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REGISTRATION LAWS

BY WILLIAM P. BANNISTER, F. A. I. A.,

Chairman of Committee on Registration Laws, American Institute of Architects

FOREWORD

There are men who gladly set aside their own convenience that those who follow may have a sure foundation. There are those who believe that as they have grown, so should others. They who have grown like the trees of the forest, killing the less fit in the shade of their mighty branches.

WE have a great company of persons who seek to earn their daily bread in our fascinating work. They exist but labor in distress and disappointment. When they entered the lists they believed that they were prepared for the battle. Possibly haste to utilize the knowledge which they possessed blinded them to its limitations. Others with real genius aspired too high in the beginning, missed their mark and failed to appreciate the value of the smaller steps in the approach to their goal. Others were so critical of the efforts of their contemporaries that they were blinded to the good which would have been their salvation if intelligently noted. All of these and many others borne down by heavy burdens in life live as but sickly plants in the shadow of stalwart growth. A growth gained by fundamental talent fed by good instruction in the school and office. Architecture has no monopoly in these classes within its ranks but most of those who have grown in the sunshine of their occupation feel a desire in their hearts to give to the beginner something from his strength to help him take good root. Whether or not they should seek to accomplish their altruistic purpose by law will ever be a subject of debate, but in this debate it must always be borne in mind that the people of the state are party to the effort to raise the standards of competency. In the first instance the citizenry are involved in the fundamentals; life, health, comfort and beauty. They pay for

all the mistakes in the struggles of the incompetent and the untrained. They pay in property loss, they suffer in health, comfort and sometimes lose life.

For this reason we cannot set aside such appeals to legislation, we cannot consider the question entirely from the point of view of the welfare of the architect except insofar as that welfare reacts for the benefit of all people. Naturally the architect looks to the law as a help to him; he believes that he is competent and should be protected from competition with the incompetent. Sometimes he sets a value on the ability of his competitor which is not complimentary, to say the least. Registration laws are a disappointment to him because his self estimate is disregarded. He forgets that society and not he is the important consideration. The placing of a law involving mental training into active operation is not the work of a day or year but is the work of many, many years.

For purposes of immediate operation hundreds are recognized as having a minimum ability which comes within the range of the average of the standard of practice at the time of the adoption of an educational law. To hold to the theory of law, that what has been established in the past must not be overlooked by an act of the present, the theory of retroactive legislation, all unfortunate conditions of the past are accepted. An able mind has suggested "That it is better to let error live than to kill love." So might it be said that it is better to let incompetence live than to destroy effort leading to competence. This is the conclusion of the lawmakers, so the door is always left open for a short period that the weak may have shelter.

These folks from the byways by their presence disturb many of those comfortably within the fold, but many of us know that they can contribute something to those complacent in their self estima-

tion. The working of the law in effect is that there may be no more wanderers in the byways. Those who enter the field of our occupation must have healthy trained minds, eager to serve and appreciative of their obligation to the people of the states. As those who are of low standing on the ladder of competency pass away it would seem that we can look for a lot of bright-eyed, healthy young folks to take their places on the lower rungs. The question to be answered is, how can this be brought about? The answer is education in its broad and technical sense. We know that schooling and statutes cannot add to intelligence but we also know that schooling is a necessary tool for the service of intelligence. Education does not seem to affect moral character and law cannot curb human propensity to violate true ethics except when the offense is by statute either a felony or misdemeanor; registration laws do intervene to an extent. Many persons do things which in effect are far worse than acts deemed criminal in law. A lawyer may be held as a criminal because of barratry while a person may nag and torture his wife (or the other way around) and not be committing a crime under the law but cause others to lead a life of misery far more harmful than barratry in effect. So society can do no more in its relations with architects than to insist that they enter the premises with the proper tools of their occupation. The law fixes the courses for the education of an architect which it is believed will serve best—preliminary schooling and technical training. When an analysis of these requirements is made it must always be borne in mind that educational laws deal only with the minimum, maximum being inconceivable.

Considering preliminary education as the foundation it is interesting to note the value placed on schooling in the statutes. In seven states and Hawaii no standard of preliminary education is established. In several states the student who seeks to begin the practice of architecture must

have graduated from a high school whether his studies are to begin in an architect's office or in a school of architecture. Thus we have laws requiring no preliminary education, laws requiring but little, as in the state of Tennessee which requires ability "to speak and write the English language." In several states the laws require the acquirement of a knowledge of mathematics, history and language gained subsequent to graduation from high school, but usually during the term of technical study, which is equal to that training in these subjects which a student would receive in the first two years of college work. It is a curious fact that the standard of technical training is about the same in all the states, yet many states ask the student to take a technical examination which he could never pass unless he had had a good preliminary education notwithstanding that the statute of the states makes no mention of preliminary schooling. This raises the question of the necessity of providing by law a specification of what that preliminary training should be. The American Institute of Architects has expressed its opinion and that opinion prevails in some states and not in others. The law must point out in advance, what schooling must be had that the student may understand the formulas in his technical studies, otherwise he would be at a great disadvantage in an attempt to follow on. He should not be led up a blind alley and left there.

In a future article a comparative review of the laws will be made as to their requirements for preliminary and technical schooling. Suggestion will also be made which may help those who wish to engage in interstate practice for it seems to be a fact that any really competent architect can practice in any state if he studies the law. The person who has his or her certificate of registration seldom finds fault with the laws. It is the person who has neglected to obtain his certificate or who has been declared incompetent who usually does the most fault-finding.



PORTLAND CEMENT STUCCO—Part IV

BY SAMUEL WARREN

Associate Member, American Society of Civil Engineers

Color effects and a graphic method of securing various textural finishes

EDITOR'S NOTE: *This article, in its manner of presentation, is a further example of the value to architects of "working photographs." These illustrations clearly set forth the actual processes of securing various textural finishes and will enable architects to explain to the man on the work the exact result desired and the best devised method of accomplishing it.*

THE coloring of stucco is closely related to texture in that the variations in texture have a very marked bearing on the shade of color produced due to the introduction of shadows.

In stucco it is fortunate, for color reasons, that we have white Portland cement and it should be understood that white cement is just as fully Portland as any gray cement. In strength and setting time, they are as nearly identical as it is possible to find any two cements. Naturally, therefore, a coat of stucco made with white cement will bond perfectly to one of gray cement.

White Portland cement gives a neutral color value on which to base the tint desired. Pure white stucco is possible but is as rarely desired as is a pure white paint. But white pigments form the base for all colors of paint, so white cement should be the base for all colors of stucco. What a mess it would be if paints were based on a metallic gray pigment instead of the white.

The coloring of stucco is best secured by the most natural means, which is by the use of a colored sand or colored stone chips. This gives to the stucco a certain genuineness of color that is quite different from that secured by pigments. Color obtained by this means weathers in a more natural way.

Specifically a dark yellow sand with white Portland cement will give a good yellowish buff which can be varied in shade by different textures. This color can be intensified by a small proportion, say 1 or 2 per cent of yellow mineral pigment or a very attractive salmon pink secured with a very small addition of red pigment, usually from $\frac{1}{2}$ to 1 per cent.

Granites, crushed to the size of sand, will also give attractive tones if the stone itself had an attractive color. Pure white, when desired, is best obtained with an opaque white sand, such as

crushed white marble, rather than with a colorless or translucent sand, as the latter will give a rather gray tone. A mixture of white cement and white marble, toned with a small percentage of pigment will give a very delicate, almost fragile tone.

Gray stucco does not always mean the use of gray cement for that gives a dead, metallic gray. A mixture of white cement and a combination of white sand and dark sand gives a lively, bright gray. If with the sand is also mixed some with a slight color, the gray can be toned to a pink, yellow or green.

When pigments are used, they should be only those manufactured for use with Portland cement. The pigments handled by the ordinary paint



THE AUTHOR

store are more or less fugitive.

Polychrome work in stucco offers interesting possibilities but must be handled by a contractor who really has a taste for color or the results will be bizarre.

In one texture that is secured by putting on a spatter dash and then troweling lightly while still soft, the cover coat of one color followed by a spatter dash of another color, not quite covering the coat below is a simple method. Or, while a finish is still plastic, a grout of a different color and containing some fine sand can be worked on with a white-wash brush.

In Europe, some interesting effects have been secured by staining the stucco with metallic salts and afterward protecting it with a transparent waterproofing.

In Washington, D. C., John J. Earley has extensively used a polychrome stucco in which the result is secured by incorporating in the finish aggregate of certain sizes and color which are ex-



STUCCO DETAIL, HOUSE AT SPUYTEN DUYVIL, NEW YORK

JULIUS GREGORY, ARCHITECT

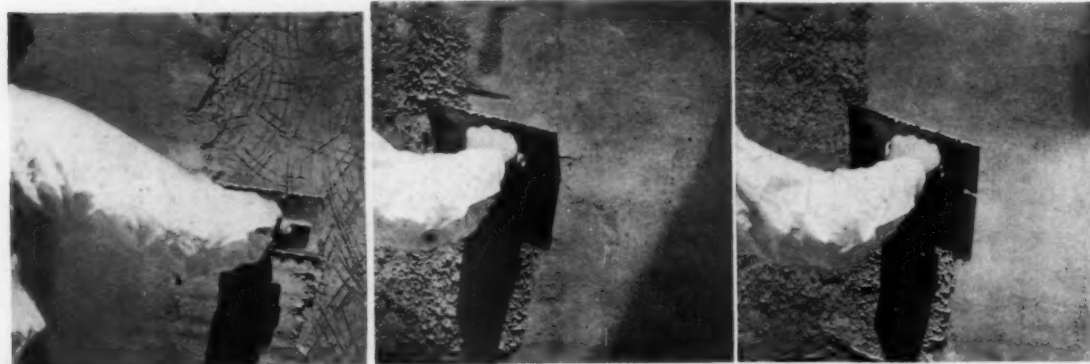
posed by brushing out the cement matrix before the stucco has finally hardened. His combination of color sense and workmanship has produced effects that have attracted great attention, as this method is applicable to not only exterior but to interior work as well.

Polychrome work should be done only under the strict supervision of the architect or left in capable hands. It cannot be trusted to the ordinary contractor.

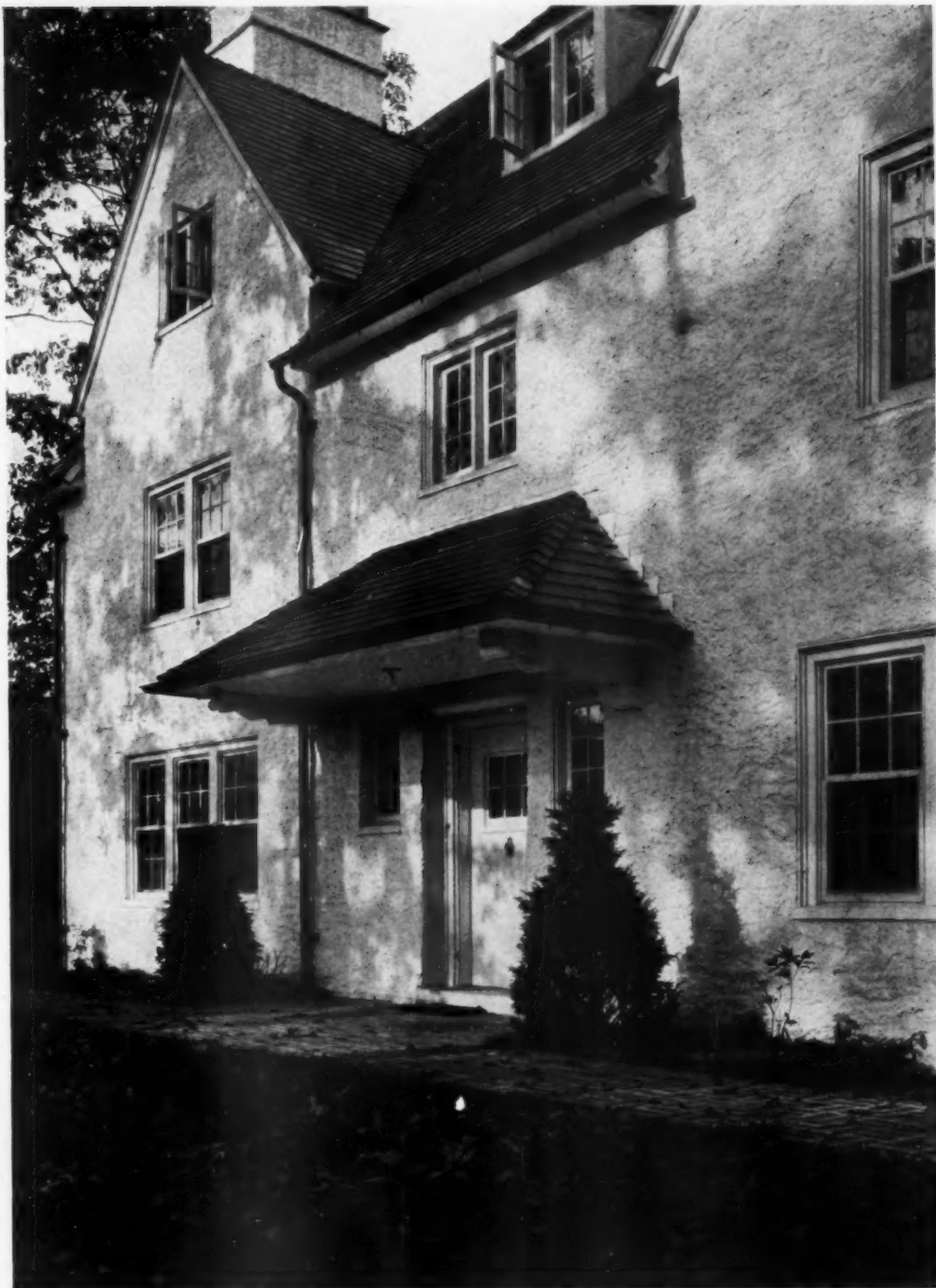
May this writer refer to this article as a correlation of some of the matter on textures rather than claim originality, for from the time when the work of his friend, Julius

Gregory, first focused his attention on this subject, his motto has been that of the English poet:

"When 'Omer smote his bloomin' lyre
'E 'eard men sing on land and sea,
And what he thought 'e might require
'E went and took the same as me."



A cover coat about $\frac{1}{4}$ to $\frac{3}{8}$ inches thick is applied over the second coat. While this cover coat is still soft, it is torn by bringing the trowel up with a quick stroke. The trowel is held at practically a right angle to the wall. If the motion is slow the trowel will jump and dig. This finish is of about the same depth as a stipple but has more character and variation, and does not have the monotony of the stipple



HOUSE AT GERMANTOWN, PHILADELPHIA, PA.

CARL A. ZIEGLER, ARCHITECT

A rough torn texture applied over fieldstone is in keeping with the Dutch Colonial architecture of this house. Stucco was used to prevent water and moisture penetrating the loosely laid stone walls of the old days

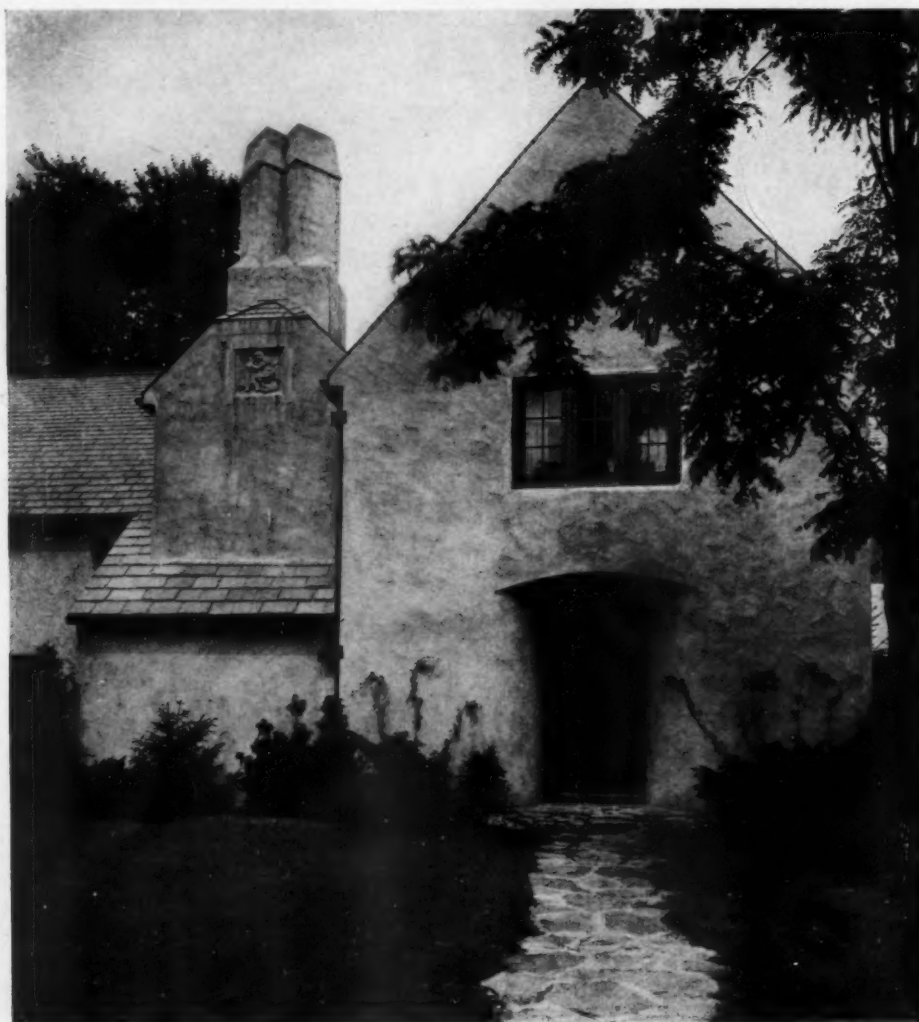
THE APPLICATION OF TEXTURES IN PORTLAND
CEMENT STUCCO

How To Secure These Textural Finishes in Portland Cement Stucco

In the "Book of Etiquette" the author has the easy task of telling his reader how to use properly his knife and fork at table. I envy him the ease of his job compared to trying to tell in writing how to secure a textural effect, and I have therefore donned my overalls, seized hawk and trowel and turned to pictures in an attempt to demon-

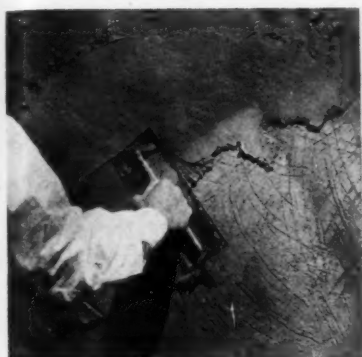
strate just how to go at it. The last term is used advisedly for the idea of this article is to show how to go at rather than to show how to imitate any particular texture other than in a general way.

It is not expected that the architect will turn stucco plasterer, but some of the effects seem so mysterious and give so little indication of what manipulation of the trowel accomplished the result that it is useful to know how to go at it. One must be able to translate a finish back into method; to grasp the feel of the material and trowel that will produce a certain effect.



DETAIL OF HOUSE OF A. J. THOMAS, ARCHITECT

This texture is an adaptation of the old stucco of Southern Europe or the stucco of the adobe buildings of our Southwest. It is an irregularly undulating surface with an occasional trowel mark showing. It gives an effect of underlying stone and so a look of stability and solidity to the wall. If a straight edge is held on the finished work, the depth of the undulations should not be more than $\frac{1}{8}$ to $\frac{1}{4}$ of an inch. If the lumps are too pronounced, the effect will be lost, as the eye will focus on these bumps. They should be there but the eye should hardly be conscious of them



Usually the mason applies his stucco with an up and down motion. Here it is applied with a roughly horizontal motion with a slight curve. The motion should be from the shoulder rather than from the elbow or wrist or otherwise the curve will have such a short radius that it looks forced. After the finish has partially set, at about the end of an hour or so, it is rubbed vigorously with a burlap bag



Care should be taken that this finish should not be exaggerated. The result desired is more in the nature of planes at slightly varying angles to the wall rather than the sweep marks of the trowel. This throws different lights and shadows on the walls. The ridges left by the trowel should not be more than $\frac{1}{8}$ of an inch in height. In this particular case the surface was rubbed with a bag to subdue the sweep marks. This is not necessary if the other finish is wanted

Modern plasterers quite invariably work from top to bottom or vertically. Here the motion is more that of the beginner whose natural inclination is to work more or less horizontally. Just as important as knowing how to get a particular texture is to know how not to get. Don't put on a smooth finish and then try to mark sweeps in it with the corner of the trowel



The finished result as shown in the accompanying "progress pictures."
This surface adds the proper effect to the shingles and half timbering



Here the finish coat is applied with the usual up and down motion but the lower or applying edge of the trowel is allowed to move in and out in an irregular way so that the stucco is thicker in some places than in others

Not much opportunity to do this is given in watching ordinary plastering which is a system evolved to obtain with the fewest motions, a smooth surface. One must turn to another phase and that is the "tearing" ability of the mortar or the applying of a coat with any smoothing action of the trowel. A word about the mortar itself. Fine, even graded sands, whether natural or crushed stone, are dead and will not tear. Under the trowel they will give granular roughness, but it takes a fatty mortar to tear. Masons know this difference and hate to work with a dead mortar, while it is a pleasure to work with a plastic, fatty mix. So use a well graded sand, running from fine to coarse; mix thoroughly, as this means much in getting plasticity and the small amount of lime adds more. If a good sand is used, sufficient plasticity can be secured even without lime. If crushed white marble is used it should not be one uniform size

but be a combination of various sizes. Sand of crushed stone is naturally not as plastic as a natural sand of rounded grains but is sufficiently plastic.

It is interesting to watch the effect of speed or quickness of stroke on the tearing effect in the mortar. A slow stroke is apt to give a finer texture, while the faster stroke gives a rougher one. A slow stroke makes it difficult to prevent the trowel from "chattering" and giving a washboard effect. The stroke should always be powerful and certain.

As the application is quick and forceful it is usually best to cover the wall with a skin coat of the finish material and work the actual finish coat into this. Then if a spot or two is missed, it is not necessary to go back and try to patch it as this little skin coat gives the proper color. But watch also the suction of the wall. Masons have a tendency barely to wet down the scratch coat and



While it is still soft the sharper breaks in the mortar are worked down with the end of the trowel. About an hour after the finish is applied it is vigorously rubbed with a burlap bag which removes practically all of the trowel marks, leaving a granular, sandy surface



A rough torn texture produced by using a rather stiff mortar and applying in irregular direction with the trowel held at a slightly sharper angle than is used for smooth work. The result is that the lower edge of the trowel tears the mortar as it goes on. The variations in this texture are many, secured by varying the consistency of the mortar and the motion used in applying



THE FINISHED RESULT OF THE METHOD SHOWN AT TOP

The heavy shadows thrown by the overhanging roof are well carried down the wall by the rough texture of the stucco



The second or scratch coat is covered with a thin layer of the finish mortar so that in case the spatter dash does not entirely cover the color of the base will not show through. The spatter dash is applied while this cover coat is still soft. In polychrome work the cover coat is a different color from that of the base



Before the spatter dash has started to set it is lightly trowelled with the trowel held almost flat on the wall

KENNETH DALZELL, ARCHITECT

quick absorption will often rob the finish coat of its plasticity in a few seconds, whereas a properly wet down wall will leave the finish still plastic for nearly one hour. This is essential in preventing lines from showing where the drop in the scaffold is made. Such joints can be avoided in the following way.

Wet down the walls thoroughly several times the previous day and again an hour or so before the finish is started. Have sufficient masons at work so that, if possible, they can complete a strip across the side of the house on which they are working in about 45 minutes. Then when they start to apply the finish in the next lower strip, the first part of the work will still be sufficiently plastic that this second strip can be worked into the previous strip and so prevent a joint mark.

This is usually sufficient. In some cases where the area is very large, and enough masons are not available, one of them can go back when the first strip across is partially completed and add a foot or so to the bottom of the lift to keep a still plastic edge to which to join.

This question of keeping down the suction and keeping the work plastic is of particular necessity when applying a rock dash finish.

In this article, an attempt has been made to show the general method used to secure textures of various types. Close attention should be paid to the angle at which the trowel is held. As far as can be done, a written description of each texture is given with the pictures.

It is not to be expected that every stucco mason can turn from ordinary plastering requiring the most true and perfect surface to the free careless stroke required in textural work. But it is gratifying how easily most of them grasp the idea and though they often have difficulty in preventing the subconscious return stroke that smooths the surface, they soon seem to master the situation. As a matter of fact, the beginner often finds it easier to apply a texture than the old-timer, which is only natural considering that a texture is primarily a method of application where "slick" work is not a consideration. So be a bit patient with the stucco mason, for remember he is an old dog learning new tricks.

Often one may have in mind an exact effect, seen somewhere, which it is wanted to reproduce. Often this cannot be secured, but the mason will perhaps arrive at one that is just as interesting.

(The End)



A HOUSE AT DOUGLASTON MANOR, L. I., N. Y.

This surface is somewhat of an exaggerated travertine nature. It is most effective when there are broad shadows from foliage on the wall.

By using a finer spatter dash the effect can be subdued

OFFICE BUILDING *for* JOHNS-MANVILLE, INC.

LUDLOW & PEABODY, Architects

AMONG the important architectural achievements of the year, which distinctly mark the better development of our modern architecture, is the completion of the Johns-Manville Building. There are two things in connection with this project which make it of extreme interest. The problem of design involved was the incorporation of an existing building which, when completed, was four and one-third times larger than the original structure. The successful solution of this problem by Ludlow & Peabody characterizes it as an extremely creditable performance.

The changes which occur in the building life of a growing city present conditions to owners and architects which confront them with the problem of investment values. It follows, then, that to maintain these values it is often necessary to decide whether to demolish an existing building or convert it into such form that its original value is increased. In this instance Johns-Manville retained the original building which permitted the owners to occupy it during the construction period of the present structure.

The ground area of the original twelve story Johns-Manville Building was increased three times in extent and on this enlarged site the present building was erected. The attic of the original building was converted into a full story, the old cornice removed and a new one of a different character substituted for it. On this original structure, whose size was increased to cover the entire area of the property, was erected a tower which was as large in plan as would be permitted by the Zoning Law. The size of the principal portion of the tower decided upon was one that would permit



OFFICE BUILDING FOR JOHNS-MANVILLE, INC., NEW YORK

LUDLOW & PEABODY, ARCHITECTS

it to be eight stories high, thus overcoming the box-on-box effect which would have resulted if the lower portion of the tower had been made larger and still conform with the law. Above this main shaft is a four story tower of smaller dimensions which is surmounted with the penthouses and other structures which house certain mechanical equipment of the building. By adopting this plan the main portion of the tower is of such size and height that it is in fine proportion with the lower part of the building.

