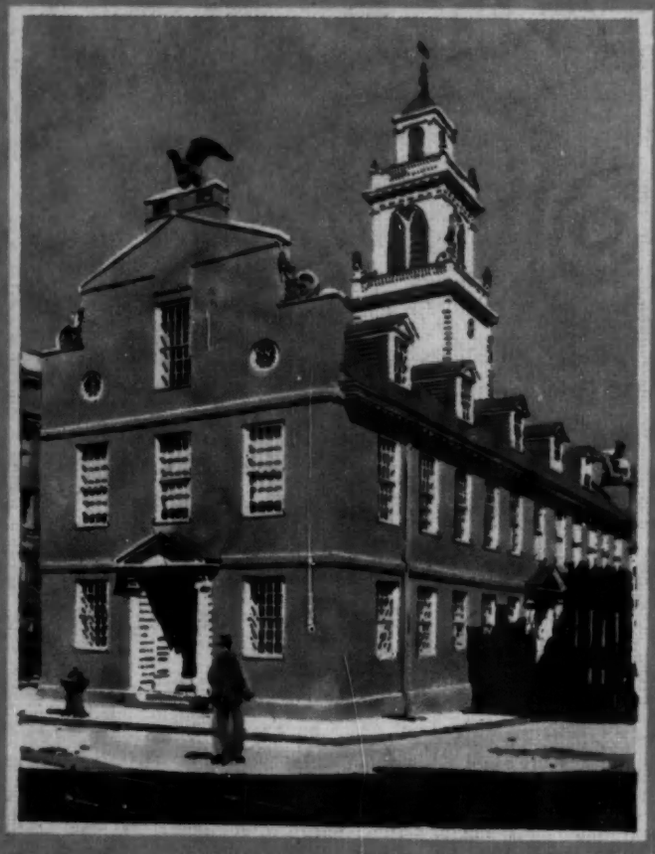
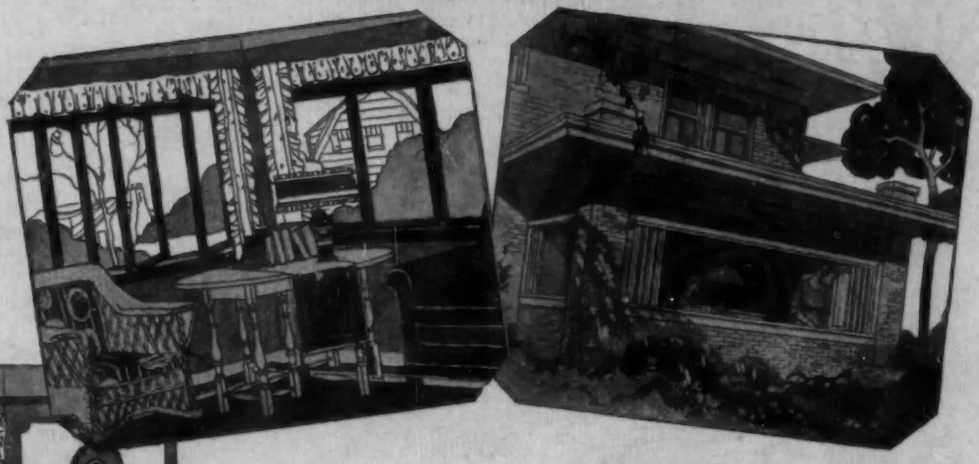
THE ARCHITECTURAL FORUM



AUGUST 1924

QVALITY LEAVES ITS IMPRINT



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AiR-Way equipped dining rooms afford all the comfort of outdoor dining while retaining the conveniences of the indoor dining room.

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AiR-Way equipped windows enable the housewife to quickly convert her hot, stuffy kitchen into a pleasant, breezy porch.

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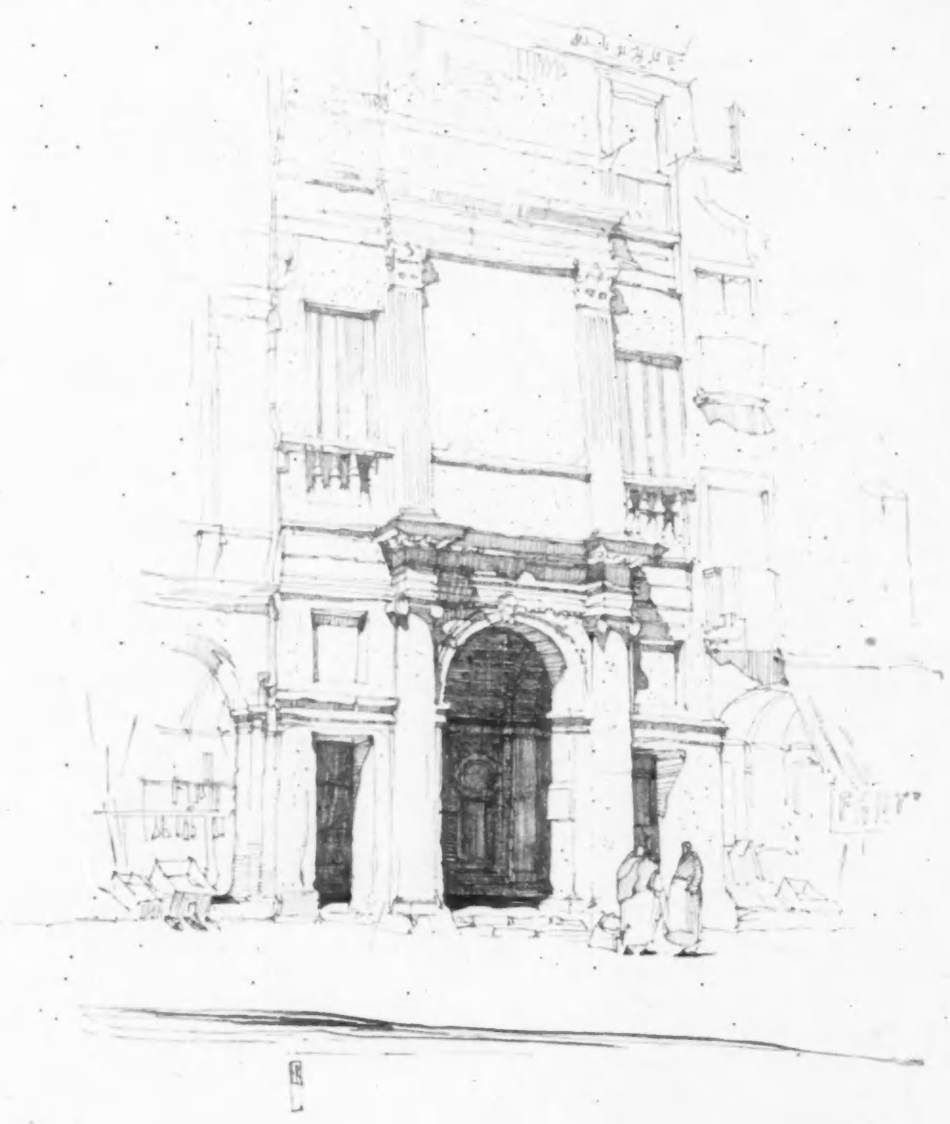


PALLADIO'S HOUSE, VICENZA
FROM PENCIL DRAWING BY
LOUIS C. ROSENBERG

The
ARCHITECTURAL
FORUM

Volume XLI AUGUST 1924 Number 2

Notes on Planning of Grounds and Buildings

By GEORGE HOWE

WHEN once the habit of reading architectural plans has been acquired, it is as irresistible and as satisfying as reading; even greater, for with plans the reader assumes in person the title role of the young detective, and admires in himself those qualities of unerring insight usually possessed only by imaginary heroes.

Here, then, lies the plan of a house and grounds, with the owner's name and the location clearly inscribed upon it, ready for study. It is evident that this plan has been considered as a whole from the outset, that every portion of the ground has been assigned its suitable use, and that the orientation of the property, with its longer axis running north and south, has been turned to advantage. The house itself is of a size appropriate to its surroundings, small in proportion to the gardens and service quarters about it—no Newport "cottage," bulging over its surroundings as a hen over her eggs. These may seem trivial observations, but from them, Holmes-like, it is possible to deduce the most important facts: first, that the owner is a man of sense and modesty; second, that his sound judgment has led him to select an architect of taste and human feeling.

It would be possible to puzzle the lay reader at this point with a display of the customary formulæ every architect has acquired in the schools. "See," one might say, "how the longitudinal axis is given interest and variety, first as it is broken by the transverse line of the house, supported by the suggested cross axis of the minor buttresses formed by the flower garden and the playground, and secondarily by the subordinate changes where the entrance drive develops into a court, whose width is carried through the house to the variation of the woodland vista beyond, until it is narrowed and stopped off at the inlet to the vegetable garden, to be carried on and completed by a double row of fruit trees. The relation of the various segments of this longitudinal axis to each other is studied with great discretion, as is also the relation of every part of each transverse section to the next." By these statements it is meant to convey the information that the plan does indeed meet the most exacting tests of scholastic examination. But what of that? As a matter of fact, very much of that, for the rules of the schools, in spite of every attempt of the schoolmaster to reduce them to cold and meaningless formulæ, are still based on truth and on life. Only their meaning has been lost.

Look, then, at the entire length of the property. About one-third of it is given over to the entrance drive and forecourt, just enough to leave a fine shield of woodland between the house and the highway. That is a just proportion, under the circumstances. If the circumstances were different, the just proportion would be different. There is no rule in the matter. About the equivalent portion of the length is given over to a grassy woodland walk, a pleasant place to linger, and one may assume that the owner is of a meditative and leisurely turn of mind (at least, if he is not, he cannot derive the full benefit from his delightful grounds). Its dimensions in feet and inches are of no importance, and if it were to serve some other purpose, it should be different in size, or shape, or proportion, as the case may be. So again with the flower garden, the playground, the service yard and the vegetable garden.

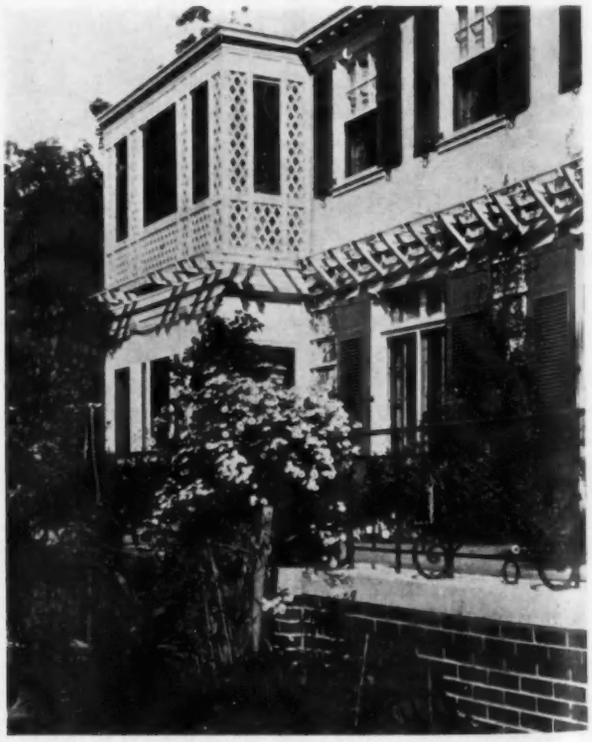
One might emphasize the human quality of design in plan in order to dispel two fallacies which have taken root in the layman's mind: first, feeling too great a respect for scholastic formulæ, as being absolute and unalterable; and second, a complete contempt for them as being inapplicable to real life.

How ably this problem has been solved by their use! Here is a long piece of woodland property. Cut a few holes in it, lengthwise and crosswise, place a house on it, and there it is, an Anglo-Saxon's castle, all complete! But it requires doing, and the doing is the real difficulty, and over the doing some single mind must preside. The architect's load of responsibility has become very heavy in these modern times, and he is indeed a strong man who can prevent the child of his brain from being broken on the wheel of the vicious circle before it is weaned!

Speaking of the vicious circle of modern specialization, there was a time when men in their leisurely way, though they might excel in one art or trade, were yet practicing adepts at many, with an under-

VINE-COVERED FACADE, FACING ENTRANCE DRIVE AND COURT

SHUTTERS OF MAIN DOOR STAND OPEN

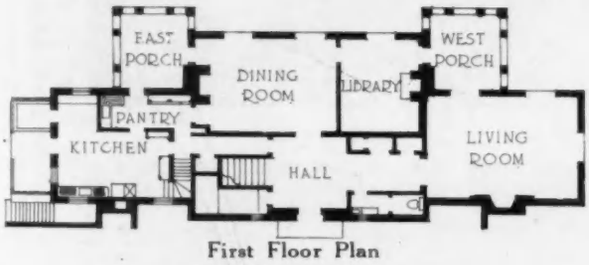


TERRACE RAIL AND SLEEPING PORCH

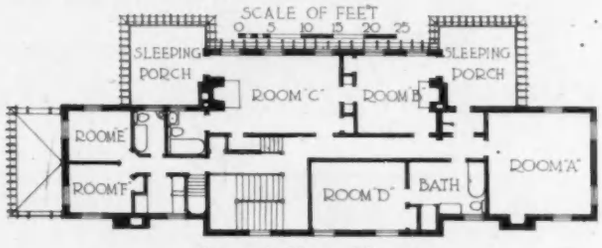
HOUSE OF ERNEST S. BALLARD, ESQ., HUBBARD'S WOODS, ILL.

EDMUND B. GILCHRIST, ARCHITECT

Garden Front and Terrace From the Allee Through the Woods



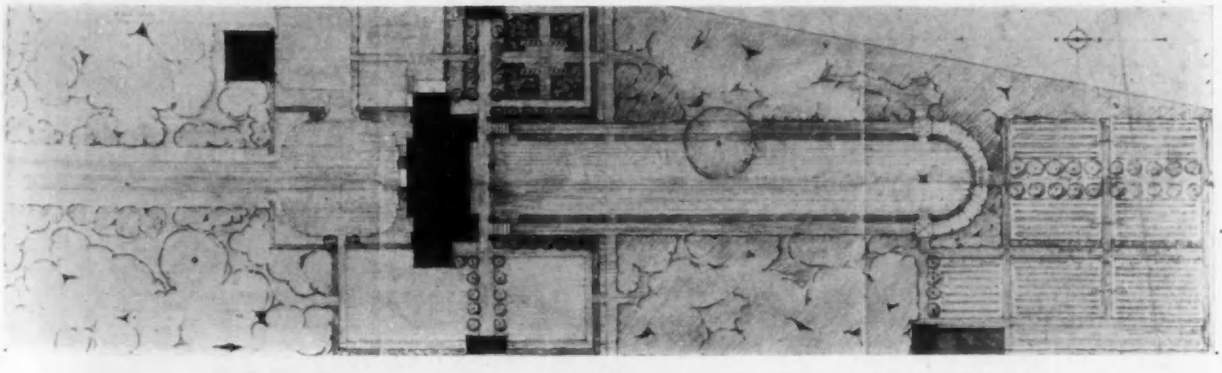
First Floor Plan



Second Floor Plan

standing of all. Such men were capable of coöperating with their fellows, and in architecture the intelligent coöperation of many minds is essential. Now, however, someone has set a new ideal of human intelligence: the one-track brain. Men equipped with such brains can only repeat a single act, under definite instructions, until told to stop. And as the type becomes more common, the number and variety of details on which the architect is obliged to issue instructions becomes ever greater, and the amount of help he receives becomes ever less. Often, in despair at last of being able to cope with the situation, he takes his place in line with the rest, and turns his responsibility over to the contractor and the owner, neither of whom is equal to it.

No such unhappy fate, however, has overtaken this charming house and garden, which Edmund B. Gilchrist, Architect, designed and built for Ernest S. Ballard, at Hubbard's Woods, Illinois. Here is a plan which shows coöperation on the part of all, the owner and the architect in particular, and every such plan today is a fresh triumph of mind over matter.



Plot Plan Showing Grounds and Buildings, Estate of Ernest S. Ballard, Esq.
Edmund B. Gilchrist, Architect

SIMPLICITY OF TREATMENT GIVES CHARM TO THE DINING ROOM
HOUSE OF ERNEST S. BALLARD, ESQ., HUBBARD'S WOODS, ILL.
EDMUND B. GILCHRIST, ARCHITECT

FIREPLACE AND BOOK SHELVES IN PANELED LIBRARY

Two Notable Houses on Sutton Place, New York

THE HOMES OF MRS. W. K. VANDERBILT AND MISS ANNE MORGAN

MOTT B. SCHMIDT, ARCHITECT

DUE to the growth and northward trend of the retail shopping district, the mansions of New York's oldest and richest families are one by one disappearing from Fifth Avenue, which for the past 60 years has been the center of wealth and fashion. This exodus is taking the former residents of the Avenue into spacious apartments and remodeled street houses on the east side. Many are leaving to make their permanent homes in the country, where estates are constantly increasing in size and number, as country life occupies more and more the time and interest of city people.

Over the minds of many, however, the spell of the streets still holds sway. The spell of old New York, to which romance and history contribute largely, may yet be felt by people with imagination in the former centers of trade and fashion, the Battery, Bowling Green, the Bowerie and Washington Square which all revive memories of colonial days. In Union Square and Gramercy Park lived the elite of the "Fabulous Forties," when the curious conventions of the Victorian Era ruled social conduct. Lovely, quiet old squares, which all of them were once, have long been given over to business or boarders, to trade or tenements.

Entrance Front, House of Miss Anne Morgan

In planning the New York of today the thrifty city fathers adopted the economical gridiron plan of avenues and streets, leaving scant space for the squares and little parks which make London so lovable and livable. As the old time squares and parks have been abandoned to the advancing tide of commercialism, the householders have been seeking in vain for other open spaces on which to face their houses. The avenues and streets enclosing the open acres of Central Park are completely given over to club houses, great apartment buildings, hospitals, museums and fast disappearing palatial mansions. There is no chance here for the small house dweller, so he is turning to the side streets, remodeling with individual taste the old high-stoop houses, thus happily and rapidly replacing the monotonous mediocrity of unbroken brownstone fronts. But this opportunity for individualism, expressed in most of the remodeled street houses, is fortunately not sufficient to satisfy the artistic taste and romantic spirit of some; fortunately, especially for architecture, as otherwise many unusual and delightful houses would never have been built, houses owing much of their charm to their immediate environs, without which their particular picturesqueness would not have been possible or practicable. Such locations, desirable and accessible, have been eagerly sought but seldom found on the map of Greater New York, so it is only due to the twists and turns of the East River that such locations as Beekman and Sutton Places exist. Community combinations by the owners of adjoining property have established such spaces as "Turtle Bay" on East 49th Street, where 20 "back yards" were transformed into a group of delightful low-walled gardens, all opening upon a broad center walk with seats and fountains among the shrubs and trees, making pleasant interruptions. Many owners of remodeled street houses are turning their high fenced back yards into delightful little gardens, but it is only in the larger enclosures, such as "Turtle Bay" and Sutton Place, that a real beauty and picturesqueness are obtainable.

Sutton Place is a short street running from East 57th to 58th Street, the rear of the lots on the east side of which overhang the East River, just south of the Queensborough Bridge. Back of the houses on these lots a common lawn and garden looks down onto the fields and buildings of Blackwell's Island and the river with its constantly shifting scene of maritime activity. Such was the

Gateway into Garden of the Vanderbilt House

location, one of the most picturesque and secluded in New York, possessing much of the charm of the Thames Embankment, London, which Mrs. Vanderbilt and Miss Morgan chose for their city houses.

In Mrs. Vanderbilt's house, Mr. Schmidt, the architect, employed a free adaptation of the style of the English Renaissance, using as the inspiration for the main entrance one of the beautiful doorways in King's Bench Walk, London, designed by Sir Christopher Wren, and for the garden entrance a hooded doorway of the early Georgian period. The long front facade of this house, which faces south on 57th Street, is continued to the edge of the cliff overhanging the East River by a high garden wall. The two end elevations are narrow and comparatively unimportant, except that the east end has three tall casement doors, that in the center hooded, which open through antique iron gates upon a paved terrace overlooking the garden and river below. Trimmed with limestone, and built of old brick obtained from the building previously occupying the site, laid up with natural colored cement, and toned down slightly with a stain that gives the brickwork an appearance of age, the house might have been built a century ago.

The plans show a basement and three floors. In the basement are located the service and mechanical departments of the house, such as boiler room, man's room and bath, trunk and storage rooms, kitchen and servants' hall. On the first floor, which is seven steps above the sidewalk, there are a large dining room, serving pantry, coat room and reception room. The second floor plan shows a long drawing room, center stair hall and one bedroom suite. The third floor has one large bedroom, with connecting dressing room and bath on the east, and a maid's room.

To a certain extent the interior was planned around an unusual collection of charming old furniture and other rare antiques which had been collected by Mrs. Vanderbilt during a period of many years. The dining room, for example, was designed to use as mural decorations and color scheme a set of old Dutch decorative paintings. And the reception room on the first floor, known as the little Georgian parlor, was built to take the antique deal paneling of an old English room. The decoration and color tone of the main hall and circular stairway, were carried out by Allyn Cox, who painted the walls in the Chinese manner to harmonize with two painted Chinese pagodas from the Royal Pavilion in Brighton, which were placed in this hall. The drawing room, on the second floor, is a splendidly proportioned room, 18 by 32 feet, with windows on the south and east. The severe panels and pilasters give dignity and reserve to the treatment of this room which is pleasingly relieved by a beautiful old Italian door opening into the hall, corner bookcases, comfortable chairs and couches. Lamps, tables, screens and other antique pieces add interest and livableness to this drawing room, in which the color scheme of blue and gold is contrasted with the dark marble fireplace mouldings.

Modern convenience and comfort mark the arrangement of the bedrooms and dressing rooms, which are decorated in a simple and unostentatious

Garden Terrace of the Vanderbilt House

manner. As practical requirements obviated the necessity for a cellar, all the mechanical equipment of the house, such as gas-fired steam boilers, hot water heater and vacuum cleaner machinery, is concentrated in a small machinery room in the basement.

The Colonial style, which is a development in this country of the architecture in England designed during the reign of the several Georges, was used by Mr. Schmidt for the design of Miss Morgan's house, adjoining the earlier English Renaissance residence of Mrs. Vanderbilt. The red Harvard brick, white painted shutters, and white marble trim recall the old houses of Philadelphia, Salem and New York. The garden or river front, which like the street facade, has a graceful doorway with deep paneled reveals, is more attractive architecturally because of the dormer windows and setback.

The plans show a basement and four floors, which have all been studied and developed with great care and cleverness, so that no waste space exists. The basement contains the mechanical equipment of the house, including the elevator machinery. To avoid the necessity of furnace-man, coal-man, ash-man, ice-man and garbage-man, the most modern mechanical appliances, such as incinerator for garbage, refrigerating plant, vacuum cleaner machinery, gas-heated hot water and steam boilers, were installed. The entrance on the first floor shows two outside doors, one entering the vestibule and main hall, the other leading into a long corridor on which open the kitchen, servants' hall, stairway, and man's room. Beyond the main hall is a spacious dining room, opening onto a paved terrace and open lawn overlooking the river. On the second floor is a large drawing room across the entire street front, which opens into both the elliptical stair hall and the foyer hall.

