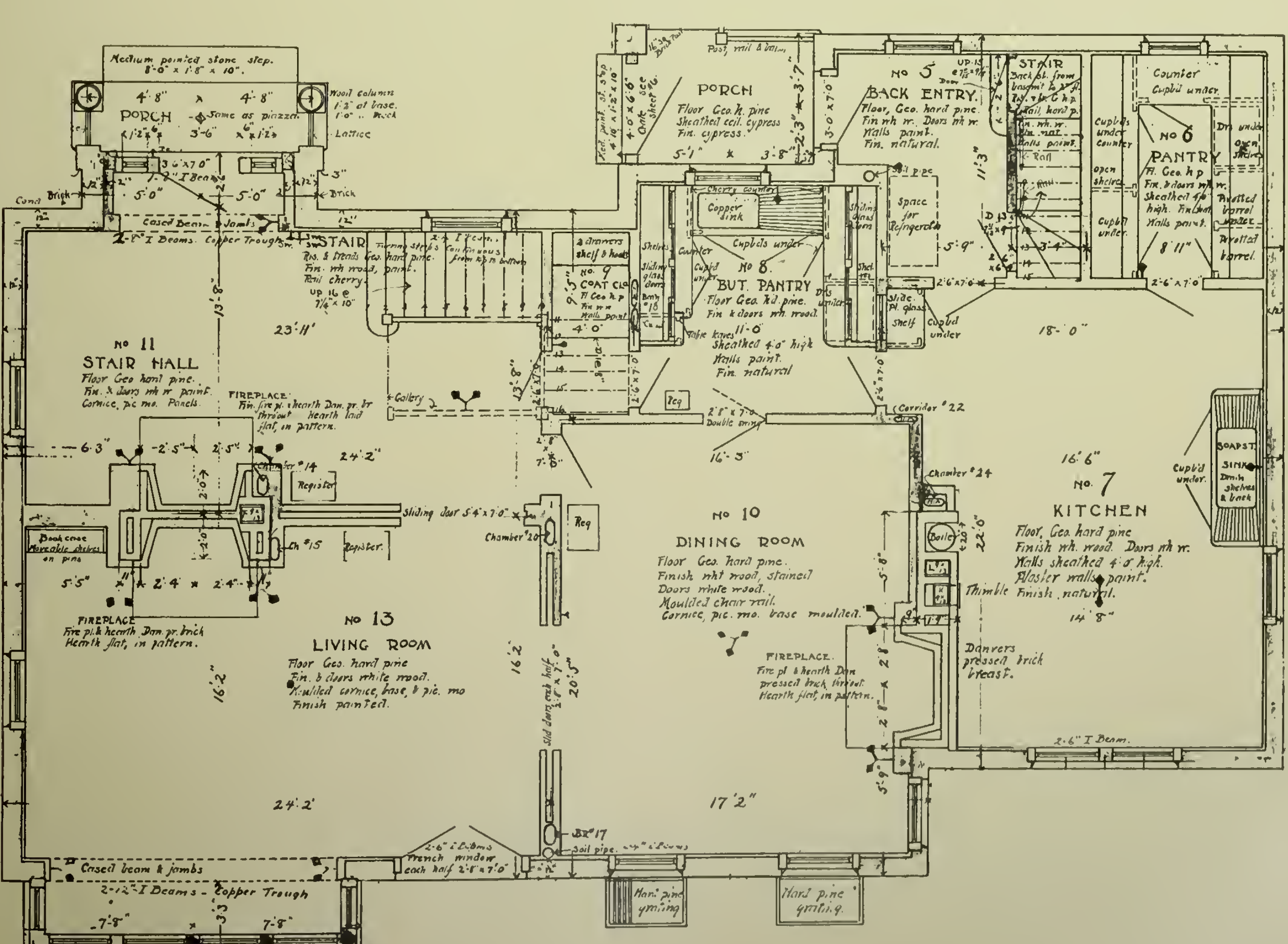
FIRST FLOOR PLAN.

FIRST FLOOR PLANS, TWO HOUSES AT CLEVELAND, OHIO.

MEADE & GARFIELD, ARCHITECTS.



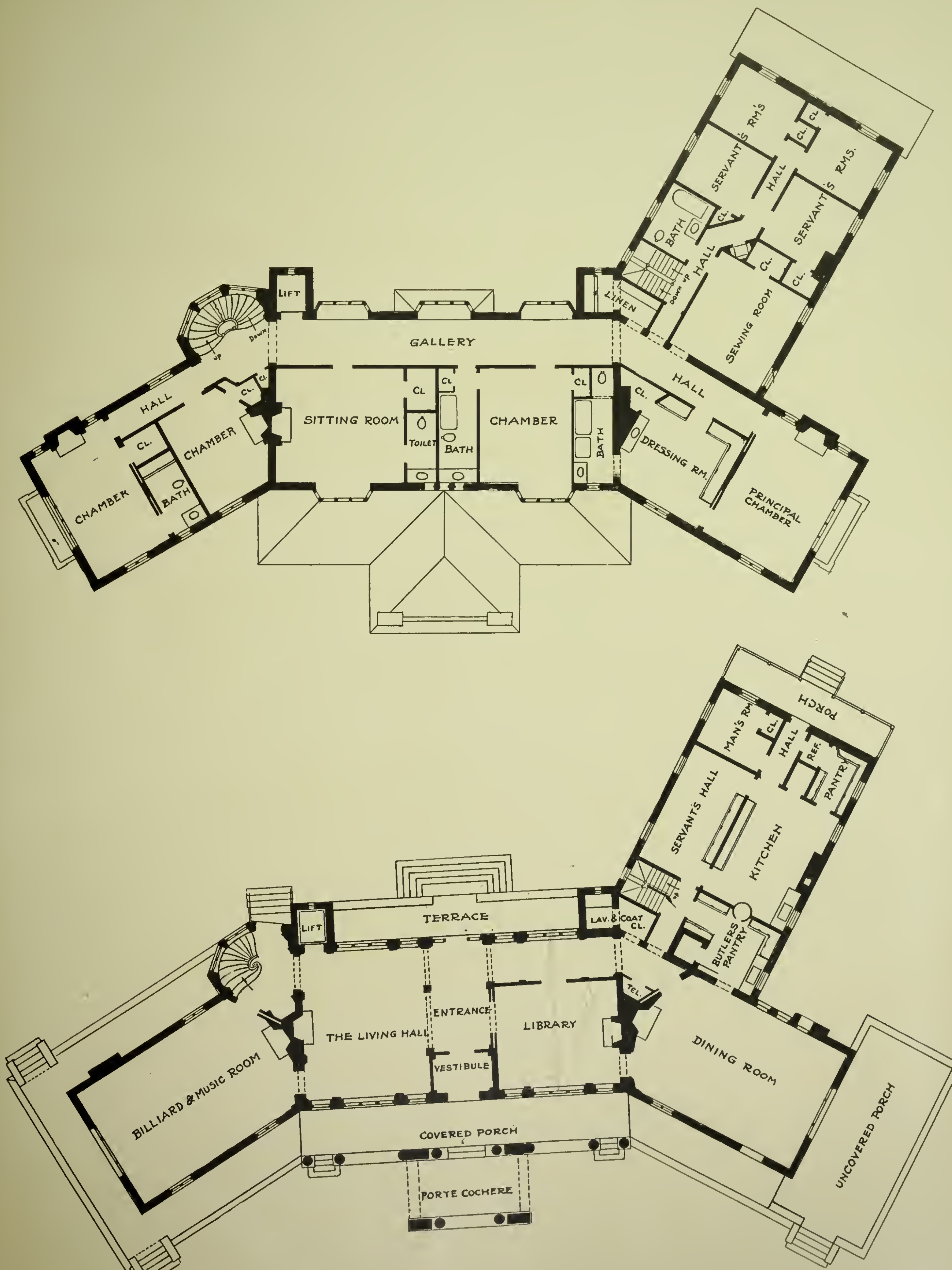
SECOND FLOOR PLAN.



FIRST FLOOR PLAN.

FLOOR PLANS, HOUSE AT BROOKLINE, MASS.

WILLIAM G. RANTOUL, ARCHITECT.



FLOOR PLANS. HOUSE AT PLAINFIELD, N. J.

TRACY & SWARTWOUT, ARCHITECTS.

THE BRICKBUILDER.

VOL. 13 SEPTEMBER 1904 No. 9

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FROM WORK OF CARRÈRE & HASTINGS, HEINS & LA FARGE, MAURAN, RUSSELL & GARDEN, RANKIN, KELLOGG & CRANE, RUTAN & RUSSELL, YORK & SAWYER.

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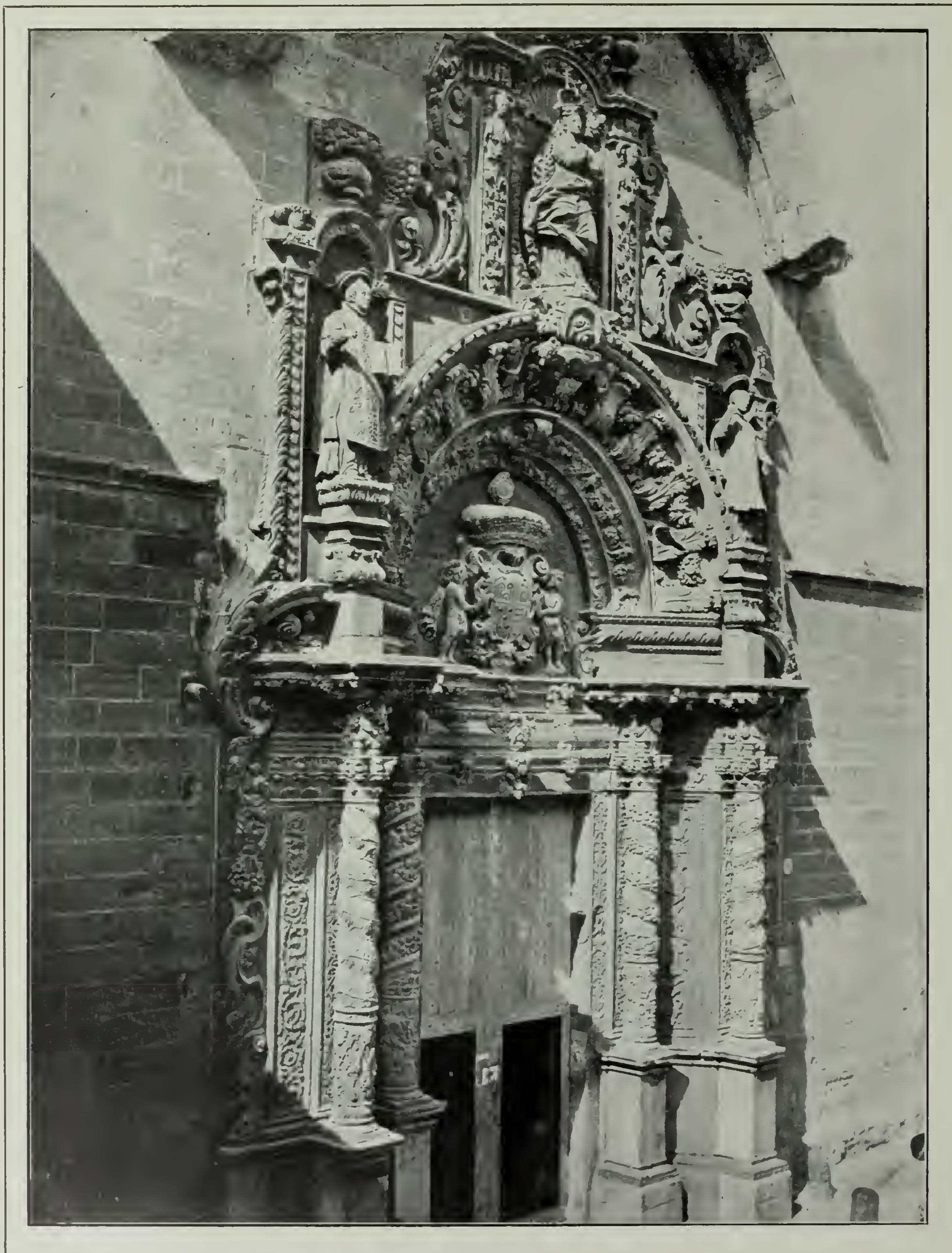

DOORWAY, CATHEDRAL OF PALMA, ISLAND OF MAJORCA.

THE BRICKBVILDER

VOL. 13 No. 9 DEVOTED · TO · THE · INTERESTS · OF ARCHITECTVRE · IN · MATERIALS · OF · CLAY SEPTEMBER 1904

THE BRICKBUILDER.

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THE OAKLAND SCHOOLHOUSE COMPETITION.

IN our last number we made mention of the series of resolutions which had been passed by the San Francisco Chapter of the American Institute of Architects in regard to the terms of a competition proposed by the Oakland Board of Education for the selection of plans for some new school buildings to be erected in Oakland. The resolutions of the Chapter presented such cogent reasons why the terms proposed by the Board were not equitable, that it would seem as if for their own sakes the authorities would have been glad to listen to what the Chapter proposed and to avail themselves of the proffered aid of advice free of compensation. Apparently, however, the Oakland Board of Education considered it knew more about architecture than the experts, and has declined to pay the slightest heed to the protest, a course of action which has called forth a second series of resolutions adopted by the Chapter, the kernel of the whole being embodied in the following:

"WHEREAS, The said Notice to Architects offers little of promise to the profession and cannot justify architects in taking part in a competition so conducted, in that it is calculated for and permits of favoritism and injustice; and,

"WHEREAS, There is a recognized method for conducting competitions for the selection of an architect, which, if carried out in good faith, guarantees satisfactory results; therefore, be it

"*Resolved*, That, as in the opinion of this Chapter an injustice is done the entire architectural profession, we advise all architects not to enter the said competition for new schoolhouses for the City of Oakland; and be it therefore further

"*Resolved*, That participation in the said competition under the present program and Notice to Architects will be regarded by the San Francisco Chapter of the American Institute of Architects as unprofessional conduct; and be it further

"*Resolved*, That a copy of these resolutions be forwarded to the Board of Education of the City of Oakland, to every certified architect in the state, and to each Chapter in the United States."

There are times in some controversies when the only course to take is to unflinchingly declare one's convictions, nail one's colors to the mast and if necessary to go down fighting. Apparently the San Francisco Chapter has felt this was one such occasion. We very much doubt whether their resolutions will have the slightest effect upon the immediate action of the Board of Education, and we further imagine that the only direct result of this protest will be that the award of the buildings in the hands of the Board will be made to some architect not a member of the Chapter. If the Board is purely political in its nature, in one sense the Chapter has been playing into its hands, as by abstaining from competing the number of possible architects from which to choose is of course greatly reduced. If, on the other hand, the Board is well meaning, but self-sufficient, these resolutions will undoubtedly embitter rather than ameliorate the situation. The ultimate result, however, of just such vigorous action as the Chapter has taken will be for good. Such action as is indicated by these resolutions demands a kind of courage which most architects are willing their competitors should display, but from which they are very careful to abstain; and it shows either a good deal of pluck or some other pertinacious qualities which we will not characterize, to fling such resolutions in the teeth of a school board. Our sympathies are entirely with the Chapter. They will not win this fight, but their action will make another fight easier, and if architects more generally would stand by the principles herein enunciated they would go a long ways towards drawing the attention of laymen favorably to the profession, and would be contributing very powerfully towards the education of the people up to an idea of what constitutes architectural ethics. Whether ignorantly or otherwise, the terms of competition proposed by the Board were unfair and unwise, and the San Francisco Chapter is certainly to be congratulated upon the stand it has taken. We would wish that the chapters of the Institute in other cities could at times be equally vigilant and outspoken in regard to improperly planned and conducted competitions for public buildings.

Brickwork on the Pacific Slope. I.

BY CHARLES PETER WEEKS.

SAN FRANCISCO.

IT is generally considered that to have the design of architectural structures regulated by natural conditions is a good thing, but this is not true in the case of San Francisco.

In the early history of this city an earthquake scare started the inhabitants to building wooden structures. The early pioneer, fearing the crash of masonry about his head, caused by the oscillations of the earth, spent his fortune in highly ornate wooden mansions, which to-day give that flimsy, cheap character to the architecture of San Francisco. The visitor expecting to find an echo of the early Missions is vastly disappointed.

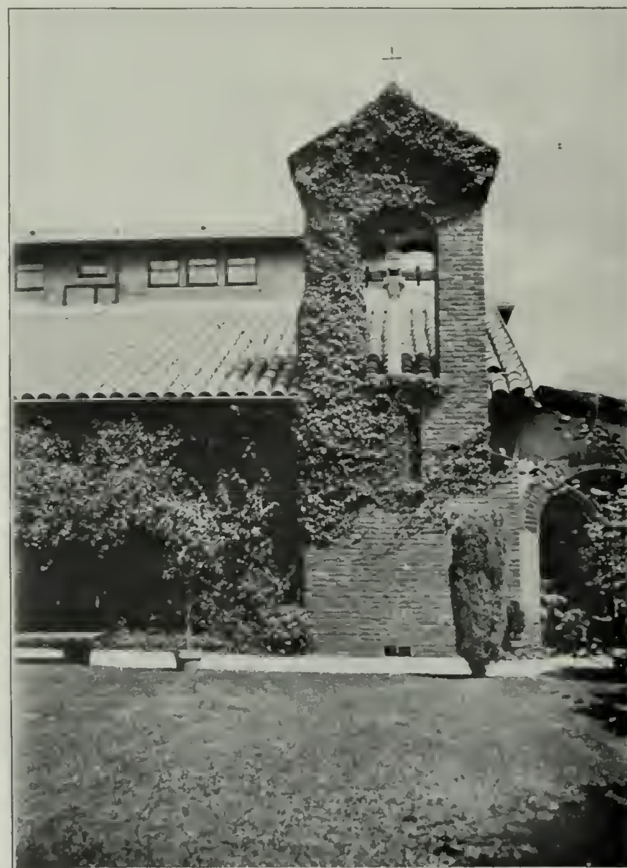
Nob Hill is covered with these cheap looking imitations of European castles, and it is only within the last few years that the sheep, following a frightened leader, have stopped and taken a stand.

HOUSE BY COXHEAD & COXHEAD, ARCHITECTS.

The entire character, architecturally speaking, of this city is changing very rapidly. Substantial structures are taking place of the flimsy dwellings, and there is being as great a rush to follow the leader in brick and stone as there was heretofore to follow the leader in wood.

A. Page Brown was one of the first men to build real architecture in San Francisco. He founded an office from which has sprung a number of architects who have beautified the city; among them, Schweinfurth, Maybeck, Mattecian, Knowles and others. This force has been added to by offsprings from the large offices in the East and by students in both the American and European schools, until San Francisco has as representative a lot of men as any city in the Union.

In this series of articles I shall not attempt to illustrate the larger hotels and office buildings, but confine myself to dwellings, clubs, churches and other small buildings of this character.



SWEDENBORGIAN CHURCH, A. PAGE BROWN, ARCHITECT.

One of A. Page Brown's most characteristic bits of work is the charming Swedenborgian Church, shown in the second illustration. Mr. Woster, pastor of the church, was of great assistance to Mr. Brown in this most tasteful composition.

From the street one sees a low portico, composed of three arches in brick and rough plaster, and a corner bell tower in brick and marble against the main gable end of the church. The central arch of this portico is closed with a wrought-iron gate. The picture is one that recalls Italy, and is very appropriate for San Francisco with its hills and bays and climate so similar to that country.

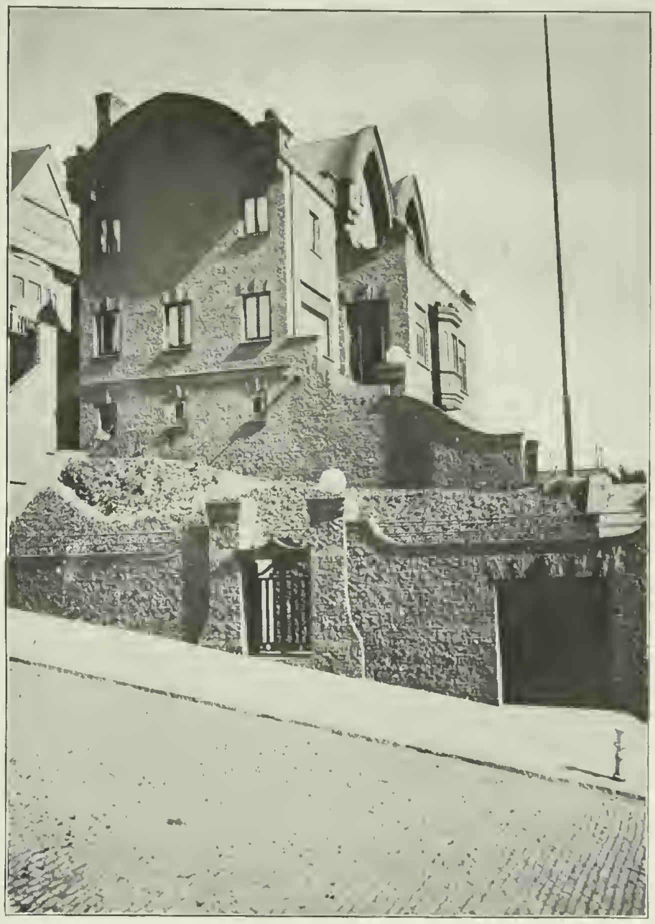
Entering through this iron gate and turning to the left, the visitor comes upon an inviting garden surrounded on two sides by plant-grown walls, and on the others by the church proper and a cloister in the same smooth clinker brick as the church itself.

The roof of the church and cloister is of old Spanish tile. The entrance to the church and rectory is through this cloister.

The interior of the church is equally as inviting, picturesque and beautiful as the exterior.

The residence portion of San Francisco is almost exclusively on hillsides, commanding either a view of the bay with the beautiful Marin County hills beyond, or of the city itself in the opposite direction. This has affected the design of nearly all of the residences, and has added greatly to the difficulty of the successful solution of the residence problem. This accounts to a great extent for the scarcity of buildings in the Mission style of architecture.

HOUSE BY ALBERT SUTTON, ARCHITECT.



HOUSE BY EDWARD L. HOLMES, ARCHITECT.

The long, low arcade requires a broad expanse of ground, which San Francisco is unable to furnish, and the architects have, to a great extent, drifted into the rambling, English style of architecture, with its greater apparent ability to cling to the hillside.

Owing to the fact that the hillside facing the bay slopes to the north instead of to the south, domestic gardening is hampered or eliminated entirely from most of the residences. The clinging vine has been called into play to relieve the coldness and barrenness of this lack of garden.

HOUSE BY BLISS & FAVILLE, ARCHITECTS.

A residence on the corner of Jackson and Pierce streets is a good example of the characteristic San Francisco house I describe. Coxhead & Coxhead are the architects. The house is built of selected common brick, laid up in white mortar. The entrance and keystones are of white sandstone; the roof, of wooden shingles. The iron lantern and window grill and anchor heads give a touch of playfulness, and relieve the otherwise severe character of the composition.

Another residence by these same architects is on the corner of Pacific Avenue and Devisadero Street. The brickwork is smooth clinker with common brick quoins. The cornice, pediments over the windows and door, and window sills are of

HOUSE ON SPOONER AVENUE, COXHEAD & COXHEAD, ARCHITECTS.

brown sandstone; the roof, of slate, pierced with wooden dormer windows. The severity of the attic wall is relieved at the entrance and bay windows by stone balusters. The entrance columns are the only unfortunate part of the design; the delicate shafts and heavy brick quoins being so utterly out of scale with each other. The building is nicely placed on a turf terrace, retained by a smooth clinker brick wall. The steps leading to the house are also of brick.

Another house inspired by the study of English design and hillside limitations is the residence of Mr. Albert Sutton, on Vallejo and Devisadero streets. It is generally conceded that an architect cannot successfully design his own house, but this is undoubtedly not true in the present case.

Resting on a broad brick retaining wall, this house rises from among flower beds at either side of the walk, well composed and of good outline.

Mr. Sutton has used a red stock brick laid in red mortar. The cornice, bay windows and balusters are of wood, painted white. The roof is of wooden shingles. The down spouts are of copper with ornamental heads and straps. The retaining wall is pierced with an entrance of brick steps leading to a brick floored porch, the roof of which serves as a balcony. From it, and large bay windows in the living room and dining room, a panoramic view of the Golden Gate, Mount Tamalpais and the entire bay is had.

The residence of Mr. W. F. Boardman on Russian Hill, Edward L. Holmes, architect, is quaintly original in design. The brick used are clinkers; the mortar, red; the trim, of redwood darkened with a stain. Wooden shingles cover the roof. The unusual gables are pleasing. The house rises strong and natural from the hillside.

Another residence on Green Street in the Russian Hill district is that of Mr. O. D. Baldwin. The architect, E. J. Vogel, has used a stock brick. The gable ends are in slate unfortunately, which detracts materially from the otherwise good design.

The residence on the corner of Baker Street and Broadway, Bliss & Faville, architects, is a remarkably successful recall of Colonial design. A nice, rough textured brick has been used with white mortar joints. The window heads are of white marble, as are the steps and water table. The portico and cornice are of wood painted white. The roof and dormers are also of wood. The vigorous character of this design, with its substantial gable terminating in two chimneys, makes it an appropriate structure for this rugged country.

HEAT AND REFRIGERATION FROM A CENTRAL PLANT.

"ONE of the new enterprises that will be carried out in Baltimore's burnt district," says a writer in the New York *Evening Post*, "is the establishment of a heating and refrigerating plant for the supply of these two commodities throughout the section. I believe that ninety per cent of the new buildings along its pipe line will take their heat from this concern instead of producing it through individual boilers, This is popularly known as 'The Hot-Air Company.' It proposes to put in meters which will register the amount of condensation, so that the consumer will pay with considerable exactness for the amount of steam that he uses, and will thus be under the same motives to be reasonable and economical as if he were furnishing the coal himself. The incidental advantages of such a system are very great. The danger from fire will be much lessened, and the insurance companies will doubtless give lower rates on the buildings which are so equipped. The city will invite bids from this company for heating the City Hall and Courthouse, and these will be compared with the approximate cost under the old system. Professor Woodbridge, it is reported, is already making a study of Washington public buildings with a view to a similar undertaking. I look to see considerable development of this idea."

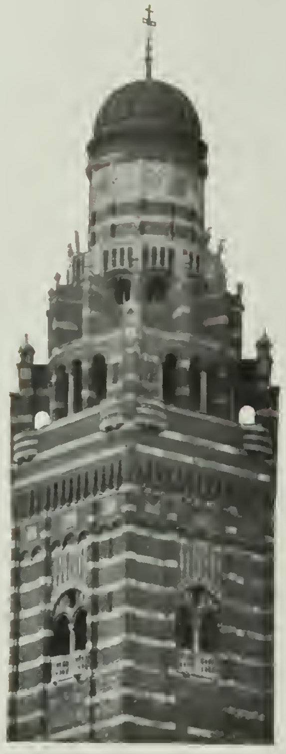
HOUSE BY E. J. VOGEL, ARCHITECT.

The New Cathedral at Westminster.

FROM many parts of the western side of London a great brick tower can be seen stretching high above the surrounding buildings, yet not one person in a thousand knows what it is. The architect with a tutored eye will recognize at once that it is no everyday design, though the average person, accustomed to associate all manner of pinnacles and crockets with a church tower, fails to realize this as the campanile of a Roman Catholic cathedral. If, however, the passer-by will turn from the endless traffic that throngs Victoria Street he will suddenly come upon this high tower and the huge fabric that lies below it. The first view amazes one, but the thought instantly occurs how unworthy the site is for so great a building, hemmed in, as one sees, by tall blocks of flats and residences which preclude any really complete view of it. To secure a noble site, however, is practically an impossibility in London to-day, and the history of this cathedral shows what difficulties are experienced in attempting to find one. So far back as 1865 the idea of building the cathedral originated with Cardinal Wiseman, and after his death the project took shape under Cardinal Manning, being brought to completion by his successor, Cardinal Vaughan. Many sites were under consideration, but eventually, in 1884, the present one was acquired for $275,000. As a rule it is not of particular interest to know what formerly occupied an area which has been cleared for a new building; but this case is an exception, for on a portion of it was the Middlesex County Prison, and the bed of concrete (nine feet thick) on which the prison stood became a ruling factor in determining the foundations for the great cathedral that was to rise over it. This bed extends diagonally across the building, as indicated by the dotted line on the plan, and the new foundations have been incorporated with it. Their extent can be gauged from the fact that six thousand tons of fresh concrete were needed.

WEST FRONT.

Having settled on the site, the next great question was the design of the cathedral. Early in the seventies a Gothic design had been prepared by the late Mr. Henry Clutton, but that was for another site, now abandoned, and consequently it was set aside. Then a competition was mooted, in which J. F. Bentley was invited to take part, though he declined to do so. Eventually the competition idea was dropped, and in 1894 Bentley was given the work.



THE SUMMIT OF THE CAMPANILE.

It needs no comment to show that the design of a cathedral destined to be the greatest since the Reformation called for long-matured thought. Bentley regarded his task in that light, and with the object of studying the great examples of southern Europe, he paid a six months' visit to Italy, devoting particular attention to the northern cities; and there, in the churches of Ravenna, he formed his decision as to what the new Westminster Cathedral should be, remembering all the time the expressed wish of Cardinal Vaughan that the building should not be any particular phase of Gothic, but a development of the first Christian architecture — Byzantine. The plan was of course the initial problem, and as showing the architect's position, I may quote the Cardinal's words: "Having," he said, "laid down certain conditions as to size, space, chapels and style, I left the rest to him.

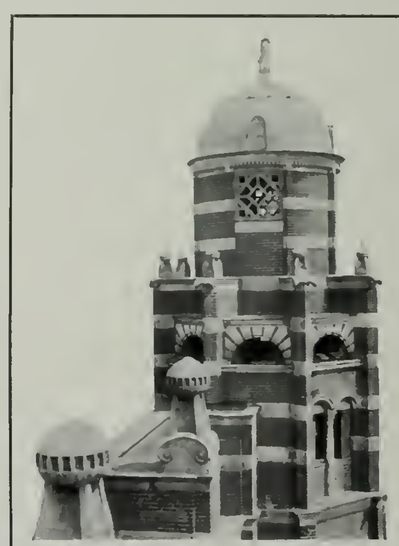
LOOKING TOWARDS NORTHWEST.

He offered me the choice between a vaulted roof and one of saucer-shaped domes. I chose the latter. He wished to build two campaniles. I said one would be enough for me. For the rest he had a free hand." Bentley, indeed, built his very life into the cathedral, and it now stands as the embodiment of a great architect, who not only evolved every detail of its design, but also with masterly skill solved the many constructional problems that make the building of exceeding interest.

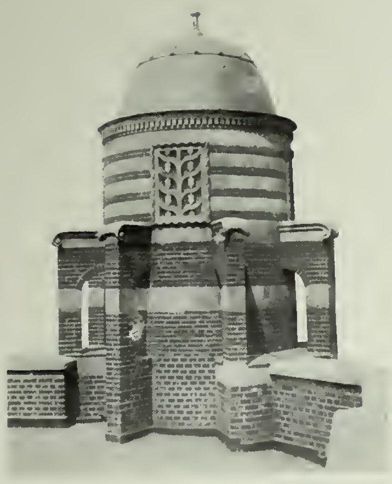
It will be seen from the accompanying plan that the cathedral is really a vast nave and sanctuary covered by four saucer domes; and one has only to look up at these latter, more than one hundred feet above the floor, to appreciate the splendid conception of the architect, the more so when it is understood that each dome weighs seven hundred tons, being of sixty feet diameter inside, constructed of concrete three feet thick at the base, diminishing to thirteen inches at the crown. Then there are

FROM THE SOUTH.

the arches of the nave, ninety feet high, giving an immense feeling of space and majesty to the interior. No words can describe the impression which the beholder receives. Yet an idea of it is given by the illustrations (for some of which — those of Mr. Dockree — I am indebted to *The Architectural Review* of London), and in studying them it is well to remember that this nave is two hundred and thirty-four feet long and sixty feet wide, — by far the widest nave of any cathedral in Great Britain and not much shorter than the longest of them, York being two hundred and fifty-one feet and Ely two hundred and eighty-one feet — while as regards height it surpasses any other, being one hundred and nine



UPPER PART OF A STAIR TURRET.



UPPER PART OF A STAIR TURRET.

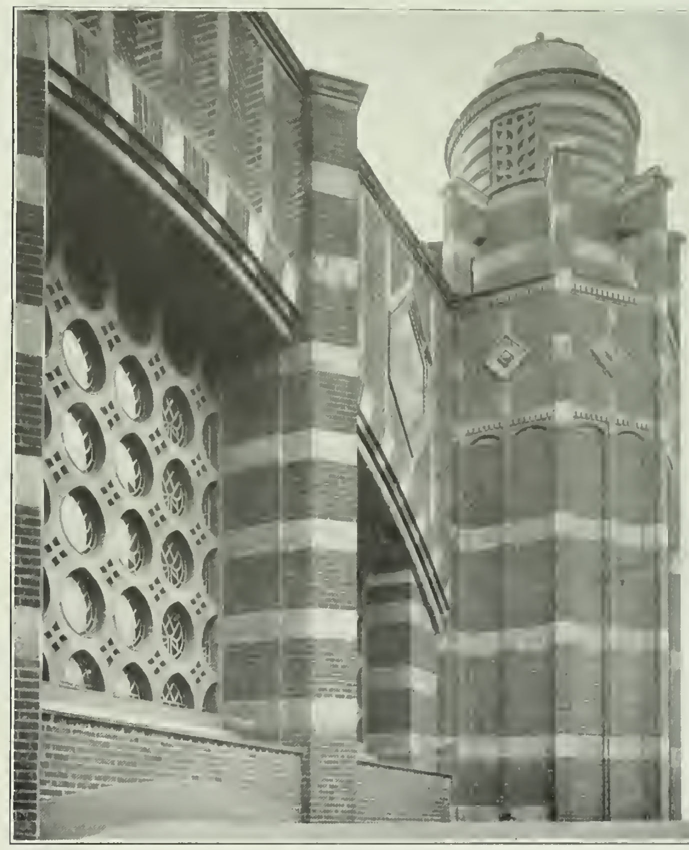
feet, as compared with Westminster Abbey one hundred and five feet, York ninety-three feet, and Ely seventy-two feet.

It will serve no purpose to describe the disposition of the various parts of the cathedral, as these can be best seen from the plan and section. I may therefore go on to describe some of the structural details. Of the domes I have already given a few particulars, but it should be added that above each is a shell built up of artificial stone slabs three inches thick, diminishing in size towards the crown, with a two-inch ventilating space to prevent expansion of the concrete, which would inevitably occur in summer. The domes were thrown on to a centering supported from the floor, the concrete

NORTHEAST PORCH.

consisting of four parts of clear, broken brick (soaked in water before mixing) and one part of Portland cement. Seatings of pendentives are of old granite and York stone in corbel courses. The three domes covering the nave are blind, but that over the sanctuary is pierced with twelve windows, each flanked by counterforts.

The walls of the cathedral are entirely of brick, in fact the whole structure is a vast piece of brickwork, no iron or steel being used anywhere and only a very small quantity of wood, so that the cathedral should prove



PORTION OF WEST WINDOW OF NAVE.

eminently fire-resisting. Faversham stocks have been used inside and two-inch red Bracknell bricks for the outside facing, Flettons being employed for the large piers and blue Staffordshires for the outside facing of the underground vaults and sacristy (also for the damp-courses), being set in nearly neat cement. The mortar was composed of one part Portland cement to three of sand. Courses average four to the foot and are flushed up solid. The facing is bonded to the backing with one course of binders to four of stretchers.

Of stone there is not a great deal in the cathedral, its chief employment being (Penrhyn granite) for the plinth and dressings to doors and windows, etc., together with Portland stone.

A noteworthy feature is the terra-cotta tracery of the large windows, as shown by the accompanying photograph of the west window of the nave. This tracery is built of small-sized pieces joined together, the glass being chiefly roundels slightly tinted, for it must not be forgotten that most of the light comes in between the nave bays. The lighting is particularly fine, especially through the windows of the sanctuary and the choir. And it may here be added that the acoustics of the cathedral are excellent.

Turning to the details of the interior, the marble columns on either side of the nave may be first noticed. These are monoliths thirteen feet high and are of Verde

NORTH TRANSEPT FROM NAVE.

Antico from the reopened quarries at Larissa in Thessaly, and a specially interesting fact about them is that they are probably the first taken out of the quarry since the time of Justinian, in the sixth century. The figure of the marble is most beautiful and varied. In the

VIEW FROM WINDOW IN NORTH TRANSEPT LOOKING DOWN.

sanctuary the columns are of jasper and red Norwegian granite, with fourteen of pavonazzo in the sanctuary galleries, which also comprise much marble work. The caps, of alabaster, are all different in design and show the architect's resourcefulness in developing Byzantine detail.

It is of course intended that the interior shall be lined entirely with marble and mosaic, but this will not be completed for many years to come. Some idea of the ultimate effect, however, can be gained from the one or two side chapels which have been finished in this manner. The marble work is exceedingly fine and the mosaic beautiful in color, though the attenuated figures characteristic of the old Byzantine work are not altogether pleasing, and the same remark applies to the large painted crucifix that hangs in mid-air above the sanctuary. The

NAVE.

mosaics, it may be noted, have been laid by a school of ladies under the direction of Mr. George Bridge.

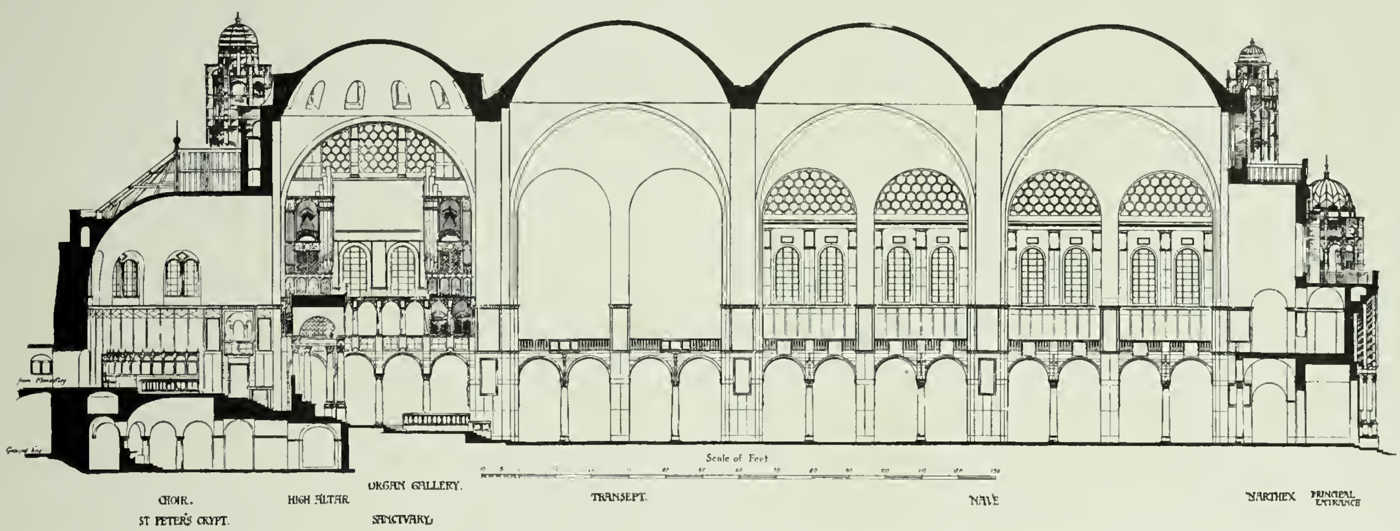
Of other finished marble work in the interior there are the pulpit and the throne, as well as a very large font in the baptistery, while the columns of the crypt are worthy of special attention; also the floor at the west end of the nave, which is of marble laid in a bold design, though the rest of the nave is wood-blocked.

A great feature of the interior will be the baldachino above the high altar. This will be flanked by eight columns of onyx fifteen feet high, supporting a marble canopy, and will be the focus of the sanctuary. The choir, it will be noticed, is placed behind the altar, about thirteen feet above the nave floor, and beneath it is St.

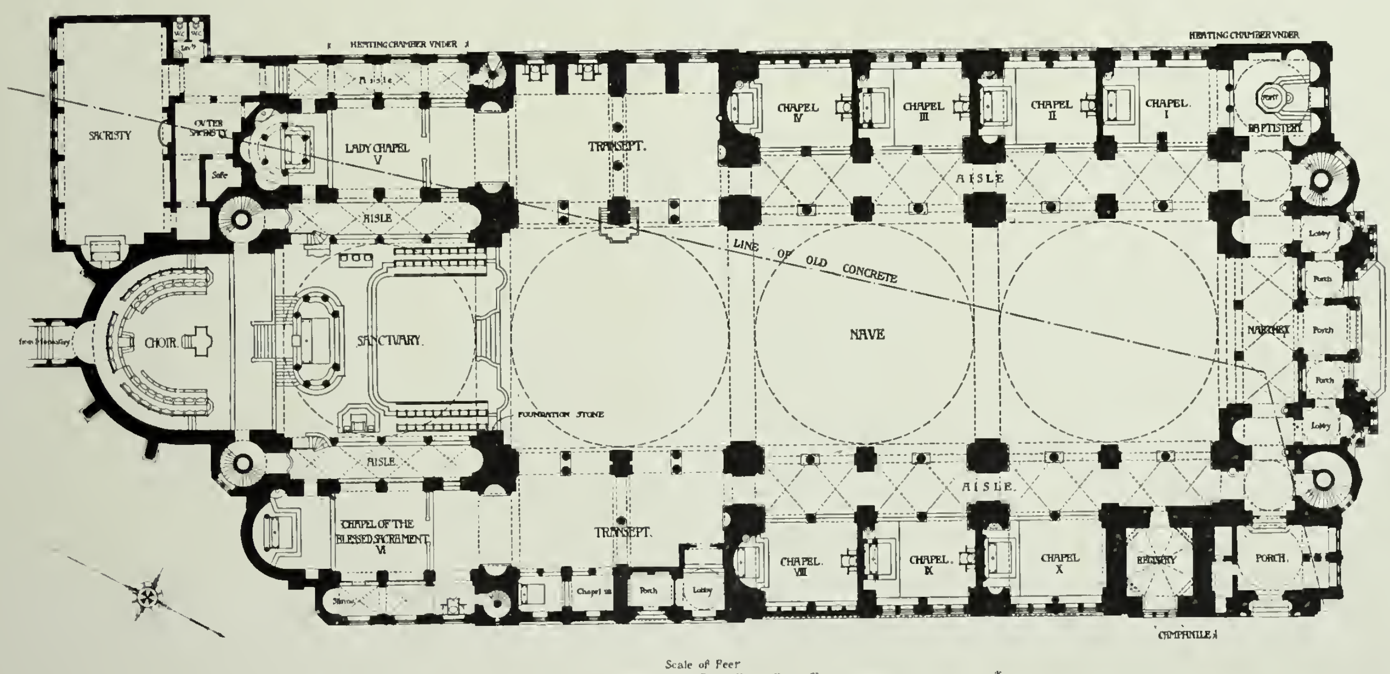
Peter's Crypt, the organ being arranged in the sanctuary galleries. Other details must be left to the illustrations, though I may add that the interior is to be heated by hot air, supplemented by low-pressure steam pipes in the galleries, while the nave will be lighted by electroliers suspended at regular intervals.

Having now described the interior, I may turn, in conclusion, to the campanile and west front. It is inter- stairs. The trouble of the ascent, however, is well repaid, for the view on a fine day is remarkable.

The west front of the cathedral is not to be judged in its present state. A hoarding still surrounds it, and the great tympanum is as yet in rough brickwork, instead of the rich mosaic which is eventually to fill the space. The entrance arch is of forty feet span, this being four feet more than St. Mark's, Venice, whence the architect



LONGITUDINAL SECTION.



GROUND PLAN.

esting to note that the former, called St. Edward's Tower, is thirty feet square and two hundred and eighty-four feet high to the top of the bronze cross, which itself is ten feet high. The campanile has a slight entasis and is gathered to an octagon at the summit, which has a lead-covered cupola round about it, being stone figures of birds gazing over the world of London that lies so far below. Much of the ascent of the campanile is by easy stairs on each face, but toward the top one enters the more usual, though infinitely more fatiguing, circular evidently went for an object-lesson. Every one will agree that the west front is a very fine piece of work, but it is to be regretted that the columns of the entrance should have been marred by the eight stone medallions, which quite break up the lines.

Adjoining the cathedral is the archbishop's house, from which a covered way leads into the choir.

Such is Westminster Cathedral. Opinions may differ about its design, and there may be a sense of disappointment with the general exterior massing from some points

DETAIL OF CHOIR WINDOWS.

of view, but the building is clearly the work of a very gifted architect, — a man who gave himself up entirely to the task, involving such calls on energy as brought about a tragic death, for he died suddenly of paralysis on Sunday, March 3, 1902, one day before he was to have been presented with the Royal Gold Medal. He never lived to see his cathederal finished, but we who now look on it can remember the architect and pay tribute to his memory.

DOMES OVER NAVE.

Some Minor English Domestic Brickwork. I.

BY FRANK CHOUTEAU BROWN.

NOWADAYS, when the expense as well as the attending difficulty of procuring good wood for exterior house treatment is tending to make the use of brick for this purpose yearly more and more possible, we should regard the simple dwellings and small cottages where this material has been most successfully employed with special interest. England abounds with examples upon which we may found the development of a style of architecture; varied to more exactly suit our own local, climatic and personal needs.

The indiscriminate and reckless deforestration that is denuding this country, annually decreases by billions of feet the amount of timber available for building purposes. Its yearly greater scarcity and consequent greater increase in cost have so far caused no attempt to be made at systematic replanting, nor has any general recognition of the serious aspect of the case yet been secured. The government reports that in less than twenty-five years, at even the present rate of consumption, the available supply of timber will be almost exhausted, has created little comment; yet this means within a few years, possibly a half dozen only, that the market price of timber will, used as it now is for building purposes, be practically prohibitive.

Abroad even the humblest cottages are built of stone or brick, whichever is the more available local material, as the case may be. A modern wooden building is a curiosity that is seldom seen. There are even many substitutes for wood finish upon the European market, and plaster is used in such a way as to more and more take the place of much of the interior trim that is so recklessly used up by our own wasteful building methods.

Abroad wood is seldom seen in the large planks that are commonly used for the framing of dwellings in America. In one small English village the stone steps in the center of the market place are covered with heavy wooden plank, and these pieces of wood are considered such a precious curiosity by the natives that they never walk or sit upon them without first covering and protecting the wood.

Wood as an exterior covering is at the best a makeshift; yet so much are we accustomed to its use in this manner that we fail to obtain a true perspective and forget that this country stands almost alone, if we except some nations and countries that we persist in considering "uncivilized," among the modern nations of the world in the universal erection of wooden buildings for even expensive dwellings.

We have forgotten that our so-called "Colonial" type of dwelling was adapted from the English brick Georgian residence, and that the earlier American houses were nothing more nor less than an imitation, in wood, of a brick and stone style of architecture. This wooden residence we have developed through many periods of changing styles until the present day, when the circle has been run and we find ourselves again, with the price of wood

OLD BUILDINGS ON BOLD STREET, LIVERPOOL.

as a building material at a level where it about equalizes the cost of brick, at almost the identical point of departure.

Meanwhile the wooden building, as such, has logically fulfilled its destiny. Starting from the simple form that was derived from the English brick dwelling, the development of woodwork as a building material reached its apotheosis in the fussy design and "gimcracky" ornamentation of the architecture of a period of a dozen to thirty years ago. Since then a saner taste, and the general development and growth of a wider and more cultured interest in gardening and in the various arts, have gradually brought us around to a point where we are quite prepared to appreciate the possibilities latent in the brick building; and so we may resume the development of an architectural style in this permanent material at almost the point where it was abandoned more than a hundred years ago.

Other countries have not lost all this time circling around and around in this architectural back-eddy but, in England especially, have continued to progress; logically modernizing and applying to modern problems in architecture the forms and details which they had inherited. Therefore it is that the American designer, in taking up the study of brickwork, should turn at once to the more progressive architecture of England to see what the architects of that country have produced during the interim; but first it is necessary that he should realize thoroughly the available historic architectural material with which they have had to work, and in no way better than by reverting to some of the simpler English dwellings erected before and up to the time of the Revolution may this be secured.

COPPERAS HILL, LIVERPOOL.

GEORGIAN HOUSE AT PETERBORO.

The advantages of brick as a building material seem quite obvious. It is durable, it requires no paint at regular succeeding intervals, and necessitates but little care after it is once in place. It is non-combustible, and the mere additional security from fire and the insurance advantages of a reduced risk, should do much towards recommending it to many people. It has many other utilitarian advantages, and some sentimental ones that are only beginning to be appreciated. In the first place, the material itself demands great simplicity of architectural treatment; this also chimes in with the modern tendency in architectural design. The brick house allows of surrounding shrubbery and climbing vines, as they do not then affect the life of the building; again, the advantages of the garden are just being realized by the American householder. How much of the charm of the English dwelling depends upon its garden and surroundings and the overgrowing vines which partially hide it from the passer-by, is probably not yet fully acknowledged by our traveling public; but already they realize something of what a factor these surroundings are towards the general effect that has so much pleased them.

Nowhere can one get a more instant and distinctive idea of certain of the qualities inherent in the brick architecture of England than at Liverpool. In this city, where the great majority of traveling Americans first land, will be found many interesting buildings of brick, some of which are evidently closely allied with the style of brickwork that in this country we term "Colonial"; but first and foremost it is the effect of simplicity that is notable through this as well as all English brickwork.

