

THE  
ARCHITECTURAL  
FORUM

IN TWO PARTS

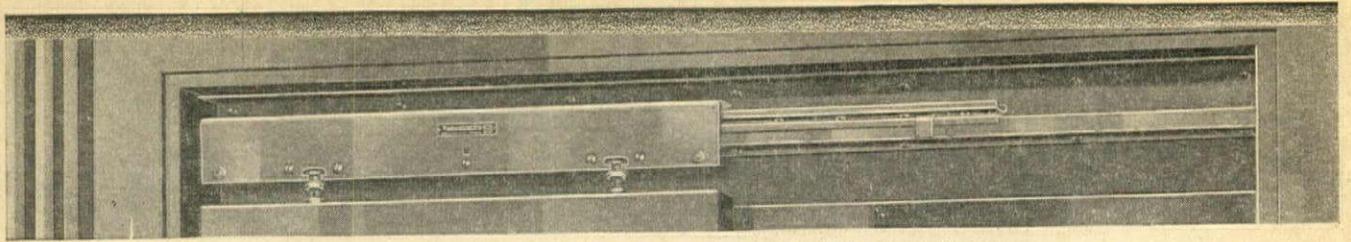
PART TWO

ARCHITECTURAL  
ENGINEERING  
&  
BUSINESS

TRANSPORTATION BUILDING REFERENCE NUMBER

DECEMBER 1930

PRICE \$3.00



Illustrating Rich-Wil Elevator Door Hanger No. 827 for single doors

# Q<sup>50 years</sup>uiet~

1880/1930

The quietest thing we know (next to a cat stalking a mouse!) is a Rich-Wil Elevator Door Hanger in operation.

It is because the suspended weight of the elevator doors is equally distributed throughout their full travel. That is because the Rich-Wil hanger rides on over-size ball bearings extending the full width of the door, providing perfect alignment.

Extreme quiet and long service are thus assured. Friction is reduced

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R-W equipment meets every elevator door requirement. R-W closers pay for themselves in valuable space saved. Standardize on R-W hangers, closers, checks, interlocks, the PowR-Way elevator door operator, and R-W signal systems of all modern types.

Consult an R-W engineer at any time without obligation. Send for R-W catalog No. 44.

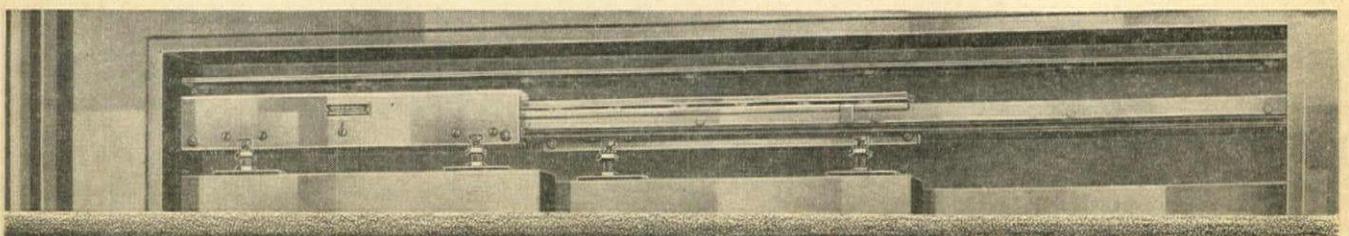
## Richards-Wilcox Mfg. Co.

"A HANGER FOR ANY DOOR THAT SLIDES"

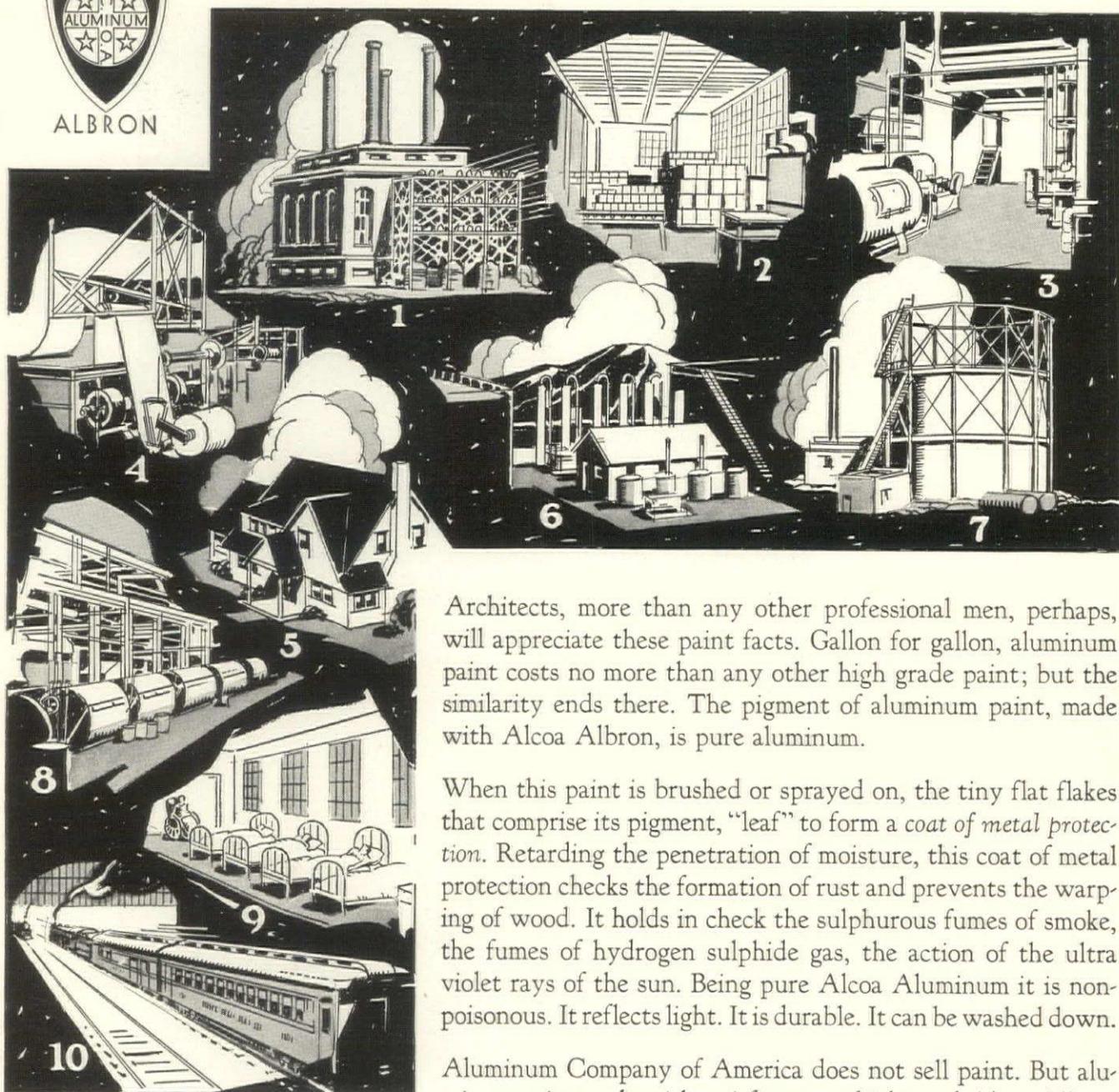
AURORA, ILLINOIS, U.S.A.

Branches: New York Chicago Boston Philadelphia Cleveland Cincinnati Indianapolis St. Louis New Orleans Des Moines Minneapolis  
Kansas City Los Angeles San Francisco Omaha Seattle Detroit Atlanta Richards-Wilcox Canadian Co., Ltd., London, Ont. Montreal Winnipeg

Illustrating Rich-Wil Elevator Door Hanger No. 828 for 2-speed doors



# Aluminum Paint made with Alcoa Albron Powder meets many "specialized" paint conditions



(1) Public Utility Plants: Resistance to rust on outside structures. Durability. Appearance. (2) Food Plants: Non-poisonous. Cleanliness. Washability. Light reflectivity. (3) Milk Plant: Non-poisonous. Cleanliness. Washability. Light Reflectivity. (4) Textile Plants: Resistance to discoloration from dye-house fumes. Light reflectivity. (5) Residential Structures: As a primer and back-primer for lumber. Holds moisture content within safe limits. (6) Oil Refineries: Resistance to hydrogen sulphide fumes. Heat reflectivity. Appearance. (7) Gas Plants: Appearance. Heat Reflectivity. Resistance to moisture penetration. Checking formation of rust. (8) Chemical Plants: Resistance to attack of acid fumes. Durability. (9) Institutions: Prime coat for lumber. Finish coat for metal. Retards penetration of moisture. (10) Terminals: Resistance to sulphurous fumes and smoke. Durability.

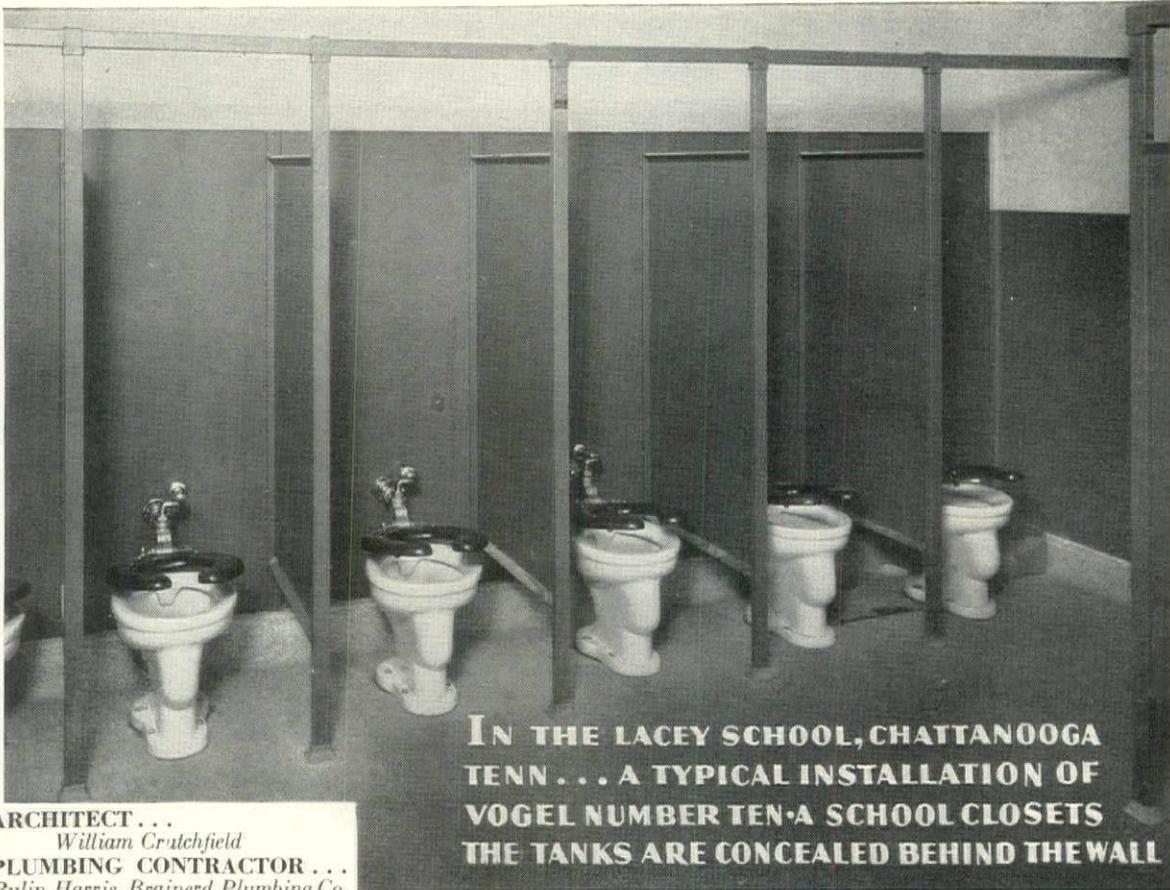
Architects, more than any other professional men, perhaps, will appreciate these paint facts. Gallon for gallon, aluminum paint costs no more than any other high grade paint; but the similarity ends there. The pigment of aluminum paint, made with Alcoa Albron, is pure aluminum.

When this paint is brushed or sprayed on, the tiny flat flakes that comprise its pigment, "leaf" to form a *coat of metal protection*. Retarding the penetration of moisture, this coat of metal protection checks the formation of rust and prevents the warping of wood. It holds in check the sulphurous fumes of smoke, the fumes of hydrogen sulphide gas, the action of the ultra violet rays of the sun. Being pure Alcoa Aluminum it is non-poisonous. It reflects light. It is durable. It can be washed down.

Aluminum Company of America does not sell paint. But aluminum paint made with satisfactory vehicles and Alcoa Albron Powder may be purchased from most reputable paint manufacturers, jobbers and dealers. Be sure the pigment portion is Alcoa Albron and is so designated.

Let us send you the booklets, "Aluminum Paint, the Coat of Metal Protection", and "Aluminum Paint Specifications", A.I.A. File No. 25-B-252. ALUMINUM COMPANY of AMERICA; 2412 Oliver Building, PITTSBURGH, PENNSYLVANIA.

ALCOA ALBRON  
POWDER FOR  
ALUMINUM PAINT



ARCHITECT . . .  
*William Crutchfield*  
 PLUMBING CONTRACTOR . . .  
*Rulin Harris, Brainerd Plumbing Co.*

**IN THE LACEY SCHOOL, CHATTANOOGA  
 TENN. . . A TYPICAL INSTALLATION OF  
 VOGEL NUMBER TEN-A SCHOOL CLOSETS  
 THE TANKS ARE CONCEALED BEHIND THE WALL**

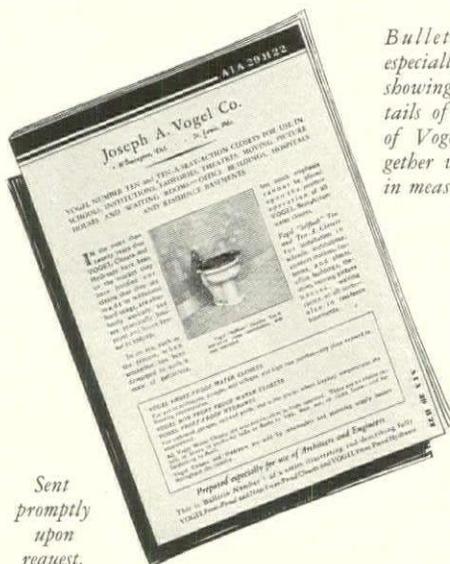
**V**OGEL Number Ten and Ten-A Closets meet the requirements of the modern school and the efficient plant.

The Lacey School, in Chattanooga, installed Number Ten-A Closets with tanks concealed behind the wall, while Pusey & Jones, one of Wilmington's largest industrial plants, installed the Number Tens, with enameled tanks, which are exposed.



*A typical installation of Vogel Number Ten Closets. Photograph taken in the Pusey & Jones plant, at Wilmington, Del. A closet similar to these on an endurance test has flushed 230,000 times without even a washer being renewed.*

*A bulletin has been prepared especially for architects and will be sent promptly to those requesting it.*



*Bulletin designed especially for architects, showing complete details of various types of Vogel Closets, together with roughing in measurements.*

*Sent promptly upon request.*

**JOSEPH A. VOGEL COMPANY**  
 Wilmington, Delaware                      St. Louis, Mo.

**VOGEL** *Products*  
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# preference continues for RAYMOND

Because Raymond Concrete Piles meet every demand for safety and certainty no matter what the subsurface conditions . . . because each pile is protected by a reinforced sheet steel shell that wholly maintains the driving resistance, retains the moisture in the concrete and insures perfect, uniform length, taper and setting.



CAST IN PLACE PILES  
COMPOSITE PILES  
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PIPE PILES

*A form for every pile  
A pile for every purpose*

BUILDING FOUNDATIONS  
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## RAYMOND CONCRETE PILE CO.

NEW YORK: 140 Cedar St.

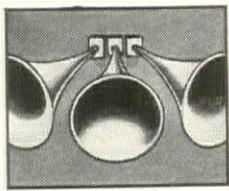
CHICAGO: 111 West Monroe St.

Raymond Concrete Pile Co., Ltd., Montreal, Canada

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# The Speech that Teamwork Built



**Architect and Acoustic Engineer help speaker put it over...**

The speaker rises. Every word he says carries—to every part of the room. People in the rear seats hear with front row ease.

Teamwork does it. Teamwork between the architect and an acoustic engineer in planning rooms where every person can hear, and in the proper

installation of Public Address equipment.

The Western Electric Public Address System acts as a miniature interior broadcasting station. It widens the hearing circle, transmits speech, music and entertainment. It is included in specifications for schools, hotels, hospitals, clubs, auditoriums, and public buildings.

Western Electric acoustic engineers are always ready to consult with architects at the planning stage and at the stage of actual installation.

AF-12-30

GRAYBAR ELECTRIC CO.,  
Graybar Building, New York, N. Y.

Gentlemen: Please send us the story of the Public Address System.

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## Western Electric

PUBLIC ADDRESS AND MUSIC REPRODUCTION SYSTEMS

*Distributed by GRAYBAR Electric Company*

# KEWANEE STEEL BOILERS

Steel, riveted construction; strong enough to stand the ravages of time, and the stress and strain imposed on every boiler; *add extra years to the life of Kewanee Boilers.*

Those extra years—plus the fuel saving guaranteed for every year by correct, unskimped design—make a Kewanee by far the best boiler investment an owner can have.

The arrival of Type "R" Steel Residence Boiler means that every building, without exception, can now have the advantages of Kewanee's superior design and construction.

**KEWANEE BOILER CORPORATION**

*division of American Radiator & Standard Sanitary Corporation*

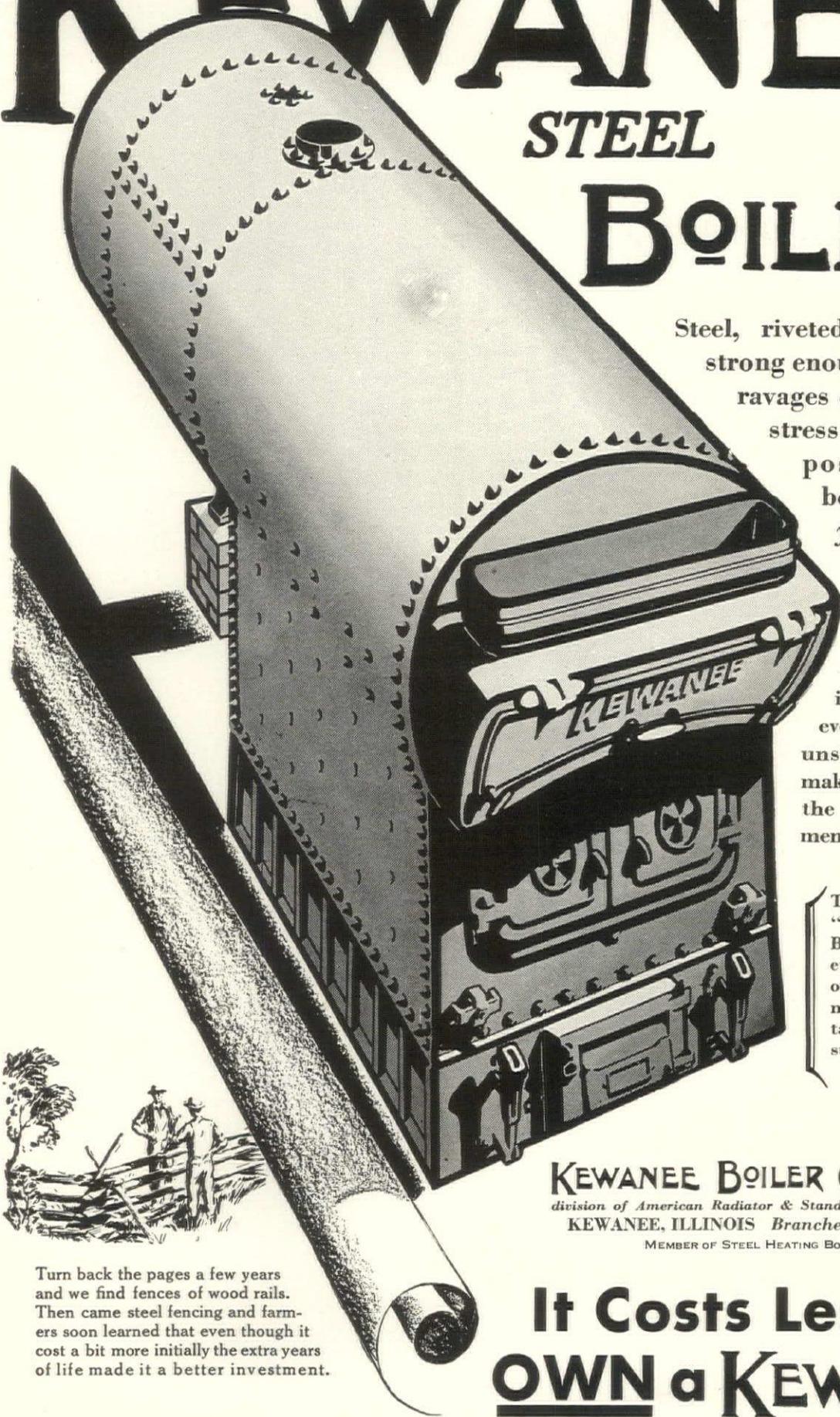
**KEWANEE, ILLINOIS** Branches in Principal Cities

MEMBER OF STEEL HEATING BOILER INSTITUTE

**It Costs Less to  
OWN a KEWANEE**



Turn back the pages a few years and we find fences of wood rails. Then came steel fencing and farmers soon learned that even though it cost a bit more initially the extra years of life made it a better investment.



# \$17,500<sup>00</sup>

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 who best utilize  
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**ARC WELDING**

**T**HIS amount of money will be awarded as prizes in the Second Lincoln Arc Welding Prize Competition for the forty-one best papers describing the redesign of any product or the design of any proposed product to be fabricated by the arc welding process. The forty-one winners will be rewarded as follows:

FOR FIRST PRIZE PAPER	. \$7,500.00
FOR SECOND PRIZE PAPER	. 3,500.00
FOR THIRD PRIZE PAPER	. 1,500.00
FOR FOURTH PRIZE PAPER	. 750.00
FOR FIFTH PRIZE PAPER	. 500.00
FOR SIXTH PRIZE PAPER	. 250.00
FOR SEVENTH TO FORTY-FIRST PRIZE PAPERS	. . 100.00 each

This is your opportunity not only to gain a substantial monetary award but win nation-wide recognition of your ability.

In order that you may have sufficient time to prepare a prize-winning paper write today for complete information.

**THE LINCOLN ELECTRIC CO.**  
**P. O. Box 683                      Cleveland, Ohio**

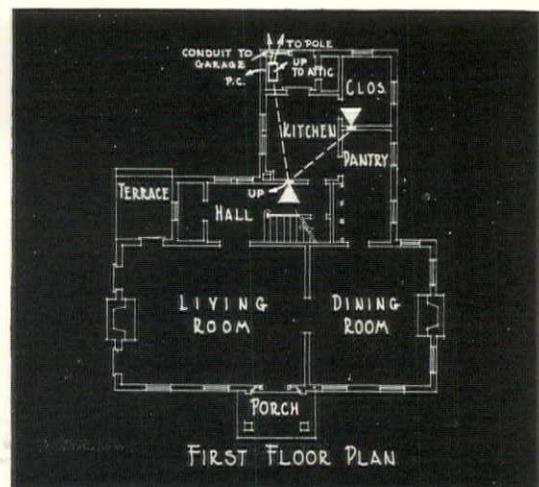
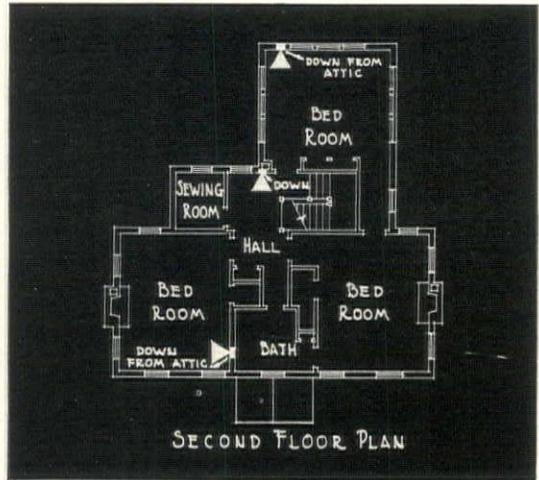


# Architects are invited to Consult freely with Bell Company representatives

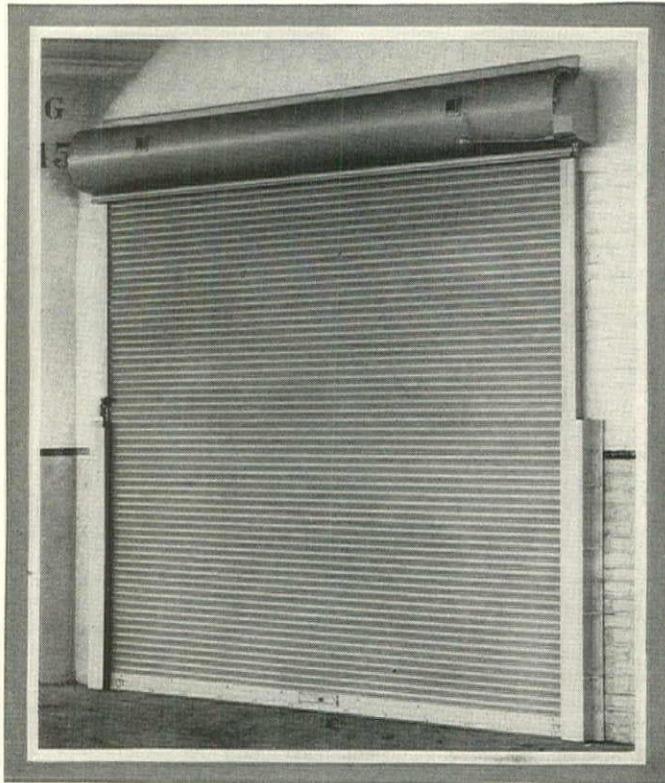
THE telephone company is constantly studying ways to improve its service. It has much data of interest to architects, particularly in view of the increasing importance of complete *telephone convenience* in the modern home. A call to the Business Office will bring a representative to discuss with you and your clients any questions that may arise in planning for the telephone arrangements in new and remodeled residences.

An important feature of this telephone convenience is the building in of conduit and outlets within the walls and floors during construction or remodeling. This gives improved appearance, by concealing the telephone wiring, and affords protection against certain types of service interruptions. Telephone outlets should be provided in all the important parts of the house. The home owner can then utilize just those which best meet his immediate needs, and he can readily rearrange or expand the service in the future.

*Modern telephone convenience is provided for in the residence of Mr. Tom C. Gooch, 3724 Armstrong Avenue, Dallas, Texas, by six telephone outlets, including one in the garage. LANG & WITCHELL, Architects, Dallas.*



# Superiority

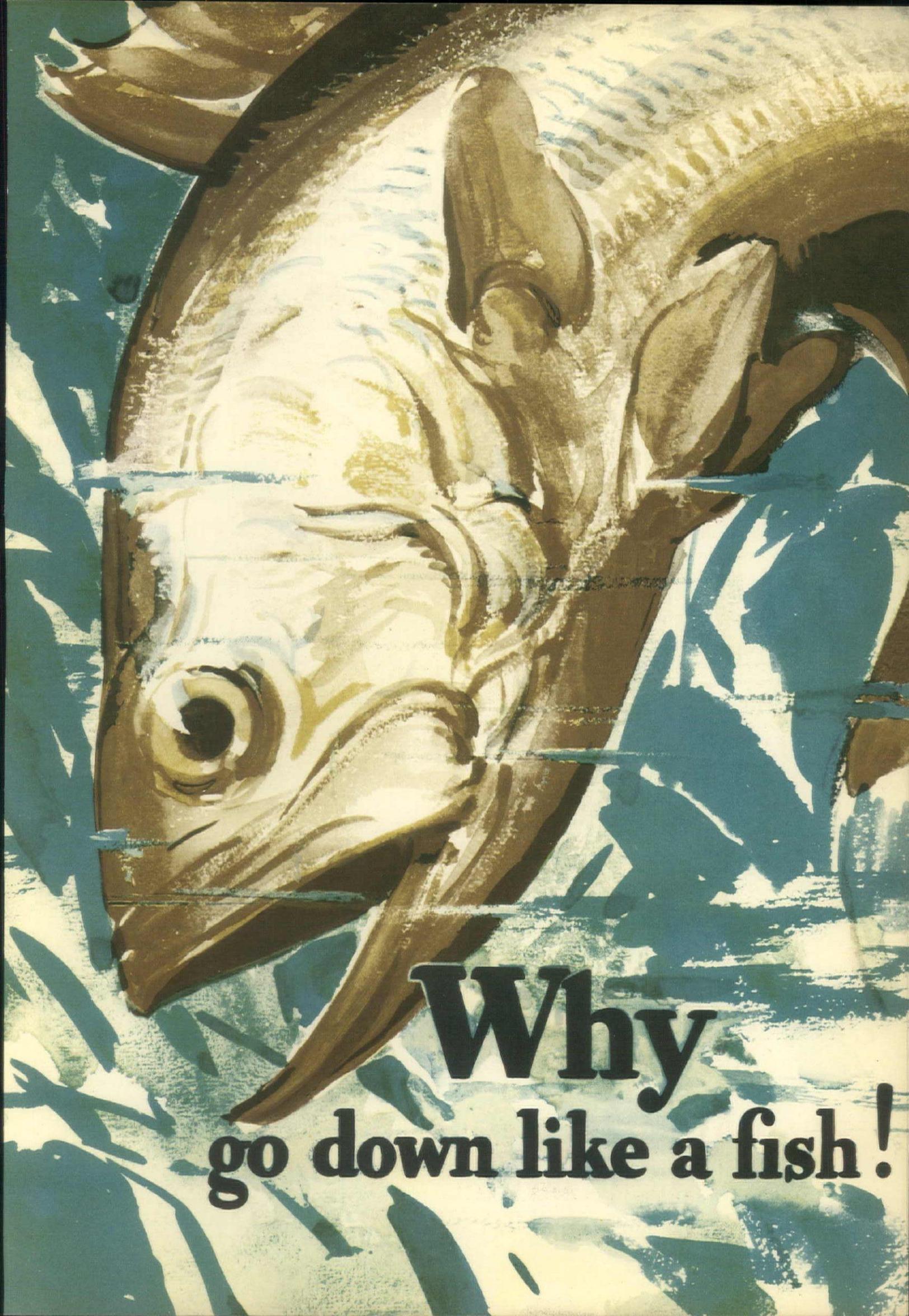


If Kinnear Rolling Doors are a superior product, and it is generally conceded by those who specify, install and use equipment of this type that they are—it is simply a reflection of the ideals of their maker. Kinnear has the courage, the financial resources, and the engineering ability to maintain the standards instituted 35 years ago when the idea of a rolling steel door first was conceived. Kinnear Doors cost a trifle more, but the years always prove their worth.

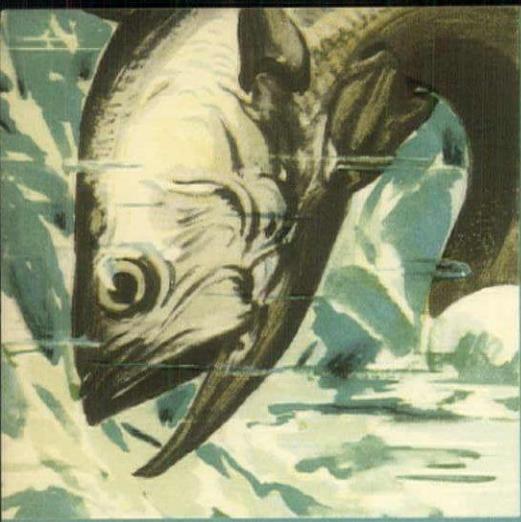
THE KINNEAR MANUFACTURING CO.  
400-44 Field Avenue, Columbus, Ohio, U. S. A.

Boston Chicago Cincinnati Cleveland Detroit New Orleans  
New York Philadelphia Pittsburgh Kansas City Washington

**Kinnear**  
**ROLLING DOORS**



**Why  
go down like a fish!**



# A Jennings Sewage Pump *has only the suction pipe* submerged

You can inspect  
or clean a Jennings  
*right out on the floor*

**C**ONVENIENCE is the outstanding feature of a Jennings. There is nothing awkward about getting at this sewage pump. The entire assembly is installed on the floor, outside the pit. Nothing is submerged except the suction pipe.

With every working part so accessible, easy work is made of inspection and cleaning. Opening up the pump and even removing the impeller takes only a few minutes. Neither pit cover, piping nor shaft alignment need be disturbed.

Jennings Suction Sewage Pumps are furnished in capacities and heads to meet all the usual requirements. All sizes are equipped with non-clog impellers. No screens are required.

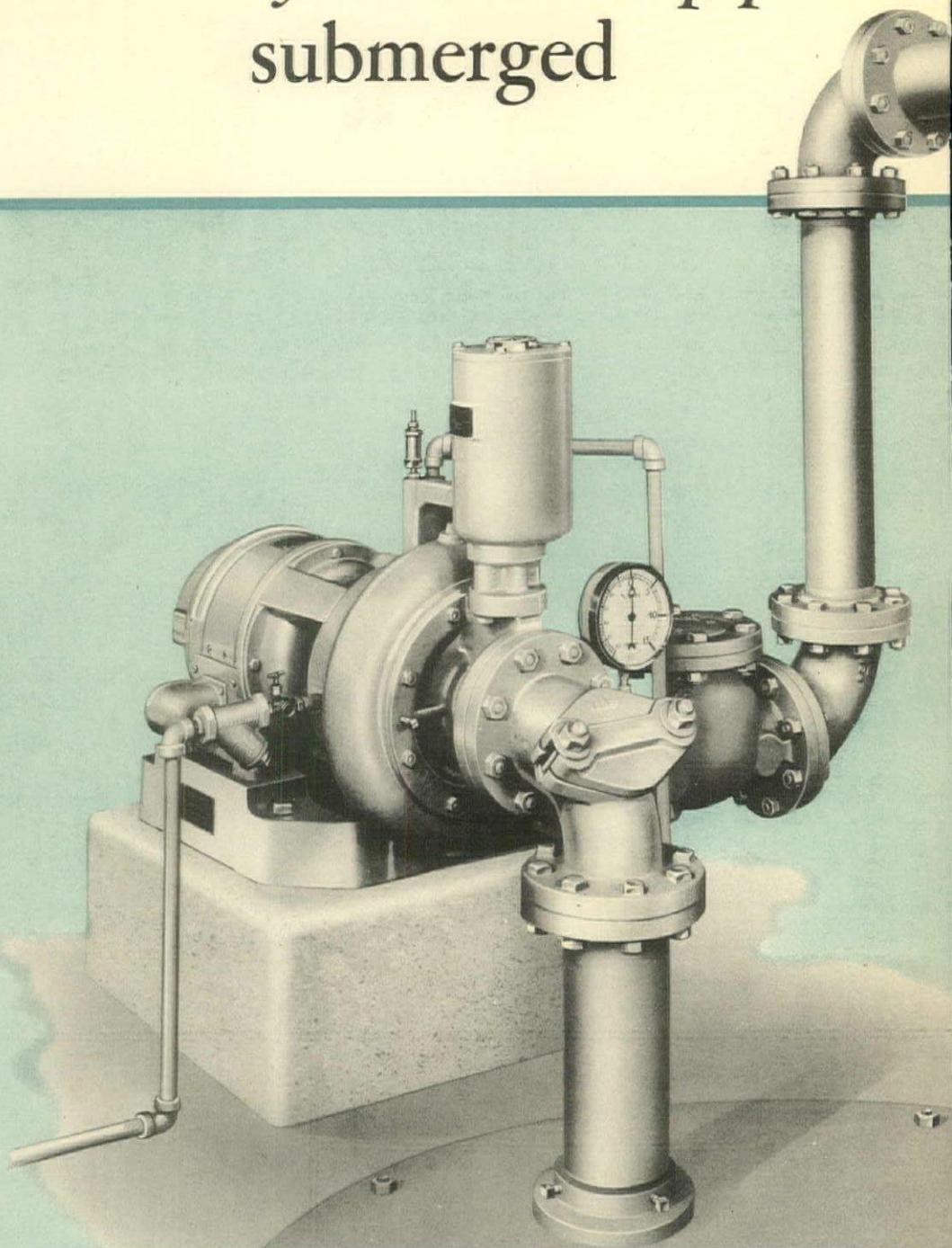
Write for Bulletins 113 and 124.

NASH ENGINEERING COMPANY  
33 Wilson Road, South Norwalk, Conn.

## Jennings

SUCTION  
SEWAGE

## Pumps



### Note these 10 features of Jennings Design

- 1 Motor is commercial, ball-bearing type selected for dependability, always available from stock.
- 2 The only two moving parts are mounted on a single heavy shaft requiring but one stuffing box, eliminating flexible coupling.
- 3 A rugged supporting bracket, integral with motor end shield, makes pump and driving motor a single compact assembly in perfect alignment.
- 4 The non-clog impeller is accurately balanced, liberally proportioned, readily reached.
- 5 There are only two bearings to lubricate.
- 6 Suction elbow is fitted with hand hole plate to permit cleaning suction pipe and impeller without dismantling pump.
- 7 Priming unit is a simple, sturdy Nash Hytor.
- 8 Iron catch basin has gas tight cover.
- 9 Controlling float switch is totally enclosed and oil immersed.
- 10 Ball float has adjustable stop.

# Would a Client of Yours ASK for

## USELESS **EXIT** LIGHTS?

ANY unprotected light is useless when electric current suddenly fails. This seldom happens, but *once* may be too often . . . especially when you think of the possible results in a hospital, a theatre, a bank, an auditorium—any building where the public may gather.

Exide Emergency Lighting Batteries are absolutely reliable protection against current failure. The instant power goes off, Exides *automatically* take over the emergency load . . . without a hand touching a switch. Many architects specify Exide protection for

exits, corridors, important rooms and for sufficient general illumination in case of power failure.

Exides are not expensive. The first cost is reasonable and the upkeep is merely a routine matter for the regular personnel.

One of our engineering representatives will gladly call on you and discuss any phase of emergency lighting. There's no obligation. Or if you prefer, we'll send you our Emergency Lighting Bulletin. Write today. For immediate reference see 1931 issue Sweet's Architectural Catalogue, pages D 5810-11.



HERE IS AUTOMATIC PROTECTION FOR LIGHTS AND POWER. Picture shows a typical Exide Emergency Lighting Battery in glass jars, which make inspection easy. The cells are arranged on neat, compact racks and can be placed in the basement of buildings or any other suitable location. They take up little space and the arrangement is flexible.

# Exide

EMERGENCY LIGHTING

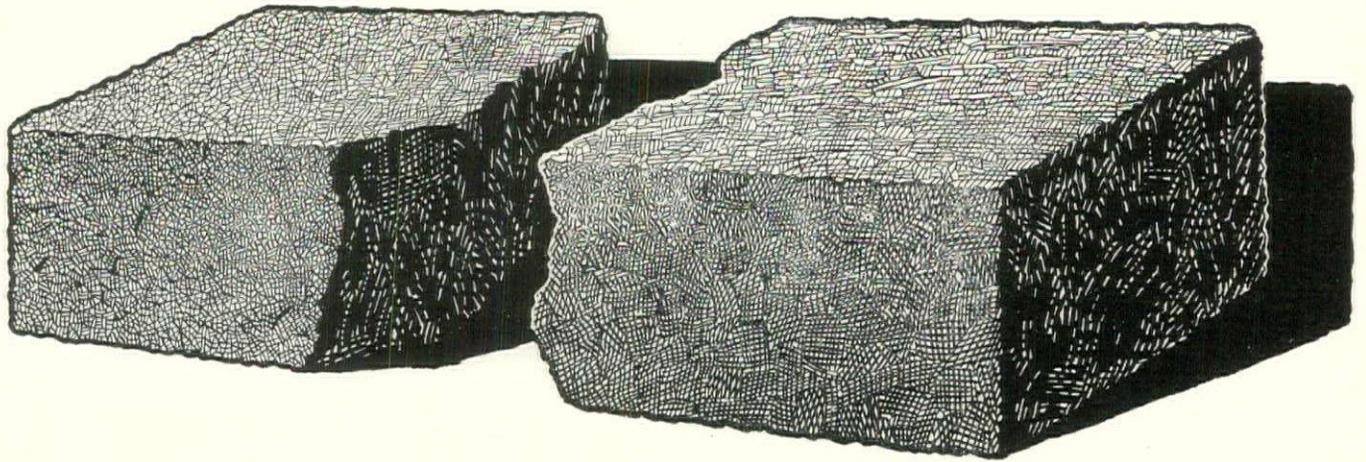
**BATTERIES**

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia

THE WORLD'S LARGEST MANUFACTURERS OF STORAGE BATTERIES FOR EVERY PURPOSE

*Exide Batteries of Canada, Limited, Toronto*

# You don't buy 2 halves to get ONE full-sized brick



## TEMLOK'S *solid-inch* gives you low-cost roof insulation *in one layer!*

**D**OING things by halves is uneconomical—whether you are advising clients, drawing up plans, or specifying roof insulation. In the past it was necessary to buy two half-inch layers (either separate or laminated) to get one inch of roof insulation.

But now, with the introduction of Armstrong's Temlok, you can avoid this. Temlok, low-cost insulation fabricated from the heartwood of Southern pine, is made in one solid-inch thickness. It is laid in a single operation that cuts labor costs. Without joint or lamination it provides the economical method of safeguarding roofs.

### *Gives more—costs the same*

Actual tests prove the insulating efficiency of this new low-cost board. The conductivity of Armstrong's Temlok is .31 B. t. u., per square foot, per inch thickness, per

degree Fahrenheit temperature difference, per hour, at 60° Fahrenheit mean temperature. Its moisture absorption is less than that of other well-known fibre boards. It provides a strong, protective base for roofing.

Your building contractors will like the easy handling that Armstrong's Temlok gives. Made in standard sizes, 22" x 47", it is shipped in bulk carloads or in securely wrapped bundles of seven boards. It is structurally strong and easy to handle. Your clients appreciate that, despite

its exclusive features, it costs no more than other fibre insulations.

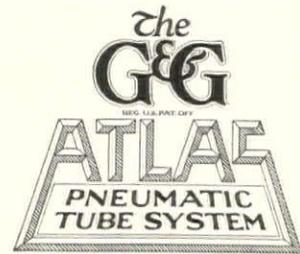
Let us send you the complete story of Armstrong's Temlok. You'll find the booklet, "Temlok, the Solid-inch of Roof Insulation," full of interesting facts. It includes the story of the quest for this golden fibre board. We also suggest that you write for samples. Armstrong Cork & Insulation Company, 900 Concord Street, Lancaster, Penna.



*You'll find Temlok provides an efficient, low-cost roof insulation for all types of buildings—factory, office building, hotel, apartment house, or any public building.*

## Armstrong's Temlok

*Low-cost, Efficient Insulation for Roofs*



NEW YORK CENTRAL R. R. STATION AT BUFFALO, NEW YORK uses G&G Atlas Pneumatic Tubes.  
Fellheimer & Wagner, Archts.

Photograph courtesy of N. Y. Central R. R.



# FOR TRANSPORTATION BUILDINGS

• RAILROADS • AIRPORTS • STEAMSHIP OFFICES • BUS TERMINALS • GARAGES •

*G&G Atlas Pneumatic Tube Systems can speed service by saving time*



In the Call Carl Garage, Washington, D. C., 15 service departments send their charge vouchers to the bookkeeping department for posting.

IN TRANSPORTATION terminals, general offices and repair shops all kinds of written messages, forms, tickets, weather reports, passenger lists, claim checks, etc. must be handled between scattered departments in the building. Investigate the saving in time and the elimination of foot and elevator traffic possible with this modern method that at 30 feet per second gives each transaction individual service by the shortest route through walls and ceilings.

Catalog in Sweet's Archt. Cat. 1931 Ed. pp. D-6350-52  
Catalog in Specification Data 1930 Ed. pp. 232-233

**G&G ATLAS SYSTEMS, Inc.**

544 West Broadway :: New York, N. Y.

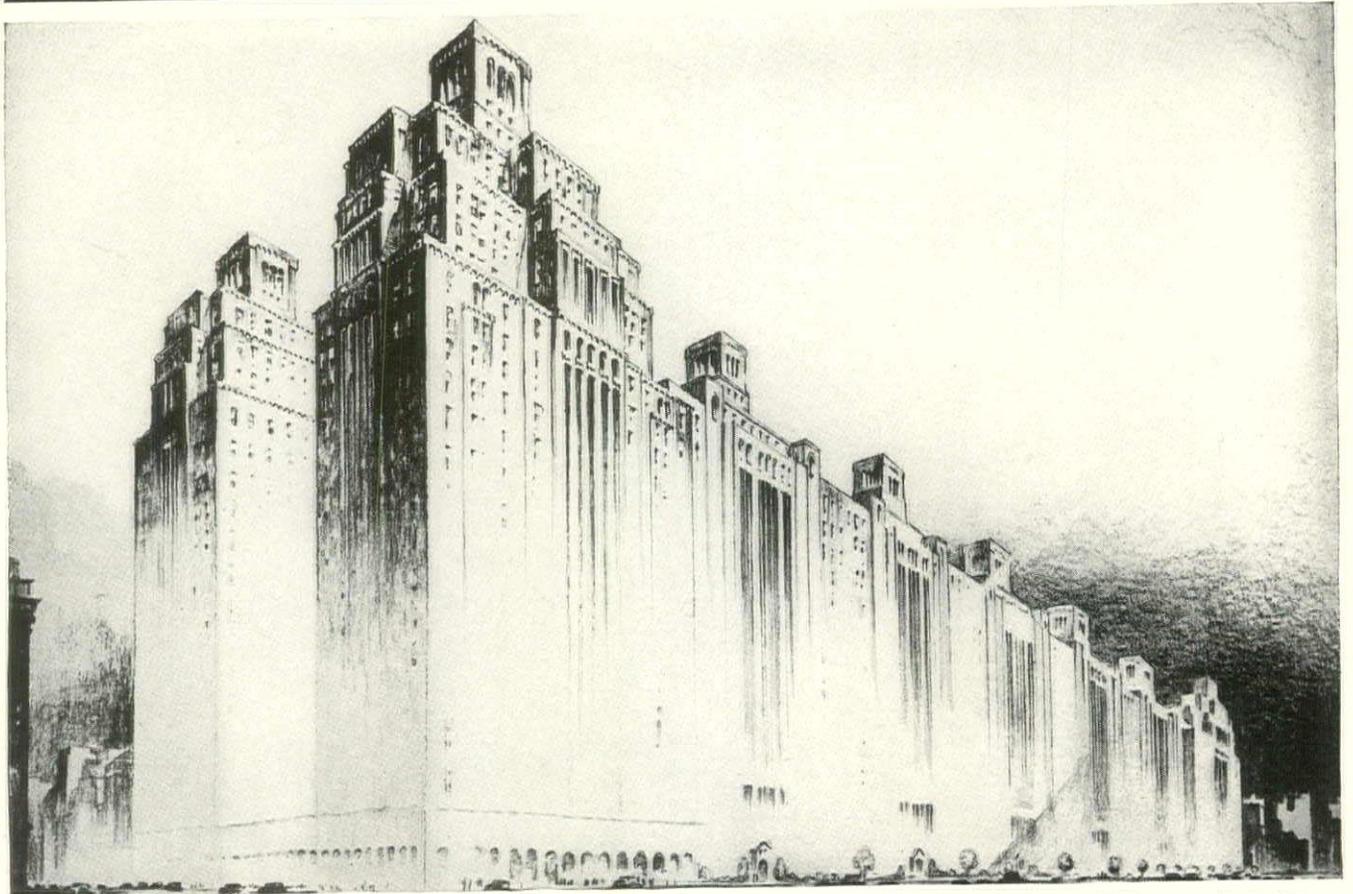
Also Chicago and Toronto

**MECHANICAL MESSENGERS ARE FASTER AND MORE DEPENDABLE THAN FOOT MESSENGERS**

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**MINWAX PRODUCTS • PROTECT • SEAL • BEAUTIFY**


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*London Terrace Apartments, New York City—The Henry Mandel Company, Owners and Builders; Farrar & Watmough, Architects*

*Where Construction Speed Was  
Imperative — All Wood Floors  
in London Terrace are Finished  
by The*

**MINWAX METHOD**

**I**N the world's largest apartment house development, where the speed of erection was outstandingly important, Minwax Flat Finish was successfully used. This new, Quick Drying form of the Minwax Method makes it possible to have lustrous, beautifully finished floors well within the limits of the most rapid construction program.

The significance of this fact lies in its manner of selection. For over two years, Mandel & Co. have used the Minwax Method in other operations. Their decision to use it here was based on actual satisfactory experience. It was also recommended by Builders Wood Flooring Company, the flooring contractors, based on their use of it in several important contracts.

Today it stands, proven by time, as a material perfectly adapted to modern requirements. It is applied to any natural wood, floor or trim, either in colorless or pre-colored form . . . It penetrates deeply into the wood, filling the pores with a tough protective gum and depositing on the surface sufficient mineral wax to allow of an easily produced lustrous polish. This finish in no way hides the natural beauty of the wood, is simple to maintain, and actually improves with use and age.

We have prepared a pamphlet that describes Minwax Flat Finish and the Minwax Method of wood finish in detail. You are welcome to a copy.

*All exterior walls above grade are protected with  
Minwax Dampproofing and Spandrel Waterproofing*



**MINWAX CO., Inc.**

*A complete service for waterproofing, damp-  
proofing, and preservation of masonry and wood.*

**11 West 42nd Street, New York City**

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*Specify*

WALWORTH  
VALVES  
FITTINGS  
AND TOOLS

*for*

**PLUMBING  
AND  
HEATING**

• In the fifty-story Irving Trust Company Building, simplicity and beauty are achieved by an unusual feature of design—the angled walls. • Large blocks of stone are so joined and fitted as to form a series of slight angles in and out from the street. • These, catching sunlight and shadows, make a new picture in the narrow gallery of famous Wall Street views.

• And so also Walworth, by supplying fire-line fittings and brass fittings and all of the valves for both plumbing and heating, makes another notable contribution to the development of New York's outstanding new buildings.

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Plants at Boston, Mass.; Kewanee, Ill.; Greensburg, Pa.  
and Attalla, Ala.

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*Copyright by Irving Trust Company*

**IRVING TRUST COMPANY BUILDING, ONE WALL STREET**

Architects: Voorhees, Gmelin & Walker  
Mechanical Engineers: Meyer, Strong & Jones  
General Contractor: Marc Eidlitz & Son, Inc.  
Plumbing Contractor: John Weil Plumbing Co.  
Heating Contractor: Baker, Smith & Co.

**WALWORTH**

VALVES - FITTINGS - AND TOOLS

# Heating and Ventilating Industrial Buildings

*For architectural offices not receiving "Heating and Ventilating," this summary of the December issue is presented.*

~ ~ ~

**M**ATERIAL to which the architect and his engineers can refer, covering the heating, ventilating and air conditioning of industrial buildings, is scattered through various engineering magazines and, to some extent, through technical magazines covering specific fields. In no single publication are there comprehensive data and articles covering this class of buildings. For this reason *HEATING AND VENTILATING* will devote its second Reference Number to articles covering all phases of heating, ventilating and air conditioning of various types of industrial buildings.

☐ Developments in heating and ventilating have been particularly rapid during the past few years in the industrial field. The unit heater revolutionized design of the systems and made necessary the development of new lines of accessory equipment. The necessity for increased production, with its resultant demand on the workers, resulted in an increase in the installation of air conditioning systems. A later development, the gas-fired unit heater, changed still further the engineering involved in designing the heating systems. These are only a few of the developments which have taken place.

☐ Among the subjects to be included in the December Industrial Building Reference Number of *HEATING AND VENTILATING* are:

☐ The Design and Layout of a Unit Heater System.

☐ Selection of Air Filters.

☐ Design of a Boiler Service Plant for an Industrial Building.

☐ Analysis of the State Laws Relating to the Heating and Ventilating of Factories.

☐ Exhaust Ventilating Systems for Collection of Dust, Fumes, Gases and Vapors.

☐ Design and Layout of Sprinkler Systems.

☐ Heating Industrial Buildings with Gas.

☐ Heating Industrial Buildings with Oil—with Coal.

☐ *HEATING AND VENTILATING* has developed the Industrial Degree-Day unit for measuring and estimating fuel consumption in the heating system of buildings where inside temperatures lower than 70° are maintained. This unit has been accorded considerable recognition, as evidenced by the Report of the Committee on House-Heating of the American Gas Association, presented at the annual convention during October, 1930. The subcommittee on unit heaters reported that:

☐ "The April, 1930, issue of *HEATING AND VENTILATING* contains Data Sheet Number 6, page 104-A, which presents an Industrial Degree Day map of the United States relative to heating loads for buildings heated only when outdoor temperatures are below 55° and 45° respectively. Considerable interesting information may be secured from that sheet."

☐ *HEATING AND VENTILATING* brings to the architectural office regularly each month the complete résumé of current developments in this important field. It presents the vital information regarding heating and ventilating. It is suggested that you enter your order immediately.

HEATING AND VENTILATING  
521 Fifth Avenue, New York, N. Y.

Gentlemen: Please enter my order for Heating and Ventilating. I want it to include the December number.

- \$2. for 1 year's subscription.  
 \$3. for 2 years' subscription.

Name .....

Address .....



“He’s a six-footer” . . . . “Measured which way?”

Can figures be facts if they are wrongly arrived at?

In considering performance of heating systems, no analysis or comparison based on hasty acceptance of inaccurate measurements or of incomplete facts, can be safe, or useful.

Unless all the factors which may influence the result have been checked, to speak of, for example, “lbs. per sq. ft. per season” means just as little as to say “twice as long as a piece of string.”

Altogether there are 45 of these variable factors,—each of which may affect the requirements and results for better or worse. To allow any one of them to be forgotten or disregarded may lead to faulty conclusions. Engineers, architects and heating contractors will find the related subjects of heating steam consumption analysis, estimating and heating cost ac-

counting, as presented by Warren Webster & Company, of vital interest. A request for further details<sup>4</sup> will bring a Webster steam heating specialist to discuss this vitally important subject.

**A Heating System for Every Need and Every Purpose**

Heating requirements vary so widely that no one type of heating system can be expected to provide the greatest return on the dollar invested in the heating equipment for all types and sizes of buildings. Realizing this, Warren Webster & Company have consistently developed an entire group of Webster Systems of steam heating to provide a heating system for every need and every purpose.

Webster MODERATOR System provides “Controlled by the Weather” heating and makes possible new methods of operation and new standards of economy. Can be applied to any existing steam heating system of sufficient size.

IMPROVED Webster Vacuum System provides distribution balanced from the start—the supply of steam to each radiator is so equalized that all radiators get steam at the same time and in substantially the same proportion, regardless of distance from the boiler. May be supplemented by HYLO Vacuum Variator, permitting manual control by building operator. Applicable to new or existing installations.

IMPROVED Type “R” System for residences and larger buildings as well, combines advantages of steam heating with advantages of hot water, but without limitations. Meets fully the operating requirements of newer fuels, newer types of radiation and newer thermostatic controls. Also provides better-than-ever heating service with old radiation and old controls.

Full details of any or all of these systems will be furnished on request.

Warren Webster & Company, Camden, N. J.  
Pioneers of the Vacuum System of Steam Heating  
Branches in 60 Principal U. S. Cities  
Darling Bros., Ltd., Montreal, Canada

**-since 1888**  
**Webster**  
**Systems of**  
**Steam Heating**

a 155

This is one of a series of advertisements discussing the factors affecting heating steam consumption. The purpose of the series is to call attention to the methods of heating steam consumption analysis, estimate and heating cost accounting developed by Warren Webster & Company to provide a reliable basis for comparing heating system efficiency. Actual detailed facts and figures of steam consumption of a number of Webster Systems of Steam Heating, prepared in accordance with these methods, are available for your examination.

# Protects COLD LINES

*like bark does a tree*

**Novoid Cork Covering**  
holds cold line loss  
to a minimum



*From the finest cork trees in Spain comes the bark that gives Novoid Cork Covering its permanent insulating qualities*

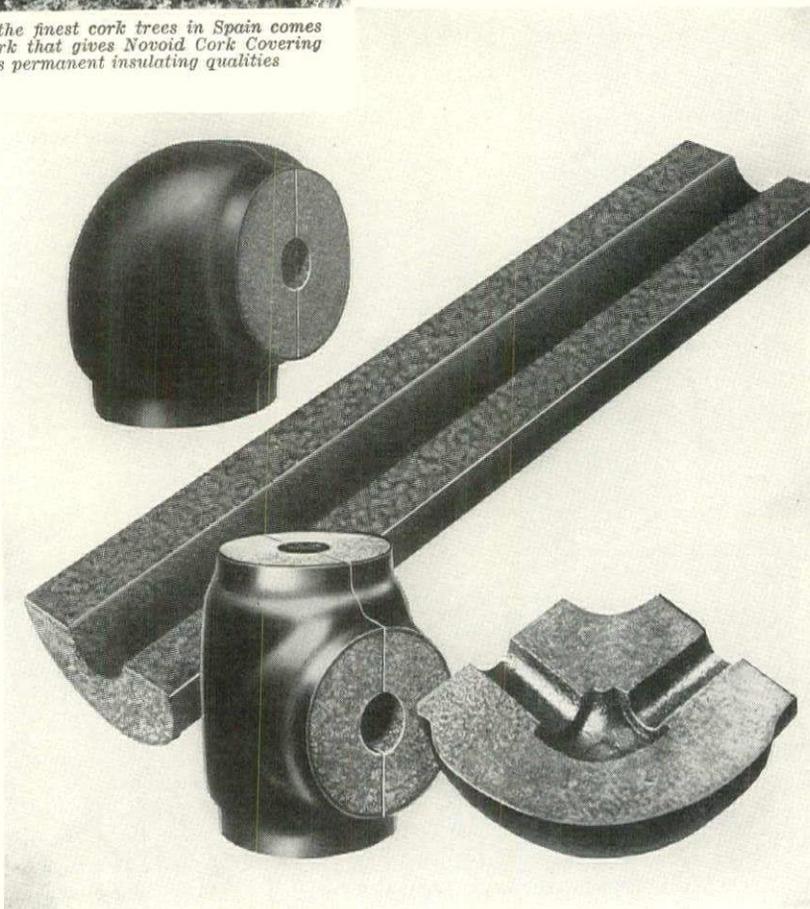
**T**AKE the best insulation nature was able to devise for her trees and place it on your cold lines in the form of close-structured Novoid Cork Covering.

*Because . . .* Novoid Cork Covering is composed of large and small granules of pure cork—taken from the outer bark of the cork tree—the most effective insulation ever devised to protect against heat and resist moisture. These cork granules are compressed tightly together, then accurately molded to fit line and fittings so as to leave no air spaces between pipe and covering where moisture might accumulate, penetrate, spread, and cause costly deterioration.

That's why Novoid Cork Covering offers permanent freedom from expensive replacements of cold line insulation. It stays dry and efficient, retaining its insulating value indefinitely.

Novoid Cork Covering is made for all sizes of pipe and fittings and is available in thicknesses suitable for all kinds of cold lines from below zero brine to drinking water.

