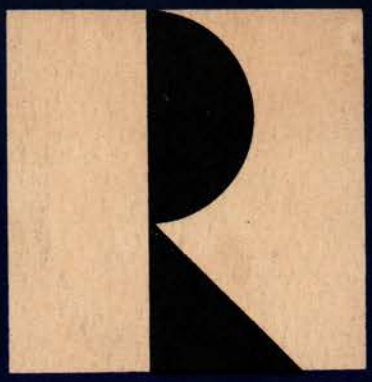
NEST BORN



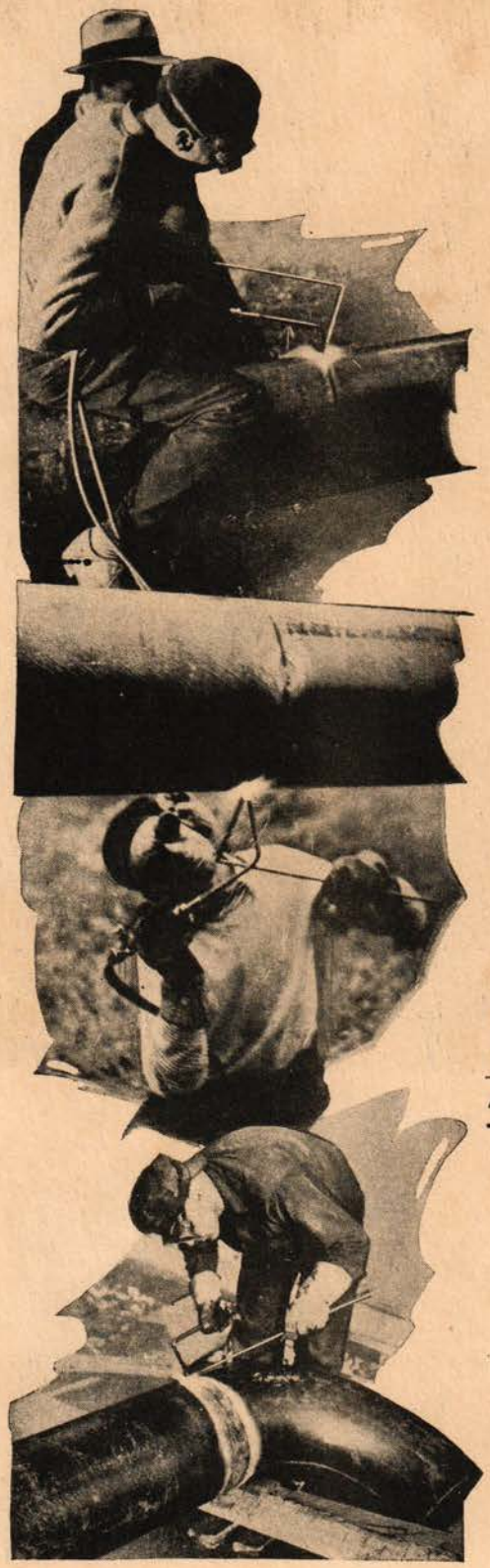
THE ARCHITECTURAL RECORD

1935

2

Another AIRCOWELDED piping job

Steam line over 1½ miles long



U. S. INDUSTRIAL ALCOHOL CO.

Curtis Bay, Baltimore, Md.

This recently constructed line between the Company's alcohol and chemical plants, was AIRCOWELDED throughout, using AIRCO gases, welding equipment and supplies. In it are 496 12-in. line welds, 16 6-in. welds for tee or nozzle connections and many similar welds for drips and vents. Tests of the finished line under the full operating pressure of 150 lbs. showed not a single leak, sweat or other fault—another perfect score for AIRCOWELDING.

The close practical cooperation which AIRCO offers to all users of its products was extended on this job. Specifications for qualification of welders and for welding and weld testing were prepared by AIRCO'S APPLIED ENGINEERING DEPARTMENT. A representative of this department qualified the welders and supervised the welding until it was completed.

Contractor—National Valve & Mfg. Co., Pittsburgh, Pa.
Consulting Engineer—Thomas E. Murray, Inc., New York.
Fittings—Supplied by Midwest Piping & Supply Company, Tube Turns, Inc.

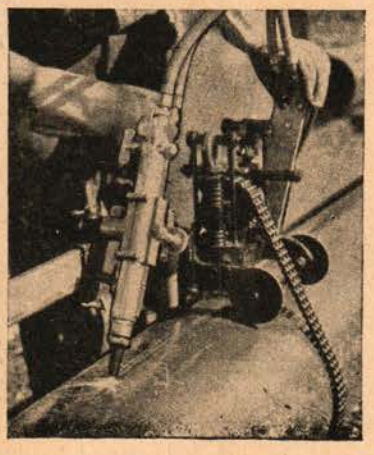
WRITE—today—for the bulletin
"FACTS ABOUT WELDED PIPING"

AIR REDUCTION SALES CO.

General Offices: 60 East 42nd St., New York, N. Y.
DISTRICT OFFICES and DISTRIBUTING STATIONS in PRINCIPAL CITIES

A NATION-WIDE WELDING and CUTTING SUPPLY SERVICE

Typical views of AIRCOWELDING in process on this job are shown at the left. In the upper view a rolling AIRCOWELD is being made under the watchful eye of the AIRCO man. In the center, a position AIRCOWELD is starting, and below, a MIDWEST welding ell is being welded. At the right, the AIRCO PORTABLE PIPE CUTTING and BEVELING MACHINE is seen in action, the machine that bevels as it cuts.



FOR SOUNDNESS and ECONOMY . . . AIRCOWELD

THE

ARCHITECTURAL RECORD

VOLUME 77 NUMBER 2 FEBRUARY, 1935

Published monthly by F. W. DODGE CORPORATION, 115-119 West 40th Street, New York. Truman S. Morgan, President; Sanford D. Stockton, Jr., Secretary; Howard J. Barringer, Treasurer. Yearly subscription: United States and Possessions, $3.00; Canada and Foreign, $5.00; Single Copy, 50c.

WHEN IT'S DECORATIVE CONCRETE—

(Like Stucco or Terrazzo or Cast Stone)

You're Sitting Pretty with ATLAS WHITE!

For economical, durable remodeling work and new construction, when appearance is a factor, Atlas White portland cement serves many purposes:

STUCCO —made with Atlas White—provides a finish in any color, and for any texture.

CAST STONE —made with Atlas White—in interesting colors; in simple or ornamental design, permanent, beautiful.

FINE TERRAZZO —made with Atlas White—provides floors that are colorful and individual and easily maintained.

NON-STAINING MORTAR —made with Atlas White—for backing, setting and pointing fine building stones without danger of discoloration from staining.

WHITE MONOLITHIC CONCRETE —made with Atlas White—for swimming pools, for walls and for any structural use.

FOR COLOR AND BEAUTY AND DURABILITY IN ALL TYPES OF DECORATIVE CONCRETE WORK

ATLAS WHITE PORTLAND CEMENT

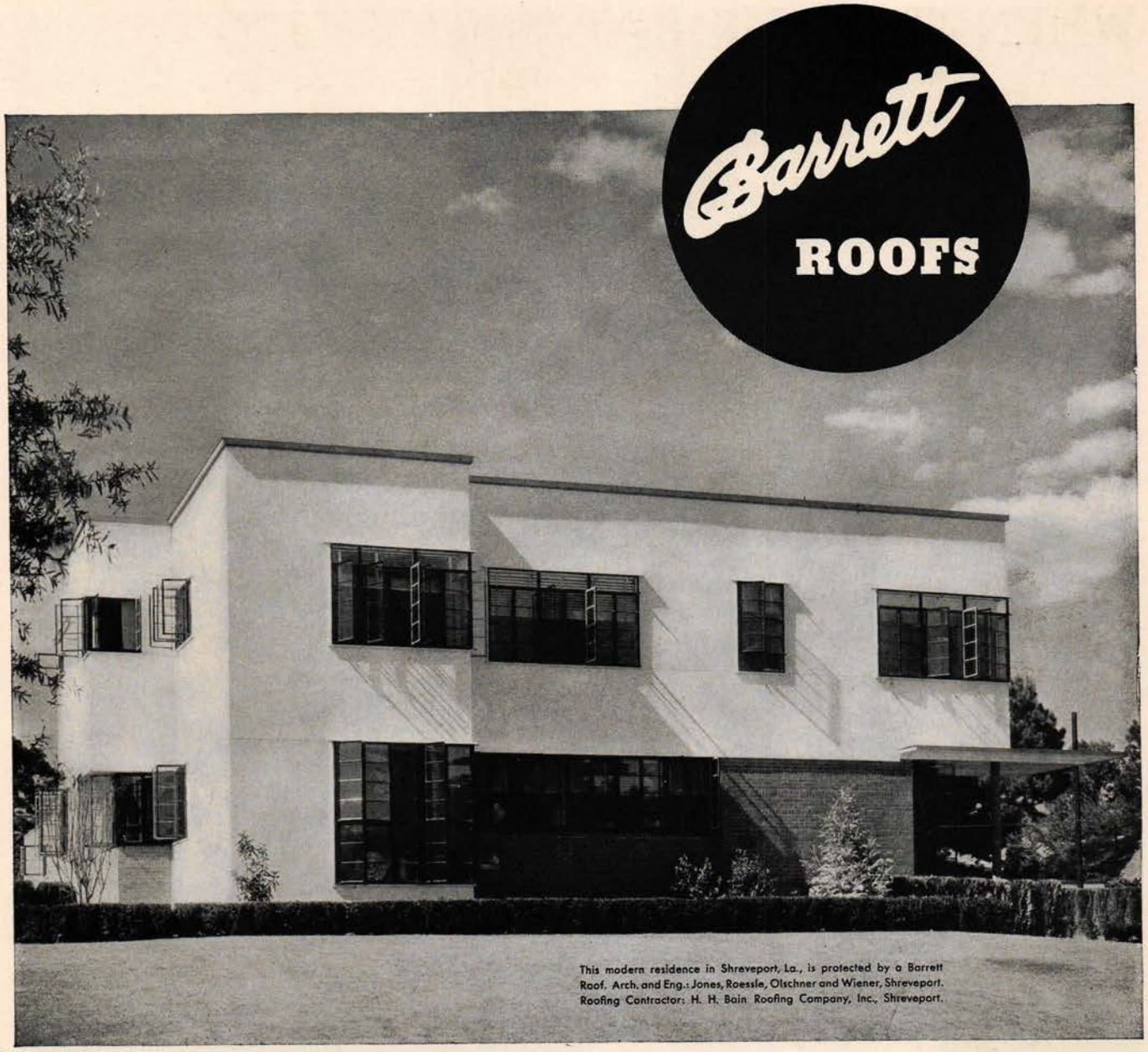
Plain and Waterproofed

PRODUCTS OF

Universal Atlas Cement Co.

United States Steel Corporation Subsidiary

208 South La Salle Street • Chicago



This modern residence in Shreveport, La., is protected by a Barrett Roof. Arch. and Eng.: Jones, Roessle, Olschner and Wiener, Shreveport. Roofing Contractor: H. H. Bain Roofing Company, Inc., Shreveport.

Time-Tested Roofs for Modern Houses

Important among the attractions of the modern type of dwelling is the opportunity to secure the advantages of Barrett Built-up Roof protection.

Barrett Built-up Roofs constructed of Barrett Pitch and Felt are adaptable to many types of wearing surfaces. Low in cost per year of service, long-lived and fire-safe, they are the logical roofs for modern, flat-roofed homes . . . just as they have been, since 1854, the outstanding roofs on America's greatest commercial and industrial buildings.

When you write Barrett Roofs in your specifications, you definitely protect yourself and your client against roof failures and disappointments. For detailed specifications see the Barrett catalogue in Sweet's.

THE Barrett COMPANY

40 Rector Street, New York, N. Y.

2800 So. Sacramento Ave., Chicago, Ill. Birmingham, Alabama

GENERAL ELECTRIC "HOME

to design a home

The Bliss family for which small homes in Classes A and B are to be designed.

$21,000 IN PRIZES

THERE is still time to enter the $21,000 G-E Architectural Competition. But the time is growing shorter. Competition closes at midnight on March 12, 1935.

The purpose of this competition is to encourage better designed homes from the standpoint of health, comfort, convenience and home entertainment—utilizing the latest mechanical and electrical advances.

Exterior design will, of course, be a factor in awarding prizes in this competition, but the judges will give greater weight to the skill and ingenuity with which the architect has provided for the maximum health, comfort, convenience and entertainment of the family for which the house is planned. This family is described in detail in the Contest Rules sent to each competitor.

Any architect, engineer, draftsman or designer, except G-E employees, is eligible to compete. Announcement of prize winners will be made on March 23rd. The jury of award consists of eleven members—seven architects representing different sections of the United States, one expert in child training, one home economics expert, one general contractor and one realtor. Names of jurors will be announced on March 19th, the first day of the judging.

Prize winning designs will be published, together with the report of the jury of award.

Member, Producers Council, Inc.

GENERAL ELECTRIC

ELECTRIC" COMPETITION

for the Bliss family

The Bliss family for which the medium size homes in Classes C and D are to be designed.

54 PRIZES IN ALL

GRAND PRIZE for Best Small Home (Best Home in Classes A and B)		$2500.
GRAND PRIZE for Best Medium Size Home (Best Home in Classes C and D)		2500.
FIRST PRIZE for Best Small Home in Class not receiving Grand Prize		1500.
FIRST PRIZE for Best Medium Size Home in Class not receiving Grand Prize		1500.
SECOND PRIZE, in each of the four classifications	$1250.	5000.
THIRD PRIZE, in each of the four classifications	1000.	4000.
HONORABLE MENTION, ten in each of the four classifications	100.	4000.
	Total	$21,000

FREE!

A handy reference file of architectural data on all G-E products used in home construction or equipment. The coupon below will bring you the complete program and the File. Fill it out and mail today.

Professional Advisor
G-E Architectural Competition
General Electric Company, Room 1208
570 Lexington Avenue, New York, N. Y.

GENTLEMEN: I desire to enter the G-E Architectural Competition for more livable homes. Please send me full information and the handy G-E Reference File.

Name.....
(PRINT)

Address.....

.....

Business Connection.....

.....

COMPANY

In today's hotel...and tomorrow's...

GENUINE MASONITE PRESDWOOD

NOWHERE is more meticulous care given to appointments than in the modern hotel. Every detail of design and color must be carried out to perfection. And at the same time durability, practicality and economy must be given paramount consideration.

Hotels everywhere have turned to PRESDWOOD and its allied Masonite Products for new-building and modernizing programs. Here are a few reasons why they are so ideally suited for floors, walls, ceilings, partitions, furniture:

- They can achieve almost any desired decorative effect.
- They are moisture and fire resisting.
- Their cost is very reasonable.
- They are all-wood and grainless. Will not warp, chip, or split.
- They come in boards of large size: 1/8", 3/16" and 1/4" thick. Can be cut or sawed to any desired shape. Can be varnished, painted or enameled with standard finishes.
- They are available from leading lumber dealers everywhere, and the quality is uniform wherever bought.

PRESDWOOD and its allied Masonite Products will perform hundreds of jobs, not only in hotels, but also in offices, theaters, factories, public buildings of all types, and in homes . . . large or small . . . and will reduce the cost of these jobs. Architects should familiarize themselves with the advantages and versatility of Masonite Products for all new-building or remodeling jobs. Masonite Corporation, 111 West Washington St., Chicago, Illinois.

The Embassy Room—a touch of the ultra-modern in the Lafayette Hotel, Washington, D. C. Sophisticated wall design executed with panels of plain PRESDWOOD alternating with panels of Tempered PRESDWOOD and chromium strips. Expensive-looking inlaid floor produced inexpensively with Masonite CUSHIONED FLOORING.

GENUINE MASONITE INSULATION AND PRESDWOOD

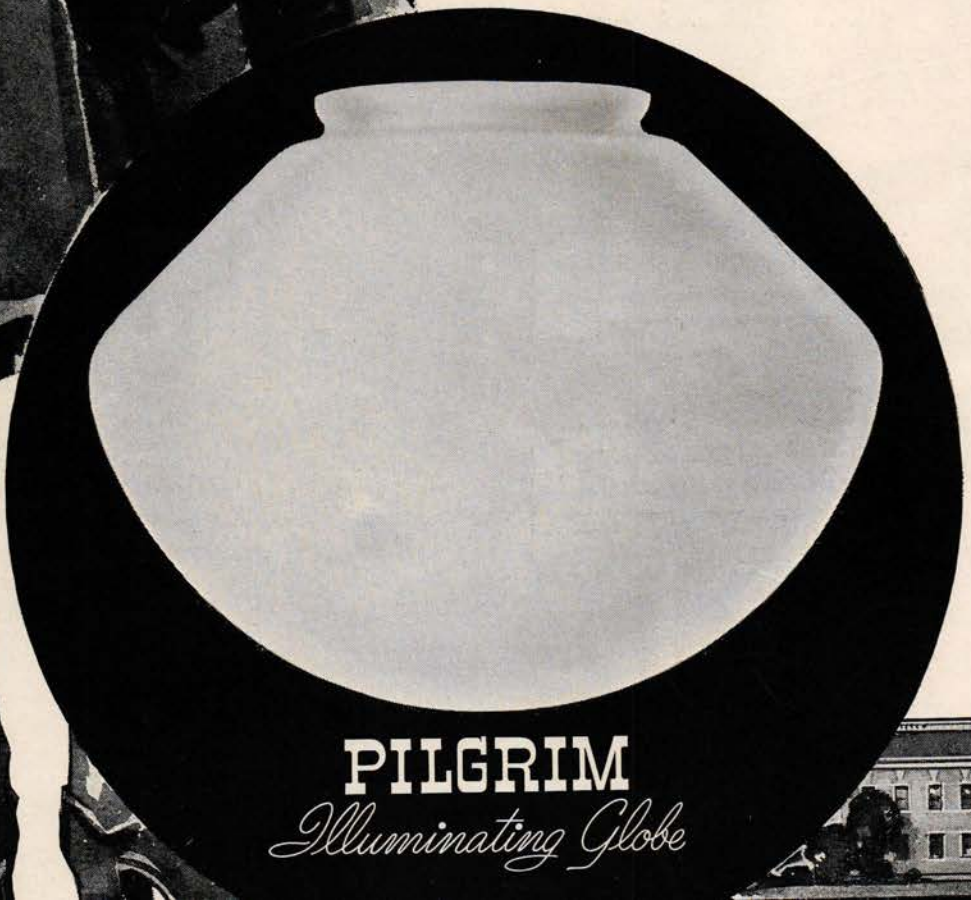
QUARTRBOARD • TEMPRTILE • CUSHIONED FLOORING

FOR THE DEFENCE OF GOOD VISION · ·

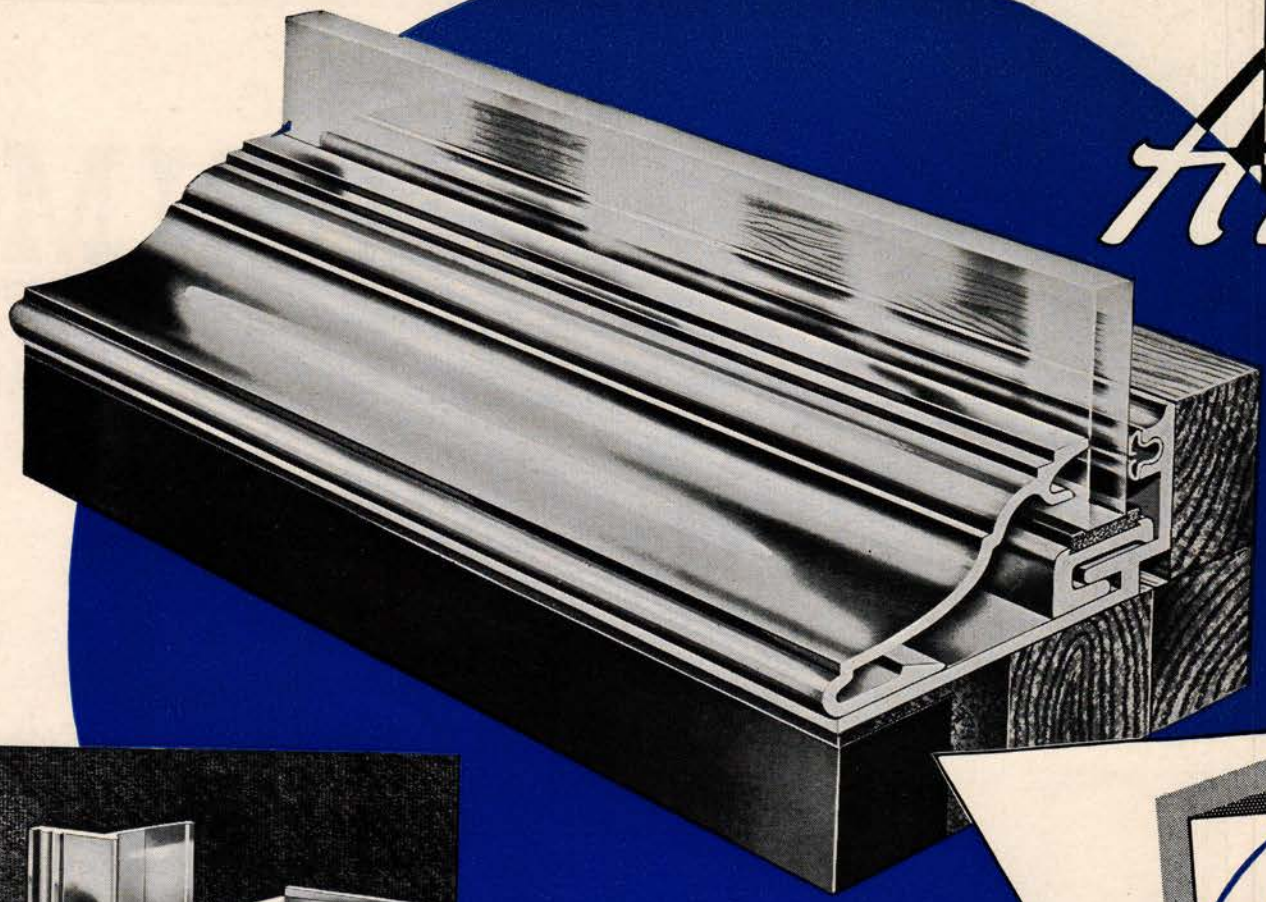
The PILGRIM Illuminating Globe

FOR SCHOOL LIGHTING

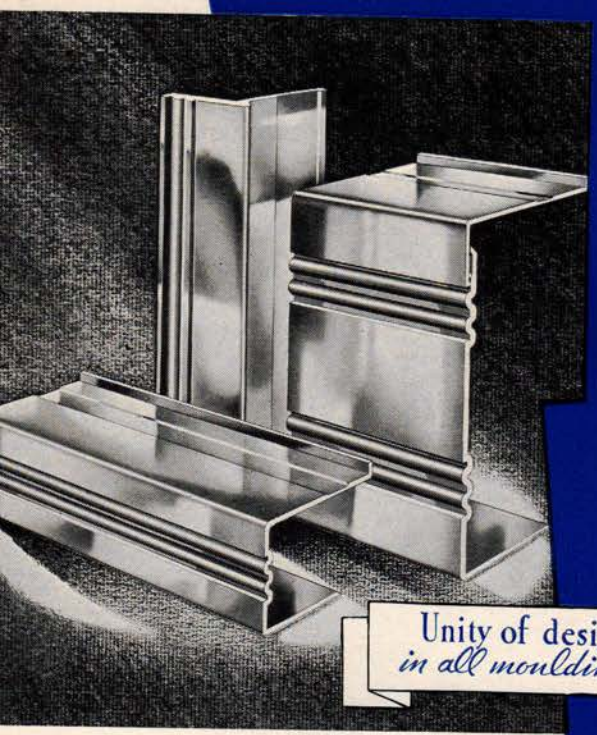
Efficient utilization of light, in addition to simplicity of shape and design, makes the Macbeth "Pilgrim" Illuminating Globe outstandingly appropriate for school lighting. It is an enclosing globe made of famous Macbeth "Monax" Illuminating Glass assuring good volume and distribution of light with low-surface brightness. Photometric data gladly furnished on request. MACBETH-EVANS GLASS COMPANY, Charleroi, Pa.



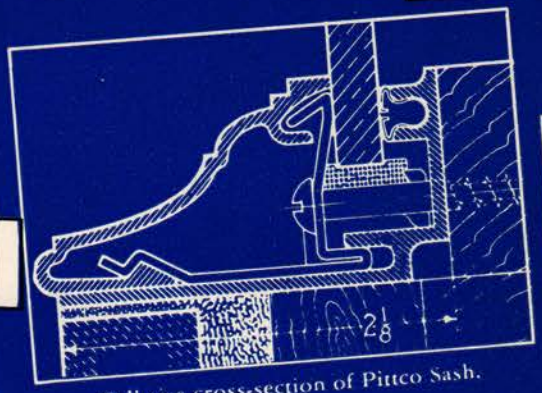
An



Now



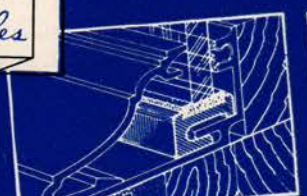
Unity of design
in all mouldings



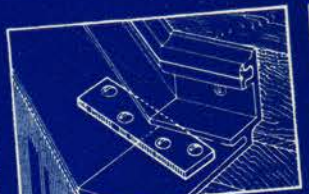
Full size cross-section of Pittco Sash.

The metal surfaces which contact the sides of glass act as a yielding cushion, absorbing dangerous shocks and jars.

Trim Vertical Bars
adjustable to all angles

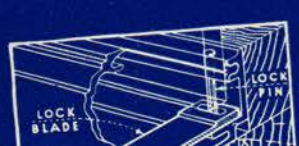


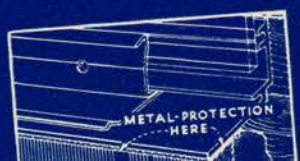
Non-ferrous metal supporting blocks are firmly wedged in groove, thus preventing tipping, rocking or sliding out of line during setting of glass.



Heavy metal cleats seated in groove at corners secure miters against rising, falling or spreading due to faulty frame work.

Glass-holding units and face members are self-adjusting to various glass thicknesses without tilting inward or outward.





Announcement

OF IMPORTANCE TO EVERY ARCHITECT WHO EXPECTS TO DESIGN A STORE FRONT

THE PITTSBURGH PLATE GLASS COMPANY OFFERS

PITTCO
STORE FRONT METAL

A new, beautifully designed metal store front construction with double yielding cushion grip on glass.

IT'S new . . . different . . . better . . . it's something you'll want to know about for the next store front job which comes to your board! For Pittco Store Front Metal has all the chief advantages of other store front constructions . . . and many new ones of its own!

BETTER DESIGN . . . Pittco didn't "just grow". It was deliberately designed as a complete line, all at the same time, and therefore exhibits a pleasing harmony and relationship of appearance, a true *unity* of design. GREATER STRENGTH AND CLEAR-CUT CONTOURS . . . all Pittco exposed members are extruded from solid metal, because this is the only practical means of assuring sharp, clear-cut contours, accuracy of mechanical detail and greater strength. BETTER DISPLAY . . . Pittco's generous depth of sash and attractive contours form an appropriate frame for the show window. BETTER GLASS PROTECTION . . . Pittco's new double yielding cushion grip on glass guards against breakage, strains and jars. NEW CONVENIENCE . . . Pittco vertical bars can be adjusted to all angles. And Pittco permits plate glass to be set in rear members of sash, show windows to be prepared for use, and face of building are applied. FINER FINISHES . . . Pittco is furnished in Alumilited Aluminum and in Architectural Bronze, Satin or Polished finish.

Find out about this new and better store front metal. Ask our warehouse in your vicinity for a demonstration. And you'll want our A. I. A. File Folder of complete information on Pittco, with five detail drawings showing various applications of Pittco, including its use in combination with Carrara Structural Glass. Sign and mail the coupon now.

PRODUCTS OF

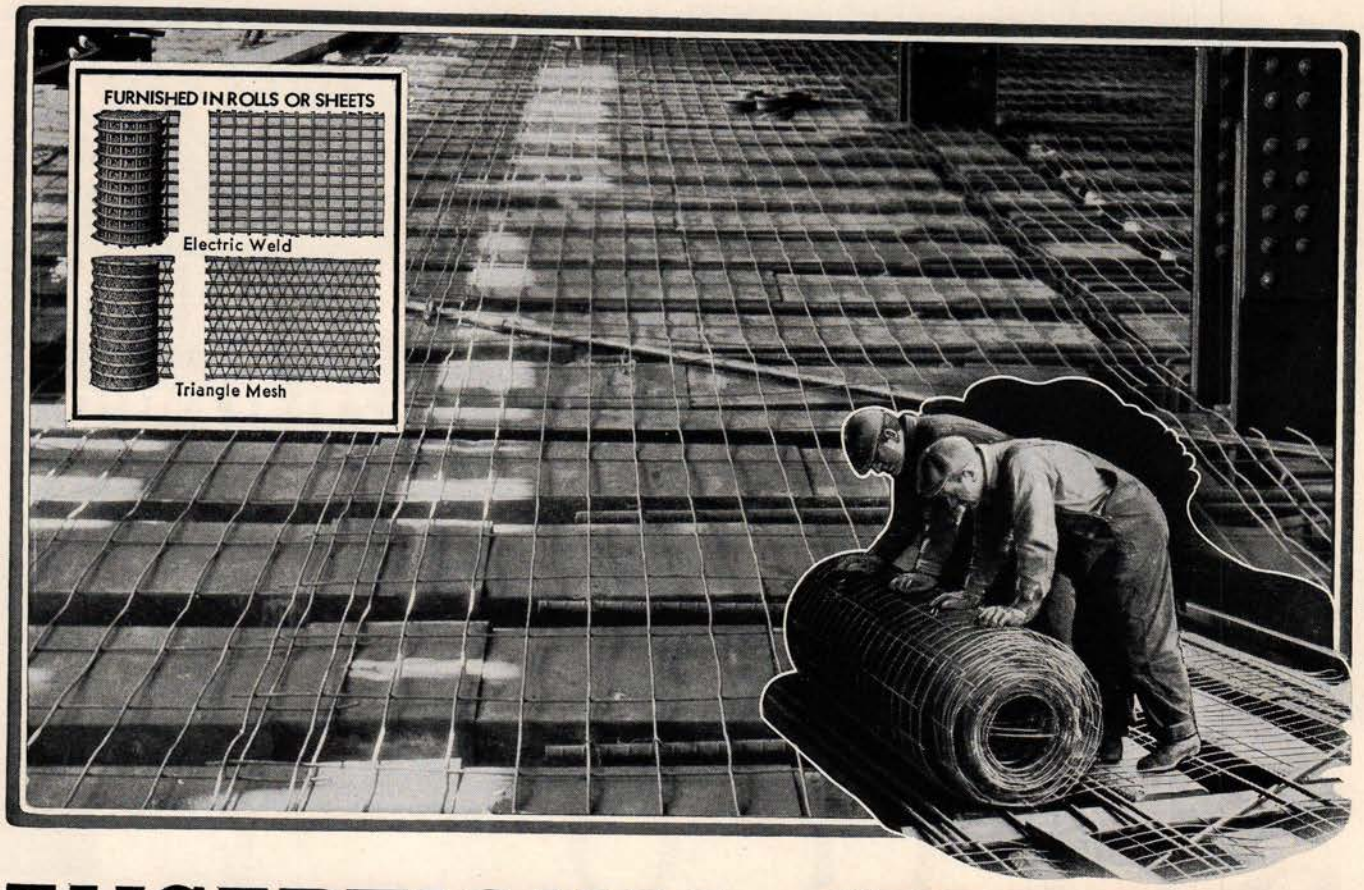
PITTSBURGH
PLATE GLASS COMPANY

Pittsburgh Plate Glass Company
2315 Grant Building, Pittsburgh, Pa.

Please send me without obligation on my part your folder containing full information on Pittco and detail drawings.

NAME _____

FIRM _____



EXCEPTIONAL STRENGTH *plus* LOW INSTALLATION COSTS

BUILDING for quality is one thing—doing it at a reasonable cost is another. In Concrete Floor Arch Reinforcement—either cinder or stone—American Steel & Wire Company Wire Fabric offers exceptional economy and service advantages. First—it is made of Cold Drawn Wire—and this means exceptional strength through the close distribution of high yield point steel. Second—it is easy to handle, which results in low installation costs. Third—its superior quality is the result of over 100 years of wire making experience. Constantly uniform, and offering many other advantages that you will wish to know about in detail. Interesting information is available—and will be forwarded on request.

AMERICAN STEEL & WIRE COMPANY

WIRE FABRIC

THE STEEL BACKBONE OF CONCRETE

AMERICAN STEEL & WIRE COMPANY

208 SOUTH LA SALLE STREET • • CHICAGO

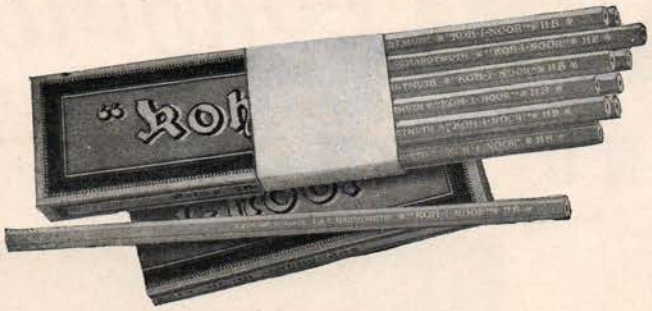
Offices in All Principal Cities

United States Steel Corporation Subsidiary

The Standard of Quality

KOH-I-NOOR Drawing Pencils

Koh-I-Noor Drawing Pencil in 17 Degrees: 6B to 9H. A Pencil for Every Need



Recognized for Its Uniformity, Smoothness, Density and Accuracy

The accuracy of a finished work depends in large part on the precision of the instruments used in that work. Architects recognize that in plans, drawings and renderings, the Koh-I-Noor Drawing pencil gives the finest results, because it *is* an instrument of precision.

L. and C. Hardmuth's drawing pencils have been the standard of quality for 145 years. The name Koh-I-Noor is used only on pencils that have been tested and approved over a period of years. For the *finest* work . . . depend on the *finest* pencils! Write *today* for full information on the full line of architects and artists pencils by Koh-I-Noor.

Koh-i-noor Pencil Co., Inc.

373 Fourth Avenue, New York City

Ornamental
ENTRANCE GATES
by Stewart

Whether your requirements demand the most decorative ornamental designs or those which gain favor through striking simplicity, Stewart Iron Fences and Entrance Gates offer you an unlimited source of designs to harmonize with all types of architecture. Stewart designers have worked with architects for 49 years. Write for the newest Stewart Catalog—it belongs in your files.

THE STEWART IRON WORKS COMPANY
Incorporated
122 Stewart Block CINCINNATI, O.

Stewart IRON AND WIRE FENCES

EVANS "Vanishing Door" WARDROBE

•

Class X

equipped with either "Jamb" type (as illustrated) or "Floor" type hinges. This is Class P wardrobe if made with flush doors.

CLASSROOM WARDROBES
High in Quality—Low in Cost

Made to set in a recess flush with the wall. Plaster back, ends and ceiling. No partitions, but with mullions between pairs of doors. Blackboards if required. Five-shelf bookcase instead of clothing equipment at no extra charge when desired.

The "Vanishing Door" hinges on which the doors are hung are made with double pivoted arms and swing the doors back into the wardrobe entirely out of the way. Simple—trouble-proof—and last as long as the building.

Wardrobes are furnished complete in the knock-down, with all woodwork cut to size, and only need to be nailed in place. The hinges are easier to put on than common butt hinges. The entire cost of installation is small.

We make many other types of school wardrobes, fully illustrated and described in Catalog "N." Send for your copy.

W. L. EVANS
WASHINGTON, INDIANA, U. S. A.

J&L JUNIOR BEAM FLOORS *Economical*

STEEL AND CONCRETE FLOORS

ACCEPTANCE by architects and builders of **J & L** Junior Beam Floors for large, expensive houses was established a number of years ago. Now, the system has been made so efficient and so simple to install that **J & L** Junior Beam Floors are being used with satisfaction and economy in modest six room houses.

The principal materials used are steel and concrete which are combined to form a rigid, vibrationless base for framing of any material. The floor is fire-resistant and vermin-proof.

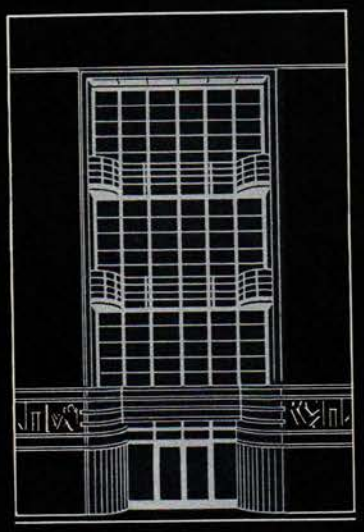
An illustrated book describing how **J&L** Junior Beam Floors are laid out and installed will be sent, without obligation, on request.

JONES & LAUGHLIN STEEL CORPORATION
AMERICAN IRON AND STEEL WORKS
JONES & LAUGHLIN BUILDING, PITTSBURGH, PENNSYLVANIA

Sales Offices: Atlanta Boston Buffalo Chicago Cincinnati Cleveland Dallas Denver Detroit Erie Los Angeles Memphis Milwaukee Minneapolis New Orleans New York Philadelphia Pittsburgh St. Louis San Francisco
Warehouses: CHICAGO CINCINNATI DETROIT MEMPHIS NEW ORLEANS PITTSBURGH
Canadian Representatives: JONES & LAUGHLIN STEEL PRODUCTS COMPANY, Pittsburgh, Pa., U. S. A., and Toronto, Ont., Canada

J&L STEEL

Other **J&L** *Construction Products: Steel Pipe, Bars for Concrete Reinforcement, Standard Structural Shapes, Light Weight Channels, Wire Nails, Steel Piling.*



CRAFTSMANSHIP IN ALUMINUM

qualifies for action in the New Building Era

The Aluminum Arts, today, occupy a greatly advanced position in the field of Architecture. Two factors are to be given the credit —

— The forward-looking architects who so quickly recognized the possibilities in this enduring metal.

— The skilled craftsmen who have prepared themselves to faithfully interpret architectural designs in Aluminum.

Hundreds of experienced organizations have entered the field with the enthusiasm of true artists. They KNOW Aluminum. They have acquired a high degree of deftness in the use of the many forms in which Aluminum is available.

Intimately working with these craftsmen and with many architects, Aluminum Company of America is continually helping to develop fabrication technique. Intensive research has improved the metal itself. Light weight combined with greater strength, corrosion-resistance and easy workability are a few of the qualities which have given Aluminum its permanent position in the building industry. A wide variety of finishes, including the new Alumiliting Process, have added both beauty and durability.

The names and addresses of craftsmen in the different fields of construction are available upon request. Ask for our book "Aluminum in Architecture." Address Aluminum Company of America, 1867 Gulf Building, Pittsburgh, Pa.

CRAFTSMEN IN EVERY BRANCH OF CONSTRUCTION ARE SKILLED IN THE USE OF

ALCOA · ALUMINUM

THE groundhog as a weather prophet has gone the way of many another old, mistaken idea that was accepted in a more credulous day.

Take the notion, once widely held but now swiftly passing, that to get a sheet able to defy rust you must pay a fancy price. That's another myth that has been refuted both by modern science and the experience of men who use sheets.

For years the American Society for Testing Materials conducted atmospheric-exposure tests on sheets. This is what they found: That of all the grades of commercial steel and iron, copper-bearing steel stands first by a wide margin in resistance to atmospheric corrosion.

Beth-Cu-Loy Sheets are made of copper-bearing steel. They have from two to two and one-half times the rust-resistance of ordinary steel sheets, yet cost only a trifle more. Wherever rust meets metal —in buildings, in and around industrial plants, in products—Beth-Cu-Loy is the sensible, economical sheet to use.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY

GENERAL OFFICES: BETHLEHEM, PA.

Banish Pipe Worries!

Call in

BRIDGEPORT

A FREE flow of water, with pipe that will be rustproof and leakproof the *entire life of the building.* This problem places weighty responsibility on the architect—responsibility to the owner and to every investor in that building, or in the business of which it is a part.

Brass or copper should be chosen. They offer *security.* But what about the expense? This question brings needless concern to many building designers who seek to save their clients money.

Upon investigation, they find that brass is not so expensive as they thought. They find that copper water tube, when the savings in labor and fittings are reckoned, is remarkably *inexpensive.* A copper job with soldered fittings actually costs no more than rustable pipe.

Bridgeport engineers have studied plumbing problems from every angle. Bridgeport makes alloys to take care of corrosive conditions at lowest cost. Bridgeport installations of brass pipe date back for over half a century—both seaboard and inland.

PLUMRITE BRASS PIPE

This experience is at your service. Its use will release your mind for other problems. We shall gladly discuss your proposed water systems with you—a line to us will bring someone qualified to advise.

BRIDGEPORT BRASS COMPANY
Bridgeport, Conn. *Established 1865*

• • •

"Water Pipe Sizes"—a small, handy booklet on figuring sizes for fixtures, risers and mains—will be mailed on request.

BRIDGEPORT COPPER WATER TUBING

For industrial piping, underground water installations, steam and hot-water installations, lawn sprinkler systems, oil burner piping. In hard, straight lengths, or flexible in

21 SAMPLES

OF TWO THOUSAND ARCHITECTURAL COMPLIMENTS

"The Chase Company should be congratulated for presenting a line of lighting fixtures, well designed, true to period, good materials and at reasonable prices."
G. E. P., COLUMBIA, PA.

"Wish to express my hearty appreciation of the real service you have done for our profession. In compiling your beautiful brochure (with price list) you are saving the architectural profession from many a headache." E. E. N., BURLINGTON, KANSAS

"Now, my fixture allowance will be justly spent—that is, the 'Chase' way."
M. J. D., OKLAHOMA CITY, OKLA.

"You are giving a service only rendered heretofore by custom design shops. We hurrah for you." F. & S., SAGINAW, MICH.

"Congratulations! Finest display of lighting fixtures ever turned out by any one firm. Hope to use them the first opportunity."
A. G., BROOKLYN, NEW YORK

"Substantial workmanship, good designs, popular prices—they mean so much to the architect trying to produce good work and struggling to keep within his estimate. I hope you will—I know you will have every success." A. Q. A., COLUMBUS, OHIO

"Your catalog presents a beautiful line of lighting fixtures in a most attractive manner and materially aids the architect's problem of influencing the owner's selection of the proper fixtures." J. W. D., HOUSTON, TEXAS

"You are doing a work that is a direct benefit for the architectural profession and builders, alike." H. E. E., WAUKEGAN, ILL.

"Congratulations on the marvelously illustrated lighting fixture catalog. The fixtures illustrated depict and blend harmoniously with the period for which they were designed. Well done—Chase!"
P. G. W., CHICAGO, ILLINOIS

"You are to be congratulated on the splendid taste shown in compiling this very distinctive collection of residential fixtures."
J. B. E. R., GRAND FORKS, N. D.

"Worth while fixtures, at reasonable prices, in real metals and of designs backed by historic precedence and inspired by modern tendencies." G. E. T., NEW BRIGHTON, PA.

"It is most gratifying to find such a beautiful collection of true designed-to-the-period lighting fixtures."
L. S. B., BROOKLYN, NEW YORK

"It is quite a satisfaction to have available a distinctive choice of fixtures of exclusive character." J. C. N., ST. PAUL, MINN.

"I consider your fixtures to be in excellent taste and offering a wide variety of choice. I wish to commend the Chase Company on producing fixtures of such fine quality and design. Such fixtures should be readily accepted and widely used."
W. L. M., LOS ANGELES, CALIF.

"An outstanding line of lighting fixtures applicable to any style of architecture."
J. O. B., SPRINGFIELD, OHIO

"I have seen your fixtures as well as your catalog and feel very happy to know that for inexpensive as well as expensive jobs I can have the best in fixtures."
T. W. J., JR., BALTIMORE, MD.

"This line of fixtures fills a long felt want and comprises a collection that will appeal to the most discerning as well as the general public." J. M. H., NEW YORK CITY

"Congratulations! The designs of the new Chase Lighting Fixtures are excellent, the prices reasonable. I look forward to using some of these fixtures, with pleasant anticipation." P. A. B., GREENSBURG, PA.

"We have already used a few of your splendid fixtures and now with these adequate and excellently illustrated catalogs, it will be a pleasure to work out fixture problems, thanks to your intelligent industry in making these fine fixtures available."
F. R., MADISON, WISC.

"A great product. This collection satisfies my ideal as an architect."
J. L. W., NEW YORK CITY

"I believe your fixtures fill a long felt need for designs of character reasonably priced and cleverly designed."
H. A. N., LOS ANGELES, CALIF.

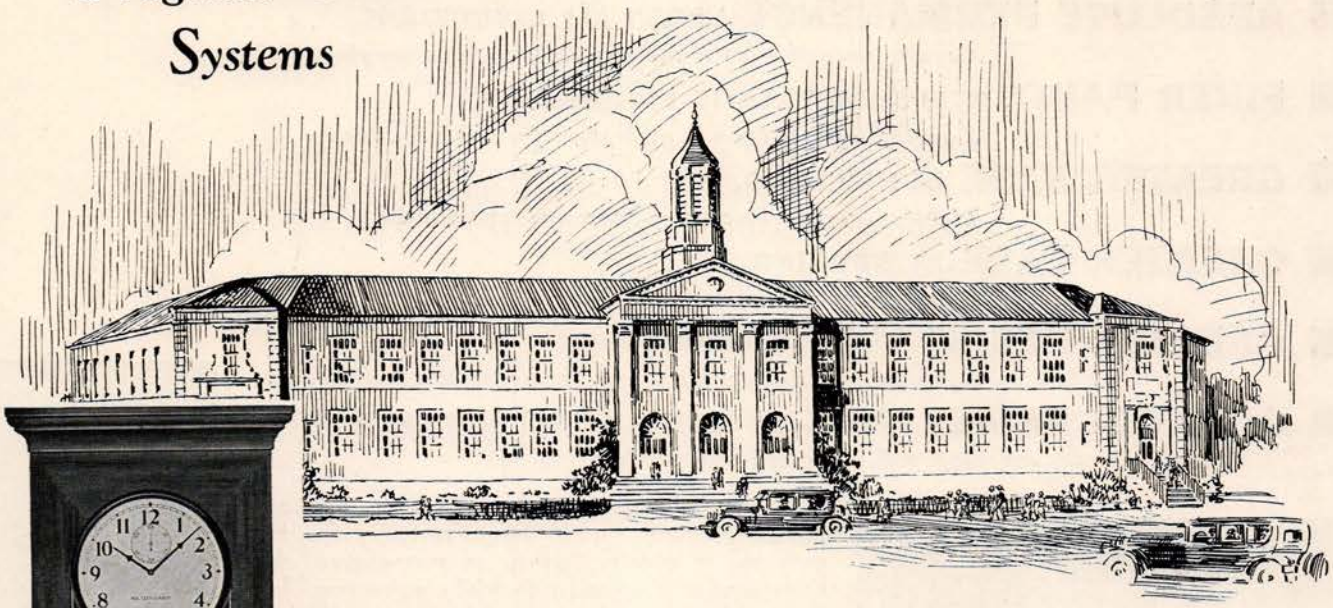
CHASE LIGHTING FIXTURES . . . CHASE BRASS & COPPER CO.

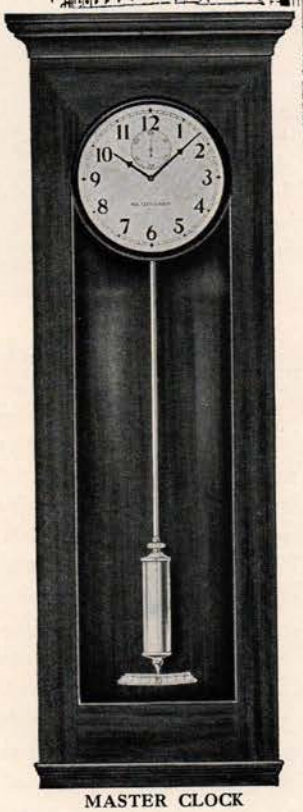
Incorporated
Subsidiary of Kennecott Copper Corporation

Chase Tower **10 East 40th Street** **New York City**

HOLTZER-CABOT

Program Clock Systems





MASTER CLOCK

HOLTZER-CABOT PROGRAM CLOCK SYSTEMS ARE DIFFERENT

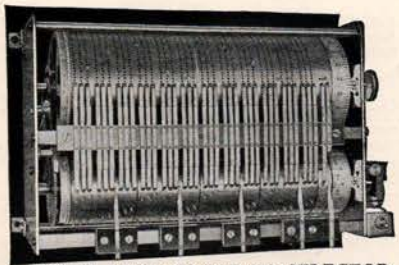
THEY EMBRACE many advanced and exclusive features developed by Holtzer-Cabot, who for sixty years have designed and produced high quality Fire Alarm, Telephone, Laboratory, and Program Bell equipment.

Holtzer-Cabot Systems have been chosen by leading Architects and School Boards for thousands of schools throughout the Country.

This advanced Program Clock System, with its unique principle of self-correction, is a radical improvement over others.

The efficient and silent operation of the secondary movement is worthy of special attention. The program selector provides extreme flexibility.

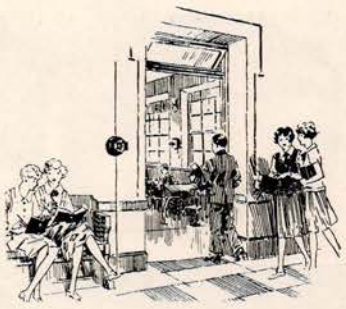
SECONDARY CLOCK



DRUM TYPE PROGRAM SELECTOR

For full particulars write Signaling Department 31

A most interesting exhibit of Holtzer-Cabot Signaling Apparatus will be shown at the N.E.A. Convention at Atlantic City, February 23rd to 28th, booths A-23-25-27.



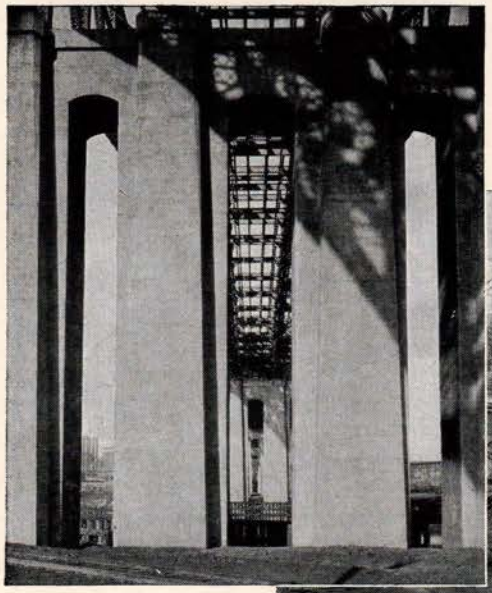
THE HOLTZER-CABOT ELECTRIC CO.

Offices in all Principal Cities

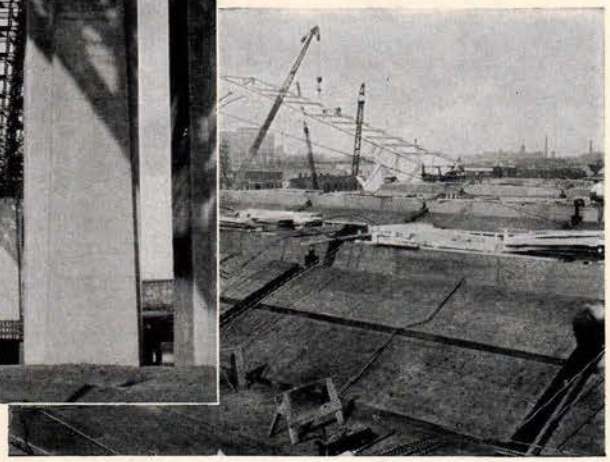
PIONEER MANUFACTURER OF SCHOOL SIGNALING SYSTEMS

*Now A SUPER

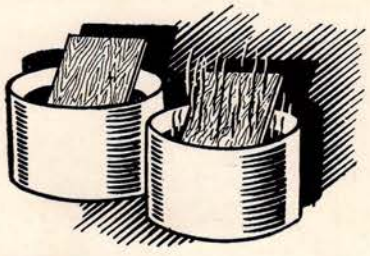
- **ABSOLUTE PERMANENCE UNDER ALL CONDITIONS.**
  Greater strength—lower moisture content, less warping, shrinking.
- **FINER PAINT, STAIN AND PLASTIC FINISHES.**
  Smoother surface because each panel pressed individually.
- **GREATER EASE IN HANDLING.**
  Lighter in weight because of lower moisture content.
- **GREATER EASE IN WORKING.**
  Easier on tools because of non-abrasive resin binder.
- **GREATER RESISTANCE TO MOISTURE.**
  Plies stay tight because fused together under heat and pressure.
- **GREATER RESISTANCE TO MOLDS, FUNGI AND INSECTS.**
  Termites, molds and fungi will not attack resin binder.



Because of these six great features, Harbord SUPER Plywood means the opportunity for the architect to specify "panels of permanence" for home modernizing and industrial construction. For these ultra-strong, smoother, lighter, more efficient panels offer more than any other type of plywood or lumber on the market.



For Interior Panelling, Built-in Cabinet Work use Harbord SUPER Wallboard in line with the increasing vogue for panelled rooms — the smoother surface allows better paint and stain finishes — the non-abrasive resin binder is easier on tools. As Concrete Form Lumber, plan on Harbord SUPER Plycrete for panels that cut contractors' costs still more because of tremendous strength and durability. Specify it for Marine work or below ground use, where molds, fungi or insects ruin ordinary lumber. The resin binder repels all such attacks. Plan it for Outdoor uses where panels with non-separable plies are needed, panels that shrink less, warp less — Outdoor Signs, Temporary Store Fronts, Barns, Chicken Houses, Hog Houses, Prefabricated Unit Houses, Factory Roofs.



PANELS SOAKED AND BOILED

Every plant test finds Harbord Super Plywood worthy of all outdoor and indoor uses. Soaked and boiled in water for two months, plies remain tight and sound because the binder is absolutely insoluble in water—water absorption 45% less than former types of plywood. Shear tests show an average wet strength of 214 pounds per square inch, dry strength of 315 pounds.

PANELS OF PERMANENCE HARBORD

PLYWOOD...

MADE BY A STARTLING NEW PROCESS THAT REVOLUTIONIZES BOTH MANUFACTURE AND USE OF PLYWOOD.

To architects and the entire construction industry, Harbord introduces a distinctly new type of plywood—one that stands out sharply as the one modern, outdoor construction wood —the only permanent plywood manufactured and sold in an economical price range.

Made by "Nature's own process" of welding wood to wood never to come loose, Harbord SUPER Plywood immediately presents a whole new array of plywood facts. A thousand new uses instantly spring up, and it becomes far more efficient for a thousand old uses. It can be used more advantageously and with much greater economy than any other plywood yet produced.

Don't overlook Harbord SAG-NOTT Doors with the Cotter-Keyed Joints that can't pull loose!

THE PATENTED NEVIN PROCESS

is a radical departure in plywood making, developed by James V. Nevin, Ph.D., Ph.C., Chemical Engineer with patents controlled exclusively by Harbord. The plies are fused together with a natural resin-base bond under heat and tremendous pressure—hot-prest for permanence. Not only is the binder positively waterproof but possesses unbelievable strength — the strongest binding agent known.

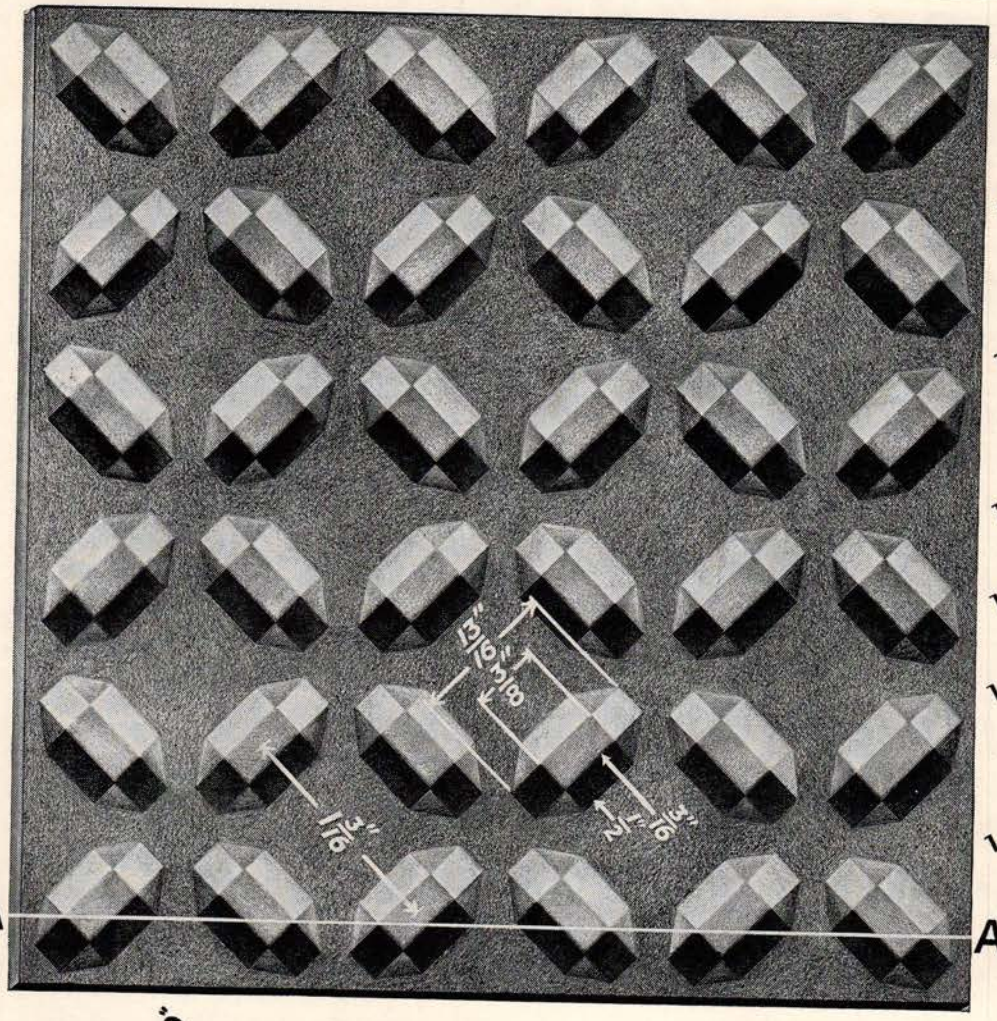
Harbord SUPER Plywood is available in all thicknesses, numbers of plies, widths and lengths. Write the general office for architects' information about how Harbord SUPER Plywood is made and why it lifts itself above ordinary plywood.

