JANUARY 1931

PENCIL POINTS

A JOURNAL FOR
THE DRAFTING ROOM

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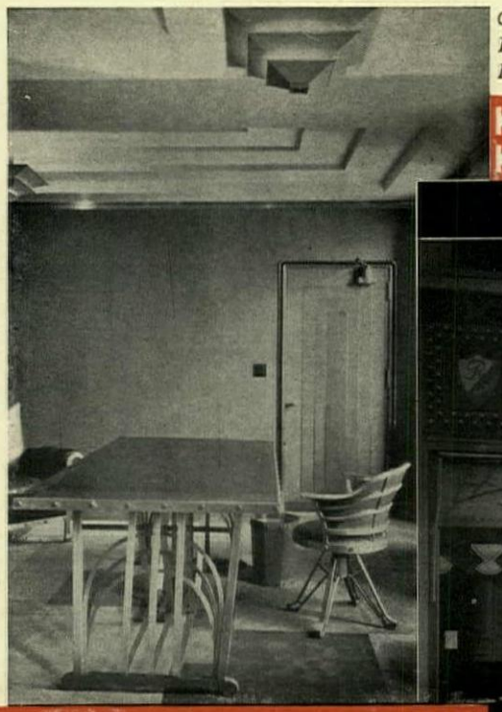
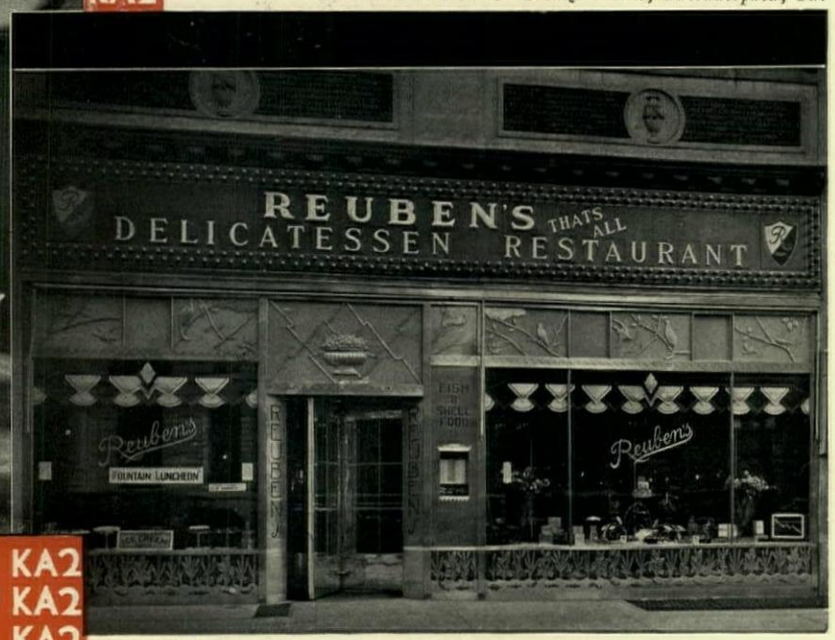


Cornice moulding, door trim and baseboard of stainless steel, by Metal Door & Trim Co. Furniture of stainless steel and other metals, by Oscar Bach. Office in Daily News Bldg., New York, Raymond Hood, Architect.

KA2 KA2

KA2 KA2

Reuben's That's All—Restaurant Front, Philadelphia. Enduro Nirosta with other metals for decoration. Executed by Leober Ornamental Iron & Bronze Works, Philadelphia, Pa.



ENDURO

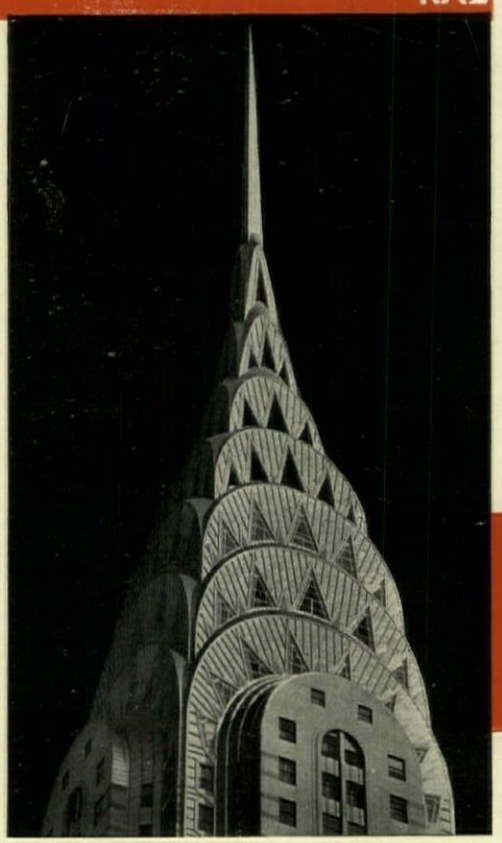
KA2 KA2 KA2 KA2 KA2 KA2 KA2 KA2 KA2

REPUBLIC'S PERFECTED STAINLESS STEEL

ARCHITECTURE'S LATEST ALLY IN MODERN BUILDING DECORATION

The lustrous beauty of Republic Enduro strikes a new note in building decoration. A modest grill in store front or elevator door—long ribbons of silver whiteness relieving the gray monotony of a ninety-storied building—a huge dome glittering in the sunlight like the facets of a giant jewel atop a modern skyscraper—Republic Enduro lends its permanent beauty to every type of use.

As made by Republic, world's largest manufacturer of alloy steels, Enduro Nirosta is impervious to atmospheric attack, non-tarnishing, strong and ductile. It can be bent, tapped, threaded, flanged, welded, drawn, spun, stamped, worked in relief or repoussé. It can be given a mirror-like polish or finished to the feel of soft satin. Republic Enduro merits your consideration when the modern touch will lend distinction.

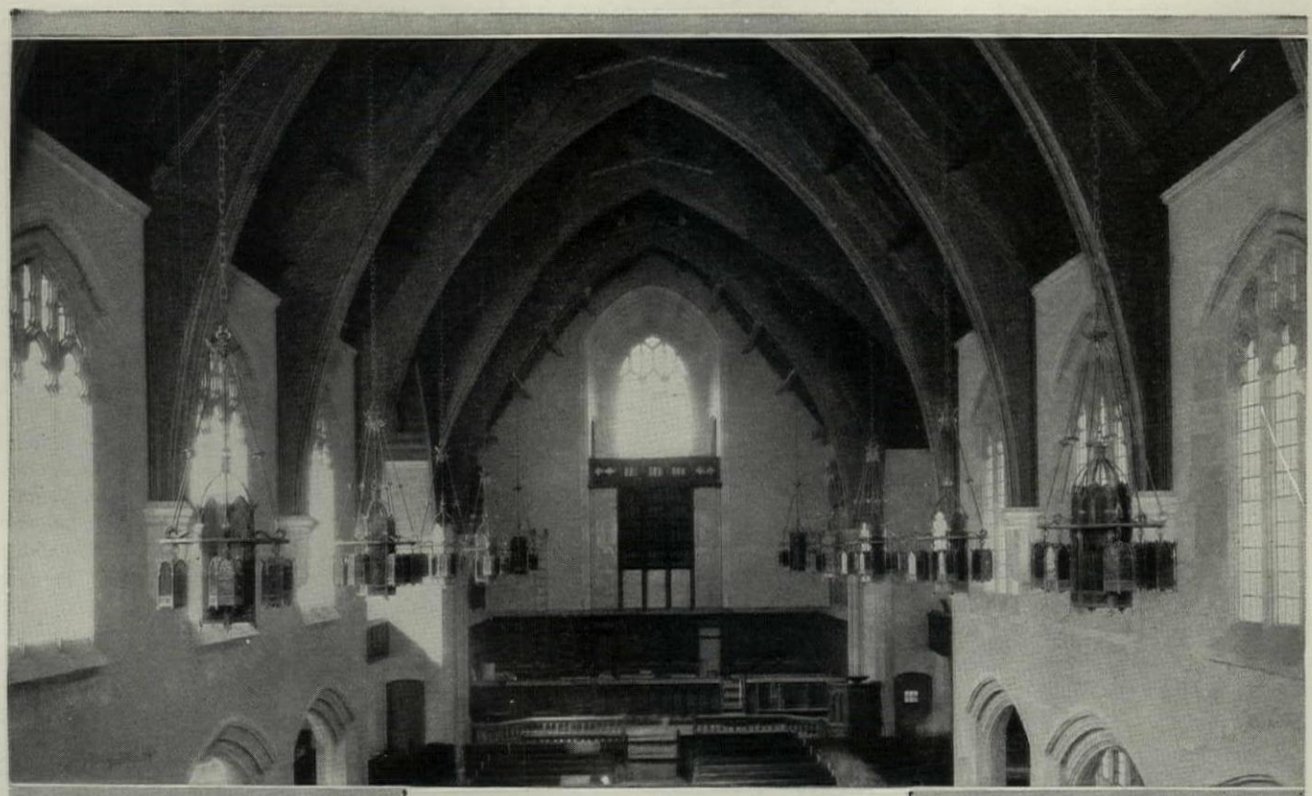


REPUBLIC STEEL CORPORATION

GENERAL OFFICES: YOUNGSTOWN, OHIO

A splendid example of Enduro Nirosta decoration on the Chrysler Tower, New York, William Van Allen, Architect.

Pencil Points, published monthly by The Pencil Points Press, Inc., at 258 Atlantic St., Stamford, Conn. Publication office Stamford, Conn. Editorial and Advertising Offices 419 Fourth Avenue, New York, N. Y. Yearly subscription $3.00, single copies 35 cents. Entered as second class matter, March 10, 1930, at the Post Office, Stamford, Conn., under the Act of March 3, 1879. Volume XII, No. 1. Dated January, 1931



Armstrong's Corkoustic applied direct to the ceiling; Broadway Methodist Episcopal Church, Indianapolis, Ind.; architects—Foliz, Osler & Thompson; associate architects—Sundt & Wenner.

Even Rear Pews can enjoy the service when the church is cork-quieted

THE notes of the organ fade—a moment's pause—then the clergyman begins his sermon. Must his congregation crane forward, noticeably straining to catch every word? In the church that has modern acoustical treatment this tension is never necessary.

Words and music are heard clearly, without distortion, in the auditorium where Armstrong's Corkoustic is used. The firm, strong cork panels, applied direct to ceiling and walls, muffle echoes and reverberations and quiet the disturbances of conflicting sound waves.

Corkoustic has another quality that is valuable in churches—and in any building where sound quieting or acoustical treatment is essential. It possesses high insulating efficiency, and so effects considerable savings in heating cost. Furthermore, its use materially shortens the time required to heat the building and helps to maintain more comfortable temperatures, both winter and summer.

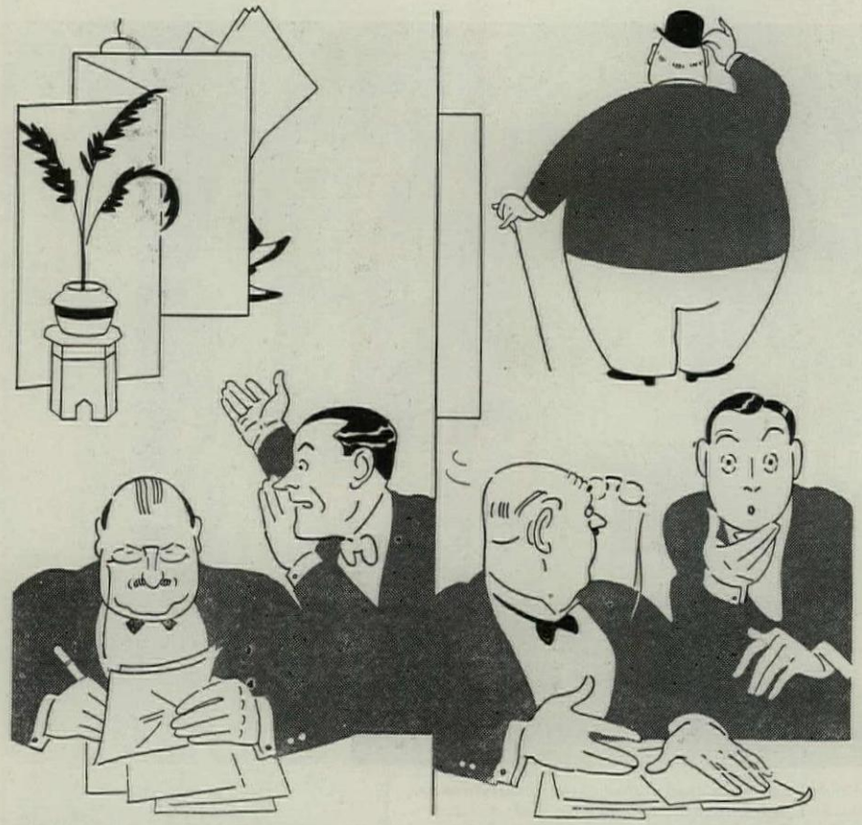
Decoration, too, is simplified with the help of Armstrong's Corkoustic. Where a conservative effect is correct, the rich, natural cork surface in blended browns is just right. But if life and color are needed, then spray coats of cold-water paint in stencilled design over the cork aid the decorator.

For a complete description of Armstrong's Corkoustic, write for the book, "Acoustical Correction." Each room, of course, offers distinct problems. So we suggest that you consult with our engineers. Armstrong Cork & Insulation Company, 902 Concord Street, Lancaster, Pennsylvania.

Armstrong's (A) *Product*

Armstrong's CORKOUSTIC

THE MODERN ACOUSTICAL, INSULATING TREATMENT FOR ALL BUILDINGS



"He's a six-footer" . . . . "Measured which way?"

Can figures be facts if arrived at wrongly?

In considering performance of heating systems, no analysis or comparison based on hasty acceptance of inaccurate measurements or of incomplete facts, can be safe, or useful unless *all* the factors which may influence the result have been checked. For example, "lbs. per sq. ft. per season" may mean just as little as "twice as long as a piece of string."

Altogether there are 45 of these variable factors,—each of which may affect the requirements and results for better or worse. To allow any one of them to be forgotten or disregarded may lead to faulty conclusions.

Engineers, architects and heating contractors will find the related subjects of heating steam consumption analysis, estimating and heating cost 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.

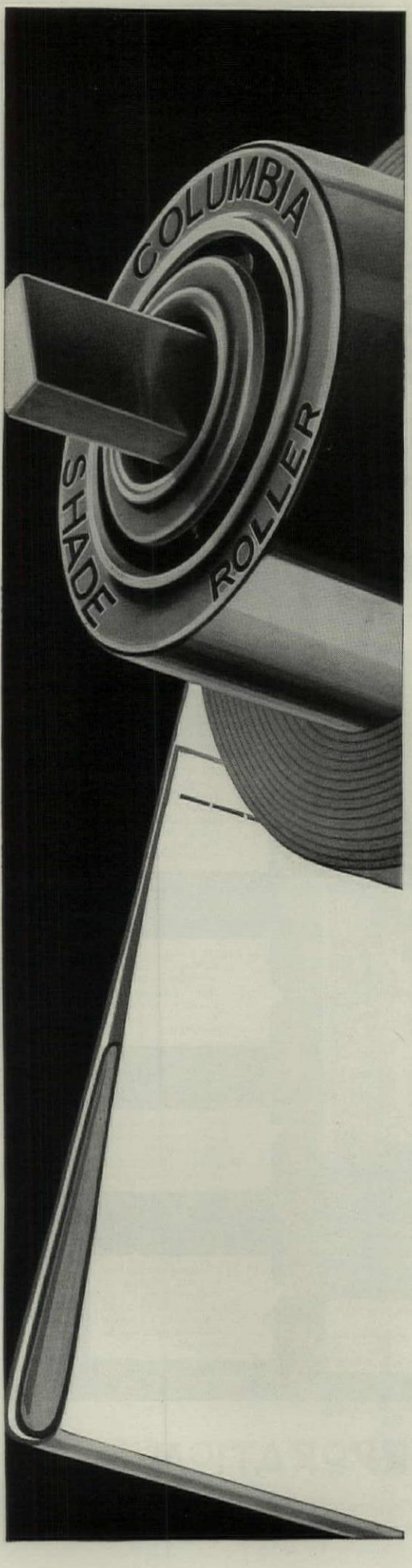
Full details of any or all of these systems will be furnished on request.

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 56a

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.



Be Hard-boiled

about Window Shades

Don't be easy-going when you buy window shades. Be hard-boiled about it. You'll save money that way, for all window shades are not alike. There is one to suit your needs at a lower cost per year than any other.

Go after that one. Make the man who claims he has it *prove* it. If he is showing *Columbia* shades, he *has* the proofs and likes to show them.

Real merit in a window shade goes deep. It's in the cloth; tucked away in the heart of the roller. The real savings you can make are tomorrow's, not today's—troublefree service; negligible upkeep.

Get these merits and savings. Look for them in *Columbia* shades. Be savage about it. See *why* the shading is better . . . in its raw materials and its expert making. Pull a *Columbia* roller apart. Know *why* it is noiseless, rustless, lastingly efficient. See for yourself its overpowered spring. Ask what buildings *Columbia* shades have proved themselves in . . . ask how well and at what cost.

***Columbia* makes the finest window shades. We welcome the hard-boiled buyer . . . he will learn *how* fine they really are!**

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

You Can Rout the Ghostly Legions With Your Plans and Specifications

Of all weapons that can be used against the hideous legions, that wait to attack faulty or poorly designed plumbing installations, there is none so sure, so deadly as exact plans and specifications.

When these specifications call for plumbing and fixtures designed to meet and defeat the particular hazards of the job, the careless operation and heavy wear that will be encountered—the battle for sanitation at low through-the-year costs is more than half won.

To get such plumbing into specifications is neither difficult nor costly.

The Clow Soldier of Sanitation stands ready at all times to help you select the proper fixtures, to work out the most economical layouts. At his finger tips is the accrued knowledge of Clow's 52 years of specialized plumbing experience.

At his back is the most complete line of specialized plumbing fixtures in the world, developed to meet particular needs in schools, hospitals, industrial plants, public buildings and similar installations as well as the smallest bungalow.

When you specify such fixtures, your plans and specifications become a sword that ghostly enemies cannot withstand.

The Clow Soldier of Sanitation is your ally in the battle for low costs, long life and perfect sanitation in plumbing installations. The world's longest line of specialized plumbing—and 52 years collective experience help him help you. Call him in. This is Bill Latimer, Albany, N. Y.

CLOW

CHICAGO

PREFERRED FOR EXACTING PLUMBING SINCE 1878

Consult your architect

Stockton Medico-Dental Bldg., Inc., Stockton, Calif.
Mayo, Bissell & Company

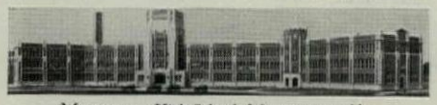
Alabama Power Co. Bldg.
Birmingham, Ala.
Warren-Knight & Davis

Hotel Montclair,
New York City, N. Y.
Emery Roth

The Brittany Apts.
New York City, N. Y.
Farrar & Watmough

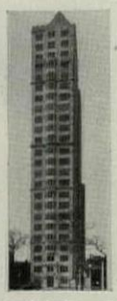
Sherman Square Studios,
New York City, N. Y.
Tillion & Tillion

Francis Palms Bldg.,
Detroit, Mich.
C. Howard Crane



Montgomery High School, Montgomery, Ala.
Frederick Ausfeld

Kings County Hospital, Seattle, Wash.
Thomas, Grainger & Thomas



1430 Lake Shore Dr.
Apts., Chicago, Ill.
Robert S. DeGolyer & Co.

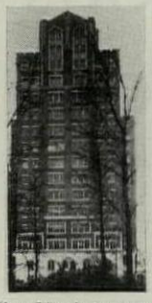
T. E. Rhoades
Apt., N. Y. City
Van Wort and Weth

Ramsay-McCormack
Bldg., Ensley, Ala.
Brooke B. Burnham

Greystone Apartments,
St. Louis, Mo.
Geo. Barnett

Pere Marquette Bldg.,
New Orleans, La.
S. Scott Joy & W. E. Spink

1616 Walnut St.
Bldg., Phila., Pa.
Tilden, Register & Pepper



Shore Line Apartments,
Chicago, Ill.
Henry K. Holsman

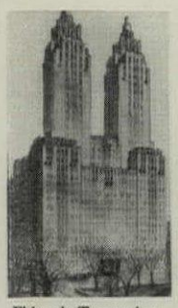
Board of Water
Commissioners Bldg.,
Detroit, Mich.
Louis Kamper, Inc.

Professional Building,
San Antonio, Texas
Henry T. Phelps

Beaux Arts Apts.,
New York, N. Y.
K. M. Murchison & Raymond Hood, Godley & Fouilhoux

London Terrace, New York City, N. Y.
Farrar & Watmough

LaFayette Apartments,
Portland, Ore., *L. L. Dougan*



Eldorado Tower Apt. Hotel,
New York, N. Y.
Margon & Holder

Public Service Building,
Boston, Mass.
Harold Field Kellogg

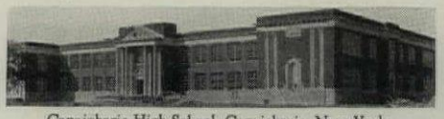
Continental Life Insurance Bldg.,
St. Louis, Mo.
Wm. B. Ittner, Inc.

Tudor City Development,
New York, N. Y.
Fred F. French Company

Priscilla Estates, Inc.,
Apartment,
New York, N. Y.
Gronenberg & Leuchtag

Petroleum Building,
Oklahoma City, Okla.
Layton, Hicks & Forsythe

424 E. 52nd Street
Apartment,
New York, N. Y.
Emery Roth



Canajoharie High School, Canajoharie, New York
Kinne & Frank, Utica

Textile Center Bldg.,
Los Angeles, Calif.
W. Douglas Lee

New York University
—School of Education,
New York, N. Y.
James Gamble Rogers

Michigan State Sanatorium for Tuberculosis,
Howell, Michigan
Malcolmson & Higginbotham

Crippled Children's Hospital, Oklahoma City, Okla.
Layton, Hicks & Forsythe

Waterloo High School, Waterloo, New York,
Carl C. Ade—Rochester

Medical Arts Building,
Oak Park, Ill.
Roy J. Hotchkiss

Meridian Security Building,
New York, N. Y.
Parker & Shaffer

Casa Riviera Apartment,
Long Beach, Calif.
Richard D. King

Woodlawn Apartments,
Chicago, Ill.
Fred Stanton

Memphis Cotton Exchange,
Memphis, Tenn.
Mahan & Broadwell

Sun Realty Co. Bldg.,
Los Angeles, Calif.
A. E. Curlett
Claude Beelman

Redick Building,
Omaha, Nebr.
J. G. MacArthur

67 Hanson Place Apt's
Brooklyn, N. Y.
Murray Klein &
Wm. T. McCarthy

Masonic Children's Home—Boys' Building,
Utica, New York
Kinne & Frank

Liverpool High School, Liverpool, N. Y.
Earl Hallenbeck, Syracuse, N. Y.

Lockerbie Hotel,
Indianapolis, Ind.
Bennett Kay

Granada Apartments,
Brooklyn, N. Y.
Wm. I. Hohauser, Inc.

Architects Bldg.
Philadelphia, Pa.
Committee of Well Known Architects

South Side Trust Company,
St. Louis, Mo.
St. Louis Bank Building & Equip. Co.

THE CAREW TOWER
Cincinnati · · · Ohio

Architect
Walter W. Ahlschlager, Inc.
New York and Chicago

Associate Architects
Delano & Aldrich
New York

General Contractors
The Starrett Building Corporation
Chicago

58 ROOFS PROTECT THIS BUILDING

This outstanding example of modern architecture, housing two department stores, a hotel, an office building, a garage and a host of shops, has 58 separate roof surfaces, each protected by a Carey Built-up Roof.

Carey Roofs are selected for important structures because they possess definite advantages. Built of perfect bonding Carey felts and asphalts, every application step is controlled by rigid specifications. Carey Approved Roof Contractors perform the work, and the finished roof is bonded for 10 or 20 years, according to the type roof selected.

The Carey Specification Book, containing complete data on built-up roofs for all styles of construction, will be mailed on request.

THE PHILIP CAREY COMPANY — *Lockland,* CINCINNATI, OHIO

Carey
BUILT-UP ROOFS

USG sound control engineers are able to analyze noise conditions scientifically and pre-determine accurately the success of corrective measures. Their services are available to architects who wish competent advice and counsel in solving their acoustical problems.

In broadcasting stations where perfect sound control is absolutely essential, Acoustone, the USG acoustical tile, is being used with great success.

Acoustone, the USG acoustical tile, adds to the beauty of any interior. Above is shown one of the many decorative designs which may be obtained with the varied patterns and color combinations in which this scientific sound absorbing material is supplied.

How Architects Use This USG Service When Sound Control Is Essential

A Message to Architects from The United States Gypsum Company

ARCHITECTS who are called upon to specify materials and methods for controlling sound—by either insulating it or absorbing it—have found the services of a USG sound control engineer especially helpful.

Whenever you have a commission which calls for acoustical treatment, a USG engineer will gladly analyze the problem and give you a dependable solution. If desired, he will assist you to prepare the specifications. This counsel and advice on sound control will be thoroughly competent and his recommendations on materials and methods wholly dependable.

The United States Gypsum Company supplies not one, but many types of materials and constructions for use in controlling sound. For absorbing noise, Acoustone, the USG acoustical tile, has been used with good success in both new and existing buildings. It is easily and quickly applied over present walls or ceilings without interruption to business or other activities.

Where installed, Acoustone creates a comfortable noise level. A wide selection of beautiful designs and shapes in varied colors is available. These colors and designs harmonize with all styles of architecture and add to the decorative attractiveness of any surroundings. Made of mineral fibre, Acoustone is fireproof and, when soiled, may be easily cleaned.

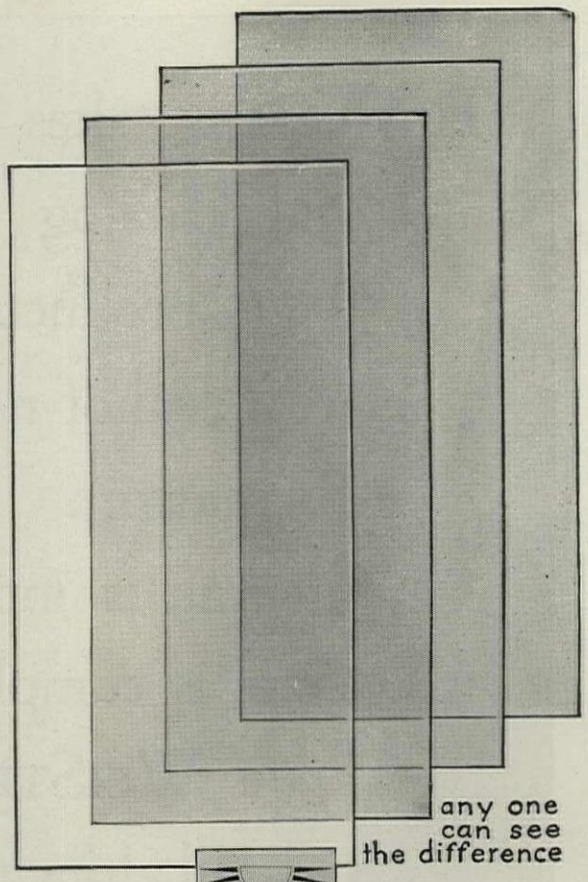
This booklet sent free. *It shows how Acoustone, the USG acoustical tile, controls sound while providing beautiful and harmonious decoration.*

You are invited to call in a USG engineer to help you with any problem in sound control. Of course, there will be no obligation for this service. Please address the United States Gypsum Company, Dept. 281, 300 West Adams Street, Chicago, Illinois.

USG

A C O U S T O N E

The WHITEST Glass made for Windows



Look for this label on every light of genuine LUSTRAGLASS.

LUSTRAGLASS
FLAT-DRAWN

A representative, unretouched, "end on" photo of four samples of glass. The white one is LUSTRAGLASS... Read main text.

CLEARER, flatter, more lustrous . . . truly a remarkable product. LUSTRAGLASS transmits a substantial amount of the shorter ultra-violet rays of sunlight of a wave length of 313 mu.* . . . It costs no more than ordinary window glass and is the whitest of all glass made for windows as evidenced by the unretouched photo shown at the left.

This is an "edge on" view of four stock samples of the leading and best known makes of glass . . . The second from the left (the white one) is LUSTRAGLASS . . . you can make this test yourself . . . The superiority of LUSTRAGLASS is obvious . . . Its marked freedom from color alone is sufficient reason for its use in better buildings.

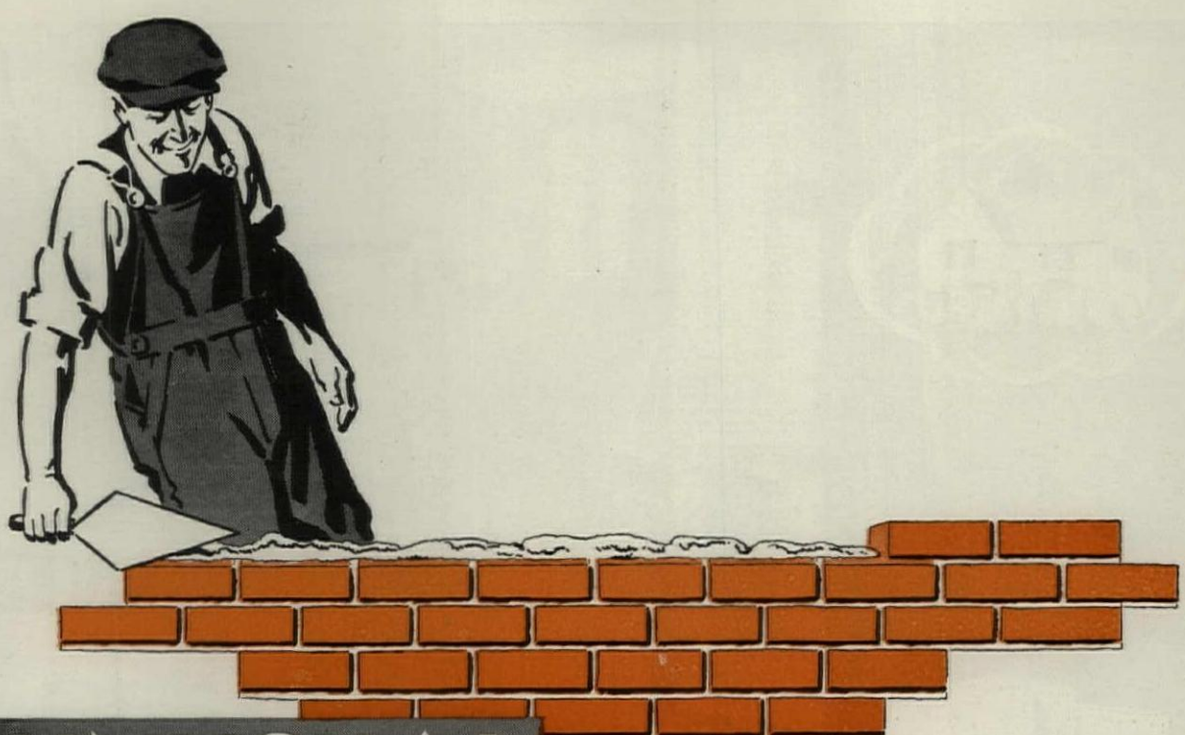
**Send for LUSTRAGLASS BOOKLET A-430 and SPECIFICATION SHEET and see complete table of transmission. Write today.*

AMERICAN · WINDOW · GLASS · CO.

Farmers Bank Bldg.

Also Makers of Armor-Lite Scatter-Proof and Bullet-Proof Glass, Tintaglass, Picture Glass, Photographic Dry Plate Glass, 3/16" and 1/8" Crystal Sheet, Ground and Chipped Glass, Improved Quartz-Lite and Bulb Edge Glass.

Pittsburgh Pennsylvania



UNUSUAL PLASTICITY

UNLESS the bricklayer is given good, rich, mortar, he cannot do quick, neat, economical brickwork. One part Brixment, three parts sand, makes a mortar plastic like a straight lime mix and strong as the brick itself.

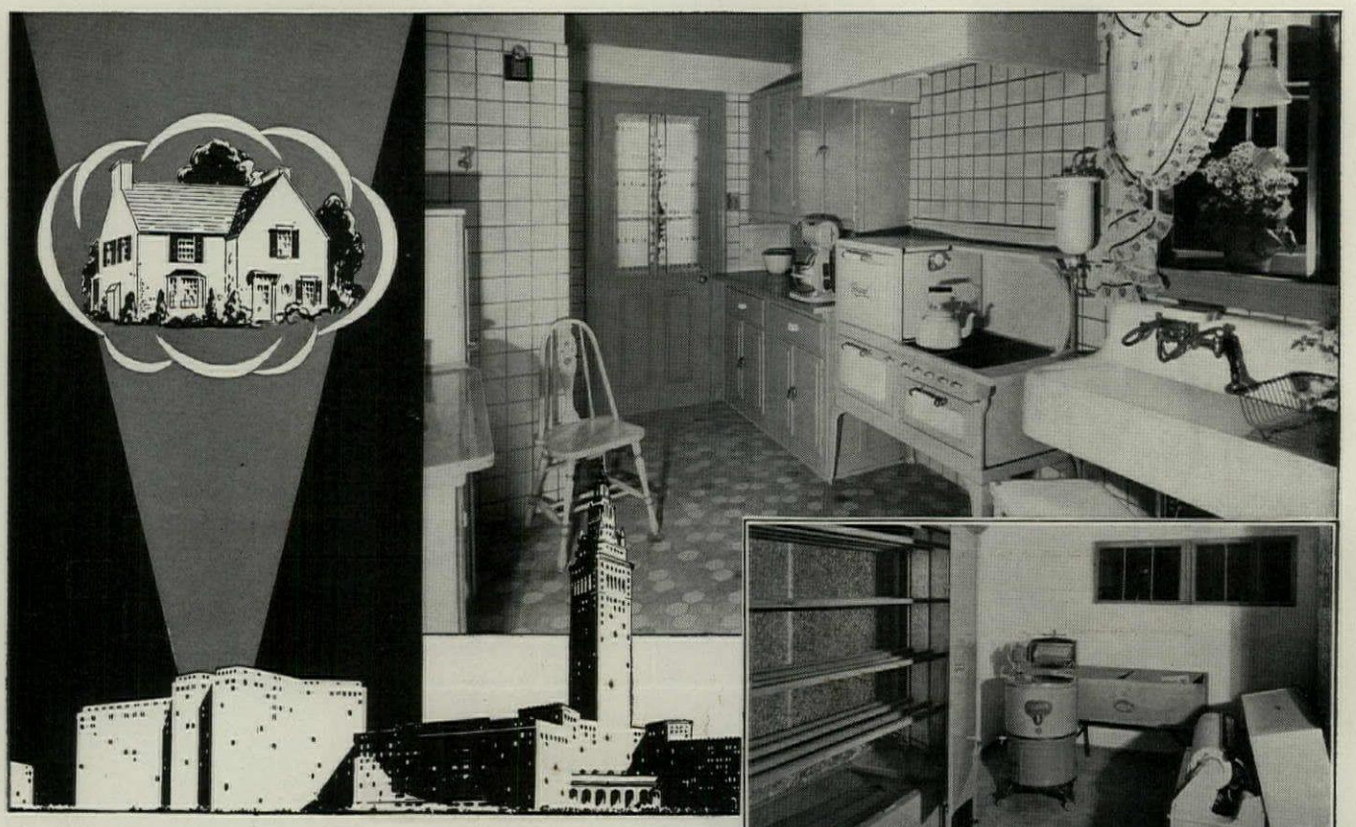
It is unusually easy to spread, and when the bricklayer throws up a head-joint, the mortar sticks to the brick. Louisville Cement Company, Incorporated, Louisville, Kentucky.

CEMENT MANUFACTURERS SINCE 1830

Mills: Brixment, N. Y. and Speed, Indiana

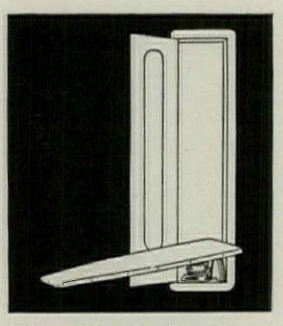
BRIXMENT

for MASONRY and STUCCO



IN CLEVELAND'S FAMOUS "HOME in the SKY"

STEEL EQUIPMENT INSURES BEAUTY, CLEANLINESS, PERMANENCE



All-steel ironing-boards and cabinets built into wall cannot warp, bend, burn or wear out and fold completely out of sight when not in use.

HIGH up on the sixteenth, seventeenth and eighteenth floors of the Builders Exchange Building in Cleveland there has been built a home that is the last word in modern beauty, comfort and cleanliness; that is an inspiration to all prospective home owners. A home that emancipates its owners from the drudgery of housework.

Significant of the place steel has taken in the present day home is the fact that everywhere possible in this model home, steel equipment was installed.

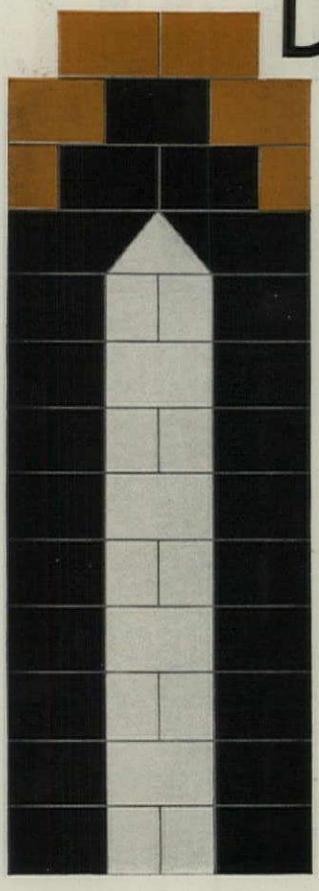
Of particular interest to housewives is the kitchen with its easily cleaned, enameled steel wall tile, steel incinerator, porcelain enameled steel range and refrigerator and in the basement is found the porcelain enameled washing machine, enameled steel mangle, colorful steel water heater, clothes dryer and steel vegetable bins.

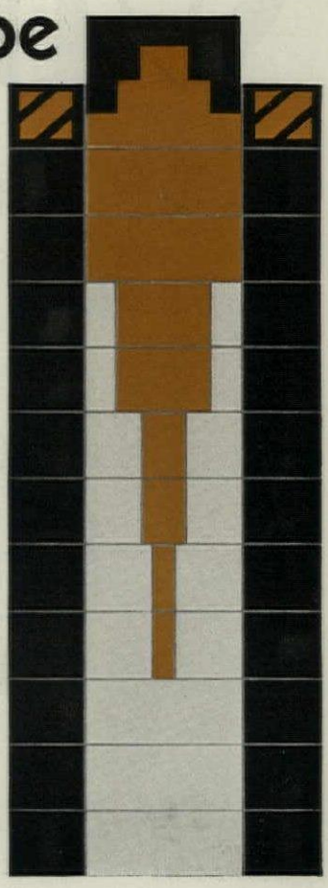
Architects and builders who have an eye to the sales value of their homes can well afford to get all the facts about steel household equipment. Complete information on such products—from the basement to the roof—will be supplied on request. Trade Research Division, National Association of Flat Rolled Steel Manufacturers, 511 Terminal Tower Building, Cleveland, Ohio.

Save ($ Money) (Fire) (Wear)

with Steel HOUSEHOLD EQUIPMENT

AR-KE-TEX Tile Colors Give Designer Wide Scope





● At right and left are shown suggested pilaster treatments in which standard units, standard colors and textures are used. By means of combinations of different standard units and various colors, a practically unlimited number of original architectural effects for wall surfaces can be produced. Such effects are not only strikingly beautiful, but can be obtained at a cost less than that of any other material by which similar effects can be created in permanent, sanitary wall finishes.

The effect in the treatment shown was obtained by the use of standard units of a high gloss Black, a glossy Amber Tan, and a Cream Tinted White. Samples of these new colors and of many other new shades and textures will gladly be shown to any architect by our nearest representative.

Beauty That Is Permanent Walls That Are Enduring

The beauty of wall designs worked out in AR-KE-TEX Tile is no fleeting thing, but permanent and imperishable. The colors and textures are everlasting because they are impervious to the action of acids, alkalis, moisture or any of the elements which cause the deterioration of walls of less enduring material.

AR-KE-TEX Tile is hard burned. That is why it builds a sanitary wall, which cannot be permanently despoiled by any ordinary means, and which never requires painting or refinishing.

An architect who creates beautiful wall effects through the medium of AR-KE-TEX Tile has the assurance that his work will remain a credit to him as long as the building stands.

For detailed information see our catalog in Sweet's 1931 Architectural Edition.

CLAY PRODUCTS CO., Inc.
OF INDIANA

AR-KE-TEX
ART-KERAMIC-TEXTURE

FACTORIES AT
BRAZIL, INDIANA

THE STANDARD OF TEXTURED TILE

Von Duprin

Self-Releasing Fire and Panic Exit Latches

for THE NEW DAY

This, Sir, is the day of change.

Architectural forms and architectural materials that were good enough twenty years ago, are not always adequate now.

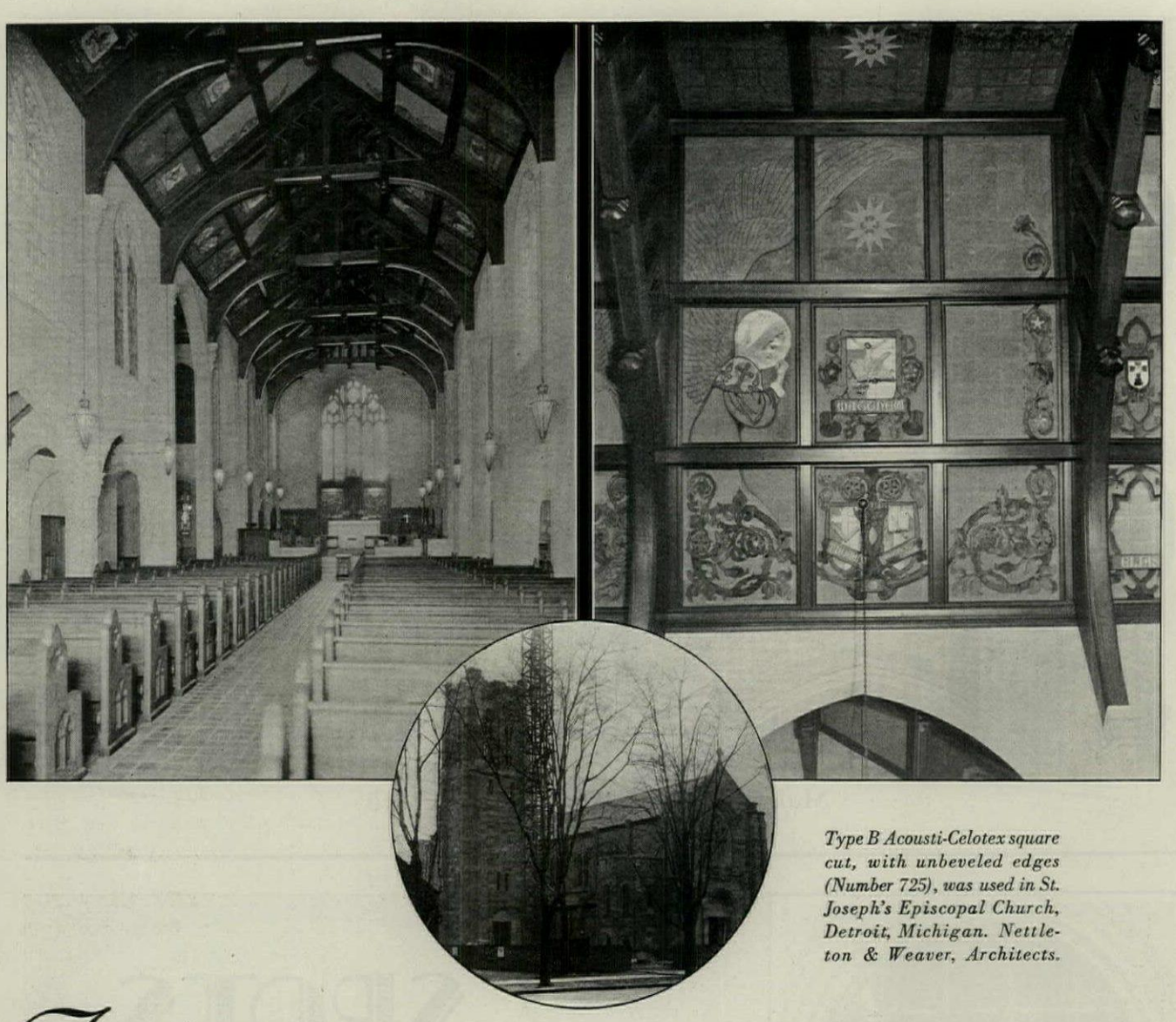
Sweets
Pages C3892-C3896

Yesterday's champion may trail the pack today. And be forgotten tomorrow.

Into this age of constant searching for new and better materials, the new series genuine Type "B" Von Duprin device brings a wholly new conception of exit service. Modern in line, stronger, more reliable than any devices known a few short months ago, these new Von Duprins are finding their rightful place on the doors of the noblest structures of today.

VONNEGUT HARDWARE CO.
Indianapolis, Ind.

Listed as Standard by Underwriters' Laboratories



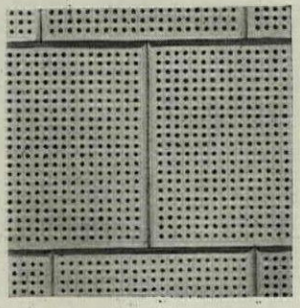
Type B Acousti-Celotex square cut, with unbeveled edges (Number 725), was used in St. Joseph's Episcopal Church, Detroit, Michigan. Nettleton & Weaver, Architects.

Freedom of design with Acousti-Celotex

This is an example of how Acousti-Celotex sound absorbing tile was incorporated in the design of St. Joseph's Episcopal Church, Detroit, Michigan. Nettleton & Weaver, Architects.

With Acousti-Celotex, the decorator is allowed free rein because this sound-absorbing material *can be painted with any kind of paint without loss of acoustical efficiency.*

The Celotex Company, 919 N. Michigan Ave., Chicago, Ill. In Canada: Alexander Murray & Company, Ltd., Montreal. Sales distributors throughout the world. Acousti-Celotex is sold and installed by approved Acousti-Celotex contractors.



Acousti-Celotex comes in three types, C, B, and BB, with coefficients of .30, .47 and .70. The deep perforations permit repeated painting with any kind of paint. Send for descriptive booklet.

ACOUSTI-CELOTEX

FOR LESS NOISE—BETTER HEARING

The words Celotex and Acousti-Celotex (Reg. U. S. Pat. Off.) are the trademarks of and indicate manufacture by The Celotex Company

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The combination of these three outstanding steel sources, together with their banded staffs of authoritative engineers and metallurgists, places at the disposal of users of these alloys a new and most comprehensive service.

The entire resources, research findings, fabrication experience, installation knowledge and experimental laboratories, of these three companies in connection with all the standard grades of corrosion, heat and wear resisting alloys including Nevastain KA2 are now available to the industrial plants of America.

Nevastain steels are furnished by Associated Alloy Steel Company for every fabricating requirement—bars, sheets, hot and cold rolled strip, tubing, wire, welding rods, billets, slabs, plates, castings, etc.

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NEVASTAIN
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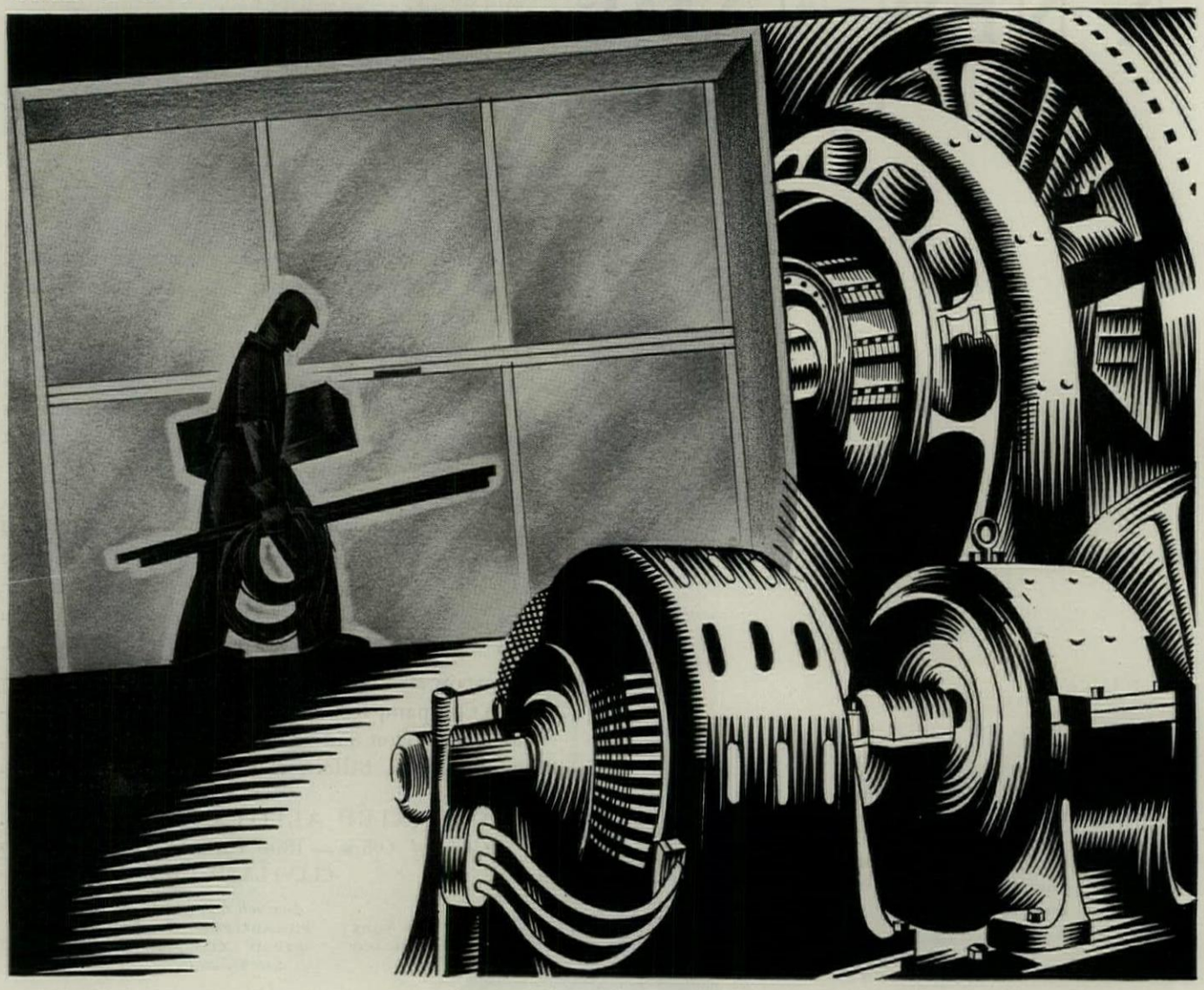
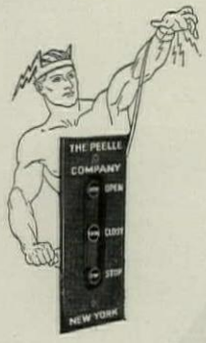
THE DOORWAY OF AMERICA'S FREIGHT ELEVATOR TRAFFIC





dynamo... modern descendant of primitive tread mills... impetus that animates into being the products of industry. But these products must move—from machine to machine—floor to floor—from maker to buyer. Peelle Doors accelerate the flow of products that power produces, help quicken their vertical voyage throughout the plant. Motorized... they afford automatic entrance and exit at the touch of an electric button... level vertical shaftways into horizontal highways... clear the right-of-way for interior traffic. Peelle Doors guard men and freight against accident, save time and labor—function with speed so that production energy may not waste itself in slow motion. In these things Peelle Doors justify a slightly higher first-cost, which low-upkeep and trouble-free service makes negligible through the years. A Peelle catalog will be gladly sent upon request, or consult our engineers.

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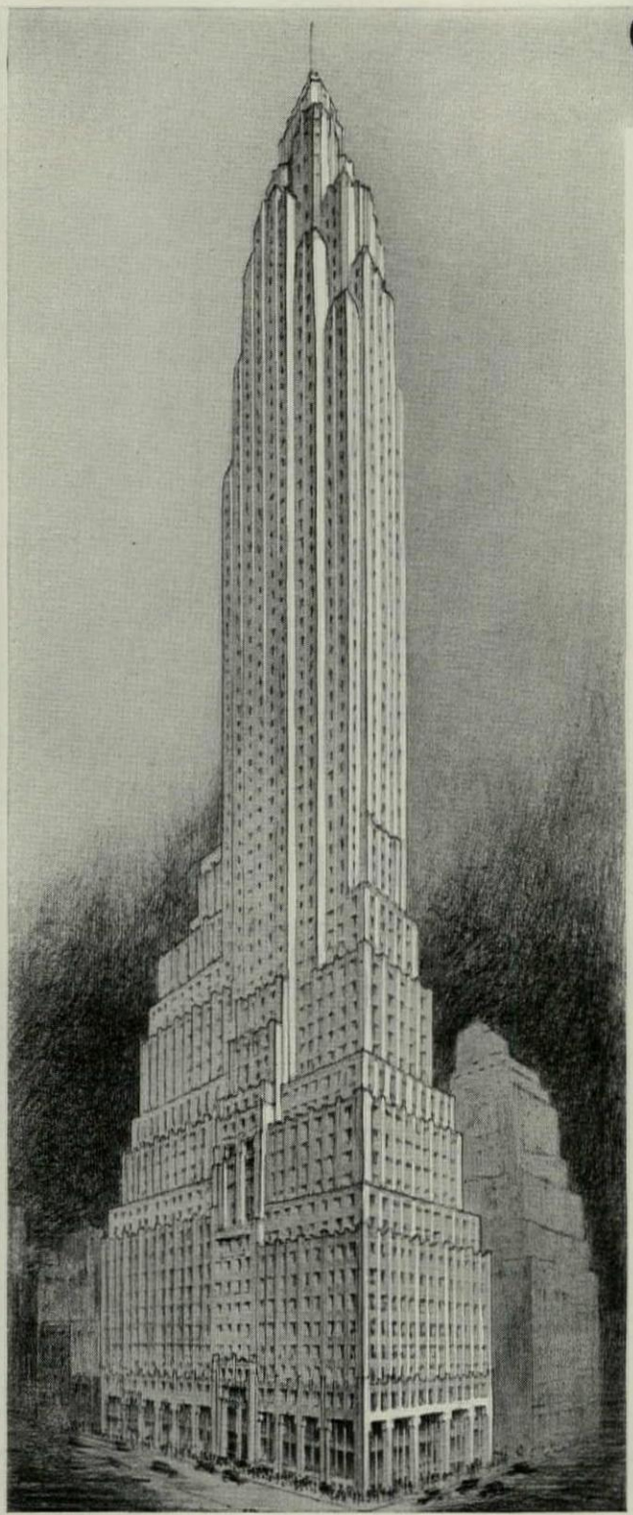
DOORS

THE PEELLE COMPANY, BROOKLYN, NEW YORK
Boston, Chicago, Cleveland, Philadelphia, Atlanta and 30 other cities
In Canada: Toronto and Hamilton, Ontario



Architects: CLINTON & RUSSELL, HOLTON & GEORGE
Contractors: JAMES STEWART & CO., INC.

CITIES SERVICE BLDG.
NEW YORK

THIS 66-story office building, at Cedar, Pine and Pearl Streets, is the first to employ double deck passenger elevator cars. Just as Dahlstrom Elevator Entrances were designated for the first full automatic signal control elevator installation years ago, they are again the first to be used with this latest innovation in vertical traffic.

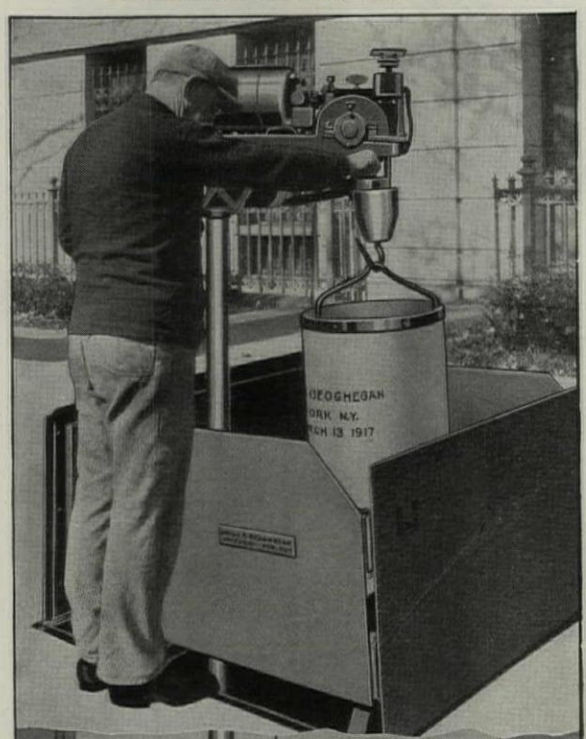
Elevator Entrances by

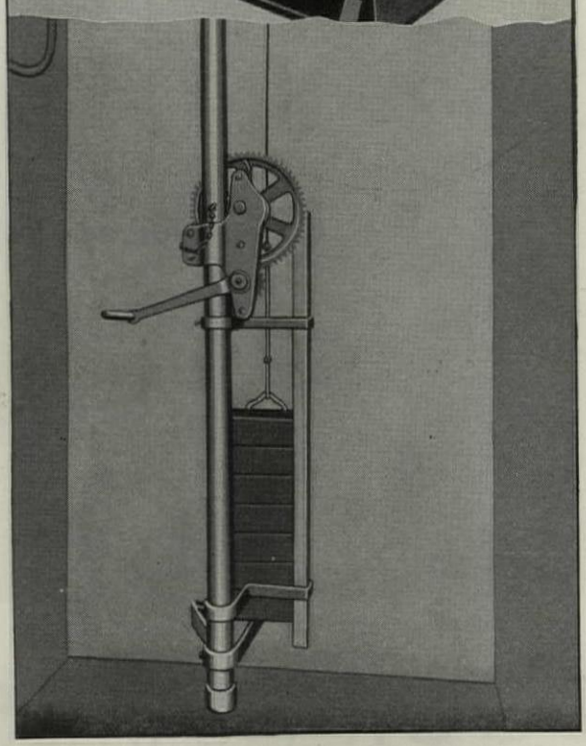
DAHLSTROM

THE DAHLSTROM METALLIC DOOR COMPANY, *(Established 1904)* JAMESTOWN, NEW YORK
WITH OFFICES AND REPRESENTATIVES IN PRINCIPAL CITIES

ASH REMOVAL

the G&G ELECTRIC
REG. U.S. PAT. OFF.
Telescopic Hoist
With Automatic Stop and Gravity Lowering Device





IN THE CORCORAN ART GALLERY

Washington, D. C.

The Corcoran Gallery of Art was founded and endowed by the late William W. Corcoran in 1869 as a gift to the public, "for the perpetual establishment and encouragement of the Fine Arts." Its collections have grown in extent and value until the Corcoran Gallery is now one of the chief places of interest in Washington.

THE Model E G&G Electric Telescopic Hoist with door equipment, as illustrated, in use at the Corcoran Art Gallery (Charles A. Platt, Archt.), has been repeatedly specified for use in buildings where a modern ash removal system is desired. Its chief advantages are: (1) positive safety because sidewalk opening is protected at all times, particularly when, as illustrated, the opening is away from building wall and four sides are guarded; (2) economy in operation because one man can do all the work and a surprisingly small amount of current is required; and (3) its rugged construction assuring long years of service.

As proof of its low operating cost, tests conducted with Model E Hoists by engineers of the Sprague Electric Works of the General Electric Company, disclosed the following results:

296 cans raised in one kilowatt hour
85 round trips for one cent current cost
227 cans handled in one kilowatt hour
15½ tons of ashes raised in one kilowatt hour
258 cans raised in one kilowatt hour

Differences in rate per kilowatt hour and distance of lift account for variance in results. Detailed figures of these tests are available on request. Hoists tested were regular stock models at actual installations, in use for some time for the removal of ashes.

2050 schools, 617 banks, 201 Bell Telephone Buildings, use G&G Telescopic Hoist equipment for removing ashes, garbage and rubbish. The list of satisfied users covers almost every building classification. Electric and hand-power models to meet varying conditions, but all noted for their outstanding economy in operation, positive safety features and extra long life. Our Engineering Department will be glad to work with you on your next project.

Catalog in Sweet's Archt. Cat., 1931 Ed., pp. D6342-49
Catalog in Specification Data, 1930 Ed., pp.230-31

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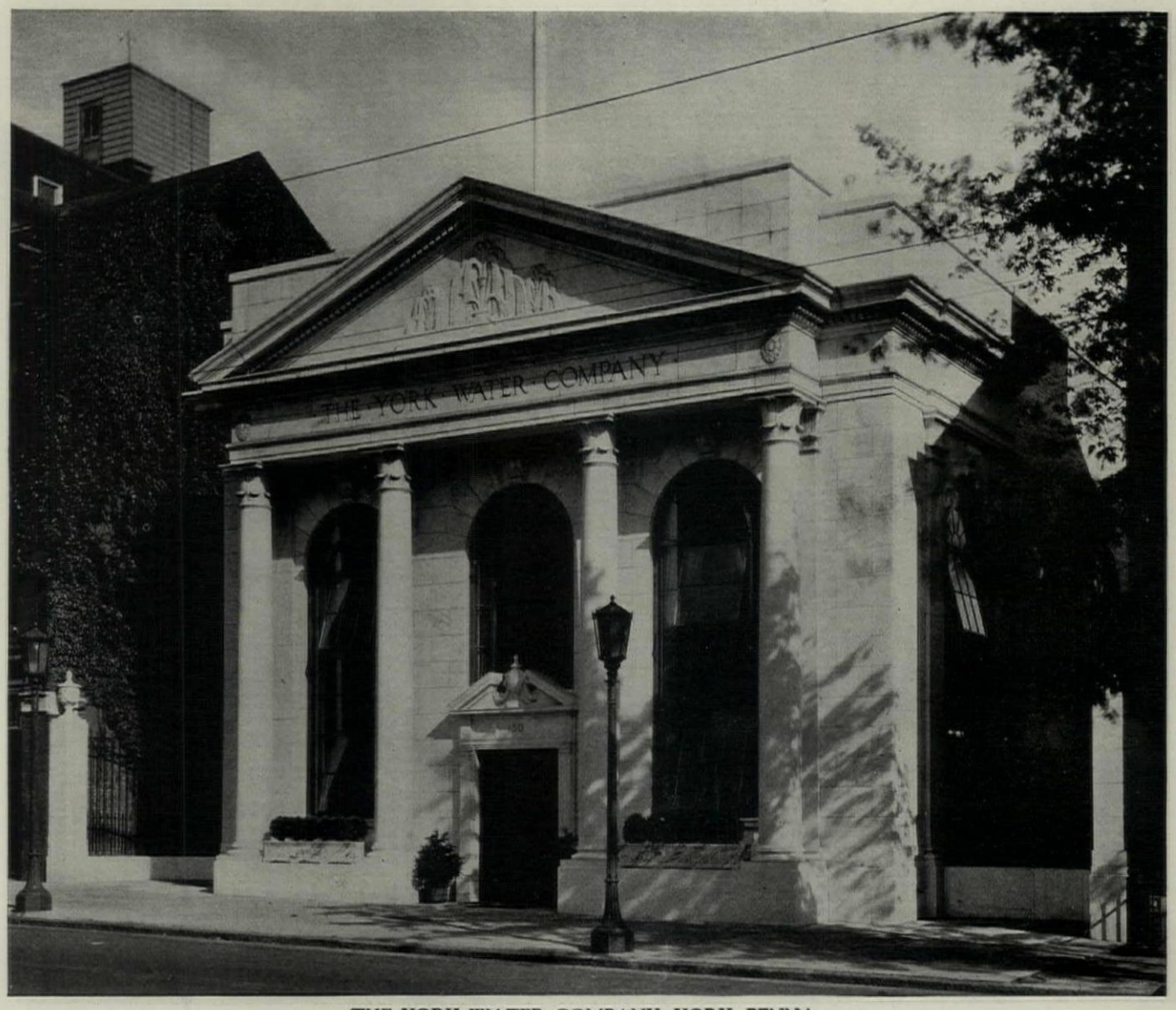

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Edward Leber and W. B. Billmeyer, *Asso. Archts.*

A UNIQUE SETTING

The York Water Company Building, in the *center* of a block, has been given *corner* prominence both by its *unique setting* and by the use of crystalline Georgia White Marble. The open spaces flanking the building permit the architectural details to be returned on either side of the building giving that three dimensional character so often lacking in facades that are *wedged* between two buildings.

