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PLATES AND ILLUSTRATIONS

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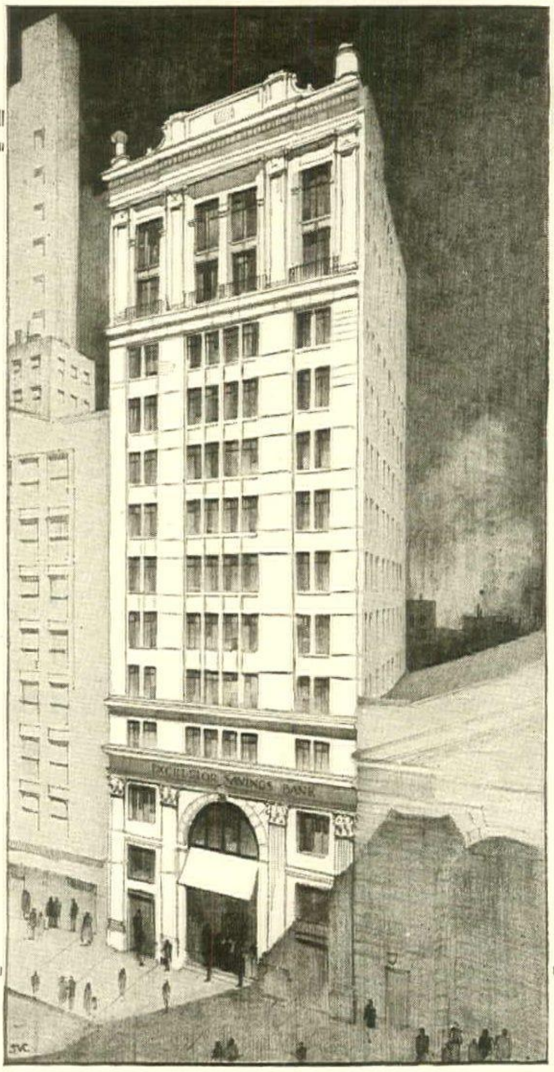

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GENERAL DETAIL OF MAIN ENTRANCE ON MALL, FREER GALLERY OF ART, WASHINGTON, D. C.

Charles A. Platt, Architect.

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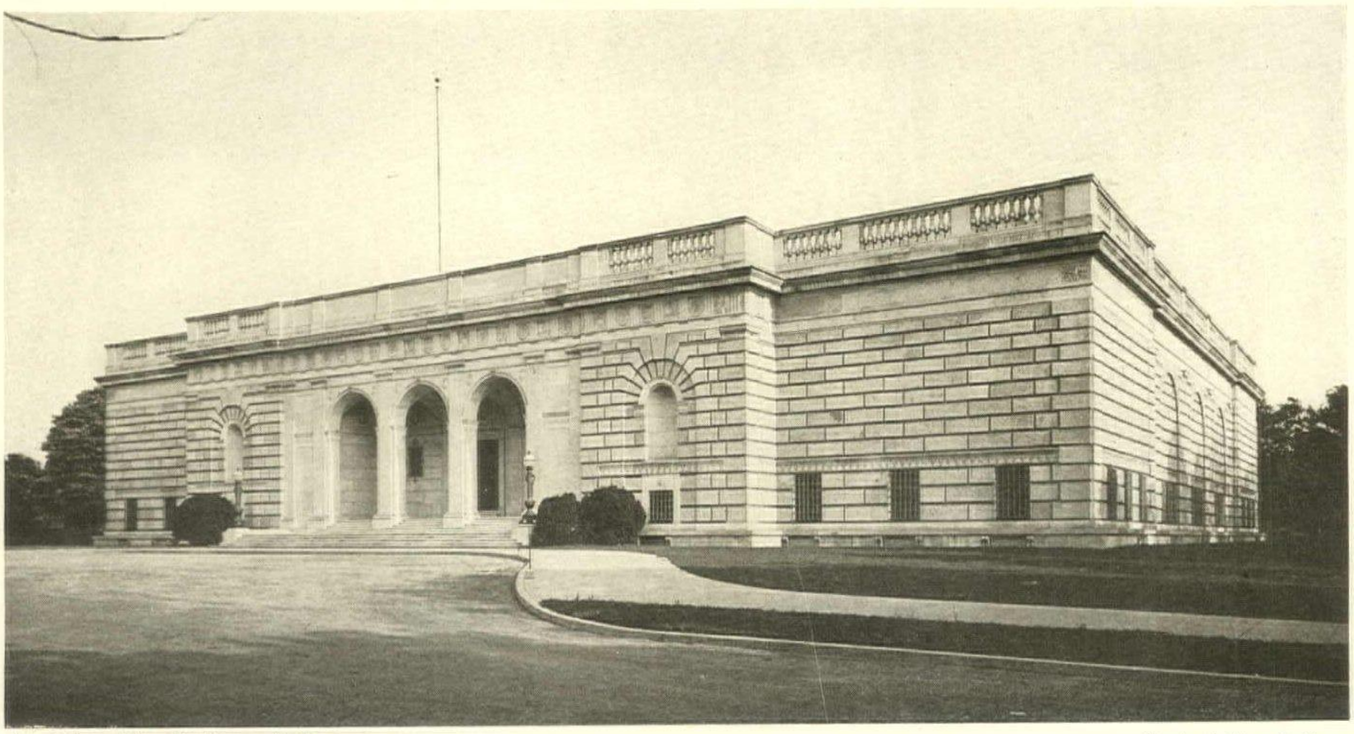
The Freer Gallery of Art, Washington, D. C.

Charles A. Platt, Architect



Freer Gallery of Art, Washington, D. C. Charles A. Platt, Architect.

WHEN Mr. Freer gave his great collection to the nation he wisely provided a building for it that should be in harmony with his own ideas of what a fitting museum should be to house it and afford suitable exhibition-rooms. He was fortunate in numbering among his close friends an architect who could carry out his wishes, and upon whose good judgment, sound taste, and architectural training he could rely with full assurance that the result would be worthy of his gift and a fitting monument to his memory.

Mr. Platt's plan was developed around a central court, with a corridor between it and the small galleries surrounding. This made possible abundant lighting, air, and color. Your first impression is of the charm and beauty of the inner court. The big fountain in the centre is a delightfully decorative element, and the peacocks that Mr. Lodge, the curator, has added give certainly an appropriate and fitting note of color.

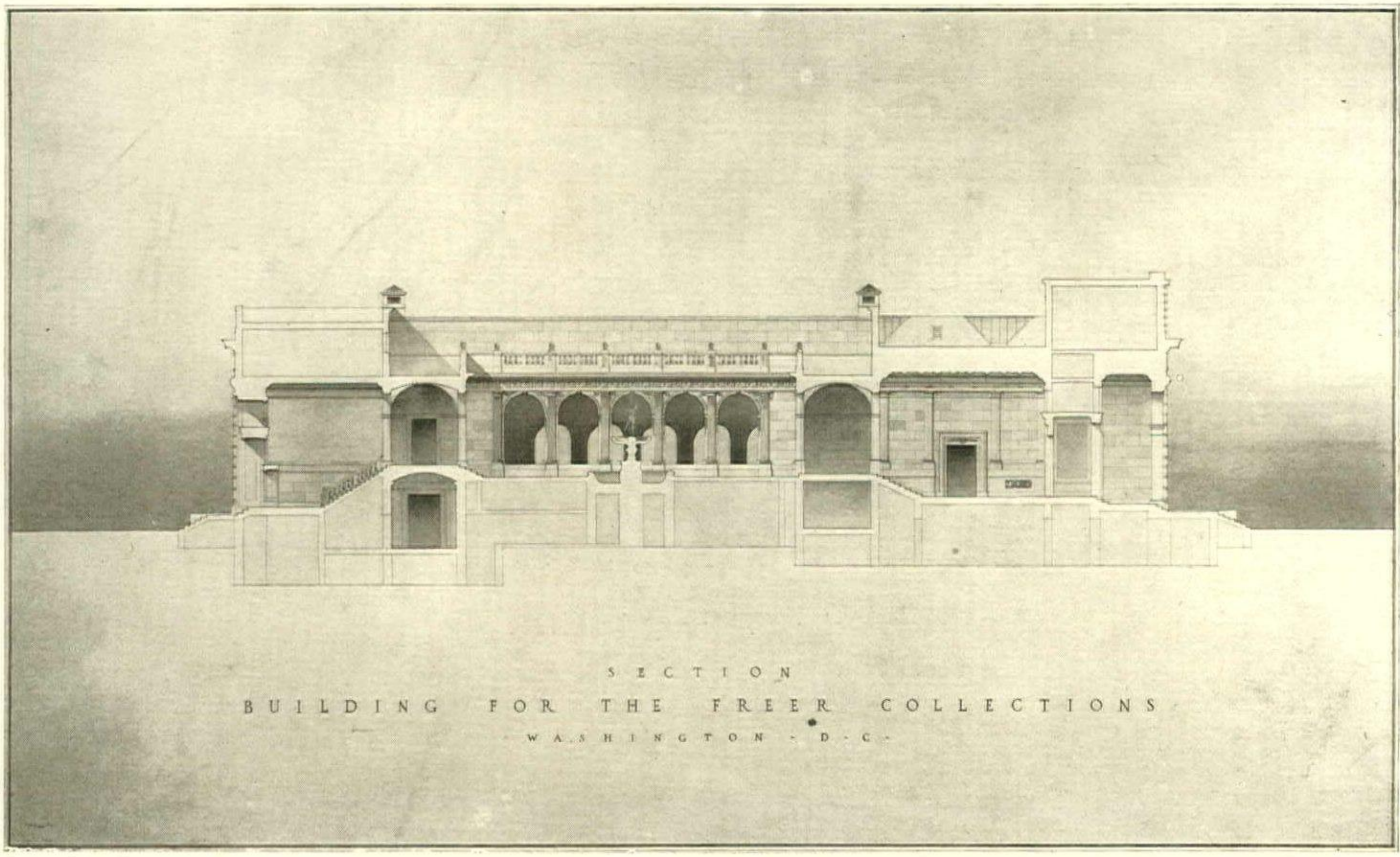
The exterior of the museum has a dignified severity and lack of ornamentation eminently appropriate in a monumental building of this character. While the rusticated masonry gives an effect of strength and substantiality, it is without undue accent or a suggestion of the fortress-like walls so characteristic of the early Renaissance.

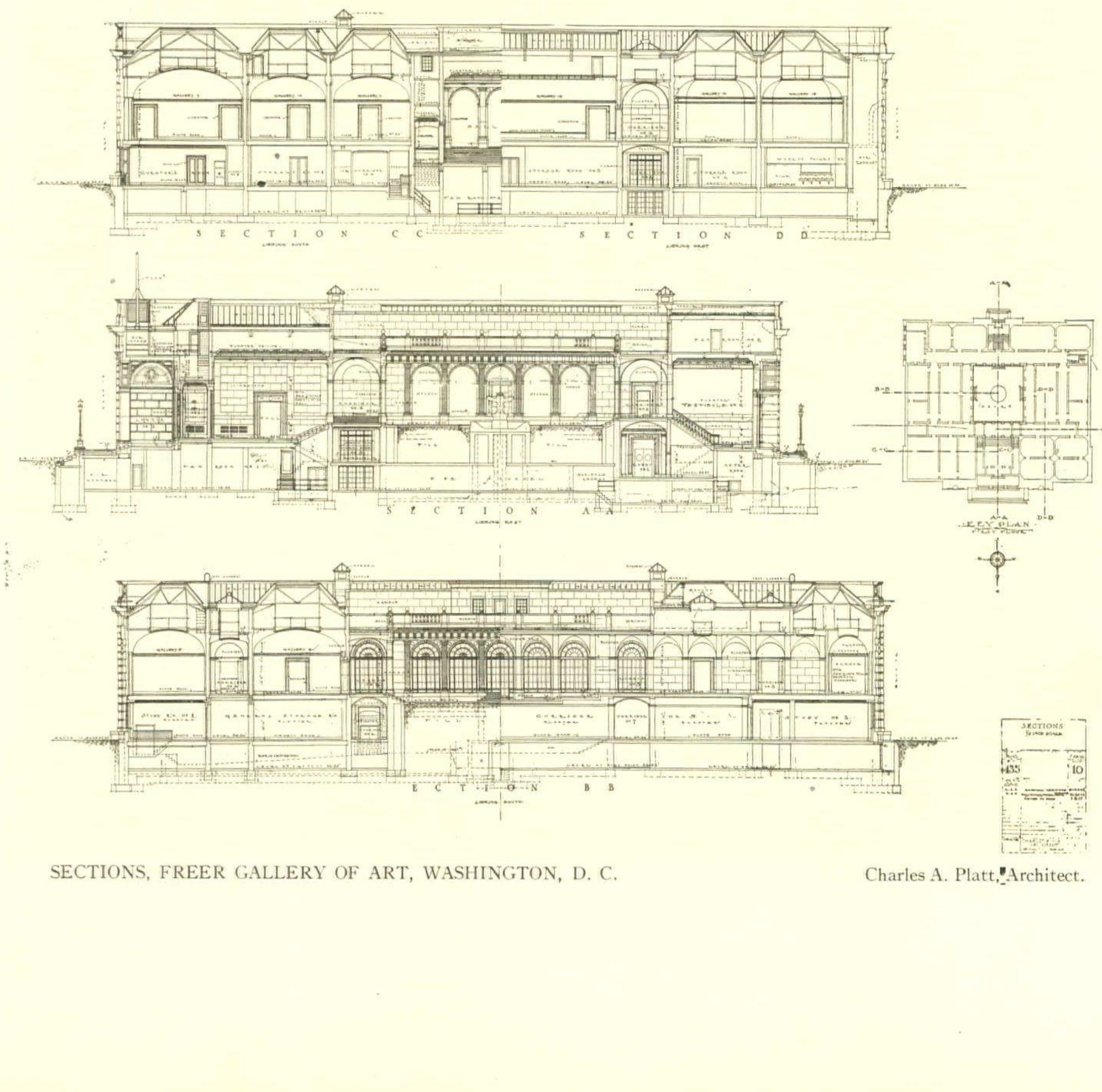
The series of small galleries opening from the corridor make a most satisfactory impression. You are struck by the perfection of the lighting, the admirable proportions, and the absence of unnecessary decorations. Simplicity is the dominant note everywhere.

In the basement provision has been made for the care of such objects as must necessarily be kept at times in storage. There are a lecture-hall and numerous other rooms.

Nothing has been omitted, apparently, that could make

(*Continued on page* 296)

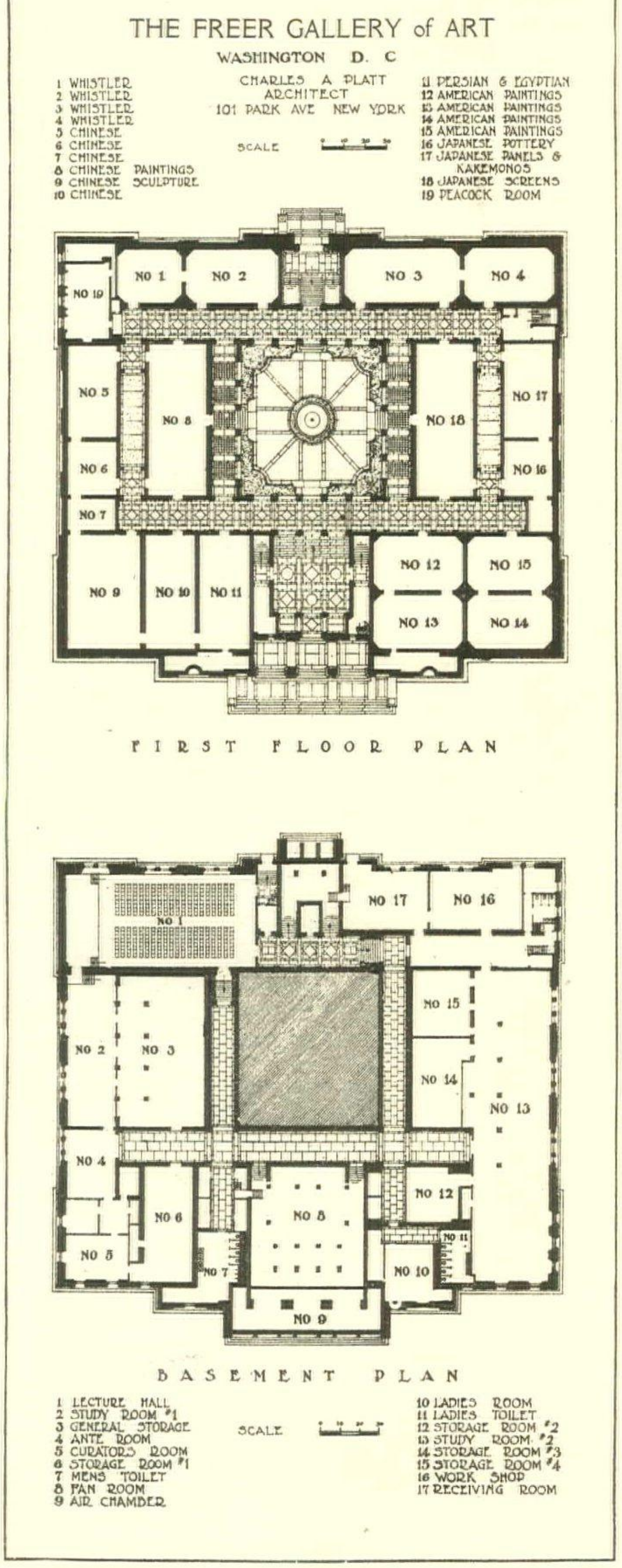




SECTIONS, FREER GALLERY OF ART, WASHINGTON, D. C. Charles A. Platt, Architect.

GALLERY NO. 3. Whistler's Paintings.

ANGLE VIEW OF SOUTH ELEVATION. Charles A. Platt, Architect.



(*Continued from page 293*)

the museum complete and of the greatest usefulness and in thorough keeping with Mr. Freer's preferences regarding the display of his wonderful collection.

The building, of modest height, in the style of the Italian Renaissance, is perfectly adapted to its purposes and in harmony with its environment. It is 228 feet long and 185 feet deep, with an interior court open to the sky. This court is some 60-odd feet square, exclusive of the loggias which surround it. The exterior is constructed of a warm gray granite, while the court is of Tennessee marble. The floors of the galleries and corridors throughout the main floor, on which the works of art are exhibited, are entirely of marble and terrazzo. Everything is absolutely fireproof. As the dimensions plainly show, the building is spacious. There are eighteen rooms surrounding the court on the exhibition-floor. In the basement, in addition to the necessary administrative quarters, there is a commodious lecture-hall, and there are a number of storage-rooms. There are also rooms set apart for study. It is quite impossible, and opposed to Mr. Freer's ideas, to exhibit all the gallery's possessions at one time. Quantities of these are kept stored, but whenever a serious student with proper credentials wishes to examine them they will be brought out for his convenience and placed in the study-rooms. The lecture-hall has an entrance of its own at the rear of the building, which obviates the necessity of bringing all the members of an audience through the exhibition-rooms.

The lighting of the main floor is entirely by skylights. Owing to the fact that the collections consist largely of small objects, the galleries are not lofty, and the exhibition space on the walls is kept as low as possible. Each exhibition-room has its individual skylight. This can be tempered above the diffusing glass so as to suit the requirements of the objects shown. None of the exhibition-rooms is wide, and this is the result of a careful study of the matter of lighting. It recognizes the fact that for light to fall at the proper angle the distance from the skylight to the object displayed must not be too great. The question of temperature has also been taken into very serious consideration. The Freer collections contain many Oriental objects which would be injured by too dry an atmosphere. Arrangements, therefore, have been made whereby moisture may be introduced whenever the air becomes too dry. There is a constant circulation of air provided above the diffusing glass in every gallery. This is expected to keep down the temperature in hot weather, and has been calculated with particular care in view of the climate prevailing in Washington.

The principal entrance to the Freer Gallery is through a loggia and vestibule opening upon a large square hall, in which there are coat-rooms to the right and left. Turning to the right along the corridor, which divides this hall from the open-air court, the visitor will find rooms devoted to paintings by American artists.

The Contents of the Galleries

(FROM THE PAMPHLET COMPILED BY MR. LODGE, THE CURATOR)

"The collections installed in the Freer Gallery of Art were brought together by Charles Lang Freer, of Detroit, Mich. They represent the results of Mr. Freer's personal study and acquisition over a period of about thirty-five years, the earliest of his purchases incorporated in the collections dating from the later eighties. It was not until after 1900, however, when, at the age of forty-six, he retired from an active business life, that Mr. Freer was able to devote the greater part of his time to the development of his collections and of the ideals which lay behind them. From 1900 until the time of his death, in September, 1919, he gradually eliminated from his consideration all other activities which might absorb his time and strength, in order that he might work with increasing concentration on his endeavor to establish the beginnings of what he believed to be a most valuable field of research.

"Mr. Freer was convinced that the more nearly a cultural object of any civilization expresses the underlying principles of artistic production in soundness of thought and workmanship, the more nearly it takes its place with other objects of equally high quality produced by any other civilization, and, with that in view, he was intent upon bringing together such expressions of Western and Eastern cultures as seemed to him to embody at their best those characteristics which he believed to be inherent in all works of art.

"From the West he acquired principally American paintings by men, inheritors of European traditions, in whose work he found qualities and tendencies in China and Japan. Most important in the Western field, as represented in these collections, is a section devoted to the work of James McNeill Whistler, including oil paintings, water-colors, pastels, etchings, lithographs, engravings, drawings, and also the Peacock Room, which has been removed from the house in London where it was decorated by Whistler for Mr. F. R. Leyland. In the American field there are also representative groups of paintings by Thomas W. Dewing, Abbott H. Thayer, and Dwight W. Tryon, and examples of the work of George De Forest Brush, Childe Hassam, Winslow Homer, Gari Melchers, Willard Metcalf, John Francis Murphy, Charles A. Platt, Albert P. Ryder, John Singer Sargent, and John H. Twachtman.

"From the East he gathered paintings, potteries, sculptures in stone, in wood, and in lacquer, bronzes, jades, and objects of various other materials. The Chinese field is represented by the largest number of objects, covering the longest period of time. Some of these specimens were produced as early as the Chou Dynasty (B. C. 1122–255), and some of them were made as recently as the Ch'ing Dynasty (A. D. 1644–1912). The Chinese paintings number over 1,200, including panels, scrolls and albums; and the Japanese paintings, about 800, including also screens. The potteries from the Far East—China, Japan, and Korea—number about 1,500; the stone and wood sculpture, 273; and the bronzes, including several specimens from Siam, about 900.

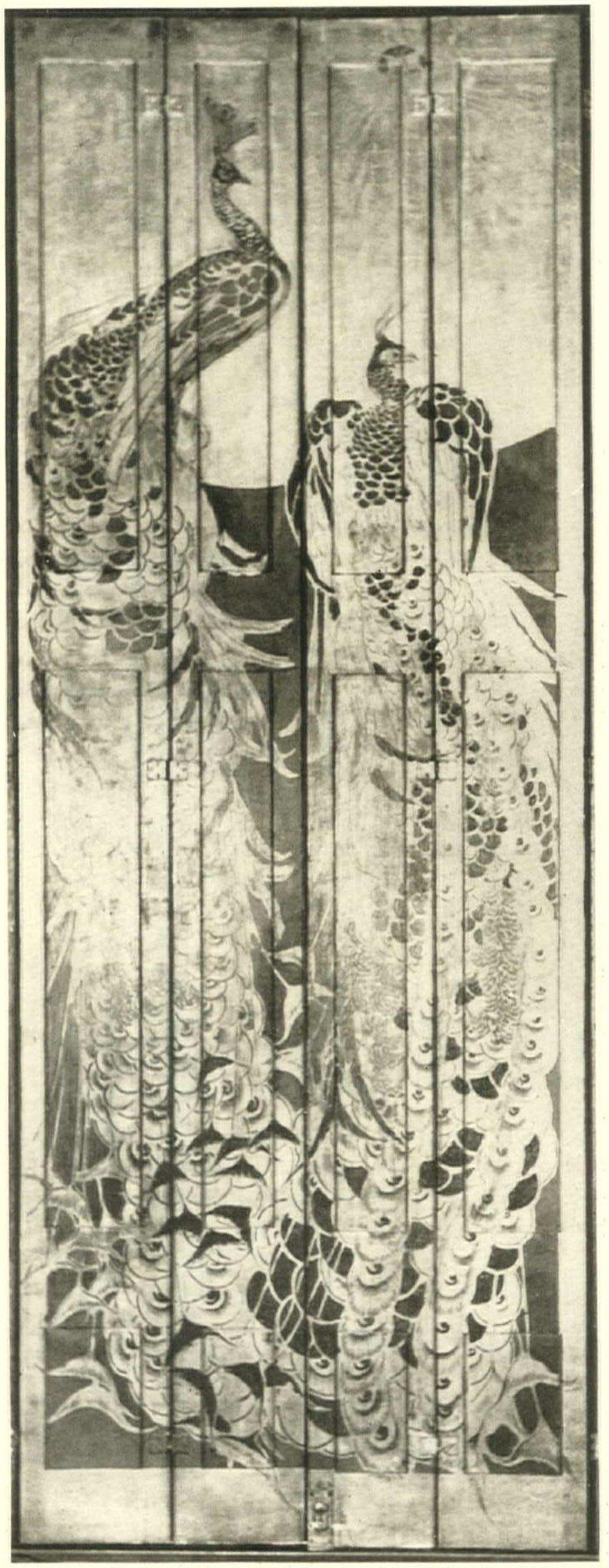
"From the Nearer East Mr. Freer purchased miniature paintings and illustrated books of Persian origin, Persian and west Asian potteries, many of them of Rakka type, and a few specimens of bronze and silver. Mohammedan art is further exemplified by a number of East Indian paintings.

"Dynastic Egypt is more slightly represented by a collection of small pieces and fragments of glass and pottery, and by a few objects in metal, wood, and stone.

"The most significant Byzantine objects appearing in the Freer collection are the Greek Biblical manuscripts, which were found in Egypt. The more important of these, now known as the Washington Manuscripts, are Deuteronomy and Joshua, the Psalms, and the four Gospels, all of which date from the fifth century, and a fragmentary manuscript of the Epistles of Paul, which dates from the sixth century.

"The building in which the collections are now installed was given also by Mr. Freer, who requested that it be used exclusively for his collections. That request, however, does not preclude the possibility of increasing the collections either by gifts from specified people or, in the Oriental field, by purchase with funds bequeathed for the purpose."

In the Freer Gallery Mr. Platt has justified expectations, given us a building of beauty, and one that provides a series of galleries around a lovely central court that are notable for their simplicity and good taste and perfect lighting. It is a notable addition to the Capital's architectural monuments.



Panel from the famous Peacock Room, by James McNeill Whistler.

North Italian Farmhouses

By Folger Johnson

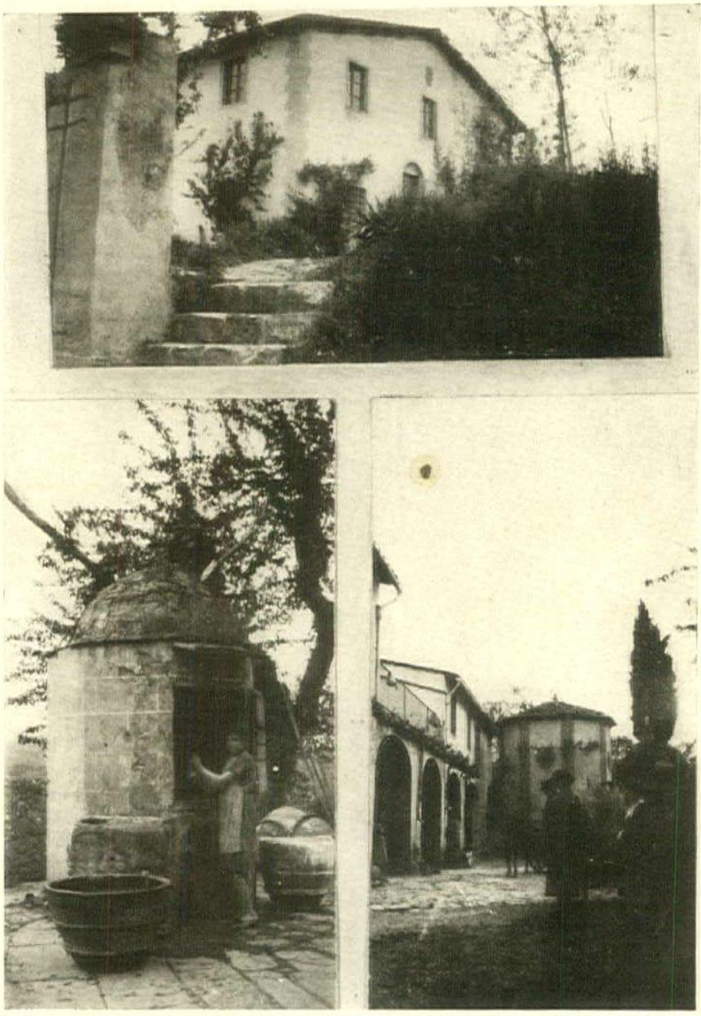
Illustrated with Photographs by the Author

THE farmhouses of northern Italy offer some suggestions to the architect not found in the more formal residences. In these homes of the peasant one escapes from the rectangular, boxlike form of the typical villa and secures an irregularity of plan and a natural and interesting encroachment of masses. Yet these little houses are so purely Italian, no one would mistake them for dwellings from any other part of Europe.

They retain the open loggia, the characteristic eaves, tile roofs, and often the shuttered windows which are so inseparable from the larger structure. But they are distinctive in that the setting is undeveloped and the ensemble has a picturesque quality not common to the usual Italian villa.

In the smaller farm, the stable for oxen is usually incorporated in the house or included in a wing of the residence proper. In the larger farm, the stable is detached but contributes to the whole by its proximity; and in this an advantage exists over the formal type of villa where the remote stable does not count in the pictorial effect.

This freedom of plan lent itself admirably to the needs of the owner who was able to build in varying story heights as his fancy prompted, producing an irregularity of eave or cornice line ranging from one to three stories in the same building, setting forth the masses as units in the composition. This result, though frequently acquired in a haphazard way, affords most profitable study.



A bit of iron rail, an old well-head, terra-cotta pots, and informal garden steps form charming accessory details.

While architectural embellishment is often entirely lacking, the Italian sense of rhythm and proportion is always happily apparent. This is seen particularly in the arcades and colonnades and in the relation of openings. The stable wings nearly always present great interest, many of them attaining dignity and formality in the succession of their high arches, a pleasing contrast to the more informal quality of other portions of the house.

The belvedere, or lookout, rising over the farm group, is a feature very common to these buildings, especially in Tuscany, though also to be found in Piedmont. This belvedere, which was so necessary when the countryside had no adequate protection, is now continued largely as a matter of tradition. Some of them, rising up tower-like, add a very desirable note to the composition. In detail a bit of iron rail, an old well-head, or terra-cotta garden pots, composed charming accessories to the house.

The wall treatment of these houses is of rough stone, brick and stone in conjunction, or of stucco, the latter finish so common to the more pretentious villa. In the Italian climate, where openings were frequently not filled, they departed at times from the accepted rectangular window, and resorted to pattern perforations in the masonry walls. These patterns, which lend variety and interest, are usually created by leaving out stones with regularity or by laying up brick or tile in the wall, as it progressed, to secure the desired pattern.

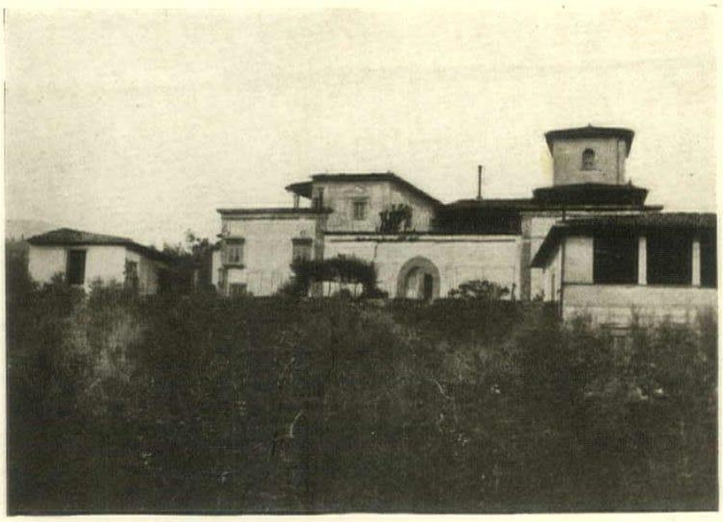
It is customarily considered that an Italian house needs a formal setting, but these small houses prove that when an irregularity of outline is achieved the house may have an informal setting and yet possess a truly Italian flavor.

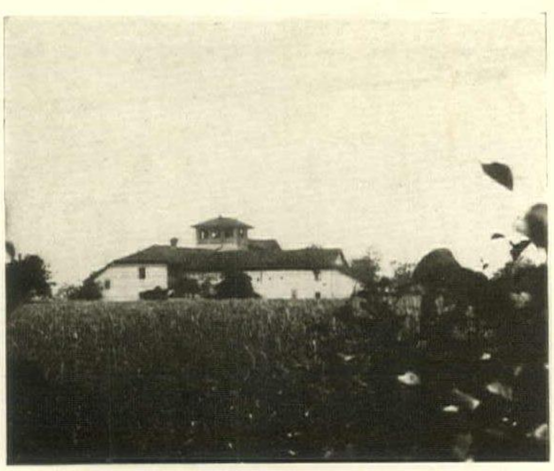
Though the surroundings were not studied, the location of the house was chosen to give it an outlook. The lines of wall or roof, whether or not so planned, merge delightfully into the sweep and contour of the countryside, of which they always seem more a part than does the erect and more block-like villa.

The gardens lack the urns and potted lemon-trees of the formal edifice, and there are no balustrades or walls to define the composition. However, these farms lose nothing by being seen across the green fields, their lines being broken by fruit and shade trees or by an occasional haymow, a cool pool in the foreground reflecting the cream or gray walls and red tile of the house.



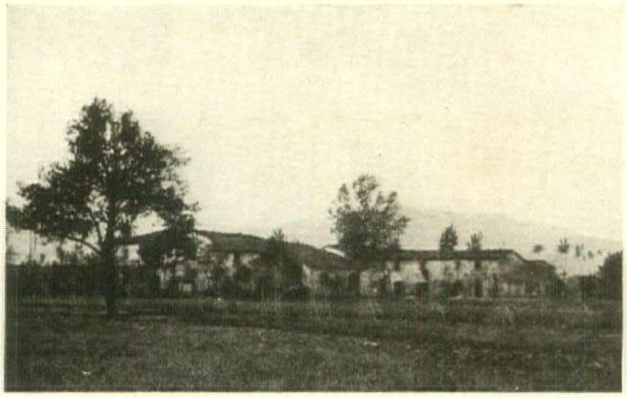

Gray or cream walls of stone, of brick and stone, or of stucco. Pattern perforations in lieu of windows.