The old building was designed in a Venetian style and the new portion is designed along Lom-



A VIEW IN THE EXECUTIVE OFFICE



MR. H. E. MANVILLE'S OFFICE

OFFICE BUILDING FOR JOHNS-MANVILLE, INC., NEW YORK

LUDLOW & PEABODY, ARCHITECTS

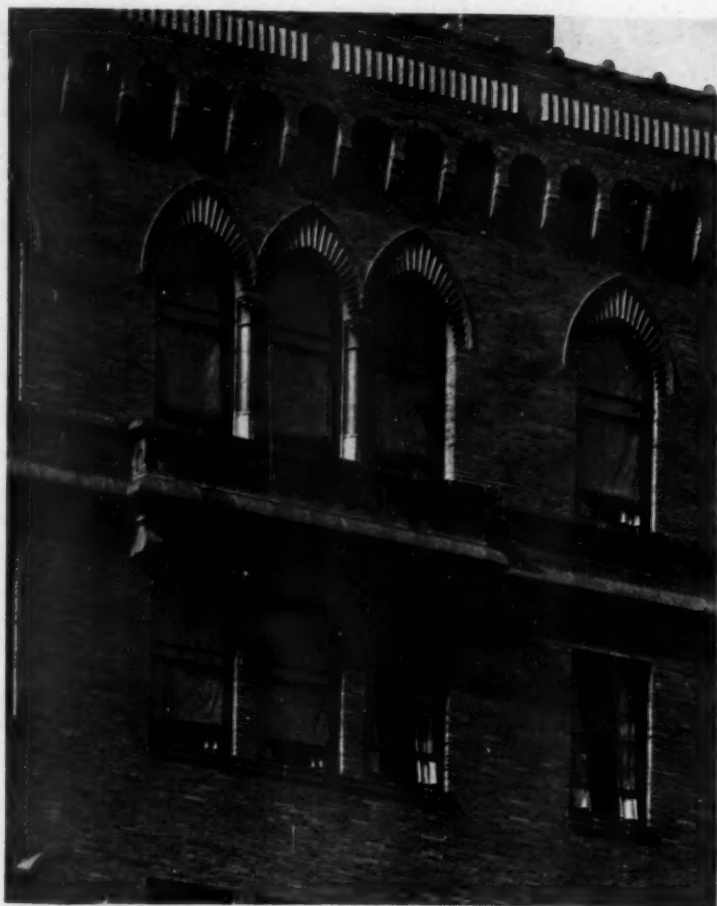


MANTEL IN THE BOARD ROOM
OFFICE BUILDING FOR JOHNS-MANVILLE, INC., NEW YORK
LUDLOW & PEABODY, ARCHITECTS

bardic lines. The new story, which took the place of the former attic with a new cornice and parapet, affords a satisfactory transition from the one style to the other. This presented a difficult problem and demonstrated the adaptability of the Lombardic style to setback conditions. As this building was to be raised vertically from twelve stories to twenty-six stories, the heavy shadow cast at the twelfth story by the overhanging Venetian cornice was undesirable as it would cut the building into two parts. To overcome this difficulty it was necessary to remove this heavy cornice and also alter somewhat the design of the story directly under it and to give this portion a "vertical cornice" which would lead comfortably up to the thirteen stories superimposed. This change also made less difficult the real harmony between the imposed architecture of the lower stories and the superimposed architecture of the thirteen story tower. As the building now stands the zoning set-backs melt one into the other with a sense of continuity to the very topmost part. It is a mighty building, formed with its massive base up through the sturdy tower to its uttermost heights—plain, simple and feudal, expressing that reserve strength and permanence which so well typifies its owners.

Johns-Manville occupies a display room on the first floor; the balance of which is tenanted by a bank. The major portion of the building is used by the owners, housing the various departments of their organization. The executive offices are located in the twenty-third and twenty-fourth floors and are finished as shown by the illustrations.

When it came to the matter of selecting an architect for this building, Johns-Manville was confronted with a very natural difficulty. Realizing that the progress and success of their business had been due largely to the appreciation by many architects of the character and quality of their products, Johns-Manville naturally hesitated in making a selection from among those architects who had given them such appreciative support as was evidenced by their specifications. At a dinner given to twenty of the leading architects of New York the announcement was made that, if agreeable to



A DETAIL OF THE TOWER

all of the guests, the selection of the architect would be made by lot and as a result Ludlow & Peabody were the winners.

An architect usually rebels when he finds that he must have his work circumscribed by an existing design with which he might have no sympathy. It may be, however, an open question as to whether the same architect, receiving such a challenge, does not do fully as well in adopting the style imposed and so modifying and transforming it into a new design, as if he were required to design a building without any such restrictions. It is the duty of the architect to conform to the unalterable conditions imposed by any problem rather than to attempt to change them. A solution of such a problem as was submitted in the Johns-Manville project is an achievement perhaps more to be proud of than if there had been no restrictions imposed. At least it is quite evident that this kind of work will be done in greater volume as time passes and it is of a nature that should command the serious consideration of architects at this time.

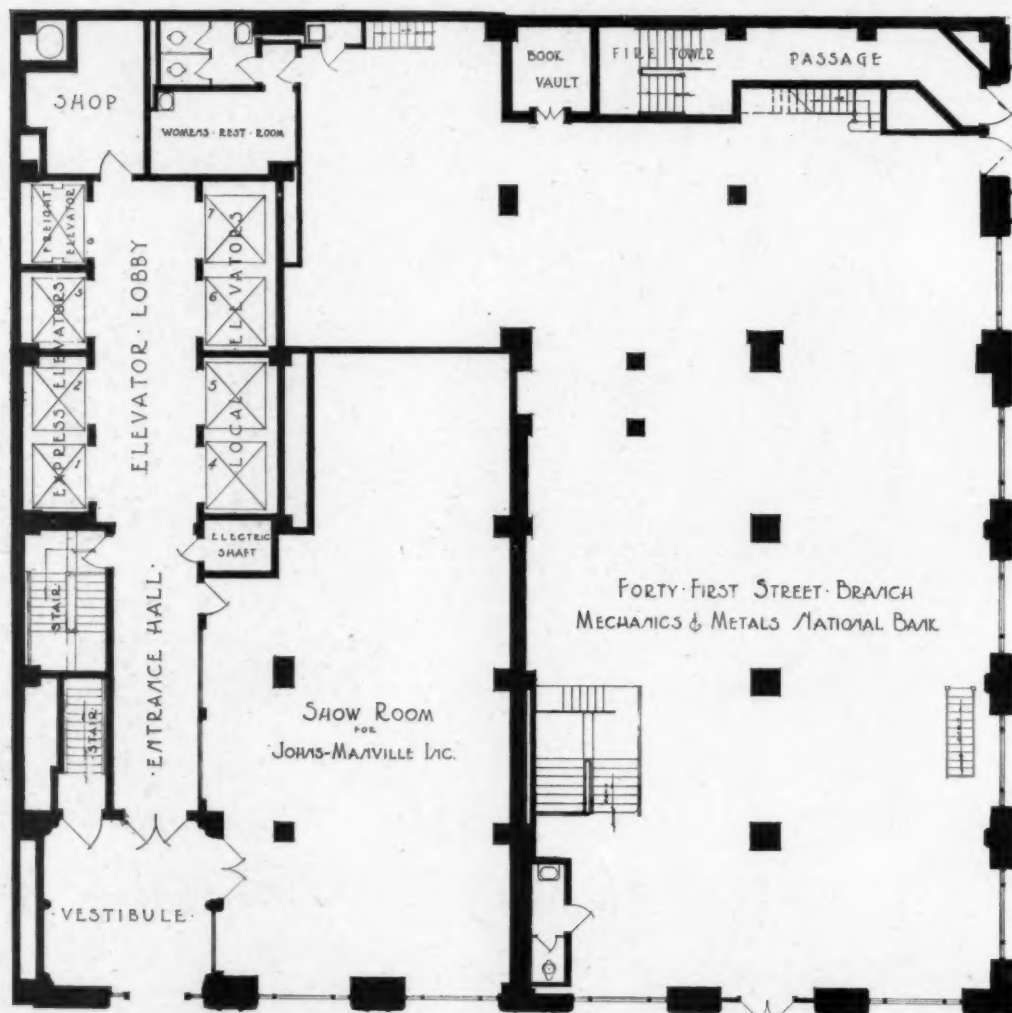


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LUDLOW & PEABODY, ARCHITECTS

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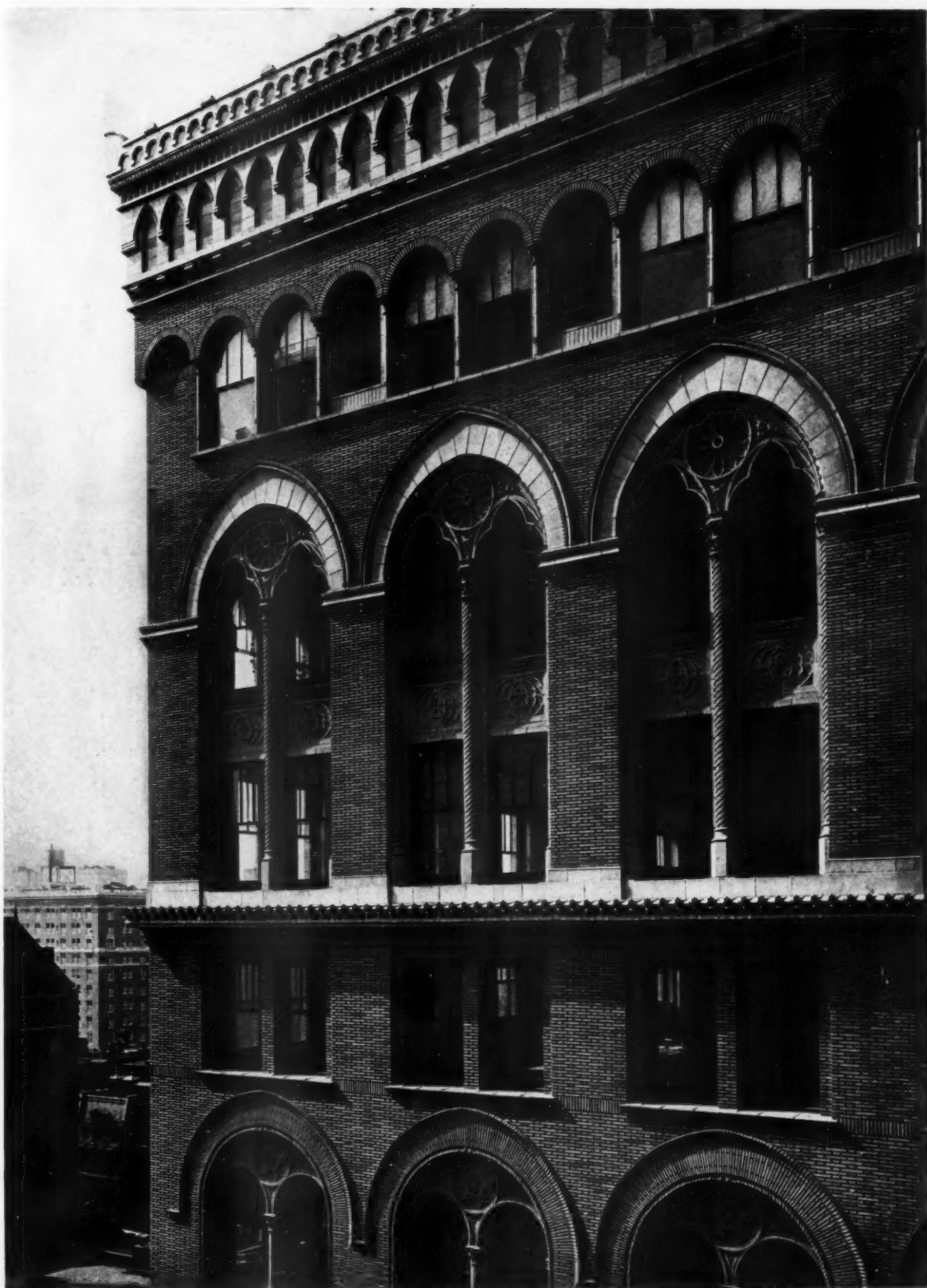
THE AMERICAN ARCHITECT
October 22, 1924, Plate 129



FIRST FLOOR PLAN

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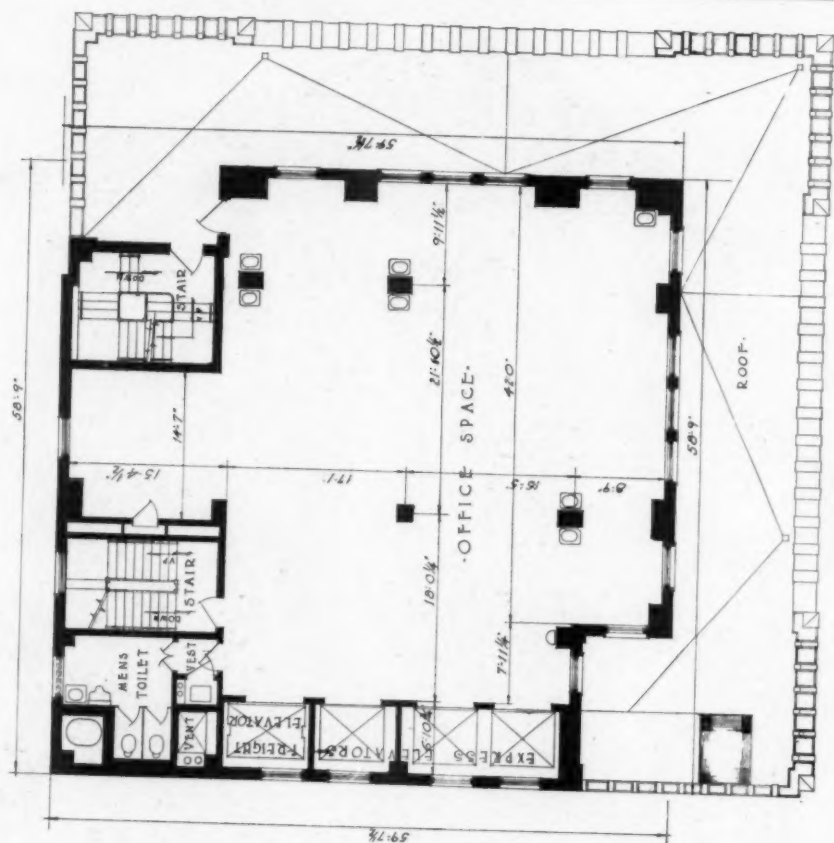
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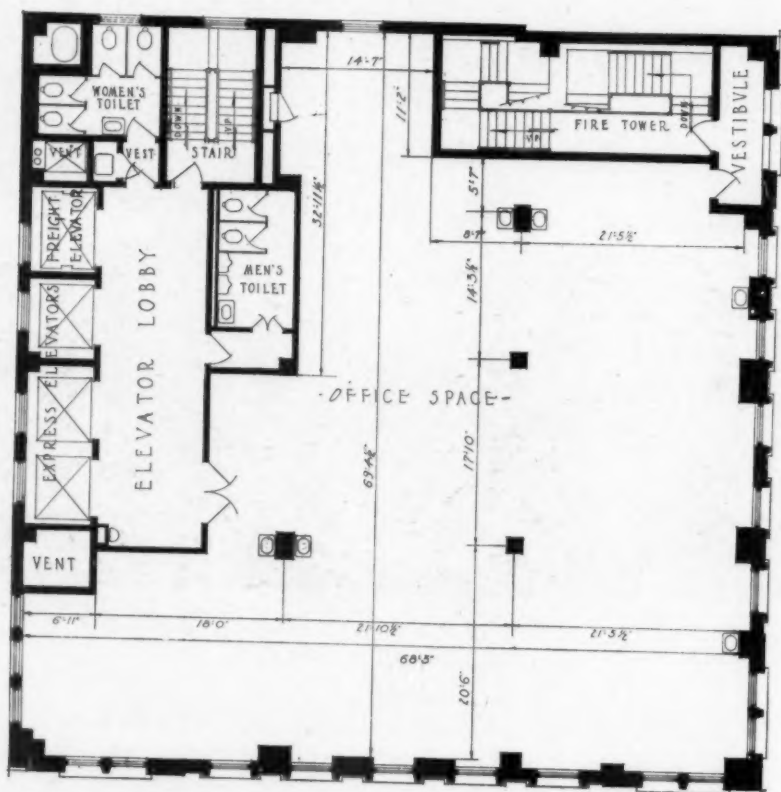
(See plans on back)



TWENTY-THIRD FLOOR PLAN

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TWENTY-SECOND FLOOR PLAN

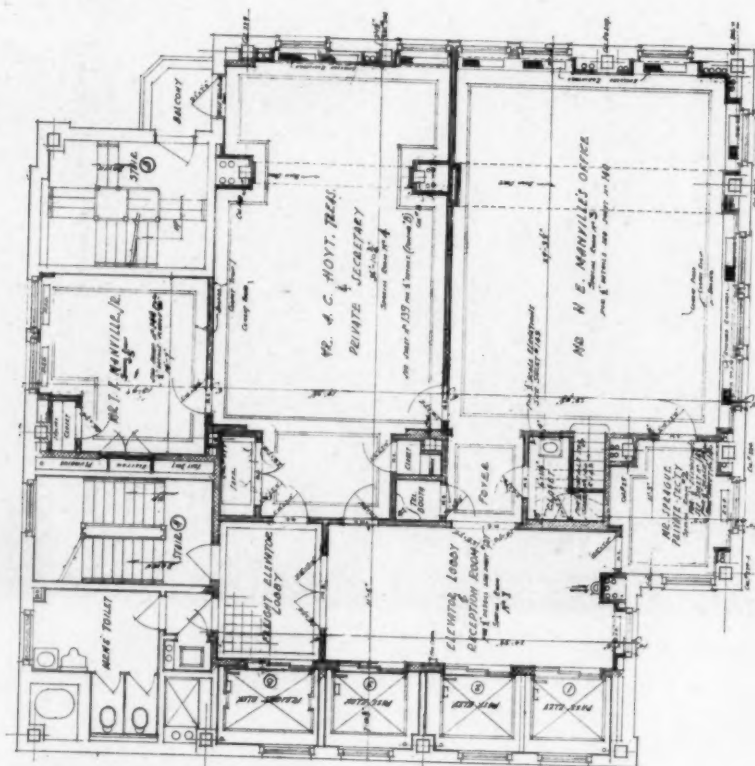


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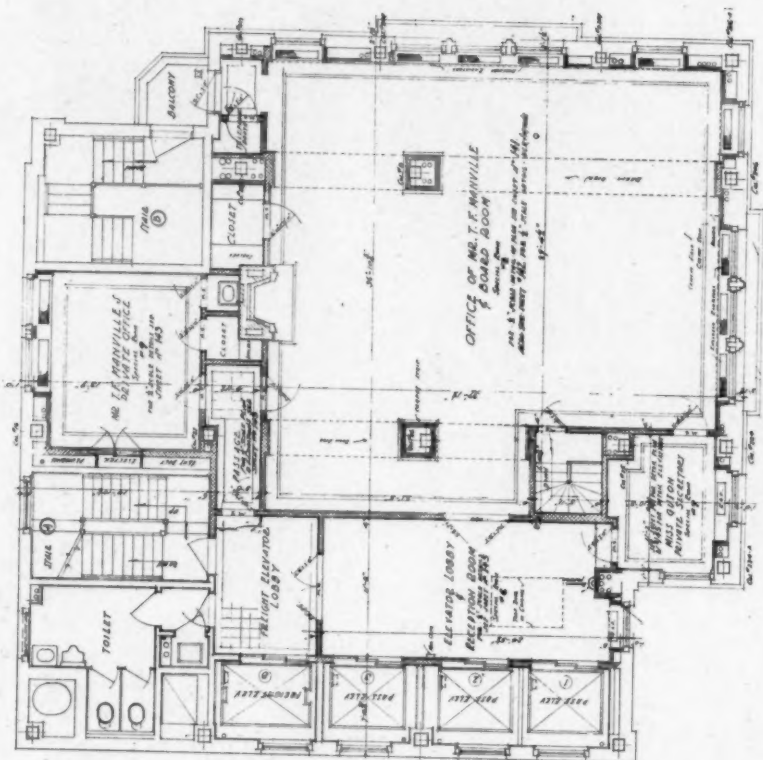
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(See plans on back)

THE AMERICAN ARCHITECT
October 22, 1924. Plate 131



TWENTY-THIRD FLOOR PLAN



TWENTY-FOURTH FLOOR PLAN

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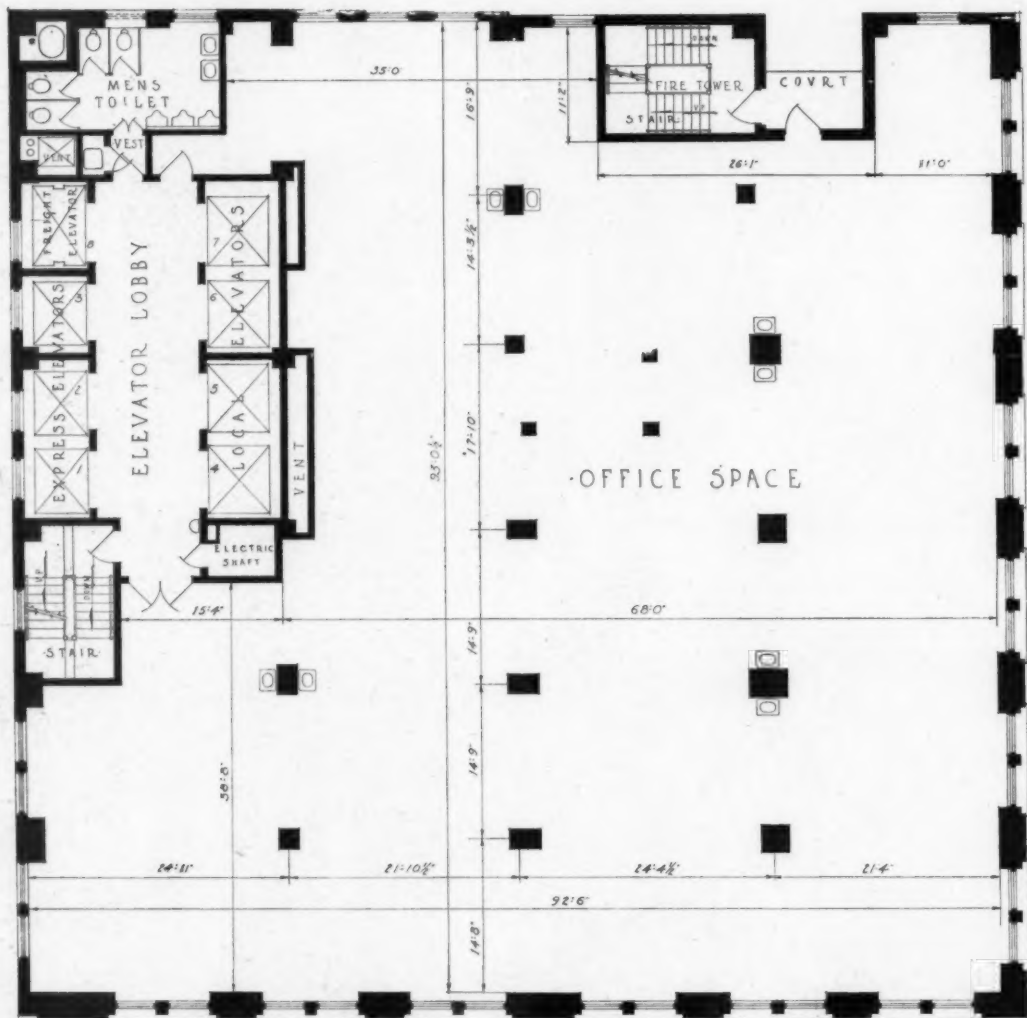


OFFICE BUILDING FOR JOHNS-MANVILLE, INC., NEW YORK

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(See plan on back)

THE AMERICAN ARCHITECT
October 22, 1924. Plate 132



TYPICAL UNDIVIDED OFFICE FLOOR
 OFFICE BUILDING FOR JOHNS-MANVILLE, INC., NEW YORK
 LUDLOW & PEABODY, ARCHITECTS



ENTRANCE VESTIBULE

OFFICE BUILDING FOR JOHNS-MANVILLE, INC., NEW YORK

LUDLOW & PEABODY, ARCHITECTS

THE AMERICAN ARCHITECT
October 22, 1924. Plate 133



BOARD ROOM AND OFFICE OF MR. T. F. MANVILLE
OFFICE BUILDING FOR JOHNS-MANVILLE, INC., NEW YORK
LUDLOW & PEABODY, ARCHITECTS

THE AMERICAN ARCHITECT
October 22, 1934, Plate 134



RECEPTION ROOM TO EXECUTIVE OFFICES
OFFICE BUILDING FOR JOHNS-MANVILLE, INC., NEW YORK
LUDLOW & PEABODY, ARCHITECTS

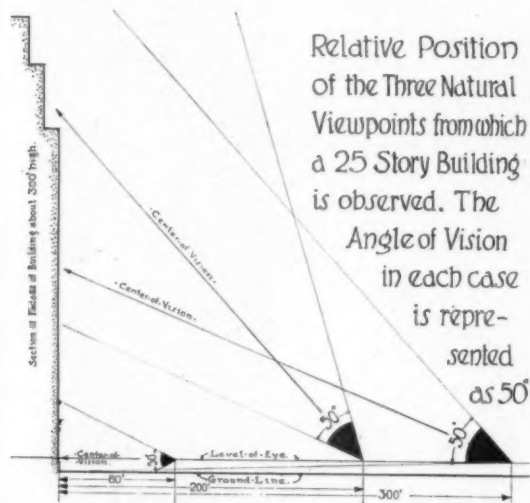
THE AMERICAN ARCHITECT
October 22, 1924, Plate 135

INTERIOR ARCHITECTURE

Scale of Interior Details

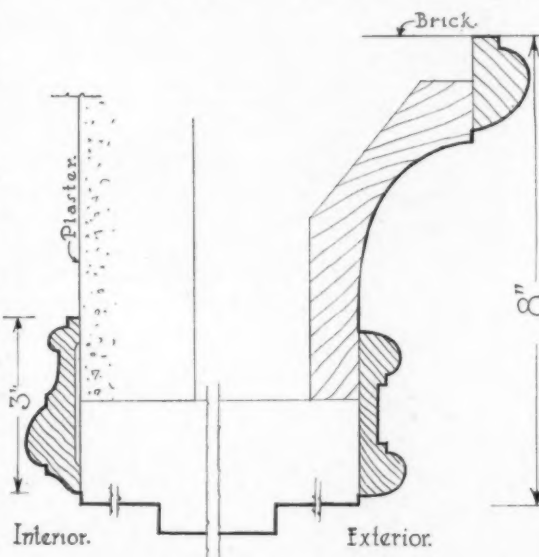
SCALE in design, like its ally, color, is a thing which can neither be figured out by mathematical formulae nor determined by charts, but has to be "felt," although apologizing for the use of so impractical a word and one of such temperamental nature. Very frequently is the word proportion misused in the sense of scale, and *vice versa*, but actually they have quite different meanings. Proportion is simply the relation of one part or component to another and to the

composition to the whole as seen from a natural viewpoint. The natural viewpoint for observing an ordinary sized house is about one hundred feet away, or in the street. The composition then includes the whole house, and the details of the design—the components of the composition—must be in scale to the whole house and with each other. The detail of the mouldings which form the trim of the entrance door, for instance, must be made large enough to count at one hundred feet, and yet in scale with the size of the door itself. One natural viewpoint for observing a tall city building, say twenty-five stories high, is across the street, about eighty feet away. From this point, however, the angle of vision limits the composition to the first four or five floors of the building. The natural viewpoint for seeing the top stories of the same building is several blocks away. Again, the angle of vision limits the composition, this time to the upper floors only. To see the entire building at once, as one composition, it is necessary to view it from a point still farther away, the third natural viewpoint. The components of each of the first two compositions must be scaled as they appear from their respec-



whole. Scale is the relative proportion of the parts to each other and to the whole. Proportion blocks in the design by outlining form and mass, but scale makes the details to correspond. The depth of a cornice, for example, is determined by proportion, but the detail of its members is fixed by scale; the sizes of the wall panels are determined by proportion, but the detail of the mouldings which form them is decided by scale. Proportion establishes scale, to a certain extent, and scale must be interpreted within the boundaries set by proportion. The relation, therefore, of proportion to scale allows of a certain variation which further proves that it must be "felt," for the interpretation of proportion either as good or bad is purely a matter of taste.