THE GEORGIA MARBLE COMPANY · TATE · GEORGIA

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OUT of the dim mists of antiquity come myths of giants . . of Atlas who upheld the blue vault of heaven . . of Hercules and his twelve stupendous tasks . . of Goliath and Cyclops and a host of others.

Today another race of giants shoulder the world's work. Carnegie Beams are the modern giants of the earth. Introduced less than four years ago, they have been conspicuous in recent notable construction. The Empire State Building, the Chrysler Building, the new Waldorf-Astoria, Hotel New Yorker, the Irving Trust Company Building, the Koppers and Grant Buildings in Pittsburgh, the Penobscot and Fisher Buildings in Detroit, the Department of Commerce Building in Washington, Strawbridge & Clothiers Store in Philadelphia, the Carew Tower in Cincinnati, No. 1 LaSalle Street and the Palmolive Building in Chicago . . these and countless others are borne on the broad shoulders of Carnegie Beams. Such widespread usage is the best indication of their adequacy to the needs of architects and designers. Their broad flanges present advantages applying to any type of construction involving the use of Structural Steel, regardless of size or type of architecture.

C B's (Carnegie Beams) are ready to serve you. They're fit for any job.

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NEWS

THE "Metropolitan Set" . . . MATCHED FIXTURES

A BRAND-NEW SERIES OF RELATED FIXTURES AND FITTINGS—MODERN, BEAUTIFUL, DESIGNED TO HARMONIZE ESPECIALLY WITH EACH OTHER. ORIGINAL WITH KOHLER!

- *The new syphon-jet closet* K-5670-EB—*for the* METROPOLITAN SET. *Other styles and combinations are available.*
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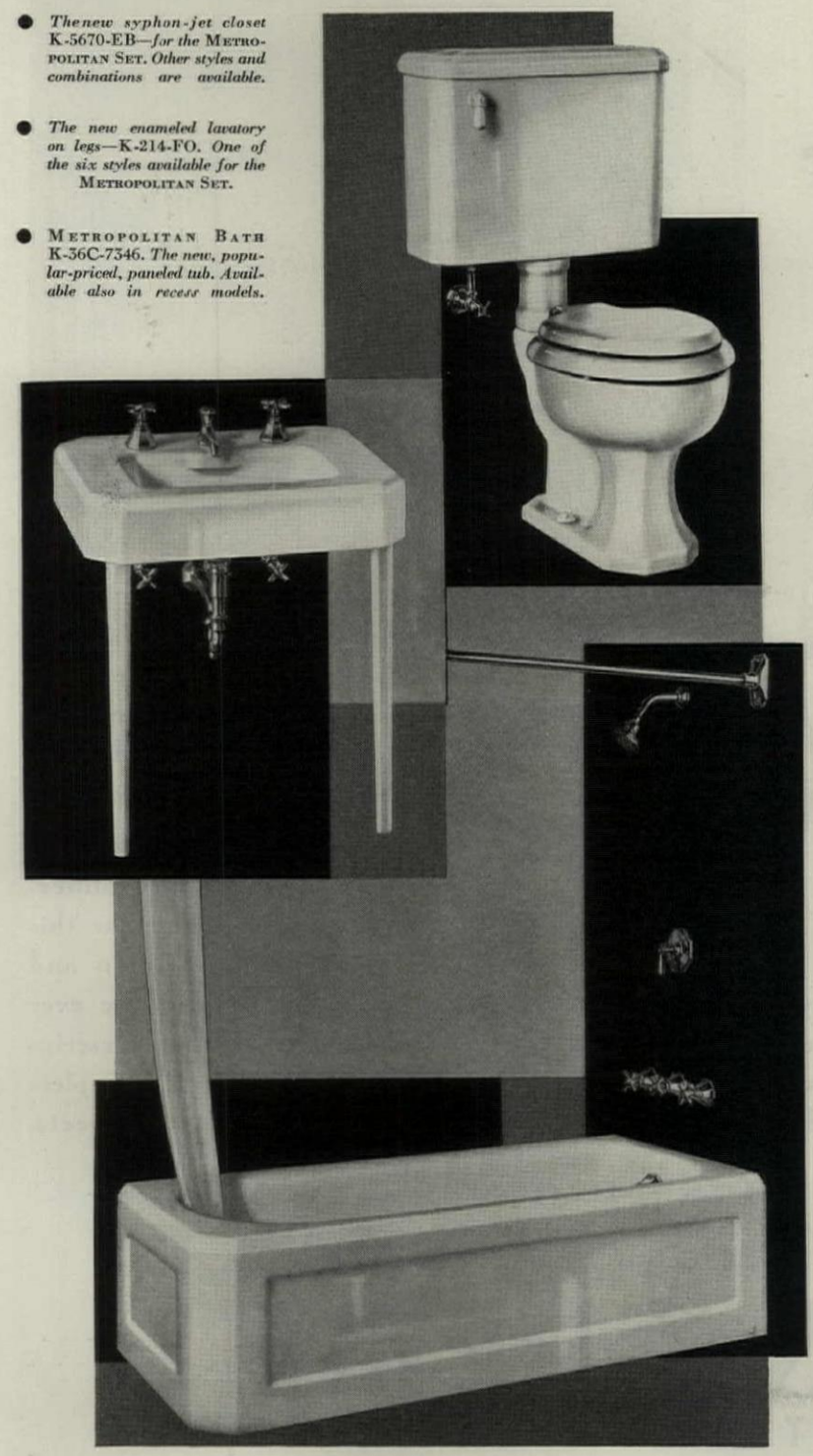
- METROPOLITAN BATH K-36C-7346. *The new, popular-priced, paneled tub. Available also in recess models.*



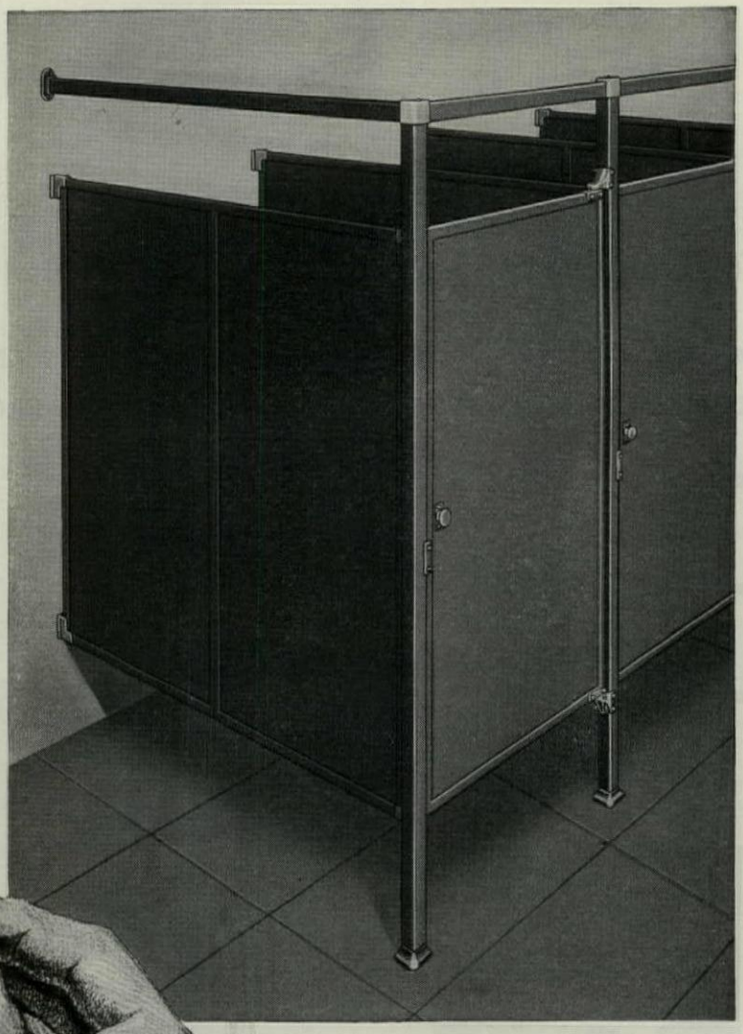
IF YOU'VE had your eye on plumbing trends, you've watched the demand for matched fixtures gather speed. Bathrooms, important as they are, have been getting brighter, more important all the time. And lately, home-hunters and home-owners, keen about the decorative effect, have been asking for lavatories, baths, and closets *that go together.*

Now, for the first time in plumbing history, a manufacturer is deliberately merchandising these related fixtures and fittings — at popular prices! Knowing your bathroom, knowing the architectural treatment of the house, you simply choose the Kohler set which best suits. Easy as one-and-two! And from the smooth shining glaze of the enamel or vitreous china, to the distinguished fittings, *every* fixture in that set agrees perfectly in design, style, quality, and color with the others!

The first of the new sets is illustrated —an exclusive Kohler design. You have a choice of sizes and models. Octachrome fittings are new, too—made of the finest brass, they do their work surely, silently, positively. . . . All-Kohler plumbing is a lifetime investment in comfort. Complete Kohler bathrooms with matched fixtures, a great step forward, promise unfailing beauty and satisfaction.

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



A Masterstroke of Design

THROWING PRECEDENT to the winds and thinking only in terms of betterment at lower and still lower prices, the design and construction of this new Mills Metal Toilet Partition is a challenge to the imagination of every buyer and to the ingenuity of him who would design better!

A design that permits for the first time panels and doors with the narrow stile so much desired for beauty and harmony of present day architecture, and without in any way sacrificing the strength, utility and sanitary features for which Mills Metal toilet partitions have always been noted.

Other outstanding features are a hinge with only two parts, entirely new type of panel clip and new wall bracket all adding to simplicity of erection and reducing cost.

Besides these there are numerous other features that make this a remarkable partition and at the lowest price we ever put on a toilet partition. Descriptive literature on request. Complete Mills Metal Catalog in Sweets.

THE MILLS COMPANY

Manufacturers of a complete line of toilet partitions and interchangeable partitions for office and factory

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TOILET PARTITIONS

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LOWER MANHATTAN

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Before the use of Elevators.

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22 years after Elisha Otis made the first Safe Elevator.

1908

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1930

6 years after the introduction of Otis Signal Control Elevators.

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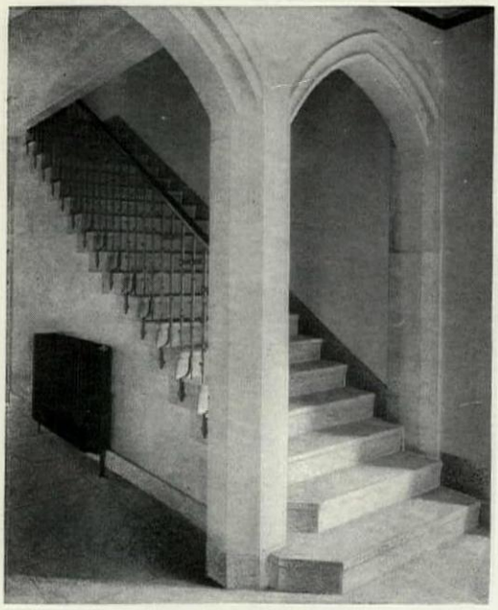
Suitable, from every angle, for sills, stools, floors, treads and base

Alberene Stone floor in the loggia of the Penn Athletic Club, Philadelphia



Alberene Stone stair treads, floor tiles and base — St. Paul's Presbytery, Pittsburgh

COLOR, durability, economy of upkeep, appearance — consider Alberene Stone from every angle and you will find it meets your requirements.

Its natural light blue-grey tone harmonizes with practically any color scheme.

Sills, exposed to extreme changes of weather, do not chip, scale or split, because the stone is impervious to moisture. Selected, hard Alberene Stone has proven its lasting qualities under severe daily use for stair-treads and landing platforms in schools and public buildings.

Its freedom from staining and its ease of cleaning make for economy particularly since the stone does not show its age. The brochure "Architectural Alberene" shows actual color reproductions of commonly used building stones in conjunction with Alberene, also gives pertinent facts as to the known durability of the stone. We will send you a copy of the brochure, gladly.

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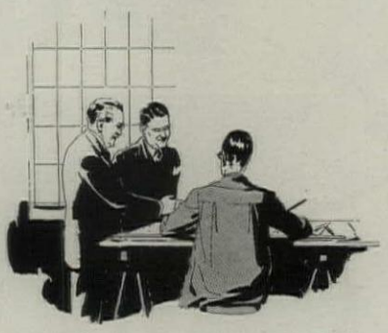
ALBERENE STONE

THE NATURAL STONE OF DIVERSIFIED UTILITY



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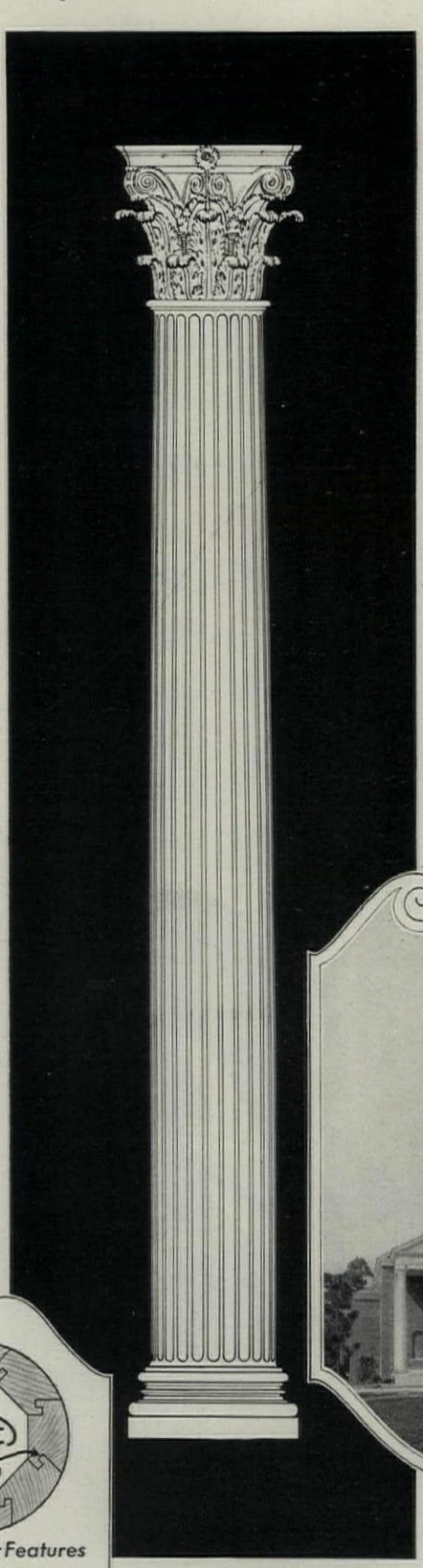
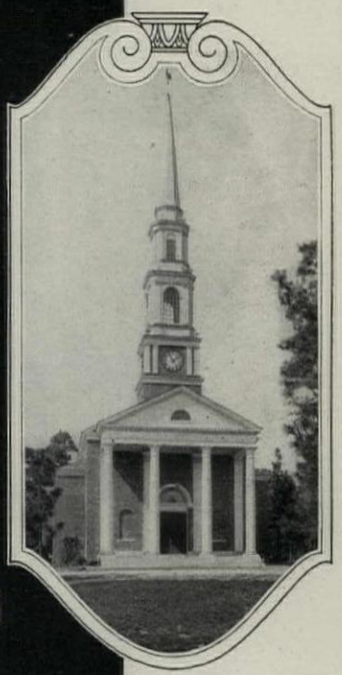
I like to use columns in my work. To me they are the symbol of architecture; and a well detailed, well turned wood column always gives me a thrill. Perhaps that is why I am so insistent that the columns I use shall be "just right." I have found that it pays to be particular, for a column is always out in front where the eye sees it first, and it really makes or mars the building.

Therefore, I always specify Hartmann-Sanders Columns, for they are always authentic and correct in every detail. What is just as important—they are made with a patented Lock-Joint, which absolutely prevents warping, loosening or opening up at the joints. But I am satisfied to leave those details to Hartmann-Sanders, for they have specialized in making exterior millwork for thirty years.



Church, Pinehurst, N.C.
Hobart Upjohn, Arch.,
New York City



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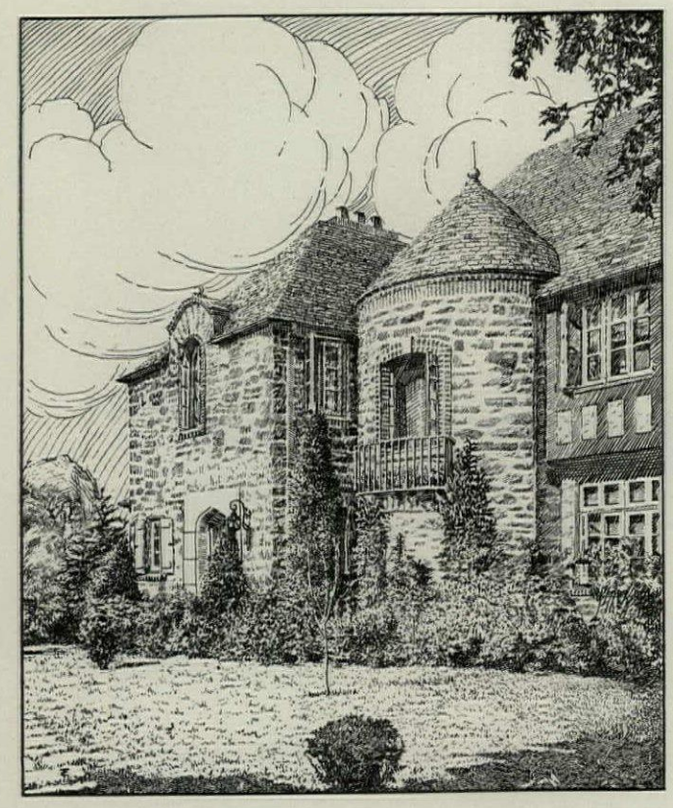

Wallace & Warner designed this house at Rosemont, Pa. The natural resistance of the fieldstone walls to cold, heat and noise has been more than doubled by the use of CABOT'S QUILT.

A Permanent Sentinel

Against Cold, Heat and Noise

On the south coast of England stands a curious little building called "Domesday Hut". It was standing in 1086, and its original construction still remains —oak timbers thatched with *Zostera Marina;* the same tough, century-defying sea plant that is the insulating material in Cabot's Quilt.

Zostera Marina is rot-proof, vermin-proof, and fire-resistant. It will never pack down, decay, or lose its insulating power. Therefore, you can use it to build a warm house in New Brunswick, a cool house in New Orleans, or a quiet house in New York. And you can give your client more comfort, health and peace of mind than he thought possible for so little money.

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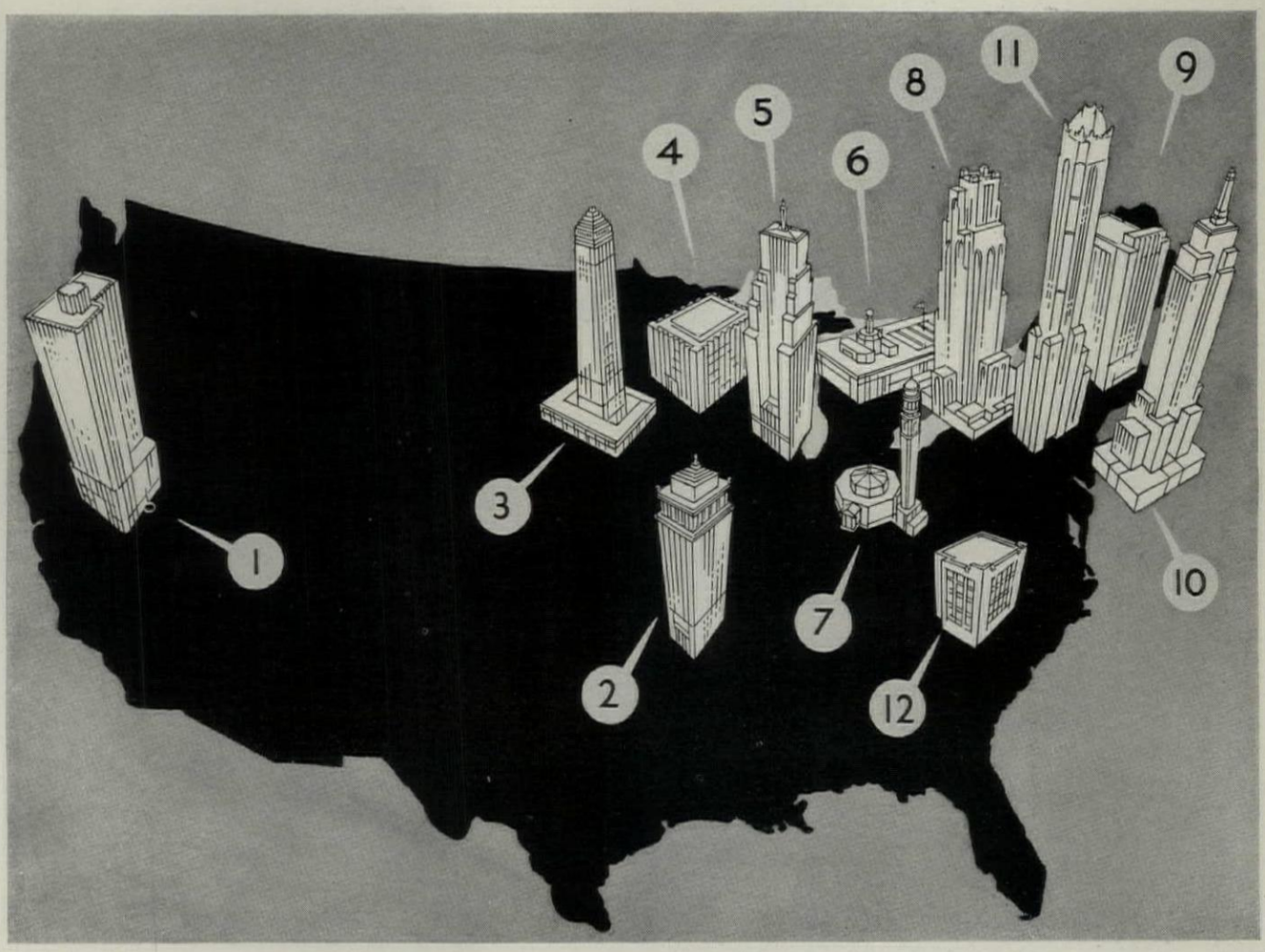


Aluminum castings used in these buildings were made from Alcoa Aluminum Alloy No. 43

Page 1

How Prominent Architects have used Alcoa Aluminum in 48 Important Buildings

1 450 SUTTER BUILDING, San Francisco, California. Architect: Miller and Pflueger, San Francisco. General Contractor: Lindgren and Swinerton, Inc., San Francisco. Sub-contractor on aluminum work: Michel and Pfeffer Iron Works, San Francisco, California. ALCOA ALUMINUM used for elevator doors, entrances, grilles, directory board, lighting fixtures.

2 ST. LOUIS CIVIL COURT HOUSE, St. Louis, Missouri. Architect: Plaza Commission, Inc. Working under the direction of the Plaza Commission. Architects: George D. Barnett, Inc.; T. P. Barnett Company; Preston J. Bradshaw; Helfensteller, Hirsch and Watson; William B. Ittner; Klipstein and Rathmann; La Beaume and Klein; Mauran, Russel and Crowell. Engineers: Brussel and Viterbo; Frederick C. Taxis. ALCOA ALUMINUM used for sheet roofing, fascia, decorative sphinxes, conduit.

3 FOSHAY TOWER, Minneapolis, Minn. Architect: Magney and Tusler, Inc., Minneapolis. General Contractor: National Contracting Company, Minneapolis. Sub-contractor on aluminum work: Crown Iron Works Company, Minneapolis. ALCOA ALUMINUM used for guard rail and ladder rungs.

4 A. O. SMITH CORPORATION, Engineering and Research Laboratory, Milwaukee, Wisconsin. Architect: Holabird and Root, Chicago, Illinois. General Contractor: Wisconsin Bridge and Iron Company; A. O. Smith Corporation, Milwaukee. Sub-contractor on aluminum work: Super Steel Products Company, Milwaukee. ALCOA ALUMINUM used for windows, cornice, coping, pilasters, plynth blocks.

5 CHICAGO BOARD OF TRADE BUILDING, Chicago, Illinois. Architect: Holabird and Root, Chicago. General Contractor: Hegeman-Harris Company, Inc., Chicago. Sub-contractor on aluminum work: Shean Steel Window Company, Chicago; Gorham Manufacturing Company, Providence, R. I. ALCOA ALUMINUM used for batten seam roof, sliding sash on promenade deck, gutters, smoke hood and statue.

6 WAYNE COUNTY AIRPORT, Detroit, Michigan. Architect: Giffels and Vallet, Inc., Detroit. General Contractor: Gallagher and Flemming, Detroit. Sub-contractor on aluminum work: Anchor Steel Engineering Company. ALCOA ALUMINUM used for spandrels, cornice and light fixtures.

7 FIRST CHURCH OF CHRIST SCIENTIST, Cleveland, Ohio. Architect: Walker and Weeks, Cleveland. General Contractor: Crowell and Little Construction Company, Cleveland. Sub-contractors on aluminum work: Industrial Asbestos Company and The John Harsch Bronze and Foundry Company, Cleveland. ALCOA ALUMINUM used for sheet roof, cast ornamental bells, tower dome and finial.

8 CATHEDRAL OF LEARNING, Pittsburgh, Pennsylvania. Architect: Chas. L. Klauder, Philadelphia. General Contractor: Stone and Webster, Pittsburgh and New York. Sub-contractor on aluminum work: Stone and Webster, Pittsburgh and New York. ALCOA ALUMINUM used for spandrels.

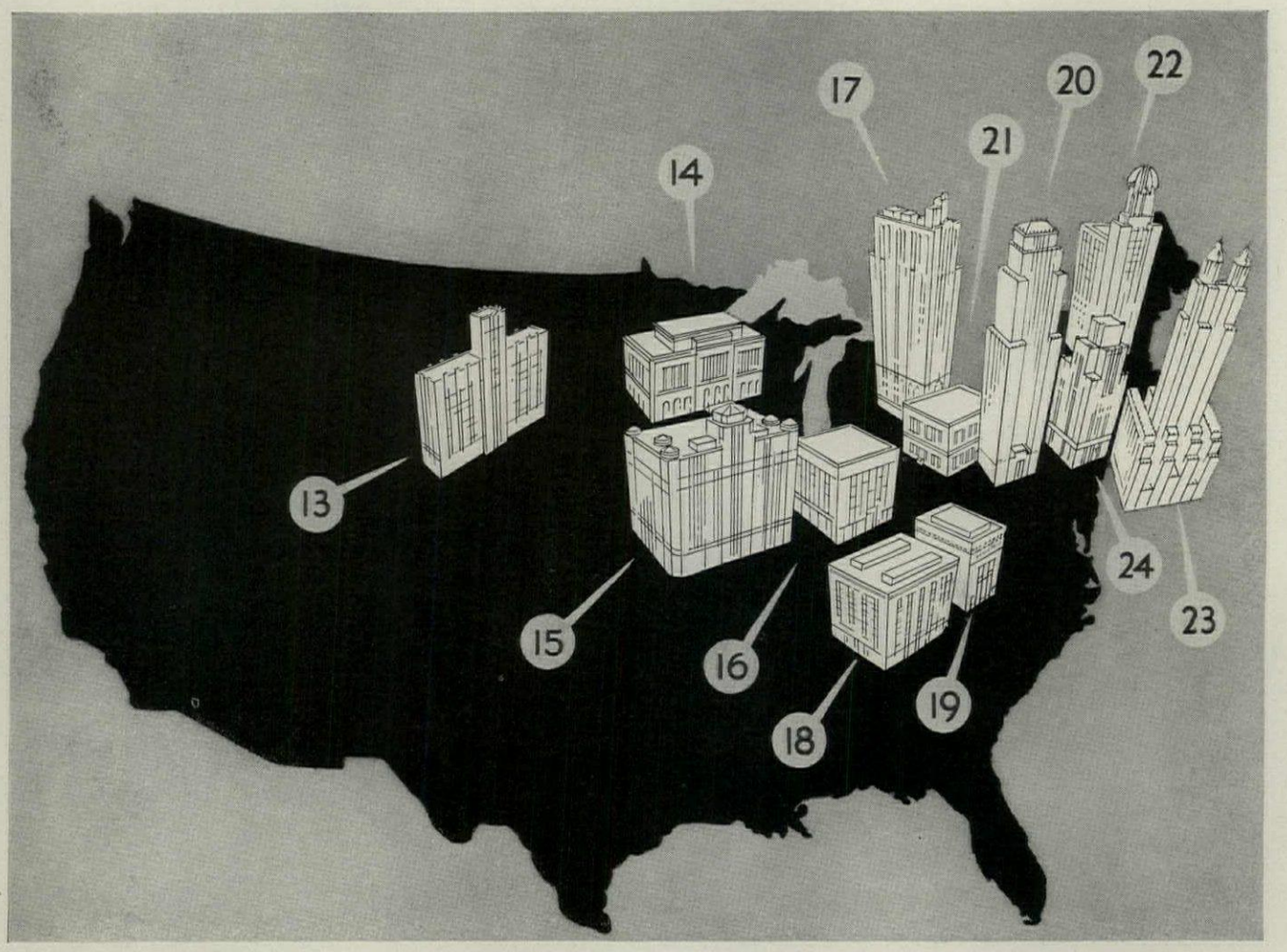
9 EDISON ELECTRIC ILLUMINATING COMPANY BUILDING, Boston, Massachusetts. Architect: Bigelow, Wadsworth, Hubbard and Smith, Boston. General Contractor: W. A. and H. A. Root, Boston. Sub-contractor on aluminum work: A. L. Smith Iron Works, Chelsea, Mass. ALCOA ALUMINUM used for spandrels.

10 EMPIRE STATE BUILDING, New York City, N. Y. Architect: Shreve, Lamb and Harmon, New York. General Contractor: Starrett Brothers & Eken, Inc., New York. Sub-contractors on aluminum work: C. E. Halback and Company, Brooklyn, N. Y.; Wm. H. Jackson Co., Brooklyn, N. Y.; General Bronze Corporation, Long Island City; W. S. Tyler Company, Cleveland, Ohio. ALCOA ALUMINUM used for store fronts, spandrels, moldings, elevator doors and trim, mooring mast sheathed with aluminum, wings cast in aluminum.

11 RADIO VICTOR BUILDING, New York City, N. Y. Architect: Cross and Cross, New York. General Contractor: A. L. Hartridge Company, Inc., New York. Sub-contractors on aluminum work: Atlas Iron Works, New York; Wm. H. Jackson Co., Brooklyn, N. Y. ALCOA ALUMINUM used for window sills, decorative metal work in lobby, exterior ornamental metal work.

12 SOUTHERN BELL TELEPHONE AND TELEGRAPH BUILDING, Greensboro, North Carolina. Architect: Marye, Alger and Vinour, Atlanta, Georgia. General Contractor: Barge-Thompson Company, Atlanta. Sub-contractor on aluminum work: Price Evans Foundry Corporation, Chattanooga, Tennessee. ALCOA ALUMINUM used for spandrels.

ALCOA ALUMINUM



Aluminum castings used in these buildings were made from Alcoa Aluminum Alloy No. 43

Page 2

They commanded a metal that lent itself readily to architectural design and fine detail

13 CREIGHTON UNIVERSITY, Omaha, Nebraska. Architect: Leo A. Daly, Omaha. General Contractor: A. Borchman and Son, Omaha. Sub-contractor on aluminum work: Kraus and Trustin, Omaha. ALCOA ALUMINUM used for spandrels.

14 MILWAUKEE COUNTY COURT HOUSE, Milwaukee, Wisconsin. Architect: Albert Randolph Ross, Milwaukee. General Contractor: Capitol Ornamental Iron Works, Rockford, Illinois. ALCOA ALUMINUM used for grille work.

15 MERCHANDISE MART BUILDING, Chicago, Illinois. Architect: Graham, Anderson, Probst and White, Chicago, Illinois. General Contractor: John Griffiths and Son Company, Chicago. Sub-contractors on aluminum work: Hansell-Elcock Company, Chicago; A. S. Schulman Electric Company, Chicago. ALCOA ALUMINUM used for light brackets, miscellaneous extruded moldings and castings.

16 HOWARD AVENUE TRUST AND SAVINGS BANK BUILDING, Chicago, Illinois. Architect: Jens J. Jensen, Chicago. General contractor: Wm. G. McNulty and Brothers, Chicago. Sub-contractors on aluminum work: The E. M. Weymer Company, Inc., Chicago; American Iron and Wire Works, Chicago. ALCOA ALUMINUM used for inscription panels and plaques, entrance grilles, vestibule grilles, lobby door frames and grilles, mail boxes, balcony railing, check desks, desk light fixtures, calendar frames, wickets for bank tellers, vault screen, gate to banking enclosure, etc.

17 UNION INDUSTRIAL BANK BUILDING, Flint, Michigan. Architect: Smith, Hinchman and Grylls, Detroit, Michigan. General Contractor: Realty Construction Company, Flint. Sub-contractor on aluminum work: General Bronze Corporation, New York. ALCOA ALUMINUM used for spandrels, banking room windows, name plates, store fronts, street letters, grilles, flag pole base, stair and balcony railings.

18 WARNER BROTHERS PICTURES, Inc., Cleveland, Ohio. Architect: J. Milton Dyer, Cleveland. General Contractor: Hunkin-Conkey Company, Cleveland. Sub-contractor on aluminum work: The John Harsch Bronze and Foundry Company, Cleveland. ALCOA ALUMINUM used for spandrels, store fronts, entrances, elevator doors, grilles, lobby trim, etc.

19 GUARDIAN BANK BUILDING, Cleveland, Ohio. Architect: H. W. Johnson, Cleveland. Sub-contractor on aluminum work: The John Harsch Bronze and Foundry Company, Cleveland. ALCOA ALUMINUM used for store fronts, doors, bank screens, check tables and spandrels.

20 KOPPERS BUILDING, Pittsburgh, Pennsylvania. Architect: Graham, Anderson, Probst and White, Chicago, Illinois. General Contractor: Mellon Stuart Company, Pittsburgh; Rust Engineering Company, Pittsburgh. Sub-contractor on aluminum work: P. Larsen Company, Pittsburgh. ALCOA ALUMINUM used for spandrels and elevator cab doors.

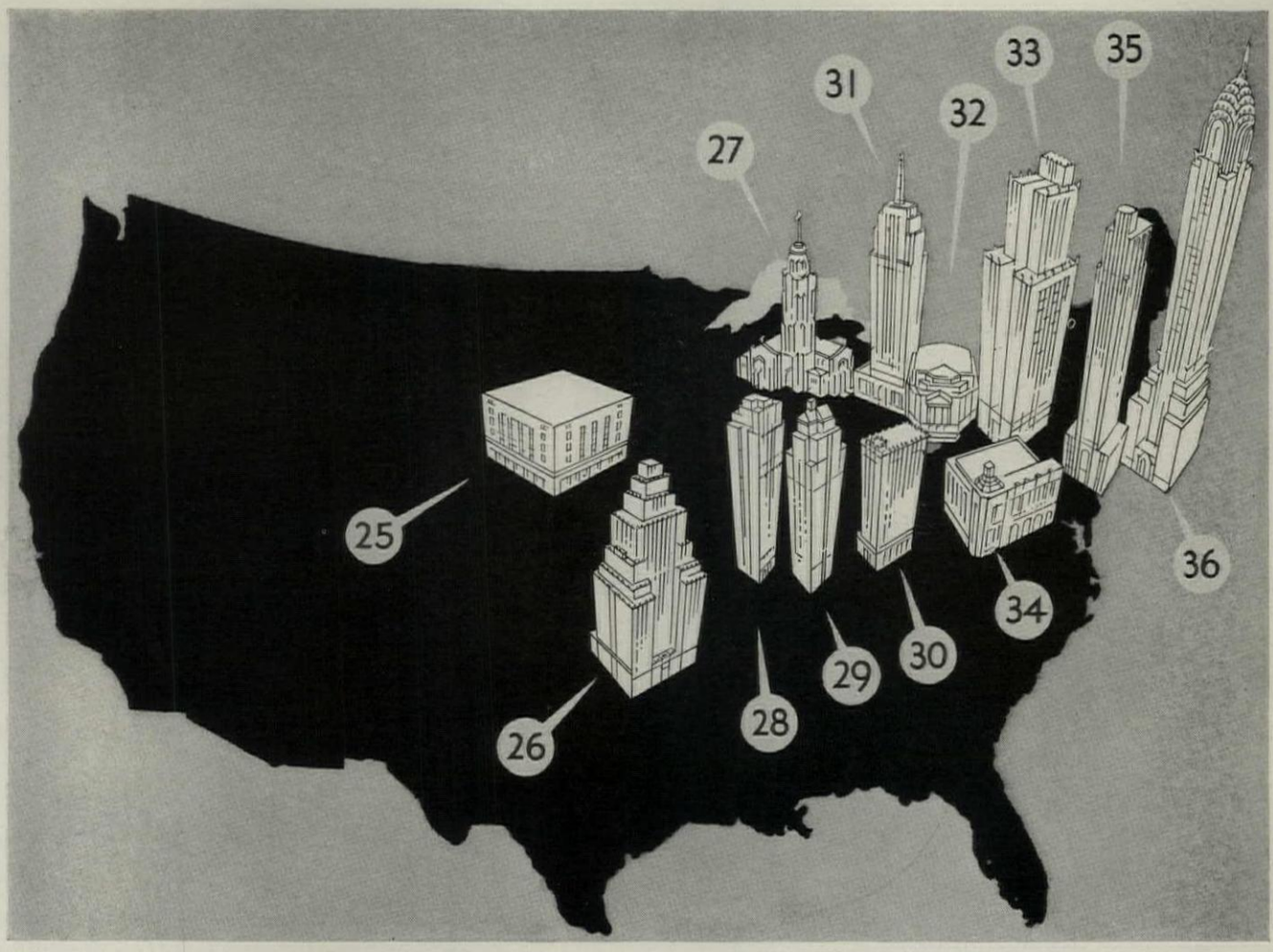
21 GULF RESEARCH BUILDING, Pittsburgh, Pennsylvania. Architect: Schwab, Palmgreen and Merrick, Pittsburgh. General Contractor: Mellon Stuart, Pittsburgh. Sub-contractor on aluminum work: P. Larsen Company, Pittsburgh. ALCOA ALUMINUM used for spandrels, mullions, doors and flashing.

22 GENESEE VALLEY TRUST BUILDING, Rochester, New York. Architect: Voorhees, Gmelin, and Walker, New York. General Contractor: A. Frederick and Sons Company, Rochester. Sub-contractor on aluminum work: Francis Metal Door and Window Corporation. ALCOA ALUMINUM used for bank room windows, spandrels, grilles, wings, mullions, light reflectors.

23 WALDORF ASTORIA HOTEL, New York City, N Y. Architect: Schultze and Weaver, New York. General Contractor: Thompson-Starrett Company. Sub-contractor for aluminum work, General Bronze Corporation, Long Island City, N. Y. ALCOA ALUMINUM used for spandrels.

24 HERSH TOWER, Elizabeth, New Jersey. Architect: Myers and Shanley, Newark, New Jersey. General Contractor: Turner Construction Company, New York City. Sub-contractors on aluminum work: General Bronze Corporation, New York City; Del Turco and Brothers, Inc., Harrison, New Jersey (Terrazzo). ALCOA ALUMINUM used for spandrels, sills, sash, grilles, mullions, store fronts, screens, beltline, entrance vestibule, lobby, elevator doors, lighting fixtures, gutters, terrazzo strips, pilasters.

ALCOA ALUMINUM



Aluminum castings used in these buildings were made from Alcoa Aluminum Alloy No. 43

Page 3

They secured permanence—saved handling unnecessary weight—cut cost of erection

25 FAIDLEY BUILDING, Omaha, Nebraska. Architect: McDonald and McDonald, Omaha. General Contractor: A. H. Brodkey Company, Omaha. Sub-contractor on aluminum work: Kraus and Trustin, Omaha. ALCOA ALUMINUM used for spandrels, store fronts, mullions.

26 PARK PLAZA HOTEL, St. Louis, Missouri. Architect: Bauman and Schopp, St. Louis. General Contractor: Koplar Construction Company, St. Louis. Sub-contractor on aluminum work: Usona Mfg. Company, St. Louis. ALCOA ALUMINUM used for radiators, supplied by the Thermal Unit Heating Company, Chicago; elevator doors, furnished by the Dahlstrom Metallic Door Company; moulding, stair rails.

27 ST. SEBASTIAN CHURCH, Milwaukee, Wisconsin. Architect: Herbst and Kuenzli, Milwaukee. General Contractor: Edward Steigerwald and Sons, Inc., Milwaukee. Sub-contractor on aluminum work: Jos. Romberger Sheet Metal Works, Milwaukee. ALCOA ALUMINUM used for roof, gutters and down-spouts.

28 1242 LAKE SHORE DRIVE APARTMENT BUILDING, Chicago, Illinois. Architect: Robert S. DeGolyer and Company, Chicago. General Contractor: Turner Construction Company, Chicago. Sub-contractor on aluminum work: Kohl and Vick Iron Works, Chicago. ALCOA ALUMINUM used for spandrels, balconies, window jambs and sills.

29 DRAKE TOWERS, Lake Shore Drive, Michigan Avenue, Chicago, Illinois. Architect: Benjamin H. Marshall, Chicago. General Contractor: Benjamin H. Marshall, Construction Department. Roofing and sheet metal construction, Advance Roofing and Sheet Metal Works, Inc. ALCOA ALUMINUM used for shingles.

30 CENTRAL UNION BANK BUILDING, Evansville, Indiana. Architect: McGuire and Shook, Indianapolis, Indiana. Associate Architect: Walker and Weeks, Cleveland. General Contractor: M. J. Hoffman Construction Company, Evansville, Indiana and Detroit, Michigan. Sub-contractor on aluminum work: International Steel and Iron Company, Evansville, Indiana. ALCOA ALUMINUM used for spandrels and window sills.

31 OLD MERCHANTS NATIONAL BANK AND TRUST COMPANY BUILDING, Battle Creek, Michigan. Architect: Weary and Alford, Chicago, Illinois. General Contractor: Walbridge and Aldinger, Detroit, Michigan. Sub-contractor on aluminum work: General Bronze Corporation, New York City, N. Y. ALCOA ALUMINUM used for spandrels, grilles, main entrance, mullions.

32 SEVERANCE HALL, Cleveland, Ohio. Architect: Walker and Weeks, Cleveland. General Contractor: Crowell and Little Construction Company, Cleveland. Sub-contractors on aluminum work: Industrial Asbestos Company, Cleveland; The John Harsch Bronze and Foundry Company, Cleveland. ALCOA ALUMINUM used for roof, doors, marquise, stair case, terrazzo strips, grilles, panels, etc.

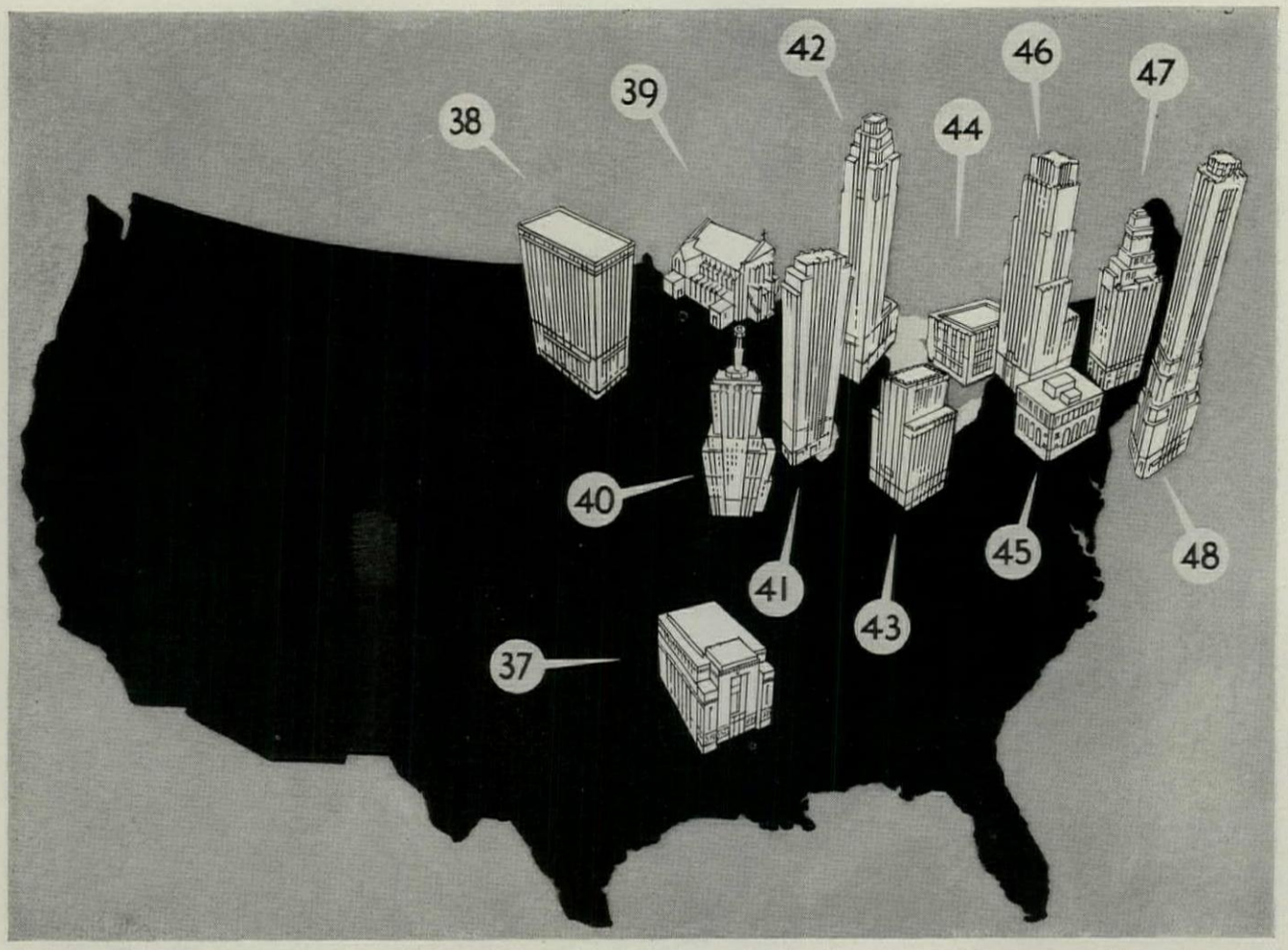
33 GRANT BUILDING, Pittsburgh, Pennsylvania. Architect: Henry Hornbostel, Pittsburgh. General Contractor: Thompson-Starrett Company, Pittsburgh, Pennsylvania and New York City, N. Y. ALCOA ALUMINUM used for spandrels, guard rail, sheet roof on pent house.

34 MT. LEBANON MUNICIPAL BUILDING, Mt. Lebanon, Pennsylvania. Architect: Wm. H. King, Jr., Pittsburgh. General Contractor: H. S. Miller and Son, Pittsburgh. Sub-contractor on aluminum work: Star Ornamental Iron Company, Pittsburgh. ALCOA ALUMINUM used for roofing, flashing, skylights, spandrels, stair and balcony railings, entrance hardware.

35 1616 WALNUT STREET BUILDING, Philadelphia, Pennsylvania. Architect: Tilden, Register and Pepper, Philadelphia. General Contractor: Wark and Company. Sub-contractor on aluminum work: General Bronze Corporation, New York. ALCOA ALUMINUM used for spandrels and interior lobby.

36 CHRYSLER BUILDING, New York City, N. Y. Architect: Wm. Van Alen, New York. General Contractor: Fred T. Ley and Company, Inc., New York. Sub-contractors on aluminum work: Sexauer & Lemke, Inc., Long Island City; Benjamin Reisner, Inc., New York City; Abbot and Ney Co., Inc., New York City, N. Y. ALCOA ALUMINUM used for spandrels, window sills, flag pole base, door saddles, louvres, window ventilators, parapet hand rail, coping panels, roof drains and leader outlets.

ALCOA ALUMINUM



Aluminum castings used in these buildings were made from Alcoa Aluminum Alloy No. 43

Page 4

They used a metal that does not require surface protection...is free from corrosion... does not streak adjoining surfaces

37 UNION TRUST BUILDING, Little Rock, Arkansas. Architect: Thompson, Sanders and Ginocchio, Little Rock. General Contractor: International Casement Company, Jamestown, New York. Sub-contractor on aluminum work: P. Larsen Company, Pittsburgh, Pennsylvania. ALCOA ALUMINUM used for spandrels, grilles, mullions and jambs.

38 NORTHWESTERN BANK BUILDING, Minneapolis, Minnesota. Architect: Graham, Anderson, Probst and White, Chicago, Ill. General Contractor: Charles Haglin and Sons Company, Minneapolis. Sub-contractor on aluminum work: General Bronze Corporation, Minneapolis. ALCOA ALUMINUM used for spandrels.

39 HOLY GHOST CHURCH, Milwaukee, Wisconsin. Architect: Eschweiler and Eschweiler, Milwaukee. General Contractor: Czaplewski Brothers, Inc., Milwaukee. Sub-contractor on aluminum work: Biersach and Niedermeyer, Milwaukee. ALCOA ALUMINUM used for roof, utters and down-spouts.

40 LINDBERGH BEACON TOWER, PALMOLIVE BUILDING, Chicago, Illinois. Architect: Holabird and Root, Chicago. General Contractor: Lundoff-Bicknell Company, Chicago. Sub-contractor on aluminum work: Gorham Manufacturing Company, Providence, Rhode Island. ALCOA ALUMINUM used for tower, structural steel encased in aluminum extruded members, projector housing.

41 430 NO. MICHIGAN BLVD. BUILDING, Chicago, Illinois. Architect: Loebl, Schlossman and Demuth, Chicago. General Contractor: Lundoff-Bicknell, Chicago. Sub-contractor on aluminum work: The American Architectural Iron Works, Chicago; Paltridge Metal Equipment Company, Chicago; E. M. Weymer Company, Chicago. ALCOA ALUMINUM used for lobby and entrance vestibule grilles and ornaments, elevator doors, door and transom frames.

42 CENTRAL NATIONAL TOWER, Battle Creek, Michigan. Architect: Holabird and Root, Chicago, Illinois. General Contractor: Lundoff-Bicknell Company, Chicago. ALCOA ALUMINUM used for flashing, louvres, screens, metal decks and ventilators.

43 THE OHIO BELL TELEPHONE COMPANY, Dayton, Ohio. Architect: Schenck and Williams, Dayton. General Contractor: H. R. Blagg Company, Dayton. Sub-contractors on aluminum work: General Bronze Corporation, Minneapolis, Minnesota; Van Kannel Revolving Door Company, New York; Cutler Mail Chute Company, New York; Campbell Metal Window Corporation, Baltimore, Maryland; Dayton Stencil Works, Dayton; Edward Meyer and Company, Cincinnati, Ohio. ALCOA ALUMINUM used for spandrels, grilles, store fronts, entrance doors to main building and stores, revolving doors, elevator doors, windows, ventilating ducts, louvres, mail chutes, directory board.

44 MICHIGAN DIAMOND EXCHANGE BUILDING (Ohio Bell Telephone Company), Cleveland, Ohio. Architect: Hadlow, Hughes, Hick, and Conrad, Cleveland. General Contractor: Crowell and Little Construction Company, Cleveland. Sub-contractor on aluminum work: Kilroy Structural Steel Company, Cleveland. ALCOA ALUMINUM used for spandrels, window sills, grilles, foyer fence and gate, entrance doors.

45 COUNTY OFFICE BUILDING, Pittsburgh, Pennsylvania. Architect: Stanley Roush, Pittsburgh. General Contractor: S. M. Siesal Company, Pittsburgh, Pennsylvania and Milwaukee, Wisconsin. Sub-contractor on aluminum work: General Bronze Corporation, New York City. ALCOA ALUMINUM used for windows, thresholds, kick plates, mop strips.

46 CENTRAL DEPOSITORS BANK, Akron, Ohio. Architect: Walker and Weeks, Cleveland, Ohio. General Contractor: Carmicheal Construction Company, Akron. Sub-contractor on aluminum work: The John Harsch Bronze and Foundry Company, Cleveland, Ohio. ALCOA ALUMINUM used for store fronts, entrance and lobby doors, grilles, terrazzo strips, bank screens, check tables, stair railing, etc.

47 NEW YORK TRUST BUILDING, New York City, N. Y. Architect: Cross and Cross, New York. General Contractor: Thompson-Starrett Company, New York. Sub-contractors on aluminum work: Reliance Bronze and Steel Company, New York; Campbell Metal Window Corp., New York; The Long Island Wire Works, Inc., Brooklyn, N. Y. ALCOA ALUMINUM used for double hung windows, revolving doors, banking room windows, elevator cabs and doors, directory board, grilles, counter screens, desks, and cage work.

48 CITY BANK-FARMERS TRUST BUILDING, New York City, N. Y. Architect: Cross and Cross, New York. General contractor: George A. Fuller Company, New York. Sub-contractors on aluminum work: C. E. Halback Company, Brooklyn, New York; Sexauer & Lemke, Long Island City; Richey Browne & Donald, Inc., Maspeth, L. I. ALCOA ALUMINUM used for spandrels, casement windows, window sills, hand rails and bridge.

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TODAY, TELEPHONE CONVENIENCE IS PLANNED IN ADVANCE

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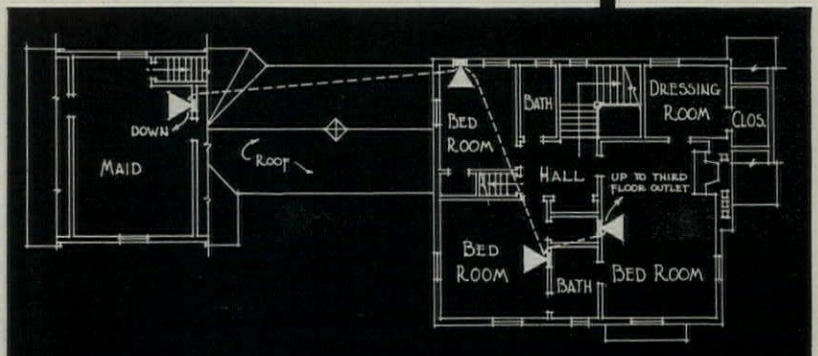
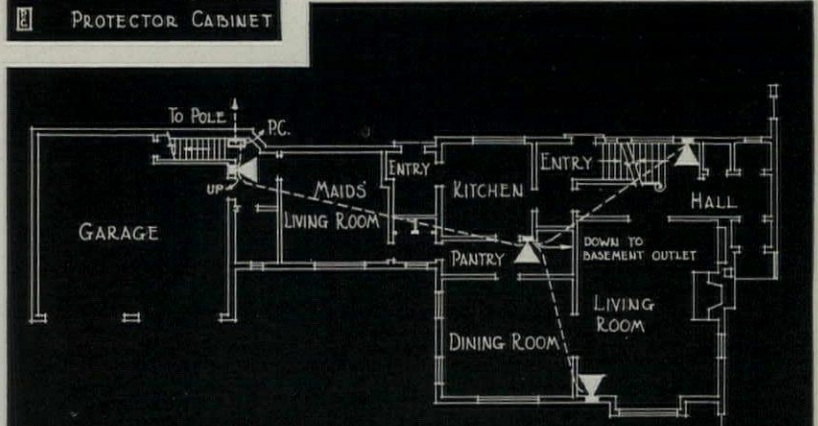
Many architects, in planning new or remodeled residences, now specify conduit for telephone wiring within the walls and floors. In this way, it is possible to provide telephone outlets at the most convenient locations in each of the important rooms. All wiring is completely concealed, thereby giving greater freedom from certain types of service interruption. Moreover, the home owner may use any number of outlets at a time, and can readily expand or rearrange his service to meet changing requirements.

Your local telephone company will be glad to assist you in planning the telephone arrangements for any of your projects. There is no charge for the service. Just call the Business Office.



SECOND FLOOR PLAN

LEGEND
TELEPHONE OUTLET
CONDUIT
PROTECTOR CABINET



FIRST FLOOR PLAN

AMERICAN TELEPHONE & TELEGRAPH CO. BELL SYSTEM AND ASSOCIATED COMPANIES

A Bulletin from the A. I. A.

Graduates of the foremost schools of architecture here and abroad have been thrust into the ranks of the unemployed. In the region of New York it is estimated that there are 3,000 architects and 12,000 architectural draftsmen.

Investigation indicates that at least ten per cent. of this number are in need. Among them are former university teachers, practicing architects, and men who have won prizes and medals for outstanding achievement in their profession.

Nearly 500 have registered at the Bureau set up by the Architects' Emergency Employment Committee at the Architectural League Building, 115 East 40th Street, with Julian C. Levi, fellow of the American Institute of Architects, as chairman, and Harvey W. Corbett, Chairman of the Architectural Commission of the Chicago World's Fair of 1933, as treasurer.

The New York and Brooklyn Chapters in the American Institute of Architects, and the architectural societies of Westchester, Long Island, and New Jersey, as well as kindred organizations, are cooperating in the work of finding jobs. Thirty or more new applicants register daily at the Bureau, which is in charge of Mrs. Lyda M. Nelson.

Many of the registrants evidence urgent need. Skilled men who have earned more than $5,000 a year are now lucky if they can earn the emergency stipend of $15 a week, it is said. One man "would drive a truck." Another "would gladly do anything however menial." More than three-quarters of the idle draftsmen have from one to three persons dependent upon them for support. Their ages range from 24 to 60, and their experiences from 2 to 41 years.

Among them are men who have received degrees from New York University, the College of the City of New York, Columbia University, the Yale School of Fine Arts, the Beaux Arts Institute, the Ecole des Beaux Arts, Cornell University, Massachusetts Institute of Technology, and the Universities of Pennsylvania, Wisconsin, Illinois and Michigan.

The majority have served long apprenticeships in offices of leading architects in New York, London, and the ateliers of Paris. They include men who have worked on buildings such as Washington Cathedral, where Admiral Dewey and President Wilson are buried, and the Stanford University buildings.

The Architects' Committee, in collaboration with the Emergency Work Bureau of the Emergency Employment Committee headed by Seward Prosser, has so far been able to give employment to only fourteen of the most needy draftsmen on the basis of $5 a day for a three-day week.

One of the first draftsmen to work at the emergency rate of $15 a week is a University of Pennsylvania graduate with a wife and two boys to support. In addition to his university training he has studied in Europe and has fine New York references. He has earned $100 a week, but as he has been out of work for a year, his resources are exhausted, and his plight is desperate.

Another draftsman who has joined the long line which forms at four o'clock in the morning outside the headquarters of the Emergency Work Bureau at 40 Wall Street is a man with a wife and three children to support. His earnings have been $80 a week. Despite his eleven years' experience and the beautiful drawings he has to show, the rent has been paid only through December 15, and there is no hope of adequate earnings to meet expenses.

These two draftsmen are typical of the fourteen men with wives and two or three dependent children who are considered fit candidates for relief.

However, the Emergency Work Bureau has not the facilities to take care of such cases as that of the Columbia University graduate who also studied at the Beaux Arts Institute of Design, and now has a wife and mother to support. He has been out of a job for the last six months.

He is 34 years old, has previously been employed for eight years as chief designer with three of the foremost architects' firms in New York, and his work has often illustrated one of the leading architectural magazines. He now seeks work on a part or full time basis as architect's renderer.

The case of the Cornell man who is a bachelor, 42 years old, with 17 years' experience and first-rate references, who has been out of work for the last eight months and "will accept any employment," having just recovered from two months' illness, also falls outside the province of the Emergency Work Committee.

The 24-year-old man who recently completed the five-year course in mural decoration at the Yale School of Fine Arts, whose father is now out of work, whose brother and sister are too young to work, and who had earned $40 a week toward their support, is another instance of the calibre of the draftsmen seeking work.

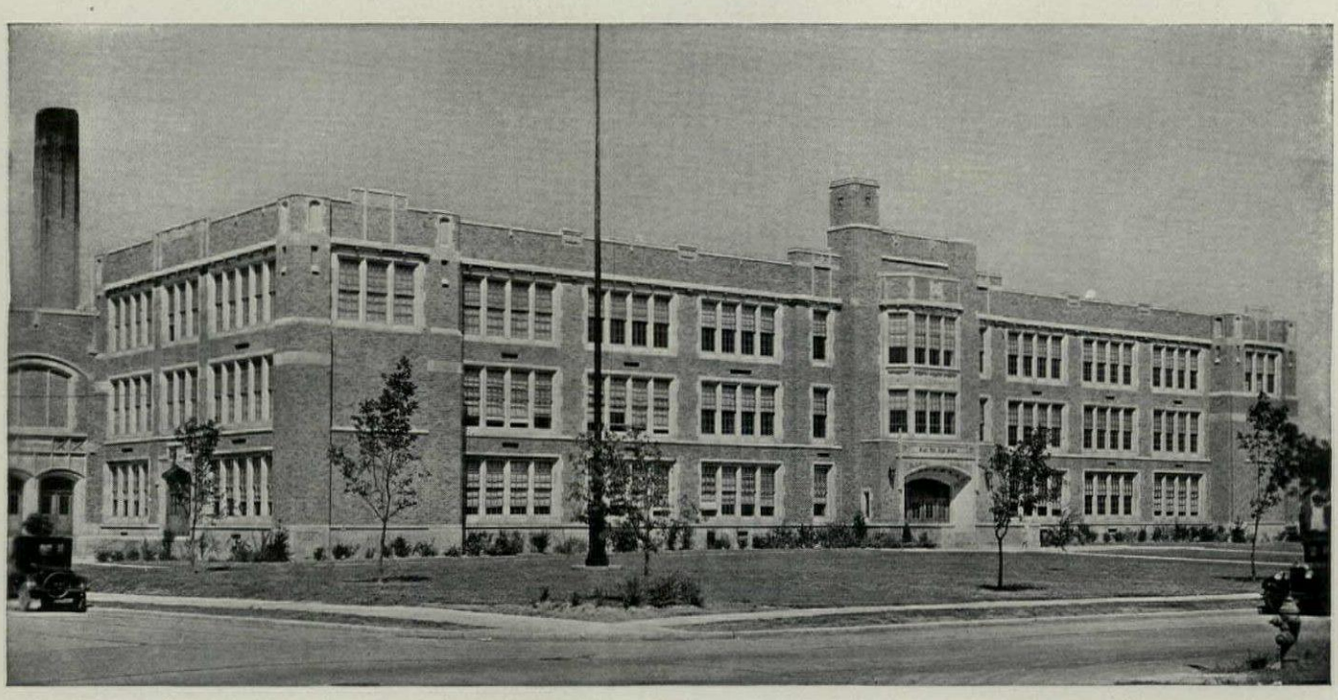
One of the applicants now in urgent financial need has been awarded the medal of the American Institute of Architects for distinguished work. One, with a dependent wife, has been out of work for the past four months.

Another man now eager to find employment as an able architectural draftsman is a former member of the American Institute of Architects and of the Beaux Arts Society. He has had forty-one years' experience and has done brilliant work in New York, Chicago and South America. He is now about 60 years old, and has a wife dependent upon him for support.

Reasons for unemployment are various. Many are traceable to the slowing up and cessation of building projects, and the complete shutdown of architectural departments in banks, and other institutions.

In response to the appeal of the Architects' Emergency Committee, only four organizations requiring the services of architectural draftsmen have so far notified the Committee of positions that may be open.

BUCKEYE Heatovent



ROYAL OAK HIGH SCHOOL, Royal Oak, Michigan

Architect: Frederick D. Madison, Royal Oak — *Heating Contractor: Drake-Avery Co., Detroit*

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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*

Let's Make It a Happy New Year

As we go into 1931 we sincerely wish every one of our readers increasing happiness and prosperity for the coming year. At the present moment, things probably look pretty dark to many architects and draftsmen. Lack of work and the accompanying lack of income which has been the lot of hundreds of men in the profession in recent months make it hard and almost impossible for them to be cheerful. Yet that hope which springs eternal in the human breast bids us all to carry on with confidence that better times are coming. Buildings have got to be built in the future as in the past and there must be architects and draftsmen to design and detail them.

