

architectural forum

January 1953

New thinking on hotels

Gardner Dailey's SurfRider uses good design and paint to make the year's cheapest big hotel both luxurious and highly profitable (p. 98)
Ed Stone's Para San Salvador indicates what changes he might make in his pace-setting Panama design (p. 106) . . .
Welton Becket's Beverly Hilton adapts the new resort type to a big city (p. 114) . . .
Polevitzky develops new lobby and guest-room plans for seaside Miami hotel (p. 112)

Japan's postwar buildings

Western-design clichés invade a traditionally influential architecture (p. 138)

Building engineering

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Elevators without operators . . . Luminous ceiling with directional down-lighting . . .
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Two small shops

How good architecture helps sell shoes and books (p. 136)

Saarinen's new geometry

A cylindrical chapel and domed auditorium for the MIT campus (below and p. 126)

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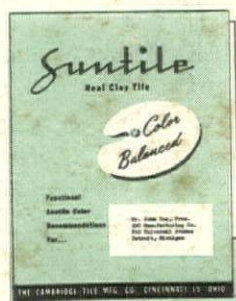
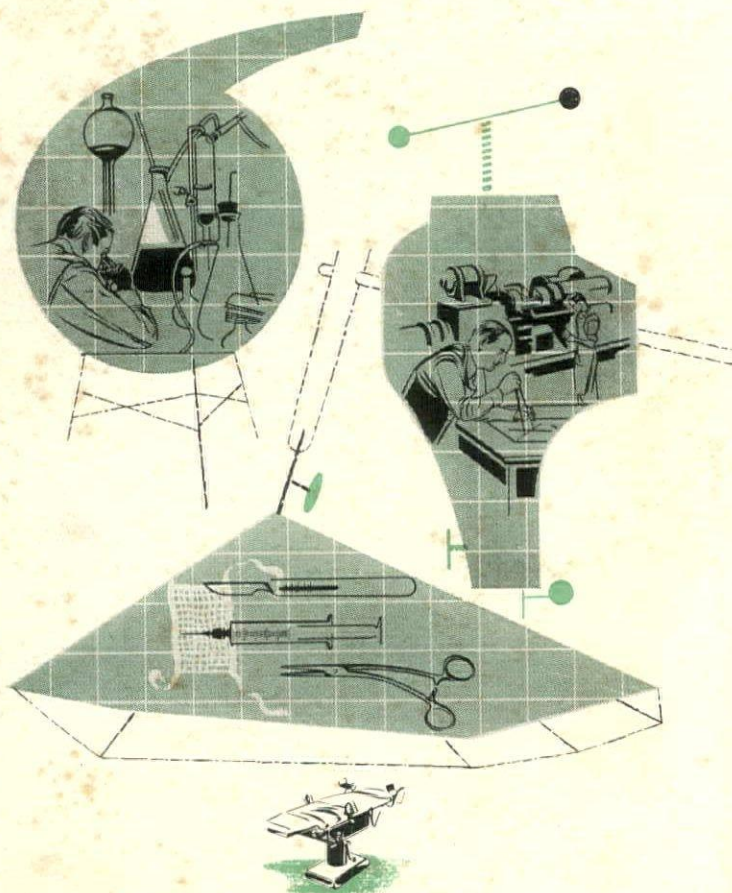
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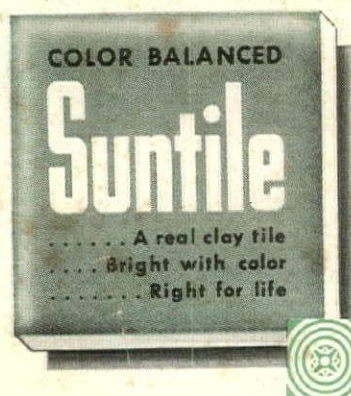
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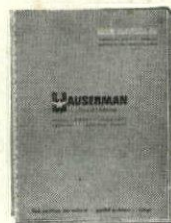
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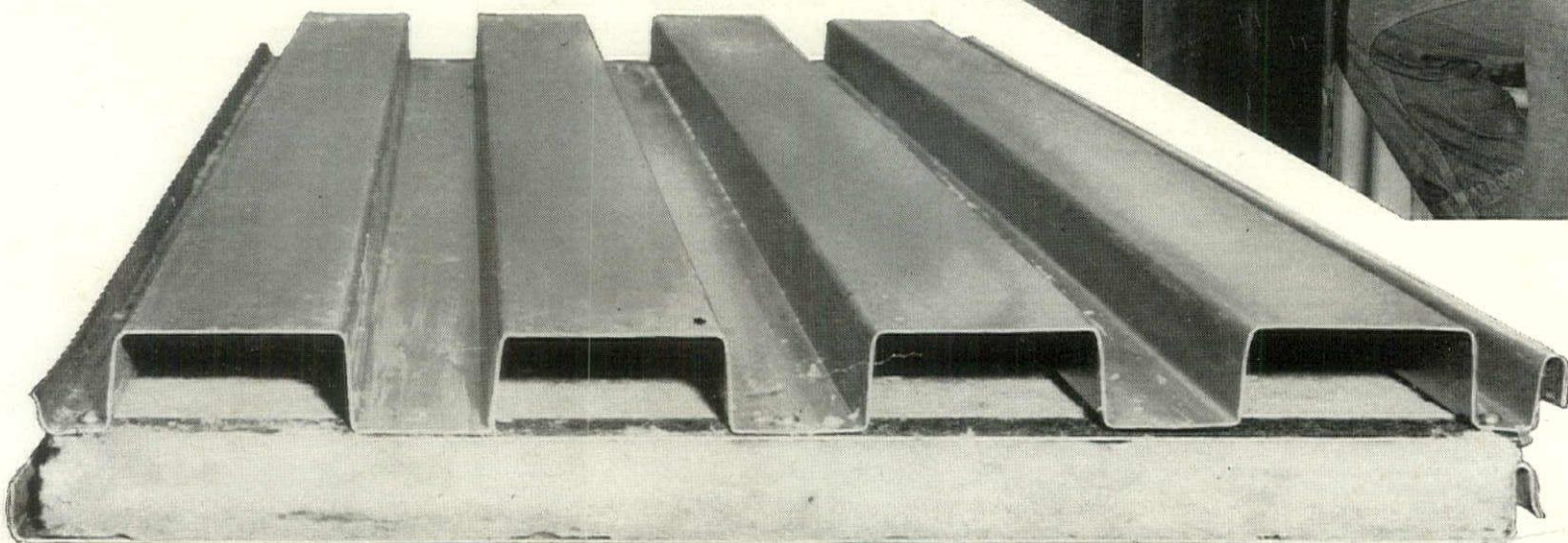
Insulated panels of U·S·S 17 (Type 430)