It is especially true of the buildings built in Liverpool and vicinity, although the cause of this may not at first be apprehended. It may require several hours' rambling around the interesting side streets of the city, and especially the streets lined with the old brick residences, before one discovers that the brick itself is of a different size than that to which we have been accustomed in our own country. It may be along some window jamb that this fact will first be noticed; it may be that the size of the quoins on the angle of the building will first disclose the different scale of the brickwork, or an observant individual may note in some flat brick arch the different size, if similar proportions, of the individual forms. This fact once realized, an idea of the influence that the size of the brick unit has on the whole effect of the building may be obtained. It means, of course, that the building must

OLD HOUSE, RODNEY STREET, LIVERPOOL.

OLD HOUSES AT CHESTER.

be kept even simpler and more restrained than if a smaller size of brick were used. These bricks are rather larger and more crude than the American form, being, as I had the curiosity to measure them for my own satisfaction, 3 inches by 4½ inches by 9¼ inches in size.

HOUSES ON RODNEY STREET, LIVERPOOL.

Liverpool is surrounded by a country producing the natural stone with comparatively little expenditure of time and labor, and when one has passed beyond this district it will be found that a brick more nearly approximating the American size is being used.

Although the architecture of the country side, what may be called "urban" architecture, is the one that we generally see illustrated and reproduced, the actual traveler cannot but notice the tremendously simple street façades in the cities themselves; often produced entirely in brickwork, with the occasional exception of the use of the stone lintel across the tops of the openings: although many examples there are where even this small amount of trimming has been omitted, and the entire structure built simply of these large plain bricks. Not only do the bricks compose the wall surface and the arches over the windows, but also the cornice, the water-table, the sill and belt courses are laid up in simple projecting bands of brickwork. The Inn at Peterboro is an instance, although this particular example lacks somewhat of the usual charm of composition that seems to have been relied upon by the English builder to obtain the effect towards which he was evidently aiming. These modest village stores and buildings are seldom illustrated and rarely photographed, but the two streets in commercial Liverpool will help to show something of what is meant in this especial connection.

The old house on Bold Street at Liverpool, with the simple cornice and horizontal mouldings, well proportioned and placed window openings shows something of this effect; an effect not entirely spoiled, even though the lower story is now made over into stores, and the entrance — which the central window in the second story then made more emphatic — is now lost to us. Or the simple Georgian house at the end of the street in Peterboro, where the only stonework is the keys of the eight windows, the coping of the plain brick parapet with the four urns evenly placed along it, and the finish around the Palladian window over the doorway, itself as simple and restrained almost as it is possible to be; while any visitor to Oxford or Cambridge cannot fail but be impressed by the character of the simpler brick structures that there line the streets.

The treatment of the houses in the older residential portion of Liverpool, which in a conservative English community means also the residence portion of to-day, should be full of suggestion to the American architect situated in the one or two cities of his own country where a similar type of city house treatment is demanded of him. Some of the simpler houses in the better residence quarters of the town are shown in the illustrations, and their close relationship to the type of building erected in the principal eastern coast cities of our own country a hundred years or so ago is at once apparent. The better type of Liverpool residence is illustrated in the view on Rodney Street, where the entrance doorways and second-story iron balconies are not at all unlike much of the early American Colonial city work. The principal difference is noticed in the roof; in place of the flat pediment and slight pitch of the English houses, the American climate has suggested, and the demands of the householder for larger

GABLED HOUSE AT PETERBORO.

GOTHIC HOUSE AT LINCOLN.

attic rooms has empasized, the adoption of a much steeper roof.

The repetition of houses of too exactly this type for block after block does slightly tend to produce a feeling of monotony, and were it not for the frequent lightening of their fronts by the trimmings of white stone, or even occasional touches of white paint, they would be even more montonous than they now seem.

Nowhere does the quality of English brickwork receive so severe a test as along these city streets, where there are no adventitious aids, as in the country, for hiding the bare proportions of the building, leaving it to depend alone upon these, and the color and texture of its building materials for its effects. The brick itself, when of this larger size, of course produces a certain largeness of scale and coarseness of texture that are emphasized by the large thick hollow joint in which most of this English brickwork is laid; but it probably has considerable to do with the effect of sobriety and dignity which these buildings produce. However picturesque they may become under certain conditions they are never in the slightest particular undignified, while the material itself seems to have imbued both the builder and designer with the correct feeling for its proper usage.

JAMES STREET, LINCOLN.

The subtle quality inherent in all English domestic brickwork does not belong so much to the material as to the simplicity and domesticity of the building itself. It is an absolutely natural solution of the problem in its simplest form of expression, and whether the building is composed of the local stone or its artificial substitute, whether the roof is thatched or slated, the outline is generally suited to the plan, and the composition almost always charming. No matter how small the village nor how unpretentious the country side, it has its little brick or stone cottages and stores, its bridges, walls and gateposts, its gardens, shrubs and winding paths. Occasionally there is some half timber in combination with brickwork, sometimes the plastering being still in place, or again it may have fallen away, but the half timber dwelling is becoming scarce and is more and more seldom seen throughout England.

The charm of the English dwelling, while hard to describe or analyze, is nevertheless unmistakable, and if it may be defined in any way, it is most impressive when the dwelling itself is simplest; always, to be sure, the added effect of grounds, surroundings and shrubbery is in evidence; but even taking into account and laying to one side the effect of these adornments, the buildings themselves are impressive because of the very simplicity and unpretentious directness with which the builder solved the problem presented by the plan of each house.

GARDEN FRONT, HOUSE AT LINCOLN.

A certain regularity in regard to the window placing is shown, to be sure. A certain amount of importance is generally given to the doorway, which may even extend to a pediment placed above the main cornice of the house with a Palladian window in the second story centering over the doorway, while sometimes the central portion of the façade is broken out and projected from the main wall of the building, and the corners are emphasized by a pilaster or quoin treatment in brick or stone. Yet the dominating principle of the whole building is so evidently based on good proportions, simplicity and directness of treatment, that we find in many instances that the very simplest dwellings are the most pleasing, and where the designer has chosen to elaborate overmuch his central entrance feature that the building has distinctly lost in charm and treatment; and it is rare indeed when an addition of pilasters to an otherwise simple and complete scheme has improved it in any particular. Rather have they detracted from the charm of the building by adding to it formality and pretension; and even though their effect is more pompous and impressive, the beholder is almost invariably conscious of the loss in both human charm and appeal that their employment has cost.

The older examples of English brickwork naturally divide themselves into four general types, one of which, the half timber frame dwelling, as in the houses at

OLD HOUSES IN ST. MICHAEL'S LANE, DERBY.

Chester where brick has been used to fill in between the timbers, and either left exposed or covered with cement and plaster, may hardly be considered as important in this connection. The second division is that shown in the two illustrations of city houses in Liverpool. These examples are comparatively late in date and, in fact, may not be considered as much dissimilar from many dwellings still found in Baltimore and other early developed cities along the Atlantic coast. Further, as houses of this plan are only used in three or four of the larger and more crowded cities in this country, and for the majority of these dwellings a more pretentious style is now customarily demanded, the remaining two divisions are therefore the more important ones, and they may be roughly classified, according to the style of the dwellings, as either "Classic" or "Gothic." The majority of the examples of these last two types are almost equally well adapted to the problem of a country house or a residence in the less crowded portions of a city.

The Classic type is easily recognized by the generally formal treatment of its exterior. There is a well emphasized center line, the architectural forms being balanced on each side of the center, and the sides are rather more or less closely a repetition of each other. From this type of building the Colonial or American type-style of dwelling is a direct descendant.

The Gothic house may sometimes be less readily recognized. The gable runs to a sharp point that is quite different from the flat pediment of the Classic residence. The chimneys are more ornate, the windows smaller, gathered in groups with heavy dividing mullions and many diamond-leaded panes. In this form the style is defined enough, but often it attains to no such clear definition. Sometimes it is only by the general effect of the composition, the "unbalance," as it were, of a façade, that the architectural classification of the structure may be determined; and it is this type that the modern British architects have gone on developing, sometimes with a nice admixture of classic feeling and detail, down to the present day.

Of these two, the Gothic type of small dwelling is much more rare, and such interesting houses as those in Peterboro and Lincoln, with their pointed arches and gables, elaborately molded chimney tops, overhanging bay windows, and triple groups of openings with small hinged sash and heavy moldings; or the chantry at Lincoln and the old house in St. Michael's Lane at Derby, where a more picturesque and simple, if less regular, grouping shows the characteristics of this style, even though, in the window and door treatment, there may be traced some of the tendencies of the Classic dwelling.

There is at Lincoln a very interesting old dwelling now used for the internal revenue office that is equally as interesting as any of these, and the gable cottage at the end of James Street, Lincoln, is another less formal but more general type that is properly related to the early and more strictly Gothic dwelling. This same illustration shows in the house on the corner a typical British town dwelling, combining evidences of both Classic and Gothic derivation, quite simple and unostentatious; and yet, from its good proportions, refined openings and general detail, interesting and pleasing in the great majority of instances. The dwellings shown in this illustration might be found in any English village outside of the districts where stone as a building material is generally used, and here, side by side, we find examples of the Gothic and Classic form of English dwelling in their less easily recognizable aspects. Particularly pertinent to the American architect is the treatment of the bay windows shown on one of these houses. The English Classic house fortunately, as a rule, lacks the bay window, — that feature which has flourished to such an unwholesome luxuriance when transplanted to American soil. The Gothic type of house allows of its more consistent treatment, but when grafted upon the Classic exterior it becomes at once a source of annoyance and trouble to the designer; yet in this example, for instance, it is treated so quietly and consistently, in so much the same manner as if it were not considered an unfortunate occurrence by the designer, that it does much towards causing it to remain an unobtrusive part of the plain wall surface of the building.

Notable Fireproof Buildings now being Erected at Chicago.

THE development and progress of the art of fireproof construction in America are now being shown by many illustrations at Chicago. Modern systems of practical fireproofing, to the inception of which New York should have the credit, were brought to the greatest perfection at Chicago twenty years ago. These methods have been constantly improved and are the examples which have been followed in nearly all of the large cities of this country. They were used in several of the great buildings at Baltimore which best stood the test of the recent conflagration, and the buildings now being erected in Chicago give evidence of improvements based on that experience wherever it showed the need for it.

It is worth mention at the start that all the buildings in the list to follow are fireproofed by burnt clay methods, and many of them are to be completely finished with materials manufactured from clay. After careful inquiry it is believed that the list comprises *all* of the larger fireproof buildings now in course of construction, leaving out those recently completed or those the projects for which have been recently perfected and which are yet to be commenced. The majority have been planned and contracted for since the Baltimore fire.

Holabird & Roche have three buildings in charge, the Republic, the Chicago Savings Bank Building and the Palmer Building.

The Republic is a twelve-story retail business building. The ground floor will have several shops entered from the street; the second floor will be occupied by a bank, and the straight hallways on each floor above this will be like streets on which small shops or offices will front. It is altogether a new idea, and will be in the nature of a department store in which all the departments are independent. Its dimensions are 100 feet on State Street, the same on the alley in the rear and 145 feet on Adams Street. It has a basement and sub-basement and twelve stories above ground, and the foundations and steel construction are calculated for five stories more, which may be added at a future time. The height above the street is 195 feet, while the depth of cellar is 27 feet. The construction is all steel skeleton with I beam floors, and the entire exterior is white enameled terra-cotta. The whole fireproofing is of porous terra-cotta, with flat hollow tile arch end pressure floors. In the finishing the floors of rooms will be hard wood laid tightly on concrete and nailed to wooden strips; but the corridors, toilet rooms and principal stores will be of marble or tile mosaic work. All the windows, except on the two street fronts, have hollow metal frames and sash, and are glazed with wired glass. All the shafts have metallic doors, and the whole building is to be equipped with an automatic sprinkler system.

The Chicago Savings Bank Building is on the busiest corner in the whole city. It fronts 48 feet on State Street and 120 feet on Madison Street. It will be fourteen stories high with basement and sub-basement, and will rise 198 feet above grade and extend 28 feet below grade. It will be occupied by stores and offices, and the savings bank will occupy the second floor. The foundations of this and the last-mentioned building are concrete columns carried down in wells to about ninety feet depth. The superstructure is all steel skeleton construction, including I beam floors. An effort will be made to erect the entire steel skeleton in sixty days. The entire exterior will be finished in white enameled terra-cotta, and the interior, including the flat end pressure floor arches, will be constructed with porous terra-cotta. The inside finish and windows will be the same in all respects as that of the Republic Building. It will also have a complete automatic sprinkler system. The introduction of this system in office buildings is new for such application. It is a recognition of the danger of fire from the contents of such buildings, which the owners are not able to control in any other way.

The Palmer Building, built for wholesale mercantile purposes, fronts 73 feet on Adams Street, 45 feet on Quincy Street and 164 feet on the river. It has fourteen stories above ground, rising to a height of 198 feet, and two stories below grade, extending down 28 feet. The same system of construction and fireproofing as in the two last-mentioned buildings is followed, except that it is faced with pressed brick and unglazed terra-cotta. All exposed window frames and sash will be of metal, glazed with wired glass.

The fireproof buildings in charge of D. H. Burnham & Co. are the First National Bank, the Heyworth Building, the Chicago Orchestra Hall and the Field Warehouse.

The First National Bank Building fronts 191 feet on Dearborn Street and 231 feet on Monroe Street. When completed it will probably be the largest office building in the world. The first section, fronting on Monroe Street, is completed; the balance is completed as far as the steel skeleton is concerned. It is seventeen stories or 257 feet high above the grade, but has only one story in the basement below the street grade. The ground floor will be rented out for stores and offices, the second and third stories will be used for the bank, and the balance will be for business offices. It is said that it will cost when completed $3,400,000. The exterior is faced with granite, and the whole interior is constructed with semi-porous hollow tile, end pressure flat arches between I beams for floor construction, and the fireproofing is complete in all other respects with semi-porous terra-cotta. Standpipes and hose will be depended upon for interior fire protection.

The Heyworth Building will provide for stores on the first floor and offices above. It fronts 80 feet on Wabash Avenue and 181 feet on Madison Street. It also has an exposure of 80 feet on an alley. It is to be seventeen stories or 257 feet high above the street grade, and the excavation for three stories below the grade is forty feet. The construction of this cellar, now completed, is a magnificent example of architectural engineering. The cost will be about $1,100,000. The steel skeleton frame will be finished on the outside with pressed brick and terra-cotta. The flat arch system will be used for the interior construction, and all the fireproofing will be with porous terra-cotta, using flat hollow tile arches for floor construction. Standpipes connected with tanks and fixed hose will be depended upon for fire protection.

The Chicago Orchestra Hall has a frontage of 105 feet on Michigan Boulevard and is 171 feet deep. It contains, besides the Music Hall, Recital Hall and Rehearsal Hall, studios for musicians and other artists. It will cost $300,000. The exterior will be finished on the steel skeleton with pressed brick trimmed with cut stone. Flat arch construction will be used for the floors, and the whole interior will be fireproofed with porous terra-cotta. No combustible material will be used in the auditorium, and only the studios will have wooden floors and finish. All doors will be of metal.

The Field Warehouse will be for the storage of goods for the firm of Marshall Field & Co. It will stand free from contact with other buildings, and covers 135 by 286 feet on the ground. It will be fourteen stories or 176 feet high above grade and 15 feet deep below the grade of street. The cost will be $600,000. It is steel skeleton construction, finished with brick on the outside. The flat arch system will be used for the floors, all of which will be of semi-porous terra-cotta. The partitions will be of brick. All window frames and sash will be of sheet metal glazed with wired glass. All doors will be of steel. There will be automatic doors in the fire walls, and the whole building will be equipped with an automatic sprinkler system.

Frost & Granger are architects for the new office building of the Chicago and Northwestern Railway Company, which will occupy the entire building. It is located at the northeast corner of Jackson Boulevard and Franklin Street. The dimensions are 105 by 166 feet, and it will be fourteen stories high. The total height above grade will be 209 feet, and the depth below grade will be nine feet. The foundation consists of fifty concrete piers, carried down in wells ninety feet below datum to natural rock. The system of fireproofing for the floors is flat end pressure hollow tile arches between I beams. All constructive work is firepoofed with the same.

On the court side fronting Quincy Street all window frames and sash are of copper, and glazed with wired glass. This court is also protected by a water curtain. It has standpipes with hose connections throughout. The office floors are of hard wood and all others of marble tiling. The two sides of this building which front on streets will be faced with granite, and all others including the court, with brick.

Jarvis Hunt is architect for the Rector Building at the southeast corner of Monroe and Clark streets. The building will be 90 by 91 feet on the ground and fourteen stories high, with a basement eleven feet deep. The height above grade will be 179 feet. It stands on concrete piers 75 feet deep below datum, built in wells where it adjoins other property, and fifty-foot piles in other parts. It is designed for an office building, but Mr. Rector will use the first floor for his restaurant. The estimated cost will be $550,000. The general construction will be a steel skeleton finished on the exterior with a polished granite base at the ground level. The first and second story fronts will be Bedford stone, the intermediate stories will be faced with paving brick, and the upper stories and cornice will be terra-cotta. The court walls will be faced with white enameled brick. The floor construction and fireproofing throughout will be of semi-porous terra-cotta, using flat end pressure arches. The inside finish will be of wood, but all windows on the court will have metal frames and sashes glazed with wired glass.

Samuel A. Treat is architect for the new plant of the Western Electric Company at Hawthorne, one of the western suburbs of Chicago. There are now twelve buildings in various stages of construction. The several buildings vary in dimensions from 820 by 175 to 100 feet square. The estimated cost for buildings alone is $1,500,000. The ground area of twelve buildings is eleven acres. Steel skeleton construction is used throughout, and all are enclosed in brick walls. While it has been inexpedient to protect from fire the roofs of these buildings, all of which are trussed, care has been taken to avoid the use of any combustible material in them. In some cases book tiles are used, set between I's, and in others Ludowici roofing tiles are set on steel purlins, and where the buildings are more than one story in height the floors have hollow tile segment arches between I beams. Some of the buildings are four stories in height, and in these all the steel construction supporting floors is fireproofed with semi-porous hollow tiles. All of the buildings are supplied with automatic sprinkler systems as well as fire hydrants and hose.

Christian A. Eckstorm is architect for the Patent Building. It fronts 102 feet on Harrison Street and 118 feet on Sherman Street, and is twelve stories or 168 feet high above grade. It has a basement nine feet deep. A party wall on one side is built on concrete piers carried down in wells about ninety feet to rock, and the remainder of the foundation is in fifty-foot piles. It has steel skeleton construction throughout, and is faced on the two streets with re-pressed paving bricks. The owner originally intended to use concrete systems for floor construction and fireproofing, but when he became satisfied that they were not best for his purpose he contracted for porous terra-cotta flat arches and fireproofing throughout; the result showed an actual saving over the cost of hard concrete. This building is one of the best illustrations of the lesson learned from the Baltimore conflagration. All combustible material for finish is avoided, and the floors are all finished with concrete on the floor arches.

The above consensus, showing how an aggregate of $11,000,000 is being invested in fireproof buildings in one city, demonstrates not only how the importance of fireproof construction is appreciated by capitalists, but illustrates certain advances in the field of fire protection of fireproof buildings. The first and most noticeable fact is that *all* of these buildings are being fireproofed with the products of burnt clay, on which is placed the sole reliance for preventing the collapse of steel skeletons with which they are constructed.

It is noticeable that in all of these buildings in which there is a rear exposure, resort has been had to incombustible window frames and sash, glazed with wired glass. It is noticeable also that only two of the buildings are faced with granite and one only partially with stone; all the others with brick or terra-cotta. It is noticeable also that there is an increased use of the sprinkler system in a class of buildings in which it had not before been used. But altogether there has been a certain advance in the desire to secure protection from fire otherwise than in the use of standard systems of interior construction.

Editorial Comment and Selected Miscellany

BRICK AND CONCRETE.

THERE is a practice which is quite prevalent but which ought to receive the condemnation of every constructor. In building foundations for columns the substructure is generally carried up either in concrete or granite to approximately the level of the bedplate, and the remaining few inches are not set in place until the construction is ready to receive the columns. The piers or walls are then carried up in brick to the exact height necessary to receive the bedplate of the column. This construction is all right provided the bedplate is proportioned to the safe strength of brick, but usually the bedplates are assumed to rest directly on the granite or the concrete of the pier or wall, and in estimating the area of the plate no account is taken of the fact that brick may be used to fill in. Of course the resistance of such a pier or wall is measured entirely by its weakest point; and whereas we may load concrete with thirty

RECEIVING TOMB, SWAN POINT CEMETERY, PROVIDENCE, R. I.
Stone, Carpenter & Willson, Architects.
Guastavino Tile Dome Construction.

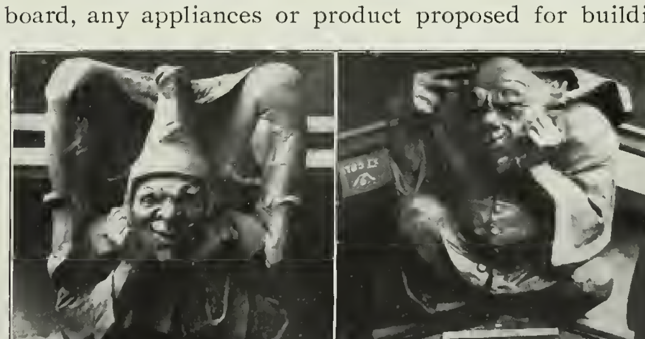
tons per foot, and granite with sixty, it is not good practice to trust over fifteen tons on brickwork. We have repeatedly seen cases where the loads placed upon such brick nogging ran up as high as forty tons per square inch. Of course this was very largely a theoretical rather than an actual load, but the continued stability of such construction reflected more credit upon the ultimate capacity of brick than upon the engineering knowledge of the superintendent who allowed such evasion to pass.

PERMANENT EXHIBIT OF BUILDING MATERIALS.

THERE have been some attempts in a few of the larger cities at various times to establish permanent exhibitions of building appliances and material. It is to be regretted that such exhibitions have not endured, but we feel they must in time be considered as a necessity in every large city for both the architects and builders. The trouble with most of them in the past has been that the greatest space and importance were given to the manufacturers or dealers who would pay the highest prices,

MAIN ENTRANCE OF A NEW YORK PUBLIC SCHOOL.
C. B. J. Snyder, Architect.
Terra-Cotta by the New York Architectural Terra-Cotta Company.

irrespective of the real worth of their goods, with a result that the standard articles which did not particularly need advertising were absent entirely, while the unknown products of real excellence, but of uncertain financial position, were unable to present themselves. The fostering of such exhibitions is a work which the master builders and the architectural societies should mutually consider a duty. The profession is too inclined to consider only what is actually thrust in its face, and the builders are usually too busy to bother about things which the architects do not specify; but there ought to be a common ground where, after passing a suitable advisory board, any appliances or product proposed for building



DETAILS BY GEORGE B. POST, ARCHITECT.
Perth-Amboy Terra-Cotta Company, Makers.

RAILWAY STATION, MARION, IND.
M. S. Kaufmann, Architect.
Roofed with American "S" Tile, Cincinnati Roofing Tile and Terra-Cotta Company, Makers.

372 pages. Illustrated. Cloth, $3.00. New York: John Wiley & Sons.

The aim of the writer has been to give a correct general outline of the subject of paints and varnishes, with a brief account of their modern use and of the principles which are involved in their fabrication and application. Many of the facts noted, though old, are practically unknown, and some of them exactly anticipate recently patented processes; their value to the public in that way is sufficient excuse for their republication. Scarcely any patents in this line are of any value or validity; and the "secret processes" which are continually vended are

ROOF OF A BUILDING IN PITTSBURG, ON WHICH FOLSOM SNOW GUARDS ARE USED IN COMBINATION WITH TILE.

for the most part neither secret nor new. The only trade secrets lie in the incommunicable intimate knowledge of the expert, and are made valuable only by his unceasing care, vigilance and conscientiousness. Theories may, however, be made known, and the attention of the student may be intelligently directed to their application.

DETAIL, EXECUTED BY NEW JERSEY TERRA-COTTA COMPANY.

IN GENERAL

A partnership for the practice of architecture has been formed between William C. Brocklesby and H. Hilliard Smith of Hartford, Conn. Offices, 36 Pearl Street, Hartford, Conn.

J. E. and D. C. Allison, architects, Pittsburg, have formed a partnership under the firm name of Allison & Allison. Offices, 1023 Westinghouse Building.

Architects F. J. Shollar and Frank A. Hersh of Altoona, Penn., have formed a partnership under the firm name of Shollar & Hersh. Offices, Altoona Trust Building.

BANK AT CATASAUQUA, PA.
Wallace E. Rue, Architect.
Roofed with Bennett's Baltimore Roofing Tile.

C. J. Aschauer, architect, has opened an office at 502 Adams Street, Springfield, Ill. Manufacturers' catalogues and samples desired.

Fred J. James, architect, West Tampa, Fla., desires manufacturers' catalogues and samples.

DETAIL, EXECUTED BY THE BRICK TERRA-COTTA AND TILE COMPANY.

Enameled brick for the fronts of buildings are finding particular favor in many of our western cities. The façade of the new Rockefeller Building, Cleveland, Ohio, Knox & Eliott, architects, requires some 450,000 of these bricks. The new Wenger-Knapp & Clark Building, San José, Cal., and the large new building for the Minifie estate, San Francisco, Cal., will also have enameled brick fronts. These brick are being supplied by the American Enameled Brick and Tile Company of New York.

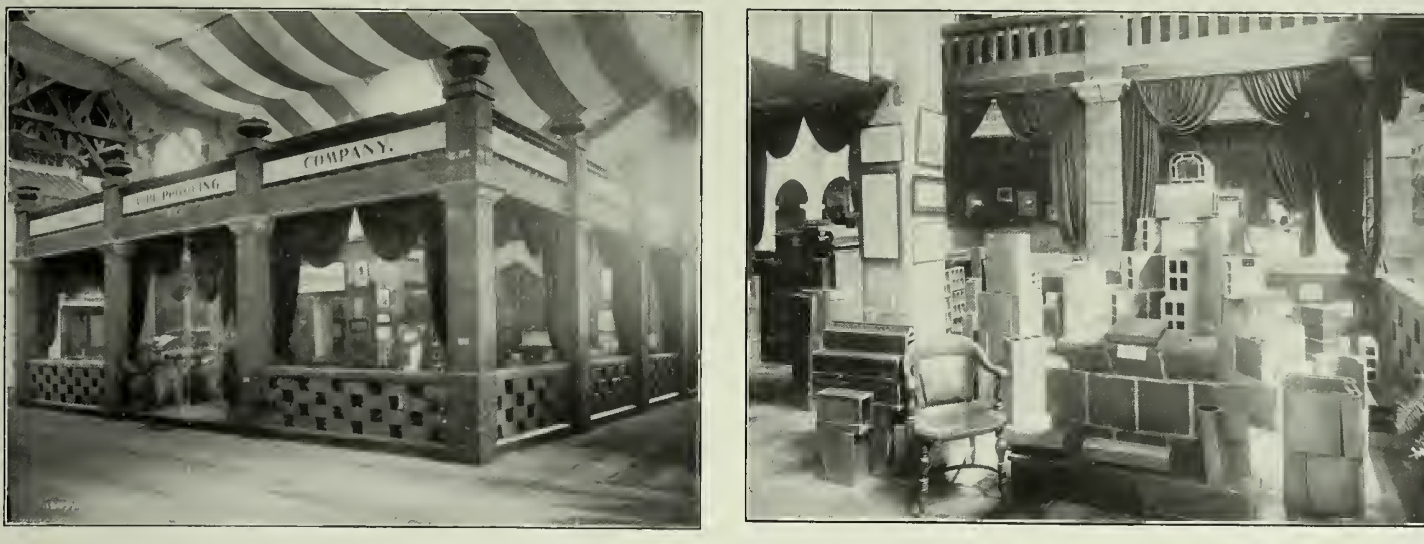


EXHIBIT OF THE PRODUCTS OF THE NATIONAL FIREPROOFING COMPANY AT ST. LOUIS.

The following list of contracts which has been awarded to this company will indicate the very general use to which

DETAIL BY AUDRY & BENDERNAGLE, ARCHITECTS.
Northwestern Terra-Cotta Company, Makers.

enameled bricks are now being put: 125,000 for the new St. Francis Hospital, New York City, Shickel & Ditmars, architects; 450,000 for the new Bellevue-Stratford Hotel, Philadelphia. Their brick will also be used in the Danforth Memorial Library, Paterson, N. J., Harlem Hospital, New York City, Horgan & Slattery, architects; Post Office Square Building, Boston, Winslow & Bigelow, architects; Abattoir for the New York Butchers' Association, Horgan & Slattery, architects (50,000 French gray and white brick to be used in this work); new Federal Building, Seattle, Wash., James Knox Taylor, architect; Providence Journal Building, Providence, R. I., Peabody & Stearns, architects; Municipal Power House, Philadelphia, Philip H. Johnson, architect; besides large quantities in the new houses for Hon. W. A. Clarke and Charles N. Schwab, Esq., New York City.

DETAIL BY HARRY W. JONES, ARCHITECT.
American Terra-Cotta and Ceramic Company, Makers.

WANTED: First-class draughtsman and designer. Young man preferred. Must be capable of taking charge of the draughting department. Address L. S. Green, 114½ Main Street, Houston, Texas.

WANTED: A competent general draughtsman to take charge of draughting room. One with technical training preferred. A good position for the right man. Address George B. Rogers, Fidelia Club Building, Mobile, Ala.

Competition for a Village Church

First Prize, $500 Second Prize, $200 Third Prize, $100

PROGRAMME

THE problem is an Episcopal Church in a large village. The location may be assumed in any portion of the United States. The lot is 80 feet wide on the west and 180 feet deep on the south. It is on a corner of two streets of equal importance. To the southwest a main avenue communicates with the principal square of the village, the grade of this street down to the square being 7 per cent. The lot itself is perfectly level and is in the residential portion of the village. The problem considers only a church with sacristies for clergy, choir and altar guild. At some future time the property immediately adjoining to the north is to be acquired, and on this property will be erected a parish house and rectory. The church will, therefore, be placed and designed with this future extension in view.

The church is to seat five hundred, the choir thirty. A small side chapel is optional.

The following points must be considered in the design:

A. Frank and logical expression of the prescribed material.

B. Historical and traditional associations of the institution for which the structure is provided.

C. Historical and architectural antecedents, associations and surroundings of the assumed location.

Drawings required:

A plan at a scale of 16 feet to the inch, and a side elevation at a scale of 8 feet to the inch, both on one sheet, and a sheet of details at a scale of one-half inch to the foot. The size of each sheet shall be exactly 20 inches by 30 inches. The sheets are not to be mounted. All drawings are to be in black ink, without wash or color, except that the walls on the plan are to be blacked in.

The exterior of the building is to be designed entirely in terra-cotta, and the same material may be used at will in the interior. Colored terra-cotta, or faience, may be employed.

It must be borne in mind that one of the chief objects of this competition is to encourage the study of the use of architectural terra-cotta. There is no limitation of cost, but the designs must be suitable for the location, for the character of the building, and for the material in which it is to be executed. The details should indicate in a general manner the jointing of the terra-cotta and the sizes of the blocks.

In awarding the prizes, the intelligence shown in the constructive use of terra-cotta and the development or modification of style, by reason of the material, will be taken largely into consideration.

Every set of drawings is to be signed by a nom de plume or device, and accompanying same is to be a sealed envelope with the nom de plume on the exterior and containing the true name and address of the contestant.

The drawings are to be delivered flat at the office of THE BRICKBUILDER, 85 Water Street, Boston, Mass., charges prepaid, on or before December 15, 1904.

The prize drawings are to become the property of THE BRICKBUILDER, and the right is reserved to publish or exhibit any or all of the others. Those who wish their drawings returned may have them by enclosing in the sealed envelopes containing their names ten cents in stamps.

The designs will be judged by three well-known members of the architectural profession.

For the design placed first in this competition there will be given a prize of $500.

For the design placed second a prize of $200.

For the design placed third a prize of $100.

We are enabled to offer prizes of the above-mentioned amounts largely through the liberality of the terra-cotta manufacturers who are represented in the advertising columns of THE BRICKBUILDER.

This competition is open to every one.

THE BRICKBUILDER.

Vol. 13 OCTOBER 1904 No. 10

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CHURCH OF THE COLLEGIATA, TORO, SPAIN.

THE BRICKBVILDER

VOL. 13 No. 10 DEVOTED · TO · THE · INTERESTS · OF ARCHITECTVRE · IN · MATERIALS · OF · CLAY OCTOBER 1904

THE BRICKBUILDER.

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THE COMPETITION FOR A VILLAGE CHURCH.

WE wish to call attention to this particular competition in order to note its bearing on several matters not elaborated in detail in the programme.

The policy of this journal has been to direct attention through its competitions to the great possibilities of burnt clay products, and to interest as many architects and draughtsmen as possible in the adaptation of design to the requirements of this particular material. At the same time these competitions are intended to be something more than this. They are intended to place before the younger members of the profession, problems with which they would naturally be confronted under conditions that might actually exist. THE BRICKBUILDER desires that while primary consideration must, of course, be given to the development of design adapted to the uses of burnt clay in all its forms, the designs submitted in the several competitions should be as well essays in constructive design abstractly considered.

That is, whatever the problem, the competitors should consider that they are not merely popularizing a particular form of building material, but that they are contributing to the development of architectural design on the most logical lines of which they are capable. In the present competition, for instance, that for a Village Church, the subject is one which is constantly coming before architects. The question of the development of a proper style for ecclesiastical architecture in this country is one of great importance. The competitors have behind them all the history and tradition of Christianity, all the local and climatic influences developing from conditions in this country, and all the new, and in some cases unprecedented, elements derived from the motives of twentieth century construction. The prizes given in these competitions are surely liberal, and should act as inducement to all competitors to study the problems in the broadest possible way.

Neither in this present competition nor any of the others will the judges be drawn from any one school of architecture, but every effort will be made to have the Board thoroughly representative of American architecture in all its aspects.

ALTERATION OF SECOND-CLASS BUILDINGS.

A DECISION was recently made by the Boston Board of Appeals which affects very materially a number of prominent buildings erected prior to the passage of the laws forbidding anything but first-class fireproof constructions for buildings over seventy feet in height. Application has been made to alter one such structure actually over ninety feet in height, the proposed alterations including a number of ordinary wooden stud partitions in the first story. This application was rejected by the Building Commission under an interpretation of the building law which provides that "any alteration in a structure shall conform to the provisions of this act for a new structure," claiming that as the law requires all new buildings over seventy feet high to be fireproof, therefore alterations of this ninety-foot building must be fireproof. The Board of Appeals, to whom the question was referred, decided against the commission and ordered the permit to be issued, taking the ground, it is understood, that the law as it stands does not intend to deprive a property owner of any of his rights nor to compel him even in part to transform an existing second-class building into a first-class one, even though such a second-class building could not now be erected under existing laws. To rightly express, therefore, the import of this decision the law should read, "Any alteration . . . shall conform to the provisions of this act for a new structure of the same class as the structure to be altered, irrespective of whether or no said structure otherwise complies with all the terms of the existing law."

It will be seen at once that this decision very materially affects the fire risks of the business district in which are many second-class structures over seventy feet in height.

Some Minor Domestic English Brickwork. II.

(*Continued from page 190.*)

BY FRANK CHOUTEAU BROWN.

OF either the "Classic" or the "Gothic" type of house there would naturally be two main divisions, those built essentially for town dwellings and generally abutting directly upon the streets, or those intended to be set in a surrounding of parks, foliage or other natural accessories. These latter may be situated either in a small town, retired behind walls and fences, or isolated upon the country side.

Several of the city type of classic houses are among the photographs taken in Lincoln. The group of three houses on the north side of the square, extending from the Bailgate to the Castle gateway, are worthy of reproduction, and the illustration shows the central building of this group along with portions of the two adjoining structures. The one at the left of the picture reaches almost to the Castle gate and is much the more pretentious in size, and dignified and reserved in appearance. The ornamented pediment with elaborate entrance, and the two niches for statues, along with the large and tall window openings, all indicate the formal intention of the residence.

Upon the other side of this group is a simpler and earlier plaster city dwelling supposed to date from the time of Henry the Seventh, of which a glimpse is given in the same illustration. Between these two is a double house occupying the center of the picture, a house that is much more "citified" in type than would be expected in these surroundings and in a city of Lincoln's straggling formation. Here the stone quoins and balusters give something more of life and color to the building, while in its entire treatment of brick and stonework it is less formal and stiff than its neighbor. The two simple doorways are also in keeping with the general aspect of the house and do much to add to the charm of the whole.

The old house in Derby shows a later and more pretentious town dwelling, in this case set within a small yard or forecourt and separated from the street by a somewhat elaborate brick fence and gateway. This building is now used by the Baptists for a chapel, and the interior of the house has been so much rearranged that its interest is slight, but the exterior still conveys a more or less appropriate effect of primness and restraint that is, architecturally, perhaps too cold and inflexible,—both almost invariable attributes of so formal and fixed a classical composition as this.

It is doubtful if the stiff academic pilaster treatment of such a building can result in anything other than a rather stilted and unpleasing composition. Except in the hands of a master, one familiar and instinct with an intuitive knowledge of the proportions of classic architectural forms, a combination so elaborate cannot fail but disclose something of the study and labor required in its production, and this feeling alone, when evident, must

GATEWAY AND HOUSE, SALISBURY CLOSE.

HOUSE AND FENCE, SALISBURY CLOSE.

GATEWAY AND HOUSE, SALISBURY CLOSE.

SCHOOL, SALISBURY CLOSE.

BRICK HOUSES, SALISBURY CLOSE.

SCHOOL, SALISBURY CLOSE.

always somewhat detract from the pleasure given by any artistic production.

The fence and gateways are rather more interesting, and taken along with the ironwork of the driveway and the planting of the restricted lot of land enclosed in the forecourt of the building, with its two tall poplar trees emphasizing the architectural treatment of fence and house and adding impressiveness to the gateway itself, it may be considered as a more felicitous and pleasing accomplishment than the house.

BRICK HOUSE, SALISBURY CLOSE.

STONE HOUSE, SALISBURY CLOSE.

STABLE, SALISBURY CLOSE.

Interesting as is the English brick city-built house, it does not compare in artistic value with the many and more beautiful dwellings that abound throughout the country and in the smaller villages. For obvious reasons it is much easier to study this type of domestic dwelling in the smaller cities than in the country. Not only may they there be found in greater numbers and in an almost equal charm of setting and environment, but as a rule they are of a type more interesting to the American architect because they are direct in their application to the problems which he has continually to solve. The unrestricted country residence is too likely to run unduly large in size and rambling in plan. It becomes more the mansion, and less a merger of the smaller manor house and the farm cottage, a process that has produced a type of the utmost charm.

There are certain portions of England where the entire mass of buildings, from the humblest cottage to the most ornate church, mansion or castle, are built of stone; a material that happens from its local production to be both the most available and least expensive. Many buildings there are too where the original simple brickwork has been painted over many times, as in the cottages in Greetwell Gate at Lincoln; or, as frequently happens, used as a ground on which to put a smooth exterior coating of plaster or cement, as in the old plastered house at Peterboro, so that all their possible interests of texture and color have been lost. Such a one, for instance, is the Golden Lion at Peterboro, an old inn near the river that has been graced (?) by a smooth false front that, however lacking in texture and color, is yet entirely unable to dispose of the lines and composition of the original mass.

It is a much too prevalent modern architectural fault to give an undue importance to the center line or principal axis of a building in order to produce an absolute "balance" of façade. In English buildings of the type that has just been discussed there is never felt any striving for the establishment of a center line, either in plan or elevation, and, what is even more remarkable, its absence is never felt. The Inn at Peterboro (illustrated in Part I of this article) is a good illustration of a building where it has not been thought necessary to establish any center line and yet where its absence is not even remarked. It will probably require several glances, for instance, to notice that not only is the doorway not in the center of

BUILDING IN BOTANICAL GARDENS, OXFORD, FROM HIGH STREET.

HOUSE, OXFORD.

BUILDING IN BOTANICAL GARDENS, OXFORD, FROM THE GARDEN.

this building, but that, as a matter of fact, there are an even number of window openings across its front, and that this doorway occurs directly under one of the perpendicular lines given by the third of a set of four windows. If it so happens that the plan works out so that the doorway naturally establishes a center line, it may be consistently emphasized in the treatment of the rest of the structure. If, however, as more frequently happens, this should not be the case, the fact is accepted as a foregone conclusion, and it is utilized in so natural a manner and with such simple good faith that the designer forestalls and disarms any unfavorable criticism.

Even when the façade appears to balance upon an arbitrary center line, it will most frequently be found that this apparent center is not in reality the actual middle of the plan, and that it may even be some distance removed from the exact mathematical center; a discrepancy that is easily and effectively taken up by a slightly varied distance in the spacing of the other openings which break the walls of the building.

There is hardly a town or place in England, even of the smallest importance, that does not contain two or three instances of the good use of brickwork. To take one at random, Boston has several examples of great interest, only one of which, the Grammar School, is here reproduced. This simple brick dwelling, of one story only, is typical of many English schools and taken along with the buildings at Salisbury, afterwards referred to, suggests a type that apparently has never been attempted in America.

Smaller individual instances excepted, there is perhaps no group of domestic dwellings that illustrate more particularly the best of the English urban quality than those clustered around the Close at Salisbury. In this group, to be sure, there are several dwellings actually constructed of stone. In reality this does little more than give to the whole an added charm of variety, as the dwelling itself might be executed as well in brick as in the other material.

In this placing and among these surroundings there is a certain amount of what might be called "unearned increment" in the additional value given to the individual dwellings by their setting. The situation and the cumulative interest of so many varied examples containing throughout a uniform likeness and charm of treatment, a certain amount of which is necessarily lost in showing them in the detached manner necessary in these illustrations, cannot of course be realized except by actually studying the group in its entirety. They are set within a clear open enclosure of the most vivid green English sward, with its uninterrupted expanse only broken by a few trees, above which rises the tall, slender and graceful spire of the cathedral. It must be remembered that Salisbury Cathedral is itself perhaps the most "popular" cathedral in England, and that almost all of this popular element it derives from the incidental and purely adventitious charm loaned it by the openness of its location and by the ideality of its surroundings. This same effect is loaned as well to the houses that are placed on the opposite side of the quiet road that bounds the Close, and when, in addition, the visitor is honored with an ideal day of brilliant sunshine and a clear atmos-

BRICK FENCE, DERBY.

BRICK MANSION, DERBY.

GATEWAY OF MANSION, DERBY.

OLD PLASTER HOUSE, PETERBORO.

BRICK HOUSE, BETWEEN BAILGATE AND CASTLE, LINCOLN.

COTTAGES, GREETWELL GATE, LINCOLN.

GRAMMAR SCHOOL, BOSTON.

phere — a blessing that is indeed rare and to be appreciated in England — it is quite impossible not to be impressed by the details and individual units of the picture, even if in its entirety one cannot help but realize that it is somewhat theatrical.

Little remains to be said about these individual dwellings themselves. Several are more or less well known as examples of the best period of the English Renaissance, while others are so comparatively humble and modest in appearance that they have often even escaped the camera of the illustrator. In the most of these dwellings architecture has been restrained to the simplest kind of brick treatment. The decoration is generally

KING'S PARADE, CAMBRIDGE.

confined to the entrance doorway alone, and that is quite as simple and unostentatious as the atmosphere of each dwelling as well as the group as a whole requires. Occasionally stonework is used on the angles as quoins to strengthen the corners, or as keystones in the center of the brick window arches, or to define a belt course or bound the outline of the building itself; and brick and stone and ironwork are combined in the modest and unpretentious archways and fences that define the lot lines, and include the gardens and yard proper around each dwelling.

The two most important and distinguishing characteristics of this group of dwellings are their good composition and their simplicity, the latter being a quality that requires for its absolute perfection the other more subtile and less easily analyzed trait; but their simplicity is, at least, undeniable. Beginning with the two brick houses on the left of the stone dwelling, what could be more simple than their entire design and treatment; plain brick arches and narrow trim around the windows, entrance doorways that are almost as plain as the window openings, the entire adornment being confined in the one to the simple pediment with a round window breaking its plain surface, and in the other to a plain projecting band of stone acting as a cornice and separating the brick balustrade from the wall surface below? Beyond the stone residence occurs a dwelling placed between the stone house and the simple stable shown more fully in

HIGH STREET, OXFORD.

another illustration, that is almost as simple as the one adjoining the stone structure on the other side.

The other houses are perhaps more pretentious. The residence shown in two illustrations, one from within the yard and the other from without, the latter including the gate and fence posts, possesses a doorway of a design very similar to that used on the stone dwelling just mentioned. Here again we find a plain brick balustrade used with the simplest of molded stone cornices, with keys of the same material placed in the window arches. Even more attractive is the house set well back in the yard and protected from the street by the trees and shrubs that line the inside of the brick and iron fence. Seen

WIDOW'S COLLEGE AND GATE TO HIGH STREET, SALISBURY.

through the simple gateway with its overhead lantern supported on a single graceful curved bar of ironwork, some idea of the real value of the ordinary accessories of the British dwelling may be obtained.

A building of larger size is that with the stone fence posts, with their carved pineapple caps, at the entrance. Larger as is this building in size, it is scarcely more pretentious in its architectural aspect than the other dwellings in the group. Its greater length allows of the simple yet effective treatment made possible by projecting, in plan, the two ends of the building so as to slightly suggest the "E" shape arrangement of the great English manor houses.

Similar in type though slightly more elaborate is the so-called Widow's College that is illustrated, along with the gateway leading from the Close to High Street, in the foregoing illustration. This gateway, itself one of the most picturesque of the units combining to form this group, would be better recalled by its outer façade.

Forming a part of this same group is the stable separately shown, a building that is thoroughly British in its expression of solidity and more than usually artistic in that it meets the requirements of its situation and does not jar as a unit in even so perfect a whole. The two small one-story school buildings are of great importance in adding variety to the group; and as their exterior allows of a freedom of treatment not generally obtainable with the more conventional two-story façade, they are perhaps among the more pleasing individual structures around the Close. Especially interesting is the comparison of these buildings with the one used for a similar purpose in Boston and the well-known but larger and more pretentious brick member of the college group at Winchester, of which the entrance doorway is reproduced in another illustration. This entrance doorway, while slightly more pretentious than those on some of the Winchester dwellings, is, after all, quite as well suited to its purpose, and on the building to which it now belongs is so unobtrusive that its excellent simplicity is there perhaps hardly appreciated.

Often the walls of these English dwellings are so covered by vines and the entire structure is so hidden from the street by shrubs and trees that actually but little architectural significance remains; yet, after all, it is this manner of so partially or wholly hiding the outlines of their buildings that adds so much charm and effect to the English dwelling. Without these natural accessories to break the hard outlines and lead the eye naturally from roof to wall and from the wall to the platform of green on which the structure rests, without this extension of color from the ground up over the sides of the building to firmly unite and blend it to the yard and greenery among which it stands, many dwellings would not be considered worthy of a second glance; but this partial veiling of their exteriors does much to pique the curiosity of the spectator and to lend them more or less of the sentimental interest that any mysterious, incomprehensible or semi-obscured object infallibly possesses for human nature.

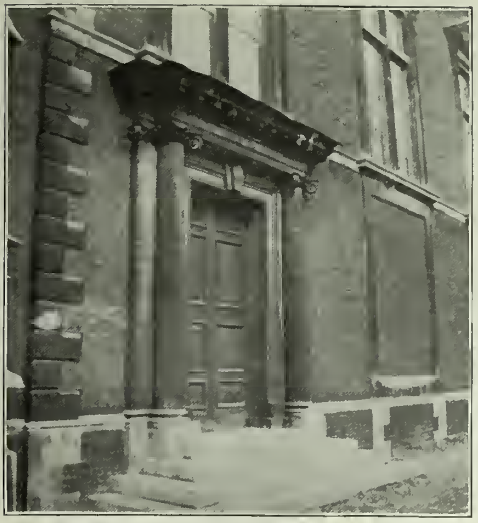
It is a far jump from Salisbury and Winchester to Oxford and Cambridge, yet both these old college towns are notable for the interesting brickwork that they contain. While it is rather with the larger and more pretentious buildings of both places that we are familiar, yet it is the less pretentious and most unarchitectural examples of brickwork that line some of these cities' streets with which we are immediately concerned. In merely passing along them, the refinement, simplicity and good composition of the majority of the structures lining the streets are noticeably evident.

The same characteristics that we have found to produce the effect of the dwellings along the Close at Salisbury are again employed with equal happiness in this class of buildings. The trick of projecting three or four courses of brickwork from the face of the wall for cornice or belt course is used again and again. The doorways or store fronts are simple to the extreme of severity. Again it must be allowed that architecture is reduced to its bare essentials, — the proportion and placing of openings, the relation of horizontal and perpendicular lines and outlines, without the least assistance from unstructural ornament in producing the result. Personally unfortunate in efforts to obtain photographs of examples of this unpretentious brick street architecture, the only buildings that I can show in illustration of this point are not of brick material, but, although these individual examples are actually executed in stone, they are exactly similar in design to many others of brick. The section of High Street at Oxford, taken from a point at one side and just before you get to Magdalen College, shows at the right the façade of Queen's and beyond that the front of All Souls College with the spire of Saint Mary's closing the vista at the end of the street. Opposite the front of Queen's and between Queen's and All Souls may be seen several of the simple street façades that have been mentioned. Although some of these have been plastered and painted, their architectural type is the same as if they were constructed of brick. The view of King's Parade at Cambridge, taken from in front of Trinity, shows a more picturesque group of street buildings, though in reality they are of less architectural value, several being of quite recent date, yet one or two display admirably the simplicity of this type of brick street architecture.