A bulletin circulated in New York by the American Institute of Architects paints a truly discouraging picture of present conditions. It is estimated that in the region of New York there are 3,000 architects and 12,000 draftsmen. The report states that at least ten per cent. of this number are unemployed and in need. The Architects' Emergency Committee is doing its best to cope with the problem of finding work for these men where no work exists, but the response to its appeal has so far been slow. On the second preceding page we have printed the A.I.A. bulletin in full, hoping that it may reach the eyes of some architects who have been successful in getting new jobs and who may be in immediate need of men. To any such the proper course will be obvious.

Those who are not now in a position to take on more men will, we hope, work just a little harder to persuade their lagging prospects that now is the time to build. The truth will be back of their arguments and lend them strength. Every man in the profession can do his bit to start things going if he will seize every opportunity to point out to the layman the advantages of investing money in buildings at the present time.

In our last issue we stressed this point but it is worth keeping at it until things get under way. Materials can be bought cheaper and labor is more efficient than when everything is rushed. The architect and his men can study their jobs more carefully which will be to the advantage of the owner. There are many valid arguments all pointing in the same direction.

Of course, business might not be so good for order takers now, but there really seems to be plenty for real salesmen. Constructive, intelligent sales efforts are as productive now as ever and the results stand out more clearly amidst the dimness of this well advertised depression. Plenty of elbow grease plus straight thinking will make 1931 as sound and prosperous as anyone could wish.

Build your sales properly and people will build.

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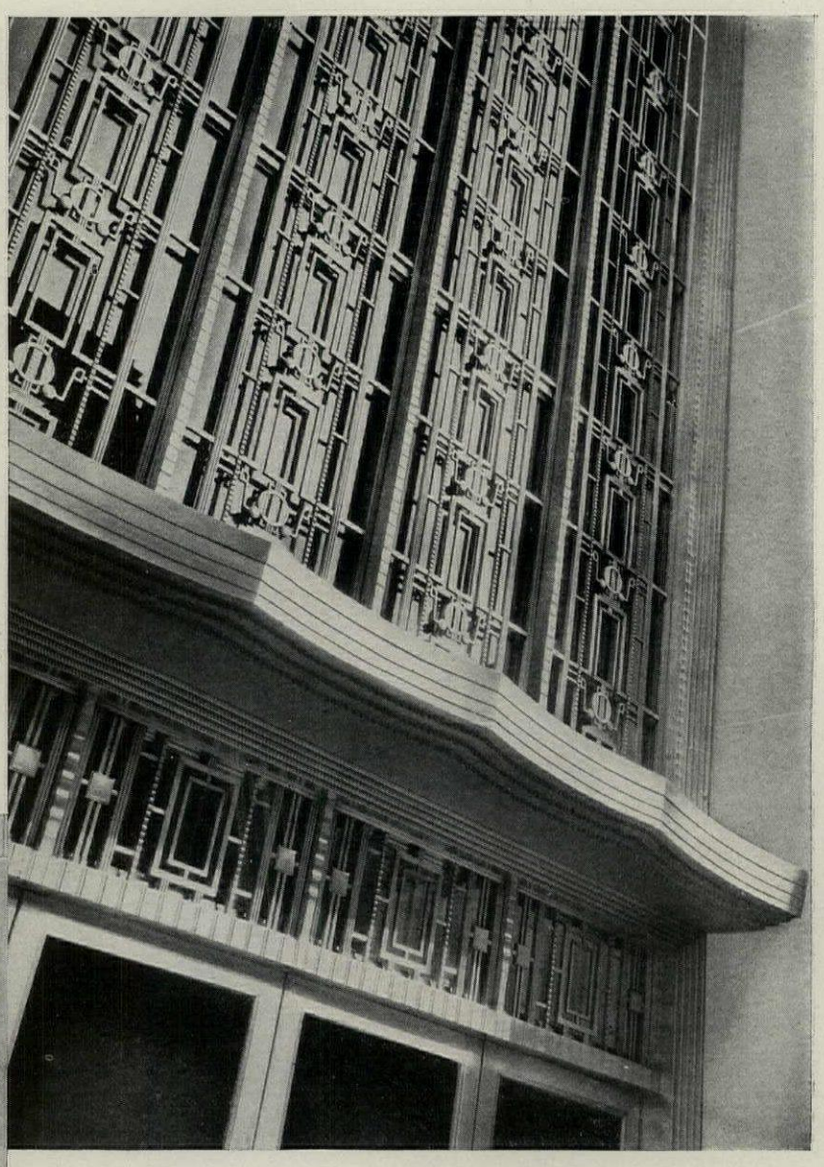
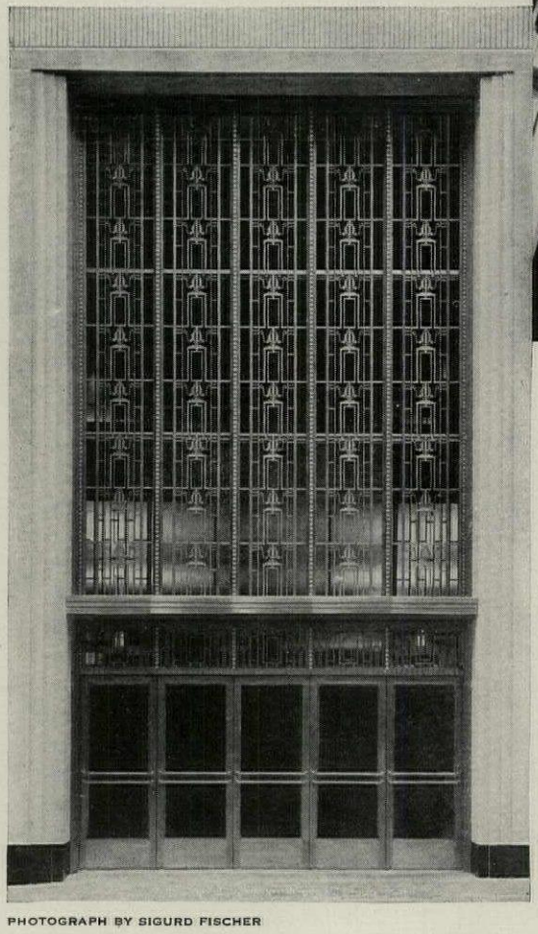
EDITORIAL AND BUSINESS OFFICES, 419 FOURTH AVENUE, NEW YORK.

James B. Newman
of the Firm of Ely Jacques Kahn
describes

"AN ENTRANCE OF DISTINCTION"





PHOTOGRAPH BY SIGURD FISCHER

"The main entrance of the new Bonwit Teller Store was designed to fit an existing building of distinction, to add a note of quiet refinement to the facade indicative of the store within, and to fulfill the utilitarian purpose of throwing a great deal of light across a lofty lobby into the front of the first and second stories. The general size and shape were approximately determined by existing conditions and the light factor led to the general open quality.

"The time of delivery was of vital importance, setting more than any other factor the opening date of the store. The entire inner and outer entrance metal work was installed by the General Bronze Company five days ahead of schedule, while at the same time their craftsmen were kept out of the way of the other trades."

The Metal on the Bonwit Teller Store Entrance is Nickel Silver
Architects: The Firm of Ely Jacques Kahn. *Contractors:* Cauldwell & Wingate.

"DISTINCTIVE PRODUCTIONS IN ALL METALS"

GENERAL BRONZE CORPORATION

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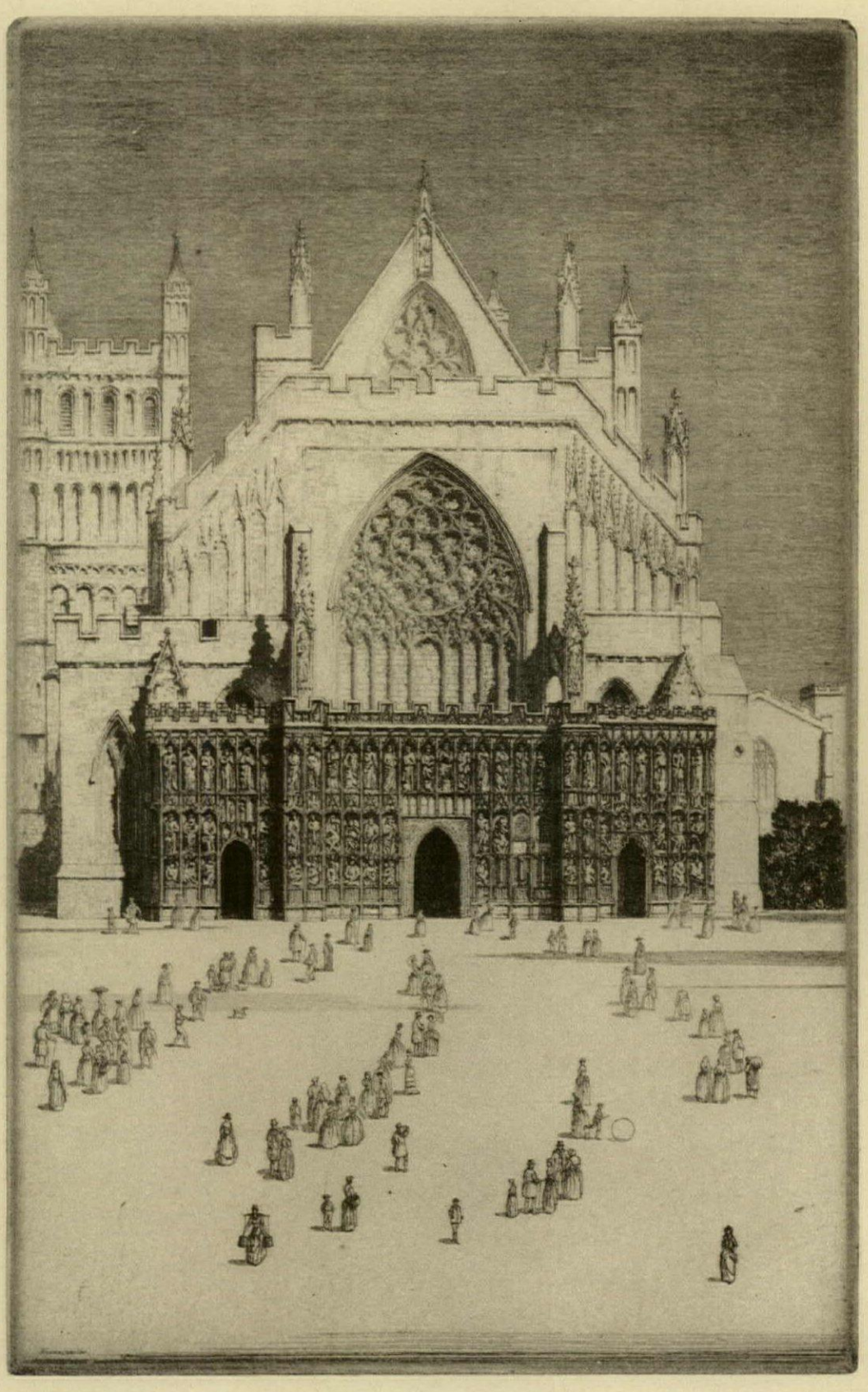

EXETER CATHEDRAL
FROM AN ETCHING BY H. GORDON WARLOW
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PENCIL POINTS

Volume XII January, 1931 Number 1

Apples!

By William Williams

A draftsman who can look death in the face and laugh might be amused at the architectural situation. Most of us can't. A lot of us haven't even got a situation to laugh at, certainly not *in*. It has been rumored that at least six members of the Architectural League are selling apples in the financial district. How they managed to get the apples has not been learnt, nor, as far as I can discover, do their colleagues care. As long as they muffle themselves up well, so as not to be recognized by past or future clients, that is all that the League, in these trying times, can expect.

At least a man selling apples has got a job, and that's something. Moreover, there is still a chance for a good architectural man to distinguish himself, even on this humble plane. It was, indeed, in the extraordinary skill displayed by an apple vendor that attention was drawn to the fact that architectural men have been reduced to this ignominious role.

Here was a man the casual observer would not have taken for a draftsman at all. There was about him a sense of dignity not commonly found in architectural circles. But he was young, the rounding of his shoulders had barely begun. Blank honesty, the light of idealism and creative ambition still shone—faintly, it is true, but still shone—in his face; he had not yet learned to steal with the insouciance of his seniors. No one would take him for a Beaux Arts graduate, a Phi Beta Thingumajig, and all the other things he turned out to be. But there he was; and there were his apples, piled up on his box as only an architect could pile them.

I stood for a moment spellbound, fumbling for a nickel. "Well!" I said. "Well!" And that is all I could say. Here was genius, rotting, so to speak, in the gutter. Such mass! Such a feeling for balance, proportion! Such a study in set-backs!

And then, as I found a nickel, my courage failed, a lump rose to my throat. I put the money back into my pocket and shook my head. "No," I said, "I haven't got the heart," smiling at the bright young man in admiration.

"An apple, sir? A nice rosy Skookum?"

"No," I said again, a certain amount of uncontrollable compassion in my voice, "I'd like to, but as I say—I haven't got the heart."

"Haven't got the heart," he repeated, "haven't got the heart!"

It was plain that he didn't understand, not realizing his genius. But I could see that one apple off the top of his pyramidal structure would have ruined it, would have been like taking the beautiful golden crown from the summit of the New York Central building. I couldn't do it.

"I don't want to spoil it, son," I explained. "Your design—it's perfect!"

"Ah, do you like it?" he said, recognizing at last the critic in me, the connoisseur, the fellow architect. "Do you like it?" He rubbed his hands with satisfaction as I nodded my approval.

"I'm glad you do," he said, "there's years of study behind all that."

"I can see it," I said.

"There is," he added, looking wistfully at somebody's chewing tobacco lying on the curb, "there is."

And then he told his story: how he had graduated in architecture with honors, won a traveling scholarship, come back, taken his master's degree; how he had been made honorary member of half a dozen societies; how he had been working on his first book, "The Relation of Design to Industry," when the slump came. At this time he was chief designer for a small firm doing big work—or a big firm doing small work—I forget which. But it doesn't matter—he was a designer and he had a job.

At this point he broke into a sob and I, so innocently stumbling upon all this misfortune, could hardly constrain my tears.

His office, he went on to tell me, closed three weeks after the stock market crash, owing to the wife of one of the members of the firm losing so much on the curb, or somewhere. Anyway, he lost his job and walked the streets ten days, when he managed to get another job that lasted two months. Then he walked the streets again, this time for two months before he got a job, which lasted only ten days.

That was four months ago, and now the unfortunate wretch is selling apples.

"But tell me," I said, as I put my hanky back in my pocket, "how does a man of your creative genius manage to sustain himself—mentally, I mean? It must be awfully monotonous standing in one spot like this, doing nothing, so to speak—awfully monotonous."

He laughed in his throat. "No," he said, "it's not as bad as that. I manage to amuse myself. There's always something to be seen on the sidewalks of New

York." And I caught his eye following a plump little blonde. "Take, for instance, the other day. I saw an old blue-print runner hot-footing it along 42nd Street with two new drafting table drawers in his hands—and I couldn't help but laugh—there were six or eight draftsmen trailing him to find out where he was going to deliver them. Things like that strike you as funny when you've been standing in the cold six or eight hours."

He was grinning, so I grinned too. Though to tell the truth I was feeling far from it.

"It's little things like that," he continued, "that help to pass the time. And then, of course, there's always the apples," he was looking at his fruit, "there's no end to what you can do with a box of apples. This design here," he said, indicating the pyramidal effect, "is purely imaginative, just an attempt to superimpose one rhythm on another, a minor rhythm on a basic rhythm. Do you ever read Mr. Walker's articles? Well, never mind, you get the idea. Sometimes I work it out in color. You've noticed that one side of nearly all these apples is green, haven't you? It's simple.

"But I don't always do these sketches, as I call them, sometimes I try to do a building from memory, or one that I can see from here. Yesterday I tried to do the Chrysler, but I couldn't get the effect without using matches, and that spoils the apples. There's really no end to what you can do. And then there's always the chance that somebody'll come along just when the thing's taking shape and pick out half a dozen from the bottom, and you've got to start all over again."

I was stirred by the young man's keen enthusiasm for his art even under the trying circumstances of adversity, and I asked him if he'd leave his apples for an hour and have lunch with me. But he couldn't come, having to attend an alumni luncheon at the Fraternity Club.

"It's too bad," I said, by way of consolation, as I moved, about to leave him. "What are we going to do? We're all more or less in the same boat, you know."

"We ought to do something," he murmured.

"Yes, we ought to do something," I repeated, nodding my head, knowingly.

"Yes."

"But what?" I asked.

He wiped his nose on his sleeve. "I don't know," he said, "I don't know that we can do anything to relieve the situation. But we might take advantage of it."

"Take advantage of it, how?"

"Well," he replied, and there was a mischievous glint in his eye, "now that architects have nothing to do, we might take a minute or two off to look over what we have been doing in the past ten years. Now that there's nothing to do I know a lot of chaps who could put in some valuable time practicing.

"Look at all this tripe," and he waved his arms in the air, in a wide, embracing sweep of the Grand Central zone, "look at it all, every bit of it put up since 1920, and not a building worth a second look. Practice, that's what the boys need, practice, they don't know the fundamentals, don't know the elements."

He was obviously mad. I felt uneasy and edged away a bit. But he moved towards me. And taking me by the lapels of my coat, he stared into my face with a wild, frantic stare.

"It's our education," he breathed into my face. "Our education. The whole weakness of our architectural education. Architects should be trained to design in three dimensions, build up their masses with clay, work in the solid, always in the solid, do away with line drawings with their artificially rendered lights and shadows, do away with paper entirely until they've got the mass right, the relation of the parts—then start the mechanical business of drawing, committing the thing to paper. Work in the mass, always in the mass, get the parts right."

I grinned, to conceal my embarrassment. The hard times had gone to his head. Underneath his genius, he was cracked. And with one more admiring glance at his handiwork, an imaginative building done in Skookums, I left him.

But all that afternoon as I walked around town, his words kept ringing in my ears—"There's no end to what you can do with a box of apples."

On the Making of Pictures and the Thumb-nail Sketch

By George Nelson

Sketches may be divided, generally speaking, into two classes. One type is made to record facts. It is a document. Made by an architect, it may show the arrangement of voussoirs in an arch, the profile of a moulding, the effect of a group of buildings. Such a sketch, made by a painter, might be concerned with different objects, but the end in view would be the same. These are usually made with the greatest rapidity and economy of effort consistent with whatever accuracy is desired. They may be, and often are, very beautiful bits of drawing, such as Brangwyn's pencil and sanguine studies for etchings, or Michelangelo's anatomical studies, or they may be all but unintelligible to anyone but the artist, like Roerich's pencil notes for his powerful Tibetan landscapes—but they are all the same in that all were made to record facts for future use.

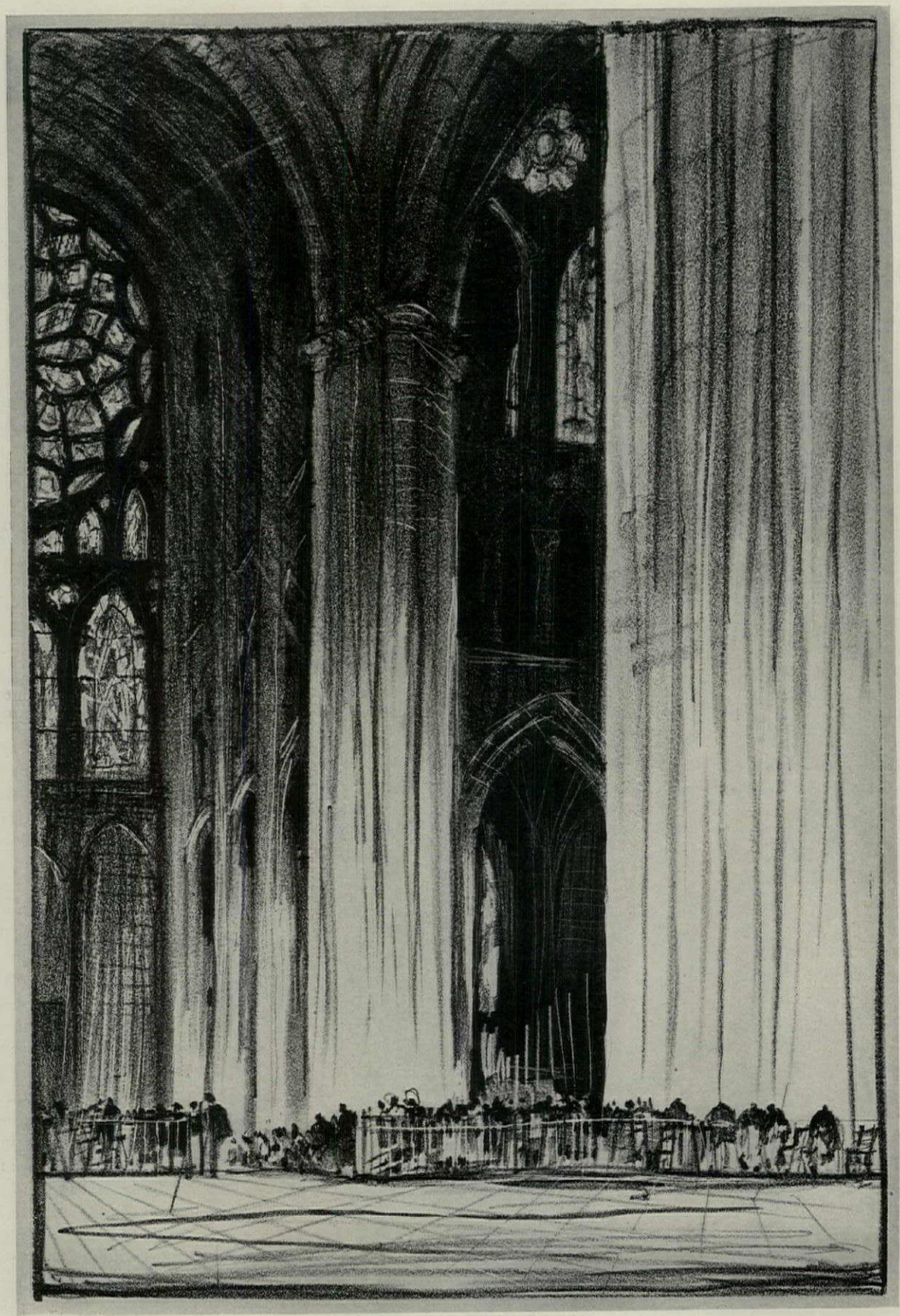
THUMB-NAIL STUDY FOR A LITHOGRAPH

Reproduced at exact size of original.

The other type is a picture. It's only purpose in life is to create an impression on the beholder, when hung on a wall in an appropriate environment. It may be that it causes the observer to have a feeling of great pleasure in its harmony of line, and color, but should the reaction be one of complete mystification, or even of actual disgust, as is often the case in these days of flourishing galleries of modern art, it still remains in the same category, because the artist is in no way limited to any particular sort of impression. In this type of sketch—which might be called decorative—should a modillion, or an entire cornice be omitted, or a thick grove of trees introduced where there was actually a bush and three tin cans, no one thinks the less of it except those unfortunate souls, reared on bargain basement oil paintings and picture post cards, whose sole artistic criterion is versimilitude.

In this classification, as in all others, there cannot be a definite line drawn. For example, a water color by Bonington or Walcot, an etching by Meryon or Rushbury or Rosenberg—any of these might be used to obtain information about their subjects, so accurately are they drawn. And conversely, many sketches made solely for the artist's information might be classed as works of art. Nevertheless this differentiation may well be adhered to, and, when applied to most architects' sketches, is peculiarly appropriate because it is a common misfortune of draftsmen and students that when they go out to make a picture, they return, more often than not, with a document. Now, while one cannot possibly have any quarrel with anything as praiseworthy as seeking after more knowledge, the fact remains that most of us have a very strong craving to make pictures when we go sketching—gorgeously free and bold water colors, lithographs with smashing blacks and intense whites, and so on. We want things we can show with pride, which we can give away (without the usual financial strain) on necessary occasions, and even hope, perhaps, to be so fortunate as to sell some one day to weak-minded, but opulent, would-be patrons of art. The point is, how to get that way? How can we throw off the influence of school and office, which makes us want to put in everything we see?

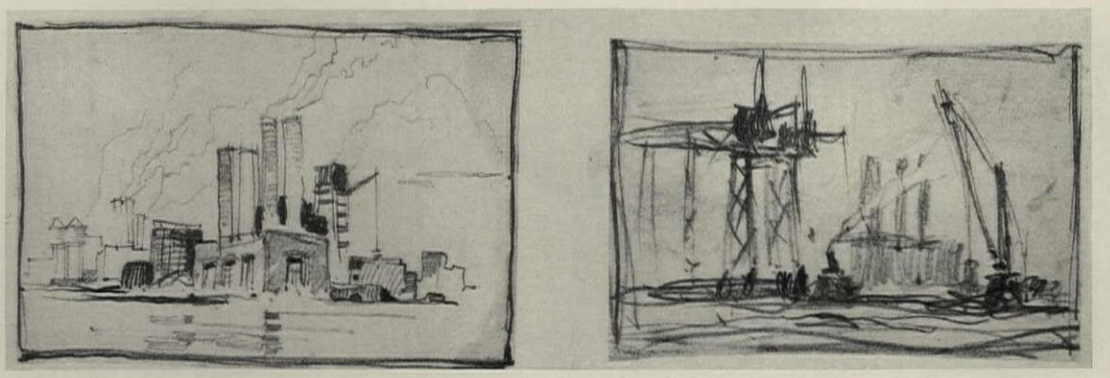
The fundamental difficulty, I think, lies in our con-



Original printed by Gaston Dorfinant

LITHOGRAPH BY GEORGE NELSON—"CHARTRES"

Size of original, 11½" x 17"—see small pencil study on page 3. Note that it is reversed like drawing on stone from which this print was made.



INDUSTRIAL SUBJECTS

The richest collections of patterns of light and dark anyone could want.

ception of what makes a picture. It is hard, when one is accustomed to constant concern with minute details, to careful and exacting work, to realize that a picture is more than an assortment of correctly drawn parts. The fact that the basis of any good picture, from time immemorial, has been a design, broad and simple, is one that we are, by training and daily practice, made peculiarly unfit to grasp. But grasp it we must, if we are to get anywhere in this business of making pictures. From this point of view it is interesting to look at painters' sketches, drawings which have been considered as works of sufficient merit to be placed in museums and private collections. Take a sketch by Claude, often little more, apparently, than a scribble, but with a composition that will defy the most careful analysis; or look at some of Turner's studies, or a water color by Cotman, or some of Sir Alfred East's landscape notes. Technically they frequently have no more tricks than those possessed by the merest beginner. Simply and rapidly done, they are nevertheless decidedly pleasant to look at, and their great skill becomes apparent only after considerable examination.

A CAREFUL STUDY

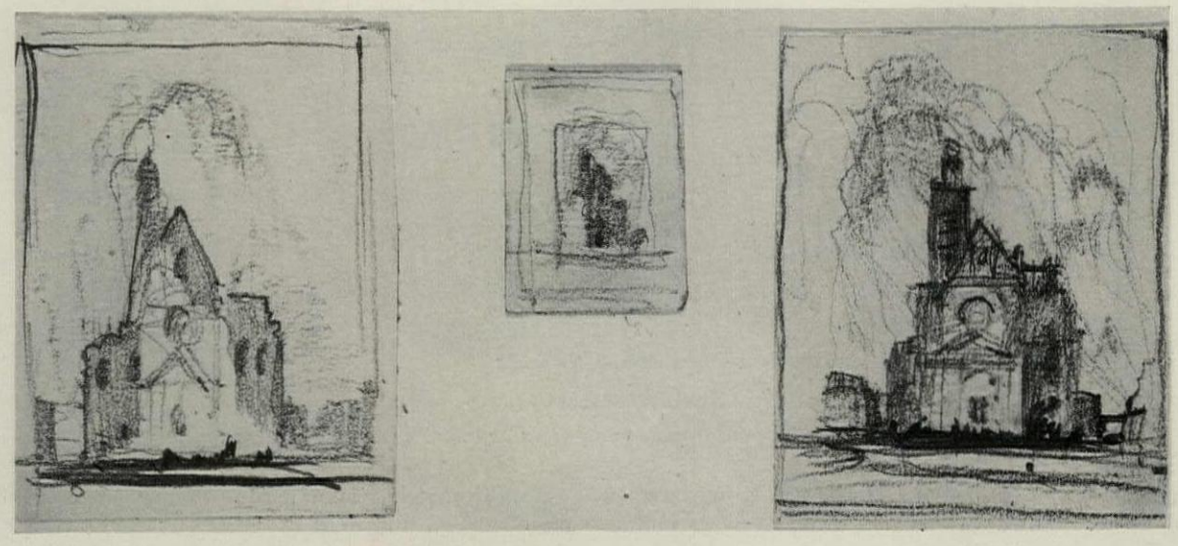
But detail is only faintly suggested.

Unfortunately, pictorial composition is a most elaborate subject, and most of us haven't time enough to sketch, let alone read books about it. There are a number of things one can do, however. Magonigle suggests sketching objects with which one is unfamiliar, clouds, boats, trees, and other irregular forms. I have also heard two excellent water colorists sing the praises of still lifes as a means of loosening one up. The practice which I have had most experience with, and the one which seems to bring one about to the desired "painter's approach" with less effort, and more directness than any other is the thumb-nail sketch.

It is about the size of a postage stamp, to start with, and is done with a soft pencil. Under these circumstances it will be found rather difficult to be tight. And while one might go on doing trees, boats, and flower pots in the same old dry way, when one is confronted by a space an inch square and a soft pencil there is absolutely nothing to do but worry about the biggest, and only the biggest, elements in the composition. Also, under such conditions, "technique," the great bugbear of the novice in sketching, espe-

YOU JUST CAN'T GET TIGHT IN A THUMB-NAIL SKETCH

All sketches shown are reproduced at exact original sizes.



STUDIES FOR A PENCIL SKETCH OF ST. ÉTIENNE DU MONT, PARIS

EXAMPLES OF ARBITRARY PLACING OF VALUES

cially pencil sketching, is reduced to its proper place.

I have found that a good procedure is to make two or three tiny sketches, locating the masses of black, gray, and white, and then to work at a somewhat larger scale, keeping the same breadth and simplicity of pattern, but introducing a bit more drawing, to make sure that I wasn't fooling myself. These larger sketches not only simplify making the final one, but provide a tremendous incentive, because they are almost invariably better.

A LATER STUDY AT A LARGER SCALE

ALL THESE STUDIES WERE DRAWN AT SIZE SHOWN

Make lots of thumb-nail sketches. They are easy and don't take any time, and once that one becomes interested in making decorative patterns, the old feeling of reverence for the sacredness of subjects rapidly disappears. If a shadow spoils an otherwise good sketch, why not leave it out? No one will care. Should a tree, or a flight of steps be embarrassing, move them, or omit them. If your conscience bothers you, get a camera and take a good, accurate photograph of the scene—take several if it will make you feel any better—and then make the sketch as seems best. A good practice to indulge in occasionally, if one is particularly squeamish about omitting things, is to make one's thumb-nail sketches, and then to turn one's back to the subject and make the sketch from the little ones. This may mystify the onlookers, but it will result in an omission of a large part of the trimmings, and is likely to produce a considerably better sketch. From the thumb-nail sketch one can progress to numerous variations, working in line rather than value, in color, and in combinations. Make large sketches, using materials such as Conté, or litho sticks, or charcoal which force you to keep the broad simplicity of the miniatures. And keep away, for a time, from anything resembling a careful drawing. If you have a choice between making one careful sketch, and four rapid ones, do the four and buy a picture postcard of the first.

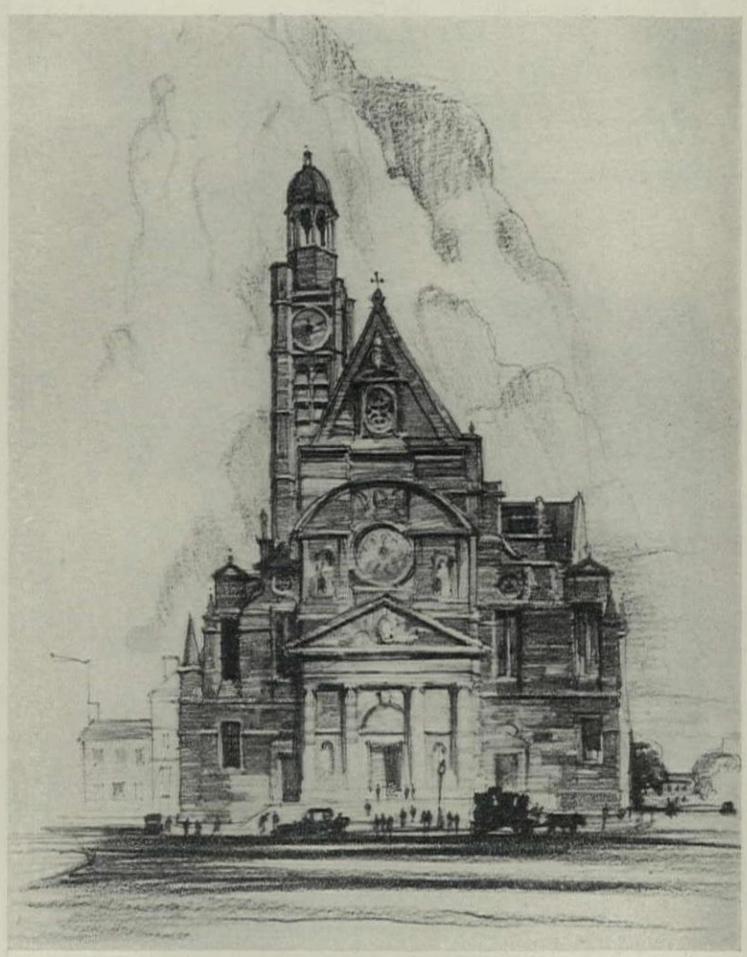
Try sketches on paper two feet square, and pretend you are making a thumb-nail sketch. It's good fun, and not as easy as it

LIGHTING ARRANGEMENTS—AN ATTEMPT TO MAKE INTERESTING A COMMONPLACE SUBJECT

sounds, because just because a sketch is rapidly done is no excuse for bad drawing, and good drawing, which is largely suggestion, is not only much more effective and interesting than the painful rendering of every part of a sheet, but is infinitely more difficult. If these efforts are sincere attempts to make a truthful sketch, and "truthful" does not by any means imply "photographic," it will be rather surprising to note the greatly increased facility when it is necessary to make a careful and accurate drawing.

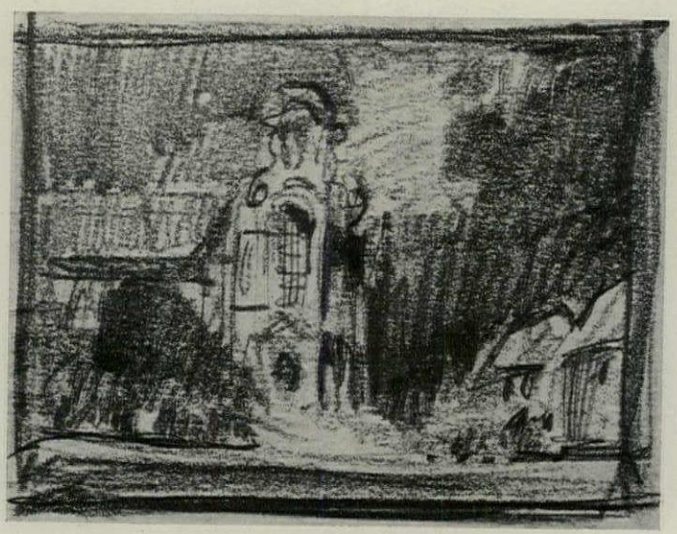
There is not any need to confine these overgrown thumb-nail sketches to black and white. With large sheets of rough paper and big brushes the same can be done in water color. Draw with the brush, and try again for effectiveness from simplicity. Think of Cotman, who could do a tree with one wash. Run washes as wet as possible, and if they drip off the board onto your lap, get a raincoat, but don't run them any drier. And it is also good to remember that a palette of seven colors is twice as good as one of fourteen; and that since pure colors are expensive, there isn't much sense in mixing three of them to make mud; and that inasmuch as good paper is also expensive, it isn't a bad idea to leave as much of it showing as possible.

The thumb-nail sketches here shown are for the most part studies for larger sketches. Others were just made as experiments in the arrangement of values, and still others were copied from pictures, in an attempt to discover their basic patterns. The more of these you do, the better you will like them, and the more reasons you will find for continuing. They keep your pencil moving when there isn't ordinarily time to sketch, they encourage breadth and boldness, qualities which will begin to appear in your more careful work, and by the use of vague and indistinct forms will stimulate the imagination, and in this way will help to get rid of tightness, which is the one thing, more than any other, that will prevent one from making decent



FINAL PENCIL SKETCH FROM STUDIES ON FACING PAGE

THIS DRAWING IS SHOWN SOMEWHAT REDUCED



1

4

2

5

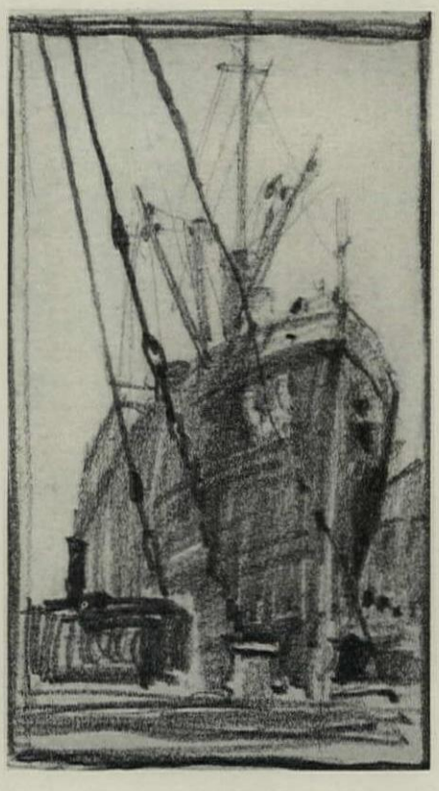
3

6

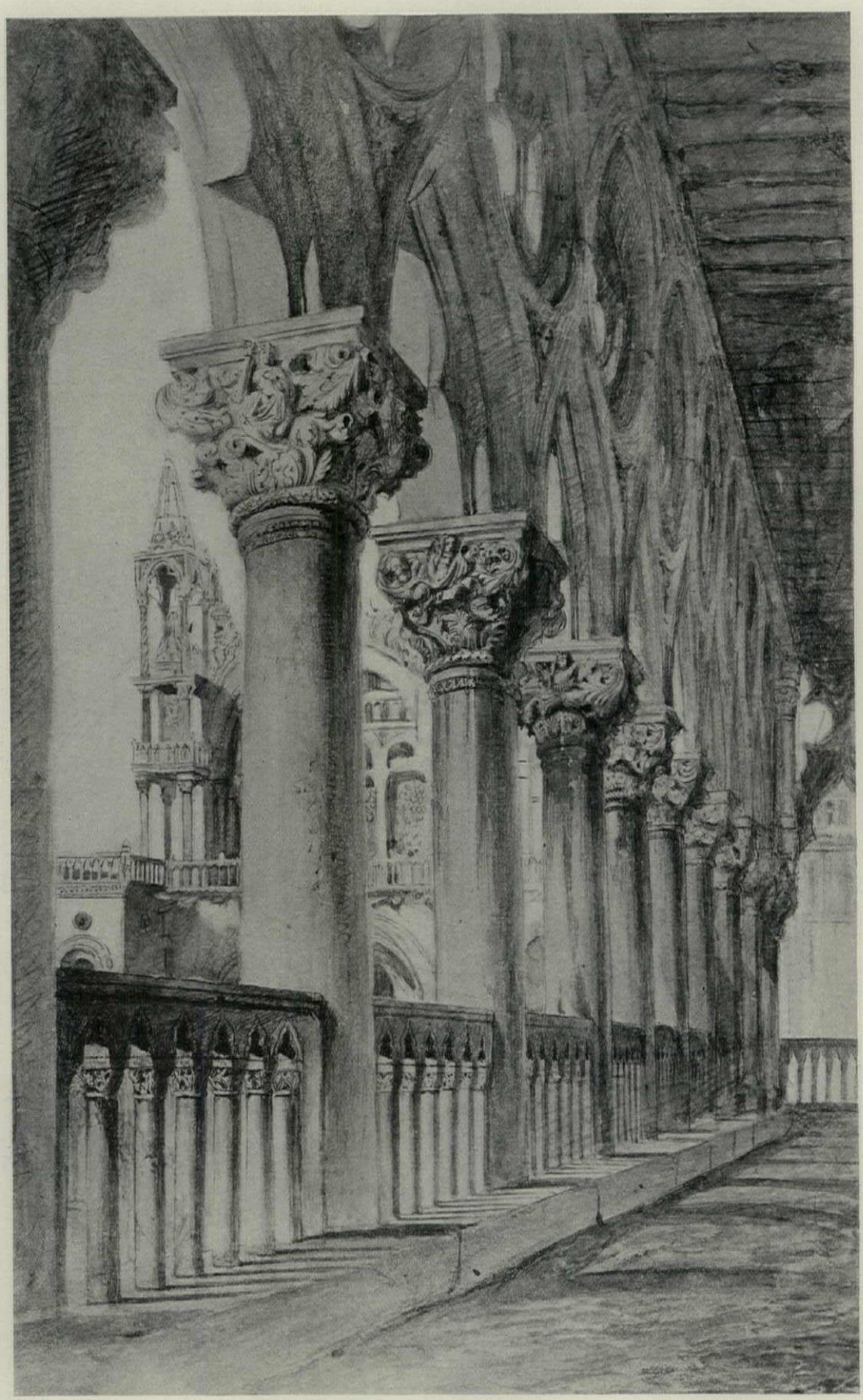
THUMB-NAIL SKETCHES BY GEORGE NELSON SHOWN AT EXACT SIZE

1 and 2, Studies of pattern in etchings by Brangwyn—a very good thing to do occasionally; 3, Study for a water color, Church, Granada; 4, A careful study with slight suggestion of detail; 5, An experiment in forms and values; 6, Study drawn carefully but at small size.

sketches. Ruskin on this all-important point has something to say, in his comparison between Reynolds and Hobbema: "A few strokes of the pencil, or dashes of color, will be enough to enable the imagination to conceive a tree; and in those dashes of color Sir Joshua Reynolds would have rested, and would have suffered the imagination to paint what more it liked for itself, and grow oaks, or olives, or apples out of the dashes of color at its leisure. On the other hand, Hobbema . . . . smites the imagination on the mouth, and bids it be silent, while he sets to work to paint his oak of the right green."



MISCELLANEOUS THUMB-NAIL STUDIES BY GEORGE NELSON



Courtesy Metropolitan Museum of Art, New York

FROM A PENCIL AND WATER COLOR DRAWING BY JOHN RUSKIN

LOGGIA OF THE DUCAL PALACE, VENICE

More Anent the Stair Rule

As Criticized Last January in Pencil Points

By George Eichenlaub

Since the Pennsylvania State Code of Regulations with regard to Stairways seems to be based in large measure on certain STANDARDS that appeared in the *National Safety News* for February, 1927, as published by The National Safety Council, it may be profitable to examine that work—especially since the Council has done much good and might be regarded in some measure as authority (which reacts to add danger to any statement if it be not fully correct).

This article, which is by Mr. H. W. Mowery, is illustrated with a convincing graph, reproduced on page 12, bearing a title "APPROVED STANDARD, Workmen's Compensation Service Bureau," which again has the earmarks of authority. In a word, it appears as though any Architect or Engineer could now discard his older rules or notions, paste the article up in the drafting room and let all and sundry be guided thereby; an easy way to settle all argument or doubt and forget that for more important or lucrative activities.

GEORGE EICHENLAUB

The graph is based on a 17½" sum of run and riser rule. Various combinations of rise and run with angle of pitch are handily worked out in the column to the right. Now it will be noted that the graph is evidently intended for use in design of *any* stairway. It is short, concise, and universal, a very good point in its favor, if true or possible. Since I, however, have found no short-cut rule or answer after measuring some two hundred seventy stairways, it is natural for me to conclude that this graph is another attempt at a satisfactory answer—but not a conclusively final one.

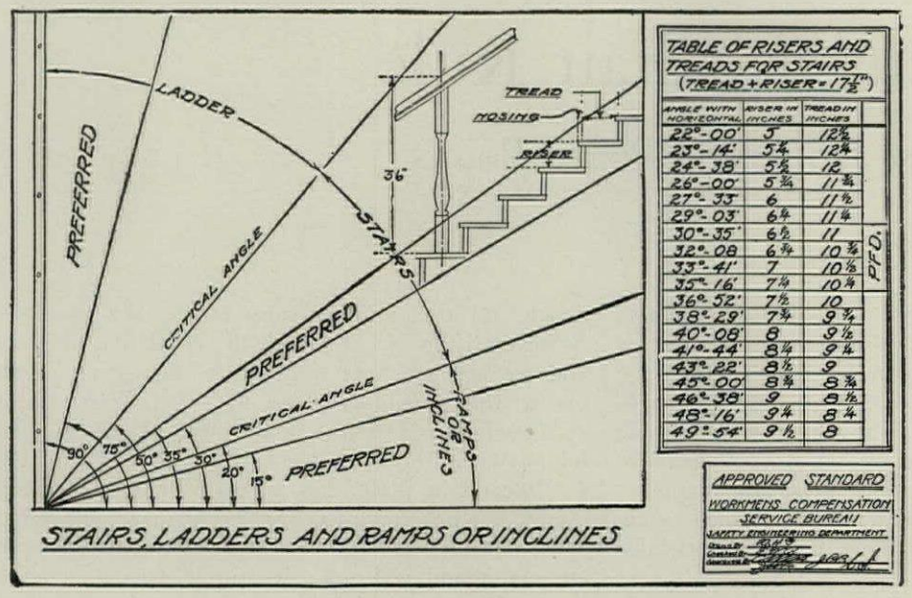
So far, it is my thought that Stairways fall into "Several" classifications the requirements of which all differ. Broadly, they are Public, Semipublic, Private, Industrial, and Activital (where we have motion as on a ship, or visual movement as active machinery). These, in turn, are all again split into Interior and Exterior or exposed conditions, each further influenced by the width of the stair, its position in the plan, materials and colors used and type of nosing, if any. Emergency Exit Stairways would be another classification, but will not be covered here, except by saying that we think the section on "School Stairs" may be closest to the ultimate answer to this question.

Solve all this in one short rule, regulation or graph and we at once have a masterful disposition of the matter that should compare with the ultimatum of a Mussolini or a Bolshevik dictator. Well—a good job anyway.

"It can't be done" has no place in our scheme of things, but no attempt is here being made just yet to work out such an universal rule. Some reader may attempt it and welcome; we surely are much interested. The State of Pennsylvania, however, has not been deterred. The new Theatre Code, as published, is before me and blithely states in effect that "Stairways shall not exceed 17½" in the sum of rise plus run and shall lie within limits of pitch at 33 and 36 degrees and stairs over 8'-0" wide shall have an intermediate handrailing." The State also has, for early release, a like or similar ruling to apply on all new public, semipublic, and industrial work. Now, we are asking the reader again to write the Department of Labor and Industry at Harrisburg, Pennsylvania, in protest. Very many *must* do this or the State will think it unimportant.

So much better if you will check up by measuring a few stairways that seem best and safest; you will learn much at small expense of time, equipment, and effort; only four measurements and you are in possession of good information of lifelong value. All that is needed is the rise, the run, the tread, and the width of stairway—then a note on color, material, nosing, and classified use. Then figure it up and get a surprise. If you drop me a line on your reaction or a copy of your Harrisburg letter, it may help toward the evolution of a rule—perhaps.

Getting back to the original thesis, the first graph, called "Approved Standard," shows " 'Preferred' Pitch of 32, 33, and 35 degrees, 17½" sum, with riser-run ratios of 6¾" x 10¾", 7" x 10½", and 7¼" x 10¼" respectively." The graph shows at a glance that in Pennsylvania you are hereafter limited to 7" x 10½" and 7¼" x 10¼" or proportionately less as governed by the pitch. Now let us consult the Eichenlaub Graphs shown herewith and see how we all check up.



GRAPH NUMBER 1—APPROVED STANDARD FOR STAIRS AND RAMPS
PREPARED BY THE WORKMEN'S COMPENSATION BUREAU

After some hours of study, we have selected a few graphs of Public Interior Stairways. Though we make an effort to be lucid and simple, we quickly find the matter on file so complicated and even contradictory that the task is extremely difficult. (To think that lawmakers are not often deterred by such mere considerations!)

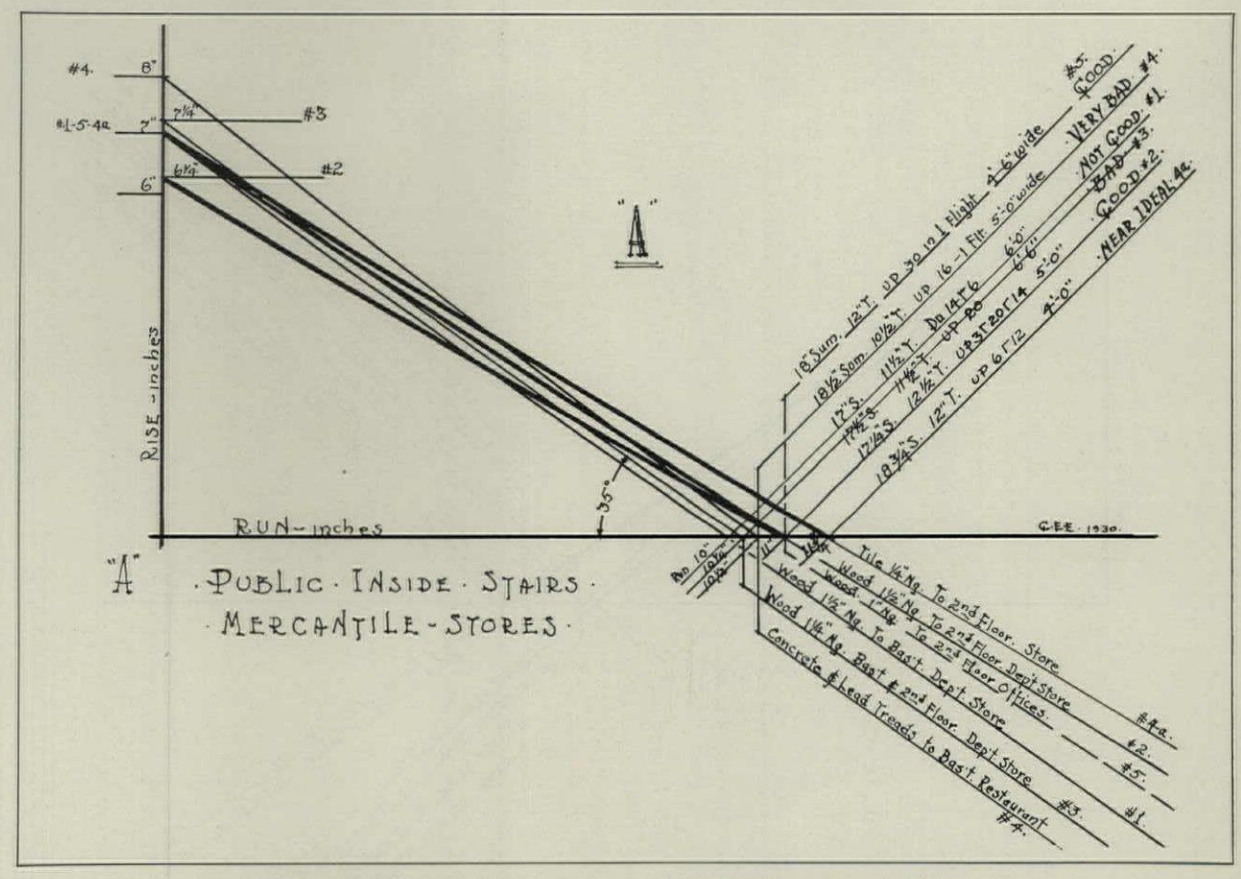
But let us worry along. On our graph, *A-3* design shows an "Approved Standard Preferred" (G-1) and also "Pennsylvania Legal" stairway at 7¼" x 10¼" and 35 degrees pitch. Four of such legal and preferred stairs are found (same graph "A") in a commercial building and department store of importance built in 1914. The stairs vary in width from 5'-0" to 6'-6" and flights vary from 8 to 20 steps. It is only fair to note that all treads are covered with new checkered rubber and have corrugated 1/16" thick brass edging to stop rubber from curling at the step-edges, which is hazardous any time. All these stairs are rated by us: "Stiff, ungainly, tiresome. All are bad, but hardly dangerous; too much rise or not enough run. Golden oak finish; good natural light; 1¼" nosing. A general stiff and square appearance and length of flights may help toward the bad mark given these stairs."

In the same graph, *A-4a* is 7" x 11¾", not in accord with "Legal or Standard," and is marked IDEAL—and with only a ¼" nosing too. But it is again only fair to say that the first flight as referred to has only six steps and the approach is a right turn so that no one can attempt this stair at fast or running speed. Then the *A-5* is 7" x 11" x 1" = 12" tread, 30 in one flight, 4'-6" wide, and is nearly good. The same stairway without tread coverings and with shorter flights, as exposed in *5a*, is a distinctly good stairway although not in accord with "Approved Standard" or "Pennsylvania Law."

In graph *B* we find a group of stairs evidently governed by the 17½" rule. The *B-7* design is also 7¼" x 10¼", the same as the *A-3* design spoken of. This stair is narrower, is steel composite construction with white marble treads and 1½" nosings, has shorter flights, and is labeled "Very Good," with consideration for its purpose as "Auxiliary to Elevators." Note that both *A-3*, marked "Not Good," and *B-7*, marked "Very Good," though apparently the same, differ in materials, color, and use. Turning to graph *C*, in the *2*, *3*, and *6* designs from a school by William B. Ittner, we see no agreement with or undue influence by any rule and yet find two IDEAL and one VERY GOOD. Consulting the graphs shown in the January, 1930, issue of PENCIL POINTS we find more material for good comparison and judgment, which again does not lead to any reconciliation with the "Approved Standard" or any other rule so far proposed.

Now, to confound the reader further, let me cite this page from concrete experience. In 1913, the author had to design a stair leading to the mezzanine offices of a piano business establishment where hundreds of all manner of people came to pay their weekly dole on furniture purchased. They were mainly women, old and young, and usually in groups of two or more. The stairway was of wood and built as 6½" x 11" x 1¼" = 12¼" treads, the limit of the 17½" sum rule; up 14 in one flight and 3'-6" wide; no tread coverings used. One side was open to the store and equipped with a light "Banister." The stair was finished in white with mahogany treads and railing-cap. This stair proved *"unusually good"* for its purpose. Now the sum is 17½" and the pitch 30 degrees which is within the "Approved Standard Preferred" limit, but lies outside the Pennsylvania State requirements. Does this prove anything? Let us see.

In 1926, this same stairway was sawed to a width of 2'-9" and placed in the rear of the same store leading to the same mezzanine now converted to be used for a private office and for the storage or packing space of a small jewelry business. Note that the use is now quite different and the stair much reduced in width—same railing, open one side as before, and the identical stairway in so far as rise and run are concerned. And —it now rates as *"Not so good;* too easy in pitch and riser height for the purpose served." Therefore, it is evident that the same rule cannot apply in both "conditions of use," because even the same identical stair does not fit two conditions—in the Public case

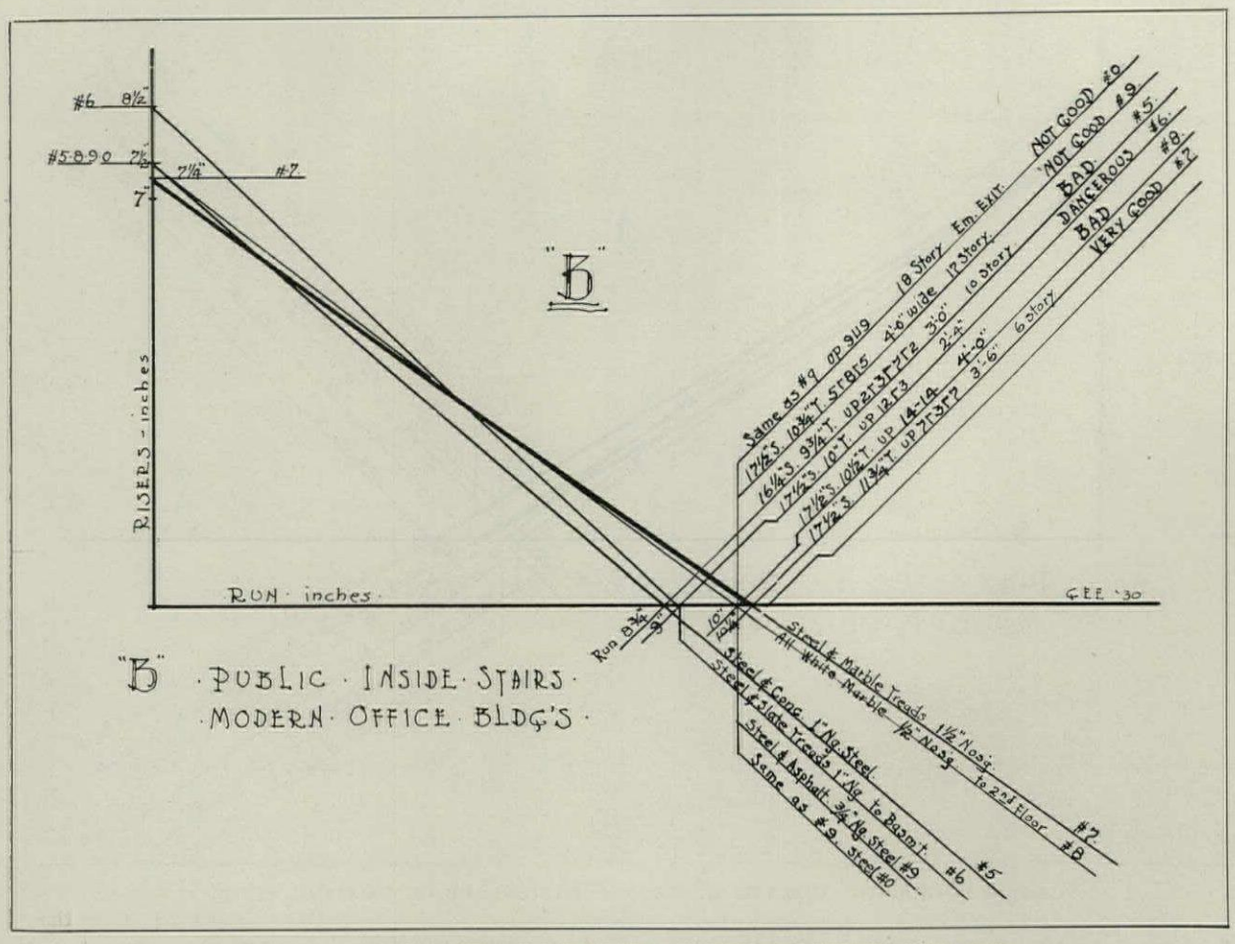


GRAPH A—GRAPHIC ANALYSIS BY GEORGE EICHENLAUB OF EXISTING STAIRS

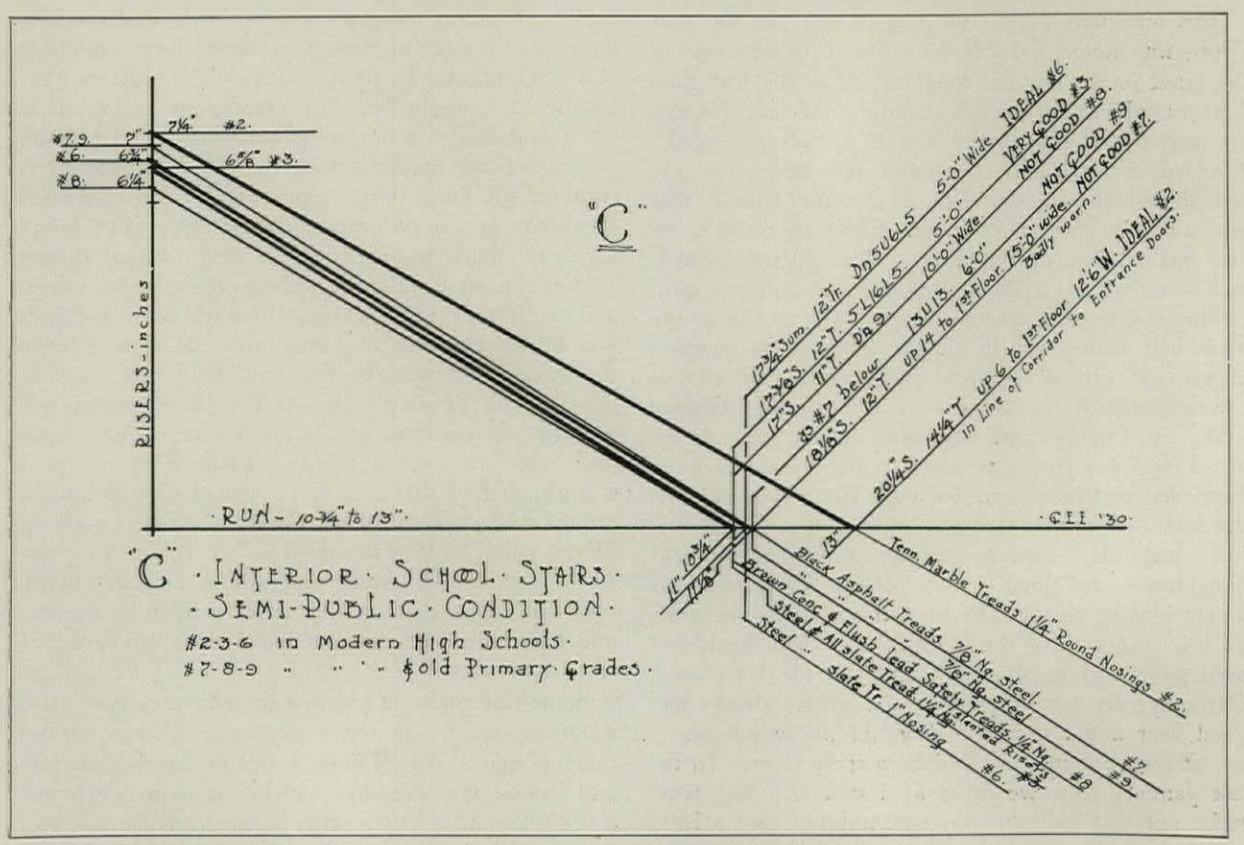
being "Near Ideal" and then "Not so Good" for the Private and the Industrial Condition.

Just one more page from experience. In the year 1900, my honored daddy built him a house—one of the finest in the city for that day. For the first time I heard talk about the Stairbuilder—his skill, his art, his specialty which marked him as a craftsman apart. (Indeed, it were well to humor him some, even as one should the Architect.) It became known that our stairway was going to be one of supreme merit and quality, one of the finest. Mr. Althof, himself and no other, was to do this job and was duly engaged. In due course, this square open stairway in the square main hall took shape in all the glory of its quarter-sawed oak, turned spindles, goosenecked rails, newels and urn-shaped finials of thin and carved—Golden Oak. And many came who admired the job. As for me, I was too young to know real beauty and now, methinks, perhaps I am too old. Be that as it may, the fact is this: that stairway to me, as a youth, was stiff, ungainly, tiresome in use and actually near dangerous—and long before design or dimensions meant a thing to me. Witness this; within one year, no less than two of the beautiful (?) urn-finials had been pulled off by stumblers and had to be replaced. Certainly, my father's family and guests always had good beer and ale, but I maintain this would make no difference if the stair had been truly right. In the last January issue we spoke of a stair that was truly right, one that had come through unbroken since 1802 and for a long time had been used in an hotel where a bar and really "strong stuff" was a "business." Checking further against my father's house, the mother, brother, and others were lately and specially interrogated and, in fine, also agree that something was not just exactly right, though they could not say just what it might be. Therefore, my rating sticks "Not so good." And time passed—until in 1922 this now practicing architect took the father's house over, trimmed off the rotting "gingerbread" and converted the home into a two-family apartment. The lower flight of stairs was pried loose and swung around against the west wall, the railings were broken down and walls took their place. The width of the stair was unchanged, rise and run remained as was, even the golden oak was retained and brightened up with new varnish (I didn't have to live there any more), and the job was done and has been continuously occupied since at a good rental. Imagine my surprise though, to find that this stairway had now become a remarkably *good* stairway. Now it earns a mark of "Very good." It measures 7¼" x 10" x 1½" = 11½" tread, 3'-6" wide, and is now a 12-step flight, right (L) turn landing and a 7-step flight to the second floor; no wall rails used and none required; no tread coverings.