WORKING UNDER ADVERSE WEATHER CONDITIONS, a crew of four installed 4005 square feet of insulated Stainless Steel panels on this building in less than eight working days. The panels were manufactured by H. H. Robertson Co., Pittsburgh, Pa.; installed by R. A. Steelman Co., Trenton, N. J.; architects were Walter Kidde Constructors, Inc., New York.

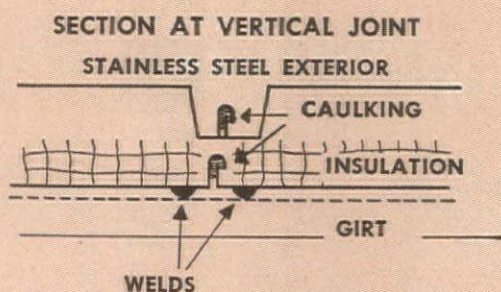
PANELS were installed by spot welding to the structural steel framework. Their light weight makes handling by a minimum crew possible.

CROSS SECTION of a complete panel for the fire station at United States Steel's Fairless Works shows the formed Stainless Steel exterior sheet, 1 1/4" of insulation and the coated steel interior.

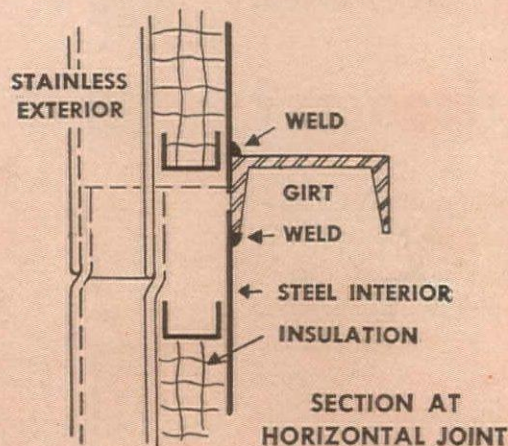


Stainless Steel mean fast, low-cost construction at Fairless Works

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THESE DETAILS of panel cross sections show methods of making horizontal joint (below) and vertical joint (above). Such methods of joining, combined with the low "U" factor designed into these panels, produce an exceptionally well insulated building.



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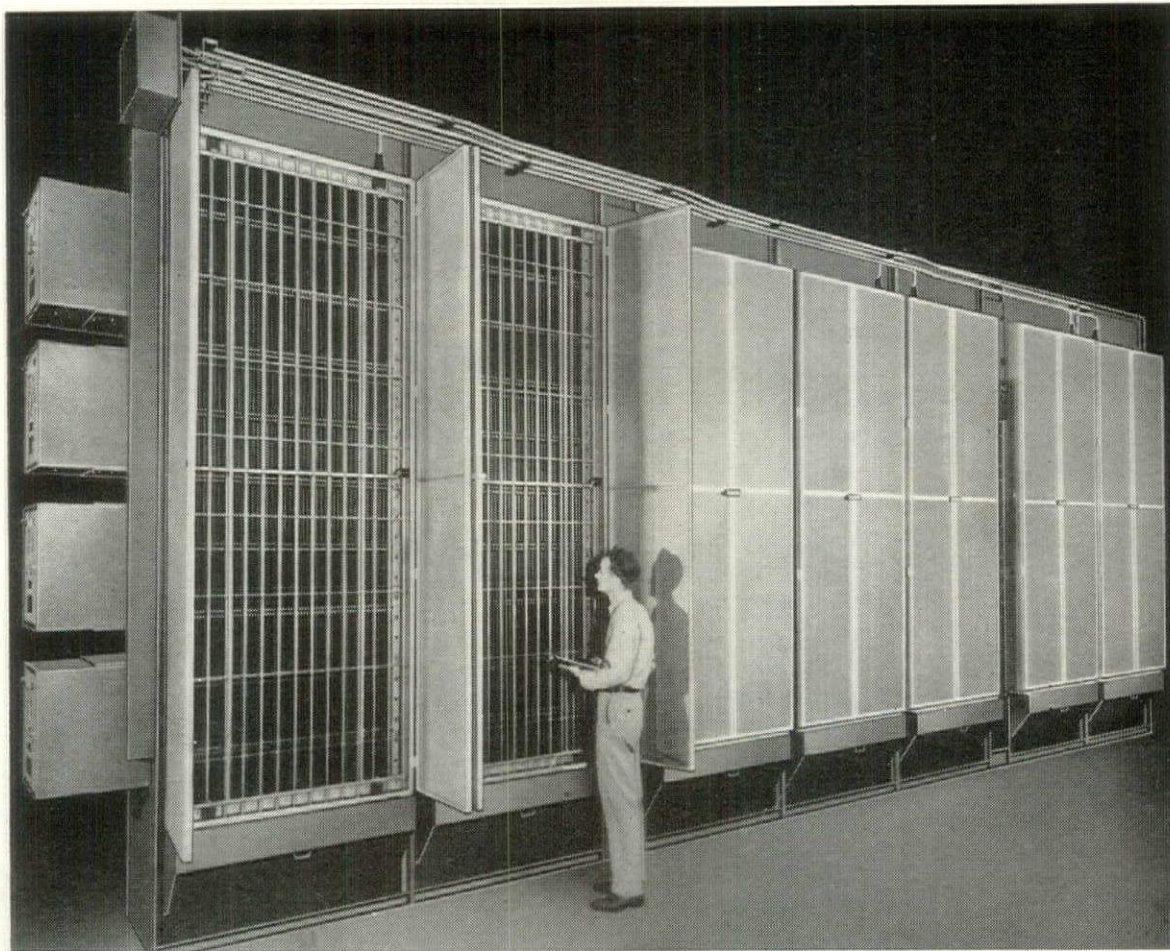
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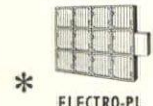