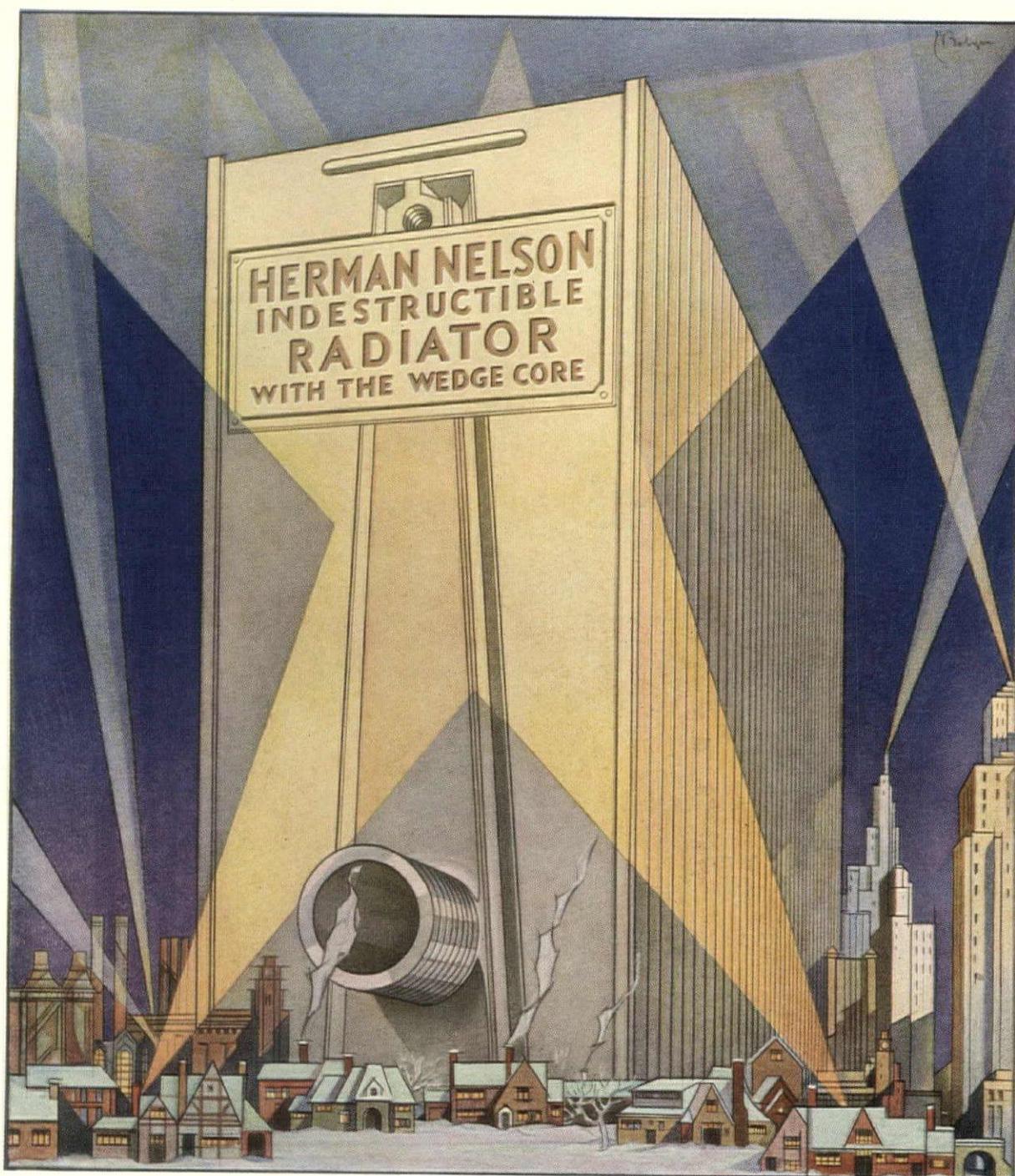
Write for samples, prices. There's no obligation. Cork Import Corporation, 345 West 40th Street, New York City.



*Just as bark clings to every branch, every twig, so is Novoid Cork Covering molded to fit tees, ells, valves, all pipe lengths*

# Novoid Cork Covering

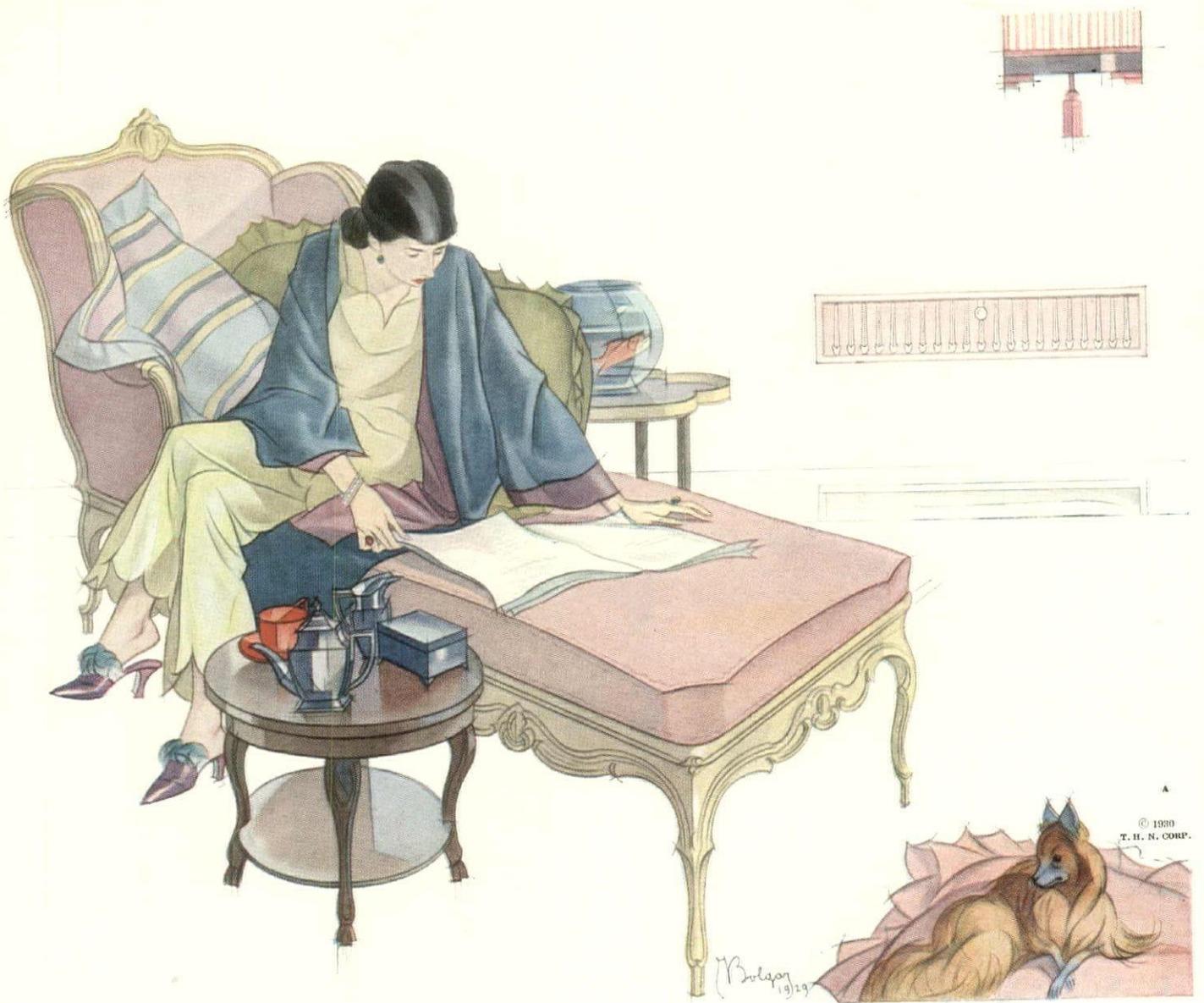
*For Cold Lines, Coolers and Tanks*



## OUR CONTRIBUTION TO THE ART OF HEATING AND VENTILATION

The Herman Nelson Wedge Core Radiator is an exclusive feature of all Herman Nelson Heating and Ventilating Products and accounts for their satisfactory performance. † † † †

THE HERMAN NELSON CORPORATION Moline ILLINOIS



## BEHIND THAT GRILLE IN THE WALL

In Herman Nelson Invisible Radiators, the architect has found the solution to many of his client's most difficult problems.

The problem of space . . . with the Herman Nelson Invisible Radiator installed within the wall, every inch of floor space is made available.

The problem of furniture arrangement . . . each piece of furniture may be placed precisely where the client wants it, with no extraneous object to detract from its beauty.

The problem of draperies . . . the Herman Nelson Invisible Radiator permits them to hang straight to the floor, in the manner that modern good taste demands.

The problem of heat control . . . a tiny

knob at the grille permits instant regulation of the heat supply.

The Herman Nelson Invisible Radiator comes in a sturdy steel case which fits in any standard wall or partition. For multi-story buildings, where access to control valves is required, a special removable panel is provided.

If you are planning a residence or any building that will have a steam, hot water, vapor or vacuum heating system, you will insure your client's satisfaction and the security of his investment by specifying Herman Nelson Invisible Radiators. Do you have our catalogue? A request will bring it to you.

THE HERMAN NELSON CORPORATION, \*Moline, Ill.

*There's a radiator  
that says... "This  
home is modern"*

## HERMAN NELSON *Invisible* RADIATOR

BELFAST, ME.  
BOSTON  
SPRINGFIELD, MASS.  
PROVIDENCE, R. I.  
NEW YORK CITY  
SYRACUSE  
ALBANY  
BUFFALO  
PHILADELPHIA  
SCRANTON

HARRISBURG  
PITTSBURGH  
JOHNSTOWN, PA.  
WASHINGTON, D. C.  
CHARLOTTE, N. C.  
GRAND RAPIDS  
SAGINAW, MICH.  
PLINT, MICH.  
DETROIT

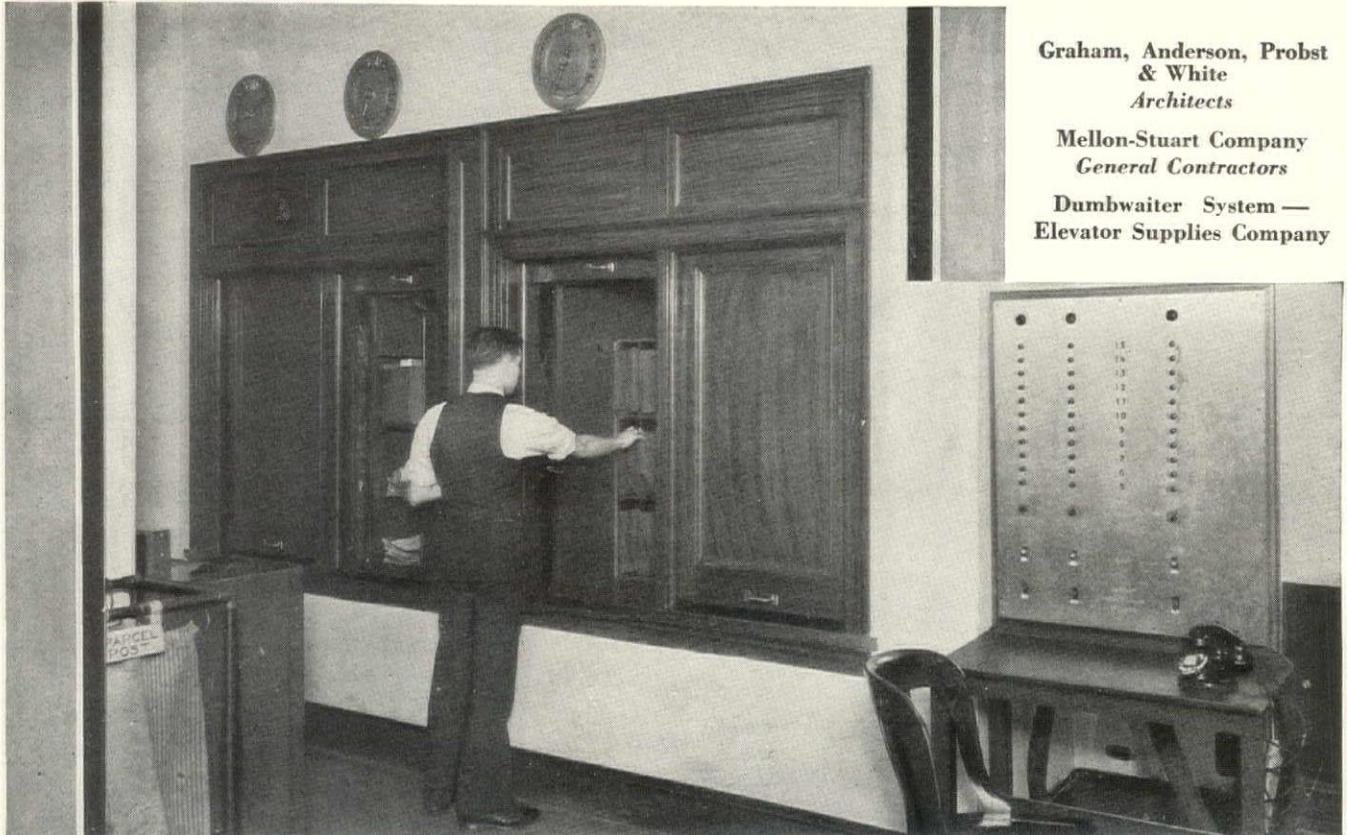
CLEVELAND  
CINCINNATI  
TOLEDO  
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INDIANAPOLIS  
CHICAGO  
PEORIA, ILL.  
DES MOINES  
MILWAUKEE

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TOKIO, OSAKA

\*Makers of the Herman Nelson Invisible Radiator, for residences, apartments, hotels, offices and monumental structures—the *Univent*, for the ventilation of schools, offices, churches and all buildings having an acute ventilating problem—the *Herman Nelson hiJet Heater*, for economical distribution of heat in factories, mills, garages, warehouses, and smaller buildings.



Graham, Anderson, Probst  
& White  
Architects

Mellon-Stuart Company  
General Contractors

Dumbwaiter System —  
Elevator Supplies Company

## Elevators for passengers . . . *Dumbwaiters* for inter-office services

In the Kopper's Building, Pittsburgh, vertical traffic—in passenger and in merchandise—has been raised to a high point of service. By keeping messengers *out* of the passenger elevators and substituting a full automatic dumbwaiter mail dispatching system, better service between floors without inter-floor messengers has been achieved.

Kopper's dumbwaiter system consists of three dumbwaiters having twelve stops each. Mail, blueprints, etc. are sent to their destination quickly, safely, surely.

The operation is simple. Each dumbwaiter car is divided into compartments for each floor served. When a car is loaded, the dispatcher presses buttons designating the floors to be served. The door is closed and a starting button pressed. The car moves to the first stop, a floor bell rings and a light at the floor over the dumbwaiter doorway

announces its arrival. The floor attendant opens the door and unloads whatever is routed there and reloads. Doors are then closed and the car proceeds automatically to its next predetermined stop.

Should an attendant delay twenty seconds, a buzzer sounds for the next twenty seconds and if not answered, the car automatically proceeds on its trip. When all stops have been made, the car automatically returns to the dispatching floor.

Any floor can signal the Dispatcher for a car by pushing a button.

An indicator dial above each dumbwaiter entrance indicates the car position at all times.

Dumbwaiter installations quickly pay for themselves. Our engineers will gladly help you solve your specific problem.

# ELEVATOR SUPPLIES COMPANY, Inc.

MAIN OFFICE AND WORKS  
HOBOKEN, N. J.

BOSTON  
CHICAGO

CINCINNATI  
CLEVELAND

DETROIT  
LOS ANGELES

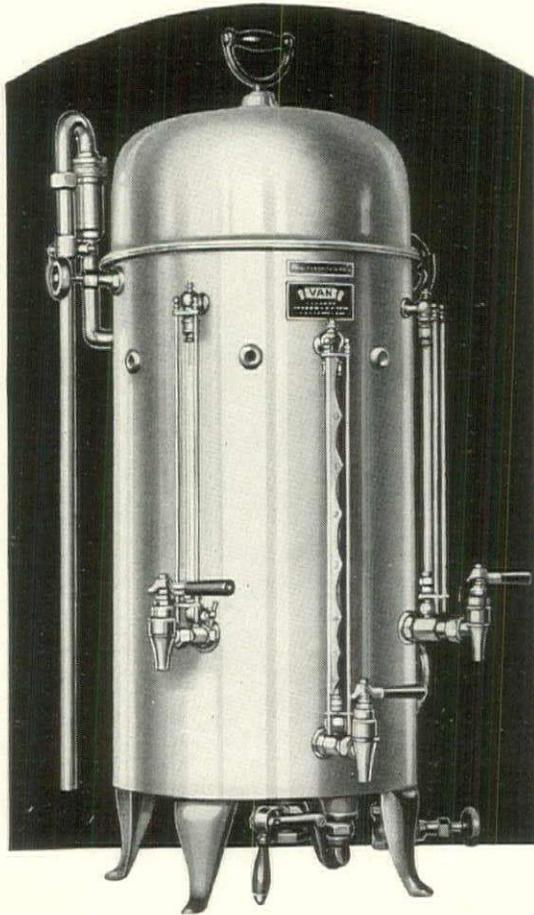
DALLAS  
PITTSBURGH

PHILADELPHIA  
SAN FRANCISCO

Since coffee is the most important single item on the menu . . . you really should recommend the

## PETERSEN URN

Pyrex Glass Lined and Equipped with "Tomlinson" Faucets



The "Petersen" Coffee Urn makes perfect coffee, according to the newest scientific principles of coffee-making. Fresh coffee is available for a much longer period due to the patented air chamber between the coffee jar and water jacket, which maintains an even temperature of approximately 200° Fahrenheit.

The "Petersen" Urn is easy to operate—cannot overflow the coffee water compartment. It extracts the maximum coffee flavor, with the least amount of tannin. It saves space—does the work of a two urn battery! Fitted with "Tomlinson" No-Drip Faucets.

There is no repouring with the "Petersen" Urn. It saves time and labor, and at the same time produces better coffee!

We make no extravagant claims for the "Petersen" Urn. Instead, we refer you to its many enthusiastic users.

The "Petersen" Urn is of the very heaviest and finest construction, presenting a handsome appearance in any service. The body is extra heavy cold rolled copper, heavily nicked. The bottom is even heavier. The cover is hinged, which prevents it from being thrown around and possibly dented. The spray head is silver plated and may be swung out of the way or removed and cleaned. Made with Pyrex glass liner and fitted with "Tomlinson" No-Drip Faucets. With each urn is included filtrator and filter cloth.

The "Petersen" Urn is also offered in a two-jar size—does the work of a three-urn battery.

The "Petersen" Urn may be purchased through your equipment jobbers, or direct from The John Van Range Co.

SIZES AND PRICES OF THE FAMOUS "PETERSEN" COMBINATION COFFEE URN

For Gas	For Steam	Coffee Cap'y	Diam.	Width incl. faucets	Height of Urn Cover closed	Height of Urn Cover open	Price
14E875	14E1075	4 gal.	16"	21"	43½"	48½"	\$300.00
14E876	14E1076	6 gal.	17"	22"	47½"	53"	335.00
14E877	14E1077	8 gal.	18"	23"	50"	55½"	375.00
14E878	14E1078	10 gal.	.....	.....	.....	.....	425.00

"Petersen" Urns with Electric Heating Units — When ordering electrically heated urns state voltage of your electric current and whether alternating or direct current.

For Electricity	Coffee Cap'y	Diam.	Width incl. faucets	Height of Urn Cover closed	Height of Urn Cover open	Price
14E910	4 gal.	16"	21"	43½"	48½"	\$360.00
14E911	6 gal.	17"	22"	47½"	53"	400.00
14E912	8 gal.	18"	23"	50"	55"	445.00
14E913	10 gal.	.....	.....	.....	.....	500.00

**The John Van Range Co.**  
EQUIPMENT FOR THE PREPARATION AND SERVING OF FOOD  
Cincinnati

Chicago Sales Office  
1200 West 35th Street

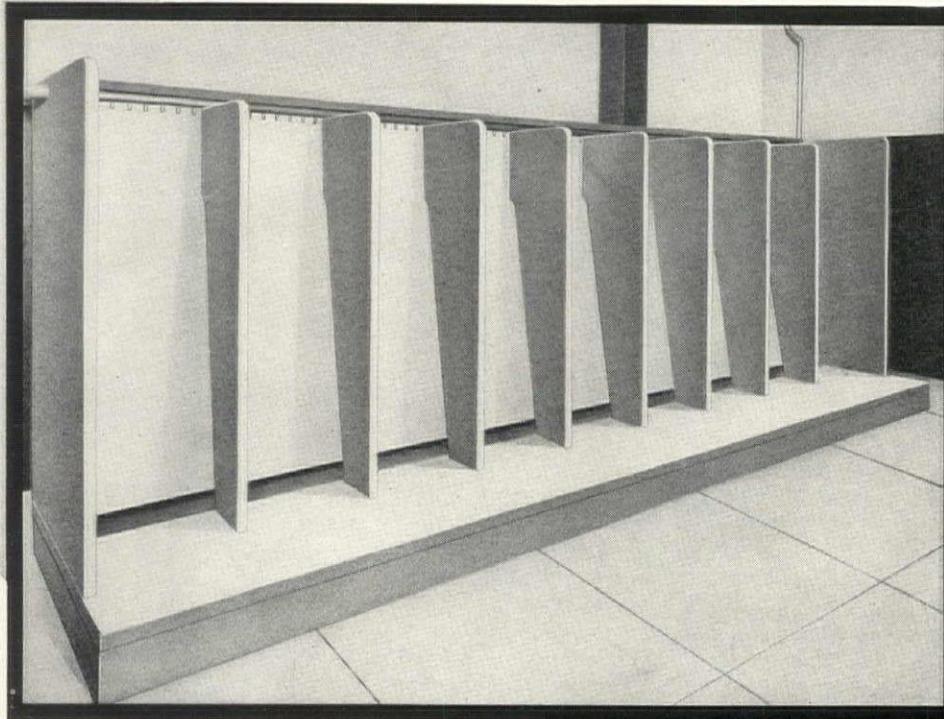
Detroit Sales Office  
170 East Larned Street

St. Louis Dallas Atlanta

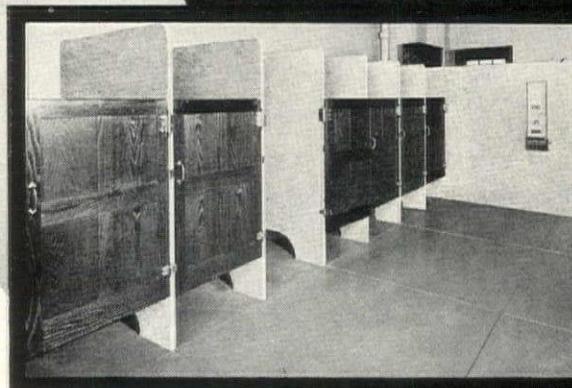
General Offices: Oakley, Cincinnati, Ohio

Cleveland New Orleans

# A SLIGHTLY HIGHER FIRST COST IS TRUE ECONOMY IN COMMONLY ABUSED PARTS OF PUBLIC BUILDINGS.



## ALBERENE CONSTRUCTION STANDS THE GAFF



**P**UBLIC buildings . . . open all day . . . and all night . . . available to everyone . . . throngs of people coming and going — many careless — and not a few abusive.

Urinal stalls and toilet partitions in these places must be staunch or upkeep costs will be tremendous.

Alberene Stone has unusual structural strength and is absolutely sanitary. It is moisture and odor resisting, and is unaffected by acid or alkali.

The Alberene Stone "Ventilating Urinal" (shown above) is particularly suitable for public buildings where economy of first cost and ease of cleaning are primary considerations.

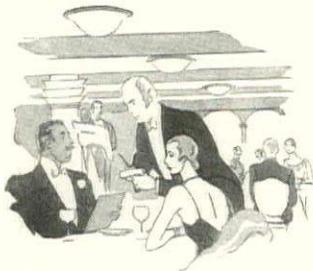
A Bulletin containing details and specifications is available. May we send you a copy? Alberene Stone Company, 153 West 23rd Street, New York. Branches: Boston; Chicago; Newark, N. J.; Washington, D. C.; Cleveland; Pittsburgh; Richmond; Philadelphia; Rochester. Quarries and Mills at Schuyler, Va.



# ALBERENE STONE

SANITARY TOILET STALLS AND PARTITIONS

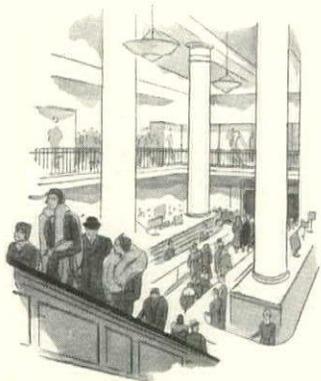
# People are beginning to demand "regulated" indoor air



*Appetites are sharper in restaurants with "regulated" air.*



*Cool, clean indoor air has brought all year around attendance at well managed theatres.*



*The comforts of the conditioned store attract shoppers and increase sales.*

A benefit to general health... a comfort to the body... "regulated" indoor air is fast gaining in popular fancy.

People read of it in the public press... they experience it in store, in restaurant, in club, hotel and theatre. They are beginning to look for it... hope for it... wherever they go. Soon it will be in virtual demand... following other progressive trends in America's development. Smaller stores will feel its need. It will become the standard in better homes.

You, as consultants, are at the gateway of this growing public consciousness of healthful air, at proper temperature and humidity... all the year round. You can enhance and guide it. York desires to offer you complete cooperation in line with this objective.

Refrigeration and Air Conditioning are inseparable. York as pioneer in one, is pioneer in the other... industrially and commercially... as designer and as manufacturer of complete equipment for every type of service.

York's viewpoint with regard to a particular type of equipment is without prejudice because York manufactures all types.

York experience and air conditioning equipment are at the service of Business, and the Public generally, through you.

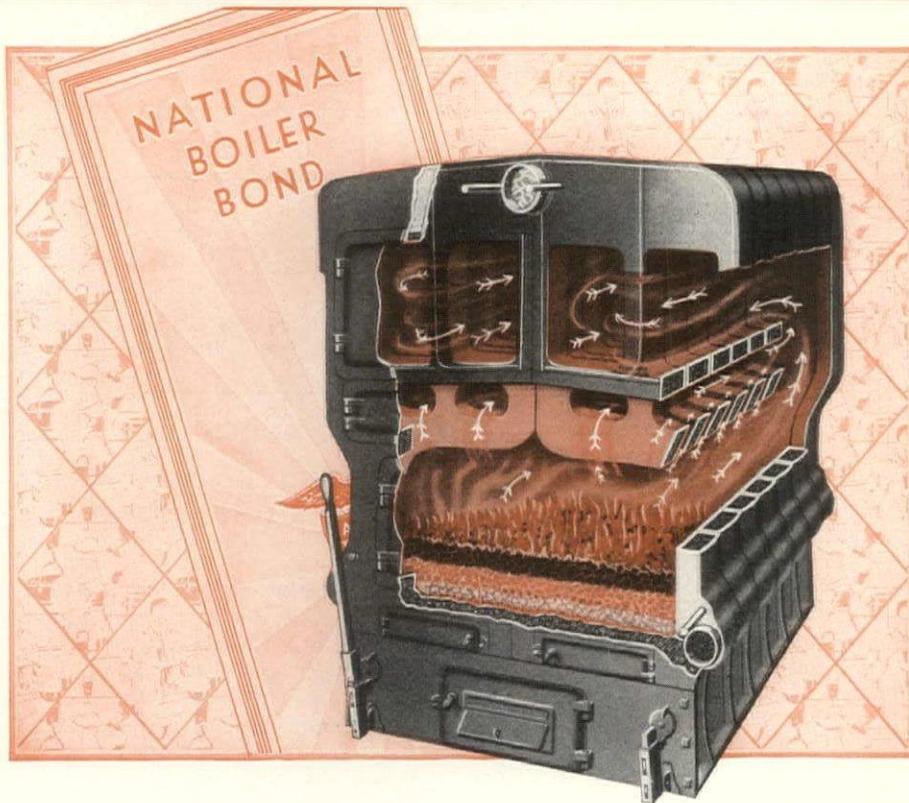
There are 71 conveniently located direct factory branches, the nearest of which will be glad to serve you.

YORK ICE MACHINERY CORPORATION, YORK, PENNSYLVANIA

# YORK

## REFRIGERATION

**THERE'S A NATIONAL HEATING SYSTEM  
FOR EVERY BUILDING NEED**



Cutaway View National Novus Boiler No. 48-8-S. One of 118 types and sizes.



National Bonded Novus Boiler

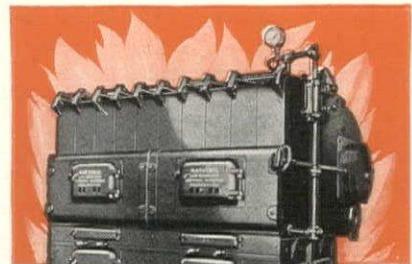
**NATIONAL BONDED NOVUS SECTIONAL BOILER**

*United for Heavy Duty—Divided for Light Handling*

Schools, Hospitals, Large Apartments—applications where a heating boiler must have high efficiency at normal loads, coupled with reserve capacity to quickly meet sudden demands for extra heat—have long known the Novus for an out-standing performer. The split sections facilitate handling, make this boiler widely used as a replacement unit for large unit section boilers installed before the building was completed.

This boiler is designed to perform efficiently with all leading types of fuel:

coal, coke, oil and gas. It can be converted on the ground to meet the individual requirements of the fuel selected. Engineering design scientifically coordinates every part to produce economical combustion and thoroughly satisfactory heating. The National Boiler Bond, furnished with each boiler, not only guarantees workmanship, materials, and design, BUT MOST IMPORTANT OF ALL SPECIFIES AND GUARANTEES BOILER PERFORMANCE. May we send you further information?



National Bonded Low Water Line Boiler



National Bonded Super Smokeless Boiler

**NATIONAL RADIATOR CORPORATION**

*Executive Offices: Johnstown, Pa.*

**NATIONAL**

*Made-to-Measure*

**HEATING SYSTEMS**

# The CRYER VALVE Crier

of the D. G. C. TRAP & VALVE CO., INC., 1 E. 43rd St., New York

Number Four

NEW YORK, N. Y., MURRAY Hill 7320

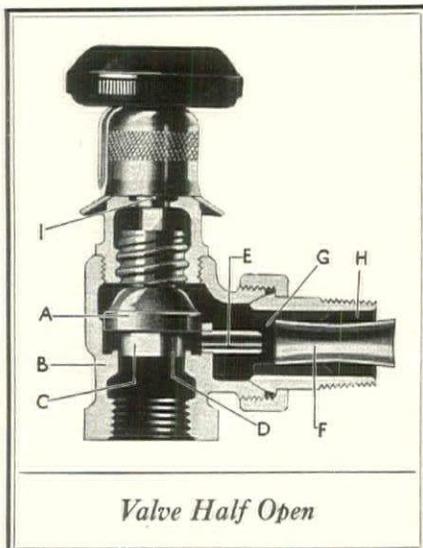
December, 1930

## This New Valve Gives You "Hot Water" Heat on Steam Systems, and Saves Fuel

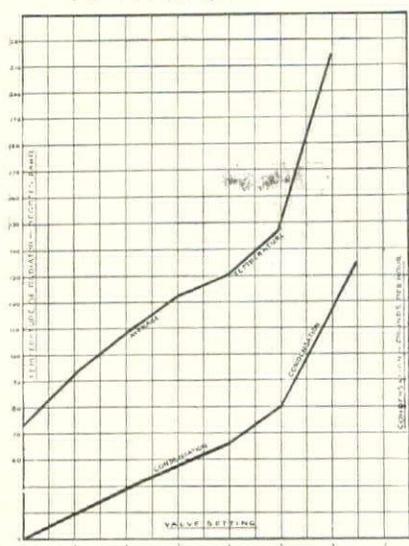
### How and Why the Cryer Valve is Unique and Better

When the valve is open up to  $\frac{3}{4}$ , steam enters the radiator only thru the slot D, nozzle E and tube F. The jet of steam shoots out across the top of the radiator, dropping to the bottom and mixing with air and vapor. The incoming steam going from nozzle E into tube F, creates a partial vacuum at G, which pulls the humid mixture back thru the first section of the radiator thru sleeve H to G. There it strikes the jet of steam and is recirculated. In this way the entire contents of the radiator are continuously circulated, heating the radiator evenly all over to a moderate temperature.

When the valve is opened more than  $\frac{3}{4}$ , steam enters through the large port over the nozzle E as well as through the nozzle E, filling the entire radiator immediately with steam at full temperature for heating the room rapidly.



Valve Half Open



Radiator Temperatures and Condensations with Cryer Radiator Valve

### Low Temperatures Held Throughout Radiator on Milder Days

The remarkably low temperatures constantly maintained throughout steam radiators when desired by the Cryer Radiator Control Valve have been strikingly shown in engineering tests at Vanderbilt University, charted at the left.

When the valve was open only  $\frac{1}{8}$ , the temperature of the *whole radiator was held down to 93° F. constantly*. And the steam consumption was *less than one-tenth* of the amount when fully open.

Tremendous fuel savings are thereby made on the many milder days of the heating season, when only a low temperature in the radiator is required to keep the chill out of the air.

Thus the equable effect of hot water heat is given to 2-pipe vacuum, vapor or steam heating systems by the Cryer Radiator Control Valve alone—at the *lower first cost* of a steam heat installation.

When the Cryer Radiator Control Valve is opened  $\frac{3}{4}$  or more, the radiator fills rapidly with steam at full temperature for quick heating, or sustained heating on very cold days, like any ordinary valve.

No other valve or steam system gives these two-in-one effects.

### 7 Important Advantages of Cryer Radiator Control Valve

1. Saves steam by permitting full control of radiator temperatures for mild, moderate or cold weather.
2. Gives steam systems the desirable operating characteristics of hot water systems.
3. Costs no more than ordinary valves.
4. Eliminates trouble on return line by thoroughly preventing escape of steam into return line.
5. Used with any trap on vacuum or gravity systems.
6. No special installation is required—valve comes to the job ready for installation.
7. Valve is attractive and substantial, nickel-plated, and polished on certain parts.

#### 4 Pages in Sweet's

The 1931 Edition of Sweet's, just out, carries four pages on the Cryer Radiator Control Valve—pages D 5526 to 5529. There you will find complete information on this *unique* heating device.

# BOOK DEPARTMENT

## METAL CRAFTS IN ARCHITECTURE

A REVIEW BY  
CLIFFORD WAYNE SPENCER

IF one were to seek for a single word in which to express the spirit of the new architecture, it would probably be found that the word is "material," since all modern building is the direct result of the adaptation of old materials to new uses and the discovery of new materials which, because of their great strength and adaptability to building purposes, have made possible new and hitherto undreamed of feats of building, by their very nature leading to the development of a new style of decoration.

New uses for old materials have been discovered and carried to great lengths, and if one were to look about in any great city such as New York, with its Chrysler and Empire State Buildings, it would be seen that extensive use is being made of metal as a decorative medium. Not only are the buildings themselves supported on frameworks of steel but they are extensively decorated both inside and out with metalwork in newly discovered alloys. The ornament that can be developed in these

metals is particularly adaptable to the modern type of buildings where reliefs of no great projection are called for. The highly polished non-tarnishable metals offer a very definite means of attracting attention to the buildings on which they are installed, and the older metals, such as bronze and copper, weather to a rich texture that adds to the dignity of any building, while brass, provided it is kept well polished, is just the material to give the proper touch of richness to great modern entrances. In interior decoration, particularly of office buildings where enclosed radiators and other openings call for metal grilles of elaborate design, a great deal has been accomplished by the use of these materials.

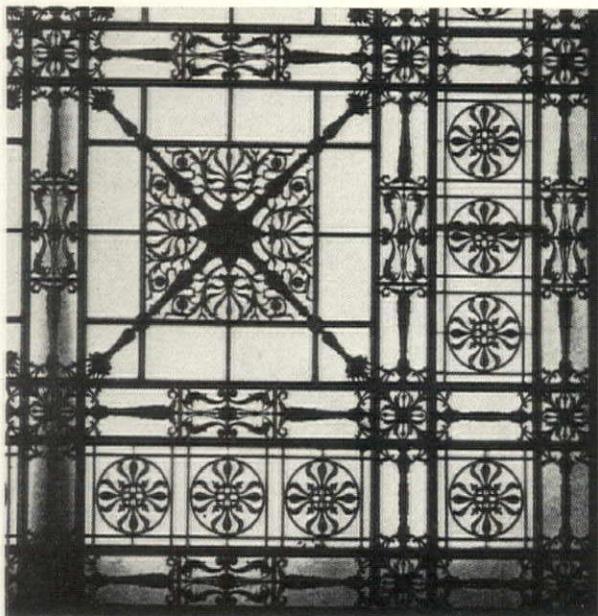
Generally speaking, the field of metal working is covered rather comprehensively by works on the subject, but in most instances the writers concern themselves almost entirely with the working of metals or with the designing of them, leaving it to the ingenuity of the reader to correlate the two. In his books on the metal crafts as related to architecture, both in "Metal Crafts in Architecture" which is the subject of the present re-

view and in "Wrought Iron in Architecture," Mr. Geerlings has undertaken to bring the different phases of the subject together. It is now possible for the architectural reader not only to find precedent for his work in metals in the illustrations of this volume but by reading the text he may gain that understanding of the actual

working of the metals which is so essential to securing the best possible results in this field of design where so much depends on the bringing out of the inherent characteristics of the materials.

Naturally, it is not necessary for an architect to know all the minute details of the processes of fashioning a material in order to be able to design it successfully. There is no need, for instance, of his knowing just how to hold the hammer or how hard to strike, although such knowledge is always helpful and an excellent training for a designer in these materials would include a short period spent in the actual working of metals. It is desirable, however, that he should know something of the properties

of the raw materials and how they will react to the different processes of their manufacture, and as much as possible of the countless other little tricks of the trade that give work of this class its distinction. And so it may be said that the outstanding feature of this work is its sound practicability. It goes into the subject just the right depth to satisfy the needs of the architect without dwelling too long on the strictly technical and unessential features of the crafts being described. As Mr. Geerlings points out in his foreword, it would be impossible to discuss, within the covers of a single volume, all the ramifications and problems connected with the manufacture and design of a large number of metals in anything like a complete manner. He proposes rather to produce a book that will chart "a number of routes which the interested layman, architect, and craftsman can pursue more leisurely if they find the scenery to their liking. It is a road map of arterial highways with the main milestones and sign posts marked rather than a detailed contour map with every footpath plotted. The contents are so arranged that if the reader be interested



A Leaded Skylight at Evanston, Ill.  
Childs & Smith, Architects  
The Linden Company, Craftsmen

Unless otherwise noted, books reviewed or advertised in THE ARCHITECTURAL FORUM will be supplied at published prices. A remittance must accompany each order. Books so ordered are not returnable.

## Give Books for Xmas!

American Church Building of Today—1930

By Ralph A. Cram

THE development of good architecture in the United States during the past generation has been astounding, but nowhere has it been more complete than in the realm of church building.

This new volume contains a splendid representation of the best and most recent churches, both large and small, of all denominations throughout the country. They were selected from the work designed by architects specializing on church architecture. There are over 350 illustrations of exteriors, plans and details.

284 full page plates, 9½ x 12½ inches, 350 figures, cloth. Price \$16.50.

English Church Woodwork

By Howard and Crosley

HERE is a book that should be in the library of every designer of churches, for it contains more helpful information on church interior design and construction than can be found in any other source. The illustrations, which are extremely sharp and clear in their reproduction, cover 325 examples of the best work of England. These examples have been carefully selected from all sections to show the whole range of English Gothic woodwork. The text gives full information regarding the various subjects and points out the different steps in the transition.

Contents—1. Local Variations of Type, Colour Decoration. 2. Structural Woodwork, Timber Porches, Doors, Roofs, Timber Vaults. 3. Fittings of The Sanctuary, The Altar, The Reredos, Pix Canopies, Testers, Sedilia, Easter Sepulchre. 4. Choir Fittings, Stalls, Bishops' Thrones, Lecterns. 5. Screens, Roods, and Lofts, Origin and History of Screen and Loft, Construction and Design. 6. Fittings, of the Nave, Pulpits, Benching and Pewing, Front-covers. 7. Tombs and Movable Fittings, Alms Boxes, Chests, Cope Chests, Cupboards and Hutches, Tombs, Shrines and Reliquaries. Index of Subjects in the Text, Index of Place-Names in the Text.

370 pages, 7½ x 10½ inches, 325 figures, cloth. Price \$13.50.

The Work of Cram & Ferguson

THIS book, which includes the work of the Boston Office and Cram, Goodhue & Ferguson, contains 343 pages of plates made from photographs and drawings of small and large churches in the Mediæval and Georgian styles, collegiate and school buildings, libraries, and residences. Numerous drawings and plans of typical churches of each denomination are included. Many of the photographs are of details of altars, choir stalls, screens, fonts, pulpits, and other church furniture. Altogether the work will furnish a valuable addition to the library of any architect.

368 pages, 11 x 14 inches, 343 plates, cloth. Price \$15.00.

Tudor Homes of England

By Samuel Chamberlain

THIS new material on Tudor architecture with its measured drawings will be welcomed by every designer of artistic homes. The beautiful collection of 300 illustrations from photographs, 30 full page measured drawings, 12 x 16 inches in size, and 60 reproductions of Mr. Chamberlain's delightful pencil sketches and dry points, are the result of an exhaustive search for new details and examples of smaller houses of the Tudor period.

The author visited most of the Tudor mansions of importance in central and southern England, and sketched and photographed many remote and unheralded houses of unique interest. The stone houses of the Cotswolds, the plaster cottages of Essex, the timbered work of Cheshire and Herefordshire, the brickwork of Norfolk, all of these pure types, and innumerable variations of them are fully treated. Manors as famed as Horham Hall, East Barsham Manor, Stokesay Castle and St. Osyth's Priory are illustrated side by side with such obscure and delightful places as Madeley Court, "Josselins" at Little Hoolesley, and the rectory at Great Snoring. All of the material has been selected with the predominating purpose of providing data and illustrations which will furnish practical, adaptable information for the domestic architect in this country. Every architect who has seen it has wanted it.

246 pages of plates, 12 x 16 inches, cloth. Price \$27.50.

Architectural Construction, Volume I

By Voss and Henry

DEALS with all types of construction, from the simplest suburban structure of wood to the more complex fire-resistant construction of our large cities, fully illustrated and described. The work includes complete working documents of executed buildings, photographic records of results accomplished, with original drawings, details and specifications by a number of well known American architects.

1246 pages, 9 x 11½ inches, 358 plates, 381 figures, cloth. Price \$20.00.

Sent Prepaid on Receipt of Price.

Architectural Forum, 521 Fifth Avenue, New York

in a certain metal he can, at the beginning of the chapter, turn to a concise historical background. If a problem in design confronts him he can turn to the next part which will describe how his *opus* will be executed, finding what limitations of the metal he should observe and what natural qualities he should emphasize, and finally in each chapter there is a group of illustrations which give a representative idea of what has been accomplished in the past."

One of the worst features of the modern competitive system of building is that it tends to discourage the highest type of craftsmanship by forcing even the best workmen to submit bids in competition with other bids based on use of inferior workmanship and materials. The remedy for this is of course more comprehensive and rigidly enforced specifications and designs more clearly indicated by the architects. This is especially true of work in which the element of artistry plays a part, and even in the contract drawings careful indication of the detail will make possible much more satisfactory final designs. It is the practice of too many architects to leave most of the designing to the shop, where it is likely to be governed more by the consideration of cost than by that of good design. Specifications should be based on a thorough knowledge of the material in question and as much as possible on personal experience.

The author in this work has provided an outline specification covering each of the metals treated and gives some hints on the writing of specifications in general and of metal specifications in particular. These specifications should fill a very definite need in the average architect's office. The information as to the processes employed in working the metals was obtained by visiting the shops of especially skilled craftsmen in and near New York, watching the progress of the work itself, and interviewing the master craftsmen. It is interesting to note that in no two cases were the methods employed by the various craftsmen quite the same, each having developed to a greater or less extent his own manner of working. The statements made in the book are given additional authenticity from the fact that several of the craftsmen read and approved of the text before publication.

In form the volume comprises a collection of monographs on each of these metals and allied subjects: Bronze; Brass; Cast Iron; Copper; Lead; Zinc; Tin; Lighting Fixtures; Current Developments; and Specifications. It will be noted that the important subject of wrought iron has been omitted from the list. This is because the subject is of such great importance that it was decided to devote a separate volume to it. This has since been issued and was the subject of a review in an earlier issue of THE ARCHITECTURAL FORUM. In that volume the manner of approaching the subject was similar to that used in the present work, and the subject matter and illustrations are especially timely during this period of great popularity of wrought iron.

As an example of the way the subject matter is handled let us consider the portion of the book devoted to the subject of bronze. As a background for an appreciation of this metal, which is as old as civilization itself and which has had a marked effect on that civilization, the author presents a brief but concise historical sketch tracing its development from its probable inception in the Caucasus and showing how its influence spread over Europe, and how it came to its greatest architectural

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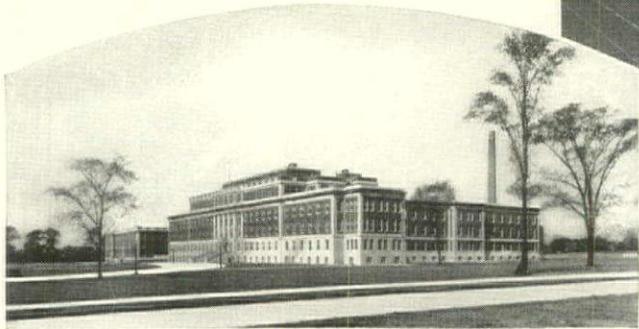
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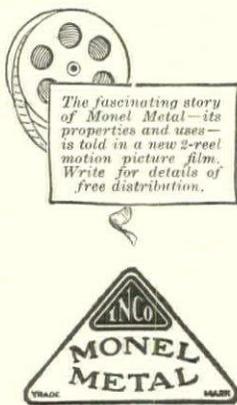
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development in the heyday of the Roman Empire. Its use in all parts of the ancient world is briefly sketched, and there is some discussion of the metallic content of the alloy as found in the various great centers of antiquity. A valuable feature of this historical sketch is that the author has included a classified list of the 64 pairs of ancient bronze doors in existence,—those which have survived from the early period of civilization. This table gives the probable date of each piece; its origin, whether Roman, Greek, Frankish, German, Italian, Spanish, Russian or English; the location and the name of the maker (if known); and the page of this work on which it is illustrated. Having covered the general historical background, each country having an important bronze tradition is taken up separately and the development and quality of its bronze work discussed in some detail.

The section devoted to bronze craftsmanship should be of absorbing interest to the lay reader as well as to the professional, since it describes the interesting processes of casting and traces the development of a piece of work from the time the client has "signed on the dotted line" to the point where the bronze has been finally installed. The descriptions of casting methods are accomplished by diagrams and scale drawings which, together with several illustrations showing action, help to make clear the processes described in the text. Under the heading of "Some Practical Aspects," the author presents some information which will help the architect in answering the numerous questions with which he is constantly being confronted, such as those pertaining to the length of time that should be allotted to the separate steps of preparing shop drawings, measuring the work, making the models, making patterns, making moulds and pouring castings, finishing, and delivery and erection. The time allotments given for these processes are necessarily only approximations, but they form a basis upon which to form an idea of the time that will be required for carrying out any particular project. Other considerations involved in practical bronze work discussed here include the relations between the architect and the bronze worker and the difficulties under which the metal contractor is forced to work. All this is invaluable, as it promotes a feeling of understanding which is quite essential for the fullest coöperation and most successful performance of the work.

Another interesting sidelight is found in the section devoted to the so-called "extruded bronze," which isn't really bronze at all but brass with a certain proportion of lead. This is generally of lower cost than genuine bronze and imposes a great many more limitations on the designer. It tarnishes when exposed to the elements in much the same manner as brass does. The remainder of the section devoted to bronze is given up to plates presenting outstanding examples of ancient and modern bronze work in full-page illustration. While the work cannot be expected to cover this subject in anything like a complete manner, the selection has been well made, and the examples are typical of the best in ornamental bronze work. Each of the other metals is treated in a similar manner, but as many of the points taken up under bronze apply also to the other cast metals, not nearly as much space is required.

**METAL CRAFTS IN ARCHITECTURE.** By Gerald K. Geerlings. 202 pp., 8½ x 11½ ins. Special Net, \$7.50. Charles Scribner's Sons, 597 Fifth Avenue, New York.

**FREIGHT TERMINALS AND TRAINS.** By John A. Droege, General Manager, N. Y., N. H. & H. R. R., Second Edition, Second Printing. 567 pages, 6 x 9 ins., illustrated, cloth. Price \$6. McGraw-Hill Book Company, New York.

**PASSENGER TERMINALS AND TRAINS.** By John A. Droege, General Manager, N. Y., N. H. & H. R. R. 410 pages, 6 x 9 ins., illustrated, cloth. Price \$5. McGraw-Hill Book Company, New York.

**B**UILDINGS are an essential adjunct of railroad transportation, perhaps much more so than we realize without investigating the subject. The reading of the two works by Mr. Droege is convincing of the essentiality of buildings. The titles are comprehensive in the terms "terminals" and "trains," the former always involving buildings of some kinds. The great mileage of railroad tracks and the numberless switches, signals, bridges and tunnels are essential to railroad transportation, but they do not require buildings as a detail of their particular service.

Terminal buildings are of two kinds,—passenger and freight. The most important in respect to architectural design are passenger terminals and stations. This results from their close association with human beings and the provisions which are made for their convenience and comfort. Usually located in conspicuous places, some real attempt is generally made to attain a pleasing architectural effect. The design of a passenger terminal is governed somewhat by its relation to the railroad tracks which place them in either of two general classes,—(1) through or side stations, and (2) head or stub stations. The architect's skill is engaged in providing the proper facilities for rapid and convenient passenger circulation through the building to and from the trains. The architectural design should logically evolve from these requirements.

Freight terminals of the modern type usually involve large storage facilities for all kinds of merchandise; in some instances cold storage has been provided. The most modern economic demand is for light manufacturing space in such structures. These are the larger and more complicated freight terminals. The usual inbound and outbound freight houses merely provide protection to merchandise in its loading and unloading. With the tremendous increase in freight traffic of various kinds, there have been developed types of express, mail and produce terminals, all of which require specialized architectural design and equipment. The grain elevator is another type of railroad building which is well worthy of the best architectural treatment because of its conspicuousness.

Utility buildings, such as roundhouses, coaling stations and numerous other structures that contribute to railroad operation, also claim architectural consideration. Mr. Droege has explained in a concise manner the function of all these types of buildings that are associated with railroad transportation,—and better understanding is acquired through his lucid explanation of their association with trains. There is nothing mysterious in the railroad technique involved in the writing of these books, and they are easily understood by those readers who have had no practical experience with railroads. Railroad buildings, aside from passenger terminals, have been, as a rule, designed by engineers who have developed high standards of efficiency and durability. The wide range of uses and types of railroad buildings offers a splendid field for architectural exploitation of the finest kind.

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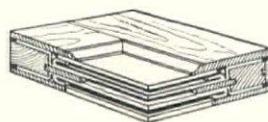
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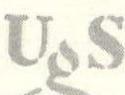


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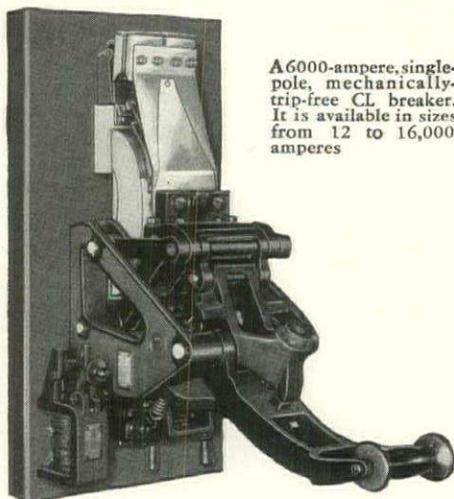
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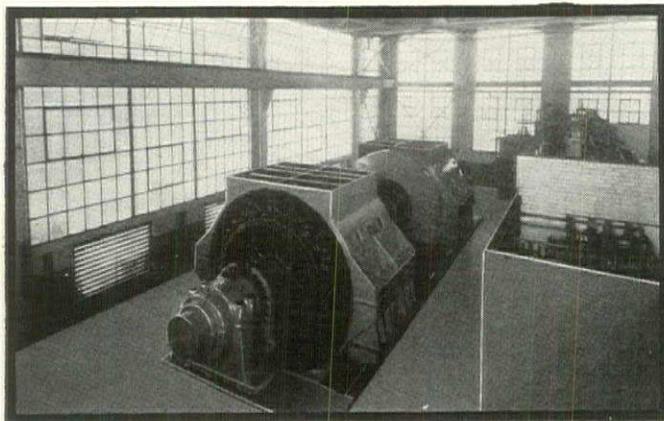
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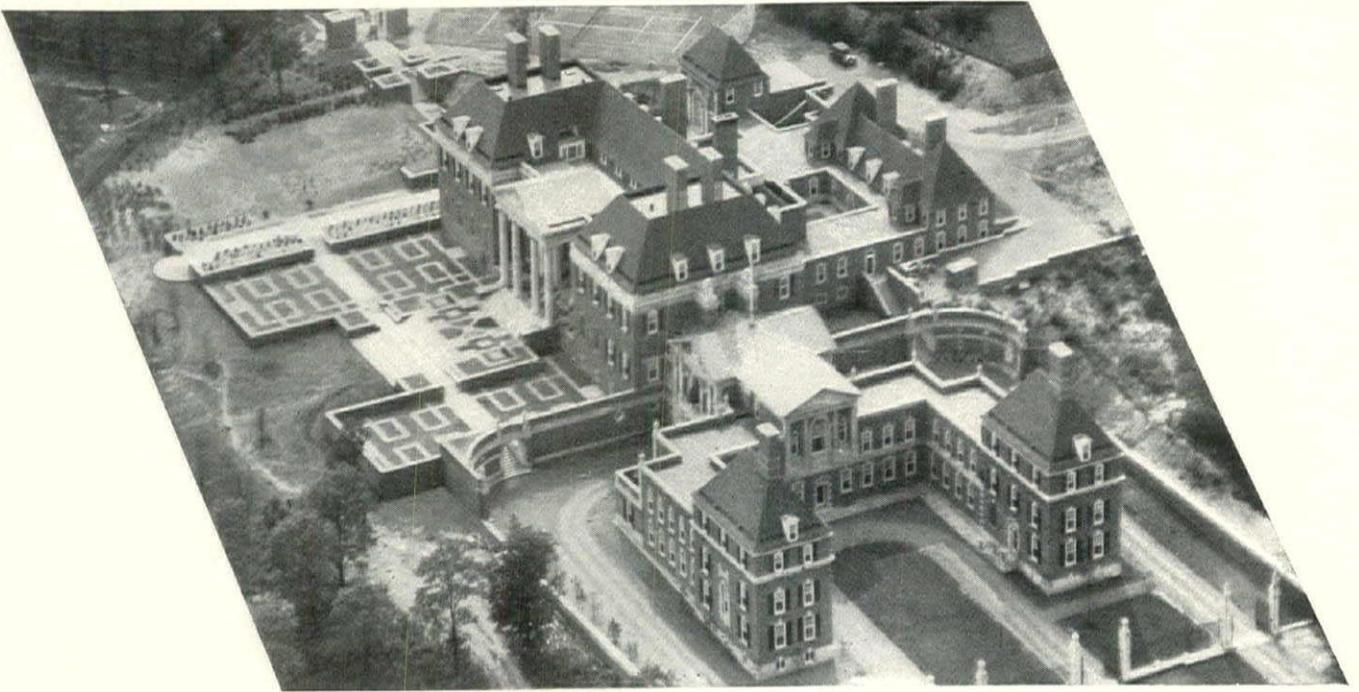
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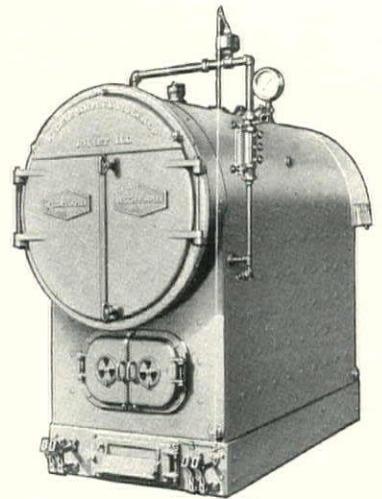


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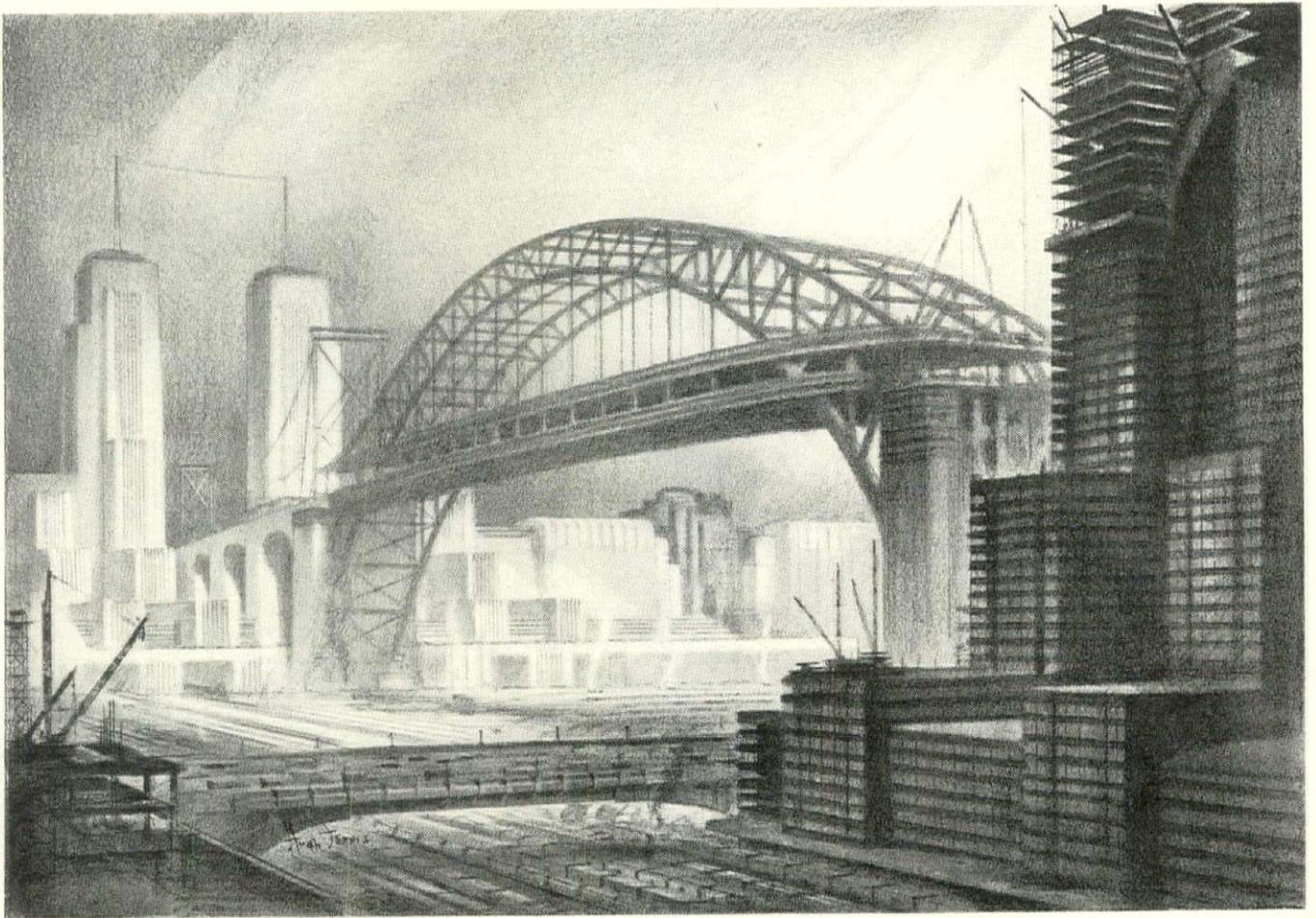
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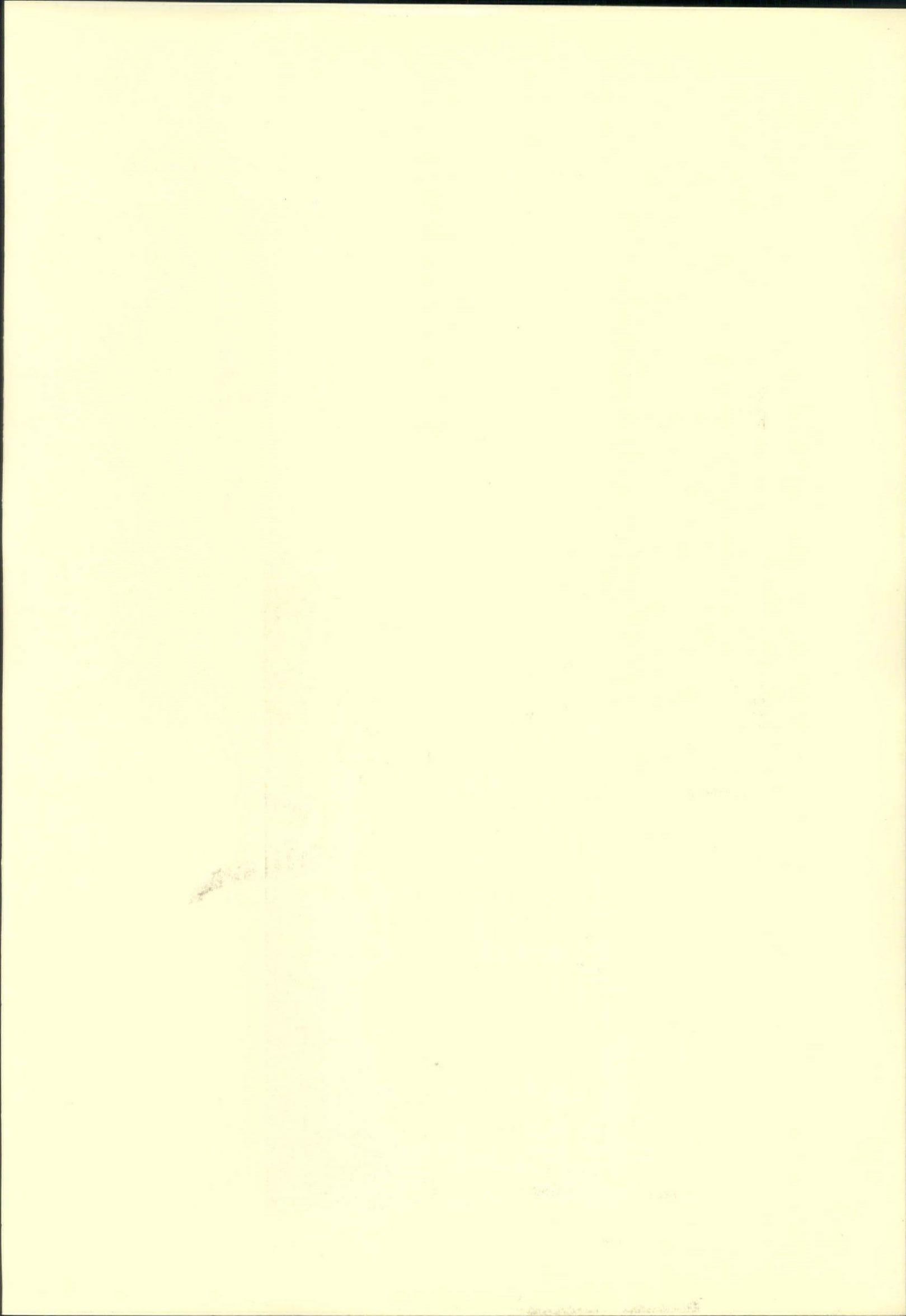
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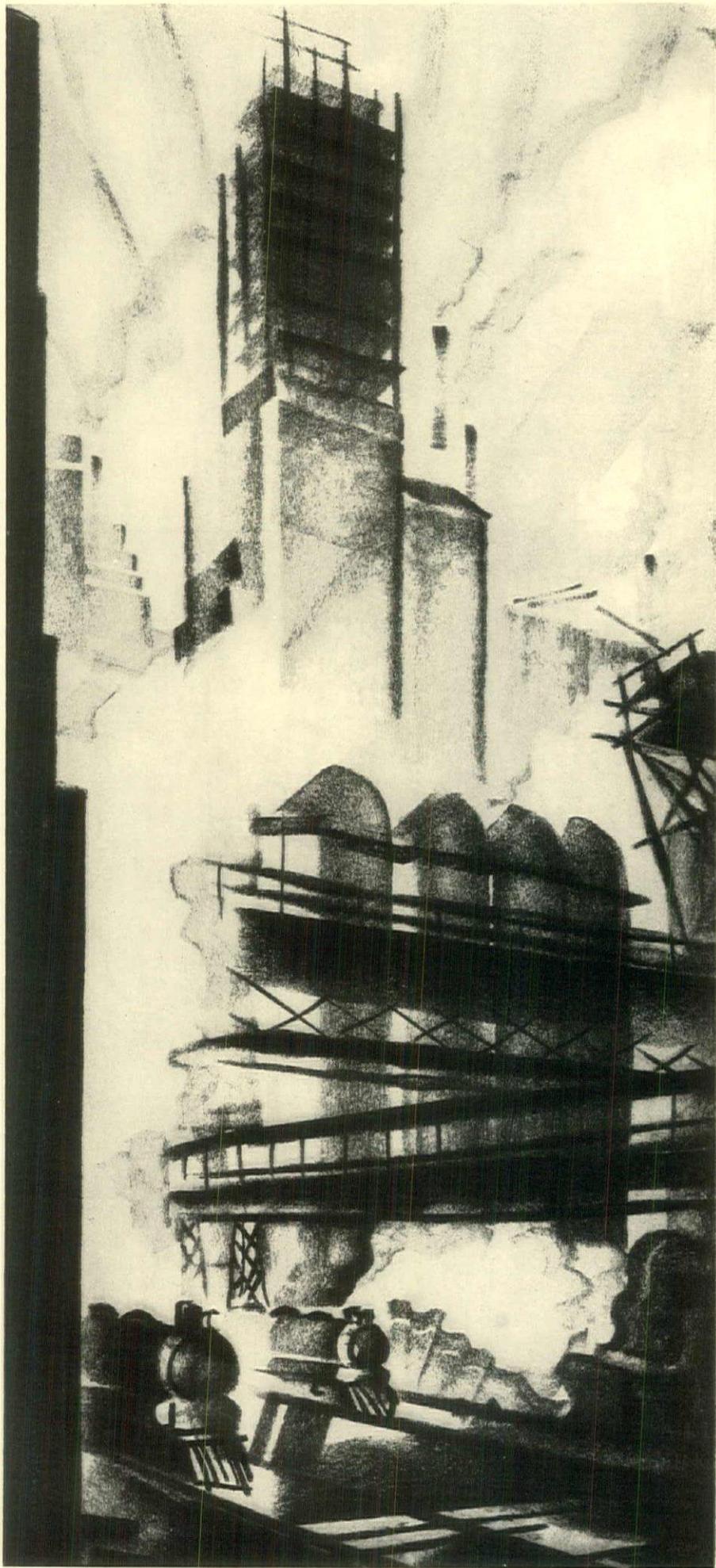
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RAILS AND  
RISING TOWERS

FROM A CHARCOAL  
DRAWING BY TABU

*The Architectural Forum*

# THE ARCHITECTURAL FORUM

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## RAILROAD STATION MATERIALS AND MAINTENANCE

BY

JOHN C. FISTERE

THE unusual abuse to which railroad stations and terminals are subjected, combined with uninterrupted operation, requires more than customary consideration from the architect in specifying materials for use in stations, and terminals. Before him as he writes appears the great bogey of railroad operation,—“low maintenance cost,”—and while initial cost is an important factor in his selection, low upkeep is even more so.

