FEBRUARY 1931

PENCIL POINTS

A JOURNAL FOR
THE DRAFTING ROOM

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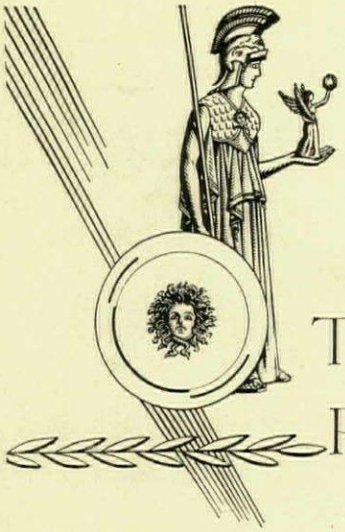


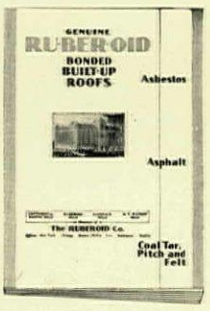
THE WISDOM OF SPECIFYING RU-BER-OID BUILT-UP ROOFS

Architects specify the type of built-up roof that best fits *each* building. Whether that choice is Asbestos, Coal Tar Pitch and Felt, or Asphalt, The Ruberoid Co. can afford to be impartial. Ruberoid has them all.

Ruberoid's flexible specifications meet any condition of climate, atmosphere, unusual wear or roof design. Their price range makes them attractive for any work. Their service record is proved over a long period of years.

To safeguard the architect, the builder and the owner, RU-BER-OID Built-up Roofs are guaranteed both as to workmanship and material for 10, 15 or 20 years, according to the specification used. This guarantee is backed by a National Surety Bond. These guaranteed or bonded roofs are applied only by approved roofing contractors of known skill and reliability.

For ready reference, you will find a complete catalog of RU-BER-OID Built-up Roof specifications in 1931 Sweet's. Should you desire extra sets of these specifications, or face a roofing problem resulting from unusual conditions, there is an engineering department at each Ruberoid office listed below. Simply write or 'phone. Your inquiry will receive our prompt attention.



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The Kind of Flush Compartments You *Expect* From Weis

In presenting Flush WeiSteeL for discriminating architects and builders we are offering a product which is entirely in keeping with the high standards set by this company for more than half a century. The benefits of steel---sanitation, economy and durability ---have been incorporated into a design which includes also those characteristics found in types of buildings where more expensive kinds of materials are generally used.

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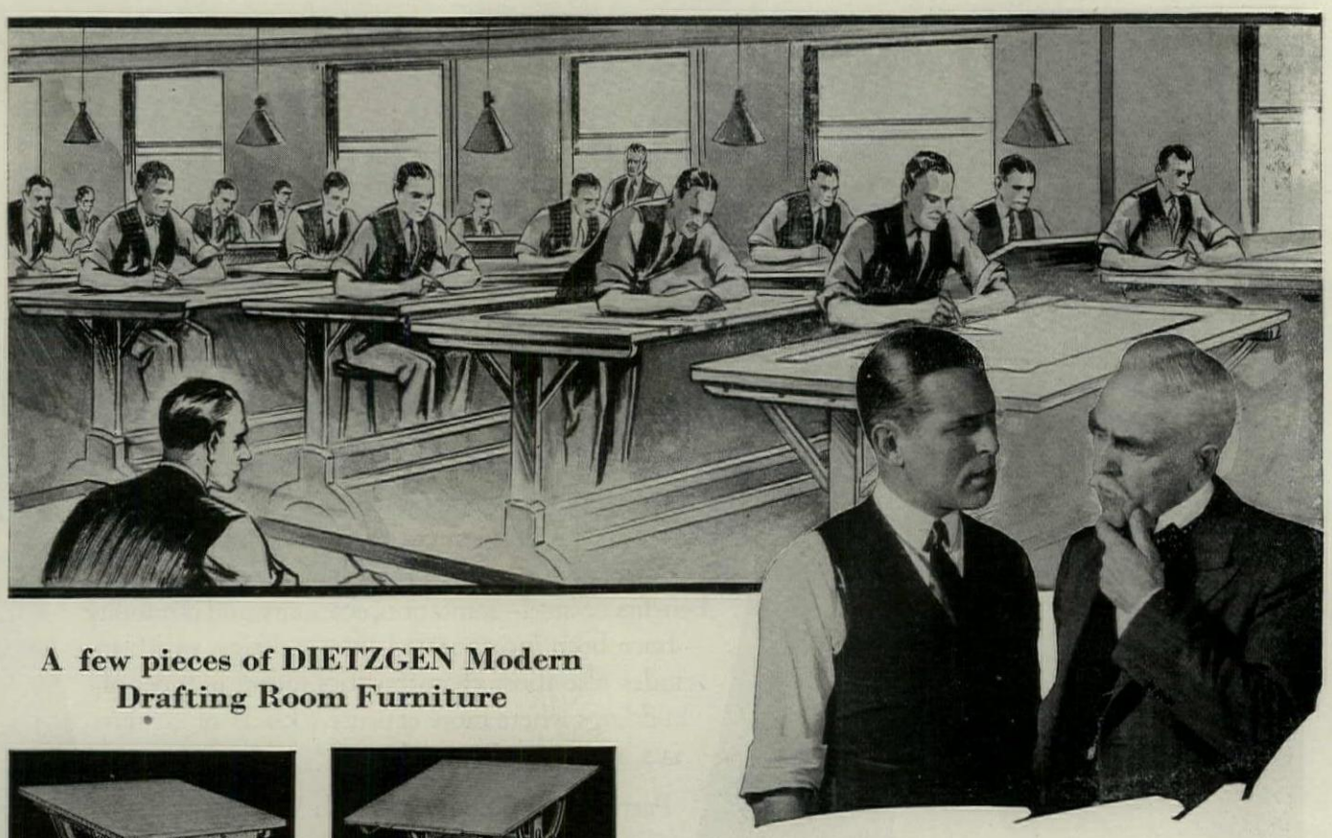
Architects and builders will find that Flush WeiSteeL offers a solution to the problem of costs without sacrifice of durability or appearance.

Turn now to Sweet's for 1931 ---page B-2921 and following ---for complete information. Or, we shall be glad to send a copy of our catalog printed separately.

FLUSH
WEISTEEL
COMPARTMENTS

HENRY WEIS MANUFACTURING CO., INC.

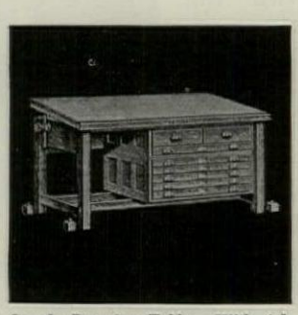
ELKHART · INDIANA



A few pieces of DIETZGEN Modern Drafting Room Furniture

Shamrock Adjustable Drawing Tables—Furnished in the many standard sizes of tops.

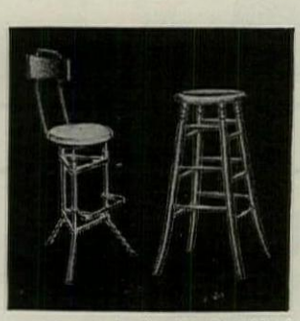
Ideal Adjustable Drawing Tables—Furnished with the many standard sizes of boards.



Sturdy Drawing Tables—With Adjustable Tops in the standard sizes.

Sturdy Drawing Tables—With Adjustable or Solid Tops in the standard sizes.

Steel Sectional Filing Cases—Made of cold rolled furniture steel, welded corners eliminate joints. Practically indestructible—fireproof.



Draftsmen's Stools—Wood and Steel. Everhold Automatic Extension Stool with leather cover and footrest. Draftsman's Stool with golden elm wood seat.

"You think we should turn out more work
. . . . of course we should

"We can turn out more . . . and **better work** but not until we first junk some of this antiquated equipment. We've got as capable a staff of draftsmen as you'll find anywhere. But working eight hours a day on wobbly antiquated equipment, doing extremely exacting work is certainly **not** inspiring and it is extremely difficult. It's hard on the nerves . . . makes best work impossible . . . slows production.

"Give them some new solid, substantial drafting furniture, modern in every way, and you'll have better work—in less time."

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Dietzgen is one of the largest distributors of drafting room furniture in the country. It will pay you to investigate our complete line of modern drafting room equipment.

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Manufacturers of Drafting and Surveying Supplies

SAVE ON YOUR MASONRY

BETTER masonry at less cost has made Brixment the world's largest-selling mason's cement:

[1] It costs less than the portland and lime required to make an equal amount of mortar.

[2] No soaking, no slaking. Ready to mix by hand or machine.

[3] Saves bricklayer's time because it's easier to spread and sticks to the headjoint; its unusual plasticity and convenient set help him in striking joints.

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CEMENT MANUFACTURERS SINCE 1830

BRIXMENT

for MASONRY and STUCCO

WINDOW BEAUTY is Largely a Matter of *GLASS QUALITY*

Residence of
Herbert J. Stroh
Summit, N. J.
J. Duncan Hunter, Arch.
New York
Glazed with
Libbey-Owens-Ford Glass

In home planning, today, windows are receiving unusual attention, for they contribute more to making a home truly beautiful and truly livable than any other single factor . . . ¶ But to achieve the utmost in window beauty it is important to select only the highest quality glass. It is for this reason architects are according an overwhelming preference to Libbey-Owens-Ford Glass, today—just as they have for over fourteen years. Libbey-Owens-Ford Glass possesses a rich, sparkling lustre of rare and permanent beauty—it is truly flat, without bow, and exceptionally clear . . . ¶ To make sure the windows in your homes add everything possible in the way of charm and beauty, insist that they be glazed with Libbey-Owens-Ford "A" quality glass. For your identification and protection, each light bears the familiar L·O·F label.

LIBBEY·OWENS·FORD GLASS CO., TOLEDO, OHIO
Manufacturers also of Polished Plate Glass, and Shatter-proof Safety Glass
CONSULT YOUR ARCHITECT

TUNE IN! FLOYD GIBBONS—*Sunday Evenings—L·O·F Radio Program—9.30 E. S. T.—WJZ and Associated NBC Stations.*

LIBBEY·OWENS·FORD
FLAT DRAWN CLEAR SHEET GLASS

A SYMPHONY IN STAINLESS STEEL AND STONE

Architects: Shreve, Lamb & Harmon. Builders: Starret Bros. & Eken, Inc. Enduro fabricated by: United Metal Products Co., Canton, Ohio.

As long as the building shall stand, the silvery ribbons of metal stretching skyward and contrasting with the gray stone of the Empire State Building, tallest structure in the world, will tell the story of the unchanging beauty of Enduro, Republic's perfected stainless steel.

It will not tarnish or rust. Rain, snow, sleet and smoke will have no effect upon it. The dazzling glints of sunlight reflected from its gleaming facets will remain undimmed through the passing years.

Enduro Nirosta—a remarkable metal—unsurpassed for modern building decoration—stronger than ordinary steel—yet it can be welded, formed, stamped, cast and drawn. To men of vision it opens the door to interior and exterior decorative schemes impossible before the advent of this unusual steel.

ENDURO
REPUBLIC'S PERFECTED STAINLESS STEEL...

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Enduro is sold only through Republic Sales Offices and Authorized Distributors.

Flint Handmade Faïence

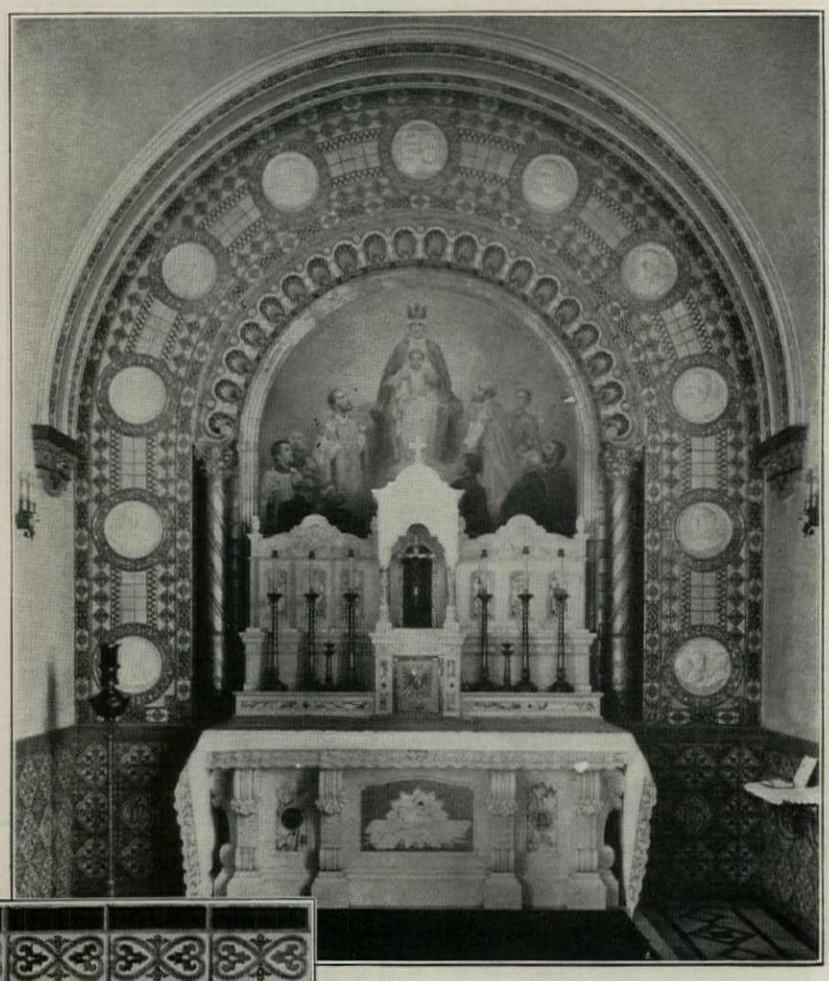
STRENGTH AND BEAUTY
ARE IN THIS SANCTUARY

Right—Altar arch in the Chapel of the new Faculty Building, University of Detroit. One of the most distinguished tiling jobs in the country. Completely executed in Flint Handmade Faience.

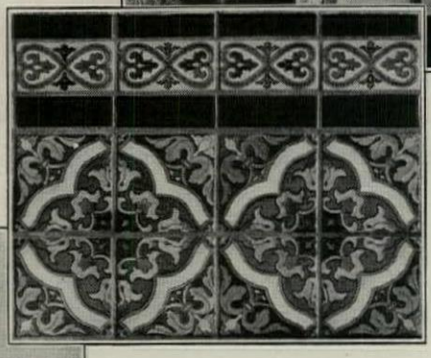
Designed in co-operation with

Malcomson & Higginbotham, Architects
Detroit

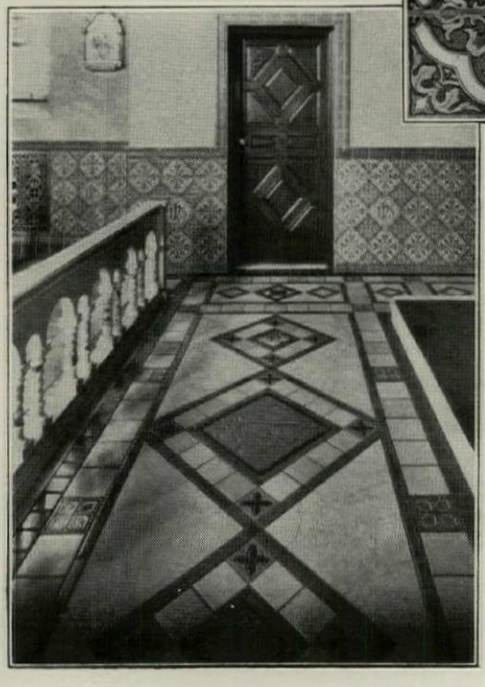
Geo. R. Mehling, Tiling Contractor
Detroit



Center—Detail of wall tile. Renaissance design in Flint Handmade Faience.

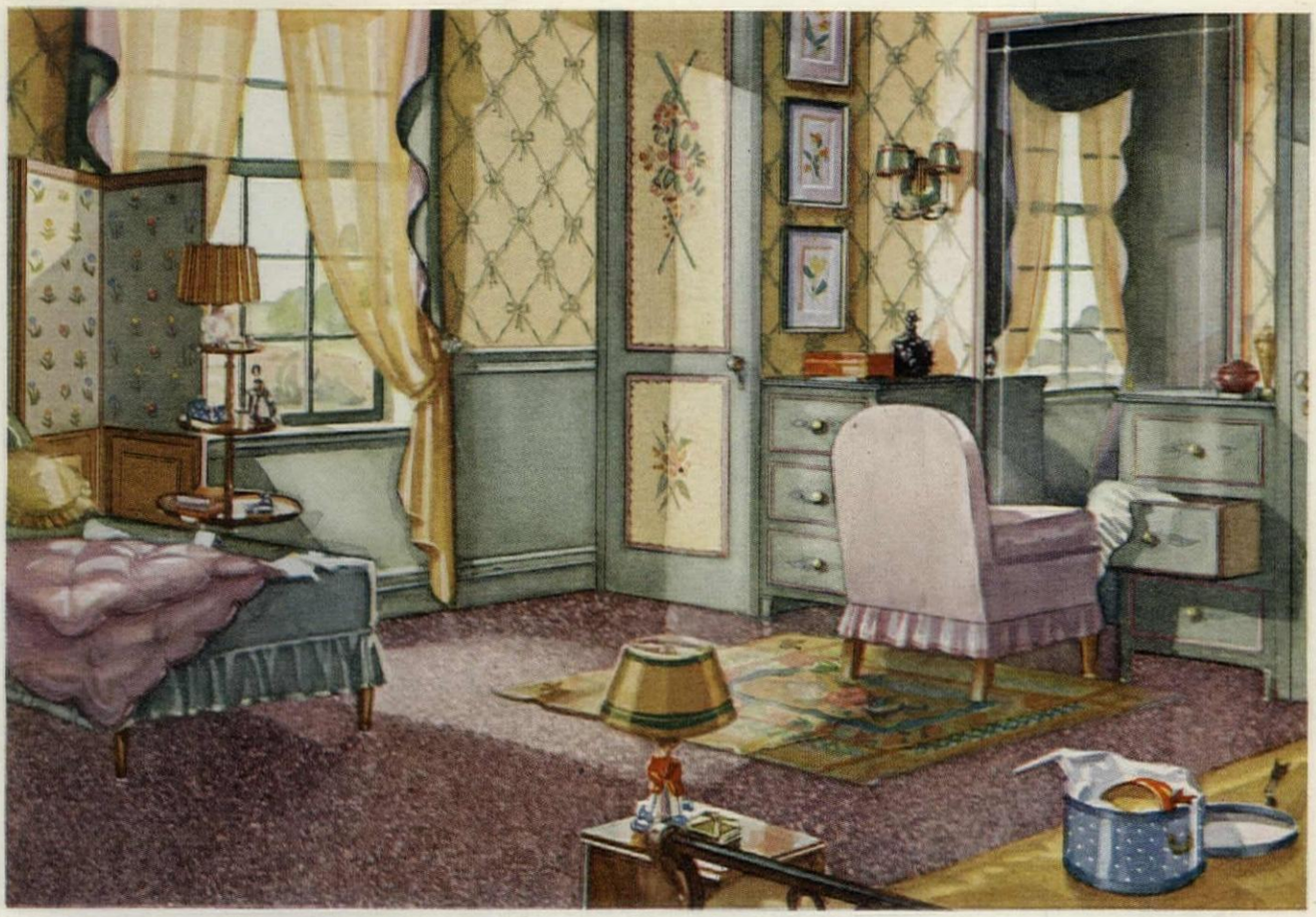


Below—Chapel aisle. Floor notable for its unusual combination of marble and Flint Handmade Faience.



Wherever strength and unusual beauty are required in combination—there you will welcome the rich colors and adaptability of Flint Handmade Faience. Your own designs expertly reproduced, new designs created for special jobs, thousands of stock designs immediately available. Write for catalogs of Flint Handmade Faience, Flintcraft machine-made tiles, and Vitrocraft non-slip tiles.

FLINT FAÏENCE AND TILE CO.
FLINT MICHIGAN



You can always plan a restful bedroom if you base your decorative scheme on Embosstex Linoleum Floors. Its soft, delicate texture is suited to interiors where interesting color is desired without definite pattern. Color shown is Lavender No. 2 Embosstex Granite.

For the Floor Where You Want Soft Color Without Pattern

EMBOSSTEX Linoleum is one of the newest Armstrong creations. It suits the occasion where color is desired without pattern. The unique textural surface lends a softness to the color much to be desired where restfulness is a factor. This type of linoleum floor, exclusively Armstrong's, can be had in a range of eight colors.

The modern architect knows the value of thoughtful color selection in conjunction with the planning of homes. He knows that a knowledge of decoration means client satisfaction and that successful interiors bring prestige to the architect.

Armstrong's (A) Product

By specifying Armstrong's Linoleum, the architect assures his client of many worthwhile "floor advantages." Armstrong Floors are comfortable and quiet under foot because they are resilient. The spot-proof Accolac-Processed surface simplifies cleaning. This means less effort in the household and smaller overhead in business institutions, where cleaning and maintenance costs are factors.

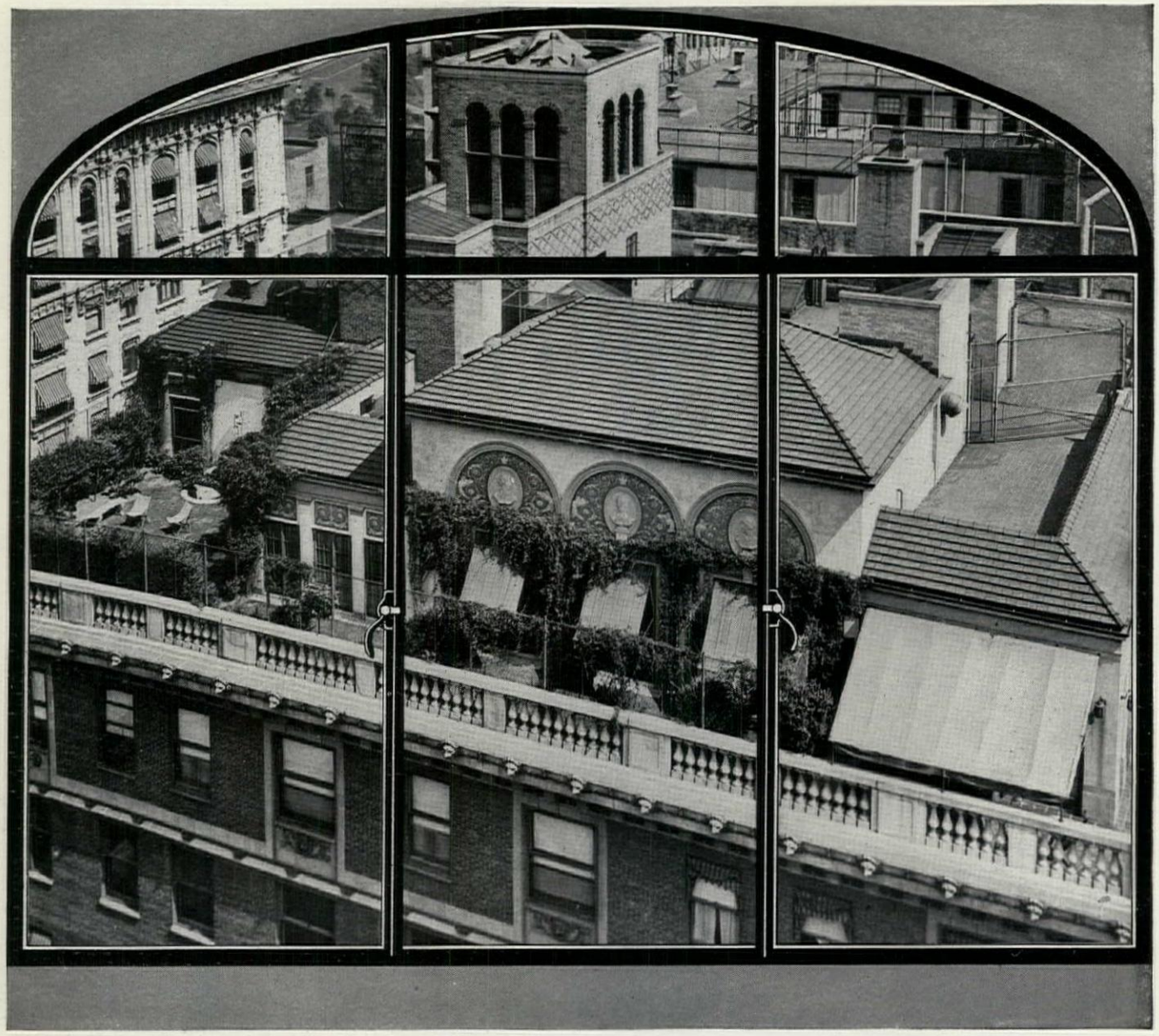
May we send you free a copy of our file-size specification book? It contains many floor facts which have been compiled for your own use. We shall also be glad to send you upon request colorplates and samples of Armstrong's Linoleum. This product is also represented in Sweet's.

Should you desire advice on the decorative use or practical application of Armstrong's Linoleum, just address Armstrong Cork Company, Floor Division, Lancaster, Penna.

Nothing has ever before been produced in linoleum with the soft textural surface of Embosstex. The enlarged section illustrates the unusual beauty of this new-type floor.

Armstrong's Linoleum Floors
for every room in the house

PLAIN · INLAID · EMBOSSED · JASPÉ · PRINTED · LINOTILE *and* ARMSTRONG'S CORK TILE



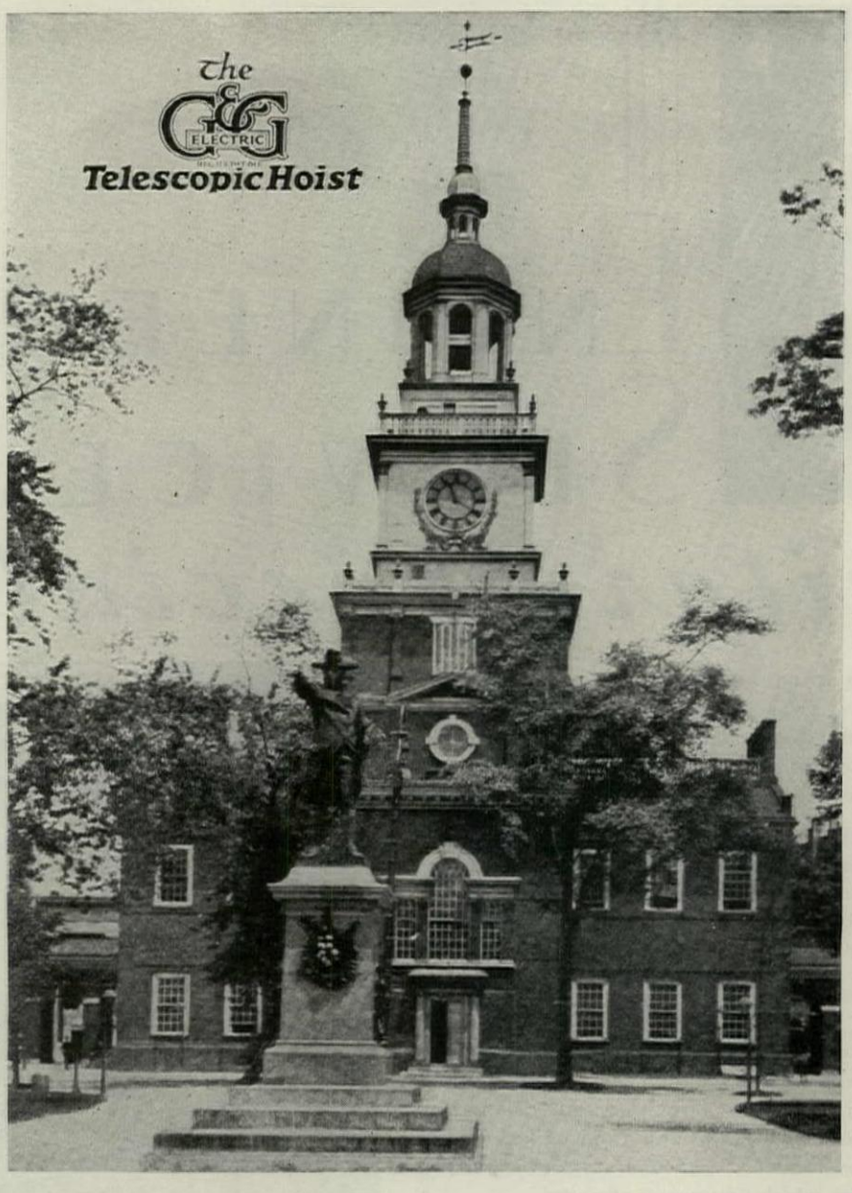
A NEW *FLATNESS* MAKES ALL THE DIFFERENCE

LOOK through a sheet of ordinary window glass and then through Pennvernon—and you're struck with a difference. "How much *clearer,* better glass," you'll say . . . Then look at Pennvernon—along its bright, flat surface—and you see the reason. An almost complete freedom from waves, streaks, "reams" and surface burns—the same flat, shining smoothness on both sides.

The two pieces of glass may contain the same material, but the difference in handling—the new Pennvernon Flat-drawing Process—has produced a flatter, brighter, clearer sheet than was ever before possible—and it has done this without increasing the cost to you.

This new glass is ready at the Pittsburgh Plate Glass Company's warehouses in all leading cities. Samples are yours for the asking. And a really interesting new booklet describing and picturing how Pennvernon is made, will be sent you if you'll just ask the Pittsburgh Plate Glass Company, Grant Building, Pittsburgh, Pa.

PENNVERNON
flat drawn
WINDOW GLASS



IN INDEPENDENCE HALL AND MANY OTHER NOTABLE BUILDINGS

G&G TELESCOPIC HOIST EQUIPMENT IS USED for the removal of Ashes, Garbage and Rubbish

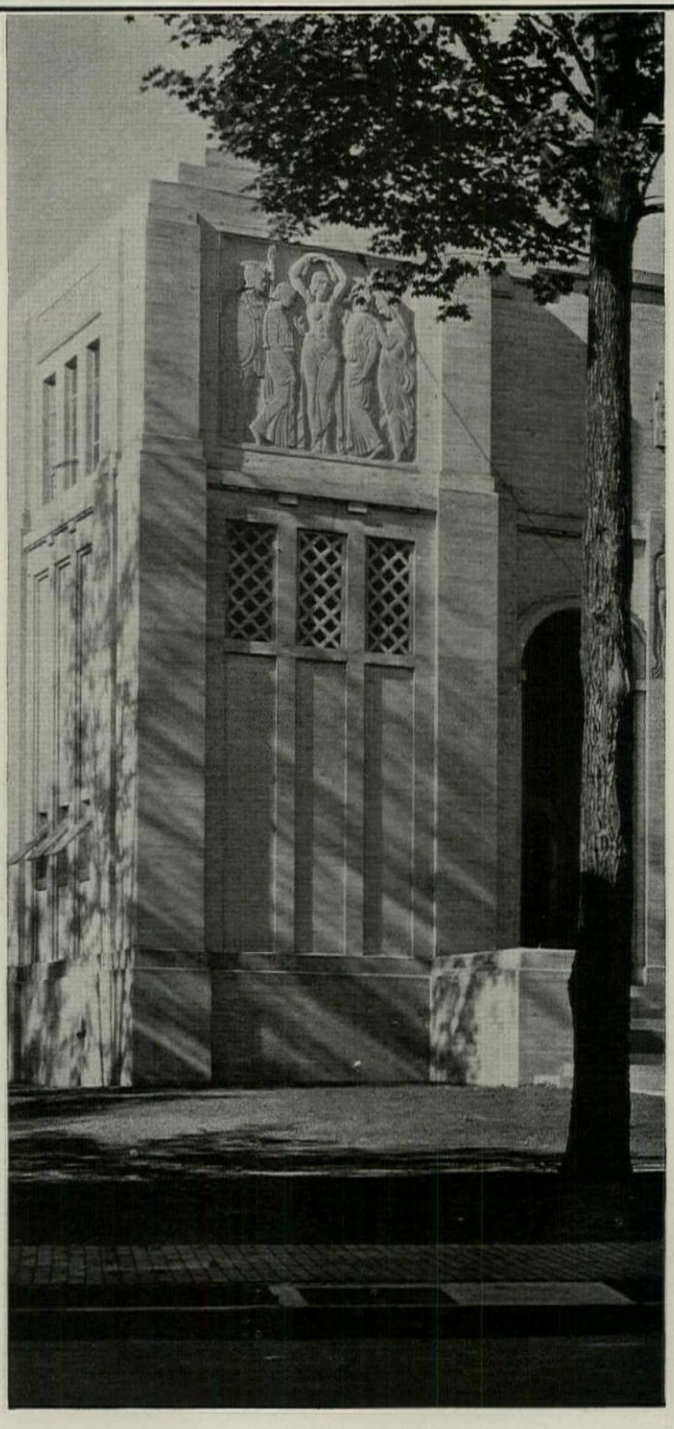
THE removal of ashes, rubbish and garbage from buildings is no longer a haphazard operation. It is carefully planned by the architect, who in thousands of instances has recommended G&G Telescopic Hoist equipment. The Capitol at Washington; U. S. Chamber of Commerce building, Washington; Theodore Roosevelt's Birthplace, New York; and The American Academy of Arts and Letters, New York are indicative of the many prominent buildings using this equipment . . . 201 Bell Telephone Buildings and 2,050 schools throughout the country are also users . . . There are electric and hand power models to meet every condition requiring economical, dependable and absolutely safe equipment.

See our Catalog in Sweet's Archt'l. Catalog 1931 Ed., pp. D6342-49
In Canada see Specification Data

G&G Model E Electric, one of two G&G Hoists in use in Holland Tunnel buildings.

GILLIS & GEOGHEGAN
548 WEST BROADWAY ● NEW YORK, N. Y.

MONOLITHIC CONCRETE



Corner Pylon
Norton Memorial Hall
Chautauqua, New York

•

Otis F. Johnson, *Architect*
Lord & Hollinger, *Structural Engineers*
Fred M. Torry, *Sculptor*
Lorado Taft, *Consultant on Aesthetics*
All of Chicago

•

Rust Engineering Company, *Builders*
Pittsburgh

Norton Memorial Hall is an auditorium seating 1,500 people. The building is approximately 83 by 143 feet, with walls 40 feet high. The entire building is of reinforced concrete, the exterior left just as it came from forms and molds except for cleaning with brush and water.

PORTLAND CEMENT *Association*

Concrete for permanence and firesafety

33 WEST GRAND AVENUE
CHICAGO

A National Organization to Improve and Extend the Uses of Concrete

FRINK

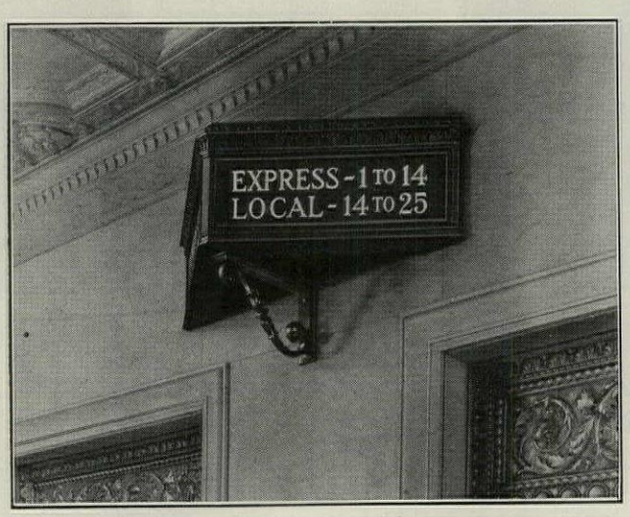
FRINK EMPCO SIGNS in CLEVELAND UNION TERMINAL . . .

GRAHAM, ANDERSON, PROBST & WHITE, Archs.

On this page are shown two of the many possible uses to which Frink Empco Signs have been put in prominent buildings in all parts of the country.

THE FRINK CORPORATION

23-10 Bridge Plaza South, Long Island City, N. Y.



Heat Buildings Without Fire!

Haven't you often wished you could heat your own living room, bedroom and especially the bath without fire in the heater? Your clients have often wished the same thing.

In the Spring and Fall before fires are started, or early mornings and late nights, it is mighty comfortable to be able to turn on a Prometheus Electric Heater and feel the room heat up quickly.

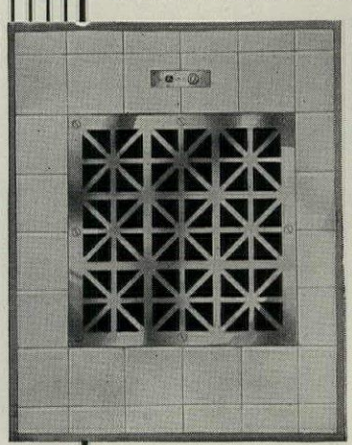
To be up to the last minute, *every room* should have a

PROMETHEUS

Electric Heater

This flush type radiator is built into the wall and has an attractive grille of chrome or monel. Can also be furnished with vitreous porcelain in colors to harmonize with other decorations, if preferred.

Heating element is entirely enclosed and never becomes red hot, so is no fire hazard. The heater is furnished with a switch giving 3 degrees of heat, and can be equipped with thermostatic control.



The adapter box is installed in early stages of building.

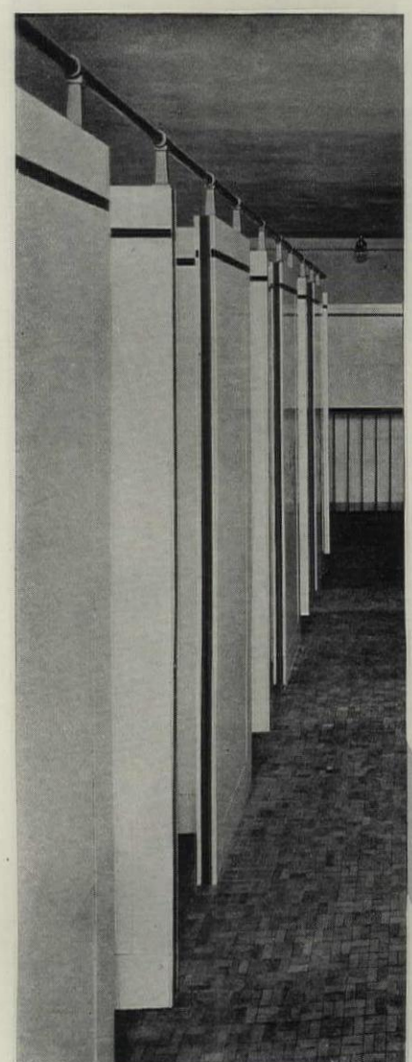
The heating element and grille are fitted in place after other construction work is finished.

Write for catalog.

PROMETHEUS ELECTRIC CORP.

358 W. 13th Street New York, N. Y.

Where modern BEAUTY and SANITATION is demanded leading Architects use VITROLITE



Girls' shower room at Lackawanna High School, Lackawanna, N. Y. Finished in white Vitrolite with black trim.

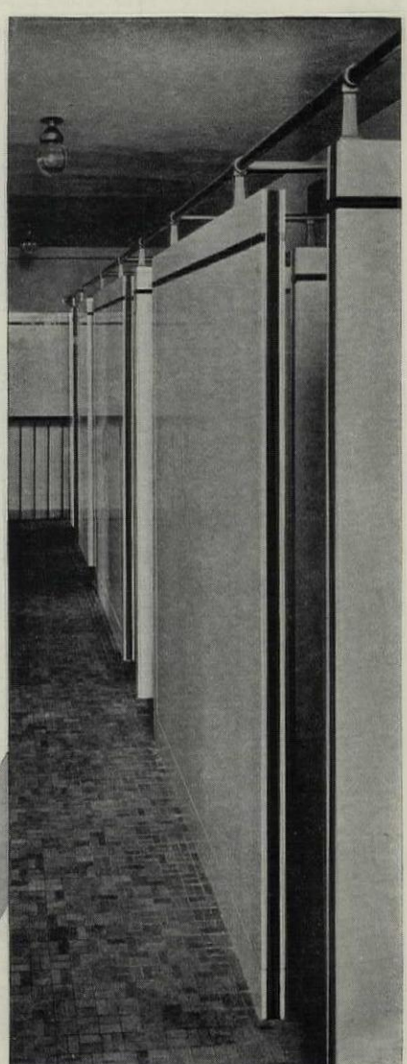
A Twentieth Century Product—yet as old as the earth's formations—is bringing modern beauty and sanitation into thousands of shower compartments, toilet partitions, bathrooms, kitchens, lobbies, corridors, etc. For architects have come to realize that here is a product that is in itself the very spirit of the modern trend.

The shower compartments pictured here are typical of many Vitrolite installations. In addition to the Lackawanna High School shower rooms pictured here, Vitrolite has also been installed in the Bethlehem Park School, the Washington School, and the Roosevelt School—all of Lackawanna, N. Y.

Vitrolite comes in many beautiful colors and surface textures, will not craze, warp or discolor, lasts a lifetime, and can be kept spotlessly clean with a damp cloth.

Send for Vitrolite Samples and Structural Catalog

VITROLITE
"BETTER THAN MARBLE"



Architects—Bley and Lyman, Buffalo, N. Y. Select Vitrolite for the work mentioned above.

THE VITROLITE COMPANY

120 S. LA SALLE ST., Room 1110, CHICAGO, ILL. *Factory:* PARKERSBURG, W. VA.

REPRESENTATIVES IN ALL PRINCIPAL CITIES IN U. S. AND CANADA

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He will judge a new material for himself

WE do not believe that superlative statements, even though true, will sell you Bi-Flax and gain your acceptance of this new material—the only one of its kind. We believe that, as one who has the responsibility of specifying materials, you will study Bi-Flax and judge its value for yourself.

We can tell you that Bi-Flax, combining Flax-li-num with metal lath, has the highest insulation value of any insulating plaster base material — That Bi-Flax provides a positive mechanical plaster key.

Undoubtedly, you are interested in these and other outstanding features of this new material. We feel, however, that Bi-Flax, to gain your approval and acceptance, must depend entirely on your personal examination of the material itself.

The attached coupon is for your convenience. It will bring you a sample of Bi-Flax, that you may examine this new building material, the only one of its kind.

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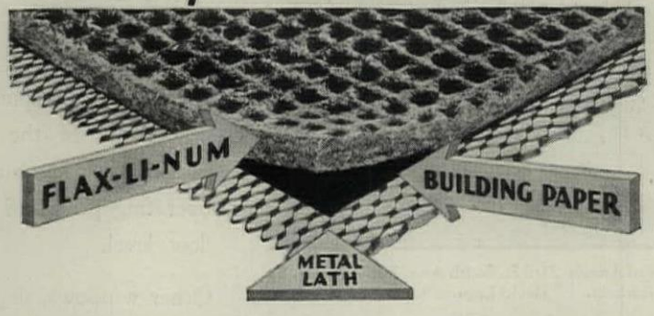

Please give individual name as well as name of firm that samples may be mailed to your personal attention.

FLAX-LI-NUM INSULATING COMPANY, ST. PAUL, MINNESOTA

Please send for my inspection a sample of BI-FLAX. PP-1

NAME_____

FIRM NAME_____

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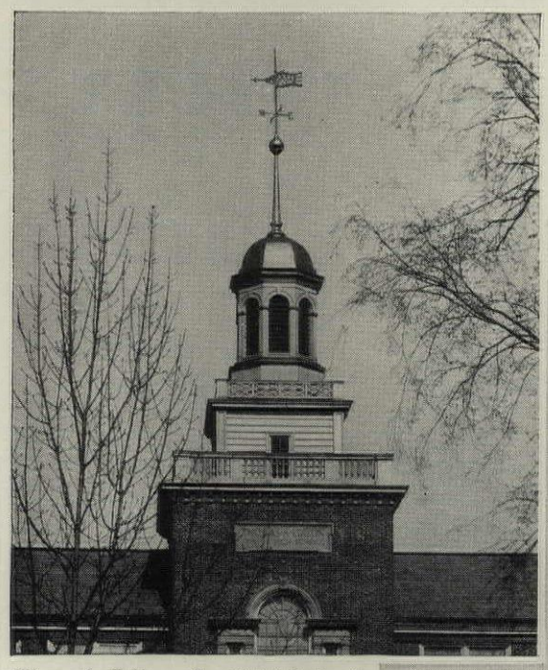
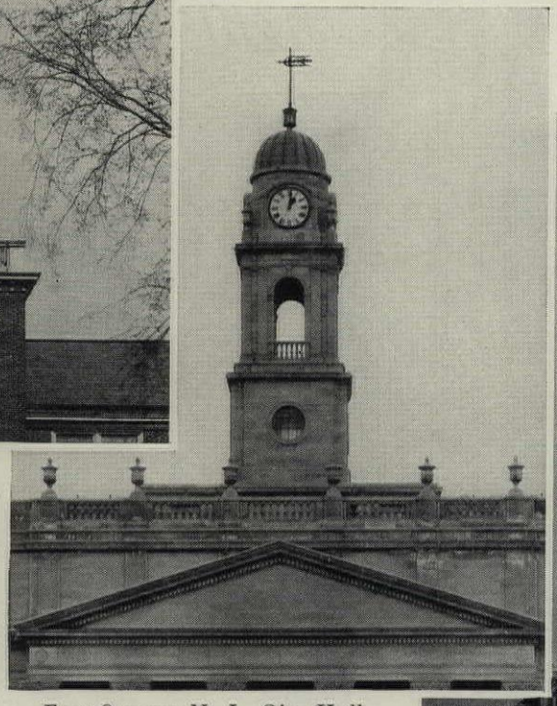
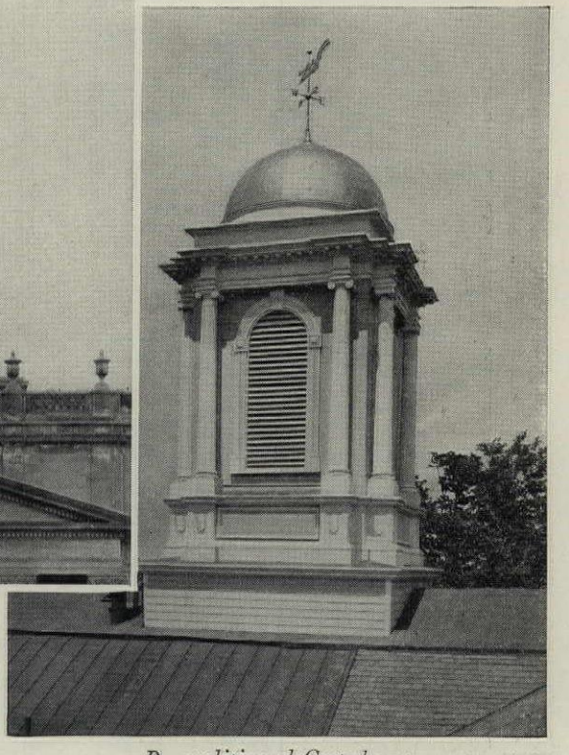


Thos. A. Edison Jr., High School
West Orange, N. J.
Guilbert & Betelle, Architects



East Orange, N. J., City Hall
John H. & Wilson C. Ely, Architects



Reconditioned Cupola on
The Morris County Court House, Morristown, N. J.
George A. Mills & Campbell Voorhees, Architects

Weathervanes — by FISKE

THE weathervane came into its own when Andronicus of Cyrrus placed his brazen Triton on the lofty summit of his Grecian "tower of the winds" to point the way of wind and weather.

FISKE is the oldest and most extensive manufacturer of weathervanes in existence, having equipped many of the outstanding private and municipal buildings in America.

Architects interested in such work will find FISKE consultory service, with its multitude of designs from which to choose, a valuable aid in attaining the highest possible degree of decorative beauty.

DECORATIVE RAILINGS; ENTRANCE GATES; GARDEN AND TERRACE FURNITURE; ORNAMENTAL FENCING (for every purpose, country estate or industrial usage); FOUNTAINS; SUNDIALS; LAMP BRACKETS; LANTERNS; SPIRAL STAIRS; STABLE FITTINGS; BRONZE TABLETS; ARCHITECTURAL BRONZE; ETC.

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ESTABLISHED 1858

SPECIALISTS IN ORNAMENTAL METAL WORK

L·SONNEBORN SONS, *Inc.*

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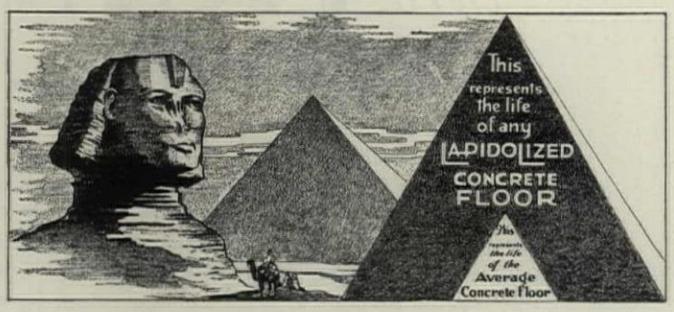


LAPIDOLITH
TRADE MARK

The Original Liquid Concrete Floor Hardener

Turns Concrete Floors Granite-Hard and Protects Them from Crumbling, Dusting and Wearing Down

PRICE-CUTTING COMPETITION, inferior materials—yes, we know it's mighty hard to produce an A-1 job. But specify Lapidolith Concrete Floor Hardener. Have it applied by a trained Sonneborn service crew, at no extra contracting cost. *There's* a job that need not cause you one minute's worry.

Lapidolith is a liquid chemical compound which penetrates deeply into the porous cement and binds the loose particles into a close-grained mass, *granite-hard*. Goes on like water. Hardens over-night. Floors, Lapidolith-treated, resist wear, water, chemicals, oil, and are dustproof.

No integral admixture can do the work of Lapidolith. Such mixtures only *accelerate* the initial set of concrete. They have no permanent effect beyond that. Lapidolith hardens concrete floors *permanently*.

More than a billion square feet of concrete floors have been preserved by Lapidolith—in offices, stores, schools, factories and institutions—in scores of the most outstanding buildings in America. Let us refer you to floors in your community which were Lapidolized years ago and are still smooth and hard after ruinous, grinding usage.

We will gladly quote prices direct to architects so that you can know in advance exactly what a first-class floor hardening job will cost. Sonneborn *guarantees* Lapidolith. Sonneborn makes good. Send for samples and full particulars.

Some Other Sonneborn Products

LIGNOPHOL
For finishing, preserving and wearproofing wood floors. Penetrates wood with life-giving gums and oils.

HYDROCIDE NO. 633
Plaster bond and damp-proofing paint for interior of exterior walls above ground.

HYDROCIDE NO. 648
Mastic, Semi-Mastic
For waterproofing and damp-proofing foundation walls and footings.

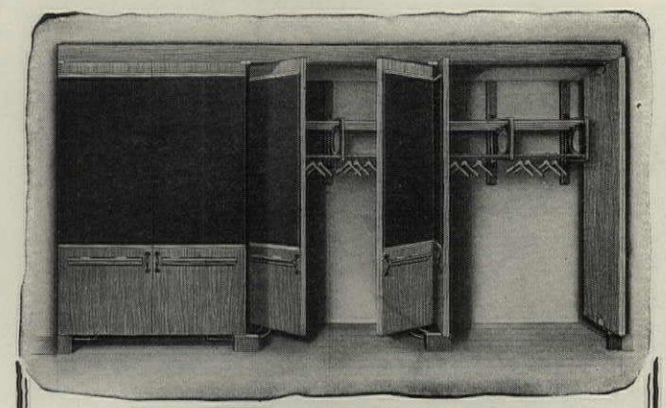
HYDROCIDE INTEGRAL
Paste, Powder
For waterproofing mass concrete, stucco, cement plaster and brick mortar.

CEMCOAT
Interior and Exterior Paints
A tough, lasting paint that stays white after other paints turn yellow. Also in colors.

●

See data in Sweet's Architectural Catalog.

L. SONNEBORN SONS, Inc., 114 FIFTH AVENUE, NEW YORK



Evans "Vanishing Door" Wardrobe Class B-B, without jambs or trim

THE wardrobe illustrated is made for plaster ends, backs and ceilings. No jambs nor trim required; only doors, fillet, hinges and interior of racks and garment hangers completing the installation.

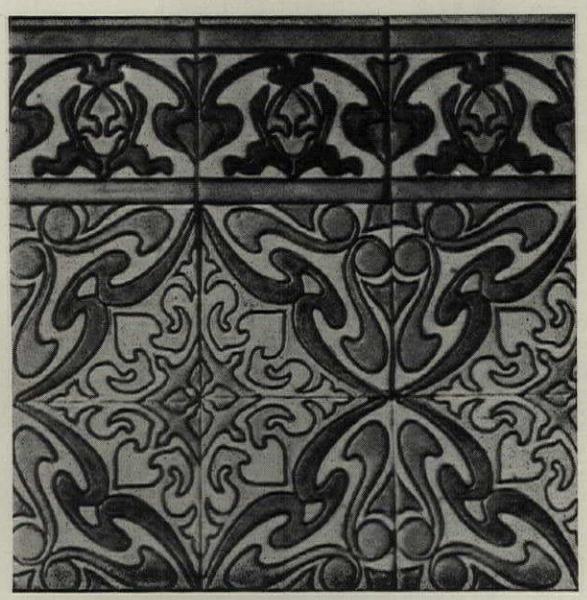
The hinges used are of heavier construction than any previous manufacture and are unconditionally guaranteed to last the life of the building. There are no noisy tracks nor rollers to stick or bind, nor intricate mechanism to get out of order.

The "Vanishing Door" wardrobes are furnished complete in the knockdown. All woodwork is cut to size and only needs nailing in place. The hinges are easier to put on than common butt hinges. The cost of installation is small.

Catalog "K," of A. I. A. file size, with specifications and price list, fully illustrates many types of school wardrobes.

W. L. EVANS
Washington, Indiana, U. S. A.

VANISHING DOOR WARDROBES



POLYCHROME DAMASK FAIENCE

MUELLER MOSAIC CO.
FACTORY: TRENTON, N. J.
New York Showroom: 103 Park Ave.

SEND FOR BOOKLET

Protective Life Insurance Co. Building
Birmingham, Alabama
Warren, Knight & Davis, Architects
Nailcrete used as nailing base for copper roof

CONSIDER THESE ADVANTAGES OF NAILCRETE

The original nailing concrete

1. Light weight with great strength and durability.
2. Fire-proof, rot-proof, unaffected by heat, cold or moisture.
3. Easy to apply—is poured like cinder or stone concrete.
4. May be applied plastically on odd-shaped contours.
5. Can be used over expanded metal.
6. Nail-gripping power greater than any similar material.
7. Eliminates wood nailing strips and all inflamable construction.
8. Economical—saves weight and time—lowers maintenance cost.
9. Every square inch is nailable.

●

NAILCRETE BLOCKS

Nailcrete Nailable Cinder Concrete Building Blocks have all the safety and nail-gripping power of Nailcrete. Ideal for use in the construction of load-bearing walls and partitions.

Send for our informative illustrated booklet

THE NAILCRETE CORPORATION
105 WEST 40TH STREET NEW YORK

MODERNE

approved ornament from our Chicago Studios

Prof. Rexford Newcomb, Professional Advisor to our Chicago Studios.

Architects everywhere will be interested in the modern plaster ornaments being produced in our Chicago Studios. A portfolio of this new and brilliant ornament has just been prepared and is available for architects and designers. In this portfolio you will find not one type of ornament but a variety to suit the individual tastes of the designer. This book will prove a helpful tool in designing and creating interiors of good taste in the modern manner.

At this time we wish to also announce to architects the retention of Professor Rexford Newcomb of the University of Illinois, as professional advisor to our Chicago Studios. Mr. Newcomb is Professor of the History of Architecture at the University of Illinois and is the author of many well-known architectural books. He will act as our advisor and consultant to insure our clients approved designs of authenticity and beauty. This is just another step on the part of the Architectural Decorating Company to insure our clients the most complete service possible in the plaster ornament field.

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Please send me your Portfolio of Moderne Plaster Ornaments.

Name.....

Address.....

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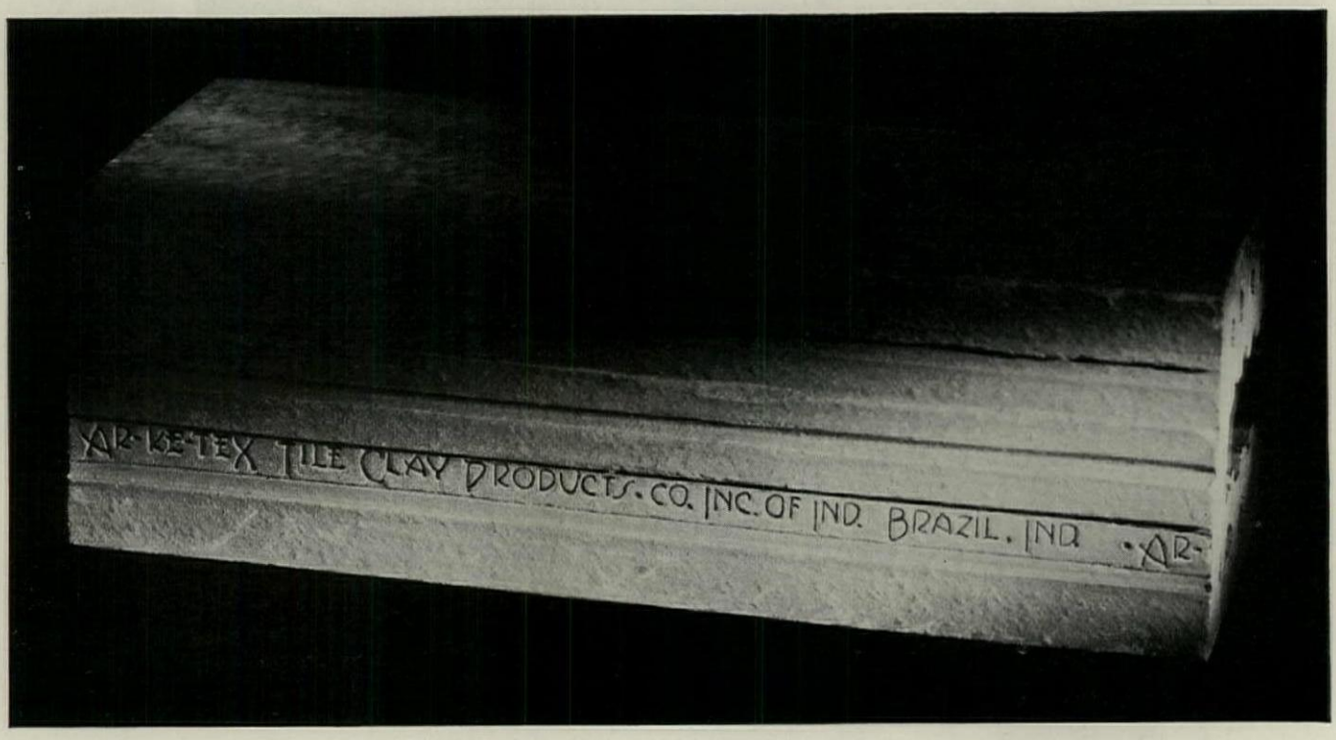
THE NAME AR-KE-TEX ASSURES SANITARY AND PERMANENTLY BEAUTIFUL WALLS



EVERY stretcher unit made by Clay Products Co., Inc. of Indiana, is stamped on the mortar bed with a die bearing the name AR-KE-TEX Tile and the name of the manufacturer. This is done to identify the structural wall material made by Clay Products Co., and to emphasize our responsibility for its creation.

To an architect, a contractor or a building owner, this name is a guarantee of quality in textured tile that has not been equalled by any one of the several imitative products which have been placed on the market since Clay Products Co. first originated and developed a structural tile with a finely finished and impervious face.

Clay Products Co. engineers have made remarkable improvements in the product since they first created AR-KE-TEX Tile. New textures and colors are being added constantly.

THE ARCHITECT GETS: New colors and textures for the design of an unlimited number of original wall effects using only standard units; a permanent finish which retains its original beauty as long as the building stands.

THE CONTRACTOR GETS: Ease and rapidity of erection at a cost which compares favorably with any material possessing similar qualities; prompt delivery in cartons if desired, for easy handling on the job.

THE OWNER GETS: A beautiful, sanitary wall which cannot be permanently marred by acids, alkalis, oil or greases; a soundproof, fire-resisting wall, insulated against heat and cold; a great saving in building maintenance because a wall of AR-KE-TEX Tile never needs painting or refinishing.

CLAY PRODUCTS CO., INC., OF INDIANA
FACTORIES AT BRAZIL, INDIANA

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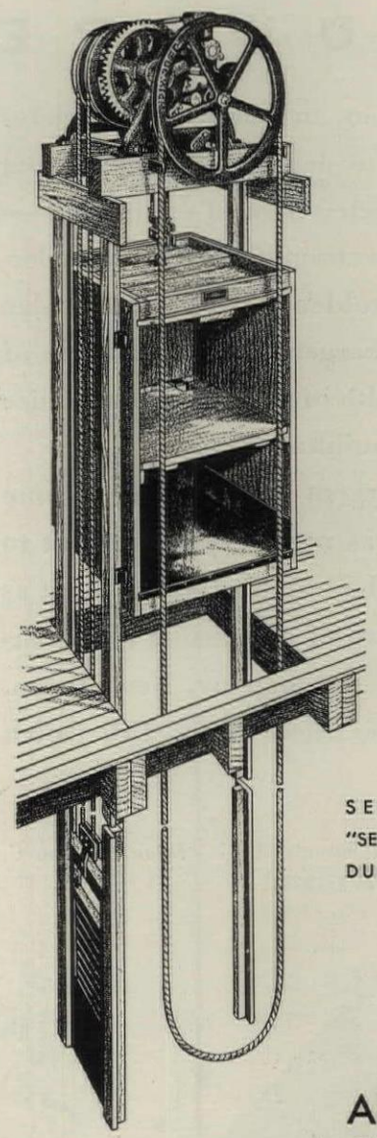
ART-CERAMIC TEXTURES

THE STANDARD OF TEXTURED TILE

A SEDGWICK DUMB WAITER

For HEAVIER Service



SEDGWICK
"SEDG-VERSAL"
DUMB WAITER

FOR average loads up to 150 lbs., and capacity loads of 300 lbs.... the "SEDG-VERSAL" Compound Geared Dumb Waiter represents the most marked advance in equipment of this type. Fitted with automatic brake or band brake as desired. The principal features are: (1) Two sets of machine cut gears, with sufficient gear reduction to enable operator to readily raise heavy loads; (2) By rearrangement of gears, various speeds and capacities can be effected, making possible (3) the efficiency of five different types of dumb waiter equipment. These features are important where average or capacity loads cannot be determined in advance, or where there is a possibility of future changes in service requirements.

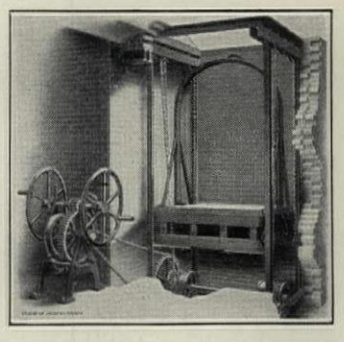
for BANKS · STORES
HOSPITALS · HOTELS
CLUBS · RESTAURANTS
SCHOOLS · INSTITUTIONS

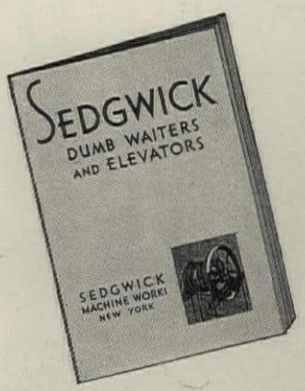
Other advantages are: Machine is a completely contained operating unit. All bearings are of steel roller type. Full diameter hoist wheels carry cables directly from car to counter weight without intermediate sheaves. Car is carried by two special safety cables, each independently attached, one always acting as safety for the other. See complete description in our new catalog. ***Every Sedgwick Dumb Waiter is guaranteed for FIVE YEARS against defective material and workmanship.***

AND—

An Improved SIDEWALK ELEVATOR

Built in capacity loads up to 2,500 lbs. An economical and efficient lift for basement-to-sidewalk service. Makes cellar space in store buildings more valuable at very moderate cost for installation.





New Complete Catalog

Contains much helpful data, such as blue prints, specifications, and a special chart of suggested uses of Sedgwick equipment for various types of structures. Copy gladly sent on request.

SEDGWICK MACHINE WORKS

158 WEST 15th STREET · NEW YORK, N. Y.

BALTIMORE, MD. 509 North Charles St.
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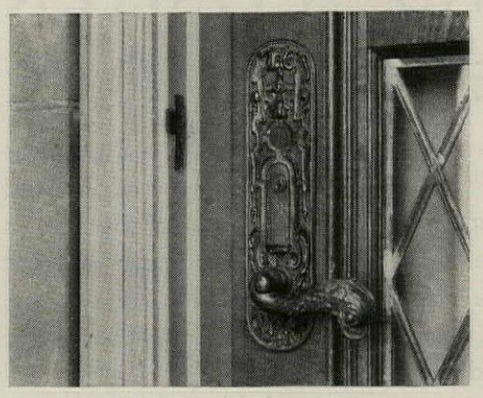
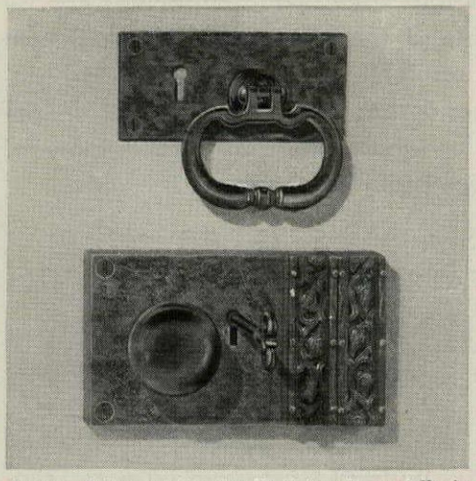
SEDGWICK
Dumb Waiters - Elevators
FOR ALL PURPOSES

YOUR OWN IDEAS IN HARDWARE



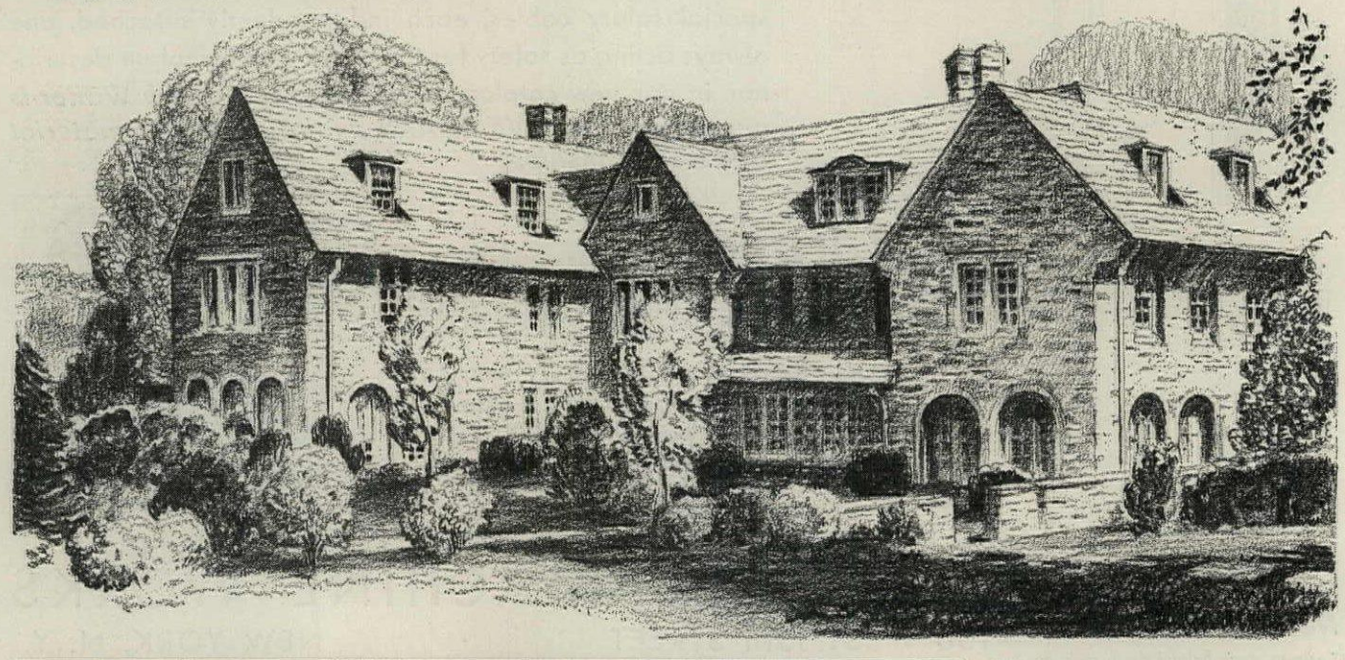


At top—A Sargent door-handle designed especially for the residence shown below. It is of solid bronze, beautifully fitted to the architectural style. And a Sargent rim lock adapted from an Elizabethan original, particularly appropriate for residences of this type.