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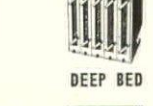
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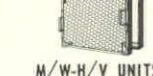
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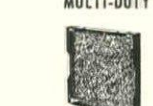
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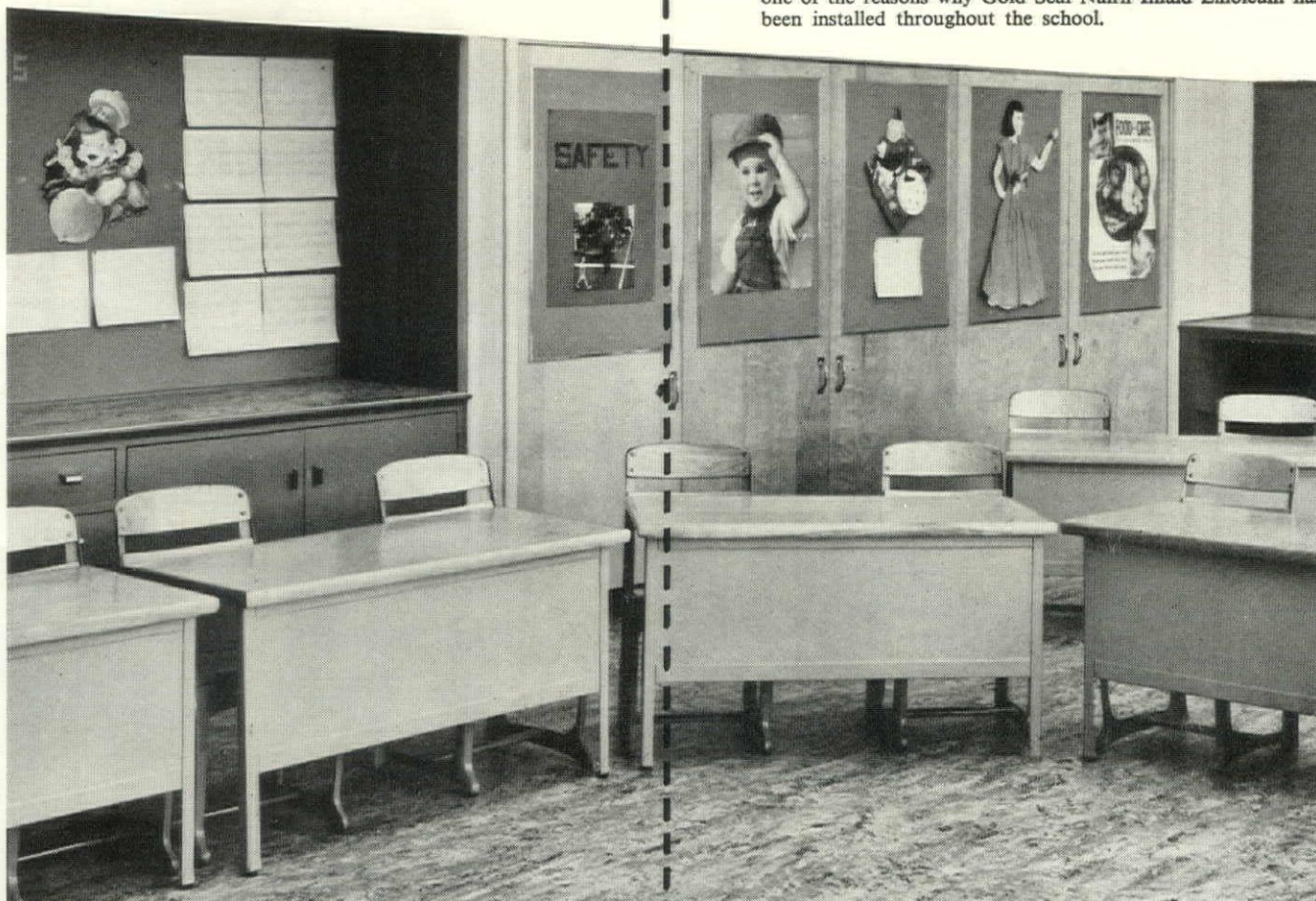
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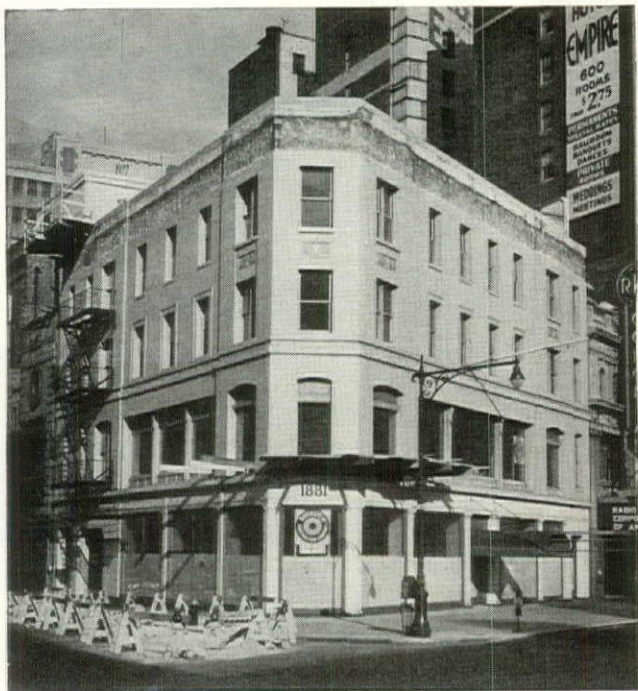