There is in Oxford one building that will well repay illustration. It is that placed in the Botanical Gardens on the river bank and across High Street from Magdalen College. This building is shown to good advantage in the illustration from the garden side, while its street façade had to be taken at an unfortunate angle from the top of the parapet of the bridge across the Cherwell.

The front on the street is rather more elaborate than that on the garden, including as it does on the principal story Greek Ionic columns of brick that are, in the illustration, rather indistinct on account both of the shadow lying across the front of the building, and of the vines that have been allowed to overrun the entire structure. From the garden the building shows to better advantage, not only on account of its surroundings but because of the better view point there obtainable.

In Cambridge there are many groups of interesting brick buildings, although here, too, many have been spoiled for our purpose by the application of a plaster or stone facing on their exterior walls. But along the river, especially, some of this old brickwork can still be found. Queens' College is perhaps one of the oldest buildings, and the corner of the courtyard shows a part of the brick arched cloister bearing the famous Long Gallery overhead, with the walls of the College Hall at the right of the illustration. The other brick buildings, such as



DOORWAY, COLLEGE AT WINCHESTER.

St. John's and Magdalene College, are more recent and of less picturesque value. The colleges of Cambridge also abound in interesting gateways, both large and small, although many of these are of stone.

The majority of the illustrations have been taken from the simplest and least pretentious buildings, although there are necessarily included a few well-known architectural examples. Gathered together even as they are in this fragmentary fashion, yet the lesson taught to the American architect by these individual instances of good brick architecture is both unmistakable and direct.

The limitations imposed by the material itself demand a simplicity and severity of treatment that force him to

COURT, QUEENS' COLLEGE, CAMBRIDGE.

abandon the usual frivolities that are so readily available for use on the wooden clapboarded house, and compel the designer to depend upon the good proportions of openings, horizontal courses, roof lines, and the outlines of his building — all integral parts of its problem in design and plan — for his effect. Further, a nice appreciation for brickwork, which gives him without stint both a beautiful texture and a variety of color that are not available in much more expensive building materials, should cause him to lose his individual preferences and do his utmost to discover and search out the technique of treatment lending itself most felicitously to its architectural expression. Almost am I tempted to write "its unarchitectural expression"; for, after all, does not a great deal of the charm of old work occur from the very faults (as we are pleased to call them) both architectural and mathematical, the very inexactness of line and circle, of projection and reveal, of detail and composition, that in our modern present-day work we are at so much pains to foresee and obviate?

Brickwork on the Pacific Slope. II.

(*Continued from page 180.*)

BY CHARLES PETER WEEKS.

SAN FRANCISCO.

THE second article on San Francisco architecture includes buildings of a more public character, but before leaving residences I wish to speak of two that space did not permit of in the first article. One, a dwelling on Jackson Street, Julius Krafft, architect, in a light

HOUSE ON SCOTT STREET.
Sutton & Weeks, Architects.

salmon-colored brick with light terra-cotta trimmings, is especially worthy of notice on account of its pure and simple design. The style followed is that of Louis XVI. It recalls the drawings of Cæsar Daly. The fenestration is good, the decoration in a few simple keystones and brackets is thoughtfully placed, and the light color relieved from monotony by well-designed dark iron balconies. The porch entrance is in keeping with the rest of the design.

The second is a residence on Scott Street, Sutton & Weeks, architects. The brick used here are selected

HOUSE ON JACKSON STREET.
Julius Krafft, Architect.

LITTLE JIM HOSPITAL.
A. C. Schweinfurth, Architect.

clinkers of a rugged texture laid in Flemish bond, the color so selected as to form an invisible pattern over the entire wall, giving it the effect of a rich, simply designed Oriental rug. Dark redwood entablature and brick quoins slightly in relief form a border. The entrance is of gray stone and the roof of slate. It has been necessary here to contend with the usual difficulty of a large house on a small lot. The house is but just completed and lacks the tone of age and joy of vine and flower.

A local characteristic of design is shown in the illustration of a brick entrance. The hillside, the large house and a small lot combine to force the ingenuity of the designer into artistic forms to disguise the long flights of steps and cramped approaches.

The Home for the Aged, by Albert Pissis, architect, just completed, is of the best work in San Francisco. The hospital character is attained by a simple window treatment, and a homelike, inviting appearance is given by the white wooden portico entrance, cornice, dormer windows and belfry. Just enough church character is given by the recall of Colonial Religious Architecture in the belfry. This is one of the few groups of buildings in San Francisco that appears to have been studied by a student of architecture, with all the requirements of the problem in mind and a sense of the beautiful in his heart.

HOME FOR THE AGED.
Albert Pissis, Architect.

The Maria Kip Orphanage hearkens back to old Spanish days for precedent. This structure, by Percy & Hamilton, is in plaster with brick trimmings. The height required has been a great difficulty, but has been very well overcome. The general lines are very good, but the detail lacks that rich lace effect that all Spanish work has. Even the Mission arches have lost by translation. The charm of the old Missions lies in their want of exactitude, their representation of human weakness, in other words. In a series of arches there is always a difference of width, height and radius. The arches in the Maria Kip Orphanage were never done by a lazy half-breed Spanish Indian.

RIDING SCHOOL.
William Curlett, Architect.

The Little Jim Hospital, by A. C. Schweinfurth, is a much better building from the point of view of architectural recall of character. This group of buildings is also of brick and plaster with Spanish tile roof. Too much effort is shown in an attempt at picturesqueness in the jagged brick trim around the windows, but this is the only criticism. The buildings consist of two similar

A TYPICAL ENTRANCE.

groups joined in the rear by a large circular ward and operating room. Two round towers flank the entrance to each group. These entrances are gems of imaginative study; a low, heavily molded archway with richly wrought doors set therein and crowned with a hood of timber and tile. The light yellow color of the walls and dark red of the tile and brick and the green doors and windows form a chord as harmonious in color as the structure is in design, but the pity is the lack of an appropriate setting.

MARIA KIPP ORPHANAGE.
Percy & Hamilton, Architects.

The building is brutally set against the very street. No vista, no atmosphere, no surroundings. How one longs for grass and walks and flower beds, and here and there a tree, in whose shade, on a lounging seat, a white-capped nurse might indicate the character of the place! On the contrary, it all looks so businesslike.

A very recent structure in brick is the building for the San Francisco Riding School. It is built of a variegated colored buff brick laid in light mortar. The ring proper is successfully composed by the long roof terminating in gable ends inspired by Mission details. The long, low character is charming and is an architectural success.

Town Halls in England. I.

IN considering the subject of town halls and municipal buildings it is worth while to recollect the guilds which formed the nucleus of town government. Much of this history is obscure, but we know that they were established generally by the close of the twelfth century, that they became powerful in the thirteenth, and were able to counterbalance the nobles during the fourteenth and fifteenth centuries. It seems certain that they were first religious associations, concerning themselves largely with the burial of their members and in singing masses for their souls; but it was not long before other guilds arose, such as the peace guilds which strove against theft and violence. Afterwards came the merchant guilds and the craft guilds, and out of the latter arose the twelve great companies of London. The fact that of the forty guilds which joined in the repair of Bodmin Church only five were craft guilds shows how diverse their functions had become. In England they were abolished more than

TOWN HALL AT FORDWICH.

a hundred years ago, yet some few relics remain, as the Dean of Guild, who is second municipal magistrate in a Scottish burgh. The first guilds probably met in private houses, but as their power extended they felt the need of a central meeting place and thus arose the guildhall, which we may regard as the simple building from which the modern town hall and municipal buildings have evolved during the lapse of centuries. Another factor in the development was the "tolbooth," originally a booth, a mere roof on wooden posts, at which market tolls were collected. When a room was required as a place of meeting for the "gildmerchant" or town council the easiest way was to build a chamber over the tolbooth, without encroaching on the market place; and when in later times the town hall or guildhall was rebuilt the same arrangement was kept, as we may see at many places in England. The guildhall was, of course, essentially the place where the guilds met to discuss affairs. Examples of these early buildings are to be found in almost every county, as at Laxfield (in Suffolk) or at Stratford-on-Avon, consisting principally of a long room where, no doubt, the members sat at a table extending from one end to the other. Later, with greater needs and the altered form of council — the guilds having lost their power and been succeeded by a body of elected townsmen — a larger hall was required, with some accommodation for the mayor, the clerk and his assistants. Thus we find things in the seventeenth and eighteenth centuries, during which the requirements continued to increase, and so on to the nineteenth, by which time a large number of rooms had been added to the hall that was once the sole apartment. The requirements of town government still increasing, we find that the town hall proper ceases to exist, being represented by the council chamber in which the councillors and aldermen meet to transact the business of the town, while a surprising number of new offices have sprung into existence, occupying by far the greater part of the site.

CHIMNEY-PIECE IN MAYOR'S PARLOR, GUILDHALL AT LEICESTER.

A still further development presents itself in the subdivision of some parts of the building. Not infrequently the police court, library, museum and fire station are gathered together with the town hall and municipal offices, forming the chief block in the town, but as demands

GUILDHALL AT LEICESTER.

increase all these become separated, and thus in the city of to-day the library and museum form one building, the fire station another, the police and law courts still another, while the actual town hall, used for common purposes of the town, such as concerts, meetings, etc., is represented by a number of places, chiefly under private direction.

As an interesting old example of a brick town hall combining these several now separated offices, I may describe that at Fordwich, near Canterbury. This quaint building has a brick and stone base, with some excellent half-timbering filled in with brickwork on the upper story, the high pitched roof being tiled. On the ground floor is a storehouse and a prison or lockup. A low door opens to a steep stairway by which the council chamber is reached. This is a plain whitewashed room about thirty-one feet by twenty-three feet eight inches, with three windows having oak mullions and lattice casements. The upper part of the room is paneled and is fitted with a narrow bench on which the twelve jurats sat, the mayor's seat being in the center. In front is a table (dating from 1580) on which are the constable's staves and a pair of handcuffs. A heavy beam crosses the room, on which are placed two ancient drums belonging to the old press-gang and still used in the ceremony of beating the bounds of the parish, and a "cucking stool," which was used for ducking scolding wives and other disorderly females in the river, they being afterwards left to dry in a loft over the room.

Mr. Woodruff, in his history of the town, says: "A careful examination of the building now called the town hall leads me to think that it may be a good deal older

TOWN HALL AT WATLINGTON.

TOWN HALL AT WATLINGTON.

than the time of Philip and Mary (1527 to 1598) and may indeed be the identical 'Common House' to which extensive repairs were done in the year 1474. It was probably again repaired in Tudor times and certainly at the Restoration. The last refurbishing was done in the year 1874, and it is to be hoped that whatever may be done in the future towards maintaining the time-worn fabric will be done in a reverent and conservative spirit, for it occupies a position amongst municipal buildings which is probably unique."

Another old town hall is to be found at Boston in Lincolnshire, which has been a corporate town since the time of Henry VIII. The old town hall, or guildhall, belonged to the Guild of the Blessed Mary, founded in Boston in 1260. The building is no longer used as the official town hall, having been ceded by the corporation to the Charity Trustees. It is now used for public meetings, examinations, dancing, etc., the official business of the town being conducted in the new municipal buildings completed this year. The exact date of the building is doubtful, but it appears to have been originally built in the sixteenth century, though later alterations are clearly shown by sash windows and other details.

TOWN HALL AT POOLE.

The town hall or market house at Watlington, near Oxford, is another interesting building. It was erected in 1664, and is one of the many with arches on the ground floor, forming a covered market, over which is the town hall proper. This is a very common type. In 1682 Preston is described as having in the center of the market place "an ample and well-beautifyed gylde hall," under which were ranged "two rows of shops, and here, once a week, was a market for linen cloth, yarn, fish and general agricultural produce, as well as cattle, sheep and pigs."

Another town hall of this type is at Amersham, in Buckinghamshire. The town of Amersham is most interesting and picturesque, but very different to what it was—as many as eighty coaches passed through it daily, before the introduction of railways. It is worth noting

TOWN HALL AT AMERSHAM.

that from a house and garden in the town Dickens took his description of Miss Hardcastle's residence, in "Great Expectations." It is also said that Sarah Gamp was taken from an old character at Coleshill, about one and one-half miles away.

Many of the old town halls have a large clock overhanging the street; that at Guildford, in Surrey, is an excellent example.

At Leicester there is a very old guildhall possessing many interesting features. It is a small building with an open roof of rough-hewn timbers and a range of windows similar in character and arrangement to most of the earlier halls of the mediæval guilds. It belonged to the Guild of Corpus Christi before it was purchased by the corporation, and though said to have been originally built in 1350, the existing building appears from all accounts to have been

TOWN HALL AT ROCHESTER.

erected in the reign of Queen Elizabeth, having been first opened by a banquet given by the mayor to commemorate the victory over the Armada. The mayor's parlor is a fine old paneled room with a magnificent chimney-piece and fragments of some beautiful and probably very old yellow stained glass in the windows.

Rochester town hall is another old place. It was first erected in 1687, a brick structure supported on coupled columns of stone in the Doric order; the hall on the first floor, to which access is given by a spacious staircase, measures forty-seven feet by twenty-eight feet, and has a curiously ornamented ceiling; it is enriched with trophies of war, as well as the arms of the city and of Sir Cloudsley Shovel, at whose expense it was done in 1695.

TOWN HALL AT GUILFORD.

We now come to the eighteenth century. By that time town halls had grown larger. That at Poole, in Dorset, is a good example of the period. It stands in the market place and was erected in 1761 at a cost of $7,500. The building is of brick with Portland stone dressings, and comprises on the ground floor a meat market formed by a series of arcades (little used now), a committee room, strong-room, etc. Above, on the first floor, is the town hall. The main entrance to this room is by a double flight of outside steps leading to a

TOWN HALL AT BOSTON.

large pedimented portico at the west end. Above is a striking clock. The council chamber is also on the first floor. The hall is used for quarter sessions, county court, police court, council meetings and for public functions, etc. Rooms for juries, etc., are provided on the floor above. The bell in the cupola was originally used for the curfew, which is still rung at eight P. M. and also at 6 A. M. throughout the year. This town hall is very typical of the buildings erected in the late eighteenth and early nineteenth century. Their design and arrangement are very much the same in different parts of England.

The development through the Victorian era and the consideration of some notable town halls erected within the last decade will comprise the second article.

Concrete-Steel Construction.

BY WILLIAM COPELAND FURBER, M. AM. SOC. C. E.

THE numerous schemes of concrete-steel construction now upon the market vary in many ways, some only in the minor details of arrangements and some in principles of construction.

Their advocates are so confident of what they say that one needs to be surely grounded on the true principles of construction to prevent being carried away with their enthusiasm. They will point out that many buildings are being constructed in this new way, and that floors, walls, columns, girders and beams are now being successfully built with concrete and steel. They present some elaborate and formidable calculations and figures to reinforce their statements, which are very interesting and instructive and sometimes impressive.

The technical press is also full of the discussions of the characteristics, qualities and tests of this modern development, and in order to keep in touch with the new facts developing every day one needs to devote considerable of his time to reading and study.

Finally, the conscientious architect should be able to make his own calculations and do his own thinking if he has a proper sense of professional responsibility, and after he has fully studied all the available facts, he must ask himself, if he were building for himself, as an investment, if he would use this new combination, as its advocates would have him.

He should weigh carefully all the advantages claimed for the new material and then consider all its disadvantages. He should consider that concrete beams and girders are usually designed to provide for uniformly distributed loads or concentrated loads symmetrically placed, and not for concentrated loads unsymmetrically placed or for loads that cause a reversal of stress.

He should also remember that steel beams or girders are usually of such section that any section of the beam is as strong as that at the point of maximum stress, and where this is not the case the minimum section of the beams is at least of sufficient section to take a temporary overload.

In the construction of columns he should remember that the loads on columns are frequently, and in columns of two or more stories high almost invariably, eccentrically loaded, and that this eccentric loading produces bending stresses, and that these bending stresses must be provided for in the section of the columns, which can readily be done in the steel column, but not so readily in the concrete columns.

Columns are also likely to have bending stresses, caused by accidental means, during construction, such as serving as posts for derricks or anchors for guy lines and afterwards by such eccentric loads as shafting, etc., which a metallic column can resist without difficulty, but which may affect a concrete column seriously.

In the question of adhesion of the concrete to the steel some recent writers have asserted that the cementing substance between the steel and the concrete was a silicate of iron which was soluble, and that by immersion in water this silicate could be dissolved out and the bond or adhesion destroyed.

This fault is claimed to be overcome by the use of corrugated or twisted rods or other shapes, which offer greater resistance to pulling out than smooth bars; but it is necessary to bear in mind that theoretically the composite structure or section is regarded as a unit, and that when separation takes place from any cause the two materials can no longer be regarded as one, nor subject to the same laws as those that govern a homogeneous material.

From a mechanical point of view the separation of the material means the first step towards disintegration and wear, opens the way for the possible penetration of water, gases and acids to affect the metallic reinforcement.

In considering the various stresses which may come upon a girder or beam other than that which it is usually designed to bear, it should be remembered that various conditions of loading, which may not affect seriously a beam of wood or steel with a uniform section, may so change the stresses in a concrete steel beam designed for a uniformly distributed load that it would not only be unsafe but in danger of destruction.

Another form of stress which is not considered in ordinary calculations, but which a steel or wood beam is usually capable of resisting, is a lateral thrust which may possibly come on the floor system from external sources, such as shafting, or from accidental causes which might arise from various sources, such as fires, etc., which the concrete steel has no provision to resist, Buildings are not infrequently designed for one purpose and are afterwards used for another, and the concrete form of beams presents great difficulty in making any changes or providing for strengthening the floor system.

Another great difficulty in the use of concrete steel and one which calls for the greatest caution is the element of workmanship. In no part of building construction does the workmanship factor exercise such an important influence. Poor workmanship in mixing the concrete, or carelessness in handling and placing the mixed material, requires the most extraordinary vigilance to guard against, for a bad batch or insufficient tamping at a critical point may cause a serious and possibly fatal failure of the structure.

The danger of the weather affecting the work before its final set is very great. The complete crystallization of cement requires about ten per cent of water, which is chemically combined with the cement. If this water is evaporated or the concrete is deprived in any way of this amount of water, complete crystallization cannot take place, and the full strength of the cement cannot be obtained. It is a difficult, if not an impossible task to educate the careless workmen out of the belief that the *drying* of the cement and the *setting* of the cement are not one and the same thing. Few workmen seem able to comprehend that Portland cement can and does set under water, and this very ignorance on their part is a great factor in bad workmanship, and tends toward poor and unsafe construction.

One of the principal reasons why concrete work is cheaper than some other forms of construction is because of the employment of unskilled labor, and this very reason is apt to be its undoing. The labor unions have reduced the quality of skilled labor to almost a negligible quantity, so that it is but little better than the unskilled, but it is some advantage to have men who have done the same kind of work before. In the unskilled class, where the laborers in a concrete gang are often changing from day to day and few men continue in the same line of work for any great length of time, it is useless to expect either efficiency or good work.

The fireproof qualities of concrete are a matter about which there is great dispute, and the final word will probably not be said until the tongues have ceased to wag, but the very fact that concrete requires water incorporated into it to permit it to crystallize is also a fact which prevents concrete from ever being seriously considered as a truly fireproof material.

Volumes may be written and series of tests may be published which may appear to establish the resistance of concrete to fire, but every chemist knows that the chemical laws cannot be evaded, and that anything containing water in any form can be made to yield it up by the application of sufficient heat. The real reason why concrete slabs or floors have shown such results as they have is because the cinder concrete is itself a very slow conductor of heat, and that while the surface may be disintegrated in a fire of short duration, the interior is not affected. If, however, the fire is continued for a sufficient length of time it is inevitable that the whole mass will be affected.

The chemical change which takes place after the application of water to the dry cement powder is indicated by the following equation:

$$\left.\begin{array}{l} CaO - 3\ Al_2O^3 \\ CaO - 3\ SiO_2 \\ CaO - 2\ Al_2O^3 \\ CaO - 2\ SiO^2 \end{array}\right\} + H_2O$$

The chemically combined water becomes disassociated from this hydrated mixture if the temperature is sufficiently high, after which the concrete loses its crystalline texture and returns substantially to the condition it was before it was originally mixed with water.

It needs no argument, therefore, to prove that whatever invaluable qualities cement possesses for construction purposes it is not and never can be regarded as a fire-resisting material, and that any structure to be fireproof should not rely upon cement or concrete coverings to protect it from great heat.

It should also be borne in mind that in those instances where cement has made a good showing under fire it was because the calcination had not penetrated deeply into the body of the mass, and that subsequent trials would still further reduce the strength of the material. The value of any fireproof material must be judged by its ability to return to its original structural condition after the fire test, and in this respect it cannot be maintained that concrete fulfills this condition.

Endurance of Portland Cement.

IN the process of the manufacture of Portland cement the raw materials are burned to a clinker in the furnace and then finely ground. It has been a frequent assumption of the cement manufacturers that the object of grinding this clinker to an almost impalpable powder was to enable the cement when mixed with water to more intimately coat the particles of sand or rock with which it should be aggregated and to more completely fill the interstices between the grains of the coarser material, but that the presence of a certain proportion of coarsely ground clinker did not necessarily injure the quality of the cement, the unground particles being practically inert. Recent experiments, however, have proven that such is not the case, and that, on the contrary, the coarser particles of cement constitute a menace to the setting of mortar or concrete with which it is mixed which would often account for failures which have been noticed in the material. A number of tests of a most interesting nature in this connection were made some time since at the United States Arsenal at Watertown, Mass., by Mr. J. E. Howard. For the purposes of the tests a quantity of one of the standard brands of American Portland cement was purchased in the open market. The cement was separated by being passed through sieves of varying fineness into four grades, the finest being an almost impalpable powder with the cement grains .0027 inch in diameter or less, while the coarsest grains would be retained by a sieve of fifty to the inch. A number of briquettes were then made, using with one batch varying grades of cement, neat, and in the other briquettes were made of the finest neat cement mixed with granite dust of the same fineness as the coarsest screenings of the cement. These briquettes were all made in the usual manner, set up one day in water, and were tested for tension after six days in the air. The results show that the briquettes made of fine cement and granite dust were much stronger than those made with fine cement mixed with the coarser grade of cement. The fragments were preserved under cover for two years, after which time it was found that the briquettes made with the fine cement and those made with fine cement and granite dust were in a perfect state of preservation, while all the briquettes containing the coarse particles of cement had disintegrated, the briquettes composed of the coarsest grains being entirely disintegrate and the other briquettes varying from a perfect state to one of greater or less disintegration, depending upon the size of the cement grains.

These tests have important bearing upon the subject of concrete construction. They prove that coarsely ground clinker is by no means inert, but that it will hydrate if air has access to it, and that in the process of hydration there is a certain amount of swelling of the particles which will inevitably destroy the coherence of the mass, rendering such construction a menace to the building in which it is employed. In the so-called reinforced concrete systems a degree of reliance is placed upon the concrete far beyond what is expected of it when used for inert resistance, as in foundations or walls. In the latter case we believe concrete to be most excellent in many ways, but we consider it too unreliable in its composition and too easily disturbed by varying factors to make it a proper material for constructive use in connection with steel. The fact of its innate scientific inability to successfully withstand the effect of heat has been demonstrated in many ways, and in this respect we shall have some interesting data of tests to present to our readers in a future number.

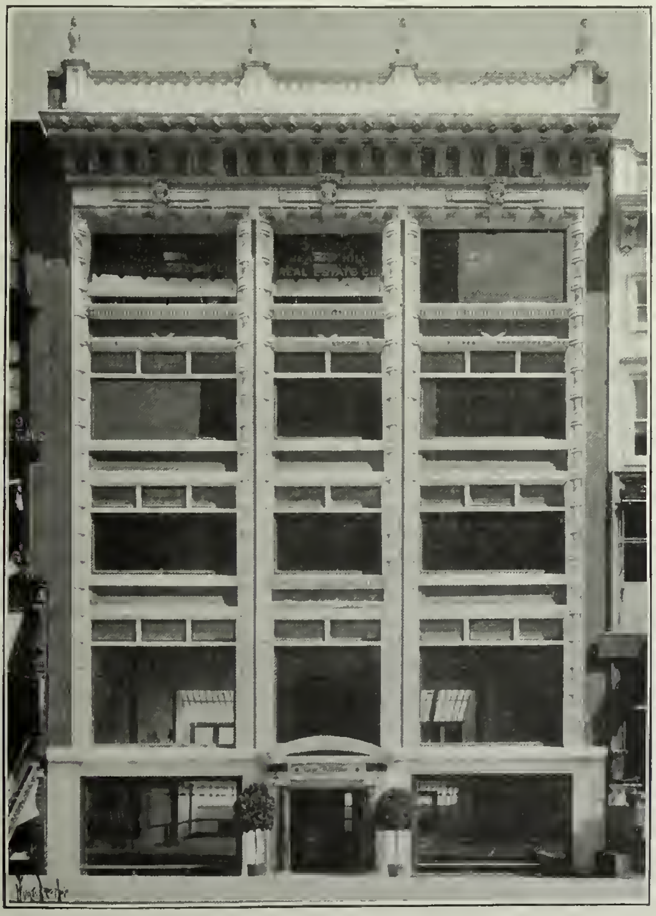
Editorial Comment and Selected Miscellany

The Engineer, the Architect and the General Construction Company.

THE article by Reginald Pelham Bolton, C. E., published in *The Engineering Magazine* and which we reprint, will certainly be read with a great deal of interest. Everything that he says emphasizes two rather curious conditions. One is, that, like the manna of old, the rewards of architecture fall upon the fit and unfit alike; and, second, that the general public which employs the architect seems really not to care very much whether the architect is fitted or unfitted for his work.

All of the charges the writer urges against the profession apply in a very large extent to the uneducated, untried, unfit members thereof. They do not in any sense apply to those who stand anywhere near the head of the profession. It is, therefore, not fair to charge the profession as a whole with the faults that are, as a matter of fact, limited to those who, while in the vast majority as to numbers, do not admittedly occupy a high professional position. It is the old difficulty of the specialist being unwilling to subordinate his work to the whole. The engineer thinks no architect can do engineering; the electrician is quite confident that an architect knows nothing of electricity; and as for the average steam engineer, we all know in what contempt he holds his architectural associates. All these specialists quite fail to appreciate that a building is not merely an engineering achievement nor a mechanical appliance, but that all of the practical requirements in the largest modern structure in their aggregate are of relatively minor importance unless subordinated to the architecture which ought to give the building a character. It is not necessary that an architect should be an engineer of any description in order to thoroughly appreciate and control all of the engineering operations connected with his building. Our utilitarian age has greatly magnified the importance of these so-called practical requirements. We would not for a moment lessen an estimate of their real value, and Mr. Bolton's article, in as far as it challenges the practice of architects, who we admit are in the majority in their profession, is timely, well put, and should command full attention, but we do claim for the architectural profession that at its best, and only in that condition should it be measured, it cannot be fairly charged with the deficiencies which this article ascribes to it.

MANTEL IN LIBRARY, HOUSE OF DR. ALEXANDER GRAHAM BELL, WASHINGTON, D. C.
Totten & Rogers, Architects.



STORE AND LOFT BUILDING, FIFTH AVENUE, NEW YORK.
Bruce Price, Architect.

We would echo Mr. Bolton's words, "Every man to his trade," but we claim most emphatically that the work of the architect should and, with the best architects, does cover every department of human industry which goes into the making and the finish of a modern structure. — THE EDITORS.

The architectural profession has not infrequently recognized its responsibility for the results of its professional work, and has advanced in many ways along lines of modern development. But it has curiously failed to recognize its responsibility in another and more important respect, namely, that of the acceptance of fees in payment for certain technical and artistic work which its members are not qualified by training to execute, and in which they are not expert in the same sense as they are in connection with actual building design. The position occupied by the profession in this regard is not logical, and has brought about a very disastrous state of affairs as regards their employment in the largest building enterprises.

MASSACHUSETTS AUTOMOBILE CLUB BUILDING, BOSTON, MASS. William G. Rantoul, Architect.

As the logical reason for the employment of professional ability in the design of a building, in place of the employment of contractors or builders for the purpose, it is maintained by the profession that their members are a trained body, expert in the design and proper construction of the work they undertake to plan, uninfluenced by the considerations which affect the contractor or builder, and capable of giving economical and independent advice to their clients.

The client, it therefore follows, in employing an architect, engages and pays for a personal ability and technical knowledge of the subjects under consideration and is entitled to a receipt of that personal capability and technical information in each branch dealt with.

If, therefore, the architect does not possess expert knowledge on any one branch of his undertaking — and no one can expect that any one of that wide profession should be so fully informed — he is under moral obligation to supplement his own deficiency in respect of any particular item involved — such as, say, sculpture, modeling, decorative effects, landscape gardening, sanitation, boiler practice, chimney design, electrical equipment, heating, ventilating, hydrostatic, elevator, foundation, steel construction, or other modern requirements — by the equivalent expert and equally independent knowledge of others ; otherwise he is not giving his client value for his engagements.

OFFICE BUILDING FOR PENNSYLVANIA STEEL COMPANY, STEELTON, PA.
York & Sawyer, Architects.

In other words, architects are paid for professional knowledge and experience upon all parts of the work they undertake, and cannot honestly accept pay for their services as amateur sculptors, artists, engineers, plumbers, and for amateur opinions upon technical subjects. Yet too many of them

A MANUFACTURING BUILDING, CHICAGO.
Pond & Pond, Architects.

not only do so, but still adhere to the old practice of obtaining information, guidance, proportions, even their plans and specifications, from contractors and prospective bidders.

As regards engineering work, there are a few architects who by reason of a certain amount of habitude, possibly in some cases of a certain amount of training, possess a familiarity with some sanitary and engineering matters. But would they, if deprived of their architectural practice, undertake with that amount of knowledge to enter upon independent practice as experts in those lines?

In other words, will any architect assert himself to be as fully qualified in these matters as he professes to be, and is, in building design and construction?

Recognizing the necessity of doing something, but desirous of avoiding the cost of employment of ability of a character and cost equal to their own, a number of architects have proceeded to a course which has proved peculiarly adverse to the interests and credit of the profession. They hire inadequate and often inexperienced help in the shape of assistants or draughtsmen, and put them forward as their substitute for technically trained expert assistance. One of the foremost firms of architects in the United States have in their employment, and put forward as their "consulting engineer," a very worthy, and in his own line deserving, man whom they took out of an engine room. There are several others who pay their "consulting engineers" in their office from $20 to $30 per week, and permit this class of experience to pass upon and decide the important operating expenses of their clients. Such men are not only incompetent in the direction of knowledge, experience or ability, but an injury is inflicted upon the client which often reflects back upon the architects by placing such a class of men in control of matters where large sums of money and many competing and unscrupulous interests are engaged.

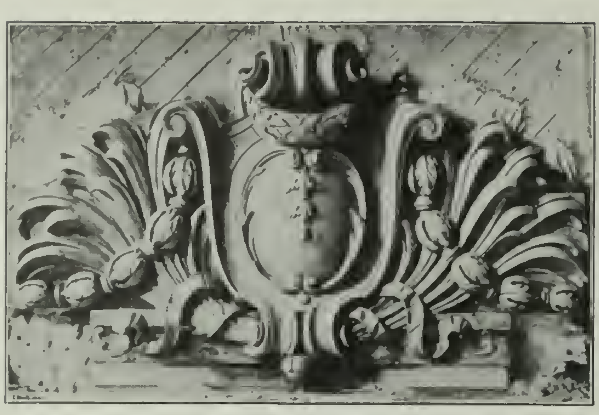
The very essence of the employment of professional men is that their "standing" shall protect the employer from corruption and undue influence; and in passing over any part of their engagement to a lower class of employed and often underpaid labor, the architects very seriously compromise their employer's interests. Even when an independent engineer is employed he is often made to feel that he is only the agent of the architect or is placed under obligations to make his designs coincide with the architect's views. The results are to be seen in many otherwise well-considered installations.

There are eight hundred and fifty practising architects in New York, and there are seventeen independent consulting engineers employed on such cognatic work, where there should be plenty of inducements and work for ten times the number. The architectural profession have had this matter drawn to their attention by several engineering societies, and have not only failed to correct their false position, but have embodied it in the provisions of their form of professional contract. As their self-sufficiency evidently renders them deaf to the calls of plain dealing, it is necessary to direct the attention of those who employ them to the matter, so that the existing system may perhaps be remedied from without. I shall not lay myself open to any charge of one-sidedness, but freely admit that there are some engineers posing as architects to whom the same consideration can be inversely addressed. But it is to the general credit of my profession that they are an extremely limited number.

It is in connection especially with steam apparatus that this matter assumes peculiar proportions, for in this the owner's pocket is particularly and permanently as-

SMALL STORE AND OFFICE BUILDING, BOSTON.
Peters & Rice, Architects.

sailed. If a few personally conducted parties of steam users could be taken through some of the most modern firerooms in New York they would certainly be convinced of the desirability of employing engineers on engineering work. A trip up Broadway would reveal boilers in dark and stifling sidewalk vaults which are a menace to public security, since boilers so placed cannot be properly maintained in security; boilers far away from the chimney, necessitating horizontal smoke connections, in one case 225 feet long; boilers, as in one well-known and widely



DETAIL BY BEEZER BROS., ARCHITECTS.
Northwestern Terra-Cotta Co., Makers.

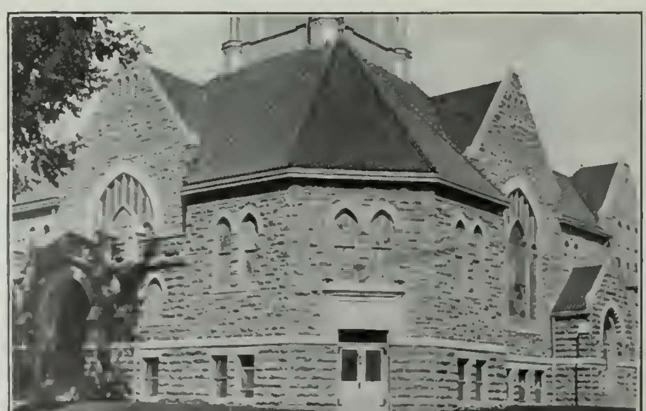
per cent, or from $1,500 to as much as $7,500. His outlay in respect of its design is frequently nothing, the whole being obtained from contractors.

The steel structure may be competed for by more than one firm of contractors, but each maintains its own drawing office, sometimes employing as many as one hundred to one hundred and fifty draughtsmen, the cost of which labor is added to the price; and thus the planning of this part of the work is frequently paid for by the owner of the building twice over.

EXHIBIT OF THE HARTFORD FAIENCE COMPANY AT ST. LOUIS.

illustrated building, so badly placed and connected that when steam is raised in one the expansion pulls the piping off the other, or, as in one of the largest insurance buildings, placed in the same room as the machinery, with space for only one day's fuel. Such instances could be multiplied.

Owners are of course largely to blame. But they do not realize what the position is. The mechanical plant in a large office building is worth from $60,000 to $150,000. On this an architect commonly receives his commission of two and one-half or five



M. E. CHURCH, GREENFIELD, OHIO.
Brown & Davis, Architects. Roofed with American "S" Tile.

The Building-Construction Company. — The unsatisfactory conditions of service, as offered by the majority of the architectural profession, have led to the introduction of a recent development of the pretensions of the builder to the possession of the facilities of the architect, and for this development, directly hostile as it is to their own pretensions, the architectural profession have themselves, in their persistence in the foregoing practices, entirely to blame. I state this fact from personal knowledge of the reasons which induced the introduction in New York of the present system of general construction, the foregoing conduct of the architectural profession having been given to me as the cause by two of the leading concerns against whom the architects of New York are now loudest in their denunciations.

By dint of liberal assertion, of active exertion on the part of young and alert employees, and of constant iteration of architectural shortcomings, the construction companies have plucked the ripest plums from the building orchard. They have calmly adopted the plans of architects, without credit or thanks, have walked off with

THE NEW ASTOR HOTEL, NEW YORK, N. Y. Clinton & Russell, Architects.
Built of Sayre & Fisher Co. repressed red brick, laid Flemish bond.

their clients, belittled their abilities, thrown doubt on their capacity, sneered at their rectitude and cold-shouldered their approaches to any understanding.

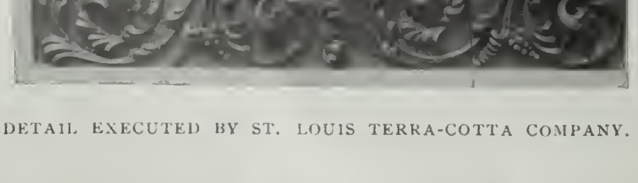
Their particular facility is that they, for a covering figure, can carry out all achitectural detail and engineering work without cost and with their own trained staff. This would be an excellent idea, if the staff were of that character; but in point of fact, they have not yet grasped the fact that it would pay them to employ the highest class of professional ability; and, therefore, the men employed by them in the work of design are often either small contractors, or are assistants of the same order as those to whom I have referred as being employed by some of the architectural profession. If the scope of these powerful concerns should eventually fully cover the field of building operations, the profession of architecture would be very completely visited for its shortcomings. since the avowed idea of the construction company is to allow the architects no more than the opportunity of producing general designs to be by them detailed and developed; but so far, owing to the very similar class of intelligence applied to their work of detail design, the result has often been poor architecture and more often still poorer engineering.

In respect of the latter, I regret to say that since the operations of these construction companies began no advance whatever has been made in the improvement of the interior engineering of the buildings they have handled. In point of fact, their practice at present is the installation of poorer designs of mechanical equipment than were generally discredited before their methods obtained an ascendency in modern building operations.

It is but a natural result of such a system that this should be the case. A general contract for a great building is made on a condition which is the essential feature and object of the employment of a general contractor. It is that a building of a certain character, often identified only by a mere sketch or outline, or even by a

WABASH DEPOT, PITTSBURG, PA. T. C. Link, Architect.
Built of Kittanning repressed gray brick and Atlantic terra-cotta.
Fireproofed by National Fireproofing Company.

partial reference to some existing building of a more or less similar type, shall be erected within a certain period for a certain sum, without any extra charges. Any attempt to introduce any detail of conveniences, of desirable materials, or of particular requirements, is met and combated by the objection that the builder must have a free hand in selection or in dealing with competing manufacturers; otherwise the cost will be increased, or the time limit will be exceeded, or labor trouble may ensue. So the owner signs away his money and gets in return a complete structure, it is true, such as his picture showed, which is, however, built of the material, equipped with the class of apparatus, proportioned to the extent of liberality, and constructed by the class of labor which have best suited the policy or profit of the contractor. If by the inducement of the needs of this building a gain can be made in another; if by the sacrifice of a detail in one an extra can be avoided in another; if by diverting proper labor from one, less competent or cheaper labor can be utilized in another,— then these policies are open to adoption, are liable to be adopted, and are and have been in many cases adopted.



DETAIL EXECUTED BY ST. LOUIS TERRA-COTTA COMPANY.

DETAIL BY A. P. CLARK, JR., ARCHITECT.
Excelsior Terra-Cotta Company, Makers.

As to the designing work produced under this system, it is inferior and is done by inferior help, whose efforts are subordinated to the one predominating consideration of avoiding all avoidable cost, while at the same time evading the much abused "extra," which in this class of contract, coming directly on the construction company, is of course to be avoided at all cost of sacrifice of efficiency. I will give an instance of an actual occurrence:

BREWERY, PHILADELPHIA, PA. O. C. Wolf, Architect.
Built of Ironclay Brick, O. W. Ketcham, Agent.

In the construction of one such building it was discovered that by a blunder in reading, or more likely by an error in estimating, no provision had been made for the cost of carrying the decorative "effects" of the two outer sides of the building round its interior sides, which were exposed by the ownership of the abutting property. The difficulty was overcome by directing the engineer to cut down the equipment to a sufficient extent to pay for the deficiency.

DETAIL EXECUTED BY NEW JERSEY TERRA-COTTA COMPANY.

The proper equipment was, therefore, cut from two boilers of ample capacity and one spare, to two boilers which, when forced, can just do the work; two generators which unitedly will barely carry 5/10 of the total lighting load, and 6/10 only by overload; the omission of every possible convenience and cross-connection; the reduction of the plumbing and character of the fixtures; and the skinning of the heating arrangements down to the cheapest system. The owners have the satisfaction of knowing that their building is carried out "without extra," and has cornices of the anticipated appearance. But they do not know that they have not only paid an extra in full for the work, but also are paying an extravagant and permanent interest on the achievement in their coal, repair and labor bills.

The Owner of Property. — I could multiply these instances, but I do not know if there is any good in attempting to draw beneficial lessons for the education of an educated class which is, withal, too careless or incapable to take elementary precautions as to its own rights and property. One would suppose that a most limited intelligence would enable a property owner to perceive that he is not likely to get something for nothing out of a smart firm of general contractors.

STAR BUILDING, ST. LOUIS, MO.

Barnett, Haynes & Barnett and Ernest Helfensteller, Associate Architects.
Built of cream shade of enamel brick made by Hydraulic-Press Brick Company. Terra-cotta trimmings by Winkle Terra-Cotta Company.

APARTMENT HOTEL, NEW YORK CITY.

H. B. Mulliken, Architect.
Front brick furnished by Robt. C. Martin & Son. Terra-cotta by New York Architectural Terra-Cotta Company.

As regards the features of engineering character in their buildings, it might naturally be assumed that men of business capacity and of ordinary intelligence would, in a matter in which they are directly and permanently liable for the cost of results, very closely examine into the conditions surrounding their future outgoings with the aid of the best technical knowledge available. But that is rarely the case. Such people, when contemplating the construction of a building, are captivated by the ideas of outside design and interior decoration, and are under those influences to such an extent that the hard and mechanical details of

DETAIL BY MAURAN, RUSSELL & GARDEN, ARCHITECTS.

American Terra-Cotta and Ceramic Co., Makers.

engineering operations are uninteresting to them. They are also very frequently dependent in all such matters on some mechanic in their employment, such as the operating engineer or fireman in their own home or other property. These men, when put forward (as they very frequently are) to discuss or suggest or even to proportion necessary apparatus in a new building, do so with the natural subserviency of their class and come under the architect's or contractor's dominance, their employment in this manner often resulting in worse blunders than would have been the case without their limited ideas and their liability to accept all kinds of assertions on the part of manufacturers.

Not until it is much more widely understood that the mechanical apparatus in a building is the part of it that directly affects the pocket of the owner, that in it and by it he is constantly being defrauded and fleeced, will the present state of affairs be amended.

I have recently had the opportunity of laying these views before one of the great mortgage-insurance companies, whose action will in future take into account the imperfections and deficiencies of mechanical apparatus in the building in which they take an interest. It may be that others will awake to this, to them, important element, and that through their action careless ownership will be aroused.

Having sat for ten years past between these elements, and having had the good fortune not to fall into the evil graces of either, I am in hopes that my plain speaking will be taken in good part and that all parties will proceed to set their courses with a little more regard for their true interests in this age of engineering detail. And I am thankful to record my knowledge that there are architects who fully live up to their undertakings in the respects I have named, as there are builders who are conscientious, and as there are owners who are capable of appreciating the value of the old saw — "Every man to his trade."

IN GENERAL.

Mr. Robert D. Kohn was associated with Messrs. Carrère & Hastings as architects for the Ethical Culture Society Building illustrated in THE BRICKBUILDER for September.

George A. Ross and David H. MacFarlane have formed a partnership for the practice of architecture under the firm name of Ross & MacFarlane, Bank of Ottawa Building, Montreal. They will be pleased to receive samples and catalogues.

.. *Competition for a Village Church* ..

First Prize, $500 ***Second Prize, $200*** ***Third Prize, $100***

PROGRAMME

THE problem is an Episcopal Church in a large village. The location may be assumed in any portion of the United States. The lot is 80 feet wide on the west and 180 feet deep on the south. It is on a corner of two streets of equal importance To the southwest a main avenue communicates with the principal square of the village, the grade of this street down to the square being 7 per cent. The lot itself is perfectly level and is in the residential portion of the village. The problem considers only a church with sacristies for clergy, choir and altar guild At some future time the property immediately adjoining to the north is to be acquired, and on this property will be erected a parish house and rectory. The church will, therefore, be placed and designed with this future extension in view.

The church is to seat five hundred, the choir thirty. A small side chapel is optional.

The following points must be considered in the design:

A. Frank and logical expression of the prescribed material.
B. Historical and traditional associations of the institution for which the structure is provided.
C. Historical and architectural antecedents, associations and surroundings of the assumed location

Drawings required:

A plan at a scale of 16 feet to the inch a front elevation and a side elevation at a scale of 8 feet to the inch, all on one sheet, and a sheet of details at a scale of one-half inch to the foot. The size of each sheet shall be exactly 20 inches by 30 inches. The sheets are not to be mounted. All drawings are to be in black ink, without wash or color, except that the walls on the plan are to be blacked in

The exterior of the building is to be designed entirely in terra-cotta, and the same material may be used at will in the interior. Colored terra-cotta, or faience, may be employed.

It must be borne in mind that one of the chief objects of this competition is to encourage the study of the use of architectural terra-cotta. There is no limitation of cost, but the designs must be suitable for the location, for the character of the building, and for the material in which it is to be executed. The details should indicate in a general manner the jointing of the terra-cotta and the sizes of the blocks.

In awarding the prizes, the intelligence shown in the constructive use of terra-cotta and the development or modification of style, by reason of the material, will be taken largely into consideration.

Every set of drawings is to be signed by a nom de plume or device, and accompanying same is to be a sealed envelope with the nom de plume on the exterior and containing the true name and address of the contestant.

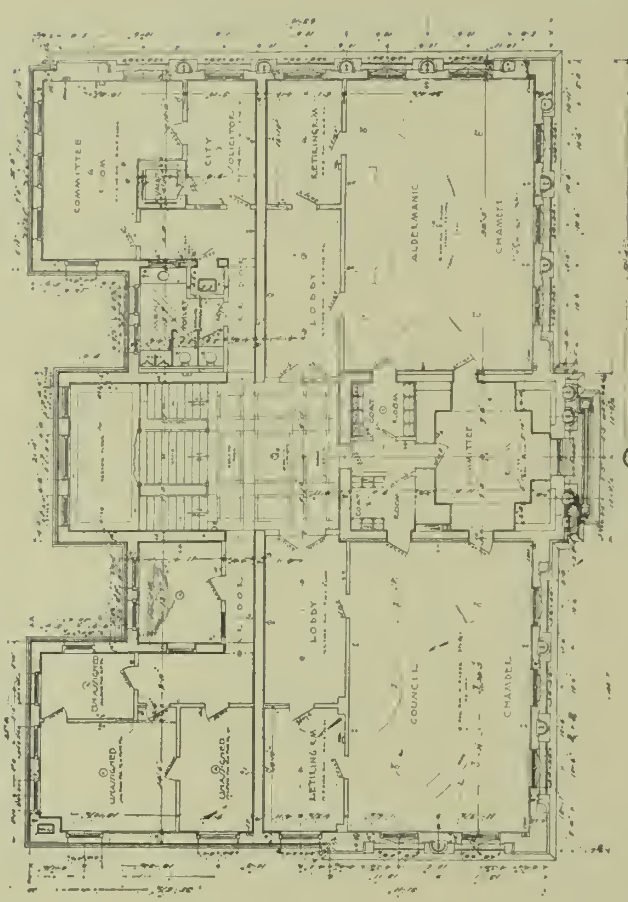
The drawings are to be delivered flat at the office of THE BRICKBUILDER, 85 Water Street, Boston, Mass., charges prepaid, on or before December 15, 1904.

The prize drawings are to become the property of THE BRICKBUILDER, and the right is reserved to publish or exhibit any or all of the others. Those who wish their drawings returned may have them by enclosing in the sealed envelopes containing their names ten cents in stamps.

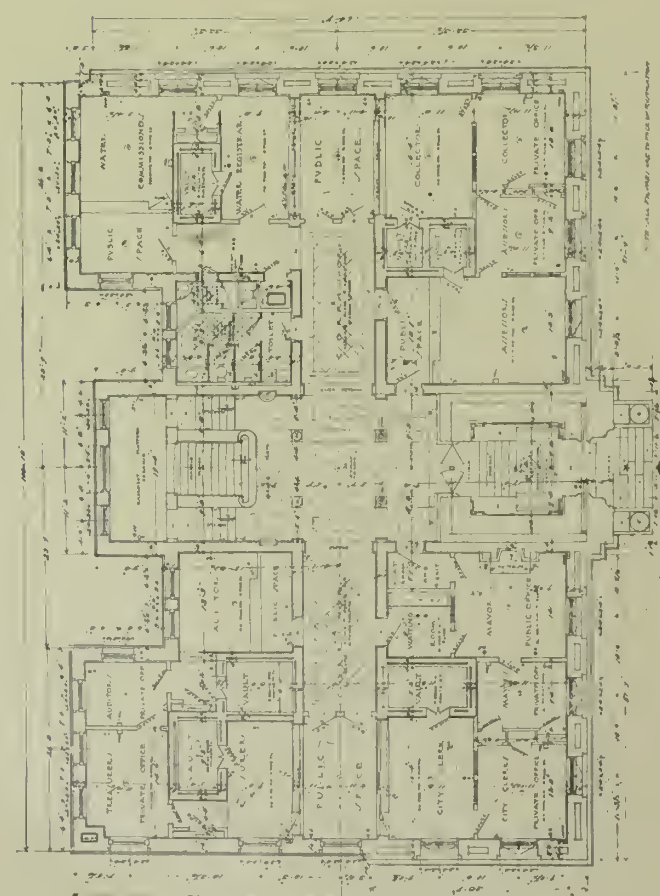
The designs will be judged by three well-known members of the architectural profession.

