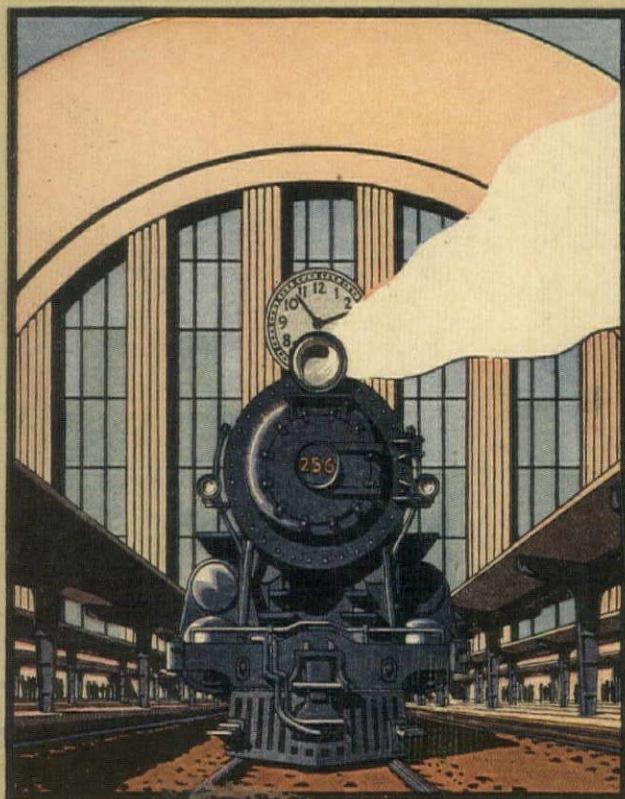


# THE ARCHITECTURAL FORUM



IN TWO PARTS PART ONE

## ARCHITECTURAL DESIGN

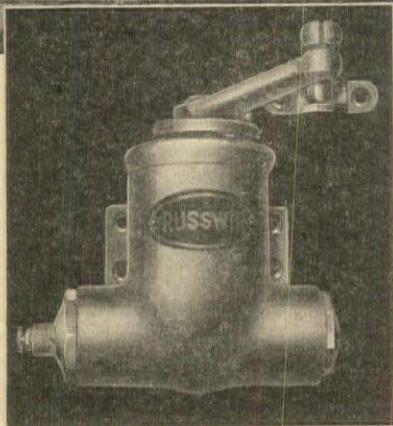
TRANSPORTATION BUILDING REFERENCE NUMBER

# DECEMBER 1930

PRICE \$3.00

# RUSSWIN

Architects: Shanley, Willson & Hugenin  
General Contractors: Jarl & Hammil  
RUSSWIN Dealer: Murphy-Maclay  
Hardware Company, Inc.



*The RUSSWIN Door Closer is a fitting example of the rugged sturdiness, fine workmanship, parts and materials that enter into every piece of RUSSWIN Hardware.*

*For the architect's convenience, Russwin Hardware is illustrated and described in Sweet's Catalogue—pages C-3137; C-3216.*

... specified for the new  
**C O L U M B U S**  
**H O S P I T A L**

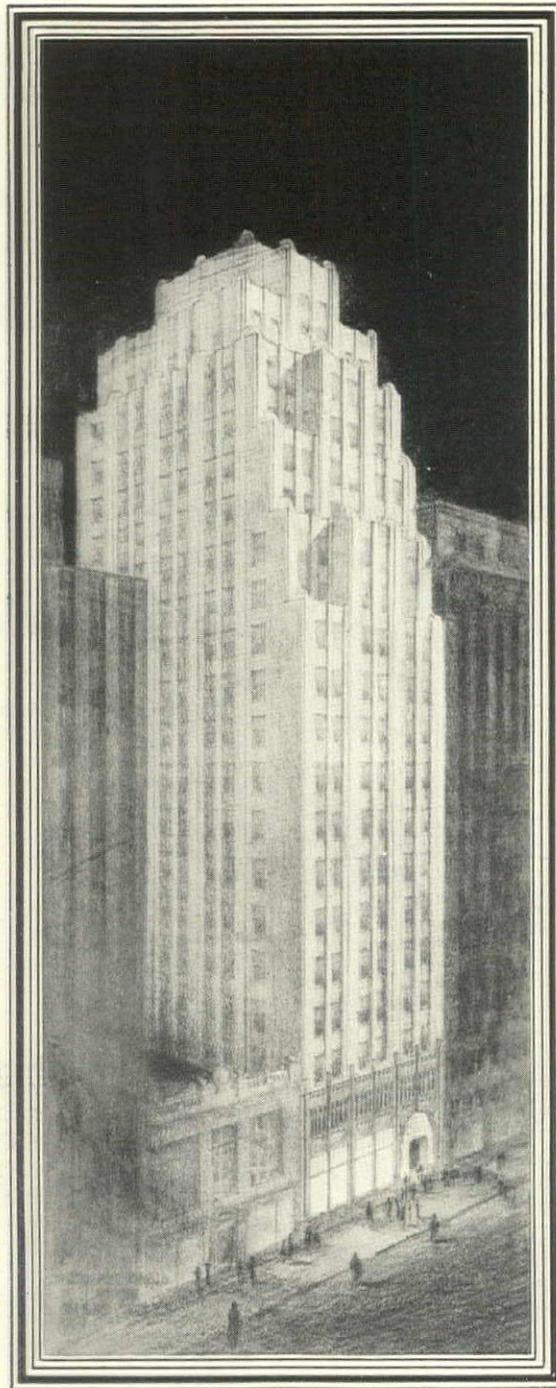
The new Columbus Hospital at Great Falls, Montana, is a spacious, attractive structure with every modern provision for the comfort and care of patients. The hardware equipment is RUSSWIN. Whether it be a public institution, a many-roomed mansion or a small home there are RUSSWIN designs in full accord with the style or period selected . . . and made of the finest base metals, brass or bronze. For nearly a century, because of its durability, the beauty of its exclusive designs and the lifetime of trouble-free service it pro-

vides, RUSSWIN Hardware has been the choice of leading architects throughout the country. Russell & Erwin Manufacturing Company (The American Hardware Corporation, Successor), New Britain, Connecticut—New York, Chicago, London.

**R&E**  
SINCE 1839  
**RUSSWIN**  
RUSSELL & ERWIN  
DISTINCTIVE  
HARDWARE

Hardware that lasts—Base Metals of Bronze or Brass

# HANLEY FACE BRICK



*Title Guarantee & Trust Co.  
New York City—Midtown Branch  
Architect: John Mead Howells  
Contractor: Thompson-Starrett Co., Inc.*



ESTABLISHED 1893

This attractive building was built with white slip glazed brick in order to obtain a material that would retain its original lustre and stand out prominently with its pure

white color. Hanley White Slip Glazed Brick is an ideal material for monumental structures giving a dignified appearance at a cost of about one-third more than face brick.

## HANLEY COMPANY

*Largest Manufacturers and Distributors of Face Brick in the East*

BOSTON—260 TREMONT ST.

BRADFORD, PA.

NEW YORK—565 FIFTH AVE.

THE ARCHITECTURAL FORUM

Published Monthly by Building Division of National Trade Journals, Inc., 521 Fifth Avenue, New York, N. Y.  
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VOLUME LIII  
Number 6

# What Stone to Use? HERE IT IS!

*Exclusive as the rarest Marble*

*Appropriate for many Purposes*

*Capable of any desired Finish*

*Available in any Size and Form*

RED SLATE, is what we are speaking of; found in only one spot: Washington County, New York. The color is of an unusually attractive shade, which we shall be happy to place before your eyes in the shape of a sample piece, free, prepaid, showing also the finish of which it is capable and convincing you of its excellence for—

*Window Sills   Chimney Caps   Stepping Stones   Garden Seats  
Hearths   Mantels   Fountains   Sinks   Thresholds  
Table Tops   Wainscoting   Base Treads*

and every other purpose for which such a stone can be utilized.

And of course we can also readily supply—

RED ROOFING SLATE, any thickness, rough and smooth texture

RED SLATE Building Stone

RED SLATE Chips, for Driveways, etc.

RED SLATE Flooring and Flagging

RED SLATE Granules and Flour

*And now — shall we send you that sample mentioned above?*

**F.C.SHELDON SLATE CO.**

GENERAL OFFICES · GRANVILLE · N.Y.

• BRANCHES IN PRINCIPAL CITIES •

# LEAD.....

The simplest formula for eliminating paint troubles: specify high-lead-content paints, preferably *pure* lead. For lasting satisfaction and long-time economy.



Reg. U. S. Pat. Off.

## EAGLE White Lead

Made by The Eagle-Picher Lead Company, 134 North La Salle Street, Chicago. Producers also of Eagle Red Lead, Eagle Lead Pipe and Fittings, and many lead, zinc and allied products.



*IMPERIAL Hand Made Shingle Tiles were chosen to roof this picturesque clock tower and other buildings on the place of Mr. Leonard C. Hanna, Jr., Mentor, Ohio. Robert O. Derrick, Inc., were the architects.*



**LUDOWICI-CELADON COMPANY**  
*Makers of IMPERIAL Roofing Tiles*

NEW YORK: 565 FIFTH AVENUE

104 S. MICHIGAN AVENUE, CHICAGO

WASHINGTON: 738 FIFTEENTH ST., N. W.



LIKE the musician to whom life is a symphony and the painter to whom the world is a pageant, the able designer constantly aspires to produce work worthy of his vision. In doing so, he naturally seeks a sympathetic medium, one that will faithfully and truly respond to every creative demand.

Northwestern Terra Cotta fully meets this reasonable requirement. It is the perfected product of fine craftsmanship, scientific research and modern equipment. It offers the architect a freedom of expression that is virtually unlimited. In form, texture, surface treatment and color, it presents a medium for creating lasting beauty that has been appreciated and employed by great artists from the time of the Della Robbias to the present day.

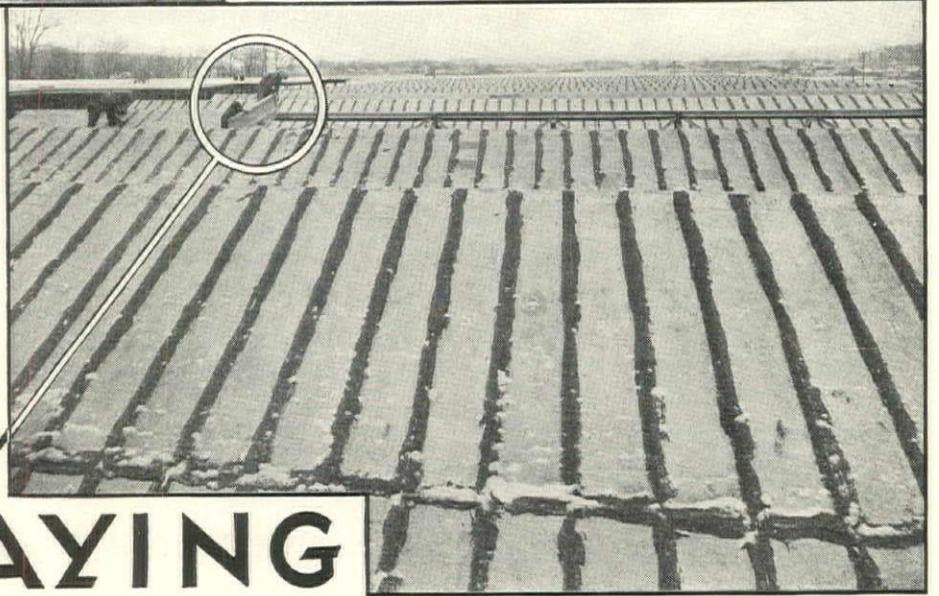
The accompanying illustrations show part of a magnificent altar in polychrome terra cotta for Church of St. Thomas Aquinas, Chicago, designed by Henry Schmidt and manufactured by The Northwestern Terra Cotta Company.

THE NORTHWESTERN  
TERRA COTTA COMPANY

DENVER · CHICAGO · ST. LOUIS



Bendix Aviation Building, South Bend, Indiana. Below—roof deck ready for composition covering. The entire roof of Featherweight slabs was erected in winter—an area of over 300,000 sq. ft. And this expanse represents but half the area of Federal roofs in use by this company!



## LAYING *a Concrete Roof in Zero Weather.*

It is done quickly and easily under any conditions, because precast slabs come to the job ready to be hoisted from box-cars and placed directly on the steel roof purlins. The building gets under cover on time — the composition covering may be applied immediately thereafter.

The Featherweight Concrete slab is alone amongst roof constructions in ultimate value—a weight as low as 10 lbs. per sq. ft.—insulating qualities—permanence—fire safety—freedom from all maintenance.

Many of the country's prominent industrial, public utility, railroad and public buildings are protected by this roof. "Catalog and Roof Standards" on request.

## *Featherweight Concrete* **INSULATING ROOF SLABS**

Made, Laid and Guaranteed by

**FEDERAL-AMERICAN CEMENT TILE CO.**

Executive Offices: 608 South Dearborn Street . . . . . Chicago

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FOR OVER A QUARTER CENTURY



**The First Requirement of a Partition is — IT MUST BE EASY TO LIVE WITH! . .**

Beauty of design, details of form, and quality of finish, all contribute in determining partition values . . . Hauserman Partitions harmonize with any surroundings . . . create dignified, attractive business homes. ✓ ✓

[ This is No. 2 of a series of advertisements setting forth things to look for when considering partitions. ]

**W**ell-balanced design and beauty of line mean as much in partitions as in automobiles. And just as one automobile excels another in eye-value, so do Hauserman Partitions stand out alone as the most pleasing in design.

Every detail of these better partitions is carefully worked out to assure permanently pleasing appearance. Rolled forms of finest furniture steel provide beauty of line and detail. Concealed assembly gives them that part-of-the-building look, yet permits easy dismantling and economical rearrangement.



Hauserman Partitions provide pleasing, economical business settings which never grow old.

The quality and variety of their finish is unsurpassed. Hauserman Partitions offer a choice of 100 attractive colors and exact duplications of selected grains. All parts are completely finished and all finishing is done in the manufacturer's plant.

**THE E. F. HAUSERMAN COMPANY**

A nation-wide organization of Partition Specialists

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CLEVELAND, OHIO

Factory Directed Planning and Erection Service from these 13 Factory Branches

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|-------------------|--------------|----------|------------|-------------|
| Newark            | Philadelphia | Buffalo  | Boston     | Kansas City |
| Chicago           | Pittsburgh   | Detroit  | Cincinnati | St. Louis   |
| Washington, D. C. |              | New York | Cleveland  |             |

**HAUSERMAN** MOVABLE  
**STEEL PARTITIONS**



Thomas K. Windham  
Residence  
Atlanta, Georgia

Jesse Wilhoit  
Architect  
Atlanta, Georgia

## YORKSHIRE SHINGLE TILE

Ever increasing popular appreciation of the beauty of Yorkshire tile as typically fitting for rustic English and Norman design, is proven daily by its increasing demand for the better class homes—wonderfully colorful in softly harmonizing shades from rusty iron blacks thru woody browns to warm fire splotted tans, with numerable middle tones of taupe and mauve casts.

The production of the colors by the exotic play of the fire precludes any exact repetition of color in any two tile. Although steel hard in body structure the texture of the surface is velvet like and non-glaring. Just a beautifully artistic tile, very moderate in cost. Samples and a color sheet are yours for the asking.

Address Dept. "F"  
Daisy, Tennessee.

**B. Mifflin Hood Company**

**KIL-KRAFT TILES**

TRADE MARK

DAISY, TENNESSEE

*Above all things use Hood Roofing Tile*

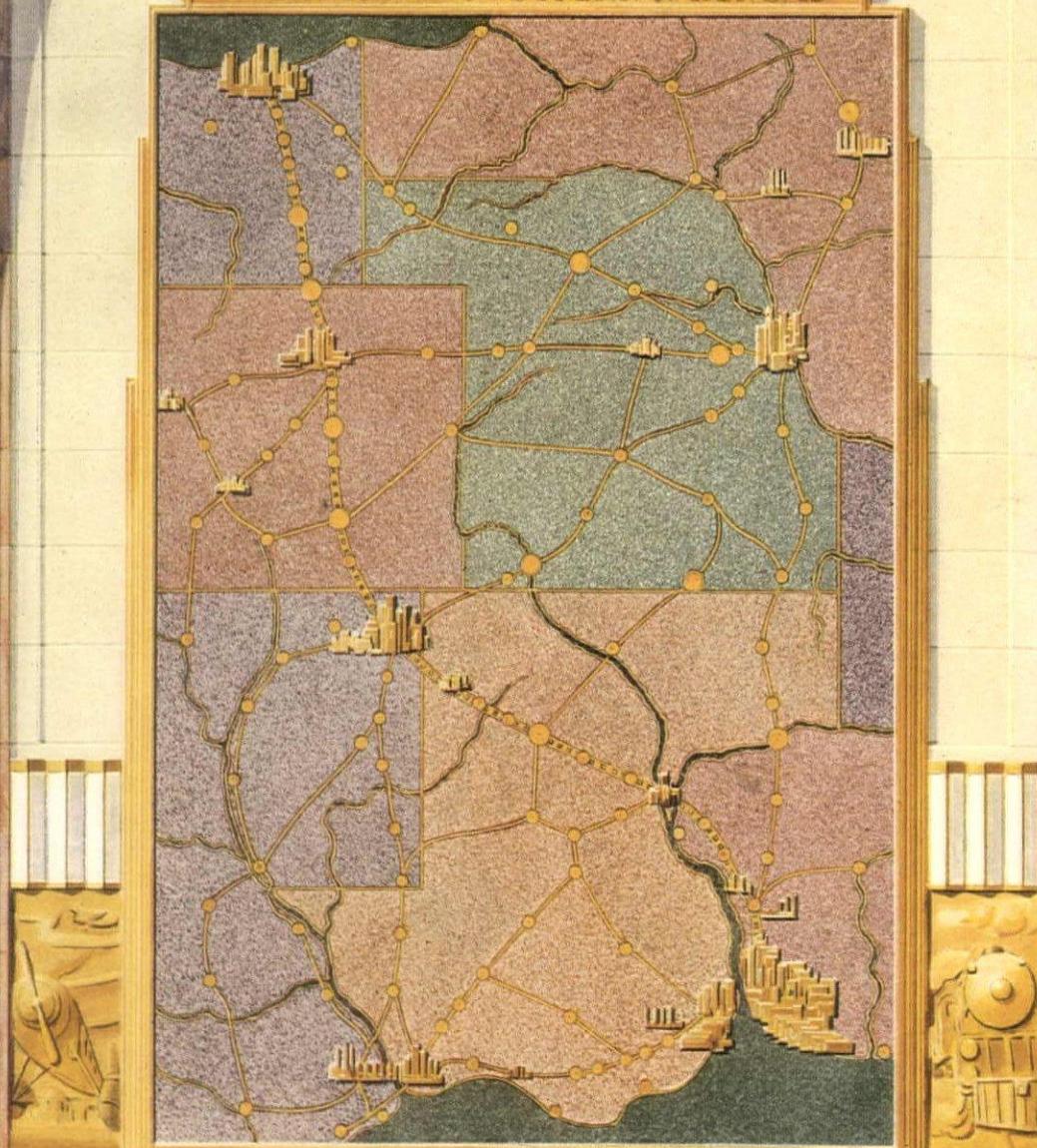
# ANACONDA

ARCHITECTURAL  
EXTRUDED BRONZE  
AND TERRAZZO STRIPS  
PLATE 26

SUGGESTION FOR TERRAZZO WALL MAP, INCORPORATING  
BRASS DIVIDING STRIPS IN THE DESIGN. CITIES SHOWN BY CAST  
BRONZE PLAQUES. COLUMNS AND TICKET WINDOWS ARE  
OF ANACONDA EXTRUDED BRONZE STANDARD SHAPES.

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NORTHERN AND SOUTHERN RAILROAD



SCALE

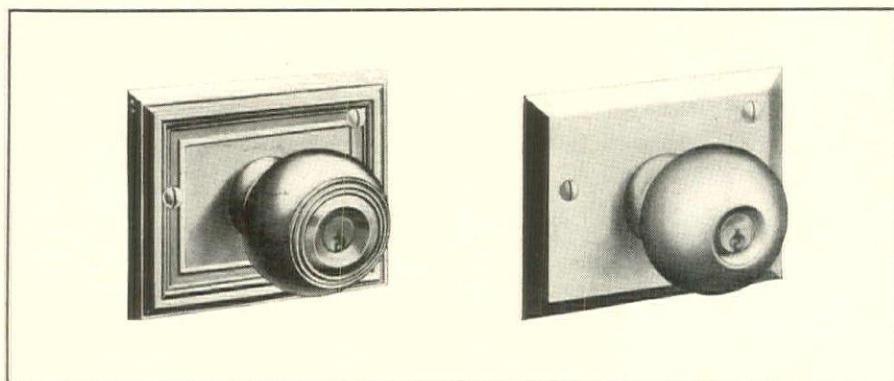
VHAGOPIAN, DES & DEL.

*Complete sets of these plates may be had for the asking*

# EXCELLENCE OF CONSTRUCTION DEMANDS THE BEST EQUIPMENT



Sargent Hardware adds to the beauty and service of this recently completed Cleveland Terminal Group, consisting of hotel, office building, and railroad terminal. Graham, Anderson, Probst & White, architects. The Sargent Union Locks shown indicate the up-to-date design and the high quality of the complete Sargent equipment.



# SARGENT

LOCKS AND HARDWARE

SARGENT HARDWARE contributes to the beauty and usefulness of each one of the buildings that make up the great Cleveland Terminal Group — office building, hotel, and railroad terminal. So also Sargent Hardware will add to the complete satisfaction of your own home. This fine quality hardware is a usual specification when excellence of equipment must finish off excellence of construction.

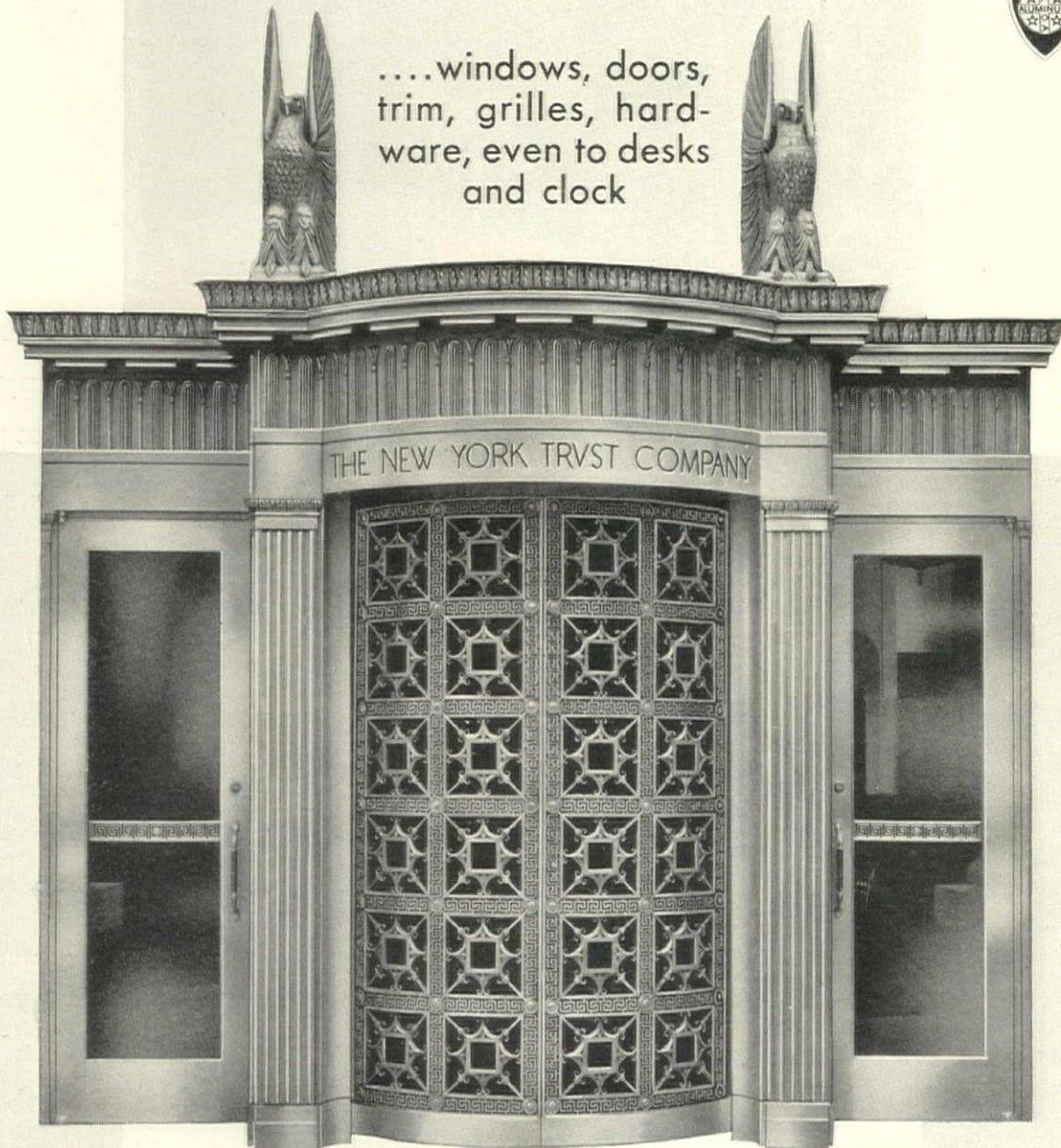
Sargent Hardware covers the entire field of building — hotel, apartment, hospital, public and educational buildings and residences of every size. Designs range from classic, authentic reproductions of the various period patterns to the extreme simplicity of the ultra-modern.

Sargent Hardware, of solid brass or bronze, is extremely durable. Of the finest materials and the most precise workmanship, the operation of each item is lastingly easy and smooth. Now, as for generations, the name SARGENT, on any hardware item, stands for finest quality merchandise. Sargent & Company, New Haven, Connecticut. In New York City — Builders' Hardware Division and Showroom, 295 Madison Avenue; Warehouse, 94 Centre Street. In Chicago — 150 North Wacker Drive (at Randolph).

# Alcoa Aluminum shows its adaptability to decoration

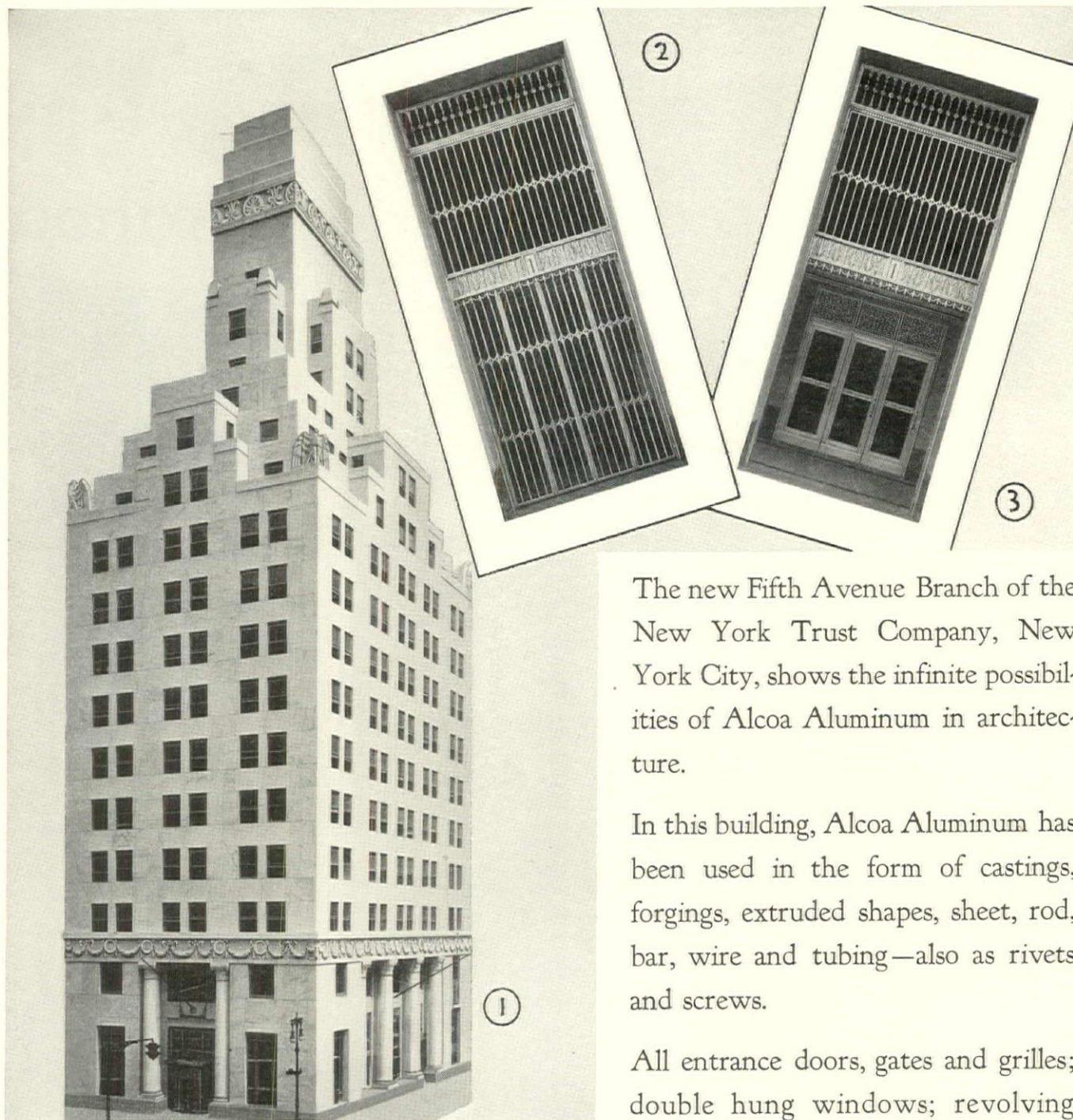


...windows, doors,  
trim, grilles, hard-  
ware, even to desks  
and clock



COMPLETE DETAILS ON THE  
THREE FOLLOWING PAGES

# Nine different forms of



- 1 NEW YORK TRUST BUILDING—5th Avenue Branch, New York  
 ARCHITECTS—Cross & Cross, New York City  
 GENERAL CONTRACTOR—Thompson-Starrett Company, New York City  
 SUB CONTRACTOR FOR ORNAMENTAL WORK—Reliance Bronze & Steel Company of Brooklyn, New York  
 SUB CONTRACTOR FOR ALCOA ALUMINUM DOUBLE HUNG WINDOWS—Campbell Metal Window Corp., New York City
  
- 2 Grille and Gate over entrance to offices above banking floor. This work by Reliance Bronze & Steel Company, Brooklyn, New York

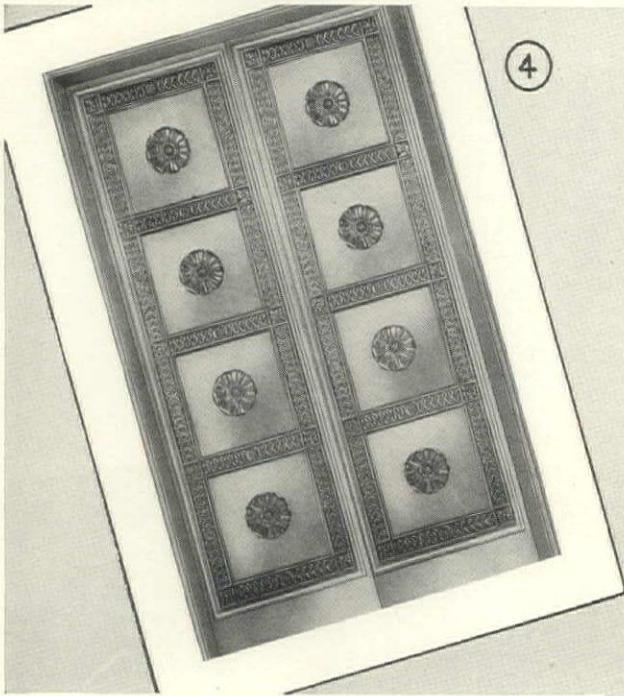
The new Fifth Avenue Branch of the New York Trust Company, New York City, shows the infinite possibilities of Alcoa Aluminum in architecture.

In this building, Alcoa Aluminum has been used in the form of castings, forgings, extruded shapes, sheet, rod, bar, wire and tubing—also as rivets and screws.

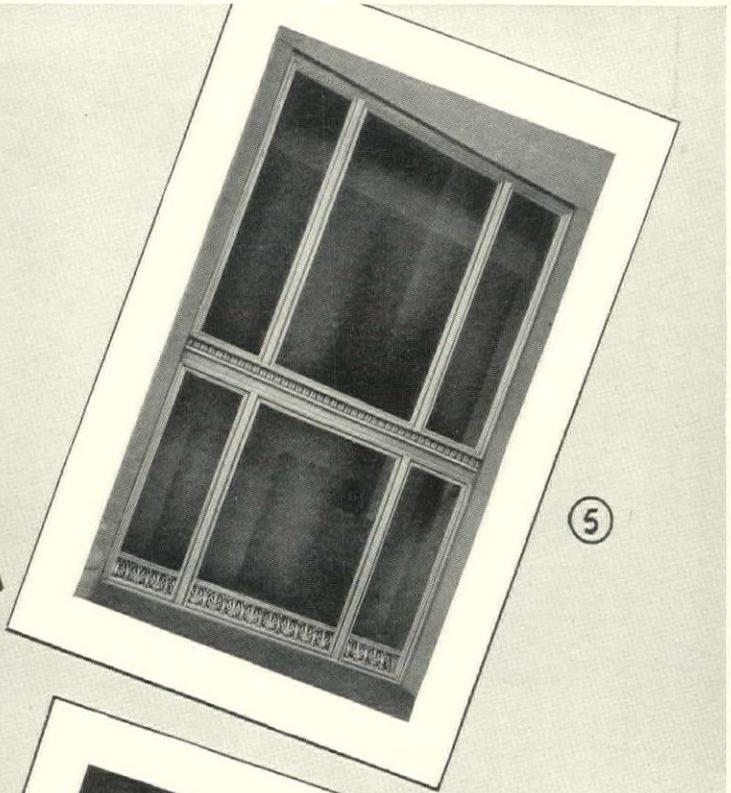
All entrance doors, gates and grilles; double hung windows; revolving doors; banking room windows; casement windows are made of Alcoa Aluminum. The elevator cab grilles, trim and doors; directory board; grilles; counter screens; check desks;

# ALCOA

# Alcoa Aluminum were used



4



5

wire cages; railings; door saddles; hardware and doors in the banking quarters are made of Alcoa Aluminum.

Alcoa Aluminum permits the architect to design and create a building whose decorative detail will endure permanently. Alcoa Aluminum Alloys resist corrosion; will not streak adjoining surfaces; need not be painted. They take a high polish.

In addition to these distinctive qualities, Alcoa Aluminum Alloys weigh only 1/3 as much as other metals commonly used, yet are equally as strong. Their cost is low—comparable to that of other metals not having the advantages of Alcoa Aluminum.



6

3 Gate opened—showing Alcoa Aluminum grille work only.

4 Alcoa Aluminum Elevator Doors by Reliance Bronze & Steel Company, Brooklyn, New York

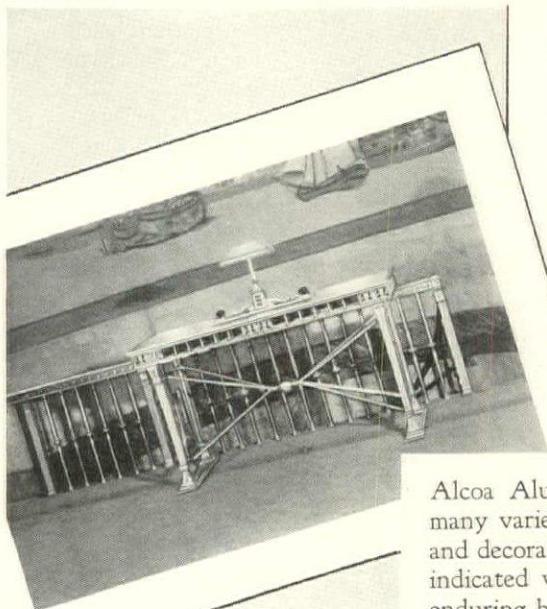
5 Banking Window—57th Street facade. Double hung Alcoa Aluminum windows are used throughout.

6 Alcoa Aluminum Revolving Door by Van Kannell Revolving Door Company, New York City

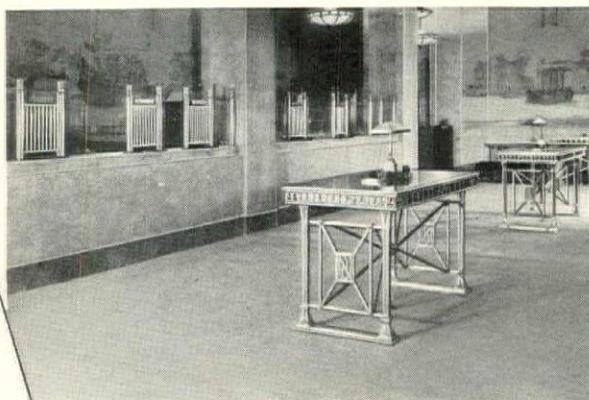
# ALUMINUM



# Light, strong, modern . . . Alcoa Aluminum



⑦



⑧

Alcoa Aluminum has definitely proved its many varied and practical uses in structural and decorative effects. Its use is preeminently indicated where factors to be considered are enduring beauty of architectural detail, lightness in weight and consequent speed in handling on the job, and freedom from corrosion. Since Alcoa Aluminum is not affected by ordinary atmospheric gases, it is suitable for use in or near round houses, chemical factories, or places where industrial processes result in a gaseous or damp condition.

## SPECIFICATIONS

Alcoa Aluminum Alloys are available in various tensile strengths. All the Alcoa Aluminum products used in the New York Trust Building were made from Alcoa Aluminum Alloy No. 43, having a silicon content of 5%. Their weight did not exceed .097 pounds per cubic inch and the average tensile strength was not less than 19,000 pounds per square inch.

In each of our offices we have representatives familiar with the decorative and structural qualities of the many Alcoa Aluminum Alloys. The services of these representatives are available to the designer and specifications writer. ALUMINUM COMPANY of AMERICA; 2412 Oliver Building, PITTSBURGH, PENNSYLVANIA.



⑨

7 Alcoa Aluminum Railing and Check Desk by Reliance Bronze & Steel Company, Brooklyn, New York

8 Alcoa Aluminum Counter Screens and Check Desks by Reliance Bronze & Steel Co., Brooklyn, New York

### Not Illustrated

Alcoa Aluminum Mail Chutes and Boxes by the U. S. Mail Chute Company, New York City. Alcoa Aluminum Wire Cages by Long Island Wire Works, Inc., Brooklyn, New York. Alcoa Aluminum Grilles and Trim on Elevator Cabs by Schleich Studios, Inc., New York City, and Elevator Supplies Company, Hoboken, New Jersey. Alcoa Aluminum Hardware in Banking Quarters by Yale and Towne. Alcoa Aluminum Door Saddles by American Abrasive Metals Company, New York City.

9 Alcoa Aluminum Clock Frame, Hands and Numerals by Self Winding Clock Co., Brooklyn, New York



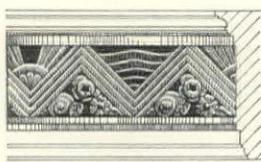
# ALCOA ALUMINUM

# STORE FRONTS

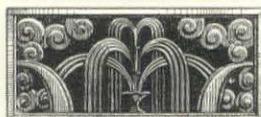


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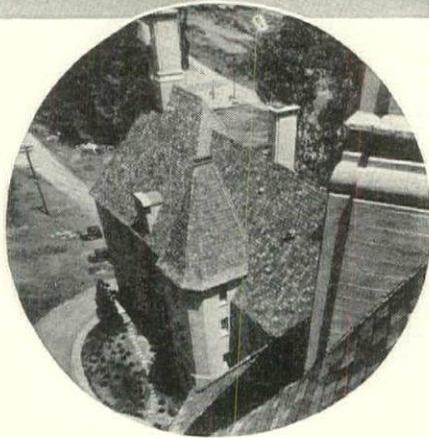
GENERAL OFFICES CHICAGO HEIGHTS ILLINOIS

ASSOCIATED COMPANIES

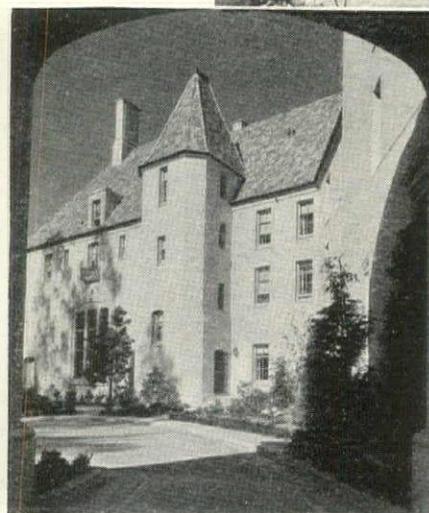
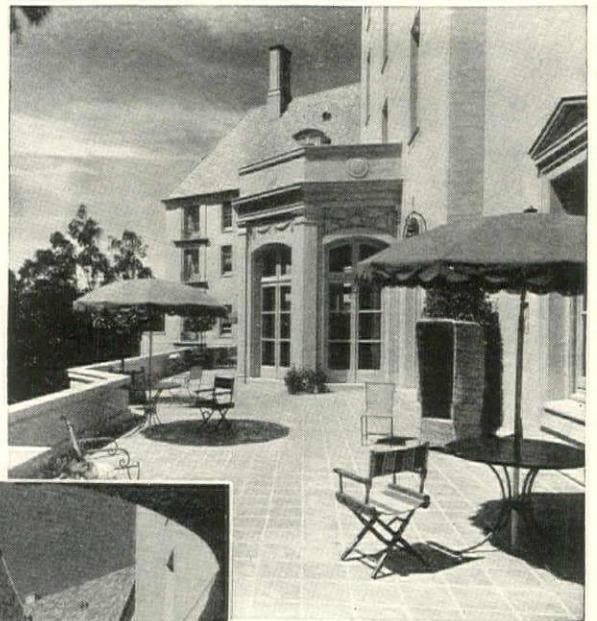
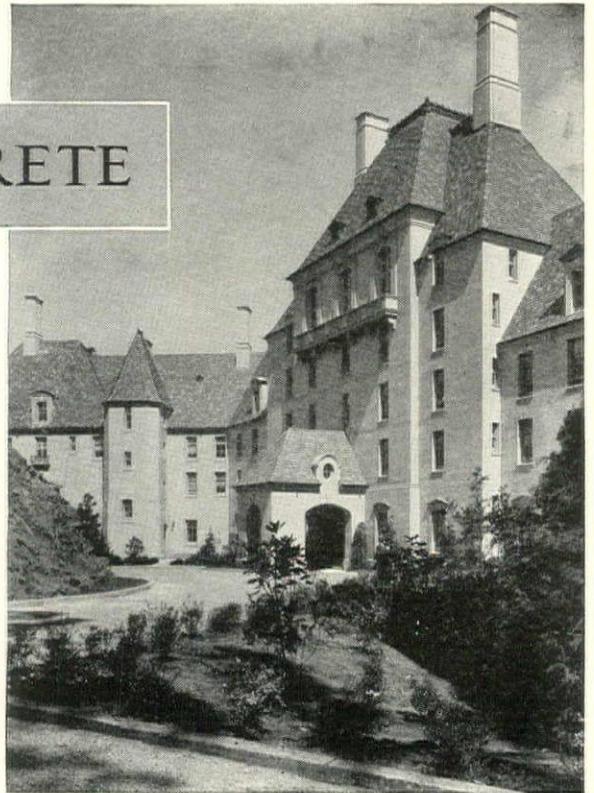
INTERNATIONAL [ MODERN BRONZE STORE FRONT COMPANY  
STANDARD STORE FRONT CONSTRUCTION CO  
INTERNATIONAL STORE FRONT COMPANY ] DISTRIBUTION

WRITE FOR CATALOG

## MONOLITHIC CONCRETE



IN this structure, the floors and walls —interior and exterior—are of reinforced monolithic concrete. The exterior has no finishing coat—the concrete was purposely left just as it came from the forms. Structural frame is of steel. Exterior ornamentation was *cast in place*. So built, this edifice offers positive assurance of firesafety and long life, with little if any structural maintenance through the years.



Views are of Building for Christian Science Benevolent Association for Pacific Coast in San Francisco, California. Henry H. Gutterson, Architect; Walter L. Huber, Structural Engineer; George Wagner, Contractor—all of San Francisco, California

# PORTLAND CEMENT *Association*

*Concrete for permanence and firesafety*

33 WEST GRAND AVENUE  
CHICAGO



Residence at Middletown, New Jersey

Charles H. Higgins, Architect


**T**udor Stone Roofs  
 and Flagging
 

**T**udor Stone roofing slate is endowed by nature with every quality essential to the ideal roofing material. Beautiful—enduring—fireproof, this product, with its rugged texture and wide variety of colors, offers countless possibilities with stone, stucco, or shingle construction.

**Rising and Nelson Slate Company**

WEST PAWLET, VERMONT

Architects' Service Department: 101 Park Avenue, New York City

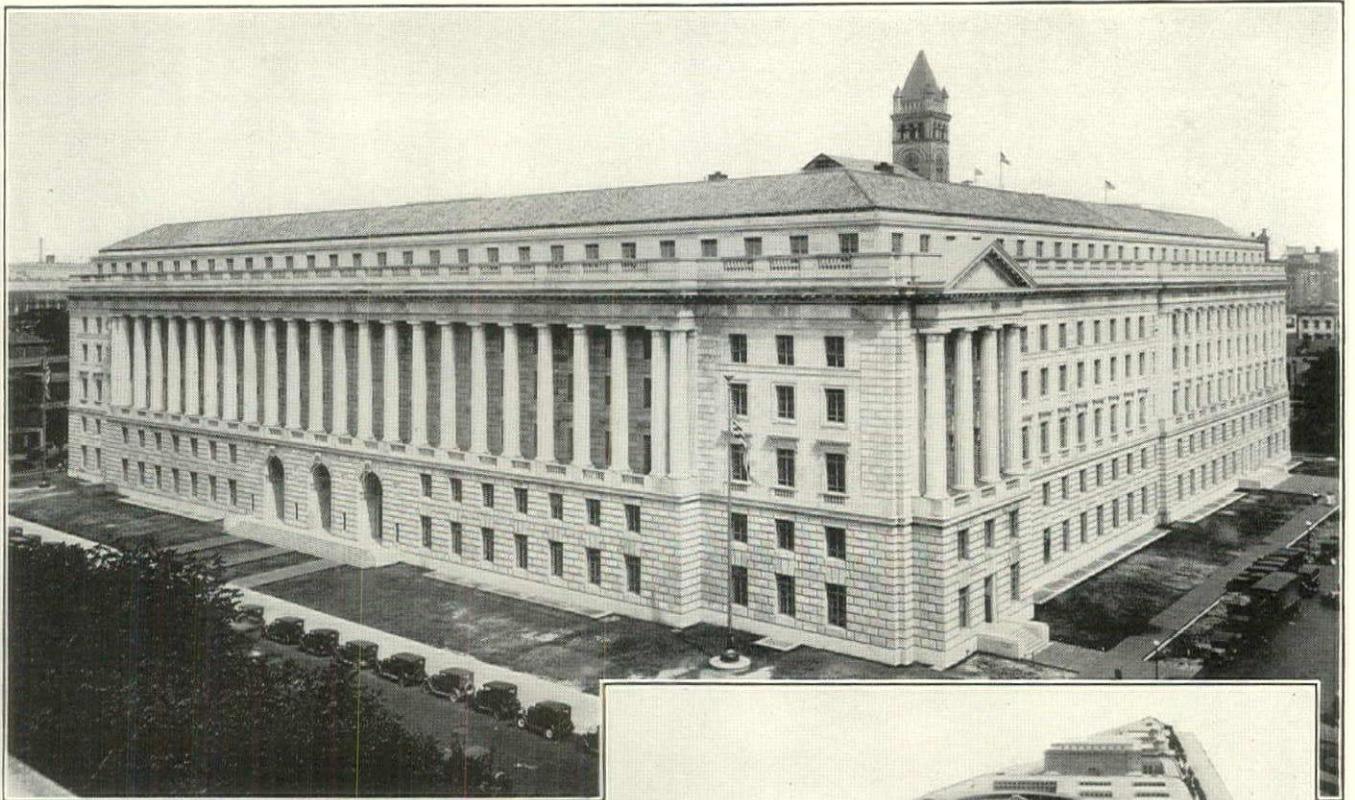
CHICAGO

DETROIT

BALTIMORE

PHILADELPHIA

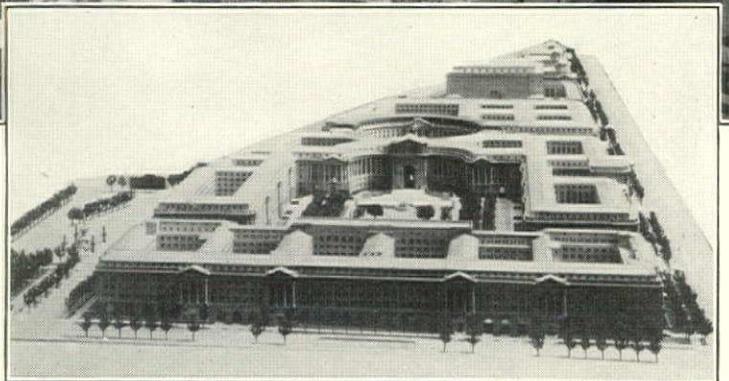
BOSTON



Internal Revenue Building, Washington, D. C. Treasury Department, Architects. James A. Wetmore, Acting Supervising Architect. James Baird Company, Builders. Built largely of Variegated Indiana Limestone.

(Right) Architectural model of group of buildings included in Government's building program, which it is estimated will involve a hundred million dollars exclusive of land for sites, etc.

© Henry Miller News Picture Service, Inc.



## Indiana Limestone Selected for First of New Government Buildings

THE first building in Washington's hundred million dollar construction program is constructed almost entirely of Indiana Limestone. This newest addition to the city's fine architecture emphasizes again the importance of materials in achieving the result you are after. It is proof anew that the fine-grained, light-colored stone from the hills of southern Indiana is considered by the architectural profession as suitable for the most noteworthy buildings of modern times.

Indiana Limestone is the logical answer to your demand for a material that is artistically and economically appropriate. By its natural

beauty, ease of fabrication and accessibility to the markets of the country, it fills these requirements. Large scale production and modern fabricating methods make it moderate in cost. It is entirely practicable for the small building as well as for the larger project.

ILCO Limestone, from the proven, time-tested quarries of Indiana Limestone Company, provides the high quality limestone required for modern building.

Let us submit an estimate on the construction you are planning. Address Dept. 2266, Service Bureau, Bedford, Indiana.

# INDIANA LIMESTONE COMPANY

General Offices: Bedford, Indiana

Executive Offices: Tribune Tower, Chicago

# “You can have the Job”

“Yes, you can have the job, if you meet this figure!” *This figure* is invariably that of the lowest bidder on the work. Now one thing is obvious. Had the architect or contractor confidence in the low man’s work, he would not waste his time

endeavoring to have a better man meet his cheaper competitor’s bid. The higher man can not do his usual excellent work at the low man’s figure. The solution is to specify PARDEE MATAWAN TILES and to insist on a

PARDEE MATAWAN BONDED INSTALLATION. By so doing, you will receive the highest type of material and workmanship at the lowest price for such a combination.

*Pardee Matawan Tile Co.  
Supplies  
Whatever You Need in Tile*

THIS COUPON WILL ACT AS A USEFUL MESSENGER

PARDEE MATAWAN TILE CO.  
101 Park Avenue, New York City

Kindly send me without cost or obligation:

- Portfolio in color.
- Color sketch of enclosed area showing how it will look if tiled in Pardee Matawan.\*

\*I enclose (check one)  sketch of tile area (with dimensions)  blueprint with area indicated.

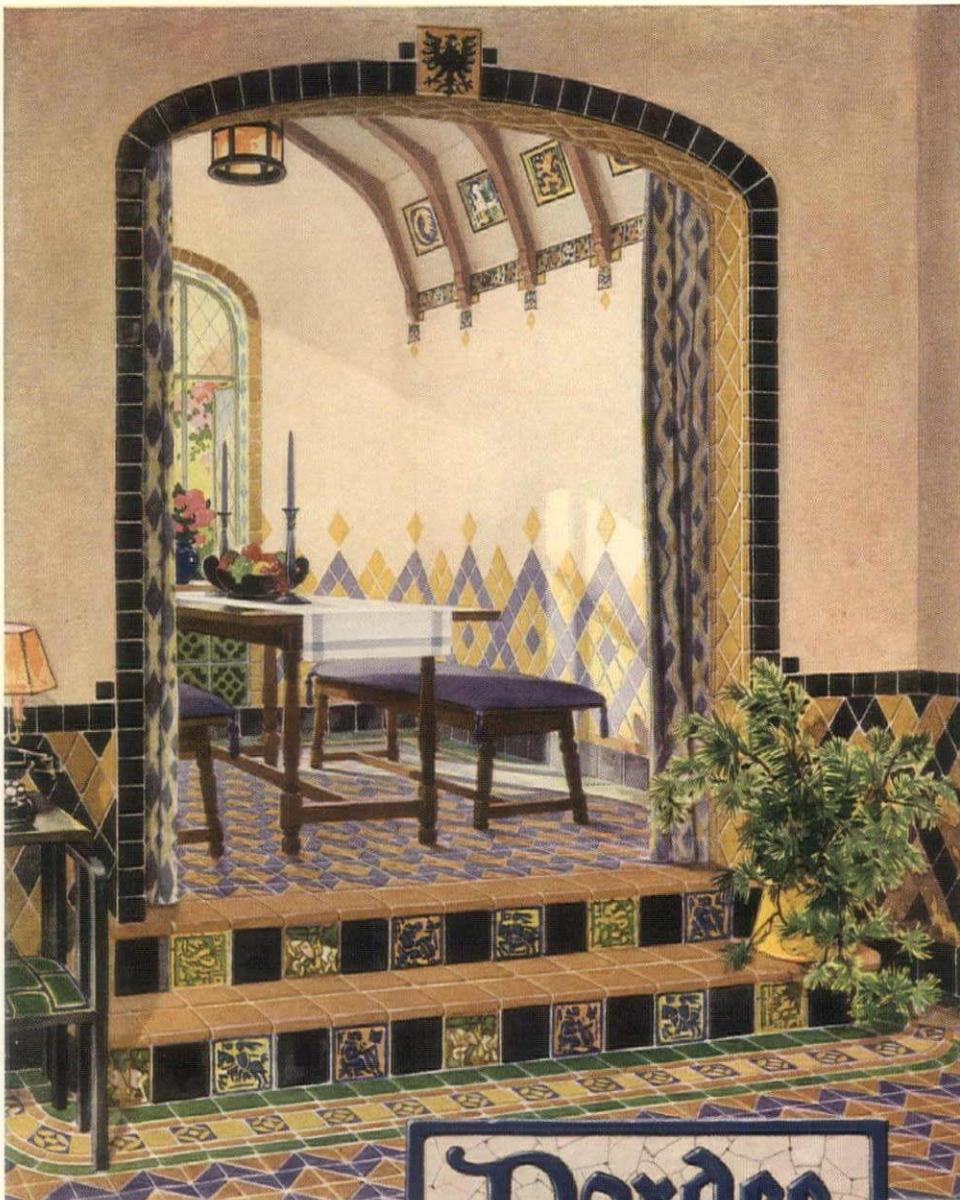
Color scheme is.....

Name.....

Street.....

City.....

State..... AF:12-30



MATAWAN



CERAMICS

# GEORGIA MARBLE

## OFTEN AN ECONOMY

Our engineers are especially keen in pointing out the way to economy in the use of marble for exteriors. Often their suggestions as to jointing and bonding make it possible for you to use Georgia Marble at a cost not appreciably greater than that of a commoner material. . . And in addition to this—Georgia Marble in itself is a decoration which requires no costly enrichment to obtain a striking and beautiful effect.

Lorain Street Branch of the GUARDIAN TRUST COMPANY, Cleveland, O., Rowland Johnson, Archt., Geo. L. Craig, Inc., Contrs. The facade is Georgia Mezzotint Marble with Georgia Creole Marble base and trim. The white metal used in the large openings of the bank proper, contrasts beautifully with the bold veining in the Creole Marble trim.