There have been many definitions of the term put forth, speaking of it in a general way as the relation of the parts to the whole. In reality, it is much more than that. The scale of a design has much to do with the point from which the design is seen. It would better be described as the relative proportion of the components of a



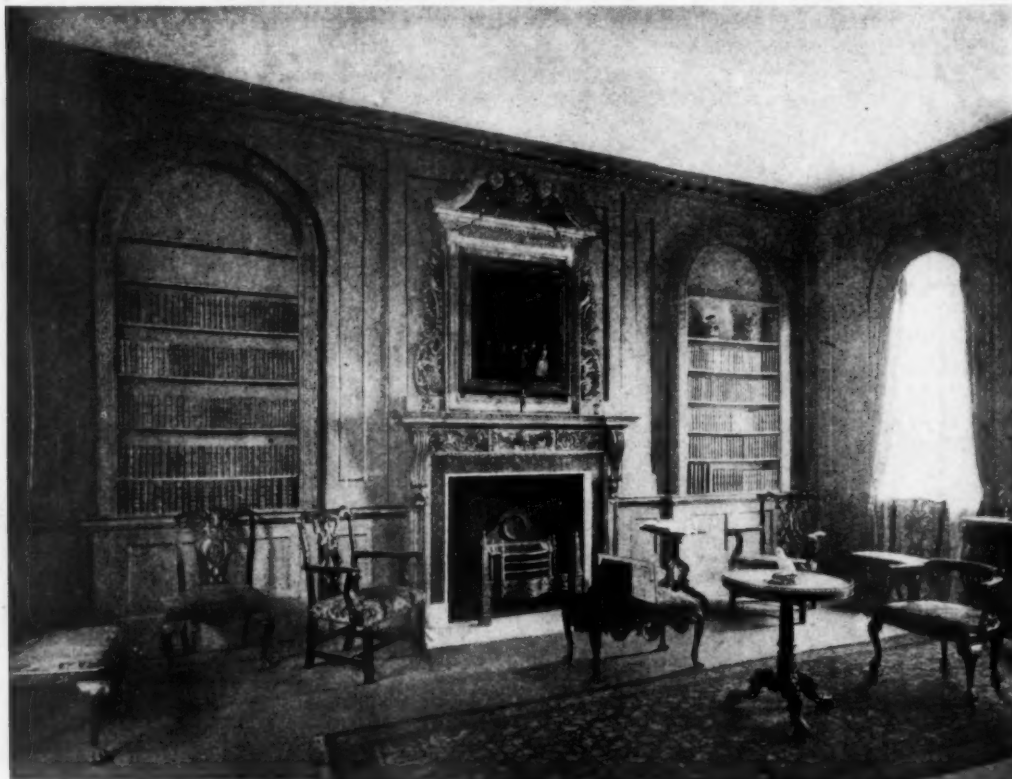
SECTION THROUGH AN ENTRANCE DOOR

R. H. DANA, JR., ARCHITECT

This illustrates at a glance the difference in scale between the interior and exterior details. The interior wood trim is three inches wide, while the exterior moulding for the same opening, of wood also, is eight inches in width

tive viewpoints. More than that, all components in each composition must appear to be in the same scale when seen from the third viewpoint. That viewpoint, from which the entire building is seen at once in perspective, is really the first to be considered in making a design. This composition must represent the harmonizing of the different scales of the other two compositions by which each and every component of both compositions will accurately represent their relative distance from the eye. It can be seen, at once, that

its own boundaries, which are generally inside the angle of vision. Considering the natural viewpoint as the basis of scale, it might be said that each wall represents a composition, and that the natural viewpoint is in the center of the opposite wall, looking directly toward the center of the composition. Each room would then have four compositions. In an ordinary sized room, the angle of vision will include the entire wall and part of the two diverging walls, floor and ceiling. The eye of the observer is thus on the same plane



THE EIGHTEENTH CENTURY ROOM, THE PERIOD OF 1750, SHOWN AT WEMBLEY, ENGLAND

From The Architects' Journal, London

The Georgian period is characterized by its small scale, but bold proportions. The high ceiling of this room does not in any way disturb the scale, and the horizontal lines of the dado, mantel and bookcase shelves tie up the scale of the architecture with the furniture

a knowledge of perspective and how it functions is necessary in solving this problem.

Quite different from this is interior scale. While the location of the nearest natural viewpoint of an exterior design is seldom less than eighty feet away, the natural viewpoint of an interior design is actually within the picture itself. The lines of the exterior converge; the lines of the interior diverge. The angle of vision does not draw the limits of the composition here, for the diverging lines of the walls, floor and ceiling mark

as the components of the composition in the immediate foreground. The scale of those components are thus fixed at full size as seen by the eye. Unity of scale thus puts all components in the composition in the scale of human dimensions. Furthermore, on account of each composition lapping another and including a part of it in its composition, the same scale must be evidenced in all four compositions.

Human dimensions have standardized certain features of design of interiors. The height of a

single door, for example, is practically fixed at seven feet six inches, to allow the average human frame to pass through the opening comfortably. The width of the same door, which is established by proportion, varies only slightly. This immediately gives a scale to the design of the composition, based on human dimensions. The width of a double door is also fixed, and the height is increased to make the opening in good proportion, and, at the same time, in scale with the single door. If the height of the double door were in-

scale. This, of course, is only considering an average room in which the height of the ceiling might vary between nine and twelve feet, for instance. If a ceiling runs much higher, as it would in public rooms such as banks, churches, etc., the room is undoubtedly much larger in proportion. The natural viewpoint on the opposite wall is then much farther away, and the scale is increased accordingly, as on the exterior. Proportion then defines bolder masses which, in turn, increase scale; door sizes are increased and furni-



QUAKER RIDGE GOLF CLUB, QUAKER RIDGE, N. Y.

BUCHMAN & KAHN, ARCHITECTS

Increased dimensions of a room do not increase the scale of the furniture, for furniture must always be in scale to human dimensions. Good proportion, however, allows larger pieces in a large room. A chair or table of generous size, in correct scale with human dimensions, appears even larger than it is, and thus is in better proportion with a large room

creased in the same ratio as the width, it would represent a single door in a much greater scale, and throw the whole design out of scale with human dimensions. The ceiling height, which determines the height of the wall, does not affect the scale of the design of the wall. It does, however, affect the design itself. A higher ceiling calls for a deeper cornice; an arrangement of wall panels is greatly affected by the ceiling height. This, however, is a matter of proportion and not of scale. The detail of the cornice mouldings and the panel mouldings, however, is in the same

ture, if there is any, goes to the extreme of human dimensions.

So far we have only been considering the composition of the wall, which is governed by the same rules governing the composition of a picture,—line and proportion. We now come to a very different stage. The complete composition which is seen from any one of the four natural viewpoints has another interesting feature besides height and width,—it has depth. In painting a picture, an artist finds his hardest problem in correctly interpreting the various planes of his

picture. This composition of a room has natural depth. Furniture emphasizes it. The introduction of furniture into the composition opens a new element. The scale of "ready-to-wear" furniture has become standardized just as has the size of doors. Chair seats are established at eighteen inches above the floor; table tops are fixed at thirty inches. These heights have proved to be the

the same effect as heightening a double door in the same ratio as it was widened.

With these standard measurements of chair seats and table tops, furniture is based on the unit of human dimensions. Eighteen inches from floor to seat is the same relative proportion to the design of a chair as seven feet six inches, the height of a single door, is to the design of the wall. In order that perspective may function properly, that is, that each component in the composition may accurately represent its relative distance from the eye, all the pieces of furniture must be in scale with each other and with the background,—the walls and ceiling. The problem of harmonizing is similar to that presented to the designer of the exterior, only here the variation of scale is not so great. A table of a much heavier scale than the mantelpiece, placed in the center of a room, with the mantelpiece as a background, appears in the perspective picture even heavier than it is. It is sometimes inferred that greater depth, often desired, is seemingly added



UNITY OF SCALE OF FURNITURE AND WALL DECORATION IS HERE BROUGHT ABOUT BY COVERING THE FURNITURE WITH THE SAME MATERIAL AS IS USED IN THE PANELS OF THE WALL

most comfortable and practical for the average human frame. This does not leave wide variation in the scale of the detail of chair and table legs. The dimensions of a chair seat may increase into a seven foot davenport, and a table top may vary in its size from the smallest tabaret to the largest refectory table. The larger pieces will call for a leg to effect greater solidity than the average chair or table. Proportion will demand it. This does not mean heavier scale, however. A good point to illustrate this wrong interpretation of scale as commonly used is seen in the dining room suite. The detail of the chair leg may be in very good scale for the small seat dining room chair. But the same leg has been practically repeated on a much larger scale for the leg of the large table. Lack of unity of scale at once overshadows the attempt at unity of design, and a bad effect is produced by the difference in scale. It is just



CHAIR COVERED WITH A MATERIAL THE DESIGN OF WHICH IS IN SCALE WITH THE DETAILS OF THE WOOD FRAME AND NOT ONLY WITH THE DIMENSIONS OF THE CHAIR, AS FURNITURE COVERING SO OFTEN IS

to the composition in this way, in that the relative proportion of the two scales forces the wall back further than it really is. This is a mistaken idea. Actually the table appears larger than human dimensions allow, and its awkwardness is

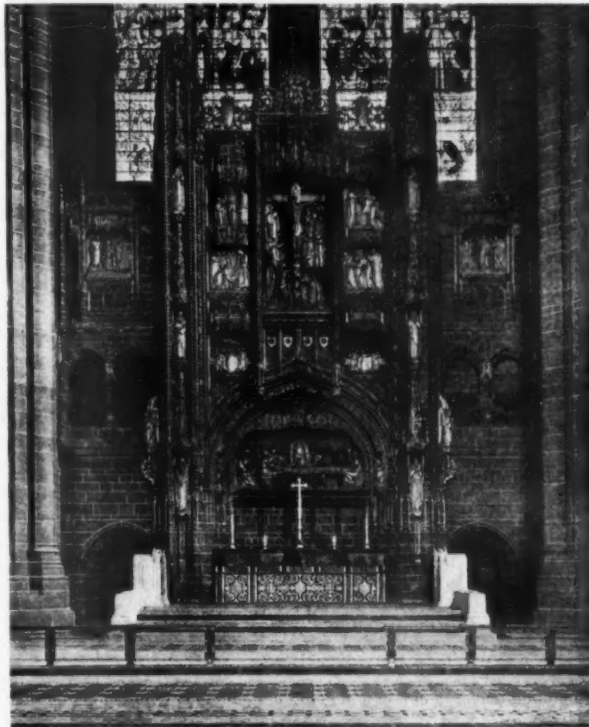
further pronounced by the standard height of the top. Even the untrained eye readily detects any illusion like this to deceive it and the difference in scale is only emphasized.

The scale of the covering of the furniture is just as important as the detail of the leg. The large davenport should be covered in a design in the same scale as the small chair, although the design may be larger. A large design does not mean a large scale. Scale of furniture covering is too often selected in relation to the dimensions of the seat and back, if any thought is given to it at all. Similarly in wall coverings. A wall paper is not selected to be in scale with the wall space to which it is to be applied. One room would then have papers of different scales on its various walls. Its design must be in scale with the cornice mouldings, the door trim and the furniture,—the components of the composition of which it is also a part. If the pattern of a wall covering seems small for a large wall space, proportion then steps in and demands a wainscot, for instance.

While pleading for unity in scale, as in an earlier article we emphasized the value of unity in design, it should not be understood that contrast must not be evident to avoid monotony and lack of interest. But, as in color schemes, a little goes a long way. Again, just as design is closely related to texture, so is scale related to material. Stone, for example, when used in an interior composition, must be governed in detail by its quality of material. It cannot be detailed like the woodwork, and would not be interesting if it were. This contrast in scale emphasizes the contrast in material. In a coarse needlepoint chair covering, the scale of the design cannot be in unison with the detail of an ordinary

chair frame and leg. A heavier scale chair must be chosen on which to use it, and the contrast of the chair and its covering to the rest of the scheme make it a feature of the composition. Harmony should prevail, but contrast must be present. Harmonious contrast is the accentuation of harmony over positive contrast. Unity creates harmony, which is restful; contrast, without disrupting harmony, creates interest, the highest development of satisfaction.

Recently, a furniture manufacturer, discussing some features of furniture design with the editor of this department, stated that scale was the determining factor in effecting harmony between two or more pieces of furniture. While that is largely true, it is not the sole consideration. It seems to be the general understanding, particularly amongst non-professional people who often ignore this vital question of scale, that unity or harmony in design is obtained by repetition. The detail of the carved moulding of a cornice repeated in the cap moulding of a bookcase must be of different proportion, but of the same scale. Similarly, a carved



THE REREDOS, LIVERPOOL (ENGLAND) CATHEDRAL

From The Architects' Journal, London

The Gothic, better than any other style of architecture, retains the scale of human dimensions in its details. The evenness of scale throughout this entire cathedral is a great factor in its success

leaf on the leg of a large center table must be proportionately smaller to be suitable for the leg of a chair, but the scale should not be changed. Actually, the furniture manufacturer was right,—scale is the determining factor, for without unity of scale, there can be no real harmony of design. Summing up, it might be stated that the correct interpretation of scale is that vital issue that gives to any composition its sense of true refinement and relieves it of any suggestion of vulgarity.

Acknowledgment is made to the following firms for supplying illustrative material: Cooper-Williams, Inc., Erskine & Danforth Corporation.

THE AMERICAN ARCHITECT—THE ARCHITECTURAL REVIEW

This section of each issue of *THE AMERICAN ARCHITECT* is intended to be of the largest and fullest practical use to readers. In the selection of topics and the method of their presentation, it is endeavored to present to architects, particularly those who are not closely in touch with decorators, such information as will keep the reader informed of the best practice in interior architecture and those elements of decorations and furnishings that are allied to that topic. The editor earnestly requests the closest co-operation on the part of readers. It is desired to be of

service, not alone in answering questions relating to problems of practice, but in putting readers in touch with such materials and supplies that will best serve a purpose. More than anything else does the editor want to discuss problems that meet the needs of readers, and he therefore asks for, and will thankfully receive, suggestions as to topics for future issues. It is only by such close co-operation that this department can be made to serve the purpose of *THE AMERICAN ARCHITECT*. Let us then know your needs.



BEDROOM BY HERTS BROTHERS, DECORATORS

The bed covering and the window draperies are of the same material, thus effecting a unity of scale which causes the window to appear at its full width and purposely makes the day bed seem smaller than it is, on account of the size of the window

REVIEW of RECENT ARCHITECTURAL MAGAZINES

BY EGERTON SWARTWOUT, F.A.I.A.

THERE was a wretched little sheet published in Paris for many years that was bought daily by many Americans, by some because it was printed in English, and by others because they wanted to see their names in print; Mr. and Mrs. J. Smith-Jones and daughter of New York, Hotel Maurice—or, among those who signed the Herald register were Mr.

From "The Architectural Forum"

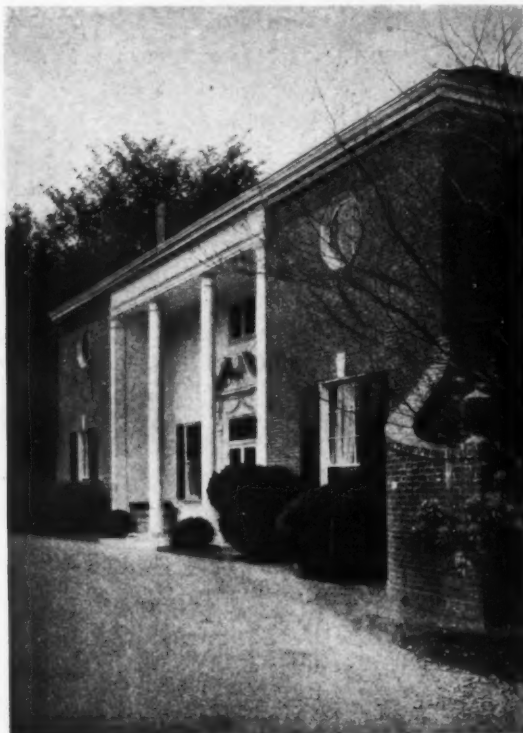


NOTRE DAME FROM THE RIVER, PARIS

and Mrs. John T. King of St. Joe, Mo. And when there weren't enough names and society notes to fill up the paper they published a letter from An Old Lady from Philadelphia who asked plaintively how on earth could one change Centigrade into Fahrenheit. The origin of this letter was lost in the haze of antiquity; it had been used so often it was kept always set in electrotype, but, old as it was, it always caught some poor fish who would gravely write a letter telling

the old lady just how to do it. Sometimes they got half a dozen answers. It was a good filler. It is also a well known expedient for hard-pressed editors of school weeklies to print a time table of the trains running between, let us say, Southboro and Boston. The architectural magazines, too, have their fillers, and one of the most overworked lately has been the use or abuse of Precedent. Ever since the last Institute Convention not a month has passed without a contribution on this subject. Some of these have been humorous and flippant but most have taken the matter quite seriously indeed. The English papers, too, have been running it; in fact they started it years ago. At first we read the articles, but they came so fast we gave it up, and we took a solemn oath we would never read another, but like many other

From "The Architect"



THE CREEK CLUB, LOCUST VALLEY, L. I., N. Y.
WALKER & GILLETTE, ARCHITECTS

There is no precedent for this but it's charming

solemn oaths we have taken, we broke it just now. And the cause of our backsliding was this. We had a telephone call from the Editor of this great Review yesterday and a stern voice said "Look here, did you read I. K. Pond's article in the October 8th issue on Precedent?" to which we replied mildly that we hadn't; we couldn't have read it because we had not yet received our copy of that issue, and anyway we weren't going to read it; we were fed up with the whole thing. But when we looked over about three dozen English magazines and a dozen American ones and found nothing at all on which to base an article—

From "The Architectural Review," London



THE NATIONAL BANK, ZURICH
A modern building, but good

you always have to have some one salient point to pick on, you know—why, then, there didn't seem anything else to do but to agree with the Editor for once and read I. K.'s story, or rather his article, his reaction as he calls it. And then we found that he referred to two previous editorials in THE AMERICAN ARCHITECT and so we had to read them too, and the more we read the less we knew about it all. Now we really admire Mr. Pond extremely; we feel proud to be noticed by him, and to sit next him at a convention, and we are firmly convinced that the stage lost a shining light when he took up architecture, and so did the Big Top, but we must confess we don't always understand just what he means, and we must also confess that sometimes when we do understand, or think we do, we do not always agree with him. In the present case, we don't understand. Perhaps today we are unusually obtuse. A few minutes ago we had a telephone call from someone or other, a woman's voice it was, who said she was speaking for Capt. Foster. We did not know any Capt. Foster, but the voice was so sure we must know him, that we meekly said "Oh, yes, Capt. Foster!" And then the voice said, "Capt. Foster wants to know if you have

registered yet" to which we replied that we were quite overwhelmed with the interest Capt. Foster took in the performance of our civic duties and that we had indeed registered, but who the hell was Capt. Foster anyhow; that is, we thought that, what we said was "Who is Capt. Foster, please?" And we were told "Capt. Foster is the Captain of your Election District." That was a relief; he might have been a police captain; and we asked if he was a Republican or a Democrat, and to our surprise the voice did not know, it did not matter anyway, and we were the first person who had bothered her with such a question; apparently Capt. Foster didn't care how people voted, he just wanted 'em to vote anyway. A very altruistic person, this Capt. Foster. Now our state of mind in the Precedent question is much like Capt. Foster's. We don't care much one way or the other; let everybody vote. The country will get along somehow whoever's in the White House, and no matter how much printer's ink

From "The Architectural Review," London



THE LAW COURTS, ZURICH
Also a modern building, unnecessarily bad

is spilled, some architects will use books and photographs, and others will sit down in cold blood,—we suppose they do it in cold blood, but maybe not—and try to invent new forms and horrible shapes and put columns upside down and so on just as they always did. That's the way we really feel about it, but having received a command from the throne to review Mr. Pond's article we've got to do it. Because then you see, I. K. may reply to it, and then others may come in, and by dividing 100 by 86 and subtracting

THE AMERICAN ARCHITECT—THE ARCHITECTURAL REVIEW

the year of your birth Centigrade can easily be reduced to etc., etc.

Now in the first paragraph of Mr. Pond's reactions he refers to two types of men, in fact in several places he speaks of the man himself as being more important than the thing produced. "But after all" he says "the *thing* is little; the *man* is everything." Perhaps we have not yet quite recovered from Capt. Foster, and are still in a trance, but we must confess we don't understand. The thing referred to is evidently the building, or a part of it for just above he says:

"A new thing, an expression of what the designer sincerely conceives to be basic in modern life, need not, from the fact of its newness, be unlovely, nor need it necessarily be beautiful. That, again, will depend upon the soul of its designer. However, a thing, beautiful or ugly, conceived in the modern spirit stands the better chance of being vital, of being instinct with life."

Now the thing may be little; this we are quite ready to admit, particularly if it is one of the newer things, and we might be quite ready also to admit that the man should be everything, but is he? We don't know how it is in Chicago, but in our own experience the thing seems to be every-

thing and the man little. For example, there has just been dedicated a large, more or less monumental building we built in the middle west. There was quite a time made over it; twenty thousand people, parades, fireworks, real and vocal, five Governors and ex-Governors, letter from the President and all that sort of thing. We

From "Moderne Bauformen"



REGIERUNGSBAUMEISTER BODE, ESSEN

This is very modern, very modern indeed



THE AUSTRIAN HOUSE, WERKBUND EXPOSITION, COLOGNE, 1914

JOSEF HOFFMANN, ARCHITECT

No silly following of precedent here. Note the shapely figure at the left

were not present ourselves; we had a premonition that it was the thing that would be everything, and our shrinking nature and innate modesty forbade; besides, it's quite an expensive trip; but we read four column accounts in all the papers. There was much praise of the pageant, of the number of people, of the beauty of the queen of the day and her attendants, much notice of the Governors, five of them, and their speeches, and several columns praise of the glories of the sovereign state, and some pleasing mention of the thing chiefly because it was *in* the State, very scant recognition of the Building Commission who gave their services for five or six years, and that's all. And that's all there ever is—and it seems to us that's all there should be. That is to say, the thing is the thing not the man. What matters it who designed the thing, or what his

moral or spiritual attitude was. It is hard indeed to believe that an atheist could build a good church, but it's conceivable, and if the church was well designed and a thing of beauty, it would live and fulfill its purpose, while a hideous structure designed by a pious man would not. Similarly how could a wretched thing be vital—we dislike that word exceedingly so we'll quote—how could it be "vital" or ever hope to be, merely because it was conceived in the modern spirit? Or by what conceivable stretch of the imagination can a distorted and lascivious representation of the human figure be called a work of art merely because the man who did it was horribly in earnest?

From "Moderne Bauformen"



REGIERUNGSBAUMEISTER BODE, ESSEN

Modern—Write your own caption

But we are hobby riding again and are getting past Mr. Pond. He never meant anything like that; we are thinking of others—and we must return to paragraph one of the reactions and quote a few lines about the two types of men:

"First, there is the vivid soul who, keenly sympathetic with the past, yet lives frankly in the present, weighs it, and courageously faces the future. Second, there is the man who, through either timidity and self-distrust or an academic cast of mind, while moving in the present, sturdily keeps his face toward the past. I shall adopt the method suitable to one of the first type, and, acting in consonance therewith, shall set forth my "reactions" in the simplest and best English at my command; studying and restudying my words and phrases, and producing the most musical and rhythmical embodiment of my thought of which I am capable."

and further along:

"that the employment and development, by individuals in a certain time and place, of forms appropriate to and expressive of the genius of that time and place, from whomsoever the forms may emanate, is a thoroughly justifiable use of precedent. That, however, is vastly different from applying forms peculiar to a remote time and environment to the surfaces of modern structures."

Now here again we are a little at sea, but perhaps this is because we are not the right type of man. This rhythmical embodiment of thought

is written for the first type, the Class A man, and either our timidity or academic mind—we prefer to think it's the latter—prevents us from a full understanding of the passage; but, as we read it, it means that use of precedent was all right years ago but quite wrong now. If we are mistaken, we will lay it at the door of Capt. Foster—Who was he anyway?

But to resume: Apparently the direct cause of these reactions was the Editorial Comment—of which we are guiltless, by the way, they never let us appear on the editorial page—the cause of it all, as we have said, was some editorial comment on the razing of Diana's tower here in New York and the vandalism of it, and the proposal to put it up somewhere else, New York University perhaps. Now that seems a good thing to us, but we are not terribly keen about it. We are in the happy position of Capt. Foster. We like the tower. When we first came down to New York after leaving the classic shades of New Haven we got our first, and only, job in the office of the firm who designed it, and it was a part of our creed that that was a good tower, and when all the buildings around about it were low and when there were no parked automobiles, and the busses were horse-drawn and were not busses, and the grass was green and the trees had leaves, and the park was full of bums and baby carriages, then the tower was a real tower. But now hidden and dingy, tucked away among the tall buildings, it has lost much of its charm. And yet we'd hate to lose it, not because of its architectural merit, but because it stands for a bit of what New York was once. It is like a tower in Spain, to be sure, too much like it. We agree, as usual, with Mr. Pond. And there are other things we could think of that are too much like other things. We don't like adaptation, or plagiarism, or whatever you choose to call it, any more than Mr. Pond. Nobody likes it.