Some one may discern that in both the above cited instances, when the other architect did the job we mark it minus and as soon as this architect gets there and moves the stairway—presto! it immediately becomes "Good." Well—that occurred to me too, so I got me some good cigars and a best smile and ap-



GRAPH B—GRAPHIC ANALYSIS OF STAIRS IN MODERN OFFICE BUILDINGS



GRAPH C—GEORGE EICHENLAUB'S ANALYSIS OF SCHOOL STAIRS

proached the first twenty-five passers-by regardless of age, sex, or appearance. From these I got nineteen to pause in some doubt, mount the stairs, come down, and then return at greater speed without putting down their bundles, if any. Thereupon I questioned them negatively something like this: "Why are those steps so uncomfortable?" "Would it not be a good idea to have a law or ordinance compelling people to put in better stairs?" The concensus of opinion was "Those steps are not uncomfortable," and I could not shake them on that either. Instead they mainly wished their own stairways were "half so good" and so on. In fact, we rented the upper flat to one of those ladies who was something of a crank on stairways herself. Most of the people thought "a law would be a good thing," but since this is something of a common American trait, we attach no importance to that; some day we Americans will be fed up on this law business.

My deduction and rating "Very good" is really gained from these people and not from mineself, but I do urge that we must not have a law about it until such time at least when we generally KNOW more about the subject.

The stairs shown in the graphs so far include the work of George B. Post, William B. Ittner, Arnold Brunner, Alden & Harlowe, Dennison & Hirons, etc., none of whom need any introduction here. We have a right to suppose if they say a thing is right, the argument is about settled—but such is far from the case. It merely proves to us that "Good and Final Stairway Information" is not such a common and settled commodity as we have all of us pretty much supposed, including the best known firms, as noted above, in the profession.

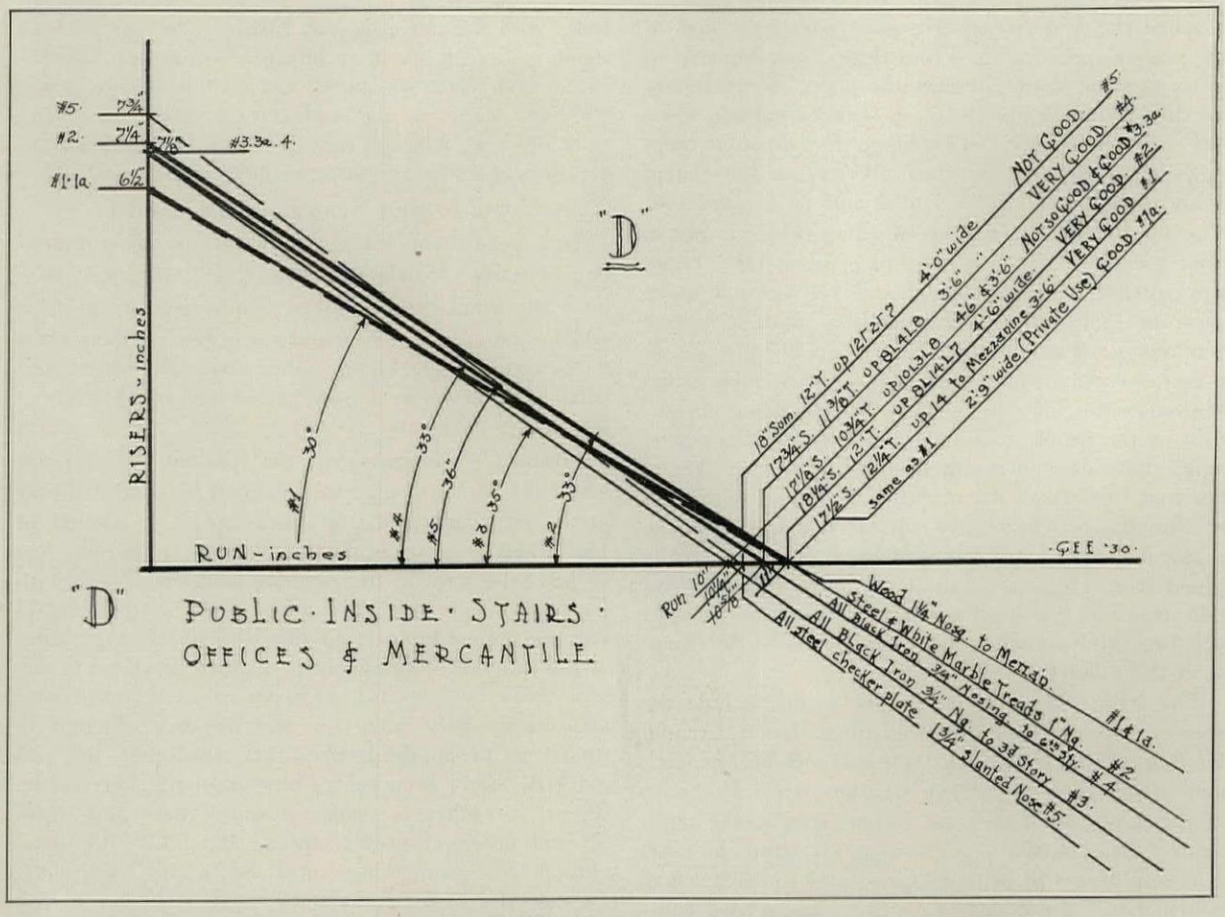
Coming back to the *National Safety News* article, Mr. Mowery does not fully agree with the No. 1 "Approved Standard" graph either, for he proposes another rule, to wit: "The best formula for determining tread and riser dimension is: 25″ minus tread width over-all divided by two equals the riser height. The angle is preferably between 30 and 36 degrees with the horizontal." Space does not permit further analysis here, but this rule, too, will not be found to work out or check with our graphs and experience or with opinions cited by this author. Mr. Mowery then uncovers the first word we have so far seen or heard concerning the influence of "Materials" upon stairway design, for safety and comfort. I maintain here that these two last elements of safety and comfort are closely synonymous or equal to each other. His words are in full agreement with my thought, so I use his: "Any slippery material is unsafe or subnormal; marble, slate, wood, etc., are normal, but may be unsafe when damp or wet; cork, travertine, asphalt mastic, ribbed rubber, and anti-slip materials as abrasive safety treads (Mowery sells 'em) are supernormal or safe and the best to use." He says further "Handrails should be used on both sides of stairs over 3′-0″ wide and an intermediate railing on stairs over 8′-0″ wide." The State of Pennsylvania says the same thing in nearly the same way and, I opine, copied this data, simply taking it for granted. Now, while we agree with the above by Mr. Mowery, he says nothing about color, or about architecture—meaning appearance—and when we started out on this voyage it was with the same purely engineering, safety, or utility point of view, which is now found to be insufficient to explain some characteristics we have found.

Some School Stairs: See Graph *C*

In a grade school I ran into this curious combination of stairs (I incline to term this "semipublic use," since the scholars live here a goodly portion of their waking time and so can and do accustom themselves to the conditions as found), done about 1914 by a politician architect who is now exclusively and better engaged as a politician.

Graph *C-7* design shows the condition. The stair was built of composite steel, painted black and black-grey, with asphalt-mastic filled treads, a width of 15′-0″ between walls, no intermediate handrails, one flight of 14 steps in the corridor to double doors with a clear opening of 6′-0″—a beautiful "bottle-neck" if you ask me. On entering the door and first glancing at this black forbidding prospect, with the head of the stair above my eye-line, the apparent pitch and general appearance were such and the negative reaction in myself so pronounced, that instinctively the job was marked "Bad" even before measurements were made. Then, carefully—a walk up and down—and again up and down at greater speed, and finally the conclusion that something must be wrong with me. Possibly this new "Stair-legitis" was setting in so that any old stair was become a good stair to me. Again up, and again down, but it still remained not quite a "good" stair—not so bad as I first thought, true, but still not good. Then it was measured and imagine my great surprise to find that the rise and run were just about what I would say was "durn good," 7″ x 11″ x 1″ = 12″ treads. True, the nosing had only 1″ projection, the slippery steel nosing edge was dangerous, and the width of stair was excessive without handrails—but, even so, the user should have a better opinion in his mind. The figures were 7″ x 11″ and no mistake; what could the trouble be? And now this engineer came to a most enlightening conclusion; perhaps after all, architecture as such—mere good appearance as color, line, etc.—has its place of positive importance in the practical application of methods for better safety and the "Safeguarding of Life, Health and Property"—a stated prime purpose for the Pennsylvania regulation, which is apparently wholly ignored by all lawyers.

Puzzled and thinking, my way continued to another grade school where I found a brand-new, to me, type of stairway built about 1924. Graph *C-8* shows this design. It was of a light brown magnesite concrete with mason-type safety treads 4″ face, level and nicely placed in the outer edge of each tread, designed as 6¼″ x 10¾″ x ¼″ = 11″ treads. The shiny top of the 4″ lead treads offered splendid contrast to the brown of the concrete for visibility in use; the steps measured only ½″ short of the 17½″ sum as shown in the "Approved Standard" graph. While these



GRAPH D—PUBLIC INSIDE STAIRS IN OFFICES AND MERCANTILE BUILDINGS

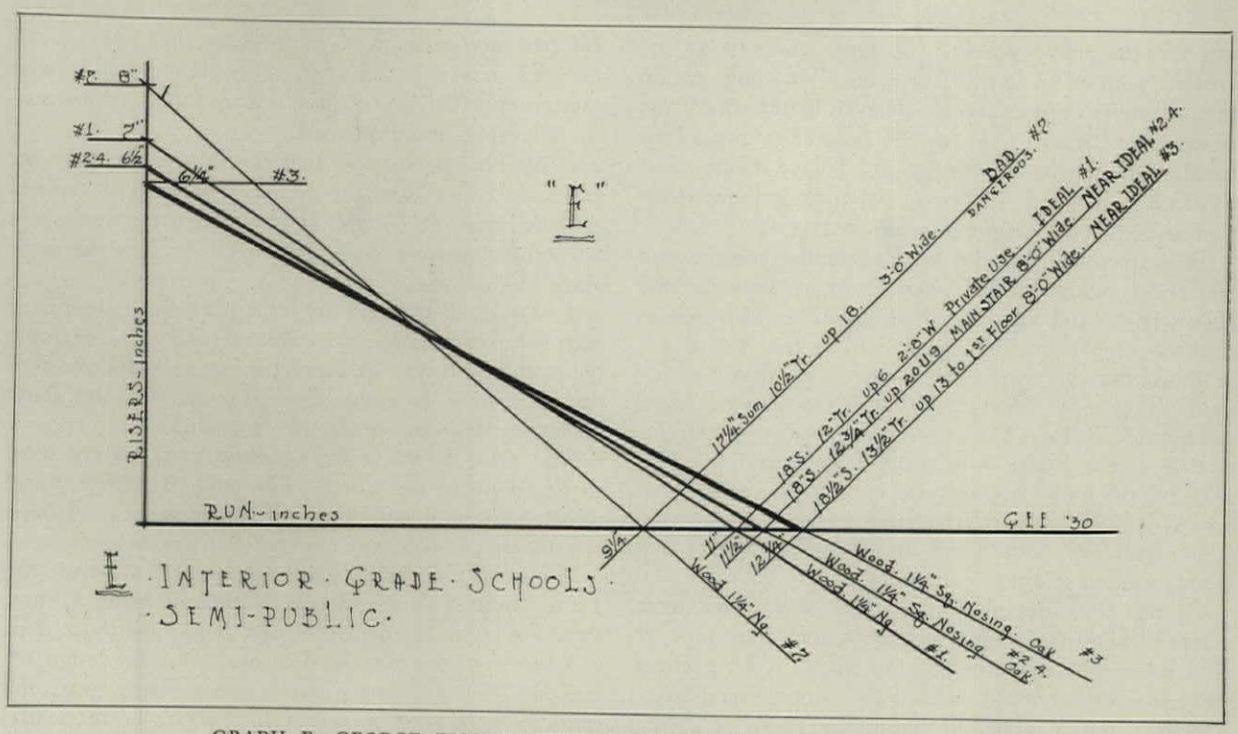
steps were placed in the straight line of the main corridor travel, near its center of length where the steps could not possibly be avoided, and were 10′-0″ wide without handrails in one flight of nine steps and deficient in nosing—still one would be almost compelled to think these stairs infinitely better and superior to the ugly black flight just previously cited. And such was my first personal reaction, due to this good appearance alone, although my stride seemed somewhat restricted in the use of the said stairs.

Now for a check-up and investigation to discover if possible, as Uncle John, an old attorney, says, "if the truth lies." The children did not think so badly of the black and worn steps with their trippy steel nosings that I had mentally condemned, but have now marked "Good" on the strength of their say-so. The last are marked "Not Good" for the same account. Even candy could not shake the opinion of my own kids, aged 7, 9, and 11 respectively, that these last-named were not at least fairly good. They say they trip, insist they trip, must always be oh, so careful, and distinctly have a vehement aversion to the last-named 6¼″ x 10¾″ stair. Evidently good appearance alone does not have great influence on the child-mind when we consider steps. After several years of use, the children have rendered their verdict and I conclude that these two stairways lie near the end-limits of school-stairs practice regardless of law, rule, or regulation.

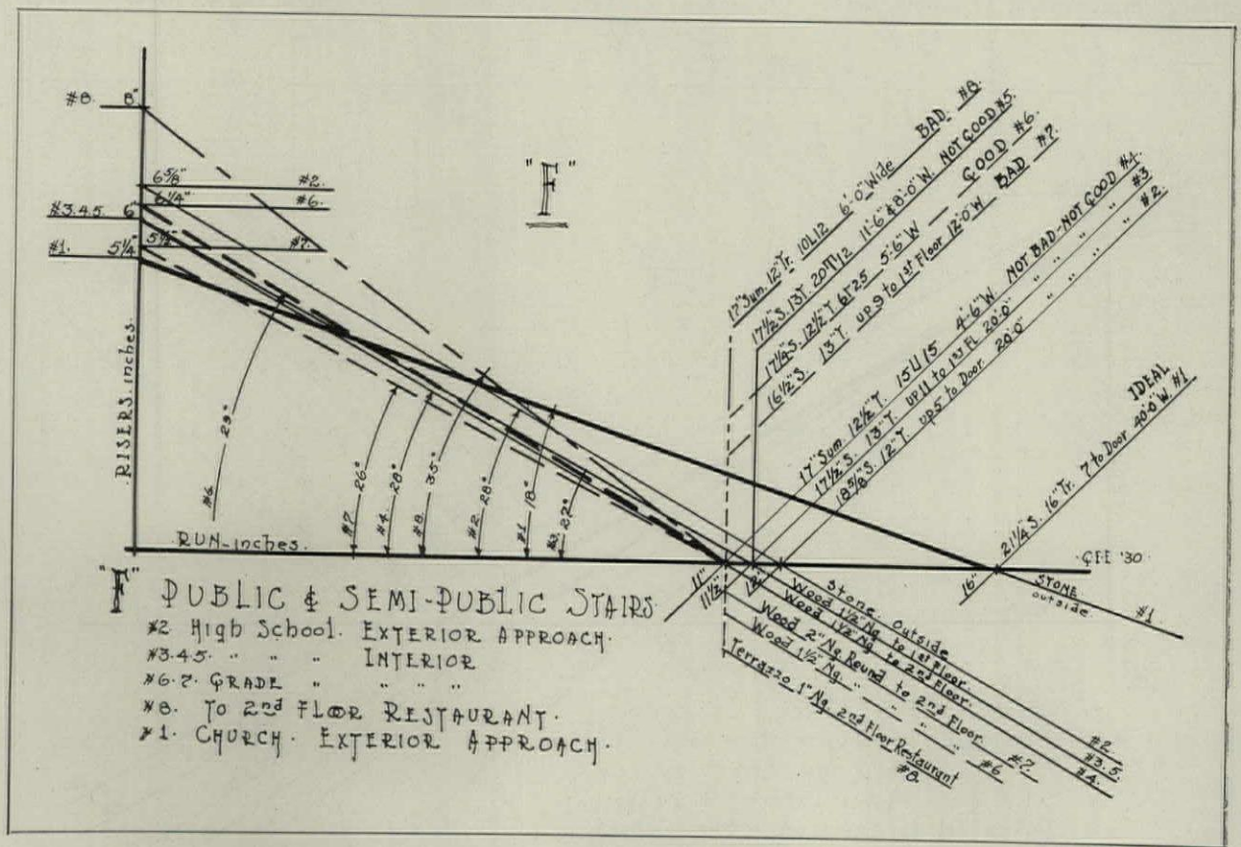
Again I come back to our 7″ x 11″ starting point for design and here I would use seven minus and eleven plus to design about a 6¾″ x 11½″ x 2″ = 13½″ tread. None just like that are found, but it approaches the IDEAL Public Library Stair in fine white marble that was shown in last January's article in PENCIL POINTS.

Public Schools and their stairways probably receive the maximum of interfloor travel. It is almost fascinating to stand clear and observe the whirl and rush and variety in use of such stairs when the gongs ring the classes in and out. The same graph "C" shows some excellent stairways in a high school by Mr. Ittner, which are not in accord with any rules—and now let us investigate further.

Graph *E-2, 3,* and *4* designs are from an older school built in 1899 by the late Joseph Frank, a German-trained architect who thought much of his scrolls and "durmelee" in common with those of his day, but who surely knew his stairways, as we shall see. The three stairways are near IDEAL and are found as 6½″ x 11½″ x 1¼″ = 12¾″ treads for an average; they are of good oak without tread coverings, 8′-0″ wide and have no trick-railings such as are found in more recent schools. In all the years, numbering thirty in use, these stairs have caused no accidents that inquiry could discover. The children like these stairs and I can personally vouch that they are just fine, because, as a youngster of 14, I attended



GRAPH E—GEORGE EICHENLAUB'S ANALYSIS OF GRADE SCHOOL STAIRS



GRAPH F—MORE GRAPHS FOR PUBLIC AND SEMIPUBLIC STAIRWAYS

this newest public school. If these risers were increased from 6½″ to 6¾″ or even 7″ it is my opinion that the stairs as found would be even better, and if the nosing were made 1½″ or 2″ projection the added tread width would help design *2*. I have doubt about *3* which is now 13½″ tread, although without question its 6¼″ riser height is insufficient.

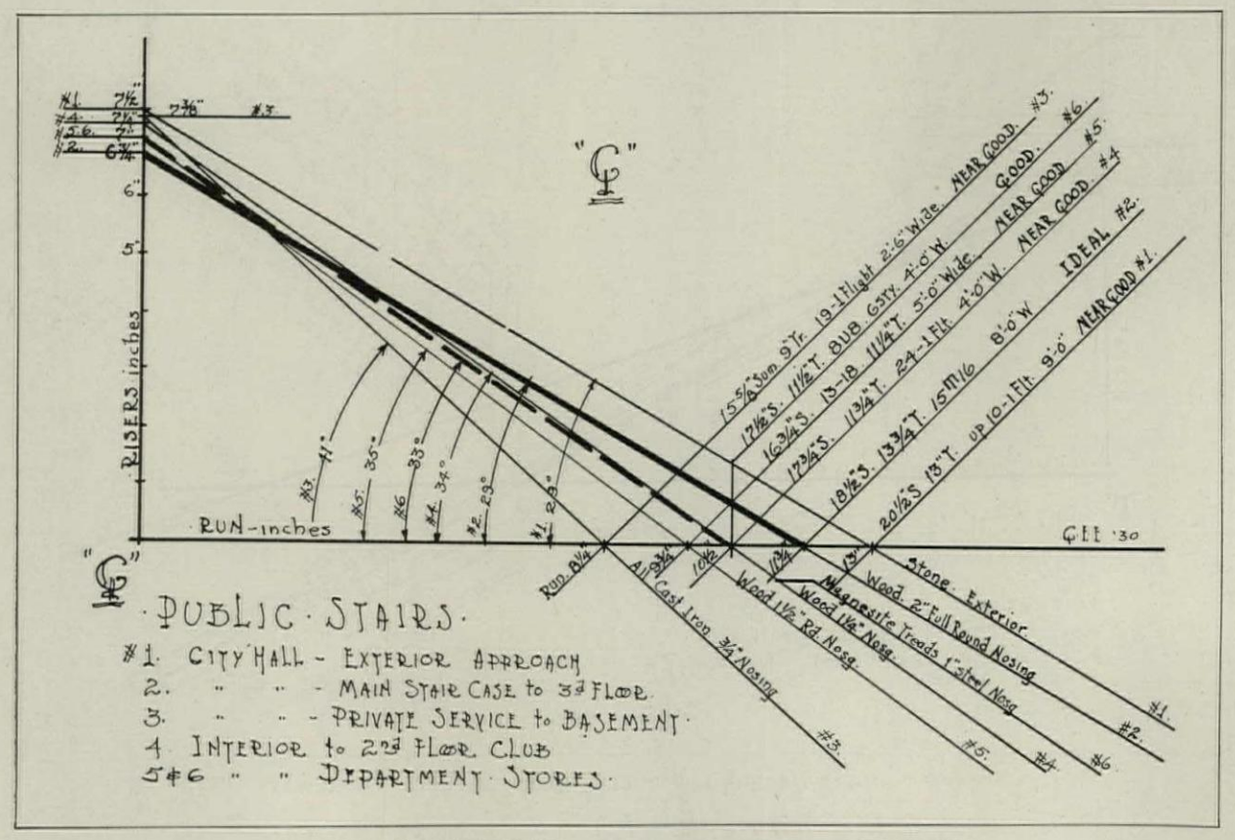
In graph *F-3, 4,* and *5* we find similar construction and treads with only 6″ risers, built in the same city about 1890 and labeled "Not good." This would seem to support my ratings and ideas too, for it will be noted that the sum of the latter, now that it is figured up, is 17½″ in accord with the now, I hope, condemned Rule. The experience of either the architect or of the Board here must have shown the stair with 6″ rise to be not so good, and in the subsequent job of 1899, as cited, the riser heights were made 6¼″ and 6½″ which we also have rated as much better, though still not quite "Ideal."

Graph *G-2* design finally does show one stair marked "IDEAL." It is not in a school, but in a City Hall where the use is public, but much akin to school use. It is also of wood and has the same general characteristics, but is measured at 6¾″ x 11¾″ x 2″ = 13¾″ treads and is ideal in spite of its shiny, flat cast-brass and potentially hazardous all-over tread coverings. I am much pleased to mention that this about bears out the recommendations just made regarding improvement of school stairs. Of course, if this had not been so, I might have had to rub this out and rewrite. Since it is so, however, it helps strengthen belief in our graphs and also in opinions so far developed and expressed.

It may be noted now, that the school stairways are generally wider than the commercial ones as exposed in the graphs *A, B,* and *D* and that the school stairs are somewhat easier in general pitch to gain the same mark of goodness.

I now think that the angle of pitch in degrees is of relative unimportance, since the rise and run determine the pitch and if they be correct it naturally follows that the pitch must be right, too. To describe and show pitches in degrees only tends to complicate further a subject that should be very simple, but has not been so found up to this time. The pitch therefore is left off on some and will be on all future graphs. I hope law-making bodies will also try for this simplification. I also still feel, with growing conviction, that the 17½″ sum of riser and run, instead of being a limit, should lie near the center of any requirements or used as a starting point for the designer. In new design we like our 7″ x 11″ better as the intermediate mean, the stairs to be somewhat steeper for private or residential work and somewhat flatter for public work in general.

NOTE:—*Next month Mr. Eichenlaub will discuss other classifications of stairways such as Private, Activital, etc., in an article of the same approximate length, which will show how requirements do vary.*



GRAPH G—GRAPHIC STAIR ANALYSIS BY GEORGE EICHENLAUB

The Pyramider

An Architectural Story

As Told to W. B. Warner by R. W. Meadows, Architect

A young architect, handling his first court house contract, would hardly expect to have the experiences pile up on him in the manner that fell to my lot when, at the age of twenty-nine, I found myself in charge of such an operation. It was in the third year of my independent practice in the city of D . . . . . , in the Middle West. The pretentious structure I had undertaken to produce was to be erected in R . . . . . City, a county-seat town about a hundred miles distant.

The five members of the county board included four Scandinavian Republicans and an astute Irish Democrat, all farmers. The personnel of the Republican group varied from one election to another, but, although the county was overwhelmingly of that persuasion, yet honest old Denny Malloy was returned unanimously every two years, and had been chairman of the board for at least twelve. Some said it was because the "Scandies" couldn't trust each other, but they all knew they could trust Denny.

That the chairman ran things to suit himself was evidenced in his selecting me for the architectural service, over the heads of many applicants of more experience—simply because he knew my father. A ring of crooked architects and contractors was said to be operating in connection with public buildings in that vicinity, hence Denny proposed, first, to employ a man they could trust. Then, if he happened to provide them with a building of the right kind, so much the better.

Naturally, I had heard something of the deals that had been pulled off, but I knew that they could only be worked with difficulty without the connivance of the architect and at least one strong board member. Working with "Honest old Denny," I felt fairly safe.

To be sure, I had, to begin with, the usual difficulty of "cutting the cloth to fit the pattern." The original appropriation was $150,000, and several of my overly-sharp competitors had eagerly offered to "guarantee" that they could produce the desired building for the money. But I had helped the county attorney to demonstrate to Denny's satisfaction the worthlessness of such "guaranty," based only upon incomplete sketches, without specifications.

After I had been employed, Denny admitted that the board was more interested in knowing that their funds were neither wasted nor stolen than they were in holding the architect and contractors strictly to the appropriation. I therefore made a careful survey of requirements and planned accordingly, and Denny seemed not at all worried when I told him my building would cost about $175,000.

My first setback came when, at the opening of the bids, we found ourselves with only two on hand, and no others promised. Seven other contractors had returned the blueprints and specifications under various pretexts. One bid came to $185,000 and the other to $195,000. We rejected them and readvertised. I made a few minor changes in the specifications, but Denny assured me it wasn't necessary to get a price within my estimate, just only to be sure that they were having real competition.

Apparently, they had it the second time, for the bids ranged from about $174,900 up to $192,500. Strangely enough, the man who had bid high the first time, Jim Perry, was now low. The former low bidder, Judson, had come down $6,500 in consideration of my changes, which I deemed about right; but I could not understand how Perry could cut his price by $20,100. I learned from Judson, who was not in the "ring," that he had thought, because I had broken into their game, that he might do likewise; but they had been too shrewd for him. It was his opinion that none of the others had figured the job, but submitted figures as directed by Perry, who had learned from Malloy the price I had estimated, and had merely bid accordingly. Judson assured me that I would have my hands full. He proved a true prophet.

Now, it happened that Perry, who operated under the name of the Dependable Building Corporation, had once been a general contractor in my own town (under his own name); had failed under circumstances not to his credit, and had betaken himself to new fields; hence the incorporation. Before the contract was awarded, I therefore told Denny that I didn't consider the low bidder as "dependable" as its name implied, and advised sending out a committee to investigate some of the work it was doing. He agreed to this and appointed me a committee of one for the purpose. I demurred on the grounds that my prejudice might render me unfair. But they sent me, nevertheless, saying I would know best what to look for.

I visited, in different places, a court house, a city hall, and a high school, all under construction, and a public library, just completed. In each case, I found the architect and the owners' representatives well pleased with the work of the Dependable Building Corp. Oddly enough, I was told, in each instance, that the company was doing excellent work in spite of the fact that it must be losing money on the contract. In the case of the library, Perry was said to have admitted that he "had gone down in his pockets" to make up a $10,000 shortage on his $80,000 contract. It was also rumored that he had lost money on a

schoolhouse, the only other work so far completed by the new corporation.

However, having received no adverse criticism of the company's operations, I was constrained to withdraw my objection, and the contract was accordingly awarded to Perry, conditioned upon the deposit of an approved surety company bond, which was duly forthcoming. Could I have divined the clever machinations of the unscrupulous "pyramider," as I came to understand them later, my embargo would most certainly have stood—and I would have been saved a deal of trouble.

Perry's general foremen were the best he could find, always; instructed to do whatever the architect demanded, so I experienced no trouble from that source. This left the "general manager and purchasing agent" of the Dependable Building Corp. free to devote his own time to closing new contracts and awarding his "subs." In both of these functions, his system was nearly perfect, as we shall see. The thing that beat him was the weather. To be sure, his Nemesis had to overtake him sooner or later; but he had not foreseen the long, cold winter that closed in on him before he was quite ready to quit. He might have gotten the other half of his million.

After five months of smooth sailing on our court house, I was congratulating myself upon my good fortune in having the work so well handled. My only friction with Perry was a regular monthly quarrel over his payments on account, the which he could collect from the county only on the certificates of the architect. These were never large enough to satisfy him. He was the smoothest salesman I have ever encountered, and nothing but my positive knowledge of the man's true character saved me from falling for his assiduous "courtship."

As a basis for my monthly estimates of work done and materials supplied, he filled what purported to be a detailed statement of what the building would cost. Compared with a similar statement of my own compilation, only his total agreed. His "estimates" of excavating, concrete work, steel, and other items at the beginning of the job were nearly double mine, whereas such matters as cabinet work, painting, decorating, and hardware were ridiculously low. Had I permitted myself to be led by him, he would have drawn nearly one-half his contract price before the job was one-fourth done.

The friction between us on this score increased from month to month and was brought to an *impasse* on the first of December when I intimated to him that I would issue no further certificates until I had evidence that he was paying his bills on our work. Public buildings (in that state, at least) are immune from ordinary mechanics' liens, hence Perry claimed that the conduct of his affair was none of my business, regardless of what the contract said on the subject, so long as his creditors were not complaining. At this time, he had received about $40,000 on account, but all that I could find that he had paid out on our job had been for local labor and freight bills, not to exceed $5,000. Apparently, neither the excavating contractor nor any of the local supply houses among whom he was distributing a minor patronage, was crowding him, nor had I received a complaint from any of his larger creditors. I reckoned that he had about $10,000 due December first, chiefly for steel and stone.

I had sent inquiries to both these concerns regarding their accounts and the stone company's representative met me at the station, when I arrived in R . . . . City at noon on December second. He said Perry was furious at me for "injuring his credit," but that the stone company appreciated my concern for their interests, inasmuch as they had received to date not a penny of the $12,500 that had thus far been allowed for cut stone. Inasmuch as they were also entitled to an additional five thousand of the December payment, I offered to support a demand for the entire $10,000 I was just about to allow. But Smith (the stone man) said that Malloy had a prior demand from the steel company for $3,000, hence his stone company would be content for the present if they were paid the remaining $7,000 of my certificate. He added that they got all of Perry's business and considered him perfectly sound financially.

Arrived at the board meeting, I found Perry fuming, threatening and cajoling, by turns; evidently impressing all the board members except Malloy, who appeared quite imperturbable. Perry asked for a minute's private conversation with me in a committee room, whither we adjourned. One of the board members suggested that I'd better have a bodyguard.

"What's this you're trying to do to me, Will?" Perry opened.

"For instance?" I countered.

"Why damn it, damaging my credit by writing these letters to my subcontractors. Now, look-a-here, Will, you're a young man, just starting in your profession, and I'm in position to do you a lotta good, if we can work together. This ain't the only court house to be built in this part of the country, but, by God, if you're going to treat me like this, I'm right here to tell you that you'll never get another. Why, this is the damndest outrage—"

"Supposing you cut out the cussing and tell me how you propose to pay these bills," I suggested. "That happens to be about all I'm interested in right now."

"Well, then, young fellow, all I have to say is that it's none of your damned business how I run my affairs. I've told you that before and you might's well let it sink in. This is a public building, not subject to lien, and I'll not submit to your interference, by God, if I have to take the matter into court. But, now, look-a-here, Will, you don't understand my situation," and the consummate actor changed his tune to supplication. "I'm only a hired man of this building corporation (ninety-eight per cent. of the stock was in the name of his grown-up daughter), an', if I don't make a showing, I'm likely to lose my job." Real tears came to his eyes, as his emotion (?) overcame him. I was uncomfortable, but not fooled. "My God, Will, you don't understand what you're doing to me—"

"No," I admitted, "and I don't much care. So,

cut out the play-acting and say the rest to the board." I opened the door.

"Well, damn you! I'll get you for this," I heard him say as we returned to the session.

"Come to any agreement?" Malloy wanted to know.

"Yes," I said. "Mr. Perry is going to pay some of his bills."

He glared at me and then took Smith into the room we had just left. When they returned, he exhibited a receipt from the stone comapny for $10,000; then said he'd go over to the bank and telegraph $3,000 to the steel contractors, which he did.

While Perry was gone, Smith told me, confidentially, that he had been persuaded to accept two notes, signed by the Dependable Building Corp., without recourse to Perry, for $10,000 each; same to be credited on account, in lieu of a cash payment. Smith appeared to be quite satisfied. I later learned that the local banker was equally gullible. He accepted a similar note for $13,000 and then placed that amount to the corporation's credit, $3,000 of which was wired to the steel company. Its receipt was promptly wired back, and I had no alternative but to issue my certificate. I had called on some of the local dealers, none of whom appeared at all anxious about their account with Perry, apparently replying implicitly upon his promises. He again threatened me for "injuring his credit," but I had sized him up as a bully and was less interested in his conversation than in his actions. I didn't know about his having borrowed ten thousand dollars more than he needed at the bank, but I wondered what he intended to do with the equal amount he received from the county. I eventually found that, as agreed, he had left two thousand in the bank and had checked out the remaining $18,000 for transfer to his home-town bank, whence he re-checked it to himself for "back-salary."

December that year was but a week old when winter came in to stay, and all construction work in that section was forced to close down. This must have proved most disconcerting to the enterprising Perry, for only by continuing his operations could he hope to draw more funds and keep going. He closed two new contracts, but they couldn't help any. On January second, I sent up a certificate to the board, to pay the contractor $3,000, to be divided equally between the steel and excavating contractors, provided there were no other claims filed. There was none, but a telephone call from Malloy advised me that friend Perry was again on hand, "frothing at the mouth," and demanding another ten thousand which he said it was my understanding he was to receive to take up one of the stone company's notes. Of course, there had been no such understanding, but Malloy insisted upon my coming up to explain to the board.

Again, Perry wanted a private talk with me, but I said it was too evident that we needed witnesses to our conversation, hence I would talk in the presence of the board. He thereupon addressed himself to them, using the character of pleading in which he was so adept.

Said he, "I admit that Will here is a capable enough young fellow, but he hasn't had the experience in the building business that I've had, an' he's trying to make a record on this first big job of his at my expense. The figures on that statement (in Malloy's hands) show that I've spent twice as much to date as he's given me credit for and I ought to have the ten thousand he promised me to take up the stone company's note in addition to the measly little three thousand he's allowed me to pay on my other bills. I can stand off the steel company. They know my credit's good, but I ought to pay some of my local bills."

He continued to plead with tears running down his cheeks, telling how badly he needed living expenses for his wife and family, etc., etc. Two of the board members were sniffling, but there was nothing to be learned from Malloy's poker face. Presently, Carlson, one of the members, while Perry paused to wipe away his tears, addressed the chair: "Val, I tank sure Mr. Perry knows better vat his stuff cost as Mr. Meadows, cause he pays the bills. I move that we instruct Mr. Meadows to change his stif'cate to tirteen tousand dollars."

"Is that all right with you, Mr. Meadows?" asked the chair.

"I have no objection to the motion," I said, "but it wouldn't change my certificate. It happens that the contract states that the amount of the certificate is supposed to represent my idea of what is due, not that of the board or Mr. Perry. And, as to a comparison of my estimate and his, you might ask him how he expects to finish the building at his contract price, if these early items are costing him twice what they should. No, gentlemen, so far as my estimate is concerned, the amount stands. Inasmuch as neither the steel contractor nor the grader seems to be looking out for their interests, however, I'll waive the point of their receipts, if you prefer. But I want it distinctly understood that Mr. Perry's statement that he had an understanding that I was to allow him ten thousand this month to take up one of the notes he gave the steel company is pure fabrication on his part. Mr. Smith showed me those notes. One is for three months and the other for six."

"Now, see here, Will—" expostulated Perry.

"Just a moment, Mr. Perry," from Malloy, "Mr. Meadows has the floor."

"Thanks, Mr. Malloy. I was merely going to add, that, if Mr. Perry is so willing to invent a story about the note, doesn't it occur to you that his so-called estimate of costs might be equally undependable? And you want to bear in mind that he would have a direct interest in falsifying his statement, while I would not."

One would have thought that Perry would have resented being called a liar in such plain terms, but he was only intent on getting that extra money. He evidently had Carlson primed, for the persistent Swede was ready with another motion: "Den I move that we allow Mr. Perry tirteen tousand dollars witout any stif'cate from the artchitec'."

"What effect would such a payment have on our bond, Mr. Meadows?" the chair wanted to know.

"As I understand it," I said, "any payment made

otherwise than on your architect's certificate would render your bond worthless."

"Then, as I see it, Mr. Carlson," said the sage old chairman, "the only motion the chair can entertain is to pay the Dependable Building Corporation the amount of the architect's certificate."

"With a proviso," I stipulated, "that the board waives presentation of the receipts demanded there in my letter."

With that, Perry started to curse me, but Malloy shut him up and the motion was carried. I had to hurry away to catch my train; a most unhappy young architect. My efforts to look after my client's interest were assuredly misconstrued or, at least, unappreciated. My first court house job was going absolutely wrong.

Imagine my pleasure, then, about ten days later, upon reading a letter from good old Denny Malloy, telling me that the Dependable Building Corp. was in the hands of its creditors and he felt that the county owed me a vote of thanks for saving it the $10,000. He wanted me to get in touch with a representative of the surety company and arrange a meeting at R . . . . . City as soon as possible.

There were present at this meeting, besides the members of the board and myself, Perry and his local banker, Robertson, the foreman of the job, Bill Fielder, and a Mr. Patterson, Chicago attorney for the bonding company. My train did not arrive till noon, hence the others had been in session some hours before they reassembled after lunch. I learned that Perry and Patterson had come in together on the Chicago Pullman, which meant that the clever rascal had had ample opportunity to "sell himself" to the lawyer. His success at this was but further evidence of the man's wonderful acting.

The two entered the board room together and Patterson handed the chairman a paper, and a copy to me. It was a three-cornered agreement which he had drawn up, appointing Perry purchasing agent and general manager to complete the job, with Fielder as foreman. Perry was to get $100 per month for such time as his duties would demand, and Fielder was to receive $175 per month for full time. I caught Malloy studying my expression and detecting my disapproval. Perry was avoiding me, sitting on the other side of the lawyer who had taken a seat at the long table next to mine.

"We agreed this morning, Mr. Meadows," explained the chairman, "that, inasmuch as Mr. Perry has let most of the contracts for the building, and is practically ready to let the rest, it would be the most economical procedure to have him finish this part of the work. Doesn't that sound reasonable to you?"

I admitted the plausibility and continued to read the contract. The last clause stated that no purchases made by the said Perry nor contracts entered into by him were to be considered as valid and binding unless countersigned by representatives of the county and the surety company. Without saying anything, I dipped a pen in the ink and added "and the architect" at the end. Then reached for the other two copies and did the same. Perry started to flare up, but Patterson and Malloy could see no harm in the addendum, and it stood. 'Twas well it did.

During the following month, the creditors' committee delved into Perry's unfinished business, which comprised ten partially completed contracts in addition to the two on which no work had been done, which latter were promptly cancelled. It developed that the corporation had about $400,000 in liabilities and less than $10,000 in assets, consisting chiefly of secondhand equipment. There could be no profits anticipated from any unfinished contracts. I took the report of the committee and did a little figuring of my own. I computed that, during the three years that Perry had played his little racket, he had carried out all or part of fourteen jobs, two undertaken the first year, five the second and seven the third. The aggregate cost of this work was pretty close to $3,500,000, of which Perry had drawn nearly $3,000,000. He had paid himself a salary of $10,000 for the first year, $15,000 for the second and $20,000 for the third, and had applied our $3,000 on salary for the current year. This latter was all the creditors managed to recover from him. As he told me, he had supported his wife for a number of years, now she could take care of him for a while.

But the $45,000, which represented the salary that Perry had so generously turned over to his wife, was but a very small part of his winnings. His graft was in the lettings of subcontracts and in purchasing materials. To all vendors, he alleged that he was merely the purchasing agent of his company and that he had his price. This was anywhere from five to fifteen per cent. of the amount of the purchase. Assuming that he "subbed" three-fourths of the cost of each building at an average of ten per cent., which I felt was a low estimate (from confessions of several dealers), Perry had collected over $200,000 in such "commissions" in three years. No wonder Mrs. Perry could afford to support him for a while! And none of this money could be reached by his creditors, nor could they have actual knowledge of its existence. There was no law to touch him!

Yet this man had been appointed purchasing agent to complete my court house at a salary of $100 a month! It sounded altogether too fishy, and it was. But he let only three contracts before he discovered that they did not bear my signature. The foundation was still incomplete and but a small amount of structural steel erected when the work was shut down. The next thing to be awarded was the fireproofing, which Perry let to the Blank Fireproofing Co. for a flat $25,000; then the roofing to the Better Insulating Co. for $9,000, and the sheet metal work to the Guaranty Metal Co. for $4,000. (He seemed to have a penchant for round numbers.) Now, I had a price of $18,500 on the fireproofing, $7,250 on the roofing, and $3,100 on the sheet metal. I took this information to Malloy and, for the first time, with definite information to hand, explained Perry's whole system. He was astounded and begged me to go into

Chicago, with full authority to handle the situation with Lawyer Patterson. This I did, and he arranged the details of Perry's discharge, and the addition of the duties of purchasing agent to those of Foreman Fielder, at an increase of salary; it being understood that Fielder and I would work together in the matter.

Still, Perry wasn't through. Evidently, he had already collected all or part of his commissions from these three concerns, and it was up to him to deliver the contracts. The roofing and sheet metal people had gone ahead on his say-so and were making the special tiling and cutting and bending the copper. Fielder understood that he was to get at least three bids on each item, but before he could secure two others on the fireproofing, he received word from the Cinder Concrete Co., whose figure I was depending upon, withdrawing the bid. Evidently, they had been advised by Perry's concern to keep hands off, for both had headquarters in Chicago. The Cinder people had bid to me through a local agent, so I called him up and asked if he was prepared to execute a contract for the work. He said he was not authorized to sign a contract, but I urged him to bring over his correspondence and run through it with me. We found a letter from his company begging him to close the contract without delay, though it hardly meant for him to sign it. However, there was a nice commission in it for him, so, when I offered to sign for the county, he was willing to do his share, and we drew up several copies of a contract, to which we attached sworn copies of his "authority" and sent them out to interested parties. Then we waited results. On the second morning following, came the president of the Cinder Concrete Co. from Chicago, hot after the local agent for signing such a contract. It was the first intimation to the agent that the bid had been withdrawn and he insisted that he was entitled to his commission whether the contract was carried out or not. Now, this commission was twice as much as the "divvy" that President Miner's company was to get from the Blank Fireproofing Co. for backing out, hence he was ready to weaken. He told his agent that he wanted to talk to me and the purchasing agent and, if he found that we had knowledge of the cancellation prior to the execution of the contract, it would assuredly not be carried out. After talking with him, I offered to accompany him to R . . . . . City to interview Fielder.

We arrived at 12:30 and boarded the old horse-drawn bus that would cover the mile to town and to the hotel, for lunch. The bus was full and I rode on the rear step, after whispering to the driver to whip up when he passed the new court house. As he did so, I told Miner I'd meet him and Fielder at the hotel, and dropped off. In Fielder's little job-office, I went through his letter-file, found the telltale letter of cancellation and transferred it to my pockets; then strolled on over to the hotel and sat down to lunch with Miner and Fielder. I had no opportunity to tell Fielder what I had done, before he had agreed with Miner that, if the letter antedated the contract, the latter might be declared void. However, Fielder's memory was very vague as to his ever having seen such a letter. But Miner had no reason to question Fielder's later assertion that he was absolutely certain that *all* correspondence with the Cinder Concrete Co. *must* be in that file—and there was no letter of cancellation to be found.

The Cinder Concrete Co. carried out their contract, saving the county $6,500—and we made the other savings also. Of course, we had all of Perry's creditors to contend with, but we simply turned them over to the court and started afresh. None of them ever got a penny, not even the unfortunate stone company, with its two worthless notes; though we bought the remainder of the stone from Smith at a fair price. We overran the contract amount by nearly $30,000; hence looked to the surety company to make good this deficit. While we were dickering with them, fire destroyed my office and every record of the case; but I found a copy of every paper carefully filed in the office of the county auditor, hence was able to make a complete restoration.

And the surety company settled with honest old Denny Malloy and his board without a lawsuit. I presented a claim for $1,800 for additional services, with Malloy's approval—but Perry's influence was still dogging my footsteps. His banker, Robertson, had replaced one of the Scandinavians on the board, in order to assist in winding up court house business (and try to salvage some of his $13,000 loan, which I had to prevent), and the other members had to compromise with him; hence my extras were cut to $1,200, with which I was forced to rest content. It was all the harm Robertson could do me, but he appeared to relish even that.

In my thirty years of subsequent practice, I have continued to find much of romance mixed with the business of building, but that court house job has ever held the preeminence in this respect. And I have encountered other pyramiders, but none to compare with the versatile Jim Perry.

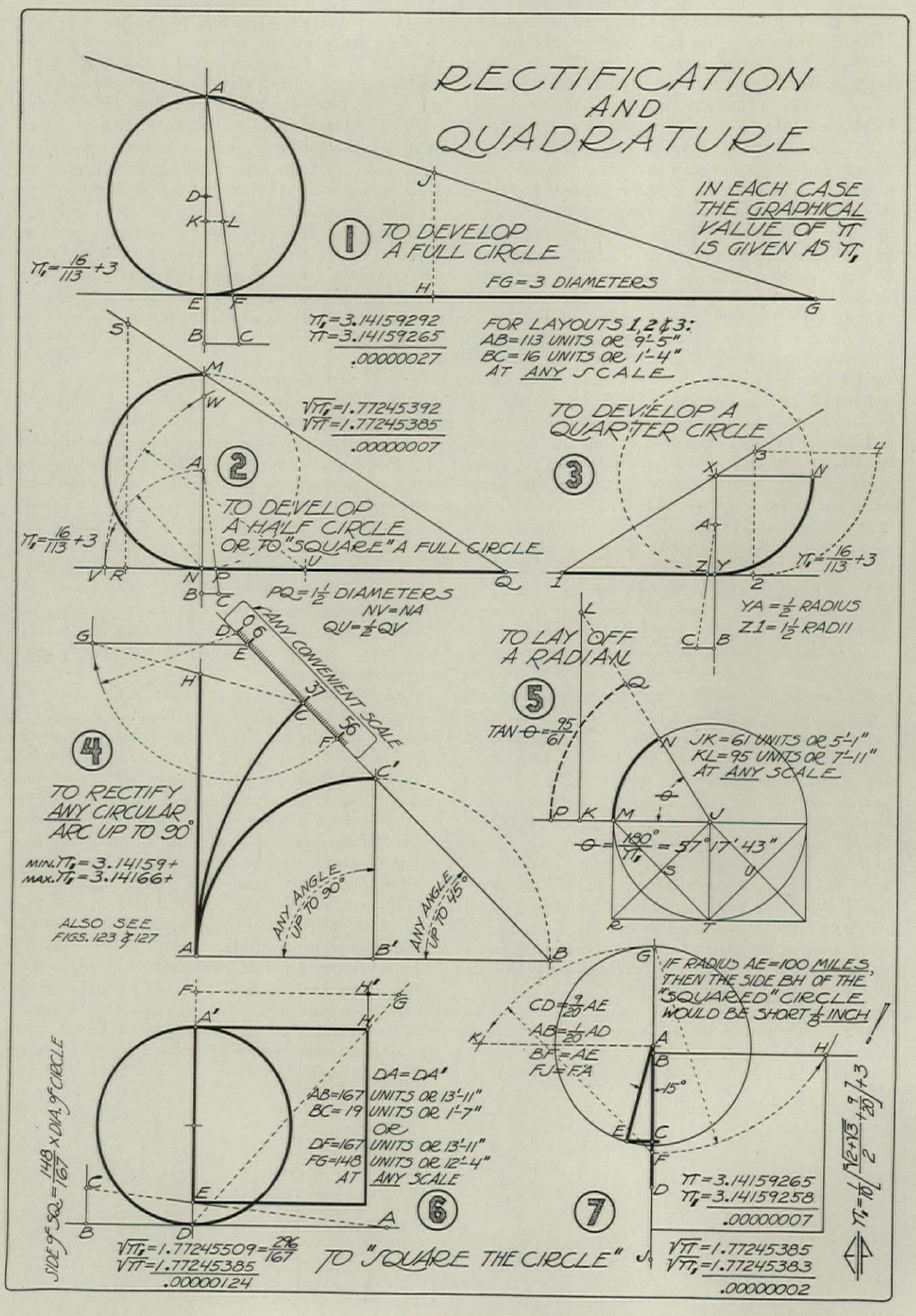

RECTIFICATION AND QUADRATURE
IN EACH CASE THE GRAPHICAL VALUE OF π IS GIVEN AS π₁
1 TO DEVELOP A FULL CIRCLE
FG = 3 DIAMETERS
π₁ = 16/113 + 3
π₁ = 3.14159292
π = 3.14159265
.00000027
FOR LAYOUTS 1, 2 & 3:
AB = 113 UNITS OR 9'-5"
BC = 16 UNITS OR 1'-4"
AT ANY SCALE
2 TO DEVELOP A HALF CIRCLE OR TO "SQUARE" A FULL CIRCLE
√π₁ = 1.77245392
√π = 1.77245385
.00000007
PQ = 1/2 DIAMETERS
NV = NA
QU = 1/2 QV
3 TO DEVELOP A QUARTER CIRCLE
YA = 1/2 RADIUS
Z1 = 1/2 RADII
4 TO RECTIFY ANY CIRCULAR ARC UP TO 90°
ANY CONVENIENT SCALE
MIN. π₁ = 3.14159+
MAX. π₁ = 3.14166+
ALSO SEE FIGS. 123 & 127
ANY ANGLE UP TO 90°
ANY ANGLE UP TO 45°
5 TO LAY OFF A RADIAN
TAN θ = 95/61
θ = 180°/π₁ = 57° 17' 43"
JK = 61 UNITS OR 5'-1"
KL = 95 UNITS OR 7'-11"
AT ANY SCALE
6 TO "SQUARE THE CIRCLE"
SIDE of SQ = 148/167 x DIA. of CIRCLE
DA = DA'
AB = 167 UNITS OR 13'-11"
BC = 19 UNITS OR 1'-7"
OR
DF = 167 UNITS OR 13'-11"
FG = 148 UNITS OR 12'-4"
AT ANY SCALE
√π₁ = 1.77245509 = 296/167
√π = 1.77245385
.00000124
7
IF RADIUS AE = 100 MILES, THEN THE SIDE BH OF THE "SQUARED" CIRCLE WOULD BE SHORT 1/8 INCH !
CD = 9/20 AE
AB = 1/20 AD
BF = AE
FJ = FA
π = 3.14159265
π₁ = 3.14159258
.00000007
√π = 1.77245385
√π₁ = 1.77245383
.00000002
π₁ = 10 [(12+√13)/2 + 9/20] + 3

FIGURE 122

The Geometry of Architectural Drafting

14—The Subjugation of the Circle

By Ernest Irving Freese

Now comes an utterly *new* kind of geometry: a geometry that transforms circles to straight lines, and straight lines to circles; that divides a circular arc in rectilinear ratio, or a straight line in angular ratio; that converts circular measure to linear, or linear to circular—a geometry that puts a stop to the interminable decimal in "pi" at such a point that the infinite overplus fades to a graphical zero. Call it *arc*-ology—if you like—but it's far from antique.

For the first time in the history of practical drafting, precise graphical *cyclometry* herewith becomes a fact. The total graphical subjugation of the circle has been accomplished. You can now abandon all those time-wasting tedious cut-and-try methods of "stepping it off" with all their concomitant accumulations of error. You can now do *anything you like* with any portion of a circle by means of the simple graphics herein for the first time made known. Moreover, you can do it with such a degree of precision that the same values laid off from mathematical calculation become *inexact* in comparison. As a matter of fact if it were not for the constructed values of "pi" which I have given on each layout or, in lieu of this graphical pi-value, stated the limits within which the construction remains precise, even a seasoned mathematician would have a terribly involved trigonometrical transaction trying to "figger out" where graphical precision ended and the lopped-off infinite overplus of the transcendental "pi" became multiplied into measurability. Also, said mathematician would have to throw away his cherished slide-rule: for the results of the "graphical" calculations here given are more exact than any "slip stick" could possibly yield—Oh well, let's have 'em:—

FIGURE 122, Diagram "1":

Make AE any circle's diameter, and draw EG perpendicular thereto. Make AB equal 113 units, or 9′-5″, at *any* scale, and make BC, perpendicular to AB, equal 16 units, or 1′-4″, at the *same* scale. Cross EG at F with AC. Add three diameters to EF, and the summation EG is the circumference. Is it? Well, suppose the radius DE were a mile—not a scale mile: an *actual* mile—63,360 inches. Then EG would be less than 1/29th of *one* inch too long. Now reduce that mile radius by a factor that will bring the construction within the limits of the hugest drafting board ever built, and that 1/29th of an inch overplus will shrivel in the same ratio. Then EG *is* the circumference. Now, since ABC determines the invariable slope of the pi-minus-three line AC, you can ever after use this same triangle to find the "stretch-out" of any circle whatsoever. Say AK is *any given diameter* laid off on AB. Then, always, the "rise," KL, plus thrice the "run," AK, is the circumference. Nothing easier or simpler could be imagined. But suppose conditions demand that you find a diameter that will yield a given length of circumference. In that case, lay off a line GA at a slope of 113:355, which is 9′-5″ rise to 29′-7″ run. Lay off GH equal to the given length of circumference, and the perpendicular HJ is the required diameter. Now *compute* HJ by dividing GH by a six-place pi-value, and never in a thousand years will you be able to lay *that* off. But there it is—graphically—HJ. In other words, precise draftsmanship is here of more avail than six-place-decimal calculation.

FIGURE 122, Diagram "2":

Make AN any given radius, and draw NQ perpendicular thereto. Establish the slope of AC as before, and make PQ thrice AN. Then NQ is the development of the semicircle NM to within less than 1/58th of an *inch* for a radius of a *mile*. It is now apparent that the slope of the line QM is bound to remain "as is" for all semicircles. And it can easily be deduced that this invariable slope corresponds to a rise of 18′-10″ in a run of 29′-7″. Wherefore, if such a line be drawn, and *any* desired semicircumference QR be laid off on the horizontal, then the vertical ordinate RS materializes the required diameter. Incidentally, the area of the triangle thus formed is the area of the *complete* circle whose half circumference and full diameter are the rectangular sides of said triangle. Now, calling the radius AN of the circle by the name of unity, or 1, it is plain to be seen that NQ is a rectilinear picture of "pi" correct to the sixth decimal place. Hence, by graphical extraction of the square root of NQ, a line can be found that will be one side of a square of equivalent area to the circle and also equal in area to the triangle MNQ. It's easy to do. Just make NV equal NA; then bisect VQ at U; then from U as a center, revolve V to W. Whence, WN squares the circle whose radius is AN and whose semicircumference is NQ; and it also squares the triangle

whose right-angular sides, or whose base and altitude, are *MN* and *NQ* respectively. Again assigning a length of one *mile* to the radius *AN*, and finding *NQ* by the construction shown, it can then be proved that the extracted side *WN* of the "squared" circle would not exceed its true length by more than 1/225th of one *inch*. I don't know of much practical use for this *squared* circle, but I do know that there exists a whole tribe of "circle squarer's" whose constant endeavor is to materialize it. Eventually, this leads to the madhouse. Wherefore, *as a humanitarian measure*, I shall herein later record a method of quadrature which should stop all further futile efforts for a couple of thousand years—or else aggravate the circle-squarers into a higher state of madness!

FIGURE 122, Diagram "3":

Make *XY* the radius of any quadrant, and bisect this radius at *A*. Draw *Y1* perpendicular to *XY*, and locate Z, on *Y1*, by establishing the slope of *AC* in the manner heretofore explained. Make *Z1* equal thrice *YA*. Then *Y1* is the development of the quadrant *YN*, so exact that 1/116th of an *inch* would exceed the difference for a radius of one actual *mile*. Is that close enough? To reverse the process, draw a sloping line *1X* such that it has a rise of 18′-10″ in a run of 29′-7″; then lay off *1-2* equal to any given length of quadrant; then *3-2* is the radius required to bend the straight line *2-1* into a quarter circle *2-4*.

FIGURE 122, Diagram "4":

This is the most exact general construction ever evolved for finding the length of any circular arc whatsoever up to a full quadrant. Let *AC′* be the given arc, with center at *B′*, and subtending any angle, *AB′C′*, not over 90 degrees. Make *B′B* equal the radius, and make *BC*, through *C′*, equal twice the radius. Now the arc *AC*, swung from center *B*, is exactly the same length as the given arc *AC′* swung from center *B′*. Hence, the development of the arc *AC* will be the development of the arc *AC′*. It is found as follows: lay any suitable scale along *BC*, making the 37-mark register with *C*; then mark off the proportionate distances clearly designated by the diagrammed scale. Draw *EG* parallel with the opposite leg *B′A* of the angle, and cut *EG* at *G* with radius *DF*, as shown. Now project the tangent from *A* to cross *GC* at *H*. The straight line *AH* is then the graphical rectification of the given arc *AC′*, as it also is of the interposed arc *AC*. Hence, since the angle *ABC* is always half the angle *AB′C′*, it is evident that, for arcs not exceeding 45 degrees, the point *C* is already located on the arc itself. For instance, let *AC* be the given arc, with center at *B*, and subtending any angle, *ABC*, not over 45 degrees. Then *AH*, as before, is the graphically-developed length of *AC*. Allowing a maximum deviation of 1/200th of an inch—which is about the width of the finest pencil line you can draw—from the exact length of the circular arc, the minimum full size radius that would produce such a deviation in *AH* would be 13′-3″, and it would occur at about 75 degrees; while for a 45-degree arc it would take a full size radius of 131′-4″ to produce the same discrepancy; and at 90 degrees a radius one half the latter. So, you see, this simple rectification can be applied even to full size arcs on any drafting board ever built without in the least manner producing any measurable difference between the length of the arc and its graphical rectification. Is that close enough?

FIGURE 122, Diagram "5":

Once upon a time the author discovered the fact that the fraction 95/61 represents the trigonometrical tangent of 180 degrees divided by "pi," to within 1/2000th of an angular degree. Hence, this affords a ready and an exceedingly precise method of graphically converting angular to circular measure; for an angle of 180 degrees divided by "pi" is the angle subtended by an arc equal in length to its own radius. Such an arc is termed a *radian*. It is the unit of circular measure—a curvilinear unit of length—in distinction to angular measurement in degrees. There are "pi" radians in a half circumference. To lay off a radian, graphically, is the simplest thing imaginable: make *JK* equal 5′-1″, and make *KL*, perpendicular thereto, equal 7′-11″, at any scale whatsoever; then the arc *MN*, drawn from center *J*—or any other arc *PQ* drawn from the same center—is equal in length to its own radius, to such a high degree of exactitude that the theoretical difference would not become measurable until the radius of the arc amounted to 47′-0″ actual length. Is that close enough? Well, here's one that's *exact*, and if you are gifted with analytic acumen, you'll know why: the triangle *JMR* is equal in area to the radian-sector *JMN*; the square, *JSTU*, is also equal in area to the same radian-sector; the square *JMRT*, or any other square whose side equals the radius of a circle, is equal in area to the area of the circle divided by "pi"—*exactly so*.

FIGURE 122, Diagram "6":

Construct a right angle of which *DA* and *DA′* are each equal to any circle's diameter. Cross *DA′* at *E* with a line from *A* having a rise, *BC*, of 1′-7″ in a run, *AB*, of 13′-11″. Then *EA′* is the side of the "squared" circle to within less than 1/50th of an inch per mile diameter. And here's another one that'll not only square the circle but that will also circle the square: draw any line *DG* having a slope of 148:167 relative to another line *DF*, that is, make *DF* equal 13′-11″ at any scale you choose, and make *FG*, perpendicular thereto, equal 12′-4″ at the *same* scale; then if *DA′* is the diameter of a circle, *A′H* is the side of an equal square; or if *FH′* is the side of a square, and this be projected to the position *A′H*, then *A′D* is the diameter of an equal circle—each to the same degree of theoretical exactitude as before. Is that close enough? Most certainly it *is*—for any work performable on any drafting board that could be gotten through the doorway of a drafting room peopled by giants! But now I shall keep my promise heretofore made. I'm going to show you the most exact Euclidean construction for "squaring the circle" that has ever been put on record. It's due to the author's discovery of the fact that if the fraction, 9/20ths, be added to the cosine of 15 degrees, and this sum be divided by 10, and the result subtracted from the "in-

commensurable decimal" in "pi," *the difference will be zero up to the eighth decimal place.* This is the one I mentioned a while ago—the one that will put the quietus on the "circle squarers" for a score of centuries hence—or plunge them further into madness! This is it:—

FIGURE 122, Diagram "7":

Freese's quadrature of the circle. Draw *AE*, the radius of the circle, at an angle of 15 degrees to any prolonged diametral line *GJ*. Project *E* to *C*, perpendicular to *GJ*, and make *CD* equal 9/20ths of *AE*. Then cut off 1/20th of *AD*, locating *B*, and make *BF* and *AG* each equal *AE*. From *G* as a center, revolve *F* to cross a perpendicular from *B* at the point *H*. Then *BH* is one side of the "squared" circle to within about 1/50000000th part of the radius. This is not a misprint: the deviation is about one *fifty-millionth* part of *AE*, that is, if *AE* were *100 miles*, then *BH* would be short by about an *eighth of an inch*. Is *that* close enough? The same result comes from revolving *G* to *K* from center *F*: *AK* equals *BH*. Now make *FJ* equal *FA*. Then *GJ* is half the circumference of the circle to within about 7/100000000ths of the radius. Now let the radius *AE* equal unity. Then *GJ* and *BH*, respectively, are each the most accurate rectilinear values of "pi" and its square root *that have ever been constructed*. Moreover, the results can be proved, without recourse to trigonometry, by the purely arithmetical formula which I have seen fit to record along with this construction. Now I can proceed with things more worth while!