THE GEORGIA MARBLE COMPANY • TATE • GEORGIA

1328 Broadway  
NEW YORK

814 Bona Allen Bldg.  
ATLANTA

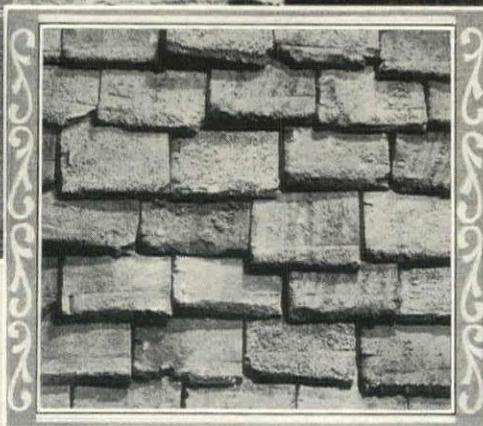
648 Builders' Bldg.  
CHICAGO

622 Construction Industries Bldg.  
DALLAS

1200 Keith Bldg.  
CLEVELAND



*M. H. Hoyt and B. Hoyt, Architects,  
selected HEINZ OLD WORLD TILES  
for their Tudor English design. Don-  
ald M. Bromfield residence, Denver.*



## THE HEINZ ROOFING TILE CO.

DENVER, COLORADO    3659 COUNCIL ST., LOS ANGELES, CALIF.    101 PARK AVE., NEW YORK

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THE NEW YORK BUILDING CONGRESS  
APRIL 18—APRIL 25, 1931  
GRAND CENTRAL PALACE, NEW YORK

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OF THE ARCHITECTURAL LEAGUE  
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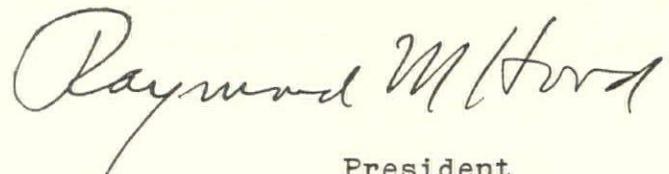
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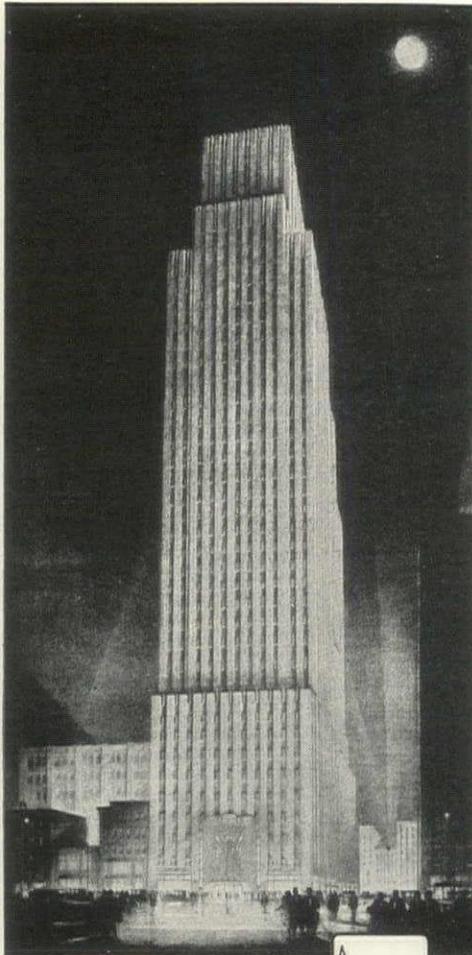
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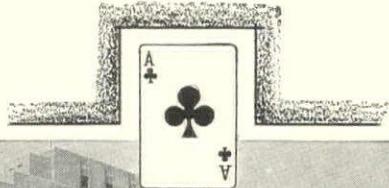
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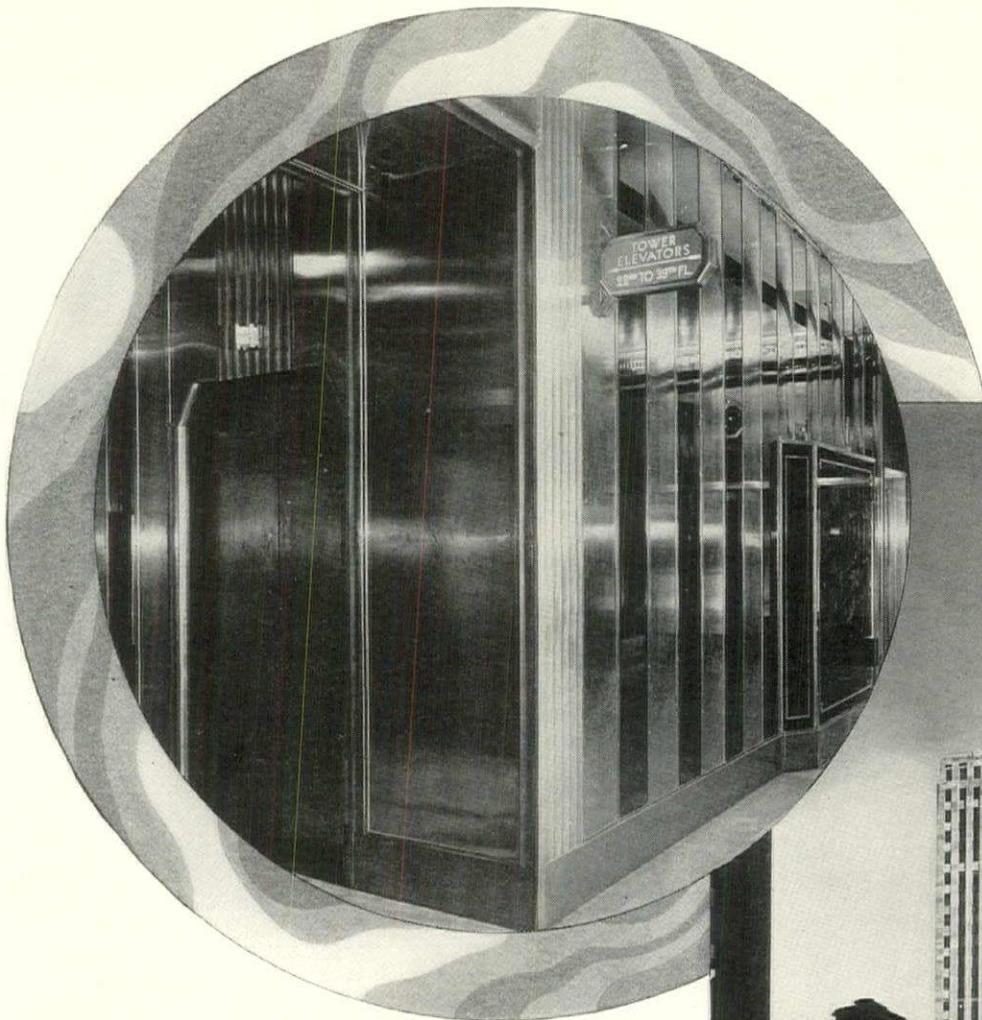
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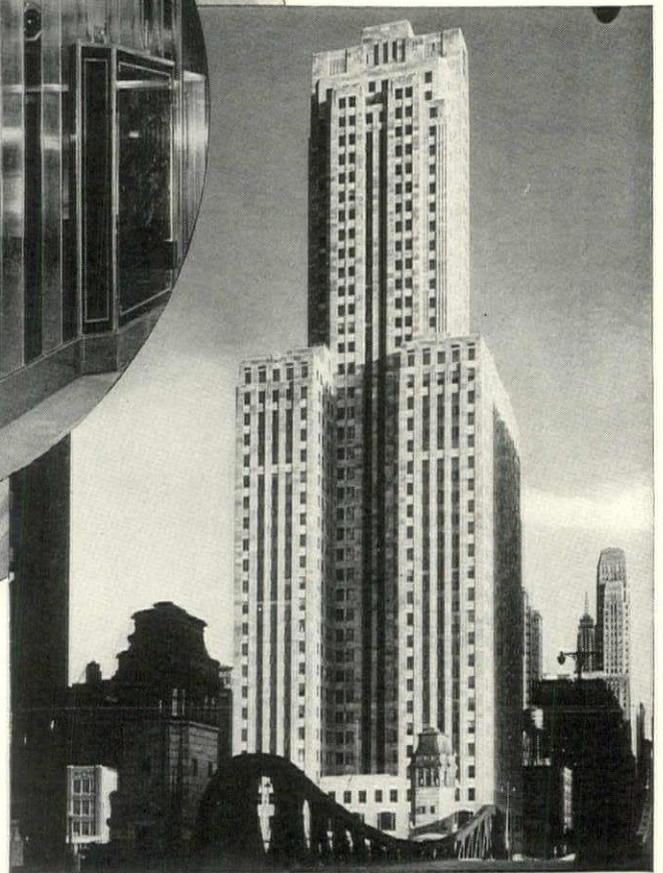
Allegheny Metal alternates  
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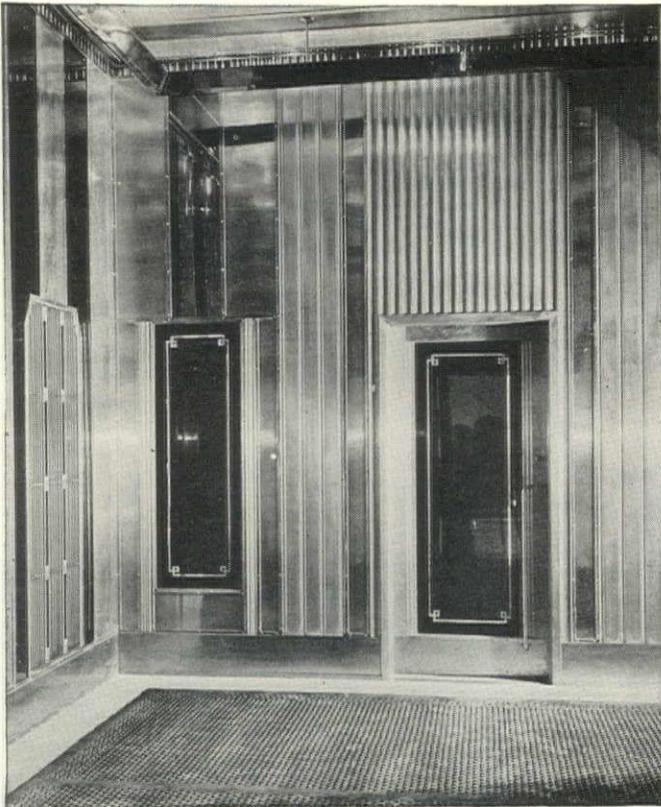


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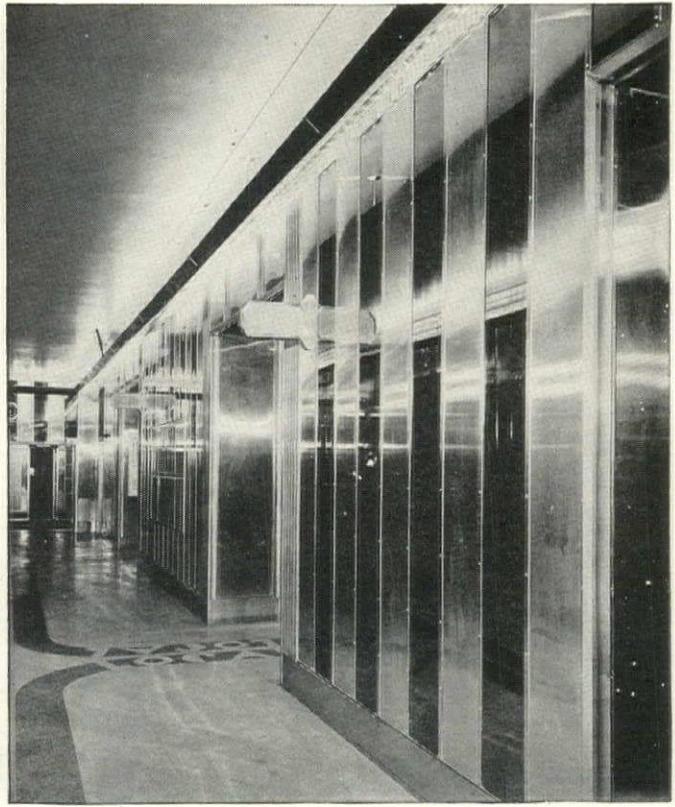
(Above) A STRIKING EFFECT is secured by the elevator doors opening on the lobby—each a flat sheet of Allegheny Metal free from any projecting surface. Display window frames are formed of this alloy

(Right) LA SALLE-WACKER BUILDING, Chicago, Ill. A. N. Rebori of Rebori & Wentworth, and Holabird & Root, architects. Allegheny Metal fabricators: Flour City Ornamental Iron Works, Minneapolis, Minn., Joseph T. Ryerson & Son, Inc., Chicago, Ill.





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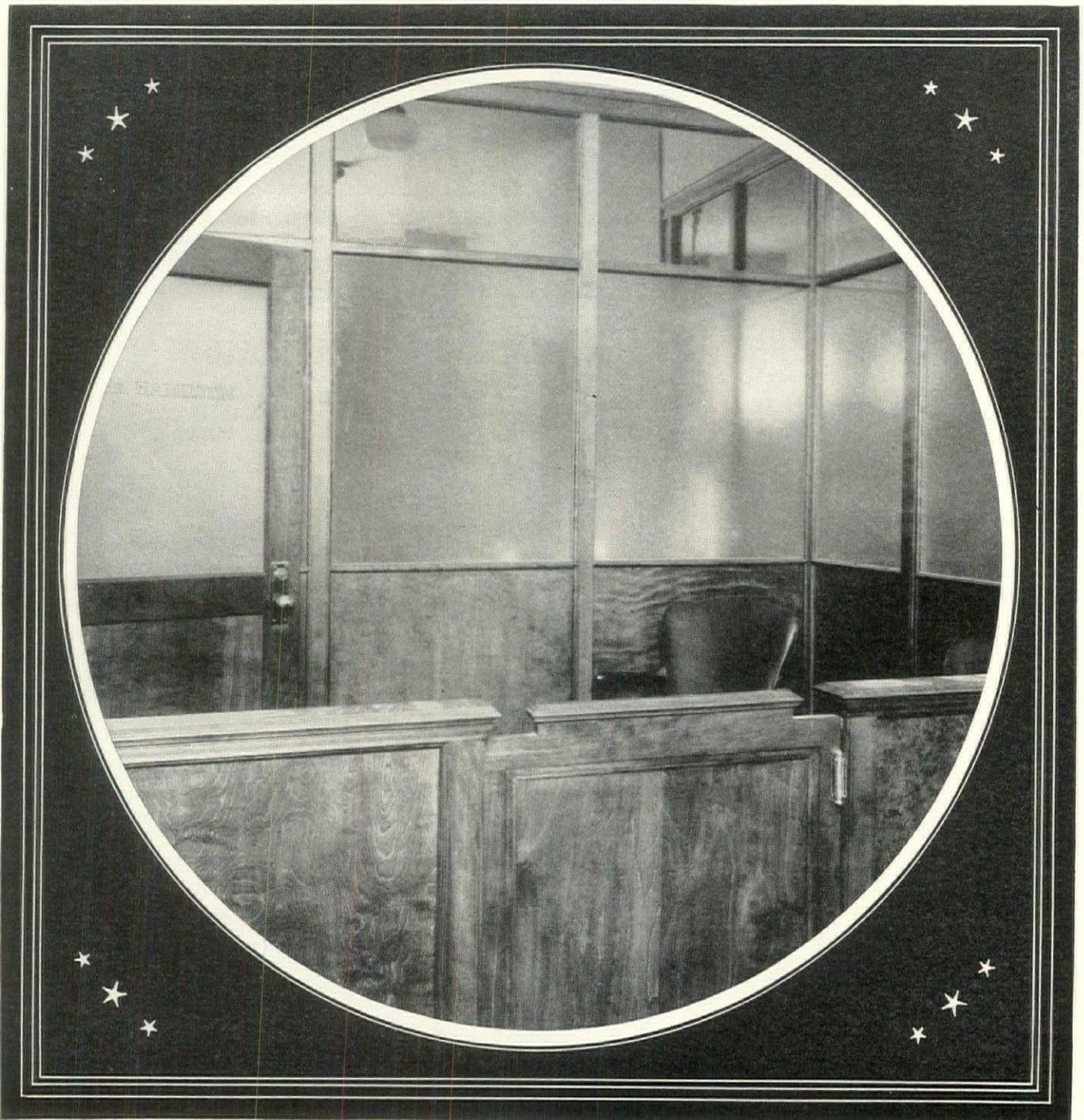
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# BOOK DEPARTMENT

## OLD HOUSES IN ENGLAND

A REVIEW BY  
ARTHUR T. NORTH

NO single book can present a type of architecture adequately, owing to the author's limitations, and it is desirable to have a comprehensive knowledge of any type of architecture in which we are interested. Those who are interested in old English domestic architecture will find Mr. Hunter's work a valuable contribution to extending the coverage of preceding publications on the subject. This work has been confined to the less pretentious work, principally that found in the small towns and adjoining countryside, in the eastern and southern counties. While the buildings illustrated are not, perhaps, outstanding examples such as the better known manor houses, they do add to the sum of the type and broaden our conception of it.

There is one important lesson to be learned from the study of this book which American architects too often neglect. It is apparent that these English builders, possibly from lack of funds, utilized the building materials at hand, and they were imported from other parts of the country only when necessary. The delight of these old houses and buildings is in their honest indigeneity,—nothing imported or adapted,—simply a growth of the soil. Hence we have stone, brick, wood, stucco finish and all kinds of houses according to the nature of the part of the country in which they were located. Aside from the enjoyable inherent delight of these old houses, the lesson of indigeneity is, perhaps, the most important to be learned from studying this work. It is to be hoped that it will induce our architects to be as consistent as were these old builders. We know instinctively that they are English houses; can we say as much for the American house as a unit, except for its badness?

Mr. Hunter has not included plans because, obviously, these old plans would be utterly unsuited for our needs. We can, however, gain much from the study of the

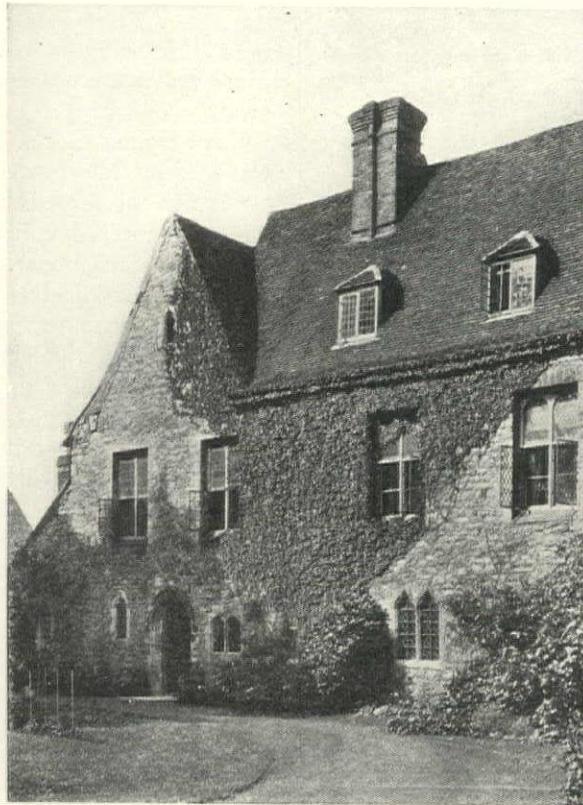
sizes, shapes and proportions of the fine old structures. Such qualities are universal in their application.

The work is divided into five divisions,—cottages illustrated by 53 plate pages; farmhouses and their dependencies, 10 plate pages; small town houses, 22 plate pages; inns, shops and details, 29 plate pages. It is a comprehensive presentation, and Mr. Hunter's photographs, being those of an architect, have captured the most characteristic features of the buildings. The engraver and printer have reproduced these photographs with great skill, and we have illustrations that want nothing in clarity and tone. The effect of this work is stimulating to the imagination and should lead our architects to study more carefully the locale of their work and evolve buildings that are suitable, and not build English houses in America, New England Colonial in Ohio, nor California Mission in Iowa. We can learn much of good taste and fitness from Mr. Hunter's work.

One who follows the publications having to do with architecture, building and decoration can hardly fail to note the success with which

American architects adapt for American use the most characteristic qualities of the architecture of many European countries. There is much in the domestic architecture of France, Spain, Italy and other countries of western Europe to serve as models or to afford inspiration, but probably there is more for us to learn from a study of English architecture as it has been developed during the different periods. Much of the most valuable English domestic architecture is to be found in buildings of modest size,—not the vast country palaces built in great numbers during several centuries.

**OLD HOUSES IN ENGLAND.** By Rowland C. Hunter. 114 plate pages and explanatory text, 11½ x 13½ ins. Price, \$8.50 net. John Wiley & Sons, Inc., 440 Fourth Avenue, New York.



An Old Building on the River Medway  
at Maidstone

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### Colonial Iron Work in Old Philadelphia By Wallace and Dunn

THIS splendid collection of photographs and measured drawings will prove a welcome addition to the library of every architect, for its carefully selected examples are certain to give helpful suggestions on every problem of design. The work shows the evolution in the use of iron for ornamentation from the plain square bars of the pre-Revolutionary Powel railing, through the graceful, simple curves of the Solitude stair and the Dirard balcony, to the Greek Revival with its ornaments and even ensembles in cast iron.

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### Mexican Houses By Garrison and Rustay

THE houses in this volume are carefully selected examples of the Minor and Domestic Architecture of the country. These are 45 plates of measured drawings of small houses. These show not only plans, facades, elevations, and details, but are complete with notes on the color materials and ornamentation.

Over 200 photographs illustrate interiors as well as exteriors, facades, patios, gardens, doorways and windows, and some splendid examples of wrought iron work, use of glazed tiles for wall treatments, dados, fountains, niches, and kitchens.

174 full page plates, 10 x 13½ inches, with 8 pencil sketches, and 45 full page measured drawings, cloth bound. Price \$15.00.

### American Theatres of Today—II Edited by R. W. Sexton

THIS second book is devoted to a discussion of the various phases of the plan, design, and equipment of the modern theatre building. Chapters on various subjects have been contributed by men who stand at the head of their profession in the several fields.

There are one hundred and sixty-four pages, 125 of which are full page plates, illustrating plans, sections, and exterior and interior views of the most recently designed theatres in this country. The text, too, is illustrated in many cases by specially prepared drawings.

Contents by Chapters—1. Tendencies in the Design of the Present-day Theatre. 2. The Design of the Modern Theatre. 3. A Standard Method of Planning a Theatre. 4. The Decoration of a Theatre. 5. Electrical Installation in the Modern Theatre. 6. Theatre Acoustics. 7. Heating and Ventilating a Theatre. 8. The Theatre Owner and the Architect. 9. The Theatre of Tomorrow.

164 pages, 10 x 13 inches, over 300 figures, cloth. Price \$13.50.

### Gargoyles, Chimeres, & Grotesque in French Gothic Sculpture By L. B. Bridaham

THIS book contains about six hundred clear examples of sculptured detail, most being shown in the original architectural setting, which makes this an important source book for architecture as well. All classes of details are treated, such as capitals, brackets, pinnacles, gargoyles, chimeres, tympanum sculpture, symbolic and non-symbolic work in stone, and stall details, misericordes, and civil carvings in wood. Many of the photographs are of work which has been destroyed during the World War, therefore representing the only records of such sculpture. An introductory text gives the historical setting in which such sculpture was born, and indicates the forces responsible for its existence.

250 pages, 9½ x 12½, 600 figures, cloth. Price \$18.00.

### Prisons and Prison Building By Alfred Hopkins

THERE has long been a need for a comprehensive study of the requirements of modern penal institutions. Mr. Hopkins has presented here the development in this field with an analysis of the problems and a splendid collection of exterior and interior views, plans, etc., of the best work of specialists on this type of building.

Contents—Site and Location, Plan, Walls, Cell Blocks, Dimensions and Details, Dormitories, Refectory Buildings, Auditorium, Toilets and Baths, Prison Farm.

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HISTORIC INTERIORS IN COLOR. Introduction by Adolf Feulner. 12 pages of text and 80 color plates, 9½ x 12 inches. Price \$12.50. William Helburn, Inc., New York.

AFTER the array of volumes that have appeared during the last few years on interior architecture, with long texts and all too few illustrations, almost exclusively in black and white, it is most welcome to come upon a work devoted to color reproductions. Such a volume is "Historic Interiors." But it is much more than a mere picture book. The selection of material is extremely fortunate, offering a fairly comprehensive survey of periods when the extensive use of color became an important part of composition as expressed through the applied arts. The plates cover the period of the Baroque through the neo-Classic as exemplified in the residences of both the secular and ecclesiastical princes of Bavaria, Franconia and southern Germany. Since the emphasis of this volume is so largely upon German interiors, it must be counted unfortunate that there are included no examples from Frederick the Great's summer palace of Sans Souci, certainly one of the most perfect architectural monuments of eighteenth century Germany. However, we must be wholeheartedly grateful for the richness of material that is here presented.

The color reproduction of the original oils and water colors of various modern artists is extremely good. These paintings are subjective impressions, it is true, but they suggest vividly something of the perennial freshness and charm of the original interiors themselves.

In this work, German Baroque and Rococo, generally considered as the step-children of Italy and France, are lifted out of obscurity and offered as things in themselves both interesting and delightful. The preponderance of German examples accentuates the fact, sometimes overlooked, that countries other than France produced furniture and interiors of striking beauty and perfect taste during these periods. This work also helps to bring out the fact that perhaps the greatest strength of the eighteenth century's domestic arts lay in the internationalism of their exponents, a characteristic which may or may not be about to find a parallel in the modernist movement which is just beginning. In these examples collected by Mr. Feulner (who, incidentally, is the director of the Residence Museum in Munich), we are again confronted with the fascination of taste in its manifold expression regardless of frontiers. To consider only one example, there are two illustrations of the prince-bishop's castle at Wurzburg. Here we see the results of a fortunate coöperation of Italian artists with a German architect. Balthasar Neumann, who designed the palace, brought from Italy Antonio Bossi for the plaster reliefs, and from Venice no less celebrated an artist than Tiepolo for the frescoes. The result, as anyone who has had the good fortune to visit the palace knows, is not only impressive, but entirely harmonious. At about the same time, Riesener, a German, was accredited one of the *maitres ebenistes* of France, and Rontgen was purveying his furniture to the various courts of Europe and even to that of England. Elsewhere in the volume under consideration we see the Frenchman, Francois Cuvillies, redecorating the residence in Munich for the Prince Elector Karl Albert, and building for that ruler's wife in the park of Nymphenburg the enchanting hunting-castle of Amalienburg. Considerable space is given to the residence at Munich, representing, besides the Cuvil-



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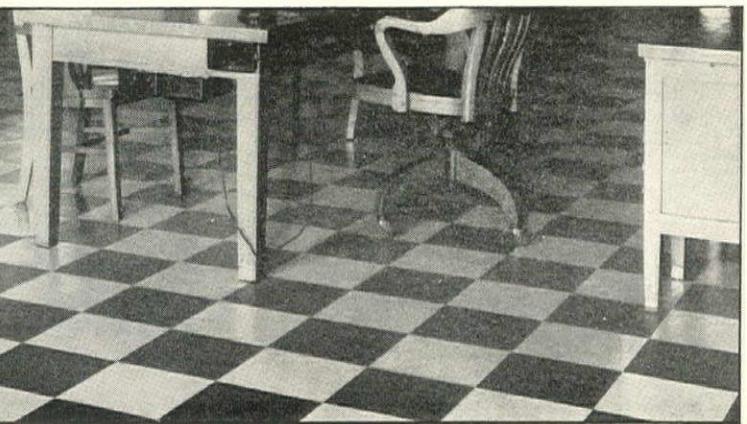
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lies rooms, others that both ante-date and post-date the work of this artist, so that this group of illustrations alone covers practically three centuries in the history of German decoration. But charming and stately as these other rooms are, they do not possess the unity and balance of those at Amalienburg. One of the plates included shows a bedroom in that castle where a design of silver-leafed cascades on an orange-yellow ground gives a lightness and playful delicacy worthy in every detail of the best in eighteenth century tradition.

In pleasant contrast to the stately proportions of the castles just mentioned, we find more intimate views from Bamberg, Ansbach and especially Bayreuth. In the Hermitage of the latter, a room known as the "haunted chamber" bears all the characteristics of Bavarian decoration, repeating the national colors, the mouldings of the white painted furniture being picked out in gold leaf, with insets of blue in the wall panels and with the consoles topped with lapis lazuli. The boldness of the Rococo style is very apparent here and shows decided Venetian influence.

The volume concludes with a small section of bourgeois interiors taken mainly from houses located in the north of Germany. It is interesting to note that besides the usual flower and animal painted decorations, tiles are also extensively used to enrich the walls. Undoubtedly this is the result of Dutch influence.

French interiors are represented by only two plates, one of them showing Mrs. Wharton's charming white salon at St. Brice. It is to be hoped that the editor will be encouraged by the success of this volume to bring out others of the same character. There is a distinct gap in this field which could be well filled by volumes presenting French, English and early American interiors.

**LANDSCAPE ARCHITECTURE: A Quarterly; Compiled Index, Volumes I to XX, 55 pages, 8½ x 11 ins. Price \$1. Landscape Architecture Publishing Co., Boston.**

WHEN a publication has served for 20 years what its editors modestly call a "limited field," the occasion calls for congratulations to those who have directed its fortunes. Such an occasion is the completion of 20 years of service by *Landscape Architecture*, and a Compiled Index of Volumes I to XX, from October, 1910, to July, 1930, sums up in concise form what the quarterly has offered to what is not a limited but indeed a really broad field. A glance at the Index shows that *Landscape Architecture* has dealt with a range of topics much wider than might be expected of a journal bearing its title. Landscape architecture touches at many points the fields of architecture proper; town and city planning; many phases of educational effort; horticulture and forestry; painting; sculpture; real estate development, and professional practice. In fact it would be difficult to name a field allied either directly or indirectly with landscape architecture which has not been dealt with from time to time by this excellent journal. Architects and the architectural press may well offer congratulations, and express the hope that *Landscape Architecture* will continue to flourish and live to observe many more anniversaries and serve so acceptably its interesting field.

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Contents—Some Simple Properties of Acoustic Waves—Fundamental Theory. Combination of Acoustic Elements, Transmission—Change in Area of Wave Front. Transmission—Changes in Media. Transmission Through a Conduit with an Attached Branch or an Open End. Distributed Acoustic Impedance, Horn Theory, Acoustic Coupling. The Filtration of Sound. Acoustic Measurements and Instruments. Physiological Acoustics. Subaqueous Sound Ranging and Signalling. Architectural Acoustics. Atmospheric Acoustics. Appendices.

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### Majorcan Houses and Gardens

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BEGINNING with Catalan Gothic as their prototype, Majorcan houses were later subject to Italian influence, principally Genoese, but in time they came to constitute a distinct Mediterranean type just a bit different from anything in Italy or Spain. The capital, Palma, contains numerous important palaces of the XVI and XVII Centuries, the towns Soller, Inca and Manacor have dignified stone houses less urban in character, but the houses which most appeal are the country seats—that combination of villa and farmstead scattered over the Island. All are beautifully illustrated with details, floor plans, etc., in this new book.

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By G. Ferrari

THIS interesting book will be of great assistance in the designing of this type of building in our country. The scope of the volume is from the Northern Provinces of Italy down to Calabria and the examples have been selected by an Italian Architect who has given the utmost care and attention to the material he has gathered.

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By C. H. Walker

THIS volume contains an interesting collection of photographs all clearly printed on coated paper, 29 of the most interesting small churches are illustrated. They are selected from all sections of the country, all periods of English architecture are presented. In the introductory text the author has given some very interesting facts regarding the various churches.

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ACCOUNTING FOR DEPRECIATION OF SCHOOL BUILDING. By George Stephen Murray. 45 pages, 8½ x 11 ins., paper. Price \$1. G. S. Murray, New Haven, Conn.

DEPRECIATION of publicly-owned buildings is seldom considered either by the public or the responsible officials. Usually, in estimating the cost of instruction per pupil, the depreciation of the buildings used for purposes of instruction is not included. Depreciation is an unavoidable actuality, and sound, scientific accounting must give cognizance to it. The idea that depreciation is applicable to publicly-owned buildings is so new that one reads this study with interest, and it should be seriously considered by all school officials and by architects who specialize in the designing of schoolhouses.

TECHNO—DICTIONARY. By Hubert Hermans. Second Edition. 411 pages, 4¼ x 6 ins., paper. Price \$3.75. Hubert Hermans, Dahlemer Strasse 64, Berlin-Lichterfelde (West), Germany. To be ordered directly from publisher.

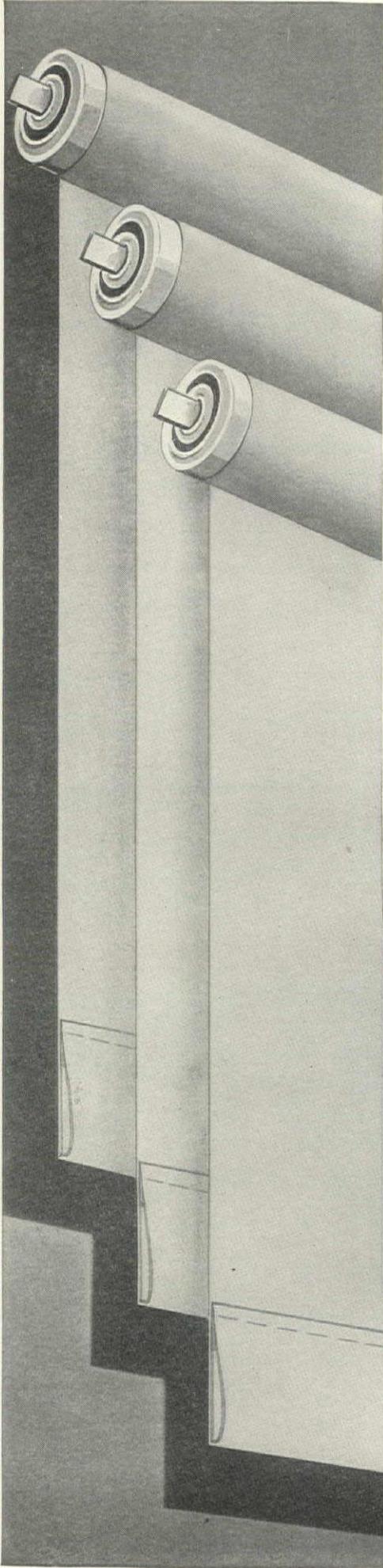
A POCKET size dictionary of technical words in German-English-Italian, English-German-Italian and Italian-German-English. This revised, second edition has been considerably enlarged by the addition of terms not included in the previous edition. The terms were collected principally from technical publications printed in the German, English and Italian languages. It is not a dictionary in the usual sense of giving the meanings of words, as it is assumed that the user knows the meaning in his own language. It does, however, give the word of the same meaning in either of the other two languages. It is intended to assist the engineer and business man reading periodicals and books in foreign languages.

HOT WATER. 130 pages, 9 x 11 ins., illustrated. Price \$3. To Architects who cooperate with local Gas Company, \$1.50. American Gas Association, New York.

HOT water service, to be satisfactory, must be both adequate in supply and economical in fuel consumption. The first consideration is to plan for an adequate supply, which involves the capacity of the heating boiler and the size and arrangement of the water supply pipes. For a given volume of hot water required, the sizes of pipes can be determined. The volume of water requirements depends on the kind of occupancy to be served. All of these factors must be known before the selection is made of the type of boiler and before the kind of fuel is determined. The kind of fuel used is a purely economic matter, varying with different local conditions.

In this work the hot water requirements for domestic and many kinds of commercial uses are given for estimating the total, peak-load consumption. Equally comprehensive data are given for the designing of the supply and circulating system. The heating boilers, hot water accessories, and the various types of boilers are described. Heretofore, working data for designing hot water systems have been widely scattered and sometimes of questionable authenticity. The American Gas Association has expended a large sum of money and much effort to assemble authentic data pertaining to the subject of hot water heating, uses and distribution. These data have been carefully edited, and the result is the most complete presentation of the subject available. Regardless of the kind of fuel used for heating water, this book is of value to architects and to engineers in planning.

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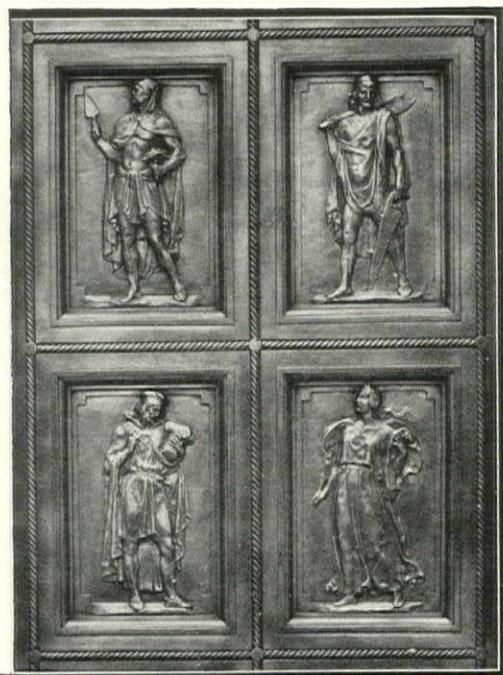
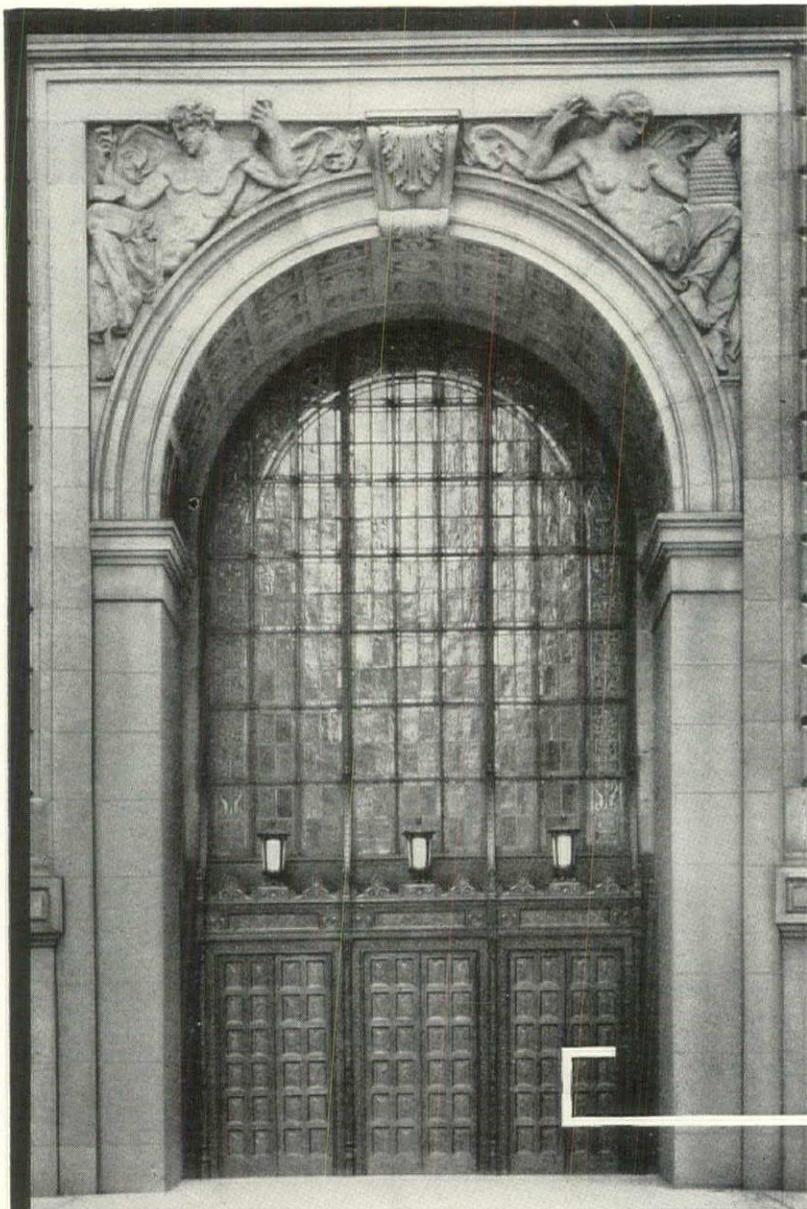
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## THE EDITORS' FORUM

### COMPETITIONS FOR THE PRIZES OF ROME

THE American Academy in Rome has announced its annual competition for fellowships in architecture, landscape architecture, painting and sculpture. In architecture the Katharine Edwards Gordon fellowship is to be awarded; in landscape architecture the Kate Lancaster Brewster fellowship; in painting the Jacob H. Lazarus fellowship, provided by the Metropolitan Museum of Art; and in sculpture the Parrish Art Museum fellowship.

The competitions are open to unmarried men not over 30 years of age who are citizens of the United States. The stipend of each fellowship is \$1,500 a year with an allowance of from \$150 to \$300 for materials and incidental expenses. Residence and studio are provided at the Academy, and the total estimated value of each fellowship is about \$2,500 a year.

The term of each fellowship is three years. Fellows have opportunity for extensive travel and for making contacts with leading European artists and scholars. The Grand Central Art Galleries, of New York, will present free membership in the Galleries to the painter and sculptor who win the Rome Prizes and fulfill the obligations of the fellowships.

Entries for competitions will be received until February 1. Circulars of information and application blanks may be obtained by addressing Roscoe Guernsey, Executive Secretary, American Academy in Rome, 101 Park Avenue, New York, in charge of the competitions.

### LECTURES FOR DRAFTSMEN

A NEW activity of the New York Society of Architects is the formation of an auxiliary organization intended to be of benefit to draftsmen and junior architects who are not as yet registered as architects. The immediate objective of this organization, which is intended to be partly educational and partly social, consists of the giving of a course of lectures to be delivered during the coming winter and spring. The subjects of the lectures are:

The Education of an Architect.

The Functions of an Architect and his Relations to the Client.

Modern Tendencies in Design.

Methods of Studying a Project, Beginning with the Sketches.

Taking of Estimates and General Practice of Letting Contracts.

Supervision of Work in Field.

Technique of Writing Specifications.

Office Administration, Organization and Cost of Producing Drawings.

Selection of Building Materials.

Legal Standpoint of the Profession.

Louis E. Jallade is in charge of the series, and he has enlisted the service of a number of well known New York architects to deliver the lectures, the first of which will be given December 16 at the Murray Hill Hotel. Those desiring tickets of admission may address Mr. Jallade at his office, 15 East 47th Street, New York.

### A TRAVELING EXHIBITION

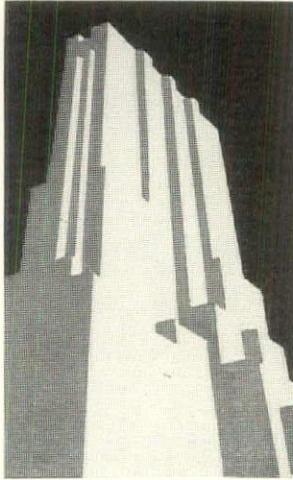
ON October 15, The American Federation of Arts opened its Third International Industrial Exhibition at the Museum of Fine Arts, Boston. The Exhibition will open in New York in December, and later in Chicago and Cleveland. "It will be recalled that in line with the policy of the American Federation of Art to demonstrate design in current production and to bring American products into comparison with those of Europe, the General Education Board, in May, 1927, granted to the Federation \$25,000 annually for a period of three years, to be applied toward assembling and circulating among museums of art a series of international collections of the products of today in various industrial art fields.

"In accord with the decision to limit the scope of these Exhibitions, the first in the series covered the ceramic arts; the second, which is still on tour, included decorative glass and rugs; while the third embraces only metals and cotton fabrics. These broad fields had to be narrowed down to more feasible working limits, so that in the metals it was found necessary to exclude jewelry and sculpture, and likewise the larger architectural pieces intended to be attached to buildings. In the cotton fields are included only woven and printed upholstery and drapery fabrics, made entirely of cotton or containing a very slight admixture of other fibers, provided that the design is carried out by the cotton itself. Dress materials are not included.

"There will be shown in this third Exhibition, in addition to the American entries, the work of eight foreign countries: Czechoslovakia, Denmark, England, France, Germany, the Netherlands, Sweden and Switzerland. About 939 objects, produced by some 181 firms and draftsmen involving the work of nearly 275 designers, have been included. In view of the attendance of over 160,000 persons for the first two Exhibition circuits, the Federation anticipates an equally warm reception for the third industrial art collection being sponsored by the American Federation of Arts."

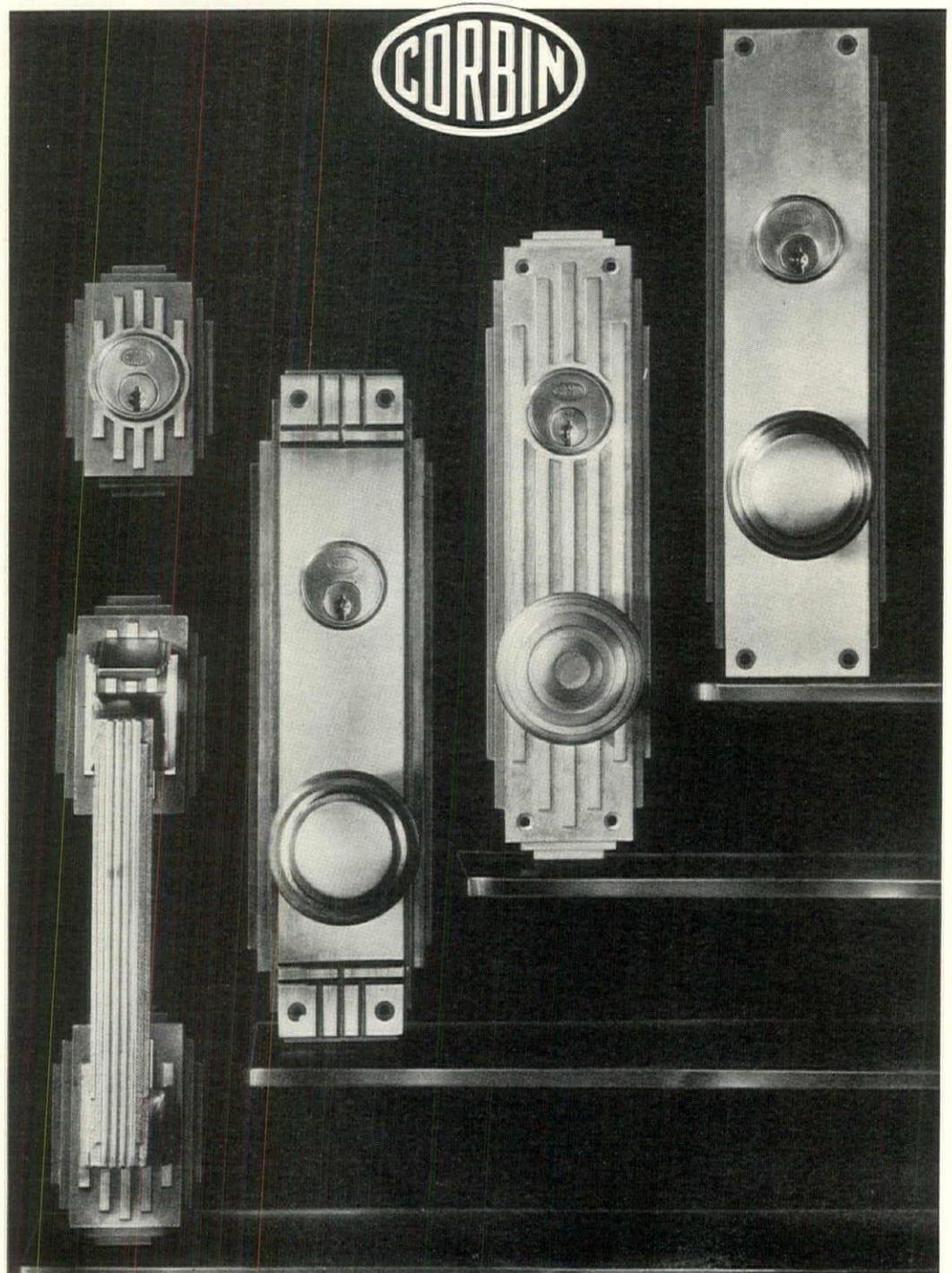
### A CORRECTION

REFERRING to the First Presbyterian Church, Greensboro, N. C., published in the October issue of THE FORUM, equal credit should have been given Hobart Upjohn, New York, and Harry Barton, Greensboro, N. C., as the architects of the building.



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# THE ARCHITECTURAL FORUM

VOL. LIII, No. 6

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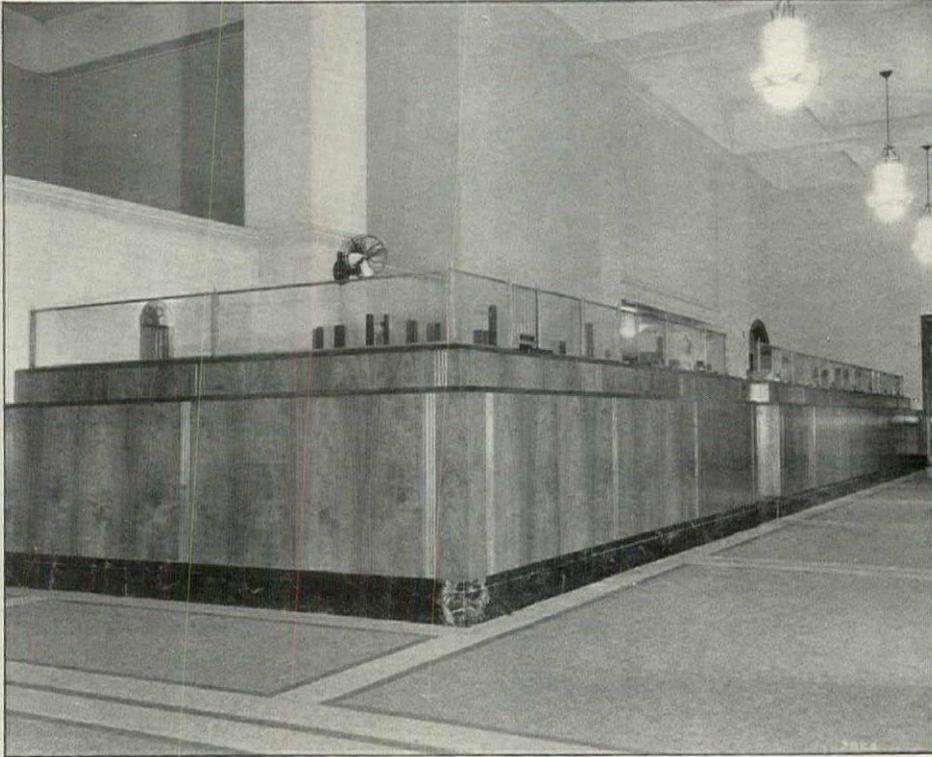
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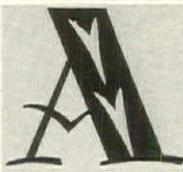
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CLEVELAND UNION TERMINAL  
GRAHAM, ANDERSON, PROBST & WHITE  
ARCHITECTS

# THE ARCHITECTURAL FORUM

VOLUME LIII

NUMBER SIX

DECEMBER, 1930

## MODERN RAILWAY PASSENGER TERMINALS

BY

ALFRED FELLHEIMER

OF FELLHEIMER & WAGNER, ARCHITECTS AND ENGINEERS

**M**OST architects in ordinary practice, when retained to design a structure of commercial, industrial or residential character in urban territory, are usually confronted by surroundings and conditions which are comparatively simple and predetermined in character. Given the plot plan, street levels, photographs of contiguous properties, zoning requirements, the building code and the client's instructions, he may concentrate at once upon the problem of bringing all the controlling elements into a harmonious and effective design.

On the other hand, the architect, when retained to design a modern passenger terminal, quickly finds that the problem is not so simple. In many cases nothing seems to be determined. In some, even the matter of site is still open or must be revised. The city plan, if any, must be followed, or, if necessary, brought into harmony with the project in hand. If no city plan exists, tentative studies therefor must be made. Coördination with transit, street car, bus and other traffic is to be considered. Study for the elimination of grade crossings may be a condition precedent to the station design. The railroad operating features, present and future, are subject to exhaustive study, particularly where more than one railroad is involved. The general scope of the work and the approximate sizes of the principal facilities must be assumed and a balance struck between the cost of the project and the funds available or to be provided,—and all this before the architectural portion of the problem can be attempted.

As propaganda in the public press may be needful; as action by public bodies may be necessary; as a number of railroad organizations, including

the boards of directors, may have to be brought into agreement; and as all these may be adversely affected by matters of political or financial import, it is not difficult to understand why many years may elapse between the inception and completion of any considerable project. The Grand Central Terminal, New York, was under way for upwards of 25 years. The Central Station in Buffalo is the result of 20 years or more of effort. The St. Paul Union Depot, after the preparation of over 100 schemes and the lapse of 15 years, became a reality. The Cincinnati Union Terminal now under construction will be the result of upwards of 20 years of agitation, discussion, reports and planning. The rehabilitation of the Chicago South Side Terminals has been in prospect for over 15 years, and no comprehensive and definite scheme has yet been found acceptable. And so on by the score. Should any terminal project be conceived, planned and executed within the period of time devoted to any of the present-day outstanding commercial buildings, such as the Chanin, Lincoln, Chrysler, Salmon, Empire State and many others, it would be the exception and not the rule. It may therefore be said that those who have been prominently connected with the design of notable passenger terminals have literally grown up with them through the era of their development.

But it occasionally happens that an architect in general practice has, or has had thrust upon him, the opportunity or necessity of going through with such a problem, and some outline of the procedure involved may be welcome and helpful. What follows is a brief outline of matters to be considered in evolving an acceptable terminal plan.

#### DESIGN USED AT ANOTHER TERMINAL NOT ACCEPTABLE

In addition to the obvious railroad necessities, the designer is usually confronted with numerous other important conditions such as the economic soundness of the project, and civic and other requirements both present and future. Each problem therefore presents some controlling features peculiar to itself, and a plan though successfully carried out elsewhere cannot be acceptably reproduced. The designer must therefore rely on his vision, ingenuity and skill in devising a plan which will satisfy all the requirements, with due regard to their relative importance, thereby creating an acceptable design, so that when the details have been correctly developed, a vitalized, successful plan will result. It is also always to be remembered that a modern large passenger terminal represents perhaps the greatest expenditure a railroad makes for an individual improvement, and that the degree of skill with which it is planned, to a great extent, predetermines its future as an asset or liability to the railroad.

#### CREATION OF THE BASIC SCHEME

The terminal in its broadest sense should provide adequate and efficient means for the handling of the railroad traffic; permit the full development of revenue from the by-products, such as rentable space and utilization of air rights; assist in the accomplishment of the city plan; and render public service in the largest measure.

Certain tendencies such as (1) Electrification, (2) Segregation of Suburban, Mail and Express Traffic, (3) Consolidation of Terminals, and (4) Coördination with City Plan, are some of the controlling elements affecting terminal station design.

(1) *Electrification* of terminal zones is gradually taking place. In general its advantages from a strictly operating standpoint are not ordinarily sufficient to justify the scrapping of existing plant and equipment in its favor. If, however, the terminal is so located that it is or may be potentially desirable for intensive commercial building development of its air rights, electrification may be definitely considered. In any event, if there is any prospect of electrification within the life of the terminal, nothing should be done that would preclude its installation when the future justifies it. If electrification is definitely contemplated, advantage can be taken of it in the immediate development of air rights and in the use of such track grades as will open up possibilities of design not practical as long as steam operation during the early life of the terminal is a necessity. Characteristic developments of air rights are found at the Grand Central Terminal, New York; the Union Station, Cleveland; and, to an extent

limited by steam operation, near the Union Station, Chicago.

(2) *Segregation of Suburban, Mail and Express Traffic.* Where the volume and growth of the suburban business tends to interfere seriously with the use of the terminal for its primary purpose,—the through or long distance traffic,—and where there is an adequate rapid transit system developed or likely to be developed in the terminal city, consideration should always be given to the ultimate segregation and possible diversion of the suburban business to the rapid transit lines at some point outside of the terminal-congested area. Where the mail and express traffic is in car-load volume and handled in solid trains, the possibility of segregating this traffic into separate terminal facilities outside of the passenger terminal should be carefully considered in order that this separation may be accomplished when desirable.

(3) *Consolidation of Terminals.* Consolidation of railroads, still in the discussion stage, will undoubtedly be accomplished at some indeterminate time in the future, inevitably bringing with it combinations of terminals which are now separate units. In any terminal problem thought should be given to this eventuality to avoid if possible serious waste of capital. Electrification may, however, in special cases, permit the development of air rights commercially to such an extent that the separate terminal can still be justified.

(4) *Coördination with City Plan.* Steps should be taken to secure the fullest coördination of the traffic elements of the terminal station with the city plan. If there is no official city plan, studies should be made so that no obstacle need be placed in the way of the development of any reasonable plan on behalf of the city. Sufficient open space should be acquired, or be available when needed, to give a proper setting for an improvement of such magnitude and importance.

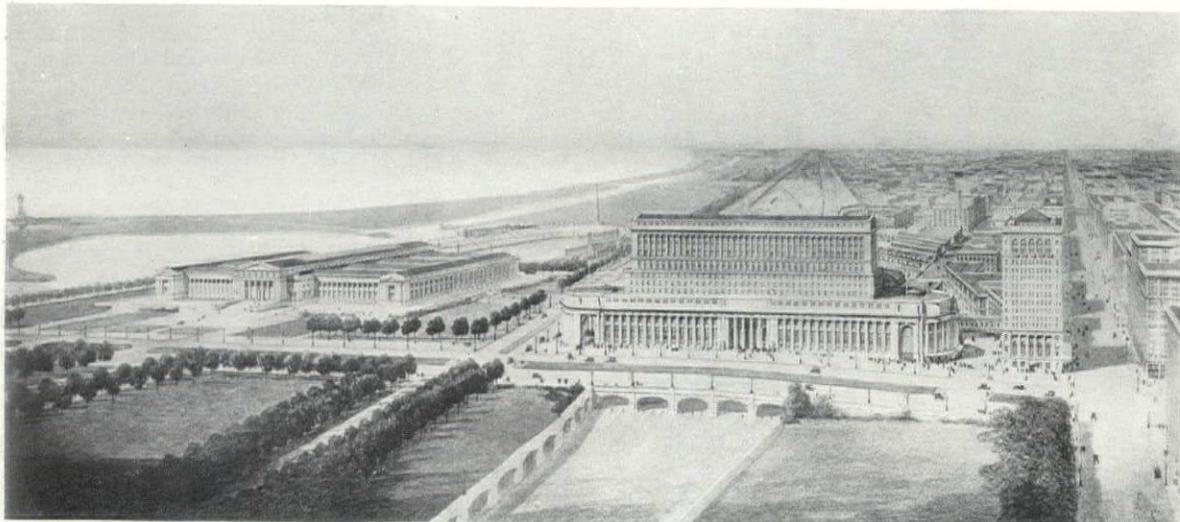
#### GENERAL REQUIREMENTS

Preliminary examination of the problem must determine that any proposed basic plan will satisfy these requirements:

(1) That the improvement of any proposed site, as compared with other available sites, is desirable on the basis of construction and operating costs, including car unit costs. The car unit costs are particularly important where the area available is so restricted as to require double deck structures to secure the desired capacity.

(2) That suitable development to meet the normal growth for such a period as will justify the project can be made in convenient stages from time to time.

(3) That the project is desirable to the city and in harmony with its city plan.



Study for Lake Front Passenger Terminal, Chicago, Ill. Fellheimer & Wagner, Architects and Engineers

Stub station, waiting room type head house. Streets and main station floor at upper track level. Suburban station floor at lower track level. Trucking access at upper track level. Baggage platform contact, by midway at upper track level and by midway and elevator to lower track level

(4) That the advantages offered to the public are sufficient to justify such concessions as may be required from the municipality.

(5) That the project is economically sound to the extent that it can be readily financed, and that there are no prior financial obligations which cannot easily be discharged.

(6) That the revenue from rental of surplus space and air rights will absorb or substantially reduce the carrying charges for the improvement.

(7) That the project as planned is so sound and free from imposing burdensome conditions on the railroad company, that governmental approval can readily be secured.

(8) That the improvement is of such a type that material commensurate enhancement of land values within the terminal area will necessarily follow.

#### SPECIFIC REQUIREMENTS

In addition to the foregoing broad principles, the basic scheme must meet these conditions:

*Transition from Existing Conditions to Proposed Plan.* Except at a new site, the new scheme must fit in with existing conditions to the extent that a gradual transition to the final plan can be effected without serious interference with operation, and in such stages from time to time as will conform to the current growth in traffic and with the development of contiguous property. Obvious economic and practical reasons render this imperative.

*Benefits to Both the Public and the Railroad.* Not only must there be an increase in comfort and convenience to insure the good will of the public, but there must also be sufficient economy in first cost and operation to insure efficient and

liberal service on the part of the railroad.

*Simplicity of Plan to Insure Directness.* The scheme must be orderly and direct in the placement of its principal parts to avoid disorder and confusion in the use of the facilities.

*Coördination of Railroad Facilities and Street Arrangement.* The railroad facilities must coördinate with the full development of the streets throughout the terminal area in conformity with the city plan, so as to permit free city expansion along and across the terminal. This will benefit both the railroad company and the city.

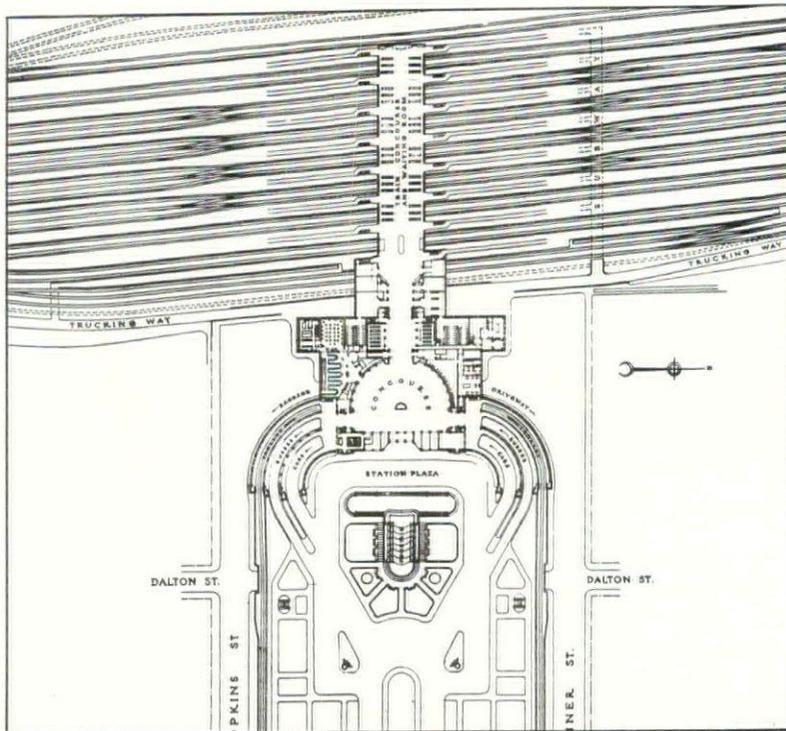
*Flexibility in Adjustment to Future Development.* Possibility of adjustment to meet future developments must be provided for, so that useful life will be limited by physical decay rather than by obsolescence. This is particularly necessary in terminals operated by steam in the early stages.

*Adequate Capacity in Approaches, Throats and Yards.* The track capacity in approaches, throats and yards must be definitely determined to be adequate and in proper balance, to secure effective and efficient use of the whole terminal.

*Possible Types for Track and Station Arrangement.* When the general scheme has been found to be in full accord with the preceding requirements a selection of the types of track and station arrangement must be made to fit the conditions imposed by the site and its surroundings and the character of the traffic to be served.

There are these two types of track arrangement from which to choose:

*Through Type.* Here the track and other facilities provide for the operation of trains in whole or in part through or past the station without reversing the direction of movement. This type is concededly the best for rapid and efficient



Plan. Union Passenger Terminal, Cincinnati. Fellheimer & Wagner, Architects and Engineers

Through station, concourse type head house. Plaza (street access) and main station floor, above track level. Trucking access at track level. Baggage platform contact, by subway under tracks with ramps. Street car, bus and taxi contact in station below main floor

handling of trains and, if possible, should be the type selected unless a careful investigation of all other elements fails to show the necessary preponderance in its favor.

*Stub Type.* Here all tracks terminate, and the trains are operated to and from the station by reversing the direction of motion. Some of the special advantages of the through type can be given the stub type by providing for the release of the engine after arrival, or, if there is sufficient room laterally, by the introduction of a loop arrangement.

In this type, except in cases where there is a difference between street and track levels, the platforms and other facilities can be arranged at one level, with these advantages:

- (1) Highest total efficiency in operation and the greatest convenience to the public.
- (2) Freer and faster travel on platforms, unencumbered by stairs or ramps.
- (3) Practical elimination of vertical travel of passengers between streets and platforms.
- (4) Economy in cost of construction, operation and maintenance.

Wherever possible, the short-haul (suburban) traffic, with its intensive service requirements, should be provided with means for through or continuous train operation.

There are these three types of station or head house arrangement:

(1) *Waiting Room Type of Head House.* Here the waiting room is made the focal center of the station, with all dependent facilities, such as ticket office, baggage and check rooms, opening

directly therefrom, and with a separate passenger concourse for access to train platforms. The Washington Union Station is an example of this.

(2) *Concourse Type of Head House.* Here a large general passenger concourse is provided for the mass circulation of passengers, with ticket office and other dependent facilities opening directly therefrom, the waiting room and its auxiliary facilities being placed adjacent to but separate from the concourse. The Grand Central Terminal, New York, is an example.

(3) *Composite Type of Head House.* Here a large room is provided exclusively for the sale of tickets, checking baggage, and like dependencies, with separate waiting rooms and passenger concourse. The Pennsylvania Station, New York, is an example. The above types are influenced by the topography of the site, i.e., the differences in level between the tracks and adjoining streets. This results in these other types:

*Single Level.* Here the tracks and streets are at substantially the same elevation. This condition is often of great advantage in a Stub Type, but quite the reverse in a Through Type Station.

*Double Level.* Here the tracks are either above or below the street and main station level. This is the best arrangement generally for a modern large passenger terminal; the latter condition, with tracks below the street and station level, is to be preferred on account of less vertical travel for the passenger.

*Multi-Level.* Here the station, streets and tracks are at different levels, or there are either two track levels or two street levels, making three



Air View, Union Passenger Terminal, Cincinnati, Ohio. Fellheimer & Wagner, Architects and Engineers

or more levels in all, depending on grades, etc.