For the design placed first in this competition there will be given a prize of $500.
For the design placed second a prize of $200.
For the design placed third a prize of $100.

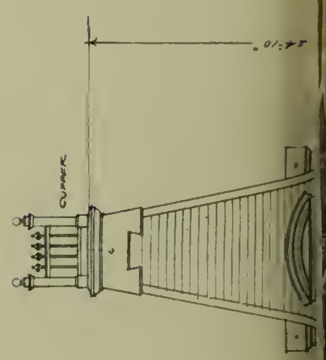
We are enabled to offer prizes of the above mentioned amounts largely through the liberality of the terra-cotta manufacturers who are represented in the advertising columns of THE BRICKBUILDER. This competition is open to every one.

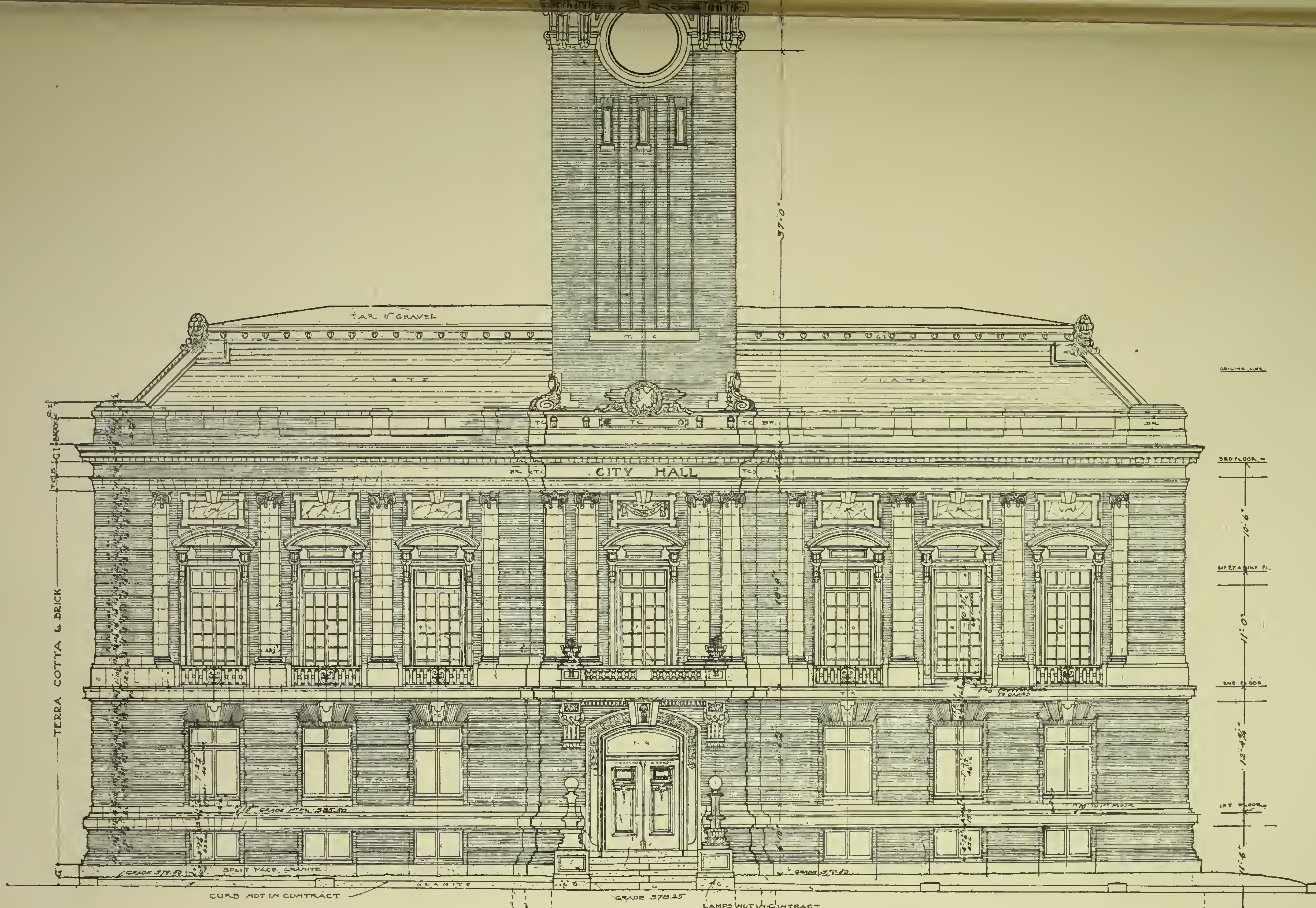


(3) SECOND FLOOR PLAN.



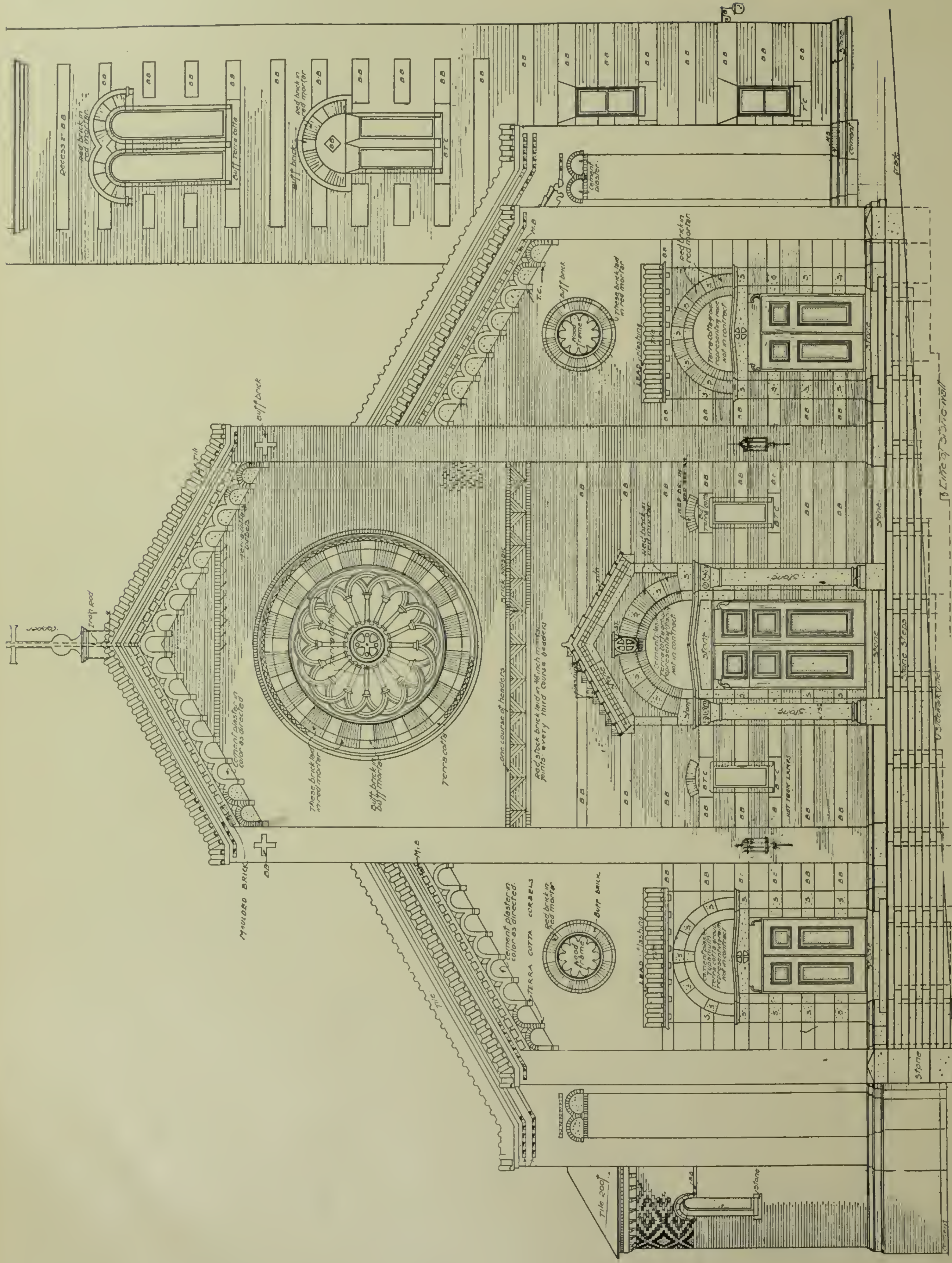
(4) FIRST FLOOR PLAN.



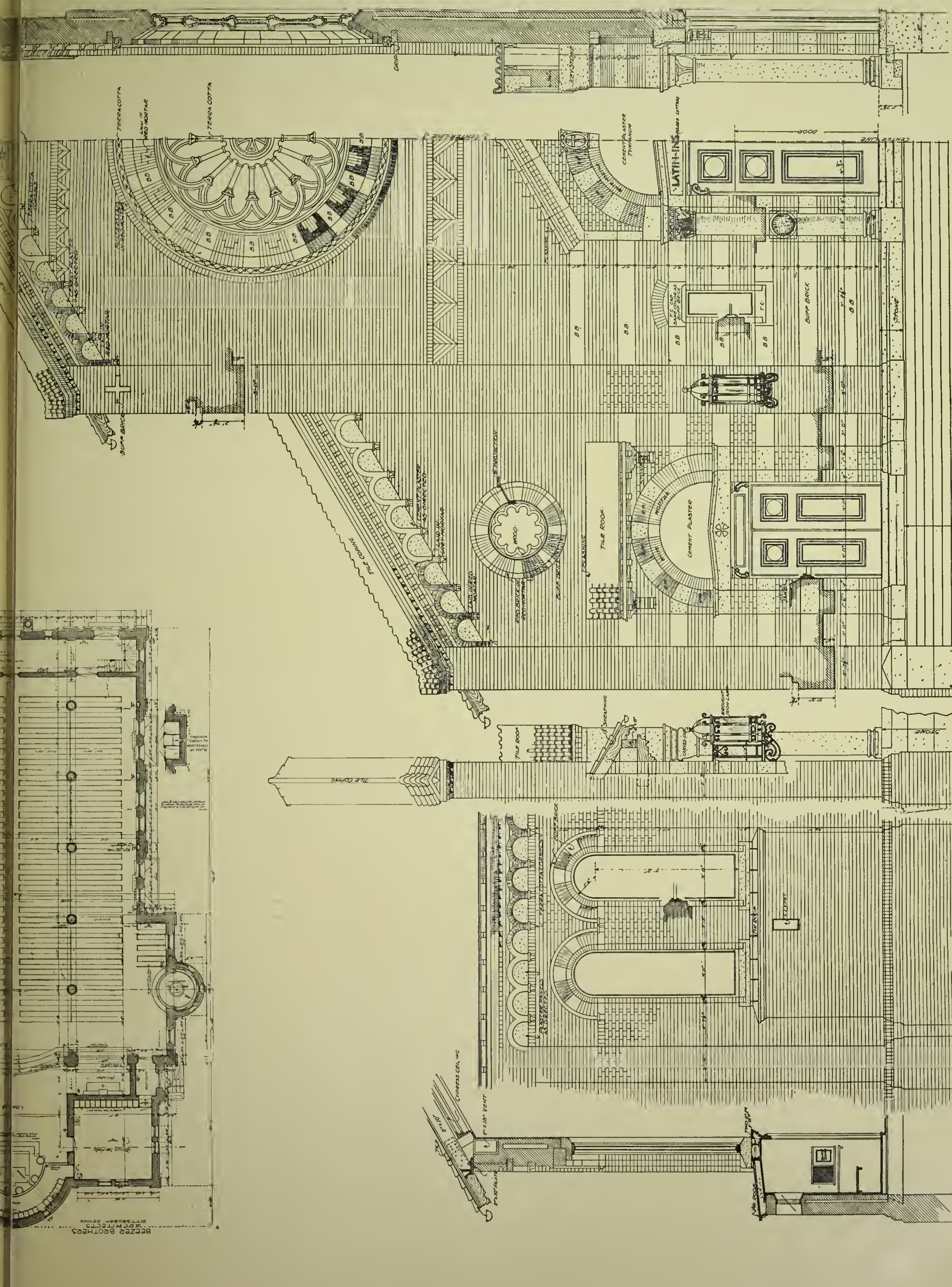


FRONT ELEVATION.

CITY HALL, MARLBORO, MASS. ALLEN & COLLINS AND J. LAWRENCE BERRY, ASSOCIATE ARCHITECTS.

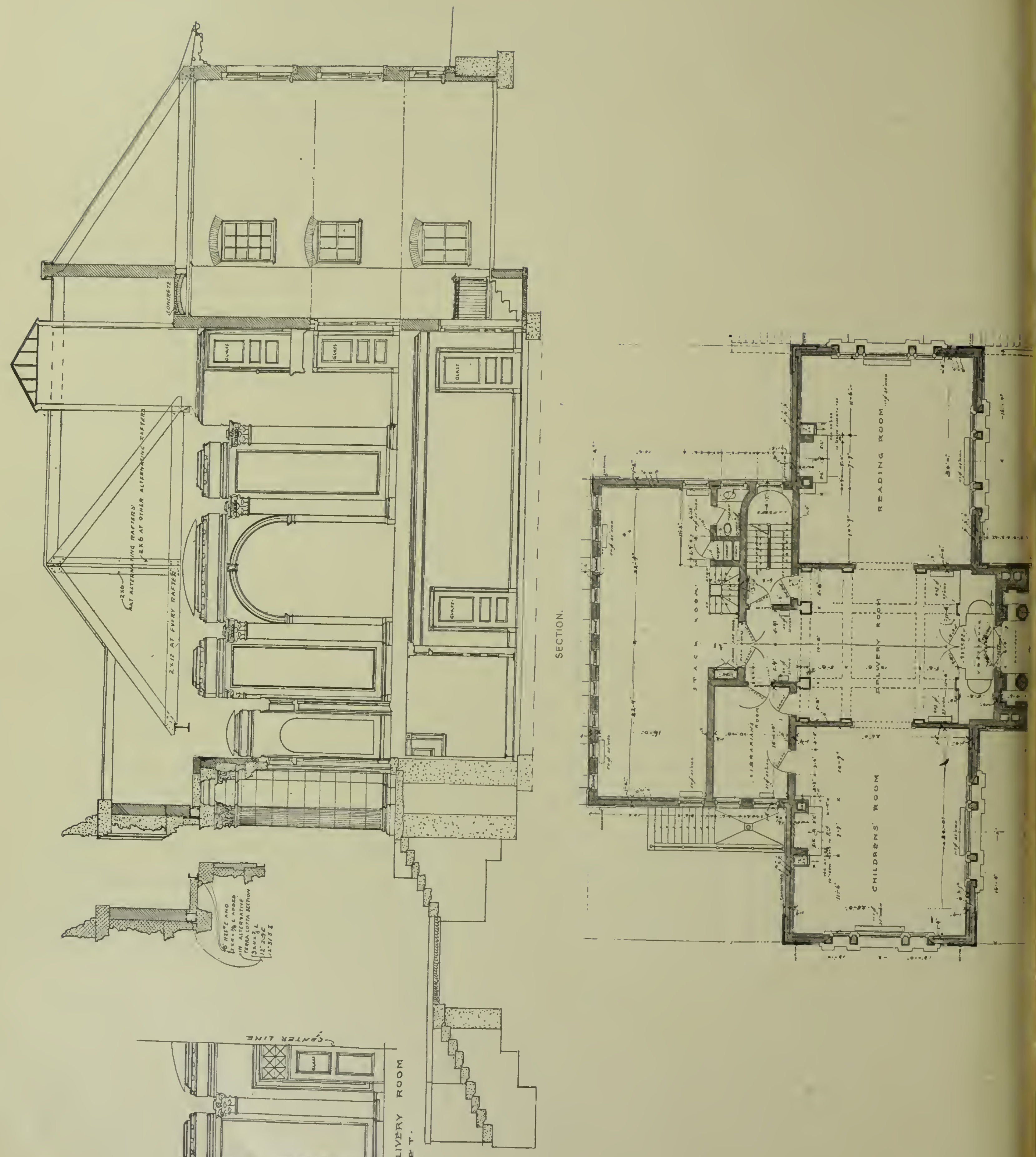


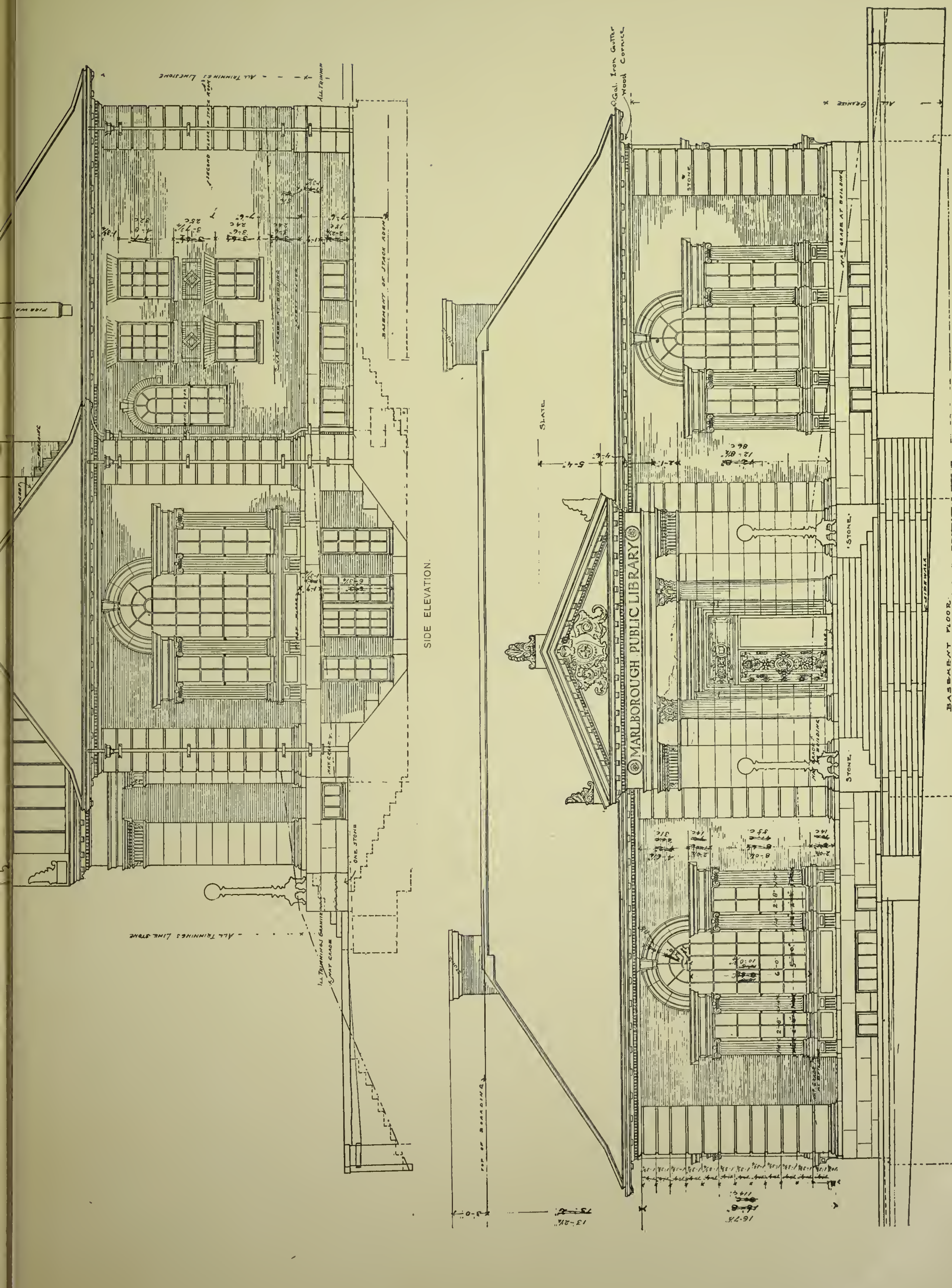
PLATES 75 and 76.



FRONT ELEVATION, DETAIL OF SAME, AND PLAN OF ST. JOHN THE BAPTISTE CHURCH, PITTSBURG, PA.

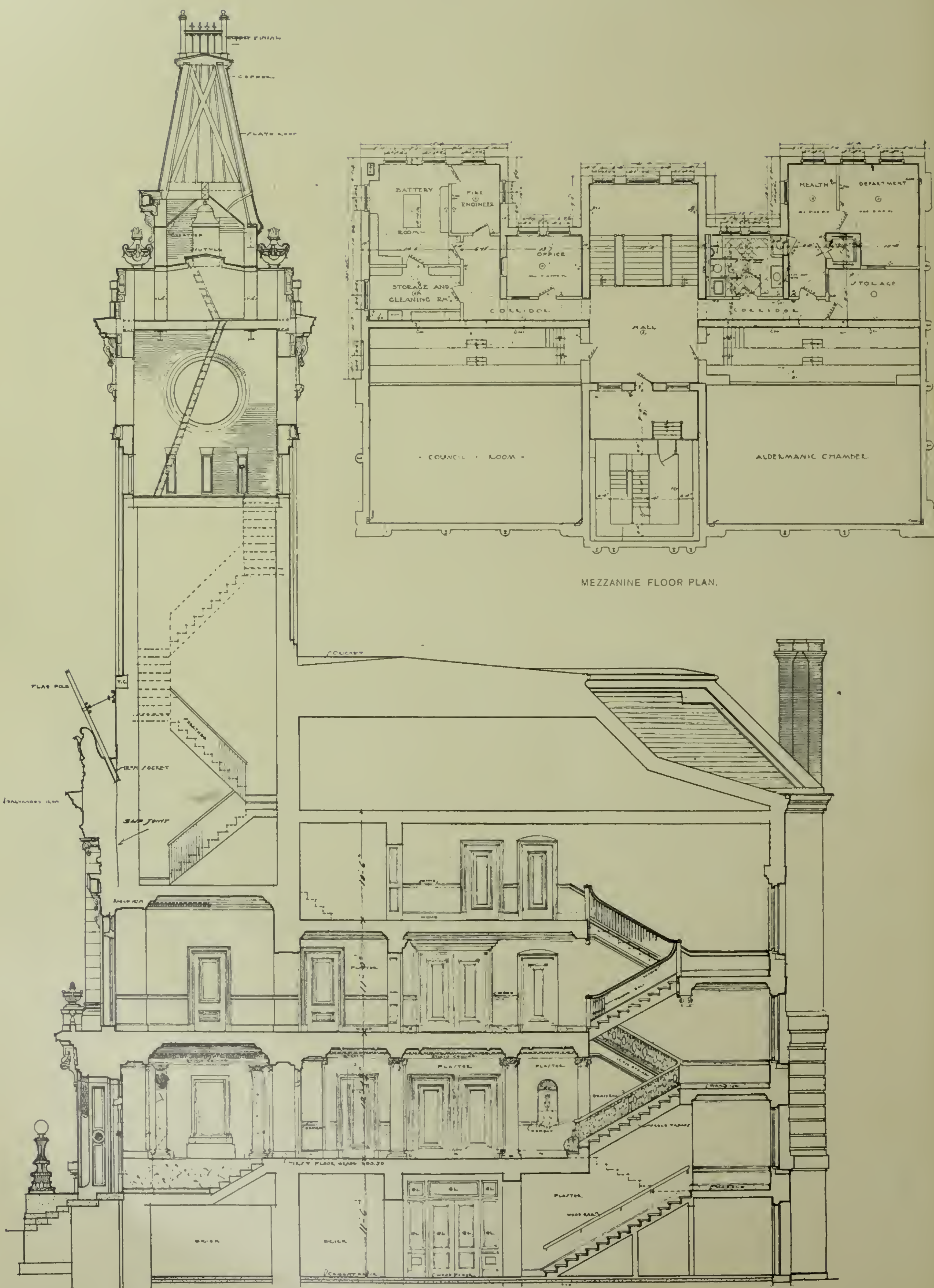
BEEZER BROTHERS, ARCHITECTS.


SECTION.
DELIVERY ROOM
TOWARD STREET.
CENTER LINE
CONCRETE
STACK ROOM
READING ROOM
DELIVERY ROOM
CHILDREN'S ROOM



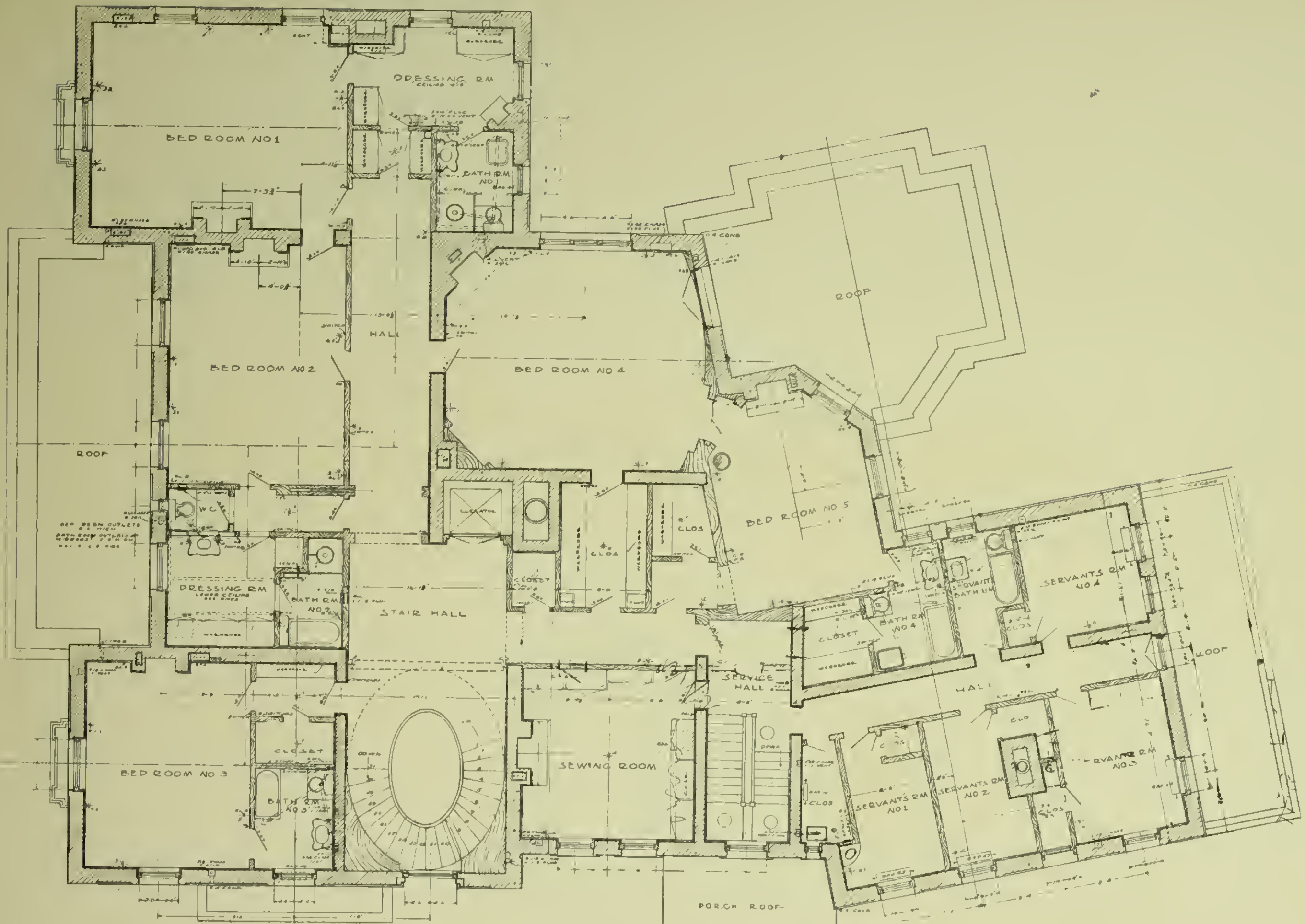
FRONT ELEVATION.

PUBLIC LIBRARY, MARLBORO, MASS. PEABODY & STEARNS, ARCHITECTS.

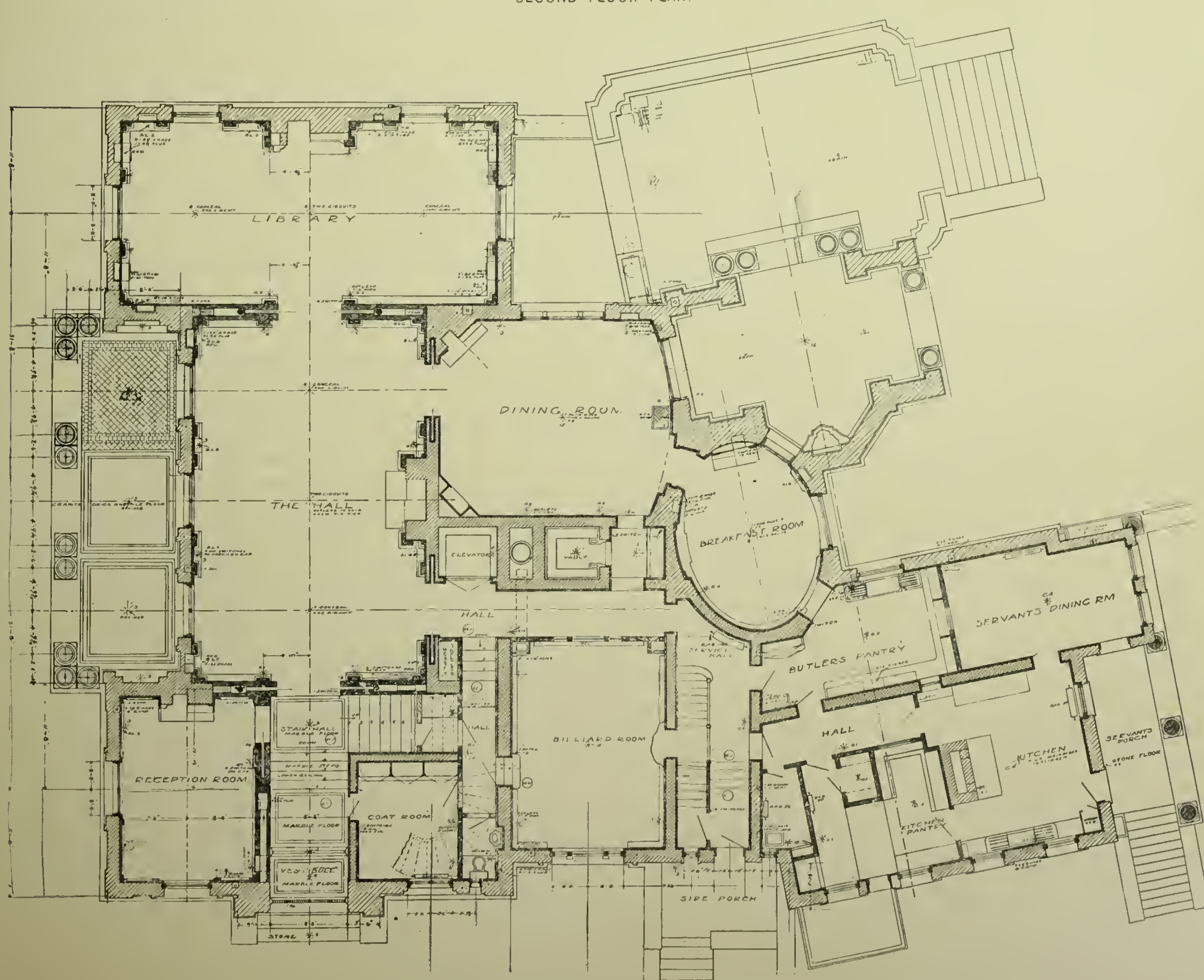


MEZZANINE FLOOR PLAN.

SECTION, CITY HALL, MARLBORO, MASS.



SECOND FLOOR PLAN.



FIRST FLOOR PLAN.

HOUSE AT BUFFALO, N. Y. GREEN & WICKS, ARCHITECTS.

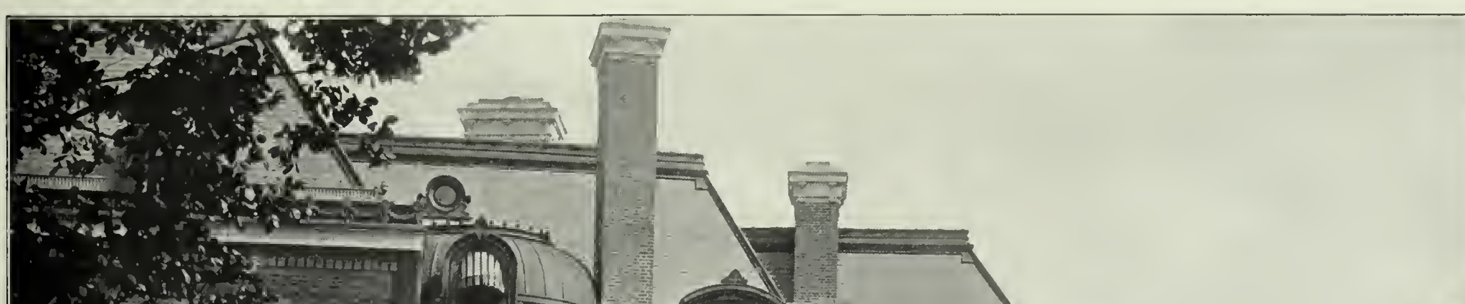
ST. JOHN THE BAPTISTE CHURCH, PITTSBURG, PA.
BEEZER BROS., ARCHITECTS.

ST. JOHN THE BAPTISTE CHURCH, PITTSBURG, PA.
BEEZER BROS., ARCHITECTS.

ORNITHOLOGICAL MUSEUM FOR JOHN E. THAYER, ESQ., SOUTH LANCASTER, MASS.
WINSLOW & BIGELOW ARCHITECTS.

PUBLIC LIBRARY, MARLBORO, MASS.
PEABODY & STEARNS, ARCHITECTS.

GARDEN FRONT.



DETAIL OF GARDEN FRONT.

HOUSE AT BUFFALO, N. Y.

GREEN & WICKS, ARCHITECTS.

THE BRICKBUILDER.

Vol. 13 NOVEMBER 1904 No. 11

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DOORWAY, BISHOP'S PALACE, SEVILLE, SPAIN.

THE BRICKBVILDER

VOL. 13 No. 11 DEVOTED · TO · THE · INTERESTS · OF ARCHITECTVRE · IN · MATERIALS · OF · CLAY NOVEMBER 1904

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Advertisements will be printed on cover pages only.

AS TO COMPETITIONS.

THE recent competition for the selection of an architect for the Carnegie Technical Schools has enlisted probably as large a proportion of the best talent of the profession of this country as any competition which has ever been held. It was partially a closed competition in that five architectural firms were specially invited and were paid for their services. It was wholly an open competition, however, in that practically any architect who could satisfy the directors of possessing a certain amount of experience was free to compete. The results are highly instructive and are an interesting commentary on a species of mental waste which seems to be considered a necessary concomitant of the present architectural practice. The competition was a scrupulously fair one, in fact ideal in many respects, and the choice is undoubtedly a wise one and tallies well with the well known and high artistic ability of the successful firm. But what shall we say of the unsuccessful architects? The directors made a deliberate choice of five architects, each of whom stands unquestionably near the head of the profession, and yet of these five only one received any recognition whatever in this competition, and he was placed second. Any one who knows the five named architects will admit at once that the work of each was undoubtedly of a high character and that any one of them would have been capable of designing and constructing a thoroughly satisfactory solution of the problem.

THIS competition simply serves to point the oft-repeated moral that a competition does not afford any measure of an architect's ability. We could name a dozen architects who have lost and won various competitions. In no case that we can recall has an architect ever done his best on a building which he won in competition, and we have seen repeated instances of architects of the highest standing being given a second or third position after younger men, untried, inexperienced, and whose subsequent work showed that they were not equal to the emergency.

IT is our belief, based upon the observation of all of the best conducted competitions for various sorts of buildings, that the most successful buildings are not conceived as the results of competitions, at least not in this country, and that to secure the most satisfactory results the personal equation must always be taken into account and the architect measured by the work he has done rather than by what his drawings may tell a committee. The architect should be free to study the problem rather than the committee. He should feel at liberty to do the thing just right and not merely try to win the job. The successful design in many competitions represents merely what happened to please the fancy of the committee, and only rarely does the successful architect have the time and the opportunity to deliberately abandon his premiated scheme and approach his problem with a thoroughly unbiased mind, seeking only for the very best solution.

TO our mind there is but one advantage in all these competitions. They stimulate the younger men, they keep the older ones keyed up to the highest pitch, and they prevent our national architecture from settling into ruts or growing commonplace. Considered in their influence upon the profession at large, they certainly do a great deal of good. From the impartial professional standpoint they are to be certainly encouraged, but from the standpoint of the committee, the trustees or the individuals who are looking for the best architectural results for their own needs, we have always felt, and this competition simply accentuates this feeling, that better results are accomplished by making a wise selection of an architect, and setting him to deliberately study the problem.

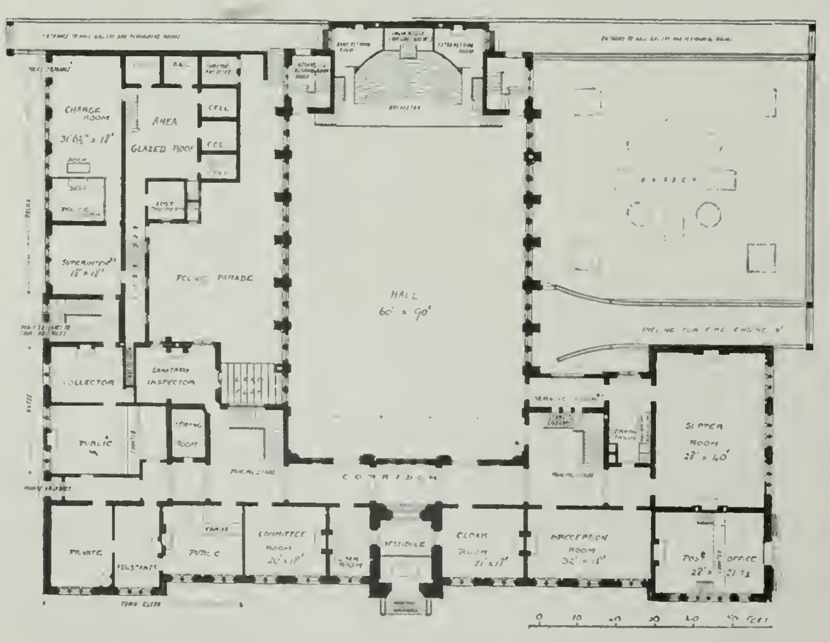
Town Halls in England. II.

(*Continued from page 207.*)

IT was shown in the first article that by the commencement of the nineteenth century the term "town hall" had acquired a very much wider meaning than a simple building used for meetings and other common purposes of the town. Municipal government was continually extending, and a number of additional rooms had to be provided for the corporation staff and officials. New town halls were being erected all over the country to meet the growing needs, and at the time of the Gothic revival such buildings felt the full force of this most noteworthy movement. Great towers and gaunt pointed roofs offered the Gothicist fresh scope for his fancy. In several cases the effect was undoubtedly successful, but in the small towns, where funds were strictly limited, some of the most atrocious town halls were perpetrated by dull architects with the Gothic fever upon them, — ill-proportioned medleys spread over with lumpy carvings. There were exceptions, however, though I cannot recall any in brick which merit attention. But as a representative building of a rather later period there is Hove Town Hall, by Alfred Waterhouse. This belongs to the eighties, and is the work of an architect who has produced many notable designs, among them Manchester Town Hall, with its splendid plan, though I must pass that by because the building is not of brick. At Hove one sees the type of design which Mr. Waterhouse has followed to the end. The tower is certainly the most successful portion of the building. And thereby hangs much, for it seems strange that the town hall proper should be obscured by an erection having no better claim to utility than holding clock faces at a height of sixty feet or so. The question is one often raised in connection with municipal buildings. To follow out the purists logically one would have to suggest pots and frying pans on the outside of a kitchen, so that the passer-by could have no doubt about what it was used for. Contentions of that sort, however, are mere folly. But there is something in the argument that the council chamber, being quite the most important apartment in a block of municipal buildings, should be made a feature where it is possible to do so consistent with good planning. At Hove the architect has put a screen of public and private rooms in front of the public hall and hemmed in the latter with the police department on one side and partly on the other side with a good-sized wing. In the former attention is drawn to the economically arranged parade, while in the wing on the other side of the building it will be noticed a post office has been provided.

HOVE TOWN HALL. Alfred Waterhouse, Architect.

About the same time as Hove Town Hall was built — 1880 — the extensive municipal buildings at Leicester, F. J. Hames, architect, were being completed. Here there is no town hall, but accommodation for the courts, the council, the school board, the fire brigade, the police and the corporation officials. The police department is in the basement, where there are twenty-three cells and a muster room 56 feet by 32 feet, besides the other usual rooms. Coming to ground-floor level, we find a crown or borough court 36 feet by 58 feet and a *Nisi Prius* court on either side of a large hall used by public and police, the remainder of this floor being devoted to rooms for the magistrates, judges, jury, barristers and witnesses, and to offices for the borough accountant, borough surveyor, inspector of nuisances, etc., including a convenient room for the payment of workmen and others. The council chamber is on the first floor and is by far the best room



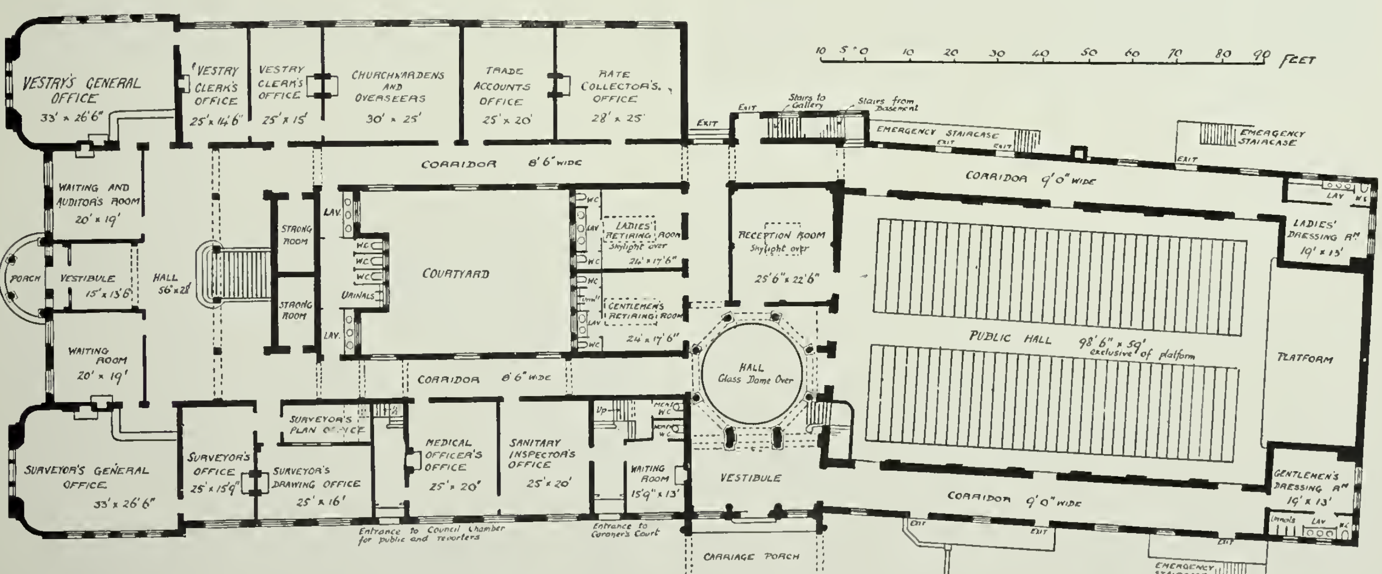
GROUND FLOOR PLAN, HOVE TOWN HALL.

BATTERSEA TOWN HALL. E. H. Mountford, Architect.

in the building. It measures 56 feet by 32 feet and has a fine plaster ceiling and a massive walnut mantelpiece enclosing a roomy fireplace. Accommodation for the mayor, town clerk, grand jury, school board and committees is also provided on the first floor and a large clubroom on the floor above. The building is of brick with stone dressings, and the clock tower is 145 feet high, the dials being 22 feet in circumference. The design is in the so-called Queen Anne style and shows that the Gothic flame was feeble enough by this time, having been succeeded by Renaissance motives. The total cost, including furniture, was $255,000. While referring to this building it is worth noting the opinions of some of the judges who visited it. Mr. Justice Field said it was one of the most pleasing of municipal buildings in England; Baron Huddleston said that throughout the Kingdom he had not met with a court more commodious and suitable; Mr. Justice Stephen said the court was superior in convenience and purity to any in London; and Mr. Justice Mathew and others have been equally appreciative.

A town hall of quite different character is that at Marlborough. The needs of this small town in Wiltshire are of course very different to those of Leicester, with its population of three hundred and seventy-five thousand, so that no comparison between them is possible. Here it will be seen that the main space on the ground floor is taken up by the court and on the first floor by the assembly room, or town hall proper, which is 76 feet by 34 feet by 32 feet high in the center, the walls being paneled in oak to a height of 8 feet. The council chamber is quite a subsidiary feature, as one would expect in the circumstances. In addition to the accommodation shown by the accompanying plans there are twelve cells for prisoners in the basement (with direct access to the dock of the court) as well as lobbies for warders, lavatory accommodation and a muniment room. It was built in 1901, the architect being C. E. Ponting.

Another interesting provincial town hall is the county council building at Stafford. The design is by Henry T. Hare — a well-known English town hall architect — and was placed first in competition in 1892. The council chamber and committee rooms are on the first floor and the offices below. The chief difficulty in the plan was that, owing to the main entrance being at the end of a long narrow site, it was apparently a necessity that there should be a long corridor for access to the first-floor rooms. This difficulty the architect overcame by arranging the entrance hall and staircase at right angles to the end, so that the head of the staircase leads to a central top-lighted anteroom with which the council chamber and committee rooms communicate; thus only a very short length of corridor was needed. The council



GROUND PLAN, BATTERSEA TOWN HALL.

chamber is about 39 feet square, the seating being arranged in tiers to a circular sweep and the two gangways kept as far as possible to the sides in order that the division of the council into parties should be a practical impossibility. The departments on the ground floor are so placed that the inquiry office of each is entered from the hall. By this arrangement the public does not use the corridors, which are screened from the hall, and in this way are kept private to the officials. The cost was about $100,000.

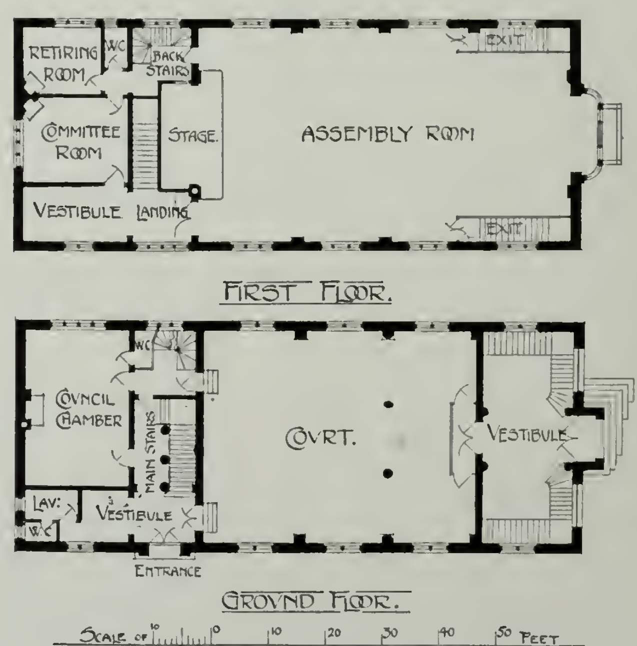
MARLBOROUGH TOWN HALL. C. E. Ponting, Architect.

Another brick town hall by Mr. Hare is that at Henley-on-Thames. This is a very refined piece of work. The building occupies an open site, and its planning will be seen to be admirably square. The illustrations show that there is a drill hall in the basement, the council chamber being on the ground floor and the public hall on the first floor. In the section will be noticed the large air duct leading from the ceiling of the hall to the turret on the roof.

At Surbiton, farther down the Thames, the new municipal buildings by Forsyth & Maule offer quite another type of plan. This is also the outcome of a competition, held in 1898, and as $25,000 was the limit of cost allowed by the conditions it became necessary to economize space and to simplify details as much as possible compatibly with giving all the accommodation required. The various offices are placed on the ground floor, the council chamber occupying a central position on the first floor, with committee rooms, waiting room, etc., adjoining, while on the second floor are the caretaker's apartments. The plans are very compactly arranged, and the elevations dignified in so far as the conditions allowed them to be.

In London there are necessarily a score of town halls or "vestry halls," several of which are in brick. Finsbury Town Hall can be cited as an example. At Battersea there are the parochial offices by Mr. Mountford. The entrance hall is 54 feet by 30 feet, with offices for vestry, board of churchwardens and overseers grouped around. The council chamber, measuring 54 feet by 35 feet, is on the first floor, with a committee room at each end. At the rear is a public hall 117 feet by 55 feet 6 inches, accommodating twelve hundred persons, with a smaller hall beneath. The cost was $130,000. Mr. Mountford is one of the best known architects of town halls, and his huge new Sessions House is now being erected on the site of Newgate Prison in London. Among his numerous designs is that of Sheffield Town Hall.