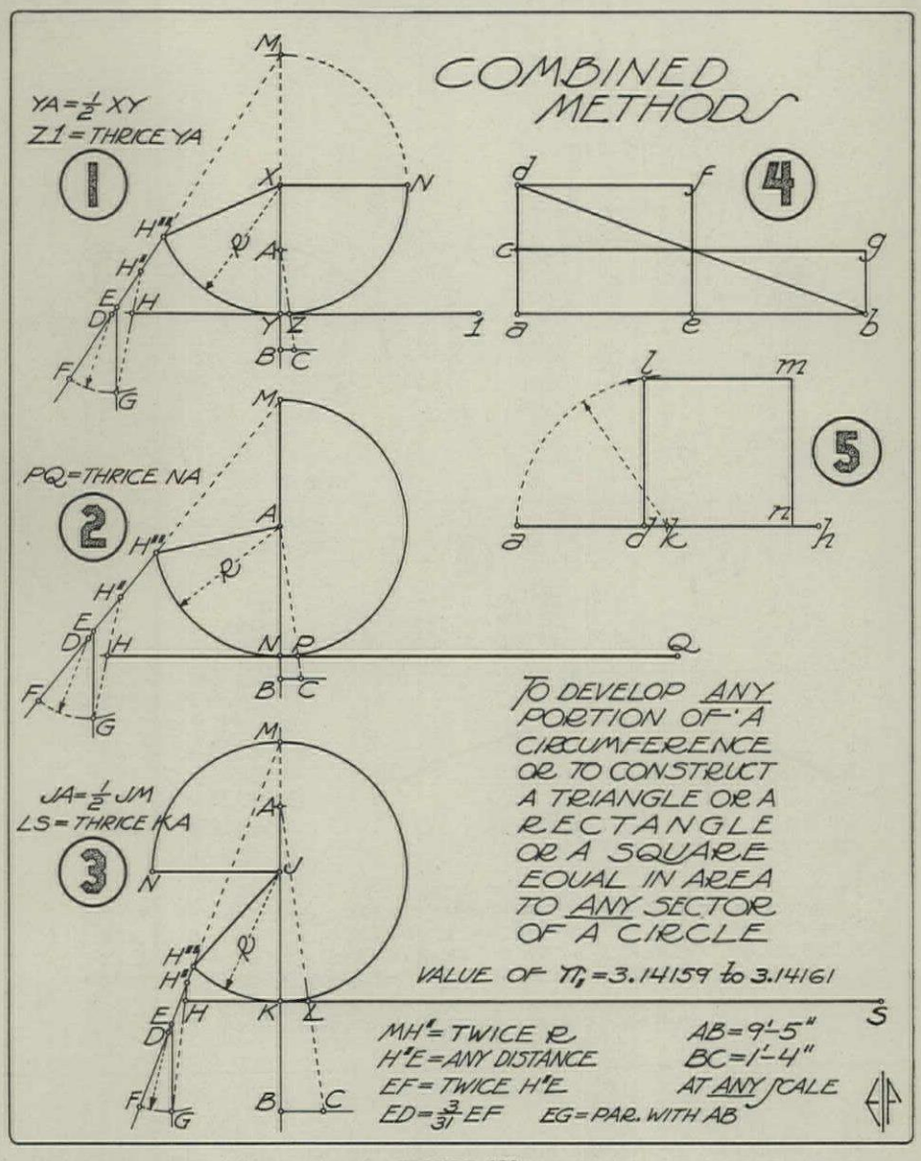


FIGURE 123

FIGURE 123, Diagrams "1," "2," and "3":

In Diagram "1," the quadrant arc *YN* is unbent to the straight line *Y1* by the method that has already been shown (Figure 122, Diagram "3"), and the arc *YH''*, being *less* than a quadrant, is developed into the continued portion *YH* in accordance with the method also before shown (Figure 122, Diagram "4"): the *total* straight line *1H* thus becoming the graphical development of the given arc *NYH''*. In a similar manner, as shown in Diagrams "2" and "3," the combination will yield the development of any portion whatsoever of a circumference. And with an utterly astounding degree of exactitude—as is evidenced by the exceedingly minute variation in the minimum and maximum graphical pi-values noted in the Figure. The location of point *A* varies in accordance with the number of full quadrants contained in the given arc, but the *slope* of *AC* is invariable, as has heretofore been shown. The point *H'* here corresponds to the point *C* of Figure 122, Diagram "4," but the method of laying off the points that locate *H* is slightly different from that before given, though the results are identical. To locate *H*, as per Diagrams "1," "2," and "3" of Figure 123, proceed as follows: make *MH'* equal twice the radius of the given arc; make *H'E* any distance, but preferably one directly divisible by 31; make *EF* equal twice *H'E*; and make *ED* equal 3/31 of *EF* or, which is the same thing, 6/31 of *H'E*; draw *EG* parallel with *AB*, and locate *G* thereon with radius *DF* as shown; then the line *GH'* fixes the limit of the rectilinear development at point *H* as shown. Actually, this construction is as

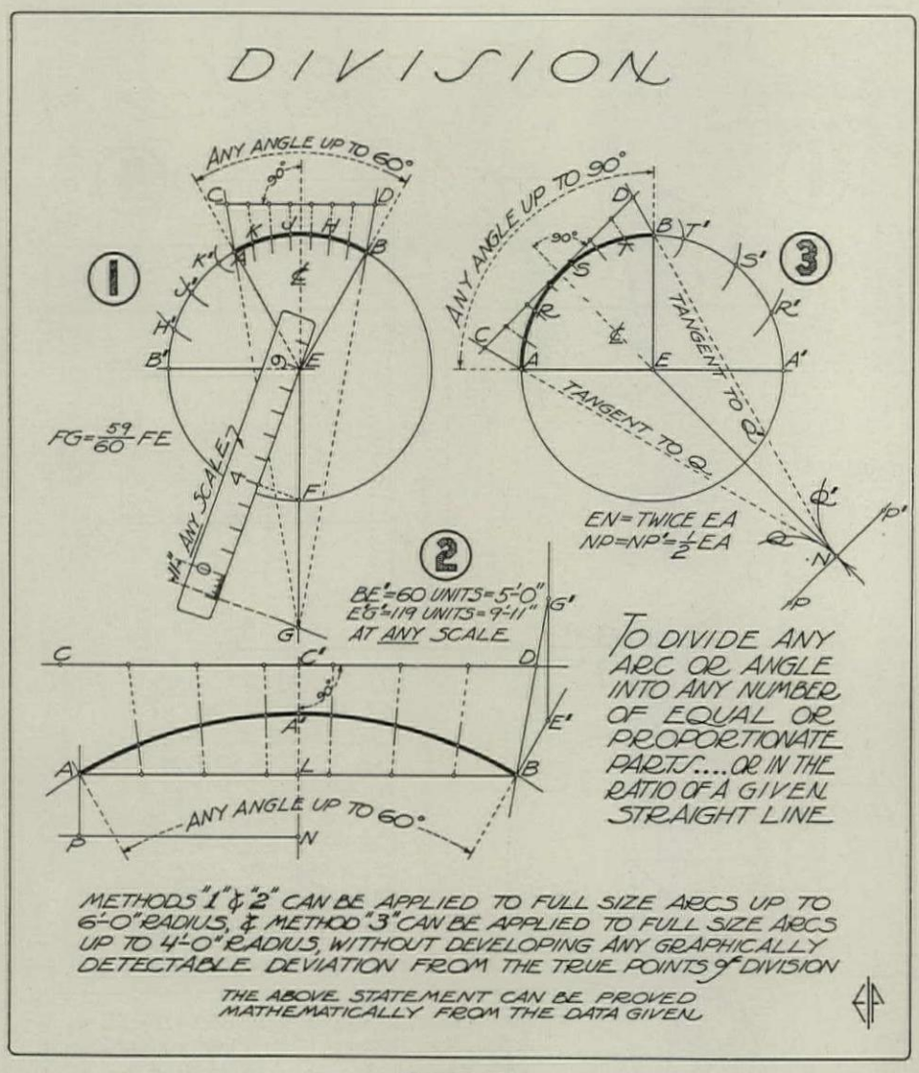


FIGURE 124

fast as it is accurate—and the qualifying adjective is "*very*."

FIGURE 123, Diagrams "4" and "5":

Lay off, as at Diagram "4," *ab* equal to the length of any arc whatsoever up to and including a full circumference. Perpendicular to this, lay off *ad* equal to the radius of the arc. Bisect both lines at *e* and *c*, respectively. Then the rectangles *adfe* and *acgb* are each equal in area to the corresponding sector of the circle, and the triangle *abd* is of the same area. Or, as at Diagram "5," lay off *ad* equal to the radius, and *dh* equal to *half* the length of the arc. Bisect *ah* at *k*, and, from this point, wherever it may fall, revolve the point *a* to cross a perpendicular from *d* at point *l*. Then the square *dlmn* is equal in area to the corresponding sector of the circle of which *ad* is its radius and *dh* is half the length of its arc. So there you are—every conceivable arc has been unbent into a straight line—every conceivable sector of a circle has been "triangled," "rectangled," and "SQUARED." Now for graphical curvilinear *division:*—

FIGURE 124, Diagram "1":

Let *AB* be a circular arc subtending any angle, *AEB*, not over 60 degrees. Bisect it, and make *FG*, on the bisector, equal 59/60ths of the radius—which latter operation is quickly done in the graphical manner diagrammed. Project lines from *G* through the limiting points *A* and *B* of the given arc. Anywhere across these two converging lines, draw a straight line *CD* perpendicular to the bisector of the arc. Divide this straight line in any manner you choose—into equal, unequal, proportionate, or perspectively-diminishing, parts. (See Part 11.) Project the resultant division-points onto the arc by lines to *G* as shown. The arc *AB* then becomes divided in the same ratio as the straight line *CD*; no graphical deviation from any one true division-point becoming detectable on any arc up to a full size radius of 6′-0″. Moreover, *no accumulation of error is possible.* Now suppose *B′AB* to be an arc exceeding 60 degrees but not exceeding *twice* sixty. Suppose further that you desire to divide it into, say, 7 equal parts. Just divide half of it, that is, *BA*, into 3½ parts by the method just shown, resulting in the division-points *H*, *J*, and *K*. Then, about *A* as a center, revolve these to the other half of the arc at *H′*, *J′*, and *K′*. The most accurate and expeditious way, however, of transferring points from one half of an arc to the other half—especially so if the points are multitudinous, as in a detailed arch ring for instance—is as follows: Over the arc *BA*, lay a piece of tracing paper or linen, and indent therein the points *B*, *H*, *J*, and *K*. Then revolve the tracing about the center of the arc so as to bring *B* into registry with *K*, or *K* into registry with *B′*, and so as to cause the other indented points of the tracing to align with the arc beneath. Then transfer the points *directly* to the arc by indentation *through* the tracing-points.

FIGURE 124, Diagram "2":

Same as Diagram "1," but especially suitable either to arcs of large radius where point *G* of Diagram "1" would not come within the limits of the drafting board or in cases where the arc center itself is off the board. As before, *AB* is *any* given arc up to 60 degrees. Bisect it. Draw the chord *AB* and any other paralleling line *CD*. On a radial through either limiting

point of the arc, say point *B*, lay off *BE'* equal to 5'-0" at any scale convenient, and lay off *E'G'*, perpendicular to *AB*, equal to 9'-11" at the *same* scale. Connect *B* and *G'*, thus locating *D*. Make *C'C* equal *C'D*. Now divide the two lines *AB* and *CD* each in the same manner as you desire the arc to be divided. A straightedge aligned with the corresponding division-points of the two straight lines will cross the arc at the points desired. Like the method of Diagram "1," the limit of graphically-precise division is reached at an angle of about 60 degrees on an arc of six feet radius. To find this limiting angle on an arc whose center is off the board, do this: make *NP*, on any line perpendicular to the bisector of the angle, equal half the known radius of the arc; then, parallel with the bisector of the angle, project the point *P* to the arc at *A*. Then *AA'* is an arc of *30 degrees*, and a repetition of the process on the other side of the center line will yield the other limiting 30-degree point *B*; or, same thing, revolve *A* to *B* from center *A'*. In other words, you merely find a chord equal in length to the radius; for the arc of such a chord subtends an angle of 60 degrees. It can be found directly, if one limiting point, say *A*, is established, by using this point as a center from which to swing an arc of a radius equal to the radius of the circle, cutting the arc at *B*—60 degrees from *A*.

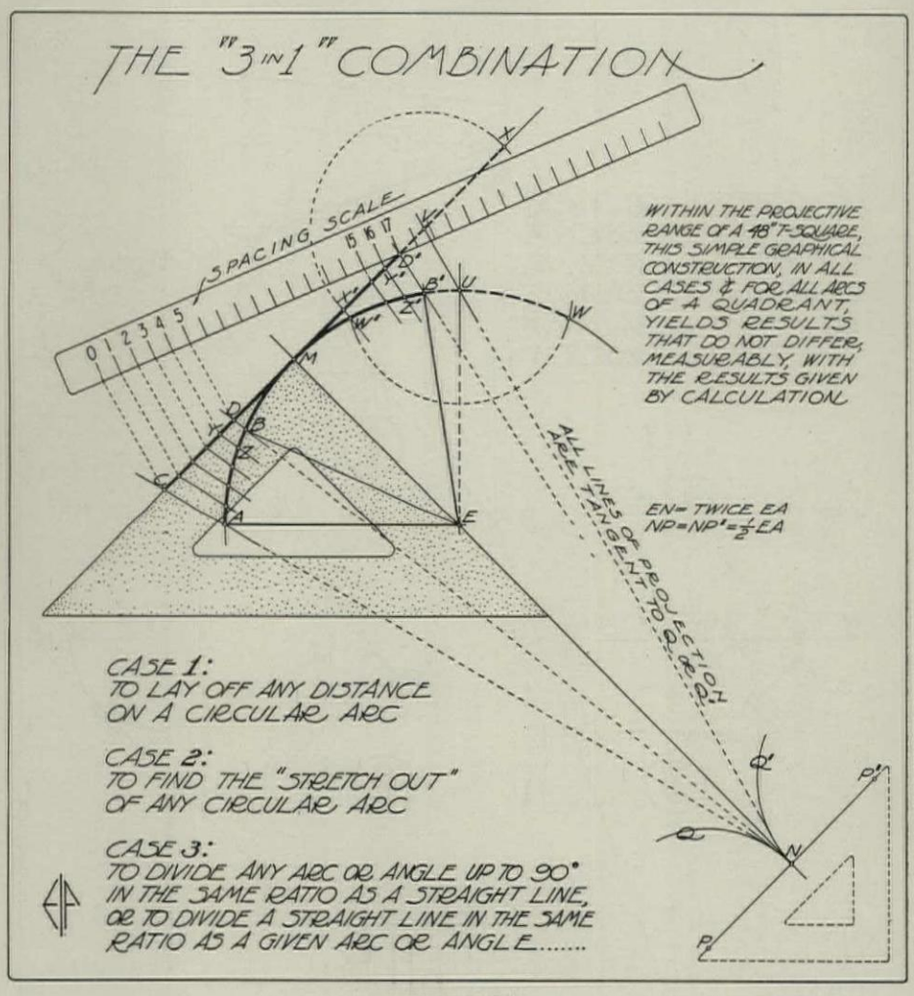


FIGURE 125

FIGURE 124, Diagram "3":

Let *AB* be *any* arc not exceeding a full quarter circle. Bisect it, and make *EN*, on the prolonged bisector, equal twice the radius. Draw a prolonged tangent, *CD*, through the bisection-point of the arc, and draw *PNP'* parallel with this tangent, making *NP* and *NP'* each equal half the radius of the given arc. From *P* and *P'*, as centers, draw the short arcs *Q* and *Q'* as shown. Project *A* to *C*, via a tangent to *Q*, and project *B* to *D*, via a tangent to *Q'*. Now divide the thus-limited tangent line *CD* in *any manner you choose*, and project the resultant points to the arc *AB* via tangent rays to *Q* or *Q'*, whichever of the latter two curves happens to be on that particular side of the bisector of the angle. The circular arc *AB* then becomes graphically divided in the same ratio as the straight tangent *CD*; no measurable deviation from any one true point of division occurring on any arc up to a full 90 degrees or for any radius up to four feet. If the given angle exceeds a right angle, but does not exceed 180 degrees, then divide half the given arc into half the required total divisions, and transfer the thus-found points to the other half either with the compass revolving about the *bisection-point* of the full arc, or with a piece of tracing linen revolving about the *center E* of the arc—both methods having been noted in connection with Diagram "1." In some such expeditious fashion, the *full semicircle* of Diagram "3" has been divided into seven equal parts with a degree of precision unapproachable by any other known method. That old-old primitive "stepping it off" system of trial-and-tribulation is hereby "backed off the boards"—once you get the hang of these new methods illustrated by the various diagrams of Figure 124—and 125—and 126.

FIGURE 125:

This is a marvel. And it's all done with the T-square, a 45-degree triangle and a drafting-scale. It'll bend a straight line 'round a circle, unwind a circular arc into a straight line, and divide arcs and angles with almost uncanny facility and precision. The combination, however, requires some room. But this

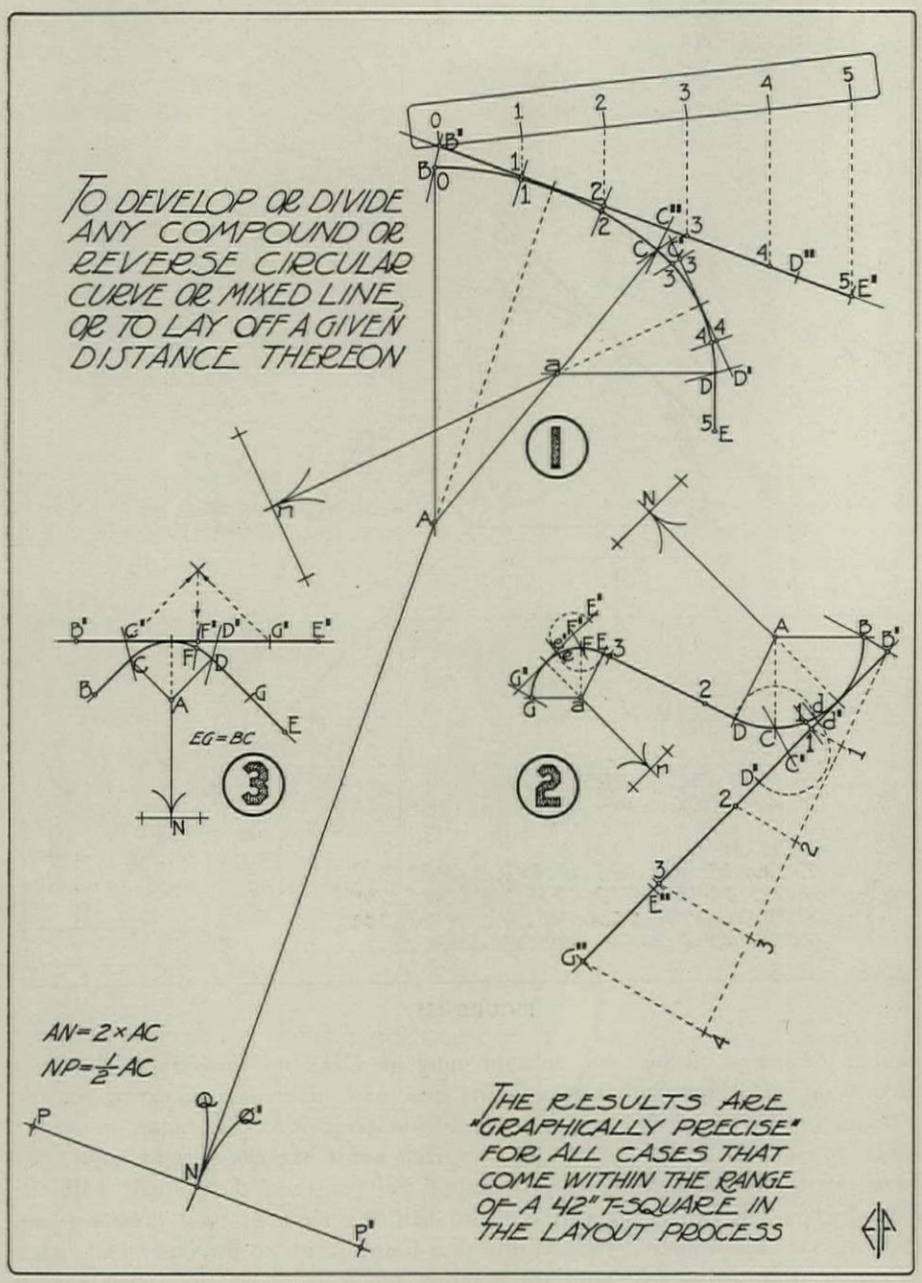


FIGURE 126

is fortunate rather than otherwise, since this condition makes it self-limiting to arcs and circles not exceeding a full size radius of about 16 inches. Up to this maximum radius, all operations indicated are graphically precise, and all then come within the working range of a 48-inch T-square. Let EA be the radius and the normal horizontal spring line of any given circular arc. Locate N on a 45-degree line through E, distant two radii from E. Also draw the short arcs Q and Q', with a radius equal to half of EA, and with centers on a 45-degree line through N. Then draw the prolonged 45-degree tangent through M, and project A to C; and U (the 90-degree point in respect to A) to V; by tangent rays emanating from the corresponding arcs Q and Q'. This projection does not require the drawing of any lines at all—in fact it should be done with one point of the dividers instead of with the pencil point. For instance: place the divider-point at A, swing the straightedge into touch, then swing it into tangency, "by eye" in this case, with Q, then indent C — the required point. The process is typical. Now you are all set to put this combination to *work*. First you may want to lay off a certain distance—any distance—*in feet and inches*, along the line of this arc from the spring point A. Make this distance CD on the tangent as shown. Project D to B via a tangent ray to Q. Then AB is the required distance, bent to the radius EA. Or, let the given distance be CX'. Project X' to W', via a tangent ray to Q'. Then AW' is the required distance on the arc. Again, let the given distance be CX, which puts it beyond the 90-degree development-point, V, by the excess VX. Revolve this excess about V to VX'. Project X' to the arc in the manner now plain. Then the arc-measure of VX is UW'. Hence revolve W', about U as a center, to point W. Then AW is the distance CX bent to the curve of the given arc. Now, it is plain to be seen, that any portion of the given arc can be "stretched out" to a straight line on the 45-degree tangent CX by an exact reversal of any one of the above operations—this second case requiring no further elucidation. So comes division—the third case of this astonishingly-workable "three-in-one" combination. Take the arc AB, for example. Find the stretch-out of it as in case 2, which is CD. Divide this portion of the 45-degree tangent in any manner you desire. Project the division-points to the arc, which latter then becomes divided in like manner —the linear divisions on CD accommodatingly bending into corresponding lengths on AB. In the same manner, the arc AB' is in the process of being divided into 17 equal parts corresponding to the 17 like parts of the developed tangent CD'. Likewise, any portion of any arc can be cut off in a given ratio. In the Diagram, $B'Z'$ is 1/12th of the arc $B'B$; the arc BZ

is 1/5th of the arc *BA*; etc., etc. Also, the angle *AEB* is to the angle *AEB'* as the straight line *CD* is to the straight line *CD'*. Well, as I have said, this combination is a marvel—within the limits prescribed. Finally, for arcs of the maximum limiting radius, or thereabouts, that are to be divided into an exceedingly large number of small parts, it is a simple matter to cut a small arc, *Q* or *Q'*, from thin cardboard and thumb-tack this to the board alternately on one side of *N* and the other, in proper position, against which the blade of the T-square or other straightedge will automatically produce the tangent lines of projection required. This useful expedient is, of course, applicable to the substantially same method of division shown at Diagram "3" of Figure 124: the only difference in the two methods of division being that, in Figure 124, the rectification of the arc takes place on a tangent line drawn perpendicular to the bisector of the given angle, whereas, in the combination of Figure 125, the rectifying tangent is invariably drawn at 45 degrees, regardless of the extent of the given angle. Incidentally, for the purpose of division *only*, the latter method remains "graphically precise" for any arc of a quadrant not exceeding a radius of 3'-8" actual measurement: the maximum "non detectable" deviation of 1/200th of an inch occurring at about an angle of 7½ degrees for all arcs of the maximum radius stated.

FIGURE 126, Diagram "1":

The line *BCDE* is a compound curve with a straight haunch *DE*. Let's see what we can do with it. First, stretch out the arc *BC* whose center is *A*. The stretch-out is *B'C''* on the tangent drawn perpendicular to the *bisector* of the angle. You know how to do it. Next, develop the other arc *CD*. Add this development, which is *C'D'*, to the tangent *B'C''*, thus making the total stretch-out of the two arcs *B'D''*. Now, from the point *D''*, add the length of the straight haunch *DE* which there becomes *D''E'*. Then *B'E'* is the graphical development of *BCDE*. Now, we'll say, let *B'4* represent *any* distance that you wish to lay off from *B* on the compound haunched curve: or let *E'4* be any such distance that must be laid off from *E*. The problem is: to locate point *4 on the arc*. Simply transfer the distance *D''4* to *D'4*, and then project *4* onto the curve *CD* in the manner with which you should certainly now be familiar. That's all there is to *that* problem! But maybe this haunched curve is half the intrados, say, of a three-centered arch which you desire to divide in some manner—say into five equal parts. Here, then, is a case that could not even be handled by the aboriginal "stepping off" system, since the arcs are of different degrees of curvature, and since a straight line forms a portion of the line to be divided. And in order to do it mathematically, you'd first have to figure the length of the arcs; but in order to figure the lengths of the arcs, you'd have to figure the angles made by their limiting radii; and after you'd figured the arc lengths from the figured angles, and summed up the various increments making

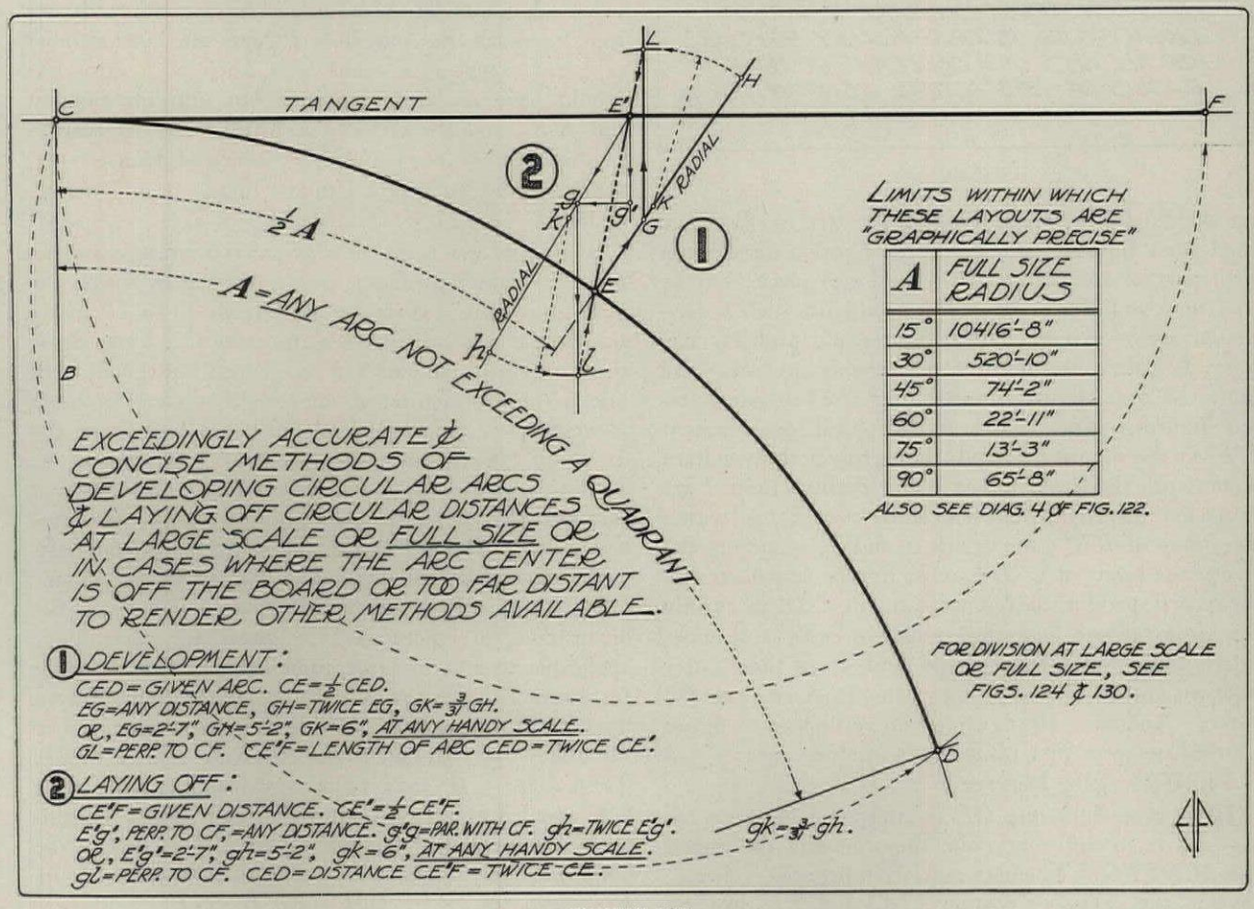


FIGURE 127

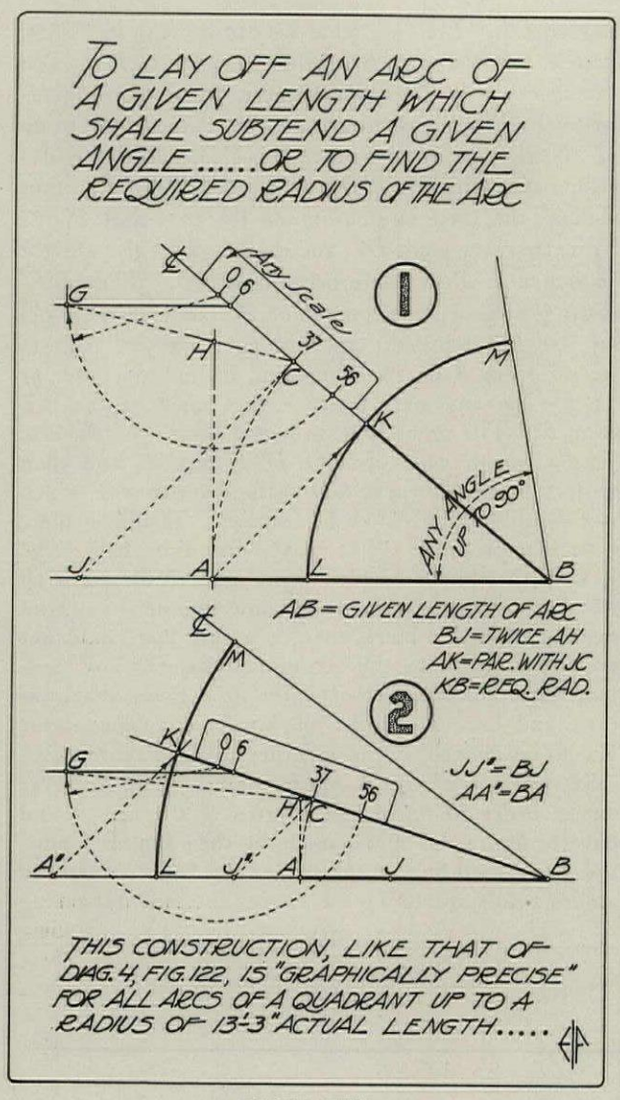


FIGURE 128

up the total line, then you'd divide this by five, and then start figuring out a way to figure each figured fifth part of the figured line back into place; but by that time you'd have figured yourself into such a decimated array of trigonometry that you'd probably figure you didn't like being a figurehead anyhow—and quit. So here's how to divide that crooked line *without* figuring: Just divide its graphical development *B'E'* in the manner desired, then project the resultant points onto the given mixed line. Points *1* and *2* are projected directly as shown, since they come within the limits of *B'C''*, but points *3* and *4*, occurring between the limits of *C''D''*, must first be transferred to their corresponding developed tangent *C'D'* in exactly the same relative positions—which is easily and accurately done with a paper strip—and, from these latter positions, points *3* and *4* are then projected onto the curve. And the only figuring you've done is to figure yourself out of a job. But here's another one:

FIGURE 126, Diagram "2":

Here, a straight line *DE* is interposed between reversed arcs of different radii, thus forming the mixed line *BCDEFG*. The arcs exceed 90 degrees. Hence, develop the excessive portions, *DC* and *EF*, by first revolving them onto the quadrants, as has heretofore been made clear in Figure 125. Wherefore, on the initial 45-degree tangent line *B'G''*, the direct development of the 90-degree arc, *BC*, is *B'C'*; and the revolved development of the arc *CD* is *C'D'*; and the transferred length of the straight portion, *DE*, is *D'E''*; and the transferred development of the arc *EFG* is *E''G''*. Now you can lay off any distance you please on this grapevine, or divide it in any manner required, by first laying off the divisions on *B'G''* and then, by a virtual reversal of the process of rectification just suggested, project or transfer them to their places on the line *BCDEFG*. Quartering is shown in the Diagram, but it is fully suggestive of the typical process.

FIGURE 126, Diagram "3":

Here, it is required to bisect the unsymmetrical mixed line *BCDE*. First cut the line down by subtracting, directly, the shorter straight length *BC* from *each* end of the total line, which leaves the portion *CDG*. Now, it is evident that, since *EG* equals *BC*, the mid-point of the reduced portion will be the mid-point of the total line. Hence, develop the arc *CD* into the tangent *C'D'*; add thereto, by transference, the straight distance *D'G'* equal to *DG*; bisect *C'G'* at *F'*; project *F'* onto the arc at *F*—or at whatever point it may fall—which point then becomes the required center-point of the mixed line *BCDE*. If the *total* line *BCDE* had been stretched out and bisected, the result would have been identical: the prior reduction of the original line was an expedient which, however, applies to bisection *only*. You can readily see that, to divide the total line *BCDE* into any number of parts except two *equal* ones, then the entire line would have to be straightened out into the tangent line *B'E'*, and the division performed on said rectifying line before projecting, or otherwise transferring, the results to the original mixed line.

FIGURE 127:

Let *D* be *any* point on a given circular arc; and let *C* be any other point on the arc occurring within the same quadrant. How far is it from *C* to *D*, *along the line of the arc*, in feet-and-inches? First, draw the prolonged tangent *CF* on which the given bent line is to be straightened out—so that you can there *measure* it or transfer it to any other portion of the drawing. Next, bisect the given arc *CD* at point *E*, at the same operation producing the required radial through *E*. As you already know from the information given in Parts 7 and 8, the projection of tangents and radials does not necessitate the use of the center from which the arc is swung. So, as noted on the illustration, the methods here given are particularly applicable to arcs of large radii—in full-size detailing for instance. Anyhow, on the prolonged radial drawn through *E*, make *EG* any distance whatsoever, but preferably one that can be directly scale-divided by 31. Then make *GH* equal twice this distance; and make *GK* equal 3/31sts of *GH*. You can readily do this with the decimal scale, but it can just as quickly be done with an architectural scale as follows: Lay off *EG* equal to 2'-7"; *GH* equal to 5'-2"; and *GK*

equal to 6″, at *any* handy scale. The distances are merely *proportions:* not actual measurements. So, now, draw *GL* perpendicular to *CF;* and find *L* with radius *KH* as shown. Cross *CF* at *E′* with the projected line *EL*. Then *CE′* is the rectification of the arc *CE*. Wherefore, twice *CE′*, which is *CF*, is the straightened-out given arc distance *CD*.

Again, in Figure 127, let *CF* represent a given distance which must be laid off, from point *C*, on the given line of the circular quadrant. Make *CE′* equal half this distance—it being unnecessary, therefore, to first lay off the total distance *CF:* the latter being shown merely to make the process graphically understandable and unmistakable. From *E′*, draw the prolonged radial *E′h*, and also draw *E′g′* perpendicular to *CE′*. Lay off *E′g′* equal to 2′-7″, at *any scale convenient;* and, from *g′*, project a line paralleling *E′C* to cross the radial at *g*. Then, at the *same* scale as *E′g′*, lay off *gh* equal to 5′-2″; and *gk* equal to 6″. Draw *gl* perpendicular to *CE′*, which direction must be parallel with *E′g′*, locating *l* with radius *kh* as indicated. Now, a straightedge joining *l* and *E′* will cross the given line of the arc at *E;* whence, the circular distance, *CE*, is the straight length *CE′* bent to the radius of the arc; whence, twice the arc *CE*, which is the arc *CED*, is the given distance *CF* laid off on the given circular line of the quadrant.

The above-given combined method of rectification and laying-off-of circular-distances is practically *exact* for any such layout that can be performed within the limits of the drafting-*ROOM*—as the given tabulated limits indicate. As this table shows, the greatest possible deviation from true rectification occurs in the case of arcs subtending the critical angle of about 75 degrees: and yet, for this critical angle, and for a *full size actual radius of 13′-3″*, the total deviation from the true length of the full 75-degree arc is an unmeasurable .005ths of one inch. On an arc of 45 degrees, it would require a full size radius of 74′-2″ to produce the same theoretical discrepancy. No general method of rectification and laying-off has before been devised that equals this method in simplicity, speed or exactitude. You have, no doubt, discovered the fact that it is the same layout, slightly modified, which has heretofore been recorded at Diagram "4" of Figure 122, and has also been combined in the first three layouts of Figure 123. And now comes *another* embodiment of the same noteworthy fundamental construction:—

FIGURE 128:

In either Diagram, let *LBM* be any given angle up to a full 90 degrees, across which, and limited thereby, it is found necessary to draw a circular arc which shall be of a specified length in feet-and-inches. To put it another way: the length of the arc, and the angle to be subtended by the arc, are given; it is required to determine the radius of the arc. Let the given length of the arc be laid off, in a straight line, as *BA;* *B* being the vertex of the given angle *MBA*. Bisect this angle with the prolonged bisector *BC*, making *BC* equal to *BA*, as shown. With the 37-mark of *any* convenient scale at point *C*, mark off, along the center line of the angle, the proportionate distances indicated on the depicted scale. Or you can do this in the manner just previously shown in Figure 127: calling point *E*, of Figure 127, point *C* of Figure 128. Then, as in Figure 128, draw *6G* parallel with *BA;* and find point *G* with radius *0-56* as shown. Now, from *A*, perpendicular to *AB*, project a line to cross *GC* at point *H*. Make *BJ* equal twice *AH*. Then, as at

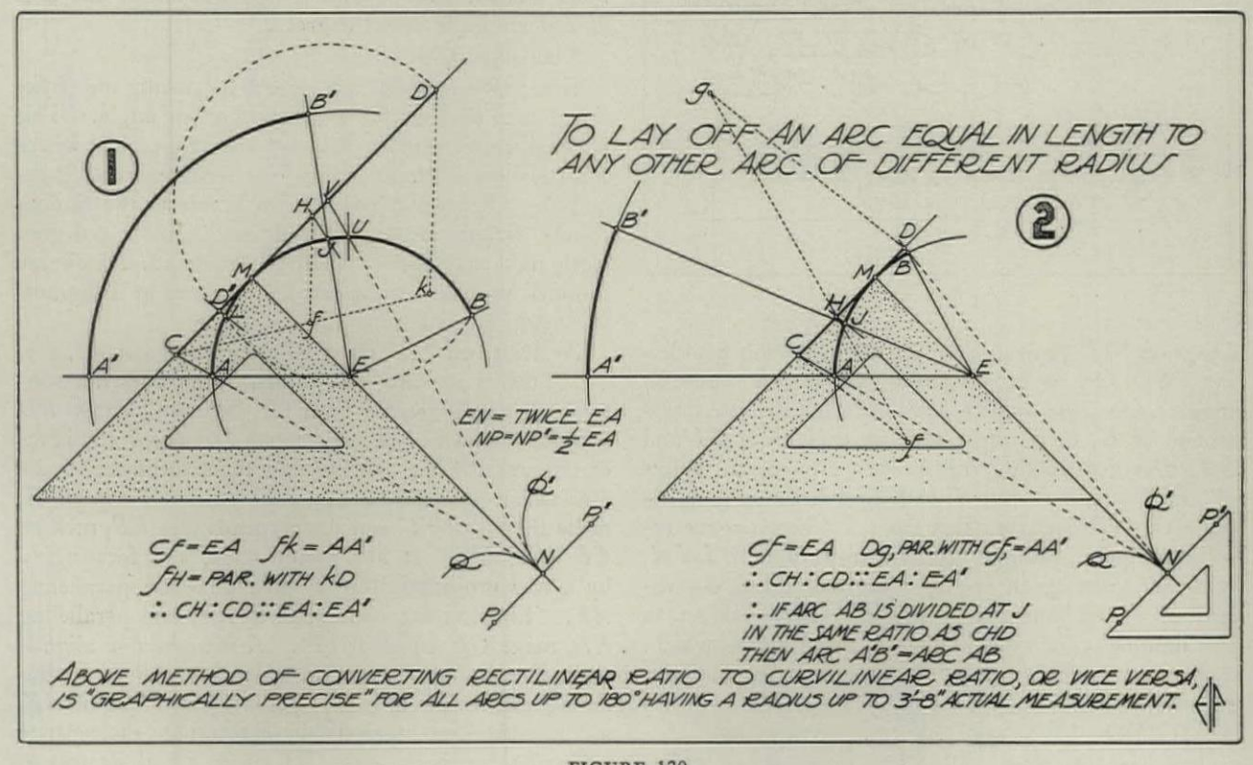


FIGURE 129

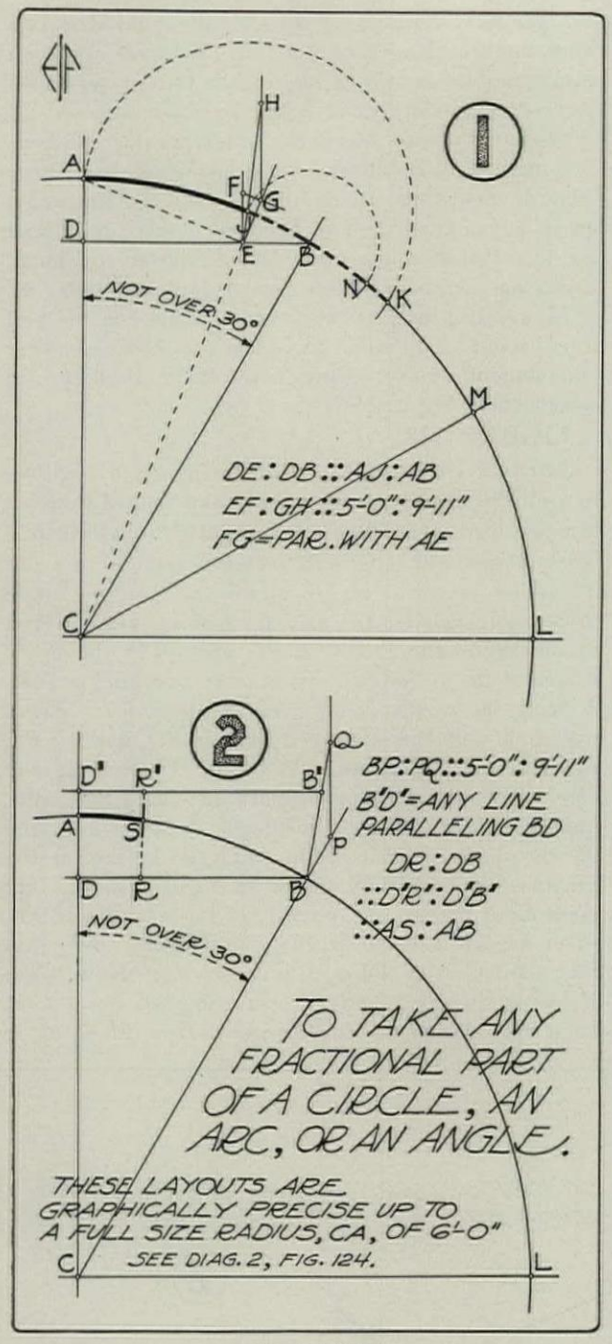


FIGURE 130

Diagram "1," project A to K, in a direction paralleling JC. Or, as at Diagram "2," if this direction makes a too acute angle for accurate and definite intersection at K, then just double or triple both BJ and BA, thus determining the still-properly-related points A' and J'; then project A' to K in a direction paralleling $J'C$. Whence, in either case, BK becomes the resultant required radius. So the then-drawn arc LKM, subtending the given angle, is the curvilinear equivalent of its rectilinear representation BA—subject to the limiting conditions stated in the Figure, which, as far as practical drafting is concerned, *are no limitations at all.*

FIGURE 129:

In either Diagram, call AB a given arc of radius EA; and assume the necessity of laying off the length of this arc on another circular line of a differing radius EA'. In accordance with the method heretofore given at Figure 125, develop the arc AB into the rectifying 45-degree tangent CD, as here shown. Then, as at Diagram "1," on *any* suitable line not paralleling CD, make Cf equal EA; and make ck equal EA', which latter makes fk equal AA'. Project f to H, in a direction paralleling kD; and project H to J via a tangent line to Q'. Project J to B' by a radial from E. Then the resultant arc $A'B'$ is the other arc AB bent to the radius EA' as required. Or, as at Diagram "2," make Cf, in any suitable direction other than parallel with CD, equal to EA; and make Dg, in a direction paralleling fC, equal to AA'. The line fg now locates H on CD. Hence, as before, project H to J, and J to B'. Whence, as before, the arc $A'B'$ is the graphical equivalent of the given arc AB. But maybe the *given* arc is $A'B'$—the larger in radius. Then, referring to Diagram "1," reverse the above alchemy as follows: Draw an extended arc with the lesser radius from the same center E; project B' radially to J on this prolonged arc-line of radius EA; develop the resultant arc AJ into the portion, CH, of the 45-degree tangent drawn through the 45-degree point M; and lay off Cf and Ck as before. Now project k to D, in a direction paralleling fH, and establish the 90-degree limit V of the development along CD as indicated. Make VD' equal VD; project D' to L by a line tangent to Q; and make UB equal UL as shown. Whence, AB is the required arc-length equivalent to the given arc-length $A'B'$—or so closely such that you would have a terribly involved time trying to figure it otherwise! The reversal of the transformation for the case shown at Diagram "1" is more simple, and obvious—since *neither* of the arcs exceed an angle of 90 degrees.

FIGURE 130:

Here, two methods are shown for taking any fractional part of a circle, or an arc, or an angle. This is often convenient in full-size detailing, etc., where the curvilinear extent of but one repeating unit is required. Obviously, it is also applicable to the finding of the length of one side of any regular polygon. Both methods produce identical results, and both are founded on the basic construction given at Diagrams "1" and "2" in Figure 124.

At Diagram "1," let it be required to cut off, say, 12/17ths of the arc AB, which latter does not subtend an angle greater than 30 degrees. Draw BD at right angles to CA; and make DE equal 12/17ths of this straight line, or, which is the same thing, make BE equal 5/17ths of the same line. Through E, draw the radial EG and the perpendicular EF, making EF equal 5'-0" at *any* handy scale, and locating G by a line projected from F in a direction paralleling AE. Then, at the *same* scale as EF, and paralleling EF, make GH equal 9'-11". A straightedge aligned with H and E will cross the given arc AB at J, thus slicing off the portion AJ equalling 12/17ths of AB, as required—no graphically-detectable discrepancy occurring for any radius, CD, up to a full six feet in

actual length. Now assume that the arc *AM* exceeds 30 degrees, but does not exceed twice 30; and that it is *bisected* at point *B*. Then, by revolving *A* about *J* to *K*, the arc *AK* becomes 12/17ths of the last-given arc *AM*. Again, let it be required to take, say, 22/51sts of the quadrant arc *AL*. Well, 22/51sts of a quadrant is 22/17ths of a 30-degree arc; and 22/17ths of a 30-degree arc is a 30-degree arc *plus* 5/17ths of itself. Wherefore—since *BJ* has been found by taking 5/17ths of the now-assumed 30-degree arc *BA*—revolve *J* about *B* to *N*, which simple manipulation makes the arc *AN* equal to 22/51sts of the quadrant *AL*, as required. Finally, as an absolutely *general* case, let it be necessary to lay off, say, 1/17th of a full *circumference*, which portion naturally, is bound to be the same fractional part of 360 *degrees*. The radius *CA* is given, or assumed; the center, *C*, being on the board or off—it's of no consequence. Now, it is certainly a very rudimentary "mathematical" process to deduce the fact that 1/17th of a circle, or any *other* fractional part of a circle, *is just 12 times that particular fractional part of a 30-degree arc*. In other words, it is extemporaneously-arrived-at that the required 1/17th of a circle is 12/17ths of a 30-degree arc or angle. The rest is just as—extemporaneously-arrived-at: locate the 30-degree point, *B;* take a dozen seventeenths of the thus-limited arc *AB*, and it will be *AJ*, the required *one* seventeenth of a *circle* having the given radius *CA*. And if you joined *A* and *J* by a straight line, then this straight line would be one side of a—hep—hep—heptadecagon. So, you see, by using the 30-degree arc as a *gauge*, you can quickly and accurately materialize any piece of "pi" you crave.

The method of "slicing" shown at Diagram "2," of Figure 130, is particularly suitable to very small fractional parts, and may, on occasion, prove more expeditious and more precise in execution than the method of Diagram "1." In the case depicted at Diagram "2"—which is typical of the general process—it is required to take 1/11th of the quadrant arc *AL*. It is, of course, unnecessary to draw the entire quadrant for this purpose: it is necessary to draw only the 30-degree extent of same, which is here assumed as the arc *AB*. Well, 1/11th of 90 degrees is assuredly 3/11ths of 30 degrees. Hence, from the 30-degree point *B*, draw *BD* at right angles to *CA*, and draw the radial *BP*. Then, at *any* handy scale, locate the point *P* at a distance of 5′-0″ from *B*, and locate *Q*, in a direction at right angles to *BD*, at a distance of 9′-11″ from the point *P*. If you'd rather, you can use the *decimal* scale, and call these same distances 60 and 119, respectively. Now draw *QB* and *B′D′*, the latter being *any* line paralleling *BD* and limited as shown. Make *DR* equal 3/11ths of *DB;* and make *D′R′* the same fractional part of *D′B′*. This establishes the slope of the slicing-line *R′R;* thus cutting off the arc *AS* which, because it is 3/11ths of the 30-degree arc *AB*, is the required 1/11th of the quadrant arc *AL*. Of course, if the total arc to be subjected to any of the aforementioned surgical operations does not, in itself, *exceed* 30 degrees, then the slicing can be done without magnification of the given fraction: that is, if the arc *AB*, say, were an arc of *less* than 30 degrees—any amount less, regardless of its particular *angular* designation—merely draw the line *BD*, perpendicular to *CA*, through the limiting arc-point *B*, and proceed as before, dividing *BD* and *B′D′* each in the identical manner required for the given arc.

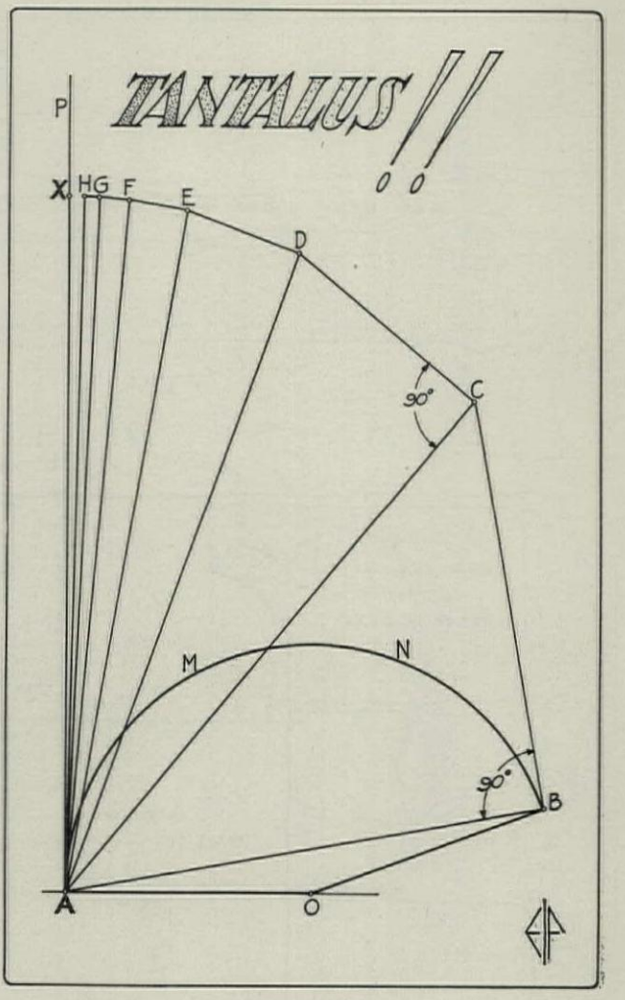


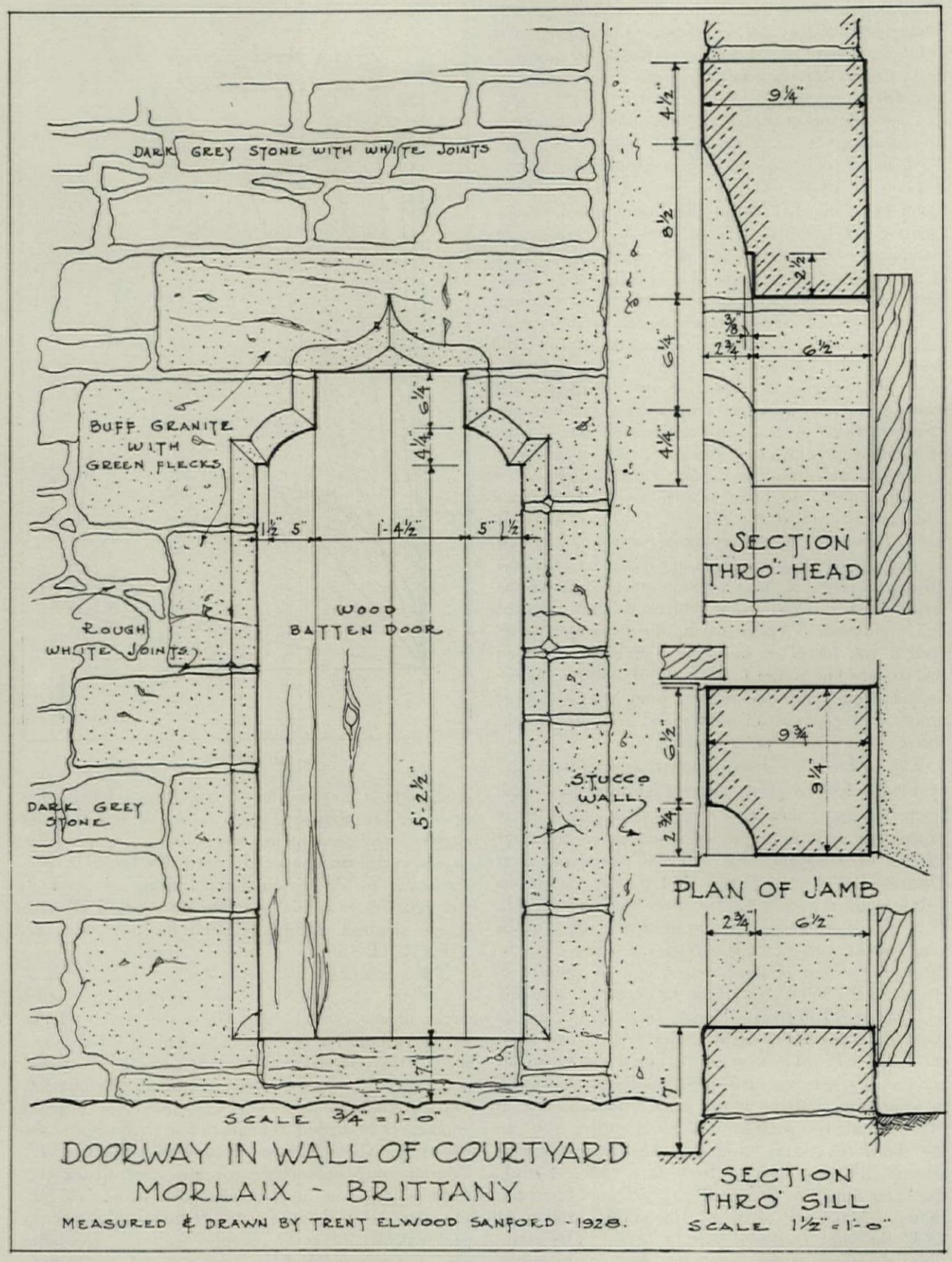
FIGURE 131

FIGURE 131:

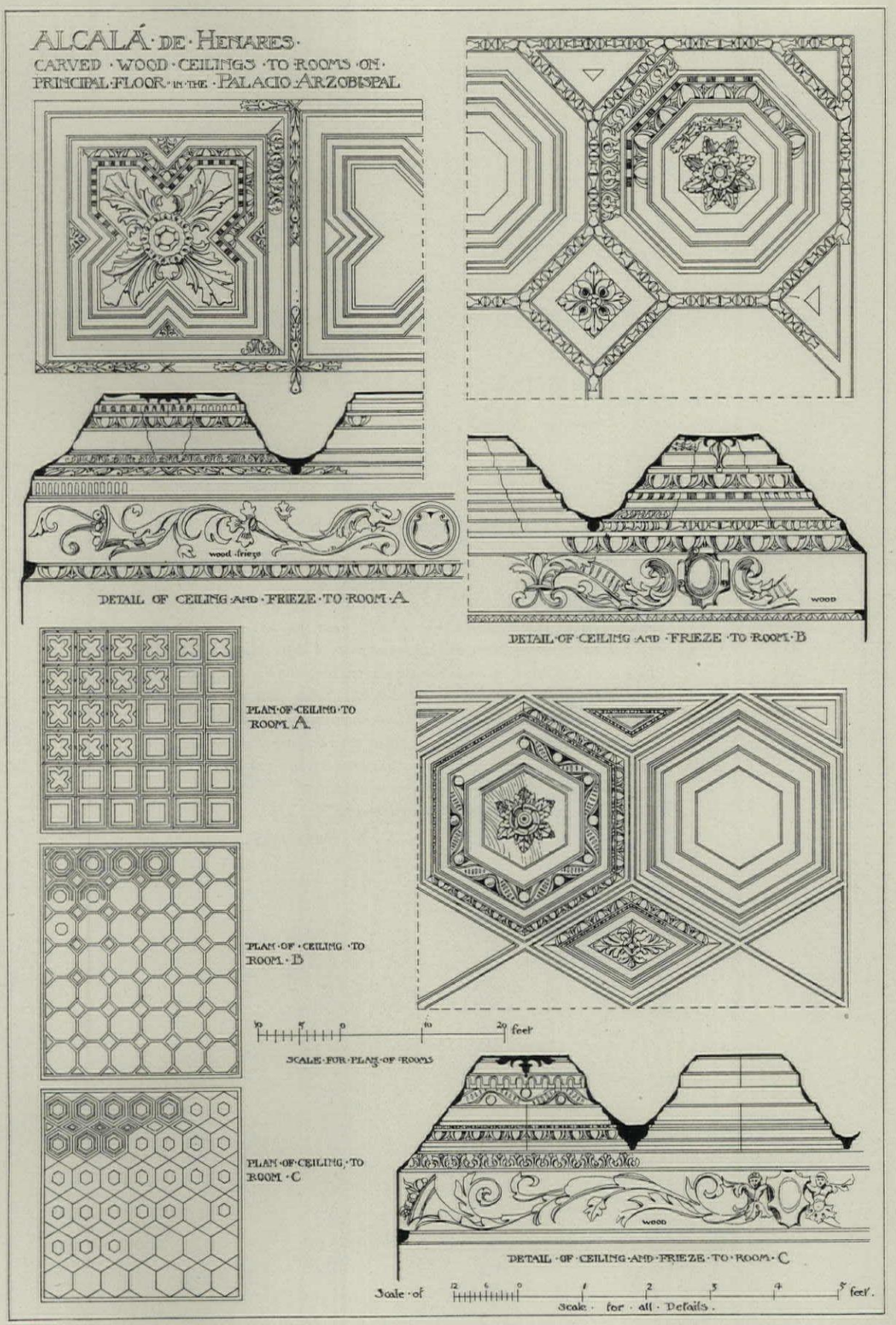
The secret of the circle—*at last!*

Let the arc *AMNB* be *any* portion of a semicircle, of *any* radius *OA*. Draw the prolonged line *AP*, perpendicular to *OA*. On *AB*, as a base, construct a right-angled triangle, *ABC*, whose hypotenuse, *AC*, bisects the angle between its base and the line *AP*. On the resultant hypotenuse, as a new base, construct another right-angled triangle whose hypotenuse also bisects the angle between *its* base and the line *AP*. Continue this kindergarten pastime—that is, just keep right on doing it—until the irregular outline *BCDE*, *etc.*, *etc.*, of the figure you are building, meets the perpendicular *AP* at *X*. Simple—isn't it? And *when* you have accomplished this, then will *AX* be the *exact* length of the arc *AMNB*. And if this arc were a full semicircle of unit radius, then *AX* would be "pi"—exactly so! No doubt, this simple construction will remain *everlastingly* famous. Try it and see.

In Part 15, *applied cyclometry goes on the boards.*



FROM A MEASURED DRAWING BY TRENT ELWOOD SANFORD



RENAISSANCE ARCHITECTURE AND ORNAMENT IN SPAIN

A PLATE FROM THE WORK BY ANDREW N. PRENTICE

PENCIL POINTS FOR JANUARY, 1931
VOLUME XII NUMBER 1

"This palace contains a magnificent suite of five apartments, the ceilings of which, said to be designed by Berruguete, are the subject of this plate. The work is in a splendid state of preservation; the height is about eighteen feet from the floor and the material is dark walnut. The carvings display much variety of design and detail, and are amongst the purest of their kind in Spain. Several of the rooms are enriched with deep ornamental plaster friezes, placed below the wooden carved frieze."

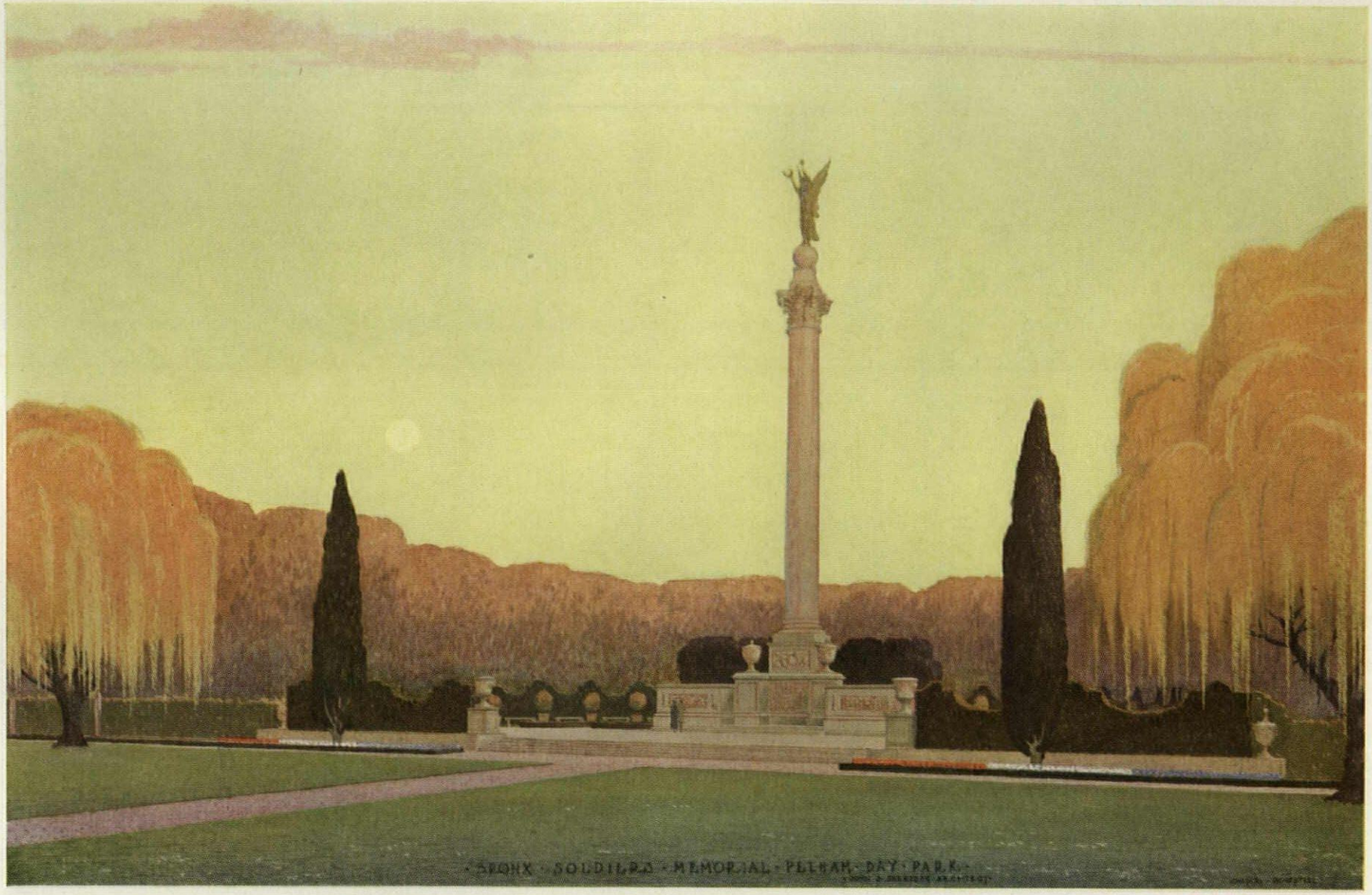
A. N. PRENTICE.

FROM A DRYPOINT BY CHESLEY BONESTELL

"NUMBER ONE WALL STREET"

PENCIL POINTS FOR JANUARY, 1931
VOLUME XII NUMBER 1

This recent drypoint by Chesley Bonestell shows the Irving Trust Company's new building at 1 Wall Street, New York, as seen from the churchyard of Trinity. As everyone knows, the architects for the new building were Voorhees, Gmelin, and Walker. The original print measures 7" x 13".



BRONX SOLDIERS' MEMORIAL, PELHAM BAY PARK, NEW YORK—JOHN J. SHERIDAN, ARCHITECT

FROM A RENDERING IN OIL COLOR BY CHESLEY BONESTELL

PENCIL POINTS SERIES
of
COLOR PLATES

The rendering of the war memorial shown on this plate was executed on a fine grain absorbent canvas similar to shade cloth. After the drawing was laid out in pencil the masses were laid in with water color which gave a texture visible in the road and grass and in the trees of the background. Thin glazes of oil were then used to heighten the color and even the tone. The sky was painted in with pure oil paint. The original measures about 30″ x 20″.