The character of the traffic to be served offers for selection these other types:

*Suburban, or Short Distance Type.* Here the facilities are used exclusively for this class of passenger traffic, and in general may be smaller and less elaborate.

*Through or Long Distance Type.* Here the main function is the housing of through or long distance passengers, and the facilities are usually larger and more elaborate. Such a terminal can, of course, be used also for suburban traffic up to the point where such use begins to interfere with the through traffic.

*Combined Through and Suburban Type.* Here the station is definitely designed for both classes of traffic, each being more or less segregated from the other either on one level or on different levels.

## ELABORATION OF THE DESIGN

### TRAFFIC CONSIDERATIONS

*Extreme Peak Conditions of Traffic do not Govern.* It is not necessary to provide for extreme peak conditions, since any well planned station can carry an overload for short periods without undue operating stress or inconvenience to the public. The design therefore should provide for the normal, frequently recurring peaks of the anticipated traffic.

*Foot Traffic Channels, Natural and Direct.* The general arrangement of facilities should invite movement of foot traffic along natural and direct channels and avoid as far as possible crossing of the main travel routes and the retracing of steps. Where established lines of city foot traffic are interrupted by the terminal construction, provision should be made to accommodate such traffic without interference with the normal use of the station.

*Separation of Suburban and Through Foot Traffic.* This should be effectively accomplished to avoid confusion and expedite both classes of traffic. It is not essential that entirely separate concourse, waiting room and general facilities be provided. The main channels of circulation should, however, be completely segregated.

*Separation of Inbound and Outbound Traffic.* Although it is desirable to separate the channels of passenger foot traffic and allocate sections of the terminal facilities to inbound and outbound traffic, no physical division should be planned in the track layout that will limit interchangeability in the use of the tracks.

*Separate Inbound and Outbound Baggage Facilities.* The facilities for receiving, delivery and storage should be separated. Trucking subways, bridges and other passageways may be used in common.

*Vehicular Traffic.* Adequate provision should be made for the public and private vehicular traffic in suitable and close relationship to the station facilities.

*Local Transit Contact.* In addition to access to streets, convenient entrances and exits should be provided for interchange of passengers with surface lines, subways, elevated lines or other local transportation systems. It is often feasible to have local transit lines on a level directly above or below the station track level and in direct contact therewith.

*Unnecessary Foot Traffic Diversion to be Avoided.* Provision should be made for direct contact with all natural points of exit and entrance. These contacts should not be forced out of place by the architectural composition.

*Traffic Contact with Mail and Express Facilities.* This is provided for by platforms, elevators and ramps between the trains and the facilities in question. The volume of traffic handled in

this way decreases materially when solid trains and carload lots are provided for outside the main station facilities.

*Segregation of Freight Traffic.* Should the terminal include provision for freight traffic, this portion of the layout should be entirely segregated from the passenger facilities, and as far as possible all freight trucking areas should be exterior to the main streets to minimize interference with the passenger and public traffic.

#### STATION FACILITIES

*General Requirements.* The various facilities making up the station proper must be placed in the natural or orderly grouping dictated by their related uses. The individual sizes should permit readjustment without seriously deranging the general coordination of parts, to accommodate disproportionate future changes in use.

*The Passenger Concourse.* This should be roomy and entirely enclosed with weather-tight gates to the train platforms. The train gates should preferably be in a continuous line on one side of the concourse. Traffic in the concourse should be free from confusing changes in direction. Ample and direct access should be provided from the concourse to the various strategic street points and to other station facilities.

*The Waiting Room.* This should be arranged conveniently accessible from the street and station facilities without inviting usage as a thoroughfare. All features for the comfort and accommodation of waiting passengers should be adjacent and readily reached. Day lighting and good ventilation should be assured.

*The Ticket Office and Checking Facilities.* These should be placed in contact with, but not encroaching upon, the main routes of travel between streets and trains so that those not requiring these facilities may pass without conflict.

*Associated Facilities.* All these should be provided with the equipment and conveniences required to insure the full working efficiency and comfort of employes.

*Concessions.* Revenue-producing facilities conducive to the comfort and convenience of the traveler should be located along the main arteries of traffic, but in such a way as not to interfere with the effective operation of the station. Their equipment and arrangement should invite the maximum patronage of the railroad patron and the public, thereby enhancing their rental value.

*Commercial Office Space in Station Building.* The station plan should not impose on the commercial office space which may be contemplated any limitations which will exclude the essentials needed to assure successful competition with similar commercial buildings.

*Air Right Buildings over or in Contact with*

*Station Facilities.* Where the character of such buildings can be predetermined, necessary contact with the station, freight, or other facilities should be provided. In any event, nothing should be done to prevent making such contacts in the future when necessary.

#### PLATFORMS AND RAMPS

*Platforms.* These should be level with the car floor, especially for suburban service. If conditions compel the use of low platforms, provision should be made for future conversion to the high type. Where the width of the platform is restricted by the need for intensive use of the property, the minimum width should permit passengers to move freely between loaded baggage trucks if placed on either side of the platform. Means should be provided to avoid trucking across platforms and tracks.

Baggage elevators should not be located in narrow platforms except at outer ends. When placed at the concourse end, they should not obstruct circulation. The space at the ends of the tracks in a stub station, and known as the "midway," permits the placing of elevators, stairs, and similar features without encroachment upon the concourse or interference with public circulation. It also permits the use of several train gates for one platform, thereby speeding the exit of arriving passengers.

Separate baggage platforms are not ordinarily necessary. The handling of baggage on passenger platforms causes but slight interference with the movement of passengers. Suburban trains carry practically no baggage. Inbound, long distance trains normally occupy the platform for a considerable time beyond the short interval required to discharge passengers. In the case of outbound long distance trains, the passengers are so thinly distributed that no appreciable interference results. If separate baggage platforms are provided, they must be ample in width, as narrow platforms are useless.

The spacing of platforms and tracks, particularly if lines of columns are necessary, should be designed to permit rearrangement of platform widths if needed. Column lines for superimposed structures, in the absence of controlling conditions to the contrary, should be located in the platforms instead of between tracks, thereby reducing danger to overhead structures, bettering the view for operation of trains, adding to safety, and facilitating maintenance. Columns in platforms interfere only slightly with passenger movement. The loss of space is small, whereas when between tracks the space is entirely lost.

*Ramps.* Where the tracks and streets are necessarily at different levels, the vertical travel should be by means of ramps rather than by



Union Passenger Station, Hamilton, Ontario. Fellheimer & Wagner, Architects and Engineers  
Airplane view of station and track elevation

elevators or stairways. In general, ramps are conducive to more rapid circulation, cause less fatigue, and reduce the number of accidents. Where the foot of a passenger ramp extends several car lengths or more from the station end of a narrow platform, provision should be made to avoid backward travel of arriving passengers.

#### TRACK FACILITIES

A reasonable proportion only of the station tracks need be of sufficient length to take the longest trains likely to be operated. Excessive rates of curvature and grade should be avoided on the score of effective and safe operation. Tracks along platforms, especially when of the high type, should be straight.

If overhead building construction is contemplated, the track spacing and location of special track work should afford reasonable opportunity for the placing of columns and for avoiding long building spans.

Where conversion from steam to electric power is a possibility, provision should be made that will permit the installation of electrical features, affecting the tracks, platforms and buildings.

#### SPECIAL STRUCTURAL REQUIREMENTS

In addition to the usual provision for the effect of temperature changes, all buildings, the rental and use value of which are adversely affected by

excessive vibration, should be entirely separated as to their foundations and other structural parts, from similar parts in other buildings and structures, through which the vibration due to rolling or live load may be transmitted.

Columns at track level, where necessary, should be protected by suitable collision piers, in order to prevent damage due to derailments. Columns back of track bumping posts should never be in direct line with the track.

The choice of type of future electrification, if initial operation is by steam, should not be hampered by structural limitations such as insufficient headroom.

#### AUXILIARY FACILITIES

Wherever possible, provision should be made for the location of all auxiliary operating facilities, such as signaling, central plants, sub-stations, and equipment, entirely separate but accessible from the station facilities. In determining their proper locations, due consideration should be given to the influence of all economic elements, such as land values, economy in handling supplies and waste, and load distribution.

#### SIZE OF STATION FACILITIES

The American Railway Engineering Association has collected voluminous statistics as to sizes of the principal facilities based on the number of

passengers making use of them. The graphs prepared from these statistics give at once a good preliminary idea of the sizes required. In connection with the rebuilding or enlargement of existing stations, facts and statistics of actual conditions at those stations in the past are given full consideration also in fixing the sizes required.

Some of the features having special influence in determining the exact sizes to be used are:

1. *Operating Features.* The usual and probable length of trains affects the track, platform and trucking layout. The placing of sleeping cars in advance of leaving time also affects the size of the track layout.

2. *Volume of Present and Future Business.* These figures, once ascertained or estimated, afford a reliable guide in fixing the preliminary sizes. They may be varied from, for other controlling reasons, as the design progresses.

3. *Relative Proportions of Different Kinds of Traffic.* Facilities for all-through traffic or all-suburban traffic can be made more compact when the volume is sufficient to justify them. The relative volume of the baggage, mail and express business handled along with the passenger traffic influences the sizes of certain facilities. As these elements of traffic increase, discussion of separate facilities for them arises.

4. *Fluctuations in Daily and Seasonal Traffic.* Suburban traffic has wide daily and some seasonal variation. Through traffic may vary largely during the day, and has seasonal changes. Mail and express traffic usually has large seasonal peaks. All these have influence in fixing the sizes of special facilities.

#### PROOF OF ADEQUACY OF DESIGN

*General Considerations.* Averages and statistics from other terminals, while interesting and helpful, have little final determining value. Each facility must be tested by the local requirements, and the facts of record at the terminal under consideration must finally govern.

*Load Coördination.* When the general design has been prepared, it is imperative that it should be analyzed to see that no feature is under or over developed, and that all will reach the saturation point at the same time. In doing this, the approaches, switching facilities, and station tracks and all supporting facilities are to be considered and brought into balance. The station facilities proper must also be adjusted in the same way. For example, the size of the ticket office and the number of selling windows have a fairly definite relation to the number of outbound passengers, which number is limited by the saturation point

of the track facilities.

*Terminal Failures to be Avoided.* The successful future of the project can be assured only by having all of its parts coördinated and in balance, and it is especially worthy of note that the apparent failure to check or prove the adequacy of the design in this way is responsible for many of the faults in American terminals.

#### ARCHITECTURAL OBJECTIVES

The architectural features of the design should reasonably express the purpose of the improvement and emphasize the relative importance of the several parts and of the entrances and exits. Attention should be given to the mass effect which attracts the notice of the public rather than to involved details which are seen and appreciated only by the few. The treatment should be simple and dignified, and elaborate structural detail should be avoided.

It is vitally important that the cost should be kept within reason and that the improvement should be, as far as possible, self-sustaining, to avoid any further burden on the rendering of transportation service. The opportunity to provide commercial office space and facilities for concessions exists in most cases and should be effectively used to carry or help carry the cost of the project and to provide the structural mass for the usually desired monumental result.

It is, above all, vital that the terminal shall be functionally correct and economically sound. After that the ingenuity of the architect has full play within reasonable financial bounds.

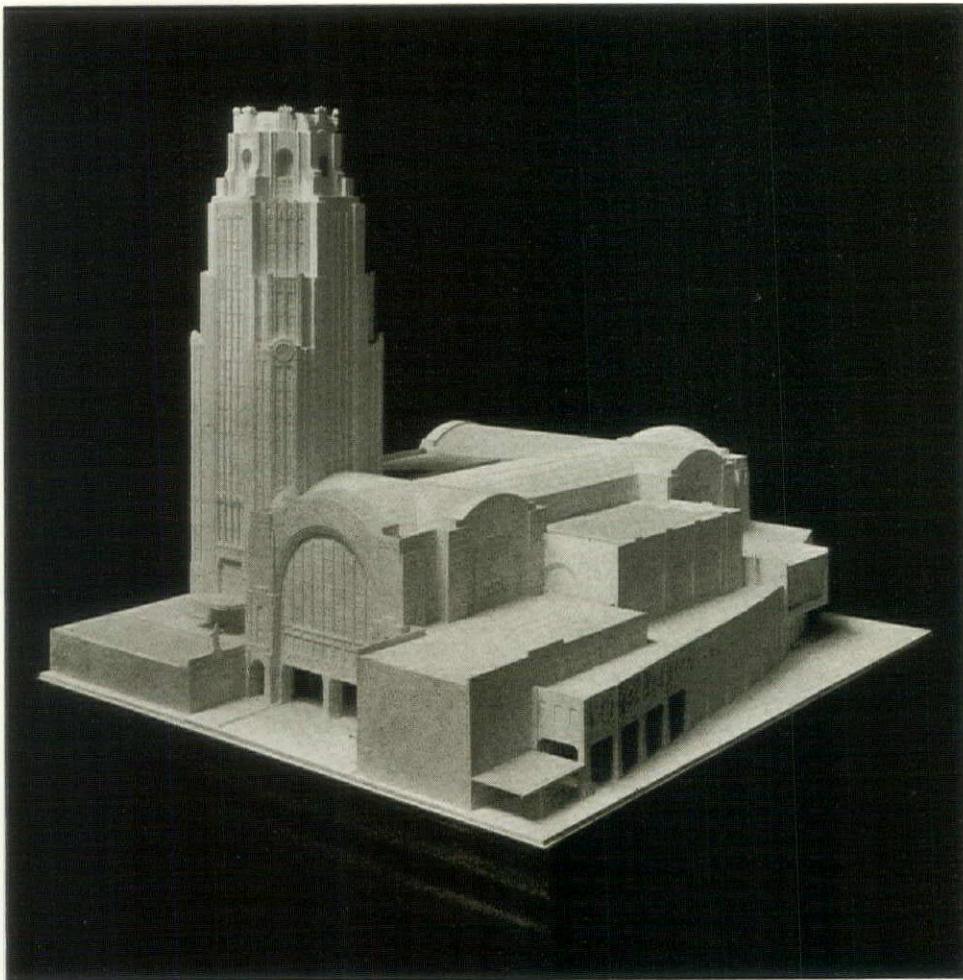
*CONCRETE EXAMPLES.* The illustrations and several of the plates call attention to a few instances where the principles outlined here have been followed by the writer as far as possible in the development of the design, and it is hoped that the study of them in connection with the text may be suggestive and helpful.

#### BIBLIOGRAPHY

The material used in the preparation of this article is largely drawn from these papers and articles by the writer:

1. "Principles of Terminal Station Design." A paper read at the 1924 convention of the American Society of Civil Engineers. *Transactions Am. Soc. C. E.* Vol. LXXXVII, P. 681.
2. "Railway Passenger Terminals." An address before the New York Society of Terminal Engineers.
3. "Railroad Passenger Terminal." Article for *Encyclopædia Britannica*, recent edition.

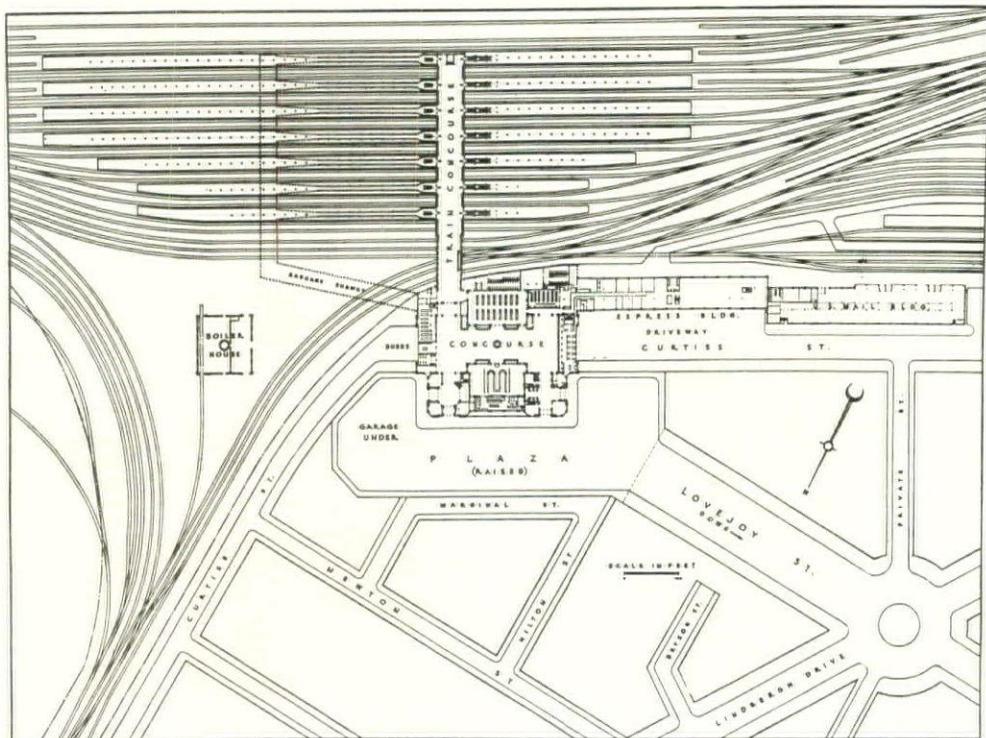
# RAILROAD TERMINALS AND STATIONS



CENTRAL PASSENGER STATION  
BUFFALO  
FELLHEIMER & WAGNER  
ARCHITECTS



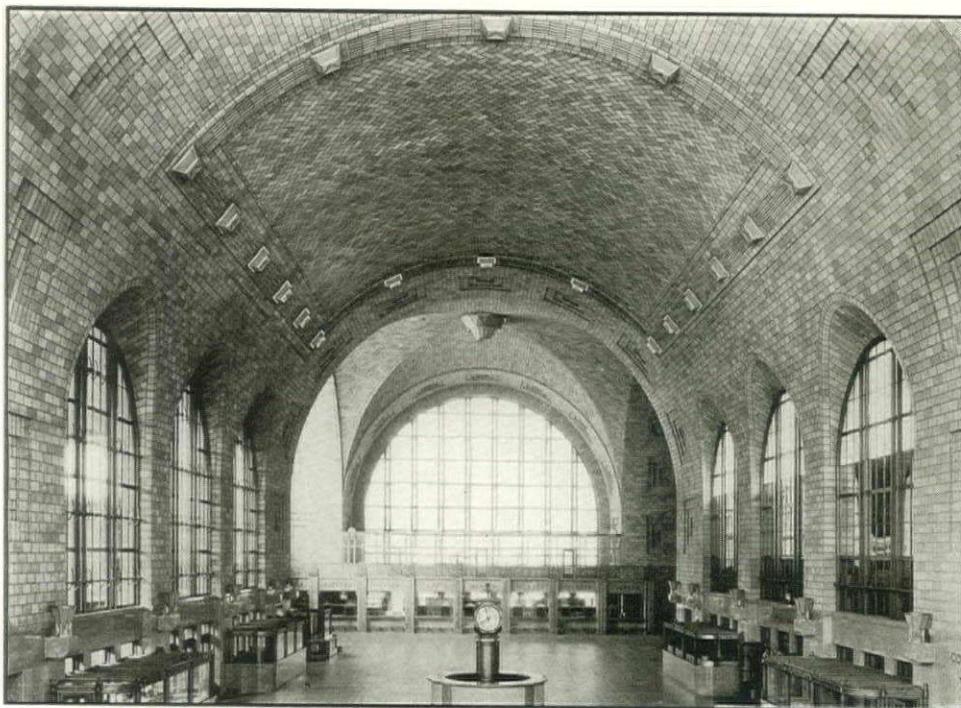
AIR VIEW LOOKING EAST



TRACK AND STATION PLAN  
 CENTRAL PASSENGER STATION, BUFFALO  
 FELLHEIMER & WAGNER, ARCHITECTS



*Photos. New York Central Lines*



MAIN CONCOURSE

CENTRAL PASSENGER STATION, BUFFALO  
FELLHEIMER & WAGNER, ARCHITECTS

## CONSTRUCTION DATA

YEAR OF COMPLETION: 1929.

TYPE OF CONSTRUCTION: Fireproof.

EXTERIOR MATERIALS: Brick and stone.

ROOF CONSTRUCTION: Tile and composition.

WINDOWS: Steel and hollow metal.

INTERIOR FINISHING MATERIALS: Marble, tile and plaster

FLOORS: Terrazzo, tile and cement.

HEATING (TYPE): Two-pipe vacuum return.

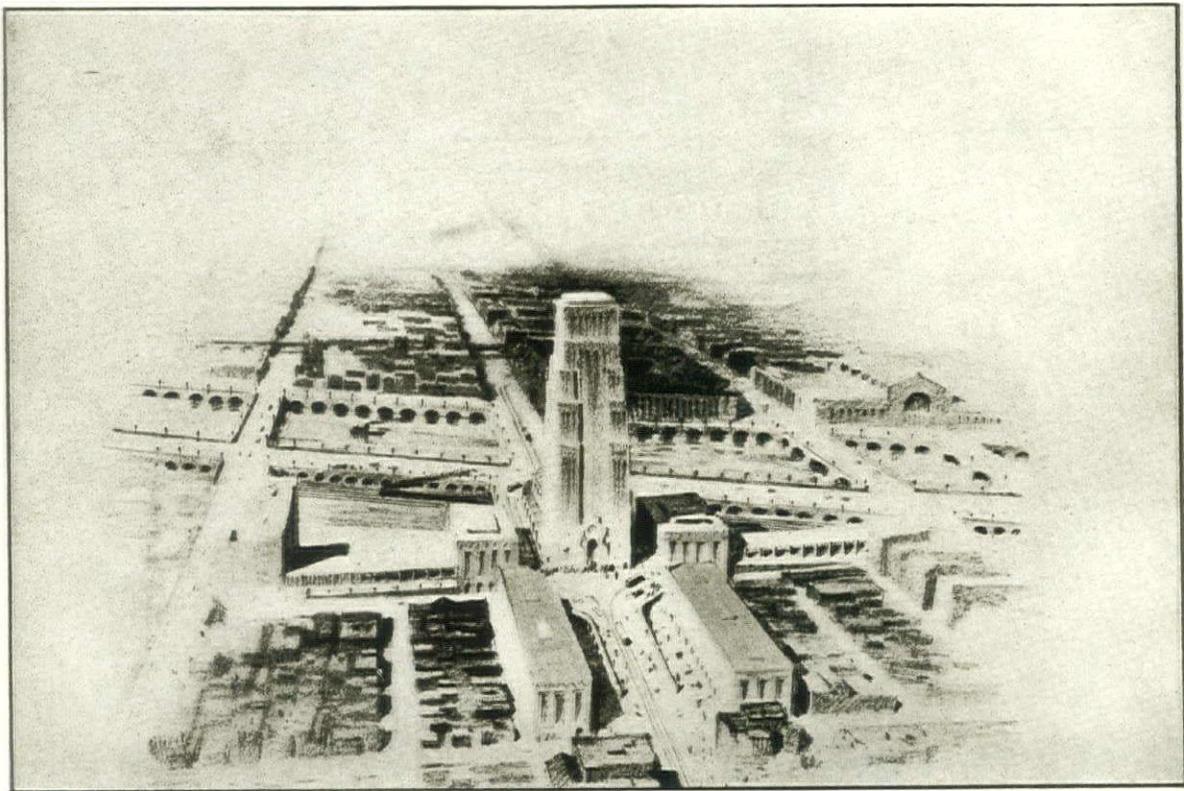
VENTILATION: Mechanical ventilation for interior spaces

TOTAL CUBAGE: 3,720,000 feet.

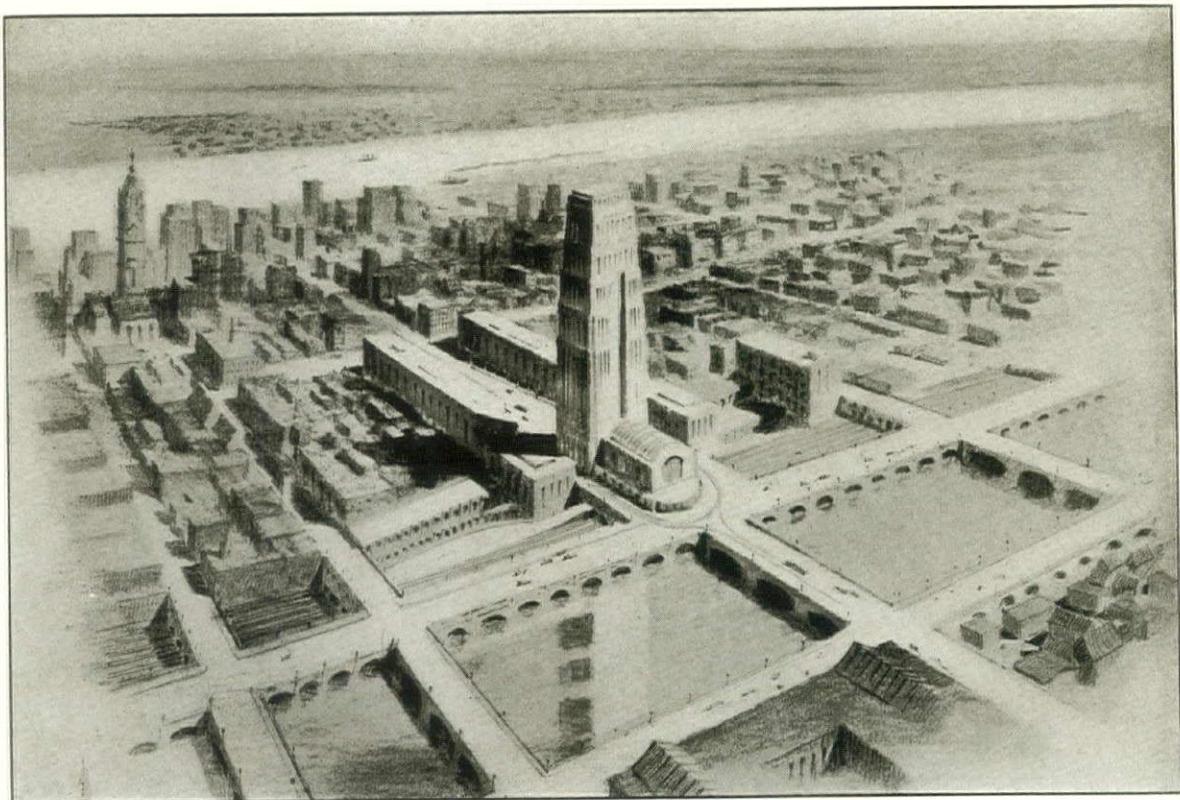
AVERAGE PASSENGERS DAILY: 10,000.

CENTRAL PASSENGER STATION  
BUFFALO

FELLHEIMER & WAGNER  
ARCHITECTS



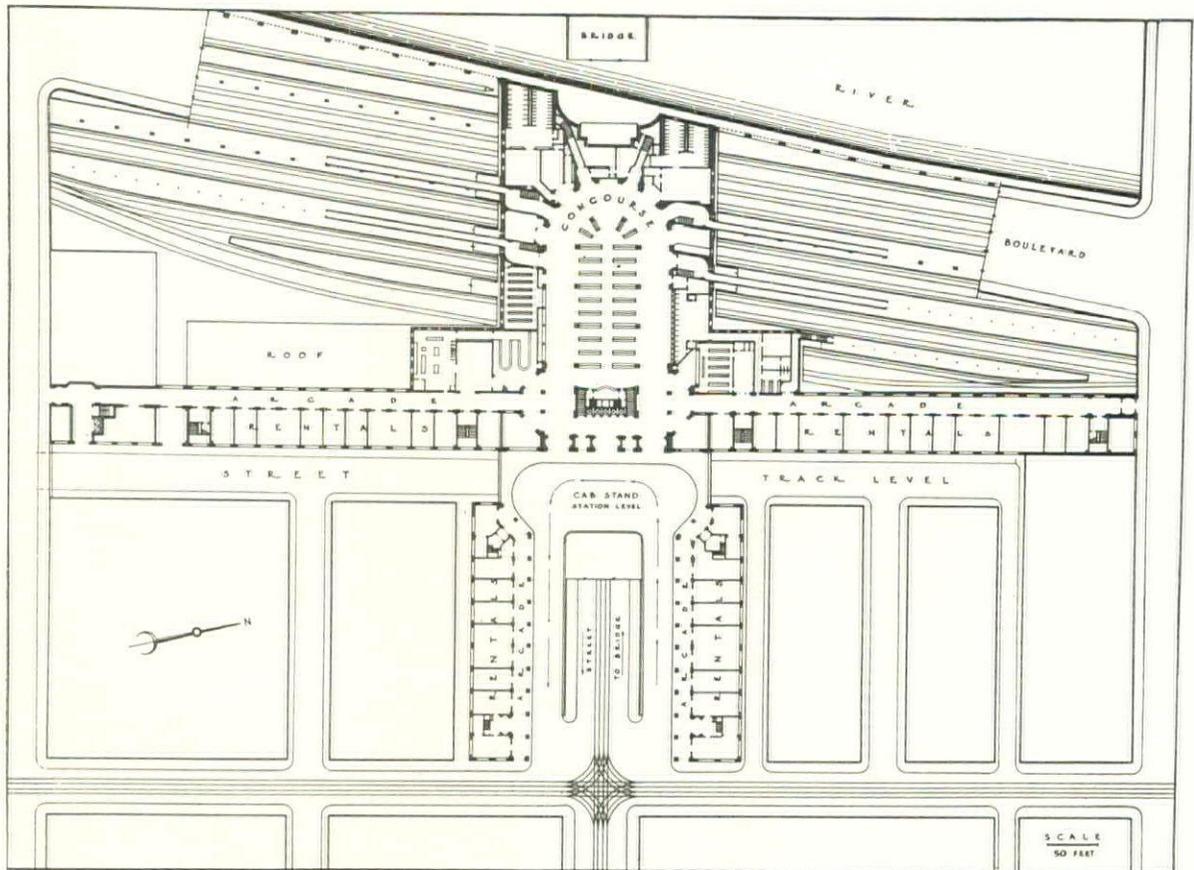
VIEW SHOWING STREET APPROACHES



VIEW SHOWING BRIDGE APPROACH

STUDY FOR RAILWAY STATION, PHILADELPHIA

FELLHEIMER & WAGNER, ARCHITECTS



TRACK AND STATION PLAN

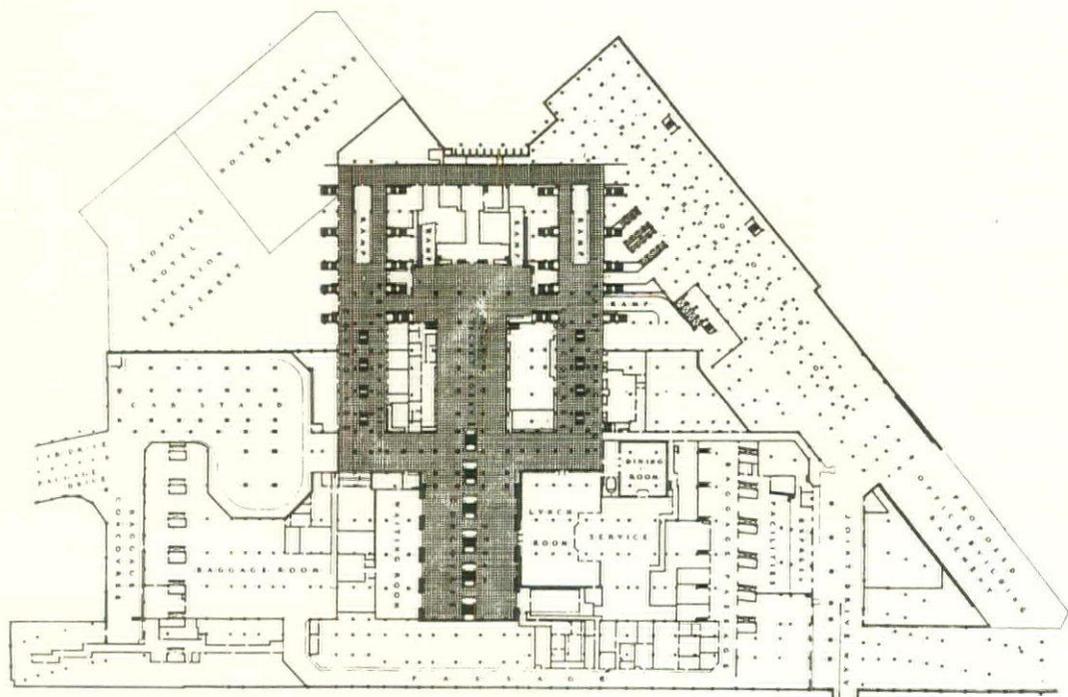
STUDY FOR A RAILWAY PASSENGER STATION  
PHILADELPHIA

FELLHEIMER & WAGNER  
ARCHITECTS



*Photo. Chicago Architectural Photographing Co.*

UNION TERMINAL, CLEVELAND  
CRAHAM, ANDERSON, PROBST & WHITE  
ARCHITECTS



L. G. P. P.  
1930

### CLEVELAND UNION TERMINAL

- YEAR OF COMPLETION: 1930.
- TYPE OF CONSTRUCTION: Fireproof.
- EXTERIOR MATERIALS: Stone and masonry.
- ROOF CONSTRUCTION: Composition.
- WINDOWS: Metal.
- INTERIOR FINISHING MATERIALS: Marble, plaster and wood.
- FLOORS: Marble, concrete.
- HEATING: Steam.
- VENTILATING: Mechanical.
- TOTAL CUBAGE: 6,400,000.
- AVERAGE PASSENGERS DAILY: 20,000.

UNION TERMINAL, CLEVELAND  
GRAHAM, ANDERSON, PROBST & WHITE  
ARCHITECTS

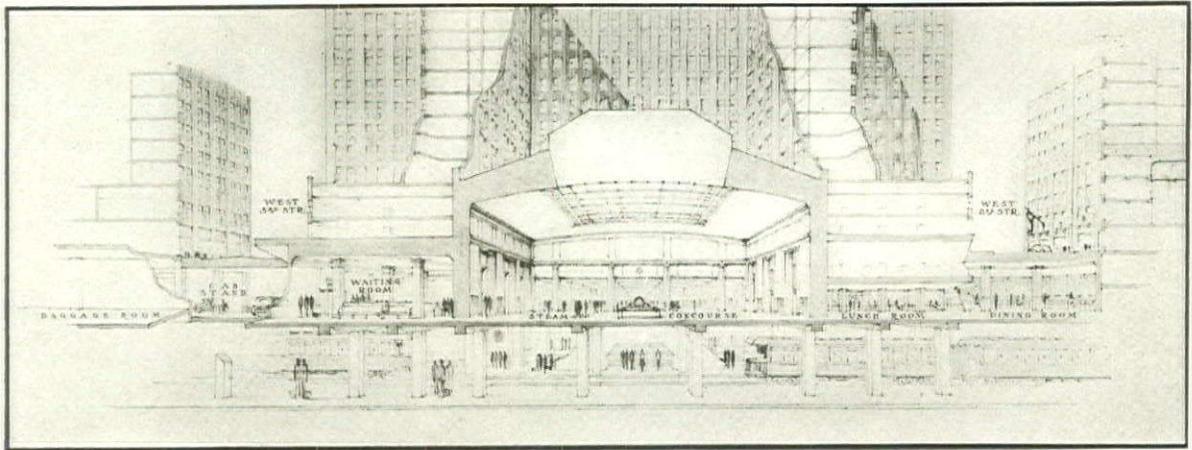


*Photos. Chicago Architectural Photographing Co.*

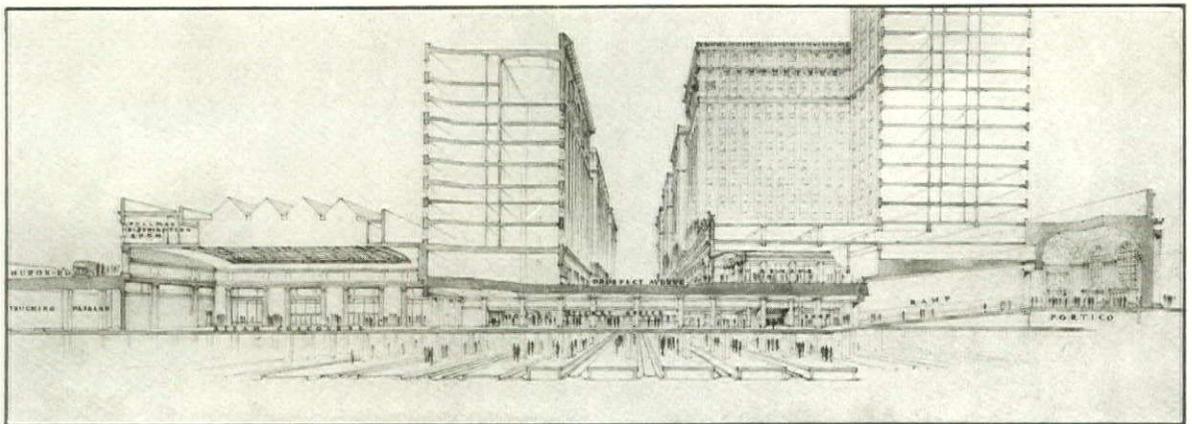
CONCOURSE, AND ENTRANCE



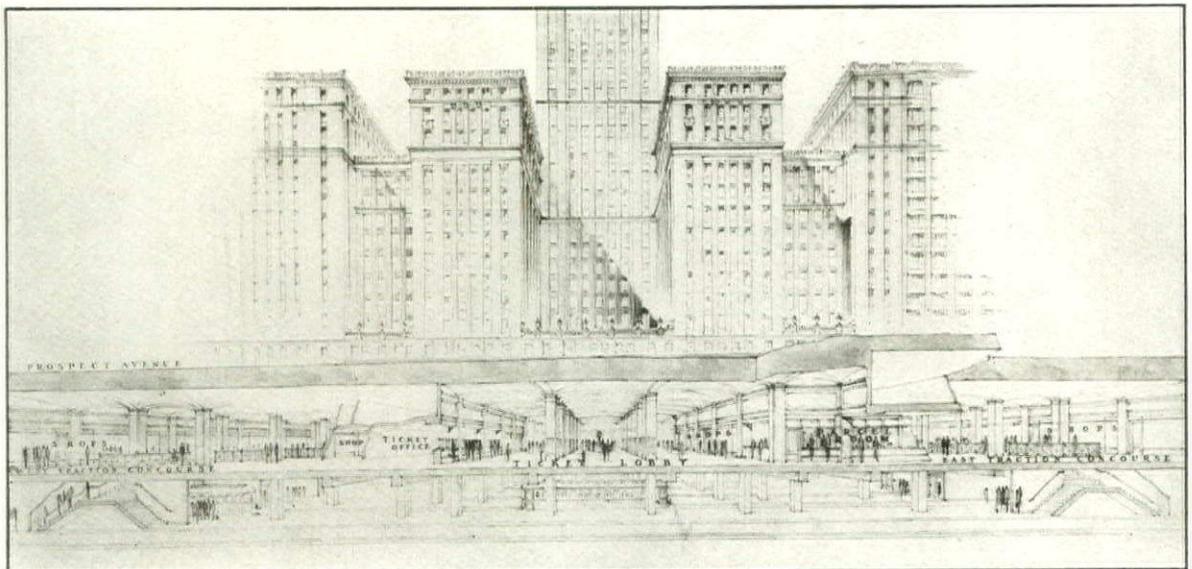
UNION TERMINAL  
CLEVELAND  
GRAHAM, ANDERSON  
PROBST & WHITE  
ARCHITECTS



SECTION BETWEEN PROSPECT AVENUE AND HURON ROAD, LOOKING NORTH



SECTION THROUGH WEST RAMP, LOOKING WEST



SECTION THROUGH PROSPECT AVENUE, LOOKING NORTH

UNION TERMINAL  
CLEVELAND

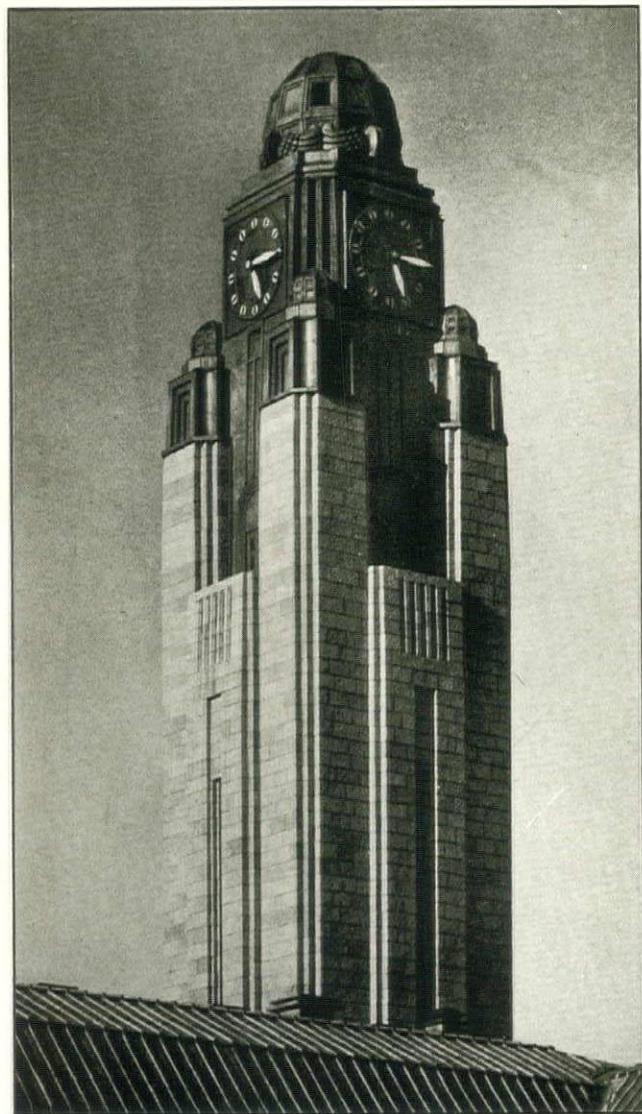
GRAHAM, ANDERSON, PROBST & WHITE, ARCHITECTS



*Apollo Photos.*

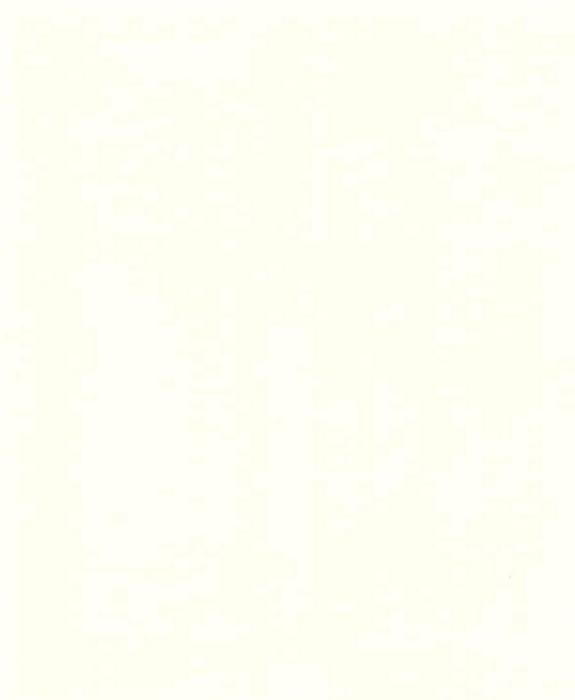
(ABOVE)  
AIR VIEW

(RIGHT)  
STATION TOWER



PASSENGER STATION  
HELSINGFORS, FINLAND

ELIEL SAARINEN  
ARCHITECT



(RIGHT)  
MAIN ENTRANCE



(BELOW)  
DINING ROOM



*Apollo Photos.*

PASSENGER STATION  
HELSINGFORS, FINLAND  
ELIEL SAARINEN, ARCHITECT





(RIGHT)  
MAIN  
ENTRANCE

(BELOW)  
ENTRANCE

PASSENGER STATION  
KONIGSBERG, GERMANY  
ERNEST RICHTER, ARCHITECT

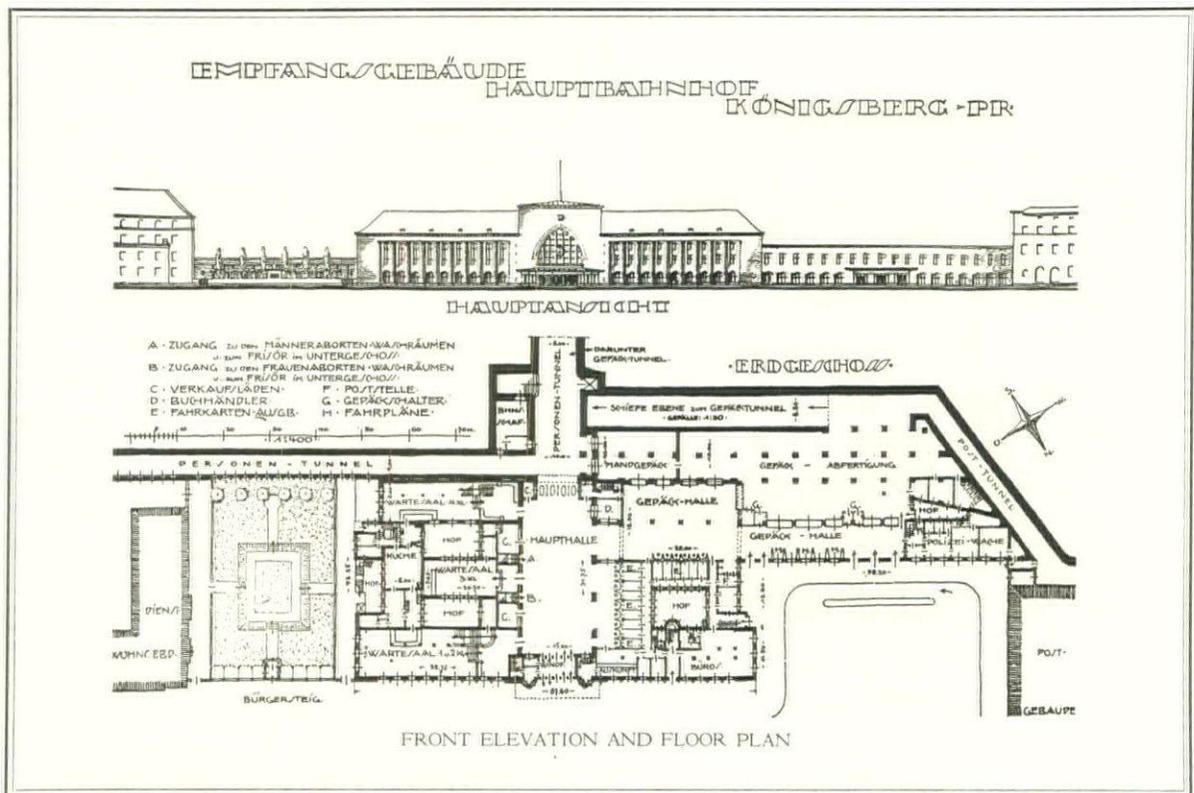


*Photos. Alfred Kuhlewindt*



Photo. Alfred Kuhlewindt

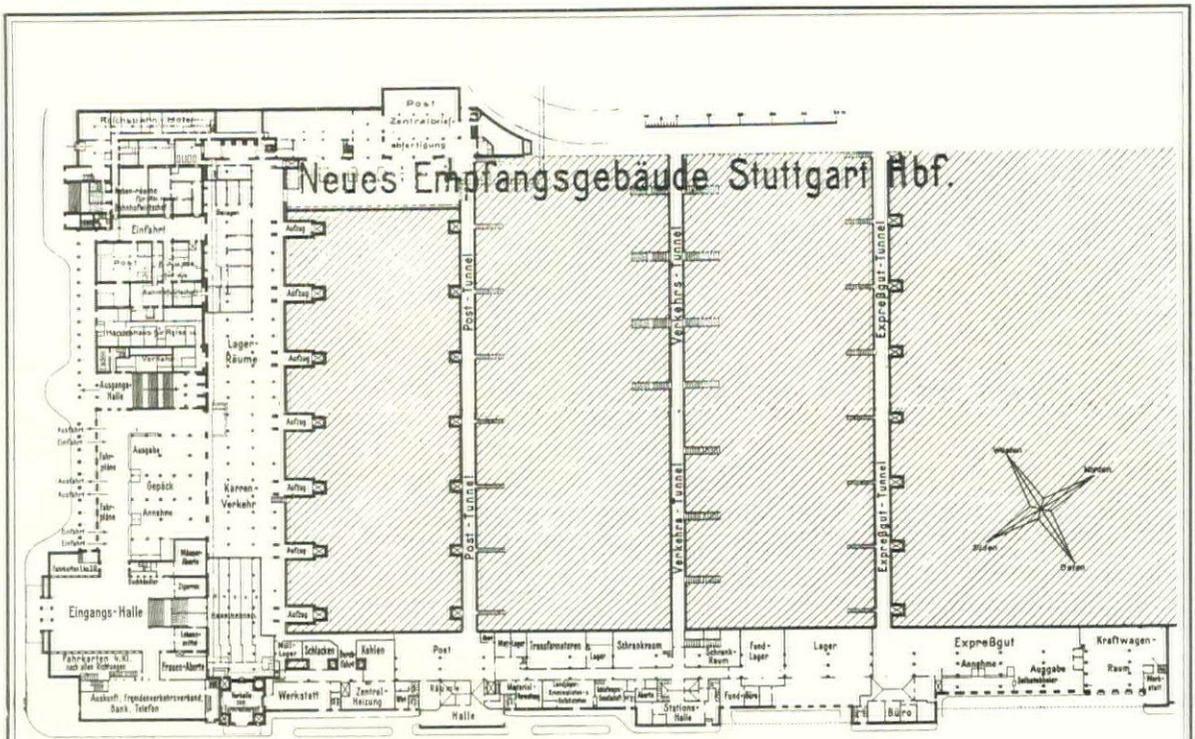
MAIN CONCOURSE



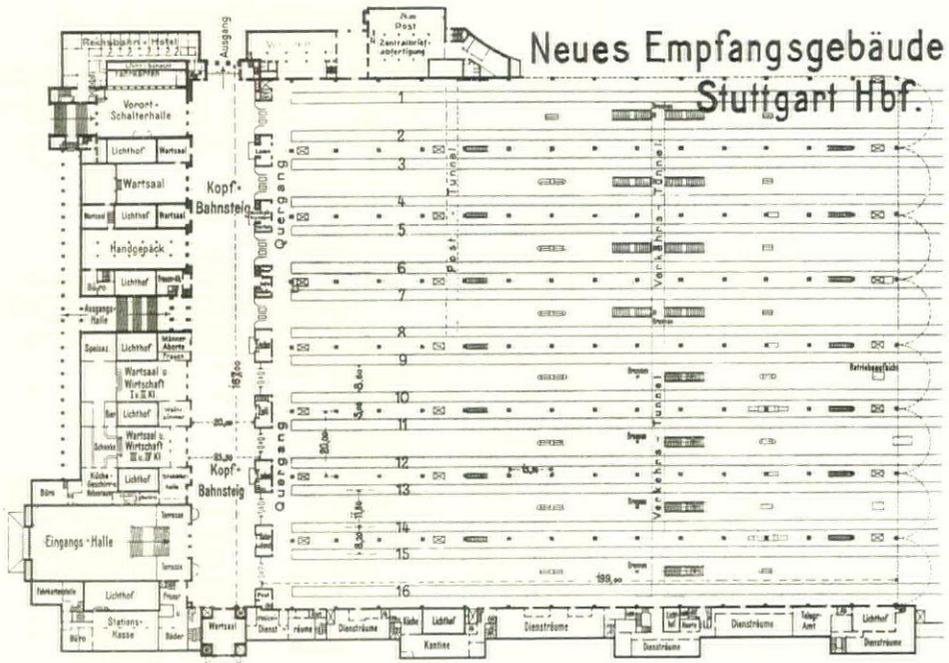
PASSENGER STATION  
KONIGSBERG, GERMANY  
ERNEST RICHTER, ARCHITECT



PASSENGER STATION  
STUTT GART, GERMANY  
PAUL BONATZ, F. E. SCHOLER  
ARCHITECTS



PLAN, STREET LEVEL

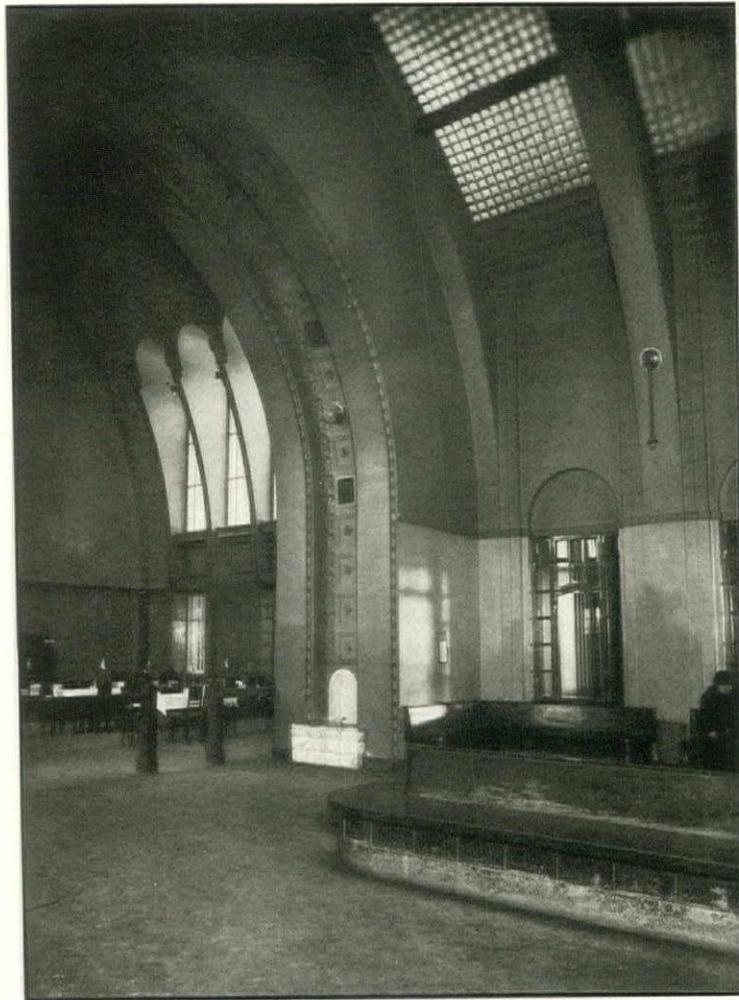


PLAN, TRACK LEVEL ABOVE STREET

PASSENGER STATION  
 STUTTGART, GERMANY  
 PAUL BONATZ, F. E. SCHOLER  
 ARCHITECTS



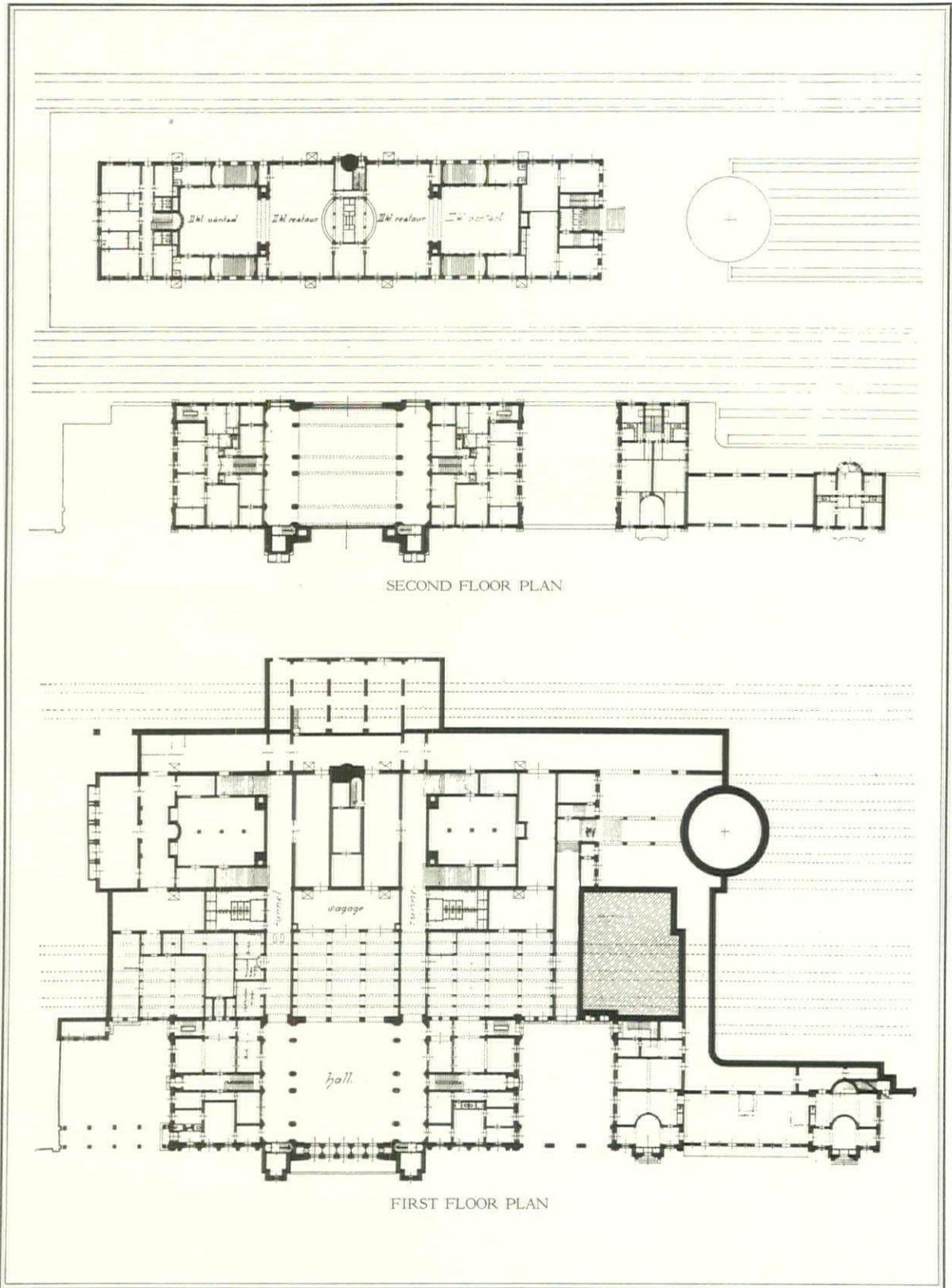
(ABOVE)  
FRONT ELEVATION



(RIGHT)  
WAITING ROOM  
SECOND CLASS

CENTRAL RAILROAD STATION  
VIBORG, FINLAND  
HERMAN GESELLIUS, ARCHITECT

*Photos. Th. Nyblin*

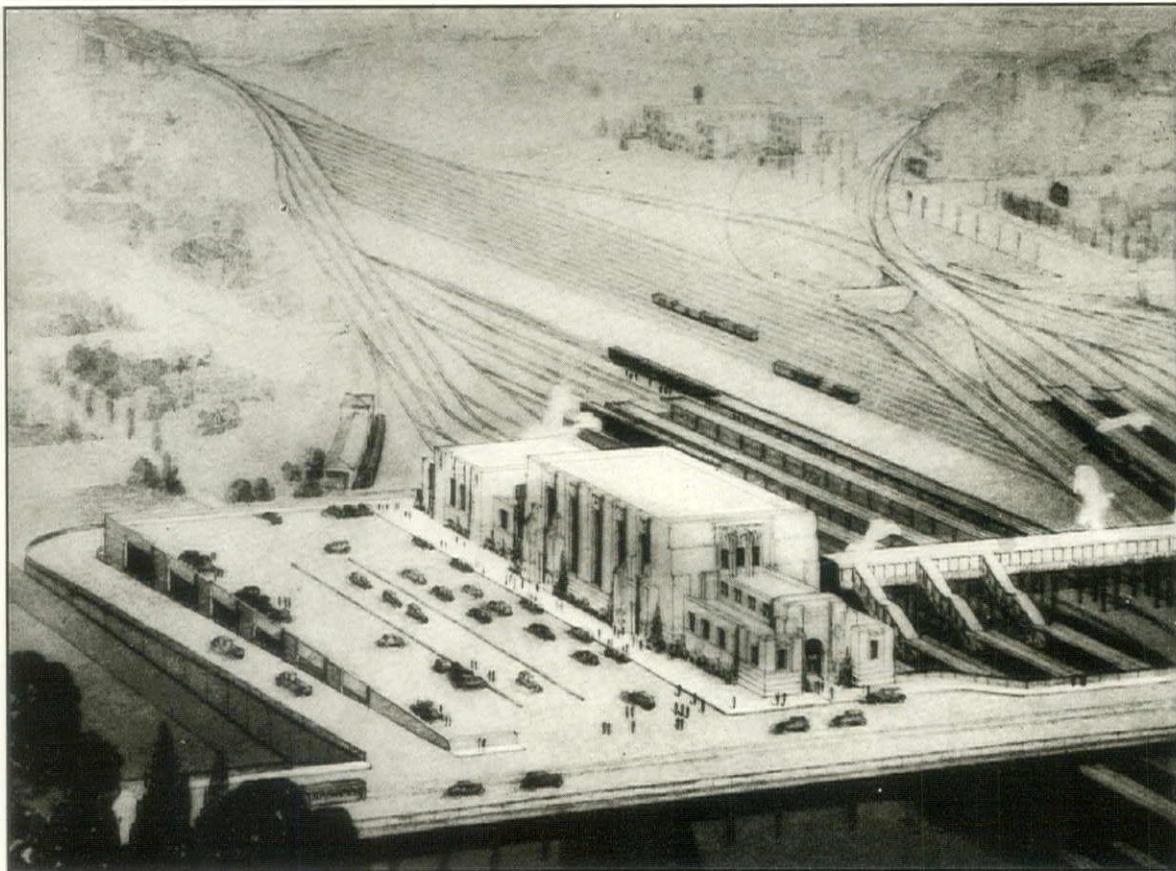


CENTRAL RAILROAD STATION  
 VIBORG, FINLAND  
 HERMAN GESELLIUS, ARCHITECT



*Photos. Union Pacific Railroad*

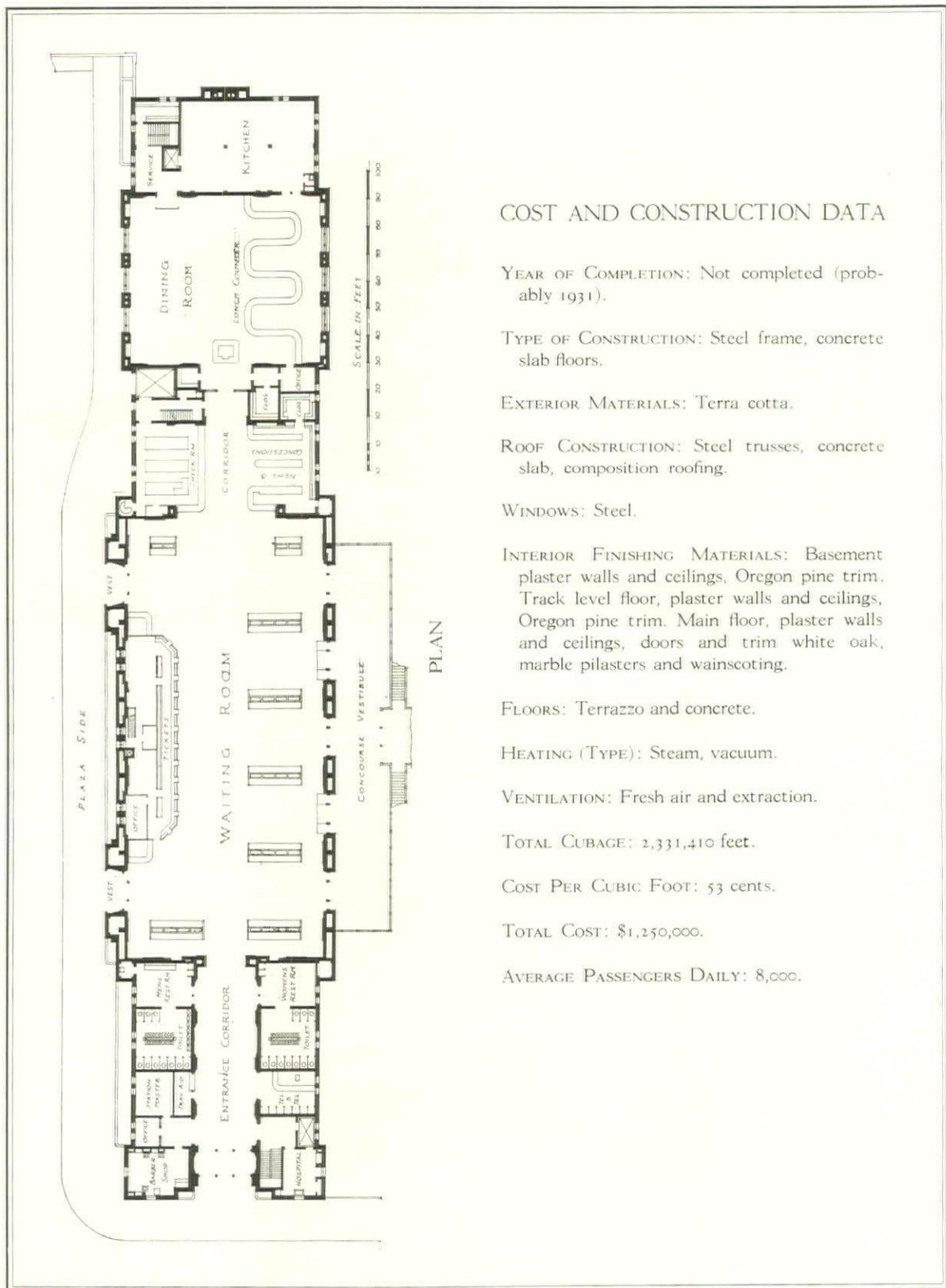
STUDY FOR STATION BUILDING



STUDY FOR STATION PROJECT

UNION STATION, OMAHA

GILBERT STANLEY UNDERWOOD & CO., LTD.  
ARCHITECTS AND ENGINEERS



### COST AND CONSTRUCTION DATA

YEAR OF COMPLETION: Not completed (probably 1931).