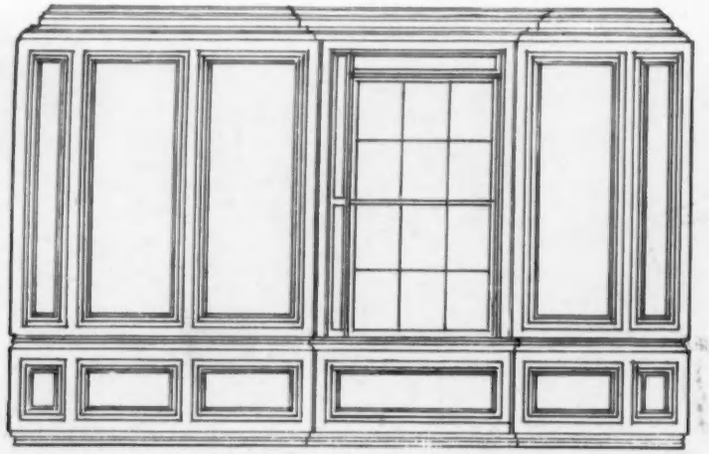
Bedroom Fireplace, the Vanderbilt House

Boudoir Mantel, the Vanderbilt House

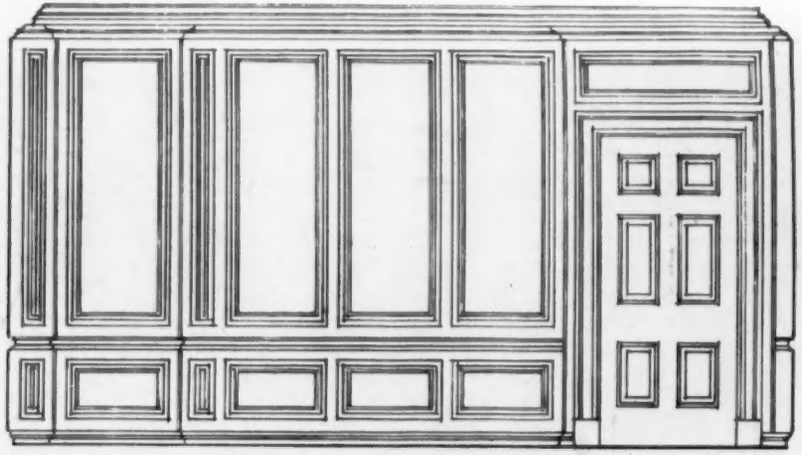
The interior of this house is also interesting because of the old and unusual furnishings, giving great distinction and charm. Entering from Sutton Place, a view of the river, through the vestibule, hall and dining room, which are on axis, may be had. In the hall and dining room a floor patterned in black, yellow and white marble, adds a rich note of color. An oak stairway taken from an early Georgian house, leads from the entrance hall to the drawing room floor above. Here an interior curved stairway, hung on the walls of an elliptical well, extends for two flights to the upper stories. Instead of the usual skylight, a more pleasing and more effective means of lighting this stair well has been found in the use of octagonal bull's-eye windows placed in the sides of the stair bulkhead or cupola. The library on the river side of the second floor, which is paneled in pine taken from an old English house, has brass grilles in the bookcase doors and star-backed crystal appliques on the pilasters. The small reception room on this floor is papered with a hand-painted Chinese Georgian wall paper, against which is hung an old Chinese Chippendale overmantel decoration.

No more valuable or successful examples of the consistent and intelligent use of English architectural precedent in the designing of American houses are to be found than these two houses on Sutton Place.

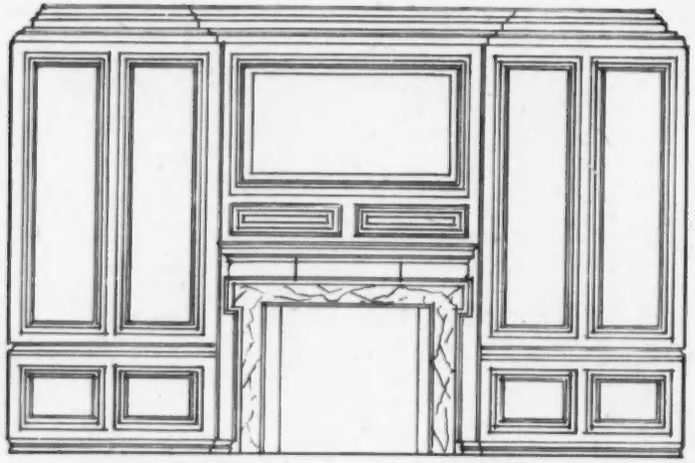
OLD ENGLISH WOODWORK ADDS INTEREST TO THE RECEPTION ROOM, KNOWN AS THE "LITTLE GEORGIAN PARLOR"
HOUSE OF MRS. W. K. VANDERBILT, NEW YORK
MOTT B. SCHMIDT, ARCHITECT



SOUTH ELEVATION



EAST ELEVATION



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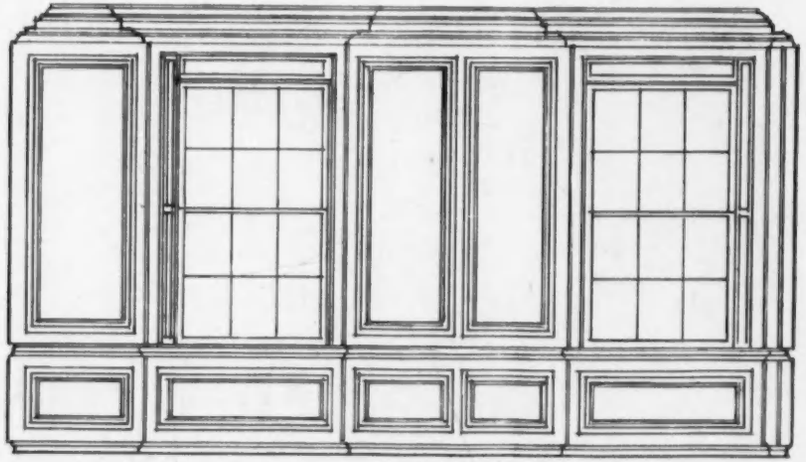


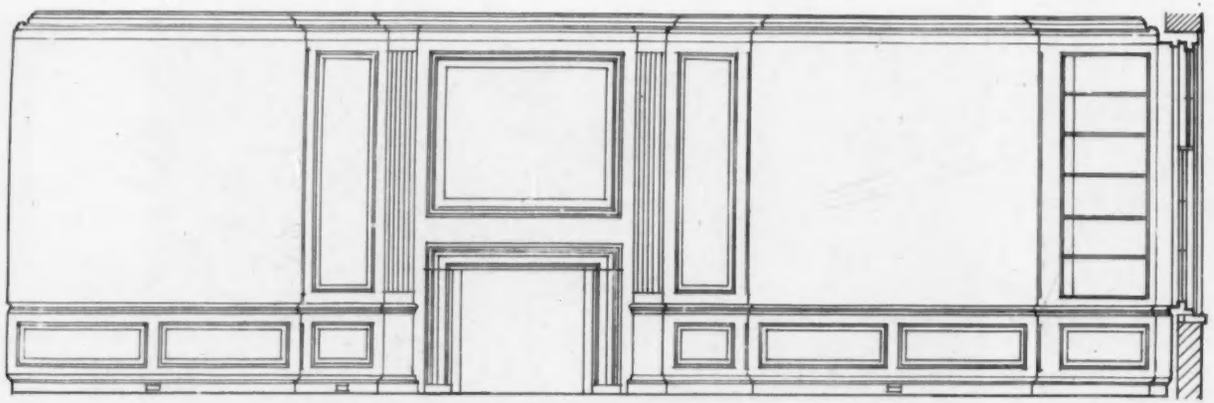
WEST ELEVATION

RECEPTION ROOM
RESIDENCE OF MRS. W. K. VANDERBILT

MOTT B. SCHMIDT ~ ARCHITECT

SCALE: 1/4" EQUALS ONE FOOT

ONE SIDE OF DRAWING ROOM
HOUSE OF MRS. W. K. VANDERBILT, NEW YORK
MOTT B. SCHMIDT, ARCHITECT



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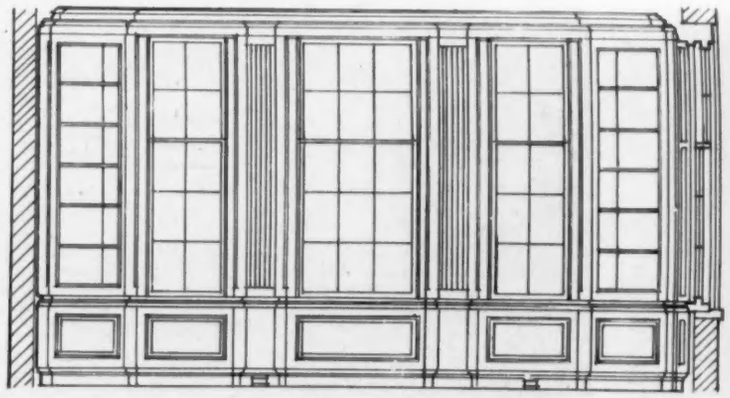

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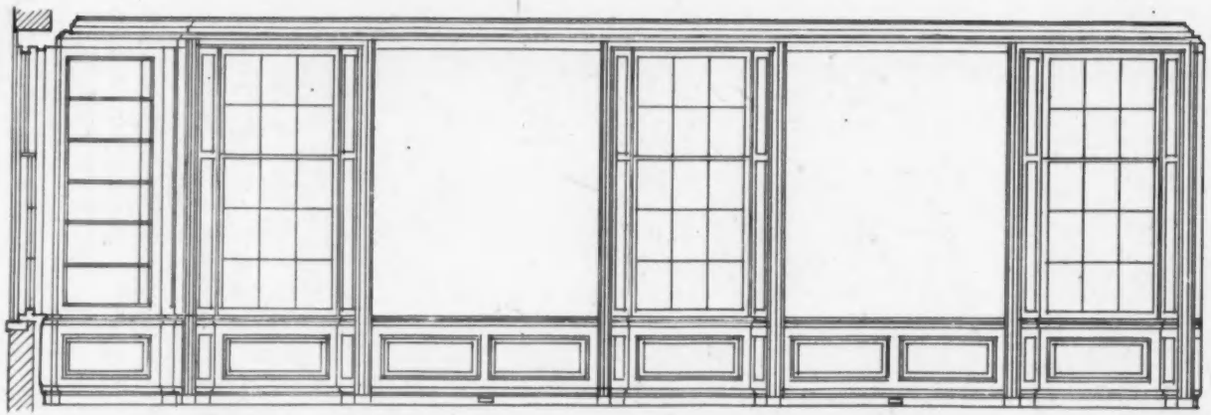
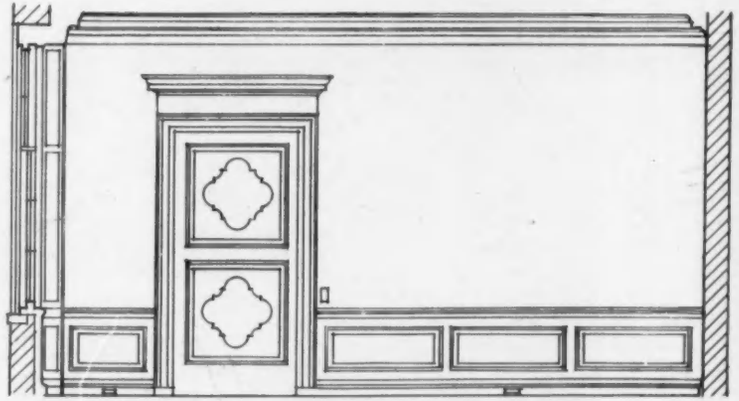


SOUTH ELEVATION



WEST ELEVATION

DRAWING ROOM
RESIDENCE OF MRS. W.K. VANDERBILT

MOTT B. SCHMIDT ~ ARCHITECT

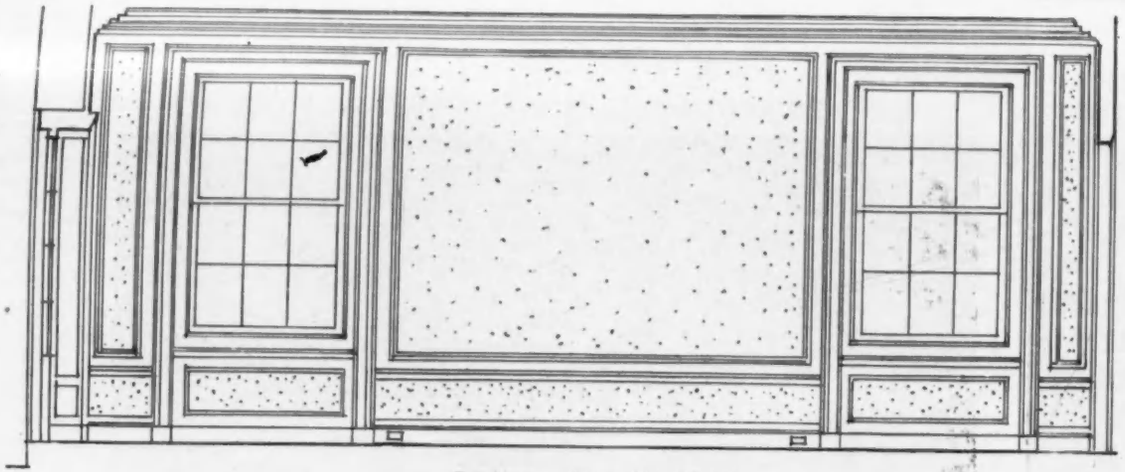
SCALE: 3/16" EQUALS ONE FOOT

DINING ROOM, LOOKING TOWARD GARDEN TERRACE

CORNER OF DINING ROOM, WITH DOOR INTO HALL

HOUSE OF MRS. W. K. VANDERBILT, NEW YORK

MOTT B. SCHMIDT, ARCHITECT



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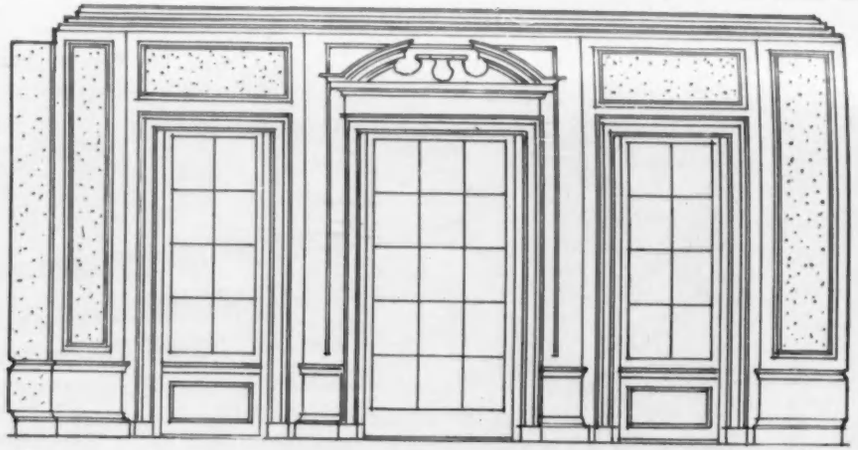

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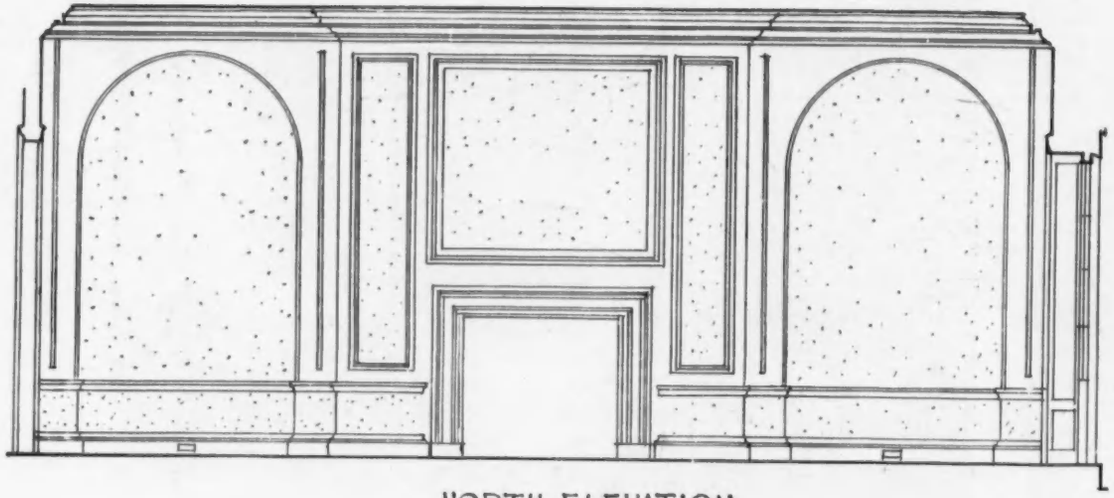

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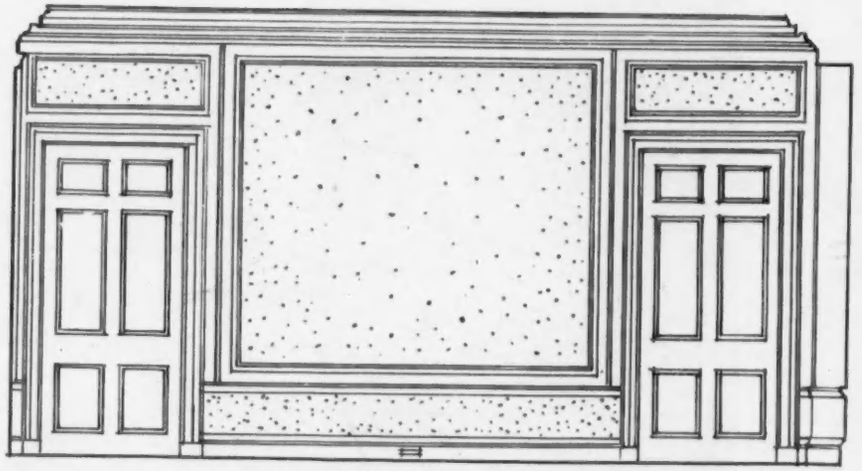
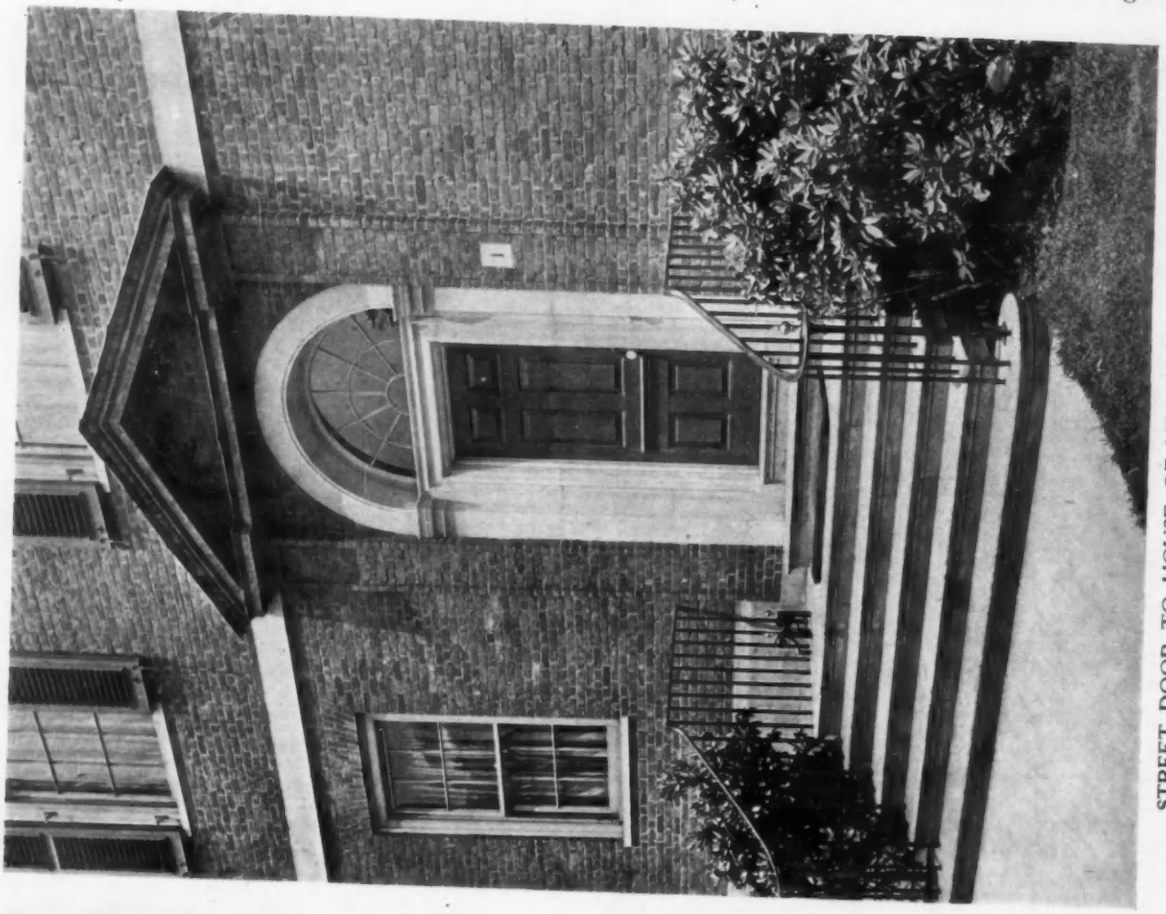