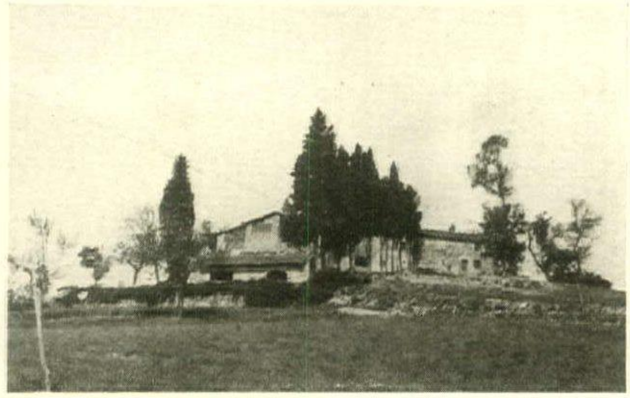




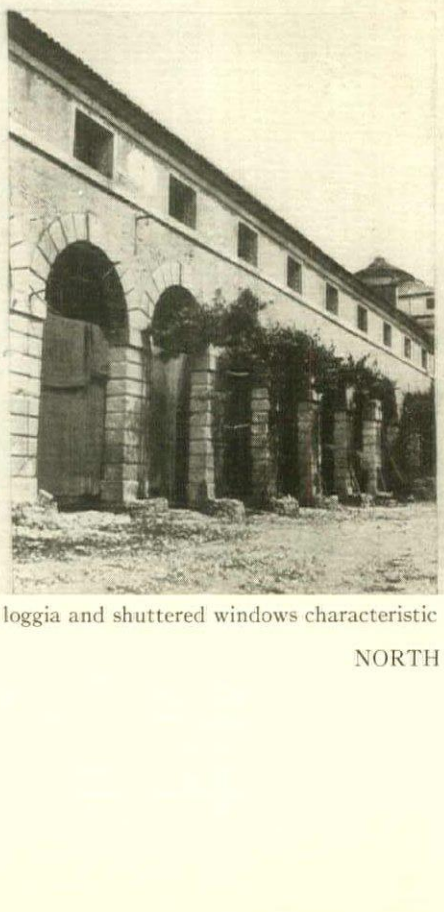

The belvedere rising above the roof adds a desirable note to the composition, sometimes achieved by a high portico.

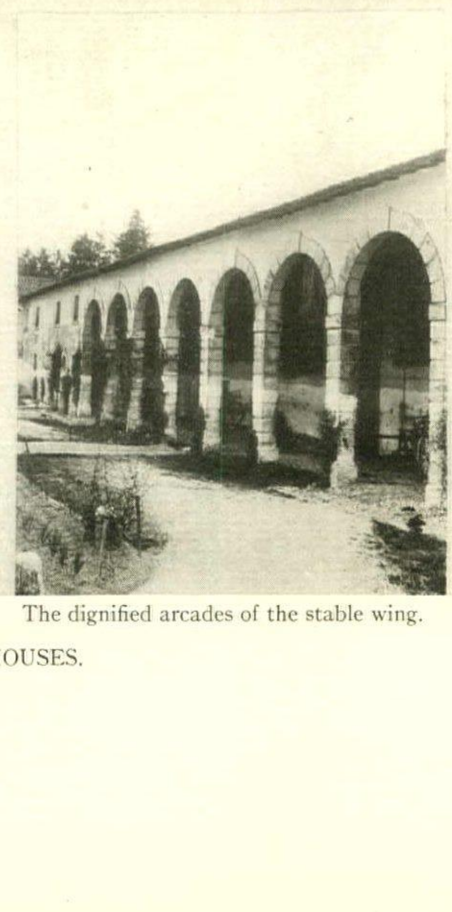
NORTH ITALIAN FARMHOUSES.





Farmhouses of a picturesque quality not common to the usual Italian villa.





The open loggia and shuttered windows characteristic of the larger villa. The dignified arcades of the stable wing.

NORTH ITALIAN FARMHOUSES.

The Passaic National Bank and Trust Company

Harry Leslie Walker, Architect

IN planning this building Mr. Walker was presented with the somewhat difficult problem of designing a structure which would serve two branches of the largest banking institution of Passaic, New Jersey, without actually subordinating either of them. At the time the building was constructed the Passaic National Bank and the Passaic Trust Company were consolidated. The first institution carries on a general commercial banking business, and the second is primarily a savings bank with a trust department. The clientele of one of these institutions is different in character from that of the other, and the banking hours are different. For these reasons it was necessary to plan the new building in such a manner that the two institutions could be housed and their business carried on without any serious conflict in the circulation of the people who patronized each department. Access must also be provided to the office floors above the banking space.

The architect solved this problem by placing the main entrance to the building on the principal street, and this opens into a dignified lobby. The elevators to the office floors above are placed to one side of this lobby. Directly on axis with the main entrance a wide marble stairway leads up to the first-floor banking-room and the various departments of the National Bank, and on either side of the main stairway are others leading down to the ground-floor banking-room of the savings department. In this manner free circulation is provided for both banking-rooms.

Interior entrance detail.

However, both of these banking-rooms are separated from the main entrance lobby by means of large wrought-iron grilles and gates. As has been stated, the banking hours of the two departments are different, and this separation enables one to be open for business while the other is closed. Mr. Walker has taken advantage of one of the requirements of the plan to add a distinctly ornamental feature to the building.

The proportions of the main banking-room are pleasing, and the architect has wisely refrained from attempting to add to their agreeable qualities by unnecessary decoration. The walls are finished in cement plaster of variegated texture and tone. The richest decoration is applied to the heavy beamed ceiling, which is painted after the Italian manner. Advantage of the art of the painter is taken in the decoration of the mural panel at the rear of the banking space. Here is a painting by Edward Trumbull, which furnishes the required spot of color to offset any feeling of rigorous simplicity which the room might otherwise possess.

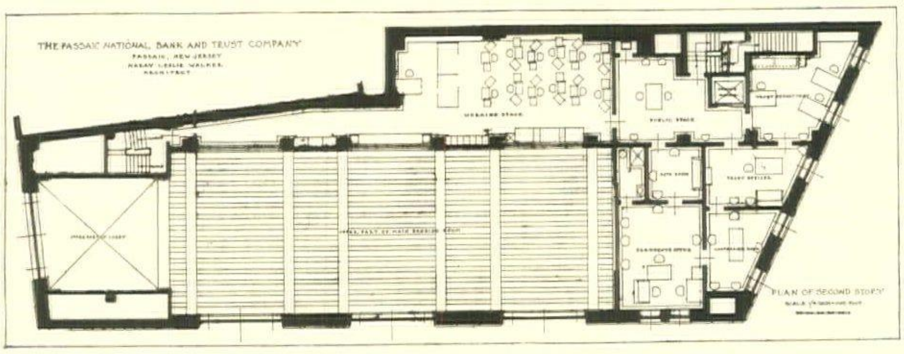
While on the subject of the decoration of the main banking-room it might be well to note that the floor of this, as well as that of the savings department on the ground floor, is of Tracon stone, and the railing, screen base, and wainscoting are of Rosato marble. The detail on which is focussed the most attention in a room of this kind is the banking screen. This, with the interior grilles and gates in the main-entrance vestibule and railings, is of hand-wrought iron and was made in the studio of Samuel Yellin. The combination of cunningly wrought iron work, dignified, plastered walls, and rich ceiling is pleasantly suggestive of the superb Florentine interiors of other days.

This Florentine feeling is carried out in the design of the exterior. Here Mr. Walker had a difficult problem to solve. The banking floors are of such height that when they are expressed architecturally they practically divide the main elevation into two parts. Every architect knows the difficulties which must be overcome under such circumstances. In this case these were surmounted in such a manner that the long elevation presents a sturdy and dignified appearance, although one might wish for a somewhat heavier cornice and deeper reveals at the banking-room windows.

The banking space is expressed by heavily rusticated walls surmounted by a moulded band course. The two stories above this are also rusticated, but not as heavily as the lower portion. Above this the joints are not emphasized. The entire exterior is of variegated limestone, with a cornice of classic proportions, which is in keeping with the feeling of Italian design which furnished the motive for the general character of the building.

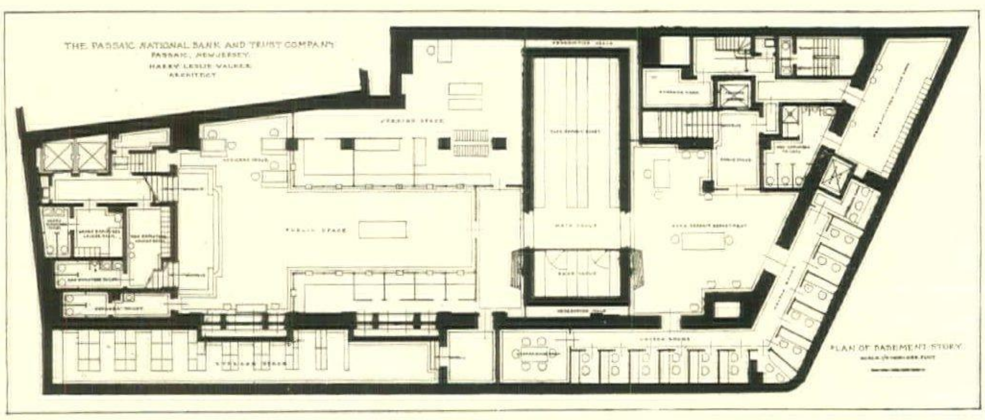
The main vault is located on the ground floor and is reached by the public from the front of the basement story or through the rear of the first story.

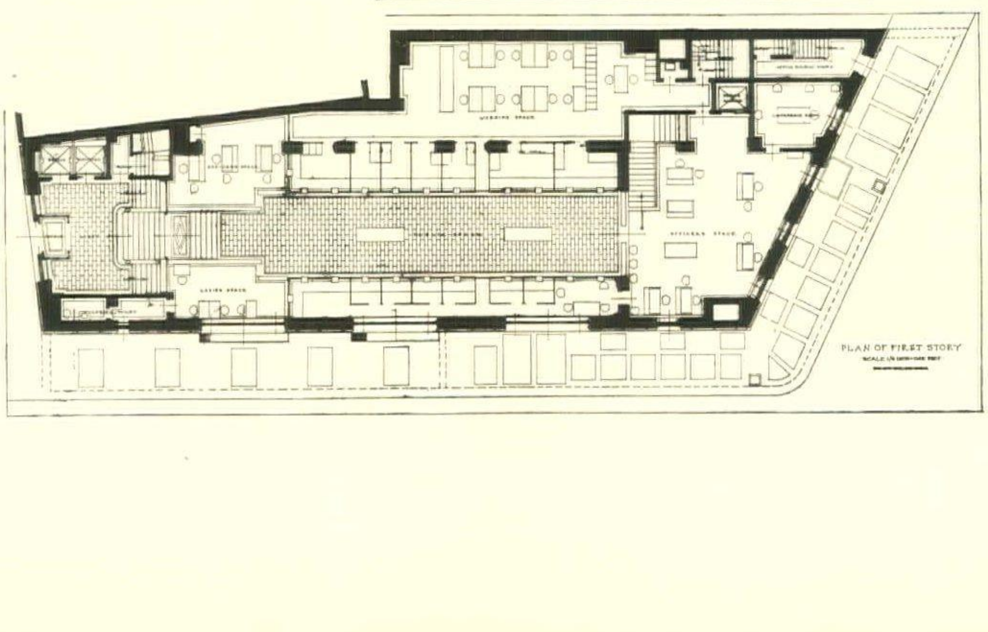
SAVINGS DEPARTMENT.



Harry Leslie Walker,

Architect.





PLANS.
PASSAIC NATIONAL BANK
AND
TRUST COMPANY,
PASSAIC, N. J.

Editorial and Other Comment

The Spirit of Service

AS we write this our country is paying the last tributes to our late President, Warren G. Harding. We cannot imagine any citizen of our great country, or, for that matter, even the alien within our gates, without a sense of loss—some feeling, too, of gain—on this solemn and thought-compelling occasion.

The passing of the leader of a great and powerful nation is always of momentous import to the world, for it focusses attention upon the uncertainty of all life, and in times like these brings even more clearly before us the world problems that have so harried and are yet filling all minds with doubt and fear of the future. In saying that in the death of our leader we have both lost and found, we mean that only in his dying have we been able to realize what his life really meant, how fully it exemplified the ideals of unselfish service, the wish to unite all hearts in the common cause of our nation's welfare, the speeding of the doctrine of tolerance, friendliness, and co-operation, as the strongest elements of power in solving the world's ills. President Harding brought to the affairs of business, the relations between men in the workaday world, something better than pride of dominance, a sense of mastery; he gave us the feeling that his sympathies were limited by no personal ends, but were given without stint to his people in every walk of life.

If he had been great in nothing else, he was great "as a peace-loving individual, conscious of his own limitations, and determined to persist in his policy of kindliness, even though much of the nation mistook it for amiable weakness and relegated him to private life in consequence."

But he was strong, full of bravery, and showed the finest courage in the very consistency with which he tried with all his power and unto the end to give his beloved country and the world something to take the place of the old selfishness, the old doctrine that might is right.

"The spirit of service was strong in him. No man ever held a more devoted sense of duty than did he. He was all for America."

And only this "spirit of service," the consciousness of our mutual human obligation and dependence, the wish to share as well as gain, can ever quiet the bitter unrest that pervades so much of this world and lead us to an assured peace in both industrial and world affairs.

If we have needed the lesson of a whole nation's profound and sincere sorrow to clear our vision and broaden our sympathies, let us not forget, let us not miss, the opportunity for taking account of and mending our own ways.

In the story of Mr. Harding's life we have all been better taught the enduring, the rare fineness of his self-sacrificing "spirit of service," of kindness, of tolerance, and let us hope we have all gained both in strength and self-respect.

Housing and High Rents

THERE seems little prospect of any reduction in the cost of building, and apparently, from a recent survey by the national real-estate boards, we are still confronted with a serious housing deficiency in many parts of the country. And yet, to judge from a casual glance as we go about, there was never a time when so much residential building of a modest character was in evidence.

This is so all about New York, and we are told that the same conditions exist in the vicinity of all the large centres of population. Two hundred and twenty-five real-estate boards, representing cities in all parts of the country, answered a questionnaire. The replies showed that a housing shortage existed in 67 per cent of the places heard from. No shortage was reported from 27 per cent. In the remainder the shortage was described as partial or non-acute.

This deficiency was confirmed by the inquiries concerning rents. In 53 per cent of the cities residential rents were still rising. In 36 per cent they were stationary. In only 11 per cent were they declining. The shortage had not yielded to an energetic resumption of building operations. Seventy-four per cent of the cities reported increased building. Only 20 per cent reported a decrease. Mortgage money was also found to be plentiful, and in only 37 per cent of the places canvassed was there a shortage of labor. An important factor in the situation was the marked development of suburban construction.

We are inclined to think that the reported housing shortage in the cities is painfully true regarding possible places for people of modest incomes. There would seem to be no lack of apartments for the well-to-do, and yet many of them, owing to high rents, seem awaiting tenants.

There is abundant room for some wise capitalist to build places for the thousands whose incomes have not followed the upward tendency of the speculative builders.

Costs

HERE and there we hear some one say, "We are going to wait until prices come down to where they were before the war," and we wonder how long they expect to live! Certainly there is no likelihood of costs going back to pre-war values in our time. No; if we sit tight and wait, we'll all be playing harps or stoking. Of course no good architect will be in the stokehold gang, but many bad investors who have been waiting and are going to wait will wake up on the other side of the River Styx to look back and see the new millionaires and the towering buildings built by a new generation, who didn't believe in just standing and waiting. Everything says: "Get busy and forget the past." "Be an optimist, keep smiling," is pure bunk most of the time, but when we get down to realities, the optimism that is real is the sort that comes from being busy, from beating out of our systems any old notion that something is going to turn up without digging.

Architectural Education

By Irving K. Pond

THERE are two factors to be considered: the public and the architect. The public is to be considered in the light of the general public, and not as the special client, for where there is a comprehending and appreciative public the education of the client may safely be left to take care of itself. It might also be said, with truth, that where there is a comprehending—a fully comprehending—and a fully appreciative public the education of the architect may safely be left to take care of itself; outside of technical detail it may be left quite to itself. Strange as it may seem, much of the technical detail may be gained in night-schools or in home study, and the remainder may be gained—must be gained—in practical work in the office and on the job.

What, then, is the public to be taught, that conditions may be favorable to an appreciation of architecture and a production of architects? What a child should learn and the public know is that under all forms of life, and consequently under all forms of art, which is a visualized symbol of life, should lie order, and rhythm, and movement, and purpose, and just relationships producing unity and harmony, and mystery, and sincerity, and imagination. That is enough to begin with; but these things, these elements, the public should be cognizant of, be familiar with, and should seek and find in a work of art, even though it be mere architecture. Underlying the expression of these things, these fundamental matters, these elements, are the basic laws of Unity, Measure, and Purpose. "Unity" means the inclusion of all necessary elements and the elimination of all that are unnecessary and extraneous. "Measure" means the establishment of right relationships, which creates harmony, a divine harmony, among the parts, among the elements. "Purpose" gives meaning to the whole; for without meaning—definite, distinguishable meaning—the whole fabric falls. The public should be educated to an understanding, an appreciation, a recognition of these laws abstractly and in application; all the architect has to do in addition is to learn to *make* the application! That will come without overstrain and too serious application to formulas, and of formulas, when once the laws have been grasped in the fulness of their bearings.

In the application of these laws, as also in their interpretation, enters a play of the spiritual qualities inhering in the individual—of the sense of mystery, of sincerity, and the spirit of joy and gladness, of the power of imagination. The public will recognize these elements just as soon as, and to the extent that, architects are able to introduce them. The architect can play the rôle of educator by placing exalted examples of his art before the public.

To give a semblance of concreteness to the foregoing, let us make an application to a definite performance. "He rejoiceth as a strong man to run a race." You have heard the words, you have an inkling of their purport. That race—that act—was to bring joy—that was its purpose, as it is the purpose of all art. But as it was a race, there was another and definite function involved—to run and to win; and to run and to win, one must necessarily make application of the laws of Unity, Measure, and Purpose. Of the purpose we have spoken—but that purpose could not be attained without the intervention of the other laws. Unity: The athlete could come upon the track and as a preliminary take a few rhythmic strides to set himself in tune without violating the unities. At the end of the course he could acknowledge the plaudits of the spectators with graceful gesture, again without violating the proprieties. But once having crossed the scratch and entered upon the course, if he were to cavort or interject extraneous movement however rhythmically and delightfully composed, he would violate the unities, would fail of his purpose, and proclaim himself no artist—no athlete—and would receive hisses rather than plaudits; and he would deserve them. Now, if the athlete, in excess (mind the words "in excess") of exuberance, overdoes his introductory passage or, when having breasted the tape, he continues to run indefinitely at top speed, or is too fulsome in the reception of plaudits, he has shown himself no artist, even though as an athlete he has won the race. He has violated the law of Measure; he has failed to demonstrate a sense of right proportion.

The public knows definitely in the case of the athlete when laws have been violated, and with education will come to recognize similar remissness on the part of the architect. And, moreover, when a race is staged, the athlete could not fool the public into the belief that he was running a race were he to come upon the course decked out in a toga and stage a Greek ceremonial dance. He would be hustled off the course, and place given to those who were to engage in the real thing. When the public really is educated, architecture will become a vital affair concerned with daily life and existence; and no sympathetic reception will be accorded the architect who comes with his little table and shells and peas and his little box of ancient tricks and his Roman toga flung over his barnyard clothes. An educated public will see through him altogether.

Do the schools, does the profession, do the architects individually want the public to be so educated? Do these all wish for a time when a discerning public shall be an inspiration to creative impulse, to rich emotional activity, to high spiritual endeavor?—or would the programme entail too much mental effort on the part of the practitioners and wipe away the line of professional least resistance? If we do look forward to such a time, there are idealists who can point the way to *what* the public (and the architects) should be taught, and some, even, will indicate how it may be done—but it is a long road!

From the leaflet of the Illinois Society of Architects.

VIEW LOOKING EAST IN COURT, FREER GALLERY OF ART, WASHINGTON, D. C. Charles A. Platt, Architect.

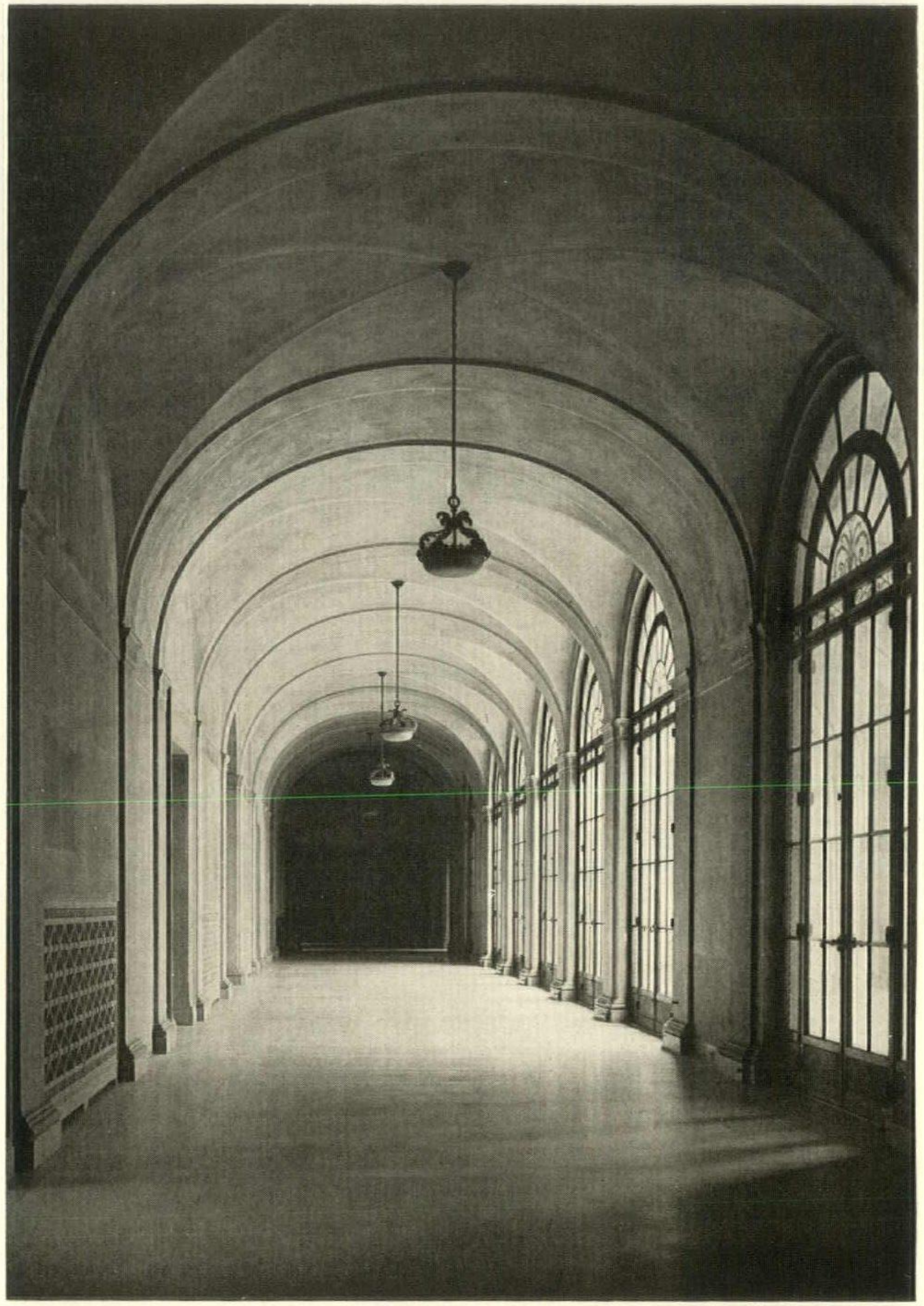
DETAIL OF SOUTH ENTRANCE, FREER GALLERY OF ART, WASHINGTON, D. C. Charles A. Platt, Architect.

DETAIL OF MAIN ENTRANCE VESTIBULE.

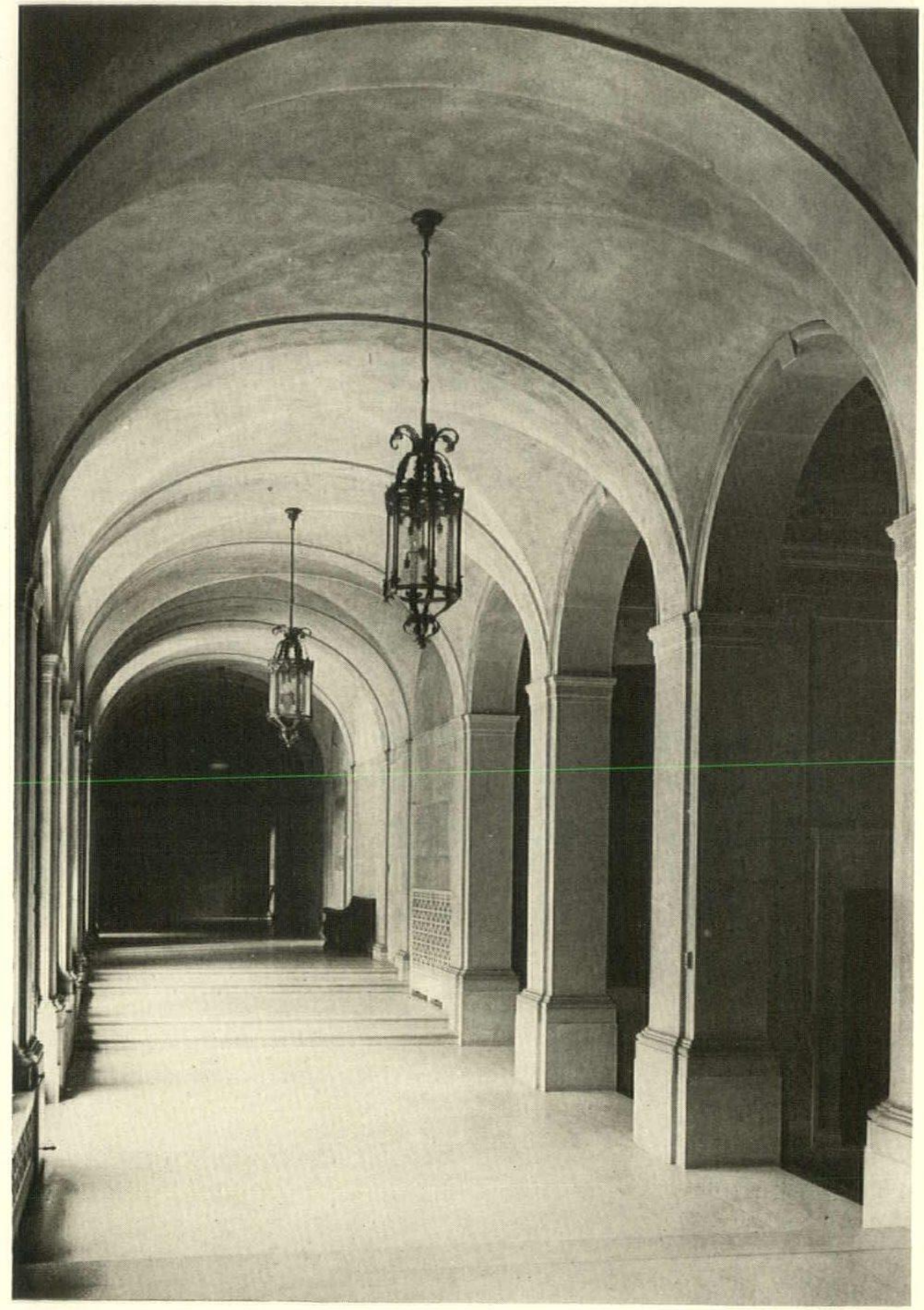
EAST LOGGIA.

Charles A. Platt, Architect.

FREER GALLERY OF ART, WASHINGTON, D. C.

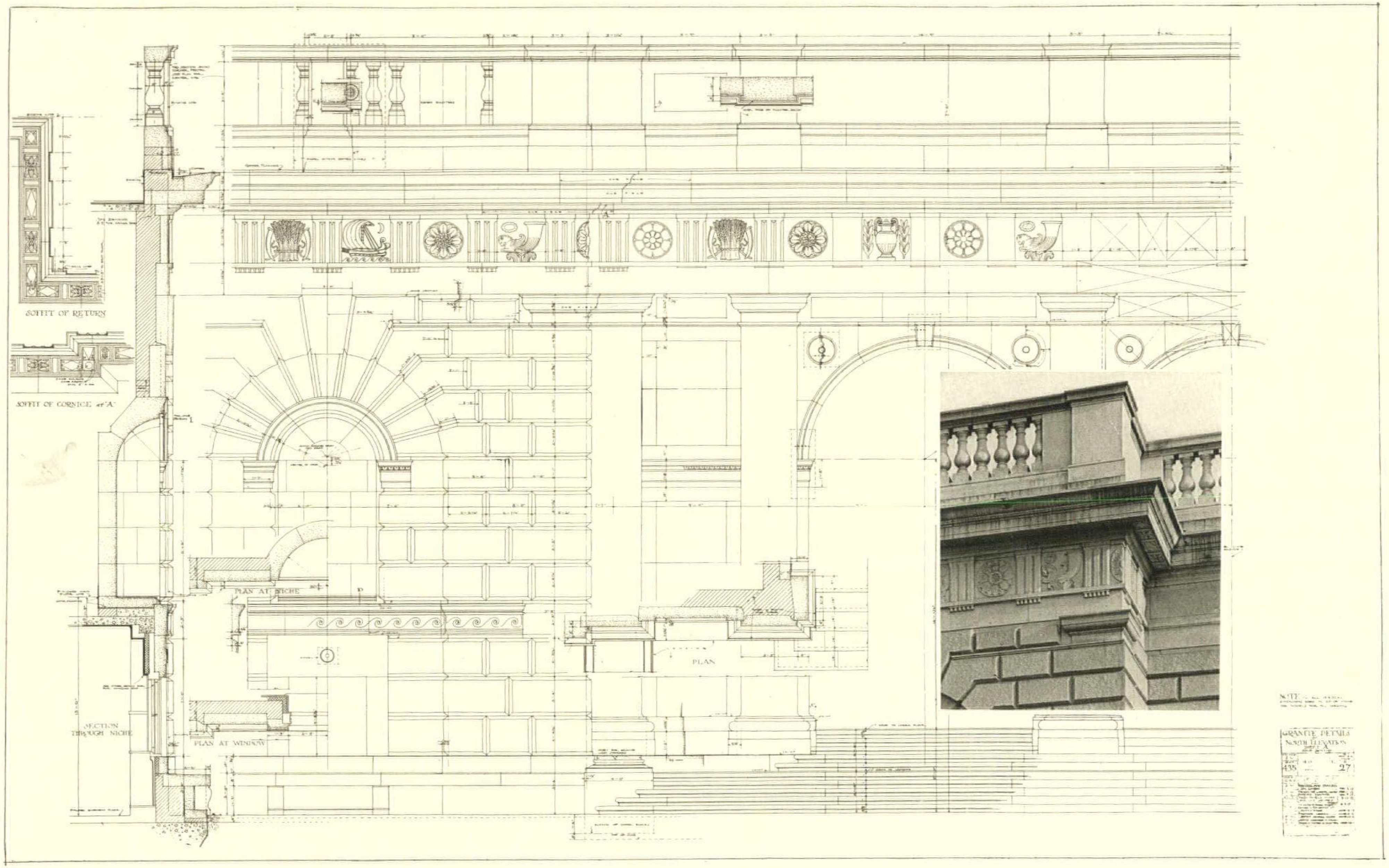


SOUTH CORRIDOR LOOKING WEST.



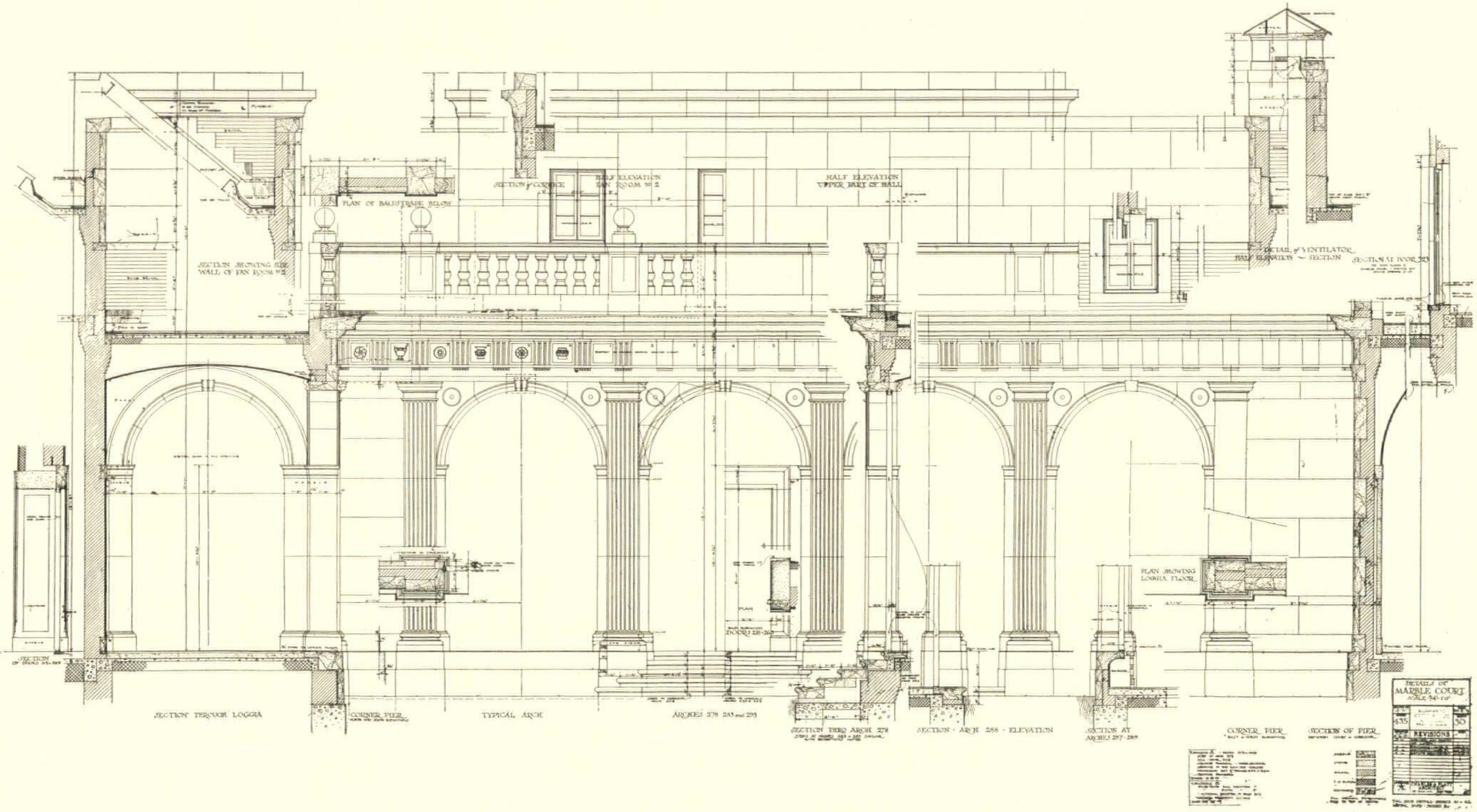
NORTH CORRIDOR LOOKING WEST. Charles A. Platt, Architect.