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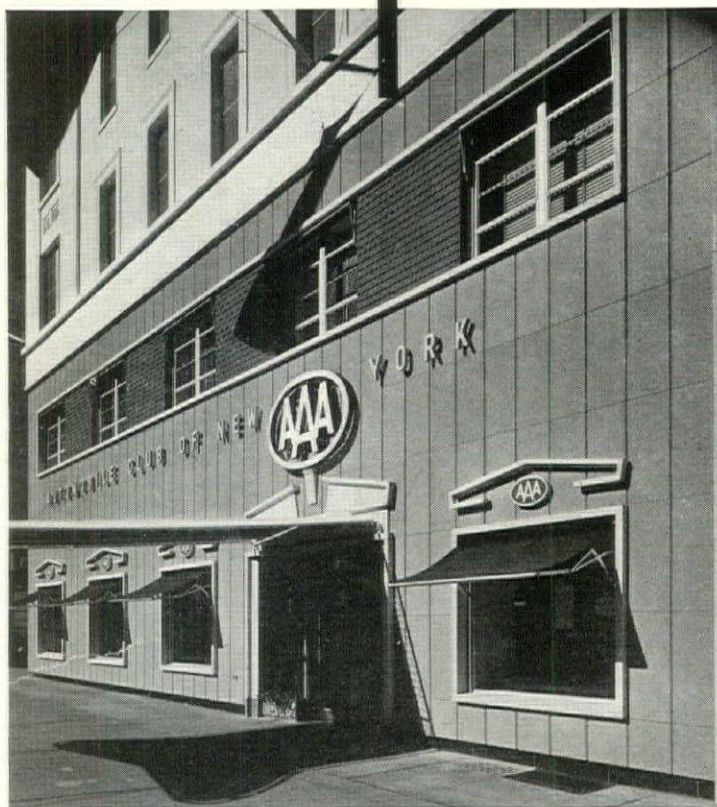
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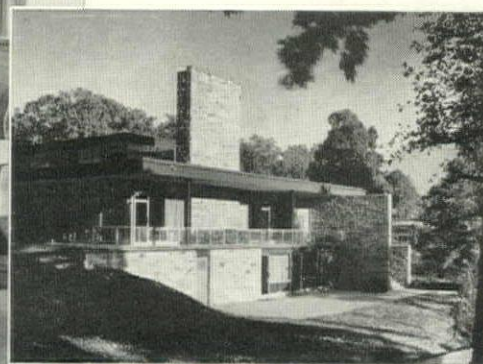
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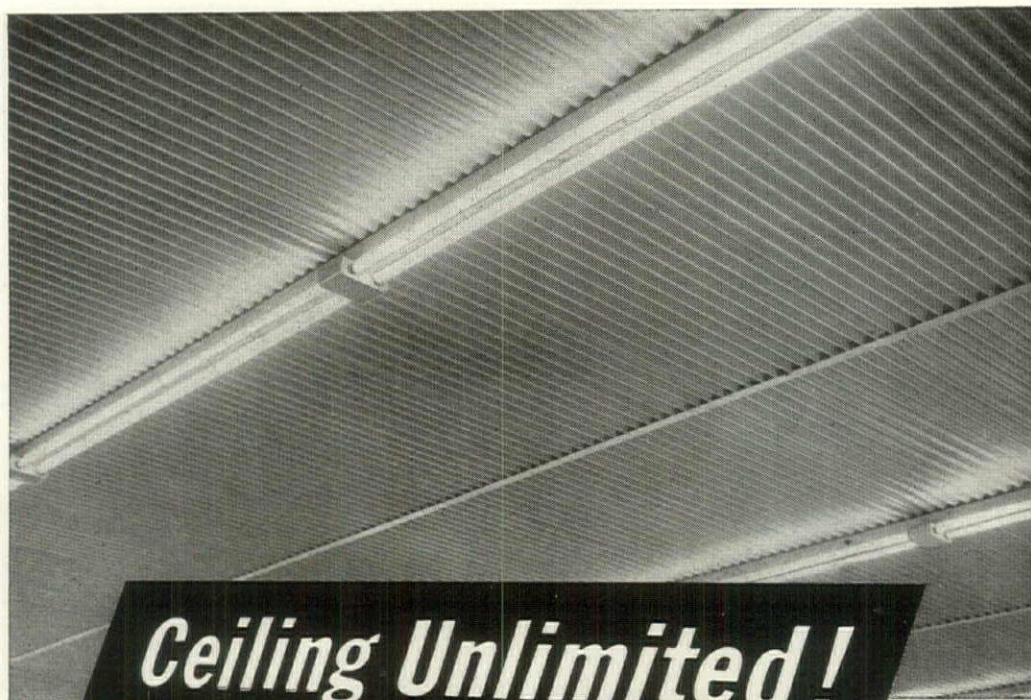
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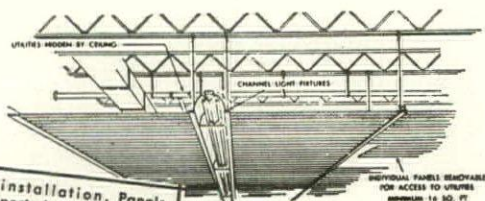
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Adaptability to any air-conditioning, including plenum chamber above panels.