HARBOR PLYWOOD CORPORATION
MILLS AND GENERAL OFFICES, HOQUIAM, WASHINGTON
DISTRIBUTING WAREHOUSES: Atlanta, Chicago, Indianapolis, Milwaukee, Pittsburgh, Philadelphia
REPRESENTATIVES: Baltimore, Cleveland, Detroit, Chicago, New York, Worcester, Washington, D. C., Kansas City, San Francisco, Los Angeles, Dallas, Omaha

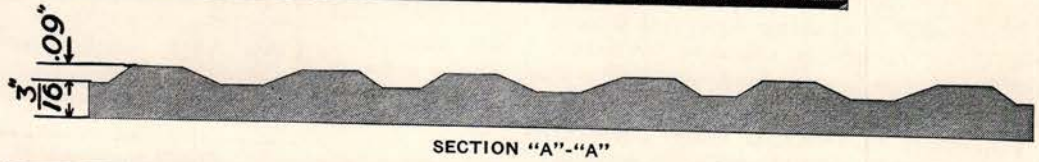
hot-prest **WITH NATURE'S OWN RESIN BY THE NEVIN PROCESS**

SUPER PLYWOOD

MULTIGRIP
FLOOR PLATE



- ✓Maximum resistance to slipping
- ✓Comfortable under foot
- ✓Good traction for wheeled vehicles
- ✓Easy to clean
- ✓Drains readily
- ✓Attractive and modern in appearance
- ✓Symmetrical—minimizes waste in cutting



SECTION "A"-"A"

Section	Thickness Inches	Width and Length, Inches			Weight per sq. ft. Pounds
		Over 6" to 15" wide	Over 15" to 30" wide	Over 30" to 84" wide	
S-300	3/16	120"	240"	480"	8.70
	1/4	120"	240"	480"	11.25
	5/16	120"	240"	480"	13.80
	3/8	120"	240"	480"	16.35
	7/16	120"	240"	480"	18.90
	1/2	120"	240"	480"	21.45

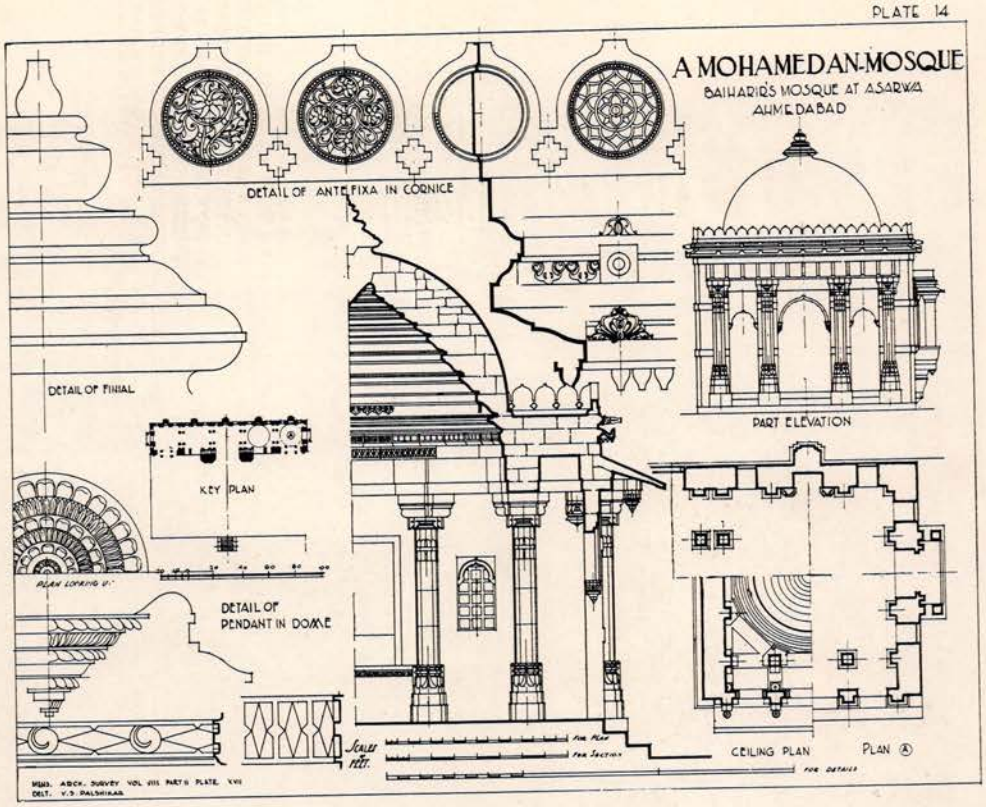
MANUFACTURED BY

Illinois Steel Company

208 SOUTH LA SALLE STREET • CHICAGO, ILLINOIS

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

THE ARCHITECT'S LIBRARY

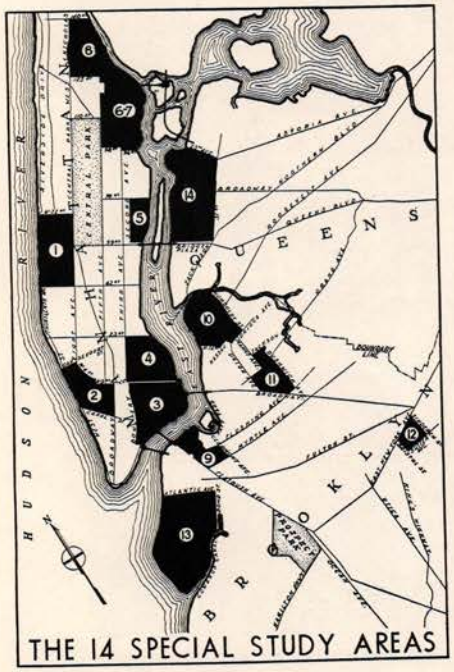


THE DESIGN DEVELOPMENT OF INDIAN ARCHITECTURE. *By Claude Batley, A.R.I.B.A., Professor of Architecture, Government School of Art, Bombay. John Tiranti & Co.,* 13 *Maple Street, Tottenham Court Road, London, W.*1. *Portfolio of* xv *pages and* 16 *plates.*

The sixteen plates of measured details included in this, part 1 of Mr. Batley's portfolio, have all been drawn by his Indian students. The text portion of the portfolio is devoted to descriptive notes of these plates, which illustrate large and small buildings in various parts of India. The notes are complete with information of pertinent historical facts, location and treatment, and method of Hindu planning. The edition of the portfolio is limited to three hundred copies, of which two hundred and fifty copies are for sale.

MAPS AND CHARTS PREPARED BY THE SLUM CLEARANCE COMMITTEE OF NEW YORK 1933-34.

From Report of Slum Clearance Committee of New York, 1933-34



These 243 maps and charts dealing with the 14 areas in Manhattan and Brooklyn in which housing conditions seemed to require special investigation, have been prepared by the Slum Clearance Committee to establish a base for an inquiry as to (1) the location of sub-standard areas in New York and (2) the fitness of any such areas for low-cost housing. With funds made available by the Rockefeller Foundation and the Fred L. Lavanburg Foundation, and assistance from informed organizations and individuals, the areas were studied for (1) economic and physical demonstration of sub-standard conditions, and (2) demonstration that they were good for clearing buildings and rehousing the poor in relation to (a) economic aspects, (b) city plans, and (c) sufficient social amenities available.

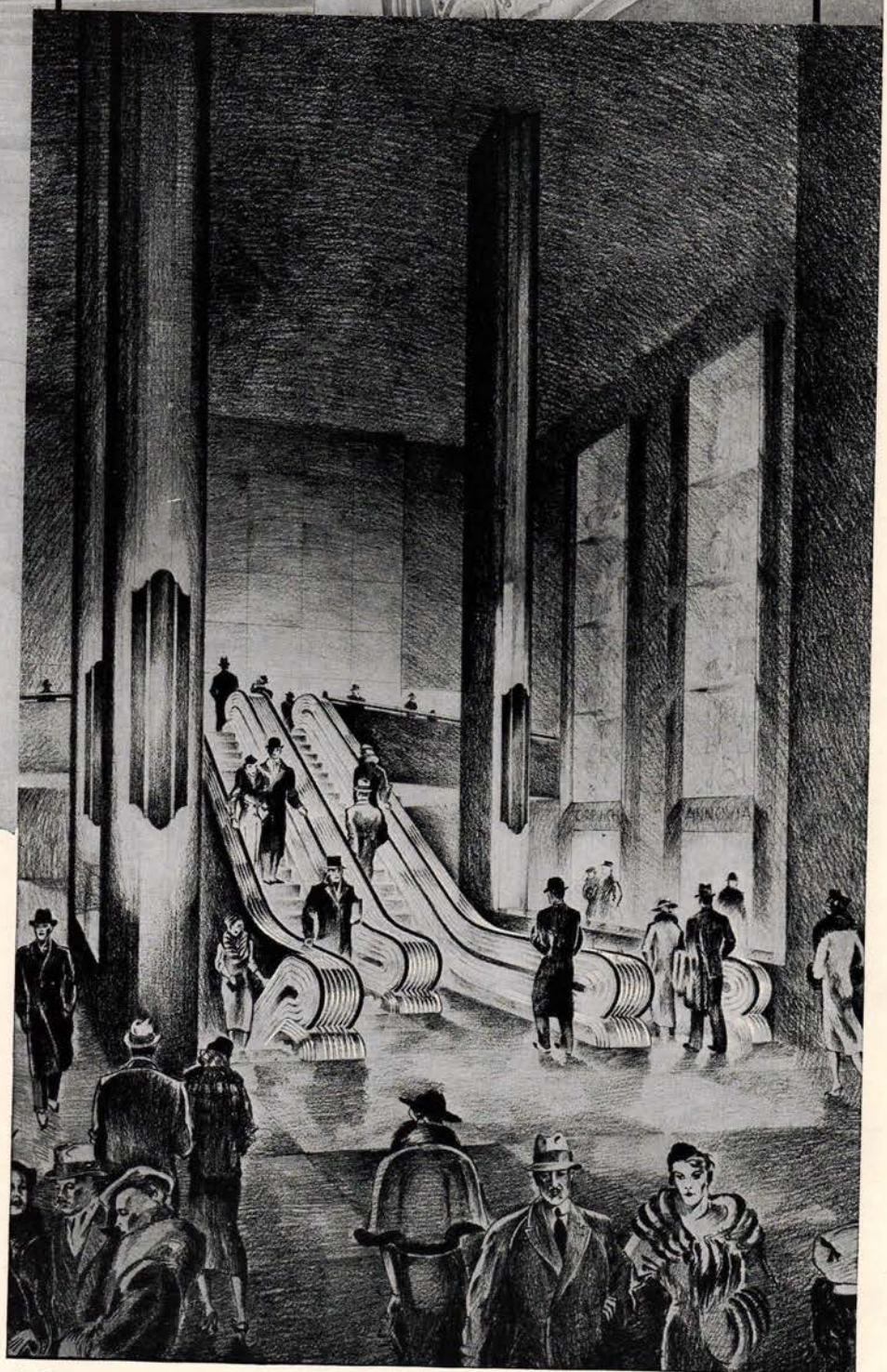
Maps and charts in the social factor study include population density, increase and decrease, and racial shifts; fatal fire and street accident records; crime incidence and juvenile delinquency; infant mortality and contagious disease rates; social agencies and active welfare cases.

Physical condition of the areas is shown by charts on new construction 1924-1934 and condition of present dwelling structures; the proportion of old and new law tenements, their physical condition, provision for sanitation, heat, hot-water service, and the housing violations filed against them.

The economic side of the problem includes studies on the real estate factors; tax arrears; tax exempt property; assessed valuation of property; rent levels and unused land and abandoned buildings.

These maps and charts, together with those showing work areas and transit facilities, and lists of parks, playgrounds and schools, also others prepared by the Land Utilization Committee of the New York Building Congress, are in book form as presented by the Slum Clearance Committee to the New York City Housing Authority, April 3, 1934.

the modern version of the grand stairway



In the latest building in Rockefeller Center, New York, Otis Escalators will be a feature of the strikingly modern lobby.

These escalators combine beauty with mechanical excellence, greatly enhancing the appearance of the lobby and also providing a second ground floor which materially adds to the income of the building.

A new standard for quietness, safety and smoothness of operation will be established by these new escalators. They will be capable of moving, to or from the first floor, 32,000 persons per hour, which is equivalent to the capacity of a grand stairway 80 feet wide.

ARCHITECTS
Reinhard & Hofmeister
Corbett, Harrison & MacMurray
Hood & Fouilhoux

MANAGERS
Todd, Robertson & Todd
Todd & Brown

OTIS ELEVATOR COMPANY OFFICES IN ALL PRINCIPAL CITIES OF THE WORLD

NEWS OF THE FIELD

The architectural firm of Jones, Furbringer and Jones has been dissolved. Mr. H. Furbringer will continue in the practice of architecture with offices at 110-111-112 Porter Building, Memphis, Tennessee.

Walk C. Jones - Walk C. Jones, Jr., architects, announce the opening of their offices in the Shrine Building, Memphis, Tennessee.

The partnership of Robert S. Arnold and L. Morgan Yost has been dissolved. L. Morgan Yost, architect, will continue his practice in the First National Bank Building, Wilmette, Illinois.

W. Whitehall, architect, is practicing at 100 Pelham Road, New Rochelle, New York.

M. H. Westhoff, architect, is now located at 1216 Enfield Street, Enfield, Connecticut.

The American Institute of Steel Construction announces its seventh annual bridge design competition, open to bona fide registered students of structural engineering and architecture in recognized technical schools of the United States and its possessions and offers two cash prizes of $100 and $50 respectively for the designs placed first and second. Certificates, signed by the Jury of Award and the officers of the Institute, will be awarded to those whose designs are given honorable mention. The subject of the competitive design is a steel grade crossing elimination bridge. Preliminary drawings must be received at the executive offices of the American Institute of Steel Construction, 200 Madison Avenue, New York City, not later than March 16, and final drawings not later than April 27. F. H. Frankland, Technical Director; Clyde MacCornack, Chairman, Committee on Aesthetic Design of Steel Bridges.

San Francisco's annual Building Exposition will be held May 4 to 12, it has been announced by W. H. George, President of the San Francisco Builders Exchange which is sponsoring the event, designed to take the place of the old Mechanics Fair, a San Francisco institution prior to the fire of 1906.

The forthcoming Greater New York Better Housing, Home and Building Modernization Exposition, to be held in New York during the week of March 25, is being sponsored by the New York City Better Housing Committee of the Federal Housing Administration as a major activity of its Better Housing Program.

The School of Architecture of Princeton University announces for the scholastic year 1935-36 two competitive prizes. The prizemen will be exempt from charges for tuition, and will receive $500 each. On or before April 15 candidates shall file with the Director of the School of Architecture formal applications and three letters of reference. Application blanks may be obtained by addressing the Director of the School of Architecture, Princeton University, Princeton, New Jersey.

The preliminary examinations for the Rotch Travelling Scholarship will be held April 8, the en loge sketches April 15 and 17, and the sketch for the finals April 20. Applicants are expected to register on or before April 1. For registration and further information apply to C. H. Blackall, Secretary, 31 West Street, Boston.

The Housing Exhibit, recently at the Museum of Modern Art under the auspices of the New York City Housing Authority, Columbia University Housing Orientation Study, the Fred L. Lavanburg Foundation, and the Housing Section of the Welfare Council of New York City, is now available for exhibition in other cities. The exhibit was visited by some 17,000 persons during the twenty-four days it was open. It is now being prepared for the State Housing Authority of New Jersey which will display it in a number of cities throughout the state in March. Any organization interested in the loan of this exhibit should communicate with Lyman Paine of the New York City Housing Authority, 10 East 40th Street.

Organization of the American Society of Planning Officials is announced. The purposes of the society are to act as a clearing house for the exchange of information and the improvement of administrative standards and practices in land and community planning, and to serve the increasing body of national, state, regional and local planning agencies and their staffs and consultants. The society takes its place among the sixteen other associations of public officials which have set up their headquarters at 850 East 58th Street, Chicago. Officers are: President, Alfred Bettman, Cincinnati, President of the National Conference on City Planning and Regional Director of the National Resources Board; Vice-President, Morton L. Wallerstein, Richmond, Va., Chairman of the Virginia State Planning Board; Treasurer, Charles S. Ascher, Secretary of Public Administration Clearing House, Chicago.

CALENDAR OF EXHIBITIONS AND EVENTS

February 16-24	Modern Home Exposition at Coliseum, Wabash Avenue and 16th Street, Chicago.
Through February	Whistler Centenary Exhibition of Prints at the Metropolitan Museum of Art, New York City.
Until March 7	Exhibition of work of George Caleb Bingham, Gaston Lachaise, and Henry Hobson Richardson, at Museum of Modern Art, New York City.
March 12	Closing date of "Home Electric" Architectural Competition, sponsored by General Electric Company. For program, apply to Kenneth K. Stowell, professional adviser, General Electric Co., Room 1208, 570 Lexington Avenue, New York City.
March 18-May 14	Exhibition of African Art, Museum of Modern Art, New York City.
Week of March 25	Greater New York Better Housing, Home and Building Modernization Exposition.
April 4-13	Architectural League Exhibition, Grand Central Palace, New York City.
April 15-May 15	Industrial Arts Exposition at Rockefeller Center, New York City, under auspices of National Alliance of Art and Industry. Model of Frank Lloyd Wright's Broad Acre City. Housing models by other architects.
May 4-12	Annual Building Exposition in San Francisco.

FOR MARCH
HOUSING NUMBER OF THE ARCHITECTURAL RECORD

FEDERAL HOUSING GROUP AT ATLANTA, GEORGIA
BURGE & STEVENS, ARCHITECTS

BASIC information on house planning.

•

Economical room arrangements.

•

Requirements for kitchens, living rooms, bedrooms.

•

Listing of standards for houses and apartments.

•

Equipment of housing.

•

Orientation.

•

Efficiency of plan arrangement.

•

Daylighting.

•

Illumination.

•

Construction.

•

Model plans recommended by Federal Housing Administration.

•

Portfolio of single-family houses.

HOUSE OF H. L. TOPLITT, BRENTWOOD HIGHLANDS, CALIFORNIA . . . H. ROY KELLEY, ARCHITECT

Haight

SPECIAL REFERENCE NUMBER

FEATURING SINGLE AND GROUP HOUSING

ELEVATORS

PHOTOGRAPH BY

VOL · 77 NUMBER 2

1 9 2 3 5

FEBRUARY

THE

ARCHITECTURAL RECORD

WHAT DO SLUMS COST?

FACTS UNCOVERED IN A BOSTON SURVEY

BY WILLIAM STANLEY PARKER

Vice-Chairman, Boston City Planning Board

The studies made in Cleveland of the tax income and costs assessable against a specific slum area, and its broader studies of real property, gave a definite impulse to similar studies in other cities. The Department of Commerce developed a Real Property Inventory in some sixty cities as a CWA project and subsequently other cities carried out similar studies either as CWA or ERA projects.

One of the latter projects is now being carried on in Boston under the supervision of the City Planning Board and it includes some additional special studies not a direct part of but clearly related to a Real Property Inventory.

One of these studies relates to the tax income and cost of six selected areas and was suggested by the earlier study of that sort in Cleveland. That one, however, dealt solely with one selected slum area, which prevented any conclusions of a comparative nature. The "cost" of a slum area was indicated but no information was given as to similar "costs" or "profits" in other types of residential areas or in business and industrial areas. The Boston study was developed in order to provide comparative data.

Six districts were selected, each comprising a single census tract except in two cases where the census divisions of the business and industrial areas did not seem practical for such use. The aim was to develop the facts concerning a cross section of the city by as few examples as would seem to give a true indication, and by as many as the duration of the ERA project seemed to permit us to complete. The six districts selected were (1) a high-grade business section; (2) a high-grade industrial area; (3) a high-rental residential area; (4) a "miscellaneous district" which included some good residences, various institutions, some retail trade frontages, with a principal core of densely built three-, four-, and five-story apartment buildings of medium rentals; (5) a good one- and two-family residence district, suburban in character yet within the city limits; (6) a low-rental area containing a substantial amount of depreciated and obsolete construction, not the most dense in population but actually five times

TABLE I	CITY				BUSINESS G - 1				INDUSTRIAL M - 4			
	ENTIRE CITY	Per Cap.	PER ACRE		For District	Per Cap.	PER ACRE		For District	Per Cap.	PER ACRE	
			Gross	Net			Gross	Net			Gross	Net
	$	$	$	$	$		$	$	$		$	$
INCOME—Table V	59,166,150	74.4	1,933.7	3,256.5	2,359,200	—	76,349.5	126,160.4	701,100	—	5,447.6	6,271.0
COST—Tables III and IV	61,939,298	77.8	2,024.7	3,409.8	321,406	—	9,682.4	16,013.5	104,722	—	814.3	936.5
NET INCOME					2,037,794		66,667.1	110,146.9	596,378		4,633.3	5,334.5
NET COST	2,773,148	3.4	91.0	153.3								

BOSTON CITY PLANNING BOARD—1934 ERA PROJECT X2235-F2-U46

as dense as the suburban area and twice as dense as the miscellaneous apartment area.

Obviously other business and industrial districts as well as several other types of residential areas could have been studied, if time had permitted, that would have added several other intermediate points on our cross section and also added further interest to the study. Perhaps they can be done later. For the present we must base our conclusions or our questions on the six sets of facts now available and so far as I am aware they constitute the first comparative study of this sort.

With this brief comment are printed tables showing the principal results in terms of "income and cost," "area and population," and "cost of County Courts—civil and criminal." I shall not attempt here to lay down any quick conclusions. There is meat here to be well chewed before swallowing. It is well, however, to explain briefly how the costs were allocated and certain items that need to be kept clearly in mind in interpreting the results.

The city budget was allocated in each major item, such as Public Welfare, Park Department, Fire Department, etc., after consultation with the heads of the departments, all of whom gave the fullest cooperation. In some cases the department total was broken down into its component parts, each of which was then allocated to the six districts on the most equitable practicable basis. This was true particularly of the Public Works Department in which the costs of paving, cleaning and snow removal were apportioned by street "area," the costs of lighting, garbage and ash removal by street "length," and the remaining items on a per capita basis.

Public Welfare cost was apportioned in part according to the actual sums spent in each district, as for dependent aid, mothers' aid, and old age assistance, but the major item of unemployment relief and certain other items were distributed on a per capita basis; no other basis appeared practicable although such a distribution is obviously unfavorable to the more prosperous districts.

In some cases the distribution was based upon a combined per capita and assessed value basis, as for the

TABLE II	City	Business G - 1		Industrial M - 4		High Rental K - 3		Suburban W - 5		Miscel. Dist. J - 5		Low Rental M - 3	
	For City	For District	% City	For District	% City	For District	% City	For District	% City	For District	% City	For District	% City
Gross Area by Acres	30,598	30.9	0.1	128.7	.42	169.6	.55	365.9	1.2	142.7	.47	27.4	.09
Net Area Available for Use	18,168.5	18.7	0.1	111.8	.62	41.4	.23	237.9	1.3	76.4	.42	17.6	.09
Population, 1934	795,256	—	—	—	—	2,978	.37	9,299	1.2	7,145	.90	3,366	.42
Persons (1934) Per Acre Gross Area	26.0	—	—	—	—	17.5	—	25.1	—	50.1	—	122.8	—
Persons (1934) Per Acre Net Area	43.8	—	—	—	—	71.9	—	39.2	—	93.7	—	191.2	—

HIGH RENTAL K - 3				SUBURBAN W - 5				MISCEL. DIST. J - 5				LOW RENTAL M - 3			
For District	Per Cap.	PER ACRE		For District	Per Cap.	PER ACRE		For District	Per Cap.	PER ACRE		For District	Per Cap.	PER ACRE	
		Gross	Net			Gross	Net			Gross	Net			Gross	Net
$ 931,600	$ 312.8	$ 5,492.9	$ 22,502.4	$ 388,900	$ 41.8	$ 1,062.8	$ 1,634.7	$ 816,400	$ 114.4	$ 5,721.1	$ 10,686.0	$ 44,800	$ 13.3	$ 1,635.0	$ 2,545.0
221,390	73.8	1,304.6	5,347.5	579,321	62.3	1,582.7	2,437.8	469,178	65.1	3,287.7	6,141.5	310,624	92.3	11,336.0	17,649.6
710,210	239.0	4,188.3	17,154.9					347,222	49.3	2,433.4	4,544.5				
				190,421	20.5	519.9	803.1					265,824	79.0	9,701.0	15,104.6

city debts, the Park Department, and the general administrative costs of the city departments, and in certain cases on a per capita basis solely, as in the case of the Health, Hospital and Institutions Departments.

Where possible, as with the Retirement Board, Police Department, Fire Department and Public Schools, costs were distributed according to the actual service rendered to each district.

In studying the resultant figures the method of distribution referred to above should also be studied and each individual is entitled to make such mental adjustments as he deems wise to offset what he may feel to be inequities in the methods of distribution employed. The method used in each case was the result of many debates by the ten architects, engineers, and real estate men who, as a group, directed the study, and who arrived by agreement at the best method to use in view of the cost data available in the department concerned.

One outstanding group of items justifies special mention in view of the comparisons set up between the residential areas and the business and industrial areas. Certain items were distributed, as noted above, on a per capita basis and the schools on a basis of the residence of the pupils. The census shows no population for business and industrial properties and all these items are, therefore, assessed against the residential areas and the total of these items is 55% of the total costs. On the other hand, there is a large concentration of property value in the business area which has an income *per net acre* more than five times that of the high-rental residence area and fifty times that of the low-rental residence area. This disparity does not appear in the industrial area which has an income per net acre only 60% of that in the miscellaneous residence district and only 30% of that in the high-rental area.

From the above it is clear that this method of distribution tends substantially towards a favorable balance in the business and industrial areas and an unfavorable balance in the residence districts. In view of this perhaps the wonder is that the residence districts show up as well as they do, only one, the low-rental area, showing a substantial net deficit.

It is an interesting problem to find a fairer distribution of this 55% of costs so that a proper proportion can be assessed against business and industrial properties. This brief commentary concerns itself solely with a presentation of the statistics resulting from this study and I do not, therefore, attempt here any analysis of the figures or any readjustments of them that might provide fairer comparisons. It is hoped that many individuals, city officials and others, will make their contribution to the subject matter by careful critical analyses and suggestions regarding conclusions indicated by these present figures and other methods of allocation of costs that may offer a clearer basis for determining which districts of a city pay their own way and which appear to be "in the red," which, of course, means that the latter are in effect subsidized by the former.

This fact, even if established, may not constitute a valid indictment of the district, but if the deficit is markedly excessive it is certainly a warning signal that suggests careful thought as to the underlying causes and the true significance of the result.

In closing, attention is called to a few facts that appear in the figures for the low-rental residence district. Its net acreage is less than one-tenth of one per cent of that of the city. Its population is nearly one-half of one per cent of the city total. Its income per capita is $13.30, quite naturally less than the $74.40 for the city. Its cost per net acre, $17,649, is five times the average cost per net acre for the city, three times the cost in the high-rental and miscellaneous districts and seven times the cost in the suburban district.

The costs of the county courts also present some interesting figures for the low-rental district, although not shown in the accompanying table. The cost of the civil courts in this district is, curiously enough, negligible but the cost of the criminal courts is $3.10 per capita against $2.60 for the city, $1.97 for the high rental, and $1.08 for the suburban, with the miscellaneous district showing the highest per capita cost of $6.42, more than double the low-rental district. Also the cost of criminal court work per net acre is equally high for the miscellaneous and low-rental areas ($600 and $593 respectively) compared to $176 for the high rental and $42 for the suburban areas.

LIMITED DIVIDEND CORPORATIONS UNDER THE NATIONAL HOUSING ACT

BY EUGENE H. KLABER, A.I.A.

The enactment of the New York State Housing Law brought the limited dividend housing corporation forcibly to the attention of those interested in American housing. Although comparatively new to America, this type of corporation was well known in England where, under the name of "Public Utility Society," it had existed for many years and enjoyed a moderate success as a producer of low-rental housing. Back of such societies and corporations lies the idea that private funds can be obtained for investment in the shares of an enterprise having a social purpose and limited as to rentals, returns and method of operation. The subscriber makes a long-term investment giving no prospect of large gains but supposedly assuring a moderate and safe return on the money invested.

The conditions surrounding such corporations are different in detail in England and America. It is not proposed to deal with these differences; this discussion is confined to American practice. On the score of differences, suffice it to say that, whereas a reasonably assured prospect of a 4% or 5% return on invested money may be attractive to the British public, it does not appeal strongly to the American investor; even a possible 6% has never evoked any considerable flow of capital into such investments.

The New York State Housing Law and the state laws which followed were enacted as a stimulus to the construction of low-rental housing; it was recognized that this is the great potential field for building construction and represents a pressing need, not likely to be satisfied by the operations of the customary processes of commercial building. The National Industrial Recovery Act recognized the need and made provision for Government loans to limited dividend housing corporations. It provided that they might receive loans of as much as 85% of the appraisal value of their projects, with an interest rate of 4% and an amortization period of as much as 33 years. It was provided that payments of interest plus amortization should be a fixed annual amount; thus, as annual interest decreased, amortization increased, until the debt was paid. No charge was made for making the loan. It was hoped that under these terms, so much more generous than could be obtained from private lending institutions, a considerable program of low-rental housing could be initiated, under private auspices.

The program was in the jurisdiction of the Public Works Administration and applications were presented to and passed upon by the Housing Division of that body. The Division was organized in the latter part of July 1933 and considered applications of proposed limited dividend corporations until the middle of January 1934 when it was advised that no further funds were available for allocation to private corporations. During that period, approximately four hundred proposals were received. Of these, there were only twenty-one which had sufficient merit to warrant an allocation of funds and, of these twenty-one, a large majority failed of final approval. It was found that with rare exceptions, the promoters of projects offered no substantial equity. Most frequently the only equity was a parcel of land put into the financial set-up at many times its possible valuation on any rational basis for any use.

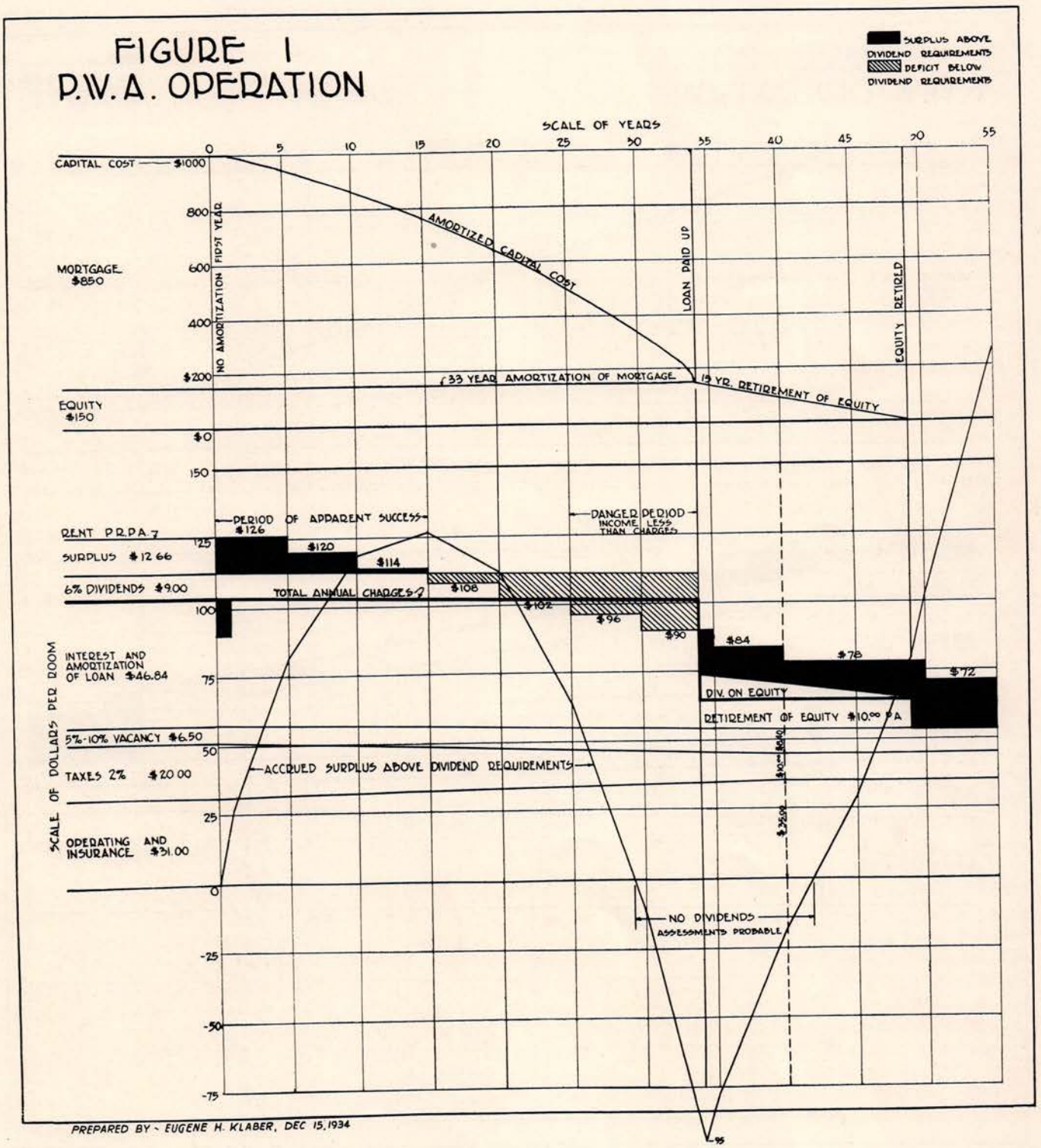
Let us examine some of the factors that militated against the success of a proposed limited dividend corporation.

The first element of risk was the smallness of the equity. In ordinary lending procedure an equity of about 40% is required. The object of permitting a smaller equity was, of course, to stimulate construction. With a required equity of only 15%, the stockholders of a limited dividend corporation were "out on the end of the limb." If the project were to go sour, they would lose their entire stake with the appearance of the first curds. Had there been a corresponding chance of gain, there would have been a greater incentive to invest, but the maximum return ordinarily allowed was 6%. It is gradually being recognized that this is a very good return if the safety of the invested capital and the dividend are reasonably assured, but we shall see that this was not the case. Further, the investor was usually faced by the requirement that, when the loan was retired, the fee to the property must be vested in the state, or that the Federal Government might take it at any time, in cases where it made a mortgage loan. Such a provision may be socially desirable, but it can hardly be pretended that it offered what is known as a "business proposition."

On top of these restrictions was the requirement that the loan be retired by equal annual payments of interest plus amortization. This provision means either good luck or no dividend and possible bankruptcy. Figure 1 shows graphically why this is the case. Note that the annual charges, other than the service of the loan, do not vary greatly; if anything, they err in showing a slight decrease instead of an increase. If we add a constant annual payment of interest plus amortization, the line of total annual charges runs approximately level. The corollary is that rentals must stay at about the same level during the entire period of the mortgage. With good luck this may happen, but the conservative investor must presume that over a long period of years the rents will perforce be reduced on account of obsolescence, no matter how much the project may be in advance of current practice. The moment that we assume a periodically decreasing rental, as shown in the figure, the time comes soon when the annual receipts permit no dividends, and later deficits appear which threaten bankruptcy.

This method of retiring a loan may have been derived from the practice of the building and loan associations, whose requirement of equal monthly payments

The National Industrial Recovery Act made provision for Government loans to limited dividend housing corporations. Execution of the provision was entrusted to the Public Works Administration and applications for loans were passed upon by the Housing Division of that body. The Housing Division functioned from the latter part of July, 1933, until the middle of January, 1934, by which time it had become apparent that private capital was unwilling to accept the risks involved in supplying equities under the loan terms offered. Mr. Klaber, after explaining what the risks were, points out the improvement in the position of equity holders in limited dividend corporations authorized by the mortgage insurance title of the National Housing Act. The insurable loans in question are of course from private sources, including life insurance companies and the like.

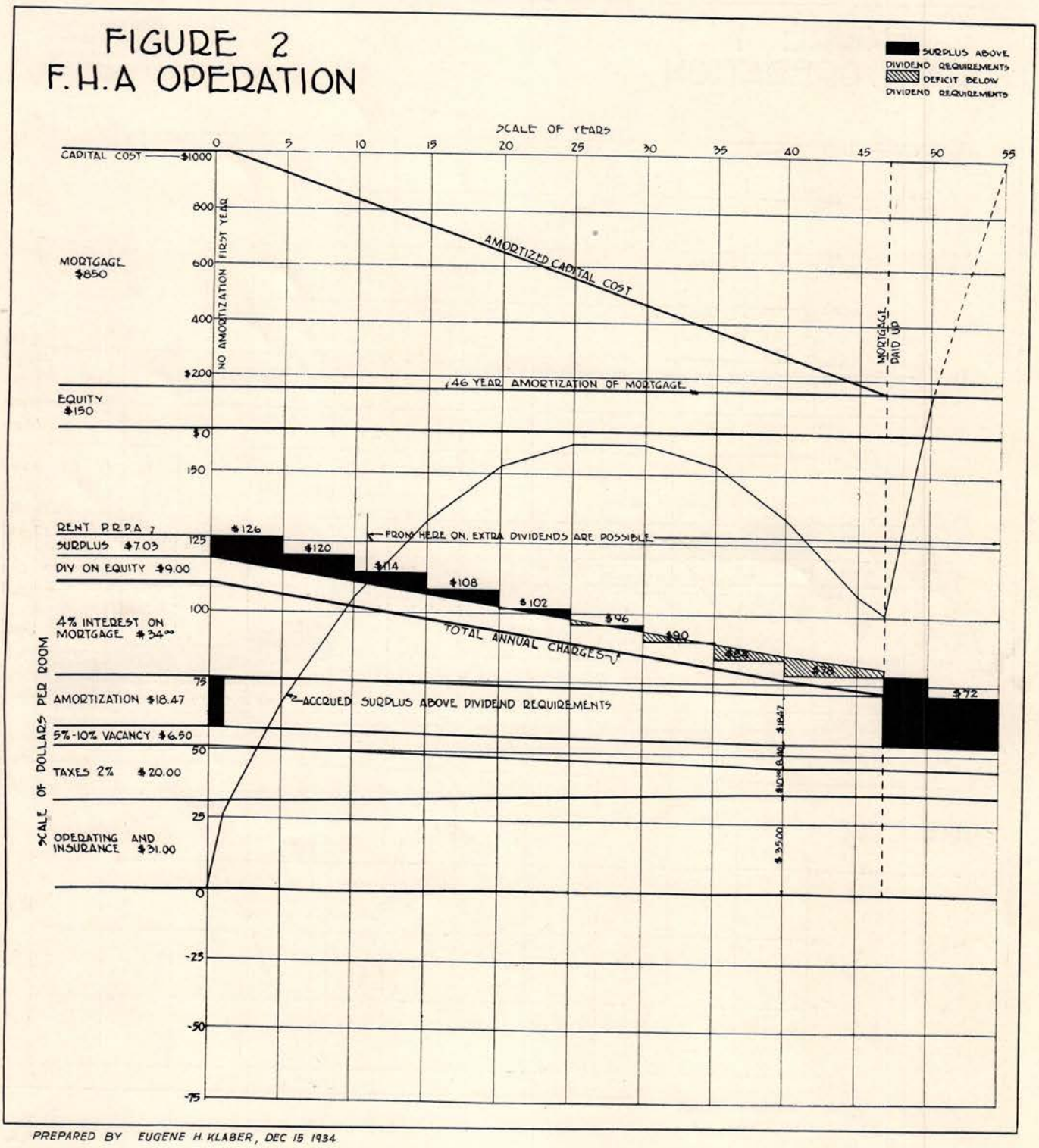


ASSUMPTIONS: A—85% loan, 15% equity; B—no amortization first year; C—equal payments interest plus amortization—33 years @ 5.51%; D—mortgage interest 4%; E—vacancies 5% first year, 10% at 40th year; F—capital cost per room, $1,000; G—operating, insurance and taxes same as figure 2; H—dividend on equity 6%; I—initial working capital and interest on accrued surplus ignored; J—no charge for mortgage insurance; K—equity retired in 15 equal installments after loan is paid.

obligated a home buyer to set aside a constant amount from his monthly pay to pay his debt on the home. To afford this, his income had to be reasonably assured during the period of the loan. Time was when a man could feel that his job was secure for eleven years and seven months and the scheme worked well enough. But neither then nor now could a man assume a constant earning power for thirty or forty years to come. The same is true of buildings; both human beings and structures are subject to obsolescence and depreciation. Buildings do not undergo final dissolution at three score and ten, but most of them ought to. It is not surprising, then, that such a set-up failed to attract the careful investor.

Although the experience of the Public Works Administration with limited dividend corporations had not been encouraging, provision was again made for aid to them through Governmental insurance of mortgages under the National Housing Act. The Federal

(*Continued on page 32, advertising section*)



PREPARED BY EUGENE H. KLABER, DEC 15 1934

ASSUMPTIONS: A—85% loan, 15% equity; B—no amortization first year; C—straight line amortization 46 years; D—mortgage interest 4%; E—vacancies 5% first year, 10% at 40th year; F—capital cost per room, $1,000; G—operating, insurance and taxes same as figure 1; H—dividend on equity 6%; I—initial working capital and interest on accrued surplus ignored; J—no charge for mortgage insurance included; K—equity not retired.

PORTFOLIO

SPECIAL BUILDING TYPES

A HOUSE AND SCHOOL OF ARTS AND CRAFTS IN MUSIC FOR DAVID DUSHKIN, WINNETKA, ILLINOIS. DESIGNED BY PAUL SCHWEIKHER.

CINNAMON MARKET AT HIGHLAND PARK, MICHIGAN. ALBERT KAHN, INC., ARCHITECTS.

THEATER EXCELSIOR IN MILAN, ITALY. EUGENIO FALUDI, ARCHITECT.

BELLEVUE BEACH IN DENMARK. ARNE JACOBSEN, ARCHITECT.

AUDITORIUM AND CHAPEL FOR WOMEN'S CHRISTIAN COLLEGE IN TOKYO, JAPAN. ANTONIN RAYMOND, ARCHITECT.

A SLIDE AND SMALL POOL AT WIESBADEN, GERMANY. FRANZ SCHUSTER, EDMUND FABRY AND WILHELM HIRSCH, DESIGNERS.

TOURIST CABINS AT WILTON, CONNECTICUT. DESIGNED BY JULIAN WHITTELSEY.

TOURIST VILLAGE DESIGNED BY EARL G. VON STORCH.

CUMBERLAND GARAGE AND CAR PARK, LONDON, ENGLAND. SIR OWEN WILLIAMS, DESIGNER AND ENGINEER.

BRYAN MEMORIAL TOWN HALL AT WASHINGTON, CONNECTICUT. CAMERON CLARK, ARCHITECT.

FIRE STATION AND TOWN GARAGE AT WASHINGTON, CONNECTICUT. CAMERON CLARK, ARCHITECT.

GREENPOINT BRANCH, NATIONAL CITY BANK OF NEW YORK. AARON G. ALEXANDER, ARCHITECT.

PENGUIN POND IN ZOOLOGICAL GARDENS, REGENT'S PARK, LONDON, ENGLAND. LUBETKIN, DRAKE AND TECTON, ARCHITECTS.

GORILLA HOUSE IN ZOOLOGICAL GARDENS, REGENT'S PARK, LONDON, ENGLAND. TECTON, ARCHITECTS.

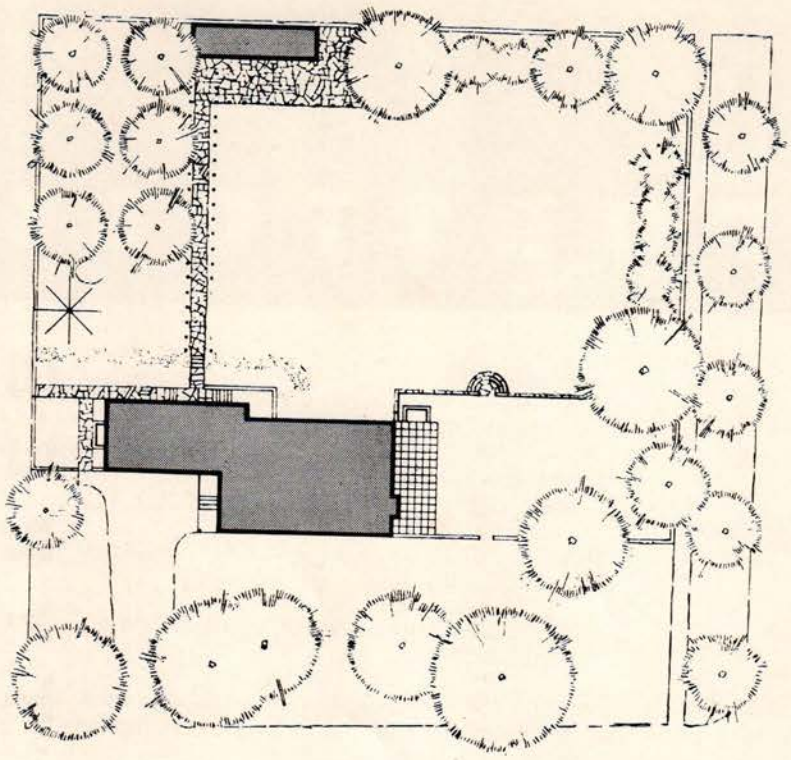
REMODELED BUILDINGS:

SCHWARTZ'S RESTAURANT, NEW YORK CITY. CHARLES SHILOWITZ, ARCHITECT.

LANTIERI BEAUTY SALON, NEW YORK CITY. VAHAN HAGOPIAN, ARCHITECT.

THEATER OLIMPIA IN MILAN, ITALY. EUGENIO FALUDI, ARCHITECT.

THEATER LIRICO, MILAN, ITALY. EUGENIO FALUDI, ARCHITECT.

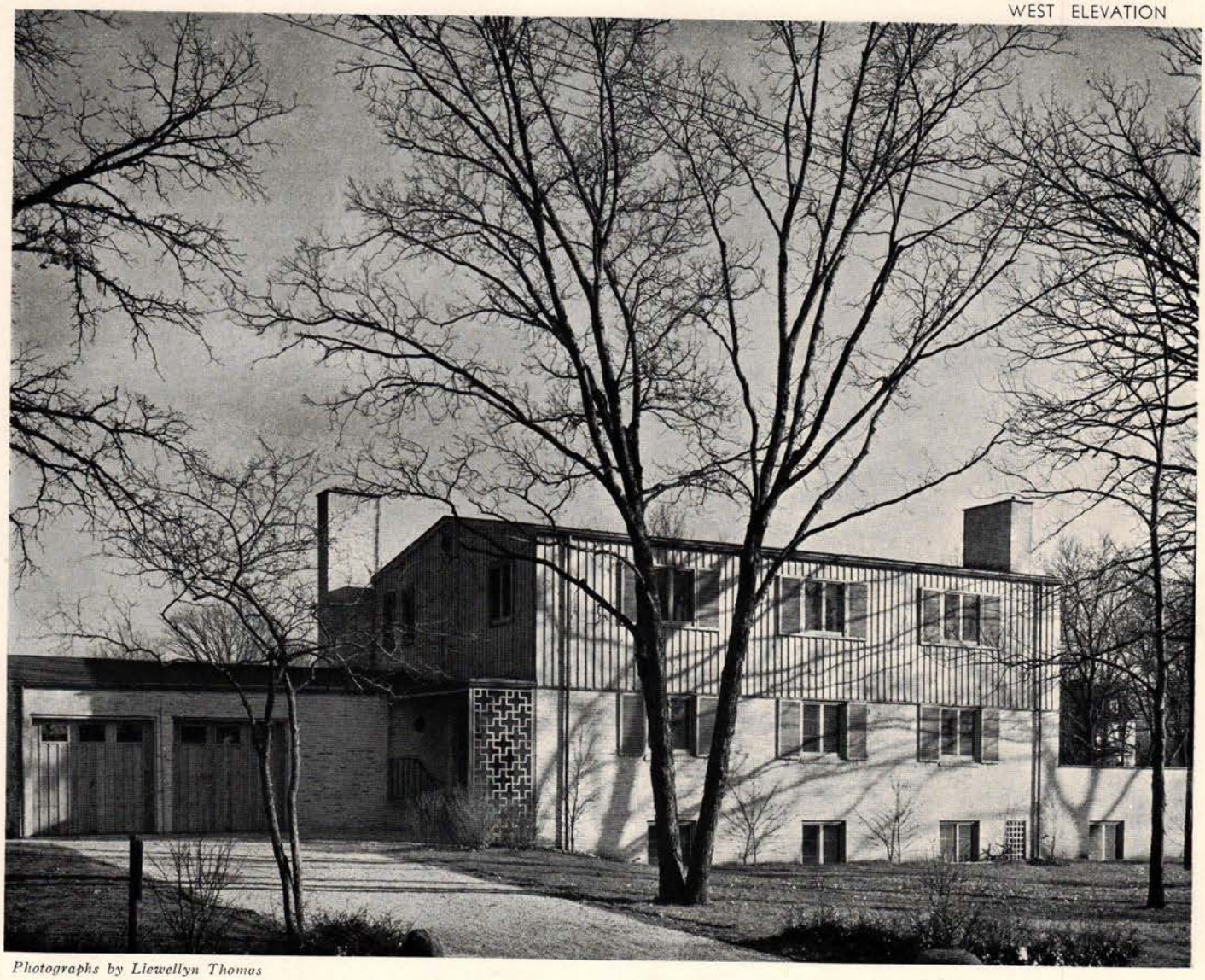


PLOT PLAN

0 10 20 30 40 50

DESIGNED BY
PAUL SCHWEIKHER

WEST ELEVATION



Photographs by Llewellyn Thomas

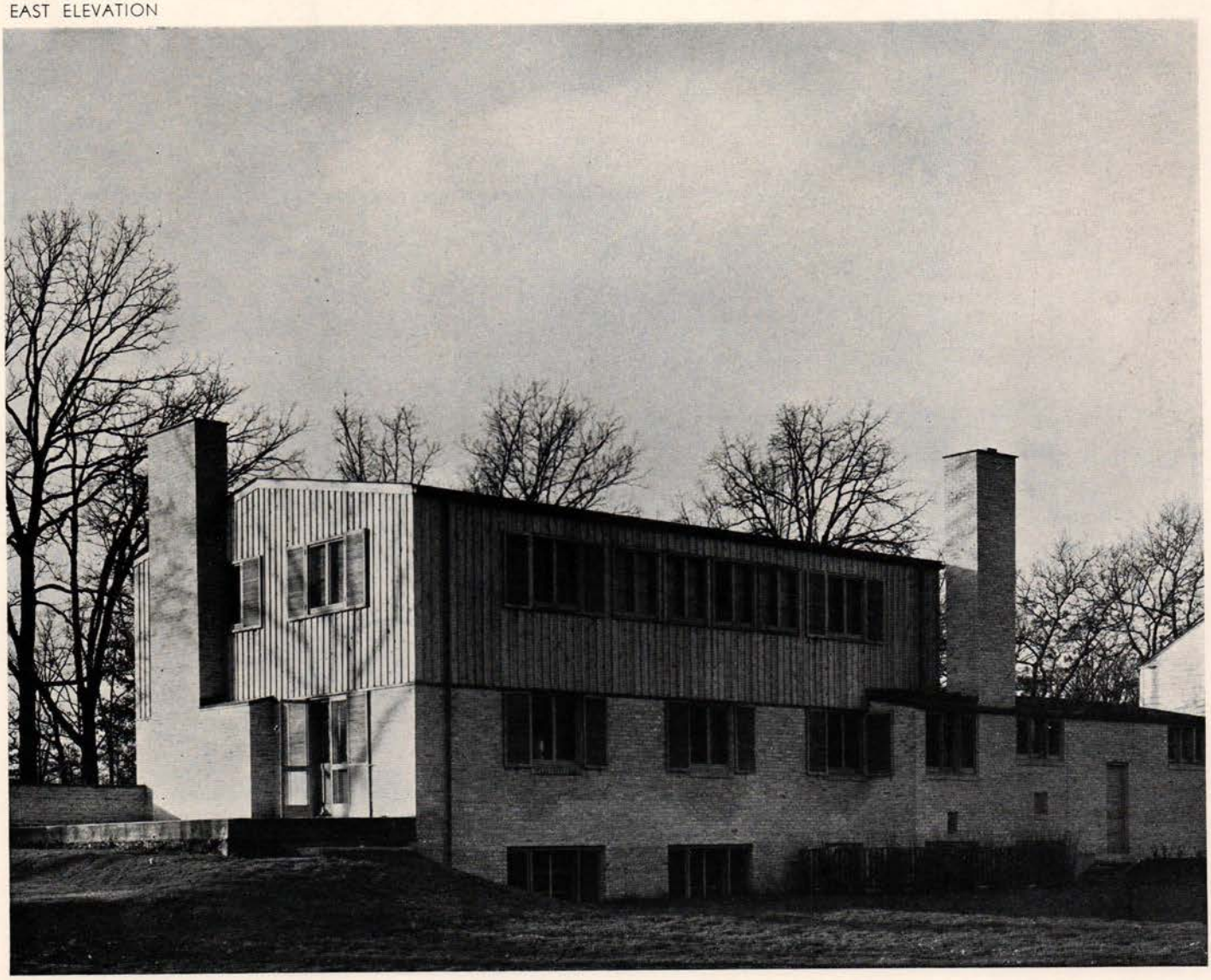
MUSIC SCHOOL

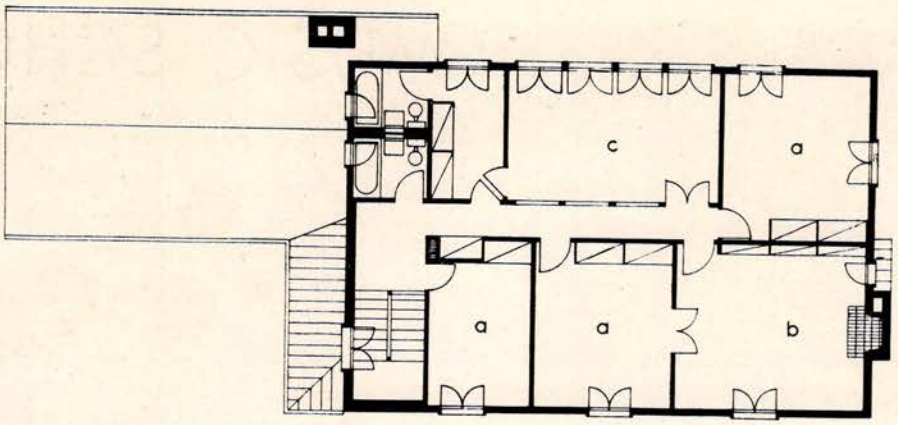
A HOUSE AND SCHOOL OF ARTS AND CRAFTS IN MUSIC FOR DAVID DUSHKIN . . . . . WINNETKA, ILLINOIS

Students are instructed in the construction and technique of musical instruments as well as in history, theory and practice. One resident teacher is provided with a studio and adjoining bath. The living room on the first floor is furnished for dining and library space; it also serves as a recital hall seating more than two hundred persons.

Walls from footing to grade are concrete (waterproofed); grade to first floor common brick. Concrete and brick are whitewashed on interior only. Walls from first to second floors are common brick veneer and wood stud (2 x 6) construction, diagonal sheathing; interior faced, in living room with plywood, remainder Celotex. Walls second floor to roof are wood stud diagonally sheathed and faced on exterior with vertical wood siding (1 x 8) and battens (1 x 2). All exterior walls are insulated with one inch of Sprayo-Flake between studs. All interior walls are wood stud faced both sides with Celotex, except ground floor partitions which are faced with Celotex but are further soundproofed by 2 inches of Sprayo-Flake on a brick core. The ground floor is concrete, stained; the first floor is maple insulated on underside with Sprayo-Flake; second floor is maple. Ceilings throughout are Celotex. Roof is covered with red asphalt shingles. The unit cost of the building, including air conditioning plant, was 29.8¢ a cubic foot.