FREER GALLERY OF ART, WASHINGTON, D. C.



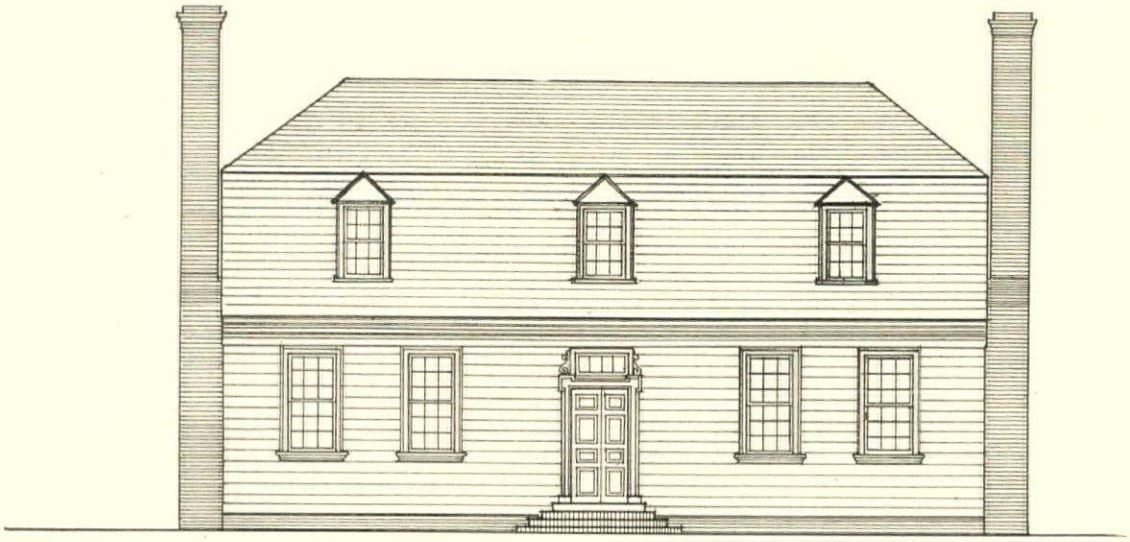
GRANITE DETAILS, NORTH ELEVATION, FREER GALLERY OF ART, WASHINGTON, D. C.

Charles A. Platt, Architect.

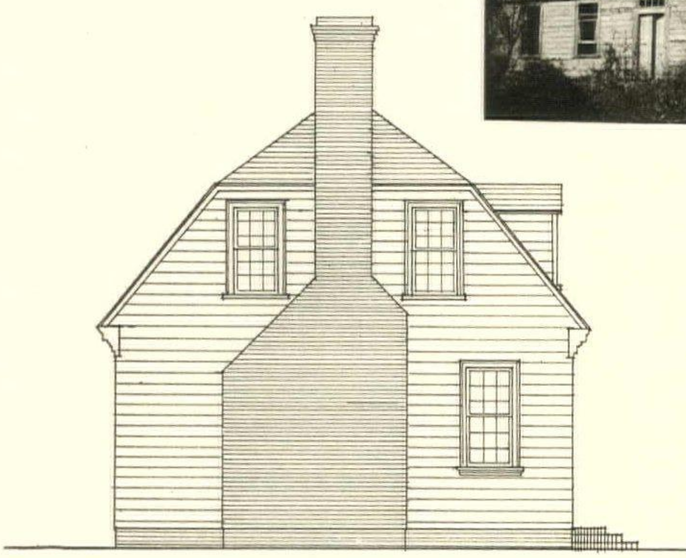


DETAILS OF MARBLE COURT, FREER GALLERY OF ART, WASHINGTON, D. C.

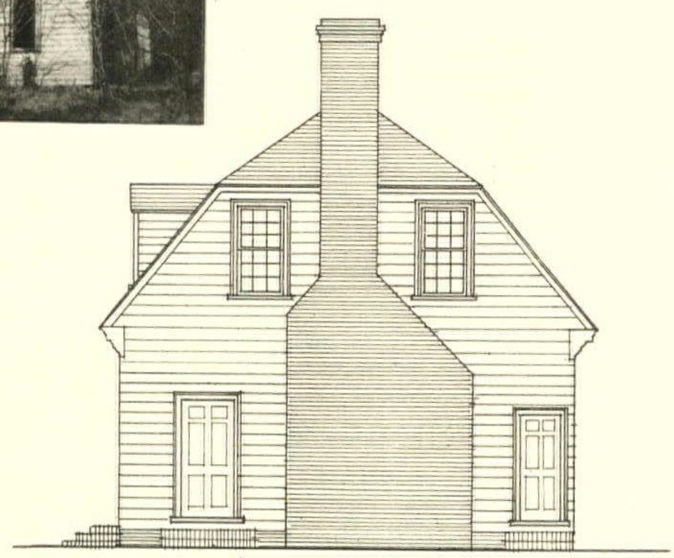
Charles A. Platt, Architect.



· FRONT · SOUTH · ELEVATION ·



· END · WEST · ELEVATION ·



· END · EAST · ELEVATION ·

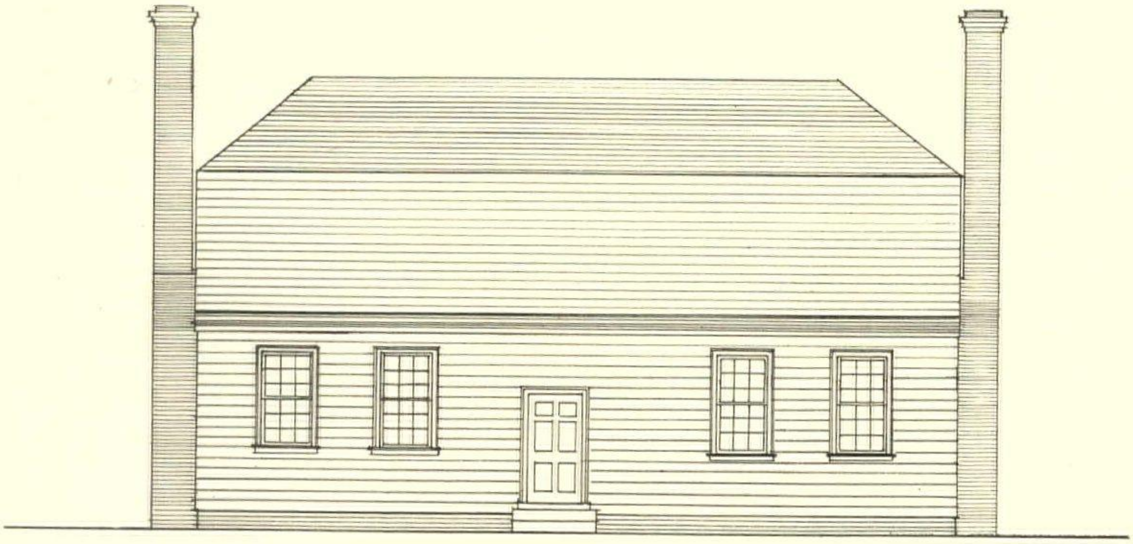
SCALE 0 5 10 15 FEET

· EARLY ·
· ARCHITECTURE ·
· OF ·
· MARYLAND ·

BARNABY MANOR

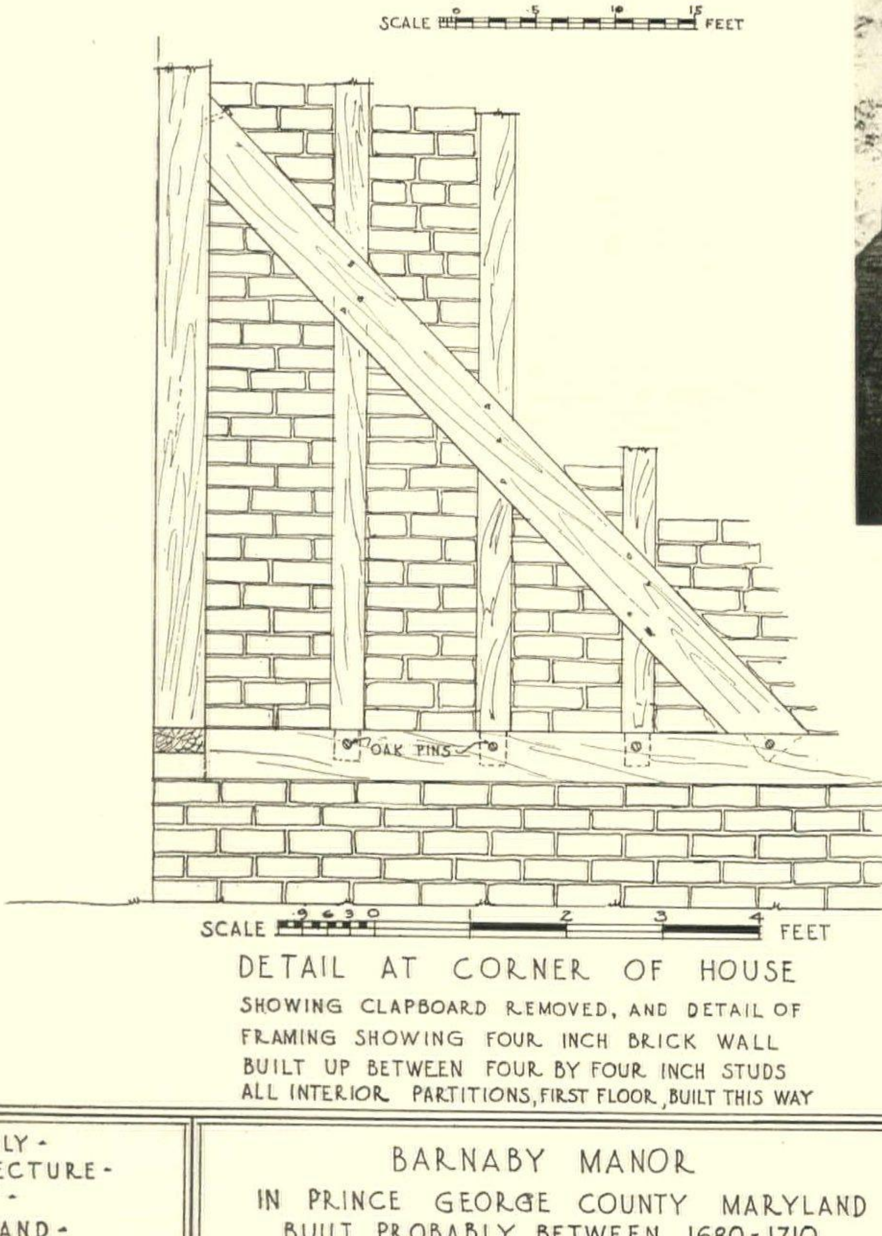
IN PRINCE GEORGE COUNTY MARYLAND
BUILT PROBABLY BETWEEN 1680 - 1710
ACTUAL DATE UNKNOWN

· MEASURED BY ·
ALBERT P ERB & CHARLES T. NEWMAN
· DRAWN BY ·
· ALBERT P ERB ·



NORTH (REAR) ELEVATION

SCALE 0 5 10 15 FEET

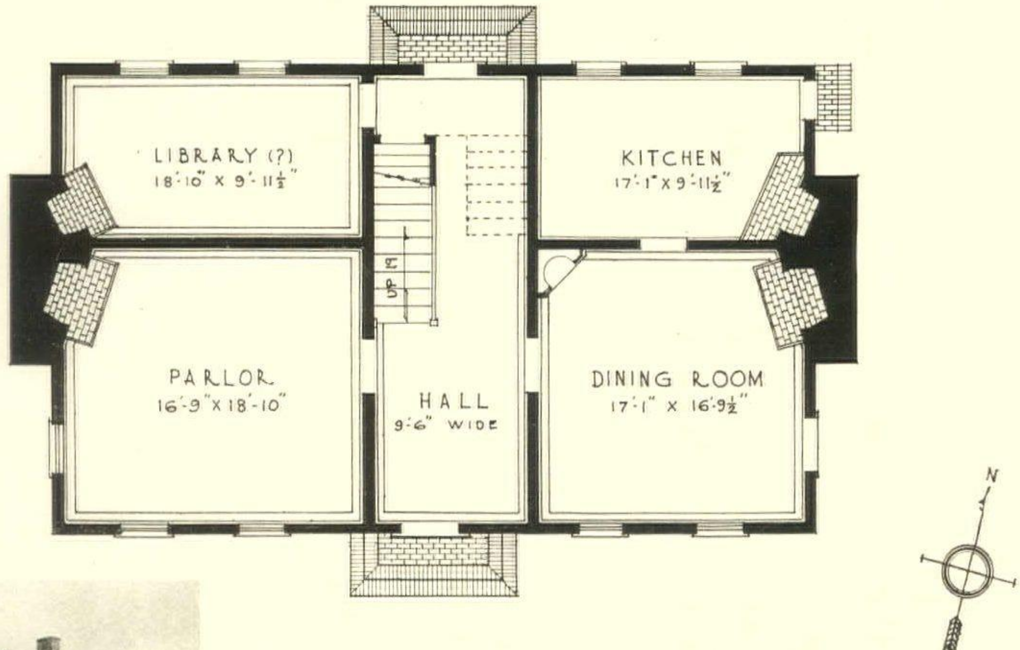


SCALE 9 6 3 0 1 2 3 4 FEET

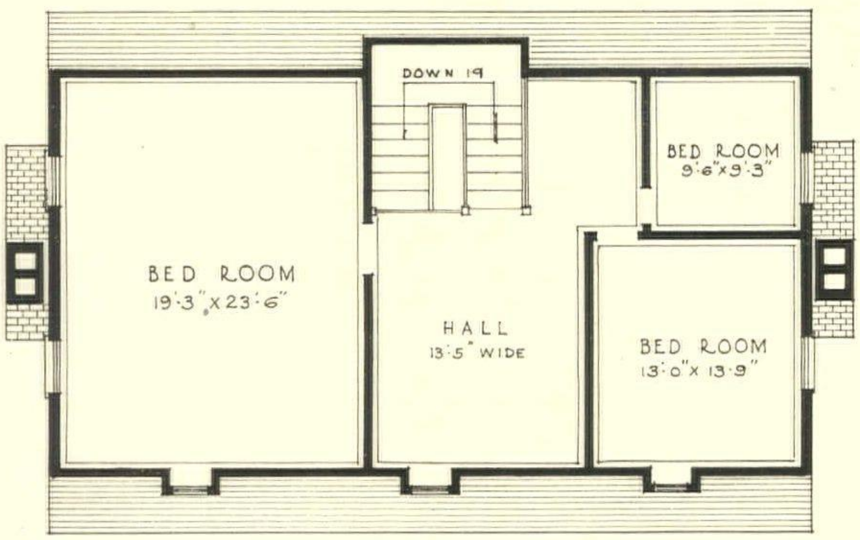
DETAIL AT CORNER OF HOUSE

SHOWING CLAPBOARD REMOVED, AND DETAIL OF FRAMING SHOWING FOUR INCH BRICK WALL BUILT UP BETWEEN FOUR BY FOUR INCH STUDS ALL INTERIOR PARTITIONS, FIRST FLOOR, BUILT THIS WAY

EARLY ARCHITECTURE OF MARYLAND	BARNABY MANOR IN PRINCE GEORGE COUNTY MARYLAND BUILT PROBABLY BETWEEN 1680-1710 ACTUAL DATE UNKNOWN	MEASURED AND DRAWN BY ALBERT P ERB



- FIRST FLOOR PLAN -



- SECOND FLOOR PLAN -

SCALE 0 5 10 15 FEET

- EARLY - - ARCHITECTURE - - OF - - MARYLAND -	BARNABY MANOR IN PRINCE GEORGE COUNTY MARYLAND BUILT PROBABLY BETWEEN 1680 - 1710 ACTUAL DATE UNKNOWN	- MEASURED BY - ALBERT P. ERB & CHARLES T. NEWMAN - DRAWN BY - - ALBERT P. ERB -

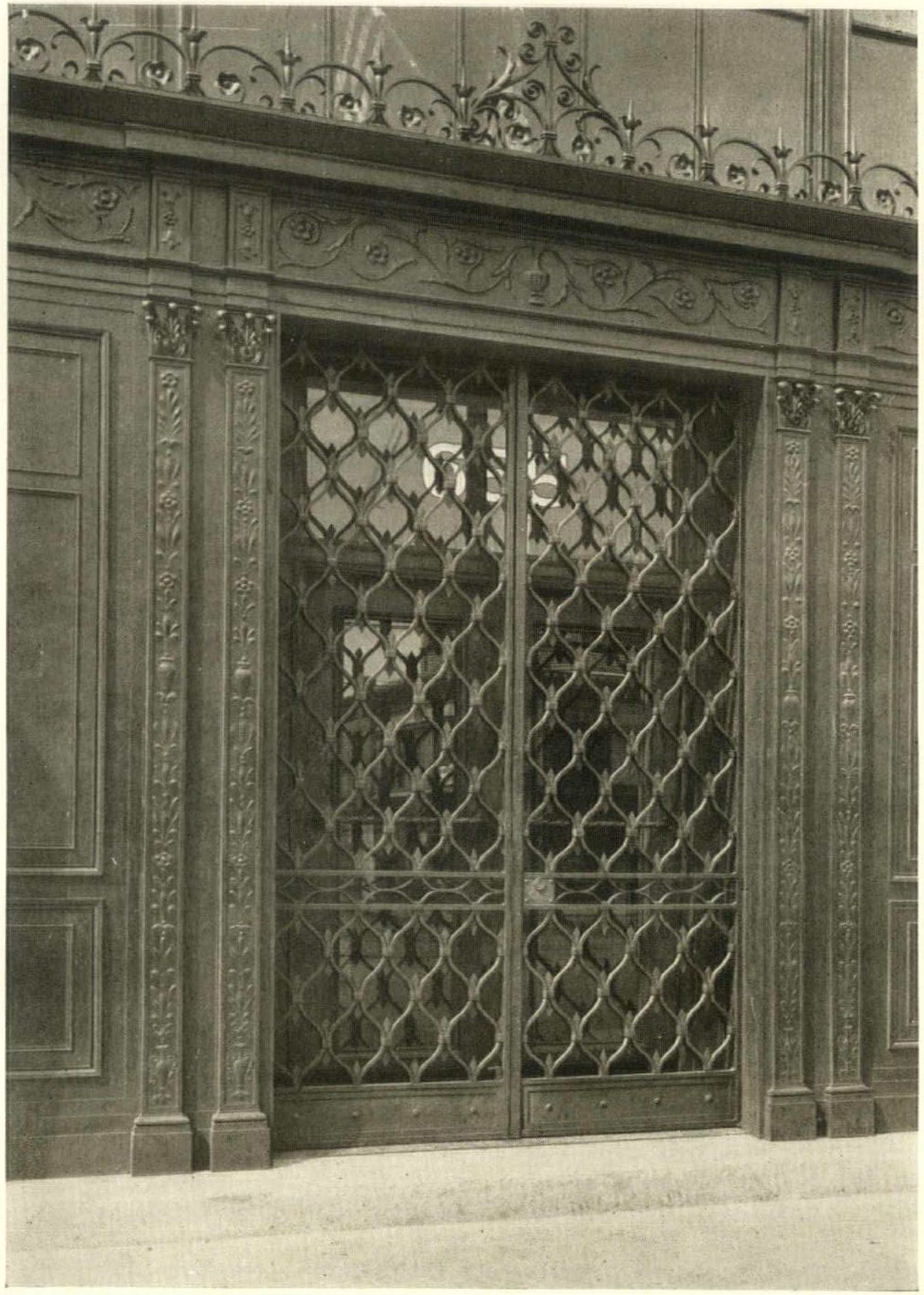
· EARLY ARCHITECTURE OF MARYLAND

BARNABY MANOR
IN PRINCE GEORGE COUNTY MARYLAND
BUILT PROBABLY BETWEEN 1680 1710
ACTUAL DATE UNKNOWN

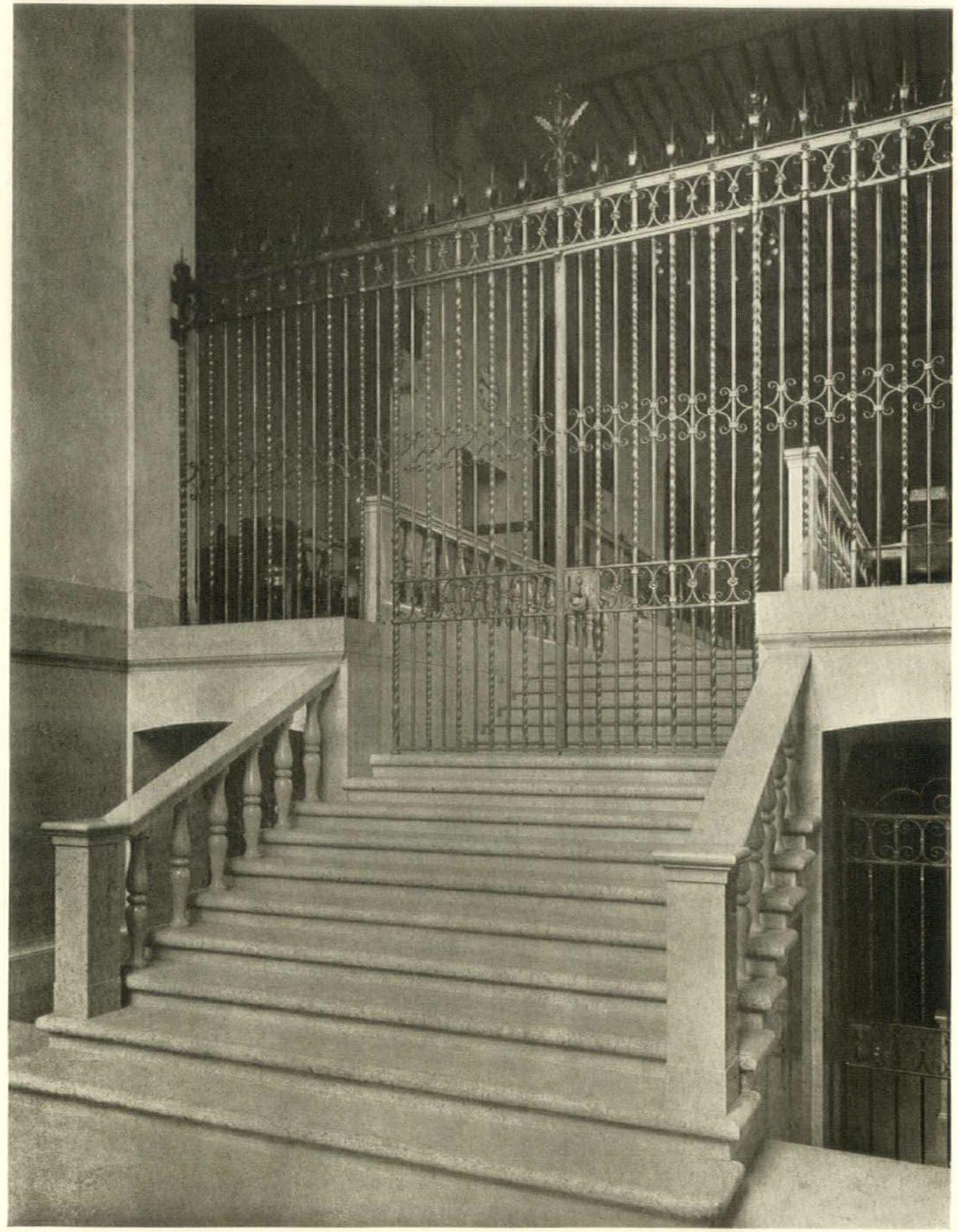
MEASURED. BY
ALBERT P ERB & CHARLES T. NEWMAN
DRAWN BY
ALBERT P ERB

PASSAIC NATIONAL BANK AND TRUST CO., PASSAIC, N. J. Harry Leslie Walker, Architect.

MAIN BANKING ROOM, PASSAIC NATIONAL BANK AND TRUST CO., PASSAIC, N. J. Harry Leslie Walker, Architect.

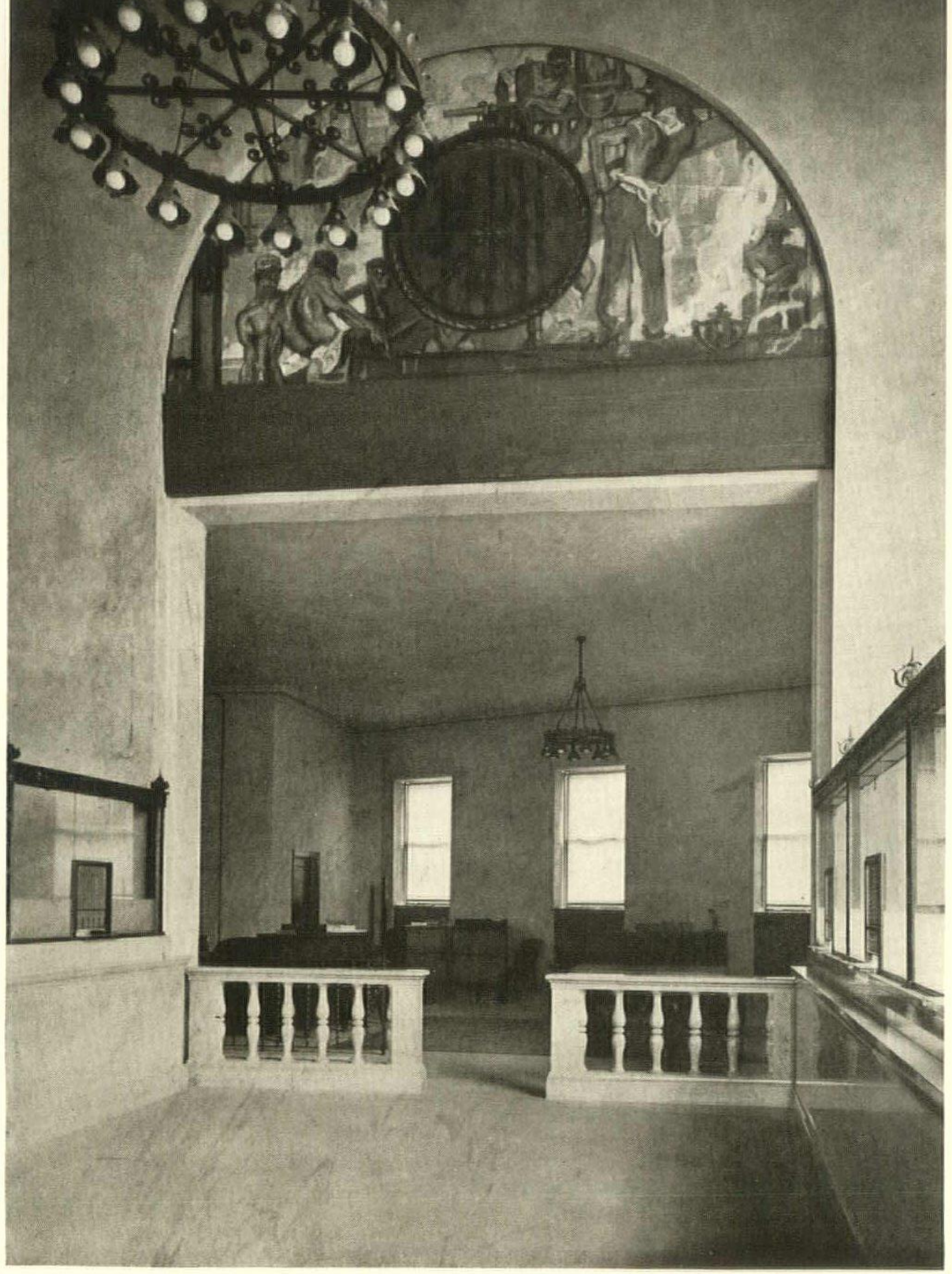


MAIN ENTRANCE DOORS.



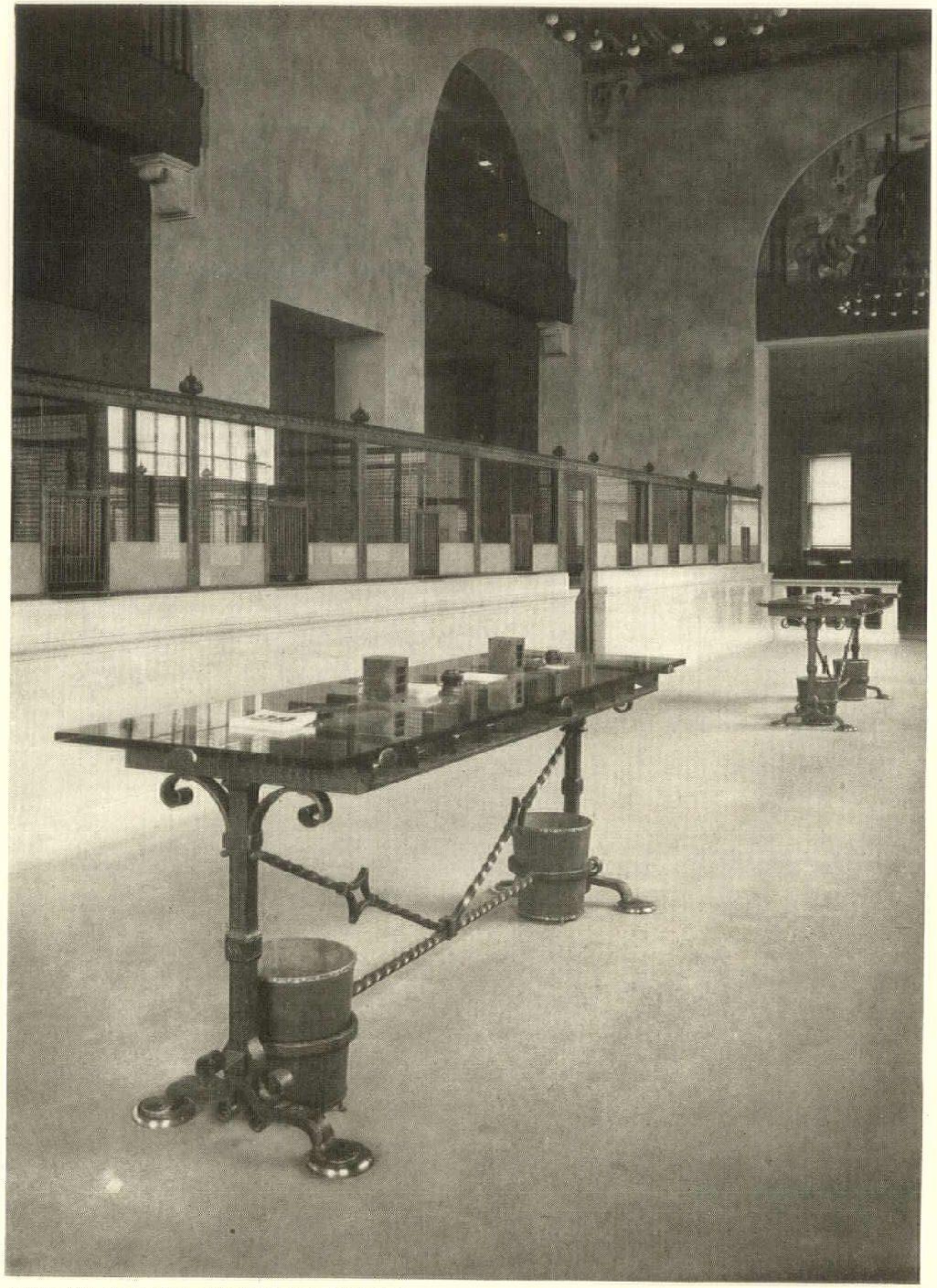
STAIRWAY AND GATES TO MAIN BANKING ROOM.

PASSAIC NATIONAL BANK AND TRUST CO., PASSAIC, N. J.
Harry Leslie Walker, Architect.


OFFICE SPACE, REAR, MAIN BANKING FLOOR.


OFFICE SPACE, FRONT, MAIN BANKING FLOOR.

PASSAIC NATIONAL BANK AND TRUST CO., PASSAIC, N. J.
Harry Leslie Walker, Architect.

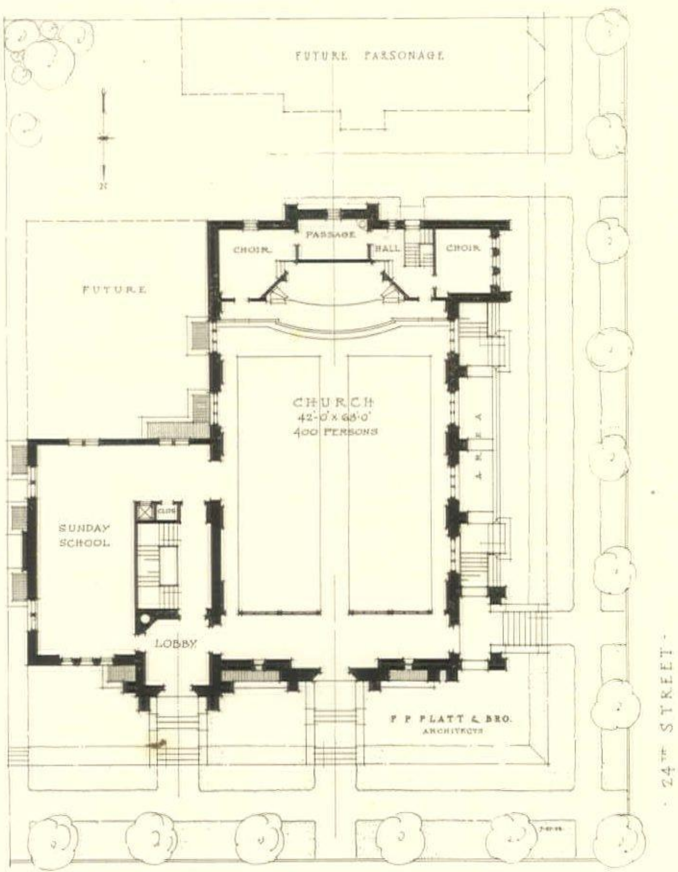


CHECK DESKS, BANKING SPACE.