FRANCHISED APPLICATORS

Contact nearest listed for engineering service, free estimates.

ALABAMA: Badham Insulation, Birmingham; Stokes Interiors, Mobile.

CALIFORNIA: Pacific Acoustics, Los Angeles; Sound Reduction, Oakland.

COLORADO: Danco, Inc., Denver.

CONNECTICUT: Wilson Construction Co., Hartford.

DISTRICT OF COLUMBIA: T. M. Woodall, Inc., Takoma Park.

FLORIDA: Standard Insulation, Fort Lauderdale; Cliff Haller, Orlando.

GEORGIA: Lewis & Co., Atlanta.

ILLINOIS: Anning-Johnson Co., Chicago.

INDIANA: Anning-Johnson Co., Indianapolis.

IOWA: Anning-Johnson Co., Des Moines.

KENTUCKY: Braun Acoustical Co., Louisville.

LOUISIANA: Walker Lloyd, Baton Rouge.

MAINE: Edw. F. Byrnes Co., Portland.

MARYLAND: Limbach Co., Hagerstown.

MASSACHUSETTS: Edw. F. Byrnes Co., Boston.

MICHIGAN: Nichols Co., Detroit; Harold R. Sobie Co., Grand Rapids.

MINNESOTA: Anning-Johnson Co., Minneapolis.

MISSISSIPPI: Stokes Interiors, Jackson.

MISSOURI: Hamilton Co., St. Louis; Stokes Co., Kansas City.

NEW JERSEY: Woosulate, East Orange; W. M. Moyer Co., Quakertown.

NEW MEXICO: Welch-Erwin, Albuquerque.

NEW YORK: Albany Acoustical Corp., Albany; A. P. Madden Co., Syracuse; Davis-Fetch, Buffalo, Rochester, Jamestown; Wm. J. Scully Corp., New York.

N. & S. CAROLINA: Bonitz Insulation, Greensboro, Columbia.

OHIO: Gellin Co., Cleveland; J. H. Archibald Co., Cincinnati.

OKLAHOMA: Ball Dist. & Eng. Co., Tulsa, Oklahoma City.

OREGON: Steward Griffith Co., Portland.

PENNSYLVANIA: Limbach Co., Pittsburgh; W. M. Moyer Co., Philadelphia.

TENNESSEE: Alexander Co., Memphis; John Beretta Co., Knoxville; Workman Co., Nashville.

TEXAS: C. F. Schilling Co., Houston; Gen'l Supply Co., San Antonio; Acoustic Builders Co., Dallas; Welch-Erwin, El Paso.

VIRGINIA: McL. T. O'Ferrell & Co., Richmond.

WASHINGTON: G. D. Bradley Co., Seattle.

WISCONSIN: DeGelleke Co., Milwaukee.

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AUTOTRONIC[®]

Without Attendant
ELEVATORING

SAVES UP TO \$7,000 A CAR

INCREASES A BUILDING'S PRESTIGE



Passengers now press the floor buttons. They like the idea.



Autotronic—WITHOUT ATTENDANT—Elevating operates the cars as a coordinated group. Its electronic equipment makes car operation completely automatic.

Operators are not needed to initiate door closing or to press floor buttons for passengers. The operating panel has been simplified. Passengers now press the buttons. They like the idea. Tenants even push buttons for each other. They're friendlier. Employees like self-service elevators. Especially, for frequent interfloor trips. Word of this widespread satisfaction gets around town. It increases a building's prestige.

In no instance has a building switched back to attendants.

Autotronic—WITHOUT ATTENDANT—Elevating has been handling heavy traffic for more than two years. It offers the only substantial saving in building operation that's available today. It saves up to \$7,000 a car, each year. Why not visit a new or modernized installation? Ask any of our 266 offices for details.

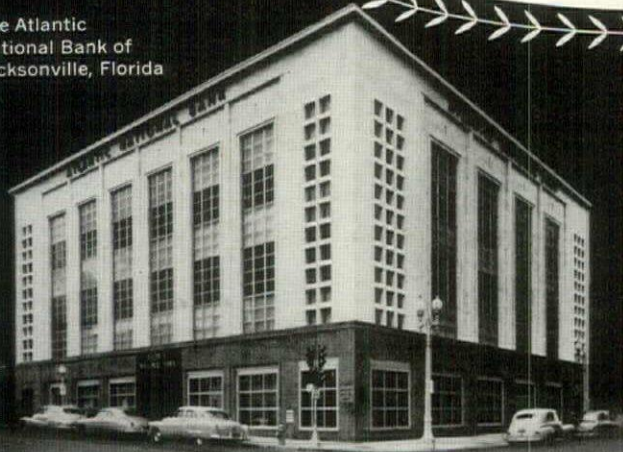
Otis Elevator Company, 260 11th Avenue, New York 1, N. Y.

BETTER ELEVATORING IS THE BUSINESS OF OTIS

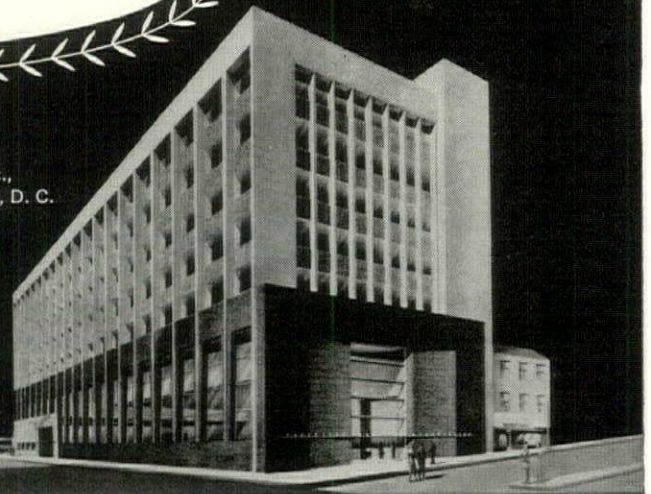
THEY SPECIALIZE IN KNOWING what banks need

