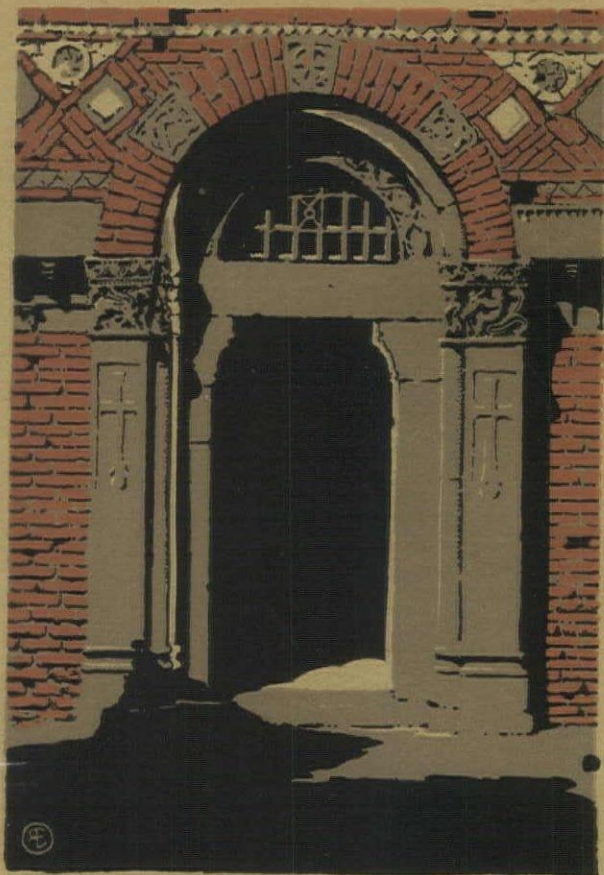


THE ARCHITECTURAL FORUM



AUGUST
1920

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Beautiful Enduring Homes of Natco Hollow Tile



A Natco home that is comfortable and permanent. Damp proof and fire safe



A Natco home where neither heat, cold nor moisture can penetrate



A stucco finish on a Natco Hollow Tile wall becomes a part of the wall itself

NO home that is not permanent is worthy of the name. A house of Natco Hollow Tile is built not only for permanence but also for safety, economy and a sound investment.

The economy of Natco Hollow Tile lies not only in the lack of repairs and deterioration, but in the cost of operation. Owing to the dead-air spaces between the outer and inner surfaces of the wall, a house of Natco Hollow Tile is estimated by the best heating engineers to be heated to 70 degrees Fahrenheit in zero weather with 10 per cent less coal than the same house of other material.

Write for your copy of the Natco Textile House book. It gives plans and illustrations of 44 moderate priced houses.

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A Natco wall is hollow, insuring warmth in winter and coolness in summer

Atlantic Terra Cotta

THE George A. Fuller Company, with a long standing record of achievement, are large users of Atlantic Terra Cotta.

The buildings listed on the opposite page are examples of Fuller Construction and Atlantic Terra Cotta.

Atlantic Terra Cotta Company
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Atlantic Terra Cotta

*Examples of Fuller Construction and
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Current Work

Federal Reserve Bank, Dallas, *Graham, Anderson, Probst & White, Architects*
National Biscuit Company Building, Detroit, *A. G. Zimmermann, Architect*
Kresge Store, Buffalo, *Joseph E. Mills & Son, Architects*
Kresge Store, Boston, *Newhall & Blevins, Architects*
Kresge Store, Fall River, *Newhall & Blevins and Edward N. Corbett, Associated, Architects*

Recent Work

Pennsylvania Hotel, New York, *McKim, Mead & White, Architects*
(*exterior and interior*)
St. Joseph's Hospital, Kansas City, *Wilder & Wight, Architects*
William Penn Hotel, Pittsburgh, *Janssen & Abbott, Architects*
Euclid Building, Cleveland, *Geo. B. Post & Sons, Architects*
Texas Company Building, Houston, *Warren & Wetmore, Architects*



NORTHWESTERN

is a short form of specification for architectural Terra Cotta of superior quality.

An object lesson in the Chicago "loop."

One of these buildings was erected in 1904—the other in 1911.

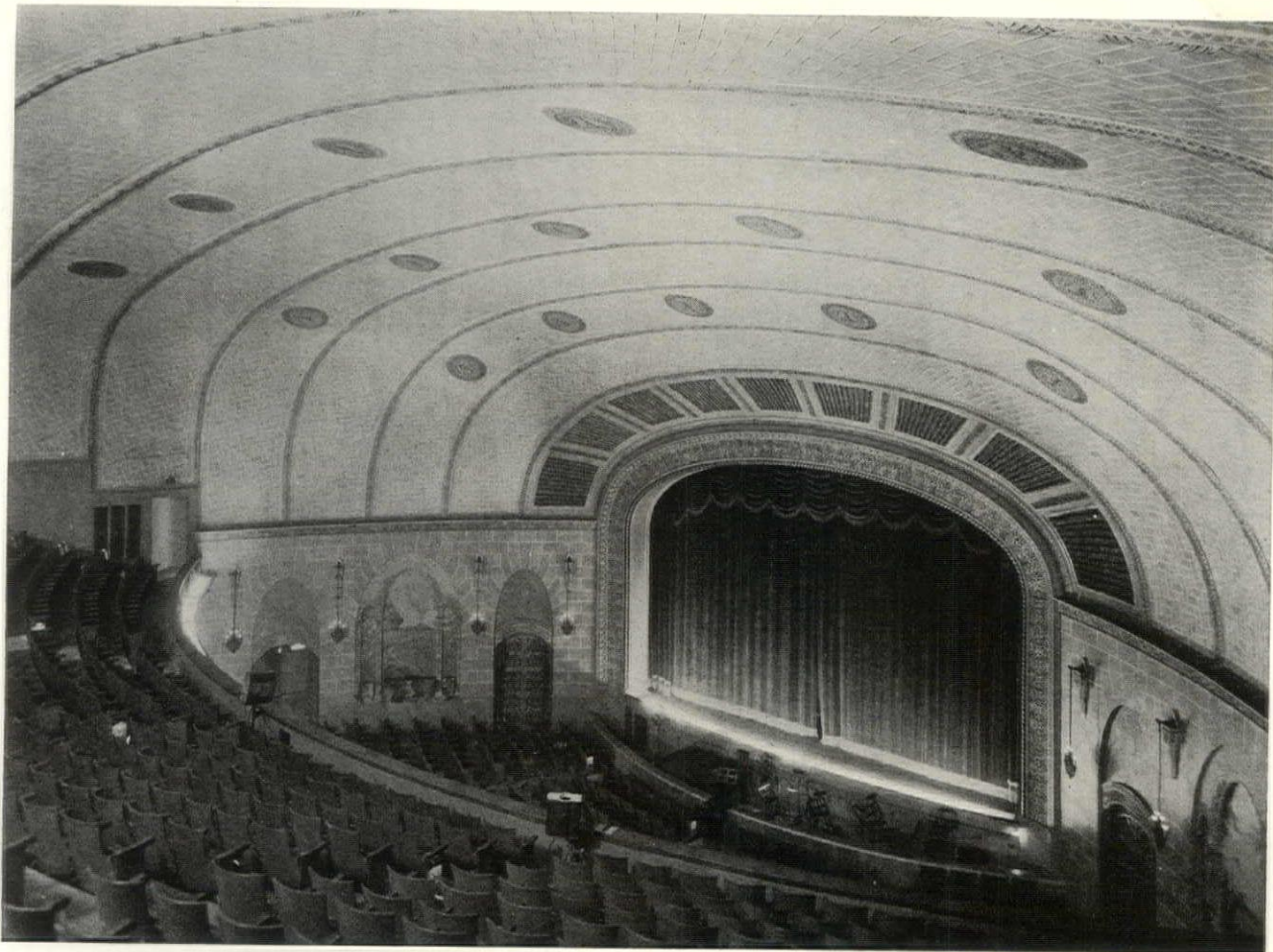
Yet today, after the lapse of years, they both look new, because faced with Northwestern cream enamel terra cotta.

In the foreground is the North American Building, designed by Holabird & Roche, and on the left is the Majestic Theatre Building, designed by E. R. Krause.

THE NORTHWESTERN TERRA COTTA CO.

CHICAGO

AN ACOUSTICAL SUCCESS



Ceiling of Goodyear Theatre, Akron, Ohio

Walker & Weeks, Architects

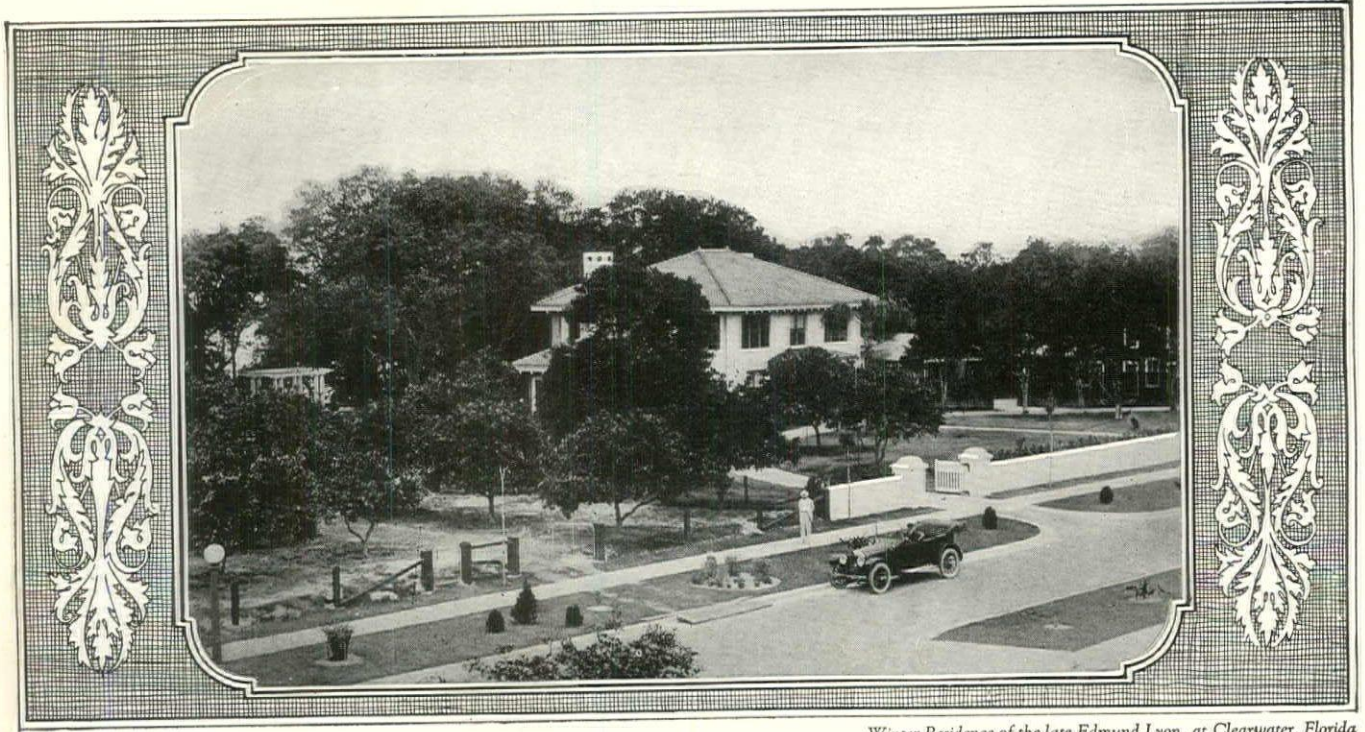
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Winter Residence of the late Edmund Lyon, at Clearwater, Florida

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The Most Economical Form of Permanent Construction



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TO give the comfort against the elements, protection from fire, and the time-resisting character necessary for a fine suburban home, Hollow Tile should be used for the exterior and interior walls and floors.

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and artistic results
are to be obtained.

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M. H. HOYT, ARCHITECT

INTERLOCKING HEINZTILE of Spanish pattern, with dull glaze in shades of green, blue and an occasional black, are so combined that they give a rich, velvet-like texture to this roof. Note particularly the small hips and ridges used.

HEINZTILE are made in French, Spanish and Mission style and in a variety of colors

The Heinz Roofing Tile Company, Denver, Colorado

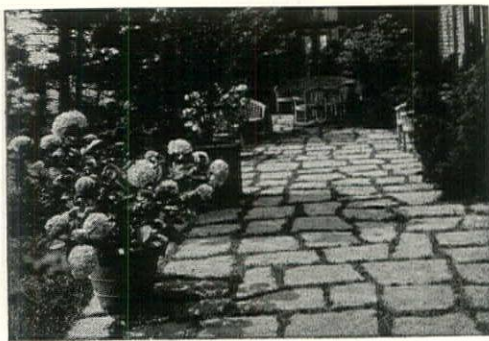
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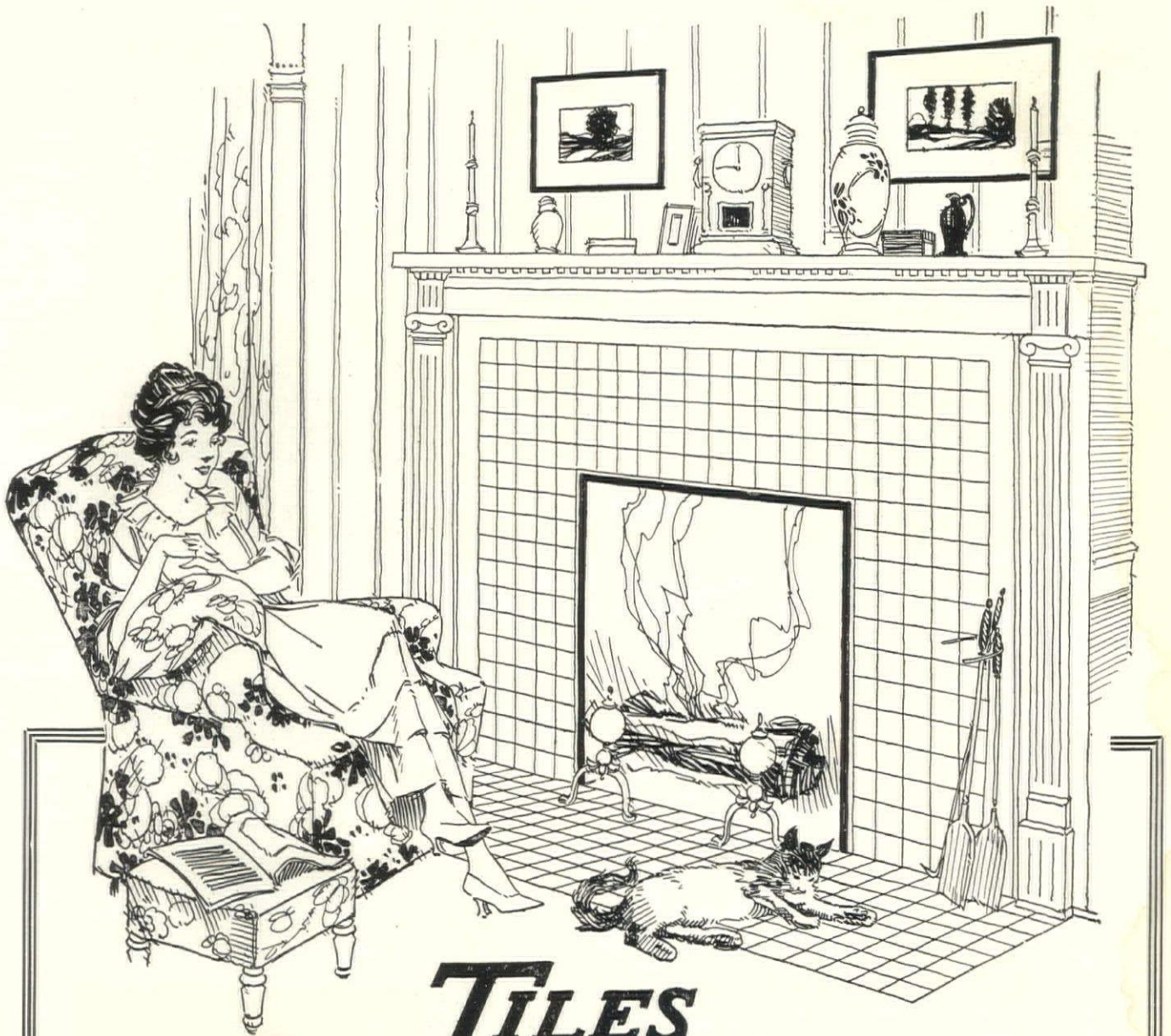
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Their Color and Decorative Values

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In addition to boundless color possibilities, Tiles possess the free lines of real beauty. Their artistic qualities have endured through the ages and are equally appreciated today.

The Associated Tile Manufacturers

Beaver Falls, Pa.



HOLY ROSARY CHURCH

Dayton, Ohio

W. L. Jaekle, Architect



THE Rose Window and all trim to this church except the columns is of "SOUTH AMBOY TERRA COTTA." The surface is tooled. The color of the terra cotta is a mottled Gray and White resembling granite.



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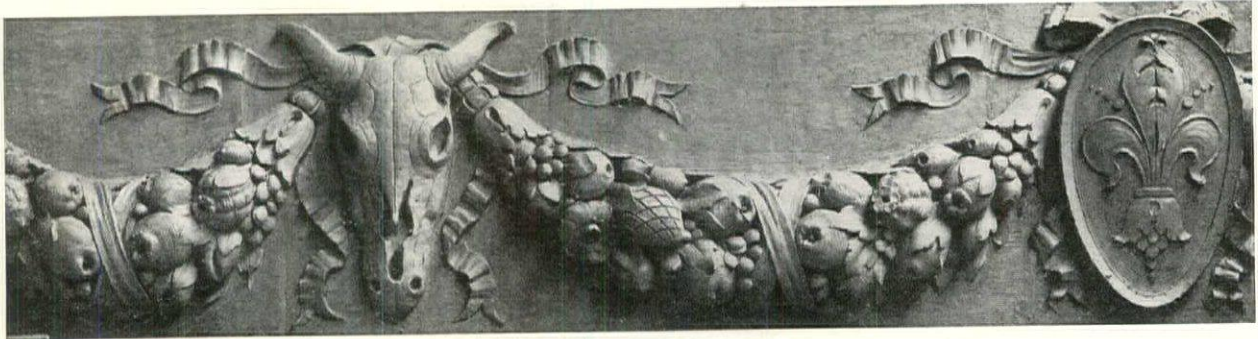
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GENERAL OFFICES

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Terra Cotta Panel on Cumberland Hotel, Cumberland, Md. Frederick Webber, Architect

THE sharp, clean cut detail of this ornamental terra cotta panel is characteristic of the modeling which architects can expect in work executed at our plant. Terra cotta affords so many possibilities for architectural

ornamentation of a building that will be in perfect harmony with other constructive materials that it should receive the architect's first attention and incidentally its use will affect a perceptible saving in cost.

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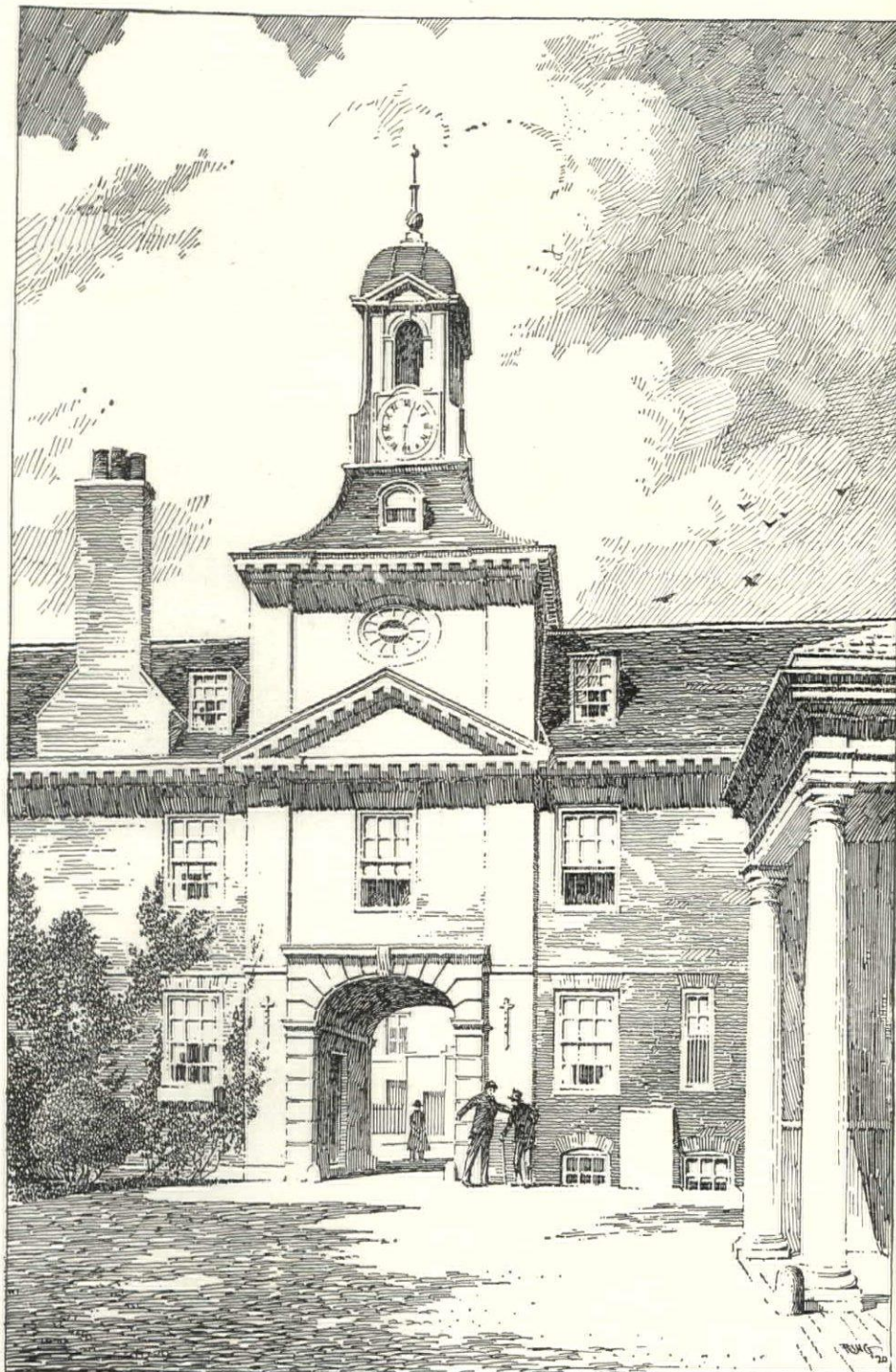
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A-F-B-A
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Entrance,
Kensington Palace,
London, England

THE EXCELLENCE of English brickwork is traditional in the architectural profession. Architects in England long ago learned the structural and artistic possibilities of brick in both public and domestic architecture.

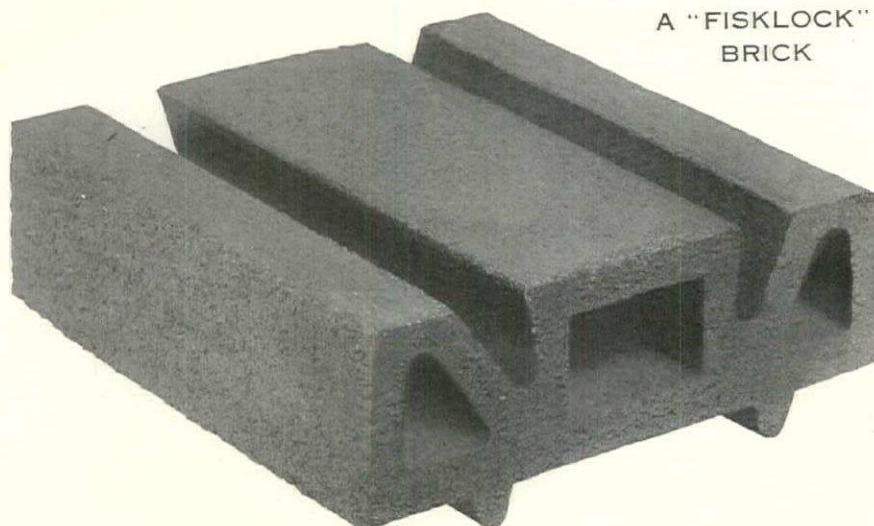
But beautiful as their brickwork in the past has been, it is being surpassed in this country today, for the progress made by American face brick manufacturers in color tones and textures has vastly increased the range of ar-

tistic effects. American face brick embraces the whole sweep of color, in smooth and rough textures, from the pure severe tones of pearl grays or creams, through buff, golden and bronze tints to a descending scale of reds, down to purples, maroons, and even gun metal blacks.

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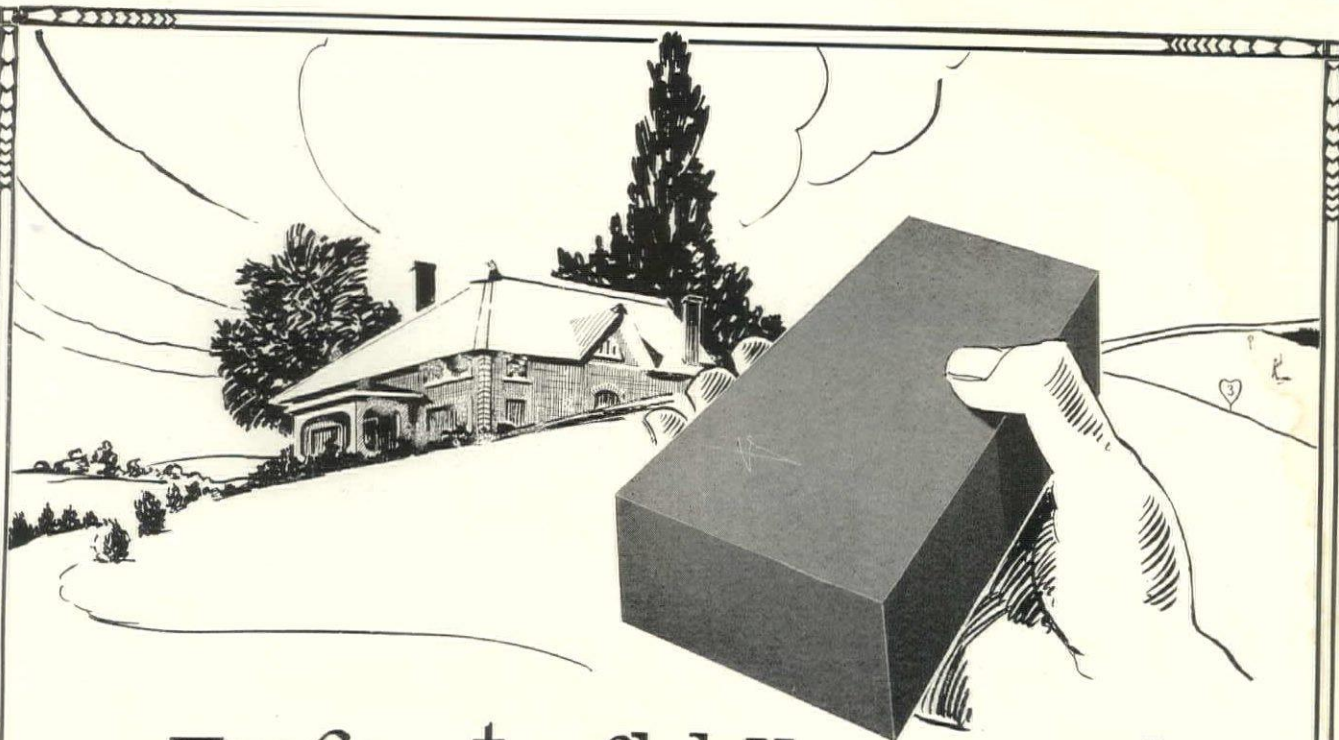
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Face Brick

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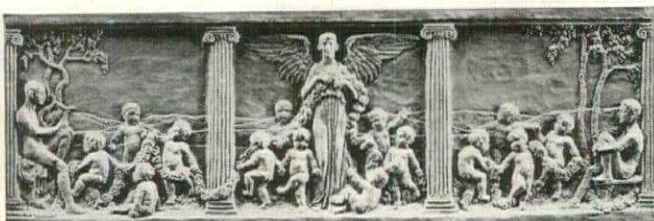
These are recommended for their rich, warm tone and their attractive texture.

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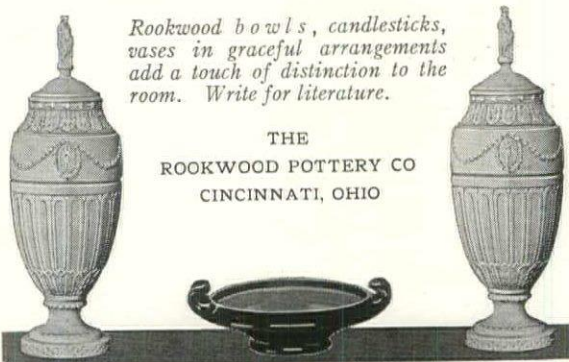


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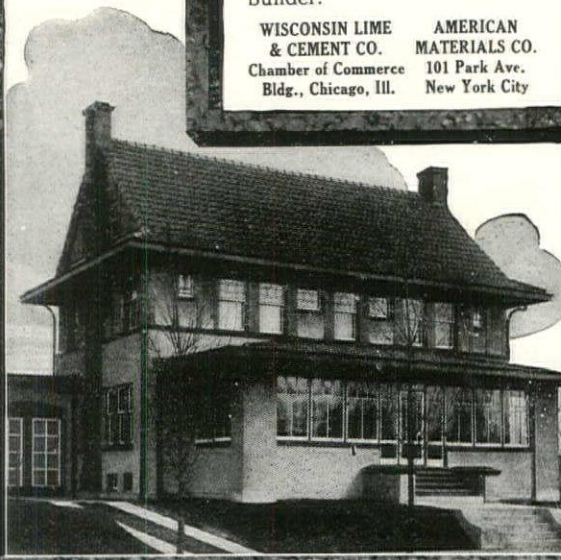
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Detail, Finley Barrel Residence, Lake Forest, Ill. Fred W. Perkins, Architect

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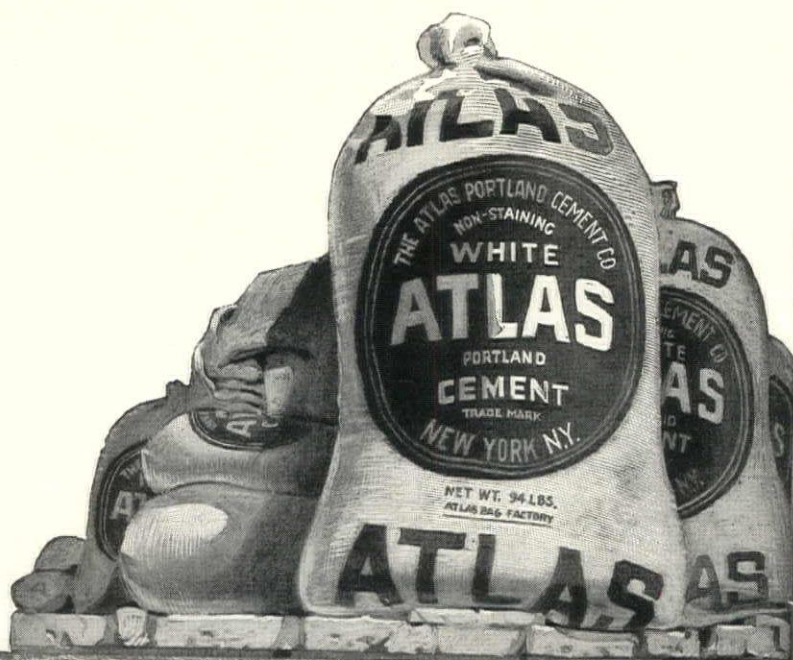
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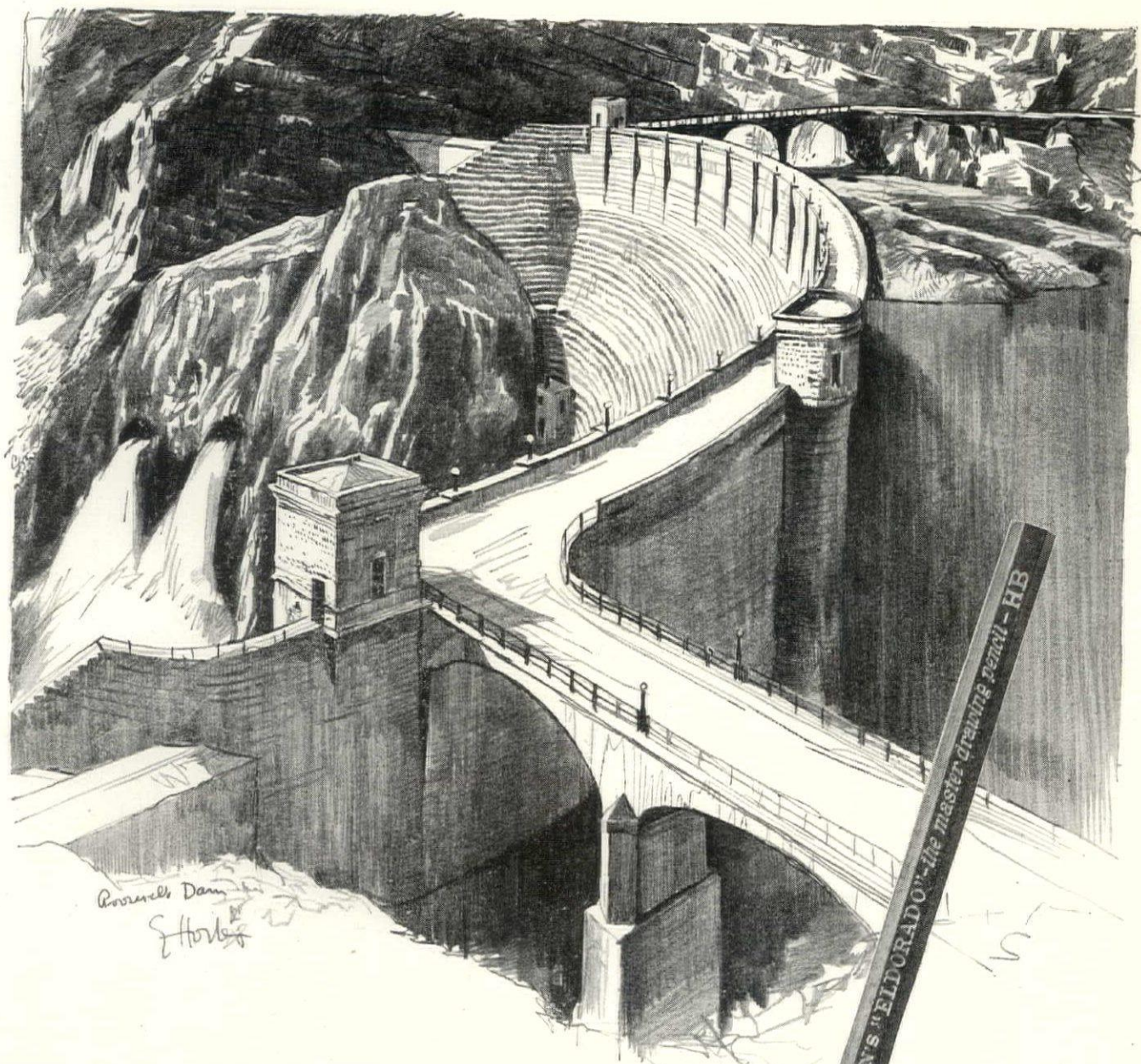
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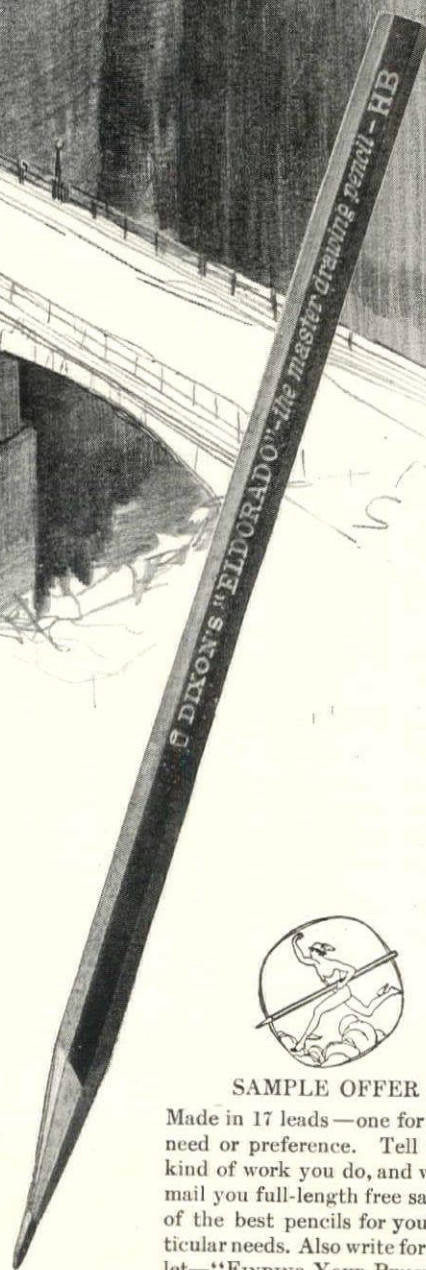
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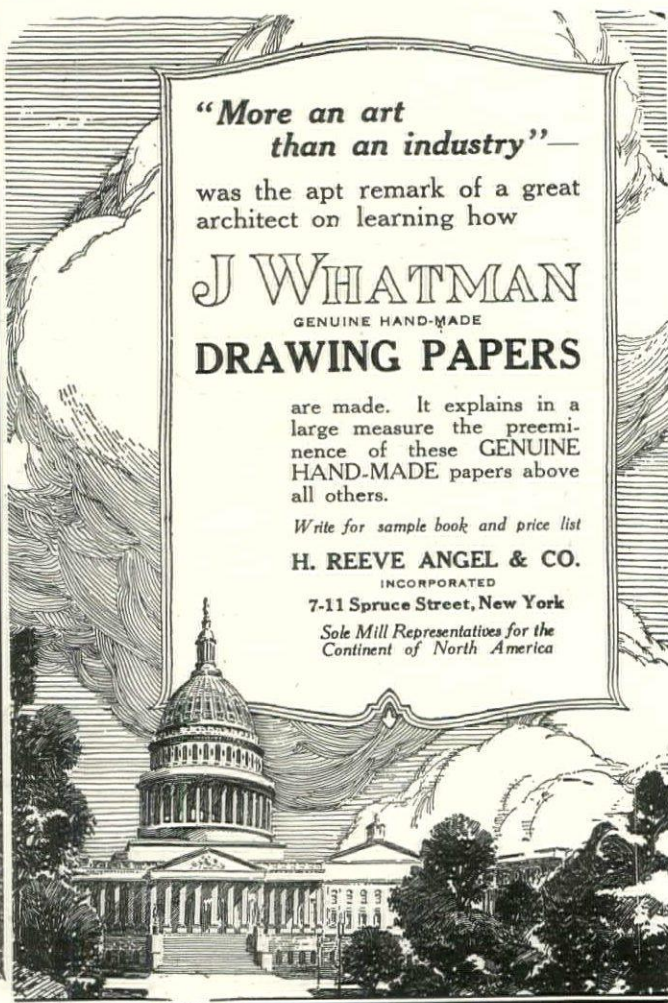
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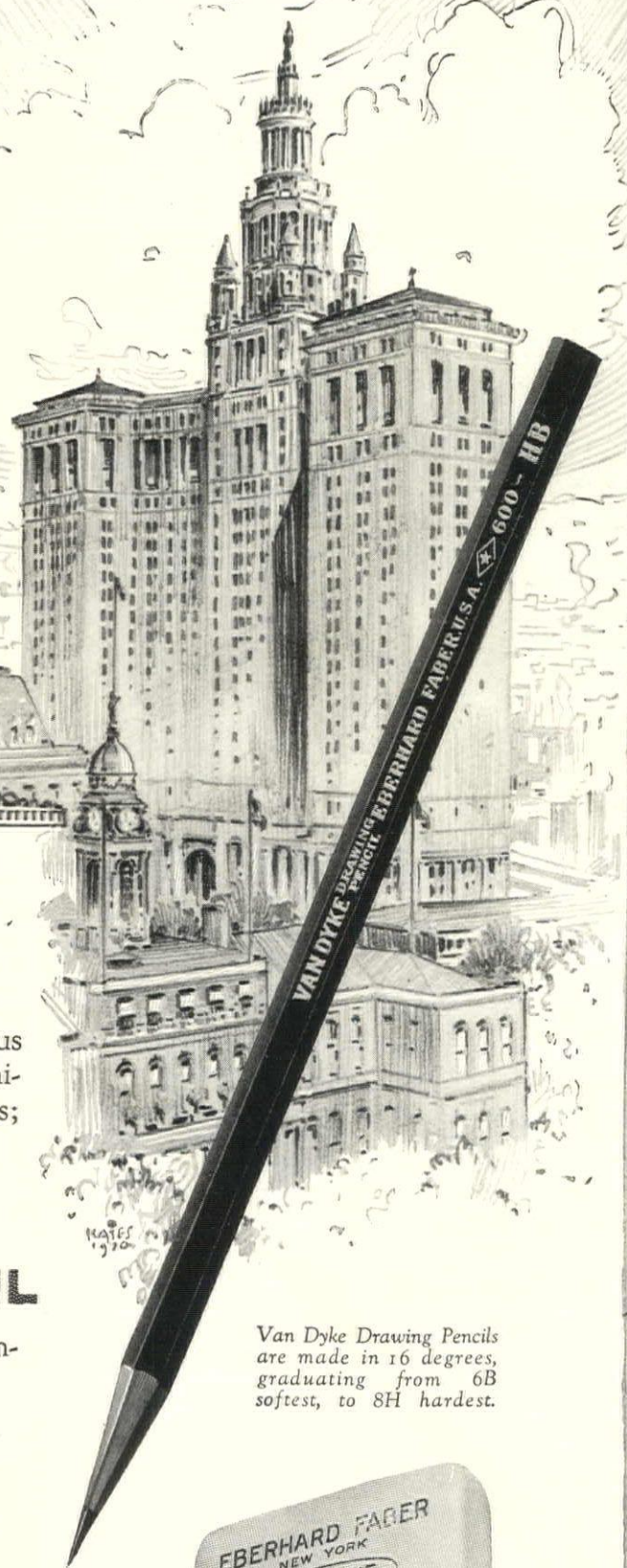
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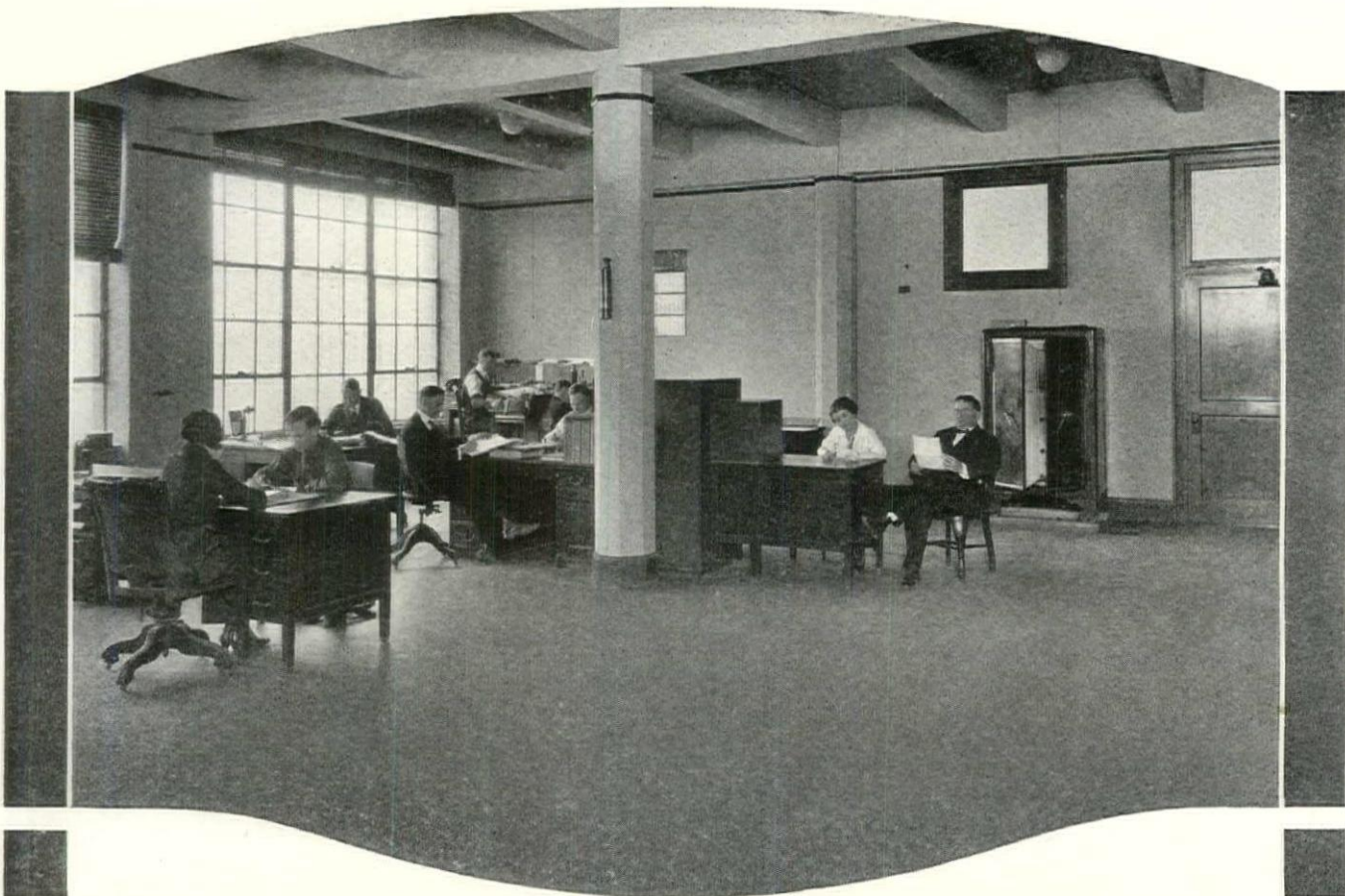
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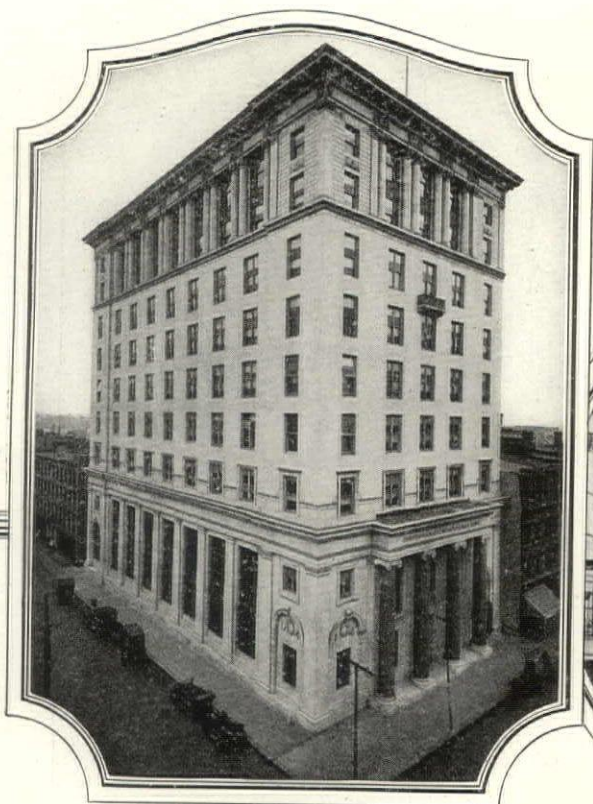
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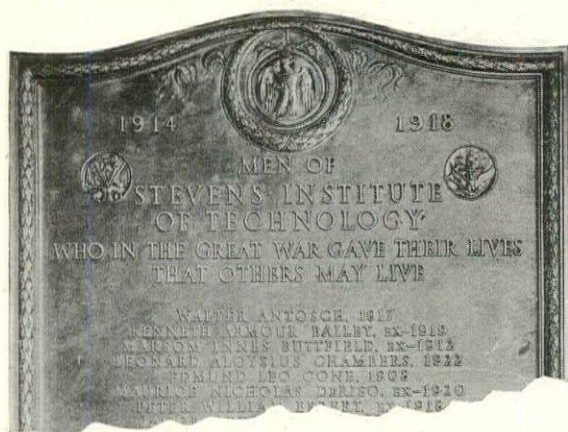
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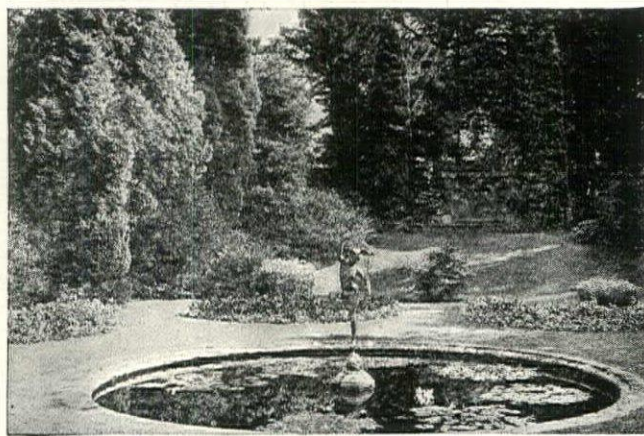
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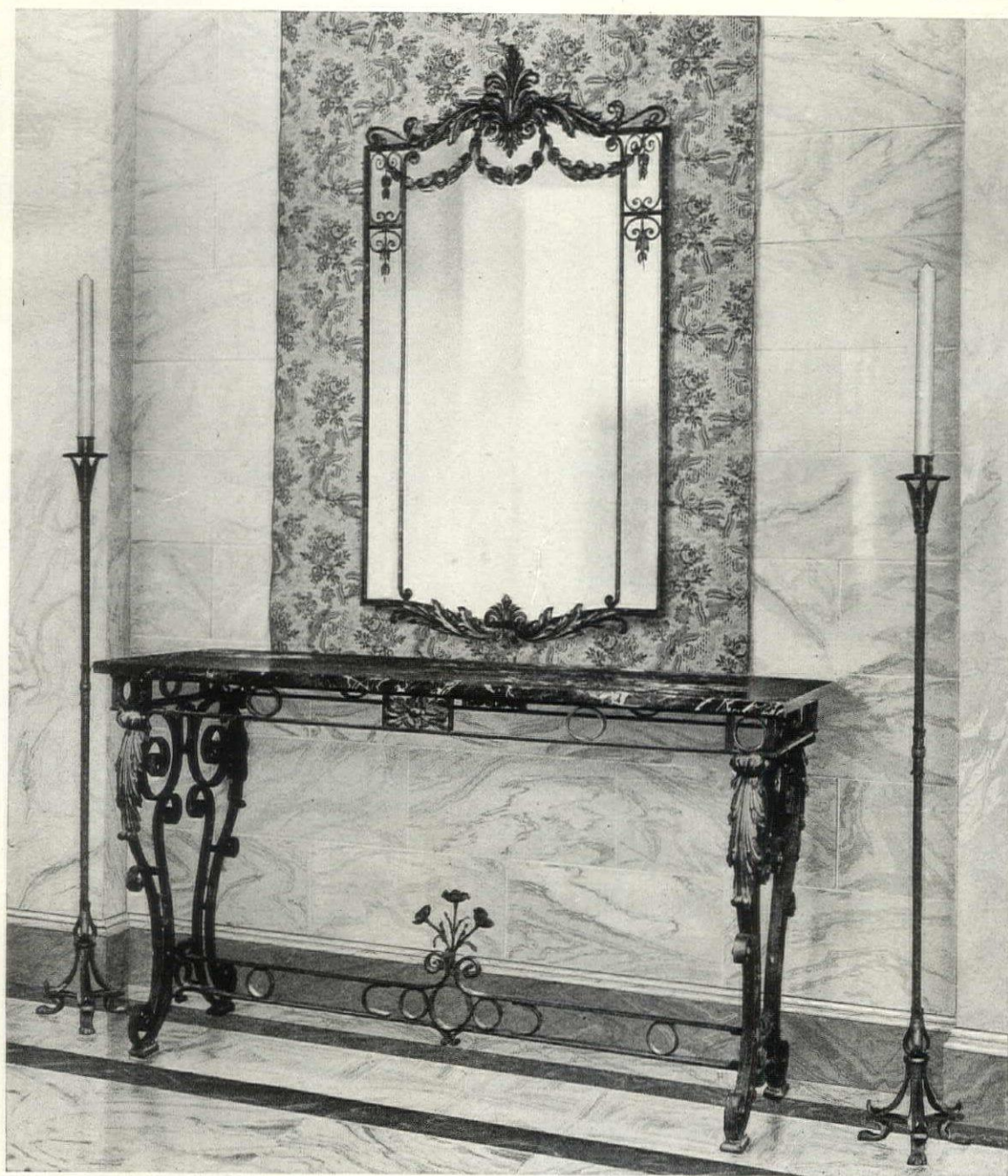
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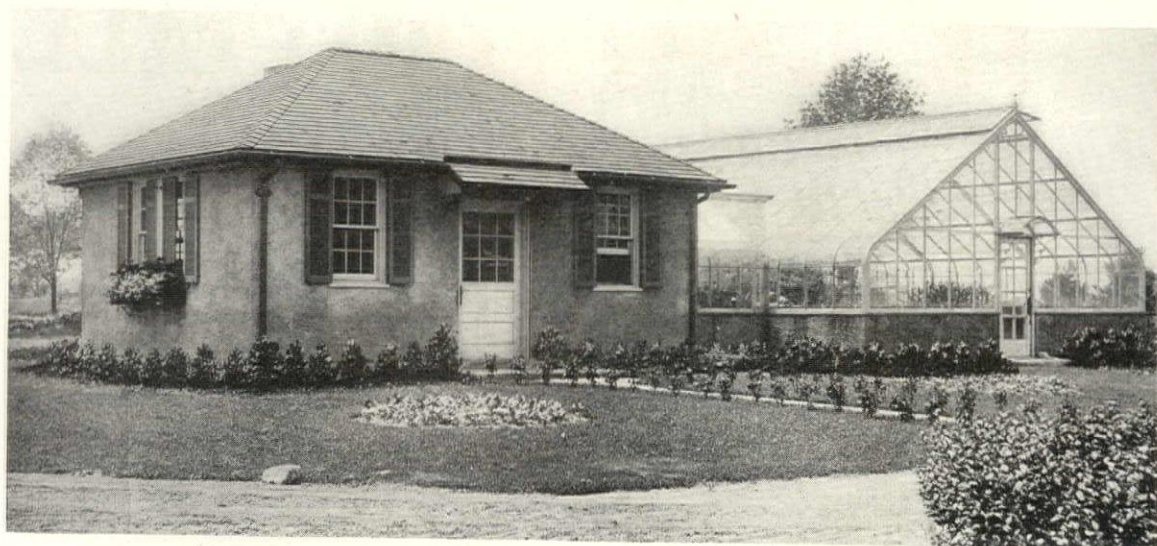
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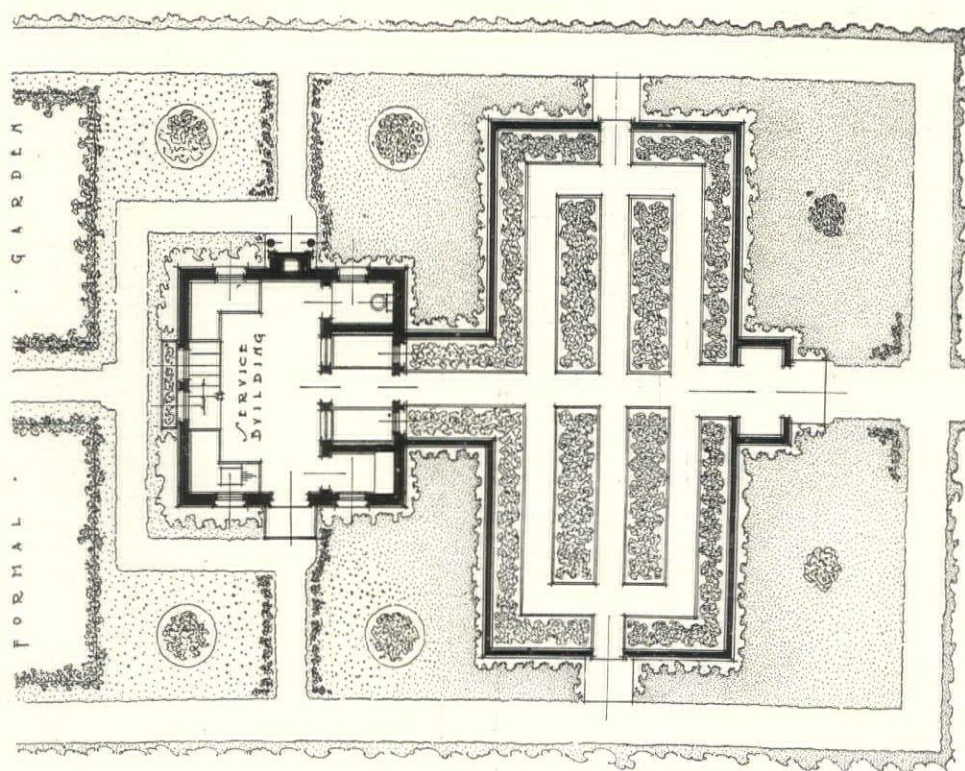
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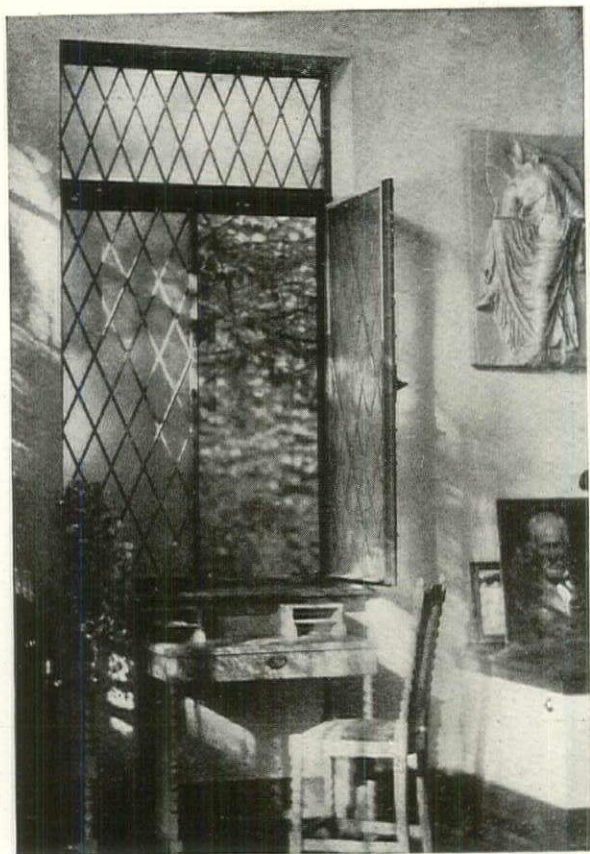
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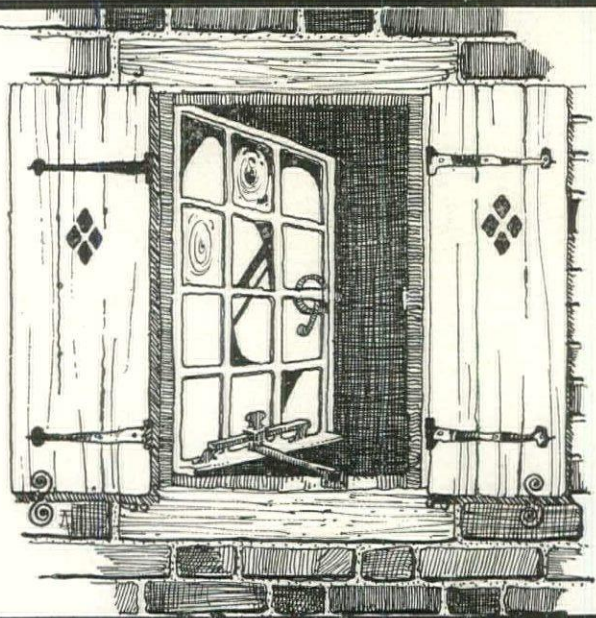
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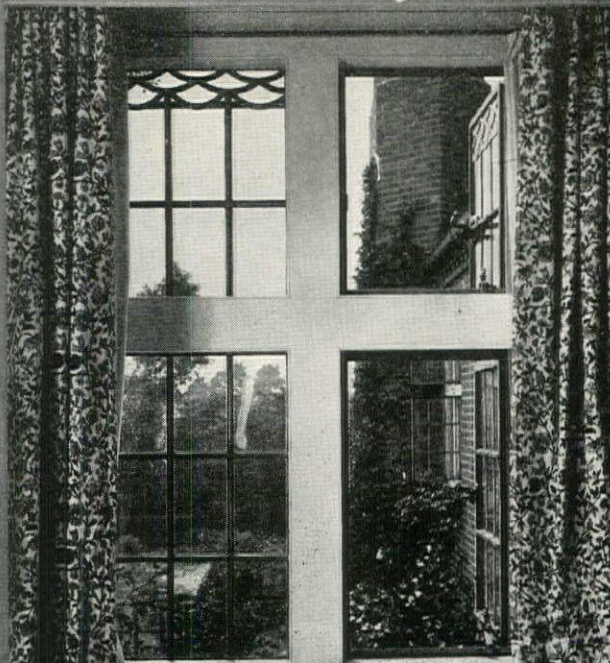
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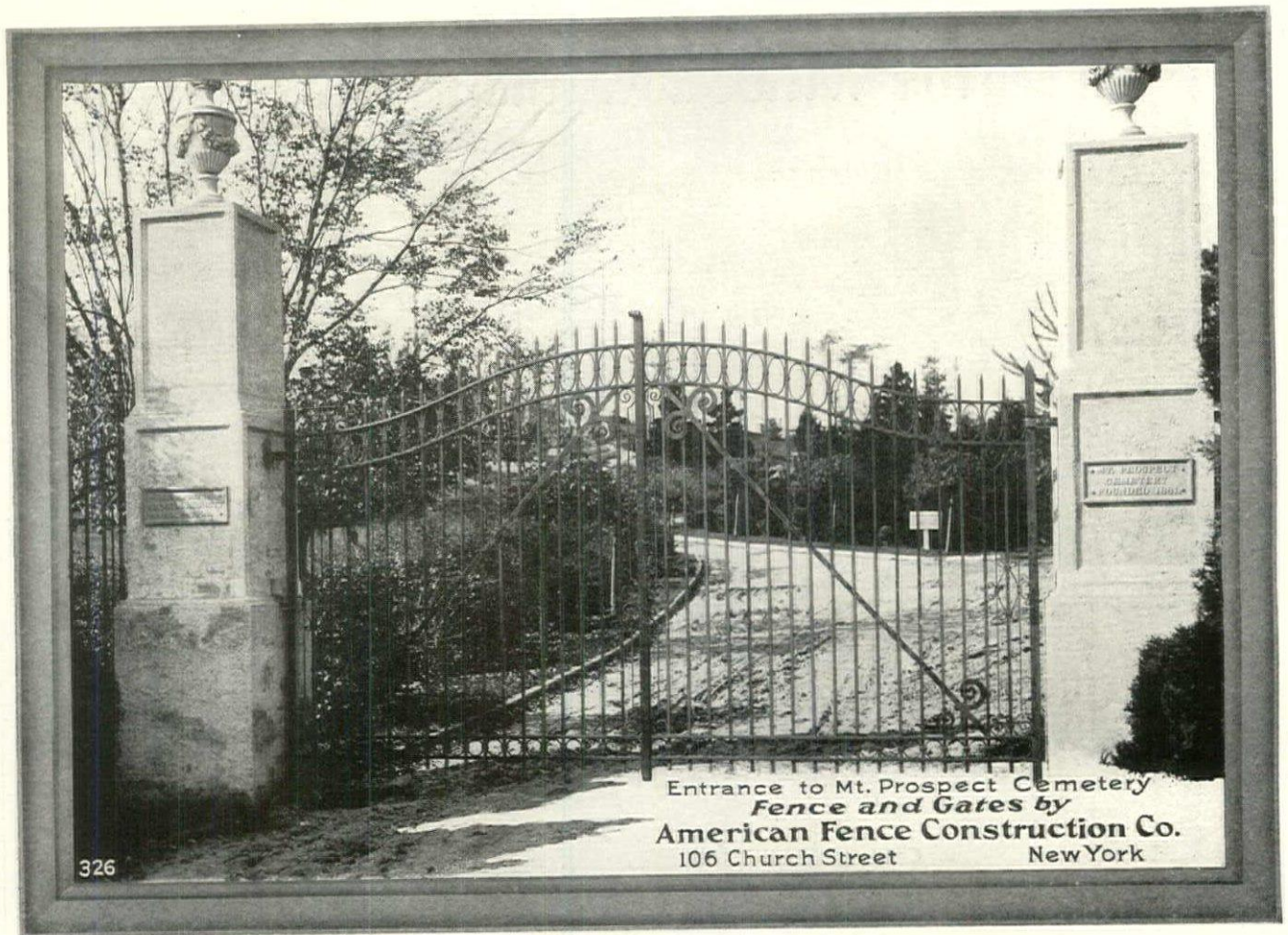
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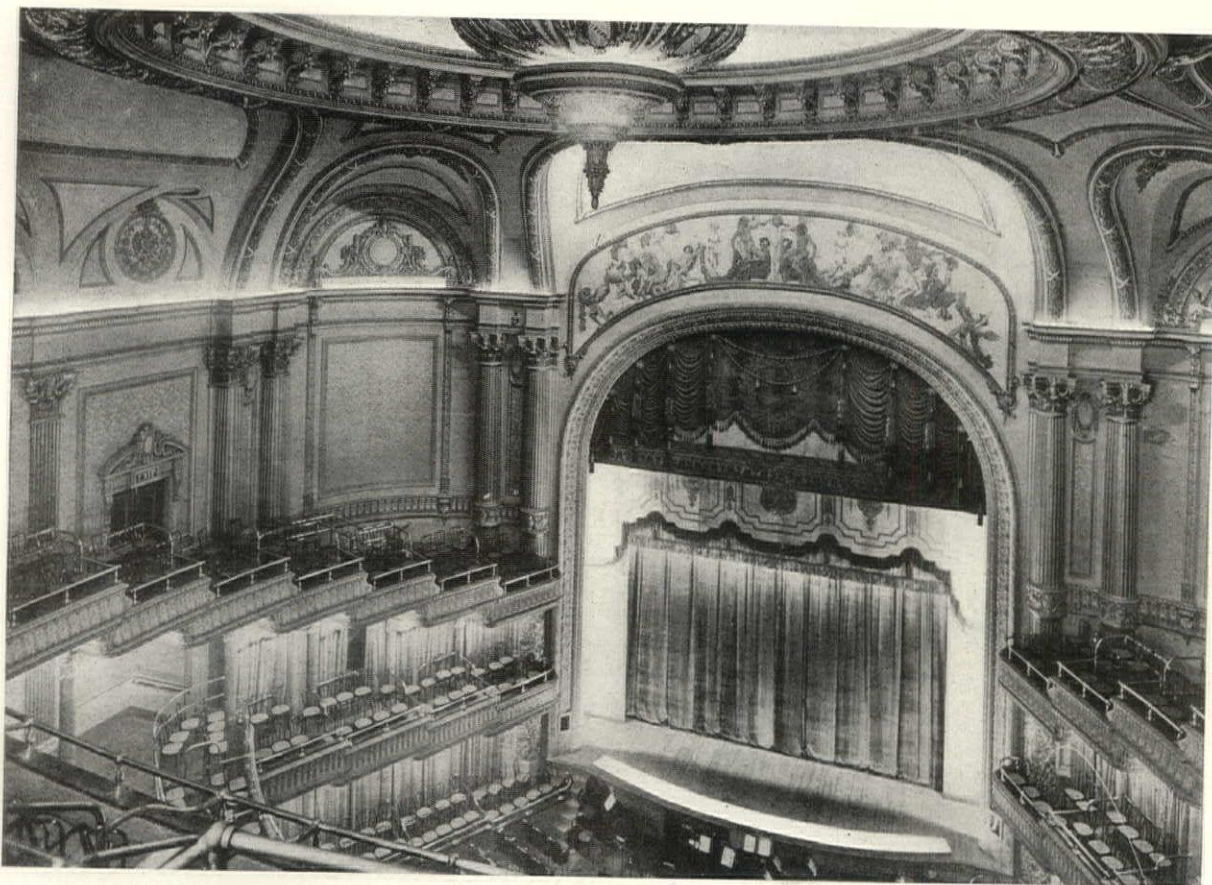
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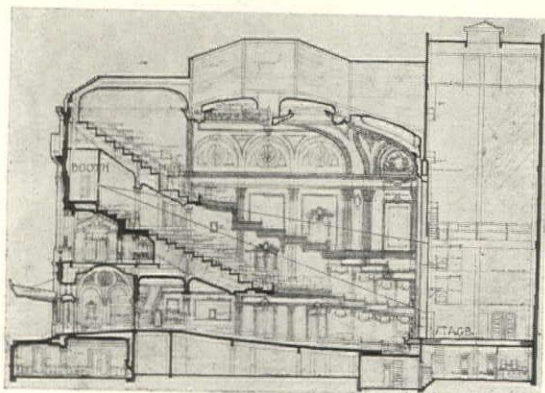
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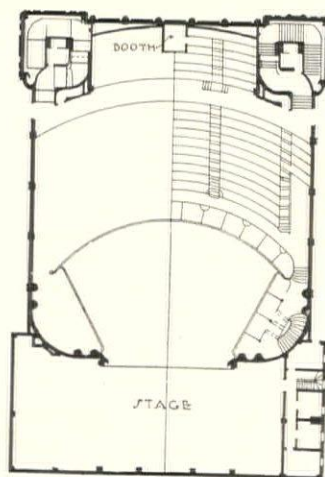
A Series of Data Sheets—No. 10. Vaudeville and Motion Picture Theaters

Power's Motion Picture Machine is used for motion picture projection in this theater. As shown by the plan and section, the booth is located in the rear of the balcony. The stage has a width of 42 ft. and a depth of 40 ft. The auditorium is 70 ft. 6 in. by 89 ft. 6 in. The seating capacity of the theater is 2,330 people.