But we can't help thinking that in all this talk on precedent most people are barking up the wrong trees, or at any rate up different trees. It seems to us that those who are most vociferous in their opposition to precedent are using that as a club to attack all who do not agree with their own advanced notions. For example, there are many who say, and believe, most of them, that columns should be abolished. Away with the orders; they have no place in modern construction. In the Classic days it was different, there they were structural, but now they are shams. But was this so? It seems to us that the Classic column was almost invariably used because of its architectural beauty. The portico of a Greek temple is not a structural necessity; it was designed to give dignity and beauty to the building. Remove it and what remains? And the order in its development was not logical; the triglyphs had

lost what little meaning they ever had. It is often said too, that engaged columns or pilasters are shams, debased forms, etc. What rot! Anything that gives beauty and dignity to a building is good architecture, and anything that is hideous is bad architecture, no matter how honest it may be, or how structural. We can see no banality in putting in a row of big columns at the base of a twenty story building if you want to and if you do it well. Don't you suppose the Greeks would have used larger orders if they could have found the means of carrying the architrave? Of course they would. Look at Agrigentum. Look how they hollowed out some of their beams into mere shells of stone to reduce the weight. And while there are some who would do away with columns altogether, there are others who realize their necessity but who do not want to use the old forms, and think they must invent something new. Now it's a pretty hard thing to sit down in cold blood, or in the heat and fire of auto-intoxication, as you please, and do in ten minutes, or ten days or even in ten months, something that hasn't been done in ten centuries. For an order is a simple thing, of simple elements, and based on one idea, the post and lintel. The post has become round and is smaller at the top, and a square plinth or template has been placed on top the shaft to receive the beam. In the transition between the round of the shaft and the square of the abacus there are a few, and only a few, possible forms, and all these possible forms have been done, and done over again, until somewhat of a standard or series of standards have been reached. To us it seems impossible to design a better order than the standards, and so, still in the state of mind of Capt. Foster, we would urge people by all means to use an order if they want to, any order they want to, but, when they do it, to follow precedent and do a good one, and not try to design a new bad one. We have seen published many melancholy examples of new orders tried in middle and northern Europe. Skinny, match-like columns with big caps; fat, thick columns with little caps; and some columns with no caps. What's the good of it all? Here precedent is a good thing. And similarly there are good examples of doors and window casings, good relations of openings and voids, good plans, good proportions. You don't have to copy these things; but by looking at them you can get an idea of what is good, and why, if you look closely enough, and the work that you do on your modern problems will be better be-

cause you have seen what is done and what has been done.

And it also seems to us that in all these discussions there are other things than precedent, that are overemphasized, overstressed, to use a word we dislike exceedingly; and those things are steel and reinforced concrete. We are told these are wonderful modern things, capable of great beauty if properly handled in a modern spirit, and there are many earnest souls who think that they are singled out by beneficent fate to be the very men who will clothe these magnificent materials in a novel and wonderful form, and great will be their reward. Well, maybe. We won't say that it can't be done, but we can say emphatically that it hasn't been done, yet. And, as we see it, the reason it hasn't been done is because of the damnable facility of the construction. Anything is possible, any shape, any size. In masonry construction it was different. There, the design was directly influenced by the construction, in the best cases it was the construction. There were certain forms, the lintel, the arch, the vault, the dome; and there were very certain and definite limitations to these forms, and the designer had to know these limitations or he could not design. Nowadays he doesn't have to think; his fairy architecture is easily raised not by some genii at the rubbing of a lamp, but by a very prosaic person with a slide rule and a set of tables. And if he does think of the steel construction and tries hard to clothe it in pleasing forms, what profiteth him? It can't be done, and so in sheer weariness of soul he goes back to precedent.

Now it must not be thought from all this that we ourselves like to stand still and look back, and not forward. We would like extremely to be in the Class A of Mr. Pond. In our own feeble attempts at architecture we have tried to use honest construction, and we have tried to clothe that construction in a simple and direct way; we have used precedent and will probably continue to, but when we have used the old orders we have tried to use them intelligently, and we've tried not to copy anything, at least not too closely; and, we confess, we have tried to invent new forms, but frankly we have not made much of a success of it. And so, at the end of it all we are much in the same state of mind as Capt. Foster. We don't care whether you use precedent or not; we only hope that you'll do something, and that you'll do it well.

PROFESSOR BORING of COLUMBIA UNIVERSITY on ARCHITECTURAL EDUCATION

ARCHITECTURAL education is veering from tradition, stressing less both beauty and taste, according to Professor William A. Boring, director of the School of Architecture of Columbia University, who in a special report to President Nicholas Murray Butler, records his impressions of the International Congress on Architectural Education which recently closed its sessions in London.

American architects, Professor Boring declares, are both artists and philosophers, comparable in their cultural associations to those of Greece and Rome. Planning he calls the basis of architecture, saying that training demands sound knowledge of construction.

"The keynote of nearly all discussion impressed one as insistence on expression of modern ideas of physical needs of society, and of modern methods of construction," says the report of Professor Boring, who is Treasurer of the American Academy in Rome.

"Insistence was recorded on expressing modernity. The need of beauty was not stressed, nor was the cultivation of taste made an issue. This is, no doubt, a healthy sign. The feeling that we are leaning too much on the use of good old forms which have been overworked, augurs something vital, but this idea alone cannot lead us to success in architectural design.

"Knowledge of structural materials and their uses, excellent craftsmanship, even good detail are not the broad basis of good design. To place these in the forefront of an educational scheme seems narrowing. The disposing of masses after analysis of the problem is more important. Planning in its broadest sense is the basis of architecture.

"This attitude of mind must be encouraged in our educational work. We must adhere to the larger aspect of design in construction, including, of course, as a proper equipment, a sound knowledge of construction and good craftsmanship.

"At the risk of seeming narrow, I must say that the American exhibit seemed to me a sound expression of good design, when compared with the work of other countries.

"The teaching of architecture as an art in a well organized school seems to raise it into a higher plane than the combined efforts of the office and school working together, as followed by many schools.

"The time we have to instruct pupils is too valuable to devote to petty details of the business

of an office. It seems better to inspire students to work for an ideal of beauty than to equip them to take positions as technical assistants in an office.

"Architecture as a profession should rank in the mind of the public as on a par at least with law and medicine. We cannot maintain it so by teaching the craft alone. We must turn out scholars who are masters of craft also. In America our architects of distinction move in the highest intellectual circles, as they did in Greek times. They are men of culture, of science, of good taste, and have a knowledge of building processes as well as of good design. In other words they are artists and philosophers.

"Much has been said about commencing early to learn architecture, and no doubt early familiarity with good buildings is an advantage. Our experience, however, shows that college-bred men who come rather late to the study of architecture are the strongest men in our school. Learning to draw early is almost essential, and facility in this method of expression is a great advantage. Some have it naturally; others must acquire it; all must master it.

"But the art of architecture is greater than its expression on paper. Only a limited number of aspirants reach the plane of real architects. Schools should teach such subjects and in such a way as to bring out and develop the natural gift of the student.

"We must recognize that a person of great talent will succeed either in or out of a school, but he will have a better basis foundation for his work if he has good school training. A school should give him those things as basic ideas which he can learn in practice only by going through and rising above the maze of details.

"Four years is not enough time for a high school graduate to reach the proficiency represented by our degree. If a curriculum includes general educational subjects, it should be longer than four years because the professional instruction alone requires at least that much time.

"The average student who has not advanced beyond high school grade is not sufficiently developed properly to approach the major subjects taught in a professional school.

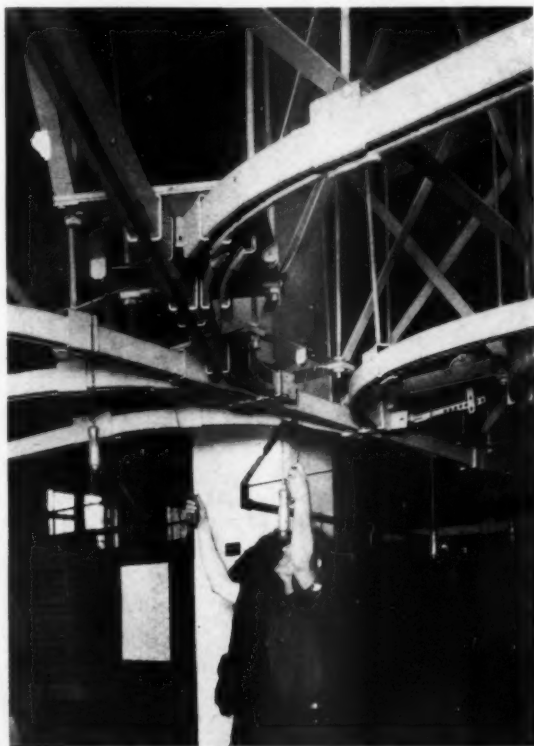
"He can very well be taught by allotting six years from high school to diploma, on the plan of a combined course which begins by mixing the elementary subjects in his professional studies with his general college curriculum."

AN HOUR in the FUR STORAGE WAREHOUSE of REVILLON FRÈRES, NEW YORK CITY

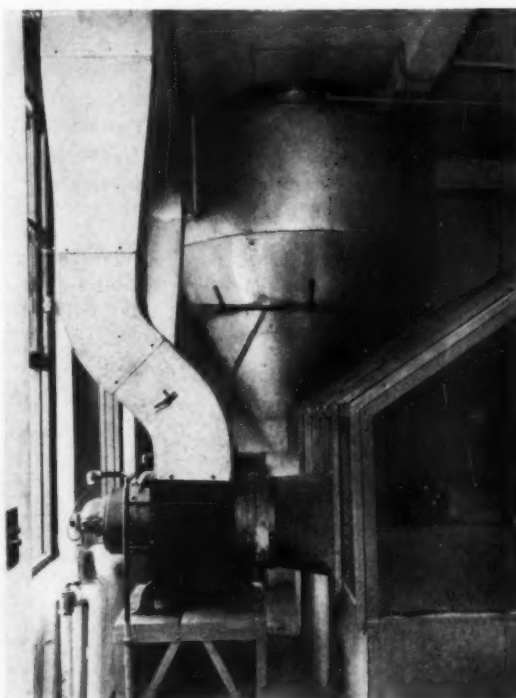
CROSS & CROSS, Architects

TO design a storage warehouse may appear to some as a rather prosaic undertaking but in fact it is one that challenges the skill of the designer as completely as the designing of any other kind of structure. Warehouses are divided broadly into two classes; those used for dry storage and those used for cold storage. A dry storage warehouse usually consists of lofts with windows in the exterior walls of a size and number dictated by the particular kind of contents to be stored. Some dry storage, however, such as furniture, does not require any exterior windows for the introduction of daylight. Cold storage warehouses, such as are used for the storage of furs or perishable goods, do not have any windows for the reason that the admission of daylight is not necessary and for the further reason that the use of windows greatly decreases the effectiveness of the insulation of the outside walls. The peculiarity of this type of building is the

entire absence of windows which naturally requires an architectural treatment vastly different from that of the ordinary building. The absence of openings in the exterior wall offers no reason for the employment of belt courses, ornamental panels, columns, pilasters or other ornaments which are customarily used in connection with a windowed



DETAIL OF THE OVERHEAD TROLLEY SYSTEM SHOWING SWITCHES, CURVES AND TURNOUTS



VIEW OF REAR OF A FUR CLEANING KIOSK SHOWING EXHAUST FAN AND DUCT LEADING THEREFROM TO THE DUST SEPARATOR

wall. The treatment of a blank wall, such as is found in this type of building, is reduced to two elements: color and texture. The outlines of the building, involving proportion, are generally fixed by the conditions over which the designer has usually no control.

A problem of this kind, which has been very successfully solved by Cross & Cross, the architects, is that of the new storage warehouse of Revillon Frères located at Thirtieth Street and Eighth Avenue, New York. Approximately square in plan, this building is eight stories and a basement in height. The two lower stories are built of In-

diana limestone without any embellishment except at the main and only entrance on Thirtieth Street. The exterior wall above the second story is built of a buff brick and is diapered by lines formed by slightly projected headers. In the third and eighth stories there are large window openings and the wall spaces in the other stories are entirely blank except for certain small openings which are designed for a purpose which is explained later. This building, in respect to its color, is most satisfactory and its simple lines and the sturdy character of its construction create a sense of security and protection which is so essential to a place where valuable things are stored. The reason for the particular planning of the building is apparent when the various processes and the work carried on therein, are explained.

The fur garments to be stored are delivered to the eighth floor where they are immediately checked off, identified and hung on trolley frames which are transported to the various departments. This permits the furs to be handled in their natural position. The garment makes its first stop in the beater department where it is taken into a kiosk—a small structure enclosed in glass. In the kiosks are placed wooden tables on which the garments are cleaned. The cleaning is effected by compressed air which is blown into and over the fur through a special automatic control nozzle, and the air pressure is carefully regulated according to the texture of the fur. The total capacity of the compressed air plant is 4-1" hose outlets. In the rear wall of the kiosk, directly above the work table

is a disc exhaust fan which draws the air from the kiosk. Through the roof of the kiosk is an inlet air duct which opens directly back of the workman. This incoming air, passing over the garment and through the exhaust fan, withdraws from the kiosk all of the dust, loose fur, larvae and other things which might be lodged in the fur. It also protects the workman from inhaling these particles, which would be injurious to his health. The fan exhausts into a duct which enters a large sheet metal dust separator.

After the fur is blown and cleaned it is then combed. From this place the garment is transported to a department where it is inspected and an accurate report made of its exact physical condition. Any repairs which are deemed necessary are noted on this report. This inspection is followed by an appraisal of the value of the garment



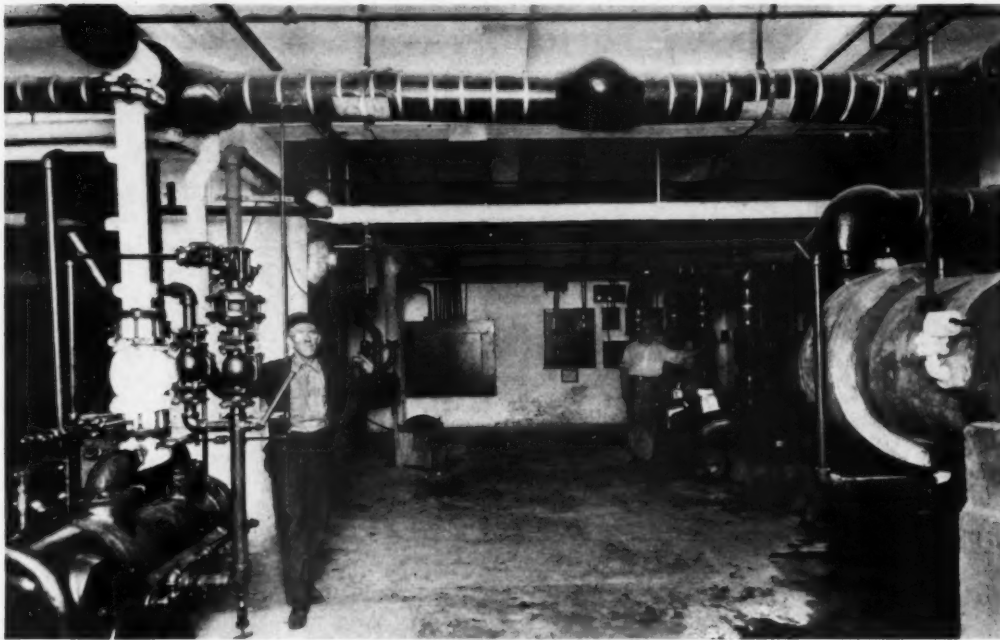
VIEW IN A COLD STORAGE ROOM SHOWING THE GARMENTS HUNG IN PLACE AND ENCASED IN SILESIA CLOTH BAGS



VIEW OF THE COIL BUNKER THROUGH WHICH THE AIR IS PASSED OVER BRINE COILS AND COOLED AND DRIED BEFORE ENTERING THE COLD STORAGE ROOMS

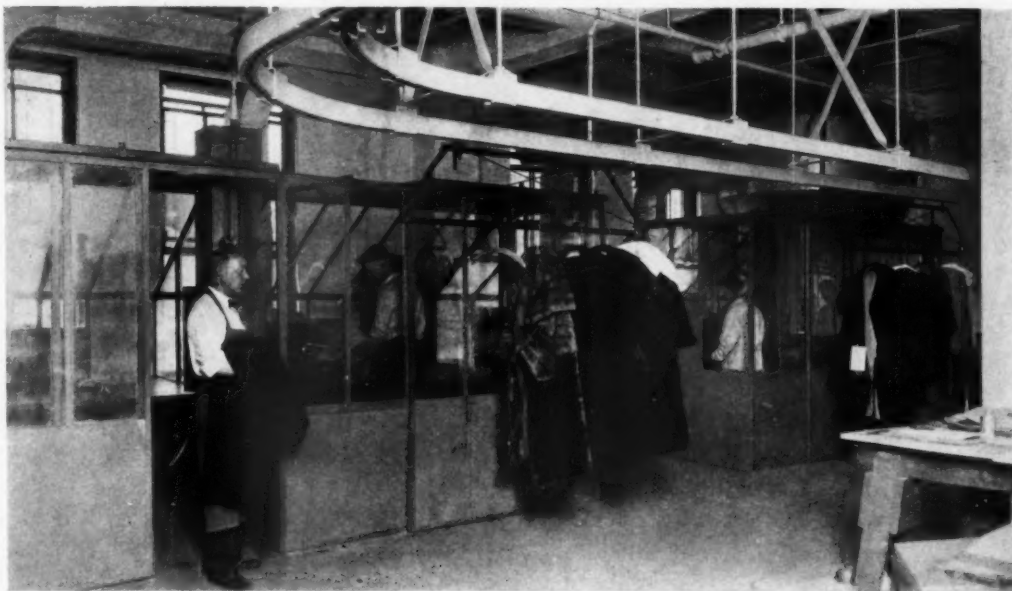
on which is based the amount of the storage charge and the amount of insurance placed on the article. A report of this valuation, the physical condition of the garment and the cost of the suggested repairs is sent to the owner. From here the fur pieces are sent to a department where the inspection report with the garment, storage number and the warehouse receipt is checked. The article is then ready for cold storage and before being placed therein is covered with a bag made of a cotton fabric called silesia. The principal purpose of so covering the fur is to prevent the contact of one garment with another in the storage room.

The records of this warehouse are completed each day and an accounting is made of the incoming and outgoing articles. The daily value of the contents stored in the warehouse is computed and the amount of insurance is based on these figures. The total amount of insurance carried runs into



VIEW IN THE MACHINE ROOM

In the right foreground is shown a portion of one of the two brine coolers in the rear of which are the three brine circulating pumps. In the left foreground is a portion of one of the compressor units back of which are located the condensers. The refrigerating plant consists of two units of 40 and 20 tons capacity



VIEW OF THE FUR CLEANING KIOSKS BUILT OF SHEET METAL AND GLASS

The vertical duct shown through the door admits fresh air back of the operator. The fan in the wall over the work bench exhausts the foul air from the kiosk

many millions of dollars and is daily adjusted by auditors.

The cold storage rooms are located in the several stories between the third and eighth floors. They are arranged in large compartments as shown by the plan. Entrance to the cold rooms is made through a vestibule and a corridor which interposes several fireproof, refrigerator doors. Each room can be individually surveyed through a peep hole by means of which the condition of the room can be observed without opening the door and thereby raising the temperature. The air in these rooms is constantly maintained at the proper temperature found to be best adapted for the storage of furs. This temperature is secured by circulating cold air through the storage rooms. The air is cooled by passing it through an enclosure in which are installed brine coils through which the air is blown. The moisture in the air is removed by passing it about the brine coils upon which it is deposited in the form of frost. In this way, perfectly dry, cold air is circulated through the storage rooms without any possibility of ammonia or other deleterious gases being introduced which might possibly injure the garments. An air cooling apparatus is installed on each floor where the cold storage rooms are located, and the cold air is constantly re-circulated. At the end of the sea-

son, as soon as a cold room has been emptied a supply of fresh air can be obtained through the small openings which are placed in the exterior walls of the cold storage portion of the building.

The refrigerating plant consists of two units—one of 40 tons and one of 20 tons capacity. The brine is circulated by a three-unit centrifugal pump system. The compressors and condensers are of 40 and 20 tons capacity. The brine coolers consist of two units containing coils through which is circulated the liquid ammonia and from which the brine is pumped to the various floors where the air cooling apparatus is installed. Protection is insured by very complete systems which are installed in the warehouse. The automatic sprinkler system is necessarily of the dry-pipe type having an Underwriter's pump located on each floor. An automatic fire alarm system is installed in each of the cold rooms which will operate at a temperature of 60° F. A complete electrical burglar alarm system is connected to every door and window throughout the building. The fire tower doors are similarly equipped so that the only possible way for a person to pass out of the building without causing an alarm is through the main entrance at which a man is stationed who examines every package that is carried out.



A NEW ENGLAND DOORWAY BUILT IN 1816

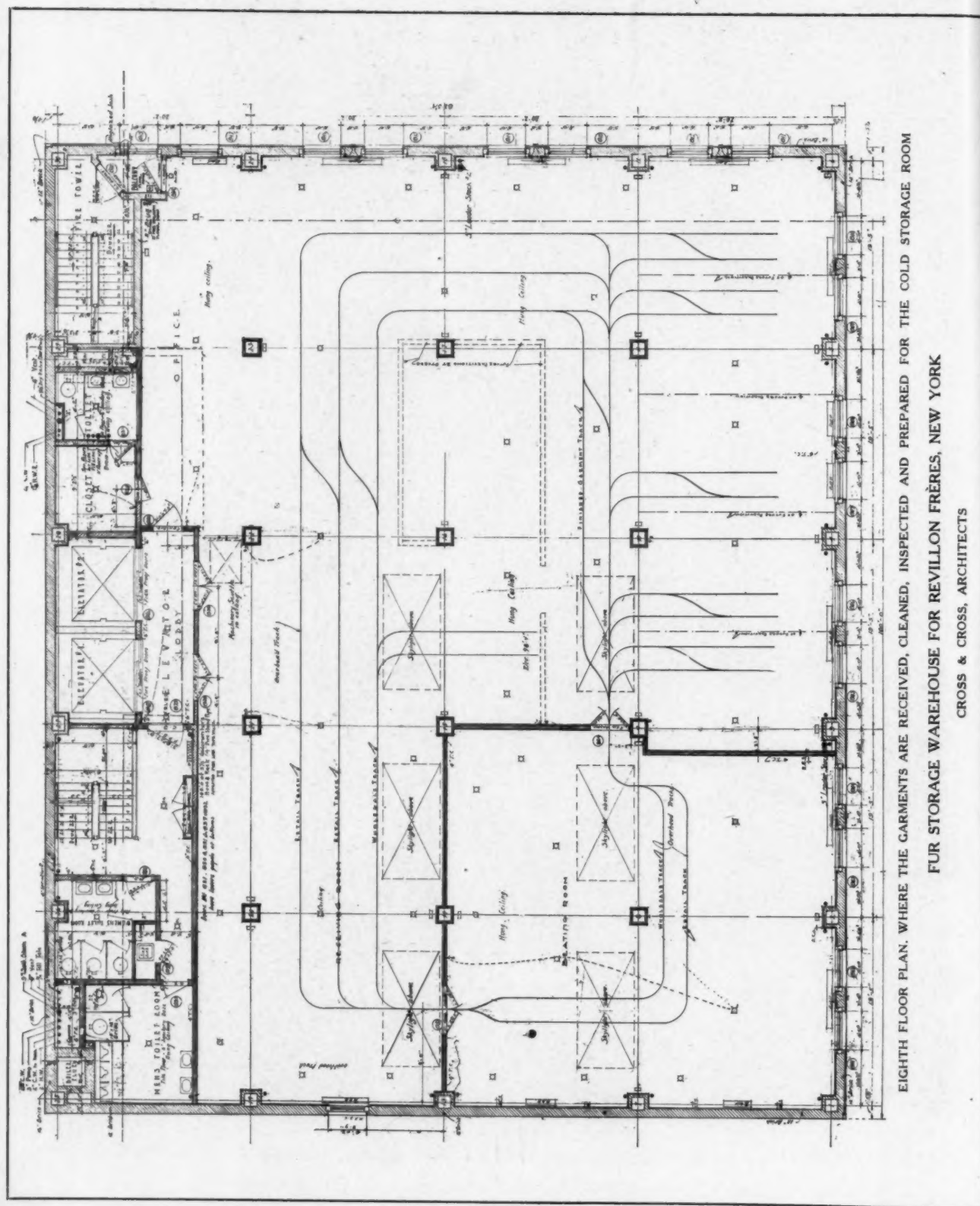


FUR STORAGE WAREHOUSE FOR REVILLON FRÈRES, NEW YORK

CROSS & CROSS, ARCHITECTS

(See plan on back)