WEST ELEVATION

DINING ROOM
RESIDENCE OF MRS. W. K. VANDERBILT

MOTT B. SCHMIDT — ARCHITECT

SCALE: 1/4" EQUALS ONE FOOT

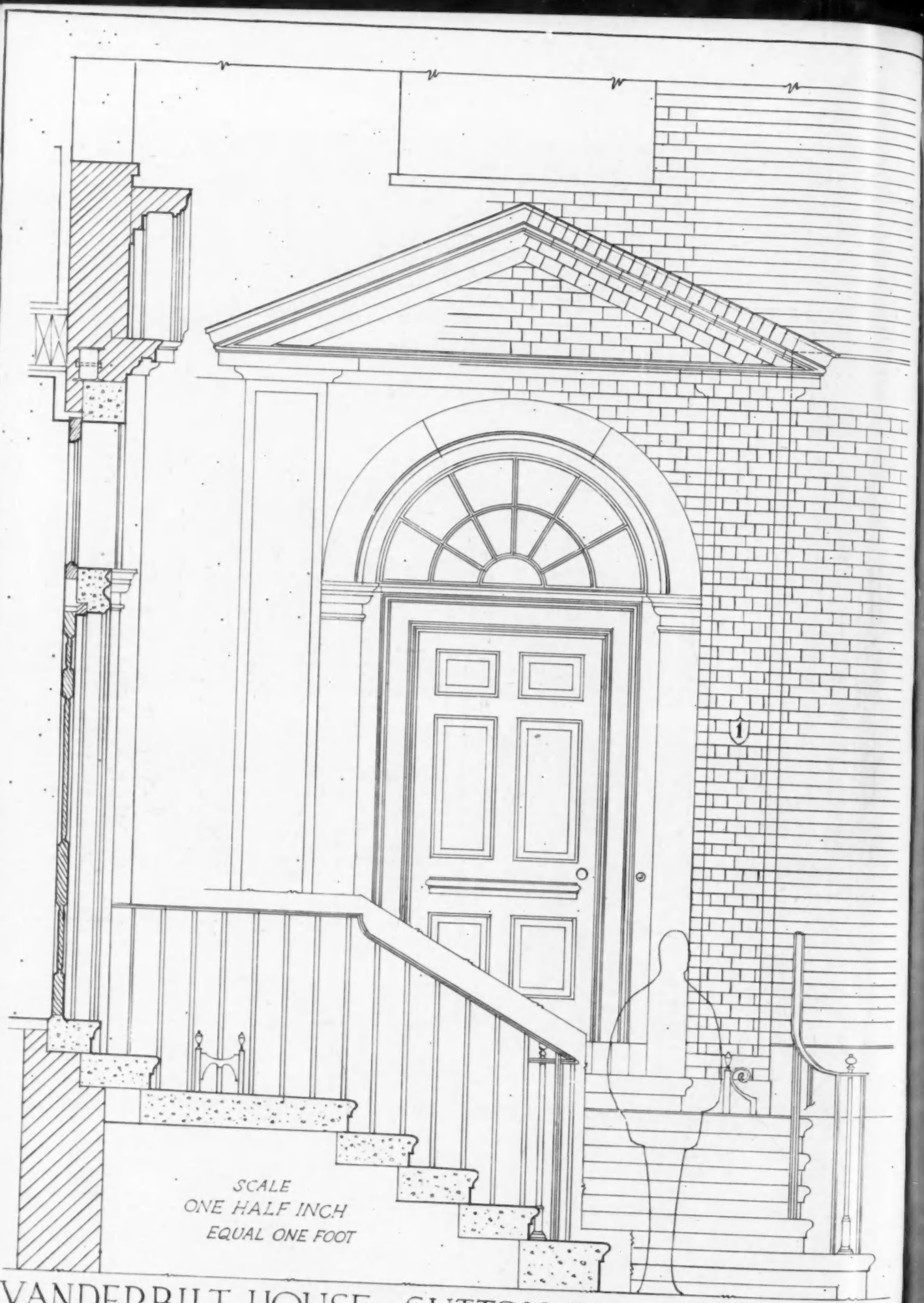


STREET DOOR TO HOUSE OF MRS. W. K. VANDERBILT
MOTT B. SCHMIDT, ARCHITECT

GARDEN ENTRANCE TO HOUSE OF MISS ANNE MORGAN

MORGAN HOUSE, SUTTON PLACE NEW YORK CITY

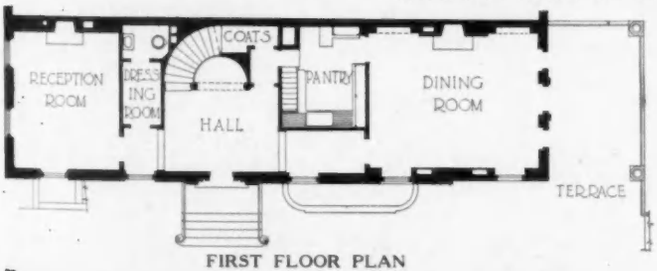
MOTT B. SCHMIDT, ARCHITECT



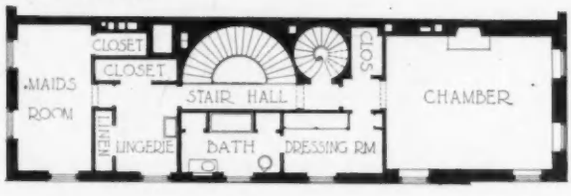
VANDERBILT HOUSE . SUTTON PLACE NEW YORK CITY

MOTT B. SCHMIDT . ARCHITECT

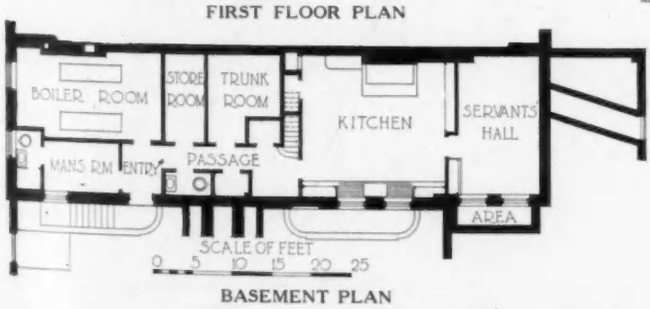
ENTRANCE FRONT ON EAST 57TH STREET



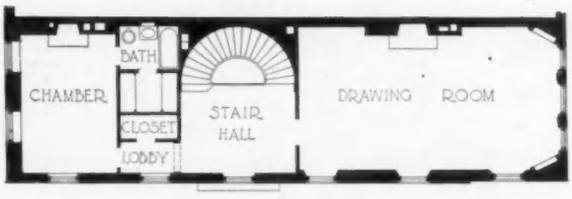
FIRST FLOOR PLAN



THIRD FLOOR PLAN

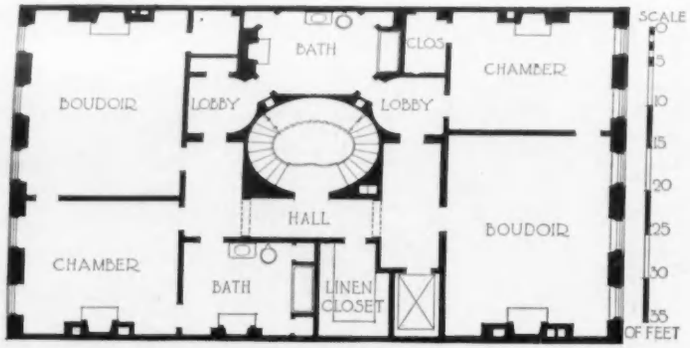


BASEMENT PLAN

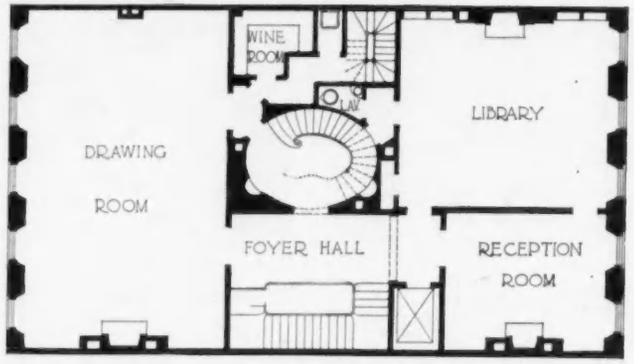


SECOND FLOOR PLAN

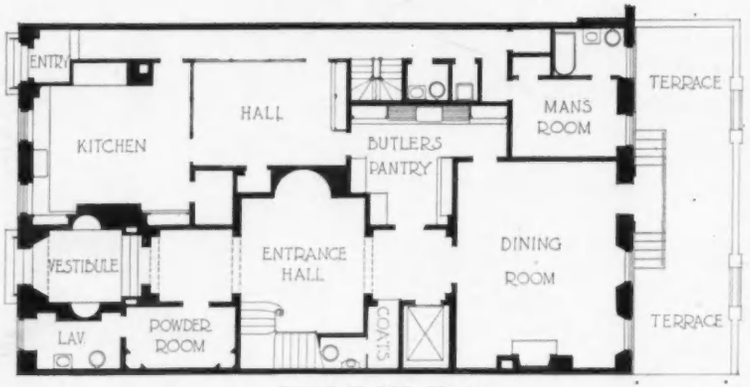
HOUSE OF MRS. W. K. VANDERBILT, NEW YORK
MOTT B. SCHMIDT, ARCHITECT



THIRD FLOOR PLAN



SECOND FLOOR PLAN

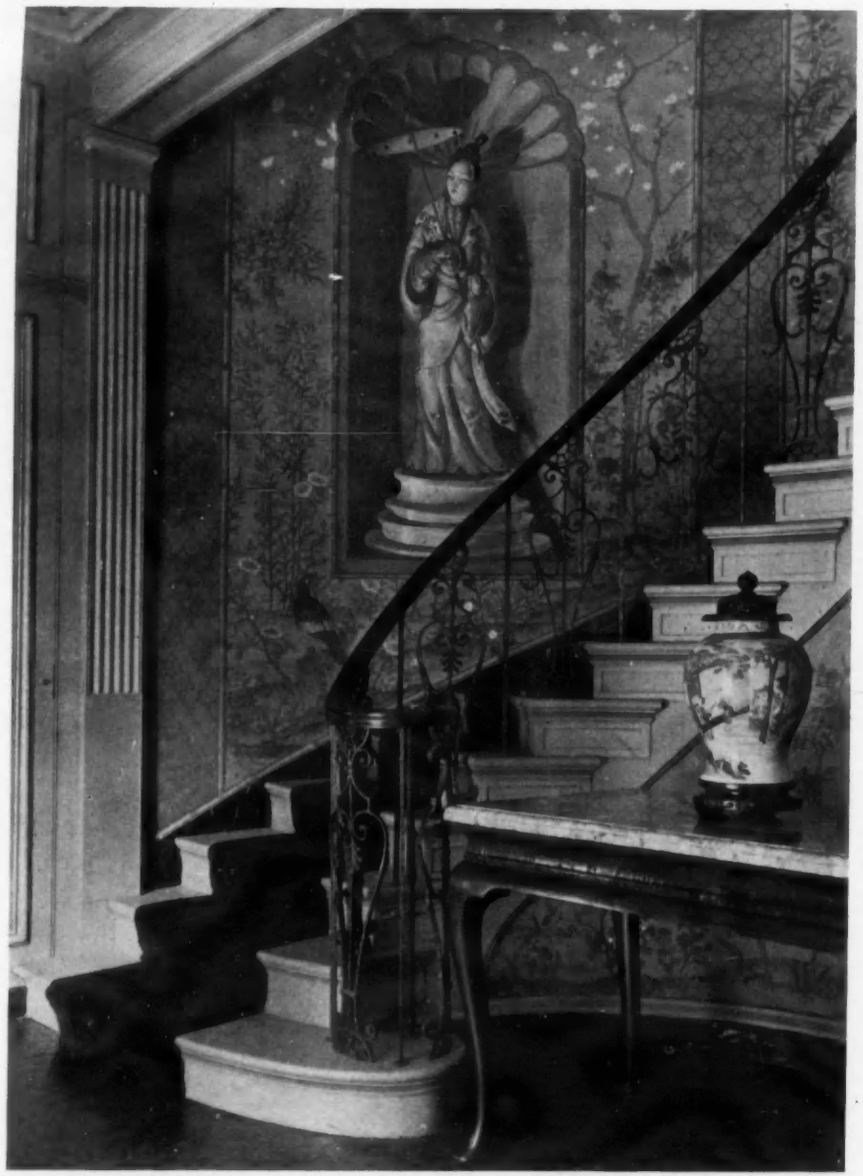


FIRST FLOOR PLAN

GARDEN FRONT WITH ENTRANCE ON TERRACE

HOUSE OF MISS ANNE MORGAN, NEW YORK

MOTT B. SCHMIDT, ARCHITECT



PAINTED DECORATION ADORNS THE WALL OF THE STAIRWAY

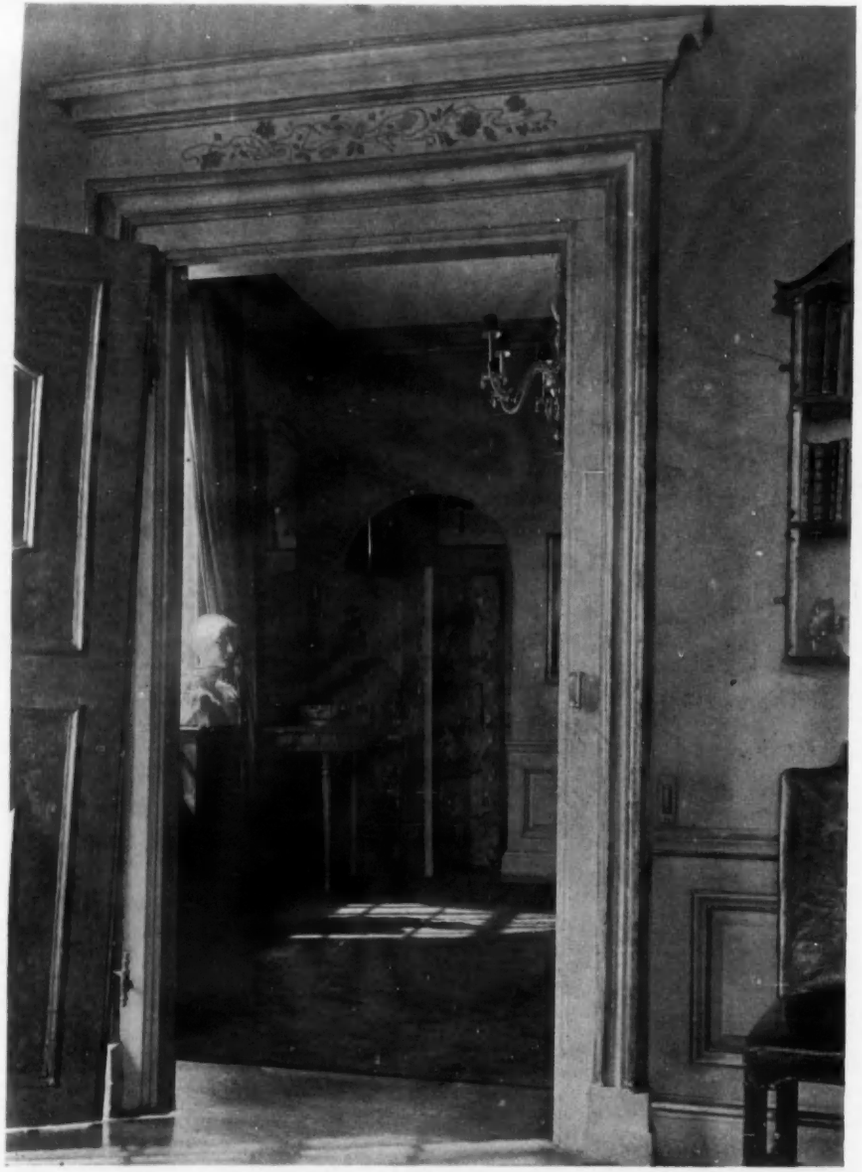
STEPS LEAD FROM HALL TO DINING ROOM DOOR

HOUSE OF MRS. W. K. VANDERBILT, NEW YORK

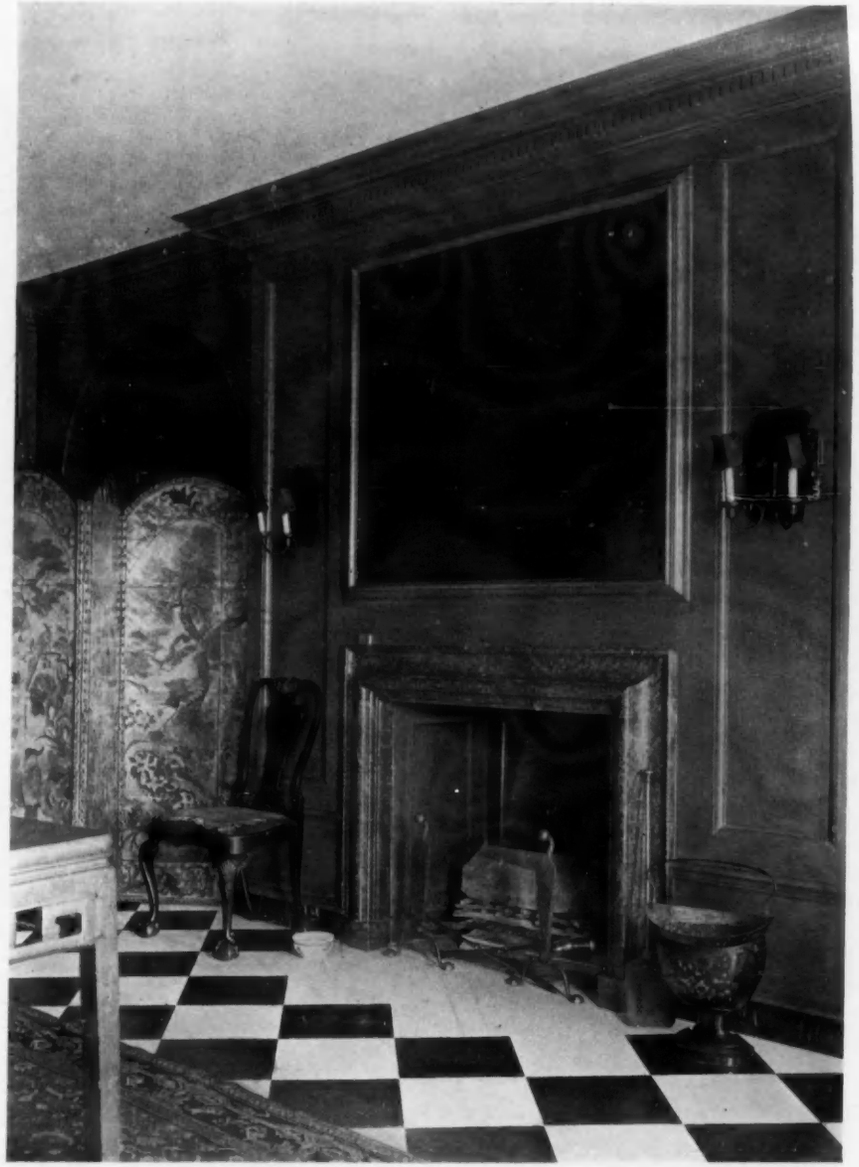
MOTT B. SCHMIDT, ARCHITECT

Photos, Kenneth Clark

Architectural
Library



ANTIQUE PAINTED DOOR FROM HALL TO DINING ROOM



FIREPLACE AND OVERMANTEL DECORATION IN DINING ROOM

HOUSE OF MRS. W. K. VANDERBILT, NEW YORK

MOTT B. SCHMIDT, ARCHITECT

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EAST FRONT WITH TERRACE AND GARDEN GATE
HOUSE OF MRS. W. K. VANDERBILT, NEW YORK
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COLONIAL SIMPLICITY AND DIGNITY MARK THE DINING ROOM

GLASS CLOSETS FLANK THE FIREPLACE IN THE WEST BOUDOIR

HOUSE OF MISS ANNE MORGAN, NEW YORK

MOTT B. SCHMIDT, ARCHITECT

RECEPTION ROOM HAS CHINESE CHIPPENDALE WALL PAPER AND MIRROR

COMFORTABLE CORNER IN THE LIBRARY SHOWING BOOKCASE

HOUSE OF MISS ANNE MORGAN, NEW YORK

MOTT B. SCHMIDT, ARCHITECT

Architectural
Library

WOODWORK FROM AN OLD ENGLISH ROOM ADDS INTEREST TO THE LIBRARY

OLD GEORGIAN PANELING IS USED IN MISS MORGAN'S OFFICE

HOUSE OF MISS ANNE MORGAN, NEW YORK

MOTT B. SCHMIDT, ARCHITECT

The Evolution and Development of Jackson Heights

ANDREW J. THOMAS, ARCHITECT

IN commercial architecture there has long been established the rule that business shall govern design. But old as the rule is, it is strangely misunderstood in practice. Too often people think of it as implying an underlying conflict between architecture and business, requiring the sacrifice of architecture, whereas it really means the intelligent coöperation of both, guided by the simple, common sense principle that architecture should serve the needs of the case. In some circles it is assumed that the architect takes too little interest in safeguarding profits in his design, and that he seeks expensive decorative effects which, if the business man did not forbid, would endanger the financial success of the building. How often do we hear a business man tell how "he had to keep his architect down on the earth in order to make the work a success!"

But the time has come to realize that there are two sides to this controversy. This fault finding has lasted so long that it is becoming hackneyed. The whole point of the matter is that the business man may be just as unbusinesslike in real estate as he claims the architect to be. It is time to establish the opposite truth, which is that the architect who lets his imagination carry him too far from the conditions of the problem is nowadays offset by the business man who has too little vision to make the most of his opportunity, who is unprogressive, and who sticks to customs, blindly following old practices without a thought as to whether these practices are sound or as to whether changing times have made them in any respect obsolete. This is not said to provoke further controversy, but only to show that the criticism of architects as being unbusinesslike is too often made thoughtlessly, and as thoughtlessly accepted. One may even assert that architects have been somewhat too humble in accepting such criticism, to the injury of business as well as of architecture. It may not be the part of the architect to instruct the business man, but he can certainly bring imagination to bear in giving effective form to business ideas; and, what is also important, he can cultivate sufficient knowledge of business principles to be able to recognize the possession or lack of them in his clients, and to seek the type of client who has business vision to couple with his own artistic imagination. As already suggested, what is needed in commercial architecture is coöperation, and coöperation means, not a one-sided, thoughtless dictation by the business man, but the active participation of the architect in the project, working in harmony with his client.

Entrance Cate to Garden of "The Towers," Jackson Heights, New York

It is important to understand that business vision is more essential in real estate than in many other fields. Some products, like food or clothing, are soon consumed and cater only to the wants of the day, but a commercial building is produced for use during a score of years or longer, and requires the finest possible business judgment in foreseeing future trends and in anticipating them in design in order to prevent too rapid obsolescence. The financial success of a building, therefore, may depend more on market conditions of future years than on the market today.

It is in this foresight that the real estate world has been too deficient. Indeed, the architect may even claim that some of the principles which he introduced into architecture in the last half century have proved to be sound business as well as good architecture. When, years ago, the architect first insisted on the careful planning of American buildings, he opened up a field of vast economies in cutting out waste space and in efficient use of the space provided. When the architect preached sound construction and durable materials, he did not do so solely to obtain decorative appearance, but also to enhance value by making buildings endure, by holding their attraction for tenants, and by reducing depreciation; and lastly—which is the point most in controversy—if the architect has fought for beautiful form and craftsmanship, he has only anticipated the time when the increasing wealth and cultivation and appreciation of the finer sides of life among the American people will be lifting them out of the

Street Facade and Garden Entrance

Center Fountain and Seats in Garden

"The Chateau," Jackson Heights, New York

ugliness and baldness of the Victorian era into a more urbane period when, to put it bluntly, they take pride in a good appearance in their buildings and their streets and their neighborhoods, and will pay well him who satisfies their demand. Whenever he has disregarded these sound principles, the realtor has been the creature of habit, opposing progress and new ideas.

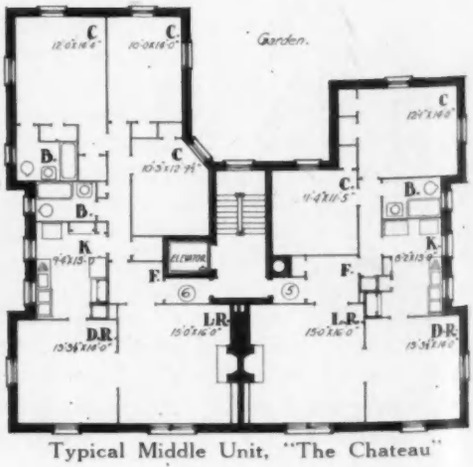
To some extent, at least, the American architect can claim that he has contributed to the business side of commercial architecture. He has in many respects understood the buyer's wants better than the business man. His contribution is only beginning, and it will grow greater as his experience increases in scientific analysis and in expert design.

The best illustrations of the correct principles of commercial architecture may perhaps be found in the apartment house field. These illustrations, moreover, occur alongside older and less businesslike methods, and as a result a most instructive set of examples is now available for comparison.