Longitudinal section through theater at left showing position of balconies and projection booth in relation to picture screen on stage.

Plan of balcony on right showing location of projection booth.



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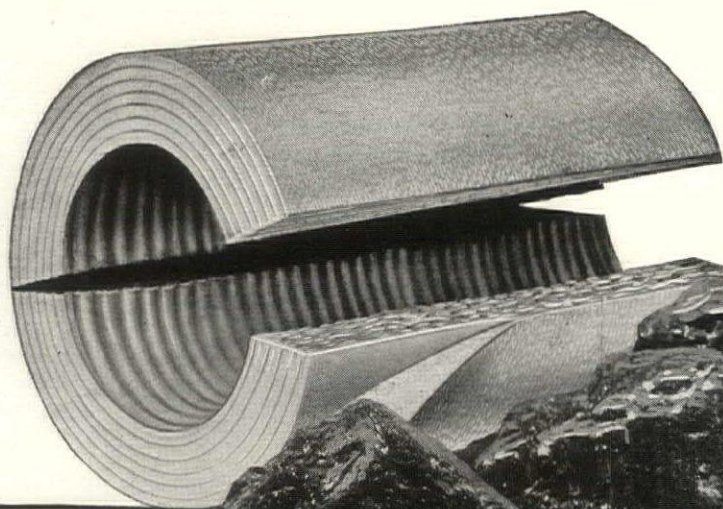
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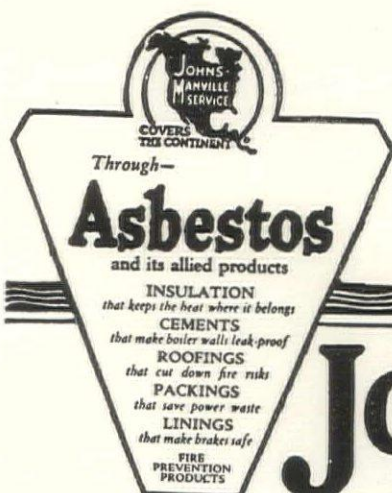
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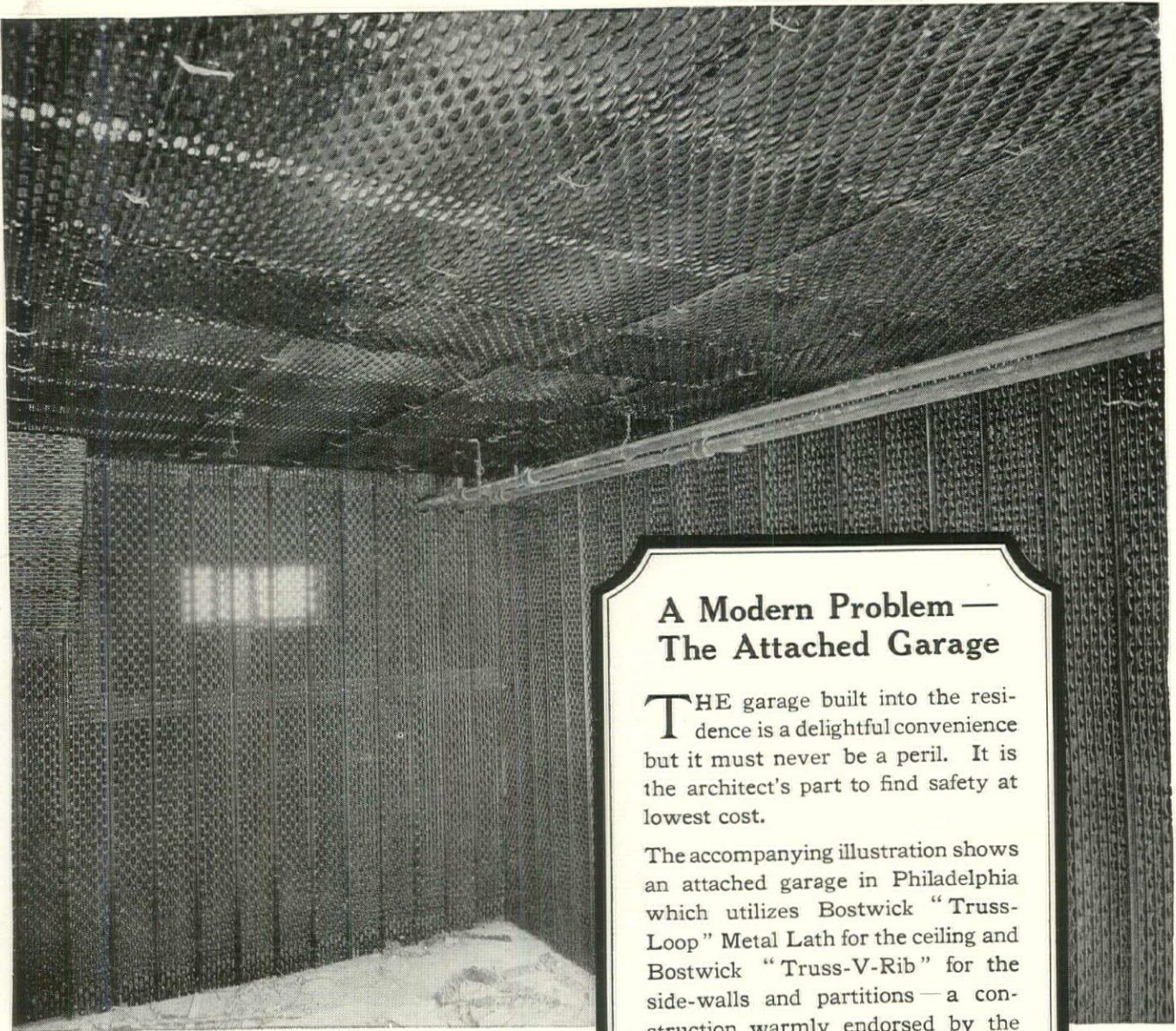


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THE ARCHITECTURAL FORUM

VOLUME XXXIII

NUMBER 2

CONTENTS for AUGUST 1920

PLATE ILLUSTRATIONS

	Architect	Plate
HOUSE OF WILLIAM V. KELLEY, ESQ., LAKE FOREST, ILL.	Howard Shaw	17-24
HOUSE OF MRS. H. J. DAVIS, SCARSDALE, N. Y.	W. Stanwood Phillips	25-28
CHURCH OF OUR LADY OF LOURDES, ST. LOUIS, MO.	Study & Farrar	29, 30
GRACE EVANGELICAL LUTHERAN CHURCH, MINNEAPOLIS, MINN.	Designed by Cecil Chapman	31
DOVERCOURT BRANCH LIBRARY, TORONTO, CANADA	Chapman & McGiffin	32

LETTERPRESS

	Author	Page
COVER DESIGN, DOORWAY OF ST. STEFANO, BOLOGNA, ITALY Drawn by O. R. Eggers		
THE EDITORS' FORUM		43
PARK STREET CHURCH, BOSTON, MASS. From the Lithograph by A. H. Hepburn	Frontispiece	
THE PLANNING OF AUTOMOBILE SALES AND SERVICE BUILDINGS	F. A. Fairbrother	39
"LUGGER'S HILL," BROADWAY IN WORCESTERSHIRE	H. D. Eberlein	45
SOME RECENT CALIFORNIA ARCHITECTURE The Work of Louis Christian Mullgardt, Architect		51
DEPARTMENT OF ARCHITECTURAL AND BUILDING ECONOMICS	C. Stanley Taylor, Associate Editor	55
Points from Investigation of the Co-operative Plan of Apartment Ownership Practical Methods of Financing Home-Building Projects Constructive Analysis of the Building Situation Export Trade and the Building Situation		
PIRANESI—STYLE MAKER	Richard F. Bach	61
DEPARTMENT OF ENGINEERING AND CONSTRUCTION The Automobile and the Private Estate, Part V	Charles A. Whittemore, Associate Editor	69
Sprinkler Installations for Fire Protection, Part II	Tyler Stewart Rogers	
HOUSE OF MRS. THEODOSIA PLEADWELL, WASHINGTON, D. C.	W. A. Brown, C.E.	75
EDITORIAL COMMENT		76

ALBERT J. MacDONALD, Editor

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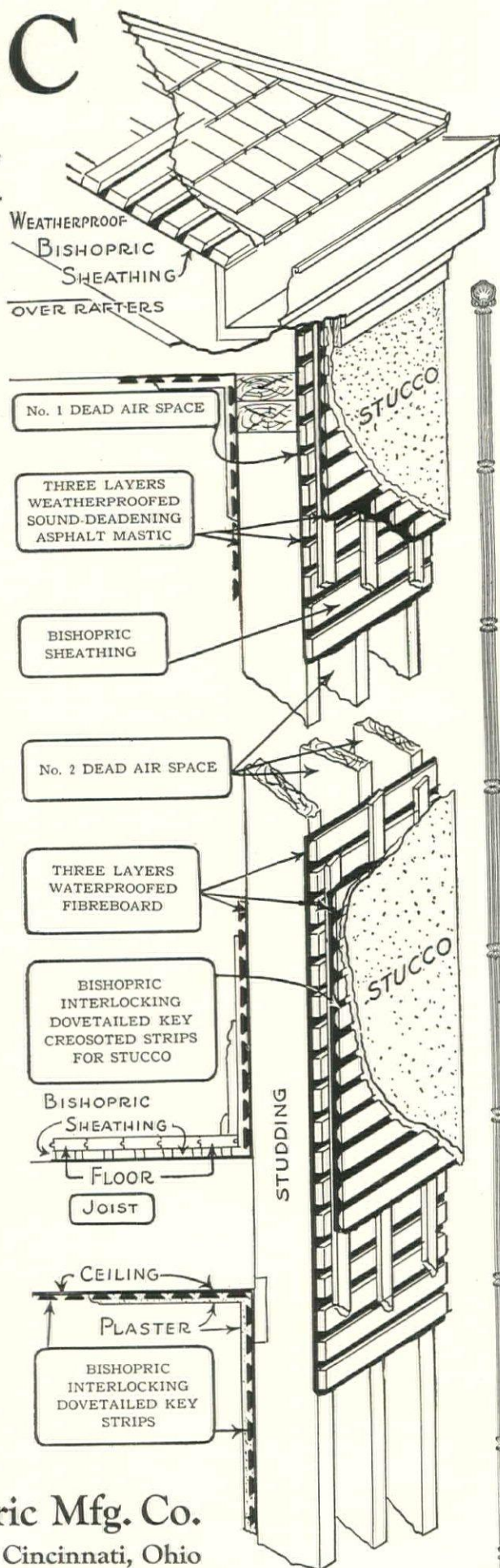
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THE EDITORS FORUM



D. KNICKERBACKER BOYD SELECTED FOR IMPORTANT BUILDING SERVICE

LABOR conditions have been giving every one connected with the building industry very great concern since the resumption of building following the war. Rapidly increasing wages augmented by evidences of decreased efficiency have been looked upon as ruinous, and in spite of varied attempts at finding an amicable solution of the difficulty, conditions have grown no better. We have lamented the absence of interest of the workman in his trade, his chief concern appearing to be to work as small a number of hours as possible and to exact in return the largest wage without any thought of the quality of service he rendered. It has many times been said that interest in craftsmanship—love of work for its own sake—would have to be revived in the workman before we could again have satisfactory working conditions or produce any work of quality. This has been said, but how seriously has any one tried to go about securing it?

It may come as a surprise to architects to know that a group of labor unions in Philadelphia has come forward and actually done something toward that end. But back of that there is a suggestion made by an architect that awakened in the laboring men a different spirit than we have been able to see by looking only at the surface. D. Knickerbacker Boyd is the architect and to him is due the credit for having inaugurated a movement among labor unions that is unprecedented and which promises to develop a system of intelligent contact between workers and employers in the building industry that should go far toward eliminating the friction so prevalent.

Last autumn Mr. Boyd gave an address before the Council of the Allied Building Trades in which he urged that labor should devote a larger portion of its meetings to matters of education and information, concerning itself with improvements in the various crafts and trades, and that discussions of strikes, wages and hours should give way to discussions of opportunity for co-operation with others and service to the public at large.

The direct result of this was the establishment of classes in the Bricklayers' Union to study their own craft and to learn the principles of plan reading. At every meeting of the Union last winter, under the auspices of Mr. Boyd, addresses were given by men prominent in building circles with the result that the workmen took greater interest in their occupation, became more efficient and more appreciative of the aims and ideals of the designers and occupants of buildings.

With this proof of the value of co-operation and human contact, arguments were advanced that similar results could be had in other branches of building and that harmonious relations could be

maintained between the unions and employers if the respective organizations could be brought together instead of working separately as they always have done. Labor considered that architects represented the consumer in a way approached by no other profession or business, and it was determined that building labor should place its confidence in an architect to aid in bringing about the co-operation desired.

Mr. Boyd was asked to assume this duty which he has accepted. He will head a committee of nine, four members of which have been appointed by the Council. The remaining four Mr. Boyd has full authority to select. In the time preceding the completion of the committee he is authorized to represent the nineteen building trades unions of Philadelphia before any builders' or other similar organizations.

THE COTSWOLD TRADITION

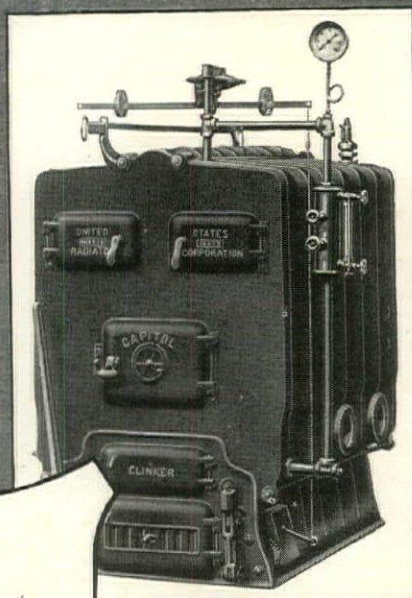
IN late years American architecture, particularly as it applies to country house work, has been striving toward a simpler expression; we have been paying less attention to dogmatic styles and have been aiming at a pleasing expression of domesticity through an intelligent use of local materials.

This is the quality which has always called forth our praise of English domestic work. English architects have not been noted for brilliant ingenuity; they have, however, long enjoyed a reputation for exercising good taste in the use of materials and for creating a home-like atmosphere in their country houses. It is but logical, therefore, to look to English architecture for inspiration in the use of materials. In the Cotswold district there developed a type of house which was the result of local craftsmanship working with local materials.

This type of design and building finds ready application in parts of the United States where similar conditions exist as in the English locality. In Pennsylvania, for instance, we have a native stone that closely resembles the English stone. What could be more sane or appropriate than to be guided by the stone houses of the Cotswolds where several generations have developed a type of building that displays to the fullest degree the characteristics of this stone? A group of Philadelphia architects have done this and in adapting the Cotswold principles to American requirements they have produced a local type of great interest.

In the preceding issue of the FORUM we illustrated a number of such houses from the designs of Duhring, Okie & Ziegler. For purposes of comparison in this issue we illustrate a modern English house designed in the Cotswold spirit that shows the essentially domestic appeal of the type and the sincere way in which the English architect respects local tradition.

CAPITOL BOILERS



In Operation

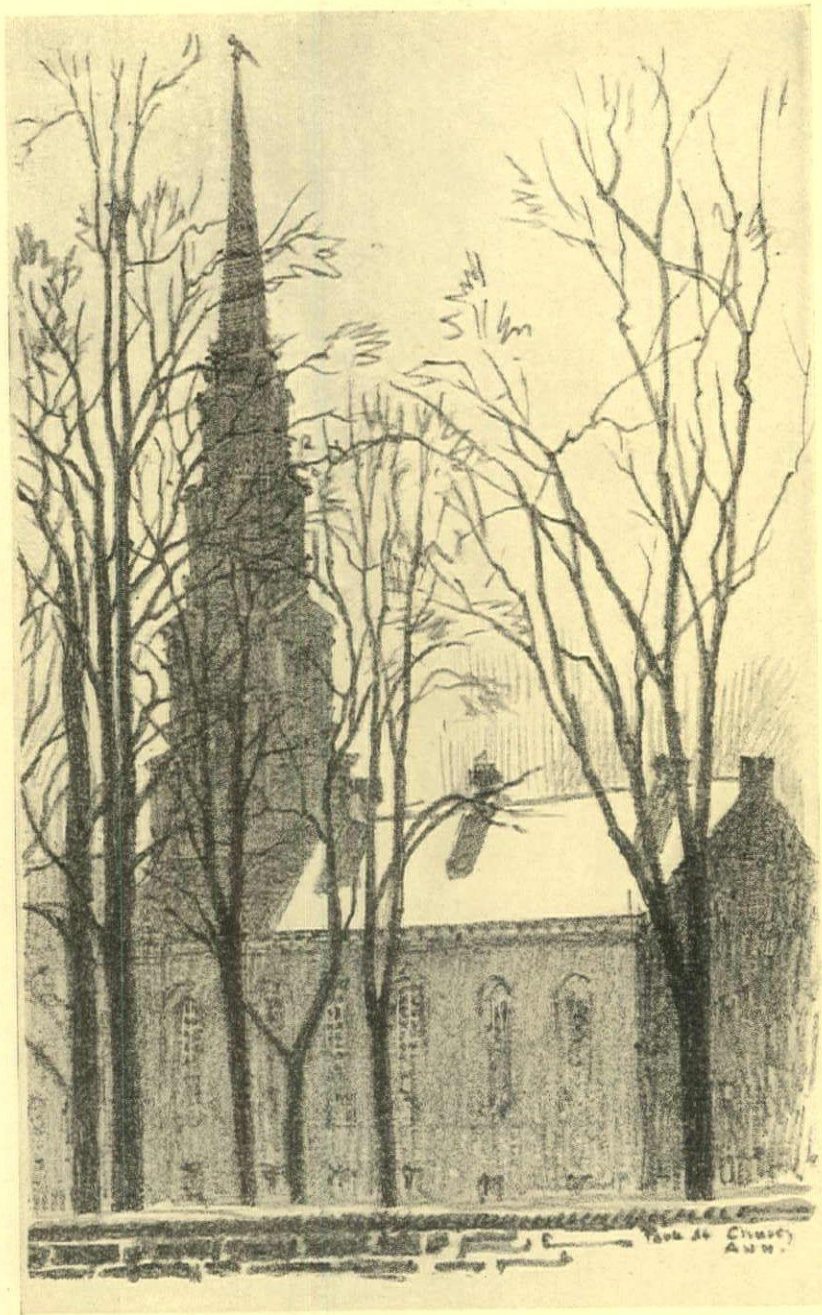
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The ARCHITECTURAL FORUM

VOLUME XXXIII

AUGUST 1920

NUMBER 2

The Planning of Automobile Sales and Service Buildings

By F. A. FAIRBROTHER

Of the Office of Albert Kahn, Architect Detroit

THE planning of automobile sales and service buildings offers what might be called a changeable problem.

The history of the automobile industry from its early beginnings has been marked by great change and development. Unlike older industries, such as the making of cloth or farming implements, the automobile industry has had what seems to be a meteoric and spectacular growth and its constant development has been reflected in the changes necessary in the planning of buildings for use in connection with the ever growing business.

Naturally, in such a rapid development, processes and even principles have been made obsolete almost over night by the introduction of some new idea. This is well illustrated by citing the revolution in the process of assembling certain makes of cars which was put into effect in one large factory a few years ago. This was the change from assembling stations, to which materials were brought as the car was being put together, to the moving conveyor system whereby the car was assembled progressively as it moved along through the assembly building.

The widespread use of automobiles and the unceasing demand for service of all kinds in connection with them have made it necessary for manufacturers to provide stations in different parts of the country as distributing centers and also to serve as stations where cars could be taken care of and replacement parts provided.

It is our purpose to consider the requirements which usually affect the planning of sales and service buildings and to describe the considerations which have entered into the arrangement of the various structures illustrated. The different departments of the buildings will be described in detail and if the suggestions made seem to be too much in the manner of a text-book it should be remembered that they are intended to set forth a somewhat ideal condition. If, however, any suggestions which may be made are found to be of assistance to any one struggling with the problem of planning

a sales and service building, we shall feel repaid.

Automobile sales and service buildings, as a distinctive type, have developed within the last seven or eight years. These buildings are distinctive in that they are a link in the process of making and marketing a product which has been developed on a large scale within two decades and, as seen in the automobile rows of our cities, are as easily recognized as power houses, apartment houses or churches. The developing of this type of building has been one of the marked examples of the improvement in the character of structures devoted to commercial uses and has progressed hand in hand with the vast improvement in the character of the buildings devoted to purely manufacturing purposes.

Garages we have had since we first commenced to drive cars, and stores where automobiles have been displayed have been seen along our Broadways and Michigan avenues since "horseless carriages" ceased to be curiosities and their manufacture was placed on a strong commercial basis.

The first places devoted to the sale and care of automobiles were naturally existing buildings, altered and adapted to the purposes of show rooms for cars and the necessary offices and garage spaces. But as the production of cars increased, and as the automobile became something more than the plaything of the well-to-do, the need for buildings designed especially for the display of cars and serving the needs of purchasers, in the making of repairs and adjustments, together with the attendant advantage of having these made by skilled workmen, became very apparent to the manufacturer. The modern sales and service building was the logical result.

The application of the word "service" to buildings devoted to the wants of automobile owners was doubtless the well chosen catch word of some advertising man, but it was a good word, well fitted to describe the uses of the building, and it surely is not the fault of its originator that we now speak of "service" as applied to almost everything from

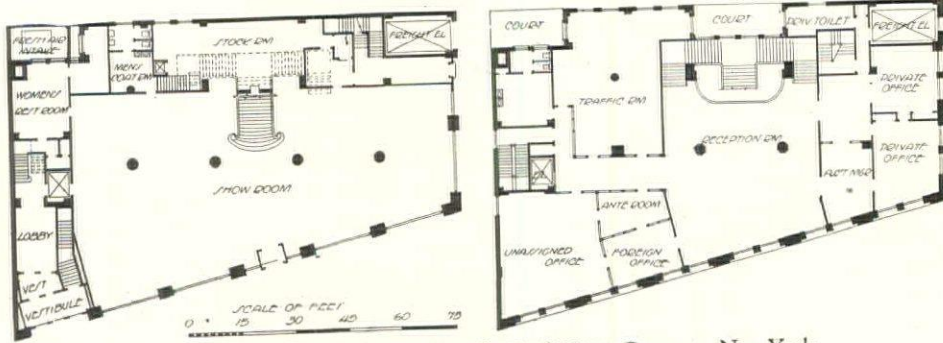


Fig. 1. Floor Plans, Sales Building for Ford Motor Company, New York
Albert Kahn, Architect

shining shoes to the altruistic work of the Red Cross.

A few of the large automobile manufacturers are the direct owners of their sales and service buildings. Still other service buildings are controlled entirely by the local agents, and in one case, at least, the manufacturer, while not owning the buildings or having little, if any, financial interest in them, yet exercises, by virtue of contracts with his agents, a measure of control over the exterior design of the buildings and over some of the chief characteristics of their interior arrangements.

There is a very real value in having a chain of buildings scattered about the country all of which have a definite and unmistakable common character in design and arrangement so that any one who tours about from place to place may have a feeling of confidence and satisfaction when coming upon a familiar looking building where he can have his little wants attended to. Then, of course, the advertising value of such service buildings is great.

We find, upon analyzing the various kinds of sales and service buildings, that there are four chief classes into which they may be divided. First, we find the class of sales and service buildings where cars are assembled. These are often spoken of as assembly buildings and are usually larger than those where no arrangements for assembling cars are provided.

This type of building would naturally be situated in the center of a considerable territory and would serve as a distribution point to the smaller stations in that territory. It would serve as a distribution point for stock or replacement parts as well as for cars. Features such as sales rooms and headquarters for local sales forces would not constitute an important part of such a building.

The second class of sales and service buildings which we cite is that comprising the headquarters of a large

district or state agent. Such a station will be found, in some cases, to serve more than one state and, on the other hand, in a thickly settled part of the country, or in a large state, might take care of only a portion of the territory in the state. In this type of building excellent show room

space, also space for sales forces, is necessary. In common with the first class of stations mentioned, the bulk of the business done here will consist of the receiving of cars and parts and the reshipping or otherwise delivering them to subdealers and agents in other cities. Very little space for repair work or service, in the ordinary usage of the term, will be

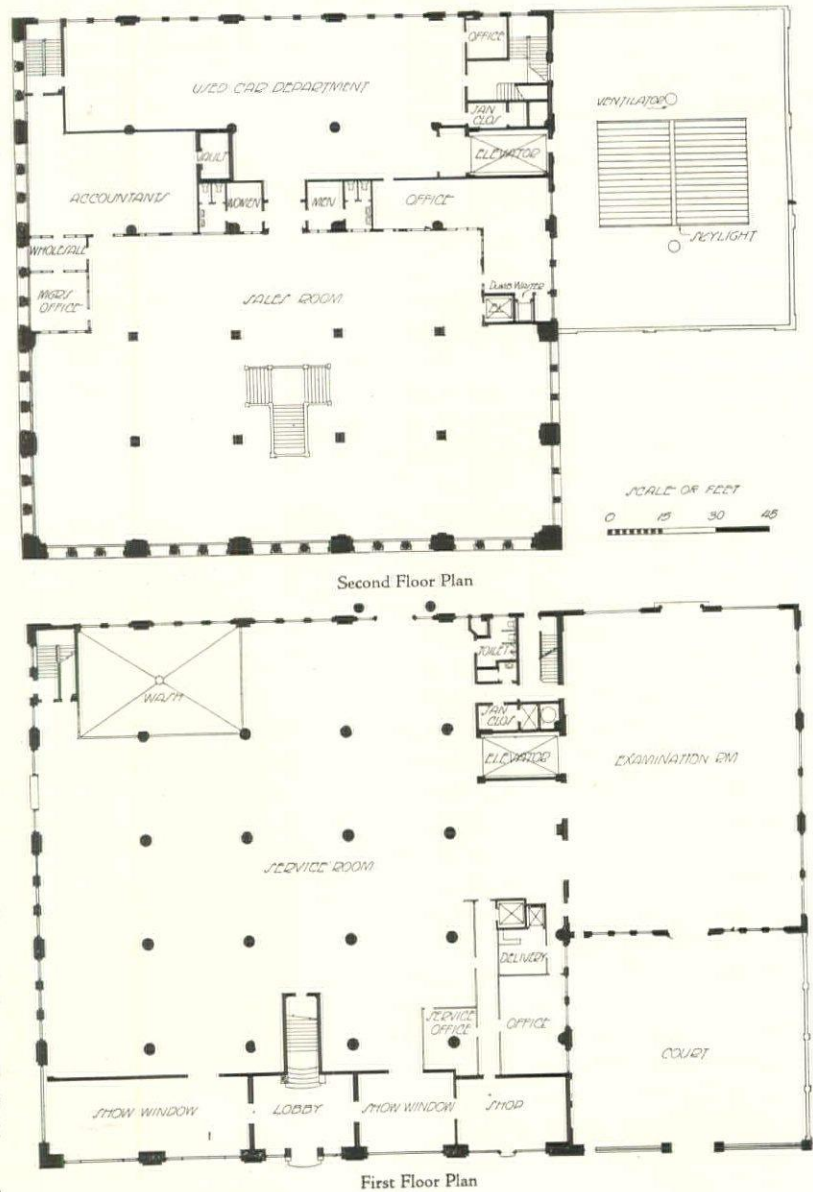


Fig. 2. Building for Cadillac Motor Car Company, Detroit
Albert Kahn, Architect

required. In this class of building considerable office space will be necessary to provide for taking care of visiting sub-agents and others from out of town.

The third class which suggests itself is the metropolitan or central sales and service station, probably being also the main office or headquarters for a large city territory. A building of this class will require admirable show room facilities as well as large office space, although it is quite likely, on account of the fact that such a building will be located on comparatively expensive property, that the service features may be lacking or at least of minor importance. If a building of this class is located in a sea coast city such as New York, it may, if it is the property of the manufacturer, house some at least of the foreign departments of the company.

The fourth and last class which will come under the heading of sales and service buildings is the local sub-agent's quarters or the small branch establishment of some larger dealer. This kind of a station will have show rooms, some office space and probably a large floor area devoted to garage and service departments. The small building of this class is the place where the greater part of the repair and other trouble work is taken care of.

Other kinds of service buildings are common, such as those taking care of batteries or supplying gasoline and also service stations for taking care of tires, but these buildings are not automobile sales buildings nor are they automobile service buildings, although many automobile service buildings have departments devoted to the care of batteries and tires.

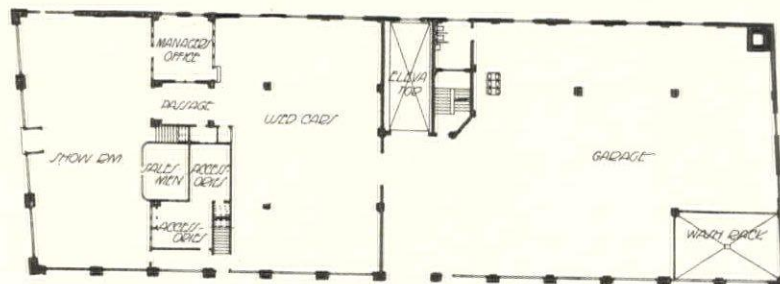
In the case of the larger buildings, especially those where cars are assembled, or where large quantities of stock or replacement parts are handled, a railroad siding is an important requirement. On the other hand, for a building serving more as a retail sales center or perhaps located in a city not too far from the factory or for a manufacturer with a separate receiving warehouse, the railroad siding is not important and such a building will, in all probability, be found on one of the main automobile thoroughfares and on more valuable land. The smaller branch or local service stations, of course, do not require railroad sidings.

Corner properties are, naturally, the most desirable, as they offer much better means of access to the service portions of the buildings and as the

show room spaces may be arranged with less interruption by driveways and doors. Increased window space for display purposes also makes a corner location particularly desirable.

The building of the first chain of sales and service buildings devoted to the marketing and care of automobiles was commenced in 1912 by the Ford Motor Company. These buildings may be said to have paved the way for the similar buildings scattered over the country from coast to coast. The structures built by this company differed largely from the majority of the buildings erected since in that most of them were arranged for the assembling of cars as well as for display and service. The special features of the assembly of cars will be taken up separately in a later portion of this article.

As the ultimate object of all the processes of manufacture is the selling of the product manufactured, the part of the building devoted to the



Main Floor Plan



Fig. 3. Building for Packard Motor Car Company, Hartford
Albert Kahn, Architect

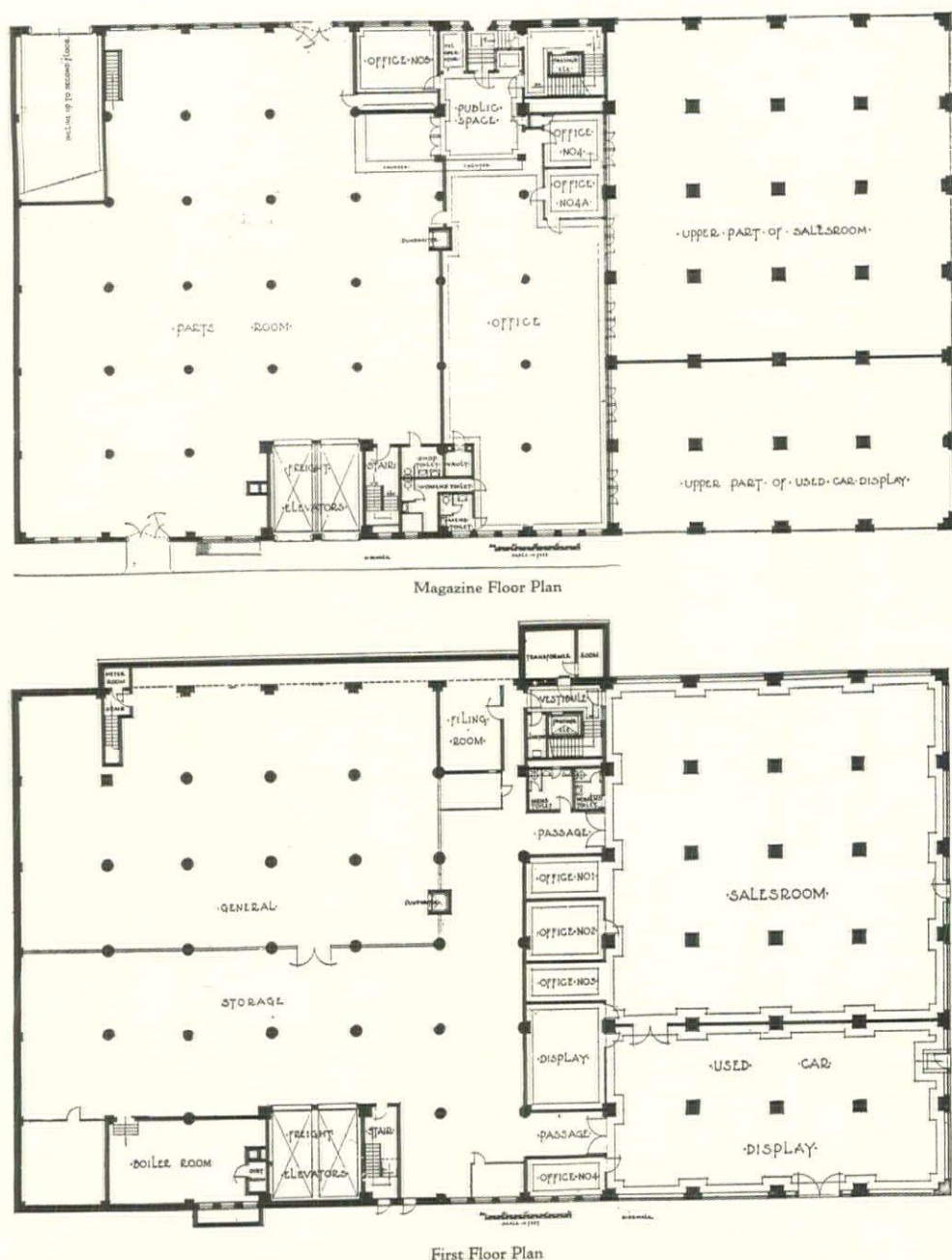


Fig. 4. Building for Willys-Overland Company, San Francisco

making of sales may be considered the most important and will be considered first.

The sales room or show room will be found to vary in size and appointments with every building. The considerations affecting its location and size will vary with the property to be developed. Consideration must be given to the type of car it is proposed to display as well as to the number of models requiring space on the floor. The best display can be made when the room is large and high. The automobile, being an outdoor vehicle, will not look its best when shown in a low or otherwise cramped room. The need for height in the sales room part of the building is a requirement which sometimes makes it desirable to adopt a story height for the entire main floor somewhat in excess of actual needs and this height may easily

allow a mezzanine floor to be inserted back of the sales room where offices for the sales department, rooms for purchasers or stock offices may be located.

The position of cars while being displayed will, of course, depend upon the ideas of the sales manager, but it is evident that the room should be so arranged, whenever possible, that windows will be sufficient in width to allow a car to stand reasonably close to them and for the whole car to be seen when one is standing directly in front of the building or when riding by in the street.

The sills of the windows should be low. It has been the custom in many sales rooms to arrange a trough below the sills to receive a line of light reflectors for night display of cars, but this method has been done away with in many recent cases and provision has been made for display lighting by means of spot lights or other suitable fixtures arranged at the sides

of show windows or on the transom bars. Lights placed in this way are well adapted to display cars to advantage and are less liable to throw a strong light into the eyes of people who may be on the sales room floor. General illumination of the sales room is likewise important, but is less difficult to arrange than the special display lighting, for the essential features of the general illumination are not greatly different from those in any large room.

Certain features are essential in the arrangement of a satisfactory sales room. Among them we might mention the need of a large door from the garage or service portion of the building for bringing cars into the sales room. This door will also provide means of communication for customers going to or coming from the garage. Access should also be planned to the parts and accessories sales depart-

ments from the sales room. An attractive display case for accessories will always be desirable.

Here also should be arranged a space for salesmen's desks as well as some central position for an information desk. In some cases the best position for a salesmen's space is in a recess or other somewhat retired place where they may look up prospects and use the telephone freely. In such cases it might be found convenient to provide some sort of a private office off the sales room to which a salesman can withdraw with his prospect and where the process of signing on the dotted line may be carried out in quiet. If there are only one or two salesmen's desks on the floor, the private office may not be required. The information desk may also be the position of the telephone operator and a place where advertising folders, catalogs and other literature may be kept for distribution. It will be found desirable to have a customers' room and perhaps a retiring room for women in some convenient location adjacent to the sales room.

The sales room illustrated in the plan of the Ford Motor Company's building in New York, Fig. No. 1, presents an attractive arrangement where the cars are all displayed on one floor and where sufficient space is provided for a number of cars without crowding.

The arrangement for the display of cars provided in the plan of the sales and service building of the Cadillac Motor Car Company's building in Detroit, Fig. No. 2, differs considerably from the example just mentioned in that the show space for cars

intended to be seen from the street is arranged in separate show windows sufficient in depth for one car only, while the larger display room is located on the second floor. This arrangement saves considerable ground floor space for service uses which would otherwise be taken up with the customers, first floor sales room and office spaces.

The sales room devoted to the display of used cars is, of course, less important than the room for display of new cars. Some such room is desirable, however, and in some cases is absolutely necessary. The used car problem confronts nearly all dealers and is dealt with in various ways. In some cases the show rooms are placed on the ground floor, perhaps back of the new car salesroom, and in other cases it will be placed in the second story. In the case of the Packard Motor Car Company's building in Hartford, Fig. No. 3, the used car sales room is located back of the main sales room and faces a side street, affording display windows which are good but less desirable than those on the front. The room itself is finished somewhat more simply than the sales room for new cars. The Willys-Overland Company's building in San Francisco, Fig. No. 4, shows an example of a used car display room occupying a corner room of nearly equal importance with the new car sales room.

A special place in almost every sales and service station will be required for the sale of parts and accessories. This department must be accessible to the public and should be so placed as to be easily reached both from the sales room and from the



Sales and Service Building for Willys-Overland Company, San Francisco

Mills, Rhines, Bellman & Nordhoff, Architects

garage and repair parts of the building. It should also be provided with convenient access from outside the building, making it possible for customers to reach it without having to pass through the sales room. It is usually found desirable, where things can be comfortably arranged, to have a public space, with a counter, opening into the stock room, and also a cashier's office or cage adjacent to the public space and connected with the accounting offices. An arrangement which would embody such features would, unless the ground floor area were very large, suggest the placing of the parts sales department on the second floor of the building. This has usually worked out well and is not too remote for customers to reach.

The arrangement shown in the plan of the building for the Willys-Overland Company in San Francisco, Fig. No. 4, works out very well, as advantage is taken of the natural rise of the ground to locate the parts department above the level of the sales room and yet reached from the side street by a very few steps.

In the building for Mr. C. C. Coddington, in Charlotte, N. C., Fig. No. 5, the parts sales department is located on the second floor and the public space is placed near the general offices. This works out well here as the stock office, adjacent to the parts department, has convenient connection with the office lobby at the head of the main stairs. It is through this office that orders from local dealers throughout the territory are received and cared for.

A stock room, of course, is essential. It will be found to vary considerably in size. If the building

is the headquarters, say, of a state agent or even the direct branch of the manufacturer and supplies the needs of various agents in smaller nearby towns, the stock room is apt to be very large.

It should be possible to close off the stock room from other parts of the building in order to make it more difficult to "lift" small and valuable parts which can be easily concealed and carried away. In some cases where the stock room occupies the whole or greater part of a floor and the elevator opens directly into it, it is desirable to have a separate receiving room where

goods may be uncrated. Such an arrangement is shown in Fig. No. 5.

The stock room should have convenient communication with the repair department and machine shops as it is necessary for these departments to get parts from stock in making adjustments and repairs. A dumb waiter is often used for this purpose and will make it possible, when located properly, to serve various departments on a number of floors.

The stock parts themselves are kept in various ways. Some rooms may be fitted up with a fine array of steel shelves or bins and again others may be arranged with plain wood shelves and boxes. The weight of materials in this room is apt to be such that it is wise to figure floors for a somewhat heavier load than some other parts of the building, allowing perhaps two hundred pounds live load per square foot.

Further requirements affecting the planning of sales and service stations will be described in a succeeding number of THE ARCHITECTURAL FORUM.

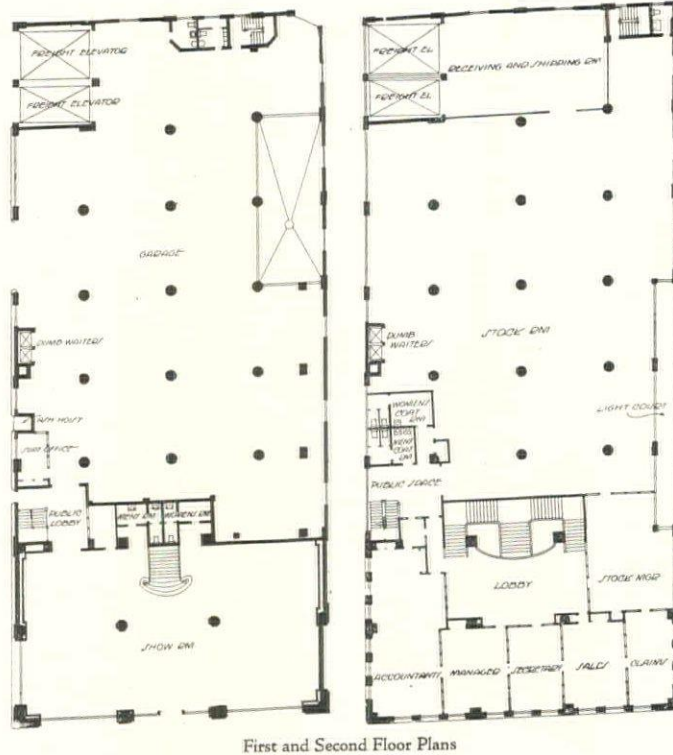


Fig. 5. Building for C. C. Coddington, Charlotte, N. C.
Albert Kahn, Architect

"Lugger's Hill," Broadway in Worcestershire

ANDREW N. PRENTICE, ARCHITECT

By HAROLD DONALDSON EBERLEIN

AT Broadway, in Worcestershire, is a very modern expression of the Cotswold architectural tradition which is significant to the student of domestic architecture, partly because of its intrinsic qualities as an individual house, and still more because of the general exposition it affords us of a certain principle involved. That principle affects the whole question of the propriety of adherence to or departure from tradition, and the measure in which such adherence or departure may be either justifiable or desirable. Before entering upon a discussion of the principle, however, it is well to scan closely the physical properties of the fabric; the preparatory scrutiny will clear the way for deductions.

In its dominant characteristics "Lugger's Hill" conforms to Cotswold tradition, that is to say, in



Garden Tea House

the particulars of (1) the materials employed, (2) the manner in which they are used, and (3) the general lines into which the composition has been cast. The walls are of the local tawny limestone, with occasional variations in color ranging from cream to dull orange and weathering to a warm gray. For the roof the customary Cotswold stone tiles, obtained from the neighboring quarries, were employed. The walls show a face of roughly hewn rectangular stones, of wide diversity in size and dimensions but so laid as to preserve the effect of more or less regular courses. Chimney

stacks, lintels and corners are of carefully dressed ashlar work in the same stone, as are also coping slabs, the ball finials at the gable peaks, and columns wherever they occur. The elements of the whole mass agree with traditional Cotswold usage;



View of "Lugger's Hill" from the Approach



Window at "Russell House," Prototype for "Lugger's Hill"

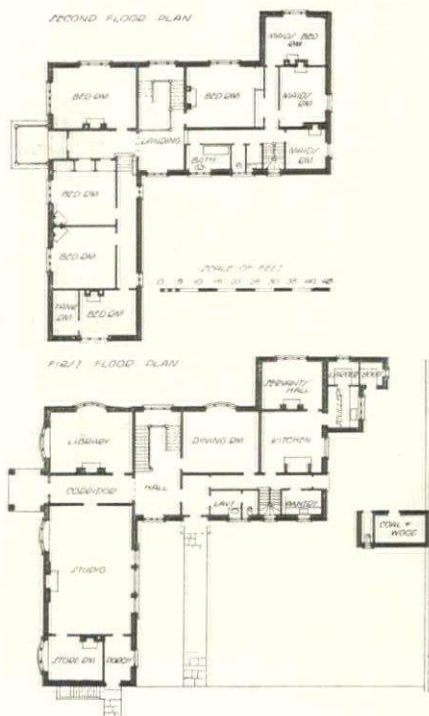
—a combination of two or more long ridged and gabled units, joined together at right angles.

The house is unmistakably a Cotswold structure; even if quite removed from its surroundings and set down in the middle of Sahara, one could not err regarding its origin. But, notwithstanding this unequivocal assertion of Cotswold character, any examination closer than a mere glance will reveal

particulars that serve to differentiate "Lugger's Hill" from what is popularly conceived to be the norm of Cotswold practice.

The scale is somewhat broader and larger than is customary in the older houses of the Cotswold district; the units are wider or deeper than the old Cotswold builders usually employed. This difference necessitates a much greater spread of the roof and is met by flattening out the pitch of the roof considerably more than is customary in the typical Cotswold house of earlier date. The fenestration is different, both in the matter of placement and in the treatment accorded the individual windows; on the east front the veranda sheltering the garden door, and the balcony above the veranda, are somewhat reminiscent of Georgian inspiration. All these items of departure from what is usually considered as the traditional Cotswold precedent are sufficient to account for a substantial difference of appearance from that of the ancient type. While permitting himself no small freedom of interpretation, and precluding any possible charge of blind following of precedent, the architect has nevertheless very happily contrived to preserve the essential Cotswold spirit.

Each and every divergence from strict traditional usage had a reason either in meeting some very practical and modern physical requirement or else in the expression of a justifiable preference. The larger scale and the greater width or depth of the several divisions of the structure are obviously made necessary by the dimensions and arrangement of the rooms to be provided for in the plan. As for the fenestration and the motifs



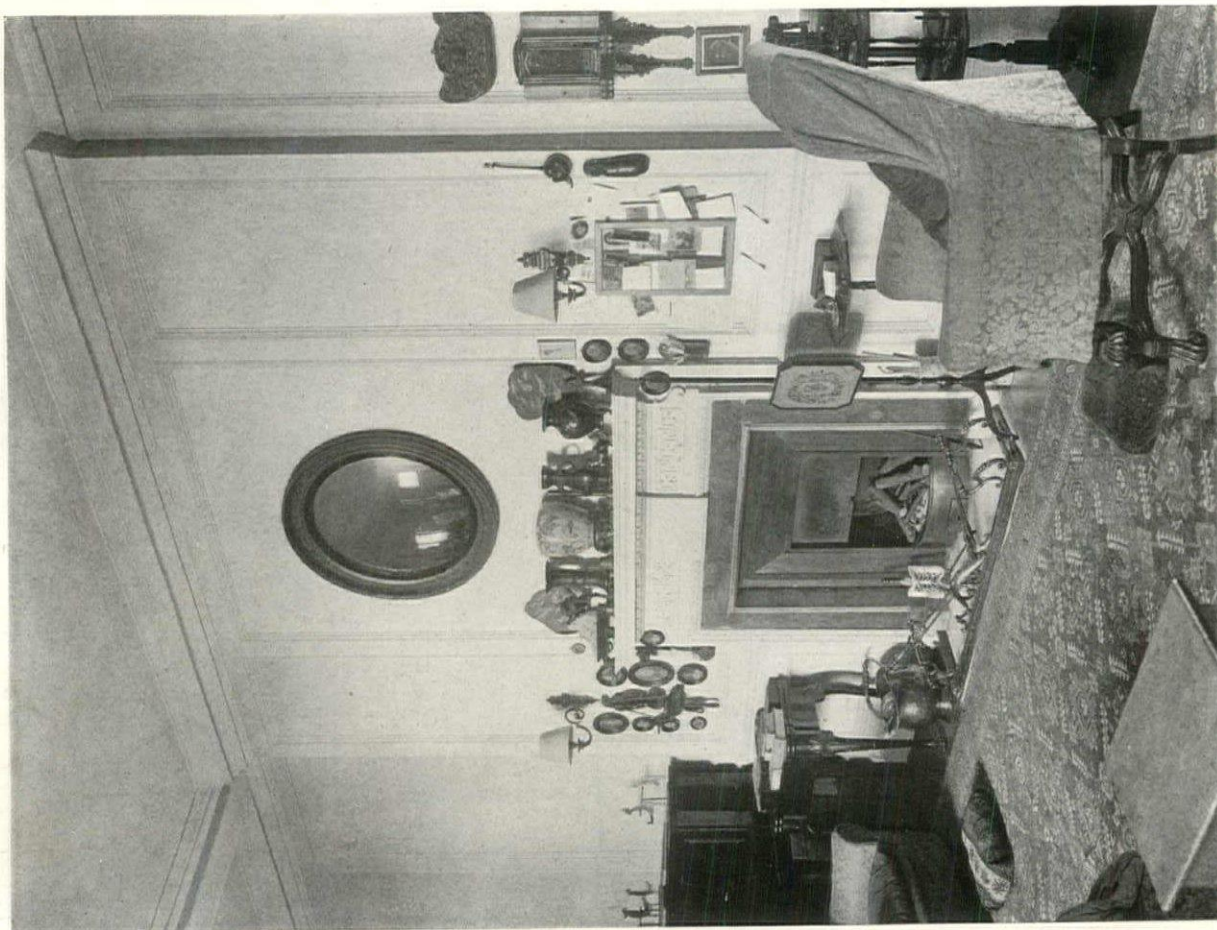
Façade Showing Use of Bow Windows at "Lugger's Hill"



VIEW OF FORECOURT FAÇADES



VIEW FROM THE GARDEN, "LUGGER'S HILL," BROADWAY, WORCESTERSHIRE
ANDREW N. PRENTICE, ARCHITECT



DETAIL OF FIREPLACE IN STUDIO

ANDREW N. PRENTICE, ARCHITECT



DOORWAY EXECUTED FOR INIGO JONES

"LUGGER'S HILL," BROADWAY, WORCESTERSHIRE.

adopted for windows, doors and verandas there is not so radical a divergence from local precedent as might at first be imagined;—a fact that will be more explicitly pointed out later on.

The interior treatment of "Lugger's Hill" is distinctly of the period of Queen Anne with certain later details;—early Georgian for the most part, while there is one doorway which is the work of Inigo Jones. This was taken from the master's former studio in London and incorporated in the new house. The detail of the woodwork everywhere else, and especially the carving of the fireplace in the library, will speak for itself. The paint in the library is a light green, in the dining room a darker green, and in the other rooms white.

"Cotswold architecture," be it noted, is a somewhat comprehensive term and needs, perhaps, some explanation for those not fully familiar with it on its own native hills and in all its phases. There is, to be sure, a general Cotswold type or style that possesses a singular unity and, at the same time, exhibits a peculiar detachment from all other regional manifestations so that it is not to be confounded with any of them. This style possesses a unity and a detachment determined by the characteristics of available building materials, by a unique combination of conditions, and by strongly pronounced habits and methods of craftsmanship that persisted with exceptional tenacity, notwithstanding the assimilation, from time to time, of influences from the outside world. And yet, within



A Corner of the Studio

that unity are to be found such manifold diversities that the student of Cotswold architecture is rewarded with the delights of ever recurrent novelty. There is a Tudor phase, a Stuart phase, a Queen Anne, an early Georgian and a late Georgian phase, and each is distinct in its expression from kindred and contemporary phases elsewhere.

Broadway is an epitome of Cotswold architecture. Within the limits of the village one may find every one of the phases just mentioned, and one item in this visible record of the genesis of a tradition is "Russell House," which supplied the prototype for the fenestration of "Lugger's Hill." Late in the eighteenth century "Russell House" was converted from a Tudor hostelry into a private dwelling and the new owners, with the appreciative judgment so often displayed in that period, devised a window treatment that successfully expressed the current taste in a Cotswold medium without doing violence to the spirit of the existing building;—an ingenious grafting of a new



Bow Window in the Library

shoot on the stock of mellow Cotswold tradition.

To have thrust into this village of homogeneous though diversified composition a new house of unrelated or exotic type would have been an affront. Even though the house in itself might have been of excellent design and might have afforded the architect a free and more alluring scope for the exercise of invention, the impropriety would have been none the less real. It would have introduced a jarring note into surroundings of complete harmony. The building of any new house in a place of Broadway's narrow limits carries with it a measure of architectural responsibility far greater than would be the case in a more extended community, for here each individual structure has a

relatively greater prominence and an anachronism would have no chance of being hidden away.

There was one course, and only one, open to the architect:—to accept the local tradition and to make such adaptations or modifications as common sense and the manifest needs of the occasion indicated. In so doing he not only complied successfully with the physical requirements imposed by the task, but he also showed his faith in the value of a vital local tradition, very much alive because it has satisfied, and still satisfies, all the plainly evident demands of the situation, and has always been flexible enough to incorporate new elements of approved worth without impairing its own architectural integrity.



Detail of Entrance Front

Some Recent California Architecture

THE WORK OF LOUIS CHRISTIAN MULLGARDT, ARCHITECT

WHILE various architectural styles are identified in the popular mind with the early history of many of the older sections of the country, there is possibly no part of the United States to which any particular kind of building belongs in quite the same degree as that to which southern California and the surrounding district may lay claim to the Spanish styles. The circumstances surrounding the early use of Spanish methods of building suggest a page from mediæval history or a leaf from a forgotten romance. The earliest builders of structures which yet remain in this region were the early Franciscan missionaries,—at once discoverers, pioneers and soldiers of the cross,—who dotted the hillsides and valleys of southern California with their missions and monasteries. These old structures are built in the effectively simple Spanish style which has ever since seemed to belong, in a sense, to the region which was the scene of their apostolic labors.

Of late years architects of the far West have turned in an ever increasing degree to the use of this form of architecture. Visitors to the Exposition at San Diego brought back marvelous tales of the glory of Spanish architecture as there exemplified.

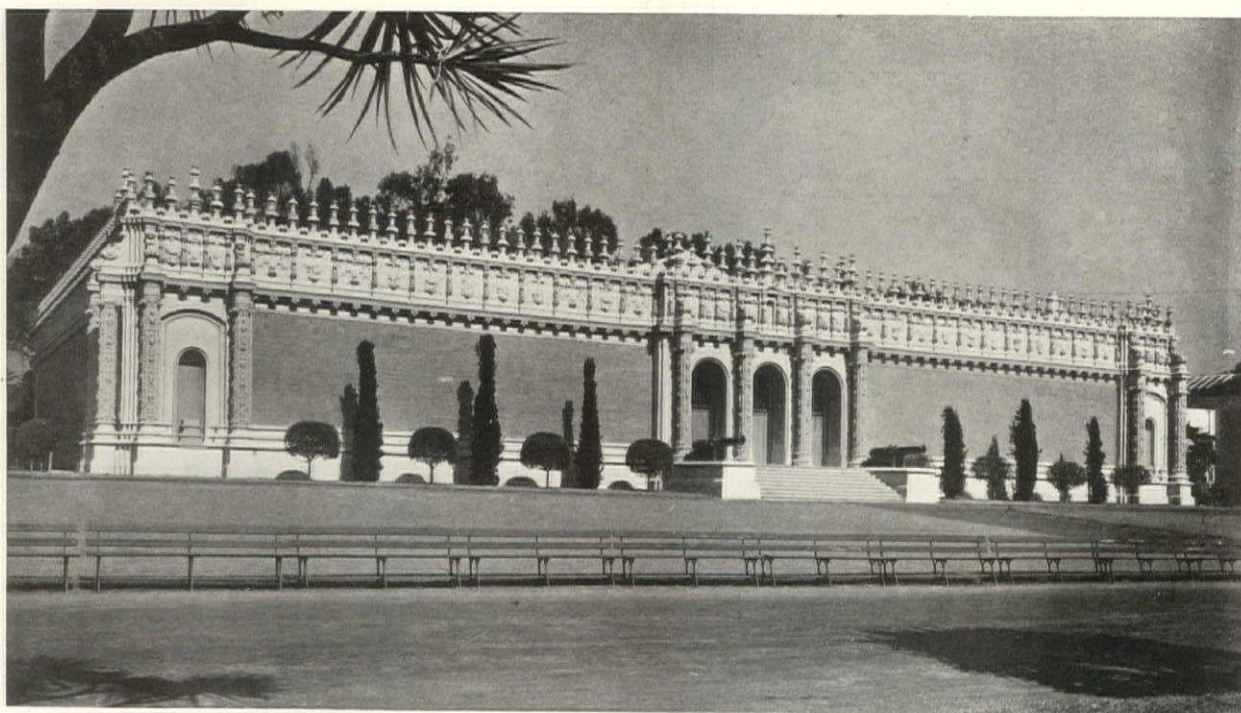
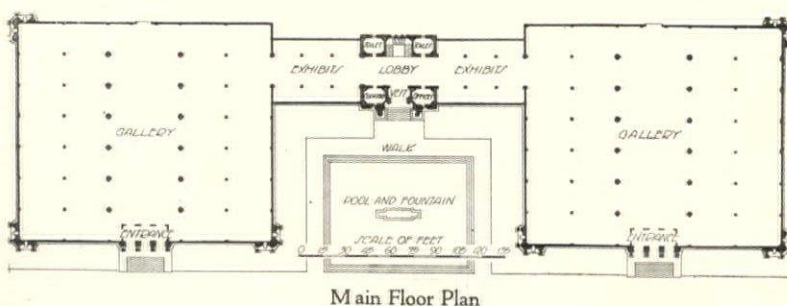
The success of these exposition buildings established a precedent which has had a powerful influence in the determining of architectural styles in southern California and particularly in the case of large buildings of a public or semi-public character.

This style abounds in opportunity for the effective use of space; it affords adequate scope for the successful treatment of large areas of floors or ceilings or of broad expanses of wall, and the most successful results are often found to follow the skilful use of comparatively simple materials.

Two recent examples of the use of these Spanish traditions in building are the work of Mr. Louis Christian Mullgardt, architect, of San Francisco. The more important of the two buildings is the new structure for the Memorial Museum in Golden Gate Park, San Francisco, which came into being largely as a result of the keen interest taken by San Francisco's journalist, Mr. M. H. DeYoung, in the original museum, a relic of the Mid-Winter Fair of 1893. There existed a rare collection of valuable exhibits, the result largely of individual gifts, and

the obvious necessity of a permanent museum building has resulted in the structure under discussion.

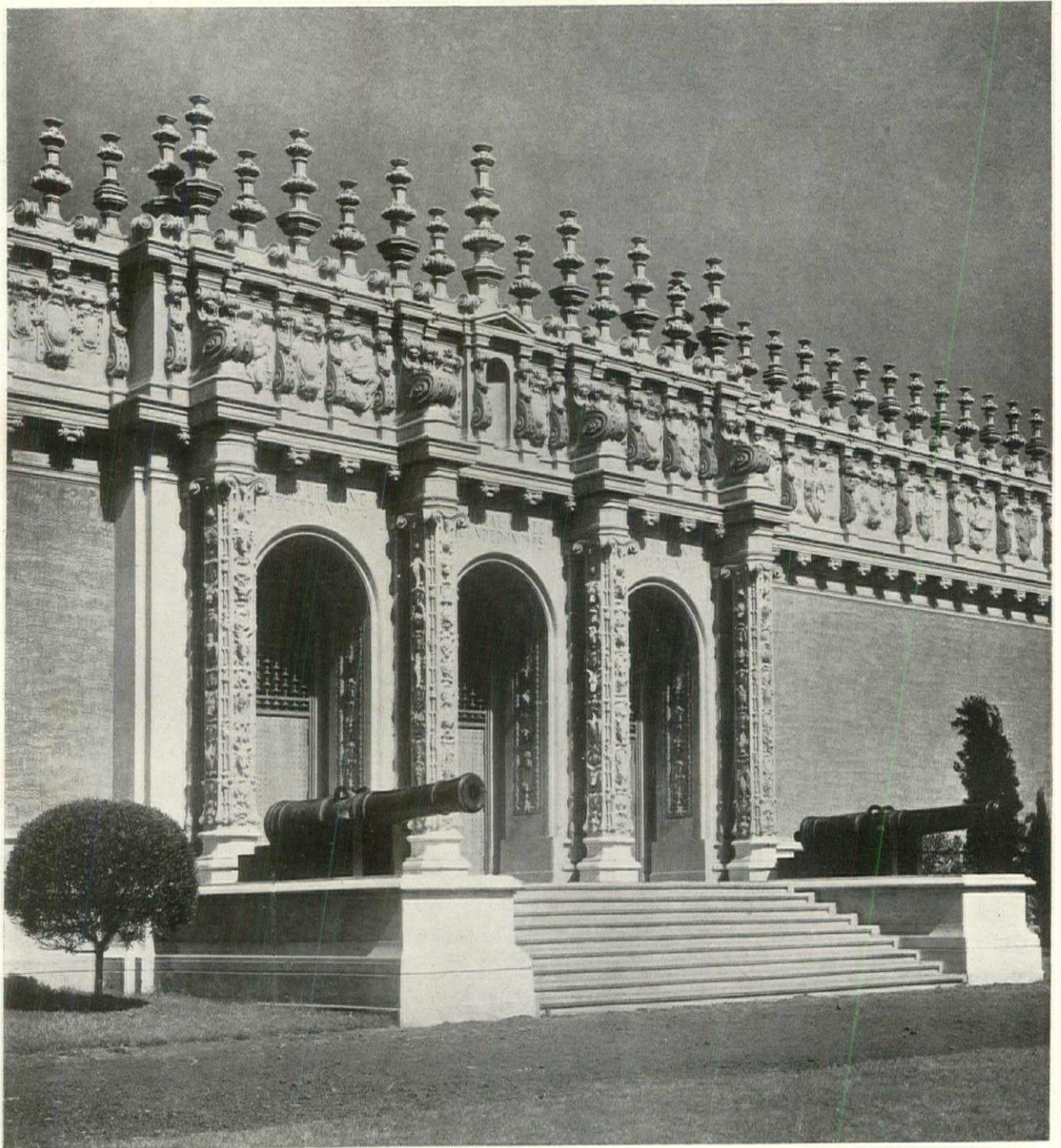
Like most of the world's great institutions the



General View of Memorial Museum, Golden Gate Park, San Francisco

Memorial Museum is to be the result of gradual development and continuous growth. The architect has very wisely planned, therefore, for a building which may be developed gradually and yet which will at no stage of its development appear to be anything but a structure which is finished and complete. The museum, as it is shown in the accompanying pictures, is but one of the two parts which will form the completed building. Midway between the two pavilions, which will be connected by a smaller gallery, is to be a square tower, which

will dominate the group and upon which will be lavished the wealth of ornament and symbolism which is already used upon the part of the museum which is already built. The structure is of reinforced concrete with hollow tile walls. Cement plaster of a texture which somewhat resembles Travertine marble is used for outside walls and the lavish ornament of the exterior is of cast stone. The tone quality of the building is a delicate buff pink which might be said to be in harmony with the colorful landscape of California.