THE AMERICAN ARCHITECT
October 22, 1924. Plate 136



EIGHTH FLOOR PLAN. WHERE THE GARMENTS ARE RECEIVED, CLEANED, INSPECTED AND PREPARED FOR THE COLD STORAGE ROOM

FUR STORAGE WAREHOUSE FOR REVILLON FRÈRES, NEW YORK

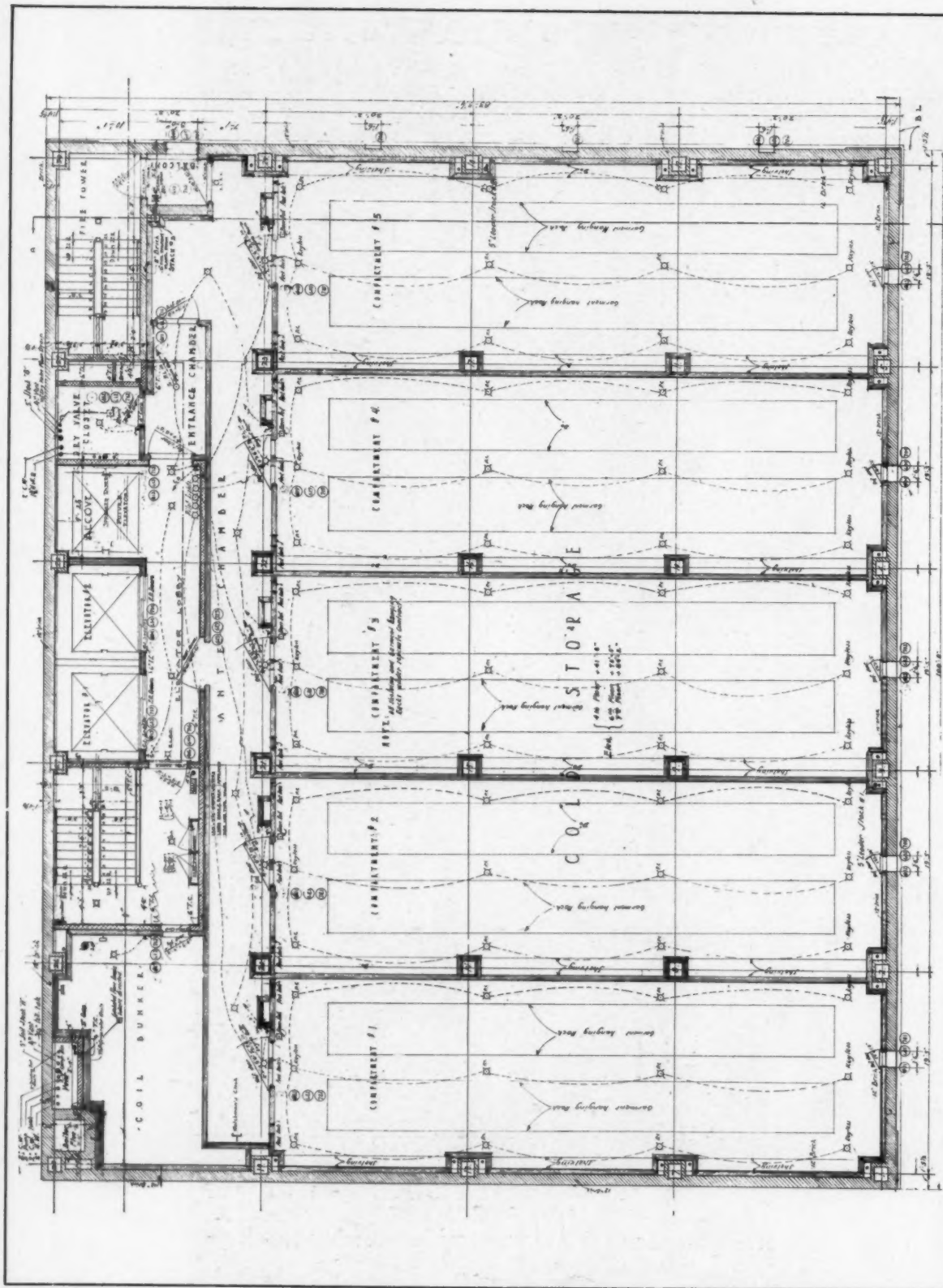
CROSS & CROSS, ARCHITECTS



DETAIL OF THE ENTRANCE
FUR STORAGE WAREHOUSE FOR REVILLON FRÈRES, NEW YORK
CROSS & CROSS, ARCHITECTS

(See plan on back)

THE AMERICAN ARCHITECT
October 22, 1924. Plate 137



A TYPICAL COLD STORAGE FLOOR SHOWING THE ARRANGEMENT OF THE COLD ROOMS, THE ENTRANCE CHAMBER AND ANTE-CHAMBER; THE COIL BUNKER AND UNDERWRITER'S PUMP ROOM

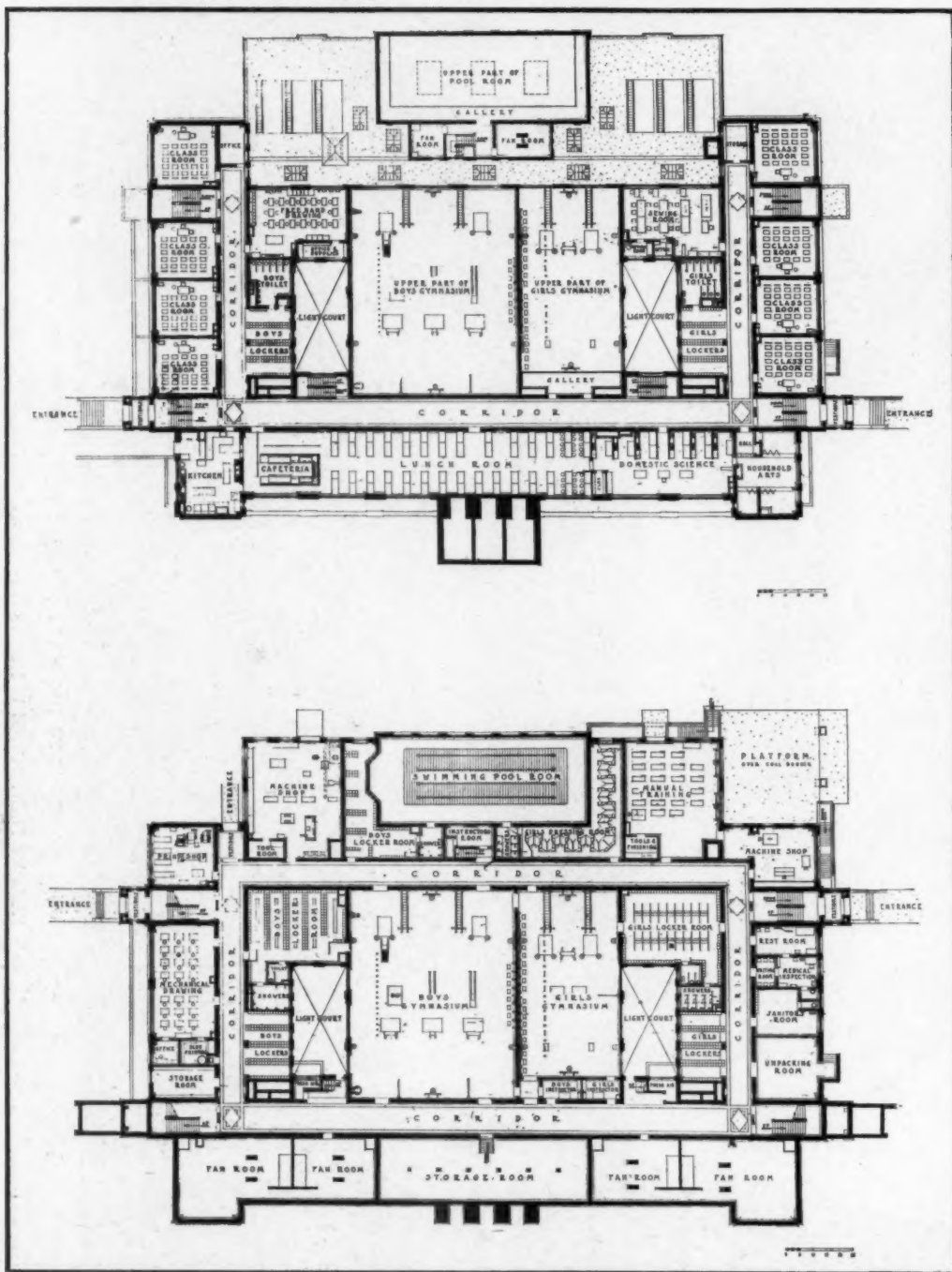
FUR STORAGE WAREHOUSE FOR REVILLON FRÈRES, NEW YORK

CROSS & CROSS, ARCHITECTS



FACADE FROM THE SOUTH
KEARNY HIGH SCHOOL, KEARNY, N. J.
GUILBERT & BETELLE, ARCHITECTS
(See plans on back)

THE AMERICAN ARCHITECT
October 22, 1924. Plate 138



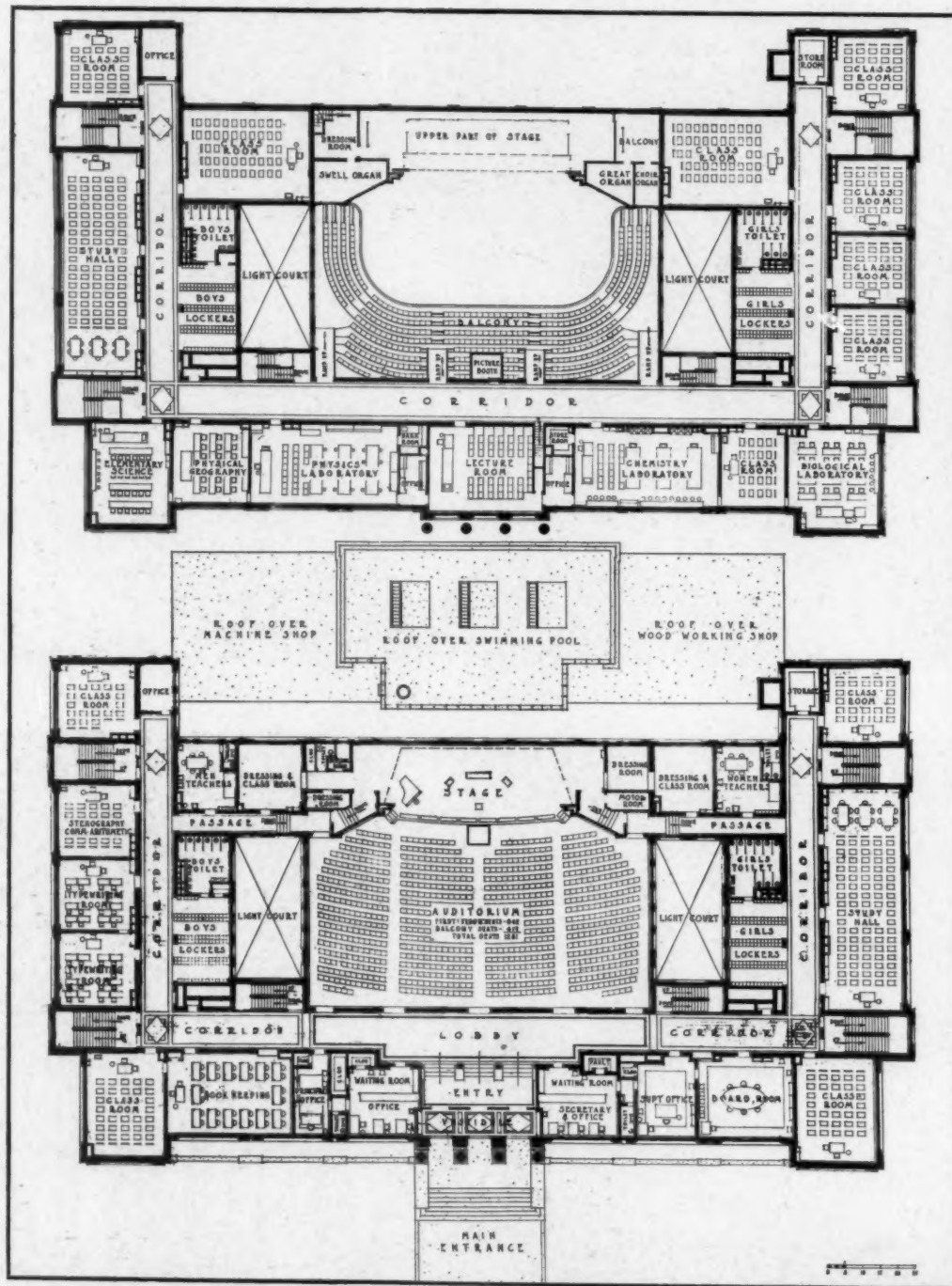
BASEMENT AND SUB-BASEMENT PLANS
 KEARNY HIGH SCHOOL, KEARNY, N. J.
 GUILBERT & BETELLE, ARCHITECTS



MAIN ENTRANCE DETAIL
 KEARNY HIGH SCHOOL, KEARNY, N. J.
 GUILBERT & BETELLE, ARCHITECTS

(See plans on back)

THE AMERICAN ARCHITECT
 October 22, 1924. Plate 139



FIRST AND SECOND FLOOR PLANS
 KEARNY HIGH SCHOOL, KEARNY, N. J.
 GUILBERT & BETELLE, ARCHITECTS



VIEW FROM GALLERY

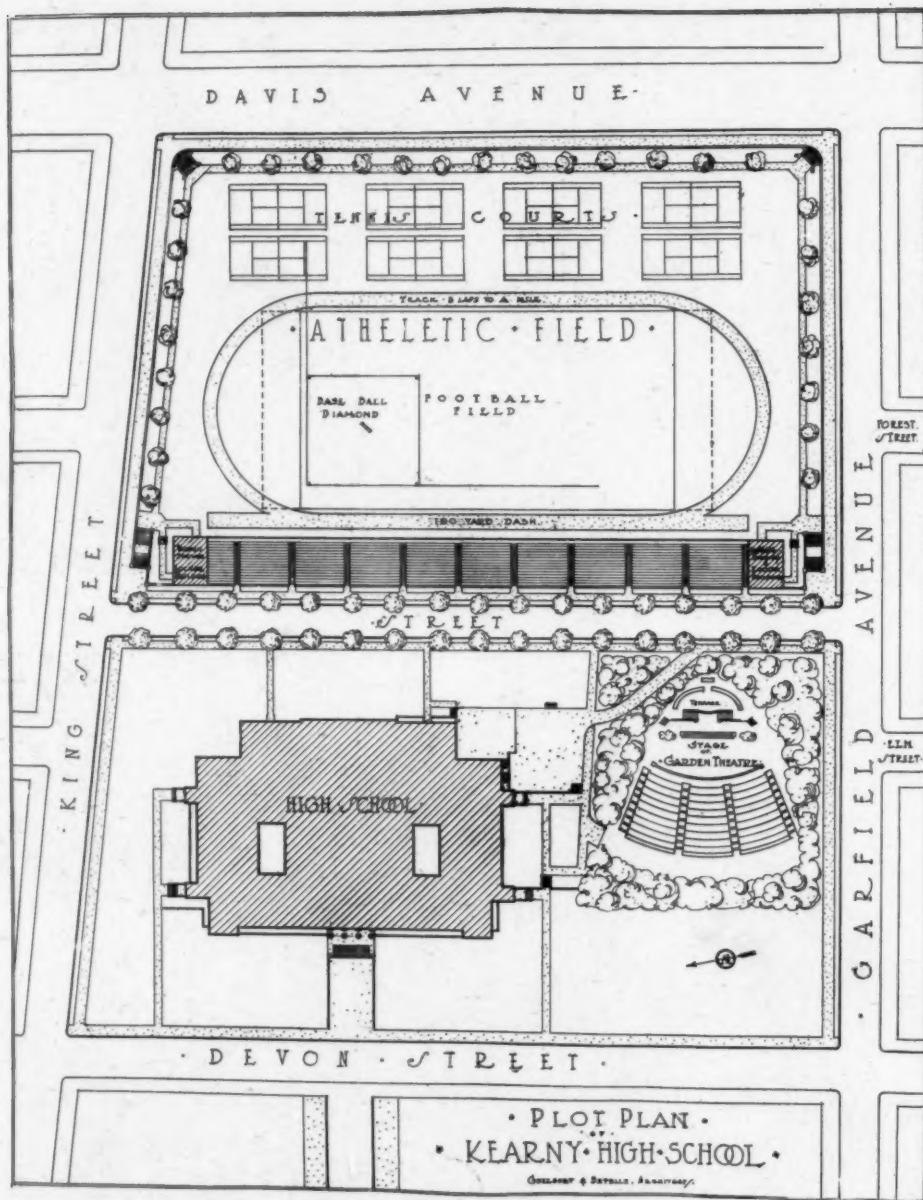


VIEW FROM STAGE

KEARNY HIGH SCHOOL, KEARNY, N. J.

GUILBERT & BETELLE, ARCHITECTS

(See plan on back)



GUILBERT & BETELLE, ARCHITECTS

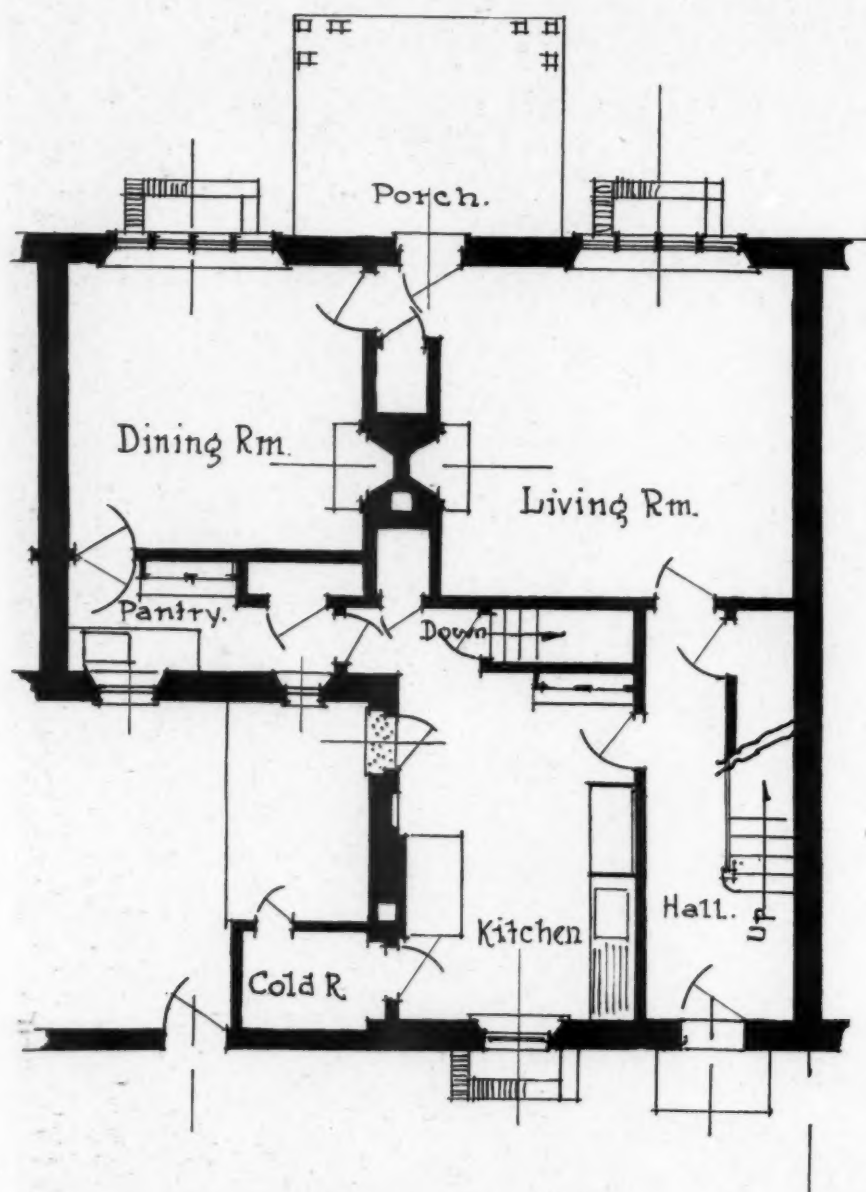


GROUP OF FOUR HOUSES AT CHESTNUT HILL, PHILADELPHIA, PA.

MELLOR, MEIGS & HOWE, ARCHITECTS

(See plan on back)

THE AMERICAN ARCHITECT
October 22, 1924, Plate 141



FIRST FLOOR PLAN

GROUP OF FOUR HOUSES AT CHESTNUT HILL, PHILADELPHIA, PA.

MELLOR, MEIGS & HOWE, ARCHITECTS

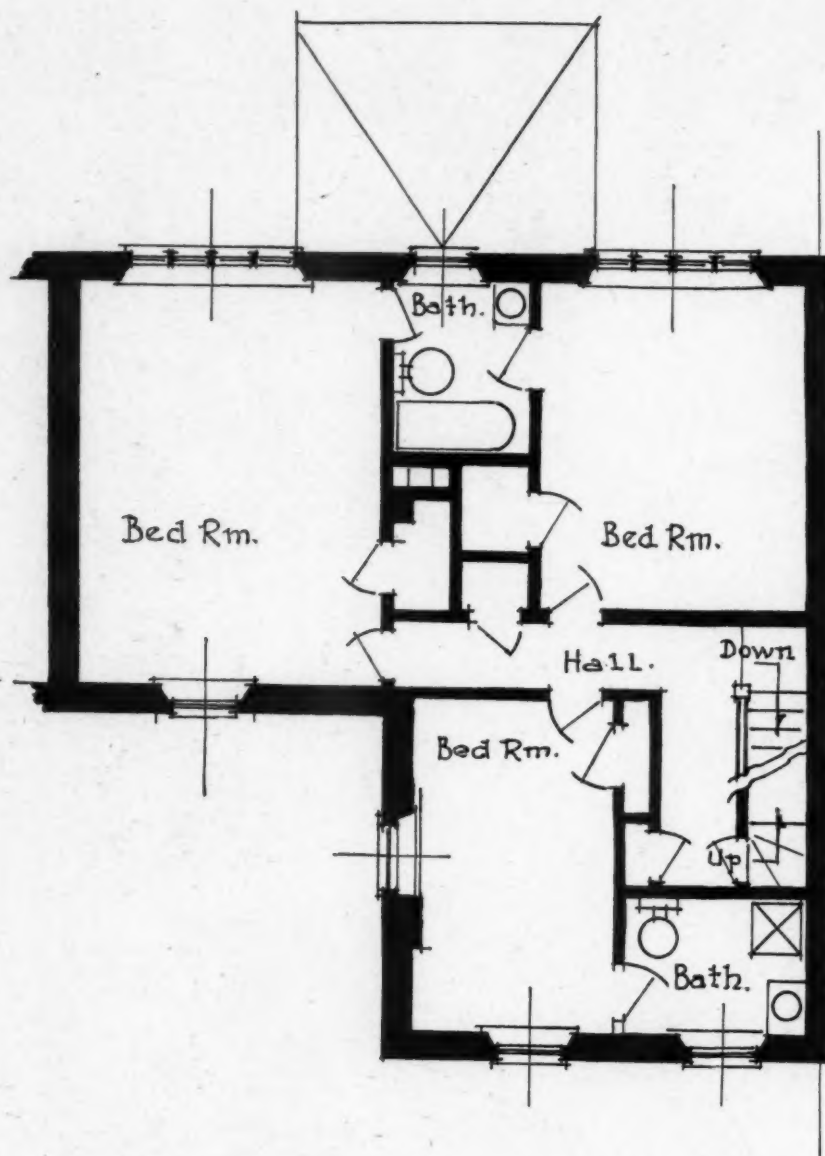


GROUP OF FOUR HOUSES AT CHESTNUT HILL, PHILADELPHIA, PA.

MELLOR, MEICS & HOWE, ARCHITECTS

(See plan on back)

THE AMERICAN ARCHITECT
October 22, 1924, Plate 142



SECOND FLOOR PLAN

GROUP OF FOUR HOUSES AT CHESTNUT HILL, PHILADELPHIA, PA.

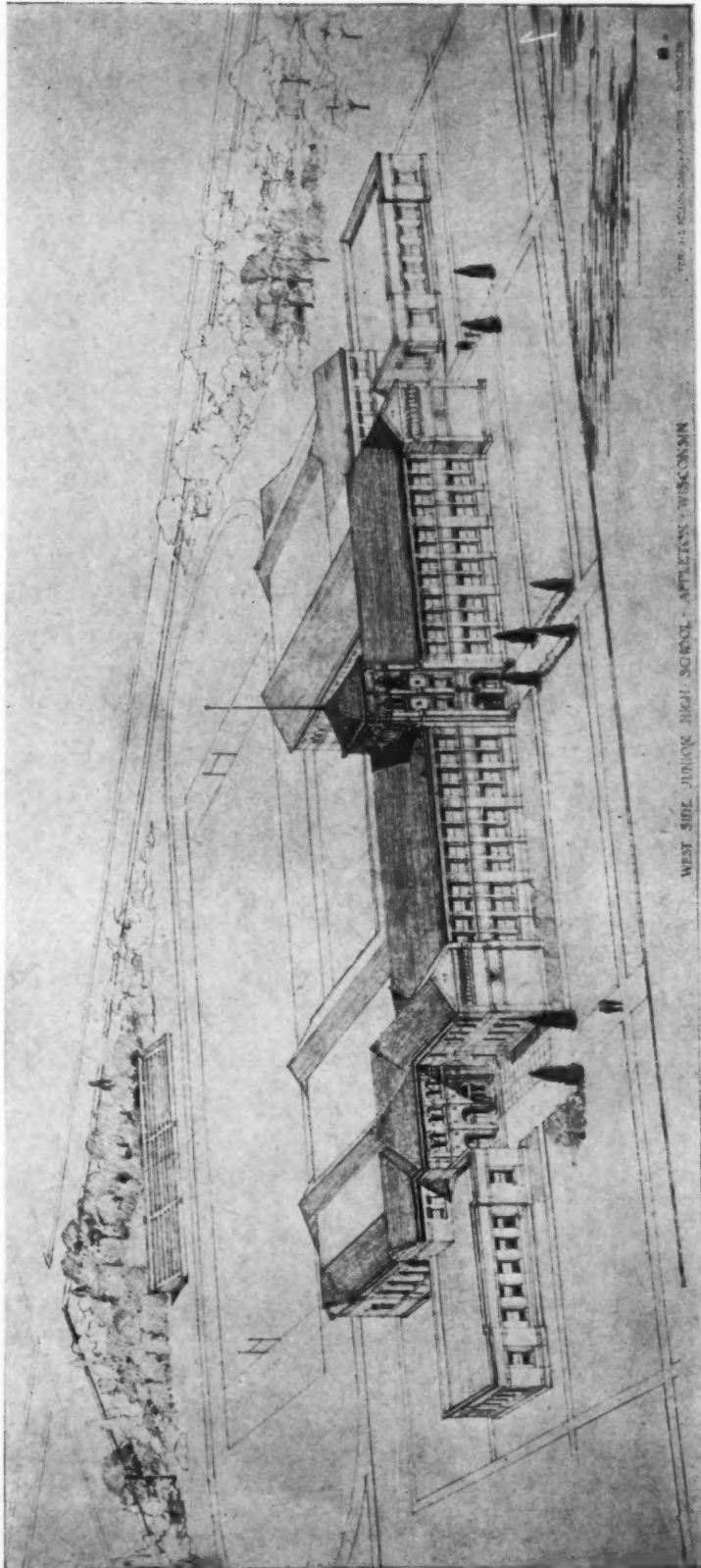
MELLOR, MEIGS & HOWE, ARCHITECTS



GROUP OF FOUR HOUSES AT CHESTNUT HILL, PHILADELPHIA, PA.