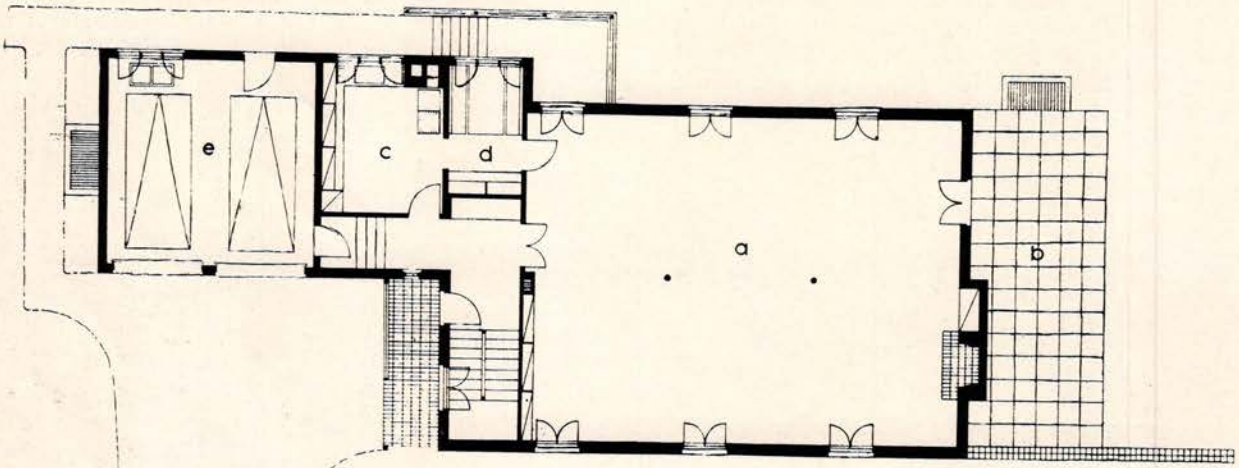
EAST ELEVATION





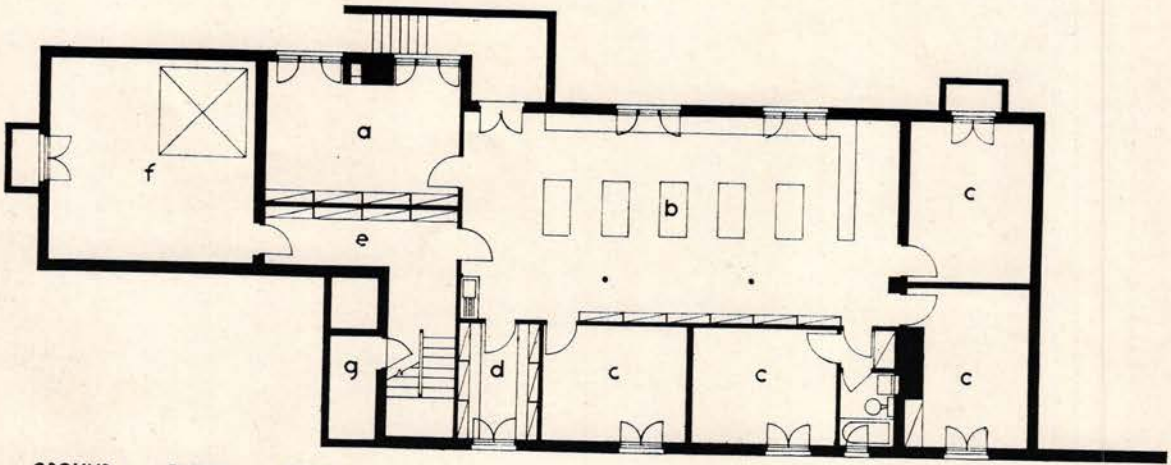
SECOND FLOOR PLAN
a BED ROOM
b SITTING ROOM
c NURSERY

SCALE IN FEET 0 5 10 15 20



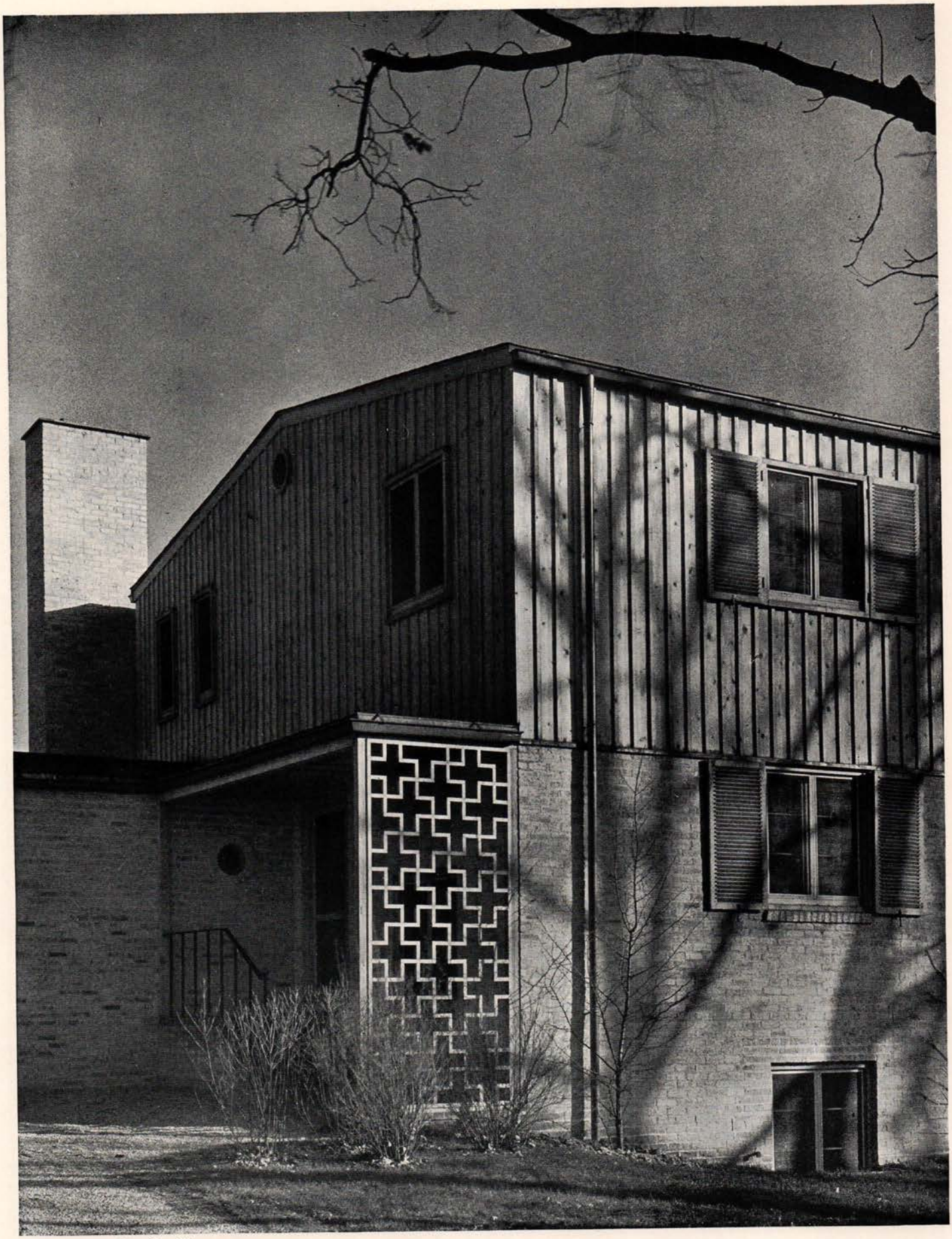
FIRST FLOOR PLAN
a LIVING ROOM & RECITAL HALL
b OPEN TERRACE
c KITCHEN
d BREAKFAST ROOM
e GARAGE

SCALE IN FEET 0 5 10 15 20



GROUND FLOOR PLAN
a OFFICE
b INSTRUMENT SHOP
c STUDIO
d PAINT ROOM
e CLOAK ROOM
f AIR CONDITIONING EQUIPMENT
g STORAGE

SCALE IN FEET: 0 5 10 15 20



Photograph by Llewellyn Thomas

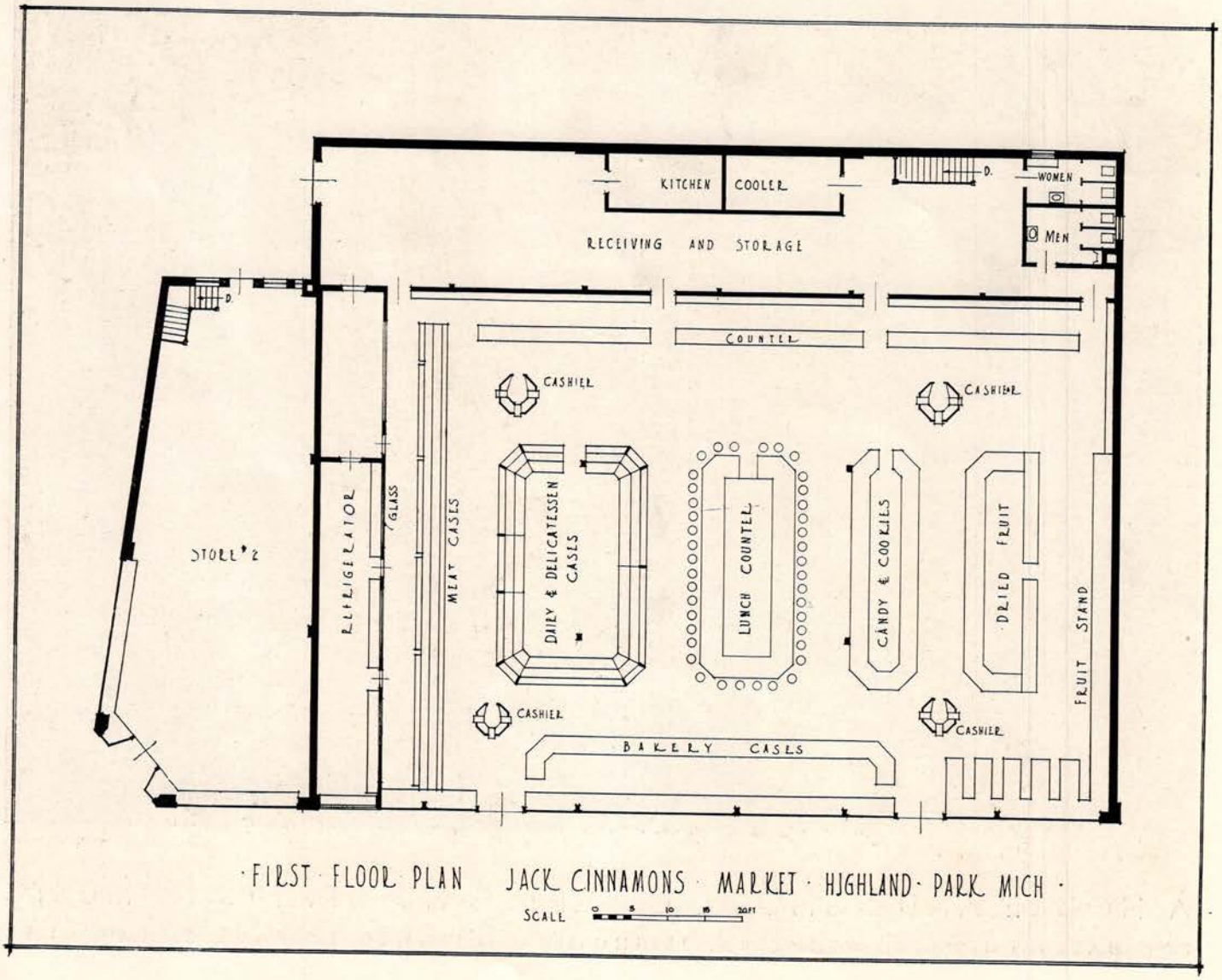
A HOUSE AND SCHOOL OF ARTS AND CRAFTS IN MUSIC

FOR DAVID DUSHKIN, WINNETKA, ILLINOIS — DESIGNED BY PAUL SCHWEIKHER

RETAIL STORE

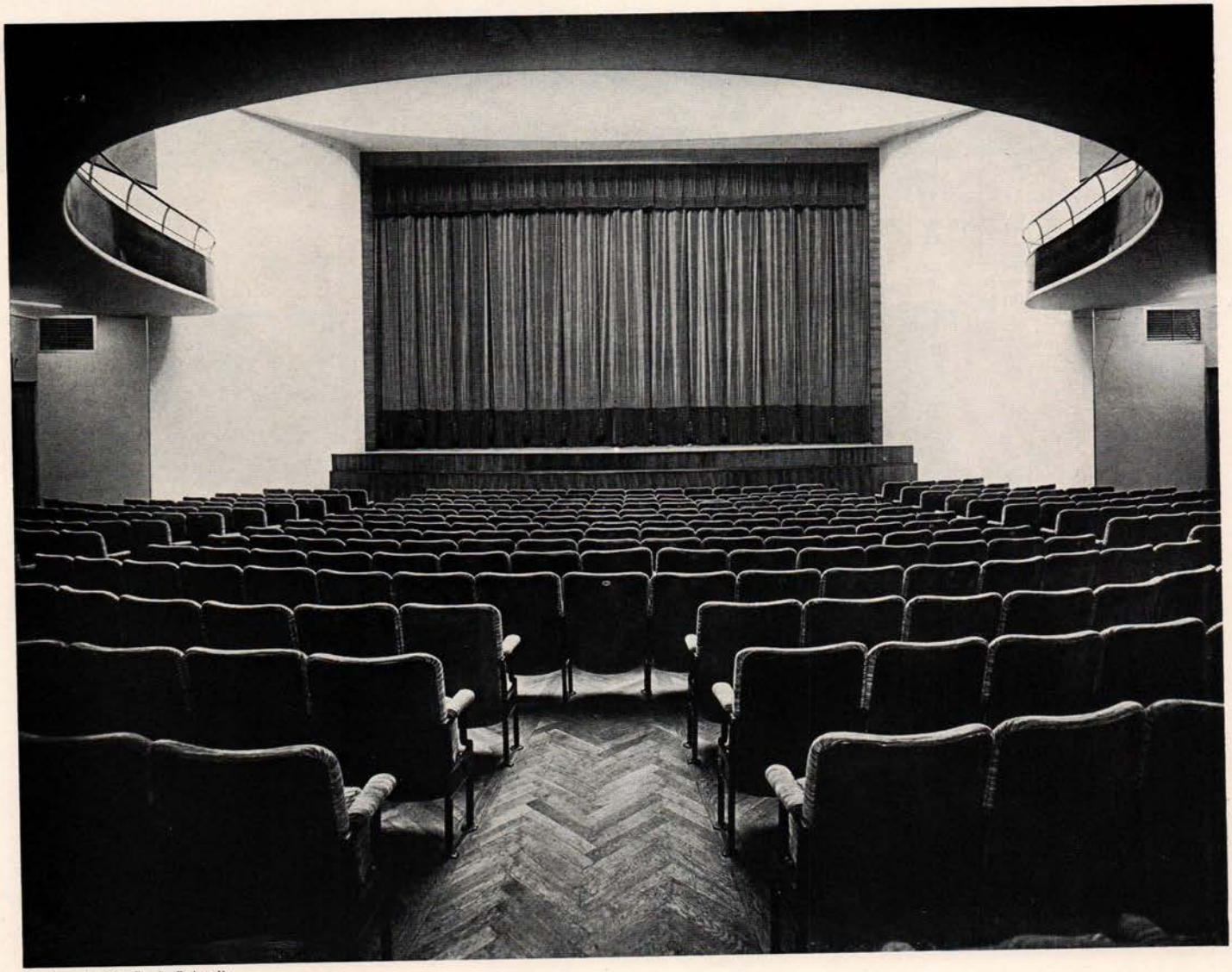
MARKET AT HIGHLAND PARK, MICH.
ALBERT KAHN, INC., ARCHITECTS

The exterior of the building (actually a tax-payer) is stainless steel in conjunction with black Carrara glass. The lower sign is flashed opalite glass with mazda lamps in back; letters are silhouetted in black enameled metal. The larger sign is stainless steel illuminated with neon tubes.



A THEATER

THEATER EXCELSIOR IN MILAN, ITALY
EUGENIO FALUDI, ARCHITECT



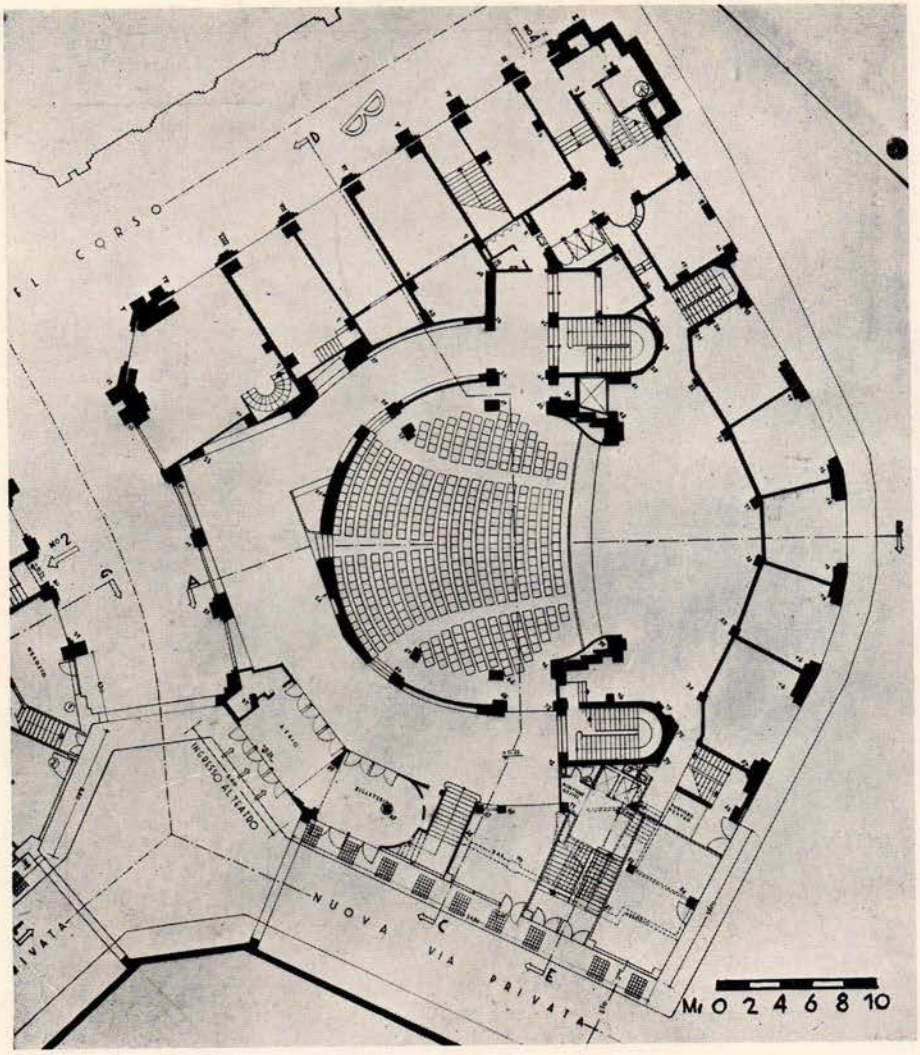
Photograph by S. A. Crimella

Photographs by S. A. Crimella

UPPER GALLERIES

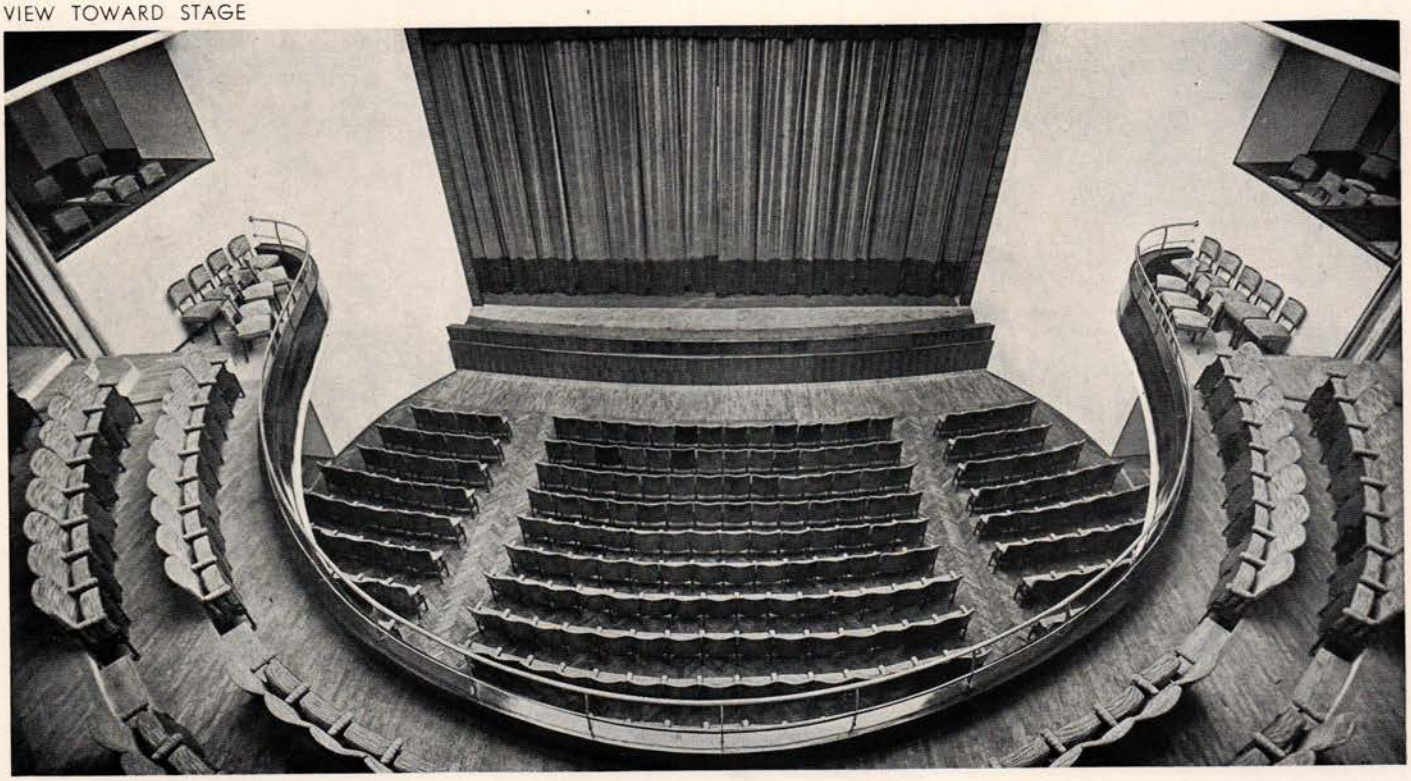
A THEATER IN ITALY

ENTRANCE HALL

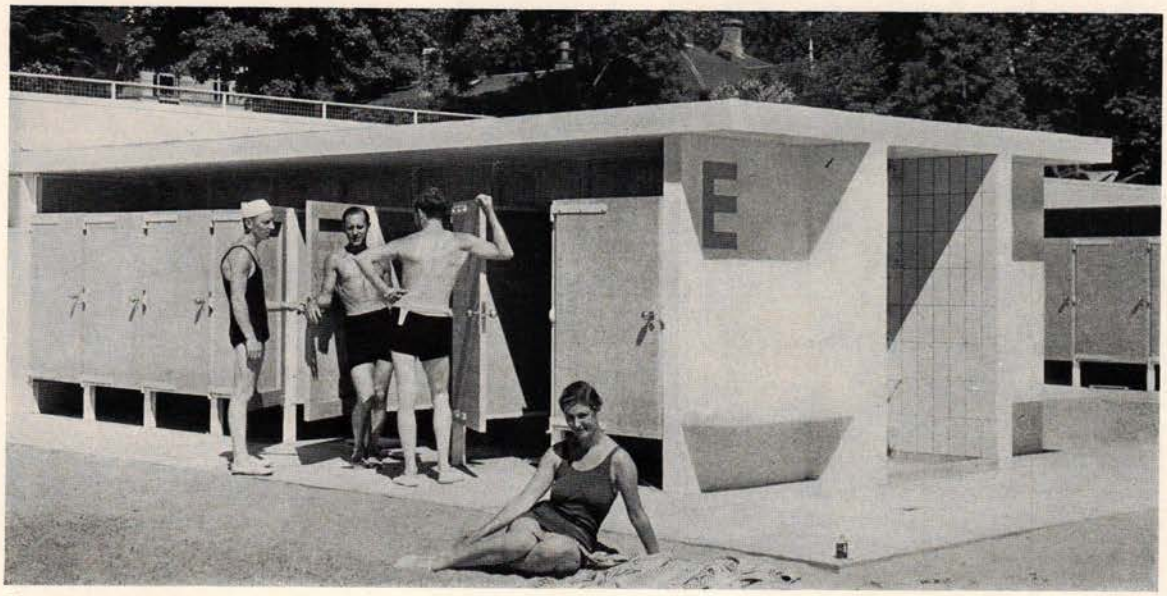


THEATER EXCELSIOR IN MILAN
EUGENIO FALUDI, ARCHITECT

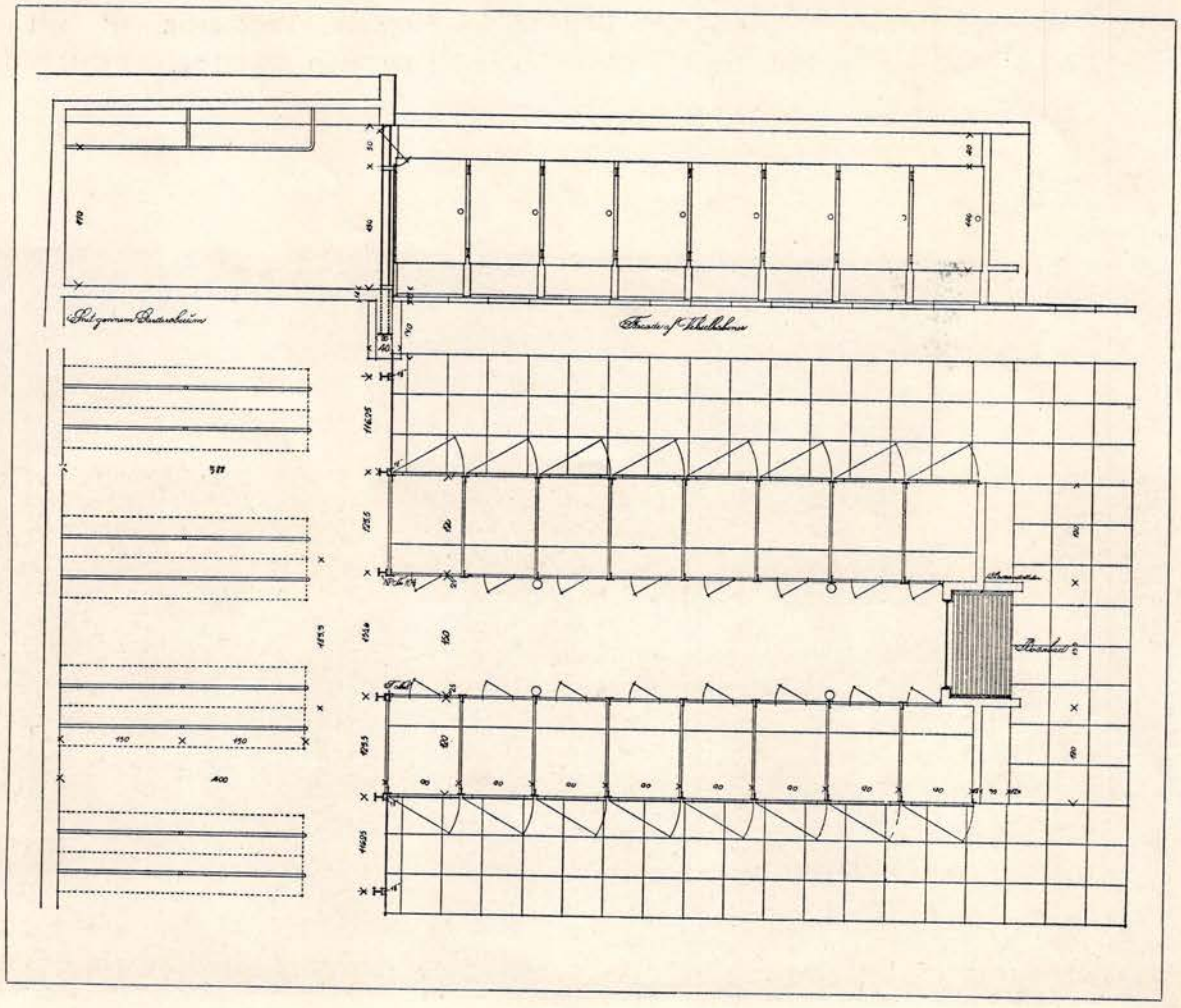
VIEW TOWARD STAGE



BEACH HOUSE



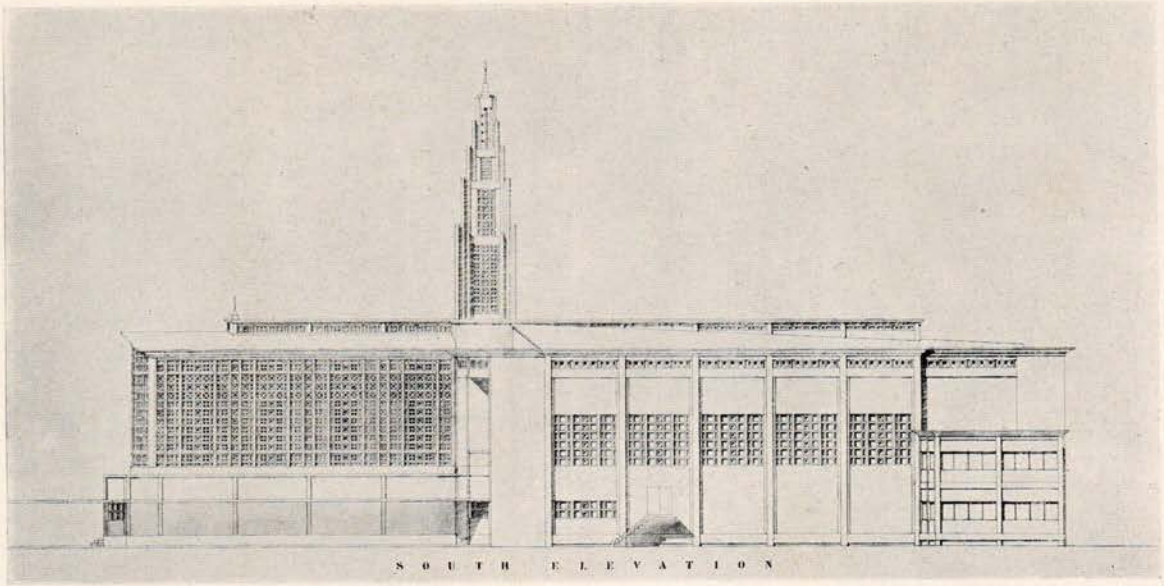
Photograph by Jonals Co.



BELLEVUE BEACH
IN DENMARK

ARNE JACOBSEN
ARCHITECT

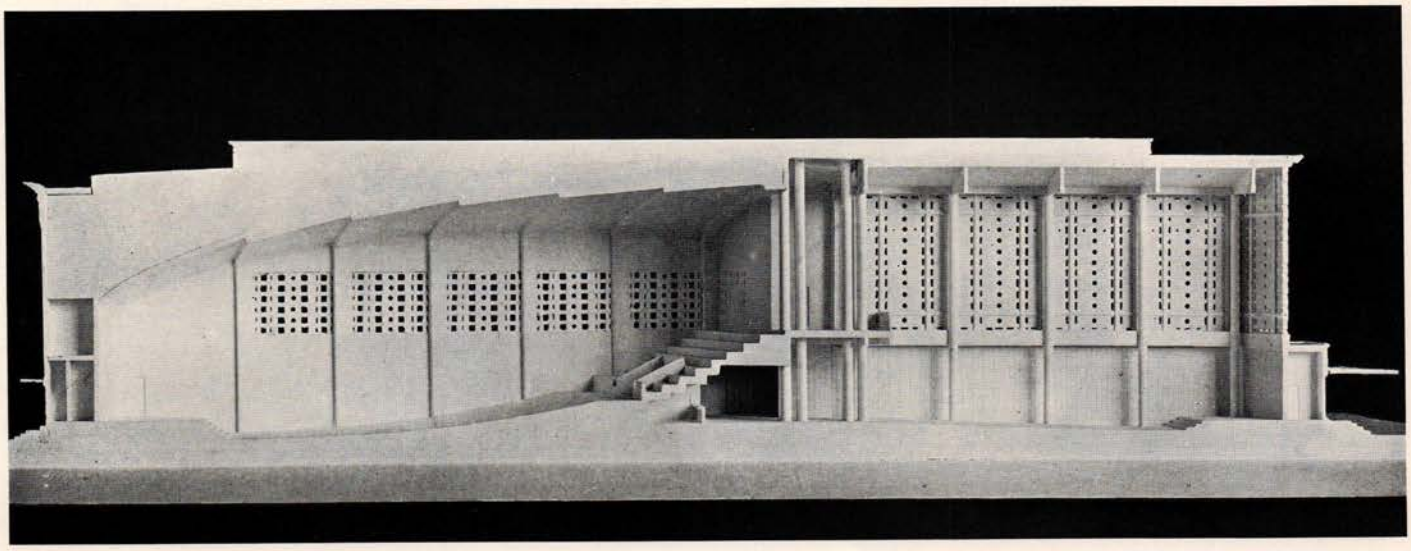
COLLEGE AUDITORIUM

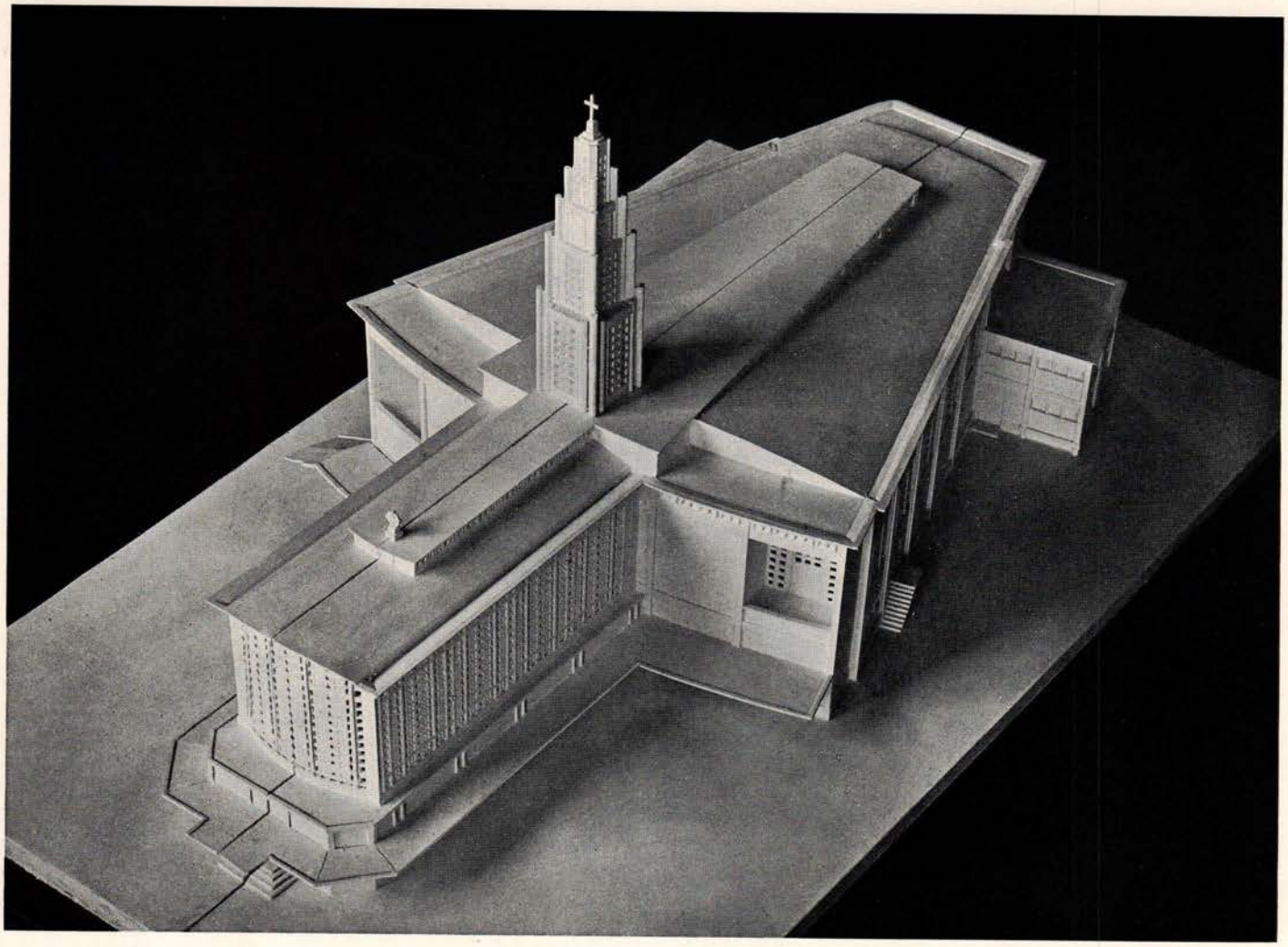


AUDITORIUM AND CHAPEL FOR WOMEN'S CHRISTIAN COLLEGE IN TOKYO, JAPAN
ANTONIN RAYMOND, ARCHITECT

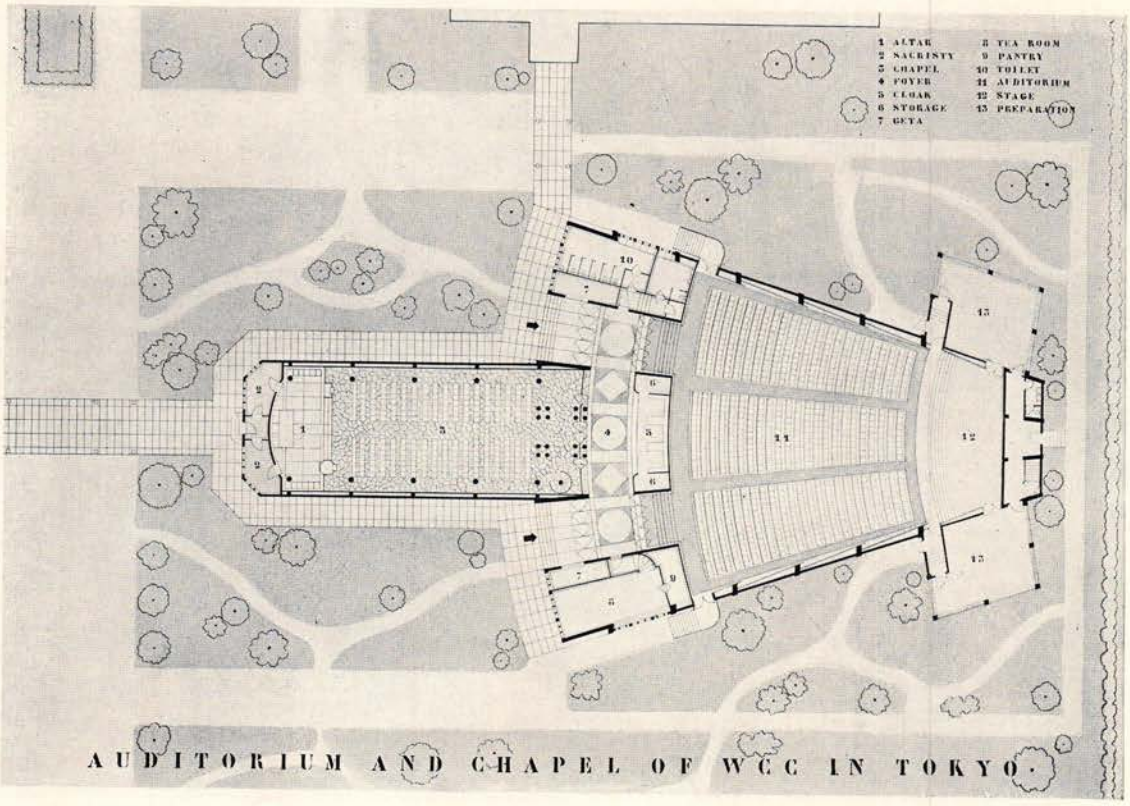
The Auditorium seats 1,200 and has a common foyer with the Chapel. The shape of the Auditorium is the result of study of visibility, acoustics and lighting. The Chapel, conventional in general arrangement, has a reinforced concrete ornamental screen instead of walls and windows on three sides. The organ loft is a balcony in the tower and screens will be provided allowing the organ to be used in Chapel only or in Auditorium only.

The whole building is a combination of steel and reinforced concrete. The Auditorium is spanned lengthwise by four half bridges of steel resting on four long columns forming the wall behind the stage and on four similar columns, two placed on each side of the tower and one each in the north and south corner, respectively. Secondary trusses perpendicular to the main bridge trusses rest on reinforced concrete columns.

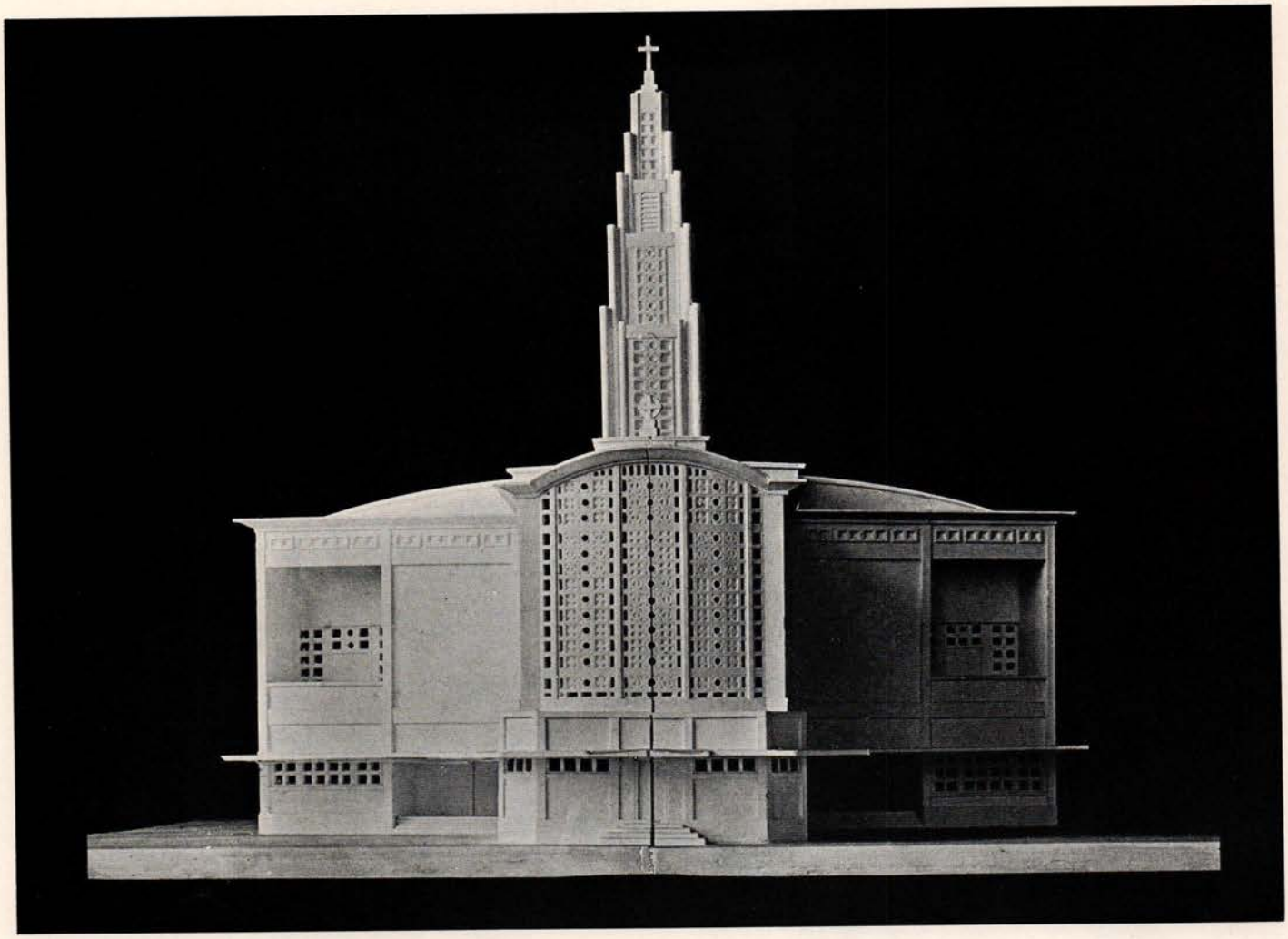




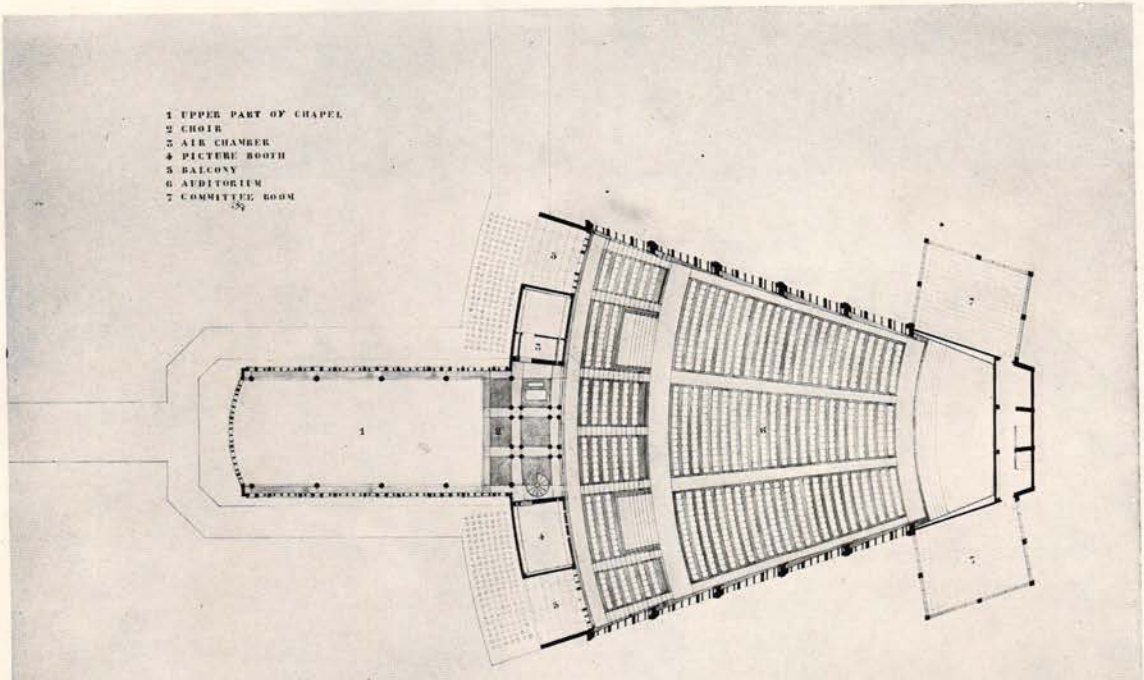
WOMEN'S CHRISTIAN COLLEGE IN TOKYO, JAPAN



AUDITORIUM AND CHAPEL OF WCC IN TOKYO.



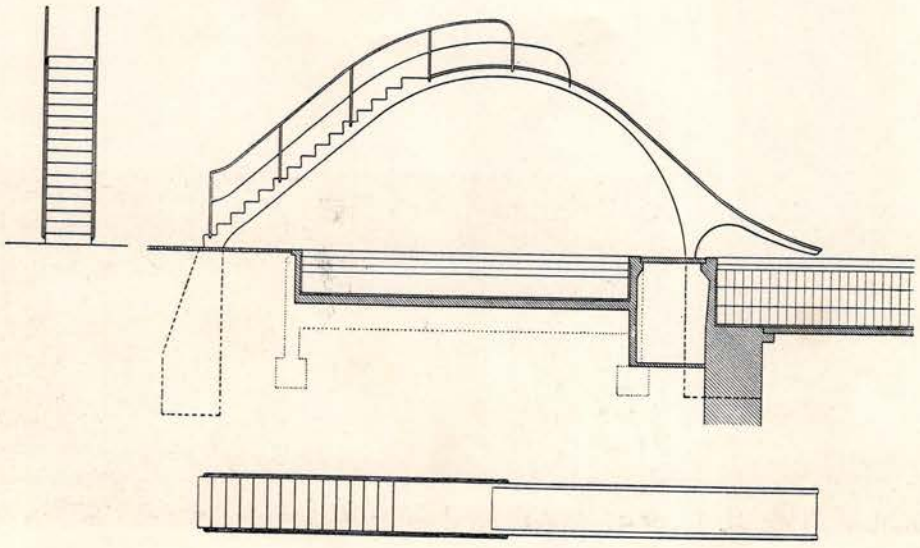
ANTONIN RAYMOND, ARCHITECT



AUDITORIUM AND CHAPEL OF W.C.C. IN TOKYO

A WATER-SLIDE

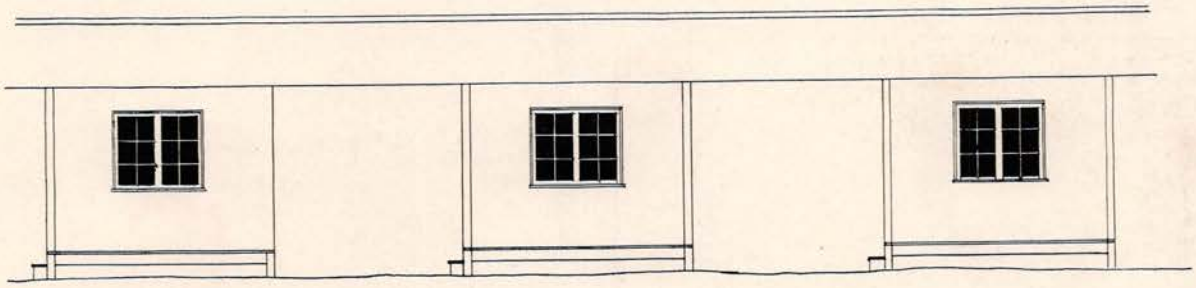
Courtesy of Baugilde

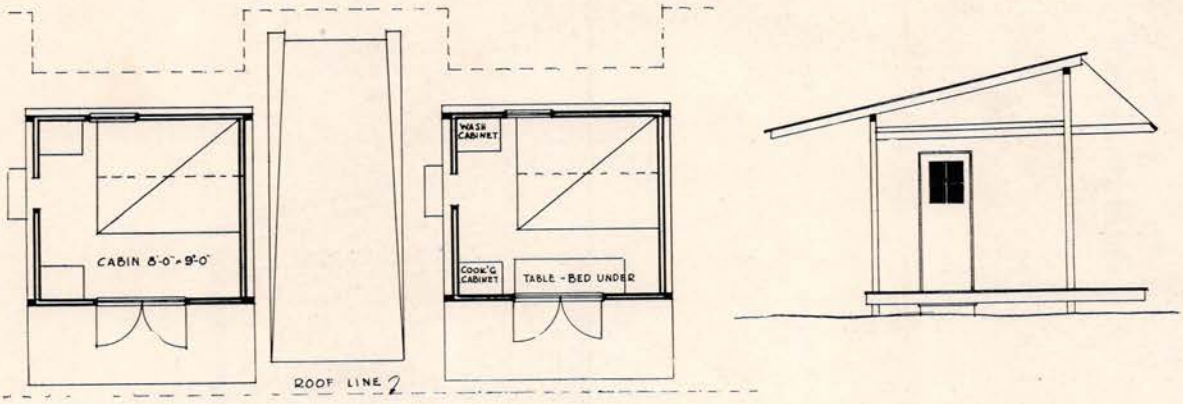


A SLIDE AND SMALL POOL
AT WIESBADEN, GERMANY

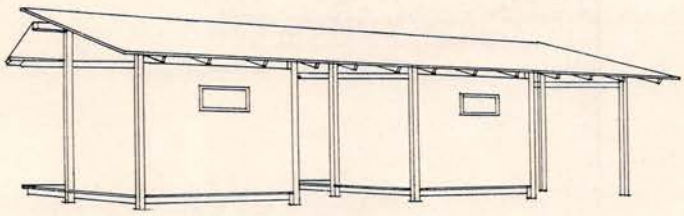
FRANZ SCHUSTER, EDMUND FABRY
AND WILHELM HIRSCH, DESIGNERS

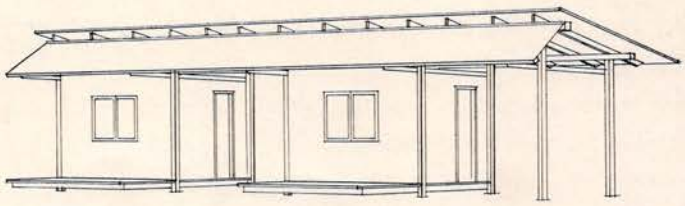
TOURIST CABINS





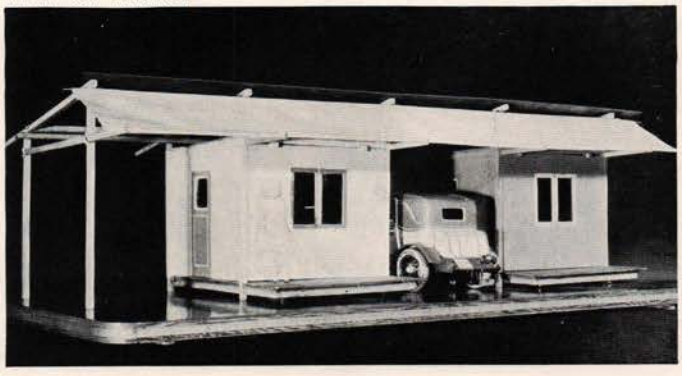
TOURIST CABINS AT WILTON, CONNECTICUT — DESIGNED BY JULIAN WHITTELSEY

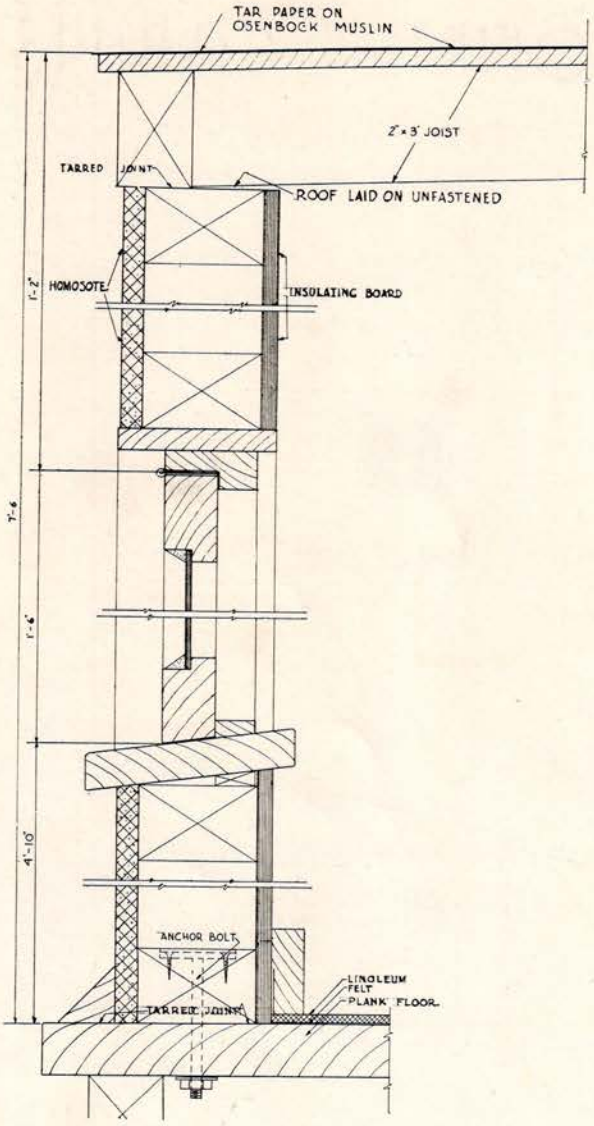




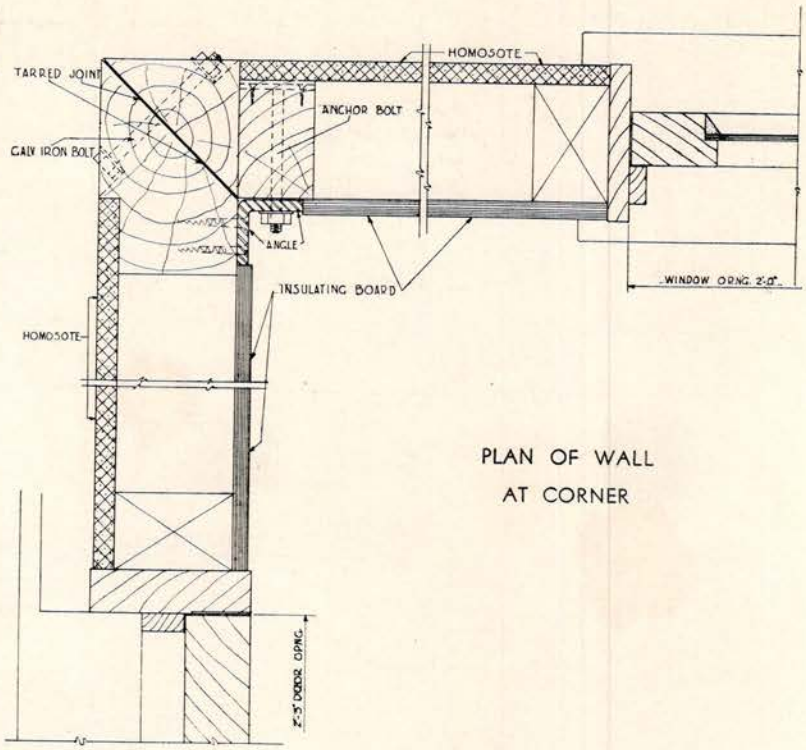
SHELTERS AS CONSTRUCTED

VIEW OF MODEL

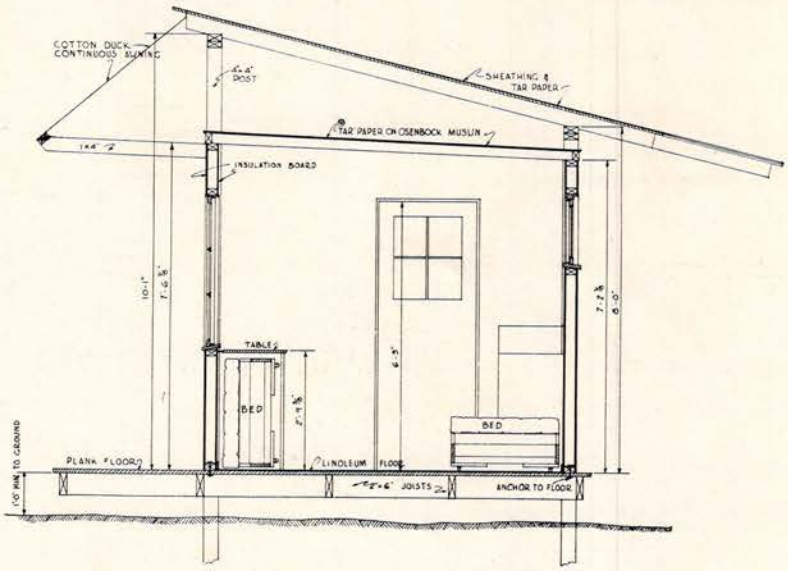




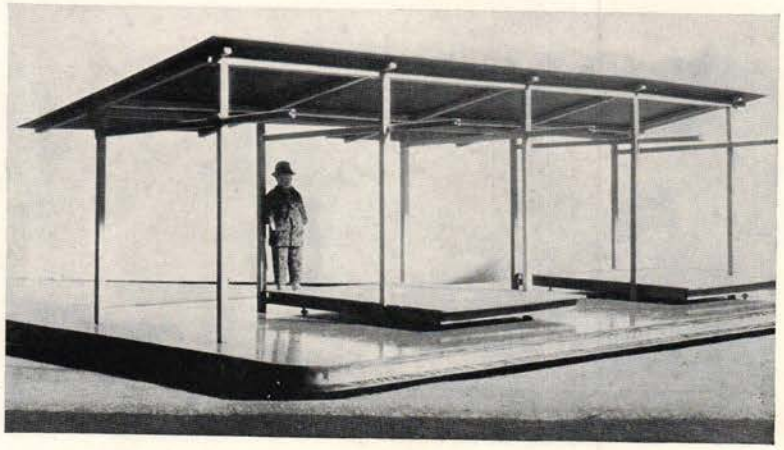
VERTICAL WALL SECTION



PLAN OF WALL
AT CORNER



VIEW OF MODEL . . . . . SHOWING METHOD OF ERECTION

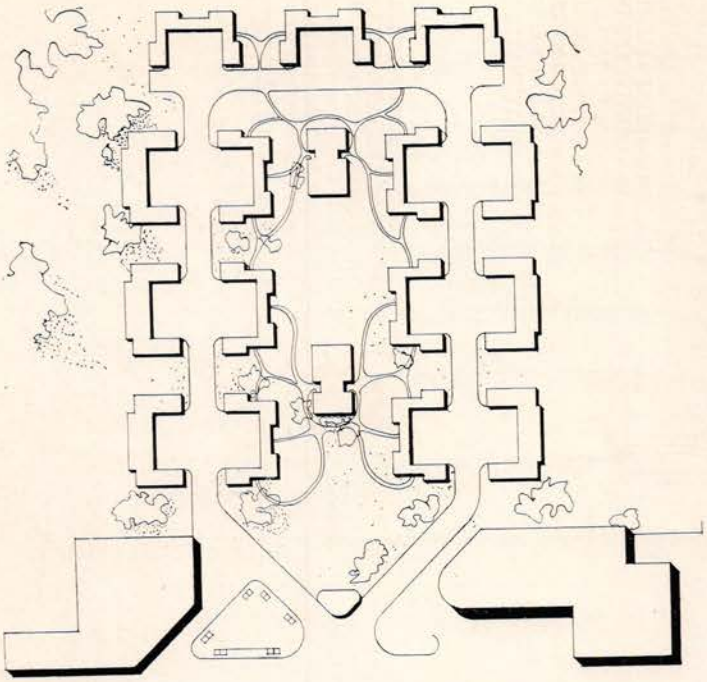


Floor and framework of wood posts supporting roof were erected at the site. Wall sections were shop-assembled, delivered to site and fastened to structural frame. The ceiling section of tar paper on muslin was slid into place and left unfastened. Open air space between roof and ceiling has been successful insulation against sun heat.