The average life of a railroad terminal is about 27 years, barring, of course, unforeseen radical expansion. In any case, a station should be planned and constructed to allow for normal growth over a period of 20 or 25 years. A terminal whose span of life extends beyond that period is unusually lucky in regard to the development of the railroad.

While it is impossible to say definitely, despite the experience of 50 years or more, just what materials are advisable for use in all cases, we can draw some general conclusions which should be of benefit to the architect who is planning a railroad station. As in all other instances, the location, the appropriation, and the materials available are the final considerations upon which specifications are determined.

### FLOOR MATERIALS

By virtue of their importance and basic position, floor materials should receive primary consideration. Immediately the main concourse, the hub of passenger terminal life, comes to mind. For large stations with huge concourses, choice has been narrowed down to two or three materials,—marble, tile and terrazzo (monolithic or tile). In both cases,  $\frac{7}{8}$ -inch is the minimum thickness.

The theoretical charge against them,—that is, that they are slippery,—is not borne out in practice. If this were so, their widespread use would not be permitted by the accident insurance companies. The only disadvantage is their tendency to crack, but the introduction of metal strips has reduced the possibility to a large extent.

Vitrified tile, concrete and certain durable composition materials have been employed extensively in suburban stations, moderate-sized through stations, and small stub terminals. The first has received the endorsement, for instance, of the Lackawanna Railroad engineers, who have used it in many of their suburban stations which have been held up as models of small station design and construction. Easy cleaning, simple replacement, and adaptability are some of the factors which determine its choice. Where cost is more important than architectural unity or beauty, concrete is serviceable, provided it is treated for dusting. The range of composition flooring is so wide that only a few suggestions can be made as to the factors to be considered, which are: adaptability of form; color and texture; initial and replacement costs; and the facility with which it can be kept clean. There are a few patented products which meet all these requirements, but each should be tested before it is specified.

### RAMPS AND STAIRWAYS

No other detail of a railroad station causes such diversity of opinion, perhaps, as stairways and ramps. One architect will use nothing but bluestone; another will consider nothing but a patented abrasive tile, while still a third will uphold metal safety treads against the field. All three are recommended for stairways, but for



Considerations of maintenance guide choice of materials: Terrazzo and tile floor; cove tile base for ease in cleaning; brick walls for permanent and interesting surface; lighting units easily available. Station, Montclair, N. J., D. L. & W. R. R. A. J. Neafie, Architect



Economy not a deterrent in design or durability; checkered tile floor with cove base; wood wainscot; textured plaster walls; space under seats difficult to clean. Depot, Marysville, Kan., Union Pacific R. R. G. S. Underwood & Co., Ltd., Architects

ramps the abrasive tile is probably to be preferred. It is warmer in color, as a rule, than bluestone, and can be laid in patterns appropriate to the desired architectural effect, which is always an advantage. For heavy-duty stairways, the metallic strips are best, provided they are spaced closely enough to prevent the catching of the heels of women's shoes. A closely woven pattern is preferred to strips running either longitudinally or transversely, because of the possibility of slipping in wet weather. Metal nosing is advisable in most cases, but it should not project more than 1 inch beyond the riser. It is possible, where architectural consistency is desired, to use non-slip terrazzo. This is reputed to be slightly less durable than the others, but its appearance is far more attractive.

#### PLATFORM FLOORING

Exterior platform flooring is selected chiefly according to the amount of money available for the purpose. Hardened concrete is the most popular and probably the most suitable material. Where the platform is uncovered, crushed stone supplies a cheap and efficient surface. If the platform is temporary, or subject to change with expansion, wood planking is the most desirable. The American Railway Engineering Association recommends these materials for transfer platforms: "Wood plank platforms should be laid preferably with the planks parallel to the line of trucking traffic. Metal plates should be used for a runway to produce easier trucking and to reduce wear on the plank. Concrete floors are used in some cases, and for extremely heavy traffic, a concrete base with creosoted wood or asphalt block or asphalt mastic wearing surface is used."

#### MISCELLANEOUS AREA FLOORING

If the station is of the type which combines waiting room and concourse, the flooring material may be chosen from any of the concourse floor recommendations given in a preceding paragraph. Vitrified tile has given a good account of itself for this purpose in the Union Pacific and the Canadian National Railroads stations. They have found it adaptable to the various styles of architecture which they employ, and it has shown up well on the maintenance cost sheet. Concrete, although if not properly treated may be untidy in appearance, is used in many instances, and in very small stations, wood flooring is popular. It might be well to recall the humorous but too-true comment of a certain well known railroad architect who said, when he was asked about flooring materials: "It doesn't make any real difference what I specify, for it will soon be chewing gum anyhow."

Ticket offices, and other offices of similar character, may be treated as individually as the architect desires; wood, composition materials, rubber tiling, and linoleum are suitable. There is no definite preference based on anything but taste and expense. For baggage rooms, concrete floors are satisfactory, and are in common use, but in locations where heavy materials are handled, wood blocks, asphalt blocks or mastic are to be preferred. In small stations at outlying points, use of wood planking is common.

#### WALLS

Wall materials offer as wide a variety as floor materials, and here again the type of station is the chief determinant in specifying. For the concourse of a huge terminal, marble or vitrified tile, and enameled brick have many partisans among station architects for wainscoting. The last is very pleasing when used with vitrified tile in a two-and-one pattern,—two courses of tile and one of enameled brick. Above the wainscoting, brick, clay and composition tiles, pre-cast cement and gypsum blocks or plaster are suitable. The extensive use of brick for interior walls by European architects has gained many converts in this country. One fine example of its use is in the Stuttgart station.

The preservative quality of paint is so important in railroad station work that specifications must be definite in this regard. Each railroad has its own formula, and the architect should consult with the engineering department of the road before specifying. The A. R. E. A. says: "Better results will be obtained by specifying rigid physical tests as a method of judging quality rather than by formulas based on chemical composition." In all cases, of course, the only thinners to be used are pure linseed oil and pure spirits of turpentine; benzine, naphtha, gasolene and coal oil are ruled out. The average length of life of a good paint should be four years. The flat surface is probably best, particularly in those sections where dust is likely to gather, or where engine soot is likely to cloud.

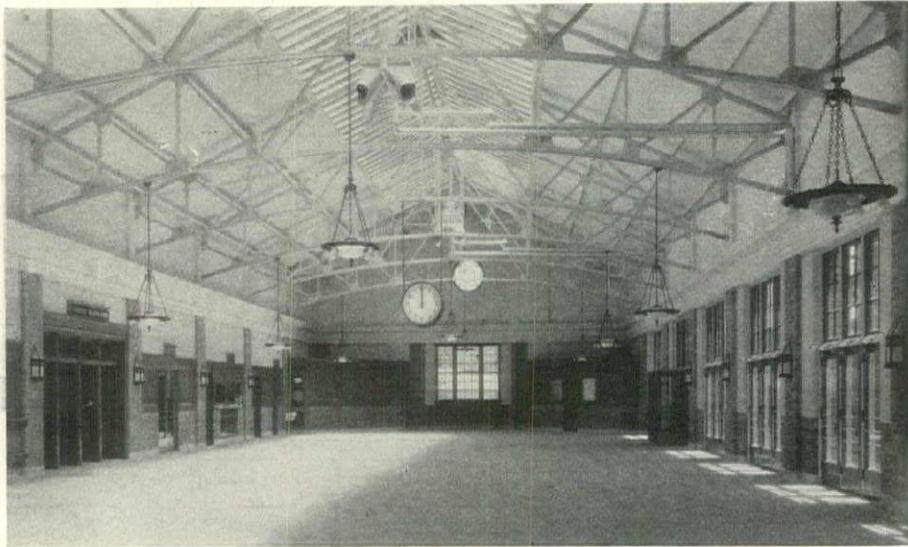
Acoustical treatment of walls is essential in some sections of railroad stations, and is advisable in others. For instance, telegraph and ticket offices should be as free from noise as possible; and in stations which accommodate steam trains the din in such places is likely to hinder efficient work. Waiting rooms which have direct access to train platforms will be made more comfortable for the company's guests if the walls are sound treated. Wall boards of various types of fiber, perforated metal backed up rock wool, cloth-covered felt, loosely pressed composition tile, and acoustical plaster may be used. None of these is



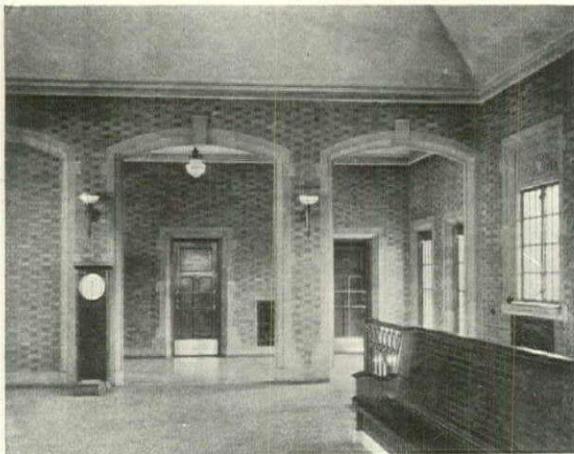
Large terminal using marble to advantage for floors, walls and columns, the darkest polished marble used for floor and base; sound-absorbing ceiling. Cleveland Union Terminal. Graham, Anderson, Probst & White, Architects



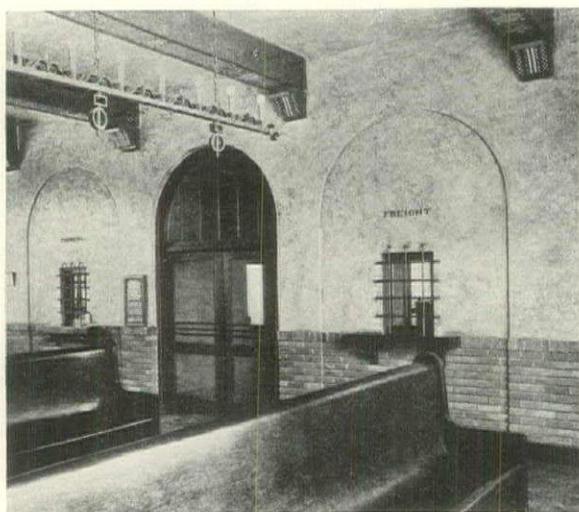
Small station interior showing straightforward use of inexpensive materials; terrazzo floor and cove base for ease in cleaning; simple details throughout; trusses and rafters exposed. Greely, Col., Station, Union Pacific R. R. G. S. Underwood & Co., Ltd., Architects



Concourse of utilitarian materials rather than decorative; concrete floor; brick wainscot, etc. Halifax Station, Canadian National R. R. John Schofield, Architect



Brick, terra cotta and terrazzo. East Orange Station, D. L. & W.R.R.



Textured plaster, brick and tile. San Pedro, Cal. Depot, Union Pacific R. R.

outstandingly effective against noises which have origin outside the room, but they do help to lower the harshness of the sound.

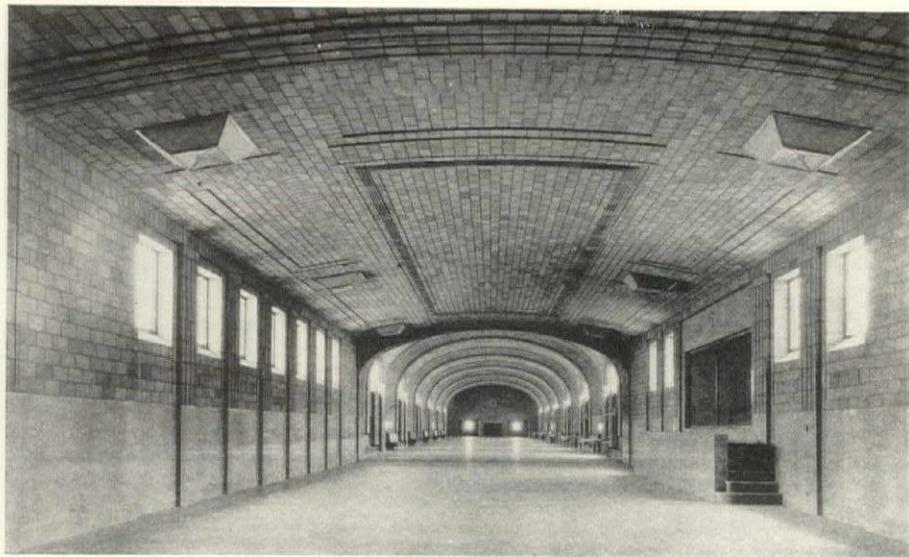
#### ROOFING MATERIALS

In determining the type of roofing material best suited for a station, there are several factors to be considered, most of which obtain in other roofing jobs. These are:

- (1) Probable life, including possibility of damage by the elements and ordinary wear.
- (2) Possibility of leaks due to character of construction.
- (3) Initial cost.
- (4) Cost of maintenance.
- (5) Fire-resisting value.
- (6) Appearance and architectural value.

In the light of these considerations we may consider these materials. Slate gives an ornamental roof of long life and low maintenance, but it should not be used on a roof having a pitch of less than 6 inches per foot, nor should it be laid with less than a 3-inch headlap over the second course below. Clay tile, glazed or unglazed, falls in the same general class, having both long life and low maintenance cost. Being heavy, the clay tile roof demands, of course, special framing, which adds to the expense. Its use is restricted not so much by its ability to serve as it is by the architectural style of the building. Cement tile, either shingle or structural, is recommended by the A. R. E. A. with the reservation that the product is unsatisfactory if poorly manufactured or not carefully laid. Glass can be introduced into the latter to take the place of skylights.

Experimentation on built-up roofing has not ceased, but the railroad architect may accept what



Permanence and low maintenance due to simplicity of design and careful choice of materials. Tunnel in Buffalo, N. Y., Station. Fellheimer & Wagner, Architects

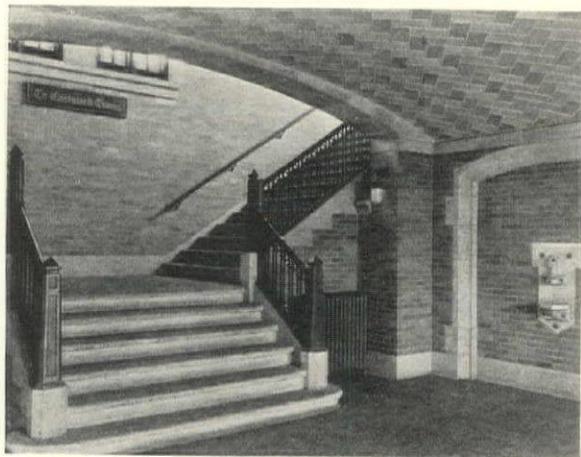
has been found satisfactory in past instances. There seems to be little to choose from between rag felt and coal-tar pitch, and asbestos felt and asphalt. The first is less expensive, but the second is reputed to be more durable, particularly when unprotected by a mineral covering. While the coal-tar pitch is affected by heat and cold, it has value as an insulator, and is to be slightly preferred under ordinary circumstances on a price basis, if for no other reason.

LIGHTING EQUIPMENT

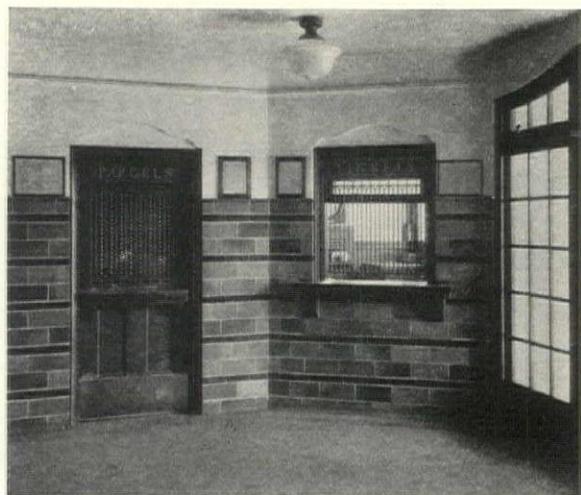
An over-lighted station is just as unpardonable as a station under-lighted, and there is no reason for the occurrence of either circumstance. These foot candle intensities may serve as an accurate guide in the lighting of various sections of the station:

Waiting rooms.....	2 to 4	ft. candles
Rest rooms, toilets.....	1 to 3	ft. candles
Ticket office .....	6 to 10	ft. candles
Concourse .....	1 to 2	ft. candles
Baggage room .....	3 to 6	ft. candles
Train platforms .....	0.5 to 1	ft. candles

The lighting, of course, should be well diffused, and should not be glary. The general acceptance of indirect and semi-indirect lighting for public spaces as well as for working areas indicates the advisability of using those types of fixtures in railroad stations. The concealed type of lighting for a ceiling arch has been found effective in large concourses. The built-in or sunken fixture, a product of modernism, is also appropriate. In waiting rooms, it is often desirable to place attached lamps on the tops of benches to provide adequate reading light for waiting passengers. It



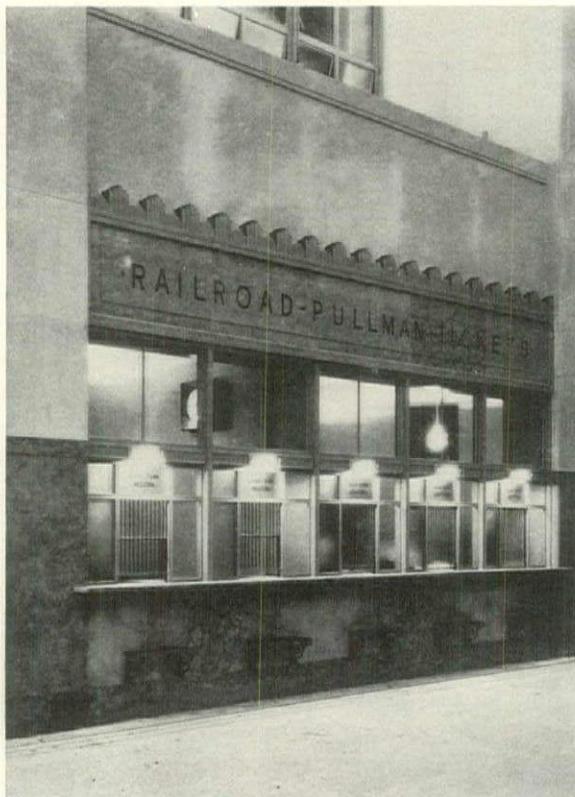
Cement, cast stone, marble, brick and tile. Madison, N. J. D. L. & W. R. R.



Impervious materials reduce upkeep costs. Paterson, N. J. D. L. & W. R. R.



Marble-enframed ticket booths; long hand luggage rest; two ticket windows per bay. Buffalo Union Station, N. Y. C. Lines. Fellheimer & Wagner, Architects



Dark mottled marble is used where defacement might otherwise show. N.Y.C. Station at South Bend, Ind. Fellheimer & Wagner, Architects

is possible, although little has been done as yet, that Neon tubing will become more popular for interior illumination. Daylighting, through the use of adequate windows and skylights, reduces the amount of artificial lighting required and therefore the cost of electricity. Skylights must be carefully designed and of the best materials or they will add to the maintenance and repair costs.

#### HEATING

Railroad station heating requirements are not uniform. The locality, character of the building, and other factors exert such an influence that generalities are not applicable in a great many cases. In large terminals, for instance, the heating of a huge concourse might offer an intricate problem, or on the other hand, it might require no heating at all. Most large concourses are at least partially heated from the rooms which surround them,—the waiting rooms, the various shops, the ticket offices, and so on. There are occasions, however, when this type of heating, must be supplemented by fan-blown heated air from grilles. They are usually placed about  $8\frac{1}{2}$  feet off the ground, above the heads of passengers. The exhaust grilles are at floor level.

Attempting to supply a heating formula for stations is impossible because of the continuous opening and closing of doors that upset all calculations. The only way an architect can be sure that he is supplying enough heat is to make sure that all vestibules and lobbies are well supplied with radiators or grilles to heat the incoming cold air. It was once thought that placing radiators between benches and beneath benches was the most effective means of heating waiting rooms. For extremely cold climates, this might still be desirable, but for the temperate and southern areas, this is likely to make the waiting room occupants uncomfortable.

Ventilation is seldom required except in large terminals with inside rooms and underground concourses. The traditional high ceiling concourse in large stations usually needs no artificial ventilation since the height of the room, and the constant opening and shutting of doors by passengers provide a sufficient change of air. The small rooms off the concourse, such as ticket offices, barber shops and other areas, are usually inside rooms, which means that provision must be made for recirculation, at least, and sometimes for fresh air from the outside of the building. Air cleaning, either by filtration or washing, may be necessary; in which case the architect must bear in mind the presence of engine soot.

#### SANITARY REQUIREMENTS

Toilet and washroom facilities should be deter-

mined by the type of the station and by the character of its occupants, but in all cases, they should be as durable as the appropriation will permit. The heterogeneous crowd of travelers and loiterers who make use of station toilets makes it essential to have both attractive and sturdy fixtures. Two types of water closets have been found unsatisfactory,—one is the overhead tank type, and the other is the periodic automatic flush kind. The first is put out of order by the breaking of the chains, and the second is likely to remain out of order unnoticed by attendants. Although the A. R. E. A. recommends the seat-operating type that flushes after use, there are some superintendents of railway maintenance who hold that they are too subject to maltreatment. Black ribbon slate or imitation marble may be used for partitions, and "A" grade yellow pine is recommended for the doors.

For water faucets, the most popular kind is the type with a compression stop valve, which shuts off the flow of water with the release of the hand. Handle and foot flush connections have proved satisfactory for urinals.

For piping, the American Railway Engineering Association suggests the following: "Concealed soil, waste, drain, sewer and vent pipes should be extra heavy cast iron soil pipe. Supply pipes which are 2½ inches or smaller, below ground, should be strong lead pipe. All exposed supply or waste pipes including connections to fixtures should be nickel, chrome or similarly plated brass."

These pipe sizes for water supply are standard:

To toilet rooms .....	¾-in.
To individual sill cock .....	¾-in.
To sink .....	¾-in.
To urinal .....	½-in.
To lavatory .....	½-in.
To closet .....	½-in.

The minimum size of waste pipes are:

From individual closets .....	4-in.
From lavatories .....	1½-in.
From urinals .....	2-in.
From slop sinks .....	3-in.

The minimum sized vent pipes are:

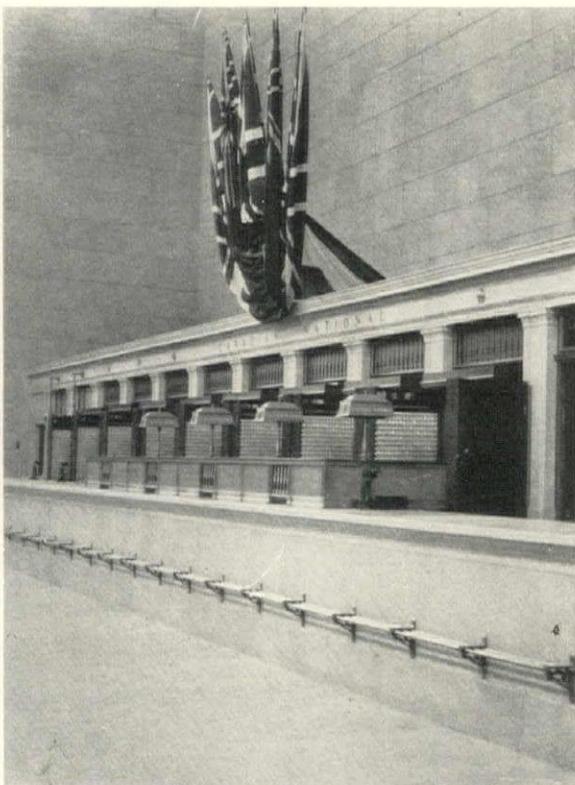
For closet traps .....	2-in.
For lavatory .....	1½-in.
For urinals .....	2-in.
For slop sinks .....	2-in.

References:

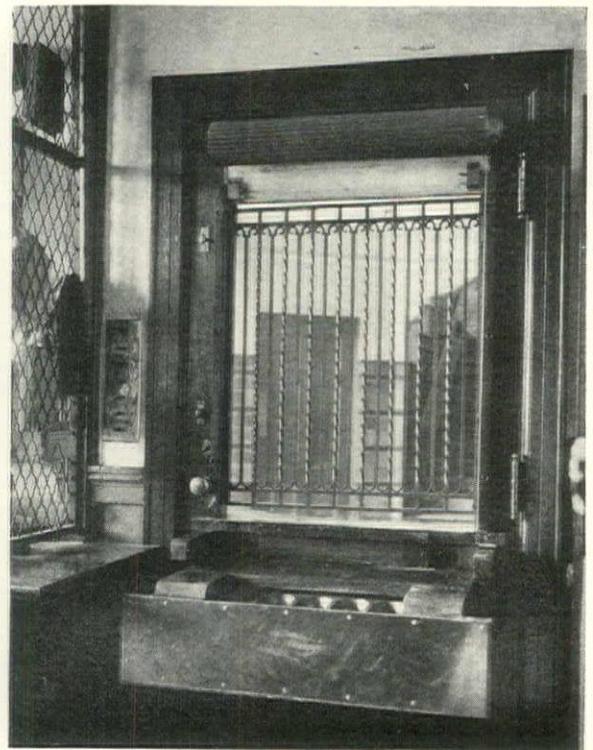
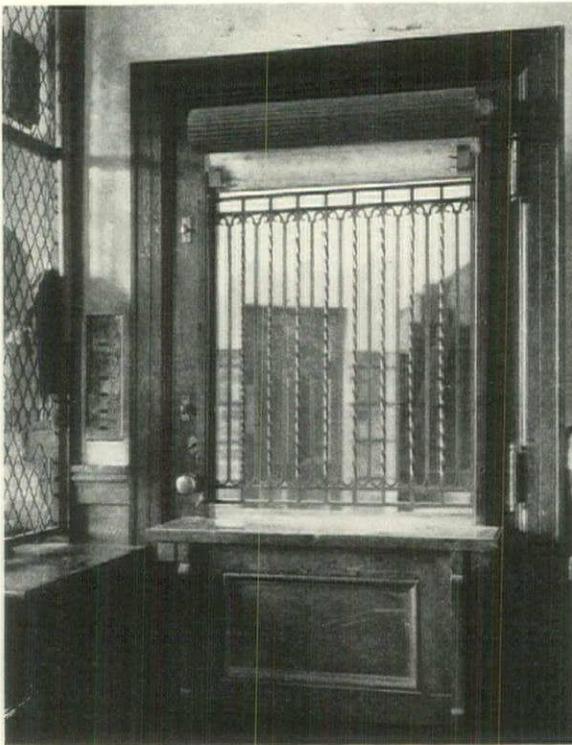
"Passenger Terminals and Trains," By John A. Droege. Published by McGraw-Hill Book Co.  
 "American Railway Engineering Association Manual," Vols. 21, 22 and 30.



Ticket booths which keep buyers in line; central luggage rest convenient to left hand. Station Königsberg, Germany. Ernest Richter, Architect



Open type ticket counter with low rail and grille. Continuous luggage rack under counter. New Union Station, Toronto, Ont. John Schofield, Architect



Utility door, ticket and parcel window to accommodate commuter traffic on rush days—cash drawer closed

Roll screen shuts off grille when not in use. Back of drawer forms parcel shelf—cash drawer open

D. L. & W. R. R. Station, Paterson, N. J.

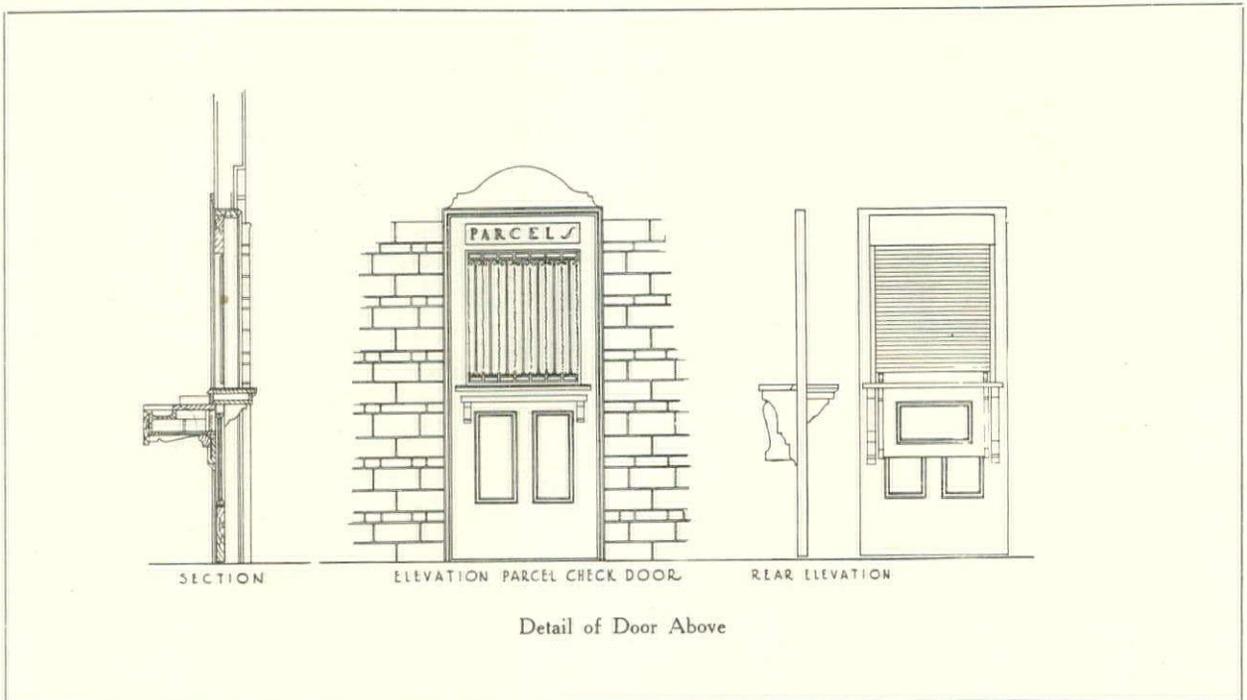
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by Simmons-Boardman Co.

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Detail of Door Above

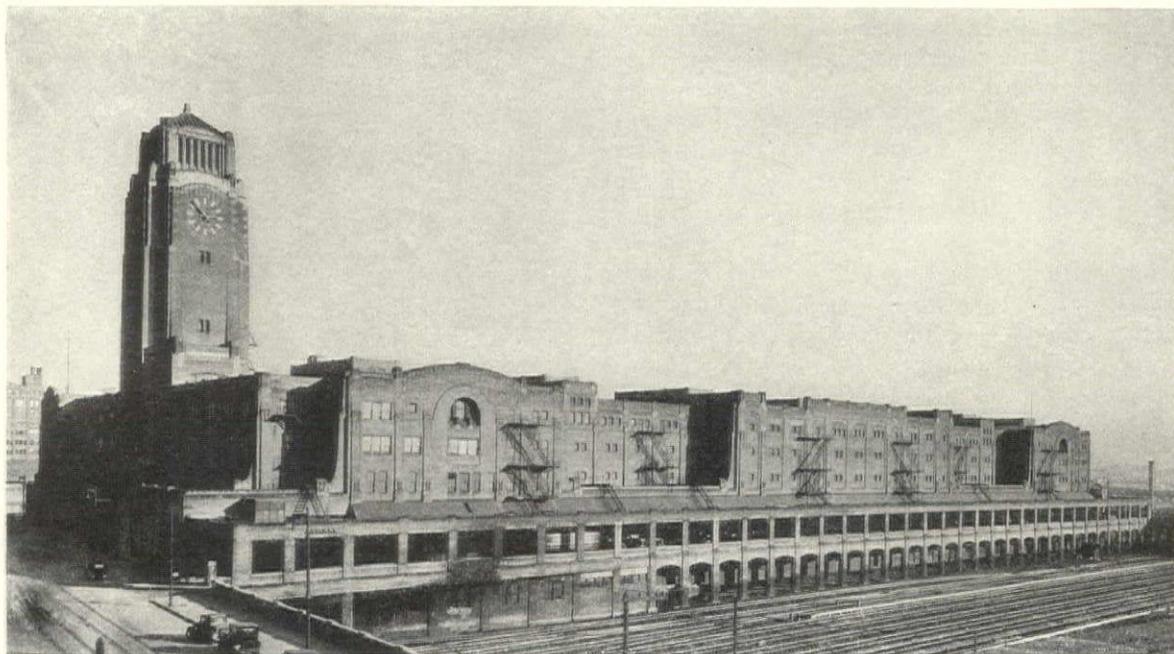
# RAILROAD BUILDINGS FOR OPERATION, SERVICE AND COMMERCE

BY  
A. T. NORTH

TWO classes of buildings are required for the operation and service of railroad transportation. One class is essential in providing facilities for the housing and maintenance of motive power, freight and passenger cars; the receiving and delivery of freight, express and mail; the arrival and departure of passengers; and a large number and variety of minor structures that supplement the uses and operation of the principal buildings. The buildings which are used for the housing and maintenance of motive power and cars are located usually near large terminals or at division points. Express and mail buildings are located adjacently to passenger stations; large express terminals are sometimes located at great distances from the passenger terminals. Express and mail buildings are located also at division points, junctions and transfer yards for reassembling and distribution to branch lines or other railroads. The other class of buildings is commercial-transportation in character, and it is made up of freight storage warehouses, merchandise storage and sales structures, and manufacturing buildings, all directly connected with railroad

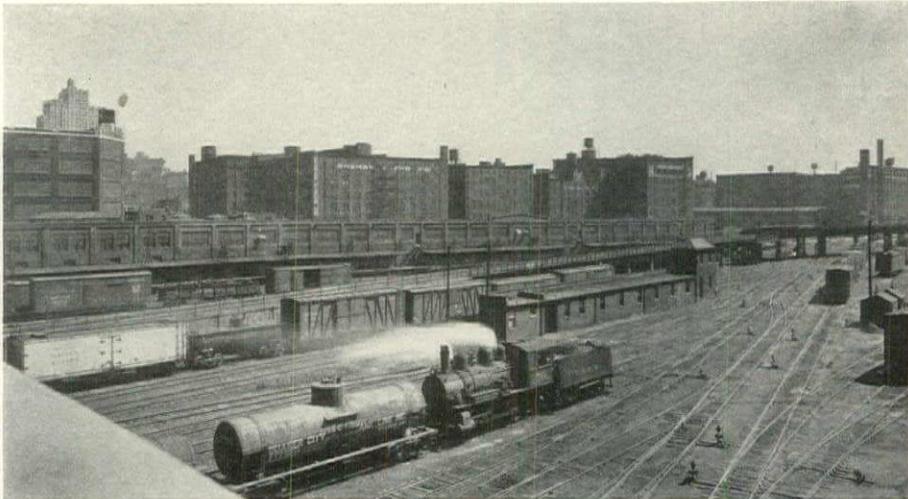
transportation facilities. This commercial-transportation class of buildings is more architectural in character because of their greater size, class and diversity of occupancy and are, therefore, of greater interest to architects.

The class of buildings first mentioned, used exclusively for transportation service and its maintenance, excepting the large passenger terminals, is not of especial architectural interest beyond being of safe, durable and economical construction. As a rule, they are reduced to functions of absolute utility and durability without the least consideration for appearance. This is unfortunate. The public, railroad employes, everyone, is entitled to the privilege of looking at attractive buildings. They are a function of public welfare by contributing to the pleasure and culture of the people. By the application of the proper kind of skill, these buildings of mere utility can also be made buildings of interest and beauty with no additional cost beyond the employment of better designing talent. There is now a worldwide tendency toward improving the design of minor and structurally unimportant buildings.



*Chicago Architectural Photographing Company*

The Pennsylvania R. R. Chicago Freight Terminal. Price & McLanahan and McLanahan & Bencker, Architects. This structure, erected 1917-18, has an architectural quality unusual in railroad buildings. It is a freight storage warehouse, freight being received and shipped on the first and second floors



The Cupples Station Terminals, St. Louis. Eames & Young, Architects. Started in 1889, this plant now consists of more than 50 buildings covering six city blocks, all connected with track platforms



*Aerial Surveys, Inc.*

The Cupples Station Terminals have direct access to the Eads and the Merchants' Bridge tracks

While railroads have developed a high standard of efficiency, they have neglected those qualities of building that produce an agreeable appearance.

The association, on a large scale, of merchandising, and later manufacturing, directly with railroad transportation, is a comparatively recent development. The first important project of this kind was the Cupples Station Terminals in St. Louis, started by Robert S. Brookings in 1889, and later donated to the Washington University of that city. The plant, now managed by Col. Isaac A. Hedges, consists of 50 buildings covering six city blocks of 500,000 square feet of ground area. The buildings are connected with the railroad track, loading and unloading platforms by subways and elevators. About 200,000 square feet of platform space, 5,000 trucks and 100 elevators are used for the handling of incoming and outgoing freight. Sixty freight cars can be "spotted" at one time for loading or unloading, and an average of 100 carloads of merchandise freight are handled daily, weighing about 1,000 tons each. For many years, Eames & Young were architects for this property.



*Chicago Architectural Photographing Company*

Chicago Freight Terminal, Pennsylvania R.R. A notable early use of the tower to enclose tanks and utilities. Price & McLanahan and McLanahan & Bencker, Architects

The renting of storage space by railroads is a natural economic development which benefits both the railroad and the tenant. The railroad benefits by utilizing the otherwise unused space above the

Lackawanna Freight Terminal, Jersey City. George J. Ray, Chief Engineer. Designed for storage and light manufacturing occupancy. Convenient vehicular access to ship sides and New York by both the Holland Vehicular Tunnels and the Ferries

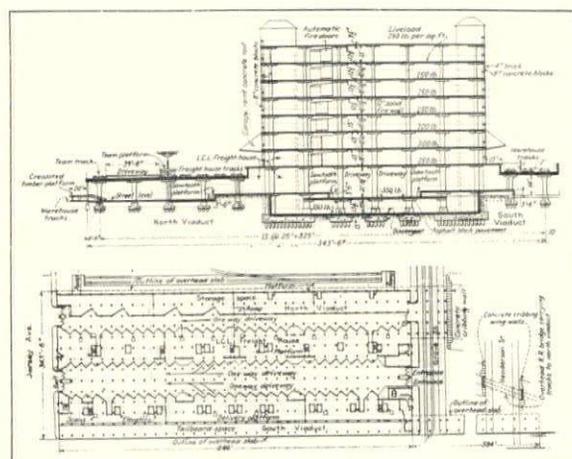


Airmap Corporation of America

freight yards. As the ground used by team tracks becomes more valuable and is taxed accordingly, the increased value is realized by improving the ground with an income-producing development. Aside from increasing the revenue from ownership of the ground, the railroad provides a service which is profitable for the tenant and insures a certain amount of freight tonnage to the railroad. It is a form of intensive ground utilization. The tenant benefits by not owning and operating an individual warehouse; by being able to re-ship merchandise by rail without the expense of trucking from and to the railroad, and with no obstacle to trucking merchandise to regional destinations.

One of the first important projects of this kind was the Pennsylvania R. R. Freight Terminal, Chicago (McLanahan & Bencker, architects, 1917-18). It is readily apparent from the window arrangement that this building is intended solely for the storage of merchandise. It is notable, however, for its effective and appropriate architectural design, and its tower was the forerunner of the modern type of towers that are used now so extensively on industrial buildings. Later constructed freight terminals have increased window areas very materially to accommodate light manufacturing occupancies, a more modern economic development. It is regrettable, however, that the element of architectural design has not been incorporated in the later railroad freight terminals.

The Delaware, Lackawanna & Western R. R. Freight Terminal (1930) in Jersey City, is located conveniently to the Holland Vehicular Tunnels and the Lackawanna Ferries in Hoboken, both affording direct vehicular connections with New York. A considerable amount of LCL package freight can be trucked from this terminal to ship side. Special provisions are made for the handling of LCL freight. The building can be utilized either as a dry storage warehouse or for



Courtesy Engineering News-Record

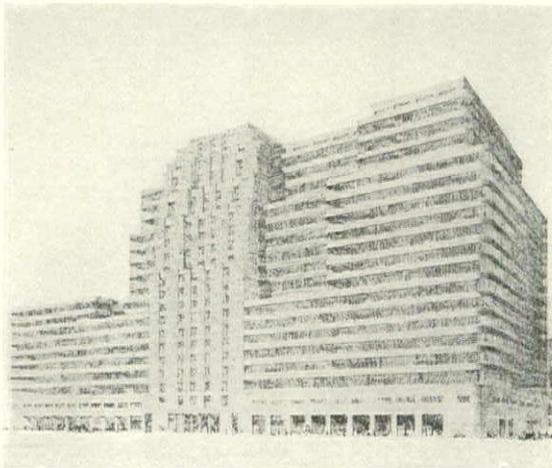
First floor (street level) plan, and cross section of the Lackawanna Freight Terminal. The sawtooth shipping platforms permit reduction in width and area of the driveways

light manufacturing for the assembling of parts received at the warehouse in bulk, the finished product to be stored, delivered direct, or reshipped. The building contains 1,180,000 square feet of storage space. Provisions are made for duplicating the building on the north side with but little additional cost for track facilities. The plant was designed and constructed under the supervision of George J. Ray, Chief Engineer.

The Lehigh Valley Freight Terminal under construction in New York further develops the scheme of providing light manufacturing and freight storage facilities to a greater extent than has formerly been done. In this case the air rights of the existing team track property are to be developed intensively. The tenants will have all of the facilities necessary for storage and light manufacturing located within the limits of elevator transportation to railroad and truck receiving and delivery platforms. The economic causes that compel the development of this type



Freight Station and Automobile Warehouse, New York. Owned by the New York Central Lines. Special occupancy warehouse for automobile storage and freight



Lehigh Valley R.R. Freight Terminal, New York. R. G. & W. M. Cory, Architects. Maximum glass area for light manufacturing occupancy with storage space in the interior of the building. Utilizing air rights of existing team tracks

of building and the plan and construction that serve this purpose will be described and illustrated by the architects, R. G. and W. M. Cory, in a future issue of *THE ARCHITECTURAL FORUM*.

The new Kingsbridge Freight Terminal and Automobile Warehouse of the New York Central Lines, located at 213th Street and Kingsbridge Avenue, New York, partakes of the nature of a special occupancy building. The building consists of two units. One half of the first floor of the first unit is a station for general freight, the remainder is for free automobile storage for 48 hours. The rest of the building is used for automobile storage, having a capacity of 2,300 cars. Cars are taken to all floors by elevators and can be taken out on ramps. The building is constructed of brick and steel and is provided with a sprinkler system. Of the 54,049 carloads of automobiles delivered to New York by the New

York Central Lines in 1929, 7,361 carloads were delivered to this warehouse.

Another phase of merchandising in connection with railroad transportation is that of perishable products for which a type of building has been developed. The Baltimore & Ohio Railroad Company has put in operation (October 1, 1930) a perishable products terminal in Baltimore, L. P. Kimball, Engineer of Buildings. Its facilities consist of an auction sales building, an auction display platform, and a private sales platform. The building is located in a large team track delivery yard and adjoins a new express company shed. The produce terminal has railroad tracks on one side and a truck delivery platform on the other side.

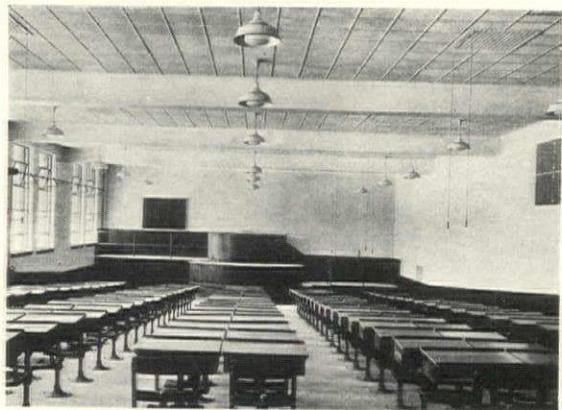
The auction sales platform is 565 feet long and 90 feet wide, with an 8-foot platform on one side. There is adequate floor area for the contents of 90 cars, allowing ample aisle space for inspection and delivery. The building is served by four house tracks having a total capacity of 48 cars, unloading at one time. As the unloading of these cars is normally completed during the night, the track space on the west side of the building is paved, providing a driveway 83 feet wide, and on the east side a similar driveway 74 feet wide is provided. Both sides of the building can be used for daytime city deliveries when the maximum tailboard space is required. The platform foreman and his assistants check and approve all goods sold before they leave the platform; the office records are made in a booth suspended from the steel trusses and reached by stairs, thus conserving floor space. On the second floor is the auction room, which is provided with desks for a seating capacity of 200 persons. This room can be enlarged if necessary. Beyond the auction sales platform is the private

Baltimore & Ohio R.R. Fruit Exchange, Baltimore. L. P. Kimball, Engineer of Buildings. A new type of special railroad structure for shipments and sales



sales platform used for the purpose of handling such perishable products as are not customarily sold at auction. A continuation of this platform, 70 feet wide and 343 feet long, having separate tracks of 30 cars capacity, will be used by the express company until such time as the fruit and vegetable trade requires additional space. The sales platforms are heated to a temperature of 40°—45°, and the auction sales room to 58°—63° Fahr. by thermostatically controlled steam unit heaters. The offices are heated to 70° Fahr. by direct steam radiators. Steam is supplied by a district heating system at a 140-pound pressure and reduced to four pounds.

A similar project is the Northern Ohio Food Terminal, financed and built by the Cleveland Terminal Improvement Corporation, a subsidiary of the Nickel Plate Railroad, with a contract by which each merchant eventually will own his unit, Wilbur Watson and Associates, Architects and Engineers. The plant consists of seven buildings. Buildings A, B and C contain stores. Building A has two stories and basement divided into 24 store units 20' x 75' in size, each with truck space 20' x 25' enclosed with rolling steel shutters on one side. The basement space for each unit is 20' x 90', and the second floor space is 20' x 100'. Each store is provided with a 3,000-pound elevator. Building B is similar to Building A and occupied by one owner. It has the equivalent of 21 store units and contains nine elevators. Building C is one story high, 261' 6" x 90', and is divided into 13 store units. Building D is 456' 6" x 90' in size, one story in height, with basement 296' 3" x 90'. It is divided into 20 store units and contains six elevators. Building E is the auction sales building, 462' x 110' in size, with a second story head house, 82' x 110', used for offices and an auction room having 286 seats. There is a small basement used for boiler room

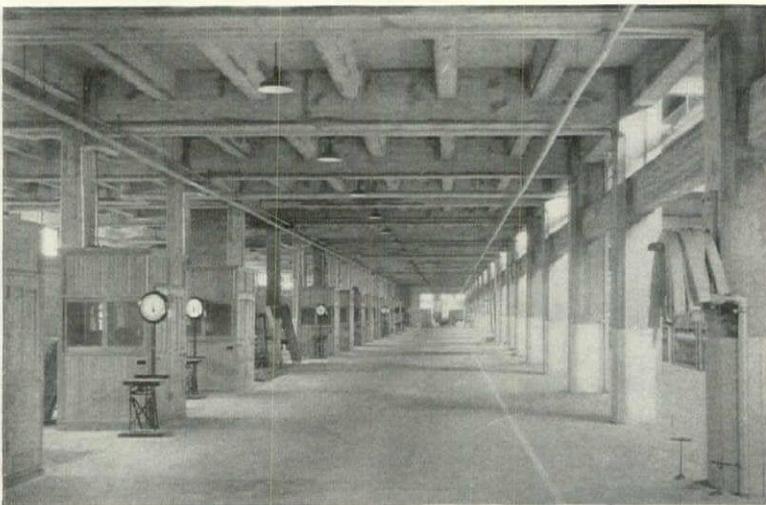


Baltimore Fruit Exchange. Above, auction sales platform; below, auction sales room

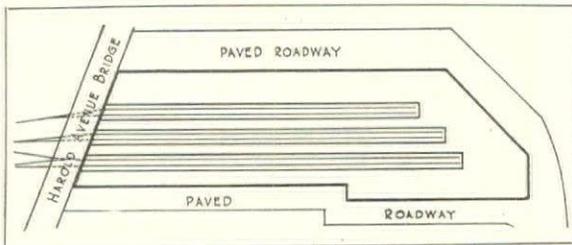
and cold storage only. This building is similar in occupancy to the Baltimore Perishable Products Terminal previously described. Building F is the dairy products building, 40' x 130', two stories in height and of mill construction. Building G is occupied by the Federal Cold Storage Company, a separate enterprise, and contains 2,880,000 cubic feet gross. This plant furnishes cold storage facilities to the Food Terminal and, also, its



Tebbs &amp; Knell, Inc.



W. N. Jennings



refrigerator lines are connected with store units in the various buildings. In general, gas is used for heating the individual store units, and the floors are designed for 250-pound live loads.

The American Railway Express Terminal, Long Island City, N. Y., was erected by the Pennsylvania Railroad Company, W. H. Cookman, Architect. The structure is 280' wide and 1,017' long, with a second story 50' wide and 740' long. The second story is used for offices, lockers for 1,300 employes, and other purposes. A small third story adjoining the Harold Avenue Bridge provides an entrance and stairway for employes and has a spiral chute for small packages.

The first story has two wide receiving platforms

American Railway Express Terminal, Long Island City, Pennsylvania R.R. Co. W. H. Cookman, Architect. One of the largest plants in America

Left, Receiving Platform, Railway Express Terminal, Bill clerks' booths and scales. Lower left, block plan of terminal showing tracks and roadways for trucks

which have 2,300 lineal feet of back-up space for trucks on three sides of the building, permitting more than 300 trucks to unload at one time. Adequate lighting is provided for illuminating the roadways and the platforms adjoining the truck ends at night. There are three pairs of railroad tracks within the building, with a capacity of 78 express cars, between which are two loading platforms. The loading platforms are wide enough to permit the "parking" of shipments beside the cars, before stowing is started, without preventing movement of the platform vehicles in both directions to reach other assigned cars. The edges of the track platforms overhang so that a walkway underneath permits wheel inspection and despatching of trains without delay.

In the afternoon the trains are set out by electric locomotives, of which one is assigned exclusively to the terminal, but across each pair of tracks there are two electrically-operated bridges, which are lowered just before the heavy movement starts. The cars, therefore, have to be carefully "spotted" so that the bridges can be lowered without setting the cars too far apart.



R. E. Hawkins

Northern Ohio Food Terminal, Cleveland. Wilbur Watson and Associates, Architects and Engineers. Typical stores for the sale of fruits and produce



Aerial Surveys, Inc.

Northern Ohio Food Terminal. Complete food terminal plant, including auction sales building, stores, markets, dairy products store and cold storage

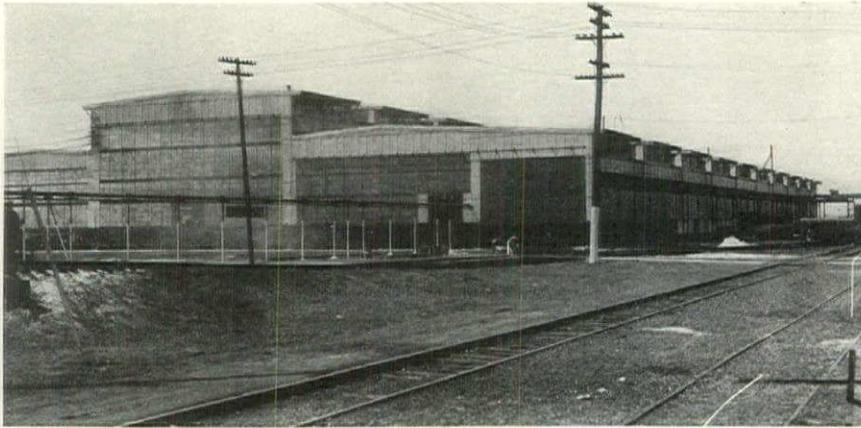
These track bridges greatly facilitate the loading operations, since electric trucks and platform tractors and trailers can make "short cuts" between the loading platforms. Without them it would be necessary to make a trip to the east end of the terminal around the end of the tracks to the proper loading platform, frequently a trip of more than one quarter mile.

Provisions are made for charging the electric street trucks, of which 488 are in service, while they are being unloaded; an incinerator and stack for burning rubbish is used; three sides of the building are equipped with rolling steel doors 16' x 8' in size; a room for valuable express shipments is provided; a heated room for perishable matter and a cold storage room are located on the first floor; by a system of fireproof rolling doors the interior can be shut off; billing booths each with two scales of 100 and 5,000 pounds capacity are placed at convenient intervals.

Express buildings, either one or two stories high, are built in connection with passenger stations. The express matter is received from and delivered to trucks on one side and the express

cars loaded or unloaded on the opposite side. At union passenger terminals these buildings are used to separate and re-route the matter to the different railroads and destinations.

The ordinary mail buildings built in connection with passenger stations are usually one story high and are used to receive mail from mail wagons dispatched from the general post office and sub-stations. The mail bags are assorted and placed on platform trucks and dispatched to proper positions on the station platforms. The incoming mail is transported by the platform trucks to the mail building, where the mail bags are distributed to the mail wagons. These buildings are very simple in character. In connection with a union passenger station a much more complicated mail building is required, which becomes to some extent a post office sub-station. These buildings have both street delivery by mail trucks and also mail car service on the opposite side. Carloads of mail are broken for distribution to other railroads and placed in the proper mail cars or delivered by platform trucks to the trains. Special provisions have to be made for the handling of parcel



Locomotive Shops, Atlantic Coast Line R.R., Uceta, Fla. Climate permits shop walls to be open at bottom. Interior of the erecting shop (below)

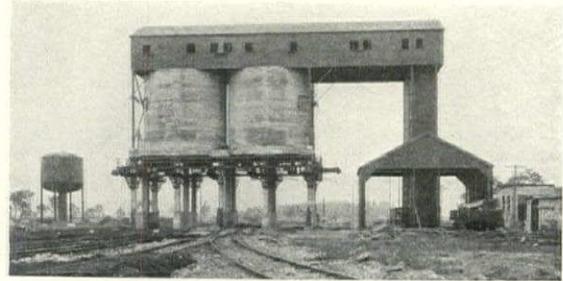
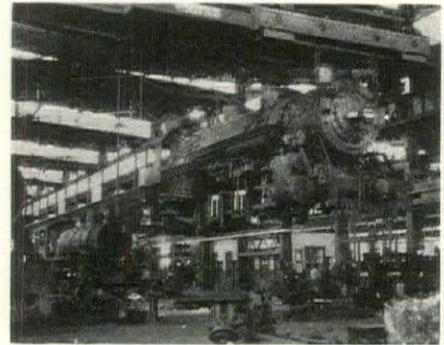
post mail, and sometimes mechanical means are used to assort and distribute the mail for each particular railroad mail route. Buildings devoted exclusively to parcel post service have been constructed in several cities.