One may assert that, except for a very few isolated cases, apartment house architecture did not share extensively in the remarkable progress made in other classes of buildings during the last 40 years. Even the most luxurious types of tall elevator apartments showed only a superficial progress, mainly confined to interior decoration and better architectural facades. In fact one may visit one of the best of the old 1890 elevator apartments, and, except for an old fashioned, somewhat "Victorian" appearance, one will find it not essentially different from buildings built since the war. The non-elevator apartments also have had little improvement during the same period, except for the increasing use of a wide frontage, although recently there has been some response to the new architectural ideas expounded by Andrew J. Thomas. Of what other types of buildings could the same be said? In contrast to the unprogressiveness of apartment house design, what a change has been wrought during this same period in the American individual house, the school, the library, church, railroad station, office and store buildings!

Only since the war, around New York have there been signs of awakening. Unfortunately, a good deal of this improvement has been superficial. Much is heard of "talking points," chiefly in the shape of minor details of finish and of bathroom and of kitchen equipment. As an example, in many

One End of "Chateau" Group Land is Reserved for Other Buildings

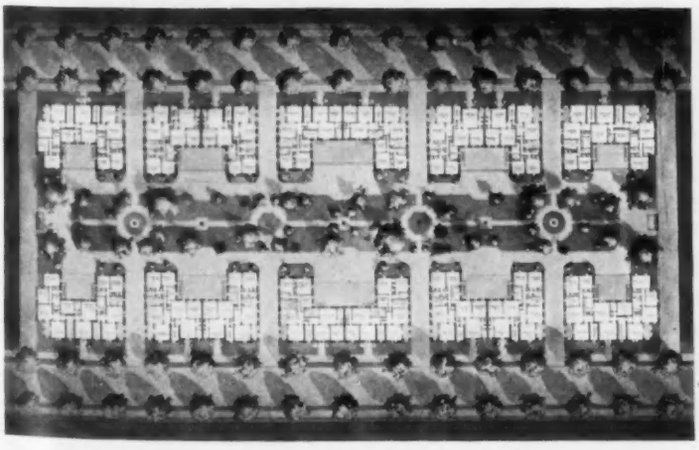


Typical Middle Unit, "The Chateau"

Garden Terrace of "Linden Court"

Italian Influence Is Evidenced in "The Towers"

of the "walk up" apartments of the cheaper type in Greater New York one sees a lavish use of marble wainscoting in entrance halls, of tile floors in upper corridors, of tile wainscots in bathrooms, and of tile floors and wainscots in kitchens. This expensive finish goes along with a large outlay for equipment. At the date of writing, a large group of very cheap small one-family, 6-room brick houses is being put on the New York market, each house saddled with an uncalled-for expense of over $1,000 in the shape of finish of the kind described, and having, in addition, a wall paneling of stiles and rails applied over the plaster walls in the downstairs rooms, five ceiling electrical outlets in the dining room plus four wall brackets, and in the bathroom a separate tile shower compartment besides the tub. Incidentally, the main stairs are so steep that one can hardly use them. Such expensive details belong to the very largest mansions, and their lavish use in commercial architecture is the sort of thing for which formerly an architect would never have been pardoned had he introduced them into this class of low priced housing. Yet the speculators who put up such structures claim to "know the market," and they make a great to-do over such incidentals as "talking points" in salesmanship. Of course, the real fact is that these "talking points" are put forward to dazzle an ignorant class of buyers and to distract their attention from the real situation, which may be that the same houses, despite their extravagant finish, are deficient in the real essentials of sunlight, outdoor exposure, garden outlook, proper planning of rooms, elimina-



Both Ends of "Linden Court" Land is Reserved for Other Buildings

Garden Detail, "Linden Court"

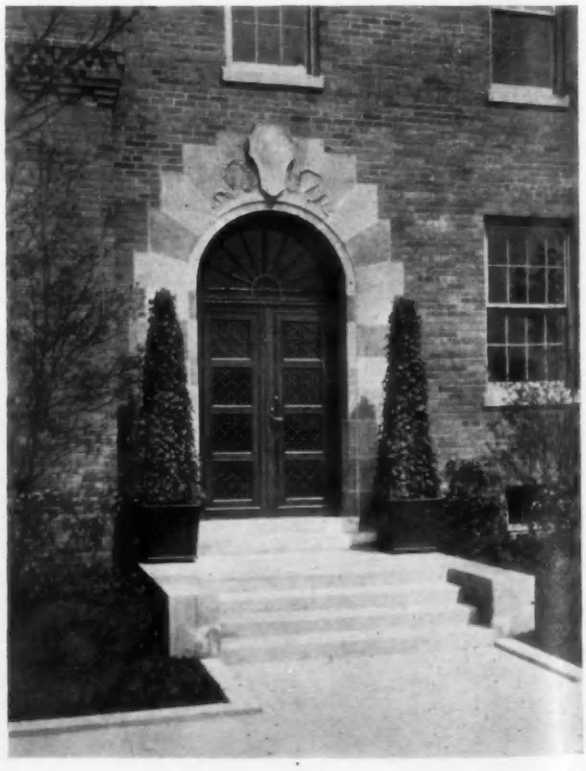
One Unit of "Linden Court," Jackson Heights, New York

tion of waste space, and in sound, durable, structural materials. One hears "modern conveniences" extolled on all sides, yet what modern conveniences can supplant the ancient conveniences of sunlight, fresh air and garden?

It needs little argument to prove that, wherever such crude practices are common, they are bound to fail in the long run, especially after the boom and the existing sellers' market have disappeared. Structures of this type, of which there are countless examples, will not hold their values for many years in the face of the awakening education of the public to better housing standards. What the unprogressive investor fails to consider is the big educational movement in favor of better homes which is going on.

Anyone in the publicity field knows that the American people seem to have an unquenchable thirst for new ideas in homes, whether viewed from the angle of architecture, of landscape architecture, interior decoration or house furnishing. A number of powerful national magazines of huge circulation like *House & Garden, House Beautiful* and *Good Housekeeping* specialize in this field, and popular publications devote immense space to it. There are also the Architects' Small House Service Bureau and the educational work of the United States Government, universities and other public spirited agencies. This vast propaganda is bound to have its effect on the buying public, and it is creating a demand for real improvement in housing practices which the speculator must meet. The propaganda goes into the most elaborate detail, and every feature of a house is exhibited and studied for practicality, econ-

Entrance Doors, "Linden Court," Show Fine Detail



Doorways of "The Towers" Show Interesting Grillework

omy, charm and artistic appearance — the real "talking points." Here is the true market for the housing speculator during the next few years, and he courts disaster if he ignores it.

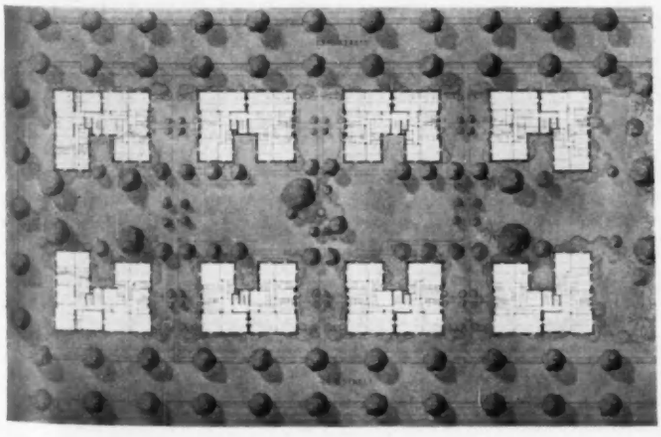
A very few real estate operators have sensed this demand for progress, and they have coöperated with the architect in meeting it. No better example of sound business policy in regard to architecture can be cited than that of the Queensboro Corporation at Jackson Heights, New York. The Queensboro Corporation constantly studies its market and insists on progress in design. To use the business phrasing which is consciously adopted in this article for purposes of illustration, it believes in improving its product in every way, from the biggest essentials of architecture down to the smallest detail. Each year it brings out new designs and new models and new improvements, in the same spirit of progressive evolution that has characterized the motor industry in its leadership of American business.

General View of "The Towers," Jackson Heights, New York

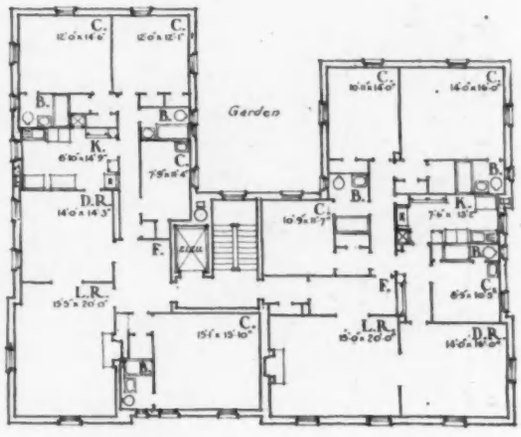
Such a program involves a vast deal of work and it requires initiative. It offers the architect a real opportunity, because he is encouraged to progress. His work becomes real expert professional service, instead of incidental draftsmanship. It requires highly coördinated architectural design in the fundamentals and in the relation of building to interior decoration and to the garden. In place of a single flat exterior wall along the street, so characteristic of the stereotyped apartment, the buildings have four exterior walls, with roofs, breaks, projections and other details—in other words, the elevations become a matter of three dimensions, or true architecture, making possible variety in treatment.

In the process, custom has no mystic sanctity to be obeyed without a question. The truth is that many real estate "customs" will not stand analysis, because they may only register the fact that people have been persuaded to accept a poor arrangement in default of anything better. A case in point is the dictum that the rear apartment and the rear bedrooms will bring less rent than those located on the street front. But Mr. Thomas reasoned that this so-called custom grew out of the fact that the difficulty with rear locations was due chiefly to bad planning, with dark, congested courts and poor outlook; and that a rear location in the midst of a great garden was much superior to one on the street and would bring a higher rent. His view was accepted by the client and has proved correct.

The most radical break with custom came in the adoption of individual buildings in place of a solid mass along the street. Mr. Thomas adopted this innovation in arrangement, because he was able thereby to get more sunlight, more outdoor exposure



Land at One End of "The Towers" Is Reserved for Other Buildings



Typical Corner Unit, "The Towers"

and better outlook, a larger number of rooms, and a more attractive appearance. The new arrangement was first tried out very cautiously as an experiment, on a group of garden apartments, called "Linden Court," built in 1920. In the "Linden Court" group the buildings are placed only 15 feet apart in the narrowest dimension and cover only 40 per cent of the area of the site. The experiment proved a striking success. People welcomed the new idea, and tenants flocked into the buildings in preference to taking apartments in the older solidly built types, a group of which was completed at the same time and which rented more slowly. Encouraged by the success of the experiment, a second group, the "Chateau" apartments, was built in 1922. The most important facts about this second group are that it covered 37.4 per cent of the site, and that the buildings were placed a little farther apart—19 feet, 6 inches. Again the success of the operation emboldened its authors to go much further, and in the "Towers," a group of fireproof luxurious elevator apartments just completed, the area occupied is only 36 per cent and the buildings have been placed 36 feet, 8 inches apart. In this architectural evolution the passages between the buildings have developed into real side gardens, opening into the great center garden, and the individual buildings have the effect of being placed in the midst of a garden setting, almost like a country house. Likewise the rear court has almost disappeared from the plan. It will be noted that the individual apartment in the two later groups has been given better outdoor exposure. In the evolutionary process the elevations and every detail of arrangement and equipment have been improved.

One of the Gardens of "The Towers"
Noel Chamberlin, Landscape Architect

This vision and business judgment is characteristic of the Queensboro Corporation's business policy. Their architecture is no capricious experimentation, but a steady, sure evolution, year by year, based on the fundamental principles of imaginative architectural design and business vision. Architecture should welcome such a demonstration, because it sets an example to real estate of real coöperation with the architect in a search for progress.

Interior Garden of "The Towers" Shows Formal Arrangement

The Smaller Civil Architecture of England

II. BERKELEY'S HOSPITAL, WORCESTER

By ROGER WEARNE RAMSDELL and HAROLD DONALDSON EBERLEIN

BERKELEY'S HOSPITAL, in Worcester, is not a place intended for the care and healing of sick folk, but a hospital in the ancient sense of the word, a place of hospitality where a limited number of aged, destitute and needy persons may find a comfortable home.

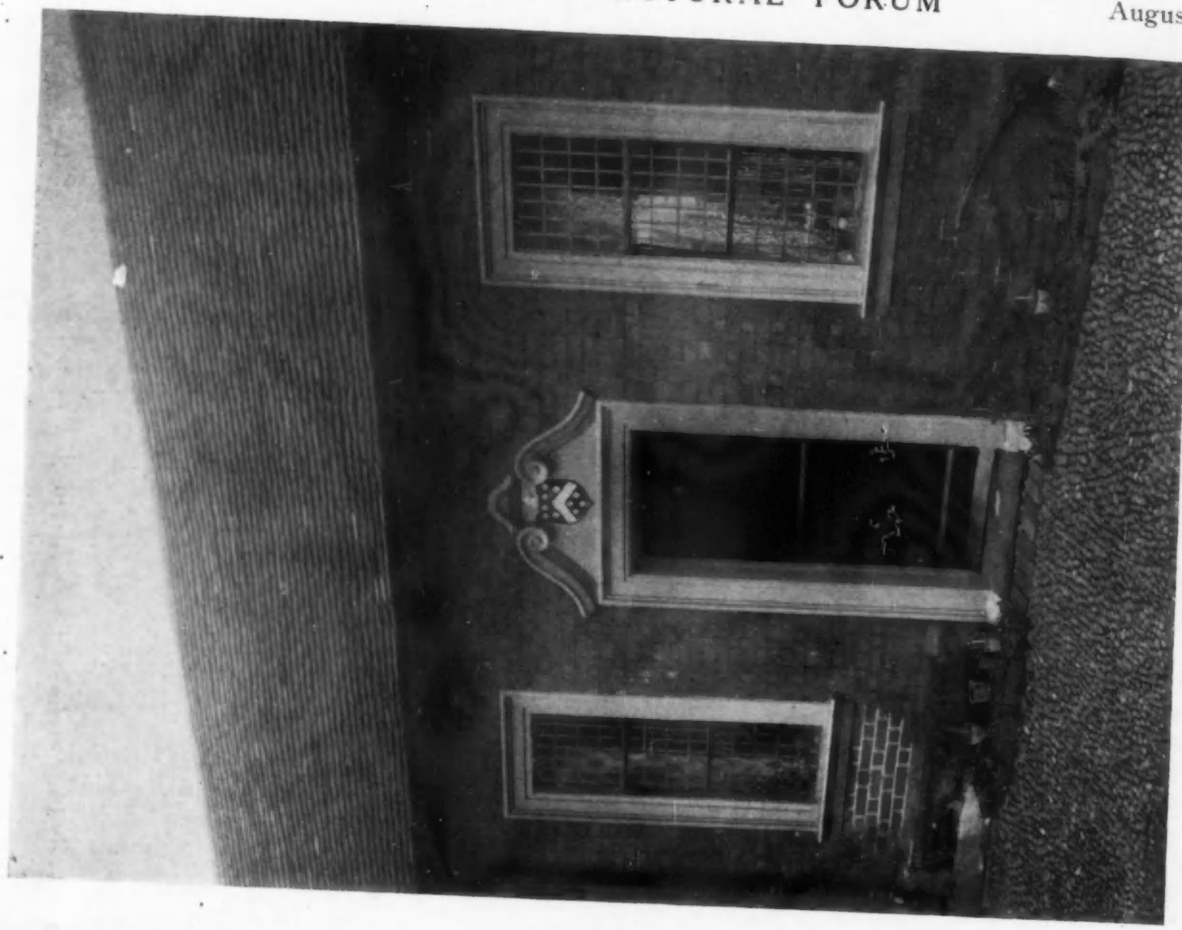
The founder was Robert Berkeley, Esquire, of Spetchley, in Worcestershire, and is described by John Evelyn in his Diary as a man of distinguished parts, "curious in gardening." By his will, dated December 13, 1692, Robert Berkeley devised certain funds to be applied to the foundation and support in perpetuity of an establishment of almshouses in Worcester for "12 poor men and one poor woman." Why this whimsical apportionment of one lone woman to 12 of the sterner sex, history does not record. The administrators of the charity later increased the number of men to 14. Besides the 13 pensioners originally designated as beneficiaries of this bounty, there was to be also a chaplain with a stipend of £20 a year. A steward was likewise to be appointed to administer the affairs of the Hospital, receiving the same compensation as the chaplain. The control and management of the foundation were vested for all time in the Mayor, Aldermen and Town Clerk of the City of Worcester.

In 1705 land was purchased in the Foregate, near Worcester Cross, and some time thereafter work was begun on a group of buildings comprising a chapel, lodgings for the chaplain and the steward, and two rows of small dwellings facing the courtyard, for the pensioners, in which they might live independently one of another, maintaining their individual privacy. Just when the buildings were completed is not certainly known, but as there is record among the old accounts of the vault beneath the chapel being let at Lady Day, 1711, to a wine merchant for storage purposes, all construction was presumably finished in 1710, if not before.

The architect of Berkeley's Hospital is not known. If there was indeed any architect at all, we can only conjecture who he may have been; if he supplied the original design, it appears from existing evidence in the fabric itself that he must have left the carrying out of the work without supervision and altogether in the hands of the master builder, who seems to have been lacking either in the matter of conscientious oversight or else in experience. Other-

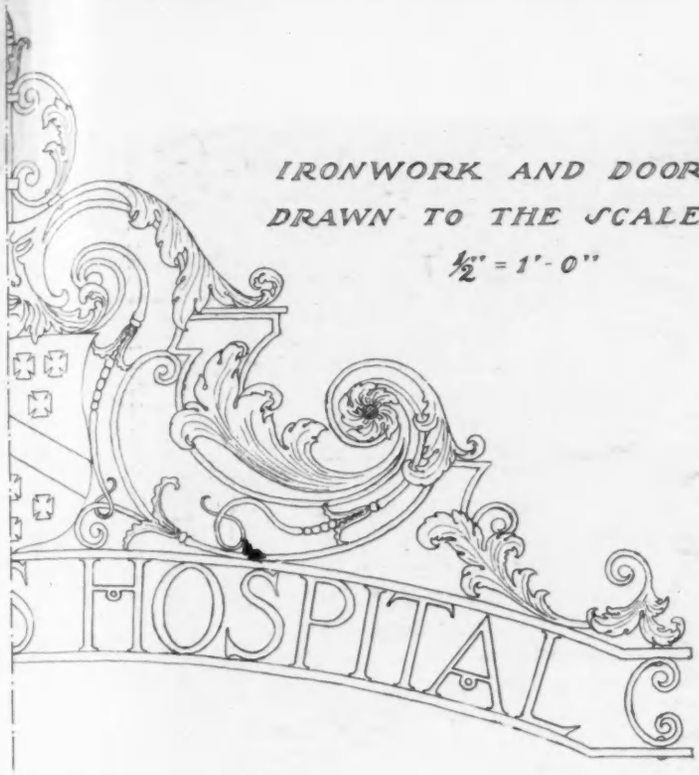
Houses of the Chaplin and Steward Flank the Gateway

AT THE END OF THE COBBLE-PAVED COURT IS THE CHAPEL



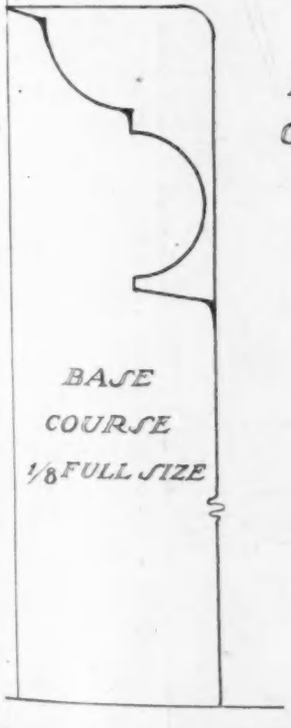
ENTRANCE DOOR TO ONE OF THE PENSIONERS' HOUSES

BERKELEY'S HOSPITAL, WORCESTER, ENGLAND



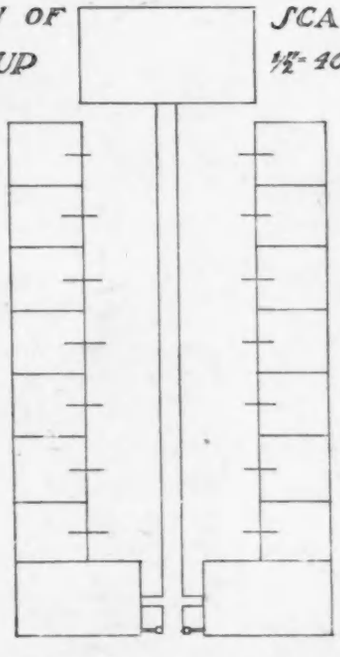
IRONWORK AND DOORWAY
DRAWN TO THE SCALE OF
½" = 1'-0"

PROFILE OF DOOR JAMB
SCALE ¼ FULL SIZE



BASE
COURSE
⅛ FULL SIZE

PLAN OF
GROUP



SCALE
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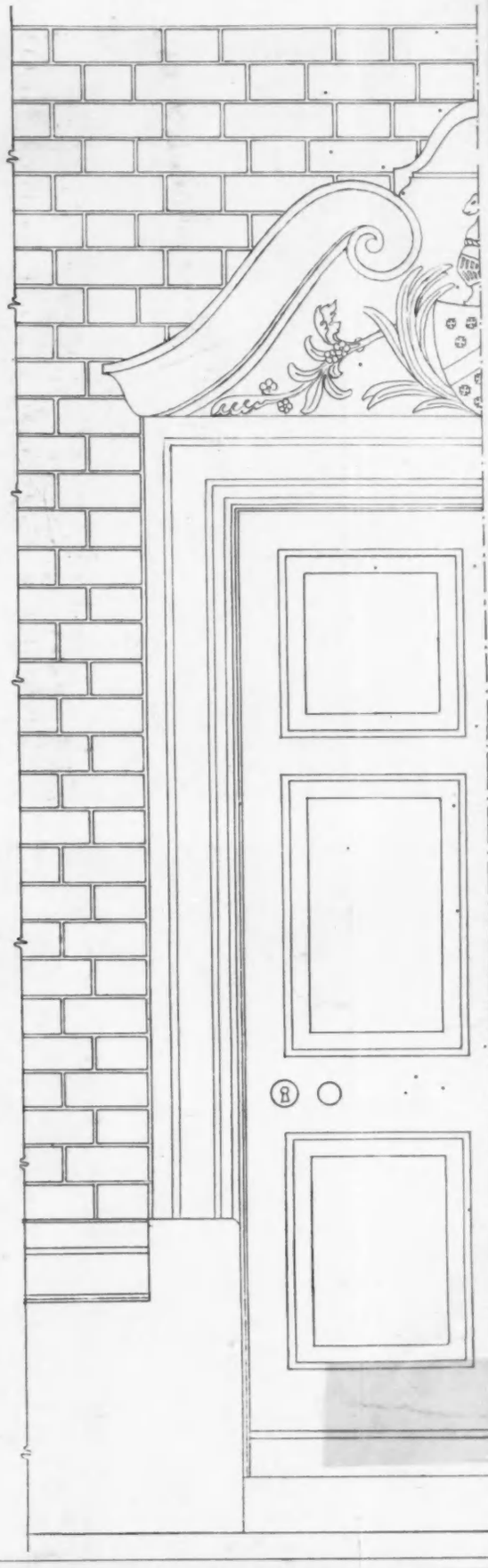