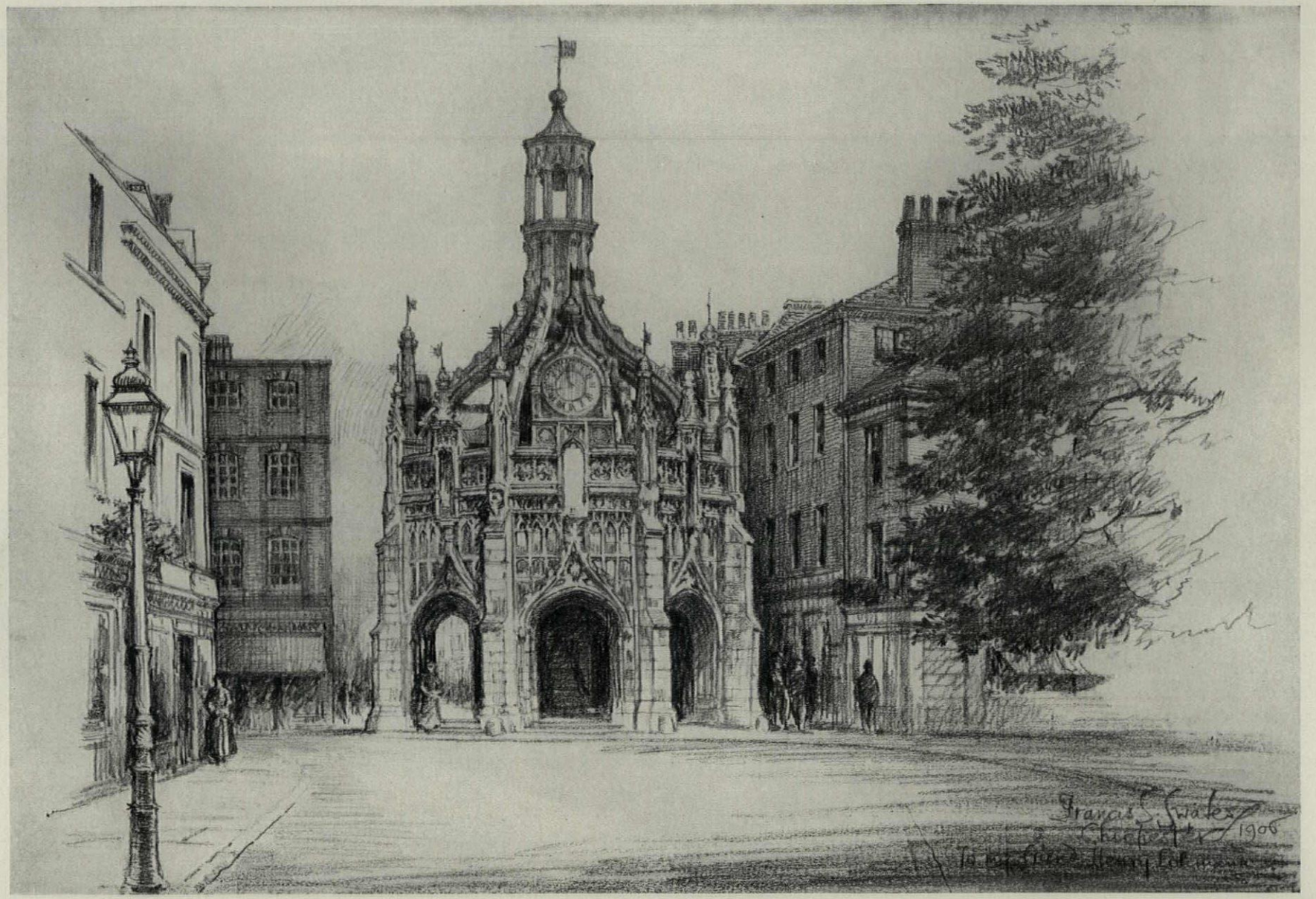
Original printed by George C. Miller

FROM A LITHOGRAPH BY FRANK SCHWARZ

A VIEW OF ANTICOLI-CORRADO FROM THE ADJACENT HEIGHTS

PENCIL POINTS FOR JANUARY, 1931
VOLUME XII NUMBER 1

This print is one of a series of lithographs recently drawn on stone by the artist from sketches made in 1927 during his residence in Anticoli-Corrado, near Subiaco, Italy, as holder of a Guggenheim Fellowship. The original measured 18¼" x 12".



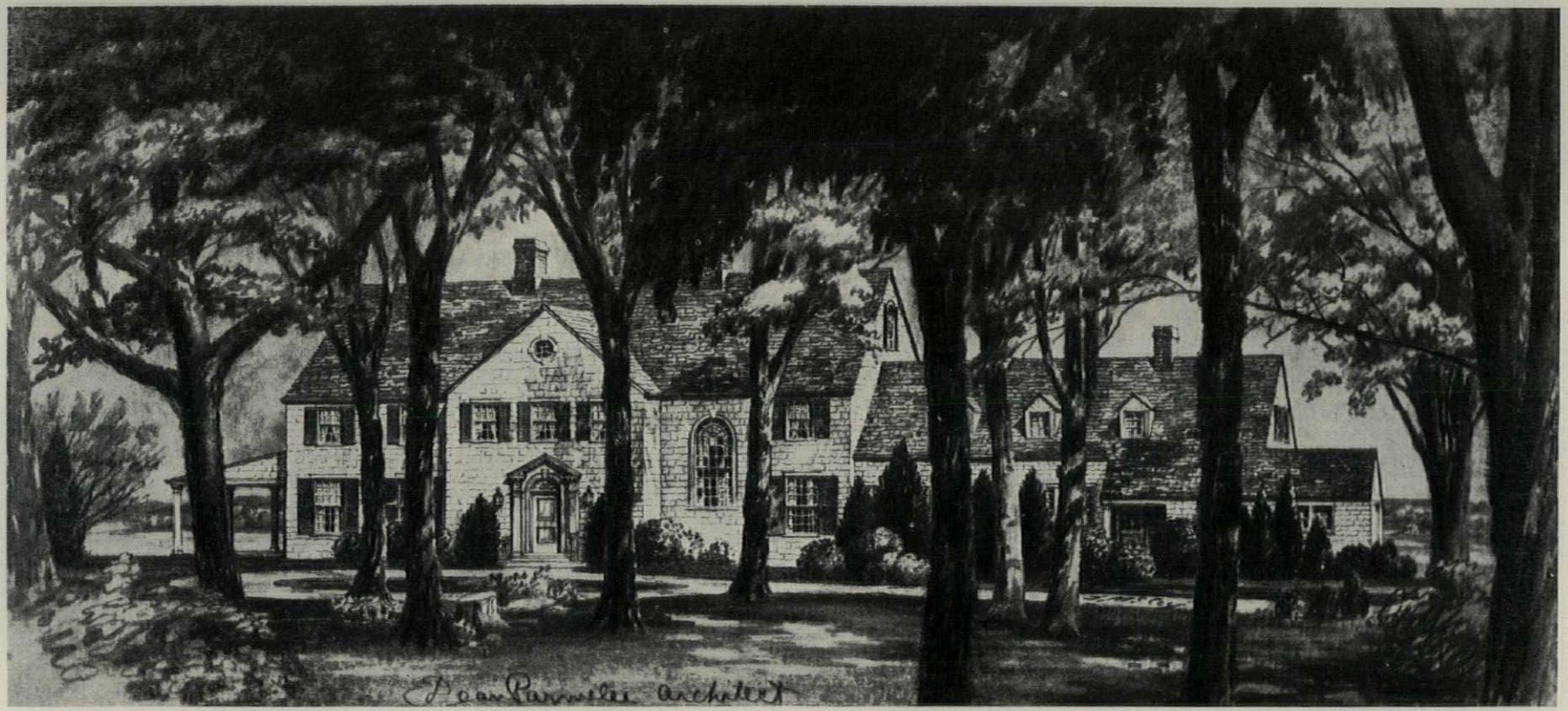
FROM A PENCIL SKETCH BY FRANCIS S. SWALES

MARKET CROSS, CHICHESTER, ENGLAND

PENCIL POINTS FOR JANUARY, 1931

VOLUME XII NUMBER 1

The sketch shown on this plate was done by Francis S. Swales while he was living in England in 1906. An article on Mr. Swales' work appeared in the September, 1930, issue of PENCIL POINTS.



FROM A PENCIL RENDERING BY JOSEPH McCOY

HOUSE FOR RODNEY S. JARVIS, ESQ., GREAT BARRINGTON, MASSACHUSETTS—E. DEAN PARMELEE, ARCHITECT

FROM SKETCHES MADE ON THE SPOT AT THE CALIFORNIA MISSION PLAY

MR. KAMPS MADE HUNDREDS OF NOTES SUCH AS THESE, MOST OF THEM IN COLOR

Some Notes on the Mission Play

By Norman H. Kamps

The California Missions were rapidly falling into decline when, for the benefit of those who loved the past, as a child its parent, there was conceived an author playwright. That man was John Stephen McGroarty, creator of the Mission Play, which is the story of the early California, land of Dons and Senoritas and the home of one of the happiest cultures the world has ever known.

The Mission Play is an annual event and runs for a lengthy season each year. It has been presented over 3,000 times and is a success in every way, including financially. It is housed in its own typically Spanish Theatre at San Gabriel. In one of the patios may be seen small replicas of all the California Missions. The proceeds of the play are devoted to the preservation of the Missions and a proud son thus pays homage to his Mother.

The time is at hand for architects to design theatres for historic plays for every State in the Union—theatres that will spring from their very environment with kinship to the soil and climate on which they grow. The plays will reenact the pioneer days, with home talent. The southland will create a new and greater *Uncle Tom's Cabin* and the architectural motif of the theatre will be cotton and slavery and the music and song will be the negro spirituals. Wisconsin will build her theatre with an uncut forest as the motif. The characters will be lumberjacks, Indians, Father Marquette —and the songs will be derived from the winter winds and the silence of the maple sap in springtime and from the breaking of ice from the storm-tossed land of lakes. Genius will capture the voice of nature and the spirit and breath of the early settlers and then release them in a poem, a song, and a book, and a play, and a theatre.

Somewhere between Atlanta and the sea is created, in the mind's eye, a theatre which will teach history to young and old in the form of a great annual Civil War Drama. Each State will have its playhouse for historic plays and we will hold communion with the past and man's continuity will not be lost. Archæologists are concerning themselves with linking the far yesterday to today; they are patching up what was sometimes ruthlessly destroyed. Their fine minds are busy establishing what might already exist, namely the secret of the buried ages gone by. They are repairing breaks in the rear of the column of life, but they belong at the head of the column of life's endeavors.

History will furnish us the themes for the localized historic plays and past history must frequently rely on archæology for facts.

What John Stephen McGroarty has done for California will be done for other parts of the country and the tourist will be enabled to see plays and hear stories of the past in the splendid way that is possible at the San Gabriel Mission Playhouse where he may become familiar with the very essence of California history in the space of just a few hours.

RHYTHMIC MOTIVE FROM THE CALIFORNIA MISSION PLAY

REPRODUCED FROM THE NOTEBOOK OF NORMAN H. KAMPS

NOTES ON THE CALIFORNIA MISSION PLAY FROM THE SKETCHBOOK OF NORMAN H. KAMPS

SEE COLOR PLATE IN THIS ISSUE FOR A COMPOSITION WORKED UP FROM THESE AND SIMILAR SKETCHES

THE MISSION PLAY, SAN GABRIEL, CALIFORNIA

FROM A COLOR STUDY FOR A MURAL DECORATION BY NORMAN KAMPS

PENCIL POINTS SERIES
of
COLOR PLATES

This careful study for a mural decoration is based on the famous Mission Play, given annually at the San Gabriel Mission in California. It is one of a series designed by the artist who has made a long study of the play and was worked up from notes taken directly from the play as it was being acted. Elsewhere in this issue will be found reproductions in black and white taken from pages in Mr. Kamp's notebook, together with a short article concerning the play. The drawing shown here measured 12¼" x 8¼" and was outlined in ink and painted in with clear washes of transparent water color.

Competition for the Worcester Memorial Auditorium

Winning Designs and Report of the Jury of Award

Invitations were extended to twenty-one architects of Worcester, Boston, and New York to submit designs in the competition for the New Municipal Memorial Auditorium for Worcester, Massachusetts. Eighteen architects accepted the invitation. The drawings were judged by a Jury of Award consisting of three architects, Charles D. Maginnis of Boston, F. Ellis Jackson of Providence, and J. Frederick Larson of Hanover, N. H., and two lay members, George F. Booth and George N. Jeppson of Worcester.

The design by Lucius W. Briggs of Worcester, associated with Frederic C. Hirons of New York, won the first place; second place and $1,500 went to J. D. Leland Company of Boston and Worcester; third prize of $1,250 was given to the design submitted by Henry and Richmond of Boston; the fourth prize of $1,000 went to Jasper Rustigian of Worcester, associated with Will Rice Amon of New York. All these four designs are shown herewith. The auditorium is to be erected "as a Memorial to Soldiers, Sailors, and Marines."

The Problem

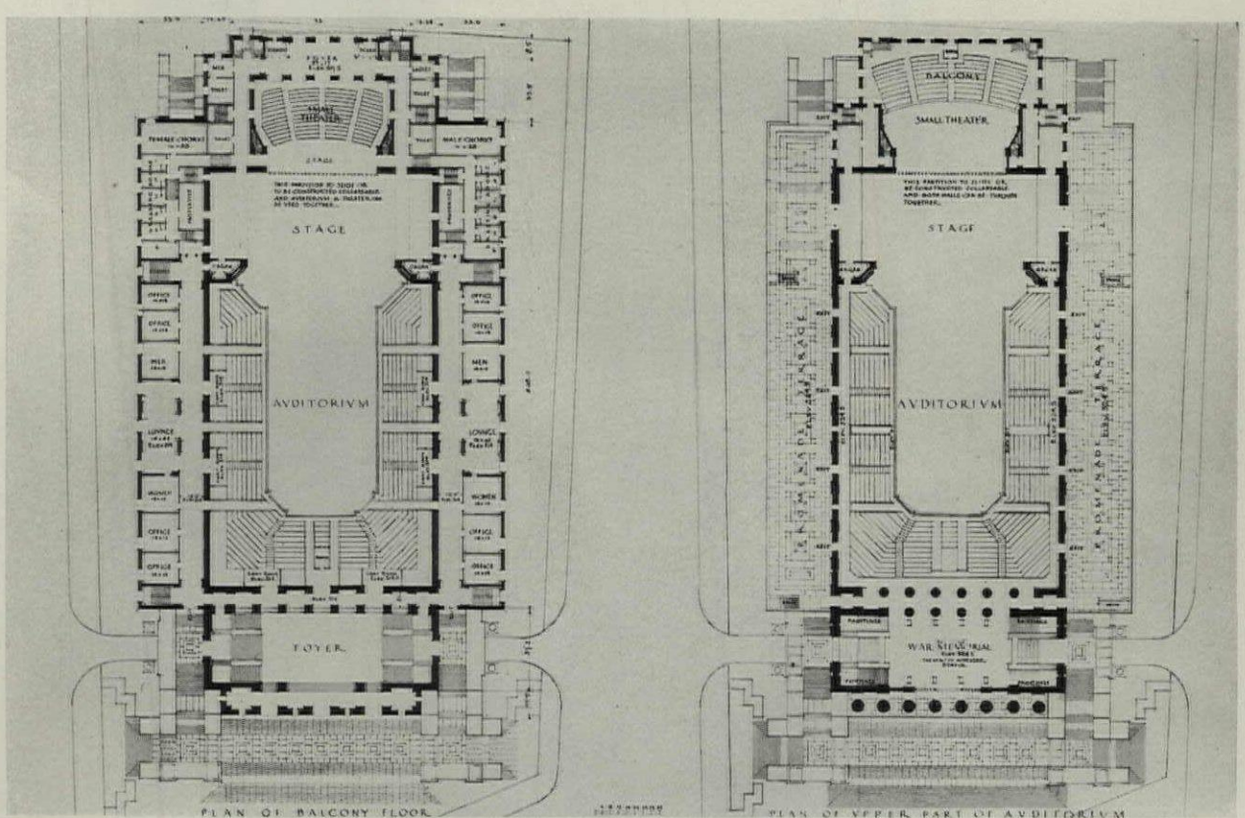
The chief essentials of the building in the order of their size are as follows:—(a) A Large Auditorium or Hall; (b) A Small Hall; (c) A Memorial Hall or Chamber; (d) Offices, Cloak Rooms, Toilet Rooms, Ticket Rooms, etc.; (e) Corridors and Entrance Halls; (f) Boiler Room, etc.; and (g) Kitchen, etc.

(a) The Auditorium is to be used for concerts, dramatic performances, conventions and school commencement exercises.

For these and perhaps for other occasions a wooden sloping floor (to be removable) must be provided. The hall will also be used for pageants, exhibition drills, and so on. For these occasions the permanent level floor will be required and provision for storing the removable floor and the seats attached thereto must be made, probably in a basement directly under the permanent floor, with trap doors in the latter. For purposes of cubing assume this basement floor to be 9′0″ below level of permanent floor of auditorium. (Mandatory.)

The auditorium should seat, approximately, 4,000 persons, of which not over forty-five per cent may occupy the balconies, and less if possible. The hall shall not be less than sixty-five feet (65′) high from floor to highest portion of ceiling.

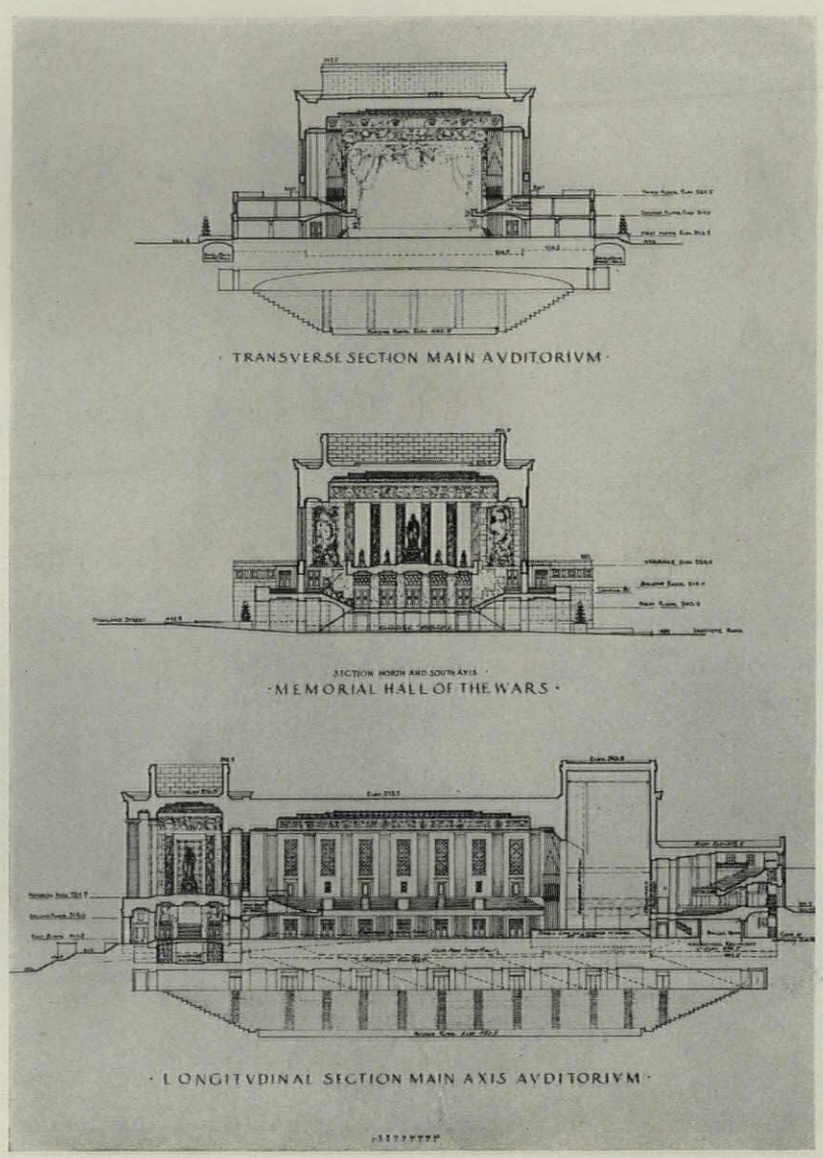
(Continued on page 62)

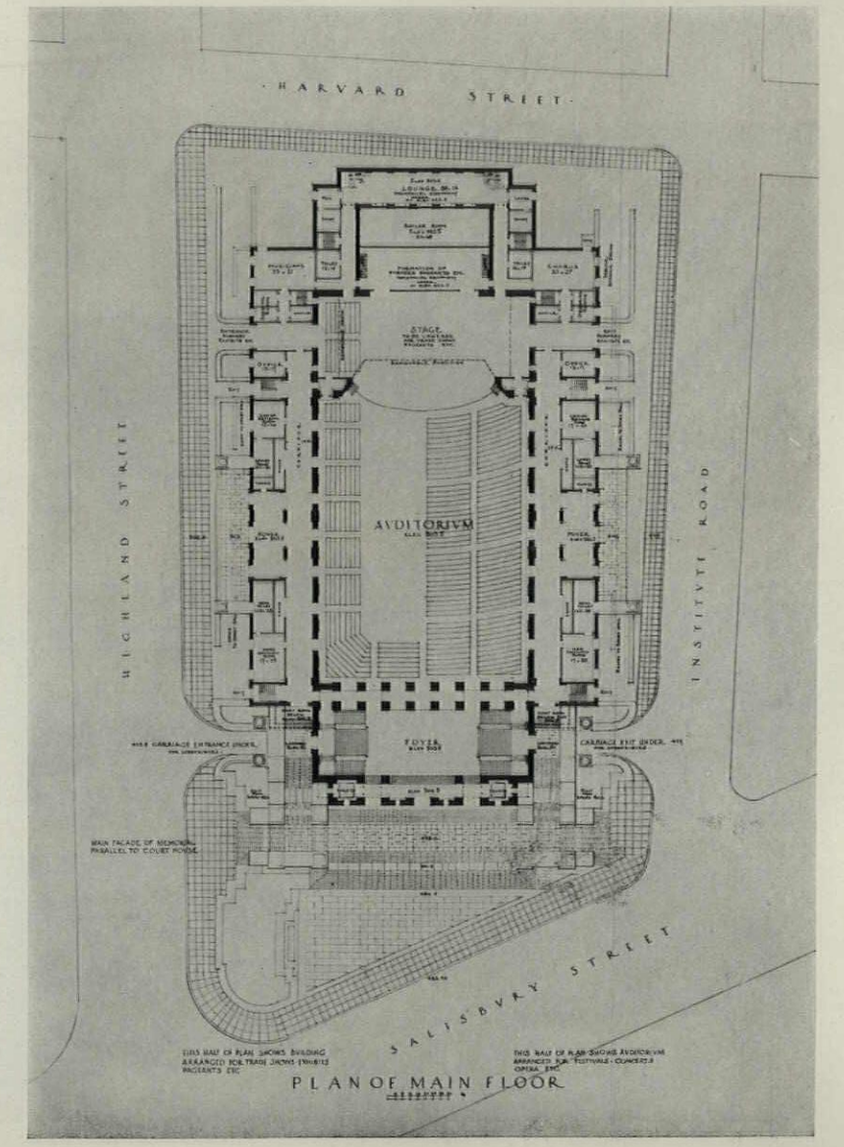


PLANS OF WINNING DESIGN BY LUCIUS W. BRIGGS ASSOCIATED WITH FREDERIC C. HIRONS
COMPETITION FOR WORCESTER MUNICIPAL MEMORIAL AUDITORIUM

PERSPECTIVE OF WINNING DESIGN BY LUCIUS W. BRIGGS OF WORCESTER, MASS., ASSOCIATED WITH FREDERIC C. HIRONS OF NEW YORK

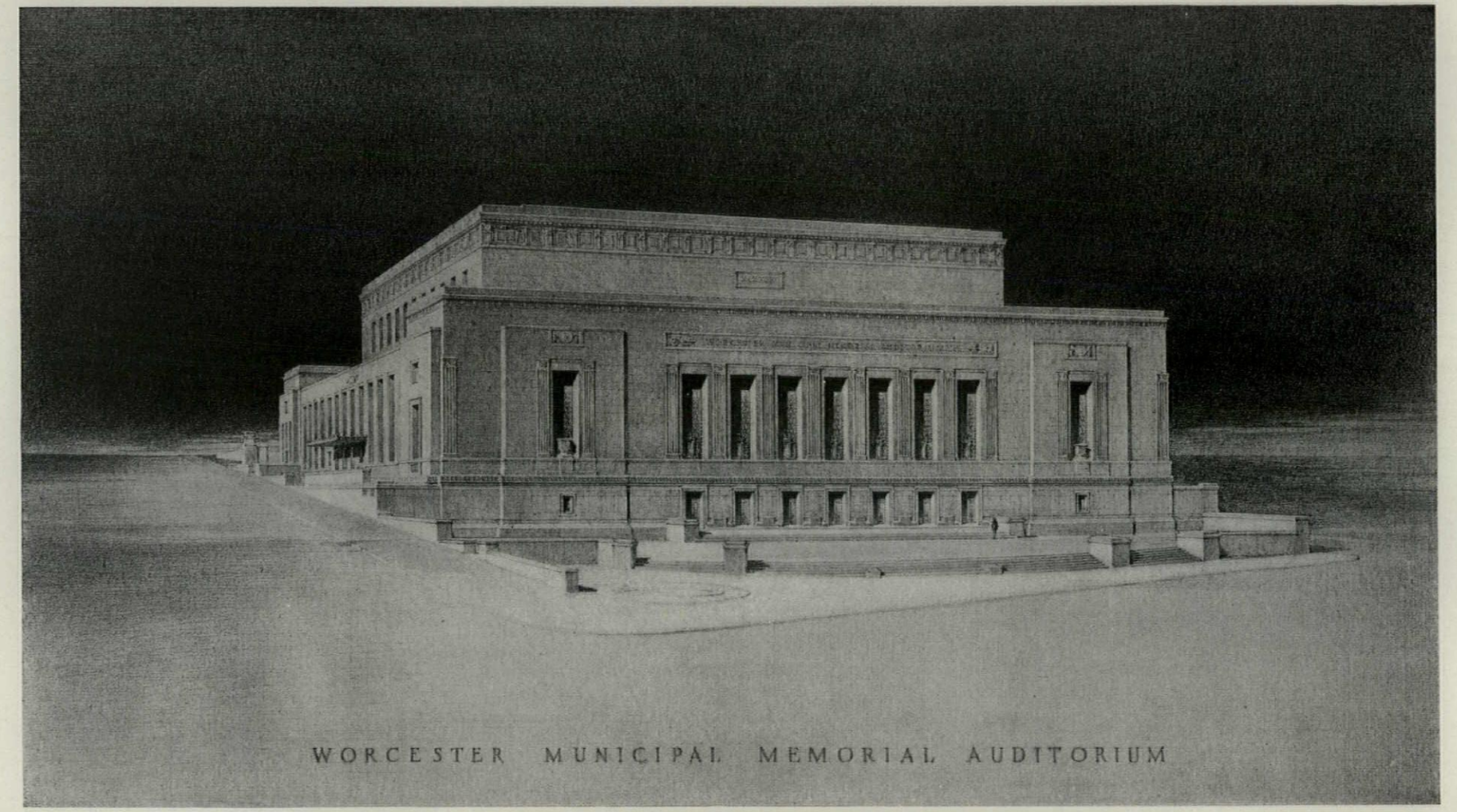
COMPETITION FOR WORCESTER MUNICIPAL MEMORIAL AUDITORIUM





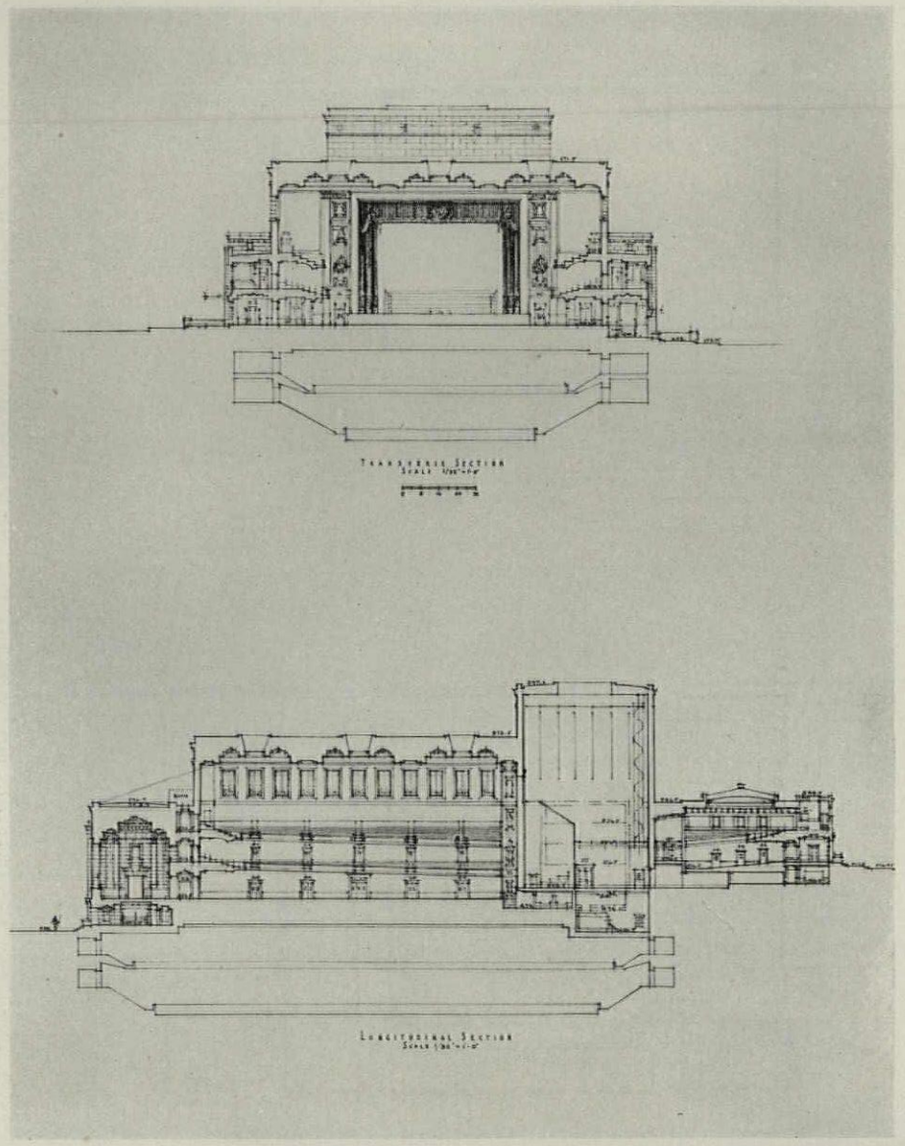
SECTIONS AND MAIN FLOOR PLAN OF WINNING DESIGN BY LUCIUS W. BRIGGS OF WORCESTER, ASSOCIATED WITH FREDERIC C. HIRONS OF NEW YORK

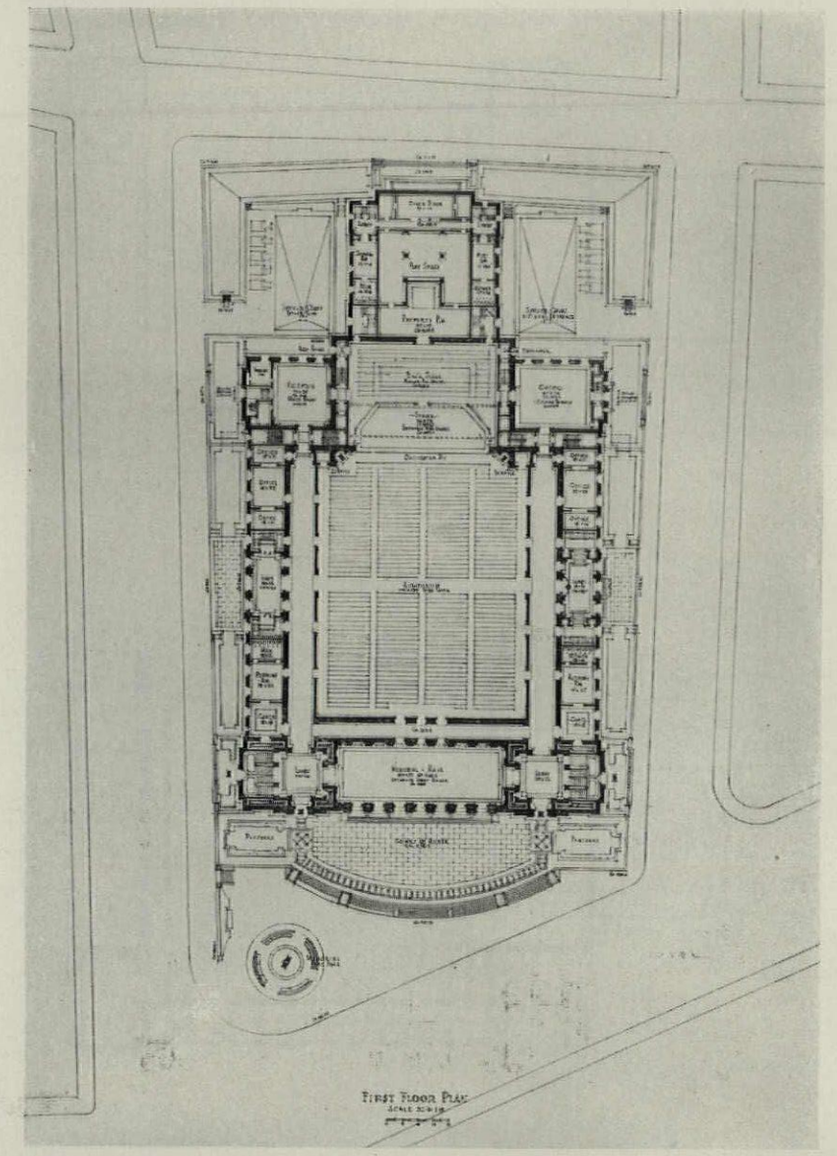
COMPETITION FOR WORCESTER MUNICIPAL MEMORIAL AUDITORIUM



PERSPECTIVE OF DESIGN PLACED SECOND, BY J. D. LELAND COMPANY OF BOSTON AND WORCESTER

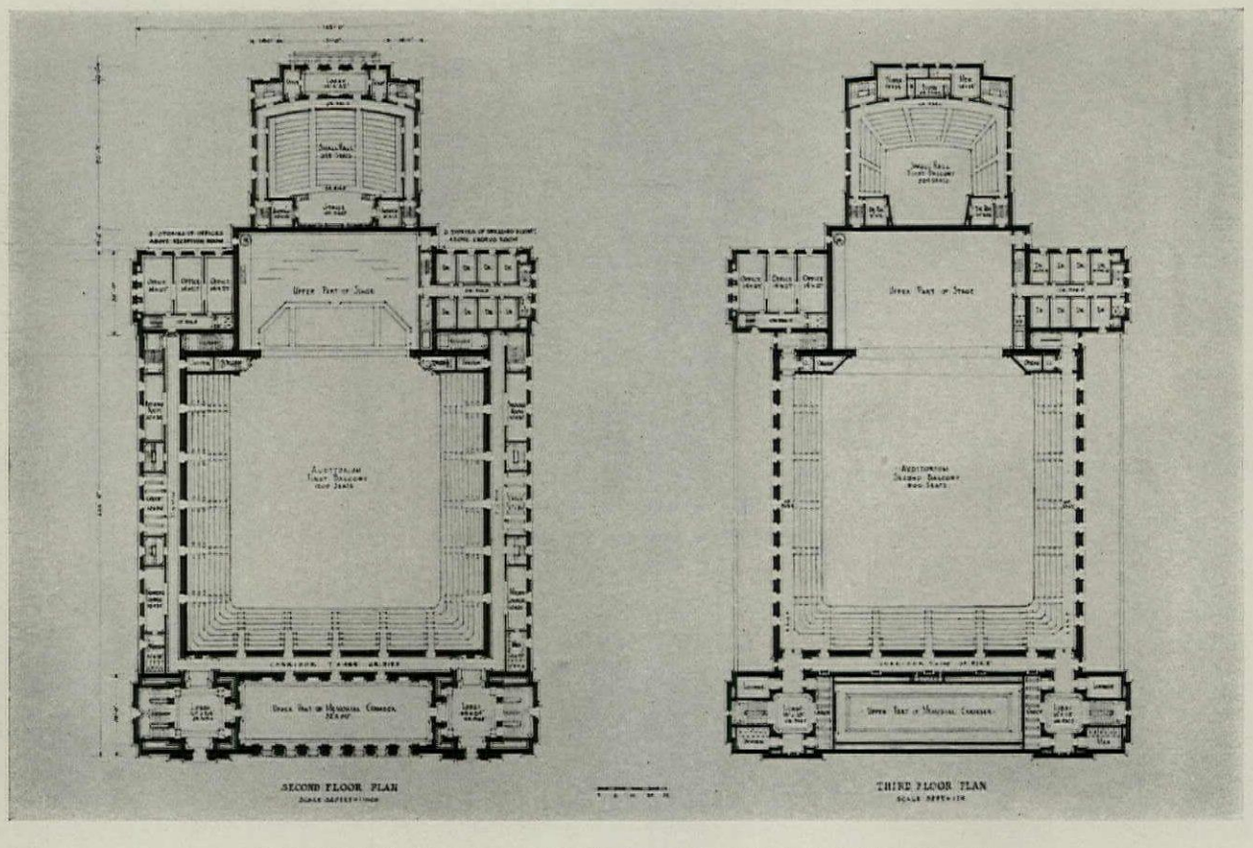
COMPETITION FOR WORCESTER MUNICIPAL MEMORIAL AUDITORIUM



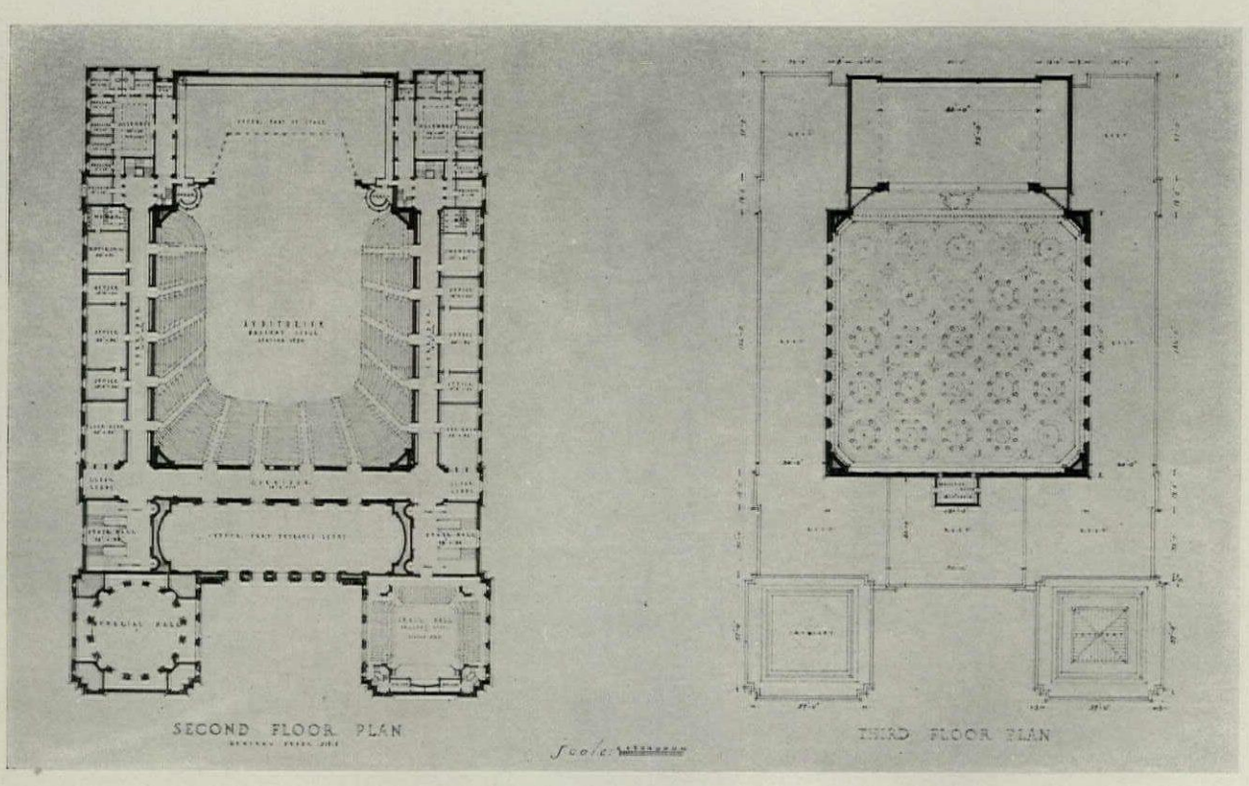


SECTIONS AND FIRST FLOOR PLAN OF DESIGN PLACED SECOND, BY J. D. LELAND COMPANY OF BOSTON AND WORCESTER

COMPETITION FOR WORCESTER MUNICIPAL MEMORIAL AUDITORIUM

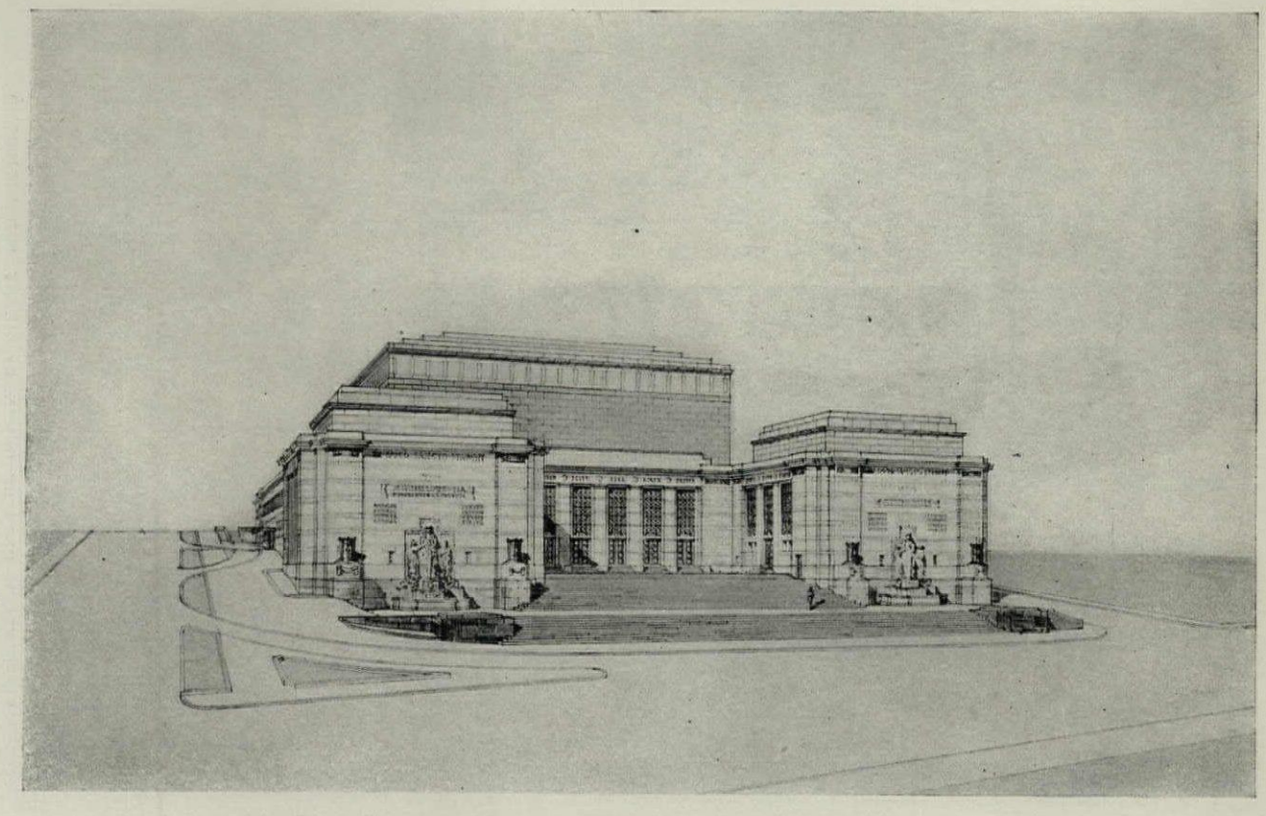


PLANS OF DESIGN BY J. D. LELAND COMPANY OF BOSTON AND WORCESTER

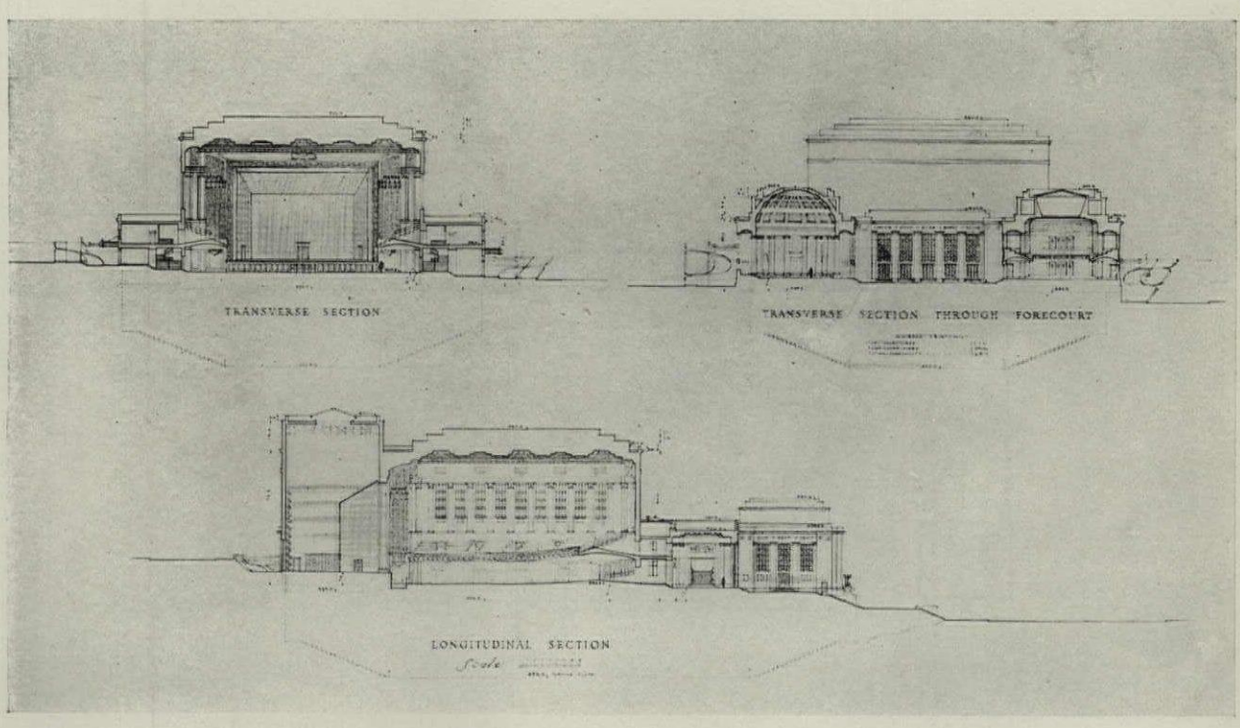


PLANS OF DESIGN BY HENRY AND RICHMOND OF BOSTON

COMPETITION FOR WORCESTER MUNICIPAL MEMORIAL AUDITORIUM

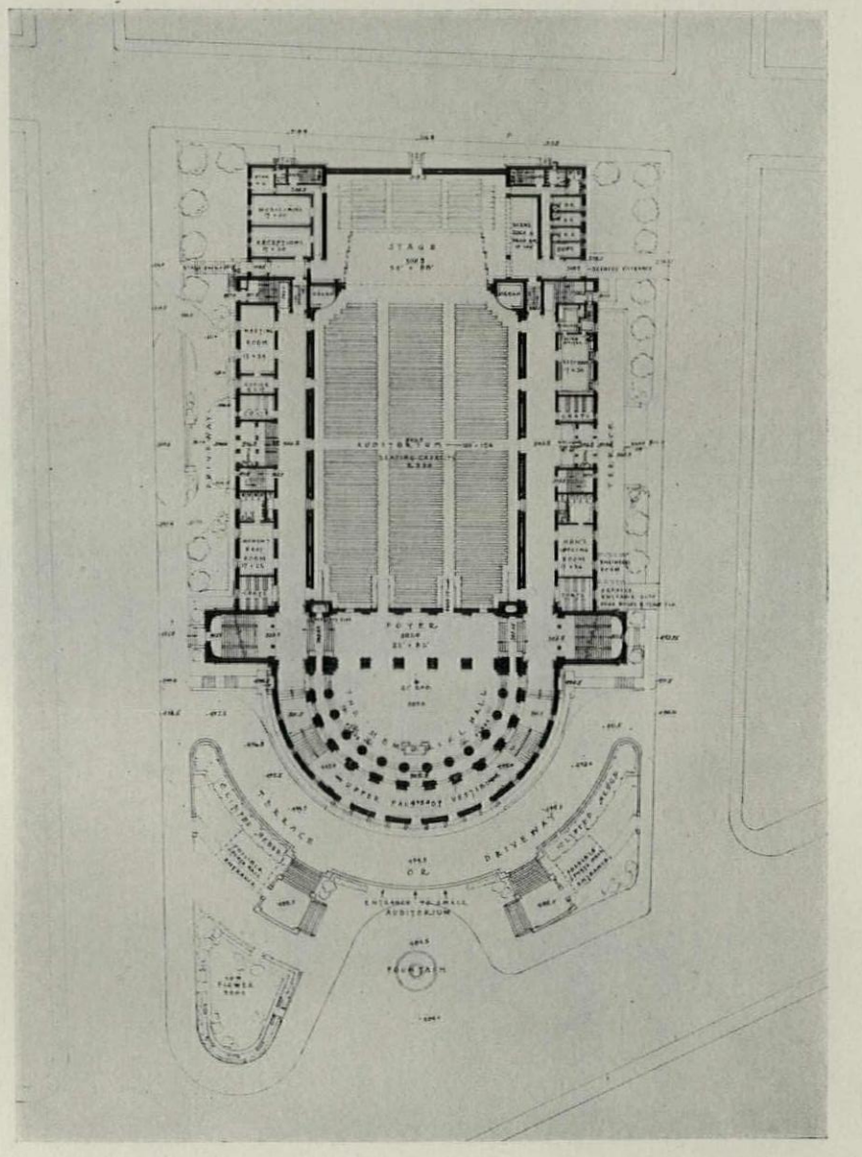


PERSPECTIVE OF DESIGN PLACED THIRD, BY HENRY AND RICHMOND OF BOSTON

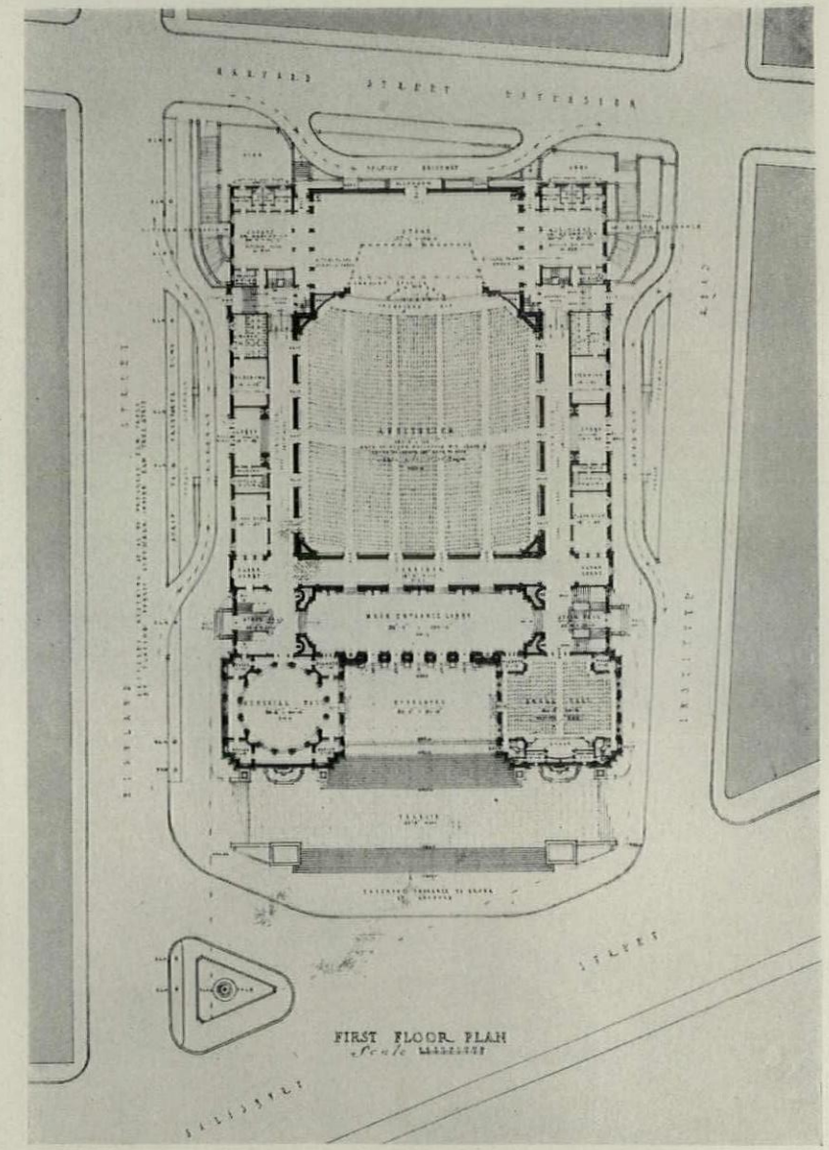


SECTIONS OF DESIGN PLACED THIRD, BY HENRY AND RICHMOND OF BOSTON

COMPETITION FOR WORCESTER MUNICIPAL MEMORIAL AUDITORIUM



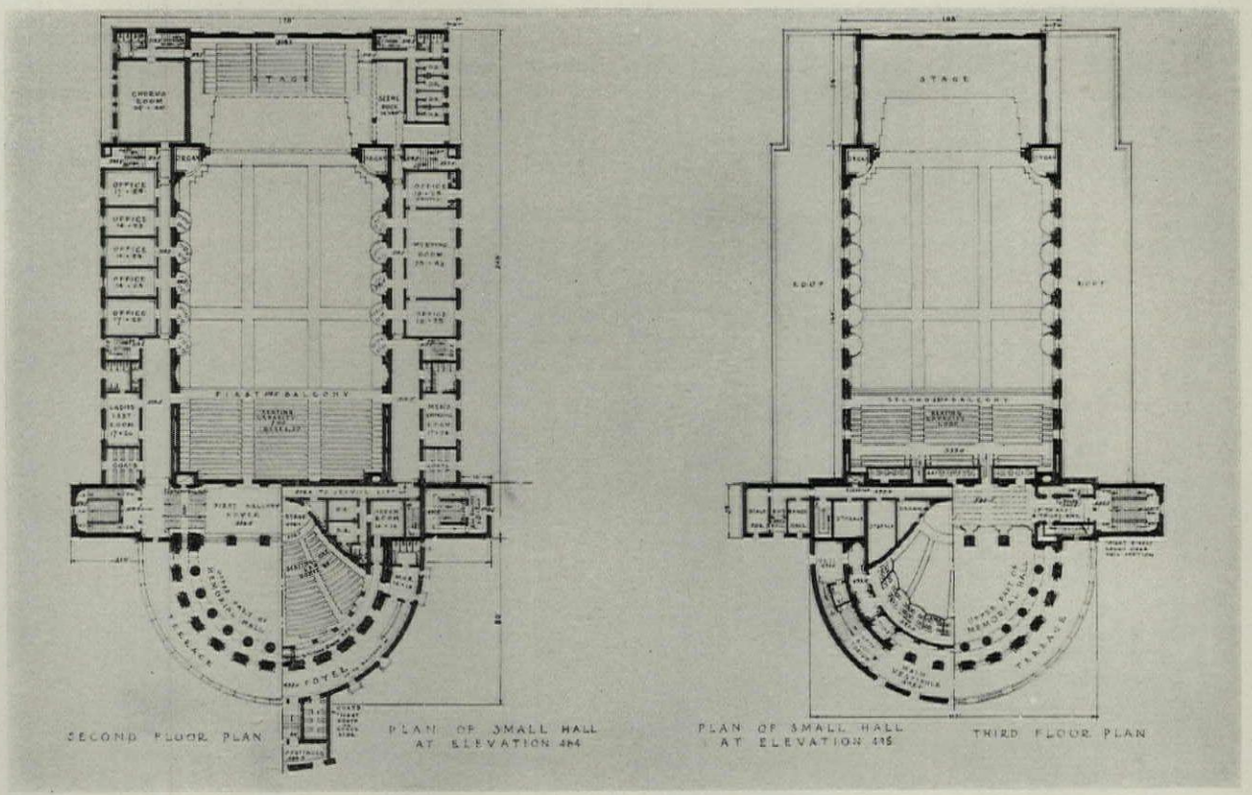
MAIN FLOOR PLAN OF DESIGN BY JASPER RUSTIGIAN AND WILL RICE AMON



FIRST FLOOR PLAN OF DESIGN BY HENRY AND RICHMOND

COMPETITION FOR WORCESTER MUNICIPAL MEMORIAL AUDITORIUM

PERSPECTIVE OF DESIGN PLACED FOURTH, BY JASPER RUSTIGIAN ASSOCIATED WITH WILL RICE AMON



PLANS OF DESIGN PLACED FOURTH, BY JASPER RUSTIGIAN OF WORCESTER ASSOCIATED WITH WILL RICE AMON OF NEW YORK

COMPETITION FOR WORCESTER MUNICIPAL MEMORIAL AUDITORIUM

COMPETITION FOR THE WORCESTER MEMORIAL AUDITORIUM

(Continued from page 53)

A large stage 5'0" above auditorium floor is wanted, suitable for orchestral and choral concerts and dramatic performances.

The Owner would like the Auditorium, as the great central feature of the plan, to be a fine hall and of sufficient height to produce a noble proportion; a handsomely panelled and decorated ceiling and a modelled and decorated frame at the proscenium opening.

(b) The small hall shall seat approximately 700 persons on the floor and in one balcony.

A comparatively small stage only is wanted, as it will not be used for dramatic performances, but small anterooms must be provided. The floor of this hall may be built as a permanently sloping floor. This small hall should have suitable entrance lobby and vestibule, ticket office, stairs to balcony, proper emergency stairs and exits, cloak rooms, smoking room, toilet rooms, etc. Provide moving picture booth.

(c) The memorial hall or chamber is "to serve as a reverent and enduring tribute to the men and women of Worcester who have served the Republic in War."

It is the hope and belief of the Owner that externally, with the funds available, a handsome and monumental building can be obtained.

The building must be of first-class construction as defined in the Worcester building law or ordinances. (Mandatory.)

The exterior wall surface must be designed to indicate stone finish. (Mandatory.) The Owner hopes that this finish may be of granite, as the assumption of forty-eight cents (48c.) per cubic foot includes the cost of such material.

To sum up. The Owner suggests, in view of the memorial character of the building and the adequate funds at his disposal, that the competitors, while not neglecting or minimizing the utilitarian and practical necessities of the problem, will give paramount consideration to the study of beauty and æsthetics, to be in evidence on the exterior as well as in all the important public portions of the interior. To obtain a work of great architecture for the City of Worcester is the Owner's hope and ambition.

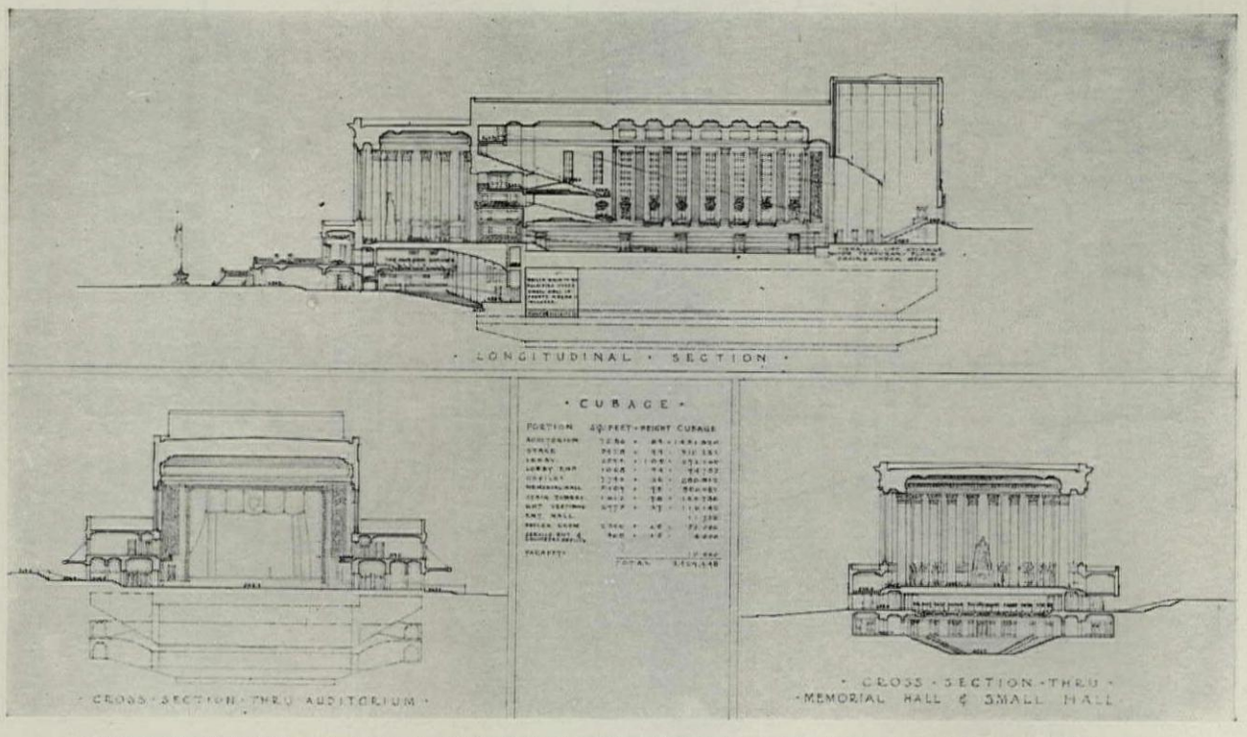
Report of the Jury of Award

In accordance with the instructions of the program we have strictly respected the anonymity of the competition and have refrained from any effort to identify the competitors. Eighteen designs were submitted for our consideration and these have been numbered by the Professional Advisor and the sealed envelopes containing the names of their authors have been deposited by him pending their opening by your Commission.

After prolonged study of these designs, the Jury has unanimously elected No. 13 [by Lucius Briggs associated with Frederic C. Hirons] as the most worthy and have voted therefore to recommend that its author be appointed as the architect of the new building. The considerations which have influenced this decision are as follows:

(1) The design has a plan of distinguished merit, of direct and logical circulation. A unique merit of this scheme which was not, however, suggested by the program is the extension of this circulation to the outdoors by means of free access to the side doors. Such a feature would lend itself interestingly in the summer to the purposes of pageantry and ceremonies. The Auditorium in its proportions and treatment is of excellent architecture. The relation to it of the Small Hall is admirable, admitting both of combined and independent use as occasion may require. The situation of the Memorial Hall is such as to affect felicitously the exterior as well as the interior of the scheme.

(2) The exterior of the building as illustrated is of distinctly monumental character, expressing clearly the memorial intention. *(Continued on page following)*



SECTIONS OF DESIGN PLACED FOURTH BY JASPER RUSTIGIAN ASSOCIATED WITH WILL RICE AMON

COMPETITION FOR WORCESTER MUNICIPAL MEMORIAL AUDITORIUM

(3) Beyond any designs submitted No. 13 takes account of the physical conditions of the neighborhood, particularly of the presence of the Boys' Club which, from many viewpoints in Lincoln Square, obscures a considerable portion of the Auditorium site. The Jury, it should be stated, was much impressed by the importance of this consideration in determining the availability of a competitive scheme. In the design presented the architectural interest of the façade is confined to such limit of width as to be independent of this intrusion. The plan, moreover, is skillfully contrived to make for attractive appearance to the approach from the north and south.

The Jury has elected No. 6 [J. D. Leland Company] as entitled to the second prize. This design, though distinctly less adapted to its situation and less monumental in expression, has an exterior of notable refinement and the plan admirable simplicity and directness.

It is recommended that the third prize be awarded to No. 5 [by Henry and Richmond]. Here, as in the case of several designs submitted, the Small Hall and the Memorial Chamber have been, not without obvious difficulty, symmetrically opposed in the plan. The author has made very attractive and picturesque use of the arrangement, however, in the development of an otherwise admirable and straightforward scheme.