MELLOR, MEIGS & HOWE, ARCHITECTS

THE AMERICAN ARCHITECT
October 22, 1924. Plate 143



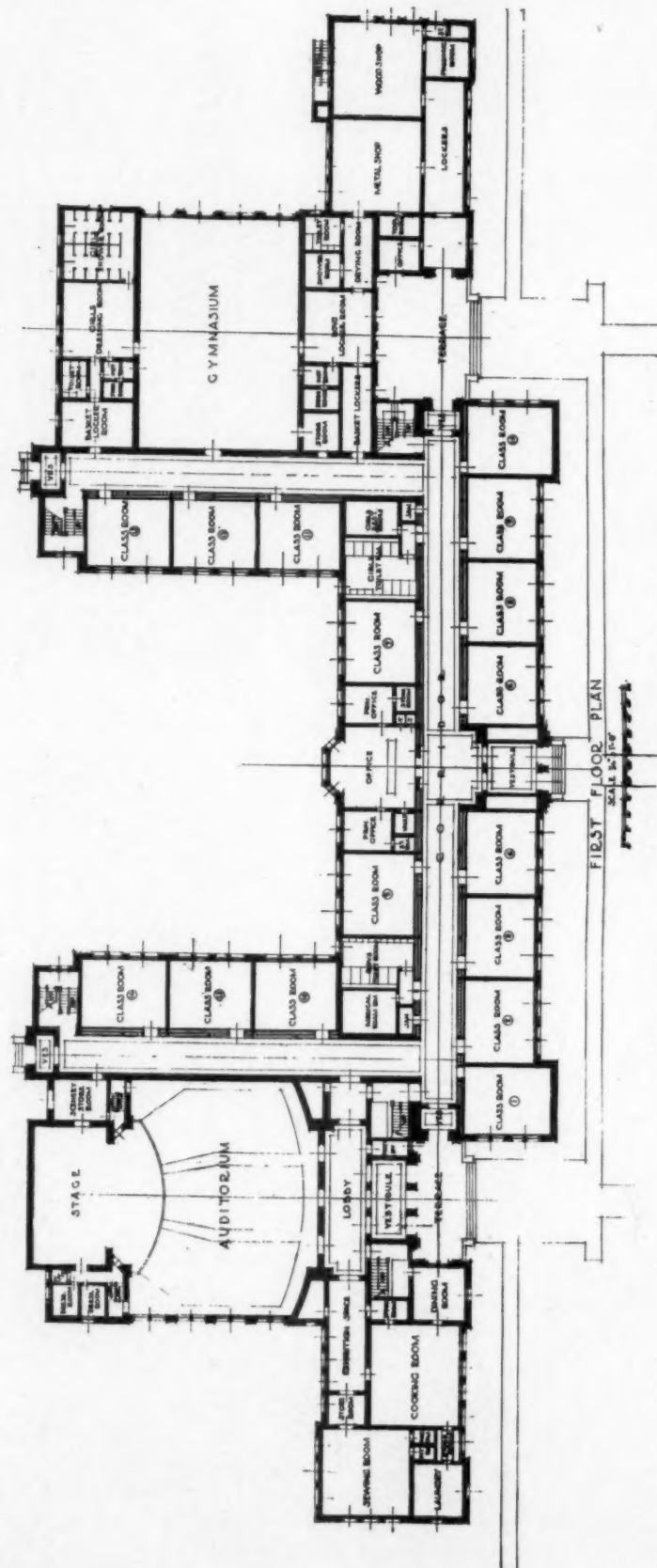
WEST SIDE JUNIOR HIGH SCHOOL, APPLETON, WIS.

PERKINS, FELLOWS & HAMILTON, ARCHITECTS

(See plan on back)

The West Side School is being constructed on a right triangular lot extending to streets in each direction, the hypotenuse on State Road being about 1,400 feet. The two story part is limited to the central or class room portion in which there are thirty-five class room units. These are divided for the usual junior high school purposes. At the right, in a one story portion, are to be built the manual training shops and the gymnasium; at the left, the domestic science department and the auditorium. The capacity is for 750 pupils, exclusive of the auditorium. The construction is fireproof. There is provided, in the Southwest portion of the site a playground large enough for football and with a quarter lap track. In front, at either end of the building is space for tennis and basket ball courts. The cost was \$290,000.00

THE AMERICAN ARCHITECT
October 22, 1924, Plate 144



WEST SIDE JUNIOR HIGH SCHOOL, APPLETON, WIS.
PERKINS, FELLOWS & HAMILTON, ARCHITECTS

EDITORIAL COMMENT

ON ANOTHER PAGE in this issue announcement is made of a competition to be conducted by this journal for a completed small house, costing less than \$25,000.

The increased cost of building construction has so largely advanced the cost of the small house that clients are now more disposed than ever before to call on the trained services of architects.

Undoubtedly a great many small houses of meritorious design are scattered all over this country. For a number of reasons, architects are hesitant to submit these for publication. It is to dignify this work and attach the real importance that belongs to it that this competition has been inaugurated. It may be well to emphasize the fact that the competition is for completed houses and not for a projected design. An interesting feature as to the awards is that the owners as well as the architects will receive appropriate certificates. This will give the owners a proper feeling of pride of possession of a house that has been deemed worthy of particular honor by a competent jury of architects.

Architects everywhere throughout the United States are invited to participate. The high character of the jury is guarantee of the selection for award of the best material submitted.

* * *

IT IS NOT ONLY UNFORTUNATE, but in the largest sense unjust, for any publication in a trade or technical field to assume, for the purpose of sensationalism, a general condition that as a matter of fact does not really exist but in the smallest degree. In a recent issue, *Hardware Age* prints a supposititious interview in which the manager of a retail hardware concern is made to allege that architects are dishonest in the specification of builders' hardware. And, across the page it spreads, in twenty-four point black faced type, this accusation:—"Fraudulent Builders' Hardware Specifications by Architects and Contractors Gross Injustice to Hardware Dealers."

Architects everywhere, if left in the belief that this libel on their profession has the approval of the hardware manufacturers and dealers, would be only human if they showed decided resentment. It is to correct this impression, and to show that the whole matter is but an example of "yellow journalism" in the trade press, that this mention is made.

Of course, no sane person believes that architects write fraudulent specifications. If from time

to time discrepancies occur between the amount specified for hardware and its final cost, it is due, as Mr. W. N. Thomas, of Sargent & Company, states in a letter to the editor of *Hardware Age*, because of "ignorance of hardware values."

The matter is logically one of education of hardware costs, and to quote further from Mr. Thomas' well considered letter, this education devolves on the hardware dealer. "The thing to do," writes Mr. Thomas, "is to get out and make the personal acquaintance of each one of these erring men. Teach them to want good hardware suited to their buildings. Teach them the value of such hardware."

There can be no doubt that every architect is willing to receive such knowledge, not only as to hardware, but to every item of material that they specify, as there can be no doubt that the better hardware dealer stands ready and eager to impart his share of it. The profession of architecture differs in no way from other professions in the matter of incompetent members. If the hardware dealer finds that the architect has underestimated the cost of the hardware specified, he might better try to show him wherein his error lies.

And, if we might offer a suggestion, *Hardware Age* could with advantage lend a hand and find some other material to fill its columns than something that is only half true, and three-quarters of that half only a suspicion not susceptible of proof.

* * *

THE UNITED STATES is the greatest wood using nation in the world. The forest products necessary to meet our needs of wood usage are enormous if based only on the most economical methods of production. It is estimated that approximately two-thirds of the forest cut is lost in conversion and through inefficient use. It is therefore evident if this prodigality is not checked, it will be but comparatively a few years before there will develop, in spite of efforts of reforestation, a pronounced shortage of a principal product on which the building industry depends.

Undoubtedly effective accomplishment in better utilization imperatively demands the joint effort of the Federal government, every state and private interests and in order to develop and put into successful operation adequate plans to this desirable end, the Secretary of Agriculture has issued a call for a national conference on the

utilization of forest products. This conference it is proposed to hold in Washington on November 19-20 of this year.

Architects, of course, are interested in any phase of conservation, but more intimately in those elements that enter into the buildings they design.

The call for this conference states that the purpose is to promote discussion of policies and measures which might be supported and executed by industrial, professional and governmental agencies, both singly and jointly, to insure the most efficient development and use of forest products.

This is a movement with which the profession of architecture might very properly be identified.

* * *

IT WAS SURPRISING, comments *The Builder*, of London, in reading the recent discussion on the decline of the art of the silversmith to notice the absence of any mention of the individual craftsman of our own time, much of whose work suggests the very opposite of decline. The art must be looked for in the quarters where it may be found. The methods of industrialism do not admit the freedom to the worker out of which sensibility to beauty can find expression, and if we limit our view to this direction only we may easily admit what is accepted as the decline of the art. If, however, this failure must be recognized, it is none the less true that in other directions, in the hands of the craftsman working freely and directly, there is much vitality at the present day, and if we look in the right direction for it the art of the gold and silversmith shows great beauty and development.

Undoubtedly, and in certain directions the work of the craftsman is marked by a very decided advance, but it is equally true that the individual craftsman is, as far as his identity is known, actually submerged.

Not only in the arts of the finer metals, silver and gold, but in iron, bronze and various alloys is it true that the advance in artistic expression is very considerable. Where may the individual craftsman find that necessary recognition today? The large corporations employing him, take over to themselves all the credit for his work, believing

it would seem that in paying for his efforts they also acquire the title to his artistic conception. Under similar conditions, Michael Angelo, and the Della Robbias, would never be known today.

Undoubtedly the craftsman's name should be identified with his work, and some means should be devised for giving him credit. To every true artist his real impetus is derived from the praise of his work. To confine such laudations to the firm or company that hands him his pay envelope is to handicap his effort and retard his development.

* * *

CORRESPONDENCE

To the Editor,

THE AMERICAN ARCHITECT:

REFERRING to the address by Professor Ferran on Architectural Education, printed in part in a recent issue:

Professor Ferran touches on a very vital feature of college work. It is my experience from contact with the graduates who come to the office, either for summer work or after graduating, that the knowledge they have taken away from their four years' work is so scattered that they do not know how to apply that which they have learned. This is not, however, true of all, for some have the ability to gather knowledge through observation, which is a subject not always taught, but is natural with some people.

A course of illustrated lectures, which I am planning will cover a great deal of the work now given, and can be done in less time and more effectively because of its presentation to the eye in form and perspective, and leave more time for applied design in the architectural course.

Every high school graduate that is interested in home arrangement or obtains good marks in drawing is not fitted for a training in architecture. The suggestion made by Professor Ferran to establish a centralized school control would with suitable entrance requirements improve the grade of student and thereby the result.

Very truly yours,

WILLIAM RICE PEARSALL

ENGINEERING *and* CONSTRUCTION

PARAPET WALLS

The Importance of Their Proper Design and Construction

DURABILITY is the essential element of a building as this is the characteristic which fixes the value of the structure.

The three most powerful agents which act to destroy buildings are fire, water and frost. These can be considered equally destructive and the difference between them is characterized mainly by the speed with which they work. Every part

which it is built should be selected with equal care. Even with these precautions, it often happens that trouble arises from improper construction. This latter factor is equally at fault for the troubles which develop in parapet walls.

As an illustration of the importance of proper designing and construction of parapet walls, here is presented the data concerning a wall which



View looking north. The spalled brick and destroyed waterproofing as well as the open joints in the stonework are clearly shown. The face of the right hand jamb stone of the balustrade projects beyond the face of the coping stone above it and doubtless this projection provided a shelf for the accumulation of water and frost which eventually displaced the stones

of a building is subject to these destructive forces in a varying degree, according to its location and exposure.

Probably that part of a building which is most exposed to the elements is the parapet wall and extreme care should be exercised in its design and construction. Not only must the design of the wall be most carefully made but the materials of

was built in February, 1920, and rebuilt in July, 1924. The building is located at approximately 40° N. latitude and about midway between the Atlantic Coast and the Mississippi River. Although the parapet walls were built in February, there is no record of extreme cold weather during the period of construction. Neither are there any records to show whether the mortar materials

were heated or any other methods of protection used.

Before the Spring in 1920, many of the coping stones had become slightly dislodged. Some of them were reset twice before the warm weather set in. During the summer of 1921 it was noticed that a number of the joints were opening and a slight disintegration of the wall was evident. At this time some steel bar dog-anchors were placed

perfect condition and the joints in the coping, tight; the rear walls having glazed tile coping, were in the same condition.

The shop drawings of the stone coping, made by the stone contractor, called for a $\frac{1}{4}$ " projection or drip beyond the roof side face of the walls and a $\frac{3}{4}$ " projection on the street side of the walls. The work as installed did not have these projections and in some cases the face of the brick extends beyond the face of the stonework.

Chicago common brick and a well known bricklayer's cement were used. The specifications respecting the waterproofing on top of the masonry walls under the coping and on the roof side face of the walls, had evidently been followed. All top exposed vertical joints in the stone coping had been filled with setting mortar and some of the joints had been pointed with elastic cement. The waterproofing of the roof side face of the wall was done as specified.

The contractor who built this wall erected a similar wall at about the same time and in the same climate. This wall was designed for the same construction and materials. In this wall the coping stones have an $1\frac{1}{4}$ " drip, the vertical joints are tight, the crude oil asphalt waterproofing is in good condition with no bad spots showing. This would indicate that the lack of drip might be the controlling factor in the destruction of the wall illustrated.

The following paragraphs of the original specification are particularly involved in this work:

2-11. All common brick shall be sound, thoroughly hard burned, standard size common brick made from clay or shale, free of lime balls or other defects and shall be whole and new.

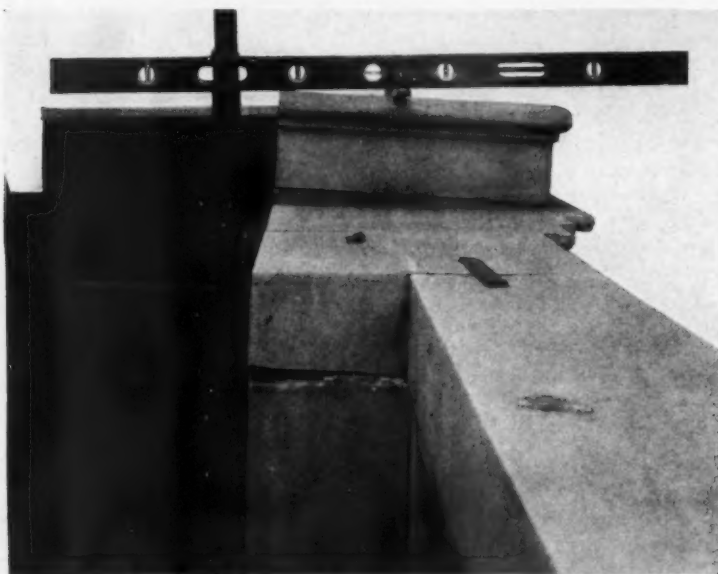
2-12. All cement shall be — Cement and shall conform to the current standard specifications of the American Society For Testing Materials.

2-15. All tile coping shall be of standard salt glazed, vitrified tile, straight and without cracks. Terminal and angle pieces shall be made for such use.

2-27. All cement mortar shall consist of one part of — Cement to three parts of sand, gauged with not more than ten per cent of hydrated lime, to give easy working quality to the mortar.

2-30. All common brick in walls having both sides exposed to the weather shall be laid up in cement mortar as specified in Paragraph No. 2-27..... with close shoved joints, each brick being rubbed to a solid bed of mortar and with all vertical joints filled.

2-39. All joints in the surfaces exposed to the weather



View looking west. The top of the coping on which the level rests, was level originally. The coping as shown pitches $1\frac{1}{8}$ " in 20". The open joint under the coping stone at the offset shows the movement and upheaval that has taken place. The dog-anchor is temporary. The roof side face of the end wall return is in perfect condition. This wall was waterproofed similar to the other wall faces and the joints in the coping are tight

over the joints between the coping stones, but nothing more was done in the way of reconstruction. In July, 1924 the condition of the masonry was as shown by the illustrations and it was necessary to tear down and reconstruct the walls. The reconstruction was done in accordance with the specifications given hereafter.

Before reconstructing the walls it was found that the upper part of the east parapet wall was inclined outward 2". At the northwest corner, the parapet walls were entirely pulled apart, practically every stone having moved. The north parapet wall was inclined outward a total of 8" in the height above the roof. The waterproofing on the inside face of the parapet walls on the street fronts was dislodged in a large number of places, in many of which the outer quarter inch or more of the brick was displaced. The west parapet wall, which has a stone coping, appeared to be in

shall be weathered joints, uniform and neatly trowel pointed and all other joints shall be neatly struck.

2-54. This contractor shall waterproof the top and inner surfaces of all brick masonry parapet walls.

2-55. Over top surfaces on which coping is to be set apply a smoothly troweled cement mortar coat to form a base. Then over this base apply a coat of elastic cement smoothly troweled to a thickness of about 1-16" covering all surfaces thoroughly and extending the coating down 2" on roof side.

2-56. Upon completion of masonry work and flashing of roof intersections see that all brick joints in the roof side of walls are full and well pointed.

2-57. Over the roof side surfaces apply a heavy coat of china-wood oil and a heavy coat of waterproofing, both coats being well brushed on so as to cover all surfaces from top of flashing to coping, overlapping the elastic cement.

The specifications for the reconstruction of this wall are as follows:

The parapet walls shall be rebuilt in accordance with the original drawings, using No. 2 paving brick for facing the roof sides of the walls, old brick properly cleaned for filling the wall, galvanized wrought iron anchors for anchoring all stone, — cement mortar mixed 1 to 3, and molten lead caulked after pouring for the upper 1" and the outer 1" of top and side exposed faces of vertical joints in the coping stones. Also provide an elastic cement waterproofing coat over the top surface of masonry walls before coping is set, carrying this covering down the roof side face of walls not less than 4".

In rebuilding the walls the thickness should be kept down to such dimensions as to provide as great a projection of the inner face of coping stone beyond the face of the brick as possible.

All mortar joints shall be weathered, trowel pointed joints.

In caulking the vertical joints in coping, joints shall be filled to within 1" of the upper and side faces of stone with setting mortar and the lead shall be poured while the stone is dry, after which it shall be caulked to insure absolutely tight joints.

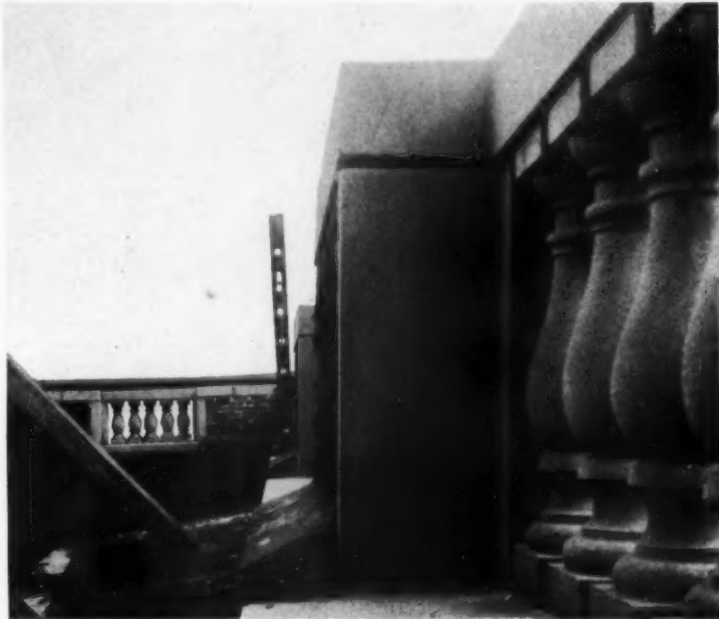
In setting the jamb facings of balustered openings, these stones shall be so set that they will not project beyond the end faces of adjacent coping stones, providing as much of a drip at these points as is possible.

The inspector's report on the condition of these walls contains the following conclusions:

The projections or drips were provided on the copings as an ordinary matter of precaution and there seems to be no reason to doubt that the coping stones first became dislodged because of an accumulation of frost at the under, inner edge of them. This movement opened up the joints and as water and consequent freezing action progressed downward through the cracks that became wider as time passed, the entire wall eventually disintegrated.

The excellent condition of the rear walls where the coping projects beyond the wall faces and its joints are tight, seems to disprove any theory that the asphalt waterproofing on the roof side faces of the front walls is responsible for the present condition of the masonry.

The subject of parapet walls faced and coped with terra cotta was discussed in an address de-



View looking north. The plumb shows that the parapet wall inclines outward $1\frac{3}{4}$ " in a height of 2'-0". The destruction of the waterproofing on the roof side of the wall and the displacement of the coping stones are clearly shown

livered before the National Terra Cotta Society, June, 1924, by Gerhardt F. Meyne. Mr. Meyne is a prominent general contractor in Chicago who has had a large experience in the altering and rehabilitating of old buildings. The deterioration of buildings and the causes therefor, is a subject about which he is particularly qualified to speak. During the course of his address Mr. Meyne made special reference to the disintegration of parapet walls, which well supplements the foregoing, and we present herewith an abstract of his remarks.

"Nothing in this address is intended to question the undisputed value of terra cotta as a building material. With this understanding, the criticisms and suggestions that I offer are caused by what I consider to have been improper methods employed in the setting of that material in buildings. The difficulty in maintaining the overhanging terra cotta cornice is caused by not properly sealing the exposed vertical joints which permits the entrance of water and moisture, thus causing corrosion of the anchors, the suspension rods and



View looking north. In the lower part of the second, third and fifth balusters (counting from the left) cracks are clearly shown which extend entirely through them. The bases and tops of the balusters are tightly doweled to the coping and sill stones. These cracks indicate the uplifting force exerted by the frost in raising the coping stone

the supporting steelwork. In some instances I have seen $\frac{3}{4}$ " rods reduced to the size of a pencil and the usual $\frac{1}{4}$ " square rod to that of a needle and, in some instances, to have disappeared entirely. I recall one instance where the projecting

"I have seldom found any deterioration of anchors or supporting steel where they were entirely under the influence of horizontal joints. Perhaps these joints are more carefully made with a high-grade elastic cement or cement mortar and pointed

because they are visible and, as a consequence, the water is prevented from entering them. Protection of the anchoring and supporting steel is an important matter and the terra cotta setters and supports in paint before using them. The usual procedure is to cut a straight rod to the desired length and then bend it to fit the place in which it is to be used. The surface of the steel is distorted when bent, which makes it particularly susceptible to the attack of corrosion



VIEW LOOKING WEST. THE UNEVEN LINE OF THE COPING STONES NEAR THE RETURN WALL IS OVER ONE OF THE STONE BALUSTRADES

member of the supporting steel frame was so corroded that it was dislodged when it was touched by the hand. On the other hand, I have found in these cornices, which were properly set and made watertight, that the supporting steelwork was in good condition after thirty years of service.

and, therefore, it should be painted after being fabricated. In my practice I use red lead as the protective coating for the reason that I have found that steelwork, to which a red lead has been properly applied, is in good condition after many years of service.

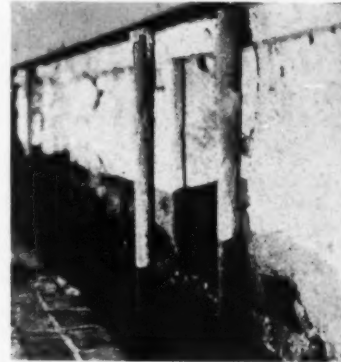


THIS IS NOT A PICTURE OF THE ENTRANCES TO SOME ANCIENT CAVERNS. IT IS A PORTION OF A CORNICE AND PARAPET WALL OF A MODERN AMERICAN BUILDING. THE MASONRY WORK WAS DONE IN A MOST CARELESS AND SLIPSHOD MANNER. THIS COULD NOT HAVE HAPPENED IF COMPETENT SUPERVISION AND INSPECTION HAD BEEN EXERCISED WHILE THE BUILDING WAS UNDER CONSTRUCTION



POORLY PAINTED ANCHORS ARE MUCH CORRODED BY THE WATER WHICH CAME THROUGH THE VERTICAL JOINTS

THE DISINTEGRATION OF THE WALL IS VERY APPARENT. THE WATER ENTERED THROUGH THE VERTICAL JOINTS. WHEN THE CORNICE WAS OPENED UP IT WAS FULL OF MOISTURE AND CONTAINED SOME FOUL WATER



A PARAPET WALL INTO WHICH WATER ENTERED THROUGH THE VERTICAL JOINTS. THE ANCHORS WERE POORLY PAINTED AND ARE BADLY CORRODED. BUILT WITHOUT A CONSCIENCE



The structural steel supports and the anchors are both badly corroded. The terra cotta is not backed up or filled and the improperly made vertical joints permitted the free access of water

"The weakness developed in the vertical joints in copings appears to result from their merely being pointed. When it is deemed too expensive to caulk and point the joint with elastic cement it should be filled absolutely solid with a good cement mortar and this should be done by buttering completely one end of the piece of coping and shoving it against the adjoining piece sufficiently hard so that the excess mortar is squeezed out of the sides and top, thus assuring a full joint. The coping itself must rest on a full bed of mortar. I have found some astonishing conditions in old parapet walls which were inclined from 1" to 4" in 4'-0" of height. We have found that the rear parapet walls built in the ordinary manner and covered with salt-glazed coping show no deterioration except that due to ordinary wear and tear.

"I would surmise that the causes for the damage done to the terra cotta facing and coping were as follows: (1) the terra cotta facing was not proper-

ly backed up; (2) the backing up material was of inferior quality and did not have the same coefficient of expansion as the terra cotta facing; (3) the mortars were of inferior quality; (4) the back



The original structural steel was corroded to band iron thickness and had to be replaced. Some of the original beams that were properly protected from the water which entered through the vertical joints were not corroded

wall had been tarred; (5) the coping was not wide enough to furnish a sufficient drip or the drip was improperly made.

"All terra cotta, wherever placed in a building, should be properly backed up and not depend entirely on anchorage for its maintenance in place. Brick and mortar should be shoved into the hol-



On opening up the cornice, the coping was found to be improperly set with no apparent care given to securing tight vertical joints

low parts of the pieces in order to make them, as much as possible, an integral part of the wall. This, of course, applies more particularly in the case of pediments and parapet walls. The backing up material should be of equal density and imperviousness as that of the terra cotta. In this way you secure two materials having comparatively the same co-efficient of expansion and also having equal resistance to the absorption of moisture.