TYPE OF CONSTRUCTION: Steel frame, concrete slab floors.

EXTERIOR MATERIALS: Terra cotta.

ROOF CONSTRUCTION: Steel trusses, concrete slab, composition roofing.

WINDOWS: Steel.

INTERIOR FINISHING MATERIALS: Basement plaster walls and ceilings, Oregon pine trim. Track level floor, plaster walls and ceilings, Oregon pine trim. Main floor, plaster walls and ceilings, doors and trim white oak, marble pilasters and wainscoting.

FLOORS: Terrazzo and concrete.

HEATING (TYPE): Steam, vacuum.

VENTILATION: Fresh air and extraction.

TOTAL CUBAGE: 2,331,410 feet.

COST PER CUBIC FOOT: 53 cents.

TOTAL COST: \$1,250,000.

AVERAGE PASSENGERS DAILY: 8,000.

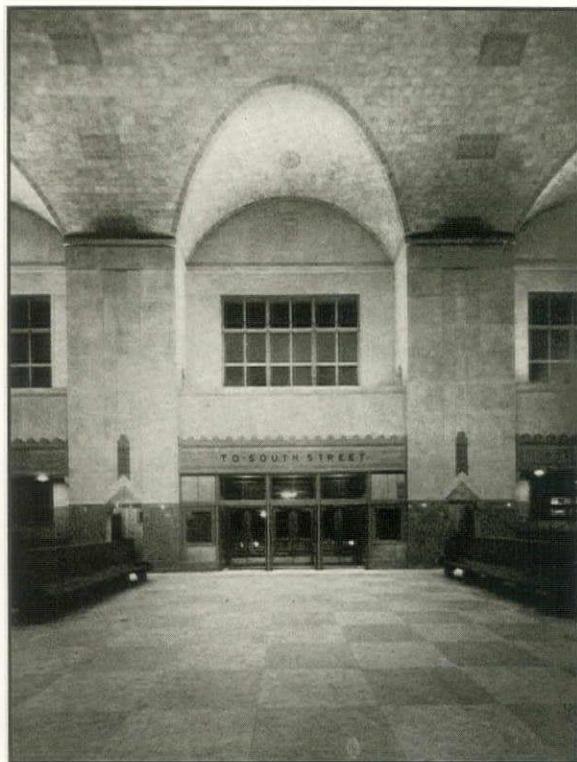
### UNION STATION OMAHA

GILBERT STANLEY UNDERWOOD & CO., LTD.  
ARCHITECTS



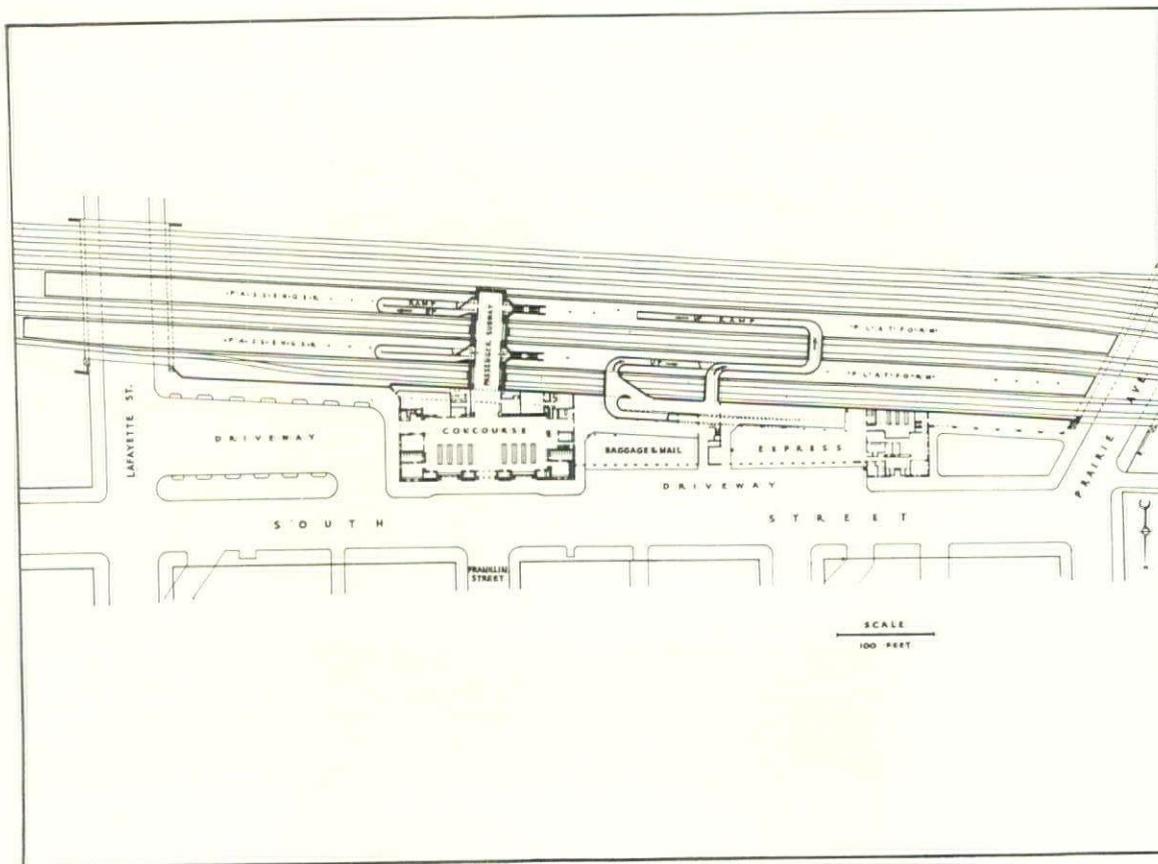
*Photos, New York Central Lines*

VIEW  
FROM STREET



WAITING ROOM  
DETAIL

UNION PASSENGER STATION  
SOUTH BEND, IND.  
FELLHEIMER & WAGNER, ARCHITECTS

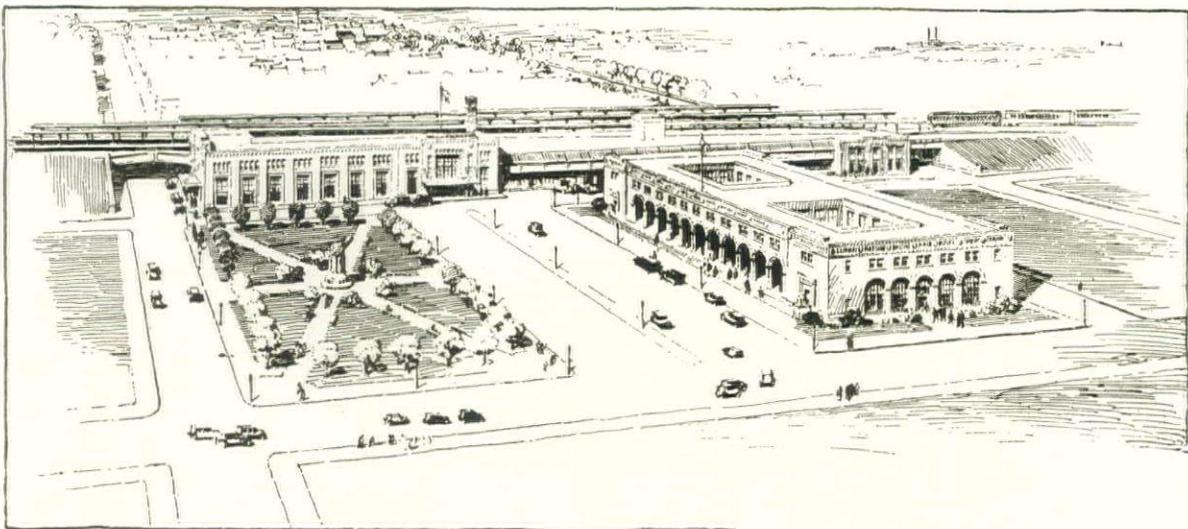


TRACK AND STATION PLAN

### CONSTRUCTION DATA

YEAR OF COMPLETION: 1929.  
 TYPE OF CONSTRUCTION: Fireproof.  
 EXTERIOR MATERIALS: Face brick and stone.  
 ROOF CONSTRUCTION: Copper and composition roofs.  
 WINDOWS: Hollow metal.  
 INTERIOR FINISHING MATERIALS: Marble, tile, plaster.  
 FLOORS: Terrazzo, tile, cement.  
 HEATING (TYPE): Two-pipe vacuum return.  
 VENTILATION: Mechanical for interior spaces.  
 TOTAL CUBAGE: 1,480,000 feet.  
 AVERAGE PASSENGERS DAILY: 2,000.

UNION PASSENGER STATION  
 SOUTH BEND, IND.  
 FELLHEIMER & WAGNER  
 ARCHITECTS



SKETCH OF STATION, PROPOSED PARK, PLAZA AND POST OFFICE

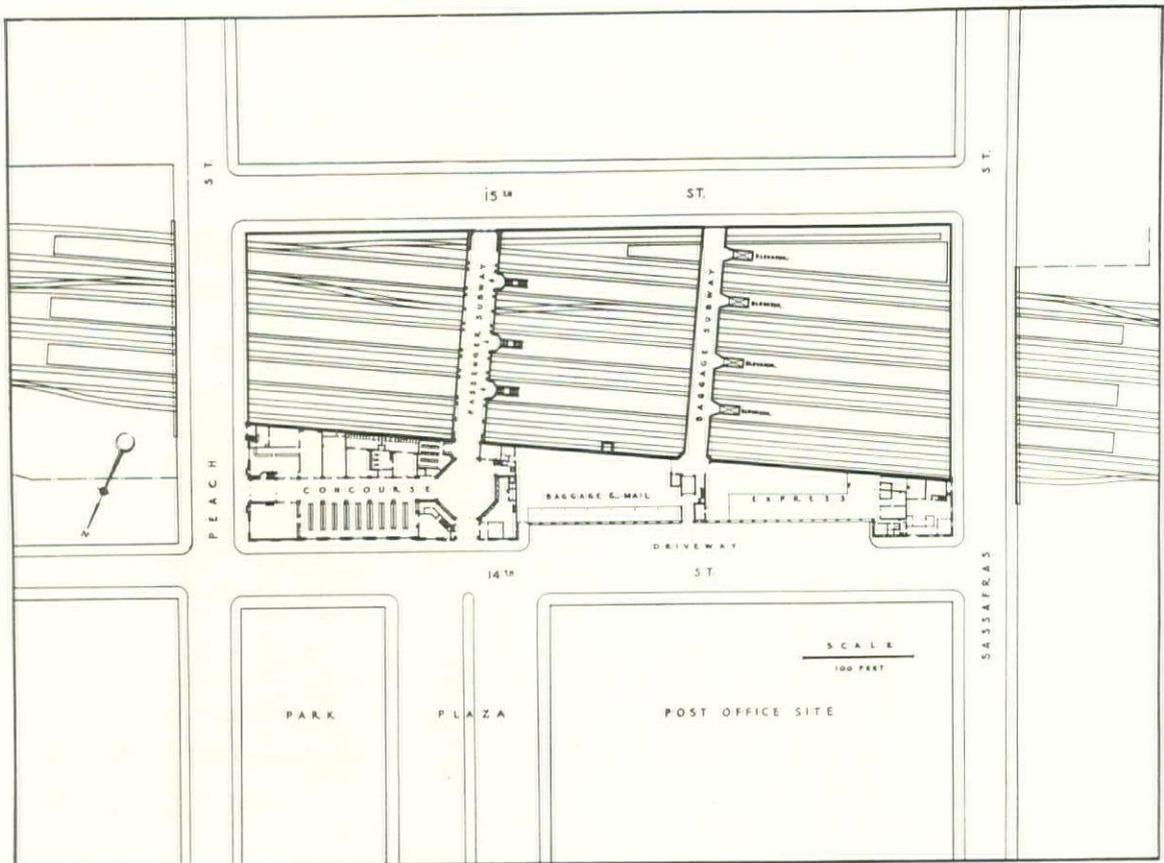


*Photo. New York Central Lines*

PLAZA ENTRANCE

UNION PASSENGER STATION  
ERIE, PA.

FELLHEIMER & WAGNER  
ARCHITECTS



TRACK AND STATION PLAN

### CONSTRUCTION DATA

- YEAR OF COMPLETION: 1926.
- TYPE OF CONSTRUCTION: Fireproof.
- EXTERIOR MATERIALS: Brick, terra cotta, stone.
- ROOF CONSTRUCTION: Composition.
- WINDOWS: Hollow metal.
- INTERIOR FINISHING MATERIALS: Marble, tile, plaster.
- FLOORS: Terrazzo, tile, cement.
- HEATING (TYPE): Two-pipe vacuum return.
- VENTILATION: Mechanical for interior spaces.
- TOTAL CUBAGE: 2,160,000 feet.
- AVERAGE PASSENGERS DAILY: 2,500.

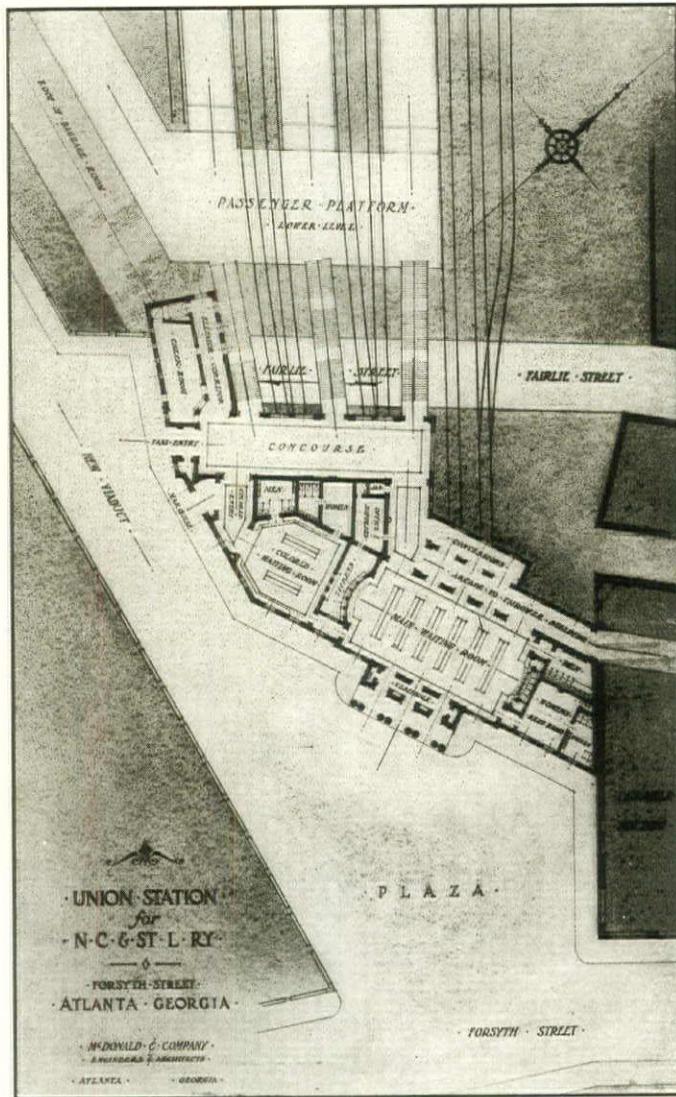
UNION PASSENGER STATION  
 ERIE, PA.  
 FELLHEIMER & WAGNER  
 ARCHITECTS



*Photos. N. C. & St. L. Railroad*



UNION STATION, ATLANTA, GEORGIA  
McDONALD & COMPANY, ENGINEERS AND ARCHITECTS



TRACK AND STATION PLAN

#### COST AND CONSTRUCTION DATA

YEAR OF COMPLETION: 1930.

TYPE OF CONSTRUCTION: Steel and masonry.

EXTERIOR MATERIALS: Limestone.

ROOF CONSTRUCTION: Cement tile.

WINDOWS: Steel sash.

INTERIOR FINISHING MATERIALS: Base, trim and wainscot: York Fossil, Italian travertine, dark cedar and sequoia. Walls and ceiling: plaster.

FLOORS: Terrazzo.

HEATING (TYPE): Unit blast heaters.

VENTILATION: Combined with heating.

TOTAL CUBAGE: 420,800 feet.

COST PER CUBIC FOOT: Approximately 55 cents.

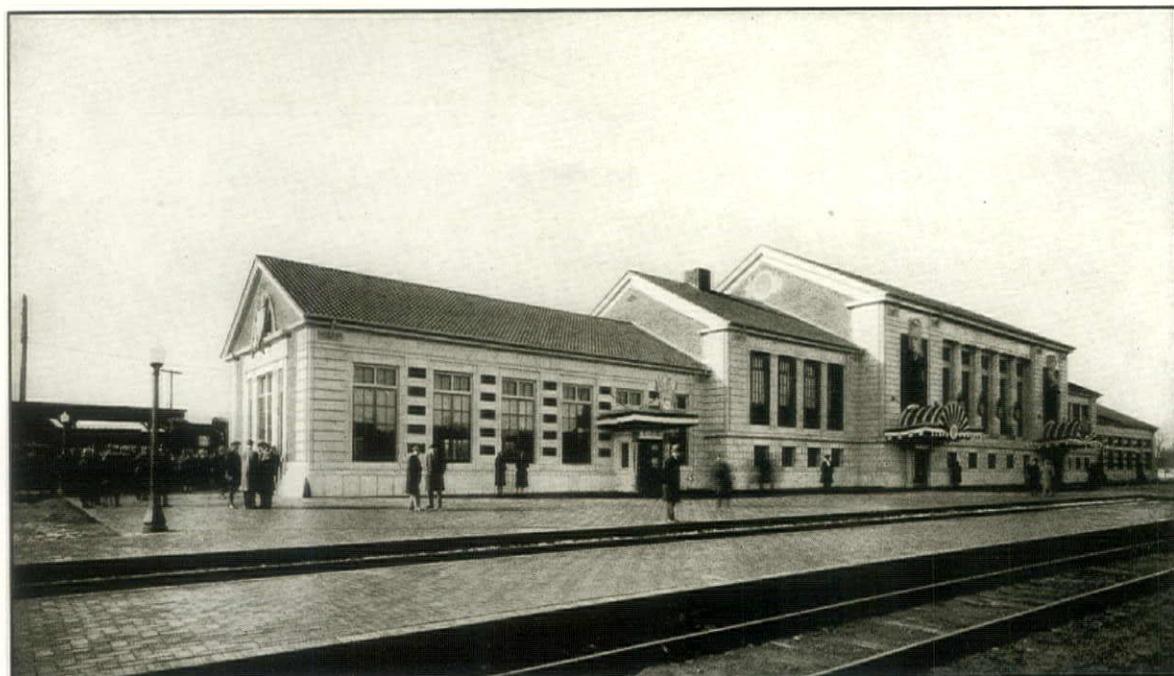
TOTAL COST: \$235,000.

UNION STATION  
ATLANTA, GEORGIA  
McDONALD & COMPANY  
ENGINEERS AND ARCHITECTS



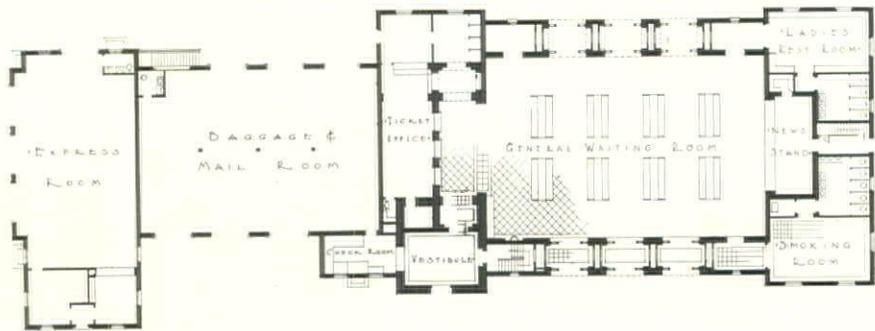
*Photo, Ewing Galloway*

UNION PACIFIC STATION, BOISE, IDAHO  
CARRERE & HASTINGS, ARCHITECTS



*Photo, Union Pacific Railroad*

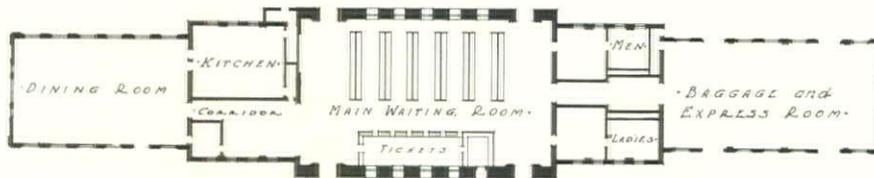
UNION PACIFIC STATION, TOPEKA  
GILBERT STANLEY UNDERWOOD & CO., LTD., ARCHITECTS



### CONSTRUCTION DATA

YEAR OF COMPLETION: About 1926.  
 TYPE OF CONSTRUCTION: Masonry shell, wood framing.  
 EXTERIOR MATERIALS: Stucco.  
 ROOF CONSTRUCTION: Wood, tile finish.  
 WINDOWS: Wood.  
 INTERIOR FINISHING MATERIALS: Plaster.  
 FLOORS: Tile and wood.  
 HEATING (TYPE): Steam.

UNION PACIFIC STATION  
 BOISE, IDAHO  
 CARRERE & HASTINGS  
 ARCHITECTS



PLAN

### COST AND CONSTRUCTION DATA

YEAR OF COMPLETION: 1927.  
 TYPE OF CONSTRUCTION: Steel frame, brick filler walls.  
 EXTERIOR MATERIALS: Brick and terra cotta.  
 ROOF CONSTRUCTION: Steel trusses, wood rafters and sheathing, tile roof.  
 WINDOWS: Steel.  
 INTERIOR FINISHING MATERIALS: Plaster walls and ceilings, oak doors and trim.  
 FLOORS: Terrazzo and concrete.  
 HEATING (TYPE): Steam, vacuum.  
 VENTILATION: Fresh air and extraction.  
 TOTAL CUBAGE: 976,298 feet.  
 COST PER CUBIC FOOT: 26 cents.  
 TOTAL COST: \$250,000.  
 AVERAGE PASSENGERS DAILY: 1,200.

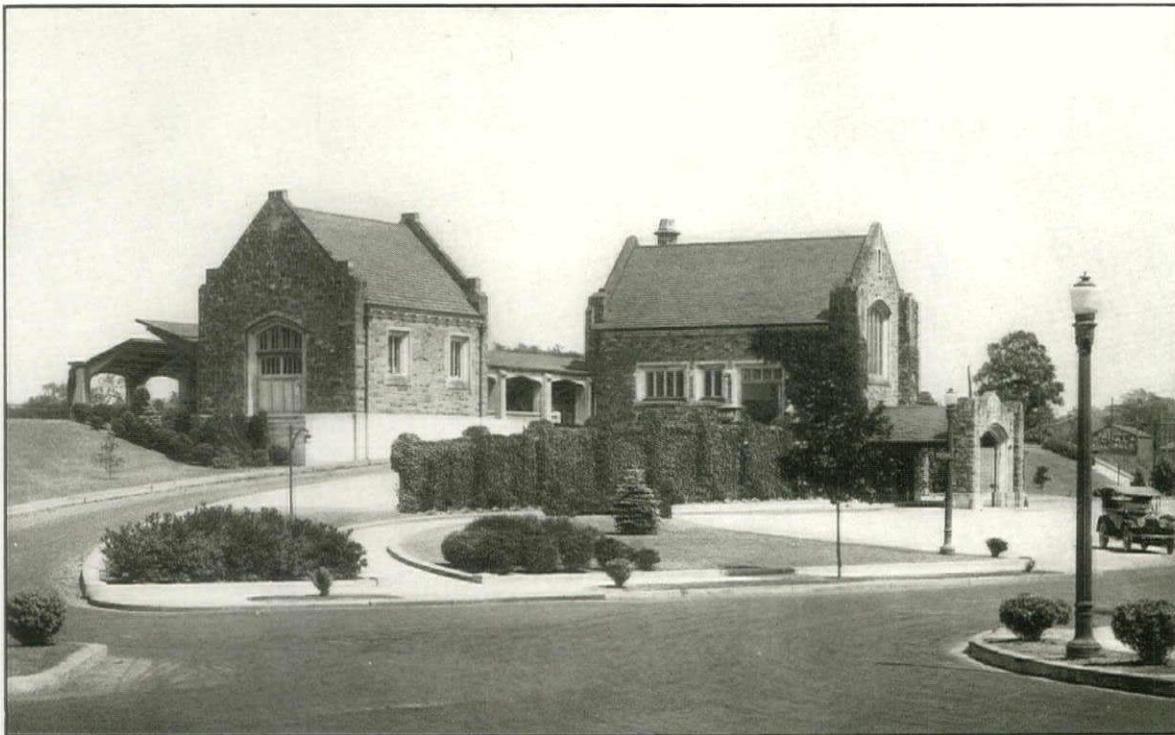
UNION PACIFIC STATION  
 TOPEKA  
 GILBERT STANLEY UNDERWOOD & CO., LTD.  
 ARCHITECTS



*Photo. Union Pacific Railroad*

PASSENGER STATION  
EAST LOS ANGELES

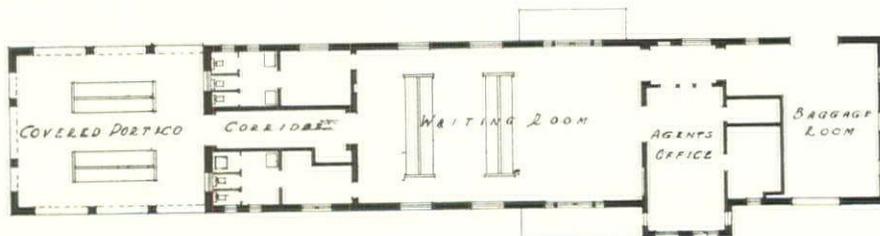
GILBERT STANLEY UNDERWOOD & CO., LTD.  
ARCHITECTS



*Photo. W. B. Barry, Jr.*

D. L. & W. PASSENGER STATION  
MADISON, N. J.

G. J. RAY, CHIEF ENGINEER  
D. T. MACK AND A. J. NEAFIE  
ARCHITECTS



PLAN

### COST AND CONSTRUCTION DATA

YEAR OF COMPLETION: 1928.

TYPE OF CONSTRUCTION: Hollow tile walls, frame roof.

EXTERIOR MATERIALS: Stucco, cast stone, tile.

ROOF CONSTRUCTION: Wood trusses, trussed rafters, tile roofing.

WINDOWS: Wood.

INTERIOR FINISHING MATERIALS: Plaster walls and ceilings, wood wainscot, Oregon pine doors and trim.

FLOORS: Terrazzo and concrete.

HEATING (TYPE): Gas steam.

VENTILATION: None.

TOTAL CUBAGE: 49,797 feet.

COST PER CUBIC FOOT: 57 cents.

TOTAL COST: \$28,773.

AVERAGE PASSENGERS DAILY: 146.

PASSENGER STATION  
EAST LOS ANGELES

GILBERT STANLEY UNDERWOOD & CO., LTD.  
ARCHITECTS

# THE DESIGN OF SMALL RAILWAY STATIONS

BY

GILBERT STANLEY UNDERWOOD

of the Firm

GILBERT STANLEY UNDERWOOD & CO. Ltd., *Architects*

THE moderate sized railroad station contains in a smaller degree practically all the departments of the large terminal. They are scaled down, but they are present, and they must be included in perhaps smaller and more difficult areas.

Location is determined by the conformation of the railroad's right of way, the position of the tracks, easy service to the city, train lengths, and the importance of keeping adjacent track-crossing streets open for traffic. There is publicity value in the location of a station at the end of a main street, and there is the more important advantage of allowing approaching traffic to divide naturally, the passenger motor traffic going to a parking space at one end of the building, the baggage and express traffic to the opposite end, and the passenger pedestrian traffic directly to the waiting room at the center. The length of trains serving a station is important. Trains must often stop where existing water columns will serve the locomotive from either direction. Baggage trucks must load quickly and express must be transferred, all without interference with the passengers. Cities often object to trains stopping at cross-overs because of creating possible traffic congestion.

In Topeka, the passenger station was put back 800 feet from the main street to permit free passage across the tracks when the trains are stopped. Tracks sometimes serve both sides of a station, and two or more trains may arrive and leave at the same time. Crossing through or around one train to reach another is dangerous and slow. Where the track level and street level are closely related, a subway is often used. High track levels above the street may be so reached with the waiting room and its related facilities on the street level floor; submerged tracks may best be reached from a concourse and stairs to each track.

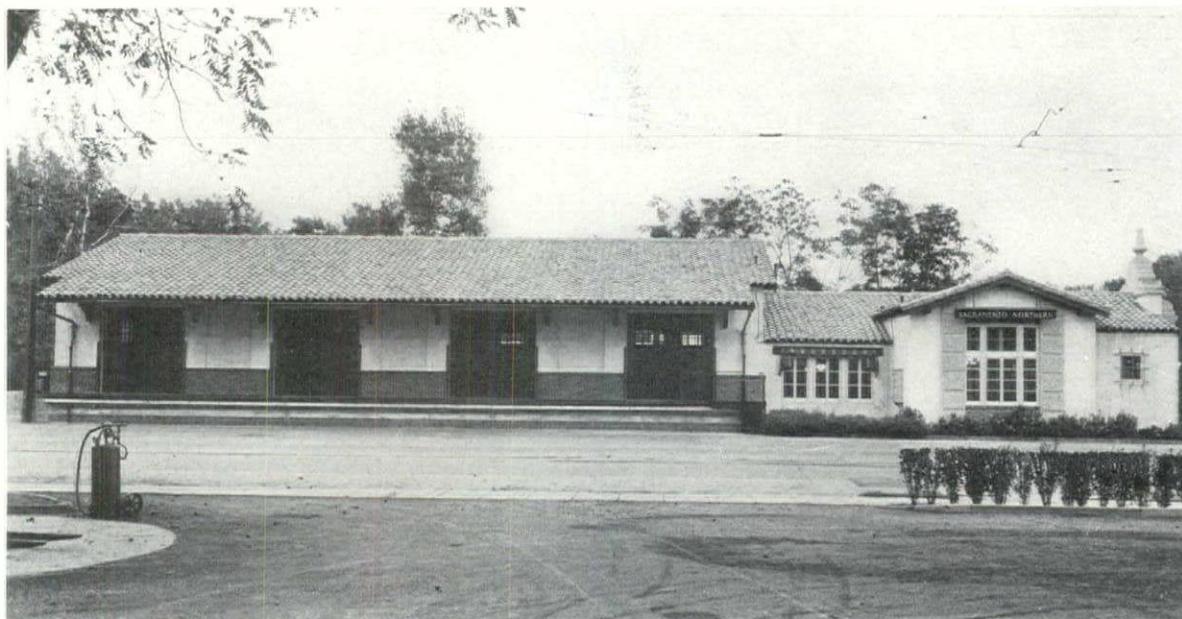
Parking space for motors, baggage and express trucks is always necessary, but particularly so where the track level is above or below the street. If the right of way is higher than the street approaches, there must be provided easy access to the levels by ramps for motor cars, by comfortable stairs or ramps for pedestrians, and possibly by a lift for invalids.

There is no rule for determining the exact sizes of rooms in a passenger station except by the study of each individual case. Our own firm has developed a great number of standards, but each



*Photo. El Tovar Studio*

"El Tovar," the combination hotel and railway station of the Atchison, Topeka & Santa Fe at Winslow, Ariz.  
E. A. Harrison, Architect

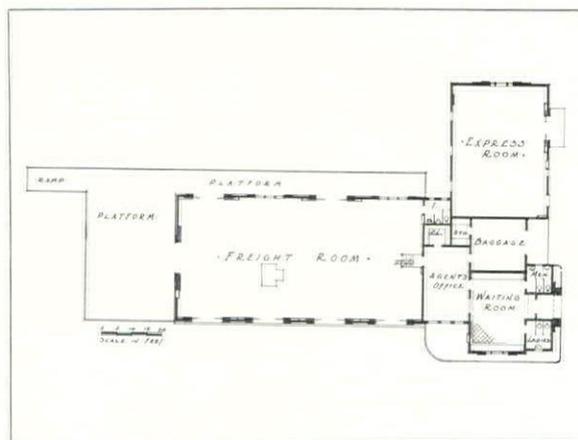


Station at Chico, Cal., Sacramento Northern Railway Co.  
Gilbert Stanley Underwood & Co., Ltd., Architects

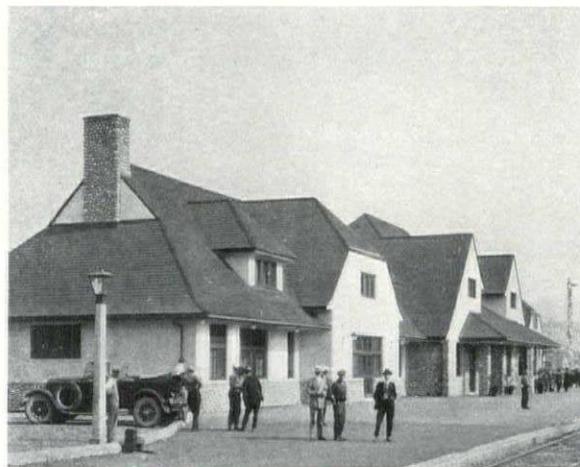
Photo. H. S. Latton

of them may be changed by differing conditions on one railroad or by different railroads. Architectural design is the architect's own province. Each problem must be solved in view of its own requirements. On the Union Pacific system, for instance, we have developed a somewhat different style for each of the different railroads forming the system. (The American Railway Engineering Association recommends these space divisions for the small railroad station which does not have many concession demands: waiting room, 41 per cent; agent's office, 15 per cent; baggage and express office, 26 per cent; women's room, 10 per cent; men's toilet, 4 per cent; women's toilet, 4 per cent.)

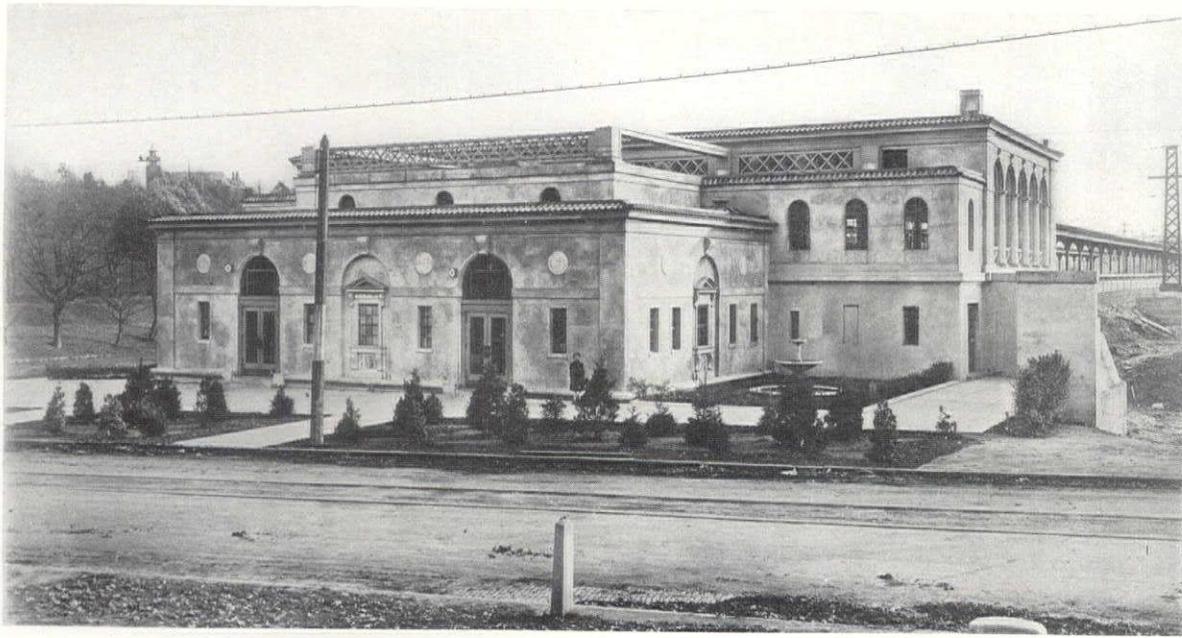
The waiting room (in all but suburban stations with heavy commuting traffic) must provide seats to accommodate at least 40 per cent of the outgoing and between-train passengers who use the station. In suburban stations, the size of the waiting room is of little consequence so long as the platforms are long and well protected by sheds of the butterfly or umbrella type. Circulation in the waiting room must be sufficiently clear, after allowing for baggage and the feet of sitters, to reach all of the facilities. Approximately 41 per cent of the space of the building should be devoted to the waiting room, according to the American Railway Engineering Association. In hot districts, an outdoor waiting room gives protection from excessive heat. Slat seats conforming to the proper curve of the body are best. Wide roof projections, awnings, or other means of creating shade are important, and a cooled drinking fountain is necessary.



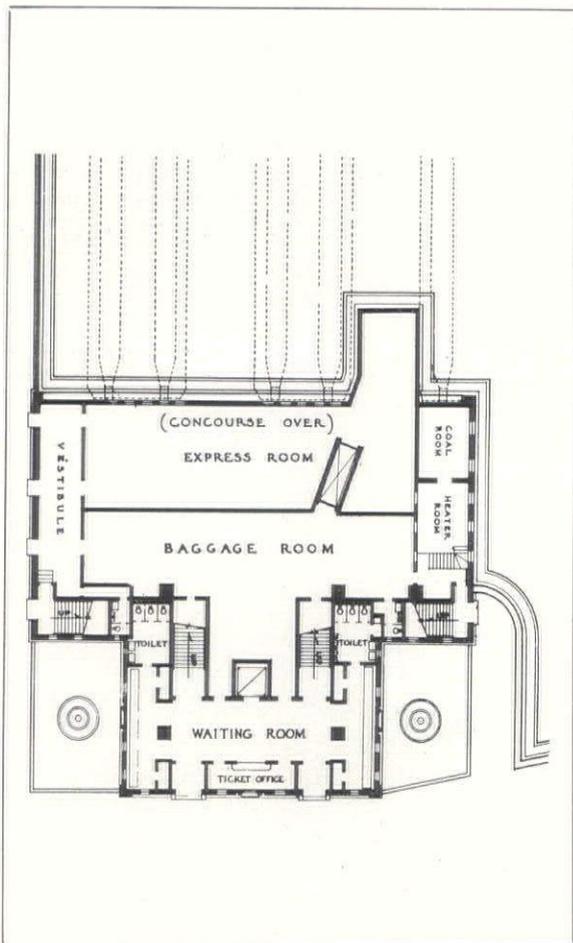
Plan of the Chico station shown above



Canadian National Railway station at Jasper, Alberta. John Schofield, Architect



Electric traction passenger station at White Plains, N. Y.  
Fellheimer & Wagner, Architects



Plan of the White Plains electric traction station. Easy movement of passengers from entrance to train platforms is an outstanding feature of the symmetrical arrangement

Toilet facilities must provide a rest room for women, preferably furnished with a couch, easy chairs, table, telephone booth and drinking fountain. Sanitary vending machines in the toilet room are a requirement. Some state laws require smoking rooms for men, but with the growing tolerance toward this delightful vice, the smoking room is disappearing, and it has become merely a vestibule to the toilet room. The women's rest room is allotted 10 per cent of the station's area as an average, and each of the toilet rooms 4 per cent of the floor space.

The restaurant, always in full view of the tracks, is often divided into a dining room and a lunch room by a door-height partition. Most of the space should be allotted to the service of the lunch counter, which gets the bulk of the business. One kitchen should serve both rooms, and one cashier should control them. Where the traffic is small enough, the news stand may face both the waiting room and the restaurant so that the cashier can handle both the stand and restaurant business.

The ticket window should be prominent, and in commuter stations it should be located on the direct line of travel from the street to the train platform, and so arranged that passengers waiting to secure tickets will not interfere with the general flow of traffic. Where a large number of commutation tickets are issued during the last two or three days of the month, it is desirable to maintain a portable booth, or else install a combination, door, parcel, and ticket window. (See page 758.) The A. R. E. A. suggests 15 per cent of the total area as sufficient for the ticket office. The



*Photos. German Railway Tourist Information Service*

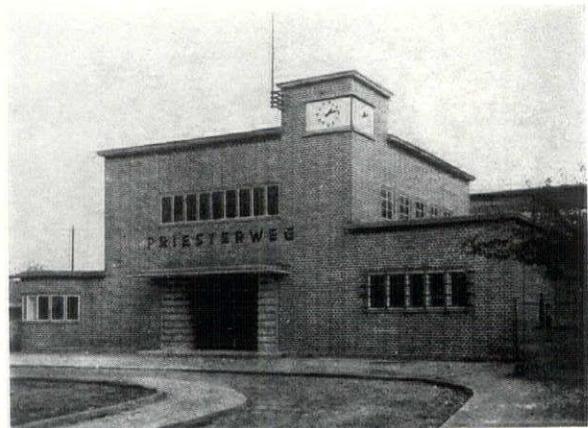
Passenger station at  
Eichkamp, Germany

agent's office should be treated acoustically, particularly when it houses telegraph facilities. The ticket window should be broad, 5 or 6 feet wide at least, preferably grilled with a fairly open design, and provided with a sliding window to close the office from the waiting room. Card tickets, coupon tickets, book tickets, ticket dater, rubber stamps, cash drawer, utility drawer, folder pockets, pistol pocket and reserve ticket stock cupboard (locked) are some of the items which must be built in under the counter.

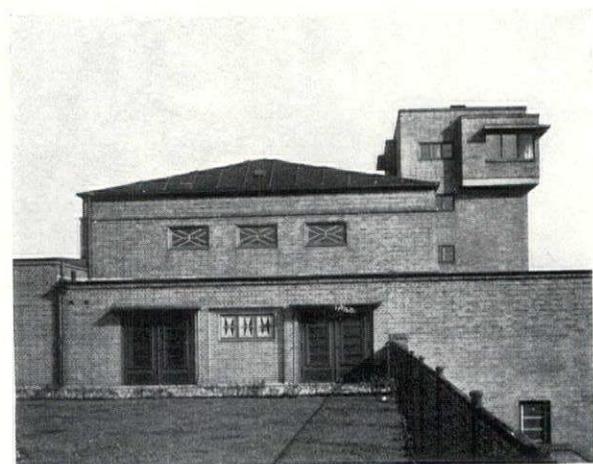
Provisions for the storage of records and files, ample for a number of years (Interstate Commerce Commission ruling), a clothes closet, sometimes a safe and a desk, and a telegraph sending and receiving table,—all are parts of the agent's office equipment. It is desirable to project the office itself, or a bay, beyond the main building line on the track side to provide vision of arriving and departing trains. The operator's table should be located at the track-side window, near which the semaphore signals should be operated. If the telegraph office is not actually in the agent's office, it should, at least, be adjacent to it, so that messages may be handled with dispatch.

The baggage lobby is a recessed room off the waiting room connected with the baggage room. A metal-covered counter divides this lobby, cutting off from view the baggage room. A partition or screen should be provided to house the counter, tag racks, tariff folders, rubber stamps, time check, and the paraphernalia of baggage checking. The full height partition is necessary in cold climates, because baggage rooms are sometimes not heated. In a small station the agent may be baggageman as well, which makes a "Ring For Agent" bell advisable for efficient service.

Baggage and express business may be handled



Passenger station at  
Priesterweg, Germany



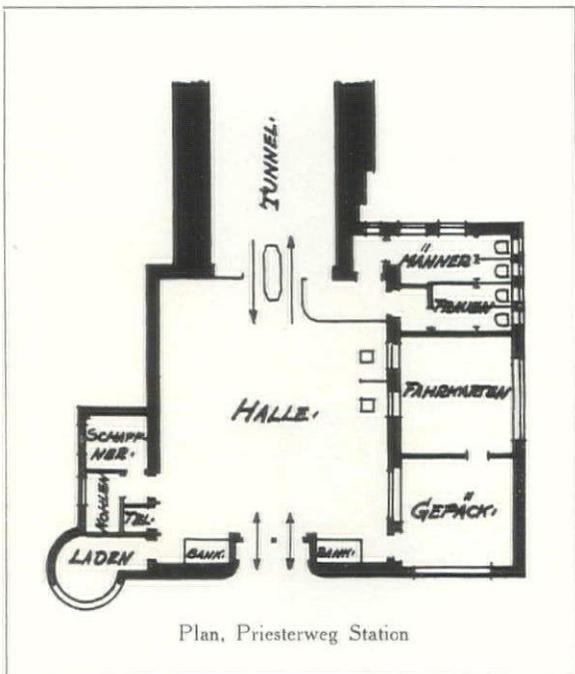
Passenger station at  
Ausstellung, Germany



Passenger station at Ausstellung, Germany



Night view of Ausstellung station



Plan, Prieststerweg Station

by a joint agent, or in separate rooms when the traffic is large enough to require it. The problems are much the same in either case. Wide doors (8 feet wide by 10 feet high) should open on both street side and track side. A weighing scale should be placed slightly off the line of travel from street to track. Piling space must be created by use of high windows and clear corners. End doors are sometimes planned to permit egress of baggage and express to motor trucks at the end of the building. It is usually wise to make adequate provision for unclaimed baggage and express, either by setting off a certain portion of the space as "holdover space" or by planning a separate holdover room.

In some moderate sized stations, freight and passenger facilities are combined, and usually the bulk of the business handled is "LCL" (less than carload). Some argue that this is not wise, because of the advisability of having one building to operate in case fire destroys the other. The freight handling quarters should be as near to the main office as possible if both are handled in the same building. The freight house floor must be at car-bed height. Refrigerator and freight cars are not the same from top of rail to car bed, and floor levels and platforms must be adjusted to the type of traffic involved. A large station will require toilet facilities for employes and truckers. Frequently, too, a hot and cold room may be needed, insulated for perishables in summer and freezables in winter. For merchandise too heavy to be stolen and not harmed by weather, an additional platform (covered or open) is part of the freight storage equipment. For end-loading cars (automobiles, etc.) there must be a platform at the end of a stub track. Gas, oil, air and water must be provided for motor cars leaving under their own fuel. A ramp should, of course, con-



Delaware & Hudson  
R.R. passenger station  
at Merriam, N. Y.

nect the platform with the ground. A hand crane may be installed for lifting heavy merchandise from truck to platform or to car.

This article scratches the surface only. There are unlimited special problems. To name only a few, a station in a college town must be designed to take heavy peaks of passenger and baggage business; a freight house handling LCL shipments of cement, flour, dry food stuffs, etc., must have protected platforms on both track and street sides; platform lighting must be adequate and properly controlled; stations must have the name of the town or city on the track side as well as on both ends, all well lighted. Some other points may be noted. There must be water connections for flushing the platforms, and convenience outlets for carlights along freight platforms; steam must sometimes be provided in a central heating plant for railroad cars as well as for the station; fire

protection demands hose cabinets and chemical cans in convenient positions.

In the opinion of many, the proper landscaping around a passenger station is as important as the building. The most carefully designed structure looks raw and naked without landscaping. We on the Union Pacific have solved that problem by turning over the work to a nationally known landscape architect, Daniel R. Hull, who has provided planting curbs around the base of the building for foundation planting, and has developed parked areas at either end. Hardy shrubs and trees are perhaps the best plant forms to use, since other varieties are likely to die from lack of care. Sprinkling systems for lawns are expensive, but are worth it. In the desert areas, it is actually inspiring to hear travelers remark on the oasis-like beauty of the landscaping; and this type of beauty is the cheapest to get and to keep.



Canadian National R.R.  
station at Niagara Falls,  
Ont. John Schofield,  
Architect

# AIR TRANSPORTATION BUILDINGS

*Photo, Curtiss-Wright Service*



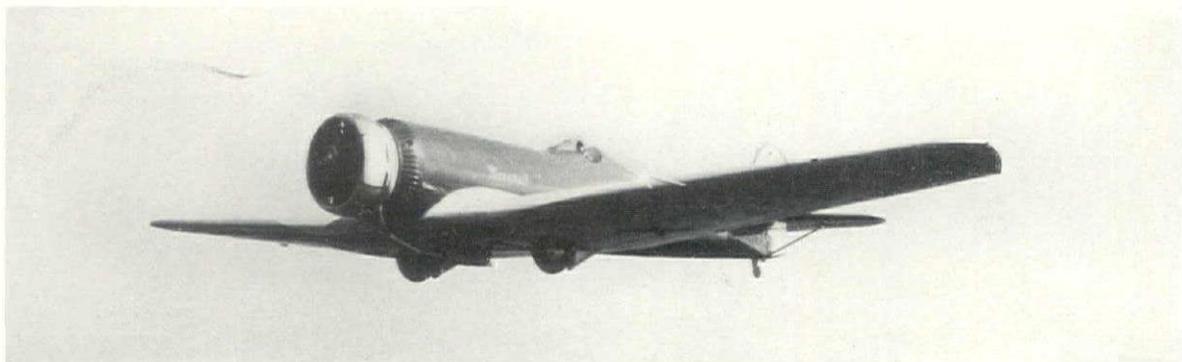


*Courtesy Boeing Air Transport*

UNITED AIRPORT  
BURBANK, CALIFORNIA

THE AUSTIN CO.  
ARCHITECTS & ENGINEERS

The airport building must be developed, independent of precedent, upon the bases of economic and social demands. It is an increasingly important unit of a new transportation, and demands imagination and a thorough understanding of airport organization for its solution



Ewing Galloway

## PLANNING FOR AIRPORT BUILDINGS

BY

ROGER W. SHERMAN

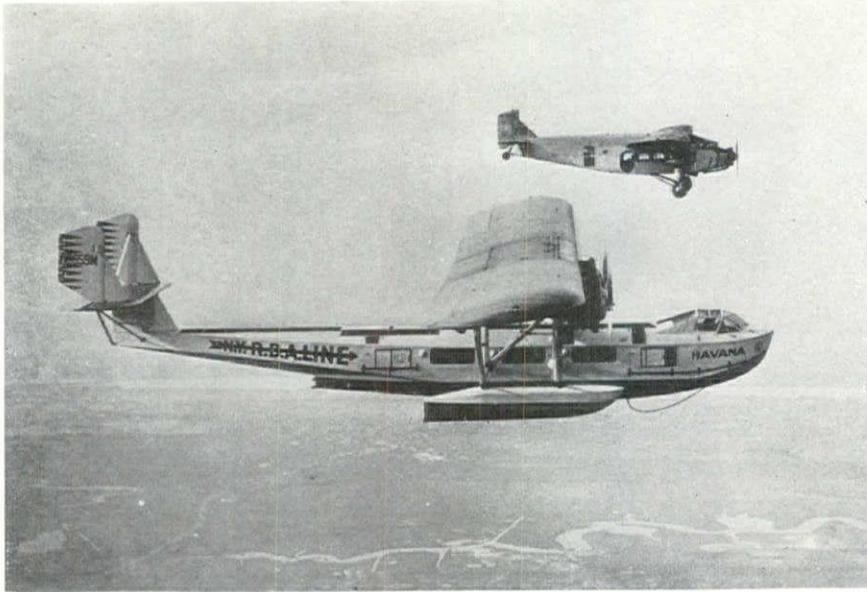
THE building requirements of airports are in direct proportion to the popular demand for air travel, which is dependent upon the factors of relative cost and safety in operation. The first regularly operated airway in the United States was opened in 1918, and organized passenger transportation had its inception in 1928. A report by the Aeronautical Chamber of Commerce covering the first six months of 1930 shows a total of 10,725,335 miles flown with 133,005 passengers carried by 29 reporting air transport companies. These are incomplete figures, as there are more than 29 transport companies in operation, and it is estimated that the yearly total will reach to 25,000,000 miles with over 300,000 passengers carried. Many figures might be given relative to improvement in equipment, increase in carrying capacity and comparative safety of airplanes, but their implication should be evident from those already given. They would merely indicate that an increasing public demand is moulding a novel experiment into an important commercial reality, and that any serious discussion of transportation problems must include a consideration of air travel facilities.

### REQUIREMENTS OF AIRPORT SITES

The operation of an airplane is a combination of the operative characteristics of a ship and a motor bus, and requisite airport facilities are based upon factors influencing its navigation, consequent to its servicing and dependent upon its use. Certain factors are basic in airport design without regard for particular use, specific location in relation to urban centers, variations in

airport activities, administrative organization or cost. These naturally will be considered first.

**I Expansion.** In view of the extreme youth of the aviation industry, the probable future development of an airport is one of primary consideration. Two basic possibilities must be appreciated: (1) the normal growth in activity due to increased patronage; (2) the possibility of radical changes in aircraft types to accomplish greater capacity, flexibility and security. The tendency of the first is to increase congestion and demands a thorough appreciation of the technicalities involved in airport organization for the solution of the problems it presents. The second is a matter of conjecture, though projects now under way indicate the trend of development. Up to the present time flying has been a personal experience in which the passenger looked to the skill and judgment of the individual pilot for his safety. The application of safety devices, the increase in plane sizes and carrying capacities, the specialization in personal responsibility and the institution of regularly scheduled flights with all the paraphernalia of commonplace transportation—these are lessening the personal concern of the individual and are stimulating him to fly, not for the thrill, but for the practical utility that the airplane affords him. Aeronautical engineers predict for the near future multimotored planes with a high factor of safety, operated by a trained crew, capable of long sustained flight at high speeds, and with all the appointments of first-class steamship or railroad travel for a capacity of several hundred people. At the same time may come the perfection of the helicopter with a

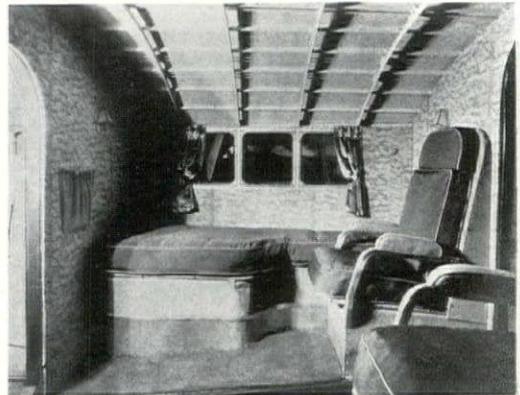


Photos. Courtesy of Aero. Ch. of Commerce

1930. A thirty-two passenger liner, conveyed by a fourteen-passenger local transport. Service in air transportation is fast, safe, pleasurable and regular



1908. It has taken but twenty-two years to mould a novel and dangerous experiment into an important commercial reality



The interior of an air liner is equipped with all the comforts of a Pullman train, and though exceptional now, will soon become a commonplace

consequent lessening of safe climbing ratios and a reduction in landing speed. Such developments would demand the expansion of an airport to closely parallel the principles of space organization now pertaining in railroad terminals, and although potential, should not be considered as improbable.

The probability of expansion colors at the present time every discussion of airport requirements. Planning for such requirements should be farsighted and complete in relation to the type of airport and the limiting influences of location. Actual building projects, however, should be as modest as actual operations will allow. It should be constantly borne in mind that aviation as a new industry requires the firmest commercial basis and that rigid economy in the fulfillment of airport needs should rule development procedure.

**2 Size and Shape.** These factors of an airport are determined by the size and shape of the

landing fields—in turn influenced by *distance from important urban centers, cost, type of airport and the characteristics of the surrounding terrain.* The size will be determined largely by the first three items with the addition of the expansion factor already mentioned. The shape will develop automatically from the last item, influenced as well by the scope of ultimate plans and the prevailing meteorological conditions. Many theoretical recommendations have been made regarding ideal shapes for landing fields, and runway patterns have been designed to provide maximum ease and number of landings and take-offs. These patterns are based upon an all-way landing field where a continuous change of wind direction is encountered. In practice, however, airport sites are selected, insofar as is possible, in terrain where the direction of prevailing winds is usually constant, and, since airplanes should land and take-off directly into the wind, the pat-

tern of runways is largely controlled by special local conditions. In addition the shape will be influenced by the placement of airport structures and the location of surrounding obstructions, both of which may also have bearing upon the size of landing fields.