Cost without plumbing, cooking units and lights was approximately $100 a cabin. The covered car space is often used as an outdoor sitting and dining space and leads to visits of several days. A restaurant is operated in connection with the camp.

TOURIST CABINS AT WILTON, CONNECTICUT
DESIGNED BY JULIAN WHITTELSEY

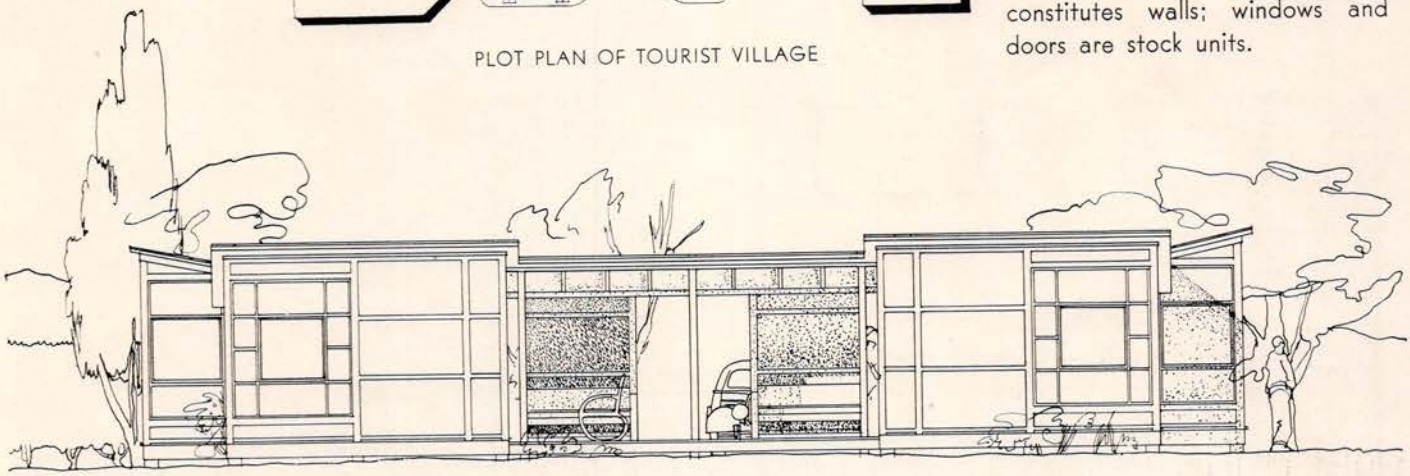
TOURIST VILLAGE

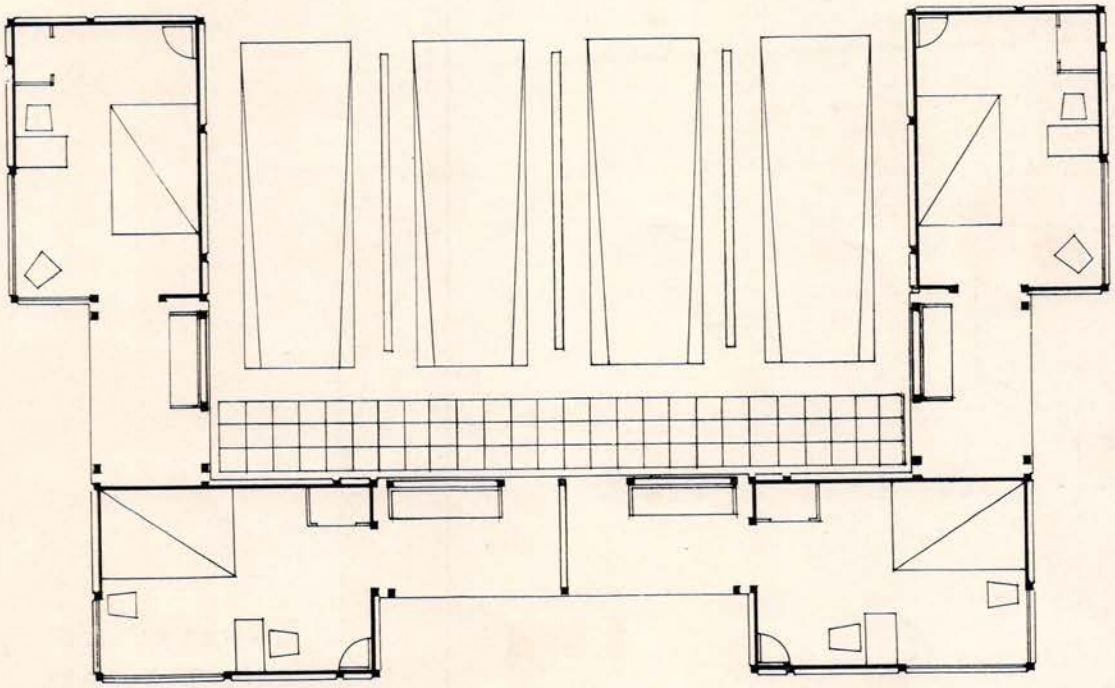


PLOT PLAN OF TOURIST VILLAGE

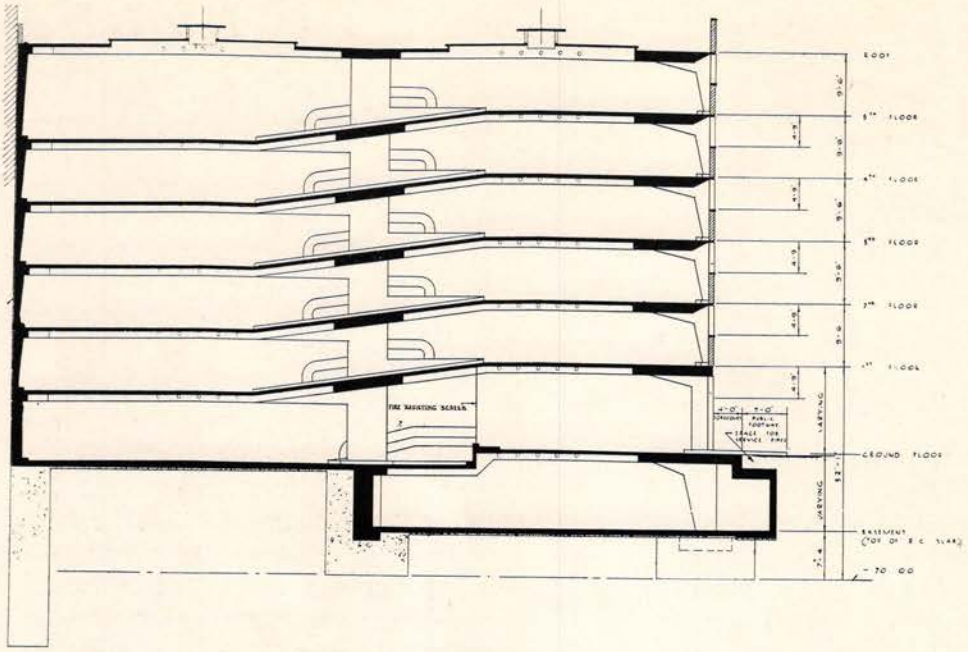
The cabins are designed to be operated in connection with a restaurant, gas station, garage and small store, all located along the highway.

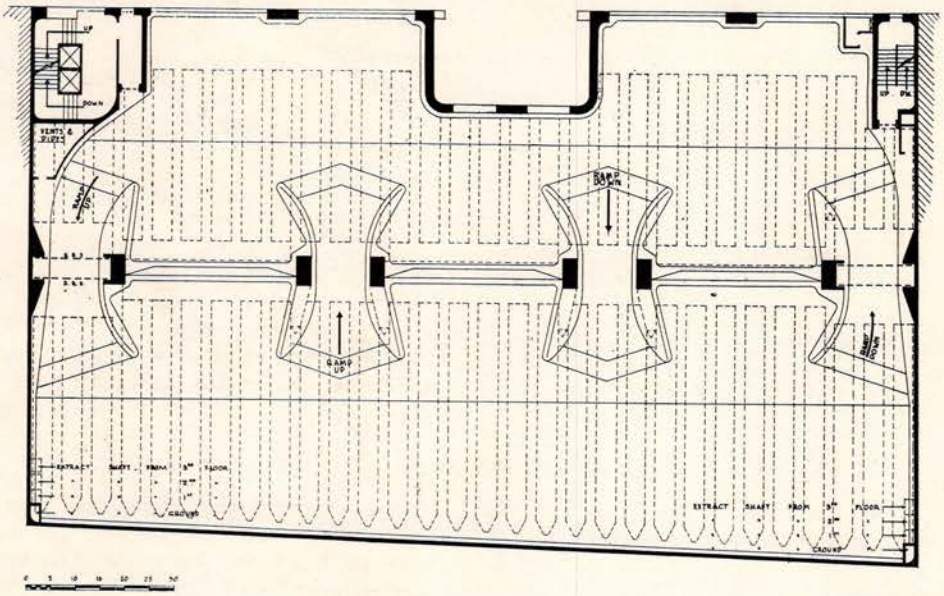
Grouping gives each cabin privacy and outlook conducive to stops of more than one night. Some cabins have additional space and cooking facilities for longer stays. Construction is wood frame, shop-cut and bolted in place; insulating material in large panels constitutes walls; windows and doors are stock units.

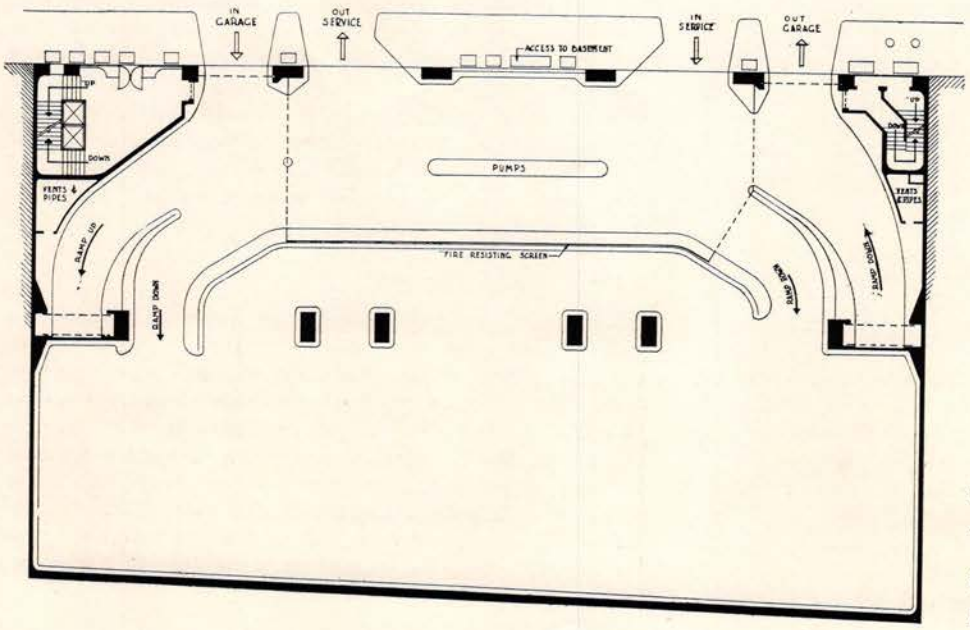




DESIGNED BY EARL G. VON STORCH



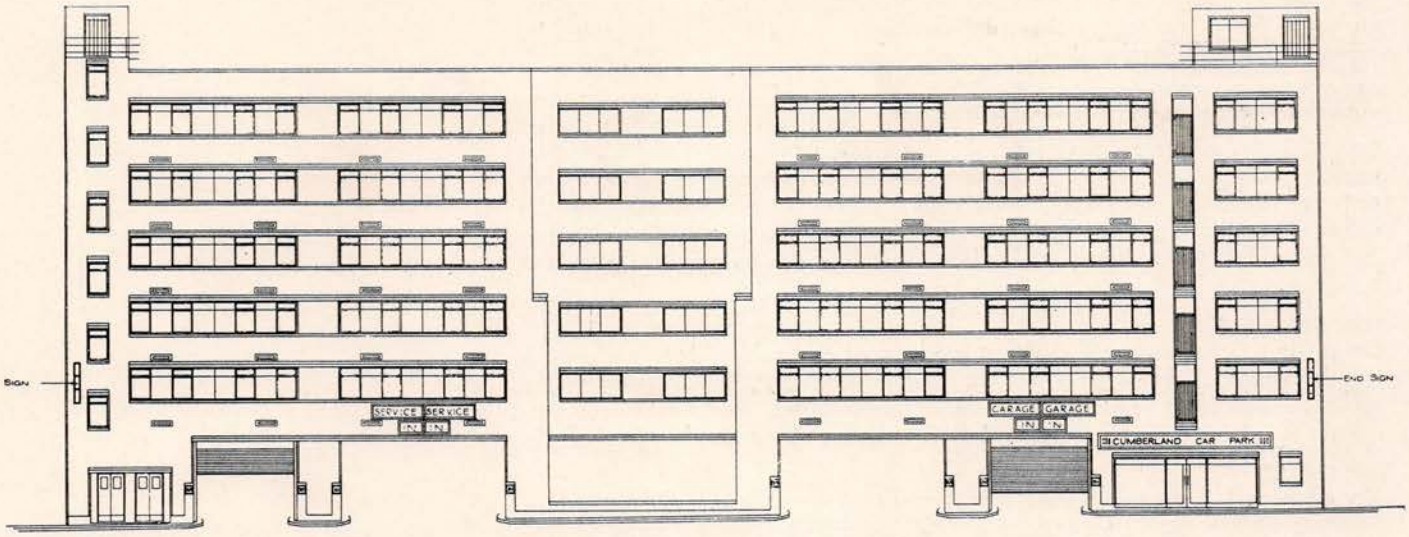




CUMBERLAND GARAGE AND CAR PARK, LONDON

SIR OWEN WILLIAMS DESIGNER AND ENGINEER

GARAGE



CUMBERLAND GARAGE AND CAR PARK IN LONDON

PLANNING PRINCIPLE

The general tendency in all traffic schemes is to regulate everything as much as possible in the clockwise direction—from left to right. In the Cumberland Garage both of the ramps and the parking accommodation have been designed and built on the anti-clockwise principle. Before plans were put on paper, experiments were conducted to ascertain whether the average driver turned more easily to the left than to the right. Contrary to all accepted ideas, these tests proved that the average driver can take left-hand turns more comfortably, more easily and with better judgment, than in the reverse direction.

FIVE PARKING FLOORS

There are five parking floors, each divided into two half floors, while the ground floor is devoted to repairing, "servicing," and beautifying the cars. The lower ground floor houses dressing rooms and bathrooms for the car owner, man or woman; the lounge; chauffeurs' rest rooms and changing rooms; a staff mess room and a luggage depository.

ONE-WAY TRAFFIC

The parking floors are reached by a ramp running spirally up one side of the building, and passing through every parking floor. This ramp is used for entrance only, and it is built on such a gentle incline that it is possible to walk up it from bottom to top without exertion. In practice, the ramp will not be used for walking, as there are self-operated passenger lifts and a staircase on either side of the building. An exactly similar ramp at the other end of the building is used solely by outgoing cars.

INVISIBLE RAY CONTROL

The ramp has sufficient headroom to allow any car to pass with ease, but in case a car piled to an excessive height with luggage should try to run up, an "invisible ray" system has been installed. Any car beyond the height limit will break the ray, whereupon two red discs will be lighted, the word "STOP" will shine out and a gong will ring violently.

COLOR IDENTIFICATION

The walls of the ramps are painted primrose yellow and orange, while all traffic notices are in orange and black. The ceilings and upper parts of the walls are painted white, to give maximum reflected light. Each floor has its ceiling striped with a distinctive color, and the car owner is given a ticket to correspond. This method of identification is superior to numbers, because color can be seen at a glance. The tickets are in three parts, one of which is given to the owner, another retained by the attendant, while the third is attached by a rubber band to the front or rear lamp (according to the parking position of the car). (The ticket will not be carelessly stuck under the windscreen wiper, a process which does not assist the working of this instrument.)

PARKING ARRANGEMENTS

When a car enters the garage, an attendant directs the driver to the least occupied floor. The attendant at the entrance always knows the state of each parking floor, as constant inter-communication is maintained by a special telephone system. The driver proceeds up the ramp to his parking floor, where he is met by a floor attendant. Each half floor has its own attendants, so there is no delay. The parking has been designed with every possible consideration, so that drivers have neither to wait, nor have the slightest difficulty in getting in or out, at a minute's notice.

PARKING METHOD
Cars are parked in slight echelon, a method of placing which gives greater ease of exit and cuts down maneuvering to the minimum. In sections of the floors, cars are nosed into position (the more natural procedure), in preference to backing. When the owner wishes to take his car out, he has only to back it away from the wall, drive straight into the path, which is always kept free and clear of cars, and down the exit ramp. No car will be "blocked in" by other cars.

PASSENGER-OPERATED LIFTS
When the car is parked, automatic lifts, operated by the passenger, take him swiftly down to the ground floor. If the gates of the lifts are carelessly left open, this is shown on an indicator in the reception office by a lighted signal corresponding with the color of the floor concerned. If the gates are not closed within a reasonable time, instructions to close them are signaled by means of a staff signal system.

DEPARTURE PROCEDURE
When the driver returns for his car, he takes his ticket to the office on the ground floor, where he pays his bill. His receipt is given to the attendant on the parking floor. Then, with the minimum of maneuvering, he drives his own car down the exit ramp. When he reaches the ground floor, he can either go straight into the street, or, if he needs oil or petrol, he can, without going into the roadway, drive into the filling station and get whatever he needs.

HEATING SYSTEM
During the winter the parking floors are kept at a "healthy" temperature for cars by the latest air-heating system. Electric fans are placed behind steam radiators and blow warm air throughout the building. This system not only maintains a pleasant temperature, but insures a continuous changing of air.

AIR SUPPLY
On each half floor are placed a water supply for filling radiators and a compressed air supply (operating at 150 pounds per square inch) for inflating tires. There are also power plugs, giving electric current, should any small electrical job be immediately required. These services, however, will generally be performed in the ground floor car clinic, where all repairs are done.

LIGHTING
A switchboard controlling the lighting of the garage is placed by the attendant's desk on each half floor. This switchboard contains indicators which record the amount of lighting shown on each floor as well as on the ramps. Each indicator is tinted to correspond with the distinctive color of the floor it represents. Should any driver wish to take out his car in the middle of the night, the attendant can, without leaving his post, light the way for a journey from any floor to the street.

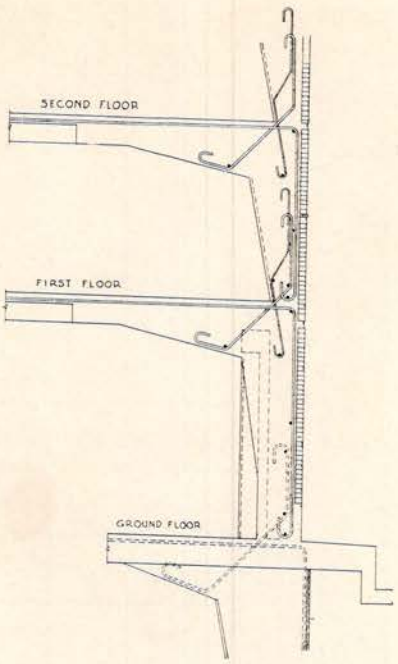
WELL-PLACED SWITCHES
No electric light switches are placed on the walls. Instead, they are fixed to the ceiling, while lights are placed about 7 feet from the wall. In this way, their illumination is directed on to the cars and not wasted on the walls. Similarly lighting and power plugs are also placed sufficiently high to avoid being hidden by the cars.

CLEANING
Each floor is cleaned by a high-powered vacuum cleaner. Portable containers are provided on each floor, containing sawdust or sand, to enable oil droppings to be immediately cleaned up.

GROUND FLOOR
On the ground floor there are accommodated the petrol filling station, control office, and in the rear section of the ground floor at a slightly lower level—car washing and repair shops.

BASEMENT
In the basement are retiring rooms, changing rooms, and bathrooms, for the use of car owners after depositing their cars. There are also, in addition to staff mess rooms, chauffeurs' retiring rooms, changing rooms, and rest rooms. For the public there is provided a luggage depository.

CONSTRUCTION
In the construction of a building of this type internal columns are obviously undesirable. The spans of the floors are therefore the full width of the roadways or "landings," approximately 55 feet. The headroom from floor to ceiling is 8 feet. The floors are constructed entirely in reinforced concrete, the quantities being 20,000 tons of concrete and 1,000 tons of reinforcing steel rods.

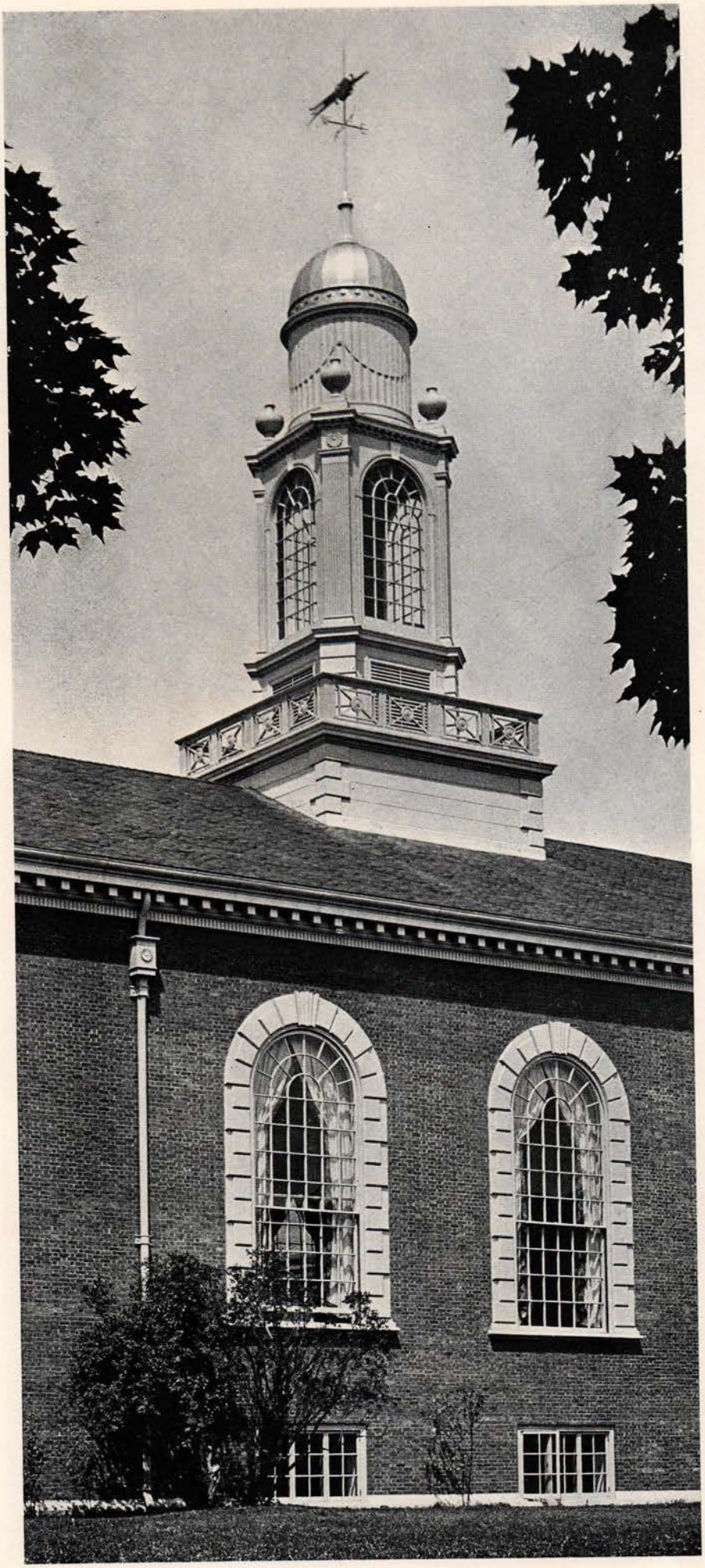


CONSTRUCTION DETAIL

CUMBERLAND GARAGE AND CAR PARK, LONDON

SIR OWEN WILLIAMS
DESIGNER AND ENGINEER

TOWN HALL



BRYAN MEMORIAL TOWN HALL AT WASHINGTON, CONNECTICUT

CAMERON CLARK, ARCHITECT

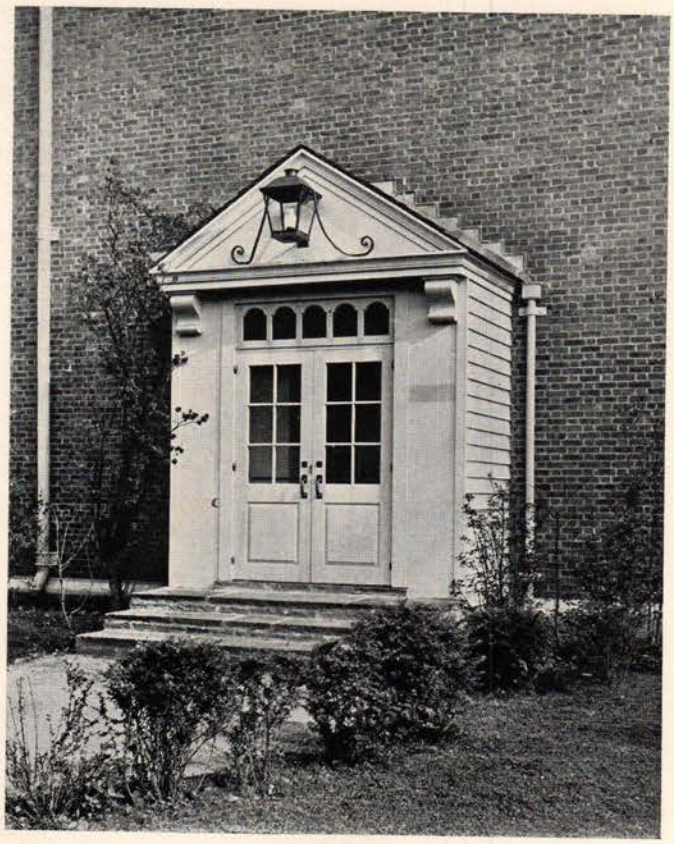
A sum of $200,000 was bequeathed by a former resident, Gregory Bryan, for a Memorial Building to be erected by a Board of Trustees: the character and use was to be decided by them after a careful survey of the town's activities.

The building comprises: (1) Hall—capacity 500—usable for all types of meetings and entertainment, including dances. Requirements included a spacious stage with scene loft, switchboard, dressing room, movie screen, projection room at rear, acoustical plaster ceiling panels for sound pictures. Movable seats are stored under stage. Projection booth and spot-light space are concealed by sliding decorative sash above cornice line. Dressing room is easily accessible in basement.

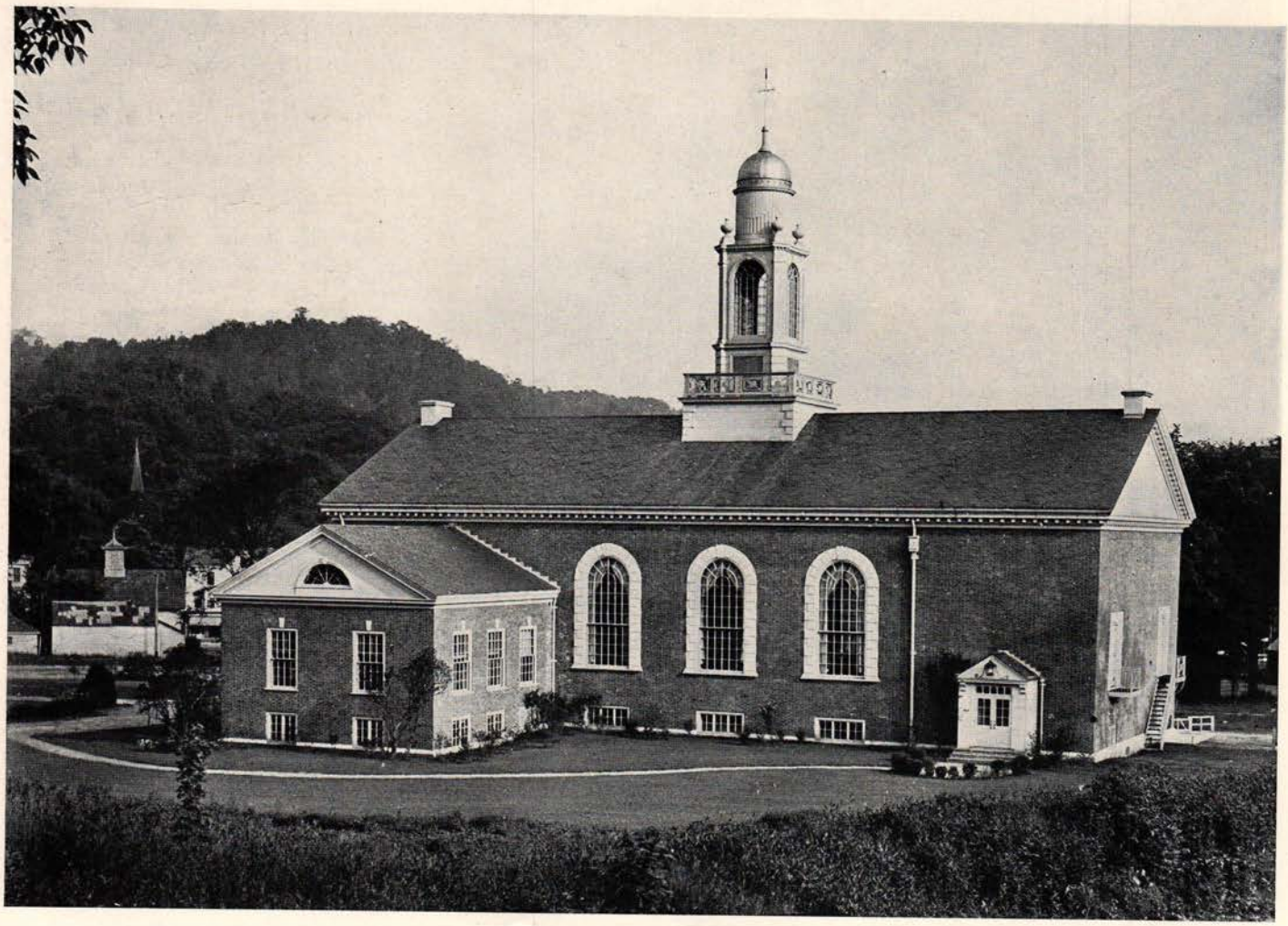
(2) Offices—on first floor: Selectmen, Probate Judge, Town Clerk, with conference room, separate vaults for each office and reading room. In basement: small court room, police room with cell, visiting nurses' room, Boy Scout and Girl Scout rooms.

(3) Social Room. Large basement room with 2 bowling alleys, 2 billiard tables and space for card games.

ENTRANCE TO COURT, JAIL, AMUSEMENT ROOMS



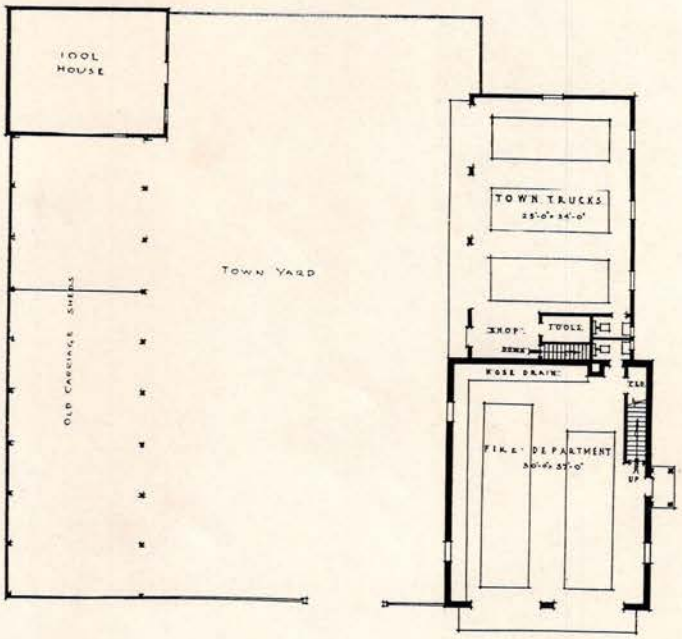
STATE ENTRANCE AND EXIT FROM HALL



BRYAN MEMORIAL TOWN HALL
AT WASHINGTON, CONNECTICUT
CAMERON CLARK, ARCHITECT

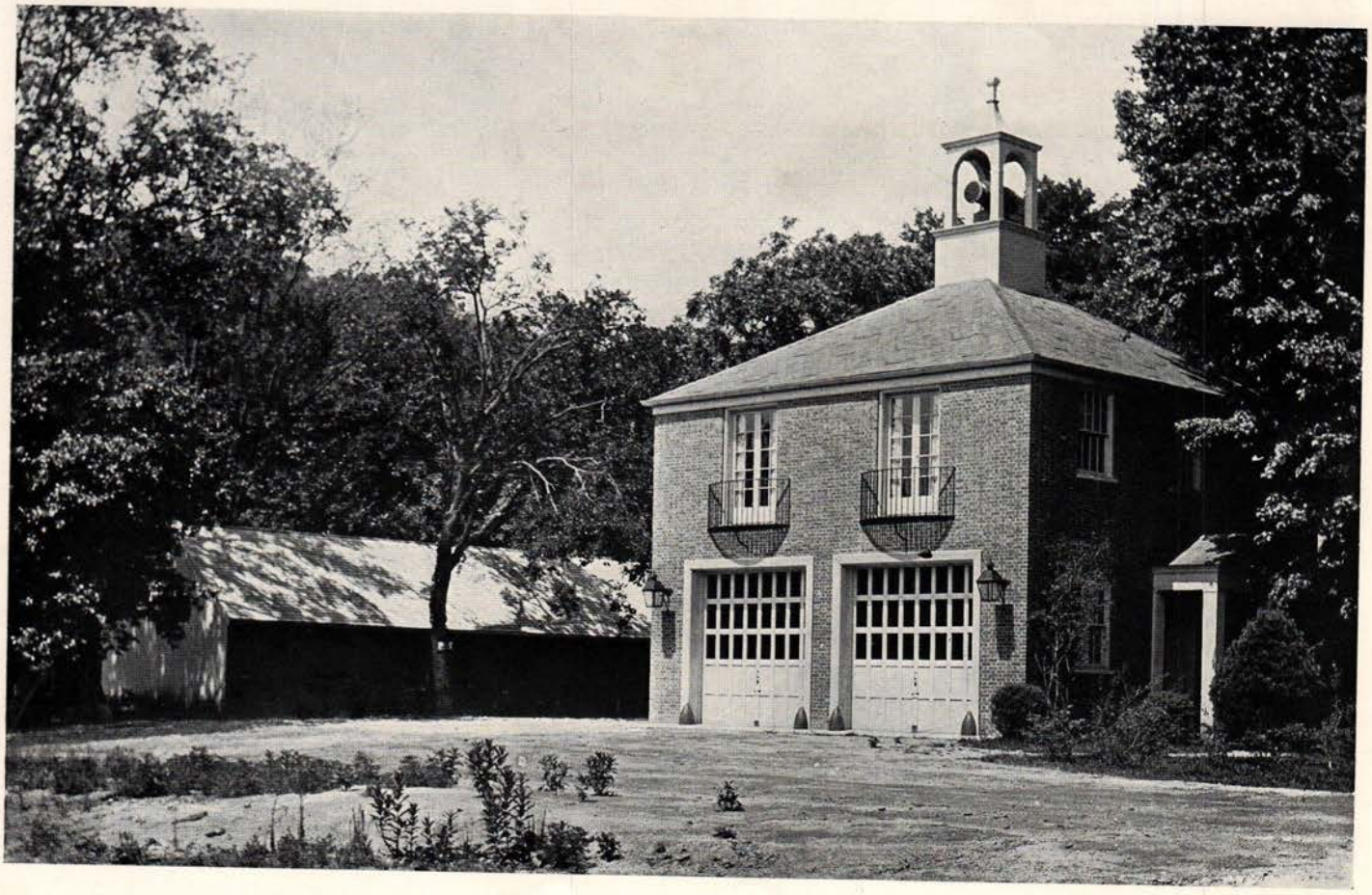
A TOWN HALL

FIRE STATION

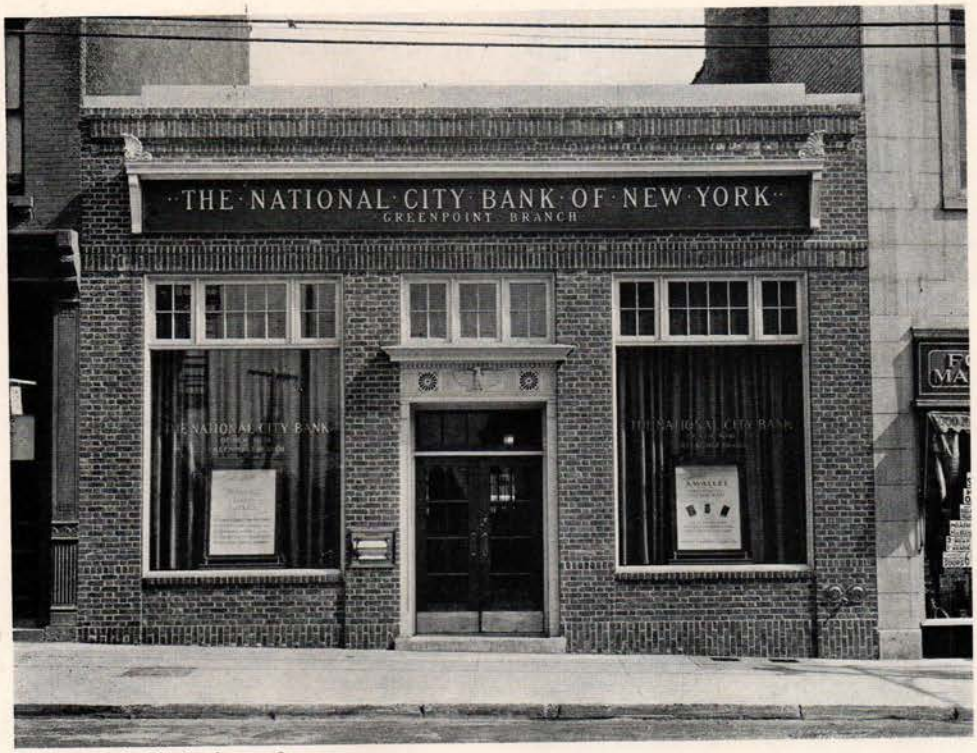


FIRE STATION AND TOWN GARAGE
CAMERON CLARK, ARCHITECT

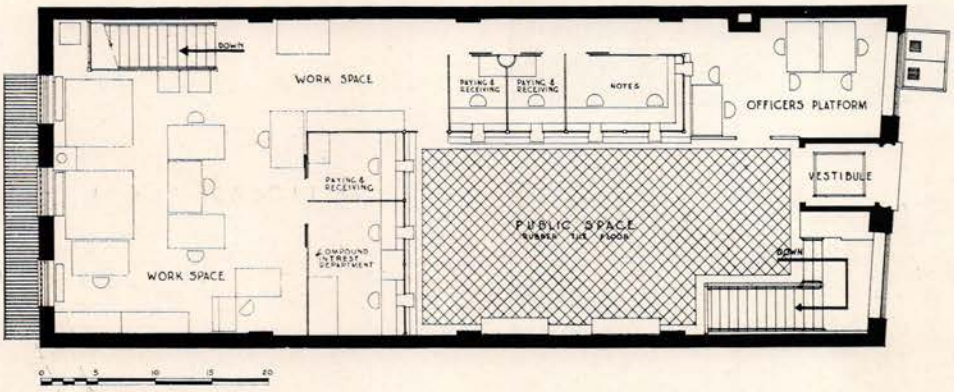
ADJACENT TO BRYAN MEMORIAL HALL AT WASHINGTON, CONNECTICUT



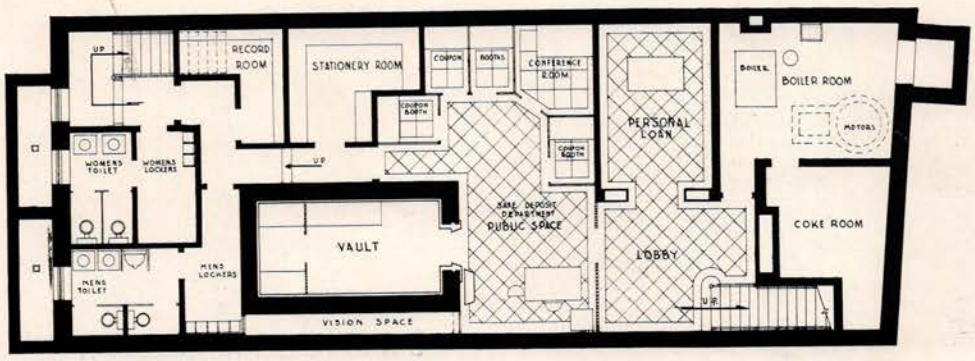
BRANCH BANK



Photographs by Charles Latere Co.



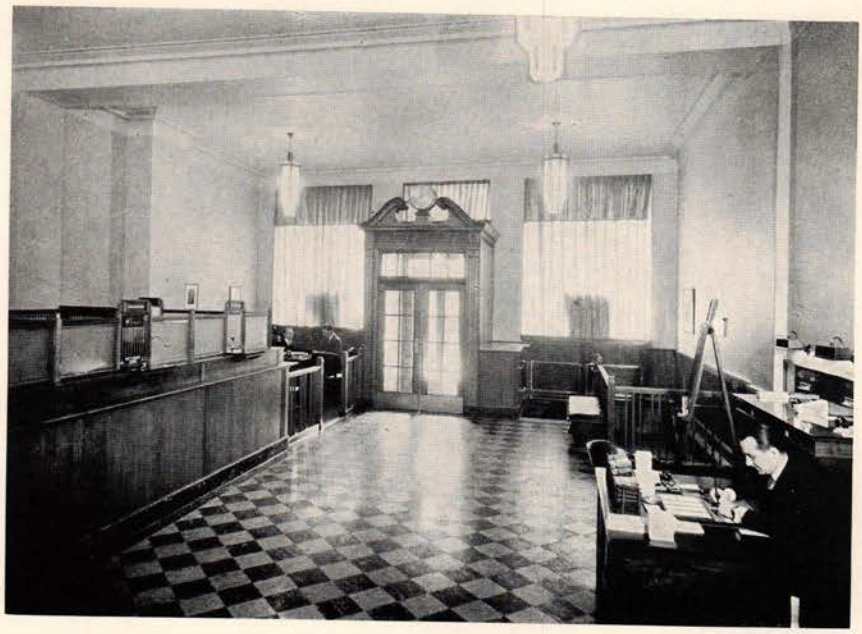
GROUND FLOOR PLAN



BASEMENT PLAN

GREENPOINT BRANCH
NATIONAL CITY BANK
OF NEW YORK

AARON G. ALEXANDER
ARCHITECT



GREENPOINT BRANCH
NATIONAL CITY BANK
OF NEW YORK

AARON G. ALEXANDER
ARCHITECT

BANKING SPACE

OFFICERS' SPACE

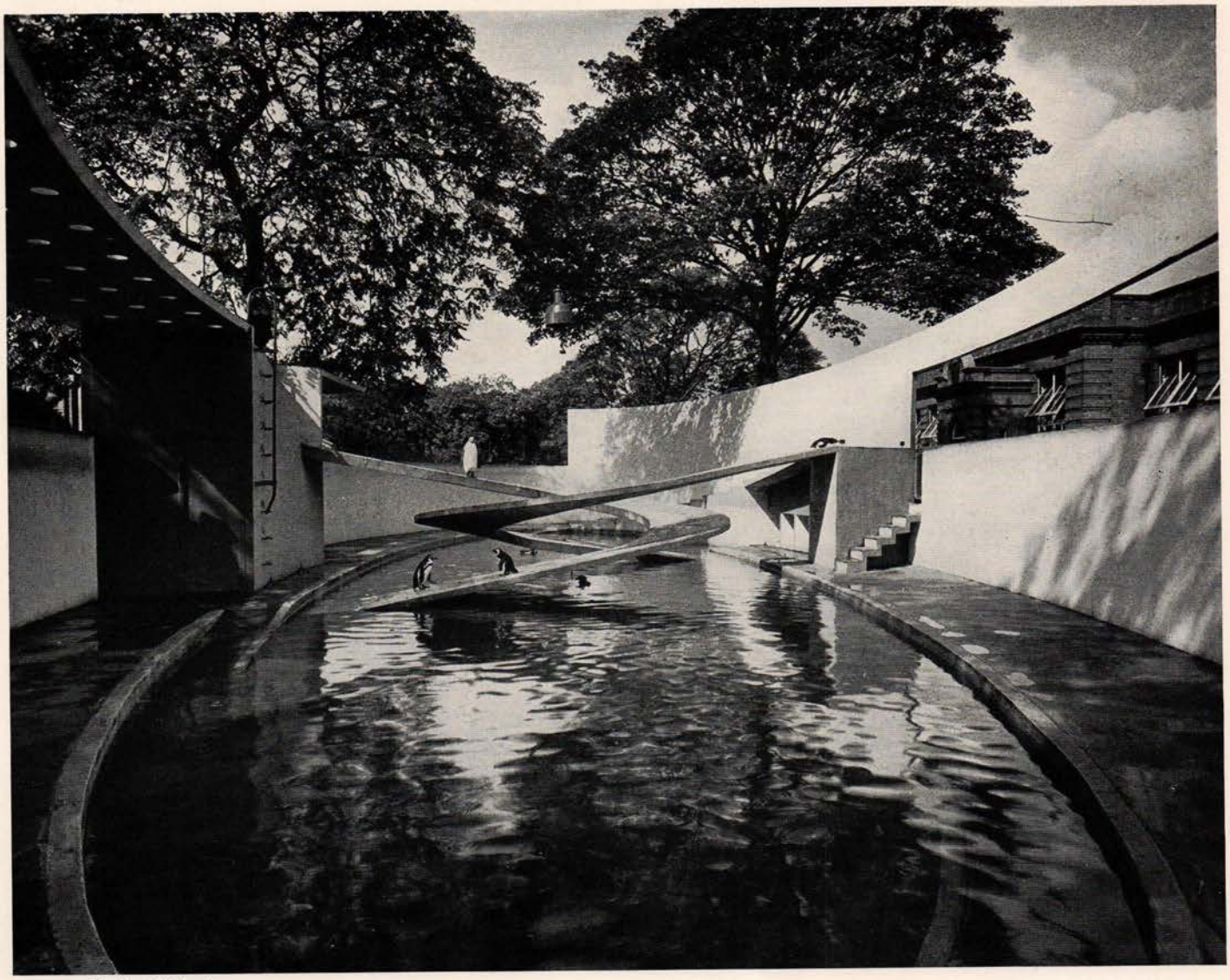
Photographs by Charles Latere Co.

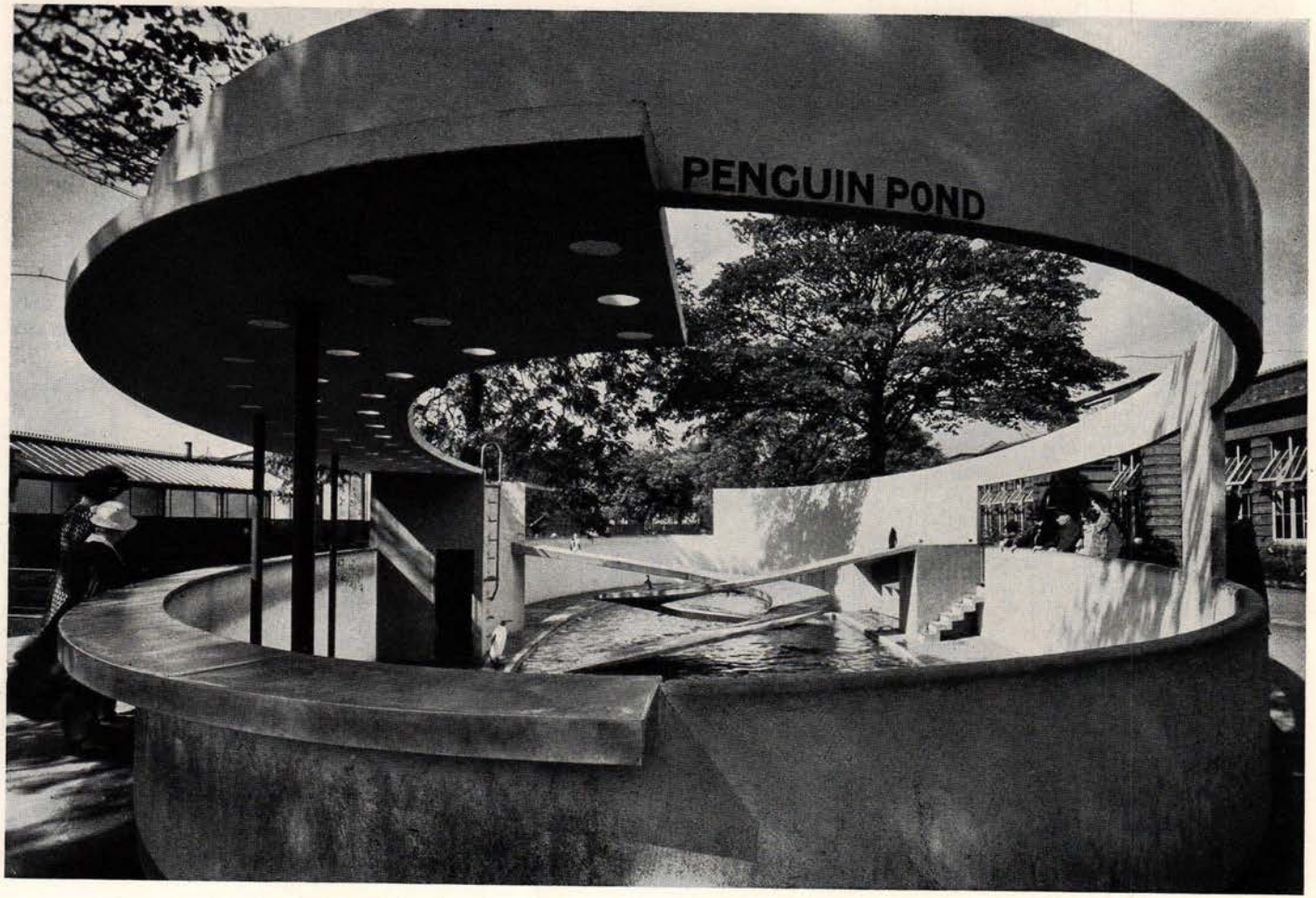
BRANCH BANK

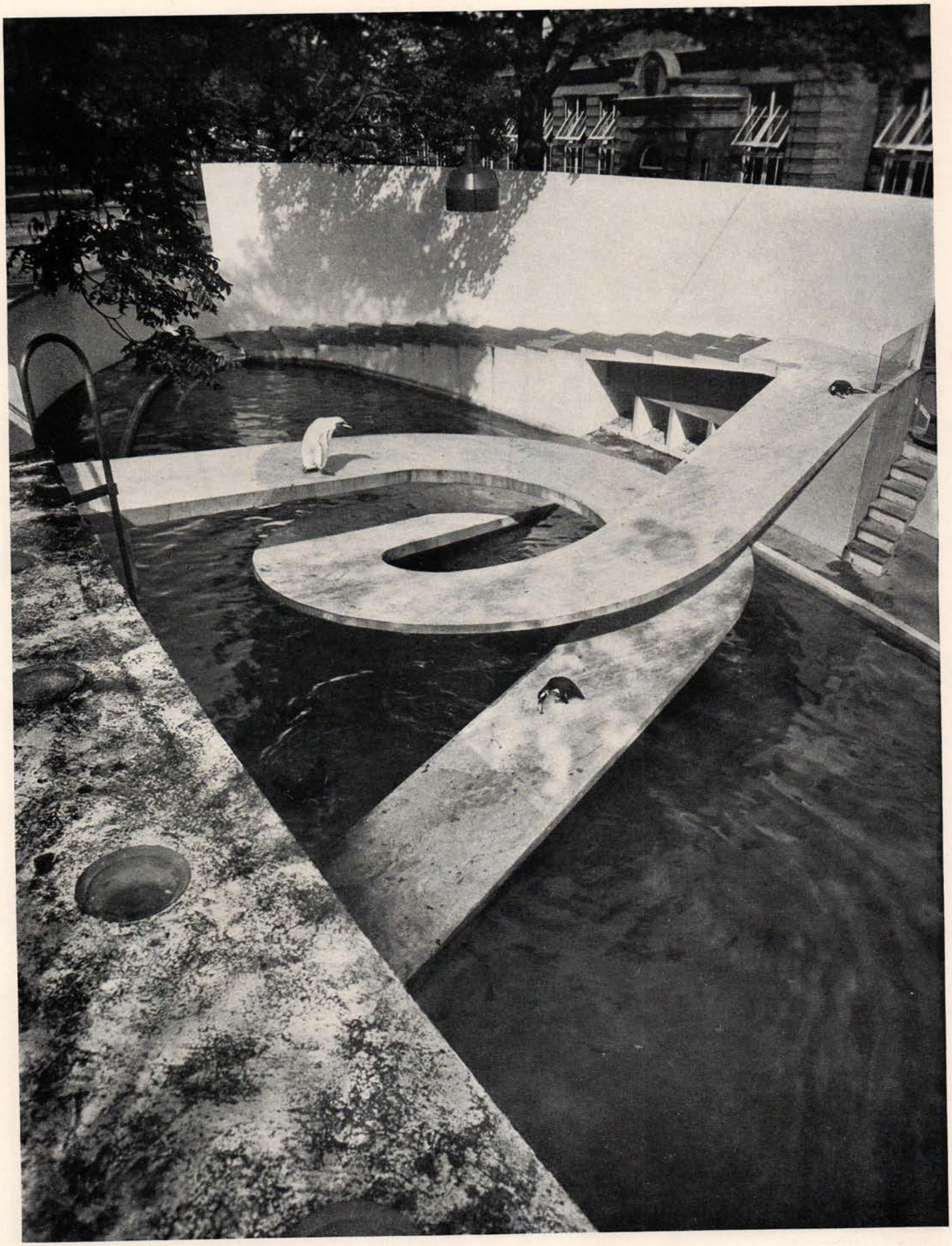
PENGUIN POND

PENGUIN POOL IN REGENT'S PARK, LONDON
LUBETKIN, DRAKE AND TECTON, ARCHITECTS

The pool was designed as a setting for the dramatic qualities of the penguin. The two cantilevered ramps spiral around each other and provide a stage up which the penguin can waddle. Reached by a flight of steps from the top of the left-hand ramp is a glass-fronted diving tank at the eye level of spectators, and in this the penguins can display their great agility under water. A variety of surfaces is provided, ranging from plastic rubber on the flat paths to slate on the steps, and the concrete ramps are kept wetted by a revolving fountain. The bottom of the pool is painted bright blue.