While referring to Sheffield I may give the following remarks by Mr. Hare on the remarkable plan for this building submitted in competition by Flockton & Gibbs: "The principle adopted was that of a central hall with the public office of each department opening directly from it, and surrounded by the private offices of the several officials. This arrangement is undoubtedly ideal, but to adopt it strictly would usually involve increasing the number of stories to an undesirable extent, as was the case in the design in question. The principle, however, is undoubtedly the right one, and in planning public offices should, I think, always be borne in mind." The chief features of the plan of Battersea Parochial Offices are: the good approaches to all parts of the building, especially to the public hall, which has numerous emergency exits opening directly into the air; the corridors, wide and well lighted from the central court, while the principal staircase and the entrance to the public hall are lighted from above; the compactness and convenient arrangement of the various offices for parish purposes; the prominent position assigned to the council chamber (on the first floor) and the accompanying committee rooms and members' library; the means of completely disconnecting the public hall and its accessories from the other parts of the building, when let for bazaars, etc.; and the excellent lighting of every corner of the building.



MARLBOROUGH TOWN HALL.

At Colchester one of the most recent town halls has been erected from the designs of John Belcher, selected by Norman Shaw in open competition. The new buildings comprise ninety rooms, among them a large moot hall on the ground floor.

At High Wycombe, a town of about eleven thousand inhabitants, in Buckinghamshire, the new town hall designed by C. E. Bateman and M. A. Hale has just been completed. This design was also selected in competition last year. The town hall is only part of a scheme for municipal offices, with council chamber, magistrate's court, etc., as shown by the accompanying plan. This building, which has cost about $60,000, is an interesting example of the kind of town hall now being erected in England following on Renaissance types.

In this treatment of the town halls of England enough has been given to show the general arrangements adopted to meet the requirements of small and large towns, as well as county, vestry and parochial authorities.

HENLEY TOWN HALL. Henry T. Hare, Architect.

REGULATIONS FOR THE USE OF CONCRETE IN GERMANY.

SOME regulations for the use of concrete in connection with elevated constructions have just been issued by the German Department of Public Work, and constitute some very important modifications of present practice. In the following some of the main points are recorded:

Before any concrete construction is commenced, any drawings, statistical calculations and specifications showing the total arrangement and any important particulars must be presented to the building police, the origin, condition and ratio of mixture of the material used as concrete being stated in full. In preparing concrete there shall be used only sharp sand, gravel or any addition of proper grain size.

Official testing officers will have to take care of the examination of the material, in case of necessity.

The concrete must be prepared only in such amounts as necessary for its immediate use, being introduced immediately after being mixed, and stamped uniformly until some water pours out from the surface. The individual layers of concrete shall not be more than fifteen centimeters in thickness, each being stamped properly and separately. Any continuous walls should be commenced throughout their length, their height being maintained constant throughout and a satisfactory connection with any transversal walls being effected.

All lining must offer sufficient resistance against any deflections as well as against any shocks in stamping, being so arranged as to be withdrawn without danger, and necessary supports being left.

In the case of a new layer having to be applied to fresh concrete layers, it suffices to moisten thoroughly the whole surface, while in

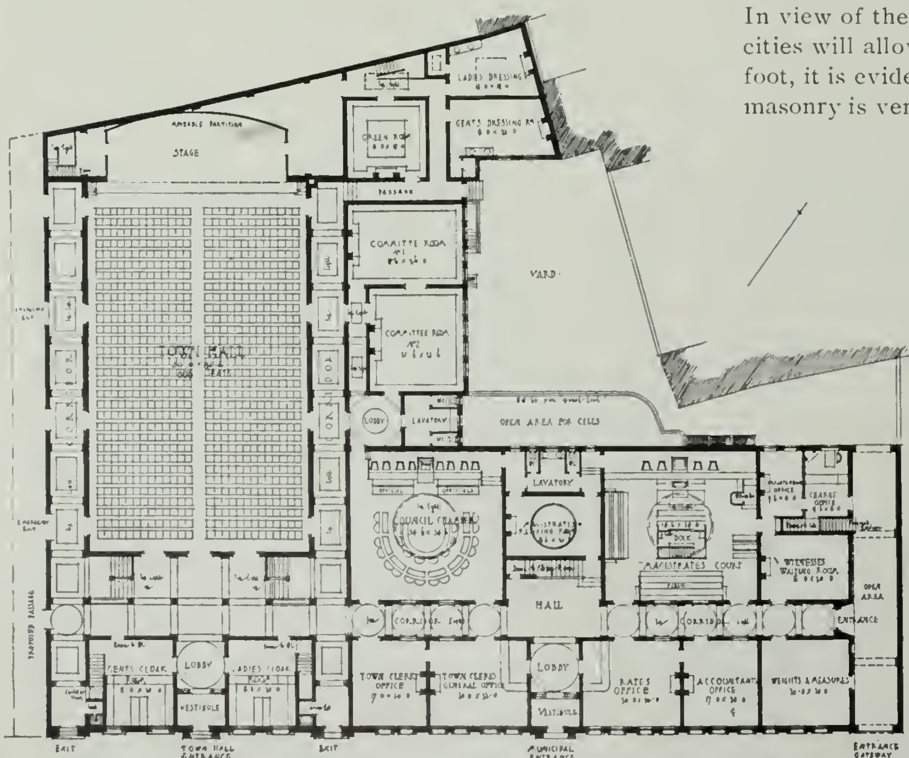
PLANS AND SECTION, HENLEY TOWN HALL.

HIGH WYCOMBE TOWN HALL. Bateman & Hale, Architects.

the case of the previous layer being hardened the old surface must be roughened and well cleaned.

In the case of buildings having several stories, no story shall be commenced before the one immediately below has been examined by the police. No work shall be done in case of frost, unless any noxious effect be excluded.

Before the concrete is hardened sufficiently any parts of the building should be protected against the effects of frost and against any premature drying, and be prevented against any shocks and loads. In the case of frosty weather occurring during the hardening period, these intervals should be lengthened by the duration of the latter. Regular diaries should be kept, recording the hours and degrees of cold of any frosty days.



GROUND PLAN, HIGH WYCOMBE TOWN HALL.

THE STRENGTH OF BRICK PIERS.

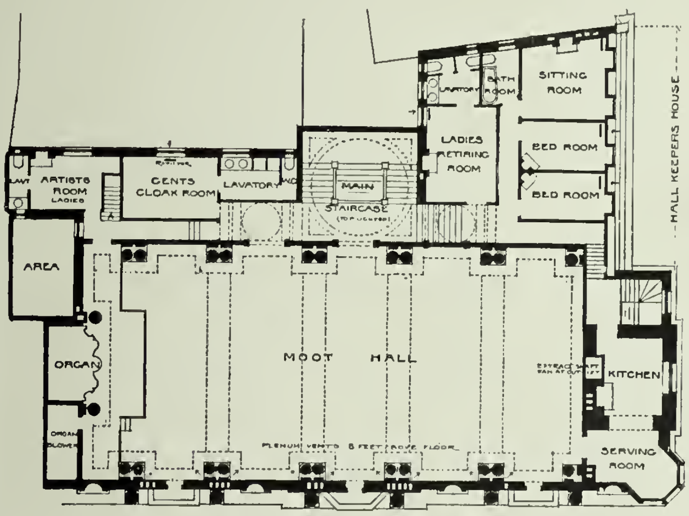
WE had occasion some time since to visit the laboratory of one of the foremost testing engineers in the country, a man who has had more experience than any other individual in investigating the strength of the various building materials. This engineer was at the time of our visit engaged in making some tests of the crushing resistance of brick piers, a subject which has occupied his attention for many years. We asked him, in the light of his experience, what would be the maximum safe load which he would feel justified in an extreme case in imposing upon a brick pier, and his reply was that if the brick were of best quality hard burned common brick, laid up in mortar composed of equal parts of Portland cement and sand, he would consider seventy-five tons

FINSBURY TOWN HALL.

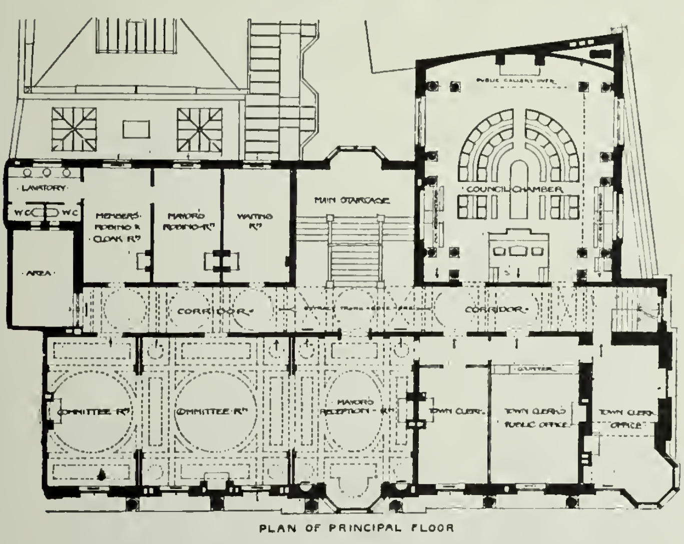
per square foot, evenly distributed, a perfectly safe load. In view of the fact that the building laws of none of our cities will allow a greater unit stress than fifteen tons per foot, it is evident that the ultimate strength of first-class masonry is very much undervalued.

THE SKY-SCRAPER PROBLEM.

PRUSSIAN business men and manufacturers are agitating for a relaxation of the building regulations of the most paternal of governments, so that they shall no longer be restricted to structures of moderate height. In Berlin no buildings may exceed 74 feet in vertical elevation, and in this movement for "sky-scrapers" the argument is advanced that modern methods of steel construction insure stability and safety to life, and that, therefore, the 74-foot limit is no longer necessary. The Prussian Ministers of Public Works, Interior and Commerce, who considered the petition, were unmoved by the reference to American experience in the matter of tall buildings, and have for the time being blocked the efforts of those who sought a change. While it is much too late for the exercise of any such spirit of conservatism in American municipalities, where in most cases the mischief is already beyond repair, there is ample room for future reforms. The engineering problems as to the height to which buildings can be carried with due regard to stability of construction, fire risk and the safety of the people quartered in them may be left to the architects, insurance experts and fire-fighters. It is not merely a question of feet and inches, but of civic art; not so much that the limit shall be 74 feet, or 125 feet as in Boston, or 250 feet as in the case of some sky-scrapers;



PLAN OF HALL FLOOR



PLAN OF PRINCIPAL FLOOR

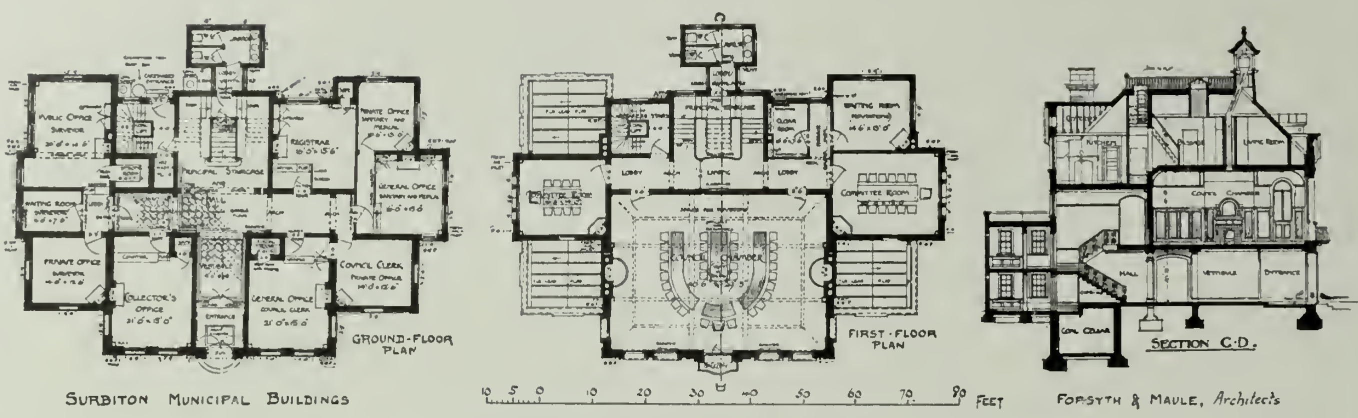
PLANS, COLCHESTER TOWN HALL.

it concerns the proportion which all buildings shall bear to the width of the streets on which they are placed. American cities are already too familiar with instances of structures of faultless design and beautiful proportion dwarfed into insignificance by some towering commercial building, which has nothing to commend it but its impressive height. And the grouping of such structures side by side on narrow streets, entirely regardless of their relation to each other or to the points from which they are viewed, is another evil which has unhappily come to be regarded as a matter of necessity.

COLCHESTER TOWN HALL. John Belcher, Architect.

There is little prospect or hope that American cities for many years to come will consent to the restrictions in architectural design and size which have made Paris so noteworthy, but Philadelphia has a peculiar opportunity in its various boulevard projects to take a step in the right direction. The millions to be expended for the condemnation of land, the opening of broad avenues and the planting of trees will be worse than wasted if no control is exercised over the style and class of buildings

SURBITON MUNICIPAL OFFICES. Forsyth & Maule, Architects.



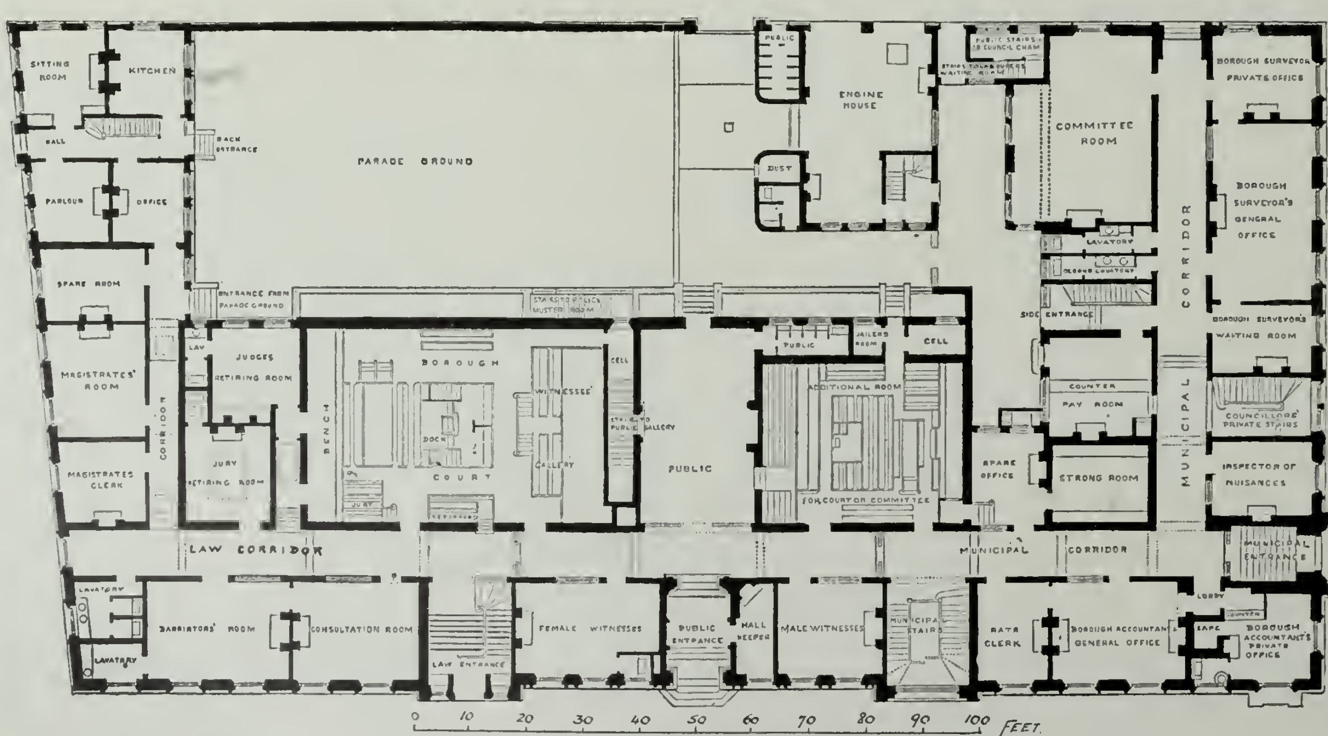
PLANS, SURBITON MUNICIPAL OFFICES.

which are to be erected. It will be no easy task to control by statute or municipal ordinance, especially where legislation owes its origin to interested grafters, but certain broad principles and proportions can be laid down to the great benefit of the city, the boulevards and the property owners. Such a plan, with the advice of skilled artists and architects, would lend dignity and beauty to what may very easily become something wholly different.—*Philadelphia Public Ledger.*

LEICESTER MUNICIPAL BUILDINGS. F. J. Hames, Architect.

HOUSES FOR THE POOR IN GERMANY.

THERE are in Germany five hundred societies formed for the purpose of constructing houses for the poor. In the past years numerous associations of employees have been formed, the one in Berlin, for example, numbering eighty-four hundred members, and having five hundred and thirty-one houses constructed and four hundred and eighteen in course of construction. Societies are also being formed for the purpose of erecting



GROUND PLAN, LEICESTER MUNICIPAL BUILDINGS.

colony houses, among which the most important is the one at Neidenburg in Prussia. The insurance companies to a large extent provide the funds for the building operations. Various communities have constructed houses either for workmen in general or for the employees of the city, but this plan does not seem to have been sufficiently developed or to be reconcilable with individual initiative. Many night asylums for the poor have been erected by various cities. Frankfort-on-the-Main is building a home for widows and orphans, and many cities are planning for the erection of habitations in common. In many cases the land on which the homes are built is public property, the surface rights having been ceded to the building associations. Such a use is made of certain crown lands of Prussia by the Berlin union of employees and of imperial lands at Wilhelmshaven, where a garden city has been erected. The municipalities of Charlottenburg and Frankfort have granted similar privileges. The amount of public land available for this purpose has been increased in many cities, by the levying of a direct tax, the proceeds of which are to be devoted to the purchase of land. In some places a tax has been levied on the unearned increment.

Photo by G. Fleetwing.

STAFFORD COUNTY COUNCIL BUILDINGS.
Henry T. Hare, Architect.

FIRE RISKS IN THE NEW YORK SUBWAY.

THE "impossibility" of fire occurring in the New York City subway is apparently taken for granted. It seems a mistake that such an idea should have been allowed to be entertained, and that it should have been practically indorsed by those municipal officers under whose purview comes the responsibility for seeing to the fire protection of the city. It must never be forgotten that it is always the unexpected that happens, and that where there is so much electrical work and an exposed third rail, to say nothing of cars in which the seats are of inflammable material, instead of being of steel, the possibilities of fire are always present. It is not given to human nature to be infallible, much less can it be expected that automatic machinery, even of apparently the most perfect sort, will not occasionally go wrong, or that some official, even the most skillful and conscientious, will not be caught napping. All that can be said with regard to the chances of danger from fire is that they are so remote as to enable the public to use the subway in full confidence that everything that can be done to avoid such a disaster as that which horrified Paris some time ago has been done by the management of the road. To state dogmatically that there is no danger of fire to travelers on the subway is to engender a spirit of carelessness among officials of all ranks which may be productive of a bad accident at a point apparently the least exposed to any such peril. — *Fire and Water Engineering.*

GROUND AND FIRST FLOOR PLANS, STAFFORD COUNTY COUNCIL BUILDINGS.

It is not generally known that an underground tunnel extending some fifteen miles under the principal streets has just been completed in Chicago. Its principal use will be for conveying freight from the railroad and steamboat lines to the wholesale and manufacturing establishments of the city.

The "Village Block" Series.

ARTICLE I.

BY WILLIAM T. PARTRIDGE.

IT is unfortunate that a square, which all can so readily appreciate as a valuable adjunct to a village, is so often lacking. This doubtless arises from the fact that settlements are seldom laid out; they have no intelligent parent, but are rather the progeny of fortuitous circumstances. A few houses are grouped together at some crossroads, and in this country of mushroom-like growth, and almost before the settlers realize the fact, they have a prosperous village to which are delegated powers of government. If there happens to be a square in the community, well and good; but if there is none the chances are that there never will be, for with the growth of the village, real estate appreciates in value and people are unwilling to pay large amounts of money for a mere open apace.

To have an ideal arrangement for such a model town as THE BRICKBUILDER is creating, it is imperative that we begin right. The writer has in mind several country towns where this ideal might be realized at a minimum of cost. So many towns of Europe owe their charm to this one factor that it would seem the importance of them is too obvious to escape the attention of the most superficial observer.

In the creation of this town we are dealing with ideal conditions. It is situated on level land in an opening among the hills of eastern New York; peacefully it sleeps there, just as we can imagine many similar villages slept when Irving's eloquent pen was writing of them; away in the distance looms the Catskills, and from some heights in the western part of the town can be seen the placid Hudson creeping toward the sea.

Not more than a score of years ago a great railroad system saw the commercial possibilities of the place and reached out an arm thitherward that had the power of a magic wand. People and money began to pour in to such an extent that within the next decade the place had grown from a few hundred souls to nearly four thousand. Instead of the dreamy place it had been, Brickbuilderville assumed the bustling appearance of a thrifty manufacturing town. With the increased population many new elements were introduced which had a potential influence in the beautifying process which began almost from their advent. First a village improvement society was formed, which most of the public-spirited men joined. With their efforts and personal contributions, together with money disbursed from the public treasury, waysides were cleared up, gutters filled in, and the unkempt common was graded, fenced, planted with trees and made attractive.

The work of these improvement societies in many of the states throughout the country is one of the happiest auspices of the times, and one which augurs well for the future of good architecture. If our highways and byways are planted and cared for with taste they cannot but improve our architecture; for one branch of art cannot be improved without benefiting kindred arts, and it is probably true that the masses of the people can better appreciate good landscape architecture before they can that of buildings.

The square had not been improved long before many of the citizens turned their attention to the buildings bordering upon it. The proprietor of the brick plant purchased an old tumble-down shack and replaced it by a dignified brick house. The innkeeper followed suit by erecting a sumptuous tavern after designs by a New York architect. After private enterprise had led the way a new town hall and courthouse were built, in response to a demand by the public, that rivaled in splendor the inn and the private houses; for it seemed to the citizens that public buildings ought not to be overshadowed by private ones.

At last a business man has conceived the idea that a good substantial brick block, with six stores on the first floor and living apartments above, can be made to pay a good rate of interest on the investment. Our client is one who has no appreciation of art for art's sake; for every dollar he puts into an enterprise he wants to take out two. We find out, however, that he does not want cheap work or a cheap design, and he allows us great latitude in the planning, choice of architectural style and materials.

Upon casually glancing down the rows of buildings along the east or west sides of the square I note the harmony of color observed by the builders; also that the buildings are set well back from the street and each about the same distance from the sidewalk; but that which pleases me more than anything else is the harmony in the architecture. Each architect employed has studied his setting, sacrificed his hobbies and lost himself that architecture might live.

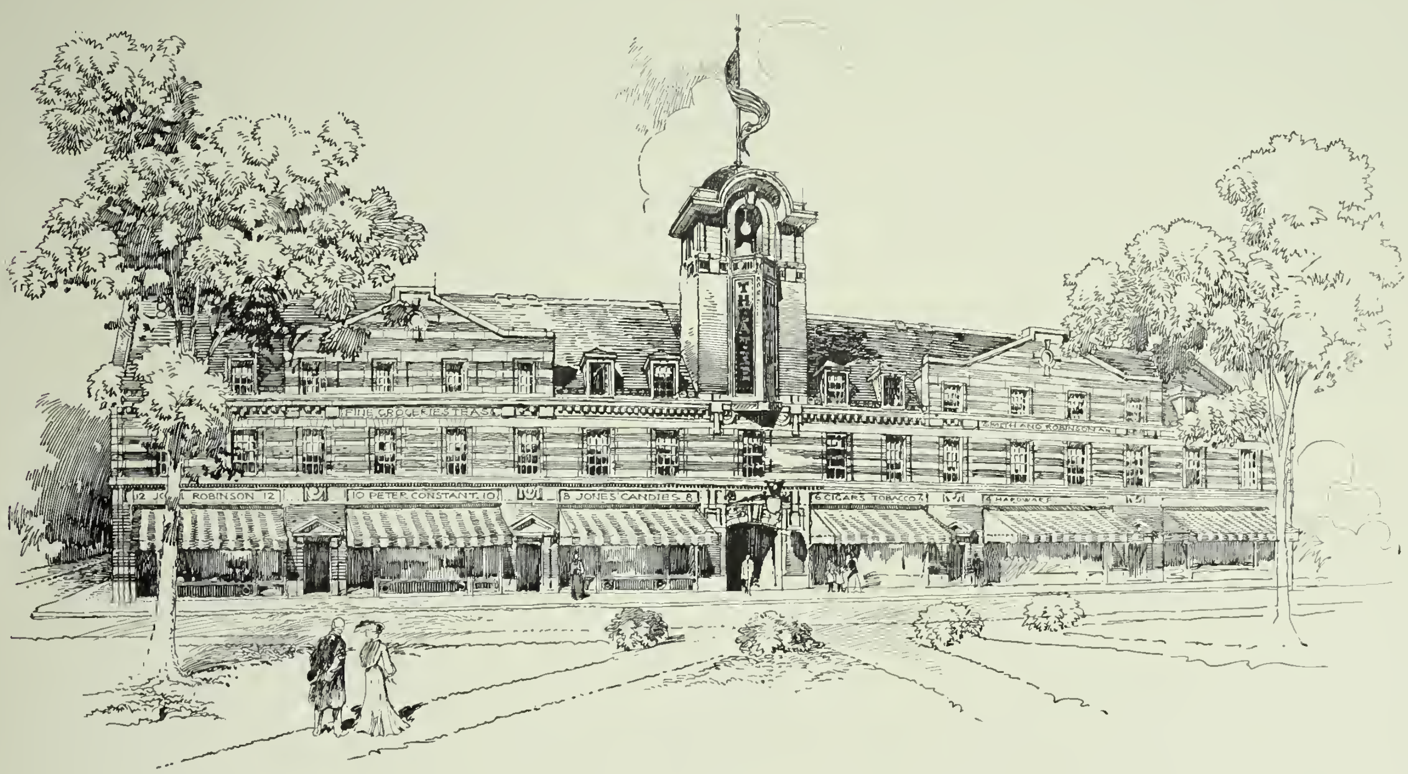
The problem suggested is so practicable that the author has ventured to submit some real preliminary sketches which were made for a similar problem, the exceptions being that the conditions in the actual case called for a small hall or theater in the rear of the stores. The tower that the theater really called for to distinguish this building from a mere commercial building gave me an opportunity to break up the monotony of a long straight roof.

The principal consideration in the planning of the stores was easy communication between the dining or living room and the store, so as to insure control of the store entrance during mealtimes, for, as often happens in small towns, the store is left practically to take care of itself during the midday hour.

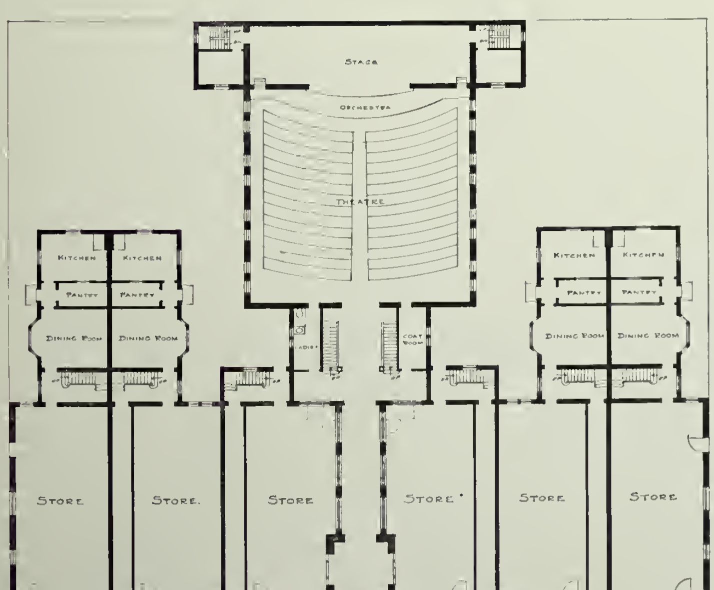
The theater has accommodation for about three hundred and fifty people. The main entrance is through the glazed arcade, so arranged that the two stores on either side can be subdivided into booths if desired. This arcade gives us an opportunity to gratify our artistic abilities in the use of enameled brick and faience. As the entire property is owned by one party, there is no difficulty in providing ample emergency exits at any point.

The elevation is designed to be as simple in character as possible, and an attempt has been made to bring into harmony the necessary signs, electric lights, awnings, etc.; for when left to the individual taste of the average storekeeper or theatrical manager the result is disastrous to the architectural effect.

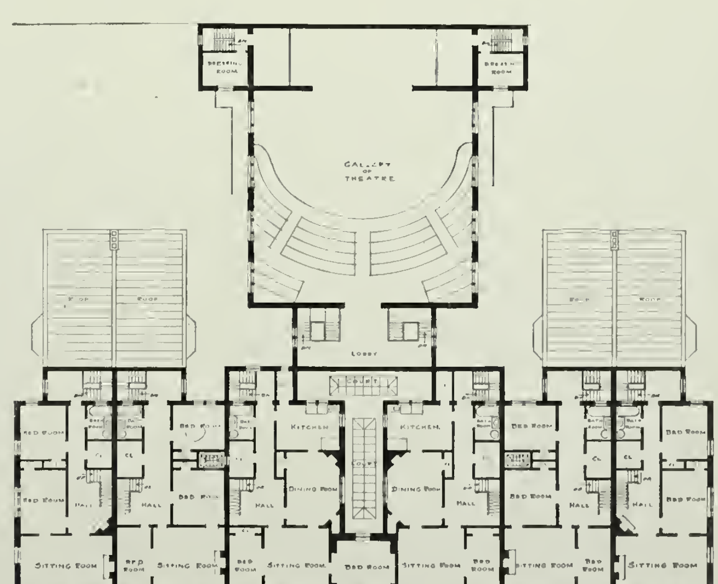
The materials used are brick and terra-cotta with a certain amount of stone at grade. Tiles of a light red color are used on the roof.



A VILLAGE BLOCK.
COMPRISING SHOPS, SHOPKEEPERS' LIVING APARTMENTS AND A THEATER.
WILLIAM T. PARTRIDGE, ARCHITECT.



FIRST FLOOR PLAN.



SECOND FLOOR PLAN.

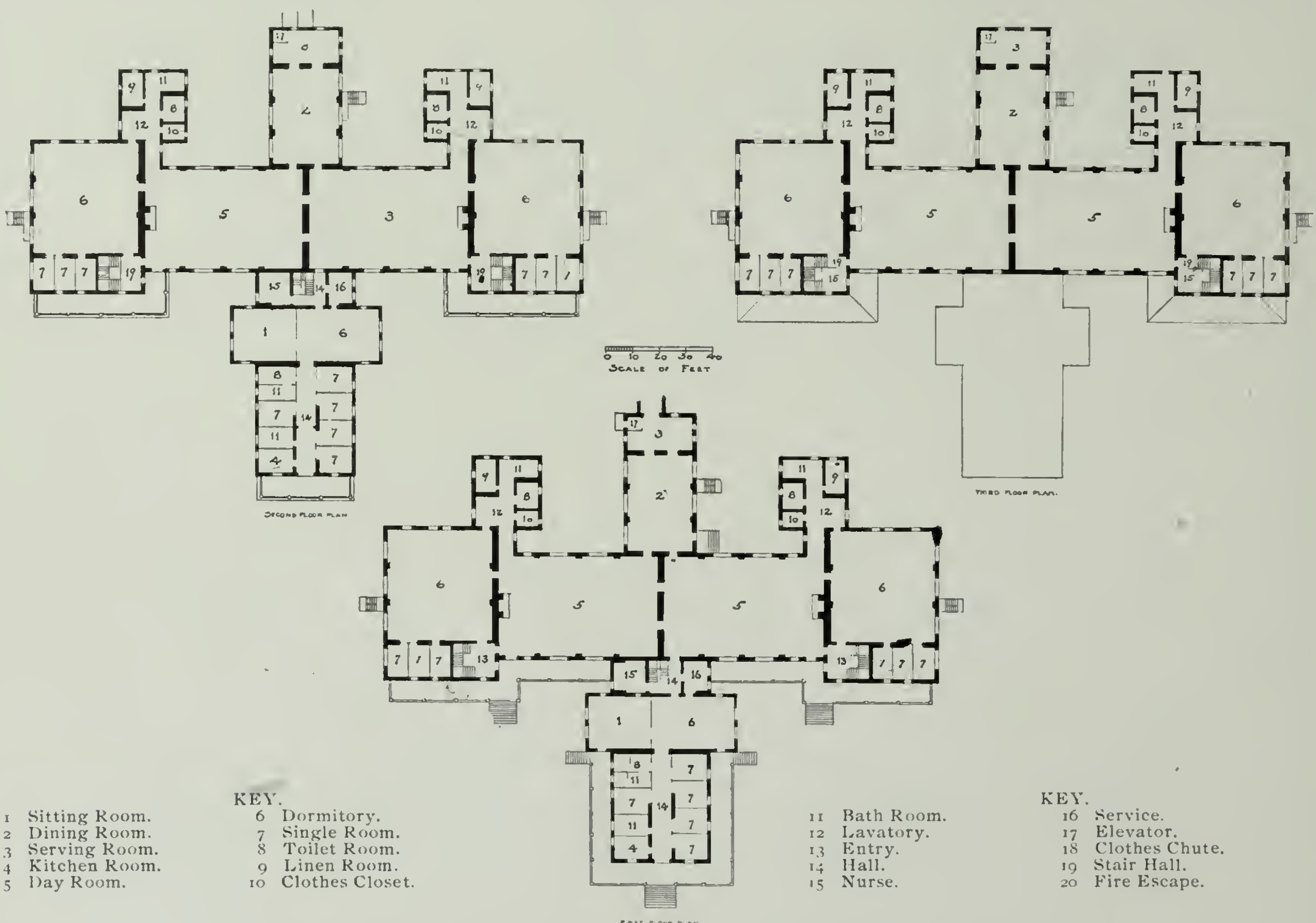
The New State Hospital for Insane, Rochester, N. Y.

BY C. A. SUSSDORFF.

A HOSPITAL for the insane presents many features in plan and scope which are not common to those of other buildings of its class. It must provide not only for patients who are ill both physically and mentally, but for those also whose physical condition permits them to be about, and who have to be constantly employed in some form of diverting work. Most of the insane hospitals are, in fact, small cities containing types of many of the buildings and the equipment which go to make up the ordinary community. So far as advisable the patients are kept employed in various industries, in addition to the general work of the institution.

Before the New York State Care act went into effect the insane were confined in almshouses or county hospitals under the direction of the local supervisors. The care of the insane is now a function of the State Commission in Lunacy, which has already corrected many of the evils which formerly existed.

The designing and construction of all new buildings were intrusted to the state architect some ten years ago, and since that time the architect, commissioners and superintendents of hospitals have labored in harmony, striving to bring about as nearly ideal results as the appropriation would permit. While the yearly expenditures have been large in the aggregate, the requirements of new structures have been so imperative that nothing but the simplest buildings have been possible, and frequently these have had to be considerably overcrowded, as more patients are annually received than are discharged. The original allowance of five hundred dollars per patient for the cost of buildings, including heating, lighting, plumbing and ventilation, was, a few years since, cut to four hundred and fifty dollars. This has necessitated the most rigid architectural economy. The buildings are constructed of common brick laid up in colored mortar, and in a simple way some very satisfactory results have been obtained. The money at command has never permitted of fireproof construction, and only in later years has mill construction been used to give some slight protection against fire.



PLANS, INFIRMARY BUILDING, STATE HOSPITAL FOR THE INSANE, ROCHESTER, N. Y.

The following is a description of the Rochester State Hospital, the last group of hospital buildings designed and erected under the supervision of George L. Heins, the present state architect. This hospital was designed to accommodate about eight hundred patients, and is an addition to the present hospital, which already accommodates about an equal number. It is one of several groups which it is proposed to erect at various localities and will be ready for occupancy the early part of the coming year.

The group consists of a reception building, an infirmary, ward for chronic cases, and a central kitchen joined together by connecting corridors, with power house detached at one side.

Reception Building. The central pavilion is used for administrative purposes and includes an office, library, clerks' room, toilet, and reception room. Visitors present themselves at the office for identification or for consultation, and patients are seen either in the reception room, or in case of disturbed condition a patient may be visited in the ward. Directly behind the offices are the dining rooms, serving rooms and toilets, with a kitchen which can be used as a special diet kitchen, the stronger patients being served from the central kitchen.

On one side of the administration portion is the therapeutic section, devoted entirely to hydrotherapy, including dressing rooms, rooms for special apparatus, rest rooms, hot rooms, toilet room, clothes closet and clothes chute. On the opposite side of the administration portion is the operating section, provided with a drug room, diagnosis, anæsthetic, recovery and operating rooms, the latter receiving ample light by large side windows and skylight. Each of the side sections has a solarium accessible from either wing.

There are four wings for the treatment of mania, melancholia and disturbed cases. They are all within easy access of the administration portion and immediate assistance can be given in case of an emergency, as it is of vital importance that the new cases be within easy reach of the physicians at all times. Of a necessity the disturbed cases are isolated as much as possible, and they are completely shut from the other wings by the stair hall.

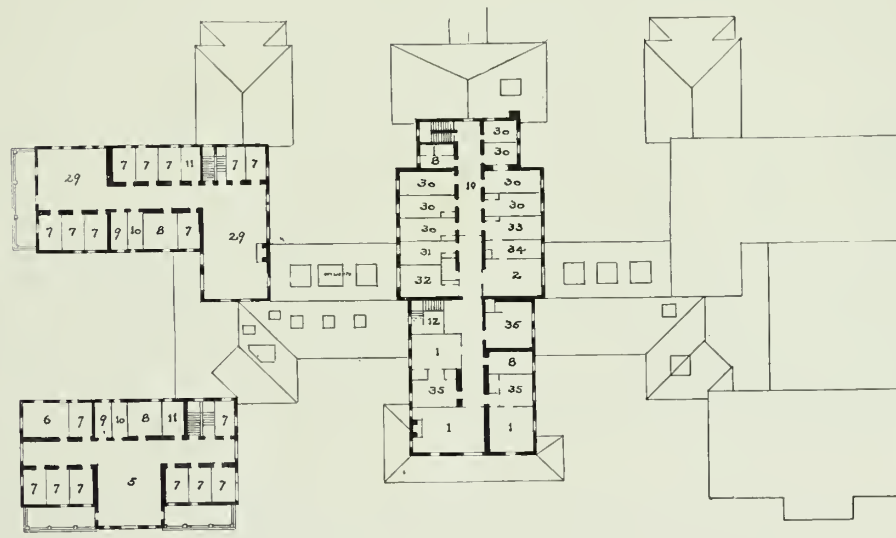
The wing for melancholia cases is arranged with a day room, dormitory and four single rooms, together with bath, toilet, clothes and utility rooms, and an office for a physician. An exercise room gives the patients ample room to move about in and may be used by either the melancholia or mania patients. This class of patients can well be taken care of in day rooms and dormitories, the single rooms being reserved for the more serious cases.

The cases of mania require individual rooms and no dormitory, provision being made for nine single rooms, a day room, toilet, bath, clothes and utility room.

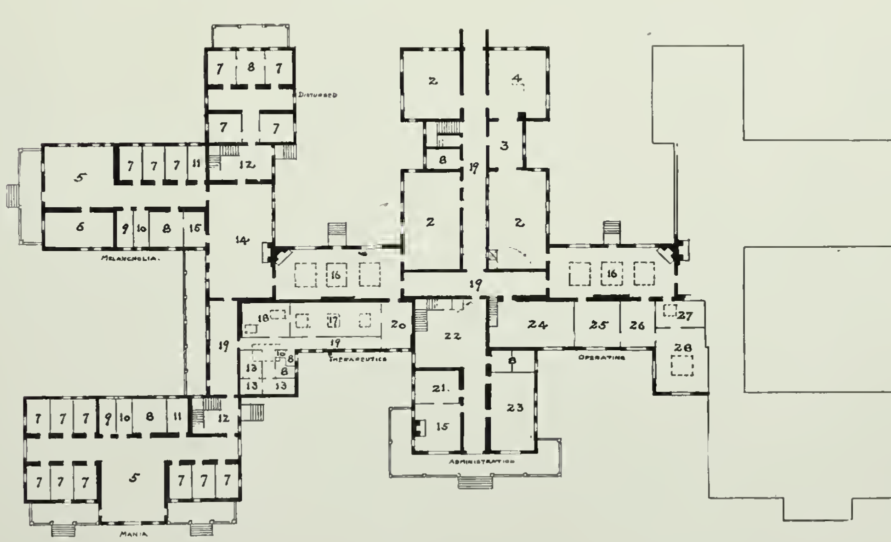
The corridors in each wing have been made large enough so that they may be used as additional room space. The wings for mania and melancholia patients are two stories in height, the upper story being arranged in the same manner as the first. Over the front of the central administrative portion is a second story assigned as quarters for an assistant physician, while over the rear of this portion are two stories of nurses' quarters.

Infirmary. The demands of economy required this building to be three stories high, and it is divided into large day rooms and dormitories. There are two central wings, one for a dining room section and the other for a hospital. The dining room section is three stories high and has a serving room on each floor. It is located centrally so as to give easy access from the wards, and each dining room is large enough to serve all the patients of each floor at one sitting.

The hospital wing is divided into single rooms, day rooms, dormitories, toilet and bath rooms, diet kitchen,



SECOND FLOOR PLAN.



FIRST FLOOR PLAN.

KEY

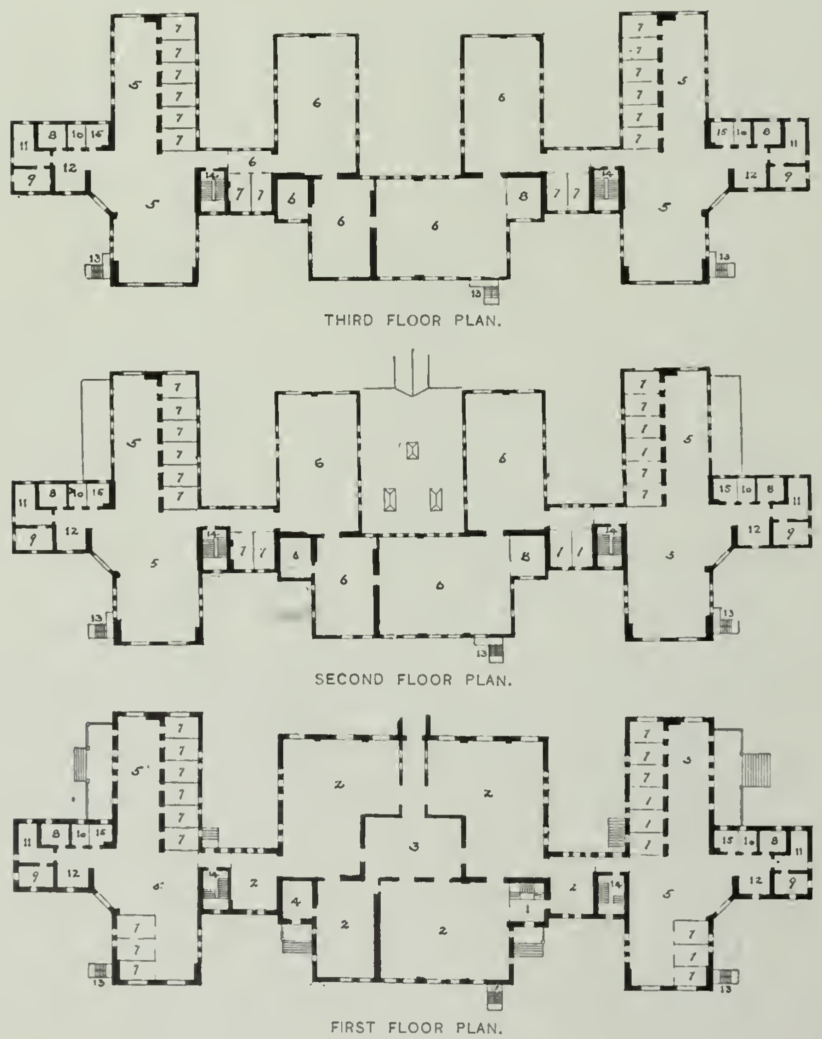
1	Sitting Room.	10	Closet.	19	Corridor.	28	Operating.
2	Dining Room.	11	Utility.	20	Dressing.	29	Dor. and Day Rooms.
3	Serving Room.	12	Stair Hall	21	Stenographer.	30	Employees.
4	Kitchen.	13	Hot Room.	22	Reception Hall.	31	Housekeeper.
5	Day Room.	14	Exercise Room.	23	Library.	32	Guest.
6	Dormitory.	15	Office.	24	Dispensary.	33	Store.
7	Single Room.	16	Solarium.	25	Diagnosis.	34	Pantry.
8	Toilet Room.	17	Bath.	26	Recovery.	35	Chamber.
9	Linen Room.	18	Resting.	27	Anæsthetics.	36	Clothes.

PLANS OF RECEPTION BUILDING, STATE HOSPITAL FOR THE INSANE, ROCHESTER, N. Y.

nurses' and service rooms. The more serious cases will be taken care of in this wing, which has the advantage of isolation and a better concentration for administration. The day rooms and dormitories accommodate a large number of patients; and while this is not particularly desirable, still it was necessary to bring the cost within the per capita allowance. Two-story porches are provided, the spaces between the columns being enclosed with wire screens to prevent accidents. The toilet sections are arranged so as to be convenient both day and night.

Building for Chronic Cases. This is designed for a class of patients who are physically vigorous and are the workers. The plan is symmetrical, so that one-half may be devoted to women patients, but at the present time male patients will occupy the whole building. The dining rooms are centrally located and can accommodate the patients of the three floors. An outside entrance into a lobby, which will be used as a hat and coat room, permits the patients to enter the dining rooms direct without first going to the wards. On either side of the dining rooms are day rooms, dormitories and single rooms, with toilet sections of convenient accessibility. The second and third are similar in plan to the first floor, except that the space over the dining rooms is used as dormitories. This building has a larger number of single rooms than the Infirmary, it being necessary to isolate a larger number of patients at night. It was built three stories high for the same reason that necessitated the third story on the Infirmary.

Kitchen Building. This is located between the Infirmary and the Building for Chronic Cases, the three structures being connected by corridors of sufficient width to be used as additional day room space. The kitchen accommodations are sufficiently extensive to serve the entire group, and this building also contains the nurses' dining room, employees' dining room, refrigerators, etc. The service is by means of hand cars, which are drawn along the corridors to each serving room. In the Reception Building and the Building for Chronic Cases the dining rooms are all on one floor, and the service is direct. In the Infirmary there are dining rooms on each floor, and the upper stories are served by dumb-waiters.



KEY.

1 Entry.
2 Dining Room.
3 Serving Room.
4 Hat and Coat Room.
5 Day Room.
6 Dormitory.
7 Single Room.
8 Toilet Room.
9 Linen Room.
10 Clothes Room
11 Bath Room.
12 Lavatory.
13 Fire Escape.
14 Stairway.
15 Nurse.

PLANS OF CHRONIC BUILDING, STATE HOSPITAL FOR THE INSANE, ROCHESTER, N. Y.

A great deal of care has been taken to avoid dark corridors, and in several of the buildings the corridors have been widened sufficiently to serve as comfortable day rooms. The water sections are throughout most carefully isolated. The peculiar odors which are inseparable from insane patients renders this necessary. In the Reception Building, where there are but few patients on each floor, it does not matter so much, but where there is a large ward it is particularly desirable. These water sections are divided into bathrooms, linen rooms, toilet rooms, lavatories and clothes closets. Clean linen and patients' clothing are stored in the linen rooms, and this room is directly off the bathroom, so that when patients are bathed the clean clothes can be directly handed to them. The bathrooms are equipped with shower baths and portable bath tubs, the portable bath tubs being necessary so that patients may be bathed at the bedside. The toilet rooms are provided with closets according to the number of patients in the adjoining wards. In the case of men the closets are of vitreous ware with integral seats. Wood seats are provided for the women. The question of using closets with integral seats for women is now under discussion, and there is a possibility of their adoption.

The buildings are heated mainly by indirect stacks, though in some cases direct radiation has been installed. Each room has one or more ventilating flues, and they are all drawn together in the attics and carried to large ventilators. This group has a power house located to one side which contains the boilers and dynamos which supply the group with light and heat. The mains are carried to the buildings by an underground conduit and thence distributed through the basement.

Brickwork on the Pacific Slope. III.

(*Continued from page 207.*)

BY CHARLES PETER WEEKS.

SAN FRANCISCO.

THE adaptation of Mission architecture to modern requirements is a difficult task. As was shown in the last article, the lack of ground area and required height made the literal adoption of Mission and Spanish detail impossible. Its adaptation is still more difficult in the case of modern hotels and apartment houses. Nothing more than a recall in minor details of the Spanish character can hope to be attained in these buildings.

The El Monterey Hotel, Albert Sutton, architect, is such a building. The main façade is composed of a curtain wall flanked by slightly protruding towers. The walls are a rough-coat, yellowish-gray plaster. The first story and window trims and quoins are of brick; the

HOTEL EL MONTEREY. Albert Sutton, Architect.

entrance is in light terra-cotta. The curtain wall is hooded with timbers and tiles, and the towers are crowned in the same manner. The towers are more particularly accused by the especial accentuation of their windows, by terra-cotta pediments and iron balconies. Spanish detail is closely followed in the terra-cotta entrance, with its iron lamps and iron balcony. The roof is likewise characteristic. The successful treatment of the main wall of the building has been attained rather by its color than by its design.