"It has been considered good practice, for a number of years, to apply tar or waterproofing compounds to the roof side of parapet walls with the idea of protecting them against the absorption of moisture. Even if this is accomplished the application of such a coating is detrimental to the wall as usually constructed. This coating excludes the air from the wall, which is usually laid up with soft brick and lime mortar. It is necessary for lime mortar to be exposed to the air in order that it may properly set and become hard. It is then evident that the water entering the wall through the vertical joints of the coping can penetrate the soft lime mortar joints and expand them by the action of frost. This results in the wall being distorted into an inclined position. I must, however, say that where walls are thoroughly seasoned it is then good practice to apply tar or

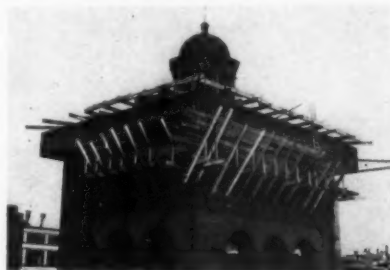
other waterproofing material. The best results can be accomplished by building the wall of materials of equal density laid in Portland cement mortar and not using tar or other waterproofing material on common brick laid in lime mortar.

"The importance of making the coping wide enough to afford sufficient drip is a thing that must not be overlooked. Unless this is done there is afforded an opportunity for the water to enter the horizontal joint under the coping, penetrate the wall and damage it. The best practice would be to caulk the vertical joints in the copings and seal them with elastic cement and then cover them with either copper or sheet lead.

"I desire again to bring to your attention what

are, in my opinion, the three most vital factors in terra cotta construction: the vertical joint, the protection of metal anchors and the proper width of copings."

In presenting these two discussions about the correct construction of parapet walls THE AMERICAN ARCHITECT believes that its importance cannot be overemphasized. The experiences and opinions of others, who have encountered difficulties in securing the satisfactory construction of these walls, will be most welcome.



The expense of rebuilding this cornice could have been avoided had the owners taken proper precautions to maintain the mortar joints in good condition

TEXTURE IN COMMON BRICKWORK

THE old style, pressed brickwork in which the bricks were carefully gauged for size and selected for shade of color and laid with thin mortar joints true to line, is fast becoming a thing of the past. It lacked variety, interest and life. Later there was developed a type of brick walls that were faced with bricks of non-uniform size or shade of color and laid up with wide joints that were pointed, flush struck or raked. Close adherence to line was not required and projecting headers were introduced to produce certain desirable shadow effects. The bricks themselves were manufactured with face surfaces of different kinds and not smooth. In fact, irregularity of size, shape and color was sought.

The charming textural effects that have been

secured by these uses of face brick have caused them to be widely and quite generally accepted by architects and the public. It is but natural that attention has been directed to the use of common brick to face walls. The results obtained by a group of Chicago architects with the common brick which is so prominently identified with that locality, are rather remarkable and really fine for certain types of structures. This use of common brick has been called "skintled brickwork" and seven distinct methods of treatment are illustrated in a booklet of brickwork working details entitled "Skintled Brickwork," published by The Common Brick Manufacturers' Association of America, Cleveland, Ohio. The booklet consists of 16 pages, 8½ x 11, and will be sent to architects free on request.

LEHIGH UNIVERSITY INSTITUTE OF RESEARCH

LEHIGH University of Bethlehem, Pa., announces the establishing of the Lehigh Institute of Research. This organization will undertake to encourage and promote scientific and scholarly achievement in every division of learning represented in the organization of the University. The personnel of the Executive Board is composed of the following prominent specialists: Charles Russ Richards, M. M. E., Eng. D., LL.D., President of the University; Harry Maas Ullman, Ph.D., Professor of Chemistry; Ralph Justin Fogg, B.S., Professor of Civil Engineering; William Esty, B.S., M.A., Professor of Electrical Engineering; Lawrence Boylston Chapman, S.B., Professor of Marine Engineering; Fred Viall Larkin, B.S., M.E., Professor of Mechanical Engineering; Bradley Stoughton, Ph.B., S.B., Professor of Metallurgy; Howard Eckfeldt, B.S., E.M., Professor of Mining Engineering; Barry MacNutt, E.E., M.S., Professor of Physics; Benjamin LeRoy Miller, Ph.D., Professor of Geology; Robert William Hall, Ph.D., Professor of Biology; Neil Carothers, A.M., Ph.D., Professor of Economics; Lawrence Henry Gipson, Ph.D., Professor of History and Government.

The Institute proposes to publish and distribute, from time to time, bulletins presenting the results of investigations conducted by or under the direction of the Institute; and to issue other material which may be helpful to the various interests which the Institute seeks to serve. Undoubtedly some of these bulletins will be of great value to architects, structural engineers and others interested in matters pertaining to building construction. In addition to the work carried on, arrangements have been made for the establishment of research fellowships for the benefit of students who wish to engage in that kind of study. One can confidently look forward to a development of this Institute which will make it the equal of those splendid organizations of the same character which are under the direction of other universities.

PROPORTIONATE USE OF CEMENT

THE distribution of Portland cement according to its use has been investigated by the editors of *Rock Products* and it is interesting to note what proportion of the total output is consumed in the erection of buildings and related constructions.

It is shown that 34% of the output is consumed in building construction and that an additional 7% is consumed in the construction of sidewalks and private drives which are related to building construction, making a total of 41% which can be attributed to work directed by architects.

"In round figures," it is stated, "approximately 50 per cent of Portland cement consumption is accounted for by public works, such as highways, water works, sewage, etc., and big construction. The other half of the country's consumption is for the smaller stuff—concrete products, stucco, farm uses, etc. Probably public works are going at as strong a pace today as they will go for some time since money is cheap and all other conditions favorable, except, apparently, a misinterpretation of the increasing agitation for an era of greater economy in Government."

The relation of cement to the employment of common labor in road building and of both common and skilled labor in other construction sheds considerable light on activities in other fields. It is estimated that Portland cement is used in about the following proportions:

Public and commercial buildings	25
Dwellings	9
Sidewalks, private drives	7
Various farm uses	21
Water pipe	4
Paving and highways	24
Railways	5
Bridges, dams, reservoirs, etc.	3
Miscellaneous	2

Studies made show that the projected new productive capacity is fairly well distributed throughout the country without consideration of the present per capita consumption of the various districts and the possibilities of increasing per capita consumption in those districts which appear to be below normal.

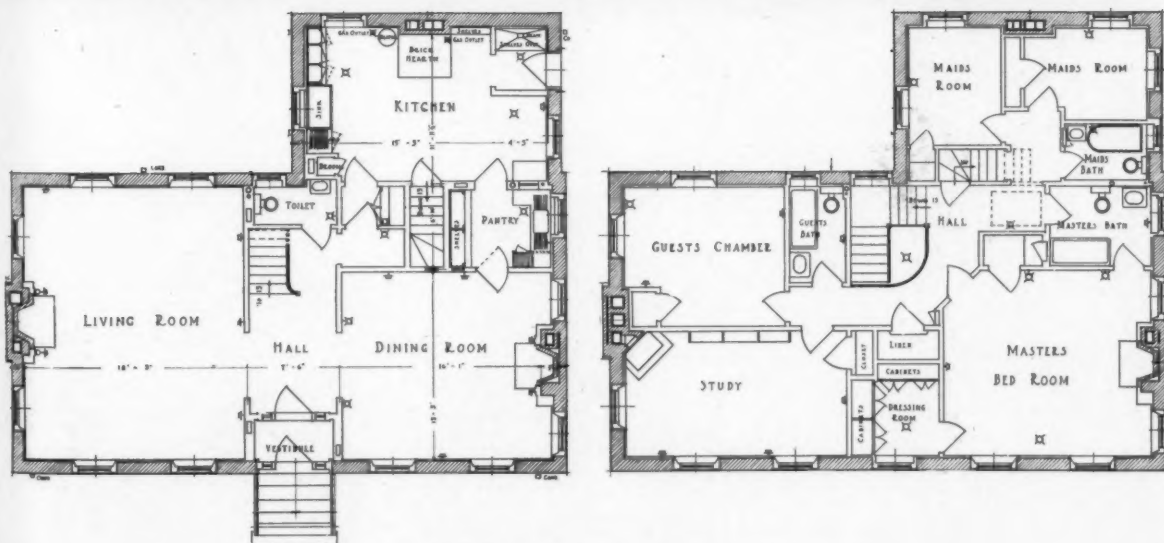
"It is also evident from the data assembled here that there is small chance of Portland cement production in this country lagging behind the demand; experience in 1913 and 1914 proves that the upward trend of the curve of production is not necessarily bound to continue without a break."

STATE ZONING ENABLING ACTS

THE Advisory Committee on Zoning appointed by Secretary Hoover of the Department of Commerce has formulated a Standard State Enabling Act under which municipalities may adopt zoning regulations. This is published by the Department of Commerce in the form of a pamphlet which can be procured from the Superintendent of Documents, Government Printing Office, Washington, D. C. Price 5 cents.

The enabling act is very short and consists of nine sections. Copious notes and references explain the various elements of this act.

The subject of zoning is one which should interest architects and the adoption of zoning regulations by states and municipalities is a thing which should engage their active participation.



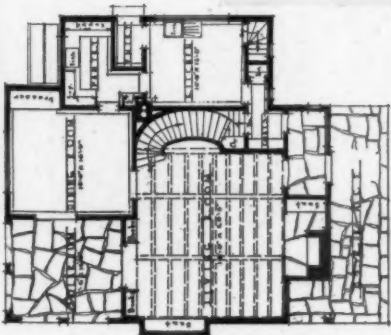
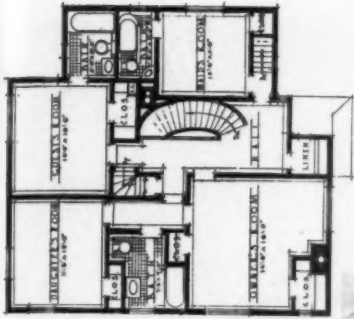
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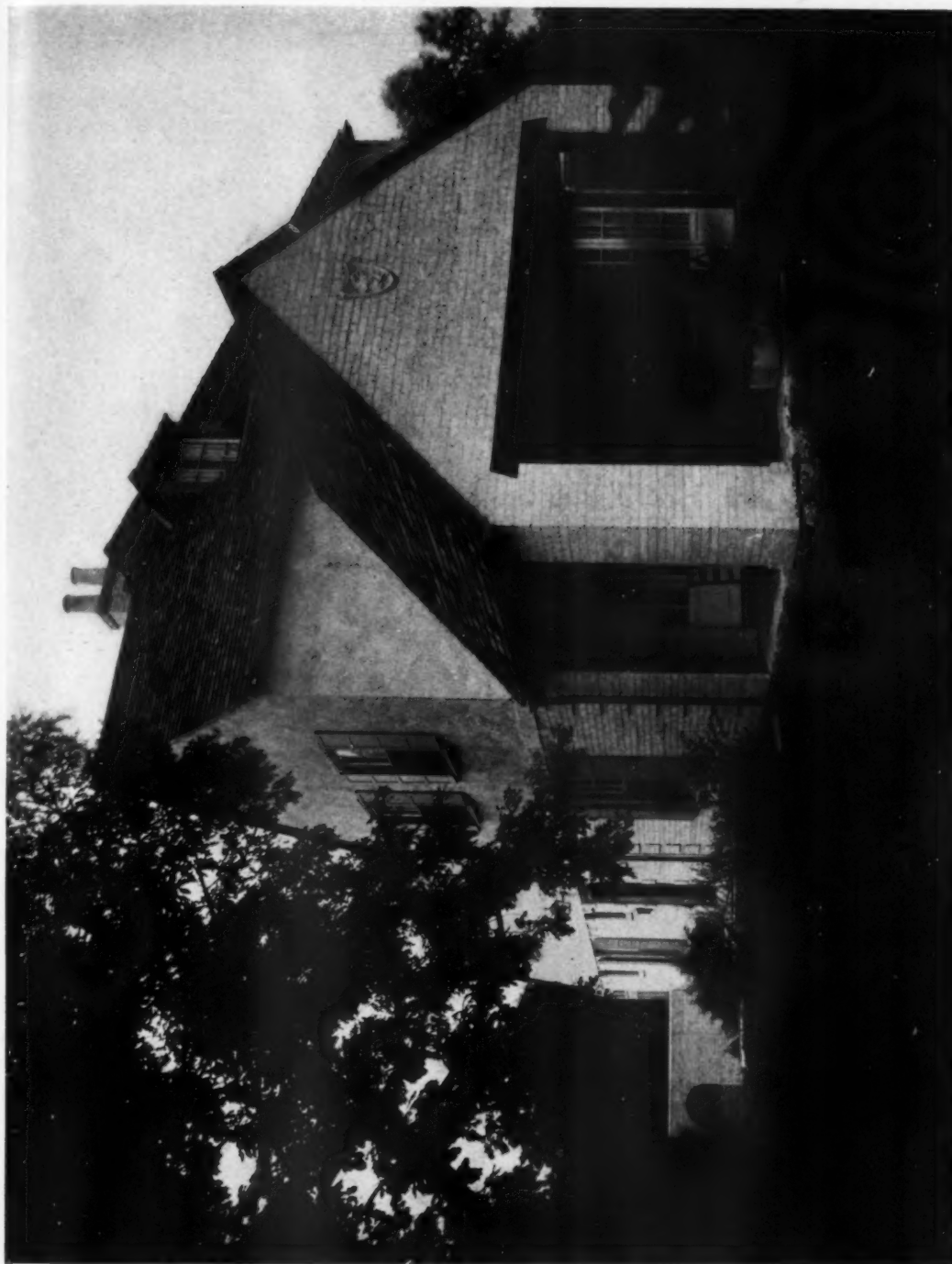
DETAIL OF MAIN ENTRANCE
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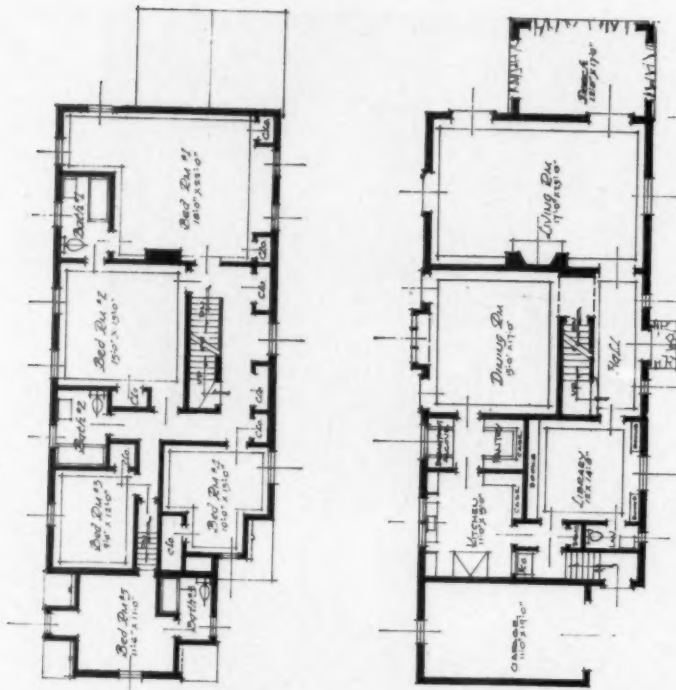




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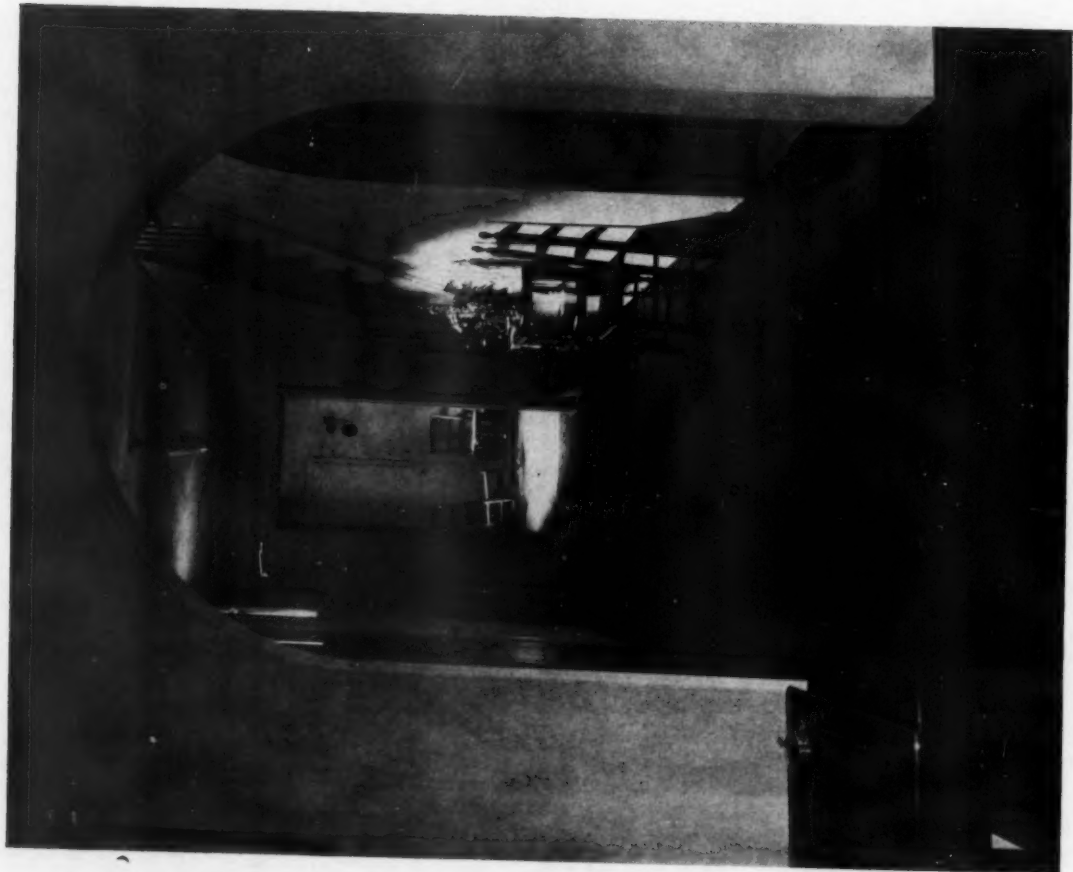


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CLASS "A" AND "B" ARCHAEOLOGY—
VI PROJET

"A PUBLIC SQUARE IN THE FLEMISH STYLE"

In the 15th and 16th Centuries Flemish Civil Architecture in the portion now known as Belgium, arrived at a rich colorfulness which has no rival in the northern European countries. In the Gothic period it already showed a greater variety and elasticity of design than any other portion of Europe. The influences acting on it from outside its boundaries were Germanic, French and Spanish. The country was rich from trade; the internal government, thanks largely to the powerful trades guilds, was highly developed.

Around the public squares of the towns were usually grouped the public buildings such as City Hall, Market, Court of Justice and the houses of these guilds as well.

The side of one of these squares was 150 ft. long and was divided unequally among 5 guilds.

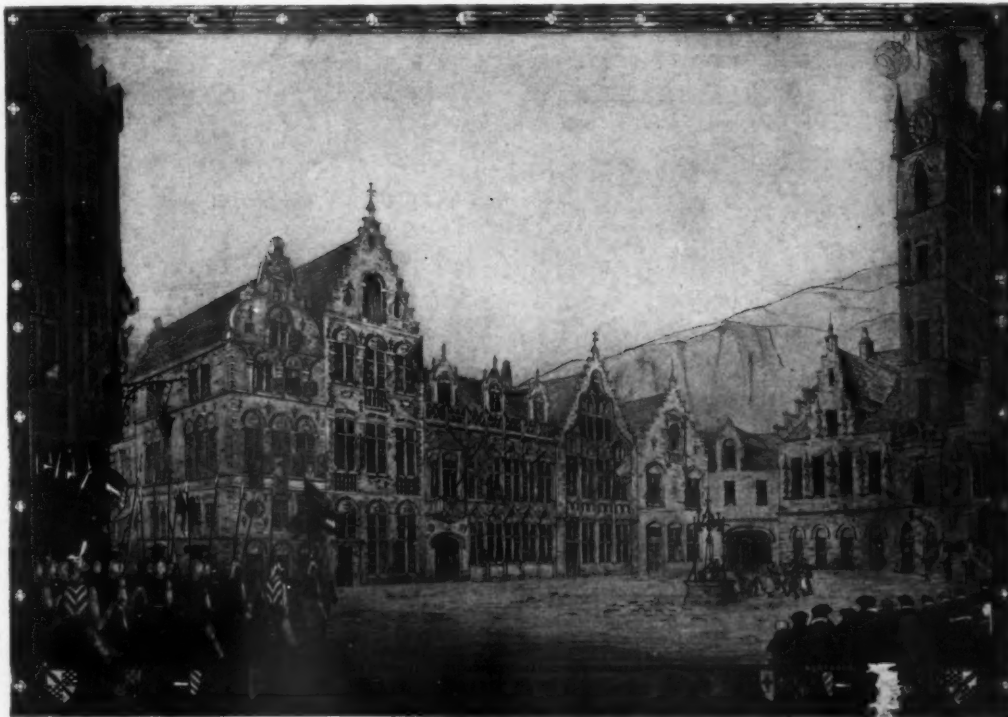
All of these buildings were destroyed in a great fire and it is desired to reconstruct them in the style of the period.

The general effect of such buildings was extremely pictorial, the windows numerous and wide filling the frame of the structure. The style was hybrid perhaps, using motives which were classic or Baroque intermingled. The façades were colored and gilded usually rising to extraordinary gables, masking high peaked roofs. This made a wonderful background for fetes and processions of the guilds as it does nowadays for the flower markets held in the similar squares in Brussels and in Antwerp. This style had the virtues of a robust and florid imagination.

CLASS "A" AND "B" ARCHAEOLOGY—
VI MEASURED DRAWING

"DOORWAY OF HOUSE AT SYRACUSE,
NEW YORK"

"THE DOORWAY OF PERRY HILL INN, NEAR
OSWEGO, NEW YORK"



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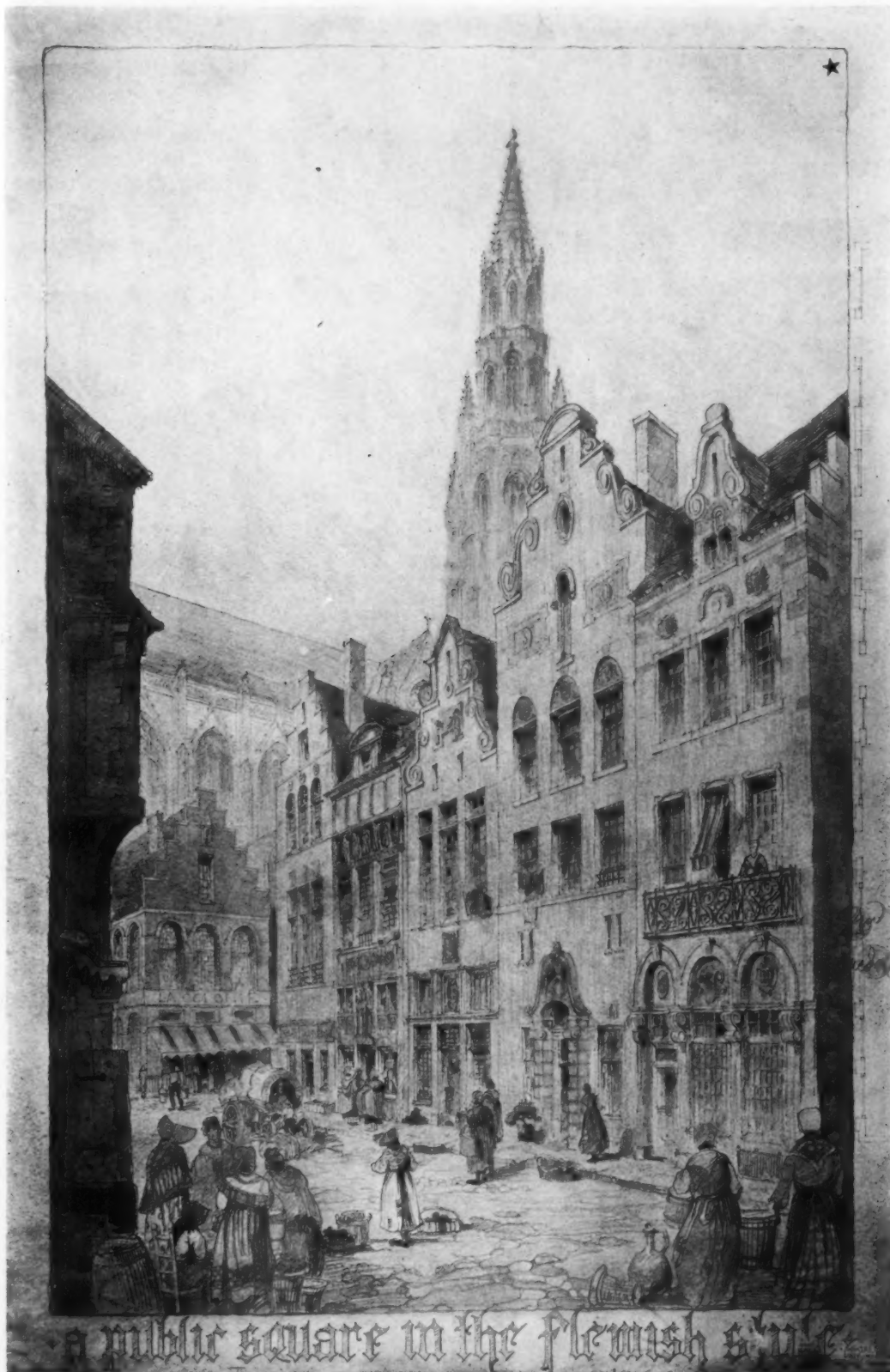