PENGUIN POND



Photographs by F. S. Lincoln

PENGUIN POND

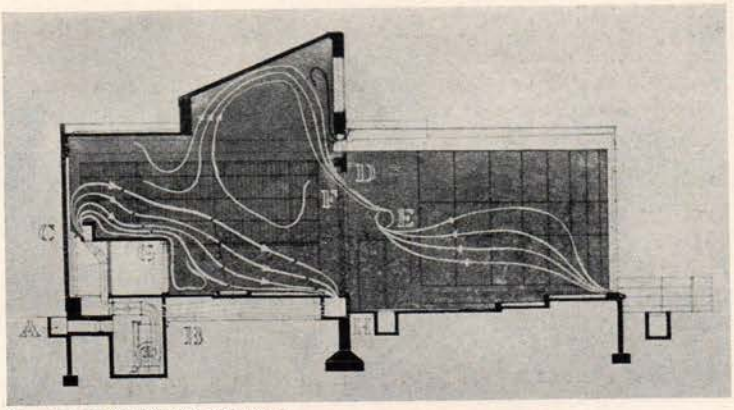
ZOOLOGICAL GARDENS, REGENT'S PARK, LONDON
LUBETKIN, DRAKE AND TECTON, ARCHITECTS

Photograph by F. S. Lincoln

PENGUIN POND

ZOOLOGICAL GARDENS, REGENT'S PARK, LONDON
LUBETKIN, DRAKE AND TECTON, ARCHITECTS

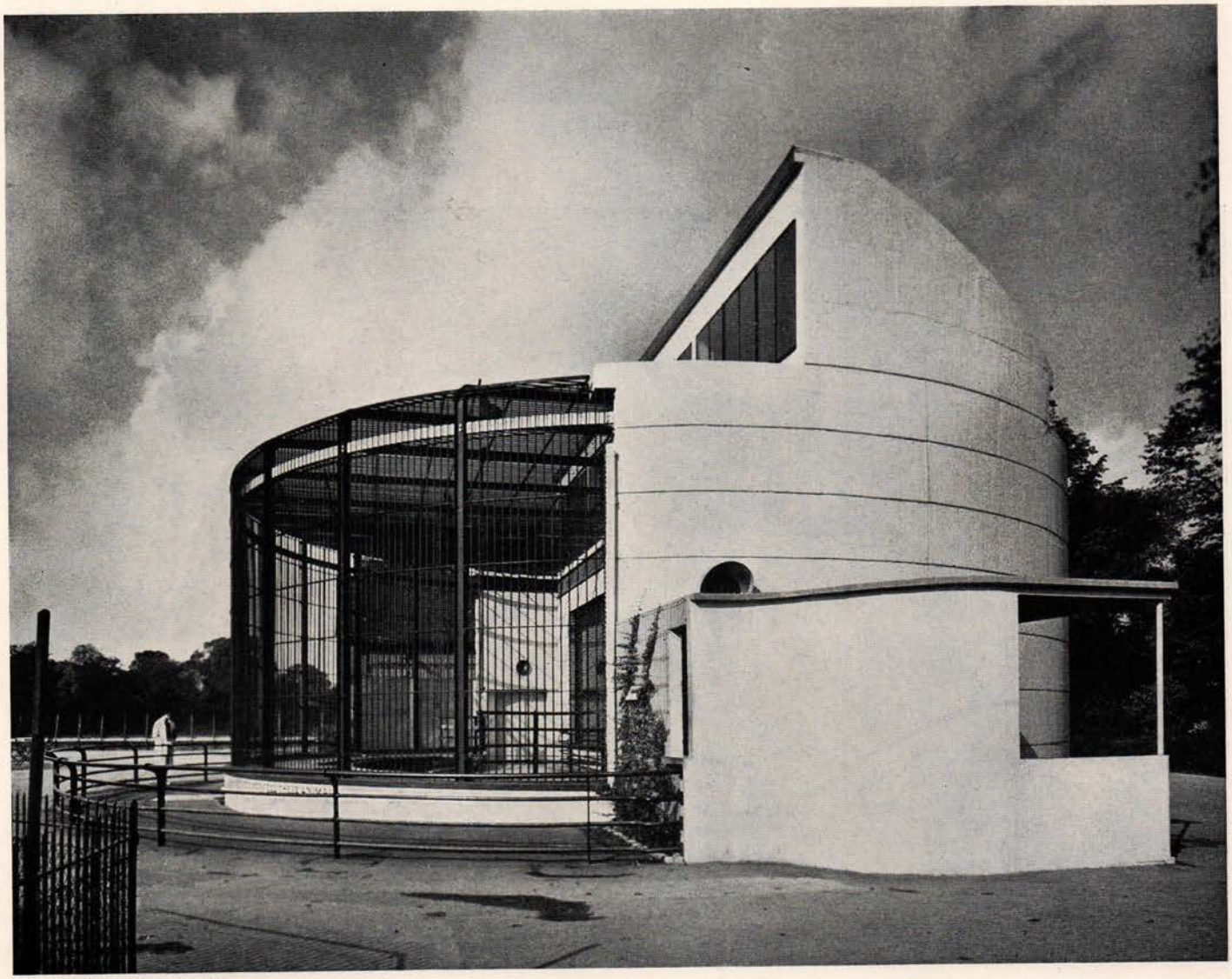
GORILLA HOUSE



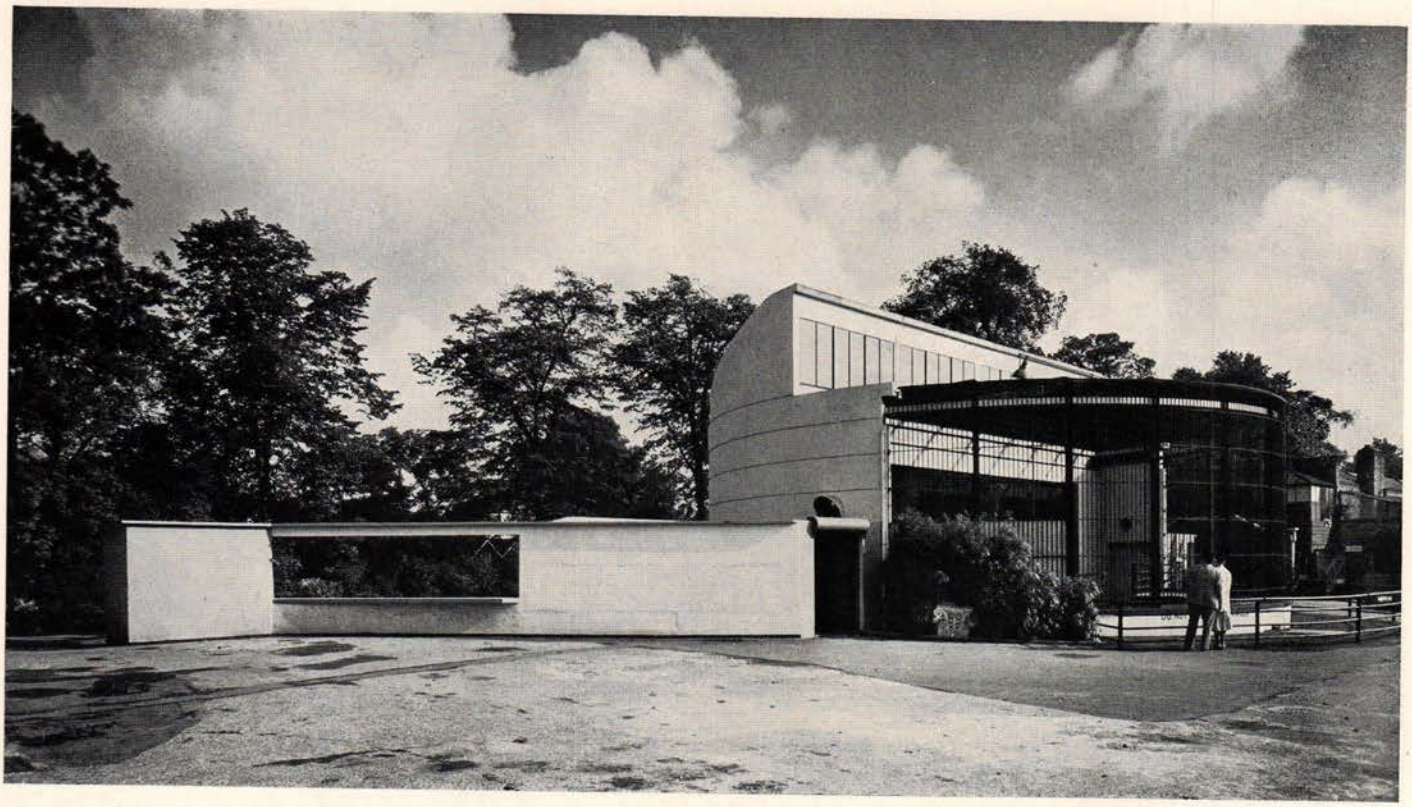
Courtesy of Architectural Review

The architectural problem consisted of accommodating the gorillas in such a way that in summer they should be in the open air while in winter they should be protected from the weather. The circular plan made possible a semi-circular revolving structure which is operated acording to climatic conditions. (The accompanying diagram shows the method of ventilation.) Since the gorillas are liable to human diseases they are therefore protected in winter by glass screens between themselves and their public. These screens can also be slid away into the wings when the summer cage is open; in the open air the infecting public must stand 8 feet away from the cage, outside the low railings, as shown in the illustration below.

GORILLA HOUSE IN LONDON ZOOLOGICAL GARDENS—TECTON, ARCHITECTS



Photographs by F. S. Lincoln



GORILLA HOUSE

LONDON ZOOLOGICAL PARK
TECTON, ARCHITECTS

The construction is reinforced concrete, and the semi-circular wall 4 inches thick. Internally the house is finished by a 2½-inch layer of cell concrete (made of fine sand, cement, and a frothy liquid which forms closed bubbles in the concrete, making it light and porous), plaster and paint.

Photographs by F. S. Lincoln

REMODELED RESTAURANT

Photograph by F. M. Demarest

SCHWARTZ'S RESTAURANT
NEW YORK CITY

CHARLES SHILOWITZ
ARCHITECT

The exterior is finished in Alabama Cream Madra marble, with steel sash and bronze frames and trim. The flower boxes are also bronze.

Photographs by F. M. Demarest

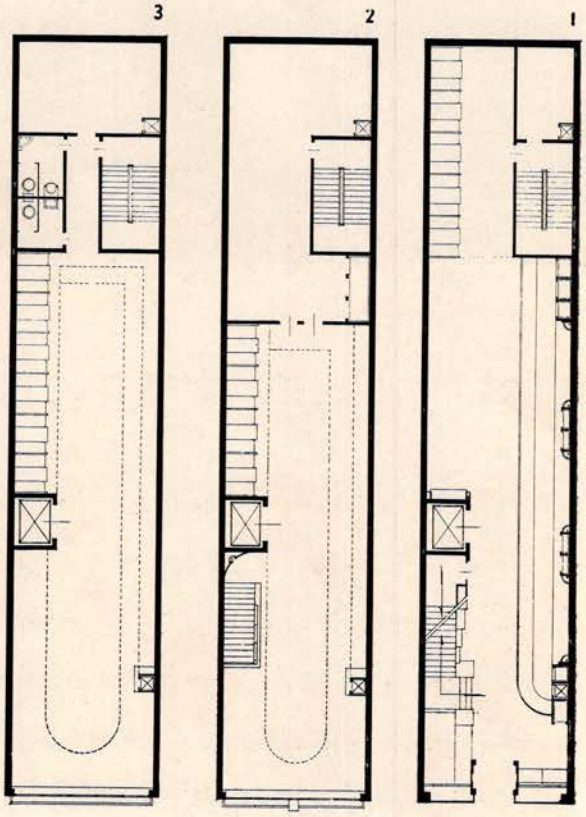
A REMODELED RESTAURANT

SCHWARTZ'S RESTAURANT, NEW YORK
CHARLES SHILOWITZ, ARCHITECT

In this building the basement is used for cold storage, dishwashing, locker rooms, and general utility; the first floor for bar and dining room; the second floor for men's dining room and kitchen; the third floor for women's dining room; the fourth floor for a banquet room; and the fifth floor for office, storage, and bake shop . . . The bar (shown on opposite page) has rosewood walls and American walnut panels with bronze strips at joints; the ceiling is sponged plaster . . . The second-floor dining room (illustrated above) has a dropped ceiling for lighting effects, walnut booths with blue upholstery, blue Linotile floors; the room is air conditioned.

Photograph by F. M. Demarest

SCHWARTZ'S RESTAURANT, NEW YORK
CHARLES SHILOWITZ, ARCHITECT



The third floor dining room has sponged plaster ceiling. The walls are finished in buff cloth with over-all pattern.

A REMODELED RESTAURANT

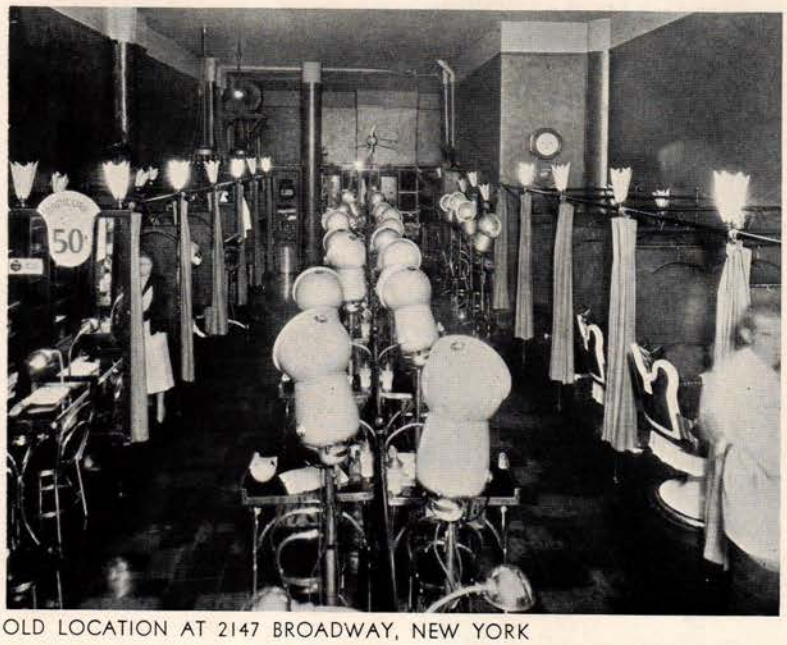
REMODELED BEAUTY SALON

Photographs by Palmer Shannon

LANTIERI BEAUTY SALON
NEW YORK CITY

VAHAN HAGOPIAN
ARCHITECT

The Lantieri Beauty Salon is one of the largest in New York and individually owned. The owner has introduced a logical division of the work into its different phases, creating departments specializing in various operations. There are departments for demonstration, hair cutting, hair-dressing, hair-dying, permanent waving, facial, reducing and body massaging. In addition there is a chiropodist and an electrolysis department.



OLD LOCATION AT 2147 BROADWAY, NEW YORK

All equipment shown in photograph of old location has been reused without transformation. A comparison of the new installation with the old location will serve to identify the furniture and yet show how different it looks in the new setting. Note the clock at the upper right hand corner of interior "before" illustration on this page, and compare it with the one appearing in the new store (page 120). In both, the mechanism is identical and of a standard make and inexpensive. For the new clock a wooden box was designed to house the mechanism, and a large dial in a sheet of enameled iron with counterbalanced aluminum hands was supplied by the metal man and set in place by the electrician.

The reception space furniture and a few new barber chairs were purchased. The numerous hair-drying machines shown in the old views have been either stored away for emergency use or built into the facial rooms in the basement of the new location.

There are five Hoffmann hair-drying units, each with a capacity of eight hair-drying hoods. These take the place of the old cumbersome individual hair-drying machines resting on the floor (mentioned above), and tend to simplify the appearance of the premises. While the hair is drying the customer sits at one of the forty tables where she may have her manicure. This leaves the booth free for another customer.

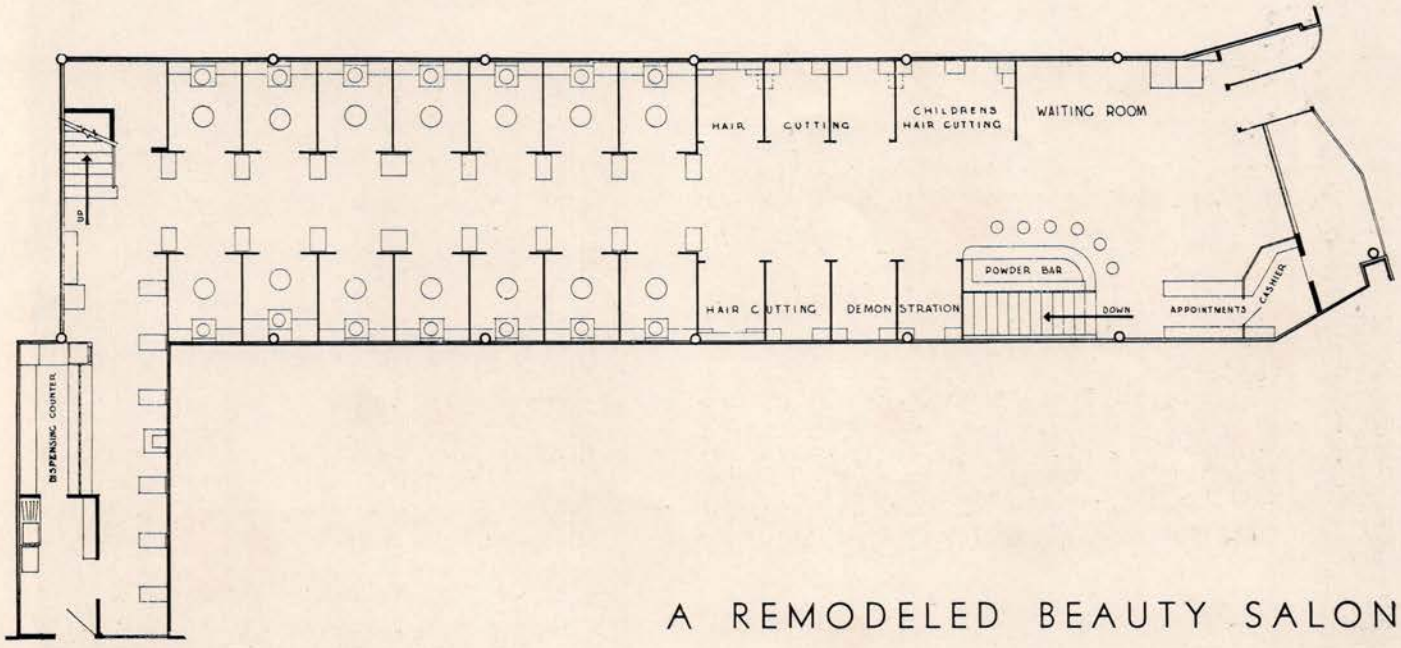
To counteract the heat given out by these hair-drying units, and to condition the air in the summer and winter, a twenty-ton ice capacity plant has been installed.

NEW LOCATION LEASED AT 2123 BROADWAY

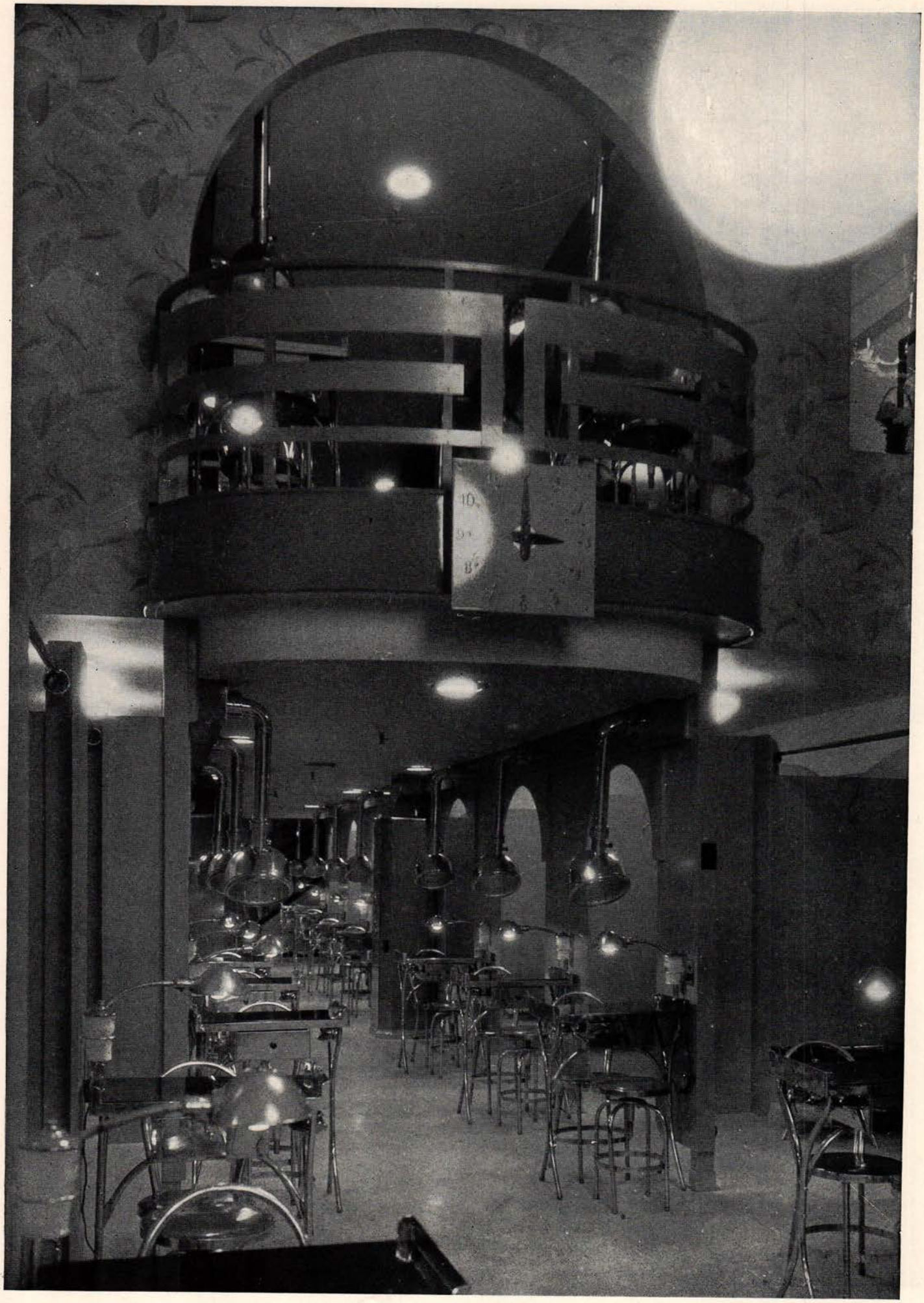
TEMPORARY FRONT DURING CONSTRUCTION

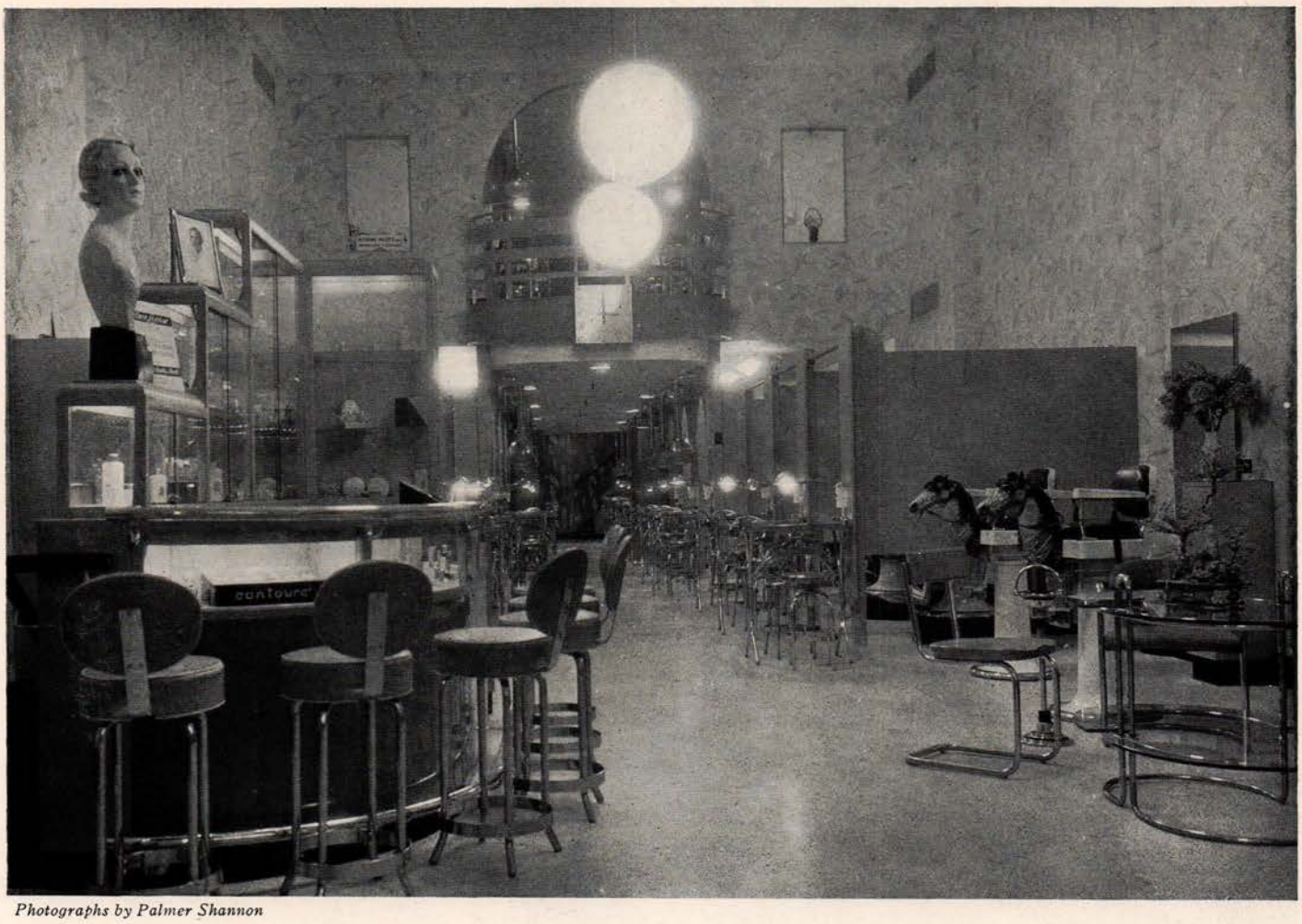
Photograph by Palmer Shannon

LANTIERI BEAUTY SALON, NEW YORK CITY—VAHAN HAGOPIAN, ARCHITECT



A REMODELED BEAUTY SALON

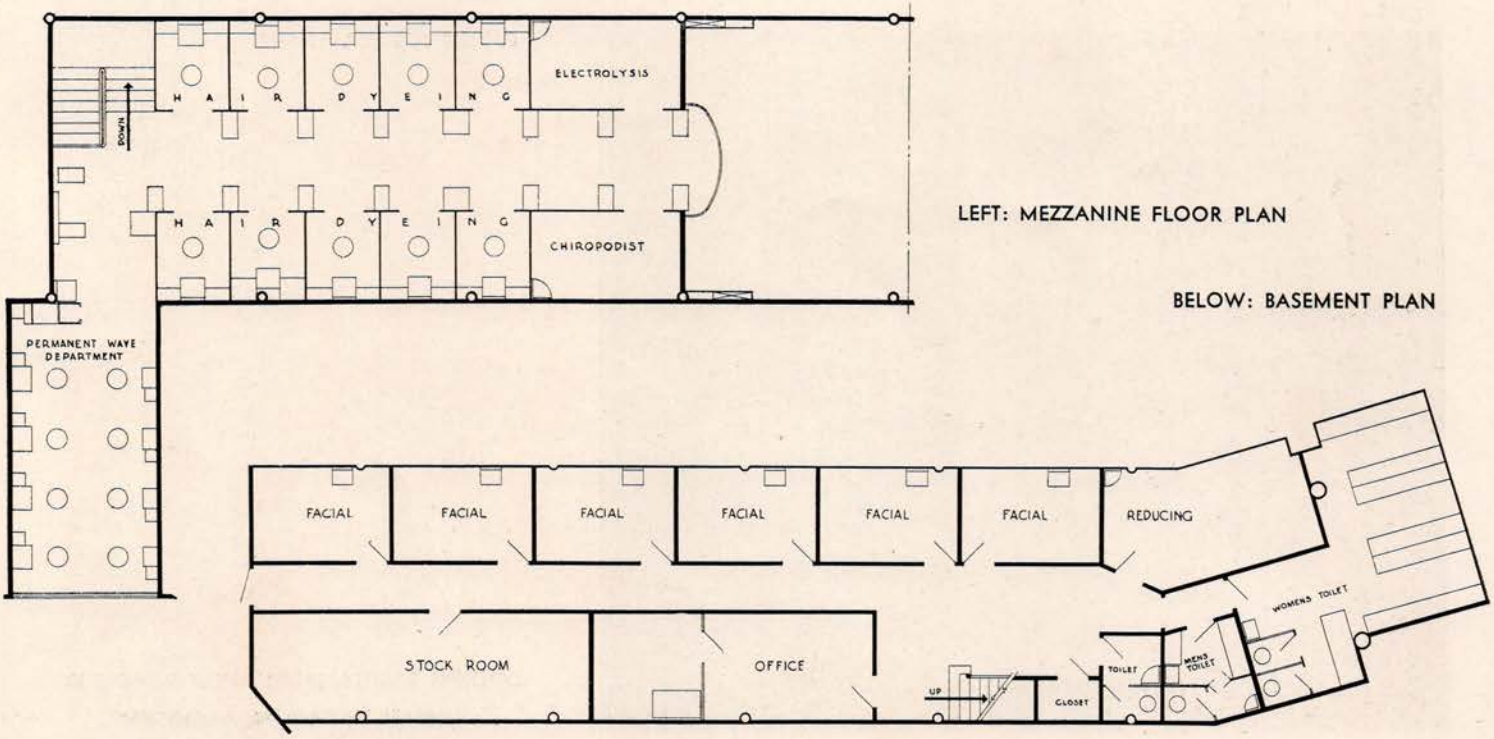




Photographs by Palmer Shannon

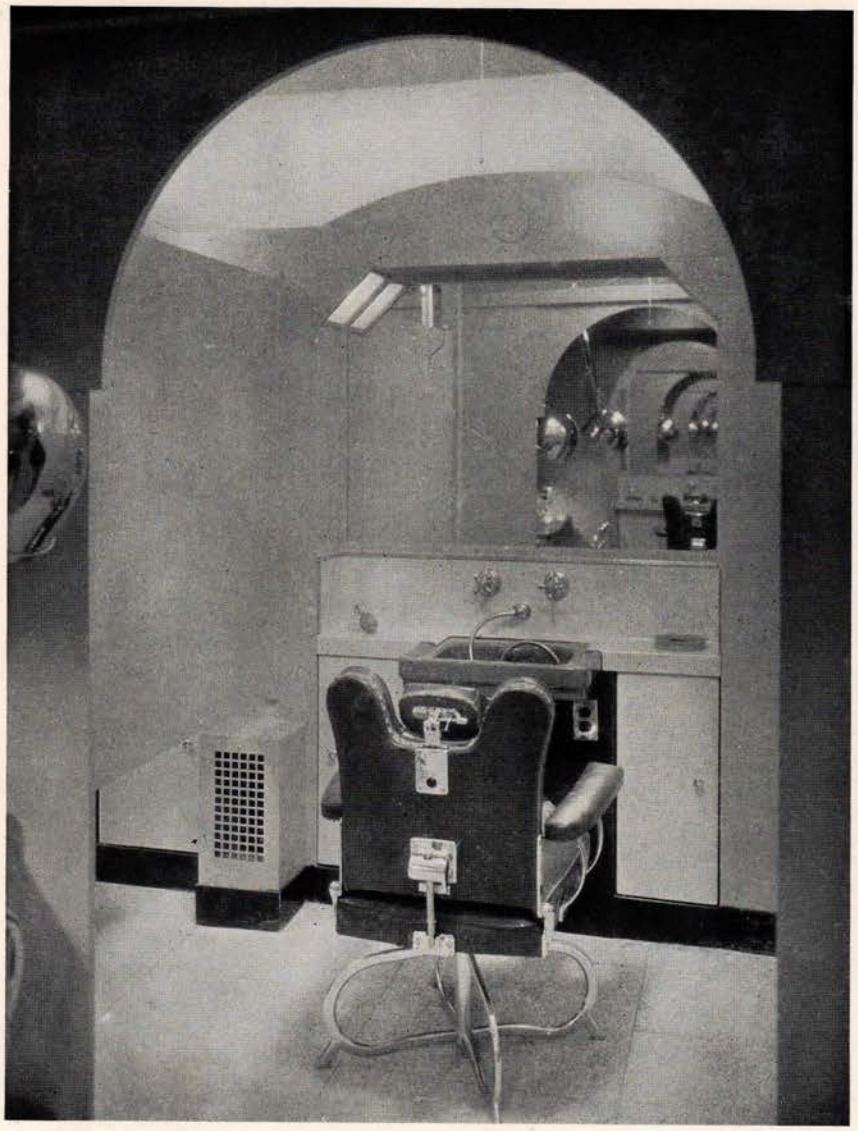
The reception space has been treated as a salon, visible from the street. In it, in addition to regular waiting room facilities, there is a beauty bar featuring novelties and specialties. This innovation eliminates the old method of selling beauty preparations over the counter.

LANTIERI BEAUTY SALON, NEW YORK CITY—VAHAN HAGOPIAN, ARCHITECT



LEFT: MEZZANINE FLOOR PLAN

BELOW: BASEMENT PLAN



INDIVIDUAL TREATMENT BOOTH

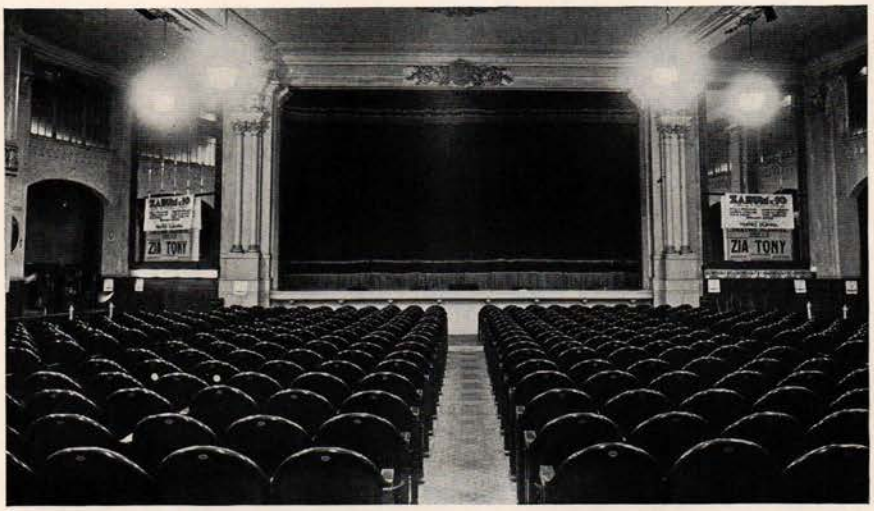
A REMODELED BEAUTY SALON

CHILDREN'S DEPARTMENT

Photographs by Palmer Shannon

LANTIERI BEAUTY SALON, NEW YORK CITY
VAHAN HAGOPIAN, ARCHITECT

REMODELED THEATER

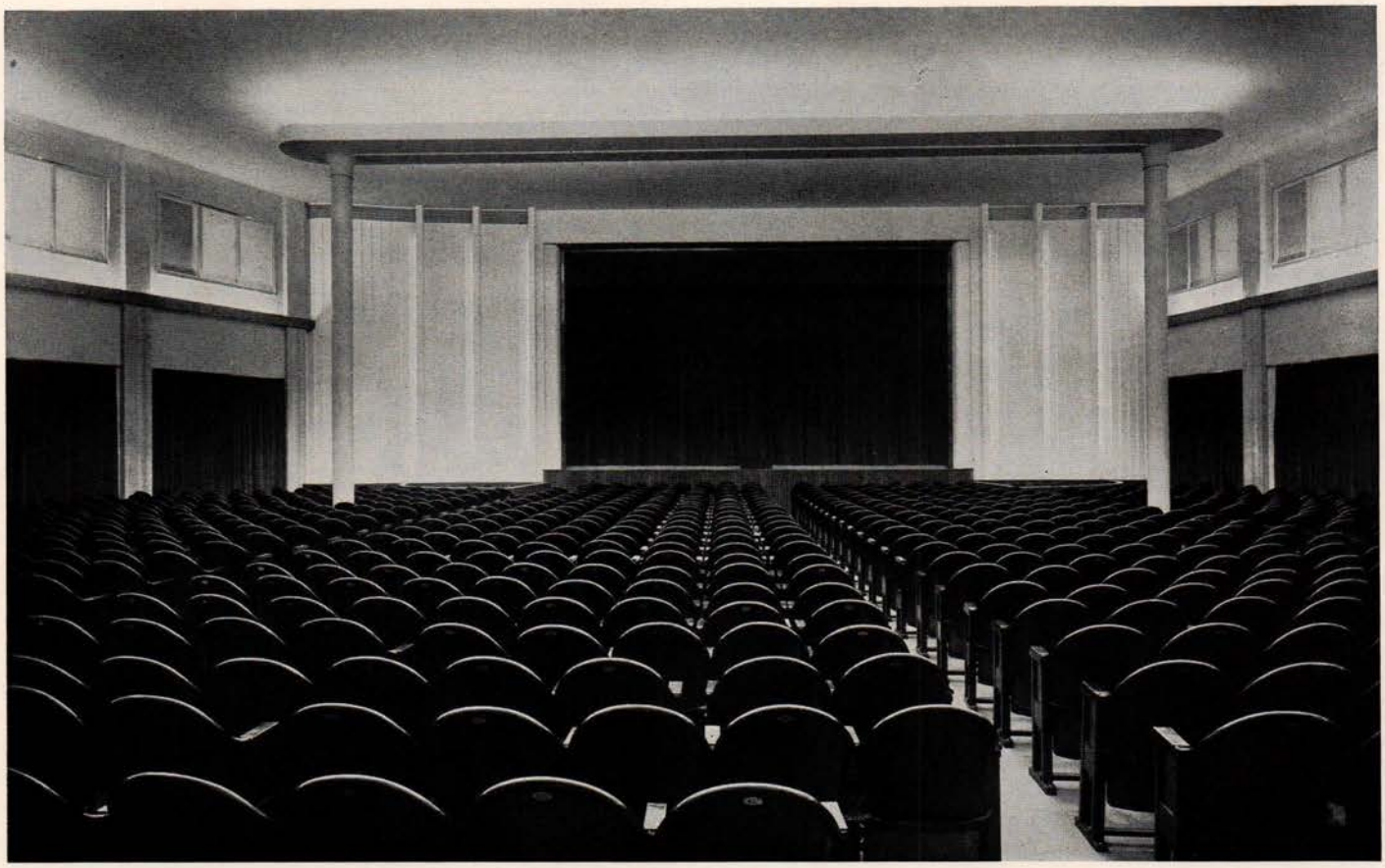


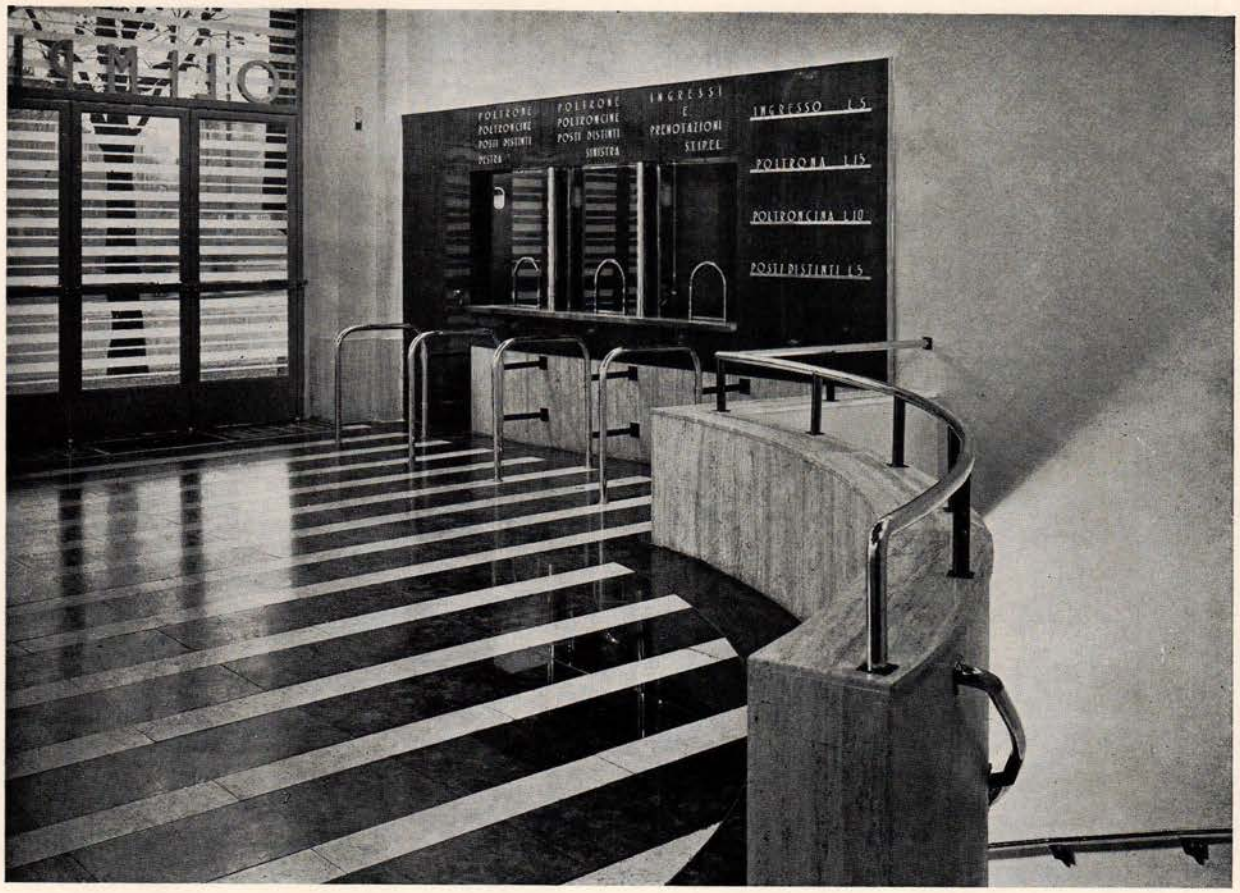
Photographs by S. A. Crimella

BEFORE MODERNIZATION

THEATER OLIMPIA IN MILAN
EUGENIO FALUDI, ARCHITECT

AFTER MODERNIZATION





A REMODELED THEATER

THEATER OLIMPIA IN MILAN
EUGENIO FALUDA, ARCHITECT

Entrance hall: Black and yellow marble floor. Traventine wainscot, and nutwood booth.

Bar on floor below: Red and yellow marble floor, black marble and ivory stucco walls.

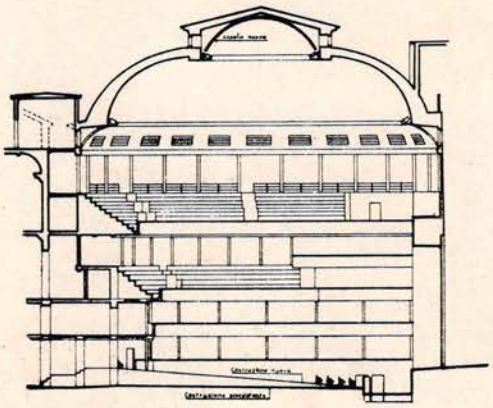
Photographs by S. A. Crimella

REMODELED THEATER

THEATER LIRICO, MILAN, ITALY
EUGENIO FALUDI, ARCHITECT

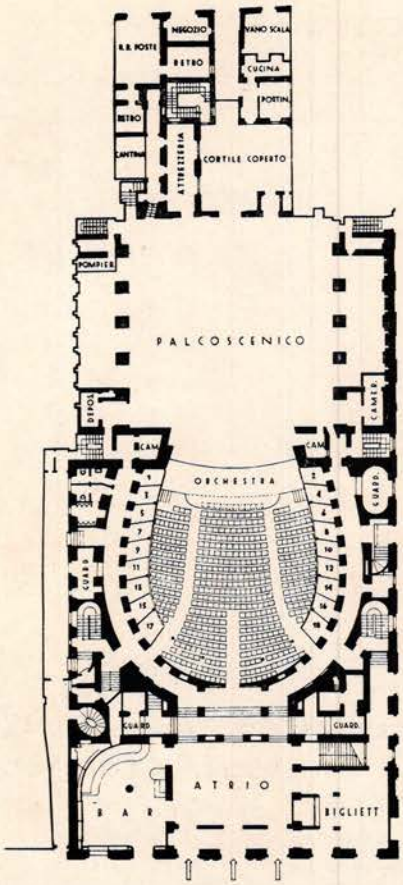
ENTRANCE HALL

Photograph by J. A. Crimella

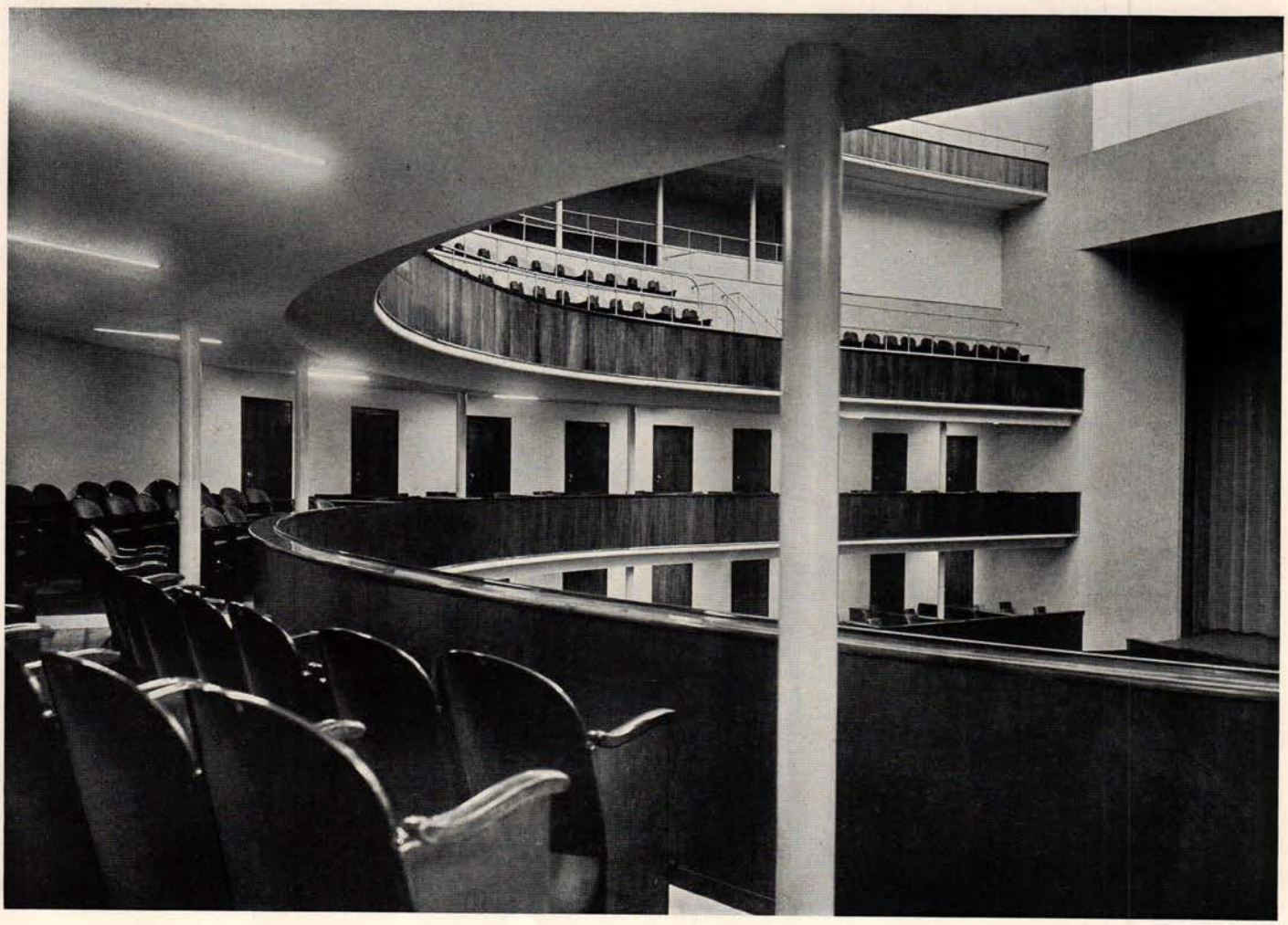


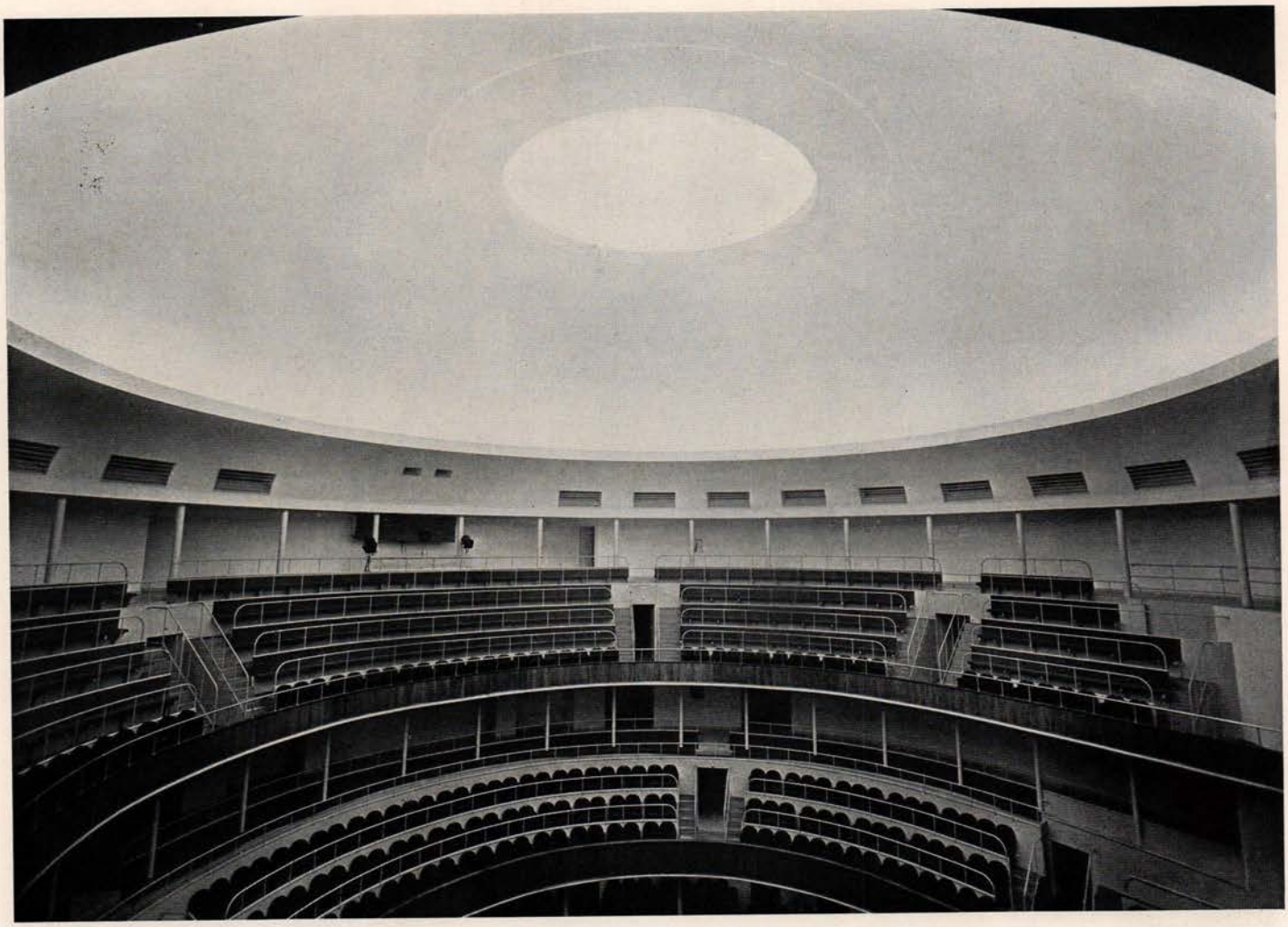
THEATER LIRICO
IN MILAN, ITALY

EUGENIO FALUDI, ARCHITECT



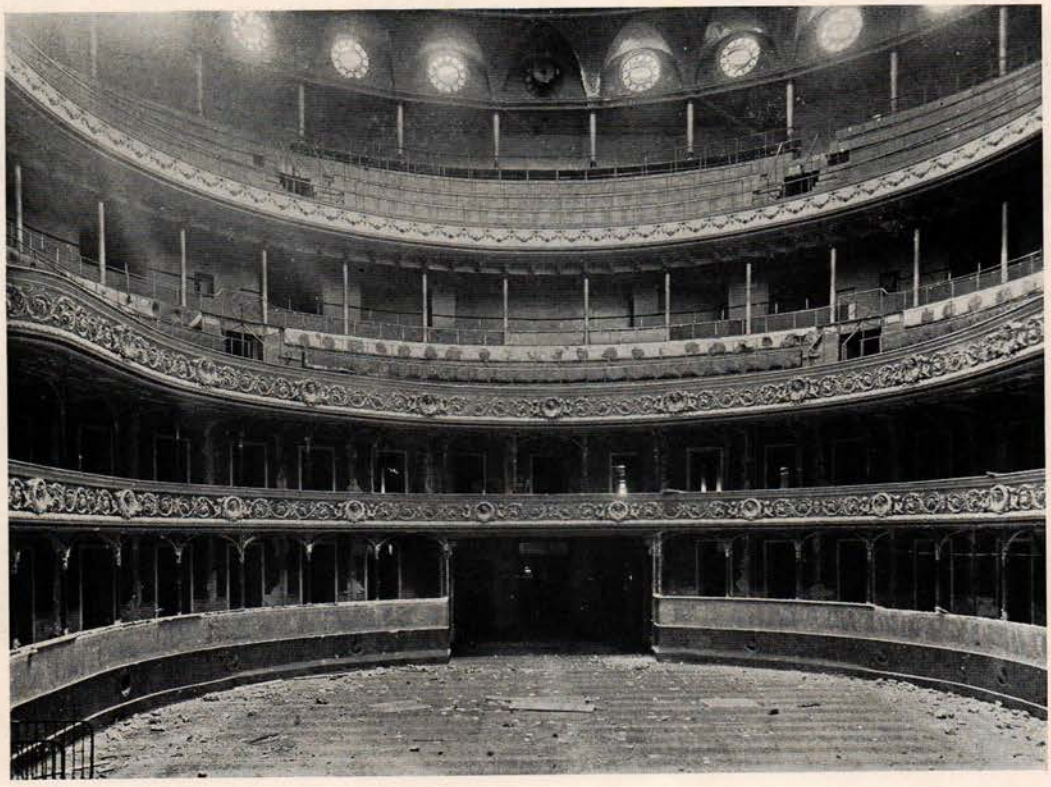
A REMODELED THEATER





THEATER AFTER MODERNIZATION: CUPOLA INDIRECTLY LIGHTED

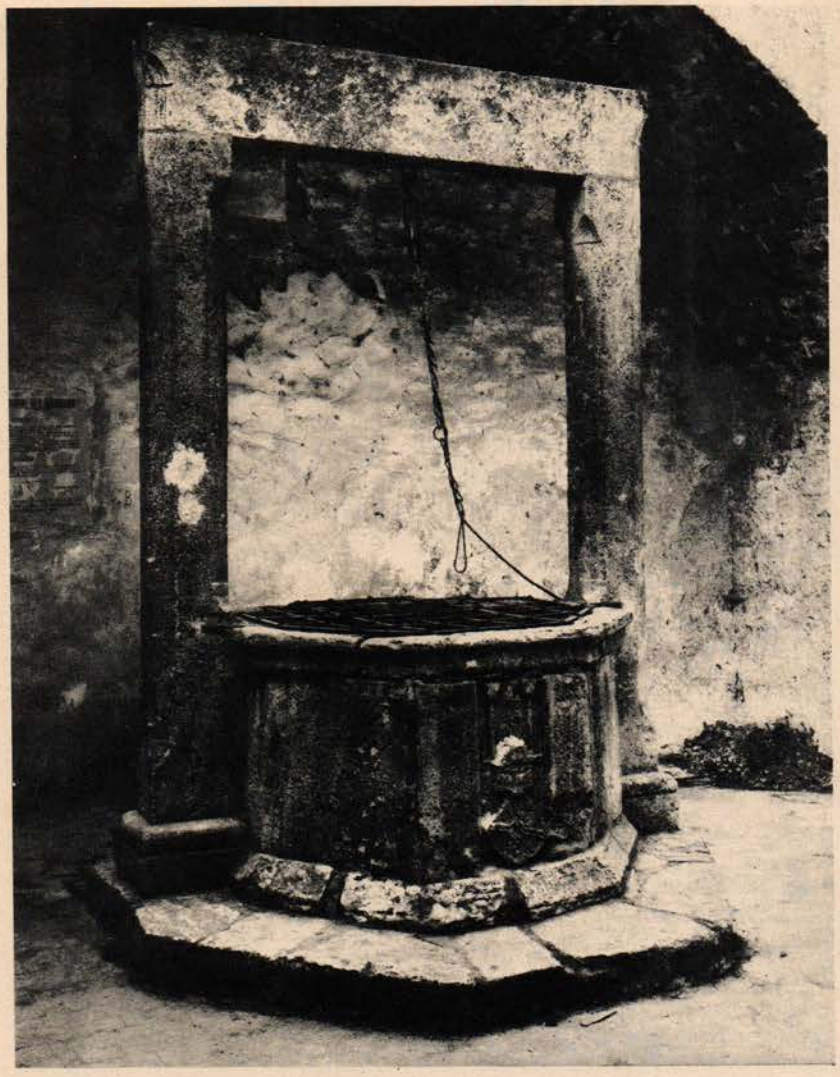
INTERIOR OF THEATER BEFORE MODERNIZATION