Another hotel in striking contrast to this building is the Empire, by Bliss, Faville & Pelton. No attempt has been made to give the building a local character. The general mass is good, the detail is vigorous and well located, the color scheme is one tone, obtained by the

LODGING HOUSE. Sutton & Weeks, Architects.

use of light pressed brick and terra-cotta of the same color.

Another hotel of a still different character is the lodging house, by Sutton & Weeks. The composition is that of a straight shaft pierced with windows and crowned by a broken gable. The brickwork is rough and variegated in color. A bit of decoration is attained at the crown by the use of white glazed brick laid in pattern. The iron fire escapes and copper down spouts serve

EMPIRE HOTEL. Bliss, Faville & Pelton, Architects.

BUILDING FOR THE GAS COMPANY, OAKLAND, CAL.
Coxhead & Coxhead, Architects.

rather to add to the design than to detract from it, as is ordinarily the case. An attempt has been here made to indicate the character of the place within, — to indicate a hotel, to indicate a lodging house. A great deal of the success of this design lies in its color, which is impossible to show in an illustration.

OAKLAND LIBRARY. Bliss & Faville, Architects.

The telephone company of San Francisco is doing its part to improve the architecture of the city by erecting local offices of good design. Two of these are shown here. Both are in brick, with either terra-cotta or marble trim. The simpler of the two is undoubtedly the better.

Oakland is to San Francisco what Brooklyn is to New York, and has some very successful buildings. The post office is one of the most charming buildings in the West. Another building of good design is the library, by Bliss & Faville. These architects received their early training in the office of McKim, Meade & White. Their work always shows their training, and the Oakland Library is no exception. It is done in light brick and terra-cotta. The detail has that same vigor that appears in all of their work.

Another Oakland building in brick is that for the gas company, Coxhead & Coxhead, architects. The second-story windows are trimmed with molded bricks. A terra-cotta cornice and balustrade crown the building. It is picturesque; at the same time it maintains its serious business character.

This series of articles is of necessity incomplete and only serves to indicate in a general way the brickwork of San Francisco and to mention the names of a few of the local architects.

The city is growing very rapidly, and the character of the architectural work here is improving. Doubtless the future will bring forth work worthy to be classed with the best.

BUILDINGS FOR THE TELEPHONE COMPANY.

Concrete Steel Construction. II.

(*Continued from page 212.*)

BY WILLIAM COPELAND FURBER.

THE first part of this paper dealt mainly with the structural side of concrete steel construction. In this part, the economy — in the sense of first cost — will be considered. There is but little doubt that concrete steel construction, from a fireproofing standpoint, is far superior to mill construction, and we ordinarily find it, if for no other reason than that of eliminating so much combustible matter from the building. If we cannot afford standard fireproof construction let us by all means use concrete steel if it is properly designed and designed so as to avoid the extremes in girders and beam construction which we sometimes see; but it is not yet altogether clear that the most economical floor system, all things considered, is not the standard I-beam and hollow-tile construction. The items that make up the cost of the two systems may be briefly considered.

In both systems steel is used exclusively to take tension in all members, it not being considered good design by even the most advanced advocates to consider concrete as having any tensile value. In concrete steel the metal is frequently of special design, requiring special forms to roll it and therefore demanding a special price, which exceeds the price of ordinary rolled forms. In concrete steel the compressive stresses are taken by the concrete, while in I-beam construction these stresses are taken by the metal. If the amount of metal in both systems be considered equal for tension requirements, it is evident that the I-beam construction requires more metal for compression requirements than the concrete, which requires none.

In the matter of centering, the terra-cotta floor arch does not require as careful or accurate false work as the concrete construction nor quite as much of it, nor does it require to be left in position as long; therefore less centering will be needed. The centering for terra-cotta construction, being suspended from the floor beams, is of course much cheaper to erect than the centering for the concrete construction, which requires posts carried up from the floor below to support the floor in the process of construction. If the centering for concrete work costs five cents per square foot, the cost of the terra-cotta centering should not exceed two and a half cents to three cents per square foot.

In the cost of the material composing the floor a slight advantage is with the concrete if cement is low in price and the rock or filling material is to be had near at hand. If concrete be taken at $7 per cubic yard and the average thickness of the floor be taken at five inches, then in a square foot of floor the cost of the concrete filling will be ten and eight-tenths cents per square foot. If to these figures the cost of centering be added, the figure will be fifteen and eight-tenths, without the cost of the steel reinforcements. The cost of the reinforcement will be from two to four and a half cents per square foot, which will make the cost of the rough subordinate floor system stand at seventeen and eight-tenths to twenty and three-tenths cents per square foot.

The cost of terra-cotta arches erected will vary from eighteen cents for an eight-inch arch to twenty-three cents for a twelve-inch arch. It is evident then that in the floor construction, exclusive of the beams and girders, the cost of the two systems varies but little.

The cinder concrete filling in both systems, with the sleepers embedded in it, costs about two to three cents per square foot, which, added to both, makes them stand at, say, twenty to twenty-six cents per square foot, the wood covering, if of good maple, added say four to four and one-half cents more, and the figures stand at, say, twenty-four and one-half to thirty and one-half cents per square foot. The sleepers of a section, say three inch by three inch square, will add about three cents per square foot.

There is not, therefore, a great deal of difference in cost between the two systems exclusive of the main lines of support, and these differences might be reversed under certain local conditions. When the girders and beams in the two systems are contrasted, the I-beam construction, as has been shown, requires metal in the compression flange, and this costs more than the concrete. The relative cost of a series of beams and girders of different spans will be considered in a subsequent article.

The enterprise and vigor which characterize the concrete advocates is worthy of the emulation of the standard hollow-tile manufacturers. The Baltimore conflagration brought to light in a general way the often inferior details of the hollow tile and the worse than careless manner of its application. Concrete has the quality of cohesiveness, and in this respect the hollow tile as usually applied often leaves very much to be desired.

Long ago, before the Baltimore fire, the weak points of the present details of hollow-tile construction were pointed out in these columns, and certain recommendations for increased thickness of material were made. The recommendations were afterwards incorporated in the revised building laws of Philadelphia. In the recent report of the National Fire Protective Association similar recommendations for the increased thickness of terra-cotta coverings are given a prominent place.

STRENGTH OF CONCRETE.

WHILE concrete is one of the oldest structural materials, it is a material of which we really know very little in a positive way. It is also the material of all others regarding the use of which formulæ are elusive and by no means reliable. The strength of concrete is seriously affected by at least a dozen varying factors. The amount of water, the size and character of the sand and of the stone with which it is compounded, the character of the rock from which the cement is made, the amount of free lime or plaster which is added to the cement before it is put upon the market, the nature of the burning, the fineness of the grinding, all these so vary as to render the results of tests of one batch by no means a sure guide of the action of cement from the other, and most vital of all is the care, or carelessness, which is used in the mixing. It requires constant watchfulness on the part of the foreman, and a degree of willingness on the part of the mechanics seldom found to produce a uniform quality of concrete which can be depended upon without reserve for floor and column construction.

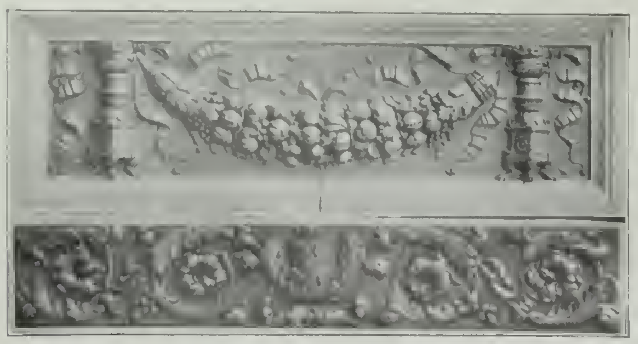
Editorial Comment and Selected Miscellany

CARNEGIE TECHNICAL SCHOOLS COMPETITION.

THE competition for the Carnegie Technical Schools of Pittsburg has been won by Messrs. Palmer & Hornbostel of New York, second place going to Mr.

DETAIL OF HOUSE AT BAR HARBOR, MAINE.
Andrews, Jaques & Rantoul, Architects.

George B. Post, one of the especially invited and paid competitors; and third, fourth and fifth places, each conveying an award of one thousand dollars, to Messrs.

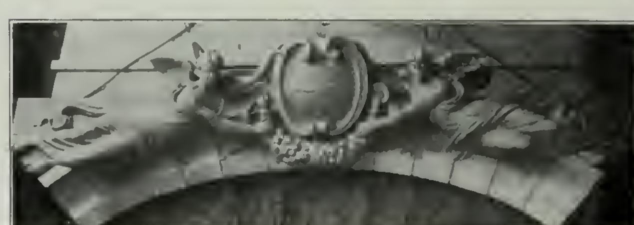


DETAIL BY MCKIM, MEAD & WHITE, ARCHITECTS.
Atlantic Terra-Cotta Company, Makers.

SCHOOL BUILDING, NEW YORK, N. Y.
C. B. J. Snyder, Architect.
Terra-Cotta furnished by New York Architectural Terra-Cotta Co.

Wood, Donn & Deming, with Corbett & Pell associated (Washington and New York), Cram, Goodhue & Ferguson (Boston and New York), and Newman & Harris (Philadelphia) respectively. The highest rank among Allegheny County architects, to whom was assured an award of one thousand dollars, was taken by Mr. T. E. Billquist of Pittsburg.

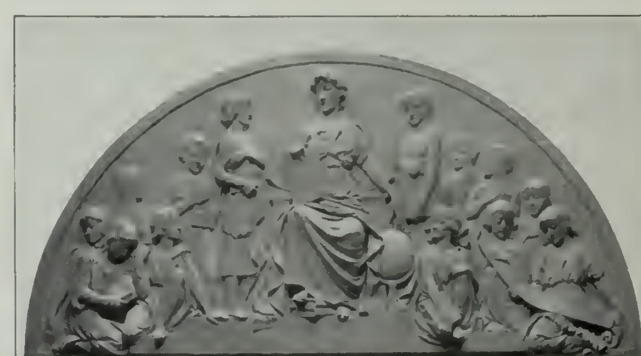
In making its decision the committee followed the



DETAIL EXECUTED BY NEW JERSEY TERRA-COTTA CO.

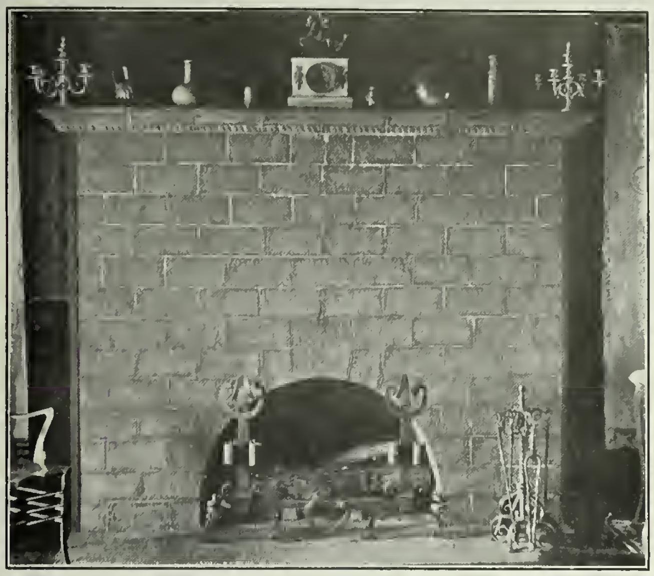
recommendations of its adviser, Professor Warren P. Laird of the University of Pennsylvania.

The competition was restricted to architects whose ability to execute large work had been approved in advance by the committee, and this, together with the fact that five leading architects were especially invited as paid competitors, brought into the competition a very large number of men of the highest attainments and



PANEL FOR SCHOOLHOUSE AT PITTSBURG, PA.
McCollum & Dowler, Architects.
Conkling-Armstrong Terra-Cotta Co., Makers.

professional standing. This, in spite of the unusually difficult nature of the problem, has had the result of producing among the forty-four designs submitted a very large proportion of fine compositions.



MANTEL OF DULL FINISH GREEN TILE,
ROUGH TEXTURE.
Made by Hartford Faience Co.

The committee is much gratified with the outcome of the competition, as the premiated design is a very strong solution of the problem.

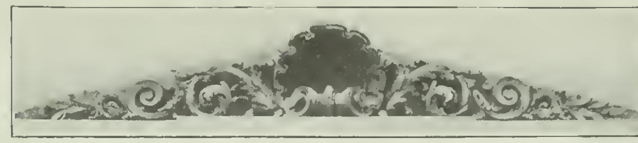
NEW BOOKS.

Architectural Shades and Shadows. By Henry McGoodwin, Instructor in Architecture at the University of Pennsylvania. Boston: Bates & Guild Company. Price $3.

DETAIL BY C. H. JOHNSTON,
ARCHITECT.
Winkle Terra-Cotta Co., Makers.

The purpose of this book is twofold: first, to present to the architectural student a course in the casting of architectural shadows, the exposition of which shall be made from the architect's standpoint, in architectural terms and as clearly and simply as may be; and, second, to furnish examples of the shadows of such architectural forms as occur oftenest in practice, which the draughtsman may use for reference in drawing shadows when it is impracticable to cast them.

These do not appear to have been the purposes of books on this subject hitherto



DETAIL EXECUTED BY THE BRICK, TERRA-COTTA & TILE CO.

published, and therefore the preparation of this one has seemed justifiable.

Elements of General Draughting for Mechanical Engineers. By C. E. Coolidge, Assistant Professor of Machine Design, Sibley College, Cornell University, and H. L. Freeman, Instructor in Machine Design, Sibley College. New York: John Wiley & Sons. Price $2.50.

This work is intended, by a representative course of progressive exercises found in the two hundred hour Course in Drawing in the first part of the book and by a systematically arranged compilation of precept found in the Manual of Drawing in the second part of the book, to convey the essentials of modern conventional draughting as practised by the general profession of mechanical engineering.

This book is specifically written for the use of the students in drawing in the present Sophomore class of Sibley College, for students in manual training schools, trade schools and technical colleges, and for the amateur draughtman who is serving his apprenticeship.

OLIVER BUILDING, PITTSBURG, PA.
D. H. Burnham & Co., Architects.
Built of white enameled terra-cotta, made by Northwestern Terra-Cotta Co. Fireproofed by the National Fireproofing Co.

MCKINLEY HIGH SCHOOL, CHICAGO.
W. B. Mundie, Architect.
Built of dark gray brick made by Columbia Brick & Terra-Cotta Co.

ELEMENTS OF MECHANICAL DRAWING, their Application and a Course in Mechanical Drawing for Engineering Students. By Alpha Pierce Jamison, M. E., Assistant Professor of Mechanical Drawing in Purdue. New York: John Wiley & Sons. Price $2.50.

The work is not intended to serve as a "self-help," but as a basis for class instruction; it is, however, so written that one may take a very satisfactory "individual" course of instruction by perusing its pages and following the directions there given.

BROADWAY LEONARD BUILDING, NEW YORK CITY.
Frederick C. Browne, Architect.
Built of gray brick made by Kreischer Brick Manufacturing Co.

The first part of the book is devoted to an exposition of the fundamentals of the art, and the remainder to furnishing copies and directions for an exhaustive course in the laying out and execution of drawings.

ARCHITECTS' DIRECTORY. New York: William T. Comstock. Price $2.

The Architects' Directory and Specification Index has just appeared for 1904-05. Several new features have been added, and much care has been taken to give the membership of societies in the list of architects. Two new lists are also added — that of landscape architects and of naval architects — thus covering the whole architectural field. The feature of giving the names of the members under each firm will be found very convenient.

IN GENERAL.

The Grueby Faience Company has been awarded the grand prize at the St. Louis Fair for tiles, pottery and architectural faience.

PANEL FOR THE COLLEGE OF THE CITY OF NEW YORK.
George B. Post, Architect.
Perth Amboy Terra-Cotta Co., Makers.

The Trades School supported by the Massachusetts Charitable Mechanic Association of Boston has begun its winter courses with a full attendance.

CHAPEL AND VAULT, DE KALB, ILLINOIS.
Joseph Pajean & Son, Architects.
Roofed with American S tile, made by Cincinnati Roofing Tile and Terra-Cotta Co.

Walter E. Pinkham, formerly of Honolulu, Hawaii, is now connected with the office of the supervising architect at Washington, D. C.

V. O. Wallingford, formerly with F. E. Kidder, Denver, Col., has opened an office in Albuquerque, N. M., for the practice of architecture, and desires catalogues and circulars.

The Hartford Faience Company is making a new white terra-vitræ tile, which, because of its low cost and wearing qualities, is especially adapted for elevator shafts, kitchens, lavatories, vestibules, etc.

The terra-cotta for Thayer Museum, South Lancaster, Mass., Winslow & Bigelow, architects, and for house at Buffalo, N. Y., Green & Wicks, architects, illustrated in The Brickbuilder for October, was furnished by the Excelsior Terra-Cotta Company.

ERIE RAILROAD STATION AT MIDDLETOWN, N. Y.
G. E. Archer, Architect.
Roofed with celadon tiles.

EXHIBIT OF THE BLUE RIDGE ENAMELED BRICK CO., ST. LOUIS EXPOSITION.
This is the third exposition at which the product of this company has been given the highest award.

The annual exhibition of the T Square Club will be held in the galleries of the Art Club of Philadelphia, January 20 to February 2.

The exhibition will consist of architectural drawings in any rendering, and of photographs and models.

APARTMENT, BROOKLINE, MASS.
Benjamin Fox, Architect.
Brick furnished by the Fiske Brick Co.

Photographs of the exhibitor's original work will be received, to be accompanied, whenever possible, by plans or other explanatory drawings, separately framed or mounted.

Models of façades and of detail, carving, etc., will also be received. The former, in connection with rendered elevations or photographs of the same subject, are particularly desired.

Drawings must be either framed or properly mounted. The omission of glass on all *large* drawings is requested.

BELLEFIELD DWELLINGS, PITTSBURG, PA.
Carlton Strong, Architect.
White dull glaze terra-cotta made by Excelsior Terra-Cotta Co.

All works accepted by the jury must remain until the close of the exhibition. Works previously exhibited in Philadelphia will not be received.

Each exhibit must have securely fastened to it the label furnished for that purpose by the committee, which label and entry slip shall be carefully and correctly filled out with the author's name and address and the full title. It is particularly requested that both the label and entry slip (one for each drawing) be printed in and not written, and that the name and title be exact, as the entry slips will be used in indexing and compiling the catologue.

OLIVER BUILDING, BOSTON.
Front brick made by Ohio Mining and Manufacturing Co.

Entries must be received not later than December 5, 1904.

Exhibits must be received not later than December 13, 1904.

Exhibits discharged Friday, February 3, 1905, when they will be returned to the owners or will be forwarded to New York (subject to selection by a committee representing the Architectural League of New York) if the exhibitor so desires.

DRAUGHTSMEN WANTED — I need two Draughtsmen, one must be first-class at preliminary work and rendering, and the other good at working drawings. R. H. Hunt, Chattanooga, Tenn.

WANTED — A publishing house about to start a new popular monthly magazine desires a young man of good education and connection; one who is of good presence and used to meeting men. Must have a university education, and at least some acquaintance with architecture. One who would come in with the idea of mastering all the details of the business and taking general charge of the office and outside work. A good opening is offered to the right person. Address with full particulars, P. O. Box 3089, Boston, Mass.

.. Competition for a Village Church ..

First Prize, $500 Second Prize, $200 Third Prize, $100

PROGRAMME

THE problem is an Episcopal Church in a large village. The location may be assumed in any portion of the United States. The lot is 80 feet wide on the west and 180 feet deep on the south. It is on a corner of two streets of equal importance. To the southwest a main avenue communicates with the principal square of the village, the grade of this street down to the square being 7 per cent. The lot itself is perfectly level and is in the residential portion of the village. The problem considers only a church with sacristies for clergy, choir and altar guild. At some future time the property immediately adjoining to the north is to be acquired, and on this property will be erected a parish house and rectory. The church will, therefore, be placed and designed with this future extension in view.

The church is to seat five hundred, the choir thirty. A small side chapel is optional.

The following points must be considered in the design:

A. Frank and logical expression of the prescribed material.

B. Historical and traditional associations of the institution for which the structure is provided.

C. Historical and architectural antecedents, associations and surroundings of the assumed location.

This paragraph corrected

Drawings required:

A plan at a scale of 16 feet to the inch, a front elevation and a side elevation at a scale of 8 feet to the inch, all on one sheet, and a sheet of details at a scale of one-half inch to the foot. The size of each sheet shall be exactly 24 inches by 32 inches. The sheets are not to be mounted. All drawings are to be in black ink, without wash or color, except that the walls on the plan are to be blacked in.

The exterior of the building is to be designed entirely in terra-cotta, and the same material may be used at will in the interior. Colored terra-cotta, or faience, may be employed.

It must be borne in mind that one of the chief objects of this competition is to encourage the study of the use of architectural terra-cotta. There is no limitation of cost, but the designs must be suitable for the location, for the character of the building, and for the material in which it is to be executed. The details should indicate in a general manner the jointing of the terra-cotta and the sizes of the blocks.

In awarding the prizes, the intelligence shown in the constructive use of terra-cotta and the development or modification of style, by reason of the material, will be taken largely into consideration.

Every set of drawings is to be signed by a nom de plume or device, and accompanying same is to be a sealed envelope with the nom de plume on the exterior and containing the true name and address of the contestant.

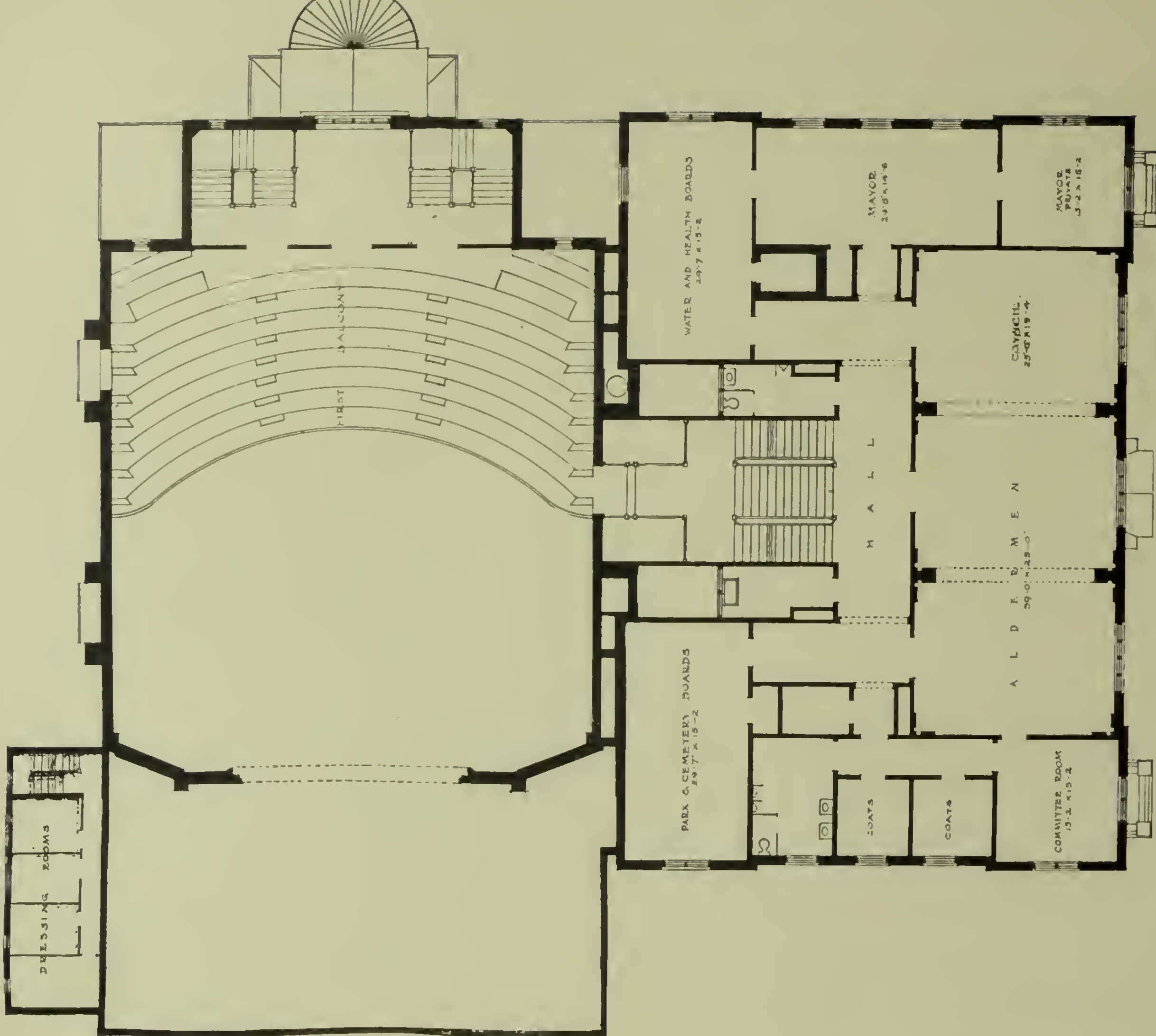
The drawings are to be delivered flat at the office of THE BRICKBUILDER, 85 Water Street, Boston, Mass., charges prepaid, on or before December 15, 1904.

The prize drawings are to become the property of THE BRICKBUILDER, and the right is reserved to publish or exhibit any or all of the others. Those who wish their drawings returned may have them by enclosing in the sealed envelopes containing their names ten cents in stamps.

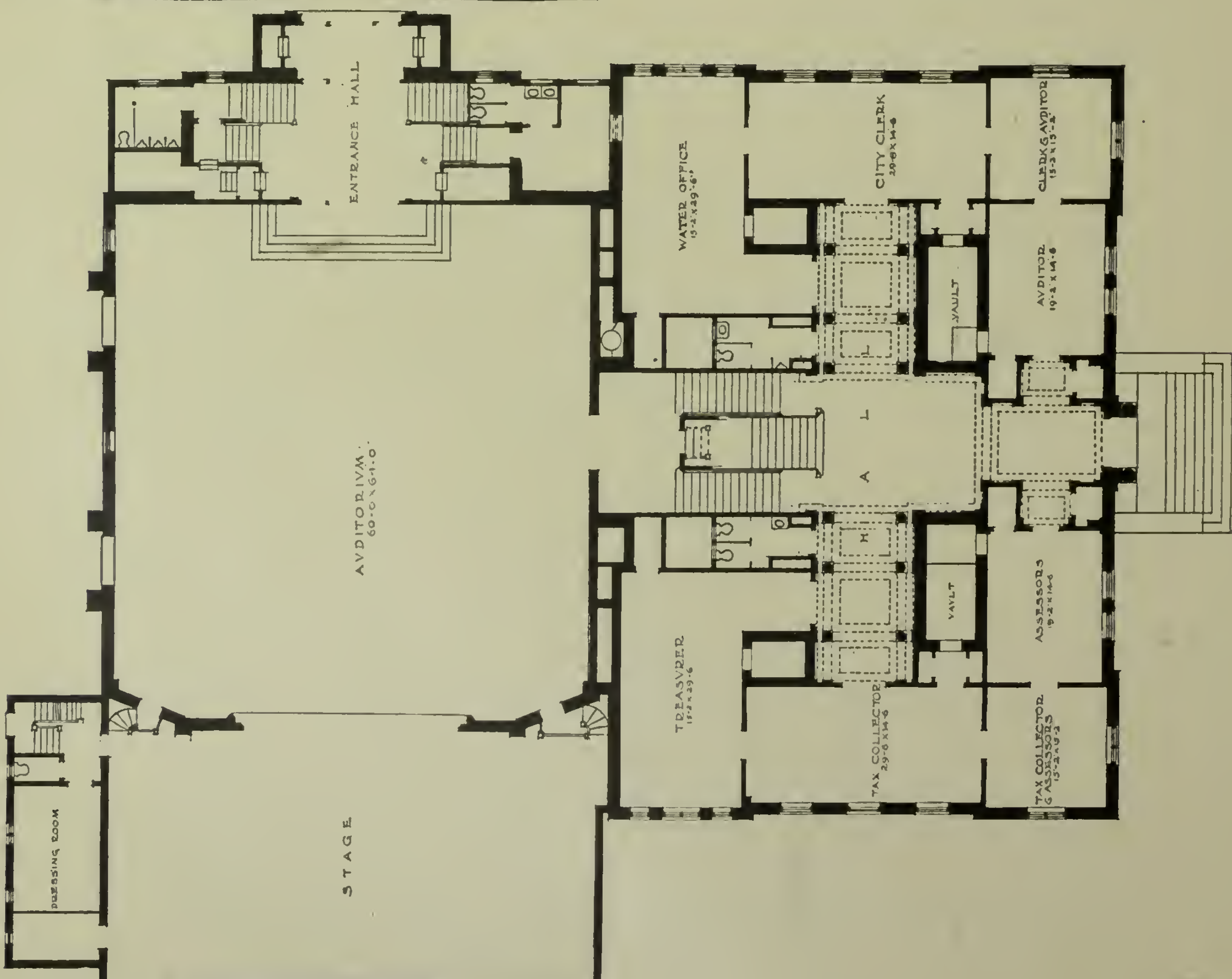
The designs will be judged by three well-known members of the architectural profession.

For the design placed first in this competition there will be given a prize of $500.
For the design placed second a prize of $200.
For the design placed third a prize of $100.

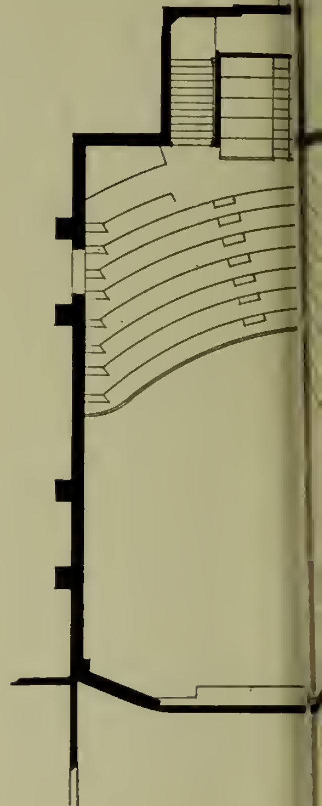
We are enabled to offer prizes of the above mentioned amounts largely through the liberality of the terra-cotta manufacturers who are represented in the advertising columns of THE BRICKBUILDER. This competition is open to every one.

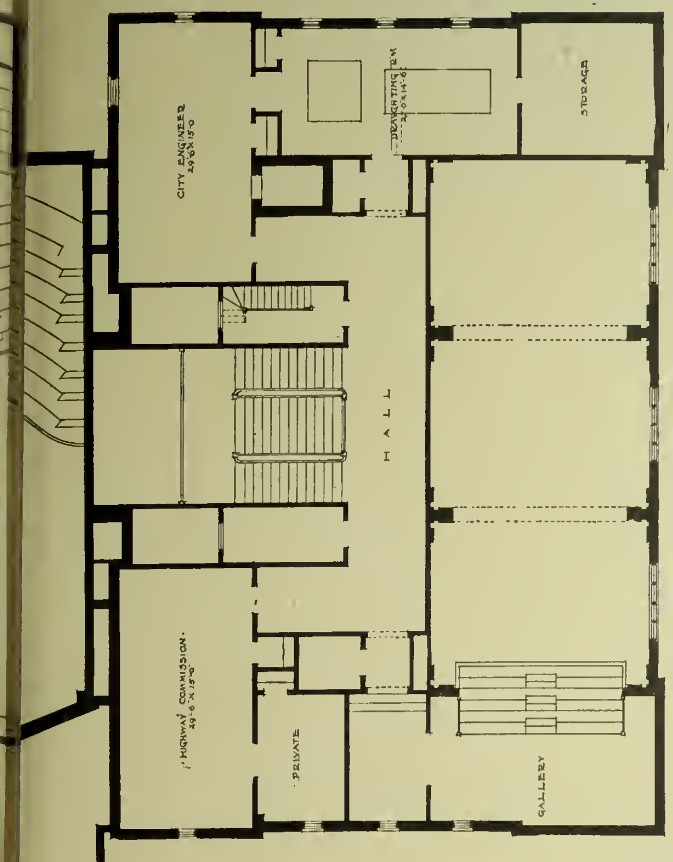


SECOND FLOOR PLAN.

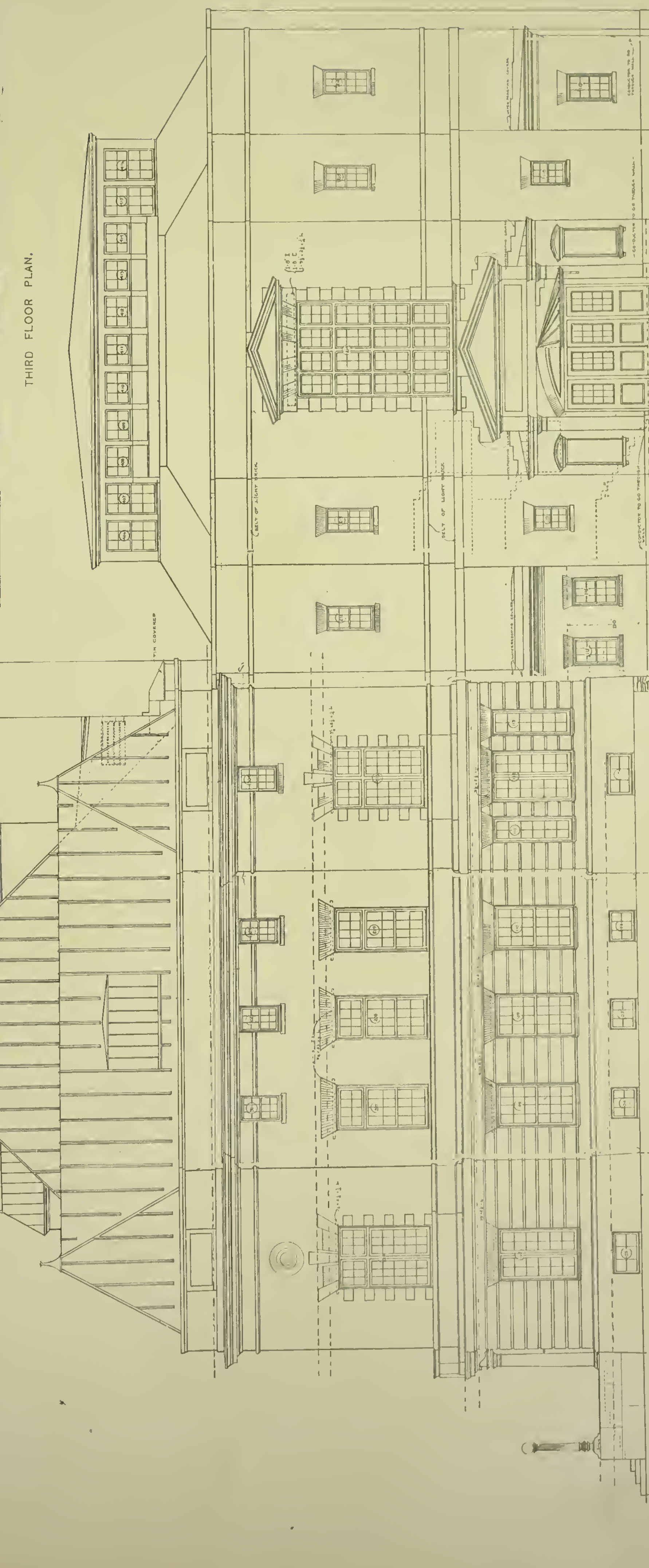


FIRST FLOOR PLAN.





THIRD FLOOR PLAN.



SIDE ELEVATION.

NEW CITY HALL, CONCORD, N. H.

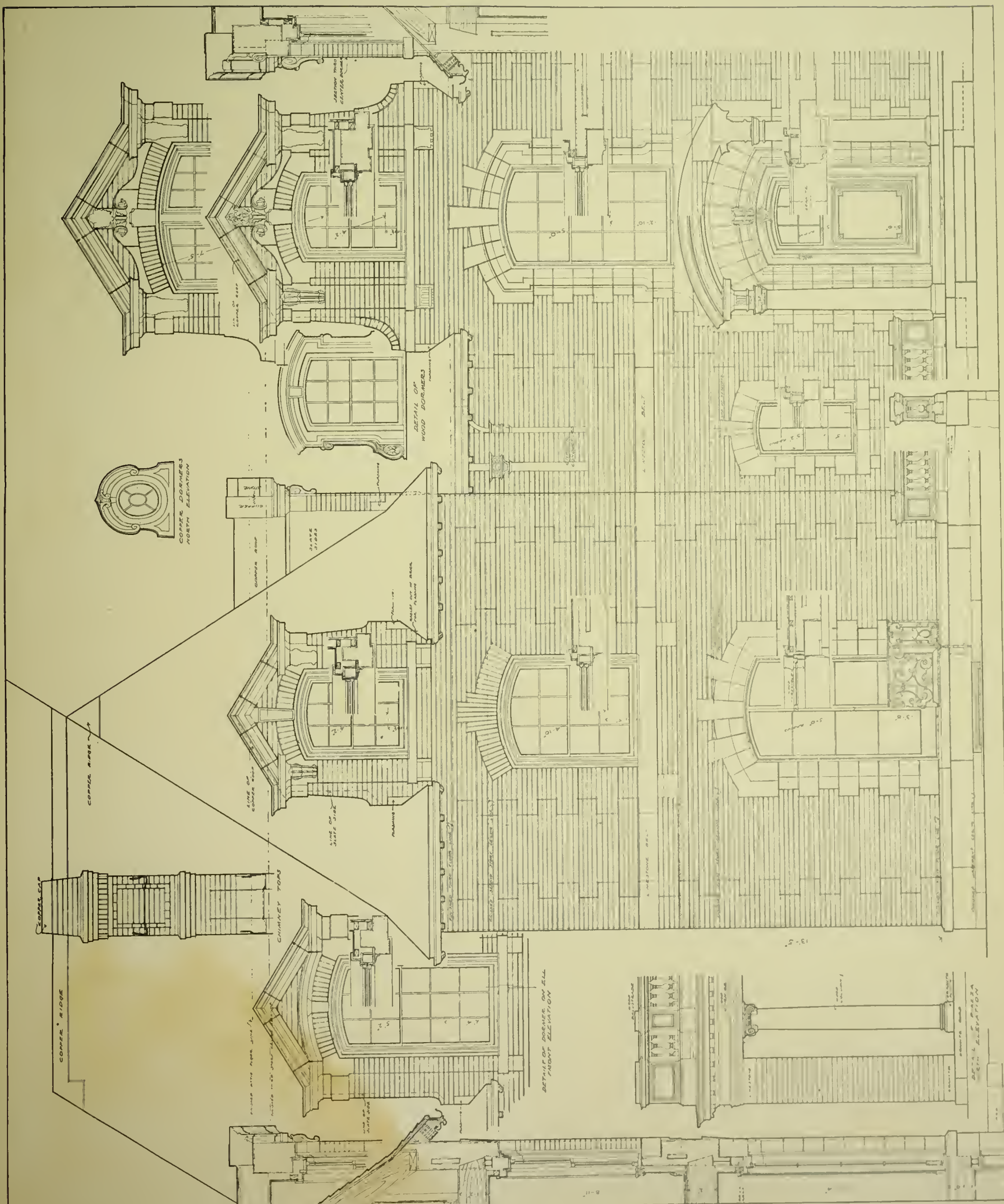
WARREN, SMITH & BISCOE, ARCHITECTS.

NEW CITY HALL, CONCORD, N. H.
WARREN, SMITH & BISCOE, ARCHITECTS.

DETAILS OF HOUSE AT BAR HARBOR, MAINE.
ANDREWS, JAQUES & RANTOUL, ARCHITECTS.

HOUSE AT BAR HARBOR, MAINE.
ANDREWS, JAQUES & RANTOUL, ARCHITECTS.

THREE FARM COTTAGES, ESTATE OF CHARLES FRANCIS ADAMS, ESQ., LINCOLN, MASS.
PHILIP B. HOWARD, ARCHITECT.



DETAILS OF HOUSE AT BAR HARBOR, MAINE.

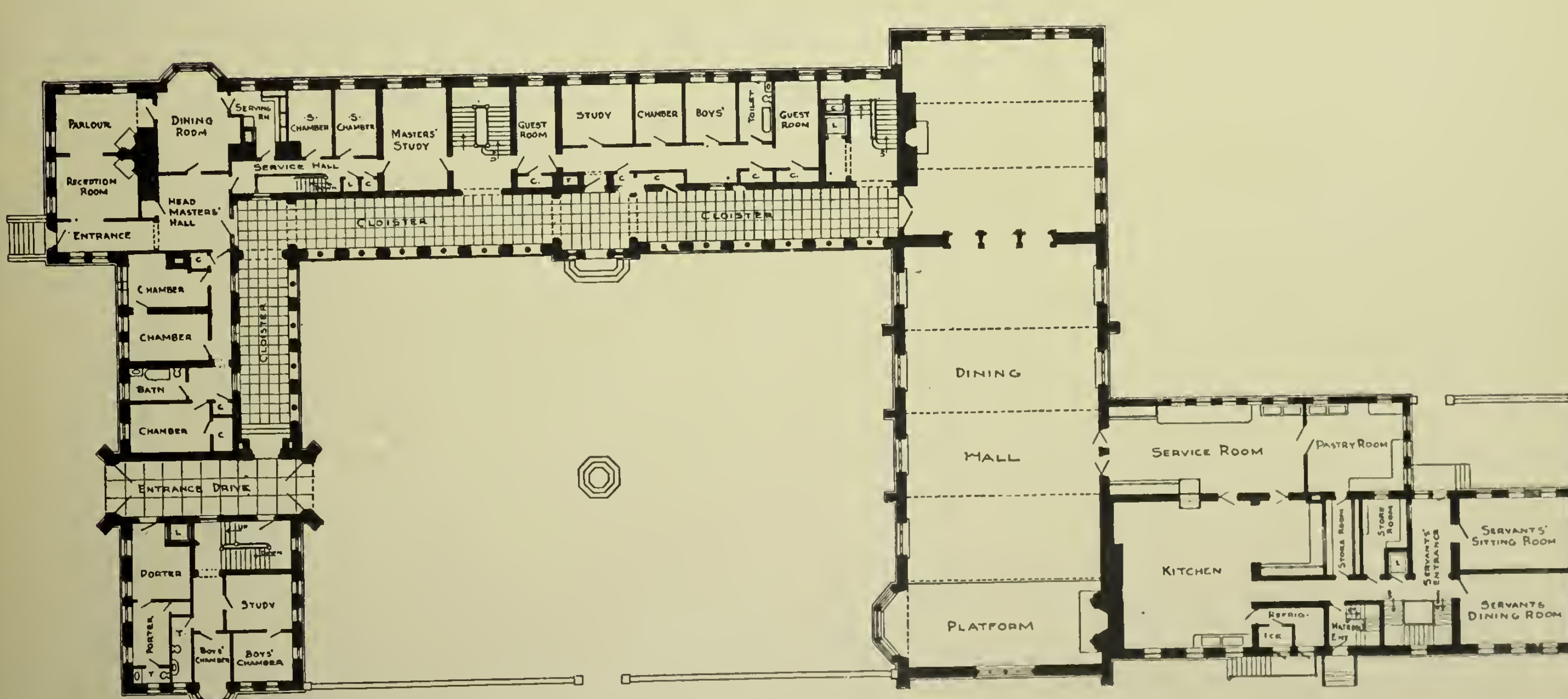
ANDREWS, JAQUES & RANTOUL, ARCHITECTS.

DETAIL OF DINING HALL BAY, DORMITORY, ST. PAUL'S SCHOOL, CONCORD, N. H.

HENRY VAUGHN, ARCHITECT.

· Second · Floor · Plan ·

Scale



· Ground · Floor · Plan ·

Scale

FLOOR PLANS, DORMITORY, ST. PAUL'S SCHOOL, CONCORD, N H

Henry Vaughn, Architect

DORMITORY FOR UPPER SCHOOL CLASS, ST. PAUL'S SCHOOL, CONCORD, N. H.
HENRY VAUGHN, ARCHITECT.

DORMITORY FOR UPPER SCHOOL CLASS, ST. PAUL'S SCHOOL, CONCORD, N. H.
HENRY VAUGHN, ARCHITECT.

FOUNTAIN MADE OF WHITE GLAZE TERRA-COTTA, MATT SURFACE, IN THE GROUNDS OF JOHN A. McCALL, ESQ., LONG BRANCH, N. J.

HENRY EDWARD CREGIER, ARCHITECT.

MANUFACTURED AND ERECTED BY THE EXCELSIOR TERRA-COTTA CO.

SUPPLEMENT TO THE BRICKBUILDER, NOVEMBER, 1904.

THE BRICKBUILDER.

VOL. 13 DECEMBER 1904 NO. 12

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FROM WORK OF BABB, COOK & WILLARD, CARRÈRE & HASTINGS ET AL., PERCY GRIFFIN, HOWELLS & STOKES, H. VAN BUREN, MAGONIGLE, McKIM, MEAD & WHITE.

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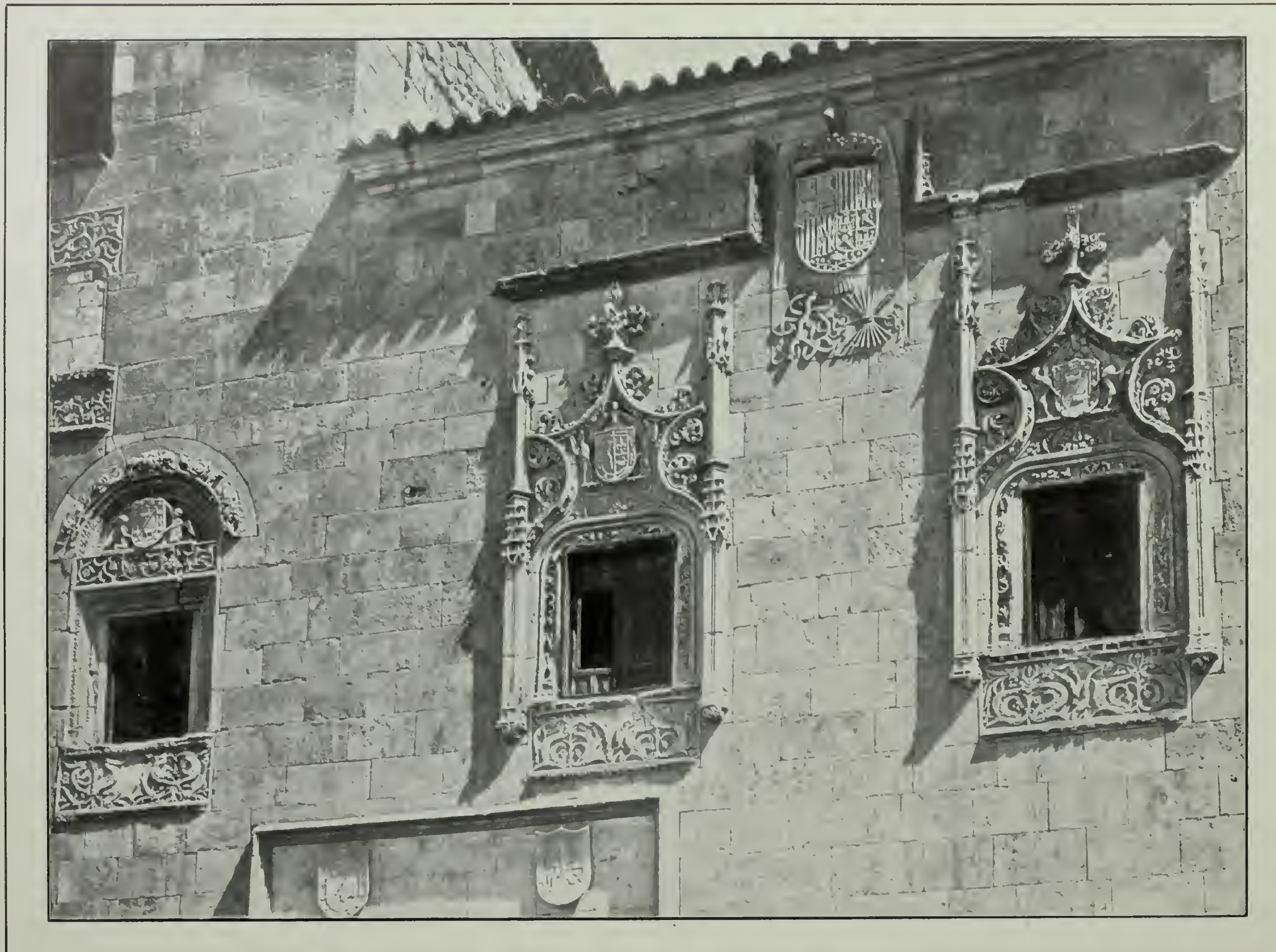

A DETAIL FROM THE UNIVERSITY, SALAMANCA, SPAIN.

THE BRICKBVILDER

VOL. 13 No. 12 DEVOTED · TO · THE · INTERESTS · OF ARCHITECTVRE · IN · MATERIALS · OF · CLAY DECEMBER 1904

THE BRICKBUILDER.

PUBLISHED MONTHLY BY

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CHURCH COMPETITION — JURY OF AWARD.