PERHAPS as no other craftsman, an architect appreciates the importance of attention to detail. A single jarring note — from a carelessly selected item of equipment — may spoil an otherwise perfect ensemble. With an understanding of the architect's problems, with a knowledge of the mechanics of design, Sargent offers hardware of unquestioned quality in a wealth of designs to harmonize with all standard schemes of building decoration.

Architects who specify Sargent Hardware have come to consider it — not merely as necessary equipment to be selected in keeping with the building style — but as a dependable, additional means of expressing true character in decoration. Sargent & Company, New Haven, Conn.; 295 Madison Avenue, New York; 150 North Wacker Drive, Chicago.

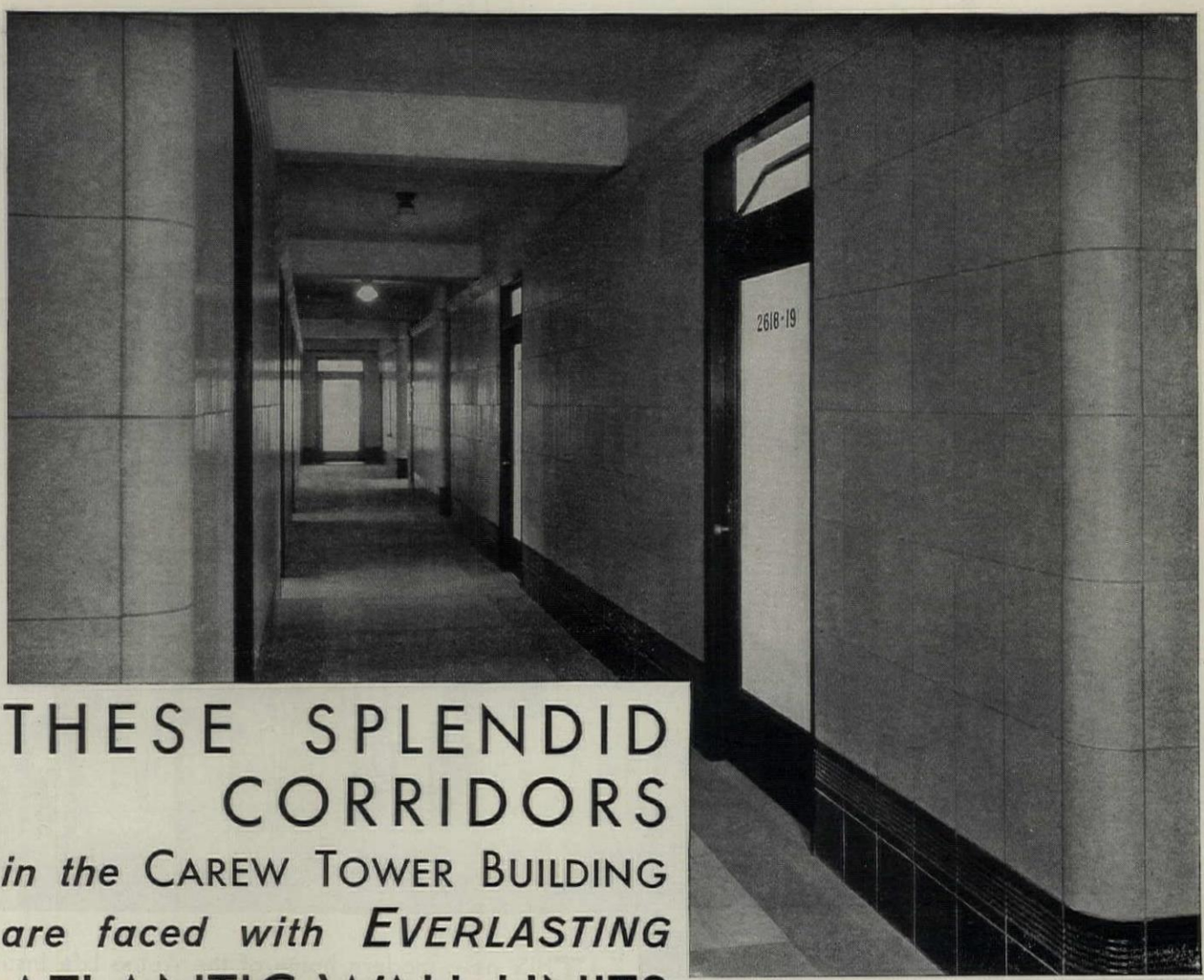
Our line is adequately represented in Sweet's, 1931 edition, volume C, pages C3780 to C3878.



Sketch of an interesting interpretation of English architecture—Seeburger & Rabenold, architects, Philadelphia, Pa.

SARGENT

LOCKS AND HARDWARE



THESE SPLENDID CORRIDORS

in the CAREW TOWER BUILDING *are faced with* *EVERLASTING* ATLANTIC WALL UNITS

One of the Carew Tower Building corridors faced with Atlantic Wall Units in pleasing cream color. Note the rounded corner Units, the black base Units, and the moulding Units at top designed to carry conduits for wiring.

Miles of corridors stretch their length throughout 40 stories of this impressive addition to Cincinnati's sky line...cheerful and attractive in their facing of Atlantic Wall Units. These new ***mechanically*** made Wall Units achieve a symmetry of joint alignment that has no equal. They possess all the advantages of hand made terra cotta units, ***plus*** a price advantage due to quantity production. Atlantic Wall Units are available in rounded as well as flat shapes, in base and moulding designs, in all desired surface finishes, and ***in the full range of hundreds of Atlantic Terra Cotta colors.*** They are offered as a new and progressive development in the building materials field, backed by the resources and facilities of four large factories engaged for many years in terra cotta manufacture.

Consult with us about your new building requirements. Avail yourself of our long experience. Our booklet "Atlantic Wall Units" will be sent upon request.

The Carew Tower Building, Cincinnati, Ohio. W. W. Ahlschlager, Architect. Starrett Brothers, Inc., Builders. One of Cincinnati's largest office buildings, housing a hotel of 732 rooms, and a garage with lobby entrances also lined with Atlantic Wall Units.

ATLANTIC TERRA COTTA CO.

19 West 44th Street, New York

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ATLANTA TERRA COTTA COMPANY
Glenn Building Atlanta, Georgia

These buildings save space and heat with CORK-INSULATED RADIATOR RECESSES

"GIVE us more rental space," building owners demand. So the architect fits heating units inside the walls of the building.

In modern structures these radiator recesses are insulated with Armstrong's Corkboard. Walls must be kept thin or there is no saving in space. But the thinner the walls, the more heat is lost through them—unless its passage is stopped. Heat must be thrown into the room to be effective—not conducted outdoors by brick or steel.

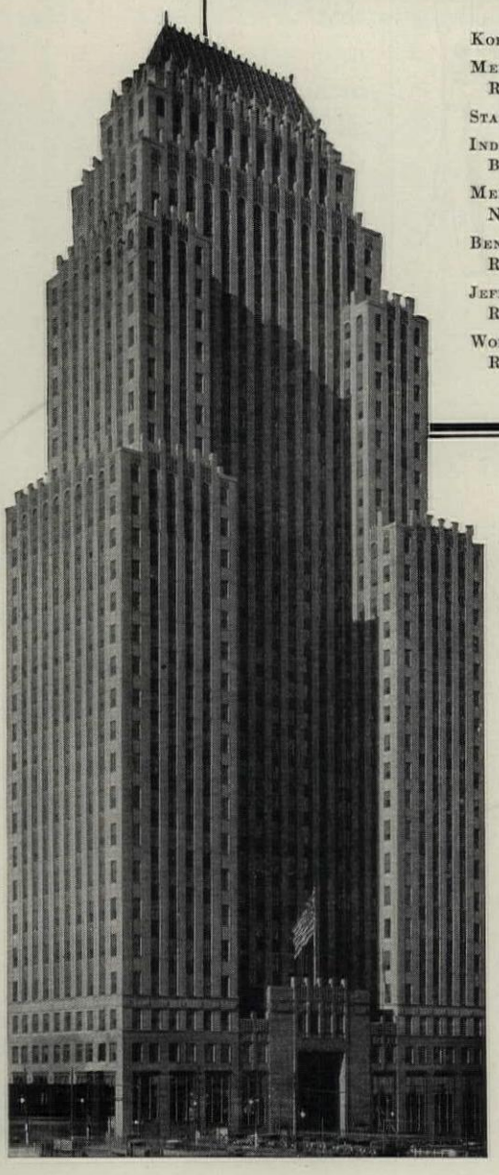
The insulating efficiency of Armstrong's Corkboard assures permanent service. Its resistance to moisture makes it last as long as the building itself. Structurally strong, it is easily worked for this or any other type of installation.

Many other uses

There are many places where Armstrong's Corkboard is serving building needs. For years it has insulated roofs of all kinds. Especially in factories, where "ceiling sweat" threatens damage to materials and machinery corkboard on the roof checks this danger. It makes it possible to maintain low temperatures in cold storage plants and quick-freezing rooms.

Because of its unique composition, cork is useful for many other purposes. Air-borne sounds can be muffled with cork. So Armstrong's Corkoustic, the cork acoustical material which lends itself to decoration, lines many school and theater auditoriums. Cork is resilient, too. Armstrong's Cork Machinery Isolation absorbs vibration and noise caused by all types of machinery. In the Koppers Building, for instance, vibration has been banished from air compressors and ventilating pumps by means of cork.

Every day sees some new use for cork.



KOPPERS BUILDING, Pittsburgh, Pa.

MERCHANDISE MART (Waiting Room), Chicago, Ill.

STATE BANK BUILDING, Chicago, Ill.

INDIANA AND MICHIGAN ELECTRIC BUILDING, South Bend, Ind.

MEHARRY MEDICAL COLLEGE, Nashville, Tenn.

BENJAMIN FRANKLIN HIGH SCHOOL, Rochester, N. Y.

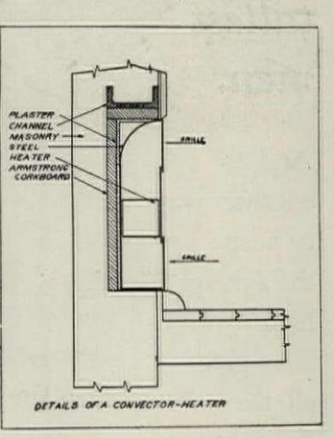
JEFFERSON JUNIOR HIGH SCHOOL, Rochester, N. Y.

WORTHEN BANK BUILDING, Little Rock, Ark.

Pittsburgh's largest office building, the Koppers Building, architects Graham, Anderson, Probst, and White. Here Armstrong's Corkboard serves many purposes, including the insulation of radiator recesses.

~ ~ ~

This sketch shows how radiator recesses are being insulated in modern office buildings.



It may be just the material you are looking for now to do some special work, solve some puzzling situation. Armstrong engineers are always at your service for consultation. Armstrong Cork & Insulation Company, 902 Concord Street, Lancaster, Pennsylvania.

Armstrong's (A) Product

Armstrong's Cork Products

CORKBOARD..CORK COVERING..CORKOUSTIC..CORK MACHINERY ISOLATION..INSULATING BRICK

It's a mighty tall army . . if you average just the four tallest men.

And another way to keep the average high is to give all the short ones leave of absence while the average is taken.

An average is reliable and useful *only* when you are *certain* that it includes *all* the factors that it should . . . "all present or accounted for" . . .

And especially is this true in judging heating system steam consumption figures.

There are no less than *forty five* separate variable factors that may affect the steam consumption of any heating system. To allow any one of them to be overlooked, forgotten or disregarded may lead to faulty conclusion or false decision.

We have prepared a "check-list" of these 45 variable factors to help you check your steam consumption figures and estimates. Write for one or more copies. We will be glad to send them gratis to anybody.

Engineers, architects and heating contractors will find the related subjects of heating steam consumption analysis, estimating and heating cost accounting, as presented by Warren Webster & Company, of vital interest.

A request for further details will bring a Webster steam heating specialist to discuss this vitally important subject.

A Heating System for Every Need and Every Purpose

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

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

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

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

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

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

-since 1888
Webster
Systems of Steam Heating

a-I 57a

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

RAYMOND CONCRETE PILES

—do you realize

—that the reinforced tapering

—sheet steel shell

—which protects every pile

—wholly *maintains* driving resistance;

—can be *inside* inspected

—from end to end after driving;

—protects the concrete from obstructions

—displaced during driving;

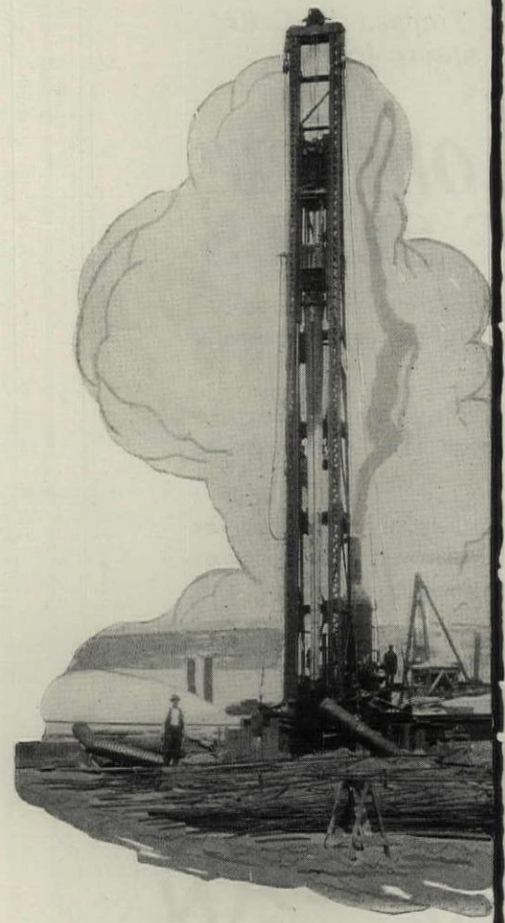
—keeps inside moisture in the concrete;

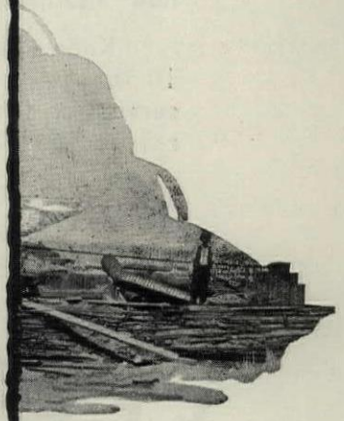
—keeps outside materials out of the concrete;

—and is left on each pile

—in the ground . . . this is the

RAYMOND METHOD





RAYMOND
CONCRETE PILE CO.
NEW YORK: 140 Cedar St.
CHICAGO: 111 West Monroe St.
Raymond Concrete Pile Co., Ltd., Montreal, Canada

Atlanta, Ga.	Miami, Fla.	Montreal, Canada
Baltimore, Md.	Philadelphia, Pa.	Hong Kong, China
Boston, Mass.	Pittsburgh, Pa.	Maracaibo, Ven., S. A.
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Detroit, Mich.	Buffalo, N. Y.	Buenaventura, Col., S. A.
Houston, Texas	Milwaukee, Wis.	Omori, Tokyo-Fu, Japan
Kansas City, Mo.	St. Louis, Mo.	
Los Angeles, Cal.	St. Paul, Minn.	

—A FORM FOR EVERY PILE—
A PILE FOR EVERY PURPOSE

THIS ROOF GOES ON *FOREVER!*

Haydite . . . . Trapped Air Cells
10 pounds per square foot . . . .

Featherweight Concrete INSULATING ROOF SLABS

Would you wish to replace the walls of a building periodically? Then why replace the roof—a roof should *surely* be as structurally sound as the walls.

Modern roofs are of concrete. Precast of Haydite aggregate (trapped air cells), they are more economical, weigh less, and provide new insulating value.

Known as Featherweight concrete, these slabs, weighing as low as 10 lbs. per sq. ft., afford permanent, fireproof, no-maintenance roof service on the country's most prominent public and industrial, utility and railroad buildings. No painting is required.

Interesting and helpful "Catalog and Roof Standards" on request.

Featherweight concrete slabs are also available with nailing surface for fastening ornamental covering.

Made, Laid and Guaranteed by

FEDERAL-AMERICAN CEMENT TILE CO.

Executive Offices: 608 South Dearborn Street - - - - - - Chicago
Plants Near CHICAGO - NEW YORK - PITTSBURGH - BIRMINGHAM
FOR OVER A QUARTER CENTURY

LOOK *"under the hood"* OF YOUR WINDOW SHADES, TOO

Are automobiles all on a par? . . . *Neither are window shades.* In shades, as in cars, there are great mechanical differences.

Look "under the hood" when you buy shades . . . look critically into the roller. And above all see a *Columbia* roller. In all shadedom there is no other engine to compare with this one.

No other will perform so well nor last so long. No other is so quick to respond . . . so smooth in action . . . so *quiet.* No other has the extra-powered spring . . . the balance born of power in reserve. No other has the semi-covered end . . . a protection against dust and ravelings. It is a matchless roller.

And *Columbia* makes matchless shade cloth to complement its service. Shadings of all kinds. Each the finest of its kind . . . *No other shade will cost you so little per month of usefulness as a Columbia shade.* Look "under the hood" for the reasons!

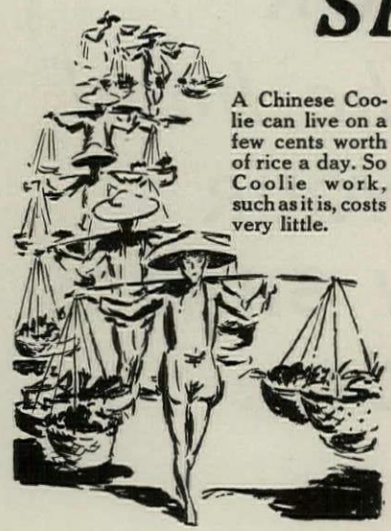
Columbia

WINDOW SHADES

Rollers . Venetian Blinds

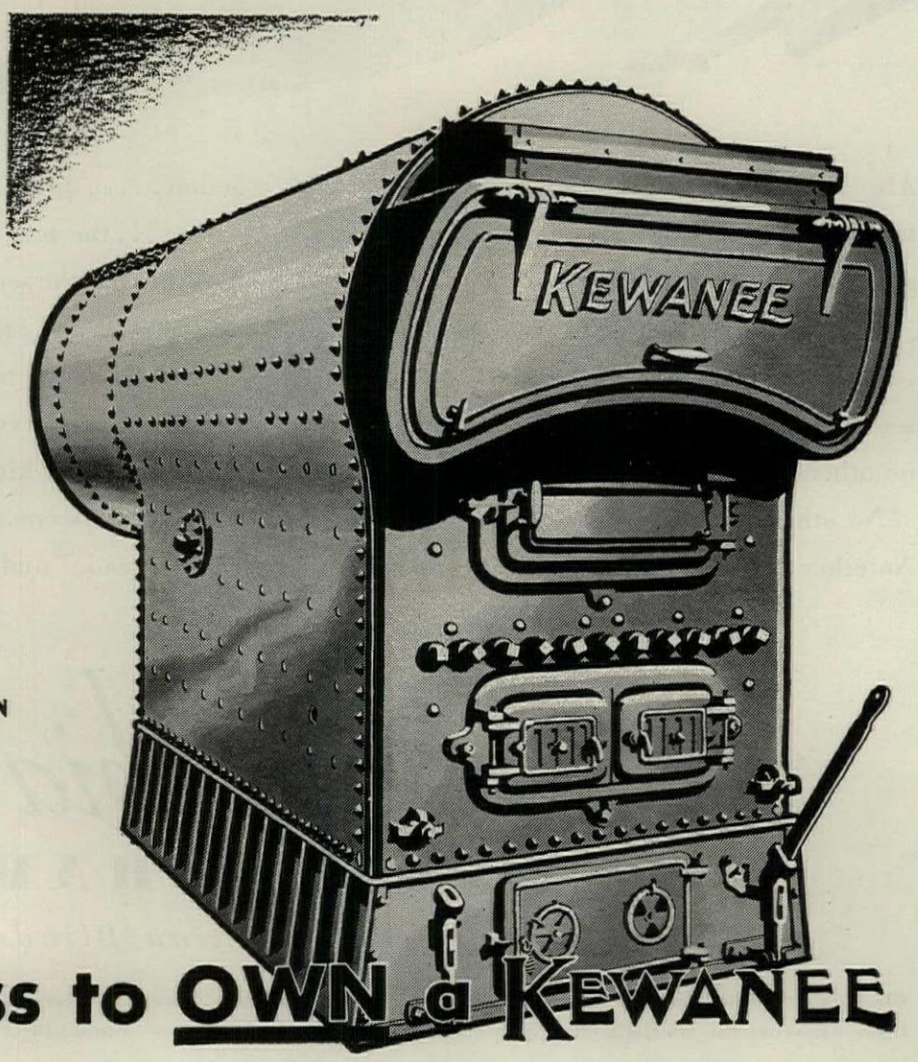
THE *Columbia* MILLS, Inc., 225 Fifth Avenue, New York · *Branches:* Baltimore · Boston · Chicago · Cincinnati · Cleveland · Dallas · Denver · Detroit Fresno · Kansas City, Mo. · Los Angeles · Minneapolis · New Orleans · Philadelphia · Pittsburgh · Portland, Ore. · St. Louis · Salt Lake City · San Francisco · Seattle

KEWANEE STEEL BOILERS



A Chinese Coolie can live on a few cents worth of rice a day. So Coolie work, such as it is, costs very little.

A Kewanee Smokeless Boiler, designed and built by American workmen according to American standards, burns the lowest priced coals (even screenings); and does it very thoroughly. It *lives* on cheap coal yet produces a maximum amount of heat.



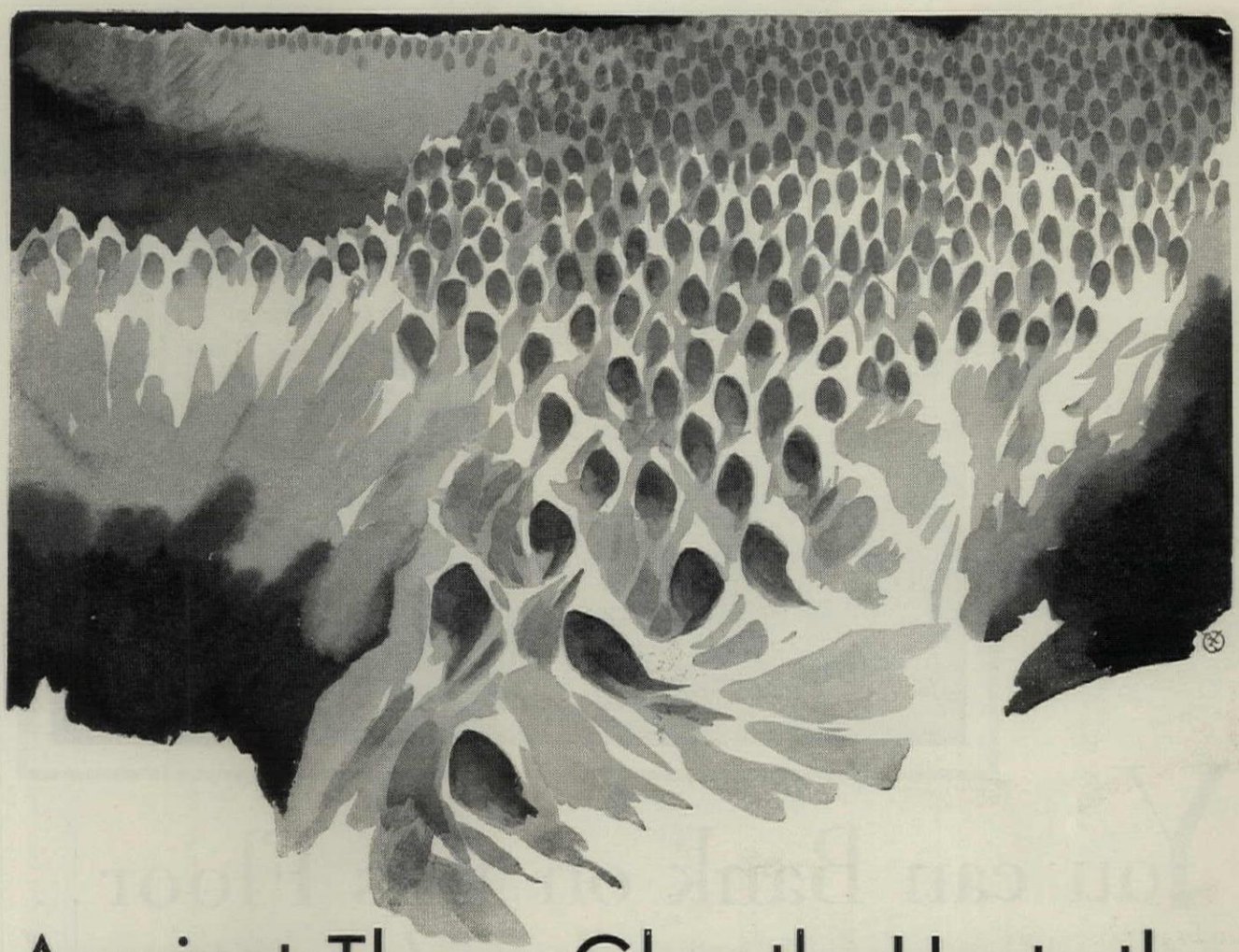
This *every day fuel saving*; plus sturdy steel construction which adds many extra years to the life of a Kewanee; brings its actual cost down to a point that makes it a preferred investment.

If the fuel supply in your city *is* a problem, investigate the advantages of a Kewanee Smokeless before making a boiler selection.

KEWANEE BOILER CORPORATION
division of American Radiator & Standard Sanitary Corporation
KEWANEE, ILLINOIS
Branches in Principal Cities

MEMBER OF
STEEL HEATING BOILER INSTITUTE

It Costs Less to OWN a KEWANEE



Against These Ghostly Hosts the Soldier of Sanitation is Your Ally

In the toilet rooms and plumbing fixtures of every public and semi-public building unseen, ghostly legions lie in ambush ready to attack at the first sign of failure or defect.

The final results of such attacks are much more disastrous than the mere dollar costs involved in remedying the troubles.

For bubble cups may wash germs to the lips of unsuspecting drinkers. Poorly operating closets and urinals may become breeding places for the most hideous of infectious diseases.

And with the number of people using the fixtures these dangers are all too common.

To defeat the grim hosts who promote such conditions the Clow Soldier of Sanitation has worked for 52 years. He has developed the most complete line of specialized plumbing fixtures in the world for schools, hospitals, industrial plants and public buildings.

And he has developed manufacturing and testing methods that assure perfect operation of every fixture before it is shipped.

You will notice the results in two ways: (1) the unseen legions ambushed for stealthy attack will be completely routed, (2) the cost of repelling them through the many years to come will be reduced to almost unbelievably low levels.

Call him in.

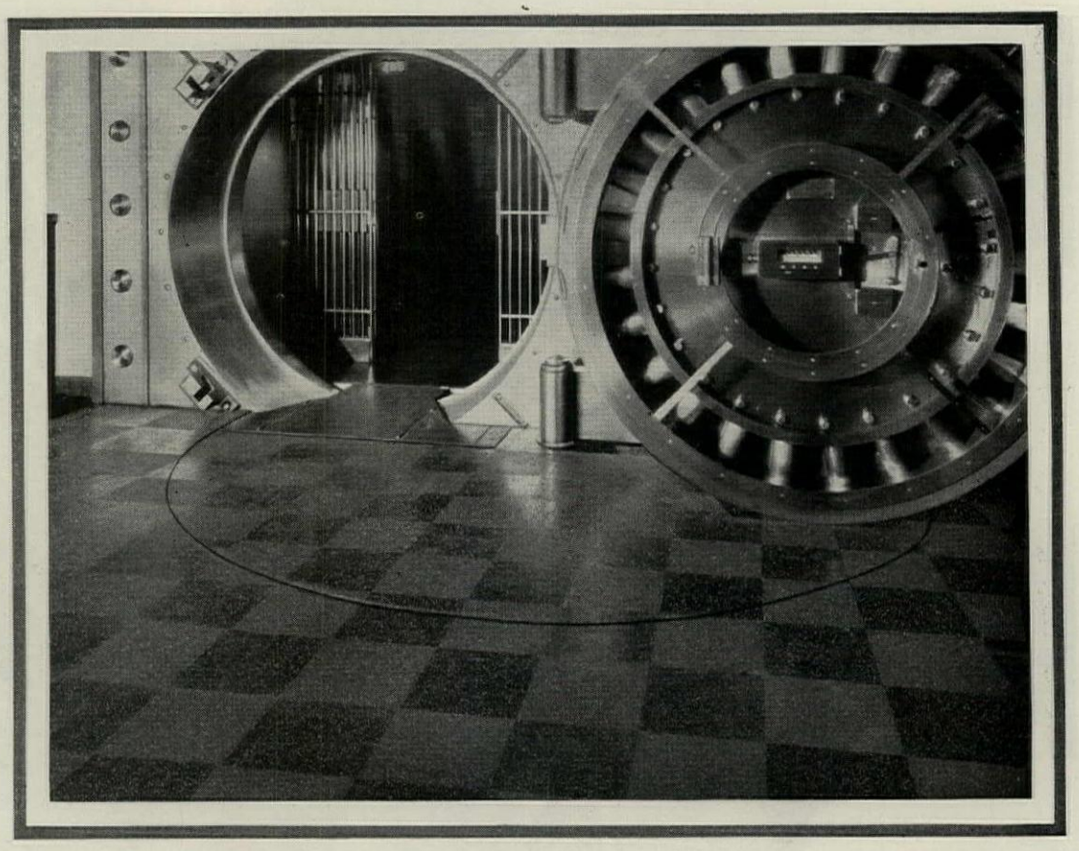
CLOW

CHICAGO

PREFERRED FOR EXACTING PLUMBING SINCE 1878

Consult your architect

The Clow Soldier of Sanitation is a specialist on all plumbing jobs where sanitation is likely to be an acute problem. At his finger tips is the accrued experience of 52 years. This is Ted Seabrooke, Toledo, Ohio.



Armstrong's Cork Tile Floor in the Safe Deposit lobby of the bank of Commerce and Trust Company, Memphis, Tenn. Architect, Hanker and Cairns.

You can Bank on this Floor.. *and work on it, too!*

The dining-room in the residence of Mr. E. L. Doheny, Jr., of Los Angeles, has this attractive two-tone Armstrong's Cork Tile Floor. Installed by Van Fleet-Freear Co.

THE extreme versatility of Armstrong's Cork Tile has made it the "true cosmopolite" among floors. Whether it is installed in bank, office, or private residence, it is equally at home . . . gives the same flawless service.

In banks, where quiet is so essential, Cork Tile Floors—made of the purest cork—cushion footsteps, silence sounds, never become slippery.

In busy offices and shops, where foot-traffic is heaviest, the resistance of Armstrong's Cork Tile is remarkable. This custom-laid floor is easily cleaned, and, when properly cared for, will last a lifetime. An occasional waxing and polishing keeps it as bright as new.

And for private homes Armstrong's Cork Tile offers many interesting decorative possibilities. These floors are made in three rich, mellow shades of brown. In creating a floor of your own design you will also find that the thirty-one different tile sizes assure you unlimited opportunities.

We have prepared a book for you completely describing Armstrong's Cork Tile. Write for "Custom-Built Floors of Cork." It also tells you about Linotile, another Armstrong's hand-laid floor. Armstrong Cork Company, Custom Floor Department, Lancaster, Pennsylvania.

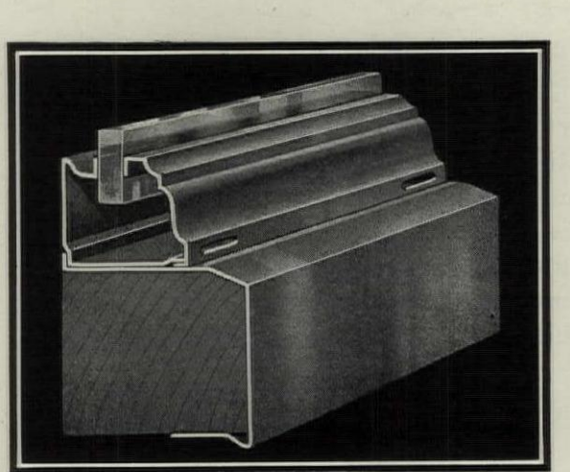
Armstrong's CUSTOM FLOORS

Armstrong's (A) Product

LINOTILE . . . . . CORK TILE

MADE BY THE MAKERS OF ARMSTRONG'S LINOLEUM

The ultra-modern front of the Thor Shop in Chicago worked out in white and black contrast with Brasco construction. Distinctive and different, this shop is an excellent example of the application of modern metals to store front design.



Brasco 606 Sash in Monel Metal. Illustration shows the self-supporting type used in conjunction with sill 649. Gauge of sash face and back members .040"; of sill, .031". All attaching screws also of Monel Metal.

4 Metals to Choose From

YOUR exclusive store front design can now be carried out in the metal most appropriate to its line and color.

To give you this opportunity for individual choice, Brasco has developed and perfected its constructions in *four* different metals—Monel Metal, introduced for the first time in this field, bronze, aluminum alloy and copper.

Thus style and distinction are linked in Brasco fronts with structural worth, permanence and safety, famous for years throughout the country.

Literature on all constructions, full-sized details and actual samples, clearly marked with the gauge of each member, gladly sent on request.

Brasco
STORE FRONTS

BRASCO MANUFACTURING CO.
Harvey, Illinois
New York Philadelphia
Distributors Everywhere

THE MODERN APARTMENT HOUSE

BY

FRANCIS S. BANCROFT

VICE-PRESIDENT OF PEASE & ELLIMAN, INC.

THERE is no ... exerted as ... nomenal develop... which has been a ... as any other one ... Manhattan, being ... out over more th... it economically un... live on a plot of land which is continually in- ... creasing in value, ... reasonable wages ... for any but the u... efficiently. The ... would have becom... gradually evolved ... acceptable to a la... population.

In the beginning, ... known as French ... their occupancy w... sired or were fo... development of ... gave a spur to a... ments, a movemen... by T. G. Hubert, ... houses approxim... arrangement of ... In the early ... operatives, u... introduced.

By 190... oped whi... cumstanc... in privat... within th... selves be... building t... vator, wit... than eight... consisted of ... ix...

... small foyer, ... off of which ... s and a bath. ... ecessary to go ... on a passage- ... om was con- ... joining bath. ... ses which had ... Even in the ... suites renting at the then staggering sum of $10,- ... g hall was in- ... ence between ... e baths and a ... ary, a billiard ...

... R. Carpenter ... were regrouped ... de of a gallery ... great impetus ... he apartment ... versally used. ... ent house has ... lude features ... private house. ... ent house to- ... n between the ... ng man. The ... would return ... investment, the ... tically pleasing ... dvantageously, ... ill contain the ... pleasing to ... complete un- ... es behind any ... would perhaps ... ximum number ... a point where ... partments, the ... go to the other ... d be left with ...

The Medinah Athletic Club, Chicago. Walter W. Ahlschlager, architect. The USG System of Sound Insulation is used to prevent the transmission of noise from bowling alleys, rifle range and elevator machinery and to provide quiet telephone booths. Sabinite Acoustical Plaster is also used in various rooms throughout the club.

It is now possible for USG Sound Control experts to determine scientifically the cause of various noises and to test the efficiency of sound insulating materials and methods.

(At Left) In many radio broadcasting stations, where perfect sound control is absolutely essential, the USG System of Sound Insulation is now being used with great success.

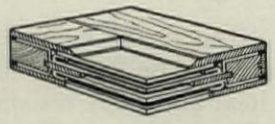
Why Architects Consult USG Engineers on Problems in Sound Control

A Message to Architects from the United States Gypsum Company

• • • •

MANY leading architects consult USG sound control engineers when called upon to specify materials and methods for insulating against undesirable noises. They have found their services thoroughly reliable in analyzing any acoustical problem and in prescribing corrective treatment.

The United States Gypsum Company supplies not one but many materials and methods for controlling sound. USG engineers are therefore in a position to make recommendations to meet the requirements of the *job*—impartially and without prejudice. They are trained and equipped to diagnose all types of sound control problems and to predict definite results which can be depended upon.



Detail of USG Sound Insulative Door. This door prevents the transmission of sound from room to room.

Where it is desirable to confine disturbing noises to the room of their origin, the USG System of Sound Insulation has been used with great success. It is a highly efficient method, scientifically designed, to control sound by preventing the transmission of noise through walls, floors, ceilings and doors.

Architects have found the USG System of Sound Insulation a practical and thoroughly dependable method for insuring quietness in hotel and apartment rooms and for eliminating disturbances caused by noises emanating from ballrooms, elevator shafts, machine shops, kitchens, pantries, gymnasiums, etc. The cost is surprisingly low—usually amounting to but a fraction of the cost of the building.

You are invited to call in a USG engineer for consultation on any problem in sound control. Complete description of USG materials and methods for controlling sound and other USG products will be found in Sweets' Catalogue. Or write for further information. United States Gypsum Company, Dept. 282, 300 W. Adams Street, Chicago, Illinois.

USG SYSTEM *of* SOUND INSULATION

A NEW NAME
of great significance to you

Nevastain is the name given to the complete line of Nirosta and Stainless Steels sold exclusively by Associated Alloy Steel Co., Sales Division for corrosion, heat and wear resistant alloys for Ludlum Steel Co., Sharon Steel Hoop Co., and Timken Steel & Tube Co.

With the eyes of the entire industrial world focused on the far reaching possibilities of Nevastain alloys, we believe the associated experience and knowledge of these three important sources will prove of great benefit to the various process industries who use or can advantageously use this advanced product.

Associated Alloy Steel Company is an organization devoted exclusively to the sale of corrosion, heat and wear resistant alloys in all forms.

Through the combined products of our Associated Companies we furnish Nevastain steels for every fabricating requirement—the complete service for bars, sheets, hot and cold rolled strip, tubing, wire, welding rods, billets, slabs, plates, castings, etc.

ASSOCIATED ALLOY STEEL CO., INC., CLEVELAND, OHIO

General Office—1806 Union Trust Building

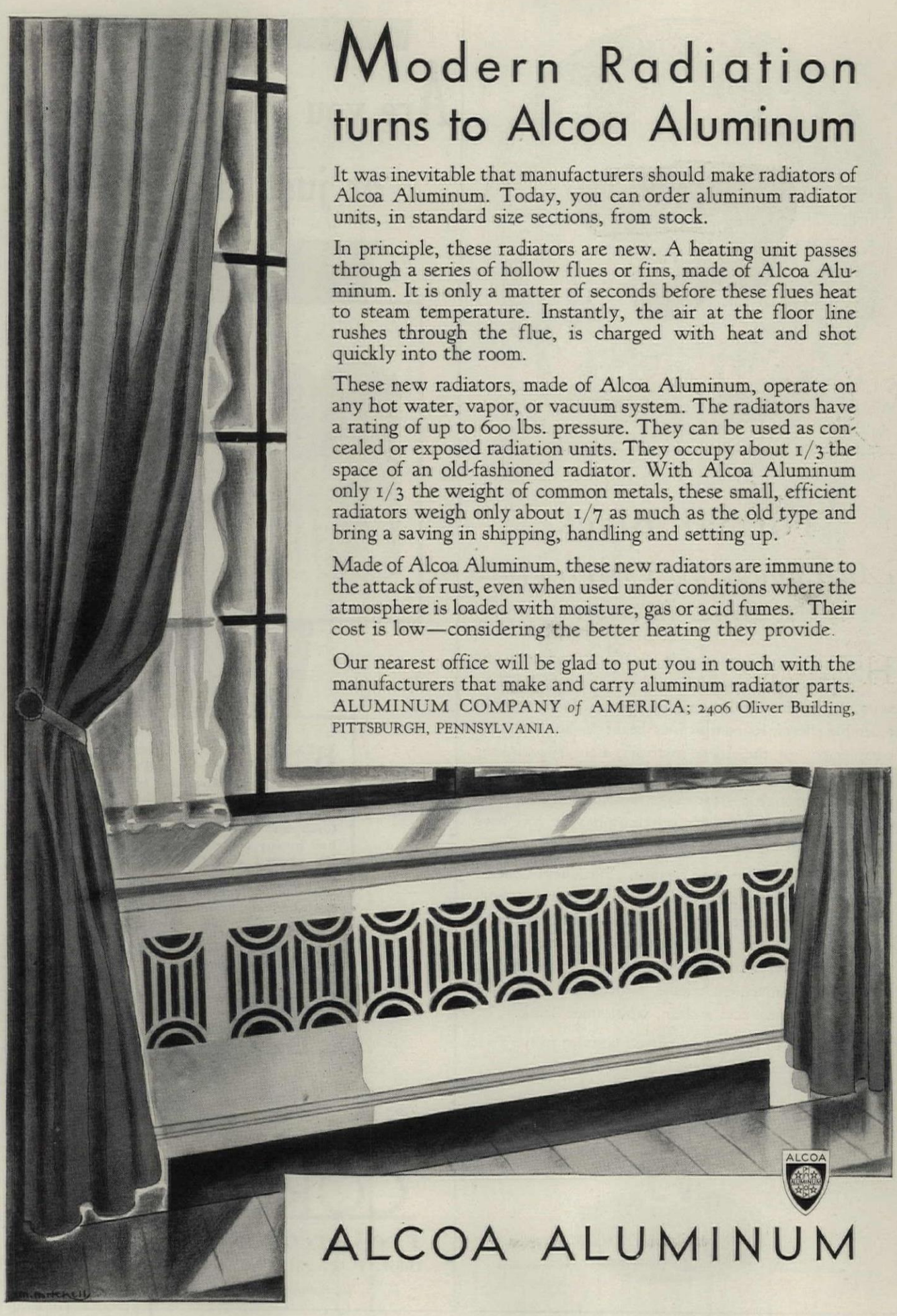
Branch Offices

NEW YORK
DETROIT
PHILADELPHIA
CINCINNATI
NEW HAVEN, CONN.
CHICAGO
SAN FRANCISCO
LOS ANGELES

Nevastain Alloys are furnished under the following brand names according to their physical and mechanical properties.

NEVASTAIN NIROSTA KA2
NEVASTAIN NIROSTA KA2S
NEVASTAIN NIROSTA KA2-MO
NEVASTAIN NIROSTA KNC-3
NEVASTAIN CA
NEVASTAIN CB
NEVASTAIN A
NEVASTAIN S
NEVASTAIN D
NEVASTAIN H
NEVASTAIN EZ

"Licensed under the Armstrong, Krupp Nirosta, American Stainless Steel Company and Chemical Foundation patents."



Modern Radiation turns to Alcoa Aluminum

It was inevitable that manufacturers should make radiators of Alcoa Aluminum. Today, you can order aluminum radiator units, in standard size sections, from stock.

In principle, these radiators are new. A heating unit passes through a series of hollow flues or fins, made of Alcoa Aluminum. It is only a matter of seconds before these flues heat to steam temperature. Instantly, the air at the floor line rushes through the flue, is charged with heat and shot quickly into the room.

These new radiators, made of Alcoa Aluminum, operate on any hot water, vapor, or vacuum system. The radiators have a rating of up to 600 lbs. pressure. They can be used as concealed or exposed radiation units. They occupy about 1/3 the space of an old-fashioned radiator. With Alcoa Aluminum only 1/3 the weight of common metals, these small, efficient radiators weigh only about 1/7 as much as the old type and bring a saving in shipping, handling and setting up.

Made of Alcoa Aluminum, these new radiators are immune to the attack of rust, even when used under conditions where the atmosphere is loaded with moisture, gas or acid fumes. Their cost is low—considering the better heating they provide.

Our nearest office will be glad to put you in touch with the manufacturers that make and carry aluminum radiator parts. ALUMINUM COMPANY *of* AMERICA; 2406 Oliver Building, PITTSBURGH, PENNSYLVANIA.

ALCOA

ALCOA ALUMINUM

Formal Black

An Enhancing Complement to Fine Interiors

HERE is a striking fountain. A Black Gem with the depth of glorious night and the sheen of brilliant stars. A play-toy for lights and shadows. In contrast or ensemble effects, its conspicuous beauty is an enhancing complement to the finest interiors. Century drinking fountains have scored a national success. From jet black to white; through a great range of color and in a score of exclusive designs their inherent beauty has been enthusiastically acclaimed.

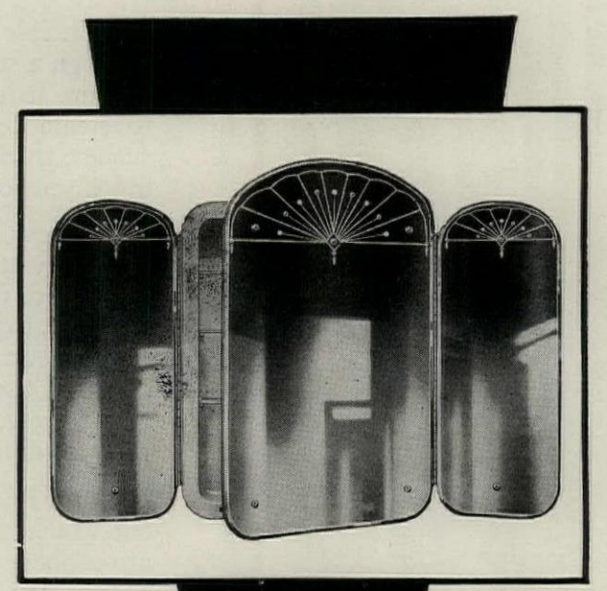
And here is the twin of Beauty... Efficiency! Century Fountains are truly automatic. From 10 to 125 pounds pressure, these unique fountains maintain automatically, a normal wholesome drinking stream. Sudden splashing gushes of water have been definitely eliminated. The unsanitary inconvenient trickle is unknown. Each turn of the handle produces a clean, wholesome drink.

We ask you to investigate these fountains fully. Your inquiry will bring complete information.

CENTURY BRASS WORKS, *Inc.*
900 N. ILLINOIS ST. BELLEVILLE, ILLINOIS

Century SANITARY DRINKING Fountains

Are you buying cabinets or just mirrors?



BEAUTY in bathroom accessories is a necessity, and the mirror on the cabinet *does* play an important part, but .... the One Piece Steel Body found in Corcoran Cabinets cannot be had in any other like product. It's pressed and formed into shape with huge presses—not made up of several pieces of steel, bent and welded together.

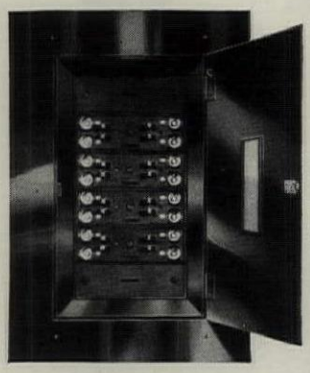
This method of construction assures perfect prevention against wall moisture—elimination of crevices where dust and dirt might lodge—and absolute sanitation with an ease in cleaning that every woman appreciates.

Corcoran Cabinets are the Original and Only One Piece Steel Cabinets. No cracks—No seams—No welded joints—No raw edges.

Write today for detailed information and catalog, illustrating 42 models. Corcoran Cabinets with their dignified beauty add a striking effect to most any bathroom plan.

CORCORAN

The Corcoran Mfg. Company
Dept. P. P. 231, Norwood, Cincinnati, Ohio
Representatives in Principal Cities



The Visible Sign of Better Wiring

Even with electrical installations where appearance is not considered important (FA) Panelboards are appreciated for "the Sign of a Better Job."

For really right products *look* right and service ability is always accompanied by convincing appearance. (FA) proves this.

There is ready and practical co-operation awaiting you at (FA). Write or call an (FA) man.

Frank Adam
ELECTRIC COMPANY
ST. LOUIS

Atlanta, Ga.	New Orleans, La.
Baltimore, Md.	New York
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Chicago, Ill.	Philadelphia, Pa.
Cincinnati, Ohio	Pittsburgh, Pa.
Cleveland, Ohio	St. Louis, Mo.
Dallas, Texas	San Francisco, Calif.
Denver, Colo.	Seattle, Wash.
Detroit, Mich.	Tulsa, Okla.
Kansas City, Mo.	Toronto, Can.
Los Angeles, Calif.	Vancouver, Can.
Memphis, Tenn.	Winnipeg, Man., Can.
Minneapolis, Minn.	Hamilton, Ont.
	Montreal, Can.

(FA) Panelboards are the "Sign of a Better Job"

For instance,

the Energy Invalid Lift

HAND-OPERATED

ELECTRIC

ONE of the advantages of all Energy vertical-transit equipment is this: Each individual Energy Type meets *outstandingly* the *essential needs* of the service for which it is recommended.

The Energy Invalid Lift is a typical illustration of this fact. Prospective purchasers of such a Lift desire three features above all others—first, absolute safety; second, dependability; third, smoothness in operation.

The Energy Invalid Lift fulfills these requisites to the entire satisfaction of its many users, because it has the background of 43 years of engineering experience in the solution of just such problems—an experience which shows its value also in the ease of operation and the trifling upkeep of both the electrically-operated and hand-operated types.

People have awakened to the fact that the Invalid Elevator is not necessarily a luxury for the rich, but that it can be installed reasonably in the moderate-sized residence—an evidence of thoughtfulness by the home designer.

SEE OUR Catalogue in SWEETS

Described in Sweet's Page D6275 1931 Edition

Bulletin 105, describing and illustrating both Electric and Hand-Operated Types, will be sent at your request. Just address Energy Elevator Company, 211 New St., Philadelphia.

Been Making Them Since 1887

ENERGY ELEVATORS & DUMB WAITERS
WHEREVER A LIFT IS NEEDED

OMICRON

PROTECTION AGAINST CORROSION IN CONCRETE FLOORS

MICROSCOPIC examination shows the presence of non-cementitious crystals in concrete chemically formed during the hydration process. These solubles are the starting points for disintegration. Corrosive agents—acids or alkalis—dissolve them, leaving the floor honeycombed and multiplying the destructive effect of abrasive wear.

No floor is safe from corrosion. Even the mild acidic precipitation from smoke or fumes attacks the solubles in concrete. That action is intensified in the presence of acids or alkalis in chemicals, greases, fats, oils, milk, fruit juices and many other commonly present substances.

Microscopic photograph of cement briquet showing calcium hydroxide crystals—one of the waste soluble products attacked by corrosion.

Now corrosion can be checked. Now the useful life of concrete floors can be extended. Omicron—a vital new ingredient discovered by Master Builders Research Laboratories—makes concrete floors highly resistant to corrosive disintegration.

Omicron converts the vulnerable solubles into non-soluble, cementitious products. Materially retarding the action of corrosives, Omicron also adds greatly to the strength of concrete.

"Concrete Bearings"
A new, educational moving picture showing how BETTER concrete floors are laid. We'll gladly arrange a screening at your convenience.

Many tests made by recognized laboratories establish the value of Omicron in checking disintegration and in giving added strength. A report of the findings will be mailed upon your request.

The MASTER BUILDERS Co.
CLEVELAND, OHIO
FACTORIES: CLEVELAND BUFFALO, IRVINGTON
SALES OFFICES AND STOCKS IN ALL PRINCIPAL CITIES

FOR INDUSTRIAL FLOORS

METALICRON – an iron floor-finish aggregate, or metallic hardener, highly refined. Contains Omicron. Produces most wear-resisting disintegration-resisting concrete —waterproof, dustproof. For monolithic or topping finish. Also available in colors.

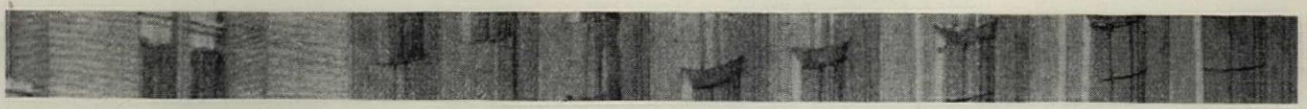
Omicron is an exclusive product of the Master Builders Company and is available as a basic ingredient in these integral concrete floor hardeners only.

FOR COMMERCIAL FLOORS

MASTERMIX—Omicron-containing liquid paste, mixed with the gauging water. Hardens, waterproofs, dustproofs the entire topping. Meets every commercial floor condition.

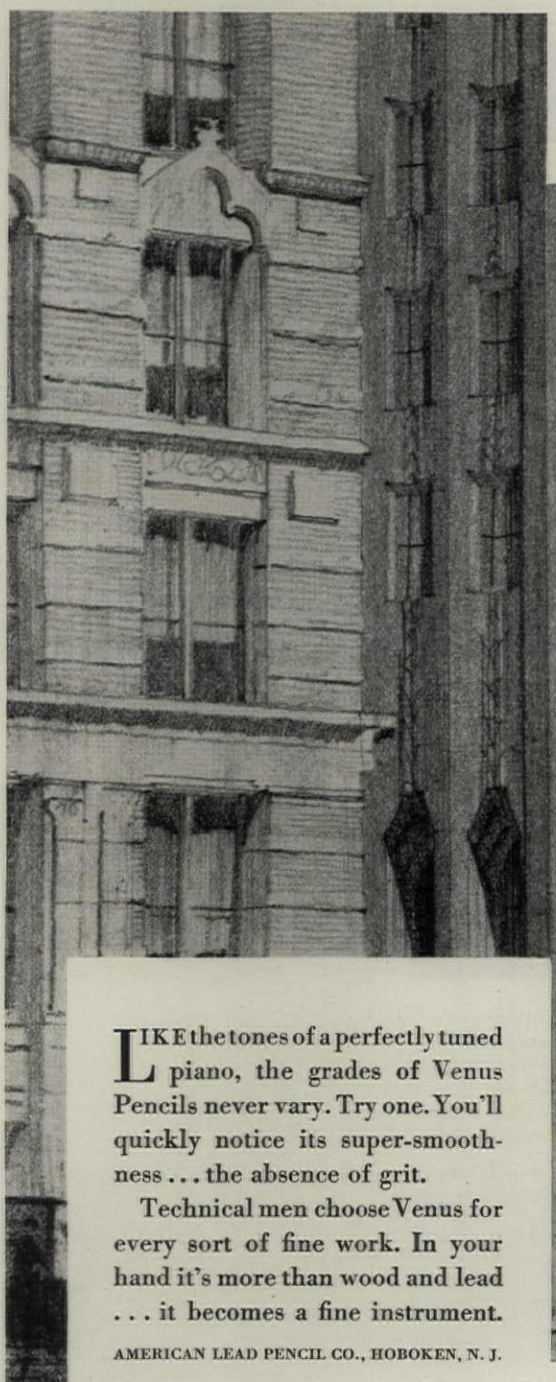
FOR COLORED FLOORS

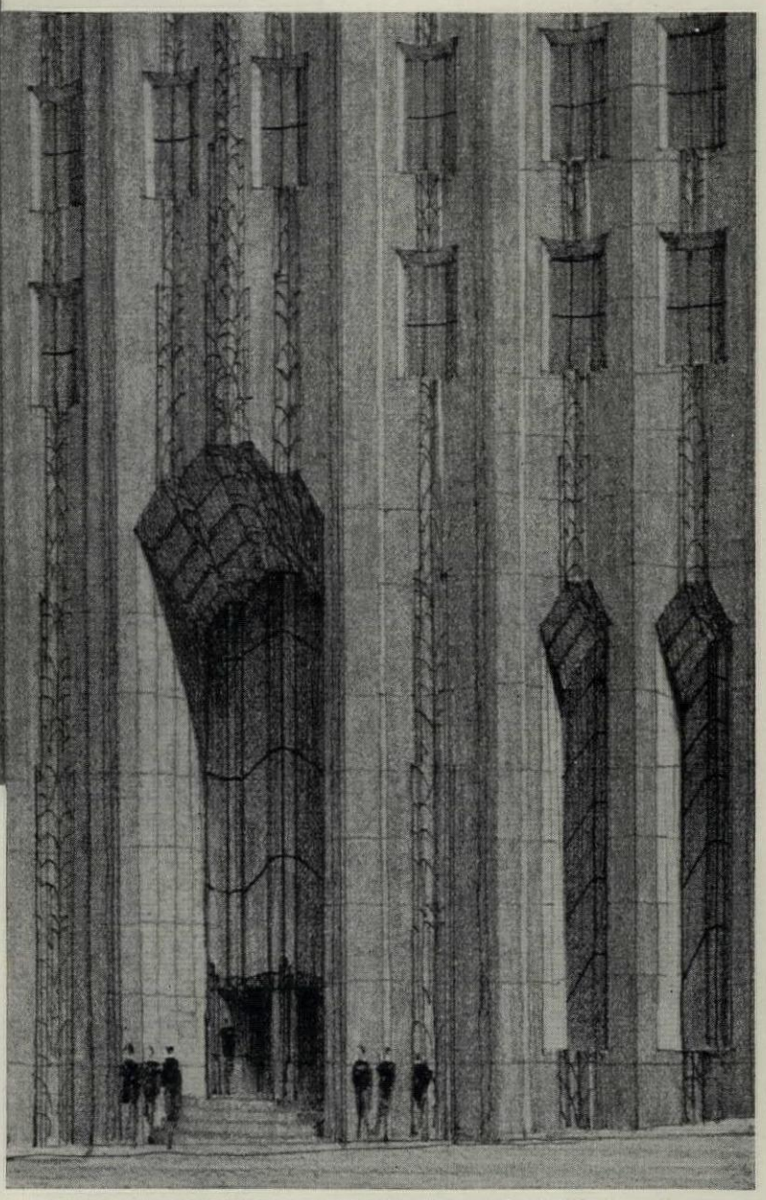
COLORMIX—Omicron-containing paste, mixed with the gauging water. Stronger than plain concrete. Produces uniform, fadeproof colors throughout topping. Hardens, waterproofs, dustproofs.



For Light and Shade . . .

VENUS PENCILS





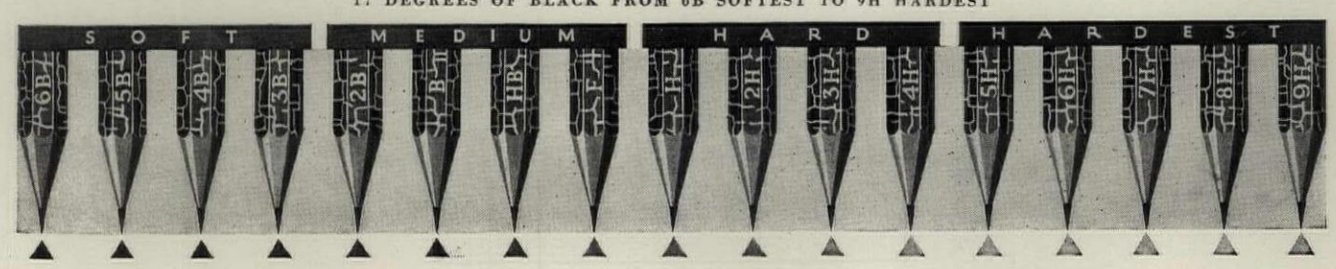
LIKE the tones of a perfectly tuned piano, the grades of Venus Pencils never vary. Try one. You'll quickly notice its super-smoothness . . . the absence of grit.

Technical men choose Venus for every sort of fine work. In your hand it's more than wood and lead . . . it becomes a fine instrument.

AMERICAN LEAD PENCIL CO., HOBOKEN, N. J.

Pencil rendering of No. 1 Wall St., New York City. Voorhees, Gmelin & Walker, architects.

17 DEGREES OF BLACK FROM 6B SOFTEST TO 9H HARDEST



THE WORLD'S LARGEST BUILDING HAS MONEL METAL EQUIPPED RESTAURANTS

●

The Monel Metal equipped restaurants kitchens and soda fountains in Chicago's great Merchandise Mart comprise one of the finest food service installations in the world!

●

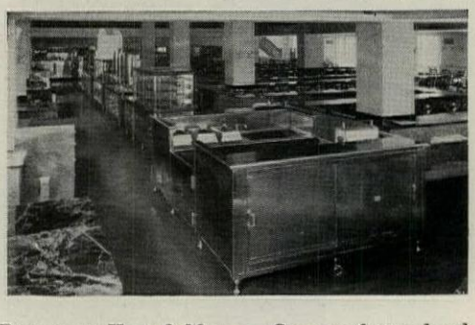
Here inviting beauty and spick and span appearance are always insured by Monel Metal's combination of rust-immunity corrosion-resistance cleanability and steel-like strength.

●

A 16-page booklet is available illustrating and deseribing this outstanding Monel Metal food service installation. A copy will gladly be sent on request.

●

Architects: GRAHAM, ANDERSON, PROBST & WHITE, Chicago, Ill.



Duparquet, Huot & Moneuse Co. manufactured and installed complete food service equipment of Monel Metal in the Merchandise Mart. In addition to equipment of their own manufacture, Duparquet, Huot & Moneuse Co. installed * additional Monel Metal equipment furnished by the following companies:

GLASS WASHERS—G. S. Blakeslee & Company, Chicago, Ill.
DISHWASHERS—Crescent Div. of Hobart Mfg. Co., Troy, Ohio.
REFRIGERATORS—"Dry-Kold" Refrigerator Co. . Niles, Mich.
BAKE OVENS—Edison Electric Appliance Co., Inc., Chicago, Ill.
SODA FOUNTAINS—The Liquid Carbonic Corp.* Chicago, Ill.
DISH CONVEYORS—Samuel Olson Co. . . . . Chicago, Ill.
EGG TIMERS—Perfect Automatic Egg Timer & Mfg. Co., Chicago, Ill.
TOASTERS—Savory, Inc. . . . . Buffalo, N. Y.
RANGES—Standard Gas Equipment Corp. . . . . Chicago, Ill.
MEAT & BREAD SLICERS—U. S. Slicing Machine Co., Chicago, Ill.
THERMOTAINERS—Waters-Genter Company, Minneapolis, Minn.

* *Soda Fountains were installed by The Liquid Carbonic Corp.*

Monel Metal is a registered trade mark applied to a technically controlled nickel-copper alloy of high nickel content. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL ST., NEW YORK, N. Y.

A HIGH NICKEL ALLOY
MONEL METAL
NICKEL ALLOYS LOOK BETTER LONGER

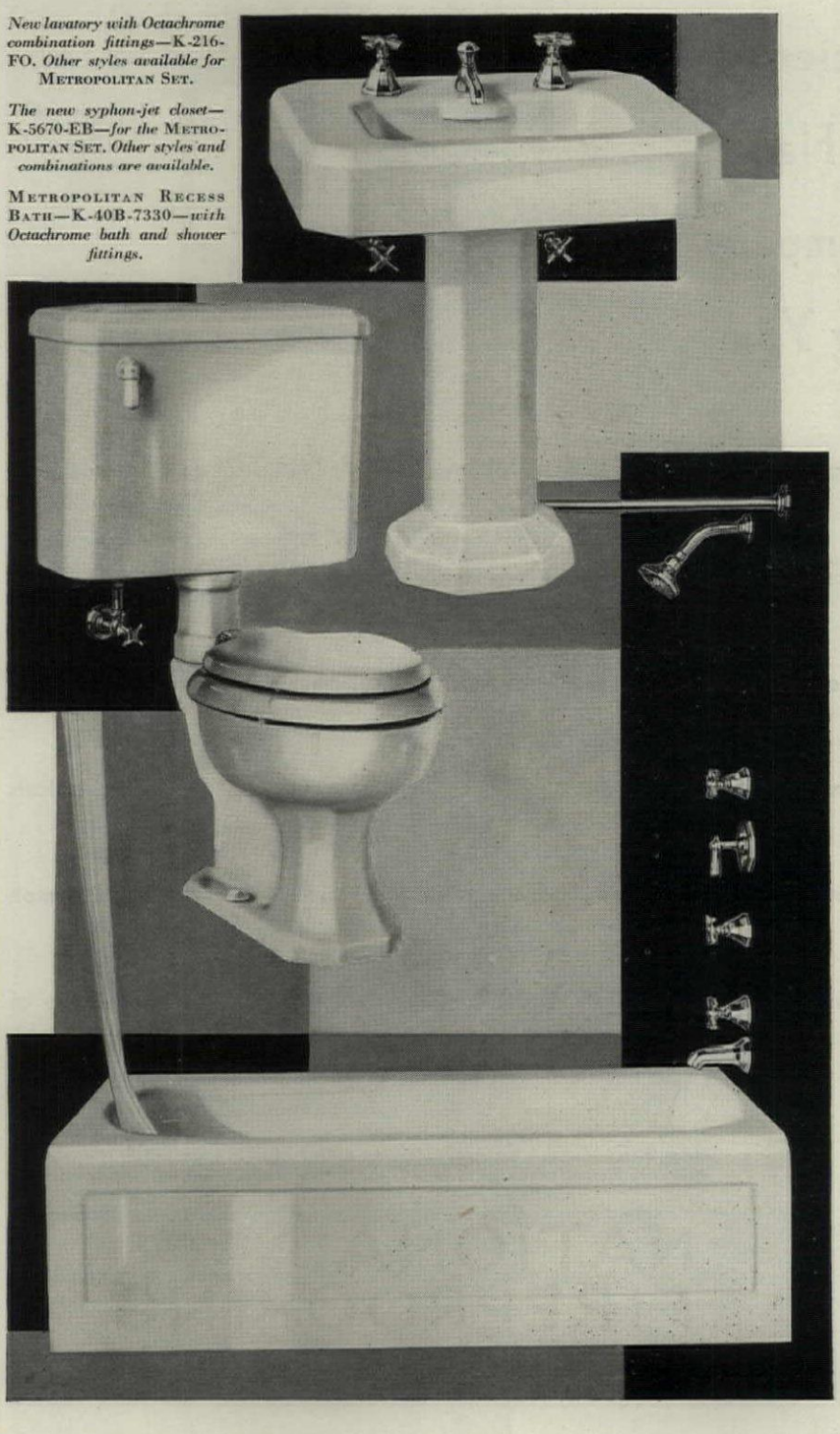
INCO MONEL METAL

Now you can select bathroom fixtures in MATCHED GROUPS harmonizing in every detail!

New lavatory with Octachrome combination fittings—K-216-FO. *Other styles available for* METROPOLITAN SET.