Several departments of a railroad organization require large clerical forces, and it is found desirable to house them in specially planned office buildings erected in the outlying districts on comparatively inexpensive land. These buildings are sometimes located so that in them can be incorporated some other feature of railroad operation. The Illinois Central R. R. office building in Chicago includes a very important suburban passenger station. The supply department for Pullman cars and commissary department for the dining cars of the New York Central Lines occupy the floors below the street grade in the New York Central Lines' office building located in the Mott Haven yards, New York. The ten stories above the street level are used for office building purposes.

The buildings used in connection with the production and maintenance of motive power and cars of various types are usually concentrated in groups called railroad shops. These groups include the roundhouses used for housing locomotives while they are being cleaned and prepared for service; small machine shops are usually built in connection for making minor repairs and replacements. The oil house and sand house are very minor buildings. The principal buildings are the locomotive and cars shops used for making major repairs, replacements and rebuilding. The locomotive shop contains the blacksmith, boiler or tank, heavy machinery and the erecting shops, all under one roof and not separated by partitions. Shops for the repair and rebuilding of passenger and freight cars are more simple in design in not requiring the use of traveling cranes and heavy equipment. They include blacksmith, light machine, sheet metal, carpenter, paint and upholstery shops.

Minor buildings of a miscellaneous character,

Photos. by  
Atlantic  
Coast Line  
Railroad



New York Central coal, water and sand service structure. An opportunity for architectural designing

included in the category of transportation buildings, are Pullman supply buildings; ice houses; coach houses for minor repairs; garbage buildings; cooling plants; fan houses; power houses; wash and locker houses; signal houses; telephone exchange buildings; yard masters' offices; and Y. M. C. A. buildings near passenger terminals, freight yards and railroad shops.

This important and widely diversified group of buildings associated with railroad transportation is well worth engaging the best architectural talent. Aside from their preëminent qualities of adequacy for their particular use and occupancy and durability required in many instances for hard and rough service, these buildings, including the smallest and most unobtrusive, are entitled to the same careful consideration from the standpoint of architectural design as are all other classes of buildings.

## RAILROAD STATION DESIGN DATA

### CARS AND TRAINS

1. Train length, 120 to 800 feet.
2. Average car length:
  - a. Coach, 72 feet.
  - b. Pullman, 74 feet.
  - c. Diner, 80 feet.
3. Height of car floor from rail top, 48 inches.
4. Average car height, 14 feet.
5. Average car width, 9 feet, 6 inches.

### PLATFORMS

1. Minimum width.
  - a. For single-track service, 12 feet.
  - b. For double-track service, 20 feet.
2. Distance from center to center of tracks.
  - a. With shed-supporting posts, 28 feet.
  - b. Without posts, 28 feet.
3. Height of low platforms above top of rail, 9 inches.
4. Height of high platforms, 48 inches (floor level).
5. Distance from track center to edge, 4½ to 5½ feet.
6. Pitch, 1 in 48 to 1 in 24.
7. Ramp and stair clearance from edge, 6 feet.

### RAMPS

1. Passenger gradient, 10 per cent.
2. Trucking gradient, 8 per cent.
3. Minimum width for passengers.
  - a. For three lanes, 8 feet.
  - b. For two lanes, 5.4 feet.
4. Minimum width for trucking.
  - a. One lane, 6 feet.
  - b. Two lanes, 10 feet.

### STAIRS

1. Sum of riser and tread measurements, 18 inches.
2. Recommended measurements.
  - a. Riser, 7 inches.
  - b. Tread, 11 inches.
  - c. Overhang, 1 inch.
3. Landing platforms, 10 or 12 steps apart.
4. Landing platform width in direction of travel, minimum, 4 feet.
5. Hand rails.
  - a. 5 inches from wall on both sides.
  - b. Center hand rail required on stairs more than 8 feet wide.
  - c. Height, 34 inches above tread on line of risers.

### TICKET OFFICES

1. Width per agent, 6 feet.
2. Height of counter, 3 feet, 8 inches.
3. Width of window, 2 feet, 3 inches.
4. Height of baggage rack beneath window, 18 inches.

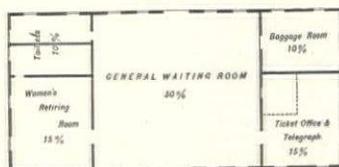
### BAGGAGE ROOM

1. Receiving platform height, 2 feet.
2. Convenient bag and suitcase compartment dimensions, 16½ x 12½ x 28⅞ inches.

### PASSENGER MOVEMENT

1. On platforms, unrestricted by crowds.
  - a. Through passengers, 4.2 feet per second.
  - b. Suburban passengers, 5.5 feet per second.
2. On platforms, en masse.
  - a. Through passengers, 3.7 feet per second.
  - b. Suburban passengers, 5.1 feet per second.
3. Through turnstiles, 50 passengers per minute.
4. Through single swinging doors, 77 passengers per minute.
5. Through double swinging doors, 117 passengers per minute.
6. Through ticket gates, 46 passengers per minute.
7. Space utilized by passengers on platforms.
  - a. Through passengers, 15 square feet per passenger.
  - b. Suburban passengers, 10 square feet per passenger.
8. Rate of discharge from platforms.
  - a. Through passengers, 15 per foot of width per minute.
  - b. Suburban passengers, 30 per foot of width per minute.
9. Space occupied by passengers with hand baggage on stairs and ramps, 2.7 feet per person.
10. Carrying capacity of ramps with 10% gradients.
  - a. Through passengers, 15 per foot of width per minute.
  - b. Suburban passengers, 30 per foot of width per minute.
11. Carrying capacity of stairs, 20 feet high.
  - a. Through passengers, 10 per foot of width per minute.
  - b. Suburban passengers, 18 per foot of width per minute.

### A. R. E. A. STANDARD PLANS FOR SMALL STATIONS



LENGTH 50' TO 75'  
WIDTH 20' TO 28'

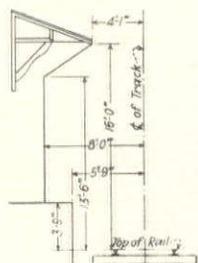


LENGTH 80' TO 90'  
WIDTH 30' TO 35'

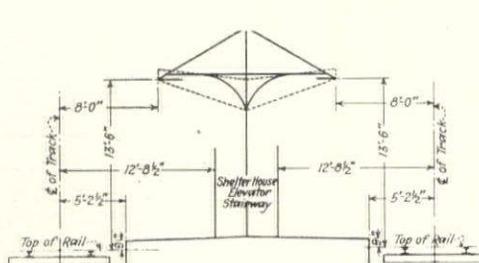


LENGTH 100' TO 125'  
WIDTH 38' TO 45'

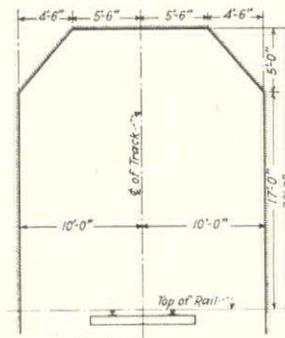
### CLEARANCE DIAGRAMS



FREIGHT PLATFORMS



PASSENGER PLATFORMS



BUILDINGS

RELATIONS WHICH SHOULD EXIST BETWEEN BUSINESS HANDLED AND THE SIZE OF THROUGH PASSENGER STATION FACILITIES

Station Facility	Unit	Number or Size of Facility Required for the Normal Number of Rush Hour Passengers Indicated								
		250	500	750	1000	1500	2000	3000	4000	5000
1. Area of main waiting room.....	100 sq. ft.....	30	53	72	89	112	128	155	178	200
2. Seating capacity of main waiting room.....	No. of seats...	143	213	270	315	400	465	570	665	750
3. Area of women's waiting room.....	100 sq. ft.....	5	7	9	11	14	17	23	29	35
4. Area of men's waiting room.....	100 sq. ft.....	5	6	7	8	9	11	14	16	.....
5. Total area for waiting purposes.....	100 sq. ft.....	55	88	116	137	167	195	238	275	306
6. Total seats in waiting areas.....	No. of seats...	190	300	390	470	590	700	880	1050	1200
7. Total area of lobby, concourse and all waiting rooms.....	100 sq. ft.....	80	152	208	256	320	376	472	552	624
8. Area of men's toilet rooms.....	100 sq. ft.....	4	6	8	10	13	15	20	26	31
9. Number of men's water closets.....	Number.....	6	9	12	15	19	23	29	35	41
10. Number of urinals.....	Number.....	5	8	10	12	15	17	20	23	25
11. Number of men's lavatories.....	Number.....	3	5	7	9	11	13	18	22	26
12. Area of women's toilet rooms.....	100 sq. ft.....	3	4	5	6	8	10	13	16	18
13. Number of women's water closets.....	Number.....	7	9	12	14	17	19	23	27	30
14. Number of women's lavatories.....	Number.....	3	5	7	9	11	13	17	21	25
15. Area of ticket offices.....	100 sq. ft.....	4	7	9	11	14	17	21	26	.....
16. Number of ticket windows.....	Number.....	3	5	7	8	11	13	16	18	21
17. Number of telephone booths.....	Number.....	3	4	5	7	10	13	19	25	31
18. Area of telegraph facilities.....	Sq. ft.....	100	130	150	170	210	230	280	310	330
19. Total area of dining and lunch rooms.....	100 sq. ft.....	9	14	19	24	34	43	63	83	102
20. Total number of seats in dining and lunch rooms	Number.....	34	53	72	93	129	173	249	327	407
21. Area of kitchen.....	100 sq. ft.....	5	8	11	14	20	26	38	50	62
22. Area of newsstand.....	Sq. ft.....	115	185	240	290	380	450	565	695	820
23. Number of barber chairs	Number.....	2	3	3	4	4	5	6	7	8
Baggage and Checking Facilities		Baggage Facilities Required for the Indicated Number of Pieces of Baggage Handled Daily								
Unit		250	500	750	1000	1500	2000	3000	4000	5000
24. Area of baggage room...	100 sq. ft.....	20	33	45	60	87	112	166	219	272
25. Baggage room tail-board frontage.....	Lin. ft.....	38	62	79	95	125	150	194	230	263
Unit		Parcel Check Room Facilities Required for the Indicated Number of Parcels Handled Daily								
Unit		250	500	750	1000	1500	2000			
26. Area of parcel check room.....	100 sq. ft.....	4	6	8	10	14	18			
Unit		Hand Baggage Facilities Required for the Indicated Number of Pieces of Hand Baggage Handled Daily								
Unit		250	500	750	1000	1500	2000	3000		
27. Area of hand baggage facilities.....	100 sq. ft.....	4	6	7	8	10	12	16		

Courtesy, American Railway Engineering Association

# AIRPLANE HANGARS

## PLANNING, FIRE PROTECTION, CONSTRUCTION DATA

BY

ROGER W. SHERMAN



*Skyways, Inc.*

**T**HE considerations influencing airplane hangar design are:

1. **Specific Use**, which may include one or more of the following purposes.

- a. Storage.
- b. Overhaul and light repairs.
- c. Heavy repairs and light manufacturing.
- d. Storage and field office.
- e. Storage and flying school.
- f. Exhibition hall.
- g. Spectators' gallery.

2. **Cost**, in relation to the total cost of the airport, the maintenance, and the probable return in the case of a commercial project.

3. **Location**, in relation to the other buildings on the airport and to limiting topographical conditions.

The specific uses of hangar buildings include many of the items above. The airport as it exists today,—especially that operated as a commercial enterprise,—is a combination transportation terminal, factory site, amusement resort, and private garage. In some cases it exists as merely a service station along an established airway; in others it assumes the proportions of an important transport and industrial center. Hangar types become, therefore, special problems requiring solutions in direct relation to the governing factors of the airport organization.

In any case, certain general requirements of planning should be noted. They are: (1) freedom from interior space obstructions; (2) daylighting and artificial illumination, dependent

*Von Rossem*



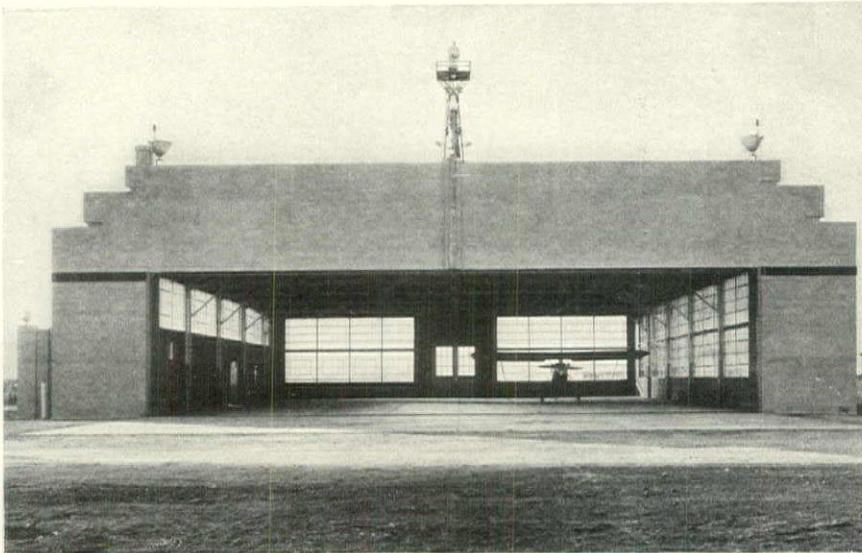
upon detailed operations; (3) susceptibility to alteration or addition with minimum expense; (4) protection from fire damage; (5) heating in relation to exterior climate and interior use; and (6) economy of maintenance.

No standard dimensions can be set for a hangar building. On the contrary, spans, lengths and clearances should be considered in view of the airport needs at the time of building, and the probable future development of its facilities. The heavier-than-air ship is capable of great expansion; with an increase in practical lift comes an increase in span, height and weight, and airports that are to keep pace in facilities with the progress of aircraft must be prepared to alter their existing buildings in accordance with the forthcoming changes in ship design.

### GENERAL PLAN TYPES

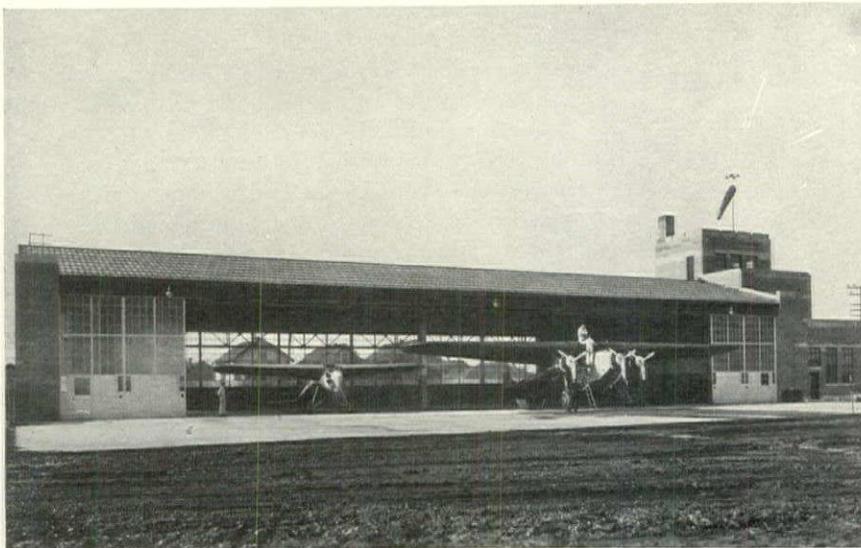
1. **Rectangular**. This is the type most used and most adaptable to the majority of airport needs. The layout may be varied within wide limits of size and space needs, dependent upon cost and use. In general, the airplane hangar is a combination of garage and industrial plant. Due to the necessity for constant motor overhauls, much work is performed on planes within the same space that serves as storage. Repairs usually require equipment in the form of machines, which should be housed in a lean-to separate from storage or working areas, yet easily accessible thereto.

When hangars are built in series of two or



*T. S. Higginbotham*

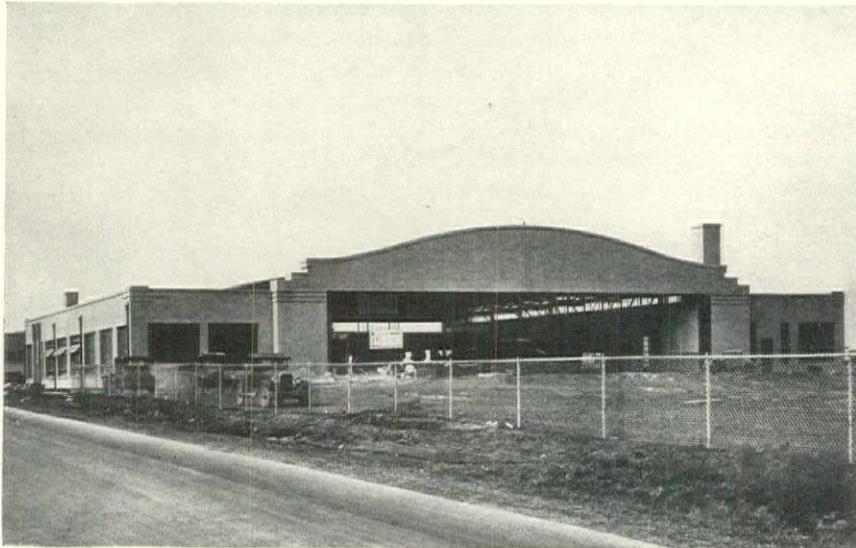
A common type of storage hangar, with sliding doors recessed into buttresses. Abilene Air Terminal, Abilene, Texas. B. Russel Shaw, Inc., Airport Engineers



*Manning Bros.*

A private storage hangar with shop and office in conjunction. This type is usual in small airports. Albert Kahn, Architect

*Powhatan*



A large single-unit hangar with large shop and office space adjoining. An efficient arrangement for flying schools, air-taxi lines, and small transport lines. Tulsa Municipal Airport, Tulsa, Oklahoma. The Austin Co., Architects

more, a lean-to may be built between two hangars, serving both at once. For fields where hangar space is leased this offers several advantages; it lessens the cost of two hangars by removing one interior wall of each; it provides independent units with complete facilities, and at the same time provides an economy of mechanical equipment and maintenance.

In many commercial fields storage is rented for private planes; repairs, overhauls, checking, etc. being done at another building. In such cases,—since private planes are usually small and rarely exceed in size the four-place class,—small plane units may be grouped under one roof. Clear openings should range from 30 to 50 feet in width and from 10 to 15 feet in height. The higher figures will give greatest renting flexibility for a wide range of plane types. Where the airport layout permits, economy may be effected by alternating individual hangar entrances in a plan shown in Fig. 1. This type of hangar is used at Portland, Ore., and application has been made for a design patent by its inventor, Carey Bundy.

2. **Ramped.** A two-story hangar with an exterior ramp to the second floor would be considered only in ports handling many large planes, and though space economy might be effected, it is doubtful whether the implied advantages would balance the cost necessary to provide structurally for planes of the transport type, weighing in many cases well over five tons. The increased height of such structures would cut down the effective area of a landing field, even with a climbing ratio higher than the accepted 7 to 1. It is conceivable that in special instances of topography a two-floor hangar might be employed to serve two adjacent fields of different levels, but, due to conditions limiting airport sites, this would be a rare exception. It is also conceivable that in time airplanes may be ground-driven through the wheels of landing gear; that airport congestion will demand stricter economy of space than now pertains; and that the perfection of the helicopter and autogyro may remove the necessity of low structures. Until these and similar problems are solved, however, the practical value of expensive and experimental airport buildings is doubtful.

3. **Polygonal.** Six- or eight-sided hangars may be employed if located in the center of a free area to permit taxiing and easy turning of planes. They give the advantage of constant daylighting and the center location of machine shops adds to the efficiency of the working area. Interior space cannot be as well utilized, however, due to the angular shape and the difficulty of maneuvering planes within a restricted area. They are not so well adapted to addition or alteration as the rectangular hangar and cannot accommodate large planes as efficiently.

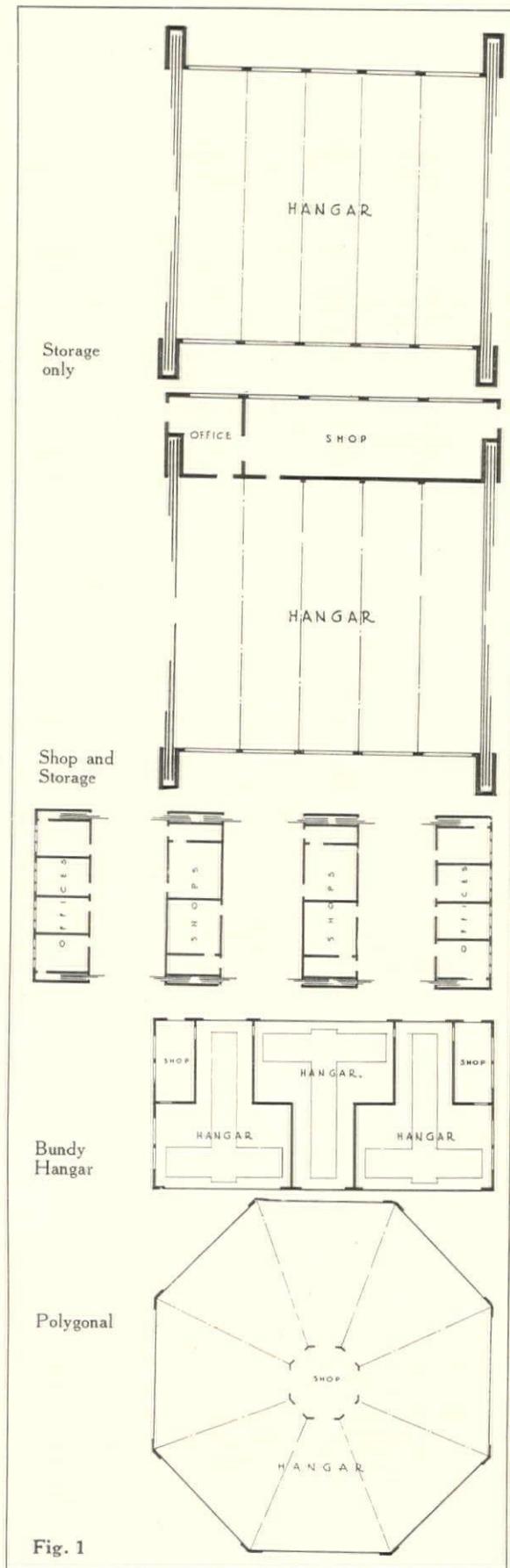
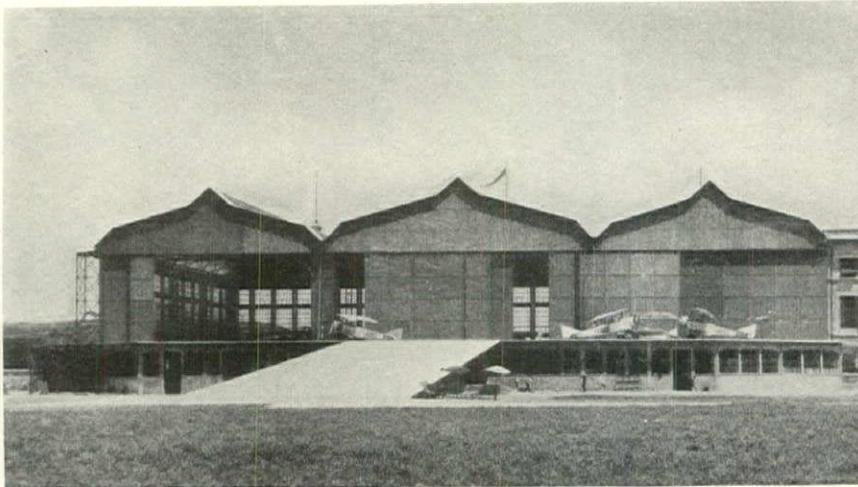


Fig. 1



Courtesy "Airway Age"

A two story, ramped hangar at the Littoria Airport, Rome, Italy. The building is metal covered, and the ramp is built of reinforced concrete. This airport is a large one and is used also as a site for the manufacture of airplanes

### GENERAL STRUCTURE TYPES

General considerations regulating the choice of materials and structure types include:

1. **Economy.** The large operating expenses of airports, the few income sources, and the possibility of building obsolescence due to radical changes in aircraft, demand the exercise of the most rigid economy in first cost consistent with the minimum of operating expenditure.

2. **Suitability for Projected Use.** Structural systems should be considered solely in relation to building functions from the standpoint of space and time efficiency in the completed structure. Material choices should parallel this from the standpoints of *strength, weight, insulating value, fire resistance, stability and appearance.*

3. **Adaptability to Varying Conditions.** As public demand for air transportation increases, extension of airport facilities to include additional hangar space or a better arrangement of existing space may be necessary. Hangars should be designed and materials specified to admit of alteration or addition with a minimum of expense and effort. Also, the development of aircraft itself may become an important factor, and the possible salvage value of materials should be given consideration.

Hangar buildings may be divided into three structural types:

1. **Frame.** For storage and minor repairs of small airplanes, frame hangars may be constructed of sheathed stud walls with a timber-trussed or Lamella-type trussless roof. Floors should be concrete on fill pitched to door opening. *Advantages* of frame hangar construction are the low cost and comparative facility in alteration. *Disadvantages* are evidenced in the high fire risk, necessity for continuous maintenance, and the limited facilities in size and type.

2. **Reinforced Concrete.** The *advantages* derived from this type of hangar are (1) low fire

risk, (2) durability of construction, (3) minimum amount of maintenance, and (4) maximum protection from climate. Among the *disadvantages* are included (1) comparative difficulty in construction, (2) difficulty in alteration, (3) minimum of material salvage value, and (4) limited adaptability to varied uses. European airports have used reinforced concrete systems extensively; in this country, however, such hangar construction has not been much used, although masonry has been employed extensively for curtain walls.

3. **Structural Steel Frame.** The adaptability of a steel frame to various types of plans and conditions of use makes it especially suitable for hangar buildings. The particular design of a structural system depends upon the special requirements of the project, but certain definite principles should be considered.

A. **In planning,** the maximum spans consistent with the equation of future development to immediate building should be chosen to allow for natural expansion of the airport without an immediate necessity of new buildings or quick alteration of old. The same principle pertains to windows. Besides the consideration of daylighting, enlargement is made possible by the removal of existing sash without changes in the structural members. This brings about a two-way span hangar, with shops, offices, etc., located along the side which is least likely to suffer alteration. This will apply to most types of hangar buildings, even though they may contain complete airport administrative facilities.

B. **Wall systems** should be as open as possible for admission of light as well as facility in alteration. With a two-way span structural system very light curtain walls may be used, and materials should be specified for economy of installation and upkeep, for durability and salvage value, and for qualities of heat insulation. The

conventional use of brick, cement block, clay tile, etc., is satisfactory. Less known materials such as protected metal, composition asbestos board, and structural glass tile should receive serious consideration. They are all capable of application in hangar construction to a high degree of general efficiency.

C. **Floors** should be pitched to interior sumps and should be at least 6 inches above grade, with an easy ramp from door line to apron. Reinforced concrete slabs should be designed for the heaviest condition of storage indicated by future expansion plans. For general use a fine brush finish is satisfactory; in buildings to be used for manufacturing or storage of heavy planes which require truck handling, a compacted slab and smooth troweled surface should be specified. Local conditions may indicate a more economical floor than concrete, and wood-block, or asphalt-bound gravel may be used. The disadvantages of the latter surfaces are due to damages caused by wear and the expense and loss of time in maintenance.

D. **Roof trusses** may be designed in three types: (1) bow string, (2) pitched, and (3) flat. The first two, for small installations, are obtainable in stock unit sizes. They are light, easily erected, and in combination with bar joist purlins form an excellent roof structure. In larger airports roof trusses must be designed in view of the expansion considerations already mentioned, and of existing special conditions. The pitched roof is not a necessity and in some cases may hinder the development of airport efficiency. In many localities a hangar roof may serve as a spectators' promenade, as in the recently completed Wayne County Airport, near Detroit. With favorable conditions of terrain, the entire administrative facilities of a considerable airport might be constructed over a large hangar space, served by a ramp to the hangar roof level, half a story above grade.

A suspended roof structure has never been attempted in this country, as far as is known. It might, however, prove highly efficient and economical in problems demanding unusually long spans. It would provide shop and office facilities between corner pier supports, and could be enlarged without interruption of operations.

#### FACTORS IN DESIGN AND EQUIPMENT

Light, heat, ventilation and color are considerations of relative importance, depending upon the size of the structure, its use and its climatic location.

1. **Light.** If industrial buildings are taken as a standard, a minimum of 10 foot candles is necessary for efficient work, although the greatest



Courtesy H. H. Robertson Co.



Courtesy Detroit Steel Prod. Co.

Efficient arrangement of shops and office space, and good daylighting facilities. Hangar at Alhambra, Calif. Edelman & Zimmerman, Architects

possible amount of daylight, without glare, is desirable. The conditions of use vary somewhat between a hangar and an industrial plant of generally similar structure. Hangar shops are usually located near exterior walls where the light intensity is highest, and most of the detailed repairs are done there. When hangar space proper is used for storage, a portable light is commonly used in checking planes, and a high daylight intensity is not of great importance. In large hangars, where heavy repairs and plane overhauls are common, the length of span may diminish the intensity of light from doors and windows to below the practical minimum, and monitors or skylights may be necessary. In any case, glare is undesirable and, in localities where extreme brightness is common and where orientation to minimize its effect is not possible, sash should be glazed with light-diffusing glass. Artificial illumination by means of direct drop lights, the number and wattage depending upon the hangar space, is adequate for storage areas.

2. **Heat.** Some heat is desirable in hangars located in zones experiencing freezing tempera-

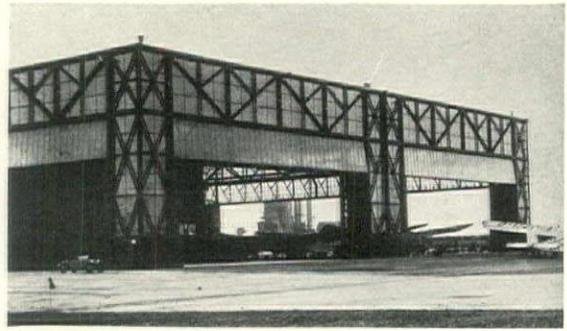
tures, as planes deteriorate greatly in unheated storage. In machine shops, offices, etc., pipe coils or radiators, ordinary or gas-fired, may be used; but they have proved inefficient in hangars due to large glass areas and infiltration through door openings. Unit heaters, ordinary or gas-fired, and re-circulating fan-duct systems are more successful. Much reliable research on the subject is lacking. The limiting considerations are cost and flexibility, which unit heaters so far meet best. Their placement should be considered to provide natural circulation within the building by warming cold infiltrations from door openings. Due to the fire risk from oil and gasoline fumes, no flame heaters should be considered. It is possible that a radiant heat for wall installation may be developed, as ceiling installations of the same type in other structures have proved efficient and economical. Effort should be made in all cases to prevent heat loss through walls and roofs by insulation, the method depending upon the type of construction.

3. **Ventilation.** Forced ventilation is usually unnecessary. In large structures monitors with sash or vents, or roof vents, either fixed or revolving should be installed and the ventilation controlled by operation of wall sash. In cases where fan duct systems are used, a controlled roof vent should be coupled with it, this being highly desirable in dope rooms or in motor cleaning areas.

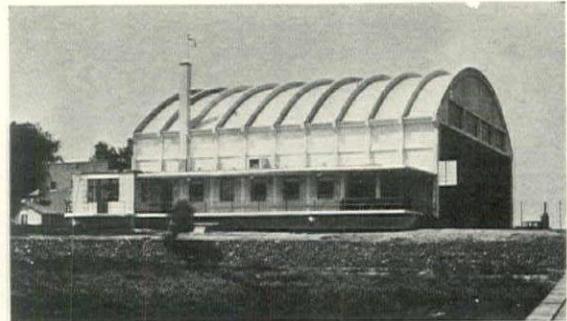
4. **Color.** Exterior color should be chosen for its visibility from the air and for contrast with surroundings. The Department of Commerce recommends black and chrome yellow for roof areas. White or aluminum paint has high visibility for walls. The color of brick or stone should be chosen with this fact in mind. Interior color should be chosen to aid lighting methods and preserve materials. Mill white or aluminum paint is satisfactory for walls and ceilings with dark doors and 5-foot dado bands.

#### COST

It is impossible to tabulate costs of any kind for structures of the hangar type. They vary within wide limits, depending upon *location, building requirements, market and labor conditions, methods of financing, and seasonal difficulties*. The important consideration is not the unit cost of a building, but the general cost of operating an airport, of which a hangar is a part. The elimination of non-essentials by careful planning for future as well as present requirements; the selection of materials for the best combination of useful characteristics in view of these requirements; and close supervision of building methods with a cost-plus-guarantee contract will do much



Courtesy German Inform. Bureau



Courtesy Portland Cement Assoc.

Above, steel and glass tile hangar at Munich, Germany. An excellent solution of a large hangar problem where free space and good light are essential. Below, a reinforced concrete hangar at Montreal, Canada

to erect an economical and efficient building. Investigation of new materials may disclose many that are particularly adapted to the needs of airport construction, and new methods of assembly may effect large economies. In steel-frame structures, for example, welding may save from 20 to 25 per cent of truss costs alone, and for an entire job would show a reduction of from 10 to 15 per cent. Light structural materials, such as pre-cast gypsum or aerated concrete floor and roof slabs reduce steel tonnage, and battledeck floors save material in many cases.

#### AIRPORT ARTICLES IN THE ARCHITECTURAL FORUM:

- Airports,—The New Architectural Opportunity,  
—Tyler Stewart Rogers.  
April, 1929, p. 593, Part II.
- The Airport of the Future,—Harvey Wiley  
Corbett. January, 1930, p. 71, Part I.
- Lehigh Airports Competition.  
January, 1930, p. 75, Part I.
- Airplane Hangar Design,—R. W. Sexton.  
January, 1930, p. 121, Part II.
- Airport and Hangar Heating,—William Hull  
Stangle. January, 1930, p. 125, Part II.
- Recent Airplane Hangar Construction in Europe,  
—Eugene W. Stern. April, 1930, p. 616  
Part II.

Interior of hangar at Curtiss-Reynolds Airport, Chicago, Ill. Rebori and Wentworth, Architects. The two-way span permits the enclosure of the court between units to form a single large space. Round-the-corner doors serve both sets of openings



Chi. Arch. Photo

Hangar at Cleveland, Ohio. The Austin Co., Architects and Engineers. The cantilever door saves interior floor space

#### DOOR TYPES

(1) **Wood Sliding Doors**,—Cost, 41-51%.

Sliding doors, 3 to 4 feet wide, hinged together in pairs. Wood sash in middle, upper half or two-thirds of each door. (a) Hand operated; (b) admits daylight; (c) clear height is same as clearance under trusses; (d) most economical type of round-the-corner door.

(2) **Structural Steel Sliding Doors**,—Cost, 42-52%.

Separate sliding doors, 8 to 10 feet wide. (a) Hand operated; (b) clear height is same as clearance under trusses; (c) fire-resisting; (d) most economical type of steel round-the-corner door.

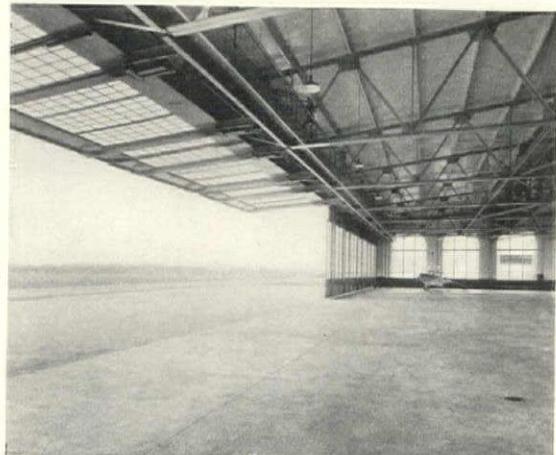
(3) **Tubular Steel Sliding Doors**,—Cost, 48-58%.

Separate sliding doors, 8 to 10 feet wide, steel sash in upper half or two-thirds of each door. (a) Hand operated; (b) admits daylight; (c) clear height is same as clearance under trusses; (d) fire-resisting; (e) economical.

(4) **Steel Rolling and Cantilever Doors, Motor Operated**,—Cost, 90-100%.

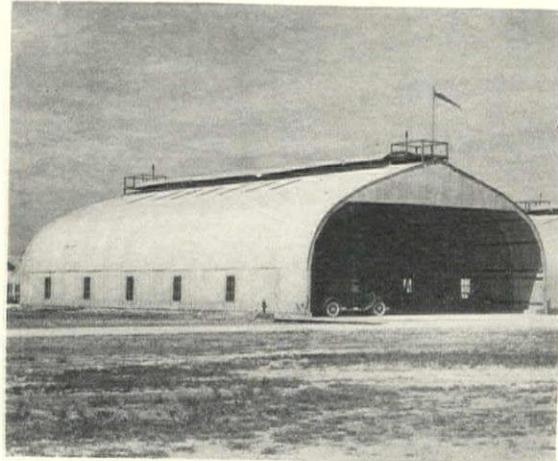
Door is usually made in 3 or 4 sections with posts between. Posts either swing or slide out of the way. (a) Saves floor space; (b) fire-resisting; (c) clear height is same as clearance under trusses; (d) may be operated in sections.

(Compiled by The Austin Co. The cost is in percentages of the most expensive type.)



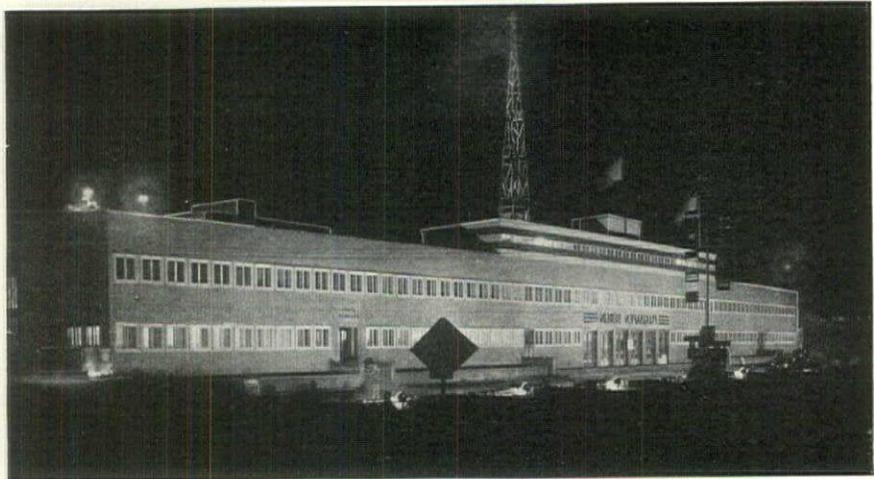
Courtesy "Airway Age"

Hieser



All-metal welded hangar at Houston, Texas. The type of construction is economical

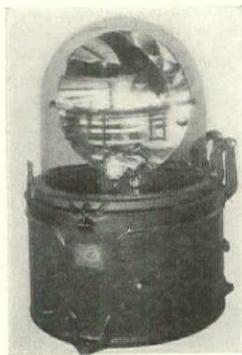
Floodlighting of airport buildings should be designed to develop maximum visibility to pilots. Glare and spottiness should be avoided. The Templehof Airport, Berlin, Germany. Paul and Klaus Engler, Architects



Klinke



Scherl

Photos. Courtesy  
General Electric Co.

Twenty-four inch rotating airplane beacons. Beacons should be installed at an elevation high enough to clear immediate obstructions, and should be of the two-color radio type. For large airports they are designed to develop two million candle power with a 5 degree beam spread, and should be visible from all angles for a distance of at least ten miles. The lighting of airways permits the use of a smaller unit, but makes the positive identification of airport lighting, by color, intensity and radio signals of great importance

## LIGHTING

Provision should be made for the following classes of lights:

1. **Signal lights.** A. *Revolving beacon.* intensity from 2 to 4 million candlepower, 1,000-watt lamp. *Location:* 50 foot tower, preferably near field control room. *Type:* two-color radio automatic revolving.

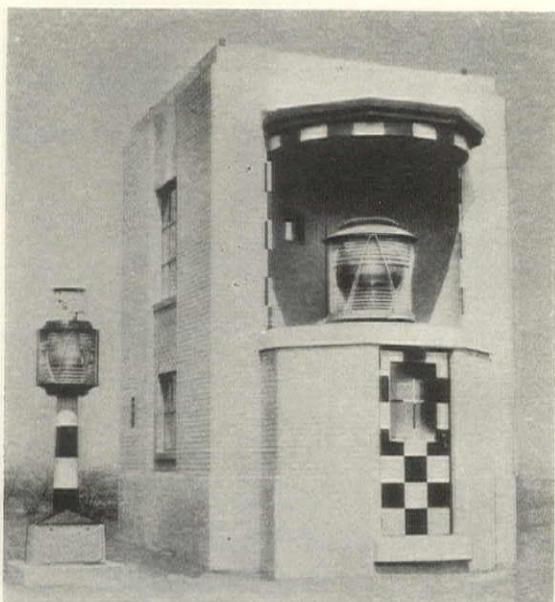
B. *Ceiling light.* 500-watt, narrow beam light, located near control room.

C. *Construction lights.* 100-watt lamps, in multiple circuits, located on every high portion of airport structures.

2. **Flood lights.** A. *Building lights.* Installations vary with the importance of the airport. It is desirable to flood-light the main structures, especially hangars. Roofs should be lighted in all cases where they are adjacent to landing areas. 200-watt lamps may be used, the type of reflector varying with the installation. Glare should be avoided in all cases and light distribution should be even.

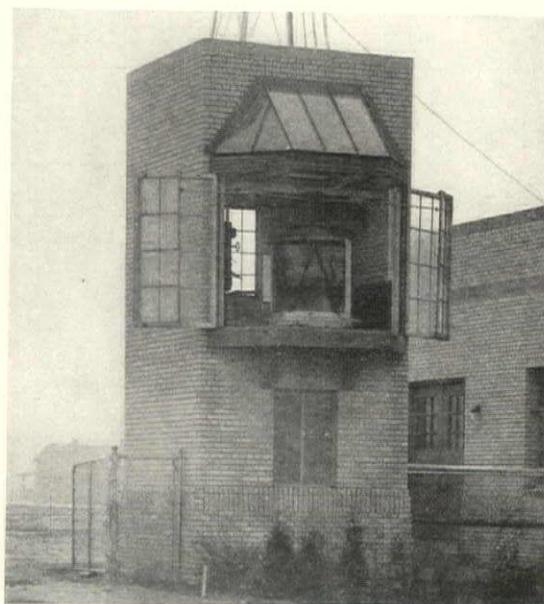
B. *Field lights.* Two types are in use, the arc light and incandescent bulb, the type and wattage varying with the field requirements. Wattage from 1,500 to 10,000 is employed. Field flood-lights will usually be housed in a small separate building placed to provide highest efficiency for landings and take-offs. They should be controlled, however, from the field control station. Two independent power sources are necessary to provide auxiliary field lights in case of the failure of the main unit.

The subject of lighting is a most important one, and with subsequent airplane development will become increasingly so. Each problem is a special one, and lighting engineers should be freely consulted for efficient solutions, and minimum lighting standards for airports may be obtained from the Aeronautics Branch of the Department of Commerce.



*Courtesy Sperry Gyro. Co.*

Field floodlighting equipment of the arc type at Bettis Field, Pittsburgh, Pa. The light is protected when not in use by circular doors below the canopy. Notice the markings and the auxiliary incandescent light. Kenneth Franzheim, Architect



*Heiser*

A similar installation at Cleveland, Ohio. The building forms a base for a structural frame supporting a radio beacon. The Austin Co., Architects and Engineers

## FIRE PROTECTION

**T**HE fire hazard in airplane hangars is great, due to the nature of buildings and the storage of highly inflammable materials within them, and all possible precaution should be taken to prevent the inception and spread of fire. Means of accomplishment are divided into three parts.

**1. Structural.** In all cases hangars should be built of incombustible materials as completely as possible. Construction should avoid the creation of flues, and trusses should be enclosed where possible to form separate roof areas and to prevent drafts through truss space. Separate spaces surrounded by adequate fire stops should be planned for operations tending to increase fire risk, such as doping, fueling, motor cleaning, etc. Fire doors of the usual type are not practical for use in hangars, due to the necessity for an unobstructed interior space. In large structures it might be possible to provide for the installation of thermally operated metal curtains of the roll-up type in the truss space. The automatic closure of hangar doors would tend to prevent drafts, as would a ceiling of incombustible material installed under trusses. Heating plants should be installed in a separate building or completely enclosed by fire-proof construction.

**2. Primary Protection.** Hangars, regardless of size, should be protected with automatic sprinkler systems. In large structures water curtains, operating from ceilings, walls and floors,

and controlled by rate-of-rise systems, should be installed in conjunction with normal overhead sprinklers. Installations should sectionalize hangar space into areas not exceeding 10,000 square feet. Wet pipe systems may be installed, and in unheated hangars a pre-action system operated by rate-of-rise controls is advocated by engineers. In all sections served by sprinklers, drains and scuppers should be installed. One scupper to every 2,500 square feet of floor area should be specified to prevent flooding. The sources of water vary with the installation, but in large structures indicating a large investment two independent sources, one fully automatic, are desirable.

**3. Secondary Protection.** Automatic protection should be supplemented by approved types of portable extinguishers. Provision for their installation,—the type and size depending upon the building and local conditions—should be made during construction. Care should be taken that the operation of doors, etc., does not render them inaccessible.

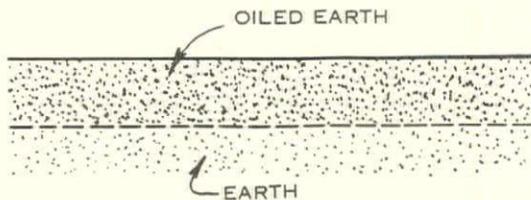
The importance of the subject should be appreciated. Adequate research has been done regarding it, and reports of complete tests under varied conditions may be obtained from the Aeronautics Branch of the Department of Commerce, and the Standards of Recommended Practice from the National Board of Fire Underwriters.

## SIZES OF STANDARD LAND PLANES

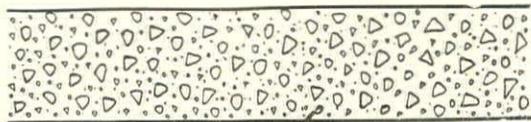
MANUFACTURER	NO. OF PASS.	DESIG.	SPAN	LENGTH	HEIGHT	WEIGHT (Empty)
Boeing Airplane Corp.....	1	100	30'-0"	20'-8"	9'-7"	1,882
Boeing Airplane Corp.....	1	Monomail	59'-1"	40'-8"	11'-6"	4,610
Crown Motor Carriage Co.....	2	Custombilt B-3	28'-0"	21'-6"	7'-0"	1,242
Aeromarine Klemm Co.....	2	AKL-25A	40'-2"	21'-6"	8'-6"	815
Waco Aircraft Corp.....	3	Mod. F-K	29'-6"	20'-8"	8'-4"	1,095
Curtiss-Robertson Airplane Mfg. Co.	3	Robin C-1	41'-0"	25'-10"	8'-0"	1,638
Paramount Aircraft Corp.....	4	Cabinaire 165	33'-2"	24'-7"	9'-0"	1,620
Spartan Aircraft Co.....	4	C4-225	50'-0"	31'-6"	9'-0"	2,325
Boeing Airplane Corp.....	5	204	39'-8"	32'-6"	12'-0"	3,358
New Standard Aircraft Corp.....	5	D-25-A	45'-0"	26'-6"	10'-7"	2,055
Bellanca Aircraft Corp.....	6	Pacemaker	46'-4"	27'-10"	8'-4"	2,363
Travelair.....	6	A-6000-A	54'-5"	31'-2"	9'-2"	3,325
Lockheed Aircraft Co.....	7	Vega Mod. S-B	41'-0"	27'-6"	8'-4"	2,490
Buhl Aircraft Co.....	8	CA-8-A	48'-0"	36'-0"	10'-0"	3,542
Fokker Aircraft Corp.....	9	AF-14	59'-5"	43'-4"	12'-4"	4,245
Bach Aircraft Corp.....	10	3-CT-8	58'-5"	36'-10"	10'-0"	4,785
Stinson Aircraft Corp.....	12	SM-6000	60'-0"	42'-10"	12'-0"	5,475
Fokker Aircraft Corp.....	14	AF-10-A	79'-3"	50'-7"	12'-9"	7,780
Ford Motor Co.....	15	5-AT-C-S	77'-10"	51'-4"	14'-6"	8,900
Ford Motor Co.....	16	S-41	78'-9"	45'-2"	15'-3"	11,500
Sikorsky Aviation Corp.....	17	5-AC-C	77'-10"	49'-10"	12'-0"	7,600
Boeing Airplane Corp.....	18	80-A	80'-0"	55'-0"	15'-2"	10,417
Keystone-Loening Aircraft Co.....	20	Patrician	86'-6"	61'-7"	13'-4"	10,200
Curtiss Aeroplane & Motor Co.....	21	Condor	91'-8"	57'-1"	16'-6"	11,352
Fokker Aircraft Corp.....	32	AF-32	99'-0"	70'-2"	16'-2"	14,910

### TYPES OF RUNWAY SURFACES

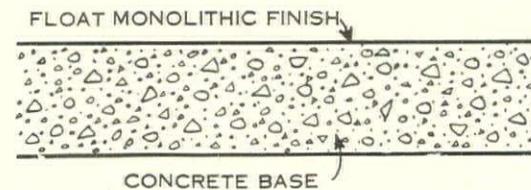
The construction of runway surfaces follows good practice in road building, although loose gravel, cinders, etc., should be avoided for a top surface. The sections, with costs expressed in percentages of the most expensive type, are from data collected by The Austin Co.



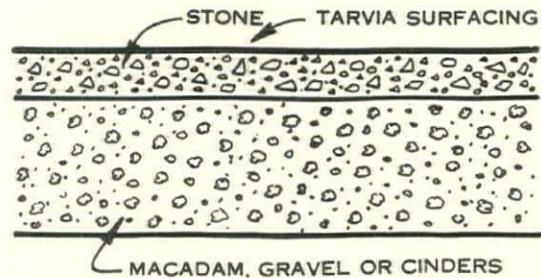
No. 1. Cost: 10-20%



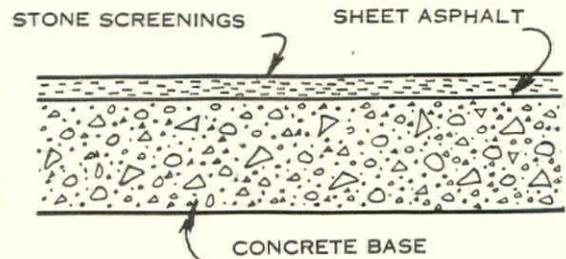
No. 2. Cost: 55-65%



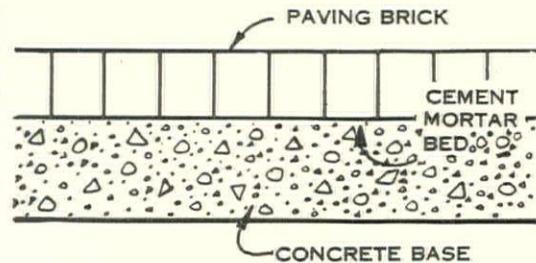
No. 3. Cost: 59-69%



No. 4. Cost: 65-75%



No. 5. Cost: 90-100%



No. 6. Cost: 90-100%



## POLICY AND OPINION



### WHAT HAVE WE DONE?

ONE century of railroad transportation has caused unparalleled changes in the social, industrial, economic and political conditions of the world. The reason is obvious. The railroad, supplemented by the steamship, has provided a rapid and safe means of distribution in and between all countries; and peaceful intercourse between all peoples has resulted in worldwide distribution of natural and manufactured products and knowledge and culture,—the latter, knowledge and culture, the most important. As a natural consequence, modern transportation has affected,—revolutionized,—the art of building. Building is an essential function of every human undertaking. There have been developed new types of buildings particular to railroads and a coincident change in the oldest types of buildings.

The buildings that are particular to railroad transportation have been distinguished by the continuous improvement of the plan, equipment and construction coincident with its development. This has been the work of engineers largely. The problems involved have been extraordinary in many respects and have had to do with the transportation of people and freight.

Today, a passenger terminal receives and discharges daily a number of persons comparable to the total population of sizable cities. Their safe, convenient and rapid circulation through the structure is the principal objective, and it is satisfactorily effected by a suitable plan arrangement. The same is true for the specific purposes of freight terminal warehouses, locomotive and car shops, roundhouses and the large assortment of minor structures. Securing efficient use, satisfactory occupancy and durability has been the primary objective, and it has been attained. There is another desirable and equally essential feature of railroad passenger terminals, in addition to efficient use and satisfactory occupancy, which has to do with the *appearance* of these structures.

Large sums have been expended to make passenger terminals imposing in appearance corresponding to their necessarily great size. Apparently a studied effort has been made to attain this objective. Use has been made of ancient styles of architecture in the vain attempt to adapt them successfully to a phase of an important modern undertaking,—railroad transportation. These ancient styles were developed for their own spe-

cific purposes and successfully, but there is no relation whatever between the uses of ancient structures and those of the modern railroad passenger terminal.

The architect who understands the causes of the changing phases of former civilizations and the controlling influences of our present civilization, and who possesses a reasonable foresight of the future cannot fail to be inspired by the purpose of a great passenger terminal and its relation to our civilization. Such understanding and inspiration have been lacking evidently among some of the American architects who have designed our great terminals. This is evidenced by a comparison of American with foreign examples.

Even in the old Union Station in Kansas City, utterly inadequate structurally and architecturally, one could not fail to be strangely moved by the departure of the many long overland trains to the southwest or the trans-Rocky Mountain states which were the bearers of the builders of great empires, and to be moved as well by the incoming trains bearing those who came to traffic in merchandise and finance, or to seek pleasure. It was truly the gateway of a nation.

Railroading in its construction, operation and purposes is an arduous undertaking. It is concerned with the building and maintenance of empires,—a vigorous, potent thing that should be represented likewise architecturally, emblematic of the masterful, vital spirit which has regenerated the world. Are American passenger terminals representative of this spirit? Can this spirit be represented by the styles of Greece, Rome or the Renaissance? The true answer is found in those great, vigorous effigies that guard the imposing portal to the terminal in Helsingfors.

Foreign passenger terminals, as illustrated in this issue of *THE ARCHITECTURAL FORUM*, incorporate either existing indigenous architectural elements or those appropriately devised for the purpose of the structures. They have no details or arrangements that are reminiscent in the slightest degree of other peoples or their architectures. Their purpose is made evident by appropriate appearance. The foreign terminal is given a setting suitable to what it is,—a people's gateway to distant parts. Foreign architects have evidently sensed and then expressed the true function of

the passenger terminal in an architecturally appropriate manner.

The utilitarian and minor American railroad structures, of unquestioned efficiency, are not distinguished by their appearance. Engineering efficiency has been the dominating influence, and the element of a simple but pleasing appearance has been totally wanting. Again the foreign

architect has collaborated with the engineer in producing utility buildings of all types which do possess a quality of appropriate beauty,—unostentatious, simple and inexpensive.

Railroad transportation buildings of all types offer a distinct challenge to American architects in the matter of appropriate appearance, and how have the architects answered it?

## LOOKING AHEAD

AS we come to the end of 1930, the thoughts of all are centered on 1931. What will the year hold for business in general and the architectural profession in particular? Will there be a gradual recovery? Can we look for better times at the beginning of the new year? These are vital questions and not easily answered. The facts about the past year in the building industry will soon be published and the curves platted showing the descent in building volume, building value, prices and employment. Forecasts of the future will be made. THE ARCHITECTURAL FORUM is conducting an extensive research in the architectural field, ascertaining the actual conditions in all offices throughout the United States regarding work in progress, projected and in prospect. The results will be published in the January issue. Proper evaluation of these facts, presented in usable form and properly interpreted, will do much to indicate what 1931 holds for architects and for the building industry.

The important question is, "How can we, as architects, improve conditions and increase building activity?" The depression that has caused the severe unemployment among architectural draftsmen, due to fewer commissions in architects' offices, can be remedied only by more active promotional efforts on the part of architects. Relieving unemployment in this field depends largely on the architects' ability to influence those who can and should build to begin immediately.

There has been an overbuilding of certain types of structures in certain localities, but there is a shortage of certain other types of buildings in almost every section of the country. The architects who will be busiest in 1931 will be those who carefully analyze the building needs in their communities and who make every effort to influence civic bodies, institutions, government departments, and private individuals to undertake a definite building program at once. There is

nothing unethical or unprofessional in this procedure; it is rather a civic duty. The fact that there may be personal gain to the architect does not alter this fact so long as he devotes his energy to the development of sound projects to meet definite needs.

Determination of those needs is the first step. The conditions in different localities vary and must be carefully considered. However, in general, the greatest opportunities seem to lie in the promotion of institutional, governmental and public buildings, such as schools, colleges and university buildings, hospitals and asylums, jails, city and town halls, municipal buildings, court houses, fire stations, police stations, libraries, civic auditoriums, etc.

Residential building has fallen so steadily and in such volume during the past few years that it has been held by some to be largely responsible for the diminishing purchasing power which was a factor in the deflation of the past year. Because such buildings can be erected at less cost than at any time in recent years, an added impetus can be given this work, not only as far as individual dwellings are concerned, but in housing developments as well.

The modernizing and improvement of existing buildings by alteration and addition offer an opportunity for the architect and in many cases may be the means of bringing about the consideration of an entire rebuilding, or the advisability of replacing the old building with a new one.

By concentrating effort on buildings for which there is a known need,—by urging the immediate building of structures now contemplated for future construction,—by presenting to those who might build the advantages of building now,—by having all factors of cost, financing and plan in definite form for such presentation,—the architect will be an important factor in the economic recovery to be hoped for and worked for in 1931.

# BUS TERMINAL CONSTRUCTION

BY

JOHN C. FISTERE

**T**HE engineering problems connected with bus terminal construction arise, for the most part, from the efficient handling of the buses themselves, getting them into the loading area, maneuvering them into position for loading and unloading, and getting them out of the building again. The problem might be likened to that of a hypothetical garage and railroad station. It is one of vehicle and passenger circulation, and the solution must be worked out on that basis.

## ENTRANCES AND DOORS

Working from the outside in, the first consideration must be the entrance. The average bus is about 8 feet wide,—seldom more than that, and sometimes less,—which means that a straight-in drive should be at least 10 feet wide. Unless double-deck buses are accommodated headroom allowance need not be more than 13 feet, 6 inches; in many states, the maximum height for vehicles is 12 feet, 6 inches. In some instances, it will be advisable to plan the entrance door on an angle to permit the bus to start its turn before entering the building. The width

of the entrance then depends on the angle of the turn. For a 45-degree angle, 18 feet is a sufficient width. The type of door to be used depends, of course, on the amount of money available. In warm climates, no door is needed; roll and vertical slide doors are preferred to swinging doors or to horizontal slide doors.

## HEADROOM

Headroom in the terminal itself depends more upon the type of baggage loading and passenger loading than upon the dimensions of the bus. If baggage is carried upon the top, it must be remembered that space is to be allowed for an attendant. A mezzanine balcony built out over the loading platform to give easy access to the top of the bus should be about 10 feet above the main floor level. If the terminal is planned with stairs or ramps leading down to the platforms, a landing for access to baggage should be included at the same height as the bus top.

## RAMPS

Where bus ramps are used, as in cases where the loading levels are above or below the street,



Turntable, 30 feet in diameter, located in the corner farthest away from traffic lanes on the mezzanine floor of the Kansas City Union Terminal. Wight & Wight, Architects



Ingress and egress lanes leading to and from a turntable in the B. & O. bus station in New York. Sloan & Robertson, Architects

a 15 per cent grade is about the maximum for safety. By far the most economical floor is concrete with a rough wood or carpet float finish, since a roughened finish is essential to prevent skidding. A metallic hardener in the finish will add years of life to the flooring. For passenger ramps, the ideal grade is 10 per cent or less; their finish should also be roughened. The experience of railroads shows a preference for abrasive tile, although bluestone cement with an abrasive ingredient may be used.