The following named gentlemen have consented to judge The Brickbuilder Church Competition:

Frank Miles Day, Philadelphia.
C. Grant LaFarge, New York.
Ralph Adams Cram, Boston.
R. Clipston Sturgis, Boston.
C. Howard Walker, Boston.

The competition will be judged on Saturday, January the sixth.

The awards will be announced in The Brickbuilder for January.

About one hundred and twenty-five sets of drawings were submitted.

THE BRICKBUILDER COMPETITION FOR A FIREPROOF HOUSE.

WE announce elsewhere in this issue the terms of a competition for the design of a fireproof house of moderate cost. We believe the present to be a transition period in the construction of moderate priced houses. The day of the speculative builder is by no means past, and we may yet see long rows of uninteresting blocks, constructed without thought or æsthetic reason, but the people are awake, as never before, to the personality of the home. We anticipate that this competition will bring out some interesting ideas and show the possibilities of artistic design in strictly fireproof construction. The influence of such a competition will, we believe, be far-reaching and encourage study along new and profitable lines. That there is a demand for fireproof houses of moderate cost is abundantly evinced to us every day. It remains only for our architects to show that they may be designed and built in a manner at once artistic and practical.

The complaint is often made that whereas the painter or the sculptor can in his studio elaborate his artistic productions, the architect is denied such opportunity except in as he finds a complacent client who is willing to experiment. This competition goes far to obviate such trouble, and if the results are as satisfactory as have been the results of similar competitions held by this journal in the past, The Brickbuilder will feel that it has evoked a distinct contribution to the advancement of good building and artistic construction.

PROMISED ARTICLES.

THERE are several series of articles treating of special types or classes of buildings which have been promised the readers of The Brickbuilder, but which have not as yet been presented. It must not be assumed, however, that these articles have been in any sense abandoned. Our announcements are usually made only after the preliminary work on a proposed series has been done. In connection with many of the articles which have been promised there has remained a great deal of work to be accomplished, in the form of study, gathering of data, illustrations, etc., before they would have the value which it is intended they shall possess. It has never been the policy of this journal to present material for the mere purpose of filling space. On the contrary, the especial object has been to present articles which will have a real and practical value to the architect. Furthermore, these articles are prepared, not by theorists, but by men who have had a large and practical experience in the particular line of work which is to be treated. We cannot always command the whole time of these men, therefore we have been obliged to wait until they could work out the most perfect solution and present the most comprehensive study of the problems.

This journal was started with a somewhat restricted field. Year by year the field has enlarged. The scope of the work presented in our columns has become greater and we believe the material given has been of increasing value. This, however, requires each year more care and more forethought, and the non-appearance of promised articles means, not neglect, but more careful consideration and ultimately more valuable contributions.

A LOST OPPORTUNITY.

EACH of the expositions which have been held in this country has given occasion for some remarkable displays of architecture in the grouping and the designing of the buildings. Indeed many will remember these fairs more for their architectural setting than for any other one feature, and enlisting as they have the abilities of many of the best members of the profession, there has resulted a remarkable development which has profoundly influenced the current architecture of the day. In a certain degree architecture has been very prominent in these fairs, but it has been treated rather as a necessary practical background than as one of the fine arts to be intelligently displayed by itself; and any one who has thoughtfully examined the various exhibits has doubtless been struck by the manner in which architecture is at once conspicuous by its presence and by its neglect. It is in just this respect that we feel the profession has let slip an opportunity which might have been turned to great good. Each of the fairs has included a large and imposing building devoted entirely to the exhibition of the fine arts, so called, by which has been understood principally painting, with a few bits of statuary and a scanty and hardly typical presentation of architectural drawings. Each fair has also included special buildings devoted to education and to various subdivisions of the mechanic arts, and there is indeed hardly any art or industry except architecture which has failed to be more or less appropriately housed and displayed by itself. Apparently the idea of treating architecture as a subject worthy to be given an independent building, if it has occurred to our fair managers, has been entirely neglected. And yet if such a building had been provided and under the direction of the American Institute of Architects the exhibits therein had been properly selected and presented, there would have been very little trouble in filling it with most varied and interesting matter, all directly in the line of architecture as a fine art and a science, and absolutely distinct from any of the advertising features which are so apt to thrust themselves upon one in a world's fair. There has thus been an opportunity lost to do a real service to the community and to the profession.

The popular interest in the work of the architect is too manifest and unquestioned to justify the relegating of the mother art to a secondary position, nor is it fair to treat architectural exhibits as a side issue. Had the opportunities been properly utilized a building, even though but a small one, should have contained the official architectural exhibit. It would not have been at all difficult to secure such interest as would have resulted in its being thoroughly well designed, representing in its plan and in its style the best current practice and including within its walls such distinctive groups as can so readily be imagined by any one conversant with current work. The field is a large one and would include not merely the drawings or sketches of the architects, but many of the important, though minor departments which are so strongly correlated to architecture and are properly included in the work which the architect supervises. In fact the field is almost limitless, provided the opportunity were recognized in time and the selection, arrangement and classification of the exhibits were intrusted to the best hands.

Whether there is ever another exhibition in this country like the St. Louis Fair is a question which cannot be settled in advance. We believe these world's shows have reached a magnitude which tends to detract greatly from their usefulness. No one tries to wander through all the miles of avenues so beset on every hand by advertisements that the whole fair seems like a gigantic bazaar, rather than an exhibition of the arts and industries; and it would seem almost inevitable that a reaction would take place and that the next world's fair would be a great deal smaller, more rigid in its selection, more exclusive of mere commercialism and that the external architecture would be even better representative of our best practice. Architects have pretty generally managed the last three world's fairs, and they have made them gigantic exhibitions of the architectural work of a few of our best-known men. We hope the next fair, when it does come, will recognize the force of what we have just stated, will accord to architecture its rightful position as the all-inclusive art, and afford a large, ample and thoroughly well-designed building exclusively for the reception and exhibition of the art and science of the profession. We believe that such a building would prove not only an educational force, but would attract the eager notice of all intelligent people. Our nation is ready for the highest architectural effort. The people want it, and it needs only intelligent direction by the American Institute and by those who are properly qualified to take the lead to cultivate a very high appreciation of what we are trying to do, and an international exhibition certainly offers a splendid opportunity for just this kind of work.

A PLAN has been under consideration for quite a while to erect, in Fort Greene Park, Brooklyn, N. Y., a monument to the prison ship martyrs of the American Revolution. This movement has finally taken definite shape, and the committee having the matter in charge have instituted a limited competition, between three firms of architects only, for the design of the monument. The action of the committee has called forth a protest from the Brooklyn Chapter of the American Institute of Architects in the form of a series of resolutions passed by the Board of Directors and unanimously adopted by the chapter at large, objecting to the limitation of the choice of the design of the monument to any three firms, however high standing in their character, and claiming that a competition of this sort is strictly against all precedent in securing designs for the public monumental work adopted by the leading countries of Europe, and also generally adopted in securing designs for the principal monumental structures in the United States, while the exclusion from the competition of all Brooklyn architects and sculptors is also objected to. The resolutions request the committee of the association to reconsider their action and to institute an open competition for securing the design.

Modern Ecclesiastical Architecture.*

BY RT. REV. HENRY C. POTTER.

(Bishop of New York.)

IT is a good sign when, in our American periodicals which deal with the construction of buildings, the way is open for a free and candid discussion of church architecture. And this for two reasons: first, because, just now, we are supposed to be called upon to deal with new problems in church building, and then because you cannot hope to get people to do their best until they *think* their best; and because the question, *What is the best?* is a question which cannot be settled by considerations of mere utility.

There ought to be a suggestion, at this point, of real value in a fact which one cannot well leave out of account. When our fathers came to these shores — I am talking now of the men who, from Holland, France, England or Scotland, came to America — nothing was more impressive than the early steps which they took to build churches. Some of them still survive, in New England, Virginia, Charleston and elsewhere on our Atlantic coast. I don't know that any of them could be called beautiful, but they were, and always aimed to be, *distinctive*. When one came into the town or village where a house of worship was he didn't mistake it for a tavern or a shop. It had a certain note of its own, and that note was always a something dignified, serious, august. We have changed all that now. There is a craze abroad for making churches look "sociable," "cozy," "homey" and the like, and one cannot be sure when he enters one that it is not a music hall or a lecture room into which he has found his way.

Now there are architects who think this sort of thing clever, and who, in it, follow the lead of committee-men, and (alas) of pastors more ignorant than themselves. It never seems to have occurred to these incarnations of stupidity and irreverence that the very things which you ought *not* to want in a church are "homeyness," "sociability" and the like! I can find these things in the kitchen, if I must have them; but the first condition of a church ought to be that it appeals to, and awakens in me, a whole group of emotions which have nothing to do with mere sociability or any of that family of emotions. We are constantly wondering why Gothic architecture — which, if anything, is rather ill adapted to our climate — has found so wide a home here. But Gothic architecture is religious architecture, though by no means the only religious architecture; and when Mr. Beecher, as I have been told, on first entering Chester Cathedral, and hearing Evensong, put his head down and burst into tears, it was not alone the sublime singing of the psalter that moved him, though he thought so! No honest mind that reads these lines will deny that mere outline, color, proportion and the like, in one word what, in secular connections, we call "environment," has a direct effect upon the mind, the imagination, the emotions, upon something deeper even than these. You cannot be in a forest without feeling this, nor in the streets of a great capital, nor in a theater. Each of these creates its own atmosphere and produces its own impression. And do you think, my brother who art an architect or a committeeman, that you can toss all this over the wall, and still build a church which shall worthily express the idea of a place where one comes into a Divine Presence, and seeks to be engaged in worship? Well, *you can't!* And that is the whole of it. Religion, as truly as domesticity, or pleasure, or letters, or art, demands its own shrine and its own environment, and it is in vain that modern architecture seeks to evade or ignore that fact.

"Very well," says the modern architect, "I admit all that; but if I do, then you critics and objectors must admit another thing, and that is that religion in these modern days makes a more complex demand upon the modern architect. In old times religion meant certain things; now it is assumed to mean much more. In old times it was a *viaticum*, by means of which men and women and children hastened through a wicked world, ignoring it, and the conditions of life in it, as much as possible. Now you preachers tell us that the whole of man is divine, and that, as Christ did, the church to-day must touch all departments of life and beautify and ennoble them; and so you have a great variety of agencies and instrumentalities to these ends. Why, then, should we be faulted for trying to build the church edifice in such a fashion as to serve these ends?" Simply, the answer is, because there is another and better way. Touch all life, its culture, its refinements, its pleasures even, with the high and fine spirit of Jesus Christ. Build your parish houses and Young Men's Christian Association gymnasiums and all the rest as discerning that the body is sacred as is the soul. But when it comes to worship and the place for worship, build that to lift men's thoughts and hungers up to God, and make church architecture as, through all the Christian ages a reverent art has done, the handmaid of praise and worship.

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* With Bishop Potter's paper we begin a series of articles treating of ecclesiastical architecture, in which will be given the views of clergymen whose interests are known to extend to the architectural expression of the church. These opinions will undoubtedly be of the utmost helpfulness to architects who are endeavoring to express the idea of the church in a fitting form.

The clergy often have very definite and valuable ideas and would naturally regard church architecture from a standpoint which must be appreciated by the architect if the best results are to be achieved. The function of THE BRICKBUILDER in this series, which will include Episcopal, Catholic, Evangelical and Christian Science churches and the Synagogue, will be to present the matter in such form as to constitute a symposium of the views upon the subject held by representative men of the various denominations. In this materialistic age we are apt to forget that architecture is essentially a religious art, that it has in the past shown its best manifestations through the medium of ecclesiastical structures, and that tradition reaching back to the pyramids links architecture always with the religious manifestations of each nation.

The opinions of the clergy will be supplemented by the presentation of the strictly architectural side of the question in such shape as shall embody all the leading points which must be considered in planning the church edifice, same to be accompanied by illustrations of the best examples of recent work. It will be found that while the points of view of the clergy and the architect are not identical, the results aimed at by each are practically the same and constitute the highest aim of the architect, the expression of the religious thought of his times in the concrete form of church architecture. — EDITORS.

Some Recent Brick Churches in England.

BY R. RANDAL PHILLIPS.

THE criticism of the beadle of Mains, that he was "sair fashed" with the pillars of Glasgow Cathedral, would hardly be applicable to the modern English church, for, by the development of the hall plan, the pillars between nave and aisles are reduced to a minimum so as to give every one an unobstructed view of preacher and choir; moreover, the question of acoustics has to be specially considered, as the sermon is not a disregarded portion of the service, and consequently the church has to be so treated and the pulpit so placed that the whole congregation is able to hear what is being said. Another factor that has very largely influenced modern church design is that of cost. Probably the cheapest building one could erect — other than a barn — would be with a sloping roof over nave and aisles, and this, with the introduction of an arcade and occasionally a clearstory, is the type often followed. As Sir Charles A. Nicholson observes in the paper which he read before the Architectural Association of London, "Architecturally the great invention of recent years is the cheap church. The cheap church of fifty years ago was ornate, but shoddily built. Twenty years ago economy was effected by building substantial and fairly complex churches of the cheapest and ugliest materials, red and yellow brick, fitting up with varnished deal furniture and stunting their general proportions." But the cheap church of to-day is very different, economy being secured by careful planning and a

ST. AGATHA'S CHURCH, BIRMINGHAM.
W. H. Bidlake, Architect.

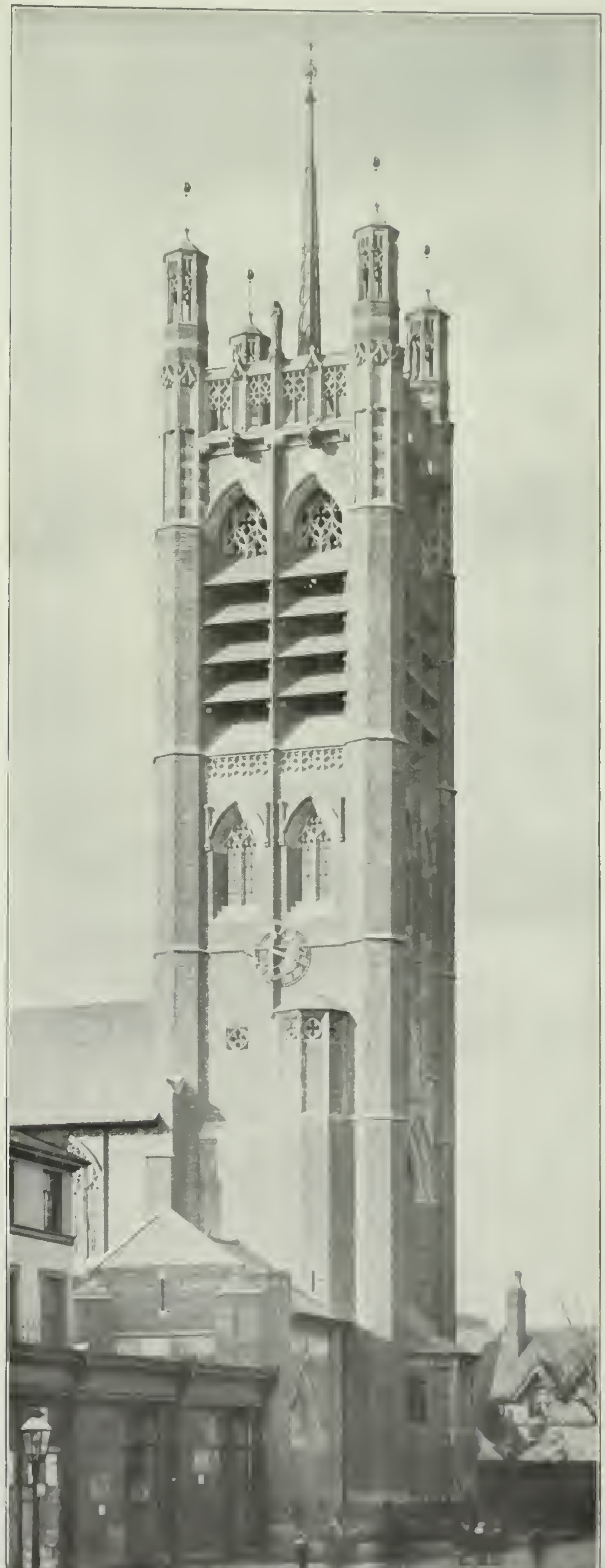
PUTNEY PRESBYTERIAN CHURCH.
E. W. Mountford, Architect.

judicious use of plain but good materials. I may further quote Sir Charles Nicholson as prefacing some particulars of a few recent brick churches, here illustrated: "Modern church design may be said to have been evolved during the century just ended. Owing to a variety of causes, church building was at a standstill in England between the death of Queen Anne and the end of the eighteenth century. It is conceded, even by those who disagree with Thackeray's opinion of the Georges, that the influence of the Hanoverian Court was not such as to foster an enthusiastic churchmanship. Moreover, during the greater part of the eighteenth century, the nation was engaged in a life and death struggle with the French monarchy, the American colonists and afterwards with Napoleon. The population was almost stationary; the old churches sufficed for all requirements; if they fell into disrepair they were patched up; if they were considered draughty and cold, ceilings were made and partitions, pews and galleries were built; if they fell or were burnt down they were either left in ruins or else rebuilt in the plainest possible fashion. . . . The Church of England was roused to activity by the preaching of the Wesleys and the influence of the Tractarians, and since the final overthrow of Napoleon the prosperity of the nation has steadily increased. The growth of cosmopolitanism has led to the toleration of all forms of religion. The Pope is no longer looked upon as an ecclesiastical Guy Fawkes; Dissenters and Freethinkers are no longer treated as anarchists; and consequently an immense amount of building has been undertaken by the Church and other religious bodies during the past century." Gothic is still the style of the English church architect, but it is no longer the Gothic of the architectural duplicator who concerned himself with the exact imitation of thirteenth-century moldings. When, however, one speaks of modern Gothic in terms of praise, it is the work of leading men one thinks of, not the indescribable hotchpot which unfortunately is so frequently perpetrated by mediocre architects up and down the country.

As a modern church designer of ability we may take W. H. Bidlake, whose career in itself furnishes many interesting side lights. As a young man he first entered the office of Colonel Edis, being afterwards with Bodley and Garner and subsequently with Dr. Rowand Anderson. In 1887 he went to Birmingham, quite unknown, and there he had an unpromising start, for his first client died bankrupt before the work was finished, while his second was a swindler against whom he had to take out a warrant, which was followed by five years' penal servitude. To-day, however, Mr. Bidlake occupies a leading position and is recognized as one of

INTERIOR ST. AGATHA'S CHURCH, BIRMINGHAM.

our most resourceful architects. He has a diplomatic way of dealing with the layman. He abjures us never to let him know that we wish to be æsthetic. Let us find a hard, concrete reason for the clearstory and open roof we wish to introduce, pointing out the danger of storms of hail — for the sake of argument — falling upon glass in skylighted roofs with school children below. "Remember it is the prosaic that tells with your committee, not the romantic. There were some dreary walls once in a certain church I had been called in to alter and renovate. They were of that depressing shade I call ecclesiastic green. Now I never can see why, if we want to get a transparent final color, we should put a coat of red, for instance, under green. So the under coats were of bright green, the first very bright, and the vicar was delighted;

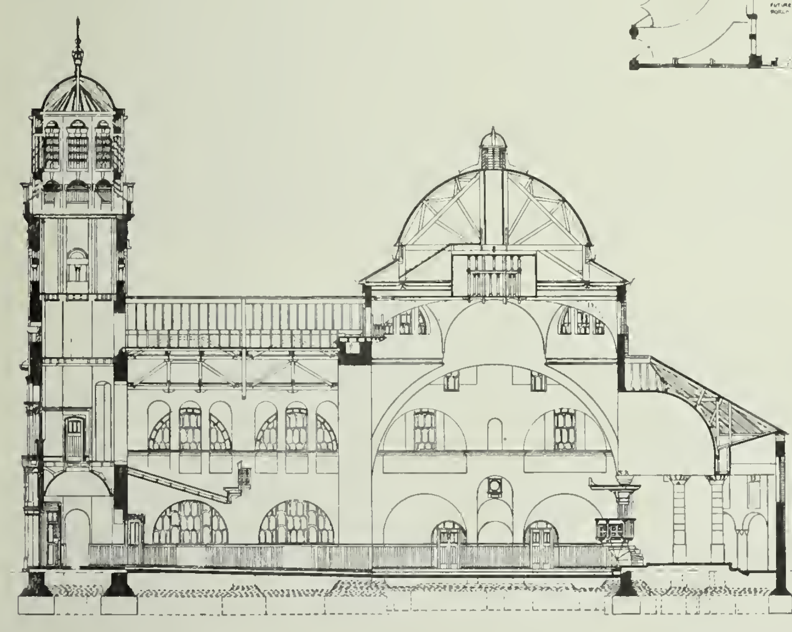


TOWER OF ST. AGATHA'S CHURCH, BIRMINGHAM.

DETAIL OF TOWER, ST. AGATHA'S CHURCH, BIRMINGHAM, ENGLAND.
W. H. Bidlake, Architect.

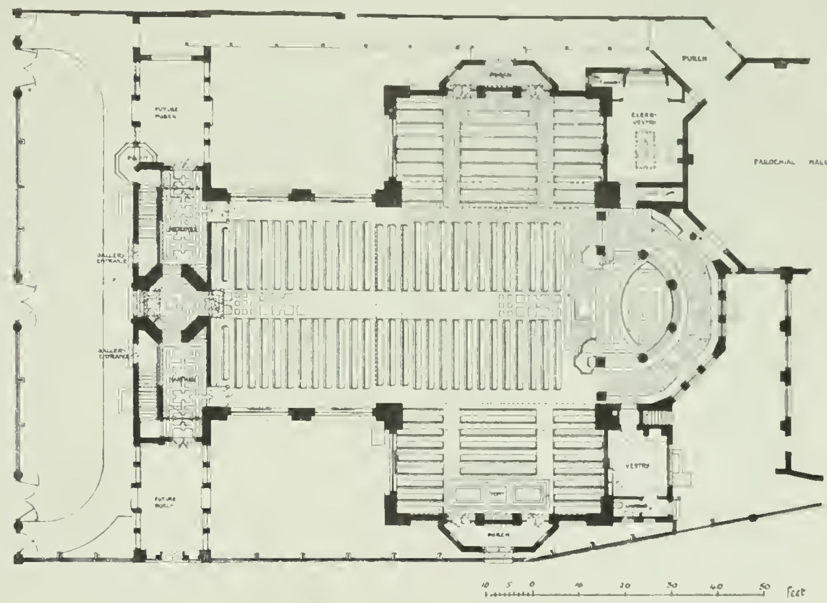
the second toned down a little, but the vicar was dubious and cried, 'Stop.' I could not convince him that when the decorative scheme was complete the final green would look light enough and bright and clear. So in his absence the contractor and I shook hands and agreed, if necessary, to go to jail together, and we put on the final and third coat of green. When the vicar saw the result he was highly pleased, but he said, 'You know I am glad I had my way with those walls'; though as a fact he does not know to this day that *his* coat of approved green was our third and final!"

Mr. Bidlake's new church of St. Agatha at Sparkbrook, Birmingham, has been built by the Birmingham Churches' Fund in fulfillment of a scheme having for its prime object the removal of churches from the center of the city, where they seemed no longer required, to those outlying districts where people have flocked of late years, — a process which has proceeded very extensively in London, to the



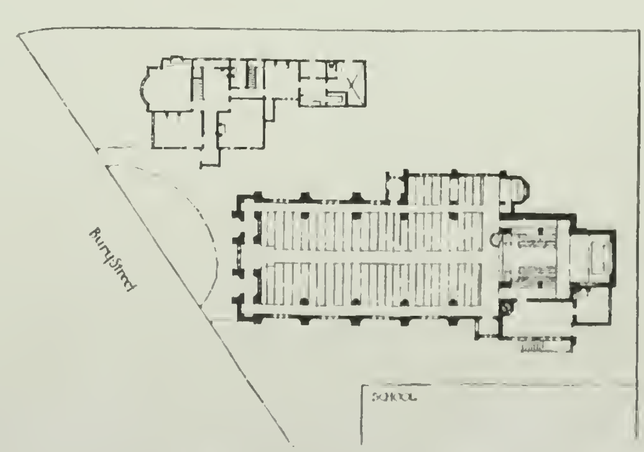
LONGITUDINAL SECTION, CHRIST CHURCH, BRIXTON.

detriment of the city churches, as I shall mention later. St. Agatha's Church cost $75,000, which amount was paid out of the proceeds of the sale of Christ Church, for many years a well-known landmark in the center of Birmingham. The foundation stone of the old church is built into the base of the tower of the new structure, and among other things taken to Sparkbrook from New Street are the font and communion table and a quantity of the mahogany paneling of the old pews, which last has been used in the new baptistery and clergy vestry. The church is in the Late Decorated Gothic style, with an original interpretation of traditional forms. Accommodation is provided for more than one thousand worshipers. The materials employed are buff brick facing within and red and blue bricks without, with stone dressings, the roofs being covered with gray-green slates. Much of the eastern part of the church is hidden by surrounding buildings, but this is compensated for by the imposing west front and tower. The latter is one hundred and twenty feet high to the top of the parapet, surmounted by a fleche rising forty feet higher. It is constructed to house eventually a peal of eight bells, and the large belfry lights in the upper part of the tower form



PLAN, CHRIST CHURCH, BRIXTON.

an important feature in the design. The gilt skeleton dials of a clock adorn the north and south sides of the tower. Below the belfry is the ringing stage, lighted by coupled windows in each face. From the base of the tower projects a semi-octagonal baptistery, over which is the west window, in turn surmounted by elaborate sculpture in canopied niches. The tympana of the porches on each side of the tower are filled with sculpture illustrative of the martyrdom of St. Agatha, while the arch moldings are decorated with cherubs' heads. The nave is one hundred and twenty feet long and twenty-nine feet wide, separated from wide aisles by arcades of Hollington stone arches. Projecting shafts rise between the arches, and, terminating at the cornice level in corbels of leaf sculpture, carry transverse timber arches supporting the timber ceiling, which is partly decorated in color. The



PLAN, ST. MICHAEL'S CHURCH AND VICARAGE, EDMONTON.

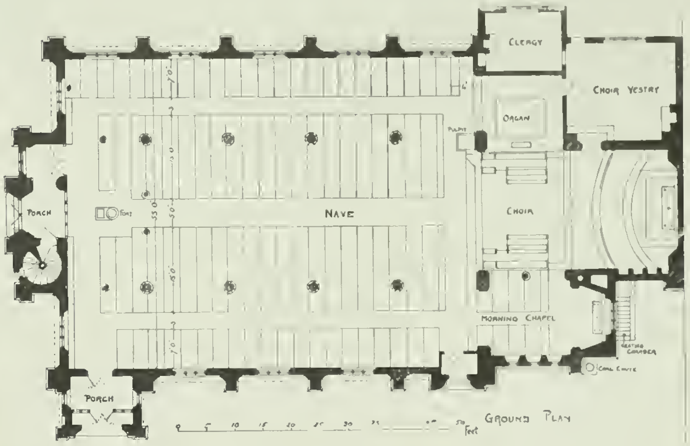
ST. MICHAEL'S, EDMONTON. W. D. Caröe, Architect.

TOWER OF ST. MICHAEL'S, EDMONTON.

clearstory, and indeed the church generally, is lighted by elaborate traceried windows, nearly every one of different design. The chancel is separated by arcades from a choir transept, over which is the organ chamber on the north side, and from an ambulatory which communicates with the vestries on the south. The choir seating is of fumigated oak, that of the nave being of sequoia wood.

INTERIOR, ST. ALDHELM'S, EDMONTON.

We may now turn to a modern English church totally different in every way — Christ Church, Brixton, London. Some illustrations of it, when the building was being completed, were published in THE BRICKBUILDER for January, 1903, and the plans and longitudinal section now



PLAN, ST. ALDHELM'S, EDMONTON.

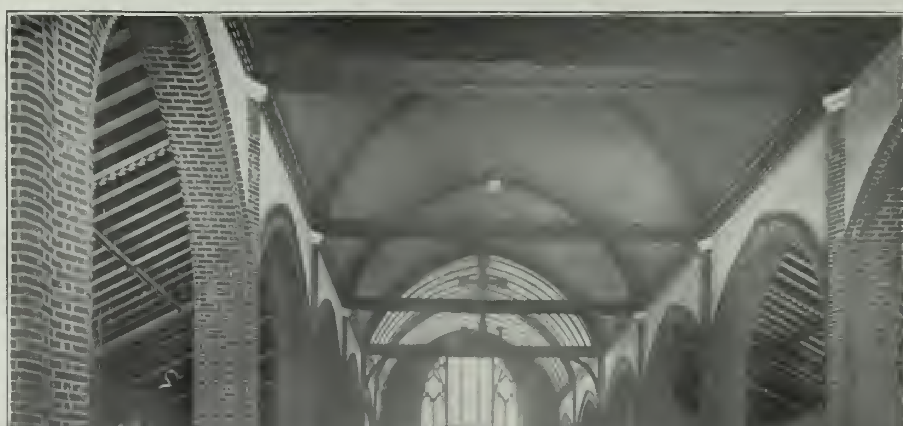
given may be examined advantageously in conjunction with them. Professor Beresford Pite is never likely to produce anything commonplace. He is an exponent of modern construction, with a knowledge of and respect for the past, and his designs exhibit essentially

ST. ALDHELM'S, EDMONTON.

individual treatments in many details; in Christ Church, Brixton, we note this, though we may not like all we see. The site was an awkward one, and very considerable ingenuity is exhibited in the adaptation of the church to

ST. ALDHELM'S, EDMONTON. W. D. Caröe, Architect.

it. There are no piers or columns to obstruct the view from any part, the plan being that of a wide nave with shallow transepts and an apsidal chancel having pillars forming an ambulatory, a noteworthy feature of which is that it is used by communicants, the altar rail forming the inner arc. Over the crossing is a dome carried on four brick arches four feet six inches wide and flat in section, the square being reduced to an octagon by diagonal iron girders, frankly shown; the pendentives are formed by plaster. The lining of the dome is interesting, consisting of strips of wood alternately light and dark and diminishing in size towards the crown A ventilation shaft extends from the center of the lower inner dome to a cupola above the outer dome. The nave roof has pine trusses carrying trussed purlines (see longitudinal section) and is boarded.



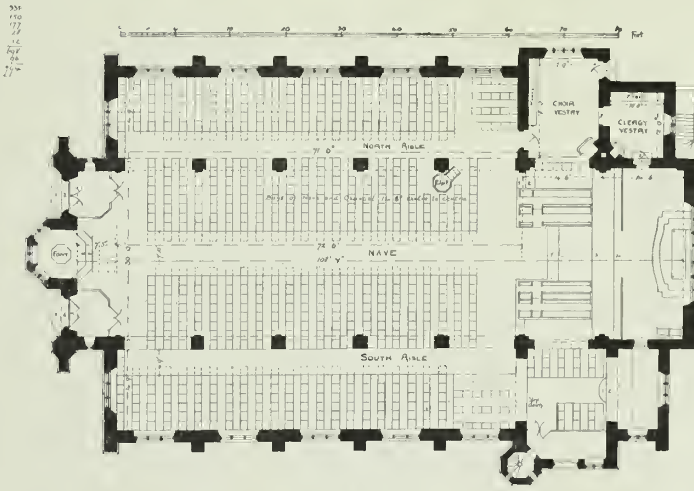
INTERIOR, ST. COLUMBA'S CHURCH, WANSTEAD.

Another feature of the church is the exposed iron girder across the gallery front, an unconventional introduction, but undoubtedly successful. The window tracery, too, is worthy of attention. The inside walls of the church are plastered, and scriptural texts are painted on them here and there. Accommodation is provided for twelve hundred worshipers. The cost was $85,000.

The two churches by Mr. Caröe at Edmonton are typical examples of his work, which is good modern Gothic, carried out in a substantial but inexpensive manner. The plan is much the same in each case, being of the hall type already alluded to; in St. Michael's especially the arrangement of the nave as an unobstructed space constituting almost the whole church is noticeable. The exterior of both churches is of red bricks, with red tiles on the roofs, and at St. Aldhelm's tiles laid in cement are introduced in radiating lines at the heads of the aisle windows and elsewhere. Inside, the piers of St. Aldhelm's are of white stone encased with wood, paneled and stained green, for a height of about five feet from the floor, which is of wood blocks. The roof is of open timber construction, boarded over the chancel. There is no window in the east end wall, the sanctuary being lighted by windows on either side. At the opposite end of the church is a small gallery carried on stone pillars, with a font under. Accommodation is provided for about seven hundred worshipers. St. Michael's is a much larger church, plastered white inside, with red brick arches in several parts. The chancel has a cruciform window on one side, opposite the organ. This church is covered by a fine roof in Oregon pine. The building was erected from the proceeds of the sale of St. Michael Bassishaw in the city of London, one of Wren's churches, which was pulled down and sold for about $1,000, most of which sum was realized by the lead.

ST. COLUMBA'S CHURCH, WANSTEAD. E. P Warren, Architect.

The pulling down of the city churches has been the subject of many protests. Only fifty-one remain out of the one hundred and fifteen that existed in the Middle Ages. St. Aldhelm's Church, exclusive of site, cost $35,000, and St. Michael's (including the church house adjoining), $60,000. At St. Michael's the morning chapel is dedicated to St. Michael Bassishaw, to preserve its relation to the now demolished city fabric.



PLAN, ST. COLUMBA'S, WANSTEAD.

The two churches by E. P. Warren were both erected at little expense, especially St. Columba's, Wanstead. This has a distinctive appearance inside by reason of the roof ties that extend over the nave and the graceful arcades. The exterior of the church at Basset is very strong in effect, which is gained by simple means; inside it is plastered, with decorated wooden emblems affixed at the springings. The internal buttresses, which Mr. Warren often employs, will be noticed. The cost of St. Columba's was $33,500, and the portion of Basset Church $17,500.

All the foregoing churches are of the Church of England, so that I may refer with interest to one of another denomination — the Presbyterian Church at Putney, of which E. W. Mountford is the architect. The design was accepted in competition and groups happily together. The tower masses up well, and its stone spire is pleasingly arranged in proportion to the rest of the structure. Inside the church is less interesting.

BASSET CHURCH, NEAR SOUTHAMPTON. E. P. Warren, Architect.

The "Village Block" Series.

ARTICLE II.

BY DONN BARBER.

THE rapidly increasing development of country or, perhaps more properly speaking, suburban life in America is having a noticeably important effect upon American architectural practice. Each year shows an astonishing increase in the number of attractive, well-designed country homes ranging from the modest to the sumptuous.

Our people, in deciding to live more in the country, seem to be regarding the cities in the light of their workshops. Their country homes absorb most of their real attention and become interesting in that they reflect the private life of the individual and show us varying ideals of comfort and luxury and degrees of artistic taste and appreciation. Many of these homes are important to our architectural evolution in that they are actually making American architectural history. They belong in many cases to those whose names are known the world over in art, music, literature, science, politics, affairs or society, and are therefore representative of our modern civilization.

We want then the quiet spaciousness of the country; but we are a commercial people, and to settle in the country usually means locating near some established village, for purposes of convenience, communication and accessibility to business. It is interesting, therefore, to speculate as to how this energetic introduction of serious and costly architecture into the environs of our villages is going to affect the architecture of the villages themselves. Let us hope that it will do much for the improvement and betterment of it, and that at as early a date as possible.

Every right-minded man must feel a proper pride in seeing even incipient municipality substantially and decently housed, and appreciate the manifold advantages that spring from having suitable and intelligently designed buildings.

Village architecture, as it exists to-day, seems to have developed for the most part accidentally and along the lines of least resistance and from a sort of hand to mouth state of affairs. Buildings have been constructed when needed, in a cheap, ordinary, inadequate, inappropriate and illogical fashion, with no thought or provision for the future and with absolute disregard for appearance or fitness. Villages are usually in consequence unsightly, unrestful, cheerless and depressing. They serve the utilitarian side of our life after a fashion, but æsthetically they are entirely insufficient.

Our country has grown so rapidly that the utilitarian side of our life thus far has seemingly developed independently of the artistic or ideal side, and public opinion has seldom been known to promote art, although it has always influenced it. The energies of our people have been mainly occupied by commercialism, leaving little or no opportunity for art development except of the most casual and perfunctory sort.

Art in this country has usually been produced by individual ambition coupled with the power to create a change and a personality and tact sufficient to produce this change without apparent hindrance.

The important thing for the architect of the present to appreciate is that he shall be restrained and guided in the planning of the building intrusted to him by the spirit and conditions of its setting and surroundings and influenced by the part his work may play in the future development of the district he is invading. He should sacrifice his pet idiosyncrasies and lose his identity if necessary that befitting entirety may live.

It is not necessary that all the buildings of an entire block should be designed by the same architect in order that they should be architecturally successful and pleasing to the eye. In fact, the separate buildings can reflect beauty, ingenuity and personality of design, and at the same time harmonize with one another, if the controlling lines of the composition, the color effects and the general scale and style of the parts of the composition carry broadly throughout all the buildings.

Architectectural completeness consists in grouping together harmoniously the individual units of a composition. It is not necessary that each unit should be an echo of the others, but it is supremely necessary that each unit should play its part in harmony with its neighbor. They should all be planned in such a way as to contribute the most to the ensemble in which they happen to be placed. A common vocabulary is as necessary to architecture as a common language is to literature.

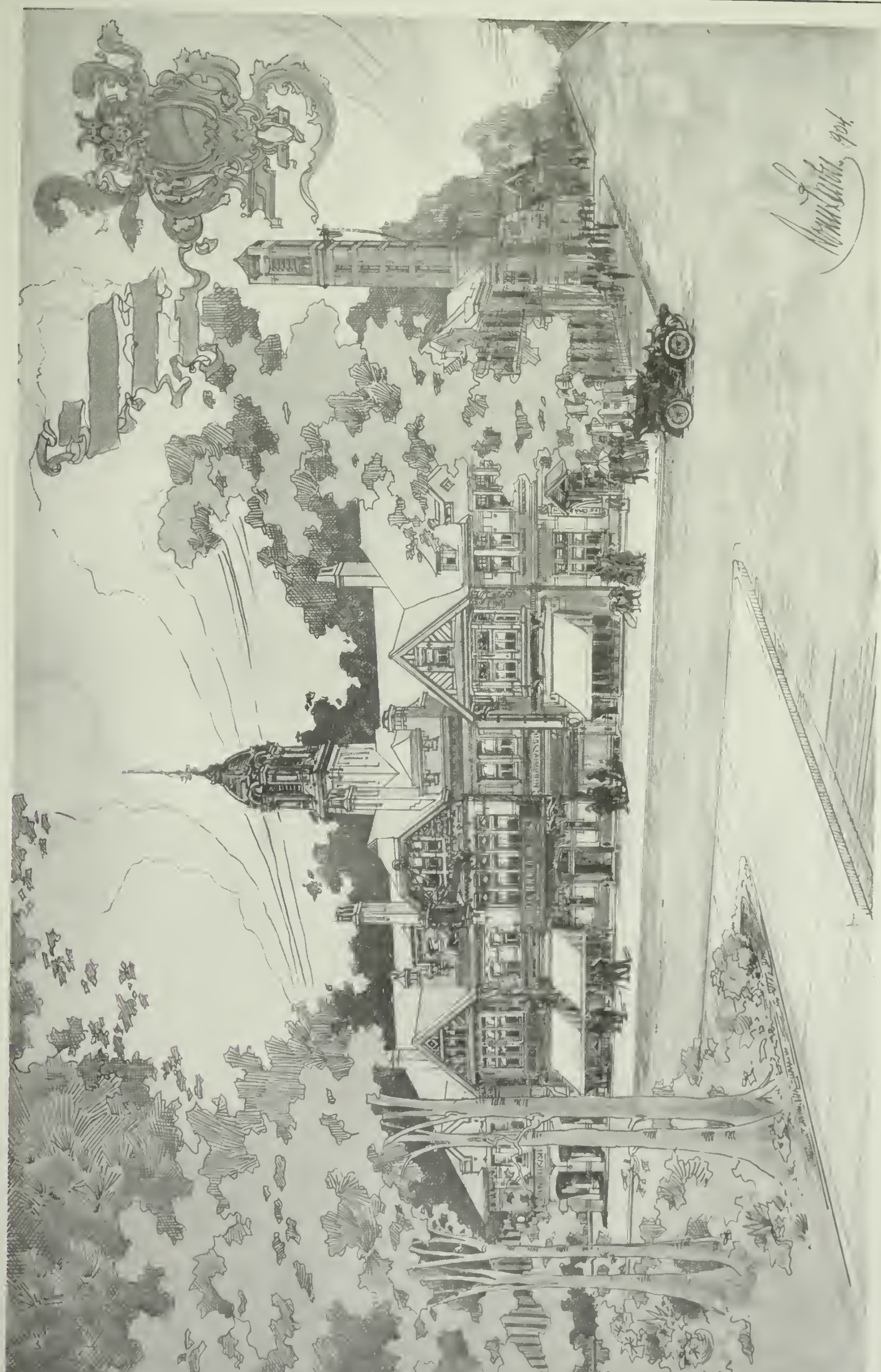
The individual instruments of an orchestra, though differing widely in the sounds they produce, can be so played that their combined sound produces beautiful harmonies, but this only when each is being played as it should be in proper correlation and with regard to the whole effect. We know what bedlam results from each one's playing his own instrument in the theme and key of his choice, utterly regardless of what is going on around him. Ensemble is understood and appreciated, and absolutely demanded in the orchestration of music, but we are slow to require harmony, consistency and comprehensiveness in an architectural idea. Harmony means restfulness, peace, law, economy and order.

The much maligned old brownstone fronts in New York, where the stoops are all the same, where the architectural features are repetitious, and where the cornice lines run continuously, are to the most untutored mind much to be preferred to some of our newer streets where the architecture is perhaps individually much better than that in the conservative brownstone rows, but where color, style and scale run riot and where each house vulgarly claims to be the whole thing.

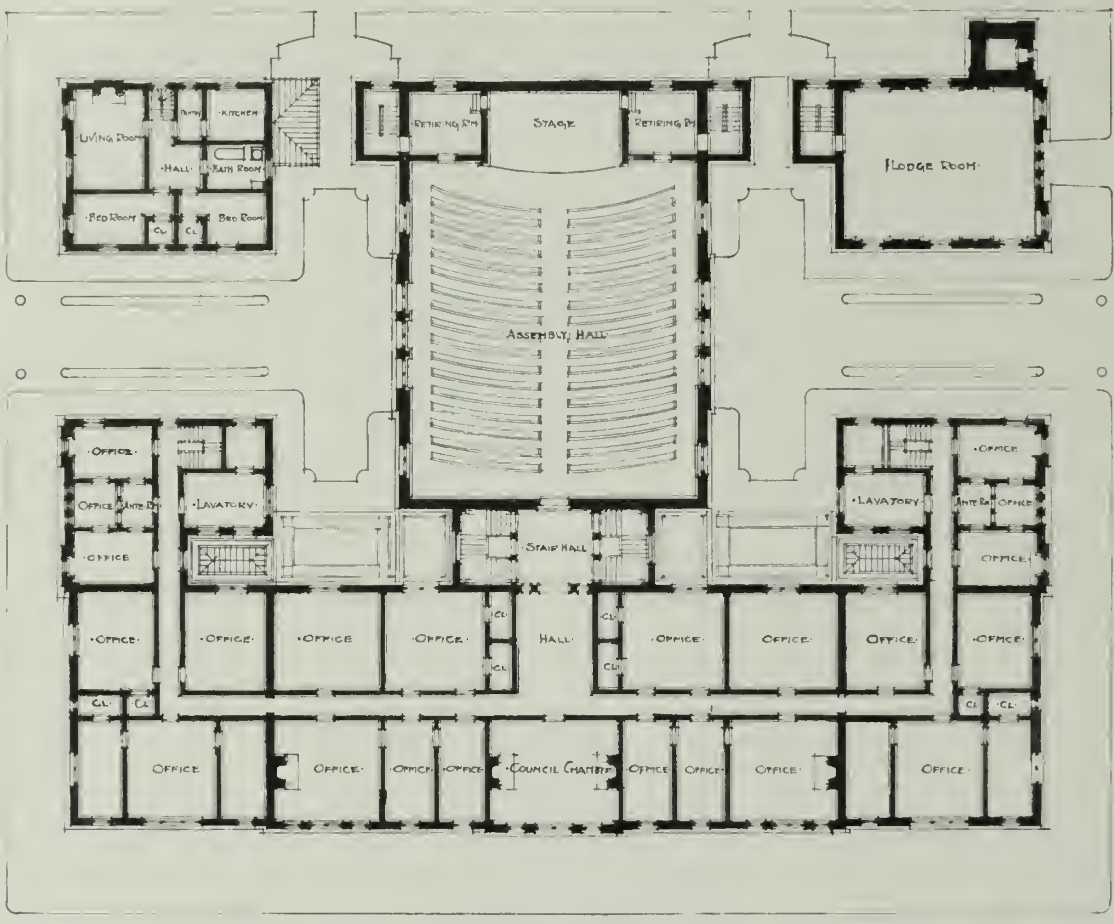
In planning and designing one or more units in a village or city block, it is of absolute importance that the architect shall play his part of the composition in the proper key and be governed in his theme by what others have done and are doing alongside of him.

Uniform and accoutrement have much to do with the imposing effect of a regiment, but in marching this uniformity and order must be carried still further and each man must keep step; though many in numbers, they then become a unit in movement. The same regiment immediately loses dignity, formality and impressiveness, and becomes simply a crowd wandering along, as soon as they break step and walk as best suits the convenience of each individual.

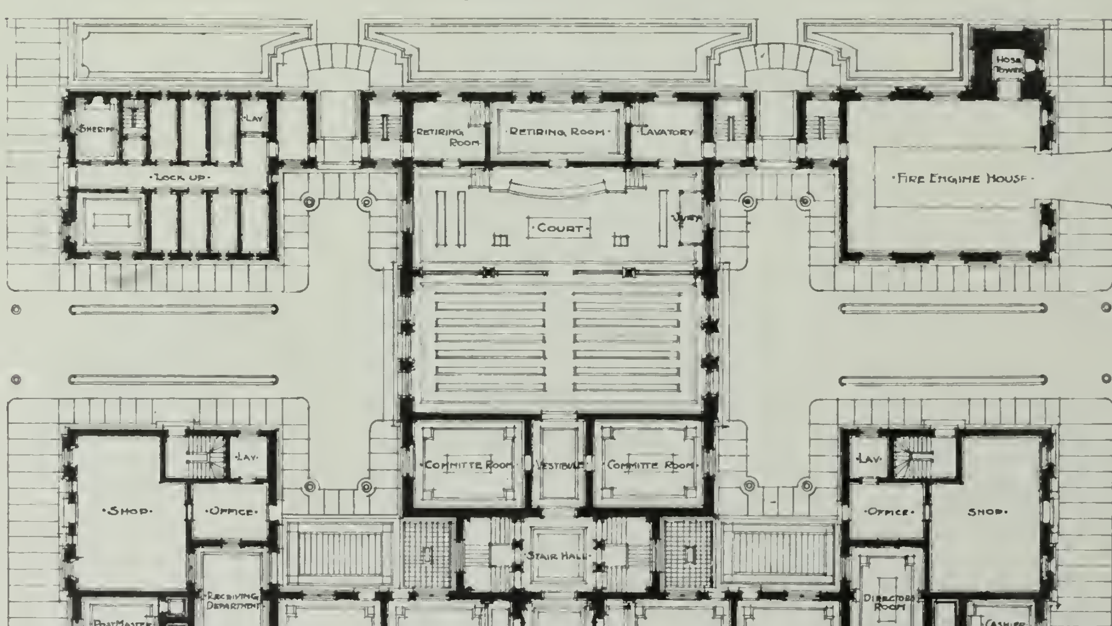
Until such time as our governments require that our



THE VILLAGE BLOCK. Donn Barber, Architect.



Second Floor Plan.



First Floor Plan.

PLANS, THE VILLAGE BLOCK.

architecture and buildings shall be properly restricted, the architects can do much for the good of the community by mutually agreeing among themselves as to certain broad restrictions which shall govern their work. This cannot be brought about by the copying or adapting of ancient forms of architecture and fragments of existing monuments and reassembling them to suit new conditions, but must come through the sincere and thoughtful working out of each problem presented to them, using common sense in the matter of style, composition, scale, selection of materials and plan disposition.

Our village architecture should be palpably village architecture and not a cheap, silly imitation of city forms. There is no need of monumentality in village architecture. Picturesqueness is rather more to be desired, inasmuch as it is more appropriate when sensibly and properly handled.

From the rapidly increasing number of men in this country who have spent years in strict artistic training, study and travel abroad, we have a right to look for some outward expression of their fitness and creative ability; some manifestation of their knowledge of logical succession and tradition, and power to produce something really worth while. Let us hope that when the manifestation finally appears, that it will mark a complete departure from the promiscuous use of threadbare classic forms, from the free borrowing of ancient styles, and from the senseless and ignorant imitation of current European architecture.

The principles and methods of good design, composition, planning and proportion are now sufficiently well understood to call for an appropriate, sincere and fittingly correct solution of any given problem.

Let us ever remember that good architecture will inevitably result from the faithful, untiring and invariable application of good, sound, logical common sense and reason to each separate detail of everything we do.

The village block, of which this article is the immediate subject, has been conceived as one between two streets of second importance, facing a public square and containing a small post office, several stores and a bank on the first floor, with small offices above. A central building has been arranged in the rear, containing a court room on the first floor and an assembly room or town hall above. Entrance to this central building is had through an arcade, the stores on either side of which could be subdivided if necessary into small shops or booths.