The new syphon-jet closet—K-5670-EB—*for the* METROPOLITAN SET. *Other styles and combinations are available.*

METROPOLITAN RECESS BATH—K-40B-7330—*with Octachrome bath and shower fittings.*



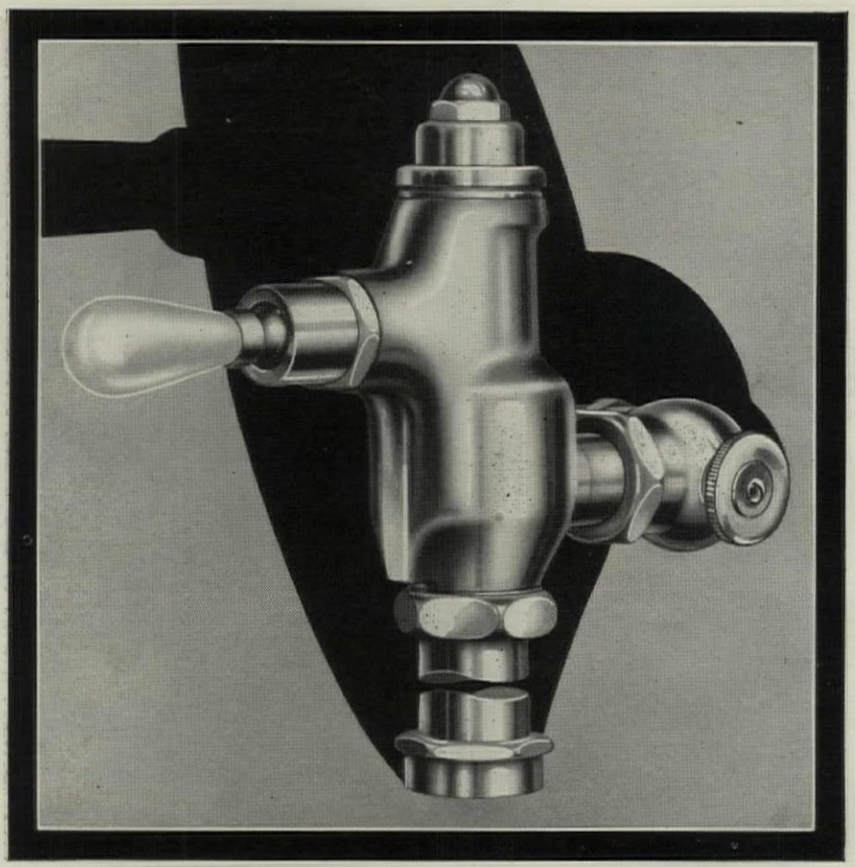
AN ARCHITECT need go no farther than his own blue-prints to realize the lack of co-ordinate design in most bathroom fixtures. Until now, even in the most carefully planned homes, you rarely could make the bathroom as much of a decorative unit as the other rooms. . . . But now, Kohler has perfected a brand-new series of plumbing fixtures, giving complete unity of design to the bathroom—fixtures that go together *on purpose!*

The first of these advanced new pieces are included in the Metropolitan Set, a group of which is illustrated. Notice the consistent handling of design—flat surfaces, beveled corners, square edges, recessed panels, a modern simplicity of line—*exactly the same feeling in each piece.* Individual beauty, combined in matched ensemble!

For all their newness of form and style, Kohler matched fixtures still are popularly priced. And an ample selection can be made according to taste and purpose. For example, the bath, with wide flat rims, is available both for recess and left corner. The lavatory can be had in several sizes and styles. The closet comes in syphon jet, reverse trap, and wash-down models, in tank or flush valve combinations. . . . Kohler fittings, with their flowing graceful lines, always complete the beauty of Kohler fixtures. And now, with matched sets, their designs key perfectly with the general effect of the ensemble.

More information about the new Kohler matched fixtures may be had for the asking. In the meantime, visit the nearest Kohler showroom. Kohler Co. *Founded* 1873. Kohler, Wis. — *Shipping Point*, Sheboygan, Wis.—*Branches in principal cities.* . . . Look for the Kohler trade-mark on each fixture and fitting.

KOHLER OF KOHLER



ALL QUIET

on the Water Front

TO THE plumber's trained ear, the sound that a flush valve makes in operation is a sure prophecy of the future. "Chatter . . . hammer . . . *thud!*" means trouble ahead. Silent, positive action is a promise of long and satisfactory service.

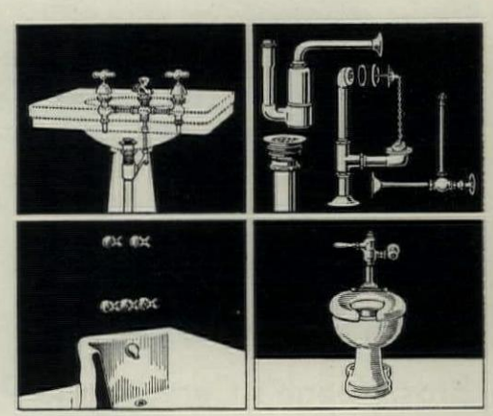
Try the action of a Scovill Flush Valve. The whole operation is as gentle and quiet as the careful opening and closing of a faucet. Never a chatter. No suggestion of hammer. Not a sound but the smooth flow of water.

The explanation lies in Scovill design. Scovill Flush Valves open *with* flow and pressure of water, close *against*. Irregularities of action are eliminated where they should be — on the designer's blue-prints.

Write for details of Scovill design, and other features of Scovill Flush Valves—self-cleaning by-pass, outside adjustment, positive action under any reasonable pressure. Styles and sizes for all requirements. Catalog on request.

SCOVILL MANUFACTURING COMPANY
PLUMBERS' BRASS GOODS DIVISION • WATERVILLE, CONNECTICUT

A COMPLETE LINE . . . .

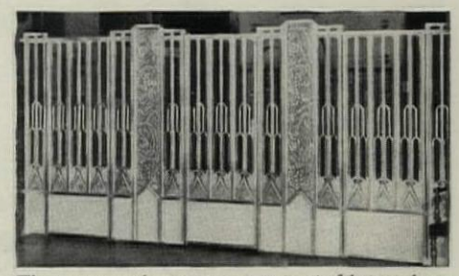


Scovill Flush Valves . . . Shower and Bath Fixtures . . . Tubular and Miscellaneous Plumbers' Brass Goods for General Plumbing Requirements.

Scovill

Alcoa Aluminum expresses both the grace and the vigor of today's design

Entrance doors, exemplifying the adaptability of Alcoa Aluminum. (See above)



The entire vault gate construction is fabricated out of Alcoa Aluminum. (See above)

A strikingly pleasing effect is obtained by the use of Alcoa Aluminum for all visible metal. (See above)

The Howard Avenue Trust & Savings Bank Building, Chicago; Architect—*Jens J. Jensen;* General Contractor—*Wm. G. McNulty & Bro., Chicago;* Ornamental Metal Contractors—*The E. M. Weymer Co., Inc., Chicago, and The American Iron and Wire Works, Chicago.*

Hand rails, grilles and night deposit box as well as elevator door frames are wrought of Alcoa Aluminum. (See below)

IN design and detail, the Howard Avenue Trust & Savings Bank Building, Chicago, expresses both grace and vigor.

Using Alcoa No. 43 Aluminum Alloy—the architect, Jens J. Jensen, has secured a pleasing combination of strength, durability and softness of tone—an effect in evidence in front door and vestibule grilles, lobby door frames and grilles, mail box, balcony and stair railing, vault grilles and screen.

Alcoa Aluminum is produced in cast, extruded and sheet form. In any form it is easily worked and finished. It is remarkably light—1/3 the weight of other metals commonly used—but it is strong and tough. It is eminently adaptable for exterior use as it resists corrosion—does not streak adjoining surfaces. And, with all its virtues, Alcoa Aluminum is low in cost—comparable to other metals which do not possess its specific advantages. These important advantages are putting Alcoa Aluminum at the architects' disposal for spandrels, mullions, sills, door frames, grilles and for many other purposes.

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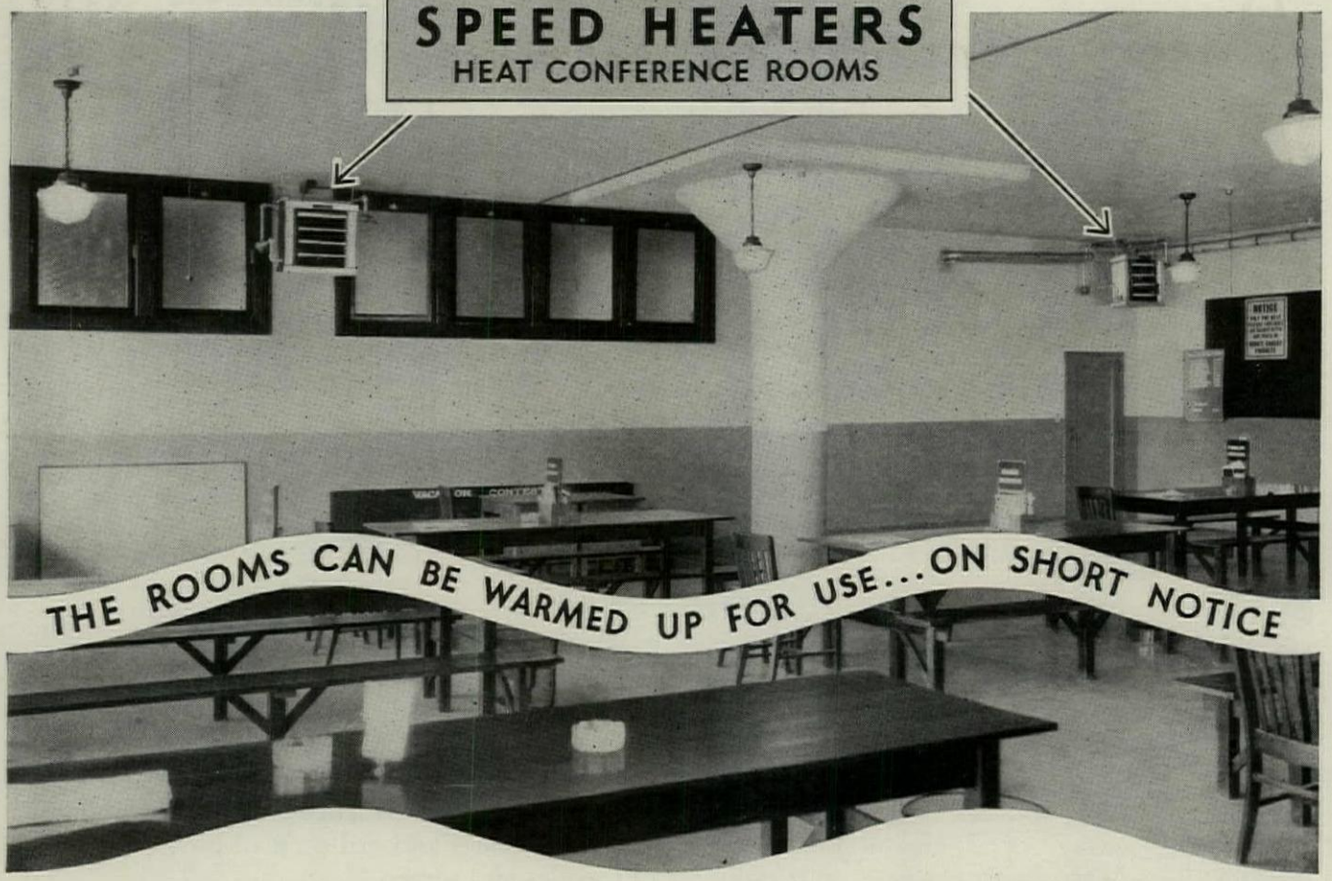
Alcoa No. 43 Aluminum Alloy is recommended for most architectural purposes. To meet the numerous demands for structural stability, Alcoa Aluminum alloys are available in various tensile strengths. In each of our offices we have competent representatives with a wealth of experience as to the decorative and structural uses of each of the special Alcoa Aluminum alloys. The services of these representatives are available to the designer and the specification writer. May we urge you to accept this cooperation without obligation in designing and writing specifications for buildings in which Alcoa Aluminum alloys will form a part? ALUMINUM COMPANY *of* AMERICA; 2406 Oliver Building, PITTSBURGH, PENNSYLVANIA.

ALCOA

ALCOA ALUMINUM

WHEN SPEED HEATERS HEAT CONFERENCE ROOMS



Sales conference room in the plant of the Krug Baking Co., Jamaica, Long Island. Architect and Engineer: George R. Fennema, New York City. Speed Heaters installed by Louis Frisse, Heating Contractor, Brooklyn, N. Y.

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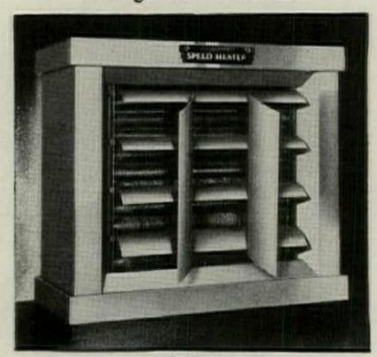

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Sturtevant (REG. U. S. PAT. OFF.) SPEED HEATERS

A Public Duty for All Architects

Urge the National, State, and City Governments to Act Quickly!

In our December issue we printed an open letter from the Washington State Chapter of the American Institute of Architects advocating the employment of local architects to design the huge amount of construction work about to be undertaken by the government rather than to have all this work planned by the existing government organizations. This idea is gaining headway but it still needs the active support of all architects if it is to be adopted in time to help to relieve unemployment. A letter to the *New York Times* by Ethan Allen Dennison of New York states the case quite clearly. He says, "The government has promised for the relief of unemployment that approximately a billion dollars' worth of construction work will be started within a few months. If this work is to be planned by government architects and engineers, it will be many years before the effects of such an enormous program will be felt.

"These large expenditures for construction work will be slow in attaining the desired results because of our government's limited engineering and architectural organizations. The result of this expenditure will be to keep these government organizations busy and rushed, but the work cannot possibly be given out to building contractors in time to relieve the unemployment situation.

"To make ready the necessary plans to permit the starting of this enormous construction program, and to avoid competition between the government and the architectural and engineering professions, a large part of the work should surely be planned outside of government organizations. Hardly any profession or industry has felt the depression more than architects and engineers. If the unemployment situation is to be improved, it is evident that the plans must be hastened for putting under way the large building program authorized by Congress.

"Benjamin F. Betts, editor of *The American Architect*, states: 'To engage a local architect for each government project would have a far-reaching effect, and at once start in rotation the wheels of the building industry. It would give a large number of architects needed employment, together with a large force of draftsmen, specification writers, engineers and clerical help. In a relatively short time a yet larger number of contractors would begin to function, thus absorbing skilled craftsmen, mechanics and laborers. Material dealers and producers of materials employing thousands of men and women would resume their activities. Much money would soon be put in circulation, and other commercial activities would be in demand.'

"This State has a large engineering organization and handles most of its own work, a large part of which is probably delayed by inadequate planning facilities, although in the case of New York City some of the work has been given to resident architects, and to the few who are successful in obtaining contracts this has been a decided help.

"Neither the government nor the State of New York, however, has of late offered much work, if any, to architectural and engineering competition."

It has been suggested by a United States congressman that Mr. Dennison's letter should be given the widest possible publicity, that copies of it should be sent to every prominent architect in the country with the request that each of them communicate with his local congressman and his two United States senators in order that all members of congress may be informed of the importance of early action. We urge every architect who reads these lines to act on the suggestion at once. Every ounce of pressure that can be brought to bear will have its effect and assist in the return of good times.

Another suggestion from the same congressman is that arrangements should be made by a selected group of architects for an interview with President Hoover to engage his support for the movement. Perhaps this is already being done but if not it should be.

Not only should the national government be urged to alter its policy but architects everywhere should seek to get state and municipal work to go ahead more rapidly than will be the case if the planning and design of these projects are left entirely to the state and city architectural departments. Architects can, if they will, lead the way back to prosperity rather than wait for the procession to go by, leaving them to bring up in the rear. It is their public duty to do so, and by doing it they will not only help to relieve unemployment but will go far towards winning from the public much-needed recognition for their profession—all of which will help to put the practice of architecture on a firmer footing than it has been in the recent past.

PENCIL POINTS

An Illustrated Monthly JOURNAL for the DRAFTING ROOM *Edited by* RUSSELL F. WHITEHEAD KENNETH REID & E. L. CLEAVER *Published by* THE PENCIL POINTS PRESS, INC.
Ralph Reinhold, *President*, L. F. Nellis, *Vice-President*, William V. Montgomery, *Secretary*

This Month and Next

We call special attention to the editorial on the second preceding page concerning the importance of getting the various government authorities to give their construction projects into the hands of architects throughout the country rather than to attempt to keep it all in the hands of the governmental bureaus if the billion dollar program is to have any immediate effect on general prosperity. Both architects and draftsmen can help if they will let their congressmen and senators, both national and state, know how they feel about the matter. Don't wait; act now!

Our March issue will, unless unforeseen circumstances prevent, contain the first of a new series of articles by Francis S. Swales on the architect as city planner. Mr. Swales has long been known as a leader in this phase of architectural activity both here and abroad and his long connection with the Regional Plan of New York is only one of a series of such projects that have felt his strong influence. What he has to say in this new series of articles will, we are sure, be of interest to all architects.

An important part of the training of the architectural draftsman is a course in free-hand drawing, preferably including a generous period at life drawing. Frank H. Schwarz, painter and Fellow of the American Academy in Rome, who is well known for his beautiful draftsmanship will give us, in the next issue, some of the reasons why the architectural man needs to draw from life. The article will be well illustrated with life drawings by Sargent, Legros, Alfred Stevens, and other recognized masters, as well as one by the author.

It will be noticed that the usual Knobloch construction plates are omitted from this issue and we regret to say that they may not be resumed for several months. Friend Knobloch reports that business has become brisk again and has taken all his time from such extra activities. For Knobloch we are glad but we know that our readers will miss the plates until he resumes them again. Next month we will try to find some temporary substitute feature. Meanwhile, there is a good opportunity for those who have some pet construction difficulty they would like to have worked out to let us know about it so that it can be included in the series later on.

Other items for the March issue include a special frontispiece reproducing a drypoint by Chester B. Price, two beautiful color plates showing a rendering by J. Floyd Yewell of a house by Dwight James Baum, and several shorter articles which will undoubtedly interest our readers.

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BRONZE..

NICKEL SILVER..OR IRON..*but*

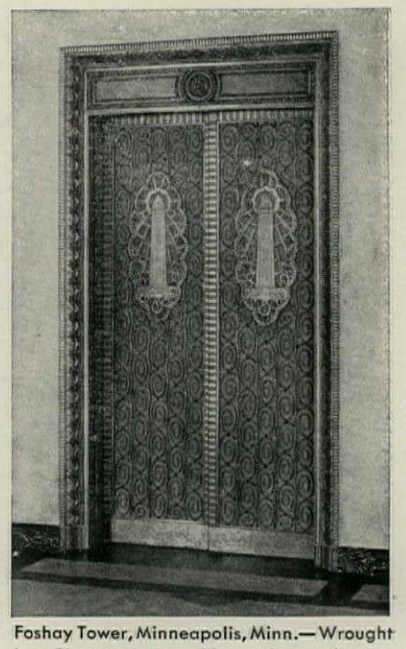
ever faithful to Architect's Designs

On this page are three examples of recent General Bronze jobs . . . Three types of elevator doors — three different styles of designs — three different metals.

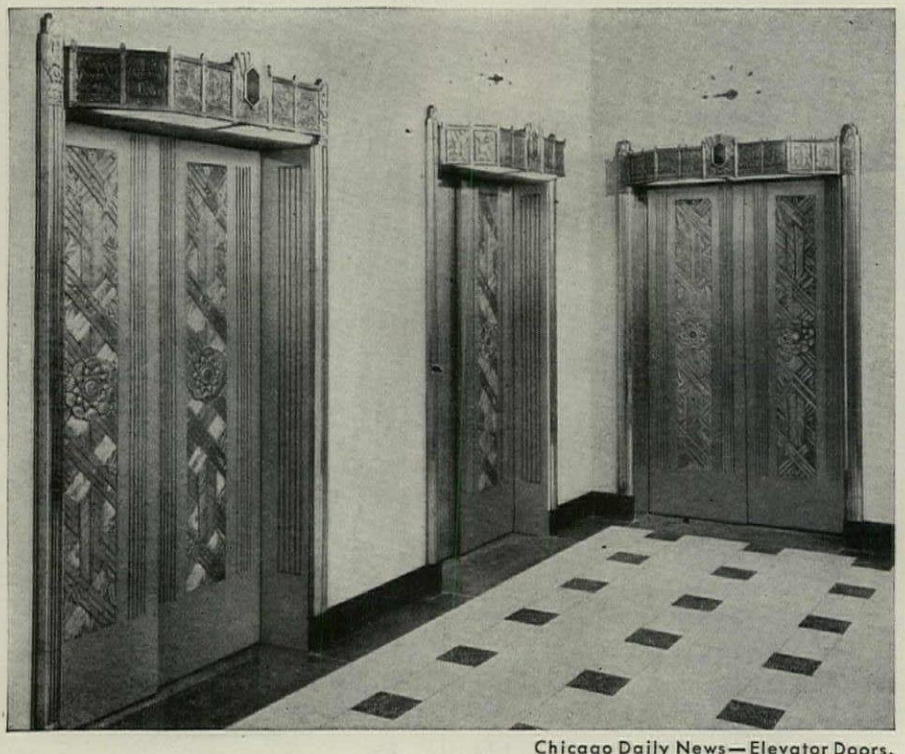
The doors of the Chicago Daily News Building are of modern *nickel silver*. The vertical design gives an effect of height and loftiness. Metal strips on each side accent this idea . . .

The design of 1 La Salle Street shows the use of *bronze* at its best. Fineness of scale, of line and of shading — such as bronze can achieve . . .

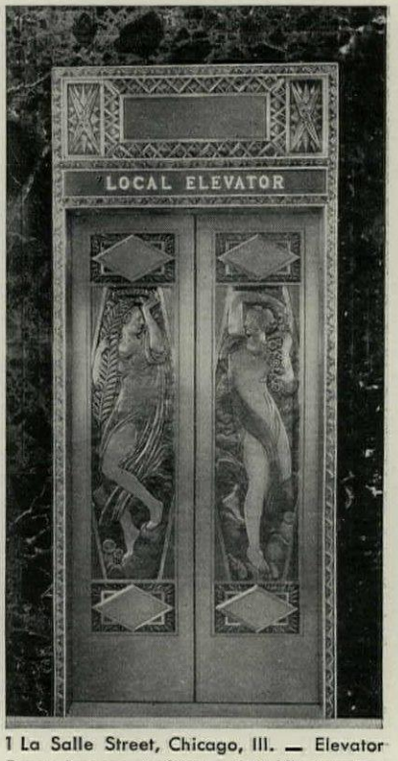
The Foshay Tower doors are *cast iron* with a classically wrought design. The bas relief representation of the building — worked into the door — is *bronze* — an effective combination for contrast . . .



Foshay Tower, Minneapolis, Minn.—Wrought Iron Elevator Doors with cast bronze inserts. *Architects:* Magney & Tussler.



Chicago Daily News—Elevator Doors, nickel silver. *Architects:* Holabird & Root.



1 La Salle Street, Chicago, Ill. — Elevator Doors, bronze. *Architects:* K. M. Vitzthum Co.

A NEW ENGINEERING SERVICE

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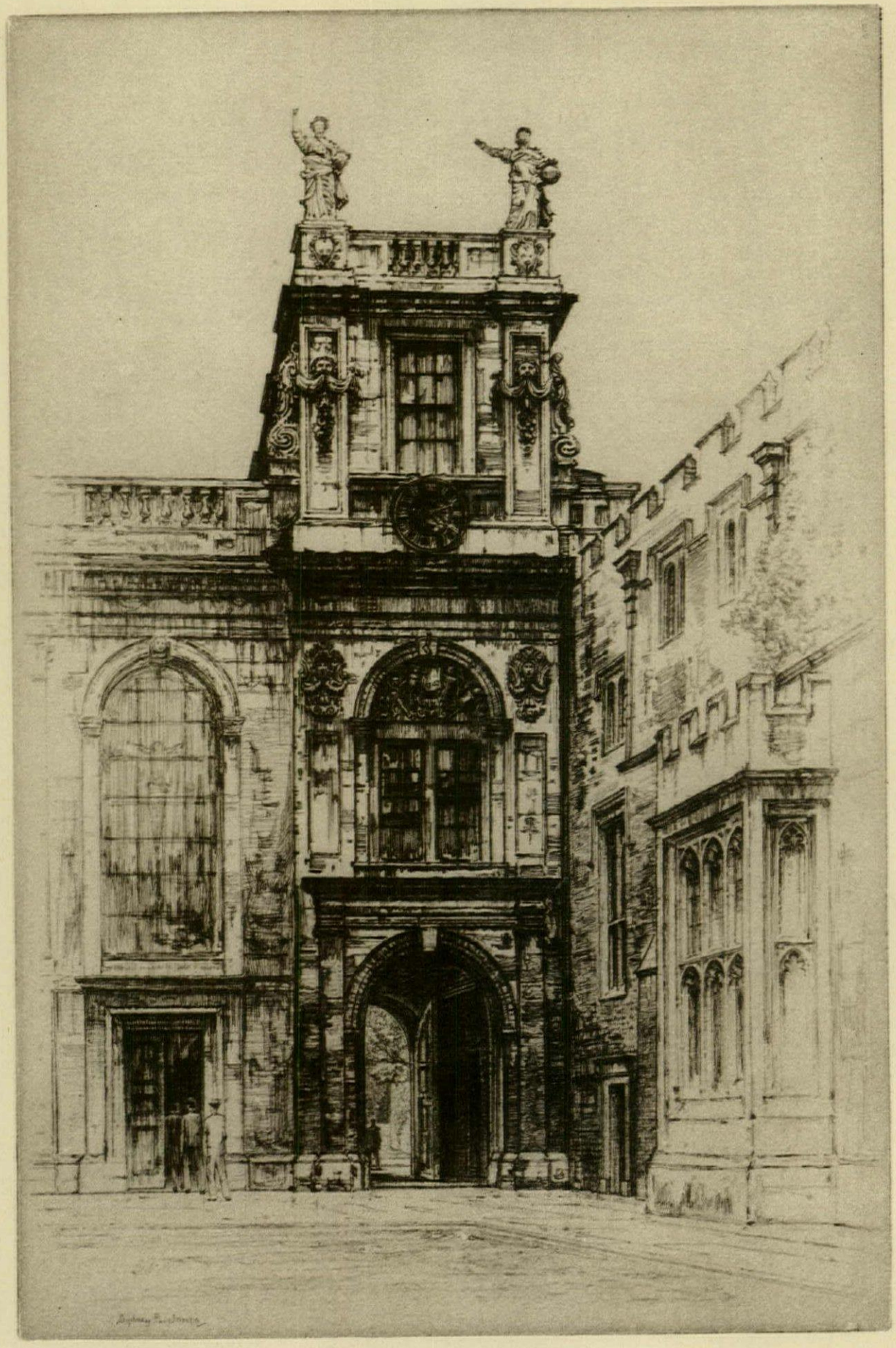
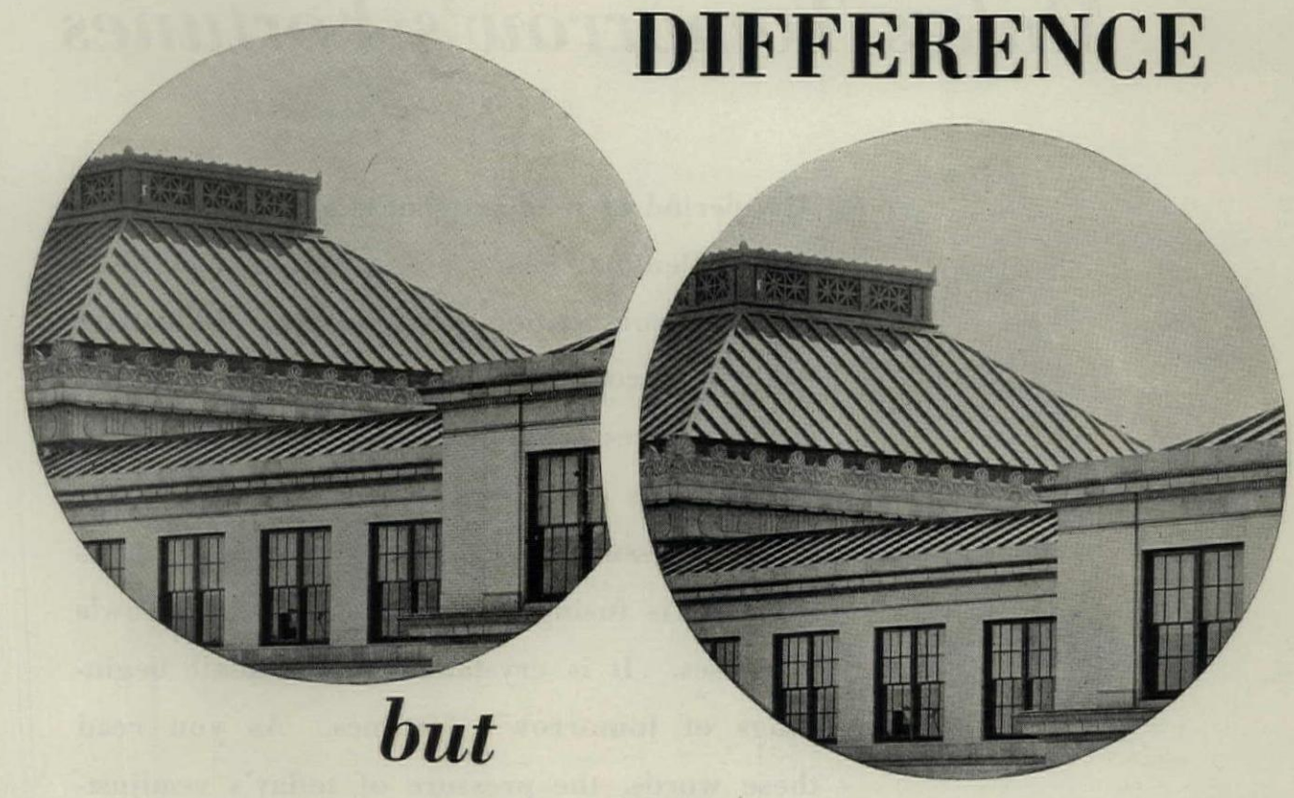


TRINITY COLLEGE, OXFORD
FROM AN ETCHING BY SIDNEY R. JONES
Reproduced by courtesy of the Schwartz Galleries

You may not know

THERE'S A DIFFERENCE



but

TIME WILL TELL

Lead is familiar to the chemist. He knows of its resistance to many acids and fumes; some of them, commonly found in our atmosphere, are the cause of many roof failures.

The farmer knows Lead. He has plowed up old lead bullets untouched by their years buried in the earth. He realizes the rust resistance of lead.

The plumber's experience tells him of the everlasting qualities of lead. He has dug up old lead pipe, buried in the ground for years without harm. He knows the difference

The similarity of these roofs is obvious, the difference almost impossible to detect. Yet a difference is there; a difference in service, a difference in upkeep and repair cost. One will survive the other by years, with less attention, lower expense. The difference is there but time only can disclose it.

That Difference is Important to the Architect

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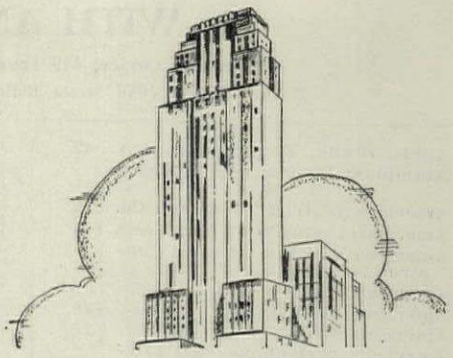
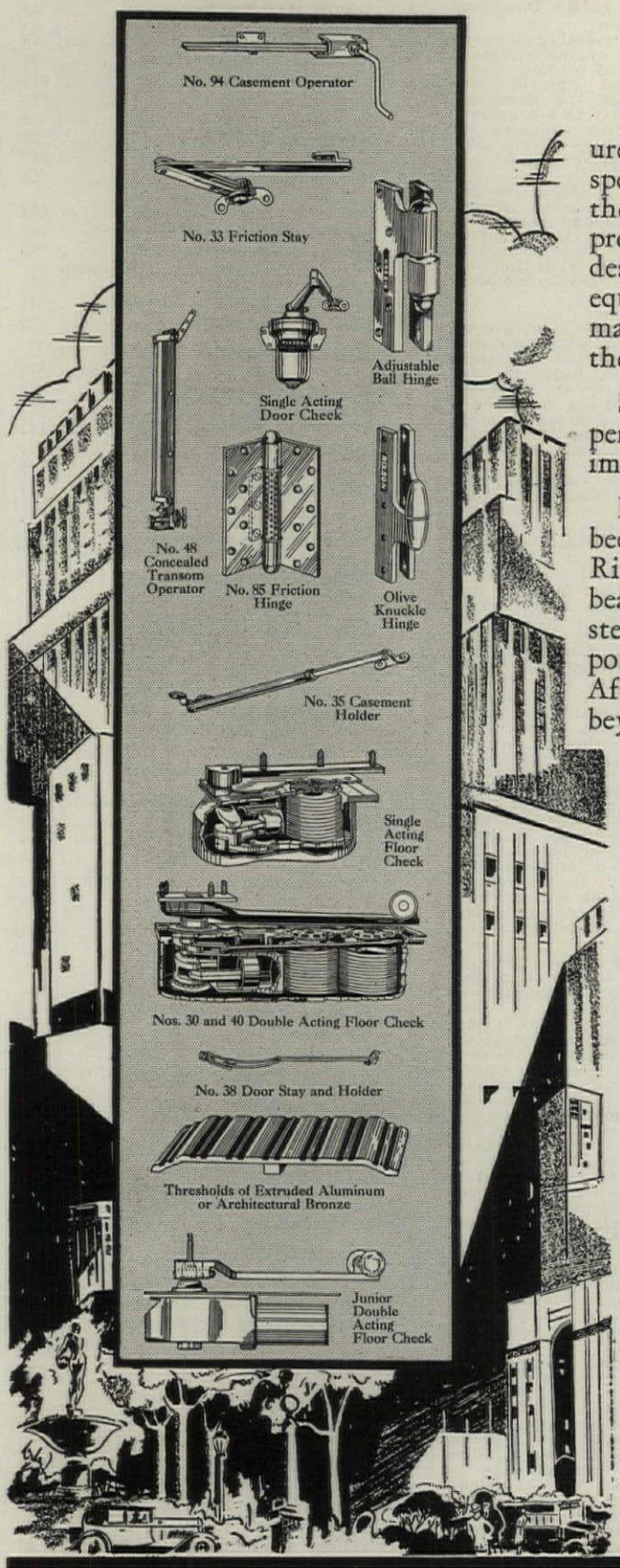
What Every Architect Knows





Every architect knows that in some measure his reputation is in the hands of his specification writer—and closely tied up with the integrity of the manufacturers whose products are specified. A fault generates a desire to blame. The blame reflects, if not equally, then proportionately on both the manufacturer and the firm which specified the product.

Seldom has a more solid reputation for dependable quality been developed than that implied by the familiar trademark "Rixson."

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The Westinghouse Electric Elevator Company has appointed Joseph U. Douglass, former president of Norton - Blair - Douglass, Inc., as Northeastern district manager of the Westinghouse organization. D. W. Hughes, former vice president of Norton-Blair-Douglass, has been appointed assistant to Mr. Douglass.

At the annual meeting of the Board of Directors of the Standard Varnish Works, held in New York, J. Heath Wood of Chicago was elected president of the company. Mr. Wood has been a vice president and director of the company in charge of the middle western business for a number of years.

Announcement is made of the appointment of L. Reuton Brown, president of the Keenan Structural Slate Co., on Jan. 1, 1931, as general sales manager of The Structural Slate Co., coincidental with the consolidation of the two companies, effective on that date.

An elevator of a new type, known as the dual elevator, with two cars operated separately in the same shaftway, has been built by the Westinghouse Elecric & Manufacturing Company and placed in regular service in that company's main office building at East Pittsburgh, Pa., according to an announcement made by H. D. James, consulting engineer for the Westinghouse Electric Elevator Company. This installation serves 11 stories, the cars operating at 600 ft. per minute and each can carry 3000 lbs.

The increasing use of white metals for decorative and ornamental purposes which has been developed by modernistic designs in architecture is reflected in the new store of the T. Eaton Company, Limited, which has just been completed in Toronto. More than a quarter of a million pounds of Monel metal was specified by Ross and MacDonald, the architects, and Sproatt and Rolph, associate architects, for this commercial development. Virtually all of the metal work in the interior of the store has been executed in this nickel alloy. It has been used for vestibule doors and grilles, for stair railings, elevator and stairway doors, door jambs, ventilator grilles, show case trim, wall lamps, ceiling lamps and the like. In the restaurant the cashier's desk and all trim, as well as the kitchen equipment, have been made of Monel metal.

Announcement is made of the recent organization of the Campbell Industrial Window Co., subsidiary of the American Radiator Co. and Standard Sanitary Corp. The formation of the new company completes the group of Campbell Window Companies and includes the Campbell Metal Window Corp., manufacturers of double hung windows; The Campbell Casement Window Co., with offices in New York and The Voigtmann Window Corp., Kalamazoo, Mich., manufacturers of hollow metal windows. Directors of the company which have been appointed are as follows: Martin J. Beirn, Jr., director, vice-president and general manager of sales, American Radiator Co.; Harry E. Campbell, director and vice-president, Campbell Metal Window Corp.; Donald M. Forgan, vice-president and treasurer, American Radiator Co.; Rolland J. Hamilton, president, American Radiator Co.; secretary and treasurer, American Radiator & Standard Santiary Corp.; Allston Sargent, president and director, Campbell Metal Window Corp.; Jack Williams, president, Campbell Casement Window Corp.; Milton T. Clark, president, Campbell Industrial Window Co., Inc. The officers are as follows: Allston Sargent, chairman of the board; Milton T. Clark, president; Harry E. Campbell, vice-president; Frank P. Stubbs, secretary; James W. Crabbe, treasurer and assistant secretary; Donald M. Forgan, assistant treasurer.

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PENCIL POINTS

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Modernism is Still in the Making

By Wells Bennett

The artist finds joy in a new creation and this pleasure is in itself a considerable reward. If, however, our painter, sculptor or architect offers to share his masterpiece with the public he is more than likely to be squelched by a general conservatism. The self-satisfied world is willing that this artistic genius should keep the good news to himself. Modern painting is just emerging from that experience: Sullivan, Wright and their school among the architects were overwhelmed by it. In fact by their very frankness in doing something new and naïvely enjoying the result the Chicagoans were inviting discipline. And sure enough, the spanking was administered. The great body of still Victorian architects and art lovers were not amused. Sullivan never capitulated, Wright carried on, but the fun of the thing noticeably subsided. The painter and architect alike need public approval for the nourishment of both soul and body.

The second onslaught of modernism upon America came not from the middle west but from abroad, quite a different matter you may be sure. New York, always more susceptible toward the east, took the full force of the impact and, weakened at home by the flank attack of the Zoning Law, succumbed. That is, she let down the bars to a very noticeable extent. The sturdy remnant of the Chicago pioneers came out of their cyclone cellars, found that the sun was shining, and with loud cries of "I told you so," joined their eastern brethren in the pæan to modernism. Happy days were here again. Men were no longer inhibited by the egg-and-dart: in its place was the significant lightning and potato-peeling motif. The flying buttress no longer chained one's fancy: there was the setback waiting to be developed. From the banal column and lintel, designers had escaped to the wild, free beauty of the cantilever. But even so not all the architects and clients wanted to let themselves go on this modern junket, and the conservatives, though less numerous, have been just as stubborn as ever. Thus we find ourselves where we are today, building lots of modern, and also lots of classic, with here and there bits of Gothic and Romanesque.

This is the horrid fly in the modernist's otherwise crystal-clear ointment. Why, by this second and third decade of the twentieth century, doesn't everybody like modern architecture? Why do laymen, as well as architects, still prefer half-timbered English cottages with sagging ridge-poles on fifty-foot lots in modern subdivisions, or apartments à la Ferdinand and Isabella? How can it be, the modernist queries, that a present-day jury in solemn conclave convivially assembled can award the George Rogers Clark Memorial prize to a beautiful rendering of that old-fashioned sweetheart of our analytique days, A Circular Temple in a Garden? That is to say, the modern goes better than in Sullivan's time but it doesn't go all the way, and why not?

Well, for one thing it might be that modern design goes better not because we do things so much better than Sullivan did but because the Zoning Law and the tremendous growth of commercial building have presented the architect with an opportunity. That is, the greater present acclaim has been due somewhat to originality in design and a great deal to the advertising and sale value of novel treatments, vigorous or suave, for modern commercial structures. The very fact that a building or shop front is modern is bound to be a distinct asset to its owner in a nation where an automobile costing more than half one's income is supposed to be turned in for the next model each year.

The most fastidious collector of early Americana, however, will not hesitate to park his 1931 Buick in the replica of a Colonial stable. The average citizen does not feel that the fashion of the place where he works has anything to do with the style of the place where he sleeps, the church where he worships, or the monuments in which he enshrines his government and his heroes. There has not come to my notice a single instance of a Ford employee who installed in his home an assembly line for getting himself and family off to work and school in the morning.

First as to the home. None but the rich can afford to go modern, for one would have to junk all the wedding presents, heirlooms, and other beloved gadgets. The rich are apt to have more heirlooms than anyone else—they can collect them—and they are apt to be terribly sentimental about Sir Barwise's chain armor, the Grand Duke's samovar and the Sultan's ebony screens. Modern is hardly opulent enough for genuine display. To be sure there appears to be a chance in apartments and city dwellings but actually the inertia of that hinterland of the traditional, the American Home with its radio, davvy and bridge lamps, is tremendous. Perhaps the bathroom is here the most vulnerable point.

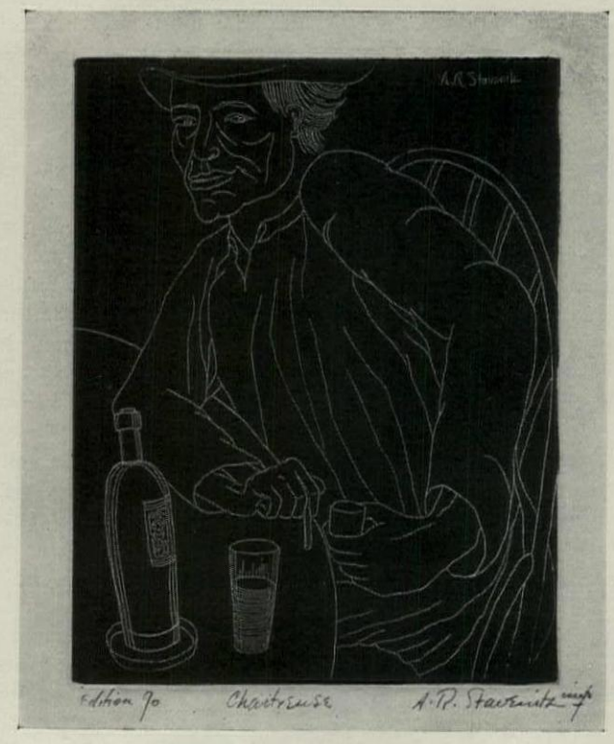
Religion is not moving very positively among us,

and the traditions to which it clings would seem best set forth in the symbolism of established ecclesiastical architecture. New sects may bring new forms and open a way. The War seems to have shaken up Europe to the extent that reinforced concrete churches are acceptable in France and Germany. As for us, the War seems to have shaken us down—to new low levels as far as interest in religion is concerned.

Turning from this negative picture of the church's architectural progressiveness, let's look at monumental architecture and competitions. This is the burden of the whole lament on the part of our naturally buoyant modernist. The gentlemen in spats and on juries revere the notion of Thomas Jefferson as to the superiority of the Roman style to represent the grandeur and nobility of the Republic. These gentlemen are sincere about it and there is no doubt that, aside from the strange interlude in the Centennial period, the Republic and its architectural monuments have marched along in the best Roman manner, and may even have surpassed Jefferson's expectations. Against this formidable front the modernists have been saying bravely, and insistently, that monumental architecture ought to be indigenous, though whether French, German, Dutch and Scandinavian forms are any more suited to the rugged Lincoln than the glory that was Greece and the splendor that was Rome might be debatable. A favorite modernist motto has been that form ought to follow function, though this, in some government buildings, would be hard to explain. Anyhow the question seems to be whether we should keep our monumental public buildings in the uniform pompous architectural frame so long set for them, or whether the frame should in some undetermined way be cut to fit the picture.

As to the layman, the habit of accepting Washington as it is, politically and architecturally, is so ingrained that he goes on happily breaking laws and not thinking much about the arid frigidity of the Mall. There is, incidentally, a moral here as to the futility of character, of fame, once one is dead. Lincoln, Grant, McKinley, George Rogers Clark—no matter how individual their lives—return to the same dust and are alike Romans, according to their monuments.

There is, however, this to be said by way of comfort. If the modern movement is a going concern it will be turning out a much better product in 1950 than it is now. Since most of the modern work is commercial it will early disappear from obsolescence. We can, therefore, go on practicing on this temporary type of building with the assurance that our mistakes will be removed by the wrecker. There is no blot like a poor public building placed, as they usually are, in a public square. Unlike a Cubist painting it cannot be turned to the wall and forgotten. Now that we have erased most of the columns and cornices from office buildings the worst is over. A classical Post Office or Treasury Building isn't so bad. The masses and forms are in themselves beautiful even if unrelated to the use of the building, even if the building is hardly usable at all. The thousands of columns in Washington may be dull, but possibly our present epidemic of capless and baseless flutings will get to be dull too. The sooner public buildings go modern the sooner will a new academicism be upon us; at the present stage of modernism that would be a pity. Finally, if the die-hard classicists are given enough rope they might be persuaded to hang themselves. It may be that within the span of some of us now living the temples, thermæ, and tombs alike may be laughed out of existence.



"CHARTREUSE"—ETCHING BY A. R. STAVENITZ

The Geometry of Architectural Drafting

15—Applied Cyclometry

By Ernest Irving Freese

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Without a doubt, Parts 14 and 15 of this work will stand as the most valuable aid to the art of practical drafting that has been produced since the invention of the drafting-scale. But think not that this system of graphical cyclometry sprang full-fledged into being. Behind these astonishingly simple constructions for doing the "impossible," there exists a latent and laboriously-woven mathematical fabric that, to look back upon, staggers even the author himself: whole reams of paper filled with highly-involved calculations leading up to the eventual formulas that mark the consummation of the author's long and finally-successful search for constructions that would not become so entangled with theory as to be inaccurate in execution and yet, at the same time, that would not deviate from theoretical exactitude to such an extent as to render such deviation graphically detectable.

Every construction shown in Part 14, and every application of same in this Part contained, is original with the author. There are no other usable graphic methods known for accomplishing the things in these two Parts shown. This system of graphical cyclometry, now made fully available, is *faster than guesswork*, and it produces results that are *more exact* than those that could be laid off from the decimalized results of mathematical computation. Furthermore, not one of the constructions contains an operation that makes for accumulation of error: on the contrary, if an initial error of layout should occur, the effect be-

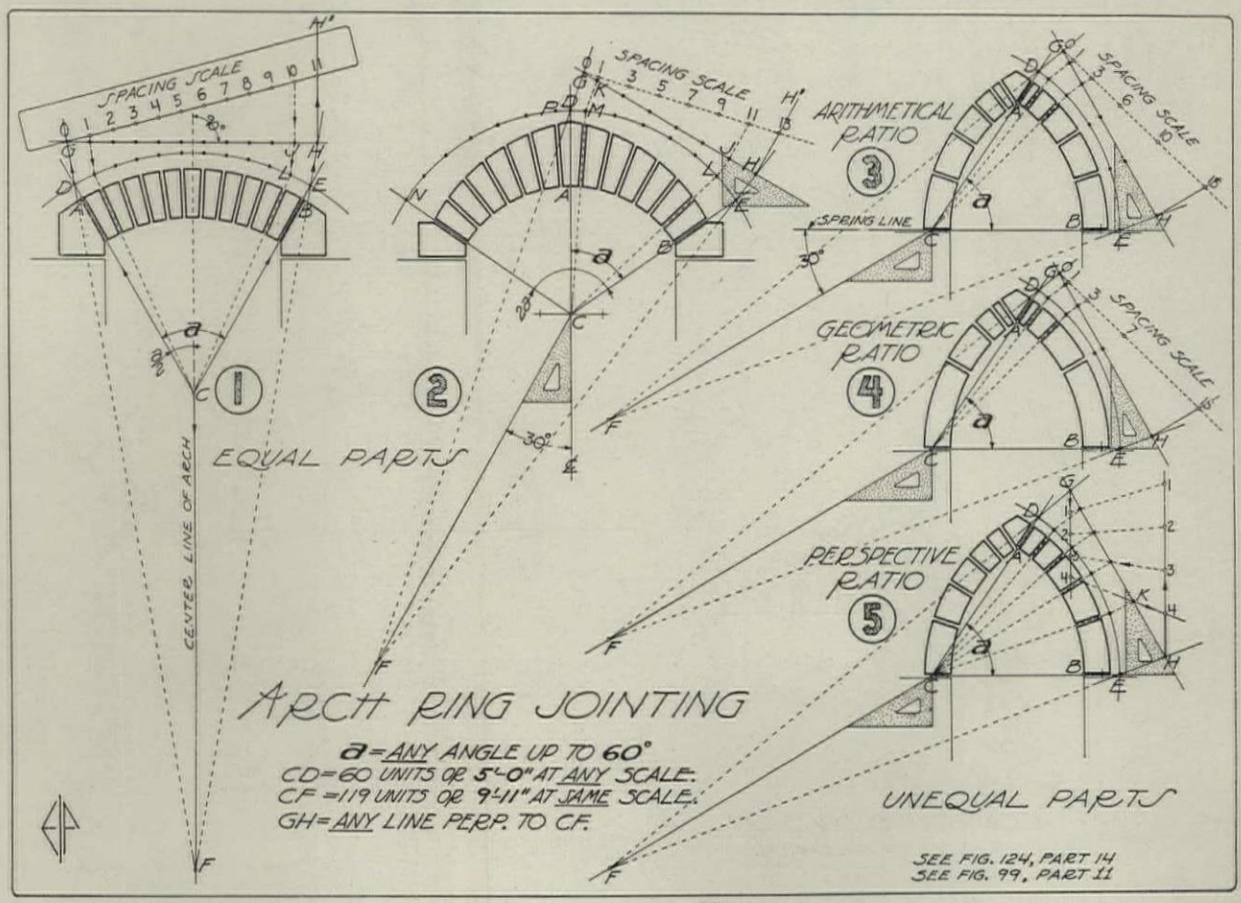


FIGURE 132

comes *distributive* rather than *cumulative*. Only a few of the infinite number of possible applications of this new kind of geometry can here be shown. But these will be typical of them all, and will be sufficient to enable the student to readily determine which particular one, of the very few and simple basic layout processes, applies to whatever case is at hand. I said "student" advisedly: the "old dogs" may merely "growl" at these new "tricks"—but the rising and oncoming generations of canines will wag their appreciative tails.

Now get over the board. You—no matter *who* you are—haven't "learned it all"—yet. I'll show you:

FIGURE 132:

The *modus operandi* of division here variously depicted applies to any arc, *AB*, that does not subtend an angle, *a*, in excess of 60 degrees. It is particularly suitable to the segmental and pointed arches shown. Diagram "1" will be used to illustrate the typical process. Draw an auxiliary arc, *DE*, concentric with the given arc *AB*, and subtending the *same angle*. Make its radius, *CD*, equal 5′-0″ at *any scale convenient;* and make *CF* equal 9′-11″ at the *same* scale as *CD*. Draw *any* line, *GH*, perpendicular to *CF*. Place one point of the dividers precisely at *D;* move a straightedge into touch and revolve it into alignment with *F;* indent *G*, snug to the straightedge and precisely on the line *GH*. In the same expeditious manner, *drawing no line*, project *E* to *H*. Now place the well-sharpened conical point of a six-aitch pencil in the indent at *H;* move a triangle into touch and *draw* the inherent line *HH′*—preferably at 90 degrees to *GH*, though not inconveniently or necessarily so. Move the zero mark of any suitable scale into registry with *G* or *H*, say *G;* at the same time maneuvering the scale so as to cause the required divisional number—in this case 11—to register exactly with the drawn line *HH′*. *But draw no line:* indent the intermediate points snug to the raking edge of the scale. Now, if you like, you can draw a faint line along the scale's edge merely to identify the indented points therealong. Place one point of the dividers at *10*, say; move a triangle into touch with its working edge paralleling the drawn line *HH′;* indent *J* on *GH*. Similarly, project the remaining points to the line *GH*. Now place the divider-point at *J*, and, using it as a pivot, swing the straightedge into alignment with *F;* indent *L* on the arc *DE*. In the same expeditious manner, *drawing no line whatsoever*, project the

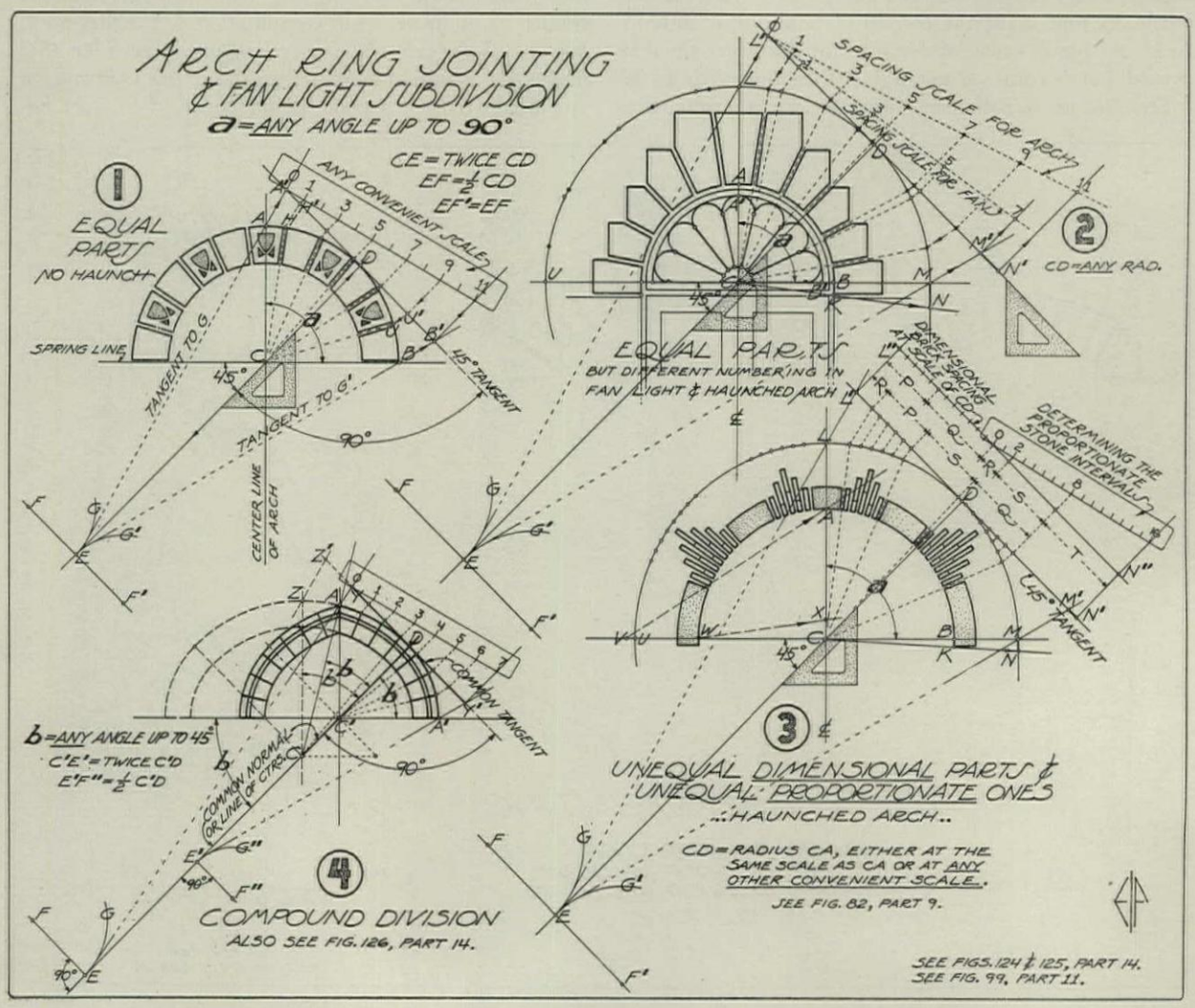


FIGURE 133

remaining division-points onto the arc *DE*. Radials to *C* from these points will divide the arch ring, or *any* arc concentric therewith and subtending the same angle, into the required number of equal or proportionate parts correspondent with those of the straight line *GH*. The above detailed technique should be followed in all cyclometric operations. It is fast and precise. It will not be further dwelt upon.

At Diagram "2," of this Figure, the *full* Florentine ring exceeds 60 degrees but does *not* exceed twice sixty. Hence, *half* the intrados, the arc *AB*, has been divided into 6½ parts by first so dividing the straight line *GH* in the simple manner indicated; and the resultant points projected onto the arc *DE* as before explained. If the other half needs to be divided, it is quickly done as follows: First, with the bow spacers at *D*, revolve *M* to the point *P;* place a piece of tracing paper or cloth over the divided arc *DE;* indent the tracing with the division-points *M* to *E*, inclusive; move the tracing so that *M* covers *N*, and *E* covers the point *P;* indent the intermediate points *through* the tracing, and the duplication is accomplished *in total*. If the first-divided half contains *unequal* divisions, then the tracing will have to be *turned over*, and the entire half from *D* to *E* thus transferred bodily to *DN*. The indented points, however, will be burred on the reverse side of the tracing, but if the indentation has been carefully done *perpendicular to the paper*, no difficulty will be met with in the reversing process. It is seldom, however, in detail work, that the *two* halves of a symmetrical arch need be shown—one is sufficient, plus the keystone if such occurs. Anything more is wasted effort—unless you're "makin' a picture"—instead of a *working drawing*. At Diagram "3," the Gothic ring from *A* to *B*, has been divided into five unequally-spaced voussoirs whose widths are in the arithmetical ratio of 1:2:3:4:5—the line *GH* being thus first divided as there shown. Ever hear of dividing an *arc of a circle* in *arithmetical* ratio? Well, there it is! And the one at Diagram "3" is divided in the *geometric* ratio of 1:2:4:8 just as easily! But Diagram "5" is the astounding one: here, the ring *BA* has been divided into pleasingly diminishing parts —in this case five—corresponding with the *perspectively-divided* straight line *HG*. I have already shown you (in Part 11 at Diagrams "6" and "7" of Figure 99) how to divide any straight line in perspective ratio. The most architecturally-pleasing results, however, are obtained by adherence to the following rule. Say 5 diminishing divisions are wanted, as in the Diagram. Sum up the consecutive series of the first 5 whole numbers; 1 plus 2 plus 3 plus 4 plus 5—which is 15. Take the *last* number of the series as the numerator, and the *sum* of the series as the denominator, of a *fraction*—which becomes 5/15ths, or 1/3rd. Make the greatest division of *HG* equal to 1/3rd of itself, which division is *HK* in Diagram "5." This establishes the rate of perspective diminution for the remaining divisions. Hence, from *G* and *H* draw the paralleling lines shown—in this case they are conveniently made verticals, but any other direction would do as well. From *G* mark off the four numbered points at *any* equal spacing, since four is the *number* of parts required in *KG*. Project *4* from the *G*-line through *K* to the *H*-line at *4*. Space the other points, *3*, *2* and *1*, on the *H*-line, same as *4H*. Connect the pairs of similarly-numbered points and mark where the connecting straightedge crosses *KG*, as shown. The line *HG* is thus divided in true perspective ratio into the five desired diminishing parts. And the rest is easy. So, *another* unheard of thing has been done! No doubt, perspectively-diminishing arch stones will henceforth become quite the *æsthetic* thing—since *geometry* now shows the way! But I often wonder how those old-time stone masons of *Venice* did it—to add *more* height to their high-pointed arches.

FIGURE 133:

The *modus operandi* of division here indicated by Diagrams "1," "2," and "3," applies to any arc, *AB*, up to and including a *full quadrant*. It is therefore particularly suitable to semicircular arches, either haunched or not: though it could just as readily be applied to the segmental and pointed arches heretofore shown. The method of Diagram "4," however, is limited to cases where neither of the arcs, *AD*, *DA'*, making up the compound curve *ADA'*, subtends an angle, *b*, in excess of 45 degrees—which is not an uncommon case. In *all four* Diagrams, though, the distance *CE* is always twice *CD*, and the radii *EF* and *EF'*, of the constructional arcs *G* and *G'*, are each always equal to ½ of *CD*. Also, in all cases except that of compound curves, and regardless of the magnitude of the angle *a*, the line *DCE* is invariably drawn at the inherent angle of 45 degrees, that is to say, it is taken as the bisector of any quadrant within which could be contained the arc or angle that is to be divided or is otherwise to be operated upon. And the rectifying line drawn through the arc-point *D* is always the one and *only* line that can be drawn through said point and tangent to the arc containing it: this rectifying tangent is then, necessarily, always perpendicular to *DE*, as shown. Hence, for *all* non-compound arcs, and regardless of the magnitude of the angle *a*, the tangent through *D* is also invariably drawn at the inherent angle of 45 degrees, as indicated.

At Diagram "1" of this Figure, *AB* is half the extrados of the arch ring itself, though it might just as well have been any other arc concentric with *AB* and subtending the same angle, *a*. At any rate, it is desired to place eleven equally-spaced voussoirs in this arch ring, the center line of which is *CA*, and the angle *a* subtended by this half being either a right angle or *any acute angle*—it matters not. Locate *D* and *E* on the 45-degree line as shown; draw an extended 45-degree tangent through *D;* and draw the short directing arcs *G* and *G'*. Project *A* to *A'* with a straightedge in tangent touch with *G;* and project *B* to *B'* with the straightedge in tangent touch with *G'*. The tangent *A'DB'* is then the *stretchout* of the arc *ADB*. Divide it, graphically as shown, into 5½ parts. Project the resultant points onto the tangent arc *ADB* via lines tangent to the directing arcs springing from *E*—using whichever of the latter two arcs happens to lie on the same side of the line *DE* relative

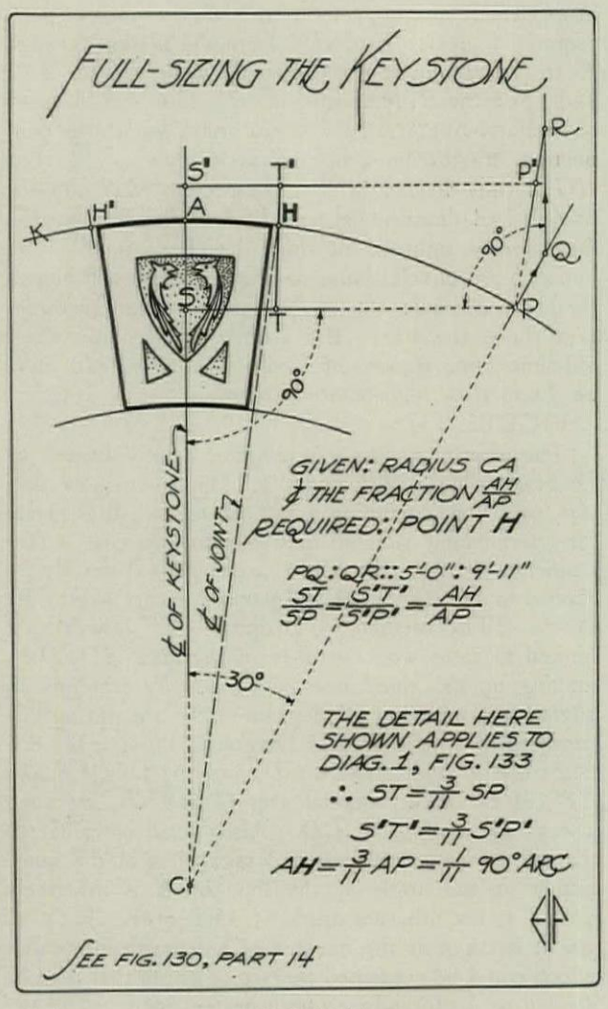


FIGURE 134

to the point being projected. For instance: place the divider-point at J'; bring the straightedge into touch and swing it into tangency with G', since G' is on the same side of DE that J' is. Then indent J, one of the required points on the arc ADB. Similarly, on the *other* side of DE, the projecting straightedge would be brought into tangent touch with G; the point H being thus projected from H'. You will find that it is always "handiest" to thus divide the *right-hand half* of an arch—as is done in all the practical examples here shown—since then the right *hand* can be used to manipulate the marker, while the left hand swings the projecting straightedge into position. The left-hand half of the arch can then be divided, if needed, by transference of the points in the expeditious manner already suggested. At Diagram "2," CD is the radius of any auxiliary arc LM, concentric with the given arc AB, and subtending the same angle a. This convenient auxiliary arc then becomes an arc upon which the operation of rectification and division can be performed. Hence, the rectifying tangent accordingly becomes the straight line $L'M'$. To this is added the length $M'N'$ which latter is the graphically projected haunch MN correspondingly enlarged from the actual haunch BK: the total line $L'N'$ thus becoming the line upon which the required division-points of the haunched arch are marked off, while the portion $L'M'$ is the line by means of which the unhaunched fanlight is divided into a different number of parts. At Diagram "3," CD is also the radius of an auxiliary arc LM; but this time CD is made *equivalent* to CA at some *other* scale. By this simple expedient, dimensional units or *distances* can be laid off on the arc LM, at the scale of CD, and then "pulled down" to the scale of the drawing, that is, to the scale of CA, by radials crossing the arc AB—which latter arc is here half the intrados of the arch. In other words, if the scale of CA were $\frac{3}{4}''$ to the foot, and if CD were made the *same* distance at the scale of $1''$ to the foot, and if a $3''$ brick unit were laid off on the arc LM at the scale of $1''$ to the foot, and if this unit were projected by radial lines to the given arc AB, then that unit would there also scale $3''$ but at the *drawing scale* of $\frac{3}{4}''$ to the foot. Obviously, and for many reasons, this is a highly convenient arrangement. Now let it be required to subdivide this arch ring in such a manner that stone voussoirs will alternate with groups of ungauged brick voussoirs, and so that the stone and brick intervals will diminish in magnitude, from skewback to keystone, at the rate of 8:7:6:5:4; the 7 and 5 representing the two brick groups made up of those numbers of dimensional brick *units*, and the other numbers representing the *ratio of decrease* in the extent of the three stone intervals. And let the distance from center to center of a brick unit, along the line of the intrados AB, be 3 inches. Finally, let the arch contain a haunch BK. I don't know what other conditions might be imposed to make this problem of arch ring division appear more complicated—but whatever else were added, its solution would still remain exceedingly simple. *For anything that can be done to a straight line, can be done to a circular arc*—as you shall see. Here, now, the tangent $L'N'$ is the stretchout of the arc AB of the intrados plus the straight haunch BK, but at the scale of the conveniently-larger radius CD. On any other line, $L''N''$, equalling the length of $L'N'$, lay off, at the scale of CD, the scale distances P and Q of 15 inches and 21 inches, respectively: the distance P representing the desired group of 5 brick voussoirs at 3 inches each, and the distance Q representing the other group of 7 brick voussoirs at 3 inches each, that are to be placed in their proper position along the intrados AB of the arch. The distance $L''O$ then represents that portion of the half intrados allotted to the definite brick intervals P and Q. Now divide the remaining portion of $L''N''$, which is ON'', into three parts in the *ratio* of 2:6:8, since 2 represents *half* the width of the keystone which is here made the *smallest* stone of the arch. The resultant proportionate stone intervals are R, S and T, on the line $L''N''$, as shown. Now transfer all the divisions of the line $L''N''$ in *proper sequence* to the tangent $L'N'$; and project the divisions to the arc LM from which radials to C will then fix the required arch ring divisions in accordance with the originally-stated imposed conditions.