**3 Freedom from Obstructions.** The airport site should be entirely free from obstructions of any sort. For the field itself unevenness and a grade over  $2\frac{1}{2}$  per cent constitute hazards for airplanes; and, for the surroundings, heights of buildings, trees, hills, etc., regulate the effective landing area and have a definite bearing upon the future development of the airport. The Department of Commerce has fixed a ratio of 7 to 1 as a safe gliding angle for planes operating at sea level. The effective area of landing fields is reduced therefore by 700 feet for every 100 feet of boundary obstruction height. At higher altitudes this increases according to the chart in

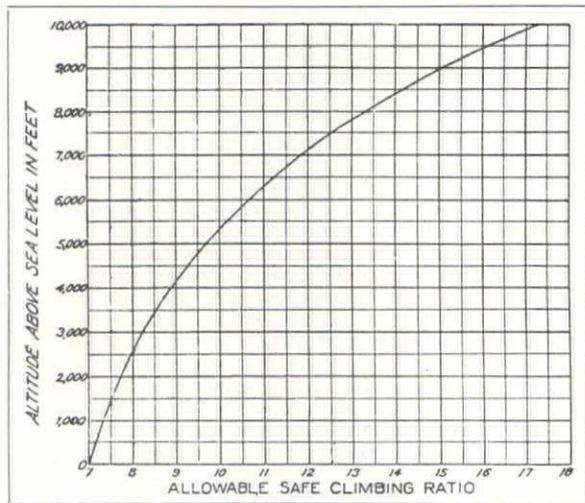
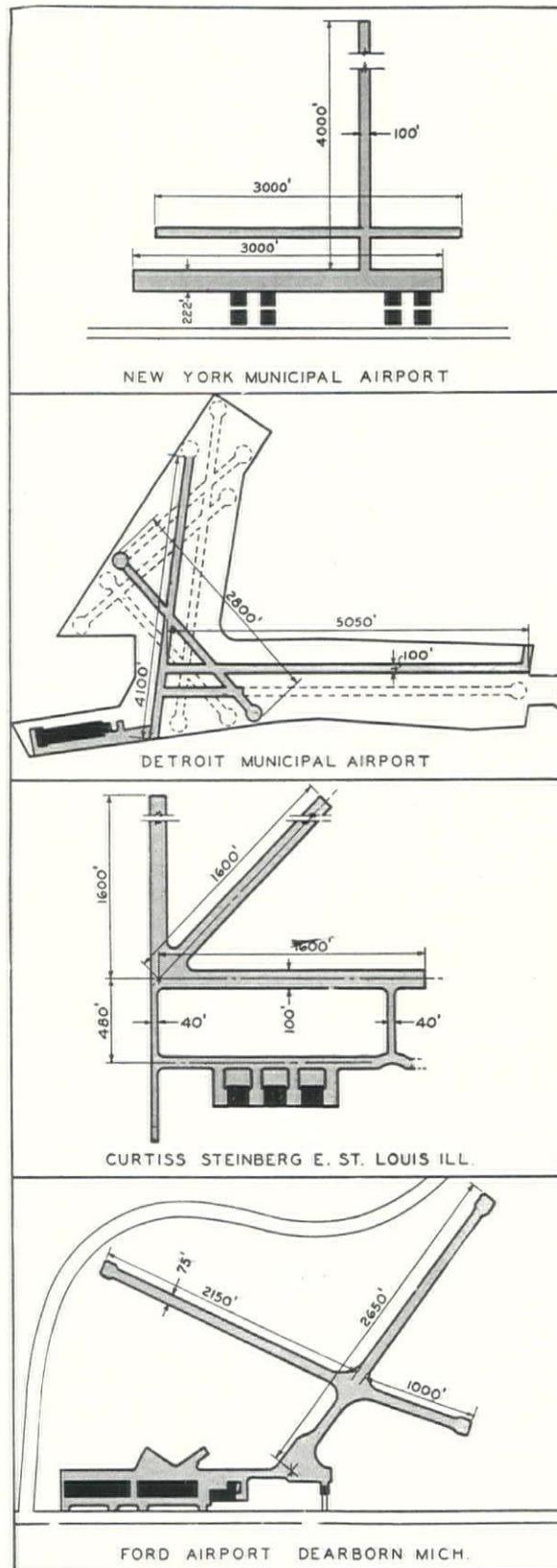


Fig. 1

Fig. 1. The relative danger of obstructions depends somewhat upon the type of plane, as small, fast planes climb more sharply than large transports. In consideration of an airport within easy reach of a city, however, the flattest angle must prevail to promote the operating flexibility of the field. Regardless of plane types, sharply veering winds with rapidly changing velocities and the presence of smoke or fog constitute hazards that should be completely charted before the airport site is accepted.

**4 Accessibility.** The characteristic of commercial air travel is speed with a consequent saving in time. The airport must be easily reached, therefore, from adjacent centers within a relative minimum of time or it has defeated its own purpose. The airport site must be located on a well paved highway, and may be served by rail



Runway patterns are influenced by the direction of the prevailing wind, the location of airport structures and the character of the surroundings. Provision should be made for future expansion as indicated in the diagram of the Detroit Municipal Airport



Dallin

Airports should be quickly accessible to urban centers, but should be located to prevent early obsolescence due to intensive building developments. The Central Airport at Camden, N. J., is on the main traffic arteries connecting Camden, Philadelphia and Atlantic City, and controls sufficient area to assure such expansion as may be necessary.

or water as well as motor transportation. It should be so placed in relation to these facilities that they do not constitute a barrier to subsequent growth, but provision for intimate transfer relations should be made. Though close contact with urban centers is necessary, an airport surrounded by congested areas containing high structures is not safely accessible to present prevailing type of planes. If the selection of an airport site holds the possibility of intensive building development, the controlled area should be large enough to insure the airport against early obsolescence caused by future building to constitute ineradicable obstructions.

#### TYPES OF COMMERCIAL AIRPORTS

Due to the rapidity of its growth, the great number of technical problems still demanding solution and much unfortunate exploitation, the aviation industry is still generally unorganized. Although at the present time many aeronautical interests are grouped together, the evident tendency is toward the specialization of activities similar to the organization pertaining in railroad and steamship transportation companies. Within a short time manufacturing and testing will be separated from centers intimately concerned with public service, and the same division will undoubtedly take place with the location of flying schools outside the limits of commercial airports. The scope of this division, however, depends upon the subsequent development of the industry.

Airports proper may be divided into three general types: (1) *Privately owned commercial centers*, (2) *Public transport terminals*, and (3) *State or municipal airports*.

As regards size, shape, lighting, navigation aids and general aeronautical equipment, they may be similar in conformation with the requirements of the Aeronautics Branch of the Department of Commerce, listed in Aeronautics Bulletin No. 16. As regards the building requirements, however, they may differ widely. The classification has been stated in relation to type of organization, and buildings should be planned to fill the specific needs of airport activities arising as results of administrative policies.

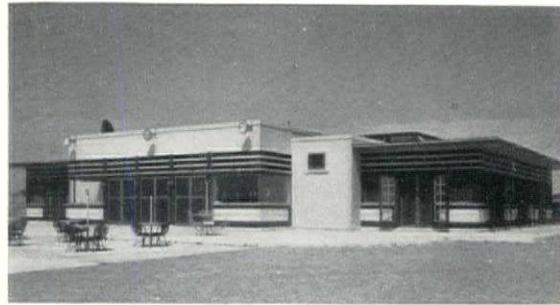
**1 Privately Owned Commercial Centers.** The organization of such airports has for its primary consideration the operation of its facilities for profit, and its activities may include any or all of the following:

- (1) Rent of land to manufacturers.
- (2) Lease of buildings to flying schools.
- (3) Concessions, such as fuel, hotel and restaurant, repair service, etc.
- (4) Rent of hangar space for storage or overhaul of planes.
- (5) Sales agencies for various types of planes.
- (6) Operation of lights on government airways.
- (7) Air taxi lines and joy riding.
- (8) Lease of airport facilities to transport lines.

Whether or not the business of the airport is concerned with all of these items, the minimum building requirements include (1) provision for plane storage, overhauling, fueling and minor repairs; (2) provision for administrative facilities, rest rooms, limited permanent accommodations for personnel, restaurant or lunch room, communications—radio, telegraph and telephone—weather reports and first aid. The placement of these facilities is dependent upon the size and shape of the airport, the pattern of runways or taxi strips, and upon the location of motor roads and rail lines. An airport of this type will usually be served only by a road, as it depends for its income largely upon the patronage of local interests, and should be situated as near as possible to them. If the probability exists that it may be served by rail, provision for passenger stations with all the facilities should be made.

The airport concessions may be expanded to include public recreational facilities, such as swimming pools, golf courses, both regular and miniature types, tennis courts, etc., and in some localities the entire development may become a popular resort, with flying as its principal attraction. The necessary buildings for such concessions do not differ generally from others of their type, but should be designed as one- or two-story structures to prevent their becoming obstructions to planes. If flying schools are operated on lease, or if transport terminals exist, office space, waiting rooms, etc., will probably be rented in a building owned by the airport company. This is advisable, as it provides a centralized control of field traffic and enlarges field facilities by keeping building areas at a minimum. Plans for such a structure should provide for a separation of independent activities; and circulation, field exits,

One structure may house concessions and field administration on a small airport. Washington Airport, Washington, D. C. Holden, Stott & Hutchinson, Architects



*Tebbs & Knell*

An airport necessity. Restaurant and lunch room at Valley Stream, Long Island. Kenneth Franzheim, Architect



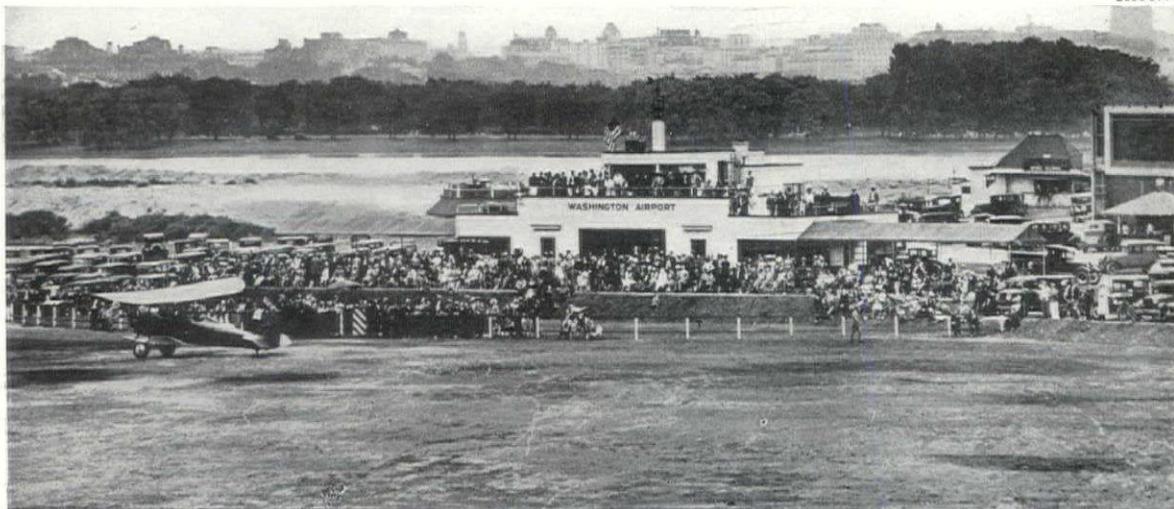
*Hoedt*



*Dallin*

Commercial airport concessions often include resort facilities. The swimming pool at the Central Airport at Camden, N. J., is typical of good practice for this type of airport building. The pool and all accessory structures are floodlighted.

*Roberts*





Bonney

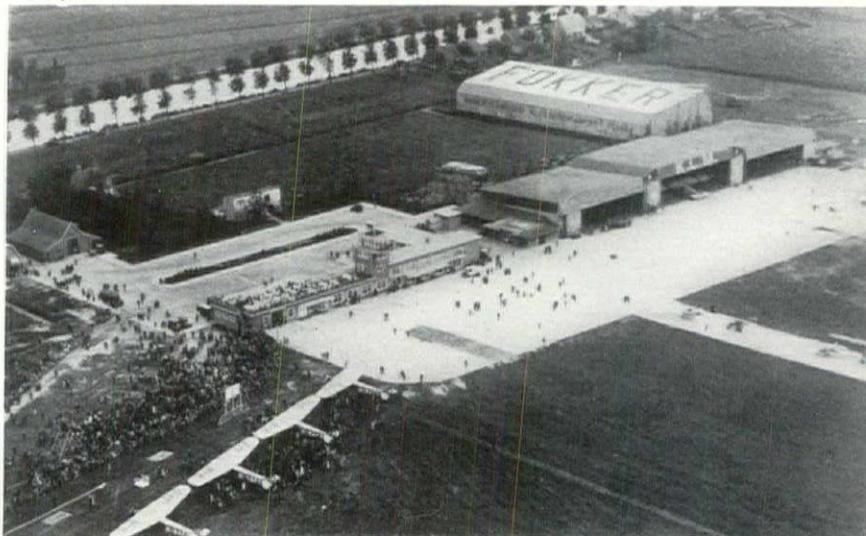
A compact, well-planned airport. Public facilities are centrally located and close to plane service and storage. Parking areas are close to buildings and the surfaced public promenade is separated from the flying field by fences. Rotterdam Airport, Holland

Fairchild



Roosevelt Field, Mineola, L. I., one of the oldest and largest fields in America. It was started during the World War, and is now used as a manufacturing site as well as a commercial airport. It is efficiently surfaced for a large volume of air traffic

Bonney



Administration and terminal units of the Schiphol Airport, Holland. Notice the efficient arrangement of surfacing to serve both hangars and terminal, the large parking area, and the separation of the flying field from public grounds

etc., should be projected in relation to private taxi lanes to avoid congestion of general field operations.

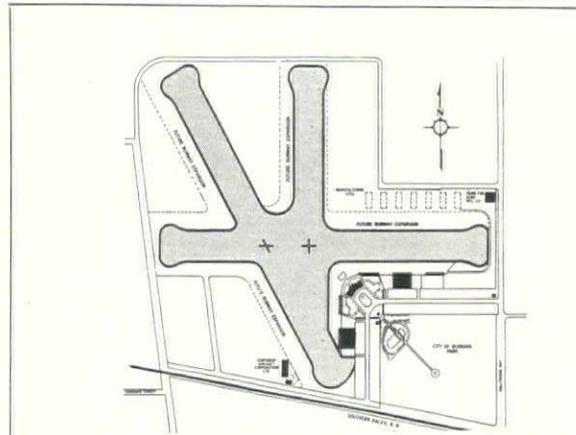
**2 Public Transport Terminals.** Public air transportation may be divided into two classes—(1) lines operating independently, solely as air travel units, and (2) lines that are subsidiary to railroad or motorbus corporations and operate in conjunction with such established facilities. The building requirements of the two types are similar in their salient aspects, though the latter may require a special consideration in view of the implied transfer of travel means.

Normally, many of the commercial features of the privately operated airport are absent, though a terminal airport may lease areas for manufacturing or sales purposes. There is an essential difference between the two types. The private airport is developed as a source of income by itself; in the transport terminal such income is incidental and the primary consideration is fast transportation service.

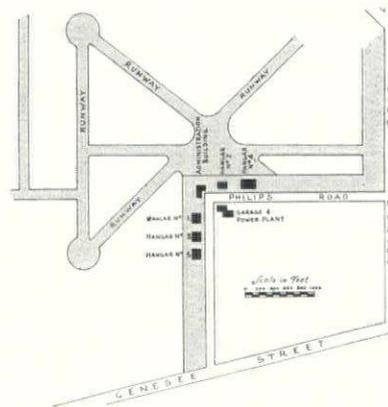
The terminal buildings should be planned to provide the maximum of comfort and convenience to passengers, consistent with the size and importance of the airport, and should include a central waiting room, information and ticket booth, news and refreshment stand, restaurant or lunch room, toilets, pilots' quarters, communications and weather reports office, airport executive offices and field control room. The public facilities should be definitely separated from all others, which should be grouped to facilitate communication.

The plane buildings should be planned to promote the maximum of efficiency in plane servicing. Hangar space, repair shops, and fueling areas should be located close to the field passenger exit of the terminal building to minimize plane taxiing.

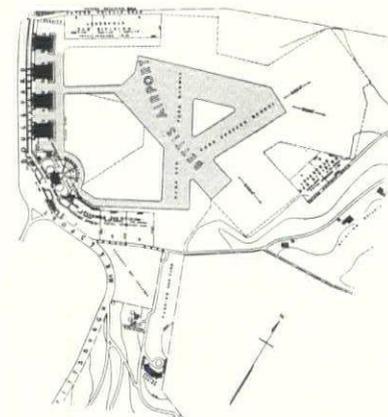
**3 State or Municipal Airports.** The functions of airports under this heading may include any or all of the factors present in the foregoing classifications and in addition may include facilities for expositions, public air meets, parks, and civic center developments. The essential difference in purpose and equipment is indicated by the type of ownership and administration. Since it constitutes primarily a public benefit—even though some portions may be leased by private interests—the problems of crowd circulation and control should be solved for the probable maximum anticipated by the airport's size, its proximity to the municipality and the ease with which it is reached. A separate administrative building is usually not as important as in other types of airports, though the determined activities may make it desirable in some instances. If terminal



United Airport  
Burbank, Calif.

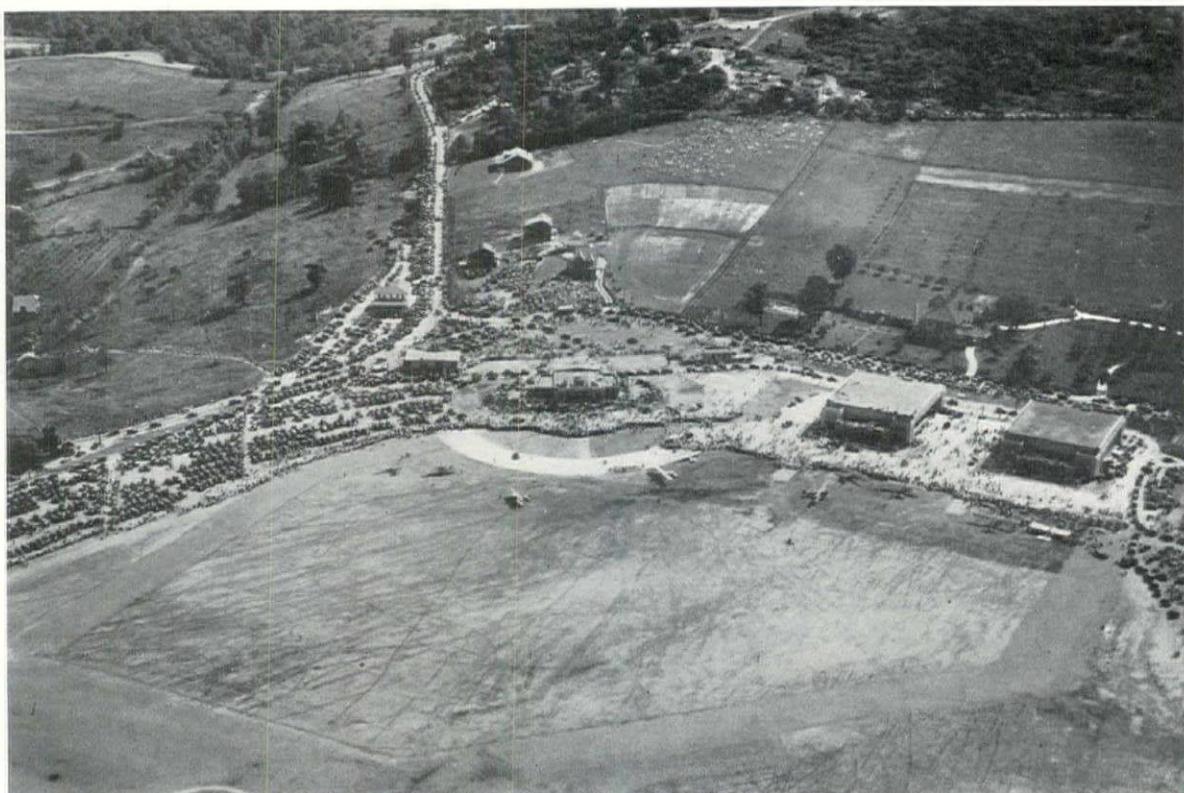


Municipal Airport  
Buffalo, New York



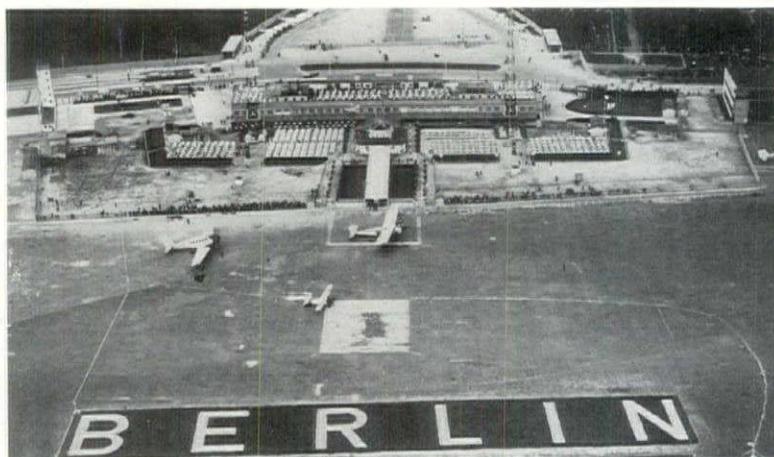
Bettis Airport  
Pittsburg, Pa.

Placement of buildings under varying conditions of topography and wind direction. In each case the structures are set apart from the runway pattern to avoid interference with air traffic; buildings are closely grouped to avoid long taxi-runs; and adequate space is available for expansion, either of the buildings or landing strips, with the administration serving as the focal point in either case



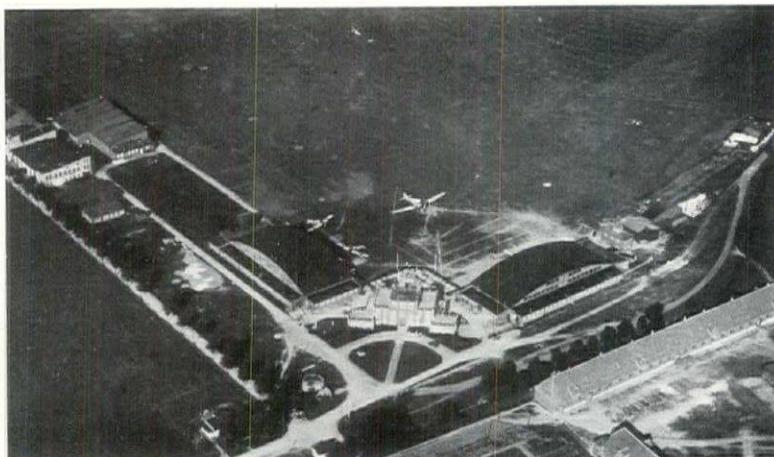
Curtiss-Wright

Airports attract crowds of spectators, and easily accessible parking areas should be provided, so placed, however, that they do not constitute an obstruction to field activity



Photos. Courtesy German Inform. Bureau

Separation of public space from the flying field is essential for safety and convenience of field operation. Terminal field exits should also be fenced to exclude spectators



Hangars should be close enough to the terminal structure to admit of quick service and a minimum taxi run, but removed enough so that the motor exhaust and the propeller stream are not objectionable

facilities are leased, the area should be separated from municipal grounds, and separate facilities for planes and passengers provided.

Concessions of various sorts will be necessary. They may be extended to approach the resort type of a private commercial venture and provision for spectators should be made by reserving ground for the erection of temporary grandstands or by the utilization of flat roof areas.

#### FACTORS OF PLOT PLANNING

Airport buildings should be located to meet the following requirements:

**1 Accessibility from Land Transportation Routes.** Hangar, concession and terminal buildings should be close to roads, and provision made for automobile parking in their vicinity, the size of the area depending upon the importance and location of the airport. In large terminals weather protection should be afforded passengers arriving by bus or train.

**2. Convenience in Airport Operation.** Terminal buildings or loading centers should be centrally located in relation to other structures. Hangars should be near enough to them to avoid long taxi runs, but should be placed to accomplish a minimum of plane maneuvering preparatory to take-off or taxi runs to loading centers. Buildings should be grouped in areas least effective as landing fields. They may be placed near the juncture of runways, but not at the ends, as they would there constitute obstructions.

Areas reserved for probable expansion may be used temporarily as concession space, in which case they should be separated from airport activities by fences. The same separation should be planned between passengers or airport operatives and sightseers, special provision being made to keep the landing field and hangar area clear of spectators at all times, while still allowing an unobstructed view of field activities.

#### CONSIDERATIONS IN BUILDING DESIGN

The height of all structures should be kept to the practical minimum and requirements met by horizontal planning and, where the terrain permits, by the utilization of basement space. Public areas should be separate from offices, control rooms, operatives quarters and service areas, and private access to the last three from the field is desirable.

Buildings should be in every case as clear in plan, and direct in elevation as is possible. It should be remembered that structures are utility buildings, seen from the air as well as the ground, and non-essentials tending to confuse a pilot or offer an obstruction to his plane should be avoided. The disposition of parts should clearly



*Courtesy German Info. Bureau*



*Keystone*

Provision for spectators should be adaptable to seasonal requirements. At the Templehof Airport, Berlin, Germany, the open air restaurant is flooded in winter to provide a skating rink



Economy of area is not necessary at airports, and buildings should be planned horizontally. The forms should be simple, and easily discernable to the pilot. Washington Airport, Washington, D. C. Holden, Stott & Hutchinson, Architects



Terminal Building at Alhambra, California  
Edelman & Zimmerman, Architects

indicate to the pilot the terminal structure and the location of the loading center. Color and materials should be chosen to increase visibility but to avoid glare or dazzle in bright weather. There are three general types of structures necessary to airports: (1) *Hangar or service buildings*, (2) *Administration and public buildings*, and (3) *Concession buildings*. The first has been treated elsewhere in this magazine (see pages 769-778, Part II).

Under the second heading terminal facilities are the most important. Though projects may vary in size, fundamental requirements are similar. They include public space,—waiting and check rooms, ticket offices, toilets, restaurants, newsstands and in some cases a concourse with shops,—offices of transport lines and offices for airport operation. Public space should be centrally located, light, airy and simple in appointments, planned for freedom in through circulation. Waiting rooms and restaurants should have a clear view of the flying field. Administrative portions should include executive offices, communications, weather, control and observation rooms, grouped for ease in circulation, in addition to pilots quarters and first aid room. The observation and control rooms should obtain an unobstructed view of the entire airport, and pilots' quarters should have resident accommodations for at least two.

Courtesy Airway Age



The terminal at Sky Harbor, Chicago. The building serves as an aviation club as well as a transport station. Notice the grandstand at the base of the tower. Allen & Webster, Architects

Concession structures will be determined by particular requirements. Usually they are gas stations, garages or lunchrooms, but may include the resort facilities already mentioned.

The foregoing planning requirements are common to the average airport. Problems including large freight areas, post offices, customs and immigration offices, extensive shopping areas, a hotel and facilities for railroad and subway transfers are extraordinary and require much research and careful study for their proper solution. In many cases expansion may include any or all of these items, and where even a remote possibility of such development exists, space for their installation should be reserved in the airport plan. Such projects are entirely dependent upon the progress of the airplane itself. If airplanes develop in size and safety to compete with other means of transportation, large and complex airports will become a necessity. Until that time, airport buildings should be designed to serve the strict and peculiar demands of air travel with the minimum of effort and expense and the maximum of efficient service.

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# AIR TRANSPORTATION BUILDINGS

## TERMINALS AND HANGARS

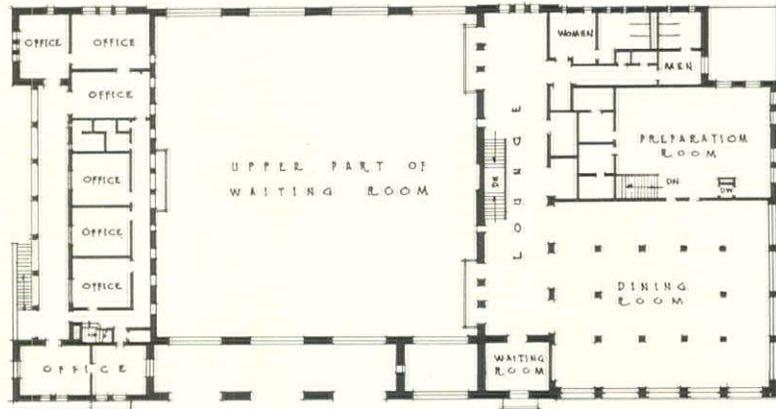


*Mott*

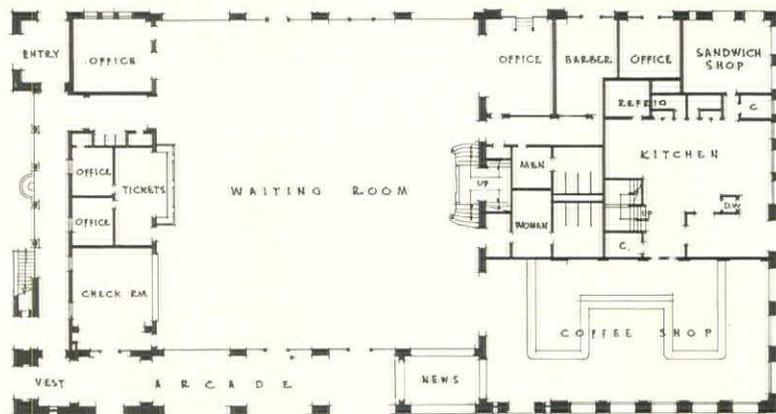
VIEW FROM THE  
FLYING FIELD

THE GRAND CENTRAL AIR TERMINAL  
GLENDALE, CALIFORNIA

H. L. GOGERTY  
ARCHITECT



SECOND FLOOR



FIRST FLOOR

GRAND CENTRAL AIR TERMINAL  
 GLENDALE, CALIFORNIA  
 H. L. GOGERTY, ARCHITECT



*Mott Studios*

TERMINAL BUILDING FROM THE STREET

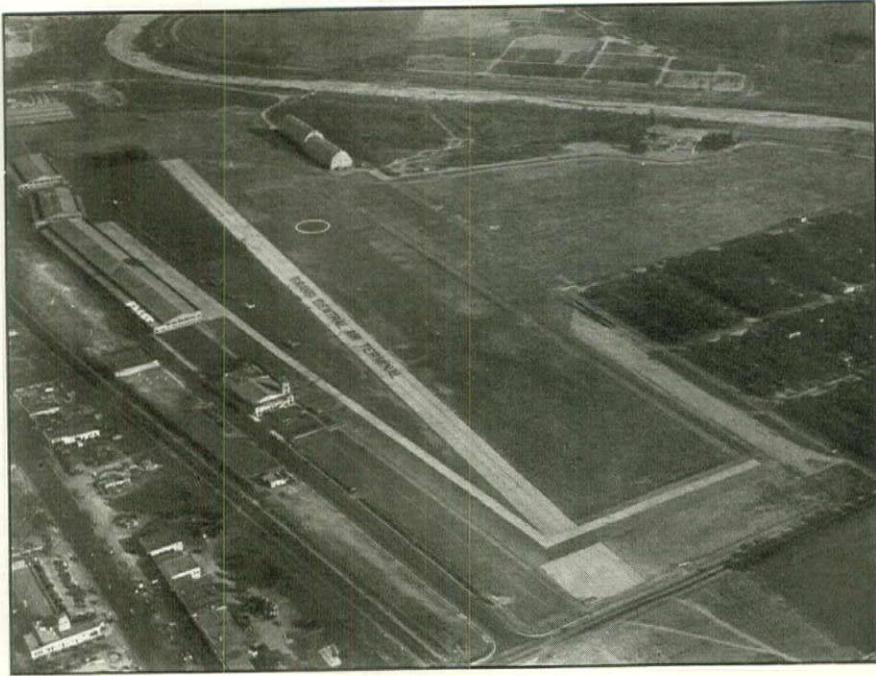


*Moss—Courtesy of "Airway Age"*

MAIN LOBBY AND STAIR TO RESTAURANT

GRAND CENTRAL AIR TERMINAL  
GLENDALE, CALIFORNIA

H. L. GOGERTY  
ARCHITECT



VIEW FROM THE AIR

#### COST AND CONSTRUCTION DATA

NAME OF BUILDING: Grand Central Air Terminal.

LOCATION: Glendale, Calif.

ARCHITECT: H. L. Gogerty.

YEAR OF COMPLETION: 1929.

TYPE OF CONSTRUCTION: Class "C." Structural steel skeleton with masonry exterior walls.

EXTERIOR MATERIALS: Masonry with plaster and cast stone finish.

ROOF: Tile.

WINDOWS: Steel.

INTERIOR FINISHING MATERIALS: Plaster, ornamental tile, wrought iron.

FLOORS: Concrete and wood.

HEATING (TYPE): Gas steam.

VENTILATION: Exhaust system in cafe portion.

TOTAL CUBAGE: 415,000 feet.

COST PER CUBIC FOOT: 36c.

TOTAL COST: \$150,000.

AVERAGE PASSENGERS DAILY: Week days 150 to 200.  
Holidays and Sundays 350 to 500.

GRAND CENTRAL AIR TERMINAL  
GLENDALE, CALIFORNIA

H. L. GOGERTY  
ARCHITECT



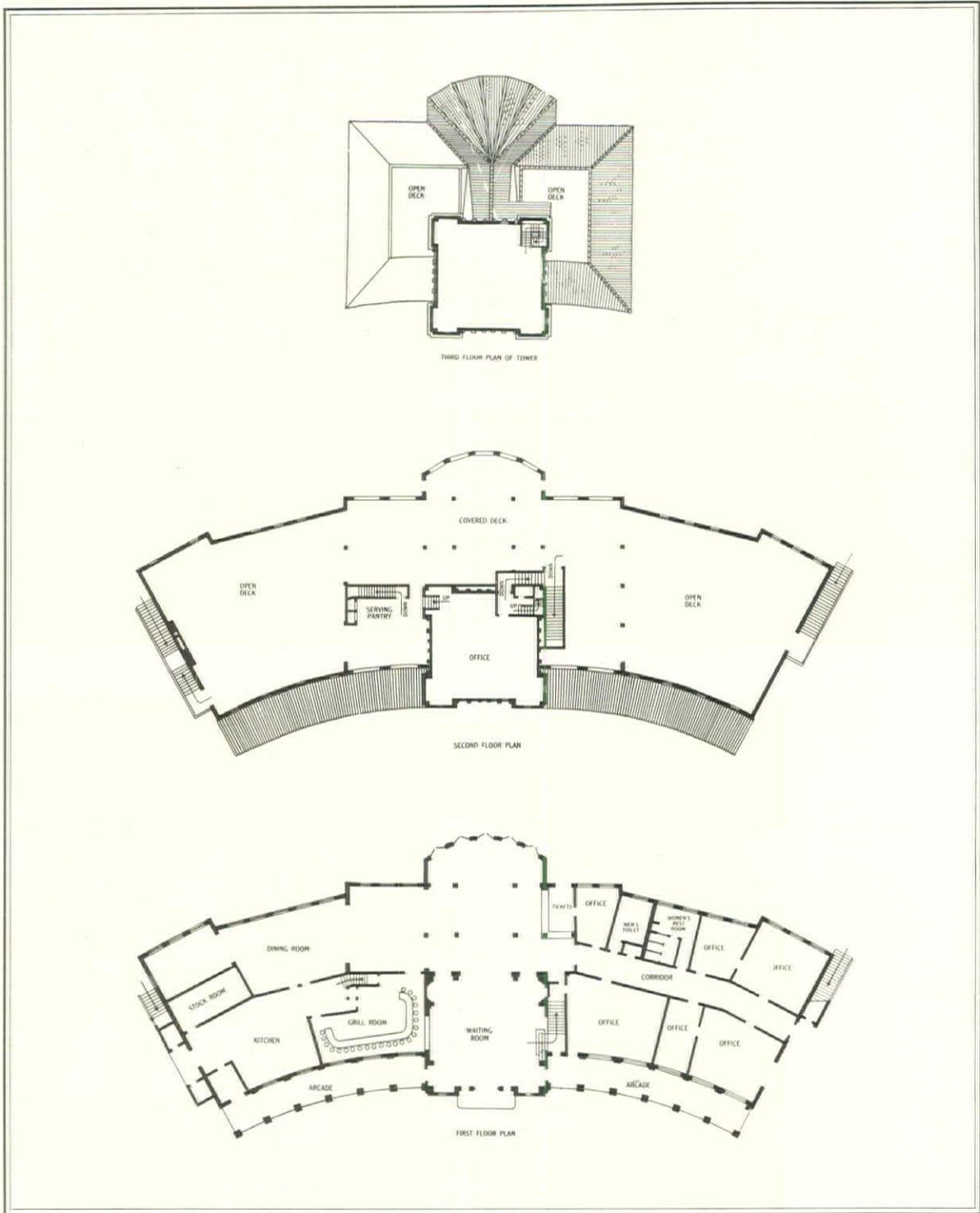
*Courtesy A.C.C.*



*Courtesy Boeing Air Transport*

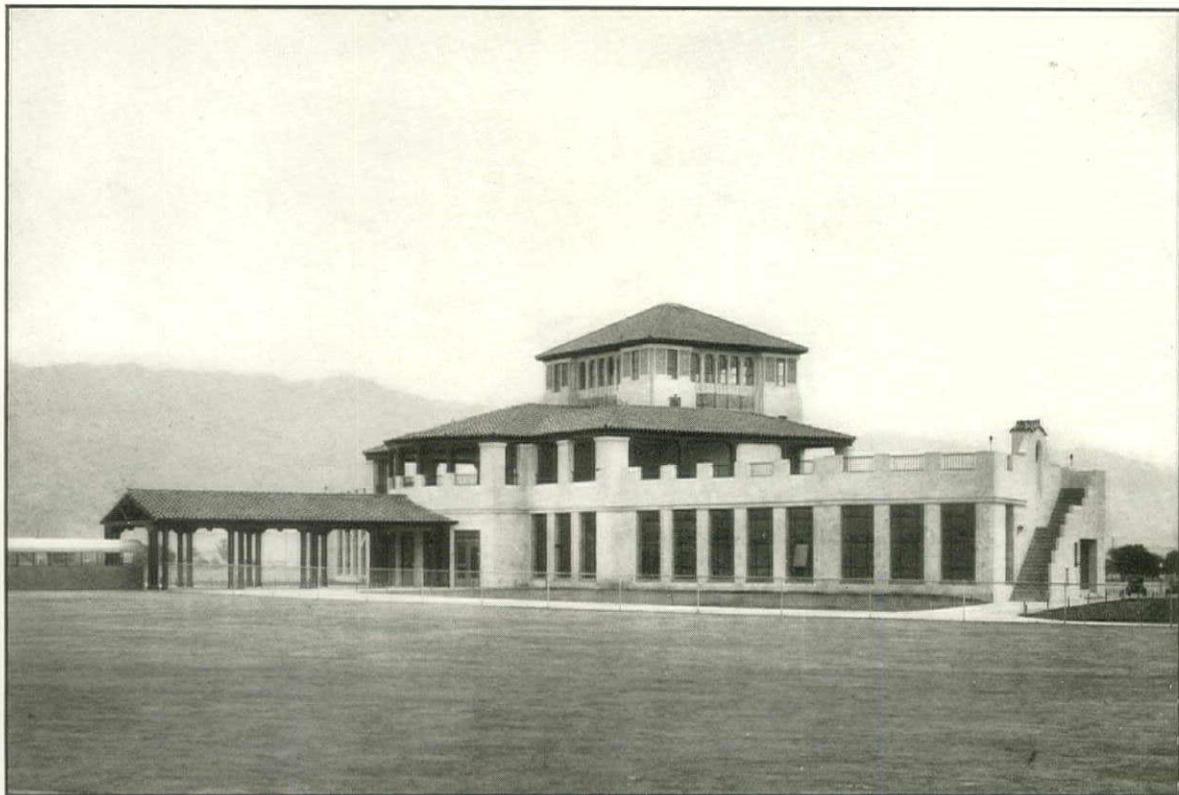
THE AUSTIN CO.  
ARCHITECTS & ENGINEERS

UNITED AIRPORT  
BURBANK, CALIFORNIA



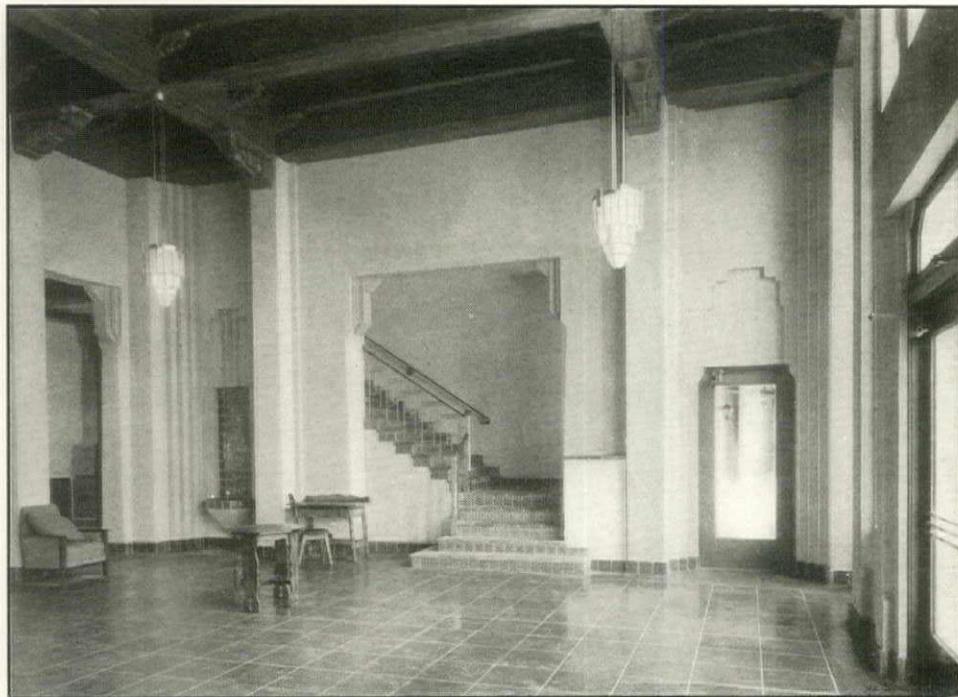
UNITED AIRPORT  
BURBANK, CALIFORNIA

THE AUSTIN CO.  
ARCHITECTS & ENGINEERS



*Heiser*

FROM THE  
FLYING FIELD

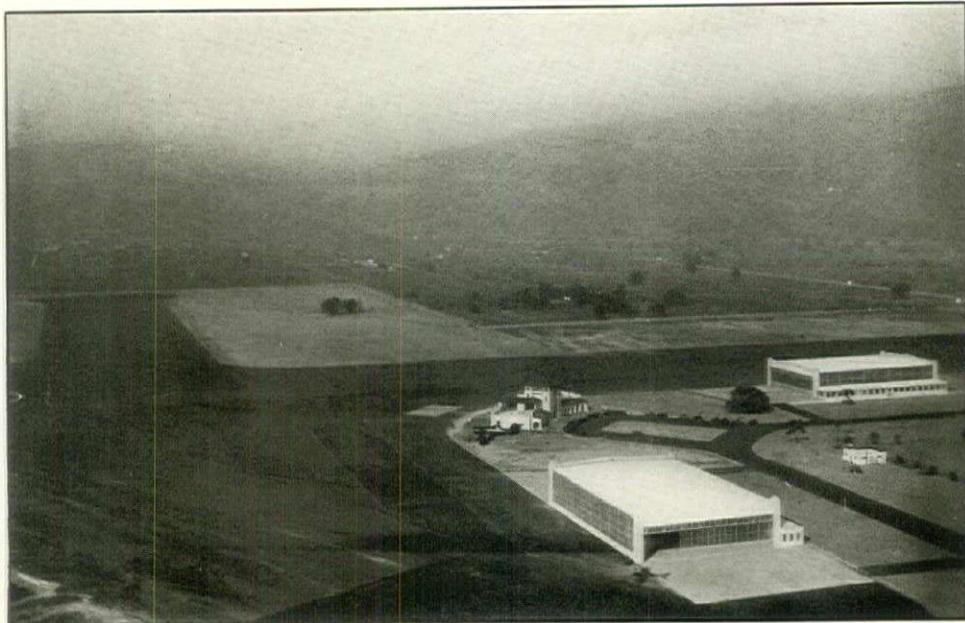


MAIN LOBBY

*Heiser*

THE AUSTIN CO.  
ARCHITECTS & ENGINEERS

UNITED AIRPORT  
BURBANK, CALIFORNIA



GENERAL VIEW  
OF AIRPORT

UNITED AIRPORT  
BURBANK, CALIFORNIA  
THE AUSTIN CO.  
ARCHITECTS & ENGINEERS



*Moss*

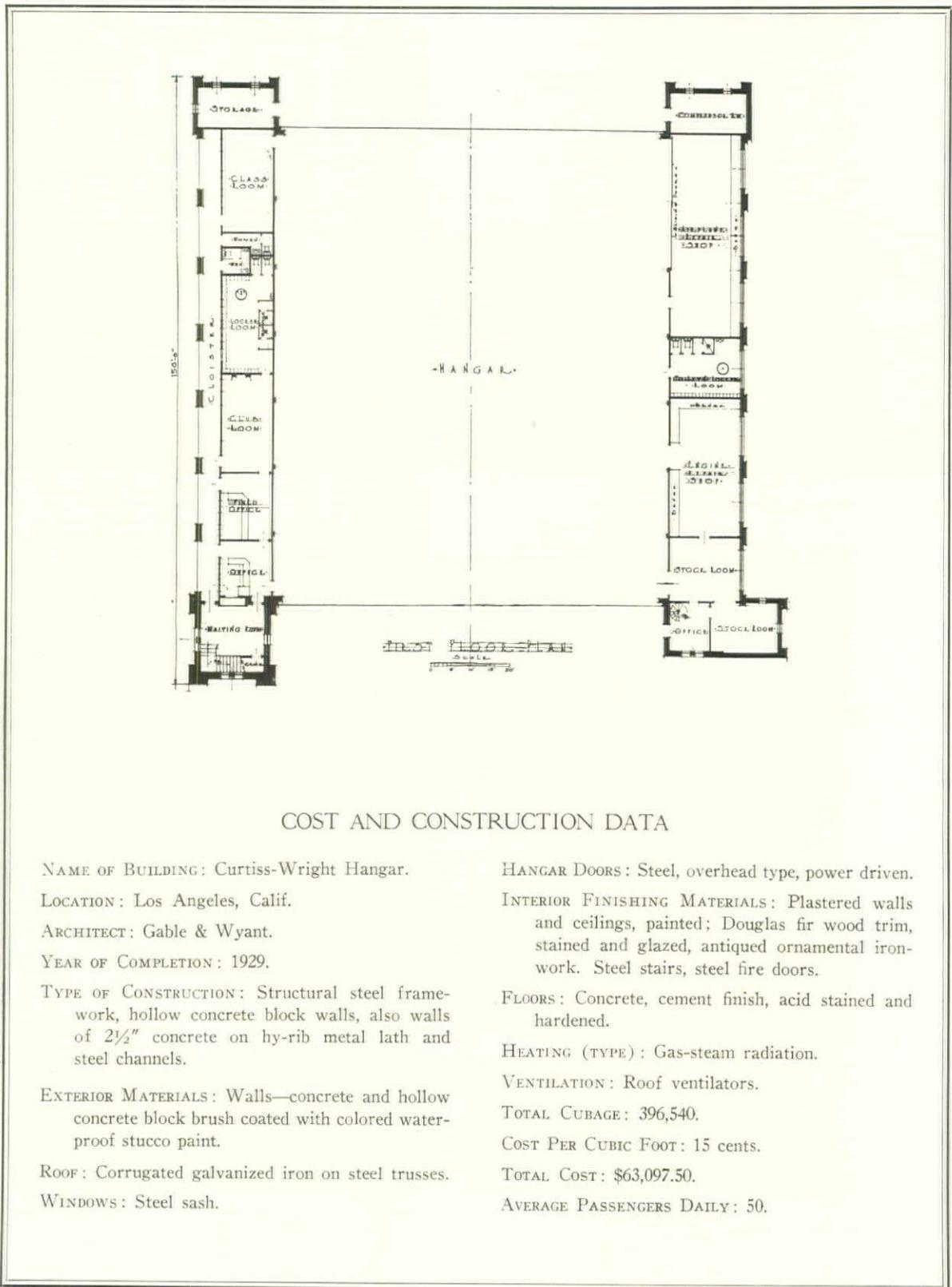
ENTRANCE TO HANGAR



*Bishop*

GABLE & WYANT  
ARCHITECTS

CURTISS-WRIGHT HANGAR  
LOS ANGELES, CALIFORNIA



**COST AND CONSTRUCTION DATA**

NAME OF BUILDING: Curtiss-Wright Hangar.  
 LOCATION: Los Angeles, Calif.  
 ARCHITECT: Gable & Wyant.  
 YEAR OF COMPLETION: 1929.  
 TYPE OF CONSTRUCTION: Structural steel framework, hollow concrete block walls, also walls of 2½" concrete on hy-rib metal lath and steel channels.  
 EXTERIOR MATERIALS: Walls—concrete and hollow concrete block brush coated with colored waterproof stucco paint.  
 ROOF: Corrugated galvanized iron on steel trusses.  
 WINDOWS: Steel sash.

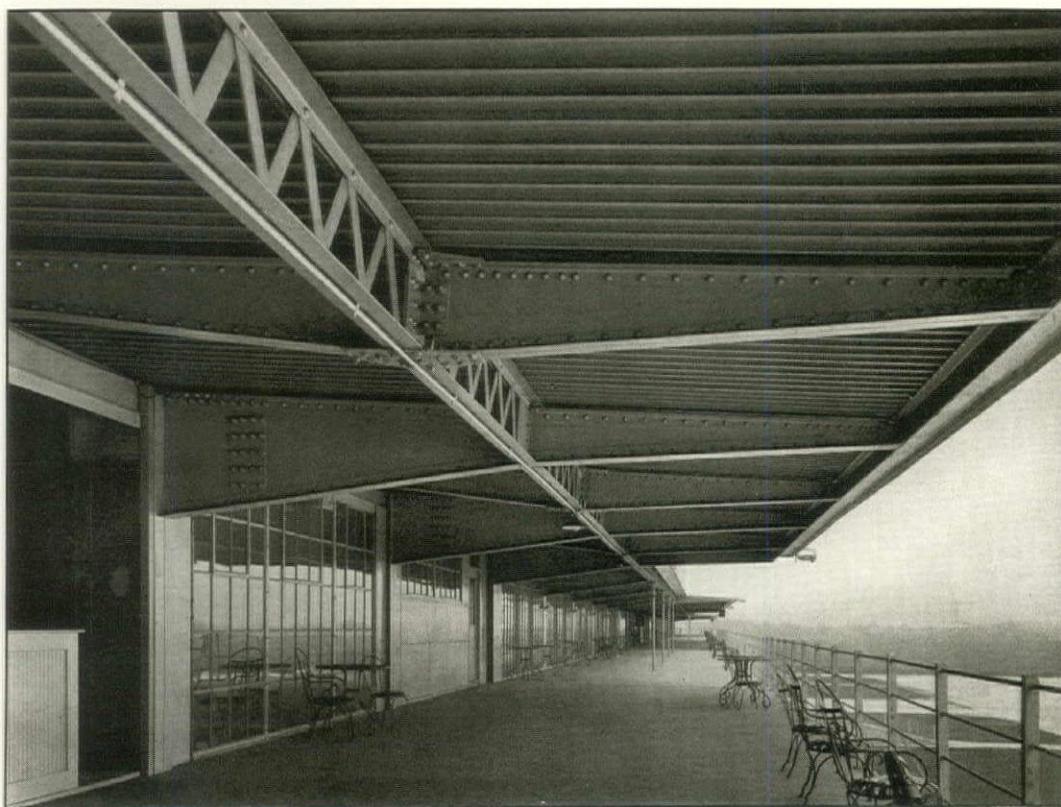
HANGAR DOORS: Steel, overhead type, power driven.  
 INTERIOR FINISHING MATERIALS: Plastered walls and ceilings, painted; Douglas fir wood trim, stained and glazed, antiqued ornamental iron-work. Steel stairs, steel fire doors.  
 FLOORS: Concrete, cement finish, acid stained and hardened.  
 HEATING (TYPE): Gas-steam radiation.  
 VENTILATION: Roof ventilators.  
 TOTAL CUBAGE: 396,540.  
 COST PER CUBIC FOOT: 15 cents.  
 TOTAL COST: \$63,097.50.  
 AVERAGE PASSENGERS DAILY: 50.

CURTISS-WRIGHT HANGAR  
 LOS ANGELES, CALIFORNIA  
 GABLE & WYANT  
 ARCHITECTS



GENERAL VIEW FROM FIELD

*Chicago Arch. Photo*

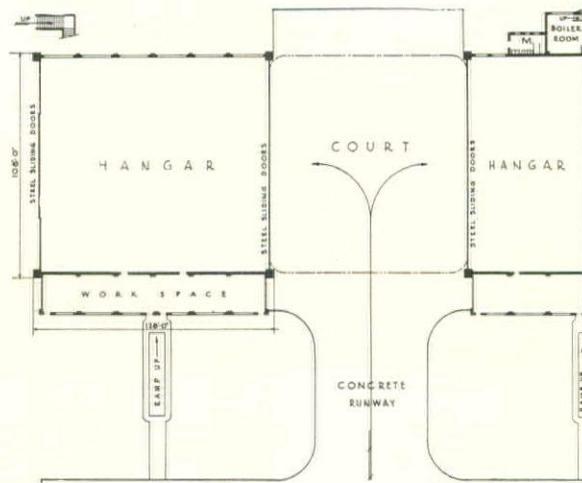


SPECTATORS' PROMENADE

*Chicago Arch. Photo*

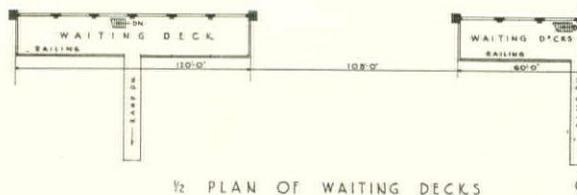
REBORI & WENTWORTH  
ARCHITECTS

HANGAR BUILDING  
CURTISS-REYNOLDS AIRPORT  
CHICAGO, ILLINOIS

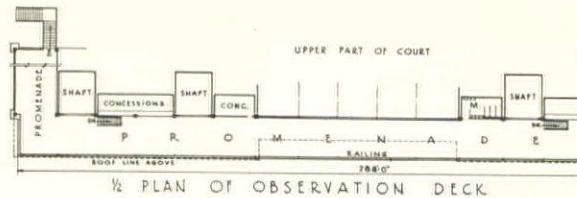


1/2 PLAN OF FIRST FLOOR

SCALE  
0 10 20 30



1/2 PLAN OF WAITING DECKS



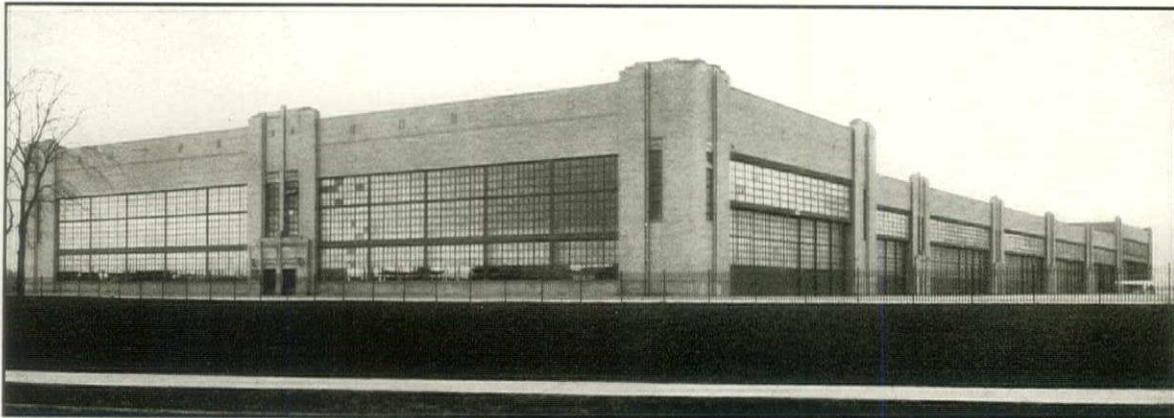
1/2 PLAN OF OBSERVATION DECK

### COST AND CONSTRUCTION DATA

NAME OF BUILDING: Curtiss-Reynolds Air- port.	ROOF: Steel I Plate Roof Decking with Asphalt Roofing.
LOCATION: Chicago, Ill.	WINDOWS: Steel.
ARCHITECTS: Rebori & Wentworth.	INTERIOR FINISHING MATERIALS: Steel I Plate used for ceilings; steel panels; steel shelving; all doors of steel.
YEAR OF COMPLETION: 1929.	FLOORS: Cement.
TYPE OF CONSTRUCTION: Steel.	HEATING (TYPE): Steam with unit heaters.
EXTERIOR MATERIALS: Silica Brick and Steel—Concrete Ramps.	TOTAL COST: \$310,000.

### CURTISS-REYNOLDS AIRPORT CHICAGO, ILL.

REBORI & WENTWORTH, ARCHITECTS



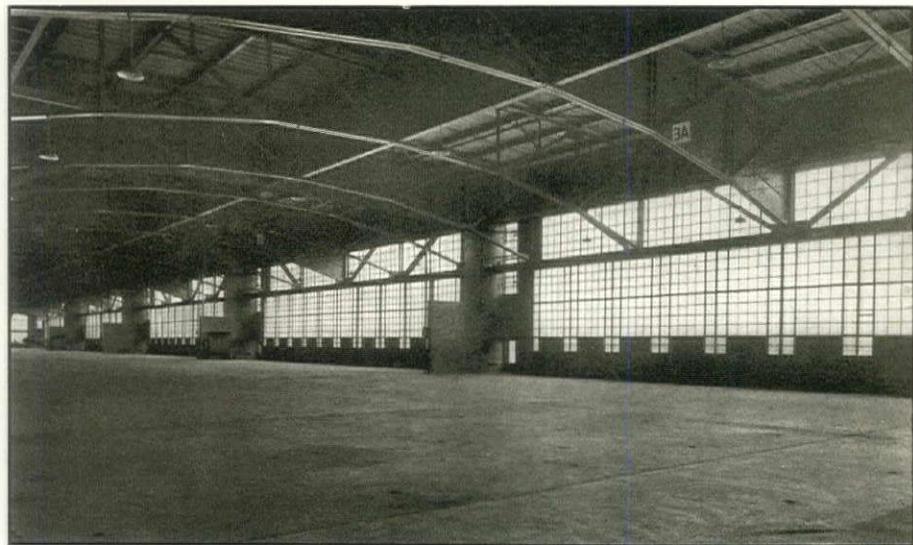
*Manning Bros.*

SOUTH BAY



NORTH BAY

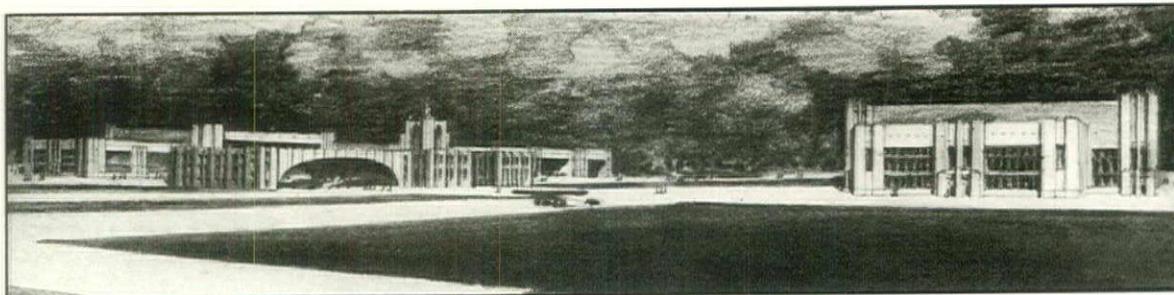
*Courtesy, Detroit Steel Prod. Co.*



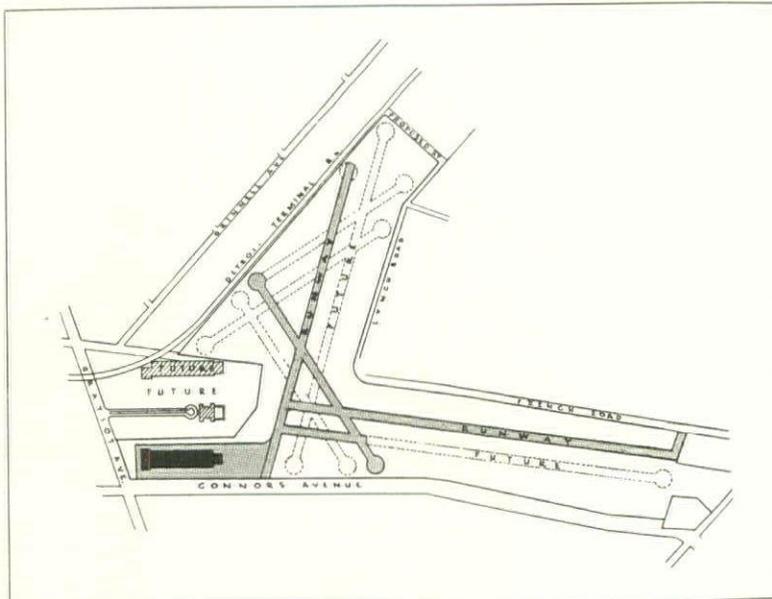
THE INTERIOR

*Courtesy, Detroit Steel Prod. Co.*

DETROIT MUNICIPAL AIRPORT  
DETROIT, MICHIGAN  
CITY ENGINEERING DEPT., ARCHITECTS



PERSPECTIVE OF FUTURE DEVELOPMENT

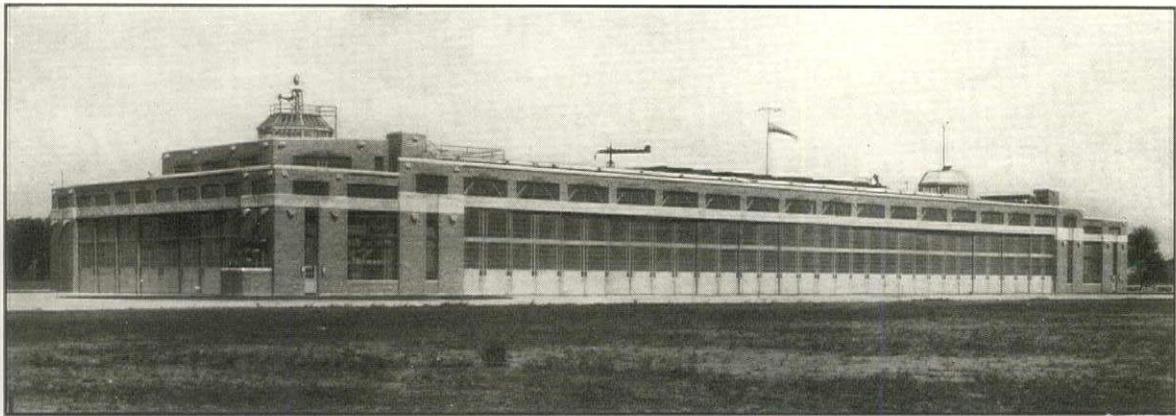


PLAN OF THE AIRPORT

#### COST AND CONSTRUCTION DATA

NAME OF BUILDING: Detroit Municipal Airport.	WINDOWS: Steel pivoted.
LOCATION: Detroit, Michigan.	INTERIOR FINISHING MATERIALS: Salt glazed brick.
ARCHITECT: Bureau of Public Structures, City Engineer's Office.	FLOORS: Concrete with super cement finish.
YEAR OF COMPLETION: 1930.	HEATING (TYPE): Unit heaters.
TYPE OF CONSTRUCTION: Fire resistant.	VENTILATION: Windows.
EXTERIOR MATERIALS: Face brick and limestone.	TOTAL CUBAGE: 9,440,000.
ROOF: Four-ply asbestos on 1/2" insulation, over precast concrete.	COST PER CUBIC FOOT: 11.66 cents.
	TOTAL COST: \$1,100,000.
	AVERAGE PASSENGERS DAILY: 20 to 50.