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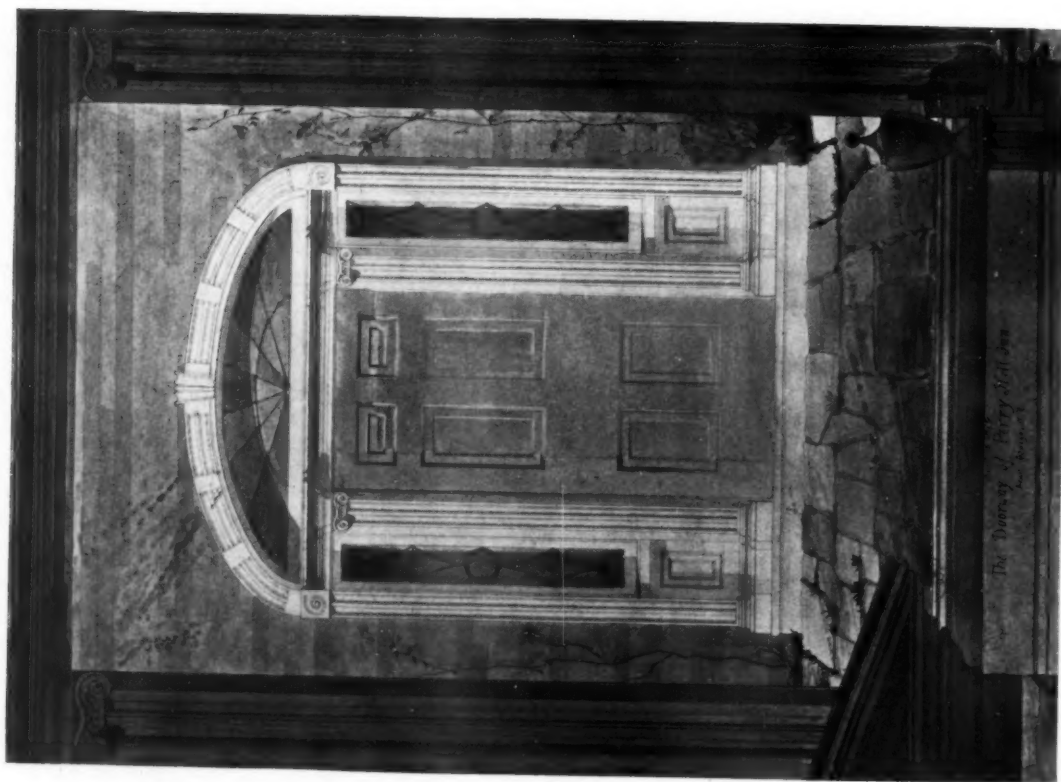
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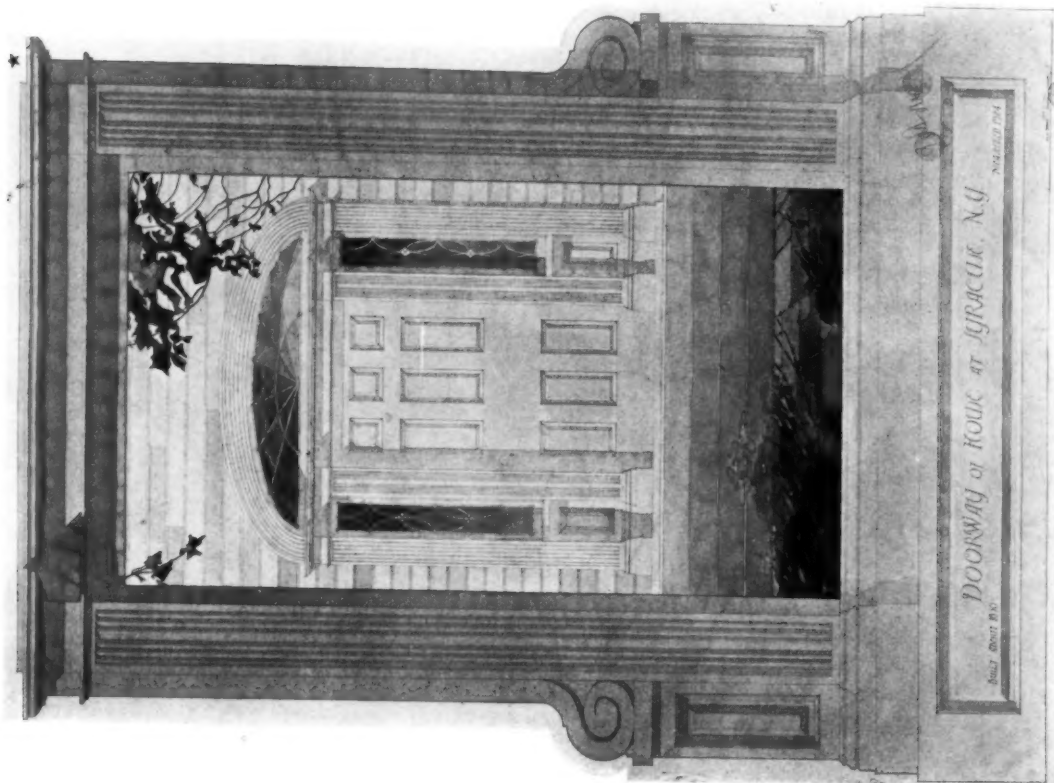
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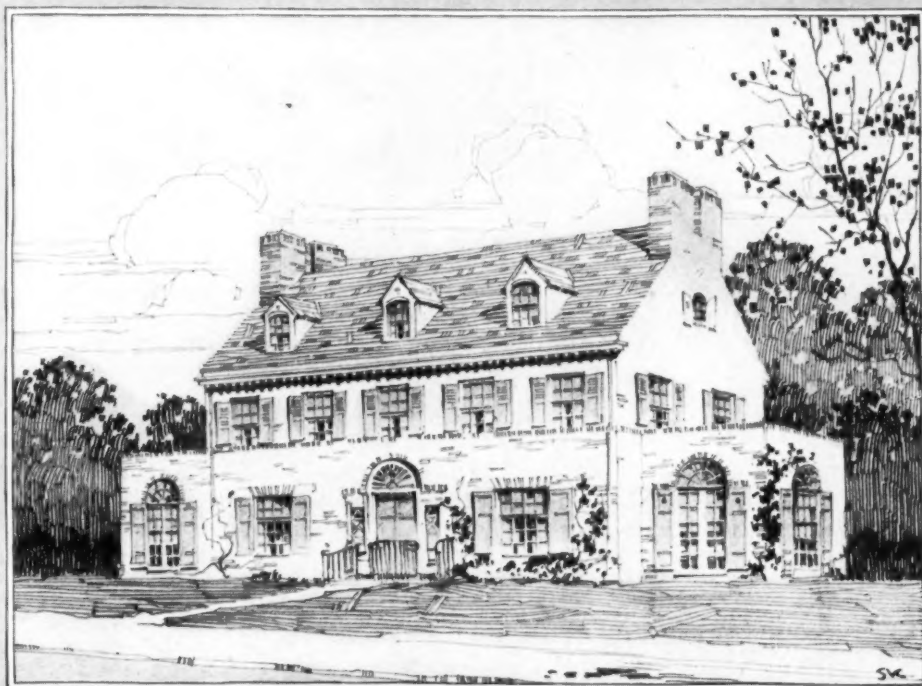


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I. CONTRACT AND LEGAL

1. Parties
2. Drawings
3. Agreement
4. Terms of Payment
5. General Conditions
6. Regulations and Codes
7. Standards

II. ECONOMIC

8. Scope of Contract
9. Methods of analysis and comparison of bids
 - 9-1. Methods
 - 9-2. Basis
10. Conditional Payments

III. GENERAL DESCRIPTIVE

11. Distribution of Materials
12. Character of Finishes
13. Working Facilities and Limitations

IV. PRELIMINARY PREPARATION

14. Field Measurements

15. Shop Drawings

16. Samples

V. MATERIALS

17. Kinds of Wood

- 17-1. Oak
- 17-2. Walnut
- 17-3. Mahogany
- 17-4. Birch
- 17-5. Gum
- 17-6. Pine
- 17-7. Other Woods
- 17-8. Common Woods for Rough Construction

18. Kiln-Drying and Curing

19. Finish Materials

- 19-1. Stains
- 19-2. Fillers
- 19-3. Shellac
- 19-4. Varnish
- 19-5. Enamel
- 19-6. Lacquer
- 19-7. Wax

20. Hardware

- 20-1. Rough Hardware
- 20-2. Finish Hardware
 - 20-1. Furnished by Owner
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22. Shop Work

- 22-1. Solid Stock
- 22-2. Veneers
- 22-3. Doors
- 22-4. Panel Work
- 22-5. Jambs
- 22-6. Casings
- 22-7. General Trim
- 22-8. Sash
- 22-9. Cases and Cabinets
- 22-10. Drawers
- 22-11. Stairs

23. Finishing of Woods (In Shop)

- 23-1. Varnishing
- 23-2. Enameling
- 23-3. Waxing
- 23-4. Other Finishing
- 23-5. Back-Painting
- 23-6. Work To Be Finished After Installation

24. Fitting of Hardware in Shop

25. Field Work

- 25-1. Rough Construction Required
- 25-2. Grounds and Furring
- 25-3. Installation of Work
- 25-4. Cutting and Fitting For Other Trades
- 25-5. Finishing of Woods (In Field)
- 25-6. Final Adjustments
- 25-7. Final Finish
- 25-8. Protection of Work Installed

VII. SCHEDULES

- 26. Shop Production
- 27. Field Operations
- 28. Shipment and Delivery

VIII. RESULTS

- 29. Inspection
- 30. Guarantee
- 31. Rejection

ILLUMINATING ENGINEERS TO HOLD CONVENTION

THE eighteenth annual convention of the Illuminating Engineering Society will be held at Briarcliff Lodge, Briarcliff Manor, N. Y., from October 27 to October 30. Many interesting papers will be read at this meeting.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION TO MEET

THE annual convention of the American Institute of Steel Construction will be held at the French Lick Springs Hotel, French Lick, Ind., on Thursday, Friday and Saturday, November 13, 14 and 15, 1924.

An educational program has been prepared which includes subjects and speakers that will undoubtedly assure a large audience. In addition to the regular members, all who are interested in the fabrication or use of structural steel are invited to be present as guests of the Institute.

More than twenty-five important cities have adopted the Institute's Standard Specifications as part of their local building codes.

A Standard Code of Practice, which will eliminate much of the confusion that has existed in the past, has been prepared, for adoption.

The standardization of structural shapes, through the publication of a Standard Handbook to contain information regarding the design and use of structural steel, is a constructive move of particular interest to all concerned in building construction.

It is announced that the convention will confine its attention to the principal problems of the in-

dustry and through the execution of an effective program render a service to the building industry and the public.

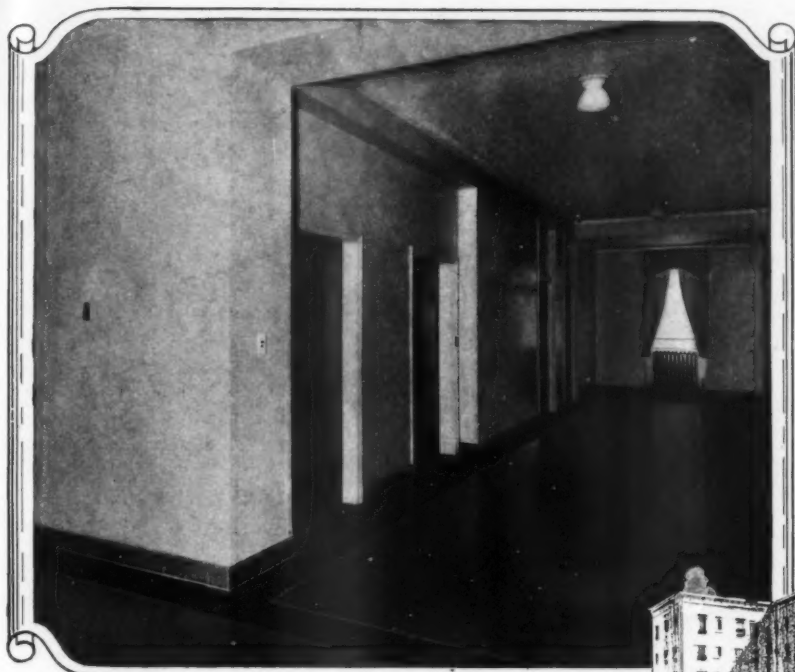
BUILDING RECORD FOR SEPTEMBER

CONSTRUCTION activities declined very slightly in September, according to F. W. Dodge Corporation. The drop from August in 36 Eastern States (which include about 7/8 of the total construction volume of the country) was only 3 per cent, which is less than the usual seasonal decline. The total value of the September building contracts was \$344,316,300. This was an increase of 19 per cent over the previous September. Compared with this season of last year, building is considerably more active now in the Middle Atlantic States than in other sections.

The more important items in the September record were: \$143,705,500, or 42 per cent of all construction, for residential buildings; \$52,033,800, or 15 per cent, for public works and utilities; \$43,316,300, or 13 per cent, for commercial buildings; \$35,222,200, or 10 per cent, for industrial buildings; and \$31,728,000, or 9 per cent, for educational buildings.

The September record brings the total of contracts awarded since January up to \$3,365,077,700, an increase of nearly 12 per cent over the corresponding nine months of 1923.

Contemplated new work reported last month amounted to \$430,300,100, which is 15 per cent less than the amount reported in August, but 11 per cent greater than the amount reported in September, 1923.



The floors of the Sutter Hospital, Sacramento, Calif., installed by the Bonded Floors Company, fill every practical requirement. 8000 square yards of Gold-Seal Battleship Linoleum were installed in the wards, corridors and private rooms of this modern hospital. Architects: Meyer & Johnson, San Francisco.



Hospital floors and their psychological importance—

Architects who are experts in hospital construction choose floors with due consideration to their effect upon the patients. Quietness is the first requisite. To preserve the restful, peaceful atmosphere essential to recovery, hospital floors must be subdued in coloring and pattern—and absolutely noiseless underfoot.

Not only from the psychological, but from the practical standpoint as well, Bonded Floors satisfy every hospital need. Their shock-absorbing resilience conserves the energies of the hospital force. They are durable, comparatively low in cost and sanitary to the last degree, easy to clean and keep clean.

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"Hospital Floors" is the title of an informative folder which describes various types of floors suitable for hospital use—battleship linoleum, rubber tile and others. It covers the possibilities of using less expensive grades for certain uses, shows a variety of patterns and color combinations, etc. Free to you for the asking.



Specifications of most products advertised in THE AMERICAN ARCHITECT appear in the Specification Manual

COMPETITION OF HOUSE BEAUTIFUL COVER DESIGNS

THE success of the cover competitions held the last two years, has led the *House Beautiful* to repeat this event and again to offer two prizes, one of \$500 and one of \$250 to the successful contestants. A number of honorable mentions will also be given. The competition closes February 7, 1925. Full particulars regarding the competition may be had on application from the Competition Committee, *House Beautiful*, 8 Arlington Street, Boston, Mass.

TWO EGYPTIAN TOMBS UNEARTHED

TWO royal tomb chapels of the Third Dynasty, believed to be the earliest stone buildings known to the world, are reported to have been discovered near the famous pyramids of Sakkara, about fifteen miles south of Cairo. The discovery is considered one of the most important made by archaeologists in recent years, especially in its bearing on the early history of architecture.

Built in a style differing in almost every respect from what is known as Egyptian architecture, the chapels are thought by the archaeologists who have been digging on the site for two months to have been the burial places of Princesses or Queens of the Third Dynasty. Fragments of grave-stones of royal Princesses are said to have been found nearby.

The façades of the chapels are decorated with fluted columns with leaf form capitals. The side walls have the earliest known form of papyrus capital and column.

FIND PARTS OF CONSTANTINE'S CHURCH OF 324 A. D. UNDER FLOOR OF ROMAN CHURCH

WORKMEN, while engaged in the reconstruction of the pavement in the baptistry of the Basilica of St. John Lateran, Rome, have brought to light important parts of buildings of the time of the Emperor Constantine, who, tradition says, was baptized there by Pope Sylvester I. in the year 324 and who is said to have given to the church the eight splendid columns of porphyry surrounding the baptistry. The workmen also discovered ancient paintings, mosaics and pavements belonging to the original baptistry of the Basilica.

The work of restoring the porticos and ancient pavements above the lateral entrance is proceeding rapidly in preparation for the celebration this Winter of the anniversary of the sixteenth centenary of the dedication of the Basilica.

NEW RAILWAY TO BE BUILT IN SPAIN

ACCORDING to consular advices to the U. S. Department of Commerce, the government of Spain has approved the project for the con-

struction of a strategic railway from Ontoneda to Calatayud by way of Burgos and Soria, a total distance of 285 miles. This is but a forerunner of a project to construct approximately 1,500 miles of Spanish railways.

BOOK NOTES

DRAWING THE HUMAN FIGURE

THERE is no "royal road to learning" and that is particularly true as to education in art. Hard and persistent effort, cultivation of the keenest powers of observation, the memory trained to retain and store away in the sub-conscious mind the briefest, most fleeting impressions, all these are essentials in an education in art. The student, and all true artists are always students, must have patience and persistence, and he must also be willing to work and work, never allowing the discouragement of a present failure to cool his ardor or retard his effort.

We know "the greatest study of mankind is man," and in the lines that make the perfect human figure we find every suggestive line and form we shall need in whatever we seek to interpret in art, whether the figure itself, the flowing landscape or the monumental building. There is no practice that more thoroughly trains the eye and hand than sketching, either from life or the plaster model. The figure painter who hopes for success may only realize his ambition when he has thoroughly mastered the anatomy of the human figure. He must know the main elements of its structure as thoroughly as does the surgeon. Artistic anatomy is a course in every art school and an artist may not successfully draw a figure until he is able to visualize the bones and muscles, their relation and functions.

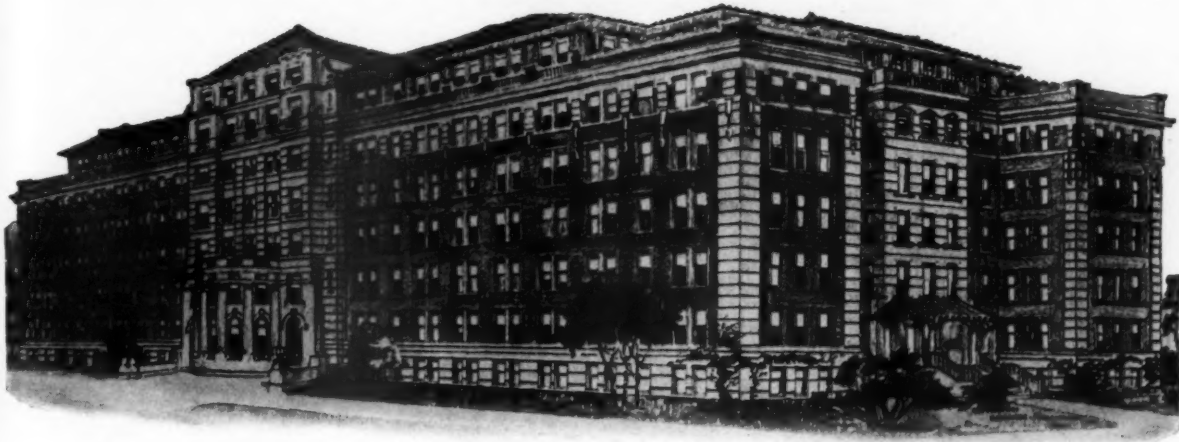
Architects who introduce figures into their sketches often show that while they know the anatomy of their buildings, and can set it forth in fine perspective and gladden the eye of a client, they do not even in its simplest aspect understand the anatomy of the human figure. It, therefore, very often happens that the figures introduced to show scale, either single ones or groups, are so awkwardly drawn as to make an otherwise artistic rendering something that does not please.

Mr. Bridgman's book on Life Drawing is far and away the best work that an architect can read and carefully study, that we have seen. The human figure is shown in a series of splendidly presented sketches, from its simplest form to the most complex. Step by step the author takes his reader along the road to knowledge. There is comparatively little text, but sufficient to explain the reason for each series of progressive drawings. Nothing finer or more comprehensive could, it would seem, be attained. There are twenty

QUALITY LEAVES



ITS IMPRINT



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chapters in this book, and the author carries his reader, simply and without confusion or unnecessary details, through a series of talks on building the figure, balance and rhythm, turning and twisting, ending with detailed studies of the head, torso, upper and lower limbs. A chapter that will particularly interest architects is that devoted to "mouldings," and it is so short and concise that we print it as a typical example of all the chapters of the book. Mr. Bridgman writes:

"Architectural mouldings consist of alternate rounds and hollows, of plane or curved surfaces, placed one beneath the other to give various decorative effects by means of light and shade.

"The human figure, whether standing erect or bent, is composed of a few big, simple masses that in outline are not unlike the astragal, ogee, and apophyge mouldings used in architecture. Looking at the back of the figure, there is the concave sweep of the mass from head to neck, then an outward sweep to the shoulders, a double curve from rib cage to pelvis, ending abruptly where the thigh begins, a slight undulation half way down to the knee, a flattened surface where it enters the back of the knee, another outward sweep over the calf and down to the heel; the whole, a series of undulating, varied forms. And the front of the figure curves in and out in much the same manner, a series of concave and convex curves, and planes.

"The distribution of light and shade brings out these forms."

Accompanying this chapter there are five pages of Mr. Bridgman's sketches showing the human figure in various attitudes and the outline of the moulding that the outline of the figure suggests.

To sum up, this is one of the very best art books of the season. Its value to the architectural draftsman is so great as to warrant this extended review. In fact, every one engaged in any of the fields of art will find enlargement of vision and a new field of artistic effort, in the pages of Mr. Bridgman's book.

Bridgman's Life Drawing, by George B. Bridgman, instructor, lecturer, Art Students League, New York City. Full cloth; 169 pages; size 7 x 9 inches. Published at Pelham, N. Y., by Edward C. Bridgman.

HEATING AND VENTILATING ENGINEER'S GUIDE

IN The Guide for 1924-25 just published by the American Society of Heating and Ventilating Engineers, the architect will find much that will be useful to him in that important branch of his work, heating and ventilation. Of the 234 pages devoted to heating and ventilation there are

no unnecessary words. It is solid reference data of the latest developments in this science.

An idea of the scope of the book may be gained from the headings of a few of the chapters. These include: Heat Losses from Buildings; Heating by Radiation; Pipe Sizes for Steam Heating; Pipe Sizes for Steam with Counter Flow of Condensation; The Boiler; Hot Water Heating; Warm Air Furnace Heating; Oil Fuel for Industrial and Domestic Heating; Gas Heating; Automatic Heat Control; Insulation; Pipe; Pipe Sizes for Water Supply Service; Ventilation; Air Washers and Filters; Air Conditioning; Design and Construction of Air Ducts; Refrigeration; Ventilators and Natural Ventilation.

This, the third annual edition of The Guide, is even more complete than either of its predecessors. It is larger by more than 100 pages than that of last year. The text section was prepared under the direction of F. D. Mensing, consulting engineer of Philadelphia and his committee who know the information a designer needs to lay out a job.

American Society of Heating and Ventilating Engineers Guide, 1924, by the Guide Publication Committee. 518 pages, illustrated, 6" x 9", cloth. Published by the American Society of Heating and Ventilating Engineers, 29 West 39th Street, New York. Price \$3.00.

DRAFTING ROOM MATERIALS

IT would be impossible for any book of reasonable size to include all of the problems which require the use of mathematics, that arise in a drafting room. This is especially true if detail drawings are made of trusses, stairs and other steel construction. However, the solving of well selected examples will give the draftsman a facility in mathematical analysis and procedure which will make him competent in other problems. The problems which Mr. Pond has selected for this book are of that practical character frequently arising in the drafting room and their solutions are clearly written and readily understandable.

To those who infrequently solve such problems, the use of logarithms might perhaps be cumbersome. They are often worked out by the use of a table of squares and the arithmetical application of the natural trigonometrical functions. A few examples worked out in this way would suggest the method for those who lose quickly a facility in logarithmic computations.

This volume covers a series of problems that have not heretofore been gathered together in printed form and should find a place in every drafting room.

Drafting Room Mathematics, by DeWitt C. Pond. Illustrated, 153 pages, 5¼ x 8, cloth. Published by Charles Scribner's Sons, New York. Price \$2.50.

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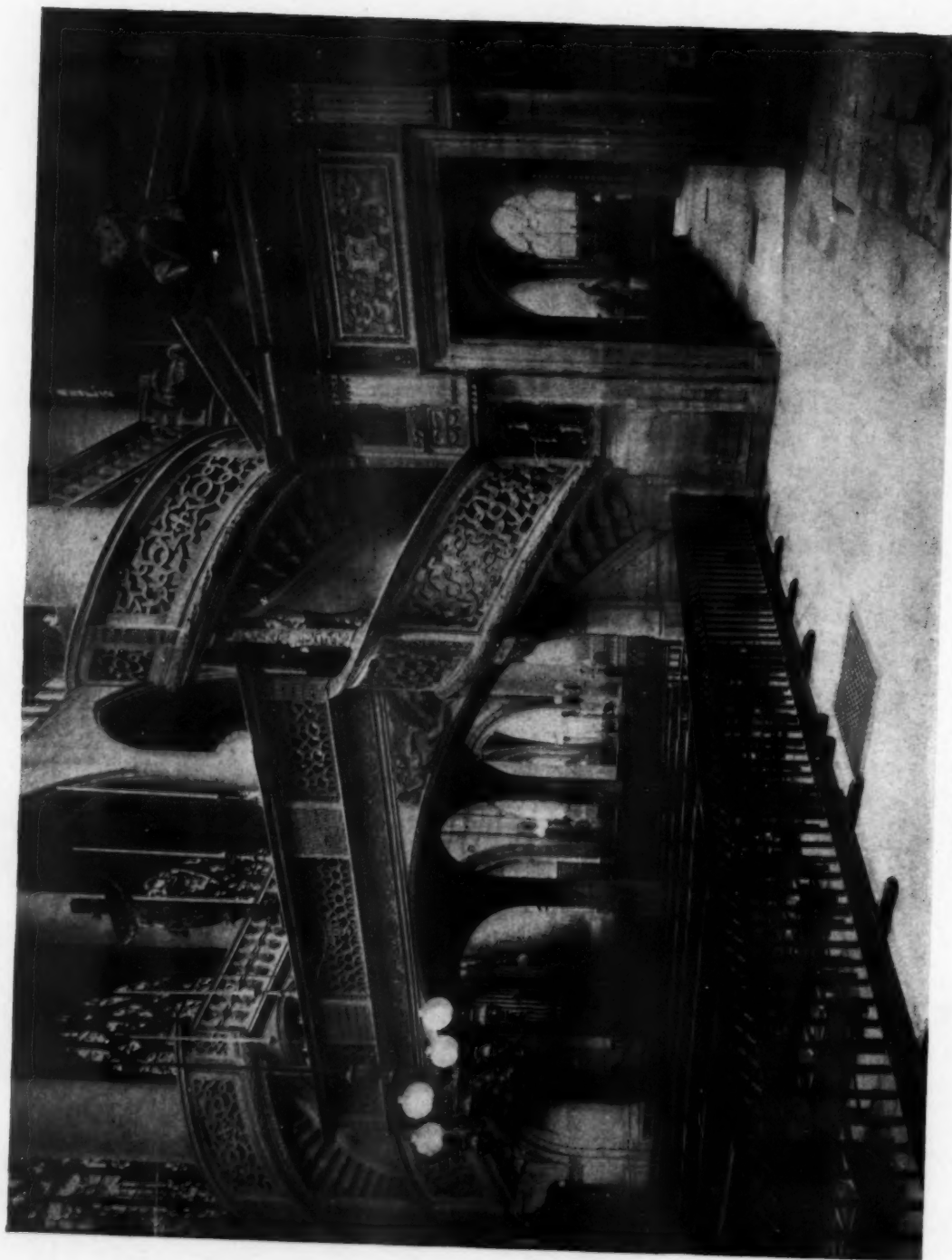
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