Before leaving Diagram "3," of Figure 133, suppose you desired to discover the radius of a semicircular

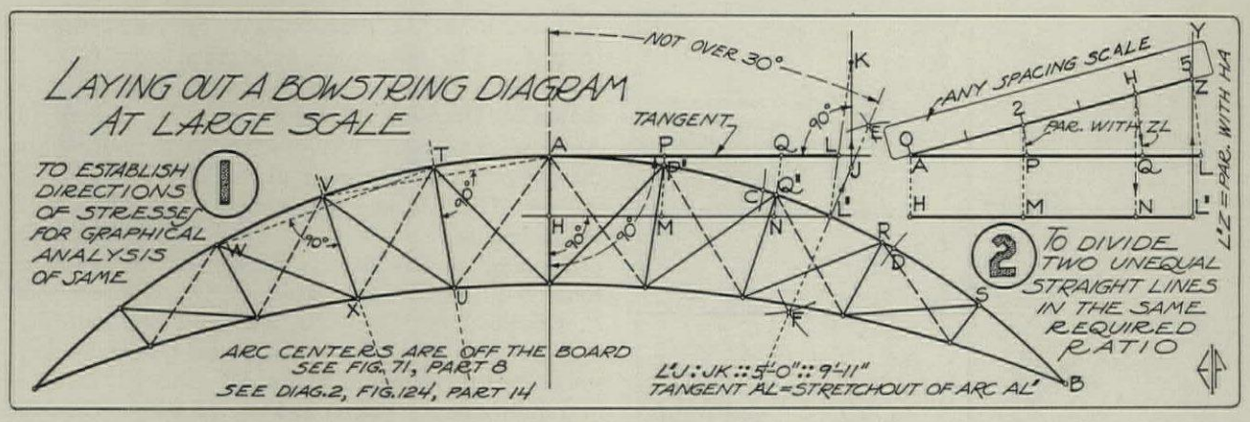


FIGURE 135

arch, on the line of its intrados *WAB*, such that this intrados would just contain a certain pre-determined number of ungauged brick voussoirs of a fixed distance center to center of joints; or such that this intrados shall, for any other legitimate or hallucinatory reason, be of a certain desired extent. Lay off *half* of this desired extent in a straight line from *C* to *V*. From *V*, project an extraneous raking line having a "rise" of 18′-10″ in a "run" of 29′-7″, to cross a perpendicular from *C* at *A*. Then will *CA* be the radius craved. Or mayhap you seek, for one or another of the above-named reasons, the length of a semicircle, *WAB*, either already drawn or having its radius *CW* laid off. Then just draw a line from *W*, having a "pitch" of 1′-4″:9′-5″, to cross a perpendicular from *C* at *X*. Then *CX* plus thrice *CW* is the length of the semicircle *WAB*.

At Diagram "4," of Figure 133, the compound extrados arc *ADA′* is composed of two arcs, *AD* and *DA′*, with centers at *C* and *C′* respectively; their point of tangency being the common point *D* on their prolonged line of centers drawn through *C*,*C′*. Neither arc subtends an angle, *b*, in excess of 45 degrees. It is required to divide the ring into—oh, *any* number or kind of parts; but I'll say 7 equal ones along the *extrados AA′*. In this case, as in the case of all *compound* arcs, the rectifying tangent must be a tangent to the particular arc being divided, rather than a tangent to another auxiliary arc. Hence, where either angle *b* does not exceed 45 degrees—a not uncommon case—the rectifying tangent can be made the *common* tangent to both arcs of the compound curve—which certainly results in a simple and highly expeditious arrangement, as shown by the Diagram. First, draw the prolonged line of centers, at whatever angle it may lie, through the arch centers *C* and *C′*, cutting the compound arc *ADA′* at *D*—or, rather, *dividing* it at *D* into its two simple component arcs *AD* and *DA′*. Next draw the extended common tangent through *D*; this, of course, always being at right angles to *CC′D*. Locate *F* and *F″*, as noted, and draw the directing arcs *G* and *G″*. A line through *A*, tangent to *G*, fixes *Y*; and a line through *A′*, tangent to *G″*, fixes *Y′*;

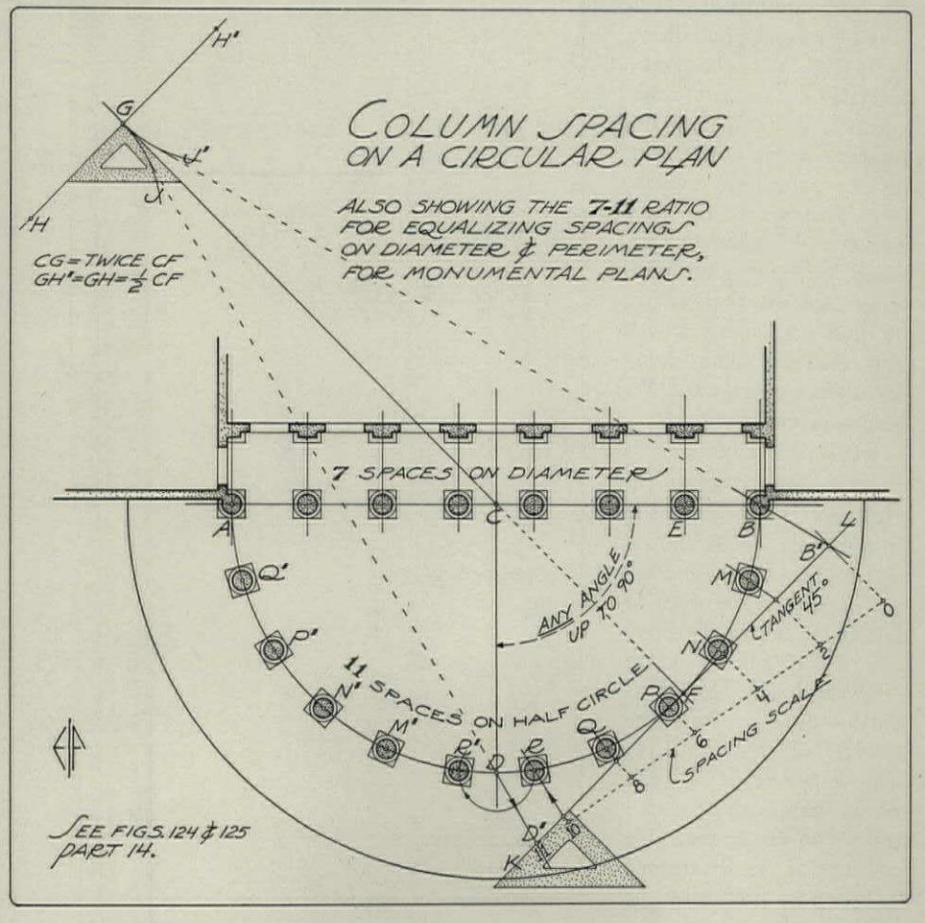


FIGURE 136

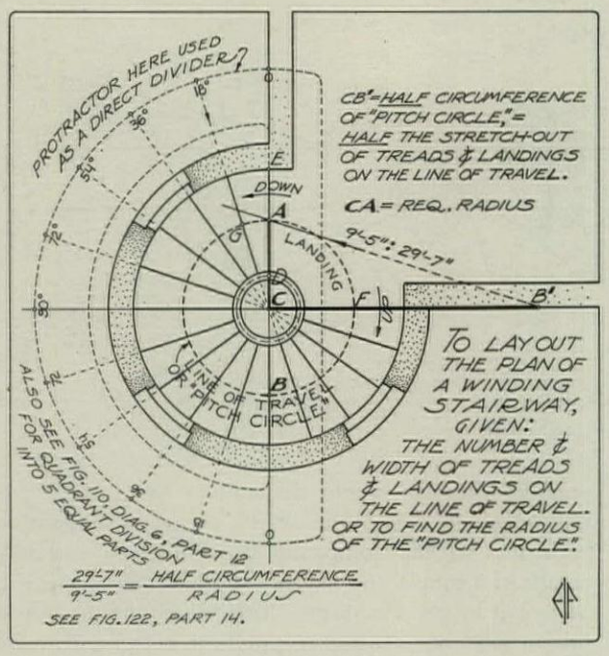


FIGURE 137

whence, YY' is the development of the compound arc ADA'; the portion YD rectifying the arc AD, and the portion DY' rectifying the arc DA'. Divide YY' into the seven required equal parts; and project the points of division onto the arc AD via tangents to G, and onto the arc DA' via tangents to G''. The deed has been done. Similarly, the compound arc ZDA', or any other compound circular curve limited by the conditions given, could be so divided, or otherwise in any manner whatsoever divided, or any given distance laid off therealong, by first *stretching it out* into the rectifying common tangent $Z'DY'$. Now you ***know***.

FIGURE 134:

It is here required to "full-size" the keystone of the scale detail shown at Diagram "1" of Figure 133. But, in order to do this, it becomes necessary to lay off its width —or the half, AH, of its width—on the full size arc K of Figure 134. The keystone is 1/11th of the semicircular arch; hence AH must be 1/11th of a 90-degree arc; hence, AH must be 3/11ths of a 30-degree arc. So, locate the arc-point, P, which is 30 degrees from A. You can do this by a radial from C, or, if C is too far distant, or off the board, by the method shown at Diagram "2" of Figure 124 in Part 14. Anyhow, it's easy. The problem then resolves into the one of locating point H so that AH is 3/11ths of the arc AP. At any handy *scale*, make PQ, on a radial line through point P, equal 5'-0", and make QR, parallel with the center line of the keystone, equal 9'-11" at the *same* scale as PQ. Connect point R with point P. Draw PS, and draw any other line $P'S'$, both perpendicular to the center line of the keystone—hence parallel. Make ST equal 3/11ths of SP, and make $S'T'$ equal 3/11ths of $S'P'$. Then the required point H is found where TT' crosses the arc. Now *you* finish it—since HC, the center line of the joint, has been found.

FIGURE 135:

The circular arc AB represents the neutral axis of the top member of half a bowstring truss. The angular extent of AB does not exceed 60 degrees. This arc, and the lower one representing the axis of the lower member, have been laid out to as large a scale as practicable in order to establish, with the greatest possible degree of precision, the stress lines of the radial and diagonal web members, for the purpose of transferring their *directions*—by parallel projection—to a subsequent *stress diagram* of the truss. There are to be, say, five panels in each half of the truss; the

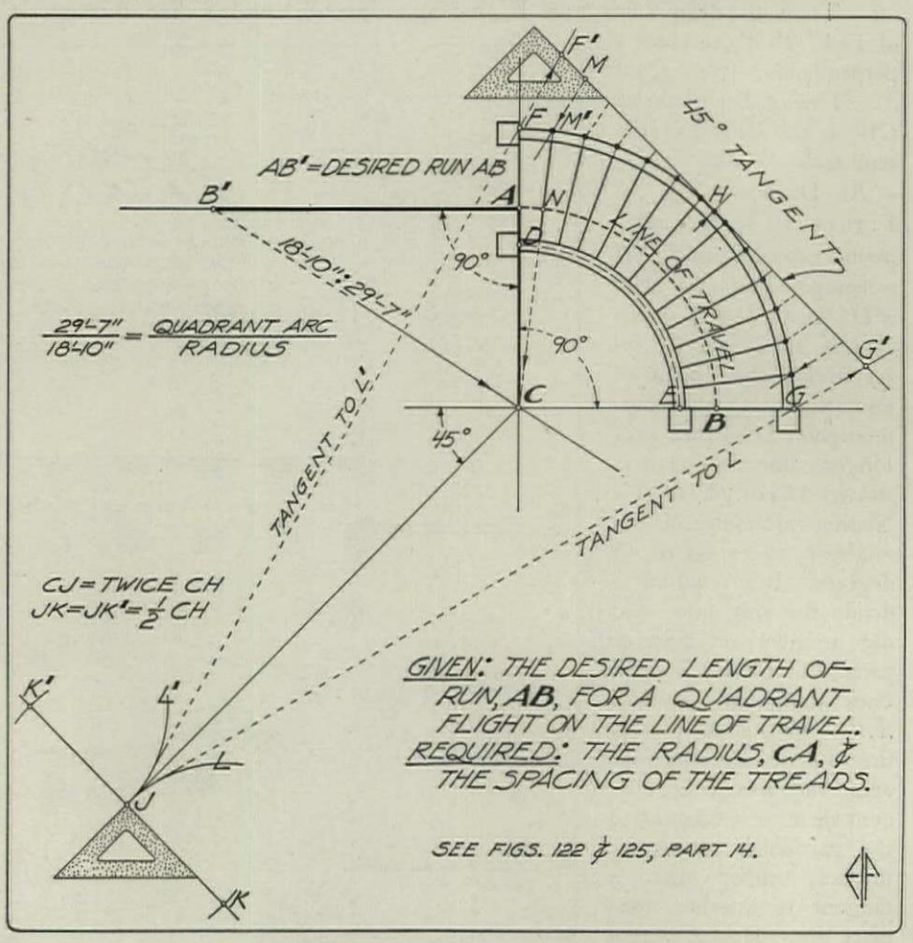


FIGURE 138

panel points being equidistant along the arc *AB*. But, because of the magnitude of the scale, there is not room on the board to employ any of the methods of division indicated by Figures 132 and 133. In fact, the arc center itself may be "off the board"—or too far distant to be practicably available. So, first bisect the arc *AB* at *L'*. This is most readily done by first reducing it to the arc *CD* by cutting off equal distances, *AC* and *BD*, from the ends thereof, as shown. Then bisect *CD* as shown, which also, at the same operation, produces the necessary radial *FE*. On this radial, from point *L'*, lay off, at *any* handy scale, *L'J* equal to 5'-0", and lay off *JK*, as indicated, equal to 9'-11" at the *same* scale as *L'J*. Draw a tangent from *A* to meet *KL'* at *L*. Draw *L'H* parallel with the aforedrawn tangent. Divide these two parallels each into 5½ parts, that is, in the ratio of 2:2:1. An expeditious method of doing this is suggested at Diagram "2," which you should have no difficulty in interpreting—though you have probably never before seen it done that way. Well—the two lines *AL* and *HL'* are now divided similarly into the requisite number of parts. Lay a straightedge between the corresponding division-points of these two parallels, and so find the analogous points *P'* and *Q' on the arc*. Transfer these to *R* and *S;* then, if needed—and they *will* be needed if the truss isn't equally loaded on each half—transfer all the points of *AB* to the other half of this top arc—said transfer being made, in total, with an indented strip of tracing paper or linen as I have before said. Now then, the *tangent AL* is also the stretchout of the arc *AL'*. And *AP* is the arc *AP'* unbent to a straight line, that is, it is the distance between any two consecutive panel points along the arc *AB*. Maybe that will help some—sometime. For the purpose of division, *only*, the line *AL* could just as well be any other line paralleling *HL'* and limited by the center line of the truss and the line *L'K:* but for the purpose of rectification, *AL* must be *tangent* to the arc at point *A*, as shown. (Refer to Figure 127, Part 14.) The placing of the radials which, in Figure 135, fixes the unequally-spaced panel points on the *lower* arc, is done by utilizing the fact that each radial is perpendicular to the imaginary straight chord between any two panel points on the upper arc that are equidistant from the one point in question: *TU* is perpendicular to *AV*, and to *P'W: VX* is perpendicular to *TW:* etc., etc.

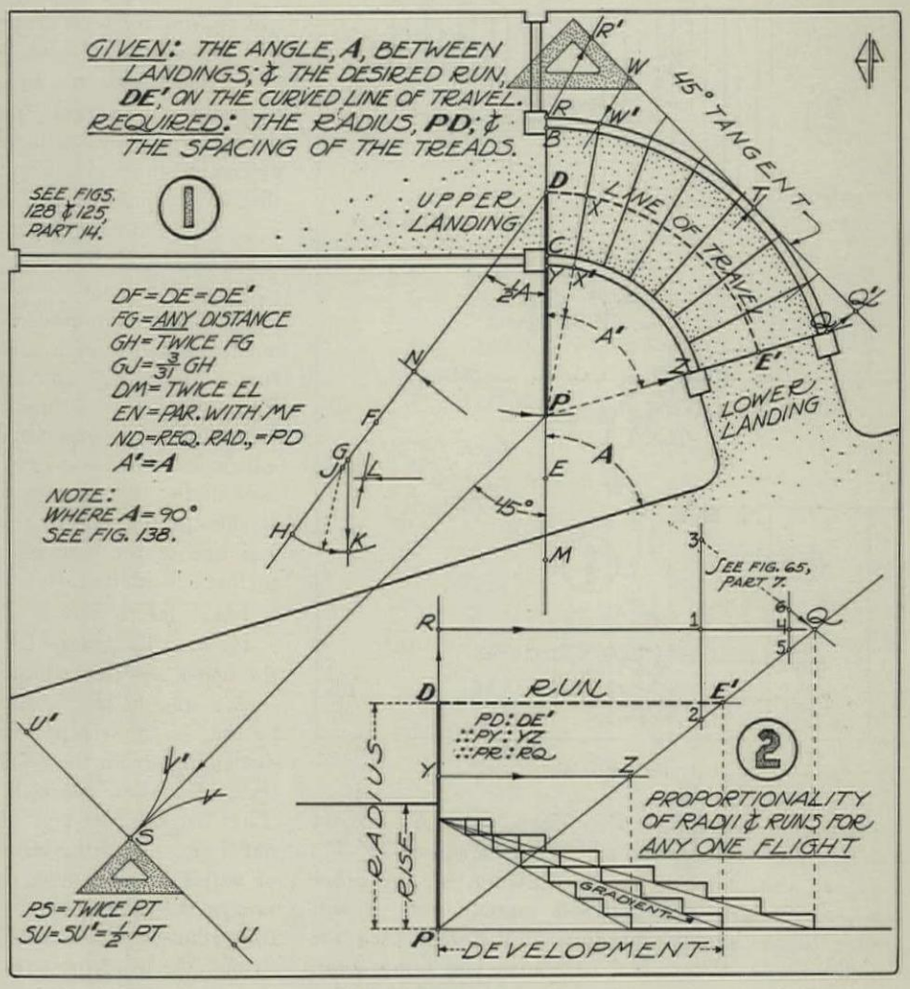


FIGURE 139

FIGURE 136:

The only difference between this cyclometric application and that given at Diagram "1" of Figure 133, is that this one is column spacing and the other is voussoirs. I have shown this because some one of you is liable to say "Well, that may be the way to space arch stones, *but how about columns?!!*" However, it also brings to light the 7-come-11 combination—which is *lucky* and not necessarily restricted to *columns*.

FIGURE 137:

Assume that *C* is a point on that plan you are laying out, about which you must draw a circular winding stair—maybe it's the center of a proposed tower: anyhow it's the predetermined center of the circular stair *well*. Say that calculations call for fifteen treads; and that the width of these treads, on the circular "line of travel" is to be 10" each; and that the width of the landing, on this same line of travel, is to be the width of five treads. This makes the total required circumference of the pitch circle equal to 200 inches or 16'-8". Lay off *half* of this distance, or 8'-4", in a

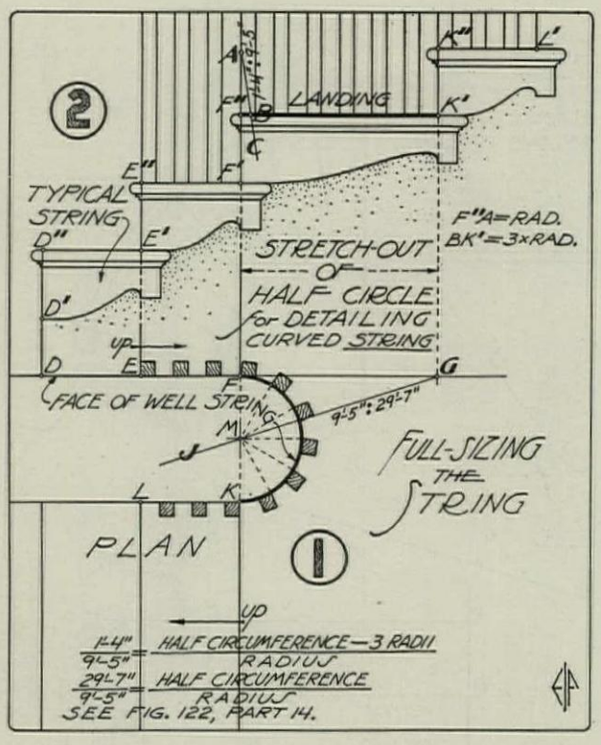


FIGURE 140

straight line from *C* to *B'*. Then, from *B'*, project a raking line having a rise of 9'-5" in a run of 29'-7". You can use the scale of the drawing, *or any other scale*, to establish this slope—it matters not—it will always be the same, regardless of the scale used for the distances. Why sure, of course you know *that*. All right, this sloping line cuts across a perpendicular from *C* at the point *A*. Wherefore, *CA* is the required radius of the circular line of travel. Hence, this time at the scale of the *drawing*, make *AD* equal from 18" to 20", which distances are the limits between which, or at one or the other of which, the center line of the handrail should occur if you want a comfortable and safe stairway. So, *CD* is the radius of the center line of the handrail. And, by laying off the desired, or otherwise controlled, width of the stairs from *D* to *E*, the radius *CE* will describe the wall line. Now, since there are fifteen treads in this particular flight, and since the landing takes up a quadrant, each other quadrant is then divided into five equal parts. Then the distance *AG*, which is the width of tread on the line of travel, will become 10"—as desired. In this case—a rare one—the protractor can be used as a direct divider as suggested in the Diagram. Or it can be done in the geometric manner heretofore shown in Part 12 at Diagram 6 of Figure 110. But, if it had been *fourteen*, or *sixteen*, or any other more-likely number of treads that could not be spaced either by the instruments or by Pythagoras—then you could easily divide one of the opposing quadrants into *one-third* the required number of treads—whether this became fractional or otherwise—then project them through *C* to the opposite quadrant, and then transfer the spacing to the intermediate quadrant—by the now-available and universally-applicable method of *graphical cyclometry* which, by this time, *should* have begun to "percolate." I said "universally-applicable" for a very good reason: by this system a *mechanical* draftsman could easily space, say, 43 teeth around the circumference of a spur gear, and then, just as readily, determine the radius of the "pitch circle" for a pinion that would just contain, say, 17 teeth to mesh with the 43. No, this *new* geometry is certainly not peculiar to *architectural* drafting. Now I can get back:—

FIGURE 138:

Here it is required to determine the radius of a quadrant flight for a given desired length of circular run. Make *AB'* equal this run—in a *straight line*. From *B'*, project a line at a pitch of 18'-10":29'-7". It will cross a perpendicular from *A* at the point *C*, which point is the *center* for all the arcs of the quadrant flight: the distance *CA* being the required radius of the circular line of travel. The remaining layout, inclusive of the spacing of the 13 treads, requires no further elucidation.

FIGURE 139:

Here, at Diagram "1," the known angle *A*, between the upper and lower landings, is *less* than a right angle —*any* amount less, it matters not. This angle is fixed by the condition of the case. A curved flight of steps descending from the level of an entrance porch to the level of a skew sidewalk would be such a condition. The height between the two levels is known—naturally. And the length of circular run on the line of travel is, of course, predetermined by a consideration of the given "rise." It is necessary to determine the radius of the line of travel so that, for the given "run," the lowermost riser *ZQ* will come parallel with the sidewalk line, that is, the proposed circular flight must subtend the given angle *A*—end where it may. Proceed as follows: From *D*, which is the start of the line of travel at one or the other landing, draw the extended line *DH*, making the angle *CDH* equal ½ the known angle *A*. Extend *DC*. Make *DE* and *DF* each equal the desired length *DE'* of the circular run. Make *FG* any distance, but preferably one that is directly divisable by 31. (The decimal scale will here be handiest.) Make *GH* twice *FG*; and make *GJ* equal to 3/31 *GH*. Draw *GK* parallel with *DE*, and find point *K* with radius *JH* as shown. Project a perpendicular from *E* to cross *KF* at *L*; and make *DM* equal twice *EL*. Now project *E* to *N*, in a direction paralleling *MF*. Then *DN* is the required radius *PD*; the point *N* therefore being revolved about *D* to the center *P*, from which latter point all arcs of the now-determined flight are swung, and from which the line *ZQ* is drawn at the given angle *A'*, thus determining the *extent* of the flight. The spacing of the 7 treads, or whatever number the run calls for, is then easily laid off in the manner there indicated.

Diagram "2" of this Figure shows you how you can determine the stretchout of any line of any curved flight from the radius and run of any other line of the same flight. This is based on the fact that, for any one given angle, the arc-lengths *YZ*, *DE'*, *RQ*, etc., vary directly as the corresponding radii *PY*, *PD*, *PR*, etc. You'll find this of value in more ways than *one*.

Note that the "gradient" of a *circular* run is the developed pitch of the "line of travel." Diagram "2" is certainly self-explaining.

FIGURE 140:

Here is a band-sawed semicircular well string that must be full-sized for the mill. But, in order to full-size it, it must be stretched out on the plane of your drafting board. It's easy, though: From the plan at Diagram "1," the radius of the face of the well string is seen to be *MF*. At Diagram "2," make *F"A* equal this radius. From *A*, draw the line *AC* at a slope of 1'-4": 9'-5" relative to *AF"*, as indicated. It will cross a perpendicular from *F"* at point *B*. Make *BK'* equal thrice *F"A*. Then *F"K'* is the required development of the semicircular face of the well string. Incidentally, if you desire the balusters on the landing to space evenly with the balusters on the treads, you can easily lay out the plan so that the length of the semicircular well from *F* around to *K* (the landing) will be a multiple of the tread-width *EF*. Like this: say we make it equal to two treads, so that six balusters will just space out therearound; lay off *FG* equalling twice *FE*; project *GJ* at a slope of 9'-5":29'-7" to cross the perpendicular center line of the well at *M*; then *MF* is the required radius of the face of the well string—and the six balusters on the half circle can, if you want to show them in plan, be spaced with the 30-60 triangle and the T-square. In cases of this kind, the appearance is always better if, as shown, the balusters around the level landing are spaced evenly the same as those on the treads, that is, *along the face of the string* instead of along the center line of the rail — which latter method is, however, more "customary."

FIGURE 141:

In the plan at Diagram "1," a winding half turn is interposed between straight runs; the winders all converging to the center point of the well. The unhappy effect of this common oversight is seen in the elevation at Diagram "2": the handrail changes pitch abruptly where it leaves the straightaway, thus not only making an ugly break in same, termed a "cripple," but also resulting in a stairway that might actually become the cause of disaster.

Diagram "3" of this Figure shows how to lay out the plan so as to avoid this undesirable "cripple." From *G*, where the line of travel crosses the one radial riser drawn through *C*, space off the desired uniform tread-widths *G1*, *1-2*, *2-3*, *3-4*, etc., until the first riser-point on the straightaway is reached—which latter is here point *4*. This point, however, does not have to occur opposite the center *C* of the well—in fact, it seldom *will* so occur. Up to this point, the treads can be "stepped off' with the bow-spacers or compass, which, of course, makes the "line of travel" polygonal from *G* to *4*, as indicated. Observe, also, that *this* operation of "stepping off" is the repetition of a definitely fixed distance, not an operation of "division": let point *4* come where it will. Finish the spacing from *4* to *H* with the *scale*. (See Table 2, in Part 10.) Now, in the plan here shown, the riser *KJ* is in line with *EF*. This riser *KJ* is therefore here determined upon as the one above which the handrail shall begin to ramp. But, in order that this ramp shall be an easy and graceful one, it becomes necessary to dispose, or "balance," the treads along the center-line-plan of the rail from *J* to *D*, so that each such tread will there be intermediate in width between adjacent treads—still, however, maintaining the already laid-off uniform spacing along the *line of travel*, for to disturb the *latter* spacing would, for sure, make the stairway an excellent break-neck contrivance. Well, here's how to do the "balancing" trick: First, in accordance with the method now certainly well known, develop the mixed line *DBJ* into the 45-degree tangent *D'B'J'*. Add thereto the distance *J'P'* which is the normal width of one tread on the line of travel, being equal, also, to *JP*. Now divide the line *D'J'* (which is the developed distance *DBJ*) into that number of *perspectively-diminishing parts* corresponding with the number of treads required between the radial *DT* and the flier *JK*—which is here 8—using, however, the added normal tread-space *J'P'* to establish the rate of perspective diminution. I'll explain it further—though the process has been heretofore shown. Draw the two parallels, *D'Q* and *P'R*, in any convenient direction, which is here horizontal. On *D'Q*, space off any eight equidistant points as there numbered. Project *8* from *D'Q* through *J'* to *8* on *P'R*. On *P'R*, space off the other reverse-numbered points, using *8P'*, on *P'R*, as the uniform spacing interval. Lay a straightedge between the correspondingly-numbered points now occurring on the parallels *D'Q* and *P'R*; and mark where the straightedge crosses the developed line *D'J'* at the similarly-numbered points *1* to *7* inclusive —point *8* being *J'* as shown. The rectifying tangent *D'J'* has thus become divided in perspective ratio in the same manner that the mixed line *DBJ* must now be divided. The points *1* and *2*, on this tangent, occur within the developed length of the arc *DB*, which latter is *D'B'* on the tangent. Hence, project these contained points from the tangent to the arc *DB* via lines tangent to the directing arcs *N* and *N'*, thus locating the riser-points *1* and *2* on the arc *DB*. Then merely *transfer* the points between *B'* and *J'* to the line between *B* and *J*—the two distances being identical. This transfer can be done, in total, by means of an indented piece of tracing paper or linen. Now draw the required riser-lines from the numbered points on the center line *DBJ* of the rail, through the similarly-numbered points on the line of travel, and continue each line to the wall as shown. The riser-lines occurring between the risers *DT* and *EF*, being merely the reverse of those occurring between *DT* and *JK*, can be readily placed in any one of a number of ways, and the plan thus completed. At Diagram "4," I have given the elevation of the resultant rail sweep as evidence that the above method of "balancing" produces the desired results. Heretofore, the only method of *endeavoring* to accomplish this was to plot the desired curve of the handrail *first*, by development, and then, from that, to deduce or discover the needed tread-spacing along the center line of the rail; *after* which roundabout process the plan lines

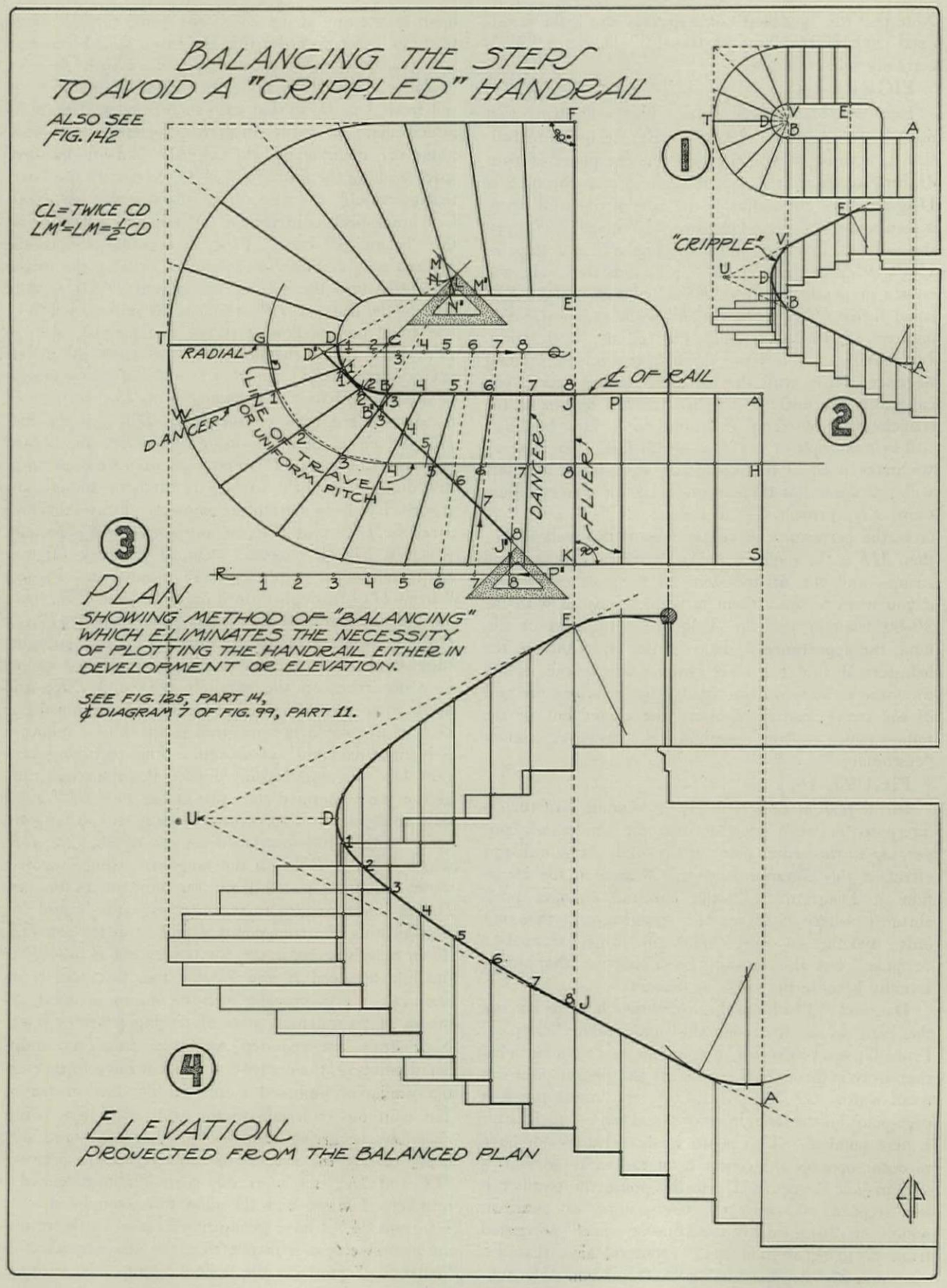

BALANCING THE STERS
TO AVOID A "CRIPPLED" HANDRAIL
ALSO SEE FIG. 142
CL=TWICE CD
LM'=LM=½CD
RADIAL
LINE OF UNIFORM TRAVEL
PITCH
DANCER
DANCER
FLIER
℄ OF RAIL
"CRIPPLE"
1
2
3
PLAN
SHOWING METHOD OF "BALANCING" WHICH ELIMINATES THE NECESSITY OF PLOTTING THE HANDRAIL EITHER IN DEVELOPMENT OR ELEVATION.
SEE FIG. 125, PART 14, & DIAGRAM 7 OF FIG. 99, PART 11.
4
ELEVATION
PROJECTED FROM THE BALANCED PLAN

FIGURE 141

could be plotted—provided you knew a way to get those stretched-out tread spaces back into place on the curve of the well. Moreover, the method of plotting the curve of a rail by *development* is all wrong—you never *see* a rail that way: you see it winding up or down the stairs, *not* stretched out *flat!* The development of a handrail curve is no indication whatsoever of how the handrail will appear in actual execution: the development of a *helix* is a *straight line*—from here to there—nothing else. Is that the appearance of a helical *wreath?* By the method given in Figure 141, you have seen that the *plan only* need be drawn. And all the stair-builder has to do is then to maintain that rail at the same uniform height—regardless of what that height may be—above each tread at the plotted riser-points along the center line of the rail. The graceful curve shown at Diagram "4" will then, *of necessity*, be the invariable result. Oh yes, this is an expensive kind of a stairway to build, and an expensive kind of a wreathed rail: and so is *any* kind of a winding stairway or geometric rail. But, if space is limited, and you still want to produce a good-looking easy-going stair—I've shown you the way.

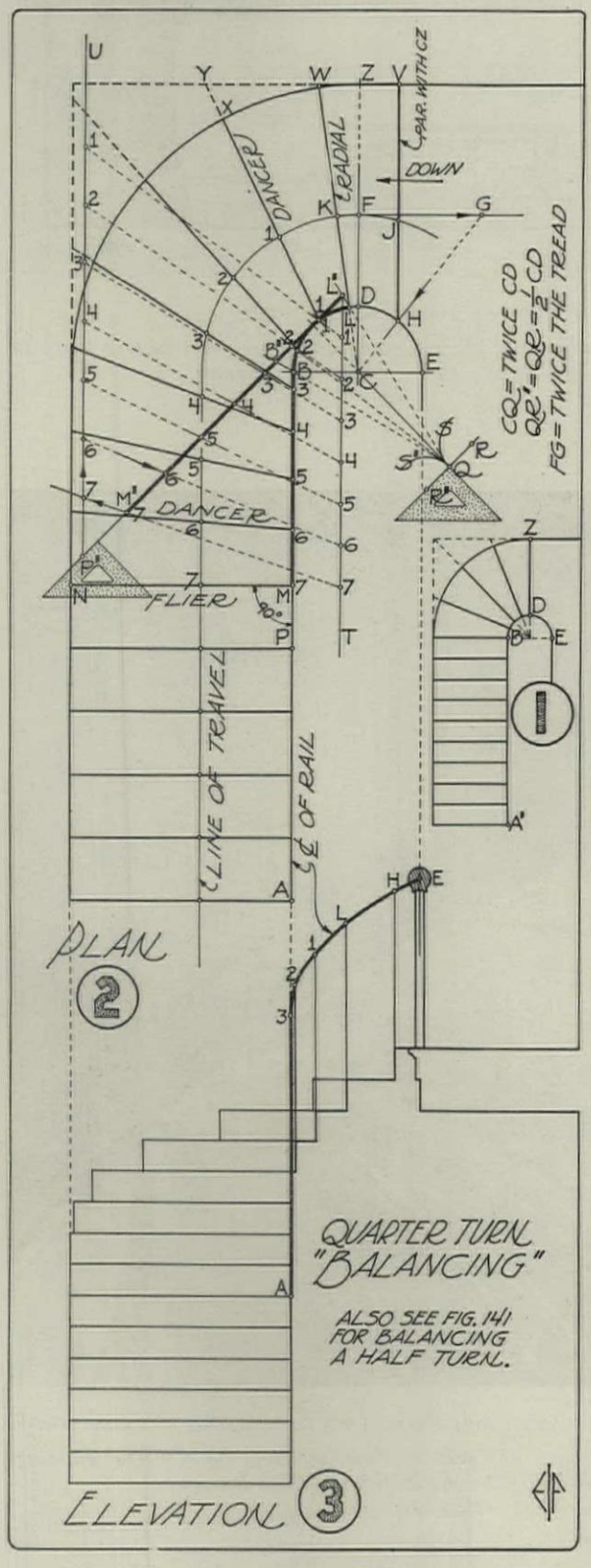
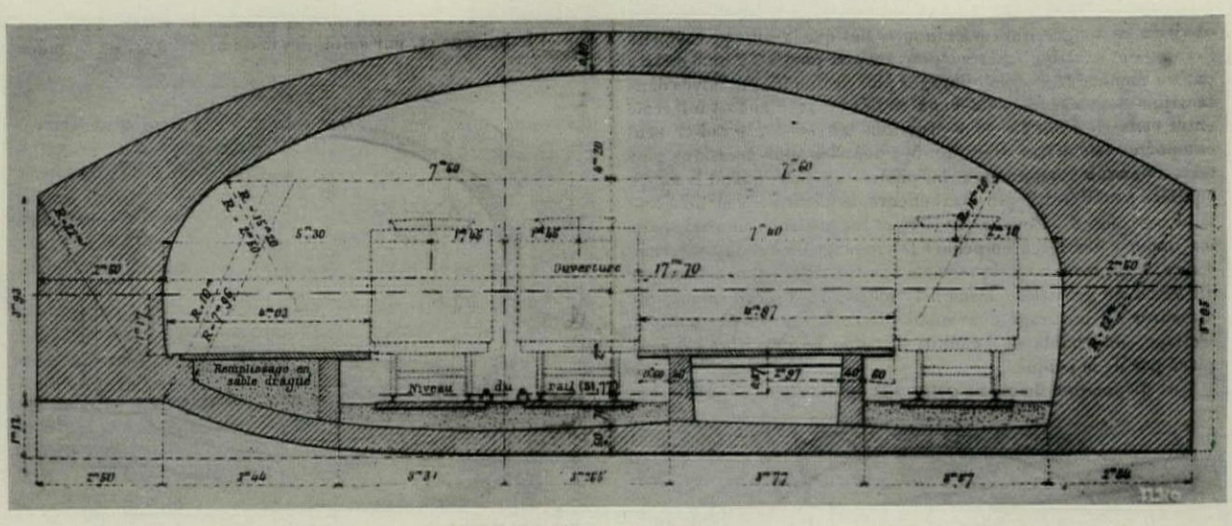


FIGURE 142

FIGURE 142:

This shows the author's method of balancing applied to a *quarter* winding turn. Diagram "1" indicates the "lazy-draftsman" method of rounding this particular turn: it produces an ungainly and dangerous "cripple" from *B* to *D*. Diagram "2" shows how the treads should be spaced along the center line of the rail to avoid this cripple. The method is substantially the same as for the half turn just previously explained in detail—but with this one essential difference: The last upper tread *HL* (or the first lower one, as it *may* be) must be made wider than the regularly-diminished adjacent one *L1*, in order that the raking rail may be made to ease gracefully into the horizontal. Hence, first fix this tread-width, *HL*, in this manner: From the point *F*, where the line of travel crosses the projected center line *CZ* of the well, draw the perpendicular *FG* and make its length equal to twice the width of the regular tread. Then, from *H*, where *GC* crosses the center-line arc *DE* of the rail, draw the riser *HV* parallel with *CZ*. Next, from *J*, where the line of travel starts on *HV*, space off the regular tread-widths *JK*, *K1*, etc., as before. From *C* draw the one radial riser *LW* through *K:* thus determining *HL*. Now, on the line of travel, determine which of the spaced-off riser-points, say point *7*, will cause the point *M*, of the consequent "flier," to alight about midway of *A* and *D* on the center line of the rail. Or, if you like, you can start the ramp-point *M* still farther *down* the stairs, in the case shown—but not much farther *up* the stairs. Anyhow, point *M* then fixes the start, or tangent point, of the *ramped* rail *MBDE;* the rail *MA* being straight and on the regular pitch of the stairs. In this Diagram, then, the mixed line *LBM* must be divided into 7 perspectively-diminishing parts, using, as before shown, the *added* tread-space *MP* to establish the ratio of diminution. The process now becomes similar to that already detailed in the previous Figure 141—except as to the number of divisions. By pursuance of this method the line of the rail will "work out" in a graceful and easy ramp from where it leaves the pitch line at *M* to where it joins the horizontal at *E*. In the elevation at Diagram "3," the portion *HE*, being ramped in an inclined plane, does not show the horizontal tangency at *E* that actually exists.



TRANSVERSE SECTION OF SUBWAY STATION AT PORTE D'IVRY, PARIS

A typical subway section elliptical in form, of masonry construction, the rails separated from the structure itself to reduce vibration. From "Le Genie Civil," November, 1930. (See text opposite.)

TYPICAL PARIS SUBWAY STATION, SHOWING THE ABSENCE OF ANY TYPE OF CONSTRUCTION ALONG THE PLATFORM

Against the wall are low benches, and somewhere along each wall the map of Paris, showing the principal buildings and monuments of the city, as well as the subway lines. From "Paris," by Mario Bucovich, published by Random House, New York. (See text opposite.)

Design in Modern Architecture

10—Some Things in Which We May Learn from Europe

By John F. Harbeson

"*But why not the City as Architecture—that is, as something built for perfect mechanical functioning in the service of man, with an over-value of sheer pleasure-giving beauty in the building. Of course it will be a city of machines, and machinery can be made noiseless; but are our cities reasonably noiseless today? Of course it will be clean, with a typical mechanical-era tidiness—like a power-house or an electric bakery; but forty thousand tons of soot are let loose in Pittsburgh's air each year, and on a cold day in London you can scarcely breathe for the heaviness of the coal-smoke atmosphere. Do we go easily from place to place? Ask the riders in the New York subways—or the New York surface cars.*"—SHELDON CHENEY, *The New World Architecture.*

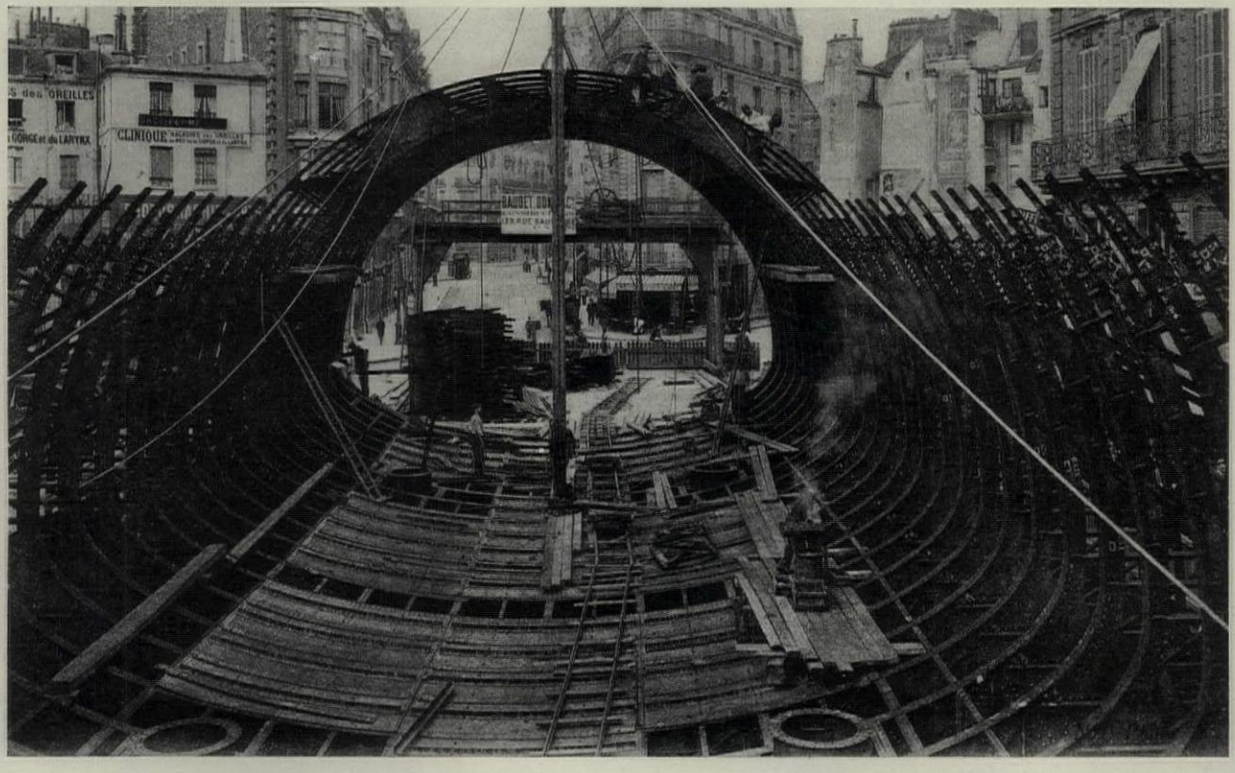
"*The city is an implement for work.*

"*Cities no longer fulfill this function. They are inefficient; they wear out the body, they thwart the soul.*

"*The disorder which breeds in them is offensive: their impotence wounds our pride and chills our dignity.*

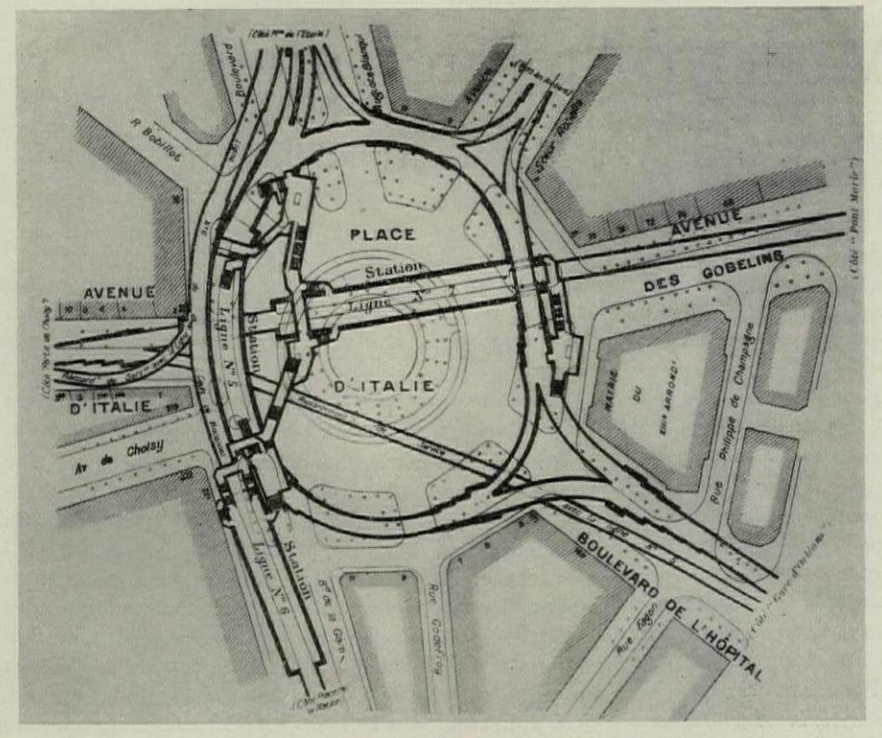
"*They are not worthy of our epoch—they are no longer worthy of us.*"—LE CORBUSIER, *Urbanism.*

America has taken such a leading position in this age of the machine—American inventions have been responsible for so much of the rapid progress made in machinery and quantity production—American business acumen has been so brilliant in making use of these inventions, that we are apt to forget that though other countries are much less favored as to supplies of raw materials, and being smaller do not have the almost limitless resources our industrial leaders can command, that individual workers in science and invention are still thinking as ably and as inventively as our own. So without in any sense wishing to belittle America's achievements in progress, it is well now and then to "see what the world is doing," especially as, with our



PARIS SUBWAY CONSTRUCTION, PLACE SAINT-MICHEL

In this case a caisson was built above ground and sunk into the ground in much the same manner as caisson foundations for bridge piers are sunk in river beds. The section is that typical of the Paris subways—elliptical vault—this one of steel frame, with no intermediate piers or interruptions. Usually subways are built (in Paris) by tunnelling operations; the street surface is not disturbed except at the openings, a half mile apart, where excavated material is hoisted out and construction supplies are lowered. There is practically no disturbance to traffic, no corduroy roads of heavy planking.



PLAN OF THE STATIONS AT THE PLACE D'ITALIE

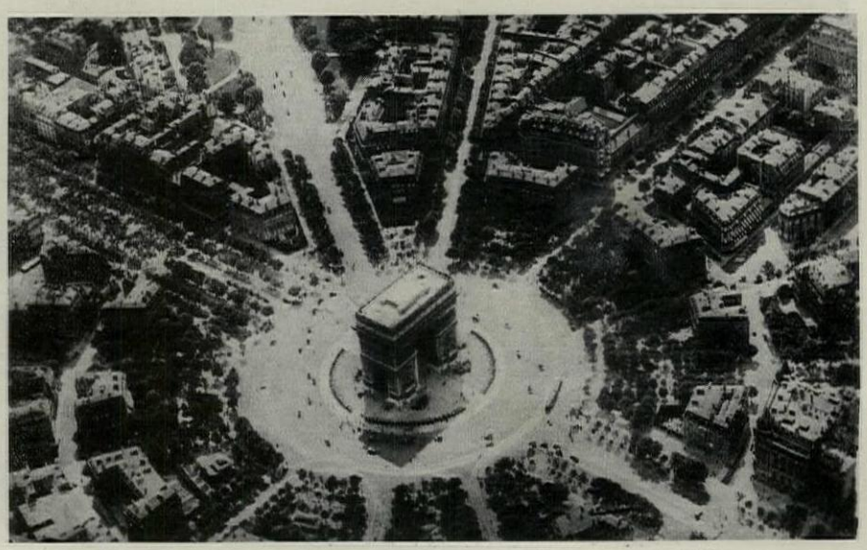
Showing the crossing of three different subway lines, where transfers may freely be made from one line to another. The trees shown on the plan continue to grow. From "Le Genie Civil," November, 1930.

better fortune, we can make good use of any ideas so found.

As to the big matters of architecture, Europe has never lost its sense of *order* in planning its important city developments. Perhaps as a heritage of the culture of the Roman Empire, the peoples of Latin lands still think in terms of real city-planning, whether in Paris, Berlin, Vienna, Rome, and the other capitals where the talent of a country is bound to gravitate, or, in lesser degree, in the smaller centers of population. There is an awakening interest in America in matters of city planning. Regional planning Federations in several cities have called on the best talent of the country in order to plan for a satisfactory solution of the great and growing problem of motor traffic. Inevitably the proposals made by these experts interfere with the plans of some private citizens. A motor highway designed to circle a city, for the purpose of keeping the through traffic out of congested areas, will undoubtedly bring changes in the land through which it passes. In Europe this would be taken as a matter of course. But in this country citizens who find such proposals affecting their own life, immediately protest, no matter what may be "for the greatest good of the greatest number."

Zoning laws, a commonplace in Europe, are still considered as confiscatory of property rights in some American cities, and meet with protest from bankers and realtors. This difference in attitude is largely the cause of the disorderly appearance of our cities. Each owner wishes to get the maximum from his land—if it deprive neighbors of light and air, if it deprive the general public of trees along the sidewalks, that is their misfortune. The Place de l'Etoile, or the Place Vendôme would be difficult of attainment in America. It is not a question of steel construction versus older methods of building. Forms such as these would be just as effective if surrounded by high buildings —if they were orderly. And the city planning of the countries of the old world is orderly by tradition.

Skyscraper cities have been designed by European theorists, and these have been orderly—cities of steel buildings which are composed along axes, with definite thought of the arrangement of groups of buildings.



PLACE DE L'ETOILE, PARIS

The circular form of the plaza would be even more effective if the surrounding buildings, which form the composition, were high, always provided these buildings conformed to similar restrictions as now prevail—as to uniformity of height and building material. If the buildings were high, the central features would have to be different—either lower, a fountain perhaps, or thinner, such as an obelisk or sculpture group.

ENTRANCES TO SUBWAY STATIONS IN LONDON

In each case there is a city map showing underground lines and points of exchange from one line to another. Similar maps are found on the train platforms below, and diagram maps are in all the cars.

None of these has been built—perhaps they are farther from realization than our own because of the lack of capital. One of the most interesting of these proposals is that of Le Corbusier to tear down a large section of Paris and build there a city of skyscrapers set regularly amid large parked spaces, along straight streets set out on the checkerboard plan of American cities (at the time when city planners in this country are urging diagonal streets across the checkerboard, for greater ease of communication, Le Corbusier, living amid diagonal streets, urges the order of the American gridiron layout of streets). He finds that Paris has grown in building along old donkey paths, now become streets. Louis XIV, a great city planner, started to make things orderly—at Versailles, at the observatory, Les Invalides, the Tuileries and Champs Elysées; later came the Champs de Mars and the Etoile. But gradually, through lessening interest, things slipped back, through the lack of responsibility of a democracy, and "the donkey path planning was again taken up." Into this Le Corbusier proposed to introduce, on the right bank of the Seine, a gridiron plan, with a series of skyscraper apartment and office buildings, with large garden spaces between. The scheme is not unlike that recently suggested by Hugh Ferriss, in *The Metropolis of Tomorrow*, though Le Corbusier's presentation is less pleasing, both as to text and illustration.

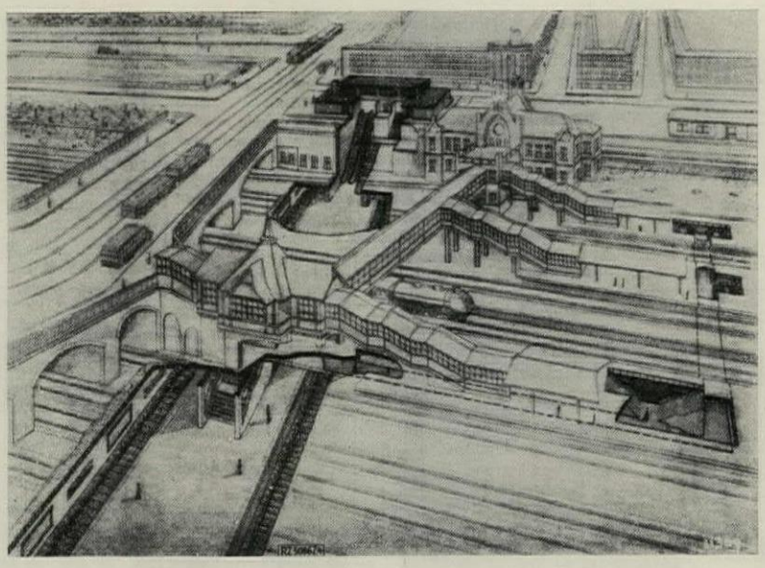
ENTRANCE TO SUBWAY STATION IN PARIS

As in London, here is a city map clearly indicating the connections between the different lines. Similar maps are found on the train platforms and in all the cars.

One must not think from his disapproval of Paris that he thinks New York an improvement. "Enthusiasm, admiration, beauty? Never. Confusion, chaos—a cataclysm, a sudden confusion of clashing conceptions. The street which with its sidewalks is only a narrow corridor between high buildings must vanish, and the automobiles—they will soon not be able to move in Paris or New York. But beauty is concerned with very different things. To commence, order is essential as a basis."

But an American traveling in the larger European cities, in comparing them with those at home, is struck with the order of the larger civic arrangements, even though he may feel that in individual or private affairs of the everyday citizen the comparison would be very

much to the credit of this side of the water. The feeling for axes, for vistas, for choosing effective sites for monumental buildings seems innate with the races that have grown from the Roman Empire, and affects the neighboring countries as well. It is not a question of one monument here or there — that is done equally well here — but of the use made of the many strategic points that result from a city plan. The greater age of the foreign cities naturally has had much to do with this—and it is the result of a progressive betterment made by many generations of designers. Undoubtedly we shall develop a greater degree of order in our cities as the voice of the professionally trained man, be he architect or city planner, is listened to more attentively by the average citizen.

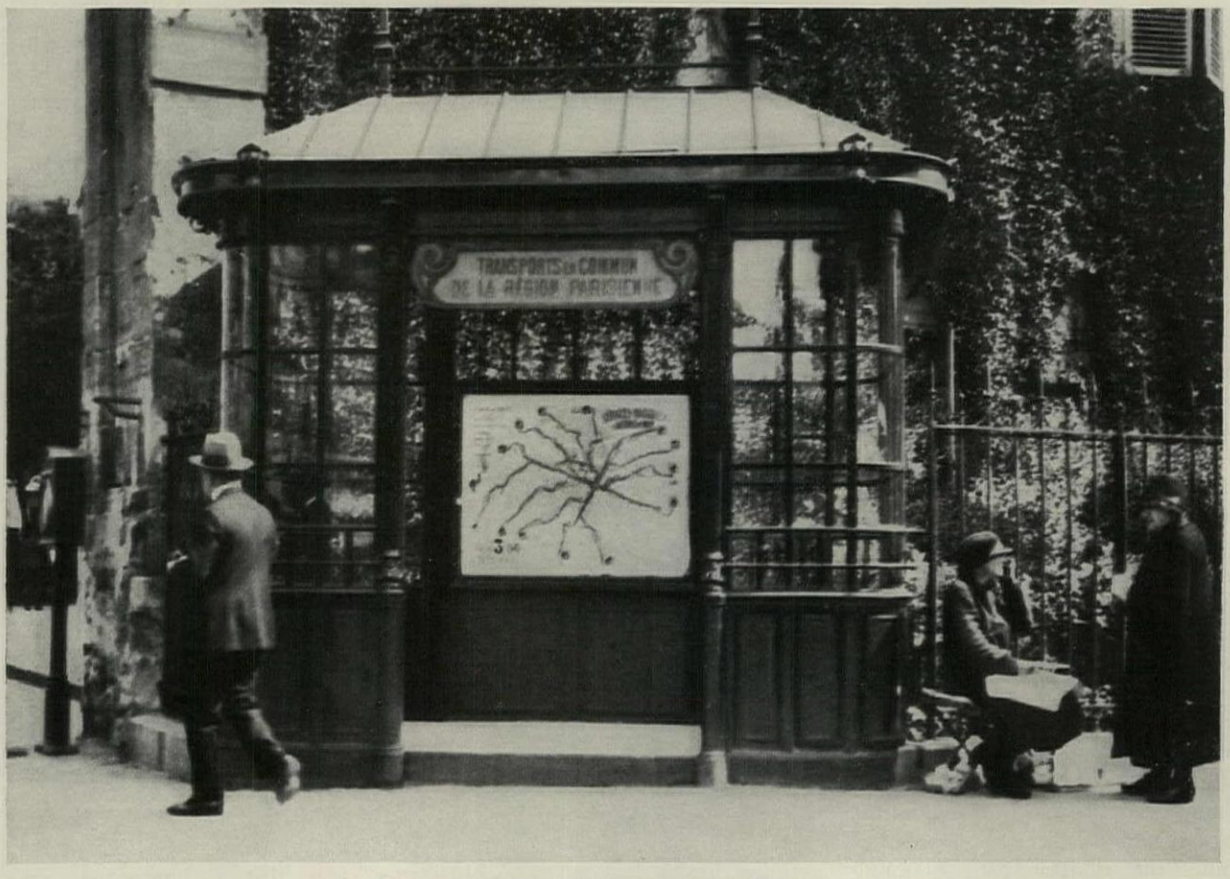


UNDERGROUND STATION IN BERLIN, CONNECTING WITH RAILWAY STATION

Showing, as in London and Paris, absence of posts or obstructions on the platforms. From "Zeitschrift des Vereines Deutscher Ingeniere," 1930.

In one particular there is no question as to superiority of this country—in speed of underground transportation. "Crowds, speed, and noise set the New York tubes apart from Europe's."* There can hardly be comparison as to speed. Foreign cities do not have expresses —every train is a local, although in London now and then a train "passes" a station, without stopping. But there is also no question as to the noise.

*"*In the Subways of Four World Cities," T. R. Ybarra, N. Y. Times Magazine, Nov. 30, 1930.*



BUS KIOSK IN PARIS, WITH THE EVER-PRESENT MAP

No one need be lost or mystified as to direction while in Paris, and no questions need be asked.

IN THE CLOISTER OF WESTMINSTER ABBEY, LONDON

Showing one of the framed plans of the Abbey Buildings. In this case the historical growth of the building is indicated by different colors of poché on the plan.

The Paris and London subways are almost entirely vaulted—and at the station where the vaults are widened to cover the platforms, with the high part of the vault over the center, there results an air cushion to absorb much of the noise . . . Besides this, much of the construction is of masonry (largely of concrete) with steel used only where concrete will not do, or where there is not sufficient height for vaulting, or for the small portions that are elevated.

The typical Paris subway is an elliptical vault, and in London a "tube"—also a vault. At the stations the vaults are wider, and higher, including two platforms as well as tracks (there are no sections with four parallel tracks as in America). But with this construction there are two resultant advantages. There is much less noise—the masonry construction does not vibrate, nor transmit the sound of the trains, as does steel. It is possible to converse comfortably in cars and on platforms while trains are moving. But the principal advantage is that there are no obstructions on the platforms, no structural columns to bump against, and the stairs are arranged beyond the area of platforms. The convenience of this freedom from interruption is so marked, and so insisted upon by the European engineers, that even where steel lintels are used, whether because of lack of height needed for vaulting or for some other reason, the steel is made to span tracks and platforms, and the platforms are clear of the obstructions that interfere with the comfort of our subways. London and Paris are fortunately built on a geological formation that permits this vaulted construction. It would be expensive in this country. Steel beams spanning greater spaces so that landing platforms would be unobstructed would also be expensive. But America is so much richer than the European countries, the average citizen is so much better off, one wonders if it would not pay us as a nation to build for greater comfort, even at the price of a few of the luxuries to which we are accustomed.

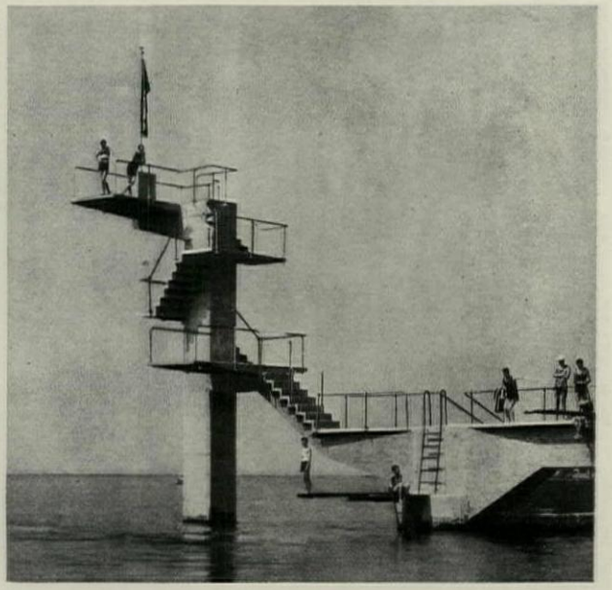
The vaulted section has another advantage over our American post and lintel type of construction. Though the vault is high at the center, and may be within a few inches of the street paving, there is a large amount of earth at the haunches, quite enough in which to grow trees. For that reason European cities still have tree-lined streets, although the subways follow the street lines as here, while here our cities have no trees.

There is a Turkish proverb to the effect that where one would build, one plants trees. But today, we cut them down. Though spoken by a Frenchman, how true this is of American cities.* This has not been so in older "less progressive" cities. In Lisbon, for instance, and in Seville, where rain is scarce, the earth about each tree is arranged in the form of a cup, and the paving is arranged to lead water into this cup.

**Quoted by Le Corbusier, "Urbanism."*

THE "PLANIMÈTRE" OF PARIS

On a roll in the box-like projection at the bottom (turned by a knob at the side) are listed alphabetically the streets of Paris; after each street is a number and a letter. The indicator rod across the map is revolved, when the button at the center is turned, until it points to the given letter, the letters being printed around the circumference of the circular map. All that is then necessary is to look along the edge of the rod for the number, and the street is found. If the street is long enough to permit of confusion two indications are given—one for each end of the street.



DIVING PLATFORMS AND OBSERVATION TERRACE, NEW BATHING BEACH AT VEVEY, SWITZERLAND, O. ZOLLINGER, ARCHITECT

Note the projection of thin concrete slabs without beam supports around the edges, and the thin section of rise and tread of stair—possible with "reinforced cement," and careful workmanship. From "L'Architecte."

Where a street runs down a hill, runnels are arranged so that water overflowing one of these cupped depressions is led to the next.

And in Paris, where trees are prized, they are planted back from the curbs and paving is kept back from the tree trunks to a diameter of five feet, and an iron grating is placed on the outer part of this space through which water may reach the roots. With us, paving is brought up to the tree trunk, tree roots are cut away to allow for curb-stones. The sentimental popular appreciation of trees voiced by an American poet does not prevent the American city father or the city bureau of street surveys from ruining one tree after another until each street fulfills their ideal—neatly paved from property line to property line, uninterrupted by naked earth or planting.

The comfort of the car rider is catered to in other ways than by giving him unobstructed landing platforms to walk on. He need never lose his way, or be at a loss as to where to alight and in which direction to go, for maps are placed everywhere for his convenience. In London and in Paris there is a map at every subway entrance, with a large circle showing the location of that particular entrance. And the various lines are shown, so that one may know where to change from one train to another and where to alight. And if one forgets on the way down to the train level, or needs reassuring, he will find another map on the platform.

The bus lines also have diagrammatic maps in the kiosks at waiting places. There is no need for even a stranger to be lost in Paris. And if he would find the location of any street he need but go to the nearest "planimètre"—there are several of them—and there he can find it in a few seconds. As the streets all bear the same name for only a short distance, the planimètre shows the location of any address one may seek.

In all of this the convenience of the man in the street, whether citizen or visitor, has been the consideration of the municipal administration as one of its duties.

In our museums we are used to plans showing location of the collections, of stairs and conveniences, and where the visitor is when he is in need of direction. In Europe such maps are found in many public buildings and in the historic monuments, as well as in museums. Again the convenience of the visitor is considered as worth an effort. But while this is pleasant to the citizen or visitor, it undoubtedly has a value to the city—thousands of questions need not be asked, thus saving the time of police and other officials for their proper duties, just as conveniently placed, legible, traffic directions not only save the motorist time, but diminish traffic congestion.*

* * * *

Much of the impetus of the modern movement has come from the use of new materials, and the new use of old materials. Steel and reinforced concrete are the most important of these. In the former no country can compete with America, the birthplace of the skyscraper. But progress in reinforced concrete design has been more marked in European countries, especially Germany and France, than is the case here. An American traveling abroad marvels at the overhanging concrete slabs of thin section, at the light concrete stair construction, at the parabolic curve forms. There are two reasons for this faster progress abroad—building laws, and the lower cost of labor, materials being relatively similar in price.