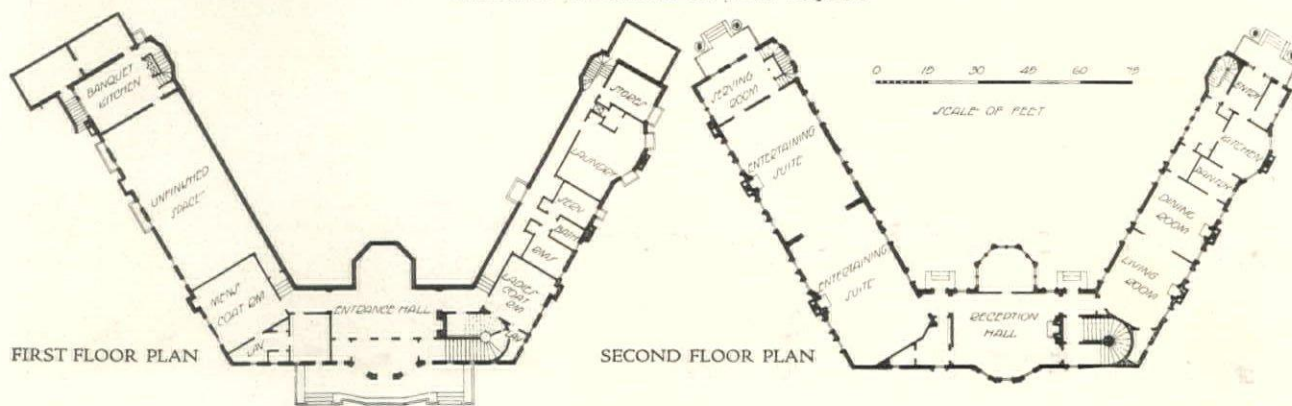


Detail of Main Entrance Doorways

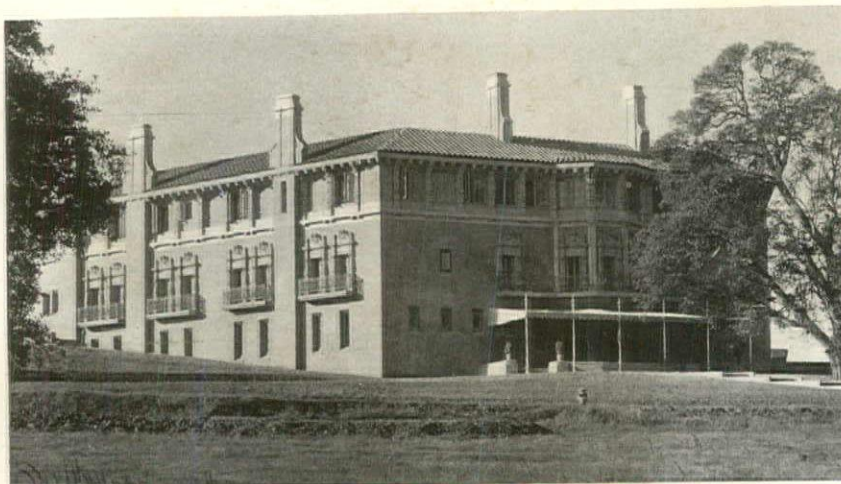
Memorial Museum, Golden Gate Park, San Francisco



DETAIL OF ENTRANCE ON MAIN FAÇADE



PRESIDENT'S HOUSE, LELAND STANFORD JUNIOR UNIVERSITY, PALO ALTO, CALIFORNIA
LOUIS CHRISTIAN MULLGARDT, ARCHITECT



View of Left Wing and Main Façade

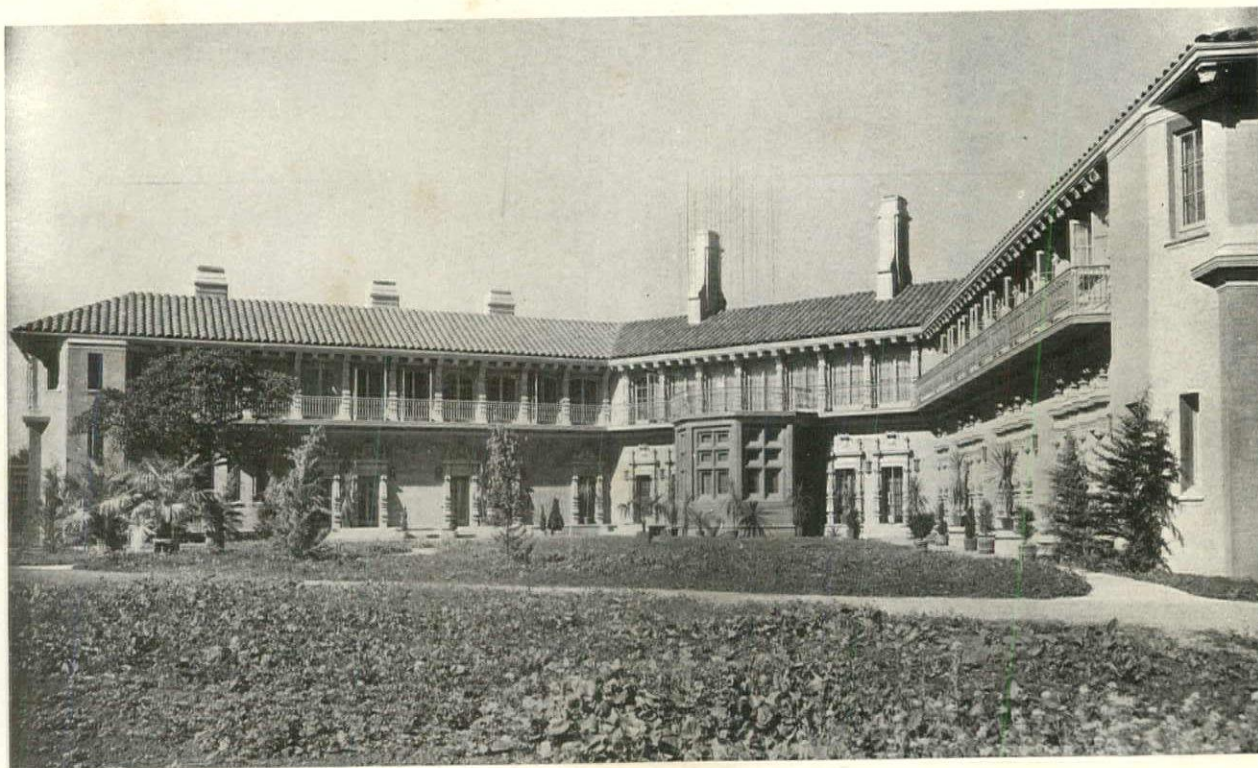
The unusual appearance of the exterior is due in a large measure to the striking use of symbolism very effectively displayed. The purpose for which the building exists makes necessary large wall surfaces which form a most effective contrast for decoration massed about doorways, at the corners of the building and in the broad frieze or cornice which extends around the four sides. The high symbolism which is worked out in the frieze and about entrance portals portrays the development of California and the progress of civilization and the arts. This history in symbol begins with the depiction of plant and animal life, then deals with the early aborigine with his spear and string of fish. In the later development of the symbolism appear

the early explorers and the Spanish friars, then the pioneers of '49 who came with pick and gun for gold but who stayed to build the basis of the commonwealth. All this sequence of symbolism leads up to its culminating architectural expression in a figure of Superior Intelligence, type of the justice and progress of the world. The upper part of the tower will have a chime of bells.

Of a somewhat different Spanish type is the president's house at Leland Stanford Jr. University. Here the problem was to adapt the Spanish style

to the use of a structure which is not a public building in the usual sense of the term but primarily a residence which must be also of sufficient size and character to serve the official needs for which the home of a university executive must often be used.

In plan the structure is U shaped with the sides of the U extended at obtuse angles, the wings forming a court and gardens which have been planned to afford a view of distant mountain ranges. The house, a three story structure, presents a very bold interpretation of the Spanish style; ornament, while used with becoming profusion, is not permitted to dominate the exterior but is confined to use at the traditional centers,—about doorways and windows and about chimneys.



Detail of Court Façades

President's House, Leland Stanford Junior University



VIEW OF ENTRANCE FRONT

HOUSE OF WILLIAM V. KELLEY, ESQ., LAKE FOREST, ILL.

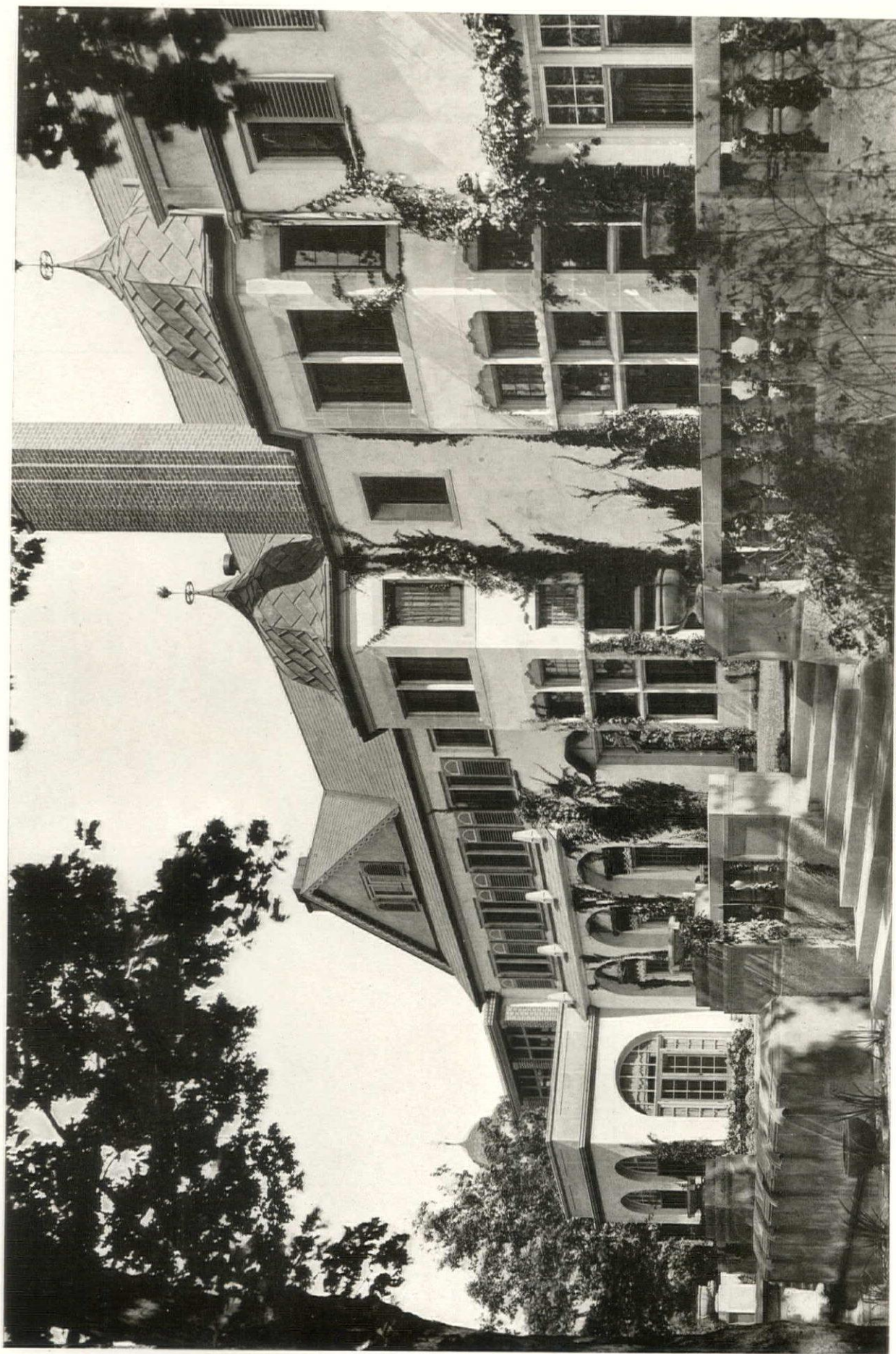
HOWARD SHAW, ARCHITECT



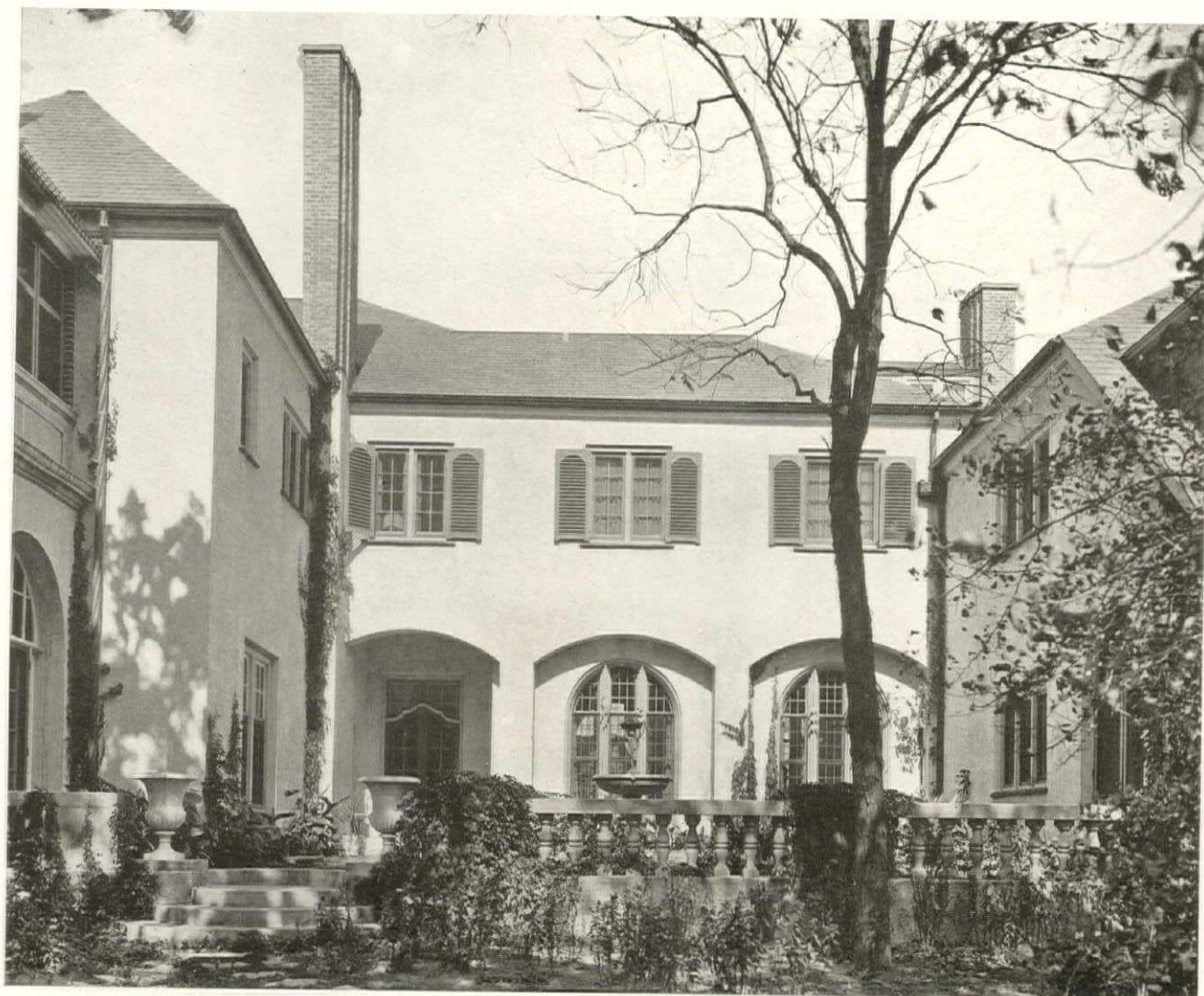


DETAIL OF ENTRANCE

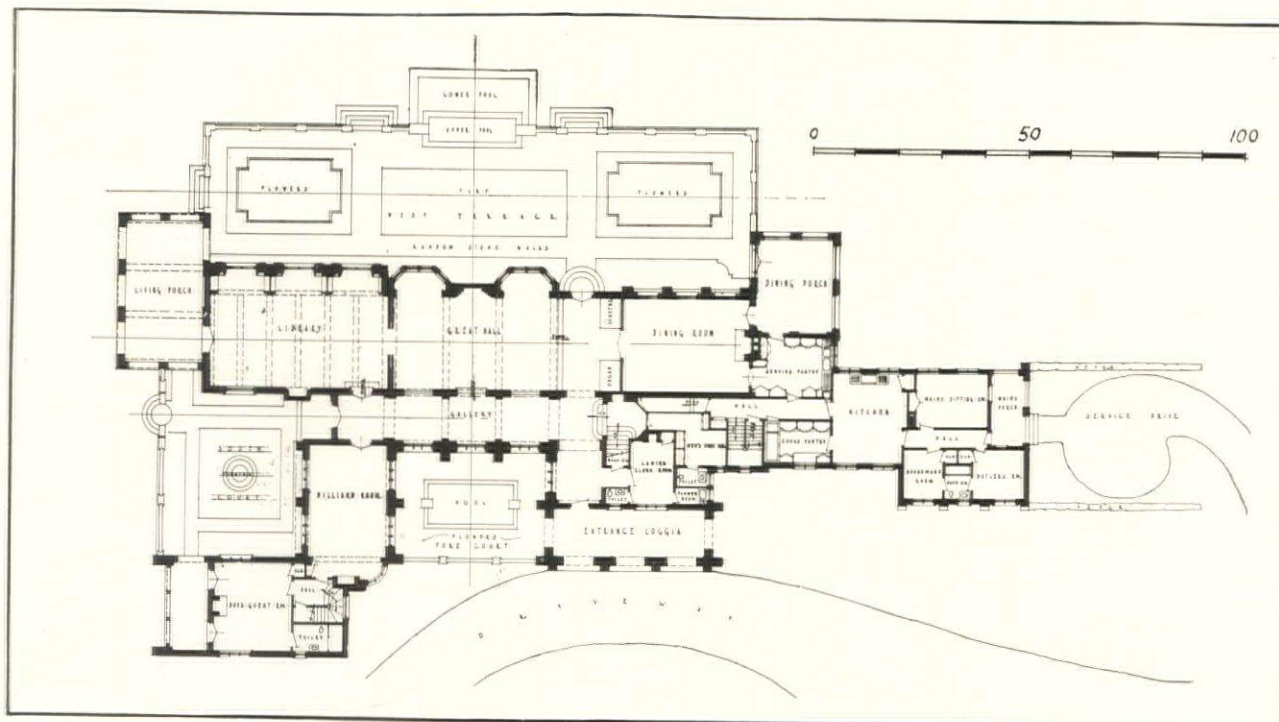
HOUSE OF WILLIAM V. KELLEY, ESQ., LAKE FOREST, ILL.
HOWARD SHAW, ARCHITECT



VIEW OF TERRACE AND GARDEN FRONT
HOUSE OF WILLIAM V. KELLEY, ESQ., LAKE FOREST, ILL.
HOWARD SHAW, ARCHITECT



DETAIL OF SOUTH COURT



MAIN FLOOR PLAN

HOUSE OF WILLIAM V. KELLEY, ESQ., LAKE FOREST, ILL.

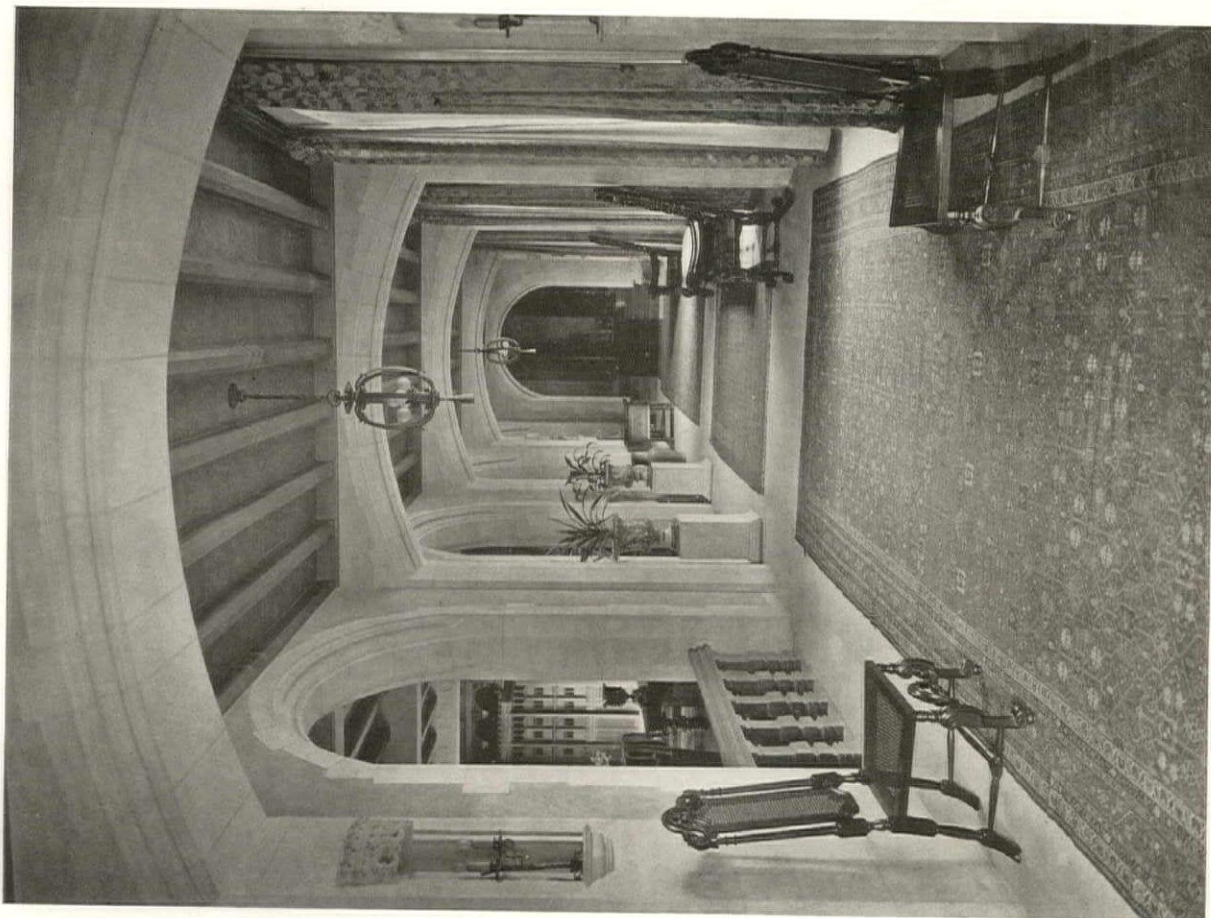
HOWARD SHAW, ARCHITECT



FORECOURT FROM ENTRANCE LOGGIA

HOUSE OF WILLIAM V. KELLEY, ESQ., LAKE FOREST, ILL.

HOWARD SHAW, ARCHITECT



GALLERY TOWARD STAIRWAY



GREAT HALL TOWARD ORGAN SCREEN
HOUSE OF WILLIAM V. KELLEY, ESQ., LAKE FOREST, ILL.
HOWARD SHAW, ARCHITECT



DINING ROOM



DINING PORCH

HOUSE OF WILLIAM V. KELLEY, ESQ., LAKE FOREST, ILL.
HOWARD SHAW, ARCHITECT

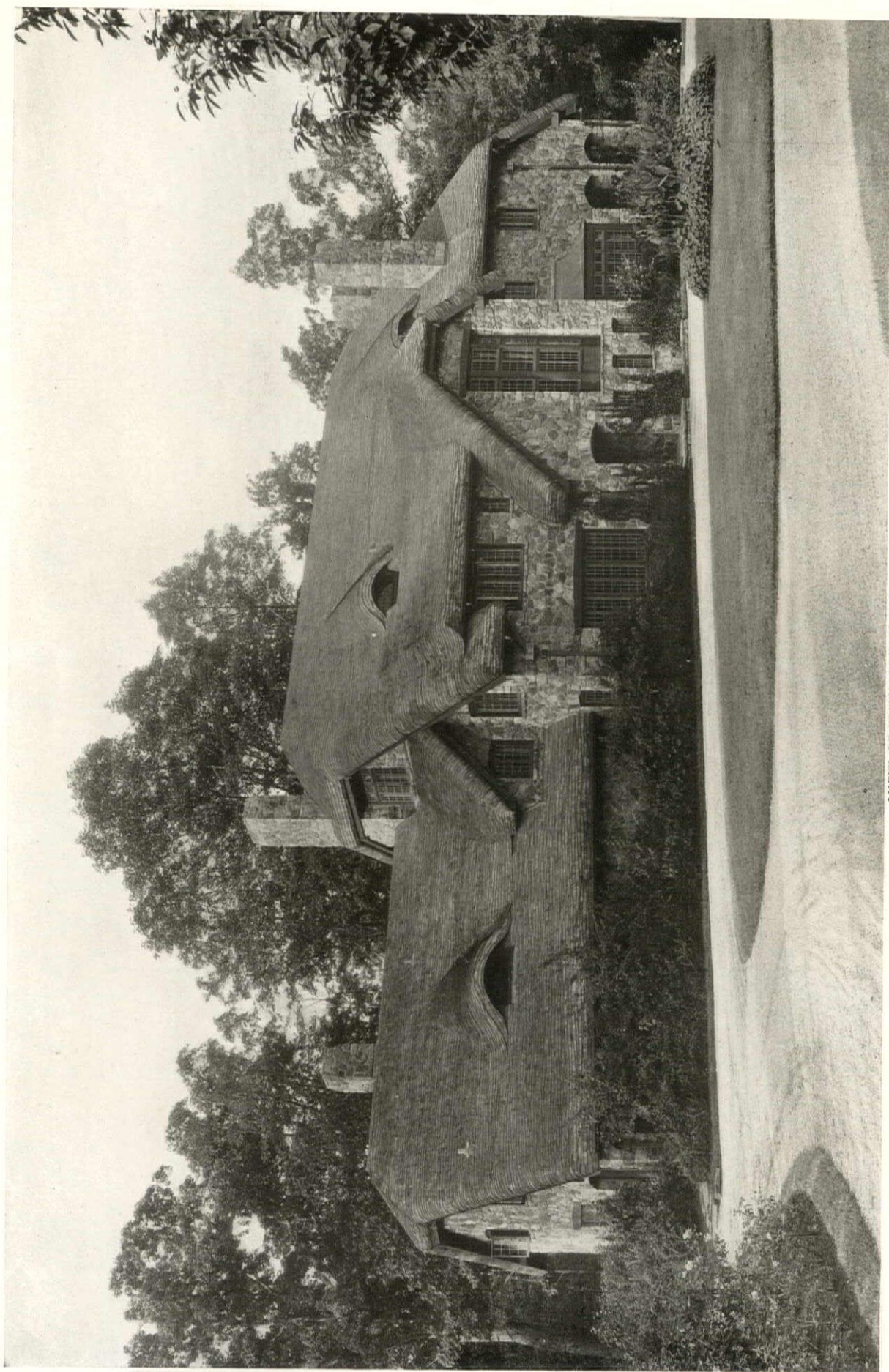


LIVING PORCH



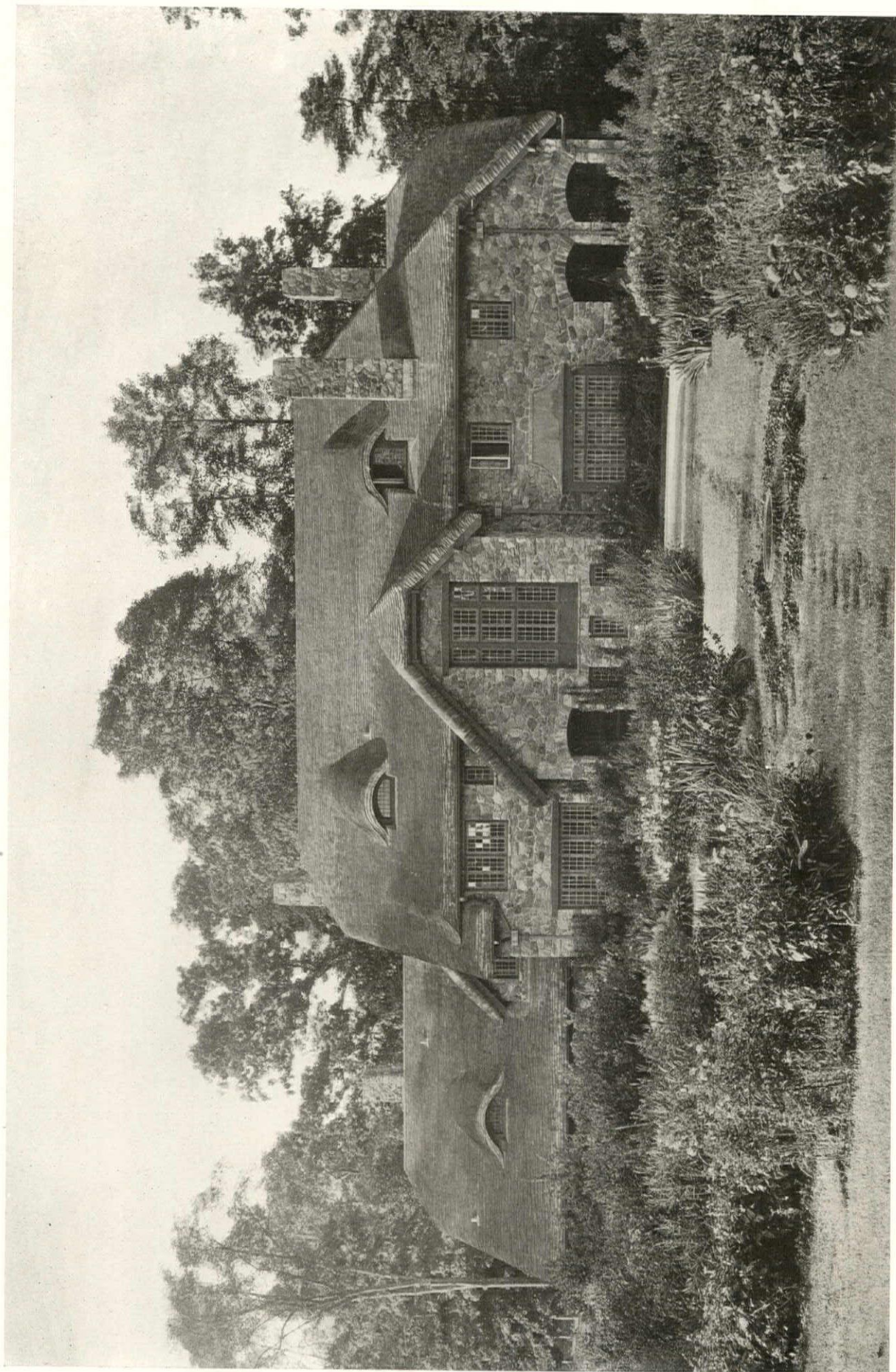
BILLIARD ROOM

HOUSE OF WILLIAM V. KELLEY, ESQ., LAKE FOREST, ILL.
HOWARD SHAW, ARCHITECT



VIEW OF ENTRANCE FRONT

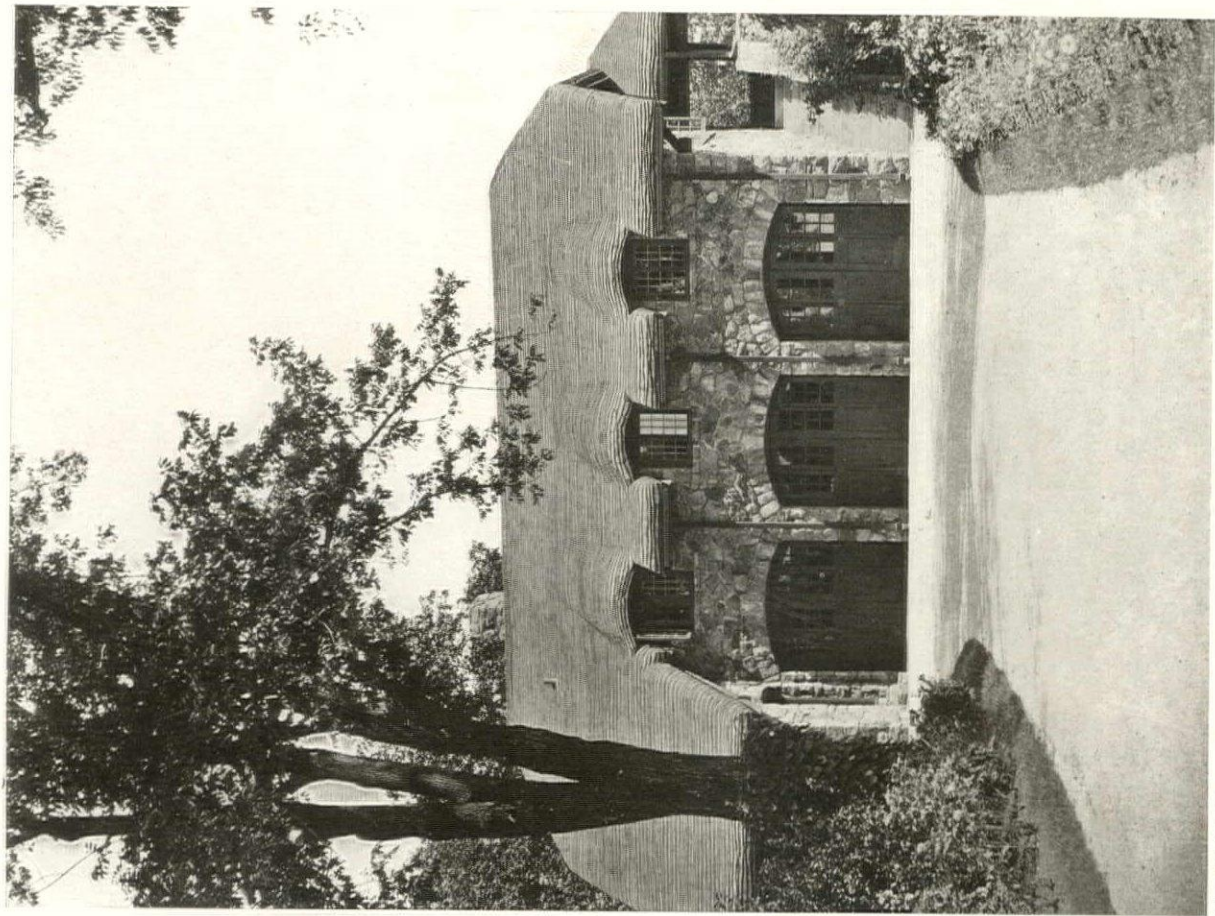
HOUSE OF MRS. H. J. DAVIS, SCARSDALE, N. Y.
W. STANWOOD PHILLIPS, ARCHITECT



VIEW OF GARDEN FRONT

HOUSE OF MRS. H. J. DAVIS, SCARSDALE, N. Y.
W. STANWOOD PHILLIPS, ARCHITECT

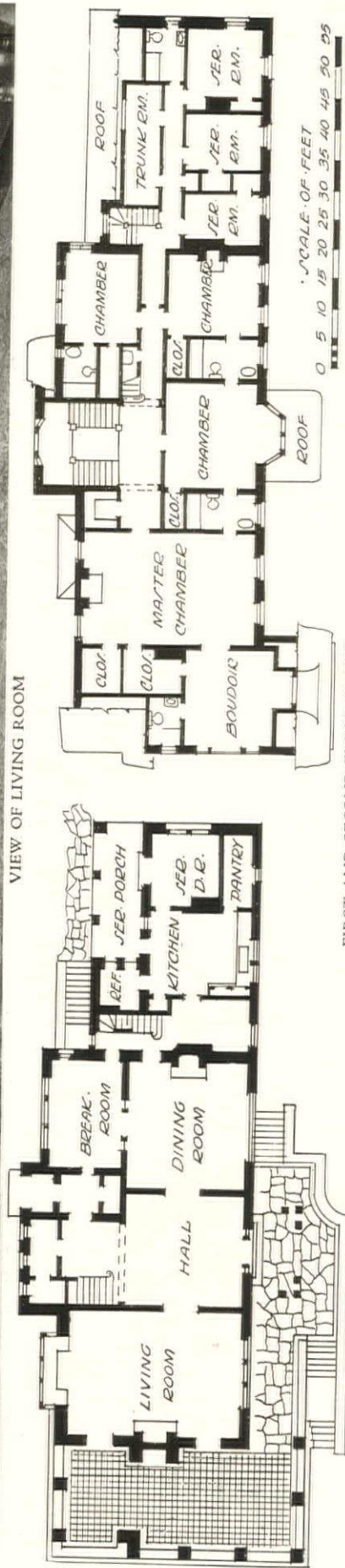




SERVICE WING AND GARAGE
HOUSE OF MRS. H. J. DAVIS, SCARSDALE, N. Y.
W. STANWOOD PHILLIPS, ARCHITECT



VIEW OF LIVING ROOM



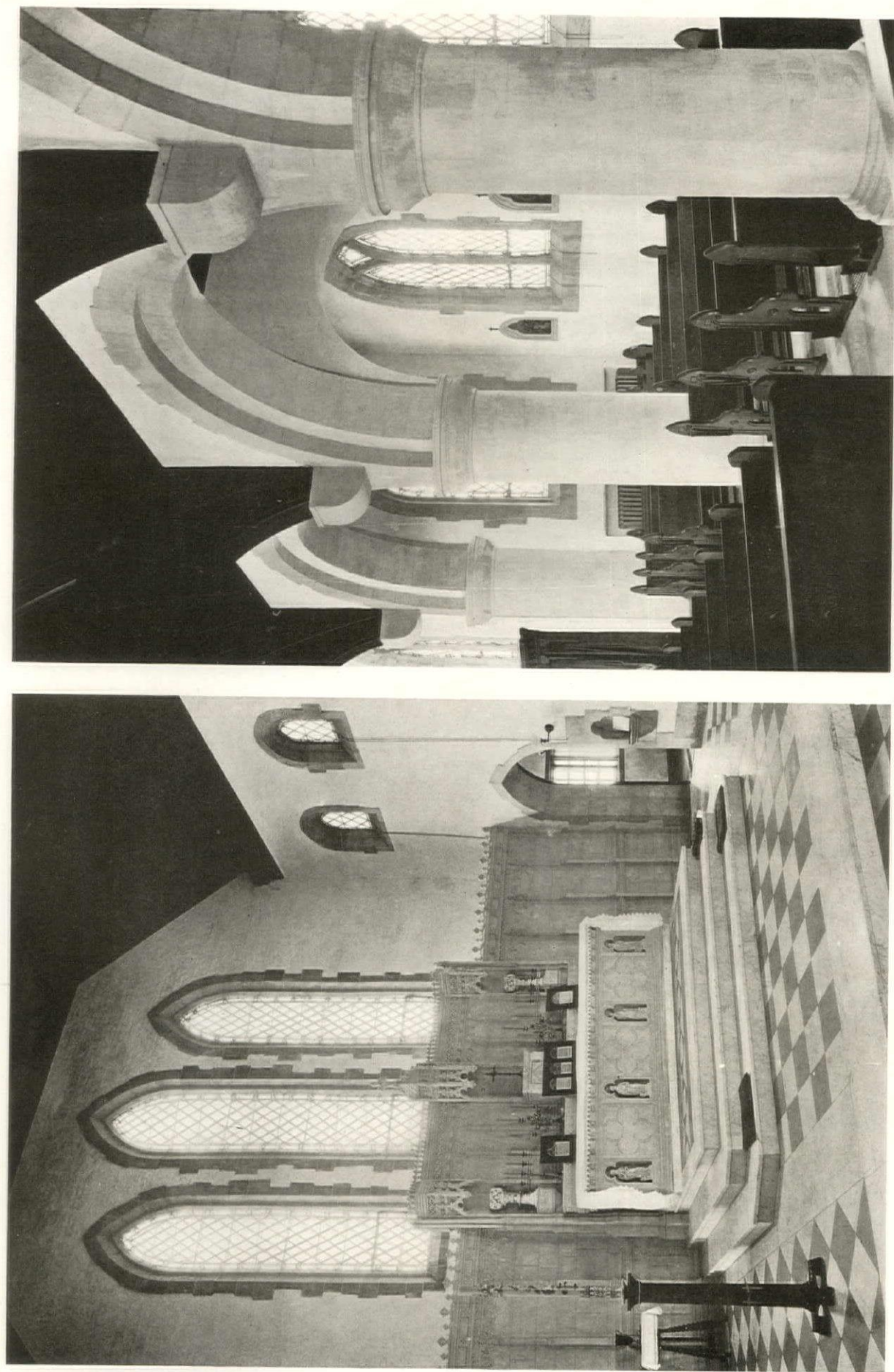
FIRST AND SECOND FLOOR PLANS
HOUSE OF MRS. H. J. DAVIS, SCARSDALE, N. Y.
W. STANWOOD PHILLIPS, ARCHITECT



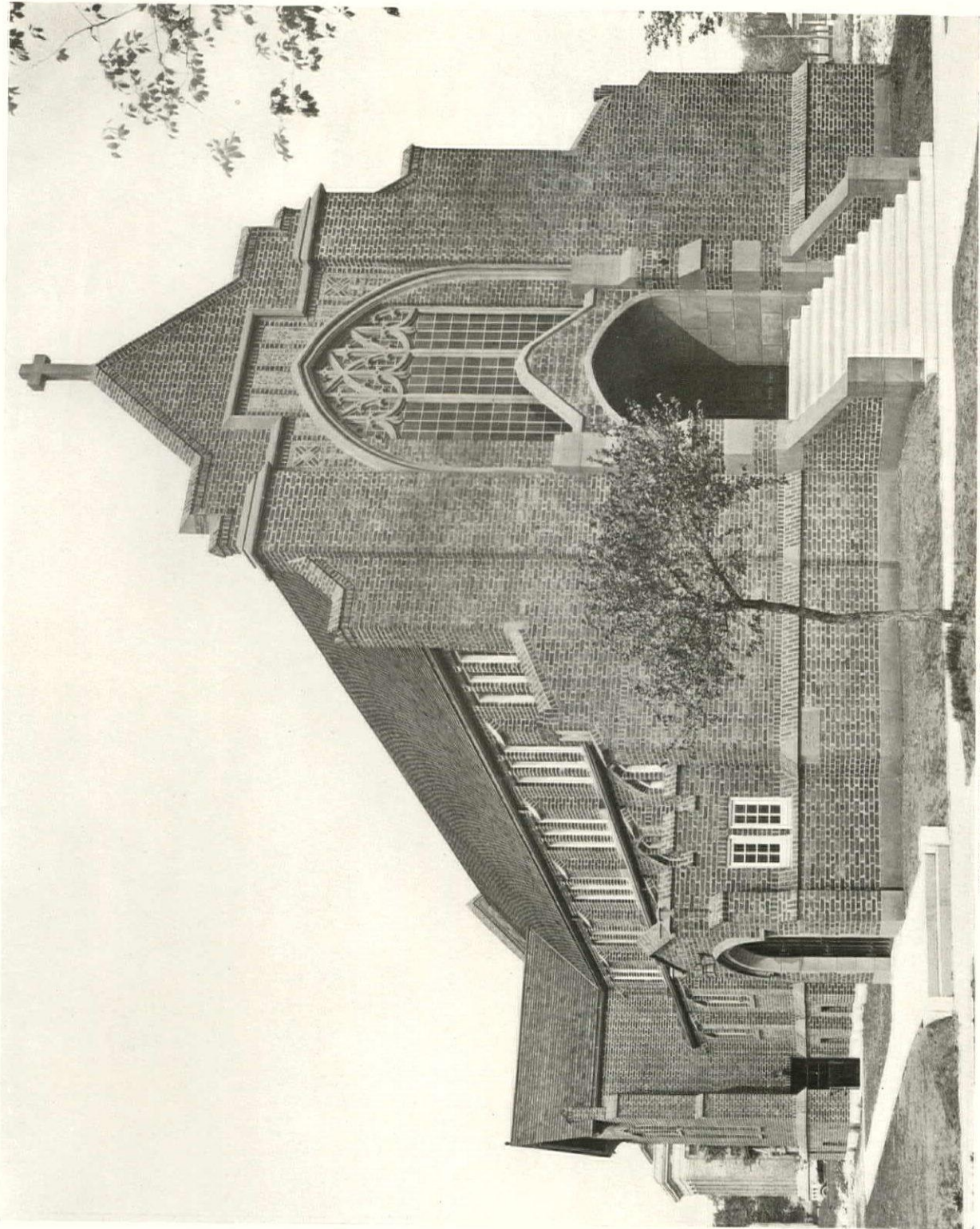
GENERAL VIEW AND FLOOR PLAN



NAVE AND SANCTUARY
CHURCH OF OUR LADY OF LOURDES, ST. LOUIS, MO.
STUDY & FARRAR, ARCHITECTS

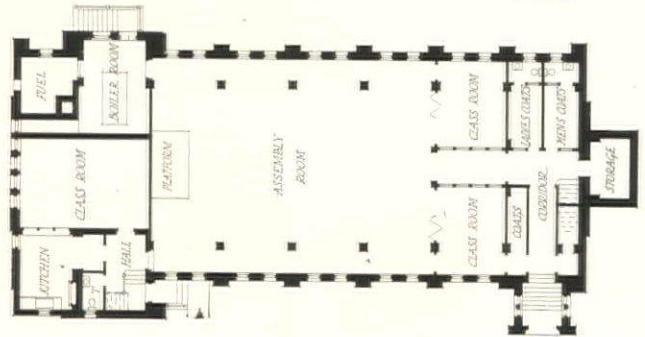
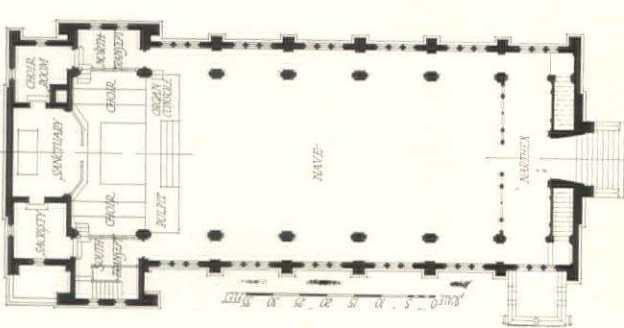


DETAILS OF ALTAR AND TRANSEPT
CHURCH OF OUR LADY OF LOURDES, ST. LOUIS, MO
STUDY & FARRAR, ARCHITECTS



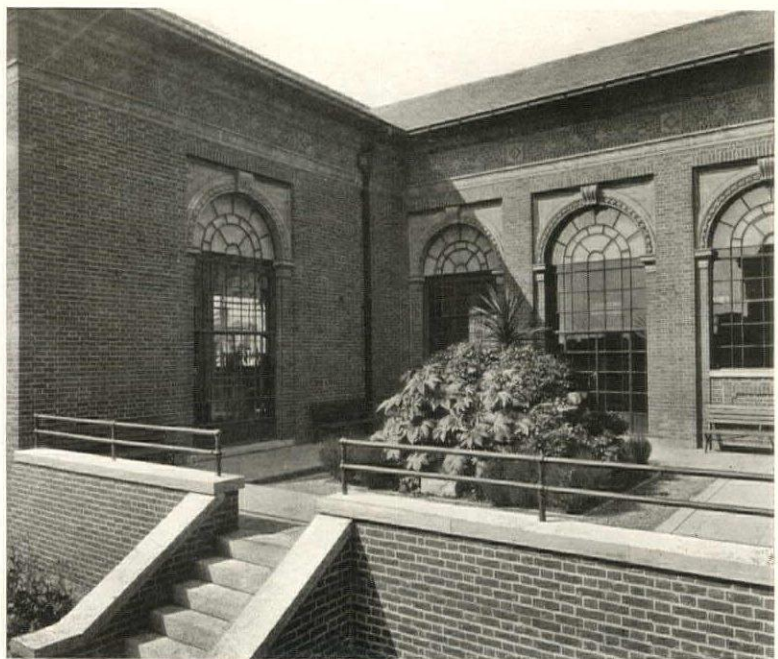
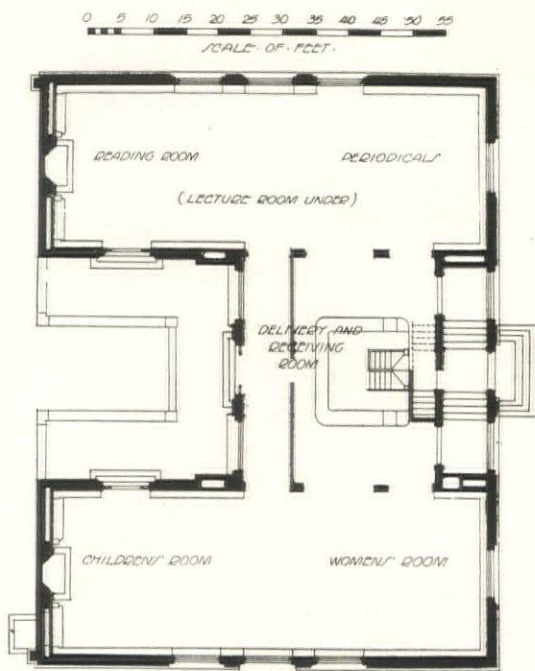
GENERAL VIEW AND FLOOR PLANS

GRACE EVANGELICAL LUTHERAN CHURCH, MINNEAPOLIS, MINN.
DESIGNED BY CECIL CHAPMAN, FORMERLY OF CHAPMAN & MAGNEY, ARCHITECTS





GENERAL VIEW



REAR COURT AND FLOOR PLAN

DOVERCOURT BRANCH LIBRARY, TORONTO, CANADA

CHAPMAN & McGIFFIN, ARCHITECTS

ARCHITECTURAL & BUILDING ECONOMICS DEPARTMENT

C. STANLEY TAYLOR, *Associate Editor*

Interesting Points from Official Investigation of the Co-operative Plan of Apartment Ownership

THAT the co-operative method of apartment house ownership and promotion holds continually increasing interest not only in larger cities, but in smaller towns throughout the country, is demonstrated by real estate reports of transfers of buildings and the filing of plans for new buildings to be sold on this basis. In the past few issues of *THE FORUM* many points relative to co-operative ownership and development have been indicated, but a recent official investigation of this general plan of buying apartments brings out added points and strengthens those already outlined.

A few months ago in New York City, where the greatest activity in co-operative purchasing is to be found, Alderman William F. Quinn introduced in the Board of Aldermen a resolution requesting an investigation of the co-operative plan of buying apartments to be made by Tenement House Commissioner Frank Mann. The results of this investigation were outlined in Mr. Mann's report to the Chairman of the Sub-Committee on Buildings of the Mayor's Housing Conference Committee of New York. Mr. Mann in this report has outlined frankly and definitely the requirements which, after investigation, he would demand if he were purchasing an apartment on the co-operative plan, and the various important points in this report will be brought up in following paragraphs with some editorial comment.

Mr. Mann's general comments were as follows:

"As Chairman of the Mayor's Housing Conference Committee I deprecate any attempt to discourage home ownership. I have called attention to the fact that out of 6,000,000 people in New York more than 5,700,000 have no interest in homes. This is lamentable and the principle of home owning should be encouraged.

"There is nothing inherently wrong in selling multi-family houses on the co-operative plan. There is no defect or disadvantage in purchasing on the same plan. There are no more dangers in the pathway of co-operative ownership than in individual ownership of one- and two-family houses. The danger of a purchaser losing his equity by reason of inability to comply with the terms is just as manifest. As a matter of fact, there is less danger of losing one's equity in purchasing on the co-operative plan if proper care is exercised in examining into the character of the sellers and the character of the financing of their operation.

"Were I to purchase an apartment on the co-operative plan I would demand the following requirements:

"Full Co-operation—The plan should be surely co-operative—every tenant in the building should participate in the plan."

Two Types of Ownership

As has been explained in other issues of *THE ARCHITECTURAL FORUM* there are basically two types of co-operative ownership. The first, which is approved by Mr. Mann as above, is that in which each owner is a tenant of an apartment. The second plan is that which involves tenancy of 40 or 50 per cent of the apartments by owners, the balance of the apartments being leased at market rentals in order that the income may offset the cost of maintenance of the building and consequently reduce the owner's rental.

There is no doubt that Mr. Mann's approval of the first plan is well founded in that it is a simple arrangement where all tenants are co-operative owners and consequently there is little room for the management problems involved where part of the space is leased; which means that the operation is not so intricate nor has it as many possibilities of failure as the partial owners' tenancy plan. On the other hand, it must be realized that the plan through which a proportion of the apartments are rented offers strong inducements to the purchasing of stock in the co-operative company, as it is quite possible to reduce the owners' rental to practically nothing if the building is divided and operated on the proper basis.

The latter method of ownership has opened up possibilities of stock promotion and sales at inflated values involving an exorbitant profit to promoters, and this is probably the reason why Mr. Mann does not look favorably on the second plan. On the other hand, there have been a number of successful co-operative projects developed in New York City during past years in which a building was only partially occupied by the owners among whom the equity of a building was divided.

These plans properly developed, and with a reasonable profit for the owner which was charged originally as part of the building cost, have been very successful. In most cases the owners' rent has been approximately 30 per cent of a normal rental established for the neighborhood, and investors in this class of property have received a return averaging from 14 to 18 per cent on money invested.

Mr. Mann's statement should, therefore, be qualified as shown by experience. The first plan of ownership is the best in simple form for dividing equally the cost of maintenance in the building.

On the other hand the second plan offers the best business proposition as it opens up a definite channel for the reduction of maintenance cost as it affects the owner who occupies an apartment in the building; or the investor who has purchased stock in the co-operative company.

The Importance of Location

*"Location—*As co-operative housing is for residence uses, the utmost care must be observed to purchase only buildings in firmly established residential neighborhoods, with a careful selection of the co-operators."

Not only is careful selection of location for a building of this type important, but care must be taken to anticipate the class of residential occupancy. There are many people who would not be interested in purchasing an apartment in a co-operative apartment house if they had any reason to believe that the neighborhood would tend to lose any of the unusual qualifications which call for location at a given point.

It is well known that in the average city certain neighborhoods are definitely classified by the type of people who may be developing homes in the vicinity. Consequently in locating a building of this nature the advice of real estate experts should be sought in order to analyze the trend of development, not only to avoid commercial or industrial development in a city or town not protected by a zoning plan, but to determine as closely as possible the character of residential occupancy which may be expected for years to come. This is often indicated by the price of land, which though high may be desirable because of its value as a determining factor in the class of construction and occupancy which may be expected.

*"Price—*The price at which the building is to be purchased should be its fair marketable value. If it is a new building the value of the land should be ascertained and the cost of construction added, plus a reasonable profit. If it is an old building the value of the land, plus the present replacement value of the building, less a liberal allowance for depreciation, depending upon the length of time the building has existed."

In buying land for buildings of this nature it has proven better to buy land in already well established residential neighborhoods, even though the original cost is much higher than in partially developed sections. The neighborhood which already bears the stamp of high class residential development, particularly if the land is protected against commercial and industrial encroachment through the medium of long term restrictions, offers the best location for a building of this nature.

In general, the building should be located within easy transportation distance of business and amusement centers, and in planning the building a definite class of occupancy should be determined upon and catered to, both in plan and location.

*"Title—*Care should be taken as to the examination of title by the employment of a title company or a reputable lawyer to see that the title offered is marketable, or that it is free and clear from all incumbrances, excepting such as shall be definitely agreed upon."

*"Mortgage—*If the property is purchased subject to a mortgage, the mortgage should be either for a long term with an amortization plan or a savings bank mortgage, which is reasonably certain of permanency, and in no case should the mortgage be for more than 60 per cent of the market value of the property. The plan should include the setting aside of a certain amount annually for the retirement of the mortgage."

As indicated in this paragraph the co-operative ownership method offers particularly good inducements to institutions or individuals having money for loan on real estate. As nearly as can be determined, there is no record of a co-operative apartment house having undergone a foreclosure of mortgage.

In the usual co-operative plan, as Mr. Mann says, a sinking fund is established which will gradually retire the mortgage. Each owner in paying an established owner's rental pays an amount toward this sinking fund. Naturally, as the mortgage is reduced the equity ownership is increased, so that this sinking fund is in effect a savings account to the owner's credit.

Details of Management

*"Incorporation—*Title to the land and building should be conveyed to and held by a corporation made up of the tenant-owners, the charter of which should limit the corporation to the ownership and operation of the building, in order to provide against possible speculation in other enterprises by action of a majority of directors and to insure the proper distribution of the proceeds of the sale of the building should a sale be effected."

The points just outlined should be given careful consideration by the purchaser of a co-operative apartment. He should know definitely what he is buying, and in a restricted corporation as outlined above he does know. Inversely, from the viewpoint of those interested in developing co-operative apartment housing schemes, it is well to realize that this form of incorporation safeguards the investment of the individual stockholder, and is the best and easiest form for successful promotion.

The operation of the building, such as management and negotiation of mortgages and similar business, is usually carried on by a committee of owners appointed often in a ratio of three committee members representing ten individual owners.

*"Management—*It is not practical or desirable for a group of tenants to manage the details of the property. This should be delegated to a reputable and competent individual or firm in that line of business."

The committee of owners, as outlined in the fore-

going editorial comment, usually takes charge of the general management of the property. As members of this committee, however, are not expert in this work it is customary and wise for the committee to appoint a professional real estate management company or individual in charge of the details of this work. He in turn usually renders a monthly report to the committee, who approve the report and at stated periods report in turn to a stockholders' meeting, usually every six months or every year, in the form of treasurer's report and general reports.

"Leases and Tenancy"—The share of the ownership in the building should be separated from the tenancy; a schedule of rents adopted for each apartment which, in total, would provide an income sufficient to pay the expenses of operation and fixed charges, including taxes, etc., a fixed amount to be set aside for the amortization of the mortgage and a balance sufficient to pay a reasonable return on the investment in the form of dividends. Leases should be entered into between the tenant-owners and their corporation, providing for annually renewable leases, containing proper restrictions and the provision that they cannot be terminated except for failure to perform or upon notice from the tenant to the landlord on the first day of July, terminating the lease on the first day of October following, in which event the apartment can be re-let for the benefit of the tenant-ownership corporation. Or a plan should be adopted which should include in

the rentals paid by the tenant-owners an income sufficient to meet all fixed charges and amortization, and in addition a sum to meet contingencies.

"Collective or co-operative ownership has many advantages in these days of high living cost, because it reduces the rent of each apartment to its share of the actual cost of maintenance and operation of the building.

"I agree that collective or co-operative ownership as it is particularly applied to the ownership of a home in the City of New York, where the majority of our population must for economic and other practical reasons reside in apartments instead of individual homes, in addition to securing a home from which one will not have to move, brings down the rent and affords a safe and profitable investment, when the plan of ownership requires the payment by the tenant-owners of a sufficient income to meet all fixed charges and amortization, and an additional sum to meet contingencies.

"I emphasize this particular feature for the reason that the average family are not certain as to how long they may be able or desire to remain in one location, and they should be free under the terms of their purchase to vacate the premises and, if they so desire, retain their investment.

"Under the tenant-ownership plan the tenant is protected against increase of rents and is assured a permanent home, and is afforded a safe and profitable investment. There is no better asset to a community than for its citizens to be interested in home ownership."

Practical Methods of Financing Home Building Projects

THE acuteness of the housing situation still continues, and the most difficult problem involved is that of obtaining financing. In a number of cities and towns where the pressure of industrial need is added to the general housing shortage, various methods of solving the financial question have been developed, and as this subject is of general interest and of application to the business of the clients of many architects, we will from time to time present brief analyses of successful methods of financing which have been developed.

In Detroit, where an acute housing shortage exists, probably the most successful plan of financial aid has been developed by the House Financing Corporation of which Mr. Eugene W. Lewis is President and General Manager. This Corporation has been organized and financed by a number of large employers in Detroit and it has as its purpose the financing of home building on a basis which offers a fair interest return on money invested.

The House Financing Corporation was organized about one year ago to carry out its activities under three plans. These plans are known as:

1. Banking Plan
2. Operation Plan
3. Contractor's Financing Plan

The plans are described as follows:

1. *Banking Plan*—Under this plan any one owning a building lot may have a house erected thereon by the Corporation, either after his own plans and specifications, which the Corporation must approve, or from the plans and specifications furnished by the Corporation. The result of the investigation of an application and investigation department indicates the maximum amount of money that should be loaned to the applicant, stating the sum that the investigation shows the applicant may carry without particular handicap to his other domestic requirements. The Corporation loans up to a maximum of 80 per cent on its appraisal figure of the house and lot.

2. *Operation Plan*—Under this plan the Corporation employs its capital direct by purchasing lots *en bloc* in various parts of the city, erects its own houses thereon and makes the sale of them after completion. At this time it owns about three hundred such lots on which it is conducting building operations, erecting from six to twenty on each property. As will be noted, this plan will add a great number of houses, but it will not produce quickly enough the large number of homes necessary for the proper relief of the situation. Careful

study of conditions and reports from those in best position to have full and accurate knowledge of the facts, indicate that something over two-thirds of the houses erected during the last year in Detroit have been built by independent contractors, either as individuals or as building firms. In other words, this large number of houses has been produced by men who use their capital in purchasing lots and building houses thereon for sale. It is quite obvious that any plan which would keep this great factor from slowing down, in fact, could stabilize and increase this effort, would be of great benefit to the city and further conserve the purposes for which this Corporation was formed.

3. *Contractor's Financing Plan*—This seems to provide what is necessary to further stimulate building and assist in securing the results so much desired for relief of the city's housing proposition. Under this plan the Corporation cannot only keep its capital in more liquid condition, but it secures the distinct advantage of having, literally, hundreds of contractors working for it and the city on a stabilized and assured basis to the contractor. The Corporation has supervision over the type and character of house that is to be built, the price at which it is to be sold to the customer, and can indicate the localities in which these houses should be built, thus securing building operations in the localities where they are most needed. Contractors engaged in independent building operations during the last year have, for the most part, tied up their capital, the income or turnover from it not being sufficient to enable the contractor to continue to do building work on anything but a small scale, if at all. This Corporation finances temporary loans on collateral notes, if necessary, in order to get the contractor started on a new operation. It then finances the building operation from time to time as it progresses under its plan in detail, by taking the contractor's three-year collateral note.

The above is a short résumé of the three general plans under which the Corporation is operating at this time, and as indicated, it will be noted, they are different in character and would seem to cover comprehensively—though in different ways—a practical solution for the quick and stable relief of the situation. The organization is complete in its various departments for proper operation and conduct under these plans, its effort and the result being limited only by the amount of capital available.

As the requirements of the situation call for a large and extensive building program, it is essential that a large amount of fixed capital be available and employed. As soon as this fixed capital is practically all invested, a plan for revolving it will be instituted. This revolving of funds will, of

course, be based upon the securities of the several kinds that have been developed in the conduct of the business. These securities form the safest kind of diversified collateral and will make a most attractive investment.

Some of the Results

Some interesting details of the working out of this plan were brought out in a discussion with Mr. Lewis. The types of houses which are constructed or financed are developed at the lowest possible cost to meet the need of the industrial classes. Any individual applying for assistance in home building must be an American citizen and no house is financed in which the cost of maintenance and ownership will exceed 25 per cent of the owner's income.

It has been the experience of the House Financing Corporation that there have been few applications under Plan No. 1 for individual home construction owing to the fact that much of the real estate purchased in Detroit has been on a speculative basis and that individual home building has proven so expensive as to discourage this method of solving the housing problem.

Under Plan No. 2 as outlined, the Corporation has already built a large number of houses. These houses are designed in the offices of the Corporation and contracts are let to contractors experienced in this line of work, who are allowed approximately 12½ per cent profit on the operation, which carries also the overhead of the Corporation amounting to about 5 per cent more. These houses are sold to individuals on easy terms.