BERKELEY'S HOSPITAL
WORCESTER

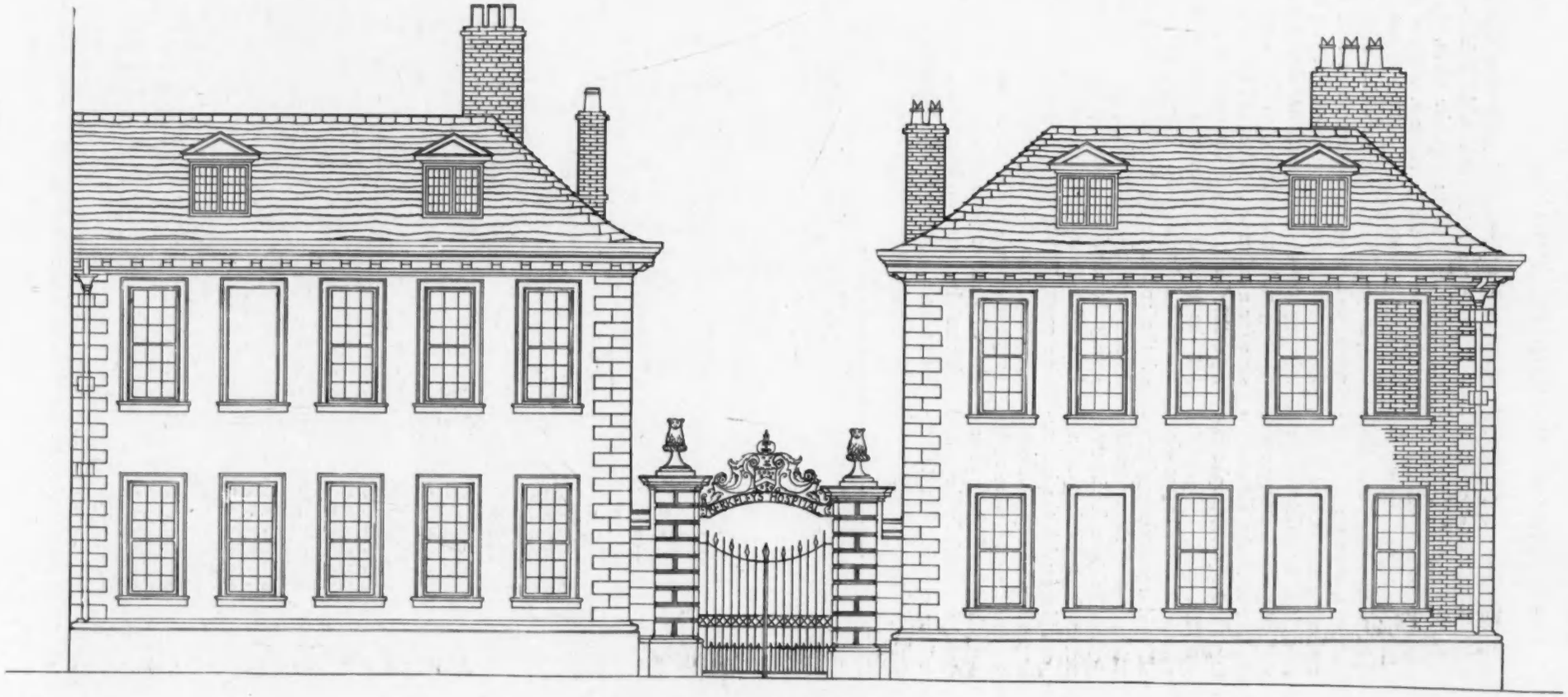
GRACEFUL CRESTING SURMOUNTS THE ENTRANCE GATEWAY

OVER THE DOOR TO THE CHAPLAIN'S LODGING, ORNAMENT FILLS THE PEDIMENT

BERKELEY'S HOSPITAL, WORCESTER, ENGLAND

OVER THE DOOR TO THE CHAPLAIN'S LODGING, ORNAMENT FILLS THE PEDIMENT

BERKELEY'S HOSPITAL, WORCESTER, ENGLAND



SCALE 1/16" = 1'-0"

BERKELEY'S HOSPITAL

WORCESTER

wise it is hard to account for the patent disparity in the height of the gateposts and certain other features that are obviously awry, and awry not because of any exigencies of plan, any settling of foundations, any intentional subtlety, or any of the lines of the plot on which the Hospital stands. These little indications of slovenliness in construction (it is impossible to find a more euphemistic name for them) along with some settling of the foundations here and there so that the walls in several places are visibly out of plumb, made it extremely difficult in more than one instance to compose photographs that would not look painfully askew.

Notwithstanding the constructional shortcomings just noted, which after all lend a peculiarly piquant individuality to the ensemble, just as the irregularities of the human face often enhance its interest, Berkeley's Hospital possesses both distinction and charm in large measure, combined with the impressive force and virile accent so generally characteristic of civil and domestic architecture alike at the date of its erection. On each side of the gateway, with its camels' heads and its gracefully fashioned wrought iron "overthrow" or cresting, are the respective lodgings of the chaplain and the steward. Between the houses of these two officials a broad pathway gives access to a wide, cobble-paved court on which face, from opposite sides, the little one-story houses of the pensioners, while at the far end, is the chapel with an effigy of the founder in a niche.

Each pensioner's house consists of a single large room, so arranged, however, that it is virtually in two easily separable parts—a sleeping cubicle and a living room. Each pensioner does his or her own cooking and housekeeping, so that there is no occasion for a refectory. The plan of the group is both agreeable in point of composition and convenient for the general purposes of administration as the Hospital is organized. The whole group is built of the red face brick, in such esteem in Queen Anne's day, of a very rich, yellow hue, and all trim except the cornices is stone. What the stone is it is impossible to say as it is covered with many successive coats of buff paint. The greater part of the original glazing has been replaced and the old robust bars and muntins have given way to sash construction of a rather weak type. The aspect of the pensioners' houses has been much altered in recent times by the substitution of leaded quarry glazing for the sashes formerly used.

The Entrance Doors to the Houses of Chaplain and Steward Are Inside the Gateway

Spanish Influence at Palm Beach

THE HOUSES OF ADDISON MIZNER AND DR. W. S. KINGSLEY

ADDISON MIZNER, ARCHITECT

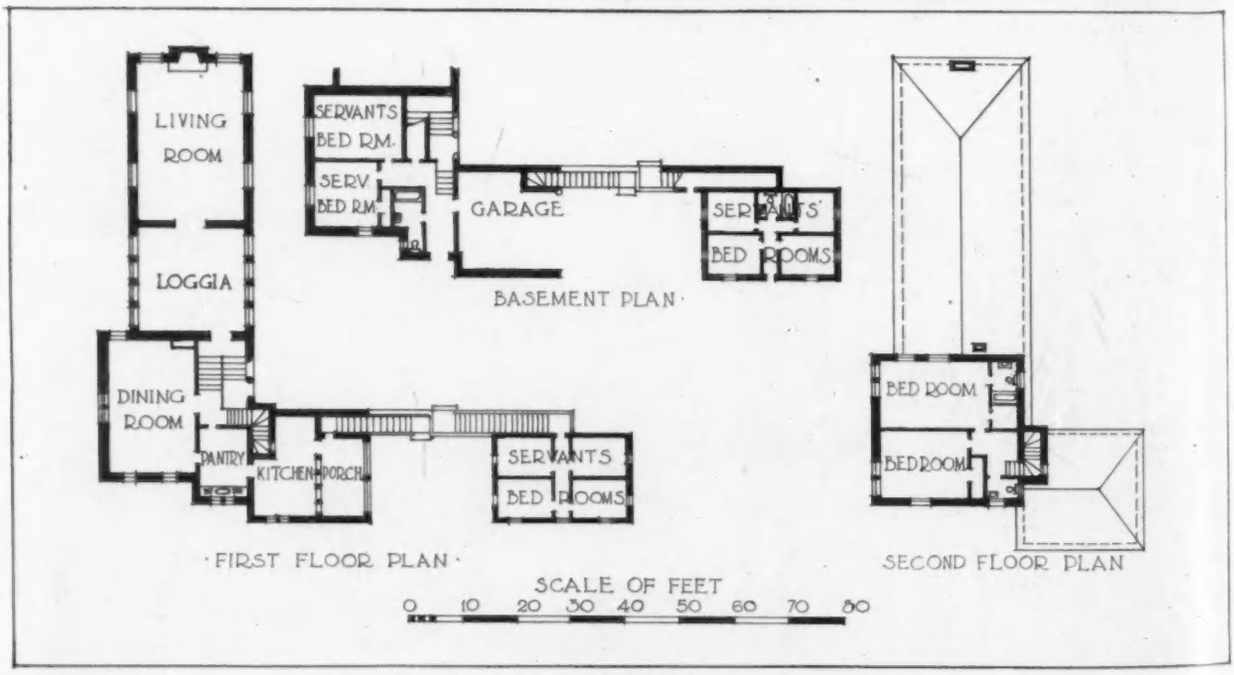
ARCHITECTURE, like plants and trees, should be indigenous to the soil from which it springs. That is to say in plan and elevation it should suit the climate and the scene of its environment. Fortunately, this most important trait, suitability of design, is being considered and carried out to a much greater extent today than ever before. Thus in southern California, already replete with Spanish tradition, the Italian and Spanish styles are being used more and more consistently and generally. As Florida has much the same climate as Santa Barbara and Pasadena, although lacking the romantic background of the Spanish missions, the architecture of southern Europe is equally suitable there.

Among the many examples of the use of Spanish architecture in Florida, two houses at Palm Beach recently designed and built by Addison Mizner, Architect, show the possibilities of this picturesque style. Imagination and artistic appreciation are strongly indicated in the designs of both of these houses, not only in the elevations but in the plans also, which are similar in general treatment. Each shows a rambling arrangement of rooms around two sides of a patio. Each has a large loggia or room open on two sides, separating the living room from the dining room and service wing. The topography of the site of Mr. Mizner's house, which is the smaller of the two, permits a main entrance and garage on a lower level than the living rooms and gardens, adding much to the picturesque irregularity of the design. In size as well as in detail Dr. Kingsley's house is more pretentious, more the Spanish villa than the farmhouse type. Its entrance drive, following the high garden wall on one side, and its ornate entrance door with open balcony above, are dignified and imposing. The long, low roofs of variegated tile carry the eye far back over the patio wall, above which beckon the waving leaves of scattered palm trees. The patio, which faces east, is shut in on one side by the wall of the entrance drive, and on the other by the buildings and courtyard wall of the service wing, giving it the quiet seclusion and indefinite charm of an old Spanish enclosure.

A broad grass terrace, broken by trees and palms of varying kinds, extends across one end upon which opens the loggia with its triple arches and low steps. An interesting wall of marble and open tile grillework separates this upper patio terrace from the lawn below. The several angles of the east side of the house, with its many arched and square-

High Walls Separate the Entrance Drive from the Patio of Dr. Kingsley's House

OLD TREES SHADE THE ENTRANCE DRIVE TO MR. MIZNER'S HOUSE

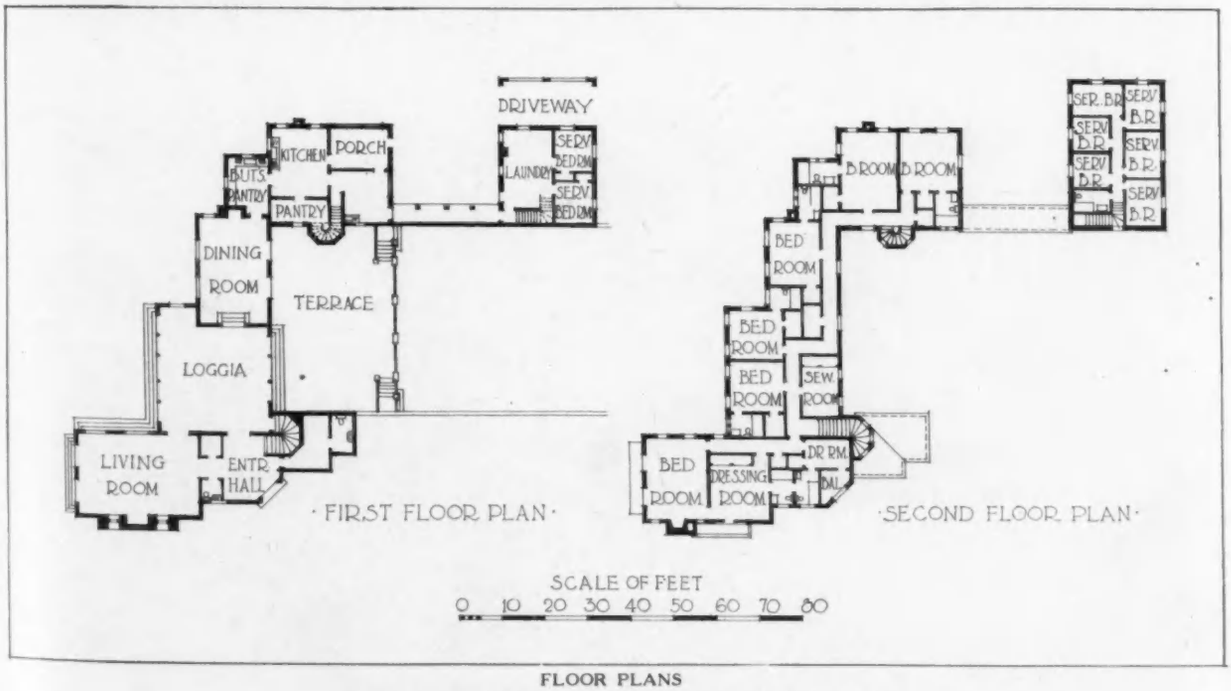


FLOOR PLANS

HOUSE OF ADDISON MIZNER, PALM BEACH

ADDISON MIZNER, ARCHITECT

SERVANTS' QUARTERS IN DR. KINGSLEY'S HOUSE OPEN ON A COURTYARD



FLOOR PLANS

HOUSE OF DR. W. S. KINGSLEY, PALM BEACH

ADDISON MIZNER, ARCHITECT

topped windows looking out upon the ocean, give opportunity for a pleasant play of alternating sunlight and shadow. The various breaks of this elevation also indicate and coincide with the plan of the interior, each bay representing a room. A few steps lead through a richly decorated entrance doorway into a corner hall from which winding stairs connect with the second floor. From this hall doors open into the living room and the great loggia room, 25 by 28 feet. From this room more steps lead up into the dining room and service wing, with its large pantry, kitchen and servants' hall. A covered walk 26 feet long connects the servants' hall with the service building, which contains besides a laundry and eight servants' rooms and bath, a large garage opening onto a lower level. A courtyard is formed by the service buildings and the covered walk, to which access is had through an archway in the servants' dormitory and laundry building. This isolation of the servants' quarters, always desirable where space and plan permit, recalls a similar arrangement found in most of the large Colonial mansions of the South, such as Mount Vernon, Westover and Homewood. The second floor of the main house contains seven master bedrooms, each having a separate bath and large clothes closet. Rough plaster walls, tile floors and narrow trim contribute to the severe simplicity of the interior of Dr. Kingsley's house. The walls of the loggia are laid up in stone, which treatment, together with the tiled floor and light wicker furniture, gives this connecting room the semblance of a porch. Curtained arches on the west lead out to the patio terrace and on the east to the ocean beach. The walls of the living room are paneled in wood, so divided that a number of old portraits could be set into some of the panels. The stone mantelpiece, which is more Italian than Spanish in design, shows a simple architecture and entablature of carved mouldings.

The main entrance of Mr. Mizner's own house, which together with a garage and two rooms and bath for servants is on a grade lower than the living rooms and patio, is approached by a shaded and winding drive. Trees of many kinds and picturesque shapes add greatly to the artistic effect. Stone stairs with iron rails lead from the entrance up to the loggia, and continue on to the dining room, which together with the service wing is on a still higher level. The two floors of the servants' building, which in this case is entirely detached, containing eight rooms and a bath, are reached by flights of steps, one up and one down from the level of the kitchen and servants' porch. Only the entrance bay of this interesting house is carried up an additional story, where two master rooms with baths are located. The patio, with its trees, marble benches, and plants in large Spanish pots, is very attractive, making a pleasant approach to the long flight of terraced steps leading down to a marble fountain.

In these two houses, although differing in plan and detail, Mr. Mizner has succeeded in reproducing much of the charm of the villas of southern Spain.

Dr. Kingsley's House Shows Many Angles and Windows on the Ocean Side

TREES GIVE A PICTURESQUE QUALITY TO THE EASTERN SIDE OF THE HOUSE

THE PATIO AND TERRACED GARDEN HAVE THE APPEARANCE OF AGE

HOUSE AT PALM BEACH

ADDISON MIZNER, ARCHITECT AND OWNER

Photos, F. E. Geisler Studio

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A LARGE FIREPLACE DOMINATES ONE END OF THE LIVING ROOM

THE DINING ROOM HAS THE CHARM AND ATMOSPHERE OF SPAIN

HOUSE AT PALM BEACH

ADDISON MIZNER, ARCHITECT AND OWNER

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WINDING DRIVES LEAD TO THE ENTRANCE DOOR

HIGH WALLS ENCLOSE THE PATIO ON THE UPPER TERRACE

HOUSE OF DR. W. S. KINGSLEY, PALM BEACH

ADDISON MIZNER, ARCHITECT

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THE LOGGIA IS SPACIOUS AND AIRY

THE DINING ROOM, LIKE THE LOGGIA BEYOND, HAS A TILE FLOOR

HOUSE OF DR. W. S. KINGSLEY, PALM BEACH

ADDISON MIZNER, ARCHITECT

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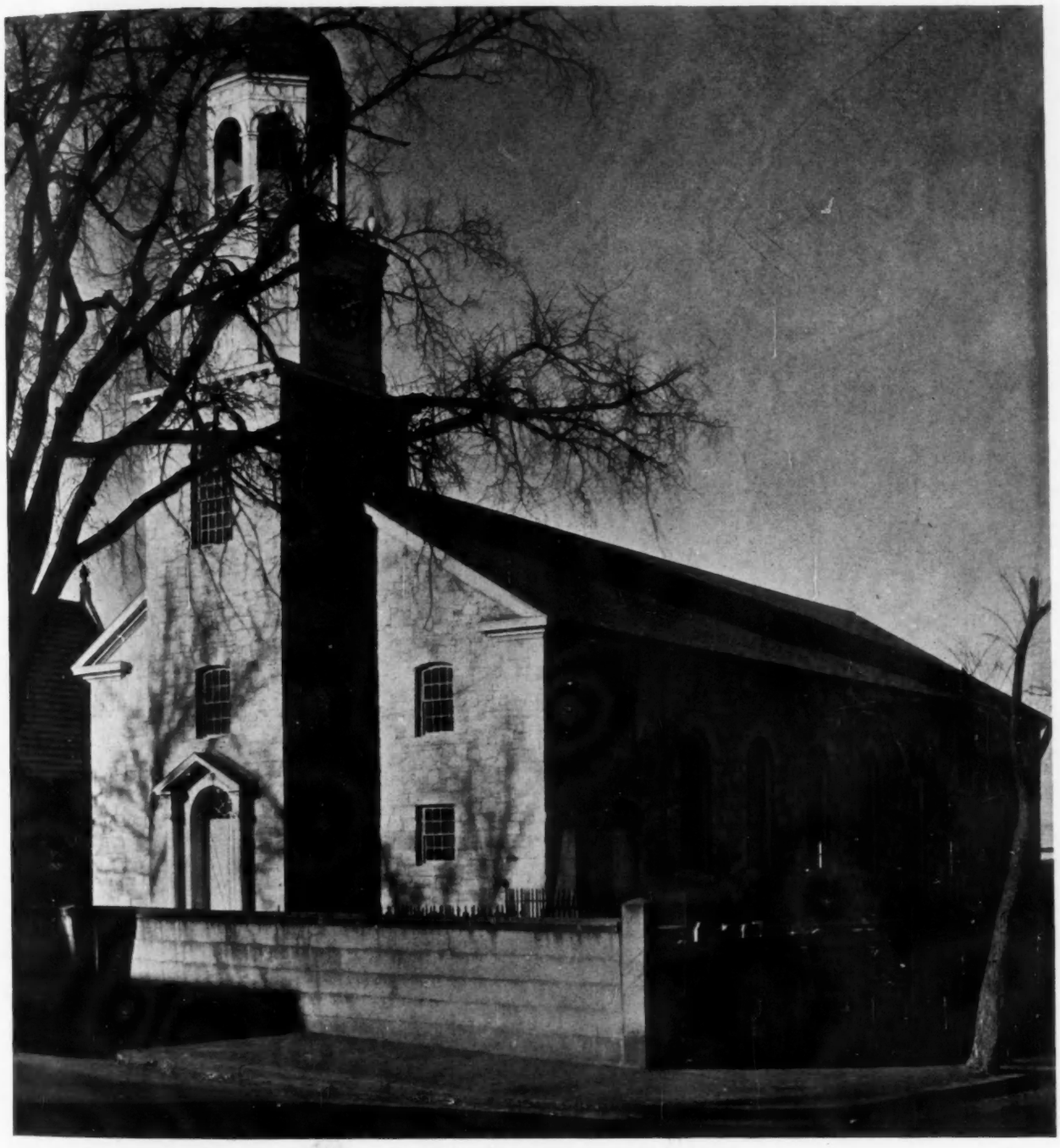
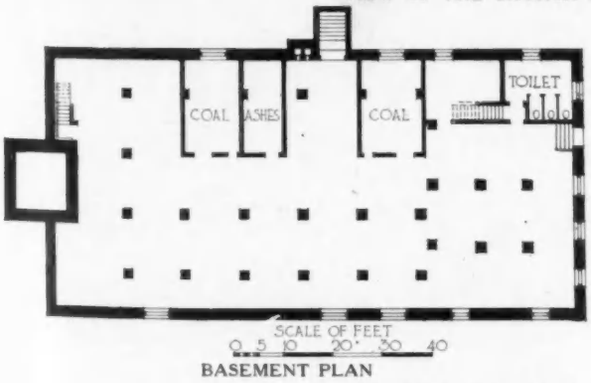
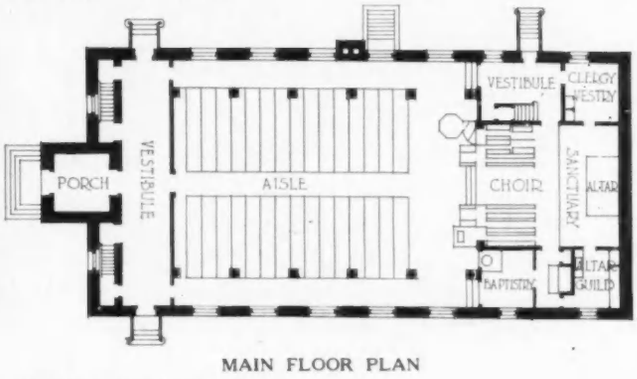