No. 15 [by Jasper Rustigian associated with Will Rice Amon] has been appointed as the fourth prize. This shows an auditorium of excellent proportions and a well studied arrangement, even if the interesting façade has been achieved at some sacrifice to other interests of the plan as well as to the exterior.

The Jury ventures to suggest to the Commission that so important a condition to the dignified architecture of this neighborhood as the construction of this Auditorium would seem to demand a study of the lines of Lincoln Square which at present is so formless and unattractive. It is also impressed by the necessity of reconsidering the situation of the proposed War Monument with the view of bringing it into a responsible and symbolic relation to the new Auditorium.

Jury of Award
- Charles D. Maginnis
- F. Ellis Jackson
- J. Frederick Larson
- George F. Booth
- George N. Jeppson

HEIGHTS OF NEW YORK SKYSCRAPERS

Interest in the heights of New York skyscrapers does not seem to abate, if we may judge by the inquiries concerning them received in this office. For the benefit of those who are interested, therefore, we are printing the following list, compiled and published several months ago by *The New York Sun*.

It should be noted that the heights given include such superstructures as the dirigible mast on top of the Empire State Building or the steel spike which surmounts the Chrysler Building. We will be glad to have any inaccuracies called to our attention. The list follows:

	Stories	Feet
Empire State Building	85	1,256
Chrysler Building	77	1,050
City Bank-Farmers' Trust	71	935
Manhattan Co. Building	70	927
Woolworth Building	60	792
Metropolitan Life	50	700
Salmon-Bristol Building	58	698
Chanin Building	56	680
Lincoln Building	53	678
1 Wall Street	50	638
10 East Fortieth	44	635
New York Life	35	617
Singer Building	45	612
New Waldorf Astoria	40	600
Ritz Tower	42	592
Municipal Building	33	580
Sherry Netherland	38	570
New York Central	39	567
Navarre Mercantile	44	565
Equitable Trust Co.	42	550
Park Central Hotel	31	550
Equitable Building	42	542
Bankers Trust Co.	39	540
Downtown Athletic Club	31	535
Julius Nelson Project	45	525
Transportation Building	42	520
Bank of N. Y. & Trust	30	513
Hotel Pierre	41	503
Chase National Bank	38	496
Lefcourt National	40	490
Benenson Building	33	487
New York Telephone	31	486
New Fuller Building	40	480
Battery Tower	40	462
International T. & T.	35	455
Lefcourt Colonial	40	454
Harriman Building	38	452
Louis Adler Building	32	450
Hotel New Yorker	40	443
Brown Bros.	35	440
The News Building	36	439
Bank of U. S.	36	432
Empire Trust Building	33	430
National City Co.	33	430
120 Wall Street	33	430
Bush Terminal Building	30	430
Fred F. French Building	38	428
Fifty Broadway	35	428
Barbizon Plaza	40	425
Caryle Hotel	40	425
Adams Express	32	424
Savoy Plaza	33	420
New Squibb Building	34	419
American Express	32	415
Hotel Shelton	34	412
Whitehall Building	32	408
Gresham-Rector St. Building	35	400
New San Remo	30	400
Graybar Building	30	400
St. Moritz Hotel	36	395
New 29 Broadway	32	393
Bricken Textile	33	387
Sinclair Oil Building	33	385
Hotel Delmonico	32	380
Morris-West St. Building	31	375
Salmon Tower	33	374
Tudor City Woodstock Tower	32	355
Hotel Beverly	30	356
Hotel Governor Clinton	31	347

THE JAMES HARRISON STEEDMAN MEMORIAL FELLOWSHIP IN ARCHITECTURE

THE GOVERNING COMMITTEE of the James Harrison Steedman Memorial Fellowship in Architecture announces the sixth competition for this Fellowship, to be held in the spring of the year 1931.

This Fellowship is founded in memory of James Harrison Steedman, M.E., Washington University—1889, First Lieutenant U. S. Naval Reserves, Assistant Engineer Officer U. S. S. Oklahoma in 1917 and 1918, who at the age of fifty, suffering from a malady curable only by rest, refused to quit his post and knowingly made the great sacrifice.

The value of this Fellowship is represented by an annual award of Fifteen Hundred Dollars, to assist well qualified architectural graduates to benefit by a year in travel and the study of architecture in foreign countries, as determined by the Committee and under the guidance and control of the School of Architecture of Washington University.

This Fellowship is open on equal terms to all graduates in architecture of recognized architectural schools of the United States. Such candidates must be American citizens of good moral character, and shall have had at least one year of practical work in the office of an architect practicing in St. Louis, Mo., before being entitled to assume the benefits of the Fellowship. All candidates shall be between twenty-one and thirty-one years of age at the time of appointment to this Fellowship.

Application blanks for registration can be obtained at any time upon written request addressed to the head of the School of Architecture of Washington University, St. Louis, Mo., to whom application blanks properly filled out must be returned not later than January 24, 1931. Any requests for supplementary information relative to the rules and regulations governing the Competition shall be made at the same time.

Any candidate who holds a degree not conferred by Washington University must submit with his application a transcript of the record of his scholastic work.

Each application must bear the endorsement of three members of the American Institute of Architects, one of whom at least must be a resident of the City of St. Louis.

BROOKLYN CHAPTER, A.I.A.

THE BROOKLYN CHAPTER of the American Institute of Architects at the November monthly dinner appropriated $100 to aid the unemployed draftsmen through the Architects' Emergency Committee.

Many members told of an unusual number of unemployed at this time and recommended not only that public works be speeded up by the State and City, but that where possible owners should pay particular attention to the improvement of their property during this period of low costs.

Twelve applications were received for consideration in the membership drive to include especially those in the outlying districts of Long Island.

William P. Bannister, Chairman of Legislative Committee, briefly outlined the work of his committee at the coming session of the legislature and the serious problem for architects in the necessity of combating unfriendly legislation.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION ANNOUNCES COMPETITION

PRIZES AGGREGATING $1,700.00 are being offered by the American Institute of Steel Construction, 200 Madison Avenue, New York, for the best design for a steel bridge.

There will be two competitions, each having a first prize of $500.00, a second of $250.00, and a third of $100.00, one going to engineering students and the other to architectural students. The first will be judged by a national jury of engineers and architects and is open to any engineering student attending a school or college in the United States or Canada. The second will be held through the Beaux-Arts Institute of Design.

The problem is a monumental bridge of restrained simplicity, such as would be erected over a navigable river within the corporate limits of a city of approximately 150,000 inhabitants. It would be 80 feet wide including two sidewalks of 10 feet each, and a total length of 1,770 feet. The approaches for a distance of 165 feet would represent retaining walls and abutments. Night illumination would be provided for.

This is the third annual student competition held by the American Institute of Steel Construction. Previous competitions of like nature have enlisted the interest of hundreds of students and have developed many bridge designs of considerable æsthetic appeal.

THE JAMES TEMPLETON KELLEY FELLOWSHIP IN ARCHITECTURE

THE FELLOWSHIP, with an income of $2,500 for one full year, was established in 1929 by Mrs. James Templeton Kelley in memory of her husband. The fellowship is administered by the Boston Society of Architects (a Chapter of the American Institute of Architects) and is to be assigned to an individual of proved ability, whether a student, an instructor, a draftsman, or a practicing architect, for foreign travel for the pursuit of advanced studies in architecture. It is open to any man or woman residing within the area under the jurisdiction of the Boston Society of Architects (Maine, New Hampshire, Vermont and Massachusetts), preferably a citizen of the United States of America, and is to be awarded annually on the basis of evidence submitted by the applicant, and otherwise secured by the Committee on Education of the Boston Society of Architects. The Executive Committee of the Boston Society of Architects makes the award on the recommendation of the Committee on Education of the Society. The holder is eligible for re-appointment. If, in any year, no suitable candidate appears, the sum available is to be set aside as a separate fund which may be used to defray expenses incurred in publishing the results of the work produced by any of the James Templeton Kelley Fellows, or for other purposes connected with the Fellowship. In any year, the Committee may reserve a part of the income, not exceeding $500, to defray expenses incurred in the administration of the Fellowship.

Applications for the year 1931 should be in the hands of Niels H. Larsen, Secretary of the Committee on Education of the Boston Society of Architects, 814 Statler Building, Boston, on or before January 19, 1931, and should state the applicant's age, education, experience, present occupation, and suggestions for his work abroad.

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 this month have been awarded as follows:

Class I—Allyn Gordon, Corsicana, Texas.
Class II—John M. Kerr, Buffalo, N. Y.
Class III—Byron E. Laidlaw, Crestwood, N. Y.
Class IV—Thomas Pao Ho Liang, Tientsin, China.
Good Wrinkle—J. Carroll Tobias, Bethlehem, Pa.

Christmas cards are starting to come in for our competition but inasmuch as we are going to press early this month we have decided to advance the closing date until January 10th to give even the most belated entries a chance. So if you haven't already sent in your greeting card do it now!

Please be sure to let us know what you think of the first of our new series of cartoons printed on page 67. We're going to publish one of these each month during 1931!

KOH-I-NOOR PENCIL FOUND WITH ANDRÉE'S DIARY

IT WILL PROBABLY be of some interest to architectural draftsmen to know that the lead pencil found with the diary of Andrée, the Arctic explorer, whose body was recently discovered in the polar regions after thirty-three years, was a Koh-I-Noor. The report did not state whether or not the pencil was a 2B or softer, so it is not known whether the fact has any arctictectural significance or not.

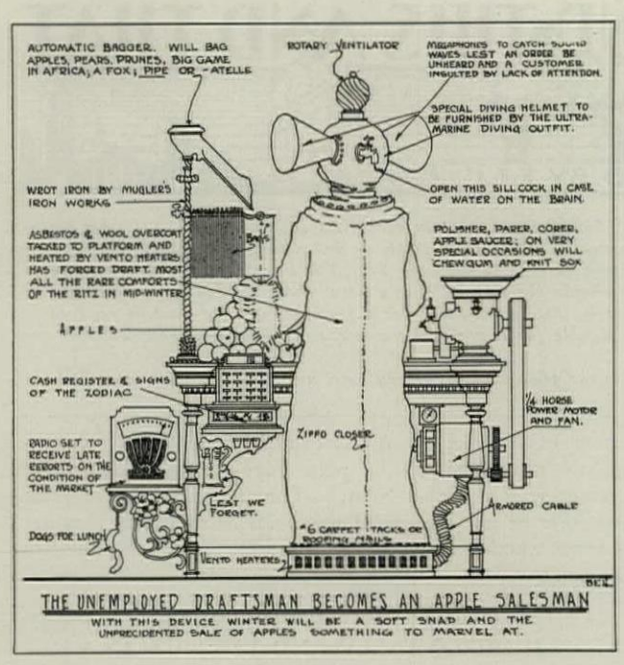
AN ODE TO PENCIL POINTS HORIZONTALLY AND VERTICALLY

By Thomas Pao Ho Liang of Tientsin, China

*P*ushing a pencil without cease;
*E*ating Sandwiches minus peace.
*N*othing must stop him while he draws—
*C*arefully not to cause some flaws.
I think there's nothing worse in Life
*L*ike an architect with his strife.

PENCIL POINTS his only pleasure,
*O*ne great joy that's without measure.
*I*t's a welcome ray of sunshine,
N the South Seas with her moonshine.
*T*o YOU he looks when he is sad—
*S*ure! Only YOU can make him glad!

OLDEST HOUSE IN PROVINCETOWN, MASS., FROM A PENCIL SKETCH BY ALLYN GORDON
(PRIZE—*Class One—December Competition*)



By Byron E. Laidlaw

(Prize—*Class Three—December Competition*)

A TOY FOR TIRED ARCHITECTS AND DRAFTSMEN

Designed by Thomas Pao Ho Liang of Tientsin, China

(Prize—*Class Four—December Competition*)

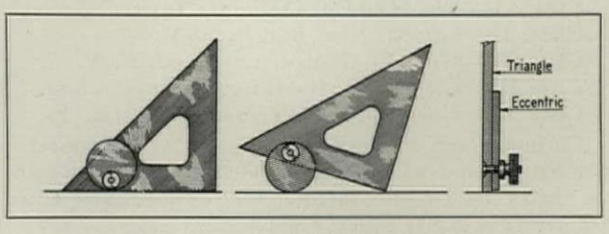
Either of the following two directions should be closely followed in order to obtain the best result:

A. Cut out the design below carefully, closely following the outline, and carry it in your pocketbook when it is full of dough and lose it when convenient. There should be no trouble whatever in case you happen to reside in a place called Chicago.

B. Tear this design out roughly and bring same to your Employer when he is at his busiest and request from him a piece of cardboard. Tell him what you want it for. Then from his desk pick up the jar of paste and use it liberally to stick the design on to the piece of cardboard. Be sure to leave sticky finger-prints all over his desk. You will then hunt for the scissors, upsetting the bottle of ink in the meantime. When at last you find them you will closely follow the outline with careful manipulation of the instrument. Better take your time in cutting—take an hour, if possible—as your Boss will like you so much more when he sees you working with such earnestness and cheek. More than certain he will raise your present salary, provided it is nothing. When completed, insert his tie-pin in center and spin it before his eyes, spelling death. You'll be surprised at the result! But no matter what may happen be nonchalant and light one of his favorite cigars as you make your exit on a stretcher.

A Toy for Tired Architects and Draftsmen

(See text above)



A SIMPLE ADJUSTABLE TRIANGLE

By J. Carroll Tobias

(Prize—*Good Wrinkle—December Competition*)

Any ordinary forty-five- or sixty-degree triangle can be very easily made adjustable to various angles by the simple addition of an eccentric as shown in the illustration. The eccentric may be made of celluloid, hard rubber, bakelite, wood, or any similar material, and is held to the triangle by a small screw and knurled nut. This construction is shown in the cross-section. The screw should be one with a flat head that can be filled flush with the back of the triangle. About a 6-32 screw is quite large enough, and a knurled nut can be secured at the radio counter of any "Five and Dime" store. When the eccentric is not in use it can be swung up out of the way or removed entirely. Calibration marks may be cut into the eccentric to indicate definite angles, in this way further increasing its usefulness. Such a device is of great value when drawing screw threads, section-lining at odd angles, and work of like nature.

'TWAS EVER THUS

By John M. Kerr

(Prize—*Class Two—December Competition*)

'Twas the opening night of "Community Hall,"
A building designed to accommodate all,
The Council's debatings—the Firemen's wagon,
An up-to-date Cooler, and, honest, no braggin'
The plan was a dandy—the fixings just swell,
Complete from the Corner Stone up to the Bell.
'Twas a sight for sore eyes as his worship the Mayor
Began to orate to the gang gathered there.
The Hall sure was packed from the floor to the rafters,
Good honest faces before and abaft us.
Country lads, each clinging tight to his "Mabel"
Waiting as patiently as they were able,
For, after the speeches the dancing was free
With the I. O. D. E. dishin' ice cream and tea,
College boys steppin' with cute little nifties,
Aldermen pompous, well up in the fifties.

ENTHUSIASTIC ARCHITECT: "You See, This Spike Runs Down the Entire Length of the Building and If Anyone Builds a Taller Building We Can Jack Up the Spike and Still Be the Tallest!"

Tough lookin' bozos and gay racketeers,
Limousine ladies decked out to the ears.
Attar of Roses and perfumes exquisite,
Mingled with garlic and other "What is it?"
Bankers and Brokers were sniffin' the air,
Bless me! if all the darn town wasn't there
With the single intention and object in view,
To cast the old optic on somethin' that's new.

The Mayor started in to congratulate all
The diff'rent contractors who'd worked on the Hall—
For they'd followed the plans with meticulous care,
To erect this great building—this monument fair.
He praised the foundations—the columns of steel;
The Façade he described as being almost unreal
In its beauty, and symmetry—Columns so white—
Ghostly, like schooners that pass in the night.

The Masons were fêted as Wizards of Oz—
The Plumbers were *Plumbers*—How Come? Why, because
For once pipes were laid with a speedy precision,
And laid where they ought to be laid, in addition.
The Walls were so white, and so beautiful too,
They took off their hats to the Plasterers—Whew!
Carpenter, Painter, each hard-boiled mechanic
Blushed rosy red in embarrassing panic.
What a gay saturnalia of brotherly love;
On everyone's shoulder there rested a dove.
The Building was open—all cares were forgotten,
But, to me, in all Denmark, just one thing was rotten.
For, "Who is that meek little man over there,
Whose brow is all furrowed and wrinkled with care?"
You've guessed it no doubt, or been led to suspect
He's the *poor* insignificant Architect!
Did the audience rise, and stand at attention?
Why, he didn't get even DISHON'RABLE MENTION!

PRATT ARCHITECTURAL CLUB

THE ANNUAL FALL DINNER of the Club was held on November 19, 1930, at the Fraternity Club and proved to be a splendid success. More than eighty members and friends gathered around the festive board, some coming a considerable distance from up-state and neighboring states.

In view of present economic conditions it was felt that the attendance was very gratifying.

Following the dinner a number of speakers were heard from, including Donald Fletcher, Instructor in Senior Design at Pratt; J. Floyd Yewell, widely known artist and delineator; and Ralph Walker, of the firm of Voorhees, Gmelin, and Walker, who told of the plans under way for the Chicago World's Fair in 1933, and of the work being done by the group of architects associated on this great project.

Our only regret was that Mr. Walker could not talk at even greater length on this fascinating subject.

Plans are in full swing for the Second Annual Dance to be held at the Architectural League, New York, on Saturday, January 24th. Those who attended last year's affair were unanimous in requesting that another affair be held by the Club, and at the same place. One of the best orchestras has been secured and the Committee is preparing for a large crowd. All Pratt men and their friends will be welcome.

DETAILS OF CONSTRUCTION

THE TWO PLATES of detail sheets, in this issue, were drawn up by Philip G. Knobloch from information supplied by Sexauer & Lemke of Long Island City, New York, and the McGregor Architectural Iron Works of Scranton, Pa.

AN ACKNOWLEDGMENT

THE DESIGN for a Christmas card by Albert R. Caulstone, published on page 1001 of our December issue, was copied from a greeting card by Paul H. Harbach, published in PENCIL POINTS two years ago.

ARCHITECTS' LEAGUE OF HOLLYWOOD

AT A RECENT meeting of the Architects' League of Hollywood, L. G. Scherer was elected President; Verner B. McClurg, Vice-President; and J. A. Murrey, Secretary-Treasurer.

The League contemplates a year of very active endeavor. The principal tasks which it has outlined for itself are:

1st: The education of the layman to a keener appreciation of the economical and æsthetic importance of architecture.

2nd: The initiating of a definite program to bring about a new and more economical plan of financing building operations.

PENCIL POINTS COMPETITION DRAWINGS ON EXHIBITION

A SELECTED GROUP of designs for An Eight-room House and Two-car Garage submitted in the PENCIL POINTS' Competition is now being shown at the Boston Architectural Club. The latter part of this month they will be on exhibition at the Massachusetts Institute of Technology, Rogers Building, Boston. In early February the drawings will be on view at the Cambridge School of Landscape Architecture and on February 15th the Architectural League of New York will show them.

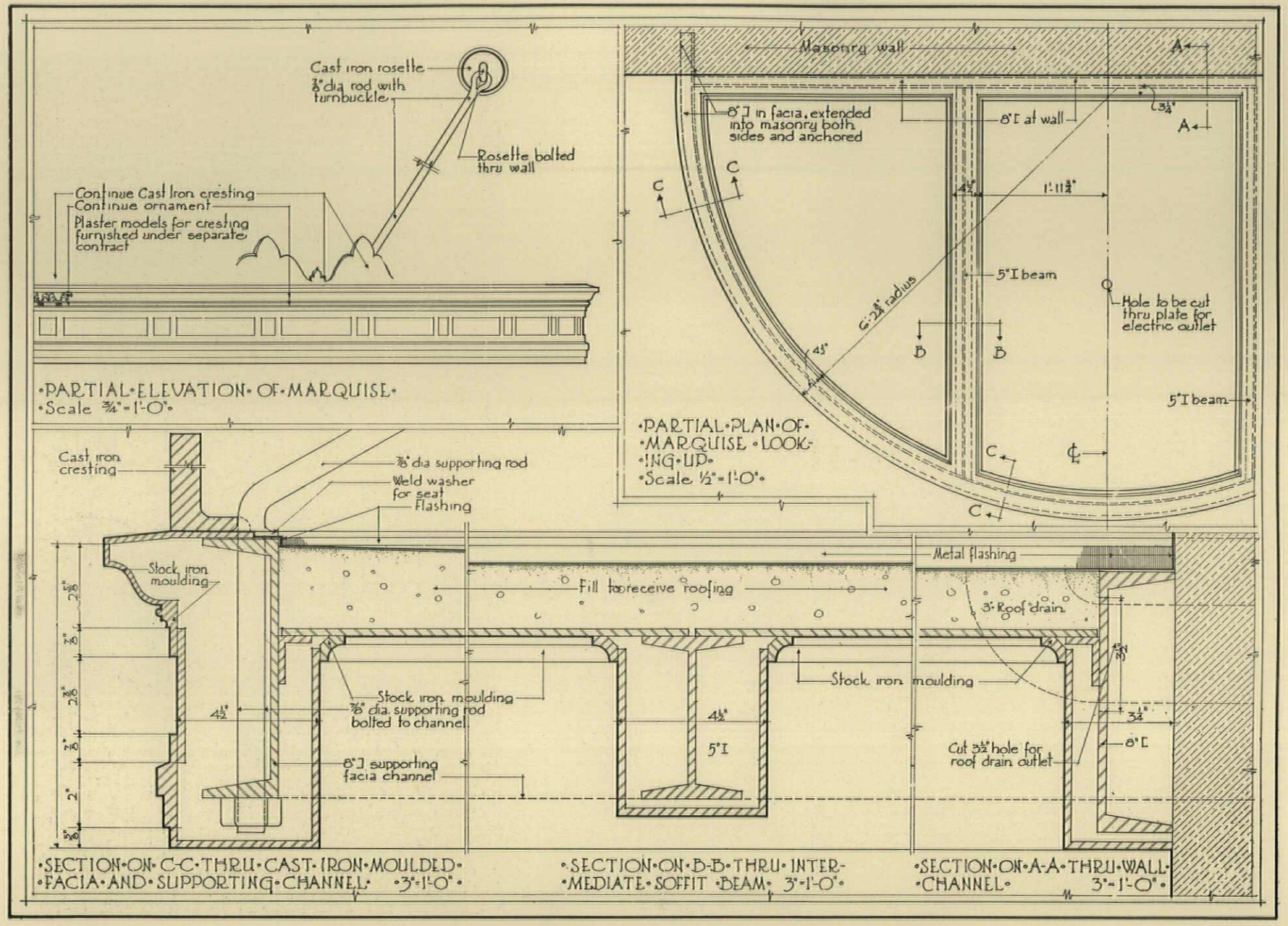
CONCERNING THE REGISTRATION LAW

SEVERAL MONTHS AGO we received a letter from two subscribers drawing to our attention a certain abuse of the New York Registration Law whereby a certain gentleman, although not a competent architect, was permitted to file plans. We have brought this matter to the attention of the proper authorities, who will undoubtedly take steps to investigate and correct the illegal action.

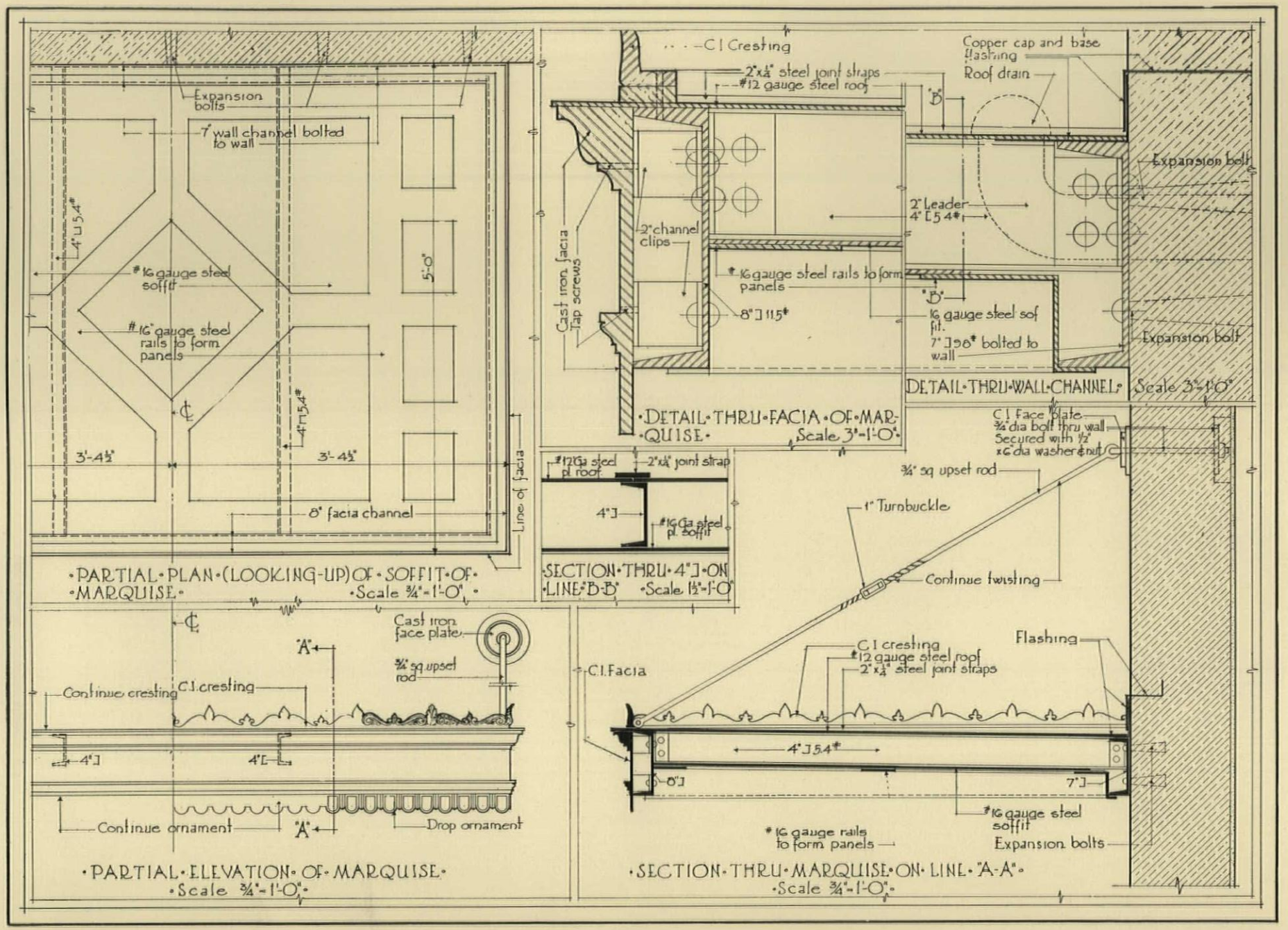
A CORRECTION

CHARLES H. HOLMSTROM, whose design for a small house was published on page 897 of the November issue, lives at 4271 Aloha Place, San Diego, California, not in State College, Pennsylvania, as erroneously printed.

WINNING DESIGN IN A COMPETITION FOR "THE SOLDIER'S MEDAL," GAETANO CECERE, SCULPTOR



DETAILS OF CONSTRUCTION FOR A MARQUISE—DRAWN BY PHILIP G. KNOBLOCH



DETAILS OF CONSTRUCTION FOR A MARQUISE—DRAWN BY PHILIP G. KNOBLOCH

STRUCTURAL STEEL CREATED THE SKYSCRAPER

STEEL CARRIES ACRES TO THE SKY

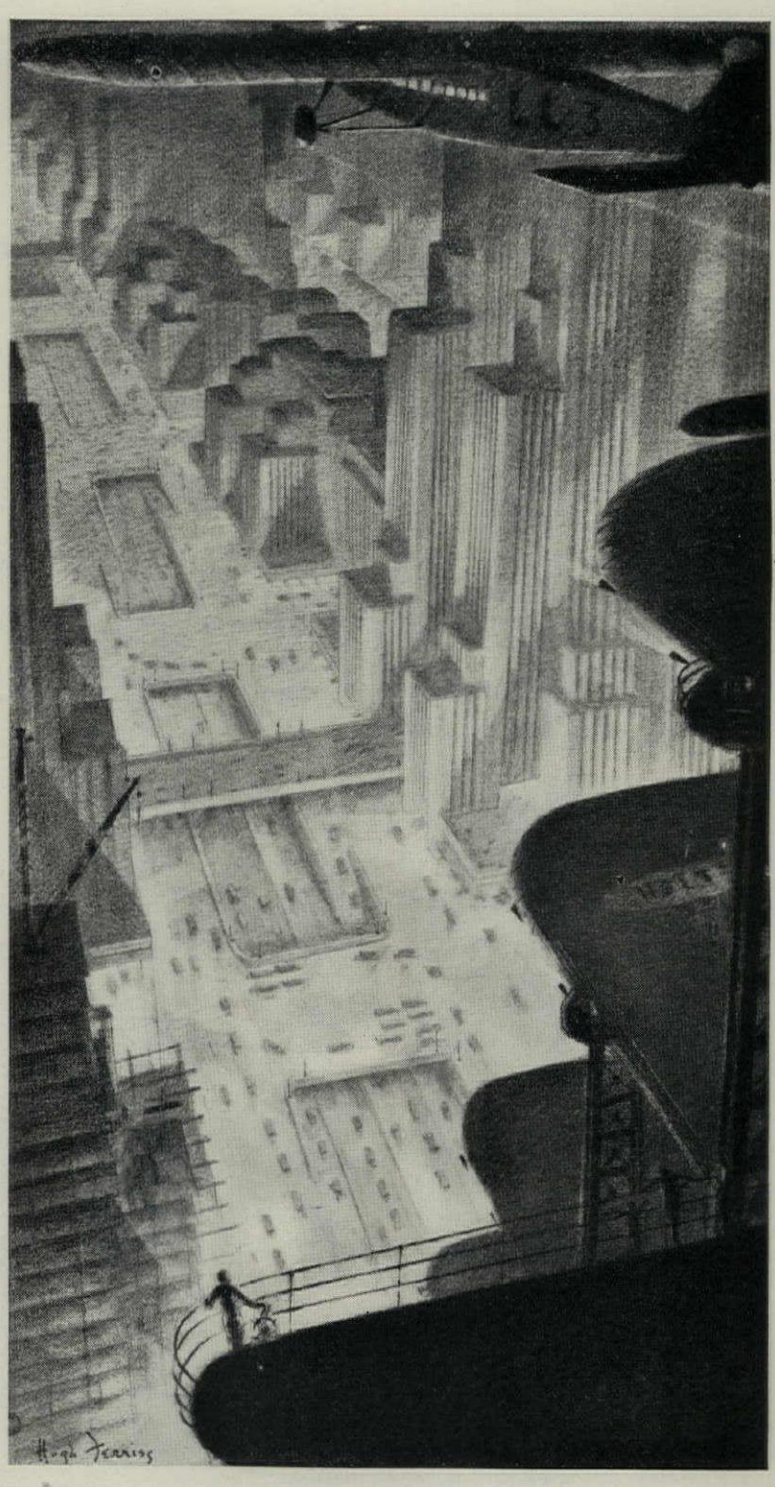
A CROWDED CITY pleads for space . . . swiftly, floor on floor, the sure steel climbs—and thirty-five or forty city "plots" stand where there was one before.

Structural steel not only multiplies the precious bit of ground. It increases *rentable* floor area. Its great strength is not handicapped by excessive bulk, so interiors may be larger without conspicuous construction members. Steel comes to a job ready to go into place. It is unaffected by rain, freezing or intense heat. Erected quickly, wherever and whenever men can work, it saves time, labor, interest charges.

More and more homes, small apartment and mercantile houses, small industrial plants and small as well as large bridges are being built with *structural* steel. Architects and builders are realizing that the employment of steel merely to give strength and security to weaker materials is a compromise with its many advantages when used in the form of structural shapes.

Before building anything, find out what steel can do for you. The Institute serves as a clearing house for technical and economic information on steel construction, and offers full and free co-operation in the use of such data to architects, engineers and all others interested.

The co-operative non-profit service organization of the structural steel industry of North America. Through its extensive test and research program, the Institute aims to establish the full facts regarding steel in relation to every type of construction. The Institute's many publications, covering every phase of steel construction, are available on request. Please address all inquiries to 200 Madison Avenue, New York City.—In Canada, to 710 Bank of Hamilton Bldg., Toronto, Ontario. District offices in New York, Worcester, Philadelphia, Birmingham, Cleveland, Chicago, Milwaukee, St. Louis, Topeka, Dallas, San Francisco and Toronto.



"SKYSCRAPER HANGAR IN A METROPOLIS," BY HUGH FERRISS. AN ENLARGEMENT, ON SPECIAL STOCK FOR FRAMING, WILL BE MAILED WITHOUT CHARGE TO ANY ARCHITECT, ENGINEER OR BUSINESS EXECUTIVE.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION

STEEL INSURES STRENGTH AND SECURITY

Publications on Materials & Equipment

Of Interest to Architect, Draftsman and Specification Writer

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.

Mastic Wood-Block Flooring.—A.I.A. File No. 19-e-92. Attractive brochure just issued covers the subject of wood-block flooring for laying in mastic over concrete sub-floors and suitable for use in fireproof buildings, ballrooms, offices, stores, etc. Installation data, details, designs and patterns, specifications, etc. 24 pp. Standard filing size. Wood-Mosaic Co., Inc., Louisville, Ky.

Herman Nelson System of Ventilation.—A.I.A. File No. 30-d-1. Valuable new handbook for architects and engineers deals comprehensively with the history and science of ventilation and describes in detail the operation and construction of this system of ventilation and the Her-Nel-Co ventilator for use in schoolrooms and similar spaces. Complete engineering data, specifications, detail drawings, etc. 104 pp. 8½ x 11. The Herman Nelson Corporation, Moline, Ill.

Design Edition—Rubber Flooring News.—The special design edition of this monthly publication illustrates the prize-winning and many other interesting designs that were submitted in a recent rubber flooring design contest conducted by this firm. Also describes and illustrates fourteen standard types of patterns. A useful collection of material to anyone interested in the subject of decorative floor treatments. The October issue illustrates a wide range of rubber flooring applications. 8½ x 11. The Goodyear Tire & Rubber Co., Akron, Ohio.

Modern American Hardware by Sargent.—Handsome new brochure illustrates numerous standard designs of Sargent hardware showing the influence of some of the current thought in the architectural field. 16 pp. 8½ x 11. Sargent & Company, New Haven, Conn.

Kewanee in Service in Schools.—A.I.A. File No. 30-c. New publication illustrates more than 450 typical school buildings, grouped geographically, in which Kewanee steel heating boilers have been installed. Brief descriptive notes accompany illustrations. 128 pp. 8½ x 11. Kewanee Boiler Corporation, Kewanee, Ill.

Hospital Cabinets.—A.I.A. File No. 35-k. Architect's filing folder with recommended specifications and series of detail sheets covering hospital cabinets of the built-in flush type. 8½ x 11. Art Metal Construction Co., Jamestown, N. Y.

Mosaic Tiles for Architectural and Decorative Purposes.—A.I.A. File No. 23-a. New catalog covering an extensive line of Faience floor and wall tiles, mosaic wall tiles, decorative borders, ceramic floor tiles, trim tiles, bathroom accessories, etc. Included are color charts and many designs reproduced in full colors. 20 pp. 8½ x 11. The Mosaic Tile Co., Zanesville, Ohio.

Paracoil Storage Water Heaters.—A.I.A. File No. 29-d-25. Catalog A-19 just issued. A useful reference book for architects and engineers covering different types of Paracoil storage water heaters suitable for use in apartment houses, schools, warehouses, clubs, hospitals, factories, etc. Specifications, construction details and complete tables and diagrams for determining the hot water requirements for buildings. 20 pp. 8½ x 11. Davis Engineering Corp., 90 West St., New York, N. Y.

Red Top Innerwall Furring Bracket.—A.I.A. File No. 20-a. Illustrated folder describing a new type of furring for metal lath on masonry walls. Complete application data. 8½ x 11. United States Gypsum Co., 300 West Adams St., Chicago, Ill.

Published by the same firm, "USG Sound Insulative Machine Bases." A.I.A. File No. 37-d. Descriptive folder covering the construction of this type of machine base, adaptable for use under practically all kinds of machinery. Specifications, details, etc. 8½ x 11.

Welco Electro-Kabinets and Radiator Furniture.—New catalog describing and illustrating a line of electrical and steel medicine cabinets and radiator furniture for use in homes, hotels, apartment houses, office buildings, etc. Also covers toilet and shower partitions and several types of incinerators. 12 pp. 8½ x 11. Welded Products Corporation, 16th and Clevelend Ave., Kansas City, Mo.

Whatman Drawing Papers.—A booklet of samples of this line of drawing papers prepared for distribution to architects, artists and engineers. Included is a new etching paper and tables showing complete list of sizes, weights and surfaces. H. Reeve Angel & Co., Inc., 7 Spruce St., New York, N. Y.

Sherwin-Williams Metal Protective Finishes.—A useful new reference book for architects, engineers and specification writers on the subject of metal protective paints. Complete descriptive and specification data covering metal protective finishes for a wide variety of applications. 28 pp. 8½ x 11. The Sherwin-Williams Co., Cleveland, Ohio.

Abrasive-Metal Anti-Slip Products.—New publication for architects and specification writers dealing with the subject of Feralun, Bronzalun, Alumalun and Nicalun anti-slip safety products. Descriptive data, specifications, detail sheets, etc. 12 pp. 8½ x 11. American Abrasive Metals Co., 50 Church St., New York, N. Y.

Otis Signal Control Elevators.—A.I.A. File No. 33-b-11. Folder B-45 explains in detail the operation of signal control elevators. Otis Elevator Co., 260 Eleventh Ave., New York, N. Y.

Published by the same firm, "Elevator System in the Empire State Building." Bulletin B-268. A brief description of the installation and operation of the elevator and signal systems, together with other facts of general interest concerning the Empire State Building. 8 pp. 8½ x 11.

Kalmantruss Steel Joists.—A.I.A. File No. 13. Handbook for architects and engineers contains complete design data for this new series of steel joists, together with useful information on this method of fire-safe construction. Accessories, specifications, safe loading and dimension tables. 20 pp. 8½ x 11. Kalman Steel Co., Wrigley Building, Chicago, Ill.

Minwax Membrane Waterproofing.—A.I.A. File No. 7-a-1. A useful new document for architects, engineers and specification writers containing descriptive and application data, specifications and detail drawings covering the Minwax membrane waterproofing system. 8 pp. 8½ x 11. Minwax Company, Inc., 11 W. 42nd St., New York, N. Y.

Hoffman Controlled Heat.—Illustrated document covering this type of vapor vacuum heating system. Included are brief technical descriptions of this line of heating specialties, their construction, together with their various combinations for different types of installations, measurements, etc. 48 pp. Hoffman Specialty Co., Waterbury, Conn.

Published by the same firm, "How to Lock Out Air—The Heat Thief." Booket with useful data on the subject of Hoffman vacuum valves, also complete description of their operation in connection with one-pipe steam heating systems. 48 pp.

Acoustex—The Decorative Sound Absorbent.—A.I.A. File No. 39-b. New brochure for architects and specification writers discusses several of the important phases of the general problem of architectural acoustics. Included is complete information on this type of acoustical correcting and sound-quieting material suitable for use in theatres, auditoriums, churches, court rooms, hospitals, libraries, offices, schoolrooms, etc. Specifications, details, color plates, etc. 24 pp. 8½ x 11. Housing Co., Acoustical Division, 40 Central St., Boston, Mass.

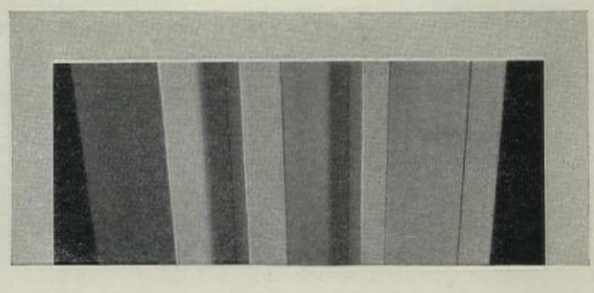
Caswell Shooting Gallery System.—Folder with descriptive data and construction details covering the Caswell target carrier adaptable for installation in armories, universities, high schools, police buildings, etc. Also describes a portable gallery for use in residence basements and attics. 8½ x 11. Caswell Shooting Gallery Equipment Co., Anoka, Minn.

Slate Roofs.—Handbook on the subject of roofing with numerous drawings, plates, details, specifications and other material of value in the drafting room. 84 pp. Standard filing size. Rising & Nelson Slate Co., West Pawlet, Vermont.

Modern Building Methods.—Useful new reference book for architects on the subject of modern building methods describes and illustrates a full line of Steeltex products and their applications, also outlines the uses of National reinforcing. Complete set of specifications is included in separate document. 30 pp. 8½ x 11. National Steel Fabric Co., Union Trust Bldg., Pittsburgh, Pa.

Church Furniture by DeLong.—A.I.A. File No. 35-a-41. New illustrated folder presents detailed specifications covering the manufacture of DeLong church pews. 8½ x 11. DeLong Furniture Co., 1505 Race St., Philadelphia, Pa.

(Continued on page 102, Advertising Section)



Sill and jambs lock tight with this new frame . . stop air and water leaks!

Newest Andersen patents give architect weathertight installation

FOR THE MODERN HOME or building, architects are turning to window and door frames of genuine white pine . . . made by Andersen . . . and now equipped with the new locked sill-joint, 3″ per foot sill slope, wide blind stop and other exclusive features. Notice how sill and jambs lock in place . . . accurate, rigid and leakproof.

In Andersen's new Master Frame, the architect finds a high standard of accuracy, plus the patented details which insure a permanent, weathertight installation. Each frame is equipped with Andersen patented noiseless pulleys—guaranteed for a lifetime of noiseless, trouble-free operation.

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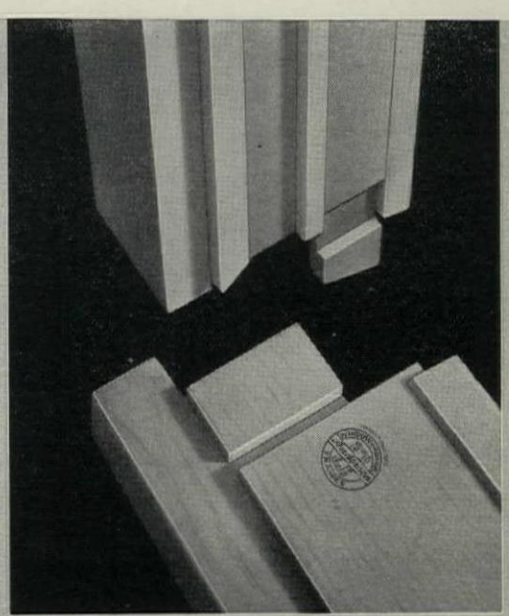
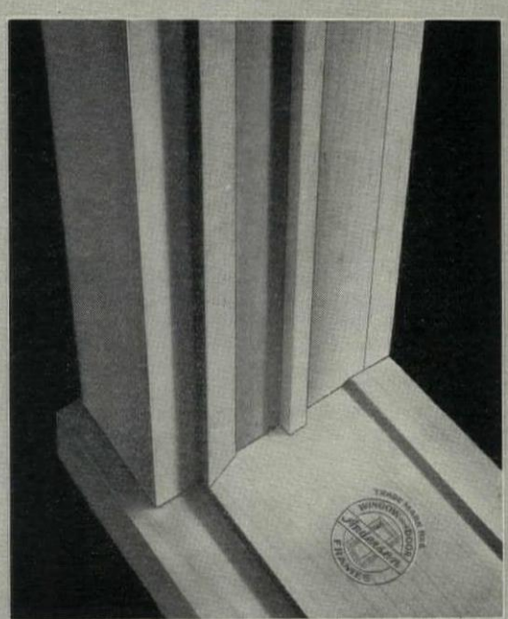


Photograph showing sill and jamb dadoes before joint is closed.



Click! Sill and jamb lock together—rigid, leakproof.

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See the 1931 Sweet's, B 2273 *to* 2292

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Replies to box numbers should be addressed care of PENCIL POINTS, 419 Fourth Avenue, New York, N. Y.

Wanted: A young man or woman to teach classes in Architectural Drawing. Must be about 26-30 years of age, healthy, of good appearance and forceful manner, a graduate of a school of Architecture with two years of teaching experience (this may have been as an assistant in College or in evening classes). Work will consist chiefly of sketches, working drawings, full size details of residences and rendering in pencil, pen and ink and color. Ability to teach strength of materials is an asset. The position will pay about $2,100 at the start and increase yearly to a $3,200 maximum. For a young man or woman who has the desire and ability to teach this is an excellent opening. Correspondence only is desired at this time with appointments to be made if and as the opening develops. Communicate with Mr. Chester L. Thorndike, Department Head, The Technical High School, Springfield, Mass.

Position Wanted: Registered architect, twelve years in private practice and as office manager in New York City and the middle west, wishes to make connection with reputable architectural office as office manager or in executive capacity. University graduate and very extensively traveled in Europe and the United States. A.I.A. and past president of one of its Chapters. Broad general experience and thoroughly versed in all phases of architectural practice. Man of culture and social standing. Box No. 27, care of PENCIL POINTS.

Position Wanted: Young man, age 23, recent University graduate, Junior member A.I.A., desires opening in reputable office. Salary of secondary importance. Box No. 1, care of PENCIL POINTS.

Position Wanted: Young lady, junior draftsman, architectural. Also typist. Five-day week. Box No. 2, care of PENCIL POINTS.

Position Wanted: Architectural draftsman, junior, ambitious, alert, efficient young man. Recent graduate. Wishes position in architect's or builder's office. Willing to start as office boy. Box No. 3, care of PENCIL POINTS.

Position Wanted: Young man, 23 years of age, with one year of college training in architecture and still continuing the course at night, wishes position as beginner in architectural office. Box No. 4, care of PENCIL POINTS.

Position Wanted: California Architects Attention. A young ambitious draftsman, single, age 20, with three years' experience in one of the country's best architect's office wants place in office in California or one of nearby states. Work is neatly and accurately done. Does not waste time while at work. Permanent connection is desired, although temporary employment would be accepted. Salary secondary. Spare time is spent studying. G. C. Gravlee, 1300 9th Street, Apartment 9, Sacramento, Calif. Telephone, Capitol 3036.

Position Wanted: Architectural draftsman desires position. Experienced. Trained at College of City of N. Y. Box No. 6, care of PENCIL POINTS.

Position Wanted: Junior architectural draftsman with one and a half years' drafting experience. High School graduate. Attending Mechanics Institute evenings, second year, studying drafting and design. 19 years of age. Desires position in architect's office. Box No. 7, care of PENCIL POINTS.

Position Wanted: Architectural designer, artist and draftsman. Nineteen years' experience all types of buildings in this country and in Europe. Graduate of the Fine Arts School in Paris. Box No. 8, care of PENCIL POINTS.

Position Wanted: Senior architectural draftsman, 8 years' experience on floor plans of fireproof buildings, new multiple dwelling, non-fireproof apartments drawn to completion including fronts and figuring steel. Moderate salary. Box No. 9, care of PENCIL POINTS.

Position Wanted: Architect, draftsman-designer, 12 years' practical experience in apartment houses, offices, hospitals, clubs and swimming pools. University training. Age 38. Box No. 10, care of PENCIL POINTS.

Position Wanted: Architect (R.A.) and draftsman, 20 years New York City experience and practice. Familiar all details and branches including various laws and ordinances. Salary arranged. Box No. 12, care of PENCIL POINTS.

Position Wanted: Architectural draftsman, 31, seventeen years' New York experience on various types of buildings and construction, thorough working drawing, plan man and checker. Box No. 13, care of PENCIL POINTS.

Position Wanted: Stenographer-secretary, 7 years' experience in architectural engineering, building construction, real estate fields. Knowledge of bookkeeping. Box No. 14, care of PENCIL POINTS.

Position Wanted: Architectural draftsman, twelve years' experience on Public Buildings, Community Centers, Schools, Hospitals, plan layouts, some designing, working drawings from design. Neat, reliable, references. Box No. 15, care of PENCIL POINTS.

Position Wanted: Patent draftsman desires suitable connection with reliable party. Can furnish best recommendations regarding past employment. Will go anywhere for reasonable offer. Salary secondary. Box No. 16, care of PENCIL POINTS.

Position Wanted: University of Pennsylvania graduate in architecture desires association with a college or university teaching architecture. Have had three years' teaching experience and seven years' practical experience. All correspondence confidential. Best references. Box No. 17, care of PENCIL POINTS.

Position Wanted: Young man, 19, desires position in architect's office in Boston. Two years' experience in well known Boston office. Ambitious and good character. John A. Harvey, 56 Ridgemont Street, Allston, Mass.

Position Wanted: Young man, age 23, student of building construction engineering at New York University (evenings) wishes day employment doing anything in either builder's or architect's office. Eight months' experience in architect's office. Neat tracer, also knowledge of general office routine. J. Gerald Glossett, 104-32—39th Avenue, Corona, L. I., N. Y.

Position Wanted: Architectural drafting student, 18, desires permanent position within walking distance from the Chicago Union Depot. Wishes to start as tracer. Experience limited to studies from Chicago Technical College. Has completed the practical drafting course and most of the architectural drafting course. Salary secondary to a position assuring advancement. Is neat, honest, and ambitious. Walter Wischstadt, Itasca, Ill.

Position Wanted: College graduate, 4 years' experience, wants position in architect's construction company or builder's office doing first class work. Location immaterial. Eloy Ruiz, 228 Eliot Street, Detroit, Mich.

Position Wanted: Ambitious young man, three years at Cooper Union Night School, still attending, desires position with architect, builder or contractor as beginner. John L. Salzone, 1292 Sixth Avenue, New York, N. Y.

Position Wanted: Ambitious young man, 20, desires position in architect's office as beginner. Three years' technical experience. Still attending Cooper Union Night School. Willing to start at small salary. Alfred Munson, 101 West 52nd St., New York, N. Y.

Position Wanted: Architectural draftsman, six years' experience in all types of work, including large commercial work, desires position. Can carry job from sketches to completion. Salary $50.00 per week. Frank L. White, 5643 N. Mascher St., Olney, Philadelphia, Pa.

Position Wanted: Young lady who has had excellent experience in the matter of laying out copy in the advertising department of well known agencies, very familiar with architectural work, good receptionist, typist, thorough knowledge of the conduct of an architectural office, would like a position with an architect, builder or allied line. Moderate salary. Box No. 29, care of PENCIL POINTS.

Position Wanted: Architectural draftsman, 27, nine years' experience, seven in country house work, would like position in New York City or New Jersey. Experienced in working drawings and details of residence work. A. Hunter, 14 No. Walnut St., East Orange, N. J.

Position Wanted: Young man, 27, general architectural draftsman, eight years' experience, moderate salary. New York or New Jersey suburbs. Anthony Ferrera, 563 Bloomfield Ave., Newark, N. J.

Position Wanted: Woodwork draftsman and estimator. Four years' experience. Full size, scale details and perspectives. Knowledge of shop practice by actual experience. Can make shop bills, specifications and estimates. Knows residence planning. Would like to tie up with a contractor, builder or lumber dealer. Stephen J. Ames, Box No. 120, West Cheshire, Conn.

(Other items on pages 76 and 77, Advertising Section)

Residence of Alexander Barker, Cross River, New York
Henry Corse, Architect

Inevitable seems the choice of this roof of Brittany Tile to crown the beauty of an English type of house. Equally perfect is the effect when the right tile is used to roof a building of Georgian architecture—or Colonial—or Spanish. Versatile in style, varied in color, tile is the adaptable roofing material of lasting service and changeless beauty. At your request one of our representatives will call; or we will mail you a catalogue.

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(Other items opposite and on page 74, Advertising Section)

Free Lance Work Wanted: Architectural designer, renderings, perspectives, water color, etc. Detailing. Mitre, 36 Union Square, New York, N. Y. Phone mornings, Stuyvesant 1014.

Position Wanted: Junior draftsman, three years' experience, desires position with architect or builder. Can do estimating. Simon Slobvdek, 667 Osborne St., Brooklyn, N. Y.

Position Wanted: Graduate landscape architect capable of handling any and all phases of the profession. Has had five years' experience in the middle west. The last two years' having been devoted to cemetery development. Good at rendering. Reasonable salary. Can furnish references if desired. Box No. 18, care of PENCIL POINTS.

Position Wanted: Architectural designer, graduate of an accredited school. Sixteen years' experience with leading offices of New York, Pittsburgh and Cleveland. Versed in the styles including modern architecture. Capable at presentation, thorough knowledge of plans and composition for buildings of any types and requirements. Can show preliminary studies and working drawings of previous work. Will consider any location. Box No. 19, care of PENCIL POINTS.

Position Wanted: Architectural draftsman, all-round experience on building and miscellaneous lines. Open for position. Great Lakes States, small wages. Samples. Edward Lechner, 1859 East 70th Street, Cleveland, Ohio.

Position Wanted: Young man, 17, Industrial High School graduate, now attending Pratt Institute, wishes position as Junior draftsman in architect's office. Neat, honest and reliable worker. Can secure excellent references. Salary secondary. Adolph Scrimenti, 499 Kosciusko Street, Brooklyn, N. Y.

Position Wanted: By architectural draftsman with six years' Chicago experience. Experienced in design of small homes. Some mechanical drafting and tracing experience. Age 26. Married. Willing to consider any location. Moderate salary acceptable. Box No. 20, care of PENCIL POINTS.

Position Wanted: Can you use a man with 25 years' general experience in architecture, both city and country projects? Fifteen years drafting, past ten years specification writing and field supervision. Experienced in most types of buildings encountered in general practice. Age 48. Gentile. Married. Box No. 21, care of PENCIL POINTS.

Position Wanted: Architectural engineering student, 21, three years' college. Will start in any capacity with architect, engineer or builder. Salary secondary to opportunity for thorough practical training. Box No. 22, care of PENCIL POINTS.

Position Wanted: Architectural draftsman, working drawings, scale detailer, full size, checking, construction, superintendence, heating engineer. General specifications, draw plans with specifications and superintendent for heating, lighting, plumbing, Junior High School Work. Can handle job from sketches to completion. Box No. 23, care of PENCIL POINTS.

Position Wanted: Architectural draftsman, College training, desires position with architect or builder. Twelve years' experience in country house work. Now employed as an estimator. Can lay out and supervise work. Box No. 24, care of PENCIL POINTS.

Position Wanted: Registered architect, 13 years' experience in New York on office buildings, apartments, high class duplex and model tenements, school buildings and residences. Sketches, working drawings, details and checking. Familiar with zoning and court requirements, also some experience on specifications and supervision. Box No. 25, care of PENCIL POINTS.

Position Wanted: Ambitious young man, 19, desires to learn architecture. Neat letterer and tracer. Salary secondary. George F. Niedelman, 1226 Sherman Ave., New York, N. Y.

Position Wanted: With general contractor or architect. Young man, 26, graduate of a technical architectural school. Two years' experience on metal fronts, doors, windows and mouldings. West preferred but will consider any location. Excellent references. Box No. 26, care of PENCIL POINTS.

A FREE EMPLOYMENT SERVICE FOR READERS OF PENCIL POINTS

(Other items on pages 74 and 76, Advertising Section)

Free Lance Work: Designs, sketches, renderings, working drawings, construction superintendence and interior furnishing. Varied experience; public buildings, stores, theatres, club houses, schools, factories, yachts. Period and modern. Interior architecture and furnishing is an especially developed department; wholesale accounts open for purchasing of interior merchandise. Fees made on a time basis. Definite estimates given. Miriam Hilliard Flick, 607 Fifth Avenue, New York, N. Y. Telephone, Volunteer 5-2489.

Position Wanted: Architectural draftsman, 29 years old, desires permanent position anywhere in U. S. or any foreign country. Eight years' experience in all types of architectural drafting—particularly schools and colleges. Capable of carrying job through from preliminary sketches to complete working drawings including all necessary scale and F.S. details. Also some experience in architectural supervision. Samples of work and recommendations sent upon request. E. W. Taylor, Apt. No. 3, 1112 Roseheath Road, Richmond, Va.

Renderings Wanted: Pencil, ink, crayon, water color, pastel, charcoal. Finished renderings or rough sketches. Quick, simple sketches at low cost. Samples will be shown upon request. Telephone, Volunteer 5-7893.

Position Wanted: Practical designer and draftsman. Twelve years' experience on all types of buildings. Can qualify as Chief draftsman. Good references. Box No. 30, care of PENCIL POINTS.

Interior Designing and Furnishing Wanted: Registered architect specializes in interior design and furnishing. Period and modern. Attractive presentation sketches. Wholesale accounts open with leading interior merchandising houses. Varied experience on work for architects and decorators of New York. Photographs of past work on display. Wickersham 2-6330.

Position Wanted: Young man, 21 years old, student of International Correspondence School of Scranton, studying architectural drafting. Three years of this work at local High School also, as well as having studied and practiced all available material in the drafting line, architectural and mechanical. One year's experience in the engineering department of a large company making blueprints, filing tracings, tracing, etc. Would like to make connection with an architectural firm where I can gain some real experience beginning as a junior draftsman. Salary sufficient to cover living expenses. Sidney F. Meyers, 1509 Michigan Ave., Menominee, Michigan.

Wanted: Experienced specification writer capable of checking working and shop drawings. Must be a man under fifty, having had field superintending experience and complete knowledge of all building requirements including mechanical. Permanent position. New York City. State in first letter, age, qualifications, and positions held. Box No. 31, care of PENCIL POINTS.

Position Wanted: Young architectural designer and draftsman, nine years' practical experience on residences, office buildings, club buildings, apartments, hospitals, theatres, schools, alterations, etc. Experience has involved designing and carrying work through to completion, including working drawings, details, designing steel and reinforced concrete, rendering perspectives, supervision, etc. Educated at Harvard. Salary $80.00. Would prefer position with opportunity of associating with firm. Box No. 32, care of PENCIL POINTS.

Position Wanted: Registered architect in New Jersey and New York, 39 years old, and married. Seventeen years' experience and have thorough architectural training in all its branches. Box No. 33, care of PENCIL POINTS.

Association Wanted: Architect with high class practice in New York for 35 years has in mind retiring in a few years. He desires to associate with a younger architect or firm with good training and practice, to occupy adjoining offices or the same suite if conditions permit. Box No. 34, care of PENCIL POINTS.

Wanted: Experienced specification writer capable of checking working and shop drawings. Must be a man under fifty, having had field superintending experience and complete knowledge of all building requirements including mechanical. Permanent position. New York City. State in first letter, age, qualifications and positions held. Box No. 31, care of PENCIL POINTS.

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Sylphon No. 875 Automatic Radiator Valves bring heat harmony to any steam heated apartment, home, office, or factory building. They save fuel also by preventing room temperature fluctuating and repeated adjustment. These new Sylphon complete control units, responding to slightest changes in the air temperature, automatically regulate the steam flow to the radiators.

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Room temperatures never get "too Hot" or "too Cold" when a Sylphon 875 Radiator Valve is on guard. It is a combination Packless Valve and Thermostatic Control Unit, easily installed, inexpensive and without electrical or mechanical accessories to get out of order. Its use prevents uneven, wasteful and injurious heat. Architects may specify these Sylphon Radiator Valves with perfect confidence in their lasting efficiency. Both angle and globe types fully described in our literature.

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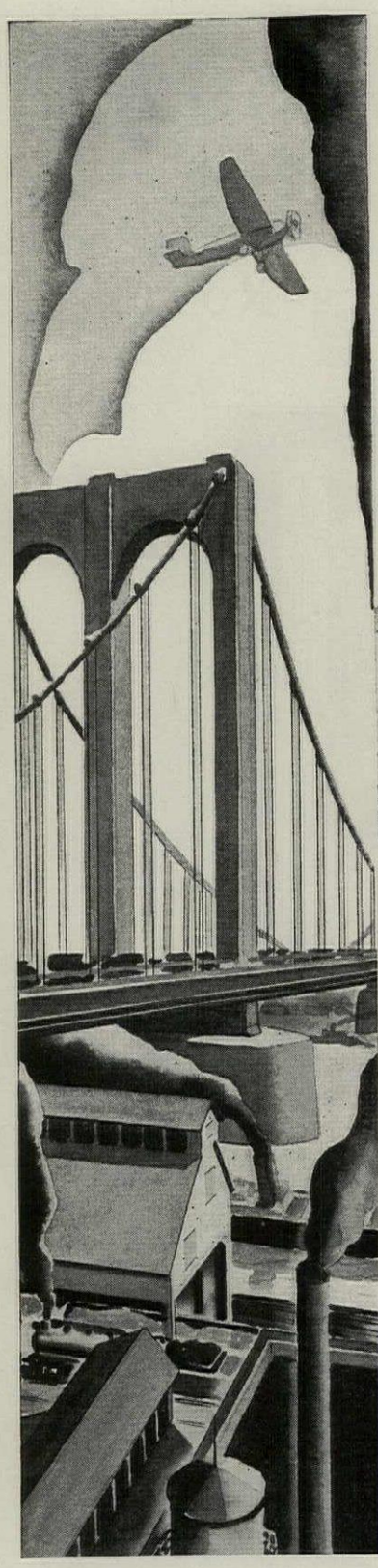

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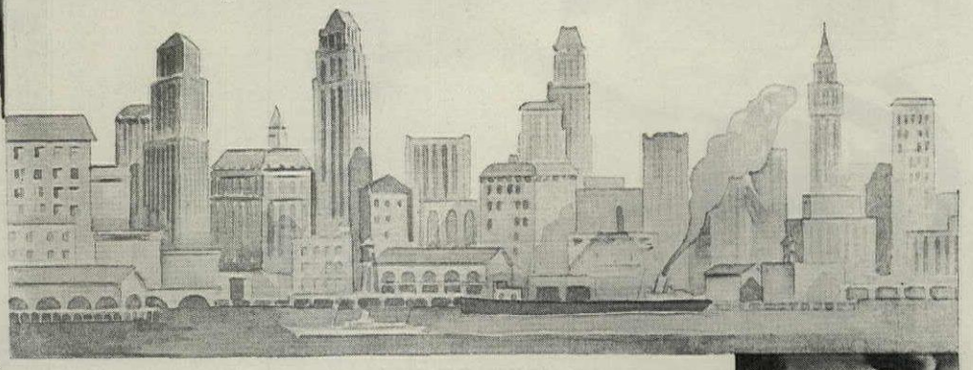

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Be sure the sheet metal you use has a reputation for quality and endurance. Specify AMERICAN Black and Galvanized Sheets, Tin and Terne Plates for all purposes. KEYSTONE quality (steel alloyed with copper) gives maximum rust-resistance. Sold by leading metal merchants.