A police station and fire engine house, disposed one on each of the secondary streets and at the back of the property, complete the grouping.

The perspective sketch shows elevations purposely avoiding any particular style of architecture. The separate buildings are arranged and composed of nondescript units and combined under a single though broken roof. The town hall is accused by a tower motif which affords an opportunity of enriching a point of interest in the center of the roof composition. Architectural motifs have been apparently strewn at random, but an effort has been made to bring about a harmony throughout by the indirect carrying through of certain broad lines and the holding to a certain scale of fenestration, ornament and general masses.

The Structural Design of Buildings.

AN architect charged with the design of buildings in more than one city cannot be but surprised at the differing requirements of various cities governing their structural design. This condition of the several building codes arises from the lack of complete data upon the necessary provision to be made for floor loads, wind loads and other external forces which may act upon the building. Attempts have been made to supplement the existing data, and to this end Mr. Blackall, Mr. Everett and Mr. Shankland, among others, have weighed the actual contents of a number of offices in several buildings in order to find some basis for estimating floor loads.

In October of this year Mr. C. C. Schneider, M. Am. Soc. of C. E., read a paper before the American Society of Civil Engineers, under the title, "The Structural Design of Buildings," with the object of bringing forth an exhaustive discussion and with the hope of bringing out some valuable suggestions that might result in a more uniform practice, as well as greater uniformity in ordinances relating to building construction.

Mr. Schneider has presented for consideration upon which to open the discussion, a set of specifications which were prepared for the guidance of structural designers in the offices of the company with which he is connected. These specifications are intended to cover only the structural features of the modern type of buildings in which steel is a component part.

Mr. Schneider calls attention to lack of uniformity in the requirements for the live loads of floors which vary from 40 to 75 pounds for dwellings, hotels and apartment houses; from 60 to 150 pounds for office buildings; from 80 to 150 pounds for public assembly rooms, churches and theaters; from 75 to 150 pounds for schools.

Another great difference noted in the several building codes is the variations permitted in the column and foundation loads. Some cities permit a reduction of the floor loads carried to the columns and foundation and others do not. It is of course evident without argument that no such difference is logical or rational, and that what is suitable for one community is suitable for another.

In the paper referred to, the writer thereof calls attention to what he terms "the irrational practice of specifying a uniform live load per square foot," and points out that maximum floor loads usually arise from concentrated loads, such as safes, etc., which may be carried on one beam only, and that in but few instances is it possible to make combinations of extreme loads which will produce results equal to the concentrated load of 5,000 pounds assumed for an office fireproof safe. Trials were made of the weight of cases used for holding drawings which gave about 326 pounds per lineal foot, and of a single row of bookcases which gave 170 pounds per lineal foot or 340 pounds per lineal foot for a double row 6½ feet high, all of which does not equal the effect of the concentrated load of 5,000 pounds unless the beam is 30 feet in length or over. A concentrated load of 5,000 pounds is equivalent to the following uniformly distributed loads per lineal foot of beam of different spans:

Spans in feet,	10	20	30	40
Uniform load in pounds per lineal foot,	1,000	500	333	250

If the span is thirty feet or more, then the load of 340 pounds per lineal foot would govern the design, but it is pointed out that ordinary offices are rarely more than thirty feet long, and the probability is not great of a continuous unbroken partition with bookcases in each side.

The table given of uniformly distributed loads permits a comparison to be made of the two assumed methods of loading:

Span of beam in feet.	Distance between centers of beams in feet. 4	5	6	7
10	250	200	166	143
15	166	133	111	95
20	125	100	83	71
25	100	80	66	57
30	83	66	55	48
35	72	57	48	41
40	62	50	42	36

Mr. Schneider points out that the application of the method of concentrated loads to each beam has the advantage of having all beam connections proportioned for a load of 5,000 pounds, which not only permits stronger connections, but provides for excessive concentrated loads which frequently occur during erection.

In the design of girders he finds that a concentrated load of 5,000 pounds is not sufficient to provide for all cases of extreme loading, while a uniform load of 1,000 pounds per lineal foot was found to be sufficient unless the uniform load of 40 pounds per square foot is found to give a greater result, which he advocates as the unit for uniform floor loads.

He suggests that floor girders be proportioned by the following three methods and that value used which is the greatest.

First. For a concentrated load of 5,000 pounds.

Second. A uniform load of 1,000 pounds per lineal foot.

Third. A uniform load of 40 pounds per square foot of floor area.

The methods suggested above will be found to give live loads on the beams of 100 pounds per square foot and 50 pounds per square foot on the girders, when the columns are placed 20 feet between centers in either direction with the beams at 5 feet between centers.

If the columns are spaced 25 feet between centers and the beams are on 5 feet centers as before, the live loads will be found to be 80 pounds per square foot on the beams and 40 pounds per square foot on the girders.

In dwellings he suggests that as safes used in private houses do not exceed 2,000 pounds, that this be taken as the maximum concentrated load on the beams and 500 pounds per lineal foot uniform load on the girders in connection with a uniform floor load of 40 pounds per square foot.

The unit loading of 40 pounds per square foot Mr. Schneider considers is sufficient for all ordinary conditions, but recommends that this figure be increased to 80 pounds for ball rooms, drill rooms, assembly rooms and gymnasiums where impact is to be provided for, and still further recommends that the depth of girders and beams should not be less than one-fifteenth of their span in order to reduce deflections and vibrations.

In the matter of loading of columns the building laws of some cities permit a reduction of the floor loads carried to the columns. The New York law provides that in building more than five stories high, the load on the columns may be reduced five per cent for each story (commencing with the columns carrying the second floor from the top) until a reduction of fifty per cent is made, with the further provision that the dimensions of the smaller columns shall be sufficient for a minimum live load of 20,000 pounds, and that the proportion of the length divided by the least radius of gyration shall be limited to 125.

If these rules be applied to the columns carrying the top floor of an office building they will give a live load of 40 pounds per square foot of floor area (unless this load is exceeded by a concentrated load of 20,000 pounds), and which load under the fifty per cent reduction is reduced to twenty pounds per square foot of floor area on the lower columns. Messrs. Blackall and Everett found that the average maximum live load on an office building floor was 40.2 pounds per square foot, and the average total maximum for the building was 17 pounds per square foot, and therefore the 20 pounds per square foot allowed under this rule would be sufficient to cover the conditions ascertained by these investigators.

In the design of foundations the practice varies widely. In the old days of masonry buildings the usual method was to figure the total weight of the masonry and add the assumed gross floor loads, and then proportion the footing to carry this, on the area determined by this load divided by assumed safe load per square foot. On ground which was practically incompressible this method gave satisfactory results, even if it was not an economical one. With the advent of high buildings which frequently had to be founded on soft and compressible soils, this method was no longer suitable, as the loading of the footings had to be kept uniform in order that the settlement (which could not be avoided) might be uniform. The use of this new method, therefore, involved the determination of the actual dead loads on the various parts of the structure, and the disregard of, or the equalization of live loads, so that the actual pressure on the footings in all parts of the building was maintained at a uniform amount.

In the design of buildings having a framework of iron, it has been customary to design the footings for the total dead load and for a certain percentage of the live load, and usually 50 per cent of the live load has been assumed to be sufficient, on the theory that but part of the live load is on the buildings at any one time.

In Mr. Schneider's paper he suggests that as the foundations have in all probability reached their maximum settlement before the building is occupied, that it would be logical to omit the live load entirely in calculating the footing, but to reduce the pressure per square foot so that with the live load added it will not exceed the safe load on the ground. Thus if the average live load in a fireproof building is taken at 20 pounds per square foot, and the dead load on the interior columns be taken at 100 pounds per square foot for the weight of the floors and partitions (with considerably more on the exterior columns supporting the walls), then for an interior column, for example, or for a column which supports the greatest portion of live load the following calculation can be made:

say 100,000 pounds live load,
400,000 " dead load,

500,000 pounds total load.

If two tons per square foot be assumed as the safe load, then $\frac{500000}{4000} = 125$ square feet. Now if 125 square feet be taken as the proper area for the footing and the live load be omitted in thecalculation, then we have $\frac{400000}{125} = 3,200$ pounds per square foot for the dead load alone. Then using this as the unit of pressure, the footings may be proportioned for the dead load alone, with uniform loads on all the footings, but with ample provision against the live load ever increasing the actual loads beyond the safe capacity of the ground.

In the design of the framework the author of the paper insists that the skeleton of the building be treated as an independent structure, the same as the towers of a viaduct, and that adequate provision should be made for resistance to wind forces. This provision is now recognized as necessary, and it is required by all the modern building laws. The increased stability obtained during erection together with the facilities wind bracing offers, in the way of permitting the columns to be kept plumb alone should dictate its use, even if no wind forces had to be contended with. When these are taken into account, and the rigidity and prevention of wear at the joints are considered, no further arguments should be needed to insure its use in all high buildings.

In the discussion brought out by this paper, there was a great deal of consideration given to the proposed change in designs of floor beams from a uniformly distributed load to one of concentrated loading, and also to the low unit of floor loading of 40 pounds per square foot proposed, and by some of the speakers this limit was thought to be too low, when it was remembered that if the determination of the proper sized beams was left to the office boy he might err on the wrong side. There was little doubt in the minds of the speakers that the concentrated load system of figuring the beams was the proper one, and the only difference of opinion seemed to be as to the proper assumption for the live load per square foot when this load governed the design of the floor beams. There was a doubt expressed that the practice of too great an economy in floor beams might lead to insufficiency in the factor of reserve; that while it was possible to exercise a greater economy in floor beam design than the present building laws permitted for certain kinds of structures, yet the possibility of the uses of the building being changed made it inadvisable to make this floor load unit so low, and it was suggested that from 50 to 80 pounds per square foot, with provision for concentrated loads, be substituted for the low limit.

It was brought out in the discussion that the permissible floor loads of dwellings should be kept at such a figure as to permit the use of steel floor beams, so that the use of fireproof construction might be extended, and that a concentrated load of 1,200 pounds for a portable safe might, with a low unit for distributed floor load, be used for this class of buildings. There is no doubt that light floor loads in dwellings are entirely permissible, and that by permitting them the permanent construction of dwellings would be encouraged, with a marked increase in sanitary construction and with great benefit to the community.

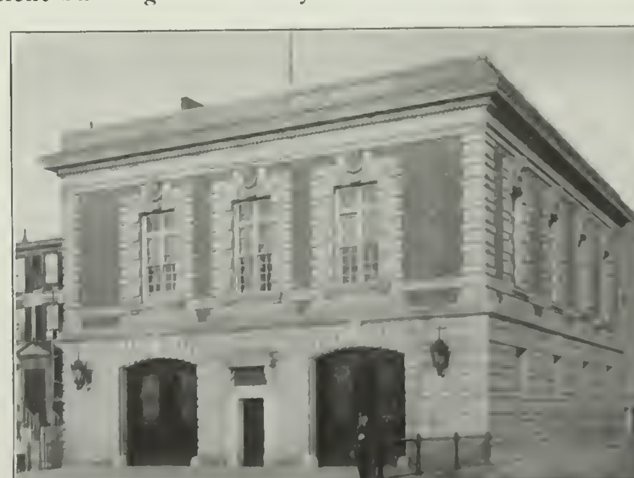
Editorial Comment and Selected Miscellany

FALSE ECONOMY.

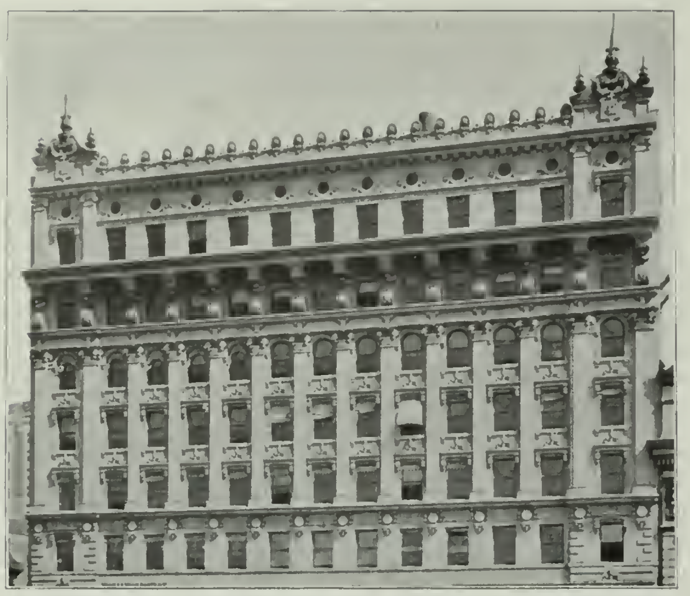
WHEN a man is building him a house a delay of a few days at the final completion or extras amounting to a few dollars added to the total cost will often assume a magnitude when the house is first occupied out of all proportion to their real importance. In the same way, in the building of our public institutions, a little added expenditure at the start will often be scrutinized with a care that is entirely disproportionate and unwarranted, and which is not justified by the conditions. This is specially true of the added cost of fireproofing

MEMORIAL GATE, UNIVERSITY OF PENNSYLVANIA.
William Charles Hays and E. P. Bissell, Architects.

over that of the ordinary construction. When a great state is building an insane asylum or a hospital it is a very narrow, shortsighted policy which would cavil at an increased expenditure of the fraction of one per cent which would be necessary to build throughout in a first-class manner, and yet this is what happens very often. No one questions the value of fireproof construction, nor does any one at all familiar with it deny the advisability of so constructing all public buildings that they shall be as far as possible first-class. In the long run it would undoubtedly be far cheaper for the state to put up smaller buildings and construct them better, than to extend second-class constructions and perpetuate insufficient building. It is only the first cost that is more.



ENGINE HOUSE, NEW YORK CITY. Edward P. Casey, Architect.



DETAIL OF UPPER STORIES OF OFFICE BUILDING, NEW YORK CITY.
Henry Ives Cobb, Architect.
Terra-Cotta furnished by Excelsior Terra-Cotta Company.

And when we consider that such structures are built for all time, and will probably last, in the natural course of events, at least half a century, it seems a most mistaken sort of policy to cut short on this part of the work. A building which is insufficiently designed as to exterior effect can be improved and corrected, but the internal construction is fundamental and is altogether too vital in its

THE REPUBLIC BUILDING, CHICAGO, ILL.
Holabird & Roche, Architects.
Fireproofed by the National Fireproofing Company.

DETAIL EXECUTED BY ST. LOUIS TERRA-COTTA COMPANY.

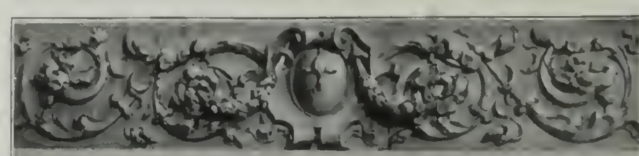
nature to justify such economy in this direction as would render the building anything but the best. If money is not at the command of commissioners to make their asylums or hospitals fireproof they would be doing a public benefaction if they should resolutely refuse to carry on work for which the funds were so limited that it could not be done right, and to allege that mill construction affords any protection against fire, or that it should be seriously considered as any marked improvement over the ordinary cellular inflammable floor construction, does

STABLE, LEXINGTON, KY. Copeland & Dole, Architects.
Roofed with American "S" Tile, made by Cincinnati Roofing Tile and Terra-Cotta Company.

not relieve any commission from its duty of insisting upon thorough and lasting fireproof construction.

FIREPROOFING WHICH DOES NOT FIREPROOF.

THE ordinances of some or our larger cities unfortunately recognize plaster as a fireproofing material. We use the word "unfortunately" advisedly. Plaster of Paris is in some respects one of the best non-conductors of heat with which we are commercially acquainted, and as a mere insulating material it would answer a purpose of protecting steel from the action of heat, if that were all that a fireproofing material is called upon to accomplish. Because of its non-conducting qualities repeated attempts have been made to utilize the material in various fireproofing systems, but the experience of the Baltimore fire alone is ample to demonstrate that any compound having plaster as its base is worthless after a relatively slight exposure to fire alone and is speedily destroyed by



DETAIL BY GEORGE E. MURPHY, ARCHITECT.
Perth Amboy Terra-Cotta Company, Makers.

ENGINE HOUSE, BROOKLYN, N. Y.
Adams & Warren, Architects.

combined action of heat and water. Notwithstanding the frequent practical lessons which conflagrations have shown in this respect, some of our building statutes continue to admit the protective qualities of plaster, and even go to the length of placing one inch of plaster, even when mixed with lime and applied upon metal lathing, as being the equivalent of far greater thickness in other and more reliable materials. Nor is this all. The ordinances in the cities referred to admit one inch of plaster on metal lathing as being sufficient fireproofing for structural steel, but do not stipulate just how it shall be applied, and accordingly a practice has arisen and received the sanction of the authorities of considering mere ordinary plaster applied to metal lathing stretched across on the ceiling from beam to beam as being sufficient to pass for fire protection. Likewise in some of our largest buildings the columns have been protected by nothing more reliable than an enclosure of metal lathing and a scant one inch of plastering. No one who has had the slightest experience with actual tests of

DETAIL EXECUTED BY NEW JERSEY TERRA-COTTA CO.

CENTRAL PARK PUMPING STATION, CHICAGO, ILL.
R. Bruce Watson, Architect.
Terra-Cotta furnished by Northwestern Terra-Cotta Company.

building material would undertake to claim that such construction efficiently protects the steel. It passes the law, but is scientifically and positively bad in that because of its cheapness it acts as a discourager of real fireproofing. This system has even been carried further. So-called first-class buildings have been constructed with pitch roofs supported by long span steel trusses or girders, the only fireproofing of which was that afforded by the plaster ceiling stretched on metal lathing immediately beneath the trusses and by a fireproof construction between the roof beams overhead, leaving the steel which actually supports the whole entirely unprotected. There are many cases where real safety does not call for any more fireproofing than the above-men-

FIRE PATROL HOUSE, NEW YORK CITY.
D'Oench & Simon, Architects.

tioned methods afford, but it is certainly wrong to designate such construction as being in any sense fireproof, and it would be far better to recognize that under some cases steel beams and trusses do not require special protection than to assume that a mere ceiling and roof will sufficiently protect all the construction between to such degree as to entitle it to be classed as fireproof. The experience of all large fires has shown that a single inch in thickness of any known material, however well designed or applied, is not sufficient to protect structural steel, and that plaster least of all, which goes to pieces under water and disintegrates under fire, should ever be relied upon for constructive purposes.

HOW TO DISCOURAGE FIREPROOF CONSTRUCTION.

THE Boston building law prescribes that every structure over seventy feet in height shall be of first-class, that is to say, fireproof construction, the maximum

STABLE, NEW YORK CITY. Charles W. Romeyn, Architect.

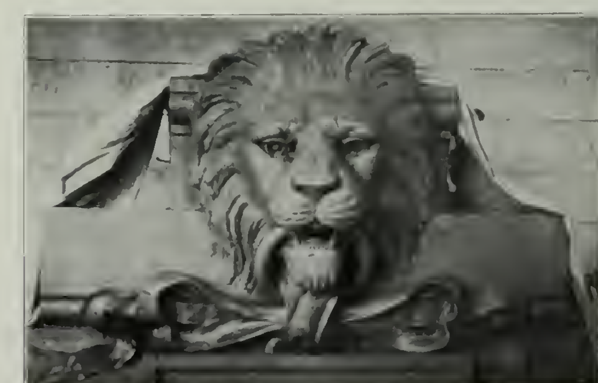
height allowed for any building being two and a half times the width of the street, or one hundred and twenty-five feet. Compared to modern buildings elsewhere this extreme limit of height would not be called at all excessive, but even that maximum has recently been curbed by legislative enactment. A commission has been at work under the instruction of the Legislature districting the city into areas of two classes, in the first of which buildings may be carried to a maximum height, while in the second no structure shall be carried more than eighty feet high. The business portions of the city are rapidly

DETAIL EXECUTED BY NEW YORK ARCHITECTURAL TERRA-COTTA CO.

encroaching upon the Back Bay residential quarters, and the manifest intent of the statute was to minimize the incongruities of the portion which lies between what is still residential and what has for some years been purely for business, so that Boston shall have as little as possible of the startling contrasts of the sky-scraper and low buildings which are always so unpleasant on the fringes of the commercial district.

DETAIL BY E. TOBEY, ARCHITECT.
Atlantic Terra-Cotta Co., Makers.

From an æsthetic standpoint the action of the commission is deserving of the highest praise, and they have considered and adjusted the conflicting real-estate interests in as fair a manner as can be expected, but the immediate result of their action and of the statute itself will be to put a premium upon second-slass buildings and to discourage fireproof construction. It is now often



DETAIL BY F. S. BARNUM & CO., ARCHITECTS.
American Terra-Cotta Company, Makers.

HOUSE, BEVERLY, MASS.
Guy Lowell, Architect.
Roofed with Ludowici Roofing Tile.

the case that where the real-estate conditions do not at present justify building more than five stories, the construction is so arranged that additional stories can be built when desired and the whole building made fireproof. Where, however, eighty feet is the limit of any construction, a consideration of the rights of others will hardly be enough to persuade a property owner to put up a first-class building. It will therefore inevitably happen that in the low building districts first-class structures will not be put up, because of the larger expense involved, with the readiness that they have been in the recent past. We do not build modern structures for ten or fifteen years, but with the expectation that they shall last at least a lifetime; and looking ahead to Boston as it will be forty or fifty years hence we believe that the result of the application of this statute will prove to have worked a degree of harm to the best interests of the city which will far more than offset the æsthetic gain to a district which at its best is in a state of transition.

IN GENERAL.

The architects of Montana have banded together under the name of the Montana Association of Architects. A constitution and by-laws, based upon those governing the American Institute of Architects, have been adopted. The officers are C. S. Haire, Helena, president; J. F. Everett, Missoula, secretary; A. J. Gibson, Missoula, treasurer; M. D. Kern and J. G. Link, Butte, directors.

UNION AKRON STAR BRAND CEMENT USED THROUGHOUT CONSTRUCTION OF THIS BUILDING.
Esenwein & Johnson, Architects.

DETAIL BY GOULD & CHAPMAN, ARCHITECTS.
Standard Terra-Cotta Works, Makers.

Henry A. Schulze and Arthur Brown, Jr., have formed a copartnership for the practice of architecture, under the firm name of Schulze & Brown, offices Hayward Building, San Francisco, Cal.

Joseph D. Boyer has opened an office for the practice of architecture in the Burres Building, Urbana, Ill., where he would be glad to receive manufacturers' catalogues and samples.

W. H. Lord, architect, 10 Church Street, Asheville, N. C., whose office was recently destroyed by fire, would be glad to receive manufacturers' catalogues, samples and price lists.

Hermann V. von Holst, architect, has opened offices in the Rookery Building, Chicago, Ill., and desires manufacturers' catalogues and samples.

The architectural terra-cotta used in the Shelter, Prospect Park, Brooklyn, McKim, Mead & White, architects, illustrated in the plate form of this number, was furnished by the Atlantic Terra-Cotta Company.

Competition for a Fireproof House

Constructed of Terra-Cotta Hollow Tie Blocks To cost $10,000

First Prize, $500 Second Prize, $200 Third Prize, $100

PROGRAMME

THE possibilities in the use of burnt clay in its various forms in our domestic architecture have only begun to be realized.

That dwellings of moderate cost should be made fireproof is not only recognized as desirable, but practicable.

The object of this competition is to call out designs for a house, the walls, floors and partitions of which are to be of terra-cotta hollow tile blocks.

The cost of the house, exclusive of the land, is not to exceed $10,000. Designs calling for a more expensive house will not be considered.

A detailed statement of costs must accompany each design. This statement is to be typewritten on one side only of a sheet of paper measuring 11 inches x 8½ inches.

A further object of this competition is to encourage a study of the use of burnt clay products of the particular class mentioned, in an artistic as well as practical manner, and to obtain designs which would be appropriate for such materials.

In the selection of blocks for exterior walls, terra-cotta hollow tile fireproofing blocks must be employed, and not architectural terra-cotta blocks.

REQUIREMENTS: The house is supposed to be built in the suburbs of a large city, upon a corner lot, with a frontage of 100 feet towards the south and 150 feet on the side street towards the east. The grade is practically level throughout. The house is to be two stories high with an attic. This attic may be either in the pitch of the roof or a third story may be treated as an attic with a flat roof. On the first floor there is to be a reception room, a library, a dining-room, a kitchen and the ordinary allowance for pantries, coat rooms, stairways, etc. The front hall may be treated as desired. In the second story there are to be two bathrooms, four chambers, a sewing room, a den, linen closet, etc. The third story should contain at least two servants' rooms, besides a storeroom. Fireplaces, bay windows, seats, etc., are at the option of the designer.

The clear height is to be in first story 10 feet, second story 9 feet, third story optional with the designer. The cellar need not be specially planned, but will have a clear height of 8 feet. Arrangement of piazzas to be left with the designer.

CONSTRUCTION: While the method of construction for walls, floors and partitions is to be determined by the designer, the following suggestions are offered as being practicable and admissible:

First. Outside walls may be of hollow tile blocks 8 inches thick, lined on the interior with 4-inch furring tile, the treatment of the faces of the blocks to be appropriate for such materials.

Second. Outside walls may be of hollow tile blocks 8 inches thick, lined on the interior with 4-inch furring tile, the face of the wall to be rough cast or plastered.

Third. The outside walls may be faced with brick, with a backing of 8-inch hollow tile blocks.

Fourth. The outside wall may be built with an outer and inner wall, with an air space of 4 inches between, using in each wall a 4-inch hollow tile. The treatment of the face of such a wall, and the manner of bonding the outer and inner walls, are left to the designer. The plaster finish may be applied direct to the interior surface of such a wall.

If hollow tile blocks are used for facings, any special features in the finish or treatment of their exposed surfaces should be given in a footnote on sheet showing elevations.

For the interior partitions terra-cotta blocks are to be used.

For the floors one of the long span, terra-cotta hollow tile block systems now on the market, which are adapted up to spans of 20 feet without the use of steel beams, or a system which employs terra-cotta hollow tile blocks in connection with light steel construction.

DRAWINGS REQUIRED: On one sheet the front and a side elevation, at a scale of four feet to the inch; also plans of first and second floor, at a scale of eight feet to the inch, and on another sheet details showing clearly the scheme of construction for the exterior walls, the floors and the partitions, together with other details drawn at a scale sufficiently large to show them clearly. Graphic scales to be on all drawings.

The size of each sheet is to be exactly 24 inches by 36 inches. The sheets are not to be mounted.

All drawings are to be made in black line without wash or color. All sections shown are to be crosshatched in such manner as to clearly indicate the material, and the floor plans are to be blocked in solid.

Each set of drawings is to be signed by a *nom de plume* or device, and accompanying same is to be a sealed envelope with the *nom de plume* on the exterior and containing the true name and address of the contestant.

The drawings are to be delivered flat at the office of THE BRICKBUILDER, 85 Water Street, Boston, Mass., on or before April 15, 1905.

The designs will be judged by well-known members of the architectural profession.

In making the award the jury will take into account, first, the fitness of the design in an artistic sense to the materials employed; second, the adaptability of the design as shown by details to the practical constructive requirements of burnt clay; third, the relative excellence of the design.

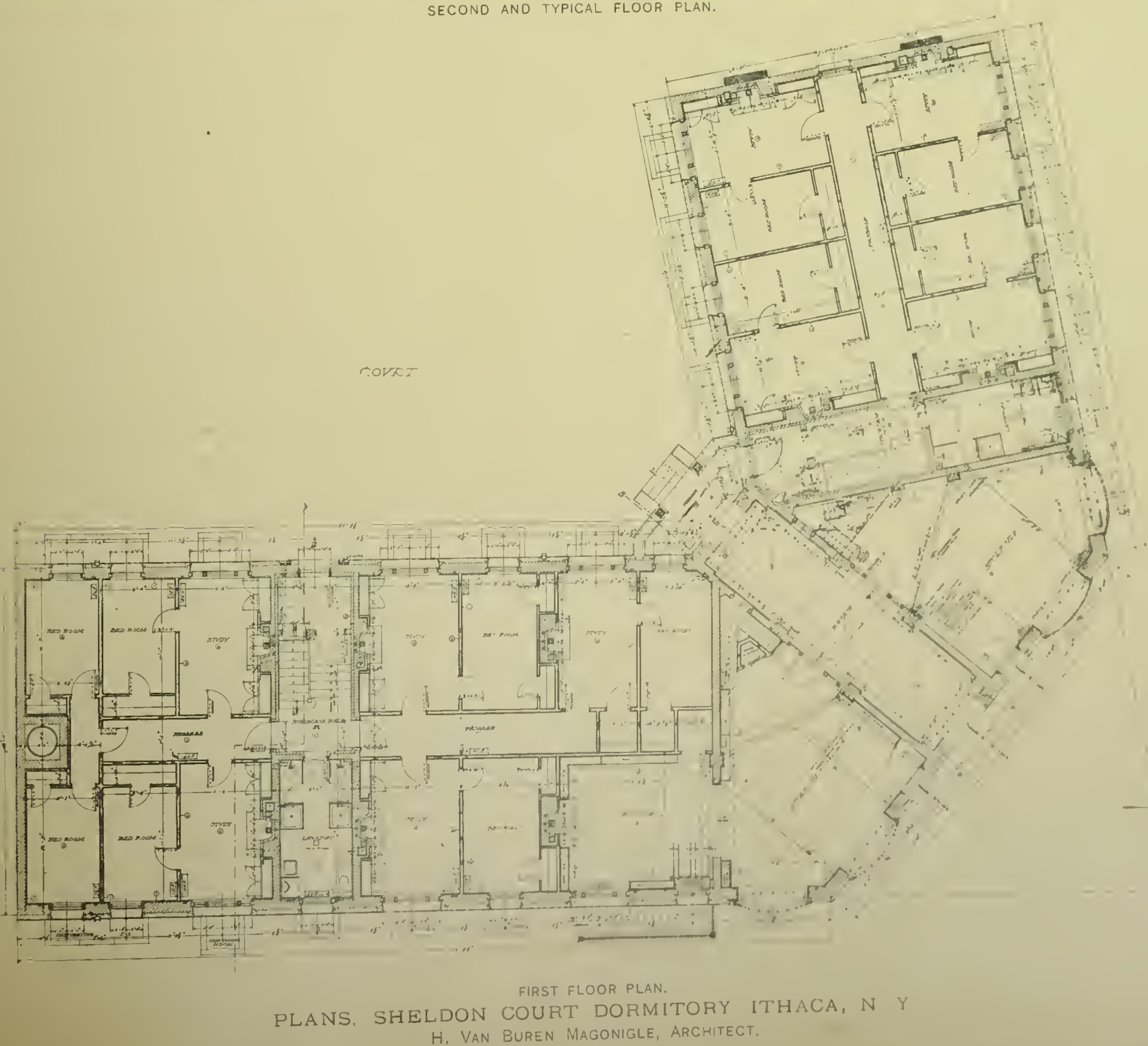
Carefully made estimates giving relative costs of fireproof and ordinary wood construction for houses built from the designs awarded the three cash prizes will be obtained by the publishers of THE BRICKBUILDER, and given at the time the designs are published.

The prize drawings are to become the property of THE BRICKBUILDER, and the right is reserved to publish or exhibit any or all of the others. Those who wish their drawings returned, except the prize drawings, may have them by enclosing in the sealed envelopes containing their names ten cents in stamps.

For the design placed first in this competition there will be given a prize of $500.00.
For the design placed second a prize of $200.00.
For the design placed third a prize of $100.00.

In the study of this problem, competitors are invited to consult freely with the manufacturers of burnt clay fireproofing or their agents. This competition is open to every one.

SECOND AND TYPICAL FLOOR PLAN.

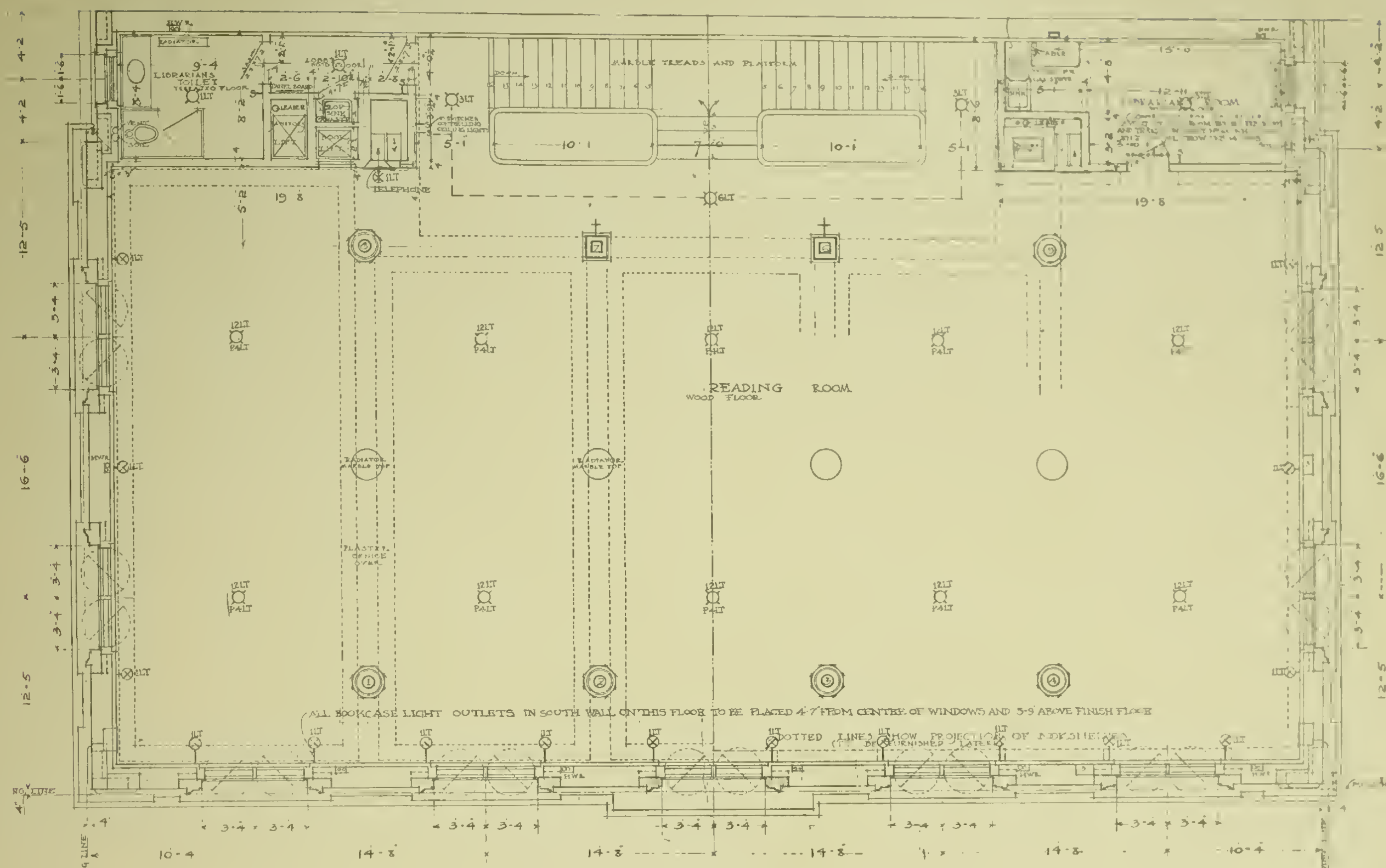


FIRST FLOOR PLAN.

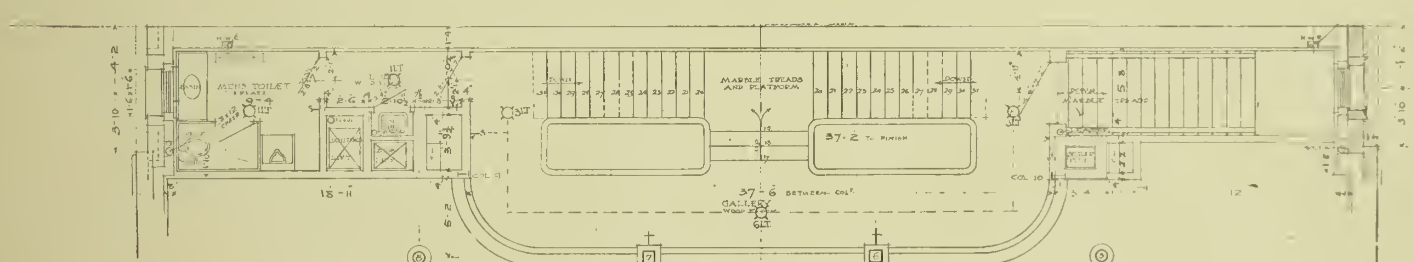
PLANS, SHELDON COURT DORMITORY ITHACA, N Y

H. VAN BUREN MAGONIGLE, ARCHITECT.

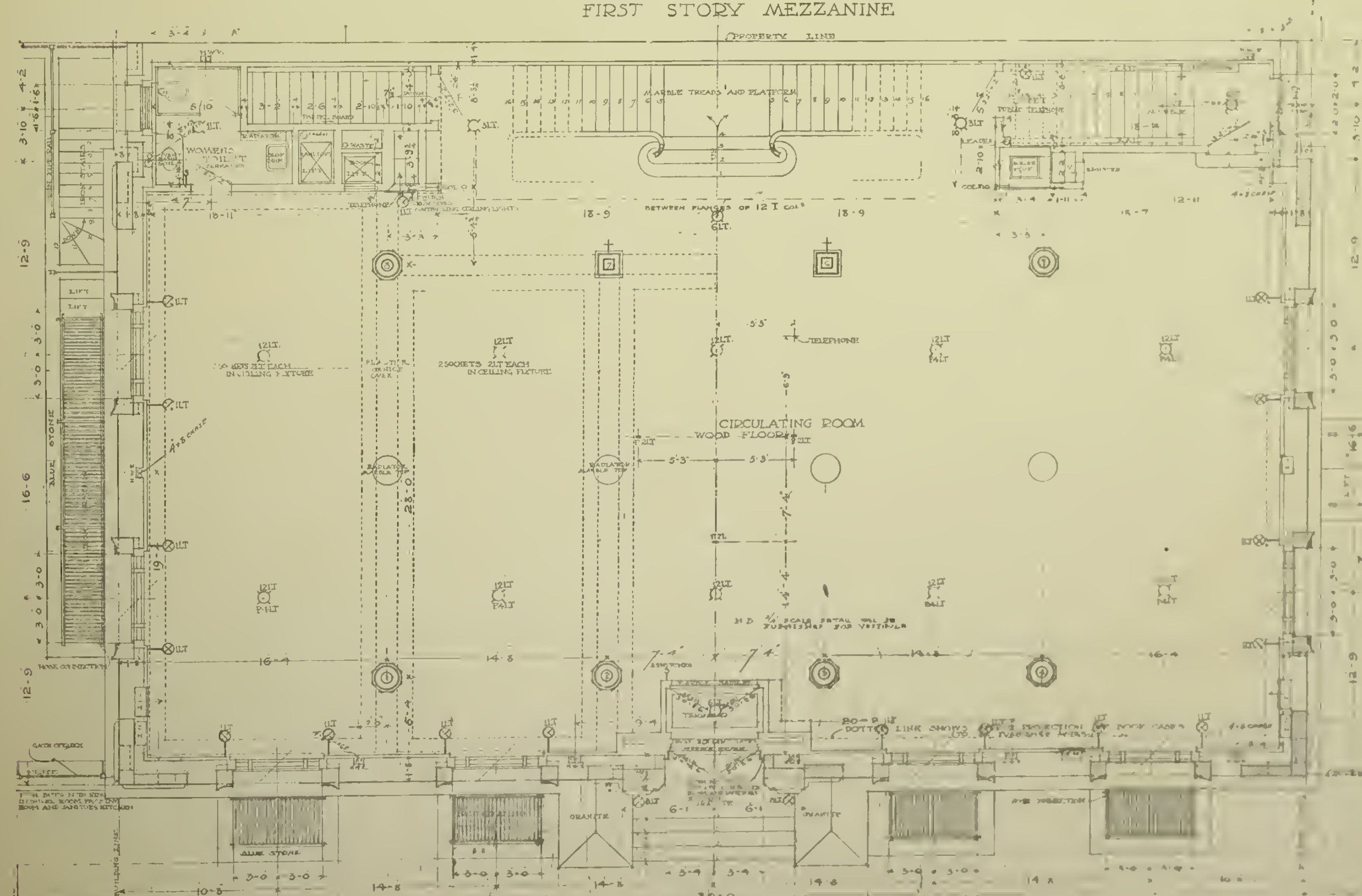
VOL. 13. NO. 12. PLATE 94.



SECOND FLOOR PLAN.



FIRST STORY MEZZANINE

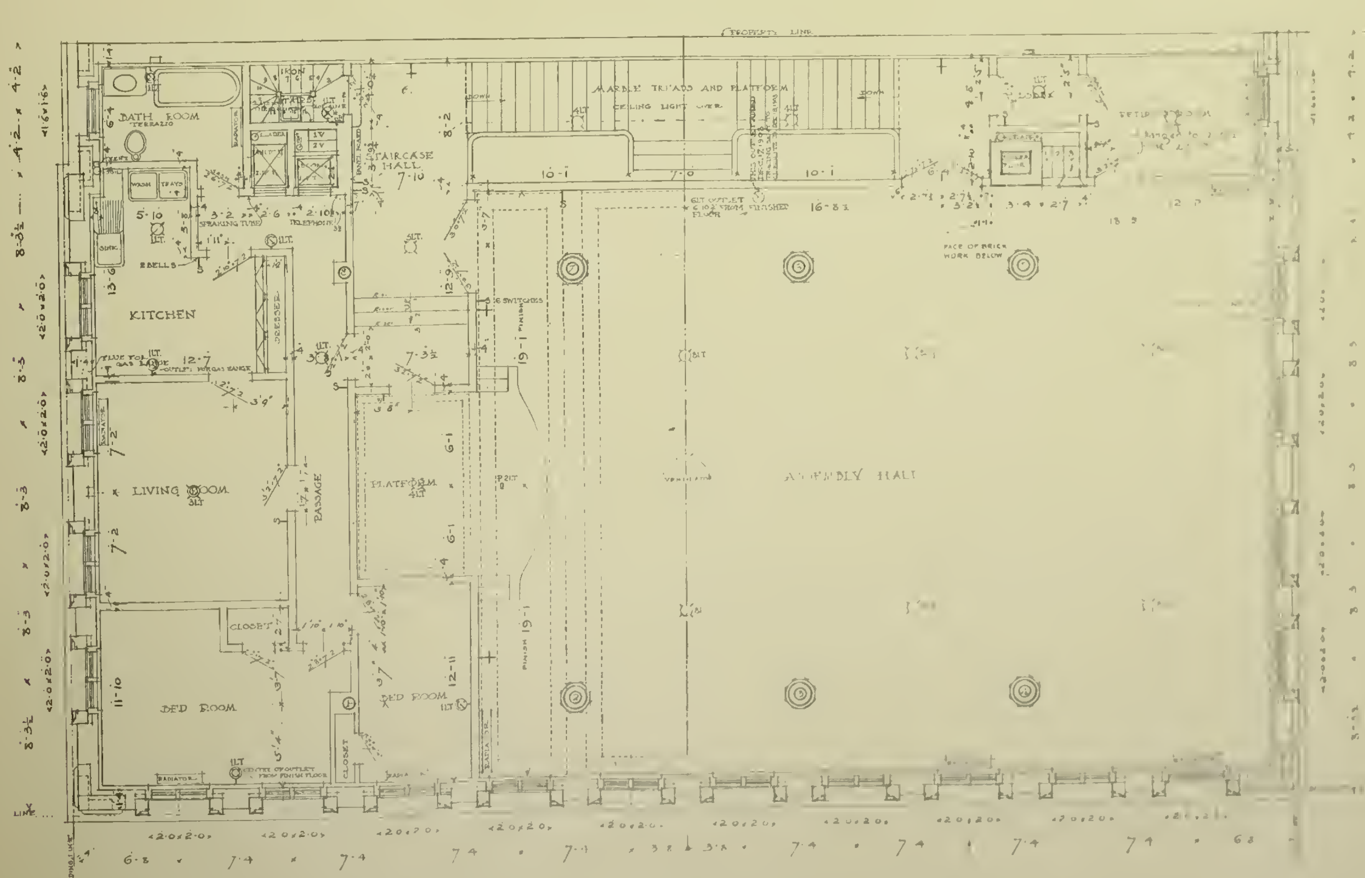


FIRST FLOOR PLAN.

PLANS, CARNEGIE BRANCH LIBRARY, NEW YORK, N. Y.

BABB, COOK & WILLARD, ARCHITECTS.

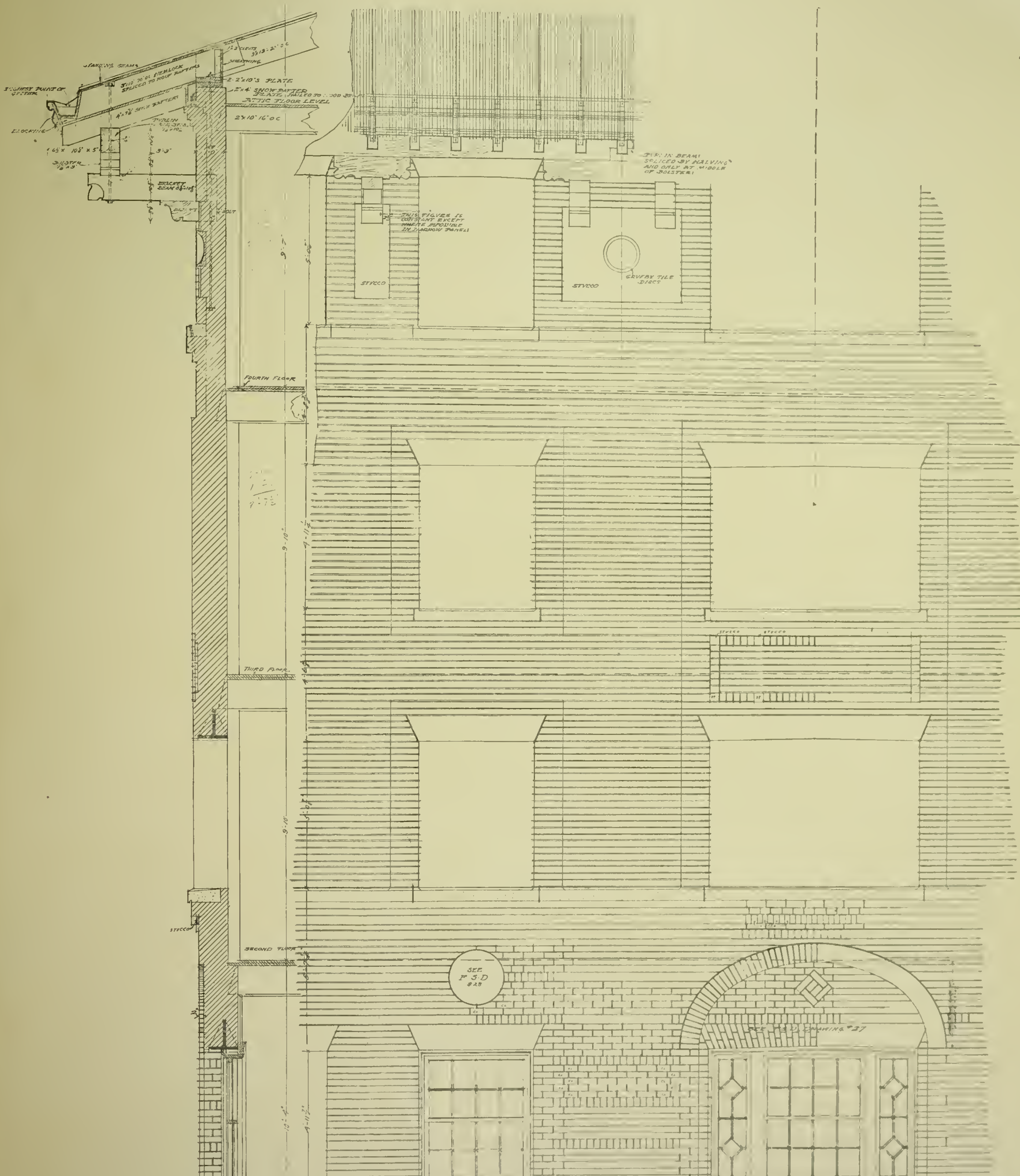
FRONT ELEVATION.



THIRD FLOOR PLAN.

CARNEGIE BRANCH LIBRARY, NEW YORK, N. Y.

BABB, COOK & WILLARD, ARCHITECTS.



DETAIL OF FRONT ELEVATION, SHELDON COURT DORMITORY, ITHACA N Y
H. VAN BUREN MAGONIGLE, ARCHITECT.

SHELDON COURT DORMITORY AT ITHACA, N. Y.
H. VAN BUREN MAGONIGLE ARCHITECT.

COURT VIEW, SHELDON COURT DORMITORY AT ITHACA, N. Y.
H. VAN BUREN MAGONIGLE, ARCHITECT

CARNEGIE BRANCH LIBRARY 140TH STREET AND ALEXANDER AVENUE NEW YORK CITY.
BABB, COOK & WILLARD, ARCHITECTS.

FIRE ENGINE HOUSE, 114TH STREET, NEAR MADISON AVENUE, NEW YORK, N. Y.
PERCY GRIFFIN, ARCHITECT.

HOUSE FOR THE ZETA PSI CLUB. CAMBRIDGE, MASS
GUY LOWELL, ARCHITECT.

STUDIO BUILDING FOR PICCIRILLI BROTHERS, NEW YORK. N Y
H. VAN BUREN MAGONIGLE, ARCHITECT.