VIEW OF THE CHURCH FROM THE MAIN STREET



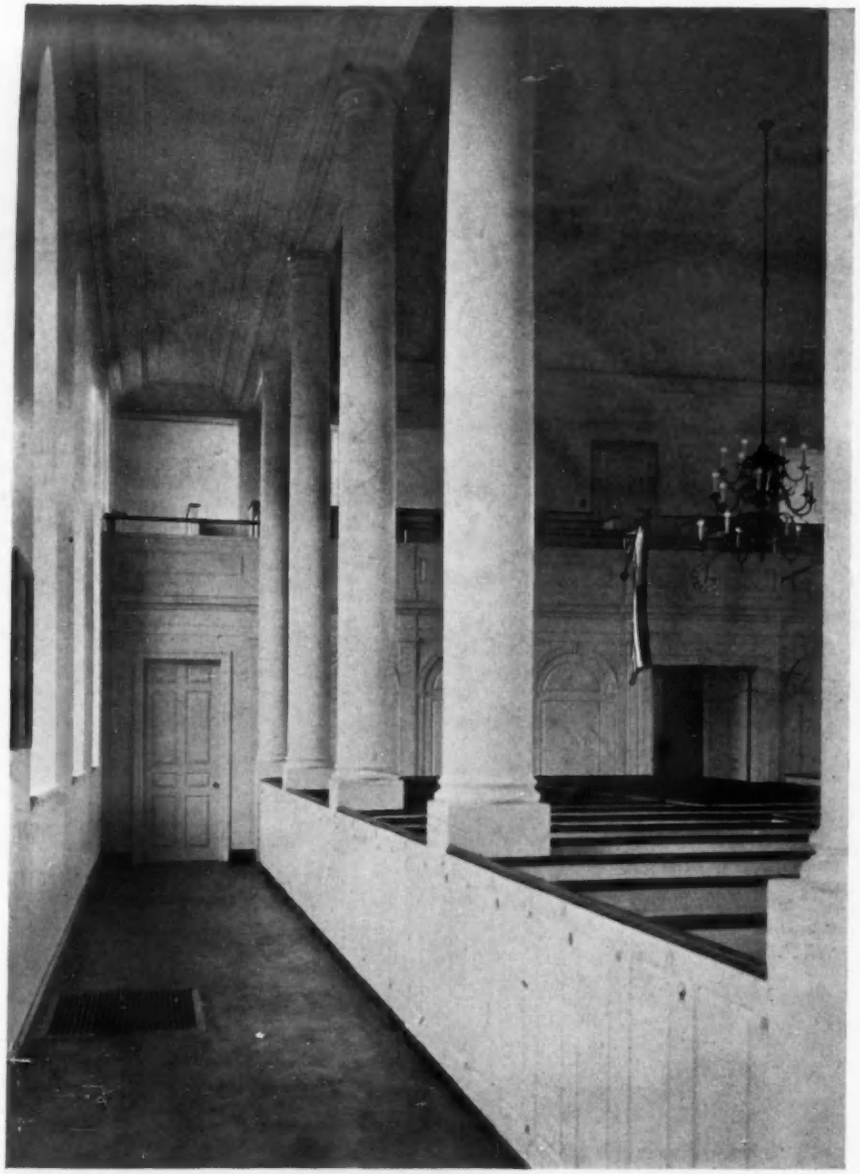
BASEMENT PLAN



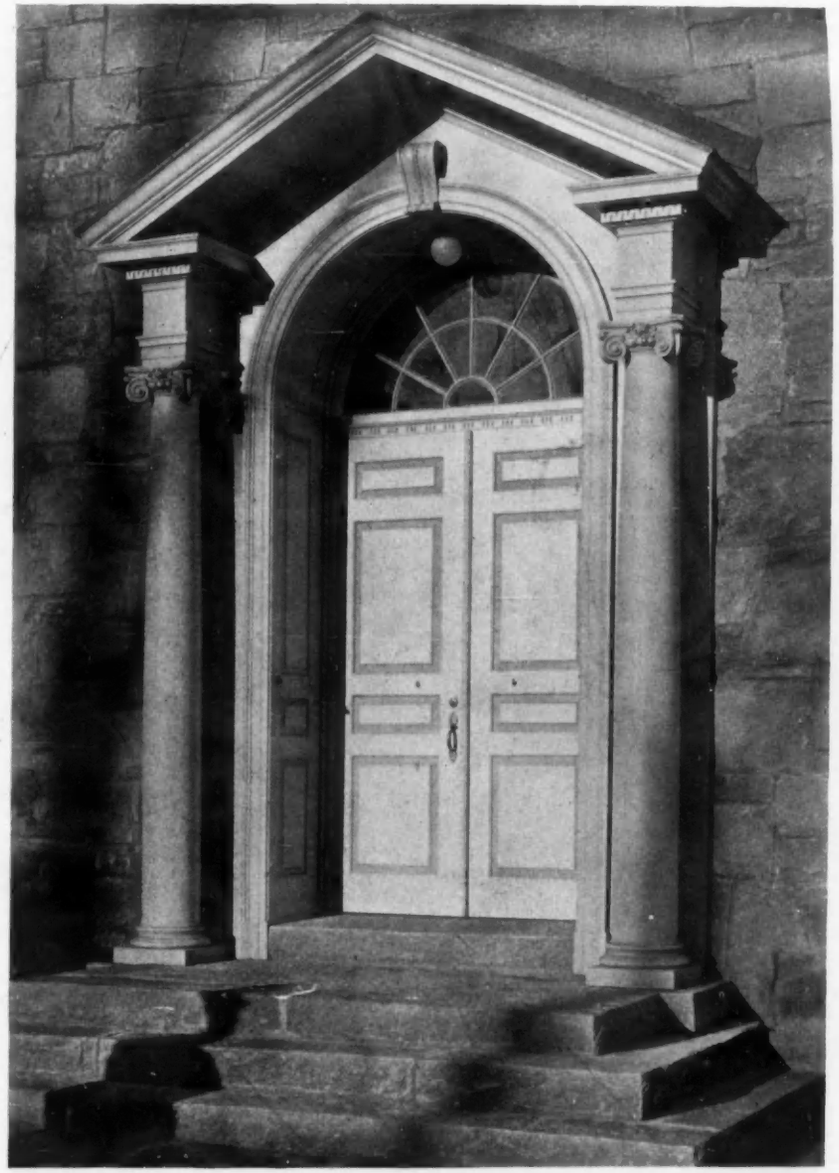
MAIN FLOOR PLAN

ST. PAUL'S CHURCH, NEWBURYPORT, MASS.

PERRY, SHAW & HEPBURN, ARCHITECTS; OFFICE OF R. CLIPSTON STURGIS, CONSULTING ARCHITECT



SIDE AISLE LOOKING TOWARD THE ENTRANCE



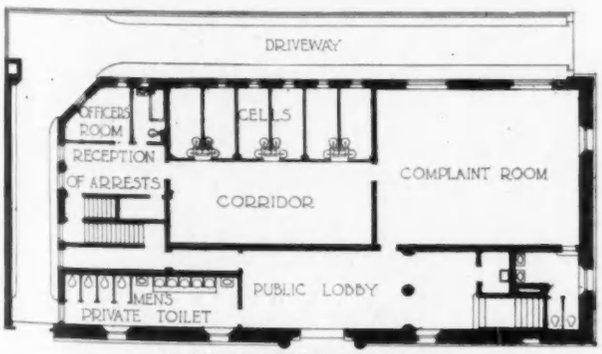
MAIN ENTRANCE DOOR

ST. PAUL'S CHURCH, NEWBURYPORT, MASS.

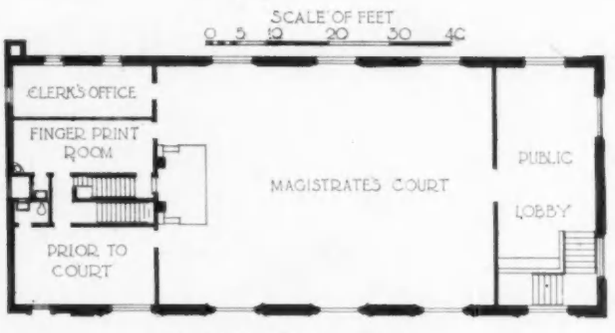
Photos, Paul J. Weber

PERRY, SHAW & HEPBURN, ARCHITECTS; OFFICE OF R. CLIPSTON STURGIS, CONSULTING ARCHITECT

MAIN FRONT ON SECOND STREET



PLAN OF STREET FLOOR

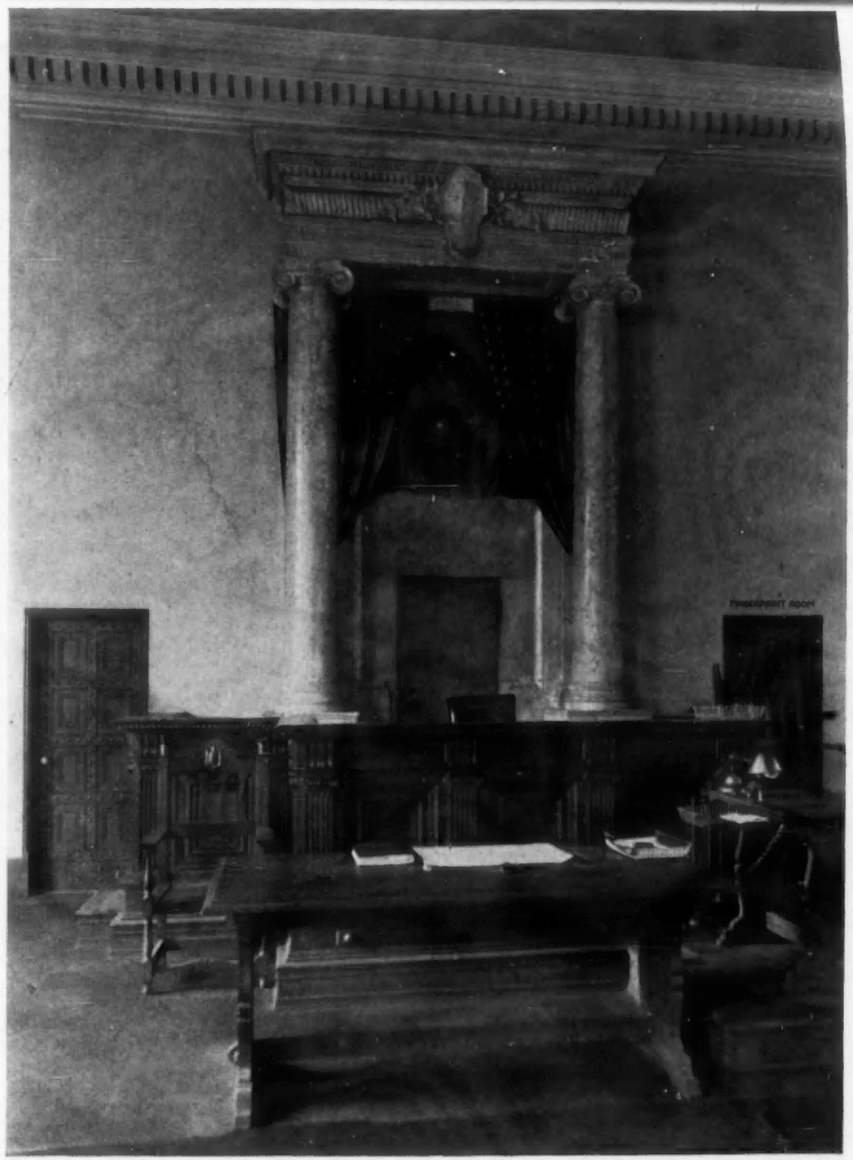


PLAN OF SECOND FLOOR

THIRD DISTRICT COURT, SECOND AVENUE AND SECOND STREET, NEW YORK

ALFRED HOPKINS, ARCHITECT

MAIN ENTRANCE ON SECOND STREET



MAGISTRATE'S DESK IN THE COURT ROOM

THIRD DISTRICT COURT, SECOND AVENUE AND SECOND STREET, NEW YORK

ALFRED HOPKINS, ARCHITECT

Photos, John Wallace Gillies

Architectural
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ENGINEERING DEPARTMENT

Charles A. Whittemore, *Associate Editor*

Use of Composite Columns in Concrete Buildings

By JOSEPH W. PARKER, *Consulting Engineer*

WITHIN recent years the designers of multiple-story buildings have found it advisable to adopt reinforced concrete construction to a greater extent than ever before and for much higher buildings than had previously been thought feasible or economical. The result is that today we have examples of reinforced concrete buildings which are 18 stories in height.

The gradual increase from year to year in the number of stories in buildings of this type introduced a very serious problem which had to be solved before this type of construction could be utilized to advantage in comparatively high buildings. The difficulty which arose was that of extremely large interior columns in the lower stories of a building when such columns were designed of reinforced concrete. The amount of floor space occupied by such interior columns in heavily loaded and high buildings, even when designed for a 1:1:2 concrete mix and heavily reinforced with spiral hooping and vertical rods, was so large as to be prohibitive, and it therefore became necessary to use some other type of column in such cases.

Structural Steel Columns Encased in Concrete

The type of column that was first used to effect the desired reduction in the sizes of interior columns was a structural steel column encased in a minimum amount of concrete for fire protection. This concrete as a rule had ordinary hooping with a few small vertical rods, and the entire column load was considered as carried by the structural steel column with a moderate increase in the maximum allowable working stresses in the steel column due to the stiffening effect of the concrete casing. The adoption of this type of column resulted in a considerable saving in valuable floor space in the lower stories of high buildings, but a serious objection to their use was the excessive increase in the cost of such columns over that of the spirally reinforced concrete columns with a rich mixture of concrete. This objection led to the use of the composite column consisting of a spirally reinforced column with a core of structural steel or cast iron.

Composite Columns with Structural Steel Core

This type of column consists of a reinforced concrete column with both spiral and vertical reinforcement, a rich mixture of concrete, and a core of structural steel. Sections of the various types of cores used are shown in Fig. 1. Type (c) is that most commonly used on account of the economy in the use of a single rolled section and also on account of the facility for making bracket connections, etc. to the core. Type (e), known as the Gray Column, is not suitable for use where beam and bracket connections are necessary.

An important advantage in the use of such columns is that the concrete inside the spiral hooping may be considered as carrying a portion of the total column load, and for that reason is more economical than the type described in the preceding paragraphs. The Joint Committee on Standard Specifications for Concrete and Reinforced Concrete in its Progress Report of 1921 suggests that the concrete within the spiral hooping of such columns be designed for a unit stress of 25 per cent of the ultimate strength in compression, and that the unit compressive stress in the steel section be determined by the formula $f_r = 18{,}000 - 70\,h/R$ where f_r = compressive unit stress in steel section with a max. value of 16,000 #/□"; R = least radius of gyration of steel section in inches; h = unsupported length of column in inches.

The Joint Committee further suggests that the safe load on a structural steel section which fully

Fig. 1. Sections Showing Types of Steel Cores Used in Composite Columns

encloses or encases an area of concrete and which is protected by an outside shell of concrete at least 3 inches thick be calculated in the same way as for the columns just described, allowing 25 per cent of the ultimate strength in compression on the area of the concrete enclosed by the steel section. In such cases, however, the spiral hooping may be omitted and the outside shell simply reinforced by wire mesh or ordinary hooping weighing at least 0.2 pounds per square foot of surface of shell and with a minimum spacing of strands or hoops of 6 inches.

Composite Columns with Cast Iron Core

This type of column, commonly called the "Emperger Column" and named after the well known pioneer in concrete, Dr. F. Von Emperger, the inventor of hooped cast iron columns, consists of a reinforced concrete column with both spiral and vertical reinforcement, a rich mixture of concrete, and a core of cast iron. The section of the core is usually round with a shell of thickness from ¾ inch to about 2 inches, depending on the required capacity of the column. Here again the concrete inside the spiral may be considered as carrying a portion of the total column load and therefore is more economical than the structural steel column simply encased in concrete without spirals. The Joint Committee in its Progress Report of 1921 suggests that the concrete within the spiral core of such columns be designed for a unit stress of 25 per cent of the ultimate strength in compression, and that the unit compressive stress in the cast iron section be determined by the formula: $f_r = 12000 - \frac{60\ h}{R}$; where

f_r = compressive unit stress in cast iron section with a max. value of 10,000 ♯ / □ ″; R = least radius of gyration of cast iron section in inches; h = unsupported length of column in inches.

The Joint Committee further suggests that the outside diameter of the cast iron core should not exceed one-half the diameter of the column within the spiral and that the spiral reinforcement be not less than 0.5 per cent of the volume of the column within the spiral. The American Concrete Institute in its "Standard Building Regulations for the Use of Reinforced Concrete," adopted in 1920, also recommends the use of the preceding formulæ and distribution of loads between concrete and core in the design of composite columns with either structural steel or cast iron cores.

Special Features of Design

In the design of high and heavily loaded reinforced concrete buildings, it is customary to use interior columns of spirally reinforced concrete for as many of the upper stories as possible. When the loads eventually become so large that it is no longer advisable, on account of excessive sizes of columns, to continue to use this type in the lower stories, some form of composite column is generally utilized. In order to make certain that the metal core receives the greater portion of the total column load it is advisable that metal brackets be attached to the core in every story. These brackets may be located just below the floor slabs and encased in the column capitals or they may be located just above the floor slabs and encased within the usual column casing. In the latter case the column casing is figured as carrying the floor load down to the bracket placed on the column just above the floor below. Fig. 2 illustrates the type of bracket which is placed just below the floor slab and is encased in the column capital. It consists of a steel bracket built up of angles and is riveted to the structural steel core. Fig. 3 illustrates the type of cap which is placed at the top of the structural steel core to carry the reinforced concrete column above as well as the floor slab at that level. It consists of a steel cap and brackets built up of plates and angles and is riveted to the top of the structural steel core. Figs. 2 and 3 are illustrations of details used in the construction of a large manufacturing building of reinforced concrete with brick veneer for the Gillette Safety Razor Co., South Boston, by Chas. T. Main, Engineer, of Boston.

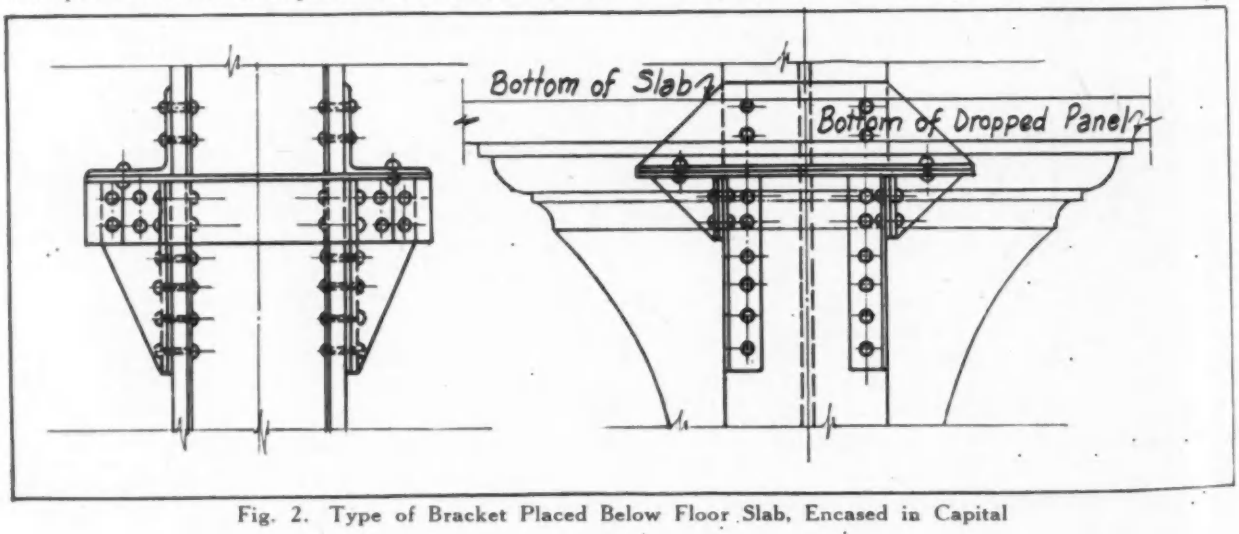


Fig. 2. Type of Bracket Placed Below Floor Slab, Encased in Capital

Where cast iron cores are used suitable brackets should be provided and the same outside diameter of core should be used in as many stories as possible in order to require the use of only a small number of reducing sleeves. At least 5 inches of concrete should be provided for outside the core at all points. In such columns it is also customary to fill the core with concrete of the same mixture as the casing.

Comparison of Types of Composite Columns

The composite column with the structural steel core is the most common type at the present time and will therefore be considered first. It is advantageous with respect to the type with cast iron core principally on account of the reliability of the material, the comparative ease of making satisfactory connections to it, and the facility for rapid erection. Its disadvantages as compared to the cast iron type are (1) that the structural steel core has a lower ultimate compressive strength than the cast iron core, and (2) that the high modulus of elasticity of structural steel will not permit as great a strength to be developed in combination with concrete as will the cast iron with its comparatively low modulus of elasticity. It is a well known fact that structural steel is a very reliable material of construction, and designers of buildings are likely to utilize it wherever it can be used to advantage. Little difficulty is experienced in making connections to it where necessary, and the splicing of one column section to another is a very simple matter.

Perhaps the best series of tests made in this country on composite columns with structural steel cores is that of Talbot and Lord described in Bulletin No. 56 of the Engineering Experiment Station at the University of Illinois. This series included 32 columns divided into four groups in this way: (1) plain steel columns; (2) core-type columns, i.e., columns in which the portion within the structural steel members was filled with concrete but without spiral reinforcement; (3) fireproofed columns, i.e., core-type columns having a 2-inch protective covering but with no spiral reinforcement; (4) spiral columns, i.e., core-type columns enclosed in close fitting spiral and filled with concrete to outer surface of spiral.

The core-type column proved to be very tough, and failure was slow. For short columns failure was caused in most cases by the crushing of the concrete; for longer columns failure was caused by bending and the crushing of the concrete. The effect of the concrete mix was small, because the strength of the column was governed by the steel rather than by the concrete. The determination of the proportion of load carried by the steel and the concrete was based upon the assumption that for a certain deformation in the core-type column, the steel core carried the same load as that carried by a plain steel column of the same section for the same deformation, and that the balance of the load in the core-type column was carried by the concrete. The fireproofed columns gave about the same results as the core-type columns.