Under Plan No. 3 many builders have been assisted. This plan contemplates the creation of liquid capital for the builder who otherwise must wait for the use of his capital until his houses are sold. The introduction of this plan found many contractors in Detroit entirely stopped in the production of homes because they had tied up all their capital and were forced to wait for sales.

In selecting the contractors to be benefited through Plan No. 3 Mr. Lewis stated the Corporation's attitude as follows:

"The best builder for this class of construction is not the big builder or the builder of houses costing \$15,000 or \$20,000. He is the man who has been active in the construction and sale of low cost dwellings."

In assisting builders under Plan No. 3 the House Financing Corporation controls the sale price of the houses in order that there will be no exorbitant profit. A profit of about 15 per cent is allowed to the builder, together with a fair profit on the lot determined by appraisal.

Export Trade and the Building Situation

IN the June issue of this Department of THE ARCHITECTURAL FORUM there was presented an article, "General Business Conditions as They Reflect on the Building Situation," which has resulted in some interesting comment. Among the letters received was one which brought out several definitely interesting points. This letter, together with the editor's reply, is printed as of general interest to those who are giving thought to future conditions which influence the building situation.

The following letter was received from a New York architect:

"First of all, there seems to be some doubt in business circles as to whether the crest of the wave of business actually has been reached, and it is pointed out that we now depend to quite some extent on world conditions. The world at large seems to have empty shelves and is only now and very slowly getting into condition to replenish.

"In the market for building materials and appliances we must recognize the fact that a great many new consumers have appeared and their number is increasing. The house famine is universal and severe, indeed practically no relief is in sight while the financing is becoming increasingly difficult.

"Before the war England and Germany enjoyed an enormous foreign trade in such materials. Both are now suffering from a severe house famine and material prices easily three or four times those of 1913. Scarcity of labor, high wages and impossible conditions of transportation also exist. In fact our labor troubles are a mere nothing compared with conditions in Europe. On the other hand, Europe lacks the organization and labor saving machinery which has been built up in this country during the last forty or fifty years through the competitive system in an effort to meet the steady rise in the prices of labor and materials. How will Europe meet the new conditions?

"Is it not reasonable to assume that there will be a heavy drain on our building material market, at least for many years, while a new system is being built up elsewhere? There will be an end to wild-cat war conditions without a doubt.

"If I might make a suggestion it would be on the desirability of studying the approximate requirements and economic strength of our foreign customers for the next few years. A good many of our manufacturers of building materials are increasing their facilities even to the tune of 200, 300 and 400 per cent, at least in some departments. That is a good indication of their view of the coming market. Altogether it certainly is a puzzling condition, and one very difficult to survey."

Following will be found the reply to this letter:

"We have for some time been puzzled, as many others undoubtedly are, regarding the influence of European business in its effect on the stability of material prices in this country. It is very difficult indeed to measure this effect. As nearly as we can determine from contact with building material

manufacturers, particularly those who have had recent experience in selling abroad, it would seem that the increase in their production facilities as referred to in your letter is largely in view of a steady volume of domestic business which the shortage in buildings of every type would seem to call for.

"We do not think the average building material manufacturer places much confidence in a volume of foreign business. Primarily we believe this is true because the general experience of those who have attempted to sell in foreign countries has been somewhat discouraging. The cause for discouragement is, to a certain extent, a strong tendency on the part of foreign buyers to procrastinate. Behind this procrastination, however, there seems to be a tacit organization against any dissipation of economic expenditure. By this we mean that in France, for instance, the tendency seems to be that, as expenditure on forms of material involving labor must be made within the country, the general tendency is to encourage local production in every possible way; and secondarily to purchase from war weakened powers which have received national credit from France.

"The same condition is met to a greater or less extent in other European countries. We believe that the production of building materials in Europe will be increased to an extent never before known in order to meet the need in the reconstruction program of European countries.

"After all, is it not logical that this should be the case? The war drained European countries have very little credit to exchange with this country for necessary materials of reconstruction. Their credit has already been overstrained in purchasing the necessary materials of war, and they are following, perhaps far more than we realize, the trend which always comes when the credit of a nation is expended, outside its national boundaries. In other words, the flow of money has been steadily outward—not from the government to its people, which in a sense is a passing of money from the left hand to the right—but from the government to the people of another state.

"This money—or credit, if you will—has been expended, as already stated, largely for materials of war. If it had been expended for materials of industry it might ultimately be returned in the form of production. But the expenditure for war material is an unfortunate expenditure, in that the volume of credit so used is almost totally destroyed and is possessed of no investment feature. By this we mean that in purchasing munitions from this country and in the use of this war material in destructive form, the value of the amount of national credit so used is gone forever.

"On the other hand, where machinery for industrial production is purchased, this machinery is used for local production and consequently returns the investment with profit."

Constructive Analysis of the Building Situation

SENATE COMMITTEE ON RECONSTRUCTION AND PRODUCTION GIVES SPECIAL ATTENTION TO BUILDING

THROUGH the efforts of Senator William M. Calder a Special Committee of the Senate on Reconstruction and Production has been created. The purpose of this Committee, of which Senator Calder is Chairman and Senators Kenyon (Iowa), Edge (New Jersey), Wolcott (Delaware) and Gay (Louisiana) are members, is to investigate building and all forms of housing throughout the country and all industries upon which the construction industry is directly and indirectly dependent. Senator Calder in a speech in the Senate of the United States has commented in regard to this Committee as follows:

"In my opinion the adoption of this resolution by the Senate is a timely act, recognizing as it does that structural development is necessary for the fuller utilization of the nation's resources, for the production of its essentials, and for the amelioration of its housing conditions, and that construction was curtailed by the war and is now hampered by an unprecedented demand for consumables.

"The scope of the Committee's work is necessarily extended because of the interdependence of the various factors, it being evident that construction cannot proceed without transportation, labor, and capital, and that construction of all kinds is necessary for increased production.

"The time allotted to the Committee is comparatively short. Accurate and detailed information is essential. In order to amplify and verify data otherwise obtained, it is the desire of the Committee that it may receive from the senators and congressmen their personal knowledge as to home conditions, together with their suggestions as to means to relieve these conditions."

The construction industry to-day is in great need of a constructive investigation of this nature. It can confidently be expected that in this investigation information will be developed which will tend to show more clearly than ever before the position of the construction industry in our economic structure and the actual hampering conditions which are to-day holding back the great volume of active and beneficial production in this line.

The fundamental problems of the construction industry would seem to be in order of importance as follows:

- (a) Finance
- (b) Transportation
- (c) Labor

Building to meet the acute shortage of homes and the general shortage in other lines of construction is definitely discouraged through the lack of financial support in the form of building loans and mortgages. As a reason, or an excuse, for this attitude on the part of loaning interests, the

unstabilized condition of building material prices and labor cost is advanced. Actually, however, it would seem that investment funds are being directed to other lines which offer greater interest or profit returns. If mortgage money were made available a great volume of construction would proceed; and with better transportation conditions it is felt that the building material producers in this country would meet the demand on a fairly stabilized cost basis.

Government housing is a fallacy for many reasons, particularly its effect in stifling competitive or speculative building. On the other hand it would seem entirely feasible that federal credit might be properly used to encourage the availability of building loan and mortgage money for those types of construction most necessary to aid in the increase of industrial production.

Manufacturers everywhere are hampered by a lack of housing for their human machinery. Consequently the volume of production which might be expected from them as individual units is often in exact ratio to the quality and proportion of employees limited by lack of housing and proper community facilities. It is common experience in practically any industrial center today to find employers making statements that they could use 200 to 300 more men if they had places for their families to live. In many plants which are fully manned the quality of labor is low because turnover is high owing, to an extent not realized by the average manufacturer, to a shortage not only of housing facilities but of proper community facilities.

The Committee on Reconstruction and Production has sent out to architects a letter asking for information as follows:

"It is possible that through your practical and everyday familiarity with the situation as an architect, you can supply the committee with information as to the shortage of housing and industrial construction in your locality, whether such shortage is increasing or decreasing, and the effect of such shortage upon public welfare and industrial development. The Committee would be pleased to learn your views as to the factors contributing to the shortage and also to be informed as to any remedial measures which have been undertaken to relieve the situation."

It is hoped that every reader of this publication will realize the importance of the work of this Committee and the value of Senator Calder's well known activities in behalf of the construction industry. Each reader may share definitely in bringing about better conditions not only in the building industry but throughout the architectural profession by sending to this Committee, whether solicited or not, any pertinent information.

Piranesi — Style Maker

AND SOME SUGGESTIONS AS TO HOW A GOOD BOOK MAY BE BETTER USED

By RICHARD F. BACH, *Metropolitan Museum of Art*

THE difficulty of doing some things is surpassed only by the pleasure of making the effort to achieve them. For instance, one might attempt a critical appraisal of Piranesi's work, but his fondest admirer would fall as far short of the true picture as would his sharpest foe. A giant of graphic art, "the Rembrandt of architecture," he stands above his time and compeers; however easily Michelangelo saw over the heads of his fellow carvers, Piranesi as handily outstripped other etchers and engravers of his period. His value to his own century was negligible as that century saw it (his splendid series entitled *Le Antichità Romane* brought him seventeen lire!), but as history has come to regard him, his labors have been credited not only with the greatest high-quality output that has been recorded for any man, but also as the influence which gave the requisite final impetus to the empire style; this, some claim (among them the critic R. Phené

Spiers), Piranesi practically made out of hand. He succeeded, furthermore in developing within this style a Piranesi vogue of his own,—as great performers in any field are bound to do,—so that he comes dangerously near to figuring as a style "creator" or, in the expressive English of to-day's business world, a style "promoter." All the more accurately does this description apply to him in that he may be said to have launched a boom in design, especially architectural design, which appears plainly in at least one of his books, as we shall see. He disapproved of current practice, made a conscious effort to improve it by reference to better originals in antiquity and sowed a seed that multiplied beyond his wildest dreams and quite probably, in most cases, contrary to his hopes.

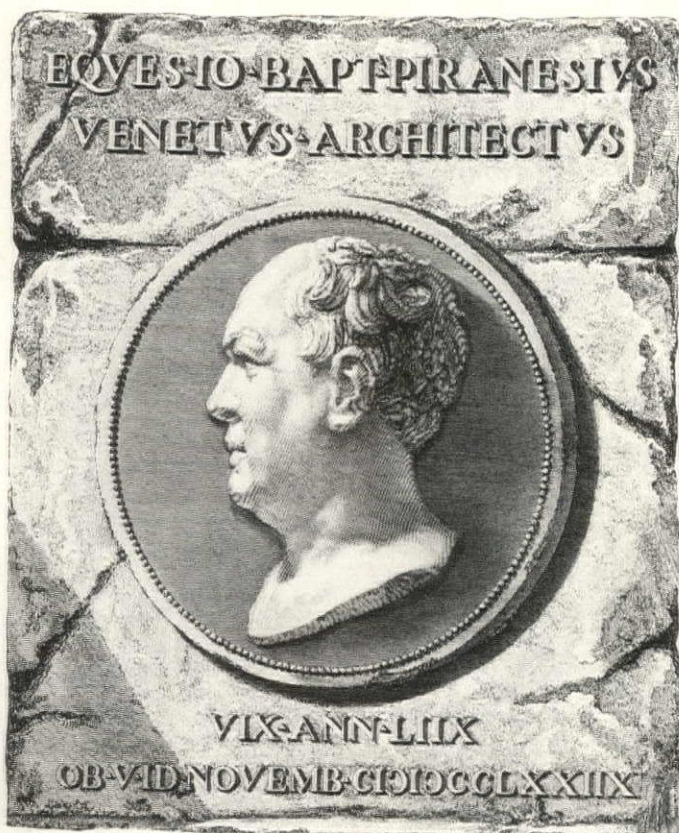
Giovanni Battista Piranesi (1720-1778), a most ambitious Venetian, can hold the mirror to the master craftsmen of all times. A consuming creative impulse drove him to work untiringly and impetuously; sometimes, perhaps not very wisely or too well, yet in the many volumes of his work only a rare plate falls below his customary excellence in either conception or technique. A

careful student has found that he produced some 2000 plates by his lifelong industry or, quite accurately, one plate every fortnight of his working career.

Piranesi's mind was a combination of architectural and graphic thinking, both of such high excellence that he was willing to let neither be sacrificed to the other, and the cumulative effect was such a prodigious output that he has been suspected of maintaining a *bottega* in the nature of a factory, similar to to-day's "plan factory" of ill repute. Of this there is no proof. But the Italians have since established such a factory

under royal patronage at the *Calcografia Reale* and have in dunder-headed good will reproduced from his plates, now carefully steel coated and re-etched, a myriad of seventh rate prints, clouding their author's reputation, damaging his work, and, we might almost say, really helping many architects toward higher thoughts in design because the lower price brings these prints within reach of their purses and enough of the artist's strength remains to offer no little inspiration and suggestion.

The immediate cause of these ruminations, which have been set down as they trailed one another in the course of a perusal of the work, is a volume by Piranesi, not by any means his best known, yet one of his most characteristic and direct products: it has the title *Divers Manners*



Medallion of Giovanni Battista Piranesi

of *Ornamenting Chimneys and all other Parts of Houses taken from the Egyptian, Tuscan and Grecian Architecture with an Apologetical Essay in Defense of the Egyptian and Tuscan Architecture*. Its text in the first edition, which bears date of 1769, is in Italian, English and French and there are sixty-five plates. We have heard much of Piranesi's *Prisons*, his *ruins* and other collections of engravings,—which we should designate etch-engravings, for he used both processes together,—but we see only occasionally any reference to his designs for ornament. His *Prisons* or *Carcere d'Invenzione* are one hundred per cent pure imagination, his plates showing ruins at least eighty per cent so,—stage ruins we might call them, for he was a conceiver or designer of ruins as well as an engraver of them. Our scenic artists would give an eye for such a ruin as he could make out of one broken stone and a stray weed, for these would grow in his mind to hills with dismantled temples overgrown with foliage, nature's protest against their further desecration. Piranesi loved ruins, and that because, as sources of design, as fountain springs of imagination, he saw in them the beginnings of an endless procession of new form combinations. What is more, he had a profound architectural consciousness, a constructive method of thinking and of working; he found no difficulty in completing the architect's thought, as seen in the tumbled remains of his building. It is therefore to be counted our good fortune that he has left us such books as this on fire-places, in which he rides his hobby as hard as ever, but reins it in to show, in a way, that it is really a perfect horse. In the present volume he comes down to earth and does not dislike its solidity; his plates indicate such reasoning and such results, from the standpoint of practical utility, as will outweigh any distaste for his thesis.

This latter he states in his introductory pages, giving it the title of *Apologetic Essay*, a name which implies a halting "I beg you," but which conceals a stern face, a fiery temperament and the not uncertain words "I dare you."

A benison on the inventor of the preface. Piranesi tells his story in his preface, which is an account, a defense, an apology, an attack—and a satisfaction. He was a plain spoken fellow and, I dare say, ready with his fists, if his style of writing is an indication of his willingness to maintain a cause. When you are through with his preface you will agree with him and vow to buy this book if it takes a life's earnings as a professional designer; or you will despise his point of view and at the same time hold on to his book for its out-and-out design value. For many a one, as for the humble writer in this instance, it will bring encouragement and admonition in a breadth, satisfaction and a compelling desire to indite without delay an *apologia pro vita sua*, as Cardinal Newman did, to set down clearly his own faith and the reasonable foundation for it, so that he himself might see it

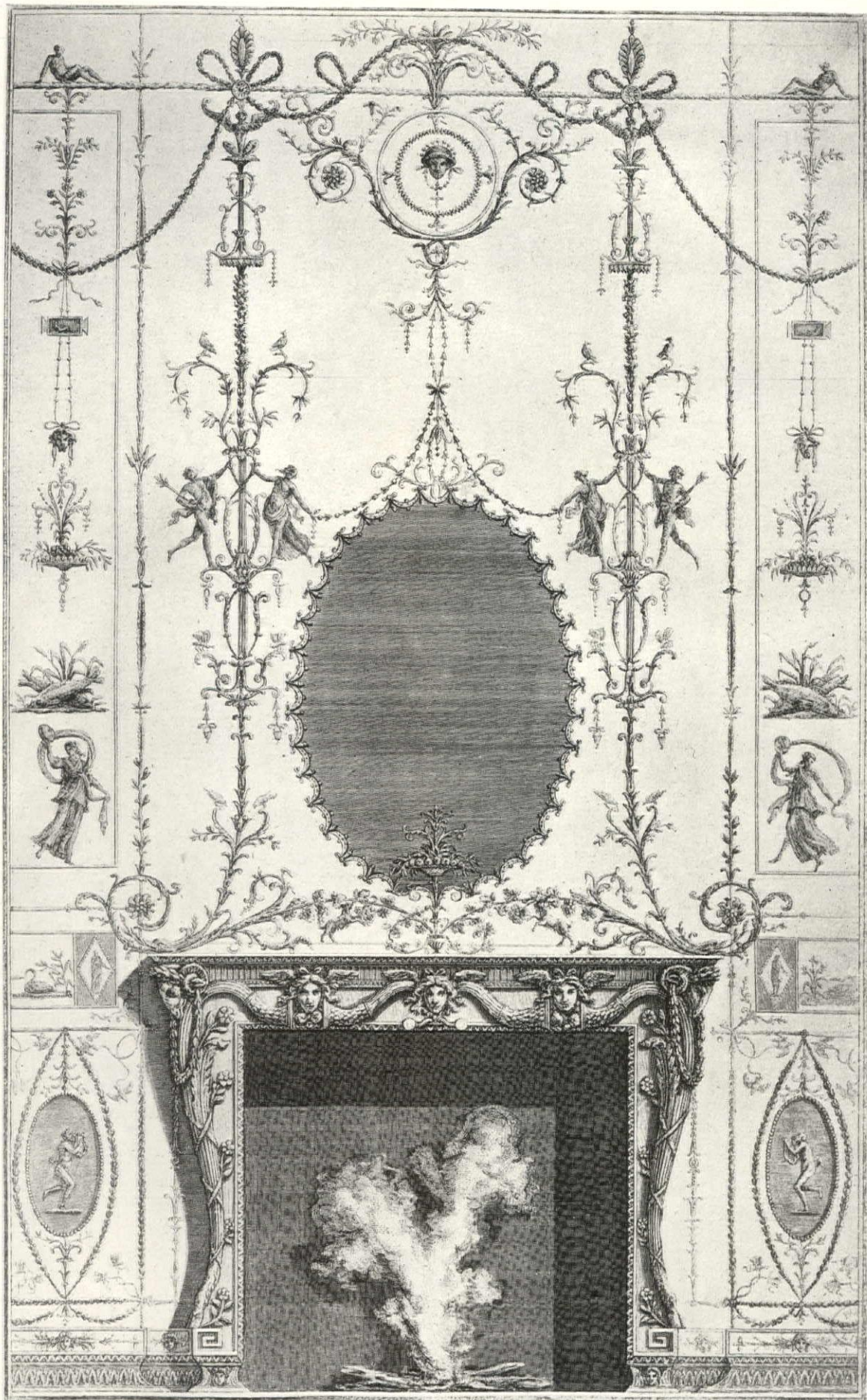
more clearly and assure himself of its convincing tone.

On this preface might be based a workable catechism, a series of leading questions answered by quotations from Piranesi and illustrated by his plates from this book. You will not always agree with him—or his renderings; you will decry his monomania but you will catch his enthusiasm, which is the burning fire of design. There are no cold blooded designers! His renderings are always fine but in modern interpretation we would miss the water color shadows that are always suffused with light, because this is the stronger and reflects when it cannot penetrate. His personality and his medium prompted strong contrasts,—flat contradictions, black on white, high noon and abysmal darkness, with solid obstructions to cut the light. It is notable that any modeling remains in his work when he favors so often a striking offset as plain as that of black type on white paper.

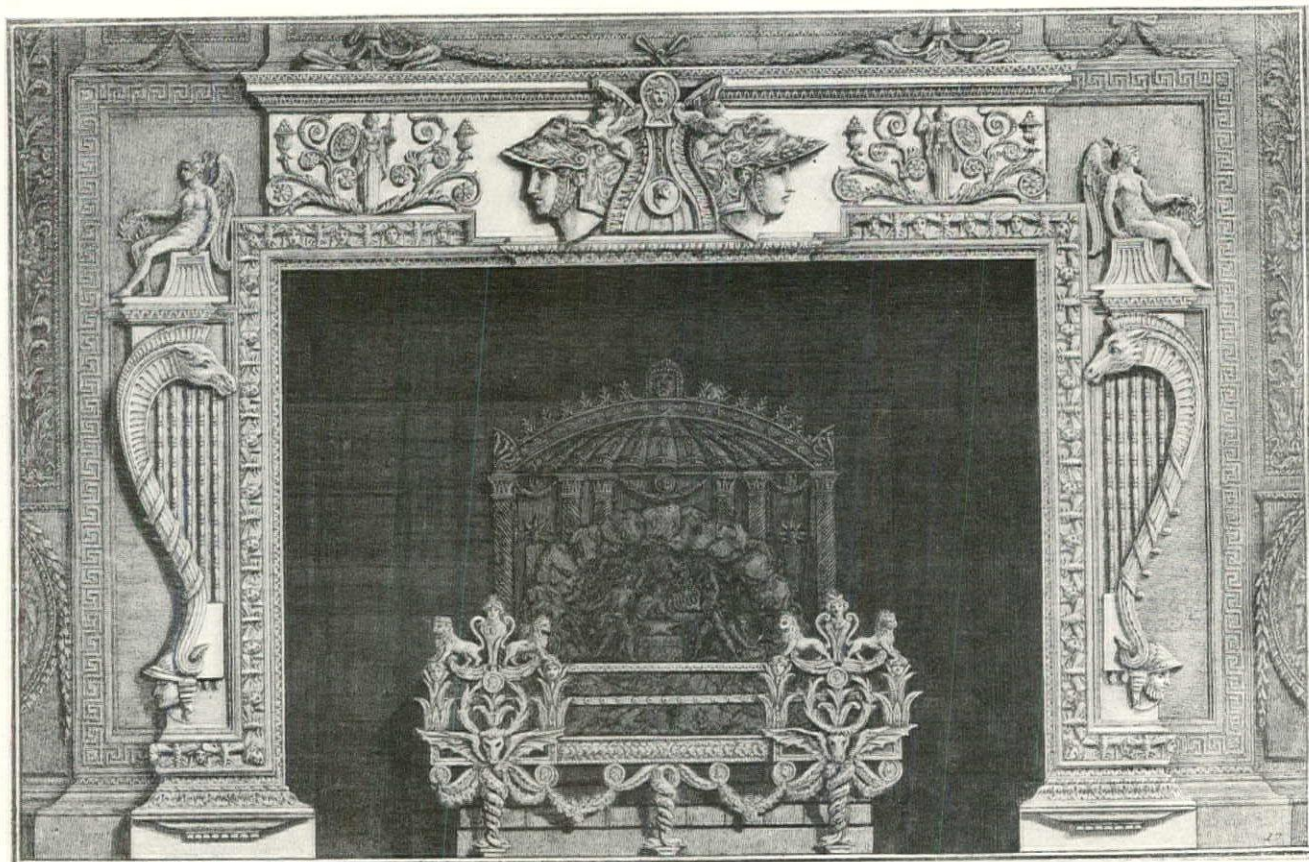
But our business is with Piranesi's text; let us read with him. First he wants to set at rest any doubt we may harbor regarding the existence of chimneys in the periods from which he draws his motives. "No one," he says, "in reading in the front of these my designs: *Divers manners of ornamenting chimneys, etc.*, will imagine that these designs which I give to the public are really taken from chimneys which were in use among the Egyptians, the Tuscans, the Greeks and the Romans; whoever should think so would be much mistaken." We are told that the author was "well apprized" of the controversy as to chimneys among the ancients and he quotes authorities. Pioneers are often naïve.

The purpose of the undertaking is then stated: "What I pretend, by the present designs, is to shew what use an able architect may make of the ancient monuments by properly adapting them to our own manners and customs. I propose shewing the use that may be made of medals, cameos, intaglios, statues, basso relievos, paintings and such like remains of antiquity, not only by the critics and learned in their studies but likewise by the artists in their works uniting in an artful and masterly manner all that is admired and esteemed in them: whoever has the least introduction into the study of antiquity must plainly see how large a field I have by this laid open for the industry of our artists to work upon; and such as have not that advantage will easily comprehend it on casting an eye over the following plates." The architect must be "able"; there is wisdom in that reservation. If he is not "able," he will not "use" the ancient monuments; he will "crib" from them. Note the inclusive lists of arts which may contribute to the architect's advancement; most of our architects barely have time (or *take* time) for an architectural periodical, let alone for a book on Greek coins or mediæval costume, or even Italian mural painting.

In succeeding paragraphs we may find a parallel



Example of a Chimney-piece with Overmantel of Pompeian Motifs by Piranesi



Fireplace of strong classic tendencies with figures and warrior heads of numismatic or cameo derivation as chief adornments. The familiar fret attributed to pre-classic days but better known as a Greek unit and the bee chosen as symbol of the Bonapartes occur on the dado and architrave

for our own day and at the same time some age-old philosophy that architects should be born with but which each learns by dint of much laborious grinding, and an appreciation of what the Japanese call the 'art of omission.' "The study of Architecture, having been carried by our ancestors to the highest pitch of perfection, seems now on the decline and returning again to barbarism. What irregularities in columns, in architraves, in pediments, in cupolas; and above all what extravagance in ornaments! One would think that ornaments are used in works of architecture not to embellish them but to render them ugly. I know indeed that in this the caprice of those, for whom the buildings are made, has often more part than the architect who makes the design. . . . A military man will have arms and instruments of war everywhere, whether they be proper or not. A sea-faring man will have ships, Tritons, dolphins and shells. An antiquarian will have nothing but ruins of ancient Temples, broken Columns, Statues of Gods, and Emperors. Let them have their will, for no curb ought to be put on such caprices of men but then let them be executed according to the rules of art. Let Tritons and fish be placed on chimneys, if it be so required, but let them not so cover the frame as entirely to hide it or take away its character. Let the architect be as extravagant as he pleases, so he destroy not the architecture, but give to every member its proper character."

Graces of architecture, yes, but they must agree with it, for the old-time requirements of decorated construction as against constructed decoration can make or break the designer, though he be architect or dramatist, painter or poet. A century later Owen Jones in his *Grammar of Ornament* makes this his Proposition One.

But there is hope if the sufferer from then current ignominious forms of design will but turn back the leaves of history to the time when the ruined buildings used as quarries all about him were the glory of the world's greatest empire. "We ought . . . to observe the kinds of ornaments used by [the ancients], the manner in which they disposed them to make them harmonise with the whole, and the modifications by which the Egyptian and Tuscan manners were adapted to another species of architecture."

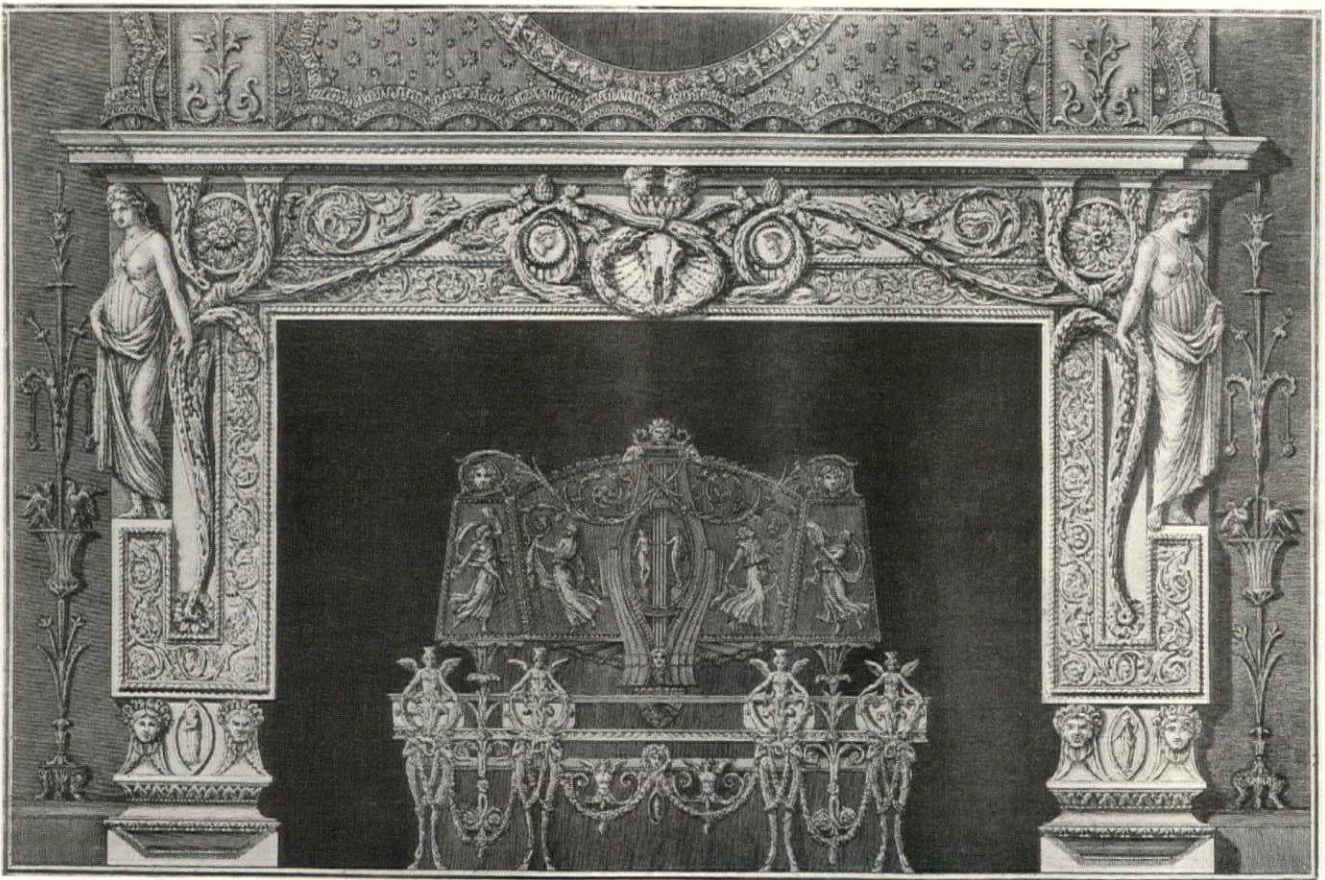
And in his own time Piranesi found fault with men whose names shine forth in our architectural histories. "Some . . . who excelled in the great parts of architecture are wanting in the small ones; others have boldly raised themselves and shewed the greatness of their genius in the daring flights they have taken in imitation of the ancients, but they have not always been able to sustain themselves, but have lost sight of the antique, to give themselves up to the bad taste of the times in which they live." Palladio and Peruzzi, guides and models for the students in our schools of archi-

ecture, divine inspirers of *projets* galore, find no mercy at Piranesi's hands. They lack coherence or unity, they break the thread between the exterior and the interior. Baldassare Peruzzi, whom Vasari, chronicler of them all, called "that most excellent master," according to Piranesi "does not keep up his credit in what he proposed to himself at first." This refers in particular to the Massimi Palace in Rome, but is accompanied by such a criticism as would seem to damn much else of his.

Another lesson, then, and one of vital importance in these days when architects want to be decorators but don't know how to go about it, and when "interior decorators" by the score are doing in an inferior way what the architects' taste should readily compass. It is obvious that the decorator must know at least as much of architecture as a qualified dentist must of medicine,—though we incline to the view that a true decorator, a Pheidias or a Michelangelo, should be a sort of super-architect, so great must be his knowledge, so painstaking his restraint. Otherwise the ornament overwhelms the structure and becomes the only guide to public taste. Says Montesquieu: "A building loaded with ornament is an enigma to the eyes, as a confused poem is to the mind"; and in another place Piranesi himself has it: "I look upon the harness in which horses are nowadays wrapped up, like children in swaddling clothes. . . . The ancients practised the reverse; they wisely thought

that the most beautiful ornament of a horse is the horse himself. All these trappings, however sumptuous and gaudy, load, but do not beautify the object." We find the solution in "a more profound study of antiquity [which] would have furnished these great men with a greater abundance of ideas, and the small architecture would have been of a piece with the great. If our present architects shall apply to this study, they will not need to be afraid of being upbraided for want of erudition, when called upon to work after the manner of the ancients." It is the time-old study of comparative significance of all features, of relative values, of leading lines and axes, of rhythm, proportion, movement, that the designer must make his mentor; so that "a multiplicity of ornaments" may not destroy "a graceful and pleasing disposition of motifs," and posterity will not say of his work as Piranesi did of the work of his contemporaries: ". . . but if the whole be considered, O Dio!"

But lest we carry away the impression that the ancient styles are flawless he hastens to make clear that they are for inspiration and influence only, not for sole sustenance, saying, "No, an artist, who would do himself honor, and acquire a name, must not content himself with copying faithfully the ancients, but studying their works he ought to shew himself of an inventive, and, I had almost said, of a creating Genius; . . . the human under-



Fireplace with Roman acanthus rinceau as the dominating feature. Fireback of the attenuated classic forms and dancing Naiads adopted in a large measure by the Brothers Adam in their decoration

standing is not so short and limited, as to be unable to add new graces, and embellishments to the works of architecture, if to an attentive and profound study of nature one would likewise join that of the ancient monuments . . . the vein is not yet exhausted, new pieces are daily dug out of the ruins . . . capable of fertilizing, and improving the ideas of an artist who thinks and reflects." Is this last expecting too much? Is it contrary to temperament?

Finally Piranesi throws the gauntlet, truly as a proud *romano*, though he was but a *romanesco*, having been born in Venice. "Rome is certainly the most fruitful magazine of this kind. . . . The Roman School, founded upon these monuments, will continue to be the Mother of good taste, and perfect design, which are the distinctive marks of her superiority over all others, and which bring such a number of hopeful youths from different nations into her bosom, there to learn the perfection of design." How little these things have changed! France there is and her teaching; Gothic has come and gone again as a revival, though it still lives and will continue among us, burning brightly in the hearts of some of our great architects. Other styles have flickered for a moment. But Rome, the fountain source, is with us as strongly as ever; that fire seems to be sacred, certainly to the profession here it is sacred, whatever tribute they may ungrudgingly pay to Greek and Gothic.

There is, then, a value in this folio of chimney-pieces, apart from its value as a collection of admirable engravings and as a splendid piece of typography. There is, besides these, the triple merit arising from first, its place in stylistic history; second, the mode of thought fostered by the author, *i.e.*, his attitude toward design in principle and toward historic originals (and, we may say, that in such things attitude is everything) as seen in his *Essay*; and third, the performance of the author in his plates, where he functions purely as a designer.

Historically the book belongs and the man belongs in the time when the realities of ancient life began to attract men who saw in the excavations and measurements of ancient monuments and other types of art possibilities for a saner outlook and respite from the vagaries, bombast, false restraint and general immorality in artistic thinking to which all the eighteenth century styles succumbed, until the same slough of despond swallowed up the empire style as well. Winckelmann was a leader among the classical students—a scholar and a pioneer but not a producing artist. His books on the criticism of antique works of art found ready response; Lessing followed him with the famous *Laokoön*. The findings at Herculaneum and Pompeii (1710 to 1750) brought ocular evidence. Everyone clamored for more facts; here was reality, splendor of true greatness—the overbearing autocracy of much of it they did not see,

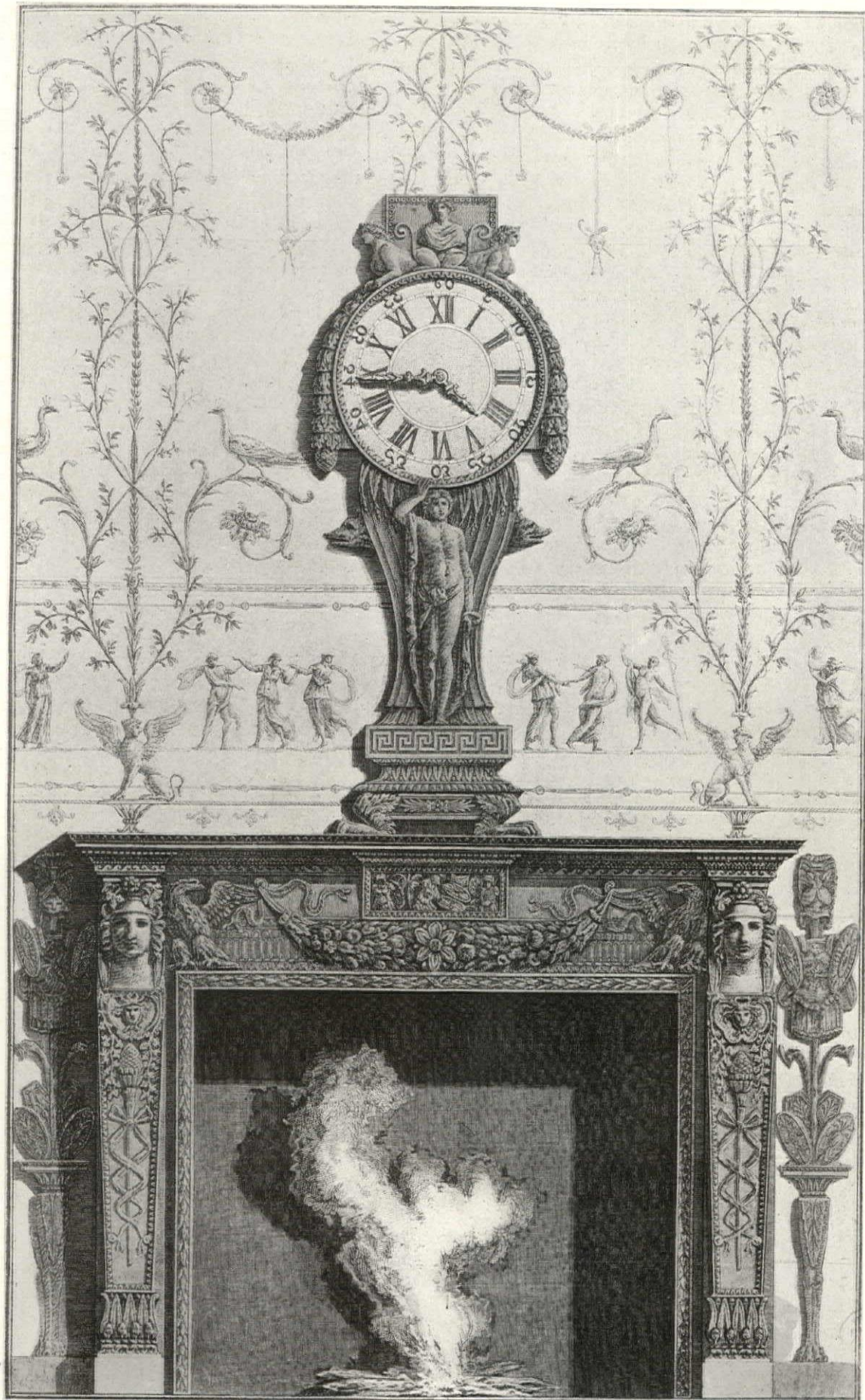
for it was natural to their environment. Piranesi was quick to feel the pulse of the time; in fact, it was his own pulse. Ancient Rome was to him the apex of human achievements and desires. He worked feverishly, throwing a spell over the ruins and confining their atmosphere in his numberless plates.

But as the Roman adherents grew in strength, a Greek camp sprang up. There also measurements were made; new-old things were found and published. In both peninsulas scholars and artists, architects and princes traveled, saw, wrote, and above all, met. All carried the germ back to their own countries and preached the new gospel. Books were written in number: Caylus on travels in Greece and Asia Minor, Wood on temples at Palmyra and Baalbec, Adam on Diocletian's Palace at Spalatro, Houel and d'Orville on temples in Sicily, Stuart and Revett on Athens. Among these Piranesi's work stands preëminent; he caught the imagination while others worked as archaeologists purely. While they were students and worked with their pencils, he was a protagonist and fought with his burin. The Greeks had to be put down, and some believe that this book on Chimney-pieces was a counter thrust to weaken the effect of David Leroy's *Les Ruines des plus beaux Monuments de la Grèce*, published in 1758.

The cult of the ancient things grew out of all proportions. Jean François Belanger, pupil of Leroy,—refiner of Piranesi he has been called,—designed furnishings for the hôtel of Mlle. Dervieux of which Brogniart had been architect in 1774. Père Lesueur's cellule at Trinité des Monts was designed by Clérisseau in faddist classic: an entablature served as table, capitals were chairs, a Roman bath tub became a bed and for secretary a sarcophagus!

Many Frenchmen were in Rome when Piranesi was at the height of his ardent apostasy, and no small number of these, and of Englishmen as well, were kindled by his enthusiasm and took away with them the mark of his influence. Augustin Pajou was there, so also Jean Antoine Houdon, Jean Jacques Caffieri and Clodion, all sculptors; and Chalgrin, architect. Important was the *grand tour* made by Abel Poisson, brother of Mme. de Pompadour, arch style maker second to none, who was later to take up, as Marquis de Marigny, the duties of *Surintendant des Beaux-Arts*. With him in the years 1749 to 1751 traveled (as tutors we surmise), Soufflot, architect of the Panthéon, and Charles Nicholas Cochin, *fils*, engraver.

What is more, Robert Adam was himself favored with three engravings by Piranesi who also dedicated to him his work on the Campus Martius. There are in this many suggestions for the proper allocation of influences seen in Adam work in England. George Dance, Jr., architect of old Newgate Prison, distinctly was debtor to Piranesi who actually assisted him, as were also Robert Mylne, designer of Blackfriars' Bridge, and Sir John Soane



Design Showing Piranesi's Attention to Accessory Details

whose bank is the hub of the British Empire.

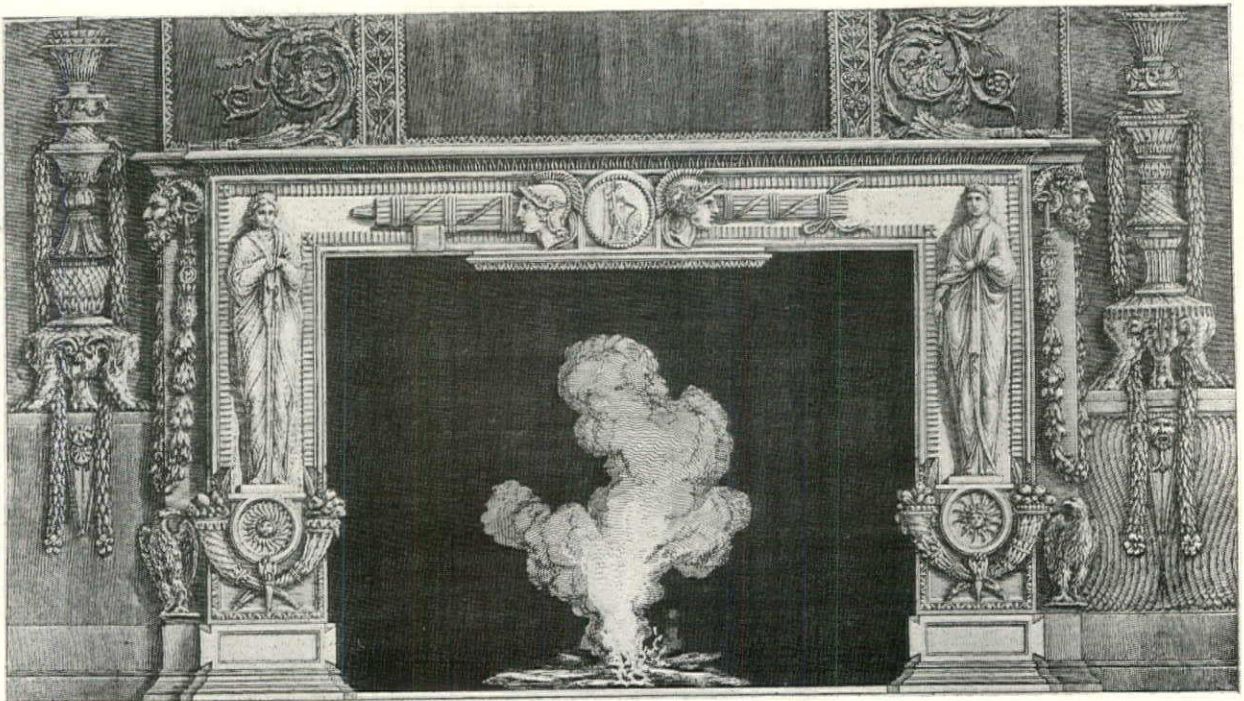
Percier and Fontaine met in Rome in 1786 and there cemented that friendship which only death severed. They spent six years in Italy. After their return to France they published *Receuil de décorations intérieures comprenant tout ce qui a rapport à l'ameublement, comme vases, trépièdes, cheminées, tables, secrétaires, fauteuils, etc.* This was in the Year XI of the new order of things which followed the first break of the Revolution in France. In 1812 the book was reissued with a *Discours préliminaire*, plainly a duplicate of Piranesi's *Apologetic Essay*. This work also was a revulsion but against prevalent abuses in France, as Piranesi's had been against those of his day in Italy. By 1788 the Empire style was definitely under way and its momentum soon carried it to extremes, formal, frigid, imperial, lifeless, uncomfortable and so doomed to an early demise.

So Piranesi's work was done; had he not sought to build so fast his structure might have had a longer life. But his record was written in every country and the greatest heads bowed to his genius—but not in his lifetime. Now he is gradually attaining the position he deserves. His broad interpretation of the architect's functions, that

scholarly angle toward his work without which the architect's vision is limited, these he possessed in admirable proportion.

It is rarely given to one man to create a style, but an occasional wonderman strikes close to that mark. Such a wizard was Piranesi, as is seen in the book which has prompted these effusions. It is an argument for sanity rather than suavity, sincerity not subtlety, vigor and virtue, not fervor and fustian. In closing his *Essay* Piranesi says: "I hope that many will consider themselves debtor to me for this labor: but I do not flatter myself that I shall escape the censures of many others who, by reason of an inclination to criticism, or a turn of mind never to be satisfied, find fault with everything. . . . But there are sometimes reasonable and discreet critics who, out of a love to truth, and for the public good, make use of that equitable freedom, which every man has, of examining whatever is exposed to public view, of exposing its defects and making out its imperfections. To despise the opinions of such, would be a self-sufficiency and presumption not to be suffered." Need more be said?

Old books need not be good books, but a good old book is a blessing.



An elaborate ensemble of familiar Roman fragments with an alternative arabesque arrangement at either side typical of Piranesi's facile delineation

DEPARTMENT OF ENGINEERING & CONSTRUCTION

CHARLES A. WHITTEMORE, *Associate Editor*

The Automobile and the Private Estate

PART V (CONCLUDING PAPER). SERVICE COURTS, PARKING SPACES AND GARAGE LOCATIONS

By TYLER STEWART ROGERS

IN the design of service courts utilitarian considerations take precedence over appearance. Economy of space is generally of first importance with economy of cost a close second. Aesthetic satisfaction is often placed last, and such decoration as may be undertaken is frequently only in the nature of carrying out the motif of the whole in the details of the unit.

Economy of cost calls for minimum area of road surface, minimum length of enclosure, and the least possible waste of space. Economy of space is insisted upon, aside from its tendency to reduce cost, in order to utilize as much as possible of the property for more interesting purposes.

Service courts may be grouped into three general classes: (a) those adjacent to the service part of the residence and used mainly for the delivery of supplies, which might be called kitchen courts; (b) those adjacent to the garage used principally for turning cars about on entering or leaving the garage, which might be called garage courts; and (c) those so located as to combine the functions of both kitchen and garage courts, for which no better name suggests itself than general service courts.

Within each of these classes there are three types of service courts, as defined by the method of performing the turn. The first type is the simple loop around which vehicles pass in a continual, progressive movement. The second type includes all courts of such size or shape that vehicles cannot move about the court in a progressive direction, but must back one or more times. For want of a more euphonious name which is equally descriptive these will be called "backing" courts, and the type subdivided according to the number of times a vehicle must go backwards in order to negotiate the turn. The third type is again a combination of the two preceding types.

The loop is the most satisfactory and simple form of turnaround of the three. Its sole disadvantage is that it requires more space than a "backing" court. Except for this matter of space it would be the only type necessary. If the center of the loop is left open, either as pavement or as unobstructed turf, it serves both as a loop for ordinary cars or for trucks within the size for which it was designed, and also as a backing court for trucks of unusually large size.

The shape of a loop has been discussed in Part IV

in connection with the designing of forecourts. The simple loop (that is, one without provision for stopping places) is sufficient for ordinary service purposes, for there is seldom any necessity for bringing the vehicle close to a step or curb. If the occasion arises for stopping parallel to and close against a curb or step, it may be done by backing, without frequently inconveniencing anyone.

Size is determined largely by the use of the service court, whether it is intended for a limited class of automobiles or trucks, or for general use by large and small vehicles, and whether for occasional cars or for heavy, continuous and fairly rapid traffic. A service court for a factory, a public garage or a farm would probably be much larger than one for a private estate. The owner's passenger automobiles and merchants' delivery trucks comprise the great majority of vehicles using a private service court and it is the characteristics of these vehicles which govern its size. Merchants' delivery trucks are generally of light weight, of fairly short wheelbase, and of good turning ability. Pleasure vehicles using the service court are apt to be of all sizes, and provision should be made for the largest kinds in order to accommodate guests' cars if not the owner's. The general dimensions of delivery trucks and passenger vehicles are quite similar, as may be seen by this table:

	Light Delivery Trucks		Passenger Automobiles	
	Minimum	Maximum	Minimum	Maximum
Turning radii	18' 0"	25' 0"	15' 0"	29' 6"
Wheelbase	8' 1"	11' 1½"	8' 3"	12' 3½"
Length	12' 9"	17' 1"	11' 2½"	18' 4"
Width	5' 4"	5' 8"	5' 4"	6' 0"

Service loops, therefore, should be designed to handle vehicles having turning radii of from 25 ft. 6 ins. to 30 ft. Very heavy trucks have much greater turning radii, some being reported in excess of 50 ft., but these trucks are so seldom encountered that their occasional use of the court need not be considered, provided open space is allowed for them to back around. Backing turns involve a totally new problem, due to the mechanical construction of automobiles. As previously explained, the center of a circle described by an automobile is on the line of the rear axle extended. Consider what effect this has on the backing of a car.

When a car is being backed around within a restricted area the driver turns his wheels before putting the car in motion. The front wheels being set at a fixed angle the car then describes the arc of a circle. When a car which is moving forward is swung into a turn, however, it describes a curve similar to a parabola-until the maximum angle of the front wheels is reached. Bearing these factors in mind the development of the accompanying diagrams is easily understood.

Fig. 1 shows the path of a car which turns by backing once, the backward motion being taken after the car has been brought to a stop without change from its original direction of travel. The arrows are marked F for forward and B for back-

consecutive numbers indicate the various forward positions which the car may reasonably be expected to occupy.

The third type of backing turn is a combination of the other two, and is generally encountered when a loop is used directly in front of a garage. This type is shown in Fig. 4.

Solutions to all turning problems may be found by varying these types of turns or by combining them to meet the specific conditions in mind. A few examples may be helpful.

The suburban garage in a restricted area sometimes is on a shallow lot which requires the least possible length of drive and backing space. In this case Fig. 2 gives the proper shape of turn, the

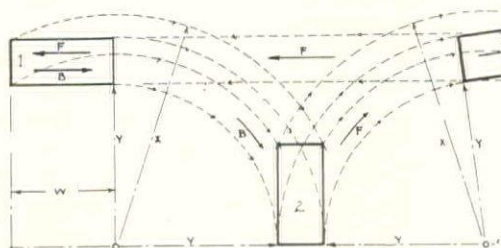


Fig. 1

ward motion. The letters X and Y indicate respectively the minimum radii of the outside front wheel and of the inside rear wheel, and W indicates the wheelbase. It will be noted that the width of the space required to turn the car is theoretically the length of X.

Compare this turn with Fig. 2 which shows the path of an automobile which swings off the direction of original travel for its first movement and then backs around. In this case the width of the space required for turning is much greater, being equivalent to X plus W plus slight correction due to the parabolic shape of the entering curve.

These two diagrams show the nature of the backward movement of a car. It has often been said that a car can back in a smaller circle than it can negotiate in a forward direction. The fallacy of this is obvious, yet the two diagrams show the probable origin of the notion. The truth is that a car can be turned with less backing in a narrow road if it makes its first movement across the road backward (as in Fig. 1), than it can if it swings across the road forward and then backs around (as in Fig. 2).

The shape of backing turns is governed by (a) the direction from which the backing is commenced, and (b) by the number of backing movements made. A car may back once, twice, three times or often more; and the space needed for each turn is less for the greater number of backings. Fig. 3 shows the shape and size of the space covered by an automobile turning by backing thrice. The actual path of the car is shown by the dotted lines, and the

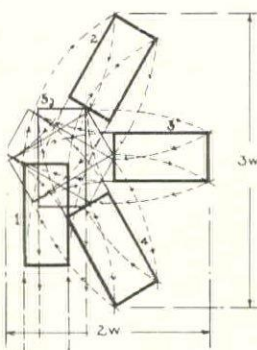


Fig. 3

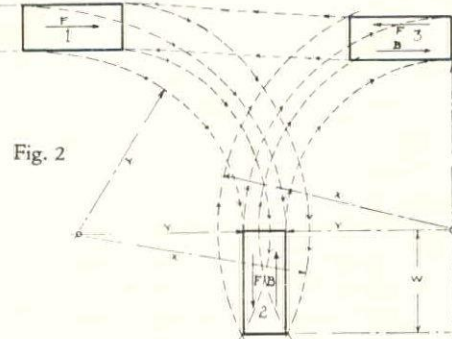


Fig. 2

owner being obliged to turn and back into his garage. On the other hand a narrow deep lot may require the use of the type shown in Fig. 1, in which case the car is always run directly into the garage and turned when it is backed out. By such economies and restrictions turns can be provided in surprisingly small and otherwise un-

used areas that occur in the layout of a plot.

When the approach to the garage is parallel to the front of the garage several variations of the problem may be possible. If the driveway is far enough away from the entrance to the garage, a turn similar to Fig. 5 may be used. Slight economies in length or width may be effected by distinguishing between the manner of making the turn, as shown in Figs. 1 and 2. When the drive is close to the garage entrance the car must always be backed once on both entering and leaving as shown in Fig. 6. The road may also approach the garage from the rear, parallel to one side of the building, when a shape similar to that shown in Fig. 7 is suggested.

When a large garage accommodating a number of cars is considered, the problem is not altered in principle. It is necessary to plot the path of each car in order to determine the shape of the drive. Occasionally the varying sizes of the cars occupying the garage may be used to advantage. An electric runabout or a small car may be placed in the stall requiring the sharpest turning, while the larger cars are given stalls where their greater turning

radii are allowed more room.

Kitchen courts are best served by loops or by simple backing turns. Garage courts are either backing turns or combination turns. General service courts are best served by a combination turn or otherwise by a backing turn. Care in designing garage turns is advised in order that space be allowed to clear the garage doors before a sharp turn is made, unless it is possible to establish the width of the doors so that cramped quarters will not mar the success of the design. Projecting doors require additional width of turning space.

Parking space for guests' cars or for the owner's cars when out of the garage is a very valuable and convenient detail which is too seldom considered. The usual approach to an estate quickly becomes congested if one or more cars are left standing in the roadway, making passage for other vehicles difficult. Some space should always be provided for the use of standing automobiles, if it is nothing more than a piece of lawn adjacent to the driveway. Such use of good turf is extravagant in maintenance costs and could well be avoided by the inclusion of an appropriate area for this special purpose in the original design of the driveway system.

One reason for the necessity of such parking space is the owner's desire to keep a car near his front door for personal use at any time. This may be provided by liberally widening the driveway immediately in front of the door or by providing an extra width of pavement elsewhere within the forecourt. The demand for this convenience is so nearly universal that it may almost be stated as a requirement in forecourt design. A width of 15 ft. in the pavement opposite the doorway is generally the minimum and care should be exercised to see

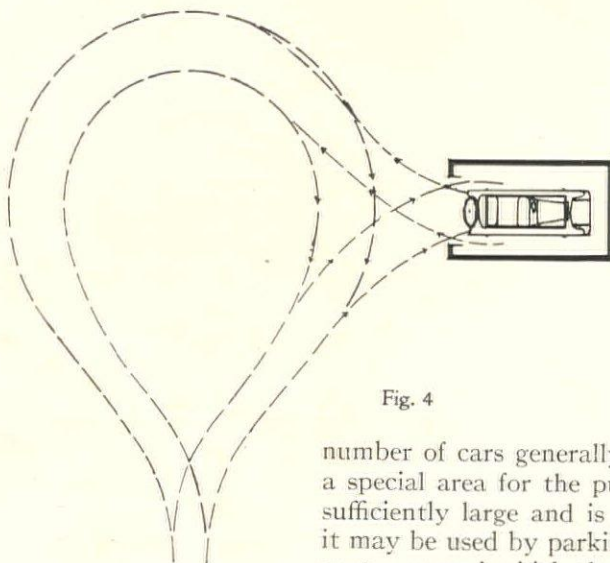


Fig. 4

that it is possible to drive into this parking space without backing and also that the space is long enough to accommodate the car without blocking the rest of the roadway. This space will also provide for the occasional caller whose car could only be driven elsewhere at some inconvenience.

Parking space for a number of cars generally requires the provision of a special area for the purpose. If the forecourt is sufficiently large and is paved over its entire area it may be used by parking the cars in a row in the center around which the moving vehicles circulate as if the center were not paved. At a Massachusetts country club this principle has been elaborated by the designers. The entrance loop has been greatly enlarged and the center part planted with a high shrubbery border shaped like a horseshoe. The open end of the horseshoe is away from the clubhouse, towards the line of approach. Cars follow the drive to the door and, after depositing their passengers, continue half way around the turn to the opening in the hedge. Within the enclosure there is space sufficient for parking a large number of cars within very easy access of the clubhouse, but entirely screened from view. A footpath from the entrance of the house through the shrubbery makes it easy for a driver to rejoin his party or to get his car without a long walk.

Occasionally the service court is available for emergency use when numerous guests are to be accommodated. When near the residence this area is often entirely satisfactory for such use, and it may even be enlarged for the purpose.

If conditions do not warrant the use of either the forecourt or the service court for parking a special area must be provided, the size depending on the probable number of cars to be accommo-

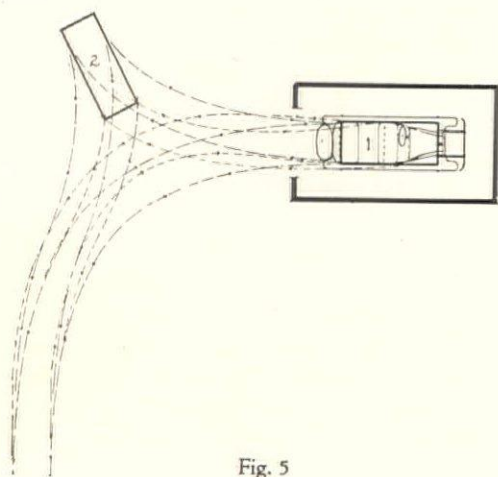


Fig. 5

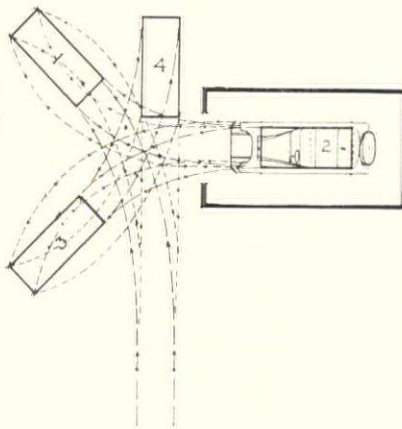


Fig. 6

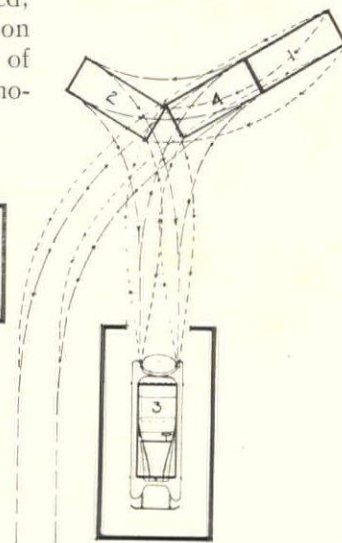


Fig. 7

dated. Large estates where frequent entertainments on a large scale are given need an area sufficient for 15 or more cars. Such space is conveniently constructed by widening a section of the roadway an extra 15 or 20 ft. for a short distance. Cars can be parked in this space diagonally to the edge of the road in the manner customary in many wide city streets. Often it is better to make a separate court for the parking of cars, entered by a branch from the main road. This scheme has certain æsthetic advantages over the abrupt widening of the roadway, as well as making it possible to keep the chauffeurs together in a place well screened from the eyes of the guests. Unless this parking space may be close to the owner's garage, in which the chauffeurs could be sheltered in severe weather, a small heated building provided with toilets would be very desirable to complete the scheme.

No problem more often confronts the designer than that of properly locating the garage. Of recent years the garage has been admitted to the sanctum sanctorum, becoming an integral part of the house itself. No other location is so convenient to the owner who drives his own car, and frequently no other arrangement is so economical in cost and in the ease with which the garage is heated during winter weather. It is generally located in the basement of the residence or beneath a porch or terrace, when sloping ground offers the opportunity. Otherwise it crops out as a modern modification of the familiar carriage sheds which are often found joined to the fine old farmhouses of the country.

Garages beneath the house have certain disadvantages to be balanced with their qualities of convenience and economy. In the first place the location introduces a fire hazard which must be reduced to a minimum by safe construction. Then, too, it brings close to the living quarters the undesirable odors of raw and burning gasoline and oil, and the noise of starting motors, air compressors and mechanics' hammers. Perhaps the chief objection to placing a garage in this position is that this location makes necessary the use of land very close to the residence for the garage court, which results in occupying areas frequently more desirable for other uses. The low grade sometimes introduces drainage problems of material consequence.

When the garage is constructed as a wing or addition to the house it is less difficult to manage it properly and most of the objections just noted are lessened. For the owner-driver there is often no better solution to the garage problem on a small estate.

Detached garages are sometimes inconvenient

for the owner-driver, and are more expensive to build and heat than either of the types which have been described. On the other hand, fire risks are reduced to a minimum and the annoyance of motor noises and odors is largely eliminated. The garage court is generally improved because more space may be given to it.

Difficulties of heating the detached garage are not so great now as formerly for numerous types of small heating units are now available. Heat may be economically conveyed from the plant in the residence for a considerable distance to the garage, or the arrangement may be reversed and the nuisance of a heating plant within the residence itself eliminated by combining the garage with a central heating plant. This is advantageous when greenhouses, servants' quarters, stables and other service buildings are grouped with the garage at a point some distance away.

Most private garages now are provided with underground gasoline storage tanks. The tank should be located outside the walls of the building, near the driveway so that supply trucks may reach the filling pipe without backing across a planted area. Gasoline will kill plants and even mature trees succumb in a few years to continued exposure to gasoline, due to leaking tanks or to drains from garages. This destructive effect of gasoline is seldom appreciated, yet it is so important as to warrant special precautions if fine trees are jeopardized by the location of a garage or filling station near them. Drains from the garage should be carried away from the trees as far as possible and tanks should be well underdrained to avoid saturation of the ground near the surface.

Turntables have not been mentioned in this discussion as means for handling cars in restricted areas but a word about them may not be amiss. They are seldom satisfactory for outdoor use for ice, snow and even dirt will put them out of commission. Their real usefulness is restricted to indoor areas, and generally to large public garages at that. Even here they are being supplanted by small caster-wheeled portable trucks.

This discussion of automobiles in their relation to private estates has been prepared more with the desire of calling attention to the problems introduced by this new and very popular vehicle than of solving these problems by infallible rules of design. It is our hope that more attention will be given to this subject by professional men so that eventually all designers will be equipped with principles and rules to guide them in the solution of problems presented by the constantly increasing use of the automobile.

excess of 12 feet and less than 23 feet in width should contain at least two lines of sprinklers; bays 23 feet in width or over should have the lines therein not over 10 feet apart. In bays in excess of 12 feet in width not more than 100 square feet of ceiling area should be covered by any one sprinkler.

In no case should a sprinkler spacing exceed 10 feet on center at right angles to direction of joist.

FOR PITCHED ROOFS—Under pitched roofs sloping more than 1 foot in 3, sprinklers should be located in peak of roof, on either side of peak and spaced according to requirements just given. Distances between sprinklers should be measured on a line parallel with rafters. Where the roof meets the floor line, sprinklers should be placed not over 3½ feet from the intersection. Sprinklers not more than 2½ feet distant each way from the peak of roof, measured on a line with the roof, may be used in lieu of sprinklers located in peak of roof.

FOR FIRE-RESISTING CONSTRUCTION—The rules for slow-burning construction should apply as far as practicable, however, the purpose being to arrange the spacing of sprinklers to protect the contents of a building, but in no case should a sprinkler on a line be more than 12 feet from the nearest adjoining head.

FOR UNUSUAL CONSTRUCTION—Special instructions should be obtained from the inspection department having jurisdiction relative to the location of sprinklers under floors and roofs of semi-mill, panel or other unusual forms of construction which may interfere with distribution of water. These types of construction are so varied that no absolute rules can be given to cover all cases.

"Semi-mill" is the term here applied to plank and timber construction with narrow bays generally less than 5 feet in width.

"Panel" construction is where the ceiling is divided by the timbers into panels or pockets. Narrow bay panels come under the head of "semi-mill" construction.

Sprinkler lines usually run at right angles to the timbers, with heads staggered under alternate timbers, in alternate bays, or alternately under the timbers and in the bays, the arrangement depending on the width of the bay, the size of the timbers and the distance between supporting girders, as well as upon the occupancy and water pressure.