DETROIT MUNICIPAL AIRPORT  
 DETROIT, MICHIGAN  
 CITY ENGINEERING DEPT., ARCHITECTS



*Ellison*

GENERAL VIEW  
FROM THE FIELD

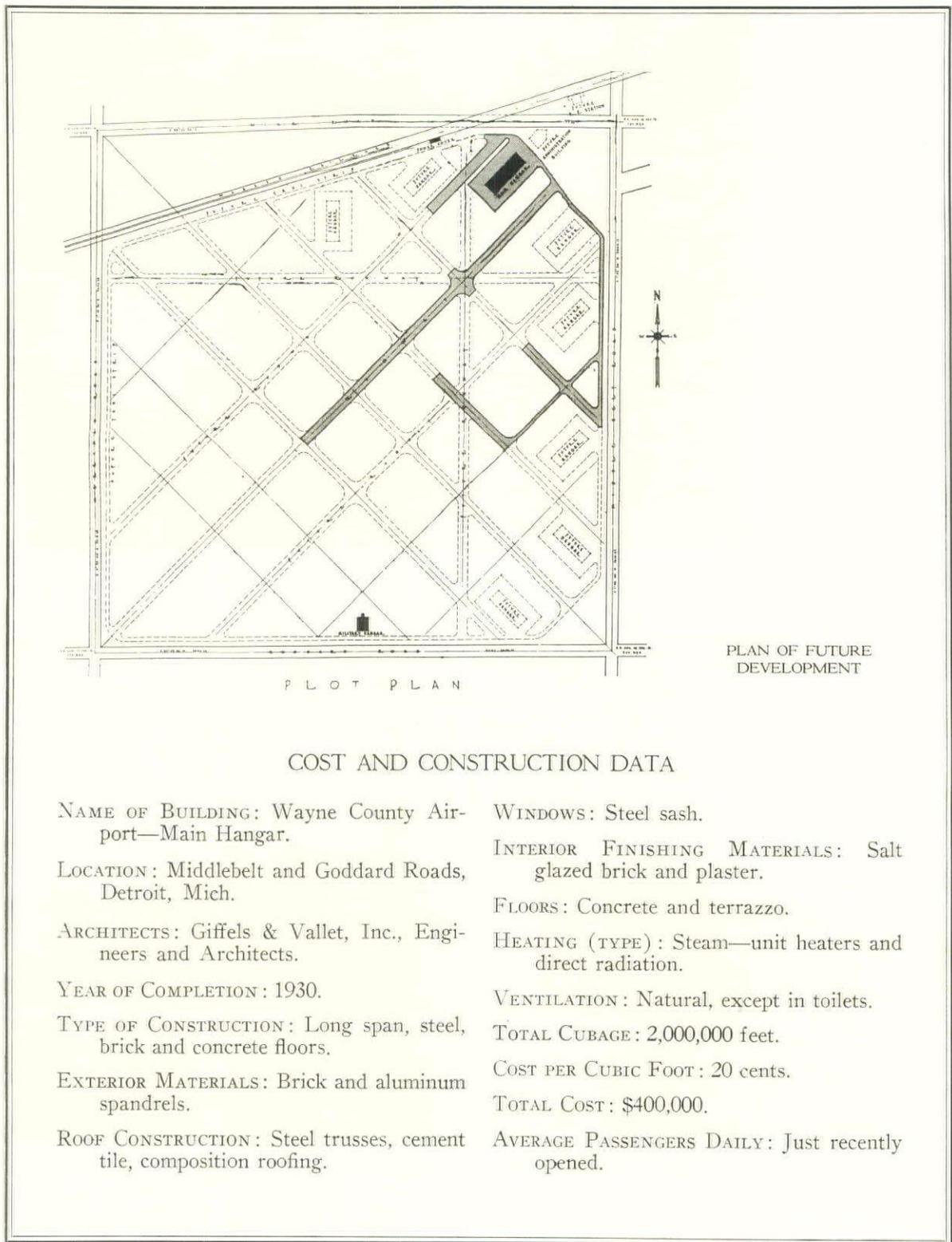


DETAIL OF MAIN  
ENTRANCE AND  
CONTROL TOWER

*Ellison*

MAIN HANGAR  
GIFFELS & VALLET, INC.  
ENGINEERS & ARCHITECTS

WAYNE COUNTY AIRPORT  
WAYNE COUNTY, MICHIGAN



### COST AND CONSTRUCTION DATA

<p>NAME OF BUILDING: Wayne County Airport—Main Hangar.</p> <p>LOCATION: Middlebelt and Goddard Roads, Detroit, Mich.</p> <p>ARCHITECTS: Giffels &amp; Vallet, Inc., Engineers and Architects.</p> <p>YEAR OF COMPLETION: 1930.</p> <p>TYPE OF CONSTRUCTION: Long span, steel, brick and concrete floors.</p> <p>EXTERIOR MATERIALS: Brick and aluminum spandrels.</p> <p>ROOF CONSTRUCTION: Steel trusses, cement tile, composition roofing.</p>	<p>WINDOWS: Steel sash.</p> <p>INTERIOR FINISHING MATERIALS: Salt glazed brick and plaster.</p> <p>FLOORS: Concrete and terrazzo.</p> <p>HEATING (TYPE): Steam—unit heaters and direct radiation.</p> <p>VENTILATION: Natural, except in toilets.</p> <p>TOTAL CUBAGE: 2,000,000 feet.</p> <p>COST PER CUBIC FOOT: 20 cents.</p> <p>TOTAL COST: \$400,000.</p> <p>AVERAGE PASSENGERS DAILY: Just recently opened.</p>
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HANGAR BUILDING  
WAYNE COUNTY AIRPORT  
WAYNE COUNTY, MICHIGAN

GIFFELS & VALLET, INC.  
ENGINEERS & ARCHITECTS



INTERIOR OF  
MAIN HANGAR

*Ellison*



MILITARY  
HANGAR

*Ellison*

HANGAR BUILDINGS  
WAYNE COUNTY AIRPORT  
WAYNE COUNTY, MICHIGAN

GIFFELS & VALLET, INC.  
ENGINEERS & ARCHITECTS

COST AND CONSTRUCTION DATA

NAME OF BUILDING: Wayne County Airport—  
Military Hangar.

LOCATION: Middlebelt and Goddard Roads, De-  
troit, Mich.

ARCHITECTS: Giffels & Vallet, Inc., Engineers and  
Architects.

YEAR OF COMPLETION: 1930.

TYPE OF CONSTRUCTION: Long span, steel, brick  
and concrete floors.

EXTERIOR MATERIALS: Brick and aluminum  
spandrels.

ROOF CONSTRUCTION: Steel trusses, cement tile,  
composition roofing.

WINDOWS: Steel sash.

INTERIOR FINISHING MATERIALS: Salt glazed  
brick and plaster.

FLOORS: Concrete and terrazzo.

HEATING (TYPE): Steam—unit heaters and direct  
radiation.

VENTILATION: Natural, except in toilets.

TOTAL COST: \$100,000.

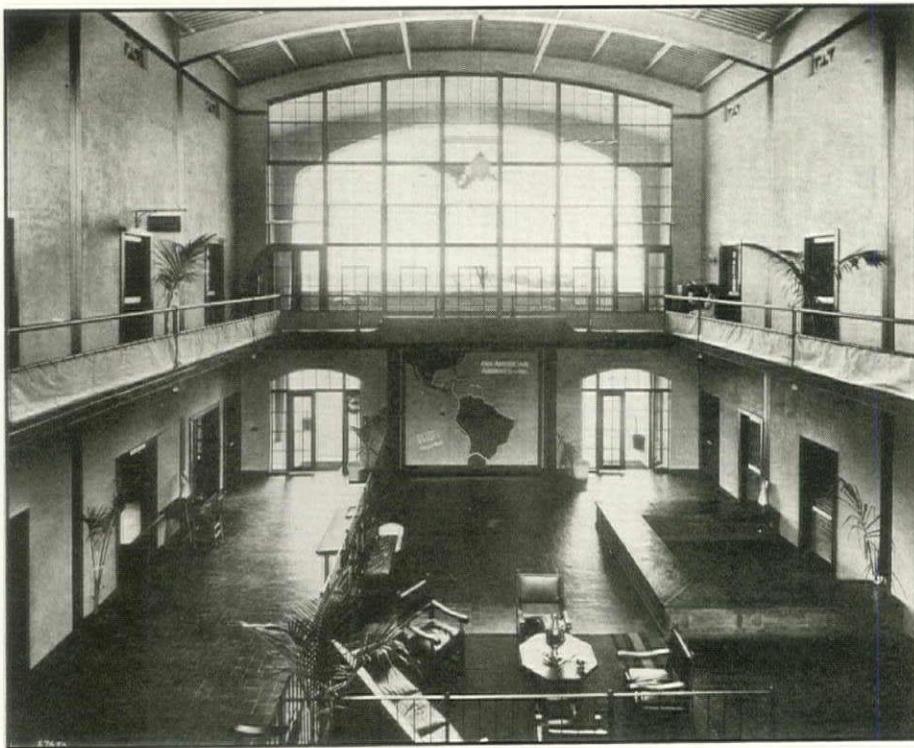
AVERAGE PASSENGERS DAILY: Just recently  
opened.

MILITARY HANGAR  
GIFFELS & VALLET, INC.  
ENGINEERS & ARCHITECTS

WAYNE COUNTY AIRPORT  
WAYNE COUNTY, MICHIGAN

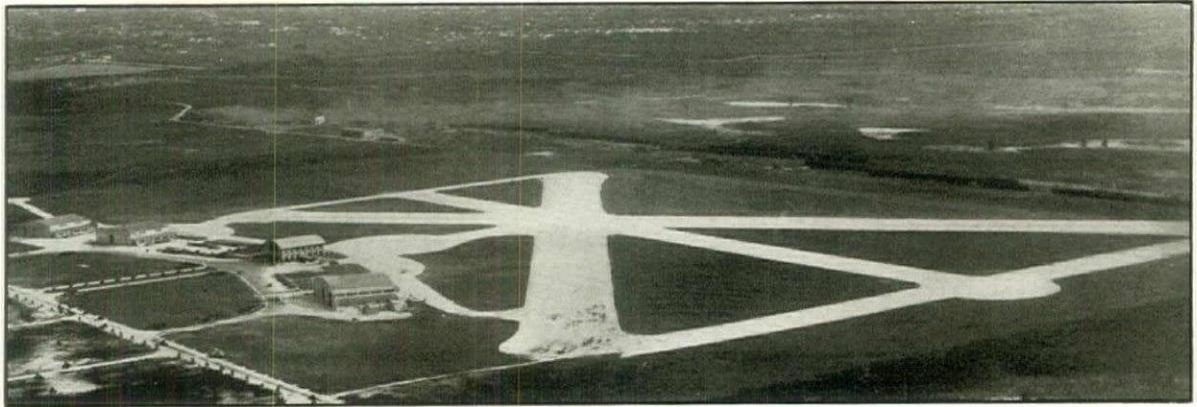


VIEW FROM  
FLYING FIELD

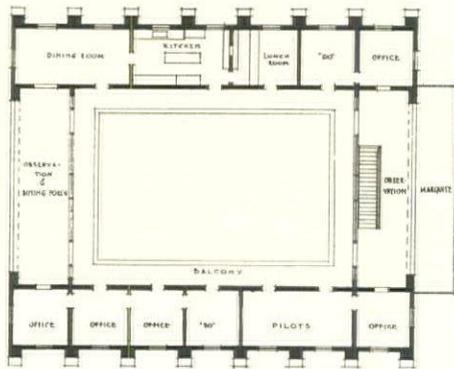


INTERIOR OF  
WAITING ROOM

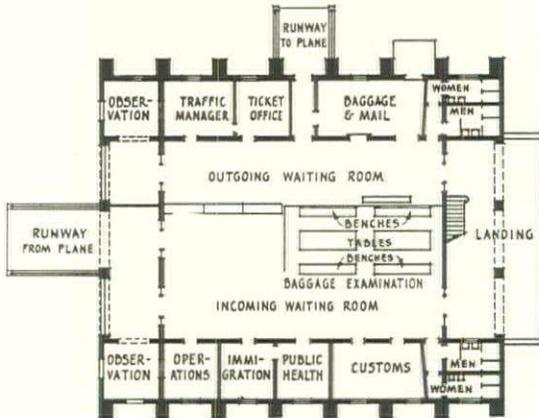
TERMINAL BUILDING  
PAN-AMERICAN AIRWAYS  
MIAMI, FLORIDA  
DELANO & ALDRICH, ARCHITECTS



GENERAL VIEW  
FROM THE FIELD



SECOND FLOOR



FIRST FLOOR

### CONSTRUCTION DATA

NAME OF BUILDING: Miami Terminal, Pan-American Airways, Inc.

LOCATION: Miami, Florida.

ARCHITECTS: Delano & Aldrich.

YEAR OF COMPLETION: 1928.

TYPE OF CONSTRUCTION: Fireproof concrete.

EXTERIOR MATERIALS: Concrete and stucco.

ROOF CONSTRUCTION: Sheet steel slab-painted.

WINDOWS: Metal.

INTERIOR FINISHING MATERIALS: Wood and metal.

FLOORS: Cement.

PAN-AMERICAN AIRWAYS  
MIAMI, FLORIDA  
DELANO & ALDRICH, ARCHITECTS

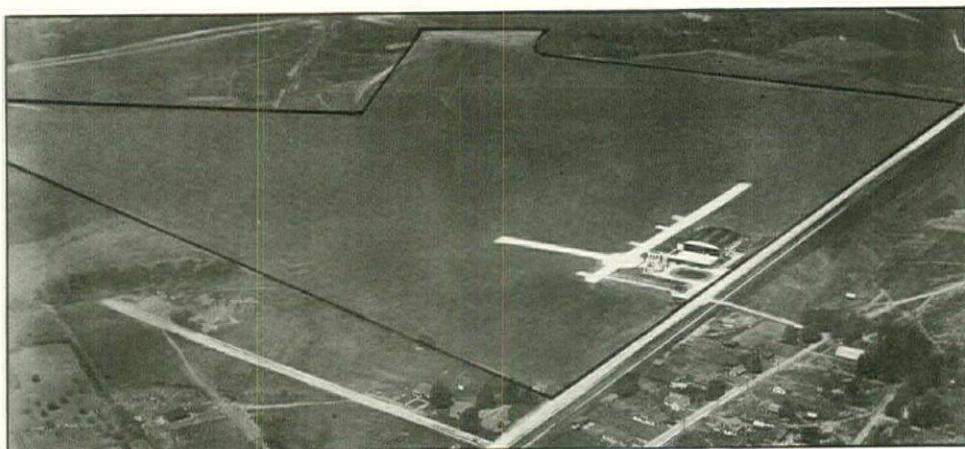


*Cline*



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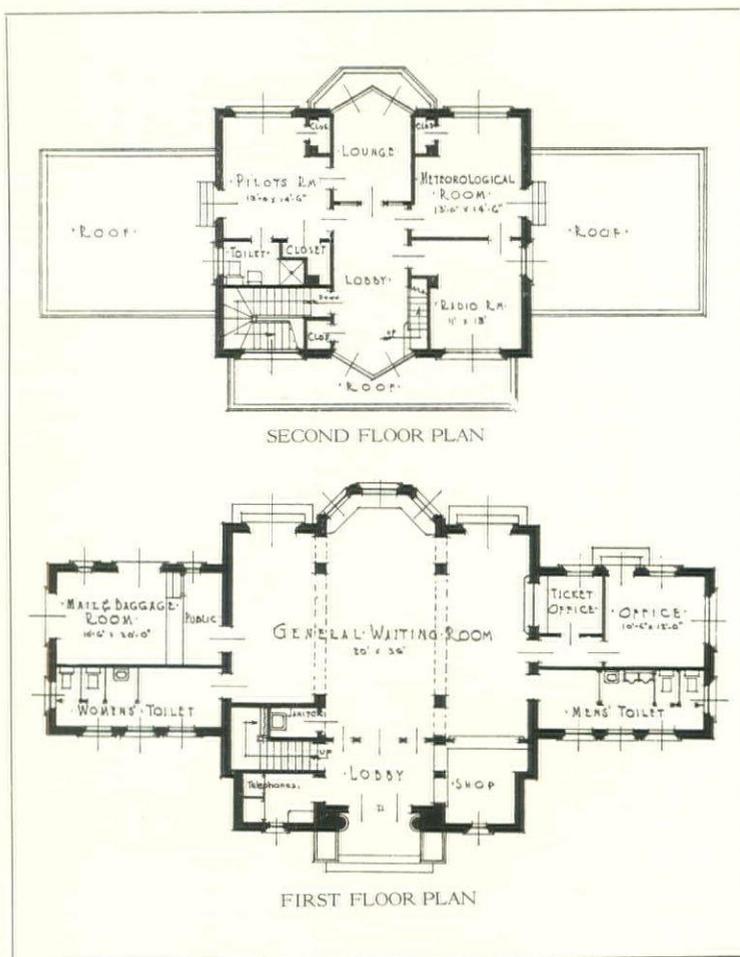
CHATTANOOGA MUNICIPAL AIRPORT  
CHATTANOOGA, TENN.  
WILLIAM CRUTCHFIELD, ARCHITECT



FROM THE AIR

### COST AND CONSTRUCTION DATA

NAME OF BUILDING: Municipal Airport.  
 LOCATION: Chattanooga, Tenn.  
 ARCHITECT: William Crutchfield.  
 YEAR OF COMPLETION: 1930.  
 TYPE OF CONSTRUCTION: Semi-Fireproof.  
 EXTERIOR MATERIALS: Stone and Stucco.  
 ROOF: Built-up Composition.  
 WINDOWS: Steel.  
 INTERIOR FINISHING MATERIALS: Plaster, Wood trim.  
 FLOORS: Wood and Cement.  
 HEATING (TYPE): Steam.  
 TOTAL CUBAGE: Terminal, 52,225.  
 Hangar, 192,000.  
 COST PER CUBIC FOOT: Terminal Building, 42 cents. Hangar, 13 cents.  
 TOTAL COST: Terminal, \$22,000.  
 Hangar, \$25,000.  
 AVERAGE PASSENGERS DAILY: Four mail planes daily. 100 transients per month.



CHATTANOOGA MUNICIPAL AIRPORT  
 CHATTANOOGA, TENN.  
 WILLIAM CRUTCHFIELD, ARCHITECT



Roberts



R. D. Stott

HOLDEN,  
STOTT, AND  
HUTCHINSON  
ARCHITECTS

WASHINGTON AIRPORT  
WASHINGTON, D. C.



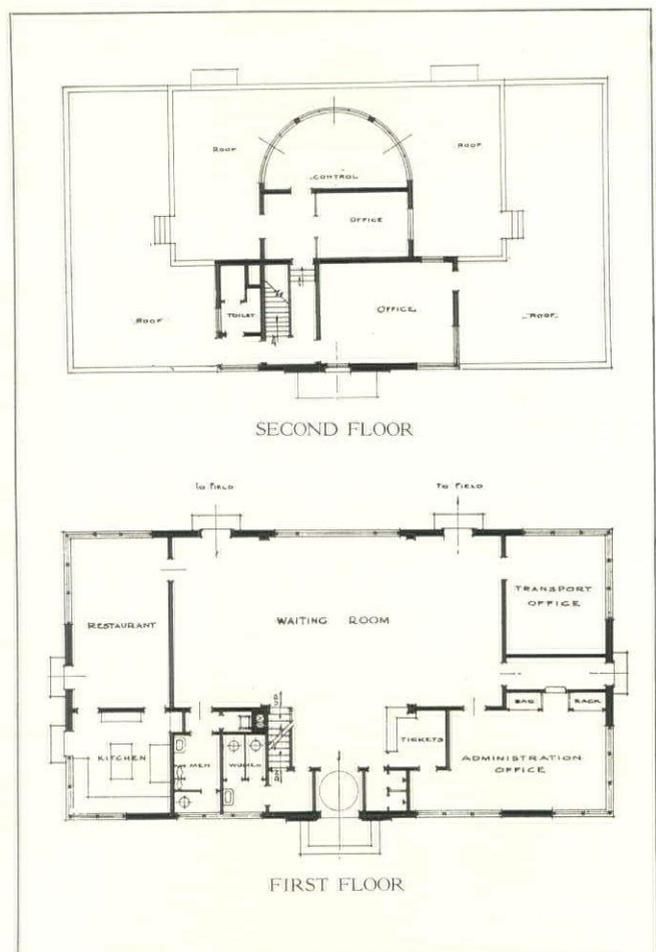
R. D. Stott

VIEW FROM THE  
FLYING FIELD

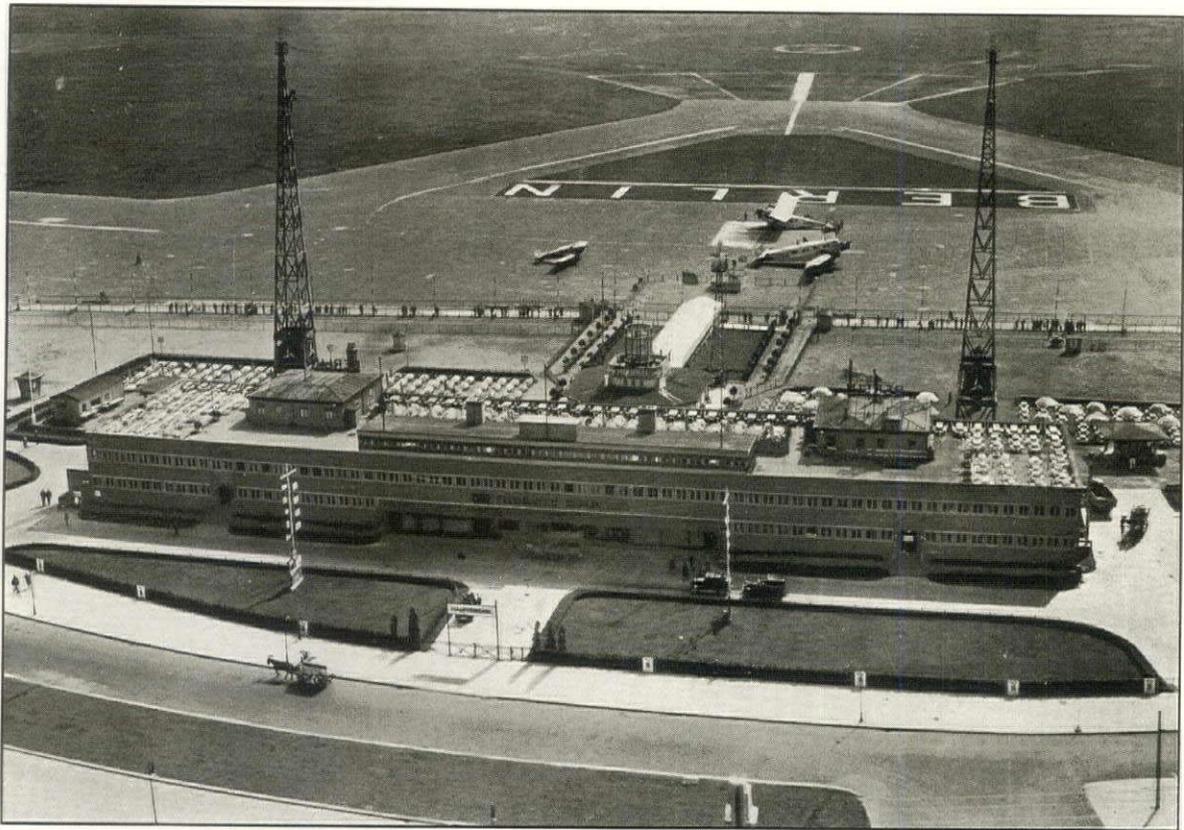
### COST AND CONSTRUCTION DATA

NAME OF BUILDING: Washington Airport.  
 LOCATION: Washington, D. C.  
 ARCHITECTS: Holden, Stott & Hutchinson.  
 YEAR OF COMPLETION: 1930.  
 TYPE OF CONSTRUCTION: Frame.  
 EXTERIOR MATERIALS: Brick veneer base,  
 stucco walls.  
 ROOF: Canvas deck.  
 WINDOWS: Steel Sash.  
 INTERIOR FINISHING MATERIALS: Plaster  
 and Paint.  
 FLOORS: Rubber tile.  
 HEATING (TYPE): Steam.  
 VENTILATION: Windows.  
 TOTAL CUBAGE: 58,000 feet.  
 COST PER CUBIC FOOT: 50 cents.  
 TOTAL COST: \$29,187.78.  
 AVERAGE PASSENGERS DAILY: 50 sightseeing  
 and 30 transport.

HOLDEN, STOTT & HUTCHINSON  
 ARCHITECTS



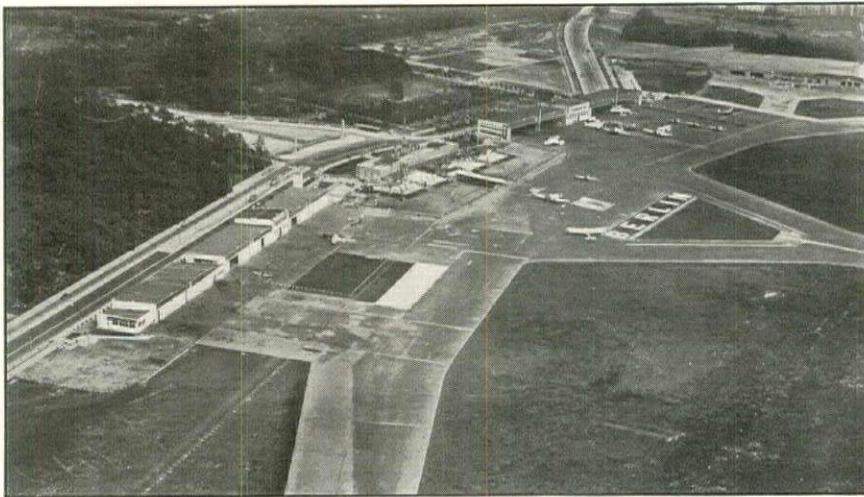
WASHINGTON AIRPORT  
 WASHINGTON, D. C.



*Photos. Courtesy German Information Bureau*

PAUL AND KLAUS ENGLER  
ARCHITECTS

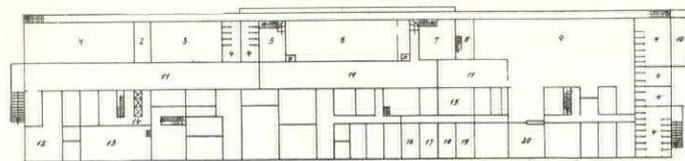
TEMPLEHOF AIRPORT  
BERLIN, GERMANY



GENERAL VIEW  
FROM THE AIR

BASEMENT

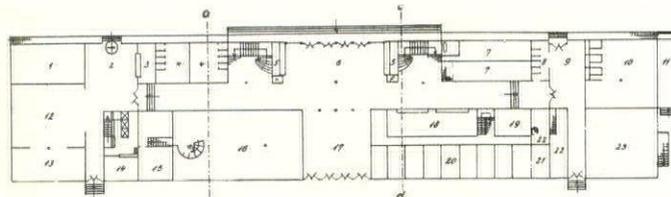
- 1, 2, 3. Kitchen, pantry, etc.
4. Toilets.
5. Police.
6. Boiler room.
7. Travel bureau.
9. Bar.
12. Refrigerator.
13. Bakery.
15. Pneumatic mail tubes.
- 16-19. Switch rooms.
20. Kitchen, storage, etc.



BASEMENT

GROUND FLOOR

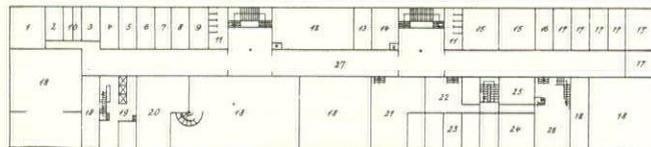
1. Wine room.
- 2, 3. Vestibule and check room.
4. Toilets.
- 6, 17. Main entrance and exit lobby.
7. Barber shop.
8. Telephones.
- 9, 10. Vestibule and post office.
11. Ramp.
- 12, 13. Waiting rooms.
- 14, 15, 16. Pantries and restaurant.
- 18, 19. Baggage and check rooms.
- 20, 21, 22. Flying, weather and customs offices.
23. Lecture hall.



GROUND FLOOR

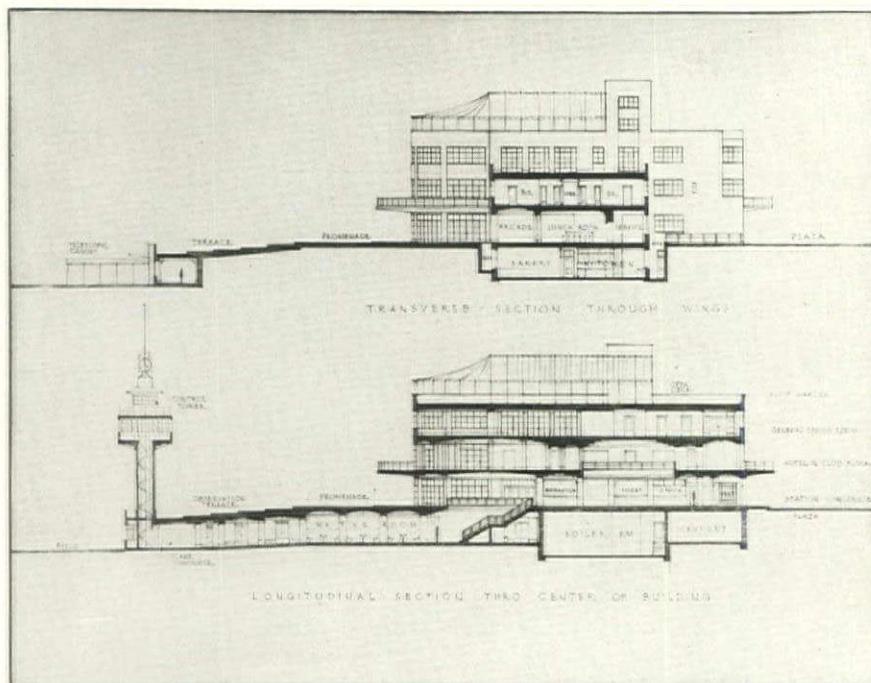
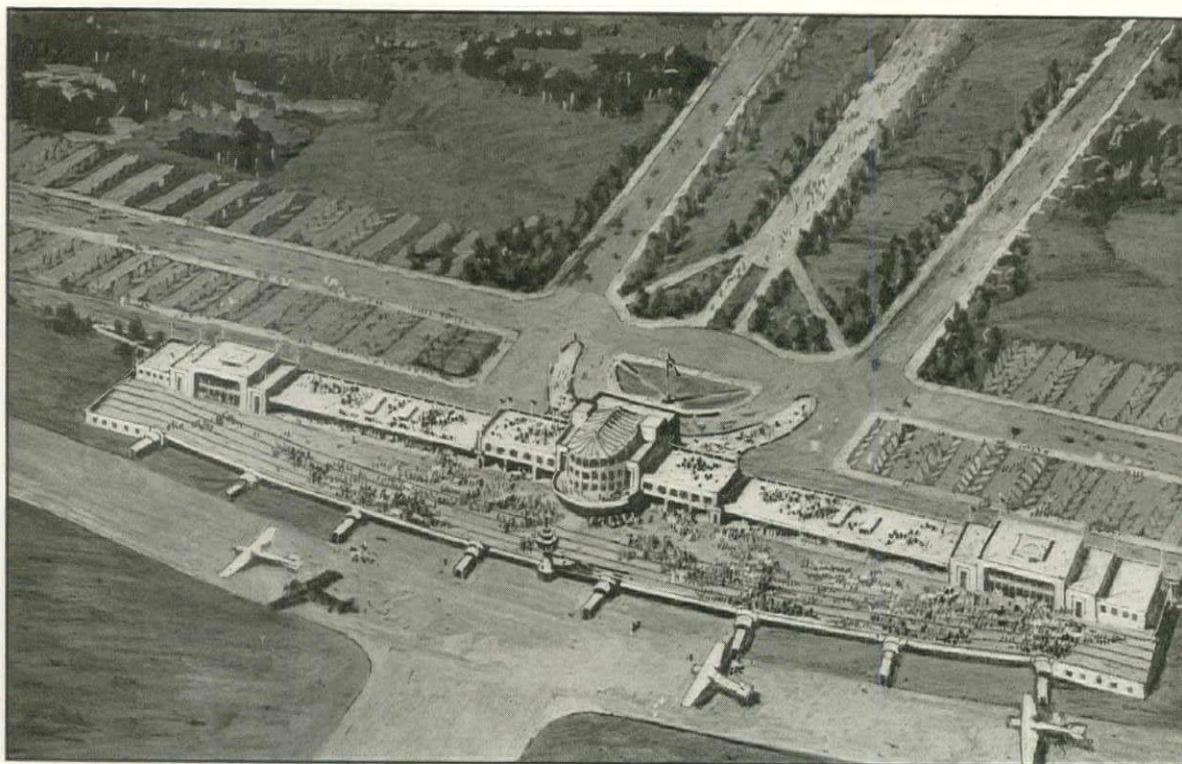
SECOND FLOOR

- 1-10. Living quarters.
11. Toilets.
- 12-16. Offices.
17. Radio rooms.
18. Upper part of restaurants, and lecture hall.
20. Restaurant mezzanine.
- 21-25. Executive offices.

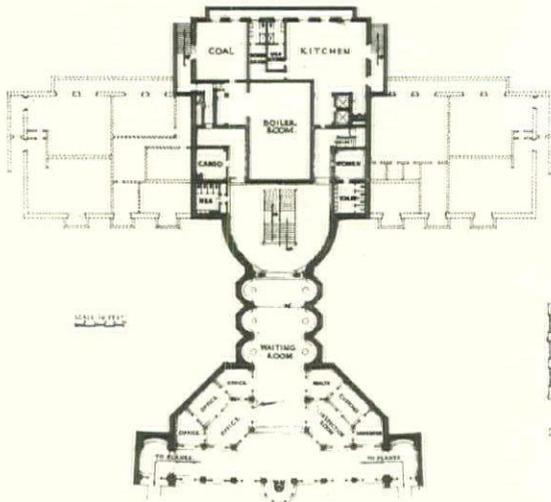


SECOND FLOOR

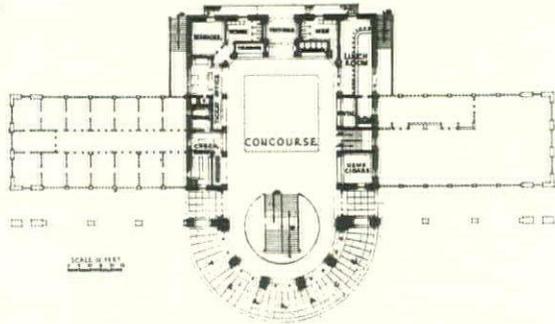
TEMPLEHOF AIRPORT  
BERLIN, GERMANY  
PAUL AND KLAUS ENGLER, ARCHITECTS



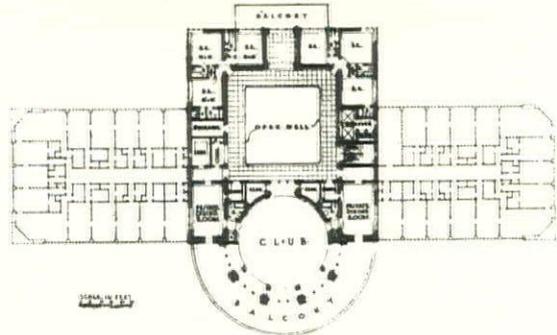
A PROPOSED  
METROPOLITAN AIR TERMINAL  
FELLHEIMER & WAGNER, ARCHITECTS



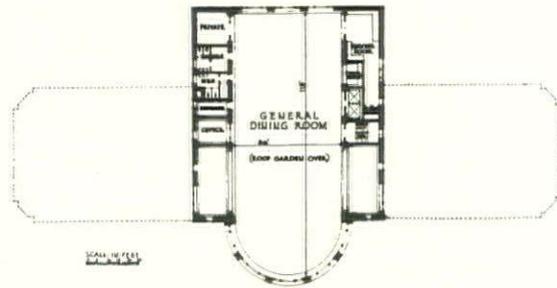
GROUND FLOOR



FIRST FLOOR



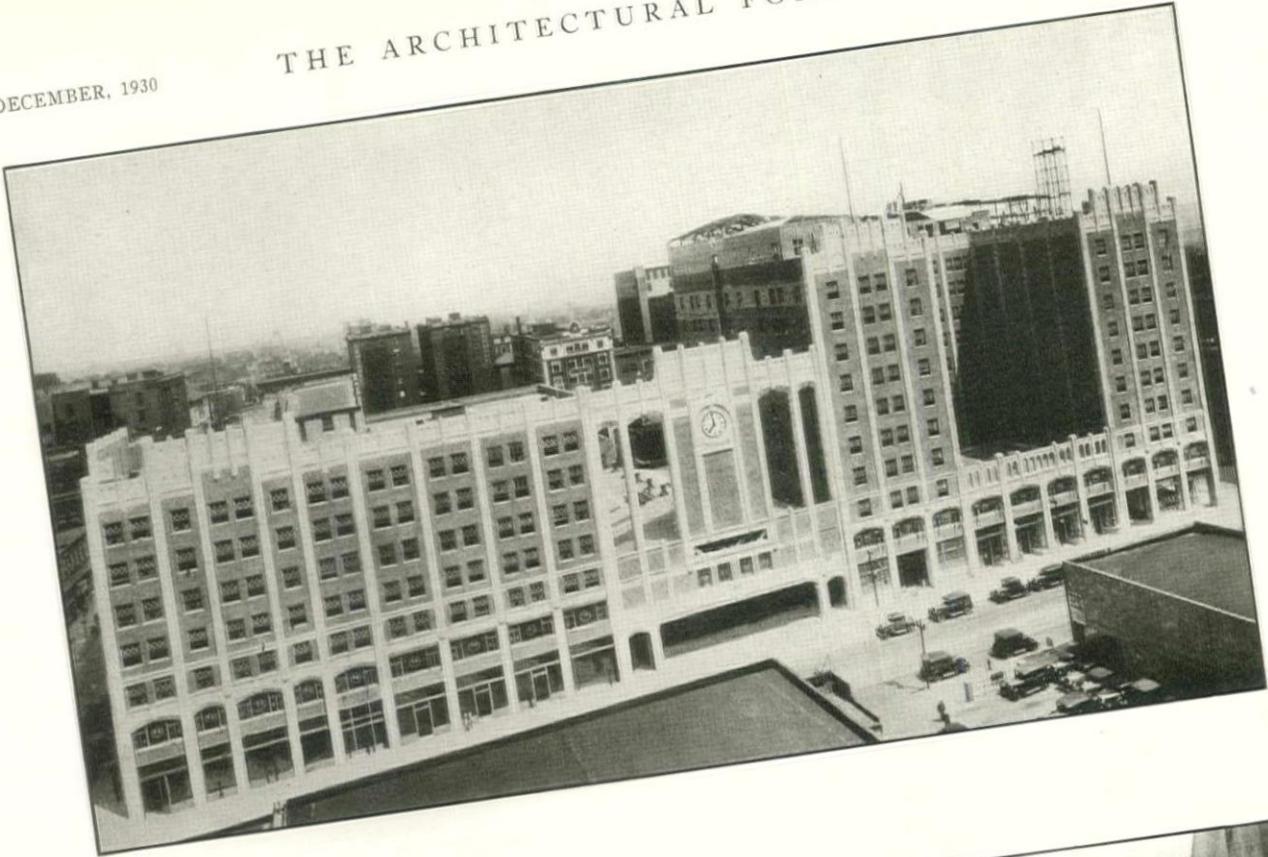
SECOND FLOOR



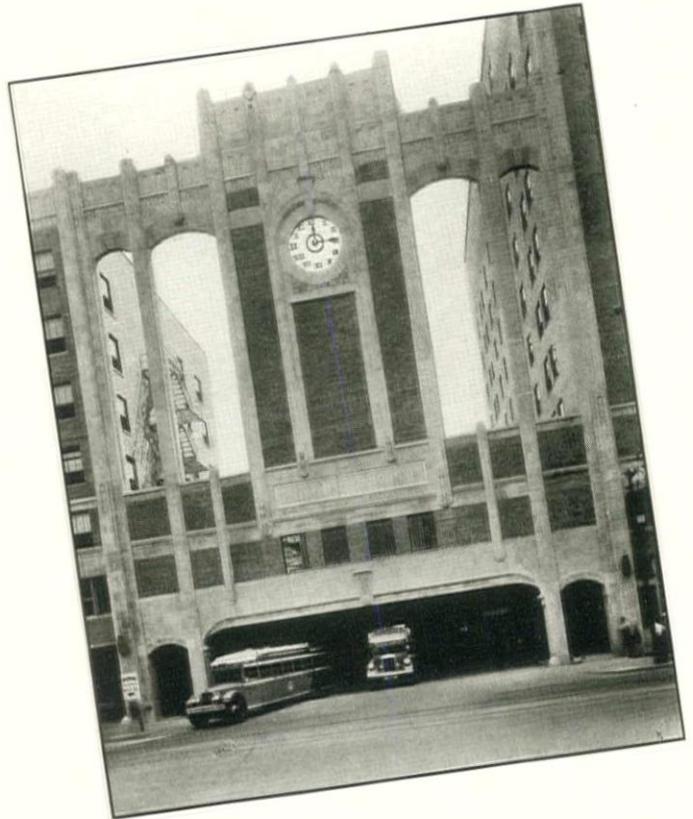
THIRD FLOOR

The project was developed as the terminal point of a large air transport line serving, through land routes, a considerable metropolitan area. The salient feature of the plan considered independently of the layout of flying fields provides for a distinct separation of passengers and spectators. Circulation from the ground floor concourse leads out to a large observation area or down to the department waiting room. Arrivals and departures are controlled from a centrally located station, and passenger traffic is regulated along a corridor facing the field, directly accessible from the waiting room and ticket offices. This project, with the addition of the club and resort facilities, would only be justified in cases where great concentration of air travel facilities were necessary but is worthy of study as an indication of future requirements and a possible solution of many of them.

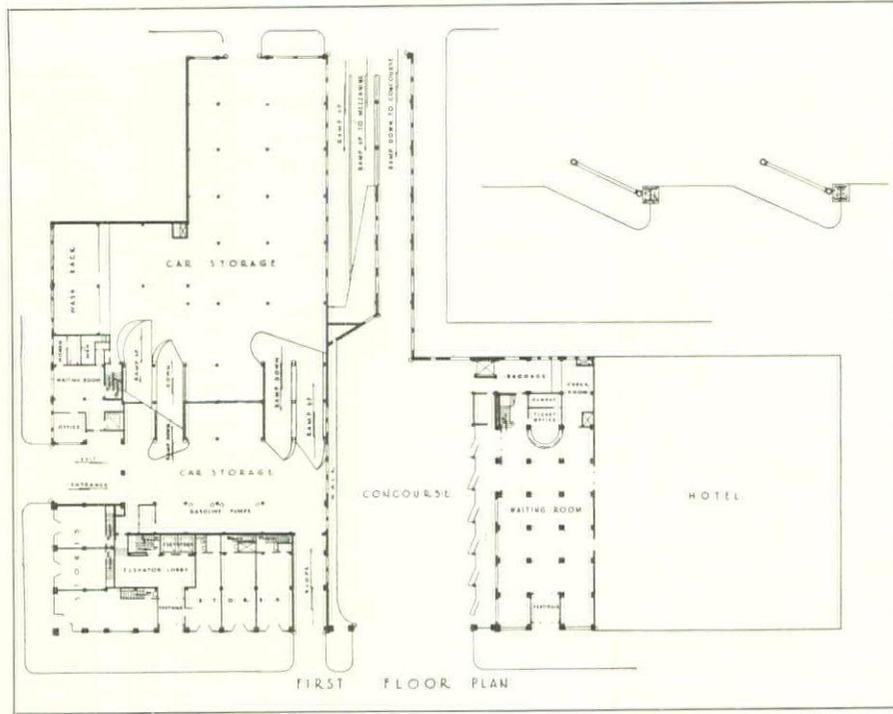
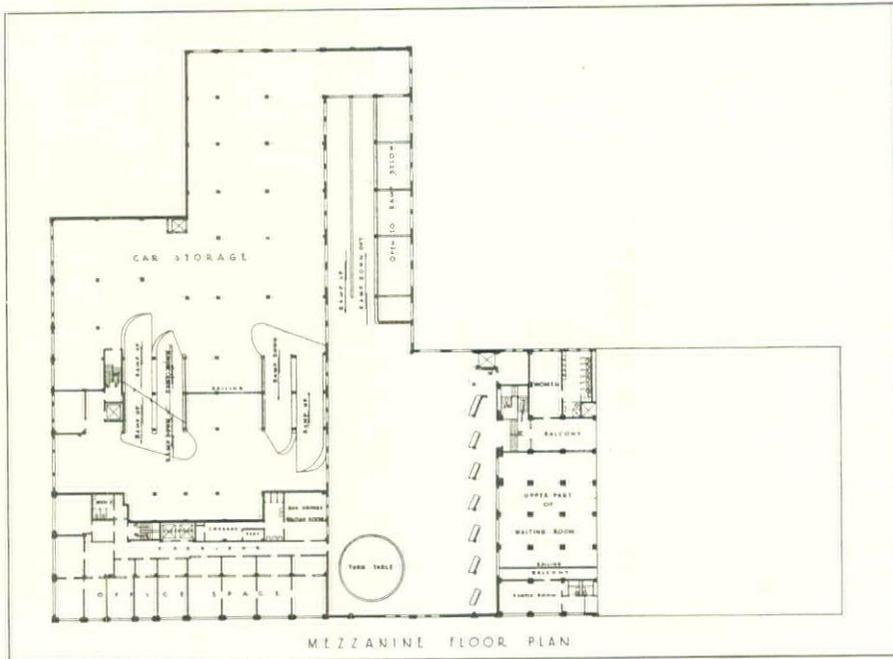
A PROPOSED  
METROPOLITAN AIR TERMINAL  
FELLHEIMER & WAGNER, ARCHITECTS



OFFICE BUILDING, BUS  
TERMINAL AND HOTEL  
(RIGHT) VEHICLE ENTRANCE



INTERURBAN CENTRAL  
BUS STATION  
KANSAS CITY  
WIGHT & WIGHT  
ARCHITECTS



INTERURBAN CENTRAL BUS STATION  
 KANSAS CITY  
 WIGHT & WIGHT  
 ARCHITECTS



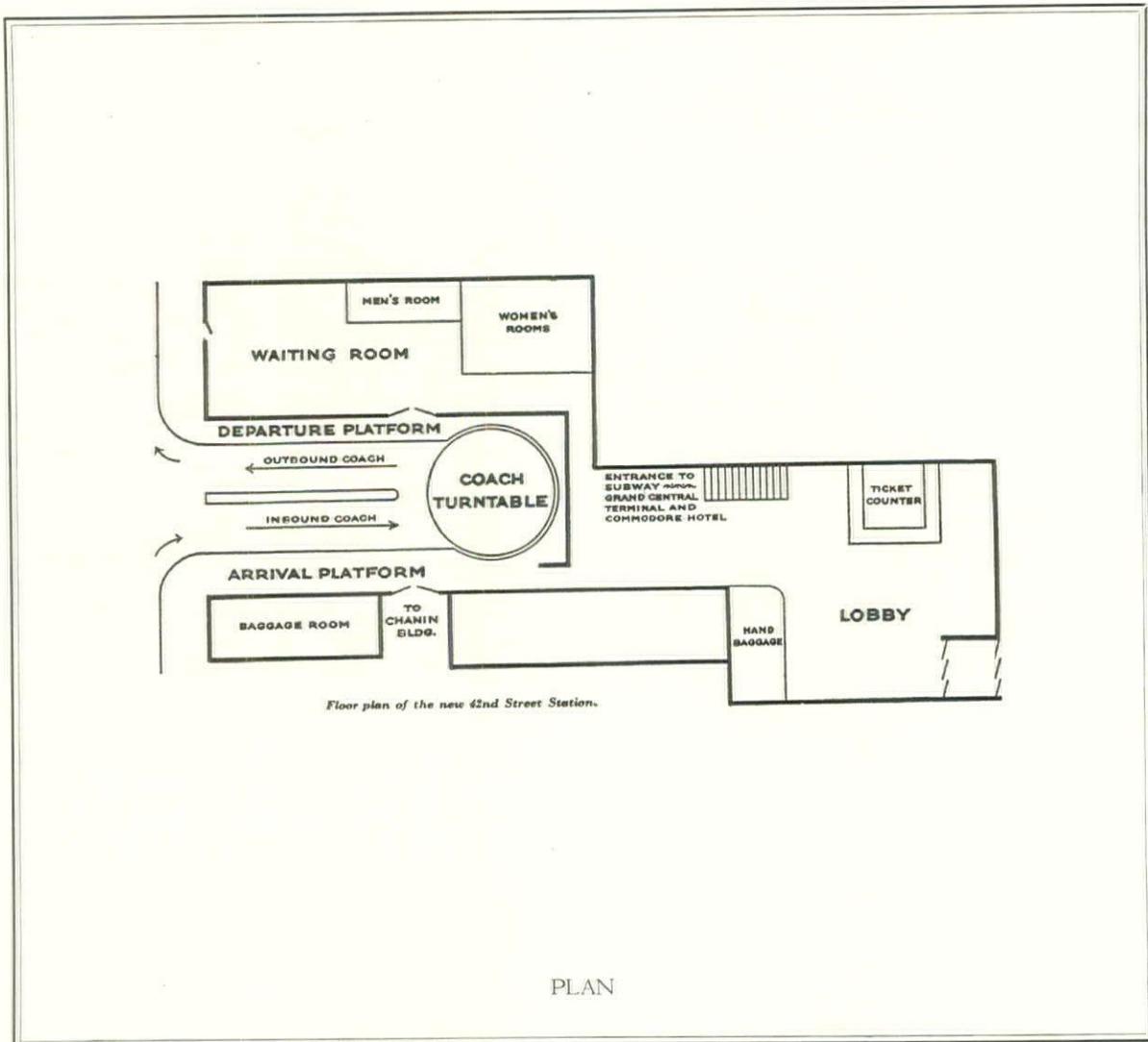
(ABOVE) VEHICLE ENTRANCE

(BELOW) STATION OFFICE AND LOBBY



B. & O. MOTOR COACH STATION  
NEW YORK

SLOAN & ROBERTSON  
ARCHITECTS



B. & O. MOTOR COACH STATION  
 NEW YORK  
 SLOAN & ROBERTSON  
 ARCHITECTS

# BUS TERMINAL PLANNING

By JOHN C. FISTERE

THE design of a bus terminal is based chiefly on two factors,—the type of passengers who use it, and the size and shape of the plot on which it is to be located. To a large extent the problem is not unlike that of a railroad station, which is not strange, since both are details in the business of getting people from one place to another. The degree of comfort and facility with which the bus terminal aids in doing this indicates the degree of success which it reaches.

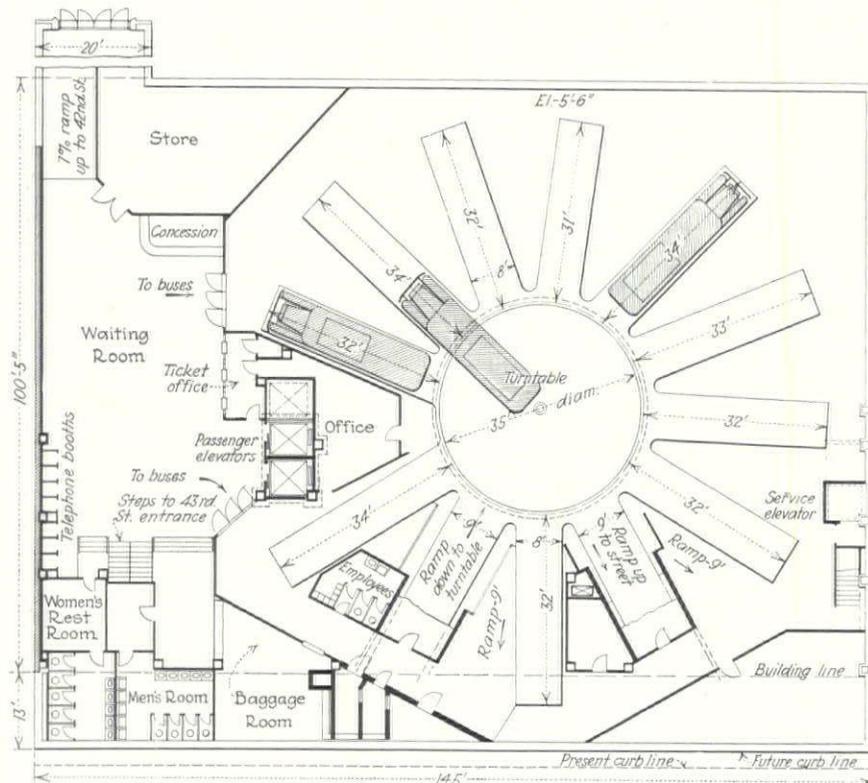
Passengers may be divided roughly into two groups, each of which requires different methods of handling. The first group consists of frequent, short-trip passengers, who need little guidance and a minimum amount of service, and who are perfectly content if they can arrive at the station and leave as soon as possible. The second class consists of the profitable, long-distance passengers, who do not travel very often by bus, and who must therefore, receive much more attention while they are in the station. They come early, are impatient guests, use the waiting room, the concessions, the toilet facilities, and ask a lot of

questions. Both these types use the same stations, which means that the architect must have his mind on the needs of both in creating his plan.

For the frequent, short-tripper, these services must be considered: ready access to the buses from the street and, conversely, ready access to the street from the buses; small waiting room space, few concessions and toilet facilities; and an abundance of loading area. For the infrequent, long-tripper, the station must provide these requirements: abundant waiting room space and adequate concessions, as well as other service accommodations, including a prominent information desk; convenient toilet facilities; and baggage room space. The proper relation between these two sets of requirements, even though they may be contrary, will produce an efficient bus station.

In general, there are two types of bus terminals, just as there are two types of railroad station,—the stub type and the through type. As their names suggest, the first is located at the end of a route, through which traffic does not pass, but ends; and the second is the type of station

Plan of the Central Union Bus Terminal in the basement of the Dixie Hotel, New York, showing the ramps leading from the street to the turntable and loading area. Emery Roth, Architect





Stairs leading from waiting room to loading platforms in Madison, Wis., station of Wisconsin Power & Light Co.

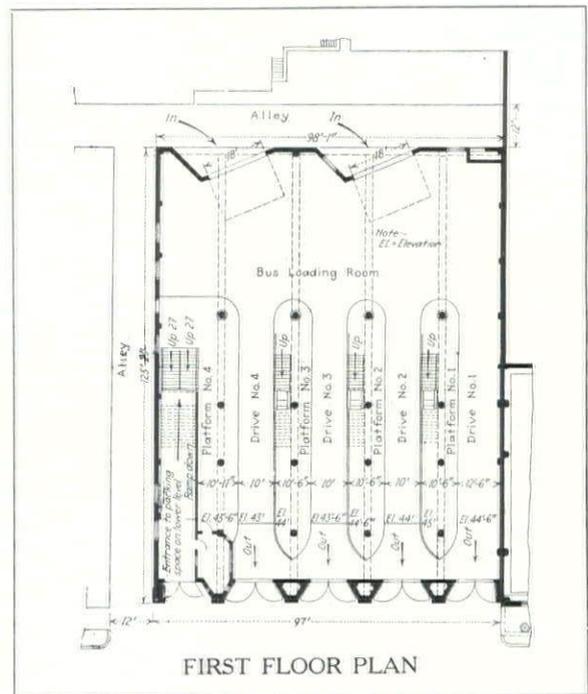
located along the route which accommodates vehicles from two or more directions.

Since the chief interest lies in getting the bus into the station and out again, and in loading and unloading passengers and baggage, that is of primary importance in the plan. Two methods may be used to attack the problem, depending on the location and size of the plot as well as the further requirements of the station. The loading area may be on the same level as the waiting room, or it may be below it; in very rare instances, the loading area could be placed above, but this occurs only when the station has two levels, as in the Kansas City terminal, designed by Wight & Wight, Architects, and illustrated elsewhere in these pages. In that case, the terminal was located on a steep hill, and the design was created to take advantage of the natural ramps which that condition offered.

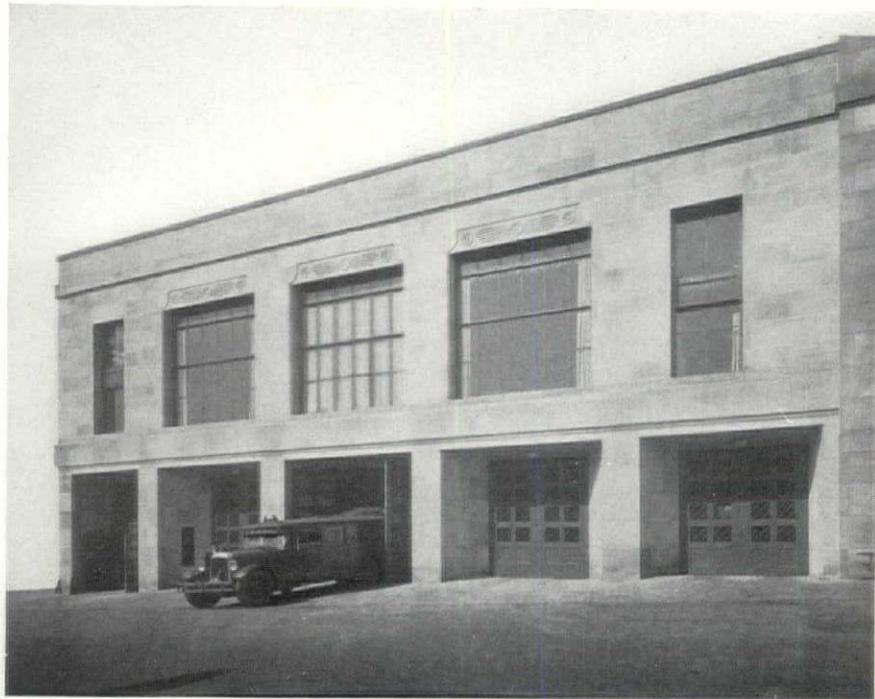
If the plot runs from one street through to a parallel street, the obvious method of providing ingress and egress is to have the vehicular passage run straight through, with loading platforms parallel to the passage. This is most easily accomplished when the waiting room is above the loading level, for it is then possible to have the passengers pass over the traffic lanes. This is the same principle that is applied in railroad stations which have island platforms for three or more tracks. If this plan is utilized in a through station, it is advisable to have separate stairways or ramps for arriving and departing passengers, leading from the overhead passage to the platforms.

If the waiting room is on the same level with

the loading area, the straight-through drive cannot be utilized, because it would be necessary to have the passengers go upstairs to get above the traffic lanes, and then down to reach the buses. There are two alternatives which have proved successful in handling this situation. The first is illustrated in the Kansas City terminal, which



Island platform type station with angled entrance drives. Wisconsin Power & Light Co. station at Madison, Wis.



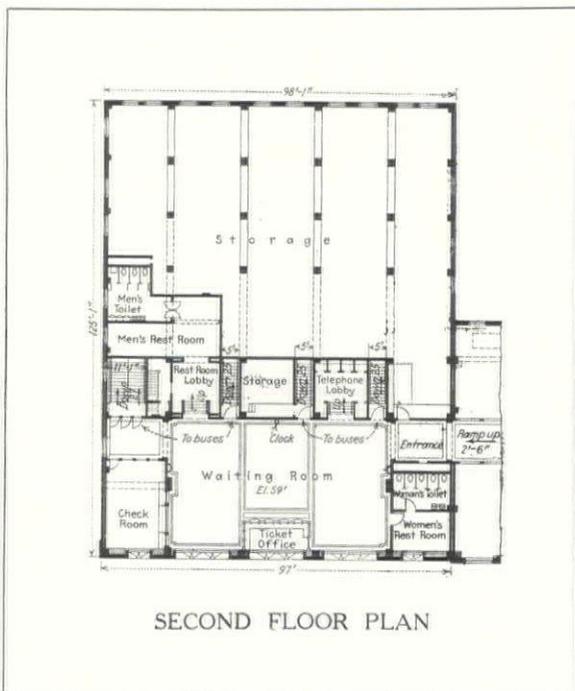
Street facade of Madison, Wis., station of Wisconsin Power & Light Co. showing swinging double doors in deeply recessed entrances

employs the sawtooth platform along the sides. The bus enters, runs past the platform to be used, turns slightly, and backs in, all without undue maneuvering. The second plan is to have the platforms in a stall arrangement, at right angles to the drive, an example of which is the Fresno, Cal., station. This, of course, requires a turntable

if backing and turning are to be avoided. The Fresno station does make use of the sawtooth platform for unloading, but the rest of the platforms are arranged in stalls.