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OF AMERICA

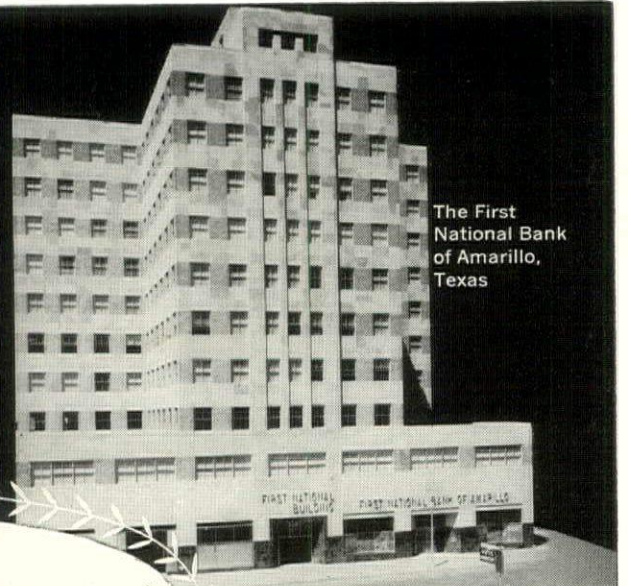
The Atlantic
National Bank of
Jacksonville, Florida



The Perpetual
Building Assoc.,
of Washington, D. C.



The First
National Bank
of Amarillo,
Texas



ALL THESE BANKS HAVE ROBERTSON Q-FLOORS

Who knows better what banks need than Bank Building and Equipment Corporation? Bank design is their existence. Here are three of their latest banks, designed to the measure of their different owners with one vital feature the same in each . . .

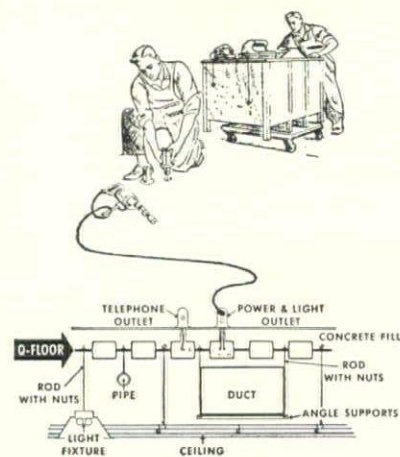
They all have Robertson Q-Floors.

The lightweight steel, load-carrying subfloors save other materials. The fast Q-Floor installation saves time. The earlier completion date reduces the cost of financing and starts the income sooner.

By using the steel cells as raceways, the floors provide electrical availability at any six-inch area. An electrician drills a small hole, establishes an outlet—in a matter of minutes. This electrical feature of Q-Floors avoids the necessity of planning outlets and partitions in advance of occupancy. It also protects the building forever from electrical obsolescence.

More than thirty years ago, banks were the pioneers in demanding "in-the-floor" wiring to handle the then new electrical bookkeeping equipment of the 1920's. That demand was met then by in-the-floor duct. Today banks need even greater electrical distribution in-the-floor for the many new electronic business machines that every up-to-the-minute bank must have, and structural Q-Floor with its complete system of oversize raceways is today's answer . . . for 1953's requirements and for the future's.

Be sure you have our latest Q-Floor literature. Write



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Offices in ALL Principal Cities
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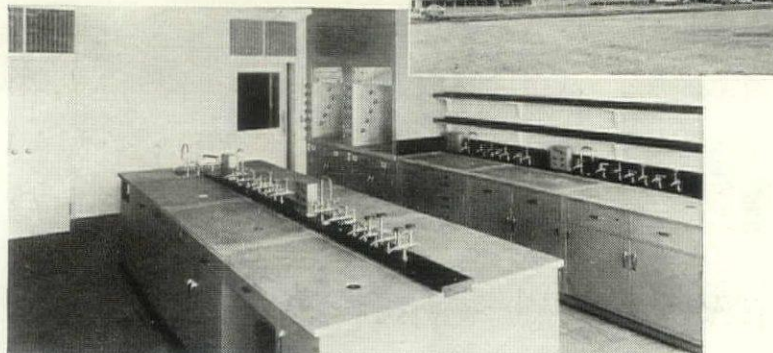
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It's **ALBERENE** Table Tops, Sinks, and Hoods

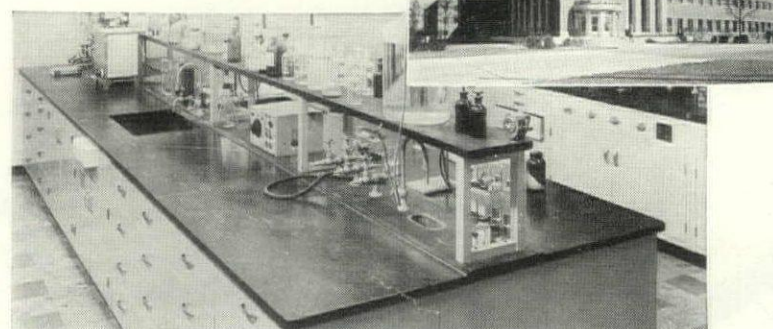
Corn Products Refining Company—Argo, Illinois. Architects—Schmidt, Garden & Erikson.



Esso Research Center of the Standard Oil Development Company at Linden, N. J. Architects—Voorhees, Walker, Foley & Smith.



Sinclair Refining Company's new research center at Harvey, Illinois—design and construction by the Austin Company.



You'll find most of the newest and finest industrial research centers in the country are equipped with table tops, sinks, and hoods of Alberene Stone. Because Alberene Stone is a natural material that is highly corrosion-resistant . . . durable . . . and attractive. And . . . because Alberene Stone is easy to handle—easy to drill and cut. Alberene Stone's weather- and corrosion-resistant properties make it ideal, too, for window sills and stools. Our engineers are familiar with the latest developments in laboratory construction. For technical information, write us today.

List of typical modern research centers, designed by many of the country's top architects, where laboratory equipment is of Alberene Stone . . .