Ordinarily, where the timbers are not larger than 6 x 10, the

best distribution is obtained by placing the heads under the timbers.

The distance between lines will depend somewhat upon the distance between the girders supporting the timbers, the number of lines in these transverse bays being governed largely by the distance between the heads on the lines. Figs. 3 and 4 show spacing of automatic sprinklers under two types of semi-mill constructed buildings.

PIPE SIZE SCHEDULE—In no case should the number of sprinklers on a given size pipe on one floor of one fire section be more than

¾ inch pipe	1 sprinkler
1 " "	2 sprinklers
1 ¼ " "	3 " "
1 ½ " "	5 " "
2 " "	10 " "
2 ½ " "	20 " "
3 " "	36 " "
3 ½ " "	55 " "
4 " "	80 " "
5 " "	140 " "
6 " "	200 " "

Where cross mains supply branch lines of only two sprinklers each, the conditions approach those of long single lines. Such feeds should usually be centrally supplied where there are over eight or ten branch lines. Lines up to fourteen in number may be fed from end, provided that 2½-inch pipe does not supply more than sixteen sprinklers.

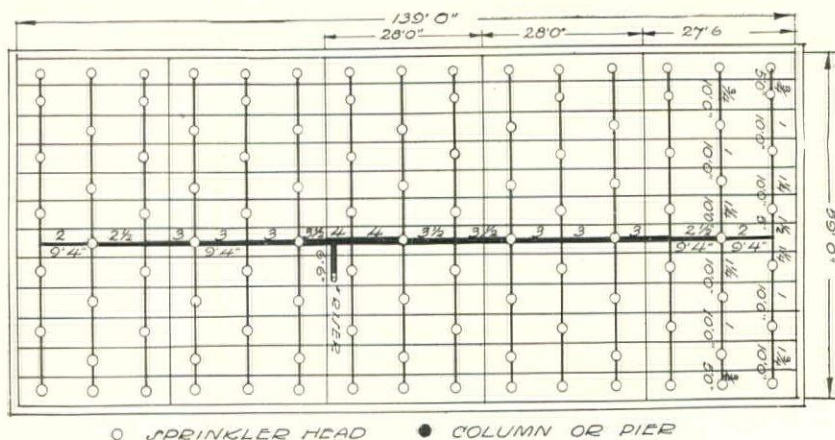


Fig. 3. Sprinklers under Semi-Mill Construction in Alternate Bays

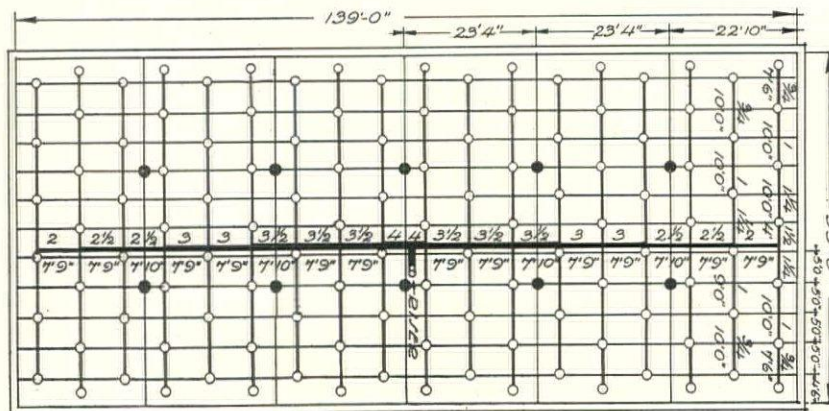
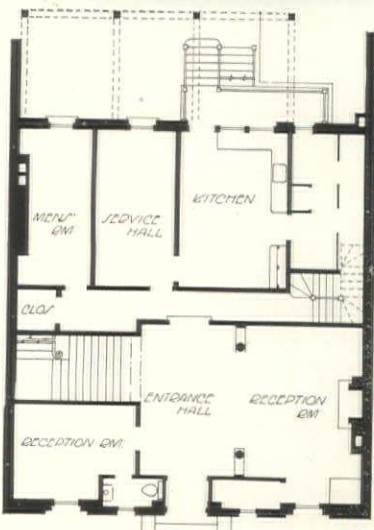


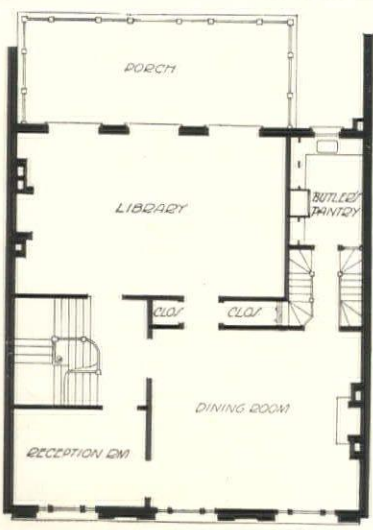
Fig. 4. Sprinklers Located in Semi-Mill Construction under Alternate Timbers. Riser Indicates Vertical Supply to Mains

House of Mrs. Theodosia Pleadwell, Washington, D. C.

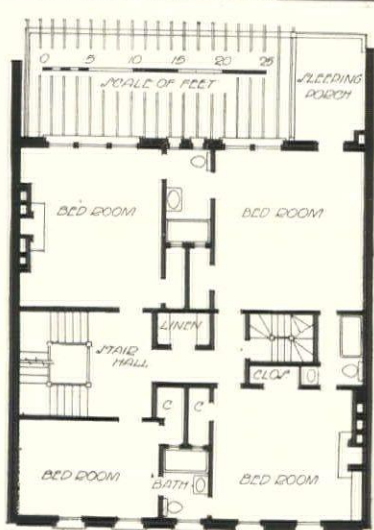
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EDITORIAL COMMENT

ARCHITECTS AND ENGINEERS

THE relation of the architectural and engineering professions whose work lies along similar lines and often overlaps is a subject of interest that comes up in various sections of the country quite frequently. With the increasing amount of legislation affecting the registration of architects and also of engineers, there are occasional efforts made to obtain an agreement on conditions and request joint registration acts. On the whole there is no special advantage to either profession in joint registration, but getting together to discuss its possibilities has a definite advantage in that it enables the professions to acquire more intelligent and comprehensive ideas of their respective obligations to the public.

If the two professions stand apart and carry through programs with entire independence of each other it is but natural that misconceptions should arise. Last spring there was a good deal of criticism by engineers of the appointment of a firm of architects to design a Pittsburgh bridge, and two engineering societies, the American Institute of Consulting Engineers and American Society of Civil Engineers, passed resolutions condemning the employment of architects except in an advisory capacity on bridge design. At a joint meeting of the A. I. A. Committee on Engineering Co-operation and a Committee of Engineering Council, there was full opportunity to present the necessity of architectural design in such important civic structures as bridges, and the result was a report which recognized the fundamental importance of both engineering and architecture in bridge design and stated that it was an administrative detail of relative unimportance to determine which profession was given chief supervision.

Perhaps the most significant recent happening is the proposed State Federation of Engineers and Architects in Minnesota. On June 19 representative architects and engineers from the state met at Duluth and took the first steps toward forming a State Federation. They jointly realize that only by a combination of forces will either architects or engineers have sufficient power and weight of numbers behind them to force attention to matters of public concern having to do with engineering and architecture or with the regulation of affairs affecting the joint interest of these related professions.

It is not the purpose of the Federation to supplant any existing organization, and this is borne out by the name of the proposed association. No one will be eligible to membership except through membership in his local organization. Thus in addition to promising a large body of intelligent and scientifically trained citizens who will exercise a beneficial effect on public opinion, it provides an added stimulus to the Minnesota Chapter of the Institute in increasing its membership as it does likewise to engineering societies. The separate

organizations will retain all of their present independent character and are free to carry on such work locally as they may determine.

A committee comprised of the present Joint Engineering Board and one member from each of the societies represented at the meeting was delegated to draw up a constitution for the new organization. The method of determining how the board of directors shall be elected by the constituent societies has been wisely left to the consideration of the committee.

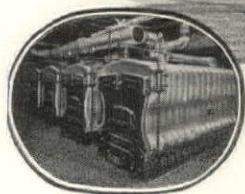
One of the immediate reasons for advocating the formation of this Federation is the movement for state licenses for architects and engineers in Minnesota. A meeting of the Joint Engineering Board was held just previous to the organization meeting of the Federation to discuss and adopt the form for a proposed license law that would include both architects and engineers. After a long discussion, the program was laid aside and it was agreed to have a committee appointed, consisting of three engineers and three architects, to draw up a bill, or bills, covering the licensing of architects and engineers, the choice of which was left entirely to the committee. The broad principles of the Federation are indicated by the fact that it recognizes the recommendation of the committee, equally divided as it is between the professions, will prove the most satisfactory solution, and it is ready to utilize its full power in backing up the request for licensing legislation whether in the form of one or two bills, when it is presented to the legislature this fall.

This character of co-operation is constructive and will result in good for both professions. It enables engineers to realize that architects are not putting forth a model for registration law that would prevent engineers from designing buildings. It brings to engineers some knowledge of the affinity of architecture to history and the cultural development of a people. Architects will learn, on the other hand, of the highly valuable inventive qualities of the engineer, the precision and utmost respect for accuracy which renders his service of such wide use to mankind. When these professions meet on a common ground of providing unselfish service to their fellow citizens, there will result only the greatest mutual respect.

The fundamental requirements for architectural and engineering training differ to a considerable degree; the ways in which they approach their respective problems are different and it is difficult to adopt one set of regulations that would fairly determine the qualifications for practice of the respective professions. Separate registration laws will undoubtedly work to the best advantage of both, yet the two professions must combine their efforts frequently. This requires intelligent co-operation and every opportunity should be utilized to bring this about through the common ground of public service to which both should heartily subscribe.



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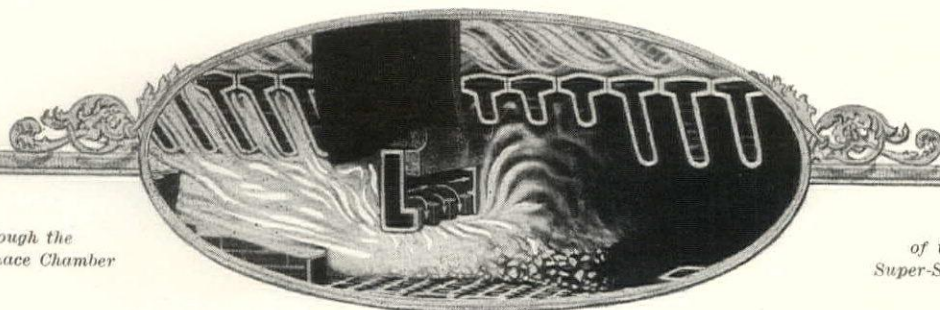
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Manufacturers' Catalogs and Business Announcements

CATALOG REVIEWS

NORTH CAROLINA PINE ASSOCIATION, Norfolk, Va.,
"Planning the New Home" (8½ x 11 ins.). 24 pp.

As an æsthetic plea for the building of homes this booklet makes its appeal through the nature of its statements and the care and taste in selecting illustrations for the text. Such controvertible points as fitness of the material for certain places have their answers here; in fact, the general adaptability and ease in working is set forth. Many admirable small and medium-sized houses with plans are shown in a section under "Practical Home Suggestions."

"Beautiful Woodwork" (8½ x 11 ins.). 16 pp.

An equally attractive booklet illustrated with charming color plates on every page is this second booklet devoted to interiors. Ideal arrangements of typical rooms to show the several finishes suitable on North Carolina Pine are depicted. A plate giving examples of the grain treated with stains is printed in natural tints to emphasize the decorative value of the wood alone. A few terse hints as to composition of furnishings for the homemaker accompany each plate.

THE STANLEY WORKS, New Britain, Conn.,
"Wrought Hardware" (6½ x 10 ins.). 260 pp.

This large catalog, thoroughly illustrated, contains all that could be desired in swinging fixtures. Besides the devices used for doors, storm windows and various shutters or lids, there are bolts and catches, hooks and handles, brackets, braces, knees, angles, etc. The well-known Stanley butts take a prominent place in the book and all brass parts are represented by a yellow tint under the cut. The binding is of limp leather and the paper is a heavy-weight stock which taken all together makes a very fine piece of catalog making.

ANNOUNCEMENTS

Mr. Wilfrid Edwards Anthony announces that he has opened an office for the practice of architecture at 2 West 47th St., New York City.

Stork & Knappe, architects specializing in school work, announce the removal of their offices from Palisade, N. J., to King St., Ardsley, N. Y.

The architectural business conducted by Mr. M. Hawley McLanahan and Mr. Ralph B. Bencker of Philadelphia under the firm name of Price & McLanahan will hereafter be carried on under the name of McLanahan & Bencker.

Mr. Leon Schwartz announces the opening of an office for the practice of architecture at 27 East 40th St., New York City. Manufacturers' samples and catalogs requested.

A. L. Thayer of New Castle, Pa., and R. M. Johnson, formerly with Walker & Weeks, Cleveland, announce their association for the practice of architecture under the name of Thayer & Johnson, with offices at 5716 Euclid Ave., Cleveland, and New Castle, Pa.

Mr. Lewis E. Welsh, formerly associated with Aymar Embury II, has opened an office at 132 Madison Ave., New York City.

Mr. Walter K. Durham announces that the firm of Durham-Banville Co., architects and engineers, has been dissolved. Mr. Durham is now associated with the United Engineering Company of the same address, 323-325 Walnut St., Philadelphia, Pa.

Mr. Guy A. Carpenter, architect, announces the opening of an office in the Leggett Bldg., Fairfield, Iowa.

Mr. H. G. Markel has opened an office for the practice of architecture at 636 Common St., New Orleans, La.

Messrs. H. Errol Coffin, Kenneth Ford Coffin and Thomas J. O'Brien, practising architecture under the firm name of Coffin & Coffin, announce the removal of their office to 522 Fifth Ave., New York City.

Mr. Rollin C. Chapin wishes to announce the opening of an office for the practice of architecture at 85 Eighth Street South, Minneapolis, Minn. Manufacturers' samples and catalogs requested.

Mr. Thomas M. James announces the incorporation of the Thomas M. James Company for architectural practice, specializing in banking, commercial and industrial buildings, with offices at 3 Park St., Boston, Mass., American Trust Bldg., Cleveland, Ohio, and the Fuller Bldg., Springfield, Mass.

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Selected List of Manufacturers' Literature

FOR THE SERVICE OF ARCHITECTS, ENGINEERS, DECORATORS AND CONTRACTORS

The publications listed in these columns are the most important of those issued by leading manufacturers identified with the building industry. They may be had without charge, unless otherwise noted, by applying on your business stationery to *The Architectural Forum*, 142 Berkeley St., Boston, Mass., or the manufacturer direct, in which case kindly mention this publication.

Listings in this Department are available to any manufacturer at the rate of \$5 per listing per month.

BOILERS—See Heating Equipment

BRICK

American Enameled Brick and Tile Co., 52 Vanderbilt Avenue, New York.
Enameled Brick. Circular. Illustrated.
Fire Brick. Circular. Illustrated.

American Face Brick Association, Dept. BJ-6, 1151 Westminster Building, Chicago, Ill.
The Story of Brick. Booklet. 7 x 9½ in. 55 pp. Illustrated. Presents the merits of face brick from structural and artistic standpoints. Tables of comparative costs.
The Home of Beauty. Booklet. 8 x 10 in. 72 pp. Color plates. Presents fifty designs for small face brick houses submitted in national competition by architects. Text by Aymar Embury II, Architect.

Bradford Brick Co., 2 Main Street, Bradford, Pa.
"Red" Catalog. 7½ x 5 in. 30 pp. Illustrated. Covers dry pressed and impervious smooth-faced brick.

Common Brick Manufacturers Association of America, 1312 Schofield Bldg., Cleveland, Ohio.
Brick for the Average Man's Home. Book. 8½ x 11 in. 72 pp. Color plates. Book of plans for bungalows, houses and apartments for which working drawings are available. Price \$1.00.
Brick—How to Build and Estimate. Book. 8½ x 11 in. 48 pp. Illustrated. A manual for the brick builder on estimating and details of brick construction. Price 25c.

CEMENT

American Materials Company, 101 Park Avenue, New York; Weed Street and Sheffield Avenue, Chicago, Ill.
Elastica, the Stucco of Permanent Beauty. Catalog. 8½ x 11 in. 32 pp. Illustrated. Treatise on composition and application of Elastica Stucco.

Atlas Portland Cement Company, The, 30 Broad Street, New York.
Color Tones in Stucco. Booklet. 8½ x 11 in. 24 pp. Color plates. Describing the possibilities of toning stucco by the use of color aggregates. Examples and specifications.
Non-Staining Mortar for Pointing, Setting and Backing. Booklet. 8½ x 11 in. 28 pp. Illustrated. A treatise on good mortar. Specifications.
Cast Stone. Booklet. 8½ x 11 in. 28 pp. Illustrated. Showing some of the possibilities of cast stone.
Appropriate War Memorials. Booklet. 8½ x 11 in. 12 pp. Illustrated. Examples of what has been done in concrete and cast stone.

Muller, Franklyn R. Co., Waukegan, Ill.
Everlastic Magnesite Stucco. Booklet. 8½ x 11 in.

Sandusky Cement Co., Dept. F, Cleveland, Ohio.
Medusa White Portland Cement, Stainless. Booklet. 8½ x 11 in. 48 pp. Illustrated.
Medusa Waterproof White Portland Cement. Booklet. 6 x 9 in. 32 pp. Illustrated.
Medusa Review. 6 x 9 in. 18 pp. Illustrated. House organ issued bi-monthly.

United States Materials Co., Weed Street and Sheffield Avenue, Chicago, Ill. See American Materials Co.

CONDUIT

National Metal Molding Co., 1113 Fulton Building, Pittsburgh, Pa.
Bulletin of all National Metal Molding Products. In correspondence folder. 9½ x 11½ in.
Sherarduct. Circular. 5 x 8 in. Illustrated.
Flexsteel. Circular. 5 x 8 in. Illustrated.

CONSTRUCTION, FIREPROOF

General Fireproofing Co., The, Youngstown, Ohio.
Fireproofing Handbook. Catalog. 6 x 9 in. 112 pp. A book dealing with the problems of fireproof construction, using as a basis the reinforcing materials—Self-Sentering, Trusset and Expanded Metal.
General Fireproofing. 8½ x 11 in. 16 pp. House organ issued monthly.

National Fire Proofing Co., 250 Federal St., Pittsburgh, Pa.
Standard Fire Proofing Bulletin 171. 8½ x 11 in. 32 pp. Illustrated. A treatise on fire proof floor construction.

Northwestern Expanded Metal Co., 934 Old Colony Building, Chicago, Ill.
Fireproof Construction. Catalog. 6 x 9 in. 72 pp. Illustrated. Handbook of practical suggestions for architects and contractors. Describing Nemo Expanded Metal Lath.

Republic Fireproofing Co., 26 Cortlandt Street, New York.
Republic Fireproofing Construction for Buildings. Booklet. 8½ x 11 in. 28 pp. Illustrated. A complete description on the two-way construction, its lightness, distribution of loads, saving of loads, saving in structural steel or concrete and its general adaptability to Fireproof Construction.

DOORS, WINDOWS AND TRIM, METAL

Merchant & Evans Co., 2019 Washington Avenue, Philadelphia, Pa.
Evans "Almetl" Fire Doors and Shutters. Catalog. 8½ x 10½ in. 24 pp. Describes the entire line including "Star" Ventilators.

DOORS, WINDOWS AND TRIM, WOOD

Curtis Service Bureau, 6030-7030 S. Second Street, Clinton, Iowa.
Architectural Exterior and Interior Woodwork, Standardized. Catalog. 9 x 11½ in. 238 pp. Illustrated. Covers a complete line of architectural woodwork, standardized both as to designs and sizes. Builders are requested to apply through their dealer.

Morgan Sash and Door Co., Chicago, Ill.
The Door Beautiful. Catalog. 8½ x 11 in. 50 pp. Color plates. Showing doors in appropriate interior settings.
Masterpieces of Doorcraft. Catalog. 6½ x 8 in. 23 pp. Color plates. Doors and types of architecture for which they are appropriate.
Adding Distinction to the Home. Catalog. 5 x 7½ in. 32 pp. Illustrated. Showing a number of entrances, various uses of French doors, mirror doors, flush doors, etc.

Reliance Fireproof Door Co., 47 Milton Street, Brooklyn, N. Y.
Reliance Fireproof Doors. Catalog. 6½ x 9½ in. 44 pp. Illustrated. Contains details of door and window construction, including molding and trim dies.

Stearns Lumber Co., A. T., Neponset, Mass.
Catalog "K." 9 x 12 in. 80 pp. Illustrated. Covering the entire line of exterior and interior finish, including Stearns' "Florida-Gulf" Cypress.

DUMBWAITERS

Kaestner & Hecht Co., Chicago, Ill.
Bulletin 520. Describes K. & H. Co. electric dumbwaiters. 8 pp.
Sedgwick Machine Works, 151 West 15th Street, New York.
Catalog and Service Sheets. Standard specifications, plans and prices for various types, etc. 4¼ x 8¼ in. 60 pp. Illustrated.

ELECTRICAL EQUIPMENT

Frink, I. P., Inc., 24th Street and 10th Avenue, New York, N. Y.
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Catalogue 421. 8½ x 11 in. 12 pp. Illustrated. Various reflectors for use in operating rooms and ward of the modern hospital.

General Electric Co., Schenectady, N. Y.
G. E. Specialty Catalog. 3¼ x 4½ in. 210 pp. Illustrated. Pocket size descriptive booklet with cloth binding. Gives dimensions, catalog numbers, capacities, package weights, etc., of a complete line of essential wiring devices.
Standard Unit Switchboard Panels. Booklet. 8 x 10½ in. Illustrated. An index to types of standard unit panels for large and small plants, alternating current and direct current, giving references to descriptive bulletins on each type.

Habirshaw Electric Cable Company, Inc., 10 East 43d Street, New York.
Plans and Specifications for the Home Electrical. Catalog. 11 x 14 in. 20 pp. Rubber, oiled paper, varnished cambric insulated wires and cables for every condition of service.

Hart & Hegeman Mfg. Co., The, 342 Capitol Avenue, Hartford, Conn.
Catalog "P." 4¾ x 6¼ in. 183 pp. Illustrated. H. & H. Switches and Paiste Wiring Materials.

Prometheus Electric Co., 511 West 42nd Street, New York.
Electrical Equipment. Booklet. 6 x 9 in. 5 pp. Illustrated. Electric plate warmers, sterilizers and mechanical heating devices.

Simplex Wire & Cable Co., 201 Devonshire Street, Boston, Mass.
Simplex Manual. Catalog and reference book. 6¼ x 4¼ in. 92 pp. Contains in addition to information regarding Simplex products, tables and data for the ready reference of architects, electrical engineers and contractors.

United Electric Co., Canton Ohio.
Ohio-Tuec. Booklet. 6 x 8½ in. 32 pp. Illustrated. Detailed description of the Ohio-Tuec electric vacuum cleaner.

Western Electric Co., 195 Broadway, New York.
Western Electric Electrical Supply Year Book. Catalog. 6½ x 9½ in. 1248 pp. Illustrated. Listing equipment for every electrical need for homes, institutions, office buildings and industrial plants. Prices for estimating included.

Western Electric Flip Switches. Folders. Illustrated. Listing a complete line of lighting switches operated by levers thrown up or down.

Western Electric Decorations for Duplexalites. Bulletin L-1. 6½ x 9½ in. 8 pp. Illustrated. Listing a great variety of shades and decorations in parchment, silk, etc., for standard Duplexalites.

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Concrete Piles for Certainty

When you, as an architect, plan a fine structure—a building costing perhaps millions—you want, naturally, to be able to feel CERTAIN that the concrete pile foundation will be perfect—that each individual pile in the piers will be perfect in length, taper, carrying capacity.

You have this certainty when you specify Concrete Piles installed by the Raymond Method.

The RAYMOND METHOD

A spirally reinforced steel shell, or form, of the desired length and taper, is built up in sections on a collapsible driving core, or mandrel. Shell and core are driven to refusal, the core collapsed and withdrawn and *the shell is left in the ground*. The interior of the driven shell may then be inspected, after which concrete is poured into it and the pile is finished. This exclusive Raymond Method is rapid, certain and costs least, ultimately.

Raymond Concrete Pile Company

New York :
140 Cedar St.

Chicago :
111 West Monroe St.

*A Form for Every Pile
A Pile for Every Purpose*



SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 50

ELEVATORS

- Kaestner & Hecht Co.**, Chicago, Ill.
Bulletin 500. Contains 32 pp. Giving general information on passenger elevators for high buildings.
- Sedgwick Machine Works**, 151 West 15th Street, New York.
Catalog and descriptive pamphlets. $4\frac{1}{4} \times 8\frac{1}{4}$ in. 70 pp. Illustrated. Descriptive pamphlets on hand power freight elevators, sidewalk elevators, automobile elevators, etc.

FENCES

- American Fence Construction Co.**, 106 Church Street, New York.
Afeco Factory Fences. Booklet. 9×12 in. 32 pp. Illustrated.
Residential Fences. Booklets. $7 \times 2\frac{1}{2}$ in. Illustrated. A series of booklets on residential fences consisting of photographs, productions and brief descriptions.

FIRE DOORS—See Doors, Windows and Trim, Metal

FLOORING

- Armstrong Cork Co.**, 132 24th Street, Pittsburgh, Pa.
Linotile Floors. Catalog. 6×9 in. 40 pp. Color plates. Describes Linotile, a composition of ground cork, wood flour, linseed oil and various gums and pigments in tile form.
The Ten-Point Cork Floor. Booklet. $3\frac{1}{2} \times 6$ in. 16 pp. Shows design panels in color for Cork Tile floors.
- Armstrong Cork Co.** (Linoleum Dept.), Lancaster, Pa.
Armstrong's Linoleum Floors. Catalog. $8\frac{1}{2} \times 11$ in. 54 pp. Color plates. A technical treatise on linoleum, including tables and specifications for installing linoleum floors.
The Artistic Possibilities of Armstrong's Linoleum Floors. Booklet. $11\frac{1}{4} \times 16\frac{1}{2}$ in. 12 pp. Color plates.
Armstrong's Linoleum Pattern Book, 1920. Catalog. $3\frac{1}{2} \times 6$ in. 176 pp. Color plates. Reproductions in color of all patterns of linoleum and cork carpet in the Armstrong line.
Quality Sample Book. Three books. $3\frac{1}{2} \times 5\frac{1}{4}$ in. Showing all grades and thicknesses in the Armstrong line of linoleum and cork carpets.
- Johns-Manville Co.**, H. W., New York City.
A Flooring That's "Made to Fit." Booklet. $3\frac{1}{2} \times 6$ in. 14 pp. Illustrated. Descriptive of Johns-Manville Asphalt Mastic Flooring.
- Muller Co.**, Franklyn R., Waukegan, Ill.
Asbestone Composition Flooring. Circulars. $8\frac{1}{2} \times 11$ in. Description and Specifications.

FLOOR HARDENERS

- Anti-Hydro Waterproofing Co.**, 299 Broadway, New York.
Floor Hardening. Circular. $6\frac{1}{2} \times 8\frac{1}{2}$ in. 4 pp. Describes an inexpensive method for producing permanently smooth, dustless and wearproof floors.
- Sonneborn Sons, Inc.**, L., 266 Pearl Street, New York.
Concrete and Lapidolith. Booklet. $5\frac{3}{4} \times 8\frac{1}{4}$ in. 24 pp. Illustrated. Describing relation of Lapidolith chemical floor hardener to concrete construction.
Why Lapidolith? Booklet. $8\frac{1}{2} \times 11$ in. 11 pp. Illustrated. Reasons why Lapidolith should be specified.
Lapidolith Specifications. Circular. $8\frac{1}{2} \times 10\frac{3}{4}$ in. 2 pp.
- Truscon Laboratories, The**, Cor. Caniff Avenue and Grand Trunk R. R., Detroit, Mich.
Agatex and Its Performances. Booklet. $8\frac{1}{2} \times 11$ in. Describes the methods of hardening concrete floors by the application of a chemical which forms a new surface as hard as agate.

FURNACES—See Heating Equipment

GLASS CONSTRUCTION

- Mississippi Wire Glass**, 220 Fifth Avenue, New York.
Mississippi Wire Glass. Catalog. $3\frac{1}{8} \times 8\frac{1}{2}$ in. 32 pp. Illustrated. Covers the complete line.

HARDWARE

- McKinney Mfg. Co.**, Pittsburgh, Pa.
McKinney Cabinet Hardware. Catalog. 6×9 in. 32 pp. Illustrated. Describes complete line of hardware for cabinet and furniture work.
McKinney Hardware for Sliding Doors. Booklet. 6×9 in. 18 pp. Illustrated. Describes different types of sliding door hardware.
- Stanley Works, The**, New Britain, Conn.
Wrought Hardware. Catalog. $6\frac{1}{2} \times 10$ in. Color plates. Shows all of the Stanley Works products made of steel from their own mills.
Eight Garages and their Stanley Garage Hardware. Booklet. $5 \times 6\frac{1}{4}$ in. 32 pp. Illustrated. Illustrations and floor plans of eight typical garages that have been correctly equipped with Stanley Garage Hardware.
Ball Bearing Butts. Booklet. B8. $5 \times 7\frac{1}{4}$ in. 32 pp. Illustrated. Concise description of various butts manufactured.
Stanley Specially Designed Garage Hardware. Booklet. B-50. 6×9 in. 24 pp. Illustrated. Detailed pictures and descriptions of various garage hardware equipment.

HARDWARE—Continued

- Vonnegut Hardware Co.**, Indianapolis, Ind.
Von Duprin Self-Releasing Fire Exit Devices. Catalog 12F. 8×11 in. 41 pp. Illustrated.
"Saving Lives." Booklet. $3\frac{1}{4} \times 6$ in. 16 pp. Illustrated. A brief outline why Self-Releasing Fire Exit Devices should be used.

HEATING EQUIPMENT

- American Radiator Co.**, 816 South Michigan Avenue, Chicago, Ill.
Engineers' Data Book. $8 \times 10\frac{3}{4}$ in. 48 pp. Illustrated. Valuable engineering data for estimating heating and ventilating requirements.
Ventilation for Vento Heaters. Catalog. $8 \times 10\frac{3}{4}$ in. 24 pp. Illustrated. Examples of installation.
Ideal Type "A" Boiler. Catalog. $6 \times 8\frac{1}{2}$ in. 46 pp. Illustrated. Describes this new type of boiler accompanied by charts and tables.
- James B. Clow & Sons**, 534 S. Franklin Street, Chicago, Ill.
Gasteam Catalog. 6×9 in. 16 pp. Illustrated. New radiator using gas for fuel.
- Abram Cox**, American & Dauphin Streets, Philadelphia, Pa.
Catalog 73. 9×12 in. 40 pp. Illustrated. Covers the complete line.
Industrial Housing Circular. $8 \times 10\frac{1}{2}$ in. 12 pp. Illustrated. Modern industrial housing projects with specifications for heating equipment.
- Gorton & Lidgerwood Co.**, 96 Liberty Street, New York.
Gorton Self-Feeding Boilers. Booklet. $4\frac{1}{4} \times 7\frac{1}{4}$ in. 32 pp. Illustrated. Descriptions, specifications and prices.
- Graver Corporation**, East Chicago, Ind.
Hot Water Service Heaters. Booklet. $8\frac{1}{2} \times 11$ in. 4 pp. Illustrated. Describing Graver vertical and horizontal service heaters which utilize exhaust steam for heating.
- Kewanee Boiler Co.**, Kewanee, Ill.
Kewanee on the Job. Catalog. $8\frac{1}{2} \times 11$ in. 80 pp. Illustrated. Showing installations of Kewanee boilers, water heaters, radiators, etc.
Catalog No. 73. 6×9 in. 35 pp. Illustrated. Describes Kewanee steel power boilers with complete specifications.
Catalog No. 74. 6×9 in. 35 pp. Illustrated. Describes Kewanee steel heating boilers with specifications.
Catalog No. 75. $8\frac{1}{2} \times 11$ in. 6 pp. Illustrated. Specifications on Tabasco Water Heaters, Kewanee water heating garbage burners and Kewanee steel tanks.
- Moline Heat**, Dept. C, Moline, Ill.
Moline Heat. Catalog. $8\frac{1}{2} \times 11$ in. 46 pp. Illustrated. Covers the complete line.
Moline Heat Supplement A. $8\frac{1}{2} \times 11$ in. 32 pp. Illustrated. Moline Heat as applied to factories, central station, dry kiln heating, etc.
- Page Boiler Co., The Wm. H.**, 141 West 36th Street, New York.
Page Boilers. Catalog. $4\frac{1}{2} \times 8$ in. 84 pp. Illustrated. Descriptions, specifications and methods of installing Page Round and Square Sectional Boilers.
Monarch Smokeless Boilers. Circular. $8\frac{1}{2} \times 11$ in. Illustrated. Describing the Monarch Down-draft Smokeless Boilers.
- Pratt & Cady Co.**, Hartford, Conn.
Heaters and Pumps. Booklet. $6\frac{1}{4} \times 3\frac{1}{2}$ in. 12 pp. Illustrated. Covering feed water heaters, hot water generators, duplex and triplex power pumps.
- Riverside Boiler Works**, Cambridge, Mass.
Riverside Range Boilers and Tanks. Catalog. 6×3 in. 35 pp. Illustrated. Shows sizes regularly manufactured, methods of installation and descriptions of processes used in manufacturing.
- Smith Co., H. B.**, 57 Main Street, Westfield, Mass.
General Boiler and Radiator Catalog. 4×7 in. 90 pp. Illustrated. Giving ratings, dimensions, capacities and working pressures.
Engineer's Data Ring Book. 4×7 in. 125 pp. Illustrated.
Architect's and Contractor's Binders. These binders are made up of $9\frac{1}{2} \times 11$ in. folders of different kinds giving dimensions, price lists, and erecting directions on the different lines of our manufacture.
- United States Radiator Corporation**, Detroit, Mich.
The Complete Line. Catalog. $4\frac{1}{4} \times 7\frac{1}{4}$ in. 255 pp. Illustrated. Contains important technical information of special interest to architects and heating engineers.
A Day's Work. Booklet. $3\frac{1}{2} \times 6$ in. 20 pp. Suggestions from employees for the purpose of promoting service and good will.
- Utica Heating Co.**, Utica, N. Y.
Imperial Boilers & Heating Supplies. Catalog. $3\frac{1}{2} \times 6\frac{1}{2}$ in. 52 pp. Illustrated.
Imperial Super Smokeless Boilers. Loose leaf catalog. $8\frac{1}{2} \times 11$ in. 24 pp.
Superior Warm Air Furnaces. Catalog. $4\frac{1}{2} \times 8$ in. 36 pp. Illustrated.
New Idea Pipeless Furnaces. Circular. $8\frac{1}{2} \times 11$ in. 4 pp. Illustrated.

HOISTS

- Gillis & Geoghegan**, 544 West Broadway, New York.
Man Saving Load Lifting. Booklet. $6 \times 8\frac{1}{4}$ in. 8 pp. Illustrated. Labor saving service in the lifting or lowering of lighter loads, through the use of G. & G. Telescopic and Non-telescopic Hoists.
Removing Ashes. Booklet. $6 \times 8\frac{1}{4}$ in. 6 pp. Illustrated. Removing ashes from boiler room directly to wagon by electrically operated Telescopic Hoists.

HOLLOW TILE—See Tile, Hollow

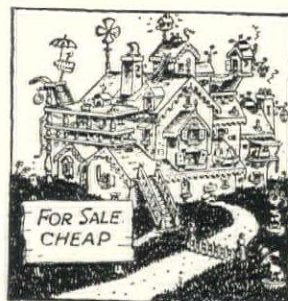
For Better Public Relations

THE adjoining advertisement is one of our second series of institutional advertisements which will appear in a number of popular magazines during the latter half of 1920.

The purpose of this particular advertisement is to educate prospective home builders to the advantage of employing architectural and engineering service in the construction of a new building.

So rapid has been the development of the application of electricity for various purposes in the home that only through the services of competent counsel can an up-to-date, efficient and satisfactory electrical installation be assured.

This second series of advertisements has been printed in pamphlet form under the caption, "For Better Public Relations." A copy will be sent on request.



A saving you can't afford

Building a home or a factory is every bit as hard as building a derby hat.

But man, while content to pay for the hatter's skill, has a lurking desire to plan his own structures, to play the roles of architect and director of construction.

And a home made building is generally about as dashing as a home made hat would be.

Interesting, to get out pencil and ruler and to cover sheet after sheet with designs after our own ideas. But an expensive diversion. Cheaper to line up a set of Bohemian vases and throw rocks at them.

It's a shock to finish the house or factory and find we've forgotten a point in fire protection that costs a thousand dollars to fix.

There are pitfalls, discouragements and remorse for the average owner who builds alone. Enter the old adage, "Cobbler, stick to thy last."

At a small fraction of the cost of our own ill-starred experiment the best engineering brains in the country will work for us. They will do the job and do it right; down to the last electric light and switch.

Whether it be a home where artistry, building skill and liveability are to be fused into one; whether it be a problem involving a most specialized department in a technical industry—the architect and the engineer bring a seasoned and unbiased judgment to the task.

After all, how much better to set two minds at work on the problem—one the architect or engineer, and the other yourself—each contributing to the solution. And this is aside from the economy of it.

*Published in
the interest of Elec-
trical Development by
an Institution that will
be helped by what-
ever helps the
Industry.*

Western Electric Company

No. 13 Western Electric—an organization whose products and services apply alike to all fields where electricity is used—in the power plant, in the shop, on the farm and in the home.

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 52

INSULATION

- Armstrong Cork Co.**, 132 Twenty-fourth Street, Pittsburgh, Pa.
Nonpareil Corkboard Insulation. Catalog. 6 x 9 in. 152 pp. Illustrated. Describes use in cold storage warehouses and wherever constant low temperatures are necessary.
Nonpareil Cork Covering. Catalog. 6 x 9 in. 64 pp. Illustrated. Describes the insulation of cold pipes and tanks of all kinds.
- Philip Carey Co., The**, Cincinnati, Ohio.
Carey Asbestos and Magnesia Products. Catalog. 6 x 9 in. 72 pp. Illustrated.
- Magnesia Association of America**, 721 Bulletin Building, Philadelphia, Pa.
Defend Your Steam. Booklet. 7½ x 10 in. 80 pp. Illustrated. A treatise covering every phase of heat insulation.
Standard Specifications. Booklet. 8½ x 11 in. 12 pp. Specifications for the application of 85 per cent Magnesia pipe covering.
Better Heated Houses. Catalog. 6 x 3½ in. 12 pp. Illustrated.
Coal Saving Tables. Booklet. 6 x 3¼ in. 4 pp.
- United States Mineral Wool Co.**, 280 Madison Avenue, New York.
Uses of Mineral Wool in Building. Catalog. 5¼ x 6¾ in. 23 pp. Illustrated.

INCINERATORS

- Kerner Incinerator Co.**, 595 Clinton Street, Milwaukee, Wis.
The Kernerator. Booklet. 5½ x 9¼ in. 40 pp. Illustrated. Descriptions, installations and testimonials.

JOISTS AND STUDS, PRESSED STEEL

- General Fireproofing Co.**, Youngstown, Ohio.
Steel Lumber. Hand Book. 4 x 6½ in. 72 pp. Illustrated. Data on the use of Steel Lumber and Metal Lath for economical fireproof construction. Tables and Specifications.
- The Hydraulic Steelcraft Co.**, Cleveland, Ohio
Steel Buildings. Catalog. 8½ x 11 in. 44 pp. Covering uses of Hydraulic Steel Buildings for various industries.
Forms for Concrete. Booklet. 8½ x 11 in. 8 pp. Describing Hydraulic Steel Arch Pans with Tables.
- North Western Expanded Metal Co.**, 934 Old Colony Building, Chicago, Ill.
Pressed Steel Lumber Manual. Catalog. 6 x 9 in. 56 pp. Illustrated. Describes a new system of light weight fireproof construction.
- Truscon Steel Co.**, Youngstown, Ohio.
Truscon Standard Buildings, 4th ed. Catalog. 8½ x 11 in. 40 pp. Illustrated. Erection details, cross-section diagrams and adaptations are given.
- Truscon Structural Pressed Steel. Catalog. 8½ x 11 in. 24 pp. Illustrated. Information on Pressed Steel Beams and Joists for light occupancy buildings. Tables, specifications and views of installations.

KITCHEN EQUIPMENT

- Aluminum Cooking Utensils Co.**, New Kensington, Pa.
Wear-Ever. Catalog. 6 x 9 in. 55 pp. Illustrated.

LATH, METAL AND REINFORCING

- The Bostwick Steel Lath Co.**, Niles, Ohio.
Bostwick Steel Lath, Revised Edition 1920. Catalog. 9 x 11½ in. 28 pp. Illustrated. Covers the entire line. Drawings and Specifications.
- General Fireproofing Co.**, Youngstown, Ohio.
Herringbone Rigid Metal Lath. Catalog. 8½ x 11 in. 32 pp. Illustrated. A treatise on the many uses of Metal Lath.
Trussit. Booklet. 6 x 9 in. 16 pp. Illustrated. Detailed descriptions on the use of Trussit as a reinforcement for Concrete.
Self-Sentering—A Reinforcement for Concrete Floors, Roofs and Walls. Booklet. 8½ x 11 in. 36 pp. Illustrated.
- North Western Expanded Metal Co.**, 934 Old Colony Building, Chicago, Ill.
Designing Data. Catalog. 6 x 9 in. 94 pp. Illustrated. Describes most efficient use of Econo Expanded Metal Reinforcing.
Formless Concrete Construction. Catalog. 6 x 9 in. 80 pp. Illustrated. Describes use of T-Rib Chancelath, a form and reinforcing for concrete.
- Truscon Steel Co.**, Youngstown, Ohio.
High Rib and Metal Lath. 18th ed. Catalog. 8½ x 11 in. 64 pp. Illustrated. Gives properties of laths, specifications, special uses and views of installations.

LIME

- Kelley Island Lime & Transport Co.**, Leader News Building, Cleveland, Ohio.
The Perfect Finishing Lime. Catalog. 4½ x 7¼ in. 32 pp. Illustrated. Describes use and advantage of "Tiger Finish" and gives illustrations of several large jobs.
For Finish-Coat Plastering. Booklet. 3½ x 6½ in. 12 pp. Illustrated.

LUMBER

- American Hardwood Mfrs. Association**. Room 1402, 14 Main Street, Memphis, Tenn.
Technical Information about Red Gum. Booklet. 6 x 9 in. 16 pp. Illustrated.
Red Gum Facts. Booklet. 5½ x 8½ in. 14 pp. Illustrated.
Oak Catalog. 6 x 9 in. 31 pp. Illustrated.

LUMBER—Continued

- American Walnut Mfrs. Assoc.**, Rm. 1000, 616 S. Michigan Blvd., Chicago, Ill.
American Walnut, the Choice of the Master Craftsman. Booklet. 7 x 9 in. 45 pp. Illustrated. The use of walnut in fine furniture and woodwork.
Specification Notes for American Walnut Interior Trim. 8½ x 11 in. 3 pp. Includes notes on the different styles of finish suitable for walnut.
- Arkansas Soft Pine Bureau**, 1551 Boyle Building, Little Rock, Ark.
Arkansas Soft Pine Handbook. 8½ x 11 in. 64 pp. Illustrated. Treatise on soft pine.
Arkansas Soft Pine. How to Finish and Paint it. Booklet. 5 x 7 in. 36 pp. Illustrated. Information on proper painting and finishing for outside work and inside trim.
The Home You Long For. Loose Leaf Folder. 8½ x 11 in. 36 pp. Illustrated. Contains 8 home designs, by Robert Seyfarth, Architect, Chicago. Illustrations include exterior and floor plans with architect's estimate.
- California Redwood Association**, 760 Exposition Building, San Francisco, Calif.
California Redwood Homes. Booklet. 6 x 9 in. 16 pp. Illustrated.
Specialty Uses of California Redwood. Booklet. 6 x 9 in. 24 pp. Illustrated.
California Redwood on the Farm. Booklet. 3¼ x 9¼ in. 40 pp. Illustrated.
How to Finish California Redwood. Booklet. 3¼ x 9¼ in. 16 pp. Illustrated. Formulae and instructions.
- Long Bell Lumber Co.**, R. A. Long Building, Kansas City, Mo.
The Post Everlasting. Booklet. 10½ x 7½ in. 32 pp. Illustrated. Information regarding creosoted yellow pine fence posts, barn poles, paving blocks, etc.
Poles That Resist Decay. Booklet. 9¼ x 4 in. 16 pp. Illustrated. Poles for telegraph, telephone, high power transmission lines.
- North Carolina Pine Association**, 91 Bank of Commerce Building, Norfolk, Va.
Home Builders Book. 8½ x 11 in. 24 pp. Color plates. A book for the consumer, with plans and suggestions on attractive modern rooms.
Book of Interiors. 8½ x 11 in. 16 pp. Color plates. A book for the architect or consumer, showing many beautiful woodwork effects.
Architect's Specification Manual. 9½ x 11½ in. 8 pp. Illustrated.

METAL LATH—See Lath, Metal and Reinforcing

METALS

- American Brass Co.**, Waterbury, Conn.
Price List and Data Book. Loose Leaf Catalog. 3¼ x 7 in. 168 pp. Illustrated. Covers entire line of sheets, rods, tubes, etc., in various metals. Useful tables.
Price List and Tables of Weights of Seamless Brass and Copper Tubes. 4¼ x 6¾ in. 60 pp.
Price List No. 12. 4¼ x 6¾ in. 40 pp. Useful tables of weights and data pages for brass, bronze and nickel silver sheets, wire and rods.
Tobin Bronze. Catalog. 4¼ x 6¾ in. 304 pp. Illustrated. Describes its use and gives specifications.
- American Sheet & Tin Plate Co.**, Frick Building, Pittsburgh, Pa.
Reference Book. Pocket Ed. 2½ x 4½ in. 168 pp. Illustrated. Covers the complete line of Sheet and Tin Mill Products.
Copper—Its Effect Upon Steel for Roofing Tin. Catalog. 8½ x 11 in. 28 pp. Illustrated. Describes the merits of high grade roofing tin plates and the advantages of the copper-steel alloy.
Apollo and Apollo-Keystone Galvanized Sheets. Catalog. 8½ x 11 in. 20 pp. Illustrated.
Research on the Corrosion Resistance of Copper Steel. Booklet. 8½ x 11 in. 24 pp. Illustrated. Technical information on results of atmospheric corrosion tests of various sheets under actual weather conditions.
Facts Simply and Briefly Told. Booklet. 8½ x 11 in. 16 pp. Illustrated. Non-technical statements relating to Keystone Copper Steel.
Black Sheets and Special Sheets. Catalog. 8½ x 11 in. 28 pp. Illustrated. Describes standard grades of Black and Uncoated Sheets, together with weights, bundling tables, etc.
Bright Tin Plates. Catalog. 8½ x 11 in. 16 pp.

METAL TRIM—See Doors, Windows and Trim, Metal

METAL WORK, ORNAMENTAL

- Hope & Sons, Henry**, 103 Park Avenue, New York.
Hope's Leadwork Catalog. 9 x 12 in. 46 pp. Illustrated.
- Polachek Bronze & Iron Co., John**, 476 Hancock Street and 579 Boulevard, Long Island City, N. Y.
Honor Roll Tablets, Memorial Tablets and Monuments in Bronze. Booklet. 6 x 9 in. 28 pp. Illustrated.
Distinctive Metal Work. Booklet. 8½ x 11 in. 8 pp. Illustrated.
Special Design Portfolio. Looseleaf Catalog. 6 x 9 in. 32 pp. Illustrated. Informations as to size, number of names or letters accommodated on Memorial Tablets.

Specify Holophane Products

Scientific lighting for stores, offices, schools, homes and industrial plants

IN the treatment of store fronts and display windows, not infrequently the architect is called upon to solve the problem of correct illumination.

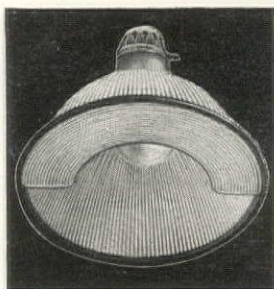
The particular requirements of this type of work demand a high lighting efficiency with the absolute elimination of harsh glare. This is best obtained by an installation of Holophane Window Lighting Reflectors.

The Holophane Glass Company places at the disposal of architects and builders the services of an Engineering Department, for twenty years experienced in the solution of difficult lighting problems. Write to-day.

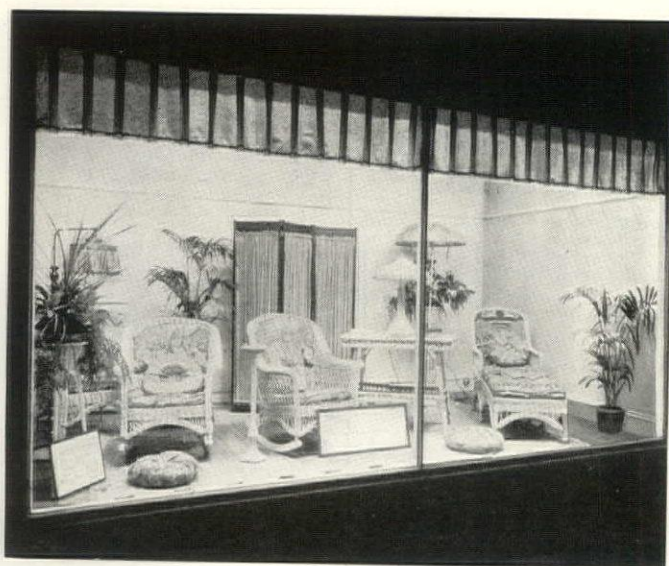
HOLOPHANE COMPANY, INC.

Dept. H-21

340 Madison Ave., New York City Works: Newark, Ohio



No. 922 — designed for island, open or mirrored back windows



Illustrating a Holophane Installation, using Reflector No. 983



No. 983 — adaptable for any style trim. See illustration

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 54*

NURSERIES

Bobbink & Atkins, Rutherford, N. J.
Nursery Catalog. 10 x 7 in. 82 pp. Illustrated.
Home Grounds Book. 7½ x 5½ in. 50 pp. Illustrated. Concise explanatory notes on residential landscape work.
World's Choicest Roses. Catalog. 7 x 10 in. 32 pp. Illustrated. Complete list of roses hardy in Northern States.

Davey Tree Expert Co., The, Kent, Ohio.
When Your Trees Need the Tree Surgeon. Booklet. 9¼ x 8 in. 16 pp. Illustrated.

OFFICE SUPPLIES

Angel, Inc., H. Reeve, 7-11 Spruce St., New York.
Drawing Papers. Sample Book. 3½ x 5½ in. Showing all the surfaces and substances in general demand.

American Lead Pencil Co., 220 Fifth Avenue, New York.
Venus Pencil in Mechanical Drafting. Booklet. 6 x 9 in. 16 pp. Illustrated.
Venus Pencil in Your School. Booklet. 6 x 9 in. 16 pp. Illustrated.

Dixon Crucible Co., Joseph, Pencil Dept., 224 J. Jersey City, N. J.
Finding Your Pencil. Booklet. 6¼ x 3¼ in. 16 pp. Illustrated.
The First Five. Booklet. 3½ x 5½ in. 10 pp. Illustrated.
A Study in Sepia. Booklet. 7 x 4½ in. 5 pp. Illustrated.

Faber Co., Eberhard, 37 Greenpoint Avenue, Brooklyn, N. Y.
Eberhard Faber Pencils, How They Are Made. Booklet. 4¾ x 6¾ in. 23 pp. Illustrated.

N. Y. Blueprint Paper Co., 102 Reade St., New York.
Catalog of Drawing Materials, Mathematical and Engineering Instruments. 4 x 6 in. 400 pp. Illustrated. Covers the complete line.

PAINTS, STAINS, VARNISHES AND WOOD FINISHES

Boston Varnish Co., Everett Station, Boston, Mass.
The Inviting Home. Booklet. 5½ x 9 in. 16 pp. Color Plates. A briefly worded book on painting for the busy architect or decorator.
The White Enamel Specification Book. 6 x 9 in. 12 pp. Explaining the use of Kyanize White Enamel on interior or exterior surfaces.

Cabot, Inc., Samuel, Boston, Mass.
Cabot's Creosote Stains. Booklet. 4 x 8½ in. 16 pp. Illustrated.

Creo-Dipt Company, Inc., 1025 Oliver St., Tonawanda, N. Y.
Dixie White. Folder. 3½ x 8 in. 3 pp. Illustrated. A heavy white stain which produces the whitewashed effect.

Devoe & Reynolds Co., Inc., 101 Fulton Street, New York.
Architectural Finishes. Catalog. 5 x 7 in. 40 pp. Specifications and suggestions for painting, varnishing, staining and enameling.
Harmony in the Home. Booklet. 4½ x 6 in. 24 pp. Illustrated. Flat finish wall paints, color suggestions and specifications.

Eagle-Picher Lead Co., The, 208 S. La Salle Street, Chicago, Ill.
Protective Coatings for Structural Metals. Book. 6 x 9 in. 48 pp. Illustrated.

Fox Co., M. Ewing, New York, N. Y.
Calimines. Booklet. 3¼ x 6¼ in. 8 pp. Color cards.
Water Paints. Booklet. 3¼ x 6¼ in. 6 pp. Color cards.

Murphy Varnish Co., The, Chicago, Ill.
Beautiful Floors and How to Care for Them. Booklet. 3½ x 6¼ in. 16 pp. Illustrated.
Murphy Varnish. Booklet. 3½ x 6¼ in. 12 pp. Illustrated. Advantages of Waterproof Varnishes.
How to Have a Modern Bathroom. Leaflet. 3½ x 6¼ in. 4 pp. Illustrated.
Modern Sanitary Kitchen. Leaflet. 3½ x 6¼ in. 4 pp. Illustrated.

O'Brien Varnish Co., 1121 Washington Avenue, South Bend, Ind.
That Magic Thing Called Color. Booklet. 5½ x 8½ in. 24 pp. Illustrated. Short treatise on the use of color in the home, special reference to walls and ceilings.
Architects' Specification Manual. 8½ x 11 in. 50 pp. Complete specifications for all paint products.

The Sherwin-Williams Co., 882 Canal Road, Cleveland, Ohio.
A Book of Painting and Varnishing Specifications. 8½ x 11 in. 30 pp. A text book on painting and finishing.
Announcement of Sherwin-Williams Flat-Tone Multi-Color Effects. Booklet. 2½ x 6 in. 10 pp. Illustrated. Development of a new system of wall decoration.
Monthly Architectural Bulletin. 8½ x 11 in. Bulletin issued periodically on painting and finishing.

Smith & Co., Edward, P. O. Box 76, City Hall Station, New York, N. Y.
Architect's Hand Book. 4¾ x 7½ in. 24 pp. Specifications and suggestions for painting, varnishing, enameling, etc.

Sonneborn Sons, Inc., L., Dept. 4, 264 Pearl Street, New York.
Paint Specifications. Booklet. 8½ x 10¾ in. 4 pp.

Truscon Laboratories, The, Cor. Caniff Avenue and Grand Trunk R. R., Detroit, Mich.
Spread the Sunshine Inside. Booklet. 5 x 8 in. 24 pp. Describes methods for light saving by the application of light reflecting enamels to interior walls of factories and workrooms.

Wadsworth-Howland Co., Inc., Boston, Mass.
Paints and Varnishes. Catalog. 5¼ x 8½ in. 140 pp. Illustrated. Covers the complete line.

PIPE

Byers Co., A. M., Pittsburgh, Pa.
General Information for Pipe Users. Bulletin No. 26. 8½ x 11 in. 24 pp. Illustrated. Description of materials and processes employed in the manufacture of Byers Pipe. Contains many useful tables.

An investigation of Pipe Corrosion. Bulletin No. 30. 8½ x 11 in. 20 pp. Illustrated. A report of general interest to architects, engineers and builders.

Corrosion of Wrought Iron, Cast Iron and Steel Pipe in House Drainage Systems. Bulletin No. 32. 8½ x 11 in. 36 pp. Illustrated. Data obtained through investigations conducted in New York and Chicago.

The Installation Cost of Pipe. Bulletin No. 8. 8½ x 11 in. 32 pp. Illustrated. Cost analyses of 20 different pipe installations in power and industrial plants, office buildings, hotels, residences, etc.

Clow & Sons, James B., 534 S. Franklin Street, Chicago, Ill.
Catalog "A." 4 x 6¼ in. 706 pp. Illustrated. Shows a full line of steam, gas and water works supplies.

National Tube Co., Frick Building, Pittsburgh, Pa.
National Bulletin No. 11, History, Characteristics and Advantages of National Pipe. Catalog. 8½ x 11 in. 48 pp. Illustrated.
National Bulletin No. 35. National Pipe in Large Buildings. Catalog. 8½ x 11 in. 88 pp. Illustrated.
National Bulletin No. 7, Manufacture and Advantages of National Welding Scale Free Pipe. Booklet. 8½ x 11 in. 16 pp. Illustrated.
National Bulletin No. 3, Prevention of Corrosion in Pipe. Booklet. 8½ x 11 in. 24 pp. Illustrated. Contains the results of carefully conducted investigations.

U. S. Cast Iron Pipe & Foundry Co., Burlington, N. J.
Keystone Columns. Architectural Service Sheet. 16½ x 21½ in. Illustrated. Standard specifications with description and formula for calculating cast iron building columns.

PLUMBING EQUIPMENT

Brunswick-Balke-Collender Co., 623 S. Wabash Avenue, Chicago, Ill.
Whale-bone-ite Seat. Booklet. 3½ x 6¼ in. 4 pp. Illustrated.
Whale-bone-ite Seat. Booklet. 3½ x 6¼ in. 8 pp. Illustrated.

Clow & Sons, James B., 534 S. Franklin Street, Chicago, Ill.
Catalog "M." 9¼ x 12 in. 184 pp. Illustrated. Shows complete line of plumbing fixtures for Schools, Railroads and Industrial Plants.

Crane Company, 836 S. Michigan Avenue, Chicago, Ill.
Crane Products in World Wide Use. Catalog. 5 x 9½ in. 24 pp. Illustrated.
Plumbing Suggestions for Home Builders. Catalog. 3 x 6 in. 80 pp. Illustrated.
Plumbing Suggestions for Industrial Plants. Catalog. 4 x 6½ in. 43 pp. Illustrated.
No. 50 Steam Pocket Catalog. 4 x 6½ in. 775 pp. Illustrated. Describes the complete line of the Crane Co.

Eagle-Picher Lead Co., The, 208 S. La Salle Street, Chicago, Ill.
Plumbers' Lead Guide. Catalog. 4¾ x 7½ in. 52 pp. Illustrated.

Maddock's Sons Co., Thomas, Trenton, N. J.
Highest Grade Standardized Plumbing Fixtures for Every Need. Catalog. 5 x 7½ in. 94 pp. Illustrated. Covers the complete line.
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Rundle-Spence Mfg. Co., Milwaukee, Wis.
Bubbling Fountains. Catalog. 5½ x 8 in. 74 pp. Illustrated.

PUMPS

Goulds Mfg. Co., The, Seneca Falls, N. Y.
Set of Twenty Bulletins. 7½ x 10½ in. 12 to 32 pp. each. Illustrated. Covers complete line of power and centrifugal pumps for all services.
Catalog "K." 6 x 9 in. 216 pp. Illustrated. Covers complete line of smaller size pumps.

REFRIGERATION

Isko Co., The, Chicago, Ill.
Electrical Refrigeration. Booklet. 8 x 3¼ in. 16 pp. Illustrated. Services and advantages of the household machine.
Bulletin No. 142. 8½ x 11 in. 4 pp. Illustrated. Isko electrical refrigeration for cooling drinking water systems.
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Johns-Manville Co., The H. W., Madison Avenue and 41st Street, New York, N. Y.
Johns-Manville System of Refrigeration. Booklet. 3½ x 6 in. 16 pp. Illustrated.

ROOFING

American Sheet and Tin Plate Co., Frick Building, Pittsburgh, Pa.
Better Buildings. Catalog. 8½ x 11 in. 32 pp. Illustrated. Describes corrugated and formed roofing together with table of weights and methods of application.

Barrett Co., The, Chicago, Ill.
Barrett Everlastic Fiber Coating. Booklet. 3½ x 6 in. 8 pp. Illustrated. A new liquid cement for covering roofs and how to apply it.
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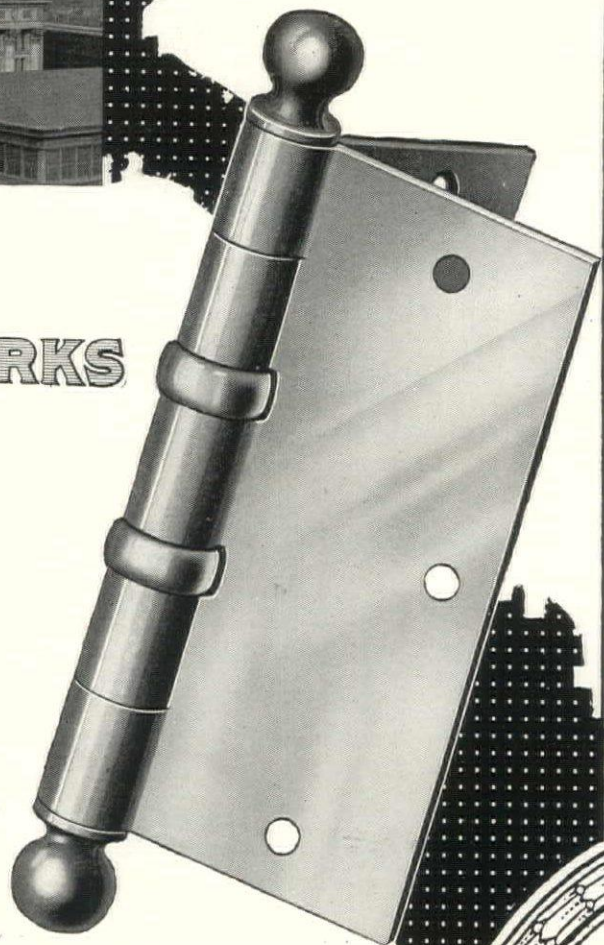
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SELECTED LIST OF MANUFACTURERS' PUBLICATIONS — *Continued from page 56*

ROOFING — Continued

- Philip Carey Co., The**, Cincinnati, Ohio.
Architects' Specifications for Carey Building Material. $8\frac{1}{2} \times 11$ in. 48 pp. Illustrated.
- Creo-Dipt Company Inc.**, North Tonawanda, N. Y.
Thatch Roofs. Booklet. $8\frac{1}{2} \times 11$ in. Illustrated. Showing the varied effects obtainable with Stained Shingles.
- Johns-Manville Co., The H. W.**, Madison Avenue and 41st Street, New York.
Johns-Manville Asbestos Shingles. Booklet. $3\frac{1}{2} \times 6$ in. 32 pp. Illustrated. Prices, construction data and specifications.
Johns-Manville Roofing and Building Materials. Catalog. $3\frac{1}{2} \times 6$ in. 24 pp. Illustrated. Describes building materials such as asbestos wood, sound deadening and insulating felts, waterproofing, etc.
- Keasbey & Mattison Co.**, Ambler, Pa.
Ambler Asbestos Shingles. Catalog. $5\frac{1}{2} \times 8\frac{1}{2}$ in. 40 pp. Illustrated.
Ambler Asbestos Corrugated Roofing and Siding. Catalog. $8\frac{1}{2} \times 11$ in. 36 pp. Illustrated. Standard Purlin Spacing Tables.
Ambler Asbestos Corrugated Roofing and Siding. Catalog. $8\frac{1}{2} \times 11$ in. 20 pp. Illustrated. Prices and specifications.
Ambler Asbestos Building Lumber. Catalog. $8\frac{1}{2} \times 11$ in. 32 pp. Illustrated.
- Ludowici-Celadon Co.**, Chicago, Ill.
Roofing Tile. A Detailed Reference for Architects' Use. Handbook. 9×13 in. 106 pp. Illustrated. A working handbook for architects.
Roof Beautiful. Catalog. $6\frac{1}{2} \times 8\frac{1}{2}$ in. 39 pp. Illustrated.
Folder No. 8. $3\frac{3}{4} \times 9$ in. 10 pp. Illustrated. A condensed catalog.

SEWAGE DISPOSAL

- Kewanee Private Utilities**, 442 Franklin St., Kewanee, Ill.
Specification Sheets. $7\frac{3}{4} \times 10\frac{1}{4}$ in. 46 pp. Illustrated. Detailed drawings and specifications covering water supply and sewage disposal systems.

SHRUBS, TREES, ETC.—See Nurseries

STORE FRONTS

- Kawneer Co., The**, Niles, Mich.
Kawneer Solid Copper Store Fronts. Catalog "K." $8\frac{1}{2} \times 11$ in. 32 pp. Illustrated. Information about various members used in the pioneer Kawneer construction.
Book of Designs. Catalog. 6×9 in. 64 pp. Illustrated.
- New Jersey Terra Cotta Co.**, Singer Building, New York.
Store Front. Booklet. $8\frac{1}{2} \times 11$ in. 20 pp. Illustrated.
- Zouri Drawn Metal Co.**, Chicago Heights, Ill.
Key to Getting the People In. Catalog BJS. 6×9 in. 68 pp. Illustrated. Zouri Safety Sash, corner and division bars have been approved by the Underwriter's Laboratories and are manufactured under their supervision.

STUCCO—See Cement, Portland.