The building laws as to reinforced concrete in this

**Such as one finds through all Connecticut towns along the Boston Post Road, when going in either direction.*

(Continued on page 161)

More Anent Stairway Design

A Continuation of Last Month's Discussion

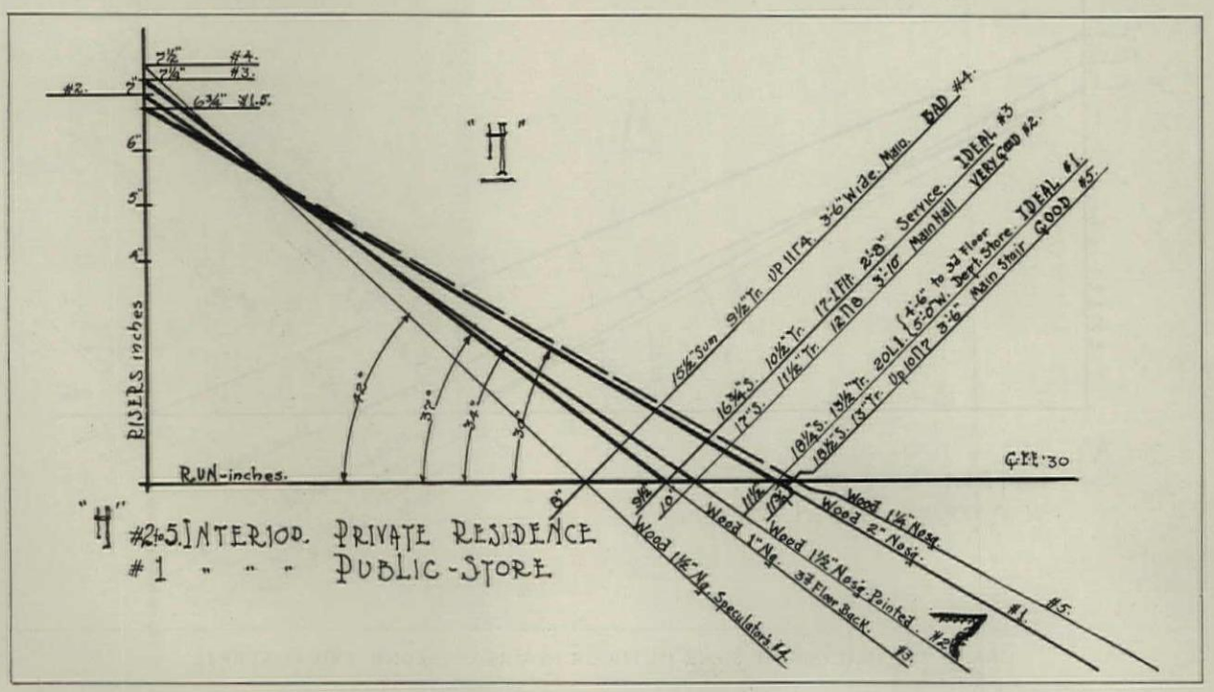
By George E. Eichenlaub

Last month we discussed various stairways ending up with some remarks on "School Stairs." Now let us take up the

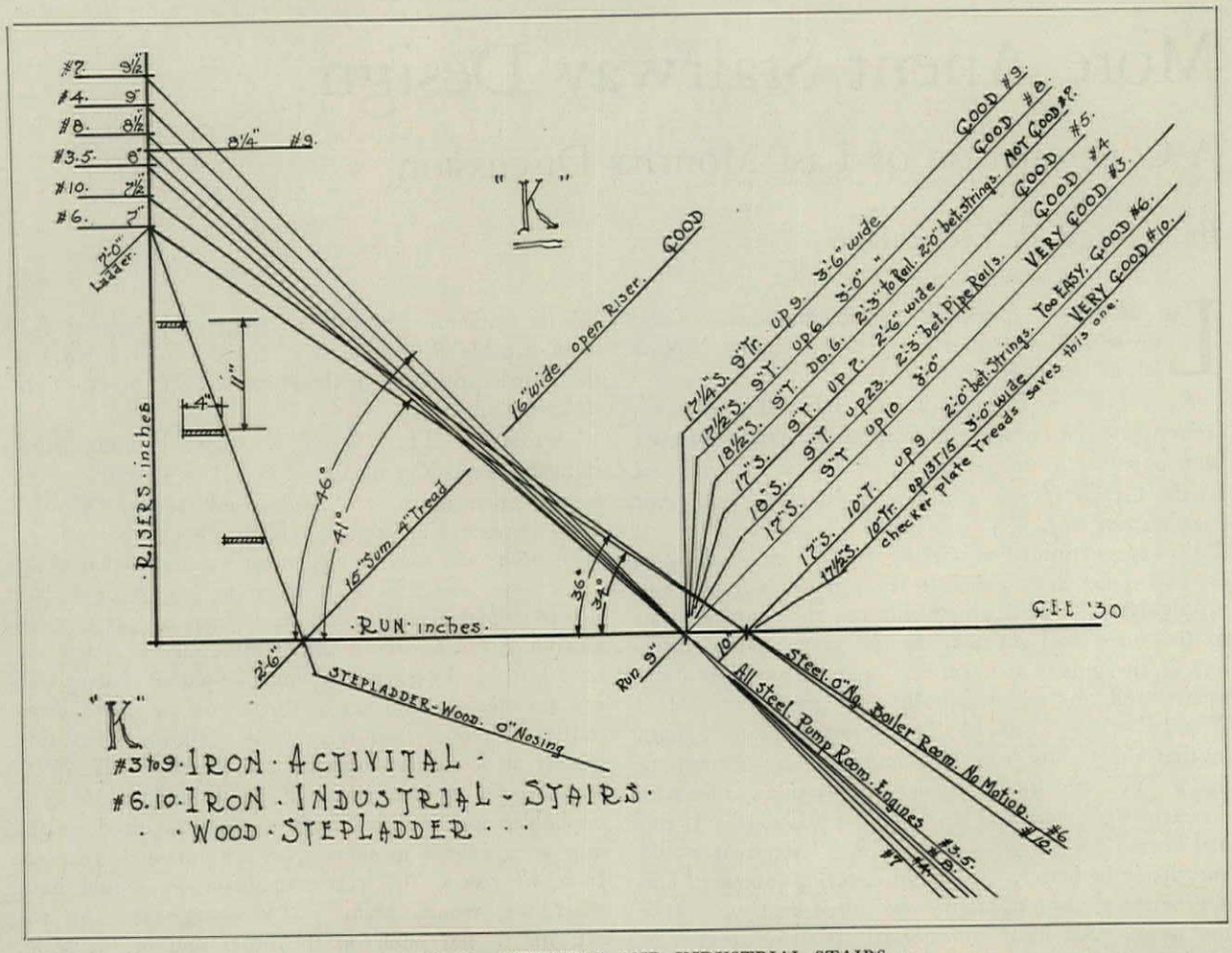
Residence or Private Type. Considering some residence stairways we find they are somewhat steeper than public stairs to get the same degree of goodness. In the Graph *H-3* is a service or servants' back stair open on one side, 7¼″ x 9½″ x 1″ = 10½″ tread, 2′8″ wide, arranged in one flight of 17 steps. For its use it is quite ideal, although the sum of riser and run is only 16¾″. *H-2* graph indicates the characteristics of the main hall stairway in the same house. It is one of the golden oak variety, open one side in a too square well, and architecturally quite good withal. It is 7″ x 10″ x 1½″ = 11½″ tread with unusual nosings in that the treads have a chamfered edge something like a "V," which we approve of heartily. The stair is nearly 4′0″ wide and marked "Very Good." If this had been 7″ x 10½″ x 2″ = 12½″ treads it would very likely be better. No tread coverings are used and it is better so, as long as the varnish is kept on to take the wear. An ideal commercial stairway appears as *H-1;* note the difference in pitch and proportion. In *H-5* is found a 6¾″ x 11¾″ x 1¼″ = 13″ treads, 3′6″ wide, open one side in two flights from a modern house by first-rate architects. This would be ideal for public use, but fails here because it is too easy for a private situation. Merely an error of judgment by a most capable firm who have some ideal stairways in the graphs presented in these articles, our digest of the stairway subject.

Activital: The Graph *K* shows, among other things, a stepladder measured as 11″ x 4″ x 0″ = 4″ treads, open risers, 16″ wide, and labeled "Good." Now consider its use, its width, absence of railings, open both sides and so on; what would happen if the risers were closed? If worked to a rule of 17½″ the riser manifestly would be too great. It is good ascending, but hardly to be recommended as a stairway for front-faced descent. It must be patent that in such use, the heels would act to throw the customer, especially if a closed riser were used. This is interesting merely to show an extreme of steepness. If 10′0″ wide, again we see where it would fail in use as a stepladder too; railings again are not required, as the stair strings here in themselves act for such purpose. In a 4″ rise x 30″ run proportion we would have what we would term a "Walking-stair" as the extreme of flat pitch on the other end of the scale.

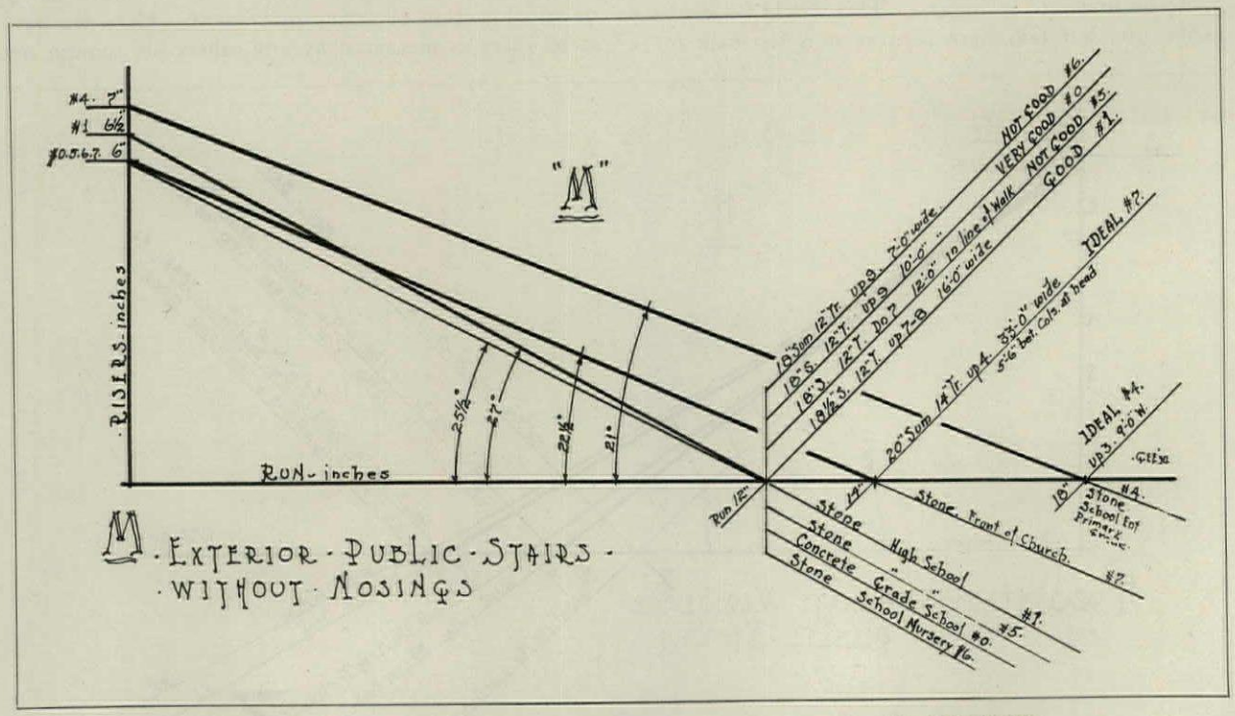
Now a word on activital or marine stairs as expressed in Graph *K* and as used not only on board ship, but in machinery rooms where we have things in visual motion or active movement. Here we have steep stairs as measured by any other use, though not



GRAPH H—SOME INTERIOR STAIRWAYS ANALYZED BY THE AUTHOR



GRAPH K—ACTIVITAL AND INDUSTRIAL STAIRS



GRAPH M—ANALYSIS OF SOME OUTDOOR STAIRS OF STONE AND CONCRETE

approaching the pitch of a stepladder. *K-3* design is 8″ x 9″ x 0″ = 9″ tread, open riser, and 3′0″ wide; marked "Very Good." If the iron treads were not worn quite so smooth and shiny, we might even dare mark it "Ideal."

K-4 is 9″ x 9″ x 0″ = 9″ tread, open riser, and 2′3″ wide, and good for its purpose to gain the upper level on a great, thumping machine. Then we consult *K-10* design which is 7½″ x 10″ x 0″ = 10″ treads of channel iron with the flanges looking down and 2¼″ apparent tread-thickness; 3′0″ wide. This would be very good in wood as a servants' stair (as before noted), but here is found too easy and labeled only "Good," which we fear is rated that high mainly because of personal prejudice so far subconsciously built up within this writer. In this case, the open riser with the excessive thickness of tread nosing is bad because, even though we are now become fairly expert on any old stair, it remains a fact that my toe caught under the sharp nosing in mounting the first flight and my shoes fit, were good, and are sensible. Now for a few remarks. In a ship, we expect to find dangerous and hazardous stairs—in fact if we board a fine passenger vessel equipped with a central "Grand Staircase" designed for real ease and comfort as in a public building or hotel, we sense it to be out of place. We are likely to stumble as the writer did on one even when the vessel was quiet and tied to the dock. When the vessel is in motion and particularly when it has a slight roll, the same stairs, to my way of thinking, are positively bad and a hazard, although ordinarily these Naval Architects do their work to a higher standard than we find in other lines of endeavor.

For over thirty years this writer has had to do with vessels and yachts and it is possible that prejudice here may lie in favor of things marine; we think that marine stairs always are and should be steep simply because the sailor must first of all learn to hang on with his hands; his feet and footing have second consideration. Steep or bad stairways therefore exercise a good function in early teaching the sailor to hang on first. The railings here become most important; they must be solid and firm.

In the machine or engine room, the mill, etc., the workman must always be alert, too, and on the lookout against moving parts, slips that may bring him in contact with hot surfaces or whirring machines. Therefore, it may naturally follow that the stairways here should not be too easy or good as judged by other standards of use as in the home or public walkway. The steep, slippery-with-wear, and really hazardous stair will surely and quickly teach the workman to be alert and stay alert. If he fall on the stair, the handy and solid rail will prevent the fall. At any rate, it seems that the steeper stairs are better when used in the factory, subject to judgment in material used. On worn, shiny iron stairs of easy pitch, the danger of slipping is increased due to greater tread surface and consequent longer stride which induces foot-slip. On ice, we all walk with short strides. If a stairway is steep, the user is on guard against slipping as well as tripping which is an apparent danger from his first glance at the steep pitch of the stair. Of course, we do not mean this as a recommendation for the slippery iron kind of job, but more as a plea for steeper permissible pitches.

Industrial: Considering industrial stairways where we have no active machinery, as in a foundry, moulding shop, filter-house, or the like, the engineer is commonly guided by the same thought he uses in the power-house, mill, and so on, where he safely and properly uses steeper stairs—but we find this then to result in awkward design. The 8″ risers with 9″ and 10″ treads are all too prevalent here, with their iron or composite construction and steel nosings that do not wear down with the tread material filler, thus resulting in the cup-shaped hollows with slippery steel and trippy edge; this is bad practice and no mistake.

It is our thought for the moment, that residential proportions will fit here better if given a wider tread at 12″ minimum, with plenty of nosing projection of the thinner or chamfered type and a non-slip abrasive material in light to silver shades, with nosing integral with tread, and darker risers. Treads in two colors should alternate, the idea being to make each step distinctly visible from the next below in any light, the saving feature of the bad school stair, spoken of before, which in this respect for visibility was perfection. If it should prove a bit "artistic," of course the superintendent or engineer will object, not being used to it. We have in mind, from another Graph, not shown here, a red quarry tile stair without nosings, in a filter-house where the engineers made an effort to create something nice and had plenty of room and money too. That stair is 7′6″ wide, up seven risers in one flight, and proportioned as 8″ x 12½″ x 0″ = 12½″ treads. The result is a failure and rates "Bad," while another with 7″ rise, ¼″ nosing, light blue tile, rates "Good." This filter-house also has a composite black iron and black slate tread stair, 3′6″ wide and up 18(L)8(L)7, proportioned 8″ x 8¾″ x 1¼″ = 10″ tread, and rated "Bad." The lighting is none too good and the daytime visibility on the two upper flights very poor, so one must very carefully feel his way down.

In the January, 1930, issue, we cited graph and description of a flight of warehouse stairs built of concrete, with galvanized steel checkered curb-nosings, and built as 7¼″ x 11½″ x 1½″ = 13″ treads, which are "Ideal." 7½″ x 11½″ x 2″ = 13½″ tread would also be as good. Here the risers are tilted or slanted backward so there is no distinct projective nosing to catch the toe of a workman staggering under heavy load perhaps. See January, 1930, PENCIL POINTS for Graph of Nosings.

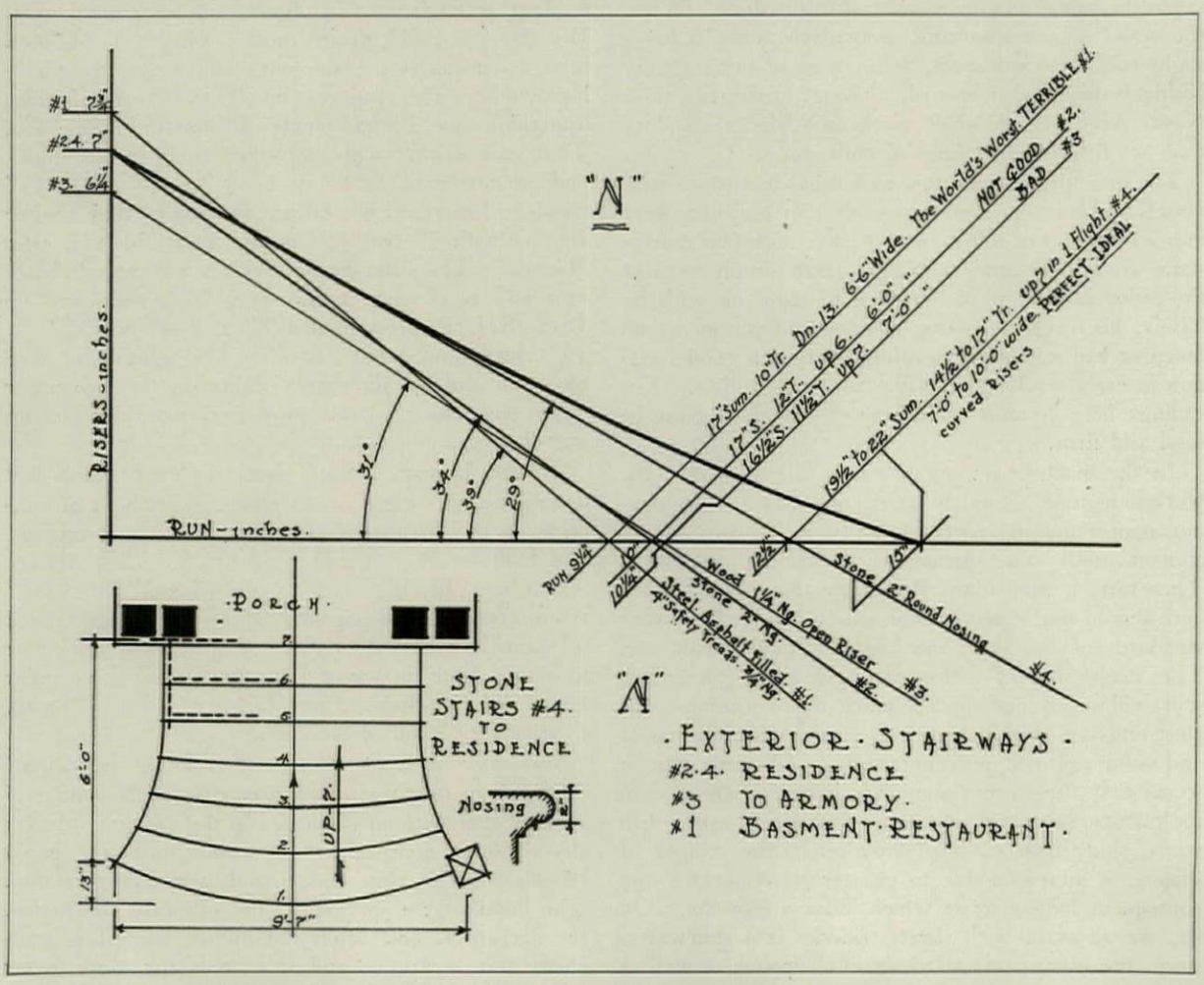
Exterior: Exterior or outside stairs are again quite different, in nearly all cases partaking of the nature of a public stair without nosings. In the average ordinary city residence approach, these outside stairs are simply terrible, due to poor design and worse construction. The hand of the speculator, the sidewalk contractor, the carpenter, and often the owner himself is ordinarily too apparent—and this holds for some better jobs too. In Graph *M* we find the world's best

known school architect (Don't all speak at once) losing interest, as it were, the moment he steps outside the front door of his two million dollar masterpiece. In the *M-1* design we find 6½"x 12" x 0" = 12" tread, 16'0" wide between stone balustrades, and down 15 in two flights with straight landing. It rates "Good, but not ideal; the landing saves it." Then in *M-5* design, from the same job, we find 6" x 12" x 0" = 12" tread, down one flight of 7 steps, 12'0" wide in the straight line of the walk to street. This is marked "Hazardous; not good." Both of these last stairs are in concrete, so that greater cost due to wider treads was not a factor. Then we find two ideal stairs of stone as *M-4* and *M-7* designs, which are 6" x 14" and 7" x 18" respectively without nosings. Of course these are short and broad flights as indicated.

Then we have another 6" x 12" as in *M-0* design which is "Very Good." Note the approach here, which prevents any attempt at speed on the stairs due to the right (L) angle turn at their head and foot. All above are without nosings, with 12" minimum treads. Note the wide variations from the 17½" sum of riser and run rule.

It is manifest that any stairway in the direct line of travel of a corridor or walkway should have more tread to allow for the higher speed of user-travel probably encountered. The best exemplification of this I found was in a high school where a 6-step flight is used in a main corridor and the Architect boldly uses a 7¼" x 13" x 1¼" = 14¼" tread, which must seem impossible to any person guided by a stair-rule. Yet this stair is done just so well, we rate it "Ideal" in spite of other minor defects such as its width of 13'0", its 1¾" thick full-rounded slippery marble tread nosing, etc. In another school we find a similar stair 7" x 18", only three steps to be sure, but "Ideal." No rule governed this one, you may be sure.

In Graph *N-4* design, we find the superlative "Perfect Ideal." This is drawn out in plan to make the message clear (see illustration). It is worth the effort, though not in accord with rule, rote, or piffle as proposed by too many of us now. This ideal exterior stair was built in 1879, of grey sandstone with 2" full rounded nosings, as the main approach to the front porch of C. M. Conrad (who made the best beer in town and got rich). It now is a part of the Armory and Legion Building and is equally good as a semi-public stair which soldiers now use and abuse. It is interesting to cogitate for a moment and come to the realization that the pitch of this stairway varies and increases as one ascends and, conversely, decreases or flattens out as one descends the stair. This observation is mother to an interesting thought. Suppose we continue this idea in a much longer flight with ever



GRAPH N—EXTERIOR STAIRWAYS EXAMINED AND ANALYZED BY THE AUTHOR

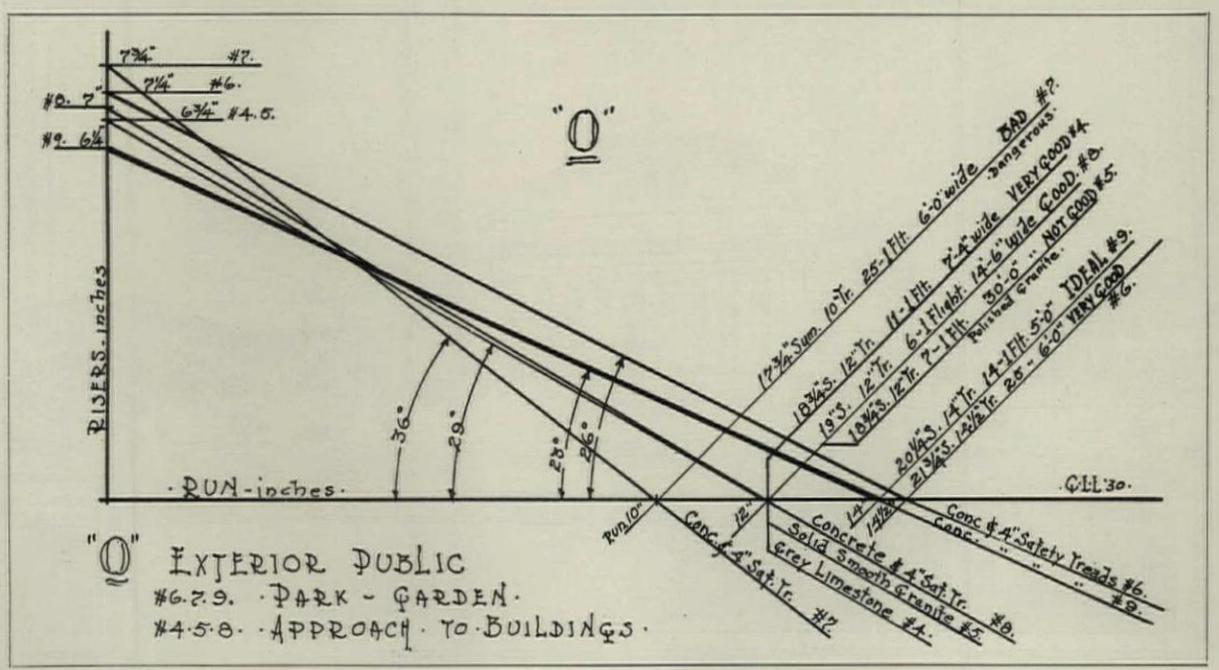
increasing tread widths and thereby get ever flattening pitch as we near the foot of stairway; would it not then be true that as one approached from below at speed he would find the wider tread better fitted to his stride, and that as he slowed up, losing momentum and the force of his rush in the ascent, he again would find the lessening sum of run and rise better suited to his shortening stride as his momentum was lost on the upgrade? Likewise, descending, if he slipped or fell near the head of stair, he must come to rest at some point just suited to his stature and weight on the ever-widening treads or pitch reduction, wherever that might be, before he actually arrived at the foot of the steps? Is it not possible that some scientist with his forces, velocities, foot-pounds, and cardiac measurements will finally prove that the curved-pitch stairway with its variable tread and run will finally develop as the ultimate ideal? Of course it is interesting, but with a restrictive Pennsylvania or other stair-rule, such scientist could not even get started. It would be against the law. Better so possibly; nevertheless, it should offer food for a beautiful discussion—between evenly matched opponents.

AN OUTDOOR STAIR BY THE AUTHOR—SEE *O-7* BELOW

The same Graph *N* also shows what is termed "The World's Worst" stairway. Done by a Pennsylvania registered architect too; no—not me this time.

Garden Stairs: The Graph *O* shows various outside stairways in connection with buildings in a semipublic park where many attributes of landscaping or the garden are present. It is difficult to judge these stairs because all are some fifteen years old and marred by the rusting and consequent swelling out of line of the applied "Safety Treads" which now are a real hazard, aside from the inherent danger as in design *O-7* which was built in and always there. The photo shows how we dressed this up with a few dollars worth of trees which in no wise contribute to this stair's safety. But before the dressing, it looked worse.

The *O-9* design is 6¼″ x 14″ x 0″ = 14″ tread and is quite ideal here for the 14-step flight determined by the contour of the grassy slope on each side. The other stairs of this graph will also bear study.



GRAPH O—ADDITIONAL STAIR ANALYSES BY GEORGE EICHENLAUB

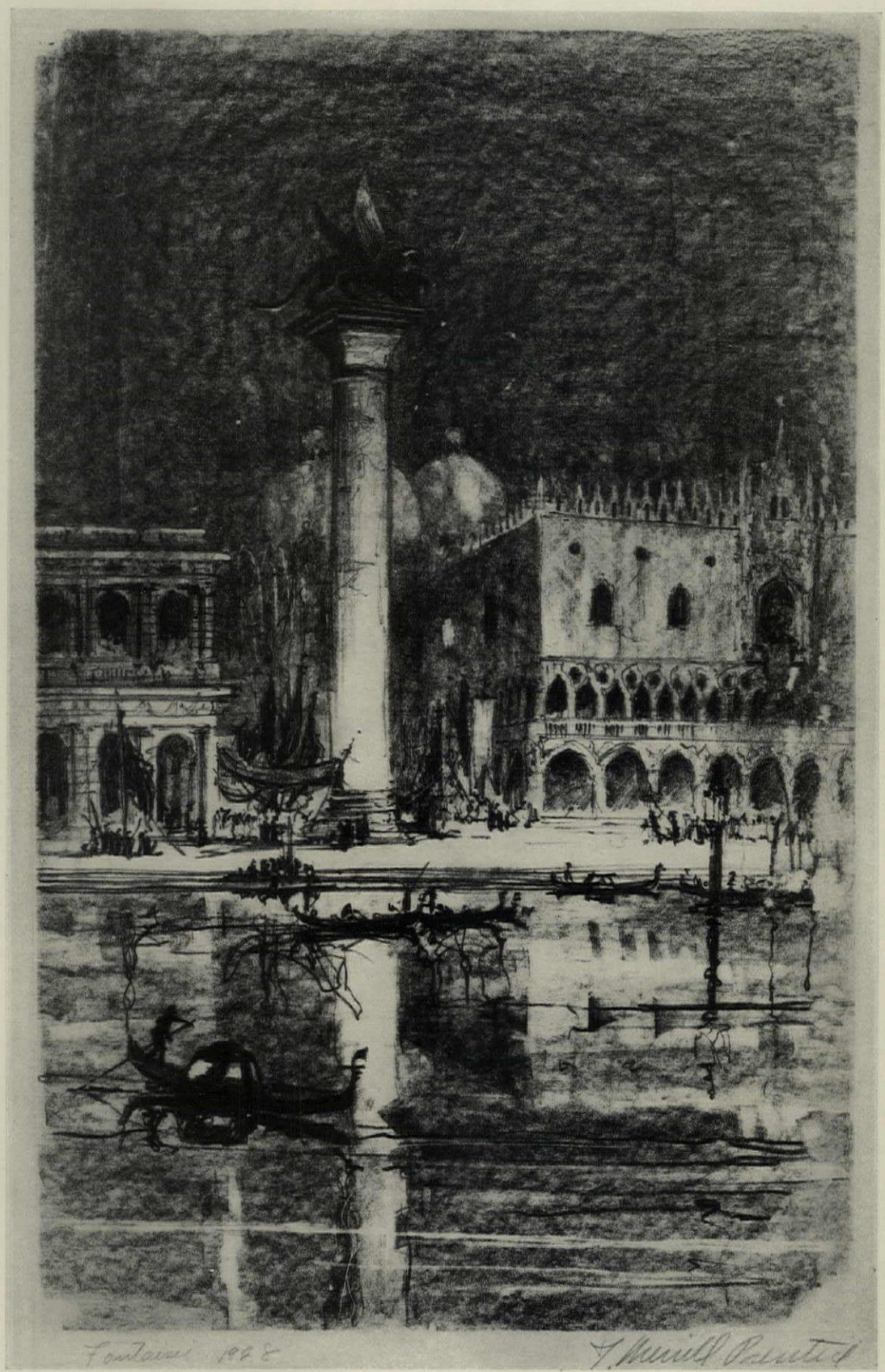
Monumental: We have no graphs at this time of such stairs as those before the Capitol at Washington or the Columbia Library in New York, but we wonder, in the case of very wide stairs (say over 50′0″) and very many (say more than forty risers), with proper intermediate landings as used with such tremendous effect by McKim, Mead & White, in front of the Library of Columbia University, provided the idea were to achieve the utmost of usability and practicality, what proportion should be used for the riser and tread? We are guessing that a 6¾″ riser with a 13″ run and a back-slanted riser to give 2″ effective nosings, thereby making the treads 15″, would be nearly right and would actually tend to improve the appearance as well, since the risers would be in deeper shade or shadow and the greater width of tread would give getter play of highlight and value for solidity to say nothing of the better foot room and security gained thereby. Under different conditions, such as a low sun, the slanted riser would perhaps lose some value as against the regular straight vertical risers of common practice. (A model would help in the study of this.) The nosings of the slanted risers would not then be so pronounced, nor would they have the molded hook that catches the unwary toe especially of the traveler who goes up or down at an angle. This invitation to angling travel is the defect in any very wide stairway, which is made safer by reason of the broader tread. Since this kind of stairway is not probably in existence at this time, our opinion cannot be properly checked. While the stepped stylobate is a potent feature of any monumental architecture, there is no reason why such steps cannot be practical as well.

There is before me a booklet (published in 1926) by the American Academy of Political and Social Sciences of Philadelphia, which in a discussion of "Industrial Safety" quotes: "Treads should not exceed 12″ including the nosing overhang which should be from ⅞″ to 1¼″." This booklet then quotes the "Mowery" Stair-rule, etc., which was discussed in these pages last month. It may be that this is intended only or specially to concern Industrial stairs, while I have more or less merrily skipped all over the field, but if we all thus seem to differ in opinion it only tends to show conclusively and finally "that no single, satisfactory stair-rule has so far been devised, and therefore that to include such or another rule in a law is premature, pernicious, and obstructive," which is the only thing, after all, we did set out to prove.

We admit the remote possibility that by or through legislation a "Universal Rule or Standard" might educate us to approach any stairway whatever with confidence, since ultimately they would all be the same, differing in no way from any other, all being standard even if bad, uncomfortable, or even dangerous. In time we would, theoretically, become educated up to this and possibly profit thereby. Actually and inevitably it would take a hundred years or so, due to all the existent stairways about us less than 1% of which are in accord with such a possible standard. However, the time has not yet arrived for such a start by Law, because we all do not yet understand the subject.

In my philosophy, the opinion or thought of no one man can be so good or so sure that it must be accepted without question. Likewise, the opinions I have cited are only worth something if they concur with your own. The reader is therefore asked to check up, in which process more will be learned than from the perusal of these words. Finally—no law is better than the common and accepted opinion under it anyway; a law is no more than a rule; if we are guided by knowledge that gives good results, a matter of education, then a law on the point is superfluous. In saying this I have stairways only in mind!

COLUMBIA UNIVERSITY LIBRARY—FROM A DRAWING BY FRANCIS S. SWALES



FROM A LITHOGRAPH BY T. MERRILL PRENTICE

"VENICE"

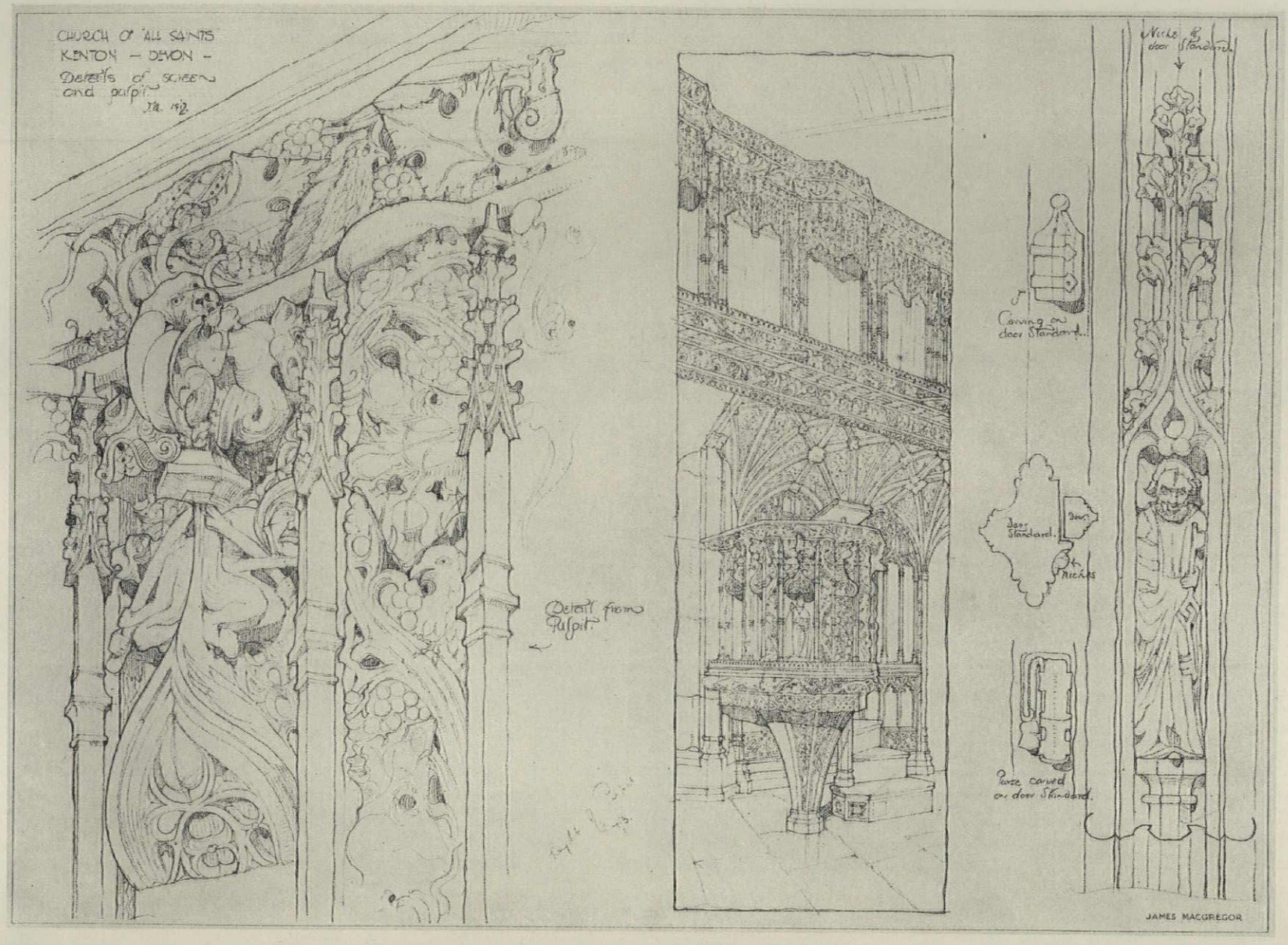
PENCIL POINTS FOR FEBRUARY, 1931
VOLUME XII NUMBER 2

This lithograph was done by T. M. Prentice while he was a student in the Ecole des Beaux Arts in Paris. The original print measured 13¼" x 20½" and was printed by Dorfinant.

FROM A PENCIL DRAWING BY SAMUEL THAL
"GLOUCESTER BOAT"

PENCIL POINTS FOR FEBRUARY, 1931
VOLUME XII NUMBER 2

This pencil sketch by Samuel Thal, a young Boston sculptor, was awarded first place in a recent exhibition at the Boston Architectural Club of summer sketches by members of the club. The original was drawn on cameo paper of a warm yellow tone. The sketch shows extremely able handling of a difficult subject.

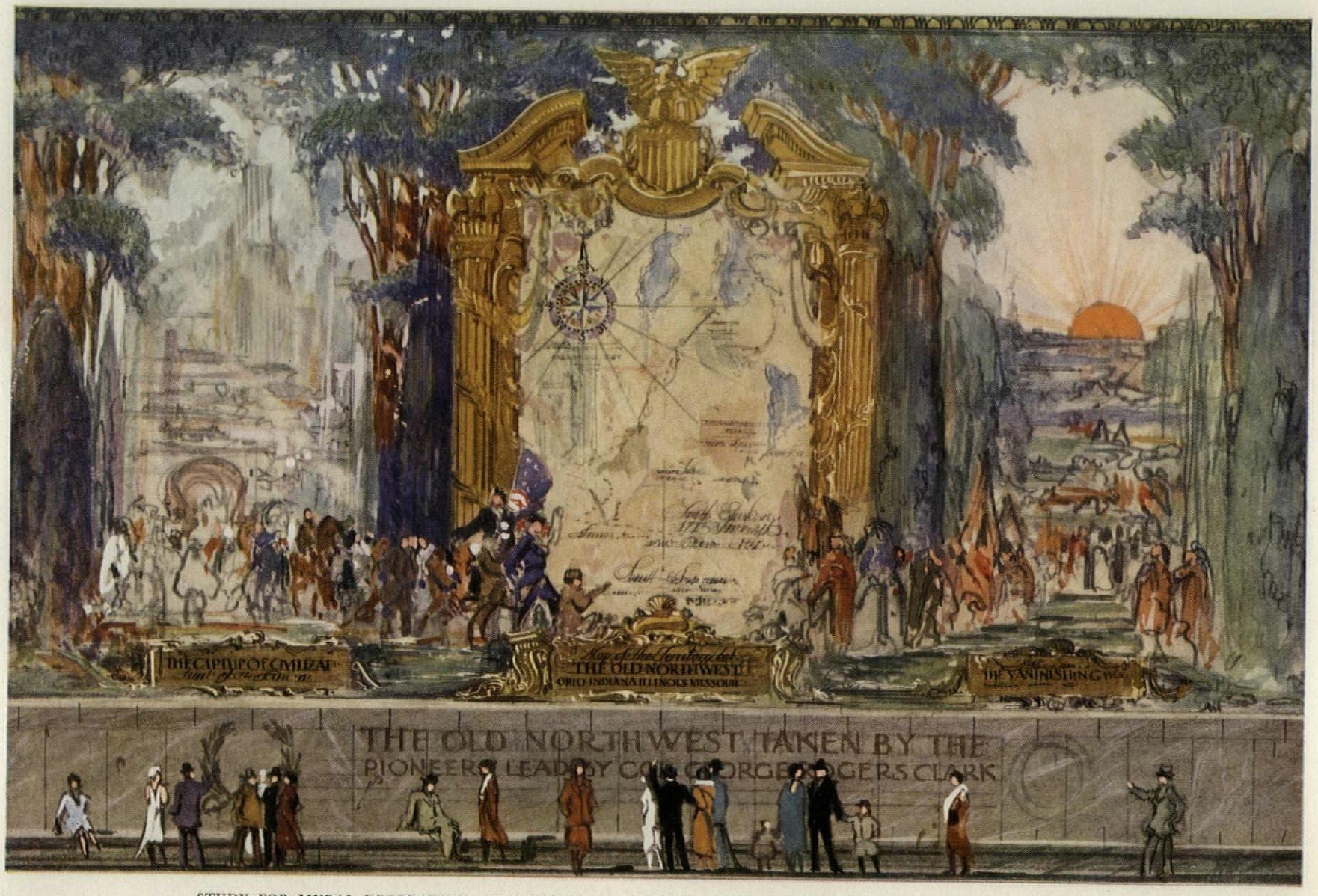


MEASURED DETAILS BY JAMES MACGREGOR

FROM "THE ARCHITECTURAL ASSOCIATION SKETCHBOOK"

PENCIL POINTS FOR FEBRUARY, 1931
VOLUME XII NUMBER 2

This pencil drawing of the details of the screen and pulpit of the Church of "All Saints," Kenton, Devon, is included in the first quarterly part of "The Architectural Association Sketchbook," published in London in 1913.

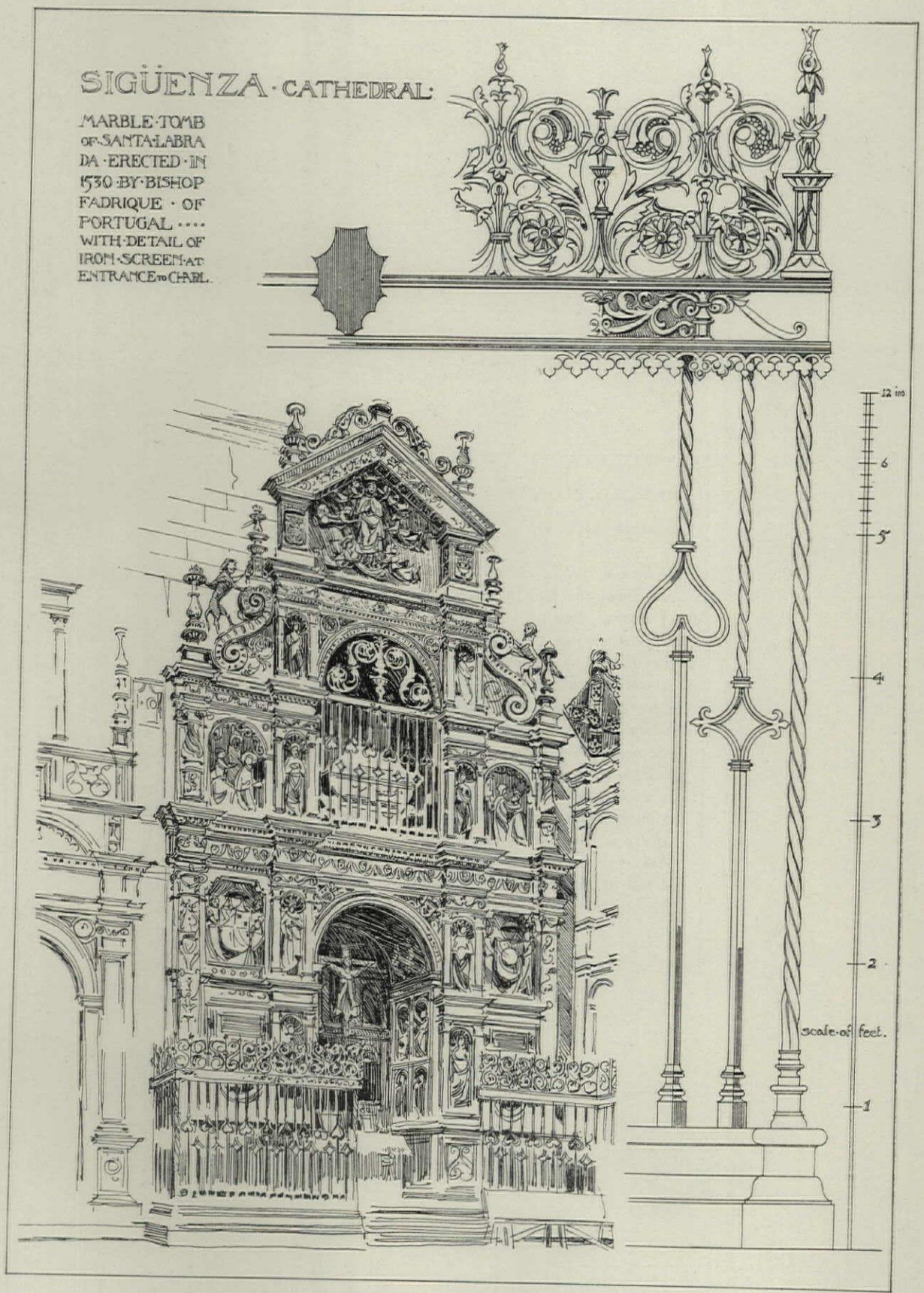


STUDY FOR MURAL DECORATION OF INTERIOR OF GEORGE ROGERS CLARK MEMORIAL, VINCENNES, INDIANA

FROM A COLOR SKETCH BY FREDERIC C. HIRONS, ARCHITECT

PENCIL POINTS SERIES
of
COLOR PLATES

This plate shows a portion of one of the early studies for the interior painting designed to go in the George Rogers Clark Memorial at Vincennes, Indiana. It was done in the spirited manner for which Mr. Hirons is noted. His winning design for the building was shown in the April, 1930, issue of PENCIL POINTS *and it may be of interest to refer to the competition drawings, particularly the section, in connection with this study which was made to be inserted in a scale model of the building. The portion of the drawing shown herewith measured 17" x 11½" and shows the central motif of the decoration. It occupies about one-third of the total width of the painting. Both transparent and opaque water colors were used in making this sketch.*



RENAISSANCE ARCHITECTURE AND ORNAMENT IN SPAIN

A PLATE FROM THE WORK BY ANDREW N. PRENTICE

PENCIL POINTS FOR FEBRUARY, 1931
VOLUME XII NUMBER 2

"Santa Labrada whose tomb is illustrated on this plate was the patroness of Sigüenza. The tomb is of marble, and was constructed at the command of Don Fadrique or Don Federico of Portugal, who was Bishop of Sigüenza in the year 1536, and afterwards Archbishop of Zaragoza, and who lies interred at the side of this chapel. The relics of Santa Labrada are preserved in a silver urn, inside the marble sarcophagus depicted in this sketch. The sculpture in the tympanum represents the saint ascending to heaven. The whole of this ornate tomb is picked out with gilding and soft color, and the effect is very pleasing, notwithstanding the over-elaboration. On this plate is also shown an enlarged detail of the wrought iron screen, surrounding the base of the tomb."

A. N. PRENTICE.

The Education of an Architect

By Theodore Irving Coe

Editor's Note:—*This is the first of a series of talks given before the Junior League of the New York Society of Architects. This one was presented at the November meeting. Next month we will print the paper read by Arthur C. Holden at the December meeting. As previously announced in* PENCIL POINTS, *these talks are under the direction of Louis E. Jallade and have been arranged for the purpose of presenting topics of interest to architects and draftsmen.*

All education, but more particularly the education for technical and professional practice, must be considered as supplying a means to an end.

If the end is to justify the means we must study our problem in plan, elevation, and perspective so that we may see clearly the scope of the architect's activities and thus hope to formulate a specification for his educational requirements.

While there are many in the profession who have acquired a modern horror of relying for inspiration upon ancient and honorable architectural classics, I feel sure we shall profit from a re-reading of the opinion of one who some two thousand years ago answered the question of what the architect should know. If we consider the complexities of modern laws and ordinances and the technical requirements of mechanical installations which have originated since his day, we are justified in accepting his opinion as representing minimum requirements.

Listen then to Marcus Vitruvius Pollio, who some thirty years B.C. wrote: "The architect should be equipped with knowledge of many branches of study and varied kinds of learning, for it is by his judgment that all work done by the other arts is put to test. This knowledge is the child of practice and theory. Practice is the continuous and regular exercise of employment where manual work is done with any necessary material, according to the design of a drawing. Theory, on the other hand, is the ability to demonstrate and explain the productions of dexterity on the principles of proportion.

"It follows, therefore, that architects who have aimed at acquiring manual skill without scholarship have never been able to reach a position of authority to correspond to their pains, while those who relied only upon theories and scholarship were obviously hunting the shadow, not the substance. But those who have a thorough knowledge of both, like men armed at all points, have the sooner attained their object and carried authority with them.

"In all matters, but particularly in architecture, there are these two points: the thing signified, and that which gives it its significance. That which is signified is the subject of which we may be speaking; and that which gives significance is a demonstration on scientific principles.

"It appears, then, that one who professes himself an architect should be well versed in both directions. He ought to be both naturally gifted and amenable to instruction. Neither natural ability without instruction nor instruction without natural ability can make the perfect artist. Let him be educated, skilful with the pencil, instructed in geometry, know much history, have followed the philosophers with attention, understand music, have some knowledge of medicine, know the opinions of the jurists, and be acquainted with astronomy and the theory of the heavens."

Some hasty thinker may ask why Vitruvius included knowledge of the philosophers, music, medicine, opinions of the jurists, astronomy, and the theory of the heavens, within the limits of an architect's education but every practicing architect could name a much longer list of subjects less obviously related to architecture concerning which his opinion has been solicited in the course of his practice.

The variety of the architect's problems and the many fields he must explore in providing structures for use, shelter, and to satisfy the desire for memorial and æsthetic symbols, lead one to believe that if he is to be protected at all points by the armor of knowledge he should know everything about everything.

Having, in the foregoing, prepared what we may compare to the preliminary sketch of our architectural problem we may proceed to the drawing of more detailed working plans and specifications, keeping in mind that our sketch, like so many preliminary sketches, may have to be simplified if we hope to produce a practical working plan, which the architect must do with every architectural problem if he is to justify the practice of his profession.

While the practice of architecture has changed much since the time of Vitruvius there is little change to suggest in what he indicated to be the ideal educational equipment of the architect.

Let us then consider in some detail, but necessarily more briefly than the subject warrants, our plans and specifications of what the architect is called upon to do and the education necessary to fit him for his work.

The education of the architect cannot be confined between the covers of books but must grow from roots firmly planted in character, natural ability, and that all-embracing characteristic—personality. To a very considerable degree the book education of the architect should follow subjects having no more obvious relationship to architecture than Vitruvius' requirements of a knowledge of medicine and the theory of the heavens.

The architect, first of all, should be a man of general knowledge and broad culture, interested in the affairs and development of the world about him and keeping abreast of the times in the realms of scientific, mechanical, and political activities as well as the field of his chosen profession and the allied arts.

The base of his structure of cultural knowledge cannot cover too much ground and in his social and business contacts he should seek friends and acquaintances outside of his profession as well as within professional circles.

The development of character and a willingness to continue to learn, combined with the ability to inspire confidence through the expression of opinions founded upon reasonable conservatism and sound judgment, represent qualities without which mere book learning becomes a reservoir of facts and figures with that something missing which makes of knowledge a living moving force and raises technical and artistic skill in the design and erection of

structures to the importance and dignity of a profession.

The development of the man in those qualities which make for good citizenship and leadership is but the beginning of the development of the architect, for, amid the present-day complexities of building construction, leadership is essential if confusion is to be avoided. The architect is logically such a leader and must qualify for leadership if the profession of architecture is to take its proper place in the confidence of the public and secure for the architect the legal protection already accorded to the professions of medicine and the law.

The acceptance of leadership in any enterprise imposes responsibility and obligations and the factors controlling leadership in the construction field must be carefully studied if the architect is to equip himself adequately as the master builder.

Even marked artistic ability will not alone suffice, for such leadership demands the bringing together of many diverse interests and the working out of problems involving property values, methods of finance, building economics, the co-ordinating of structural and mechanical details with the architectural design, the making of important contracts, and the general direction and supervision of the progress and completion of the work in the field.

We can now perhaps begin to understand the requirements of Vitruvius as to knowledge of the philosophers, medicine, the opinion of the jurists, astronomy and the theory of the heavens, for the architect must combine in no small degree the elements of the business man, financier, economist, judge, artist, engineer, constructor and general all-round peacemaker.

So far in the amplification of our plans and specifications concerning the education of the architect I have only touched upon what to many has seemed the ultimate goal of the architect's training—his development as a designer and draftsman.

As we may not see the forest because of the trees, so it may sometimes seem as though the architect, as a designer and draftsman, has been obscured by activities and functions far removed from the more interesting display of his creative talent.

The preparation of the preliminary sketches for any building project marks a period of interesting study. It is at this point the designer comes into his own but, from then on, the work becomes more and more of a practical construction and engineering problem and much of the artistic color fades out of the picture from the standpoint of the designer who sees little of architectural interest in the swing of doors, the height of risers or the locating of a quart of balky mechanical equipment in a pint of architectural space.

It is interesting to note the extreme simplicity of drawings from which buildings such as our National Capitol were constructed as compared with the completeness and complexity of the drawings now required for buildings of almost every character; for competent architectural service, in our present American practice, calls for the preparation of general drawings, details, and specifications so complete in every detail of architectural, structural, and mechanical work as to fully advise the contractor concerning the precise methods of construction at every point. A high degree of practical experience and technical skill must form the background necessary to perform this service if, so far as may be humanly possible, the work is to be accurately and completely called for with the clarity required to avoid justified misinterpretation of plans or specifications which may have embarrassing consequences in the form of claims for additional compensation—always a most distressing subject from the standpoint of a client.

Designing and drafting ability share in the responsibility the architect must assume in the practice of his profession, for it is far easier to intrigue a client with a beautifully rendered drawing than it is to satisfy his requirements as to the ultimate cost of the work, yet if heartaches and disappointments are to be avoided the designer must be practical as well as artistic for many of the details of the building are so firmly established by the original design as to defy the application, in the development of the drawings, of practical requirements, making for durability and economy of maintenance, without serious injury to the designer's æsthetic sense.

The designer must not minimize the importance of good planning in the urge for exterior effect. This is particularly true where investment returns depend upon the economic solution of an architectural problem, such as the percentage of rentable area with relation to cubic contents.

While the contractor who erects the work must assume responsibility for sound and honest workmanship to a far greater extent, the architect must assume responsibility for the durability of the structure and economy in its upkeep and maintenance through the wise selection of the materials and methods of its construction. In justice to his clients and his own reputation the architect should proceed with extreme caution in the use of materials unsupported by the test of time. For this reason it is to be regretted there is not a more widespread interchange between architects of the experience gained through the use of various materials and methods of construction under widely differing conditions of exposure and use. In this connection architects can gain much by friendly conferences with capable contractors whose experience is of the utmost value and who share with the architect the desire to build truly and well.

As we consider the work of construction in the field and the architect's responsibility for its supervision and general direction we come to one of the important functions of leadership and one which may have little appeal for those who would like to approach the practice of architecture from the standpoint of design.

Supervision is of the type of things which the architect must be prepared to do well as a necessary function of leadership in the construction field and can only be learned as the result of personal experience.

I believe the best building superintendents are those caught young, and I would urge every potential architect to acquire as much supervising experience as possible in the early period of his training, for much of value in the entire range of architectural knowledge can be learned in no better school and it will make what follows come more easily.

Outside the covers of books the architect must learn not only to gain but to keep clients. Closely bound up with this is the matter of dealing with contractors, for the architect must hold the scales even between the rights of his client and his client's contractor. This is not always easy, since clients may be unreasonable and contractors sometimes have original ways of interpreting the architect's plans and specifications.

Through the medium of the specifications the character and quality of the materials and methods of construction are largely determined. For this reason, specifications have assumed an increasingly important function as an instrument of the architect's service and demand the exercise of extreme care in their preparation and a thor-

ough knowledge of materials and the methods of their use.

Here again, as with the drawings for the work, we find a marked change compared with earlier practice. To meet the conditions growing out of the competitive system, under which most construction work is executed, specifications aim more and more to set up definite and accepted standards for materials and methods of construction, as compared with such flowing phrases as "All work and materials shall be of the best of their several kinds," and that timeworn requirement "Subject to the approval of the architect."

Architects can and do cooperate in the fixing of definite and generally accepted standards which permit manufacturers and material dealers to standardize and simplify their products thus eliminating wasteful duplication, reducing costs and avoiding the delays which usually follow the specifying of materials of special dimension or character, where standard products will serve the purpose equally well.

The process of standardization and duplication is a continuing one, as new materials enter the field and conditions change, and the architect must keep abreast of these changing conditions if he is to fully serve his clients' interests.

As communities have grown and improved methods of construction have made possible the erection of higher structures, conditions have demanded the exercise of a greater degree of municipal and state control and regulation of the structural safety, height, area, and use of structures through the enactment of laws and ordinances imposing ever increasingly wide factors of control.

These are the limiting conditions which govern the architect in the planning of buildings and to a considerable extent affect the economic return upon the investment of the owner.

It is, therefore, gratifying to note that architects are taking an increasingly active interest in the formulation of such laws, for, by so doing, the profession not only performs a public service on behalf of all interests and groups but, at the same time, demonstrates its willingness and ability to play its part in matters of general civic interest which cannot fail to advance the standing of the profession in public good will and esteem.

The architect must be familiar with the laws and ordinances governing buildings if he is to design his building intelligently, lest he may find himself, after selling his client a well considered solution of his problem, in the embarrassing position of reporting that some iniquitous section of the building code or zoning resolution prohibits the erection of the design he has so carefully worked out.

In our attempt to analyze the education of the architect, if the thread of our thought lacks continuity, we but reflect the characteristic of the architect's routine which has a tendency to pass quickly from one phase of activity to another and perhaps unrelated one, and we must rely upon your thought and imagination to fill in the gaps as to the education and training the architect will require to solve some of the problems we could but summarize or touch upon in passing.

It was said of the old Napoleonic Army that every private carried a Marshal's baton in his knapsack. Similarly, every draftsman is and should be a potential architect, keeping bright the ambition to practice in his own right.

To the young men whose feet are on the threshold of the temple of architecture I trust I have drawn no formidable or discouraging picture.

The dropping of water wears away stone and the acquiring of knowledge and experience comes drop by drop and not as a cloudburst.

It is by realizing the importance of accumulating the drops as they fall that a reservoir of knowledge may be formed from which the necessary supply for daily use may be drawn without reducing the source.

The architect must depend upon the draftsman to carry out in detail the work he conceives and through his daily experience the draftsman has the opportunity to apply his skill and grow in knowledge and professional ability. It should be the duty of the draftsman to realize that such material profit as the architect may derive from his practice depends largely upon the ability and earnest application of the draftsman, for lack of knowledge or skill, time wasted or spent in unnecessarily repetitious work, or the development or rendering of drawings beyond the point required for the full and clear indication of the work, adds to the cost of production not only the draftsman's time but the factor of overhead which may easily double the amount so expended.

Regardless of the character and extent of the draftsman's academic and architectural scholastic training it is office experience which affords the only sure method of reducing theory to practice to the extent necessary to properly equip him to practice as an architect in accordance with the standards which should surround such practice.

There can be no set rule applied to the length of such office experience, for it is dependent upon the character of the experience, the natural ability and the educational equipment which the individual, in each case, brings to the entrance of his office training.

Ambitious youth must accept the dictum "Art is long and time is fleeting" and make every moment count if professional success is to be achieved. Patience must be cultivated, for many architectural tasks will seem to contribute little or nothing to such success and the desire for rapid change and new architectural pastures may be difficult to resist.

As we look back upon experience we realize that the least interesting and perhaps most arduous task may serve as a higher stepping stone than some of the periods of more agreeable work. For the draftsman who is moving toward the goal of his own practice the constant question should be, "Is my present experience adding drops to my reservoir of architectural experience and knowledge?" The value of such experience is not to be measured by the size of the office or the volume of its work, for the draftsman may gain more through the opportunity personally to handle and direct work of modest proportions in a good, small office than would be possible if he were following routine work in connection with work of even considerable volume as one of a larger office organization.

The rise to professional distinction of many men who have lacked definite architectural training, aside from that gained through practical experience, should be an encouragement to any man who lacks the opportunity for such preliminary training, but it imposes upon such a man the added burden of acquiring so much of such training as he can while he is securing his practical office experience if he expects to keep pace with those who start their office experience with a full measure of academic and technical training. This he may do, with energy and perseverance, through the excellent educational facilities which are available in New York City.

The fact that requirements for architectural practice have advanced materially within the past few years, and that these will become more rigid and comprehensive as time goes on and the profession secures the public recognition it deserves, should be considered by those who look toward the profession of architecture as their life work. The urge should be compelling if one is to look forward to the doing of something which will bring the sense of satisfaction which makes for happiness and peace of mind regardless of the material gain.

The past few years has marked a material advance in the standard of draftsmanship so that those who lack the skill to produce with accuracy and reasonable speed the drawings which the architect must furnish, as a part of his service, find themselves much handicapped if not hopelessly outdistanced in the progress of their advancement.

No man who advances in the skill and knowledge of his profession fails to recognize, with regret, details which spell mistakes in judgment and the overlooking of something which appeared very different in execution from the drawing indication. The draftsman who works on the drawings will add drops rapidly to the reservoir of his experience if he will make it a practice to study carefully the completed work in comparison with the drawings for such work, for in no better way can he develop sound judgment in matters of scale and proportion—the fundamental qualifications for good architecture.

In these days of rapid change and the demand for what seems new and novel, the architectural atmosphere is sometimes clouded by the smoke of fire-eating partisans who argue for or against all that has gone before in the development of architectural expression. Let us be not too much impressed or deceived by this smoke of conflict, for the battle of the old and the new is ages old and the field of architecture is only one of the familiar battlegrounds.

Architecture is but one of the expressions of man's creative talent and, like the art, music, and literature of the several stages of his progress, it represents a more or less logical evolutionary development based upon nationality, intelligence, environment, and mode of living.

Change and development there should be as conditions alter, but let us not attempt to ignore the past in our haste to create something for the future.

Architecture, as in the past, must continue to serve man's various purposes and, at its best, it should continue to respond to his inborn love of order and beauty.

We shall indeed be modern if we build, upon the foundation of the best that has preceded us, those things which represent the real advance in our own thought and skill, thus adding naturally to the growth of the art we serve, regardless of the label we may apply to the results of our creative efforts.

While the practice of architecture represents one of man's earliest activities the profession of architecture seems hardly out of its swaddling clothes. Much remains to be accomplished to secure from the public at large the recognition and confidence which the profession may hope to merit.

As trades and occupations became professions, principles of conduct and practice have grown up as a natural development and it is by the general adherence to the principles of such ethics of conduct and practice that a profession may hope to win not only the respect of the public but the respect of the individual practitioner for himself and his profession.

We need consider less the details of such professional ethics if we live closely to the general definition of the word itself: "The science of human duty, or right and of right character and conduct."

Forward progress can only be accomplished toward the ideal goal through the loyal cooperation of the individual in the interest of all, the setting up and adherence to the highest standards of professional ethics and practice and the education and development of architects generally to the point where leadership in the field of building activities will be granted by reason of the architect's ability and capacity for such leadership.

In man's creation of the means to translate and express his thought and ideas, we here and there come upon a single word that in itself speaks volumes and paints a complete word picture. Such a word is "*Architecture,*" for the sight and sound of it brings to mind much of the whole history and record of man's rise and development.

Architecture is, and of right should be, a profession of honor and inspiration, and the training and experience of the architect peculiarly fits him for service to his community outside of the limits of his professional practice. Such service he should welcome and freely undertake. From it the architect will gain breadth of view, knowledge of men and strength of character which will justify his place in the thoughts of the poet who said:

"Ah, to build, to build!
That is the noblest of all the arts.
Painting and Sculpture are but images,
Are merely shadows cast by outward things
On stone or canvas, having in themselves no separate existence. Architecture, existing in itself, and not in seeming something it is not, surpasses them as substance, shadow."

DESIGN FOR A PROPOSED RESIDENCE IN WESTERN CONNECTICUT—ALEXANDER BERESNIAKOFF, ARCHITECT

FROM A DRAWING IN OPAQUE WATER COLOR BY HENRY R. DIAMOND

PENCIL POINTS SERIES
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The rendering shown on this plate was made on a sheet of white illustrators' board with opaque poster colors applied in the "pointillist" manner. A pencil outline perspective was first made on tracing paper and then rubbed onto the board in the usual way. The colors employed were Cadmium Yellow (pale), Cadmium Orange, Vermilion, Alizarin Crimson, Permanent Blue, Cobalt Blue, and Viridian. The rather bright effect is attractive to many clients, particularly those who are interested in small or moderately large residences. The original of this drawing measured 17½" x 12".

The Philosophy of House Design

By Hedley B. Sevaldsen

Editor's Note:—*The following notes, inspired by the results of our 1930 Architectural Competition were submitted to us shortly after the publication of the winning designs. Though some time has since elapsed, the author's remarks may be of interest to some of the competitors. It is noteworthy that the opinions expressed are not universally accepted since many designers agree with the opposite views as expressed by Norman-Bel Geddes in the "Ladies' Home Journal" for January, 1931, to wit: that in ten years' time residences will generally be built with living quarters at the rear, towards the garden, and garages and service portions towards the street. We invite discussion and will print any interesting comments that may come to us.*

A house with its service section: kitchen, pantry, maid's room, bathroom, icebox room, etc., etc., to the front, facing the street, is a poor investment. This fact has been sufficiently established by the experience of the past. The garage to the front is illogical. The reasons for that are many and conclusive.

The emotions upon which all architecture rests did not come into the world with the automobile. They rest on tradition; and the vitality of tradition is strong, powerful.

The precept, "My home is my castle," has its root too deeply imbedded in the heart of man to be abolished overnight. Through centuries of growth, certain principles of design, certain forms of construction have been identified with certain meanings that stir up the emotions we associate with the term "home." A house has, therefore, to fulfil some of those things before it becomes a home.

A house with its main living rooms to the rear has nothing strategic about it. We are relaxing comfortably in our living room after dinner; some one approaches the house. We can possibly hear the approach, but we cannot see who it is. Perhaps it is some one whom we do not wish to meet just at the moment, and we are taken by surprise. It is awkward, it is annoying; and what is more, it is unnatural.