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Bell Telephone Laboratories, Inc.—Murray Hill, N. J.
Voorhees, Walker, Foley & Smith
Best Foods, Inc.—Bayonne, N. J.
Lockwood Greene Engineers, Inc.
Carbide & Carbon Chemicals Div. of
Union Carbide & Carbon Corp.—Charleston, W. Va.
H. K. Ferguson & Co.
Celanese Corp. of America—Summit, N. J.
Wigton Abbott Corp.
Corn Products Refining Co.—Argo, Ill.
Schmidt, Garden & Erikson
E. I. du Pont de Nemours & Co.—du Pont
Research Center—Wilmington, Delaware
Voorhees, Walker, Foley & Smith
Firestone Tire & Rubber Co.—Akron, Ohio
Voorhees, Walker, Foley & Smith
Flintkote Company—Whippany, N. J.
Lacy, Atherton, Wilson & Davis
General Electric Co.—Schenectady, N. Y.
Voorhees, Walker, Foley & Smith
Gulf Research & Development Corp.—Harmarville, Pa.
Hoffman-La Roche Inc.—Nutley, N. J. Felheimer & Wagner
Johnson & Johnson—New Brunswick, N. J.
S. C. Johnson & Son, Inc.—Racine, Wisc.
Frank Lloyd Wright
Liggett & Myers Tobacco Co.—Durham, N. C.
Lockwood Greene Engineers, Inc.
Merck & Co., Inc.—Rahway, N. J.
Ortho Research Foundation—Raritan, N. J.
Shreve, Lamb & Harmon
Parke, Davis & Co.—Detroit, Mich. H. K. Ferguson & Co.
Chas. Pfizer & Co., Inc.—Brooklyn, N. Y.
Sinclair Refining Co.—Harvey, Ill. Austin Co.
Socony-Vacuum Oil Co., Inc.—Paulsboro, N. J.
Frederick G. Frost
Solvay Process Co.—Syracuse, N. Y. H. K. Ferguson & Co.
E. R. Squibb & Co.—New Brunswick, N. J.
Standard Oil Development Co.—Linden, N. J.
Voorhees, Walker, Foley & Smith
Tennessee Eastman Corp.—Kingsport, Tenn.
Upjohn Company—Kalamazoo, Mich. Austin Co.
William R. Warner & Co., Inc.—New York City
Felheimer & Wagner
Winthrop Chemical Co., Inc.—East Greenbush, N. Y.
Thompson & Barnum

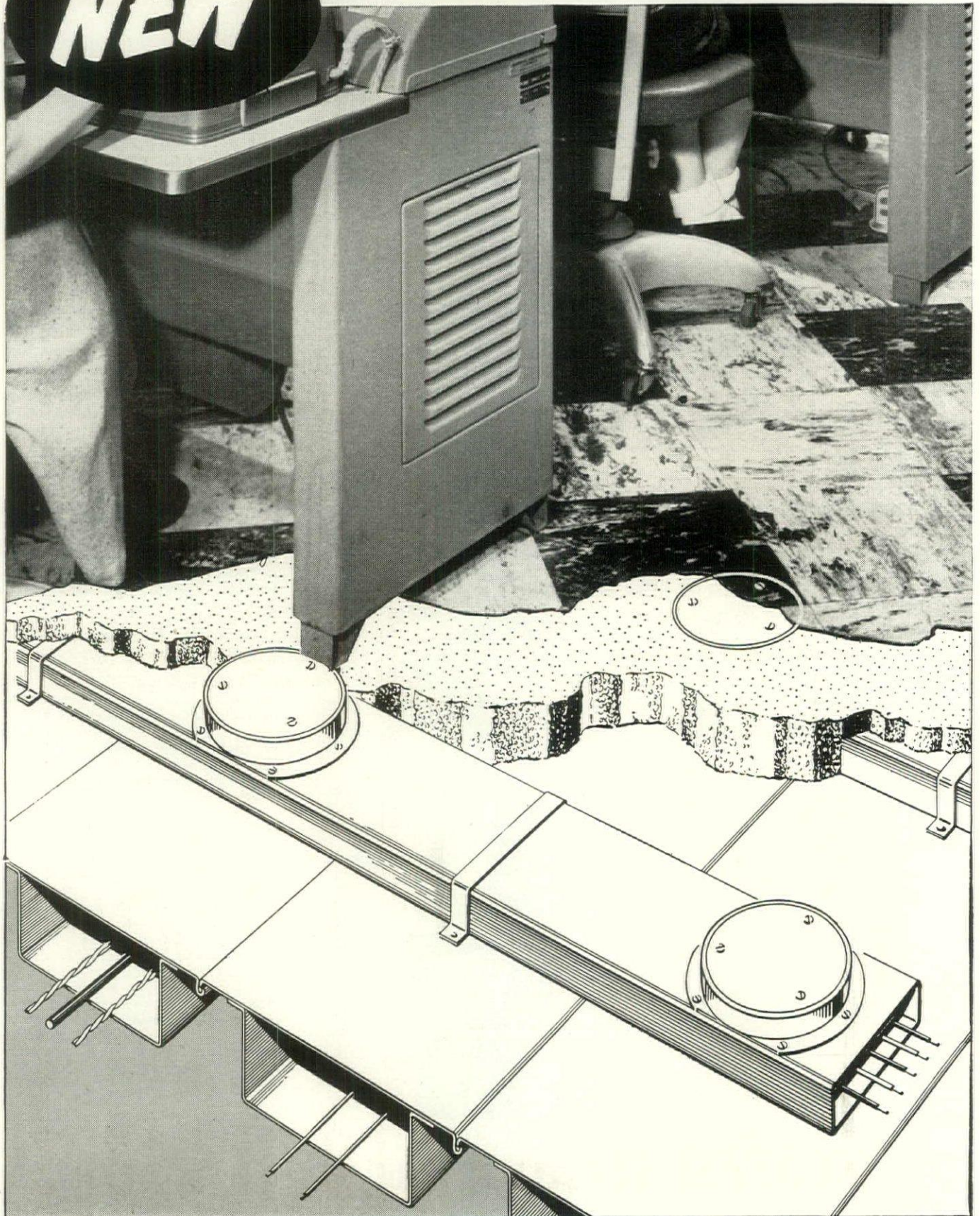
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NEW



ELECTRIFLOOR !