Photograph by J. A. Crimella

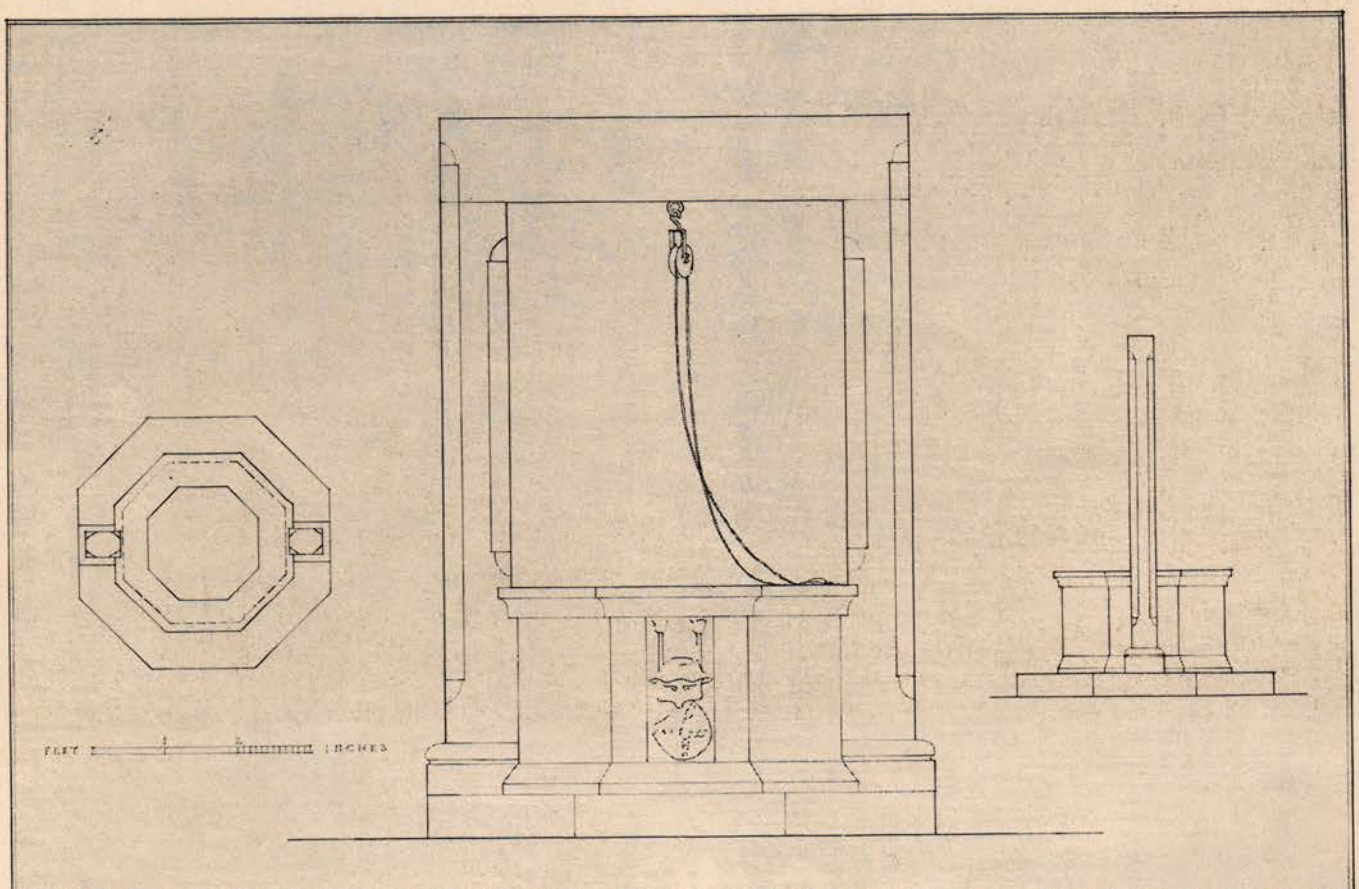
A REMODELED THEATER

THEATER LIRICO IN MILAN, ITALY
BAR BY EUGENIO FALUDI, ARCHITECT



MEASURED DETAILS from SAN GIMIGNANO

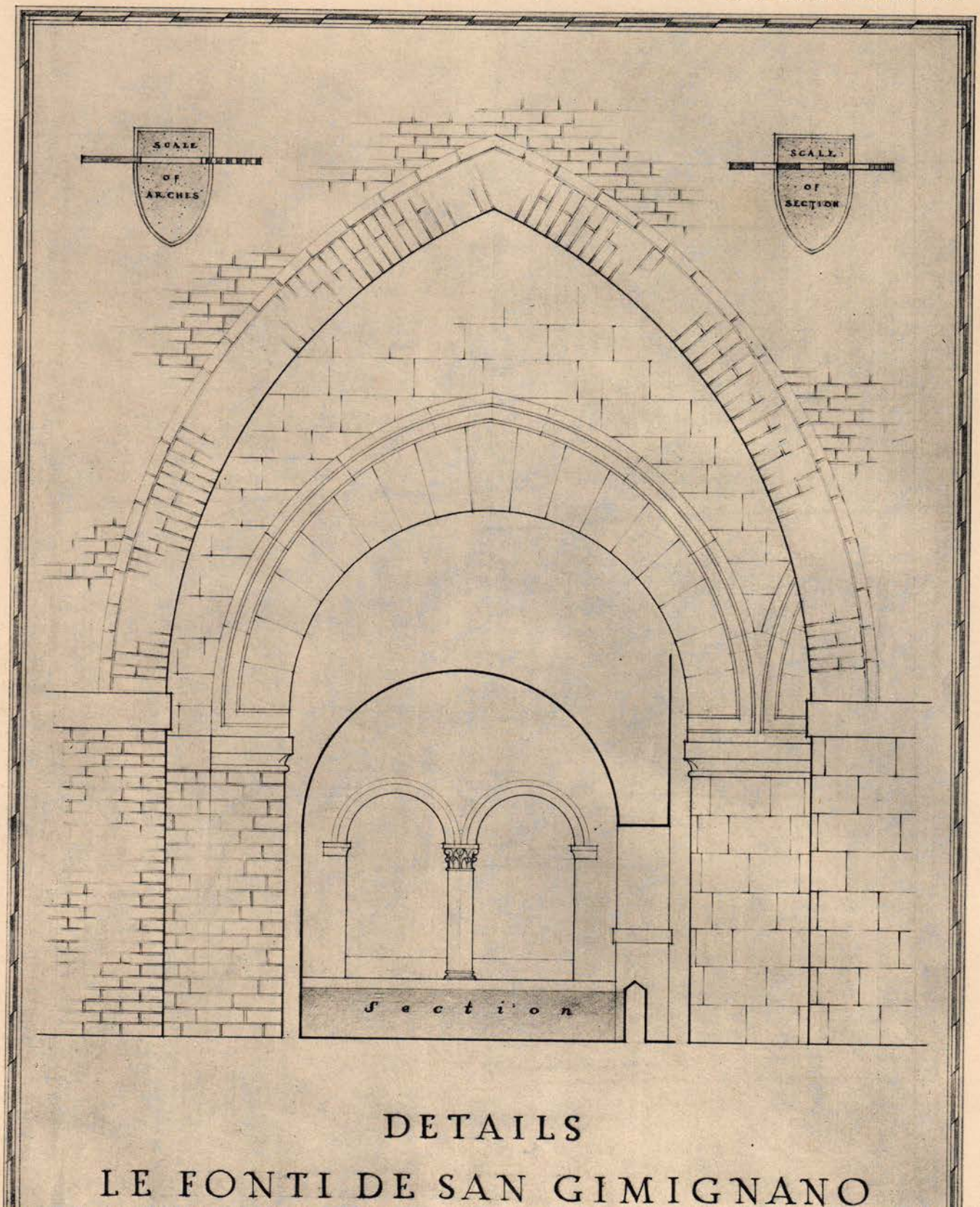
By IVES VAN DER GRACHT and
ROBERT W. McLAUGHLIN, JR.



MEASURED DETAILS FROM SAN GIMIGNANO, ITALY

THE PUBLIC FOUNTAINS: Beyond the Gate of the Fountains, ornamented with a small statue of San Gimignano to commemorate an unsuccessful attempt of the Ardinghelli to penetrate into the town after one of their periodic exiles, a steep path leads down to the public wells. These, with the various wells in the town, were its sole water supply until quite recently, and to this day the women of San Gimignano gather here to do the weekly washing. The first two arches are of cut stone, supported by a heavy pillar of gray stone, and date from the XII century. The others were added subsequently, especially during the period when the wool industry flourished.

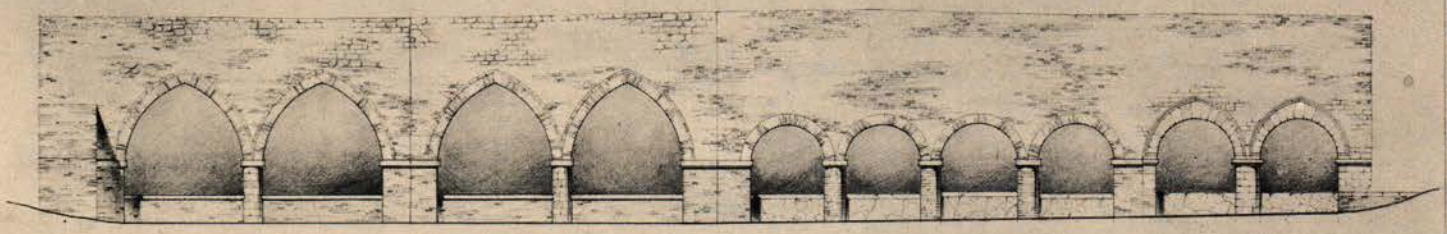
A little further down the hill, three-quarters buried in the ground and overhung with vines, is a primitive well, built of brick in the Lombard manner, which might go back to the VIII or IX century. From here there is a splendid view not only of the rolling countryside with its weathered stone farms and half ruined castles, but also of the towers of San Gimignano which rise above the huge masses of tufa stone upon which the town is built.



DETAILS

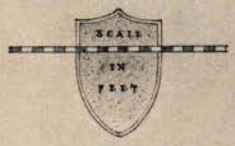
LE FONTI DE SAN GIMIGNANO

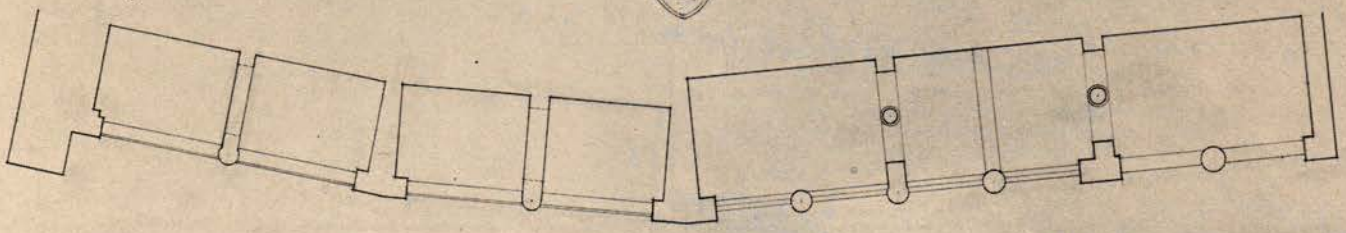
LE FONTI DE SAN GIMIGNANO



ELEVATION DEVELOPED

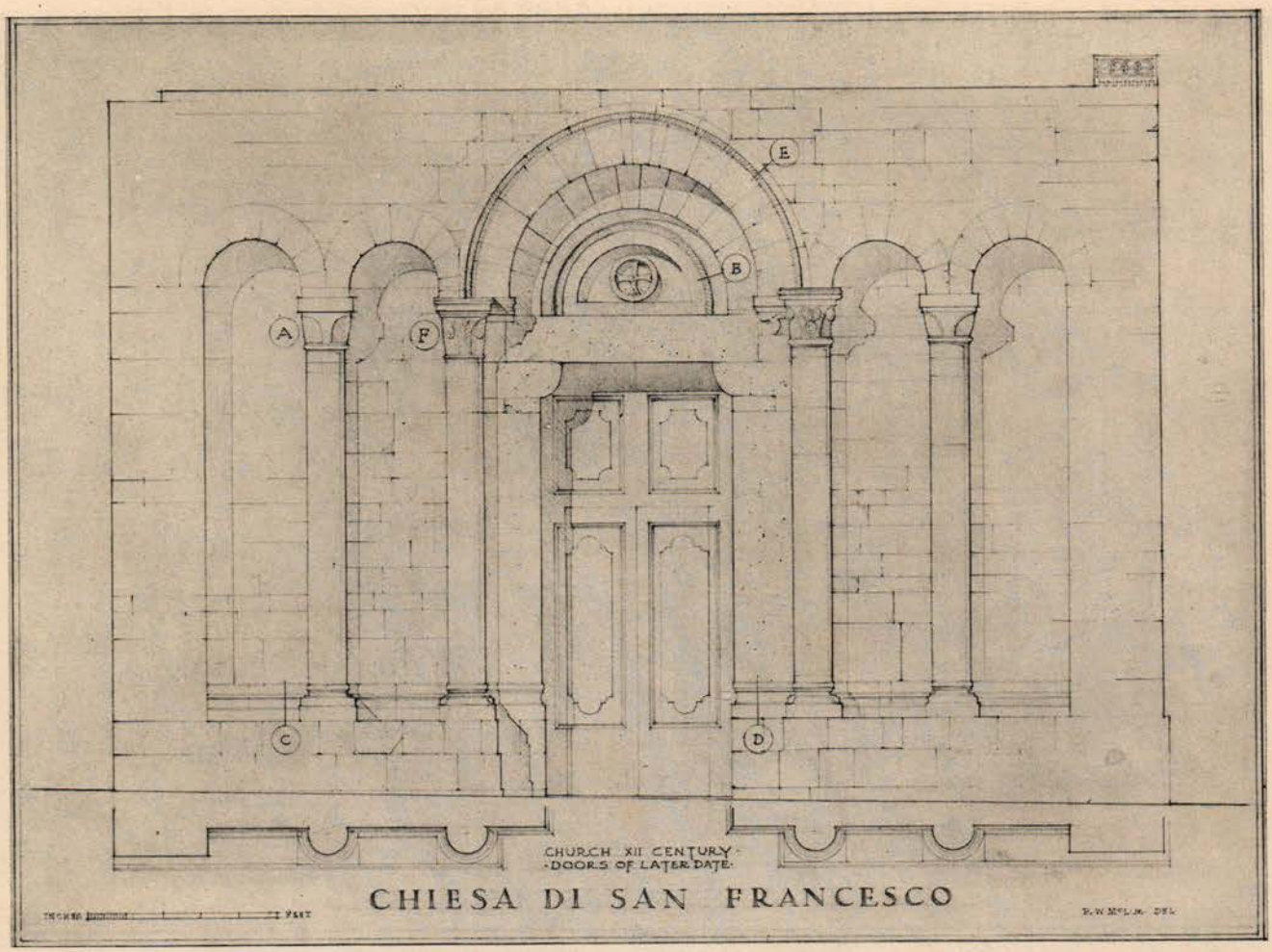
E. G. THORN DEL.



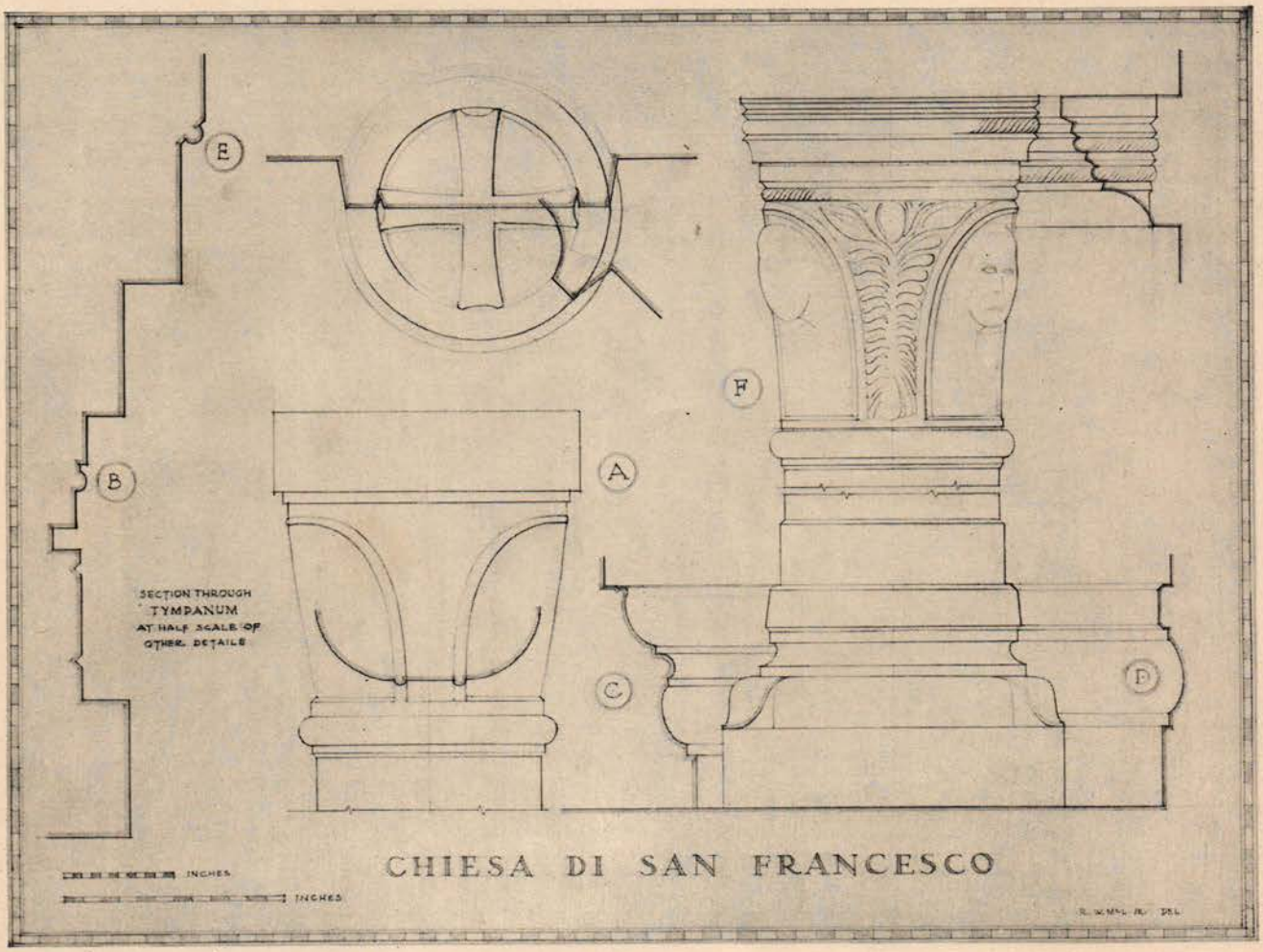


P L A N

Photograph by Alessandro Logi & Figli



CHIESA DI SAN FRANCESCO



CHIESA DI SAN FRANCESCO

TYMPANUM OVER
ENTRANCE DOOR

CHURCH OF
S. FRANCESCO

SAN GIMIGNANO
TUSCANY, ITALY

FRAGMENT OF
CHURCH FACADE

MEASURED BY
IVES VAN DER GRACHT
R. W. McLAUGHLIN, JR.

THE NEW ARCHITECTURE IN AMERICA

OBSERVATIONS OF AN ENGLISH VISITOR

BY JOHN GLOAG

The excavating archaeologist of 3,000 years hence who works first on the buried ruins of New York and then on Washington will conclude that those cities were erected by totally different races, whereas they are the architectural results of totally different moods indulged by one indisputably great race. The eighteenth century patron of architecture was educated in classic architecture; the twentieth century patron of architecture in America is educated in commercial advertising. The audacious beauty of New York has grown out of the spirit of salesmanship that pervades the city; and the architect has been called in to amplify the theme song of commerce, which is: "Tell the World!"

With this sort of patronage there has clearly been a readiness to experiment, which has sometimes been deflected by an appetite for mere novelty; and when the experimental mood is in abeyance what may be called the "topical" building appears. The Woolworth building was topical in its day; so was the Chrysler building; but time may demonstrate that Al Smith's handiwork, the Empire State Building, has authentic individuality, and it may retain its freshness and vigor after styles in trimmings (from which the Woolworth building suffers) and in ornamental lids (which is the complaint of the Chrysler building) are outmoded.

The visitor to New York finds her such a lovely and stimulating lady, that he never suspects, unless he meets a young, modern-minded American architect, that New York is overdressed, and that he has been captivated by the brisk and bewitching way she wears her foreign clothes. Then he learns that he has been admiring a city of old-fashioned buildings, hung with unnecessary masonry, with all the real creative work lavished upon their skeletons, and the use of new external materials that could make them real twentieth century buildings deliberately restricted by regulations, by traditional prejudices, and (it is even hinted) by vested interests.

But if New York is a city of "old-fashioned buildings," what about Washington? In that city it has yet to be discovered that gargantuan classic architecture is not the true architecture of the twentieth century. Washington is growing into the most expensive capital city in the world. Huge sums are being spent upon the erection of new government offices. Old nineteenth century buildings, still in excellent condition, are being demolished to make room for new masses of shining white stone. All the millions of dollars that are being poured out to wash up these sparkling islands of masonry are keeping the building industry busy and must be making enormous and continuous claims upon building material. The state is spending money, and it will have something to show for it, but it will be the wrong thing architecturally. Columns, columns, everywhere, and not a new thought peeping out anywhere.

But they have such sweeping courage in Washington that it is not only conceivable but extremely likely that in fifty year's time they will be pulling down that dazzling corinthian temple of white marble, the New Supreme Court, and erecting in its place a composition of steel and glass, while the young architects of that future time will glower and mutter: "That dead functionalist stuff—when *will* the old men learn!"

Meanwhile millions are being spent and a colossal opportunity is being missed, and all America appears to be taken in by it. Public men consider it a great gesture of modernization. Only the young architects, and only some of them, are aware of the tragic mistake that is being made with such hymns and shouting. To see Washington from the Arlington Cemetery is to see a white Graeco-Roman city; but, like men and women on the cinema screen, it is larger than life size. It is a monument; a consistent expression of America in a mood of national dignity; unparalleled in architectural history except by the Acropolis at Athens and the Forum at Rome. It performs no service to the architectural genius of its own century; its example may be directly harmful to the life and growth of the modern movement in America; and there it differs from Athens and from Rome, for those cities expressed with the finest and most enduring materials available, the national genius of their architects. To anybody who lives and works in England, blind love of tradition is a familiar obstacle in the way of good design; and to such a person the discovery that America cannot live architecturally in her own age is faintly shocking. Modern architecture, which is of the same stuff as the machine age that America has been largely instrumental in developing, is still unrecognized in the one country on earth that might have raised it from its experimental stage and made a fine, glowing and glorious thing of it.

Although public buildings and commercial buildings may provide no opportunity in the present state of patronage for creating twentieth century architecture, the problem of housing may receive some attention from industry, and thereby release design from its classic limitations. The prefabricated house may alter, in due time, existing ideas about architectural forms. One learns that architects have been called in by some manufacturers of prefabricated houses; and from the young men one learns that industry has generally consulted what these irreverent youths describe as "the tail-coat school," and that, as a result of this, one firm had produced metal houses painted to look like wood.

"Prefabricated houses will be well-designed if they do their job with the greatest efficiency," said one young architect to the writer. The faith of functionalism seems to blaze brightly in every mind under thirty. The young men are intolerant of the old school, "the

tail-coat school," but they are constructive; they have experimental, adventurous minds, and they do not seem to recognize the limitations that would be constantly intruding upon and curbing the adventurousness of many of their English contemporaries. They are prepared to get outside their profession; to claim the right of accepting more spacious responsibilities; and to break up the aesthetic tradition that hampers the architect in every contact he makes with the tough realities of commerce and industry. In an ardent discussion about this, somebody said: "The architect must get the engineer and the real estate man together. Without the architect those two can destroy society: with the architect they can remodel it without any politician knowing that anything's happened."

Here is the technical application of the "Open Conspiracy" that H. G. Wells has been advocating for years. A practical assumption of social and economic responsibilities by capable technicians, while the politicians and the statesmen and the professional great men send battalions of words to fight for their own pet creeds or cronies, and to obscure every problem in the dust of conflict for some political faith. And who are better qualified to remodel society than architects—the only men in the social structure who have been trained to think logically and to plan? The young generation knows what it wants. It has identified the major obstacles, and is hammering away at a program for getting around them. And it has the courage to advocate the abandonment of professionalism that is based upon social charm and aesthetics, and to replace it with professionalism based upon business knowledge and competent salesmanship. No school ever taught those things to young architects—the depression has provided that part of their education.

"Architecturally we're much further ahead as a result of the depression," said one young architect. He was earnest, enthusiastic and humble about his work. He explained that this period of inactivity had enabled architects to look around and solve all sorts of small house problems—things they had never bothered about before. With the result that in the working parts of a house, in kitchens and bathrooms alone, they found that half the time they thought they were being functional they were just being fashionable, in a very superficial "streamlined" way. They had not only been able to do research in such matters; they had been able to specialize.

If men like these were consulted about the mass production of prefabricated houses, the citizens of the United States would, in a generation, have homes that were the envy of the world. At Chicago, during the last few days of the World's Fair, the writer had the good fortune to be conducted round the exhibition by an architect, and observed many experiments in housing, most of them marred by that funk of logical consequences which distorts or mutilates so much work in this country of experiments; a fact that is always slightly bewildering to an English mind attuned to the belief that in America new ideas have a better chance of life than anywhere else. There were prefabricated houses in metal; needlessly expensive, because they were not compactly planned, and their producers were apparently suffering from the trouble that retarded the early development of the automobile industry, when manufacturers insisted that the motor car was a rich man's toy and always would be. It is doubtful whether the makers of prefabricated houses are consciously saying that; but they are not attempting to solve the problem of cheap housing yet, if the exhibits at the Fair were a representative sample of their endeavors. Maybe they are awaiting the advent of a Henry Ford. The greatness of America lies in the certainty that a Henry Ford of housing will arrive.

It was explained that the prefabricated housing firms were breaking the idea gently to the American public. "Canned housing" had to be put over by making it look like something familiar to begin with. The architect who said that added: "If anybody gets a good idea here, they've got to get it under cover quick or they get shot up as revolutionaries." When the writer registered incredulity he enlarged on the subject. "We go to schools over here," he said, "and they teach us methods of construction, and they give us facts, and show us what has been done—but we're all afraid of doing something creative. Schools exist here to show people what will be accepted by other people. We don't create."

But at this point the visitor had to protest that ideas were bursting out all over the place. Admittedly, after the stimulation of New York and the urbanities of Washington, Chicago was a bit of an anti-climax; but there, in the World's Fair, which was probably the proudest muddle the world has ever seen, there was something alive, and, like all things full of life, full of mistakes, but promising one day to create a technique of handling materials and processes that may give a grandeur to Western civilization that will surpass every glory achieved in its Mediterranean cradle. Meanwhile design is everywhere degraded or hampered by the convention that new things should never be frank about their newness. And plan in its great social sense seems to be as little understood in America as in England. Flying from Washington to Chicago, across Western Virginia to Charleston, and then crossing and recrossing the Ohio to Cincinnati, and on via Indianapolis to the murky lakeside city, you see a lot of America in plan, and you observe that English sins of omission and imitation are also American sins. But with more space to play with in America, muddles are not quite so squalid as English muddles; small towns are not cramped; they are casual, but spacious.

But the modern architects are impatient. The World's Fair was described by one of them as "A Century of Safety First put over as Progress." And the dismal imitations of Gothic, Byzantine, Italian and Spanish Renaissance façades draped over the fronts of the towers of Chicago illustrate that patronage had determined that no acknowledgment should be made to the machine age that produced the metallurgical knowledge and the elevators that made those towers possible. An architect who designs in an "architectural style" is only the decorator. The real American architect of the last generation, with a few exceptions of whom Frank Lloyd Wright is indisputably the greatest, was the structural engineer. The new architecture which American engineers created got into the wrong costume; but the new generation of architects certainly has the will to abandon disguise and to create in partnership with engineering and with industry.

MEASUREMENT OF CONDITIONED AIR

By J. C. HARDIGG, Consulting Engineer

Standardization of methods in measuring and determining needs in air conditioning, as well as correct tabulation of operating data with a check on efficiency of performance, has been made possible by the new psychrograph recently made public at a meeting of the American Society of Mechanical Engineers.

In figuring any particular air conditioning installation, there is apt to be as many different answers as there are companies in the market, because each company has its own, and different, method of determining the work that must be done. All this confusion can now be eliminated by determining beforehand just what work is to be done, thereby putting all manufacturers on the same basis.

ATMOSPHERIC REQUIREMENTS

We condition air in order to maintain indoors a comfortable and healthful atmosphere. To do this we either heat or cool the air, either humidify or dehumidify it, keep it fresh, filter and circulate it. The first step is to determine the temperature and relative humidity at which the atmosphere will be kept. This temperature will vary from 70° F. in winter to from 10° to 15° F. cooler than the outside air in summer. The humidity will vary from 40 to 60 per cent in summer to, perhaps, something less in winter. A high humidity in winter frosts the window glass and for this reason humidity is reduced to a point where frosting does not occur. If it is desirable in any particular instance to maintain the same humidity both winter and summer, there are now on the market doublepane window sash which eliminate frosting. Having decided upon the indoor temperature and humidity, the amount of heating and cooling necessary is determined by the United States Weather Bureau's records for a particular vicinity for the past several years.

When the outside air is cooler and drier than the temperature and humidity to be maintained, inside heat and moisture must be added. When the outside temperature and humidity are greater, heat must be taken away in order both to cool and to take out the excessive moisture. There are only two ways by which to remove moisture from air: either chemically or by reducing the temperature of the air to a point where the moisture forms water and drops out of the air. This second method is used invariably because it is the cheaper.

The Weather Bureau records show the maximum and minimum temperatures of the outside air which have been experienced for many years. From these records we can determine the greatest amount of heating and cooling that we may reasonably expect and demand in order to maintain the conditions desired inside the home or office building.

An important part of the problem is the amount of fresh or outside air that it will be necessary to take into the system each minute. After much experimentation this amount has been found to vary from 10 cubic feet per minute for each person in a room to 30 cubic feet or more. It is readily seen that if the space under consideration is a living room where persons are reading or talking but not smoking, the amount of fresh air required will be much less than in a room of similar size where two or three tables of bridge players are smoking. Again, if the bridge players are in the room just for an evening's amusement, the air will be fresh and clear of smoke by the next morning under normal operation of the air conditioning system; if, however, the players are in a club where play goes on all day and far into the night, the amount of fresh air to be taken into the room normally must be materially increased.

Ventilation, or the amount of outside air that is supplied to the rooms of public places, is regulated by law in most communities. But the designers of air conditioned rooms must make sure that the amount supplied is sufficient to supply the needs of occupants even in small offices and residences. It is easy to imagine the accumulation of odors in a small office during dictation periods alone, if the employer is smoking a heavy cigar or a series of cigarettes and the stenographer has more than the usual trace of perfume. Only proper ventilation will take care of this situation.

In arranging for the proper supply of air to a room, the equally important point of removing an equal quantity must be given full consideration. In other words, if we connect an air duct to a hermetically

sealed room, we shall be unable to push air into the room. Yet, if we supply an outlet duct as well, we can push into the room just as much air as is carried away by the outlet.

Another important point is the amount of moisture normally given off in the room to be air conditioned. The moisture given off by the human body must always be calculated, as well as the moisture given off by hot foods as they are brought into a restaurant from the kitchen, and the moisture in a small tearoom from innumerable pots and cups of hot beverage. With the publication of the psychrograph it is now possible to plot the individual needs of a room or building as easily as to plan a trip by train, boat or airplane.

Noise abatement is another necessary part of air conditioning. Equipment, whether a unit for one room or a system for conditioning a large building, should be noiseless in operation. In addition to this, it is possible to absorb or eliminate street noises which would come through the equipment or through an open window. A further step is to deaden the sound of voices or the hum of mechanical adjuncts by absorbing these noises in walls and ceilings by special lining material. The limit to the "silence" of an air conditioned room is the noise-tightness of windows and doors, and the amount of noise the walls and ceilings will absorb.

To visualize the work to be done by a properly operating air conditioning system or unit, we must again consider the hermetically sealed room at the conditions required. In winter heat will pass through the walls to the outside and chill the room; in summer heat will flow from the outside into the room and warm it too much. To maintain a uniform temperature in the room during winter, a part of the air is drawn out each minute and replaced with air warmer than the temperature to be maintained in the room, so that when it is mixed with the rest of the air the proper temperature is maintained. In a large number of installations this heat is added by blowing the air over the customary steam heated radiators in each room. In summer the air withdrawn is pulled down to the cooling equipment where its temperature is reduced the necessary amount before being returned to the room. Windows let heat through much faster than the walls, which necessitates supplying more heat in winter and more cooling in summer. After the heat leakage—loss in winter and gain in summer—of the building has been found, there must be determined the amount of heat given off inside the room or building by persons, electric light, food, and so on. The sum of these is the amount of heat that must be removed in summer cooling. The total amount of cooling is found by adding to this sum the amount of cooling necessary for the air of ventilation.

The amount of heat contained in either a pound or cubic foot of air depends both upon its temperature (dry bulb) and the amount of moisture it contains, i. e., its relative humidity. Of two samples of air at the same temperature but having different humidities, the sample with higher humidity will contain the more heat.

The relative humidity or the amount of moisture in the air of a room is determined by the dry bulb and wet bulb temperatures of the air. The dry bulb temperature is taken with the ordinary mercury thermometer. The wet bulb temperature is taken with a similar thermometer which has a wet wicking around its bulb at the bottom. Knowing these two temperatures, by referring to the ordinary psychrometric chart we can read directly the relative humidity, the grains of moisture per pound of dry air, its dew point or the temperature at which fog will start to form, and the number of cubic feet per pound of dry air, with the vapor contained in the pound of air, and the total heat per pound of dry air.

The amount of moisture present in the air to be conditioned plays an important part in determining the capacity of the equipment to be installed. Humidity variations from day to day change the demand made upon the equipment, in addition to the temperature changes. When heat is either taken away or added to a quantity of air, part of the heat changes the temperature of the air itself and the other part of the heat is absorbed in the moisture of the air.

Air at 100° F. and 65 per cent relative humidity contains 64 grains of moisture to the pound more than does air at 90° F. and 60 per cent relative humidity. The amount of heat required to evaporate this amount of water, but without raising the temperature of air, will raise one pound of dry air about 35° F.

"Sensible heat" is the heat we have all our lives seen recorded on the ordinary outdoor or indoor thermometer. "Latent heat" is the additional heat needed to evaporate the moisture that is contained in the air, and this we are learning to read on the wet bulb thermometer. "Total heat" is the sum of these two and is what we must calculate in planning to condition air.

THE NEW PSYCHROGRAPH

These variables: the persons in a room and the bodily heat they give off, the addition of hot foods and beverages, the steaming towels for barbershop facial packs, the electric driers of beauty parlors, and so on have been so many and so different that until the publication of the psychrograph, each separate room or condition had to be computed laboriously and minutely. At the end of all the figuring appeared differences of opinion owing to various methods of computing individual needs.

With the new psychrograph guesswork is eliminated, and even the layman may see and read the methods by which his own air conditioning needs are decided. To the reputable manufacturer of air conditioning equipment is given the same working basis as to all his competitors, thereby eliminating injurious price cutting which means sacrifice of efficiency to consummate a sale. With widespread use of the psychrograph nobody will be in the dark, either as to his own building's needs, the fulfillment of those needs by manufacturer or designer, or to the operation of his equipment after it is installed.

The psychrograph is the contribution of A. M. Norris (Chatard and Norris) of Baltimore. It is a chart so constructed that, given the exact conditions of a room or a building, even a layman can draw the connecting lines which will almost magically calculate for him the requirements and present before his eyes the things he must demand of all manufacturers. It is perhaps the greatest forward step in the whole field of air conditioning, because it enables for the first time the architect, engineer, manufacturer, owner and operator to speak together in common, understandable terms.

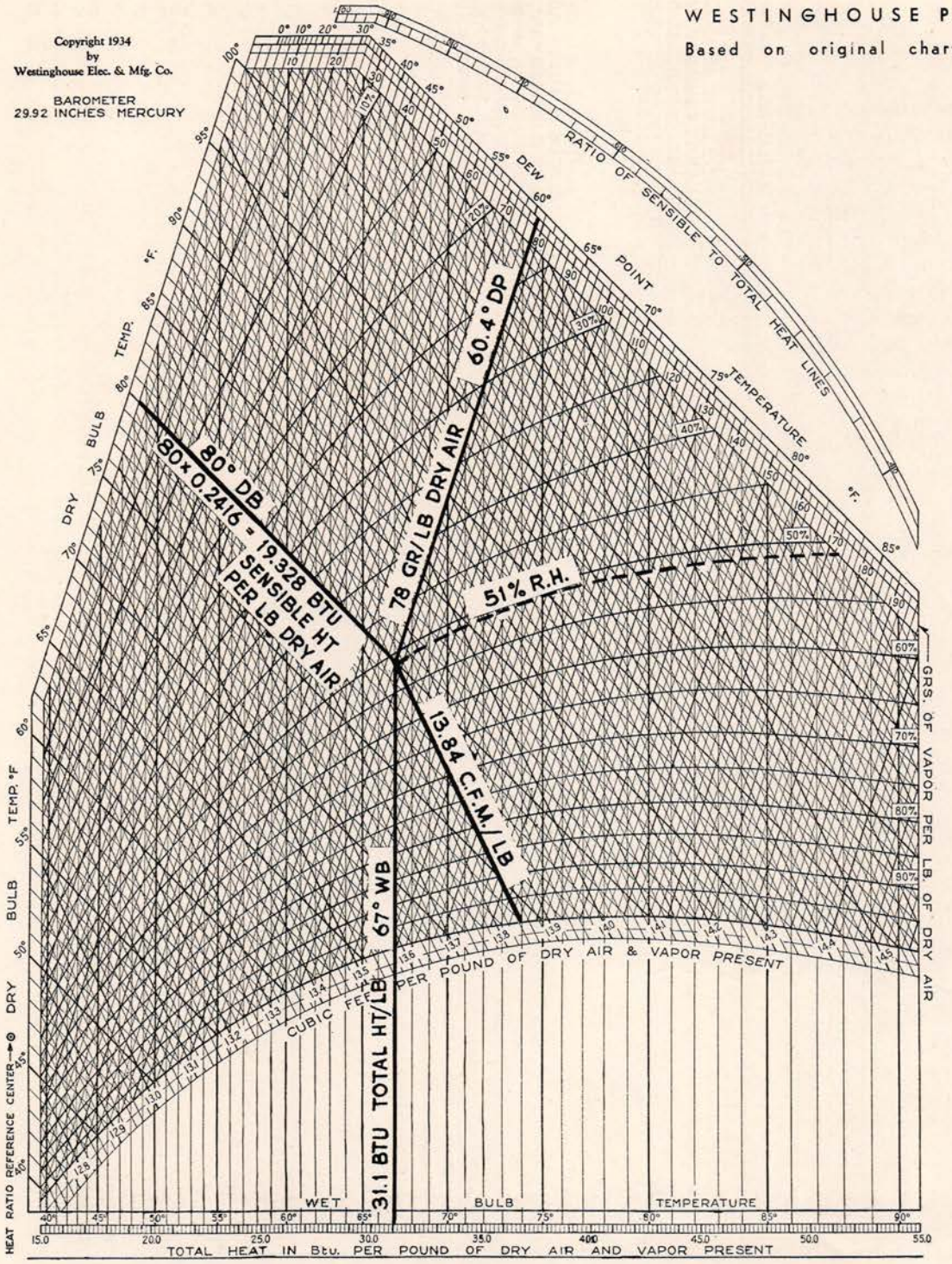


FIGURE 1

THE PSYCHROGRAPH: ITS MEANING TO THE ENGINEER

By A. M. NORRIS, Chatard and Norris, Baltimore

The use of the psychrograph as an ordinary psychrometric chart is illustrated by Fig. 1 on which a single point has been taken.

FIGURE 1

At the single point taken, reference to Fig. 1 will show: dry bulb temperature 80°; wet bulb 67°; relative humidity 51 per cent; dew point 60.4°; grains of vapor per pound of dry air 78; cubic feet per pound of dry air plus vapor present 13.84; B.t.u. sensible heat 19.33; B.t.u. total heat 31.10.

It will readily be seen that if any two of the above characteristics are known, the lines representing them may be drawn and intersections of these lines will fix all other characteristics for the sample.

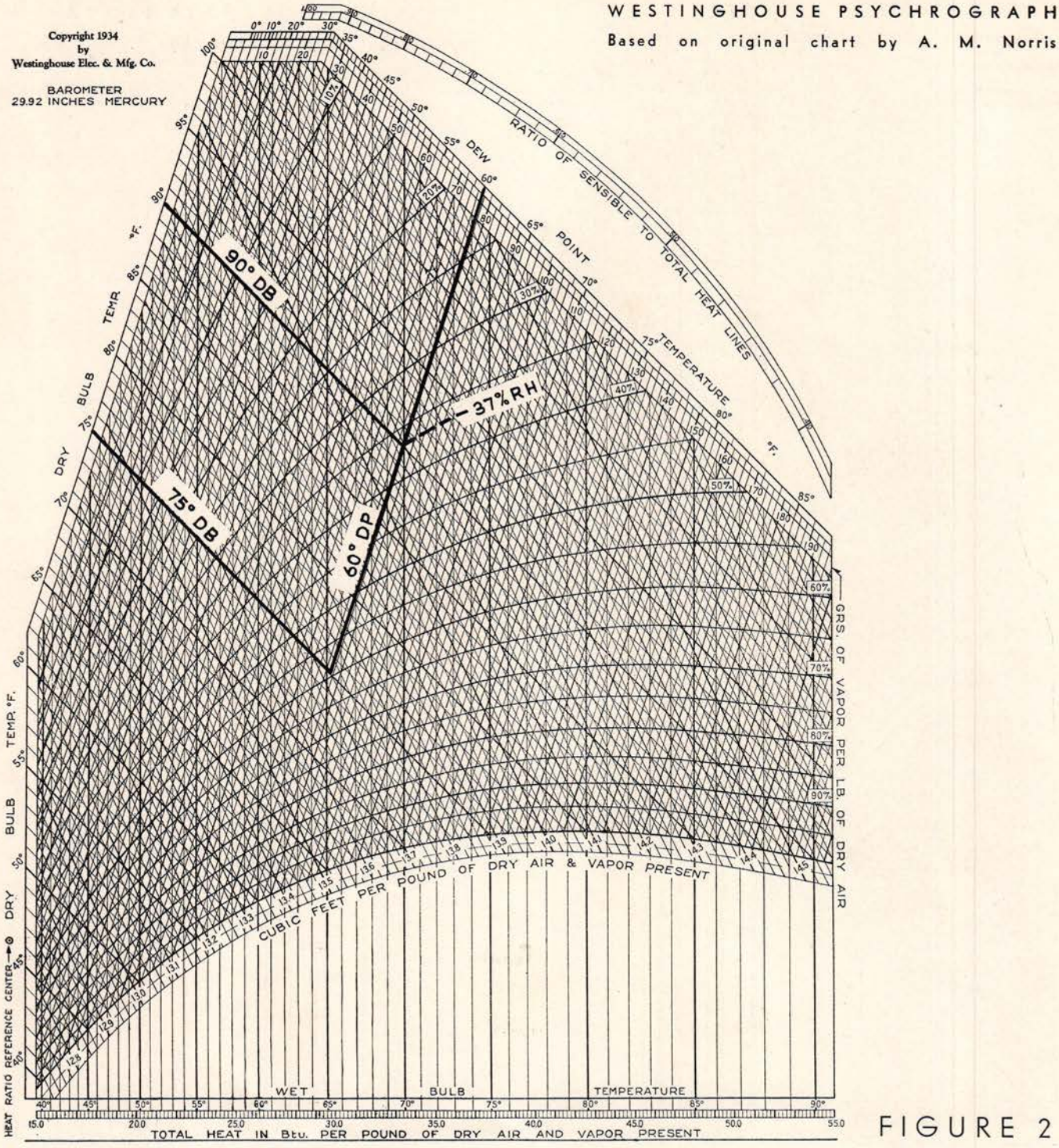


FIGURE 2

FIGURE 2

Given: Dew-point temperature 60° and dry bulb 75°.
Find: The relative humidity, should the dry bulb be increased to 90° with no moisture added (dew point remaining constant).

Locate the point of intersection of the slant line representing 60° dew point and the slant line representing 75° dry bulb temperature. At this point move obliquely upward and to the right along the 60° dew-point line to the intersection of the 90° dry bulb line. At this point relative humidity is read as about 37%. Incidentally, the wet bulb temperature has increased from about 65° to approximately 70°.

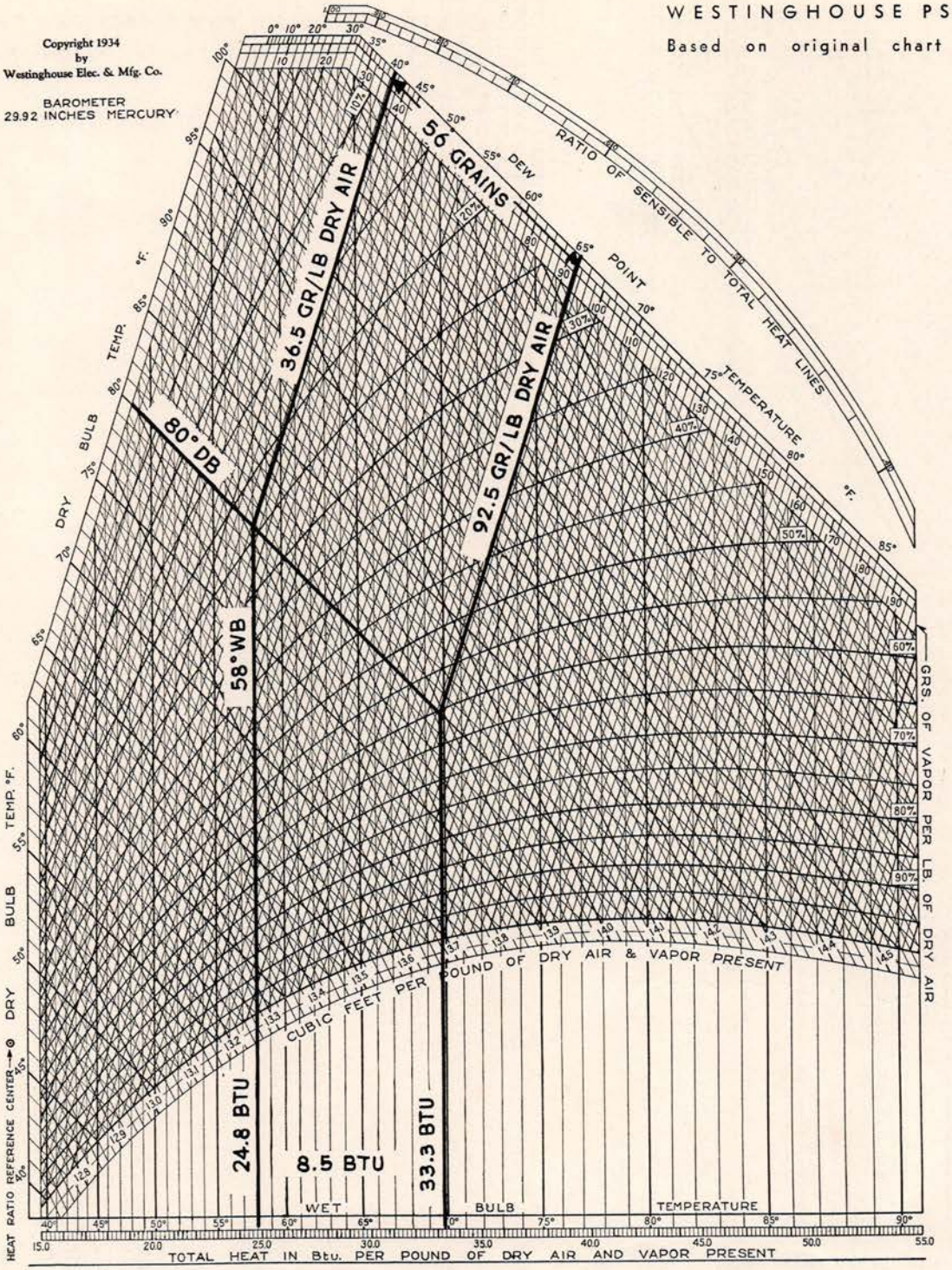


FIGURE 3

FIGURE 3

Given: Air at 80° dry bulb temperature and 58° wet bulb temperature.

Find: The increase in total heat when 56 grains of moisture per pound of air are added and the dry bulb temperature remains at 80°.

Locate the point of intersection of the slant line representing the 80° dry bulb temperature and the vertical line representing the 58° wet bulb temperature. From this point project upward and to the right where 36.5 grains per pound is read (total heat may be read as 24.8 B.t.u. per pound directly from the wet bulb temperature).

If 56 grains per pound is added, the mixture will contain $36.5 + 56 = 92.5$ grains per pound. Locate this quantity on the right-hand scale and then project downward to the left to the intersection with 80° dry bulb temperature line. From this intersection project vertically downward where total heat for the new conditions is read as 33.3 B.t.u. per pound. Thus, with the dry bulb remaining constant, the total heat increased from 24.8 to 33.3 per pound, or 8.5 B.t.u., with an increase in moisture content of 56 grains per pound.

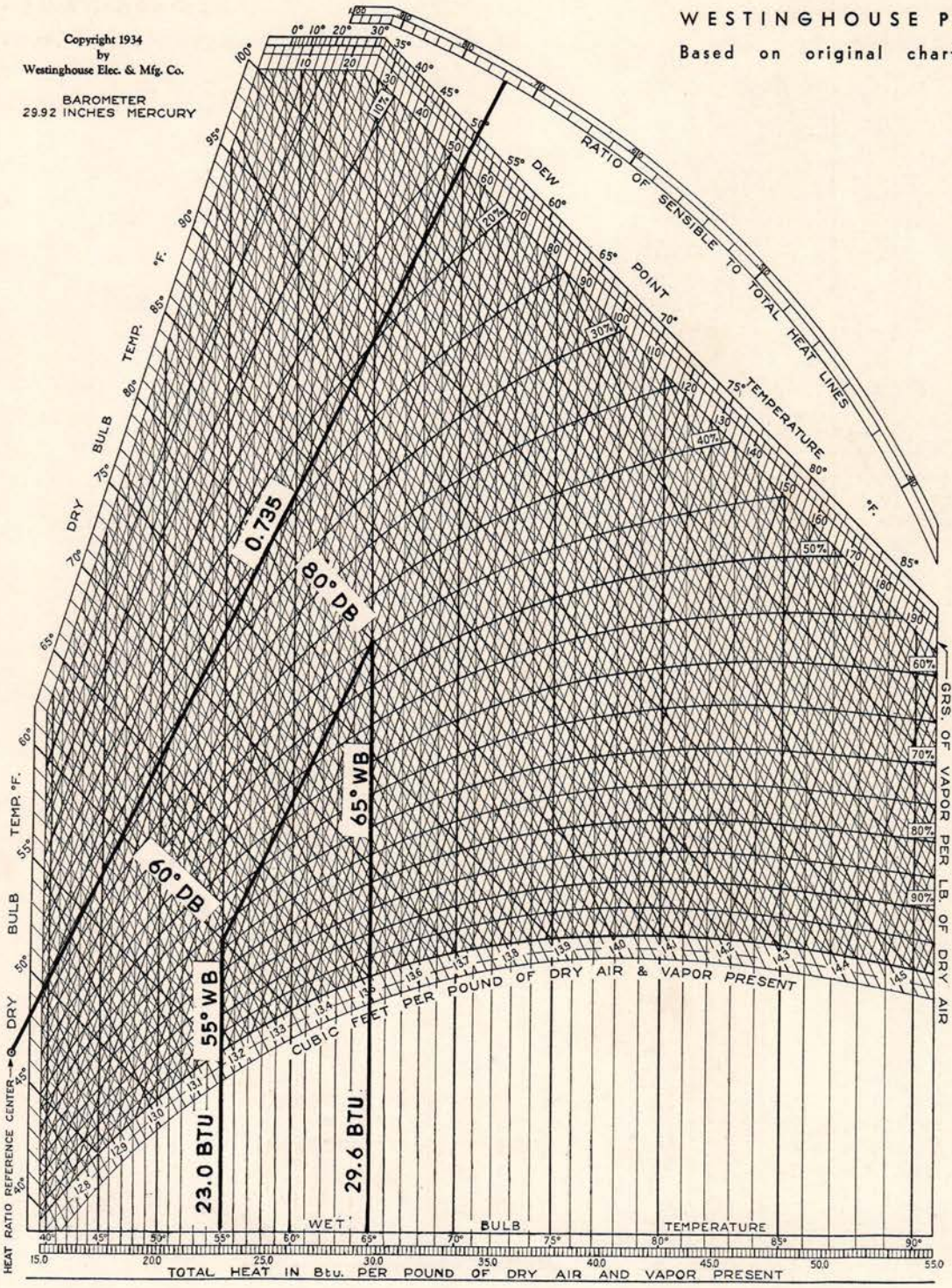


FIGURE 4

FIGURE 4

Given: Air cooled from 80° dry bulb temperature and 65° wet bulb temperature (about 45% relative humidity) to 60° dry bulb temperature and 55° wet bulb (72.5% relative humidity).

Find: Latent heat and sensible heat extracted in cooling.

This example illustrates a graphical solution that cannot be made directly on any other psychrometric chart. Locate the two points representing the conditions of the air at the two sets of dry bulb and wet bulb temperatures. Project vertically downward and read the total heat for the two points as 29.6 and 23.0 B.t.u. per pound of air. Connect the two points by a straight line. Draw a parallel line through the heat ratio reference center to the curved scale marked "Ratio Of Sensible To Total Heat Line," and read the ratio as .735. The total heat extracted is 29.6 minus 23.0 equals 6.6 which, multiplied by .735 equals 4.85 B.t.u. per pound of sensible heat and 6.6 minus 4.85 equals 1.75 B.t.u. per pound of latent heat.