DETAIL, BANKING SPACE.

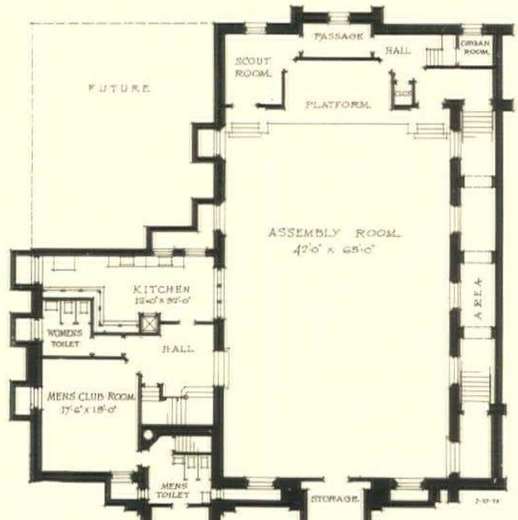
Harry Leslie Walker, Architect.

PASSAIC NATIONAL BANK AND TRUST CO., PASSAIC, N. J.



FILLMORE AVE

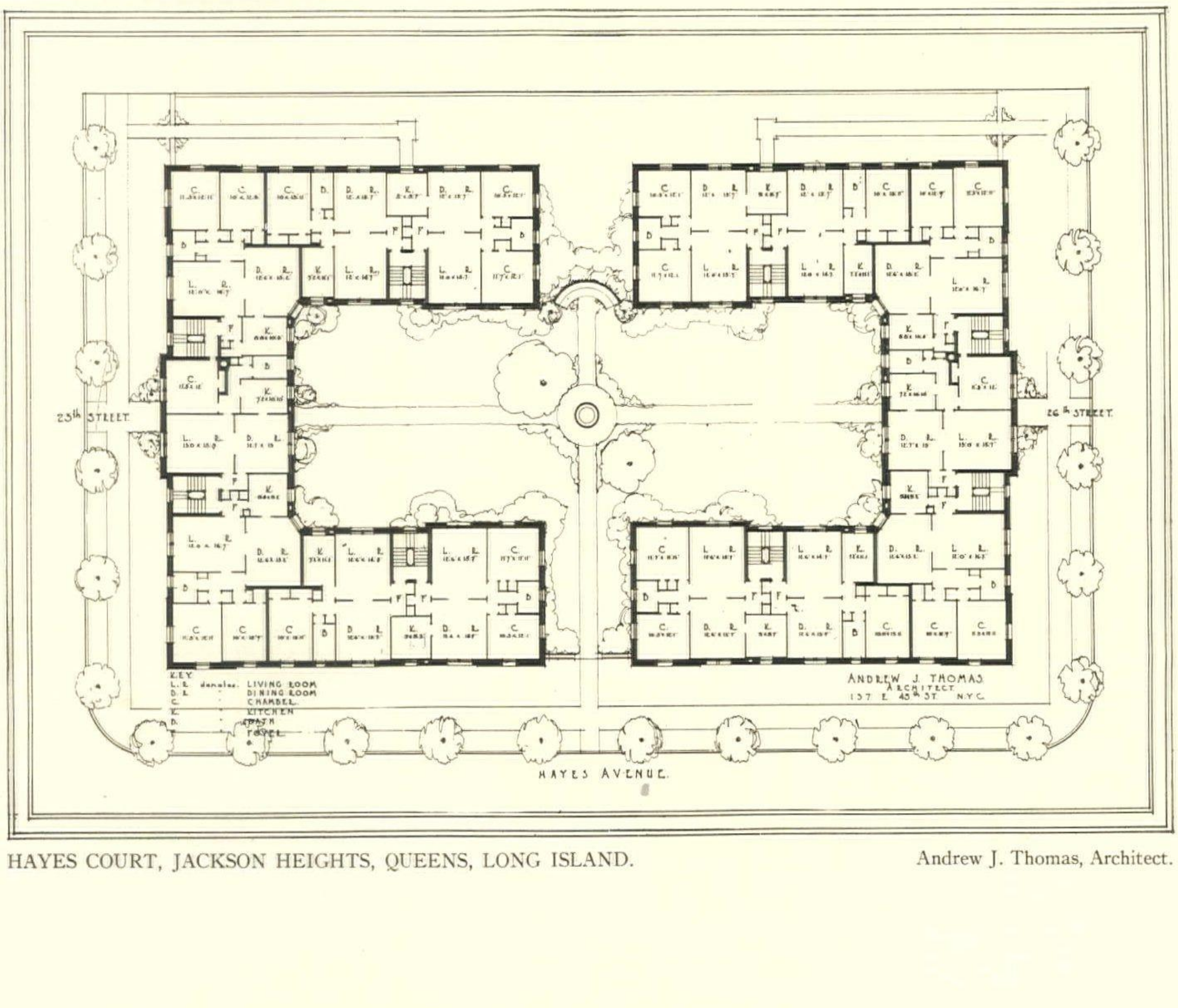
· FIRST · FLOOR ·



· BASEMENT

COMMUNITY CHURCH, JACKSON HEIGHTS, QUEENS, LONG ISLAND.

F. P. Platt & Bro., Architects.



HAYES COURT, JACKSON HEIGHTS, QUEENS, LONG ISLAND. Andrew J. Thomas, Architect.

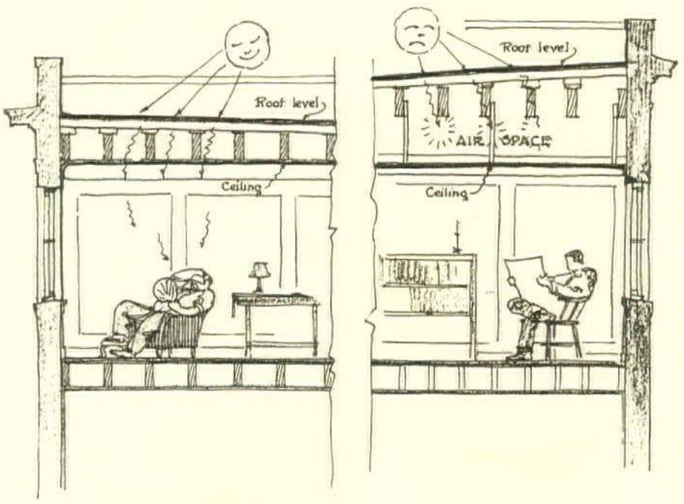
Construction of the Apartment-House

By H. Vandervoort Walsh
Instructor of Construction, School of Architecture, Columbia University

ARTICLE VIII

ROOFING AND ROOF CONSTRUCTION

IT is a notable fact that the black pitch and felt roof that is spread over the top of the ordinary apartment absorbs considerable heat and has a decided influence upon the temperature of those apartments directly underneath it. One often hears real-estate agents explaining to the prospective tenants that there has been built a large air-space between the ceiling of these top-floor apartments and the surface of the roof, but the writer has failed to observe any such large air-space being constructed in the newer apartments, and is rather under the impression that the real-estate agents have exaggerated this point.



A FAMILIAR STORY

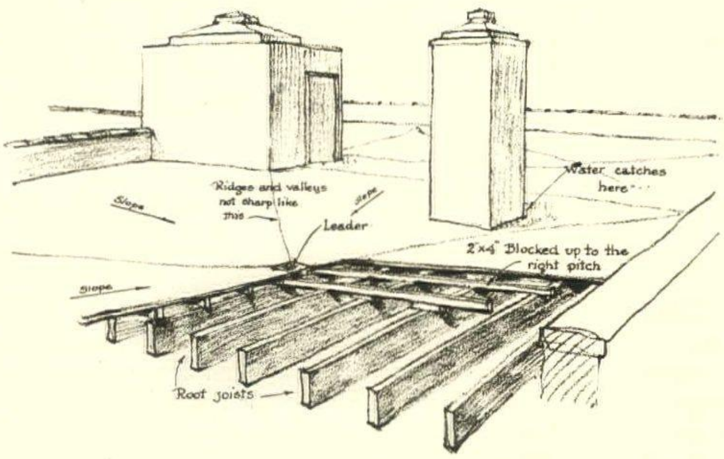
Of course, some apartments do have fairly large attic spaces built under the roof. This is very easily done, for the ceiling of the apartment on the top floor can be furred down and supported upon a framework of 2-inch by 4-inch members, suspended from the room joists. Such a method of building is highly commendable when one desires to maintain a lower temperature in the top-floor apartments in summer weather. But there are very serious drawbacks to such construction. First of all, it requires the outside walls to be carried up much higher than if this air-space were omitted; second, it requires extra lumber and framing; and, third, it forms a dangerous hidden pocket in which a fire might easily spread. Now, of course it is not the latter reason that keeps the builder from using this form of construction, but rather the first two reasons, which are matters of the pocket-book.

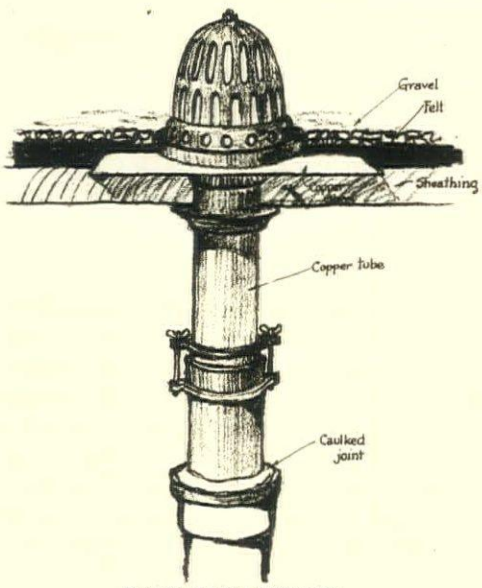
As a rule, the usual method of preparing the roof for its covering is to build, over the topmost apartment, roof-joists of the same type and size as those used for the floor-joists on the lower floors. In fact, the framing for the roof is identical to the framing of the other floors. The plaster ceiling is applied to laths that are nailed to the under side of these roof-joists. However, the upper surface must be constructed to form the various slopes necessary to drain the water toward the leaders. This variety of level is secured with blocks and 2-by-4s. By placing on top of the roof-joists wooden blocks of varying thickness, the 2-by-4s may be nailed down to form the various levels necessary for good drainage. These 2-by-4s are spaced 16 inches on centres, and are covered with tongued and grooved, or shiplap, $\frac{7}{8}$ sheathing boards. In other words, a platform having the desirable slope is built upon the top of the roof-joists. These 2-by-4s are usually placed directly over the roof-joists, but not always, and the slope given to them by the blocking underneath does not exceed 2 inches in 1 foot, nor is it less than $\frac{1}{8}$ inch in 1 foot.

The arrangement of leaders in a roof of this kind should be such that the minimum complication of slopes is needed. Generally this requires them to be located in the middle section of large rectangular parts of the roof, so that they may drain the water from four different directions. Complications of pitch always come up, however, around vertical extensions of dumb-waiter shafts or stair-wells. About these ought to be constructed special cants and crickets, so that the water will be hurried toward the leader and not back up into little pools behind dumb-waiter shafts or chimneys. In the drawing are shown some of the common difficulties encountered, and how they are usually overcome when shown upon the architect's drawings, but actually the writer has seldom seen these crickets and special cants built around the vertical shafts. If there is a general slope toward the leader, it is commonly constructed as though there were no dumb-waiter shafts or chimneys to block the flow of the water. And in rain-storms the water does collect in back of these places, but with no very serious results, for when the rain stops the excess water gradually runs off, and the sun quickly dries up the rest. It is true this is not the best construction, but then apartment-house construction does not stand for the best.

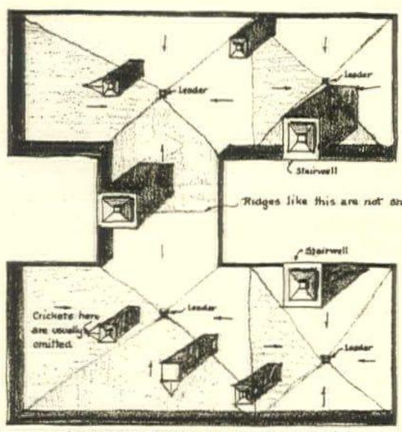
Now, the leaders which are used to drain these roofs are usually 3 inches in diameter, and can be expected to take care of 2,000 square feet of roof area. A 4-inch leader can drain 3,500 square feet of roof. They are inside leaders and connected with the drainage system of the building. Special running traps are required to be placed on them before they finally discharge into the house drain. Being made of cast iron, it is necessary to have a short length of lead pipe wiped to a brass ferrule, and caulked into the top joint of the pipe so that the connection with the copper leader box may be made easily. This short length of lead pipe is made long enough to allow cutting off to whatever level becomes necessary for the completed roof. A copper box, 12 inches square and 2 inches deep, is built into the roof over the leader. The edges, like flanges, of this box are turned outward and made to extend a few inches under the roofing felt. Soldered to the bottom is a copper tube which fits inside of the lead pipe at the top of the leader. Over the top of the copper box are laid two thicknesses of woven and welded wire lath, to act as a sieve. This is the usual and common detail that the writer has observed, and does not represent the best practice. Without a doubt,

(*Continued on page* 308)

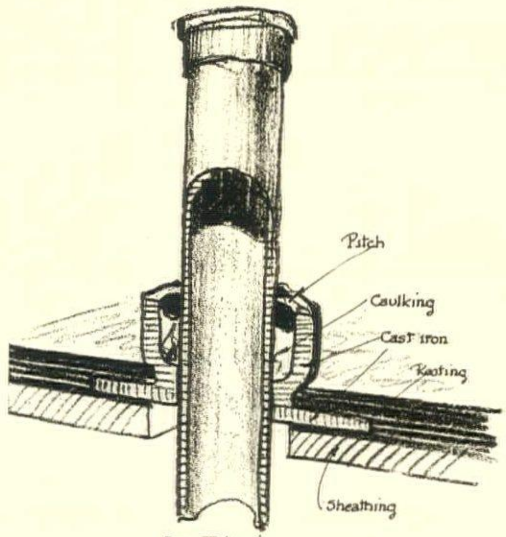




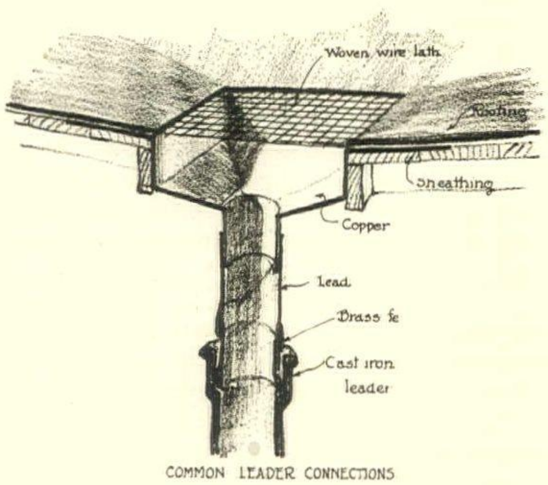
PATENT LEADER CONNECTION



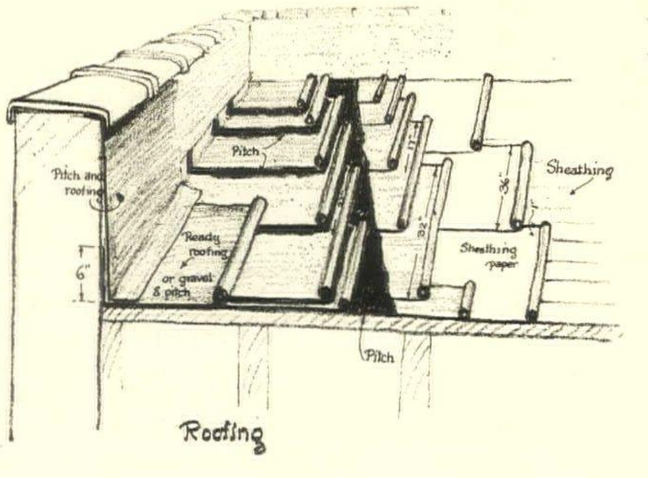
Theoretical Drainage of Roof which practical
conditions approximate



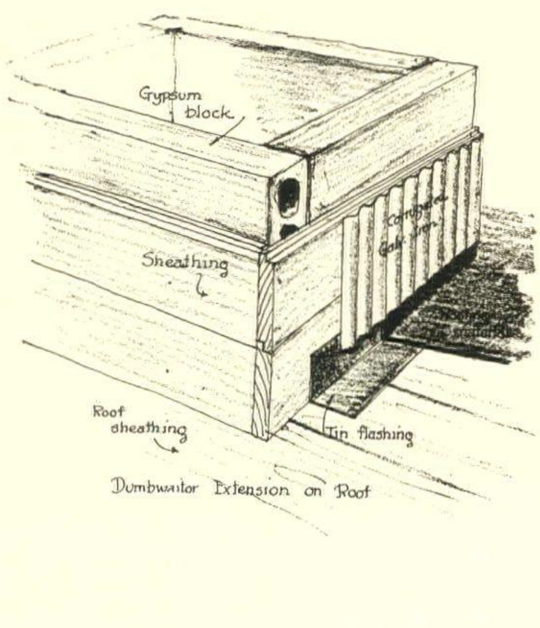
Pipe Extension



COMMON LEADER CONNECTIONS



Roofing



Dumbwaitor Extension on Roof

(*Continued from page 306*)

the best work makes use of some one of the carefully designed leader connections, such as shown in the drawing. Connections of this type are mechanically compact, are permanently tight, are strong and fool-proof.

It might be advisable to call attention to the influence which the number of leaders has upon the size of the house-drain when they are connected to the sewer system. Ordinarily the house-drain, in apartments, is made 4 inches in diameter, and this is capable of receiving the discharge of roof water from 2,500 square feet, if it has a pitch of ¼ inch to the foot, but when its pitch is ½ inch to the foot it may be used to drain 3,200 square feet roof area. A 5-inch house-drain will take care of 4,500 square feet roof area when the pitch is ¼ inch to the foot, and 6,000 square feet when the pitch is ½ inch to the foot. A 6-inch house-drain will take care of 8,000 square feet with a pitch of ¼ inch to the foot, and 10,000 square feet with a pitch of ½ inch to the foot.

One sometimes finds apartments which have outside leaders of galvanized sheet iron extending from the roof down to the cast-iron pipe drain connection at the base. This cast-iron pipe is carried 5 feet above the level of the pavement of the court. An outside leader of sheet metal is, of course, cheaper than a cast-iron interior one, but it is a terrible thing to listen to when it rains. Within the reverberating walls of a court in a downpour a leader of sheet metal rings out such a dismal song of dulness that one cannot help but feel the oppression of being shut within the close, damp, stuffy walls of an apartment. Thoughts of suicide could easily be inspired by its tune.

The roofing that is usually spread over apartment-houses is called the built-up roof, consisting of layers of pitch and felt, with a top protection, sometimes, of gravel. The felt, made from cotton rags, serves as a reinforcing body to the more or less elastic pitch. The number of layers of felt used is designated by the term ply. A 3-ply roof has 3 layers of felt, and a 5-ply roof has 5. The latter is the best, and makes a very durable roof, lasting about twenty years, if properly laid. The 3-ply roof is often employed on apartments.

If the best practice is followed, the process should be about as follows, but most apartments have roofs that fall considerably short of these methods. First is laid, on top of the sheathing boards, sheathing paper, 36 inches wide, lapped at the joints 1 inch. On top of this are laid 2 plies of 32-inch-wide tarred felt, lapping the joints 17 inches, nailed wherever necessary to hold in place. The upper surface of these layers is then evenly coated with pitch. On top of this are then placed 2 more plies of felt which lap 17 inches, but these are mopped with pitch at the lap, so that at no one place does felt touch felt. Over the entire roof is then poured from a dipper a uniform coating of pitch, into which, while hot, are embedded not less than 400 pounds of gravel to each 100 square feet of roof. The pitch should be laid without wrinkles or buckles, and not less than 125 pounds of pitch should be used on each 100 square feet of roof.

The above represents good construction, but one finds that many apartments do not have so many layers of felt, nor is there used so much pitch, and gravel may not be used for the top covering at all, but a layer of ready roofing may be put down to serve as the wearing surface, which will buckle and open at the joints and be dented and cut easily. Walks of wooden slats are quite necessary for the protection of the roof from these cuts and dents, but they are often omitted, when the top layer is of this ready roofing.

The usual method of flashing against the parapet walls is to mop with pitch and stick a strip of felt against the wall about 6 inches, and 3 inches on the roof, and then to paste with pitch another layer of felt from the under side of the coping tile down to the roof and out on it about 3 inches. A layer of felt and pitch is mopped over the entire surface of the stair-well extension, too.

The dumb-waiter extension, since it is built of gypsum blocks, must be protected from the weather. It is therefore covered with wood sheathing on the outside. A strip of tin is then laid along the bottom of it and covers the joint between it and the roof. Over the outside of the wood sheathing is then fastened galvanized, corrugated sheet iron, which paps down over the tin flashing at the bottom to within 4 inches of the roof. The felt and pitch of the roof is carried over the outstanding part of the tin flashing and the base, and some of the pitch is swabbed up over the tin to about 4 inches above the roof.

Where soil and vent lines pass through the roof, a special collar is placed around them, before the roof is spread. This collar of cast iron is closer to the pipe at the base than at the top, as the drawing shows. At the base of it oakum is stuffed, and pitch poured on top. Thus the pipe has freedom to move, and yet the joint is water-tight.

A lavish mopping of pitch over all surfaces that might seem to leak finishes the job.

Frames to hold the clothes-lines, made of 1½-inch by 1½-inch angles, have to be screwed down to the sheathing, but this is done after the body of the roof has been laid, then the base is swabbed over with pitch.

Forest Laboratory Gives Lessons on Wood Products

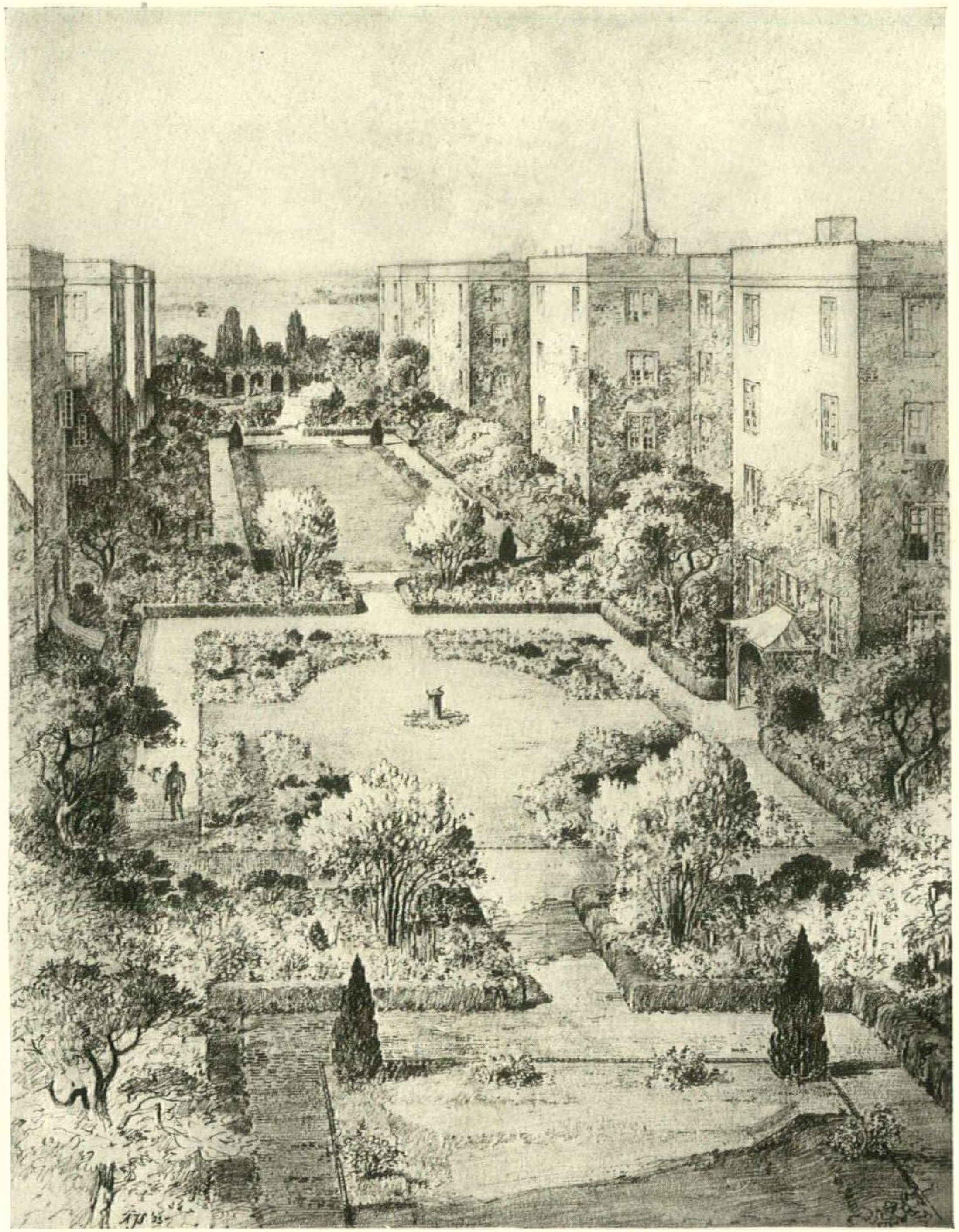
DEMONSTRATION courses in the best and most economical use of the products of our forests are offered by the Forest Products Laboratory, Madison, Wis. The laboratory, primarily an institution for research, has gathered much useful information on the properties of wood and the use of wood products. A large part of the field for the practical application of this knowledge is in the industries, and it is for their representatives that these demonstration courses have been designed.

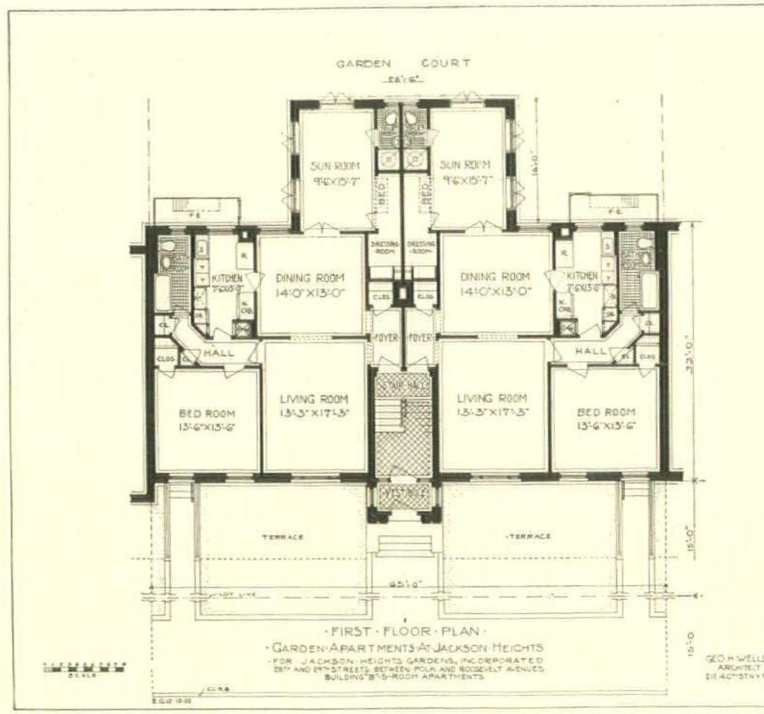
Details of the several courses offered for personal instruction are given in Miscellaneous Circular No. 8, just issued by the United States Department of Agriculture. These courses are given in the kiln-drying of lumber, boxing and crating, gluing of wood, and wood properties and uses. They are arranged to be completed in from one to two weeks and so that a fee of $100 to $150 will be sufficient to cover the cost of the course. The instruction in these subjects aims to give not only basic knowledge but its practical application to every-day problems. That these courses are a feasible means for such practical application is shown by letters from many men who have attended them, and from the companies they represent, telling of the problems solved by the knowledge gained at the laboratory.

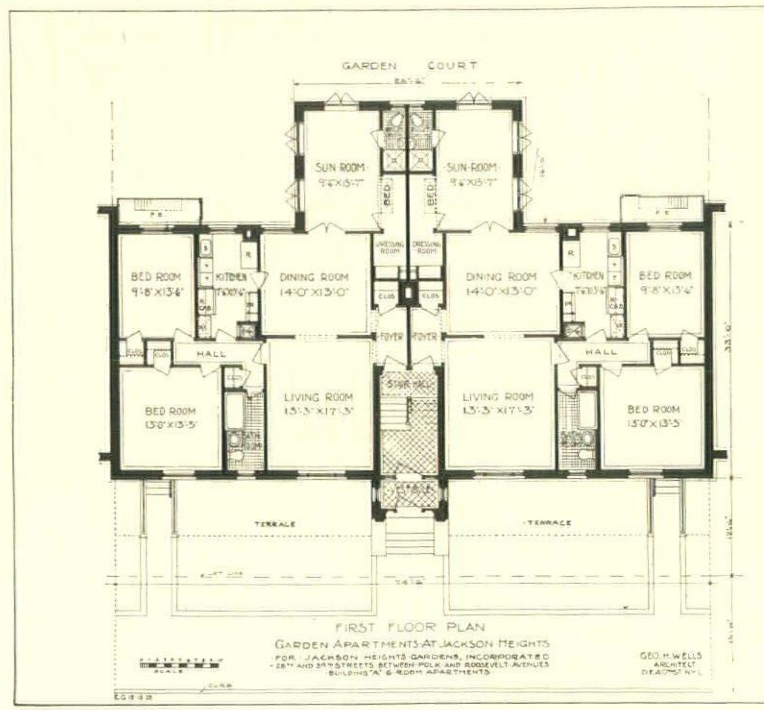
Stress is laid on the practical aspects of the subjects, so that no one need hesitate to enroll because of a lack of technical training. Copies of the circular may be secured from the United States Department of Agriculture, Washington, D. C., as long as the supply lasts.

CAMBRIDGE COURT, JACKSON HEIGHTS, QUEENS, LONG ISLAND.

Geo. H. Wells, Architect.



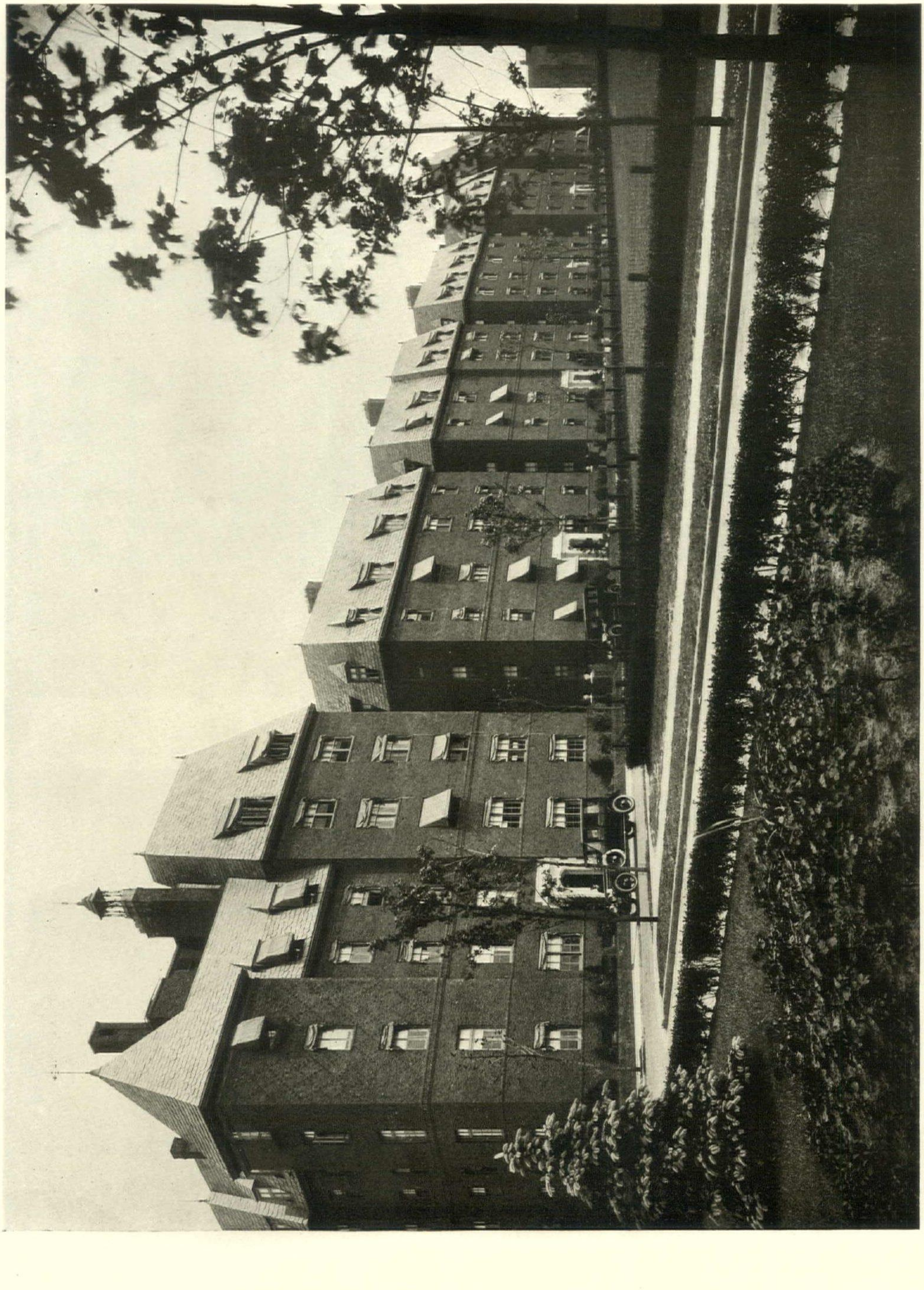




THE GARDEN.

Geo. H. Wells, Architect. Olmstead Bros., Landscape Architects.

CAMBRIDGE COURT, JACKSON HEIGHTS, QUEENS, LONG ISLAND.