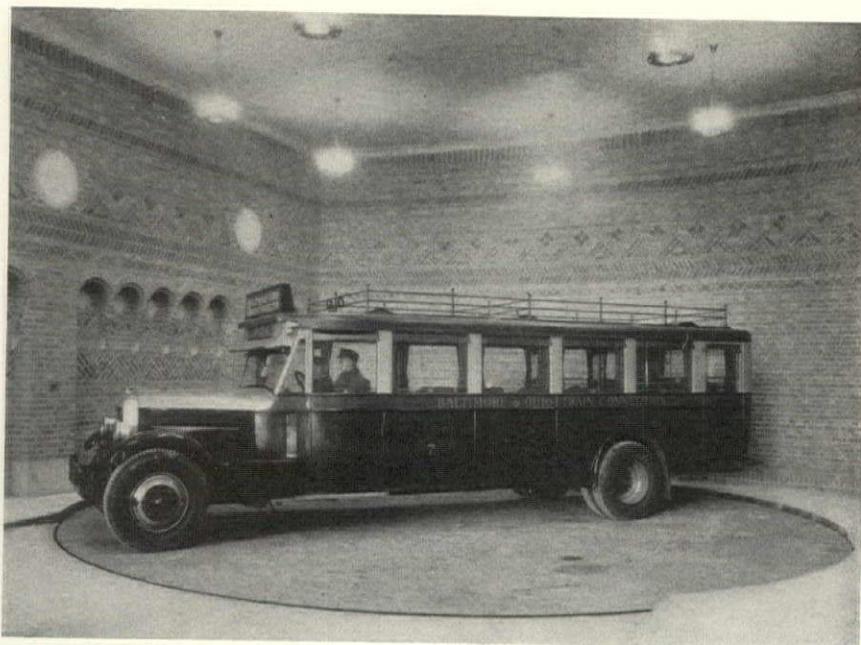
The widths of passenger ramps should be in multiples of 2.7 feet since that is the amount of space occupied by the average passenger carrying a small amount of baggage. Probably the most advisable width is 8.1 feet, which allows three lanes of pedestrians. While landing areas on

ramps are not essential, they may be advisable for loading baggage, as was mentioned already. Stairways are planned on the usual rule of 18, that is, the combined measurements of the riser and tread should equal 18 inches. For bus terminals, steps should be comparatively broad and low; a tread of 11 inches is recommended, which means that the riser may be about 7 or  $7\frac{1}{2}$  inches. Approximately 1 inch is allowed for the nosing. A criss-cross pattern of metal strips, or any of the better abrasives is satisfactory for stair flooring. In this connection, it might be well to recall that ramps discharge pedestrians at a rate one and a half times that of stairs, the figure being 10 passengers discharged per foot of width per minute on stairs, and 15 on ramps.

The mechanical equipment of bus stations is



Another view of the mezzanine floor of the Kansas City Union Terminal, showing the relation of the turntable in the right background to the sawtooth platforms. Eight skylights are introduced in the roof, the span of which is 80 feet



The turntable in the B. & O. station in New York. It is controlled by an electric switch, and its mechanism is reached by a trap door in the floor

somewhat similar to that of garages, and in most cases, a garage is an integral part of the terminal itself. The pitch for floor drains should be about  $1\frac{1}{2}$  inches, and the number of drains need not be great so long as the drains are well placed. Three or 4-inch drains should be adequate in most cases.

#### HEATING AND VENTILATING

Steam is generally preferred as a heating medium, although hot water has certain advantages if the freezing of pipes and heating surfaces in exposed places is carefully guarded against. A temperature of approximately  $50^{\circ}$  is sufficient for the loading areas, and  $70^{\circ}$  for the rest of the terminal. The larger part of the building equip-

ment for the loading area should be located near the door. Radiators or coils should be located as near the floor as possible but protected to prevent damage by contact with buses. Where the loading area is large, a unit ventilating system may be advisable; the type which does not occupy excessive floor space has been used successfully in many garages. No workable formula is possible for ventilating equipment; the number of exhaust grilles should be generous in the sections where stagnation of air is most common,—that is, away from the entrances and ramps.

#### SERVICES

The devices which are necessary for bus service should be located in the storage area in stub



The basement level of the Kansas City Union Terminal, which has approaches from parallel streets. The ramp to the mezzanine may be seen in the background. The disadvantage of the loading platform is that passengers must step into the vehicle area to alight from or to board the buses

terminals and apart from the actual loading areas in through stations. Such equipment includes, of course, gasoline, oil, and water supply fixtures; car washing and cleaning equipment; and general repair apparatus. Grease racks open clear to the floor, or the pneumatic type which raises a car on a platform above the floor, are to be preferred to the open pit, which constitutes a real hazard to the mechanic because of the accumulation of carbon monoxide gas.

#### TURNTABLES

For a terminal which is to employ a turntable, the architect is first concerned with the space to be allotted to it, and its position in the plan. Ordinarily, a table with a diameter of 35 feet will accommodate the largest buses in use today. Its position is of course decided upon by the positions of the landing platforms and the driveways.

#### PLATFORMS

Reinforced concrete platforms, 8 inches high, are recommended by most bus companies. Island-type platforms should be at least 30 feet in length to provide room for one bus; stall platforms at right angles to the driveway should be the same length. It is not necessary in other types to make the platform as long as the bus, except for those buses which have front and rear entrances. Platforms which do not have stairs leading down to them need not be more than 5½ feet wide, and in some cases, they may be as narrow as 2½ feet. Platforms with ramps or stairs ought to be at least 11 feet wide. A guard rail around the dangerous sections of the platform is advisable.

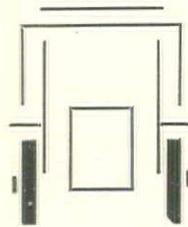
#### BAGGAGE AND CHECKING

The baggage room should be for the double purpose of checking parcels and bags and for

handling them for immediate relay to the buses. A metal-covered counter is standard for the receiving desk. Since the baggage room is usually located in a conspicuous place near the entrance where space is valuable, it might be wise to have conveyors transport the luggage to a storage room in the basement or mezzanine or in some other relatively unimportant section. Leading from the baggage room there should be a separate passage to a balcony over the bus-loading platform or to the platform itself.

The other facilities of the stations are similar to those in railroad stations. There has been a tendency, however, in bus transportation to break away from the standard ticket windows which are parts of every railroad station. Instead, open counters, with all ticket paraphernalia beneath, are being used. The most approved height for the counter is 3 feet, 8 inches, since that, by actual test, permits the agent to work with greater speed, and less fatigue. If the enclosed cage is used, 2 feet, 3 inches is considered the most desirable width for the opening. Some railroad men, however, prefer a wider type, 5 or 6 feet. If divided stalls are used, the partitions should be about 6 feet apart; if the open counter is decided upon, that much space must be allotted for each worker. It is also advisable to provide tables for writing out complicated tickets, because an agent is likely to become confused by passengers' questions if he is working directly in front of them. A baggage rack is often advisable below the counter.

Finally, the materials selected for floors, walls, and roofs must be such as will show up well on the company's maintenance chart. Under the abuse which bus terminals are certain to receive, poor materials and faulty construction will be revealed, to prove the contention that transportation buildings must be built for permanence.



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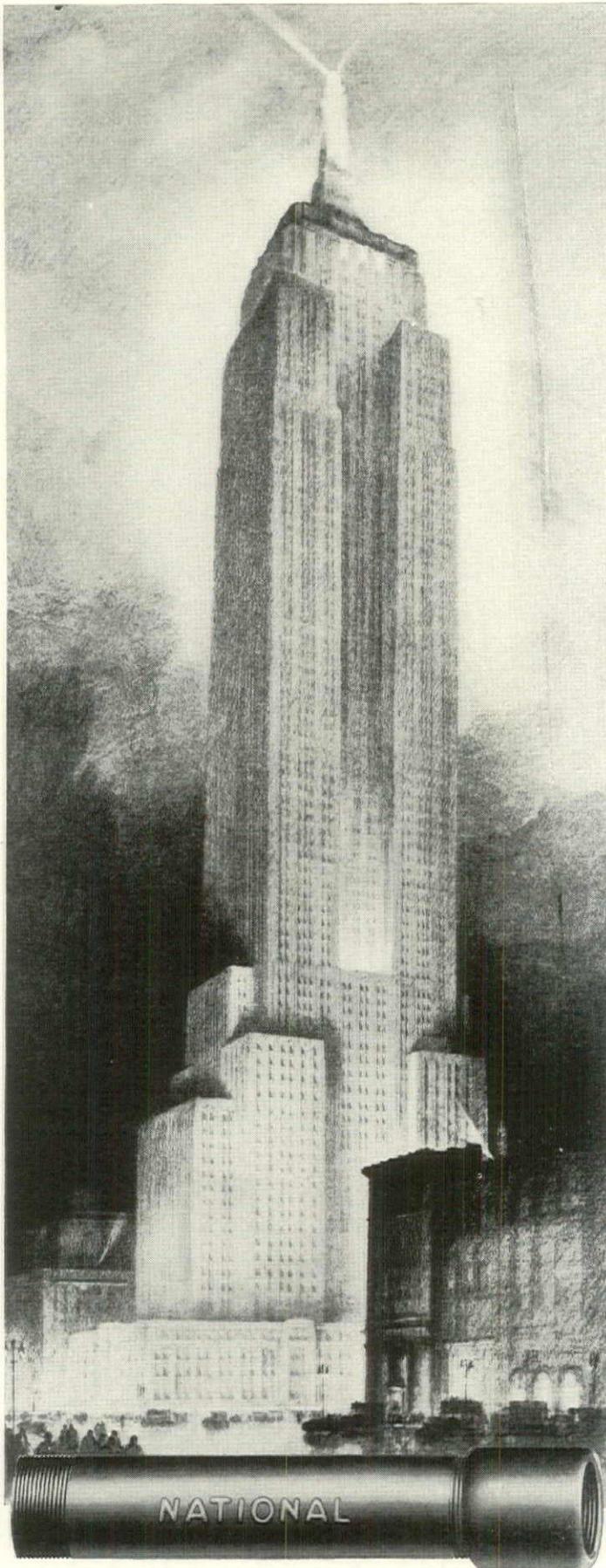
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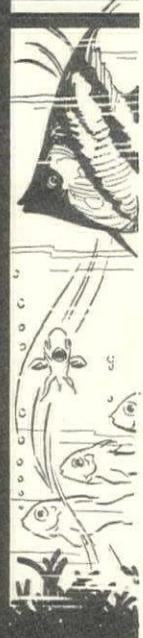
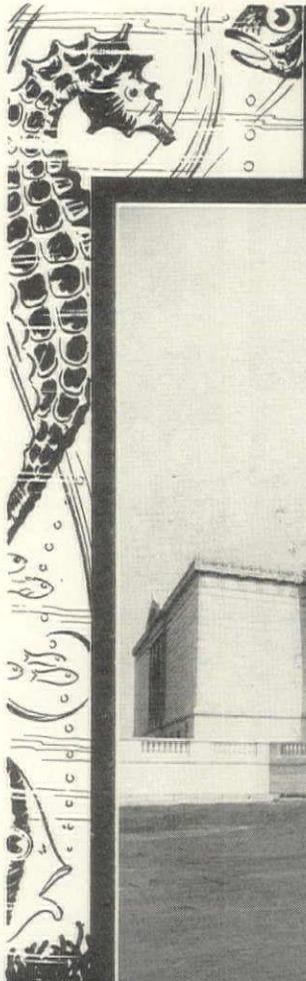
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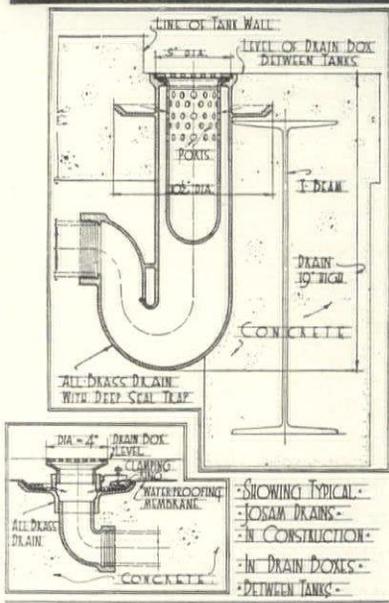


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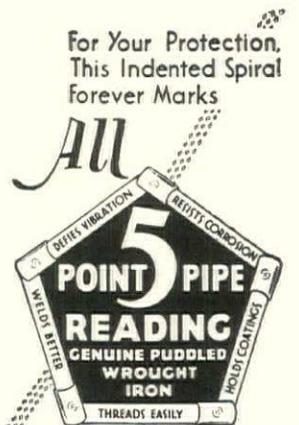
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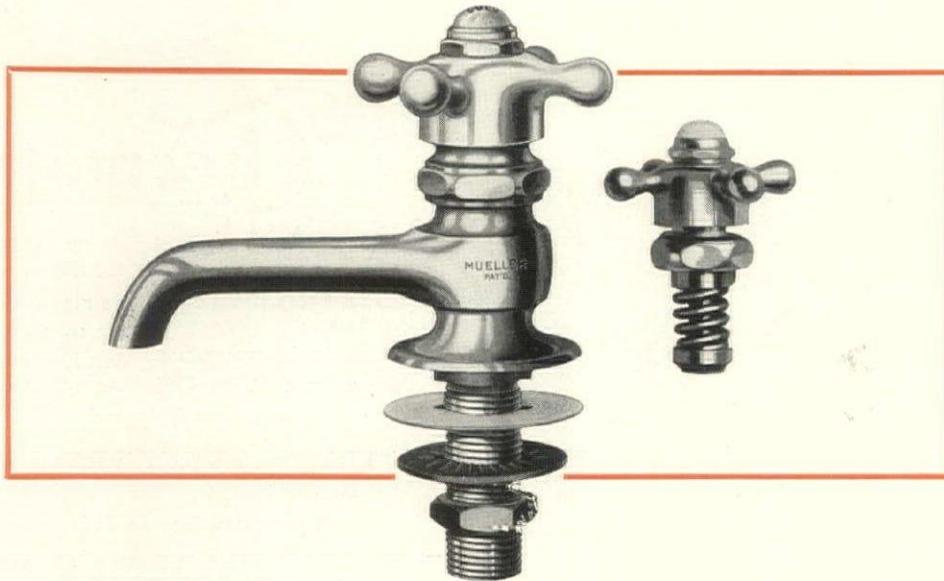
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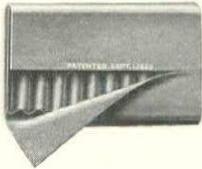
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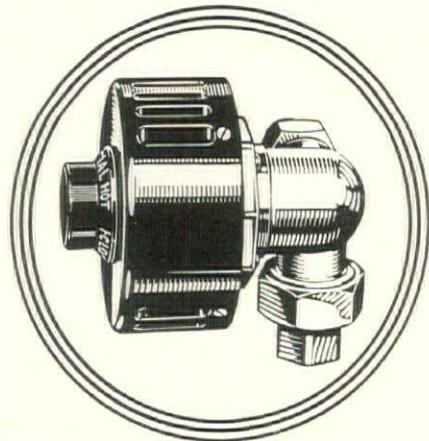
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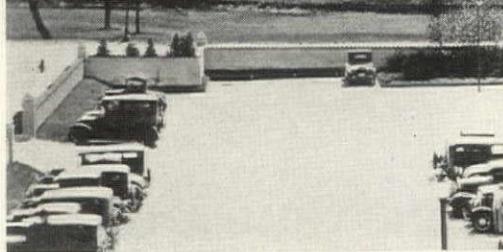
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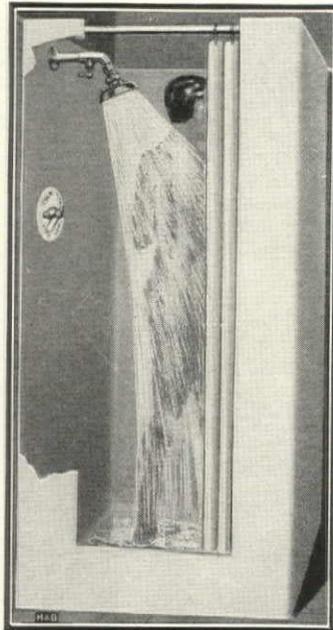
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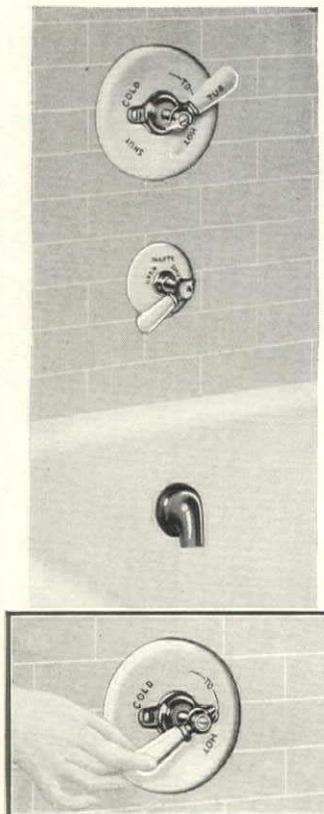


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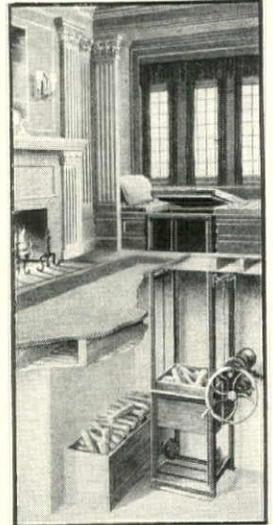
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This house of seven bathrooms has Speakman Showers and Fixtures throughout, including the

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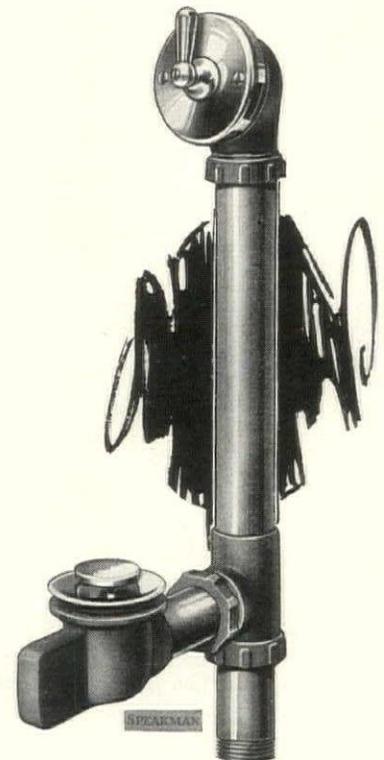
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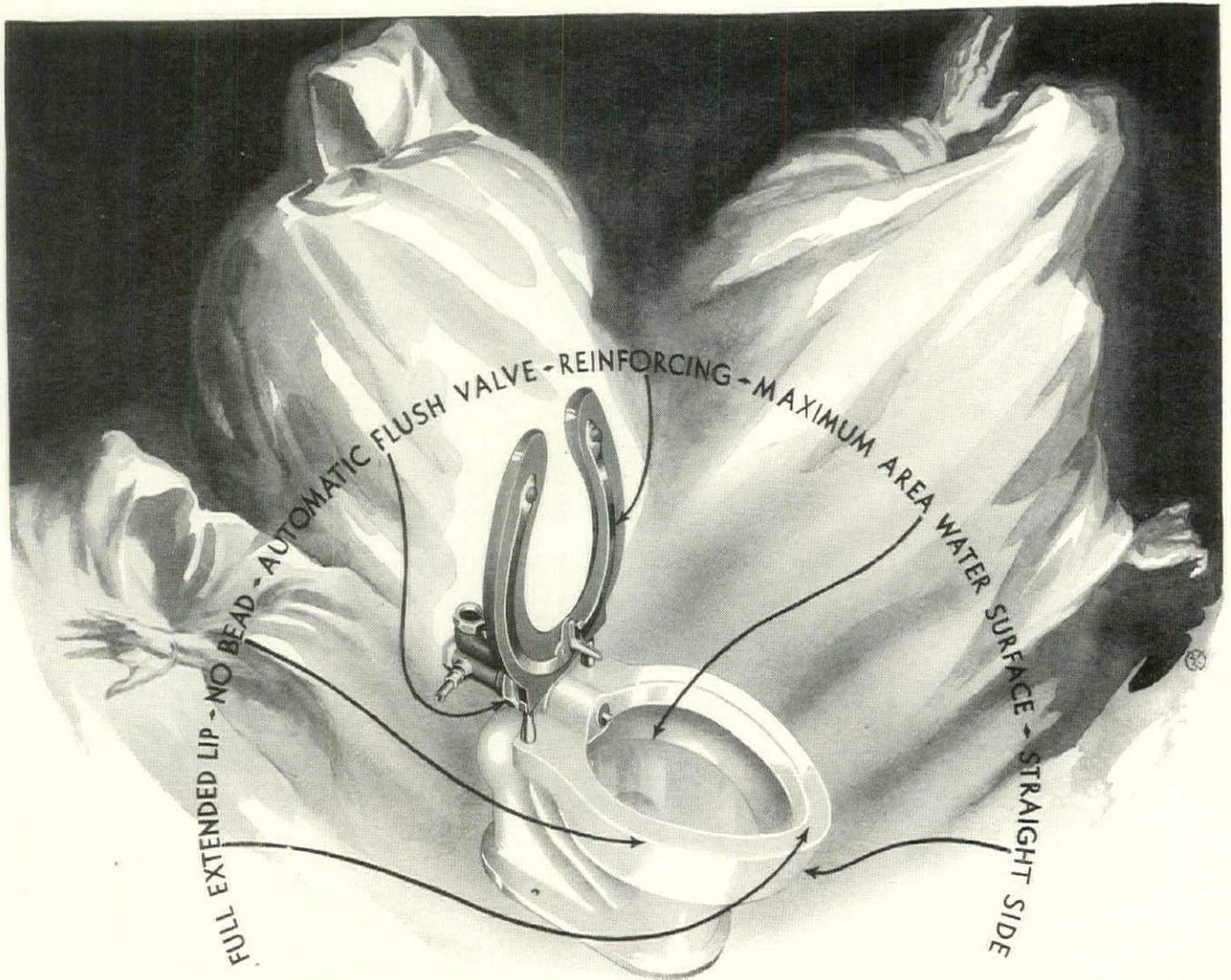


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# SPEAKMAN SHOWERS *and* FIXTURES



## A New Closet That Helps Rout Three Ghostly Shadows

The Clow Soldier of Sanitation has built a new closet to rout the three grimmest shadows that hover in the toilet rooms of public buildings, schools, hospitals, industrial plants and similar places.

He has made the bowl low, semi-lipped

with a form-fitting seat for comfort. He has eliminated the dirt-catching bead that extends around the outside top of more old-fashioned closets.

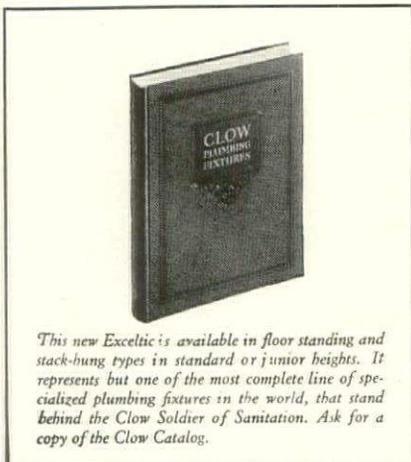
He has made the bowl sides perpendicular. Anything dropped into the bowl will fall directly into water. Nothing can stick to the sides, because nothing can easily hit the sides.

And even careless minds are defeated and forstalled by the Clow-Madden Valve

that flushes the bowl *automatically* after every occupation.

The many records of ten, fifteen and even more years of trouble-free service established by this valve attest to the long life, and negligible repair costs that can be yours.

And with this brand new closet the Clow Soldier of Sanitation scores another big victory for you against your three most hideous toilet room enemies: *Failure—Short Life—and their ghostly brother Insanitation.*



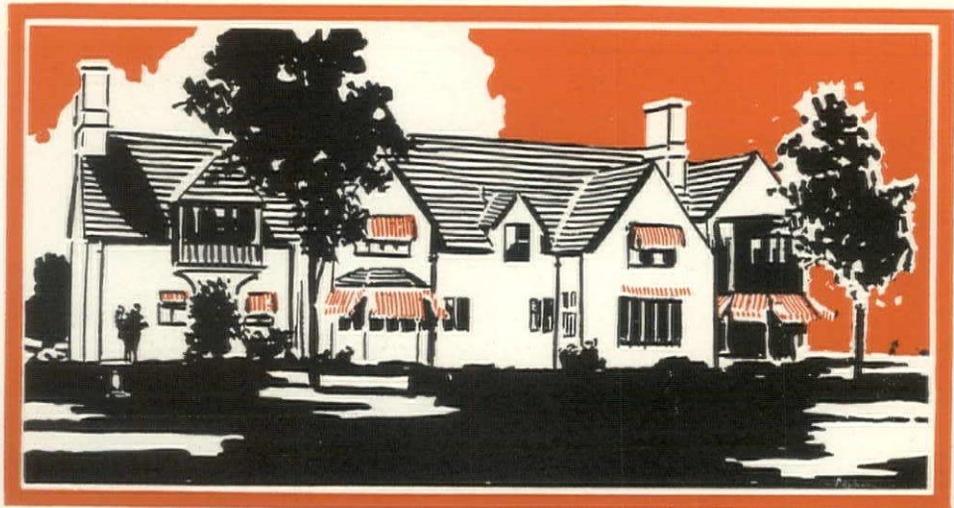
*This new Exceltic is available in floor standing and stack-hung types in standard or junior heights. It represents but one of the most complete line of specialized plumbing fixtures in the world, that stand behind the Clow Soldier of Sanitation. Ask for a copy of the Clow Catalog.*

# CLOW

CHICAGO

PREFERRED FOR EXACTING PLUMBING SINCE 1878

Consult your architect



Home of W. P. Harris, Grosse Pointe Park, Michigan, heated by a Gar-Wood unit.

*In this home the  
GAR-WOOD gave*

# TWICE THE HEAT... AND SAVED \$264 A YEAR BESIDES

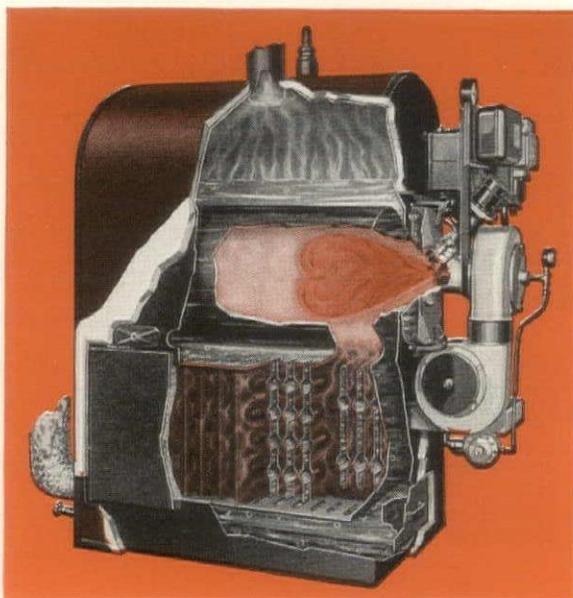
Built like an automobile radiator, the Gar-Wood boiler is designed to secure an almost complete transfer of heat to the water sections. The Gar-Wood burner is designed to effect almost complete combustion from the time it starts. Designed for and engineered into each other, the Gar-Wood burner and boiler form one complete balanced heating unit... to provide automatic heat from either oil or gas at a cost that is less than coal.

But what do home owners who have installed the Gar-Wood say about it? Ask Mr. W. P. Harris of Grosse Pointe Park, Mich. He had been using an oil burner... in a boiler built for coal firing... with a separate gas heater to heat his domestic water supply. He rebuilt and enlarged his home so that it required double the amount of radiation. After installing a Gar-Wood unit with its built-in water heater, Mr. Harris says:

"During the past heating season, from September 1st to June 1st, I used only one-half of one per cent more oil with the Gar-Wood plant than with the previous oil burning installation, and I heated twice the amount of radiation. In addition I used the Gar-Wood to heat all my hot water, reducing the gas bills over the previous year from an average of \$38.00 per month to an average of \$16.00 per month." A clear saving of \$22.00 per month or \$264.00 a year.

For two years the Gar-Wood has met the test of every practical operating condition in private homes. It has been repeatedly proven that its unprecedented efficiency reduces heating costs far below that of any other type of heating unit. Your clients will expect you to tell them all about the Gar-Wood. The coupon will bring you complete information.

Responsible organizations now distributing through the heating trade should investigate the Gar-Wood franchise. Write the factory for details.



GAR WOOD ENGINEERING CO.  
4196 Bellevue Ave., Detroit, Mich.

Gentlemen: Send me... without cost or obligation... a copy of "A New Principle of Generating Heat at Low Cost."

Firm Name

Address

City

State

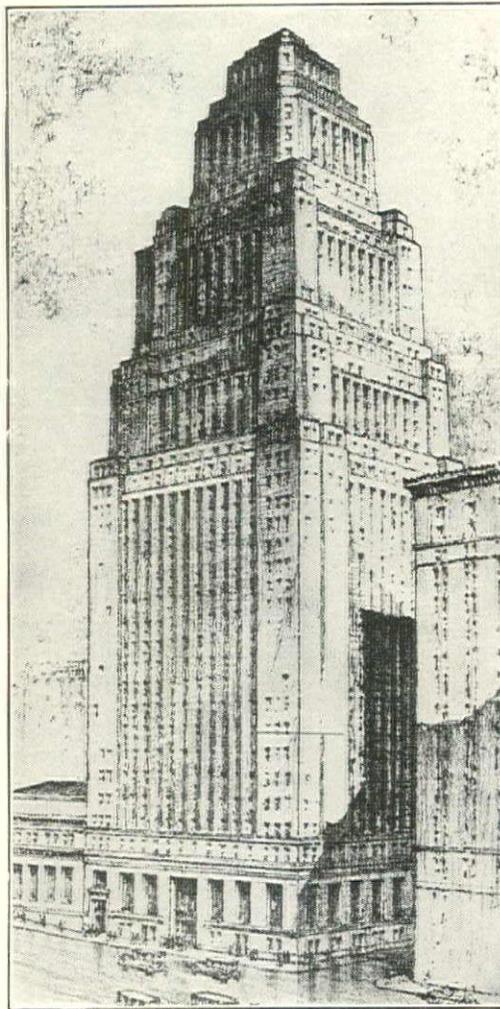
F-12-30



GAR WOOD ENGINEERING CO.  
4196 Bellevue Ave. Detroit, Mich.

*Gar-Wood*

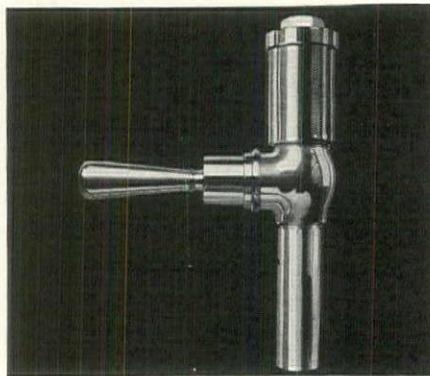
## MEETING ARCHITECTURAL STANDARDS OF QUALITY



Equitable Trust Building, 11 Broad Street, New York, Architects: Trowbridge & Livingston, New York; plumbing contractor: W. G. Cornell, Long Island City, N. Y.; Solid Nickel Silver plumbing fixtures manufactured by Meyer-Sniffen, New York. Located in the center of financial New York, this modern building has 42 floors above ground, is 550 feet high and contains 11,992,071 cubic feet.

## SOLID NICKEL SILVER PLUMBING FIXTURES BY MEYER-SNIFFEN\* IN EQUITABLE TRUST BUILDING, NEW YORK

The Equitable Trust Building, in addition to being one of the largest of modern office buildings, embodies many new features of beauty, comfort and convenience. Throughout this imposing structure Solid Nickel Silver plumbing fixtures have been installed—thereby insuring constant cleanliness and life-long service... Solid Nickel Silver plumbing fixtures are now readily supplied in practically any quantity or style required for all types of quality installations. They are



18<sup>07</sup>/<sub>100</sub> Nickel  
SILVER

corrosion-resistant and not easily marred or broken during installation or use. Solid Nickel Silver has the hardness and toughness of the best bronze—a factor of great importance in connection with the wear-resistance of valve seats. In its silver-like beauty Solid Nickel Silver resembles Pure Nickel and high Nickel alloys. Architects everywhere are specifying sanitary fixtures made of Solid Nickel Silver for buildings that are designed to serve many generations of discriminating tenants.

(\*Diamond Metal is the name used by Meyer-Sniffen Co. to identify its Nickel alloy used in manufacturing Nickel Silver plumbing fixtures. This is a solid white metal and contains a high percentage of Nickel.)



Photo by courtesy of The New York Sun

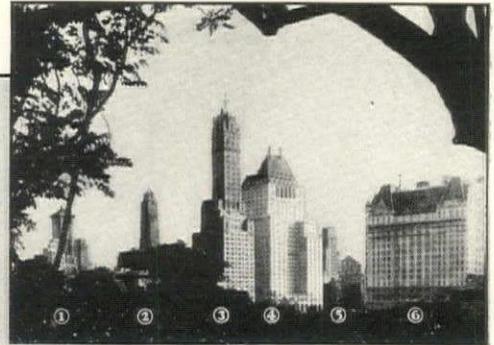


Photo by courtesy of The New York Times

**“BRYANT EQUIPPED”  
BUILDINGS  
in the  
PLAZA ZONE**

**A Change—  
Not a Correction!  
Another “Random Shot”**

1. *Delmonico Building.*  
Architects: *Goldner & Goldner.*  
Electrical Contractor: *J. L. Goodrich*
2. *Ritz Tower*  
Architect: *Emory Roth.*  
Electrical Contractors: *J. Livingston & Co.*
3. *Sherry Netherlands Hotel.*  
Architects & Engineers: *Schultze & Weaver.*  
Electrical Contractors: *J. Livingston & Co.*
4. *Savoy Plaza Hotel.*  
Architects: *McKim, Mead & White.*  
Electrical Engineers: *Tenney & Ohmes.*  
Electrical Contractors: *Walter H. Taverner Corporation.*
5. *Brisbane Building.*  
Architect: *Emory Roth.*  
Electrical Contractors: *P. J. Keogan Co., Inc.*
6. *Plaza Hotel.*  
Architects: *Warren & Wetmore.*  
Electrical Contractors: *Walter H. Taverner Corporation.*
7. *Hotel Pierre.*  
Architects & Engineers: *Schultze & Weaver.*  
Electrical Contractors: *Greer Electric Construction Co.*
8. *Squibb Building.*  
Architect: *Ely Jacques Kahn.*  
Electrical Contractors: *Alliance Electric Company, Inc.*

SOME months ago, we ran an advertisement featuring a photograph, again reproduced in inset, which appeared in the New York Times. All six of the buildings included in this were “Bryant Equipped”. Several weeks ago, there appeared in the New York Sun another photograph of the “Plaza Zone”, taken from almost the same spot. This is reproduced above. Note the two additions to the skyline—The Hotel Pierre and The Squibb Building. These, too, are “Bryant Equipped”. While the New York skyline is constantly changing, those architects and engineers who insist upon the best continue to specify Bryant “Superior Wiring Devices” and contractors who carry out their plans are only too glad to use them, for Bryant Devices, since 1888, have been a standard throughout the world.

A-12

**THE BRYANT ELECTRIC COMPANY**

**BRIDGEPORT  
BOSTON · CHICAGO · NEW YORK**



**CONNECTICUT, U.S.A.  
PHILADELPHIA · SAN FRANCISCO**

50 High Street    844 West Adams Street    60 East 42nd Street

1333 Chestnut Street

149 New Montgomery Street

MANUFACTURERS OF “SUPERIOR WIRING DEVICES” SINCE 1888—MANUFACTURERS OF HEMCO PRODUCTS

# TESTED *and* APPROVED



*Automatic discharge station, Horn & Hardart Co., Philadelphia, Pa.*

*by these leading Institutions*

FOLTIS-FISCHER, INC.  
New York City  
HORN & HARDART CO.  
New York and Philadelphia  
WIL-LOW CAFETERIAS, INC.  
New York City  
HOTEL PIERRE  
New York City  
NEW YORK LIFE INSURANCE CO.  
New York City

COLUMBIA UNIVERSITY  
New York City  
HARVARD UNIVERSITY  
Cambridge, Mass.  
TUCK-RICH CAFETERIA  
Toronto, Ont.  
F. W. WOOLWORTH CO.  
New York City  
STATE TOWER COFFEE SHOP  
Syracuse, New York

**Y**OU can specify the Lamson Trayveyor with the complete assurance that it is the most dependable, sanitary, trouble-free dish and food conveyor possible to obtain. Many of the country's busiest restaurants, hotels, hospitals and clubs have given it their unqualified approval.

The Trayveyor is a precision-built, automatic machine, designed to convey dishes and food—up and down between floors—with the maximum safety, speed and quiet. Its protective devices guard against the carelessness of inefficient help and reduce dish breakage. Sanitary metal enclosures seal the Trayveyor shaft, insuring absolute sanitation. Because of its unique "chain around a chain" principle, the Lamson Trayveyor requires a smaller shaft than any other automatic device of its kind.

This modern device may help you solve a difficult dish-conveying problem. Write to-day for complete information concerning the ascending, descending, double-duty and reversible models.

The Trayveyor is a patented product and the right to use it is fully guaranteed by the Lamson Company.

THE LAMSON COMPANY, SYRACUSE, NEW YORK  
*A nation-wide institution with offices in principal cities.*

# LAMSON TRAYVEYOR

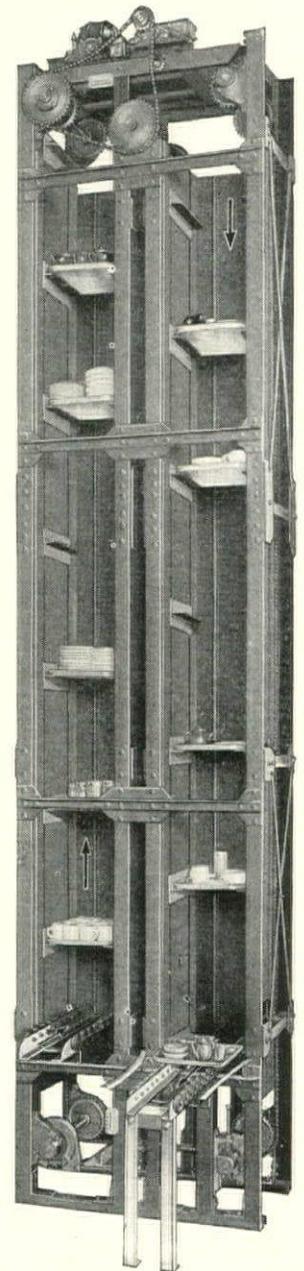
MAIL THIS COUPON

The Lamson Co., Syracuse, N. Y.

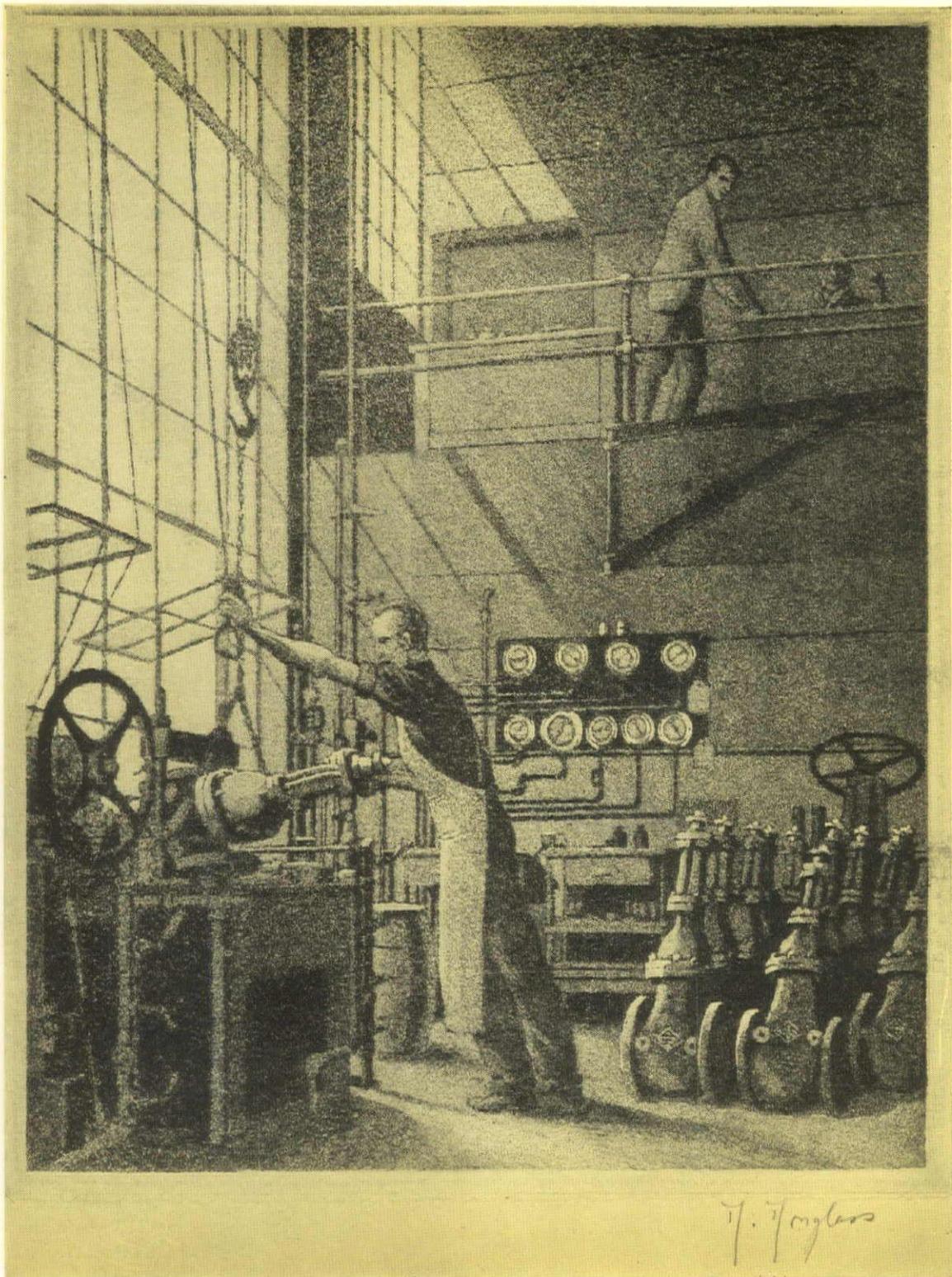
Please send me information concerning the Trayveyor.

Name.....Street.....

City.....State.....



*Double-duty Trayveyor.  
There is a model for every need.*



## FINAL TESTING...INDICATES A WIDE MARGIN OF SAFETY

After assembly every Jenkins Valve is subjected to severe factory tests which show that the valve will bring to the job a wide margin of safety and strength...Jenkins Tests are the logical climax to a manufacturing routine, which at every step, is characterized by exacting fidelity to Jenkins high standards of craftsmanship. Jenkins are made in types and patterns suitable for practically every service. Jenkins Bros., 80 White St., New York; 524 Atlantic Ave., Boston; 133 No. 7th Street, Philadelphia; 646 Washington Blvd., Chicago; 1121 No. San Jacinto, Houston, Texas; Jenkins Bros., Ltd., Montreal, London.





## 2,000 Times—He tried to cause a Plaster Crack—AND FAILED!

To verify the fact that Kalman Steel Door Frames insure freedom from plaster cracks in the surrounding wall, one architect proved it for himself.

In a Kalman-built doorway, he slammed a heavy door 2,000 times. Eventually, the lock fell off—the door split—yet the surrounding plaster remained crack-free.

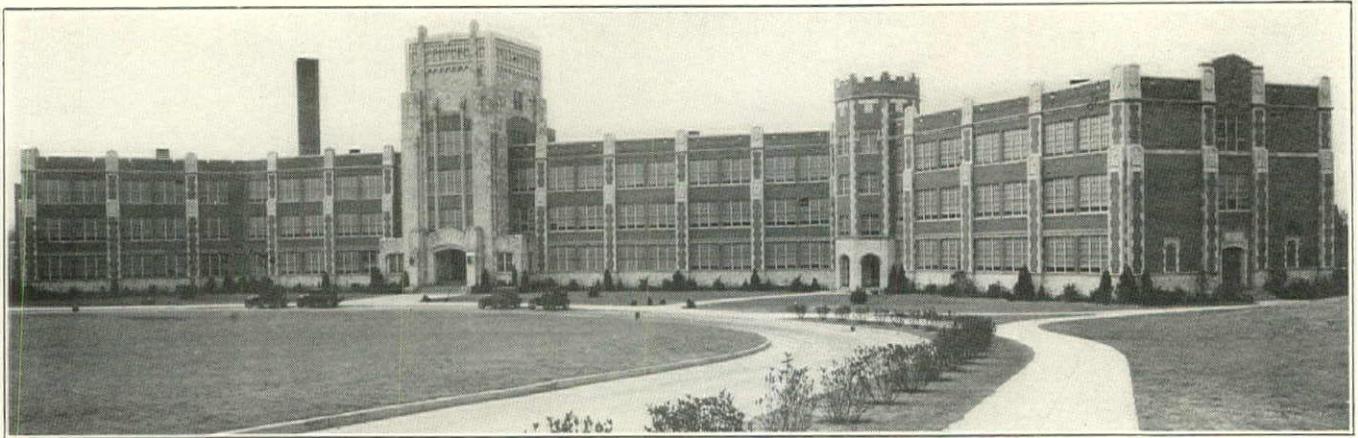
So much a part of the wall does the Kalman Steel Door Frame become—overlapping and closely engaging the side of the tile—providing a positive bond and terminal for plaster—that the possibility of plaster cracks is eliminated.

There are 15 advantages with the Kalman Steel Door Frame as compared to any other doorway construction. Write for file folder.

# KALMAN STEEL DOOR FRAMES

KALMAN STEEL COMPANY

ALBANY • ATLANTA • BALTIMORE • BOSTON • BUFFALO • CHICAGO • CLEVELAND • COLUMBUS • DALLAS • DAYTON  
DETROIT • HOUSTON • MILWAUKEE • MINNEAPOLIS • NEWARK • NEW HAVEN • NEW YORK • NILES • PHILADELPHIA  
PITTSBURGH • ST. LOUIS • ST. PAUL • SYRACUSE • WASHINGTON, D. C. • YOUNGSTOWN • EXPORT OFFICE, NEW YORK



Lanier High School, Montgomery, Ala. Nailcrete used throughout as Nailing base for wood floors. Fred Ausfeld Archt. Algernon Blair, Contractor

## FOR SAFETY AND ECONOMY SPECIFY

### NAILCRETE BLOCKS

Architects and builders are quick to see the many advantages of the new Nailcrete Nailable cinder concrete building blocks in the construction of load-bearing walls and partitions. Investigate!

Write for Illustrated Booklet

# NAILCRETE

The Original Nailing Concrete

In large or small construction, Nailcrete is the ideal nailing base for roofs and floors. Nailcrete is fire-proof, rot-proof, unaffected by heat, cold or moisture and its nail-gripping power is greater than that of any similar material.

THE NAILCRETE CORPORATION  
105 West 40th Street New York



## MEYER Steelforms THE STANDARD



Inquiries will establish the fact that Meyer Steelforms are the standard for concrete joist floor construction.

CONCRETE ENGINEERING COMPANY  
General Offices: Omaha, Nebraska  
Branches in all principal cities

## RESPONSIBILITY

— the factor that must not be overlooked in the selection of an incinerator

When you specify a Kernerator you are selecting the product of a financially responsible manufacturer. You can be certain that the installation will be supervised by a trained man. Satisfactory performance during the years to come will be assured by a guarantee — a guarantee that means something—backed by a responsible manufacturer, with a national service organization. Incineration is becoming the accepted necessity for modern homes — the Kernerator has already become the accepted standard in the architectural profession.

With GAS or OIL for HEATING — what will you do with WASTE and RUBBISH ?

KERNER INCINERATOR COMPANY  
1574 N. Richards St. Milwaukee

Offices in over 150 cities

## KERNERATOR INCINERATION

FOR NEW AND EXISTING BUILDINGS  
See our catalog in Sweet's  
or write for A. I. A. folder.

## "The UNOFFICIAL PALACE"

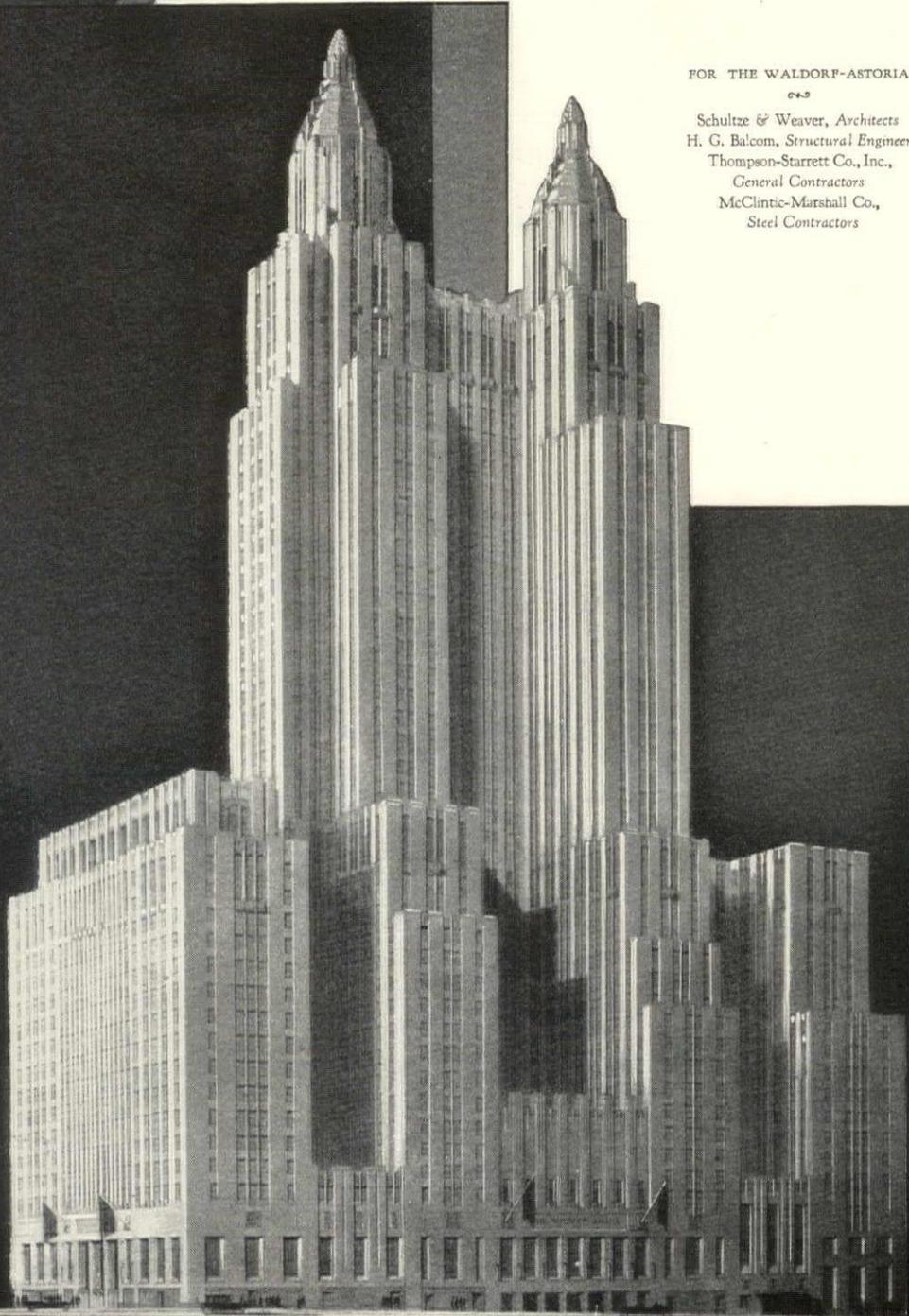
"The unofficial palace of New York," as the old Waldorf-Astoria was called, is gone. On its site has been erected the 85-story Empire State Building, the world's highest structure.

A new and greater Waldorf-Astoria, on Park Avenue between 49th and 50th Streets, will open its doors in October, 1931. The superb architectural beauty of this veritable palace, and the rare distinction of its interior decorations will suitably continue a great tradition.

Carnegie Beams were used in the construction of both the Waldorf-Astoria and the Empire State Building.

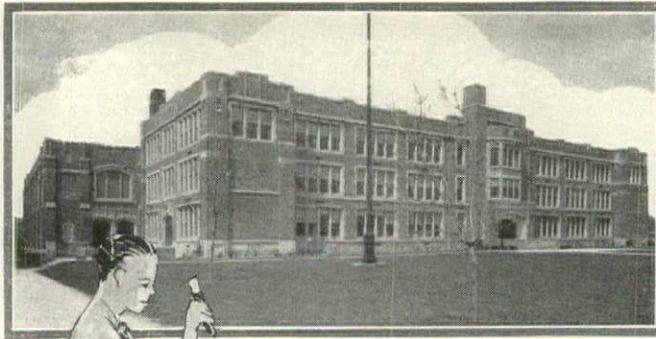
FOR THE WALDORF-ASTORIA

Schultze & Weaver, Architects  
 H. G. Balcom, Structural Engineer  
 Thompson-Starrett Co., Inc.,  
 General Contractors  
 McClintic-Marshall Co.,  
 Steel Contractors



CARNEGIE STEEL COMPANY - PITTSBURGH

Subsidiary of United States Steel Corporation



Duriron carries the acid wastes at Royal Oak High School, Royal Oak, Mich.

Frederick D. Madison, Architect

THE presence of a Chemical Laboratory, whether it be in a high school (of which we picture a notable and recently completed example), college or university, a hospital or an industrial building, that laboratory demands

# DURIRON ACID PROOF DRAIN-PIPE

if corrosive wastes are to be isolated in a leak-proof drainage system. Not only must the pipe be acid-proof, but the joints must be permanently tight. Anything less than the rigid structure and joint tightness achieved by calked Duriron Pipe is insufficient protection for a building you wish to be a monument to your thoroughness.

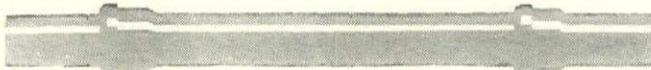
For details—see our pages in Sweet's.

The **DURIRON COMPANY, INC.**

446 North Findlay Street

DAYTON, OHIO

Sales Offices in 36 Principal Cities



## TRIMOUNT SPECIAL SOUND-PROOF DOORS

*The Standard for*

BROADCASTING STUDIOS  
MOVIE-TALKIE STUDIOS  
MUSIC CONSERVATORIES  
HOSPITALS, LABORATORIES  
PHYSICIAN'S OFFICES  
Any place where absolute quiet is required.

Can be fire-proofed by Pyrono Process.  
*Prompt Deliveries Guaranteed.*

THE COMPOUND AND PYRONO  
DOOR COMPANY  
ST. JOSEPH, MICH.

DETAILS  
3'-1" 0"

HARDWARE  
1 1/2'-1" 0"

## Another Fine Hospital Noise Protected



This beautiful new hospital is an outstanding example of up-to-dateness.

Possibly no hospital ever built is so thoroughly equipped to give comfort to the patients and facilitate its operation, great attention having been given to the choice of its many equipment features.

St. Elizabeth  
Hospital

Hermann  
J. Gauland  
Christopher L.  
Gaul, Architects

# HAMLIN

## SOUND-PROOF DOORS and folding partitions

Write for full particulars and prices.

IRVING HAMLIN

Manufacturer of Sound-Proof Doors  
and Folding Partitions

1506 Lincoln St.,

Evanston, Ill.

# DO YOU REALIZE

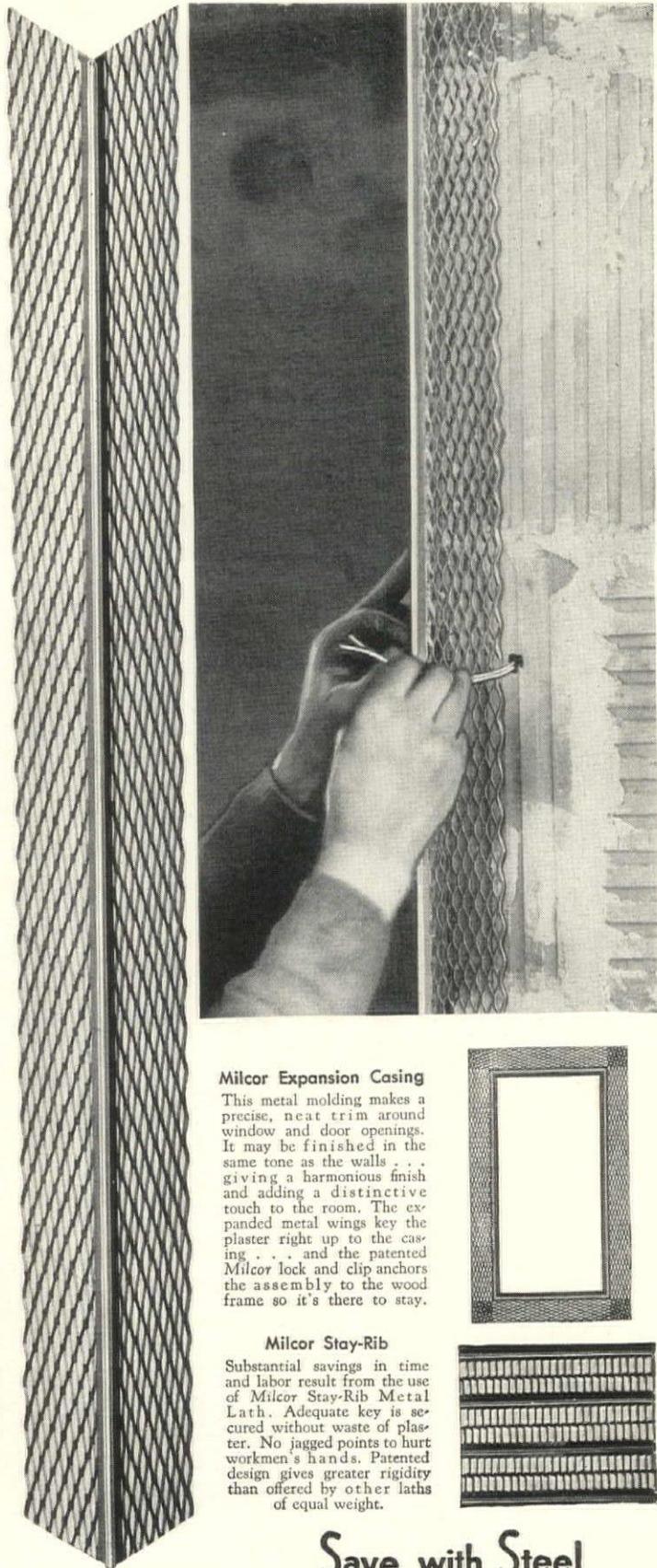
## the Importance of EXPANSION WINGS on Corner Bead?

By means of the expanded metal wings every square inch of plaster is reinforced and keyed right up to the bead. There are no smooth surfaces to which the plaster may or may not "stick". The result is a corner of unusual strength . . . one that will withstand more than average abuse without chipping or cracking.

Time and labor are saved, too. For there is no hunting for nail holes with *Milcor* Expansion Corner Bead. It can be wired, stapled or nailed to any kind of wall construction at lower cost.

For permanence . . . for beauty . . . and for lower costs . . . use *Milcor* Expansion Corner Bead. Millions of feet have been installed.

Would you like a sample?



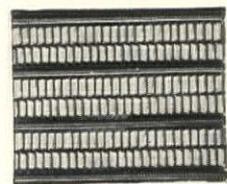
### Milcor Expansion Casing

This metal molding makes a precise, neat trim around window and door openings. It may be finished in the same tone as the walls . . . giving a harmonious finish and adding a distinctive touch to the room. The expanded metal wings key the plaster right up to the casing . . . and the patented *Milcor* lock and clip anchors the assembly to the wood frame so it's there to stay.



### Milcor Stay-Rib

Substantial savings in time and labor result from the use of *Milcor* Stay-Rib Metal Lath. Adequate key is secured without waste of plaster. No jagged points to hurt workmen's hands. Patented design gives greater rigidity than offered by other laths of equal weight.



### Save with Steel

# MILCOR PRODUCTS

## MILCOR STEEL COMPANY

(formerly Milwaukee Corrugating Co., Milwaukee, Wis. and The Eller Mfg. Co., Canton, Ohio)

Main Offices: 1405 Burnham Street, Milwaukee, Wis.