The sensible heat value may be checked by multiplying the dry bulb temperature difference by the heat required to raise the temperature of 1 lb. of air 1° which is .2416. This calculation gives 20 × .2416 equals 4.83 B.t.u. per pound of sensible heat and checks the figure from the chart very closely.

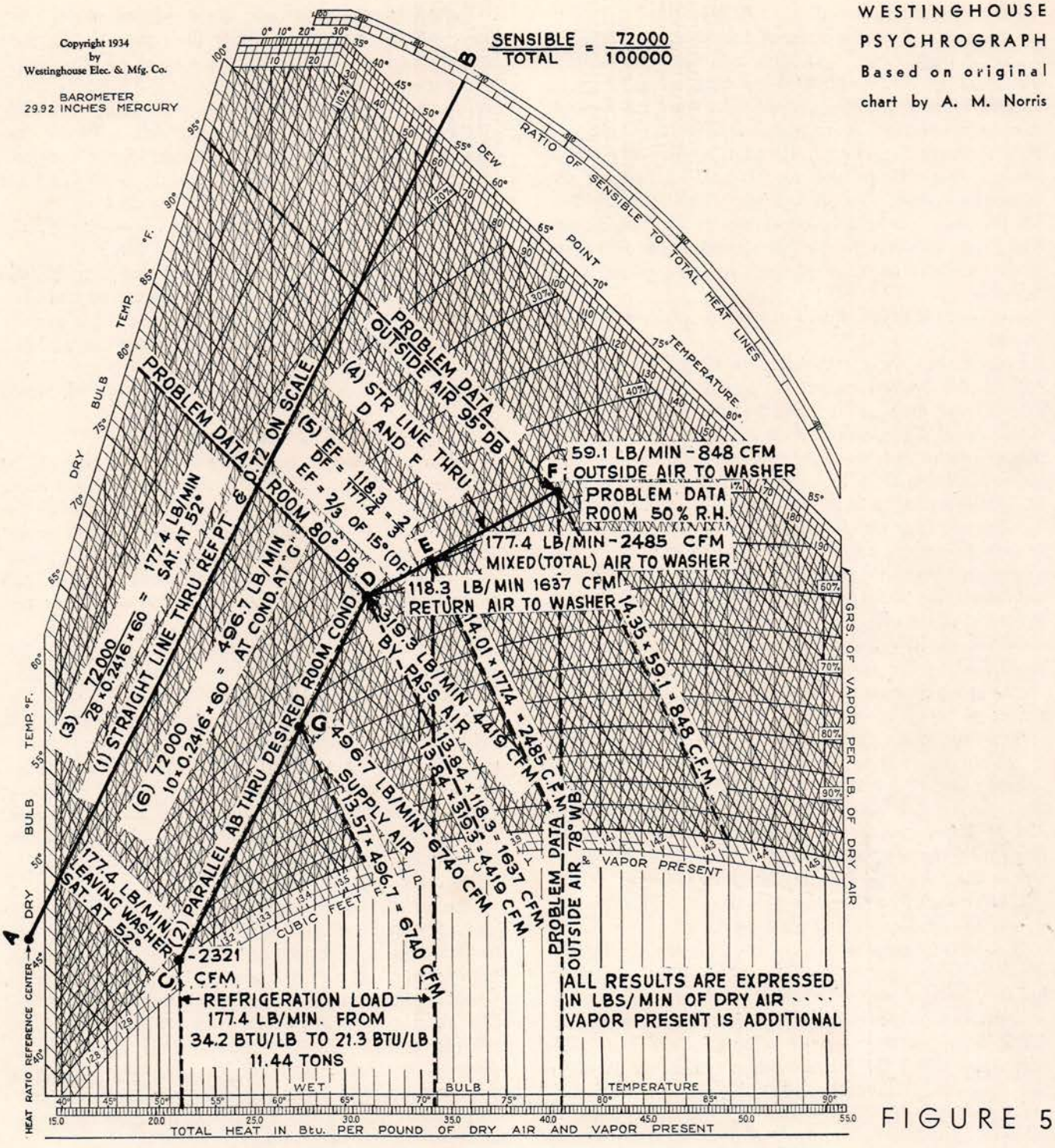


FIGURE 5

FIGURE 5

This figure illustrates a graphic solution of an air conditioning problem in which it has been assumed that a by-pass system, using a washer, will be installed.

The outside air is assumed at 95° dry bulb and 78° wet bulb, and an allowance of 848 CFM or 59.1 lb. per minute of outside air for ventilation purposes has been assumed. The desired room condition is 80° dry bulb and 50% relative humidity. It is also assumed that a heat estimate has been made and it has been found that the heat load, exclusive of the ventilation air which passes first through the washer, but inclusive of any infiltration, is 72,000 B.t.u. per hour of sensible heat and 100,000 B.t.u. per hour of the total heat.

The heat estimate must be broken down as outlined above, because we are interested in the quantity of sensible and total heat which is liberated in the conditioned space, which must be disposed of, or carried out, by the conditioned air supply, which supply must be raised from its condition at the outlets to the desired room condition by picking up this heat.

The surplus heat above delivery condition in the air for ventilation, which passes first through the washer, is removed in the washer, and thereafter this air becomes simply a vehicle for the removal of room heat along with the reconditioned recirculated air. It is also assumed that the desired difference between room temperature and supply air temperature is 10°.

The problem is solved as follows:

Find point B on the scale of the "Ratio of Sensible to Total Heat Lines." In this case the ratio is 0.72. Through the 0.72 point and the heat ratio reference center A draw a straight line AB. Find the desired room condition at D, representing 80° dry bulb and 50% relative humidity. Through point D draw a straight line CD, parallel to AB and intersecting the saturation curve. In accordance with Theorem No. 1*, this line CD will be the locus of all possible delivery airs which will give the desired room condition since the delivery air must pick up heat in the ratio $\frac{\text{sensible}}{\text{total}} = 0.72$ to finally reach this desired room condition, and therefore the point G at 70° dry bulb will be the desired quality of the delivery air. This delivery air may be obtained by mixing room air at condition D and saturated air at condition C in the proper proportion, which will be 10 parts of saturated air at condition C to 18 parts of room air at condition D, since the heat lost by the air at condition D equals 10 degrees drop times quantity of air at condition D in pounds of dry air per unit of time, multiplied by the specific heat of a pound of dry air, and this in turn will equal the heat gained by the air at condition C which equals 18 degrees rise times quantity of air at condition C in pounds of dry air per unit of time, multiplied by the specific heat in a pound of dry air. Eliminating common factors and transposing, we may write:

Quantity of air at condition C is to the quantity of air at condition D as 10 is to 18 or as DG is to CG.

Since the refrigeration is all applied to the saturated air, which must have capacity to absorb and remove 72,000 B.t.u. per hour of sensible heat, this value divided by the temperature rise of 28° of the saturated air to 80°, by the specific heat in a pound of air (0.2416) and by 60 minutes will give 177.4 lb. per minute of air saturated at 52° required.

It is also possible to figure the delivery air at 70° in the same manner by dividing 72,000 B.t.u. per hour by 10° temperature difference by specific heat of a pound of air (0.2416) and by 60 minutes to obtain 496.7 lb. of delivery air per minute. 496.7 less 177.4 will equal 319.3 lb. per minute of room air through the by-pass to give the mixture; and the ratio of $\frac{177.4}{319.3} = \frac{10}{18}$.

By Theorem 2* the condition of the air to the washer may be obtained by drawing a straight line through the point D, representing the room condition, and point F representing the outside air condition of 95° dry bulb and 78° wet bulb. Under the terms of the problem there must be 59.1 lbs. per minute of outside air, and the air through the washer is 177.4 lb. as stated above. 177.4 lb. less 59.1 lb. will leave 118.3 lb. of return or room air which must mix with the outside air to pass through the washer. Since the temperature difference between D and F is 15° and the ratio of outside air to return air is $\frac{59.1}{118.3} = \frac{1}{2}$, EF must be twice the distance DE, and the point E falls on the 85° dry bulb line. This is another way of stating the relationship from that given on the graphic solution diagram, but it will be clear that DF × 118.3 must equal EF × 177.3 or $\frac{EF}{DF} = \frac{118.3}{177.4} = 2/3$, which is to say, EF equals 2/3 of 15° or 10°.

All of the above results have been expressed in pounds per minute of dry air, the vapor present being additional. Reference to the diagram will indicate the method of converting all of these quantities into cubic feet per minute. For instance, at the point F, a pound of dry air plus the vapor present will occupy 14.35 cubic feet and 14.35 × 59.1 lb. equals 848 cubic feet per minute.

In the same manner, the cubic feet per pound for point E was determined to be 14.01; for point D, 13.84; for point G, 13.57, and for point C, 13.08.

It will be seen that the mixtures check out on the cubic feet per minute basis as 848 cubic feet per minute of outside air mixed with 1,637 cubic feet per minute of room or return air will total 2,485 cubic feet per minute of air to the washer and 4,419 cubic feet per minute of room air mixed with 2,321 cubic feet per minute of washer air will result in a mixture of 6,740 cubic feet of delivery air.

The refrigeration required may be figured by projecting point E, which represents the air to the washer, to the B.t.u. scale at the bottom of the chart, and obtaining 34.2 B.t.u. per pound; also project point C, which is the saturated air, to the B.t.u. scale, and read 21.3 B.t.u. per pound, which is to say that each pound will have 12.9 B.t.u. removed from it in passing through washer. Since 177.4 pounds per minute of air at condition C passes through the washer and, from each pound, we remove 12.9 B.t.u., the total refrigerating load will be 11.44 tons.

It is, of course, obvious that this problem has been worked out in far greater detail than is usually required. This is done to illustrate the complete information which can be obtained through a graphic solution.

---

*_Theorem No. 1_: A line drawn parallel to any given heat ratio line, through any given point on the chart, will be the locus of all changes of psychrometric condition in the air represented by the given point, when heat is added to, or deducted from, this air in the given ratio of sensible heat to total heat.

From this it follows that,

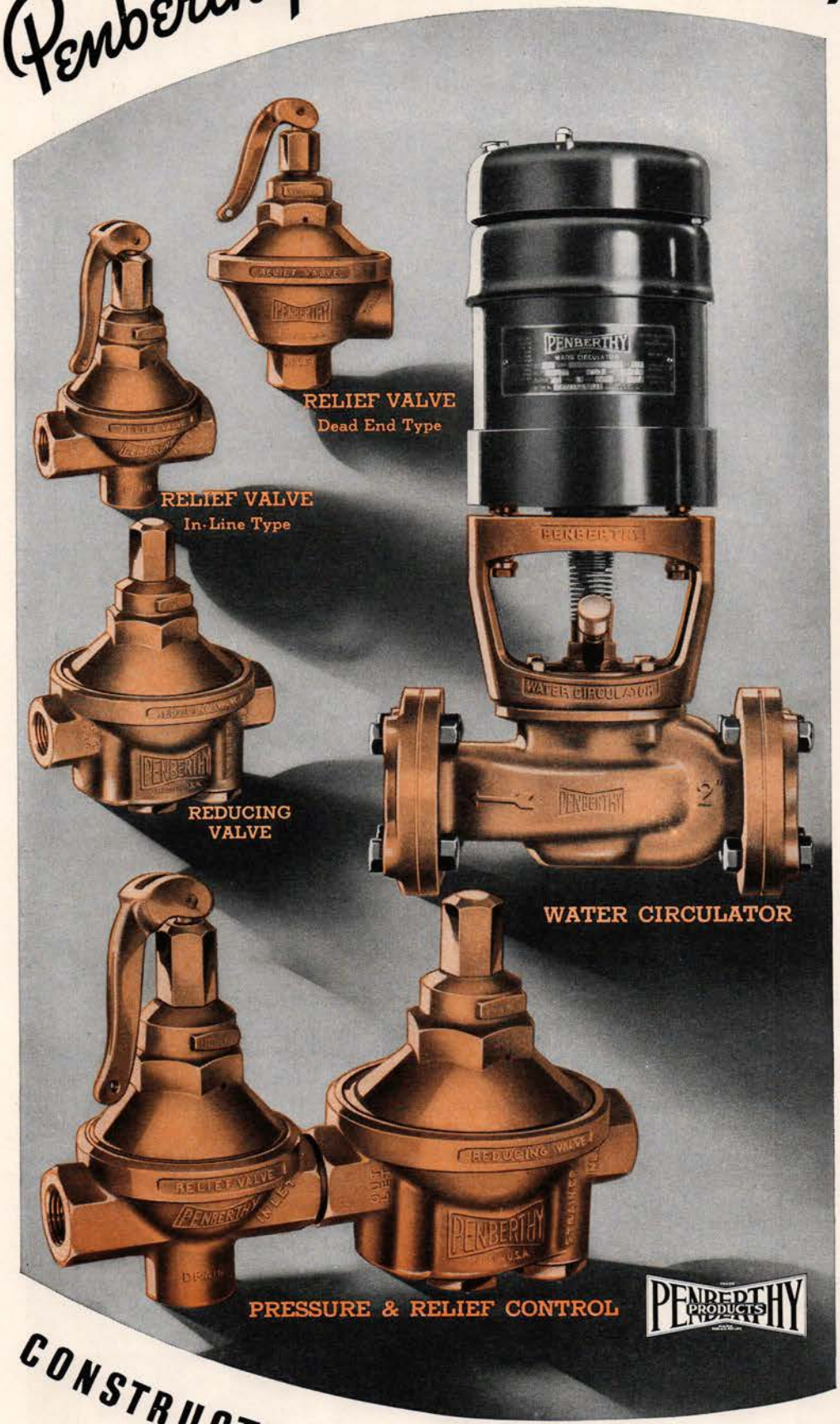
Theorem No. 2: When two samples of air are mixed, the locus of all possible psychrometric conditions for mixtures in varying proportions must be the straight line joining the two points which represent the psychrometric qualities of the two samples, since one sample must lose heat and the other gain heat in identical quantity and ratio of sensible and total; and the two points and the point representing the mixture will all lie on the same heat ratio line parallel.

An exception to this rule occurs when the straight line joining the two points crosses and recrosses the saturation curve. In this case the locus of possible mixtures may follow the saturation curve instead of crossing it and the quality of mixture will be somewhat uncertain, if less than saturated, as a portion of the vapor present may condense out of the mixture and fail to reevaporate.

Both theorems are true because of the system used in constructing the psychrograph, which is in fact built up on coordinate paper with inclined axes, the coordinates being equal divisions of sensible heat in one direction and equal divisions of total heat in the other. This will result in a heat ratio plotting as a straight line.

The original paper, of which this article is an abridgement, contains the proof of these theorems, and will be published in full in the proceedings of the A. S. M. E.

Penberthy Hot Water Heating Specialties



HIGHEST QUALITY OF DESIGN MATERIALS AND WORKMANSHIP

★

WATER CIRCULATOR

Modernizes old hot water heating plants, also makes hot water preferable to steam for new systems. Important advantages are (1) immediate heat, (2) reduced fuel cost, (3) uniform heat distribution throughout system, etc.

Condenser start condenser run type motor is especially designed for quiet operation and freedom from radio interference. All moving parts are sound insulated from circulator body. Self-adjusting packing requires no attention. Double inlet balanced type impeller offers no resistance to gravity flow. Impeller shaft is Monel Metal. Made in 3 sizes for 1½", 2" and 3" pipe connections.

PRESSURE & RELIEF CONTROL

Automatically keeps system filled with water and relieves any excess pressure. Complies with A.S.M.E. Code and has lever for testing relief valve. Both valves have large laminated phosphorous bronze diaphragms that are very sensitive and positive in action. Special composition discs provide perfect seating. Springs are carefully calibrated and have exceptionally high fatigue resistance; spring below seat makes reducing valve more sensitive at lower pressure differentials. Large brass strainers protect seats of both valves.

REDUCING VALVE

Automatically reduces available water pressure and maintains desired working pressure regardless of fluctuations in supply line. Complies with A.S.M.E. Code. Laminated phosphorous bronze diaphragm is resistant to heat and corrosion. Large brass removable strainer protects seat. Springs are carefully calibrated and have high fatigue resistance; spring below seat makes valve more sensitive at low pressure differential. Made in 6 models having ½", ¾" and 1" pipe connections.

RELIEF VALVE

Excess pressure in system is automatically relieved. Complies with A.S.M.E. Code and has lever for testing. Laminated phosphorous bronze diaphragm and carefully calibrated spring assure maximum efficiency. Large brass strainer protects valve seat against injury. Both types made for ½" and ¾" pipe connections.

PENBERTHY INJECTOR CO.

Mfrs. of Quality Products Since 1886

DETROIT, MICH. • WINDSOR, ONT.

LEADING DISTRIBUTORS
STOCK THESE
SPECIALTIES

CONSTRUCTED OF HIGH GRADE STEAM BRONZE

USS Forever New

AGE holds no terrors for products fabricated from USS Stainless and Heat Resisting Steels. Decades of exposure cannot rust or mar the shimmering surface of this ageless metal.

For any application in which you want beauty to endure, specify USS Stainless Steel. There is a type suited to your needs . . . in resistance to specific corroding agents and in the physical qualities which you need. Our representatives will be glad to cooperate with you in the determination of the right Stainless Steel for your requirements.

AMERICAN SHEET AND TIN PLATE COMPANY, *Pittsburgh* - - - - - - - - - SHEETS AND LIGHT PLATES
AMERICAN STEEL & WIRE COMPANY, *Chicago* - - COLD ROLLED STRIP STEEL, WIRE AND WIRE PRODUCTS
ILLINOIS STEEL COMPANY, *Chicago* - - - BARS, PLATES, SHAPES, SPECIAL AND SEMI-FINISHED PRODUCTS
CARNEGIE STEEL COMPANY, *Pittsburgh* - - - - SHAPES, PLATES, BARS AND SEMI-FINISHED PRODUCTS
NATIONAL TUBE COMPANY, *Pittsburgh* - - - - - - - - - - - - - - PIPE AND TUBULAR PRODUCTS

Pacific Coast Distributors—COLUMBIA STEEL COMPANY, San Francisco, Calif. ——— *Export Distributors*—UNITED STATES STEEL PRODUCTS CO., New York, N. Y.

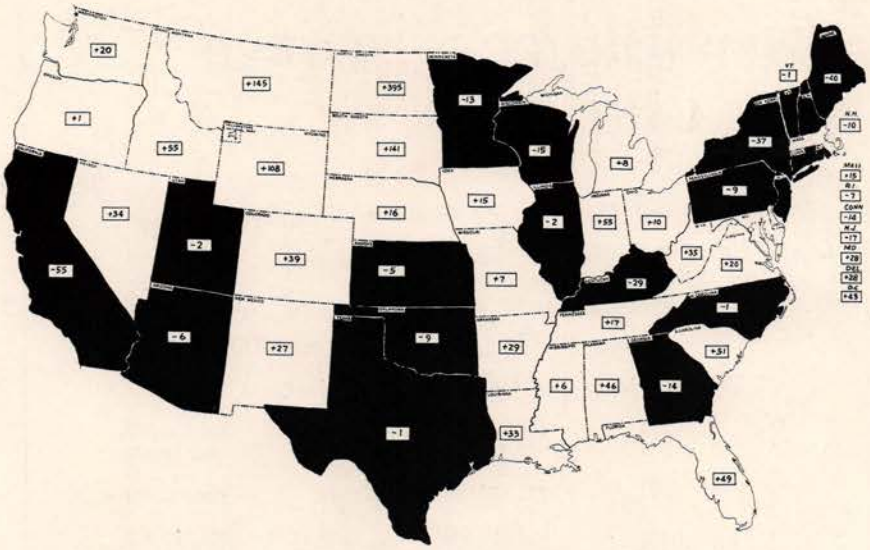
United States Steel USS STEEL *Corporation Subsidiaries*

USS STAINLESS AND HEAT RESISTING STEELS

USS CHROMIUM-NICKEL ALLOY STEELS ARE PRODUCED UNDER LICENSES OF THE CHEMICAL FOUNDATION, INC., NEW YORK, AND FRIED. KRUPP A. G. OF GERMANY

BUILDING TRENDS AND OUTLOOK

BY L. SETH SCHNITMAN
CHIEF STATISTICIAN
F. W. DODGE CORPORATION



BUILDING DURING 12 MONTHS — January, 1934-December, 1934, INCLUSIVE. Corresponding twelve months ended December, 1933, taken as base. SHADED AREA: BELOW BASE. UNSHADED AREA: ABOVE BASE. Figures denote percentage change from base. Floor space for new building contracts, 37 states east of the Rocky Mountains. Permit valuations for Rocky Mountain and Pacific coast states. Map, copyright American Map Co., N. Y. Authorized reproduction No. 5025.

MATERIAL PRICE MEASURING ROD

F. W. DODGE CORPORATION
COMPOSITE PRICES

MATERIAL	This Month	Month Ago	Year Ago
Portland Cement	$2.20	$2.20	$2.20
Common Brick	14.78	14.80	13.14
Structural Steel	1.65	1.65	1.65
Lumber	16.23	16.25	16.44

The prices in this tabulation enable one to visualize at a glance the main trend of the material market. Their significance does not extend beyond that point, and the explanation should be read carefully. Prices given in this comparison are composite and do not in all cases refer to one item. For instance, the price of structural steel is the composite of prices of shapes and plates f.o.b. Pittsburgh; the price of lumber is a composite of five items of Southern pine and five items of Douglas fir f.o.b. mill; the price of cement is a composite of prices in fourteen different cities per barrel, carload lots, to contractors; price of brick is composite in fourteen cities per M. delivered on the job.

Residential Building Prospects Relatively Favorable

Residential building contracts let in January, 1935, were about 53 per cent larger in aggregate value than in December, 1934; at the same time a gain of 48 per cent was shown when contrasted with the total for January, 1934. Though these percentage gains are gratifying the January dollar total of residential building contracts, approximating $22,500,000 for the 37 Eastern States, was only 40 per cent as great as in January, 1931.

For the first quarter of 1935 it is probable that residential building awards will exceed the total for the corresponding period of 1934 by at least 15 per cent.

Nonresidential building contracts awarded during January failed to reach the total for January, 1934, but the volume of about $33,000,000 exceeded the contract value for this class of building reported for December, 1934, by about $5,000,000. Prospects for nonresidential building for the initial quarter of 1935 are less bright than in the residential field; in fact, it is probable that the current quarter's contract total for nonresidential types may not reach the volume shown for the first quarter of 1934. For public works and utilities of heavy engineering design the January contract total fell below December, 1934, by almost $6,000,000, and was 60 per cent below January, 1934; in making comparison, one must bear in mind that at that time contract-letting under the PWA program was at its peak.

It is highly improbable that contracts for engineering projects during the initial quarter of 1935 will reach the total for the corresponding period of 1934; in fact a loss in excess of 25 per cent looms in this class of construction.

Altogether contracts for all classes of construction to be let in the 37 Eastern States during the first three months of the current year will probably fall somewhat below the dollar volume reported for the corresponding period of 1934. Regardless of this, residential building will fare relatively better than either nonresidential building or engineering.

ARCHITECT-PLANNED PROJECTS SCORED 36% GAIN LAST YEAR

Architect-Planned Projects Which Reached Contract or Construction Stage in 37 Eastern States

		Year 1933		Year 1934	
		No. Projects	*Cost*	*No. Projects*	*Cost*
Commercial Buildings:	N	2,221	$28,739,000	2,392	$50,106,500
	A	3,671	22,944,900	4,786	38,798,500
	T	5,892	$51,683,900	7,178	$88,905,000
Factories:	N	668	$53,217,800	572	$51,711,300
	A	737	19,529,000	747	13,983,200
	T	1,405	$72,746,800	1,319	$65,694,500
Public and Institutional Buildings*	N	1,606	$105,582,000	2,384	$151,528,100
	A	1,565	27,730,500	2,622	68,149,500
	T	3,171	$133,312,500	5,006	$219,677,600
Apartments, Hotels and Dormitories:	N	277	$23,496,100	338	$39,023,000
	A	1,306	10,081,300	1,541	12,177,400
	T	1,583	$33,577,400	1,879	$51,200,400
1 and 2-Family Houses:	N	7,083	$71,811,000	6,242	$72,402,500
	A	2,728	10,332,700	2,958	13,422,100
	T	9,811	$82,143,700	9,200	$85,824,600
Total Building Work:	N	11,855	$282,845,900	11,928	$364,771,400
	A	10,007	90,618,400	12,654	146,530,700
	T	21,862	$373,464,300	24,582	$511,302,100
Public Works and Utilities:	N	384	$32,327,500	547	$38,404,000
	A	94	1,864,200	131	4,460,200
	T	478	$34,191,700	678	$42,864,200
TOTAL CONSTRUCTION:	N	12,239	$315,173,400	12,475	$403,175,400
	A	10,101	92,482,600	12,785	150,990,900
	T	22,340	$407,656,000	25,260	$554,166,300

* Public and Institutional Buildings include all classes of non-residential buildings except commercial buildings and factories

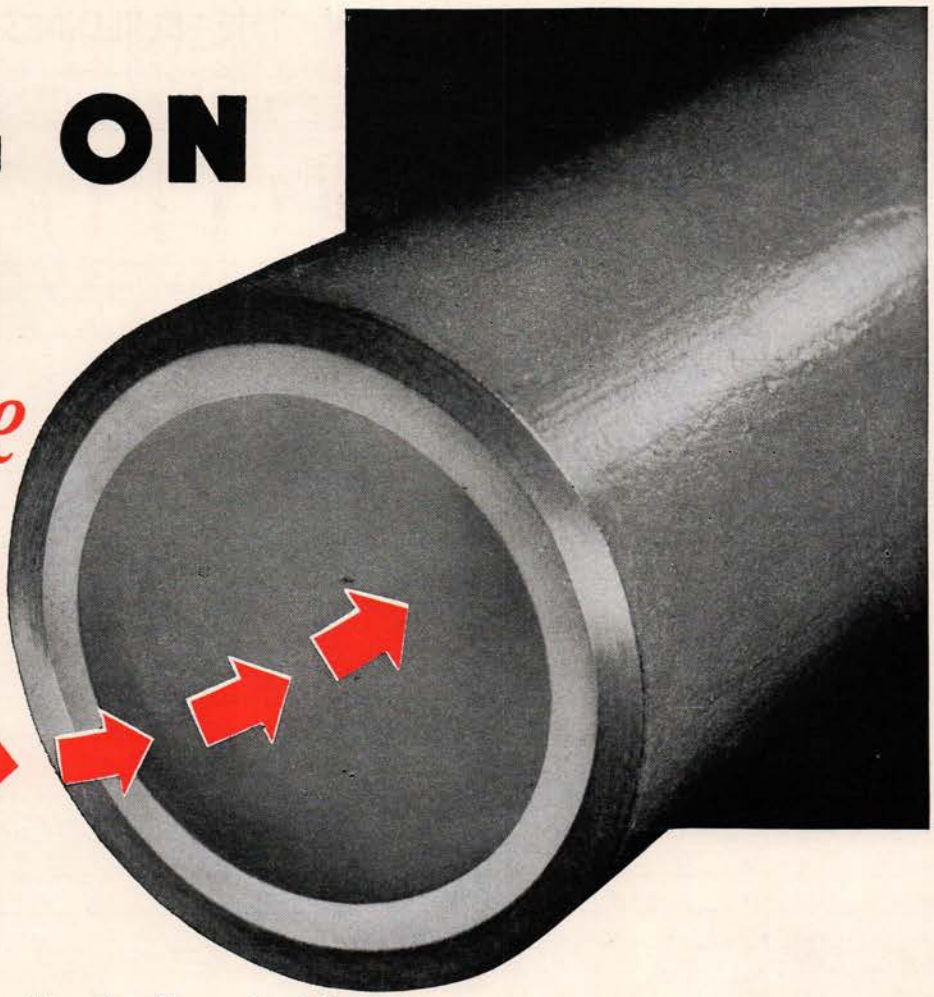
Key { N: New construction; A: Alterations and additions; T: Total of above }

SUMMARY

	Year 1933		Year 1934		*Dollar Volume Gain*
Planned by	*No. Proj.*	*Cost*	*No. Proj.*	*Cost*	
Architects	22,340	$407,656,000	25,260	$554,166,300	+36%
Engineers	17,088	623,301,200	21,109	758,756,400	+22%
Others	45,789	224,751,200	46,159	230,178,600	+2%
Totals	85,217	$1,255,708,400	92,528	$1,543,101,300	+23%

As recorded by Dodge Statistical Research Service, F. W. Dodge Corporation, Publishers, New York and principal cities

BRING ON YOUR *corrosive waters*



For hot- and cold-water supply lines in office and public buildings, hospitals, schools, and residences; and for underground mains and distribution lines, salt water and drainage lines, and similar services where corrosion is unusually severe, NATIONAL Duroline Pipe is particulary adapted.

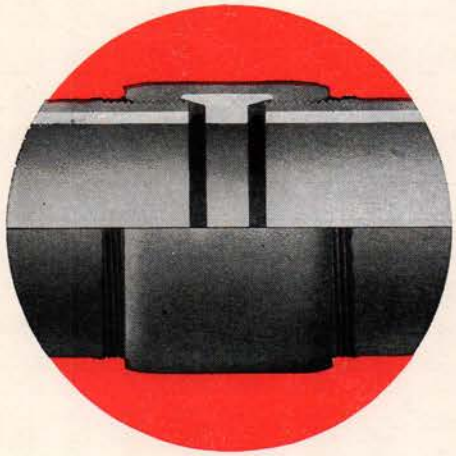
Duroline is a highly-improved cement lining, developed primarily to resist the destructive action of waters and certain solutions that rust or otherwise attack unprotected metal pipe. When Duroline Pipe is used you secure definite protection from corrosion and tuberculation, combined with the strength and other desirable features of steel pipe—and at a price that offers no handicap to its general use.

An interesting bulletin describes in detail the development and proved serviceability of Duroline . . . Write for it!

NATIONAL TUBE COMPANY · Pittsburgh, Pa.

Pacific Coast Distributors—COLUMBIA STEEL CO., San Francisco, Calif.
Export Distributors—UNITED STATES STEEL PRODUCTS CO., New York, N. Y.

United States Steel Corporation Subsidiary



Section of National DUROLINE Pipe coupling and joint. (Note special highly corrosion-resistant joint compound on end of pipe and on threads.)

NATIONAL DUROLINE PIPE

WAGE SCALES IN THE BUILDING TRADES

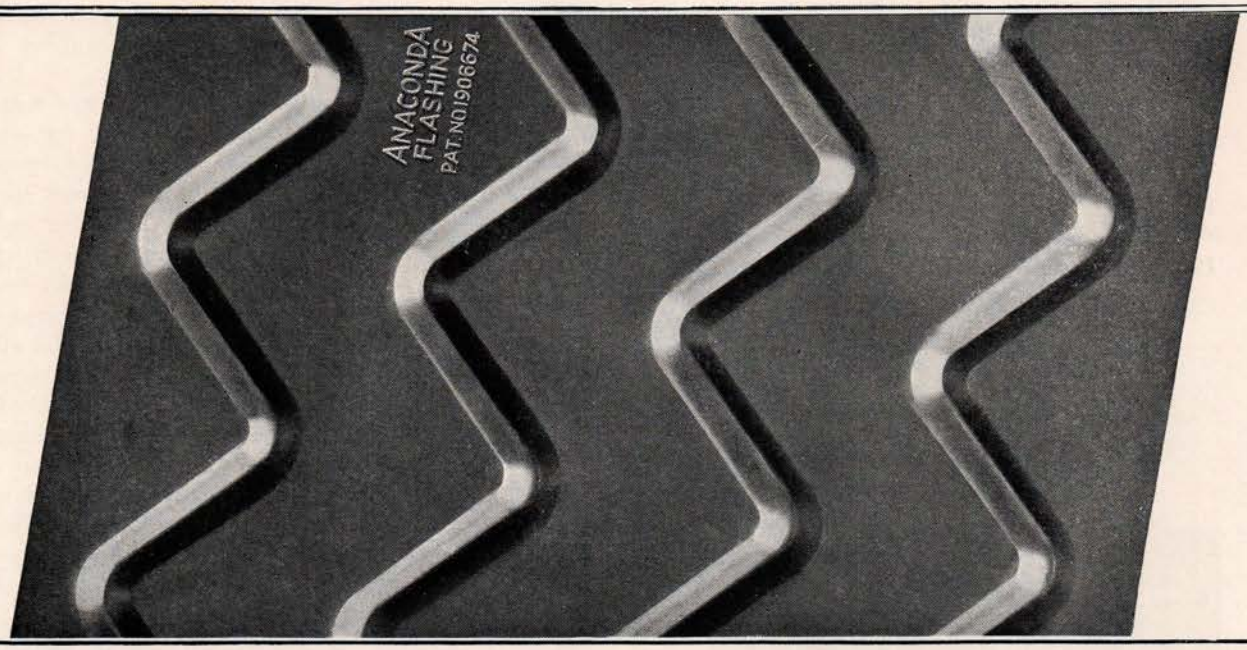
Information Furnished by National Association of Builders Exchanges and Compiled by Division of Statistics and Research, F. W. Dodge Corporation, as of December, 15. 1934

	Asbestos Workers	Bricklayers	Bricklayers Tenders	Carpenters	Cement Finishers	Electricians	Hoisting Engineers	Iron Workers—Ornamental	Iron Workers—Structural	Laborers	Lathers	Painters	Plasterers	Plasterers' Tenders	Plumbers	Roofers—Composition	Roofers—Slate & Tile	Sheet Metal Workers	Steamfitters	Stone Masons	Tile Setters	Tile Setters' Helpers
Akron	$1.00	$1.25	$0.45	$0.70	$0.70	$0.75	$0.70	$0.60	$0.60	$0.40	*$0.87½	$0.65	*$1.00	$0.62½	$0.85	$0.80	$0.80	$0.80	$0.85	*$1.25	*$1.25	*$0.50
Atlanta	1.00	1.25 1.40	‡.30 .45	.70	1.25	.90 1.10	.60 1.00	.35 1.85	1.25	.25 .35	1.00 1.25	.75	1.25	.30 .45	1.25	.80	.80	.90 1.00	1.25	1.00 1.25	1.25	.40
Baltimore	1.00	*1.10	1.10	1.00	*1.00	*1.00	*1.50	*1.37½	*1.37½	.40	*1.25	1.00	*1.25		*1.10	.75	.75	*1.12½	*1.10	1.10	1.25	.65
Boston	1.25	*1.30	.70	*1.17½	1.17½	*1.25	1.17½	*1.20	*1.20	.70	*1.50	*1.12¼	1.37½	*.95	*1.25	*1.17½	*1.05	1.17½	*1.25	*1.30	*1.30	*.95
Buffalo	1.00	*1.25		*1.00	1.00	1.12½	1.00	1.12½	1.12½	.40 .50	1.25	*1.00	1.33		1.20	.60	1.00	1.00	*1.20	*1.25	*1.18¾	
Chicago	1.37½	1.50	.82½	‡1.31¼	1.31¼	1.50	1.31¼	1.33⅓	1.35	.82½	*1.50	‡1.33⅓	*1.50	88¾	1.37½	1.37½	1.50	1.37½	1.37½	1.50	1.50	1.06¼
Cincinnati*	1.15	1.37½	.70	1.20	1.02½	1.25	.80 1.25	1.25	1.25	.45	1.31¼	1.15	1.37½	.70	1.25	1.02½	1.07½	1.07½	1.12½	1.25	1.00	
Cleveland*	1.17½	1.25		1.12½	1.12½	1.37½	1.12½	1.25	1.25	.72	1.25	1.20	1.25		1.25	1.15	1.37½	1.12½	1.25	1.25	1.25	.81¼
Columbus	1.00	1.30	.62½	.80	.80	1.00	1.15	1.25	1.25	.40	1.00	.80	1.00	.62½	1.00	.80	1.00	.80	1.00	.75	1.25	.50
Dayton*	1.25	1.30	.80	1.00	1.15	1.55	1.25	1.35	50	.50	1.10	1.00	1.20	.80	1.00	.85	1.00	1.00	1.00	1.30		
Denver††	9.00	12.00 *13.00	6.50 7.00	10.00	10.00 11.00	10.00 11.00	10.00	10.00 11.00	10.00 11.00	4.00 5.00	11.00	*10.00	12.00	7.00	11.00	7.00 8.00	7.00 8.00	9.00	9.50	12.00 13.00	10.50	.62½
Des Moines	1.00	1.50	.90	1.15	1.12½	1.25	1.25	1.00	1.00	.77½	1.43	1.25	1 37½	.90	1.25	1.00	1.00	1.00	1.25	1.50	1.25	.67½
Detroit	1.37½	1.25 max.	.55 .60	.80 1.00	.70 .90	1.25 1.40	.60 1.00	1.00 1.20	1.00 1.25	.50 .55	1.37½	.80 1.00	1.00 1.25	.70 .80	1.00 1.50	.70 .90	.80 1.00	.80 1.00	1.25 1.50	1.25 1.50	1.00 1.25	.80
Duluth	1.00	1.00	.60	.80	.80	1.00	.80	1.00	1.00	.50	1.20	.80	1.20	.80	1.20	.70	1.00	85	1.20	1.00	1.00	.80
Erie		1.00	.45 .50	.80	.80	.90 *1.00	.90	.60 .80	.90	.40	.90	.60 .70	1.00	.40 .50	1.00	.50 .60	.80 .90	.80 .90	*1.00	1.00	.80	.40 .50
Houston		1.00	.35	.75	.75	1.00	.75	1.00	1.00	.35		.62½	1.00	.35	1.00	.75	1.00		1.00	1.00	1.00	
Indianapolis	1.32½	1.62½	.90	1.22½	1.17½	1.50	1.37½	1.45	1.45	.40 .45	1.37½	1.25	1.57½	1.00	1.00	.60 .90	1.27½	1.22½	1.50	1.62½	1.50	.60
Kansas City	.90	1.32½	.80	1.00	1.00	1.00	1.00	1.00	1.00	.60	1.00	1.00	1.06¼	.80	1.00	.92½	.92½	1.00	1.00	1.12½	1.25	.62½
Los Angeles††	10.00	8.00	6.00	7.00	8.00	7.00	8.00	9.00	10.00	4.00	10.00	7.00	9.00	6.00	9.00	7.00	7.00	8.00	10.00	8.00	6.00	.75
Louisville	1.00	1.25	.62½	1.00	1.00	1.00	1.00	1.10	1.10	.40	1.12½	.95	1.00	.62½	1.12½	.40	.85	.85	1 12½	1.25	1.00	
Memphis	1.00	1.37½	.50	.87½	1.10	1.00	1.12½	.87½	.87½	.40	1.00	1.00	1.25	.50	1.25	.75 1.00	1.12½	1.12½	*1.25	1.37½	1.25	.50
Milwaukee	1.00	1.25	1.25	.92½	1.00	1.25	1.00	1.05	1.05	.60	1.20	1.00	1.20	.80	1.20	1.00	1.00	.92	1.20	1.25	1.25	.80
Minneapolis	1.00	1.00		.80	80	1.00	.80	.90	1.00	.45	.75 .85	.80	1.00	.70	1.00	.70	.70	.80	1.00	1.10	1.00	.65
Nashville		1.00		.60 .75	.50	.75		.60	.75	.40	1.00	.62½	1.10		1.10	60	.60	.60	1.10	.50	.75	
New Haven*		1.20	.50 .60	.80 1.06¼	1.20	.80 1.00	1.16¾ 1.27½	1.37½	1.37½	45 .65	1.27½	.80 1.00	1.20	.50 .60	1.06¼		1.50	1.06¼	1.06¼	1.20	1.20	
New Orleans	.65 .80	1.25	.85	.55 .75	1.00	1.25	1.25	1.25	1.25	.35 .50	1.25	.75 .90	1.25	.75	1.00 1.25	.40	.90 1.15	.90	1.05 1.25	1.50	1.25	.35
New York City††	11.20	12.00	7.20	11.20	11.20	†11.20	13.20	11.20	¥	6.60	11.20	†9.00	12.00	8.50	12.00	10.28	12.62	11.20	11.20	12.00	11.50	8.50
Oakland	6.40	‡9.00	‡6.00	7.20	7.20	8.05	11.00	11.00	11.00	5.00	7.50	7.00	‡7.50	‡6.60	8.80	6.40	6.40	8.80	9.00	9.00	8.00	5.00
Oklahoma City††	8.00	8.00	4.00	6.00 8.00	8.00	6.00 8.00	8.00	8.00	8.00	3.50	.80	7.00 8.00	.80	4.00	†.80	6.00	6.00	8.00			11.00	.62½
Omaha	1.32½	1.12½	.45	.90	1.00	1.00	1.00	.90	.90	.50	.90	.80	1.20	.80	1.20	.72½	.95	1.00	1.20	.90	1.00	.50 .60
Philadelphia	1.00	1.50		1.00	1.05	1.25	1.18½	1.25 1.37½	1.00 1.37½	.40	1.37½	.90	*1.37½		1.20	1.00	1.25	1.25	1.20	1.25	1.12	.75
Pittsburgh	*1.50	*1.50		*1.25		*1.56¼	1.37½ 1.43¾	*1.37½	1.37½	.70	*1.50	.87½	*1.50		1.50	*1.25	*1.50	*1.31¼	*1.50	*1.40	1.33¾	.88
Portland, Ore.††	8.00	*9.60	7.20	7.20	*7.20	*8.00	6.40 9.60	8.80	8.80	4.80	*8.80	7.04	*9.60	*7.20	*8.80	7.20	7.20	*8.00	*8.80	*9.60	8.00	7.20
Reading	.80	.80	.60	.80	.80	.80	.80	.80	.90	.40	.90	.63	.90	.60	.90	.80	.80	.70	.90	.70	.75-1.15	.50
Richmond	60 .65	1.25		.60	.35 .40	.80		.70	.70	.40	1.00	60	60		.90	.60	.60	1.00	.90	1.25	1.25	
Rochester	.91	1.25	.55	1.05	*1.25	1.20	90	1.20	1.20	.55	1.20	1.05	*1.25	.55	*1.20	*.95	*. 95	1.05	*1.20	*1.25	1.20	.47½
Salt Lake City ††		9.00	5.00	7.20	8.00	1.12½	1 12½	1.12½	1.12½	4.00	1.10 1.25	7.20	1.50	1.10	8.00	7.20	8.00	8.00	8.00	9.00	8.00	4.00
San Antonio††	6.00 10.00	6.00 10.00	2.00 3.00	2.00 7.00	3.00 8.00	3.00 7.00	4.00 7.00	1.75 4.50	5.00 10.00	1.50 2.50	4.00 7.00	3.00 7 00	4.00 8.00	2.00 3.00	5.00 8.00	5.00 6.00	4.00 6.00	3.00 7.00	5.00 8.00	3.50 8.00	4.00 10.00	2.00 3.00
San Francisco	6.40	9.00	7.00	7.20	7.20	9.00	9.00		9.60	5.00	8.00	7.00	8.80	7.50	8.00	8.00	8.00	7.20	8.00		8.00	5.00
Seattle††	8.00	9.60	5.28	7.20	7.20	*8.80	8.00	8.00	8.80	4.75	*8.80	7.20	*9.60	*6.40	*8.80	7.20	7.20	8.00	*8.80	9.60	8.00	
Sioux City	1.00	1.25	.50	1.00	.90	1.00	1.00	.90	.90	.50	.90	1.00	1.25	.60	1.20	.90	.90	.85	1.20	1.25	1.00	.60
St. Louis	1.25	1.50	.87½	1.25	1.31¼	1.50	1.35- 1.47	1.47	1.47	.78¾	1.25	1.25	1.50	1.06¼	1.43¾	1.17½	1.25	1.25	1.43¾	1.25	1.25	.76½
St. Paul	1.00	1.10	.55	.80-.90	.80	1.00	.80	1.00	1.00	.50	1.20	1.00	1.20	.85	1.20	.75	.75	.85	1.20	1.00	1.12½	
Washington, D.C.	*1.50	1.75	.50 .75	*1.37½	1.25	*1.65	*1.37½	*1.65	*1.65	.75	*1.62½	*1.37	*1.75	*.75	*1.50	*1.37½	*1.37½	*1.50	*1.50	*1.25	*1.50	.75
Wichita	.60	.75 1.25	.25 .40	.40 .75	.40 1.00	.50 .87½	.30 .75	.40 1.00	.40 1.00	.20 .40	.50 1.25	.50 .87½	.60 1.25	.25 .50	1.00	50 1.00	.50 1.00	.50 1.00	.75 1.12½	.75 1.25	.50 1.00	.25 .40
Youngstown††	*1.00	1.25	.60	.75-1.00	1.12½	1.00	1.12½	1.25	1.25	.40	1.00	1.00	1.25	.75	1.00	1.00	1.00	1.00	1.00	1.25	1.25	.81¼

NOTE.—Where two figures are shown they are the minimum and maximum. All figures are for hour rates except as indicated. ††8-hour day. ‡6-hour day. †7-hour day. *On 5-day week basis. cCorrection. Asterisk after city indicates all trades on five-day week basis.

ABOVE DATA ARE WAGE SCALES AND DO NOT NECESSARILY INDICATE ACTUAL WAGE RATES BEING PAID IN THE RESPECTIVE TRADES.

NEW...*and* Moderately Priced!



Anaconda Through-wall Flashing* is a simple but highly effective copper wall flashing now available at a moderate price.

It is furnished in 16-oz. copper, either plain or lead coated, in four types which are adaptable to practically every brick or masonry condition.

This flashing provides a sound bond which affords maximum resistance to lateral movement in every direction. Since it is bent and cut to fit on the job, Anaconda Flashing may be installed with minimum labor. The flat selvages are ideal for making roof and counter flashing bends without unsightly ridges to interfere with the discharge of water. Water-tight end joints are made by overlapping one corrugation. When required, flat ends permit easy soldering.

Anaconda Through-wall Flashings may be obtained from distributors of Anaconda Copper. Our new descriptive folder, Anaconda Publication C-28, mailed on request.

*Patented May 2, 1933 (Pat. No. 1,906,674)

ANACONDA
from mine to consumer

THE AMERICAN BRASS COMPANY
General Offices: Waterbury, Connecticut
Offices and Agencies in Principal Cities

NRA CODE

ANACONDA COPPER

LIMITED DIVIDEND CORPORATIONS UNDER THE NATIONAL HOUSING ACT

(Continued from page 89, editorial section)

Housing Administration was confronted with the problem of liberalizing the restrictions imposed on the limited dividend corporation so that it might be a more attractive venture for the private investor and yet be, what its name implies, limited in its returns. Inasmuch as the Administration, as an insuring agency, can logically exercise jurisdiction only during the term of the insurance, and, as all the money in the project is private, the project can properly belong to the stockholders of the corporation when it has paid its private debts. If the term of the loan is forty years, at the end of this period the corporation has, as its assets, the land plus the depreciated value of the building. If initially well planned and constructed, their building can then earn an excellent return even without large increases in rental.

The Administration's regulations provide that the annual dividend to the stockholders may not exceed 6%, but this may be cumulative; that is, if a dividend is passed, or is less than 6%, the difference may be added to a future dividend. The risk run by the owners of the equity has been recognized and provision has been made to permit extra dividends under certain conditions, depending largely on the diligence and efficiency of the management. If, through the efforts of the management and the cooperation of the tenants, a surplus has been built up equal to the total scheduled rental for the year next preceding, the Administration may, from time to time, permit the distribution of a portion of the surplus, one-half of the amount to go to the stockholders as an extra dividend and the remainder to be given to the tenants on an equitable pro-rata basis. In order that the corporation may still be limited as to dividend, the extra dividends may not exceed an average of 2½% over the period of the mortgage. Thus: in a forty-year period the corporation may earn extra dividends equal to its original stock issue.

This scheme has three advantages: it permits the corporation to earn as much as 8½%, it offers an incentive to good management and it establishes a partnership between landlord and tenant, both being interested in the creation of a large surplus through care of the premises and reduction of operating costs.

The Administration has no prescribed method or term of amortization. The door is, therefore, open to long-term "straight-line amortization" schemes for projects of good design and construction that are well financed.

Figure 2 is a spread sheet of the possible operation of a limited dividend corporation under the provisions of the Federal Housing Administration. The assumptions made are identical with those in Figure 1, except the method and period of amortization and the element of extra dividend. It will be noted how constant amortization and diminishing interest reduce the annual charges. Note: in this case there are no deficits as rents are reduced, although at times payment of regular dividends must be from accrued surplus.

☆

ARCHITECTS WILL BE CALLED ON

☆

From that Point on Air Conditioning Problems Can be Safely Left to Kelvinator

We have been talking to architects and they tell us that proposed construction nowadays invariably involves the consideration of air conditioning. This they have found especially true in new buildings for industrial processing, and in structures for direct selling to the public, such as stores—in other words, quite sizable installations.

These architects have unanimously agreed with our thinking here at Kelvinator that each air conditioning job is a separate and distinct problem, and they have approved the Kelvinator principle of **EXACT SELECTION** of equipment on the basis of a thorough-going engineering survey for each project.

Architects who place their air conditioning problems in Kelvinator's hands can do so with the confidence that Kelvinator's more than 20 years' experience in controlling temperatures will provide the correct solution. We say this because Kelvinator is not relying solely upon refrigeration engineers to meet the demands of this new business. Kelvinator air conditioning engineers know construction, heating, ventilation, as well as refrigeration, and are thus equipped to give a well-rounded advisory service to you. Kelvinator prestige and reliability are assets the architect will be quick to appreciate. Don't hesitate to call on . . . KELVINATOR CORPORATION, 14250 *Plymouth Road, Detroit, Michigan. Factories also in London, Ontario, and London, England.* (1007)

KELVINATOR

Specialists in Controlled Temperatures Since 1914

Air Conditioning
Household Refrigeration
Automatic Heating
Water Cooling
Truck Refrigeration
Beverage Cooling
Ice Cream Cabinets
Milk Cooling
Commercial Refrigeration
for every need of
merchants, manufacturers
and institutions

KELVINATOR

Air Conditioning

NEW MATERIALS & EQUIPMENT

NEW CATALOGS

RESEARCH REPORTS

MANUFACTURERS' LITERATURE

Architects are invited to use the coupon on this page as a convenient means of obtaining manufacturers' publications describing in detail the products and materials mentioned

B5-1

NEW SYNTHETIC RUBBER-LIKE MATERIAL

B. F. Goodrich Company has developed a new material, a synthetic rubber named "Koroseal" which is being put to practical use in many forms and proving more successful than natural rubber. Koroseal is said to resist swelling when exposed to many oils and greases and does not disintegrate in the presence of corrosive chemicals, resisting even chromic acid and hot, concentrated nitric acid. Although not the same as rubber in chemical composition it may, like rubber, be varied by compounding methods from very hard to soft, doughy consistency and can be molded into any shape. Koroseal can be produced in a variety of colors. It is odorless. At present the prohibitive cost of manufacturing Koroseal precludes its adoption as a general substitute for rubber but some of its characteristics render it superior to rubber for certain specialized applications.

B5-2

ASBESTOS FLEXBOARD, NEW MATERIAL

Johns-Manville is producing a material, called Asbestos Flexboard, that is fireproof, flexible (though structurally strong), saws like wood, nails without splitting, and is available in four colors. The colors are not merely on the surface but completely penetrate the material. Asbestos Flexboard is made in two styles, one for colorful, sanitary wall finishes in homes, offices, stores and the like; the other is designed for a variety of utilitarian applications. A new folder giving complete details of compositions, advantages and uses of this material is offered by the Johns-Manville Company.

B5-3

PENBERTHY WATER CIRCULATOR

A centrifugal type pump of bronze construction, manufactured by Penberthy Injector Company, claims five advantages: (1) immediate heat, (2) reduced fuel cost, (3) uniform heat distribution throughout system, (4) simple and dependable operation, (5) low cost and easy application.

The Penberthy Water Circulator forces the heated water from the boiler throughout the system *immediately* whenever the motor is started; this eliminates the delay in heat delivery that is encountered by a gravity system which must first set up thermal syphon operation. The faster flow of water over the boiler heating surface increases the rate of heat transfer and the efficiency; this reduces fuel consumption. The faster flow through the piping minimizes the heat transmission loss. Forced circulation tends to overcome the disadvantages of inadequate pipe sizes and insufficient radiation. It will also circulate water to radiators below boiler room level and to remote radiation on long horizontal runs. On new jobs, smaller pipe sizes can be used, reducing initial cost.

B5-4

IMPROVED ELECTRODES

Airco Rods Nos. 78 and 79, described in leaflet offered by Air Reduction Sales Company, are heavily coated steel electrodes possessing a quieter arc and smoother flow due to their coating, and are said to be suitable for all position welding. The rods have a tensile strength of from 60,000 to 75,000 lbs. per sq. in., an elongation of from 22-30% and have higher resistance to corrosion than mild steel. No. 78 is recommended for flat welding while No. 79 is for vertical and overhead work. No. 81, a heavily coated electrode for flat welding only, has characteristics similar to those of Nos. 78 and 79 except that its elongation runs about 5% greater. A copy of this leaflet will be furnished on request.

AN OFFER TO ARCHITECTS PRACTICING IN UNITED STATES

TO OBTAIN FURTHER INFORMATION

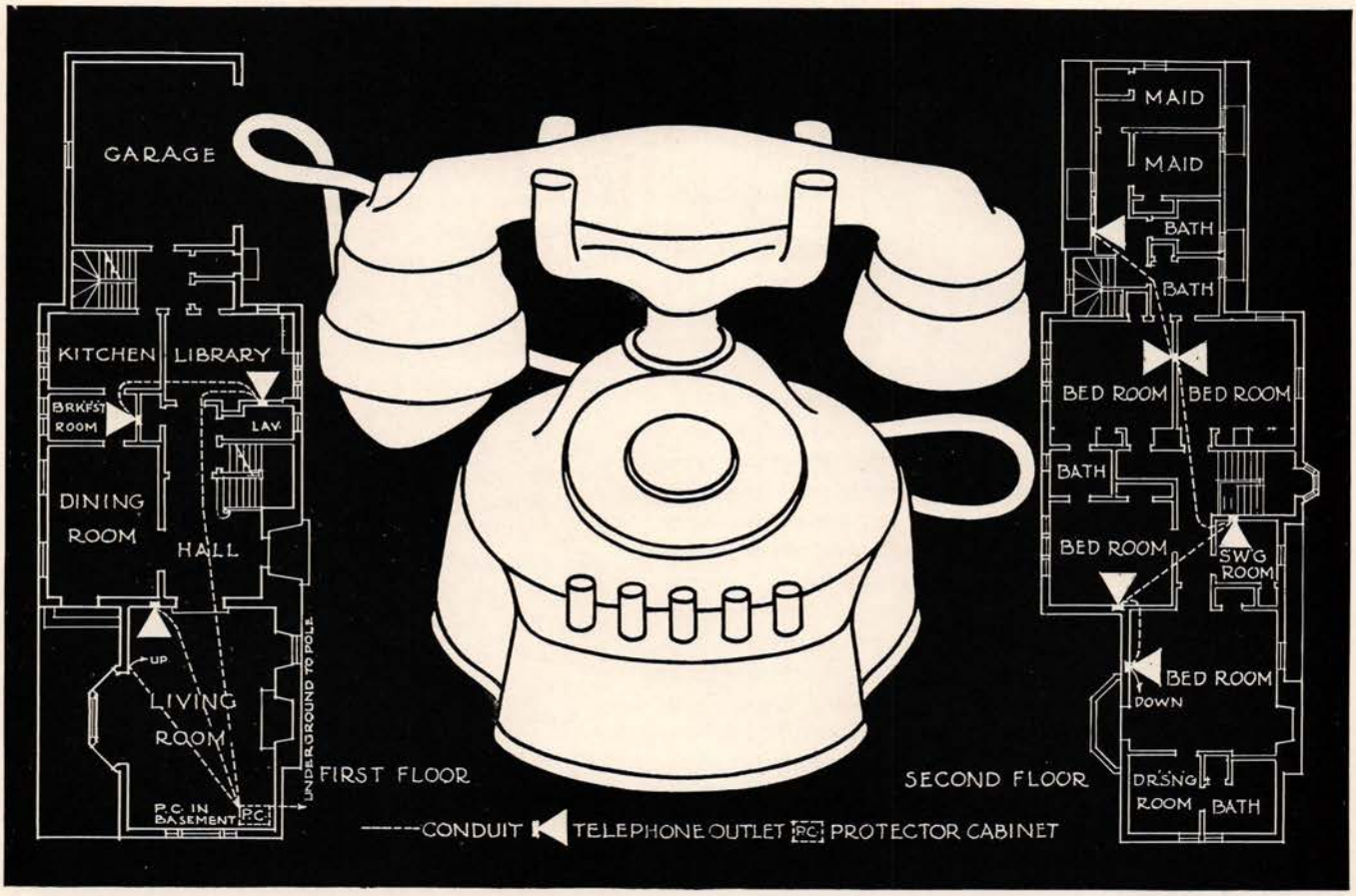
about any products mentioned, write the index numbers in space below. For literature about products *advertised* in this issue, give name of the product and manufacturer. Return coupon to The Architectural Record, 119 West 40th Street, New York, N. Y.

. . . . . .

. . . . . .

Name_____

Position_____



IT'S NEW—*Key Control Equipment*

IT PROVIDES COMPLETE TELEPHONE CONVENIENCE FOR YOUR RESIDENCE CLIENTS

HERE'S a notable new telephone service for larger homes and apartments. It will handle up to eleven telephones and one or two central office lines, without a switchboard or attendant.