If the "southern exposure" theory is carried out to its logical conclusion, all houses built on streets facing north would have their living rooms facing the back yards of their neighbors in the rear, with ash-cans, clotheslines and all the semiprivate life going on there. Because those houses, facing south, would naturally have their service rooms and garages where they should be, to the back.

Therefore it is not natural. We have only one master to obey: Nature.

"Southern exposure" is a theoretical formula on a par with the happy ending in story writing, a formula, which in our day of mechanical equipment for buildings, never needs be taken into consideration. We build now up and down and in any direction we want without being in any way handicapped by daylight, ventilation, heat or cold. Keeping the heat from the sun in the summer out of our living rooms is far more difficult than overcoming the cold or uneven temperature in the winter. By placing a thermometer in every one of eleven rooms in a well designed house, it was found that all the rooms showed the same temperature, while the living rooms facing north and west were at least 12 to 16 degrees cooler in the heat of summer than the temperature outside.

The premiated and mention designs of the recent competition show that "southern exposure" was the touchstone of the competition and tripped up those who looked upon the problem in a more comprehensive spirit. There is something that comes before anything else in architecture, and that is a harmonious and well-balanced building.

The design placed first has a dormer, entrance, and chimney all on one side of the building. This makes the house lopsided in spite of the sham wall hiding the garage doors. If the chimney had been on the other gable it would have helped, although it would not have helped enough to make it an artistic creation.

Furthermore, the plan is formal, cold, and the product of mechanics rather than artistic talent. It may be a house, of course, but it certainly is not a home. It lacks all of the qualities that make a house a home. It does not give us the feeling of "snugness, quiet, rest, and protection" that are the first essential qualities of a home. And it does not touch the heart.

It was Schubert who said: "My music is the product of my heart and of my reason; what the heart alone has produced seems to please the people most."

To those who understand, there is a close relationship between music and architecture. This understanding prompted a celebrated European writer and thinker to describe architecture as "frozen music." This comparison is just: for music, apparently the freest and most lawless, is in reality the most rigorously scientific of the arts.

But though a strict adherence to all the principles of architecture is indispensable to every genuine architectural structure, whatever its object, it does not necessarily follow that equal prominence must be given to each of these principles on every occasion. If a building has for its primary object the expression and commemoration of such feelings as grief, gratitude, devotion, or the like, this object manifestly will be best attained by subordinating the scientific and utilitarian to the æsthetic principles of architecture; and the reverse will be the case where mere convenience, or (though in a lesser degree) where convenience in combination with beauty or magnificence is sought.

It is in great measure by the prominence which they have given to one or other of those principles, that the different nations have displayed their diversities of character in their architecture.

The abstract conception of all pervading deity, as embodied in the Greek temple, or the religious aspiration after a personal God, as shadowed forth in the Gothic cathedral, can be realized only in accordance with the principles of mechanics, and the most rigorous adaptation of means to ends; whereas, in an opposite direction, the kraal of the Hottentot, the hut of the Indian of the American wilderness, or even the vulgar chimney-stack in the dingy manufacturing suburb, if properly constructed for their respective purposes, will be found to have obeyed such æsthetic principles as those with which they may have come in contact.

Nature is not self-contradictory; and art and science, beauty and utility, when rightly understood, never conflict.

The automobile is a means of transportation, a means to an end; not in itself an end. Its usefulness is outside the house, not in it. It is not an interior ornament. It is related to the house in exactly the same degree that a horse and carriage of old were related to a house. The smell of oil, grease, and gasoline is much more obnoxious than the clean odor of the stable, and yet no one ever thought of bringing the stable into the house, or next to it, and much less to display it in front of a building.

To connect the room, then, in which the automobile is stored, when not in use, to the house itself is a very questionable thing to do at its very best. But if it is done, it most assuredly should not be placed at the front of any house even though it be masked by a sham wall. Why anything sham in architecture? On the stage, in scenic painting, yes, because the mask appears to be a wall for a few hours, and is thus fulfilling a mission. But in architecture—never! Why conceal anything as obvious as a garage door at the end of a driveway?

Even a cultured man likes to examine his car now and then, put on skid-chains, look after the battery, fill the radiator, test the spark plugs, tighten up a bolt here and there—in other words, play with his car. Why expose him to the front and the street, dirty as he is, or will be before he is through, when he might as well be left in peace at the back of his house?

Fear of not being original is the sole cause of designs of this sort, whereas the really original mind uses the most obvious means and methods, and because of that creates something really worth while—and beautiful.

Is it not, when one takes the trouble to reason the thing out, rather ridiculous to have any man, cultured or not, in dirty clothes, smudgy of hands and face, at the front of his house; and when he is dressed up, with friends invited to dinner, beautiful women, beautifully dressed, gathered in his living rooms, to force them to stare upon his neighbors' ash-cans, pyjamas, socks and stockings hanging lifeless on strung-up lines between one wall or another, and all because of "southern exposure"?

FISHERMAN'S SHACK—PIGEON COVE, GLOUCESTER, MASSACHUSETTS

FROM A LITHO-ENGRAVING BY H. RAYMOND BISHOP

A LETTER FROM HOWARD D. CLARY OF CHICAGO

REPLYING TO Mortimer E. Freehof's remarks in the December, 1930, issue.

"Mr. Freehof's letter on Architectural Publicity was interesting in its indignation. Evidently accustomed to doing a good class of work, he has just discovered that architecture is progressing, and that the rear guard is disproportionately large. He finds them fighting an action with the speculative builders, and suggests that the battle might be won by abolishing the fighting force. This is rank pacifism.

"I have worked for several of the 'rear guard' in Chicago and may perhaps be able to give a worm's-eye view of the situation.

"Strict requirements for registration will not change the situation. Illinois has had a license law for some years. It requires the applicant to have a certain amount of practical experience, less for graduates of an architectural school than for others, and a high school education. The applicant must give evidence of good moral character, must have certificates of his ability to practice from several architects, and must pass a stiff examination. Very few pass this examination the first time, and college graduates do not seem to fare much better than others. Structural engineers, who are also licensed by examination, are allowed to make plans and superintend construction.

"As Mr. Freehof says, 'the great bulk of building construction in large cities is of a speculative or investment nature' and 'the ancient law of supply and demand functions regularly.' The average speculative builder is a keen buyer and considers himself a fairly competent superintendent. He is often a carpenter, bricklayer, or building tradesman of some sort, and has general knowledge of how to run a job. What he would have to pay an architect becomes part of his profit.

"The city of Chicago requires the seal of a licensed architect on every plan presented for permit and this, to the speculative builder, is the main reason for going to an architect. Modern planning and methods of construction are seldom given consideration until they have been tried out by competitors. Many a building has been planned from some other fellow's renting layout. Details are necessary only for a few items, for the vast majority of the material used is furnished in stock patterns. Competition cuts down the time available for sketching (sometimes the sketches, too, are speculative), and there you have it.

"Now to the fee. I also have heard of fees as low as one-half of one per cent. What's more, I've known architects to make money at that price. When a speculative builder wants a building just like a thousand others, when he doesn't want details or specifications because he is interested in the cost of the building more than the quality of the construction (to the uninitiated, a poor piece of work looks as well as a good one for the first year), and when his ideas of design concentrate themselves on various arrangements of soldier courses and eight by eight stone blocks, a plan can be drawn very cheaply. The draftsman has a hundred others for reference.

"When a builder sends a client to an architect (most people go to a 'builder' when they want to build), he wants the client to get the same kind of service that he has been getting. The architect is in no position to insist on good construction, or to urge superintendence or anything else that the builder considers to his disadvantage. The builder wants no competition, particularly from the architect, and the architect is dependent on the builder for business. This sort of client always has information from the builder as to what he should pay for a plan. In many cases the architect has been discredited by the more 'practical' builder.

"I do not pooh-pooh Mr. Freehof's assertions as to dishonesty among architects. I have heard of these things too, but I imagine that they are not confined to any one division of the profession. The 'bargain counter' architect has less opportunity to do these things than his more orthodox brethren.

"The Illinois Architectural Act requires superintendence by a registered architect or engineer on every building within corporate limits, and costing more than $7500. This portion of the law is not enforced. The 'rear guard' hasn't the necessary influence. They are the only ones that would benefit by strict enforcement, because they are the only ones coming in contact with the class of client that does not 'understand the value of architectural service.' The leaders of the profession are not interested, and, as far as organization or control of it is concerned, they are the profession.

"The 'rear guard' in Chicago have tried to help themselves. The South Side Chapter of the Chicago Associated Architects has been in existence for more than a year, and attempts are being made to organize chapters on the north and west sides. A minimum schedule of fees for the class of service required has been established and, in spite of demoralizing business conditions, has been adhered to. Standard office forms have been distributed. The retaining fee is becoming known. The stock plan, that is to say the reprint of someone else's plan, has been abolished by general consent. This association has done more for its members in one year than any other has done in ten.

"Remedies? Instead of making the lot of the rear guard harder, try to ameliorate their condition. Let the Pharisees get down in the mud and help them out. Throw away the halo and humanize the architect. An advertising campaign backed by the entire profession would add more to his prestige than all the canonizing done in past years. Try to make a few prominent writers and motion picture producers realize that the average architect isn't a great artist and cathedral builder, or an irresponsible young lover that spends most of his time exhibiting models of country houses to wealthy clients, or making wash drawings with a French curve. The legal and medical professions are better understood and less often misrepresented.

"Where there are architectural laws, enforce them and let the public know that they exist. Follow the example of the builder who has on his signs 'designed and built by ————————.' Make superintendence a guarantee that counts for as much as the bronze brick or the nameplate on the radiator of an automobile.

"Get away from the attitude that the same class of service is necessary for all work. The builder of a hogpen doesn't need the services of a Goodhue and doesn't expect to pay for them. One great mistake has been to assume that, because certain architects did not follow all the precepts of the architectural priesthood, they were unworthy members of the order and should be condemned before the general public. That is not so. The clients served by the rear guard are no reflection on their capabilities. When given an opportunity they have wrought mightily. They are the ones responsible for any increase in the percentage of building superintended by architects and should have cooperation instead of condemnation."

A LETTER FROM HUBERT G. RIPLEY OF BOSTON

"We view with alarm the attempt to apply 'modern business methods' to the practice of Architecture. It is as if the Knights of the Round Table, or Bertrand Du Guesclin, or Tamerlane of Samarkand went a 'pricking on the plaine ycladd in mightie' high-powered armoured cars equipped with machine guns and tear gas bombs. What chance would the mighty antagonists of the slightly mightier heroes have in such case? What becomes of the glory of the strife, or Romance, or Art, or High Endeavor?

"The history of architecture is the history of the world, they say, where the architect, a master-workman, occupies a proud position. Why change it? In clarion tones we are told, 'The architect must assume his rightful place of leadership in the building industry.' Whence came these trumpet blasts? From the leaders of our profession? No, they are too busy making history and designing works of art to waste time in wingless words. Do these exhortations come from the designers of our tremendous commercial structures, those great piles of steel, masonry, and chromium that soar to the very vault of the empyrean? They're all set. They don't want to change anything as long as job piles on job like Pelion on Ossa.

"We've a suspicion that all the hue and cry comes right down to, 'We want jobs.'

"Of course we want jobs, we can't practice our art unless we have something to practice on. Why not be honest about it? Some like an engineering job, those that pay good fat fees without a big overhead, where the heating engineer and the structural engineer and the acoustical engineer and the sanitary engineer, and the structural service bureau do all the work and the architect just sits back in a swivel chair, before a duralumin desk with a black glass top and a row of push buttons, while subordinates tiptoe in and whisper in his ear, the boss frowning slightly the while. Others, in whose veins flow immortal ichor, like jobs where there ain't no soil pipes to speak of and nobody cares a damn about the acoustics. Jobs that when built (preferably by L. D. Willcutt's Sons or Marc Eidlitz) will go rolling down the ages as a landmark to the genius of the designer and the foresight and circumspection of those whose sympathetic cooperation made them supreme. Jobs which cause the architect to sweat real blood, where sculptors and painters and workers in bronze and hewers of wood and painted glass and tapestries meld into a perfect symphony. We wouldn't object to getting 15 or 20 per cent. for such a job, but we'd like to earn it, and do a lot of work on it ourselves.

PENCIL SKETCH BY RUDOLPH DE GHETTO
"SAN GIMIGNANO"

"Architecture, to our way of thinking, should be and is a pleasant art. To be sure its practice is beset with pitfalls, and to climb the slippery ladder of success, paved, as the old saws have it, with rolling stones, needs a firm hand and a steady eye to maintain a foothold. Still we all have our little triumphs, and the vexations and disappointments of the jobs that go sour only make the *succès fou* all the sweeter by comparison. The companionship, advice, and friendly criticism of our confrères, the thrill that comes with the discovery of just the right *partie*, the consciousness of sensing, if but for a moment, the music of the spheres; even the accumulation of much fine gold cannot wholly compensate for such joys as these. Why the wrinkled brow? And the complexities and involutions and amphibolic ratiocinations of these writers? It all seems like just so much cagmag producing coccygodynia. Isn't simple straightforward English used any more?

"Let's suppose the architect achieves the position of leadership in the building industry. What happens? He simply becomes another business man whose main interest is to make money. The more money he makes, the more importance he must assume. He goes to Chamber of Commerce meetings and addresses large gatherings on 'Modern Trends in Economic Relationships,' 'Cultural Aspects of our Present-day Needs,' and suchlike flapdoodle. He is pointed out on the street as one of our Big Men and a Commercial Factor with branch offices in fifty cities. He cultivates an Absorbed Manner, very serious, nods brusquely to the traffic cop and cuts his boyhood companions of the old swimming hole. *They* know something about him of which the general public is ignorant.

"What have we done that entitles us to a position of leadership in the building industry? Demanding it won't help us get it. It'll come naturally without the asking, if at all, and without consciously working for it; and then, after having it handed to us, we won't know what to do with it, unless we frame it and hang it up beside our engrossed certificate of fellowship.

"It's all very depressing to have this thing happen just as we are climbing out of our 20th century swaddling clothes, so to speak, and what becomes of the Fine Art of Architecture? Somebody's got to keep the sacred flame alive, and let us hope that in the event of this direful postulate, the font of the Hippocrene will not run dry."

FOURTH COMPETITION FOR A. W. BROWN TRAVELING SCHOLARSHIP

ANNOUNCEMENT IS MADE of the fourth competition for the selection of a beneficiary for the A. W. Brown Traveling Scholarship, this competition to be held under the direction of a committee of the American Institute of Architects. Programmes will be mailed to approved applicants about March 14, 1931, drawings to be delivered on or about April 13, 1931.

This Scholarship is the gift of Ludowici-Celadon Company and is a memorial to the late A. W. Brown, who was for many years president of that company and a leader in the manufacture of roofing tile.

The amount of the scholarship is Two Thousand Dollars, to be used towards defraying expenses of a year of travel and study in Europe by a worthy and deserving architect or architectural draftsman. Traveling expenses between the winner's place of residence and the port of New York will be paid in addition to this amount.

An award of Two Hundred and Fifty Dollars will be made to the person whose design is placed second in the competition; One Hundred and Fifty Dollars to the person whose design is placed third; and One Hundred Dollars to the person whose design is placed fourth.

Under the terms of the gift the selection of the beneficiary of this scholarship is to be made by means of a competition to be held under the direction of a committee of the American Institute of Architects, the drawings to be judged by a jury of from three to five practicing architects chosen by that committee. The general requirements of the problem given for the competition will be similar to those of the Class A problems issued by the Beaux-Arts Institute of Design. In making the award of the scholarship the committee will give due consideration to the personal qualifications of the competitors as well as the excellence of the designs as judged by the Jury.

It is stipulated by the donors that the competition shall be open to any architect or architectural draftsman who is a citizen and resident of the United States; who has never been the beneficiary of any other European scholarship; who has passed his twenty-second but has not passed his thirty-second birthday on May 1, 1931; and who has been in active practice or employed in the offices of practicing architects for at least six years, or, if a graduate of an architectural school, at least two years since graduation.

The beneficiary will be required to complete, during his European study, two envois, which shall consist of measured drawings of buildings on which burnt clay has been used for roofing. Other than this there will be no restrictions as to the type of architecture that shall be studied, or the type of work that shall be done, except as the committee may deem it necessary to advise from time to time in order that the intention of the establishment of the scholarship may be realized.

Those wishing to compete should write for application blanks to the secretary of the committee, Wm. Dewey Foster, 25 West 45th Street, New York, N. Y.

COMPETITION FOR THE DESIGN OF A RADIATOR GRILLE

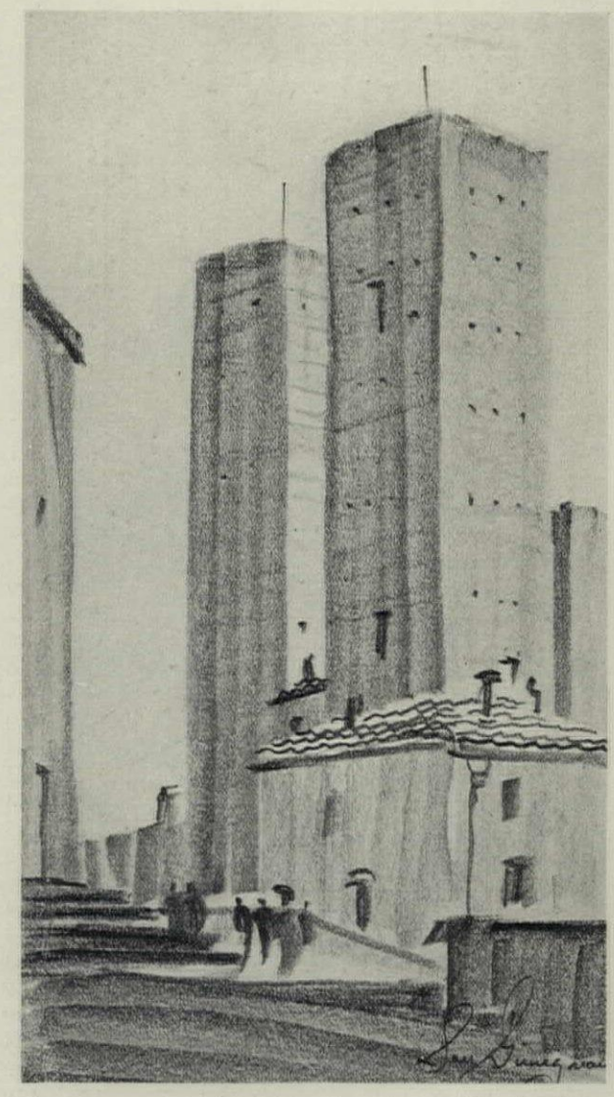
THE COMPETITION FOR the design of a Radiator Grille, the program for which was published on page 983 of the December issue of PENCIL POINTS, closes on February 15, 1931. All entries must be delivered to the *Program Committee*, Architectural Sketch Club of Chicago, 1801 South Prairie Avenue, Chicago, Illinois, by messenger on this day or postmarked prior to the closing date.

SEVENTH ANNUAL SMALL SCULPTURE COMPETITION

THIS COMMITTEE has the pleasure and privilege of announcing the Seventh Annual Competition for small sculptures in white soap for the Procter & Gamble prizes. The amount of these awards is $3,100, and the variety of the classifications and the distribution of the prize money are very generous. In addition to the cash prizes there is also a Scholarship Award in the Senior classification. The competition closes May 1st, 1931. For circular describing the details of the competition and regulation entry blank write to The National Soap Sculpture Committee, 80 East 11th Street, New York.

EXHIBITION OF THE ARCHITECTURAL LEAGUE OF NEW YORK

THE FORTY-SIXTH annual exhibition of The Architectural League of New York will be held at the Grand Central Palace in New York from April 18th to April 25th inclusive. Circular of information may be obtained from The Architectural League of New York, 115 East 40th Street, New York.



FROM A SKETCH BY LOUIS SKIDMORE
"SAN GIMIGNANO"

It is interesting to compare this drawing with that of the same subject shown on the opposite page.

MORE SKYSCRAPER STATISTICS

SINCE WE PUBLISHED the list of New York skyscrapers, which appeared in the *New York Sun* several months ago, a new list has been prepared by the *Sun* including 89 skyscrapers over 30 stories in height. This list, which we are reproducing below, includes a number of buildings not mentioned in our January issue.

NEW YORK'S 89 SKYSCRAPERS OVER 30 STORIES ARRANGED IN ORDER OF THEIR ACTUAL HEIGHT

Building	Stories	Feet
†Empire State	85	1256
Chrysler	77	1050
Manhattan Company	70	927
*Cities Service	66	840
Woolworth	55	767
†City Bank-Farmers Trust	59	750
†500 Fifth Avenue	58	699
Lincoln	53	673
Metropolitan Life	46	657
†1 Wall Street	51	638
10 East Fortieth Street	48	632
Chanin	54	623
New York Life	41	619
†R.C.A.-Victor	50	616
*Waldorf-Astoria	47	616
Singer	45	612
Ritz Tower	42	592
Municipal	33	580
Sherry Netherland	38	570
New York Central	39	567
†Nelson Tower	48	560
Navarre Mercantile	44	555
Equitable Trust Company	42	550
Park Central Hotel	31	550
Equitable	42	542
Bankers Trust	39	540
Downtown Athletic Club	31	531
Transportation	42	520
Bank of New York Trust	32	513
†Continental	43	511
*22 East Fortieth Street	43	506
Hotel Pierre	41	503
*Hotel Equipment	42	498
Chase National Bank	38	496
Lefcourt National	40	490
Benenson	33	487
*McGraw-Hill	35	486
New York Telephone	31	486
*Hampshire House	35	485
Fuller	40	480
†Seville Towers	45	464
International T. & T.	35	455
Lefcourt Colonial	40	454
*444 Madison Avenue	43	453
Harriman	38	452
†19 Rector Street	36	446
*Commerce	35	444
†1410 Broadway	33	444
Hotel New Yorker	43	443
Wall and Hanover	35	440
News	36	439
†1400 Broadway	35	435
Bank of the United States	36	432
Empire Trust	33	430
National City Company	33	430
120 Wall Street	33	430
Bush Terminal	30	430
Fred F. French	38	428
50 Broadway	35	428
Hotel Carlyle	40	426
Barbizon Plaza	40	425
†Maritime Exchange	36	425
†116 John Street	35	425
Adams Express	32	424
Savoy Plaza	33	420
Squibb	34	419
American Express	32	415
Hotel Shelton	34	412
Whitehall	32	408
San Remo	30	400
Graybar	30	400
St. Moritz	36	395
†21 West Street	33	395
530 Seventh Avenue	32	392
Bricken Textile	33	387
Sinclair Oil	33	385
Hotel Delmonico	32	380
Eldorado Apartments	31	380
*501 Madison Avenue	30	378
*New Amsterdam Casualty addition	30	378
Woodstock Tower	32	376
†29 Broadway	30	375
Salmon Tower	33	374
*Majestic Apartments	30	352
Hotel Beverly	30	350
*Apartment project	30	348
Hotel Governor Clinton	31	345
Hotel Lexington	30	336
Hotel Lincoln	30	317

**Under construction.* *†Nearing completion.*

DETROIT ARCHITECTURAL BOWLING LEAGUE NOTES

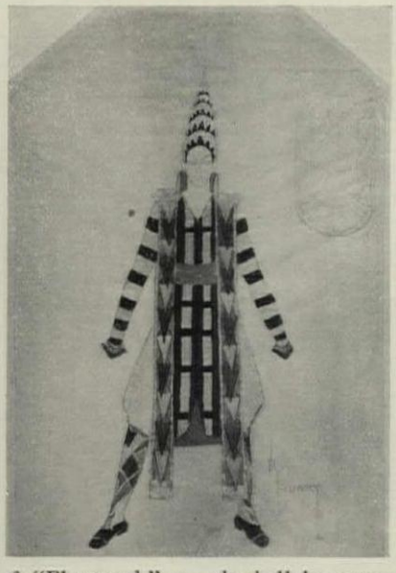
STANDINGS ON Jan. 2, 1931:	W.	L.
Robert O. Derrick, Inc.	30	15
Malcomson & Higginbotham & Trout	30	15
Albert Kahn, Inc.	28	17
Donaldson & Meier	27	18
McGrath & Dohmen	23	22
Hubbard & Wagschall	23	22
Smith, Hinchman & Grylls	21	24
Weston & Ellington	17	28
Louis Kamper, Inc.	16	29
Giffels & Vallet	11	34

Individual High Score—	
1 game—Bradshaw (AK)	268
3 games—N. Krecke (H&W)	688
Team High Score—	
1 game—R. O. Derrick, Inc.	1015
3 games—R. O. Derrick, Inc.	2840
Leading 200 Scorer—Meidell (M&H&T)	15
High Individual Average—Stegkamper (LK)	193

WOMAN'S ARCHITECTURAL CLUB OF CHICAGO

THE WOMAN'S ARCHITECTURAL CLUB of Chicago held its January meeting at the offices of Hamilton, Fellows, and Nedved. Mr. Hamilton exhibited some of his sketches and gave a stereopticon lecture on his recent trip to Europe. There was a very large attendance.

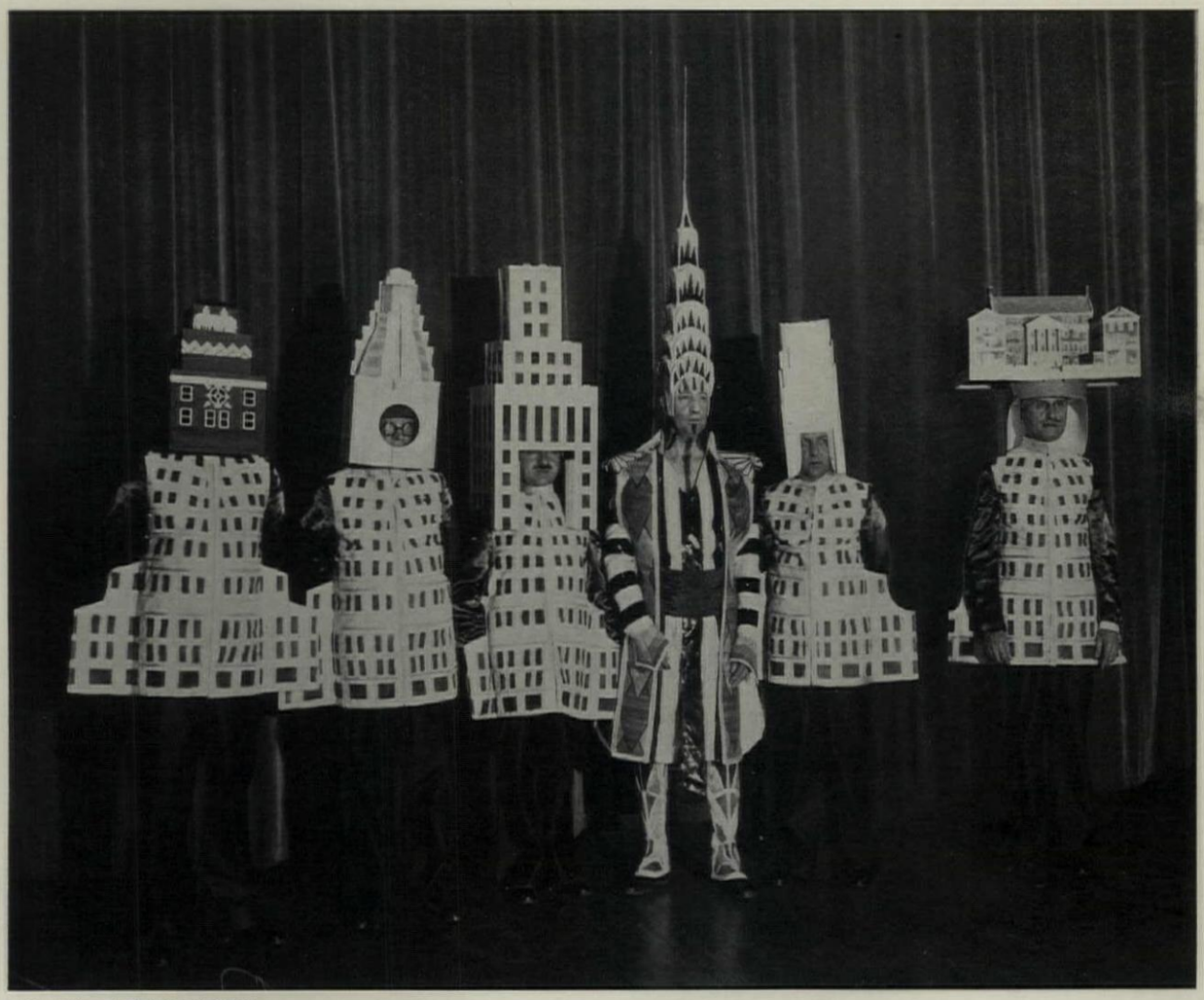
The officers for the new year elected at a recent meeting are: president, Ruth Perkins; vice-president, Aileen Anderson; treasurer, Marion Crissey; secretary, Juliet Peddle.



AT THE RIGHT is reproduced the drawing for the costume worn by William Van Alen at the Beaux-Arts Ball, held at the Hotel Astor, New York, on January 23rd. The entire costume, including the hat, was of silver metal cloth trimmed with black patent leather; the sash and lining were of flame-colored silk. The cape, puttees and cuffs are of flexible wood, the wood having been selected from trees from all over the world (India, Australia, Philippine Islands, South America, Africa, Honduras and North America). These woods were teakwood, Philippine mahogany, Honduras ribbon mahogany, American walnut, African prima vera, South American prima vera, Huya and aspen, maple and ebony, lace wood and Australian silky oak. The costume was made possible by the use of "Flexwood," a wall material of a thin veneer with a fabric backing.

The costume was designed to represent the Chrysler Building, the characteristic features in the composition being carried out by using the exact facsimile of the top of the building as a head piece; the vertical and horizontal lines of the tower were carried out by the patent leather bands running up the front and around the sleeves. The cape embodied the design of the first floor elevator doors, using the same woods as are used in the doors themselves and the front was a replica of the elevator doors of the upper floors of the building. The shoulder ornaments were the eagle's heads which appear at the 61st floor set-back of the building.

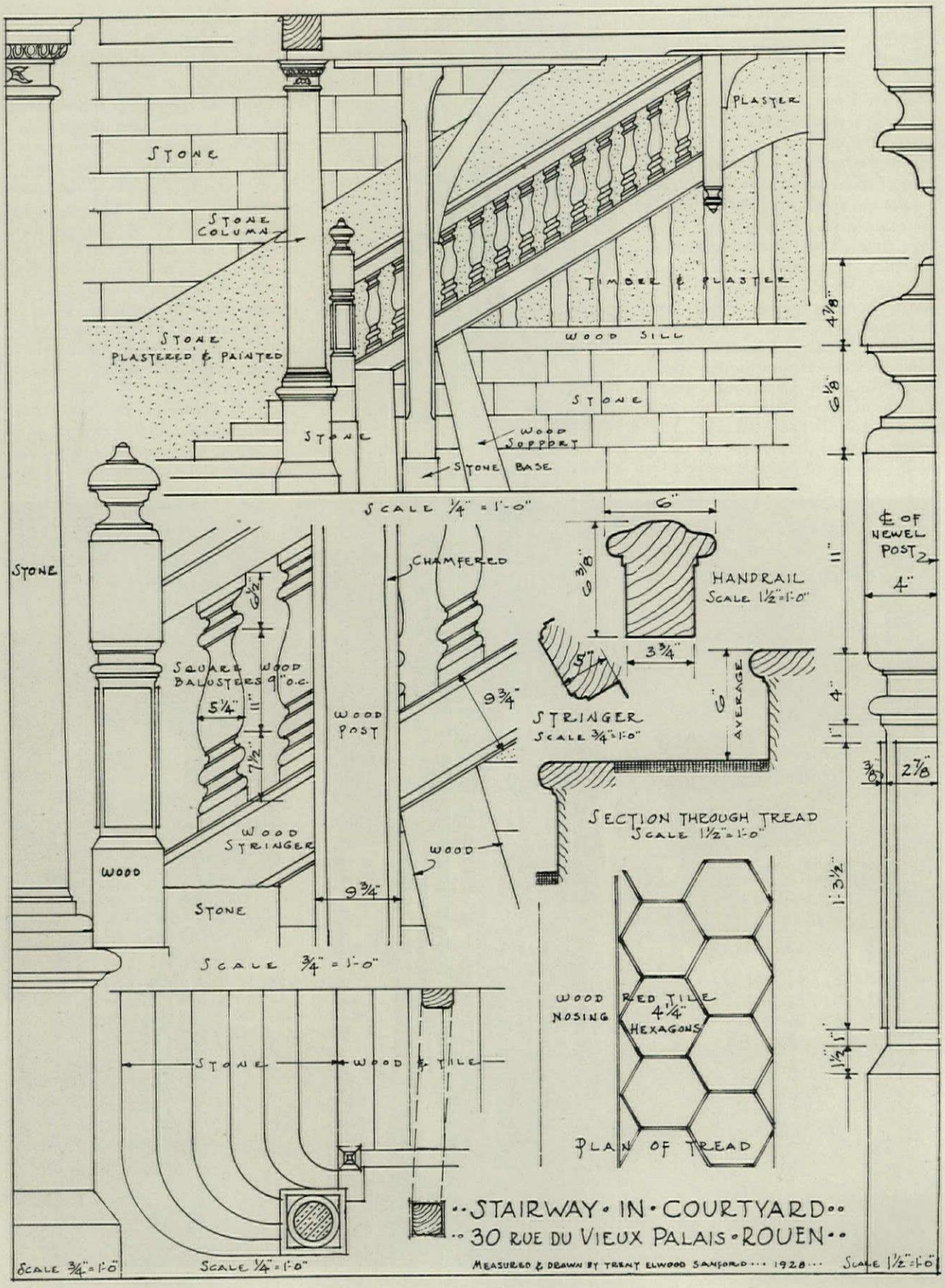
As is shown by the photograph below, a number of architects attended the ball in costumes designed to represent New York skyscrapers, forming a miniature "Skyline of New York."



International Newsreel Photo

ARCHITECTS IN COSTUME FOR THE RECENT BEAUX-ARTS BALL IN NEW YORK

Each costume in this group represents a building designed by the architect wearing it. Left to right: A. Stewart Walker as the Fuller Building; Leonard Schultze as the New Waldorf-Astoria; Ely Jacques Kahn as the Squibb Building; William Van Alen as the Chrysler Building; Ralph T. Walker as the Wall Street Building; and Joseph H. Freedlander as the Museum of the City of New York.



FROM A MEASURED DRAWING BY TRENT ELWOOD SANFORD

ALPHA RHO CHI CONVENTION

THE SIXTEENTH ANNUAL CONVENTION of Alpha Rho Chi, national social architectural fraternity, was held December 30-31, 1930, at the University of Minnesota. The Minnesota chapter had the honor in 1924 of initiating Mr. Cass Gilbert, who holds one of the highest honorary memberships in this fraternity. The Convention approved the final model of the Alpha Rho Chi medal, which is to be offered annually to all recognized schools of architecture in the United States for award in each school to a graduating student chosen by the faculty. The basis of the award is to be leadership, service to his department and school, and professional promise. In offering this medal, the fraternity desires to embody in it some of the ideals of Alpha Rho Chi in such a way that it will become recognized as one of the most respected and coveted honors offered to graduating architectural students. The idea of such an award has been endorsed thoroughly by many professors in schools of architecture. The medal itself will be bronze, the design being especially executed by Merrell Gage, sculptor. The medal will be cast direct from his model, and will be ready about April 1.

COLUMBIA OFFERS NEW COURSE

ARCHITECT'S RELATION TO THE PROMOTION AND FINANCING OF INCOME PRODUCING STRUCTURES

BEGINNING FRIDAY, February 6th, 1931, Columbia University offers a University Extension course of fifteen lectures by Mr. C. H. Lench on the subject noted above.

Among the topics which will be discussed are:

Who conceives the idea of building a modern commercial structure?

What are the motives involved?

What part does the architect play in the early stages of promotion?

What pitfalls beset an architect at this stage?

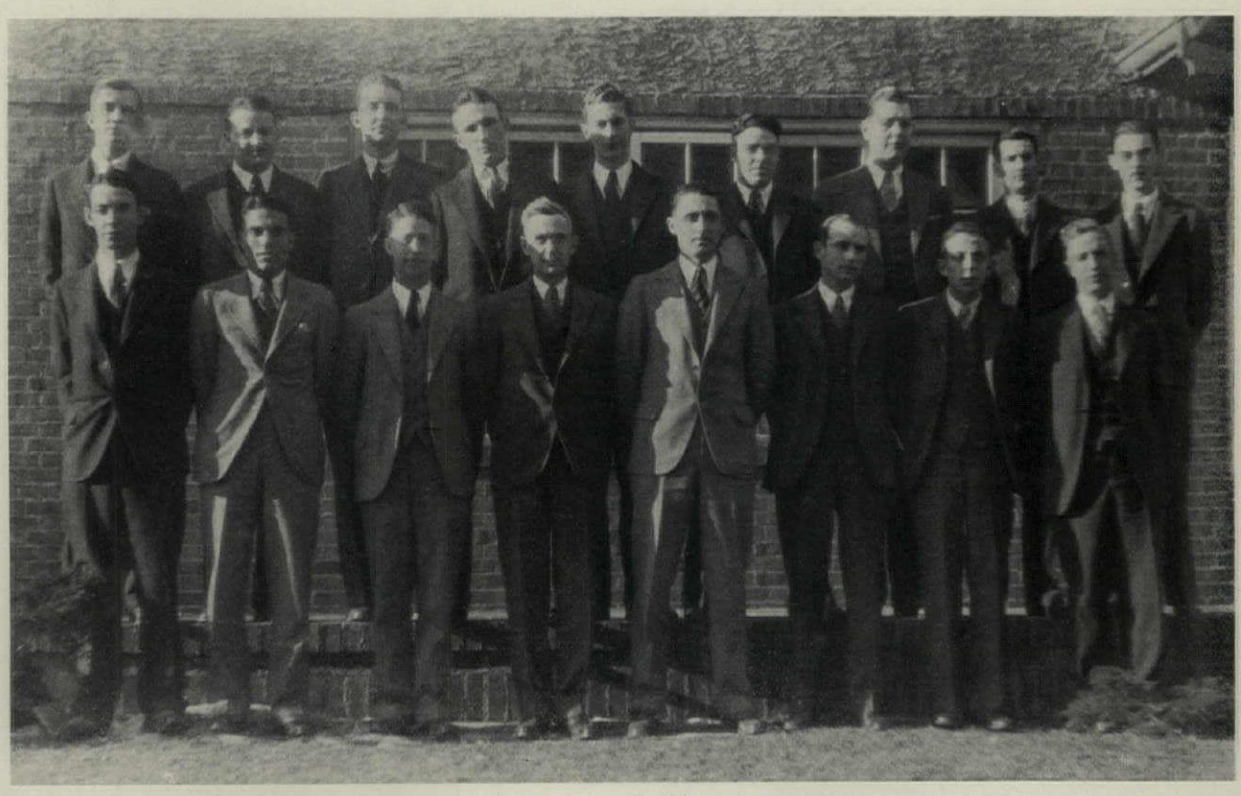
How do realtor and architect cooperate?

What are the most important qualifications of an architect in the field of commercial building?

To what extent should an architect be interested in such problems as:

- The availability of a plot with or without subordination.
- The leasing of a plot with or without permission to mortgage the fee.
- Whether or not clear title to the land can be given by the seller to the purchaser.
- What are the financial problems involved in various types of building operations?
- How is the architect regarded by the various interests involved in a commercial building operation?

These and many other questions will be discussed. Persons desiring to take the course are required to enroll at the office of the Registrar, Room 315, University Hall. Registration began January 29th. The class will meet on Fridays, from 8 to 9:50 P. M. The fee for the course is $20.00, with a University fee of $7.00 in addition. For further details address the Secretary of Columbia University, New York.

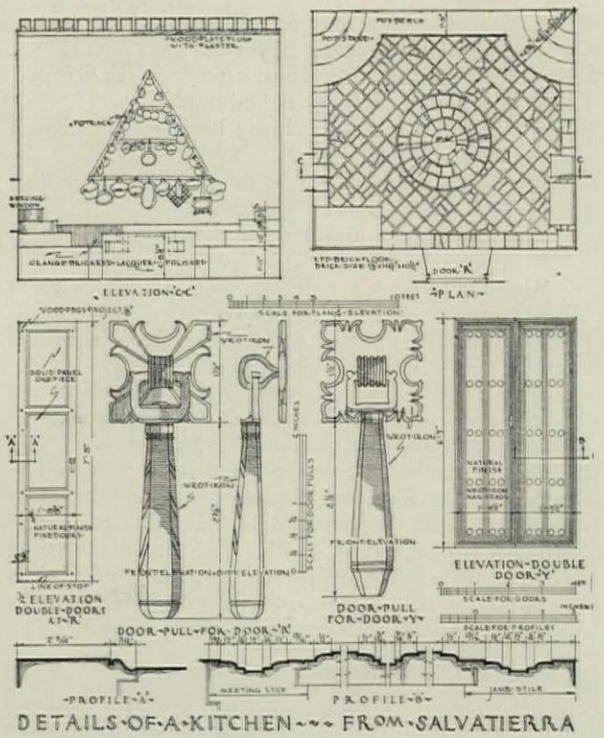


DELEGATES TO THE ANNUAL CONVENTION OF ALPHA RHO CHI, HELD AT UNIVERSITY OF MINNESOTA

FRONT ROW (left to right): *E. C. Chapman, Illinois; E. B. Wilson, Oklahoma A. & M.; V. L. Annis, Grand Council; D. P. Ely, Grand Council; J. M. Ramey, Convention President; E. E. Eggert, National Editor; J. J. Mattern, Virginia; W. M. Wadsworth, Illinois.*

BACK ROW (left to right): *D. G. Ball, Minnesota; F. S. Moorman, Circulation Manager National Publication; T. H. Shive, Southern California; L. F. Zisler, Michigan; C. G. Ossman, Kansas State Agricultural College; L. D. Nichols, Convention Secretary; M. W. Madsen, Minnesota; W. C. Davis, Carnegie Institute of Technology; L. M. Yost, Ohio State.*

THE DRAFTSMAN'S LIBRARY



DETAILS-OF-A-KITCHEN---FROM-SALVATIERRA

From "Mexican Houses."

Mexican Houses, by G. Richard Garrison and George W. Rustay; 173 plate pages, 10¼" x 13½"; price $15.00; published by the Architectural Book Publishing Company, Inc., New York.

This volume is, in addition to being a handsome piece of bookmaking, an extremely valuable reference book on a subject hitherto uncovered in architectural bibliography. The authors knew what they wanted—and got it. Their photographs are excellent and their sketches and detail drawings are beautiful examples of draftsmanship. The whole business is admirably compiled to be informative to the designer doing small and moderate-sized buildings in the Spanish Colonial manner. There is no doubt but that this book will be widely used and that we will see, as a result, many charming pieces of detail repeated or echoed from the past in residences, apartments, and other buildings of the future. It will be especially useful to designers in the south and west where this type of precedent is logical.

Today's Building Estimator, by S. P. Hicks; 96 pages, 5½" x 8½"; price $1.25; published by Wm. T. Comstock Co., New York.

Reviewed by Francis S. Swales

The book is designed to furnish the estimator with a handy reminder for making an estimate of cost of minor buildings. It contains a dozen blank forms to be filled in—so that a complete bill of material may be made, and tabulated estimated costs recorded in its pages for a dozen jobs. The book is printed on writing paper in order that a written record may be made in ink.

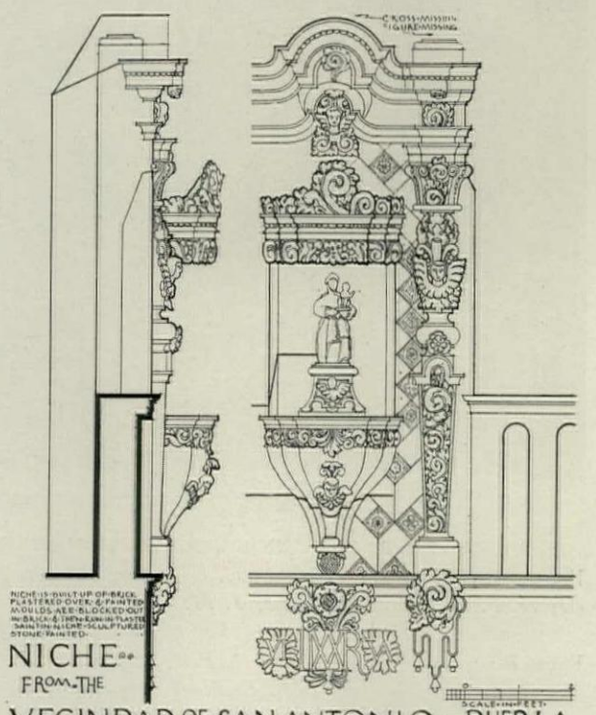
It serves also as a specification reminder. There is a material check list, data on estimating cement work, plastering, stucco, brickwork, chimneys, ready reckoner, timber measure and rafter table, methods of estimating by the square, lineal foot, and piece, giving quantity of material and workman's average time for a given amount of work.

New Building Estimator's Handbook, by William Arthur; fifteenth edition revised and enlarged, 1022 pages, 4½" x 7"; price $6.00; published by the Scientific Book Corporation, New York.

Reviewed by Francis S. Swales

"It has been found necessary to issue another edition of this well known handbook to bring it up to date. Many changes have been made and some new material added. It is prepared for those who construct buildings of 20 stories and less, the men who erect . . . . ordinary buildings. But this covers nearly all the buildings in the United States. The men who erect buildings from 20 to 85 stories do not need such a book as this, they have their own method and great experience," says the author in his preface. The book resembles in appearance, size and makeup, the generally known "Kidder" handbook of construction and makes a useful companion to it for anybody interested in items of cost. To an architect it is especially valuable as a check upon cost of changes, extras, etc., and a ready means of comparing cost of doing work in different ways and with different materials.

The chapters are arranged in the order in which work is executed on the job and therefore along the method adopted by most architects in writing specifications. To the architect who builds and sells completed structures as well as designing the buildings, Mr. Arthur's book is almost indispensable. To the student of construction it adds a



NICHE-FROM-THE VECINDAD-OF-SAN-ANTONIO---PUEBLA

From "Mexican Houses."

useful and practical point of view for it is written by an author who is evidently thoroughly practical in all matters of building.

Personalities in American Art, by W. Francklyn Paris; 112 pages, 5½" x 8"; price $2.00; published by The Architectural Forum, New York.

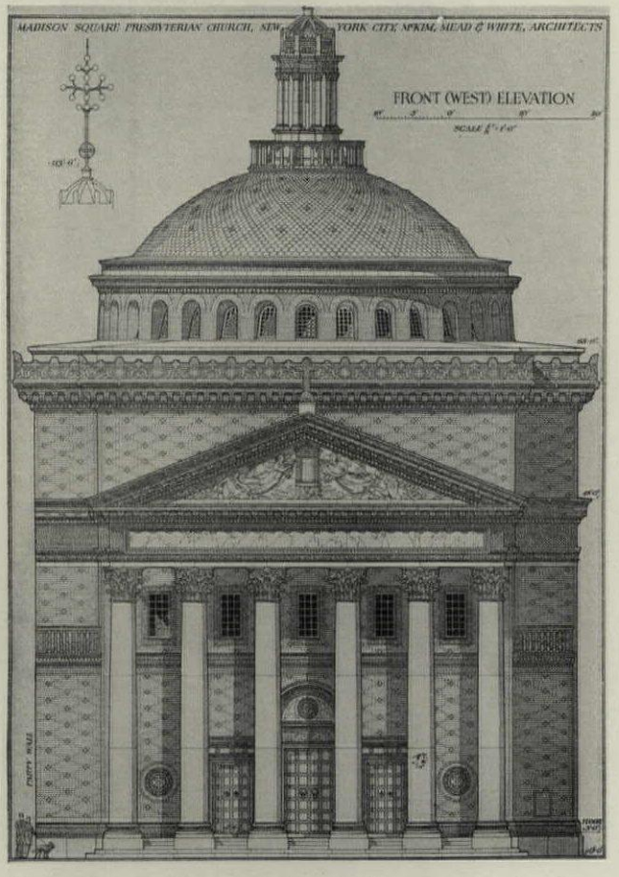
This book is a character study grouping together eight men whose influence upon American art or whose encouragement of American artists entitle them to public esteem and gratitude.

The author, through his initiative as Director of the Hall of Remembrance of New York University, has raised statues to the memory of five of them and it was at the unveiling of these busts that these assembled eulogies were delivered. James McNeill Whistler, Augustus Saint Gaudens, William M. Chase did not need the additional praise conferred in this volume but Clinton Ogilvie, Samuel F. B. Morse, Lloyd Warren, J. Sanford Saltus and Egerton Swartwout, all modest, self-effacing men, might have continued unsung but for the appreciations of their good deeds now published by Mr. Paris.

American painting, sculpture and architecture and the growth of Art education in America form the background of these "lives." An interesting account of the founding of the National Academy of Design and of the Beaux Arts Institute of Design is contained in the sketches on Morse and Lloyd Warren and an interesting light is thrown upon the creation of the Department of Fine Arts of New York University in the Saltus eulogium.

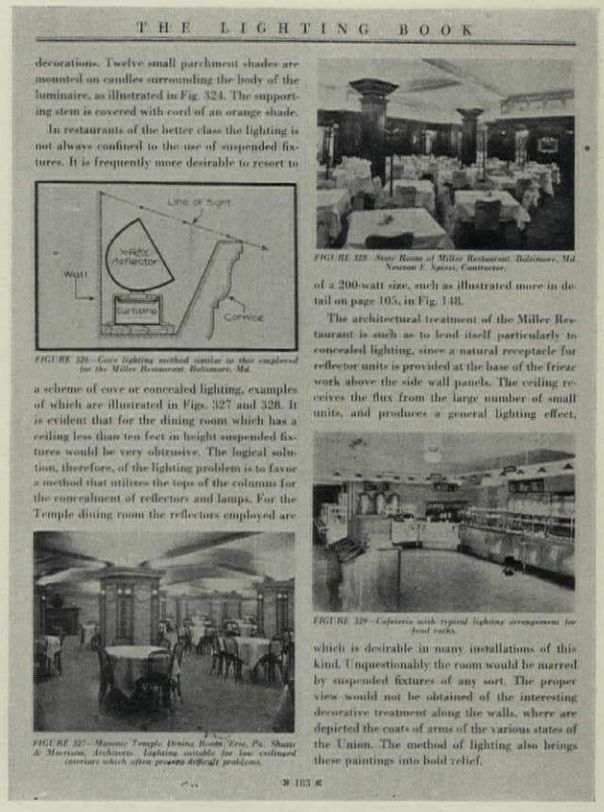
All of the sketches are written with the idea of "rendering unto Caesar the things that are Caesar's" and the author explains that in the case of a majority of the characters he has analyzed this restitution was necessary owing to the tendency of the men involved to hide their light under a bushel.

It is not given to many of us to know as large a group of outstanding personages in art as has been the privilege of the author of this volume, nor are there many who, knowing them, could set down so gracefully and interestingly the qualities making up their personalities. Eight distinguished Americans become for us, in the text of Mr. Paris' book, living human creatures whom we can unqualifiedly admire.



MADISON SQUARE PRESBYTERIAN CHURCH, NEW YORK

From "Masterpieces of Architecture in the United States," by Hoak and Church. Reviewed in November, 1930, issue.



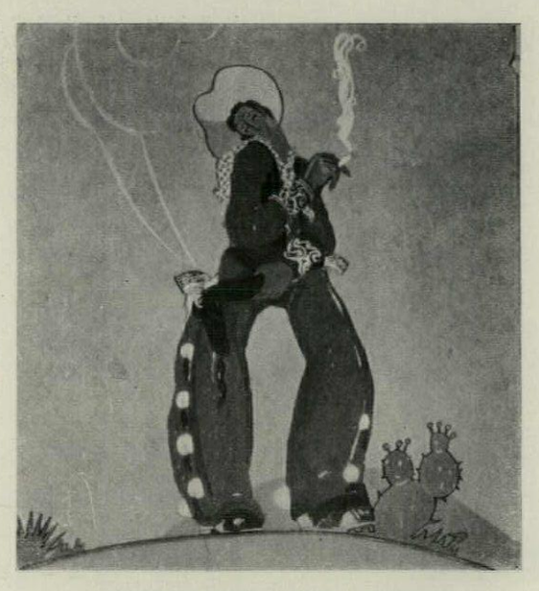
SPECIMEN PAGE

From "The Lighting Book."

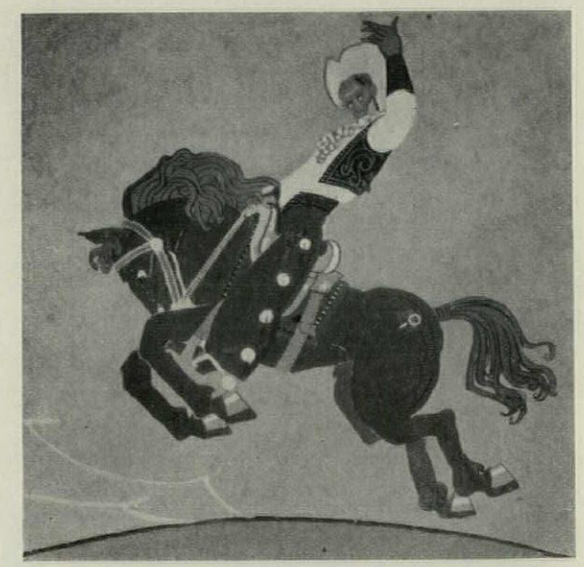
The Lighting Book, by J. L. Stair, 312 pages, 8½" x 11"; published by Curtis Lighting, Inc., Chicago.

Though this book is a publication which might come under the head of manufacturer's literature, it is such an unusually fine volume that it is worthy of being considered as a de luxe item for the architect's library. Several thousand copies have been distributed gratis by its publishers, Curtis Lighting, Inc., to the better architects in the United States, Canada, and other countries. It is beautifully and profusely illustrated and covers "History of the Lighting Art," "The Story of Curtis Lighting," "Engineered Lighting," "Modern Lighting Practice," and "Planning Lighting Systems." Under the head of "Modern Lighting Practice" is taken up the application of scientific lighting methods to both interior and exterior lighting for all types of buildings. The architect or draftsman who has or who can procure a copy of this valuable work will find in it a wealth of technical data and æsthetic inspiration. The publishers are to be highly commended for preparing and giving to the profession such a handsome and useful volume.

A Mexican riding a jackass.

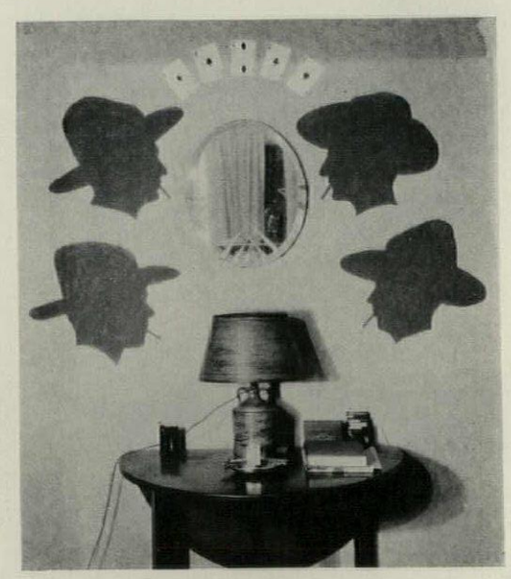


A modernistic Texas cowboy.

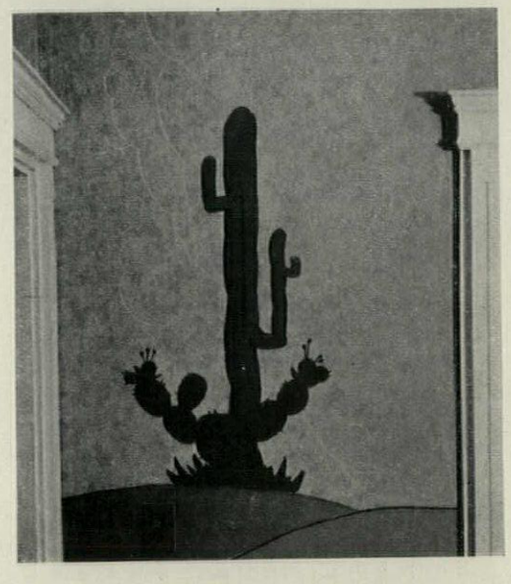


The central motif over the mantel.

One of the three vultures around the central motif.



Silhouettes of Jessen, Southerland, Wofford, and Page.



A Texas cactus.

DECORATIONS IN APARTMENT OF LOUIS SOUTHERLAND, RAY WOFFORD, BUBI JESSEN, AND LOUIS PAGE—TEXANS STUDYING ARCHITECTURE AT M.I.T.

HERE AND THERE AND THIS AND THAT

CONDUCTED BY E.L.C.

This department conducts four competitions each month. A prize of $10.00 is awarded in each class as follows: Class 1, sketches or drawings in any medium; Class 2, poetry; Class 3, cartoons; Class 4, miscellaneous items not coming under the above headings. Everyone is eligible to enter material in any of these four divisions. Good Wrinkle Section: a prize of $10.00 is awarded for any suggestion as to how work in the drafting room may be facilitated. No matter how simple the scheme, if you have found it of help in making your work easier, send it in. Competitions close the fifteenth of each month so that contributions for a forthcoming issue must be received by the twelfth of the month preceding the publication date in order to be eligible for that month's competitions. Material received after the closing date is entered in the following month's competition.
The publishers reserve the right to publish any of the material, other than the prize winners, at any time, unless specifically requested not to do so by the contributor.

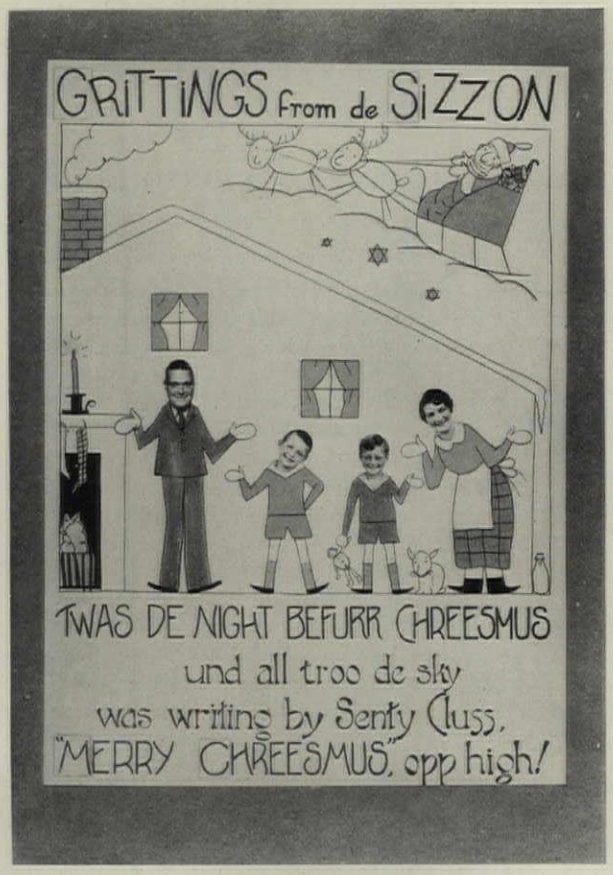
THE PRIZES IN OUR regular monthly competitions have been awarded as follows:

Class I—Paul A. Schmitt, Oakland, California.
Class II—A. C. H., Oakland, California.
Class III—George C. Sponsler, Jr., Philadelphia.
Class IV—J. Wm. Veley, San José, California.

Our Christmas Card Competition was the most successful we have ever had. Over five hundred cards were received from all over the country and we want to thank all those who submitted entries.

Frank Wanier Grenzbach of Hollywood, California, carried off the grand prize of ten dollars for the most original and amusing card. John Y. Roy sent out "specifications" for the holiday season, which are printed on the following page. He has been awarded Honorable Mention and a prize of five dollars.

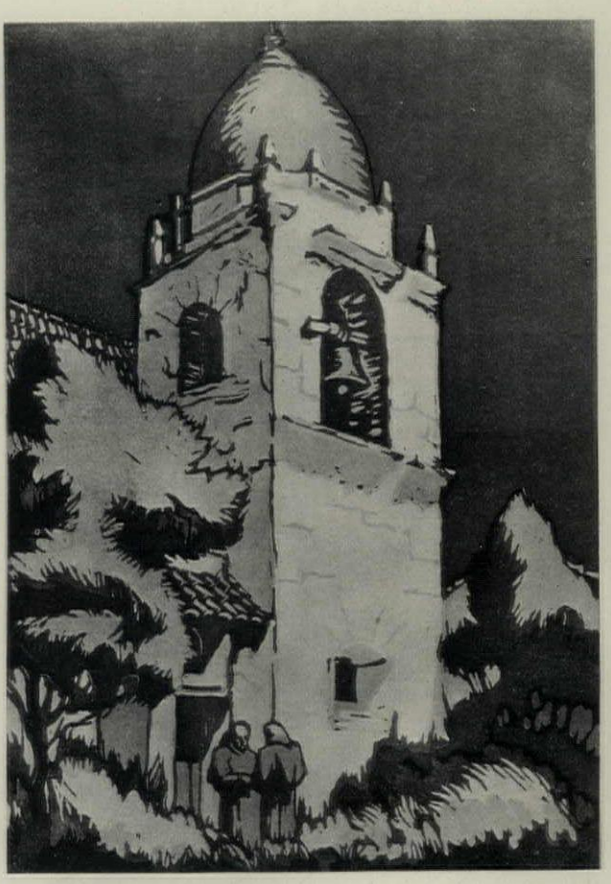
GUY N. CRAWFORD, of Minneapolis, Minnesota, sent us a sticker which is reproduced herewith at the actual size. Mr. Crawford tells us: "This little ray of sunshine is creating a good deal of interest in the building fraternity. We should all get on the band wagon and try to stimulate building by continual hammering at the prospective builder to go into action." These stickers cost $1.00 per hundred; $9 per thousand.



FROM THE FRANK WANIER GRENZBACHS OF HOLLYWOOD, CALIFORNIA

This is a photostat colored with crayon and water color and pasted on a bright red, deckle-edged folder.

(PRIZE—*Christmas Card Competition*)



LINOLEUM BLOCK PRINT BY PAUL A. SCHMITT

This print of the Carmel Mission at San Carlos was printed by hand on an old Washington proof press. The original, in brilliant colors, measures 11¾" x 8½".

(PRIZE—*Class One—January Competition*)

FAITH IN NUMBERS

(PRIZE—*Class Two—January Competition*)

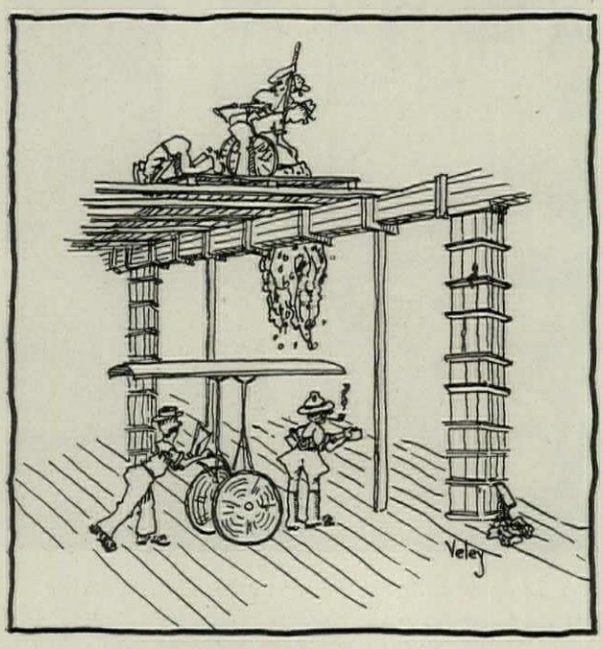
A. C. H. WAS INSPIRED by an item from *The Oakland (Cal.) Tribune* to write this poem.

> Take your pencils, boys and girls, and figure out for yourselves the great era of prosperity that is to come.
>
> The years of recent depressions are: 1903, 1912, 1921 and 1930. Note the digits in each case add to thirteen!
>
> Now, before another such year will appear on the calendar of human affairs it will be 2029.

Let no dejected clan nick
  Your contemplated years;
Suffer no unscheduled pan-ic
  To disturb your dormant fears;
Regard no pessimistic men,
  (Fear no repeated slump)
For you shall never see again
  The business world ker-flump!
    Allay all fears,
    You fretful dears;
    Let building boom and whir:
    Depressions can't again occur
    For ninety-seven years!

Though hectic doldrum "cycle"
  May be again expected,
The young and old alike'll
  Not live to be affected.
In future time the signs decree,—
  But not in yours nor mine:
The digits say the next shall be
  Two Thousand Twenty-Nine.
    Allay all fears,
    You fretful dears;
    Let building boom and whir:
    Depressions can't again occur
    For ninety-seven years!

—A. C. H.



A PORTABLE OVERHEAD STEEL AWNING
(See text at right)

THIS GREETING WAS blue printed on a four-page folder and sent out by John Y. Roy. The name of the individual to whom the card was sent was written in on the cover, which is reproduced at the right. The following specifications were on the inside:

SPECIFICATIONS

General Conditions: It is the intent and purpose of this plan and specification to create a Merry Christmas and a Happy New Year for the party before mentioned and strict accordance with the conditions set forth must be met.

The Receiver reserves the right to accept or reject any or all things which will not tend toward a complete fulfilment of above intent.

Method: Christmas Day must be spent to the best advantage for Receiver's desires and happiness and anything contributing otherwise will be ruled out.

Freedom from worry is expected and hoped for throughout the year.

Christmas Day must be happy—(Yea! Very Merrie). And as for the New Year, the Sender hopes and desires for the above-mentioned Receiver to have all the good things possible in life plus much happiness and contentment.

Finally: In carrying out the above specifications, it must be understood that an A No. 1 Christmas Day and a Happy New Year of the same quality shall be the result. Submitted with sincerity of intent for your speedy acceptance—(I hope).

JOHN Y. ROY.

THE JOB INSPECTOR COMES INTO HIS OWN

By J. Wm. Veley, San José, California

(PRIZE—*Class Four—January Competition*)

A PORTABLE OVERHEAD steel awning (concreteproof), reproduced at the left, is for use of the job inspector when passing under scenes of operations. It is highly advisable to provide protection for Tony, too. (Tony pushes if the concrete crews are Celtic or Nordic. If the crews are Latin, Pat pushes. This arrangement discourages cooperation between the operator and members of the crews.)

Provide Tony or Pat (be sure the operator is able to read) with a copy of PENCIL POINTS. This he may read while the inspector is top-side, and, as a result, he will feel quite professional and somewhat above his brethren. A bond is thus forged between the inspector and the operator, lessening the chances of bribery, etc.

The device may be improvised from a discarded concrete buggy. When not in active use as above prescribed, the steel top, by turning the whole apparatus upside down, may be used for slump tests, quartering of aggregate samples, etc.

Note: Do not give the operator your own copy of PENCIL POINTS, as it will probably not be returned. His interest being aroused, with a consequent yearning for a higher education, by his first perusal, he will unostentatiously transport it to other scenes for further study. Provide him, therefore, with the office copy. It will be sorely missed but, after all, self-preservation, etc., etc., and if a certain amount of care has been exercised, the culprit will not easily be apprehended.

The Committee Seeking Its Home.