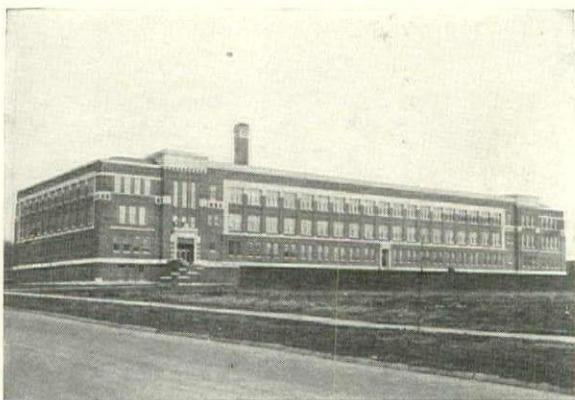
Milwaukee, Wis. Canton, Ohio

Chicago, Ill. Kansas City, Mo. La Crosse, Wis.

Sales Offices: New York, 418 Pershing Square Building; Boston, Mass., 726 Little Building; Atlanta, Ga., 207 Bona Allen Building; Minneapolis, Minn., 642 Builders Exchange Building; Little Rock, Ark., 104 W. Markham Street



Copper Alloy Steel



Central Junior High School \*  
Kansas City, Mo., Chas. A. Smith, Architect

## WHAT THEY TEACH IN KANSAS CITY

**I**N Kansas City they teach the young idea its Latin and Algebra and its typewriting and dramatics, under very favorable conditions. Incidentally, they are teaching some other highly useful things—teaching them to the taxpayers as well as to the school children.

For instance, the economy of doing things well. The efficiency of favorable working conditions. The protection of property against depreciation. What could be more important?

They teach these things by building admirable modern schools. The Central Junior High School, shown above, is a practical, well-constructed building. It is self-protecting—being calked against weather with Pecora Calking Compound, applied by the Higgin Mfg. Co. It is built for long-time economy.

\* The Central Junior High School, Kansas City, Mo. (Chas. A. Smith, Architect) is calked against wind, rain, dust, and cold with Pecora Calking Compound, applied by the Higgin Mfg. Co., Kansas City.



PECORA PAINT COMPANY,  
Fourth and Venango Streets, Philadelphia

Please tell me why a building isn't completed until it is calked. And give me full information on Pecora Calking Compound.

Name .....

Firm Name .....

Street and No. ....

City and State .....

## MODERN

Copper, and the highly effective use of its heat conducting qualities that is represented by Modine design, has set new standards of domestic heating.

Not only do Modine Concealed Copper Radiators meet every demand for concealed, out-of-the-way heating, but they set a higher standard of heating comfort and economy.

More than that, there is assurance of mechanical perfection that is guaranteed by nineteen years of copper fabricating experience. You can specify Modine with perfect confidence.

MODINE MANUFACTURING COMPANY  
Manufacturers of Concealed Copper Radiators,  
Unit Heaters and Automotive Radiators  
1703 Racine Street, Racine, Wisconsin

## MODINE COPPER RADIATORS

## ARCHITECTURE PRESERVED

**T**HE beauty created by Architects and constructed by Engineers today, need not become the antique fragments of the future. For every destructive effect of water on building walls or foundations, TOCH BROTHERS offer the responsible and economical protection of their "R. I. W." products. For every problem of structural preservation, they offer the scientific resources of their laboratories and the recommendations of their experts.

### The Authority of Accomplishment TOCH BROTHERS, INC.

(ORGANIZED SINCE 1848)

Water-proofing and Damp-proofing Products,  
Cement Compounds and Technical Paints

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Refer to SWEET'S Architectural and Engineering Catalogue

# Today

Mr. Coolidge on Russia.  
American Building Ideas.  
Farm Relief Attention.  
Not Elephants, Microbes.

By ARTHUR BRISBANE

THE APPALLING EXTENT of Italy's disaster is due to the fact that in building, even small dwellings, walls and floors are nearly all made of stone, roofs of heavy tile. Earthquakes causing even a slight disturbance, separating walls, allow heavy stone floors and tiled roofs to fall through, killing the inmates.

IT IS BELIEVED that Mussolini will order dwellings rebuilt of reinforced concrete. Ordinary steel framing is too expensive; lumber, scarce in Italy, is too perishable to suit Italians.

McClintic-Marshall, an American concern, erecting the great bridge across the Hudson River, has devised a method of steel construction, extremely light, little more expensive than wood. Mussolini should investigate that.

THIS WRITER recently erected a very large residence by the McClintic-Marshall method, most satisfactorily.

Earthquake, lightning or gale could not affect it.



ARTHUR  
BRISBANE  
*drops a hint  
to builders*

THE mention of Steel Framing in this editorial was no doubt prompted by Mr. Brisbane's experience in building his own home, in which Mac-Mar Steel Framing was used.

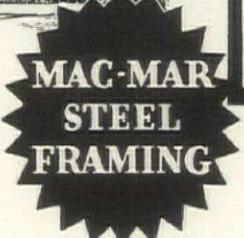
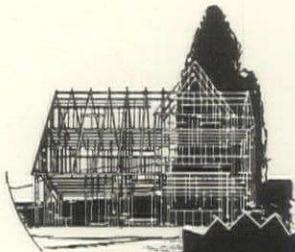
The house built with Mac-Mar Steel Framing is fire-safe and lightning proof. It is protected against wind and weather. There will be no plaster cracks nor ill fitting doors or windows caused by warping, shrinking or settling of the frame.

Prices are quoted on Mac-Mar Steel Framing, with or without erection, from blueprints designed for any type of construc-

tion. And from these same blueprints the steel frame is detailed by us to fit the plans to the quarter of an inch.

Each part of a Mac-Mar Steel Frame is fabricated at the shop to fit in its place perfectly. Erection is quick and easy—no cutting or trimming, no welding or riveting on the job.

Mac-Mar Steel Framing provides modern homes—better homes, of increased value—by bringing to home building all the advantages of skyscraper construction at a cost comparable to that of ordinary construction with wood framing.



## STEEL FRAME HOUSE CO.

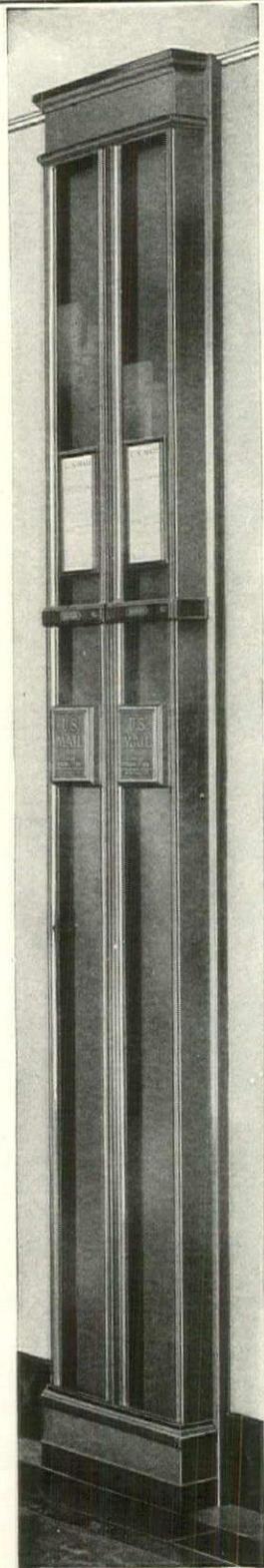
Subsidiary of McCLINTIC-MARSHALL CORPORATION

Oliver Building, Pittsburgh, Pa.

## CUTLER TWIN MAIL CHUTE

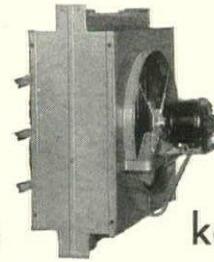
FOR BUILDINGS where large quantities of mail originate, two or more mail chutes are provided, usually installed in pairs. By opening the chutes on alternate floors, danger of over-crowding is avoided, and in case of need one chute can be cleared, cleaned, or repaired, while the service is maintained by the other without interruption.

FULL DETAILS, specifications and information on request.



THE CUTLER MAIL CHUTE CO.  
GENERAL OFFICES AND FACTORY  
ROCHESTER, NEW YORK

## AIR CIRCULATION



is the key to industrial heating efficiency

Dwyer Unit Heaters circulate large volumes of warm air throughout the working levels.

Send for bulletins and see why Dwyer equipment is selected by experienced engineers.

**C. A. DUNHAM CO.**  
UNIT HEATER DIVISION

Successors to the business of Dwyer Equipment Company  
450 East Ohio Street Chicago, Illinois

HEAT WITH UNIT HEATERS

### The FITZGIBBONS LINE of STEEL HEATING & POWER BOILERS

for ALL FUELS and ALL HEATING SYSTEMS in Installations of EVERY SIZE

**COPPER-STEEL RESIDENCE BOILERS—TABLE 1.** For Small and Medium Size Plants, Electric-Welded. Built for 15 lbs. W.S.P. Types for Anthracite, Bituminous Coals or Coke, Oil, Gas, Domestic Stoker, 400 to 4000 sq. ft. Steam Ratings.

**STEEL HEATING BOILERS—TABLE 2.** For Intermediate Size Heating Plants. Riveted Longitudinal Seams. 15 lbs. W.S.P. types for All Fuels. 3800 to 25,000 sq. ft. Steam Ratings.

**STEEL HEATING AND POWER BOILERS—TABLE 3.** For heating large buildings of every description, including those having kitchen, laundry, process and similar high-pressure loads. All-Riveted construction. Types for All Fuels. Heating Boilers for 15 lbs. W.S.P. Power Boilers up to 150 lbs. W.S.P. 4200 to 36,000 sq. ft. Steam Ratings.

**Z-U FIREBOX BOILERS.** Smokeless, Up-draft; Oil, Gas, Stoker Types. 2300 to 38,000 sq. ft. Steam Ratings. Built for 15 lbs. W.S.P.

**R-Z-U FIREBOX BOILERS.** Rear Smoke Outlet. The Z-U Boiler arranged to meet the needs of plants where conditions make it desirable to place smoke outlet at the rear. 4000 to 34,000 sq. ft. Steam Rating. Built for 15 lbs. W.S.P.

**500-SERIES PORTABLE FIREBOX BOILERS.** Riveted — Return Tubular. 5900 to 37,000 sq. ft. Steam Ratings. Built for 15 and 100 lbs. W.S.P.

**SMOKELESS, DOWN-DRAFT FIREBOX BOILERS.** Riveted — Return Tubular. Designed primarily for burning soft coal smokelessly, but also adapted for burning any other fuel as well. 7000 to 27,000 sq. ft. Steam Ratings. Built for 15 and 100 lbs. W.S.P.

### FITZGIBBONS BOILER CO., INC.

570 Seventh Ave., NEW YORK, N. Y.  
Works: OSWEGO, N. Y.

Branches and Representatives in Principal Cities

# ARMCO

## INGOT IRON

~ ~ the *dependable*  
sheet metal  
of moderate cost

**O**FTENTIMES, you are required to select a sheet metal of moderate initial cost. Yet it must be a serviceable metal that will not require the frequent repairs and replacements so common to ordinary low-cost sheet metal.

With such a situation confronting you, Armco INGOT IRON solves the problem. Produced originally, twenty-two years ago, expressly to resist rust, this uniform pure iron still sets the standard for durable, inexpensive sheet metals. Behind it is the longest record of actual service of any low-cost, rust-resisting sheets and plates—a record that eliminates hazardous speculation and guesswork from your specifications.

Other advantages of Armco INGOT IRON are exceptional ductility, good welding qualities and, in the case of galvanized sheets, a heavy, tightly-adhering coat of highest grade zinc. If you are concerned with any specific application of sheet metal, an experienced Armco Engineer will gladly assist. Just write to the office nearest you.

*TUNE IN—The Famous Armco Concert Band  
broadcasts every Thursday night  
WLW—700 K. Cincinnati  
Nine to nine-thirty,  
E.S.T.*



Since 1910, Armco INGOT IRON window frames have protected the casements in the Fidelity & Casualty Building, New York City. Not a single repair nor replacement has been required during this period. Architects: McKenzie, Voorhees and Gmelin.

THE AMERICAN ROLLING MILL  
COMPANY

Executive Offices, Middletown, Ohio

Export: The ARMCO International Corporation

DISTRICT OFFICES:	Chicago Cincinnati Cleveland	Detroit New York Philadelphia	Pittsburgh St. Louis San Francisco
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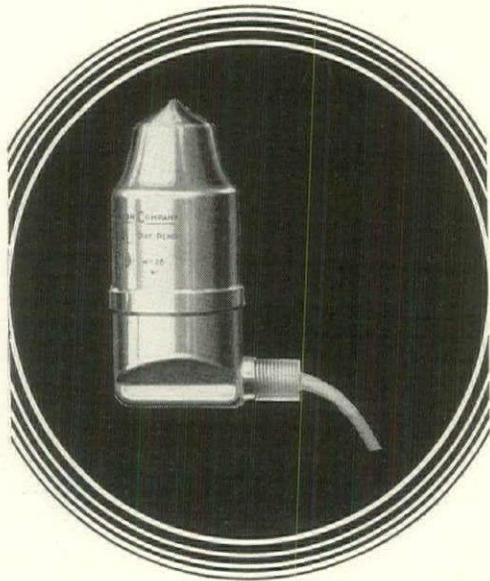


“BE SURE IT'S MADE OF ARMCO INGOT IRON”

# When you get THIS COMPLAINT

"my radiators won't get hot"

## install AIRID AIR VALVES



This is the season of complaints for heating contractors. And most of them come from people who are not getting enough heat. In a great many cases the cause is very simple—cheap inefficient air valves. Replace them with Airids (either No. 500 for steam or No. 510 Vac-Airid for vacuum) and you put an end to complaints. Airid Air Valves can be depended on to let the radiator do its work efficiently.

## IN-AIRID

*The Invisible* AIR VALVE

No. 1 for Steam      No. 2 for Vacuum

The only air valve—1. That must be installed by a steamfitter. 2. That is inside the section and beautifies the radiator. 3. That can not be stolen or tampered with. 4. That vents all the air from new type steam radiators.

### AMERICAN RADIATOR COMPANY

DIVISION OF

AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

40 WEST 40th STREET, NEW YORK

**ARCO ACCESSORIES MAKE  
ANY HEATING PLANT BETTER**

## Like Getting 114 Cents on the Dollar!

ACTUAL figures based on U. S. Government Standard Rating, show that on an average 1,000 ft. job, Pierce-Eastwood radiation will deliver from 119 to 140 feet more actual heating surface than any other make!

This extra heating surface costs no more—it is a positive economy, an assurance of plus satisfaction that any client can appreciate.

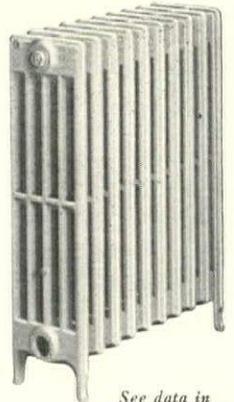
Let a Pierce representative figure with you on your next heating specification and show exactly what this advantage means, in square feet or in dollars.

PIERCE, BUTLER & PIERCE  
MFG. CORP.

41 East 42nd Street      New York

Branches in Principal Cities

Manufacturers of Heating Equipment since 1839



See data in  
AIA File No. 30  
Copy on request.

## PIERCE EASTWOOD BOILERS & RADIATORS

The Name  
**BROWNELL**  
IS NEVER APPENDED TO  
HALF WAY ACHIEVEMENTS



It came as no surprise when the Brownell Automatic Stoker immediately set up a new standard of automatic firing performance. Paramount among its distinguishing characteristics are the use of heavier parts and greater precision in manufacture. In the

words of competent judges, "here is a truly great stoker."

### HEATING BOILERS AND AUTOMATIC STOKERS FOR CRITICAL CLIENTELE

When used to fire a Brownell Master heating boiler, the last word in heating efficiency and economy would seem to be reached.

THE BROWNELL COMPANY, Dayton, Ohio  
Established in 1855      Representatives in Principal Cities

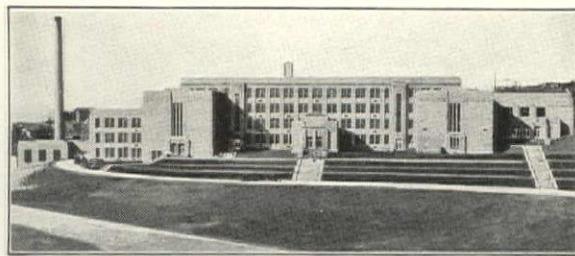


**BROWNELL**  
THE BALANCED HEATING UNIT

# The New HAVEMEYER STEEL JOIST



Upper—THE BIARITZ, Atlantic City, N. J., Louis Joseph Tonk, Architect, Herbert V. Realty Company, Builders.



HERRON HILL HIGH SCHOOL, Pittsburgh, Pa. James Steen & Sons, Architects.

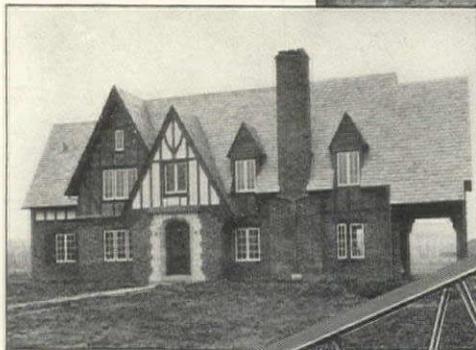


Upper—MARTIN BUILDING, Elizabeth, N. J., Frank A. Berry, Architect, John W. Ferguson Company, Builders.

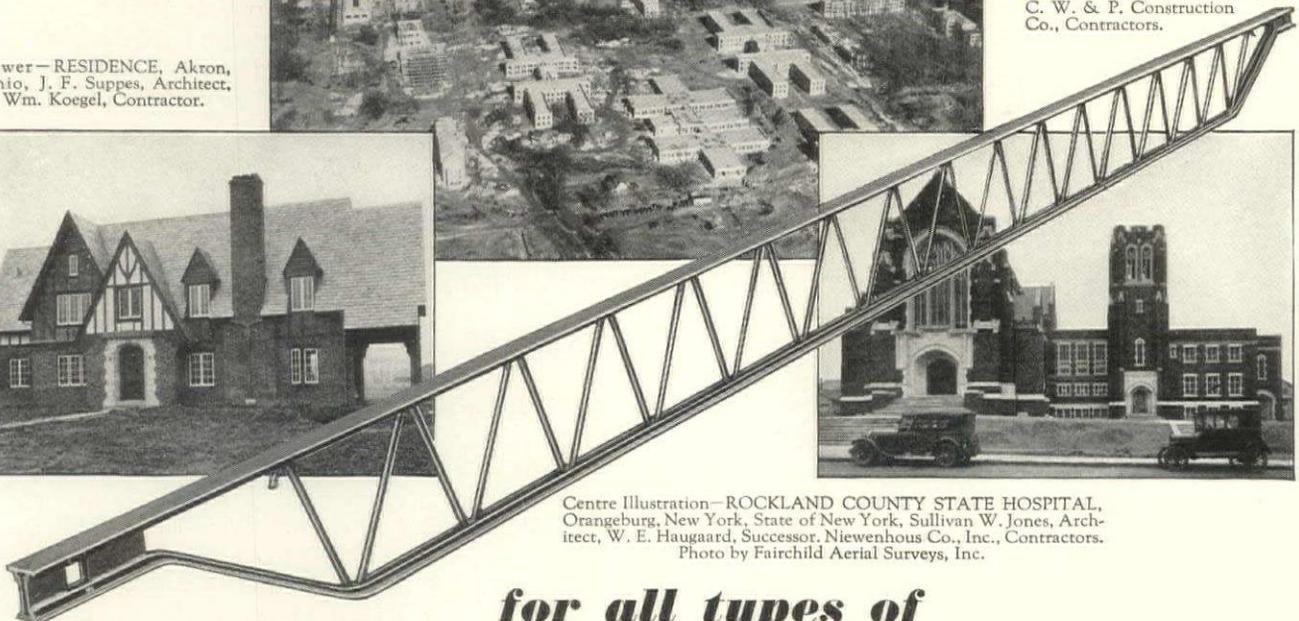


Lower—RESIDENCE, Akron, Ohio, J. F. Suppes, Architect, Wm. Koegel, Contractor.

Lower—TRINITY REFORMED CHURCH, Akron, Ohio, J. C. Fulton & Sons, Architects, C. W. & P. Construction Co., Contractors.



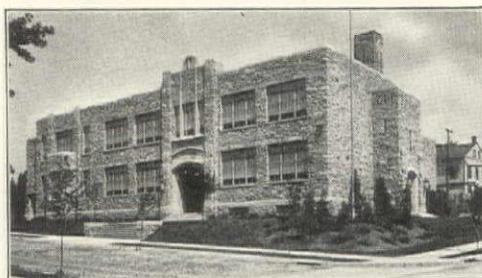
Centre Illustration—ROCKLAND COUNTY STATE HOSPITAL, Orangeburg, New York, State of New York, Sullivan W. Jones, Architect, W. E. Haugaard, Successor, Niewenhaus Co., Inc., Contractors. Photo by Fairchild Aerial Surveys, Inc.



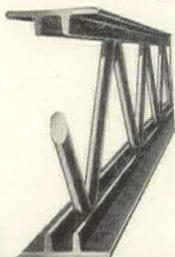
**for all types of  
light-occupancy buildings**

Combining fire safety with minimum weight and simplified installation, the New HAVEMEYER Steel Joist meets a need long-recognized in the construction of fireproof floors and roofs for all types of light-occupancy buildings . . . For Schools, Hospitals, Sanitariums, Churches, Apartment houses, Hotels, Residences, etc., the HAVEMEYER Steel Joist is ideal. Its use is recommended wherever the utmost in economy, fire-safety and speed of erection are imperative.

Write for new booklet "Havemeyer Steel Joist."



SACRED HEART PARISH SCHOOL, West Reading, Pa., Jacoby & Everett, Allentown, Pa., Architect, Wyomissing Development Co., Wyomissing, Pa., Contractor.



The new HAVEMEYER Steel Joist is made with a specially rolled "Twin-tee" steel section for top and bottom chords. The chords provide a flat bearing surface which adds materially to the lateral stiffness of the joist and simplifies the placing of lath for the finished floor or ceiling. Altogether the HAVEMEYER Steel Joist is a rigid electrically welded unit capable of the utmost strength proportionate to its weight.

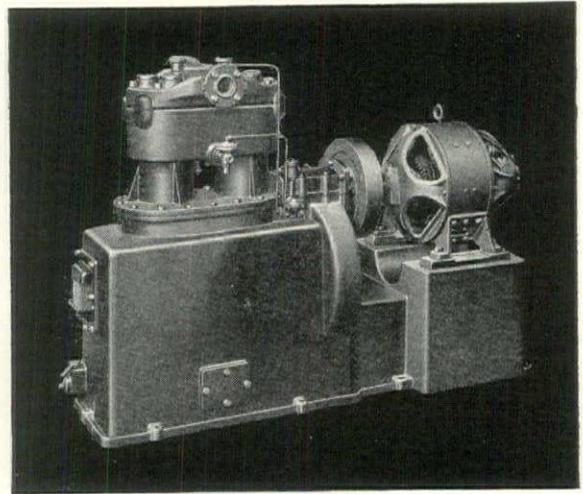


# Concrete Steel Co.

2 PARK AVENUE . . . NEW YORK CITY

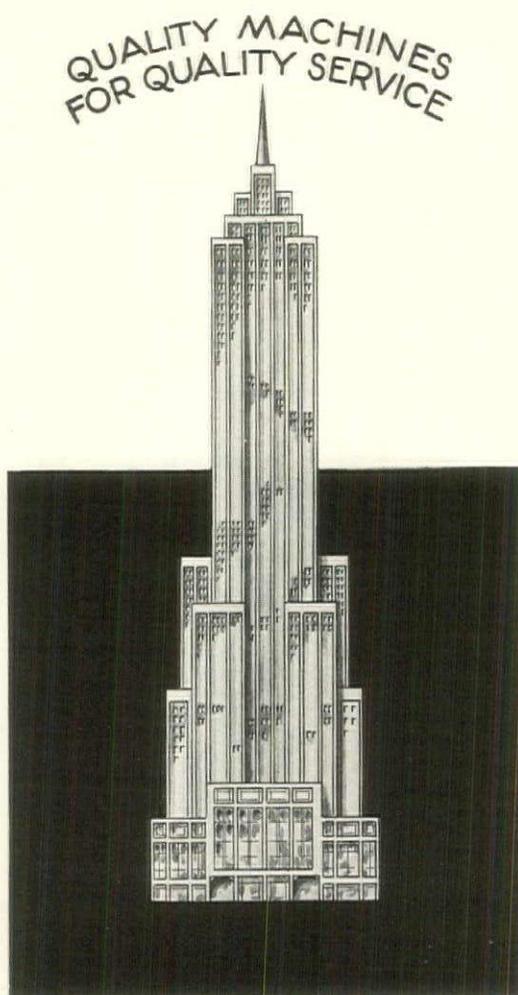
## WESTINGHOUSE-NATIONAL AIR COMPRESSORS

**WHEN  
Modern Buildings  
NEED AIR » » » »**



Type 2VSW Compressor - 150 cu. ft. displacement. Other types and sizes from 2½ to 700 cu. ft.

**I**N MODERN buildings there is usually some need for compressed air » » » operation of elevator doors, cleaning purposes, stoker firing of steam boilers, operation of fuel oil pumps and general engine room use, deep well pumping, sewage ejection, drying of automobiles after washing and



other garage uses, fire protection systems, and operation of small tools such as in dental offices » » » Westinghouse-National Air compressors are serving in hundreds of the world's finest buildings for many of the pneumatic uses mentioned. They embody distinctive features developed from three score years of experience; are constructed to manufacturing standards that place ultimate service above the all-too-often consideration of first cost, and have a reputation for high efficiency, dependable action, economical operation and long life. » » » » » » » » » »

WESTINGHOUSE TRACTION BRAKE CO.  
INDUSTRIAL DIVISION  
PITTSBURGH    ✓    ✓    PENNSYLVANIA



TRADITION



PROGRESS

"'BUILDINGS Going Up By Arc Welding' says a headline in my paper and they talk of a couple going up in the West and a couple in the East.

I'm beginning to wonder, Lad, how much there really is to this welding of buildings."

"Not nearly as much to it as in riveted construction, Pop.

Let me take that pencil and make a drawing for you comparing the design of a riveted beam seat and a welded one.

Both are designed for a load of 45,000 pounds.

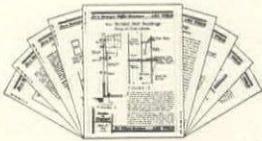
The riveted seat requires 2 angle members and a filler plate, and to fabricate it you punch 4 pieces and drive 8 rivets.

The welded seat requires but one member . . . a piece of a T shape.

You fuse this into the column with 18 lineal inches of 3/8" fillet weld.

So there's not as much in the arc-welded seat by 2 members and by a lot of labor.

I got that from Lincoln's "Studies in Structural Arc Welding" which is a series of plates for architects, engineers and fabricators . . . mailed without charge to those with welding work under way, as well as those 'way under-worked in welding."



Write for a complete set of "Studies in Structural Arc Welding"

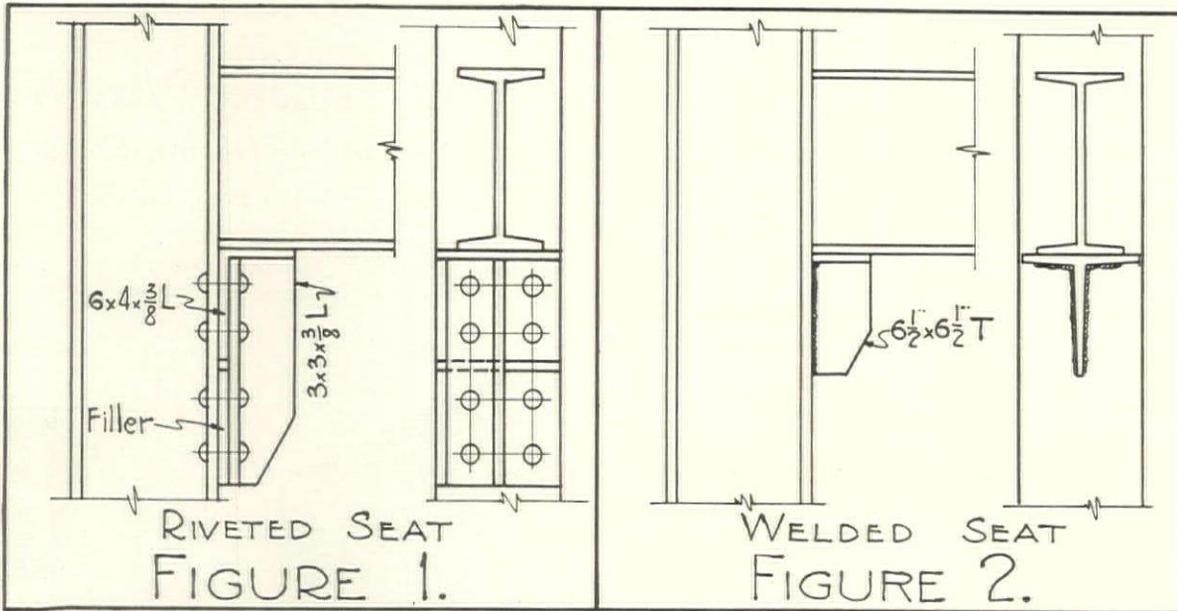
THE LINCOLN ELECTRIC COMPANY

Department No. 4-12

Cleveland, Ohio

World's Largest Manufacturers of Arc Welding Equipment

W-160

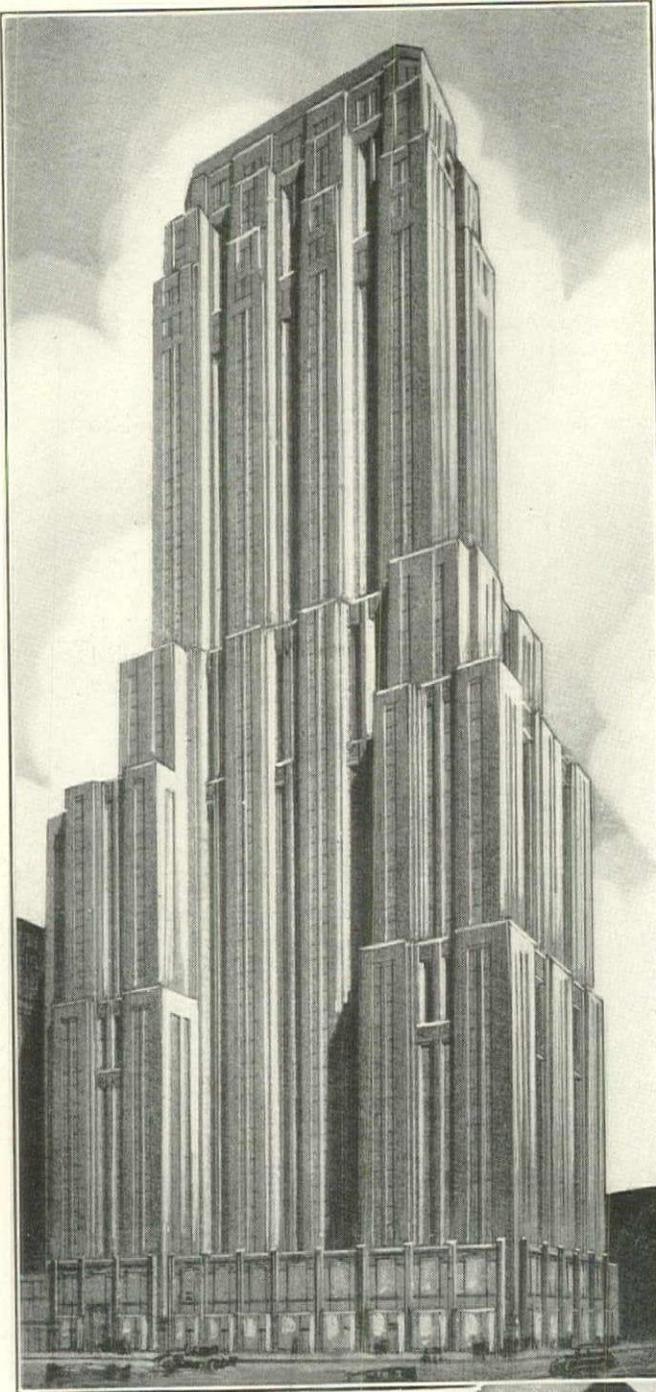


# LINCOLN "Stable-Arc" WELDER

Lincoln "Stable-Arc" welder, motor-driven portable truck type, for use where electric power is available.



# TEN SCHOOLGIRL COMPLEXIONS ALL PERMANENT



The new Palmolive Building in Chicago. A monument to every contractor who helped to build it. It was wired with Hazard 30% Building Wire by Hatfield Electric Company; Holabird and Root, Architects; Lundoff Bicknell Company, General Contractors.

**I**N many buildings the wiring circuits are so numerous and intricate that they would be easier to follow if readily identified by colored wires. Therefore, Hazard Electrical Building Wire is supplied in ten standard, permanent and easily distinguished colors.

All Hazard Wire is uniformly small in diameter with tightly woven braids and a smooth, slick finish that makes handling easy. Copper conductors are full-size, accurately centered in real, elastic, long-lived rubber insulation.

## Hazard Insulated Wire Works

*Division of The Okonite Company*

WORKS: WILKES-BARRE, PA.

*Sales Offices*

New York	Chicago	Philadelphia	Pittsburgh	St. Louis	Boston
Atlanta	Birmingham	San Francisco	Los Angeles	Seattle	Dallas



Send for a free copy of "Installations of Hazard Electrical Building Wire." It shows the ten colors available.



REPUBLIC

REPUBLIC

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COPPER

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IRON PIPE

REPUBLIC

REPUBLIC

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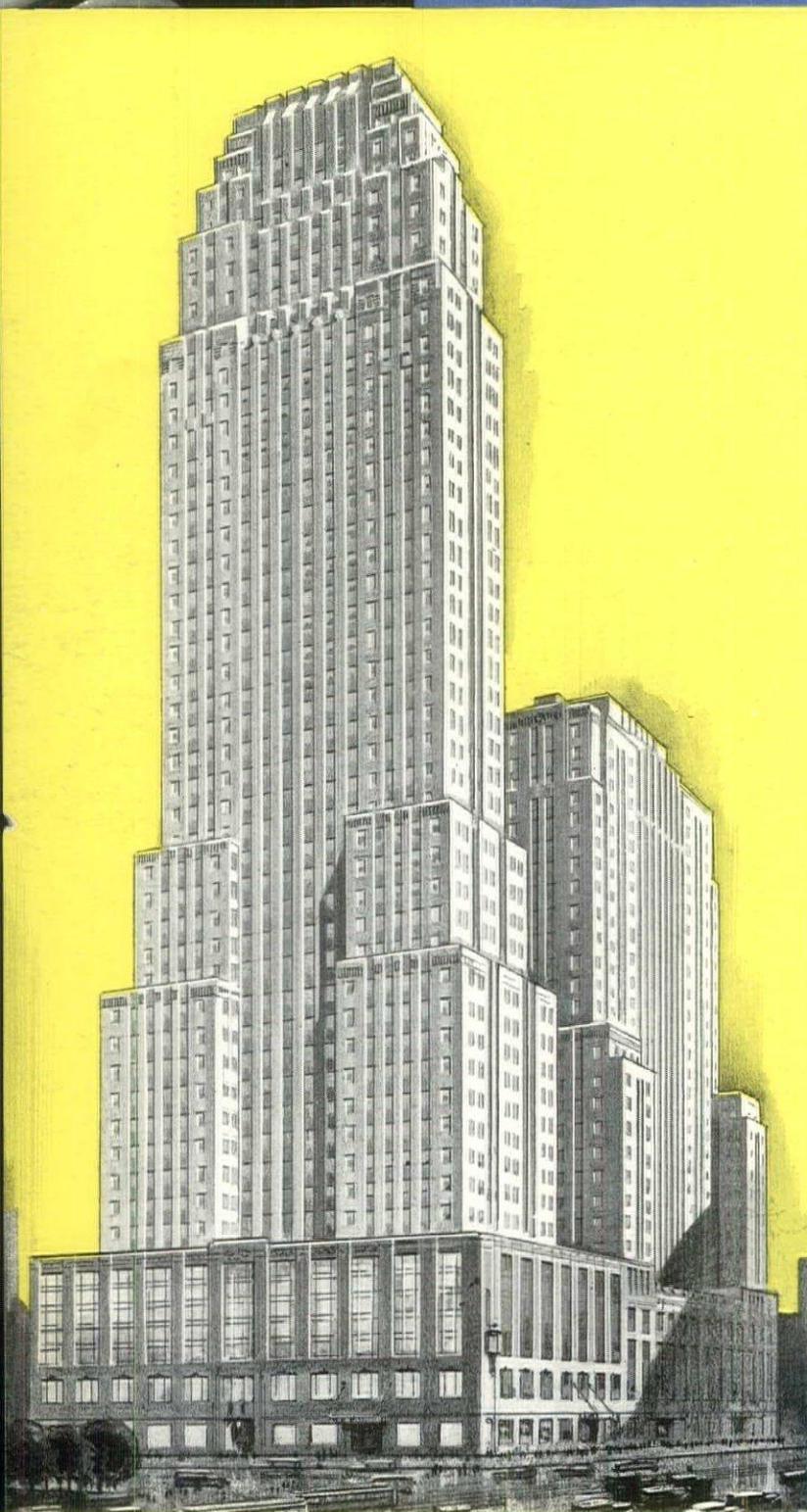
RT

RT



# TONCAN IRON PIPE

*In Cincinnati's Famous Carew Tower . . .*



**W**ITHIN the last few months Toncan Iron Pipe has been installed in the heating systems of a 732 room hotel, two department stores, a large parking garage, a number of specialty shops and a 46-story office building. All these are grouped under one roof to form Cincinnati's outstanding building operation of nineteen-thirty—the famous Carew Tower.

Paramount among the factors leading to the final selection of this unusual alloy of iron, copper and molybdenum to withstand the rigorous service encountered in the steam return lines throughout this building, was its remarkable resistance to corrosion.

Dozens of buildings representing many millions of invested capital are similarly protected. It's a thrifty thought—let Toncan Iron Pipe point the way to Permanence in your specifications.

**REPUBLIC STEEL CORPORATION**  
YOUNGSTOWN, OHIO



Birmingham Boston Buffalo Chicago Cincinnati Cleveland  
Dallas Denver Detroit El Paso Indianapolis Los Angeles  
Milwaukee New York Philadelphia Pittsburgh San Francisco  
Seattle St. Louis St. Paul Tulsa Toledo

Walter W. Ahlschlager, Architect . . . Delano & Aldrich, Associate Architects . . . Starrett Bros., Inc., General Contractors . . . Peck, Hannaford and Peck, Heating Contractors . . . Thos. J. Dyer, Plumbing Contractor . . . Rockwood Sprinkler Company, Sprinkler System Contractors

REG. U.S. PAT. OFF.  
**TONCAN**  
COPPER  
MO-LYB-DEN-UM  
**IRON PIPE**

# Selected List of Manufacturers' Publications

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*, 521 Fifth Ave., New York, or the manufacturer direct, in which case kindly mention this publication.

**ACOUSTICS**

- R. Guastavino Co., 40 Court Street, Boston.  
Akoustolith Plaster. Brochure, 6 pp., 8½ x 11 ins. Akoustolith as Related to Architectural Acoustics. Booklet 10 pp., 8½ x 11 ins.
- Johns-Manville Corporation, New York.  
Sound-Absorbing Treatment in Banks and Offices. Booklet, 18 pp., 8½ x 11 ins. Illustrated.
- Sound-Absorbing Treatment in Churches and Religious Institutions. Brochure. 22 pp., 8½ x 11 ins. Illustrated.

**ASH HOISTS**

- Gillis & Geoghegan, Inc., 544 West Broadway, New York.  
G & G Telescopic Hoist catalog, 8½ x 11 A. I. A. Standard Classification 30il, contains complete descriptions, method of selecting correct model to fit the building's needs, scaled drawings showing space requirements and specifications.

**ASH HOISTS—TELESCOPIC**

- Gillis & Geoghegan, Inc., 544 West Broadway, New York.  
G & G Telescopic Hoist catalog, 8½ x 11 A. I. A. Standard Classification 30il, contains complete descriptions, method of selecting correct model to fit the building's needs, scaled drawings showing space requirements and specifications.

**BRICK**

- Hanley Company, Bradford, Pa.  
General Catalog 16 pp. 8½ x 11 ins. Illustrated.  
Bradford Reds. Folder. 8 pp., 3 x 8 ins. Illustrated.

**CABINET WORK**

- Henry Klein & Co., 25 Grand Street, Elmhurst, L. I., N. Y.  
Driwood Period Mouldings in Ornamented Wood. Brochure, 28 pp., 8½ x 11 ins. Illustrated.
- Ensemble Offices for the Banker and Broker. Folder. 4 pp., 8½ x 11 ins. Illustrated.
- Luxurious Office Partitions in Walnut, Mahogany and Quartered Oak. Folder. 4 pp., 8½ x 11 ins. Illustrated.

**CARPETS**

- Collins & Aikman Corporation, 25 Madison Avenue, New York.  
"Seemingly Seamless Carpets." Booklet, 8 pp., 8½ x 11 ins. Illustrated.

**CEMENT**

- Carney Company, The, Mankato, Minn.  
A Remarkable Combination of Quality and Economy. Booklet, 20 pp., 8½ x 11 ins. Illustrated. Important data on valuable material.
- Louisville Cement Co., 315 Guthrie St., Louisville, Ky.  
BRIXMENT for Perfect Mortar. Self-filing handbook, 8¾ x 11 ins. 16 pp. Illustrated. Contains complete technical description of BRIXMENT for brick, tile and stone masonry, specifications, data and tests.
- Medusa Portland Cement Co., 1002 Engineers' Building, Cleveland.  
Medusa Waterproofed Gray Portland Cement. Booklet, 30 pp., 8½ x 11 ins. Illustrated.
- Medusa White Portland Cement, Non-Staining. Brochure, 30 pp., 8½ x 11 ins. Illustrated.
- Portland Cement Association, Chicago, Ill.  
Concrete Masonry Construction. Booklet, 48 pp., 8½ x 11 ins. Illustrated. Deals with various forms of construction.
- Town and Country Houses of Concrete Masonry. Booklet, 20 pp., 8½ x 11 ins. Illustrated.
- Facts About Concrete Building Tile. Brochure, 16 pp., 8½ x 11 ins. Illustrated.
- The Key to Firesafe Homes. Booklet, 20 pp., 8½ x 11 ins. Illustrated.
- Design and Control of Concrete Mixers. Brochure, 32 pp., 8½ x 11 ins. Illustrated.
- Portland Cement Stucco. Booklet, 64 pp., 8½ x 11 ins. Illustrated.
- Concrete in Architecture. Bound Volume, 60 pp., 8½ x 11 ins. Illustrated. An excellent work, giving views of exteriors and interiors.

**CENTRAL CLEANING SYSTEMS**

- The Spencer Turbine Co., Hartford, Conn.  
Modern Cleaning Methods for Hotels, Schools, Theatres and Industry.

**CHURCH EQUIPMENT**

- John Van Range Co., Cincinnati.  
Practical Planning for Church Food Service. Booklet, 32 pp., 8½ x 11 ins. Illustrated.

**CLUB EQUIPMENT**

- John Van Range Co., Cincinnati.  
Practical Planning for Club Food Service. Booklet, 32 pp., 8½ x 11 ins. Illustrated.

**CONCRETE BUILDING MATERIALS**

- Concrete Steel Company, 2 Park Avenue, New York, N. Y.  
Modern Concrete Reinforcement. Booklet, 32 pp., 8½ x 11 ins. Illustrated.

**CONSTRUCTION, FIREPROOF**

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

**CONSTRUCTION, STONE AND TERRA COTTA**

- Cowing Pressure Relieving Joint Company, 100 North Wells St., Chicago, Ill.  
Pressure Relieving Joint for Buildings of Stone, Terra Cotta or Marble. Booklet, 16 pp., 8½ x 11 ins. Illustrated. Deals with preventing cracks, spalls and breaks.

**DAMP-PROOFING**

- Minwax Company, Inc., 11 West 42nd St., New York.  
Complete Index of all Minwax Products. Folder, 6 pp., 8½ x 11 ins. Illustrated. Complete description and detailed specifications.
- Toch Brothers, New York, Chicago, Los Angeles.  
Handbook of R. I. W. Protective Products. Booklet, 40 pp., 4½ x 7½ ins.

**DOORS**

- David Lupton's Sons Company, Philadelphia.  
Lupton Commercial Steel Doors. Folder. 8½ x 11 ins. Illustrated.
- Lupton Steel Industrial Doors. Brochure. 8 pp., 8½ x 11 ins. Illustrated. Details and specifications.

**DOORS AND TRIM, METAL**

- The American Brass Company, Waterbury, Conn.  
Anaconda Architectural Bronze Extruded Shapes. Brochure, 180 pp., 8½ x 11 ins., illustrating and describing more than 2,000 standard bronze shapes of cornices, jamb casings, mouldings, etc.
- William Bayley Co., 147 North Street, Springfield, Ohio.  
Bayley Tubular Steel Doors. Brochure, 16 pp., 8½ x 11 ins. Illustrated.
- Kalman Steel Company, Chicago, Ill.  
Finishing Door Openings. A.I.A. file holder with 20 loose-leaf sheets of details and specifications.
- The Kawneer Company, Niles, Michigan.  
Detail sheet, 8½ x 11 ins., with A.I.A. File No. featuring Heavy Welded Bronze Doors.
- Richards-Wilcox Mfg. Co., Aurora, Ill.  
Fire-Doors and Hardware. Booklet, 8½ x 11 ins., 64 pp. Illustrated. Describes entire line of tin-clad and corrugated fire doors, complete with automatic closers, track hangers and all the latest equipment—all approved and labeled by Underwriters' Laboratories.
- Truscon Steel Company, Youngstown, Ohio.  
Copper Alloy Steel Doors. Catalog 110. Booklet, 48 pp., 8½ x 11 ins. Illustrated.

**DOORS, SOUNDPROOF**

- Irving Hamlin, Evanston, Ill.  
The Evanston Soundproof Door. Folder, 8 pp., 8½ x 11 ins. Illustrated. Deals with a valuable type of door.

**DRAINAGE FITTINGS**

- Josam Mfg. Co., Michigan City, Ind.  
Josam Products. Booklet, 73 pp., 8½ x 11 ins. Illustrated. A valuable line of accessories.
- Josam-Marsh Grease, Plaster, Sediment and Hair Interceptors. Brochure. 7 pp., 8½ x 11 ins. Illustrated.
- Josam New Saw Tooth-Roof Drain. Folder, 4 pp., 8½ x 11 ins. Illustrated.

**REQUEST FOR CATALOGS**

To get any of the catalogs described in this section, put down the title of the catalog desired, the name of the manufacturer and send coupon to THE ARCHITECTURAL FORUM, 521 Fifth Avenue, New York.

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Name ..... Business .....

Address .....

## SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 167

### DUMBWAITERS

**Sedgwick Machine Works**, 151 West 15th St., New York, N. Y.  
Catalog and Service Sheets. Standard specifications, plans and prices for various types, etc.  $4\frac{1}{4} \times 8\frac{1}{4}$  ins., 60 pp. Illustrated.  
Catalog and pamphlets,  $8\frac{1}{2} \times 11$  ins. Illustrated. Valuable data on dumbwaiters.

### ELECTRICAL EQUIPMENT

**Bryant Electric Co.**, Bridgeport, Conn.  
Catalog No. 30. Complete catalog of wiring devices  $8\frac{1}{2} \times 10\frac{1}{2}$  ins. 152 pp.  
An Electrical Specification. Contains information and data useful in connection with the writing of electrical specifications. Illustrated.  $8\frac{1}{2} \times 11$  ins. 12 pp.  
The Bryant Home of Ideas. Contains data and suggestions useful in connection with residence wiring.  $8\frac{1}{2} \times 10$  ins. 16 pp.  
"KeNeX" and "HooKeX" Bulletin No. 5129. Contains data and specifications pertaining to devices for use in connection with the hanging of lighting fixtures, making such fixtures portable or removable, soldered joints being eliminated.  $8\frac{1}{2} \times 10$  ins. 6 pp.  
Hospital Signal Devices. Bulletin HS-622-RP. Complete information on hospital signal devices. Pull Control Type.  $8\frac{1}{2} \times 10$  ins. 46 pp.  
Hospital Signal Devices. Bulletin HS-1023. Magnetic Control Type.  $8\frac{1}{2} \times 10$  ins. 26 pp.

**The Electric Storage Battery Co.**, Philadelphia.  
Emergency Lighting and Emergency Power Data. Booklet. 12 pp.,  $8\frac{1}{2} \times 11$  ins. Illustrated.

**General Electric Co.**, Merchandise Dept., Bridgeport, Conn.  
Wiring System Specification Data for Apartment Houses and Apartment Hotels. Booklet, 20 pp.,  $8 \times 10$  ins. Illustrated.  
Electrical Specification Data for Architects. Brochure, 36 pp.,  $8 \times 10\frac{1}{2}$  ins. Illustrated. Data regarding G. E. wiring materials and their use.  
The House of a Hundred Comforts. Booklet, 40 pp.,  $8 \times 10\frac{1}{2}$  ins. Illustrated. Dwells on importance of adequate wiring.

**Ward Leonard Electric Co.**, Mt. Vernon, N. Y.  
Mobile Color Lighting. Booklet, 46 pp.,  $8\frac{1}{2} \times 11$  ins. Illustrated. Valuable work on the subject.

**Westinghouse Electric & Mfg. Co.**, East Pittsburgh, Pa.  
Electric Power for Buildings. Brochure, 14 pp.,  $8\frac{1}{2} \times 11$  ins. Illustrated. A publication important to architects and engineers.  
Variable-Voltage Central Systems as Applied to Electric Elevators. Booklet, 12 pp.,  $8\frac{1}{2} \times 11$  ins. Illustrated. Deals with an important detail of elevator mechanism.  
Modern Electrical Equipment for Buildings. Booklet,  $8\frac{1}{2} \times 11$  ins. Illustrated. Lists many useful appliances.  
Electrical Equipment for Heating and Ventilating Systems. Booklet, 24 pp.,  $8\frac{1}{2} \times 11$  ins. Illustrated. This is "Motor Application Circular 7379."  
Westinghouse Panelboards. Catalog 224. Booklet, 64 pp.,  $8\frac{1}{2} \times 11$  ins. Illustrated.  
Beauty; Power; Silence; Westinghouse Fans. (Dealer Catalog 45.) Brochure, 16 pp.,  $8\frac{1}{2} \times 11$  ins. Illustrated. Valuable information on fans and their uses.  
Electric Range Book for Architects (A. I. A. Standard Classification 31 G-4). Booklet, 24 pp.,  $8\frac{1}{2} \times 11$  ins. Illustrated. Cooking apparatus for buildings of various types.  
Westinghouse Commercial Cooking Equipment (Catalog 280). Booklet, 32 pp.,  $8\frac{1}{2} \times 11$  ins. Illustrated. Equipment for cooking on a large scale.  
Electric Appliances (Catalog 44-A). 32 pp.,  $8\frac{1}{2} \times 11$  ins. Deals with accessories for home use.

### ELEVATORS

**Otis Elevator Company**, 260 Eleventh Ave., New York, N. Y.  
Otis Push Button Controlled Elevators. Descriptive leaflets,  $8\frac{1}{2} \times 11$  ins. Illustrated. Full details of machines, motors and controllers for these types.  
Otis Geared and Gearless Traction. Elevators of All Types. Descriptive leaflets,  $8\frac{1}{2} \times 11$  ins. Illustrated. Full details of machines, motors and controllers for these types.  
Escalators. Booklet,  $8\frac{1}{2} \times 11$  ins., 22 pp. Illustrated. Describes use of escalators in subways, department stores, theaters and industrial buildings. Also includes elevators and dock elevators.  
**Richards-Wilcox Mfg. Co.**, Aurora, Ill.  
Elevators. Booklet,  $8\frac{1}{2} \times 11$  ins., 24 pp. Illustrated. Describes complete line of "Ideal" elevator door hardware and checking devices, also automatic safety devices.  
**Sedgwick Machine Works**, 151 West 15th St., New York, N. Y.  
Catalog and descriptive pamphlets,  $4\frac{1}{4} \times 8\frac{1}{4}$  ins., 70 pp. Illustrated. Descriptive pamphlets on hand power freight elevators, sidewalk elevators, automobile elevators, etc.

### ELEVATORS—Continued

Catalog and pamphlets,  $8\frac{1}{2} \times 11$  ins. Illustrated. Important data on different types of elevators.

### ESCALATORS

**Otis Elevator Company**, 260 Eleventh Ave., New York, N. Y.  
Escalators. Booklet, 32 pp.,  $8\frac{1}{2} \times 11$  ins. Illustrated. A valuable work on an important item of equipment.

### FIREPROOFING

**Concrete Engineering Co.**, Omaha, Neb.  
Handbook of Fireproof Construction. Booklet, 54 pp.,  $8\frac{1}{2} \times 11$  ins. Valuable work on methods of fireproofing.  
**Concrete Steel Company**, 2 Park Avenue, New York, N. Y.  
Economical Fireproof Floors for Suburban Buildings. Folder. 4 pp.,  $8\frac{1}{2} \times 11$  ins. Illustrated.  
Havemeyer Steel Joist. The Joist with the Twin-Tee Chords. Booklet, 24 pp.,  $8\frac{1}{2} \times 11$  ins. Illustrated.  
**National Fireproofing Company**, Fulton Building, Pittsburgh.  
Natco; The Complete Line of Structural Clay Tile. Booklet. 48 pp.,  $8\frac{1}{2} \times 11$  ins. Illustrated.  
Make the Facing Bear Its Share. Folder,  $8\frac{1}{2} \times 11$  ins. Illustrated.  
Unibacker, The Tile That Binds. Folder,  $8\frac{1}{2} \times 11$  ins. Illustrated.  
Face Tile Walls. Folder,  $8\frac{1}{2} \times 11$  ins. Illustrated.  
Meeting Every Need. Folder,  $8\frac{1}{2} \times 11$  ins. Illustrated.  
Natco Vitritile. Folder,  $8\frac{1}{2} \times 11$  ins. Illustrated.  
Natco Double Shell Load Bearing Tile. Folder,  $8\frac{1}{2} \times 11$  ins. Illustrated.

### FLOODLIGHTING

**National Terra Cotta Society**, 230 Park Avenue, New York, N. Y.  
Terra Cotta Buildings Are Superior for Floodlighting. Brochure, 16 pp.,  $8\frac{1}{2} \times 11$  ins. Illustrated.

### FLOOR HARDENERS (CHEMICAL)

**Minwax Company**, 11 West 42nd Street, New York, N. Y.  
Concrete Floor Treatments. Folder, 4 pp.,  $8\frac{1}{2} \times 11$  ins. Illustrated.  
**Toch Brothers**, New York, Chicago, Los Angeles.  
Handbook of R.I.W. Protective Products. Booklet, 40 pp.,  $4\frac{1}{2} \times 7\frac{1}{2}$  ins.

### FLOORS—STRUCTURAL

**Concrete Steel Company**, 2 Park Avenue, New York, N. Y.  
Havemeyer Steel Joist. The Joist with the Twin-Tee Chords. Booklet, 24 pp.,  $8\frac{1}{2} \times 11$  ins. Illustrated.  
**Truscon Steel Co.**, Youngstown, Ohio.  
Truscon Floretyle Construction. Booklet,  $8\frac{1}{2} \times 11$  ins., 16 pp. Illustrations of actual jobs under construction. Lists of properties and information on proper construction. Proper method of handling and tables of safe loads.  
**Structural Gypsum Corporation**, Linden, N. J.  
Gypsteel Pre-cast Fireproof Floors. Booklet, 36 pp.,  $8\frac{1}{2} \times 11$  ins. Illustrated. Data on flooring.  
Service Sheet No. 3. Specifications and Details of Design and Construction for Gypsteel Pre-Cast Floors and Ceilings. Folder,  $8\frac{1}{2} \times 11$  ins. Illustrated.

### FLOORING

**Armstrong Cork Co. (Flooring Division)**, Lancaster, Pa.  
Armstrong's Linoleum Floors. Catalog,  $8\frac{1}{2} \times 11$  ins., 44 pp. Color plates. A technical treatise on linoleum, including table of gauges and weights and specifications for installing linoleum floors. Newly revised, February, 1929.  
Armstrong's Linoleum Pattern Book, 1929. Catalog, 9 x 12 ins., 44 pp. Color plates. Reproduction in color of all patterns of linoleum and cork carpet in the Armstrong line.  
Linoleum Layer's Handbook. 5 x 7 ins., 36 pp. Instructions for linoleum layers and others interested in learning most satisfactory methods of laying and taking care of linoleum.  
Enduring Floors of Good Taste. Booklet, 6 x 9 ins., 48 pp. Illustrated in color. Explains use of linoleum for offices, stores, etc., with reproductions in color of suitable patterns, also specifications and instructions for laying.  
**Blabon-Sandura Company, Inc.**, Finance Building, Philadelphia.  
Blabon's Linoleum Styles for 1930. Booklet, 64 pp.,  $6\frac{1}{4} \times 8\frac{1}{2}$  ins. Illustrated.  
Detailed Instructions for Handling and Laying Linoleum. Brochure, 40 pp.,  $3\frac{1}{4} \times 5\frac{3}{4}$  ins. Illustrated.  
Blabon's Linoleum Floors and Where You Will Find Them. Booklet, 8 pp.,  $8\frac{1}{2} \times 11$  ins. Illustrated.  
Comparison of Tests. Folder,  $8\frac{1}{2} \times 11$  ins. Illustrated.

### REQUEST FOR CATALOGS

To get any of the catalogs described in this section, put down the title of the catalog desired, the name of the manufacturer and send coupon to THE ARCHITECTURAL FORUM, 521 Fifth Avenue, New York.

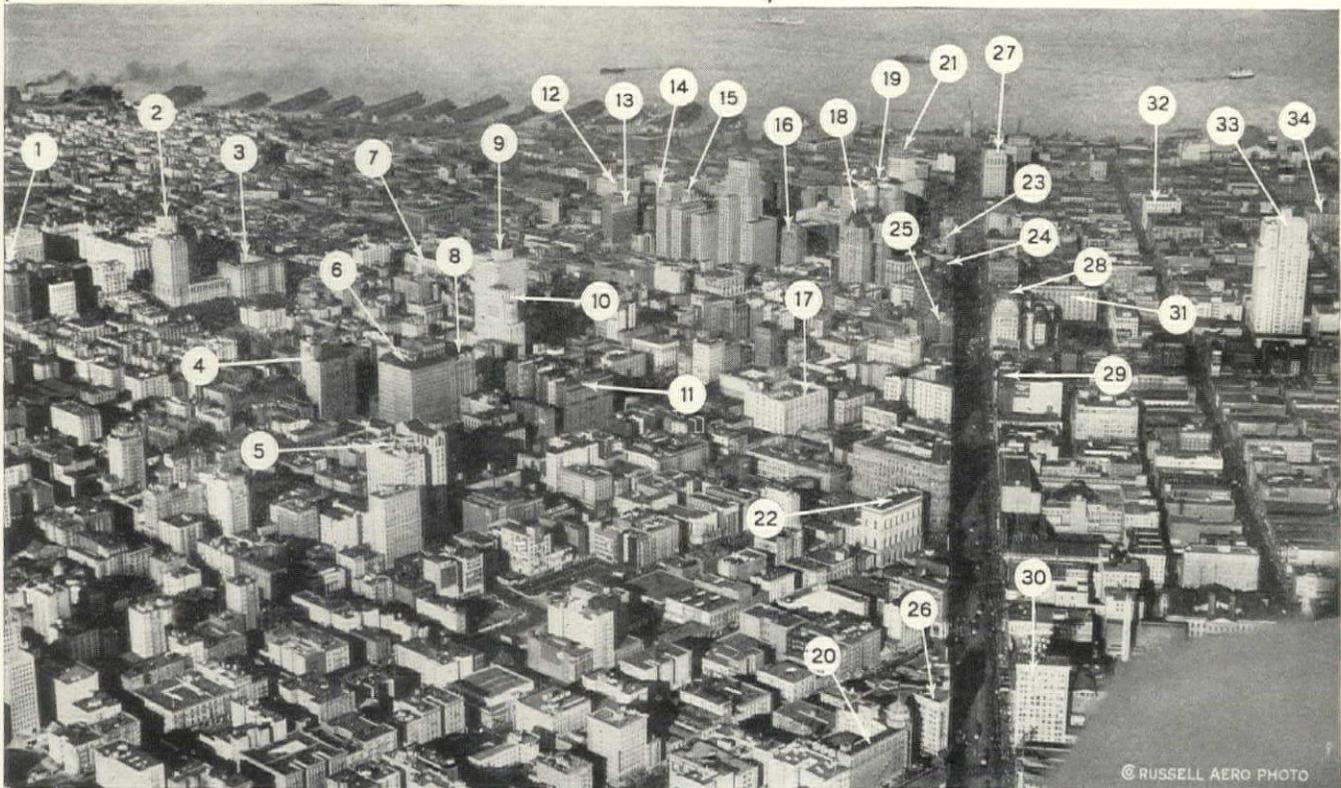
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Address .....