The spiraled columns with structural steel cores showed considerably greater strength and toughness than similar columns without spiral reinforcing; in fact their ultimate strength exceeded the capacity of the testing machine at that time. On account of large deformation necessary the full strength afforded by spiral reinforcing is not available in building construction, and therefore a large percentage of spirals is not justifiable. In most cases 1 per cent of the volume of the enclosed concrete is ample and will provide for a tougher and safer column and also will prevent spalling of the outer shell. Since danger of sudden failure is removed, the results of these tests indicated that such columns may be designed for higher working loads than the fireproofed type of column. The steel cores used in these tests were the Gray type shown in Fig. 1 (e) and were made up of eight 3 x 2½ x 5/16-inch angles

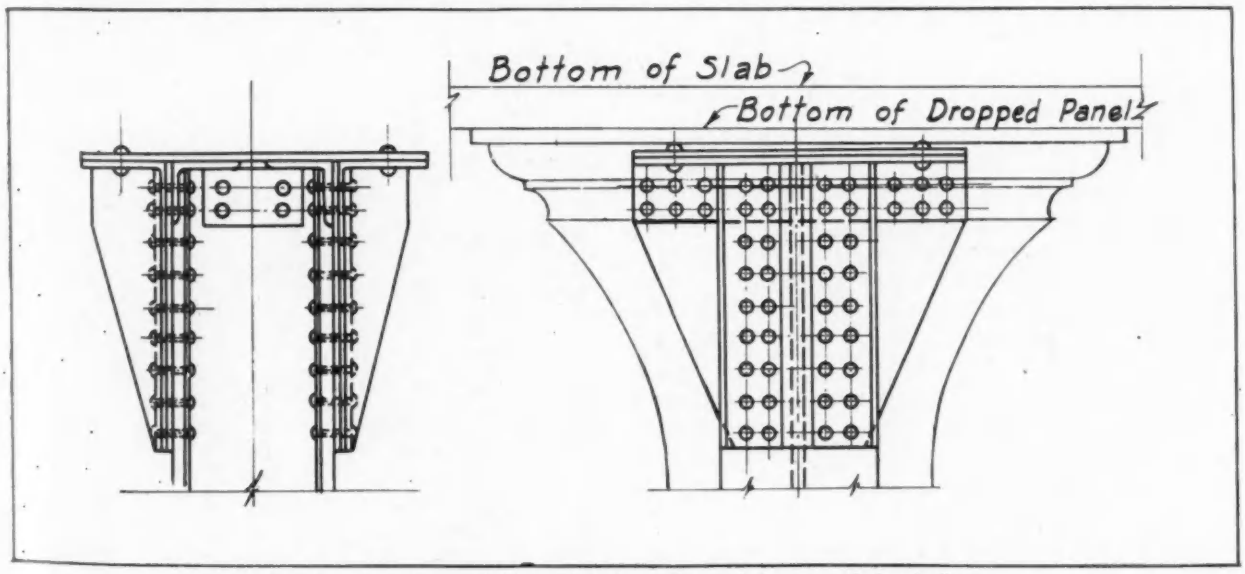


Fig. 3. The Type of Cap Placed at Top of Structural Steel Core

with 5½ x ¼-inch steel ties spaced about 16 inches on centers, the core being about 12 inches outside diameter.

The composite column with a cast iron core is a very economical column. It is theoretically a more suitable column than the type with a structural steel core, due to the much greater compressive strength of cast iron. When encased in concrete which is reinforced with longitudinal rods and spiral hooping it makes a very desirable column for heavy loads if the quality and uniformity of the cast iron core can be assured. The strength of cast iron is very uncertain in tension, and this type of column is intended to largely eliminate the possibility of tension in the cast iron, due to bending stresses in the column, by encasing the core with a liberal thickness of concrete well reinforced both vertically and spirally. This casing also serves as excellent fireproofing. L. J. Mensch in a paper on "Tests of Concrete Columns with Cast Iron Core" presented at the Thirteenth Annual Convention of the American Concrete Institute says: " . . . the combination of hooped concrete and cast iron makes it possible to develop the ultimate strength of both the hooped concrete and the high compressive strength of the cast iron." He further says in conclusion: "To sum up, we have in hooped concrete columns reinforced with cast iron, a new type of compression member which can sustain stresses up to 17,000 pounds per square inch, and hence allows smaller sizes than columns built of structural steel, at a very great saving in cost." A disadvantage in the use of this type of column, however, is the comparative unreliability of cast iron as a structural material. Flaws and blow holes are likely to be present in spite of thorough inspection. This type of column has been used principally in the Middle West. Fig. 4 shows a typical cross section of one of the composite columns with cast iron core which was tested by Mr. Mensch.

Advantage in Size Over Spiral Columns

That there is a reduction in the diameters of composite columns for a given loading as compared with spiral columns is evident from an examination of the tables given here. Table I gives the capacities of round concrete columns of various diameters with vertical and spiral reinforcement as based on the formula adopted by the Joint Committee in January, 1917. The concrete mix is 1 : 1 : 2, and the coarse aggregate is granite or trap rock. The spiral reinforcement is approximately 1 per cent of the volume of the enclosed concrete. Table II gives the capacities of round concrete columns with structural steel (H-section) cores and with spiral reinforcement as based on the formula suggested in the Progress Report of 1921 by the Joint Committee. The concrete mix is 1 : 1 : 2, and the coarse aggregate is granite or trap rock. The spiral reinforcement is approximately 1 per cent of the volume of the enclosed concrete. Table III gives the capacities of round concrete columns with round cast iron cores and with spiral reinforcement as based on the formula suggested in the Progress Report of 1921 by the Joint Committee. The concrete mix is 1 : 1 : 2, and the coarse aggregate is granite or trap rock. The spiral reinforcement is approximately 1 per cent of the volume of the enclosed concrete.

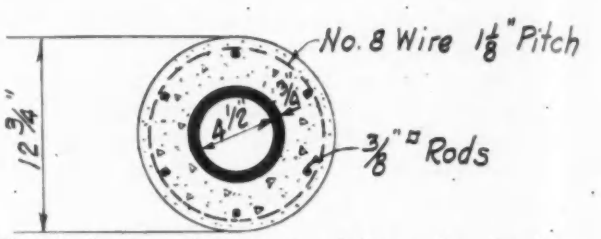


Fig. 4. Section of Composite Column; Cast Iron Core

It is apparent that the reduction in size is much greater with a structural steel core than with one of cast iron. This is due to the comparatively low compressive stresses permitted in the formula used for the determination of the working stresses in the cast iron core. The results of the tests by Mr. Mensch seem to indicate that somewhat higher stresses might be safely used when a good quality of cast iron is secured and the core thoroughly encased in concrete.

In conclusion, it may be said that we have in composite columns a means of materially reducing the sizes of interior columns in the lower stories of high concrete buildings. That this is a matter of particular importance at the present time cannot be denied in view of the high rental values of floor space in modern buildings. The adoption of this type of column has made possible the utilization to good advantage of reinforced concrete construction in buildings to an extent once thought impractical.

Table I

Outside Dia.	Spirals Size	Spirals Pitch	Vert. Steel 4%	Safe Load
18 in.	⅜ in.	2 in.	7.08 sq. in.	277,000 lbs.
20 in.	⅜ in.	2½ in.	9.08 sq. in.	355,000 lbs.
22 in.	⅜ in.	2¼ in.	11.36 sq. in.	444,000 lbs.
24 in.	⅜ in.	2 in.	13.84 sq. in.	542,000 lbs.
26 in.	⅜ in.	2½ in.	16.60 sq. in.	650,000 lbs.
28 in.	⅜ in.	2½ in.	19.60 sq. in.	767,000 lbs.

Table II

Outside Dia.	Spirals Size	Spirals Pitch	Structural Steel Core		Safe Load h = 12 ft.
18 in.	⅜ in.	2 in.	8 in. B.H.	91.0 lbs.	480,000 lbs.
20 in.	⅜ in.	2½ in.	10 in. B.H.	136.5 lbs.	725,000 lbs.
22 in.	⅜ in.	2¼ in.	12 in. B.H.	133.5 lbs.	778,000 lbs.
24 in.	⅜ in.	2 in.	12 in. B.H.	190.0 lbs.	1,070,000 lbs.
26 in.	⅜ in.	2½ in.	14 in. B.H.	245.5 lbs.	1,383,000 lbs.
28 in.	⅜ in.	2½ in.	14 in. B.H.	288.5 lbs.	1,630,000 lbs.

Table III

Outside Dia.	Spirals Size	Spirals Pitch	Cast Iron Core Outer Dia.	Cast Iron Core Thickness	Safe Load h = 12 ft.
18 in.	⅜ in.	2 in.	7 in.	1¼ in.	303,000 lbs.
20 in.	⅜ in.	2½ in.	8 in.	1¼ in.	389,000 lbs.
22 in.	⅜ in.	2¼ in.	9 in.	1½ in.	516,000 lbs.
24 in.	⅜ in.	2 in.	10 in.	1¾ in.	661,000 lbs.
26 in.	⅜ in.	2½ in.	11 in.	2 in.	822,000 lbs.
28 in.	⅜ in.	2½ in.	12 in.	2 in.	956,000 lbs.

NOTE.—Cast iron cores filled with 1:1:2 concrete.

DECORATION & FURNITURE

Details of the Large Hall Chateau de Montfermeil, Paris

CLASSIC INFLUENCE IN LOUIS XIV INTERIORS

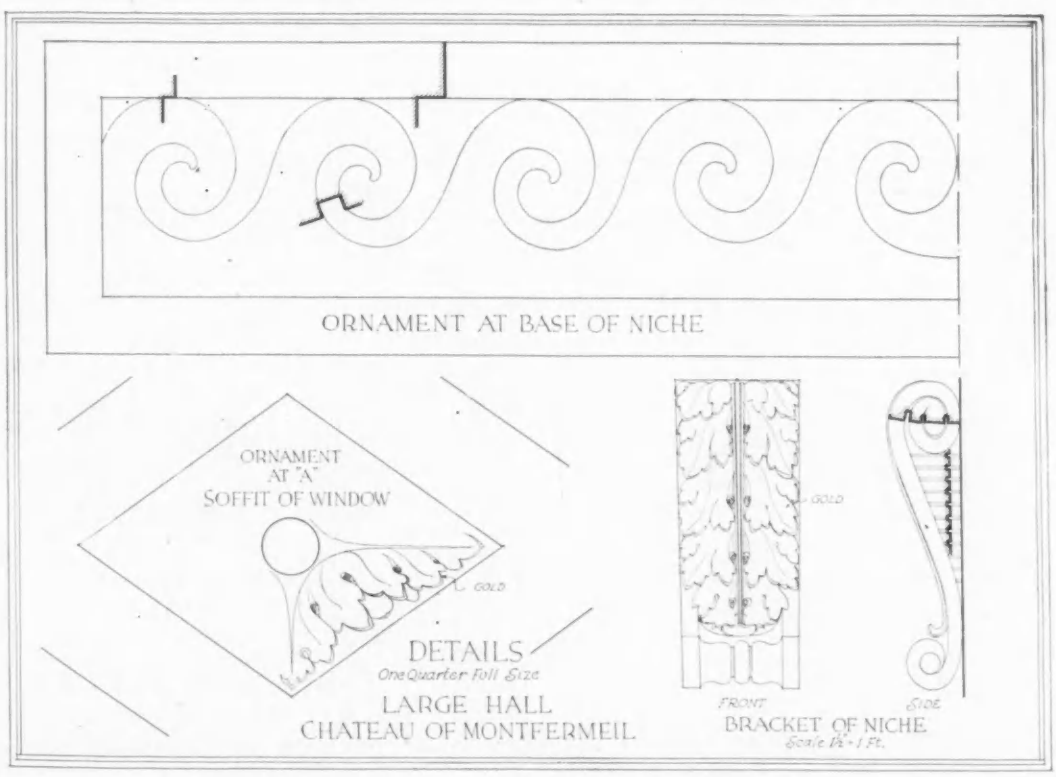
Drawn by C. HAMILTON PRESTON

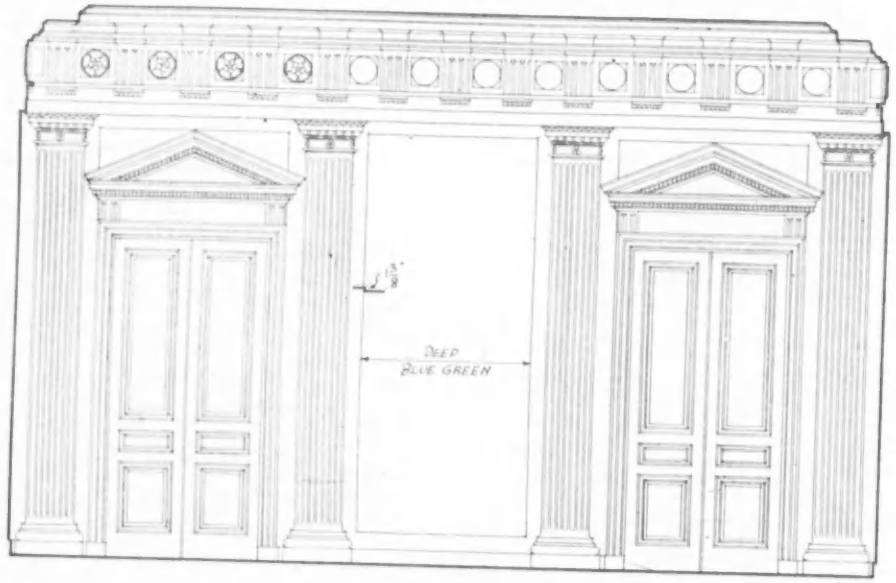
THE large hall in the Chateau de Montfermeil, even more than the two salons, shows the influence of Classic architecture. In this room of perfect proportions, 24 feet, 3 inches wide by 38 feet, 3 inches long and 17 feet high, a balanced design is carried out by means of fluted pilasters, richly ornamented entablature, splendid doorways, and graceful wall niches. Of the long walls of the room, which runs north and south, the east wall shows three casement windows, that in the middle extending to the floor, each separated by double pilasters so spaced that they divide the wall into three major parts, each containing a window opening; the west wall shows a similar grouping of pilasters, forming three wall spaces, in which two niches and a center doorway balance the window openings opposite. The north and south elevations are likewise divided, but by single instead of double pilasters.

Unusual care was taken in the detail, which shows great refinement and delicacy, not only in the mouldings of the architraves and pediments of the doorways and niches but also in the carved Tuscan caps of the pilasters and the Classic entablature, richly ornamented with triglyphs and metopes in which are carved rosettes. Combined with this beauty of detail is a consideration for scale and proportion which makes this room one of the superb examples of interior architecture designed during the Louis XIV period. So Classic in feeling is the detail that it might well have been copied from some room in one of the Roman palaces of the Italian Renaissance.

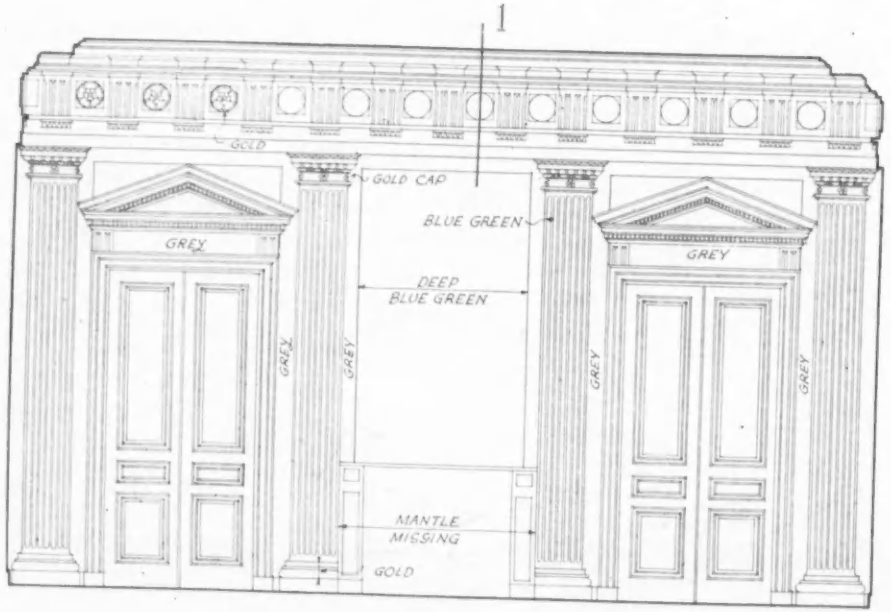
The architecture of this hall is splendidly decorated with color, offset by the deep brown tones of the parquetry floor. The general color throughout is gray, relieved by deep blue-green in the pilasters and end wall panels, with gold used to enrich the bases and caps of the pilasters and the brackets and rosettes of the entablature.

This use of color with gold should serve as an inspiration to modern designers who appreciate and understand the importance and value of color in interior decoration and architectural ornament.



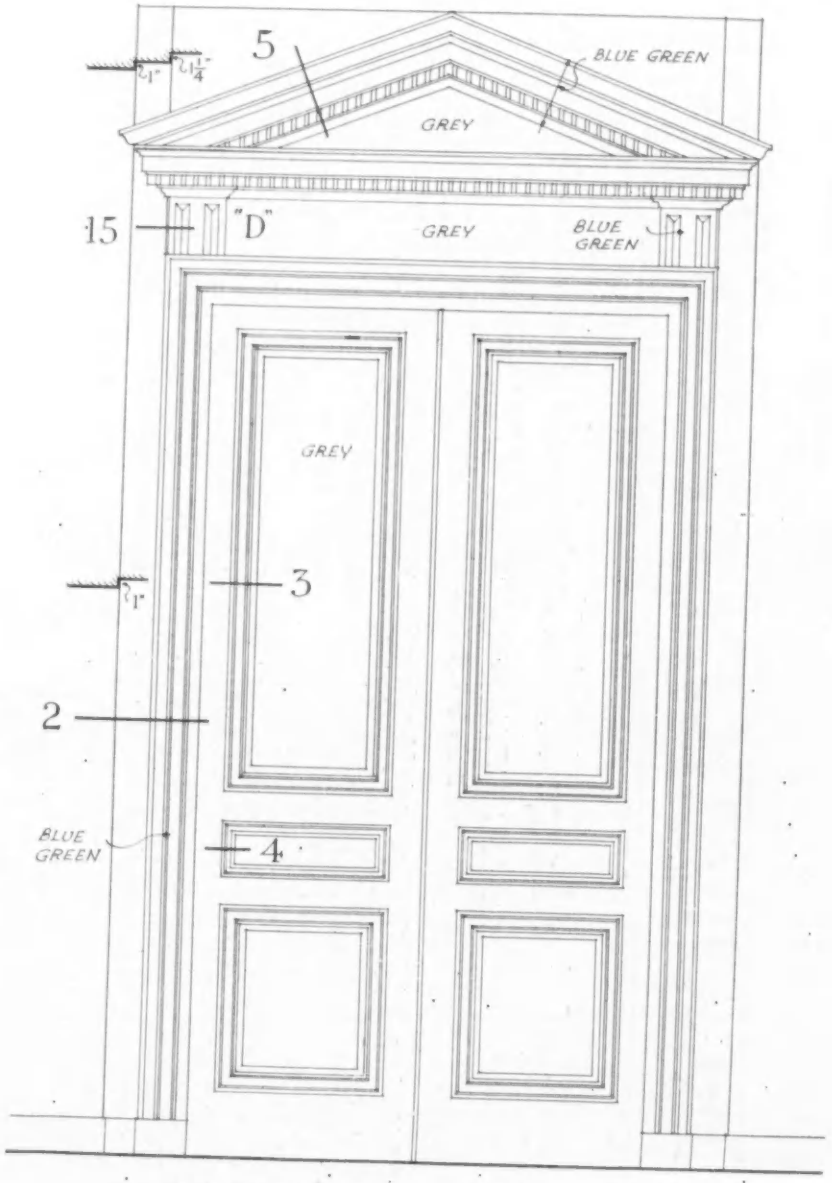


NORTH ELEVATION



SOUTH ELEVATION

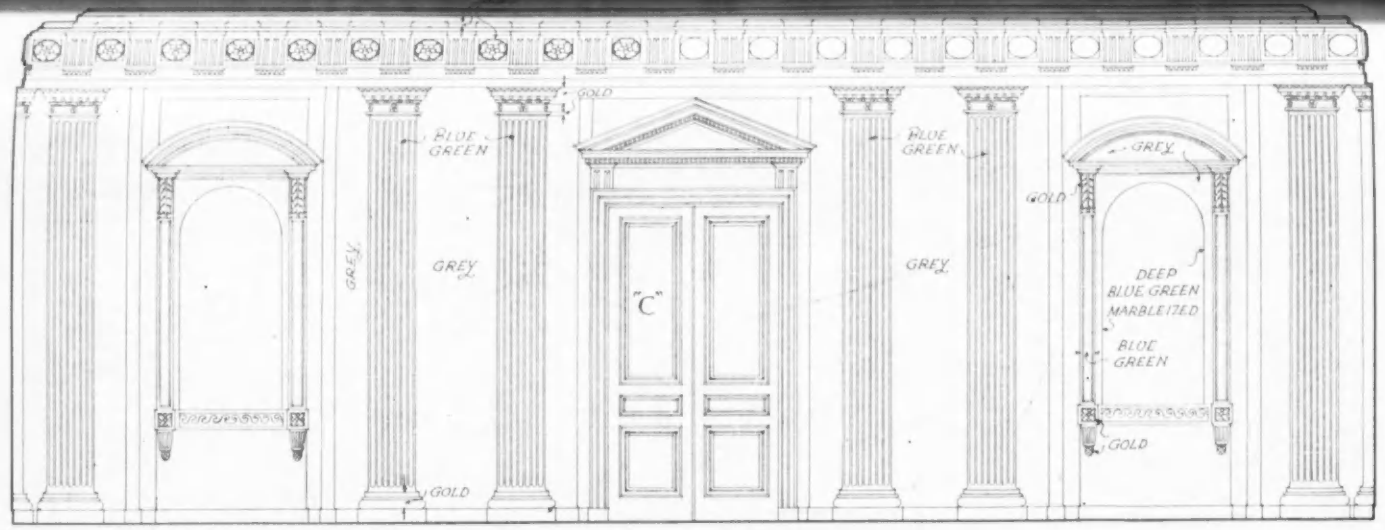
Scale 3/16" = 1 Foot



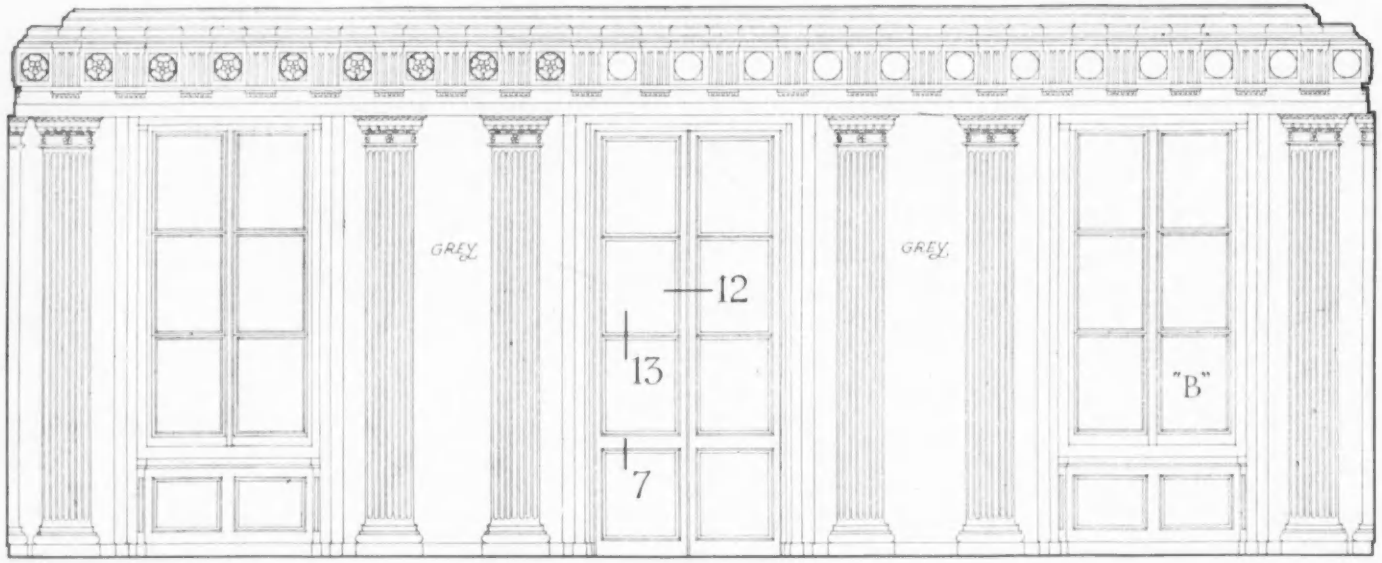
ELEVATION OF DOOR "C"