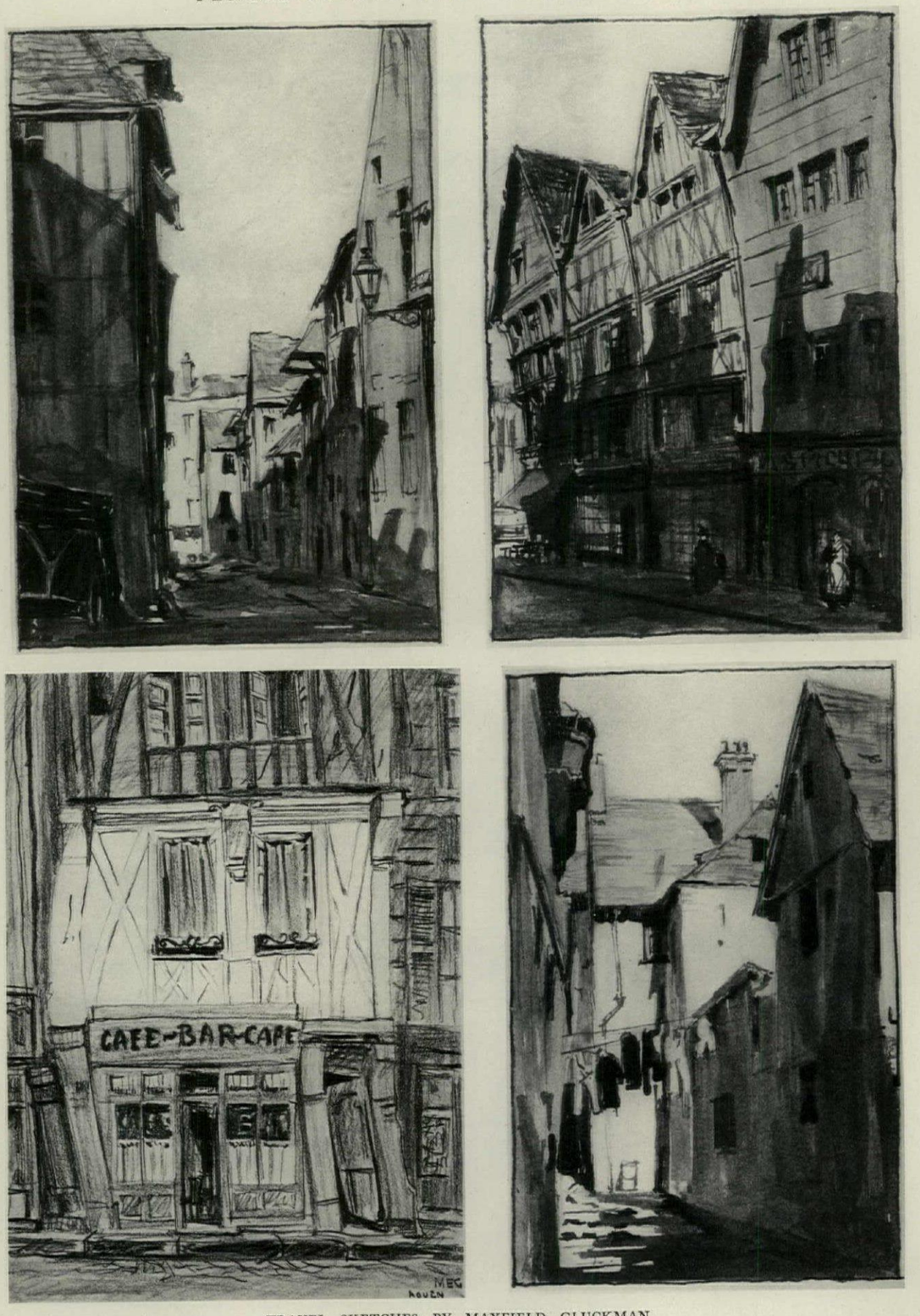
Portrait of an Elusive Client.

Portrait of a Young Draftsman.

OF PARTICULAR INTEREST TO THE PROFESSION AT LARGE ARE THE PORTRAIT STUDIES OF THE ABOVE GENTLEMEN—DRAWN IN LITHOGRAPHIC CRAYON BY GEORGE C. SPONSLER, JR.

(PRIZE—*Class Three—January Competition*)

"And, this, Madam, is the Master's bedroom."



TRAVEL SKETCHES BY MAXFIELD GLUCKMAN

The two sketches above and that at the lower right were made at Lisieux with colored inks and gum lacquer. The drawing at the lower left was made at Rouen with Wolff pencil and crayon.

A RESOLUTION BY THE STATE ASSOCIATION OF CALIFORNIA ARCHITECTS

"WHEREAS The State Association of California Architects realizes that the problem of the architect is no different in this state than it is in every state in the Union. If one state profits by what its Association does it will reflect and be a benefit to other state associations; if one suffers others will suffer likewise.

"And whereas the great majority of architects are unorganized, except as they may be locally or as a state organization, and further, since the general welfare of architects may be bettered by an exchange of views from all sections of the country. Therefore, we believe that the time has come to sound a call to all architects to assemble all such groups or individual architects, who are not identified with The American Institute of Architects, to meet in convention.

"Therefore be it resolved, that The State Association of California Architects undertakes to advise and counsel with all other associations or organizations to consider the feasibility of calling appointed delegates together for the purpose of organizing all such interests and to name a time and place for such a meeting.

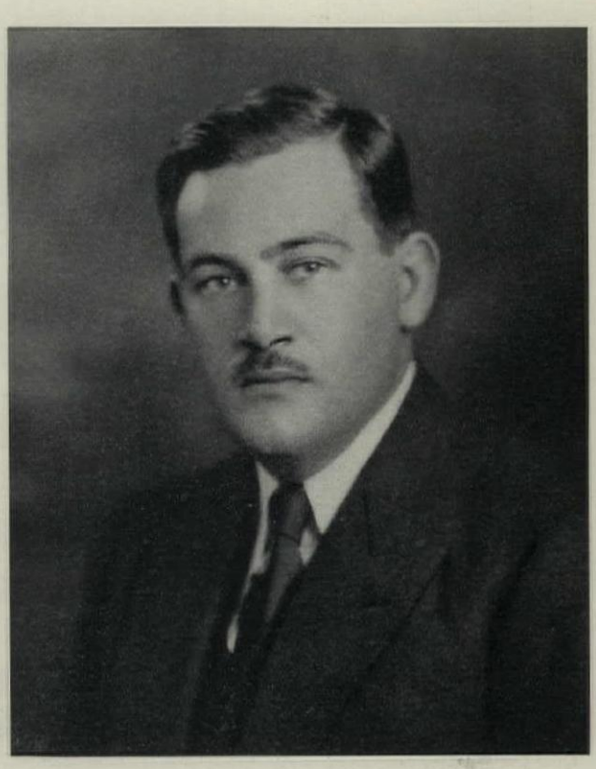
"Be it further resolved, that the purpose of such a meeting or organization shall not be held detrimental to the best interests, high aims and purposes of The American Institute of Architects, but in so far as it is possible it shall fill a subordinate position, assuming a place and sphere of work that remains unorganized as a National group."

A LETTER FROM ROSSEL EDWARD MITCHELL

Many architects familiar with heating problems, and, I dare say, many engineers, will disagree with a statement by D. B. Emerson in the October number of PENCIL POINTS, relative to hot water heating. I refer to the following: "An expansion tank should always be placed above the highest point of the system." Reasons are given for so doing, together with directions for an elaborate method of installation of the expansion tank.

This system has been "passed up" long ago by very many architects and engineers. The modern method is to install an expansion tank in the basement near the boiler, using a "closed system" of hot water heat. There is used in connection with these systems a special pressure relief valve, a pressure reducing valve, and strainer. This whole rig costs only about $15.00. With this system the hot water is put under a pressure of about ten pounds, and the circulation greatly accelerated. Slightly smaller pipes may be used, and distant radiators heat more satisfactorily. The expansion tank receives the excess water due to starting the system in the fall, after months of disuse, and the air in the tank acts as a cushion, permitting the pressure to rise to 10 lbs., when the relief valve opens and discharges a small quantity of water into a small drain pipe provided for the purpose. Thousands of successful installations have been made, in which the expansion tank is omitted altogether.

It is not my purpose to hostilely criticize the otherwise informative article of Mr. Emerson, but to offer this amendment for the benefit of those who may not be familiar with the technique of small heating systems.



MAXFIELD GLUCKMAN

MAXFIELD GLUCKMAN has recently returned from Europe, where he studied last summer as winner of the Walter L. Hopkins Memorial Scholarship to the Fontainebleau School of Fine Arts.

Mr. Gluckman was born in New York in 1903 and had his schooling in that city. He studied architecture at Columbia University and New York University, where he worked under Lloyd Morgan, whose encouragement and helpful advice, in Mr. Gluckman's words, "has been a guiding star in my career." For two years Mr. Gluckman worked in the Atelier under the criticism of Lloyd Morgan. In 1928, while working in this Atelier, Mr. Gluckman was awarded the Emerson Prize.

The drawings shown opposite were done by Mr. Gluckman on his recent trip. During a tour of Normandy, at Lisieux, he discovered a medium in sketching consisting of waterproof ink and gum lacquer. Three of the drawings shown are in this medium.

Over a period of four years Mr. Gluckman has been with the office of W. E. Anthony, and Taussig and Flesch, where he is now employed.

FREE EMPLOYMENT SERVICE

(Other items will be found on page 78, Advertising Section)

CHIEF DRAFTSMAN WANTED: An industrial corporation in the Greater New York territory is seeking a competent man to serve as chief draftsman. Applicants should be familiar with ornamental metal work and should also have the qualifications of a successful executive. Box No. 221, care of PENCIL POINTS.

POSITION WANTED: Plumbing engineer, college graduate, 15 years' drafting experience, 7 years of highly specialized plumbing drafting. Willing to go anywhere. Box No. 218, care of PENCIL POINTS.

POSITION WANTED: Architectural draftsman with executive experience would like position. Box No. 219, care of PENCIL POINTS.

MEMBERS OF THE ORGANIZATION OF PHILIP L. SMALL, INC., ARCHITECTS AND ENGINEERS, CLEVELAND, OHIO

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The Functions of Modern Stucco

By W. D. M. Allan*

The simple mixing and placing of mortars on the exterior of buildings dates back to the day when the primitive builder, governed by the necessity for creating shelter and protection, scraped up mud and plastered it over his dwelling place. In practically every land and in every architectural period stucco has been almost inseparable from building. Prehistoric man, the Indian, Egyptian, Persian, Greek, Roman, Carolingian, and so on, each in his turn, adopted or developed stuccoing materials.

In the hands of these various craftsmen the composition, use, application, and finish of stucco have, of course, varied widely. Specimens found in the ruins of early buildings indicate that the Egyptians used a form of stucco. The Temple of Apollo at Delphi and numerous buildings in ancient Athens, the remains of which have been opened, show that stuccoing was a highly developed art in Greece more than 500 years before the Christian era. Many instances have been found where stucco was used as a ground upon which to paint decorative ornament, but in most cases it was used in large masses to decorate temples and other buildings.

In Rome, judging from existing relics, the art of stuccoing attained its highest state of perfection, as far as the Ancient World was concerned. The Romans used stucco on the first Pantheon. Slabs of stucco which are still in excellent condition have been found in the ruins of Pompeii and Herculaneum. It has been recorded that persons cutting slabs of stucco from some of these ancient structures have been able to use them for tables and mirrors; whether or not this report is strict fact, it attests to the high quality and beautiful finish produced by the ancient plastering craft.

The stucco material used by the Romans was composed largely of a mixture of lime and volcanic ash, the latter being a combination of sand and calcareous materials taken from deposits near the village of Pozzuoli. This Pozzuolana, as it has since been called, has many of the properties of modern Portland cement.

For more than 1,000 years after the fall of the Roman Empire, all relics of stucco work were buried and well nigh forgotten by an indifferent world. During the Middle Ages the art of stuccoing was practically lost. Although stucco during this period was rarely used for direct adornment, it was quite generally used as a protective covering. That its firesafe qualities and sanitary influence were known is shown by the following edict of King John issued in 1212 after fire had destroyed the timber-built London Bridge.

" . . . all shops on the Thames should be plastered . . . within and without. All houses which till now are covered with reed or rush, let them be plastered within eight days and let those which shall not be plastered within that time be demolished by the aldermen and lawful men of the venue (overseers). And let all houses in which brewing or baking is done be plastered within and without, that they be safe from fire."

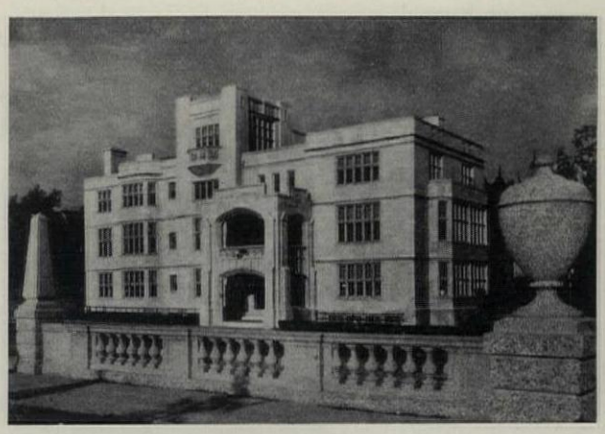
It was not until 1518 that decorative stucco became in vogue again. At that time, Raphael began a series of researches into ancient Roman ruins that resulted in practically a rediscovery of the ancient methods. Schools devoted to the development of the art of stucco were established in several parts of Europe and it was not long until the formerly humble stucco worker was accorded high standing as a skilled craftsman. It is said that the requirements for beautiful and durable stucco work became so rigid that when a flaw developed in a job during the lifetime of the plastering contractor, the penalty was often death, and, after the contractor had passed on, his oldest son frequently was held responsible.

The increasing demand for speed in building construction, however, tended to eliminate much of the old craftsmanship. This trend in recent years has caused the old processes to be discontinued for newer ones calculated to produce quicker results.

Throughout the history of stuccoing, the character of the cementing agent has been largely responsible for the quality of the stucco materials. As has been previously pointed out, the stucco of the Romans was made from a mixture of volcanic ash and lime. The properties of this mixture greatly resembled those of modern Portland cement and produced remarkably lasting results in many instances. However, Pozzuolana was distinctly lacking in uniformity and, hence, could not be depended on for invariably successful results.

While stucco enjoyed rather general usage throughout early building history and was associated with the masters of building materials, it did not come into widespread popularity until after the invention of Portland cement by Joseph Aspdin in 1824. With Portland cement as the cementing agent in stucco, more uniform, dependable and lasting jobs could be obtained. In some ways the quick popularity gained by stucco was detrimental for, coincident with the great public demand for stucco surfaces, came the production of inferior as well as superior

*Manager, Cement Products Bureau, Portland Cement Association, Chicago.



BUILDING ERECTED FOR LEGATION USE, WASHINGTON, D. C.

GEORGE OAKLEY TOTTEN, ARCHITECT

The gray Portland cement stucco exterior has been marked off into blocks, the shades of the blocks having been varied to give the entire structure a stonelike semblance.

materials. Builders tended to use almost any stucco without considering its lasting qualities. This tendency and the fact that, until recently, there were no set standards by which to measure the quality of stucco, account for stucco's paradoxical position as one of the most condemned and one of the most praised of modern building materials. Praise comes from all sections of the country—from localities where extremes of temperatures and weather conditions throw unusual burdens on all building materials as well as from localities where the bright sun ruins colors in all but the best of building materials. On the other hand, in sections where weather conditions are much less severe, stucco is sometimes thoroughly discredited.

Unfortunately the word "stucco," as applied today, is much too vague; this vagueness is one of the principal reasons for the strong partisan views for and against stucco in general. The dictionary is not much help, for its definition states: "In modern building, *stucco* is generally an exterior coating in which cement is largely used." This definition applies alike to the stuccos that have failed and those that are giving admirable service. The American Society for Testing Materials defines stucco as: "A material used in a plastic state which can be troweled to form a hard covering for the exterior walls or other exterior surfaces of any building or structure." About all that this definition does is to differentiate stucco from interior plaster and mortar. Neither of these definitions throws any light on the properties of stuccoing materials or practices that might account for failures or successes.

Obviously, either the materials, the construction methods or both must vary widely to produce such different results in finished stucco jobs. Therefore, it is best to examine first the various stuccoing materials. Stucco mortar for either scratch, brown, or finish coats is composed of aggregate, usually fine sand or crushed stone, water, and cementing material. The grading of the aggregate is essentially the same for all kinds of stucco. The distinguishing property is the nature of the cementing materials, there being several commonly used in modern stucco. These materials have widely different chemical and physical properties and react differently to attack from dilute acids in the air, to alternate wetting and drying, and to freezing and thawing. Moisture probably has the greatest effect on stuccoing materials. It strengthens Portland cement stucco, but usually is actively detrimental to stuccos using other cementing materials.

In view of the fact that the cementing materials react differently, the differences in the permanence of various stuccos can usually be traced to the cementing agent used. This has led to the need for using a prefix designating the type of stucco referred to, as for example, *Portland cement* stucco. Stuccos are manufactured and distributed under various trade names. Frequently the trade name does not indicate the type of stucco; it may even be applied to several different kinds of stucco, thereby producing confusion and misunderstanding.

RESIDENCE OF OWEN MOON, WINSTON-SALEM, N. C.
KARCHER AND SMITH, ARCHITECTS
The Portland cement stucco is executed in an English texture of light gray color.

The physical and chemical characteristics of Portland cement stucco make it the logical material for exterior wall surfacing where durability, permanent beauty and great resistance to weather are required. Portland cement stucco has relatively high early strength, which is a most desirable quality when applied under severe weather conditions. In addition, its strength increases indefinitely with age, thus assuring long life. Weathering has no effect on Portland cement stucco other than to make it stronger and more beautiful. Portland cement stucco can be applied on metal reinforcement without corroding the metal; in fact, it acts as protection for either iron or steel.

From an æsthetic standpoint, Portland cement stucco offers almost unlimited possibilities for achieving textural and colored effects. Its period of plasticity is long enough to permit easy molding and manipulation. And scientific research has established a definite technique for combining mineral pigments with cement in stucco.

There has been and still is a tendency to label many stuccoing materials, which have few of the properties of Portland cement mortars, as "Portland cement" stucco. Therefore the American Concrete Institute has adopted a tentative standard specification governing the physical properties of Portland cement stucco, the essential requirements of which are as follows:

"The minimum average compressive strength of finish coat Portland cement stucco at 28 days of age shall be 2,000 lbs. per sq. in. . . .

"Finish coat Portland cement stucco shall not absorb more than 10 per cent of water. . . .

"If pigments are used, they shall be pure mineral oxides guaranteed by the manufacturer to be of uniform quality and proof against action of lime and sun. . . . "

Reputable manufacturers of true Portland cement stucco regularly have tests made on their product to be sure that it fulfills the requirements of these specifications.

One reason for stucco failures is to be found in the fact that finish coat stucco prepared on the job is often of poor quality. While the principles underlying the preparation, proportioning and mixing of Portland cement stucco are not difficult to grasp, it has been found that a more uniformly high quality of stucco results if the materials come on the job completely mixed ready for the addition of water. Furthermore, finishes involving definite and controlled color effects can be more accurately developed if the materials are prepared in a reputable Portland cement stucco plant under supervision of experts. Accurate measuring and proportioning of materials, machine mixing, grinding of color pigments with cement and similar operations contribute to the success of the job.

Proper use of material in any phase of building is important. In fact, no amount of care in selecting materials will compensate for poor workmanship nor eliminate the necessity for standard construction methods. In stucco this is particularly true. The most reliable manufacturer of correctly formulated stucco cannot guarantee the success of his product on any specific job unless certain require-

(Continued on page 74, Advertising Section)

DESIGN IN MODERN ARCHITECTURE

(Continued from page 106)

country were made in the infancy of that science, before much experimenting had been done, and in general require a high factor of safety. It has been found difficult to change them, even when experts recommend changes, because of a natural fear of the unknown, and because, at times, of propaganda from manufacturers of competing materials.

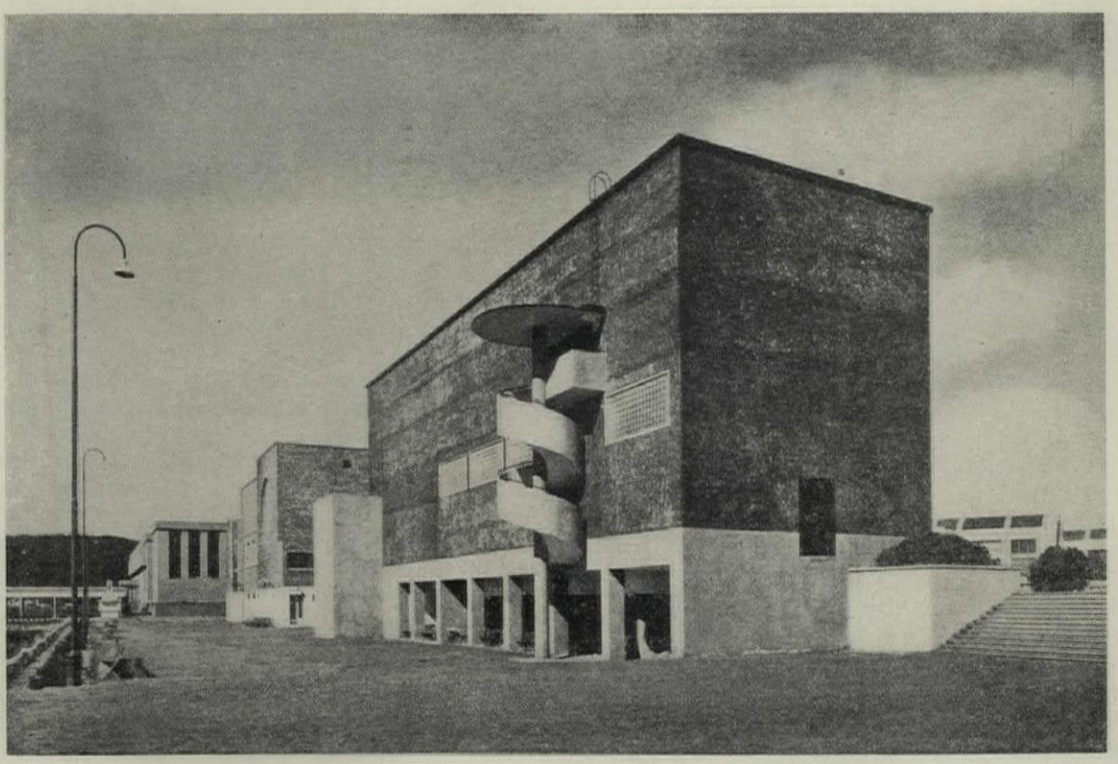
The European designers have not been so checked, and interesting, daring sections have resulted, that have much to do with the appearance of modern work. This work is not reinforced concrete as we know it, but "reinforced cement," the crushed stone or gravel that is the third ingredient of common practice in this country being omitted, leaving sand and cement only.

The planetaria occurring in every German city require a semisphere without interruption, and approximately seventy feet in diameter. In many cases this dome has been made by constructing a network of light steel rods, and coating this inside and outside with a rich mixture of cement and sand, very light forms being all that are necessary, the resulting section being not much over two inches in thickness.

The thin overhanging slab construction and the thin stair sections already mentioned result also from the use of carefully designed and carefully placed reinforcement, and a concrete and sand mixture which also must be carefully placed and tended to until the cement has set securely.

Naturally such concrete would be considerably more costly in this country than one in which broken stone or gravel forms more than half of the bulk; and the necessarily greater care in making formwork needed for such thin sections, and the skill needed in placing such a rich mixture, would be considered as extravagant in cost in this country of high wages for the skilled worker. In Europe, however, with its lower wage scale, the saving in cost of material is sufficient to pay for the expense of the needed labor.

These are reasons why America does not as yet use concrete as the contemporary Europeans use it. But as this country is wealthy compared to those of the old world, as the spending of large sums of money in building is frequently justified because of the advertising value of the method of construction, or the appearance of the finished building, it will not be long before these lighter, more daring, sections of "reinforced cement," already known experimentally in this country, are used on a larger scale and on more important work.



BRÜNN PAVILION AT EXHIBITION CELEBRATING THE CZECHOSLOVAKIAN REPUBLIC.
BOHUSLAV FUCHS, ARCHITECT

Note the thinness of the sections of the stairway of reinforced cement construction and the protective slab above. From "Moderne Bauformen," December, 1928.

SERVICE DEPARTMENTS

THE MART. In this department we will print, free of charge, notices from readers (dealers excepted) having for sale, or desiring to purchase books, drawing instruments, and other property pertaining directly to the profession or business in which most of us are engaged. Such notices will be inserted in one issue only, but there is no limit to the number of different notices pertaining to different things which any subscriber may insert.

PERSONAL NOTICES. Announcements concerning the opening of new offices for the practice of architecture, changes in architectural firms, changes of address and items of personal interest will be printed under this heading free of charge.

FREE EMPLOYMENT SERVICE. In this department we shall continue to print, free of charge, notices from architects or others requiring designers, draftsmen, specification writers, or superintendents, as well as from those seeking similar positions. Such notices will also be posted on the job bulletin board at our main office, which is accessible to all.

SPECIAL NOTICE TO ARCHITECTS LOCATED OUTSIDE OF THE UNITED STATES: Should you be interested in any building material or equipment manufactured in America, we will gladly procure and send, without charge, any information you may desire concerning it.

Notices submitted for publication in these Service Departments must reach us before the fifth of each month if they are to be inserted in the next issue. Address all communications to 419 Fourth Avenue, New York, N. Y.

THE MART

H. N. Dallas, 116 Main Road, Dadar, Bombay, India, would like to obtain all issues of PENCIL POINTS from June, 1920, to January, 1929, inclusive.

Prospero Mundia, 87 Henry Street, Passaic, N. J., has for sale copies of PENCIL POINTS, complete, for the years 1923, 1924, and 1925.

The office library of the late Wheeler Smith, Architect, is for sale in whole or in part. There are about fifty volumes of architectural books and photographs. Communicate with Wm. E. Austin, 46 West 24th Street, New York.

I. Earle Aston, P. O. Box 925, Lancaster, Pa., has the following issues of PENCIL POINTS for sale: Complete year for 1923, 1924, 1925; April to December, inclusive, 1926; January, 1927. Price for the entire lot, $5.00, F. O. B. Lancaster.

Thomas S. Arcuri, 307 East 55th Street, New York, has for sale the following copies of PENCIL POINTS: Complete for the years 1926, 1927, 1928, 1929, and 1930; also several odd numbers previous to 1926. All in almost perfect condition, price 40c. per copy.

R. H. Dana, Jr., 350 Madison Avenue, New York, would like to obtain the following Series of *White Pine Monographs:* Vol. 2, Nos. 1 and 3; Vol. 3, Nos. 1 and 3.

Ides Van der Gracht, 74 East 54th Street, New York, would like to secure the March, 1930, issue of *The Architectural Record.*

John B. Reschke, 301 Atlantic Avenue, Brooklyn, N. Y., has for sale all copies of PENCIL POINTS from June, 1920, to date. Also several years of *The Architectural Record.*

Office to Let. Drafting room, 22′ x 26′, and private office, 9′ x 18′, 4th floor front and side, 19 Arlington Street, Boston, Massachusetts, overlooking the Public Garden. Has been occupied by Landscape Architect and is well adapted to the use of an Architect. Excellent light and air in all points of drafting room. Apply to Wm. H. Punchard, above address.

A. J. Schreiber, 6430 Montour Street, Philadelphia, Pa., would like to have a copy of the November, 1930, issue of *The Architectural Forum.*

PERSONALS

ANDERS & REIMERS, ARCHITECTS AND ENGINEERS, have removed their offices from the Erie Bldg., to 712 Columbia Bldg., Prospect Ave., at East 2nd St., Cleveland, Ohio.

HERMANN SCHOENFELDT, INTERIOR DESIGNER, has opened an office at 180 North Michigan Avenue, Chicago, Illinois, specializing in the design of interiors.

BLACK & BIGELOW, INC., ENGINEERS, 551 Fifth Avenue, New York, have changed their firm name to A. A. Bigelow & Co., Inc. Mr. Archibald Black has resigned as President of the firm, but will continue his association in the capacity of consulting engineer.

JOHN HENRI DEEKEN AND HUBERT MARION GARRIOTT, ARCHITECTS, announce their association under the firm name of John Henri Deeken, A.I.A., Architect, and Hubert Marion Garriott, A.I.A., Associate, with offices at 15 East 8th Street, Cincinnati, Ohio.

JOHN CRAWFORD BYERS AND STUART FRANKLIN EDSON, ARCHITECTS, have formed the partnership of Byers & Edson, with offices in the Graybar Bldg., 420 Lexington Avenue, New York.

EDWARD DOUGHERTY, F.A.I.A., formerly of Dougherty & Gardner, has formed a partnership with Harold C. Wallace, Architect, and Thomas L. Clemmons, Engineer. The new firm name will be Dougherty, Wallace & Clemmons, with offices for the practice of architecture in the Cotton States Life Bldg., Nashville, Tenn.

EPPLE & KAHRS, ARCHITECTS AND ENGINEERS, have moved their offices to the 17th Floor of the American Insurance Bldg., 15 Washington Street, Newark, N. J.

HENRY POWELL HOPKINS AND ALLAN BURTON, ARCHITECTS, have moved their offices from 347 N. Charles Street to 10 East Mulberry St., Baltimore, Md.

FREE EMPLOYMENT SERVICE ITEMS WILL BE FOUND ON PAGE 78, ADVERTISING SECTION

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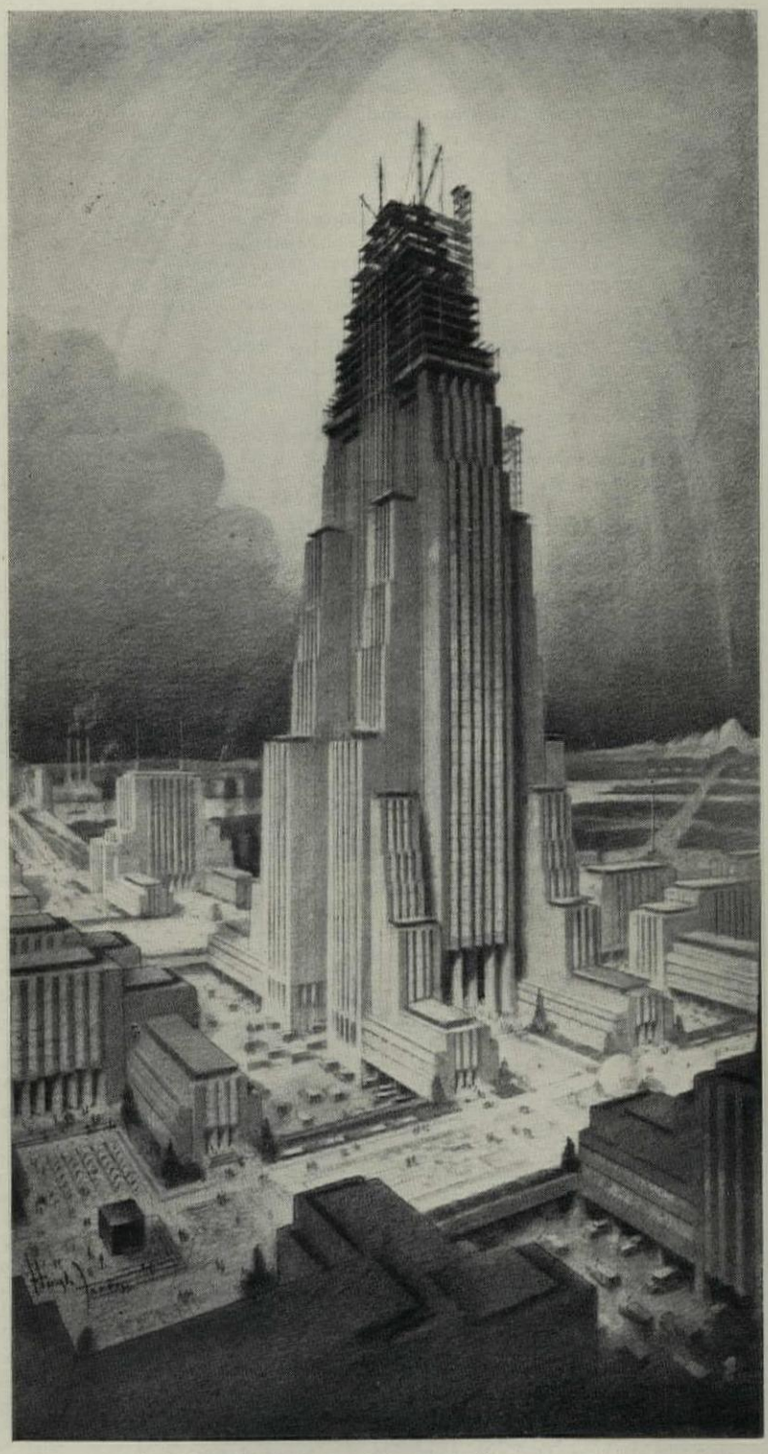

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Publications mentioned here will be sent free unless otherwise noted, upon request, to readers of PENCIL POINTS *by the firm issuing them. When writing for these items please mention* PENCIL POINTS.

Hospital Ward Partitions and Other Equipment.—Handsomely illustrated catalog featuring various types of special screens and partitions for hospital work as well as cabinets, racks, etc. 16 pp. 8½ x 11. The Hart & Hutchinson Co., New Britain, Conn.

Cheney Interlocking Wall Flashing.—A.I.A. File No. 12-h-1. New publication illustrating and describing this type of interlocking wall flashing which does not break the bond. Included are construction photographs showing applications, also complete set of specifications and detail drawings. 16 pp. Standard filing size. The Cheney Co., 959 Main St., Winchester, Mass.

Genuine Ru-Ber-Oid Bonded Built-Up Roofs.—A.I.A. File No. 12-b-1. New document prepared especially for architects and specification writers contains series of detailed specifications covering the application of three types of built-up roofs over board sheathing, poured concrete, steel decks, precast gypsum blocks, book tile and under promenade tile. 16 pp. 8½ x 11. The Ruberoid Co., 95 Madison Ave., New York, N. Y.

Vita Glass.—A.I.A. File No. 26-a-92. New publication with descriptive information and specifications covering this type of improved window glass for offices, homes, apartments, hotels, schools, hospitals, etc. 16 pp. 8½ x 11. Vitaglass Corporation, 100 E. 42nd St., New York, N. Y.

Specifications for ATP Roofs.—A.I.A. File No. 12-b-11. 1931 edition. Valuable reference manual for architects and engineers on the subject of built-up roofs. Contains many new specifications including roofs for automobile parking, roofs over steel decks and insulation, along with other standard built-up roofs (bonded and unbonded). Also specifications for different kinds of flashings and membrane waterproofing. Complete information regarding optional bond plan on flashing and roofs. Blueprint details. 32 pp. 8½ x 11. American Tar Products Co., Koppers Bldg., Pittsburgh, Pa.

Published by the same firm, "The ATP Line." Descriptive folder covering this line of wood preservatives, roofing, flooring, waterproofing and miscellaneous asphalt materials.

The Cryer Thermostatic Radiator Trap.—A.I.A. File No. 30-c-2. Illustrated bulletin describing the operation and mechanical details of a new thermostatic radiator trap for use on all two-pipe steam, vapor or vacuum heating systems. Specifications. 4 pp. 8½ x 11. D.G.C. Trap and Valve Co., Inc., 1 E. 43rd St., New York, N. Y.

The Westfelt Handbook of Acoustics.—Handbook dealing with the sound-treatment of theatres and auditoriums, with special reference to Acoustical Westfelt, a sound-absorbing material. Included are simple methods and rules for determining need for sound treatment, application methods and other useful information on the subject. 24 pp. 7½ x 10⅝. Acoustical Division, Western Felt Works, 4029 Ogden Ave., Chicago, Ill.

New Grille Designs.—An addendum to catalog and handbook No. 28 showing a collection of new designs of perforated metal grilles, accompanied by drawings and tables of opening sizes. 8 pp. 8 x 10¾. The Harrington & King Perforating Co., 5655 Fillmore St., Chicago, Ill.

Burt Fiber Air Filters.—Illustrated folder with detailed descriptive and application data covering a new air filter of the dry unit type for use in industrial plants, theatres, schools and other buildings. Erection diagrams. 4 pp. 8½ x 11. Burt Air Filter Corporation, Akron, Ohio.

Horn's Waterproofings and Floor Treatments.—New catalog presents complete descriptive and specification data covering this line of waterproofing and floor treatment products. Detail drawings, color samples, tables, etc. 26 pp. Standard filing size. A. C. Horn Co., Horn Bldg., Long Island City, N. Y.

Struco Slate Review.—The current issue of this publication contains an interesting collection of illustrated articles on the subject of slate and its application to modern architecture. Included is a brief treatise on the subject of interior window sills written by D. Knickerbocker Boyd. 28 pp. 8½ x 11. The Structural Slate Co., Pen Argyl, Pa.

Smith & Egge Sash Chain.—Catalog A-1 lists and illustrates a full line of sash chain, sash chain fixtures and transom chains. 24 pp. The Smith & Egge Manufacturing Co., Bridgeport, Conn.

Arco Radiator Enclosures.—A.I.A. File No. 30-c-41. Attractive brochure, just issued, illustrates and describes in detail numerous new models of radiator enclosures designed for recessed and concealed radiation in residences, apartment houses, hotels and office buildings. Included are blueprint details and helpful ideas in the actual construction of the recesses for concealed radiation. 24 pp. 8½ x 11. American Radiator Co., 40 W. 40th St., New York, N. Y.

Published by the same firm, "The New Arco Radiator." A.I.A. File No. 30-c-4. Illustrated folder announcing a new radiator that can be recessed, enclosed or semi-enclosed. Tables of ratings and dimensions. 4 pp. 8½ x 11.

Bur-Vett Vertical Lift Steel Doors.—A.I.A. File No. 16-d-13. Attractive publication with complete descriptive and specification data covering this type of steel vertical lift door suitable for industrial buildings, railroad structures, garages, etc. Construction and installation details. 16 pp. 8½ x 11. J. S. Thorn Co., 2009 West Allegheny Avenue, Philadelphia, Pa.

Moderne Store Illumination.—A.I.A. File No. 31-f-14. Catalog No. 160 is devoted to a description of Erikson lighting equipment employing the Kirbylite system of illumination for interiors, show windows and cabinets. Illustrations show numerous designs of modern ceiling luminaires. Specifications, drawings, schedules, etc. 22 pp. 8½ x 11. Erikson Electric Co., 6 Power House St., Boston, Mass.

Published by the same firm, "Show Case Lighting." A.I.A. File No. 31-f-14. Catalog No. 150. Complete descriptive data covering this line of show case reflectors for all types of standard and special show cases. Specifications, installation details. 16 pp. 8½ x 11.

FauceHot Water Heater.—A.I.A. File No. 29-d-2. New document for architects and specification writers describing the construction and operation of this type of self-operating gas water heater. Specifications, roughing-in dimensions, capacities, etc. 14 pp. 8½ x 11. Gas and Electric Heater Co., Utilities Division of Bastian-Morley Co., LaPorte, Ind.

Balmer Bathroom Accessories.—A.I.A. File No. 23-i and 29-i. Looseleaf catalog lists and illustrates a comprehensive line of bathroom accessories, also special equipment for hotels. 34 pp. 8½ x 11. J. H. Balmer Co., 399 Central Ave., Newark, N. J.

Burt Ventilators.—Handbook with useful information for architects and engineers on the ventilation of industrial, public and private buildings together with complete descriptive and specification data covering this line of ventilators. 40 pp. 8½ x 11. The Burt Manufacturing Co., Akron, Ohio.

Carrara Modern Structural Glass.—A.I.A. File No. 22-f. New brochure with helpful data for architects and specification writers covering this kind of structural glass suitable for a wide range of application. Specification and installation data, detail drawings, etc. 12 pp. 8½ x 11. Pittsburgh Plate Glass Co., Grant Bldg., Pittsburgh, Pa.

Buffalo Unit Heaters.—A.I.A. File No. 30-d-2. Catalog No. 469, recently issued, illustrates and describes in detail five different types of unit heaters for industrial installations. Also includes useful data relative to the selection of heaters, steam systems, outline dimensions, etc. 20 pp. 8½ x 11. Buffalo Forge Co., Buffalo, N. Y.

Published by the same firm, "Buffalo Breezo Fans." A.I.A. File No. 30-d-1. Bulletin No. 2321-C contains brief descriptions of the method of ventilating various types of building with this kind of equipment. Data on a home ventilating unit is included. 20 pp.

"Buffalo Home Ventilating Unit." A.I.A. File No. 30-d-1. Architects' file card with installation details and specification data covering two types of residence ventilating units. 8½ x 11.

Pardee Matawan Tiles.—A.I.A. File No. 23-a-3. Looseleaf catalog showing in colors a wide range of Pardee and Matawan tiles suitable for floors, side walls and ceilings for all types of buildings. A valuable collection of color plates, suggestions and other data on the subject of tile treatments. Standard filing size. Pardee Matawan Tile Co., 1600 Walnut St., Philadelphia, Pa.

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Wanted: An architect located in Ohio has an opening for an outside man, preferably one with architectural training or at least engineering knowledge, young, unmarried and with real sales ability to go out and get business. Will be paid a nominal salary plus a percentage of the work brought in and must be satisfied to live in a small town. The right man will have a permanent position with a constantly increasing salary depending on his own efforts. Box No. 200, care of PENCIL POINTS.

Position Wanted: Architectural designer-draftsman with long experience in leading eastern offices. Graduate of an accredited architectural school. Thoroughly competent in plan, perspective, working drawings as well as engineering and supervision. Age 36. Any location considered. Box No. 201, care of PENCIL POINTS.

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Free Lance Work Wanted: Scale models, architectural renderings, perspective layouts. Local or out of town commissions. Rates upon request. Truman Johnson Hemmer, 237 Northampton Street, Buffalo, N. Y.

Position Wanted: Senior architectural draftsman, capable designer, preliminary studies, finished working drawings. Good detailer. Specimens of work and full details upon request. Box No. 202, care of PENCIL POINTS.

Position Wanted: Architectural draftsman, 11 years' experience on industrial plant and residence work, complete working drawings from preliminary sketches. Prefer Middle Atlantic States. Age 36. Married. Box No. 203, care of PENCIL POINTS.

Partner Wanted: Established architect operating in Texas offers an opportunity to an experienced designer and renderer. Applicant must be financially able to carry himself and invest in the business. The work consists of schools and commercial projects. Box No. 204, care of PENCIL POINTS.

Position Wanted: Architect, draftsman, specification writer, superintendent. 46 years of age, 26 years' experience east and west, would like to make connection with office doing good work. Any location. Salary $75.00 a week for permanent connection. Would consider partnership in established office. No investment. Box No. 205, care of PENCIL POINTS.

Wanted: Contact man by long established New York architectural firm with high class practice. College man preferred with first-class social connections. State experience and training. Box No. 206, care of PENCIL POINTS.

Position Wanted: Architectural draftsman, 8 years' experience, capable of making working drawings from sketches and preliminary drawings on commercial, industrial and residential work, also experienced in alteration work. Able to make sketches and carry on drawings to completion. Have general knowledge of office duties and routine. Samples of work if desired. Age 28. Salary $225.00 per month. Location preferred Newark, N. J., and surrounding suburbs, also New York City. Three-year architectural course at Fawcett Art School, four-year architectural course Cooper Union College, special structural course International Correspondence School. Box No. 207, care of PENCIL POINTS.

Position Wanted: Architectural draftsman, graduate of Architectural College of Cornell University, seeks position with architect or contractor. Experience in residential construction, perspective, general drafting and specifications. Prefer New York or vicinity. Box No. 208, care of PENCIL POINTS.

Position Wanted: Architect, designer, draftsman seeks post as executive or contact man, casual or part time considered. General experience and institutional designer. Genial personality. Box No. 209, care of PENCIL POINTS.

Position Wanted: Young man wishes position in architect's office or drafting room. Attending Night School at Newark Technical School. Salary secondary. Nicholas J. Hock, 20 Burnet St., Newark, N. J.

Position Wanted: Architectural draftsman, 7 years' experience in New York on apartment houses, residences, office buildings and hotels. Thorough knowledge of the new multiple dwelling law. Capable of carrying work through to completion including sketches, working drawings and details. Joseph Levin, 1842 Bryant Ave., Bronx, New York City.

Position Wanted: By architect as representative. University education. Fourteen years' experience. Box No. 210, care of PENCIL POINTS.

Position Wanted: Architectural draftsman, 8 years' experience planning, detailing, designing and rendering of apartments, residences, and country houses. Neat worker and capable of making working drawings from sketches to full-size details. Box No. 211, care of PENCIL POINTS.

Position Wanted: Designer-draftsman, thoroughly familiar with all styles and modern architecture. Sketching, designing, detailing, working drawings, perspectives and rendering in all mediums. Box No. 212, care of PENCIL POINTS.

Free Lance Work Wanted: Modern designer, specialist on refined modern interiors. Will furnish sketch designs, renderings or completed job. Walls, backgrounds, lighting effects and furniture, etc. Box No. 213, care of PENCIL POINTS.

Position Wanted: Modern architectural designs of dignity —all phases of the work. Both interior and exterior. Free lance basis or will work direct with you. Box No. 214, care of PENCIL POINTS.

Position Wanted: Junior draftsman desires position in architect's or builder's office. Four years' training. Good at ink or pencil tracings. Willing and competent worker. Salary no object. Arthur N. Jacobs, 3543—89th Street, Jackson Heights, L. I., N. Y.

Position Wanted: Residential designer desires association with established architect. Specialized on residential, school and church work for past 12 years. Can furnish references. Give all details. Box No. 215, care of PENCIL POINTS.

Position Wanted: Landscape architect or planting designer, preferably with a Pittsburgh firm. High School, traveled, experience in commercial art and also interested in such a position. Albert M. Smith, 220 Martin Avenue, Mt. Lebanon, Pittsburgh, Pa.

Position Wanted: Architectural and engineering service —plans and specifications prepared at a special low rate, consulting and advisory service free for the asking. Bernard Kempner, 88 Bay 32nd Street, Brooklyn, N. Y.

Position Wanted: Builder's or general contractor's office or field. Young man 22 years of age of good address, energetic and dependable, desires connection where knowledge and experience can be utilized. Technical school graduate, attended Columbia University, was employed by prominent builder. Compensation secondary to a position where advancement is assured. Box No. 216, care of PENCIL POINTS.

Position Wanted: Young man wants position as junior draftsman or tracer in New York City or vicinity. A. Aaite, 229 Willis Ave., Bronx, N. Y. C.

Position Wanted: Architectural draftsman, 6 years' experience, Technical School graduate, age 24. Alterations, store and office buildings, lofts, etc., steel design. Permanent position. Will locate anywhere. Box No. 217, care of PENCIL POINTS.

Position Wanted: Architect with national experience would like position with some firm as contact man, representative man, or in an executive position. Nineteen years as draftsman, designer, supervisor of construction, specification writer, etc. Will go anywhere. Prefer New England or New York. Box No. 220, care of PENCIL POINTS.

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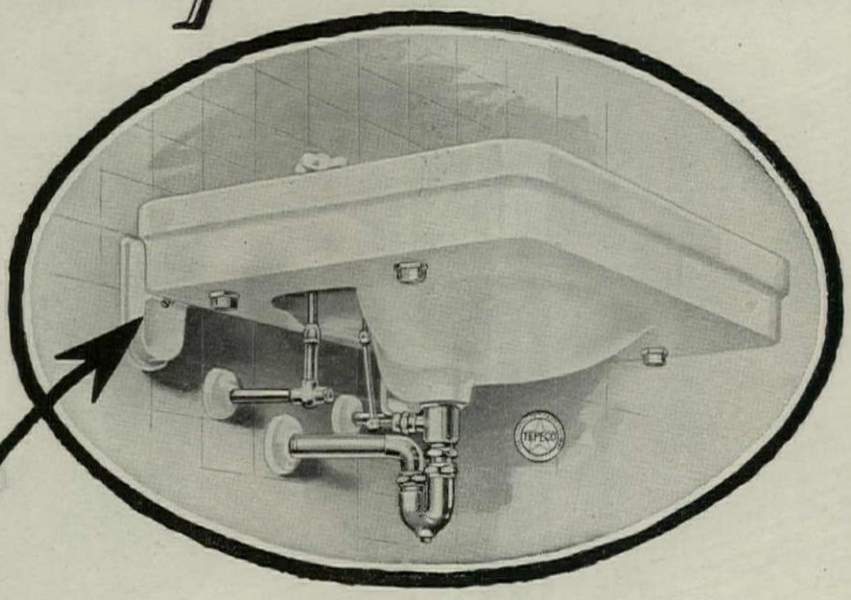

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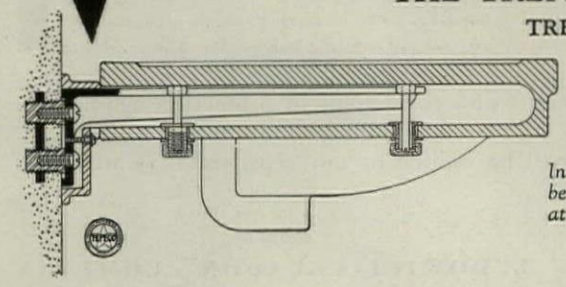

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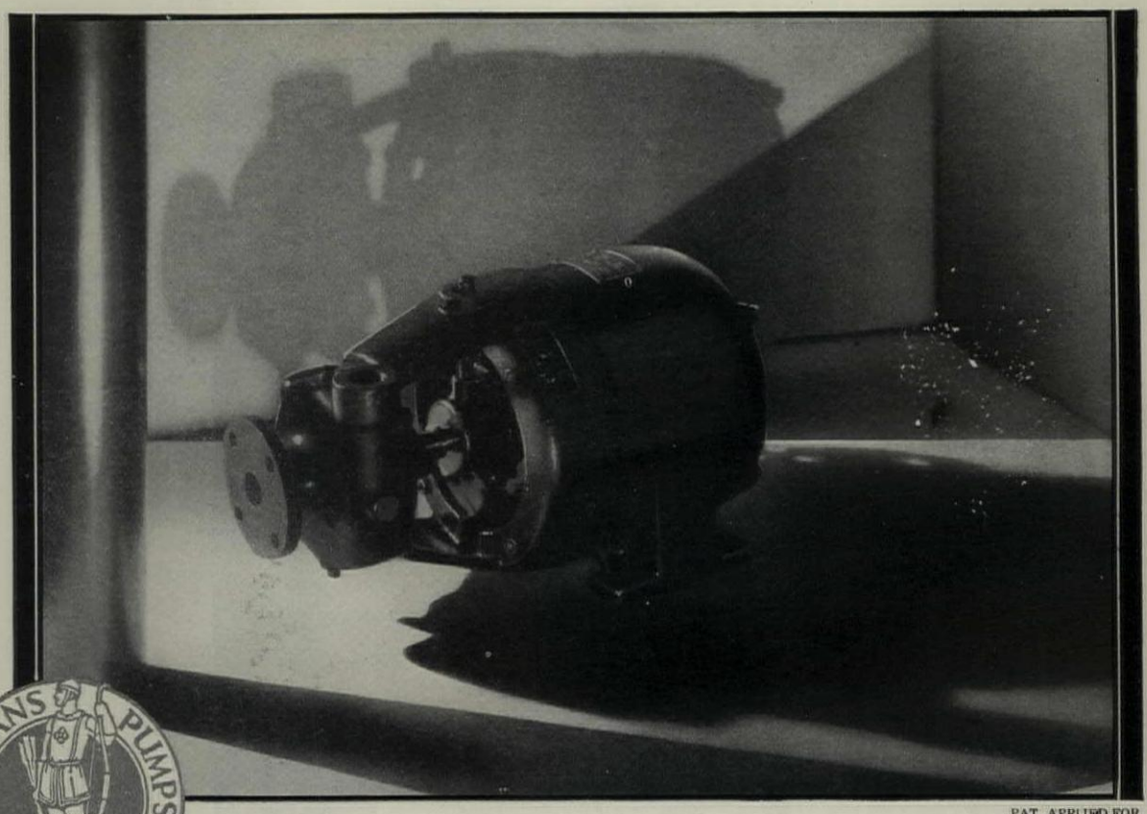
We make but one grade of ware—the best than can be produced—and sell it at reasonable prices. We sell no seconds or culls.

Our ware is guaranteed to be equal in quality and durability to any sanitary ware made in the world.

The Te-pe-co trade mark is found on all goods manufactured by us and is your guarantee that you have received that for which you have paid.



PAT. APPLIED FOR

New standard of service from small centrifugal pumps . . .

COMPACT size, high efficiency and practically foolproof operation have been combined in the design of this small centrifugal pump, the Yeomans "Motopump."

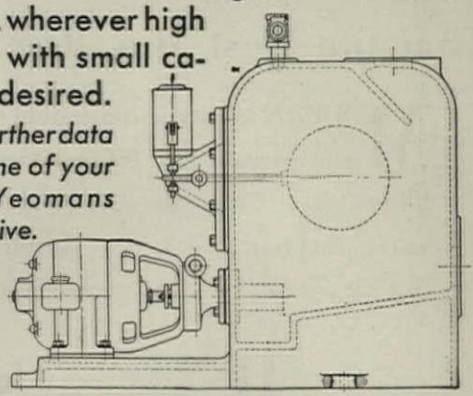
Couplings have been eliminated, saving weight and space and making the unit easily portable. The pump impeller is mounted directly on the motor shaft extension, and is accessible without disturbing pipe connections.

High efficiency is secured by refinements of design, of which the unique enclosed bronze impeller is prominent.

Contributing to foolproof operation are these factors: stainless steel shaft; wide margin of safety in the motor; simple, rugged construction of the entire unit.

These Yeomans Motopump characteristics mean that maintenance costs are kept low and that long life and outstanding dependability are assured. Its capacity (5-30 G.P.M.) fits it ideally for circulating hot water, cold water or brine; for booster service in residences or small buildings; for fountains, pools, etc. wherever high efficiency with small capacity is desired.

Write for further data and the name of your nearest Yeomans representative.

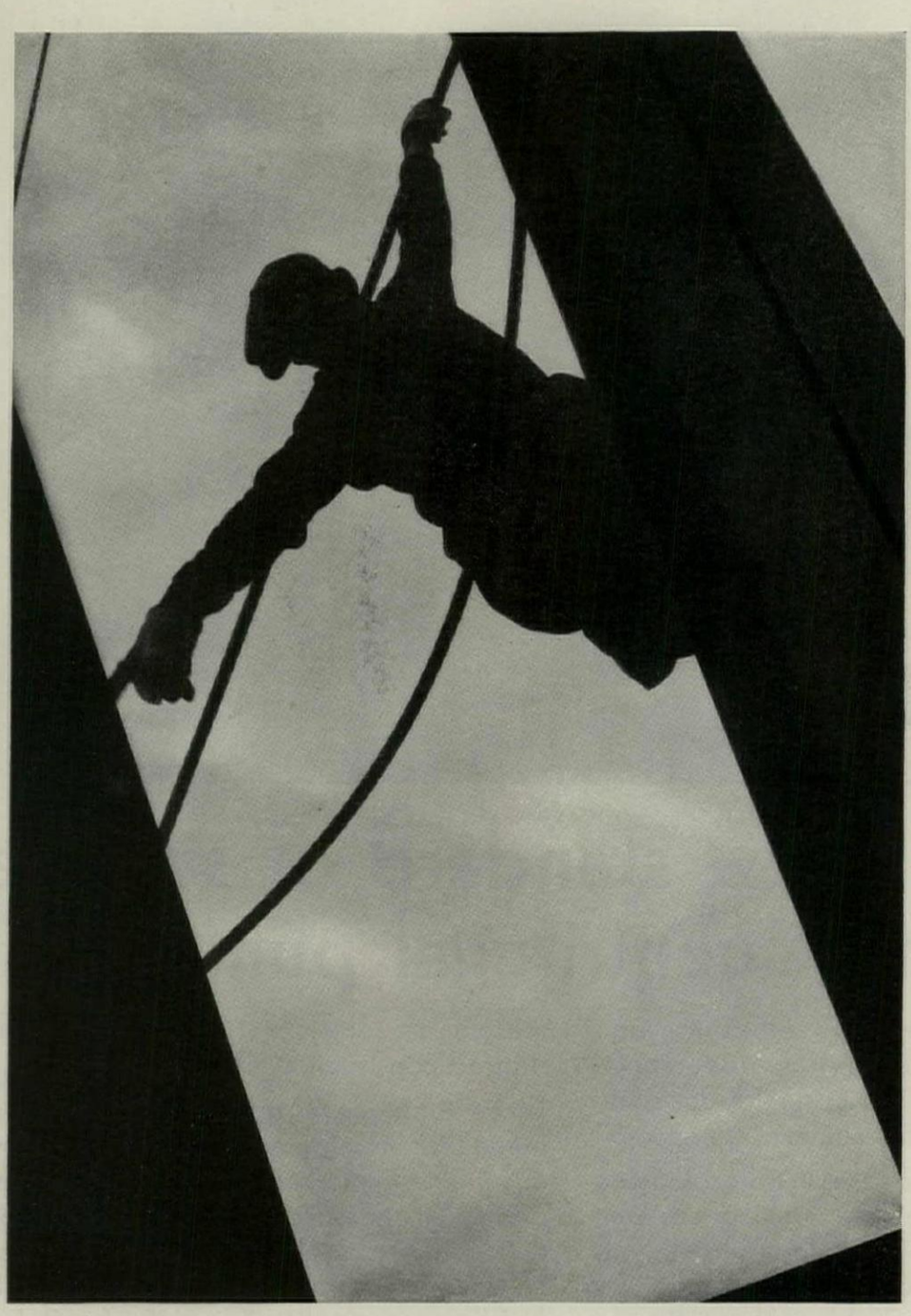


YEOMANS BROTHERS COMPANY
1448 Dayton Street, Chicago, Illinois
Representatives in Principal Cities

Yeomans Pumps
SEWAGE *and* DRAINAGE

Above: The Yeomans Motopump adapted for automatic condensate return service. This unit is self-contained, including **cast iron** *receiver, pump and electrical controls mounted on a base plate cast integrally with the receiver*

P.P. 2-Gray

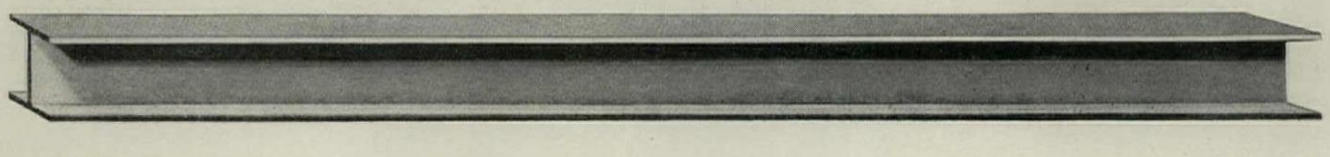


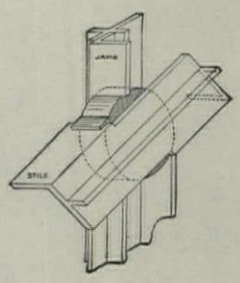
That the West May Rise Against the Skies

MODERN construction builds with Steel for economy, safety and permanence. Now to the builders of the Central West, Illinois Steel Company offers parallel flange C.B. SECTIONS, formerly produced only in Pittsburgh. These sections are now rolled in Chicago in the complete range of sizes.

Illinois Steel Company
SUBSIDIARY OF UNITED STATES STEEL CORPORATION
208 South La Salle Street
Chicago, Illinois

C. B. SECTIONS





A triumph in pivot design

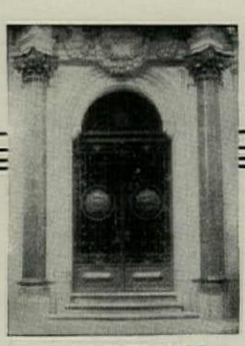
Here is sash that stays sound† Good friend to him who builds well† New† Different† Of genuine wrought iron† It stands alone in effective resistance to progressive corrosion† Brings new low upkeep in meeting railroad, seaboard, packing house and other special conditions† Write for bulletin PP†

WROUGHT IRON SASH

Chicago, Milwaukee, St. Paul and Pacific Railroad Car Shops Milwaukee

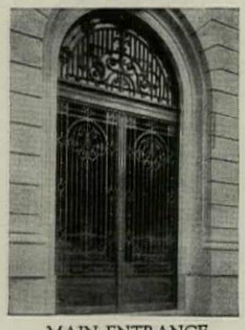
MESKER BROS. IRON CO., ST. LOUIS, MO.
Wrought Iron Window Sash Originators

Mesker



MAIN ENTRANCE
PORTUGUESE BANK BUILDING
Stanley Equipped

MAIN ENTRANCE
CASA PALMARES
Stanley Equipped



MAIN ENTRANCE
SAO PAULO POST OFFICE BUILDING
Stanley Equipped

GATES OF THE LONDON &
RIVER PLATE BANK BUILDING
Stanley Equipped

ENTRANCE DOOR
RAMOS DEAZEVEDO BUILDING
Stanley Equipped

PALACE OF PERMANENT EXPOSITIONS
Stanley Equipped

In Sao Paulo, Brazil

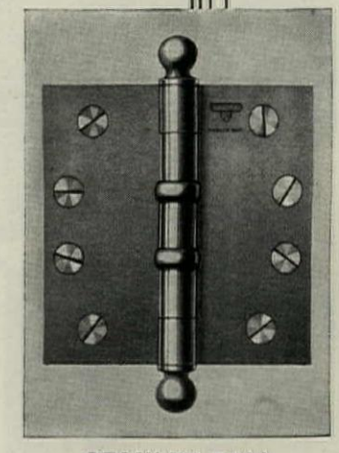
Illustrated here are a few examples of the work of F. P. Ramos DeAzevedo & Co., leading architects of Sao Paulo, each one of which is equipped with Stanley Ball Bearing Hinges.

It is interesting to note that to insure smooth trouble-free operation of doors, Stanley Ball Bearing Hinges are specified by architects the world over.

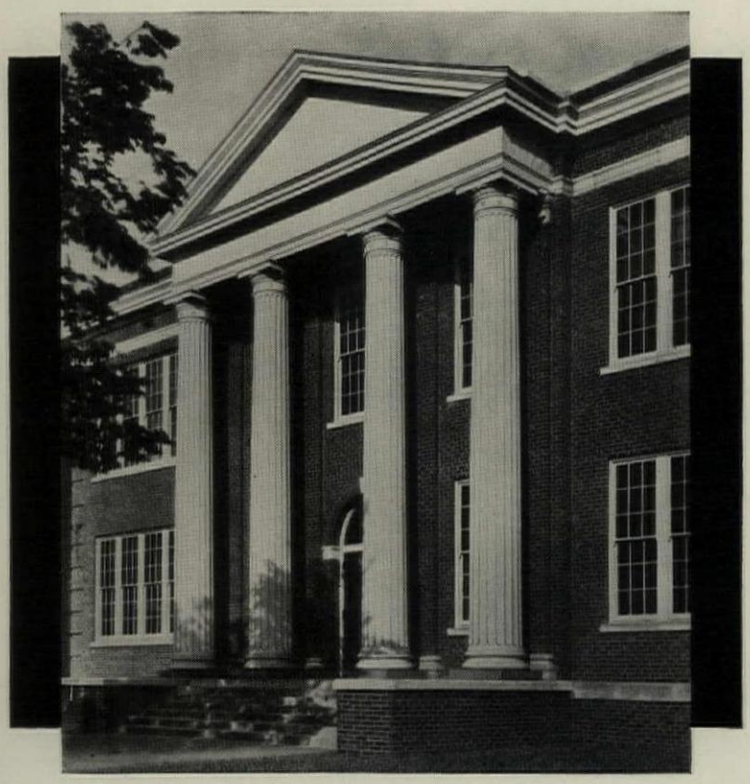
You will find our "Architects Manual of Stanley Hardware" a most useful book in making up hardware specifications. We shall be glad to send you a copy.

THE STANLEY WORKS
New Britain, Conn.

STANLEY
SW



STANLEY BALL
BEARING HINGES



Entrance, East Chattanooga Grammar School, Chattanooga, Tenn.
Roman Doric Union Metal Columns (Design No 224) used.
Architect, R. R. Hunt.

Consider Every Type of Column— Your Choice Will be Union Metal

A CAREFUL comparison of columns on the basis of appearance, original cost and maintenance finds the balance in favor of Union Metal Pressed Steel Construction. ¶ Here are columns carefully modeled after Greek and Roman originals, Columns which appear as beautiful when examined closely as when seen from a distance. Every flute, every detail of ornamentation is sharp and clear. ¶ As for cost, the original investment is approximately the same as that for less durable types of columns. Since no maintenance is required other than a coat of paint at intervals, the cost per year is exceedingly low. ¶ For beauty, economy and permanence, specify pressed steel columns as manufactured by Union Metal. ¶ Write today for catalog 50-D.

THE UNION METAL MANUFACTURING COMPANY
GENERAL OFFICES AND FACTORY ◆ ◆ ◆ CANTON, OHIO
SALES OFFICES: New York, Chicago, Boston, Los Angeles, San Francisco, Seattle, Dallas, Atlanta. Representatives throughout the United States

UNION METAL COLUMNS

"THEY LAST A LIFETIME"

Did this ever happen to you?

Ah! an obsolete type masquerading as a sanitary fountain—water falls back on bubbler—dangerously unsanitary!

THIS . .

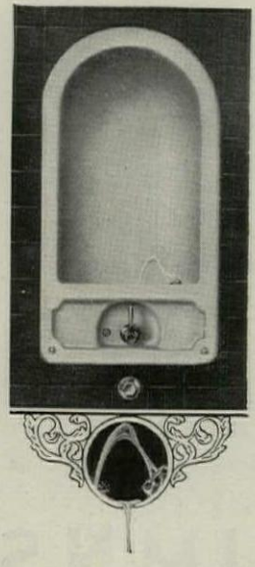
Right in the eye! He wanted a drink —not a shower. This happens so often because the stream is not controlled. Inconvenient—annoying!

OR THIS . . .

More fun! Children like to play— especially with a fountain that is easy to tamper with! Messy—destructive!

OR EVEN THIS . .

Where's the water? And they call it a fountain! Disgusting—provoking!



So many things happen with the average fountain because of faulty design that no page advertisement can feature them all. But architects and builders, who specify and use them, know that Halsey Taylor Drinking Fountains have none of these objections. Distinctive two-stream projector means a drinking mound always hygienic and convenient to drink from without lips touching source of supply. ¶ Automatic stream control is another patented safeguard, water being uniform in height regardless of pressure variation, and the non-squirting feature is of special appeal in school installations. See 1931 Sweets for our complete catalogue . . . The Halsey W. Taylor Company, Warren, Ohio.

HALSEY TAYLOR

Drinking Fountains

1

THE SPECIFICATION FOR SANITATION

Fenestra

. . . . . the *ONLY* steel casements operated *THROUGH* inside screens without touching them

Ordinary windows warp and stick . . .

Fenestra Screened Casements are COMPLETE windows, with frame, swing leaves, hardware and screen, all fitted, hinged, assembled and painted.

Permanent, non-warping, metal-to-metal contact between flat screen frame and flat window frame makes these windows fly-tight and insect-proof.

Locking handle attached to the frame and sill operator attached to the swing leaf both extend through the screen and obviate the necessity for leaning out.

Only the actual ventilating portion of the window is screened, thus saving considerable expense and leaving glass in side lights and fixed transoms clear.

Practically invisible, screens may be left in place the year round, or may be removed quickly and easily.

Fenestra screening is by no means the only Fenestra advantage. Others are: more daylight, better control of ventilation, rolled steel members that do not warp or stick, outside washing from within, easy opening, weathertight closing, attractive hardware in either solid bronze or nickel silver.

And these better steel windows cost little if any more than ordinary windows.

DETROIT STEEL PRODUCTS COMPANY
2286 East Grand Boulevard Detroit, Mich.
Factories at Detroit, Mich., and Oakland, Calif.

Fenestra

America's Oldest and Largest Manufacturer of Steel Windows

STEEL CASEMENTS SCREENED

"DELPHI" PATTERN
SEALEX VELTONE

A new idea in resilient floors

A new idea—and a modern idea. One of the most interesting of present day tendencies is to let rich materials speak for themselves. Stone without carvings. Wood without inlays.