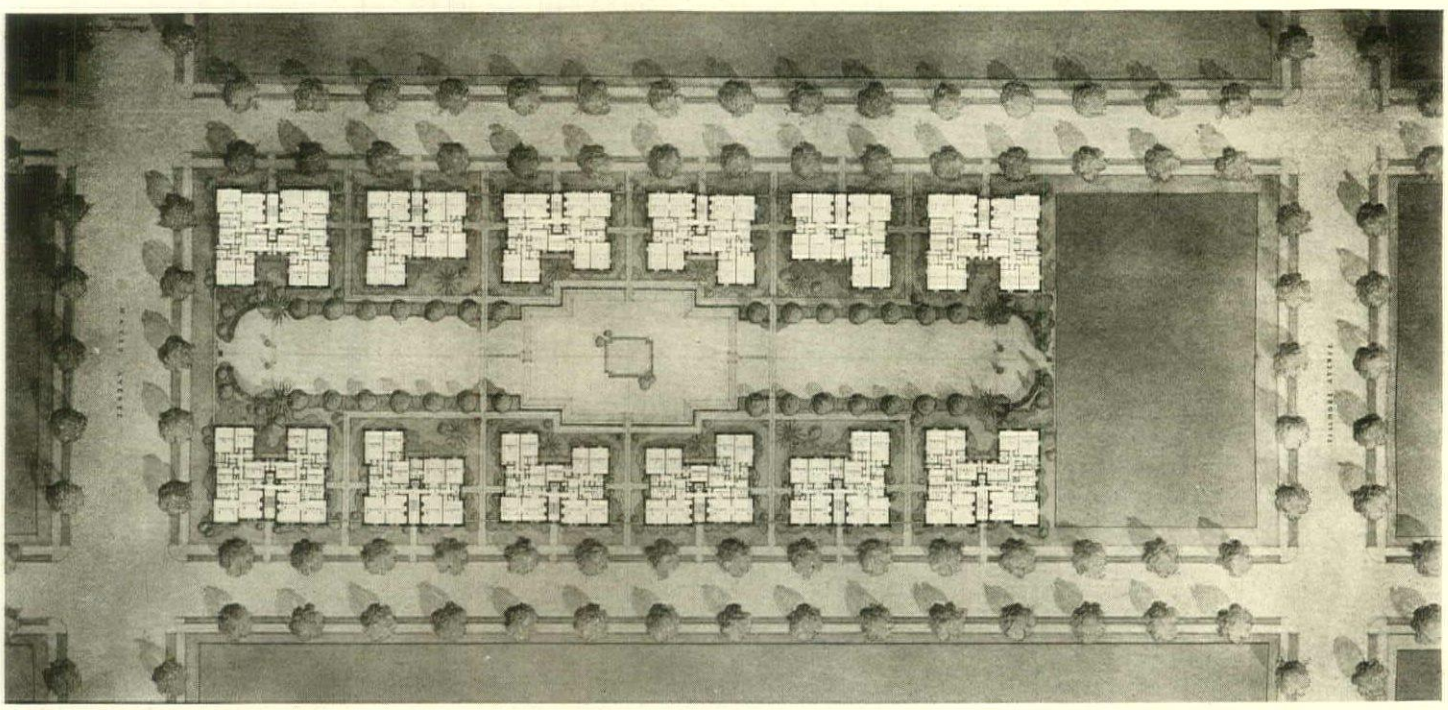


CHATEAU APARTMENTS, JACKSON HEIGHTS, QUEENS, LONG ISLAND.

General view from Hayes Boulevard.

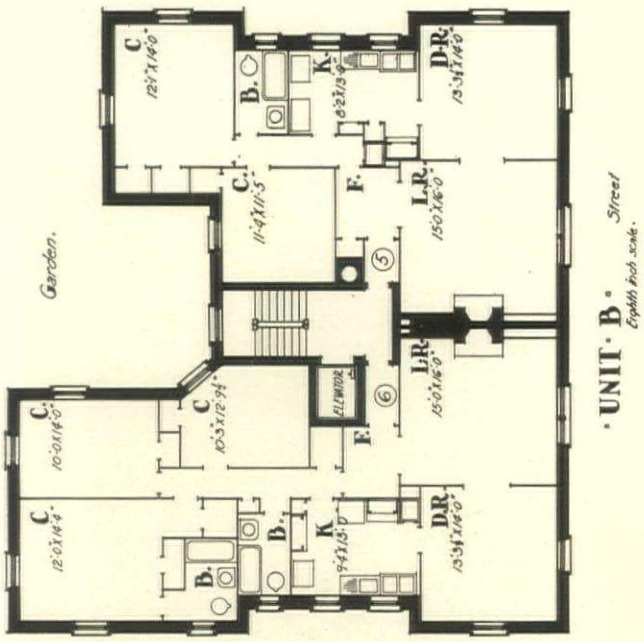
Andrew J. Thomas, Architect.

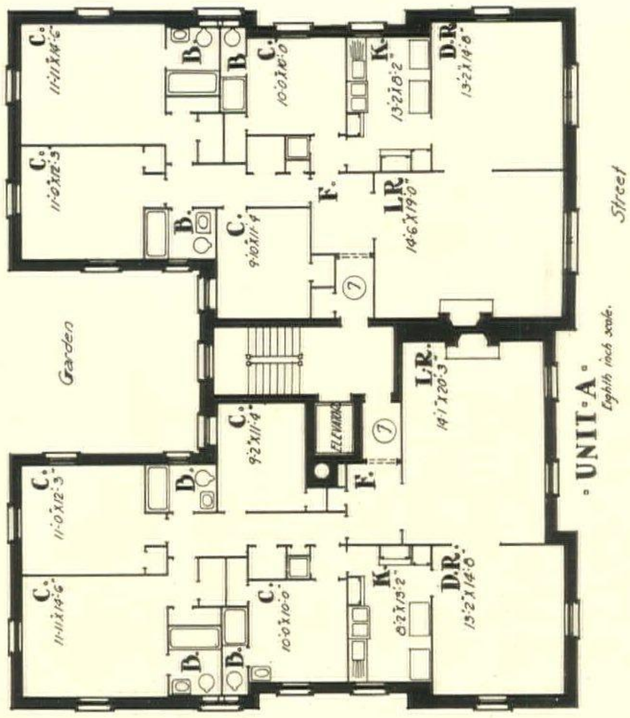
LOOKING NORTH THROUGH GARDEN COURT.



BLOCK PLAN. Andrew J. Thomas, Architect.

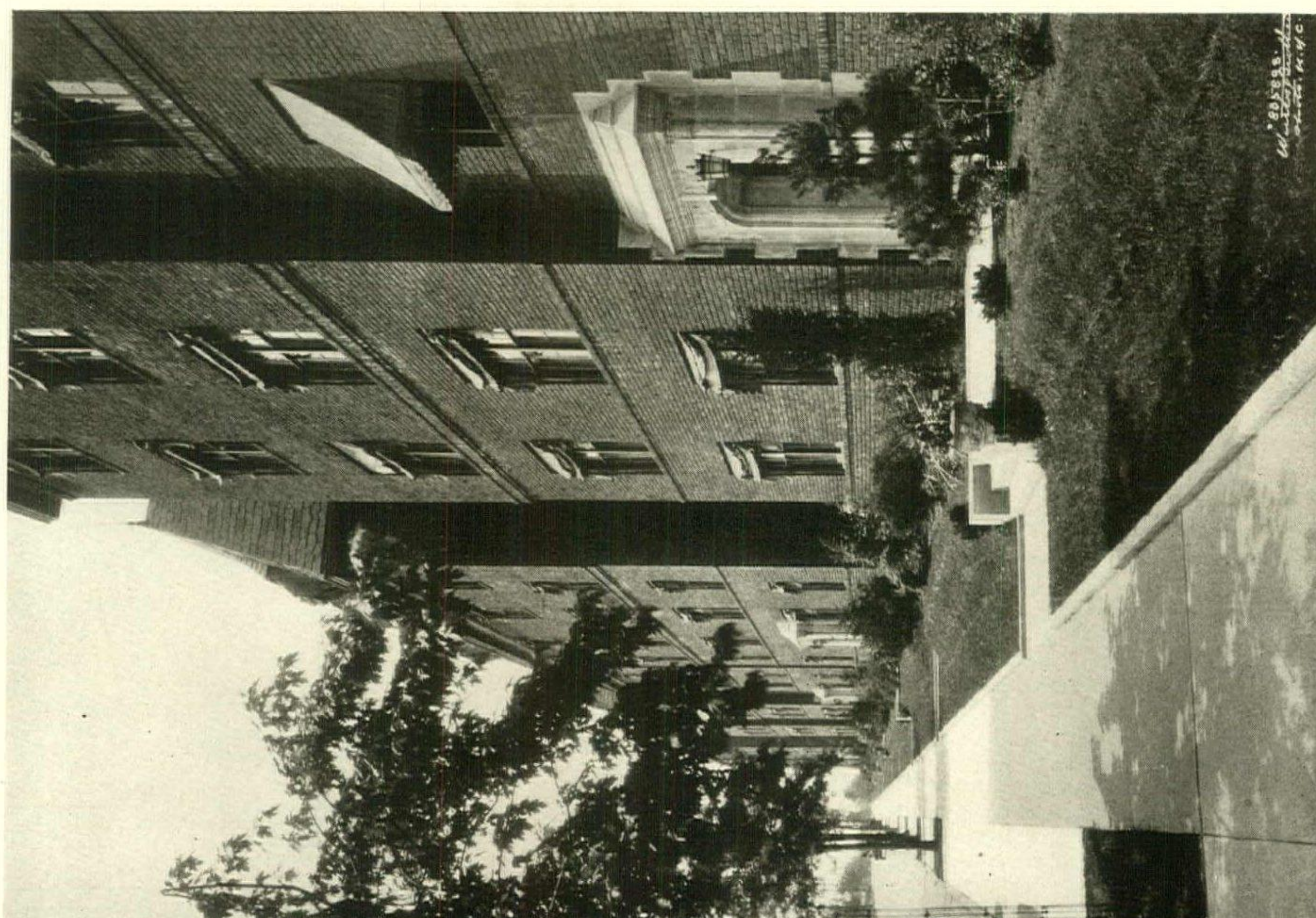
CHATEAU APARTMENTS, JACKSON HEIGHTS, QUEENS, LONG ISLAND.



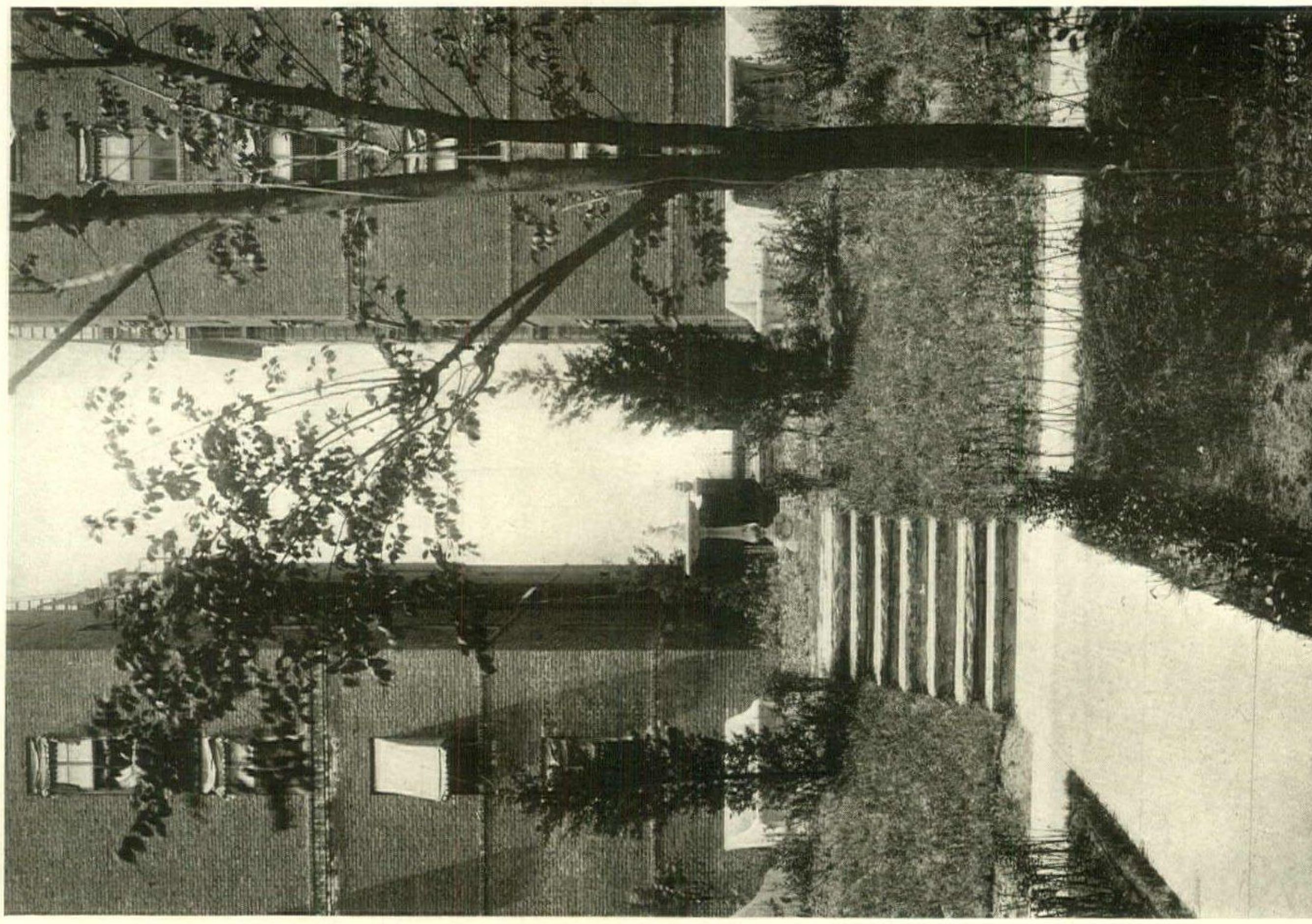


Andrew J. Thomas, Architect.

DETAIL OF ENTRANCE.
CHATEAU APARTMENTS, JACKSON HEIGHTS, QUEENS, LONG ISLAND.



TERRACE AND PLANTING ON SIDE STREET.



GARDEN COURT.

CHATEAU APARTMENTS, JACKSON HEIGHTS, QUEENS, LONG ISLAND.

Andrew J. Thomas, Architect.

Of Questionnaires and Government Architecture

By Louis A. Simon

Washington

OUT of the unrest that a very complicated civilization has thrust into modern life, and out of the probings for a varied assortment of information, questionings pertinent and impertinent, there has emerged among other things the questionnaire. It comes as a product of the mania for measurement that challenges our aims, our efforts, and our enthusiasms, and interprets them in terms of efficiency norms.

That the art of making questionnaires has its roots reaching back to the time of the Inquisition seems likely. So cleverly are the innocent questions advanced, so artfully is the sequence built up, that the unsuspecting victim throws off all constraint, and with rising courage proudly fills in the answers from 1 to 19. But at Number 20 comes the awakening. To answer Number 20 in the light of previous answers may spell self-conviction of anything from petty larceny to murder in the first degree.

Nevertheless, much slipshod thinking and evasion of obvious conclusions may be avoided by this distressing method of focussing attention on things as they are, and he who first suggested that any fool can ask questions stands pilloried as a shallow thinker, without insight into the deeper significance of those things by which men live. His time must have been before the day of the proverb, "A question well put is an answer half made." For the latent power of a question publicly asked is that it becomes a point upon which many minds may focus, and as a method of clarifying what might otherwise remain dark there is much to be said in its favor.

Then, again, the hated questionnaire has a wide-cruising range. It can circle around anything from income tax to Einstein's theory of relativity, and remain unabashed; and a properly made questionnaire has these qualities, too; it pursues its way straight to the mark, without let or hindrance. It is free from fearsomeness of results. And why should it not be, when the author of the questionnaire complacently leaves to others the setting down of the answers?

It would seem to be a far cry from questionnaires to government architecture. It *is* a far cry from the questionnaire's directness of purpose to the indirectness and confusion of thought manifested in the past in those endless and sometimes acrimonious discussions which recur again and again anent the policies and practice of the United States Government in the matter of its public works.

Some Questions Regarding the Matter of Public Works

Question 1: Can it be accepted as a fact that the expression of national ideals reacts on the individuals of a nation and fosters ever higher ideals; strengthens, unifies, and gives direction to the efforts of that nation? If so, is such a process one of the great constructive forces which make for national development?

Question 2: Is it a fact that the great governments of the past, those that generated influences which have vibrated down the centuries, used their architecture as one of the principal means of expression of their national life?

Question 3: Is there any reason to suppose that the United States of America moves in its course in contradiction to all historical precedent? If not, is the domain of America's public works a subject which concerns only a class of effete and visionary intellectuals, or does it reach down with deeper meaning into the very heart of what this nation aims to achieve?

Question 4: Does the present practice of the United States Government in the matter of its public works suggest the existence of a well-matured programme to extend over a term of years, and does that practice inspire in the minds of architects a feeling of confidence that the legislative bodies charged with the responsibility of authorizing public works are in complete possession of all the facts necessary to clear vision and a just appraisement of values in such matters? *Is there evidence of a plan that provides for local interests in the terms of national aims?*

Question 5: Since the construction of federal buildings must continue in order to meet economic necessities, is a more accurately defined and comprehensive programme of future public works a matter which statesmen committed to the task of insuring this nation's future may take up confidently as a public benefit?

Question 6: Should the agency delegated to evolve such a programme be left to fortuitous selection, or should the architect as master workman be called in to assist in making that programme?

Question 7: Is it probable that a true conception of the larger possibilities of architectural service becomes submerged when such service operates through the alien atmosphere of executive departments organized for quite other purposes?

Question 8: Is it sufficiently understood outside of the ranks of the architectural profession that an architect's thought is not centred on the idea of supplying casual embellishments of a more or less useless character to buildings erected to serve a utilitarian purpose, but rather that the architect's first act is to study and analyze the utilitarian elements of each problem in the light of cold reason, and to be guided by those elements in applying his creative faculties to the design of a practical, useful building in a form fitting its purpose?

Question 9: Is it your opinion that any benefit would inure to the government if some channel were established through which a council chosen from the architectural profession might act in an advisory capacity in the formation of the government's policies for public works?

Question 10: Would such a procedure tend to promote a more comprehending view and a more accurate appraisement of the true position of public works in a programme of national development?

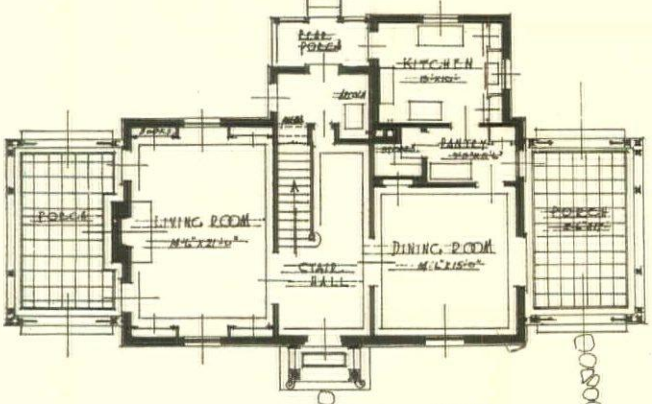
Would it tend to stabilize government expenditures for construction work?

Would it tend to convince the public that an architect's training does not sacrifice his appreciation for economic considerations, but leads him to weigh the cost of a utilitarian building against its earning power?

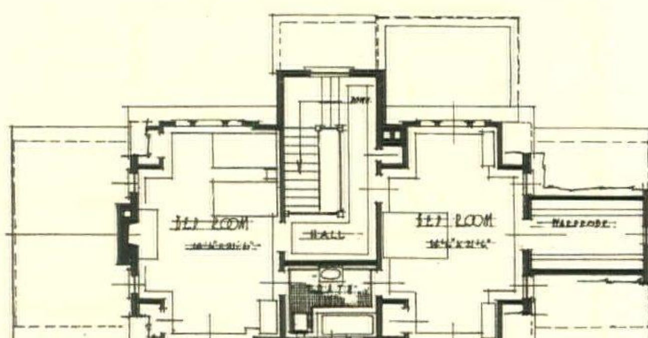
Question 11: Would the procedure mentioned in Question 9 arouse suspicion that the architectural profession is seeking selfish ends in the guise of altruistic motives? If so, how can such a suspicion be dispelled?

Question 12, *Question* 13, *Question* 14, *Question* 15, *Question* 16, *Question* 17, *Question* 18, *Question* 19 elided by censor.

Question 20: What motives would lead any one to give to the above questions answers differing from your own?



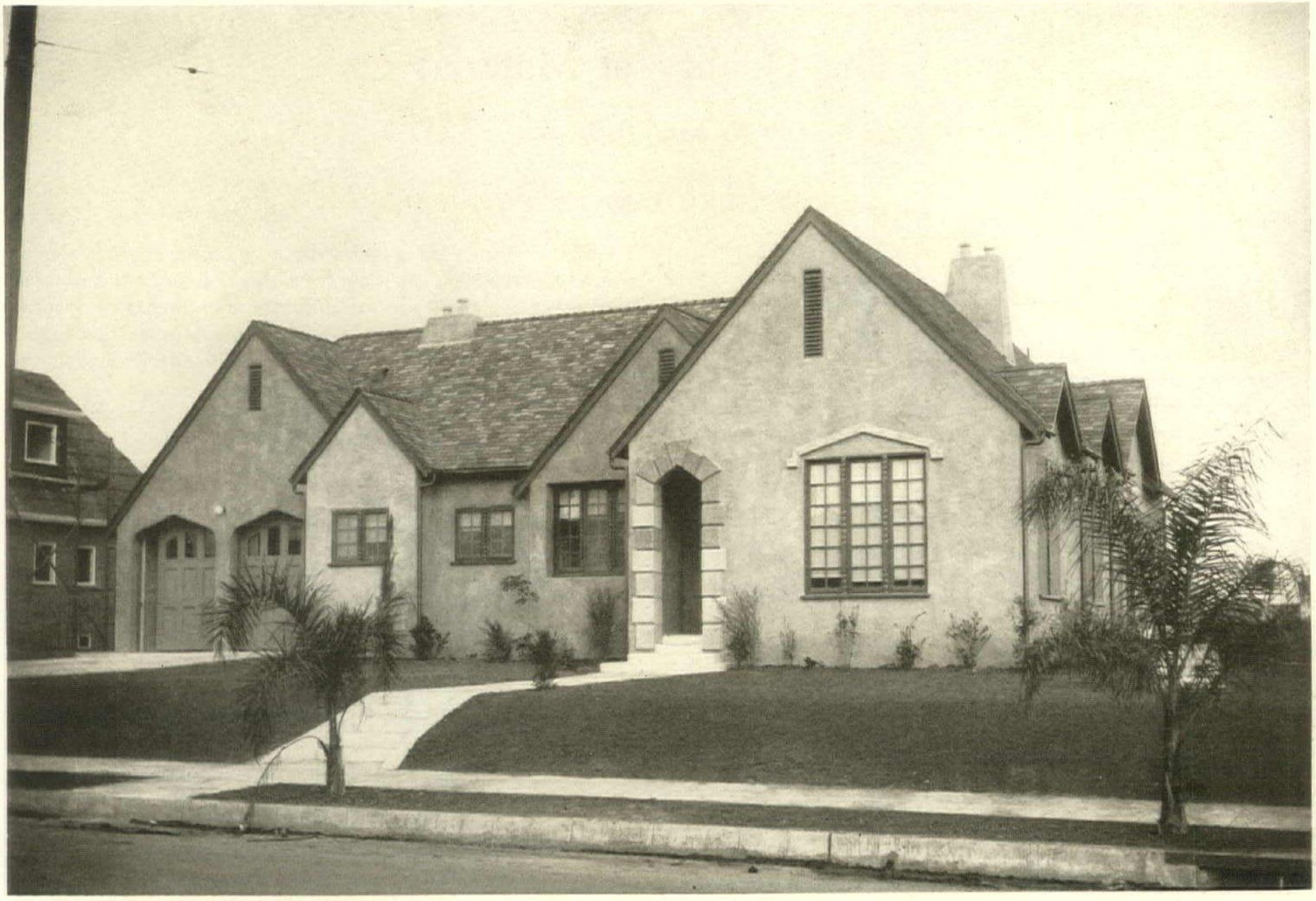
FIRST · FLOOR · PLAN

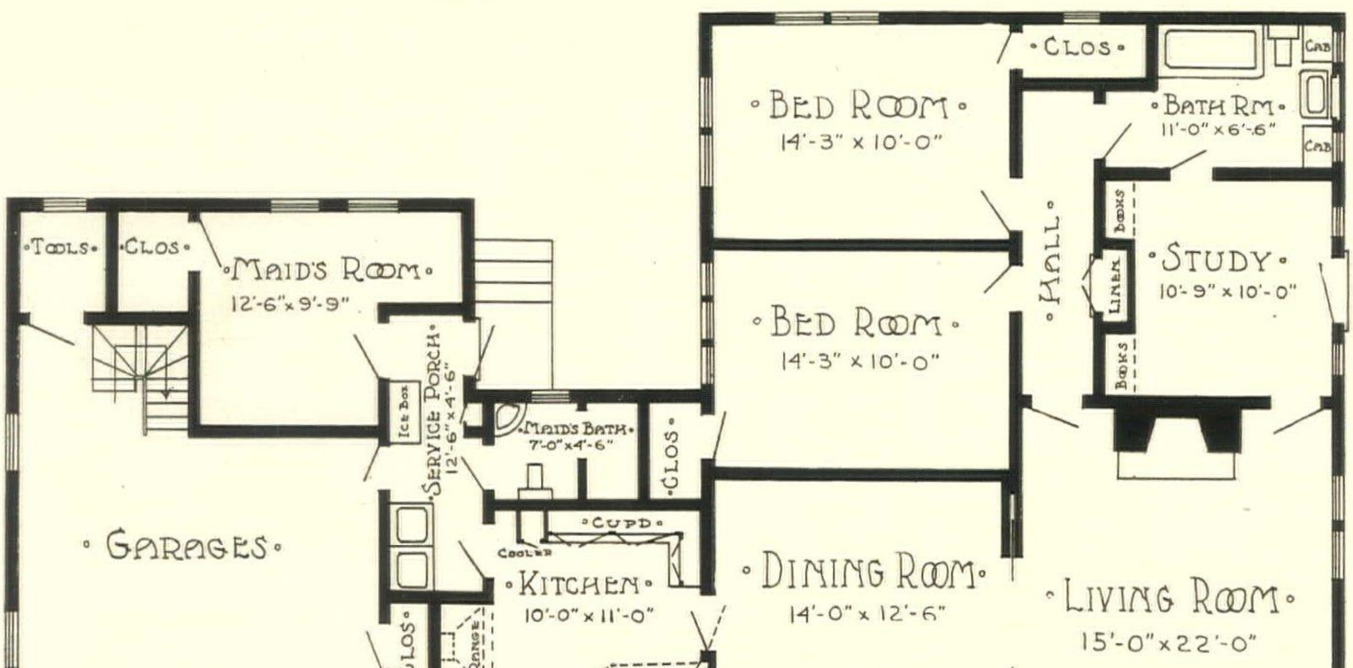


SECOND · FLOOR · PLAN

HOUSE, K. W. DUNWODY, RIVOLI, GA.

Dunwody & Oliphant, Architects.





HOUSE, LOS ANGELES, CALIF. L. Milton Wolf, Architect.

The Quality of Material

By Richard P. Wallis

THIRD ARTICLE

H. Concrete Construction

MOST city building codes require floor tests on completed reinforced concrete structures before they will permit them to be occupied. These tests are of two kinds, a deflection test and a deformation test.

The materials used in loading that portion of the building to be tested may be any one or a combination of the following:

1. Brick.
2. Cement.
3. Loose sand in small boxes.
4. Sand in sacks.
5. Pig iron.

The selection of the loading materials depends considerably upon their availability at the time of the test.

Each of these materials has certain inherent characteristics that affect its use in this connection. Brick spalls, littering the floor with sharp fragments, and is in small units, involving a considerable handling charge. Cement sifts through the sacks, which often become untied through handling. Sand in bulk is very satisfactory. Pig iron is excellent where available. Other building material may be pressed into use, such as partition tile, iron rail, or whatever else is present in sufficient quantity.

In placing the load upon the slab care should be taken to avoid arch action occurring within the material, and thus insure a nearly uniform loading. For this reason, and to facilitate handling the loading material and the taking of observations, aisles should be left in both directions through the centre of the slab. The effect of such a division of loading on the results of the test are negligible.

The selection of the particular section of the structure for testing depends upon the following considerations: First, the area selected should when loaded produce effects on beams, girders, slabs, and columns as severe as will be found anywhere in the structure; second, the area should be free from irregularities of construction; third, the area should be as free as possible from disturbance by workmen, and, fourth, it should be as accessible as possible to the source of the loading material.

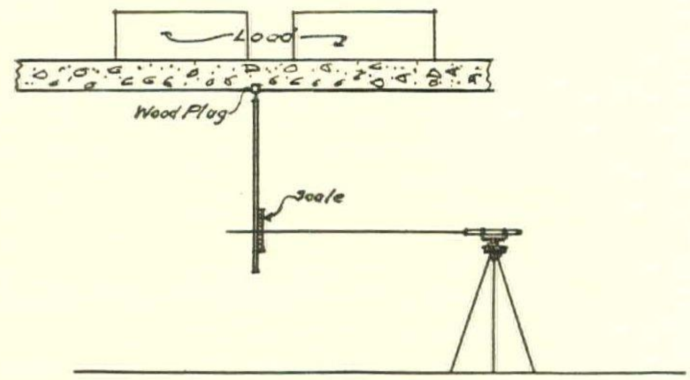
I. *Deflection Test.*—The requirements of most city building codes call for a test loading of twice the designed live load—this load to remain in place for not less than twenty-four hours without undue deformation of the concrete structure. The Minneapolis building code permits a total deflection of not more than 1/800 of the panel length of the slab and 1/1000 of the span of the beam and girder under such a condition of loading.

Test loads greater than twice the designed live loads should not be applied, as such excess is likely to permanently damage the concrete without serving any useful purpose.

There are several methods of making the necessary observations:

(*a*) A wood plug is inserted in the under side of the slab or beam at the point where the deflection is sought. To this is suspended a rod with a common engineers' scale securely attached. An engineers' level is set up and readings taken on the scale for different increments of loading. The level should be kept in perfect adjustment throughout the operation, and should be frequently checked with two or more permanent bench marks.

(*b*) A direct method of recording this deflection involves the use of a combination of the Ames gauge-head and screw-micrometer connected in tandem. The purpose of the screw-



micrometer is to record large variations, and the Ames gauge-head small deflections. The instrument should be secured so as to permit of motion only in the gauge-head. The readings are taken on the gauge-head until they run off the scale. The micrometer is then adjusted, bringing the gauge-head reading to zero. In this way there may be any number of readings on the gauge-scale. The separate readings on both gauge and micrometer are added to give the total deflection. This method was devised by the Illinois Engineering Experimental Station, and is described at length in Bulletin No. 64 of the station.

II. *Deformation.*—The deflection test determines whether or not the structure is strong enough to safely carry the live loads for which it was designed, but does not tell anything about the actual stresses existing in the steel and concrete. Many building codes require a check on the actual stresses developed in the component parts of the structure. This information is also essential in investigating new theories of design and construction.

The magnitude of these stresses is determined by means of a device known as an "extensometer." This consists of a frame with two pointers, one fixed and the other hinged, so that the distance between the pointers may be either increased or decreased. These pointers are approximately from 10 to 12 inches apart, varying for different makes of instruments. There is a multiplying device that magnifies any lateral movements of the hinged pointer. This magnified motion is in turn conveyed to an Ames gauge-head. The instrument is sensitive to a movement of 0.00002 inch.

At zero load the two pointers are inserted in previously prepared holes, called gauge-holes, at a distance apart exactly equal to the spacing of the pointers, called the gauge-line distance. As the load is increased and the deformation takes place, this gauge-line is either elongated or shortened in length, depending upon whether the strain is tension or compression. At intervals of loading the pointers are again inserted in the same holes as before, and the change in the length of the gauge-line read on the gauge-head scale.

Because of the small changes in length recorded it is essential to eliminate any errors due to expansion or contraction in the extensometer itself. This is guarded against by checking frequently during the progress of the test with a standard gauge-line placed on some metal of low coefficient of expansion, such as invar steel. This temperature correction is added or subtracted from the observed readings.

Knowing the modulus of elasticity of the material under test and having determined the amount of deformation or strain with the extensometer, the corresponding stress is arrived at from the relationship

$$E = \frac{\text{unit stress}}{\text{unit strain}}$$

This method is described at length in Bulletin No. 64 of the University of Illinois Experimental Engineering Station.

III. *Settlement Cracks.*—When settlement cracks appear in a masonry structure, the supervisor is interested in determining whether or not the motion causing such displacement is continuing, or whether it has ceased and the component parts of the structure have reached a new condition of stable equilibrium.

The simplest method of checking any supposed motion of the parts relative to each other is that of gluing a strip of paper one or two inches in width over the crack, leaving a sufficient area on either side to insure a firm bond to the masonry.

These strips should be protected as far as possible against the action of the elements and from malicious tampering by unauthorized parties. The date should in all cases be noted on the sticker.

Any motion on either portion of the wall tending to cause a displacement of the masonry will cause the paper strip to tear, thus indicating that such displacement has taken place.

This test is qualitative only and does not serve to indicate how great the motion is or in what direction. If successive tests indicate a continuation of the displacement, it would be advisable to make a thorough investigation of the factors causing such settlement.

I. Lime

The use of hydrated lime in building operations is increasing rapidly, owing to the many advantages secured in using a lime slaked in large quantities and under expert attention. It is also packed in sacks easily handled, requires no preliminary slaking, is not spoiled by air slaking, and does not heat while wet.

I. *Laboratory Tests.*—The hydrated lime should conform to the specifications of the American Society for Testing Materials. These specifications are numbered *C* 6–15 and *C* 6–19*T* for hydrated lime, and *C* 5–15 and *C* 25–19*T* for quicklime, etc.

II. *Field Tests:* (*a*) *Air-Slaked Hydrated Lime.*—To determine if a sample of hydrated lime has become air-slaked, mix a sample with enough water to form a cream and add a small amount of dilute hydrocholric acid. Hydrated lime will dissolve quietly, but the calcium carbonate contained in the air-slaked lime will show an effervescence as the carbon dioxide is driven off.

(*b*) *Air-Slaked Quicklime.*—Quicklime sometimes comes in finely ground form. To determine whether or not this condition is due to its having been air-slaked, take a sample of the fine material and mix it with about its own weight of water. If it slakes and generates a considerable amount of heat it is pulverized quicklime and is not badly air-slaked.

III. *Inspection:* (*a*) *Lump Lime.*—If freshly burned lump lime is specified it will be necessary to check the lime on the job to see that it is as specified. A good lime will when slaking fall to pieces, leaving no hard core. The lime should be in hard lumps and not in powdered form when delivered to the job.

(*b*) *Popping.*—To test a lime for the presence of material that will cause popping, spread the paste in a thin layer ($\frac{1}{8}$ inch) on a glass plate. The particles that are apt to cause trouble are white to reflected light but opaque to transmitted light.

J. Brick

I. *Laboratory Tests:* (*a*) *Strength.*—The compressive strength of good-quality brick should be not less than 2,500 pounds per square inch for building brick and 4,000 pounds per square inch for piers and heavy work. The modulus of rupture should be not less than 750 pounds per square inch.