Scale 1/2" = 1 Foot

LARGE HALL — CHATEAU DE MONTEBELLO



WEST ELEVATION

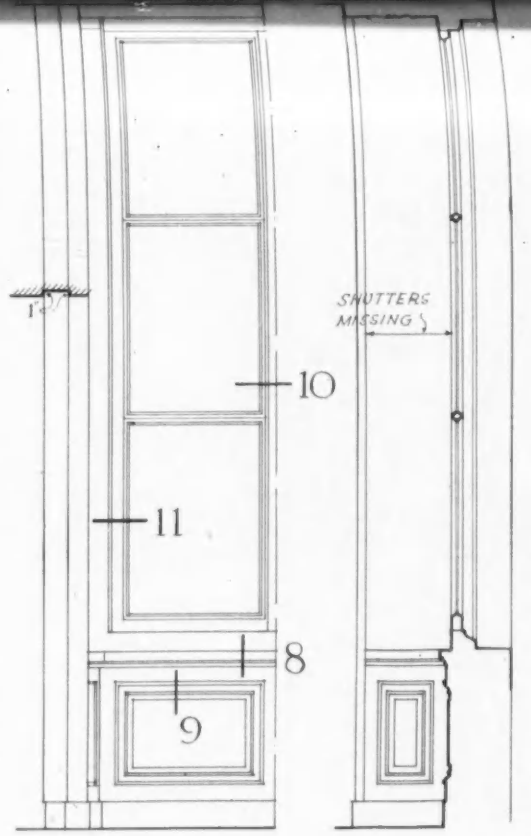


EAST ELEVATION

LARGE HALL

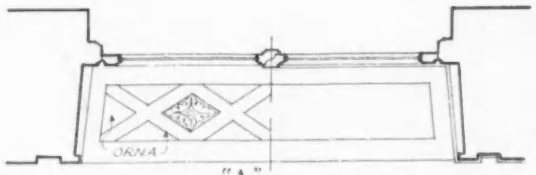
CHATEAU OF MONTFERMEIL

Scale 3/16" = 1 Foot



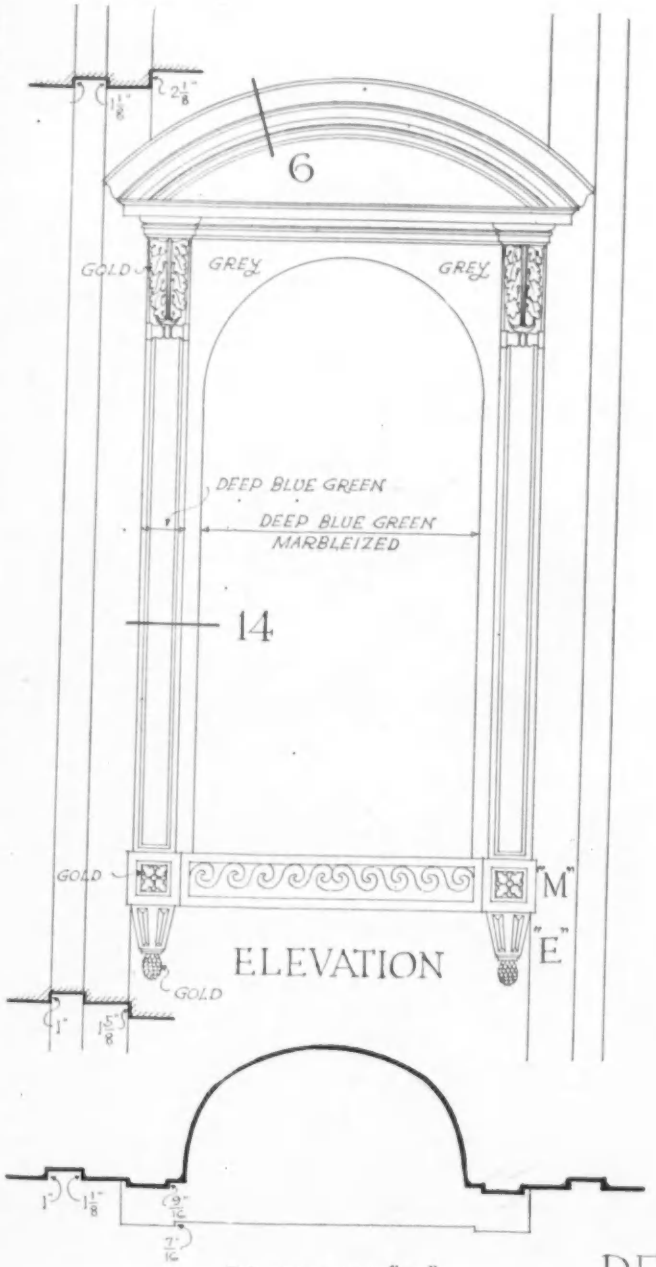
½ ELEVATION OF WINDOW AT 'B'

SECTION
Scale 3/8" = 1 Foot



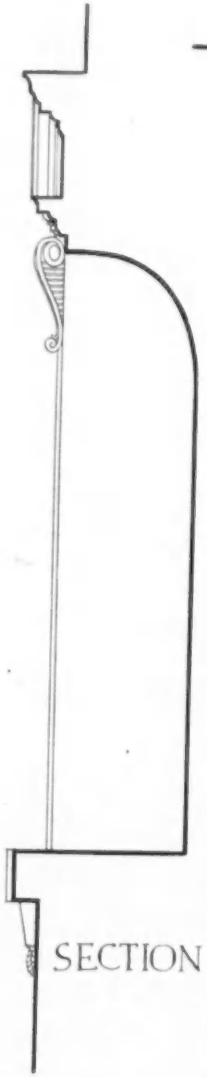
PLAN

Elevation of Door C
Scale ½" = 1 Foot



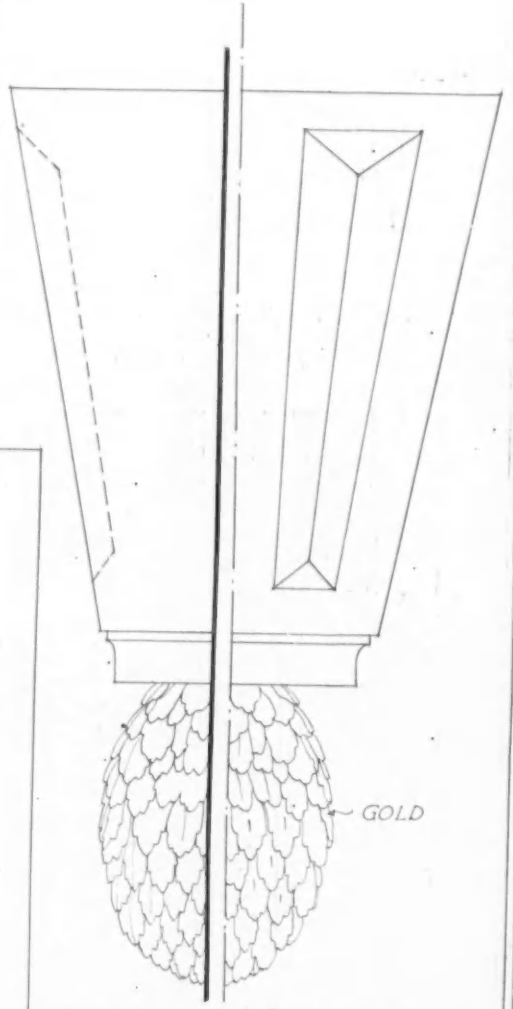
ELEVATION

PLAN AT "M"
Scale $\frac{1}{2}$"=1 Ft



SECTION

DETAIL AT "M" *Full Size*

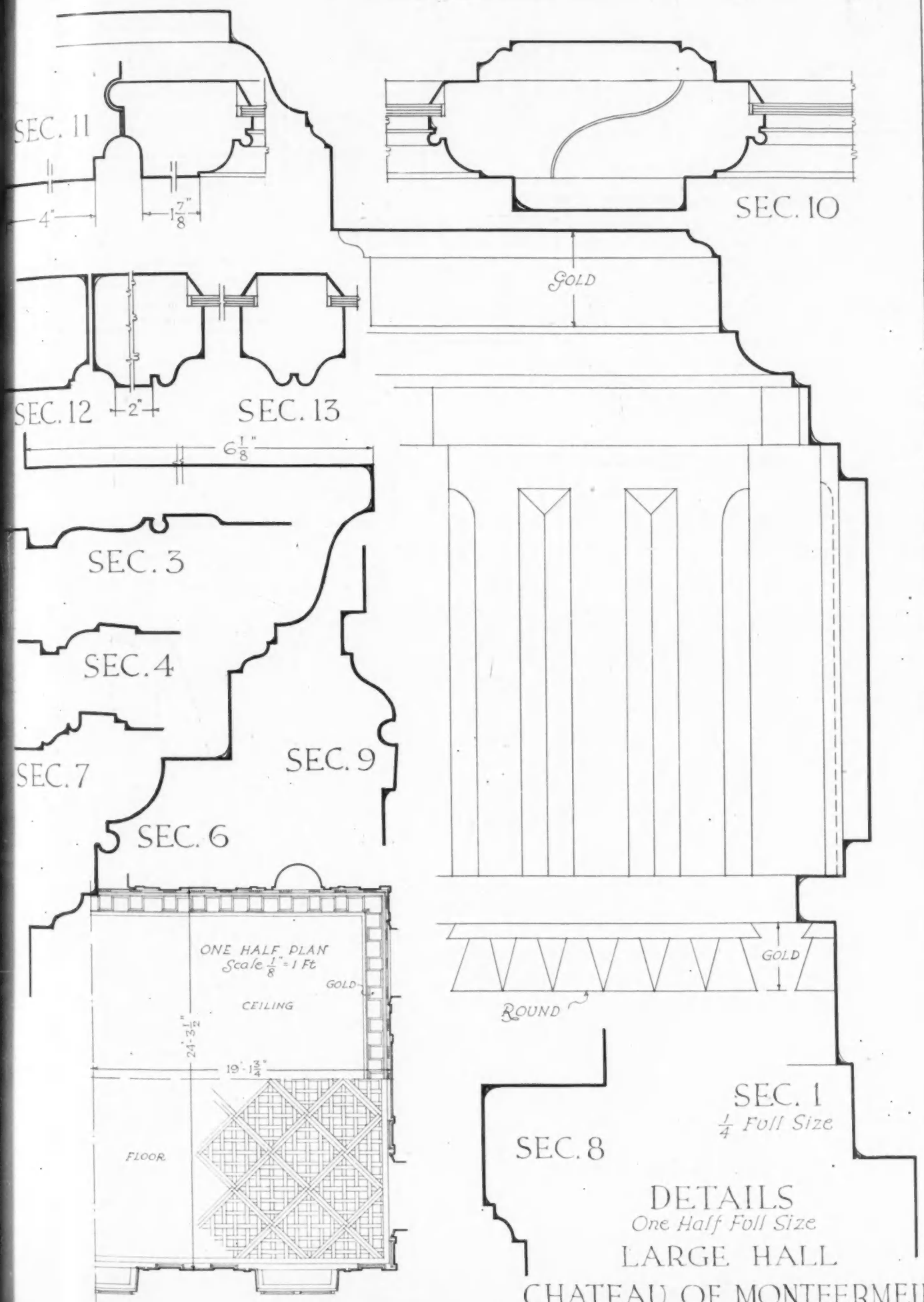


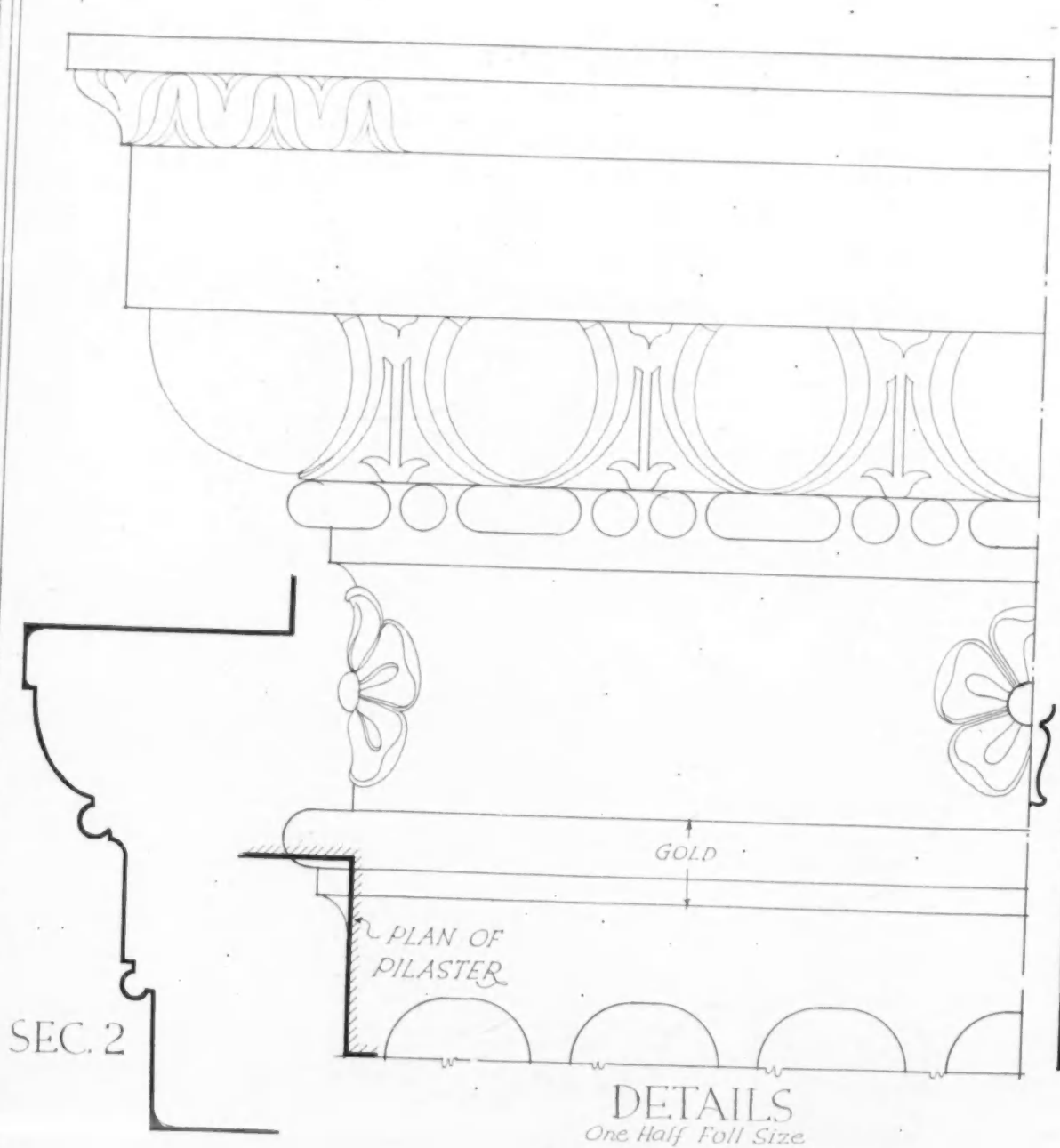
SECTION $\frac{1}{2}$ ELEVATION AT "E"

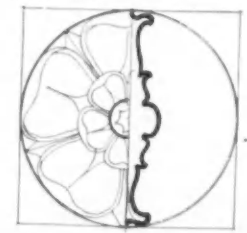
DETAILS

One Half Full Size

LARGE HALL
CHATEAU OF MONTFERMEIL


SEC. 11
4"
1 7/8"
SEC. 10
GOLD
SEC. 12
2"
SEC. 13
6 1/8"
SEC. 3
SEC. 4
SEC. 7
SEC. 9
SEC. 6
ONE HALF PLAN
Scale 1/8" = 1 Ft
GOLD
CEILING
24'-3 1/2"
19'-1 3/4"
FLOOR
GOLD
ROUND
SEC. 1
1/4 Full Size
SEC. 8
DETAILS
One Half Full Size
LARGE HALL
CHATEAU OF MONTFERMEIL

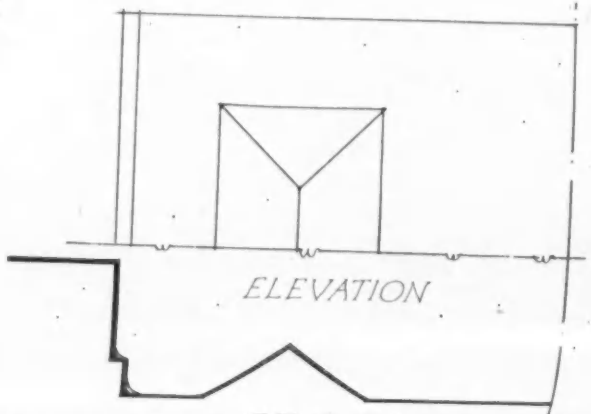




DETAIL OF ROSETTE
IN CORNICE
Scale $1\frac{1}{2}$" = 1 Ft

PROFILE OF
PILASTER BASE

SEC. 5



DETAILS

One Half Full Size

LARGE HALL

CHATEAU DE MONTGERMEIL

SEC. 15

Plate Description

St. Paul's Church, Newburyport, Mass., Plates 29, 30. Perry, Shaw & Hepburn, Architects; Office of R. Clipston Sturgis, Consulting Architect.

Shut in by a wall, with a century-old graveyard on one side, this stone church in simple Colonial style defies the casual observer to say whether it is new or old. Built of irregular shaped blocks of West Townsend granite laid up random, the exterior design shows the severe restraint and dignity characteristic of the early New England meeting-house. The unusual care taken in the size and scale of the window openings and their relation to the wall surfaces, as well as the accuracy and good taste displayed in the use of Colonial detail, contributes to this building's appearance of age, and makes it difficult to believe that it replaces one of wood built in 1810, destroyed by fire in 1921.

The interior, which is finished in plaster with wooden trim, columns and entablature painted white, has old fashioned box pews with doors, mahogany rails and book racks. The tall, slender columns, which support the end balcony and form two side aisles, the high wall panels and pilasters, the wide entablature with delicate mouldings and the flat paneled ceiling above a lofty cove, all give great dignity to the interior. The octagonal pulpit with its massive but graceful canopy, and the pedestal of delicate design which supports the lectern book rest—a bronze eagle of beautiful modeling—are excellent examples of the logical use of Colonial detail.

Third District Court House, New York. Plates 31, 32. Alfred Hopkins, Architect.

For civic buildings there is no style of architecture better adapted or more appropriate than the Florentine phase of the Italian Renaissance, in which the new Magistrates' Court House of the Third District has been designed. The plans show three floors and a mezzanine. The basement is devoted to boiler room and storage space. Besides the entrance lobby and stairway, the first floor contains a complaint room, and a police department with 15 cells of which 9 are on the mezzanine floor. A large courtroom occupies the greater part of the third or top floor. The exterior is built entirely of brick in the Italian style, showing interesting use of moulded brick in the architraves of the arched entrance door and upper windows. Bronze lanterns and door grille add to the decorative effect of the entrance. The interior shows a successful and consistent use of this same style in both architectural details and furnishings, unusual and satisfying.

Magistrates' Court Room—Third District Court, New York
Alfred Hopkins, Architect

EDITORIAL COMMENT

THE HOUSING PROBLEM

IT is not only the housing of the well-to-do, so attractively and successfully demonstrated by Andrew J. Thomas, Architect, in the garden apartments of Jackson Heights, but also the more important problem of housing the wage earner at a minimum cost in light, airy, modern apartments which is engaging public attention.

The seriousness of this problem locally can be appreciated when it is realized that New York is 16 years behind in the building of homes for working men. To alleviate this unfortunate situation, individuals, corporations, legislative committees and newspapers have instituted investigations to secure reliable information to bring to the attention of the city government as well as the public, information showing a practical way in which the existing inadequate and deplorable housing conditions may be remedied. That there is a practical way out of the present situation has been demonstrated to the satisfaction of the Lockwood Committee of the New York Legislature, as well as investing companies such as the Metropolitan Life Insurance Company. This company has just completed the construction in Long Island City, on three different sites, of altogether 54 houses, which will accommodate 2,125 families, or about 9,000 persons, from designs prepared by Andrew J. Thomas and D. Everett Waid, associated architects.

It was the opinion of many builders, real estate operators and owners that houses could not be built, under ruling prices for labor and material, to rent for rates lower than $20 per room with any profit to the builder or owner of the property—a rental entirely prohibitive to a very large proportion of the city dwellers, resulting in the inevitable crowding of two or three families into rooms intended for one family, the evil effect of which needs no argument, but does require a speedy and permanent remedy. The tragedy created by such crowded conditions can hardly be conceived by anyone unfamiliar with the situation in New York, where about 90 per cent of the people are obliged to live in multi-family houses, where there are no vacancies, and where consequently the landlords not only double and quadruple the rents, but also give as little service as possible. At last the worm has turned; the long suffering renters, by coöperative effort through tenants' associations, are combating the extortions of the landlords in the state legislature, where laws to protect tenants and to encourage the erection of houses in which the maximum rental can be $9 per room per month, have recently been enacted. The Metropolitan Life Insurance Company, under the able and experienced leadership of Mr. Thomas and Mr. Waid, agreed to build such houses after the estimates on the submitted plans satisfied them that the rental of $9 per room would produce on the actual cost of land and buildings a net return of 6 per cent, and 2 or 3 per cent more to amortize the cost of the houses.

The plans for all the houses except eight provide on each floor two apartments of three rooms and dining alcove, four apartments of four rooms and dining alcove, and two apartments of five rooms. For the complete bathroom in each apartment, for steam heat, hot water and janitor service, no charge is made. All apartments have electric light and gas facilities, which are paid for by the tenants. Between the houses, which are five stories in height, are courts or side yards 12 to 16 feet wide running from street to rear yard. The U-shaped plan of each house with open rear permits a large yard between the two wings from 36 to 42 feet in width by about 60 feet deep. The central yard, running the entire length of the block, is from 26 to 36 feet in width. There is abundant open space surrounding every house, so that perfect light and ventilation and greater safety from fire, as well as no dark inside rooms are assured. The four stairwells and stairways in each building, lighted by outside windows on each floor, are fireproof, as are also the self-closing doors to all apartments. Every apartment has access to a fire escape, none of which is on the front. The houses are therefore as safe from fire as it is possible to make buildings in which floors and partitions are of wood and plaster construction.

Every possible economy in construction was resorted to, such as importing from Holland, at a saving of $8 to $10 per thousand, the 14,000,000 face brick needed, and bringing by steamer from the Pacific Coast, already cut to proper lengths, 5,600,000 of the 32,000,000 feet of lumber required, producing a saving for the owners of at least $1,000 per house.

The lesson to be derived from this successful experiment seems obvious. Although it is doubtful if 8 per cent net on cost could be realized without the present tax-exemption, which expires January 1, 1932, at a rental of $9 per room per month, there is no doubt that an additional rent of $1.50 per month per room would sufficiently provide for full taxes. If, therefore, limited dividend corporations, other life insurance companies and employers of labor desiring to build apartment houses at the present possible rent, with a sure return of say 8 per cent would use the same methods as the Metropolitan Company has used in this operation, there seems to be no doubt that a maximum rental of $10 to $11 per room per month will produce 8 per cent net and pay full taxes, if the houses are built on low priced land, easily and cheaply prepared for building and with public utilities already provided.