Our new Veltone Marbles in Sealex Linoleum (illustrated on this and the following page) are in step with this trend. Here is a floor utterly without pattern or tricky ornamentation. A floor that relies solely on the inherent beauty of its splendid marble color effects.

Each roll of Veltone is like one huge unbroken block of marble. There are no tiles, no mortar lines, no repeats of any kind. Without interruption, the gorgeous colors flow on and on, mingle, melt into one another, disappear and reappear. Only in Sealex Linoleums would you find such a floor . . .

Continued on next page

Continued from preceding page

because only the makers of Sealex Linoleums have mastered the art of producing marblings which in beauty and realism stand alone.

We are confident that architects will see great possibilities in Veltone. A luxuriously beautiful, yet thoroughly practical, material for the business or institutional interior. A fine floor for the smart shop or restaurant. A richly decorative element to help individualize the entrance hall, dining room or living room in the home.

Among the many other innovations Congoleum-Nairn is offering this year are Sealex Linsignia. The "Ancient Galley" illustrated below is an interesting example of how readily even fairly intricate designs may be executed in Sealex Linoleum. These insets, either designed by architects or specially designed by us under the supervision of architects, are cut at our factory and shipped to the contractor, ready to install in any Sealex floor.

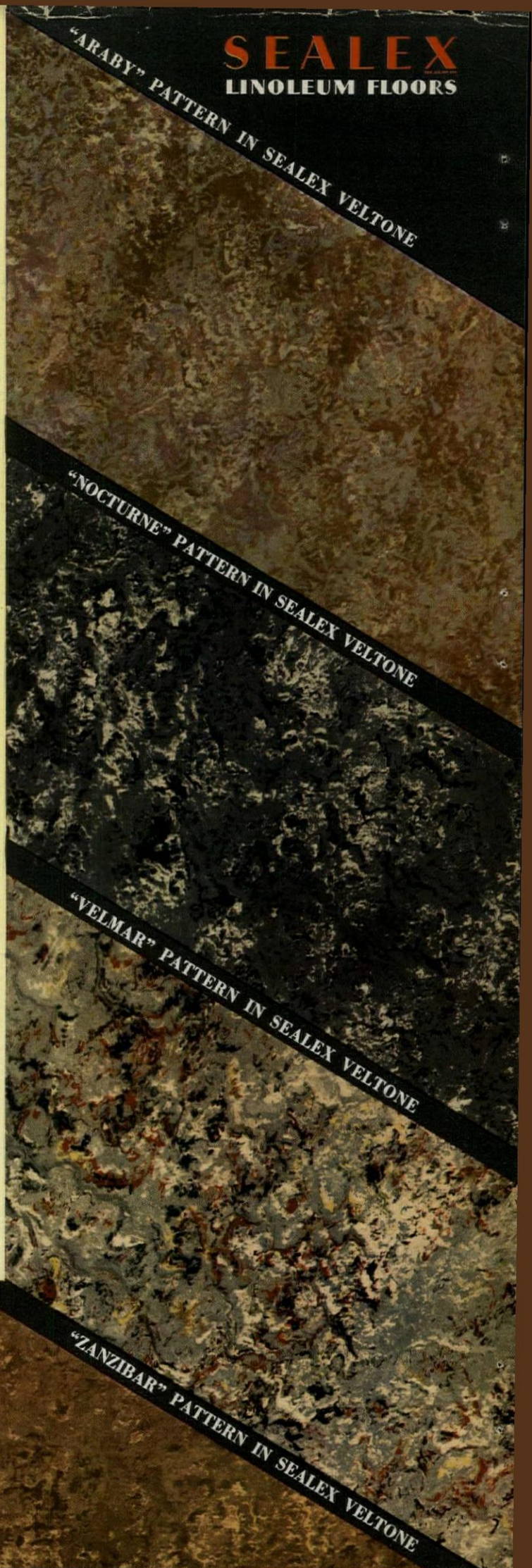
If you wish to see samples or desire further information on Veltone, Linsignia and other beautiful modern effects in Sealex flooring materials, please address our Architectural Service Department.

CONGOLEUM-NAIRN INC.
KEARNY · NEW JERSEY

• • •

BONDED FLOORS are floors of Sealex Linoleum and Sealex Treadlite Tile backed by a Guaranty Bond issued by U. S. Fidelity & Guaranty Co. They are installed by Authorized Contractors located in principal cities

SEALEX
LINOLEUM FLOORS



SEALEX LINOLEUM
Stain-proof · Easily Cleaned
SATISFACTION GUARANTEED OR YOUR MONEY BACK

DURING 1931 EBERHARD FABER OFFERS

$1200.00 in Prizes

In case of a tie each of the tying contestants will receive the full amount of the prize tied for.

Two Prizes Every Month by the makers of the MONGOL Colored Pencil . . . $50 for a sketch . . . $50 for a suggestion.

Lead exceptionally strong and thin . . . takes a needle point in a pencil sharpener — guaranteed not to break in normal use . . . and you can paint with it!

ENTHUSIASTIC users started it. Wrote us in praise of this new pencil. Exclaimed over its toughness . . . the fine point it takes . . . the charming water-color effects it gives. They sent specimens of work; suggestions for new uses.

Now we're offering prizes to the thousands who use the Mongol Colored Pencil.

No elaborate rules, no red tape. And to give *everyone* a chance to compete, we'll accept entries from users of any colored pencil. Every month two awards of $50 each. One for a *sketch*. One for a *suggestion*. Artistic skill not necessary. We want new and novel uses.

The *sketch* may represent any branch of the fine or technical arts. Drawing, plan, diagram, portrait, landscape . . . Just so long as it illustrates a new and interesting use.

The *suggestion* may indicate a use in business, industry, engineering, the technical or fine arts . . . Any work or study in which this pencil is used in a new way. Send suggestions by letter (pen, pencil or typewritten.)

Contests close at our office, five o'clock on the last working day of each month. (Material received too late for the current month will be entered in the following month's contest.)

A folder, describing some of the uses already developed for the amazing Mongol Colored Pencil, is waiting at your dealer's. Or mail the coupon.

EBERHARD FABER

The famous black Mongol is made in five degrees, very soft to very hard. Look for the black tip with the gold band.

EBERHARD FABER PENCIL CO.
Dept. PP 31-2, 37 Greenpoint Ave., Brooklyn, N. Y.

Please send me the folder describing uses for the Mongol Colored Pencil. (I am not a user of the Mongol Colored Pencil, but would like to try it. Enclosed is (.....) 10c for a sample pencil; (.. .....) $1 for a dozen in 12 assorted colors.)

Name .....

Address ..... City ..... State .....

Dealer's Name .....

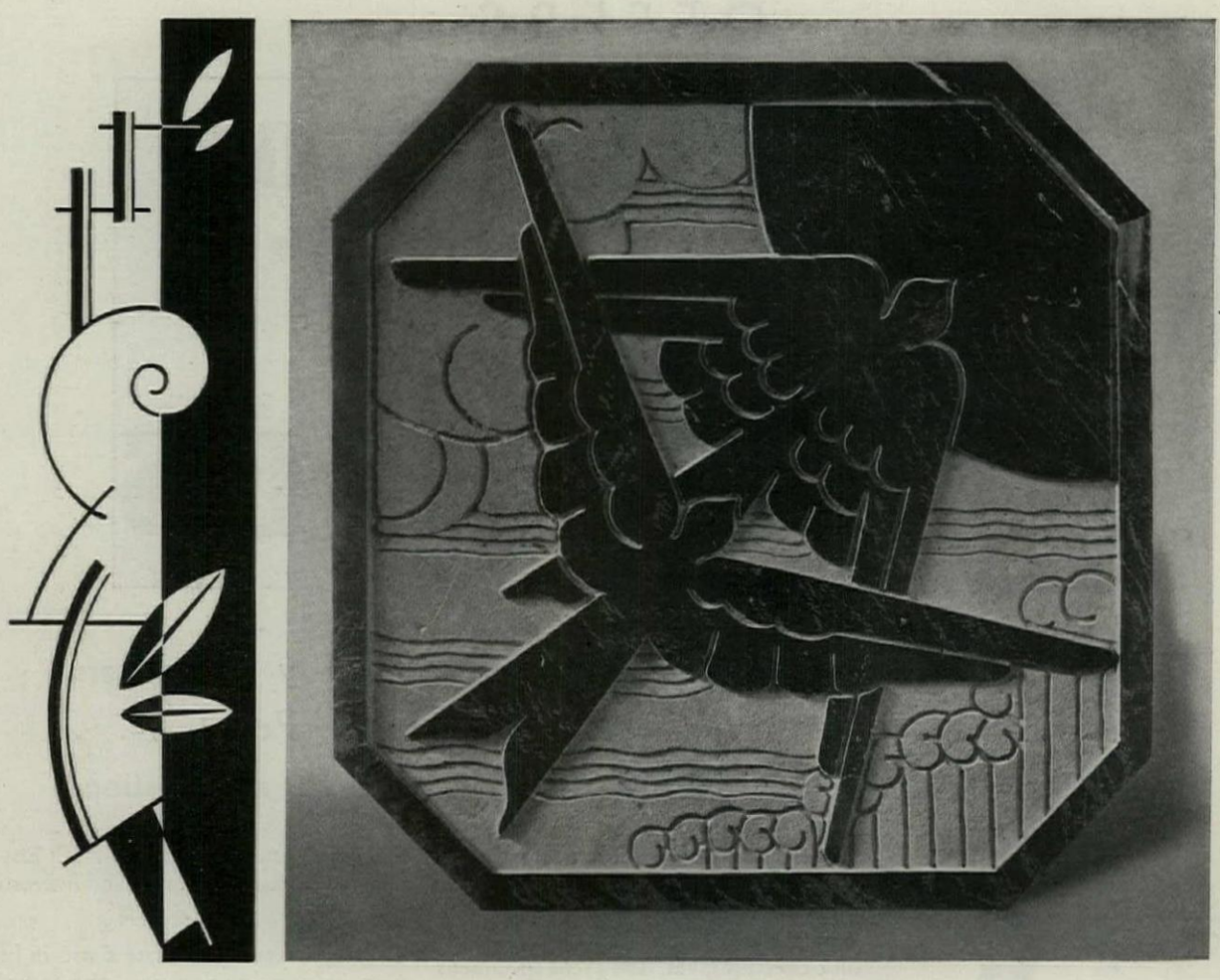


PLATE 5
The Modernistic Movement

This picture represents one of the panels of Verde Antique marble in the Indiana Power Company Building, South Bend, Indiana. The work was finished under the supervision of the Art Terrazzo & Tile Company.

Here is a case where the design is well adapted to the business it symbolizes—where the modern features are strengthened by the contrast between the cut and polished surfaces of the marble.

ARCHITECTURAL BRONZE

BY THE

Kawneer

COMPANY

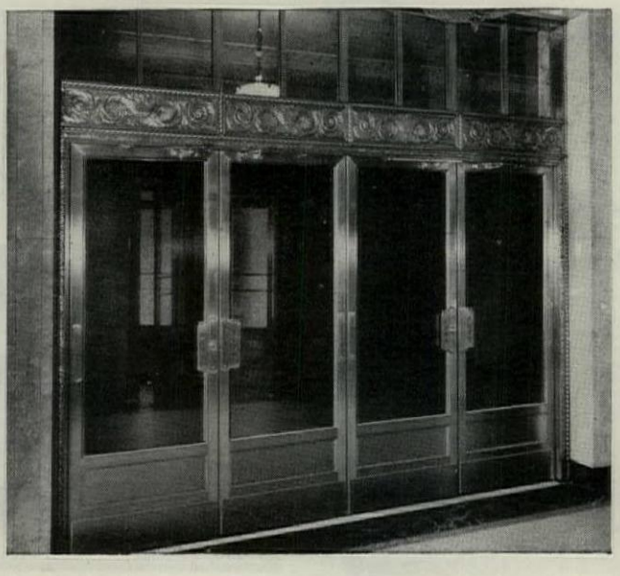
NILES, MICHIGAN

and subsidiaries

PRODUCTS

RUSTLESS METAL SEALAIR

WINDOWS - DOORS - ARCHITECTURAL CASTINGS AND STORE FRONTS



THE NEW ROOF *With* THE "WEATHER AGE" TEXTURE

CAREYSTONE SHINGLES—a more beautiful roof, with a veined, rippled surface which softens the sunlight and deepens the shadows. A more permanent roof, unaffected by the weather and requiring no attention. A fireproof roof, made entirely of two non-combustible substances, Asbestos Fibre and Portland Cement. And, best of all, these superior shingles cost about the same as smooth surface roofs.

Behind this achievement is more than a half century of successful manufacturing experience, years of patient research, and an ambition to produce a roof covering suitable for the most elaborate structures, but which could be economically used on the small home where first cost is important.

Careystone Shingles are made in several widths, and in five colors—Windsor Gray, Weathered Brown, Georgian Red, Bristol Green and Tudor Black. The colors are solid thru and thru, not veneered or pressed into the surface.

In order that architects may know the appearance and quality of Careystone Shingles, we have made up packages of miniature samples, which will be mailed on request. Write today for your set.

THE PHILIP CAREY COMPANY ✕ Lockland, Cincinnati, Ohio
Branches in Principal Cities

BUILT-UP ROOFS
ASPHALT PRODUCTS
ELASTITE EXPANSION JOINT
WATERPROOFINGS
ROOF PAINTS

Carey PRODUCTS
EST. 1873

HEAT INSULATIONS
ASBESTOS MATERIALS
CAREYSTONE CORRUGATED SIDING
ASFALTSLATE SHINGLES
BUILDING PAPERS

FROM COAST TO COAST

THOUSANDS OF WINDOWS ARE BEING GLAZED WITH LUSTRAGLASS

FLAT—DRAWN

In just a few short months, the demand for this new and modern window glass has swept the nation from coast to coast.

Architects and Builders, quick to recognize the outstanding advantages of LUSTRAGLASS, have expressed their preference in specifications resulting in a flow of orders so far in excess of our most optimistic expectations that the facilities set aside for LUSTRAGLASS production have proved entirely inadequate.

To meet this demand . . . another of our largest factories (equipped with the largest capacity window glass furnace in the world) is now being devoted to the manufacture of this new glass for windows. This assures prompt delivery of your LUSTRAGLASS specifications for 1931.

This label appears on every light of genuine LUSTRAGLASS. Write for Booklet A-430 giving table of transmission and other interesting facts about the ultra-violet rays of sunlight and LUSTRAGLASS.

LUSTRAGLASS *transmits a substantial amount of the shorter (more effective) ultra-violet rays of sunlight.*

* * *

It transmits more daylight.

* * *

It is the "whitest" of all glass made for windows.

* * *

Yet it costs no more than any good window glass.

SPECIFY LUSTRAGLASS INSTEAD OF WINDOW GLASS

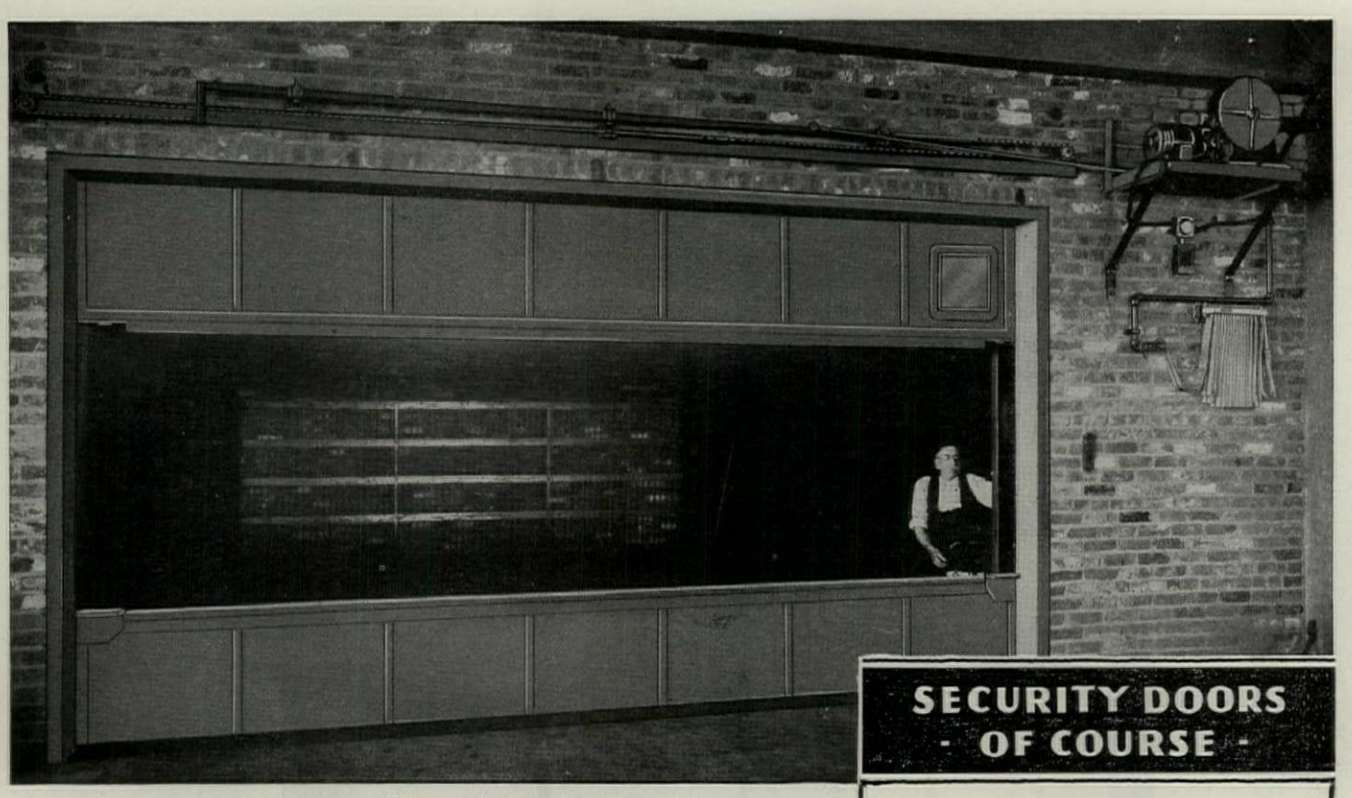
AMERICAN

FARMERS BANK BUILDING

WINDOW GLASS CO.

Also makers of Armor-Lite Scatter-Proof and Bullet-Proof Glass, Tintaglass, Lustrawhite Picture Glass, Photographic Dry Plate Glass, $\frac{3}{16}$" and $\frac{7}{32}$" Crystal Sheet, Ground and Chipped Glass, Improved Quartz-Lite and Bulb Edge Glass.

PITTSBURGH, PA.



Power-operated, M-6 "Seco" Doors 16′ Wide in the Hupp Motor Corporation Engineering and Storage Building, Detroit, Michigan.

SECURITY DOORS
- OF COURSE -

MADE GOOD . . . . . .
. . . . . MAKING GOOD

Today, more than ever, the comparative value of every product is quite as essential as the reputation of the manufacturer who builds it . . . . At the right is listed a partial group of Security Door installations made in 1930—some on the basis of past Security performance, others on the basis of that careful comparison which determines the choice of Security Doors as a matter of course.

PARTIAL LIST OF RECENT SECURITY DOOR INSTALLATIONS

The Merchandise Mart	Chicago, Ill.
Crooks Terminal Warehouse	Kansas City, Mo.
Pennsylvania Railroad Freight Ter'l., W.	Philadelphia, Pa.
The Dayton Union Railway Co.	Dayton, Ohio
Eastern Outfitting Co.	Los Angeles, Cal.
Scobey Fireproof Storage Co.	San Antonio, Texas
Produce Terminal, for Buffalo Market Terminal Company	Buffalo, N. Y.
Detroit Union Produce Terminal	Detroit, Mich.
River Terminal Warehouse	Memphis, Tenn.
Central Warehouse	Huron, S. C.
Dreyfuss Warehouse	Tulsa, Okla.
Henry O'Neil Warehouse	Rapid City, S. D.
Sheboygan Furniture Forwarding Co.,	Sheboygan, Wis.
Oregon Short Line Railroad Whse.	Salt Lake City, Utah
Union Transfer & Storage Co.	Fargo, S. D.
Leonard Warehouse	Buffalo, N. Y.
Wilson Transportation Warehouse	Sioux Falls, S. D.
Rag Warehouse, for Nickel Plate Development Co.	Cleveland, Ohio
Julius Garfinckel Department Store	Washington, D. C.
Polsky Department Store	Akron, Ohio
Bon Marche Department Store	Seattle, Wash.

Send for Catalog—or Inquire at Any of Our Offices

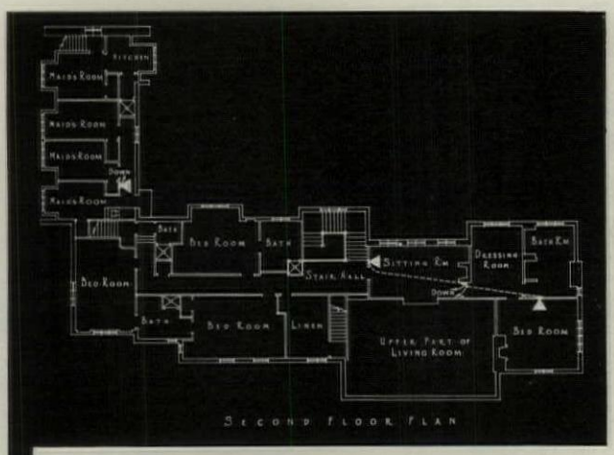
SECURITY FIRE DOOR CO. 3044 Lambdin Ave., ST. LOUIS

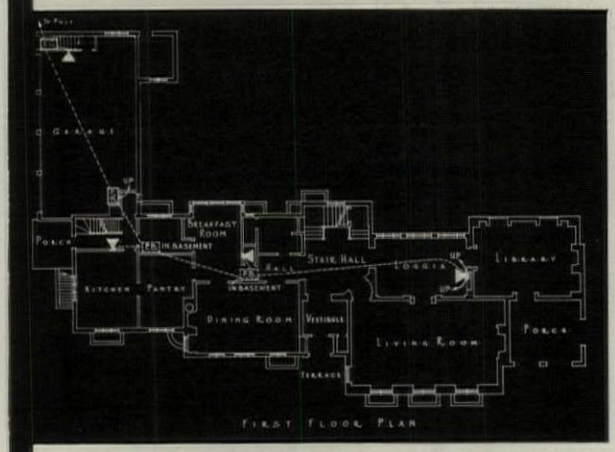
OFFICES IN NEW YORK . . . BOSTON . . . PHILADELPHIA . . . CHICAGO
SAN FRANCISCO . . . LOS ANGELES . . . DETROIT AND OTHER PRINCIPAL CITIES

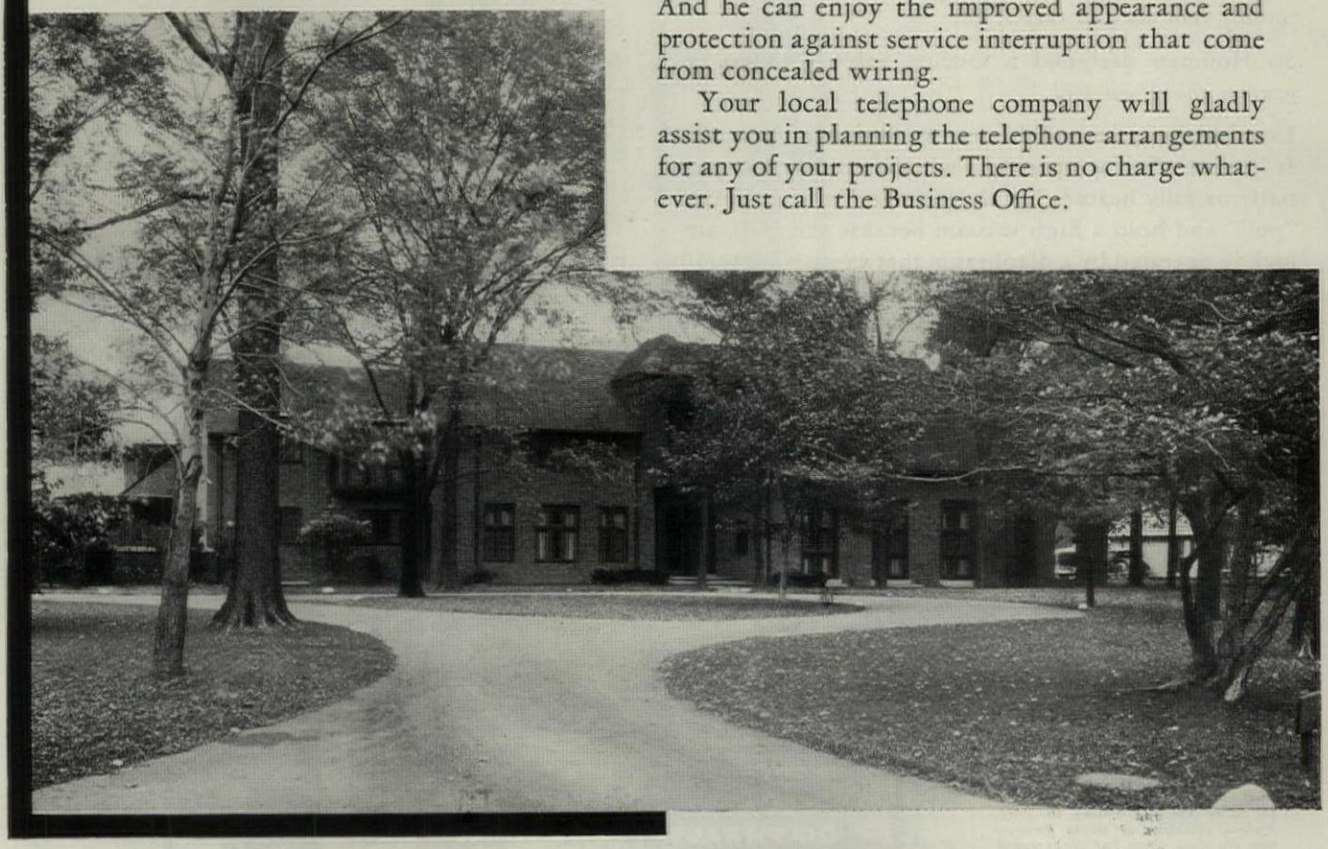
824

SECURITY DOORS

Make good freight elevators more efficient







TELEPHONE CONVENIENCE CAN BE PLANNED TO MEET FUTURE REQUIREMENTS AS WELL AS PRESENT NEEDS

Distinction in a house is as much a matter of arrangement inside as of appearance outside. Every added convenience contributes to it. And many architects consider *telephone* convenience especially important.

Telephone convenience consists simply in having *enough* telephones—in living-room, library, bedroom, boudoir, kitchen and laundry—wherever they will save time and energy. It is as properly a part of the small home as of the large residence. It can be provided for in advance, by specifying conduit for telephone wires within walls and floors.

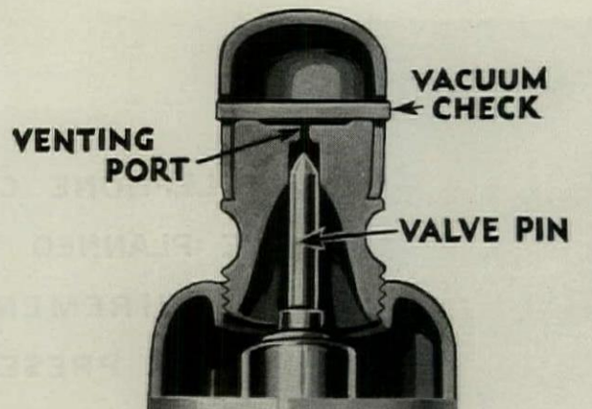
That conduit permits the owner to have telephone outlets wherever he wants them. He can change them or add to them as occasion demands. And he can enjoy the improved appearance and protection against service interruption that come from concealed wiring.

Your local telephone company will gladly assist you in planning the telephone arrangements for any of your projects. There is no charge whatever. Just call the Business Office.

Eight telephone outlets, including one in the basement, and an intercommunicating system, provide suitable telephone convenience in the residence of Mr. Henry P. Williams, 180 Provencal Road, Village of Grosse Pointe Farms, Michigan, as shown above. Hugh T. Keyes, Detroit, *Architect.*

LEGEND
TELEPHONE OUTLET
CONDUIT
PC PROTECTOR CABINET
PB PULL BOX

BELL SYSTEM
AMERICAN TELEPHONE & TELEGRAPH CO. AND ASSOCIATED COMPANIES



The venting port remains wide open until air is completely exhausted from the system. The vacuum check is a "vacuum starter" and used only when the radiator has not been fully heated and the vent port closed by steam. It retards intake of air until one inch of vacuum has formed. Then the vacuum diaphragm comes into action and keeps the air-port tightly closed.

The Hoffman DOUBLE AIR LOCK *doubles efficiency*

Failures in one-pipe *vacuum* systems are generally traceable to one cause—valves that are unable to completely vent air and *keep* it out.

So Hoffman designed a vacuum valve with an *ingenious double air lock.*

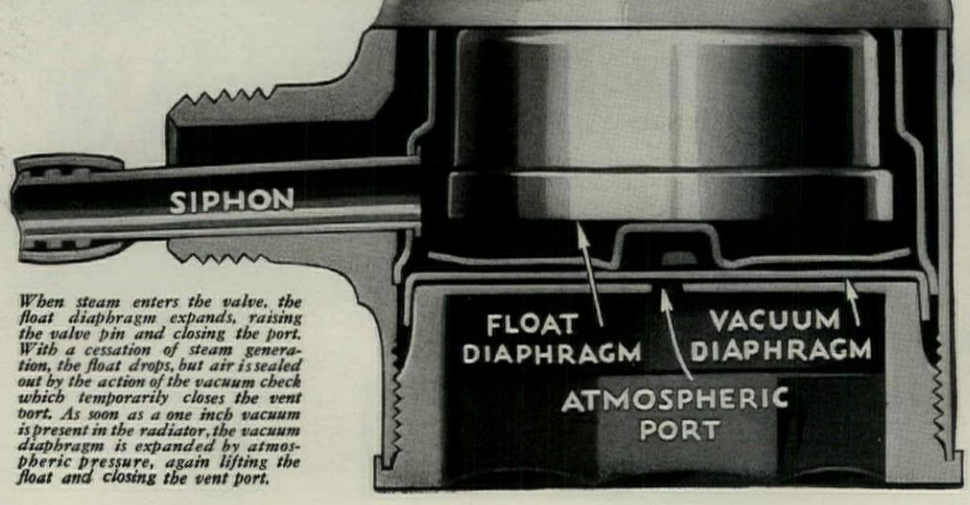
Examine this patented feature—exclusive to this valve. It insures efficient operation whether radiator is partially or fully heated. No. 2 Hoffman Vacuum Valves "pull" and hold a high vacuum because the main air-lock is operated by a diaphragm that exerts a 20 to 50 times greater pressure to hold the vent port closed than ordinary disc or ball checks. Dirt and scale is crushed or pushed aside.

There are other reasons why No. 2 Hoffman Vacuum Valves give such long-lived, superior service. They are manufactured with as much care as is used in making a fine watch. The valve pin, for example, is machined—not stamped—to fit tightly in its seat.

In all, 279 separate, precise operations are necessary to complete one Hoffman Valve. Rigid tests check every step of manufacture—from raw materials to finished product. Before a Hoffman Valve leaves the factory, it is adjusted to water and steam, and sealed in its tamper-proof shell. That's why we can unqualifiedly guarantee five years of efficient service.

Compare this valve with any other. Compare it for efficient operation—for low cost of servicing — for precision workmanship. Finally, compare it for user satisfaction—the ultimate test of any valve. You'll find every evidence of complete superiority. Hoffman Specialty Company, Inc., Dept. PP-11, Waterbury, Conn.

No. 2 HOFFMAN VACUUM VALVES



When steam enters the valve, the float diaphragm expands, raising the valve pin and closing the port. With a cessation of steam generation, the float drops, but air is sealed out by the action of the vacuum check which temporarily closes the vent port. As soon as a one inch vacuum is present in the radiator, the vacuum diaphragm is expanded by atmospheric pressure, again lifting the float and closing the vent port.

Diaphragm metal is here subjected to millions of rapid expansions and contractions at a high temperature. It must prove that it will not break, stretch or soften under severest usage.

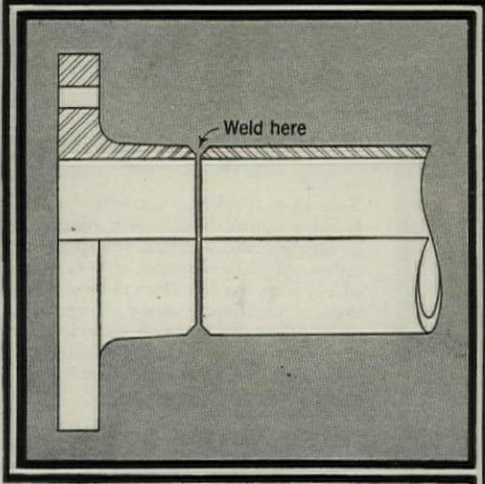
DESIGN STANDARDS FOR OXWELDED PIPING

Any welded piping system, even in its most complicated form, is a combination of a few fundamental welding design details.

PIPE FLANGES
Standard Flange for Welding

Explanation:

A type of flange especially designed for welded piping construction is illustrated. It is supplied by leading manufacturers of pipe fittings in both forged and cast steel. Either flat or tongue and groove



faces can be obtained to meet service requirements. It is provided with an extra long hub for butt welding into the line.

Uses:

The Standard Flange for Welding is recommended to replace by welded construction other types of American Standard flanges for all sizes, pressures and services.

Specification:

When the Standard Flange for Welding is specified the following features should be included in the specification:

1. The flange shall be carefully tacked before welding, with tack welds not more than 6 in. apart, to facilitate and maintain alignment.
2. Bolt holes shall straddle natural center lines except when specified otherwise.
3. Other features to be included in the specification are the same as for the Open Single Vee Butt Weld given on page 10, "Design Standards for Oxwelded Piping," except that in all cases the weld shall be built up to a height in excess of the thickness of the welding end of the flange hub.

The above is excerpted from a handbook on fundamental designs, titled, "Design Standards for Oxwelded Steel and Wrought Iron Piping," published by The Linde Air Products Company. A copy of this handbook should be in every architectural drafting room. It is yours for the asking. Just fill in and mail the coupon.

Technical Publicity Dept., 12th Floor
205 East 42nd St., New York, N. Y.

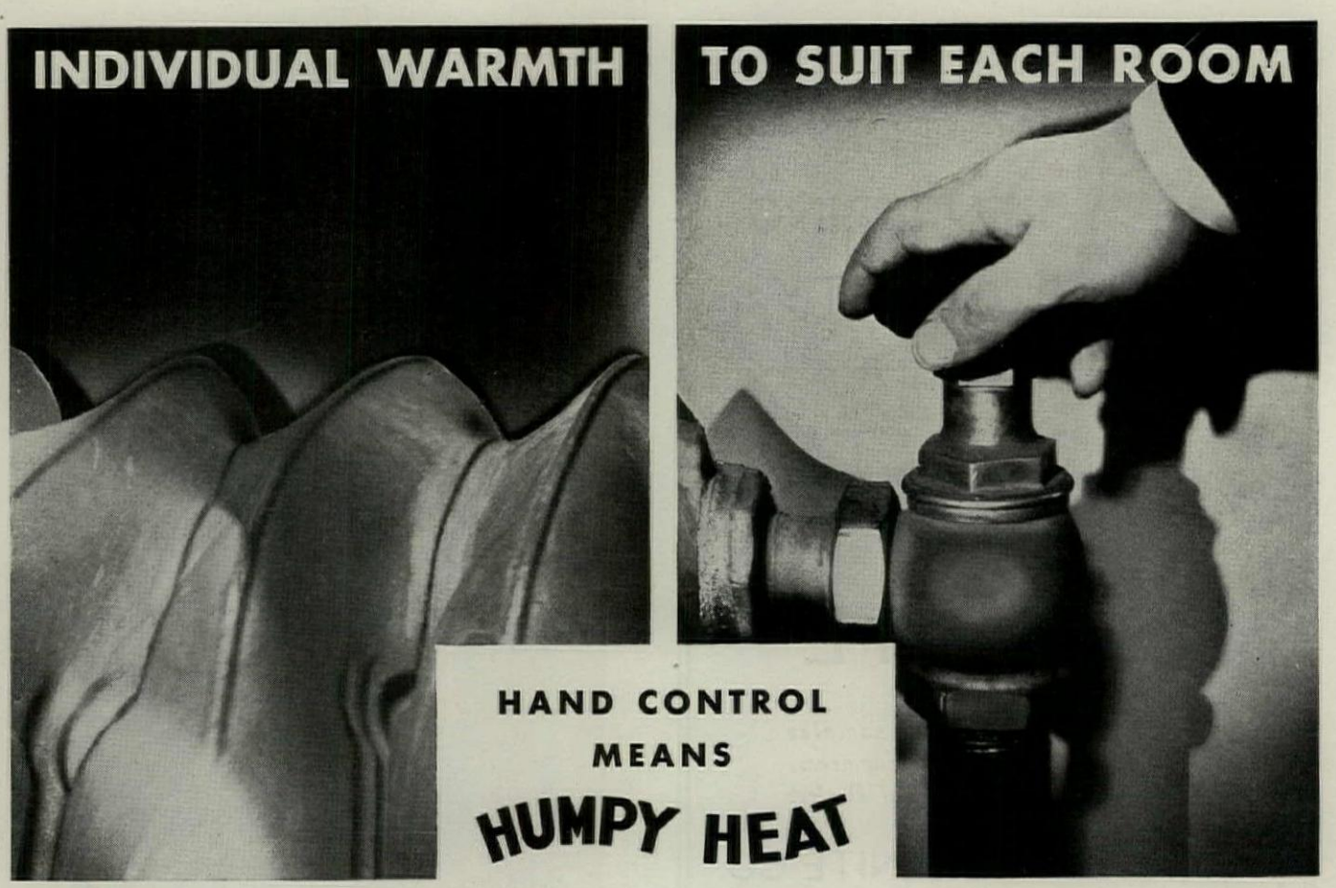
Please send me a copy of your new book, "Design Standards for Oxwelded Steel and Wrought Iron Piping." P.P.-2-31

Name.....

Company.....*Position*.....

Street Address.....

City.....*State*.....



And HUMPY HEAT Means Fuel Waste

First "too hot" and then "too cold!" That is the daily temperature record of rooms and offices in many buildings where hand control valves are employed on steam radiators. Sylphon Automatic Radiator Valves assure temperatures automatically kept just as desired by the room occupants. Their use makes for steady, even heat—personal comfort, health and more efficiency. Once set at the desired marking, they turn the steam "on" or "off" and hold the room temperature exactly at the predetermined point. Actuated by the dependable Sylphon Thermostat, Sylphon Automatic Radiator Valves respond to the slightest air temperature changes, but are not affected by heat from the radiator or pipes.

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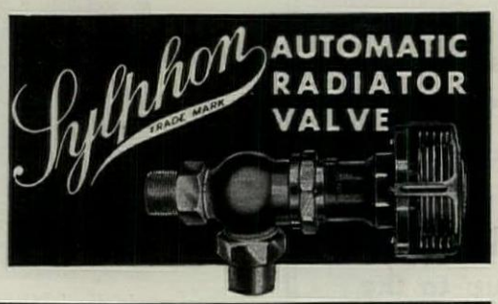
EASY *and* INEXPENSIVE

The Sylphon Radiator Valve is a combination packless valve and thermostatic control unit without electrical or mechanical accessories. Know all about this controlling device of last-ing efficiency. Our printed matter fully describing both the angle and globe types will be gladly sent. Write today for Bulletin CP 250.

30 Day Free Trial

In order that you may be convinced of its positive action, we will gladly send one or more of these Sylphon Automatic Radiator Valves on a 30 day free trial, and you incur no obligation. Try them while the heating season is on.



Other Sylphon Products

For a quarter of a century Sylphon Instruments for the accurate control of temperatures and pressures of Air, Liquids and Gases have attained wide and diversified employment.

SYLPHON REGULATORS for many industrial processes, refrigerating machines, and building temperature regulation.

SYLPHON DAMPER REGULATORS.

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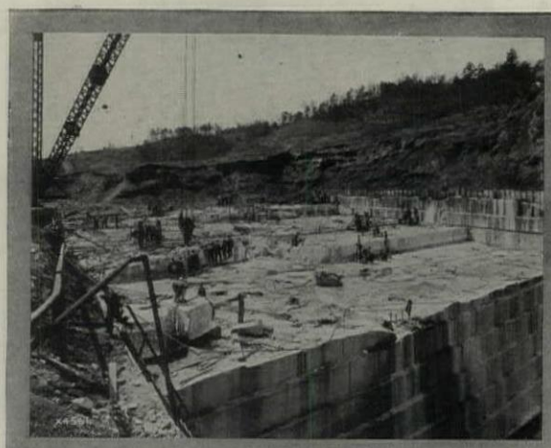
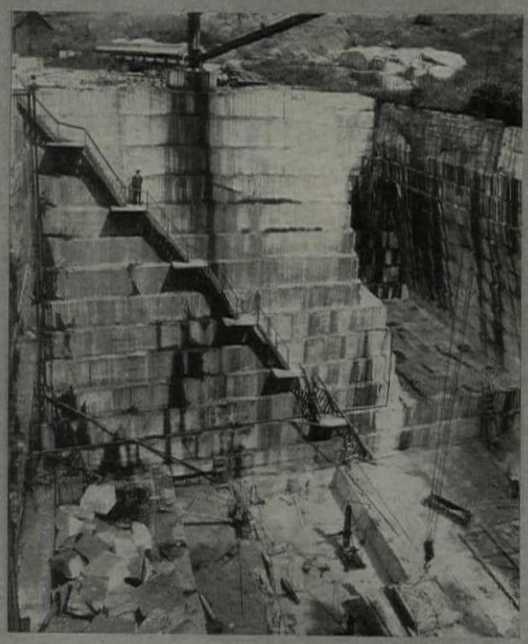
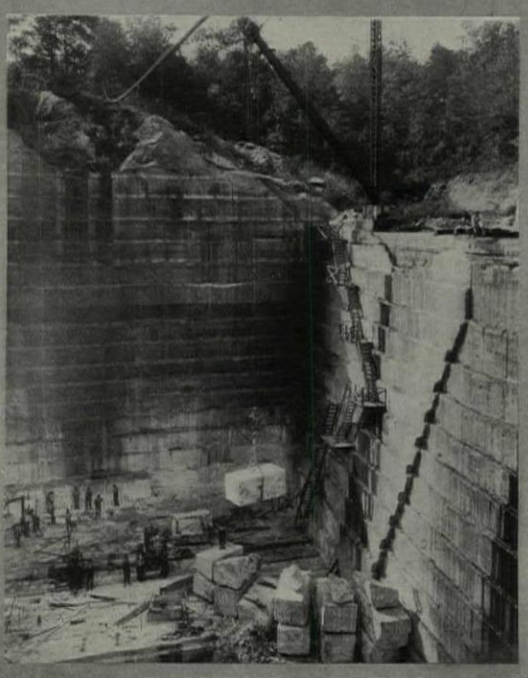
GEORGIA MARBLE







An Inexhaustible Supply

We have three finishing plants and nine quarries in operation the year round—there is no *closed season.*

The illustrations show three of our quarries and an air view of our Tate finishing plant. The other two plants are at Nelson, Ga., and Marietta, Ga.

Although the nine quarries now in operation are meeting our needs, new quarries can be opened when necessary. At almost any point over an area of 7000 acres it is possible to open up a new quarry by removing the surface soil.

Test borings indicate that this section contains Georgia Marble in quantities so great that it would take many centuries to quarry even the marble that has been definitely charted.

Those who visit the quarries marvel at the unusual soundness of the marble, and the immensity of this marble deposit. Georgia Marble is available in white, grey, pink, green, and other colors.

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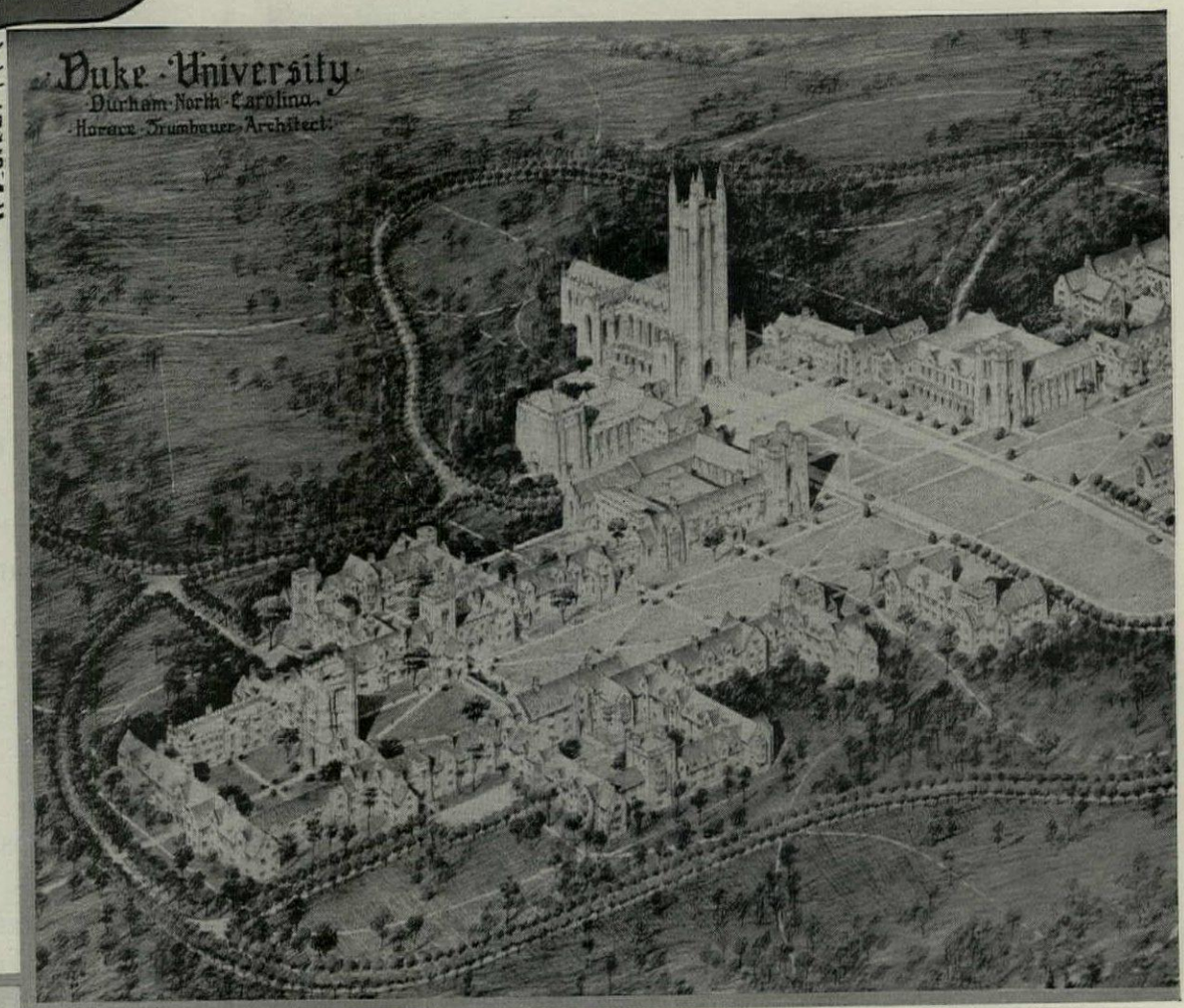
NEW YORK ATLANTA CHICAGO DALLAS CLEVELAND

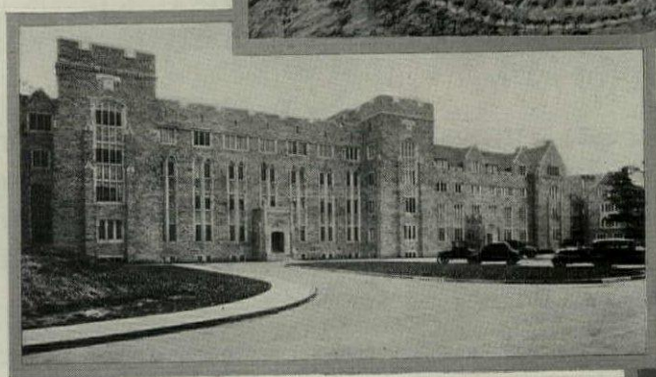
Duke Un

is to be a monument not only to

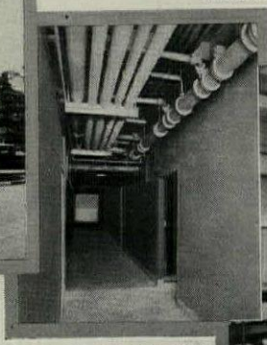


A bird's-eye rendering of the new $42,000,000 University as it will be when the construction program is completed.

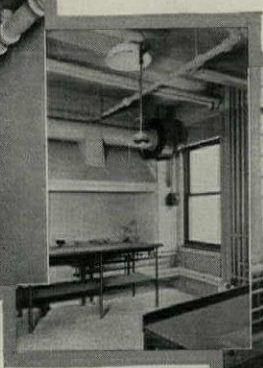
Horace Trumbauer, Philadelphia, Pa., Architect
Isaac Hathaway Francis, Engineer



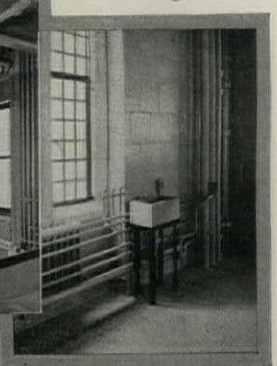
The Medical School, one of the completed units, with full equipment of Duriron laboratory drain piping.



One of the Medical School pipe corridors.



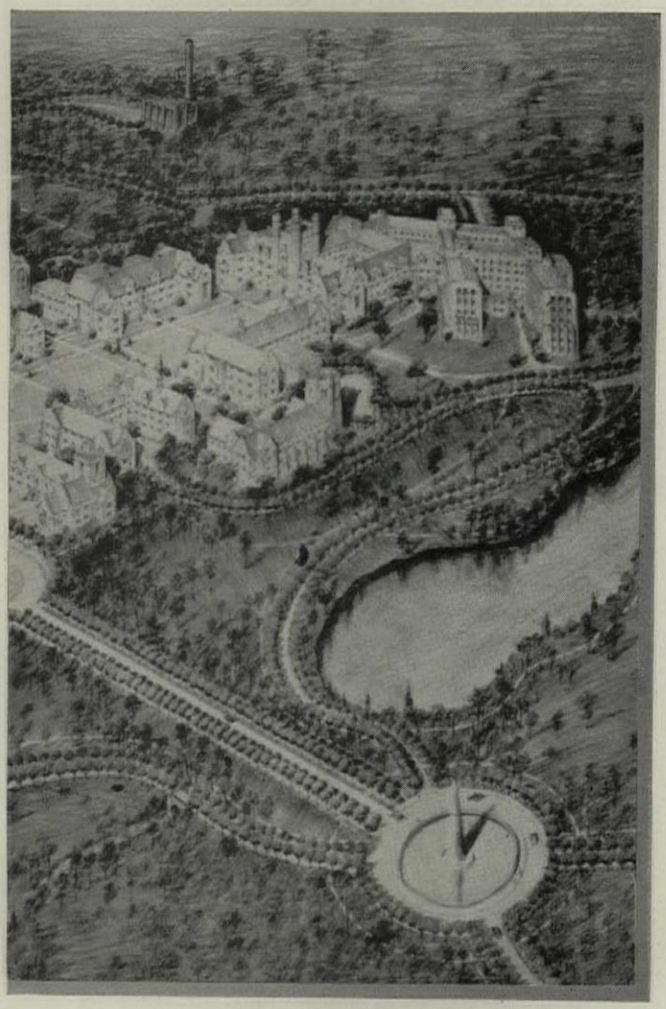
Wall hood with exhaust fans fabricated of acid-resistant alloy supplied by "Duriron."



Another laboratory view, with Duriron pipe much in evidence.

-iversity

the man whose generosity made it possible



** Of the total requirement, seven carloads have been delivered for the early buildings of the ultimate University group.*

—but to the highest standards of architectural planning and permanence of construction

It is prideful, therefore, to record the fact that, to carry wastes from all the chemical laboratories DURIRON ACID-PROOF DRAIN PIPE* is specified—and will uphold its part of the architects' purpose of building the new university for enduring permanence.—That DURIRON PIPE and its *calked* joints are assurance of freedom from the hazard of acid waste leakage, for the life of such buildings, is coming to be a matter of common understanding. —DURIRON now being installed, will serve humbly but invaluably down the flight of years as Duke University grows hoary in the making of American educational history.

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MASSACHUSETTS INSTITUTE OF TECHNOLOGY

COMPETITION FOR TWO SCHOLARSHIPS

TWO scholarships of five hundred dollars each are offered in the academic year 1931-32 for *special students* in the third or the fourth year of the course in Architecture at the Massachusetts Institute of Technology. They will be awarded as the result of a competition in design under the direction of the Committee on Design of the Department of Architecture.

The competition is open to citizens of the United States of good character, who are between twenty-one and twenty-eight years of age, and who have had at least three years of office experience.

The competition will be held from May 16 to May 25.

Competitors are allowed to prepare their drawings wherever conditions conform to the requirements of the Committee, but these drawings must be sent to Boston for judgment.

Applications should be received on or before April 13, addressed to Professor William Emerson, 491 Boylston Street, Boston

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The architect finds beauty and decorative value in Stedman Reinforced Rubber Tile. He finds in them a great adaptability to almost any architectural treatment. He has the choice of a wide variety of patterns and color combinations, through Stedman's standard and custom color types in tile and border forms.

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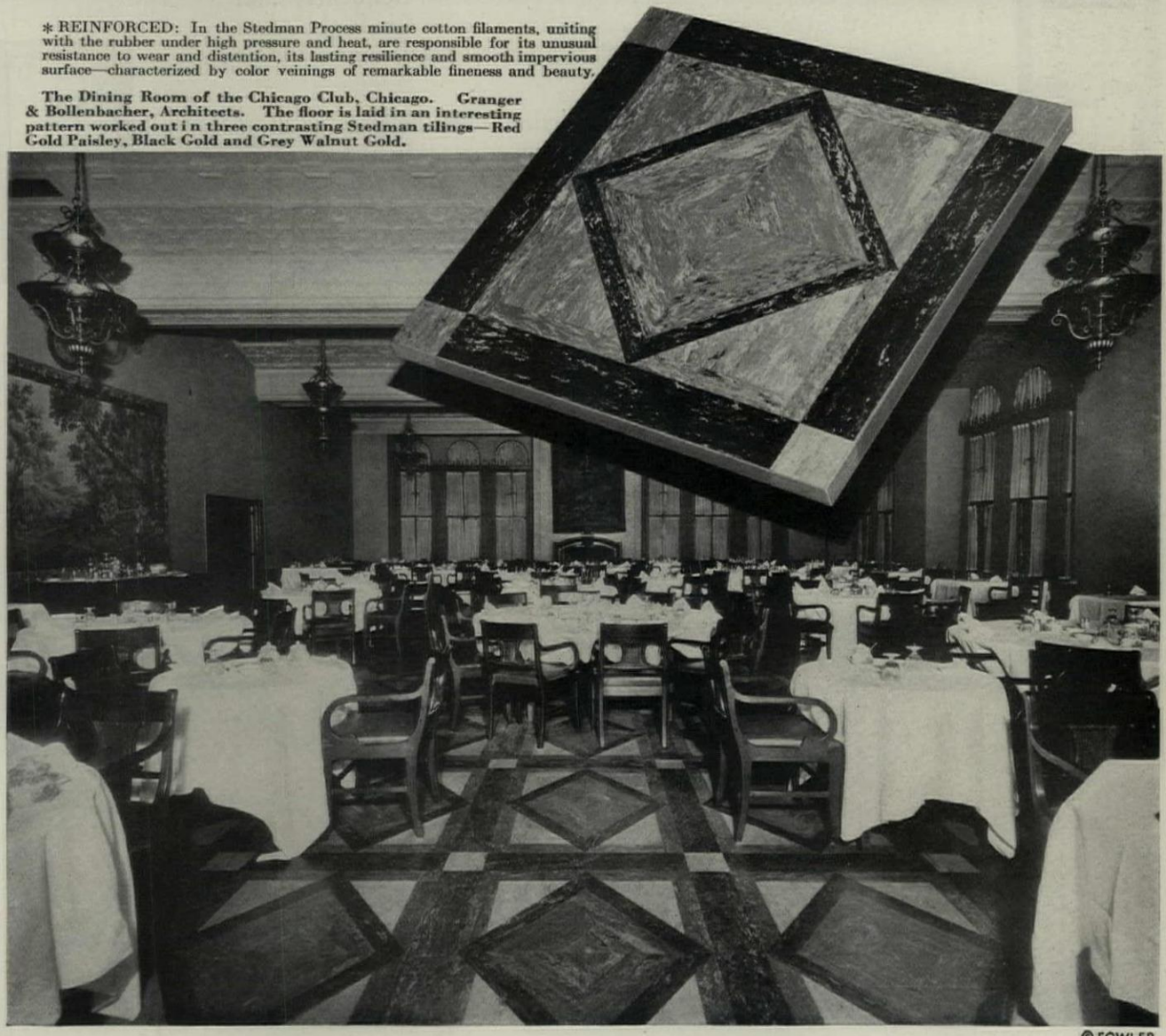

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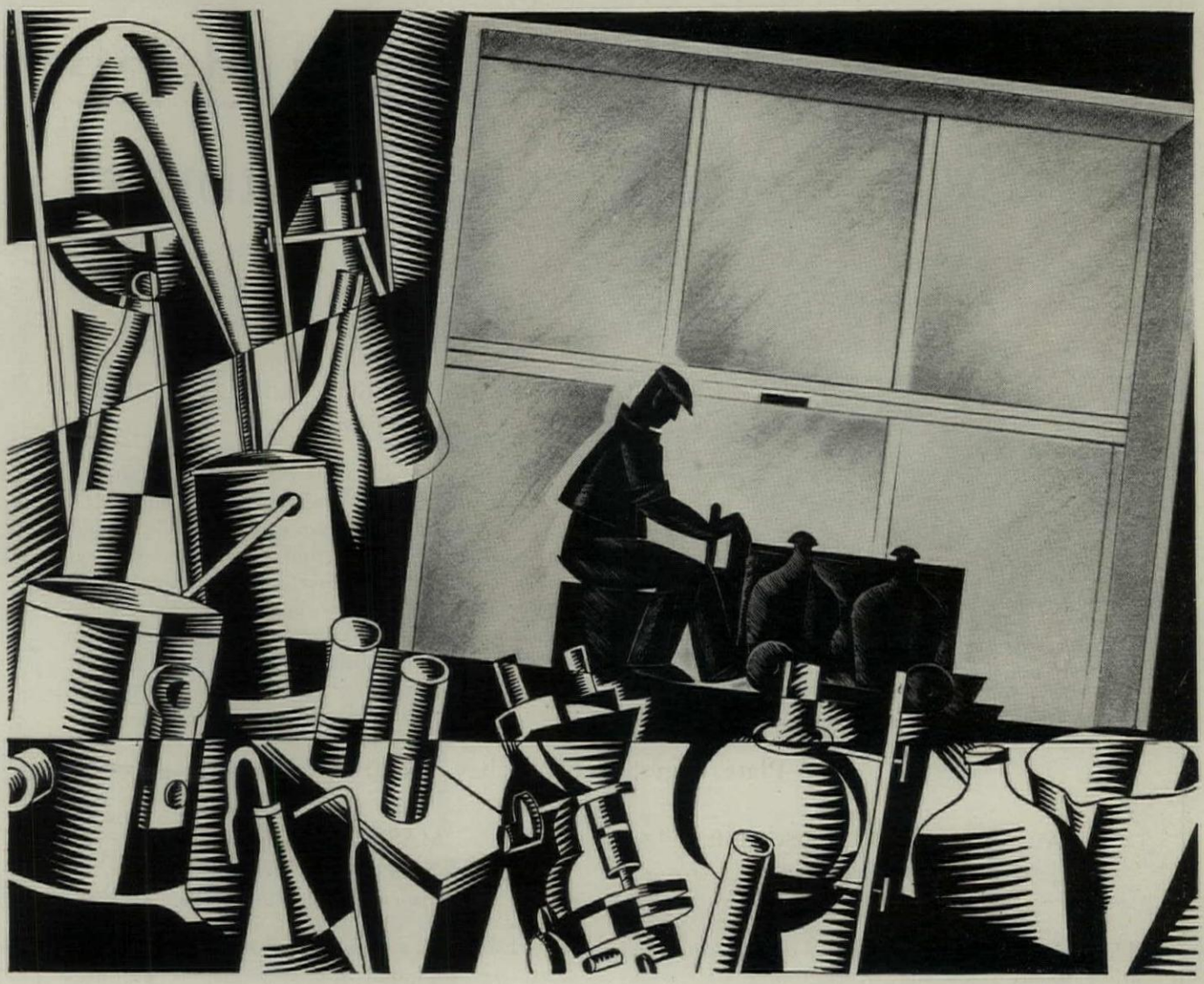

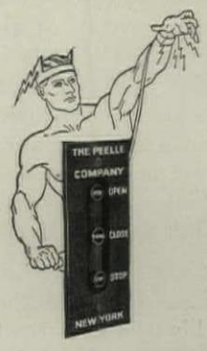

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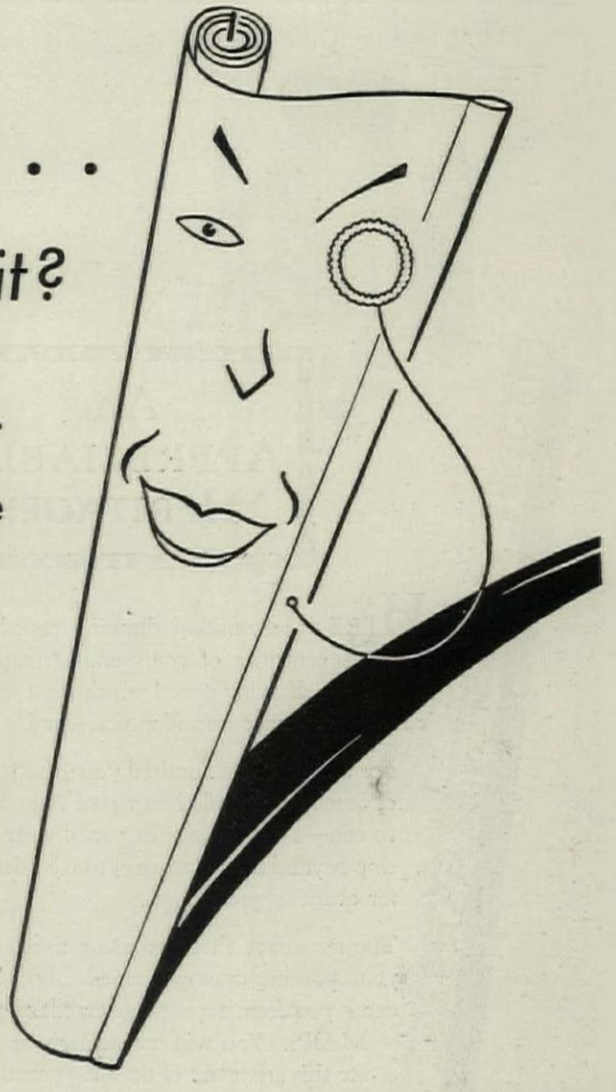

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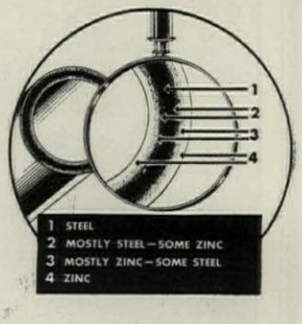

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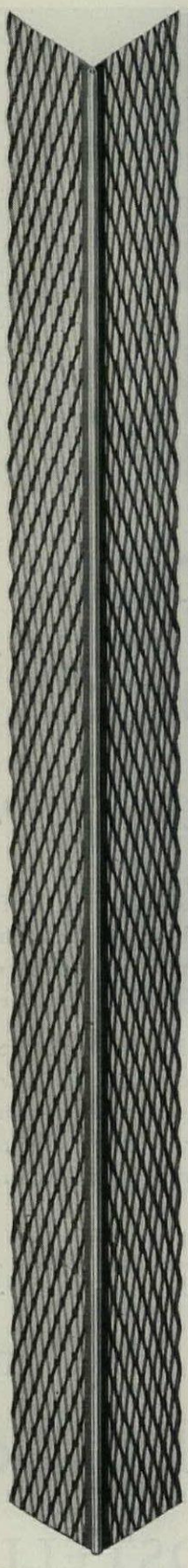

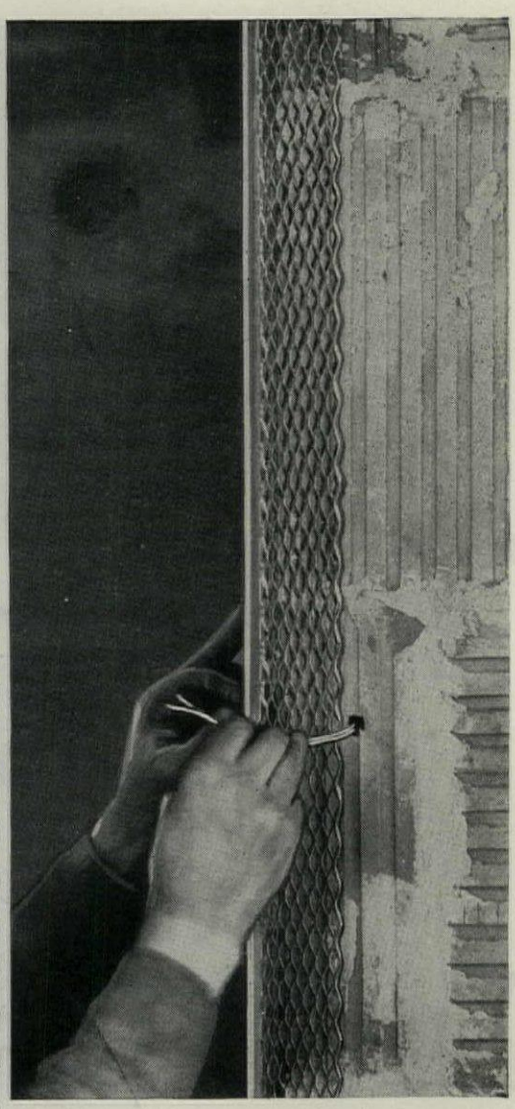

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Right up to the nose of the bead

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

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

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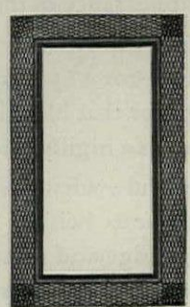
This metal molding makes a precise, neat trim around window and door openings. It may be finished in the same tone as the walls . . . giving a harmonious finish and adding a distinctive touch to the room. The expanded metal wings key the plaster right up to the casing . . . and the patented *Milcor*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



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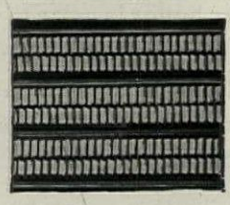
Substantial savings in time and labor result from the use of *Milcor* Stay-Rib Metal Lath. Adequate key is secured without waste of plaster. No jagged points to hurt workmen's hands. Patented design gives greater rigidity than offered by other laths of equal weight.



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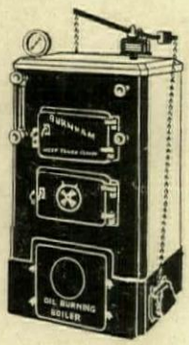
He Matched the Long Oil Flames with Burnham Long Fire Travel



YOU know how the pressure under which oil must be burned, makes a long, flaring flame. A flame with many times the velocity of any other fuel. Unless that flame is tamed down, a large proportion goes, unharnessed, out the chimney.

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