It should be mentioned at this point that some bus companies have seen fit to have their loading areas in the open, either in a public street or a private alley. Under these conditions, the architect's problem involves nothing more than the creation of a waiting room and the necessary facilities. An example of this is the Fifth Avenue Coach station, West 36th Street, New York, which permits only one-way traffic in a narrow alley, with no provision for future growth. If, for instance, two or three buses were to arrive at the same time, the lane would become bottled up with a possible delay of several minutes to the last bus. This plan, however, might be used on a strictly stub terminal, provided adequate shelter were provided for the entire length of the alley.

In many cases, the straight-through drive will not be possible, because most plots face on streets at right angles to one another or on only one street. Two prominent examples of the latter type are the B. & O. station on the first floor of the Chanin Building in New York, and the Central Union Bus terminal in the basement of the Dixie Hotel in the same city. Where the terminal faces on two streets, the designer has several possible plan solutions, the most efficient type of which is, perhaps, that of the Madison terminal of the Wisconsin Power & Light Co. In this station, the waiting room is above the loading area,



SECOND FLOOR PLAN

Office and waiting room facilities of Madison station grouped on second floor with four entrances to loading area below



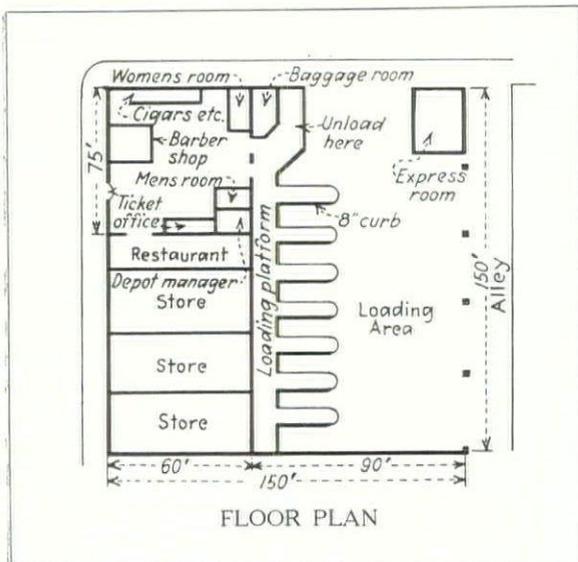
The baggage and parcel office of the B. & O. station on the first floor of the Chanin Building in New York. Exit from the unloading platform is at the right, and the company offices are in the mezzanine above. Sloan & Robertson, Architects

and stairways lead down to the island platforms. The two entrances to the building are set at an angle of 45 degrees, each of which leads to one of two platforms. The angled entrance allows

the buses to make the turn at an easy pace, and eliminates backing and turning after the bus has entered the building.

One Chicago terminal architect was faced with the same problem with the exception that his waiting room had to be placed on the same level as the loading area, which cut out island platforms and overhead passage. He placed his drive on the exterior of the building, providing a curved turn at the corner. The same difficulty of bottling up traffic would occur in this plan if a few buses arrived off schedule at the same time. The Portland, Ore., station is planned on the same general principle except that the turn is effected inside the building, with the loading areas located on the turn itself, thus permitting the bus to make the swing in two movements.

While it has never been put into effect, a plan has been designed by LeRoy Rothschild of Philadelphia which makes use of a uniquely shaped platform, curved, with a protrusion at one end to bring the bus-door up to the platform. The platforms were to be of the island type, with an overhead passage. The driver runs past the end of the platform and backs slightly, cutting his wheels to bring the door on line with the platform extension so that passengers need not step down.



A Fresno, California bus station showing typical opportunity for improvement through architectural planning



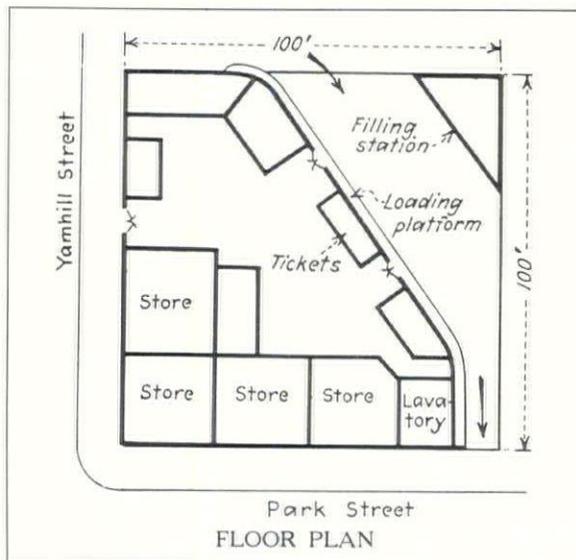
The ticket and information desk of the B. & O. bus station in New York. Entrance to the station is from the right and the tunnel to the loading area is to the left. Sloan & Robertson, architects

Depending upon the amount of traffic which the terminal must handle, there are two solutions of the problem presented by the one-street site either of which may be employed. For light traffic, the B. & O. station in New York suggests a plan that appears most logical. It has two parallel lanes, which lead to a turntable. A bus enters and deposits its passengers on a platform which leads into a tunnel to the ticket office, baggage room and the street; the bus then advances to the table, and is swung completely around to face the outgoing lane. Passengers are admitted to the bus from the waiting room on the side. The difficulty with this plan is that the waiting room and loading area are separated from the ticket and baggage offices.

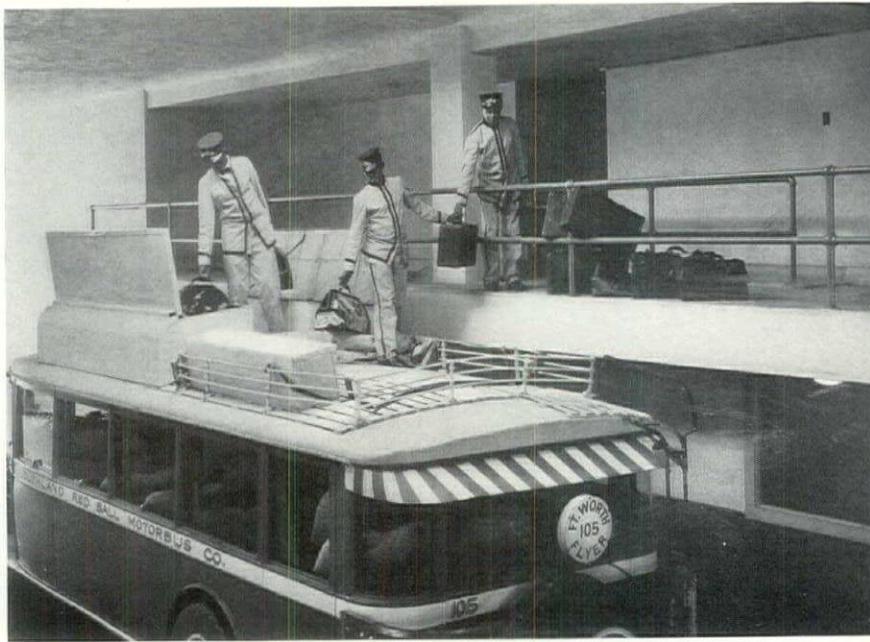
For heavy traffic, a most ingenious plan has been worked out for the Central Union Bus terminal in New York. Here, two oblique lanes at street level lead down to a turntable, off of which are ten short lanes to accommodate waiting buses. In appearance, the plan is much like a wheel with 12 spokes (page 709). By placing the terminal in the basement of a hotel, the owners were able to locate it in the heart of the metropolis.

The problem of planning a bus waiting room is just about the same as the problem of planning a

railroad station waiting room. If possible, the ticket offices should be on a direct line from the street to the loading area, or, at least, in a prominent position. It is advisable to handle baggage



The Portland, Oregon, station, which employs the oblique drive through the building with station facilities all on one side



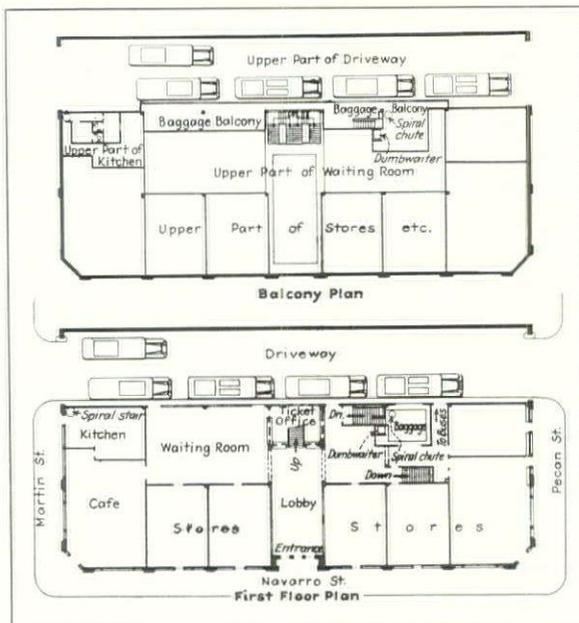
Loading baggage from a balcony in the Greyhound Union Terminal in San Antonio, Texas.

with as little interference with the passengers as possible. Separate entrances to the loading area should be provided if possible. If the buses are of the type which carries baggage on the top, a platform or balcony above the loading area is most convenient. Some buses store baggage at the rear, which means that unless an exclusive entrance to the platform is provided, considerable congestion will result at loading time. In all cases, luggage

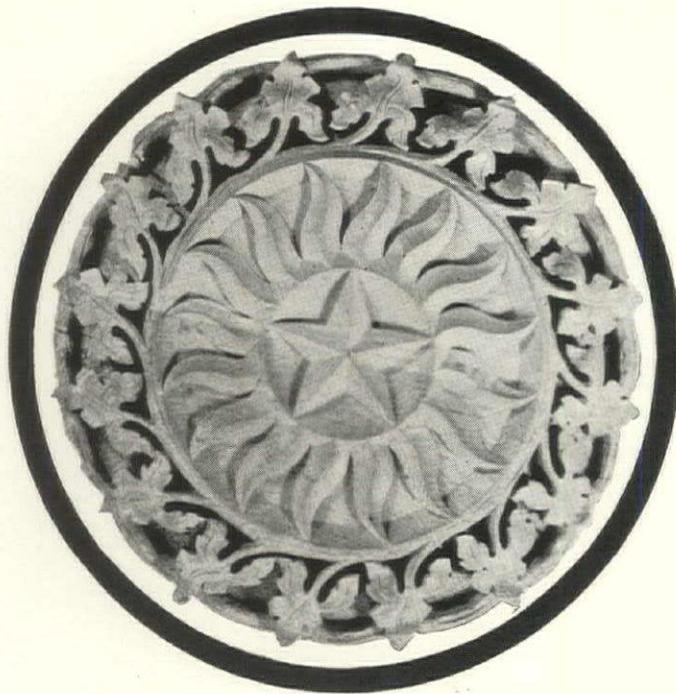
must be handled by attendants as far as the waiting room, where a baggage room should be provided. The inconvenience which would result from giving the passengers their luggage immediately upon alighting is obvious.

As in railroad stations, the waiting rooms should be directly accessible to the loading area, and, if possible, in view of it. One plan which has been adopted is the installation of a glass partition between, which permits impatient passengers to watch the arrival and departure of all buses. In time this may not be necessary, but at present, with bus transportation somewhat of a mystery, passengers are more concerned about missing a bus than they are about missing trains. The loading area ought to be visible from the lunch room as well. An information booth, toilet and wash rooms, newspaper, cigar and candy counters, a bootblack stand, and perhaps a haberdashery shop, drug store and florist shop are some concessions which ought to be arranged for in a terminal of any size. It has been estimated that the concessions should take care of at least 75 per cent of a terminal's running expenses.

Since the present development of bus terminal design indicates problems analagous to those in railroad station planning, the future solution of efficient terminals is likely to be found in studying the methods of railroad station architects, and adapting the findings of their experience. The same principles of circulation discussed by Alfred Fellheimer in this issue are the same principles which should be embodied in bus terminal design.



The straight-through drive, San Antonio Union Terminal, which employs the baggage-loading balcony, with stairs for attendants and a spiral chute for baggage



THESE BOSSES IN THE WOOD CEILING OF THE PRINCETON CHAPEL WERE DESIGNED BY CRAM & FERGUSON, AND EXECUTED BY THE WOOD CARVING DIVISION OF THE AMERICAN CAR AND FOUNDRY COMPANY.

*Among the other users of a.c.f. architectural woodcarvings are the following:*

ARCHITECTS: Carrere & Hastings, J. Walter Cope, Chas. L. Klauder, Delano & Aldrich, John M. Deibert, Tilton & Githens, Raleigh C. Gildersleeve, Bertram, Grosvenor Goodhue Associates, Henry F. Hornbostel, Charles Platt, John Russell

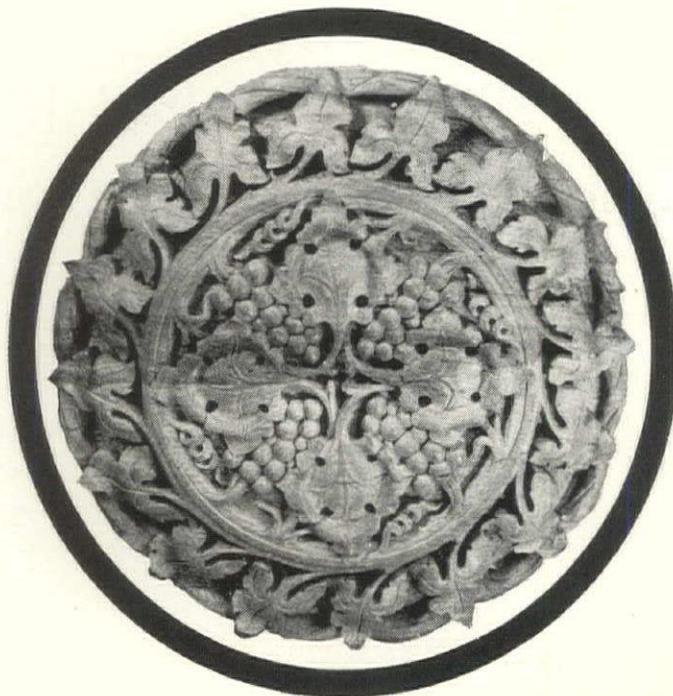
ARCHITECTURAL  
WOOD CARVING

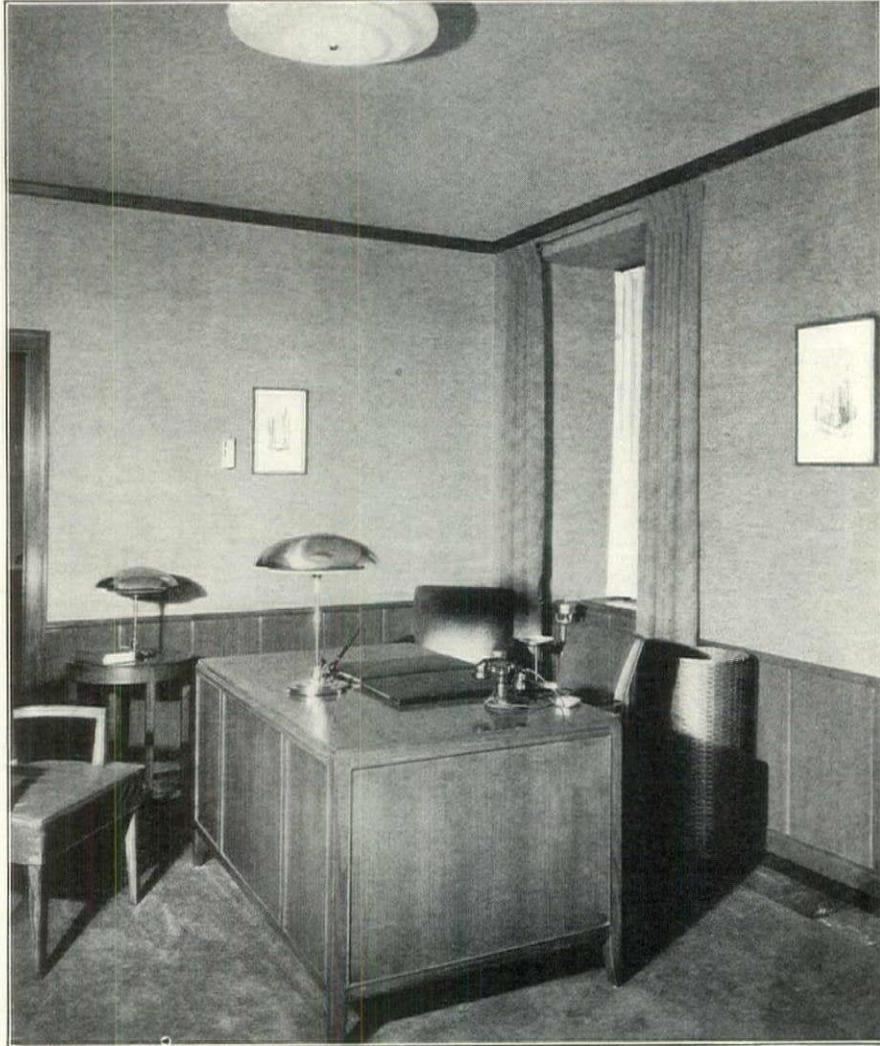
a.c.f.

Pope, Albert H. Spahr, Warren & Wetmore, and Zantinger, Borie & Medary.

BUILDERS: John W. Barnes, Inc., duPont Engineering Co., Longwood Farms, Matthews Construction Co., Smyth Construction Co., James Stewart & Co., Inc., James L. Stuart.

AMERICAN CAR AND FOUNDRY COMPANY • WILMINGTON, DELAWARE





*Office of Fred H. Clutton  
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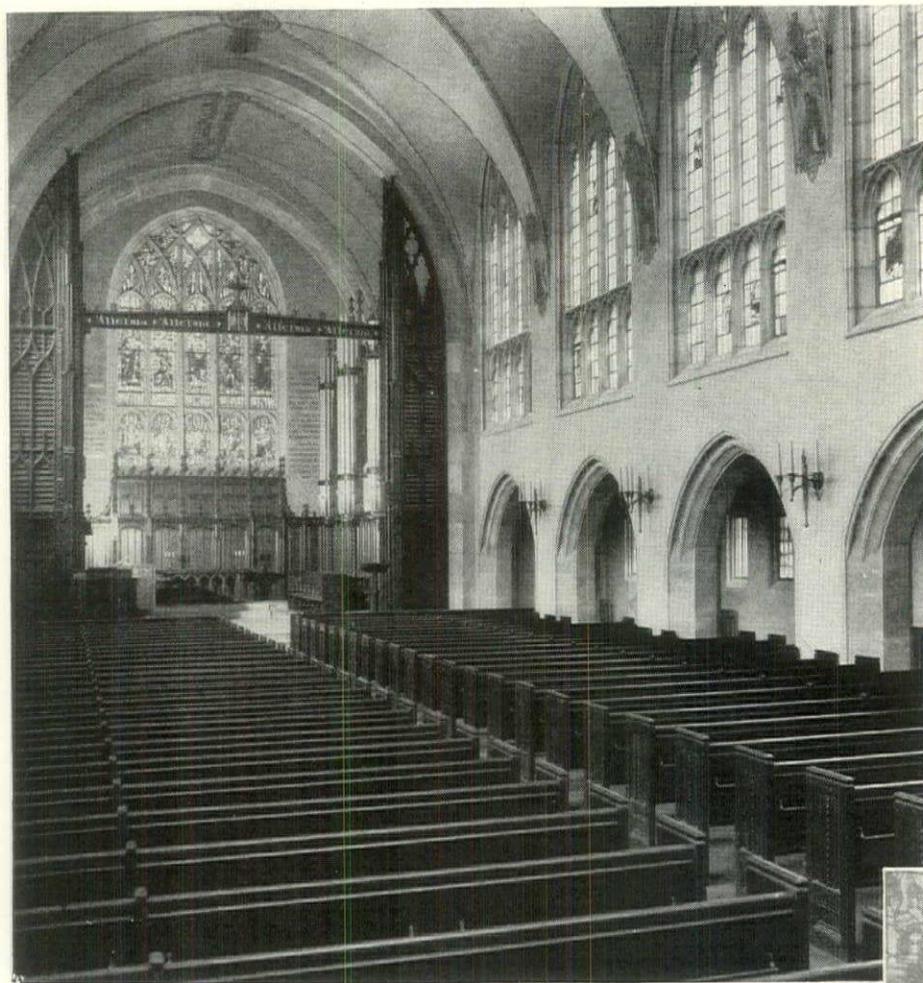
PHILADELPHIA  
1528 Walnut Street

CHICAGO  
1512 Heyworth Building

PARIS  
50 Faubourg Poissonniere

SAN FRANCISCO  
442 Post Street

LOS ANGELES  
816 South Figueroa Street



Where  
Tradition  
Is  
a Guide,  
Not  
a Master

Congregational Church, Kalamazoo, Mich.  
Architect: Aymar Embury, II, New York City.  
Woodworker: Manitowoc Church Furniture Co.

Tradition is a guide but not a master to those architects who have learned for themselves the merits of American Walnut in the decoration of church interiors. Just as they have forsworn the gloominess of candle-light in favor of modern lighting, they have substituted the mellow, softer beauty of American Walnut for the harshness of the materials employed by designers of the distant past.

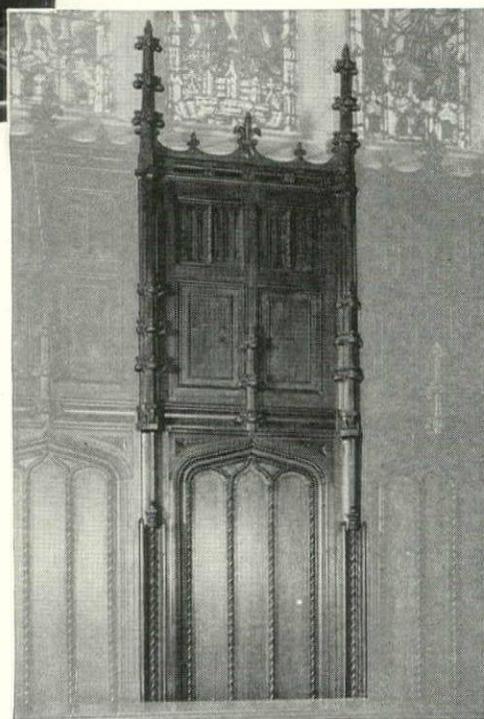
For architects, adapting the traditional to the needs of today, find that no material so serves to embellish fundamental, structural unity as does American Walnut. No other adds those grace notes of design to the "frozen music" of a composition. American Walnut covers bareness without monopolizing attention. It glows with warm color without being ostentatious. It provides texture to a broad surface without being obtrusive. And it is equally beautiful in broad expanses or intricate carvings.

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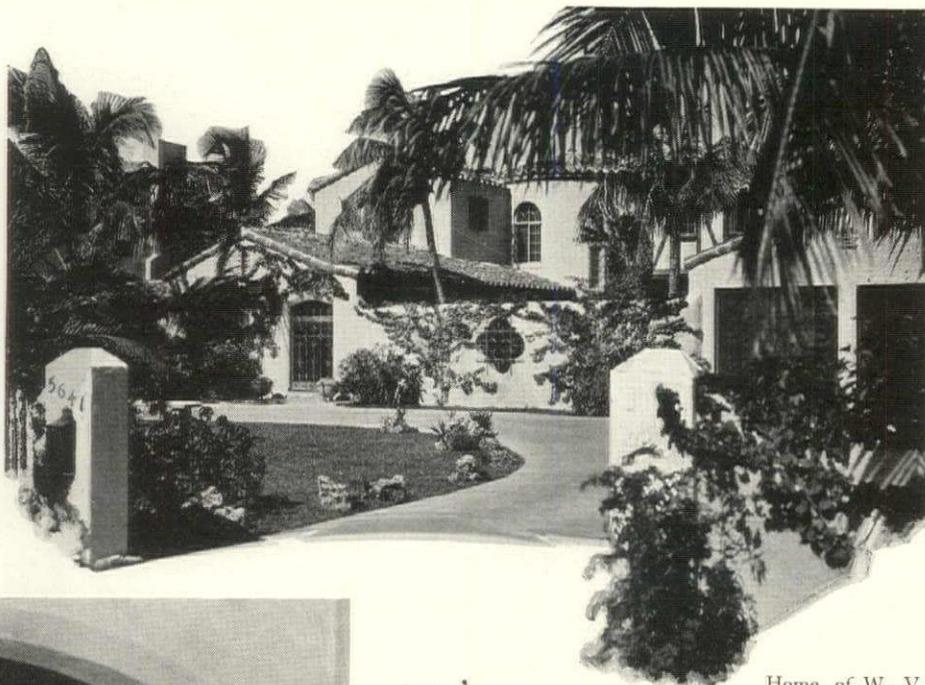


*A few important installations of  
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*A  
Glimpse  
of  
Old Spain*



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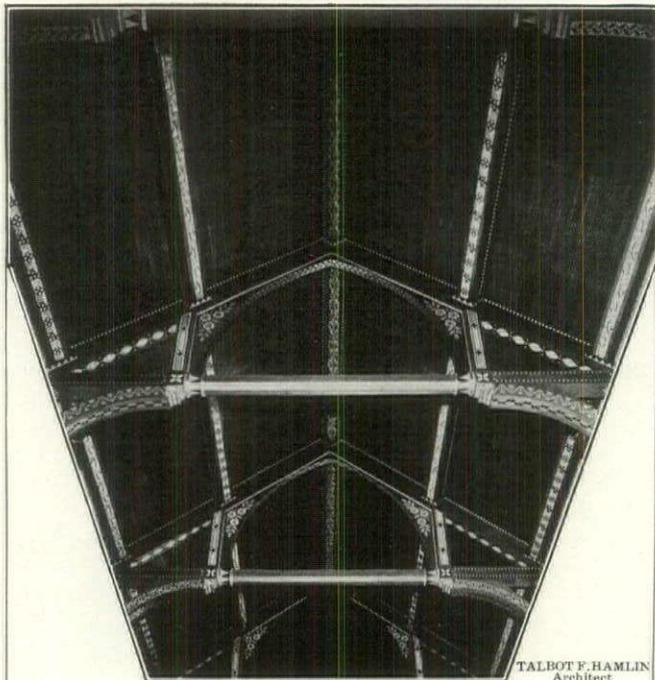
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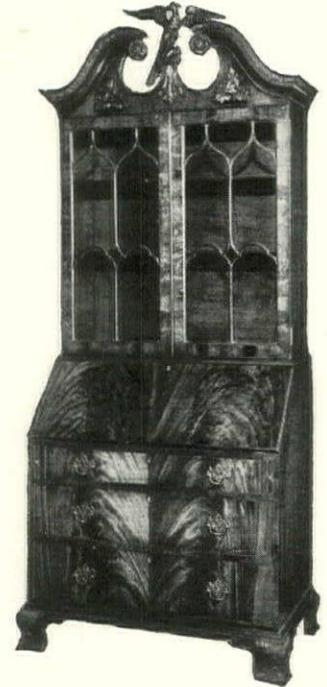
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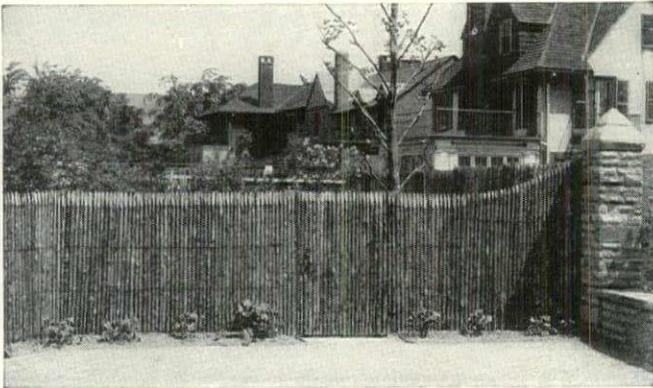


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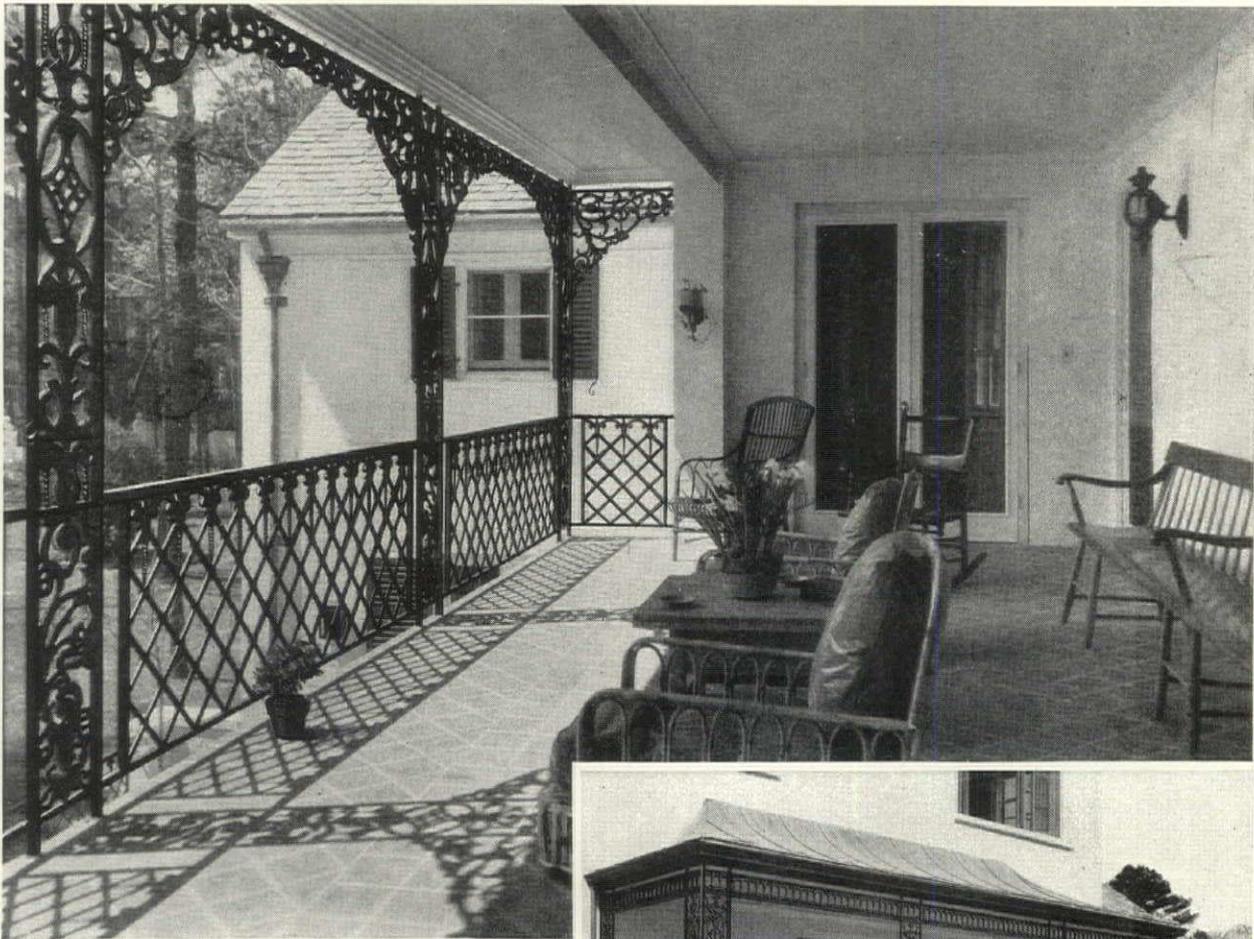
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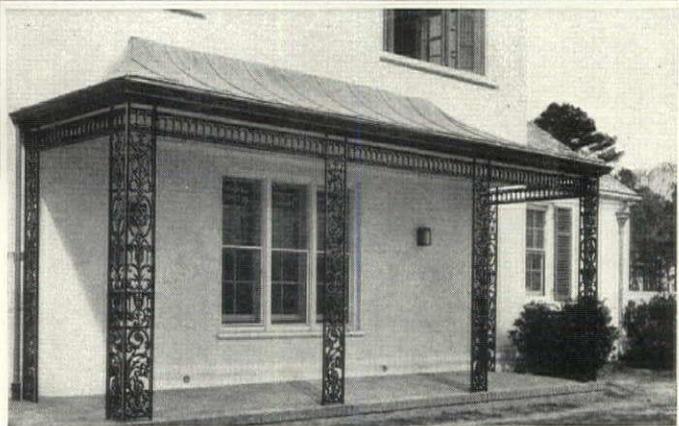
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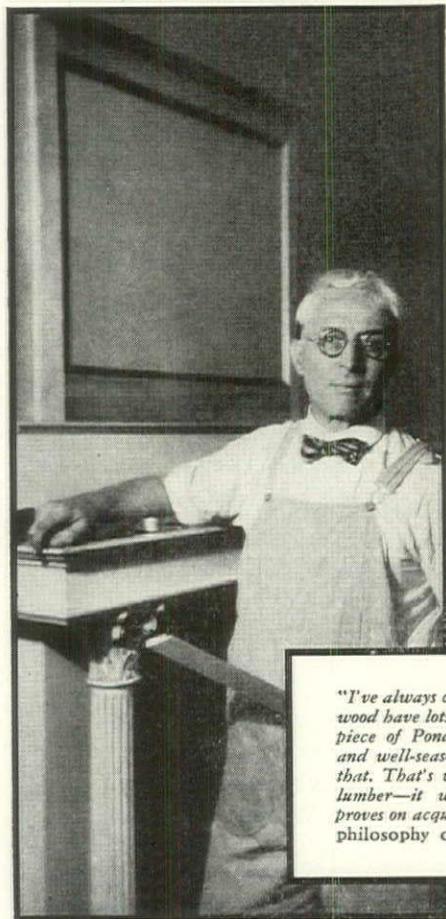
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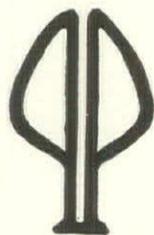
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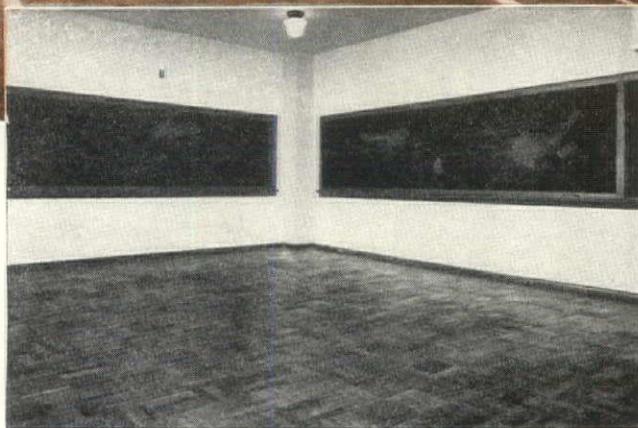
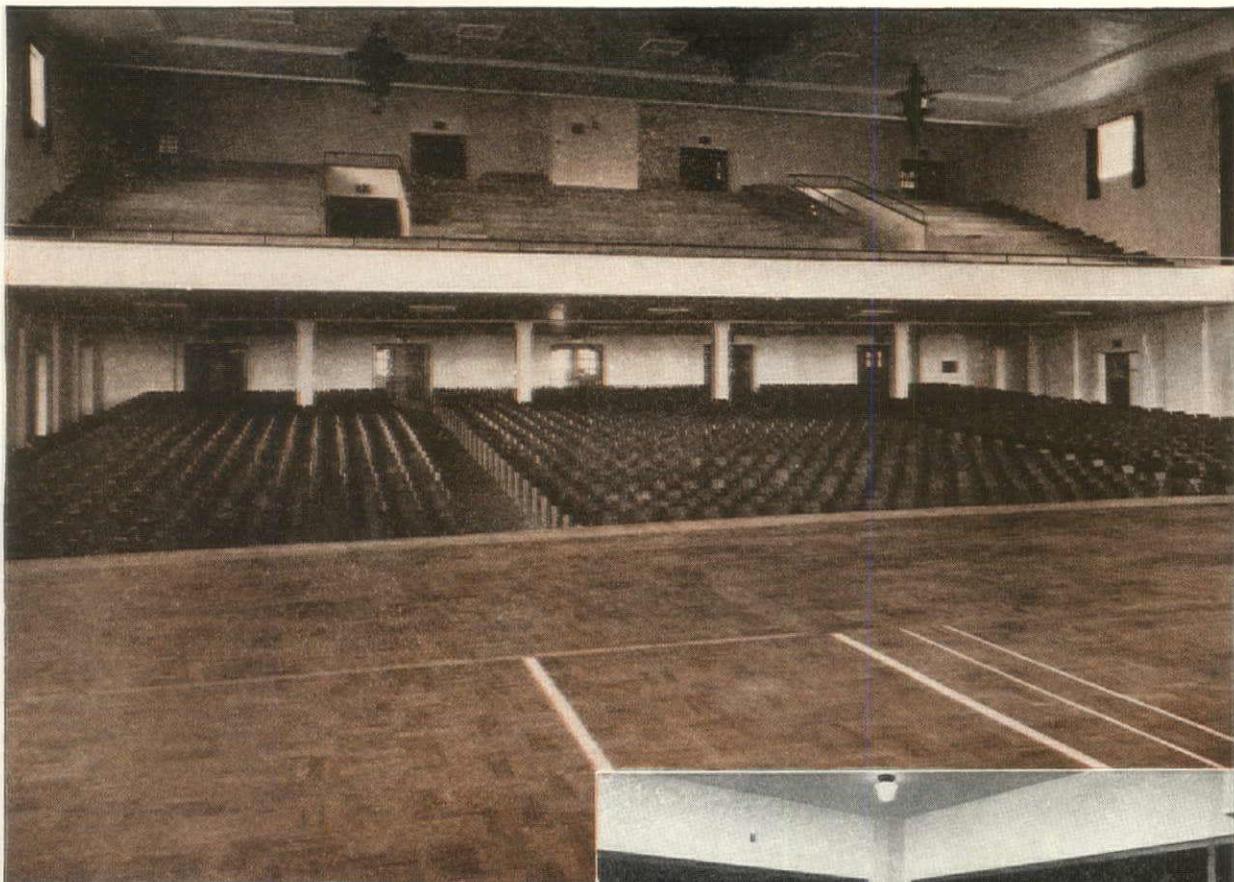
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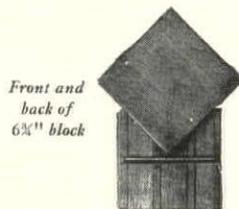
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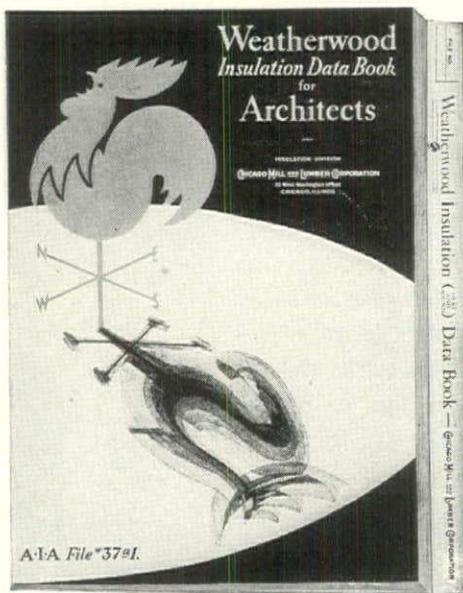
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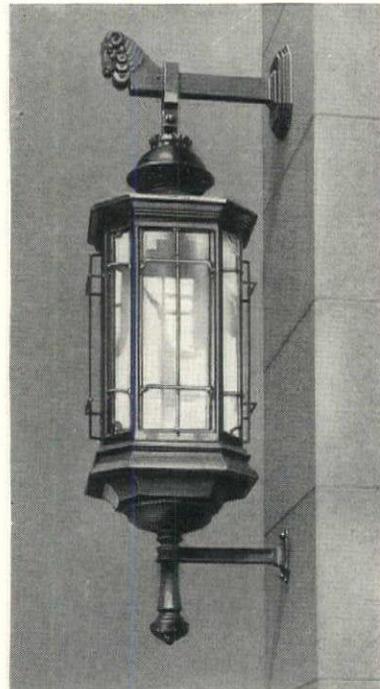
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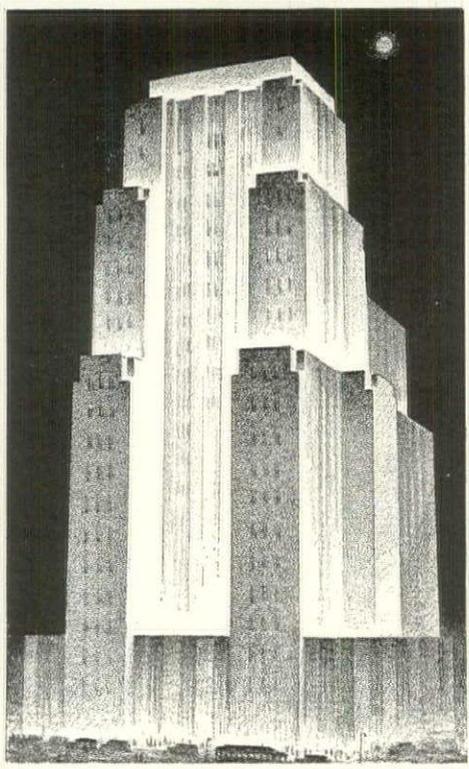
*Exterior Lamp Delaware River Bridge*  
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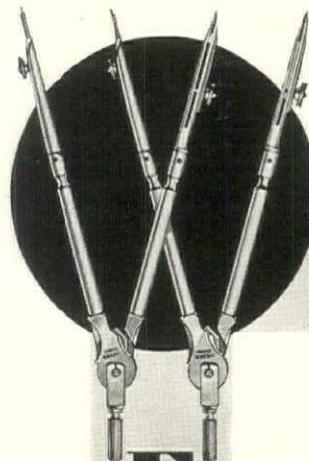
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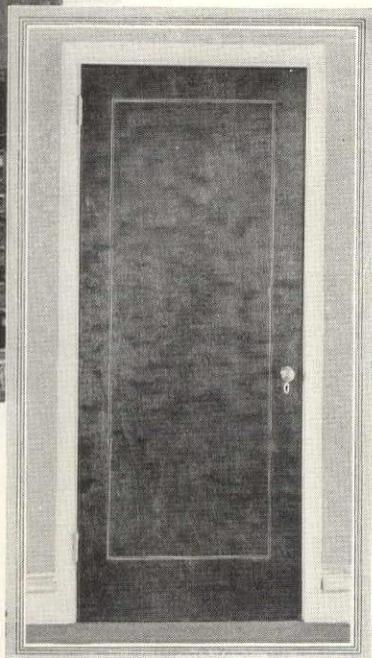
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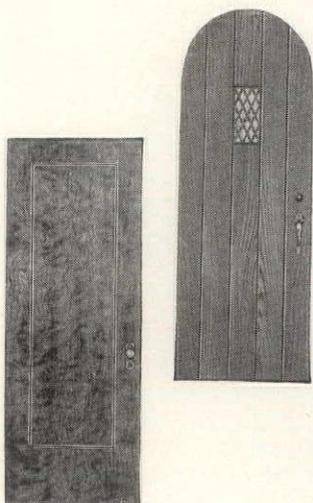


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Before you next decide upon doors write for and read the interesting Roddis Catalog: of exceptionally attractive stock doors, for apartment buildings and residences particularly. Where you require a special inlay or figure design to particularly lend with the interior trim, Roddis Department of Design is at your service: to originate or to follow idea furnished. Roddis Flush Doors, of standard styles or custom made special designs are universally preferred: for most enduring service and beauty and real economy value. Write Roddis now.



Ph. Linsley Small, Cleveland, Ohio . . . Architect

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# D O O R S *by* R O D D I S



Red-White Blue Dowel on edge of each Roddis Door. The mark of Roddis identity and quality.

# ORANGE Extruded Aluminum SCREENS

**HEAVY DUTY  
ALUMINUM  
SCREEN DOORS**

SEE for yourself how husky the top and bottom rails of our heavy duty aluminum doors are made.

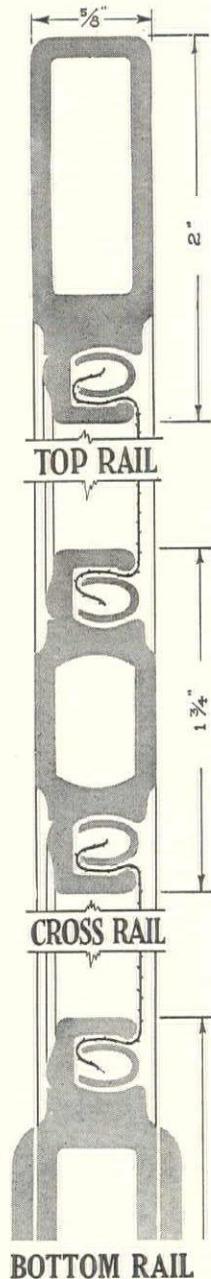
Notice the thickness of the extruded metal — the same strong alloy they use in making airplanes.

Then take into account the non-sag welded corners and deep-set screen key, that never loses its grip on the wiring.

It is because of the way our aluminum doors are made, that we put so rigid a guarantee behind them. You don't need to take our word for their sturdy worth. We will gladly send you sample sections, so that you may judge for yourself.

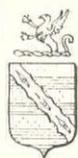
There's an Orange Screen man in your vicinity, who will show you anything you want to see about aluminum screens. Ask us to send him to you, with complete samples of our aluminum screens.

The drawing shows in actual size the rails of a heavy-duty aluminum screen door. Slender extruded sections are used for light doors and window screens.



**ORANGE  
SCREEN COMPANY**

Aluminum Screens and Window Ventilators



Also Wood, Steel, Bronze and Roll Screens

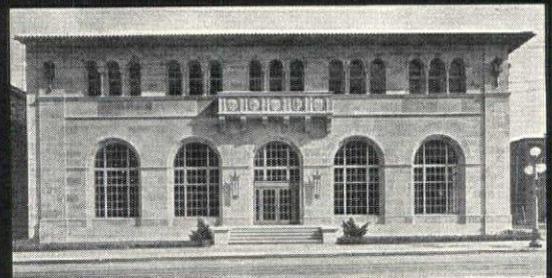
MAPLEWOOD, NEW JERSEY

## LUPTON CASEMENTS LEND THEMSELVES TO ARCHITECTURAL EXPRESSION

These famous windows add charm to interiors and to exteriors. A wide range of sizes and shapes provides almost unlimited choice in your architectural treatment.

Quantity production has lowered costs, and has made Lupton Home Casements possible in even the smaller residence-jobs. Complete information can be obtained from your current edition of *Sweet's*. David Lupton's Sons Co., 2207 E. Allegheny Ave., Philadelphia, Pa.

**LUPTON**  
WHERE STEEL IS FUSED  
WITH SINCERITY



News-Sun Bldg., Springfield, O. — Schultze & Weaver, Archt., New York  
A. G. Samuelson, Inc., Contr., Springfield, O.

### PIONEERS

THE wide acceptance of Bayley Steel Windows and Doors is due to the fact that Bayley has pioneered in every important improvement since the birth of the industry. Having looked far ahead, Bayley has been able to anticipate the exact needs for better steel windows and doors of various types and for various uses in all kinds of buildings. Folders describing and illustrating Bayley Products sent on request. The William Bayley Company, Springfield, Ohio.

**BAYLEY**  
STEEL WINDOWS & DOORS

# Harmony without Sound—a Modern Floor at R.C.A.-Victor

Its harmonizing colors and design are made possible through a choice of 27 distinctive types in squares and rectangles . . . Its sound deadening quality is due to the definite, lasting resilience of Stedman Reinforced\* Rubber Tile . . . With this adaptable material architects and decorators are meeting all artistic requirements while providing floors that are quiet, comfortable, entirely practical . . . For churches and theatres, hospitals and stores; for the formal rotunda or the modernistic beauty salon, Stedman Tile reveals its superiority in its characteristic color veinings, its remarkable durability and low up-keep cost. . . . You will receive intelligent co-operation from design to installation . . . Book-let and color charts are free.

**\*REINFORCED:** In the Stedman Process minute cotton filaments, uniting with the rubber under high pressure and heat, are responsible for its unusual resistance to wear and distention, its lasting resilience and smooth, impervious surface — characterized by color veinings of remarkable fineness and beauty.

Random pattern in random colors at the show rooms of R. C. A. - Victor, Atlantic City, New Jersey . . .

STEDMAN RUBBER FLOORING CO.,  
SOUTH BRAINTREE, MASSACHUSETTS

## Stedman Reinforced\* Rubber Tile





Tower Detail,  
Merchandise Mart  
Chicago, Ill.

Graham, Anderson  
Probst & White  
Architects

**TERRA COTTA**

ornamentation on the tower of the Merchandise Mart, Chicago,—the world's largest building. Figures are warm gray, spandrels dark green, small circular panels, gold.

**TERRA COTTA**

alone among architectural materials gives the designer freedom to create a new and vital modern architecture thru the application of color; monumental sculpture and ornament; and the liberal use of gold, silver and platinum in ceramic form.

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"BEAUTY WITHOUT INTERRUPTION"

COMPLETELY invisible when the door is closed. Flush doors - clean lines - no undesirable projections. Manufactured with scientific precision as befits a quality product - yet surprisingly low in cost.

There is a Soss Invisible Hinge for every purpose. See our line in Sweet's Catalogue or write direct to us for our own complete catalogue "C"

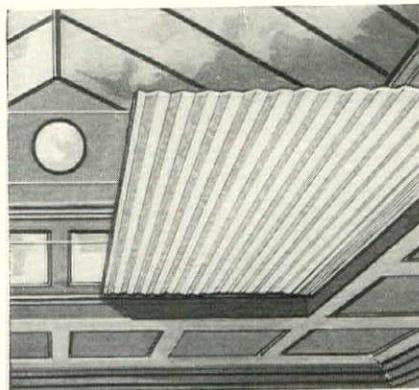
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House Doors Folding Partitions  
Secret Panels Radiator Covers  
Folding Tables  
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Established 1908  
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**SOSS INVISIBLE HINGES**

**Architects have been waiting for this Skylight Shade**

This handsome shade is of regular Athey quality workmanship and material, and is made in many sun-fast colors. It weighs only 5/8 of an ounce per sq. ft. —is manufactured in almost any size—even as large as 20 ft. x 36 ft. in one leaf.



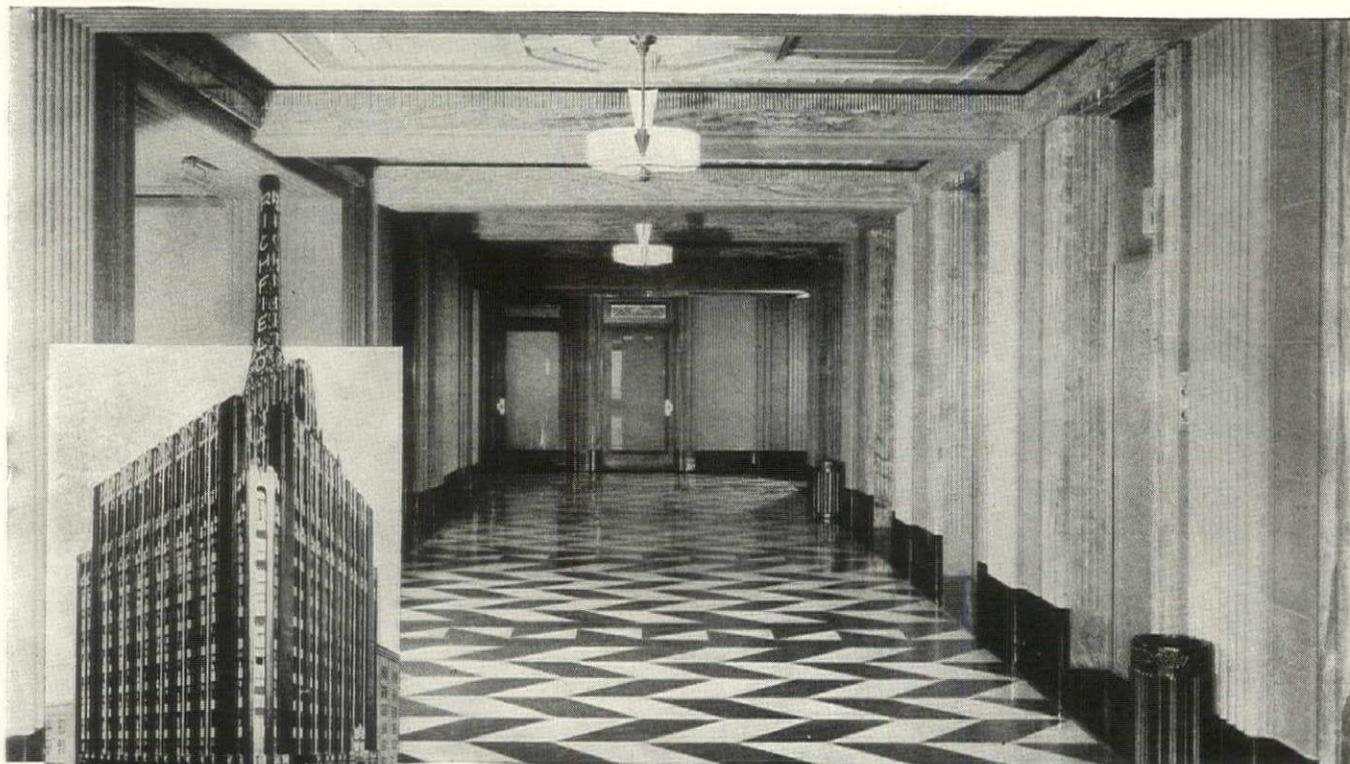
This popular Skylight Shade is adjusted by a convenient, small wall crank and sometimes from the stage for lecture rooms.

It is translucent, shading without eliminating necessary light and giving full light when needed.

Hundreds of successful installations have demonstrated the utility of this superior product.

Write for interesting catalog.

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View of elevator lobby, Richfield Oil Building, laid with Goodyear Rubber Flooring



Richfield Oil Building, Los Angeles, Cal.; Morgan, Walls & Clements, Architects; P. J. Walker Co., Builders; 31,000 sq. ft. Goodyear Rubber Flooring laid by Barker Bros., Inc.

## These colorful floors are in the spirit of today

APPROXIMATELY 31,000 square feet of Goodyear Rubber Flooring were laid in the striking Richfield Oil Building, Los Angeles. Here is another modern building whose tenants enjoy lasting comfort and pleasure from this *modern* flooring material.

Goodyear Rubber Flooring is a *working* material. As made by Goodyear for floors it will wear as long as the building itself. Rubber is resilient. Rubber is silent. Rubber is moisture proof. The colors go the whole depth of the material and are consequently permanently fresh. They do not fade even where wear is hardest as on stairs or in elevator cars.

Rubber Flooring saves tons of building weight.

The smooth and lustrous surface of Goodyear Rubber Flooring—the clear colors and trim patterns—win building occupants. Tenants appreciate the noiselessness and yielding “give” of this



View of dining room, Richfield Oil Building, laid with Goodyear Rubber Flooring

flooring underfoot. Owners value likewise its immaculate appearance and the ease with which it is kept up. Goodyear Rubber Flooring cleans instantly with cold water. It does not scar, scuff, or stain.

You can pattern Goodyear Rubber Flooring to agree with any decorative treatment. It is as available to conservative architecture as to the most radical modernism. Yet, in all styles, it has an identical efficiency. It is always comfortable, cleanly, durable, and silent.

Write for Architect's File, A.I.A. 23C, containing specifications and whole floor designs—Goodyear, Akron, Ohio, or Los Angeles, California.

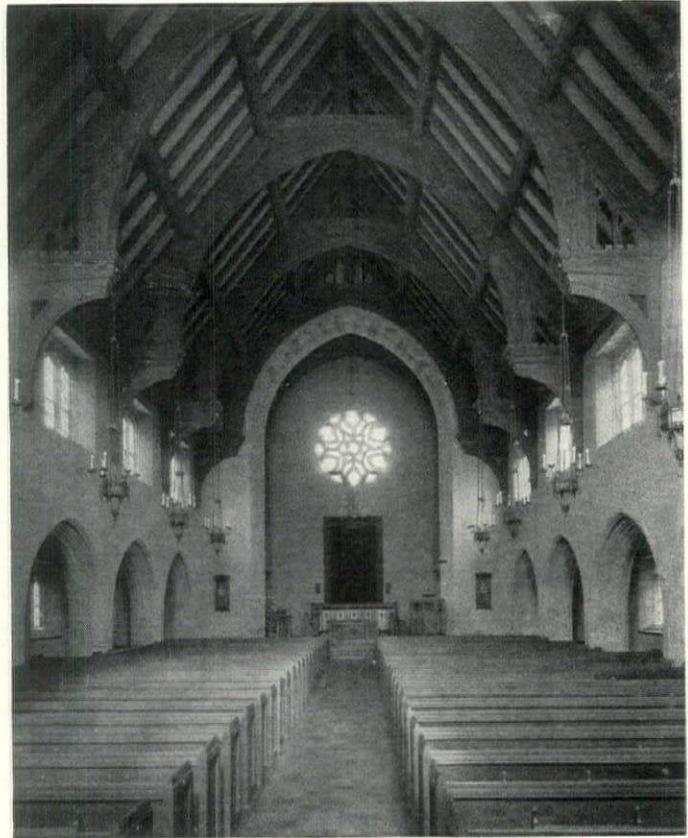
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*Larchmont Avenue Church, Larchmont, N. Y.  
 Office of John Russell Pope, Architect*

**H**ERE Are Some of the Charming Old Houses, Gateways, Churches, Halls, etc., Photographed and Measured for this volume:

Isaac Cook House, Brooklyn; Christ Church, Alexandria; Phillipse Manor House, Faneuil Hall; City Hall, New York; Old House Gates, New York; Christ Church, Philadelphia; State House, Boston; Pennsylvania Hospital, Philadelphia; The Tayloe Octagon House, Washington; The Whipple House, Salem; Leffert's Homestead, Brooklyn; Phillip's House, Salem; Pingre House, Salem; Erasmus Hall, Brooklyn; Hamilton Hall, Salem; St. Paul's Church, New York; Old South Church, Boston; St. John's Chapel, New York; The Taylor House, Roxbury; State House, Philadelphia; Mount Pleasant Mansion, Christ Church, Philadelphia; House In Shirley, Virginia; Joseph Cabot House, Salem; Forrester House, Salem; Shreve House, Salem; Haven and Ladd Houses, Portsmouth; South Church, Salem; City Hall and Trinity College and a number of other public buildings in Dublin and England.

Over 1,000 photos and scaled details are included.

*The Georgian Period*  
 Students' Collection from Original Edition  
 Edited by WM. ROTCH WARE

**E**VERY architect should have a good reference to the Georgian or Colonial architecture in America. This volume is recognized as the standard authority on the subject. It was prepared at great expense by a corps of men who actually photographed and measured each house.

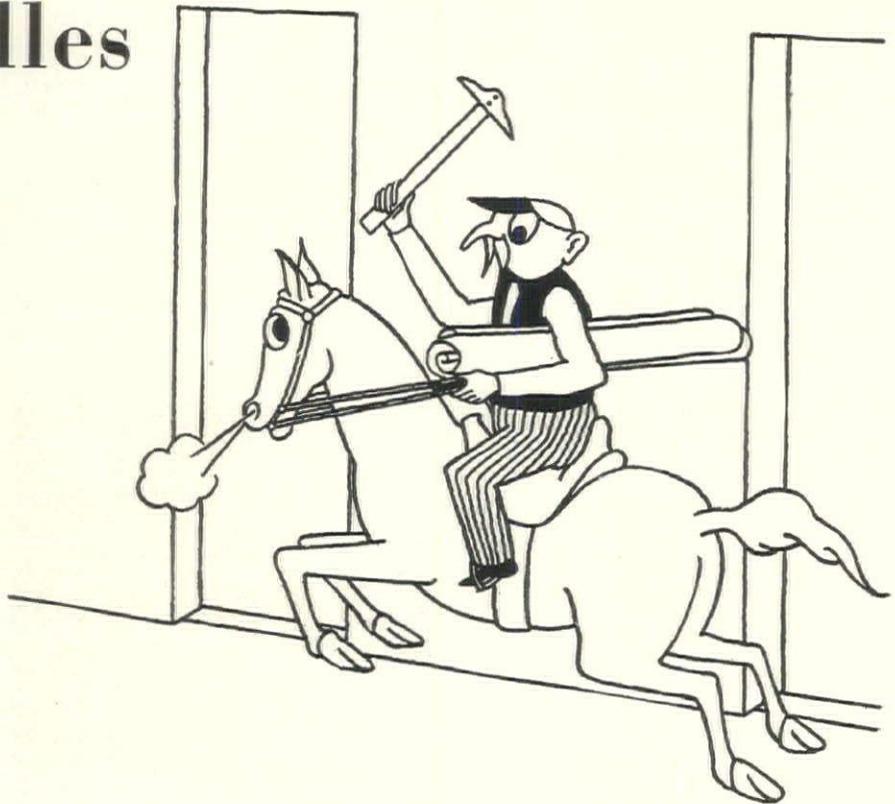
This "Students' Collection" comprises 100 plates, carefully selected from the 450 in the complete edition. They are from the original printing and show every detail clearly. The photographs, which were reproduced by the Heliotype process, are large enough to show every detail of the ornamentation. The measured plates not only show the scaled drawing of the whole mantel, cornice, doorway, or whatever it may be, but also give all the profiles or sections, and larger sized details of all important points.