(*b*) *Specific Gravity.*—The sample should be dried for 48 hours at a temperature of from 230° to 250° F. All loose corners and grains should be removed and the specimen carefully weighed. It should then be placed in water, where all air bubbles should be removed, either by placing it under the receiver of an air-pump or by leaving it immersed for twenty-four hours and carefully removing all surface air bubbles by means of a brush or feather, and weighed.

The specimen should then be taken from the water and again weighed, after all surplus moisture has been removed either with a cloth or with blotting-paper.

The specific gravity is obtained by dividing the weight of the dry sample by the weight of the saturated sample in air less its weight in the water.

(*c*) *Standards.*—For more detailed requirements refer to standard specification No. *C* 21–20 of the American Society for Testing Materials.

II. *Field Tests:* (*a*) *Hardness.*—Strike the brick with a hammer or other brick and note the resulting sound. A good, clear, ringing sound indicates a brick that is well burned, hard and free from cracks. A dull sound indicates a soft, underburned brick that should not be used in locations requiring much strength.

(*b*) *Absorption.*—A good brick should not absorb more than 10 per cent of its weight of water. A soft, weak brick will absorb from 25 to 35 per cent, and should not be used, owing to its tendency to efflorescence.

(*c*) *Efflorescence.*—If efflorescence is due to the brick it may usually be traced to its source by placing a brick on edge in a pan containing about an inch of pure water, either distilled or rain-water. As the brick absorbs the water it will develop the customary white discoloration on the top surfaces after several days if it contains the soluble salts which give rise to this difficulty. Very hard-burned brick will not discolor under any circumstances.

(*d*) *Absorption.*—The water absorption may be used as a rough criterion of the quality of the brick. The test is made in a simple way by drying a whole or half brick in an oven, weighing it on a scale, boiling it in water for five hours, allowing it to remain in the water until the latter has cooled to the temperature of the air, and then weighing it again.

The absorption of water is then easily calculated by subtracting the weight of the dry brick from the net weight, dividing this difference by the dry weight, and multiplying the result by 100. This will give the percentage of water absorption.

(*e*) *Weather Resistance* (*Face Brick*).—If doubt exists as to whether a brick is really weather resistant, a simple but drastic test can be made to determine its durability.

This consists in first preparing a concentrated solution of Glauber's salt (sodium sulphate), which may be purchased at any drug-store. Such a solution is readily prepared by filling a pail with water at room temperature, and placing in it a sufficient amount of the salt, so that after standing for several hours, with occasional vigorous stirrings, a certain amount still remains undissolved.

Several half-bricks are now dried by heating in an oven at a temperature of over 212° F. for several hours, and then immersed in the solution for twelve hours or longer. They are then removed and again dried in the oven, the temperature of which is brought up to about that required for baking bread. This drying requires several hours.

If the bricks are still uninjured, they are put back in the Glauber's salt solution and allowed to remain there again for twelve hours or longer. After this they are dried out once more in the oven.

If necessary this treatment should be repeated until it has been done five times. If the brick is still intact, showing no cracks or crumbling, it may with certainty be considered of good durability and frost resistance.

A brick of weak structure will often go to pieces completely or break down to a crumbly mass. This test is very severe, in fact excessively so, but it errs on the safe side as far as the building is concerned. It is apt to do injustice to some satisfactory but porous brick. This test should not be employed for common or backing-up brick.

The action of the Glauber's salt is similar to that of freezing, as the salt is absorbed with the liquid and then crystallized upon drying, thus exerting a considerable force tending to disrupt the brick. Bricks which are underburned or inherently weak will break down under this action.

III. *Inspection.*—The color of bricks may vary from pale to dark red and black, or from a cream to buff and brown. The kind of clay used naturally governs the color of the brick, though even with the same clay different colors may be produced.

Thus most red-burning materials will give a dark red when well burned and black when burned very hard. Underburned brick will usually show a pink or salmon color. As the strength of the brick is determined by the degree to which it is burned, the color serves as a very good indication of the strength.

K. Sand-Lime Brick

I. *Field Test.*—If a brick is stood in a vessel of still water for an hour and the moisture line rises more than ½ inch it is not a first-class brick; it if rises more than 2 inches its value for facing is questionable, and if it rises more than 3 inches it should not be used in any outside work of importance.

II. *Inspection.*—If the brick is made of reasonably clean sand and pure and finely divided lime, is sound and gives a good metallic ring when struck it will withstand exposure to the weather.

L. Hollow Terra-Cotta

Hollow terra cotta tile makes excellent backing for face brick, as well as interior partitions, owing to its high insulating value and its comparative light weight and high strength.

Manufacturers grade their product into five grades:

Very hard burned or vitreous.
Standard hard burned.
Ordinary or medium burned.
Soft tile.
Salt-glazed tile.

Only the first two grades should be used in a location where they will be required to act in a load-bearing capacity.

I. *Laboratory Tests.*—Hollow tile should be subjected to crushing tests. The first two grades should develop a strength of 1,200 pounds per square inch and 700 pounds per square inch respectively.

II. *Field Tests:* (*a*) *Absorption.*—The first three grades of tile are classified according to their absorption of water. The first grade absorbs less than 8 per cent, the second not over 12 per cent, and over 12 per cent for the third.

(*b*) *Hardness.*—Strike the tile with a trowel or hammer and note the sound. A clear, ringing sound indicates a hard, well-burned tile.

III. *Inspection.*—No badly split, cracked, warped, or underburned tile should be accepted.

No hollow tile should contain any void whose cross-section, measured at right angles to the web, is more than 4 inches, and the vertical webs and shells of all tiles should have a thickness of not less than 15 per cent of the measurement across the void enclosed by such shells or webs.

M. Architectural Terra-Cotta

This material is used almost entirely for decorative purposes, and as such considerable care and attention should be devoted to an inspection of the units before they become incorporated in the finished structure.

I. *Laboratory Tests.*—One-inch cubes may be prepared from material delivered to the job and subjected to crushing. These cubes must show a minimum compressive strength of 3,000 pounds.

II. *Field Tests:* (*a*) *Hardness.*—Terra-cotta that does not give a sharp metallic bell-like ring when struck with a hammer or trowel should be rejected.

(*b*) *Absorption.*—Terra-cotta should absorb not more than 12 per cent of its weight of water.

(*c*) *Absorption.*—Terra-cotta with vitreous surface and matt-glazed should be so non-absorbent as to permit water to stand on its surface without being quickly absorbed.

(*d*) *Absorption.*—Full-glazed terra-cotta tile should be so non-absorbent that ink will not penetrate its surface and may be entirely washed off with water.

(*e*) *Acid-Resisting.*—Dilute muriatic acid applied on the surface of the enamel should cause no destructive action such as to indicate a dissolution of the surface.

(*f*) *Weathering.*—A sample of terra-cotta, when tested with the Glauber's salt solution, as described in paragraph *J*–II–*e*, should stand up with no sign of crumbling.

III. *Inspection.*—All pieces of terra-cotta that are not straight and true, with wavy lines, warped, over or underburned, discolored, badly spalled or cracked, should be promptly rejected.

The terra-cotta should resist scratching with the point of a knife-blade.

(*To be continued*)

Drafting-Room Mathematics

By DeWitt Clinton Pond, M.A.

ELEVENTH ARTICLE

IN the last article, to which the reader should refer, certain parts of the Building Zone Resolution adopted by the Board of Estimate and Apportionment of New York on July 25, 1916, were quoted, and the application of some of these provisions was investigated with regard to a particular problem illustrated in Figs. 42 and 43 of that article. It was shown that in a "one and one-quarter times district" the street wall of a building located on the building line could be carried to a height of 75 feet on a 60-foot street, and 100 feet on an 80-foot street. Above such heights it was necessary to set the street walls back so that for each foot the walls were set back $2\frac{1}{2}$ feet could be added to the height of the building. The various set-backs were calculated, as it was desired to carry the building to a height of eight stories, but no advantage was taken of the exceptions referred to in the rules, and quoted in the last article, owing to the limited space given to each article. However, such advantage should be taken with regard to the street walls on A Street. On this street wall for a distance of 150 feet from C Avenue the set-back distances can be the same as required for C Avenue, as has been stated in the quotation from paragraph *b*, section 9, of Article III.

The architects were not satisfied with this distance, however, and wanted to add to it, so they took advantage of the exception referred to in paragraph *c* of that section.

It will be seen that the first set-back on C Avenue occurs above the seventh floor, and that the first set-back on A Street and B Avenue occurs above the sixth floor. The architects desired to have more of the street wall on A Street carried up to the seventh floor than was allowed in 150 feet. They therefore took advantage of the "sixty per cent exception." This allows the architect to carry up a part of a wall which can be included within a triangle the altitude of which is 60 feet and the base equal in length to 60 per cent of the length of wall under consideration. On A Street the wall is divided into two sections. The first is that which is included within the 150 feet from the corner of A Street and C Avenue, and the second is the remainder, which measures 88 feet 4 inches.

The first section can be carried up to the seventh floor in accordance with exception in paragraph *b*, but only that part of the second section which is included within a triangle with a base equivalent to 60 per cent of 88 feet 4 inches and a height of 60 feet can be carried to this height. The method of determining this area of wall is shown in Fig. 44. The triangle has a base measuring 53 feet. This length was found by taking 60 per cent of 88 feet 4 inches.

$$\begin{aligned} \log 88 \text{ feet } 4 \text{ inches} &= 1.94612 \\ \log .60 &= \underline{9.77815 - 10} \\ 1.72427 &= \log 53 \text{ feet} \end{aligned}$$

It can be seen that logarithms are very useful in finding percentages of distances measured in feet and inches. There is no need to reduce the dimensions to decimal equivalents.

In order to find the additional length of wall on A Street which can be carried to the seventh-floor level, it will be necessary to find the length of a line parallel to the base of the triangle and at a distance of 15.88 feet above it. This last dimension is obtained by subtracting the elevation of the height limit, or 195 feet, from the elevation of the tops of beams at the seventh floor, or 210.88 feet. As stated in the last article, and as shown in Figs. 43 and 44, the tops of beams are 4 inches below the finished floor. In Fig. 44 the triangle is shown, and the line representing the elevation of the beam tops is indicated as AB. The perpendicular distance from AB to the apex of the triangle is found by subtracting 15.88 from 60.

$$60 - 15.88 = 44.12 \text{ feet.}$$

In order to find the length of AB it is necessary to use proportions. AB is to the base of the triangle as 44.12 is to 60. This proportion is expressed below:

$$AB : 53 = 44.12 : 60$$
$$AB \times 60 = 53 \times 44.12$$

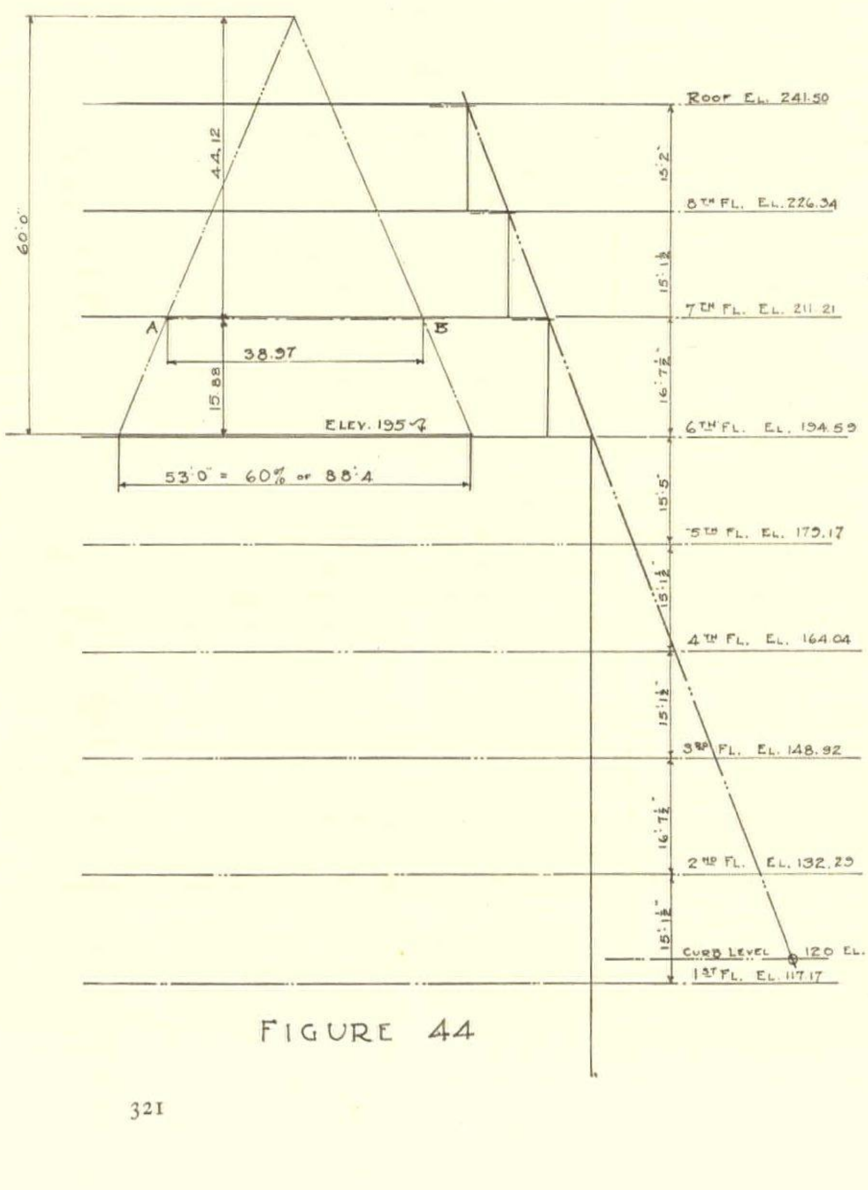


FIGURE 44

In order to find the length of *A B* it will be necessary to multiply 53 by 44.12, and to divide by 60. It will be found that the length of *A B* is 38.97 feet. If this is added to 150 feet, the total length of wall along A Street which can be carried to the seventh-floor level will be found to be 188.97 feet. Because of the architectural treatment of the façade, the actual length of the wall on A Street was made 188 feet 1 inch.

It can be seen that the calculations involved in the problem are not difficult, the only difficulty which can be found being in the application of the rules contained in the resolution. It might not be an easy matter to understand how the altitude of 60 feet of the triangle is obtained. It will be recalled that in the previous article, paragraph *c* of section 9, Article III, was quoted. This stated that such "frontage length of such structure at any given level shall be decreased by an amount equal to one per cent of such street frontage . . . for every foot such level is above such height limit."

Perhaps the most simple manner of explaining this exception is to give an actual example. Suppose there is a 100-foot street frontage of a building under consideration. Sixty per cent of this can be extended above the height limit, provided that the frontage of the part carried above this limit is reduced 1 per cent of the distance along the street—in this case 100 feet. One per cent of this length is 1 foot, and so for each foot that it is desired to extend the street wall above the height limit it will be necessary to reduce the length 1 foot. At the height limit the length of the wall which can be extended is 60 feet, or 60 per cent. At a height of 10 feet above the height limit this length is reduced by 10 feet, and becomes 50 feet. At a height of 20 feet above the height limit this length becomes 40 feet, and so on until at a height of 60 feet the length is reduced to zero. Accordingly, on a 100-foot street frontage the base of the triangle is 60 feet, and the height 60 feet.

If a 50-foot street frontage is considered, then the base of the triangle will be 30 feet. One per cent of the street frontage will be one half of a foot, so that at a height of 10 feet above the height limit the allowable length of the bulkhead frontage will be 25 feet. At a height of 30 feet above the height limit the length will be 15 feet, and in this manner the distance becomes zero at a height of 60 feet.

For a frontage of 125 feet the base of the triangle will be 75 feet, and the amount which will be taken off this length for each foot beyond the height limit which the bulkhead is carried is one foot and one-quarter. For a height of 10 feet above the height limit, 12.5 feet will be taken from the 75-foot length, leaving 62.5 feet. For a height of 30 feet above the height limit, 37.5 feet will be deducted from the length, leaving 37.5 feet.

In the first case of a 100-foot frontage, the base of the triangle was 60 feet, and the altitude was 60 feet. In the second case the frontage was 50 feet, the base of the triangle was 30 feet, and its altitude was 60 feet. In the third problem the frontage was 125 feet, the base of the triangle was 75 feet, and the altitude was 60 feet. From these three problems it can be seen that the base of the triangle varies with the street frontage, but that the height remains the same. At first it is not always apparent that this is the case, but it is plain that 1 per cent of the street frontage is always $\frac{1}{60}$ of the bulkhead length at the height limit, and if the bulkhead is made 30 feet high, one-half of its length would be lost.

It might be well to note that a bulkhead which could be erected within any of the triangles just referred to can be placed at any point on the façade, and in the case of the problems in these articles it was desirable to add the part which could be carried up in accordance with this exception to the 150-foot length allowed because the building was a corner building. In some cases it is desirable to have two bulkheads, or donners, instead of one. If this is desirable,

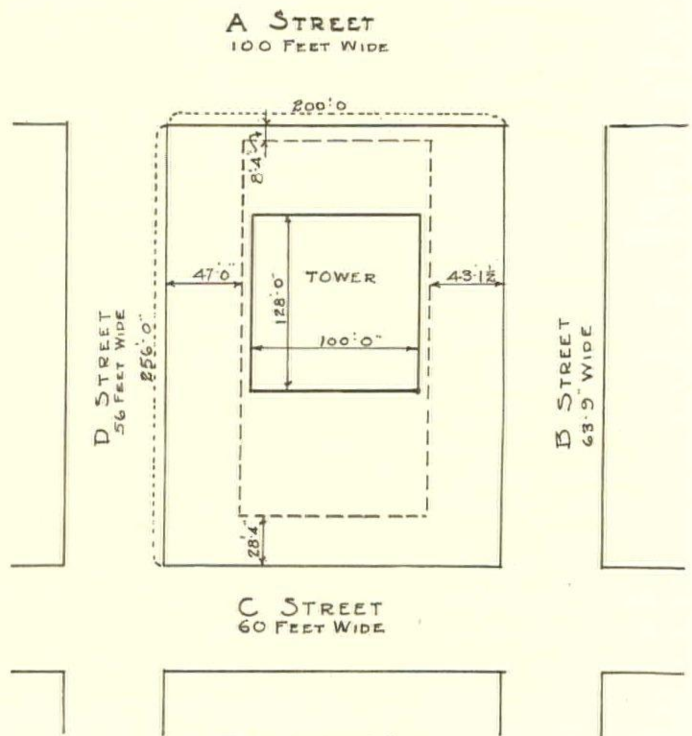


FIGURE 45

then the total length of the two donners will have to equal the length of one designed on the basis given above.

It can be seen that the mathematical calculations made in connection with the exceptions given in paragraphs *b* and *c* in section 9 of Article III are very simple. With regard to the problem given in the last article, only the exceptions granted in these two paragraphs were referred to. There is another exception, however, which, if taken advantage of, might cause the draftsman to resort to mathematical computations in order to find out the dimensions of a tower which he may have reason to erect on his building.

The exception which he will make use of is that one given in paragraph *d*. In this paragraph it is stated that if "the area of the building is reduced so that above a given level it covers in the aggregate not more than 25 per cent of the area of the lot, the building above such level shall be excepted from the foregoing provisions of this article. Such portion of the building may be erected to any height, provided that the distance which it sets back from the street line on which it faces, plus one-half the width of the street, equals at least 75 feet. But for each 1 per cent of the width of the lot on the street line that such street wall is less in length than such width of the lot, such wall may be erected 4 inches nearer to the street line."

The first part of the paragraph quoted above can be applied to the following problem. Suppose the architect is called upon to design a building covering an entire city block. The block measures 200 feet wide by 256 feet long, and is in a two-times district. The plan of the block is shown in Fig. 45, and the widths of the streets are shown to be 100 feet, 63 feet 9 inches, 60 feet, and 56 feet wide. One of the interesting features of a plan of this type is that the set-backs allowed for the 56-foot street—D Street—need never be used, as it is possible to measure back 150 feet from A Street, a 100-foot thoroughfare, and 150 feet from C Street, which is 60 feet wide, and the set-backs required for these two streets will govern the position of the walls on D Street. The two 150-foot lengths will actually overlap.

The area of ground covered by the plot is obtained by multiplying 256 feet by 200 feet, which gives a result of 51,200 square feet. Twenty-five per cent of this area is 12,800 square feet. A tower measuring 100 feet by 128 feet would have this area, and could be extended to any height. A lot such as would be considered in a problem of this type would probably be located in the lower section of Manhattan, where values would make the erection of a tall building profitable. In this case it would be in a two-times district, and on A Street, and, for a distance of 150 feet from A Street along B and D Streets, can be carried to a height of 200 feet, or about sixteen stories, before setting-back. For the remaining part of the building the street wall can be carried to a height of only ten stories before this is necessary. The walls will have to be set back until they reach the tower, and it is interesting to note the limits within which the architect will have to work in locating it. In the first place it may be located so that "the distance which it sets back from the street line on which it faces, plus one-half the width of the street, equals at least 75 feet." According to this, the face of the tower facing A Street may be 25 feet back of the building line, as this distance plus one-half the width of the street—50 feet—equals 75 feet. In the same manner it may be located 43 feet $1\frac{1}{2}$ inches from the building line of B Street, 45 feet from the line on C Street, and 47 feet from the line on D Street. But there is an additional provision in this paragraph, and in order to discuss this provision it will be necessary to note certain dimensions given in the figure. The tower is assumed to measure 100 feet by 128 feet. The 128-foot dimension is parallel with the long dimension of the lot. Suppose the distance from the building line on A Street to the tower is required. It has already been stated that according to the first statement the wall may be 25 feet from the building line. This dimension may be reduced in the following manner. First obtain 1 per cent of the width of the lot on the street line. In this case this is 2 feet. Next it is necessary to obtain the difference in length between the width of the tower and the width of the lot. This difference is 100 feet. Divide 100 feet by 2 feet. The result is 50. Multiply this by 4 inches. This will give a length of 16 feet 8 inches. Subtract this from 25 feet and the result is 8 feet 4 inches. It can be seen that the tower may be so designed as to have its face on A Street on the building line. On C Street the same distance may be deducted from 45 feet, giving a result of 28 feet 4 inches. No matter how narrow the face of the tower was designed, it could never be brought out to the street line on C Street.

To find the distance from the street line on B Street to the tower it is first necessary to find 1 per cent of the width of the lot on this street. This is 2.56 feet. The difference between the width of the tower and the width of the lot is found by deducting 128 from 256, giving a result of 128 feet. 2.56 goes into 128 fifty times, so the same distance of 16 feet 8 inches can be deducted from 43 feet $1\frac{1}{2}$ inches as the distance from B Street, or from 47 feet as the distance on D Street. The results are shown in the figure.

Book Reviews

SIR CHRISTOPHER WREN, SCIENTIST, SCHOLAR AND ARCHITECT. By SIR LAWRENCE WEAVER, K. B. E., F. S. A., Hon. A. R. B. A. With Illustrations of Wren's Work and Portraits. Charles Scribner's Sons, New York.

Of Sir Christopher we have heard much of late, and we dare say that even the non-architectural reading public has learned something of this remarkable man besides the fact that he was the architect of St. Paul's Cathedral in London. The frontispiece of this little book, which contains a vast amount of interesting material, is from a drawing by C. R. Cockerell, R. A., in which he has grouped St. Paul's with the many other churches designed by Wren. It gives you some idea of the prodigious amount of work that Wren did for London as well as a notion of his various steeple designs.

Wren was a remarkably precocious boy, with a special taste for mathematics; he invented an astronomical instrument at thirteen, and at twenty-four he was Gresham Professor of Astronomy at Oxford.

But it was not until he took up architecture as his real work that he found himself.

This small book makes no pretense of being a life of Wren, but it does contain in brief compass an interesting summary of his very human qualities and an outline of his great achievements.

SMALL HOUSES OF THE LATE GEORGIAN PERIOD. PART II: DETAILS AND INTERIORS. By STANLEY C. RAMSEY, F.R.I.B.A., and J. D. M. HARVEY, B.A. With fifty photographs by F. R. Yerbury, secretary of the Architectural Association. William Helburn, Inc., New York.

This volume completes Mr. Ramsey's collection of typical examples of late Georgian small houses. His former work deals exclusively with exterior elevations of late Georgian small houses. This further volume is devoted to interiors and typical details of small houses of the same fascinating period.

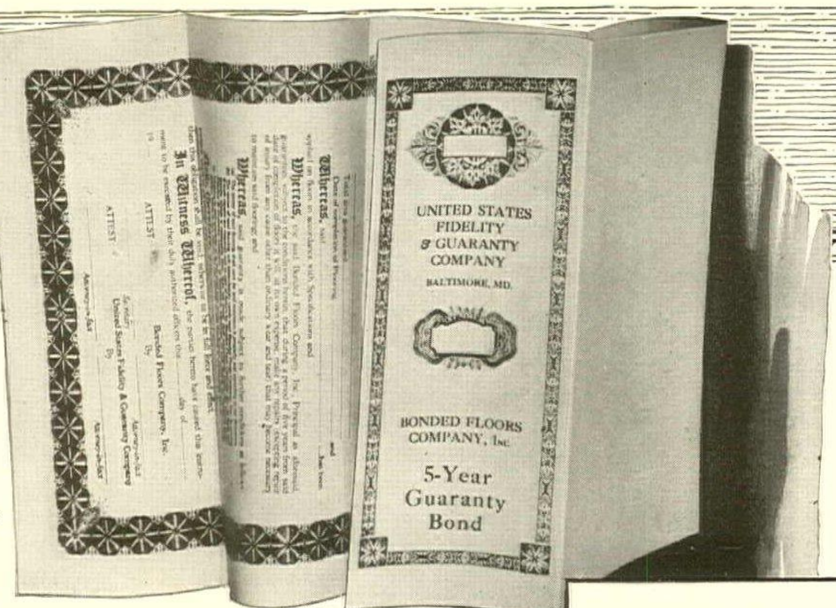
The late Georgian tradition is a potent influence in modern domestic design, and the new volume has been produced in response to many requests from those who have appreciated the book of exterior elevations for a complementary volume dealing with details and interiors.

"Small houses of the Late Georgian Period: Details and Interiors" comprises a hundred plates of exceptionally fine photographic views and measured drawings of distinctive merit, completing a comprehensive view of the entire subject. The details include, of course, fireplaces, doorways, chimney-pieces, windows, ceilings, friezes, bookcases, staircases, plaster ornaments, porches, etc. It makes, with the author's former book, an admirable reference library of the period.

"THE PLANNING OF APARTMENT HOUSES AND COUNTRY HOMES." By TEUNIS J. VANDERBENT. Brentano's.

A superficial glance at the volume on "The Planning of Apartment Houses and Country Homes" would lead one to believe that there was not much in it for the architect or architectural draftsman, for certain plates seem extremely elementary, and the arrangement of the text is forbidding. But there will be a pleasant surprise for the young architect when he reads it in detail. There are no plates of elevations or photographs, such as one ordinarily finds in a book on this subject, but it is filled with numerous plans. Of course the old and experienced architect will pass this book by with a perfunctory smile, as if he knew what the author had to say, and we have seen this smile a number of times, and yet we read the book carefully and became convinced that it contains more vital information on the details of domestic planning than any other book published.

After reading the chapter on "Apartment Houses," we were convinced that here was a written document on planning which was the accumulated experience of a man who had tried the thing himself and had not forgotten how much the details had bothered him. It is all well and good to lay out the plans of an apartment house in a general way, and employ the principles of design which are common to all buildings, but the young designer who comes up against the problem for the first time finds that there are a thousand little details that he should know before he can carry the plans to completion and beyond the sketch stage. The answers to such simple questions as how wide should the private halls be, how small may the servant's bedroom be, or what are the customary sizes of closet doors are commonly known by draftsmen and designers of experience, and they forget that the young man has to learn these things. And where will he find the answers? We know of no book where they have been so well compiled and brought together as they have been in this one.



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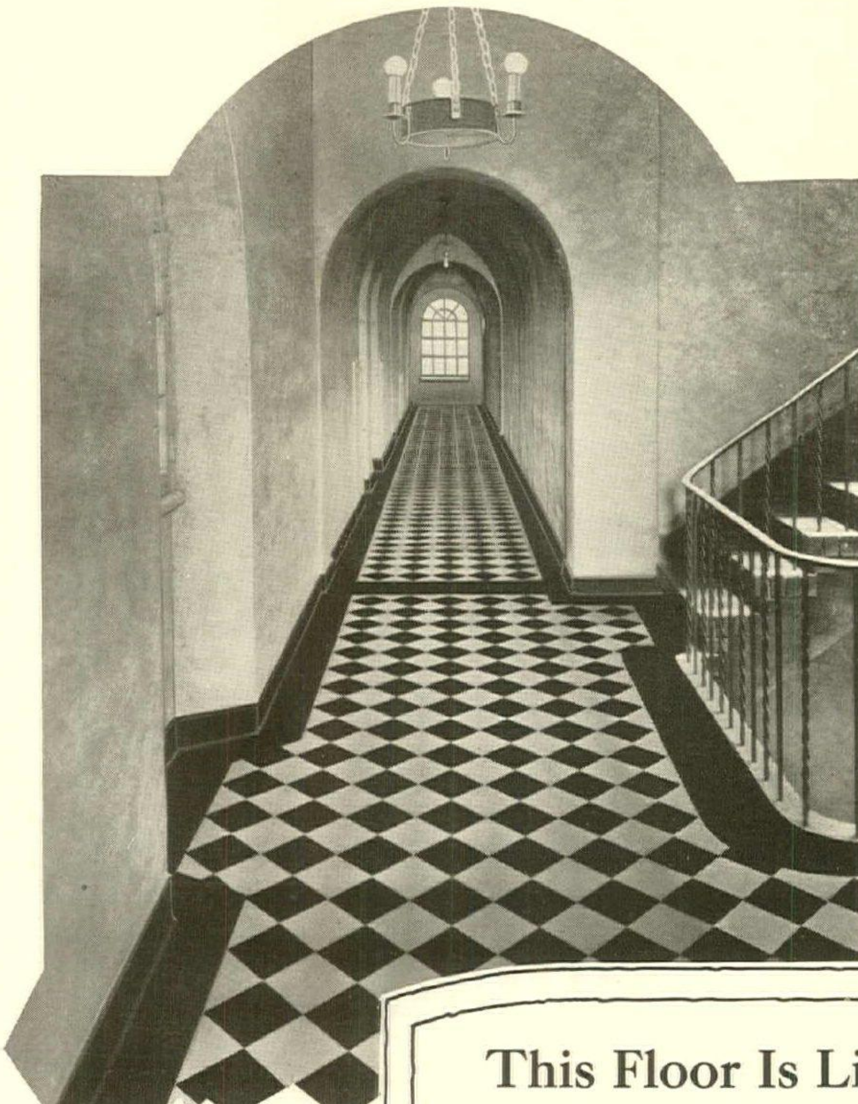

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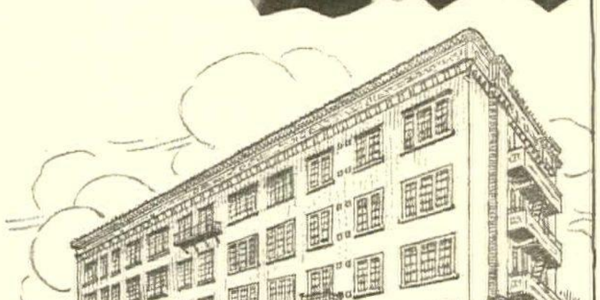

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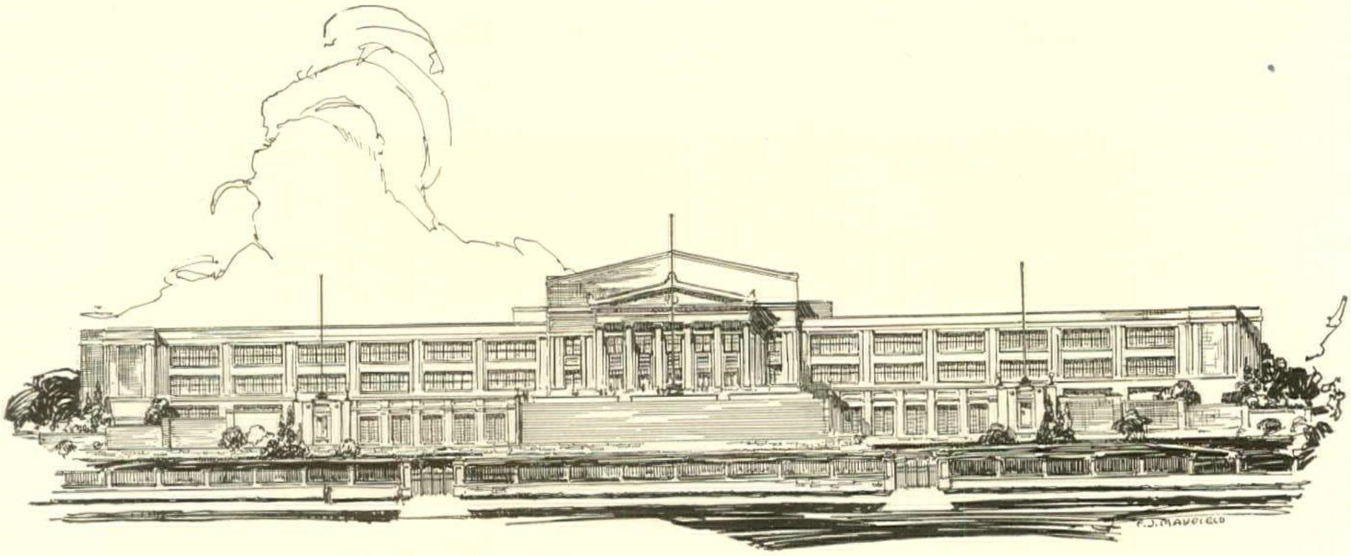