STUCCO AND WALL BOARD

- Bishopric Manufacturing Co.**, 9 Este Avenue, Cincinnati, Ohio.
Homes Built on the Wisdom of Ages. Catalog. 6×9 in. 48 pp. Illustrated. Describing the use of Bishopric stucco board and Bishopric sheathing board.
- Carey Co., The Philip**, Cincinnati, Ohio.
Carey Board for Better Building. Catalog. 6×9 in. 32 pp. Illustrated.

TELEPHONE, INTER-COMMUNICATING

- Western Electric Co.**, 195 Broadway, New York.
Specification for W. E. Inter-phones and Private Telephone Systems. $8 \times 10\frac{1}{4}$ in. 88 pp. Illustrated.

TERRA COTTA

- Northwestern Terra Cotta Co., The**, 2525 Clybourn Ave., Chicago, Ill.
Booklet. $8\frac{1}{2} \times 11$ in. 77 pp. Illustrated. Showing in a concise way the usefulness of terra cotta.

TILE, FLOOR AND WALL

- Associated Tile Manufacturers, The**, Beaver Falls, Pa.
Tile Floors and Walls for Hospitals. Booklet. $8\frac{1}{2} \times 11$ in. 40 pp. Illustrated. Reasons for selecting Tile for hospitals.
Bring the Crowds to Your Market. Booklet. $8\frac{1}{2} \times 11$ in. 16 pp. Illustrated. The use of Tile for the modern sanitary market.
Preparation for Tile. Booklet. 6×9 in. 32 pp. Illustrated. Describing the manner in which Tile is set and the various types of construction which are used as a foundation for the product.
Swimming Pools. Booklet. $8\frac{1}{2} \times 11$ in. 32 pp. Illustrated. A handbook on swimming pools and their construction.

TILE, HOLLOW

- Hollow Building Tile Association**, B. J. Dept. 118, Conway Bldg., Chicago, Ill.
Handbook of Hollow Building Tile Construction. $8\frac{1}{2} \times 11$ in. 104 pp. Illustrated. Complete treatise on most approved methods of hollow tile building construction and fireproofing.
- National Fire Proofing Co.**, 250 Federal St., Pittsburgh, Pa.
Standard Wall Construction Bulletin 174. $8\frac{1}{2} \times 11$. 32 pp. Illustrated. A complete treatise on the subject of hollow tile wall construction.
Industrial Housing Bulletin 172. $8\frac{1}{2} \times 11$ in. 14 pp. Illustrated. Photographs and floor plans of typical workmen's homes.
Nateco on the Farm. $8\frac{1}{2} \times 11$ in. 38 pp. Illustrated. A treatise on the subject of fire safe and permanent farm building construction.

VALVES

- Jenkins Bros.**, 80 White Street, New York.
The Valve Behind a Good Heating System. Booklet. $4\frac{1}{2} \times 7\frac{1}{4}$ in. 16 pp. Color plates.
Jenkins Valves for Plumbing Service. Booklet. $4\frac{1}{2} \times 7\frac{1}{4}$ in. 16 pp. Illustrated.
- Pratt & Cady Co., Inc.**, Hartford, Conn.
Valves. Catalog. 9×6 in. 221 pp. Illustrated. Covers the complete line.

VENTILATION

- Clarage Fan Co.**, Porter Street, Kalamazoo, Mich.
Clarage Multiblade Fans. Catalog No. 51. $8\frac{1}{2} \times 11$ in. 64 pp. Illustrated.
Type S. P. Exhaust Fans. Catalog No. 111. $8\frac{1}{2} \times 11$ in. 36 pp. Illustrated.
Type C. I. Fans and Blowers. Catalog No. 112. $8\frac{1}{2} \times 11$ in. 8 pp. Illustrated.
Type S. P. Blowers. Catalog No. 23. $8\frac{1}{2} \times 11$ in. 20 pp. Illustrated.
- Globe Ventilator Co.**, Dept. P., Troy, N. Y.
Globe Ventilator's Catalog. 6×9 in. 32 pp. Illustrated.
- Moline Heat., Dept., C. Moline**, Ill.
Univent. Catalog. $8\frac{1}{2} \times 11$ in. 32 pp. Color plates. Ventilation in all its phases.
Architect's and Engineer's Univent Data Book. $8\frac{1}{2} \times 11$ in. 32 pp. Illustrated. Technical information on ventilating.
- Royal Ventilator Co.**, 415 Locust Street, Philadelphia, Pa.
Ventilation. Catalog. $4\frac{3}{4} \times 9$ in. 48 pp. Illustrated.

WATERPROOFING

- Anti-Hydro Waterproofing Co.**, 299 Broadway, N. Y.
Waterproofing. Booklet. $3\frac{1}{2} \times 6$ in. 4 pp. Methods used for waterproofing concrete and mortars.
- Barrett Co., The**, Chicago, Ill.
Barrett Elastigum. Booklet. $3\frac{3}{4} \times 8\frac{1}{2}$ in. 8 pp. Illustrated. Describes elastigum, a waterproof cement, and its application to parapet walls.
Barrett No-Aer-Leeks. Booklet. $3\frac{3}{4} \times 6$ in. 8 pp. Illustrated. How it is applied to make air-tight and moisture proof walls around boiler settings.
- Sandusky Cement Co.**, Dept. F, Cleveland, Ohio.
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- Truscon Laboratories, The**, Cor. Caniff Avenue and Grand Trunk R. R. Detroit, Mich.
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- Wadsworth-Howland Co., Inc.**, Boston, Mass.
Bay State Waterproofings. Booklet. No. 10. $8\frac{1}{2} \times 11$ in. Illustrated. Methods of applying Cement Coating.

WATER SOFTENERS

- Graver Corp.**, East Chicago, Ind.
Graver Zeolite Softeners. Bulletin 509. $8\frac{1}{2} \times 11$ in. 16 pp. Illustrated. Water softeners for homes, institutions, hotels, apartments, etc.
Graver Vertical Pressure Water Feeders. Bulletin 502. $8\frac{1}{2} \times 11$ in. 8 pp. Illustrated. Detailed description of parts, capacities and dimensions.
Graver Small Continuous Water Softener. Bulletin 507. $8\frac{1}{2} \times 11$ in. 12 pp. Illustrated. A softener for raw water ice plants and small steam power plants.
- Permutit Company, The**, 440 Fourth Ave., New York, N. Y.
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- Kewanee Private Utilities**, 442 Franklin St., Kewanee, Ill.
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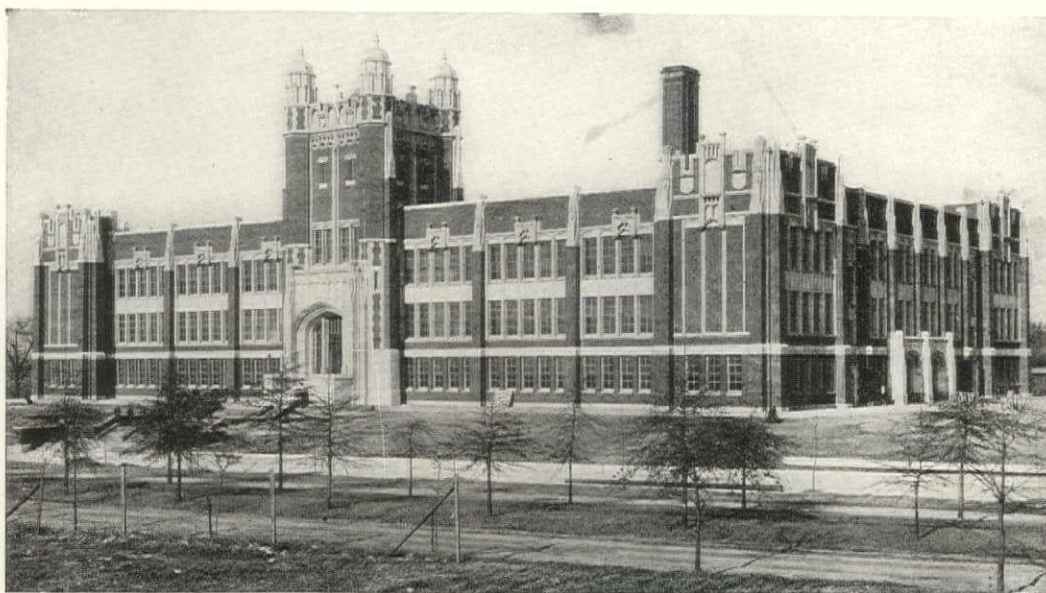
WINDOW CORD

- Samson Cordage Works**, Boston, Mass.
Samson Spot Sash Cord. Booklet. $3\frac{3}{4} \times 6\frac{1}{4}$ in. 4 pp. Illustrated.

WINDOWS, CASEMENT

- Crittall Casement Window Co.**, 685 East Atwater Street, Detroit, Mich.
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- Hoffman Mfg. Co., Andrew**, 900 Steger Building, Chicago, Ill.
Hoffman Casements. Catalog. $5\frac{1}{2} \times 8$ in. 8 pp. Illustrated. Miniature details and phantom drawings.
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- Hope & Sons, Henry**, 103 Park Avenue, New York.
Catalog. $12\frac{1}{4} \times 18\frac{1}{2}$ in. 30 pp. Illustrated. Full size details of outward and inward opening casements.
- International Casement Co., Inc.**, Jamestown, N. Y.
Casements for Banks and Public Buildings. Catalog. $8\frac{1}{2} \times 11$ in. 24 pp. Illustrated. Shows construction of steel windows and surrounding masonry.

WOOD—See Lumber



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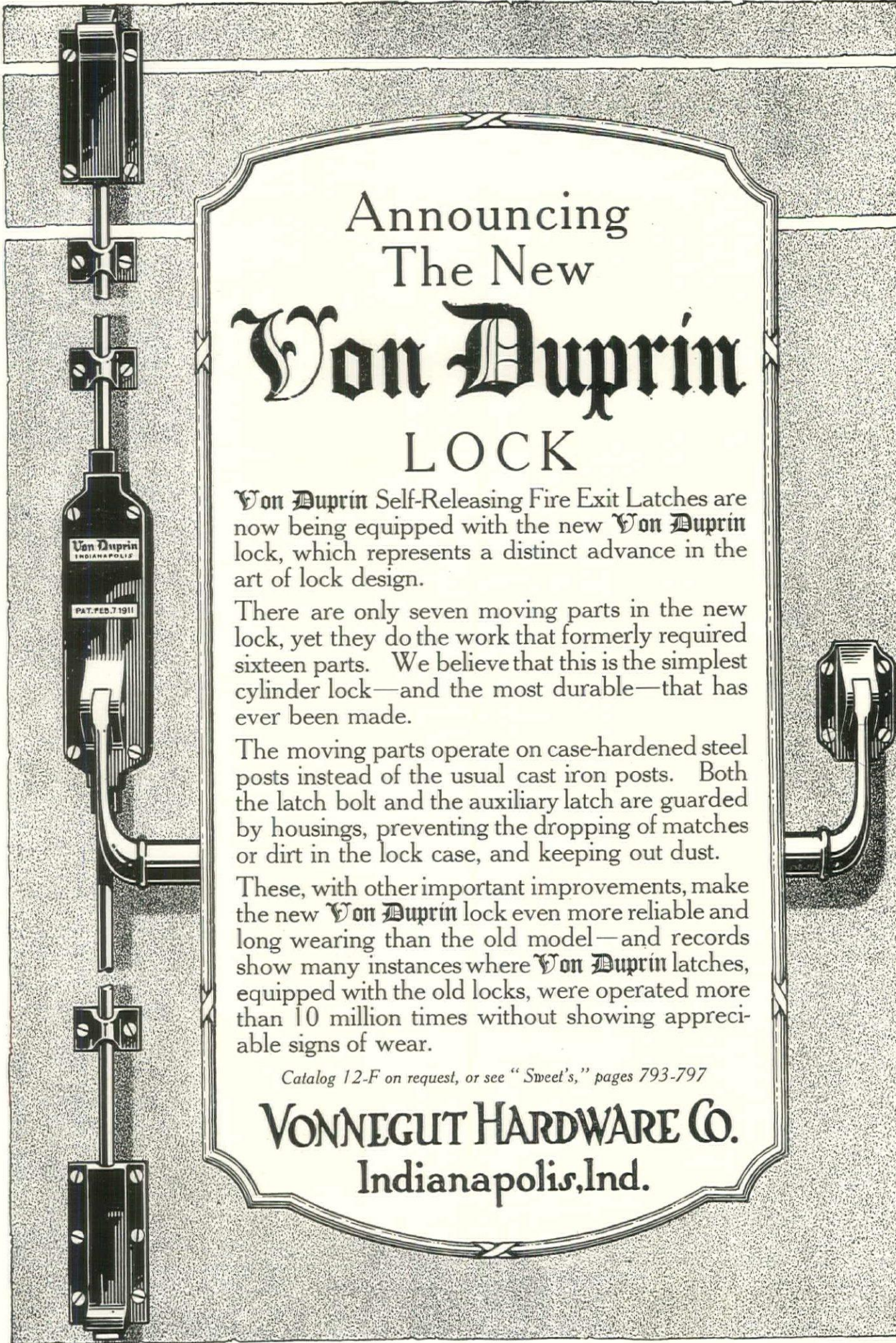
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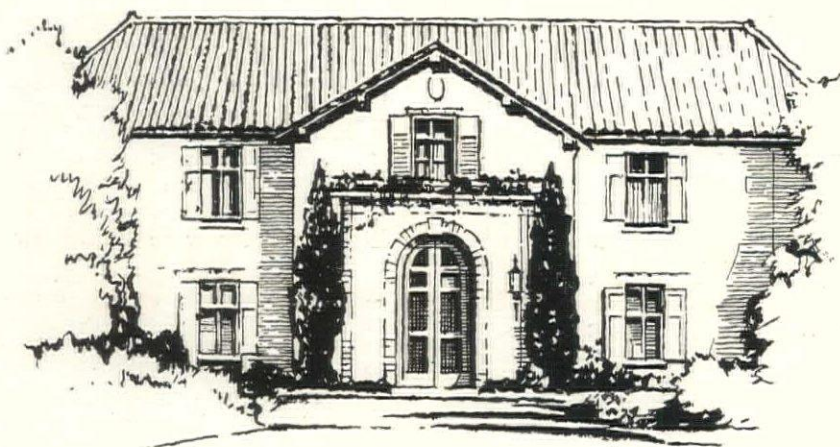
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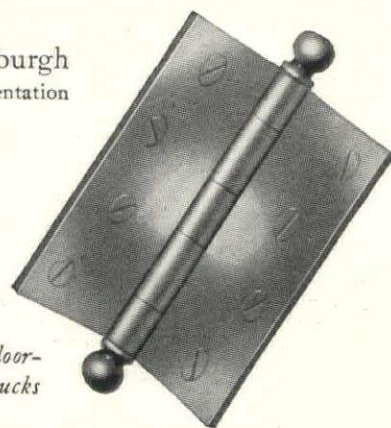
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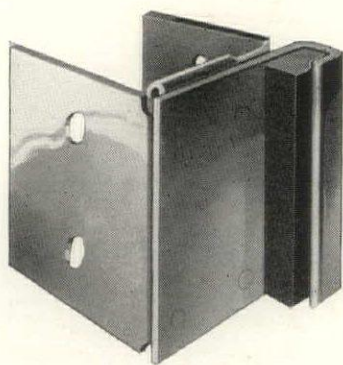
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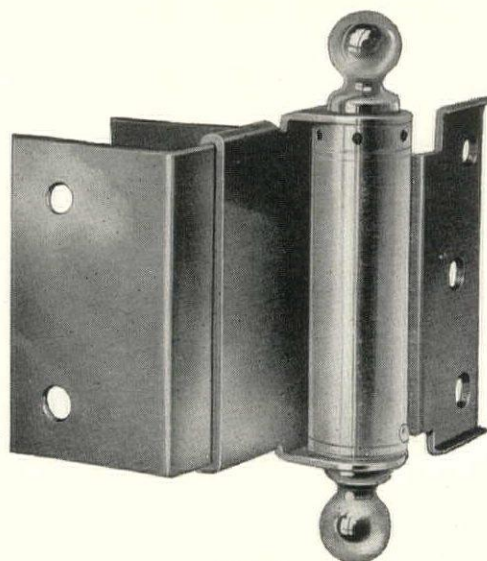
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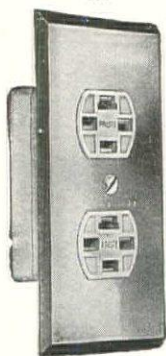
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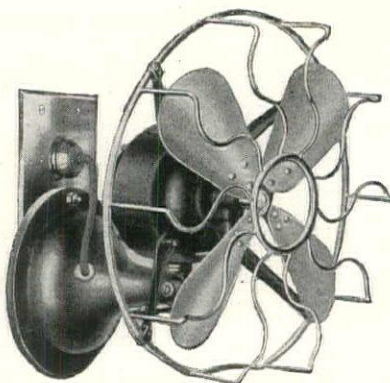
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and through the readiness of many great transit systems, Habirshaw cables are insuring the flexible power which keeps homes alive in office and factory and shortens the worker's day.

Habirshaw laboratories are contributing advances in methods and materials. Habirshaw shares are advancing new economies of mass through organization and system production and perfecting the constructive work of Habirshaw by efficient distribution of Habirshaw wire and cable through the Western Electric warehousing and sales organization reaching every active market in America.

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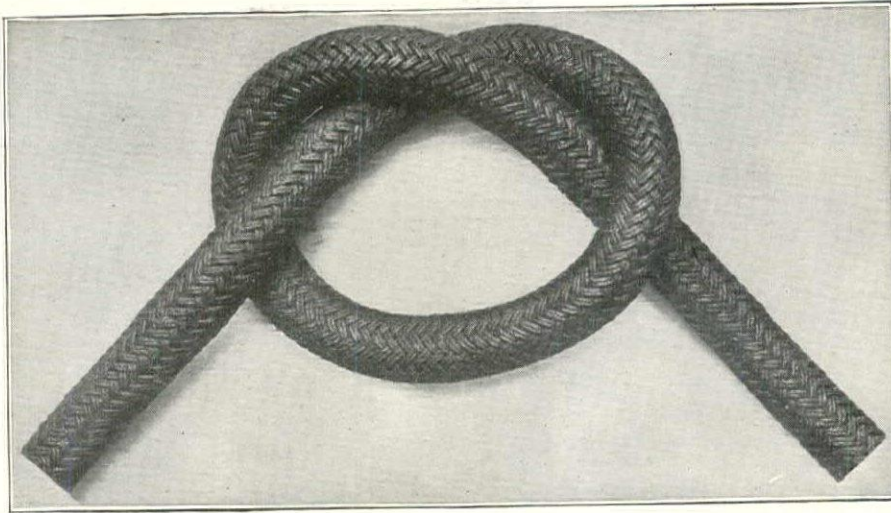
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30% Hevea R. S. A. Standard

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FOR PORTABLE TOOLS AND LIGHTS



Flexible as a lamp cord. Protected by a seine twine braid specially treated to withstand rough use. Recommended for portable tools and lights in machine shops, garages, shipyards and on any engineering or construction work where conditions are severe and continuous service is essential.

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MANUFACTURERS

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FIREPROOFING
DEADENING OF SOUND AND
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Moderate in Cost
Easily Applied

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Samson Spot Sash Cord



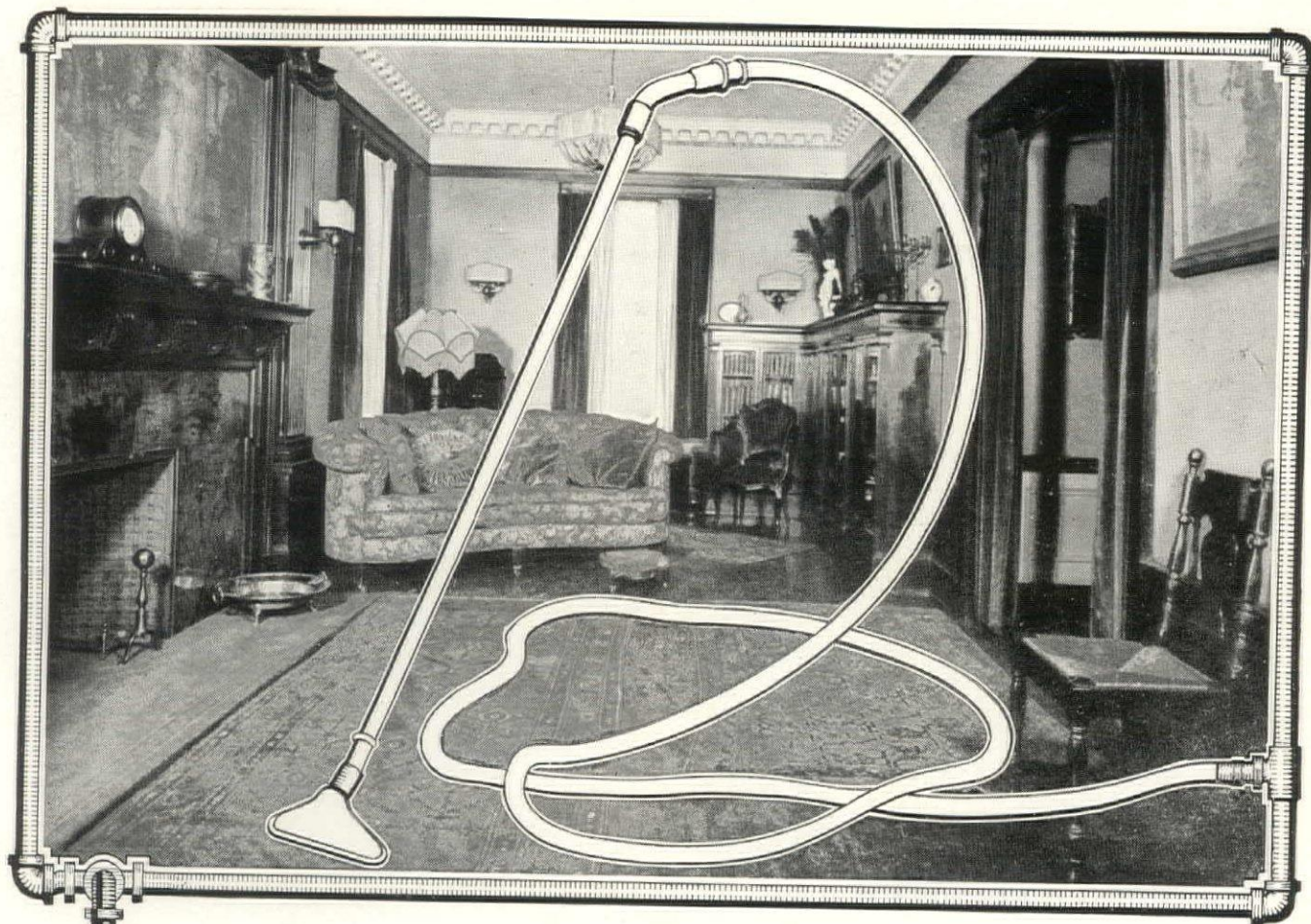
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Spot Cord is made of extra quality stock, is carefully inspected and is guaranteed free from the imperfections of braid and finish which make common sash cord wear out so quickly.

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Boston, Mass.



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***"Greatest in Efficiency
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There you have the whole secret of the remarkable success of the TUEC Stationary Suction Cleaner.

Judged from any standpoint the TUEC Fan-Type No. 260, $\frac{3}{4}$ -H. P. Model for buildings of ordinary size, is the biggest value ever offered in a stationary suction cleaner.

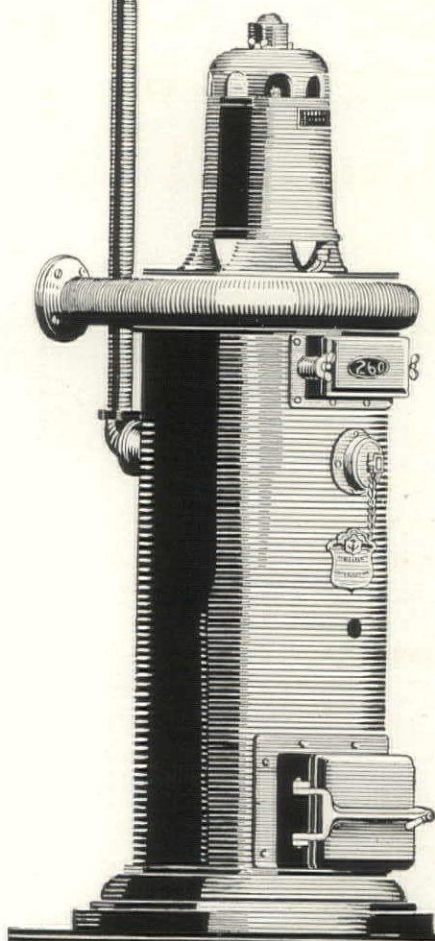
Simplicity of design is the keynote of the TUEC'S unmatched cleaning power, TUEC fan-type construction represents the latest and furthest advance in vacuum cleaner building. It costs less to maintain, requires less care and is absolutely fool-proof and accident-proof.

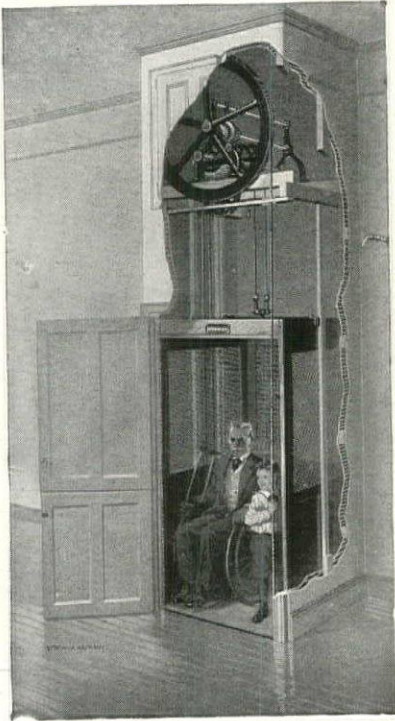
Your knowledge of vacuum cleaners and air cleaning service is incomplete if you are not familiar with all the advantages of the TUEC.

Write for catalog and call on us for advisory service.

THE UNITED ELECTRIC COMPANY,
New York Chicago Cleveland

CANTON, OHIO
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SEDGWICK Invalid Elevator

Is there an invalid in your client's family?

Then you can render a great service by recommending the installation of a Sedgwick Invalid Elevator.

Few conveniences in the whole home will so lighten family cares.

No feature will so cheer and enrich the life of the invalid.

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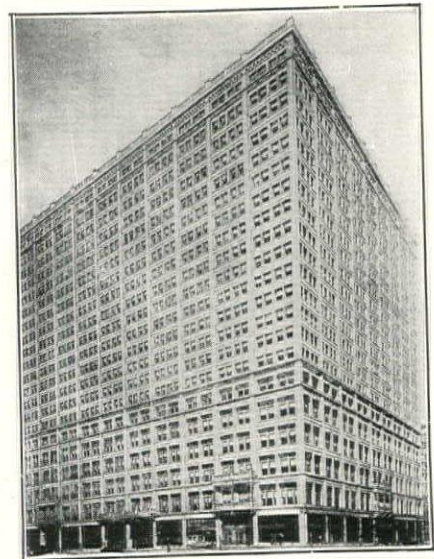
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St. Louis

Mauran, Russell & Crowell, Architects

*Every window above ground floor is
Wire Glass*

Permanence — Minimum Maintenance
Fire and Breakage Protection were
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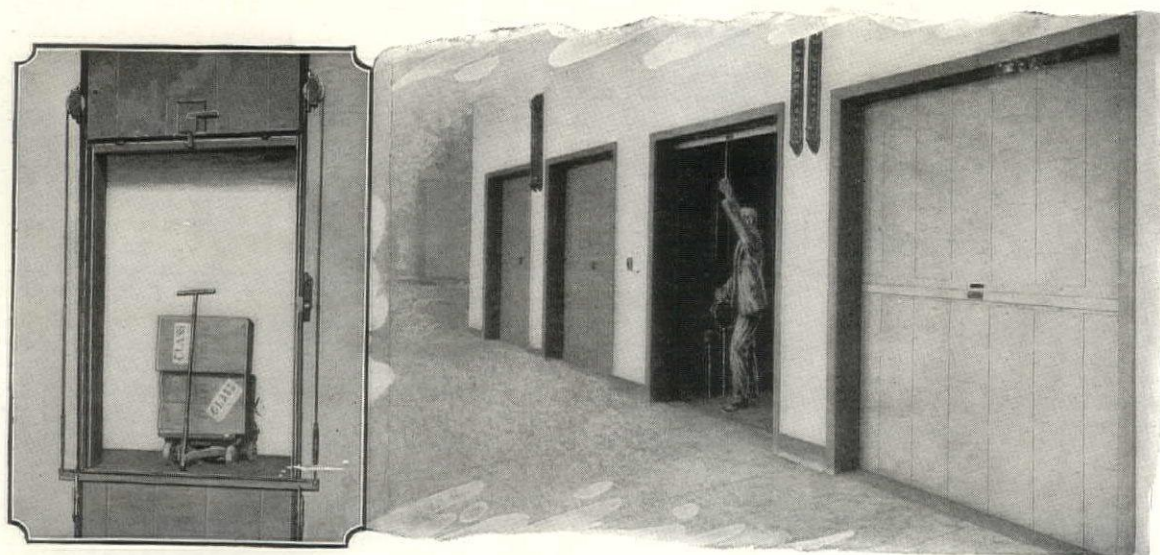
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220 Fifth Avenue, New York

St. Louis

Chicago

Put your
Elevator Door Problems
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Full Clearance for Loading and Unloading

PEELE Counterbalanced Truckable Freight Elevator Doors, because they operate vertically within the elevator shaft, consume no floor space whatever and leave full clearance for loading and unloading.

PEELLE Doors save time, labor and insurance costs. They eliminate the trouble and loss incident to stoppages and accidents. Operated electrically or manually, they combine to a high degree the elements that produce utmost elevator efficiency. Avoid imitations called "PEELLE Style", "PEELLE Type", etc.

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Battery Co.

*and many
others*

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CLEVELAND
BOSTON
PHILADELPHIA

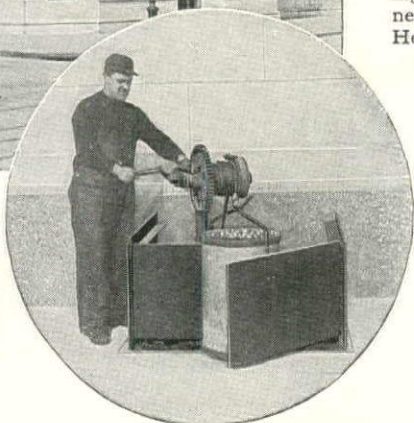
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Peelle Products Protect



Model A—manually operated—Hoist installed at Guaranty Trust Company Building, 60th & Madison Ave., New York City. That part of Hoist shown telescopes below grade when not in use.



Modernized Ash Removal Saves Time and Labor

The
G & G
Telescopic Hoist
with Automatic Gear Shifting Brake
Device and Silencer

ASH and rubbish removal from large buildings can be a source of unnecessary waste of time and money or it can be an economical and efficient operation. It depends entirely upon the method used. Architects who have investigated the G & G Telescopic Hoist know that it enables one or two men to do this necessary work far *better, quicker and quieter* than five men can perform the task under ordinary methods.

G & G Hoists are made in various models—*electric and manual*. Can be installed in old as well as new buildings where there is an opening (preferably 4 ft. square but a smaller space can be used when necessary) in sidewalk, alley or playground. No need to excavate. Heel of Hoist rests on basement floor.

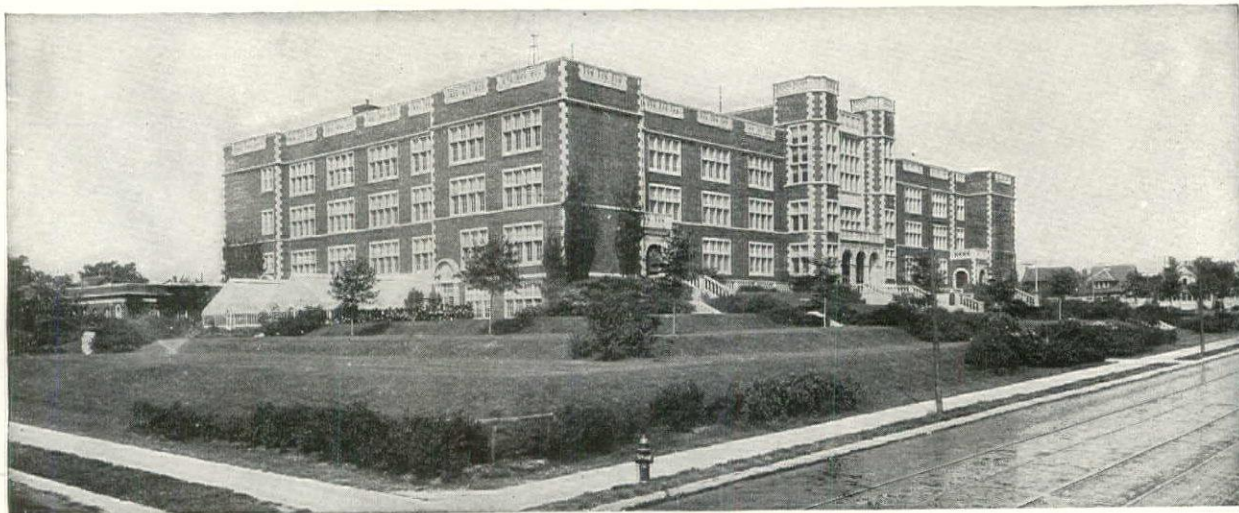
Pedestrians protected from open Hoistway by automatically operating G & G Spring Guard Gates. Hoist telescopes below grade when not in use. Sidewalk doors open and lock automatically—close and lock automatically, by turn of telescoping handle. Sidewalk doors rainproof when closed.

We will be glad to have YOU investigate the G & G Telescopic Hoist. When writing please tell us height of lift; quantity of ashes to be removed and how often; and whether cans are to be hoisted to sidewalk or high enough to dump directly into wagon alongside of Hoistway. See complete catalog in SWEET'S 1919 and 1920 Editions.

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544 WEST BROADWAY, NEW YORK CITY
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The above trade mark appears on every light



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Every architect acts as a potential salesman, whether he realizes it or not; the recommendations contained in his plans and specifications exert a tremendous influence on a client.

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Your reputation and prestige will be advanced accordingly. In Zouri fronts are incorporated every desirable feature—great strength, assurance of minimum glass breakage, beauty and maximum display value. Approved by *Underwriters' Laboratories*, Zouri key-set construction meets approval from architects, builders, dealers and merchants all over the country.

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WILL SAVE ALMOST HALF THE COST

By eliminating Sash Weights—Weight Boxes
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With this hardware you can use
PLANK FRAMES AND NARROW MULLIONS
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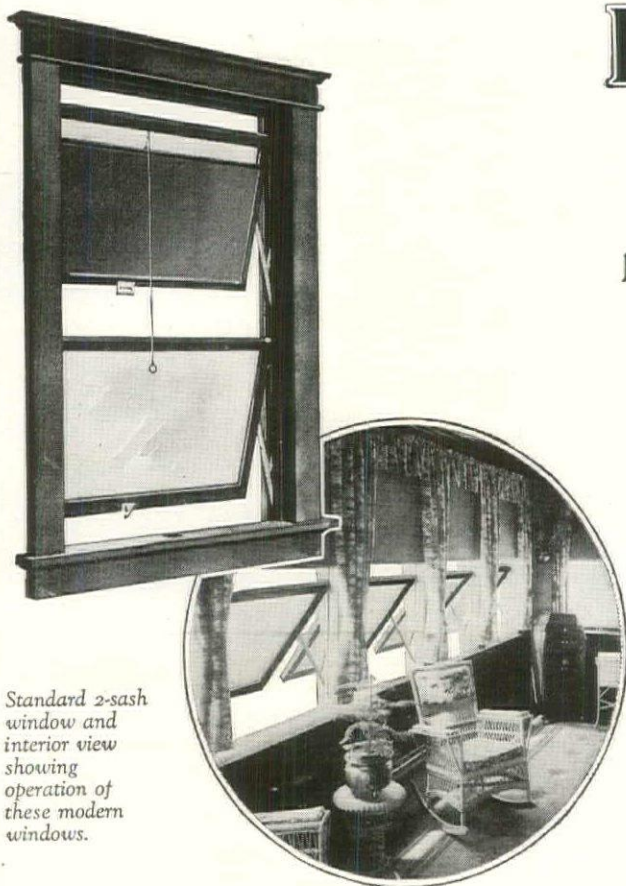
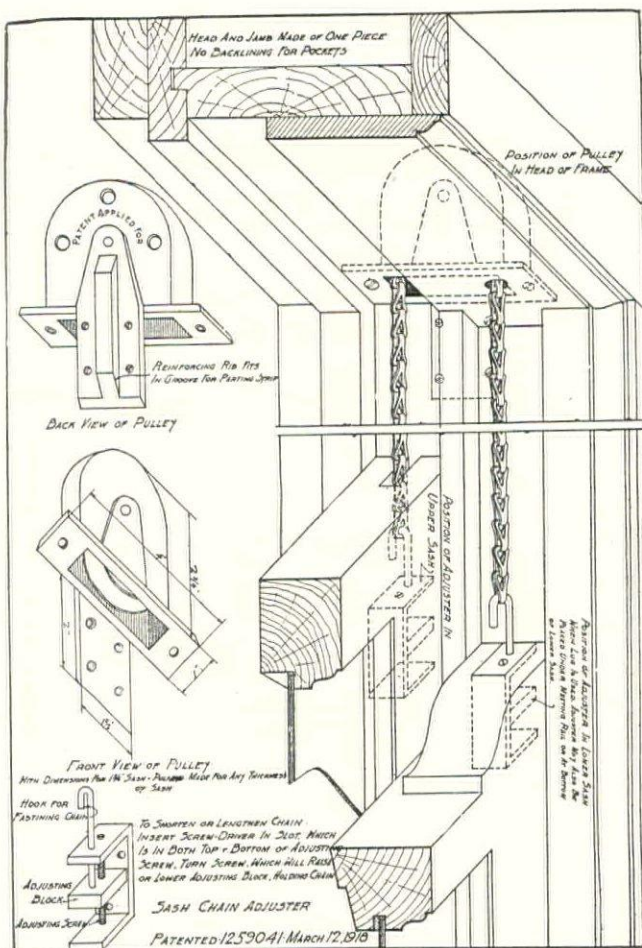
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Standard 2-sash
window and
interior view
showing
operation of
these modern
windows.

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SIMPLEX
WEIGHTLESS REVERSIBLE
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MADE OF SOLID BRONZE

For Homes, Office Buildings, Apart-
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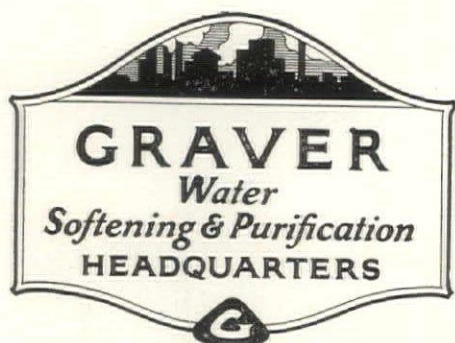
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"I'll wait for the GRAVER"

IT is a matter of regret to us that, despite our best efforts, we are still unable to make deliveries on the GRAVER ZEOLITE WATER SOFTENER with the promptness that we desire to characterize Graver Service.

Yet, were it not for the inconvenience caused to our customers, we might consider the situation a blessing in disguise, because of the many complimentary expressions of these customers, brought out by our apologies to them for lack of more rapid production.

The spirit of these messages may be summed up in the words *"I'll wait for the Graver."* The implied preference for Graver Products is, we believe, a tribute to the unswerving maintenance of Graver quality for 63 years—a quality that must always come before any other consideration.

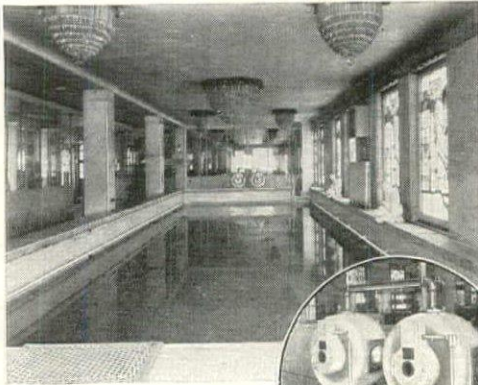
We have just published a descriptive Bulletin on the Graver Zeolite Softener. A copy of it will gladly be sent to any one upon request.

GRAVER *Corporation*

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*Steel Tanks and General Steel Plate Construction
Water Softening and Purifying Equipment*

East Chicago, Indiana



Swimming Pool, Fleischman's Baths, New York, and close-up of the two Type E-22 R. U. V. Sterilizer.

R. U. V. Sterilizers Protect This Popular Swimming Pool

THE beautiful swimming pool at Fleischman's Baths, New York, is one of the most popular pools in the United States. It is patronized by thousands of swimmers—day and night—every month of the year. It is especially popular with women and children. Patrons appreciate the fact that nothing has been overlooked to keep the pool in the very highest state of sanitation.

The 60,000 gallons of water in the Fleischman pool is kept in constant circulation from the pool through quartz sand filters and aerators and then through two R. U. V. (Ultra Violet Ray) Sterilizers which purify every drop of water before its re-entry into the pool. These R. U. V. Sterilizers—together with the circulating system—not only provide perfect sanitation but effect a great saving in water and heat over the old refill method.

R. U. V. Sterilization is accomplished without the aid of chemicals or gases. Automatic and economical in operation. Does not change taste, color or temperature of water.

The experience and recommendations of our expert Sanitary Engineers are at your service in designing sanitary swimming pools.

Address Department "M"

The R. U. V. Company, Inc.

165 Broadway New York City

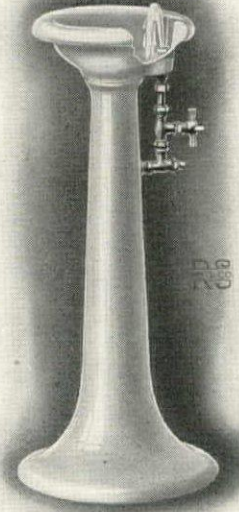
The "Vertico-Slant" Stream of the Rundle-Spence Drinking Fountain

Overcomes formidable objections put forth by scientists to some types of this modern invention.

Lips cannot touch the nozzle, thus preventing contamination.

The stream of water is slanted just enough to make drinking easy and comfortable, at the same time avoiding the bad features of the vertical stream fountains, which have been demonstrated to retain bacteria from 2 to 135 minutes.

It uses less water than the average globe-shaped drinking head.



Write for circular giving greater details

The Rundle-Spence Manufacturing Company

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Your reputation is behind your specifications. For over twenty-five years Kewanee Private Utilities Company, founded on the basis of honest workmanship and fair dealing, has supplied



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to satisfied users outside the limits of public utilities. Let our reputation be behind your utilities specifications. Our free booklets contain information that you will find valuable in your data library.

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GOULDS PUMPS -

"The right pump for every pumping need"



HOUSE OF DWIGHT JAMES BAUM

DWIGHT JAMES BAUM, ARCHITECT

WITH no restrictions other than those dictated by his years of experience the architect in planning his own home, as in this case, usually turns to Goulds for his Pumping Equipment.

It is a matter of precedent in many of the best offices to consult with Goulds whenever pumping problems arise.

The Goulds Manufacturing Company

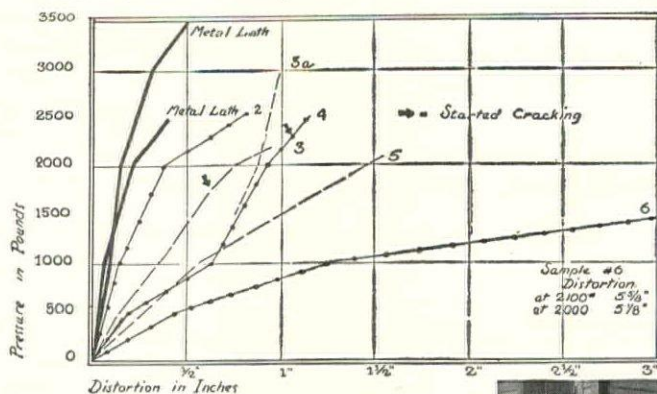
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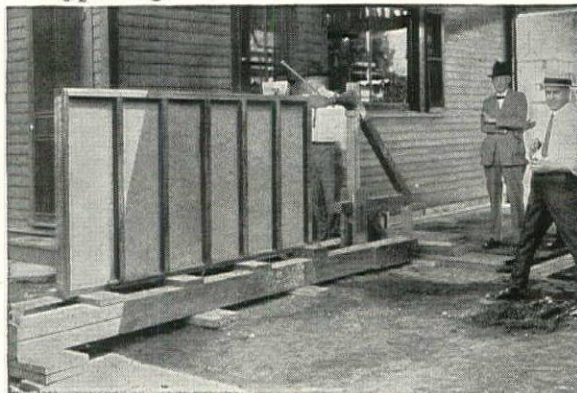
Metal Lath vs The Field

RECENT distortion tests conducted in Omaha to show the best possible type of exterior wall construction proves Back Plastered Metal Lath to be the *best possible*. You will note from the chart that at the greatest number of pounds pressure (3,500) back plastered Metal Lath showed a distortion of one-half inch. At this pressure it had not cracked nor did it show any signs of weakening. From the chart, the tests on other types of construction may be observed.



Types No. 3 and No. 4 started to crack at points indicated. The chart proves the success of Metal Lath. As a result the building codes of a great many cities will undoubtedly be changed.

THE picture shows how the test was conducted. Heavy timbers were placed on the scale, which was connected with the lever shown leading to the jack. As the pressure of the jack was increased, the load was registered directly on the scale beam. Maximum pressure was forced against the wall of back plastered Metal Lath but it did not crack.



NOT only this test, but also a test conducted by Armour Institute, shows the superiority of Metal Lath over other forms of construction. The Armour test was to determine what form of wall construction made the best insulator. Again Metal Lath proved that "Metal Lath was against the field". Just as Metal Lath is becoming a means for better and more economical building construction, Herringbone Rigid Metal Lath is becoming *THE* Metal Lath in great demand today. It has proven its success to many architects and builders as well as being entirely satisfactory to the owner.

The General Fireproofing Co.

YOUNGSTOWN, OHIO

BRANCHES

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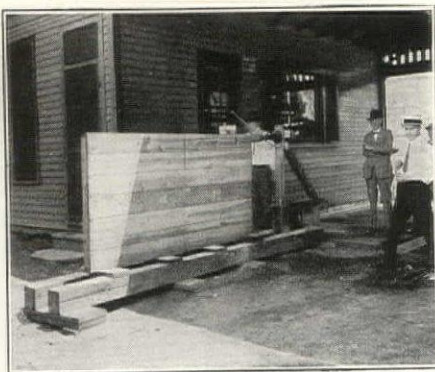
Important New Tests May Cause Revision of Omaha Building Code

Superiority of back plastered metal lath construction again demonstrated, substantiating the findings of Government Experts.

In the distortion tests just completed at Omaha, six different types of exterior wall construction were tested for strength in specially designed apparatus. Of these, *metal lath back plastered* proved to be the stiffest of all the types. Though it was the only sample not stiffened on the interior by the application of ordinary lath, yet it

**Showed No Cracks Under
Pressure of 3,500 Pounds**

—the limit of the pressure apparatus. No other sample was given this extreme test.



This most recent triumph for metal lath but substantiates the findings of the United States Bureau of Standards which, after years of investigating the merits of ten different types of wall construction, gave metal lath, back plastered, omitting sheathing, the only 100 per cent rating.

Back Plastered METAL LATH Construction Wins Wide Recognition

Metal Lath as a base for stucco and back plastered, sheathing omitted, offers such definite advantages of economy, fire resistance and durability that it is being recognized by more and more cities throughout the country.

Back plastered metal lath construction is further explained in *Fireproof Construction*. Send for copy, also samples of *Kno-Burn* Metal Lath.

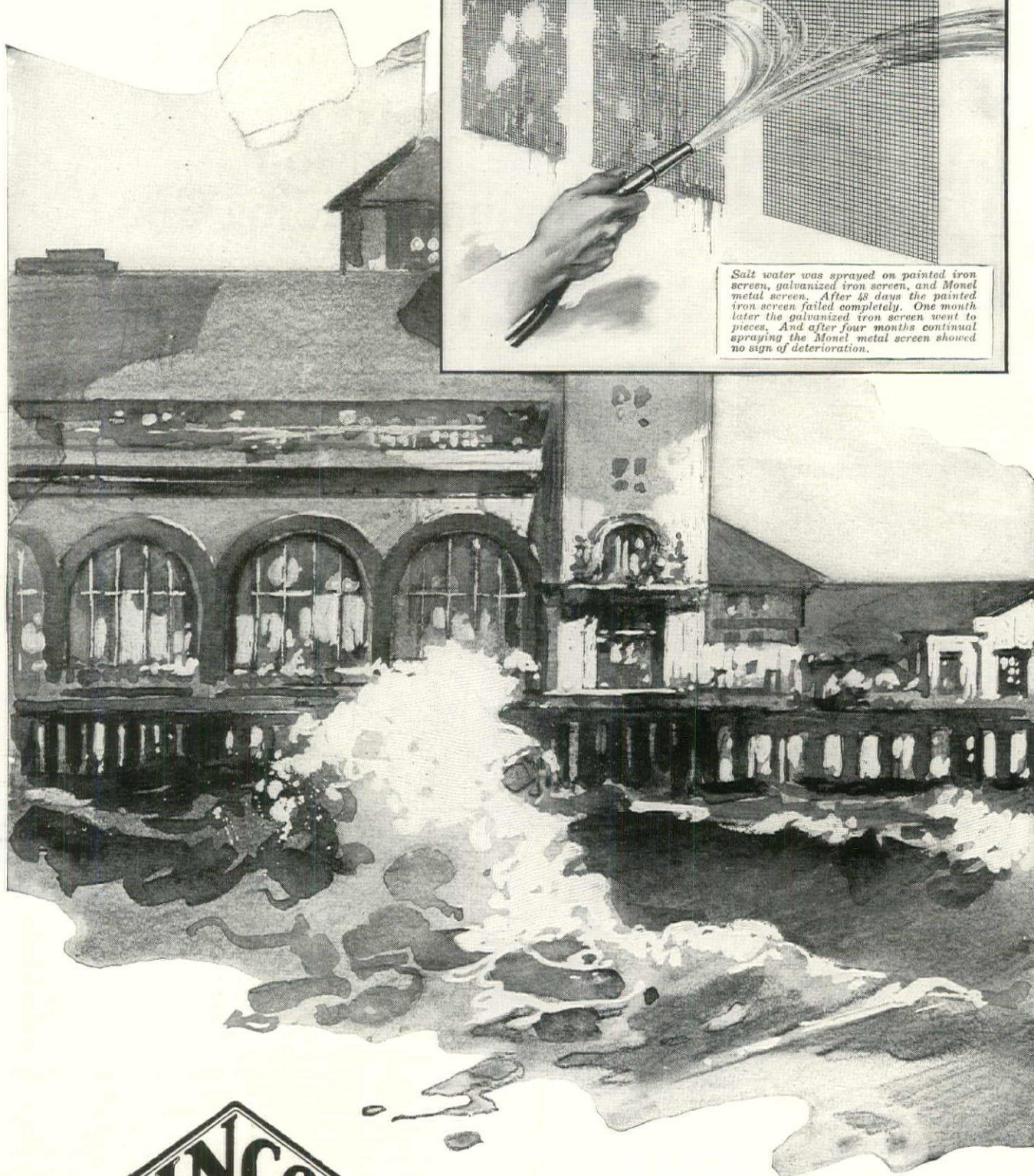
North Western Expanded Metal Co.
934 Old Colony Building
CHICAGO

New York
Los Angeles

Boston

Atlanta
Cincinnati

Kno-Burn



Salt water was sprayed on painted iron screen, galvanized iron screen, and Monel metal screen. After 48 days the painted iron screen failed completely. One month later the galvanized iron screen went to pieces. And after four months continual spraying the Monel metal screen showed no sign of deterioration.


Monel metal

THE INTERNATIONAL NICKEL COMPANY

Build your screen specifications on test facts

HERE are shown galvanized iron, painted iron and Monel screen samples after a few months intermittent spraying with salt water

Monel alone survives.

Nor is salt sea coast corrosion the only cause of screen failure. City smokes contain chemicals no less destructive.

Rust and Corrosion Resistance

The first Monel screen put up (nine years ago) is still in service untouched by rust, corrosion or abuse.

Strength

Monel wire is 60% stronger than copper. So the usual rough usage given screen doors or porch screening has little effect on it. And it can be stretched in the frames to permanently eliminate sag.

Visibility

This same extraordinary wire strength permits the use of fine mesh without the necessity of making each strand so thick that the screen is unsightly because hard to see through.

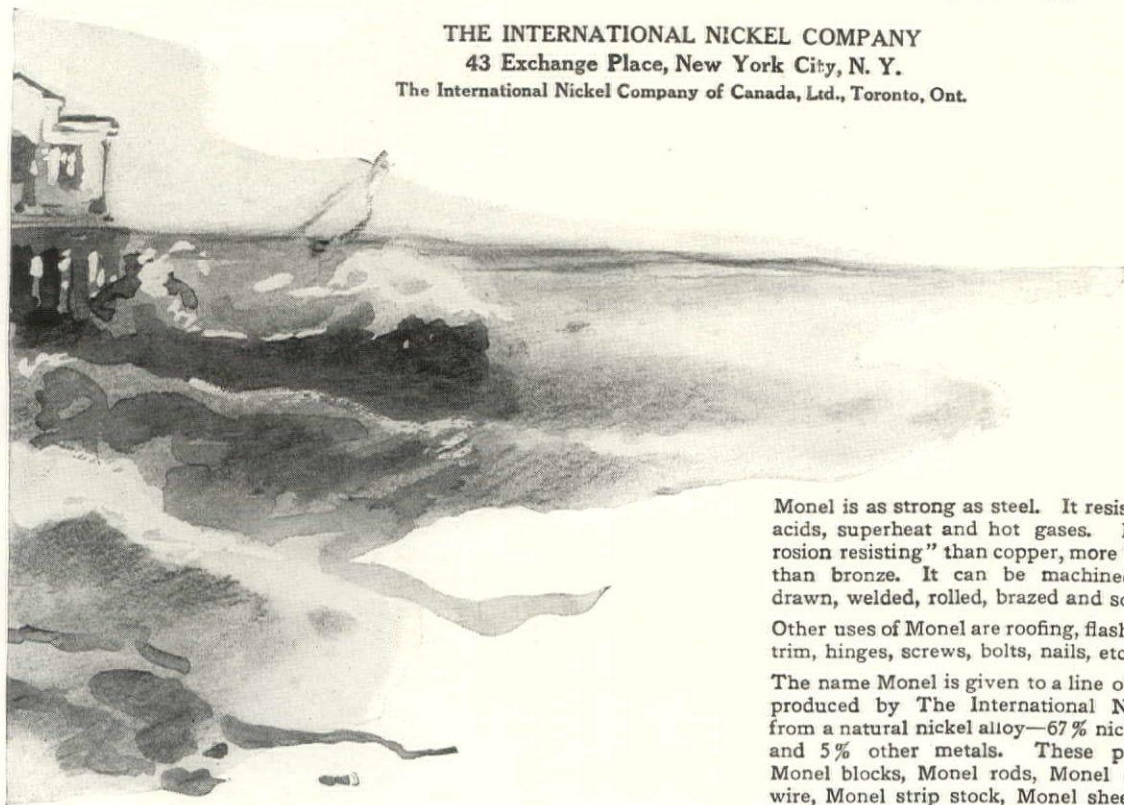
Economy in size range

In Monel wire screen, the screen builder can secure the exact width that cuts to best advantage. Monel screen is woven in 18"—and by 2-inch widths increases up to 48" wide. Gauges are .009 for 18 mesh and .010 for 14 and 16 mesh screening.

Use and life record

Monel screen's nine year life record has led to its specification by the U. S. Government on hospital buildings at Panama. Colonel Gorgas writes: "as good as when installed—a very severe test for any screening."

THE INTERNATIONAL NICKEL COMPANY
43 Exchange Place, New York City, N. Y.
The International Nickel Company of Canada, Ltd., Toronto, Ont.



Monel is as strong as steel. It resists alkalis, most acids, superheat and hot gases. It is more "corrosion resisting" than copper, more "wear resisting" than bronze. It can be machined, forged, cast, drawn, welded, rolled, brazed and soldered.

Other uses of Monel are roofing, flashing, ornamental trim, hinges, screws, bolts, nails, etc.

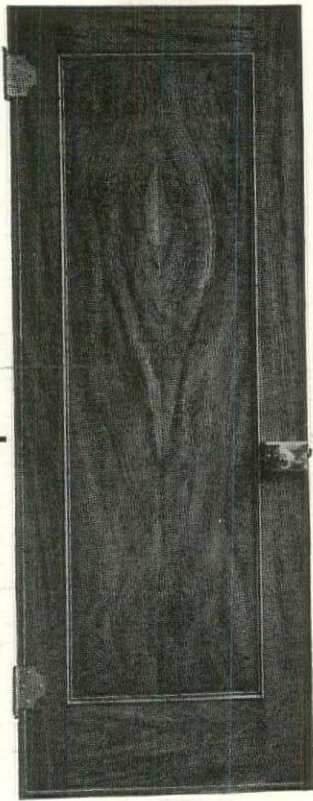
The name Monel is given to a line of metal products produced by The International Nickel Company from a natural nickel alloy—67% nickel, 28% copper, and 5% other metals. These products include Monel blocks, Monel rods, Monel castings, Monel wire, Monel strip stock, Monel sheets, etc. Monel bears the Inco Trade Mark of The International Nickel Company, producers of Inco Nickel—the standard Nickel for alloy steels.

Monel screen is made in the usual widths, meshes and gauges. Write us for names of manufacturers where Monel Metal screen may be obtained.

screen



THE INTERNATIONAL NICKEL COMPANY



ALIGNUM

Fireproof Doors

for

Hospitals
Industrial Buildings
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"Alignum" is a mineral composition manufactured from fireproof mineral components, principally asbestos, amalgamated under hydraulic pressure, resulting in a very strong but resilient product. It does not contain any deleterious ingredients such as cinders, clay, plaster of Paris, magnesite or Portland cement.

"Alignum" is like wood in that it can be worked with ordinary carpenters' tools, and is finished in the same manner and with the same materials as wood. But, unlike wood, it will not decay, swell or shrink, warp, twist or check.

Send for descriptive bulletin and detail specification

ALIGNUM FIREPROOF PRODUCTS CO., Inc.
356 LEXINGTON AVENUE - NEW YORK

Boston Office
181 Congress Street

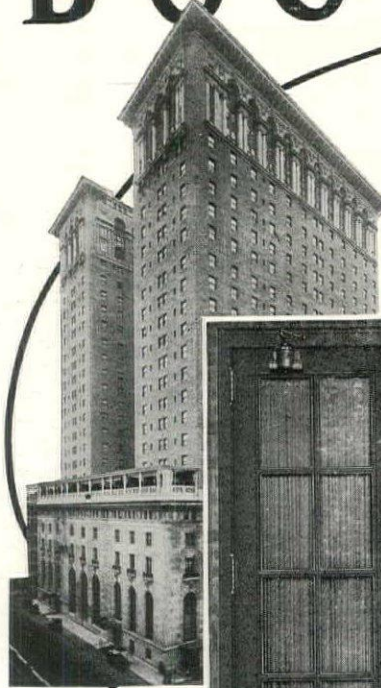
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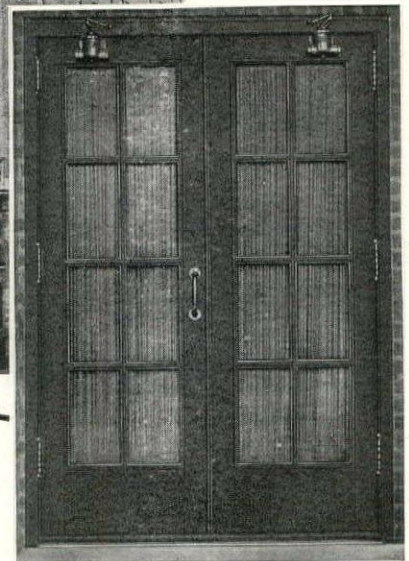
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Exit Doors



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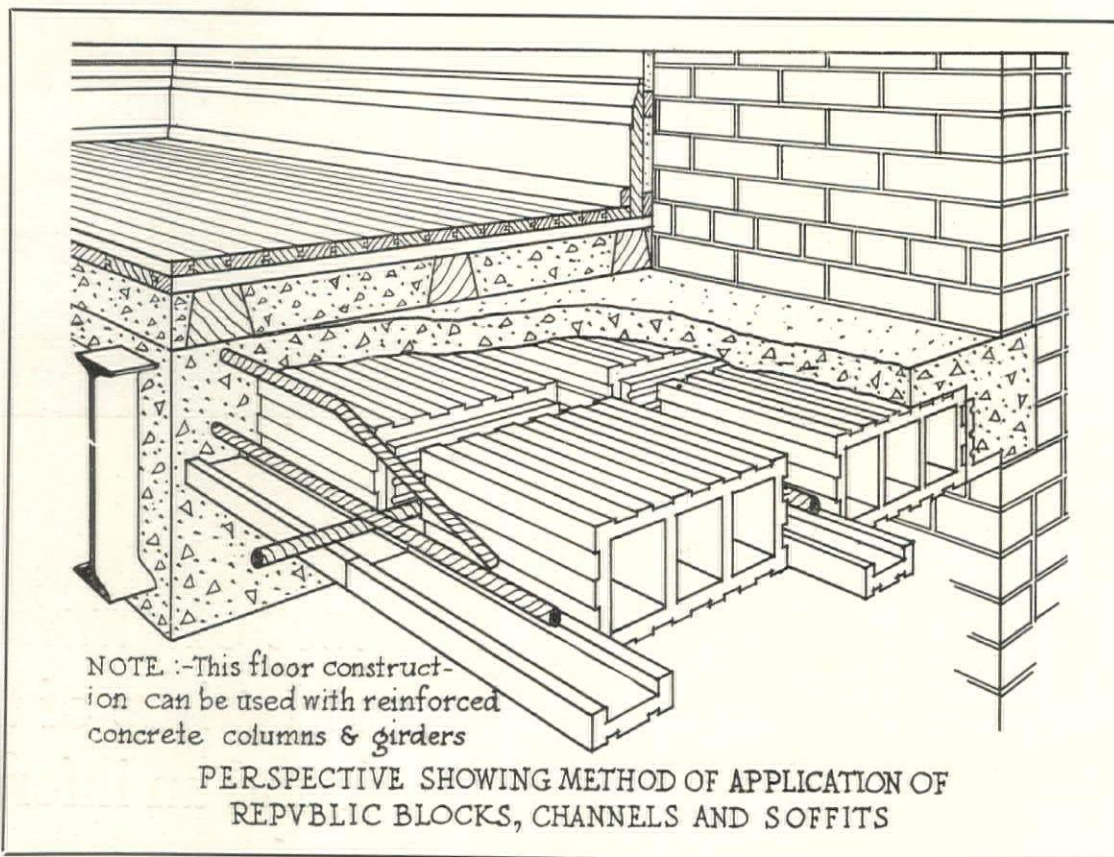
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Reliance Fireproof Door Co.
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Republic Two-Way Fireproof Floor and Roof Construction



Lighter and Stronger Floors

BY using Republic Tile Blocks instead of concrete, Republic Construction saves several inches in depth, producing lighter floors.

Supported on four sides instead of on two sides as in one-way construction, the Republic Two-Way floor possesses greater rigidity and strength.

Less dead weight and greater strength are only two of the reasons why 95% of the architects who have specified our construction once have used it again. Our engineers will gladly discuss with you without obligation its many advantages and economies.

66 contracts now in progress

Saves
from 40% to 60%
of
**Structural
Framing**
in

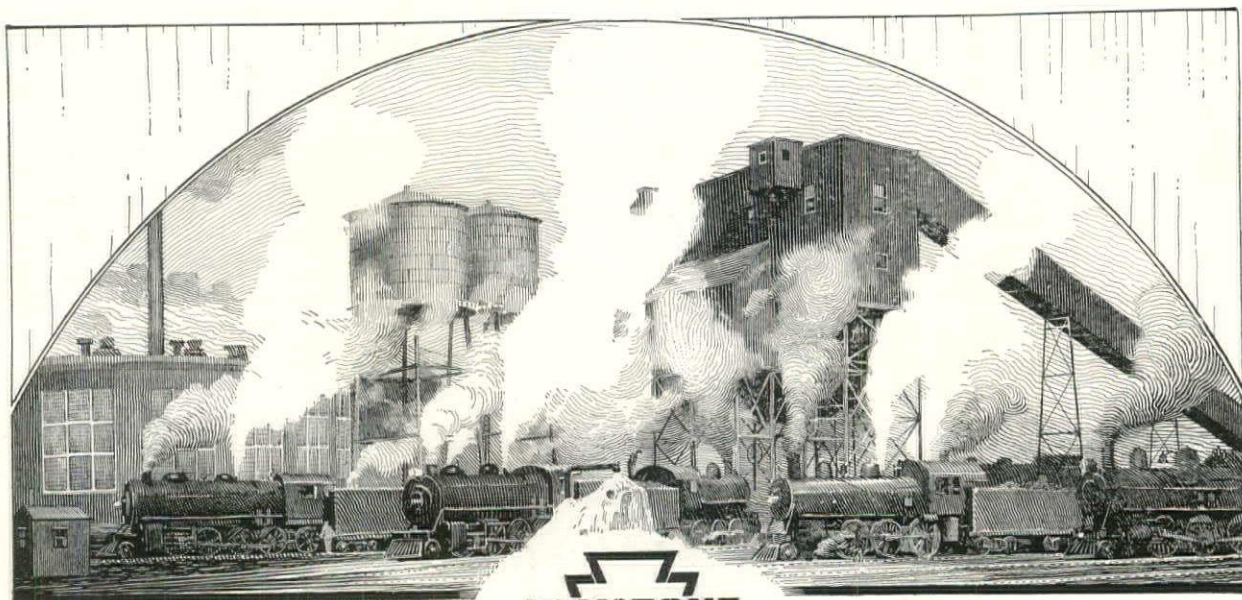
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REPUBLIC FIREPROOFING COMPANY, INC.