When you are looking for a suggestion for exterior treatment of the house, church, hall, gateway, cornice, or for a stairway, mantel, cabinet, iron grille, etc., you are certain to find a great many charming examples on each subject from which to make your selection.

100 Plates 10 x 14 inches, 28 Pages Text, Portfolio. Price \$15.00 delivered.

ARCHITECTURAL FORUM BOOK DEPARTMENT  
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# He learned about saddles



**H**E WORKED very fast. Galloped through his plans. Got his estimate in ahead of the field. And lost by a saddle! \* The saddle... that innocent-looking strip of wood between the jambs of a door... can cause a lot of trouble. When it's set back from the wall of the corridor it means cutting the carpet to fit (which is an item of expense) or sewing in a small carpet strip (which looks pretty bad). \* When saddles are made *even with the walls*, there's an unbroken stretch of carpet the length and width of the hall. This strikes the eye very agreeably. And it strikes the builder as a neat little economy. \* Bigelow-Sanford's contract department overflows with practical ideas such as this. That's one reason why more and more architects look to Bigelow-Sanford for floor-coverings. The other reasons are (1) unequalled variety, (2) authentic patterns and colorings, and (3) the greatest resources and facilities of any rug and carpet weavers in the world. \* The name of your nearest dealer will gladly be sent on request. Or present your problems direct to the contract department.

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Made by Bigelow-Sanford Carpet Co. Inc. Mills at Thompsonville, Conn.; Amsterdam, New York; Clinton, Mass. Main Sales Office: 385 Madison Ave., New York  
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## STUDIES IN TECHNICAL CO-OPERATION

## STRIKING A MODERN NOTE IN LIGHTING

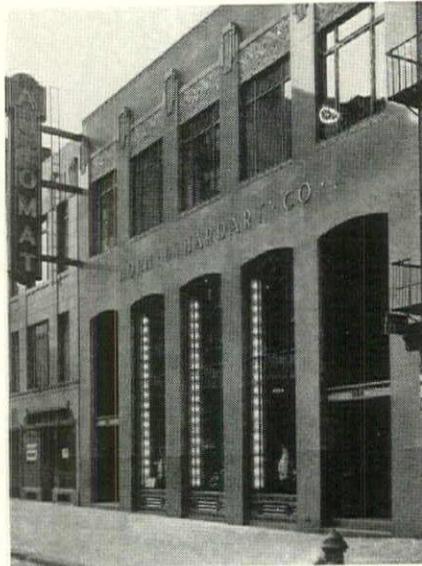
*with wiring adapted to restaurant needs*

by FREDERICK PUTNAM PLATT—A. I. A.  
of F. P. Platt & Bro., Architects, New York, N. Y.

In the Horn & Hardart Company restaurant at 1165 Sixth Avenue, New York, light enhances the inviting atmosphere of the restaurant and provides appetizing display for food.

Uncontrollable factors necessitated the development of an unusual type of exterior illumination for this building and the decorative scheme of the interior called for a lighting plan that would take full advantage of the colors and materials used.

In such a situation, where specific questions of lighting practice are raised, proper co-operation between the architect and the lighting and wiring section of the local electric service company can be most valuable. Information about changing styles in lighting and about the use of light for both decorative and merchandising purposes helps materi-



*Passers-by are attracted by the unusual exterior illumination—lighted panels installed at the sides of the window jambs.*

ally in reaching a happy solution of the problems.

For the exterior illumination in this case, lighted panels are used at the sides of the window jambs. These give a pleasing effect, both day and night, while they also bathe the interior with a soft glow of light which enriches the decorative features.

Modernistic ceiling and side wall fixtures make the restaurant interior inviting. A continuous hood-light over the cafeteria and automat counters is used in the merchandising of food.

The total connected load in this restaurant is 63 K.W. for lighting and 50 H. P. for power. Every care has been taken in the wiring to provide for possible future needs of the kind that are constantly developing through the increasing use of electricity.

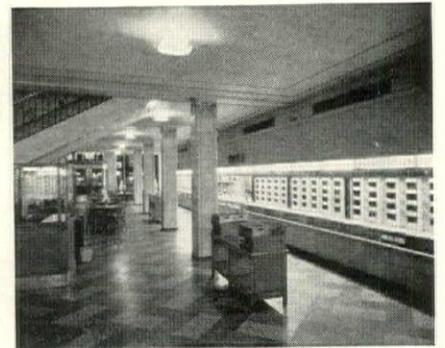
*Attractive pendant type fixtures provide general illumination over the mezzanine well.*



*Hood light illumination is used over the counters with a concealed lamp in each food compartment.*



*In the smaller bays a modernistic, box-type carved glass fixture is used.*

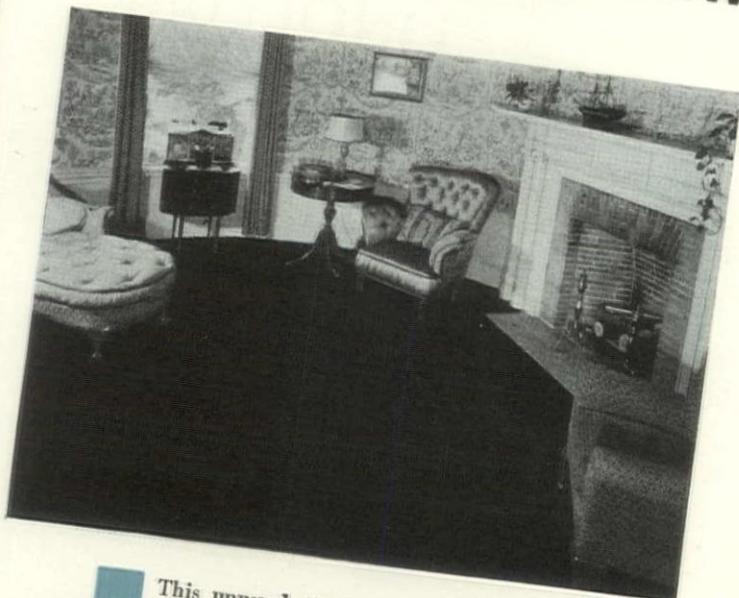


*For information about trends in lighting standards, and about adequate wiring, call on the Wiring Bureau of your local electric service company, or write direct.*

NATIONAL ELECTRIC LIGHT ASSOCIATION, 420 LEXINGTON AVENUE, NEW YORK, N. Y.

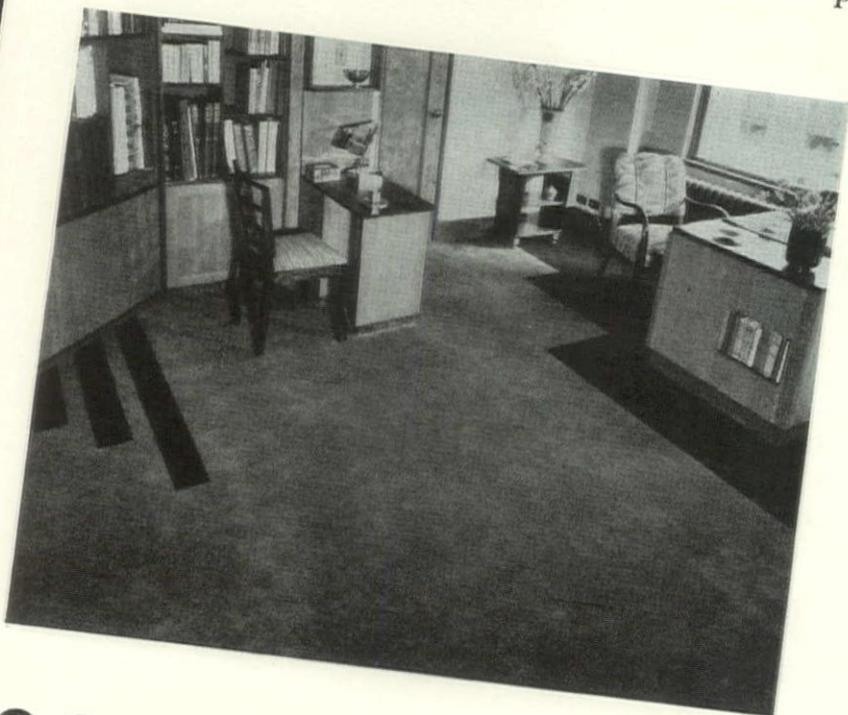
# YOU CAN DO THIS SORT OF THING WITH THE NEW

# seemingly seamless CARPET



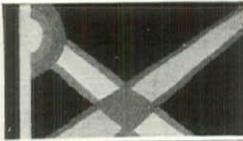
This unusual circular room, completely laid with rich, black Collins & Aikman Carpet, was photographed in a beautiful home located at Cummings Point, Stamford, Conn. The new carpet comes in 54-inch widths. The resilient backing locks the pile, and allows the carpet, when cut, to form its own selvage. Strips are joined by pushing edges together and applying a tough web of strapping to the back. The thick pile meshes . . . the finished carpet is apparently seamless.

THERE are a lot of people yet who find it hard to understand that the new Collins & Aikman Carpet actually gives a seemingly seamless appearance — at the price of ordinary narrow-width carpet with stitched seams. The idea is so unique that it hardly seems possible — until you see the proof before your eyes. That is why we are showing these photographs of actual installations — just two of the many which have been made. In homes, offices, restaurants, hotels, theaters and steamships, the new Collins & Aikman Carpet is already in service. For full information, write to Collins & Aikman Corporation, 25 Madison Ave., New York City.

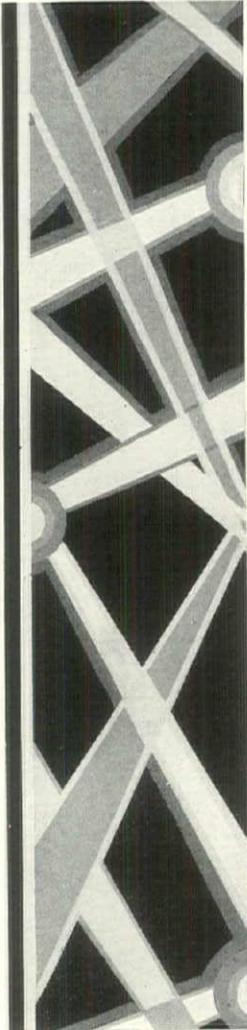


This photograph shows the New York office of Miss Virginia Hamill, a leading stylist. Miss Hamill made the color-design for the carpet herself, and it was laid just as she wished. The unique manner of joining strips permits any number of colors to be inlaid. To get the same effects with broadloom carpet would involve special looming. Collins & Aikman Carpet is the only kind that can be laid in special color combinations at a price which encourages heavy sales. Our booklet explains other advantages — to dealers, decorators and consumers.

# COLLINS & AIKMAN CARPET



# BEACON TAVERN "GOES MODERN" WITH BLABON'S LINOLEUM

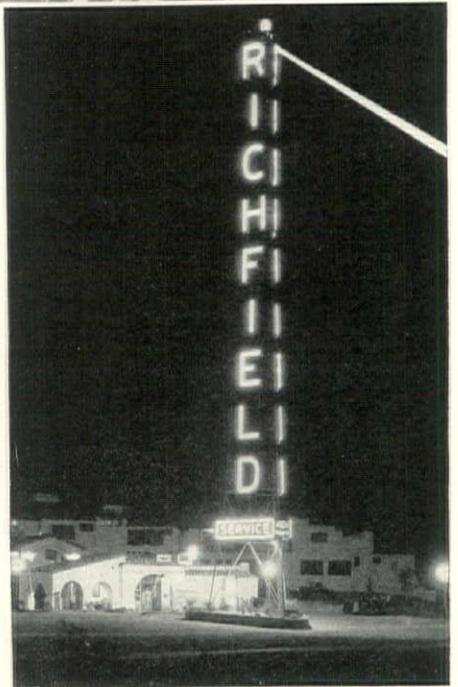


LIKE a bit of Sunny Spain transplanted in the desert at Barstow, California, Beacon Tavern sounds a new keynote in modern hotel luxury for the motorist.

First of a possible chain of thirty-two Beacon Taverns to be dotted throughout the Pacific Coast, this unusual new development combines everything the hotel guest could desire in beauty, comfort and service.

To add that sparkling touch of color—that atmosphere of distinction which only the finest of appointments can create—Blabon's Inlaid Linoleum (Pattern No. 1129) has been installed in this delightful hostelry.

For, after all, no type of floor covering surpasses in richness and practicability America's finest Linoleum.



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# 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 301l 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 301l 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, 8½ 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 67

### DUMBBWAITERS

**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 Fire Proofing Company**, Fulton Building, Pittsburgh, Pa.  
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.,  $4\frac{1}{4} \times 7\frac{1}{2}$  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 Floretype 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

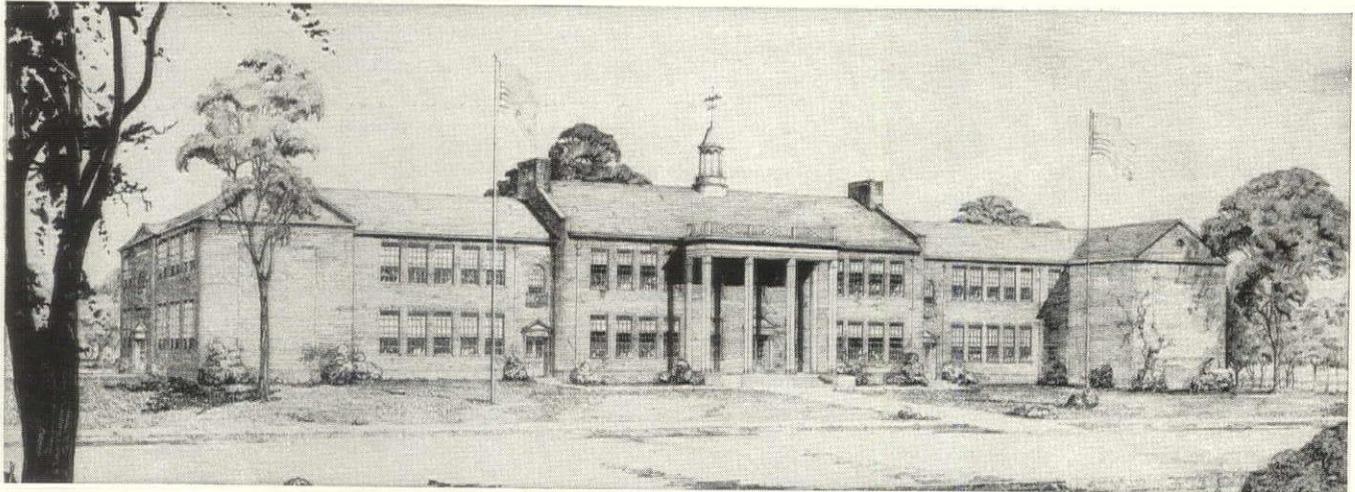
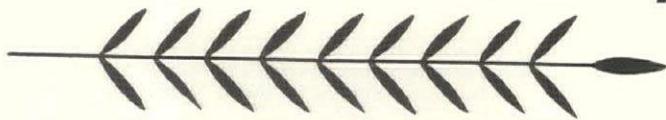
**Armstrong Cork Co. (Flooring Division)**, Lancaster, Pa.  
Armstrong's Linoleum Floors. Catalog,  $8\frac{1}{2} \times 11$  ins., 44 pp. Color plates. A technical treatise on linoleum, including table of gauges and weights and specifications for installing linoleum floors. Newly revised, February, 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.

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## SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 68

### 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. 7¾ x 10¾ 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., 5½ x 7½ 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., 3¼ x 6 ins. Deals with residence hardware.  
Door Closer Booklet. Brochure, 16 pp., 3¼ x 6 ins. Data on a valuable detail.  
Garage Hardware. Booklet, 12 pp., 3¼ 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 5¼ 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., 10¼ 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 Siphon Company**, Knoxville, Tenn.  
Siphon Temperature Regulators. Illustrated brochures, 8½ x 11 ins., dealing with general architectural and industrial applications; also specifically with applications of special instruments. Siphon Heating Specialties. Catalog No. 200, 192 pp., 3¼ x 6¼ ins. Important data on heating.

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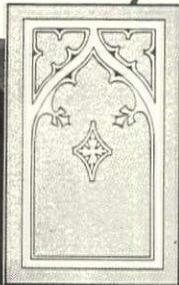
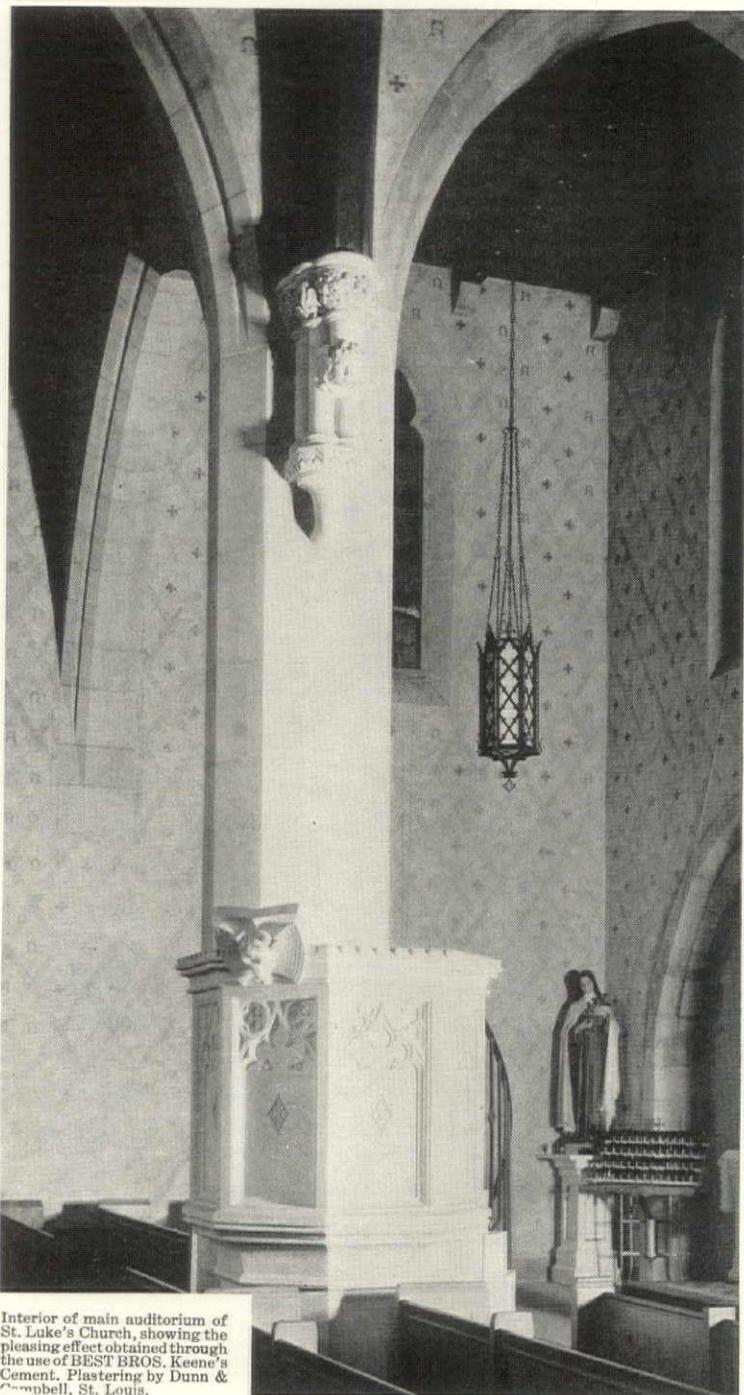
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Study, of Study, Farrar and Rothenheber, architects of the church, had the thought of BEST BROS. Keene's Cement.

In writing of the successful results, Mr. Study says:—

"We sought for a treatment of the plaster in St. Luke's Church that would be permanent, reasonably economical and in entire sympathy with the character of the architecture. This was obtained by plastering with BEST BROS. Keene's Cement. While this was still wet we marked off the walls with a diamond pattern and in the center of the diamonds, stamped the Greek letters Alpha and Omega and a Greek cross.

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"This simple lattice work design is the type of design common in Gothic work and it is more than probable that in many of the old churches the plaster was scratched this same way. Nearly all who have seen these walls have been tremendously struck by the beauty of this simple method of decoration."

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## SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 70

### 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, radi-  
ators, 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 decorat-  
ive 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. Illus-  
trated. Deals with industrial, commercial and domestic heat-  
ing.

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 7¼ 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 re-  
moving ashes from basements.

### HOSPITAL EQUIPMENT

**Bryant Electric Co.**, Bridgeport, Conn.

Hospital Signal Devices. Bulletin HS-622-RP. Complete infor-  
mation on hospital signal devices. Pull 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 pho-  
tographs and drawings, showing the types of lights for use in  
hospitals, as operating table reflectors, linolite and multilite  
concentrators, ward reflectors, bed lights and microscopic re-  
flectors, 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 (Architect and Build-  
ers' Edition). Size 8½ x 11 ins., 20 pp. Illustrated. De-  
scribes principles and design of Kernerator Chimney-fed Incin-  
erators 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 Ker-  
nerator for residences.

Garbage and Waste Disposal for Apartment Buildings. Folder,  
8½ x 11 ins., 16 pp. Illustrated. Describes principle and de-  
sign 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 insu-  
lating roofs of manufacturing or commercial structures.

Insulation of Roofs to Prevent Condensation. Illustrated book-  
let, 7½ x 10½ ins., 36 pp. Gives full data on valuable line  
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## SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—Continued from page 72

### 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. 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.
- Steelex for Floors. Booklet, 24 pp., 8½ x 11 ins. Illustrated.
- Combined reinforcing and form for concrete or gypsum floors and roofs.
- Steelex Data Sheet No. 1. Folder, 8 pp., 8½ x 11 ins. Illustrated. Steelex for floors on steel joists with round top chords.

### LATH, METAL AND REINFORCING—Continued

- Steelex Data Sheet No. 2. Folder, 8 pp., 8½ x 11 ins. Illustrated. Steelex for floors on steel joists with flat top flanges.
- Steelex Data Sheet No. 3. Folder, 8 pp., 8½ x 11 ins. Illustrated. Steelex for folders on wood joists.
- Truscon Steel Company**, Youngstown, Ohio. Truscon ¾-inch Hy-Rib for Roofs, Floors and Walls. Booklet, 8½ x 11 ins., illustrating Truscon ¾-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, 3¾ x 6 ins. Gives analysis, physical qualities, comparison of absorption with granite, opinions of authorities, etc.
- Convincing Proof. 3¾ 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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 ow used generally.  
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 T. W. C.  
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 same. So beg to inquire if you fur-  
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 est dealer?  
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 tain this LUSTRAGLASS?  
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 contemplating the erection of a number  
 of schools in which it is possible that  
 violet ray glass could be used to ad-  
 vantage.  
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 country. If you are not able to furnish  
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 on glass that will ad-  
 mit ultra-violet rays.  
 Give a list of dealers  
 in this locality.  
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 Shallowater, Texas

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 store in our best shopping street.  
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 Port of Spain,  
 Trinidad, B.W.I.

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 Aurora, Colo.

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 kindly send me your book-  
 let on LUSTRAGLASS.  
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men:  
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 tell me in what size I can get the  
 LUSTRAGLASS, nearest place of purchase  
 and price.  
 J. L. B.  
 Memphis, Tenn.

men:  
 Please send me descriptive literature  
 on glass that will ad-  
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### 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., 7¼ 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 8½ ins. Illustrated price list of doors for various types of buildings.
- Roddis Doors, Catalog G. Booklet, 184 pp., 8½ 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.**, 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, 8½ 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 ARMCO Dredging 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.  
Knightware 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 half-tone 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.

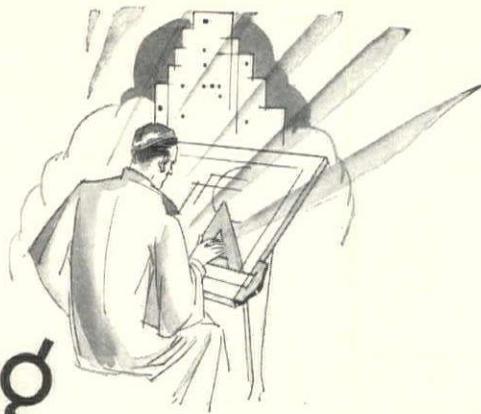
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### PLASTER—Continued

- 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., 10¾ x 7½ 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., 10¾ x 7½ ins. Illustrated in color. Describes the design, construction and operation of the Jennings Suction Sump Pump.  
Bulletin 11. Brochure. 8 pp., 10¾ x 7½ 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 Nailing 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 pps., 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.  
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- 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.  
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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.  
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- John Van Range Co., Cincinnati.  
Practical Planning for School Food Service. Booklet, 32 pp., 8½ x 11 ins. Illustrated.

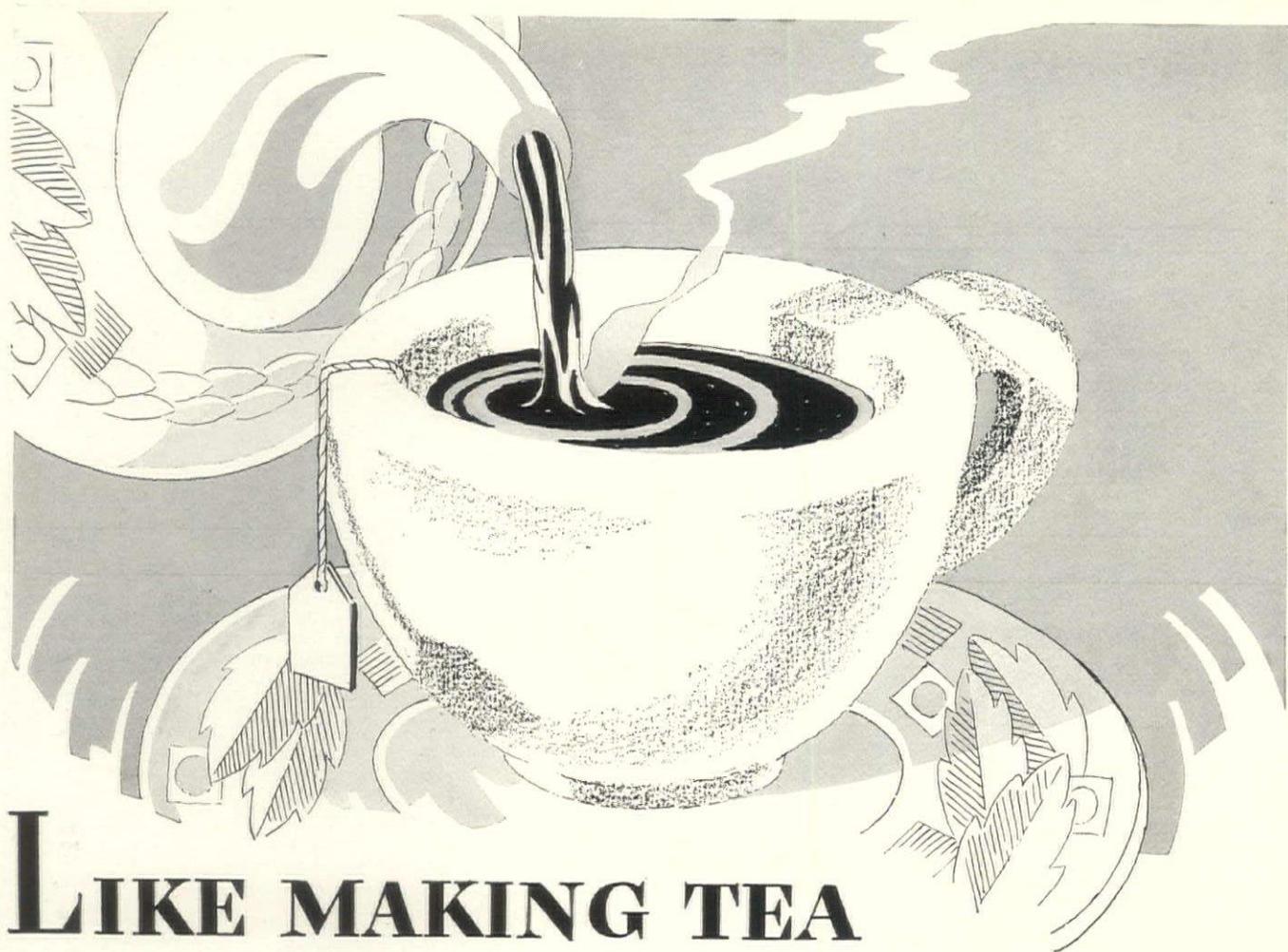
### SEWAGE DISPOSAL

- 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.  
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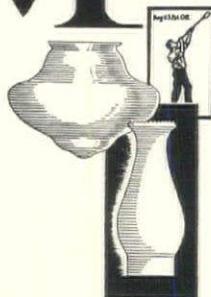
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- American Brass Co., The, Waterbury, Conn.**  
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- Athey Company, 6015 West 65th St., Chicago, Ill.**  
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- David Lupton's Sons Company, Philadelphia, Pa.**  
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### STEEL PRODUCTS FOR BUILDING

- Bethlehem Steel Company, Bethlehem, Pa.**  
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- Bethlehem Structural Shapes Bound Volume, 368 pp., 4¼ x 6¾ ins. Illustrated.
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- 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, 11¾ 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.**  
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- R. Guastavino Co., 40 Court Street, Boston.**  
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- National Fireproofing Corporation, Fulton Building, Pittsburgh, Pa.**  
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### 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.**  
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- Burlington Venetian Blind Co., Burlington, Vt.**  
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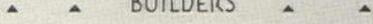
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### VENTILATION

- 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.  
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- 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.  
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Data Sheet on Membrane Waterproofing. Folder, 4 pp., 8½ x 11 ins. Illustrated.
- Toch Brothers**, New York, Chicago, Los Angeles.  
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### 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.  
Pennvernon 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.  
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Lupton Commercial Projected Windows. Brochure. 24 pp., 8½ x 11 ins. Illustrated. Details and specifications.

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- 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.  
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- 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.

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- William Bayley Co.**, 147 North Street, Springfield, Ohio.  
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- American Walnut Mfrs. Association**, 618 So. Michigan Boulevard, Chicago, Ill.  
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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.  
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House Comfort that Pays for Itself. Brochure, 32 pp., 5¼ x 7¾ ins. Illustrated.

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- Minwax Company**, 11 West 42nd St., New York.  
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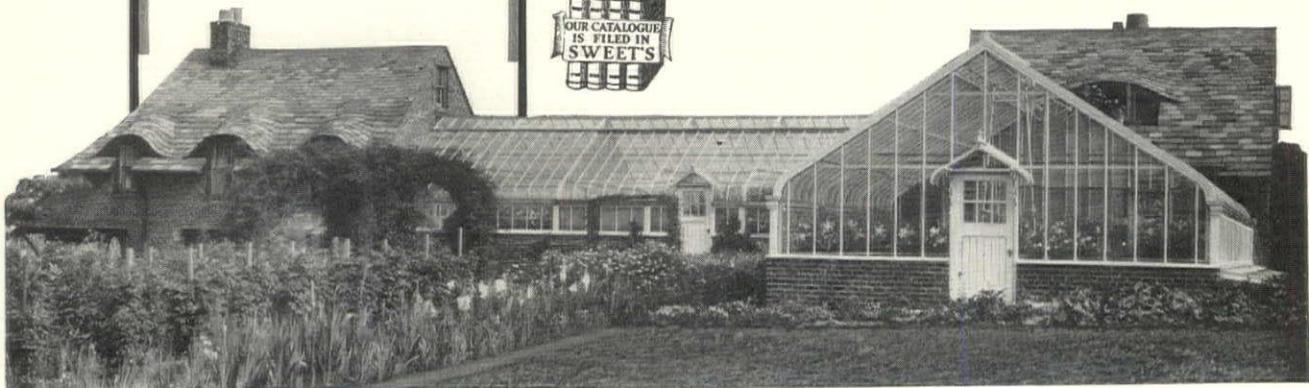
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## Geerling's Wrought Iron in Architecture

This book combines for the first time a practical discussion of craftsmanship, of what can be justly expected of the metal with economic limitations, of the inter-relations of client, architect, and artisan, with historical data and a splendid collection of examples of the craft in the various countries. The first chapter treats of craftsmanship and the architect's design and drawings, while succeeding chapters deal separately with the ironwork of Italy, Spain, France, the Lombards, England, Germany, American Pre-Twentieth Century, and the modern. Detailed drawings are given opposite the photographs in many cases. The last chapter is given over to specifications.

Contents: Wrought Iron Craftsmanship; Properties of Wrought Iron; Texture, Legitimate and Otherwise; Tools and Terms; Architectural Design, Motifs and Ornamentation; Economic Aspects in Design; Wrought Iron Finish; The Architect's Drawings; Italian Wrought Iron; Spanish Wrought Iron; French Wrought Iron; Iron Work of Belgium and Holland; English Wrought Iron; German Wrought Iron; American Wrought Iron (Pre-Twentieth Century); Twentieth Century Wrought Iron; Lighting Fixtures and Knockers; Wrought Iron Specifications; Bibliography.

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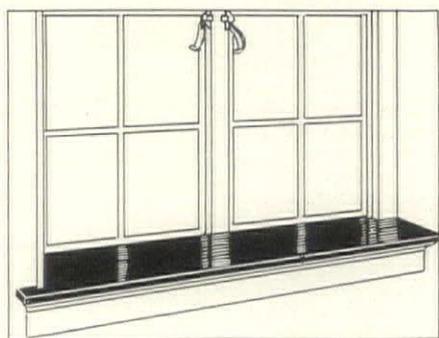
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## REVIEWS OF MANUFACTURERS' PUBLICATIONS

**INDIANA LIMESTONE COMPANY, Bedford, Ind. "Indiana Limestone for Public Utility Buildings."**

The marked improvement being made in the architecture of utility structures of many kinds is suggested by this folder. It is true that no one has yet succeeded in making a gasometer architecturally acceptable, and grain elevators are among the structures likely to baffle if not dismay even the most ingenious and resourceful designer, but that power houses, water towers and filtration plants are susceptible of excellent architectural treatment is abundantly proved, and the improvement in the service buildings of telephone companies is among the encouraging signs of the times. This folder deals with the use of Indiana limestone for such buildings, illustrating among other structures built of this material a beautiful water works tower at Arlington, Mass., designed by the Metropolitan District Commission and F. F. Low in association, and an excellent sub-station for an electric light and power company in St. Louis designed by La Beaume & Klein in a modified version of the "modern" style.

**THE E. F. HAUSERMAN COMPANY, Cleveland. "Office Planning Studies by Hauserman."**

The considerable cost of space in an office building presupposes careful arrangement of whatever space there is. The best possible use must be made of windows; provision must usually be made for keeping hats, coats and umbrellas; and generally at least some small storage space is required. To do this within contracted area is difficult but not impossible, as is proved by this extremely useful brochure issued by a firm specializing in the planning, manufacturing and installing of partitions, the organization's work involving, quite logically, considerable study to secure the most advantageous use of what area there is. "Efficient mental work necessitates the workers' being safeguarded from disconcerting interruptions and irritating annoyances. This is an accepted fact. Psychologists have proved it, repeatedly, with scientifically conducted experiments involving the reaction of hundreds of students and adult office workers of both sexes. It has been customary in the past for each tenant or business executive to figure his space requirements from the ground up as if no one had ever attempted to solve a like problem before. This method of allocating departments has often resulted in awkward office arrangement and a waste of valuable floor space. Notwithstanding the fact that businesses differ in their needs, some similarity exists as far as dividing space into usable units is concerned. There are many frequently-used layouts and methods which may be applied to the problem of matching space to the needs of any organization as well as meeting the provision for future growth. These have been analyzed and reproduced in this book. This group of studies is presented with the thought that the principles involved may be selected to fit the needs of each specific case. In many cases the layouts may be used with little or no change. In others they will serve as suggestions and may be used with modifications."

The booklet offers a number of plans (and sometimes gives views) of single-desk offices; two-desk offices; and offices of larger extent. Certain of the chapters are entitled, "The Key to Good Planning"; "Single-Swing Doors are Best"; "Angles are Always Wrong"; "Office Sizes Made Independent of Column Centers"; "The Standard Unit of Space"; "The Center Island Plan"; and "The Open Center Plan." Useful hints are given as to the best use of light, both natural and artificial, and as to securing the most comfortable ventilation, and the final page says: "It has been the privilege of the Hauserman engineers to consult with hundreds of architects, contractors, building owners, managers and factory executives. In this capacity they have handled thousands of feet of partition layouts and specifications for the economical use of movable steel partitions. They are thoroughly schooled in laying out space so that it may be easily changed in size, shape and arrangement, for the best planned businesses always provide for unplanned changes. These partition specialists understand how to handle ventilation, light, radiator conditions, and overhead obstructions. They are experienced in planning the equitable division of floor space so that doors, ventilators and transoms are properly located."

**PORTLAND CEMENT ASSOCIATION, Chicago. "Monolithic Buildings." Some suggestions on constructing them.**

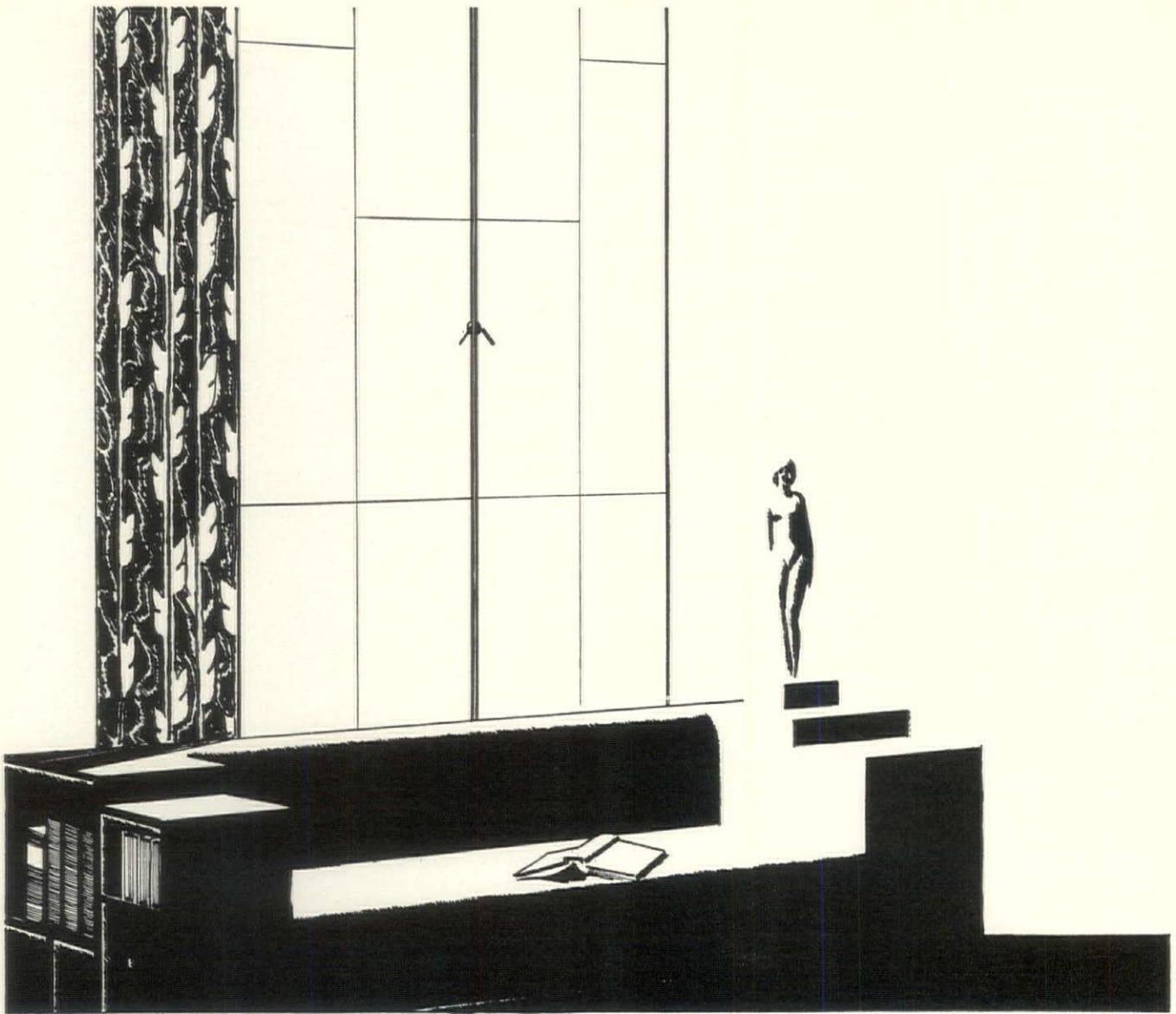
The word "monolith" is itself descriptive as meaning "one stone," and this is literally accomplished when a wall or a building of concrete hardens into one solid substance. But building in this way, and even building of fine character, is so often of a strictly structural nature that it is not always realized that it is quite possible to obtain in a monolithic building architectural ornament of a surprisingly intricate character. "Decorations and embellishments may be cast as an integral part of the wall or column and at the same time as the member is cast. This is accomplished through use of waste moulds (inexpensive moulds of plaster of Paris, which are discarded after using once) built into the wood forms and filled with the same concrete as the rest of the structure. When the walls are complete, all of the architectural decoration is in place, thus saving the additional cost of building scaffolds and setting stone. Moulded decoration, as this may properly be called, offers the widest possible range of treatment of architectural ornamentation. The most minute details in columns, flutes, bas-reliefs or panel surfaces may be carried out. The fact that the same mould may be easily copied makes it simple to repeat a given ornamental design many times, as has been previously pointed out, without materially increasing the cost. The ornamentation may be given the same surface treatment as the walls and other parts of the building, or it may be colored, brushed, bush hammered, or otherwise finished." This brochure deals with this interesting subject with considerable detail and gives illustrations of a number of buildings in California,—churches, clubs, theaters and public buildings,—which have been monolithically constructed and embellished with architectural ornament of an extremely elaborate nature. The brochure is so replete with data and suggestions that it deserves wide circulation among architects and engineers.

**THE GOODYEAR TIRE & RUBBER COMPANY, INC., Akron, O., and Los Angeles. "Homes with Beautiful Floors."**

Many of the most excellent of the various advertising booklets and brochures which reach THE FORUM's office are those issued by the makers of flooring materials of different kinds, their excellence being due to beauty of production, clarity of data given, and several other qualities likely to interest architects and interior decorators. This particular brochure is among the best of its kind, giving as it does all requisite data regarding the rubber flooring produced by this old and well known firm, and suggesting its proper use in domestic buildings by numerous beautiful illustrations of interiors of several of the architectural styles.

**LUDOWICI-CELADON COMPANY, New York, Chicago, Washington, "Domestic Architecture in Surrey and Sussex."**

The series of monographs being issued bi-monthly under the title of "*The Tuileries Brochures*" are intended, first of all, to further the use by architects and builders of the excellent roofing tile made by these well known manufacturers. But, as has been observed already in these columns, the monographs contain material which might well be useful to any designer, even though he were not at the moment concerned with roofing tile. The monograph issued for July, 1930, deals with "Some Domestic Architecture in Surrey and Sussex," the text having been prepared by W. Pope Barney, while the illustrations are from photographs by the eminent British architect, F. R. Yerbury. These illustrations show a number of the fine old domestic buildings which are found even yet in these two English shires, their roofs and sometimes even their walls covered with the old tile which possibly afforded a model upon which the excellent Imperial Roofing Tile made by the Ludowici-Celadon Company were based. That American architects are aware of the advantages of using these tiles is proved by one illustration which shows a circular tower, part of a farm group on a Long Island estate. "All the tiles are of the same size, being cut at the site to fit the narrowing surfaces. The final effect has produced the same beauty of texture and color to be found in the old roofs of England." *The Tuileries Brochures*, being edited by William Dewey Foster, are abundantly worth while.



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## REVIEWS OF MANUFACTURERS' PUBLICATIONS

**INDIANA LIMESTONE COMPANY, Bedford, Ind. "Limestone for Sculpture, Carving and Finishes."**

The various booklets and brochures issued by the Indiana Limestone Company are among the most interesting and valuable which reach the desk of THE FORUM'S reviewer of manufacturers' publications. This widely known firm operates some 20 quarries from which there are obtained varieties of limestone which by reason of their colors or textures are appropriate for many different uses, and with reference to each use the firm issues publications which are richly illustrated and full of valuable data. This particular booklet has to do with limestone when used for architectural sculpture and finishes. Among the illustrations are those of many important examples of such sculpture, used for the exteriors or interiors of buildings, several being parts of the new British Embassy building in Washington. A number of pages show different forms of rustication, a type of ornament for which Indiana limestone is particularly well adapted.

**MEDUSA PORTLAND CEMENT COMPANY, Cleveland. "Gray Portland Cement,—Waterproofed."**

A valuable booklet lately issued by this well known firm deals with the making of cement which is waterproof. This waterproofed cement is made by the Medusa process, which consists of grinding in Medusa waterproofing with the cement clinker at the mill during the manufacture of the cement. The issuing of this brochure marks the 20th year of the successful use of this product in the building material field. Several interesting details are brought out in the booklet. There is a graphic test showing the advantages of the use of waterproofed cement. The subject of why concrete and mortar should be waterproofed is thoroughly dealt with, as is also the advantage of mill-mixed waterproofed cement over the use of mixtures made at the site. It gives complete specifications and details for the making of a good, permanent, waterproofed concrete. It tells how to waterproof concrete and masonry both above and below grade, and it gives the specifications and use for waterproofed mortars. Other interesting details in the booklet include specifications for waterproofed concrete blocks, for waterproofing existing work, waterproofing in home construction, mercantile buildings, factories, swimming pools, etc. The brochure is profusely illustrated and is a valuable guide for anyone interested in making good waterproofed concrete for any use.

**CLINTON METALLIC PAINT COMPANY, Clinton, N. Y. "The Importance of Color of Mortar in Architecture."**

One tendency in present-day architecture is toward economy in use of ornament. In tall structures, such as office or loft buildings, apartment houses and hotels, the cornice with or without a supporting frieze has almost completely disappeared, and gone likewise are the garlands, cartouches and other devices with which until a few years ago architects were fond of embellishing their buildings. This does not mean that ornament is no longer used, but that now the ornament is what might be termed "structural,"—secured usually by use of the building material in ways which are sufficiently tasteful to give grace and dignity to the structure without using any form of applied ornament. It is quite possible that brick is being used more extensively today than at any time in the world's history. Even the tallest building must be enclosed, even though the enclosing walls support nothing,—not even themselves,—and this involves vast areas of wall which are often of brick, and to give architectural character to these great expanses, often necessarily without windows, is to give ornament which is part of the structure itself. Character in brickwork can be secured in several ways, one by using an attractive bond, and another by using an appropriate mortar joint, giving the mortar itself a color which affords a pleasing contrast with the brick. This folder deals with the mortar colors made and sold by the Clinton Metallic Paint Company, materials possessing excellence which has several times been pointed out in these pages. In addition to giving valuable data on the use of these colors, the folder makes many suggestions.

**NATIONAL FIREPROOFING CORPORATION, Pittsburgh. "The Complete Line of Structural Clay Tile."**

Use of clay tile in structural work is of course a matter of great interest to architects, engineers and builders. This valuable booklet deals quite fully with the subject as it relates to the building of exterior and interior walls, floors and roofs, and sets forth the advantages of using the material because of its strength and minimum weight and because of its insulating, fire-safety, and sound-proofing qualities.

**GENERAL ELECTRIC COMPANY, Schenectady, N. Y. "Arc Welding Structural Steel."**

The growing use of arc welding in erecting the steel construction of buildings means a vast reduction in the amount of noise which distracts the inhabitants of so many American cities. In this booklet,—one of several issued by the General Electric Company dealing with use of arc welding for different purposes,—the matter as relating to building construction is covered quite fully. The various advantages of arc welding are set forth, and descriptions are given of the different types of welding,—butt, lap, fillet, etc.

Regarding the relation of building codes to arc welding, the brochure has this to say: "The revision of building codes and the preparation of specifications for welded buildings are highly important matters. Much thought and attention have been given to them at the present time. Many municipalities and engineers have formally recognized metallic arc welding as worthy of consideration wherever structural steel is to be fabricated, either in the shop or in the field. The American Welding Society has published its 1928 Code. Copies of this code may be obtained by addressing the Society. The Pacific Coast Building Officials' Conference has included in its 'Uniform Building Code,' Section 2710, the authority to use arc welding. This code also sets forth the essential elements required by engineers and architects for working out designs of welded joints in steel beams and columns used for building construction. The unit stresses as given in this code are to be changed in the near future to agree with those given in the code of the American Welding Society. Over 50 cities have adopted the code of the Pacific Coast Building Officials' Conference. These cities are listed in the appendix at the end of this publication; and, as will be gathered from the two lists of cities following in the appendix, it appears that, under reasonable supervision, arc welding is an acceptable means of construction in other localities. The Pennsylvania legislature has recently passed a new law which permits welded construction to be used in cities of the first class. As this law is applicable only to cities of the first class, municipalities below that grade are free to adopt their own codes. This is a good indication that an increase in the use of arc welding in the construction of buildings is foreseen. Each month, more and more municipalities are considering the advisability of adopting arc welding on steel construction as a means of obtaining quiet in the vicinities of hospitals, hotels, apartment houses, schools, and office buildings.

"Arc welding has already been successfully applied to more than 50 buildings, varying in height from one to eleven stories; to scores of bridges, including railroad bridges which carry heavy freight locomotives; to many steel barges; to ships, in which part or all of the steel is connected by welds rather than by rivets; to hundreds of miles of steel pipes for transporting oil, or conveying water as part of municipal water-supply systems. The tallest welded building erected to date is the Hotel Homestead at Hot Springs, Va. This was fabricated, erected, and electric arc welded by the American Bridge Company. Five hundred tons of steel are contained in the structure, which consists of two six-story wings and a central portion of eleven stories, above which a tower rises to a height of 180 feet above ground level. The next highest arc-welded building erected to date is the power plant adjoining the Chalfonte and Had-don Hall hotels at Atlantic City. The steel for this power plant was fabricated, erected, and welded by the Bethlehem Steel Company. It is approximately 150 feet high and contains 540 tons of steel. Steam boilers, coal bunkers, and various other accessories of considerable weight incidental to a plant of this kind are supported by the frame-work."



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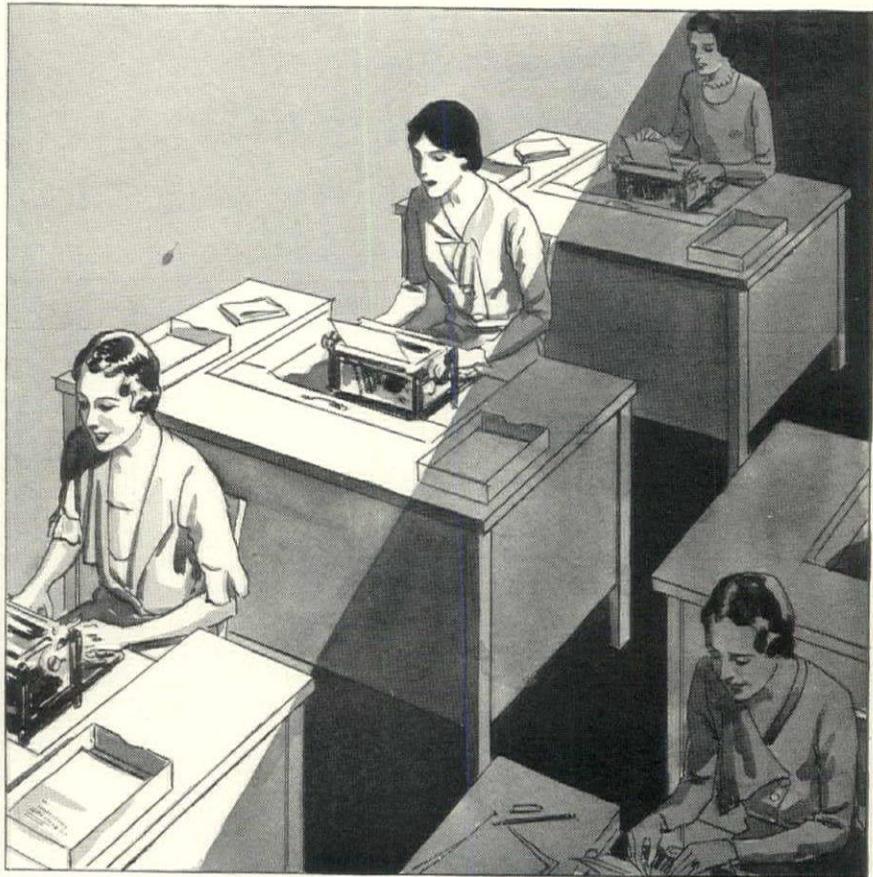
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### The way out of the Twilight Zone

Architects and engineers who are interested in using light effectively should have a copy of the new, illustrated book, "The Way Out of the Twilight Zone." Address your request to the Westinghouse Lamp Company, Department 203, 150 Broadway, New York, N. Y.

\*The deceptive half-light between obvious darkness and adequate illumination.

Westinghouse Lighting Specialists will help you in planning effective lighting installations

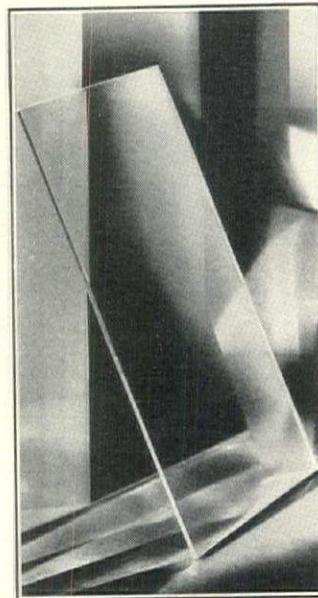
# Westinghouse



Architects Recognize  
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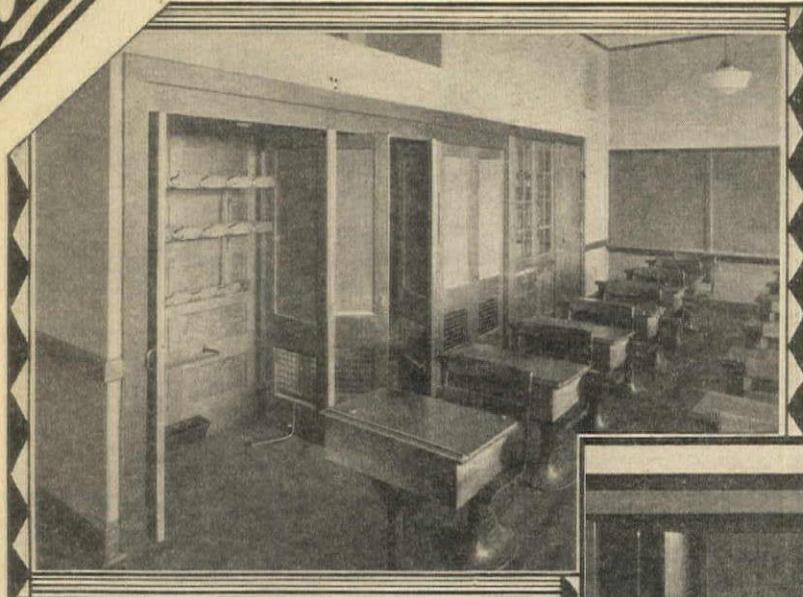
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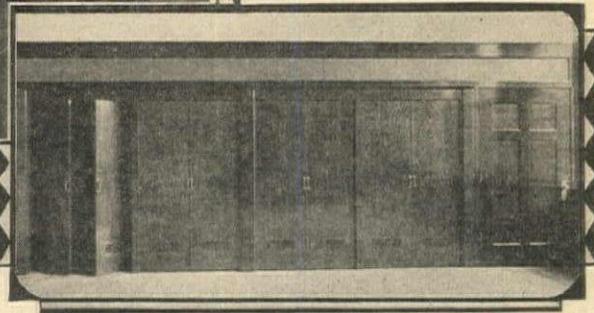
*Wilson*

## HYGIENIC SCHOOL WARDROBES



Showing installation in class room of Belmont, Mass. High School. Note how doors do not block aisle when wardrobe is open.

**What Good  
are  
Cloak Rooms  
Anyway?**



These Wilson disappearing door wardrobes were installed in College Hill Public School, Cincinnati. Elzner & Anderson, Architects.

**T**HE old-fashioned cloakroom has served its purpose, for the most part in demonstrating the useless construction expense attached to a separate walled-in enclosure, its unsanitary characteristics and as an obstacle in the path of educational efficiency.

Wilson Hygienic Wardrobes become an integral part of the class room, but without undesirable encroachment on valuable floor space.

In the Disappearing Door type, the doors, when open, protrude but  $2\frac{1}{2}$  inches into aisle space, folding easily and neatly to the sides of the individual cabinets.

They may be set against the wall or be installed in a convenient recess.

They can be made to conform to any special interior finish, the upper parts of the doors pro-

vided with blackboard surface that meets with no interference from clothes inside.

Wilson Hygienic Wardrobes can be connected to the ventilating system, providing hygienic conditions.

They are constantly under the teacher's eye, promoting discipline.

Besides these advantages, they conserve construction funds, saving, for example, \$120 to \$187 in a room 29'x22'x12'.

Wilson Wardrobes are made by pioneers in this field, proving their superiority during 50 years of service. They are installed under our own supervision and are guaranteed for one year.

For full details as to advantages, descriptions, etc., including the Wilson Rolling Front type for small schools with limited construction appropriation, send for catalog No. 3.

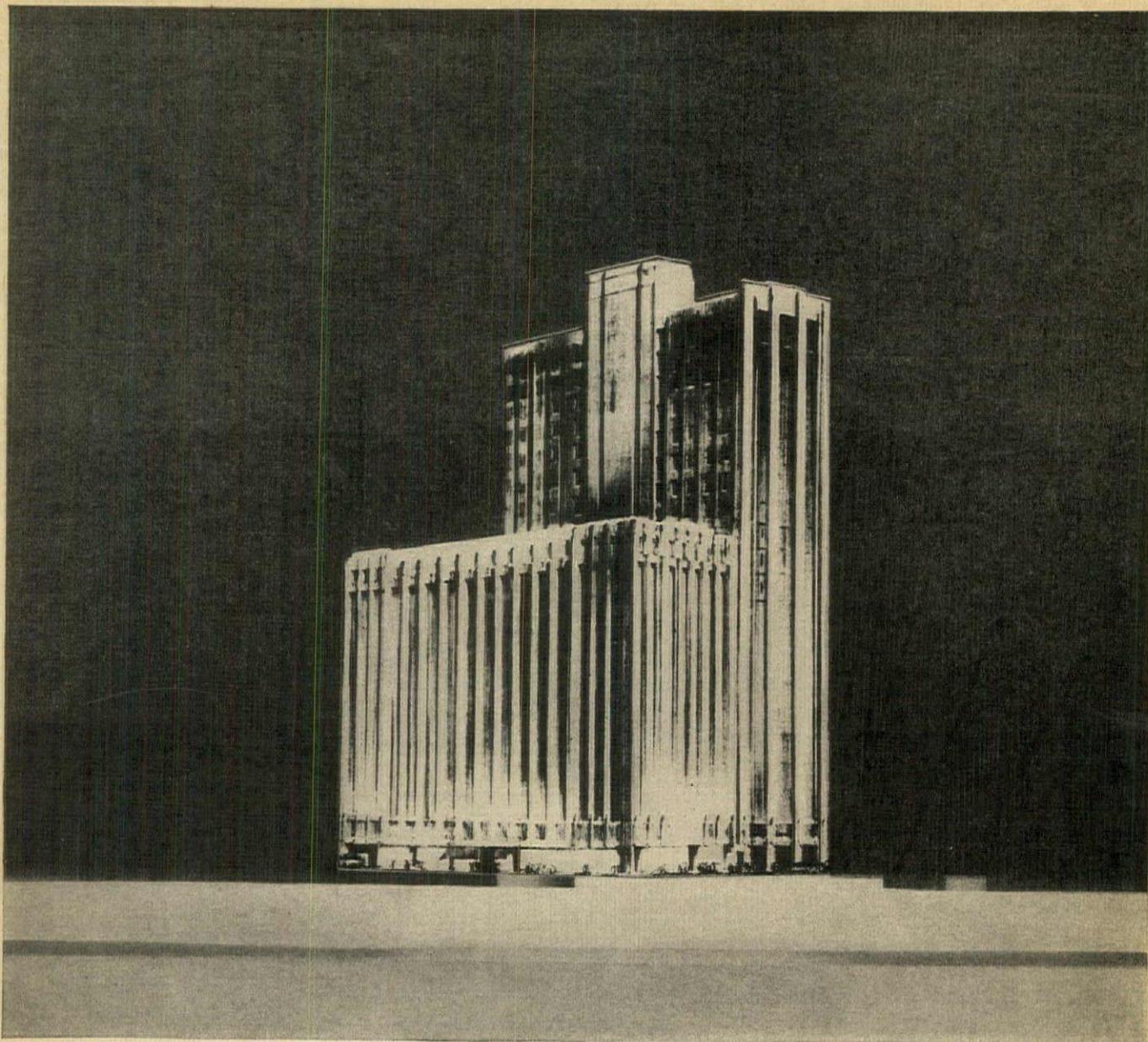
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