Key buttons built into the base of modern, compact hand telephones control outgoing, incoming, intercommunicating calls, and interior buzzer signals. All types of calls may be made from all telephones. (Or certain telephones can be restricted to intercommunicating calls, if desired.) Incoming calls may be answered at any telephone and transferred to any other. One or two outside conversations and one inside conversation can take place simultaneously.

Dependable, inexpensive, easy-to-operate, KEY-CONTROL EQUIPMENT saves countless steps and minutes, makes homes more livable and households more efficient. It gives the greatest measure of convenience, of course, if telephone arrangements have been carefully pre-planned, and conduit included in walls and floors during construction. Then telephone outlets are available at strategic locations, wiring is concealed, and full protection afforded against certain types of service interruptions.

If you'd like to know more about KEY-CONTROL or other telephone equipment—if you're planning conduit layouts for new or remodeled residences—call the Business Office of your local telephone company. Their engineers will help you, without charge.

AMERICAN TELEPHONE & TELEGRAPH CO. AND ASSOCIATED COMPANIES — BELL SYSTEM

For further information on Bell System telephone services and equipment, see Sweet's Catalogue

B5-6
RIC-WIL INTRODUCES NEW SUPER-STRENGTH TILE CONDUIT

A new design Tile Conduit called Super-Strength is announced by the Ric-wiL Company, Cleveland, Ohio, manufacturers of conduit systems for underground steam lines. It is designed for use under highways or other heavy traffic conditions and is offered as a virtually traffic-proof conduit for all conditions except railway traffic. The tile sections feature extra heavy walls, especially reinforced to produce balanced construction and maximum strength. Tests are said to indicate sufficient strength to support a concentrated static 6-ton traffic load per wheel under actual installation conditions. Thus any reasonable specifications on traffic load resistance can be met, regardless of conduit sizes.

B5-7
COPPER-COVERED RPM

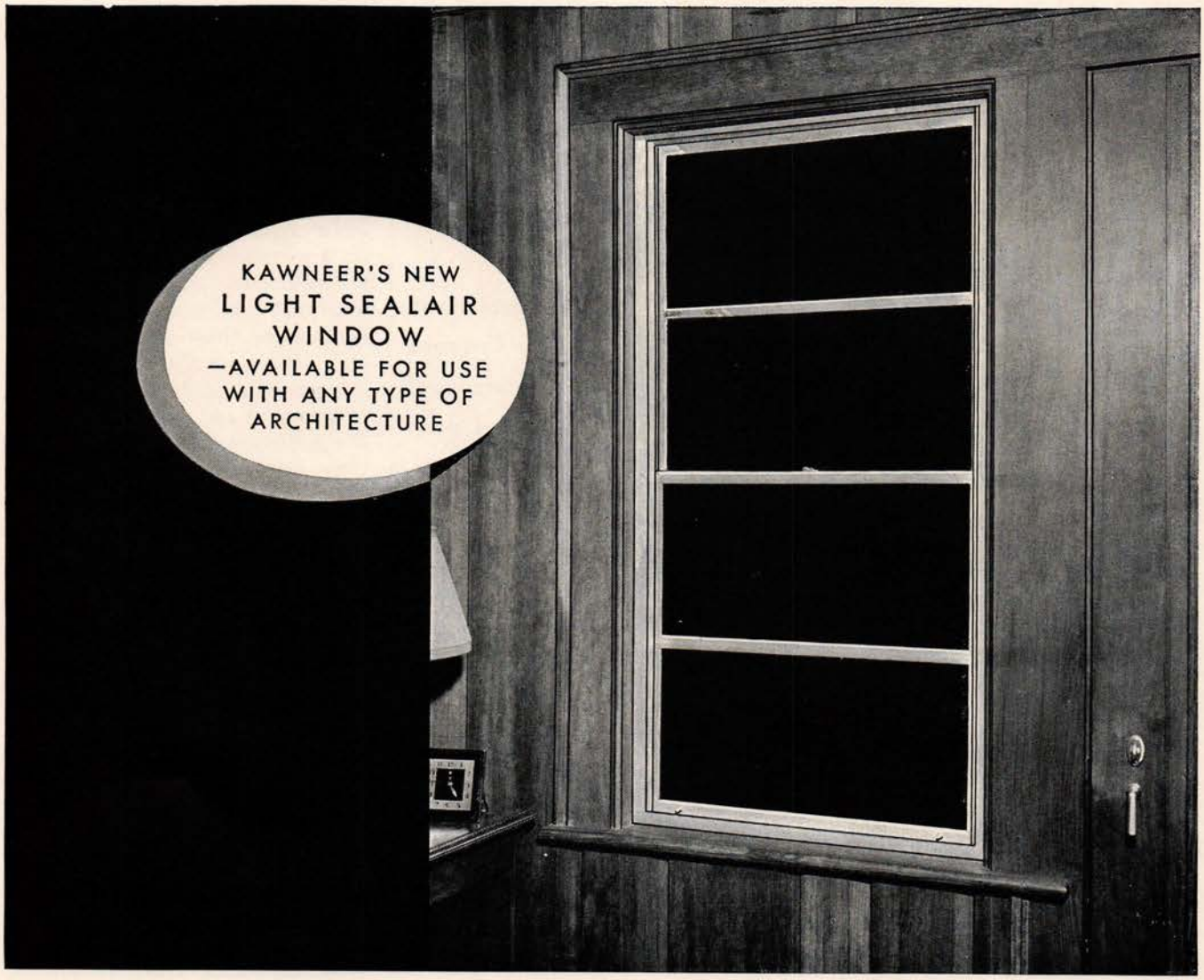
H. H. Robertson Company introduces Robertson Protected Metal (RPM) with covering of Anaconda electro-sheet copper. The copper sheet is external surfacing which is bonded to asbestos felt which in turn is applied to the steel core sheet with asphalt. The copper surface provides advantages both in appearance and durability. Its varied applications include ceiling and wall coverings, foundation waterproofing, dampproofing, furniture trim and many others. A leaflet is available in which this improved product is described.

B5-8
BOHN DEVELOPS NEW EXTRUSION PROCESS

A new development in the field of extruded work is announced by the Bohn Aluminum & Brass Corporation. It is now possible, on a production basis, to manufacture integrally extruded hollow shapes, concentric in wall-thickness. This new process is said to eliminate the necessity for the use of lock seams, dovetail pieces or welded seams in the production of hollow shapes particularly as used in ornamental work for window framing and door stiles. Pieces are manufactured with the wall thickness at all parts held to extremely close limits so that desirable hollow shapes can be produced not only at a lower total cost to the fabricator but with the advantage of greater structural strength and rigidity due to the one-piece formation of the section. Bohnalite extruded aluminum shapes are manufactured for the architectural metal trade from virgin metals alloyed to produce the various materials recognized for architectural purposes. Bohnalite and Bohnolloy extruded shapes in sizes up to 8 inches in over-all dimensions and in length in excess of 20 feet are now available.

B5-9
MARK TIME SWITCH

The Mark Time switch is one so constructed as to allow a convenient time-lag between the throwing of the switch and its actuation. The front porch light of the exhibit house erected at 39th Street and Park Avenues, New York City, under the sponsorship of Better Homes in America is equipped with a Mark Time switch allowing 35 seconds from the instant of operating the switch until the light automatically goes out. Switch is especially suitable in bathrooms and bedrooms and in garages, permitting enough time for moving about in safety after turning off lights.



★ NOW YOU CAN USE ALUMINUM OR BRONZE WINDOWS IN ANY HOME!

FINGER-TIP SASH CONTROL

Anyone can easily open and close the light Sealair with a single fingertip. Careful fabrication and the use of durable alloys assure lasting, trouble-free service, and bring worthwhile maintenance savings!

These practical new Sealair light weight-hung windows (types LWA and LWB) are priced for use in medium or low-cost homes . . . offer entirely new ease of operation, minimum maintenance cost, and lasting service. Complete unit of sash (glazed or unglazed), frame and weights may be quickly installed by one man in wood subframe in frame or masonry construction. Narrow, yet sturdy members admit more daylight . . . mullion width is reduced to approximately one inch . . . integral weatherstrip guides and interlocking members are effective against wind and weather . . . several arrangements of muntins, and twenty standard glass sizes are now available for use in the new homes of 1935. Details in Sweet's, or mailed to any architect on request.

THE Kawneer COMPANY
NILES • MICHIGAN

WRITE FOR COPY OF BOOKLET "BETTER WINDOWS"

B5-10
COLOR HARMONY

A guide to proper color effects for exterior and interior painting of homes, with decorative plans for every room, has been issued by the paint and varnish division of E. I. du Pont de Nemours & Co., Wilmington, Delaware. "New Color Harmony for your Home" is a 24-page booklet with three color schemes each for popular types of homes of moderate cost and with decorative effects in line with the modern trend for each room, including the placement of furniture.

B5-11
NEW WIRE AND CABLE CATALOGUE

A new catalogue has been issued by Crescent Wire & Cable Company of Trenton, New Jersey. Application, conductor, insulation, finish, and the results of various tests are described for each of a wide variety of wires and cables.

B5-12
NEW LINE OF ELECTRIC RANGES

A new line of electric ranges, with new styling and lower prices, has been announced by the specialty appliance sales department of General Electric Company. There are eight models, ranging in price from $69.50 to $564. Three of the models are under $110. Six are table top models and two are of the high oven type. All table top models can be built in flush against the wall and the adjacent cabinets, making it possible to match standard cabinet construction and to harmonize with the refrigerator, dishwasher and other kitchen equipment.

B5-13
CORK INSULATION COMPANY

Cork Insulation Company introduces Corinco Cork Tile, a flooring material available in a wide range of standard and special sizes in light, medium and dark brown shades, and in varying thicknesses. Samples, specifications and estimates applying to flooring for a single room or entire building are offered by the manufacturers.

B5-14
USES OF CONCRETE

Two interesting booklets are being circulated by Portland Cement Association. Each illustrates and describes a varied selection of buildings in which concrete has been used. The Griffith Observatory in Los Angeles is featured in one booklet; the Wilshire Tower Building, also in Los Angeles, is featured in the other.

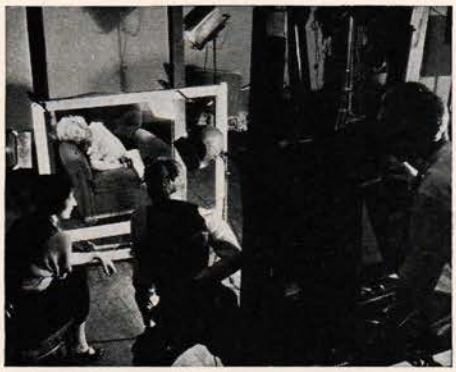
B5-15
BETHLEHEM LIGHT SECTIONS

Supplementing the series of wide-flange structural shapes, Bethlehem light sections extend their application and consequent economies to types of buildings where the heavier shapes cannot always be used advantageously throughout. Light sections particularly lend themselves to the economical construction of buildings where loads are relatively light, such as hospitals, schools, apartment houses, hotels and large residences. In a new catalogue released by Bethlehem Steel Co., are given the nominal dimensions and weights for light sections which include light beams, columns, joists and stanchions.

ONE OF THESE PICTURES WAS TAKEN THROUGH A PIECE OF L·O·F QUALITY WINDOW GLASS

● (IN THE OTHER THERE WAS NOTHING BETWEEN THE CAMERA AND THE SUBJECT) ●

CAN YOU TELL WHICH IS WHICH?



The authenticity of these photographs is attested by Underwood and Underwood.

● While the above is by no means a technical or scientific test, it is nevertheless a very practical one, and convincing evidence that L·O·F Quality Window Glass is exceptionally clear and flat. It explains, in some measure, why so many leading architects write a closed specification for all the flat glass to be used in structures they design. The L·O·F label is attached to every light for your protection and that of your client. It is advisable to instruct contractors to leave the label on. Libbey·Owens·Ford Glass Company, Toledo, O.

LIBBEY·OWENS·FORD QUALITY GLASS

TRADE ANNOUNCEMENTS

MINNEAPOLIS-HONEYWELL REGULATOR CO.

The recent consolidation, whereby the Brown Instrument Company of Philadelphia, became a subsidiary of Minneapolis-Honeywell Regulator Company of Minneapolis, unites two of the largest and oldest firms in the temperature control field. Minneapolis-Honeywell maintains branch and distributing offices in fifty-eight cities and subsidiary companies in Canada and Europe. The Brown Instrument Company maintains twenty-two branches throughout the United States. The consolidation, coming on the eve of the 50th anniversary of the Minneapolis-Honeywell Regulator Company, completely rounds out its line of heating, ventilating, cooling, humidifying and air conditioning control equipment for domestic and large building applications. Also it increases the line of automatic industrial process controls.

The Brown Instrument Company's business has been exclusively in the industrial field and consists of instruments for indicating, recording and controlling of temperatures, pressures, flows, liquid levels, CO_2, speeds, etc., serving such varied industries as oil, power, steel, chemical, glass and automotive. This company, headed by Richard P. Brown, will retain its own identity and continue to operate as a separate unit.

Announcement is also made that H. W. Sweatt, for the last eight years vice president and general manager of Minneapolis-Honeywell Regulator Company, has been made president of the company. He succeeds M. C. Honeywell, who has served as president since the merger of the Minneapolis Heat Regulator Company and the Honeywell Heating Specialties Company in 1927. Mr. Honeywell becomes Chairman of the Executive Committee.

MOE-BRIDGES COMPANY

Announcement is made of change in ownership of the Moe-Bridges Company of Milwaukee, Wisconsin, manufacturers of electric lighting fixtures. A new corporation, the Moe-Bridges Corporation, headed by Mr. S. Deutsch, has been formed to take over the assets, manufacturing facilities and personnel of the previous organization. A new catalogue, soon to be released by this company, will feature the new "Masterlite" series of lighting fixtures.

UNIVERSAL FORM CLAMP COMPANY

With facilities to produce Uni-Form Panel Forms, reinforcing accessories, road chairs, etc., the Universal Form Clamp Co. has opened a Pacific Coast Division, located at 130 Hooper Street, San Francisco. The new division will operate under direction of MacGregor S. Anderson.

UNDERWRITERS' LABORATORIES

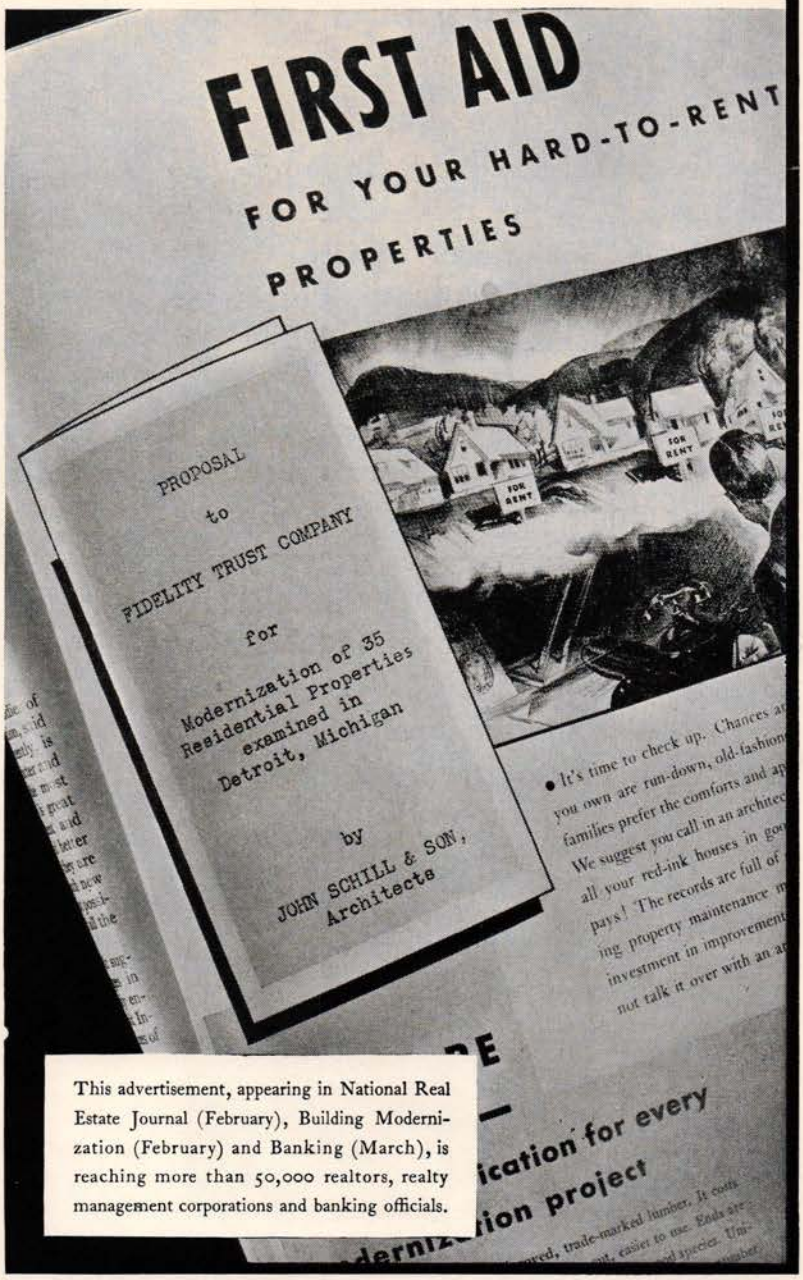
At a special meeting of the Board of Directors of Underwriters' Laboratories held in Chicago January 7, Vice President A. R. Small was unanimously elected president, succeeding the late Dana Pierce.

THERE'S A NEW AND FERTILE FIELD FOR ARCHITECTS

. . . among owners of multi-parcel property

● *It's good business* for property maintenance officials to modernize their out-of-date houses—to make them easy-to-rent, easy-to-sell.

It's good business for architects, too, to offer their facilities for this kind of work. A number of eastern firms are specializing in modernization—and making money for the first time in years. Have you checked the possibilities in your own city?



This advertisement, appearing in National Real Estate Journal (February), Building Modernization (February) and Banking (March), is reaching more than 50,000 realtors, realty management corporations and banking officials.

4-SQUARE LUMBER

. . . a safe specification for every modernizing job

● 4-SQUARE Lumber is improved, trade-marked lumber. It costs no more because every piece is precision cut, easier to use. Ends are smooth and square. Available in all principal softwood species. Uniform size standards are followed both as to width and thickness. Architects who have had experience with 4-SQUARE Lumber are enthusiastically specifying it for both building and repair work. 4-SQUARE Lumber is sold by almost 3000 dealers from coast to coast. See the dealer nearest you. He has some original material that will prove valuable to you in planning all kinds of residential modernizing work.

WE COOPERATE WITH BETTER HOUSING PROGRAM

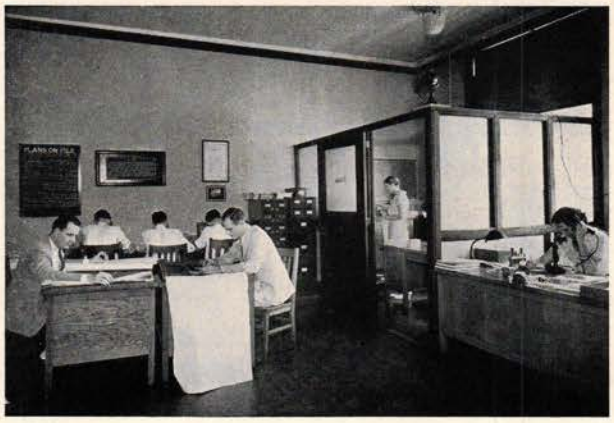
WEYERHAEUSER SALES COMPANY

WEYERHAEUSER 4-SQUARE LUMBER

FIRST NATIONAL BANK BUILDING SAINT PAUL, MINNESOTA

MAKE IT STANDARD PRACTICE IN YOUR OFFICE TO USE DODGE PLAN ROOMS THIS YEAR

From New York to New Orleans Dodge offers architects the convenience and advantage of Plan Room Service. In 20 cities throughout the 37 states east of the Rocky Mountains, Dodge Plan Room Service is available. We invite architects to use this service. It will save crowding in your office. You will secure a more dependable range of sub-bids and material prices. It will simplify the task of securing bids on jobs to be built in distant cities. When having plans blue printed, have one or more sets prepared for Dodge Plan Rooms. Send them to us express collect—or ask us to send for them. After the contract is awarded we will return them. Make it standard practice in your office to use Dodge Plan Rooms. For further information ask the Dodge reporter when he calls.



DODGE PLAN ROOM — NEW ORLEANS

DODGE PLAN ROOM — NEW YORK

CITIES WHERE DODGE PLAN ROOMS ARE LOCATED

Atlanta, Ga.	Dallas, Tex.	Kansas City, Mo.
Birmingham, Ala.	Detroit, Mich.	Milwaukee, Wis.
Boston, Mass.	Greensboro, N. C.	New Orleans, La.
Buffalo, N. Y.	Houston, Tex.	New York, N. Y.
Chicago, Ill.	Indianapolis, Ind.	Philadelphia, Pa.
Cincinnati, O.	Miami, Fla.	Pittsburgh, Pa.
Cleveland, O.		St. Louis, Mo.

OUR CATALOGUE IS FILED IN SWEET'S

CONSTRUCTION NEWS DIVISION

F. W. DODGE CORPORATION

119 W. 40TH STREET NEW YORK

F.W. DODGE CORPORATION

WHEN PLANS CALL FOR

MODERNIZING

here are Fixtures in which you will be interested . . .

Complete literature describing these fixtures in detail will be sent promptly. They are all furnished in Speakman Chromium Plate which has proven over years that it will not peel, crack, tarnish or wear off.

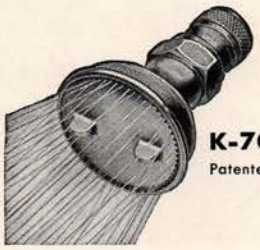
SPEAKMAN COMPANY
Wilmington, Del.

K-3395
(Patented Jan. 2, 1923
—Nov. 3, 1931)

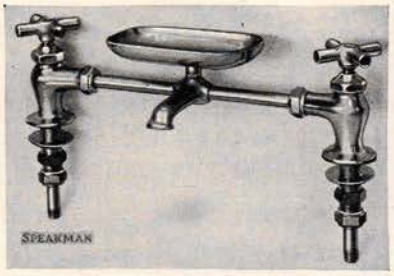
K-5504-M

PATS. PENDING

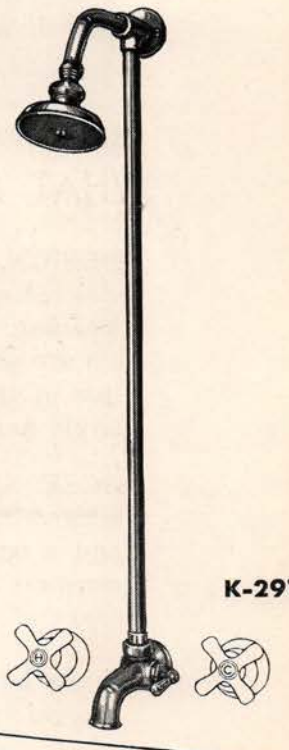
K-1001



K-7047
Patented—Nov. 3, 1931
Mar. 15, 1932
June 14, 1932



K-7115



K-291

K-3395 Speakman Anystream Self-Cleaning Shower Head. Will never stop up and gives a needle, normal or flood shower at ordinary house water pressures. Fits any kind of a shower.

K-7047 Adjusta Spray Head. Little brother to the Anystream Head. Gives coarse or fine shower spray by adjusting the face—easily cleaned by giving the face a couple of turns.

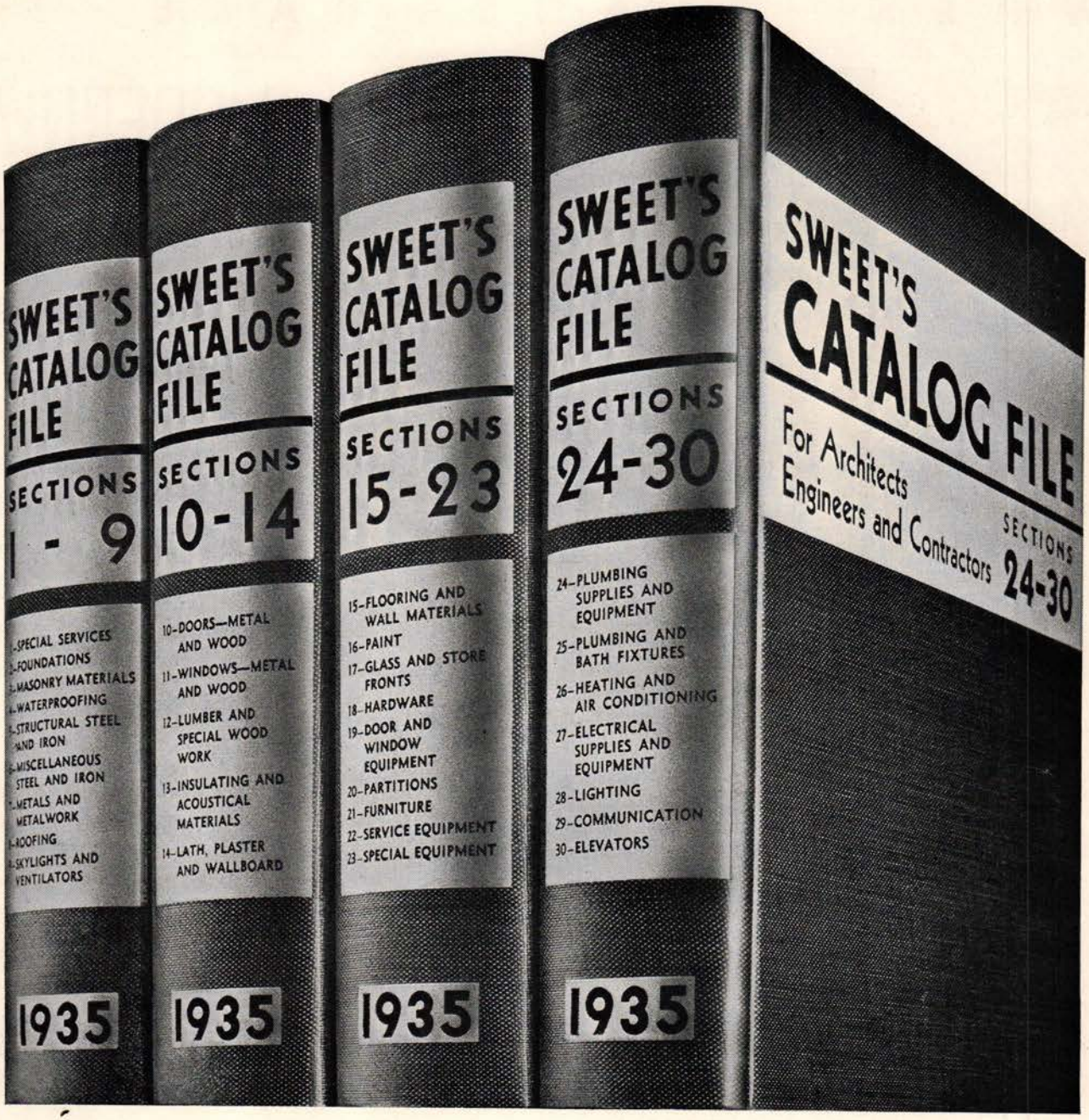
K-2916 Trans-Nozzle Shower. One of many types of this style shower made by us. These Trans-Nozzle showers fit over practically any type of tub and give shower convenience at small cost without tearing up the bathroom.

K-1001 Si-Flo Flush Valve. This valve is practically noiseless. Use it to replace any type of noisy flush valve. Roughs-in on Standard measurements. Has only one wearing part which is easily replaced at nominal cost.

K-5504-M Sink Fixture with hose and spray. A real kitchen convenience. We make these swinging nozzle sink fixtures in various styles with and without hose and spray.

K-7115 Over-Slab Lavatory Fixture. Fits practically any type of lavatory. Gives the convenience of washing in running tempered water from one nozzle. Also furnished with hose and spray (K-7116).

Refer to Sweet's Architectural Catalogs — Section 25, Catalog 9



WHAT MAKES MANUFACTURERS' CATALOGS USEFUL TO YOU?

DESIGN, for one thing. Design, not in the restricted sense of the term, but in its broader meaning. Design, in which typography and layout are only the means to an end—the presentation of the information you want, comprehensively and clearly.

ACCESSIBILITY, for another thing. Not mere *availability,* miles away, subject to your request and a wasteful lapse of time—but quick and constant *accessibility,* in your office, at a distance of a few feet.

Seven hundred and eighty-one manufacturers, recognizing the importance of these qualities, provide you with nearly a thousand catalogs and bulletins in the new Sweet's file for 1935. What these manufacturers could not do individually, they have done collectively, with Sweet's as the central agency to carry out their wishes.

The accessibility of these catalogs is demonstrated every time you reach for Sweet's. But there is still room for improvement in individual catalog design. Sweet's, acting in an advisory capacity, is bending every effort to have each manufacturer give you *all* the information you need, before getting in touch with his representative, and in its best possible arrangement and form.

BRIDLES FOR AIR...

J. Jay Hirz

AIR on the rampage lays waste the land and snuffs out human life with reckless abandon. Bridled air... air under control... is the servant of man. ¶ Bridling air has been Sturtevant's job for over 70 years. Today it makes available America's most comprehensive line of air equipment... including, in part, Ventilating Fans, Air Conditioning Apparatus, Unit Heaters, Unit Ventilators, and Portable and Central System Vacuum Cleaners.

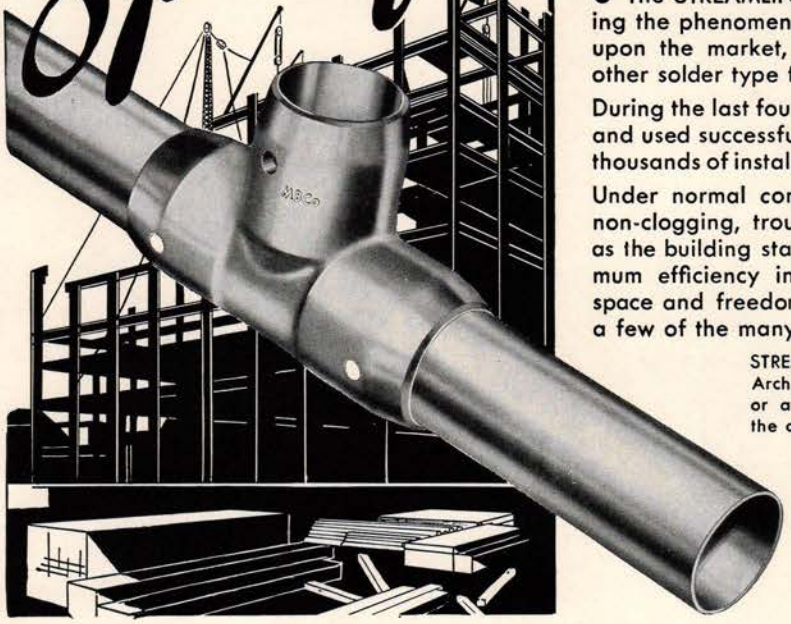
B. F. Sturtevant Company, Hyde Park, Boston, Mass. Sturtevant

REG. U.S. PAT. OFF.

VENTILATING • HEATING • AIR CONDITIONING • VACUUM CLEANING EQUIPMENT

When the "JOB" calls for the BEST

Specify STREAMLINE



● The STREAMLINE Fitting was the first solder type fitting utilizing the phenomena of capillary attraction to be successfully put upon the market, and it incorporates many advantages that no other solder type fitting possesses.

During the last four years STREAMLINE Fittings have been specified and used successfully in every type of building construction and in thousands of installations throughout the United States and Canada.

Under normal conditions they assure your client a non-rusting, non-clogging, trouble-free plumbing or heating system as long as the building stands. Absolute safety in concealed work, maximum efficiency in heat transference, conservation of valuable space and freedom from the harmful effects of vibration are but a few of the many advantages of this product.

STREAMLINE Products in full range are described in Sweet's Architectural Catalog, Section 24. Send for A. I. A. File 29 B4 or a list containing hundreds of outstanding installations and the architects who have specified them.

STREAMLINE PIPE AND FITTINGS
PORT HURON, **CO.** MICHIGAN
DIVISION OF MUELLER BRASS CO.

Our Best Advertisement is the Glass Itself

SEND FOR SAMPLE OF

SCOHY WINDOW GLASS

It is our contribution for any test or comparison you care to make

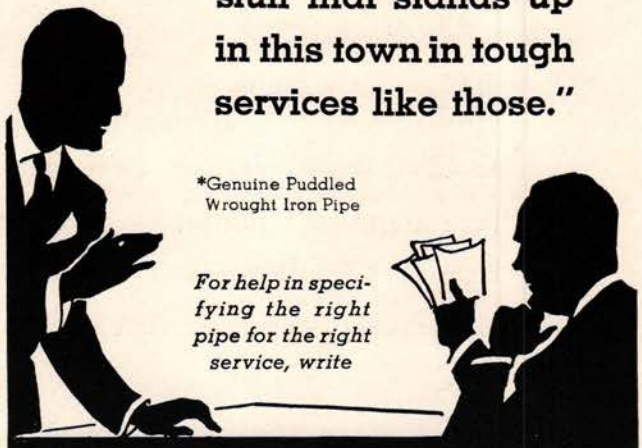
"Window Glass costs less than plate"

WHEN you get your run-of-the-batch sample you will see first hand why SCOHY WINDOW GLASS IS ESTABLISHED AS TODAY'S LEADER FOR FINE UNIFORM QUALITY. You will also realize why our plants are running at full capacity 24 hours a day, seven days a week.

SCOHY SHEET GLASS COMPANY
SISTERSVILLE WEST VIRGINIA

SCOHY WINDOW GLASS
1,000,000 BOXES A YEAR CAPACITY

"Specify Reading GPWI* Pipe for all the vents, downspouts, and waste lines, McGregor. That's the only stuff that stands up in this town in tough services like those."



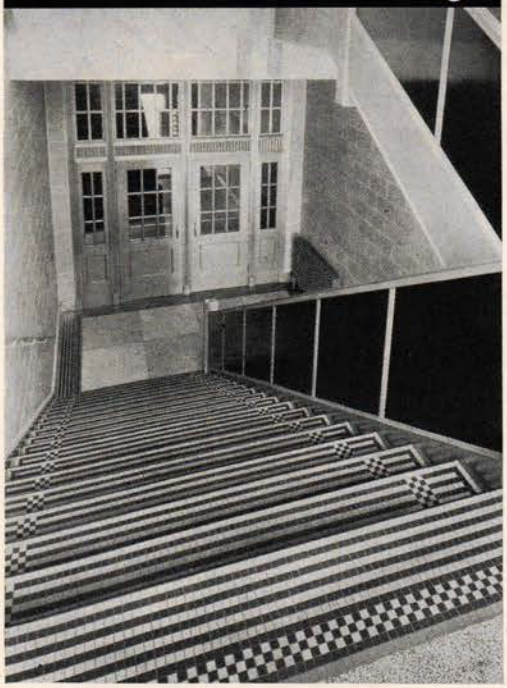
*Genuine Puddled Wrought Iron Pipe

For help in specifying the right pipe for the right service, write

READING IRON COMPANY
PHILADELPHIA

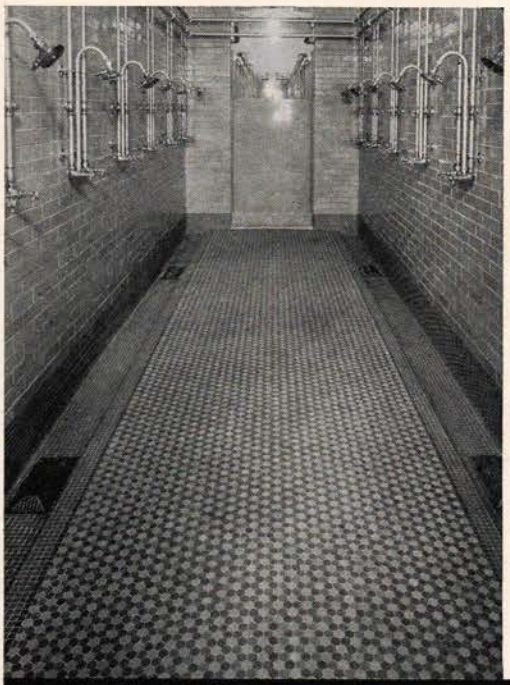
SCIENCE AND INVENTION HAVE NEVER FOUND A SATISFACTORY SUBSTITUTE FOR GENUINE PUDDLED WROUGHT IRON

For Safe Walkways . . . in School Buildings



Alundum Tiles in the RUFUS KING HIGH SCHOOL

ALUNDUM Ceramic Mosaic Tile (with vitreous mosaics) in the showers and on the stairways; Alundum Aggregate in the terrazzo of the landings and platforms—with these two Norton Floors products permanent walking safety has been assured in the new $1,000,000 Rufus King High School of Milwaukee. (Designed by Bureau of Buildings and Grounds, B. J. Jelinek, Chief; G. E. Wiley, Architect; Milwaukee Board of School Directors.)



GUARANTEE*

1. Norton Alundum Tile is guaranteed against defects in material or workmanship.
2. Norton Alundum Tile is guaranteed to retain its non-slip properties throughout its entire life if it is kept free from an accumulation of dirt or other foreign substance.
3. Norton Alundum Tile is guaranteed for a period of ten (10) years against wear resulting from foot traffic making replacement necessary.

* This guarantee applies to Alundum Stair and Floor Tile and to Alundum Ceramic Mosaic Tile.

NORTON COMPANY
WORCESTER, MASS.

New York Chicago Detroit
Philadelphia Pittsburgh Hartford
Cleveland Hamilton, Ont.
London Paris
Wesseling, Germany

T-398

NORTON FLOORS

ALUNDUM TILES, TREADS AND AGGREGATES

House at New Canaan, Conn. Clark and Arms, Architects, New York City. Shingled roof stained with Cabot's Creosote Shingle and Wood Stains. Shingled walls painted with Cabot's DOUBLE-WHITE.

Making
WALL and ROOF SHINGLES
More Attractive—More Serviceable

To make wood shingles more attractive and to keep them so, architects have, for more than 50 years, used Cabot's Creosote Shingle and Wood Stains. Their soft, rich colors, which do not mask the natural beauty of the grain, are the outcome of the unique and patented Cabot "Collopaking" Process. They really preserve the shingles, for they contain more than 60% of specially refined, genuine creosote, "best wood preservative known."

NOTE: For use when uniform, solid color effects are desired, Samuel Cabot, Inc., also makes Cabot's Heavy Bodied Shingle Stains.

The coupon below will bring you full information.

Cabot's
Creosote Shingle and Wood
Stains

Specify Cabot's Insulating "Quilt" to make walls and roofs warmer in winter and cooler in summer.

Samuel Cabot Inc.
Manufacturing Chemists

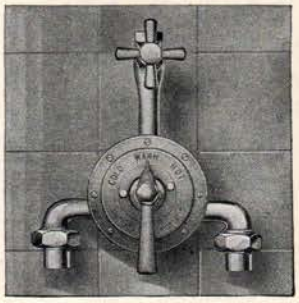
141 MILK STREET
Boston, Massachusetts

Gentlemen: Please send me your Color Card and full information on Cabot's Creosote Shingle and Wood Stains.

Name AR-2-35

Address . . . . . .

LEONARD
Thermostatic
WATER·MIXING VALVES



SERIES-T

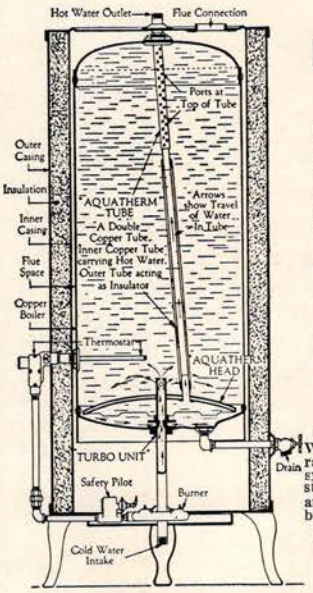
QUALITY
ECONOMY
DURABILITY

QUALITY because of fine workmanship and materials. ECONOMY because of low first cost and upkeep. DURABILITY because of simple construction. Series T Water-Mixing Valves furnished for exposed piping only. Literature describing Series T and R Valves sent on request.

LEONARD ROOKE CO. INC. PROVIDENCE R.I.

NOW!
CUSTOMER SATISFACTION IS ASSURED!

Today two remarkable new patents by Theodore W. Dahlquist now standardized in all their copper boiler equipment, have definitely advanced the true efficiency and economy of modern hot water heating.



TURBO AQUATHERM
(Underfire automatic hot water storage system)

INVESTIGATE AND BE CONVINCED

DAHLQUIST BOILERS

Covered by U. S. Patents
Nos. 15065050—1648043—1762215

Incorporate the only vital improvements made in automatic hot water storage design during the past 40 years.

These new developments by Theodore W. Dahlquist absolutely prevent all possibility of sediment accumulating on bottom of boiler. No need to drain off Dahlquist boilers every few weeks.

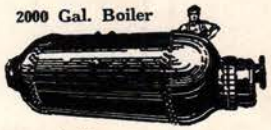
(a) The TURBO device prevents sediment from forming—assures always crystal clear hot water fit for drinking purposes—prevents costly burnouts.

(b) The AQUATHERM device reduces fuel costs 50%.

Whether you are concerned with common range boilers, automatic hot water storage systems or a commercial heavy pressure storage boiler, look into these convincing and unmatched improvements by Dahlquist before you order. Investigate now.

Write for descriptive catalogue

2000 Gal. Boiler



We make all types of copper boilers

DAHLQUIST MFG. COMPANY

70 WEST 3rd STREET **SO. BOSTON, MASS.**

Look into
THE YEARS AHEAD

Highly **RUST RESISTING**

Surface takes PAINT LACQUER ENAMEL **FINISHES**

SUPERIOR GALVANNEALED sheets have a wide use in the building field because of their permanence, freedom from maintenance expense and their ability to hold paints and other finishes. They are made from a special analysis steel with a hot dipped zinc coating bonded to the steel by a patented heat-treating process. This highly rust-resisting coating will not chip, flake or peel under severe forming, and the mat-like, etched surface takes—and holds—paint, lacquer or enamel finish. Standard samples will be sent on request and we shall gladly supply data regarding the specifications and qualities of these sheets.

THE SUPERIOR SHEET STEEL COMPANY • CANTON, OHIO

Division of Continental Steel Corporation, U. S. A.

OPEN HEARTH STEEL SHEETS

For Building Purposes

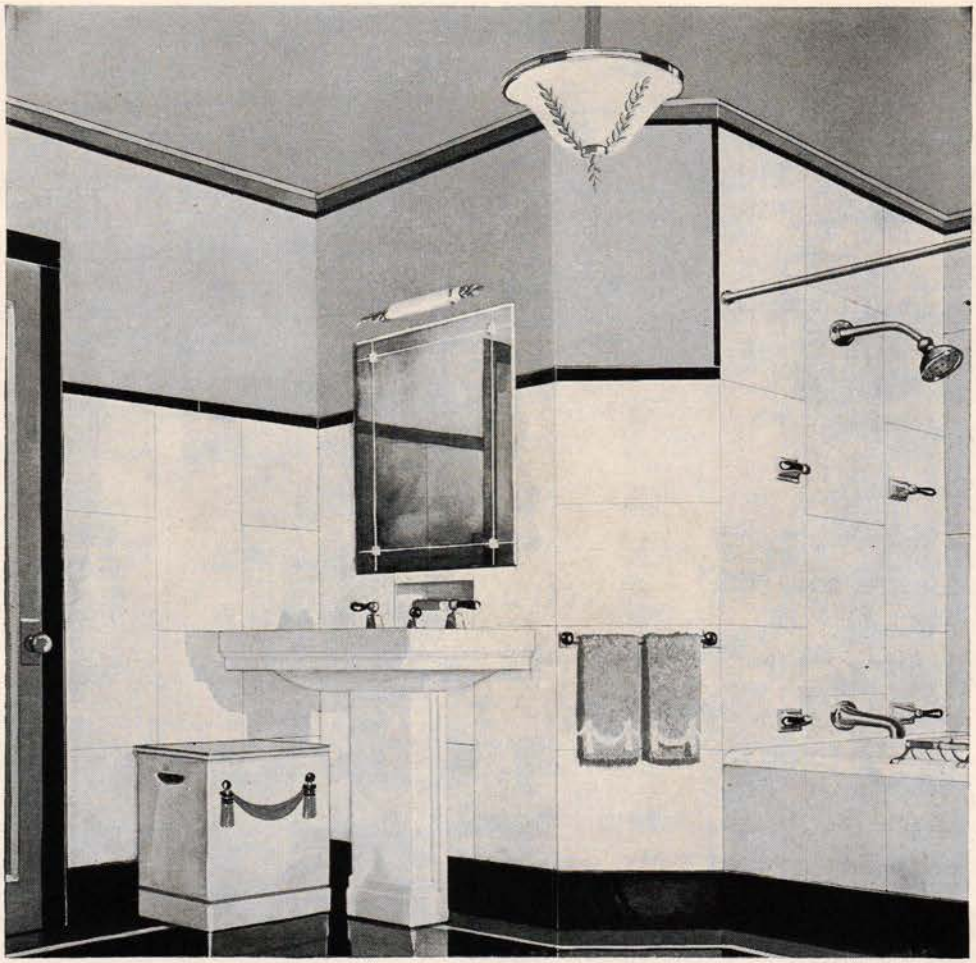
Commercial, Copper-Bearing and "Konik" Galvannealed
Super Metal
Galvanized Sheets
Blued Stove Pipe Stock
Long Ternes
Galvanized Roofing

Specify Superior Galvannealed for Marquees, Fire-Doors, Metal Sash and Frames, Air Conditioning Equipment, Toilet Partitions and other uses where high degree of rust-resistance and ability to hold finishes are important factors.

Superior Galvannealed PATENTED PROCESS

SUPERIOR
COATED SHEETS *for more permanent construction*

Carrara Walls have been used to good effect in this modern bathroom. Permanent, practical and easy to clean, Carrara adds beauty and personality to any room in which it is used. The color scheme here was Gray Carrara for the walls, Black Carrara for cap and base trim.



Let

CARRARA WALLS HELP YOU ACHIEVE DISTINGUISHED BEAUTY

in the next bathroom you design

ARCHITECTS like Carrara Structural Glass . . . because it helps them design original, beautiful rooms. And we believe that if you'd give Carrara Walls a trial in the next bathroom or kitchen which comes to your board, you'd join them in their enthusiasm for this lovely material.

You can't blame them for growing enthusiastic about Carrara. It offers them such freedom of design. It has so many good qualities. Here are just a few of them: BEAUTY—Carrara's polished reflective surfaces and soft color-tones give bathrooms and kitchens a loveliness and distinction which no other wall material can equal. VERSATILITY—Carrara is adaptable to almost endless treatments. It can be sand-blasted with designs, deep or shallow etched. It can be fluted, shaded, laminated to combine various colors. It can be set in an infinite variety of sizes, shapes, patterns, and color schemes. EASY CLEANING — Carrara asks only an occasional wiping with a damp cloth to keep it spotless. EASY INSTALLATION — Carrara is applied quickly and easily with a special flexible cement to allow for settling of the walls. PERMANENCE—Carrara Walls are just as lovely—innocent of crazing, checking, fading, absorbing odors, or losing their luster . . . thirty years from now as they are today.

We have recently prepared a booklet entitled, "Personality Bathrooms and Character Kitchens," which contains not only complete information about Carrara but many interesting pictures of typical installations. We believe you would find this book a valuable addition to your files. If you care for a copy, merely write to us and we will forward it immediately.

A PRODUCT OF

PITTSBURGH
PLATE GLASS COMPANY

2286 Grant Bldg., · Pittsburgh, Pa.

CARRARA

The modern structural glass

INDEX TO ADVERTISEMENTS

THE NAMES UNDER MANUFACTURERS' NAMES GIVE THE SECTION NUMBERS OF THEIR CATALOGS IN SWEET'S CATALOG FILE (Architectural) 1935

FLOORS THAT BRING

ENDURING SATISFACTION TO THE OWNER

—enduring pride to the architect

WHETHER you choose Northern Hard Maple Flooring for remodeling or for new construction, the soundness of your judgment will be proved again and again as years go by. Almost countless service records prove that this unique flooring material is the logical choice for homes, stores, schools, office buildings, factories, mills, warehouses and similar buildings.

Northern Hard Maple combines warm, dry, cushioning effect beneath the feet, with lasting wear and smoothness. It is resilient, tough-fibred, tight-grained—will not sliver, splinter or develop ridges even after years of strenuous service. Northern Hard Maple actually outwears stone—holds its smoothness as the years go by. Hence it is exceptionally easy to keep clean—provides no lodging spaces for the accumulation of germ-laden dust and dirt.

Northern Hard Maple, moreover, may now be treated with special penetrating, heavy duty finishes—natural or color—that seal its surface, keep out dirt, resist soil stains and are non-slippery—finishes that will not mar, scratch or flake off.

Northern Hard Maple is your insurance that your clients' flooring will give lasting satisfaction year after year. Write for grading rules and complete standard specifications for laying and finishing **MFMA** Maple, Beech and Birch Floors.

MAPLE FLOORING MANUFACTURERS ASSOCIATION
1782 McCormick Bldg., Chicago, Ill.

Let our research and service department assist you with your flooring problems. Write us.

Floor *with* Maple

The letters **MFMA** on Maple, Beech or Birch Flooring signify that the flooring is standardized and guaranteed by the Maple Flooring Manufacturers Association, whose members must attain and maintain the highest standards of manufacture and adhere to manufacturing and grading rules which economically conserve these remarkable woods. This trade-mark is for your protection. Look for it on the flooring you use. **MFMA**

Members of the Maple Flooring Manufacturers Association have contributed many thousands of dollars and years of work to standardize and improve the manufacture and grade uniformity of Northern Maple, Beech and Birch Floorings. The following manufacturers only are licensed to use the Association Trademark* MFMA. *Specify M F M A on the flooring you use.

Beck, August C. Company	Milwaukee, Wis.
Brown Dimension Company	Manistique, Mich.
Bruce, E. L. Company (Mill at Reed City, Mich.)	Memphis, Tenn.
Cobbs & Mitchell, Inc.	Cadillac, Mich.
Connor Lumber & Land Company (Sales Office, Marshfield, Wis.)	Laona, Wis.
Cummer-Diggins Company	Cadillac, Mich.
Farrin Lumber Co., M. B.	Cincinnati, Ohio
Holt Hardwood Company	Oconto, Wis.
Kerry & Hanson Flooring Co.	Grayling, Mich.
Mitchell Brothers Company	Cadillac, Mich.
Northwestern Cooperage & Lumber Co.	Gladstone, Mich.
Oval Wood Dish Corp.	Tupper Lake, N. Y.
Robbins Flooring Company	Rhinelander, Wis.
Sawyer Goodman Company	Marinette, Wis.
Stephenson Company, I.	Wells, Mich.
West Virginia Pulp & Paper Co.	Cass, W. Va.
Wells, J. W. Lumber Co.	Menominee, Mich
Wisconsin Land & Lbr. Co.	Hermansville, Mich
Yawkey-Bissell Lumber Co.	White Lake, Wis

CRANE PRODUCTS
in your specifications
insure the satisfaction of your client!

MODERN BATHROOMS demand a distinctive design in a closet! This neatly styled NEUTON Closet has a thorough cleaning wash-down jet action. Specify Crane NEUTON Closet C 11125-JA.

REMODELED KITCHENS need an inexpensive sink such as this which comes with either right or left single drainboard and with the improved RIVAL swinging faucet. Specify Crane Sink C 19230-LZ with C 19968 Cabinet.

FUEL ECONOMY is assured by several new Crane features in boiler design such as: *controlled water-travel* and, *elongated* flue passages. Specify Crane Sectional Boiler (coal or oil-fired).

● When you turn a completed building or a remodeling job over to a client, you bank your reputation on it.

To be certain the work is done *right* and with the *right materials*, write Crane products into your specifications for plumbing, heating, piping, valves and fittings.

You can find many different arrangements for a kitchen layout using the new compact Crane SUNNYSIDE Cabinet Sink. In heating, Crane "Directed Radiation" will heat rooms better, keep walls clean.

But whether you draw plans for building or remodeling, *your* work is guaranteed by the Crane trade-mark of quality!

There are 160 Crane branches in principal cities. That is assurance that your specifications will be filled promptly, *exactly*. Use Crane showrooms to assist your client in making selections. Ask a Crane representative for whatever information, specifications or assistance you require — it's his job to give it to you.

WE ARE CO-OPERATING BETTER HOUSING PROGRAM

Did You Know You Could Specify "Crane" Throughout the Building?

1. Crane Boilers for coal, oil or gas.
2. Crane Radiation, regular, concealed, "Directed."
3. Crane Kitchen Sinks, regular or cabinet type.
4. Crane Bathroom Fixtures.
5. Crane Laundry Tubs.
6. Crane Water Heaters.
7. Crane Water Softeners.
8. Crane Water Systems.
9. Crane Valves and Fittings.

NRA WE DO OUR PART

CRANE

CRANE CO., GENERAL OFFICES: 836 SOUTH MICHIGAN AVE., CHICAGO, ILLINOIS · NEW YORK: 23 WEST 44TH STREET

Branches and Sales Offices in One Hundred and Sixty Cities

VALVES, FITTINGS, FABRICATED PIPE, PUMPS, HEATING AND PLUMBING MATERIAL

For the latest developments in linoleum decorative treatments, see the Congoleum-Nairn catalog in Sweet's for 1935. Illustrated in actual colors are the newest design effects in Sealex Linoleum and Wall-Covering . . . appropriate for every type of interior . . . ideal for

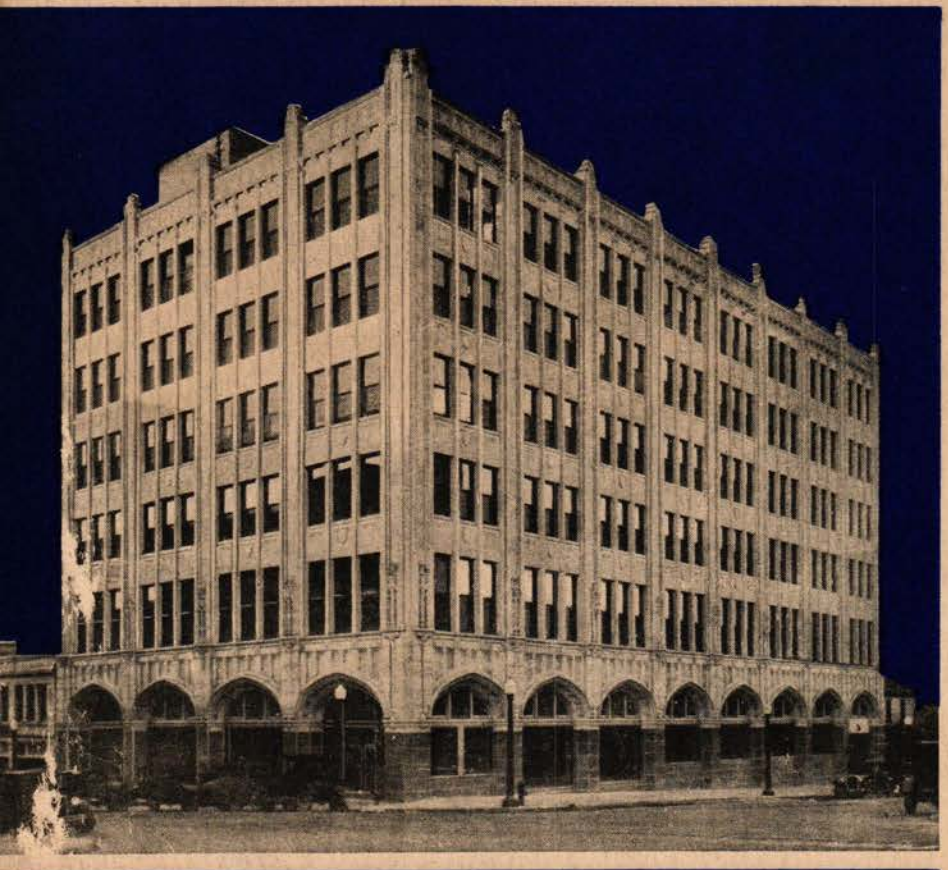
Information includes complete specifications . . . table of new linoleum gauges as established by U. S. Government standards . . . everything the architect and builder will want to know about linoleum floorings and linoleum-type wall-coverings. Architectural Service Depart-

SINCE ·1885·

COMPENSATED EFFECTIVE TEMPERATURE CONTROL FOR AIR CONDITIONING

Cooling Comfort Automatically Determined by Outside and Inside Temperature and Inside Humidity

. . . . . with the MODUTROL SYSTEM



OKLAHOMA GAS & ELECTRIC CO.
OKLAHOMA CITY, OKLAHOMA

AIR CONDITIONING systems give best results to bot owners and occupants when indoor temperature an humidity are maintained automatically in relation to outsid temperature. Indoor conditions must be governed in accord ance with outside temperature to avoid the physical shock an discomfort of abrupt changes . . . Further, indoor comfort i dependent upon the proper relation between indoor tempe ature and humidity . . . The Modutrol System automaticall measures these Air Conditioning factors and controls indoo humidity and temperature in the correct proportion to produc maximum comfort at minimum operating cost . . . This Effectiv Temperature Control is available through the accurate an dependable electrical operation of the Modutrol System. It ma be applied to any air conditioning installation . . . Minneapoli Honeywell Regulator Co., 2804 Fourth Ave. So., Minneapoli Minnesota Branch and distributing offices in all principal citie

The Modutrol System

MINNEAPOLIS