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ENDURANCE is the test of *quality*. Amid the smoke, fumes and grime of the round house and train shed is found an inferno for the rapid deterioration of steel.

It has been found by actual experience that this material gives *substantial protection* against the action of smoke and acid fumes, along with extremes of temperature and the corrosive influences of the weather. KEYSTONE Copper Steel pays for itself time and again through the years it is in service by saving costly replacements and in the preservation of valuable property. It furnishes conclusive proof that high grade steel when properly alloyed with copper does *resist rust* to a remarkable degree—and further, it assures the architect and builder the maximum of satisfactory service under all conditions.

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General Offices: Frick Building, Pittsburgh, Pa.

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Sheet and Tin Mill Products of every description, including Black Sheets, Galvanized Sheets, Tin and Terne Plates, Electrical Sheets, Corrugated and Formed Roofing and Siding Materials, Special Sheets for Stamping, Wellsville Polished Steel Sheets, Automobile Body Sheets, Deep Drawing Sheets, Stove and Range Sheets, Black Plate, Etc.



THE PRODUCTS of this Company have gained a high reputation the world over for their general excellence and reliability. All of our standard Steel Sheets can be supplied in KEYSTONE quality, if specified.



Send for our Keystone Booklets showing service tests

Apollo Best Bloom Galvanized Sheets
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 American Bessemer and Open Hearth Black Sheets
 Apollo Formed Roofing and Siding Products
 Corrugated Sheets — Black and Galvanized
 Fire Door Stock
 Roofing Tin Plates, Etc.

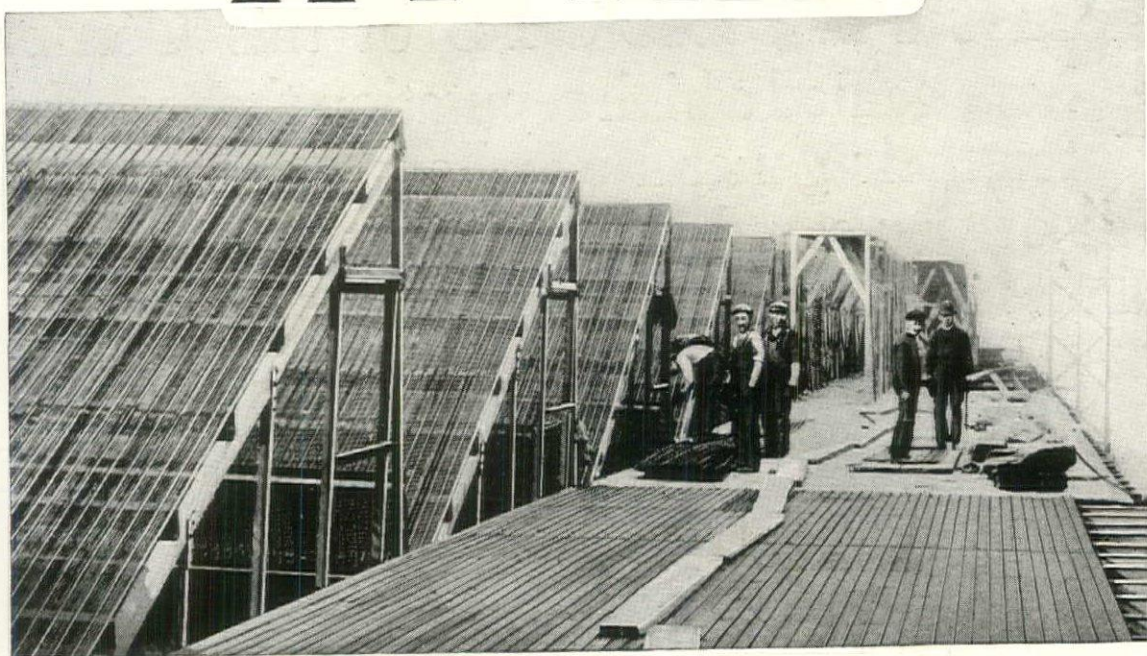
We manufacture Sheets and Plates for every known purpose. Leading metal merchants sell these products. Write nearest District Sales Office for full information. Do you have our Weight Cards and Bundling Table?

American Sheet and Tin Plate Company
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HY-RIB



Hy-Rib Saw-tooth Roofs Before Concreting, Oliver Chilled Plow Co. Prack & Perrine, Architects

Quickly Erected, Concrete Roofs

The most practical roof for present-day needs is the Hy-Rib concrete roof. Fireproof, permanent and light in weight this roof is rapidly and economically erected without the use of forms and with minimum labor.

Hy-Rib is a steel mesh stiffened by rigid ribs all manufactured from a single plate. The Hy-Rib sheets are set in place, the concrete applied and the under surface plastered. The construction is very simple and rapid—no forms nor special equipment are required.

The Hy-Rib concrete roof is light in weight, using little material and is erected by few workmen. This thin slab effects a great saving in dead weight and reduces the size and cost of roof members, columns and foundation.

Thousands of manufacturers have availed themselves of the advantage and economy of Hy-Rib not only for roofs but also for sidings, partitions, ceilings, floors, etc. Investigate Hy-Rib for your prospective building by writing to-day for Hy-Rib book.

TRUSCON STEEL COMPANY, YOUNGSTOWN, OHIO

Warehouses and Sales Offices in Principal Cities

TRUSCON
STEEL CO.
TRUSCON
BUILDING
PRODUCTS



Put your home under this fire-proof blanket

WHEN your house is covered with Ambler Asbestos Shingles, laid in the Ambler way, you have over your entire roof what is virtually a fire-proof blanket.

You have absolutely protected your roof from flying sparks and embers and also all the natural destructive forces.

Durability and fire-resistance are the chief characteristics of all

AMBLER ASBESTOS BUILDING PRODUCTS

Ambler Asbestos Shingles. Made in 3 styles, 4 permanent colors: Newport gray, natural slate, red and green. Lie snug to the roof, forming water-tight and fire-tight covering. Also $\frac{1}{4}$ inch mixed color shingles in 7 shades of reds, browns and grays.

Ambler Asbestos Building Lumber. For siding, partitions, fire doors and wherever fire resistance is essential.

Ambler Asbestos Corrugated Roofing and Siding. For industrial, railroad and farm buildings.

Ambler Linabestos Wallboard. Wherever a superior flame-proof, fire-resisting wallboard is wanted.

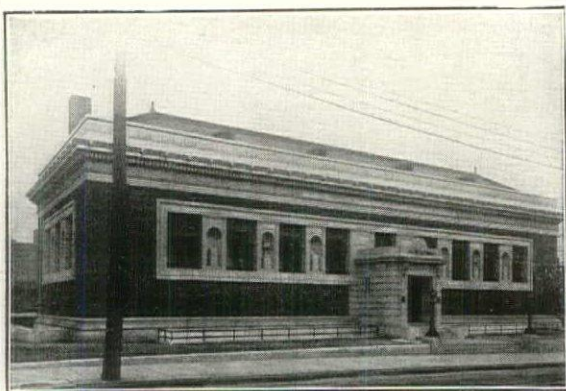
*Send for Samples and Literature showing
reproductions of installations*

Asbestos Shingle, Slate & Sheathing Co.

Ambler, Penna.

Factors
KEASBEY & MATTISON CO.
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Manufacturers of: Ambler Linabestos Wallboard,
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Shingles, Ambler Asbestos Corrugated Roofing and Siding,
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Crunden Library, St. Louis, Mo.
Eames & Young, Archts.

A Triumph of Protection

Although this building was constructed upon ground "filled in" on the site of a former pond, and although springs were flowing during excavation and construction—the entire basement was rendered *waterproof* with

R.I.W. MARINE CEMENT
REMEMBER ITS WATERPROOF
REG. U.S. PAT. OFF.

This "R.I.W." protective product is a black, waterproof composition for damp-proofing the exterior of foundation walls and footings, filling seams, etc. It is applied cold with a brush—*need not be heated*. Used extensively on concrete floors over which wood sleepers and wood flooring are to be laid.

For details write Dept. 97

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Technical and Scientific Paint Makers Since 1848
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Works: Long Island City, N. Y., and London, England

R.I.W.
REMEMBER ITS WATERPROOF
REG. U.S. PAT. OFF.
STEEL NEED NOT RUST!
WOOD NEED NOT ROT!
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White Plains, N. Y.

Kenneth M. Murchison, Jr.
Architect

30,000 square feet of "Bayonne" used on porches and sun parlors of Gedney Farms Hotel.

BOYLE'S Roof and Deck BAYONNE Cloth

Has years of service and the experience of Architects the country over to recommend it. No white lead bedding required, yet lays flat and stays flat. It is reliably waterproof.

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Used on these Sidewalls and Roofs

If you would have exteriors of pure delight—yet strictly practical and economical—use "Creo-Dipt" Stained Shingles for sidewalls as well as roofs.

Save the waste and muss of staining on the job, and do not divide responsibility for quality of shingles, stain and fast colors. Save paint and repair bills for a lifetime. Thirty shades of red, brown, green, gray in 16, 18 and 24 inch lengths.

Handled ready to lay without waste. No additional brushcoating necessary. Proof against dry rot and weather. The open market does not afford such quality in shingles or stain.

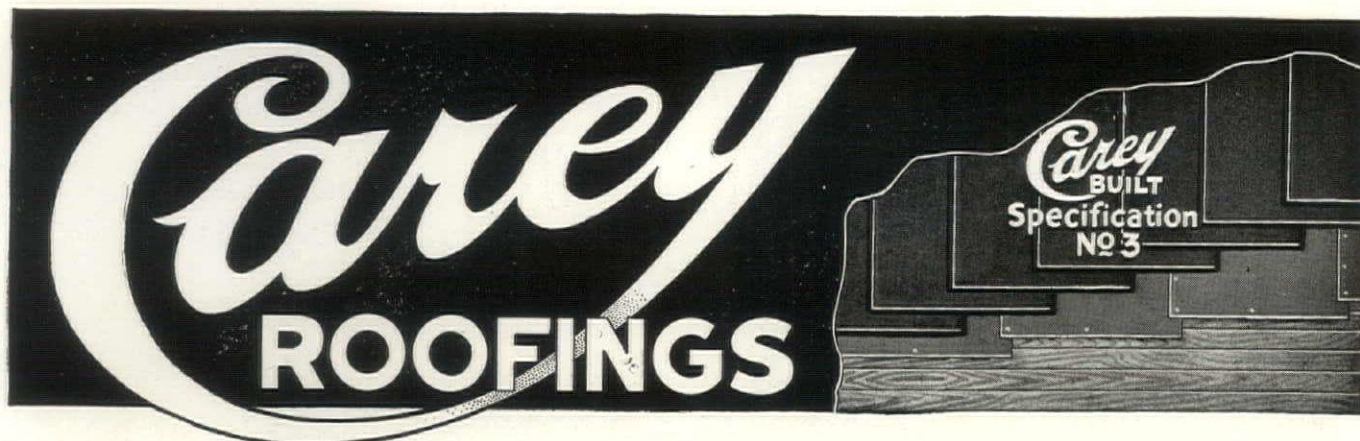
For valuable suggestions, send today for Portfolio of 50 Large Photographs of Homes by prominent architects and Color Samples. Ask about "Creo-Dipt" Thatch Roofs; 24 in. Dixie White Sidewalls; Varied effects for Group of Homes.

CREO-DIPT COMPANY, Inc.

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Estate of F. S. Carver,
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Tooker & Marsh, N. Y.



Consider the atmosphere when you specify a roof!

IN big cities and in manufacturing districts the air is often burdened with smoke containing sulphur and other acid or gas elements, and with dust and fumes from manufacturing plants.

This danger to roofs and buildings can be minimized, and the menace of new industries that may spring up around your building forestalled, by using the roofing that has literally "stood the acid test."

A letter from the Morton Salt Company says: "Carey Roofing was put on

all our Hutchinson Kansas buildings when the plant was remodeled in 1907.

Our Port Huron manager states that 'since coming with our concern he has used nothing but Carey Roofing as he found that it resisted the salt dust much better than any roofing that he had tried or heard about'."

Carey Roofings are used on the Youngstown Sheet and Tube plant, The Edgar Zinc plant, the Obea Nester Glass Works, the Carborundum plant, and many others that have special atmospheric conditions. They will afford *unusual* protection to your buildings.

Write for specification book.

We are headquarters for the building and insulating products of

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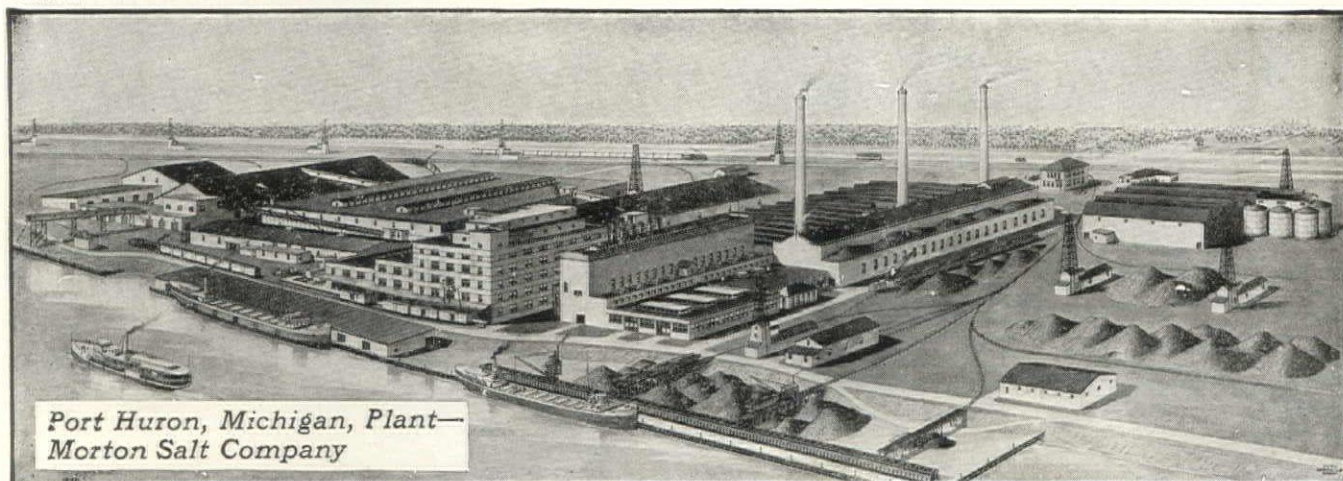
A Roof for Every Building

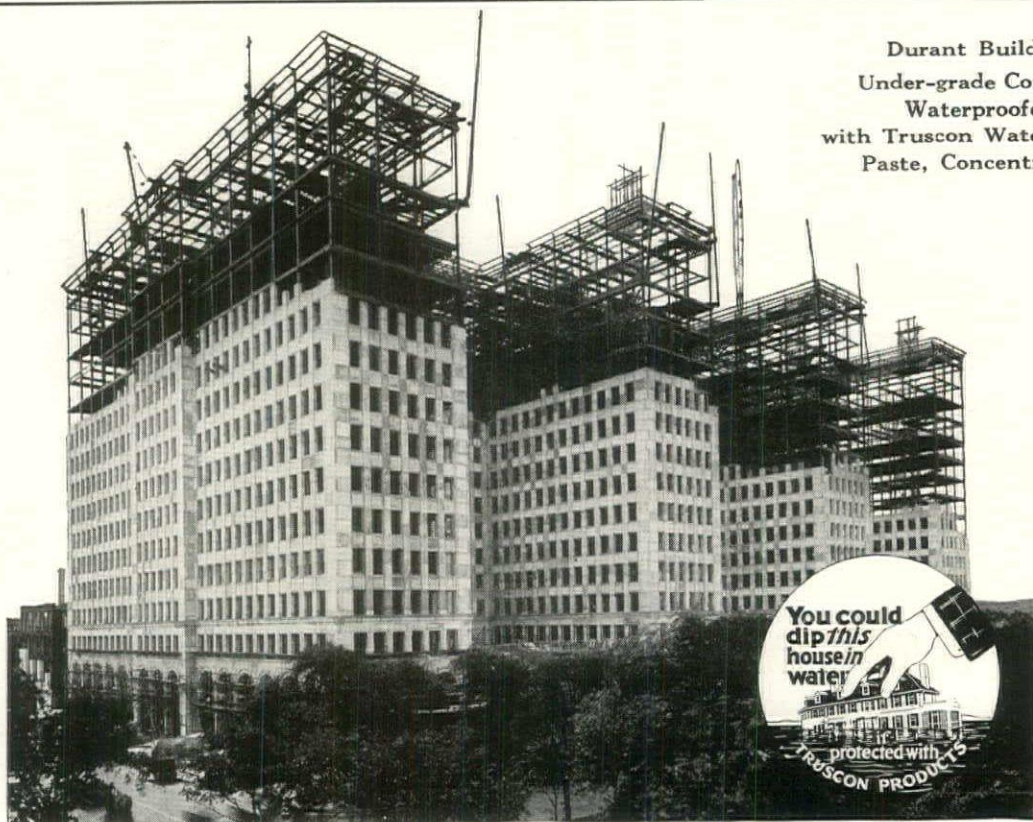
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504-524 Wayne Ave., Lockland,

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Arch. 8-20





Durant Building
Under-grade Concrete
Waterproofed
with Truscon Waterproofing
Paste, Concentrated.

The Durant Building, Detroit—in which will be installed the General Offices of the General Motors Corporation.
Albert Kahn, Architect. Thompson-Starrett Co., General Contractors.

They Take No Chances

Make an audit of the big building operations of the last few years—of the big construction jobs that are going up now. Note how many of them have their foundations and under-grade concrete thoroughly and permanently waterproofed with

Grand Central Terminal of New York, the St. Louis Hotel Statler, Victor Talking Machine Co., American Can Co. of North Kansas City, Detroit News Building, Hotel Biltmore, Pennsylvania Freight Terminal at Chicago, University of Michigan Hospital, Philadelphia Warehouse of Sears, Roebuck & Co., Cleveland Plant of the Fisher Body Co., the General Motors Corporation Durant Bldg., and hundreds of others. On all these operations, architects, contractors and owners insisted that the foundations be protected and strengthened against water with Truscon Waterproofing Paste, Concentrated. They used Truscon because they would take no chances. They wanted what they knew would give them predetermined results.

TRUSCON Waterproofing Paste CONCENTRATED

Truscon Waterproofing Paste is Concentrated—you require less to the cubic yard of concrete. Furthermore, it comes in the best possible form for rapid, easy and uniform mixing—Paste form. It is simply added to the gauging water without any trouble or extra expense. It is always dependable, and its cost is negligible.

Full information on Truscon Waterproofing Paste, Concentrated, will be sent on request. Ask for "Structural Waterproofing."

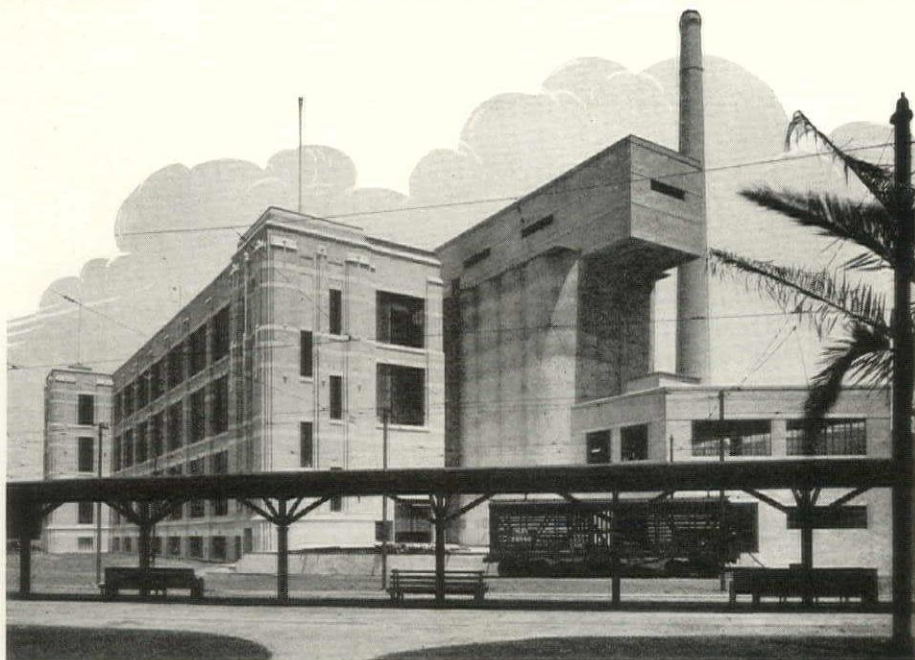
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The World's Largest Manufacturers of
Integral Waterproofings

DETROIT, MICHIGAN

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Architectural and
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A complete handbook and reference guide upon Integral Waterproofing, 100 pages, 94 drawings, diagrams and plates. Size 8 1/2 x 11". Free to architects and engineers only. Request must be written on business stationery. Price to public, 50c.



Effective Waterproofing Assures Permanence

EFFECTIVE waterproofing not only assures permanence but reduces cost of upkeep. By the use of waterproofing in storage houses and in the basements of large department stores—materials can be kept dry and the problems of dampness and seepage of water will be solved.

GF No. 10 Paste, aside from its waterproofing value, acting as a lubricant breaks the surface tension of the water. It provides a greater natural density of the concrete. It may be applied more perfectly, with the assurance that the exclusion of water in the finished coat means no cracks and no discoloration. This fact is surely indicative of low upkeep.

In order to get the best results from the use of Waterproofings and Damp-proofings the best must be used. GF Waterproofings and Dampproofings have been experimented with, studied over and tested, and the results showed success, before they were placed on the market.

There is no job of concrete or cement work where waterproofings should not be used. *Jobs that are effectively waterproofed are GF Waterproofed.*

The General Fireproofing Company
YOUNGSTOWN, OHIO

BRANCHES

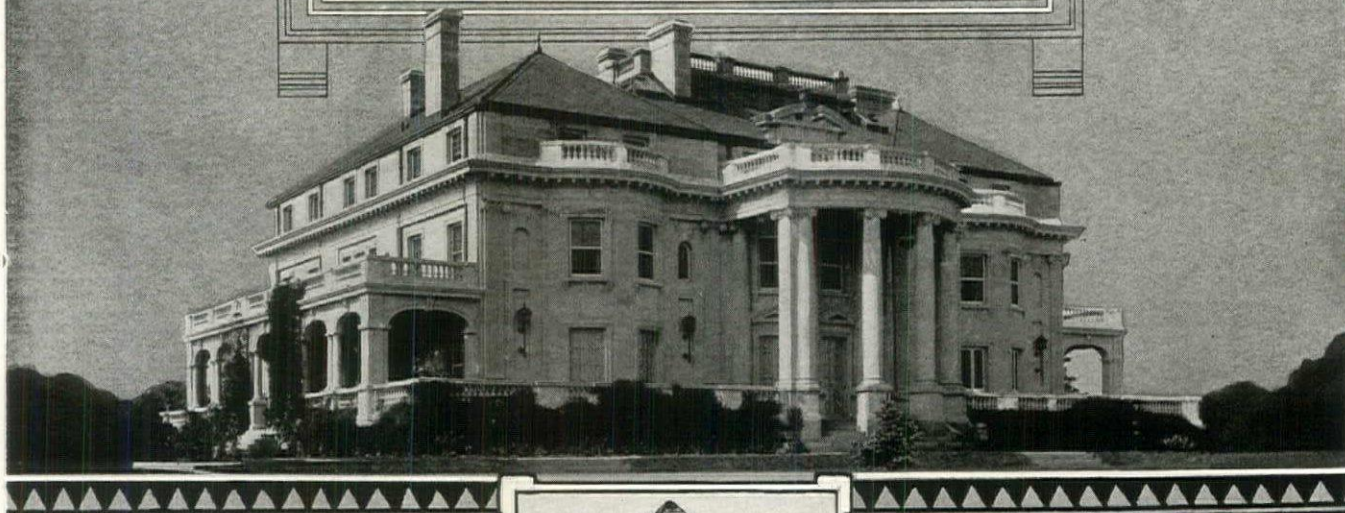
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WATERPROOF foundations are the first requisite and one of the most important contributing factors to the *permanence* of any building.

Architects and engineers so thoroughly appreciate the *permanence* of "ANTI-HYDRO" for both waterproofing and hardening concrete, that they are unwilling to erect their finest structures without its protection.

Pictured below is one of the many excellent types of "ANTI-HYDRO" installations. Both the concrete foundations and verandas are *permanently* waterproofed with "ANTI-HYDRO."

If age means anything to you, "ANTI-HYDRO" has just scored its sixteenth year of continuous success!



BENCOE RESIDENCE
WHITE PLAINS, N. Y.



Architect: Howard Nott Potter
New York City
Contractor: George Symonds
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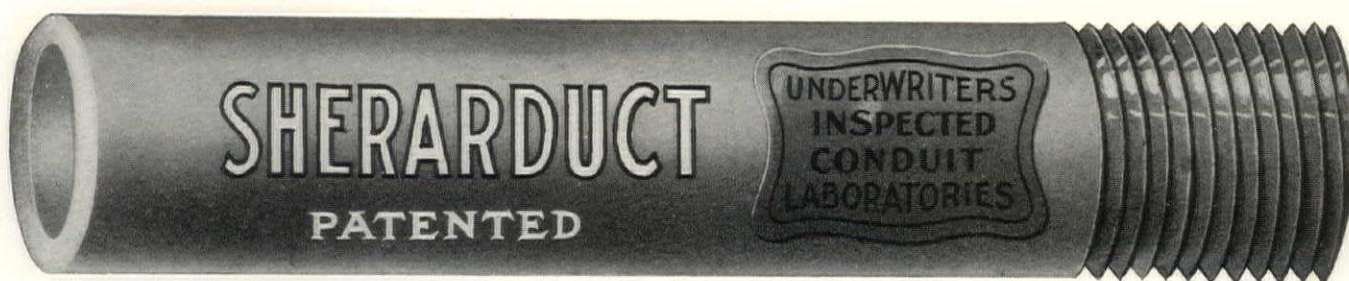
When you specify "ANTI-HYDRO" for hardening and waterproofing concrete, you have chosen for your client a material which, when judged by its past performances, is admittedly the most *permanent* in results and the most economical to use.

Our Engineering Department will be glad to work with you on any specific waterproofing problem. Specifications and technical data gladly sent on request.

"ANTI-HYDRO"

ANTI-HYDRO WATERPROOFING CO.

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Sherarduct and Economy Electrical Conduits

SHERARDUCT is Sherardized on both interior and exterior surfaces. The Sherardizing process—alloying of zinc with the steel surface of the conduit—makes Sherarduct proof against rust, acid, gases and other destructive forces. In addition, both surfaces are enameled with an acid and alkali-proof enamel.

Economy is made of the same high quality tubing as Sherarduct. It differs only in the protective treatment applied. There is no better enameled conduit.

Our nearest representative or distributor will be glad to work with you in planning electrical installations.

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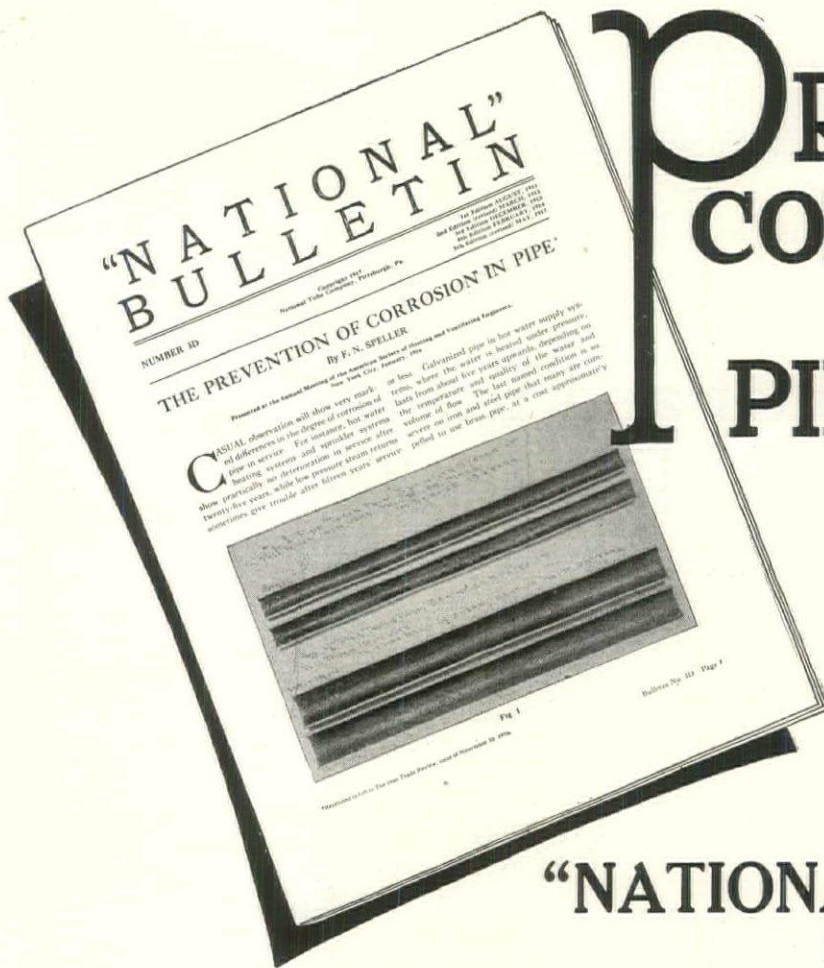
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PREVENT CORROSION *in* PIPE LINES!

"NATIONAL" BULLETIN No. 3 TELLS HOW

CONDITIONS of installation, rather than the material from which pipe is made, govern the extent of corrosion in pipe lines in the majority of cases. It is necessary to understand these conditions before they can be corrected.

"NATIONAL" Bulletin No. 3 explains these conditions, describes a practical preventative of corrosion in hot water supply lines, and includes some investigations in which the method described has proved successful and practical under actual service conditions.

If corrosion is one of your pipe problems, ask for a copy of "NATIONAL" Bulletin No. 3, "The Prevention of Corrosion in Pipe."

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PIPE and FITTINGS

Removed from 124 Cedar Street,
New York City after more
than 80 years
service.

~ 80
years in the
ground has authen-
tically been found to be
but part of the service record of
the pipe and fittings here shown.
After nearly a century in service
the calked joints were found
so tight as to necessitate
the *breaking* of the fittings
to separate the pipe, reveal-
ing the even wall thickness
of the pipe and the splendid
condition of the cast iron.

More than another decade
of service could be claimed
for this cast iron, but 80 years
is by far a longer service
period than any other pipe
material could boast of.

It is too but another of thou-
sands of illustrations of the
fact that wherever installed

CAST IRON SOIL PIPE

OUTLASTS THE BUILDING — ANY BUILDING

Specifications and illustrated literature will be mailed upon
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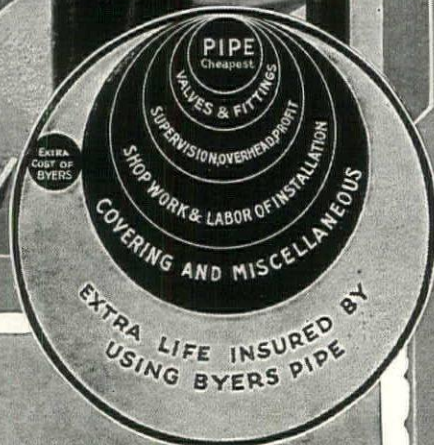
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BYERS

GENUINE WROUGHT IRON
FULL WEIGHT GUARANTEED

PIPE

Look for the
Name and Year
Rolled in Every
Length



Making \$665.50 Go As Far As \$25,000.00

THE initial cost of a certain power pipe system was \$25,000.00. This sum embraced pipe of ordinary quality costing \$1515.48. Also valves, fittings, shop cost, labor, overhead and incidentals, but no fixtures or mechanical equipment.

By using Byers pipe, \$665.50 had to be added to the total cost of the system. When it is borne in mind that Byers genuine wrought iron pipe is the pipe of greater rust resistance, lasting two or three times longer than cheaper pipe, it will be seen that the prospective life of the installation costing \$25,000.00 was increased 100% or more by the investment of that \$665.50.

The case described is typical of the relation of bare pipe cost to total installation cost of pipe in plumbing, heating, steam, gas, hydraulic, compressed air and other systems. Byers Bulletin No. 8 contains cost analyses of a variety of such installations. Send for a copy.

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ESTABLISHED 1864
NEW YORK BOSTON PHILADELPHIA CLEVELAND CHICAGO DALLAS



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THE vast collection of heating and ventilating data we are able to place at the disposal of architects represents a resourcefulness unapproached by any other organization of similar character.

Frequent requests from architects for consultation on heating and ventilating problems of a complex nature would indicate their confidence in the knowledge we have gained through sixty years of progressive air-engineering practice.

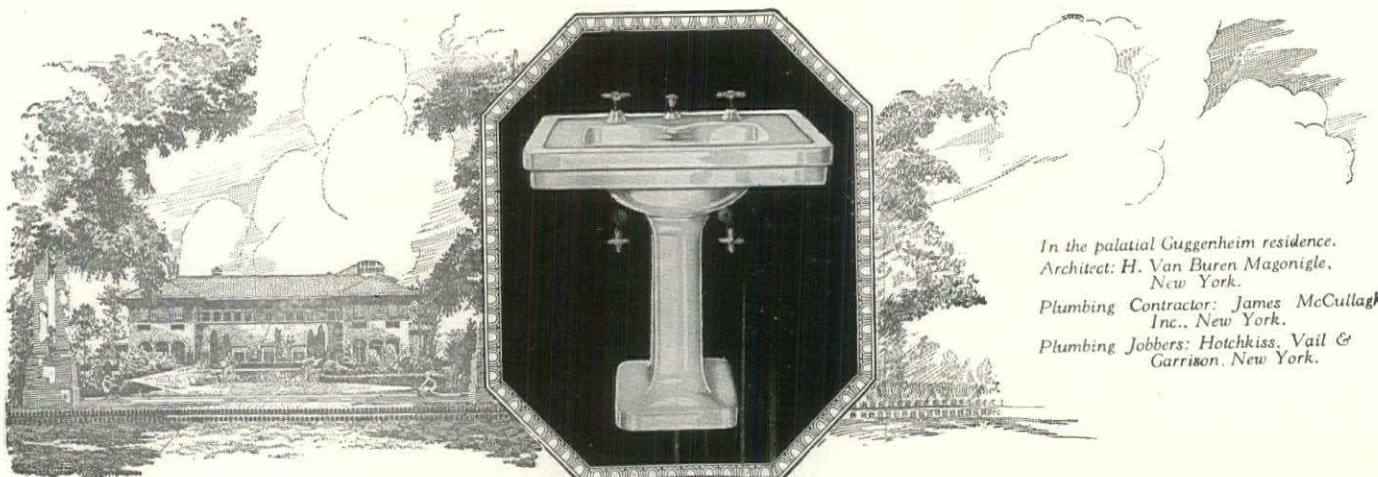
There are three sources where you may readily obtain the assistance we are fitted to give: first, your current

edition of Sweet's contains condensed information covering our systems and auxiliaries; second, our engineering sales offices are established for your more personal contact; and third, our engineering and research departments, located in Hyde Park, Massachusetts, offer you the opportunity of consultation on the more exacting problems pertaining to all classes of buildings.

Always at your service

B. F. STURTEVANT COMPANY
HYDE PARK, BOSTON, MASSACHUSETTS
AND ALL PRINCIPAL CITIES





In the palatial Guggenheim residence.
 Architect: H. Van Buren Magonigle,
 New York.
 Plumbing Contractor: James McCullagh
 Inc., New York.
 Plumbing Jobbers: Hotchkiss, Vail &
 Garrison, New York.



Plumbing equipment that saves labor in cleaning

Graceful design, highest quality and utility were the characteristics that caused Maddock plumbing fixtures to be chosen for the palatial Guggenheim residence.

Thomas Maddock closets have an extra large water surface and a thin, sanitary flushing rim. The lavatories have no metal work above the slab and are equipped with an overflow cleansing device. These are the exclusive features of Maddock fixtures that save the labor required to keep ordinary fixtures clean and sanitary.

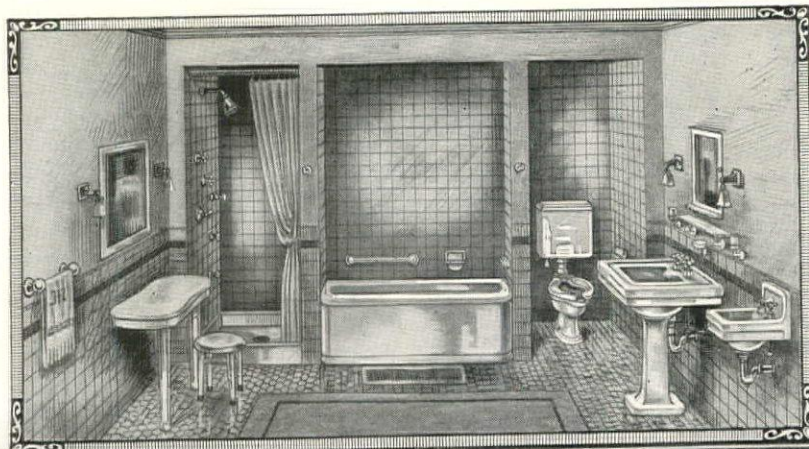
Architects should write for our special architect's catalog which fully describes the various Maddock specialties designed for the home, for hospitals, public buildings, etc.

See our section in the
 Fourteenth Annual Edition
 of Sweet's Catalog,
 pages 1037 to 1044.

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 OLDEST - SANITARY - POTTERS - IN - AMERICA - ESTABLISHED 1859

Manufacturers of sanitary earthenware plumbing fixtures for bath, kitchen and laundry needs in the home; also sanitary ware for medical, industrial, commercial and public building installations.

Branches: New York - Philadelphia - Chicago - San Francisco - St. Louis



The fixture shown above is the *Madbury*. A one-piece vitreous china lavatory of the pedestal type with integral supply nozzle and overflow cleansing device, both exclusive Maddock features.

The valve handles and other slab fittings are also made of vitreous china, which eliminates the care required to keep ordinary metal parts clean.

This lavatory may also be furnished with center leg support, instead of pedestal, when so desired.

M First in the industry — foremost since M

The CRANE LINE of PLUMBING FIXTURES

embodies the most progressive ideas
on modern sanitation and physical
comfort.



Private toilet room with
shower bath.

The H. & S. Pogue Co.
Department Store
Crane equipped
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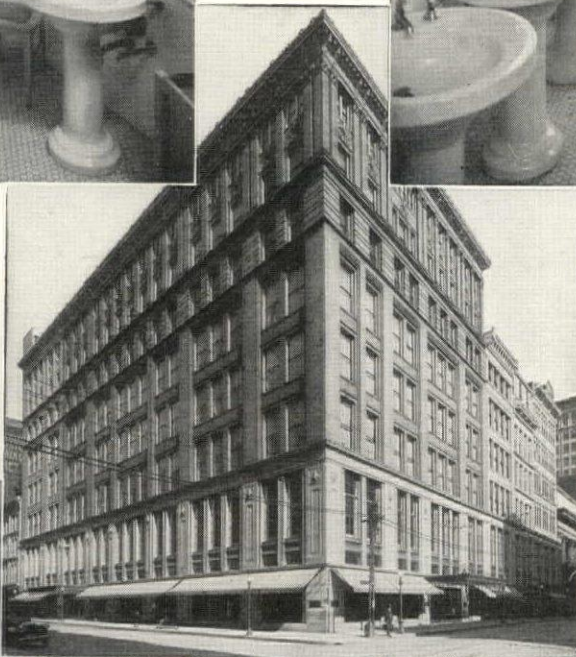
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Public wash room

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Male employees wash room



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*Leamington Hotel, Minneapolis: Stevens Construction Co., Architects;
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KOHLER

And LEAMINGTON HOTEL

Noted as among the largest apartment hotels of the world, the Leamington Hotel, Minneapolis, is no less known for its refined and comfortable appointments. And prominent among the features provided for the convenience of its residents are 675 snow-white, glistening Kohler plumbing fixtures. Armored with the durable, easily cleaned Kohler enamel, these fixtures are recognized as the last word in modern sanitation. Their use extends throughout the range of human habitation—homes, apartments, hotels, clubs and public institutions.

* * *

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Kohler Co., Founded 1873, Kohler, Wis.
Shipping Point, Sheboygan, Wis.

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Kohler "Viceroy" Built-in Bath, Corner Pattern

MANUFACTURERS OF ENAMELED PLUMBING WARE AND KOHLER AUTOMATIC POWER AND LIGHT 110 VOLT D. C.

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THE average height of women is five feet four inches, but why should one five feet eight inches tall, for instance, be forced to stoop over a kitchen sink built to the average height?

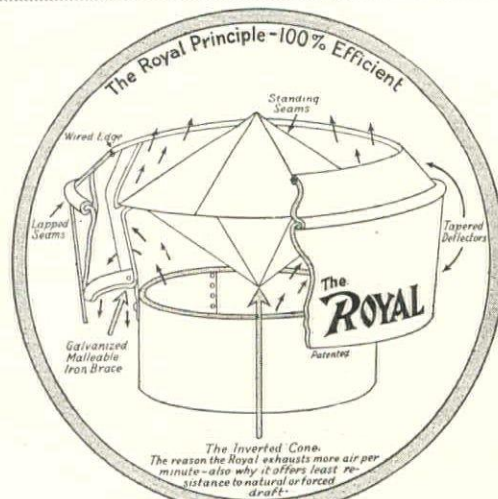
We provide in the above pattern a sink that can be set at any desired distance from the floor. It is mounted upon concealed supports so that no obstruction prevents thorough cleaning of the floor beneath.

This is but one evidence of the thought put behind the building of sanitary plumbing by The Trenton Potteries Co.

Minor considerations perhaps, but when added to the recognized high quality of our Vitreous China and Solid Porcelain a factor not to be lightly ignored in specifications.

The same thought and consideration of detail has been carried throughout the entire revised Tepeco line and surely merits your specification.

THE
TRENTON POTTERIES COMPANY
TRENTON, NEW JERSEY



PATENTED Double Cone ROYAL VENTILATORS

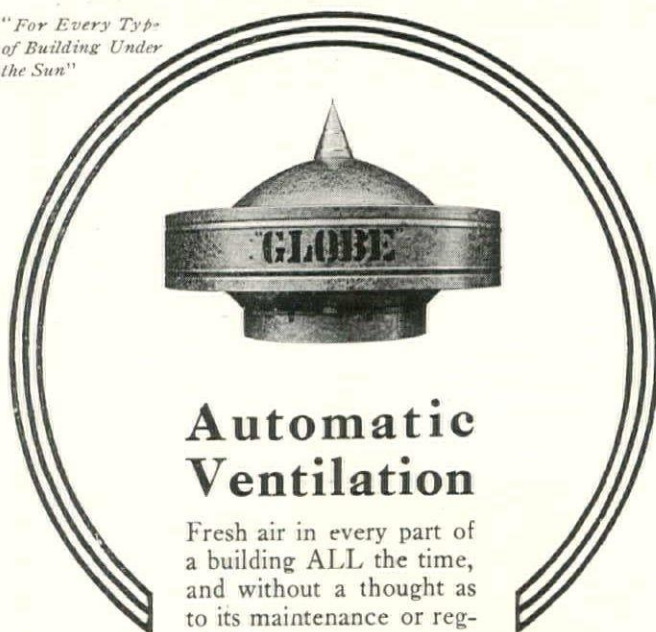
Are responsible factors where efficient ventilation is required. They have demonstrated that in all conditions of outside atmosphere an exhaust current from the building is effected.

The scientific design of conical surfaces in the "ROYAL" creates a positive draft outward that is comparable in intensity and continuity only to that set up by a fan or blower. The advantage of the "ROYAL" over any fan system is that it is always at work; consumes no power; needs no attention. The entire construction is designed for highest exhausting capacity and durability.

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Automatic Ventilation

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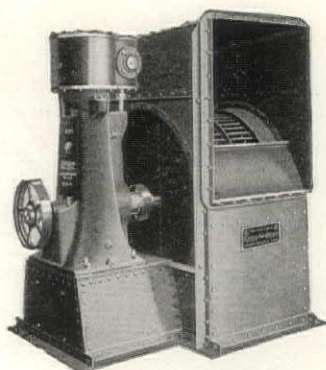
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Pontiac is Twenty-Six Miles from Detroit -

Moreover, Pontiac Schools are famous. Great care has been taken to provide adequate buildings for the school children. This High School in Pontiac, Michigan, is an architectural feast from without and a marvel for convenience and health within.

It is only to be expected that Clarage Fan Equipment was selected for heating and ventilation. Every day, winter and summer, these students enjoy the comfort and beneficial effects of clean, fresh air, correctly temperatured.

Why not allow Clarage Engineers to co-operate with you on your next proposition? Anyway, write for literature to-day.



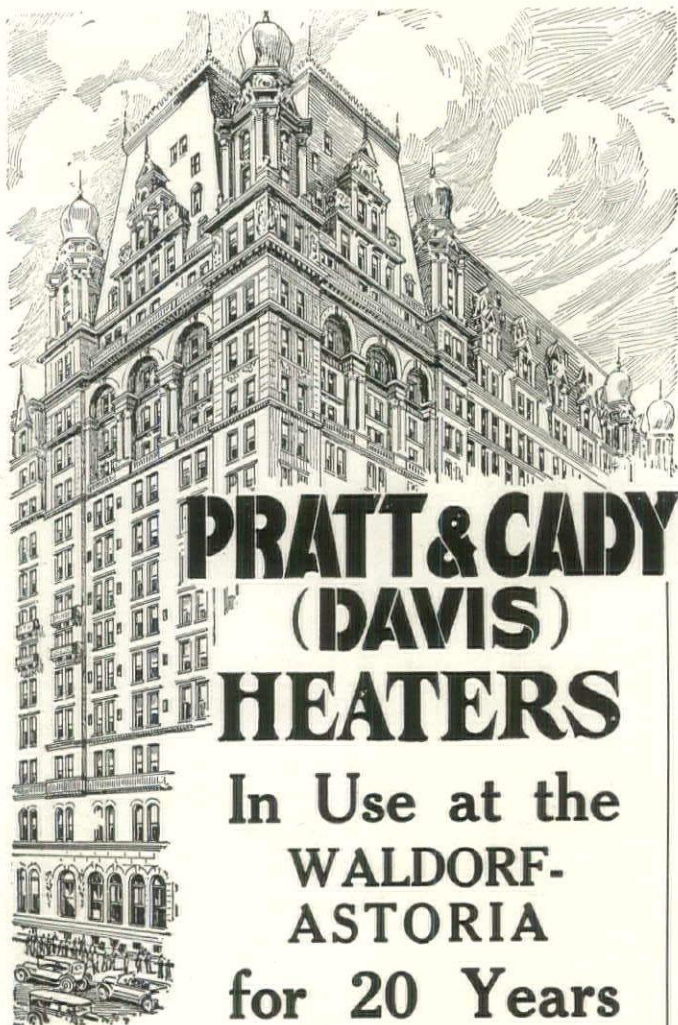
HEATING AND
VENTILATING UNIT
Clarage Multiblade Fan and
Clarage Steam Engine

CLARAGE FAN COMPANY

PORTER STREET, KALAMAZOO, MICHIGAN

Engineering and Sales Offices in Principal Cities

Manufacturers of Fans, Blowers, Heaters, Steam Engines, Etc.



**PRATT & CADY
(DAVIS)
HEATERS**

**In Use at the
WALDORF-
ASTORIA
for 20 Years**

The prestige which the Waldorf-Astoria Hotel enjoys, as the world's most famous hostelry, has been attained only through an insistence upon the *best* in every detail of its service and equipment—an insistence which applies quite as much to apparatus which the guest never actually sees, as to those niceties of appointment which come directly under his surveillance.

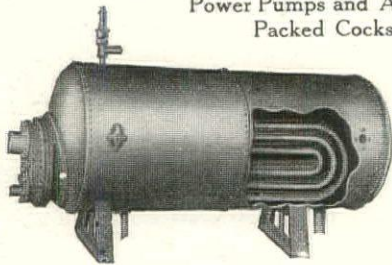
Pursuant to this well defined policy of superiority, the Waldorf management installed Pratt & Cady (Davis) Hot-Water Service Heaters twenty years ago. The fact that these heaters are still in use is a notable tribute to the type of service which they have rendered, as well as an indication of their durability.

Interesting booklet is yours for the asking

PRATT & CADY CO., Inc.

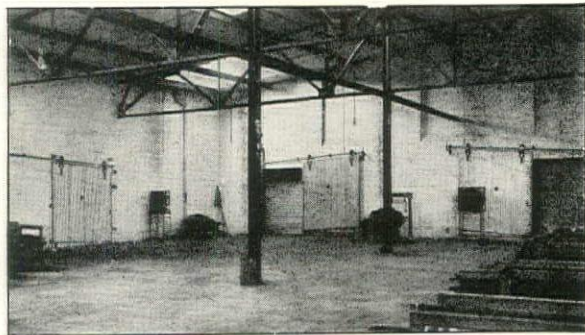
(Successors to I. B. Davis & Son)

Manufacturers of Valves, Feed Water Heaters, Hot Water Generators, Hot Water Service Heaters, Power Pumps and Asbestos Packed Cocks



Boston
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Representatives in all large cities



Evans "ALMETL" Fire Doors and Shutters

(Pat. Pend.)

THEIR greater durability over wood-core doors, ease of operation, and the elimination of practically all maintenance expense make them the best Fire Door investment procurable.

Under actual test the Evans "ALMETL" Fire Door has withstood a temperature of 2,000° Fahrenheit.

Fully approved by the Underwriters' Laboratories and recognized authorities on Fire Prevention everywhere.

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WHEELING

CLEVELAND

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CHICAGO

KANSAS CITY

The Actual Facts

—In regard to the Omaha tests of various kinds of backing for plastered surfaces, the result was conclusive proof that back plastered Metal Lath was superior to all building material tested.

If you have been interested in the subject and have been misled by full-page trade-paper advertising, get the results of the test and examine them. Ask us for copy of the report.



MILWAUKEE CORRUGATING CO.

MILWAUKEE, WIS.

Branch Office and Factory

Kansas City, Mo.

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Accessible Air Information

Tangible Service for architects depends upon accessibility. Comprehending this situation we have provided you with definite means whereby all of your heating, ventilating, and air-purifying problems can be readily solved.

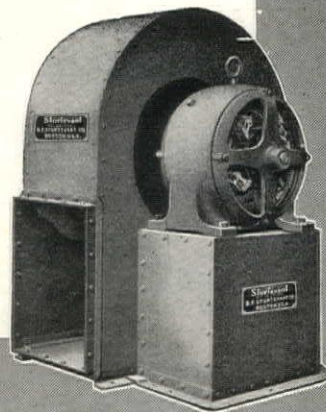
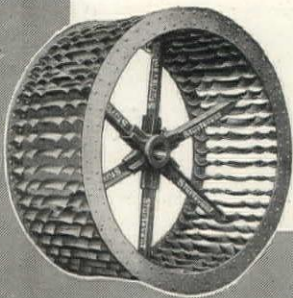
First—Sweet's Catalog, your ready reference book, contains eighteen pages of live information. The sort of facts you seek in a textbook, but with all superfluous words eliminated; just the "boiled-down" data to form the basis of your calculations.

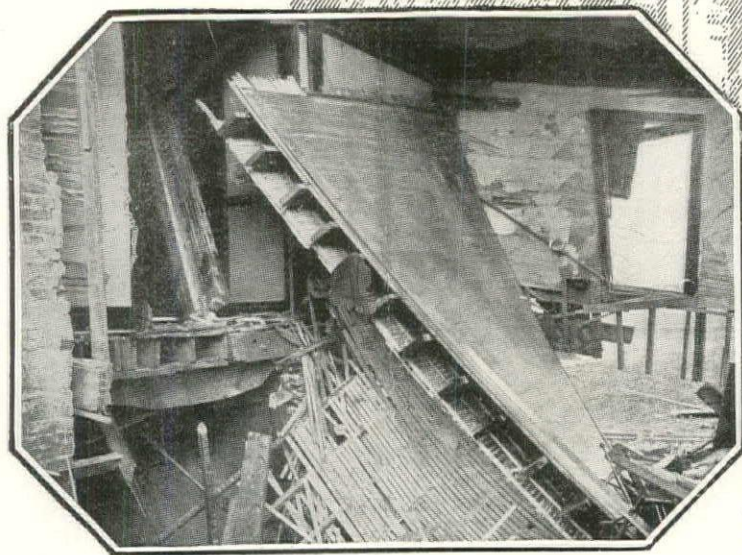
Second—There are twenty-four engineering offices conveniently located in the United States and Canada. These offices are, in reality, architects' service stations, open for consultation on all questions pertaining to the application of air. Page 1266 of Sweet's shows a list of the telephone numbers.

Third—Our engineering personnel and research bureau offers a service unapproached by any other manufacturer of air-moving apparatus. Sixty years of intensive study of the application of air enables us to give you a range of information applicable to the most complex and exacting demands.

OUR SERVICES AND LITERATURE
ARE AT YOUR DISPOSAL

B. F. STURTEVANT CO.
HYDE PARK, BOSTON, MASS.
AND ALL PRINCIPAL CITIES





It Happens to the Best of Boilers — Why?

IF every heating boiler were operated by a trained engineer — if they were under the supervision of an expert all the time — low pressure boiler explosions would be unknown.

But — the plant with a trained engineer in charge is the rare exception; and even where an expert is in charge, *continuous attention is impossible.*

Without a substitute for constant and expert supervision, explosions *will* occur. How great is the explosion hazard? The constant cracking of sections is the best index; for cracked sections, engineers agree, are the result of miniature explosions that might have caused destruction as great as that illustrated above where three lives were lost. The flash action responsible for this explosion might not have been foreseen by an experienced fireman; yet the Kelly Controller would have prevented it.

Even if there were *no* possibility of explosion, and cracked sections were

the only condition overcome, Kelly Controllers would still be a highly profitable investment. Every man who has maintained a heating plant knows that a device which will overcome the repairs, the expense and the shut-downs that go with cracked sections is a time saver, a trouble saver and a money maker.

But in addition to eliminating explosions and cracked sections, the Kelly Controller adds to the efficiency and service life of the heating boiler and system. Learn the many advantages of Kelly Controllers. Know why you should install them and specify them. Know why the best boiler cannot function at its best unless properly controlled. Any of the branch houses will send complete information.

Manufactured by THE KELLY CONTROLLER CO., Chicago, and Distributed by

The
FAIRBANKS
Company

Accorded the Famous —



Administrative Offices: NEW YORK

Branch Houses:

Albany	Buffalo	New York	Scranton
Baltimore	Chicago	Patterson	St. Louis
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Kelly Controller complete with automatic temperature reducer and water feed

These Dangers Threaten Every Uncontrolled Boiler

1—Slight surging condition; due to presence of foreign substance in feed water.

The Kelly overcomes this by returning, through a bleeder pipe, the water which surged over.

2—Priming; due to too heavy firing.

This condition is overcome by the controller through automatic temperature reduction.

3—Syphoning; due to a rupture in the steam line, or sudden opening of a large condensing surface.

In this case the controller automatically cuts the boiler off, thus acting as a complete safety device.

Write for complete explanation of these conditions.

Kelly Controller

"The Boiler Master"



NOVELTY

SMOKELESS BOILERS

Giving you a reason for specifying NOVELTY

Back of the NOVELTY Boiler or Furnace in the cellar—the range in the kitchen—stand not merely 73 years of mechanical experience, but vast engineering research—the application of scientific principles—the selection of the best material and equipment—to give you the ultimate in durability, economy and efficiency.

Take **FLEX-O-TUF** iron as a case in point—a distinct NOVELTY feature that insures longer life to the range or boiler—better appearance—increased toughness and strength—and sufficient flexibility to withstand the terrific shocks of sudden contraction and expansion as drafts are forced or the fire banked.

Since **FLEX-O-TUF** iron means no cracks—no warping—the owner becomes a stranger to the repair man—the furnace is gas, dust and air-tight.

Then, too, since we make all types of Heating and Cooking Apparatus, the owner may rest assured of unprejudiced advice in the selection of a furnace, boiler or range exactly suited to individual needs. Come to our Factory Show Room and see these things for yourself.

ABRAM COX STOVE COMPANY

American and Dauphin Streets, Philadelphia

Manufacturers of Boilers, Pipeless Heaters, Furnaces and Ranges in Philadelphia for 73 Years.

Makers of Warm Air Furnaces, Pipeless Furnaces, Hot Water Systems, Steam Systems, Vapor Systems, Gas Ranges, Coal Ranges, Combination Ranges, Laundry Stoves, Water Heaters, Garage Heaters.

101 Park Avenue
New York

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Chicago



Do You Know What a Coal Climber Is?

He is the chap who insists on burning *Aristocratic Coal* at gorgeous prices instead of using a Kewanee Smokeless Boiler which will burn *any old coal* at the lowest prices.

In other words Mr. Climber uses an exclusive boiler which won't burn anything but pedigreed coal. He thinks it a social error to burn soft coal so he installs an exclusive boiler, loads himself down with high priced coal, and lets his profits go to the devil for the sake of family pride. He forgets that elusive profits are due to exclusive boilers.

Just the same the wisest owners of big buildings of *all kinds, everywhere* are using Kewanee Smokeless boilers and burning cheap soft coal. And the difference which they save in coal bills makes a nice hunk of profit every year.

What are you going to do about it?

There is only one sensible thing to do. Be sure that any building, with which you have anything to do, is heated with a Kewanee Smokeless Boiler. Then you can use any coal you can get and know that you will get every bit of heat from it.

The solution of the coal question lies in the boiler, not in the coal and never has and never will.

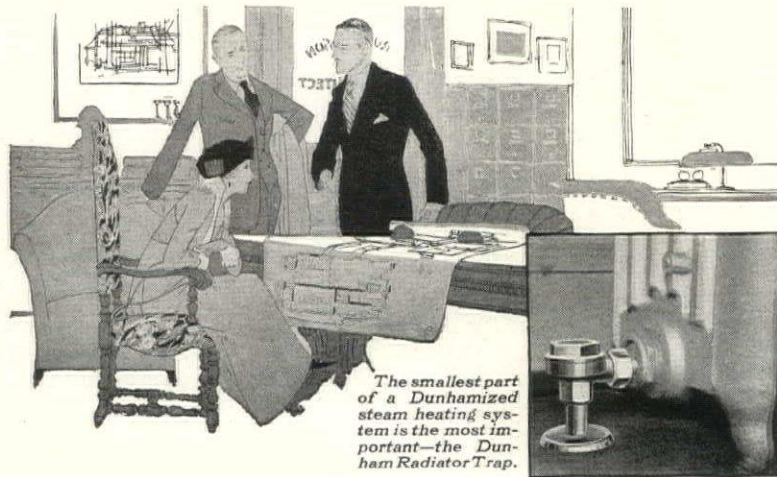
KEWANEE BOILER COMPANY

KEWANEE, ILLINOIS

Branch Offices:

CHICAGO	Market-Washington Sts.	PITTSBURGH	945 Oliver Bldg.
NEW YORK	47 W. 42nd Street	DETROIT	1925 Ford Bldg.
DES MOINES	315 Hubbell Bldg.	TOLEDO	629 Nicholas Bldg.
ST. LOUIS	1212 Chemical Bldg.	CLEVELAND	706 Rose Bldg.
INDIANAPOLIS		SALT LAKE CITY	Scott Bldg.
WASHINGTON, D. C.	534 Southern Bldg.		
MINNEAPOLIS	708 Builders Exchange		
MILWAUKEE	Mer. & Mfrs. Bank Bldg.		
DALLAS	Southwestern Life Bldg.		
KANSAS CITY	2014 Wyandotte St.		

CANADIAN REPRESENTATIVES—The Dominion Radiator Co., Ltd.
 Toronto, Ont., Montreal, Que., Winnipeg, Man., Hamilton, Ont., St. John,
 N. B., Calgary, Alta., Vancouver, B. C.



Clients who discuss better heating will appreciate the Dunham Trap

Widespread interest in better heating is in evidence. There is every reason why it should be—and more reason why home builders who discuss steam heating will be satisfied with your recommendation of the Dunham Radiator Trap—one of the elements in

The DUNHAM HEATING SERVICE

All that the perfect radiator trap should do, the Dunham does. In part proof, witness its progress from its advent in 1903. Is it not true that today, the thermostatic hollow disc type trap is the leader? The Dunham was the FIRST of this type. And so good were the first ones made that many are now in daily service. Nor has the fundamental principle of the Dunham Trap been changed since 1903. You who advocate standardization know what this signifies.

"The Dunham Hand Book" is full of facts. Send for your copy.

C. A. DUNHAM CO., Fisher Building, CHICAGO

Factories: Marshalltown, Iowa
Toronto, Canada

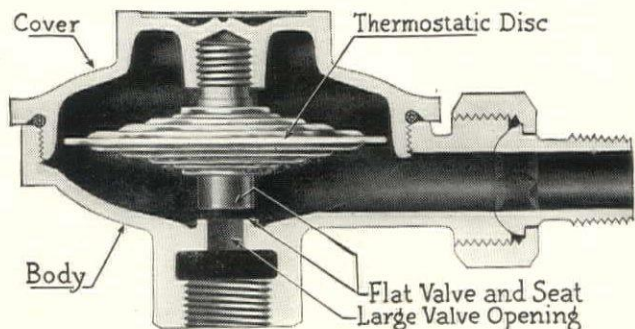
Branches in 36 cities in
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London: 64 Regent House, Regent Street, W. 1.

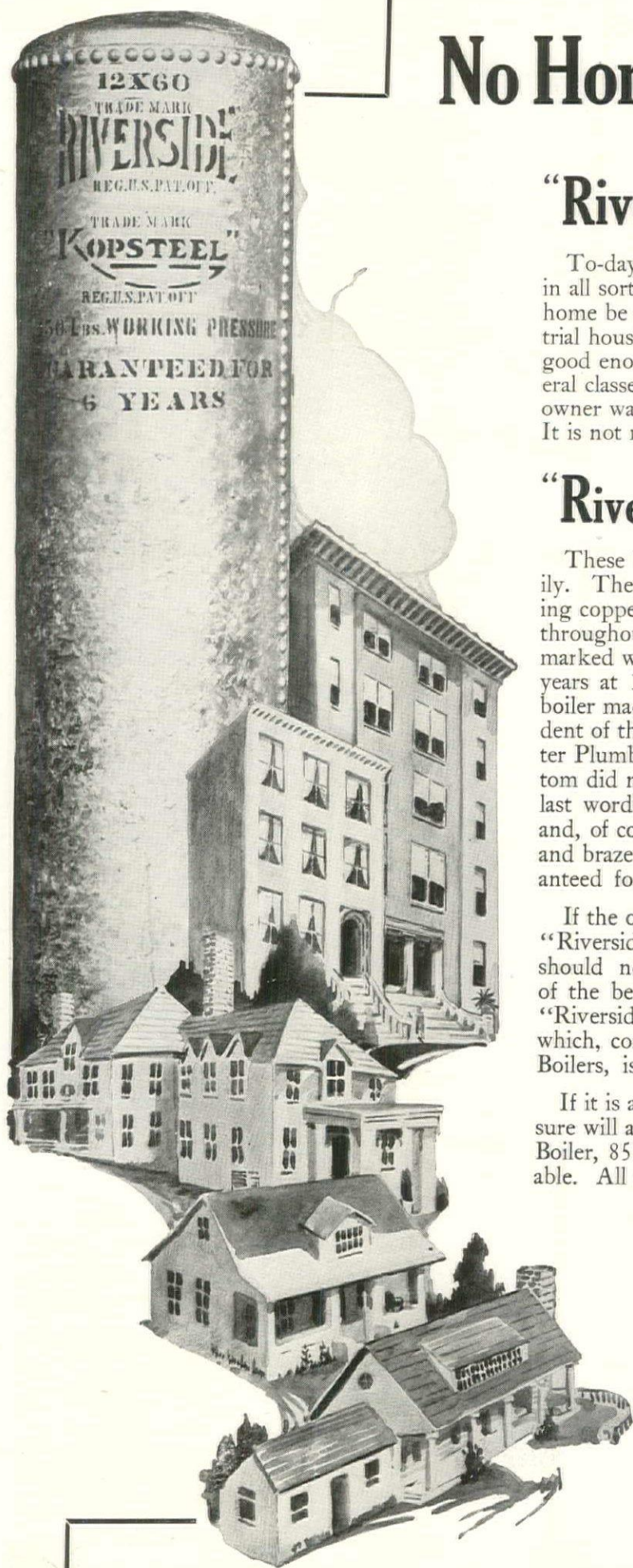
Paris: Etablts. Munzing & Cie, 47 Rue de la Fontaine-au-Roi

Dunham Specialties

Packless Radiator Valves	Reducing Pressure Valves
Radiator Traps	Oil Separators
Drip Traps	Suction Strainers
Blast Traps	Air Vents
Air Line Valves	Return Traps
Vacuum Pump Governors	Check Dampers
	Damper Regulators



Cross-section of No. 2 Trap



No Home is Too Good

for the

"Riverside" Range Boiler

To-day you will find the "Riverside" Range Boiler in all sorts of homes. It matters not whether the home be a high class residence or one of an industrial housing proposition. The "Riverside" is made good enough for any and all uses. It is made in several classes, and it is purely a question of what the owner wants to pay. It has real Quality built into it. It is not merely a receptacle for water.