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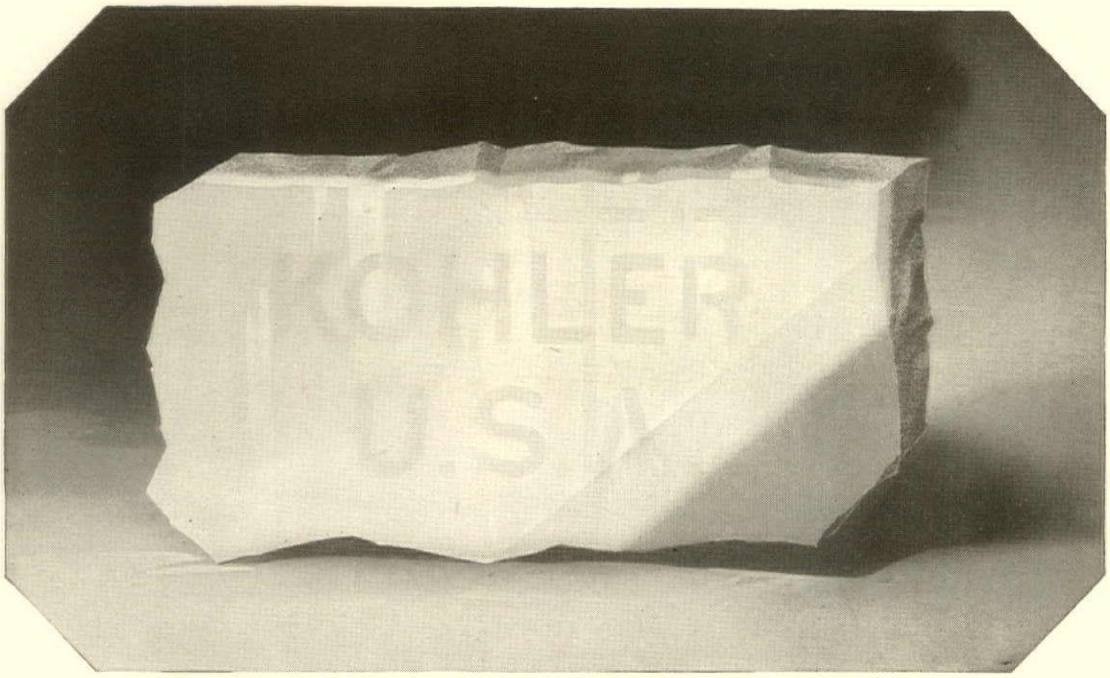

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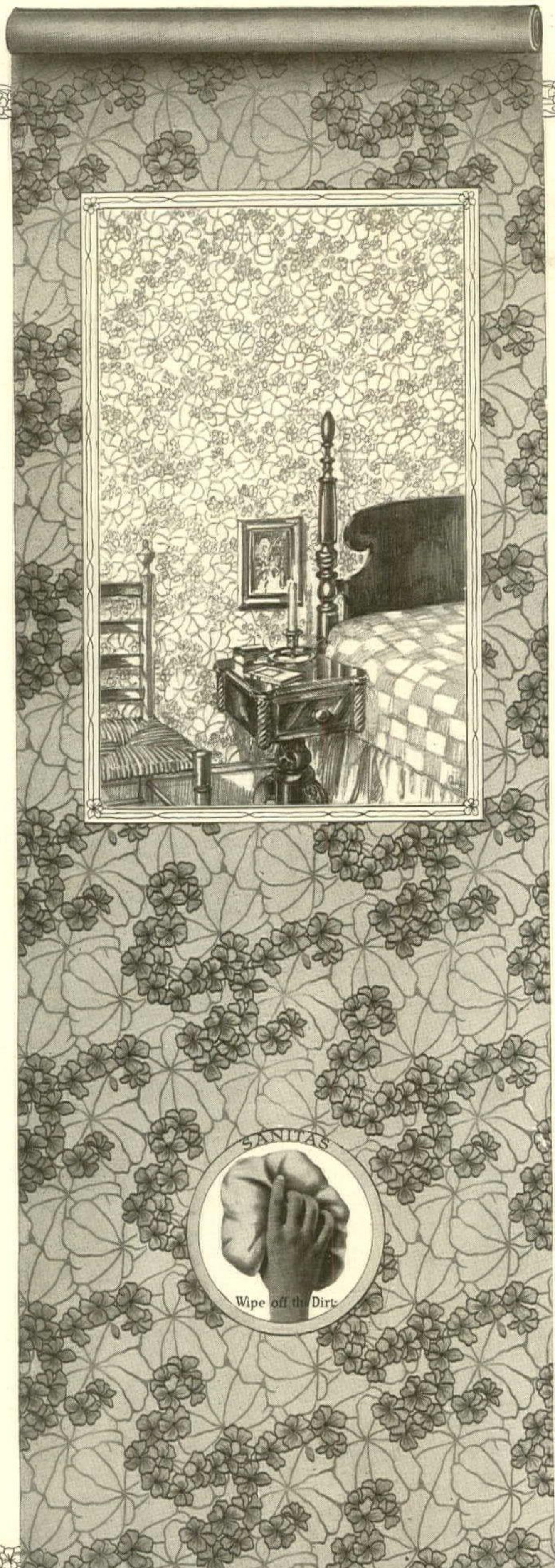

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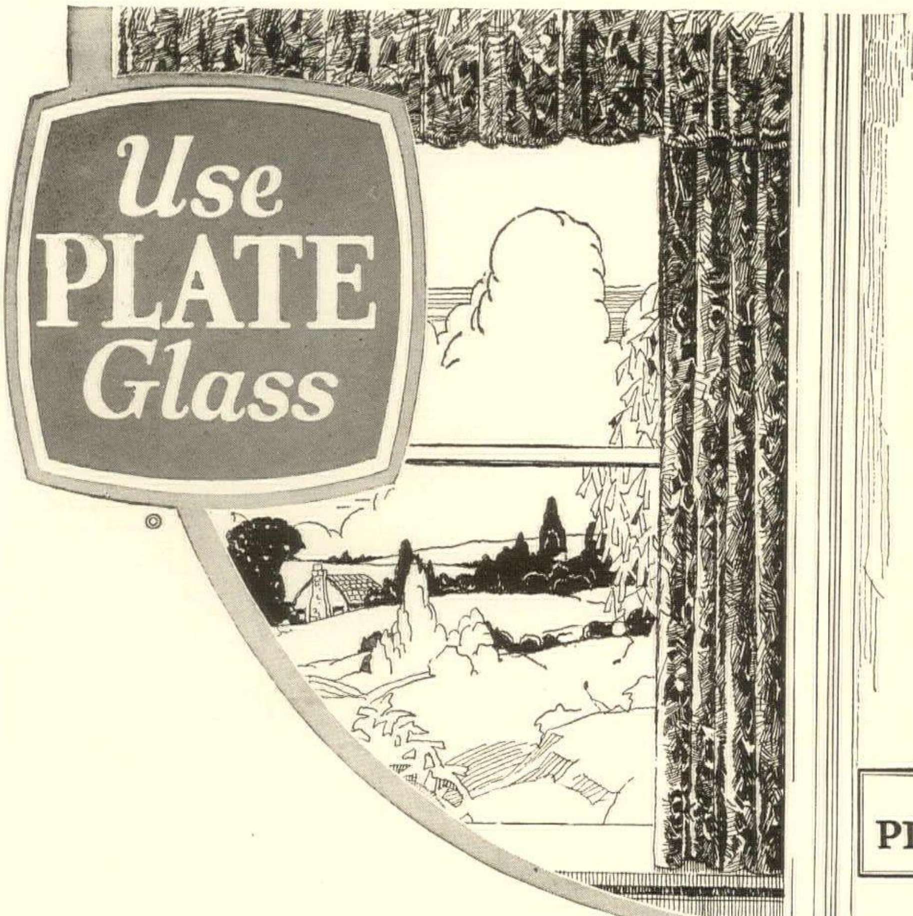

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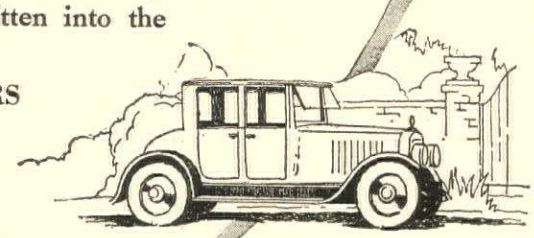

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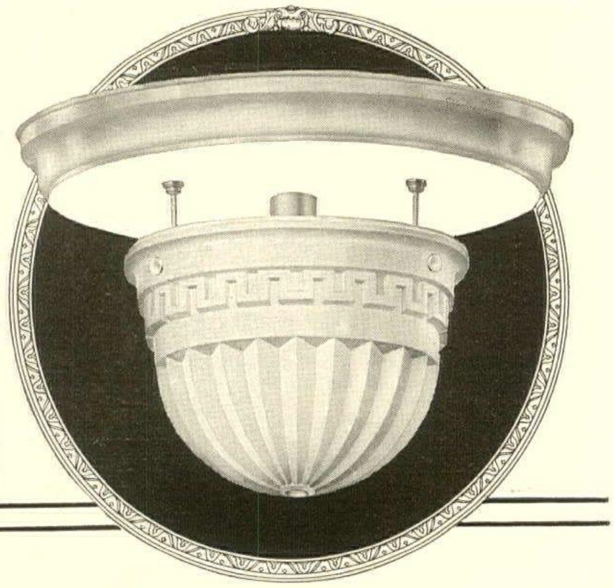

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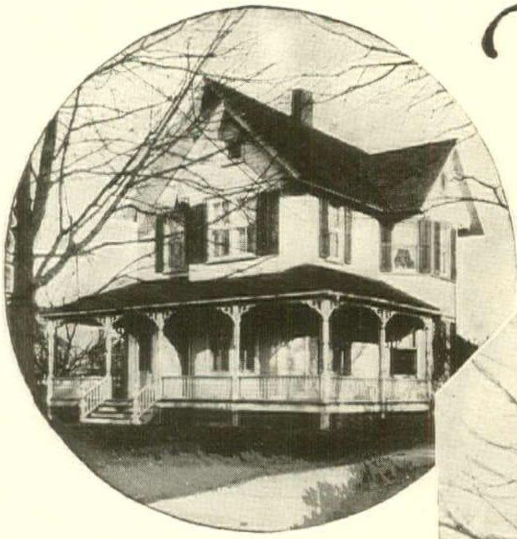

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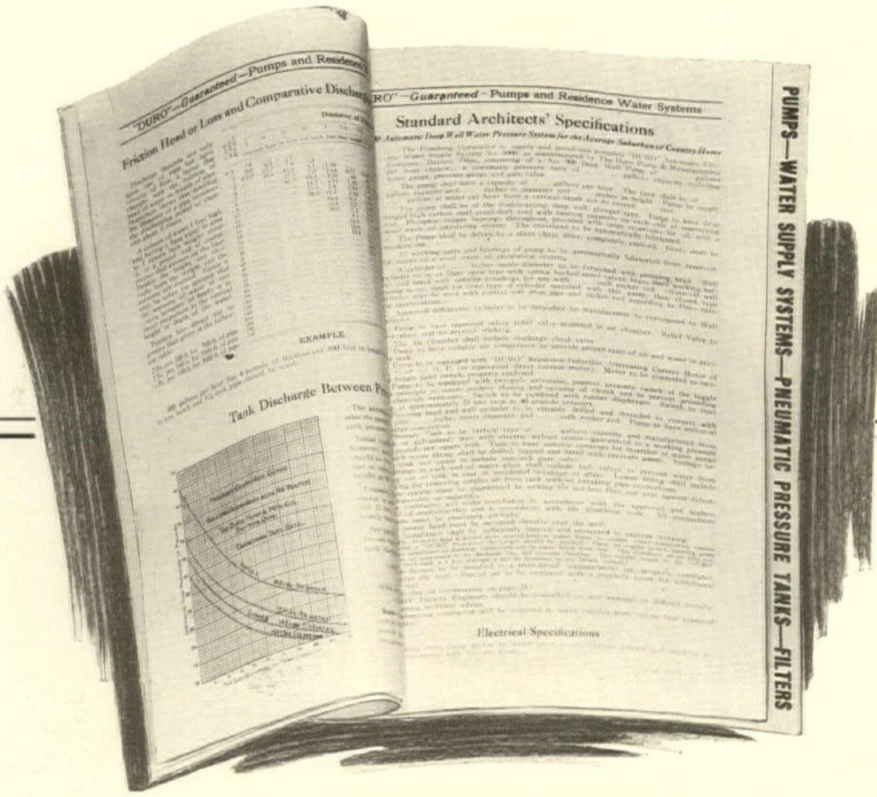

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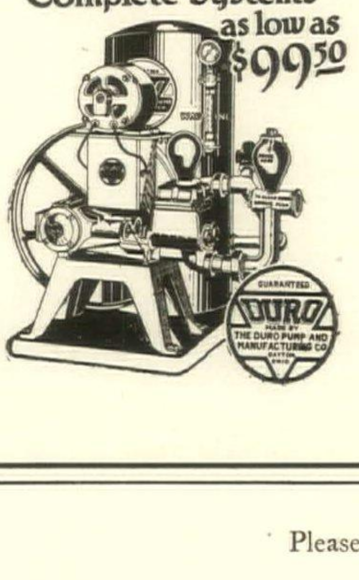

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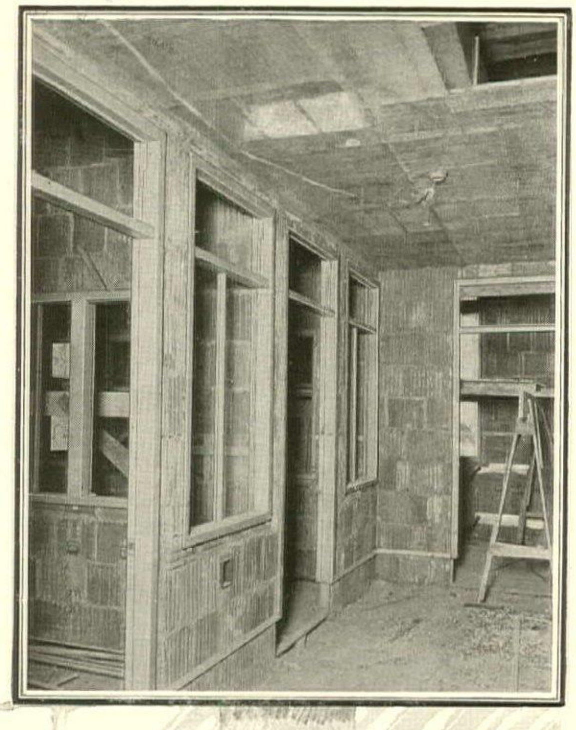

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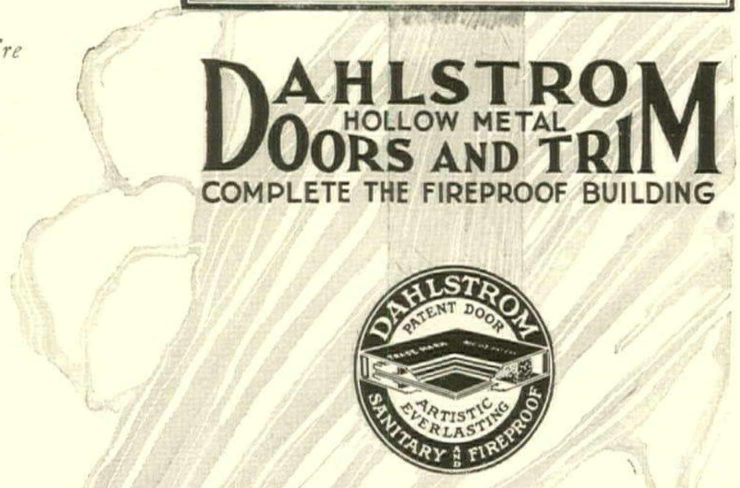

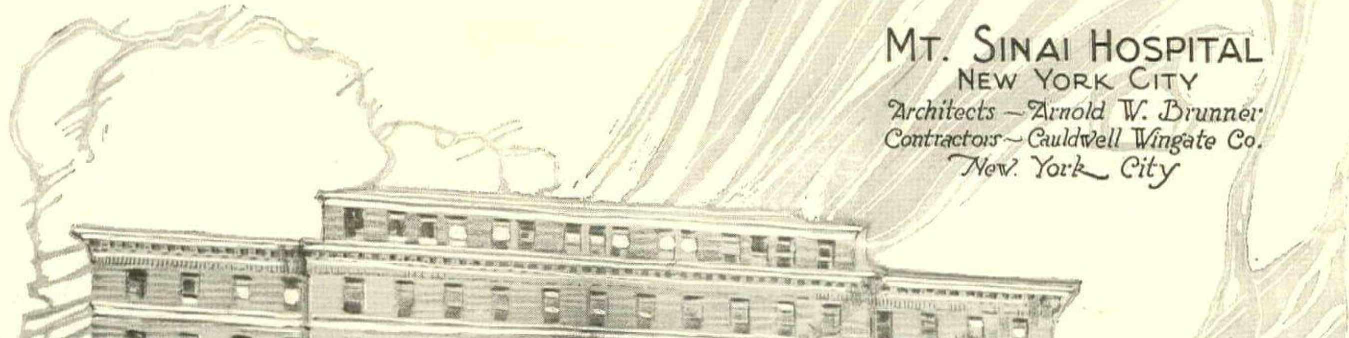

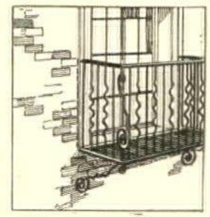
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EXTERIOR METAL SURFACES	*Kromik Structural Steel Primer* *Metalastic* (for finishing coat)	*Old Dutch Enamel*		
FACTORY WALLS (Interior)	*S-W Eg-Shel-Mill White* *S-W Fume Resisting White*	*Old Dutch Enamel or Enameloid*		
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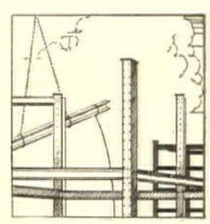
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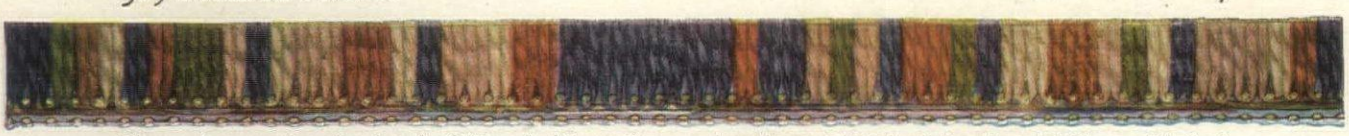
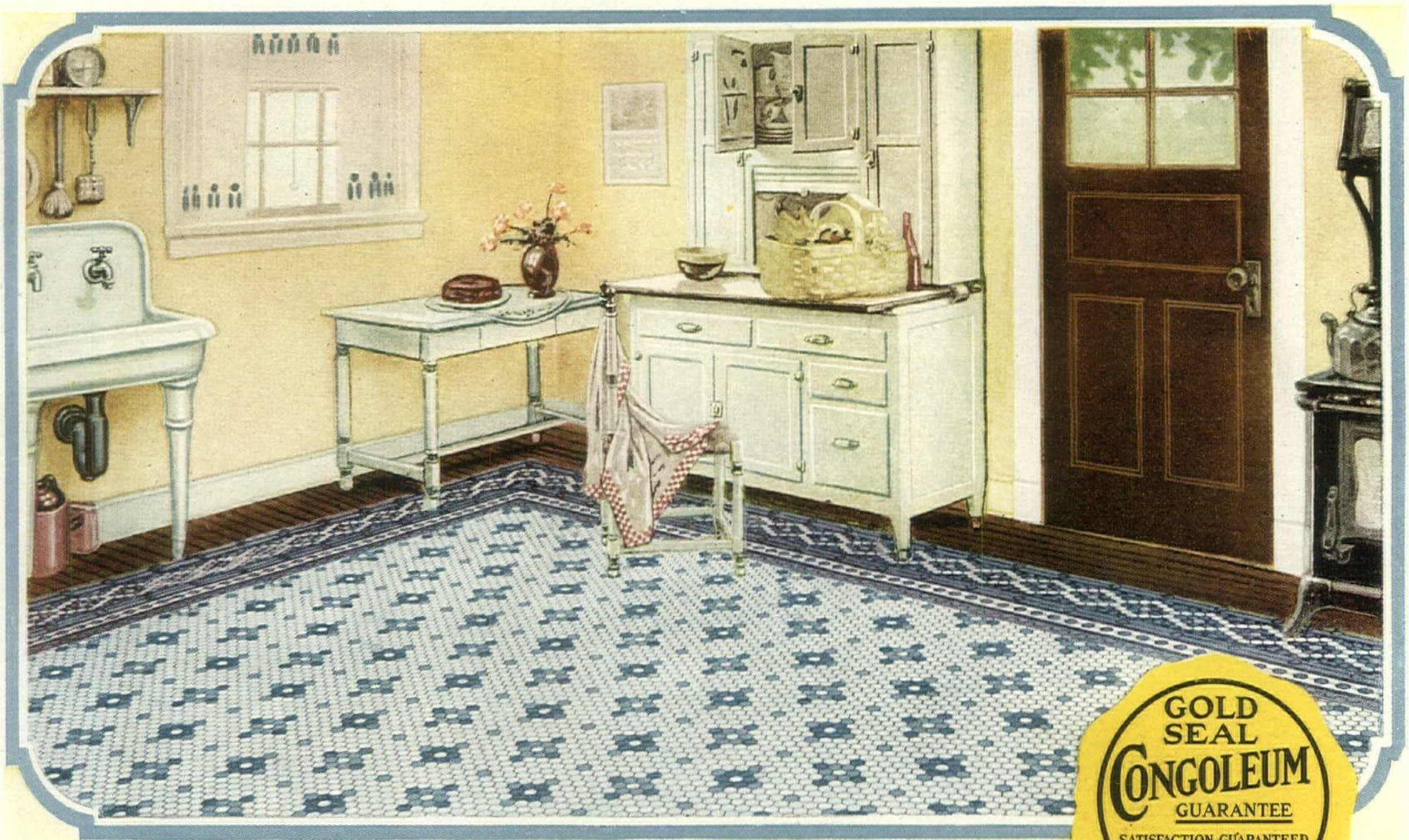


Here we have cut through a length of "Hartford-Saxony" rug to show the actual height of the pile and thickness of the back.



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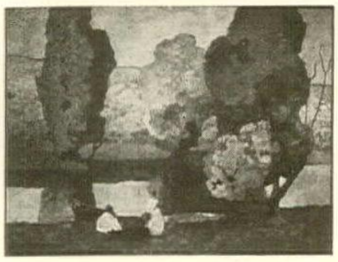

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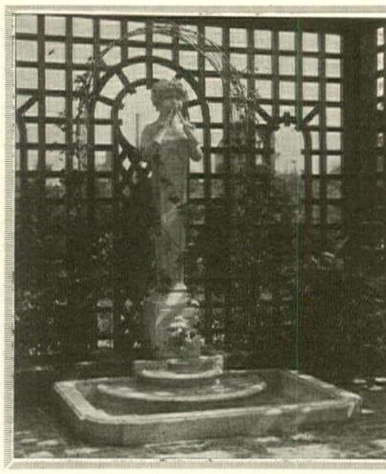

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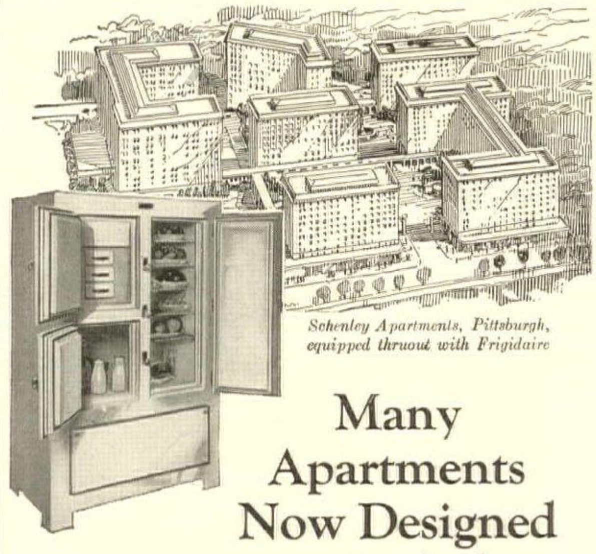

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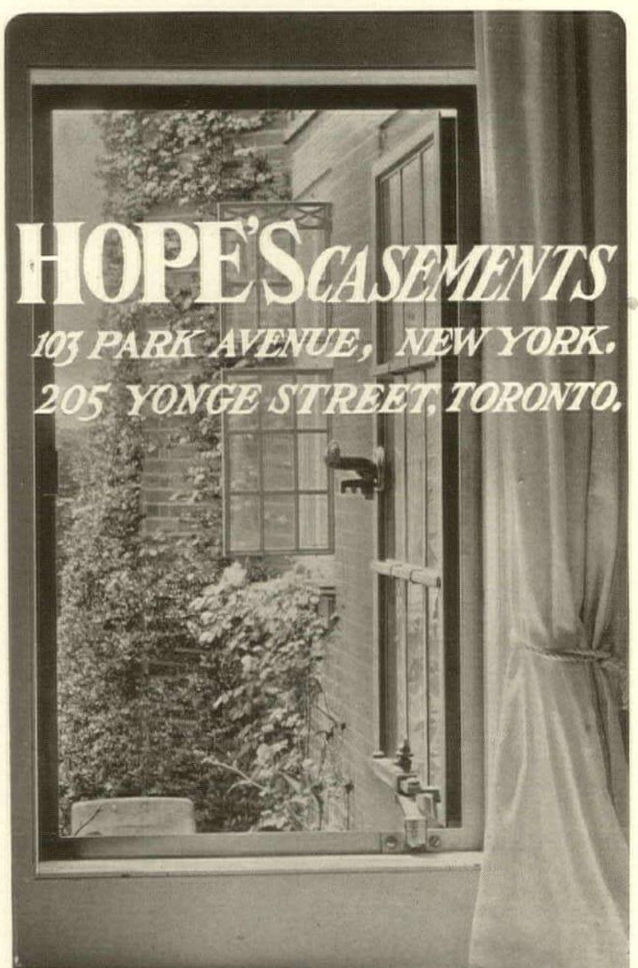

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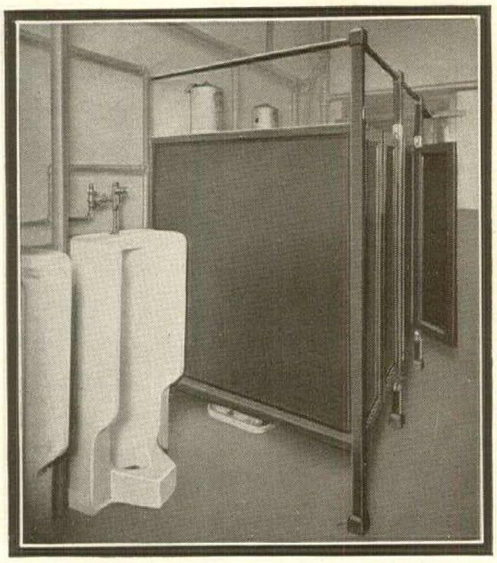

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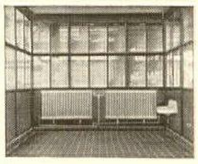

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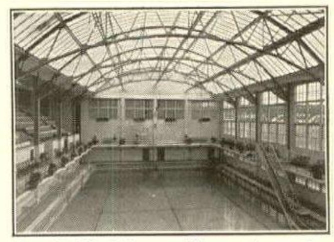

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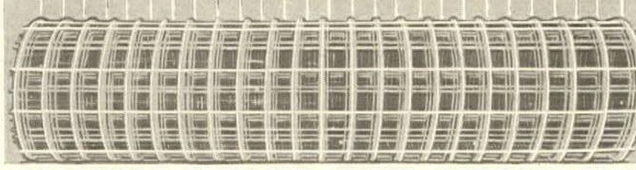

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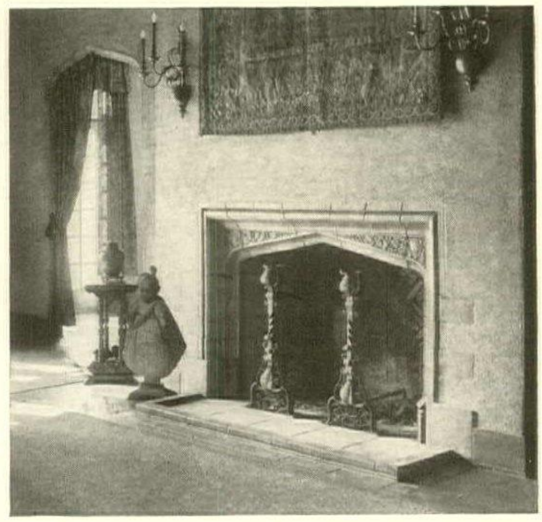

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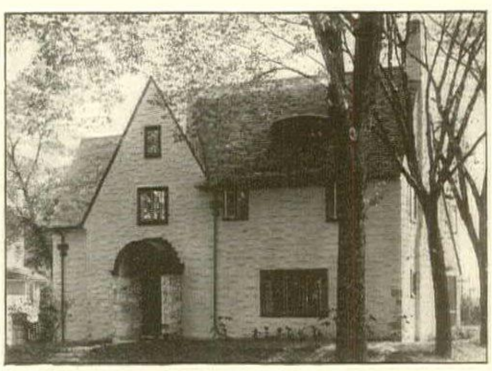

Chicago common brick finished with Cabot's Old Virginia White; roof stained with Cabot's Shingle Stain
Lowe & Bollenbacher, Architects, Chicago

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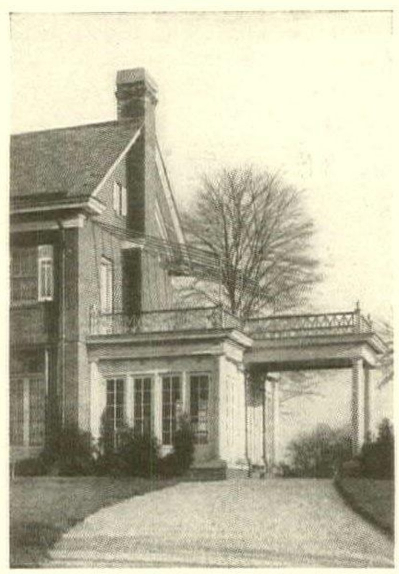

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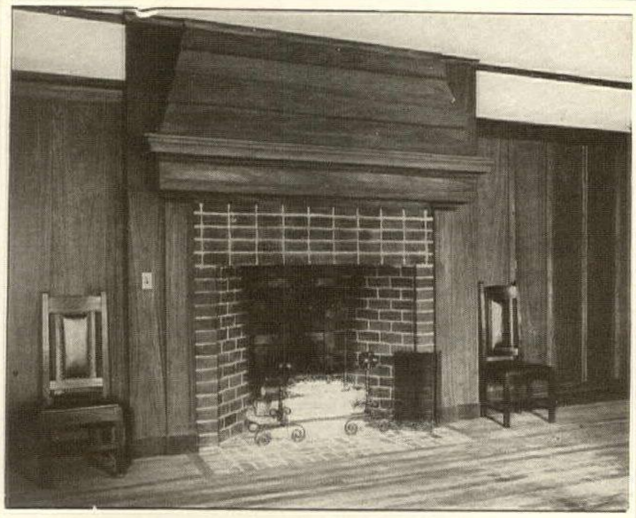

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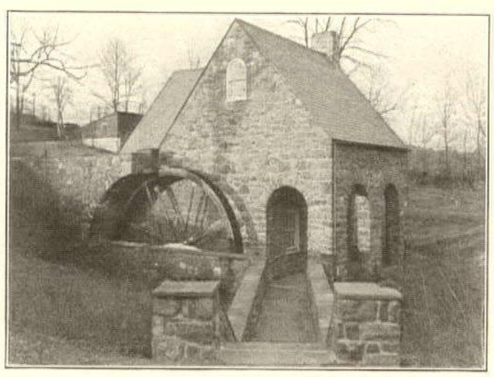

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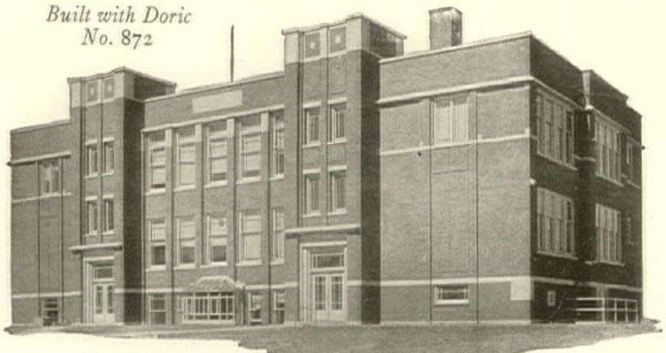

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The Dorics offer six unusual shades of buffs and tans, from a delicate buff with a pinkish cast, through olive buffs, golden tans and rich browns, to deep purplish browns and blacks.

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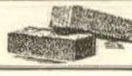
The Gothics offer beautiful tones of rich browns and reds, ranging from dark brown or black, through light browns and reds to a wonderful old rose shade.

Write Department 49 for "Doric and Gothic" Brick

Brick for Schools

STIPPLED Brick have been used very extensively in school construction. The slight elevations and depressions of the stippled texture produce a soft light-diffusion that greatly enchances the natural beauty of the brick colors and obtains enviable architectural effects in large wall masses.

STIPPLED BRICK



Western Brick Company
Capacity One Hundred Million Annually
Danville, Illinois

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HESS WHITE STEEL MEDICINE CABINET
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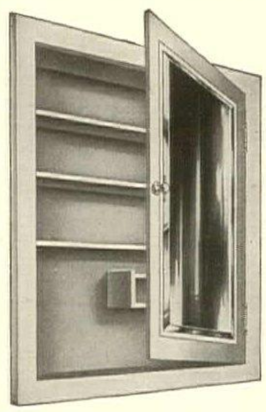

Five sizes, to recess or to hang on the wall

Shaft mirror doors and cabinets also

This mark guarantees HESS TRADE-MARK CHICAGO best quality throughout

Sold by Jobbers and Dealers everywhere
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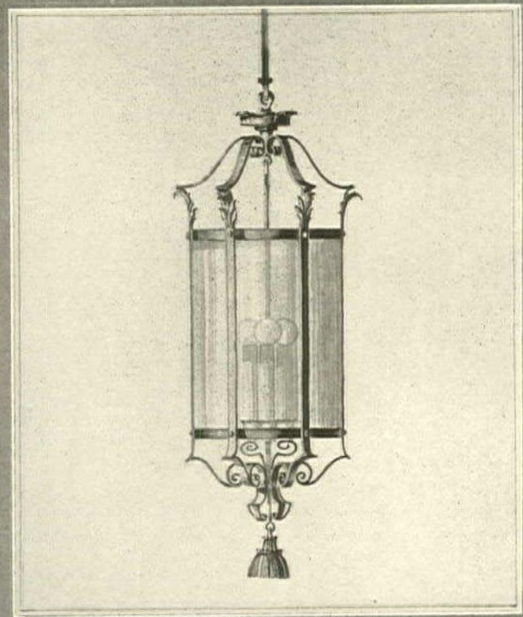
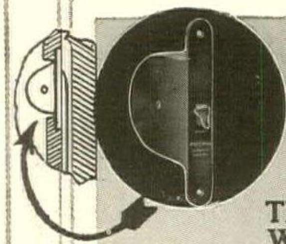
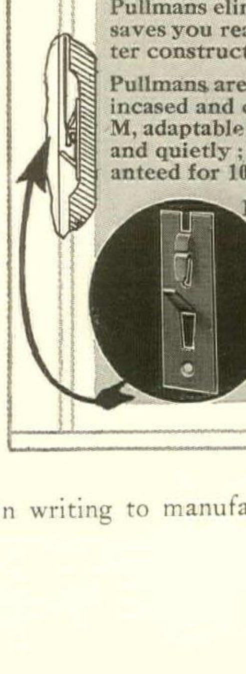
Makers also of HESS WELDED STEEL FURNACES







The Architect's Artful Aid

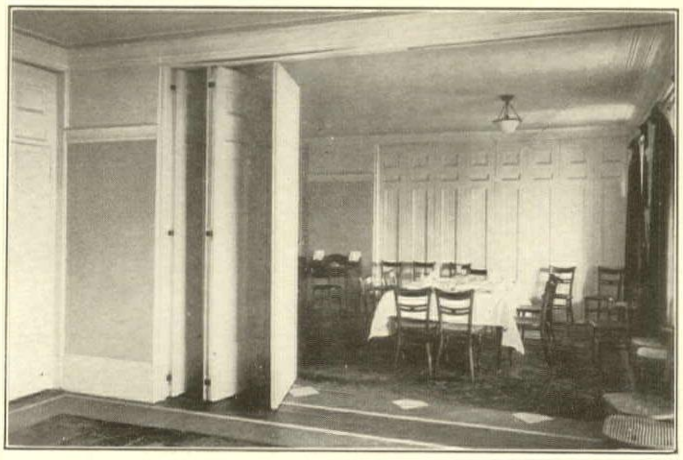
BEGINNING twenty-five years ago to specialize on the production of sliding door hangers, "McCabe Hangers" are the standard for QUALITY and perfect operation of all doors so equipped.