These buildings in San Francisco's business section are served by Jennings Pumps:

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| 1. Huntington Apartments<br><i>1 Duplex Jennings Vacuum Heating Pump</i> | 18. Hunter Dulin Building<br><i>2 Jennings Vacuum Heating Pumps</i>     |
| 2. Mark Hopkins Hotel<br><i>1 Duplex Jennings Vacuum Heating Pump</i>    | 19. Standard Oil Building<br><i>2 Jennings Vacuum Heating Pumps</i>     |
| 3. Sanford Court Apartments<br><i>1 Jennings Vacuum Heating Pump</i>     | 20. Golden Gate Theatre<br><i>1 Duplex Jennings Vacuum Heating Pump</i> |
| 4. Western Women's Club<br><i>1 Duplex Jennings Vacuum Heating Pump</i>  | 21. Shell Oil Building<br><i>2 Jennings House Service Pumps</i>         |
| 5. Clift Hotel<br><i>1 Jennings Vacuum Heating Pump</i>                  | 22. Bank of Italy<br><i>1 Jennings Vacuum Heating Pump</i>              |

# On guard at the Golden Gate



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| 6. Medical-Dental Building<br><i>1 Jennings Vacuum Heating Pump</i>  | 23. Crocker Building<br><i>1 Jennings Vacuum Heating Pump</i>                       |
| 7. Metropolitan Life Building<br><i>1 Duplex Jennings Vacuum Heating Pump<br/>1 Jennings Vacuum Heating Pump</i> | 24. Wells Fargo Union Trust<br><i>1 Duplex Jennings Vacuum Heating Pump</i>         |
| 8. Elks Club<br><i>1 Jennings Vacuum Heating Pump</i>  | 25. Crocker First National Bank<br><i>1 Jennings Vacuum Heating Pump</i>            |
| 9. 450 Sutter St. Bldg.<br><i>1 Duplex Jennings Vacuum Heating Pump</i>  | 26. Loew Warfield Theatre<br><i>1 Duplex Jennings Vacuum Heating Pump</i>           |
| 10. Sir Francis Drake Hotel<br><i>1 Jennings House Service Pump</i>  | 27. Pacific Gas & Electric Bldg.<br><i>1 Jennings Vacuum Heating Pump</i>           |
| 11. St. Francis Hotel<br><i>2 Duplex Jennings Vacuum Heating Pumps</i>   | 28. Claus Spreckles Building<br><i>1 Jennings Vacuum Heating Pump</i>               |
| 12. 500 Sansome Street<br><i>1 Jennings Vacuum Heating Pump</i>  | 29. Bank of America<br><i>1 Jennings Vacuum Heating Pump</i>                        |
| 13. Financial Center Building<br><i>1 Duplex Jennings Vacuum Heating Pump</i>                                    | 30. Western State Life Ins. Bldg.<br><i>1 Jennings Vacuum Heating Pump</i>          |
| 14. Federal Reserve Bank Bldg.<br><i>1 Jennings Vacuum Heating Pump</i>  | 31. Sharon Building<br><i>2 Jennings Vacuum Heating Pumps</i>                       |
| 15. Commercial Union Building<br><i>1 Jennings Vacuum Heating Pump</i>   | 32. Walter N. Moore Building<br><i>1 Jennings Vacuum Heating Pump</i>               |
| 16. Alexander Building<br><i>1 Jennings Vacuum Heating Pump</i>  | 33. Pacific Tel. & Telegraph Bldg.<br><i>2 Duplex Jennings Vacuum Heating Pumps</i> |
| 17. O'Connor & Moffat Store<br><i>1 Duplex Jennings Vacuum Heating Pump</i>                                      | 34. Butler Bros., Building<br><i>1 Jennings Vacuum Heating Pump</i>                 |

IN more than thirty important buildings in San Francisco's business section, Jennings Vacuum Heating Pumps stand guard over return lines steam heating systems, assuring proper, efficient heating.

San Francisco's architects, engineers and building owners know that they can rely on these sturdy pumps to give years of service with little attention. The Nash Engineering Co., 12 Wilson Rd., So. Norwalk, Conn.

# Jennings Pumps



## SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 168

### FLOORING—Continued

- Congoleum-Nairn, Inc.**, 195 Belgrove Drive, Kearny, N. J.  
Facts you should know about Resilient Floors. A series of booklets on floors for (1) schools, (2) hospitals, (3) offices, (4) stores, (5) libraries, (6) churches, (7) clubs and lodges, (8) apartments and hotels. Illustrated.
- Specifications for Resilient Floors. Booklet, 12 pp. A reprint from Sweet's.
- A New Kind of Floor Service. Brochure, 8 pp. Data on Bonded Floors.
- Sealex Battleship Linoleum. Booklet, 12 pp. Illustrated. Shows typical installations.
- Sealex Treadlite Tiles. Two booklets, 8 and 16 pp. Illustrated.
- Colonial Planks. Brochure, 8 pp. Illustrated.
- Goodyear Tire & Rubber Co., Inc.**, Akron, Ohio.  
Beautiful Floors, Architects' Reference Book. Brochure, 32 pp., 8½ x 11 ins. Illustrated. Valuable data on flooring.
- Rubber Flooring News Monthly publications. 8½ x 11 ins. Illustrated. Giving data on flooring for buildings of many types.
- Manual of Goodyear Rubber Tile Installation Booklet. 7¼ x 10¼ ins. Illustrated.
- C. Pardee Works**, 101 Park Ave., New York, N. Y., and 1600 Walnut St., Philadelphia, Pa.  
Pardee Tiles. Bound Volume, 48 pp., 8½ x 11 ins. Illustrated.
- Stedman Rubber Flooring Company**, South Braintree, Mass.  
Stedman Ray-Proof Rubber. Booklet, 12 pp., 5½ x 8 ins. Illustrated. For X-ray Rooms.
- Stedman Tile, The Original Reinforced Rubber Floor. Booklet, 16 pp., 8½ x 11 ins. Illustrated. Valuable data on flooring.
- Structural Gypsum Corporation**, Linden, N. J.  
Gypsteel Pre-cast Fireproof Floors. Booklet, 36 pp., 8½ x 11 ins. Illustrated. Data on floorings.

### FURNITURE

- American Seating Co.**, 14 E. Jackson Blvd., Chicago, Ill.  
Art Ecclesiastical Booklet, 6 x 9 ins., 48 pp. Illustrations of church fittings in carved wood.
- Theatre Chairs. Booklet, 6 x 9 ins., 48 pp. Illustrations of theatre chairs.
- Kittinger Co.**, 1893 Elmwood Ave., Buffalo, N. Y.  
Kittinger Club & Hotel Furniture. Booklet, 20 pp., 6¼ x 9½ ins. Illustrated. Deals with fine line of furniture for hotels, clubs, institutions, schools, etc.
- Kittinger Club and Hotel Furniture. Booklet, 20 pp., 6 x 9 ins. Illustrated. Data on furniture for hotels and clubs.
- A Catalog of Kittinger Furniture. Booklet, 78 pp., 11 x 14 ins. Illustrated. General Catalog.

### GLASS CONSTRUCTION

- Libbey-Owens Sheet Glass Co.**, Toledo, Ohio.  
Flat Glass. Brochure, 12 pp., 5¾ x 7¾ ins. Illustrated. History of manufacture of flat, clear, sheet glass.

### GREENHOUSES

- King Construction Company**, North Tonawanda, N. Y.  
King Greenhouses for Home or Estate. Portfolio of half-tone prints, varnishes, 8¼ x 10½ ins.
- William H. Lutton Company**, 267 Kearney Ave., Jersey City, N. J.  
Greenhouses of Quality. Booklet, 50 pp., 8½ x 11 ins. Illustrated. Conservatories making use of Lutton Patented Galvanized Steel V-Bar.

### GYPSUM

- Structural Gypsum Corporation**, Linden, N. J.  
Service Sheet No. 1. Specifications and Details of Design and Construction for Gypsteel Pre-Cast Long-Span Roofs. Folder, 8½ x 11 ins. Illustrated. Service Sheet No. 2. Specifications and Details of Design and Construction for Gypsteel Pre-Cast Short-Span Roofs. Folder, 8½ x 11 ins. Illustrated.
- Service Sheet No. 3. Specifications and Details of Design and Construction for Gypsteel Fireproof Pre-Cast Floors and Ceilings. Folder, 8½ x 11 ins. Illustrated.
- Service Sheet No. 5. Specifications and Details of Design and Construction for Gypsteel Pre-Cast Assembled Slab Roofs. Folder, 8½ x 11 ins. Illustrated.

### HARDWARE

- P. & F. Corbin**, New Britain, Conn.  
Early English and Colonial Hardware. Brochure, 8½ x 11 ins. An important illustrated work on this type of hardware.
- Locks and Builders' Hardware. Bound Volume, 486 pp., 8½ x 11 ins. An exhaustive, splendidly prepared volume.
- Colonial and Early English Hardware. Booklet, 48 pp., 8½ x 11 ins. Illustrated. Data on hardware for houses in these styles.
- Cutler Mail Chute Company**, Rochester, N. Y.  
Cutler Mail Chute Model F. Booklet, 4 x 9¼ ins., 8 pp. Illustrated.

### HARDWARE—Continued

- Richards-Wilcox Mfg. Co.**, Aurora, Ill.  
Distinctive Garage Door Hardware. Booklet, 8½ x 11 ins., 66 pp. Illustrated. Complete information accompanied by data and illustrations on different kinds of garage door hardware.
- Distinctive Elevator Door Hardware. Booklet, 90 pp., 10½ x 16 ins. Illustrated.
- Russell & Erwin Mfg. Co.**, New Britain, Conn.  
Hardware for the Home. Booklet, 24 pp., 3½ x 6 ins. Deals with residence hardware.
- Door Closer Booklet. Brochure, 16 pp., 3½ x 6 ins. Data on a valuable detail.
- Garage Hardware. Booklet, 12 pp., 3½ x 6 ins. Hardware intended for garage use.
- Famous Homes of New England. Series of folders on old homes and hardware in style of each.
- Todhunter, Inc.**, 119 East 57th St., New York, N. Y.  
Colonial Hardware. Booklet, 12 pp., 8½ x 11 ins. Illustrated. Deals with hardware of the best type for exterior and interior use.

### HEATING EQUIPMENT

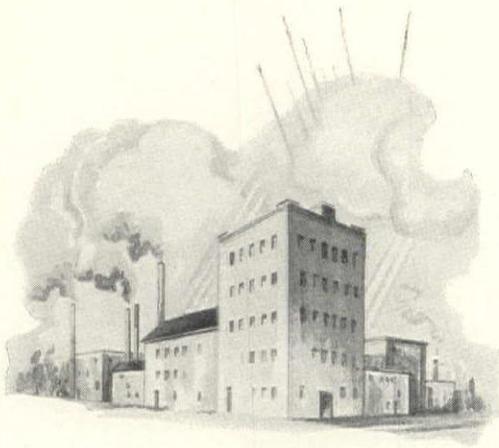
- American Blower Co.**, 6004 Russell St., Detroit, Mich.  
Heating and Ventilating Utilities. A binder containing a large number of valuable publications, each 8½ x 11 ins., on these important subjects.
- American Radiator Company, The**, 40 West 40th St., N. Y. C.  
Ideal Boilers for Oil Burning. Catalog 5½ x 8½ ins., 36 pp. Illustrated in 4 colors. Describing a line of Heating Boilers especially adapted to use with Oil Burners.
- Corto—The Radiator Classic. Brochure, 5½ x 8½ ins., 16 pp. Illustrated. A brochure on a space-saving radiator of beauty and high efficiency.
- Ideal Arcola Radiator Warmth. Brochure, 6¼ x 9½ ins. Illustrated. Describes a central all-on-one-floor heating plant with radiators for small residences, stores, and offices.
- How Shall I Heat My Home? Brochure, 16 pp., 5¼ x 8½ ins. Illustrated. Full data on heating and hot water supply.
- New American Radiator Products. Booklet, 44 pp., 5 x 7¼ ins. Illustrated. Complete line of heating products.
- A New Heating Problem. Brilliantly Solved. Broadside, 4 pp., 10¾ x 15 ins. Illustrated. Data on the IN-AIRID invisible air valve.
- In-Airid, the Invisible Air Valve. Folder, 8 pp., 3½ x 6 ins. Illustrated. Data on a valuable detail of heating.
- The 999 ARCO Packless Radiator Valve. Folder, 8 pp., 3½ x 6 ins. Illustrated.
- Bryant Heater & Mfg. Co.**, 17825 St. Clair Ave., Cleveland, Ohio.  
Handbook on Heating Buildings with Bryant Gas Furnaces. Booklet, 12 pp., 8½ x 11 ins. Illustrated.
- Handbook on Heating Water with Bryant Gas Boilers. Brochure, 20 pp., 8½ x 11 ins. Illustrated.
- Handbook on Heating Buildings with Bryant Gas Boilers. Booklet, 20 pp., 8½ x 11 ins. Illustrated.
- James B. Clow & Sons**, 534 S. Franklin St., Chicago, Ill.  
Clow Gasteam Vented Heating System. Brochure, 24 pp., 8½ x 11 ins. Illustrated. Deals with a valuable form of heating equipment for using gas.
- D.G.C. Trap & Valve Co.**, 1 East 43rd St., New York, N. Y.  
Cryer Radiator Control Valve. Bulletin, 8½ x 11 ins., 12 pp. Illustrated. Explains operation and advantages of this radiator control valve on two-pipe vapor, vacuum or gravity steam systems.
- C. A. Dunham Company**, 450 East Ohio St., Chicago, Ill.  
Dunham Radiator Trap. Bulletin 101, 8 x 11 ins., 12 pp. Illustrated. Explains working of this detail of heating apparatus.
- Dunham Packless Radiator Valves. Bulletin 104, 8 x 11 ins., 8 pp. Illustrated. A valuable brochure on valves.
- Dunham Return Heating System. Bulletin 109, 8 x 11 ins. Illustrated. Covers the use of heating apparatus of this kind.
- Dunham Vacuum Heating System. Bulletin 110, 8 x 11 ins., 12 pp. Illustrated.
- The Dunham Differential Vacuum Heating System. Bulletin 114. Brochure, 12 pp., 8 x 11 ins. Illustrated. Deals with heating for small buildings.
- The Dunham Differential Vacuum Heating System. Bulletin 115. Brochure, 12 pp., 8 x 11 ins. Illustrated. Deals with heating for large buildings.
- The Fulton Syphon Company**, Knoxville, Tenn.  
Syphon Temperature Regulators. Illustrated brochures, 8½ x 11 ins., dealing with general architectural and industrial applications; also specifically with applications of special instruments.
- Syphon Heating Specialties. Catalog No. 200, 192 pp., 3½ x 6¼ ins. Important data on heating.

### REQUEST FOR CATALOGS

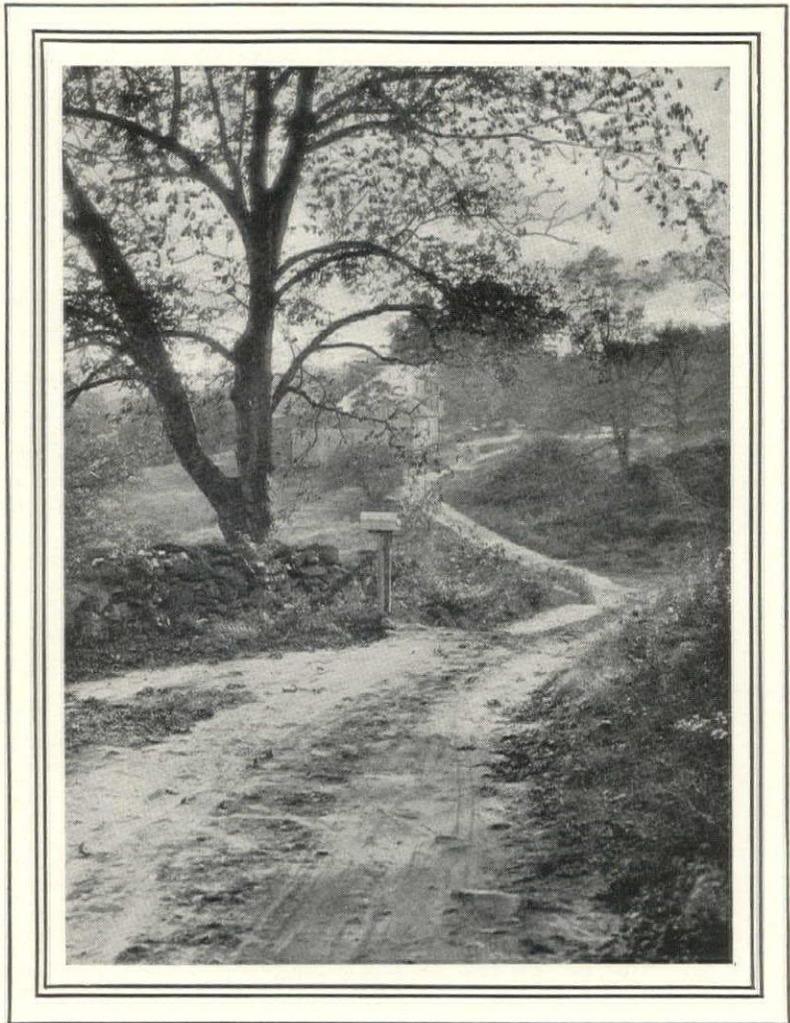
To get any of the catalogs described in this section, put down the title of the catalog desired, the name of the manufacturer and send coupon to THE ARCHITECTURAL FORUM, 521 Fifth Avenue, New York.

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Address .....



*“... he gave his building the quiet that men seek in forest and field”*



**B**UILDINGS have voices. Some are harsh voices that shout and scream. Voices that ceaselessly call, “Don’t think . . . hurry, hurry, hurry!” Voices that distract the men who work within their walls.

But here and there you find a quiet, friendly building that hardly whispers. It never, never repeats what is spoken within its walls. Even when people fairly swarm through the corridors you barely hear the building’s voice. And then it only says, “Hush . . . we must have no noise here.” For the architect planned more than beautiful lines. He gave his building the quiet that men seek in forest and field.

\* \* \* \* \*

Armstrong’s Corkoustic — strong, resilient panels of cork — applied directly to walls and ceilings, absorbs sound. Echoes and reverbera-

tions and other air-borne sounds that abound in offices, schools, hospitals, auditoriums, are hushed.

Corkoustic has interesting decorative possibilities, too. Wherever the effect desired is one of dignity—directors’ rooms, for instance—we suggest the natural brown panels. The design is limited only by your ingenuity. Colors and unusual patterns, if desired, are quickly applied with cold-water paints and stencils.

Armstrong’s Corkoustic also functions as an efficient heat insulator. The pure cork prevents the transmission of heat through walls and ceilings. Comfortable temperatures are easier to maintain. Fuel bills are lower, too. For further facts about Corkoustic, send for the book, “Acoustical Correction.” If you have a special

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problem our engineers will be pleased to consult with you. Armstrong Cork and Insulation Company, 900 Concord St., Lancaster, Penna.

# Armstrong’s CORKOUSTIC

*for the acoustical treatment of all buildings*

## SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 170

### HEATING EQUIPMENT—Continued

- Hoffman Specialty Company, Inc.**, 25 West 45th St., New York, N. Y.  
Heat Controlled With the Touch of a Finger. Booklet, 46 pp., 5¼ x 8¾ ins. Illustrated.
- How to Lock Out Air, the Heat Thief. Brochure, 48 pp., 5 x 7¼ ins. Illustrated.
- Janette Manufacturing Company**, 556 West Monroe Street, Chicago.  
More Heat from Any Hot Water System on Less Fuel. Folder, 4 pp., 8½ x 11 ins. Illustrated. Deals with use of the "Hydro-lator."
- S. T. Johnson Co.**, Oakland, Calif.  
Johnson Oil Burners. Booklet, 9 pp., 8½ x 11 ins. Illustrated.  
Bulletin No. 4A. Brochure, 8 pp., 8½ x 11 ins. Illustrated. Data on different kinds of oil-burning apparatus.  
Bulletin No. 31. Brochure, 8 pp., 8½ x 11 ins. Illustrated. Deals with Johnson Rotary Burner with Full Automatic Control.
- Kewanee Boiler Corporation**, Kewanee, Ill.  
Kewanee on the Job. Catalog, 8½ x 11 ins., 80 pp. Illustrated. Showing installations of Kewanee boilers, water heaters, radiators, etc.  
Catalog No. 78, 6 x 9 ins. Illustrated. Describes Kewanee Fire-box Boilers with specifications and setting plans.  
Catalog No. 79, 6 x 9 ins. Illustrated. Describes Kewanee power boilers and smokeless tubular boilers with specifications.
- McQuay Radiator Corporation**, 35 East Wacker Drive, Chicago, Ill.  
McQuay Visible Type Cabinet Heater. Booklet, 4 pp., 8½ x 11 ins. Illustrated. Cabinets and radiators adaptable to decorative schemes.  
McQuay Concealed Radiators. Brochure, 4 pp., 8½ x 11 ins. Illustrated.  
McQuay Unit Heater. Booklet, 8 pp., 8½ x 11 ins. Illustrated. Gives specifications and radiator capacities.
- Modine Mfg. Co.**, Racine, Wisc.  
Modine Copper Radiation. Booklet, 28 pp., 8½ x 11 ins. Illustrated. Deals with industrial, commercial and domestic heating.  
A Few Short Years. Folder, 4 pp., 8½ x 11 ins. Illustrated. Heating for garages.  
Dairy Plant Heating. Folder, 4 pp., 8½ x 11 ins. Illustrated.  
Industrial Heating. Folder, 4 pp., 8½ x 11 ins. Illustrated.  
Modine Unit Heater. Folder, 6 pp., 8½ x 11 ins. Illustrated.
- Nash Engineering Company**, South Norwalk, Conn.  
Bulletin 85. Booklet, 12 pp., 10¼ x 7½ ins. Illustrated in color. Describes construction and operation of the Jennings Return Line Vacuum Heating Pump.  
Bulletin 87. Brochure, 8 pp., 10¼ x 7½ ins. Illustrated in color. Deals with Sizes T and U Jennings Vacuum Heating Pump for 2500 and 5000 square feet equivalent direct radiation.  
Bulletin 63. Booklet, 4 pp., 10¼ x 7½ ins. Illustrated. Describes in detail the Unit Type Motor Driven Jennings Condensation Pump.
- National Radiator Corporation**, Johnstown, Pa.  
The Crimson Flame. Folder, 6 pp., 4½ x 7 ins. Illustrated.  
Contento Brings Contentment to Your Home. Folder, 12 pp., 3½ x 6 ins. Illustrated.  
National Jacketed Boiler. Folder, 4 pp., 8½ x 11 ins. Illustrated.  
National Super-Smokeless Boiler. Folder, 4 pp., 8½ x 11 ins. Illustrated.  
Aero, the National Radiator Sizes and Ratings. Booklet, 16 pp., 5 x 7½ ins. Illustrated.
- Sarco Company, Inc.**, 183 Madison Ave., New York City, N. Y.  
Steam Heating Specialties. Booklet, 6 pp., 6 x 9 ins. Illustrated. Data on Sarco Packless Supply Valves and Radiator Traps for vacuum and vapor heating systems.  
Equipment Steam Traps and Temperature Regulations. Booklet, 6 pp., 6 x 9 ins. Illustrated. Deals with Sarco Steam Traps for hospital, laundry and kitchen fixtures and the Sarco Self-contained Temperature Regulation for hot water service tanks.
- B. F. Sturtevant Company**, Hyde Park, Boston, Mass.  
Tempervane Heating Units. Catalog 363. Booklet, 44 pp., 8½ x 11 ins. Illustrated. Data on "Heating Every Corner with Maximum Economy."

### HOISTS, TELESCOPIC

- Gillis & Geoghegan, Inc.** 535 West Broadway, New York.  
G & G Telescopic Hoist. Booklet, 24 pp., 8½ x 11 ins. Illustrated complete data on hoists.  
Ash Removal. Folder, 8½ x 11 ins. Illustrated. Hoists for removing ashes from basements.

### HOSPITAL EQUIPMENT

- Bryant Electric Co.**, Bridgeport, Conn.  
Hospital Signal Devices. Bulletin HS-622-RP. Complete information on hospital signal devices. Full Control Type. 8½ x 10 ins. 46 pp.  
Hospital Signal Devices. Bulletin HS-1023. Magnetic Control Type. 8½ x 10 ins. 26 pp.
- The Frink Co., Inc.**, 369 Lexington Ave., New York City.  
Catalog 426. 7 x 10 ins., 16 pp. A booklet illustrated with photographs and drawings, showing the types of light for use in hospitals, as operating table reflectors, linolite and multilite concentrators, ward reflectors, bed lights and microscopic reflectors, giving sizes and dimensions, explaining their particular fitness for special uses.
- The International Nickel Company**, 67 Wall St., New York, N. Y.  
Hospital Applications of Monel Metal. Booklet, 8½ x 11½ ins., 16 pp. Illustrated. Gives types of equipment in which Monel Metal is used, reasons for its adoption, with sources of such equipment.
- John Van Range Co.**, Cincinnati, Ohio.  
Practical Planning for Hospital Food Service. Brochure, 62 pp., 8½ x 11 inches. Illustrated.
- Wilmot Castle Company**, Union Trust Bldg., Rochester, N. Y.  
The Hospital Sterilizer Data Sheets. Booklet, 16 pp., 8½ x 11 ins. Illustrated. Data on planning sterilizer installations.

### HOTEL EQUIPMENT

- Pick-Barth Company, Inc.**, Albert, 1200 West 35th St., Chicago, and 34 Cooper Square, New York.  
Some Thoughts on Furnishing a Hotel. Booklet, 7½ x 9 ins. Data on complete outfitting of hotels.

### INCINERATORS

- Josam Mfg. Co.**, Michigan City, Ind.  
Josam-Graver Incinerators. Folder, 4 pp., 8½ x 11 ins. Illustrated.
- Kerner Incinerator Company**, 715 E. Water St., Milwaukee, Wis.  
Incinerators (Chimney-fed). Catalog No. 18 (Architects' and Builders' Edition). Size 8½ x 11 ins., 20 pp. Illustrated. Describes principles and design of Kernerator Chimney-fed Incinerators for residences, apartments, hospitals, schools, apartment hotels, clubs and other buildings. Shows all standard models and gives general information and working data.  
Sanitary Elimination of Household Waste. Booklet, 4 x 9 ins., 16 pp. Illustrated. Gives complete information on the Kernerator for residences.  
Garbage and Waste Disposal for Apartment Buildings. Folder, 8½ x 11 ins., 16 pp. Illustrated. Describes principle and design of Kernerator Chimney-fed Incinerator for apartments and gives list of buildings where it has been installed.  
Sanitary Disposal of Waste in Hospitals. Booklet, 4 x 9 ins., 12 pp. Illustrated. Shows how this necessary part of hospital service is taken care of with the Kernerator. Gives list of hospitals where installed.  
Estate Type Kernerator. For Estates and Country Homes. Booklet, 8 pp., 8½ x 11 inches. Illustrated.

### INSULATION

- Armstrong Cork & Insulation Co.**, Pittsburgh, Pa.  
The Insulation of Roofs with Armstrong's Corkboard. Booklet. Illustrated. 7½ x 10½ ins., 32 pp. Discusses means of insulating roofs of manufacturing or commercial structures.  
Insulation of Roofs to Prevent Condensation. Illustrated booklet, 7½ x 10½ ins., 36 pp. Gives full data on valuable line of roof insulation.  
Filing Folder for Pipe Covering Data. Made in accordance with A. I. A. rules.

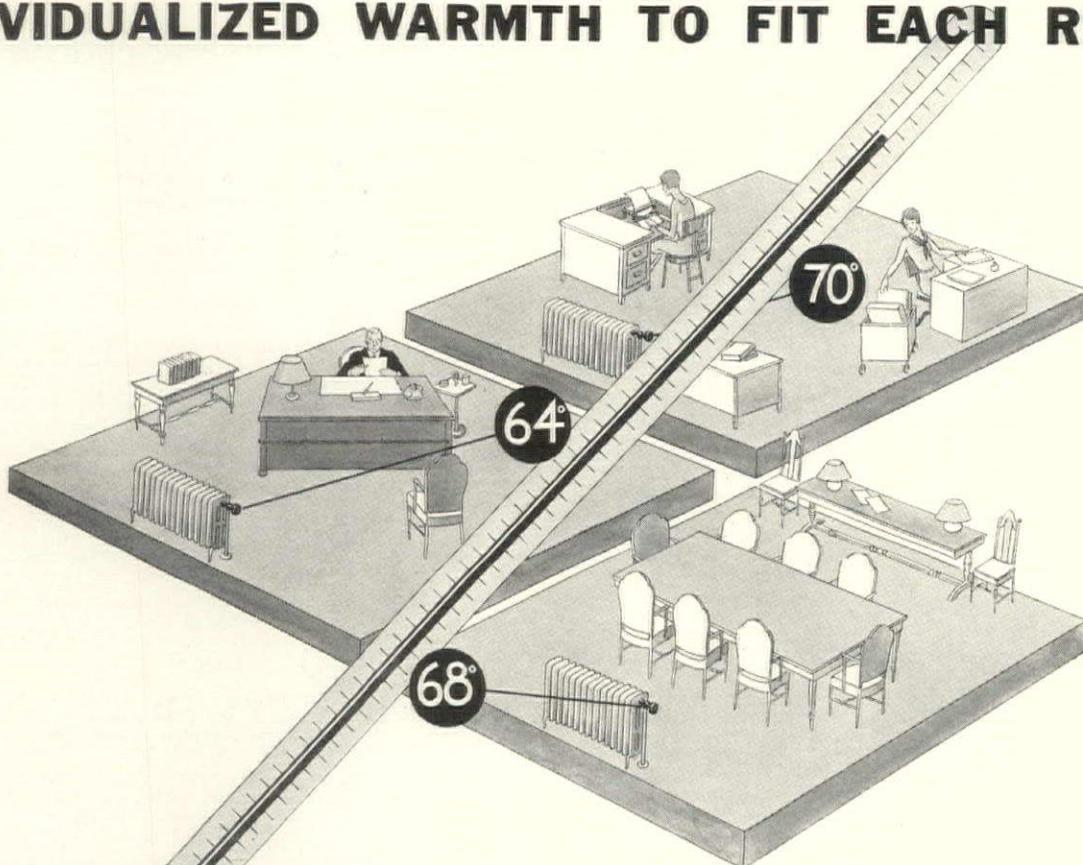
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## SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 172

## INSULATION—Continued

- The Cork-lined House Makes a Comfortable Home. 5 x 7 ins. 32 pp. Illustrated.
- Armstrong's Corkboard. Insulation for Walls and Roofs of Buildings. Booklet, 66 pp., 9½ x 11¼ ins. Illustrates and describes use of insulation for structural purposes.
- Cork Import Corporation, 345 West 40th Street, New York. Novoid Cork Covering for Cold Pipes, Coolers and Tanks. Folder 8½ x 11 ins. Illustrated.
- Novoid Corkboard Insulation. Folder 8½ x 11 ins. Illustrated.
- Structural Gypsum Corporation, Linden, N. J. Heat Insulation Value of Gypsteel. Folder, 4 pp., 8½ x 11 ins. Brochure, by Charles L. Norton, of M. I. T.

## JOISTS

- Concrete Steel Company, 2 Park Avenue, New York, N. Y. Havemeyer Steel Joist. The Joist with the Twin-Tee Chords. Booklet, 24 pp., 8½ x 11 ins. Illustrated.
- Modern Concrete Reinforcement. Brochure, 32 pp., 8½ x 11 ins. Illustrated.
- Standard Practice for Placing Havemeyer Reinforcement in Columns, Beams and Slabs. Data sheets, 8½ x 11 ins. Illustrated.
- Kalman Steel Company, Chicago, Ill. Steel Joists. Brochure, 20 pp., 8½ x 11 ins. Joists and accessories. Firesafe Floor and Roof Construction. Booklet, 8 pp., 8½ x 11 ins. Joists, lath and accessories.

## KITCHEN EQUIPMENT

- The International Nickel Company, 67 Wall St., New York, N. Y. Hotels, Restaurants and Cafeteria Applications of Monel Metal. Booklet, 8½ x 11 ins., 32 pp. Illustrated. Gives types of equipment in which Monel Metal is used, with service data and sources of equipment.
- Prometheus Electric Corporation, 360 West 13th St., New York. Electric Heating Specialties. Booklet, 24 pages. 8½ x 11 ins. Illustrated. Specialties for heating, cooking, hospitals, organ lofts, etc.
- John Van Range Co., Cincinnati. Practical Planning for Church Food Service. Booklet, 32 pp., 8½ x 11 ins. Illustrated.
- Practical Planning for Club Food Service. Booklet, 32 pp., 8½ x 11 ins. Illustrated.
- Practical Planning for School Food Service. Booklet, 32 pp., 8½ x 11 ins. Illustrated.
- Planning Restaurants That Make Money. Booklet, 78 pp., 8½ x 11 ins. Illustrated. Excellent work on equipment.
- Practical Planning for Hospital Food Service. Brochure, 62 pp., 8½ x 11 inches. Illustrated.

## LABORATORY EQUIPMENT

- Alberene Stone Co., 153 West 23rd Street, New York City. Booklet, 8¼ x 11¼ ins., 26 pp. Stone for laboratory equipment, shower partitions, stair treads, etc.
- Duriron Company, Dayton, Ohio. Duriron Acid, Alkali and Rust-proof Drain Pipe and Fittings. Booklet, 8½ x 11 ins., 20 pp. Full details regarding a valuable form of piping.

## LANTERNS

- Todhunter, Inc., 119 East 57th St., New York, N. Y. Lanterns. Booklet, 16 pp., 8½ x 11 ins. Illustrated. Deals with a fine assortment of fixtures for exterior and interior use.

## LATH, METAL AND REINFORCING

- Concrete Steel Company, 2 Park Avenue, New York, N. Y. Havemeyer Building Products, Booklet, 40 pp., 8½ x 11 ins. Illustrated.
- Kalman Steel Company, Chicago, Ill. Firesafe Building Products. Booklet, 20 pp., 8½ x 11 ins. Lath, fireplace accessories, beads, etc.
- Milcor Steel Co., Milwaukee. The Milcor Manual. Booklet, 96 pp., 8½ x 11 ins. Illustrated. Data on metal lath and similar materials.
- Milcor Metal Ceiling Catalog. Booklet, 288 pp., 8½ x 11 ins. Illustrated. Data on metal ceiling and wall construction.
- National Steel Fabric Co., Pittsburgh, Pa. Better Walls for Better Homes. Brochure, 16 pp., 7¼ x 11¼ ins. Illustrated. Metal lath, particularly for residences.
- Steeltex for Floors. Booklet, 24 pp., 8½ x 11 ins. Illustrated. Combined reinforcing and form for concrete or gypsum floors and roofs.
- Steeltex Data Sheet No. 1. Folder, 8 pp., 8½ x 11 ins. Illustrated. Steeltex for floors on steel joists with round top chords.

## LATH, METAL AND REINFORCING—Continued

- Steeltex Data Sheet No. 2. Folder, 8 pp., 8½ x 11 ins. Illustrated. Steeltex for floors on steel joists with flat top flanges.
- Steeltex Data Sheet No. 3. Folder, 8 pp., 8½ x 11 ins. Illustrated. Steeltex for folders on wood joists.
- Truscon Steel Company, Youngstown, Ohio. Truscon ¼-inch Hy-Rib for Roofs, Floors and Walls. Booklet, 8½ x 11 ins., illustrating Truscon ¼-inch Hy-Rib as used in industrial buildings. Plates of typical construction. Progressive steps of construction. Specification and load tables.

## LAUNDRY MACHINERY

- American Laundry Machinery Co., Norwood Station, Cincinnati, O. Functions of the Hotel and Hospital Laundry. Brochure, 8 pp., 8½ x 11 ins. Valuable data regarding an important subject.
- Laundry Equipment of Small Hotels, Hospitals and Institutions. Booklet, 36 pp., 8½ x 11 ins. Illustrated.
- Troy Laundry Machinery Co., Inc., 9 Park Place, New York City. Laundry Machinery for Large Institutions. Loose-Leaf booklet, 50 pp., 8½ x 11 ins. Illustrated.
- Laundry Machinery for Small Institutions. Loose-leaf brochure, 50 pp., 8½ x 11 ins. Illustrated.
- Accessory Equipment for Institutional Laundries. Leather bound book, 50 pp., 8½ x 11 ins. Illustrated.
- Dry Cleaning Equipment for Institutional Purposes. Brochure, 50 pp., 8½ x 11 ins. Illustrated.

## LIGHTING EQUIPMENT

- The Frink Co., Inc., 369 Lexington Ave., New York, N. Y. Catalog 415, 8½ x 11 ins., 46 pp. Photographs and scaled cross-sections. Specialized bank lighting, screen and partition reflectors, double and single desk reflectors and Polaralite Signs.
- Gleason Tiebout Glass Company, 67 West 44th St., New York, N. Y. Fragment of Celestialite. Booklet, 24 pp., 7 x 10 ins. Illustrated. Data on lighting for offices, schools, hospitals, etc.
- Celestialite Catalog 727. Booklet, 18 pp., 8½ x 11 ins. Illustrated. Valuable brochure on lighting.
- Smyser-Royer Co., 1700 Walnut Street, Philadelphia, Pa. Catalog "J" on Exterior Lighting Fixtures. Brochure, illustrated, giving data on over 300 designs of standards, lanterns and brackets of bronze or cast iron.
- Todhunter, 119 East 57th St., New York, N. Y. Lighting Fixtures, Lamps and Candlesticks. 24 pp., 8½ x 11 ins. Illustrated. Fine assortment of lighting accessories.
- Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. Industrial Lighting Equipment. Booklet, 32 pp., 8½ x 11 ins. Illustrated.
- Commercial Lighting. Brochure, 24 pp., 8½ x 11 ins. Illustrated. Airport and Floodlighting Equipment. Booklet, 20 pp., 8½ x 11 ins. Illustrated.

## MAIL CHUTES

- Cutler Mail Chute Company, Rochester, N. Y. Cutler Mail Chute Model F. Booklet, 4 x 9¼ ins., 8 pp. Illustrated.

## MANTELS

- Henry Klein & Co., Inc. 40-46 West 23rd Street, New York. Driwood Mantels. Booklet, 12 pp., 8½ x 11 ins. Illustrated. Fine line of eighteenth century English and American mantels.
- Todhunter, Inc., 119 East 57th St., New York, N. Y. Georgian Mantels. Brochure, 12 pp., 8½ x 11 ins. Illustrated. Illustrates and describes an excellent assortment of fine mantels based on Georgian precedent.

## MARBLE

- The Georgia Marble Company, Tate, Ga.; New York Office, 1328 Broadway. Why Georgia Marble Is Better. Booklet, 3¼ x 6 ins. Gives analysis, physical qualities, comparison of absorption with granite, opinions of authorities, etc.
- Convincing proof. 3¼ x 6 ins., 8 pp. Classified list of buildings and memorials in which Georgia Marble has been used, with names of Architects and Sculptors.
- Hurt Building, Atlanta; Senior High School and Junior College, Muskegon, Mich. Folders, 4 pp., 8½ x 11 ins. Details.

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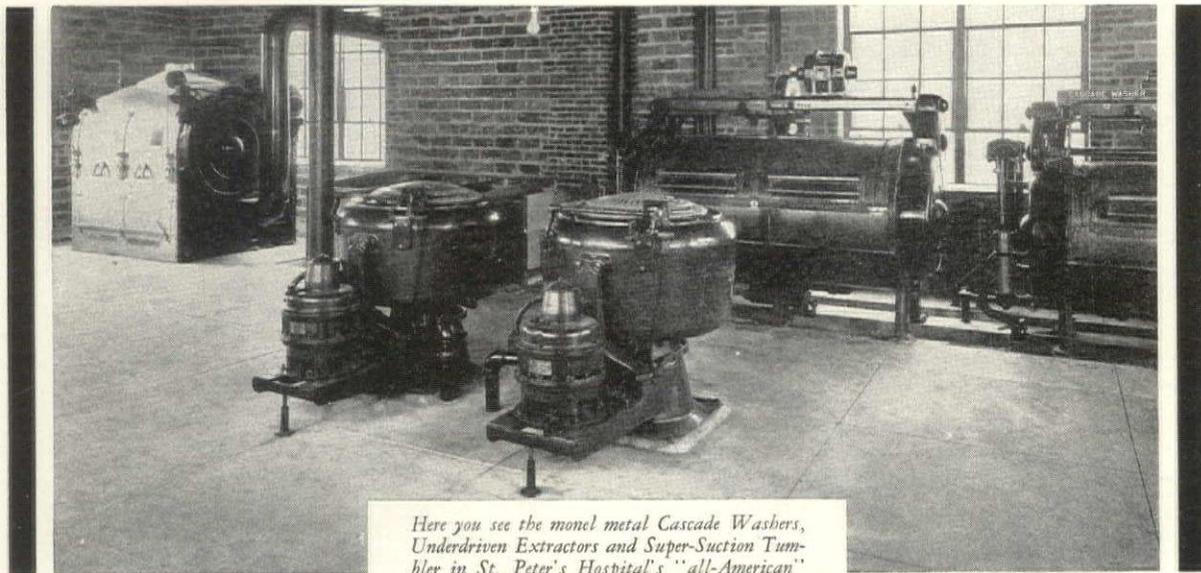
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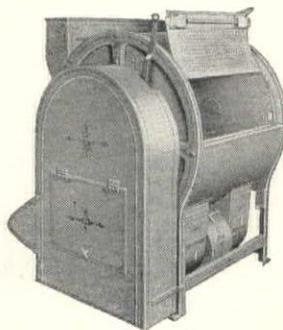
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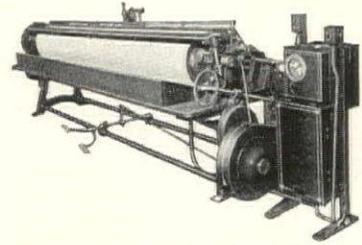
The American Raytex Washer



The American 17" Monex Extractor



The American Drytex Tumbler



The American Electric Steam Ironer

## SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 174

## METALS

- Aluminum Company of America, Pittsburgh.**  
Architectural Aluminum. Brochure, 30 pp., 8½ x 11 ins. Illustrated. An excellent booklet on the subject.
- The International Nickel Company, 67 Wall St., New York N. Y.**  
Monel Metal Primer. 8 folders, 4 pp., 8½ x 11 ins. Illustrated. Valuable data on use of monel in kitchens, laundries, etc.

## MILL WORK—See also Wood

- Curtis Companies Service Bureau, Clinton, Iowa.**  
Your Dream Kitchen, Booklet, 11 pp., 7¾ x 10½ ins. Illustrated. Fine line of fittings for kitchens, breakfast alcoves, etc.
- Hartmann-Sanders Company, 2155 Elston Ave., Chicago, Ill.**  
Column Catalog, 7½ x 10 ins., 48 pp. Illustrated. Contains prices on columns 6 to 36 ins. diameter, various designs and illustrations of columns and installations.
- The Pergola Catalog, 7½ x 10 ins., 64 pp. Illustrated.** Contains illustrations of pergola lattices, garden furniture in wood and cement, garden accessories.
- Klein & Co., Inc., Henry, 11 East 37th St., New York, N. Y.**  
Two Driwood Interiors. Folder, 4 pp., 6¼ x 9 ins. Illustrated. Use of moulding for paneling walls.
- A New Style in Interior Decoration.** Folder, 4 pp., 6¼ x 9 ins. Illustrated. Deals with interior woodwork.
- Driwood Period Mouldings in Ornamented Wood.** Booklet, 28 pp., 8½ x 11 ins. Illustrated.
- How Driwood Period Mouldings in Ornamented Wood Set a New Style in Decoration.** Folder.
- Roddis Lumber and Veneer Co., Marshfield, Wis.**  
Roddis Doors. Brochure, 24 pp., 5¼ x 8¼ ins. Illustrated price list of doors for various types of buildings.
- Roddis Doors, Catalog G.** Booklet, 184 pp., 8¼ x 11 ins. Completely covers the subject of doors for interior use.
- Roddis Doors for Hospitals.** Brochure, 16 pp., 8½ x 11 ins. Illustrated work on hospital doors.
- Roddis Doors for Hotels.** Brochure, 16 pp., 8½ x 11 ins. Illustrated work on doors for hotel and apartment buildings.

## ORNAMENTAL PLASTER

- Jacobson & Company, 239 East 44th Street, New York.**  
A Book of Modern Design. Booklet, 44 pp., 9 x 12 ins. Illustrated. Decorative plaster, particularly for ceilings.

## PAINTS, STAINS, VARNISHES AND WOOD FINISHES

- Medusa Portland Cement Co., 1002 Engineers' Building, Cleveland.**  
"How to Paint Concrete and Masonry Surfaces." Booklet, 16 pp., 8½ x 11 ins. Illustrated.
- Minwax Company, Inc., 11 West 42nd St., New York.**  
Color Card and Specifications for Minwax Brick and Cement Coating. Folder, 4 pp., 8½ x 11 ins. Illustrated.
- National Lead Company, 111 Broadway, New York, N. Y.**  
Handy Book on Painting. Book, 5½ x 3¼ ins., 100 pp. Gives directions and formulae for painting various surfaces of wood, plaster, metals, etc., both interior and exterior.
- Red Lead in Paste Form.** Booklet, 6¼ x 3½ ins., 16 pp. Illustrated. Directions and formulae for painting metals.
- Came Lead.** Booklet, 6 x 8¼ ins., 12 pp. Illustrated. Describes various styles of lead comes.
- Toch Brothers, New York, Chicago, Los Angeles.**  
Architects' Specification Data. Sheets in loose leaf binder, 8½ x 11 ins., dealing with an important line of materials.

## PARTITIONS

- Circle A. Products Corporation, New Castle, Ind.**  
Circle A. Partitions Sectional and Movable. Brochure. Illustrated. 8½ x 11¼ ins., 32 pp. Full data regarding an important line of partitions, along with Erection Instructions for partitions of three different types.
- Irving Hamlin, Evanston, Ill.**  
Hamlinized Folding Partitions Made from Hamlin's Evanston Soundproof Doors, Sectional and Movable. Folder, 4 pp., 8½ x 11 ins. Illustrated.

## PARTITIONS—Continued

- Hauserman Company, E. F., Cleveland, Ohio.**  
Movable Steel Partitions for sub-dividing office and industrial space. Folders on complete line, 8½ x 11, giving full data on the different types of steel partitions with details, elevations and specifications. Also 40-page Architects' Portfolio AIA—28A3, containing 20 full page plates of practical office layouts.
- Hollow Steel Standard Partitions.** Various folders, 8½ x 11 ins. Illustrated. Give full data on different types of steel partitions, together with details, elevations and specifications.
- Henry Klein & Co., 25 Grand Street, Elmhurst, L. I., N. Y.**  
Telesco Partition. Catalog, 8¼ x 11 ins., 14 pp. Illustrated. Shows typical offices laid out with Telesco partitions, cuts of finished partition units in various woods. Gives specifications and cuts of buildings using Telesco.
- Detailed Instructions for Erecting Telesco Partitions.** Booklet, 24 pp., 8½ x 11 ins. Illustrated. Complete instructions, with cuts and drawings, showing how easily Telesco Partition can be erected.
- Improved Office Partition Co., 25 Grand St., Elmhurst, L. I., N. Y.**  
(See Henry Klein & Co.)
- Richards-Wilcox Mfg. Co., Aurora, Ill.**  
Partitions. Booklet, 7 x 10 ins., 32 pp. Illustrated. Describes complete line of track and hangers for all styles of sliding parallel, accordion and flush-door partitions.
- Structural Gypsum Corporation, Linden, N. J.**  
Service Sheet No. 4. Specifications for Gypsteel Partition File. Folder, 8½ x 11 ins. Illustrated.
- Telesco Office Partition, 25 Grand St., Elmhurst, L. I., N. Y.**  
(See Henry Klein & Co.)

## PIPE

- American Brass Company, Waterbury, Conn.**  
Bulletin B-1. Brass Pipe for Water Service. 8½ x 11 ins., 28 pp. Illustrated. Gives schedule of weights and sizes (I.P.S.) of seamless brass and copper pipe, shows typical installations of brass pipe, and gives general discussion of the corrosive effect of water on iron, steel and brass pipe.
- American Rolling Mill Company, Middletown, Ohio.**  
How ARMCODredging Products Cut Costs. Booklet, 16 pp., 6 x 9 ins. Data on dredging pipe.
- Bethlehem Steel Company, Bethlehem, Pa.**  
Bethlehem Wrought Steel Pipe, Catalog P. Booklet, 20 pp., 4¼ x 7¼ ins. Illustrated.
- Clow & Sons, James B., 534 S. Franklin St., Chicago, Ill.**  
Catalog A. 4 x 16½ ins., 700 pp. Illustrated. Shows a full line of steam, gas and water works supplies.
- Duriron Company, Dayton, Ohio.**  
Duriron Acid, Alkali, Rust-proof Drain Pipe and Fittings. Booklet, 20 pp., 8½ x 11 ins. Illustrated. Important data on a valuable line of pipe.
- Maurice A. Knight, Akron, Ohio.**  
Knighthware in the Princeton Chemical Laboratory. Booklet, 16 pp., 6¼ x 8½ ins. Illustrated.
- National Tube Co., Frick Building, Pittsburgh, Pa.**  
"National" Bulletin No. 2. Corrosion of Hot Water Pipe, 8½ x 11 ins., 24 pp. Illustrated. In this bulletin is summed up the most important research dealing with hot water systems. The text matter consists of seven investigations by authorities on this subject.
- "National" Bulletin No. 3. The Protection of Pipe Against Internal Corrosion, 8½ x 11 ins., 20 pp. Illustrated. Discusses various causes of corrosion, and details are given of the deactivating and deaerating systems for eliminating or retarding corrosion in hot water supply lines.
- "National" Bulletin No. 25. "National" Pipe in Large Buildings. 8½ x 11 ins., 88 pp. This bulletin contains 254 illustrations of prominent buildings of all types, containing "National" Pipe, and considerable engineering data of value to architects, engineers, etc.
- Modern Welded Pipe.** Book of 88 pp., 8½ x 11 ins., profusely illustrated with halftone and line engravings of the important operations in the manufacture of pipe.

## PLASTER

- Best Bros. Keene's Cement Co., Medicine Lodge, Kans.**  
Information Book. Brochure, 24 pp., 5 x 9 ins. Lists grades of plaster manufactured; gives specifications and uses for plaster.
- Plasterers' Handbook.** Booklet, 16 pp., 3½ x 5½ ins. A small manual for use of plasterers.

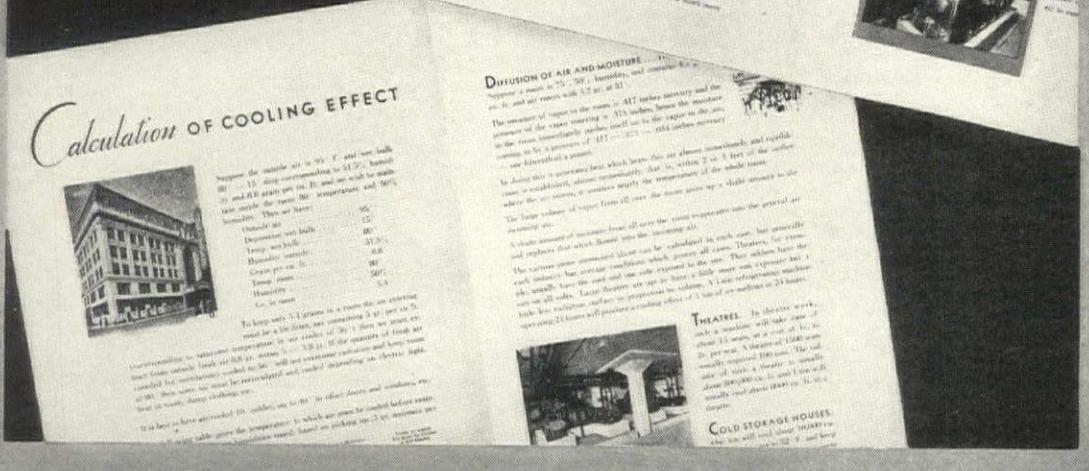
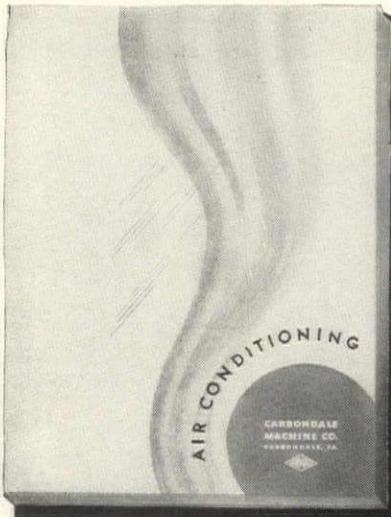
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## SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 176

### PLASTER—Continued

Interior Walls Everlasting. Brochure, 20 pp., 6¼ x 9¼ ins. Illustrated. Describes origin of Keene's Cement and views of buildings in which it is used.

Structural Gypsum Corporation, Linden, N. J.

Plaster Time Book. Booklet, 4 x 7 ins., 48 pp. Illustrated. Gives specifications, yardage, and general instructions for using Gyp-steel Gypsum Plasters.

### PLUMBING EQUIPMENT

Clow & Sons, James B., 534 S. Franklin St., Chicago, Ill.

Catalog M. 9¼ x 12 ins., 184 pp. Illustrated. Shows complete line of plumbing fixtures for Schools, Railroads and Industrial Plants.

Crane Company, 836 S. Michigan Ave., Chicago, Ill.

Plumbing Suggestions for Home Builders. Catalog, 3 x 6 ins., 80 pp. Illustrated.

Plumbing Suggestions for Industrial Plants. Catalog, 4 x 6½ ins., 34 pp. Illustrated.

Planning the Small Bathroom. Booklet, 5 x 8 ins. Discusses planning bathrooms of small dimensions.

Duriron Company, Dayton, Ohio.

Duriron Acid, Alkali and Rust-Proof Drain Pipe and Fittings. Booklet, 8½ x 11 ins., 20 pp. Full details regarding a valuable form of piping.

Imperial Brass Mfg. Co., 1200 W. Harrison St., Chicago, Ill.

Watrous Patent Flush Valves, Duojet Water Closets, Liquid Soap Fixtures, etc. 8½ x 11 ins., 136 pp., loose-leaf catalog, showing roughing-in measurements, etc.

Kohler Company, Kohler, Wis.

Catalog K. 322 pp., 8½ x 11 ins. Illustrated. Loose-leaf catalog showing complete line of plumbing fixtures and accessories. New Beauty and Utility in Plumbing Fixtures. Booklet, 36 pp., 6 x 9 ins. Illustrated. Shows well-arranged bathrooms, kitchens, etc.

Speakman Company, Wilmington, Del.

Catalog K. Booklet, 150 pp., 8½ x 10½ ins. Illustrated. Data on showers and equipment details.

### PNEUMATIC TUBE SYSTEMS

G & G Atlas Systems, Inc., 544 West Broadway, New York.

12 pp., 8½ x 11. Illustrated booklet of tube systems for retail stores and other buildings.

4 pp., 8½ x 11. Data Sheet showing schematic diagrams for hotel, bank, factory and wholesale buildings, table of sizes, space requirements and preliminary layout steps. A. I. A. 35h21.

### PUMPS

Kewanee Private Utilities Co., 442 Franklin St., Kewanee, Ill.

Bulletin E. 7¾ x 10¼ ins., 32 pp. Illustrated. Catalog. Complete descriptions, with all necessary data, on Standard Service Pumps, Indian Brand Pneumatic Tanks, and Complete Water Systems, as installed by Kewanee Private Utilities Co.

Nash Engineering Company, South Norwalk, Conn.

Bulletin 52. Brochure. 6 pp., 10½ x 7¾ ins. Illustrated in color. Devoted to Jennings Standard Centrifugal Pumps for house service, boosting city water pressure to supply top stories, for circulating warm water, etc.

Bulletin 97. Booklet. 16 pp., 10½ x 7¾ ins. Illustrated in color. Describes the design, construction and operation of the Jennings Suction Sump Pump.

Bulletin 11. Brochure. 8 pp., 10½ x 7¾ ins. Illustrated in color. Deals with Nash Hytor Vacuum Pumps for air and gases.

### REFRIGERATION

The Fulton Syphon Company, Knoxville, Tenn.

Temperature Control of Refrigeration Systems. Booklet, 8 pp., 8½ x 11 ins. Illustrated. Deals with cold storage, chilling of water, etc.

### REINFORCED CONCRETE—See also Construction, Concrete

Concrete Steel Company, 2 Park Avenue, New York, N. Y.

Modern Concrete Reinforcement. Booklet, 32 pp., 8½ x 11 ins. Illustrated.

Kalman Steel Company, Chicago, Ill.

Building for Permanence. Booklet, 8 pp., 8½ x 11 ins. Reinforced concrete products.

Truscon Steel Company, Youngstown, Ohio.

Shearing Stresses in Reinforced Concrete Beams. Booklet, 8½ x 11 ins., 12 pp.

### RESTAURANT EQUIPMENT

John Van Range Company, Cincinnati.

Planning Restaurants That Make Money. Booklet, 78 pp., 8½ x 11 ins. Illustrated. Excellent work on equipment.

### ROOFING

Federal Cement Tile Co., 608 S. Dearborn Street, Chicago.

Catalog and Roof Standards. Booklet, 36 pp., 8½ x 11 ins. Illustrated. Describes Featherweight Concrete Insulating Roof Slabs, including complete data, weights and dimensions, specifications and detail drawings. Also includes complete information on Featherweight Nailings Concrete Roof Slabs for use with ornamental slate or copper covering. The catalog is profusely illustrated and contains also a partial list of users.

Examples of Theaters and Theater Roofs. Brochure, 16 pp., 8½ x 11 ins., Illustrated. Contains views of theaters designed by some of the country's leading architects.

Federal Interlocking Tile and Glass Tile. 4 pp., 8½ x 11 ins. Illustrates and describes complete roof or precast concrete slabs requiring no composition covering.

Heinz Roofing Tile Co., 1925 West Third Avenue, Denver, Colo.

Plymouth-Shingle Tile with Sprocket Hips. Leaflet, 8½ x 11 ins. Illustrated. Shows use of English shingle tile with special hips.

Italian Promenade Floor Tile. Folder, 2 pp., 8½ x 11 ins. Illustrated. Floor tiling adapted from that of Davanzati Palace.

Mission Tile. Leaflet, 8½ x 11 ins. Illustrated. Tile such as are used in Italy and Southern California.

Georgian Tile. Leaflet, 8½ x 11 ins. Illustrated. Tiling as used in old English and French farmhouses.

Johns-Manville Corporation, New York.

The New Book of Roofs. Brochure, 24 pp., 8½ x 11 ins. Illustrated. Roofing from the Architect's point of view.

Ludowici-Celadon Company, 104 So. Michigan Ave., Chicago, Ill.

"Ancient" Tapered Mission Tiles. Leaflet, 8½ x 11 ins., 4 pp. Illustrated. For architects who desire something out of the ordinary this leaflet has been prepared. Describes briefly the "Ancient" Tapered Mission Tiles, hand-made with full corners and designed to be applied with irregular exposures.

Milcor Steel Co., Milwaukee.

Milcor Architectural Sheet Metal Guide. Booklet. 72 pp., 8½ x 11 ins. Illustrated. Metal tile roofing, skylights, ventilators, etc.

Milcor Sheet Metal Handbook. Brochure. 128 pp., 8½ x 11 ins. Illustrated. Deals with rain-carrying equipment, etc.

Structural Gypsum Corporation, Linden, N. J.