"Riverside" Kopsteel Boilers

These boilers are the best of the "Riverside" family. They are made of specially selected rust-resisting copper steel, and a double extra thickness is used throughout. Each boiler is tested to 300 lbs., but is marked with and carries a definite guarantee of six years at 150 lbs. working pressure. Tests of this boiler made under the supervision of a former President of the Massachusetts State Association of Master Plumbers showed that at 300 lbs. plus the bottom did not bulge a hair! This boiler represents the last word in galvanized range boiler construction, and, of course, like every "Riverside," it is riveted and brazed. Remember that it is marked and guaranteed for six years at 150 lbs. working pressure.

If the owner cannot afford the extra cost of the "Riverside Kopsteel" Boiler (which, by the way, should not cost more than one-half to one-third of the best copper boiler made), then specify the "Riverside" Extra Heavy, 150 lbs. working pressure, which, compared with other so-called Extra Heavy Boilers, is really a "Super-Extra Heavy" Boiler.

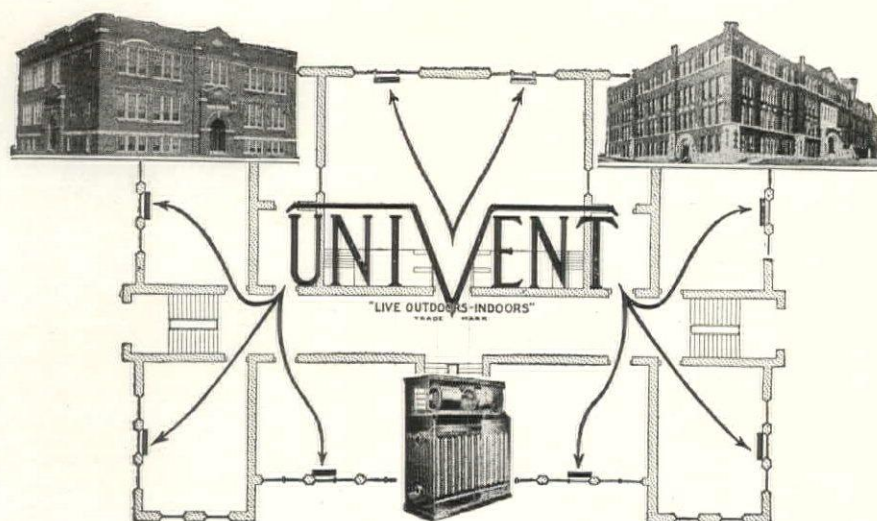
If it is a question of price entirely, and if the pressure will allow it, the "Riverside" Standard Range Boiler, 85 lbs. working pressure, will be found suitable. All of these boilers are Riveted and Brazed.

"Look us up in Sweet's"

**RIVERSIDE BOILER
WORKS, Inc.**

The Quality Range Boiler Builders

Cambridge, Mass.



YOUR IDEAS ON VENTILATION CAN NO LONGER BE DEFEATED

THE Univent system, simple, practical, efficient, economical, easily measures up to what a 100% ventilating system should be because it delivers the quantity of fresh air it is set to deliver and nothing can stop its delivery until the power is shut off.

The air in the Univent does not have to pass through dirty, uncleanable, unsanitary flues or chambers. It is delivered pure into the room, direct from the outside, the fresh air being diffused into every nook and corner of the room—without draft.

No extra radiators are needed in a Univent equipped room, as each unit contains a double radiator which heats the air sufficiently for both ventilating and heating, delivering at a rate of from 600 to 1500 cubic feet of fresh air per minute.

The Univent system is designed on a unit basis. Each room is ventilated and heated as a unit by its own individual Univent.

Buildings using UNIVENTS need no vents or ducts, the cost of building is reduced, power bills are cut, fuel bills are less, fire hazards are minimized, maintenance costs are negligible, extra rooms are made available and often a whole story of the building is saved.

See complete specifications in Sweet's Catalog, pages 1162 to 1182 inclusive.

Send for our Catalog and Engineering Data Book. You will be convinced that the Univent is the ventilating system you need now and have been needing for years. Write Dept. C.



Moline

Illinois

MAIL THIS COUPON TO-DAY

MOLINE HEAT, DEPT. C

MOLINE, ILLINOIS

Please send me complete catalog and information describing the UNIVENT. I am interested in heating and ventilating.

Kind of Building _____

Name _____

Address _____

THE DISTINGUISHED SERVICE LINE

A Boiler That Turns Coal Into Heat, Not Smoke

In tests and in actual service the Monarch Down-Draft and Up-Draft Smokeless Boilers have proven themselves to be the acme of efficiency.

They are durable, too. Some have been in constant service for over fifty years and we have yet to hear of one wearing out.

Our complete catalog, free to architects, will tell you more about them. Why not write for it to-day?

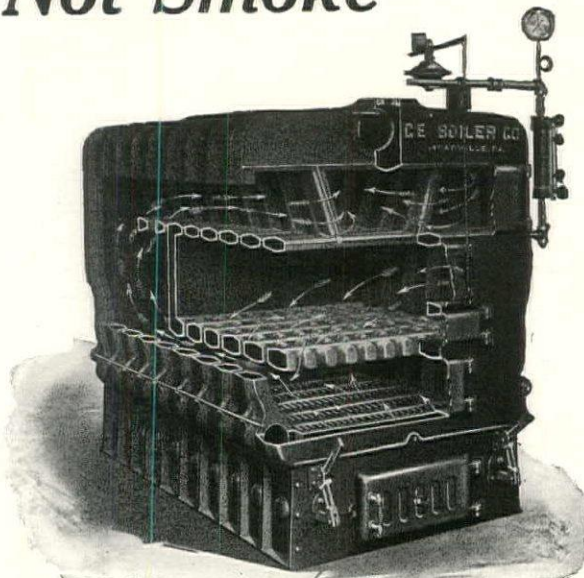
The Wm. H. Page Boiler Co.

The oldest and largest makers of boilers exclusively

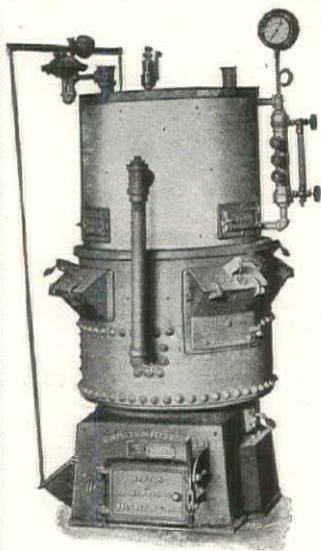
SALES OFFICES AND WAREHOUSES

NEW YORK	BOSTON	PHILADELPHIA	CLEVELAND
141 W. 36th St.	100 High St.	1718 Sansom St.	Builders Exchange

*Makers of a complete line of
Round and Square Boilers for every class of building*



MONARCH DOWN-DRAFT SMOKELESS BOILER



Durability

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

Efficiency

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

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

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

OUR NEW NO. 88 CATALOG IS READY—WILL BE SENT UPON REQUEST

Gorton & Lidgerwood Co.

96 Liberty Street, New York

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

E.S.
1827
& CO.

Nearing the Century Mark in VARNISH MAKING

Our products have been specified by architects *continuously for ninety-three years*. What endorsement could be greater?

Trade **Esco White Enamels** Mark
(Interior and exterior)

These enamels have reached the pinnacle of perfection. Pure white, free working, elastic, brilliant, great covering properties and made of *finest materials*.

Interior "Esco" is dust free in four to six hours. Can be rubbed to a dead finish in three days.

Exterior "Esco" free from dust in eight to ten hours. Can be rubbed flat in a few days.

Like all Edward Smith & Company products, which include varnishes for every use, floor finishes, and floor sheens, Esco White Enamels are *Standard Grade*.

Have you our Booklets? Request our finished panels

EDWARD SMITH & CO.

West Avenue, 6th and 7th Streets, Long Island City
P. O. Box 76, City Hall Station, New York City
Western Branch, 3532-34 South Morgan Street, Chicago

REG. U.S. PAT. OFF.
TRADE
JENKINS
MARK

From the **MODEST**
to the **MIGHTY**



Jenkins are Big Factors in Good Plumbing

The design of a Jenkins Valve results from a thorough understanding of valves and valve requirements. They are heavier than other valves because more metal is put into them. A Jenkins valve is dependable and "trouble-free" under every condition because each valve in every type is made for the maximum service, not merely the average—and so tested before it leaves the factory.

The valves illustrated are of the renewable disc type and fitted with Jenkins Discs. These discs are compounded of rubber, and permit an absolutely tight contact on the seat when the valve is closed. They take up the wear and give the valve practically unlimited life.

When open the passage is free and unobstructed.

The Equitable Building is typical of the mighty structures using Jenkins Plumbing Valves throughout. Residences and factories in great numbers everywhere are Jenkins-equipped.

Jenkins Valves are made of brass, iron and steel in types and sizes to meet all requirements of power plant, plumbing and heating service. They are known by the name and Jenkins "Diamond Mark" cast on the body.

Specify genuine Jenkins Valves, bearing the name "Jenkins" within a Diamond Mark. Interesting literature on request.



JENKINS BROS.

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San Francisco

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Jenkins Valves

Since 1864

KERNERATOR

Built-in-the-Chimney

Burns Garbage Without Using Commercial Fuel

THE only fuel used is the paper and other dry waste thrown in the hopper door. This in burning dries the wet waste so it also becomes fuel. Bottles, cans and other non-combustible matter are dried and sterilized and later dropped into the ash pit.

There is no dirt or odor and the insanitary garbage can is abolished.

The Kernerator is found in 85% of new residences and apartment houses in cities where this company is established.

The Kernerator is an enlargement of the chimney in the basement.

Sanitary — Economical — Convenient — Odorless

See Page 1132, Sweet's 1919 Catalog

KERNER INCINERATOR CO.

708 Clinton Street, Milwaukee, Wis.

From an Architectural Firm

The Kernerator is a small but profitable investment and a permanent improvement, operating expense practically nothing. Our tenants are well pleased and our clients satisfied.

MARTIN TULGREN & SONS

Architects and Builders

Milwaukee, Wisconsin

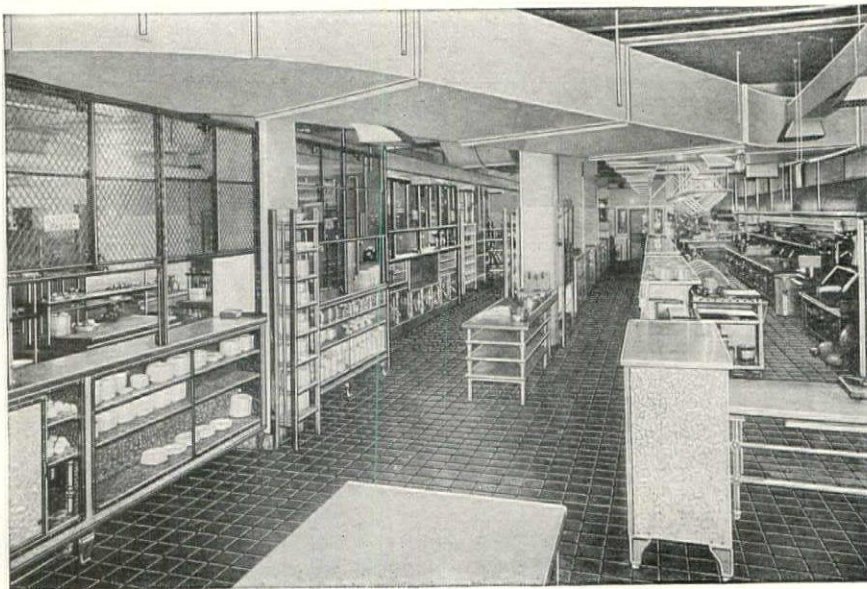


Cuisine Excellence --- Does It Mean Anything To Your Clients?

The answer is obvious—that is the reason the layouts of the great hotel kitchens and the planning, selection and supply of food-cooking and serving equipment have been entrusted to

Van's Food Service Engineers

Our seventy years' experience and successful execution of food preparing and serving details are at your disposal.



VAN KITCHEN INSTALLATION, HOTEL CLEVELAND

Architects — Get in touch with us

The John Van Range Co.

EQUIPMENT FOR THE PREPARATION AND SERVING OF FOOD

CHICAGO

Cincinnati

DETROIT

One of the finest hotels of the South. Most modern in character and appointments. Has achieved an enviable reputation because of the quality of its cuisine. J. B. Pound, President. J. L. Lowell, Resident Manager. Has 250 rooms and 200 baths. Accommodated 100,000 guests during 1919.



Architect: W. T. Downing

The Kitchens of the HOTEL PATTEN

(Chattanooga, Tenn.)

are equipped with



"Wear-Ever"

Aluminum Cooking Utensils



The fact that the Hotel Patten and many other hotels have their kitchens equipped with "Wear-Ever" indicates a rapidly growing appreciation of the superior worth of these silver-like utensils.

"Wear-Ever" *never needs tinning.* This feature alone makes "Wear-Ever" preferable to ordinary utensils which are costly because they are periodically in need of retinning.

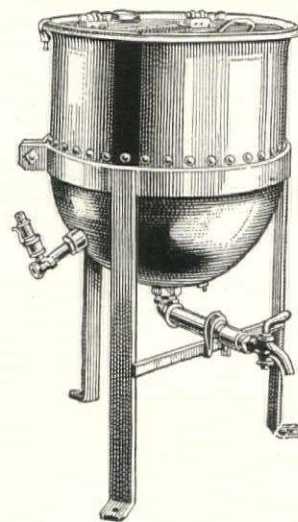
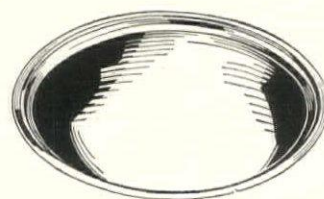
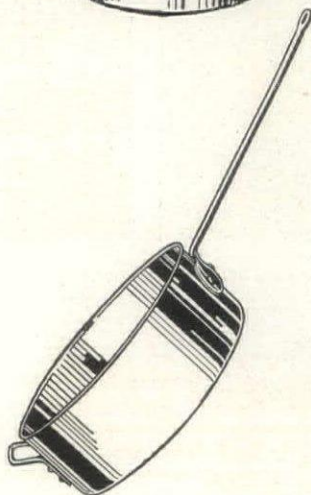
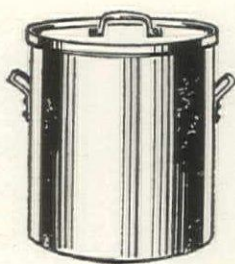
"Wear-Ever" *is cleanly.* Made in one piece from hard, thick, sheet aluminum, "Wear-Ever" utensils have no joints or seams in which food can lodge.

*Replace utensils that wear out
with utensils that "Wear-Ever"*

See Sweet's Architectural Catalog and the American Architects' Specification Manual for specification data on "Wear-Ever."

The Aluminum Cooking Utensil Co.
New Kensington, Pa.

In Canada "Wear-Ever" utensils are made by
Northern Aluminum Co., Limited, Toronto, Ont.





A Glass-like Protection for Kitchens

Univernish is a Murphy Varnish—so hard and elastic that it gives a surface as durable and impervious as tough glass would be. Impervious especially to water, even though boiling hot.

Univernish should be specified for all the woodwork in kitchen, pantry and bathrooms, including floors or linoleum;

also for outside doors and all varnished woodwork exposed to weather.

For over fifty years Murphy Varnish has preserved, and is still preserving beautiful surfaces—pianos, furniture, the old-time coach and present day automobile, yachts and fine architectural work of all kinds.

*We will gladly send samples to architects
for testing, together with full specifications.*

Murphy Varnish Company

NEWARK

CHICAGO



The Dougall Varnish Company, Limited, Montreal Canadian Associate

DEVOE

The oldest paint manufacturing concern in America
Founded in 1754



Paint, Varnishes, Stains, Enamels,
Brushes, Artist Materials



You can always be sure of Devoe materials. They are guaranteed to give your clients satisfaction



DEVOE & RAYNOLDS CO., INC.
NEW YORK CHICAGO

Why Stearns Cypress

For Interiors

The varied effects obtainable make it a pleasing and effective finish for every room.

The wood in its natural state possesses rare beauty although it is recommended by many architects as a basis for unusual finishes.

Our catalog describes many useful applications of Stearns Cypress Lumber.

Let us send a copy for your files.



The A. T. Stearns Lumber Co.
Neponset Mass.



Residence of G. W. Wattles, Garden Front, Hollywood, Calif.
Myron Hunt & Elmer Grey, Architects

BAY STATE COATING

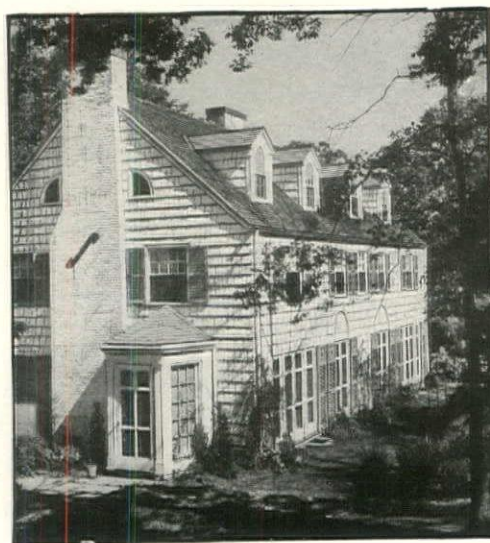
PERMANENT beauty. That's the kind that one or two applications of Bay State Brick and Cement Coating imparts to all walls of brick, cement or stucco. It waterproofs them, too. No rain, sun, or storm affects its protection and lasting qualities.

Your choice of white or a range of colors. We will send you a sample of any tint you wish. Let us mail you Booklet No. 10. It shows a number of Bay State Coated Homes. Drop us a postal.

WADSWORTH, HOWLAND & CO., Inc.

Paint and Varnish Makers
BOSTON, MASS.

New York Office, Architects Building
Philadelphia Office, 1524 Chestnut Street



Residence of Francis A. Nelson, Architect, Upper Montclair, N. J.
On the exterior, hand-hewn cypress shingles are used, stained with Old Virginia White. Roof stained with Cabot's Creosote Stains.

Cabot's Old Virginia White

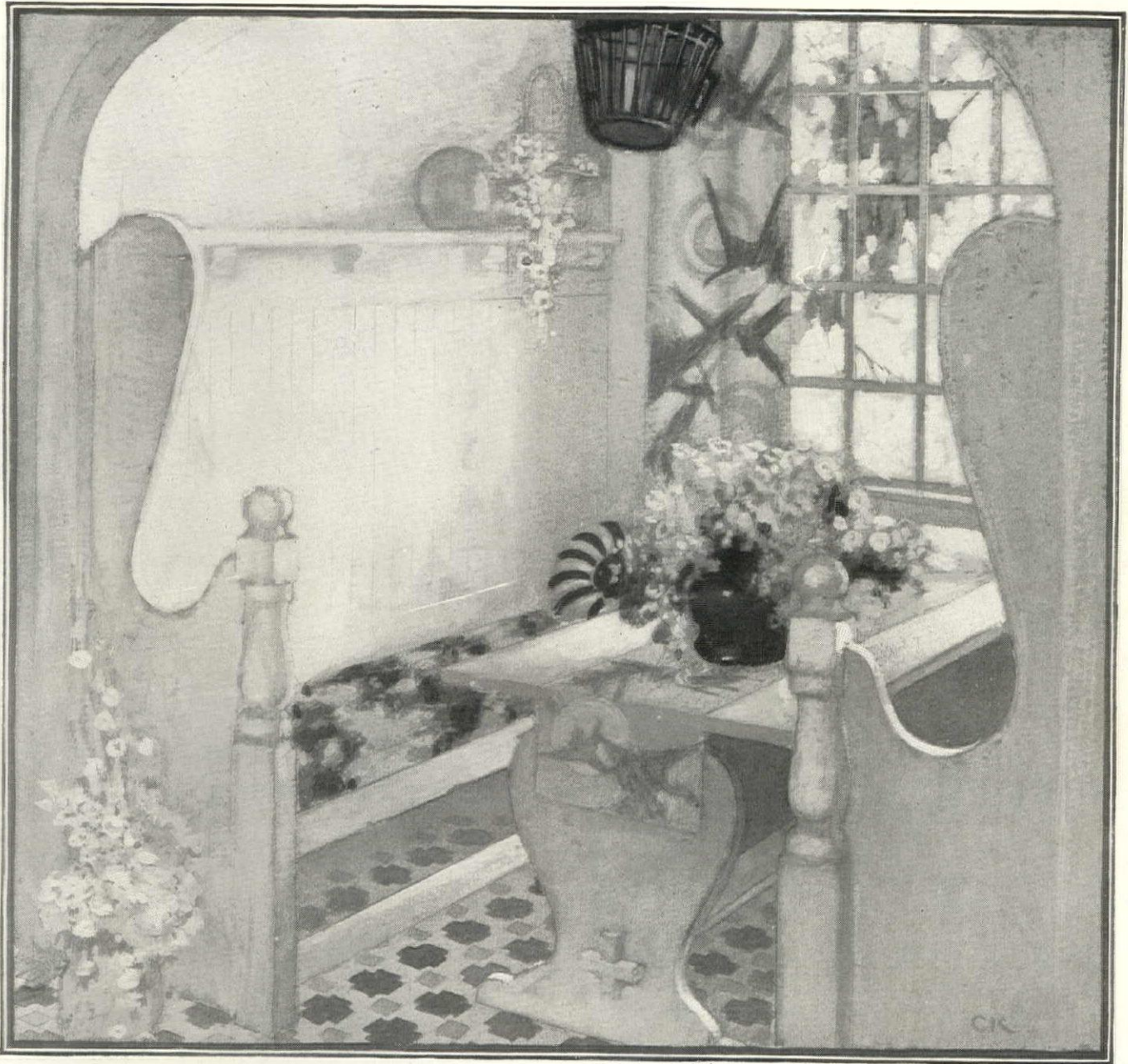
The Clean, Brilliant "Whitewash-white"

Old Virginia White has real distinction. It is a softer but brighter white than paint, and its texture is essentially different. It is as handsome as new whitewash and as lasting as paint—though cheaper. It has the genuine old Colonial effect and when combined with

Cabot's Creosote Stains

on the roof the result is so thoroughly harmonious and distinguished that the house is sure to represent the latest and best in exterior decoration.

SAMUEL CABOT, Inc. Mfg. Chemists **BOSTON**
1133 Broadway, NEW YORK 24 West Kinzie St., CHICAGO



Pure White

Sherwin-Williams Old Dutch Enamel is an American-made enamel of the type made famous by Dutch enamel makers with certain improvements, which we have been able to effect through the treating and aging of linseed oil.

Old Dutch Enamel can be used with equally desirable results for the enameling of exterior surfaces or interior finishing. It will not crack and will retain its original snowy whiteness through years of service. The beautiful fullness of body of this enamel makes it possible to secure an exceptional enamel finish with two coats of enamel over three coats of Sherwin-Williams Enamel Undercoater Number Twelve.

Complete data upon Old Dutch Enamel can be secured from our Department of Architectural Service upon application

THE SHERWIN-WILLIAMS CO., 882 Canal Road, Cleveland, Ohio

SHERWIN-WILLIAMS PRODUCTS
ARCHITECTURAL FINISHES





You Can Safely Tell Your Clients

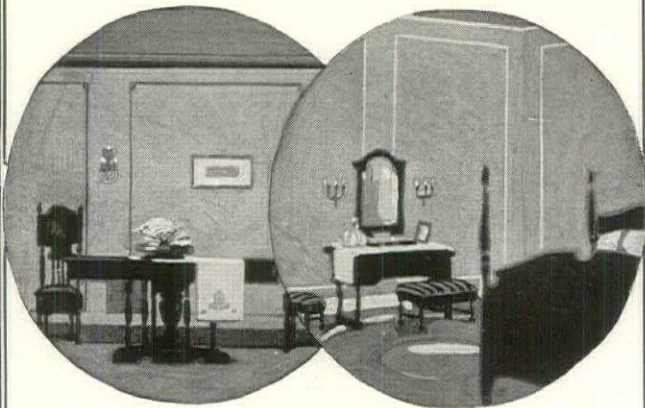
Architects who are accomplishing things have little time to experiment with unknown interior finishes—you want to find a thoroughly reliable one, standardize on it, and recommend it to your clients. You prefer to *know* rather than to hope, that the interior finish will be all you and your clients expect of it.

It does not just happen that *Liquid Velvet* is today regarded as the standard of comparison for flat wall enamels. In conferring with your clients you can honestly assure them that *Liquid Velvet* is a profitable investment because it gives as dividends the desired finish with a long-wearing period.

Liquid Velvet has an oil base and is washable—and very durable. It has great spread—will not crack, chip or peel. There are ample shades of *Liquid Velvet*, permitting the selection of the *exact* shade best suited for the particular room or building.

Other O'Brien interior finishes you will want to specify are: *Master Varnish*, *Flexico White Enamel* and *Pyramid Natural Wood Finishes*. In specifying O'Brien products you are assured of the ever increasing appreciation of satisfied clients.

O'BRIEN VARNISH COMPANY
1125 Washington Avenue SOUTH BEND, INDIANA
"Varnish Makers for Half a Century"



Liquid Velvet
THE SPECIFIED BRAND



A LEAD Product
for
Every LEAD Purpose

The Supremacy of Pure White Lead

has been maintained because through its use the master painter can prepare his paints to meet the surface, weather and climatic conditions existing on each contract, which results in a more durable, protective paint film.

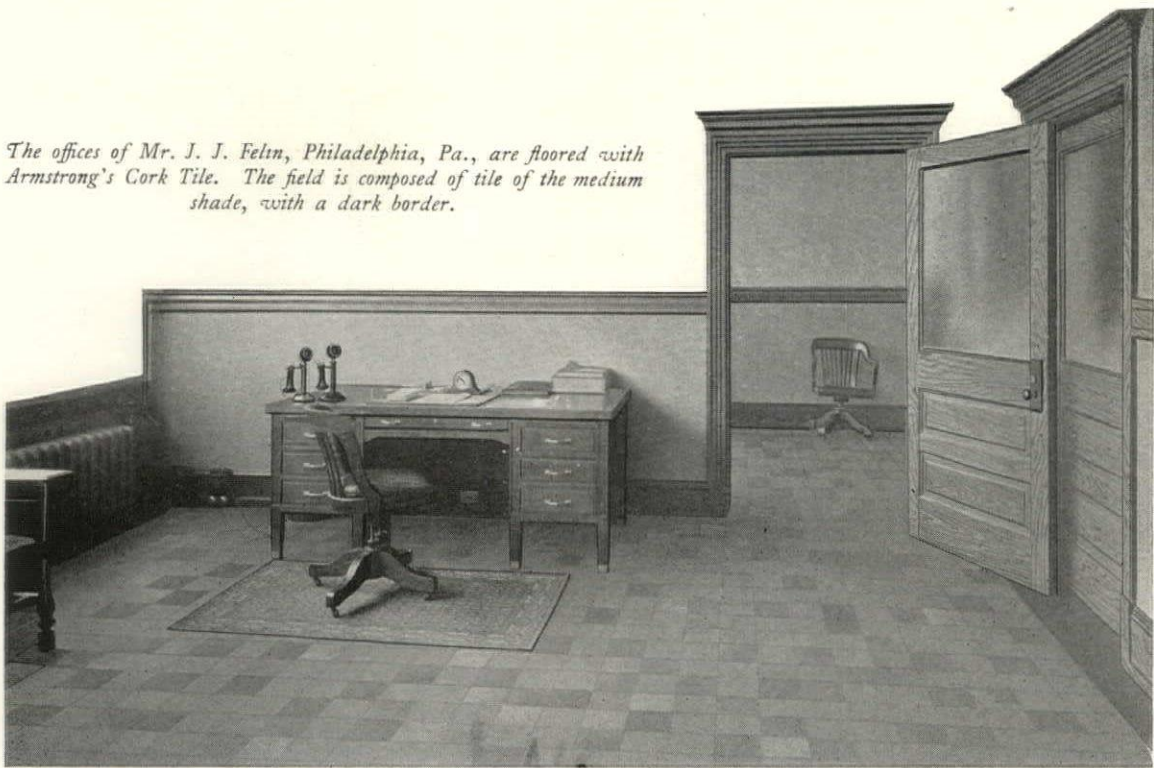
Eagle Pure White Lead has been the choice of discriminating painters for 77 years, and has proved itself to be a paint material of unequalled durability.

The EAGLE-PICHER LEAD Company

208 South La Salle Street, Chicago
New York Philadelphia Baltimore Pittsburgh
Cleveland Cincinnati St. Louis Kansas City
And All Principal Cities

Manufacturers of White Lead, Lead Oxides,
Sublimed White Lead, Sublimed Blue Lead, Babbitt Metal, Lead Pipe, Plumbers' Lead Goods, Pig Lead, Slab Zinc, Sulphuric Acid and Lithopone

The offices of Mr. J. J. Feltn, Philadelphia, Pa., are floored with Armstrong's Cork Tile. The field is composed of tile of the medium shade, with a dark border.



Efficiency and Floors

IN stores, banks, offices and other business institutions where the work involves considerable standing and walking, maintenance of efficiency among employees depends to no small extent upon the material used for floors. Fatigue results from contact with floors that are cold and hard just as surely as it does from manual labor, and its reaction is almost invariably evidenced by a decided slowing up.

One of the several advantages of a

floor of Armstrong's Cork Tile is its ability to conserve energy. It is warm and resilient underfoot, yields to the tread, and absorbs fatigue-producing shocks in much the same manner as the pneumatic tire on your automobile.

When you make your next set of plans for a business house, think of the men and women who are on their feet for hours at a time—and specify floors of Armstrong's Cork Tile.

Shall we mail you a copy of the illustrated booklet, "Armstrong's Cork Tile"? There is no charge for it or a sample.

Armstrong Cork & Insulation Company

132 Twenty-fourth Street,
Pittsburgh, Pa.

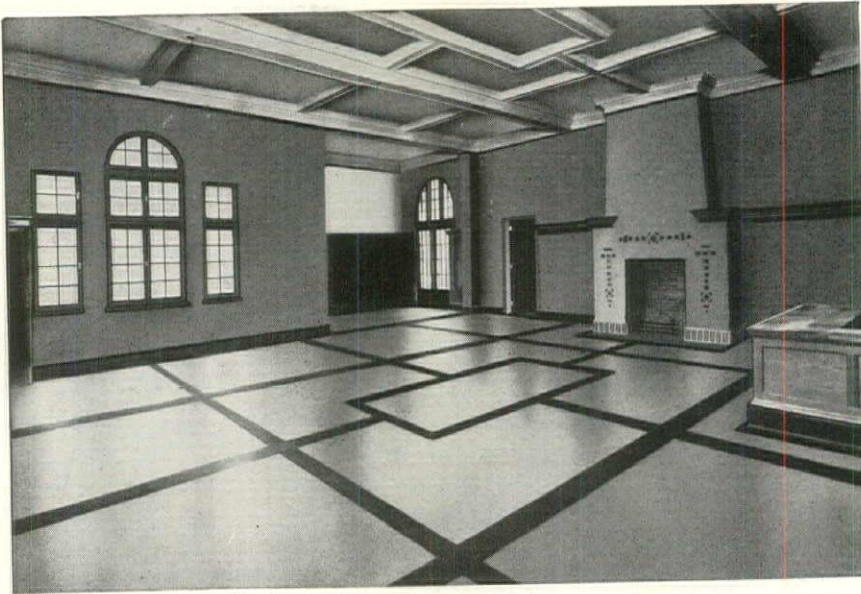
Also manufacturers of Nonpareil Corkboard for cold storage rooms; Nonpareil Cork Covering for cold pipes; Nonpareil High Pressure Covering for steam lines; Nonpareil Insulating Brick for boiler settings, etc.; Nonpareil Cork Machinery Isolation for deadening the noise of machines; Circle A Cork Brick for cold storage room floors; and Linotile for floors in offices, residences, etc.

Armstrong's Cork Tile

REG. U. S.



PAT. OFF.



Flooring

Hygienic, Durable, Fireproof

Floors are the most used and most abused portions of every building and demand that only the best flooring material be specified.

ASBESTONE Composition Flooring is an ideal flooring for all interior purposes. It is recognized to be the most perfect Hygienic, Fireproof, Durable flooring that is installed plastic, presents a monolithic surface, smooth, jointless and artistic, is easy to keep clean, noiseless, resilient and easy to the tread.

ASBESTONE Composition Flooring is not cold or hard, like

marble or tile, does not check or warp like wood. Its low cost of installation and lasting qualities make it of special interest to architects, medical men, property owners, etc.

ASBESTONE can be installed over either new or old cement or wood, and can be supplied in a variety of artistic colors.

Specify ASBESTONE and insist on its installation. Installations made in all parts of the world.

Samples, prices and full particulars on application.

FRANKLYN R. MULLER & CO. Manufacturers Waukegan, Illinois

Established 1906



For Industrial Buildings

Painting Specifications

Walls and Ceilings

To be given two coats of PERMANITE, cold water paint, manufactured by M. Ewing Fox Co., New York and Chicago, mixed and applied in accordance with manufacturers' directions.

If you specify simply "cold water paint," the contractor will use the cheapest stuff he can buy—with the natural result.

If you specify Oil Paint, the result will be good, but the cost of material at least five times the cost of PERMANITE.

PERMANITE gives the required result at the lowest cost.

That's why you should specify it.

FRENCH'S

"Quality First"

Mortar



Colors

BRIGHTEST, STRONGEST, UNFADING

Manufacturers of

BUCK WHITE LEAD

The Best White Paint

CROWN PAINT

Ready Mixed or Semi-Liquid

**COLORS IN OIL, ALSO JAPAN
AND DISTEMPER**

VARNISHES

For all Purposes

SAMUEL H. FRENCH & CO.

Established 1844

PHILADELPHIA



Gold Seal Battleship Linoleum in Manhattan State Bank, Manhattan, Mont. Arch. & Cont. - A. Moorman & Co., St. Paul, Minn.



Floor Service —Guaranteed

Under any and all tests, *Gold Seal Battleship Linoleum* delivers 100% floor service.

It is quiet under foot; comfortably easy to walk on; attractive in appearance — soft brown color; sanitary — easy to clean; and remarkably durable — able to stand any type of hard wear.

We're so certain of its sturdy worth that we back *Gold Seal Battleship Linoleum* with this absolute Gold Seal Guarantee: "Satisfaction guaranteed or your money back." (The Gold Seal appears on the face of every two yards.)

Our Service Department may be able to help you solve your floor-covering problems. Samples and specifications for laying sent on request.

GOLD SEAL Battleship Linoleum

(THE FAMOUS FARR & BAILEY BRAND)

U. S. NAVY STANDARD

Important Announcement

The Congoleum Company, Incorporated, has acquired the plant, business and good-will of the Farr & Bailey Mfg. Company, of Camden, N. J., among whose products is the famous F. & B. Battleship Linoleum. In the future F. & B. Battleship Linoleum will be known as

GOLD SEAL Battleship Linoleum

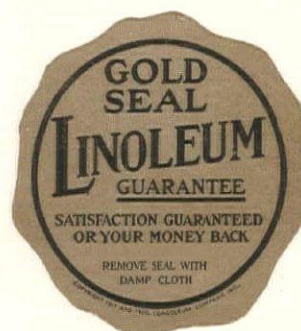
It will continue to be the same enduring linoleum that for years has led the field in this type of floor-covering; built on exactly the same rigid U. S. Navy Specifications; made by the same F. & B. workmen, in the same factory.

And in addition it will bear this definite Gold Seal Guarantee:

*"Satisfaction guaranteed,
or your money back."*

Congoleum Company

INCORPORATED
PHILADELPHIA CHICAGO SAN FRANCISCO
CLEVELAND NEW YORK MINNEAPOLIS
DALLAS BOSTON KANSAS CITY
MONTREAL



Be Sure to
Look for the Gold Seal

THE BUILDERS' JOURNAL

A new monthly magazine for the building contractor
Published by Rogers and Manson Company

THERE is great need for improvement in the design of small houses and commercial buildings that are erected in large numbers every year. Unfortunately this work does not receive the attention of the capable architect and it is left largely to the building contractor to secure the design.

Rogers and Manson Company aims to stimulate interest in better architectural design in this type of work by setting before the moderate cost building contractors of the country examples of good, small buildings that may serve as models. We already have ample evidence that builders appreciate the public demand for better architecture and we expect *THE BUILDERS' JOURNAL* to be an important factor in creating a full appreciation of the results for which the architectural profession is working.

Why Architects Should be Interested

THE BUILDERS' JOURNAL is eminently practical. It publishes detailed photographs, plans and construction drawings of moderate cost buildings of many different types. Each month contains ten special departments covering the various building trades and giving detailed information on construction methods. This material has practical application in the architect's office in bringing to the attention of draftsmen valuable help in building problems that they would otherwise obtain only by actual contact in the field. These construction articles are written by engineers, contractors, architects and others having practical knowledge.

Special Offer to Draftsmen

THE BUILDERS' JOURNAL is published at a low price so that it may have as wide an influence as possible. Its subscription is \$2.00 per year. As an introductory offer to draftsmen we will be glad to accept subscriptions at

Seven Months for \$1.00

THE COUPON BELOW IS FOR CONVENIENCE IN SENDING ORDER

ROGERS AND MANSON COMPANY

142 Berkeley Street

Boston 17, Mass.

Gentlemen: You may enter the following subscriptions to *THE BUILDERS' JOURNAL* beginning July, 1920, for seven months.

Enclosed find _____
at rate of \$1.00 for each subscription.

Name _____

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Long-Bell

The Mark on Quality

LUMBER

IN MANY lands where men carefully fashion buildings out of sawn wood the Long-Bell trademark is recognized as a dependable guide to lumber and timbers of uniform high quality. Such a reputation was not made in a day. Since 1875 The Long-Bell Lumber Company has been taking unusual pains to provide lumber that would meet the most exacting requirements of builders large and small. From a very small beginning this concern has become the largest manufacturer of Southern Pine in the United States, an indication that its efforts have not been in vain.

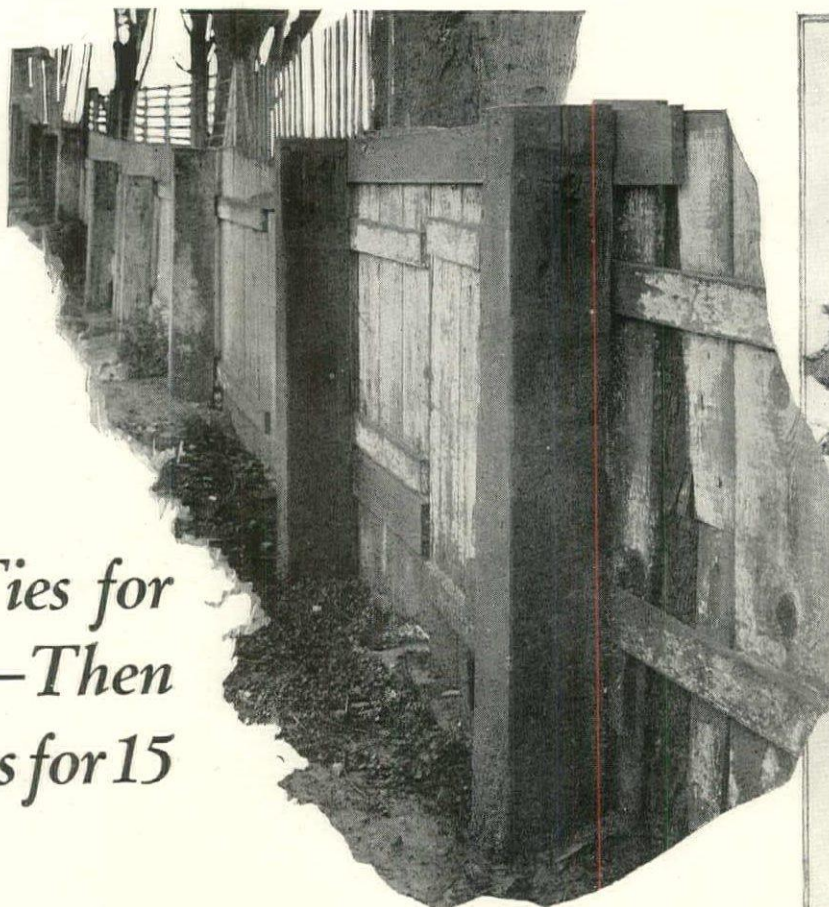
Ask Your Dealer for Long-Bell Brand

SOUTHERN PINE LUMBER AND TIMBERS; CREOSOTED LUMBER, TIMBERS, POSTS, POLES, TIES, PILING AND WOOD BLOCKS; OAK LUMBER, OAK FLOORING, GUM; CALIFORNIA WHITE PINE LUMBER; SASH AND DOORS; STANDARDIZED WOODWORK



The Long-Bell Lumber Company
 R. A. LONG BUILDING Lumbermen since 1875 KANSAS CITY, MO.

Redwood fence posts now standing in San Francisco, California. This fence was built 15 years ago from Redwood ties which had been used by the Southern Pacific Railway for 20 years.



Railway Ties for 20 years—Then Fence Posts for 15

—and still as sound as dollars. Redwood is preserved *by nature*, against rot and the attacks of insects—a peculiar property of this wood.

This remarkable resistance to rot has made Redwood a valuable lumber for all general building purposes—foundation posts, mud sills, curbing, weather boards, siding, sheds, pergolas, greenhouses, factory and mill roofs. Redwood is also excellent in engineering and industrial construction, and for the manufacture of wood specialties—tanks, silos, casket shells and boxes, beehives, ice-cream cabinets, battery separators, candy and cigar boxes, incubators, pipe organs, etc.

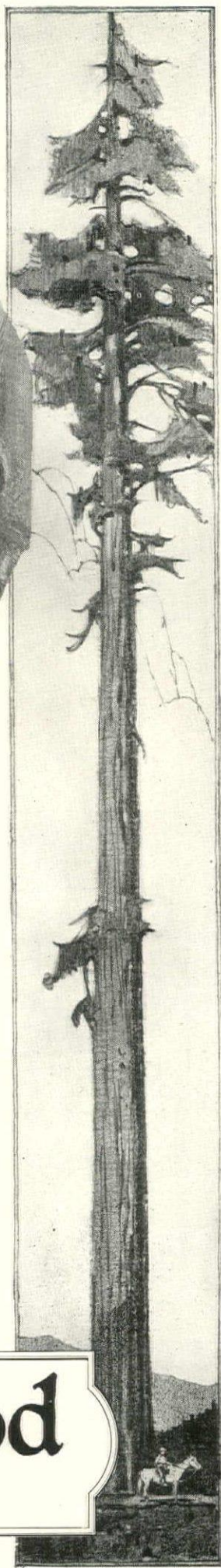
Redwood also resists *fire* to a remarkable degree, an unusual quality in wood. Freedom from pitch or resin accounts for this. When properly seasoned, Redwood will not shrink or swell, and is easily worked. Takes paint exceptionally well.

Gradually increasing knowledge of the unusual and peculiar properties of Redwood for many building, industrial and specialty purposes, has resulted in a demand for this lumber to the extent of taxing the present facilities of the Redwood mills. The mills are making every effort to enlarge their production to take care of the increased demand. There has also been a persistent demand from lumber users and prospective users for further information about this remarkable wood, and this series of advertisements is for the purpose of providing such information.

CALIFORNIA REDWOOD ASSOCIATION
760 EXPOSITION BUILDING, SAN FRANCISCO

California Redwood

Resists Fire and Rot





I

“It is so cheery and homelike in your dining room,” said the guest, “the walls and floors harmonize so well. And I don’t think that paneled walls will ever go out of style, either. I wish we could afford woodwork like this in our home.”

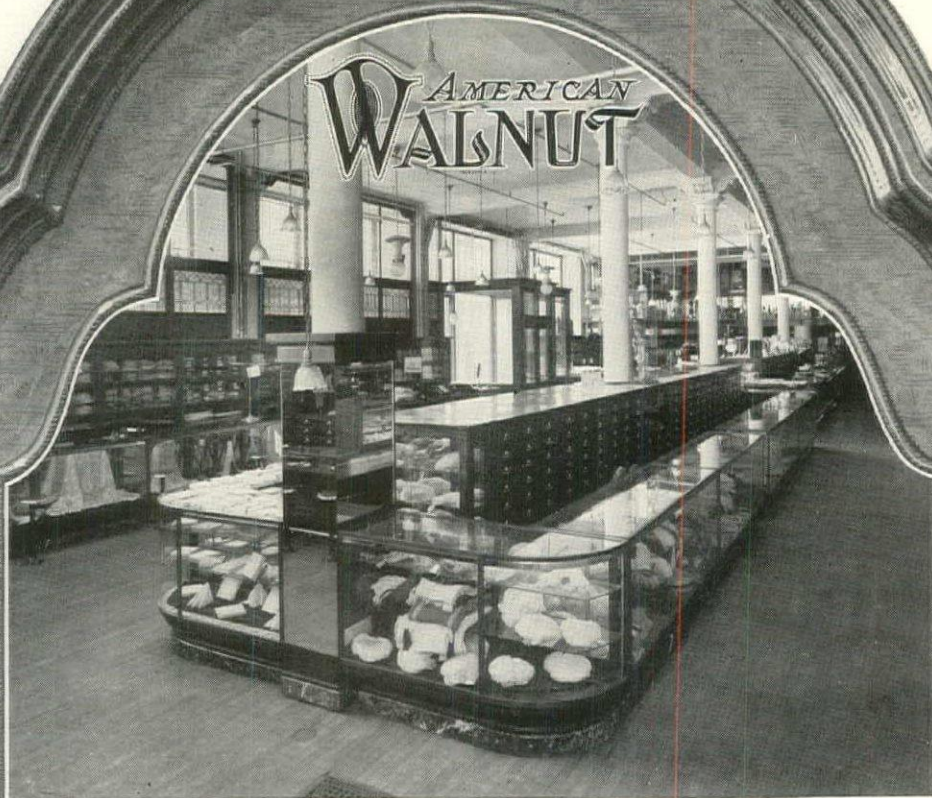
The hostess smiled. “You can surely afford it if we can,” she said. “I gave up the idea of using expensive hardwood when our architect first told us about North Carolina Pine. We tried it out in our bedroom first. It looked so well that we soon decided to use it all over the house. In laying our floors we were surprised to find that it was cut in such a way that we saved over 10 per cent of the lumber which would otherwise have been used. When you figure this along with the economical price of the lumber itself, you surely can make big savings.”

Descriptive book and grading rules free to all architects

North Carolina Pine Association
91 Bank of Commerce Bldg., Norfolk, Va.

North Carolina Pine

Beautiful and Economical—Easily Worked—Takes all Paints, Stains and Enamels



Herpolsheimer Department Store, Grand Rapids, Mich. American Walnut fixtures by Welch Mfg. Co. and Wilmarth Show Case Co., Grand Rapids.

Winning Store Fixtures

FOR the expression of the *quiet sumptuousness* required by the most successful of modern stores there can be no better medium than American Walnut.

That this may be successfully carried into the large and popular type is well illustrated by the Herpolsheimer Department Store of Grand Rapids, Michigan, a glimpse of which is shown above. (*AMERICAN WALNUT FIXTURES.*)

There is a handsome brochure of many, but not too many, pages which sets forth in brief and delightful form the history and use of Walnut. Yours for the asking.



AMERICAN WALNUT MANUFACTURERS' ASSOCIATION
Room 1000, 616 S. Michigan Boulevard Chicago

SONNEBORN PRODUCTS


Grind-Proof *and* Dust-Free Concrete Floors!

If You Will Write Us

we will prove beyond doubt that it is good judgment to specify Lapidolith for the dustproofing and hardening of your clients' concrete floors.

Even better than this we will refer you to a concrete floor near you which has been lapidolized, and put you in touch with architects and engineers who know Lapidolith by practical experience.

LAPIDOLITH

TRADE MARK

the liquid chemical, should be flushed on a new concrete floor as soon as it is dry — and on old floors which show wear. The action is chemical and permanent.

Lapidolith completes the hydration of the Portland Cement and thereafter wear and dusting cannot occur.

Sonneborn Products:

Cemcoat

the durable Mill White. Washable, of exceptional covering capacity. Gloss, Flat and Egg-shell; also all colors.

LIGNOPHOL

FOR WOODEN FLOORS

the modern wood preservative, gives new life to old or new wooden floors.

Every architect should keep in mind these facts —

Concrete Floors are Best for Permanence.

Lapidolith is Necessary for Dustlessness.

Write for specification form, sample and literature

L. SONNEBORN SONS, INC.

Dept. 4 264 Pearl St., New York

SONNEBORN

Index to Advertising Announcements

Abendroth Brothers	93	Keasbey & Mattison Company	85
Adam Electric Company, Frank	64	Kelley Island Lime & Transport Co.	22
Alabama Pipe and Foundry Co.	93	Kelly Controller Company	104
Alignum Fireproof Products Co.	80	Kerner Incinerator Co., The	112
Aluminum Cooking Utensil Co.	113	Kewanee Boiler Company	106
American Brass Co., The	2nd Cover	Kewanee Private Utilities Co.	74
American Enameled Brick and Tile Company	16	Kohler Company	98
American Enameling Manufacturing Corporation	93	Krupp Foundry Co.	93
American Face Brick Association, The	13	Lawson Manufacturing Company	63
American Fence Construction Co.	36	Leavens & Co., Inc., William	30
American Foundry and Pipe Co.	93	Long-Bell Lumber Co., The	123
American Materials Co.	16	Lorillard Refrigerator Company, The	32
American Sheet and Tin Plate Co.	82, 83	L. P. T. Specialty Co.	72
American Terra Cotta and Ceramic Co., The	10	Ludowici-Celadon Company	11
American Walnut Manufacturers' Assn.	126	Lutton Company, Inc., W. H.	33
American Window Glass Company	70	Maddock's Sons Company, Thomas	96
Anchor Post Iron Works	36	Maurer & Son, Henry	12
Angel & Co., Inc., H. Reeve	24	McKinney Manufacturing Company	61
Anniston Foundry Co.	93	Medina Foundry Co.	93
Anti-Hydro Waterproofing Co.	90	Merchant & Evans Co.	102
Arkansas Soft Pine Bureau	62	Milwaukee Corrugating Co.	102
Armstrong Cork Company	119	Mississippi Wire Glass Co.	68
Armstrong's Linoleum	26	Moline Heat	109
Associated Tile Manufacturers, The	9	Morgan Sash and Door Company	Third Cover
Atlantic Terra Cotta Co.	2, 3	Muller & Co., Franklyn R.	120
Atlas Portland Cement Co., The	21	Murphy Varnish Company	115
Berry Brothers, Inc.	38	National Building Granite Quarries Association, Inc.	18
Bessemer Soil Pipe Co.	93	National Fire Proofing Company	1
Bishopric Manufacturing Co., The	42	National Foundry Co. of New York, Inc.	93
Bobbink & Atkins	30	National Metal Molding Co.	91
Bostwick Steel Lath Co., The	40	National Pipe and Foundry Co.	93
Boyle & Co., Inc., John	86	National Tracing Cloth Co.	27
Bradford Brick Co.	15	National Tube Co.	92
Bristol Company, The	28	New York Blue Print Paper Co.	24
Brunswick-Balke-Collender Co.	130	Nicholas Power Company, Inc.	37
Byers Co., A. M.	94	North Carolina Pine Association	125
Cabot, Inc., Samuel	116	North Western Expanded Metal Co.	77
California Redwood Association	124	Northwestern Terra Cotta Co., The	4
Campbell Manufacturing Co.	93	Notman & Co., A. H.	31
Carey Co., The Philip	87	O'Brien Varnish Co.	118
Carney's Cement Company	20	Page Boiler Co., The Wm. H.	110
Casey Hedges Co., The	93	Peelle Company, The	69
Central Foundry Co.	93	Polachek Bronze & Iron Co., John	30
Charlotte Pipe and Foundry Co.	93	Pratt & Cady Co., Inc.	102
Cheney Brothers	29	Prometheus Electric Company	64
Clarage Fan Company	101	Raymond Concrete Pile Company	51
Clow & Sons, James B.	99	Reading Foundry and Supply Co.	93
Cohen, Michael & Co.	16	Reliance Fireproof Door Co.	80
Congoleum Company, Inc.	121	Republic Fireproofing Co.	81
Conkling-Armstrong Terra Cotta Co.	12	Riverside Boiler Works, Inc.	108
Cousa Pipe and Foundry Co.	93	Rookwood Pottery Company, The	16
Cox Stove Co., Abram	105	Royal Ventilator Co.	100
Crane Company	97	Rundle-Spence Manufacturing Company, The	74
Creo-Dipt Company, Inc.	86	R. U. V. Company, Inc.	74
Crittall Casement Window Co.	34	Salem Brass and Iron Manufacturing Co.	93
Crown Pipe and Foundry Co.	93	Samson Cordage Works	66
Curtis Companies, The	30	Sandusky Cement Co., The	19
Cutler Mail Chute Co.	62	Sargent & Company	59
Devoe & Reynolds Company, Inc.	116	Sedgwick Machine Works	68
Dixon Crucible Co., Joseph	23	Sherwin-Williams Co., The	117
Dunham Company, C. A.	107	Simplex Wire and Cable Co.	66
Eagle Picher Lead Co., The	118	Smith Co., The H. B.	49
Emack Co., The John D.	8	Smith & Co., Edw.	110
Faber, Eberhard	25	Smith & Egge Mfg. Co., The	62
Fiske & Company, Inc.	14	Solry Tile Manufacturing Co., Inc.	8
Fox Co., M. Ewing	120	Somerville Iron Works	93
French & Co., Samuel H.	120	Sonneborn Sons, Inc., L.	127
Gadsden Pipe Co.	93	South Amboy Terra Cotta Co., The	10
General Fireproofing Company, The	76, 89	Southern Cypress Manufacturers' Association	114
Gillis & Geoghegan	70	Standard Foundry Co.	93
Globe Ventilator Company	100	Stanley Works, The	57
Gorton & Lidgerwood Co.	110	Stearns Lumber Co., The A. T.	116
Goulds Manufacturing Co.	75	Sturtivant Company, B. F.	95, 103
Graver Corporation	73	Superior Manufacturing Co.	93
Guastavino Co., R.	5	Toch Bros.	86
Habirshaw Electric Cable Co.	65	Trenton Potteries Co., The	100
Hart & Hegeman Mfg. Co., The	64	Truscon Laboratories, The	88
Heinz Roofing Tile Co., The	8	Truscon Steel Co.	84, 129
Hitchings & Co.	24	Union Foundry Co.	93
Hoffman Manufacturing Co., Andrew	35	United Electric Company, The	67
Hollow Building Tile Ass'n, The	6	United States Mineral Wool Co.	66
Holophane Company, Inc.	55	United States Radiator Corporation	44
Hood Brick Co., B. Mifflin	7	Utica Heater Company	47
Hope & Sons, Henry	34	Van Range Company, The John	112
Indiana Limestone Quarrymen's Association	17	Vonnegut Hardware Co.	60
International Casement Co., Inc.	34	Wadsworth, Howland & Co., Inc.	116
International Nickel Co., The	78, 79	Weiskittel & Son Co., A.	93
Jenkins Bros.	111	Western Electric Co.	53
Johns-Manville Co., H. W.	39	Wetter Manufacturing Co., H.	93
Johnson Co., J. D.	93	Winkle Terra Cotta Co., The	12
Kaestner & Hecht Co.	Back Cover	Wisconsin Lime & Cement Co.	16
Kawneer Co., The	72	Yale & Towne Manufacturing Co., The	62
		Zouri Drawn Metals Co.	71



LIGHT WEIGHT CONSTRUCTION *for* LIGHT LOADS

Does it not seem uneconomical to design a floor construction which weighs nearly as much as the load it supports? Yet this is what must be done with many types of fire-proof construction to support loads such as occur in apartment houses, schools, hotels, office buildings, etc. A great part of the materials of construction is thus used to support itself.

The light weight of Truscon Pressed Steel makes it ideal for light-occupancy buildings. The beams are light in weight and correspondingly easy to handle, while only a minimum of materials is required for the floor and ceiling. All members are shop fabricated, saving field labor. Merely set the beams in place, attach Hy-Rib Lath and apply plaster and concrete. No centering nor forms are required.

Truscon Pressed Steel Construction is fireproof and permanent, and economical in all respects. It is the ideal construction for apartment buildings, schools, stores, hotels, etc. Endorsed by successful use in many important buildings.

On request, we will gladly furnish complete information, catalog, etc.



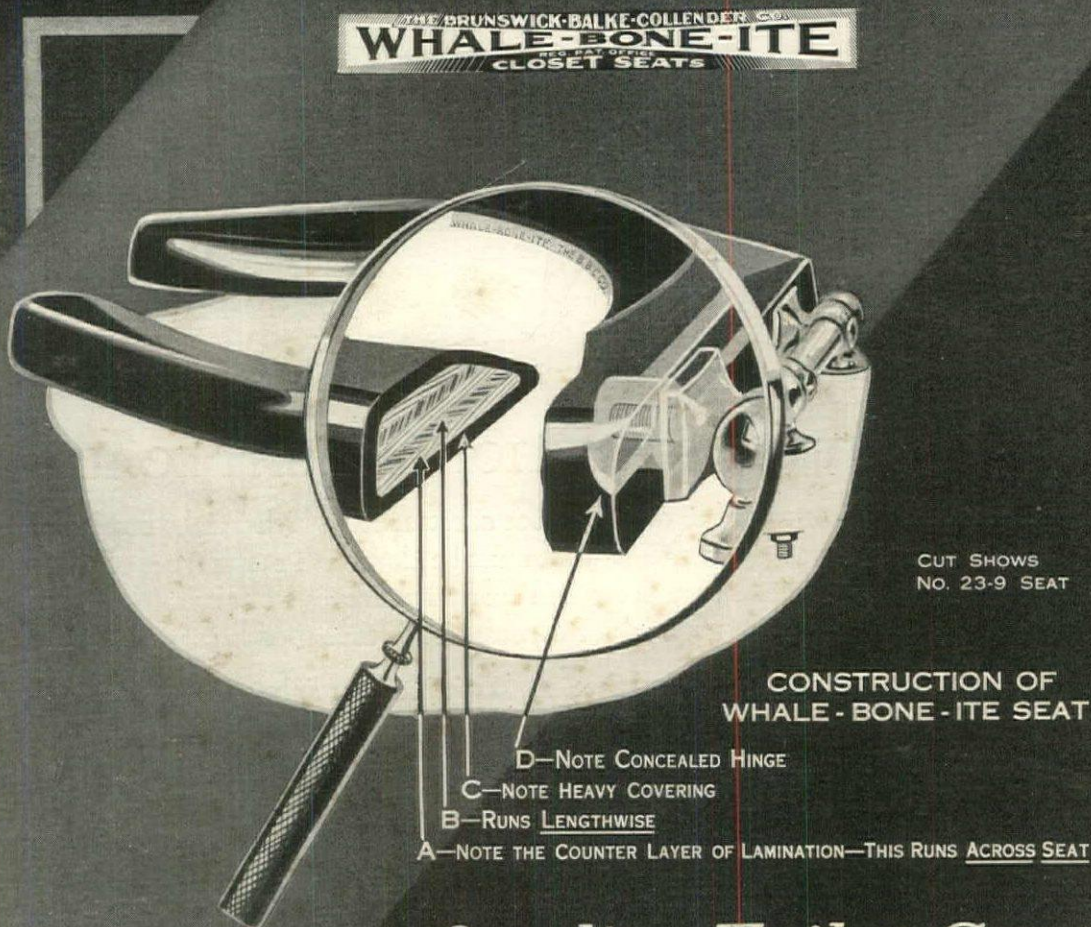
STRUCTURAL PRESSED STEEL DEPARTMENT

TRUSCON STEEL COMPANY
YOUNGSTOWN, OHIO

WAREHOUSES AND SALES
OFFICES IN PRINCIPAL CITIES
Reinforcing Steel, Metal Lath, Steel Windows,
Steel Buildings, Pressed Steel, Cement Tile, etc.



**TRUSCON
PRESSED STEEL
JOISTS and STUDS**



The Quality Toilet Seat

With Permanent Economy

Building Economics

—“The installation of mechanical fixtures that are not a source of expense, but when once installed give lifelong service.”

WHALE-BONE-ITE Toilet Seats

—combine all that this implies. The numerous installations in buildings of national reputation as the result of careful extensive tests, warrants your consideration. It is a quality product—guaranteed unqualifiedly against splitting, cracking and checking, and to be impervious and acid-proof.

—Sold by all leading plumbing houses.

MADE BY

THE BRUNSWICK-BALKE-COLLENDER CO.
1623 S. WABASH AVE. CHICAGO

THE laborious, slow, costly process of designing and making by hand special millwork for the average small home is the height of extravagance.

With Morgan Approved Standard Millwork in stock at leading dealers, this extravagance is unnecessary.

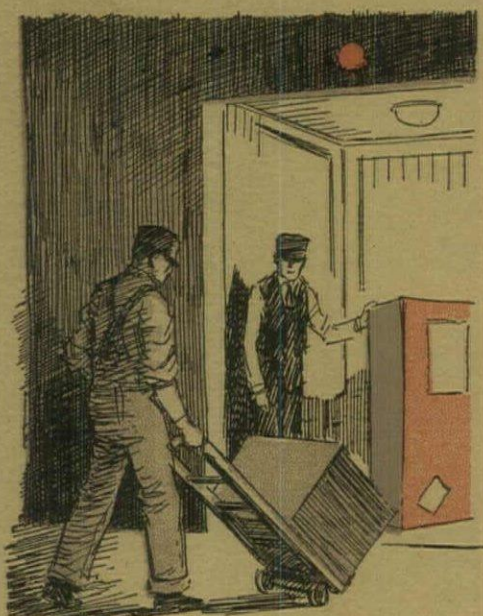
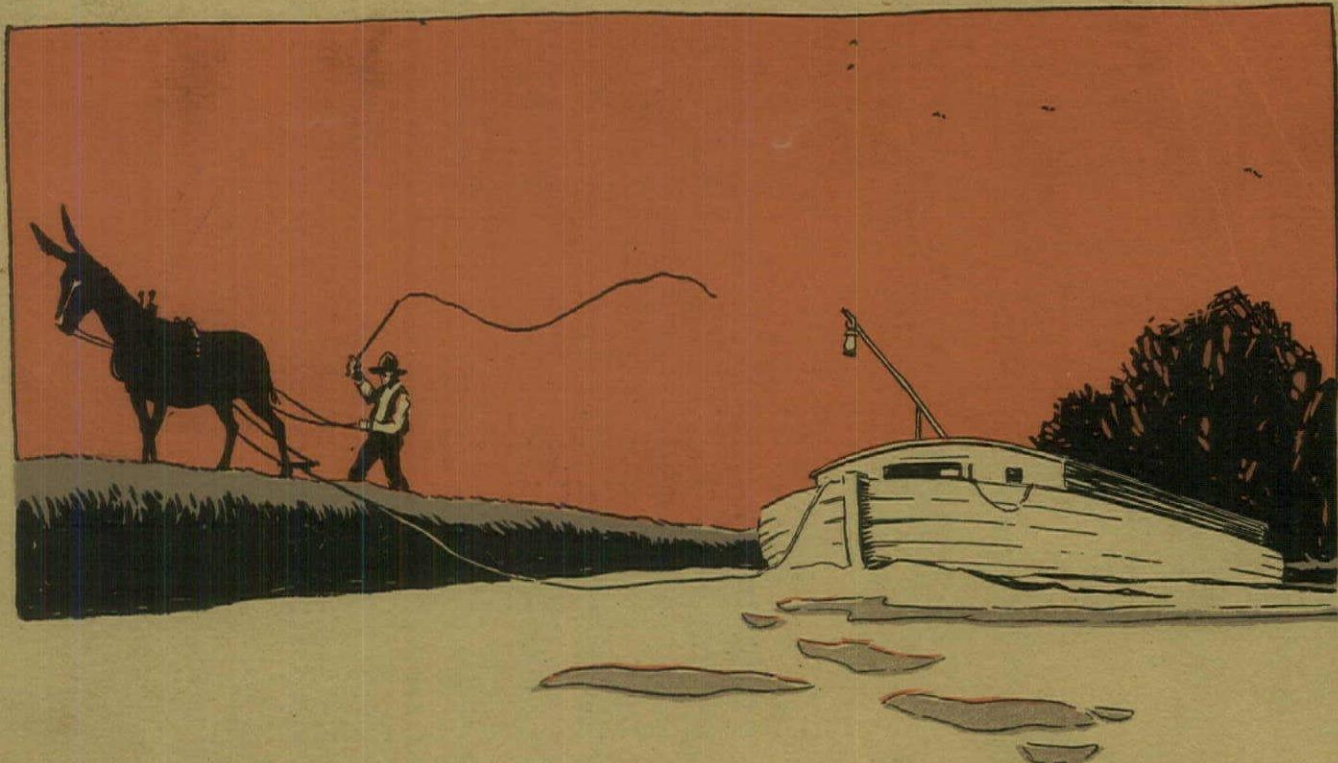
Improved quality and reduced cost are complementary to quantity production.

MORGAN MILLWORK ORGANIZATION

OSHKOSH CHICAGO BALTIMORE
NEW YORK CLEVELAND DETROIT JERSEY CITY
ATLANTA



This mark on the top rail of a door means a guaranteed door



ESTABLISHED 1863

Even the standards of K&H freight elevators are as far ahead of regular practice as power driven boats are in advance of those which were mule drawn in 1863.

Buildings which supply K&H elevator service remain up to date with elevators that cost more per car but less per mile.

KAESTNER & HECHT Co.

ELECTRIC ELEVATOR BUILDERS
CHICAGO