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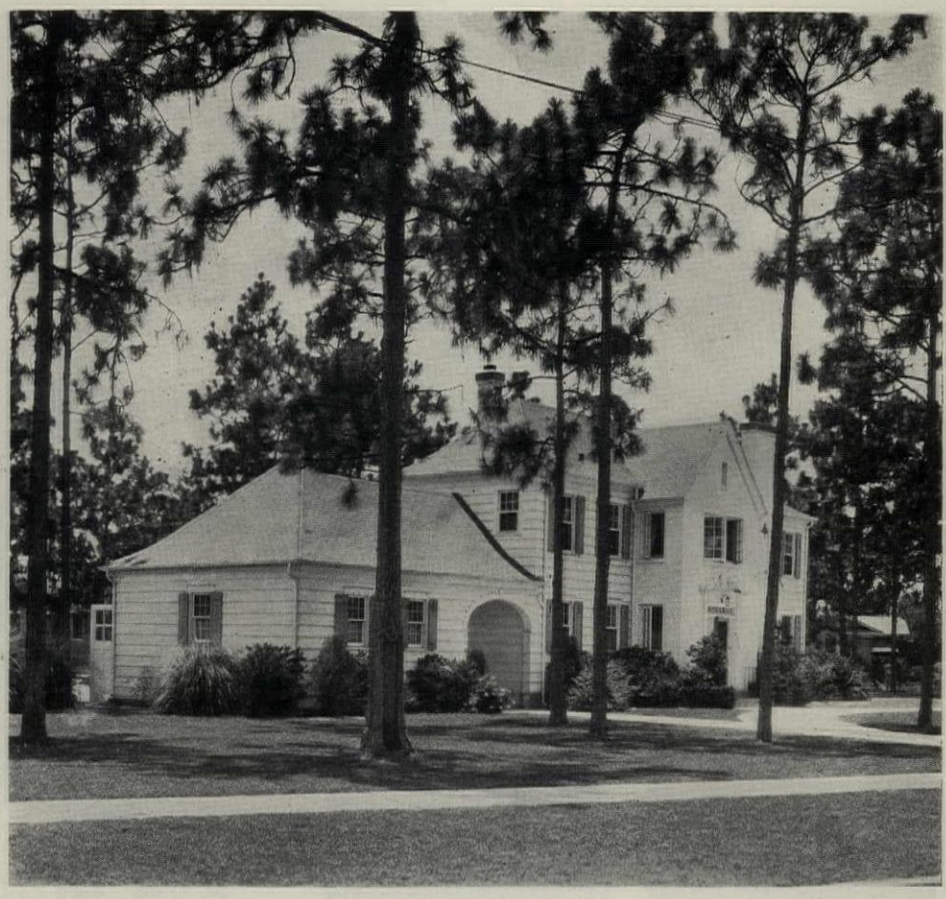
A charming home in Jacksonville, Florida. The architect, W. Kenyon Drake of that city, employed Tidewater Red Cypress



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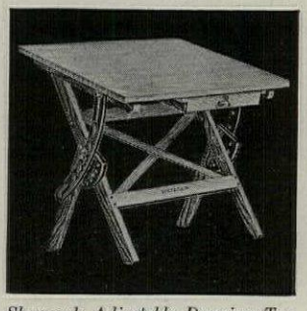
TIDEWATER RED CYPRESS

(COAST TYPE)

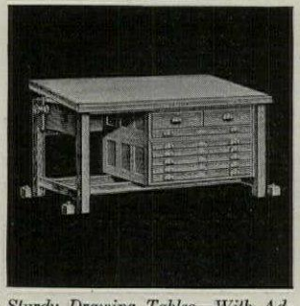
THE WOOD ETERNAL

A few pieces of DIETZGEN Modern Drafting Room Furniture

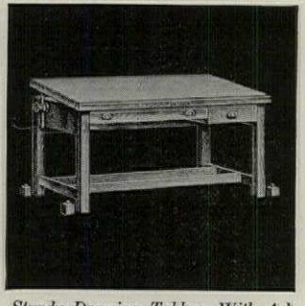


Shamrock Adjustable Drawing Tables—Furnished in the many standard sizes of tops.

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

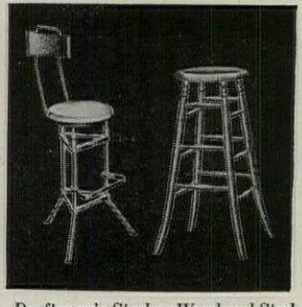


Sturdy Drawing Tables—With Adjustable Tops in the standard sizes.



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."

* * *

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.

EUGENE DIETZGEN CO.

Enduring worth at reasonable cost

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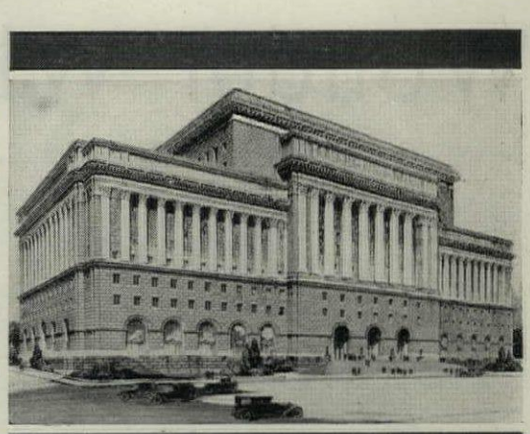
DIETZGEN
ESTABLISHED 1885

Philadelphia Washington
Milwaukee Los Angeles
Factory at Chicago

Manufacturers of Drafting and Surveying Supplies

Milwaukee County Court House Building

Completely Equipped with Johnson Control



All of the heating and ventilating equipment in this building is automatically controlled by the Johnson System of Temperature Control. The direct radiation is controlled by the Johnson dual thermostats which operate the valves on the direct radiators so as to maintain a normally even temperature in the offices and rooms during the day and by means of a switch under control of the engineer automatically operating the valves at a lower temperature during the night. There are ten main mechanical ventilating systems all equipped with Johnson control. The thirty court rooms are heated by indirect systems of heating and ventilating controlled by Johnson thermostats operating on mixing dampers. The Judges' Chambers are provided with individual heating and ventilating systems employing unit ventilating machines completely controlled by Johnson thermostats. All fresh air intake, recirculating and exhaust ducts are provided with Johnson dampers which are operated by pneumatic switches under control of the engineer. Architects: Albert Randolph Ross, New York and Milwaukee. Heating and Ventilating: Wenzel & Henoch, Milwaukee. John Messmer, Superintendent of Buildings, Milwaukee County.

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ESTABLISHED 1885

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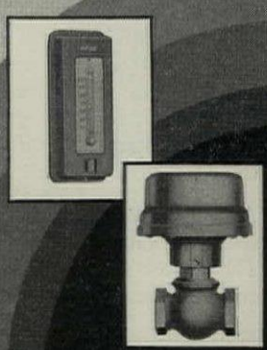
Each Johnson Installation Made By Johnson Mechanics Only.

Every Johnson Installation Inspected Annually Without Charge. . . .

30 Convenient Johnson Branches Insures Emergency Attention Within 24 Hours Anywhere.

The All-Metal System. The All-Perfect Graduated Control of Valves & Dampers. The Dual Thermostat (Night & Day) Control: Fuel Saving 25 to 40 per cent per year.



JOHNSON HEAT AND HUMIDITY CONTROL

Wonder What Mrs. Architect would say—

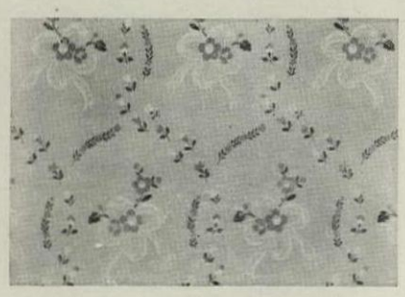
if you showed her these rich Fabric Wall Coverings in charming new patterns . . .

ARCHITECTS' wives usually have a keen appreciation for the finer aspects of home furnishing. So we make this suggestion: Send for a few representative patterns of this rich fabric wall covering and go into a conference with Mrs. Architect.

Chances are she will find them the most charming patterns and beautiful colorings she has ever seen in moderately priced wall coverings. She will be delighted with their refreshing individuality—and much of their charm she will attribute to their richness of fabric texture.

And Mrs. Architect will be quick to see the practical side of Wall-Tex. Those dust streaks from radiators—and children's finger marks above the stairway—are easily wiped away with a damp cloth. Colors, even the most subtle pastel shades, are non-fading. The beauty of this fabric wall covering lasts for years.

Wall-Tex is used in many of America's finest residences—and because of its long-run economy it is the ideal wall-covering for hotels, hospitals, public buildings of all kinds.

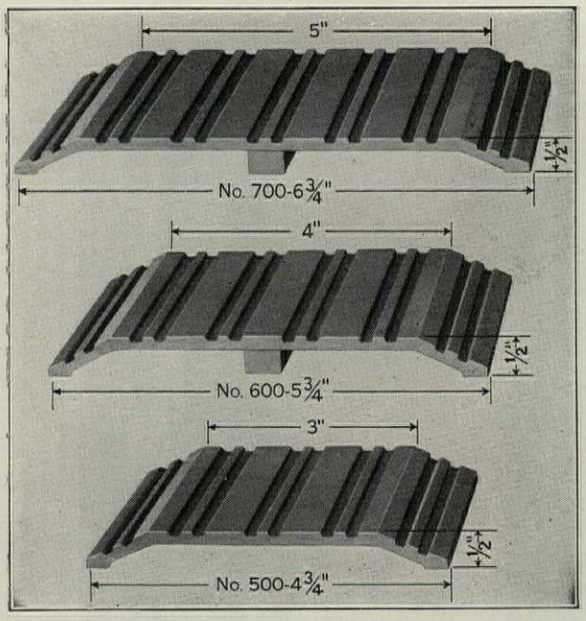


Write us today for interesting folder, "The Modern Trend in Wall Coverings" and samples of charming new patterns styled by Virginia Hamill.

COLUMBUS COATED FABRICS CORPORATION
Dept. A-1 Columbus, Ohio

WALL-TEX

Fabric Wall Coverings of Enduring Beauty



The Threshold of a New Year

Scuff, scuff! Scrape, scrape! The worn-out years go through the doorway into oblivion. With them go the depreciated things you specified a long time ago.

At the threshold of a New Year resolve to specify new thresholds—Rixson Thresholds. The extruded ribs and hard metal will offer better resistance to the scuff and scrape of many new years. There is a saving not only tomorrow but today in installation with Rixson Floor Checks for which Rixson Thresholds can be had ready-drilled. For color harmony you may choose either the white of aluminum or the warmer tone of architectural bronze.

OUR CATALOGUE IS FILED IN SWEET'S

RIXSON THRESHOLDS OF ARCHITECTURAL BRONZE or ALUMINUM

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Adjustable Ball Hinges
Butts, Pivots and Bolts
Door Stays and Holders

The COWING JOINT

Insures These Great Towers of La Salle Street Against Cracks and Spalls~

ONE LA SALLE STREET
K. M. Vitzthum & Co., Arch.
FOREMAN BANK BUILDING
Graham, Anderson, Probst and White, Architects

The value added to a building by the Cowing Joint is recognized by architects generally.

The Cowing Joint preserves the beauty by preventing cracks and spalls. It saves maintenance cost, reduces tuck-pointing, is neat, will not squeeze out, it endures.

See **"SWEETS"**

Cowing Pressure Relieving Joint Co.
226 W. Superior St. Chicago, Illinois

New School donated by Owen D. Young of the General Electric Company, to the town of Vanhornesville, N. Y., to replace the little schoolhouse he attended as a boy. Ernest Sibley, Architect. Nailcrete used as nailing base for wood floors.

This Attractive New School Has The Modern Security of NAILCRETE

Nailcrete—the *original* nailing concrete—is specified as the nailing base for floors and roofs in many of the country's finest buildings because of its safety, durability and economy. Nailcrete is fire-proof, rot-proof and impervious to heat, cold or moisture. Furthermore, when used under wood floors it eliminates sleepers, sleeper clips, fill and underflooring.

NAILCRETE BLOCKS
The new Nailcrete Nailable Cinder Concrete Blocks possess all the advantages of Nailcrete and are ideal for use in load-bearing walls and partitions.

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Complete data regarding Nailcrete and the new Nailcrete blocks in Sweet's Architectural Catalog—or write for illustrated booklet.

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FAIENCE
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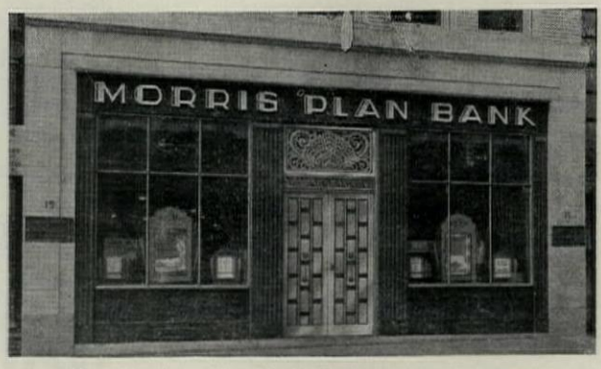
SEND FOR BOOKLET

PERMANENT AS ONLY  NICKEL ALLOYS CAN BE

• • •

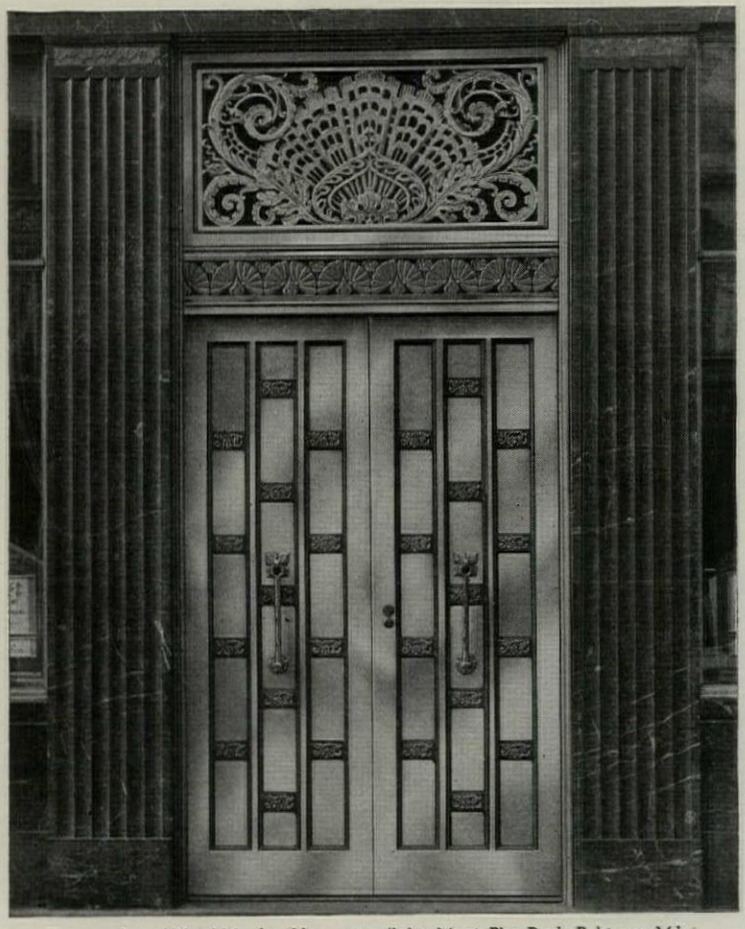
WHERE WEAR IS HARDEST



View of exterior metal work in Monel Metal and bronze at Morris Plan Bank, Baltimore, Md. Note particularly effectiveness of cast Monel Metal sign letters against background of black marble.

MONEL METAL INSURES LASTING BEAUTY

• • •



Entrance door of Monel Metal and bronze installed in Morris Plan Bank, Baltimore, Md., and executed by SUPERB BRONZE & IRON CO., INC., Brooklyn, N. Y. Architects: TAYLOR & FISHER, Baltimore, Md.

YOU find evidence of Monel Metal's increasing architectural use on every hand—in homes, in office buildings, banks and public institutions of all kinds. To doors, railings, grille work, store fronts and ornamental metal work Monel Metal brings a degree of beauty and permanence that only this lustrous Nickel alloy can give.

Monel Metal's silvery beauty blends perfectly with every scheme of decoration...lending a crisp note of modernity to any style of design...providing strength that asks no favors of time or weather ...combining many advantages in the most modern of new-day materials—Monel Metal!

Monel Metal gets its silvery beauty from Nickel—the whitening, strengthening partner used in many modern alloys—stainless steel and Nickel Silver, to mention only two. Nickel gives Monel Metal its steel-like strength, its immunity to rust and high corrosion-resistance. Because Monel Metal is two-thirds Nickel, it is one of the easiest materials to clean and keep clean. Being solid throughout, like sterling, with no coating to wear off, Monel Metal always retains its original lustre and attractiveness.

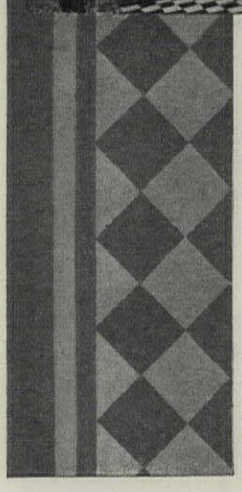
When planning future metal work remember that "Nickel Alloys look better longer". Let us send you complete information about Monel Metal in the metal arts.

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.

MONEL METAL

INCO MONEL METAL TRADE MARK

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



Rich Colors and Greater Thickness place Rubber Tiling in Constant Demand Where Appearance is Vital---

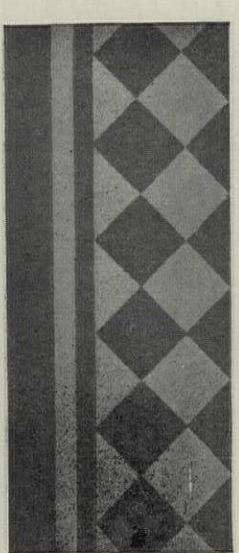
IN IMPRESSIVE Bank Lobbies and other public spaces subject to considerable foot traffic, the flooring specified must be of a quality that will not fade or the colors show signs of wear during the life of the installation.

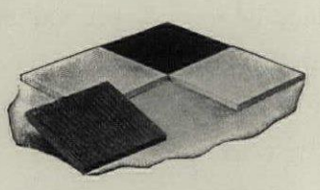
The true, permanent colors of New York Belting and Packing Company's tiling are an integral part of this material, extending through the full thickness of the tiles. They are unaffected by the most severe traffic conditions.

The superior three-eighths-inch thickness recommends this tiling for heavy duty. Many floors laid more than twenty-five years ago are still in excellent condition. This remarkable wearing quality is due to the extraordinary firmness, thickness and weight, making a floor that is practically permanent.

So constructed as to assure the quiet, resilient, and comfortable floors so necessary in banks and offices where the public is to be impressed amid ideal working conditions.

50% GREATER THICKNESS
Harmonious in Color and Design
Sanitary - Safe - Comfortable
DOUBLE LIFE





Samples, color suggestions and full information on request

NEW YORK BELTING & PACKING CO.
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Boston Philadelphia St. Louis Chicago Pittsburgh San Francisco

A PRODUCT OF NEW YORK BELTING & PACKING CO.

RUBBER TILE FLOORING

YOU NEED AN EASILY WORKED LUMBER FOR MOST REMODELING JOBS

"The trouble with us oldsters is, we criticize youngsters for slap and dash and forget the long seasoning we've *had. Take this piece of Pondosa—when it was young and green it wasn't dependable. But now it's cured an' kiln-dried, it'll stay put without warp or crawl."* From the philosophy of the boss-carpenter.

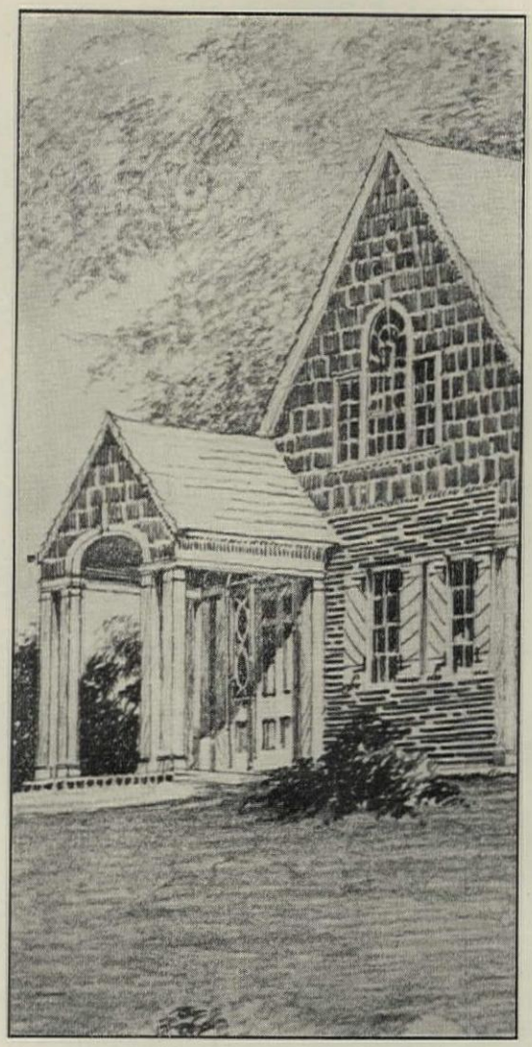
In rebuilding and remodeling, you want to specify a wood easy to work—a wood adaptable to many uses. For a paneled wall . . . a mantel . . . built-in bookcases for a den . . . balustrades, railings, cornices . . . delicate molding, and all other interior trim . . . for almost any softwood job you're called upon to design, Pondosa is an ideal lumber.

Even-grained, with a surface smooth as satin, Pondosa has all the qualities necessary for this sort of work. Carpenters saw, plane, and finish Pondosa in short order. It takes nails and screws in short grain with virtually no splitting. It lies flat and stays in place. Paints, varnishes and enamels are easily and quickly applied, yet sparingly. . . . Waxed and sanded effects bring out the natural beauty of Pondosa. That's one reason for its popularity in pine paneling work.

Pondosa is rigidly graded, carefully milled, and sized after seasoning. The lumber dealer can supply large quantities on quick notice. And for your protection you can specify all Pondosa by the familiar pine tree trade-mark. Western Pine Manufacturers Association, Portland, Oregon.

Pondosa Pine

THE PICK O' THE PINES



For example: contrasting tone values call for Venus Pencils. Above is section (below is reduction) of architect's pencil sketch of Short Hills Country Club, Short Hills, N. J. By C. C. Wendehack, architect, New York City, specialist in country club design.

If you've never used Venus erasers, we should like to have you try them. They are better.

Unique Thin Lead Colored Pencils put a complete palette at your finger tips. 24 different colors. Can be sharpened to a fine point. Make wash effects easily.

For Textural Qualities . . .

Venus Pencils

ANY DESIGN—no matter how intricate—can be developed. Proper tone values are easy. Because Venus Pencils come in 17 shades of black. From 6B softest to 9H hardest.

Are they uniform? Here's our challenge—come to our plant and we'll put in your hands Venus Pencils of any grade for any year since 1905. You'll find the 2H of today exactly the same as the 2H of two, twelve or twenty-five years ago. And so on, in every degree.

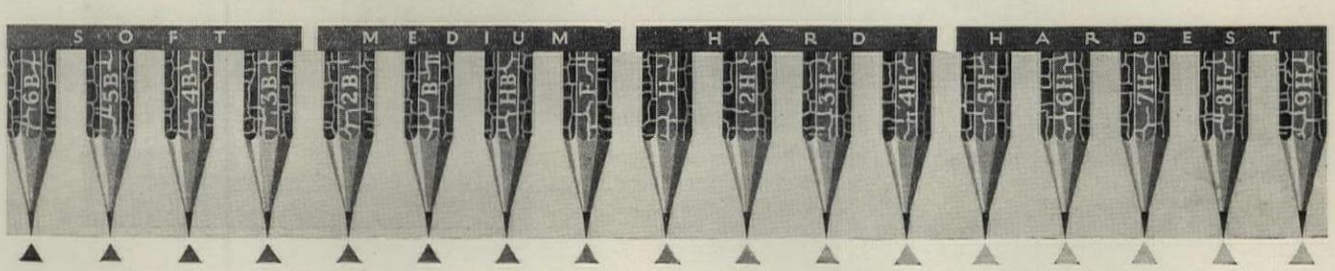
A new feature—you can now tell the grade of a Venus Pencil at a glance. Each has its degree of black stamped on three sides. No matter how the pencil lies on the table, the grade is never hidden.

If you are not now using Venus Pencils, choose the degree you prefer and write for a free sample. We want you to try Venus.

AMERICAN PENCIL CO., HOBOKEN, N. J.

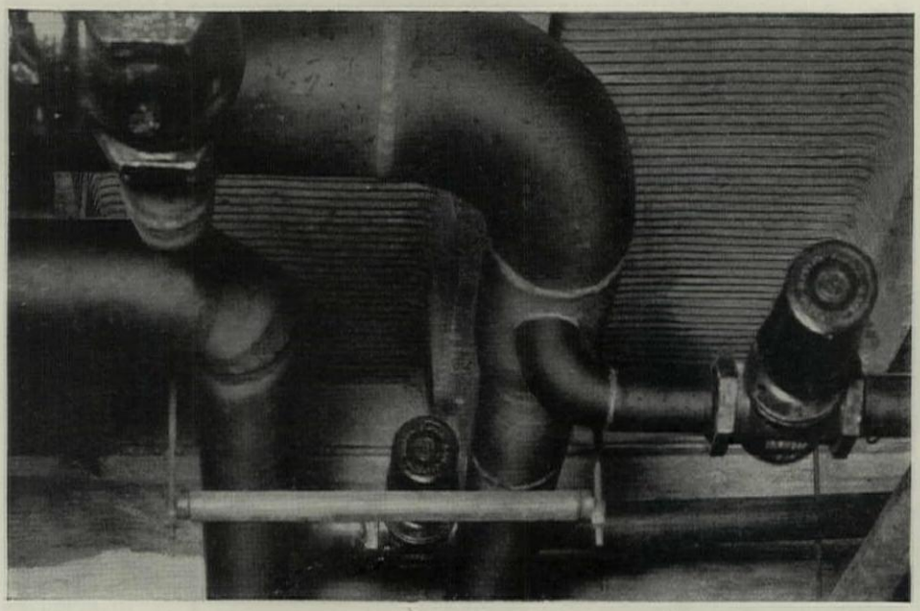
VENUS PENCILS

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



OXWELDING

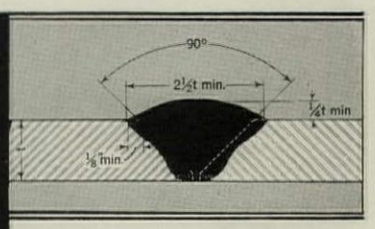
SIMPLIFIES PIPING DESIGN



THE laying out of a piping system is materially simplified by oxwelding. Where this method of jointing is used, plans are not governed by the availability of standard fittings and the avoidance of specials.

Oxwelding does not change the general design features. Size of pipe, method of suspension, provision for expansion and contraction and location of turns, branch connections, valves and other fittings are the same as for other types of construction. Welded joints and fittings are merely substituted to obtain increased compactness, economy and serviceability.

Under Procedure Control, welded piping construction may be undertaken with the same confidence in a satisfactory result as older methods.



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.

WELDED LINE JOINTS

Open Single Vee Butt Weld

Explanation of Design:

The Open Single Vee Butt Weld illustrated is the type of weld most extensively used for jointing steel pipe. When properly made, it develops the full strength of the pipe wall; it is easy to make and of low cost.

Uses:

The Open Single Vee Butt Weld is the standard line joint and is recommended for standard, extra heavy and double extra heavy piping, for all services carrying all pressures to which steel and wrought iron pipe are subjected.

Specification:

When the Open Single Vee Butt Weld is specified the following should be included in the specification:

1. The spacing between pipe ends, before tacking, shall be as given in Table 1, page 11, "Design Standards for Oxwelded Piping."
2. Welds shall be thoroughly fused to the joint edges and shall extend completely to the bottom of the vee.
3. Welds shall have a minimum width of 2½ times the pipe wall thickness and shall be symmetrical with respect to the center line of joint.
4. Welds shall be built up to present a gradual increase in thickness from edge to center.
5. Thickness at the center of the weld shall not be less than 1¼ times the pipe wall thickness.
6. The weld shall be of sound metal free from laps, gas pockets, slag inclusions or other defects.

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," which also explains procedure control for pipe welding.

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Company.....*Position*.....

Street Address.....

City.....*State*.....

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175 Oxygen Warehouse Stocks
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● Architect, Burrell Hoffman, New York City—Mechanical Engineers, Hunter & Hudson, San Francisco—Builder, Dowsett-Ruhl Company, San Francisco—Heating Contractor, Higgins & Kraus, San Francisco.

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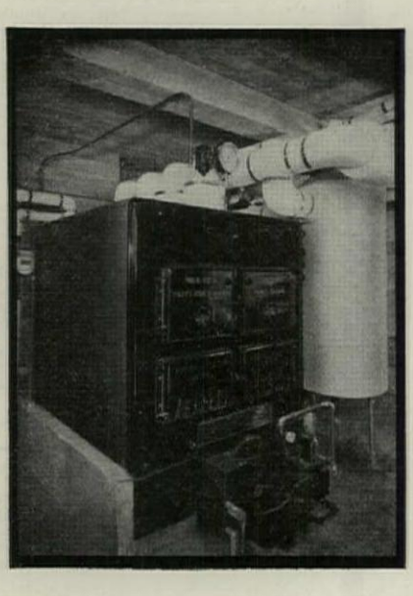
IS WARMED BY AMERICAN RADIATORS



• Not only is this one of the loveliest residences in Northern California, but every detail of it has been designed for comfort as well as beauty.

• An Ideal Redflash Oil Burning Boiler sends healthful even warmth to concealed Corto Radiators in every room.

• The architect made sure that the owner would find it just as desirable a home after completion as it appeared in the plans.

AMERICAN RADIATOR COMPANY

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AMERICAN RADIATOR & STANDARD SANITARY CORPORATION
40 West 40th Street, New York, N. Y.

PUBLICATIONS ON MATERIALS & EQUIPMENT

Of Interest to Architect, Draftsman and Specification Writer

(Other items on page 72, Advertising Section)

New Royal Line and Other Bathroom Accessories.—A.I.A. File No. 23-i and 29-i. Catalog No. 31, just issued, illustrates and describes a full line of china bathroom accessories, medicine cabinets and mirrors, including the recently developed Royal line of decorative equipment. Specifications, color plates, installation details, etc. 16 pp. Standard filing size. The Fairfacts Company, 234 West 14th St., New York, N. Y.

Air-Way Heating Systems.—A.I.A. File No. 30-d-11. Looseleaf catalog contains complete descriptive and technical data covering the Air-Way unit heater for industrial use and the Air-Way Aeriet, a built-in wall type heating unit operating from steam, hot water, vapor or electricity for use in homes, apartments, hotels, offices, hospitals, etc. Specifications, tables, installation details, etc. 80 pp. Standard filing size. Air-Way Electric Appliance Corp., Heating System Division, Toledo, O.

Erie City Steel Heating Boilers.—A.I.A. File No.30-c-1. New catalog with complete descriptive and engineering data covering this line of welded steel heating boilers for coal, oil, gas and stoker firing. Specifications, tables, etc. 16 pp. Standard filing size. Erie Iron Works, Stearns Division, Erie, Pa.

Mac-Mar Steel Framing.—New catalog with complete data, details and illustrations showing the elements of Mac-Mar steel framing, the sequence of operations in assembling them for all types of buildings, and standard methods of attaching all normal building materials. Useful reference document for architects on this type of construction. 16 pp. Standard filing size. Steel Frame House Co., Pittsburgh, Pa.

RCA Centralized Radio System.—A.I.A. File No. 31-i-6. Architects' filing folder with series of bulletins and data sheets giving complete information, specifications and details covering the RCA centralized radio system for hospitals, schools, hotels, apartment buildings, etc. A valuable reference guide on the subject. Standard filing size. RCA Victor Co., Inc., 261 Fifth Ave., New York, N. Y.

Stanwood Electric Welded Steel Heating Boilers.—A.I.A. File No. 30-c-1. Bulletin 100. Descriptive data, specification, rating and dimension tables and arrangement diagrams covering this type of electric welded steel heating equipment for coal, oil or gas burning. 8½ x 11. The Stanwood Corporation, Cincinnati, Ohio.

Published by the same firm, "Stanwood Horizontal Tubular Boilers." Catalog No. HT-30. Useful information for architects and heating engineers on this type of heating equipment. Numerous changes in design and construction are featured including steel casing setting of the catenary bag type. Specification, blue print drawings, etc. 32 pp. 8½ x 11.

Kernerator Incineration for Waste Disposal in Industrial and Commercial Buildings.—A.I.A. File No. 35-j-41. Catalog No. 257, just issued, is devoted to the subject of waste disposal in industrial, commercial, governmental and other non-residential buildings. Included are descriptions of incinerators suitable for such installations. 12 pp. 8½ x 11. Kerner Incinerator Co., 3707 North Richards St., Milwaukee, Wis.

Arc Welding Structural Steel.—A.I.A. File No. 13-c-2. Publication GEA-1161, devoted to the subject of arc welding structural steel, presents much useful descriptive and engineering data to anyone engaged in the design, fabrication, and erection of steel structures. 22 pp. 8½ x 11. General Electric Co., Schenectady, N. Y.

Published by the same firm, "Architecture of the Night." A.I.A. File No. 31-F-24. Publication GED-375. A presentation of a series of articles in which the possibilities of architectural illumination are discussed by prominent architects. 14 pp. 8½ x 11.

Brownskin Building Paper.—Bulletin with descriptive and test data covering this kind of waterproof building paper. 4 pp. 8½ x 11. Angier Corporation, Framingham, Mass.

Mahon Rolling Steel Doors.—A.I.A. File No. 16-d-13. Useful reference book for architects giving complete information and data pertinent to the application and installation of Mahon rolling steel doors. Detail drawings, tables of dimensions, standard parts. 36 pp. Standard filing size. The R. C. Mahon Co., Detroit, Mich.

Knotty Pondosa Pine Paneled Dining Room.—A.I.A. File No. 19-e-3. New publication with color plates, detail drawings and descriptive data covering a dining room of the French Provincial type built at the Good Housekeeping Studio of Furnishings and Decorations. 8½ x 11. Western Pine Manufacturers Assn., 510 Yeon Bldg., Portland, Ore.

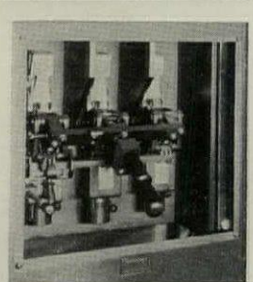
Published by the same firm, "Paneling Need Not be Expensive." A.I.A. File No. 19-e-3. New bulletin discussing the advantages of Idaho white pine for paneling. 8½ x 11.

Perforated Steel Sheets.—Supplement No. 1 to Catalog 26-26A shows a number of new designs in perforated steel sheets. 8½ x 11. J. G. Braun Co., 537 W. 35th St., New York, N. Y.

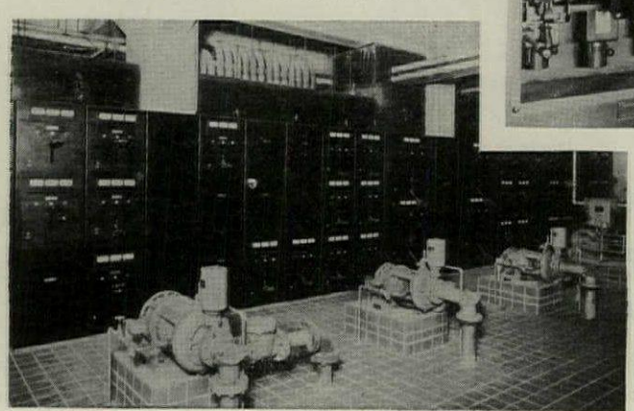
In this New Bell Telephone Building

A SHIELD OF STEEL ENCLOSES CL BREAKERS

Cincinnati and Suburban, 209 West Seventh Street Bell Telephone Building.
Harry Hake, Architect
Chas. Kuck, Associate Architect
J. & F. Harig Co., General Contractor
Standish Electric Co., Electrical Contractor.



A three-pole, 400-ampere CL Breaker similar to those used in the above building, with protective steel plate removed.



Main power and lighting distribution steel switchboard. Note the totally enclosed Circuit Breakers and Flush-type Instruments.

THE impressive new 209 West Seventh Street Bell Telephone Building in Cincinnati has every feeder circuit protected by Westinghouse CL carbon circuit breakers mounted on the latest type dead-front, dead-rear steel switchboards. One hundred and seventy-six breakers are used in this building.

These breakers are the same one-piece frame type that have been installed during the past few years in many other prominent buildings, such as the Chicago Civic Opera building, the Chrysler building, the Grant building in Pittsburgh, and the Atlantic City Auditorium. Compactness, quiet operation, neat appearance, trip-free arrangement and unbreakable carbon contacts are a few features which were developed from field and high-power laboratory tests to meet the electrical protective requirements of today's buildings.

If your file 31-D-44 does not contain copies of circular 1705-C please request them from our nearest district office.

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A *Prize Competition* for a Radiator Grille

HERE is interesting information for Architects. The Harrington & King Perforating Company, Chicago, specialists and pioneers in the field of radiator grilles and enclosures, is sponsoring a competition to increase the variety of designs in the field of Modern Art. The competition is to be conducted under the auspices of the Architectural Sketch Club of Chicago and shall be open to Architects, Artists, Draftsmen, Engineers, and all students of the arts within the boundary lines of the United States and Canada.

The Program

An end wall of a large public lobby has a radiator recess 2'0 x 6'0 in its greatest dimensions, the front of which is to be grilled. The depth is excessive so the competitor is free to establish any desired relation of the grille to the face of the wall. The form of the opening and treatment of the wall is unrestricted, and the competitor is free to use intermediate members or panels of any form or material to satisfy structural or aesthetic demands.

The grille may contain as many different unit designs as the competitor desires, and these may also vary in size. Units may be grouped, staggered, alternated, or arranged in bands in any direction or composition.

Bands may be arranged as part of a wall treatment and they may be raised, depressed, "V" shaped, curved, semi-circular or in any simple form that could be produced within the practical limits of the manufacturer's process.

Great stress in judging will be laid on the design of the units. Although designs that may be produced by punching alone are easy to fabricate, competitors may submit designs that require bending as well. These may be designed for specific radiator conditions which, by the unique forms evolved to satisfy definite conditions, would render both efficiency in its function and beauty in its effect. The outcome of any research of this nature that has been developed in the design may be explained to the jury by the use of brief notes and diagrams. The maximum area (or areas) permitted for this purpose shall not exceed 42 square inches.

The competitor must bear in mind that the manufacturer's product is produced with a die in a perforating press. This does not strictly limit to punching, as bending can also be performed with punching. Any metal or combination of metals may be used, as the manufacturer now fabricates from steel, brass, bronze, Monel metal, stainless iron, and aluminum. The stock ranges from 20 gauge (.0375") to ⅛ inch thick. A unit in the design of a grille should not be more than 3 inches, as experience has taught that larger units result in large margins when a dimension is not evenly divisible by the size of a unit. Units may be as small as ⅝ of an inch. This size, common in radiator enclosures, is usually punched from 20 gauge stock while the larger units range from 22 gauge to 3-16 of an inch. Embossing is not practical in gauges greater than 20 gauge. Long unsupported bridges and unsupported projections are difficult to make and to maintain in hardened steel dies especially for ⅛" to 3-16" metals. A study of the manufacturer's catalogue will be of assistance in determining present practices.

The requirements of good practice in heating and ventilating demand the open work in a grille to be at least 50%, preferably 65%, or 70%, of the area. In the smaller units with the thin metals this may range from 45% to 55% open. These figures apply only to the units (or grille surface) as the recess opening is larger than required for the radiator.

Final Drawing

Drawings will be received at the Architectural Sketch Club of Chicago up until 10 P. M., Feb. 15, 1931. Local competitors shall deliver their drawings by messenger. All mailed entries must be postmarked prior to that time and will be received on or before Feb. 28, 1931.

The Jury of Awards shall consist of: Frank L. Venning, Chairman, of Granger & Bollenbacher, Architects; David W. Carlson, of Holabird & Root, Architects; Philip Maher, Chicago; N. Max Dunning, Chicago, and J. M. Fuller, President of the Harrington & King Perforating Co.

Communication

In order to enter this competition it will be necessary to secure full details. These will be found on page 983 of the December issue of Pencil Points.

The latest catalogue of the Harrington & King Perforating Company's product will be sent to all competitors upon request to the Competition Committee, Architectural Sketch Club of Chicago, 1801 South Prairie Ave., Chicago, Illinois.

CASH PRIZES

1st Prize	$300.00
2nd Prize	150.00
3rd Prize	75.00
4th Prize	50.00
5th Prize	25.00

and $20.00 to each design the sponsors may desire to use.

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ABOVE: *An etching of the Chase National Bank Building, New York.* LEFT: *Interior showing W. & J. Sloane Battleship Linoleum.*

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THE Chase National Bank, New York merged recently with the Equitable Trust Company, thereby becoming the largest bank in the world, with assets of $2,800,000,000.

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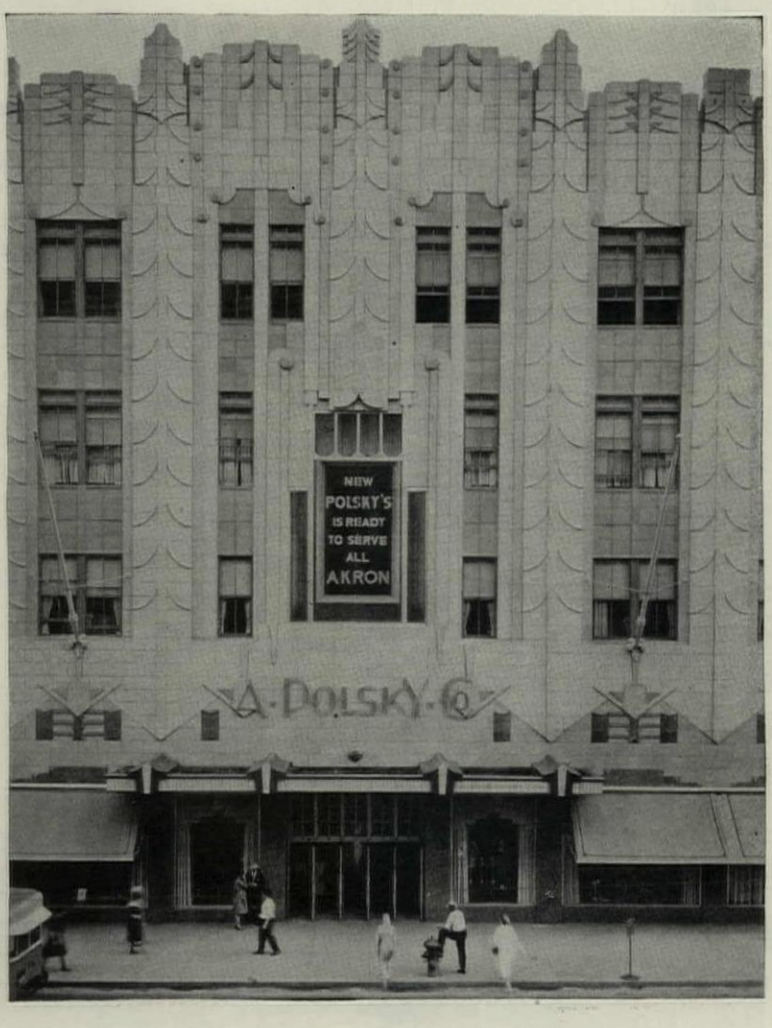

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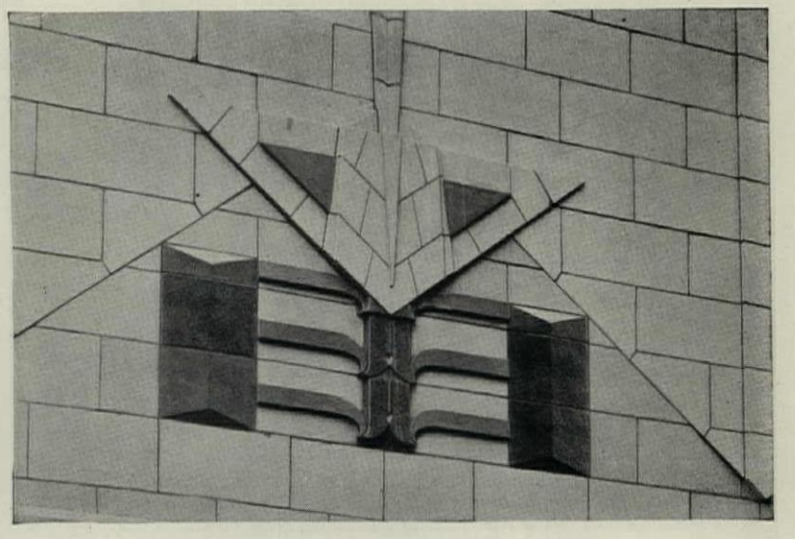

THE entire facade of this unusual building is grey-buff colored Terra Cotta. The spandrels and sinkages dull lead colored glaze. The geometrical decorations over the store fronts highly burnished silver.

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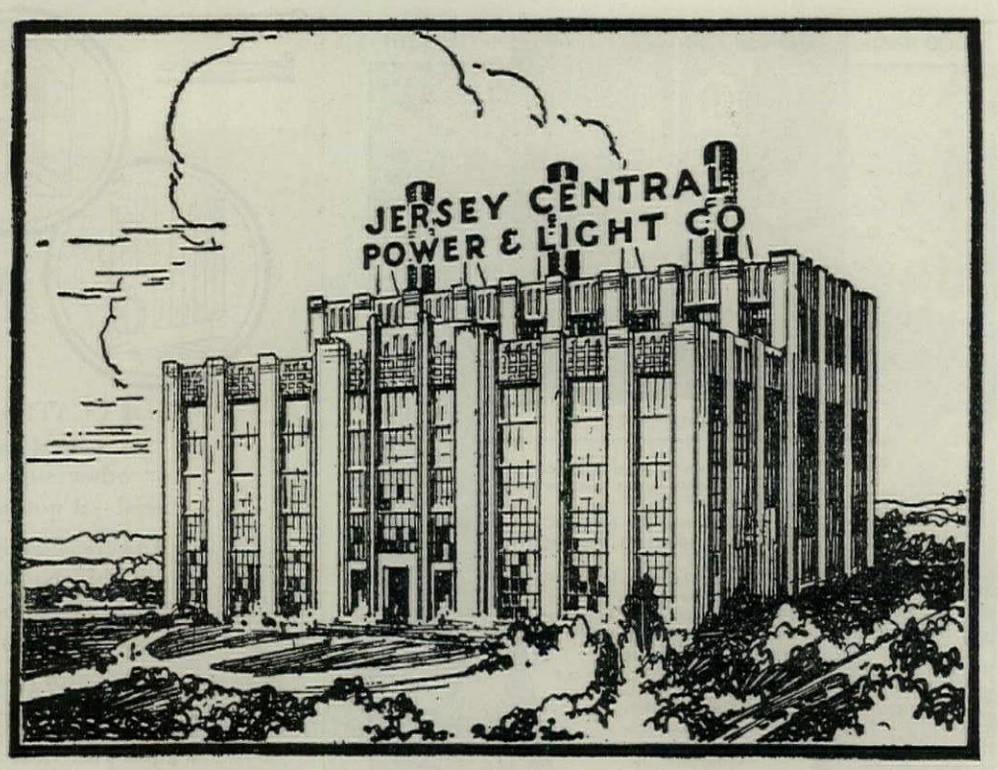

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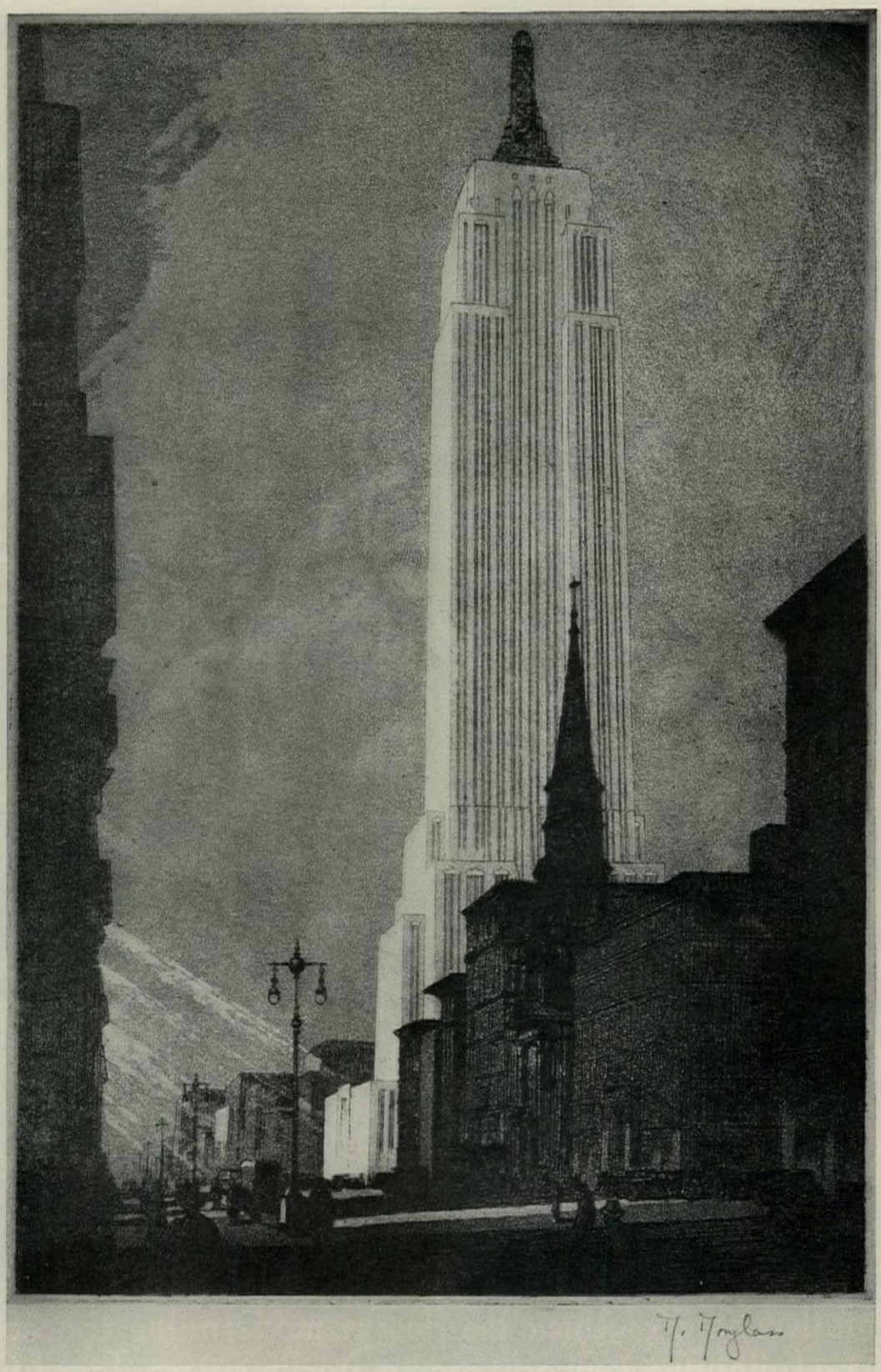
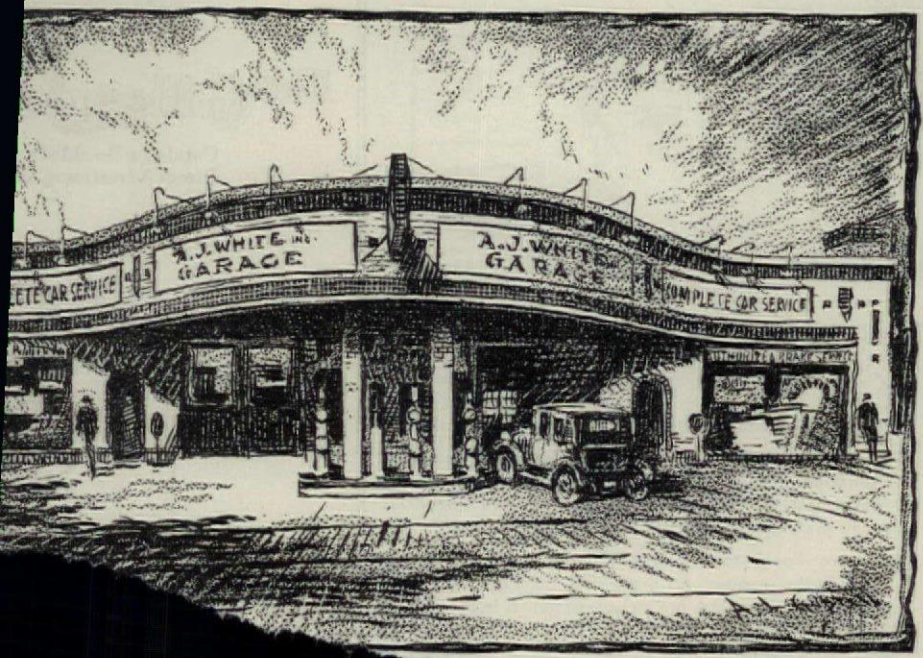


WHERE STONE AND STEEL BLEND WITH THE BLUE

Aquatint etching of the Empire State Building, New York, N. Y., the world's tallest building—Shreve, Lamb and Harmon, Architects—Fred. Brutschy, Consulting Plumbing Engineer—Meyer Strong & Jones, Inc., Consulting Heating Engineer—Starrett Bros. & Eken, Inc., General Contractor—J. L. Murphy, Inc., Plumbing Contractor—Baker Smith & Co., Heating Contractor . . . Jenkins Valves were selected for both the heating and plumbing of this monumental structure . . . Jenkins Bros., New York — Boston — Philadelphia — Chicago — Houston



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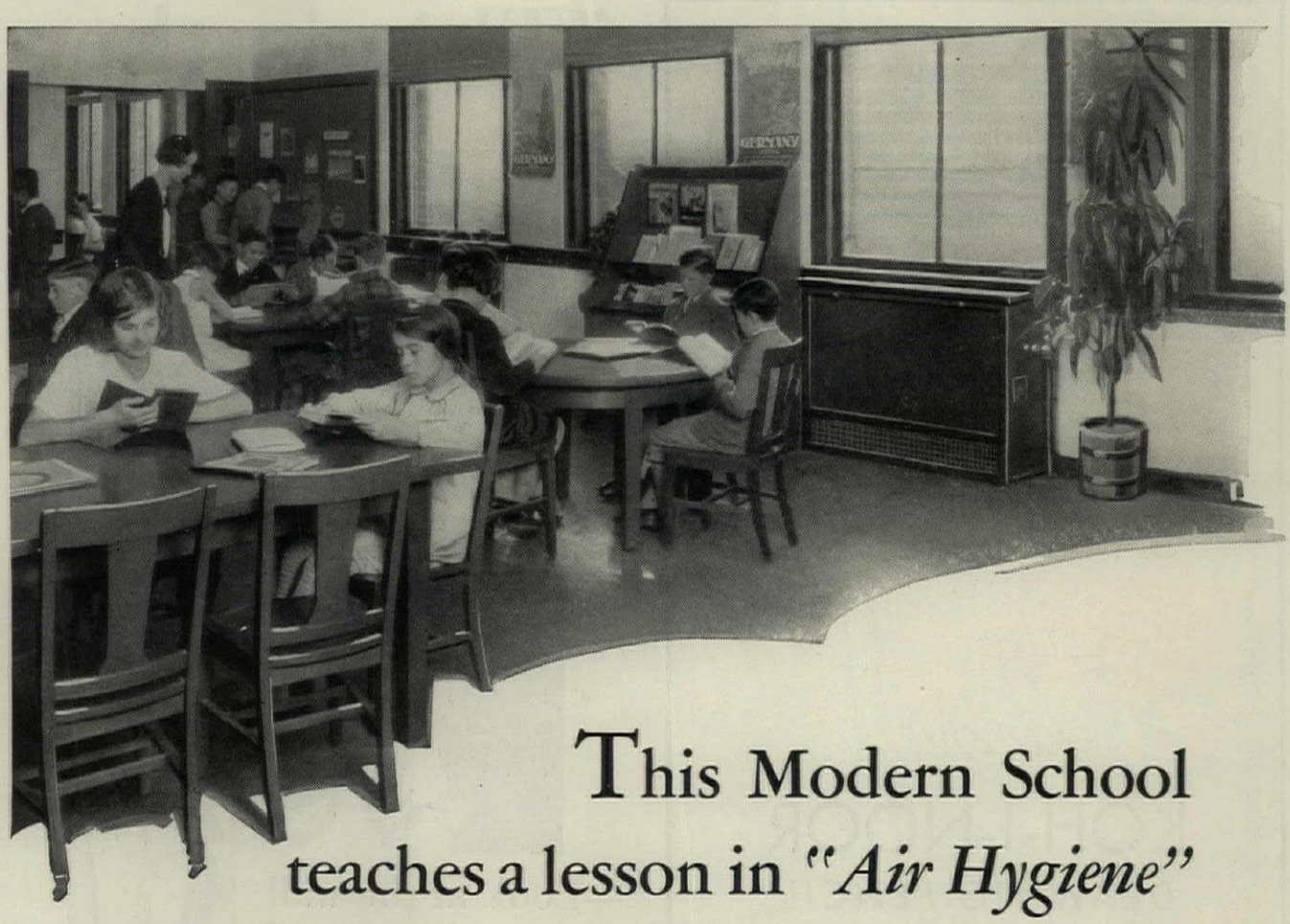

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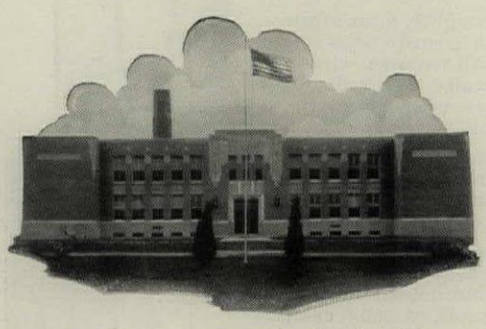

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The American Radiator & Standard Sanitary Corp., New York, has made the following announcements effective immediately: M. J. Beirn, vice-president and general manager sales of American Radiator Co., is appointed vice-president and general manager sales of American Radiator & Standard Sanitary Corp.; Charles B. Nash, vice-president of Standard Sanitary Mfg. Co., is appointed director of publicity of American Radiator & Standard Sanitary Corp.; A. R. Herske, sales promotion manager of American Radiator Co., is appointed sales promotion manager of American Radiator & Standard Sanitary Corp.; John Hall, general sales manager, European division, Standard Sanitary Mfg. Co., is appointed vice-president and assistant general manager sales of Standard Sanitary Mfg. Co. The resignation of George Herth as vice-president and general manager sales of Standard Sanitary Mfg. Co. has been accepted.

The Hamilton Mfg. Co., Two Rivers, Wis., has recently placed on the market the Junior tracing and photo retouching table No. 183, a new illuminated tracing table for draftsmen. It has a plate glass working surface which has a sand blast finish on the under side. This plate glass is illuminated from below by two electric lights and a parabolic reflector. The top is adjustable in height and also the working angle. In addition to this, the top slides forward or back 10 in. from normal position.

Claxton E. Allen, formerly manager of the Southwestern district of the Westinghouse Electric & Manufacturing Co., was elected a commercial vice-president of that company at a recent meeting of its board of directors. Mr. Allen's duties of coordination will extend over the domestic appliance division and other divisions serving the household market, such as refrigeration, radio, etc., and also the jobbing outlets, and other outlets as may be appropriately developed.

Responsive to the increasing demand for concealed, partly concealed and out-of-the-way radiation, the American Radiator Co. announces a new addition to its line of American radiators. This new development is the Arco radiator. It is made of cast iron, small and compact in design, so that it is easily recessed, enclosed or semi-enclosed. The company has also introduced Arco radiator enclosures in a variety of models designed for recessed and concealed radiation.

The various plastic activities of the General Electric Co. have been coordinated into one department known as the Plastic Department according to an announcement just made by Gerard Swope, president of the company. R. E. Coleman has been appointed manager of the new department with an advisory committee consisting of vice-presidents J. G. Barry, chairman, W. R. Burrows, and C. E. Eveleth. The new department will be responsible for sales, engineering and manufacturing of plastics and involves activities at the Pittsfield, Schenectady, Fort Wayne, Erie and Lynn (River) plants of the company.

The Associated Alloy Steel Co., Inc., Cleveland, Ohio, announces that a new name, "Nevastain," has been given to the Nirosta and stainless steels produced by the Ludlum Steel Co., Sharon Steel Hoop Co. and Timken Steel & Tube Co.

The Ward Leonard Electric Company, Mount Vernon, N. Y., announces the appointment of R. C. James as sales representative in the Seattle district. Mr. James' organization will be located at 2321 Second Avenue, Seattle, Washington.

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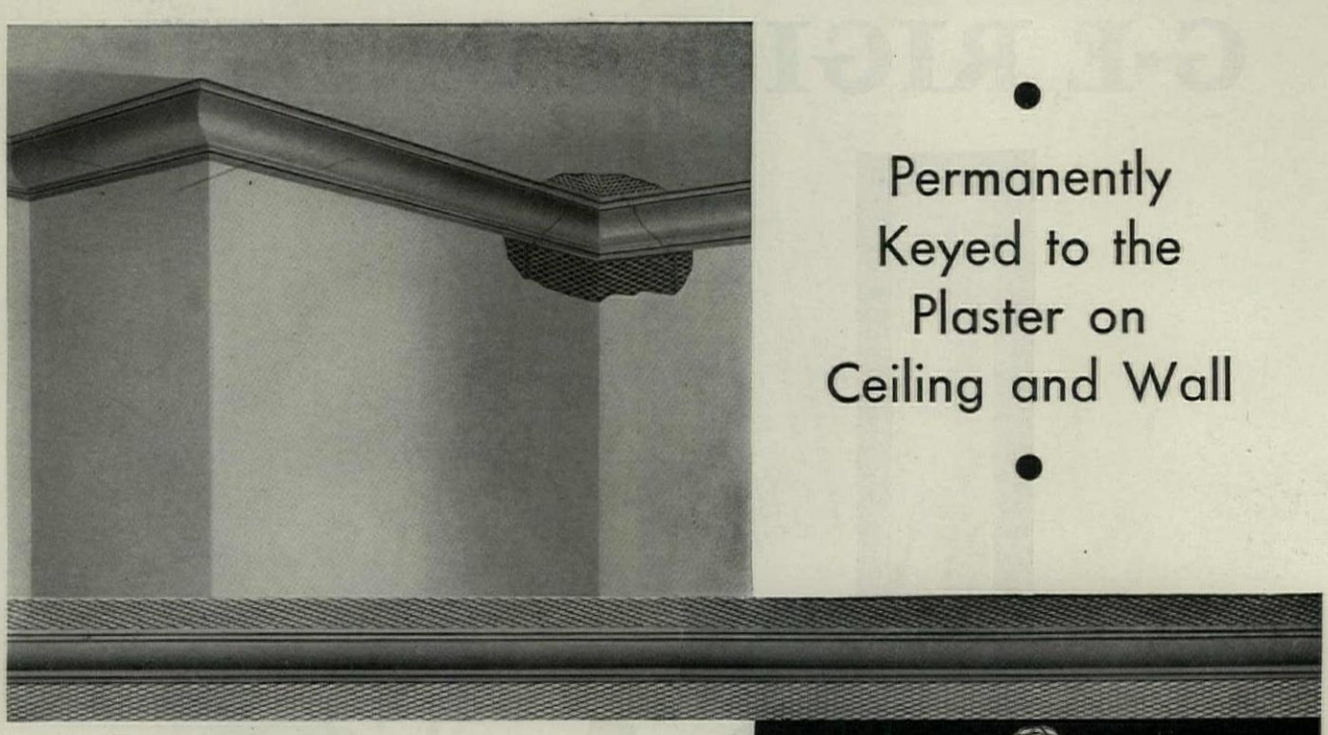
MILCOR ANNOUNCES

A New Metal Cornice With Expansion Wings



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Being made of metal, this cornice will not crack. Having the famous *Milcor* expansion wings at each side, cornice cannot pull away from the plastering. The plaster is reinforced right up to the edge of the cornice.

An invisible joint has been perfected . . . by depressing the cornice, at the joint, the exact thickness of the metal. Precision in manufacture assures a perfect fit.

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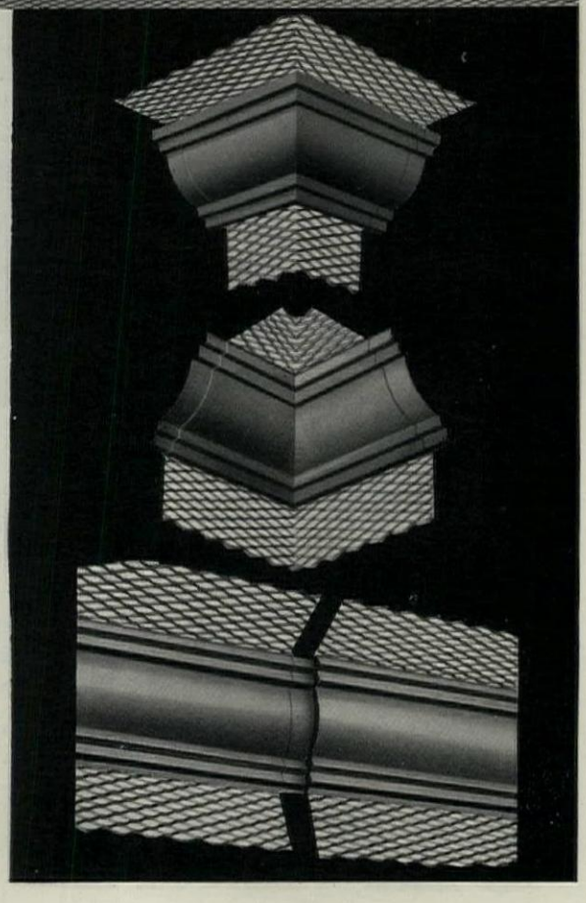
Lead coated terne sheets are used . . . which will receive and hold a paint job to harmonize with the walls and ceilings. The new *Milcor* cornice is also available in copper. *Send for sample sections and complete information.*



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