Folding partitions and accordion doors in churches, schools, hotels, office and public buildings equipped with "McCabe Hangers" operate smoothly and quietly and give lasting satisfaction.

There is a "McCabe Hanger" for every sliding and rolling requirement, every hanger being adapted to its specific use, tried and proven satisfactory.

Materials and workmanship used are the best. We invite comparisons.

Specify "McCabe Hangers," consult our engineering department, and let us prove our solution of all folding door problems and that "McCabe Hangers" are the Architect's Artful Aid.



TYPE No. 72
Single hung from center of each alternate door. No track or guide required in floor. For Accordion doors.

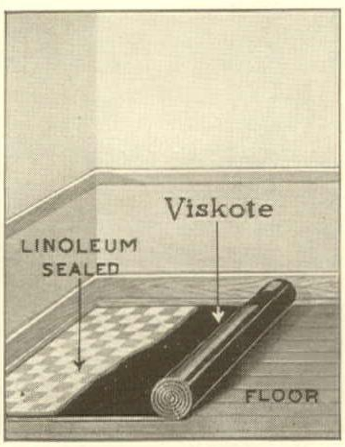
TYPE No. 402
Doors hung from edge. With roller floor guide. For doors folding to one side of partition.

TYPE No. 405
Doors hung from edge. To roll on floor track and guided above. Used where headroom is limited.

THE McCABE HANGER MFG. CO.

425 W. 25th Street New York City

McCABE
Sliding Door Hangers



Cement is unnecessary when you seal linoleum to the floor with the new adhesive linoleum cushion—Viskote "B"

This linoleum cushion *seals* without cement

It is no longer necessary to use cement in laying deadening felt under linoleum. A new linoleum cushion has been produced which *seals* the linoleum fast to the floor without the use of cement.

This unique product, Viskote "B," is a loosely woven cushion of felt, coated on both sides with a highly adhesive waterproof surfacing of Viskalt Compound. After being softened on both sides with Viskote Primer it adheres firmly both to the floor and floor covering.

Thus Viskote is not only easier to apply, but also forms a waterproof sanitary cushion which adds long life to the linoleum, takes care of expansion and contraction, and insulates against heat, cold, and dampness.

Moreover, Viskote meets fully the recommendations of the foremost manufacturers of linoleums, who strongly urge the use of a felt cushion cemented both to the linoleum and to the floor.

Another use for Viskote

This unique product, specially prepared as Viskote "A," you will find highly efficient as insulation between walls and beneath floors. For it is both sound proof and sanitary.

The heavy Richardson felt which forms the base of Viskote absorbs and reflects sound to a remarkable degree. The sanitary Viskalt coating not only repels vermin but also prevents spillage from setting up unhealthful conditions. Moreover, Viskote, because of its tough coating, remains *permanent*.

You can readily see the advantages of Viskote—silence and sanitation—especially for public buildings such as schools, hospitals, and libraries as well as homes. And once installed, it will last as long as the building.

Viskote is made by a firm backed by over fifty years of manufacturing experience. You will find it distinctly helpful to know the other construction products of this company. For complete specifications, just write the Construction Materials Division, Dept. 31-H

The RICHARDSON COMPANY

Lockland (Cincinnati), Ohio
Melrose Park (Chicago), Ill. New Orleans, La.

Viskote
LINOLEUM CUSHION
"B"

RICHARDSON Product

From the makers of Richardson Roofing (including Flex-a-tile Housetops), Viskalt Membrane Roofs, Wall Board and similar products.

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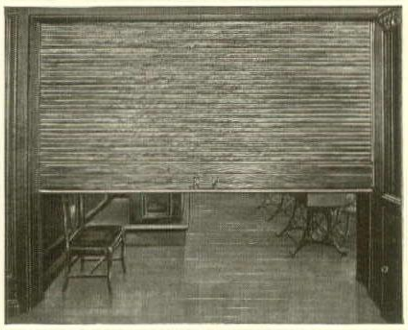
Horizontal Rolling Partition.

Grant Wood Rolling Partitions

ADAPTED for church and Sunday School rooms, Y. M. C. A. buildings, schools, halls, etc. Indispensable because of the many convenient combinations of rooms which can be obtained and the economical use of floor space. Blackboard surface can be furnished on one side of overhead partition. Write for details and catalog.

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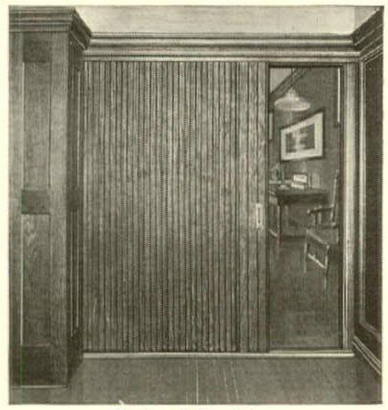
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AUTOMATIC
HEAT REGULATION
ELECTRICALLY OPERATED

Consumers of steam from central heating plants can reduce their bills from 25 to 50% by the installation of Gold's control, and always receive an equable temperature. No motor necessary.

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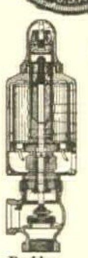
Packless Electric Valve


Thermostat

GOLD CAR HEATING & LIGHTING CO.
BUSH TERMINAL
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ARE the FINEST and BEST GOODS of THEIR KIND

Emancipate yourself from the use of corrosive and ill-smelling inks and adhesives and adopt the Higgins Inks and Adhesives. They will be a revelation to you

AT DEALERS GENERALLY
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Branches; Chicago, London. 271 Ninth St., BROOKLYN, N. Y.

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THE RIPOLIN COMPANY, CLEVELAND, OHIO

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THE ORIGINAL HOLLAND ENAMEL PAINT

"Giant Metal," "Red Metal" and Steel
SASH CHAINS

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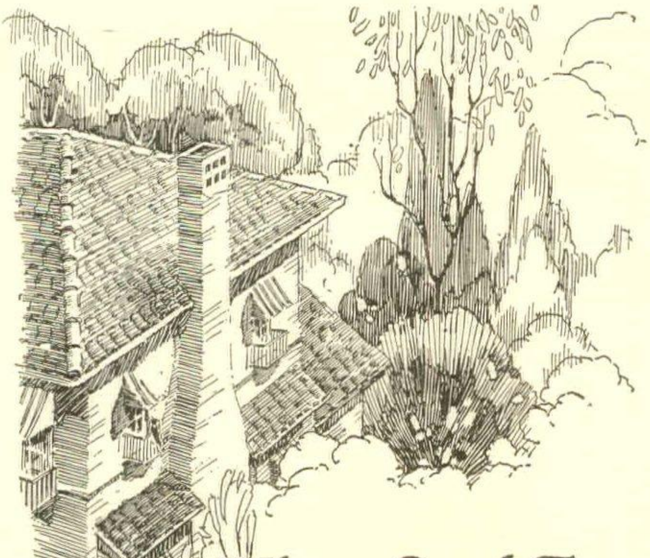
THE SMITH AND EGGE MFG. CO.
BRIDGEPORT, CONN.
ORIGINATORS OF SASH CHAIN



Where Good Taste Is Paramount

AMONG those to whom the better things of life appeal, the Kernerator exerts an influence out of all proportion to its cost. It solves for all time the problem of waste and garbage disposal.

All refuse—even tin cans—dropped through the convenient hopper doors, falls to the brick incinerator in the basement. There, all combustibles are consumed, and non-combustibles sterilized for removal with the ashes.

Costs nothing to operate since the waste itself is the only fuel required. For details see page 2124, Sweet's 1922 Catalog, or write—

KERNER INCINERATOR COMPANY
1011 Chestnut Street
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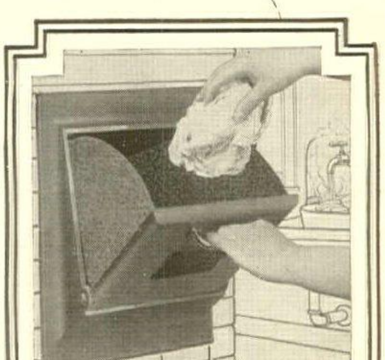

Drop all waste here—then FORGET it!

KERNERATOR
Built-in-the-Chimney
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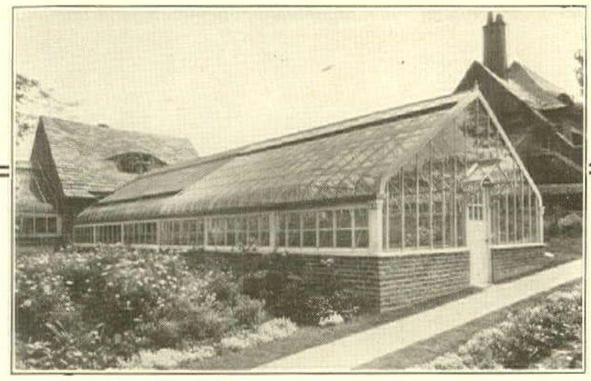

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GREENHOUSES

combine lasting strength with the beauty of design demanded by the man whose greenhouse is to be a source of pleasure rather than profit.

They are easily adaptable to all requirements of size and style.

Our engineering department is always glad to be of assistance in solving special problems of design or construction.

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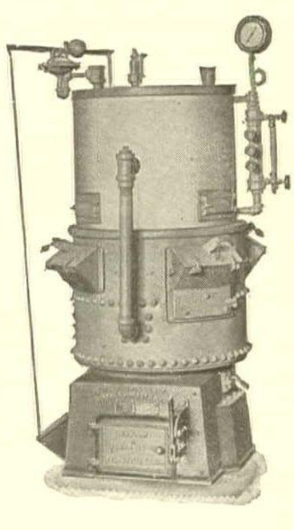

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of the **Gorton Self-Feeding Boiler** is demonstrated by the fact that many of the boilers installed over 25 years ago are still in use giving entire satisfaction.

Efficiency

The **Gorton Self-Feeding Boilers** are built on the lines of Power Boilers, using the same material, thus securing the greatest Strength, Durability and highest Efficiency.

The **Gorton Self-Feeding Boiler** gives a steady heat with attention only morning and night—its construction insures complete combustion of the gases and prevents the waste of coal.

See pages 2, 3, 4, 6, 8, 10, 11 *and* 13 *of Catalog No.* 88.

Our New No. 88 Catalog is ready and will be sent upon request

Gorton & Lidgerwood Co.

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All Gorton Self-Feeding Boilers Built to the "A. S. M. E. Standard"


Here it is!
WARM
HOT
COLD
The New Powers Shower Mixer
What It Does
It entirely eliminates those unexpected "shots" of cold or scalding hot water caused by sudden changes of water pressure when adjoining showers or other plumbing fixtures are used.
More Than a Mixer
This mixer not only mixes hot and cold water as do ordinary mixers, but it has within it a simple pressure balancing valve, of all-metal construction, which instantly and automatically equalizes the pressure of hot and cold water before they enter the mixing chamber.
No Porcelain or China to Crack or Break
Made of brass with nickel plated dial and handle in three styles, for both exposed and concealed piping. Send for Bulletin No. 154, which gives detailed information, and particulars of our 30-day Free Test Offer.
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Over 30 Years of Specialization in the Manufacture of Apparatus to Automatically Control Temperature
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for Clubs, Schools, Hotels, Residences, Hospitals.

High Unclimbable Impregnable

—the Anchor Post Chain Link Fence illustrated provides *real* protection. Ideal for country estates, playgrounds, industrial properties, and many other places.

Fabric is made of No. 9 steel wire. Posts are steel U-sections which keep the fence in constant alignment because they are *drive-anchored*. Every part of the fence is thoroughly *galvanized throughout* by the old-fashioned hot-dip-spelter method.

The nearest A. P. office or sales agent will gladly furnish complete information on this or any other type of Anchor Post Fence.

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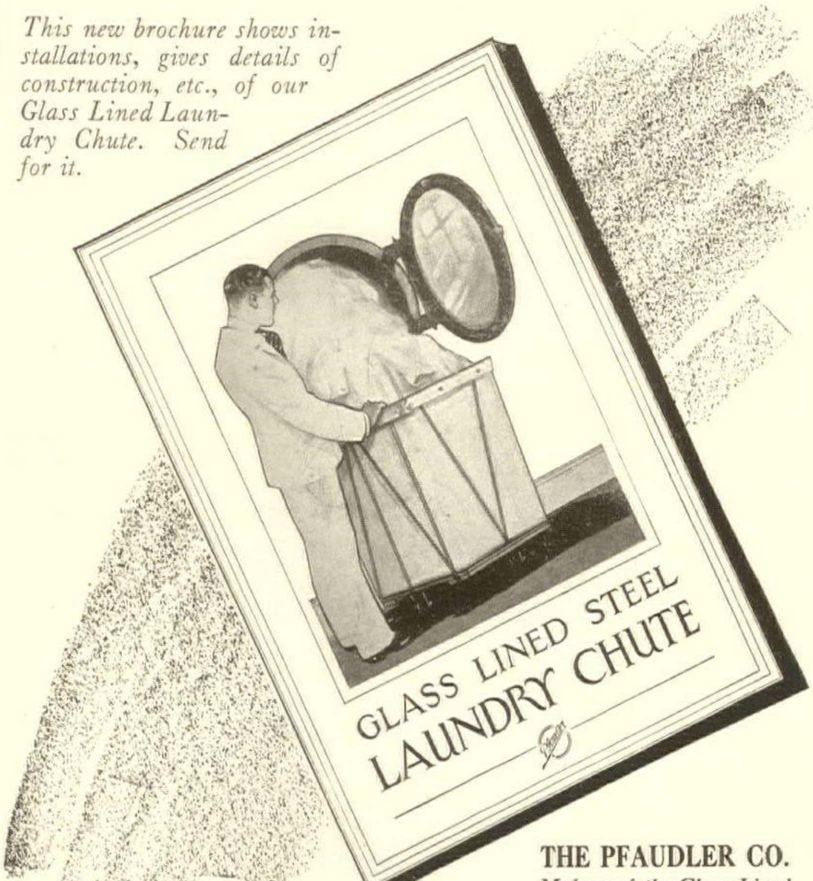
ANCHOR POST *Fences*

This new brochure shows installations, gives details of construction, etc., of our Glass Lined Laundry Chute. Send for it.



THE PFAUDLER CO.
Makers of the Glass Lined Steel Laundry Chute
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A Few More Architects to Specify the Pfaudler Chute

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Our catalogue in Sweet's is very complete and you have at your disposal our drafting and engineering service. Take advantage of it!

—also mail coupon for new brochure.

MEMO.

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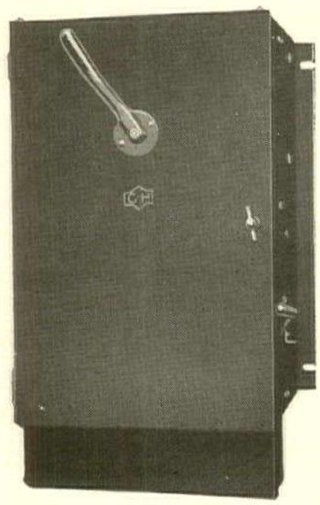
A-9-23

Complete Specifications for Architects

Covering Enclosed Type Motor Starters and Control Apparatus for Hotels, Public Buildings, Theatres, Factories, Office Buildings

To provide greater uniformity—and reduce the cost of enclosed motor starters and controller for pumps, fans, and the scores of motor-driven machines used in office buildings, hotels, theatre buildings, etc., Cutler-Hammer engineers have developed and standardized a complete line of this class of apparatus.



The requirements of leading architects and engineers as well as those dictated by the National Electrical Code, Electric Power Club, and other safety codes have been incorporated.

Instead of building these as special equipment they are now a regular part of the C-H line, information in usable form for the architect being included in 40 pages of typed specification sheets bound in suitable covers.

Prominent architects have found this information of value and such buildings as the Union Trust, and Keith's Theatre in Cleveland, and the new Statler Hotel in Buffalo have recently been equipped with this class of controller.

The book of specifications is designated as Publication No. 2068, a copy of which will be forwarded to you for your specification writing department.

THE CUTLER-HAMMER MFG. CO.

Motor Control Department
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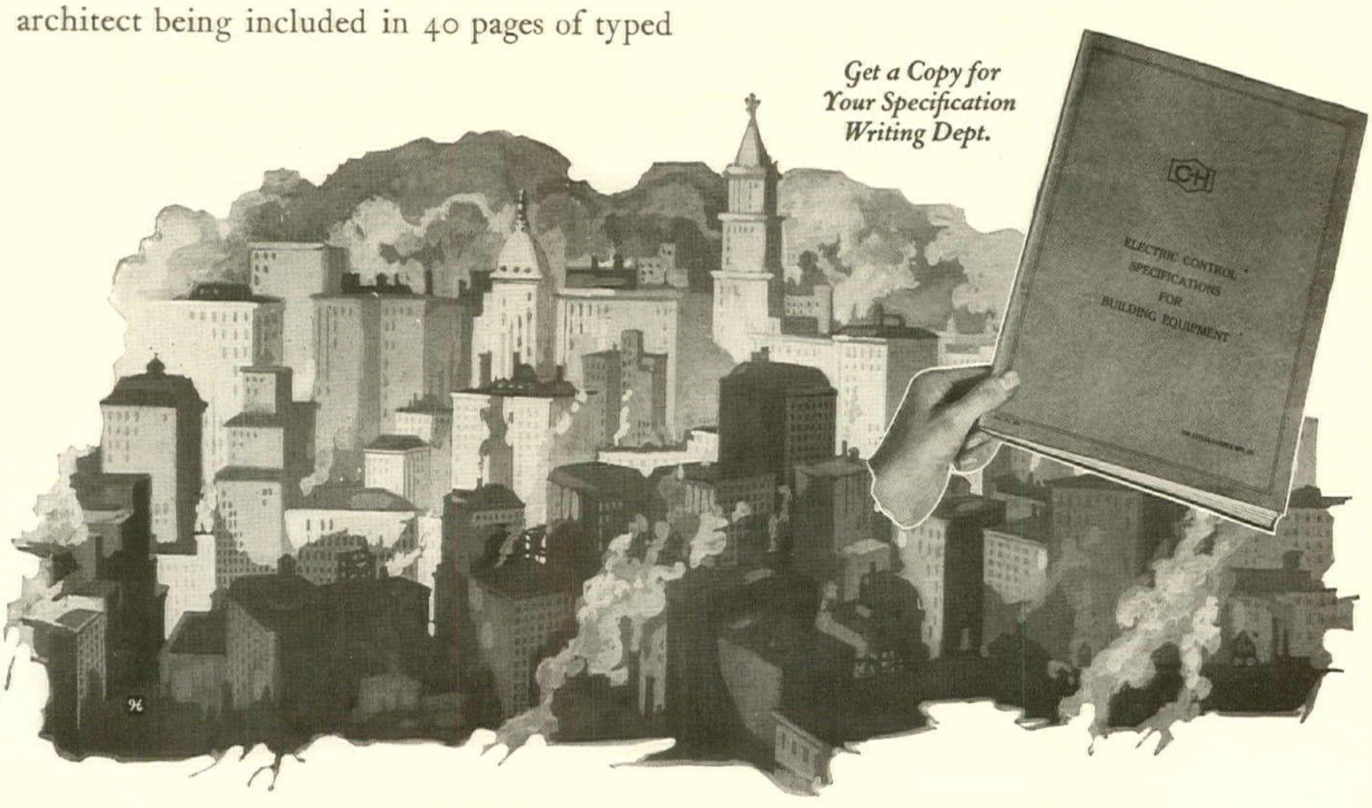
Northern Electric Co., Ltd., Can.

Get a Copy for Your Specification Writing Dept.



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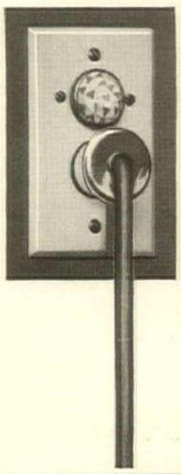
CUTLER-HAMMER

BUILDING EQUIPMENT STYLE WITH CIRCUIT BREAKERS

CONNECTICUT AUTOMATIC SIGNAL SYSTEM *for Hospitals*



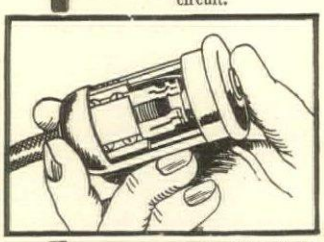
Better Than Ever

Not content with a call button that does no more than light lamps and sound a buzzer, Connecticut engineers set about perfecting a device that would give the most attention-getting signal possible—so that an ordinary call would register as effectively as the average emergency call and an emergency call would be made in such a way as to leave no possibility of mistaking its nature.

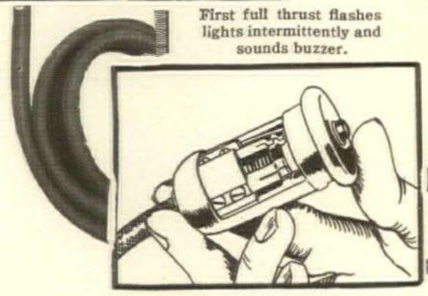
This they accomplished by designing the Connecticut pendant push so that a full thrust of the button flashes the lights on and off, sounds a buzzer, and then, as the patient releases button and it slips back into its natural "on" position, the lamps settle down to a steady glow, which they maintain until the call is cancelled by the nurse at the patient's bedside.

With neither lamps nor buzzer in circuit at the same time there is no danger of a dim light—and with the contacts arranged so that the lamps flash and the buzzer sounds intermittently you can readily see how this mechanism translates the patient's anxiety for attention into a real emergency call.

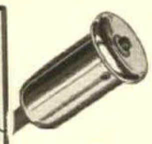
Ready for signal. Neither lamp nor buzzer in circuit.



First full thrust flashes lights intermittently and sounds buzzer.



Normal "On" position. Keeps lamps lighted but breaks buzzer circuit



No. 2 of a series of pages illustrating and describing the superiorities of the Connecticut Nurses Silent Call System.

Illustration and complete information will be sent on request

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MERIDEN SIGNAL SYSTEMS DIVISION **CONNECTICUT**

It took 18 years

to produce a perfect radiator valve

Eighteen years ago, the first Packless Valve was made.

Immediately the American Radiator Company recognized the advantage of doing away with the "stuffing box". And knowing it to be a real improvement, they have always encouraged the use of packless valves.

To-day, this company's engineers have produced a Super-Packless Valve which we believe is the *perfect radiator valve.*

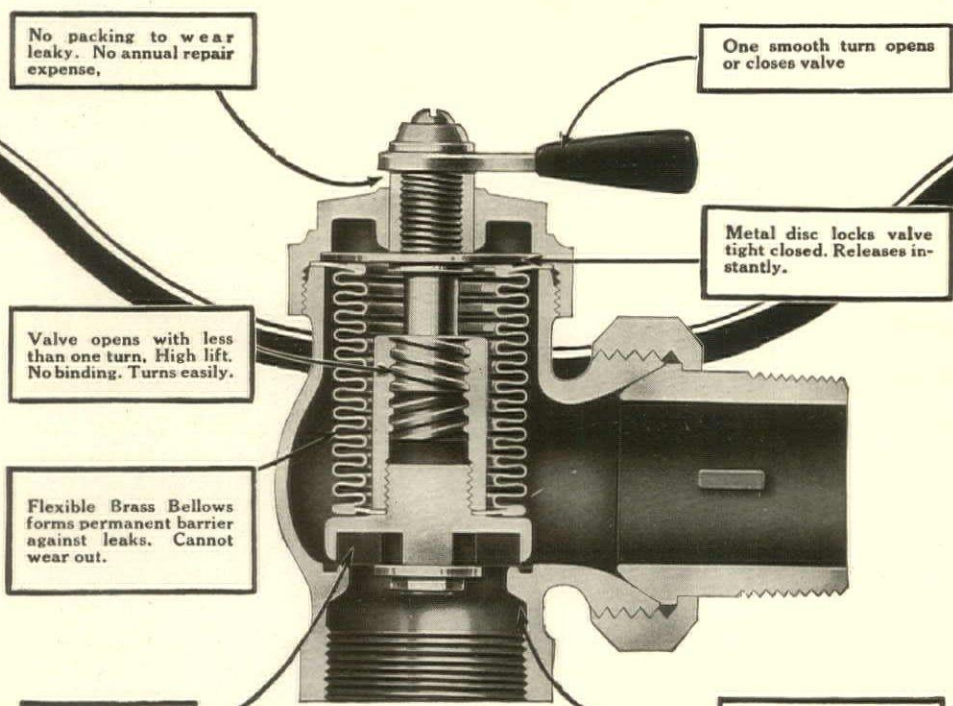
This valve not only prevents leaks, but it opens and closes at a touch—a convenience that every owner wants—a feature that will remind him of his architect's good judgment every time he opens or closes the valve.

But even with all its advantages, the IDEAL Super-Packless Valve costs very little more than the old-fashioned stuffing-box valve.

And architects everywhere are realizing that this is a real step forward in the refinement of heating equipment they can give to their clients.

IDEAL SUPER-PACKLESS VALVE

Opened or closed with one easy turn



AMERICAN RADIATOR COMPANY

IDEAL Boilers and AMERICAN Radiators for every heating need

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KEWANEE

Smokeless Boilers

Eliminate smoke and save fuel

Do you realize that every bit of smoke that goes up the stack is nothing more or less than *unburned* coal? And that every smoky boiler is not only a dirty boiler but a mighty expensive one as well?

Kewanee Smokeless Boilers are burning soft coal [even the cheapest grades] in strict compliance with the most stringent smoke ordinances ever passed. They make it unnecessary for a building owner to buy "fancy" coal—they save owners countless thousands of dollars every year.

That's why a complete list of buildings heated by Kewanee Smokeless Boilers would fill many pages of this magazine and would include many of the finest buildings ever put up.

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Steel Heating Boilers, Radiators, Tanks, Water Heating Garbage Burners

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CANADIAN REPRESENTATIVES—The Dominion Radiator Co., Ltd.

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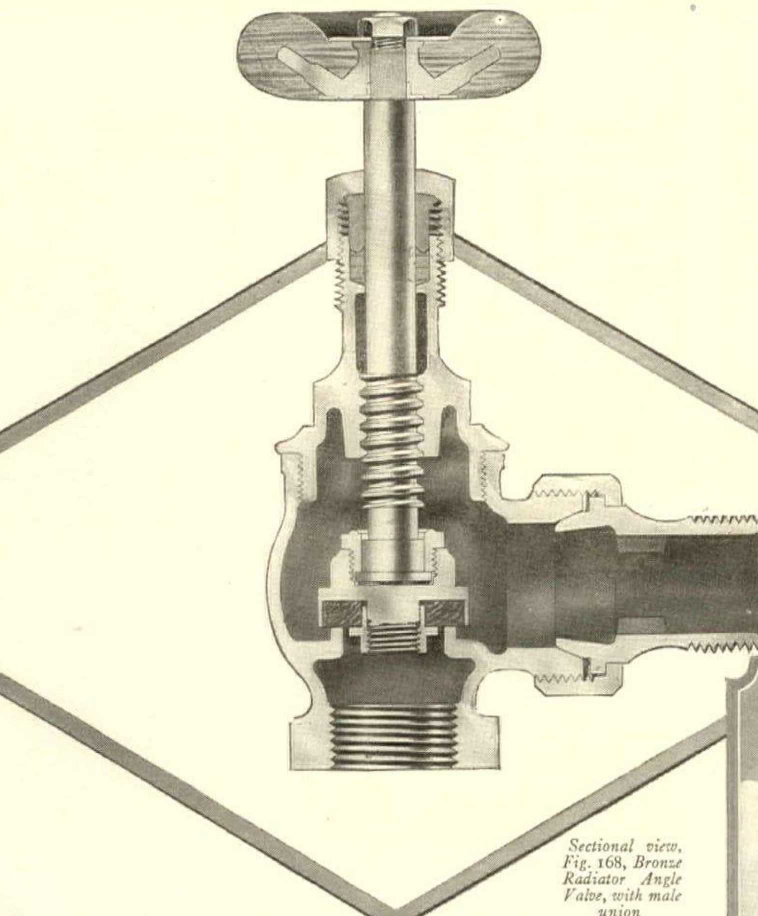


Sectional view, Fig. 168, Bronze Radiator Angle Valve, with male union

Fig. 168, Bronze Radiator Angle Valve with male union.

The new National City Bank Building, Indianapolis, Ind., equipped throughout with Jenkins Radiator Valves.

Radiator Valves you can depend on

THE new building of the National City Bank, Indianapolis, Ind., is equipped throughout with Jenkins Radiator Valves, thereby aiding materially in the reliable service expected of the heating system.

You can depend on Jenkins Valves—they are practical in design and sturdy in construction. The *usual* service from a Jenkins Valve is a service of years and years that means true economy.

Valves in bronze, iron, and steel for all requirements. At supply houses everywhere.

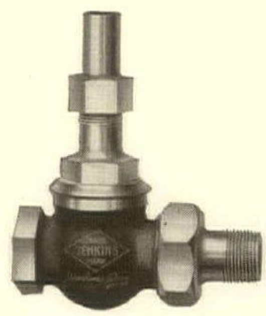


Fig. 170-G, Bronze Radiator Globe Valve with lock shield to preclude tampering.

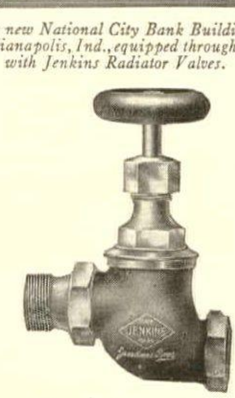


Fig. 173-A, Bronze Radiator Globe Offset Valve with male union.

JENKINS BROS.

NEW YORK BOSTON PHILADELPHIA CHICAGO
MONTREAL LONDON

Always marked with the "Diamond"

Jenkins Valves

SINCE 1864

THE MADVAL BIDET

THE health-protecting features of the Bidet are so vitally important that this fixture is now considered an essential in modern bathroom appointments.

The Madval Bidet, a Thomas Maddock fixture, is constructed throughout of vitreous china which is always easy to clean and easy to keep sanitary. This fixture also possesses the various other sanitary advantages that have characterized Thomas Maddock plumbing equipment for three generations.

ARCHITECT'S SPECIFICATION: White Vitreous China Flushing Rim Pedestal Bidet Pan; height, 15 inches, with Douche and Fixture Shelf. Fitted with N. P. Brass 1¼-inch Pop-up Waste Fixture with China Knob, 1¼-inch O. D. Tailpiece; "Hot" and "Cold" Compression Supply Valves with China Cross-arm Handles and Escutcheons, and Transfer Valve with China Lever Handle and Escutcheon, permitting either "Hot" and "Cold" Supply to Flushing Rim or Center Douche; Supply Pipes to floor.

Send for literature describing the use and construction of this fixture.

THOMAS MADDOCK'S SONS CO.
TRENTON, N. J

Another Notable Building

the builders of which have recognized the superior qualities of the

"MILCOR"

Expansion

Corner Bead

Here are the pertinent facts about the "Expansion" Bead which have gained for it the preference of architects and contractors:

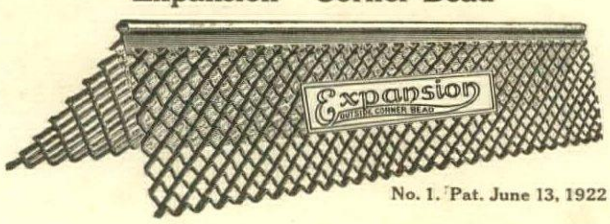
1. It eliminates the corner bead clips generally necessary with other beads.
2. It can be "set" in half the time required for other beads.
3. It is drawn like a wire, and is straighter, and more perfect from floor to ceiling.
4. It can be wired, nailed, or stuck to any kind of building material with equal facility, because of its expanded metal wings.
5. It affords a more secure tie-up to the other building material.
6. It furnishes a better plaster grip, which extends closer to the nose of the bead than any other.
7. It costs less installed, though the price per foot is more, than other beads.

Expansion Metal Door and Window Trim is rapidly gaining the same popularity as Expansion Beads. It is cheaper and more sanitary than hard-wood trim.

NINETEEN - STORY ADDITION TO R. H. MACY & CO., Inc., DEPARTMENT STORE, 34th STREET AND BROADWAY, NEW YORK. PRESENT MACY BUILDING TO THE RIGHT. ROBERT D. KOHN, ARCHITECT

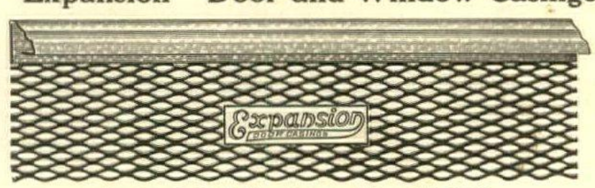
Plaster Contractors, Geo. S. Holmes Co.

"Expansion" Corner Bead



No. 1. Pat. June 13, 1922

"Expansion" Door and Window Casings



No. 6. O. G. Mold. Patented June 13, 1922

Manufacturers of

"Stay-Rib" and "Netmesh" Metal Lath
"Milcor" Channels, Furring Strips, Brick Bonds
"Alpina," "Nu-Air" and "Milwaukee" Ventilators
"Milcor" Metal Roofing, "Titelock" Metal Shingles and Tile

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