Gypsteel Pre-cast Fireproof Roofs. Booklet, 48 pp., 8½ x 11 ins. Illustrated. Information regarding a valuable type of roofing

Service Sheet No. 1. Specifications and Details of Design and Construction for Gypsteel Long-Span Pre-Cast Roofs. Folder, 8½ x 11 ins. Illustrated.

Service Sheet No. 2. Specifications and Details of Design and Construction for Gypsteel Short-Span Pre-Cast Roofs. Folder, 8½ x 11 ins. Illustrated.

Service Sheet No. 4. Specifications and Details of Design and Construction for Gypsteel Pre-Cast Assembled Slab Roofs. Folder, 8½ x 11 ins. Illustrated.

### SCHOOL EQUIPMENT

John Van Range Co., Cincinnati.

Practical Planning for School Food Service. Booklet, 32 pp., 8½ x 11 ins. Illustrated.

### SEWAGE DISPOSAL

Kewanee Private Utilities, 442 Franklin St., Kewanee, Ill.

Specification Sheets. 7¾ x 10¼ ins., 40 pp. Illustrated. Detailed drawings and specifications covering water supply and sewage disposal systems.

Nash Engineering Company, South Norwalk, Conn.

Bulletin 67. Booklet. 16 pp., 10¾ x 7½ ins. Illustrated in color. Describes Type A Jennings Sewage Ejector for handling Un-screened sewage and raising it from basements below sewer level.

Bulletin 103. Brochure. 16 pp., 10¾ x 7½ ins. Illustrated in color. Deals with small size Type B Jennings Sewage Ejector.

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*This advertisement is one of a series addressed to Architects, Engineers and Institutional Executives.*

## QUESTION:

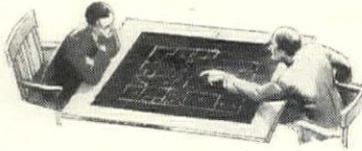
*What determines correct ventilation in the institutional laundry!*

## ANSWER:

Adequate ventilation of the institutional laundry should be insisted on for several reasons. It safeguards the health of employees. It enables them to work in comfort. The result is not only a vanishing labor turnover, but also an increase in the quantity and quality of work done.

To design and install an efficient ventilating system, experience and familiarity with such work are essential. Air volume, air temperature, relative humidity, air motion, air purity with regard to freedom from bacteria, odors, dust, toxic gases and other objectionable matter, and air distribution including general distribution, air movement and freedom from drafts are factors that must be accurately determined and properly balanced one against the other. On these factors good ventilation depends.

Distribution ducts, dampers, etc., are all matters subject to exacting design. Number of air changes per hour, quantity of heat and vapor given off from machines, type of exhaust used, and many other things influence the layout.



Hot humid air, gases and vapors should be completely exhausted through properly constructed hoods and ducts. Such exhausts are sometimes planned for each individual washer and ironer. Sometimes a group of machines or an entire room is exhausted as a unit. A slow movement of air in the working space is a necessity. Drafts are to be avoided. Not only are they objectionable from the standpoint of health but they often disturb work in the finishing department.

Rooms or spaces devoted to receiving, storing, sorting, toilets and other places giving off noxious smells should be exhausted independently. The exhaust system should be adequate for running during the day and also during the night, over week-ends and on holidays. In hospitals, this applies also to the sterilization room.

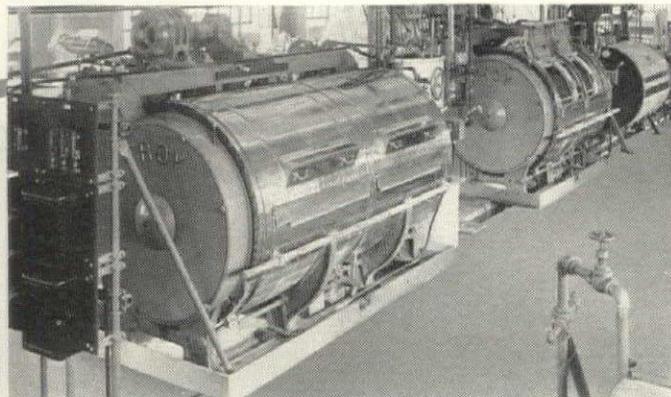
The whole subject of ventilation, of which the above is but the merest outline, is one on which Troy Engineering Service is in a position to render valuable assistance to the architect and institutional executive.

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## SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 178

### SCREENS

- American Brass Co., The, Waterbury, Conn.**  
Facts for Architects About Screening. Illustrated folder, 9½ x 11¼ ins., giving actual samples of metal screen cloth and data on fly screens and screen doors.
- Athey Company, 6015 West 65th St., Chicago, Ill.**  
The Athey Perennial Window Shade. An accordion pleated window shade, made from translucent Herringbone woven Coult cloth, which raises from the bottom and lowers from the top. It eliminates awnings, affords ventilation, can be dry-cleaned and will wear indefinitely.

### SHELVING-STEEL

- David Lupton's Sons Company, Philadelphia, Pa.**  
Lupton Steel Shelving. Catalog E. Illustrated brochure, 40 pp., 8½ x 11 ins. Deals with steel cabinets, shelving, racks, doors, partitions, etc.

### STEEL PRODUCTS FOR BUILDING

- Bethlehem Steel Company, Bethlehem, Pa.**  
Steel Joists and Stanchions. Booklet, 72 pp., 4 x 6¼ ins. Data for steel for dwellings, apartment houses, etc.
- Bethlehem Structural Shapes Bound Volume, 368 pp., 4¼ x 6¼ ins. Illustrated.
- Steel Frame House Company, Pittsburgh, Pa. (Subsidiary of McClintic-Marshall Corp.)**  
Steel Framing for Dwellings. Booklet, 16 pp., 8½ x 11 ins. Illustrated.
- Steel Framing for Gasoline Service Stations. Brochure, 8 pp., 8½ x 11 ins. Illustrated.
- Steel Frame Standard Gasoline Service Stations. Booklet, 8 pp., 8½ x 11 ins. Illustrated. Three standard designs of stations.
- Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.**  
The Arc Welding of Structural Steel. Brochure, 32 pp., 8½ x 11 ins. Illustrated. Deals with an important structural process.

### STONE, BUILDING

- Indiana Limestone Company, Bedford, Ind.**  
Volume 3, Series A-3. Standard Specifications for Cut Indiana Limestone work, 8½ x 11 ins., 56 pp. Containing specifications and supplementary data relating to the best methods of specifying and using this stone for all building purposes.
- Volume 1, Series B. Indiana Limestone Library, 6 x 9 ins., 36 pp. Illustrated. Giving general information regarding Indiana Limestone, its physical characteristics, etc.
- Volume 4, Series B. Booklet. New Edition, 8½ x 11 ins., 64 pp. Illustrated. Indiana Limestone as used in Banks.
- Volume 5, Series B. Indiana Limestone Library. Portfolio, 11½ x 8¾ ins. Illustrated. Describes and illustrates the use of stone for small houses with floor plans of each.
- Volume 6, Series B. Indiana Limestone School and College Buildings. 8½ x 11 ins., 80 pp. Illustrated.
- Volume 12, Series B. Distinctive Homes of Indiana Limestone. 8½ x 11 ins., 48 pp. Illustrated.
- Old Gothic Random Ashlar. 8½ x 11 ins., 16 pp. Illustrated.

### STORE FRONTS

- Brasco Manufacturing Co., 5025-35 South Wabash Ave., Chicago, Ill.**  
Catalog No. 33. Series 500. All-Metal Construction. Brochure, 20 pp., 8½ x 11 ins. Illustrated. Deals with store fronts of a high class.
- Catalog No. 34. Series 202. Standard construction. Booklet, 16 pp., 8½ x 11 ins. Illustrated, complete data on an important type of building.
- Detail Sheets. Set of seven sheets, 8½ x 11 ins., printed on tracing paper, giving full-sized details and suggestions for store front designs.
- Davis Solid Architectural Bronze Sash. Set of six sheets, 8½ x 11 ins., printed on tracing paper. Full-sized details and suggestions for designs of special bronze store front construction.
- The Kawneer Company, Niles, Mich.**  
Catalog M, 1929 Edition, 64 pages, 8½ x 11 ins., with the A.I.A. File No., profusely illustrated. General Catalog
- Detail Sheet and descriptive folder, 8½ x 11 ins., with A.I.A. File No. featuring "B" Store Front Construction, designed along modernistic lines.
- National Terra Cotta Society, 230 Park Avenue, New York, N. Y.**  
Terra Cotta Stores and Store Fronts. Booklet, 15 pp., 8½ x 11 ins. Illustrated.

### TELEPHONE SERVICE ARRANGEMENTS

- All Bell Telephone Companies.** Apply nearest Business Office, or American Telephone and Telegraph Company, 195 Broadway, New York.
- Planning for Home Telephone Conveniences. Booklet, 52 pp., 8½ x 11 inches. Illustrated.
- Planning for Telephones in Buildings. Brochure, 74 pp., 8½ x 11 inches. Illustrated.

### TERRA COTTA

- National Terra Cotta Society, 19 West 44th St., New York, N. Y.**  
Standard Specifications for the Manufacture, Furnishing and Setting of Terra Cotta. Brochure, 8½ x 11 ins., 12 pp. Complete Specification, Glossary of Terms Relating to Terra Cotta and Short Form Specification for incorporating in Architects' Specification.

### TIMBREL TILE VAULTS

- R. Guastavino Co., 40 Court Street, Boston.**  
Timbrel Arch Construction. Booklet, 8 pp., 8½ x 11 ins.

### TILE, STRUCTURAL CLAY

- National Fireproofing Corporation, Fulton Building, Pittsburgh, Pa.**  
Natco. The Complete Line of Structural Clay Tile. Booklet, 48 pp., 8½ x 11 ins. Illustrated. A General Catalog.
- Natco Vitritile Bulletin No. 164. 40 pp., 8½ x 11 ins. Illustrated. Shows color charts, sizes and shapes, actual installations, etc.
- Natco Header Backer Tile Bulletin. 8½ x 11 ins. 4 pp. Illustrated.
- Natco Unibacker Tile Bulletin. 8½ x 11 ins. 4 pp. Illustrated.
- Natcofloor Bulletin. 8½ x 11 ins., 6 pp. Illustrated.
- Natco Double Shell Load Bearing Tile Bulletin, 8½ x 11 ins., 6 pp. Illustrated.

### TILES

- Flint Faience & Tile Co., Flint, Mich.**  
Vitocraft Tiles, Unglazed. Folder, 4 pp., 8½ x 11 ins. Illustrated. Details of patterns in full color. Ask for Form A-322.
- Faience Tiles for Bathrooms. Folder, 4 pp., 8½ x 11 ins. Illustrated. Ask for Form A-303.
- Faience and Vitocraft, Unglazed. Folder, 4 pp., 8½ x 11 ins. Illustrated. Views of installations. Ask for Form A-304.
- Flintcraft Tiles. Folder, 4 pp., 8½ x 11 ins. Illustrated. Machine-made floor or wall tile. Ask for Form A-363.
- Hanley Company, Bradford, Pa.**  
Hanley Quarry Tile. Folder. 4 pp., 5 x 8 ins. Illustrated.
- C. Pardee Works, 101 Park Ave., New York, N. Y., and 1600 Walnut St., Philadelphia, Pa.**  
Pardee Tiles. Bound volume, 48 pp., 8½ x 11 ins. Illustrated.

### TRUSSES

- McKeown Bros. Company, 523 South Keeler Avenue, Chicago.**  
Truth in Architecture. Folder, 4 pp., 8½ x 11 ins. Illustrated. Deals with use of trusses of wood.
- Factory Built Bowstring Trusses. Folder, 4 pp., 8½ x 11 ins. Illustrated.
- Timber Trusses. Folder, 4 pp., 8½ x 11 ins., Illustrated.

### VALVES

- Crane Co., 836 S. Michigan Ave., Chicago, Ill.**  
No. 51. General Catalog. Illustrated. Describes the complete line of the Crane Co.
- C. A. Dunham Co., 450 East Ohio St., Chicago, Ill.**  
The Dunham Packless Radiator Valve. Brochure, 12 pp., 8 x 11 ins. Illustrated. Data on an important type of valve.
- Jenkins Brothers, 80 White Street, New York.**  
Office Buildings Yesterday and Today. Folder, 8½ x 11 ins. Illustrated. Valves for use in office buildings.

### VENETIAN BLINDS

- Burlington Venetian Blind Co., Burlington, Vt.**  
Venetian Blinds, Booklet, 7 x 10 ins., 24 pp. Illustrated. Describes the "Burlington" Venetian blinds, method of operation, advantages of installation to obtain perfect control of light in the room.

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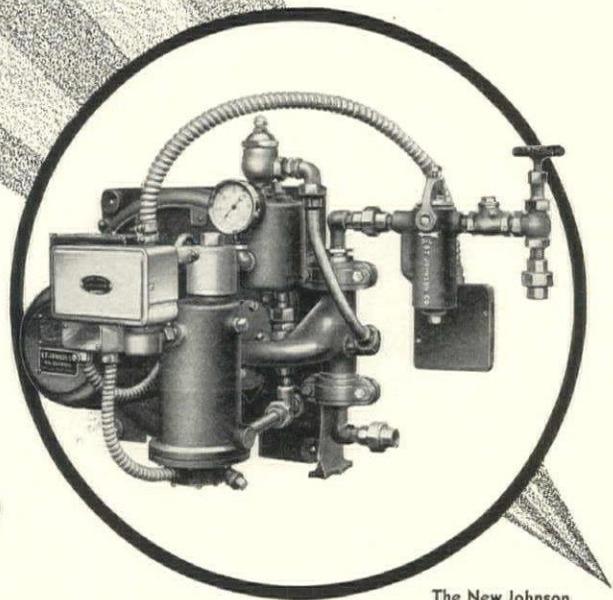
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## SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 180

### VENTILATION

- American Blower Co., Detroit, Mich.**  
American H. S. Fans. Brochure, 28 pp., 8½ x 11 ins. Data on an important line of blowers.
- Duriron Company, Dayton, Ohio.**  
Acid-proof Exhaust Fans. Folder, 8 x 10½ ins., 8 pp. Data regarding fans for ventilation of laboratory fume hoods.  
Specification Form for Acid-proof Exhaust Fans. Folder, 8 x 10½ ins.
- Orange Screen Company, Maplewood, N. J.**  
Window Ventilator, Filters the air. Folder 4 pp., 8½ x 11 ins. Illustrated.

### WATERPROOFING

- Medusa Portland Cement Co., 1002 Engineers' Building, Cleveland.**  
Medusa Waterproofed Gray Portland Cement. Booklet, 30 pp., 8½ x 11 ins. Illustrated.
- Minwax Company, Inc., 11 West 42nd St., New York.**  
Waterproofing Stadia. Folder, 4 pp., 8½ x 11 ins. Illustrated.  
Transparent Waterproofings for All Masonry Walls and Surfaces. Folder, 4 pp., 8½ x 11 ins. Illustrated.  
Data Sheet on Membrane Waterproofing. Folder, 4 pp., 8½ x 11 ins. Illustrated.
- Toch Brothers, New York, Chicago, Los Angeles.**  
Architects' Specification Data. Sheets in loose leaf binder, 8½ x 11 ins., dealing with an important line of materials.

### WEATHER STRIPS

- Athey Company, 6035 West 65th St., Chicago, Ill.**  
The Only Weatherstrip with a Cloth to Metal Contact. Booklet, 16 pp., 8½ x 11 ins. Illustrated. Data on an important type of weather stripping.

### WINDOW GLASS

- Pittsburgh Plate Glass Company, Grant Building, Pittsburgh, Pa.**  
Pennvern Window Glass With the New Flatter Surface. Booklet, 16 pp., 8½ x 11 ins. Illustrated.

### WINDOWS

- William Bayley Co., 147 North Street, Springfield, Ohio.**  
Bayley Pivoted Windows. Booklet, 24 pp., 8½ x 11 ins. Illustrated. Sections, hardware, and other details, and illustrations of installations.
- Detroit Steel Products Co., 2250 E. Grand Boulevard, Detroit.**  
Fenestra Blue Book. Brochure, 75 pp., 8½ x 11 ins. Illustrated. Data on steel windows.
- The Kawneer Company, Niles, Mich.**  
Circular, 8½ x 11 with A.I.A. File No. featuring full size details and specifications of Heavy Type Sealair Independent Balanced Sash Window.  
Circular, 8½ x 11 with A.I.A. File No. featuring full size details and specifications of Light Independent Balanced Sash Sealair Windows.  
Circular, 8½ x 11 with A.I.A. File No. featuring full size details and specifications of In-swinging Sash Sealair Windows. The above to be furnished in non-ferrous metal and steel.
- David Lupton's Sons Company, Philadelphia, Pa.**  
Lupton Pivoted Sash. Catalog 12-A. Booklet, 48 pp., 8½ x 11 ins. Illustrates and describes windows suitable for manufacturing buildings.  
Lupton Commercial Projected Windows. Brochure. 24 pp., 8½ x 11 ins. Illustrated. Details and specifications.

### WINDOWS, CASEMENT

- Detroit Steel Products Co., 2250 E. Grand Boulevard, Detroit.**  
Fenestra Casements. Booklet, 14 pp., 8½ x 11 ins. Illustrated. Discusses casements, particularly for residences.  
Fenestra Screen Casements. Brochure, 16 pp., 8½ x 11 ins. Illustrated.  
Decorating With Casements. Booklet, 18 pp., with inserts in color 6 x 8½ ins. Deals with use of decorations, particularly draperies, with casement windows.
- David Lupton's Sons Company, Philadelphia, Pa.**  
Lupton Casement of Copper Steel. Catalog C-217. Booklet, 24 pp., 8½ x 11 ins. Illustrated brochure on casements, particularly for residences.

### WINDOWS, CASEMENT—Continued

- Lupton Creates a Complete Casement.** Folder, 8½ x 11 ins. Illustrated data on a casement providing for screens, shades and draperies.  
Lupton Heavy Casements. Detail Sheet No. 101, 4 pp., 8½ x 11 ins. Details and specifications only.
- Richards-Wilcox Mfg. Co., Aurora, Ill.**  
Casement Window Hardware. Booklet, 24 pp., 8½ x 11 ins. Illustrated. Shows typical installations, detail drawings, construction details, blue-prints if desired. Describes AIR-way Multifold Window Hardware.  
Architectural Details. Booklet, 8½ x 11 ins., 16 pp. Tables of specifications and typical details of different types of construction.  
List of Parts for Assembly. Booklet, 8½ x 11 ins., 16 pp. Full lists of parts for different units.

### WINDOW SCREENS

- William Bayley Co., 147 North Street, Springfield, Ohio.**  
Bayley Pivoted Windows Screened. Booklet, 8 pp., 8½ x 11 ins. Data on screening and window ventilation.
- Detroit Steel Products Co., 2250 E. Grand Boulevard, Detroit.**  
Fenestra Screen Casements. Brochure, 16 pp., 8½ x 11 ins. Illustrated.

### WINDOWS, STEEL AND BRONZE

- William Bayley Co., 147 North Street, Springfield, Ohio.**  
Bayley Steel Window Inserts. Brochure, 8 pp., 8½ x 11 ins. Illustrated. Suggestions on correct use of inserts.
- David Lupton's Sons Company, Philadelphia, Pa.**  
A Rain-shed and Ventilator of Glass and Steel. Pamphlet, 4 pp., 8½ x 11 ins. Deals with Pond Continuous Sash. Sawtooth Roofs, etc.  
How Windows Can Make Better Homes. Booklet, 3½ x 7 ins., 12 pp. An attractive and helpful illustrated publication on use of steel casements for domestic buildings.
- Truscon Steel Company, Youngstown, Ohio.**  
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Continuous Steel Windows and Mechanical Operators. Catalog 126. Booklet, 32 pp., 8½ x 11 ins. Illustrated.

### WOOD—See also Millwork

- American Walnut Mfrs. Association, 618 So. Michigan Boulevard, Chicago, Ill.**  
American Walnut. Booklet 7 x 9 ins., 46 pp. Illustrated. A very useful and interesting little book on the use of walnut in Fine Furniture with illustrations of pieces by the most notable furniture makers from the time of the Renaissance down to the present.  
American Walnut for Interior Woodwork and Paneling. 7 x 9 ins. Illustrated. Discusses interior woodwork, giving costs, specifications of a specimen room, the different figures in Walnut wood, Walnut floors, finishes, comparative tests of physical properties and the advantages of American Walnut for woodwork.
- Wood Conversion Company, Cloquet, Minn.**  
Nu-Wood Insulating Board and Insulating Lath. Booklet, 24 pp., 4 x 6 ins. Illustrated.  
True Insulation for Your Present House. Brochure, 12 pp., 5 x 7 ins. Illustrated.  
Evidence of the Economy of Heating with Gas. Booklet, 11 pp., 5 x 7 ins. Illustrated.  
House Comfort that Pays for Itself. Brochure, 32 pp., 5¼ x 7¾ ins. Illustrated.

### WOOD FINISH

- Minwax Company, Inc., 11 West 42nd St., New York.**  
Color card and specification for Minwax Flat Finish. Folder, 4 pp., 8½ x 11 ins. Illustrated. Deals with a penetrative, preservative stain finish giving stain and soft wax effect.

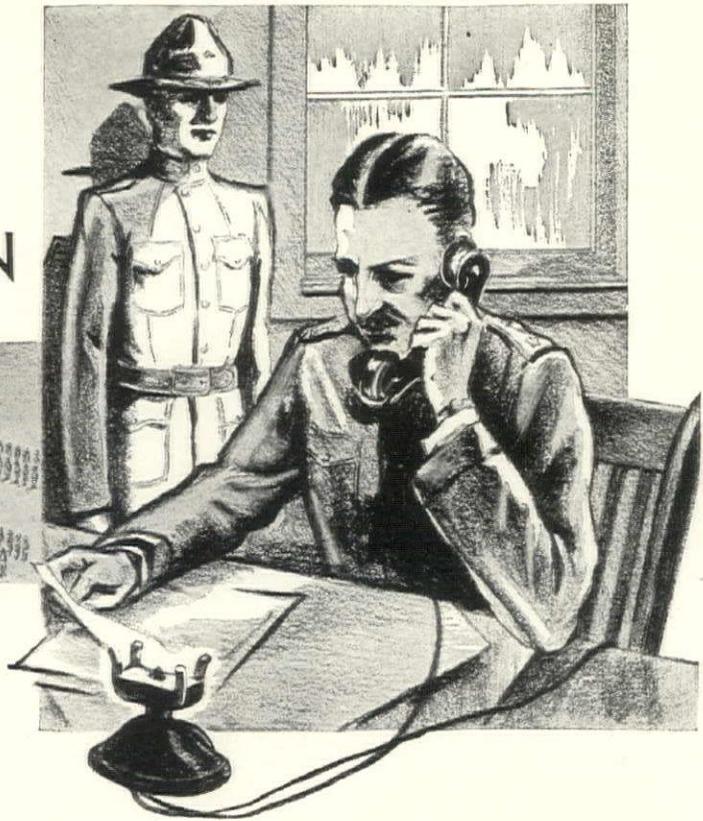
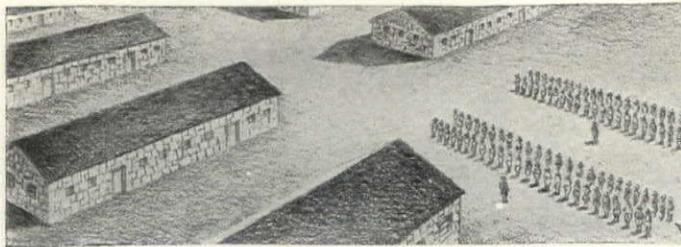
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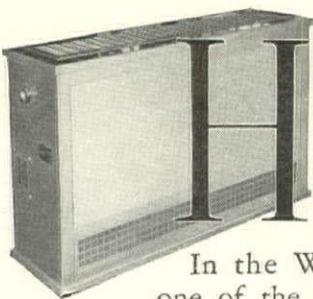
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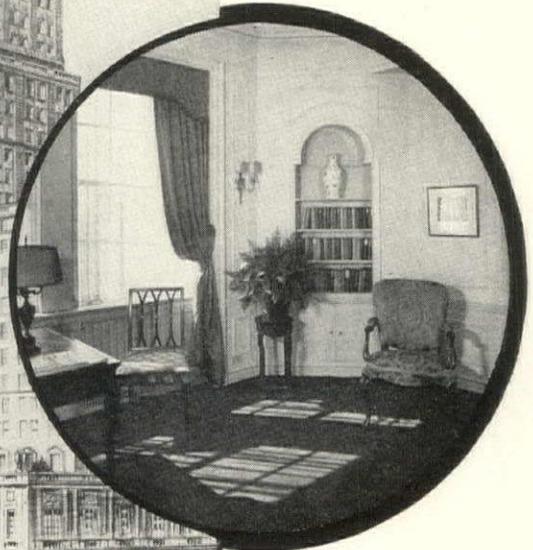
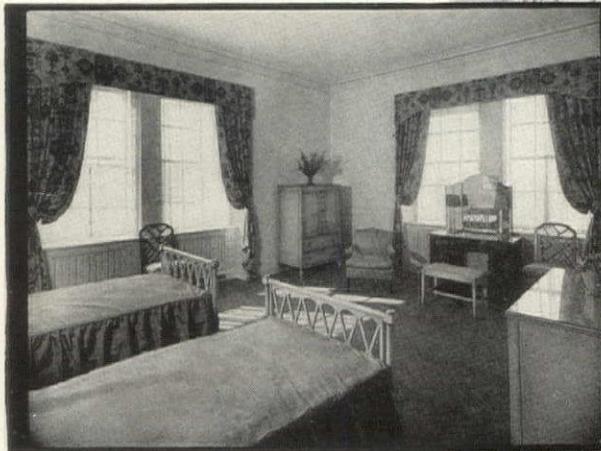
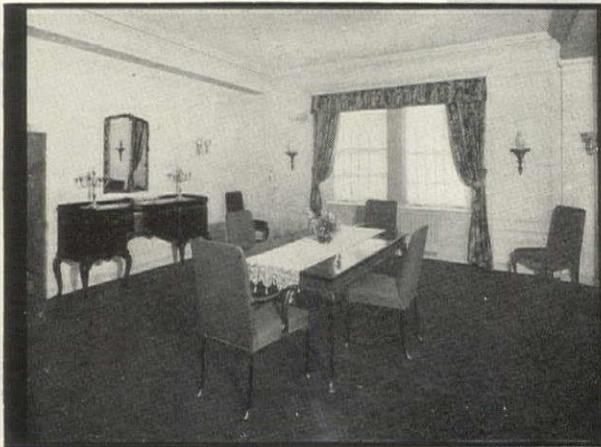
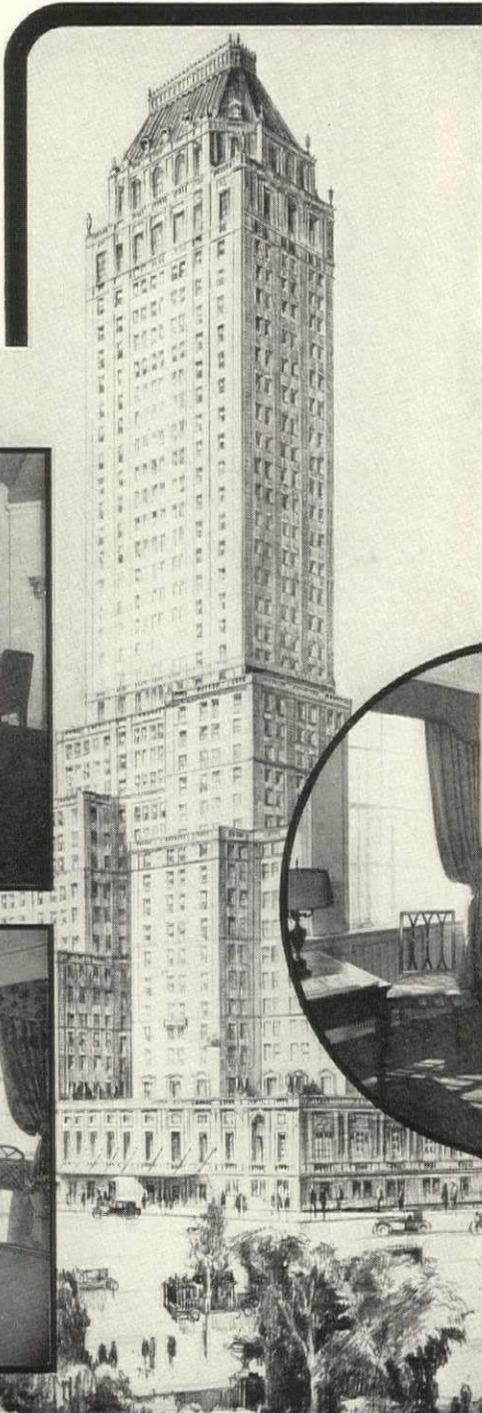
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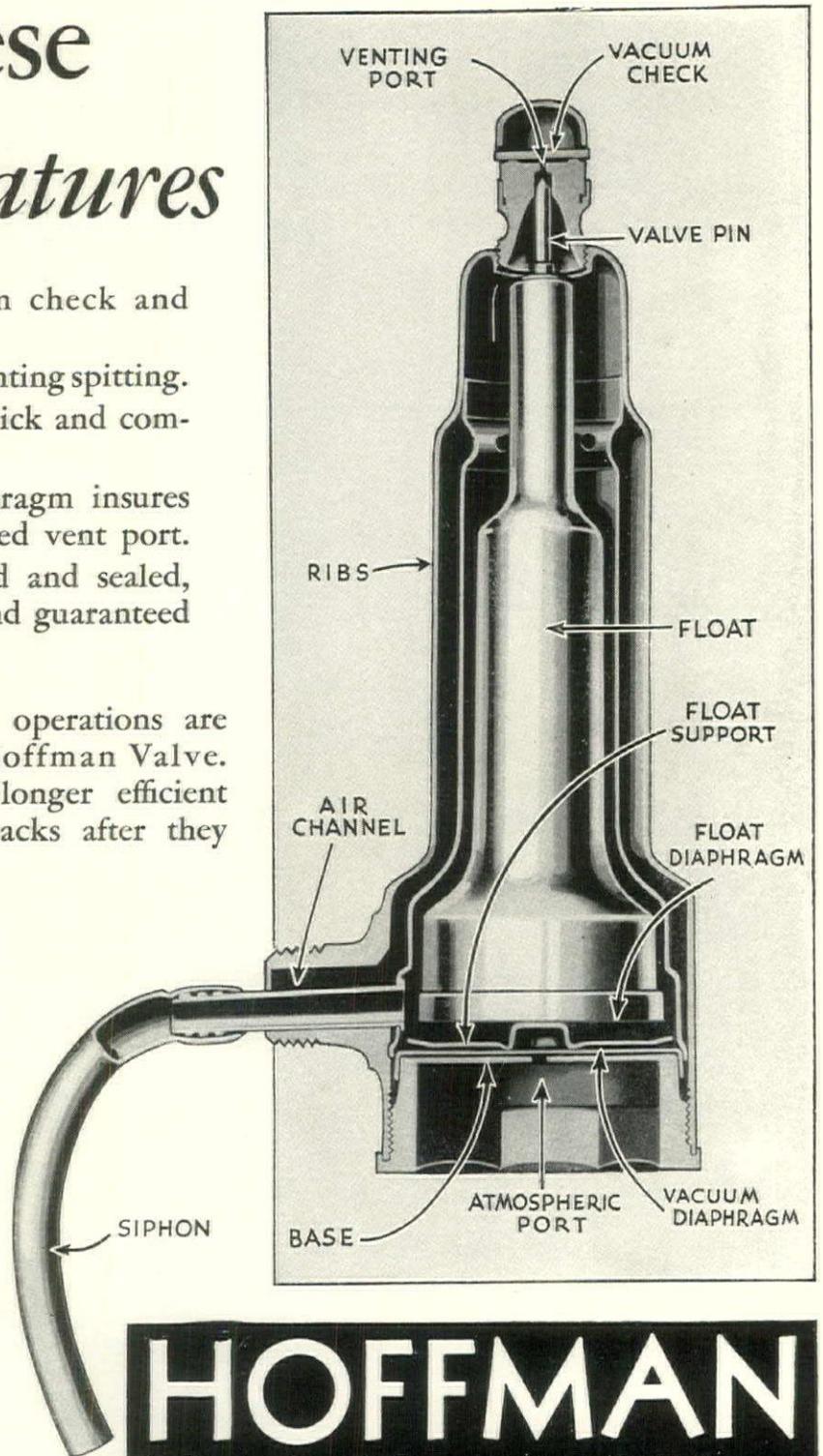
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- 3** Perfect siphon, insuring quick and complete drainage of valve.
- 4** Snap action of float diaphragm insures wide open or tightly closed vent port.
- 5** Each valve factory adjusted and sealed, steam and water tested and guaranteed for five years.

**I**N all, 279 separate, precise operations are needed to complete one Hoffman Valve. That's why these valves give longer efficient service and require less call-backs after they are installed.

Furthermore, Hoffman valves are *easier to sell*, because millions of property owners are pre-sold for you by Hoffman advertisements appearing in national publications.

Right in your vicinity are hundreds of property owners who are eager to enjoy the comforts and economies of a Hoffmanized heating system.

Get your share of this profitable modernizing work. Let us tell you about the Trial Offer many contractors are using successfully. Write us for particulars. Hoffman Specialty Co., Inc., Dept. EF-25, Waterbury, Conn.



**HOFFMAN**  
No. 2 Vacuum Valves  
for one pipe steam systems

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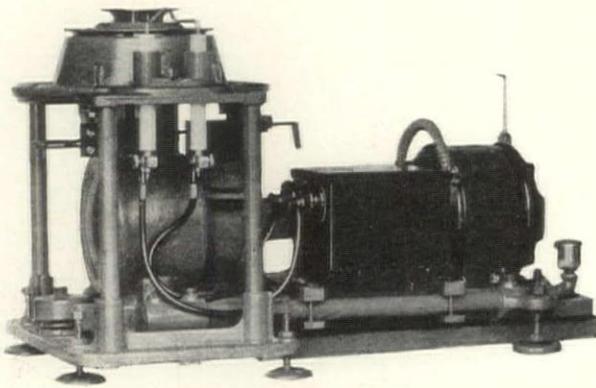
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■ Because the two new Hardinge Domestic Fuel Oil Burners have flexible drives instead of rigid steel shafts, they are practically soundless. Because these two new models are much more compact, they fit inside the boiler or furnace, under the grate line, leaving nothing outside to stumble over or waste floor space. They're out of hearing, out of sight, and truly out of mind; here are domestic

oil burners built as an architect would have them. Your home building clients, surely, will appreciate your suggestion to inspect these new domestic labor-savers. ... For your own daily usage, we have some handy oil burner working data, sent on request. Hardinge Brothers, Inc., 4149 Ravenswood Avenue, Chicago, Illinois.



# HARDINGE

FUEL OIL BURNERS FOR BUNGALOW TO SKYSCRAPER

The new Hardinge Domestic Fuel Oil Burners are silenced to the last degree, and hidden under the grate line.

## REVIEWS OF MANUFACTURERS' PUBLICATIONS

**THE FLEXWOOD COMPANY, 919 North Michigan Avenue, Chicago. "Flexwood." Suggestions regarding a new product.**

Flexwood, a new wood product just announced by the Flexwood Company of Chicago, permits paneling of wall surfaces in the master cabinet woods at from one-third to one-half the cost of plywood paneling. It is one of the year's significant contributions to the building industry. Wood paneling in cabinet woods for wall surfaces, until recently associated only with the most expensive offices and lavishly finished homes, has now been made available at a cost which opens an entirely new field of possibilities in the treatment of office, apartment, and house wall interiors. Flexwood is a real wood, which is made as pliable across the grain as a piece of leather by a new process. Its cost is from one-third to one-half lower than plywood paneling, and it can be applied to any interior wall construction. It is immune from the effects of moisture and does not warp or crack. Flexwood sheets are cut from 6 to 12 feet in length and are from 8 to 30 inches wide, depending upon the kind of wood and method of cutting. They are applied with ordinary paperhanger's equipment, and excellent results are obtained when directions for applying it are followed. Flexwood is available in the three outstanding cabinet woods,—American walnut, oak and mahogany. Original natural wood designs in unlimited variety are possible and not costly.

**THE JOHN VAN RANGE CO., Cincinnati. "Practical Planning for Hospital Food Service." An invaluable booklet.**

With all the complexity of equipment which renders the designing and planning of a modern hospital perhaps the most difficult of all the problems which come into an architect's office, there is no one detail of greater importance than that which concerns the preparation and serving of food. First of all, there is the problem which has to do with the preparation of special kinds of food prescribed for patients, since quite obviously what a patient eats has much to do with his physical condition. Then there comes the matter of preparing food for staff, nurses and employes of different kinds, and particularly the matter of *servicing* the food, for such are the conditions in a large hospital that those belonging to one class must be served apart from those of any other class, even though the food served be precisely the same. Then again there is the problem which has to do with serving food still in an appetizing condition far from the place in which it was prepared. Now, to do all this to the complete satisfaction of all concerned demands far more study than can be given the subject in the office of an architect to whom the planning of a hospital may come only occasionally; and indeed study alone will not suffice, since even the most carefully thought out plans have a way of failing most lamentably when put into actual practice. Experience is the best and indeed the only teacher.

The John Van Range Co. during many years has made a special business of planning and installing equipment for preparing and serving food in institutions of divers kinds, the Company's service having constantly become more and more efficient because of its constant and long continued practice. To bring the benefits of this service to the attention of architects and others interested, the Company has issued lately a number of booklets on the subject,—“Planning Restaurants that Make Money”; “Practical Planning for Club Food Service”; “Practical Planning for School Food Service”; and “Practical Planning for Church Food Service.” The latest addition to the series is entitled, “Practical Planning for Hospital Food Service.” Like the brochures already issued, it reviews in carefully considered text the entire subject involved. Then it presents plans and illustrations of hospitals large and small and of every imaginable character in which the firm's equipment has been installed after study by the firm's specialists in preparing and serving food. As has already been suggested, the matter is beyond an architect unless his practice involves planning hospitals and nothing else, and the data and help which the John Van Range Co. places at the service of architects in this volume put the profession under renewed obligations to the Company. Like the other booklets, this brochure is important.

**APEX SMELTING COMPANY, 2554 Fillmore Street, Chicago. "Architectural Aluminum."**

One particularly interesting detail of modern building is the rapidly increasing use of aluminum. The colossal structure being built on the site of the former Waldorf-Astoria in New York makes lavish use of the metal in the form of spandrels, and it is said that a Boston building costing \$20,000,000 is to be crowned with a dome of aluminum. Another striking use of this material is to be seen in Chicago, where the new building of the Board of Trade is capped by a statue cast of aluminum, the statue being 31 feet high and weighing more than three tons. Recently the possibility of using aluminum or buralumin structurals in the upper stories of skyscrapers was discussed as a means of lightening the supported load throughout the structure. However, the recent progress in the architectural field of use of aluminum has been most noticeable in its employment for decorative purposes such as symbolic figures, grilles, railings, decorative castings, etc. Aluminum possesses physical qualities that recommend its use to the architect and engineer in construction of buildings, particularly its lightness, facilitating handling and lessening the strain upon the workers while at the same time giving permanence in form and effect. This folder gives valuable data on the use of aluminum and suggestions on its use.

**W. D. ALLEN MFG. CO., Chicago. "Allen on Interior Fire Protection."**

So much emphasis is being placed upon the value of fireproofing and the importance of using building materials which render structures fireproof that the value of devices for combating fire when it does occur is in danger of being entirely overlooked. And yet, even making allowance for the great progress being made in fireproofing, there remains the fact that the vast majority of buildings in this country are neither fireproof nor likely to be, and considerable reliance therefore must be placed upon apparatus for extinguishing fire. This booklet deals with the excellent equipment supplied by the W. D. Allen Mfg. Co. “For over 40 years the Company has been marketing fire-fighting devices with the fundamental thought of producing approved equipment in volume at the lowest production and distributing costs. From a small beginning has grown its present plant with its modern equipment, capable of economically producing material which withstands the rigid tests and inspection of the Underwriters. The equipment is approved by every municipal fire-prevention bureau, and the installation of the labeled devices assures the lowest insurance rates. Any saving in the initial cost between the unapproved apparatus as compared with the approved equipment when balanced against the value of the building to be protected is so slight that every architect and engineer should insist upon having the best, which is neither costly nor difficult to obtain.”

**WESTERN PINE MANUFACTURERS' ASSOCIATION, Portland, Ore. "Knotty Ponderosa Pine Paneled Room."**

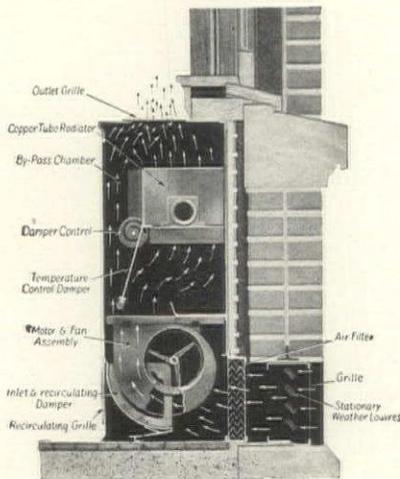
The publications which devote space to dealing with the furnishing and decorating of homes have of course had much to do with the raising of the standard of the architecture and decoration of residence quarters. Editors of these publications have enlisted the services of architects and interior decorators well qualified to write on their subjects, and their work is helpful and valuable. This booklet, issued by a large association of lumber dealers, is a reprint of pages from *Good Housekeeping* for July, 1930. The brochure illustrates and describes a dining room arranged in the French Provincial mode, built at the studio of furnishing and decoration maintained by *Good Housekeeping*. The walls of the dining room are paneled in knotty Ponderosa pine after designs by Henry Ives Cobb, Jr., and the furniture, floor coverings and draperies are of types appropriate for so distinguished a setting. The booklet gives complete data on the use of Ponderosa pine, a wood which should be much more widely used by architects, interior decorators and builders.

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## REVIEWS AND ANNOUNCEMENTS

**NEWMAN MANUFACTURING CO., Cincinnati.** "Newman Store Fronts De Luxe."

Many merchants and even some architects and builders are of the opinion that the modern shop fronts of metal and glass which are now being used almost everywhere are troublesome to design and costly to build. They can be both, of course, when their details must be drawn by skilled designers and their designs carried out in expensive materials, but there is a way out of the difficulty by using the metal parts or units carried in stock by a number of manufacturers, from which there may be built up a shop front of any size or shape. This booklet deals with the units or sections supplied by the Newman Manufacturing Co., with its headquarters in Cincinnati and branches in Chicago and New York. The brochure is laid out upon an excellent plan; a page will illustrate a shop facade, and the same page will show the various members or parts which entered into its building. The designing has been done with excellent taste, and illustrations are given of shop fronts in many different cities built of this company's materials. Some of the designs seem to be calculated to please those who favor the "modernistic," while others are likely to be preferred by those of more conservative tastes as more appropriate for their use.

**R. W. CRAMER & COMPANY, 136 Liberty Street, New York.** "Sauter Electric Time Switches."

Many of the uses which are made of electric lighting would be impossible were it not for the time switch. Countless shops have their show windows lighted during the evening hours, the time switch turning the light on and off at the determined times. Electric signs are lighted up and the light extinguished at the hours at which the switch is set, and many of the public buildings and business structures which are illuminated at night are equipped with switches which turn the electricity on and off without the attention of attendants. This brochure deals with the Sauter Electric Time Switch as applied to all the purposes just mentioned, while in regard to clocks the switch not only illuminates their dials but attends to their winding. "The self-winding time switches eliminate the human element to the extent of doing away with manual winding and weekly setting. These switches may safely be left alone for two and three months on end. If they are used to control illumination on a full-night or on a half-night lighting schedule, the clocks are equipped with the appropriate type of Sauter astronomic dial, the operations of the time switch then automatically follow the changes in schedule. If operations are to be omitted on Sundays, or if the hours over the weekend are to be different, a special additional 7-day program dial is available.

**THE TYLER COMPANY, Cleveland.** "Store Fronts, Show Window Backs, and Backgrounds."

Modern methods of merchandising involve more than a little of what might be called "psychology applied to business." A modern and wholly up-to-date shop has (or should have) a definite and distinct "personality," based to some extent upon its type, to some extent upon its business methods, and to a considerable extent upon the character of the clientele to which its appeal is directed. Quite lately it was thought necessary to entirely remodel a most elaborate business structure in New York because it was found that notwithstanding its great cost the setting was not adapted to the type of business to be conducted therein. Naturally, the shop's first appeal to the public is based upon its external appearance,—its facade, its entrances, and particularly upon its show windows, which might be said to follow up the shop's initial appeal and bring the observer into the store. All this forms the subject matter of a booklet issued by a firm which has made an exhaustive and successful study of how to make shops attractive and consequently profitable. The brochure deals with shop fronts, entrances and especially upon show windows with their permanent or temporary backgrounds, as well as with other matters related thereto. The booklet is full of suggestions valuable to shop keepers and to architects who are designing business structures.

Schuyler & Lounsbery are occupying offices temporarily at 1401 Twentieth Street, Washington.

Lawrence Hampton Hall is occupying new offices in the Dayton Industries Building, Dayton, O.

Charles L. Hofmann announces the opening of new offices at 122 North Eighth Street, Richmond, Va. He desires the catalogs and other publications of manufacturers.

Harold Holmes Owen, lately of the firm of Owen & Osberg, has opened an office under his own name at 3 North State Street, Concord, N. H. The publications of manufacturers will be appreciated.

Harry W. Bogner, formerly a member of the firm of Judell & Bogner, announces the opening of his own office at 759 North Milwaukee Street, Milwaukee. He desires the publications and the samples issued by manufacturers.

**ARMSTRONG CORK & INSULATION COMPANY, Lancaster, Pa.** "Armstrong's Corkoustic."

The wide use which architects and builders are making of acoustical materials often brings up problems which, while interesting, are sometimes difficult to solve. Some such materials while possessing undoubted merit in the way of absorbing sound are wholly without architectural or decorative qualities, and any attempt to render them more pleasing is likely to impair if not quite spoil the very qualities which brought about their use in the first place. This folder deals with the use of "Corkoustic," a material supplied by the Armstrong Cork & Insulation Company for securing proper acoustical qualities in interiors where such qualities do not already exist. Corkoustic is described as a material possessing naturally a rich brown color which is often acceptable for interior walls and ceilings, but if the decorative treatment calls for figure and color it is easy to secure both without impairing Corkoustic's sound-absorbing value, by spraying cold water paint over the surface; in fact the folder presents two patterns in color, made by the use of stencils, the patterns possessing all the design value which could well be desired. The folder also gives all the data likely to be required for the specifying or installation of Corkoustic. The folder says that the firm publishes a booklet entitled "Acoustical Correction," which can be had for the asking.

**THE CROMAR COMPANY, Williamsport, Pa.** "Cromar Oak Floors."

Wearing qualities of a wood floor depend upon the excellence of the wood itself and the care with which the wood is laid and finished. The finishing is usually done after the wood strips are laid in place, and the process in addition to being costly if properly done is likely to last for several days or at times even weeks. The Cromar Company supplies flooring strips of an excellent quality of oak, properly cut, cured by the most approved methods, and then milled, filled, varnished, and even treated to resist moisture, and this before the strips leave the Cromar factory, so that they need only be nailed down when they reach the building where they are to be used. "The timber from which Cromar strips are cut is Appalachian white oak,—whose fiber and grain make it the finest in the world for flooring purposes. At the Cromar plant the carefully selected oak boards are cured in the yard and dry kiln, and milled into smooth-surfaced flooring strips. And then, going from one department to another, these beautifully grained strips become 'Cromar Factory Finished Oak Flooring,' the pride not only of the makers but of thousands of home owners in every part of the land." This brochure supplies architects with all the data required for the intelligent ordering and laying of these flooring materials, and it gives directions for their proper upkeep or maintenance.

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Johnson Service Company maintains thirty branches on the North American continent: one in each of the twenty-five largest and geographically best situated cities in United States, and five likewise in Canada.

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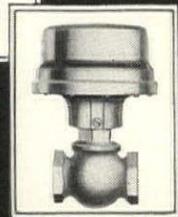
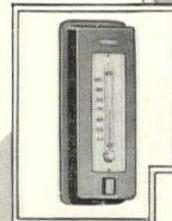


Union Gas & Electric Company Building, Cincinnati, Ohio  
 Architects:  
 Garber & Woodward . . . . . Cincinnati  
 John Russel Pope . . . . . New York City  
 Fosdick & Hilmer . . . . . Consulting Engineers

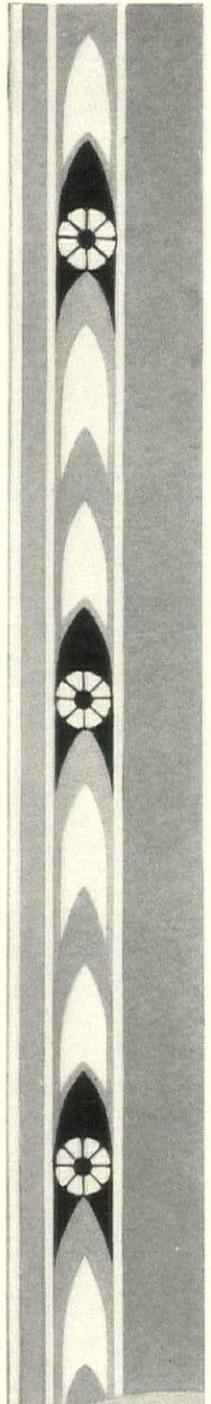
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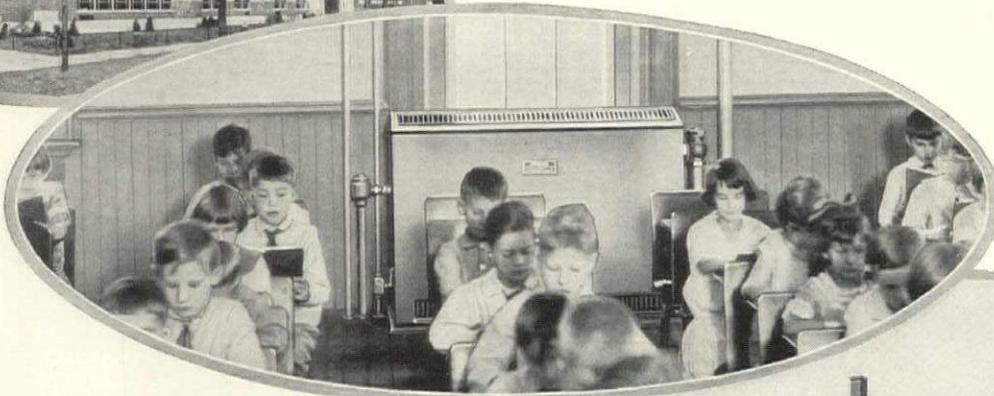
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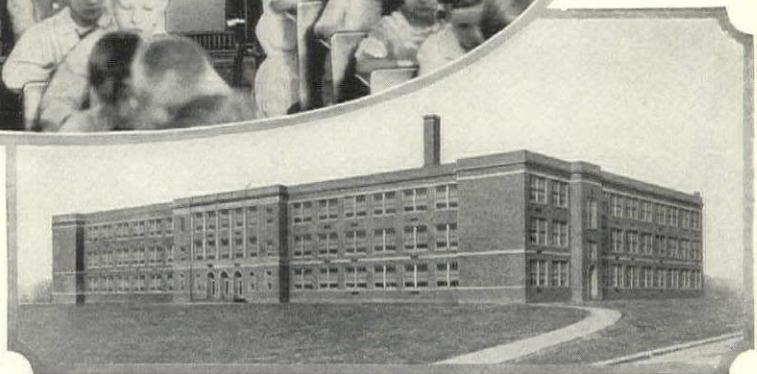
(above) Robert E. Barber School, Highland Park, Michigan

*Architects:* Burrowes & Eurich.  
*Heating Contractor:* Leggett-Doll-Foster Co.

(in oval) A typical PeerVent installation in a classroom

(right) East High School, Youngstown, Ohio.

*Architects:* Louis and Paul Boucherle.  
*Contractors:* W. J. Scholl Co.



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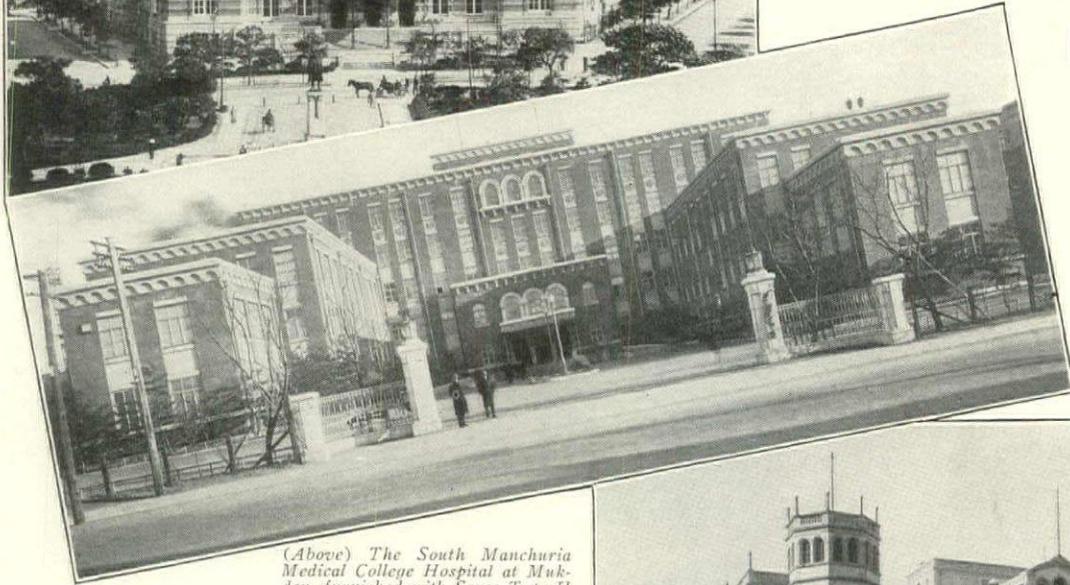
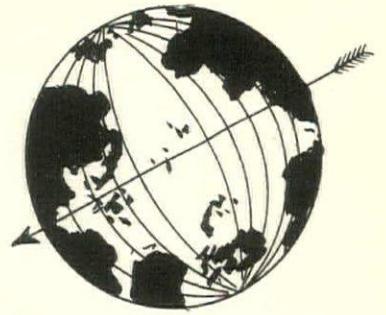


PEERLESS UNIT VENTILATION CO., Inc.  
BRIDGEPORT, CONNECTICUT  
*Pioneers in Unit Ventilation*

Resident Engineers in Principal Cities from Coast to Coast



(Left) Dairen Yamato Hotel furnished with Sarco Type H Radiator Traps by Nishikawa & Co., Dairen, in 1927.



(Below) Mukden Yamato Hotel furnished with Sarco Type H Radiator Traps, Boilers and Radiators, by Nishikawa & Co., Dairen, in 1928.

(Above) The South Manchuria Medical College Hospital at Mukden, furnished with Sarco Type H Radiator Traps and Classic Radiators, by Nishikawa & Co., Dairen, in 1928.



# How Western Skill Helps Eastern Progress in Manchuria

**B**ORE down far enough at Reno, Nevada, and you will come out the other side of the globe at Dairen, Manchuria, about 30 miles northeast of Port Arthur; head of the South Manchuria Railroad, and virtually the property of the railway company. Here the system has built a magnificent modern city, erecting hotels which, for the Orient, are sumptuous.

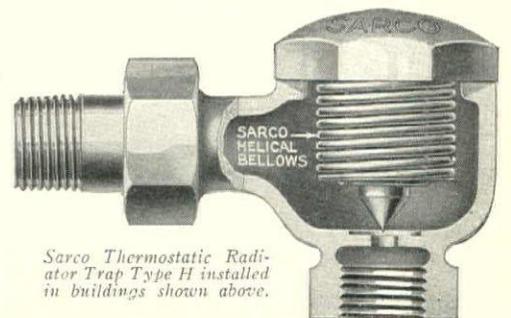
At Mukden, capital of Manchuria, about 225 miles northeast of Dairen, and the other terminus of this branch, the railroad has put up a hotel probably not excelled in furnishing and equipment anywhere in the Far East.

That Sarco Traps were selected by the Japanese engineers for the three important installations pictured above is notable. One does not transport equipment half way round the world unless one is sure it is right. Write for Catalog AK-80 giving complete information.

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 183 MADISON AVE. NEW YORK, N. Y.  
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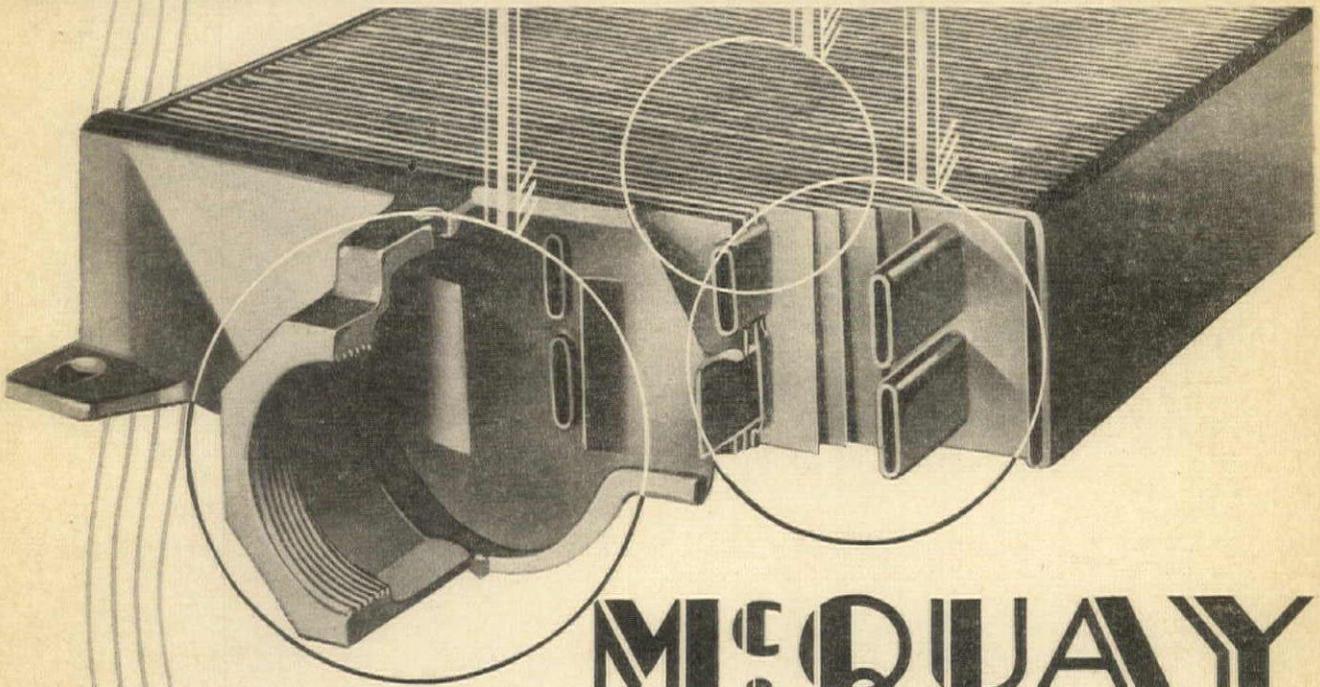
## SARCO Radiator Traps



Sarco Thermostatic Radiator Trap Type H installed in buildings shown above.

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## McQUAY

### *All-Copper Heating Element for Modern* **RADIATORS**

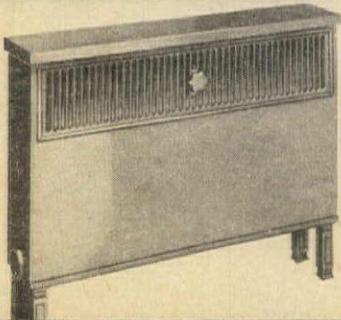
All Copper Radiation has been found to be the most efficient in providing instantaneous controlled heat for the modern office building, apartment house or home.

Architects, contractors, and builders everywhere have found satisfaction in specifying and installing McQuay seamless heating elements because of their durability, quick response to the heat supplied, and freedom from up-keep costs.

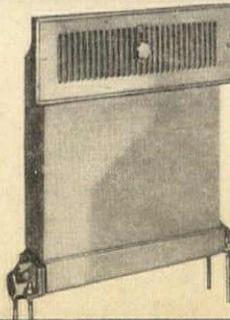
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## McQUAY RADIATOR CORPORATION

General Offices: 1600 BROADWAY, N. E., MINNEAPOLIS, MINN.



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