Two great names combine to produce a great new product

Carries live and dead loads at lower cost!

Provides electrical outlets in any square foot of floor area . . . any time!

Fenestra*—a leading manufacturer of metal building panels, and Nepco (National Electric Products Co.)—a leading manufacturer of electrical wiring equipment, pooled their experience and their products to give you a great new building facility . . . Fenestra-Nepco Electrifyfloor.

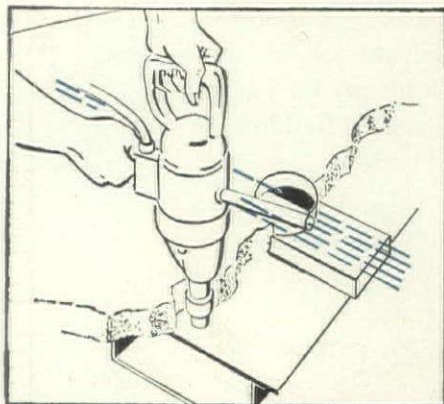
You slash the cost of your foundation and your structural steel. Because this floor is formed by long-span steel, cellular panels coupling great strength with light weight . . . engineered to carry your physical load at the lowest possible cost.

Your building rises fast from its foundation, because your floors go in as your structural steel frame goes up, forming a working platform for other trades.

Your finished building will never be electrically obsolete, for the cells of this cellular steel subfloor act as raceways for wires fed in from the header ducts on the surface of the subfloor.

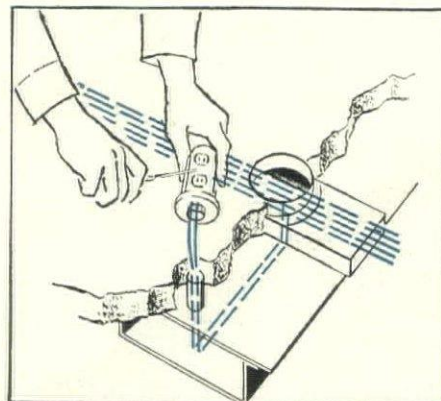
Your client can have electrical outlets in any square foot of floor . . . any time . . . for the life of the building. He can change them as his electrical needs change . . . quickly, inexpensively . . . without disrupting his business. He can move partitions . . . change his whole office layout without costly electrical alterations.

Electrifyfloor has been fully tested and approved by Underwriters' Laboratories, Inc. Please write for complete details. Have the facts at your finger tips for the job on your boards right now. Let us send you the facts on the City-County Building in Detroit, an Electrifyfloor installation. Write Detroit Steel Products Company, Dept. MB-1, 2296 East Grand Blvd., Detroit 11, Michigan. *Trademark

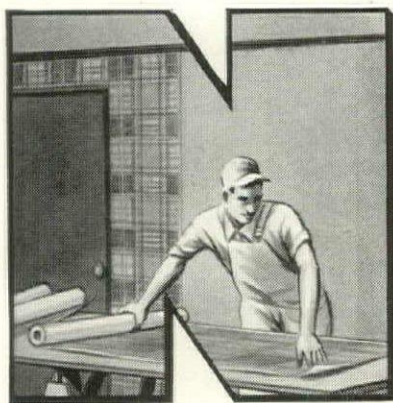


← A hole is simply drilled down through the finished floor into the cellular sub-floor. Floor outlet tubing is installed. Cover is removed from handhole of cross-over duct and wires fed down and wires fed through raceway to the drilled hole.

Wires are pulled up through drilled hole and outlet installed. Floor is never torn up, business goes on as usual. You have electrical availability in any square foot of floor . . . any time. As many as 15 outlets in the area occupied by a single desk. ➤



Fenestra nepco **ELECTRIFLOORS**



**repeat
performances with**



... Roddiscraft Hardwood Plywood Paneling

A RODDISCRAFT finished wall is a single performance—once installed, it's there to stay—little or no maintenance required—beauty that grows with age.

Compare the economy of single performance paneling with the periodic repeat performances required with other types of walls. Painting and papering every few years soon add up to far more than the original cost of plywood paneling.

Yes—it's the elimination of repeat performances that today make the one job installation of a plywood wall the best buy for economy, beauty and utility—and a Roddiscraft wall will last as long as the building.

Roddiscraft hardwood plywood is a craftsman's product—quality built from veneer selection to final sanding. Available in a wide variety of domestic and foreign woods.

Be sure of the best—specify Roddiscraft—

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Calif. • Louisville 10, Ky. • Marshfield, Wis. • Miami 38, Fla.
Milwaukee 8, Wis. • New Hyde Park, L. I., N. Y. • New York
55, N. Y. • Port Newark 5, N. J. • Philadelphia 34, Pa.
St. Louis 16, Mo. • San Antonio 6, Texas • San Francisco 24,
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Roddiscraft

RODDIS PLYWOOD CORPORATION
Marshfield, Wisconsin



Who said only cucumbers are cool?



More and more of the country's foremost frozen food producers depend on Worthington refrigeration for the fast freezing which insures that fresh-picked flavor.

And more and more food outlets of every size protect produce . . . keep customers contented regardless of the weather . . . with Worthington air conditioning.

For any job—large or small—when you specify "Worthington" for air conditioning or refrigeration you specify the equipment your client links with the "first" names in every field.

No other manufacturer makes *so complete* a line. A Worthington system is all Worthington-made . . . not just Worthington-assembled . . . assuring perfectly balanced operation and unit responsibility.

Worthington Corporation, Air Conditioning and Refrigeration Division, Harrison, New Jersey.

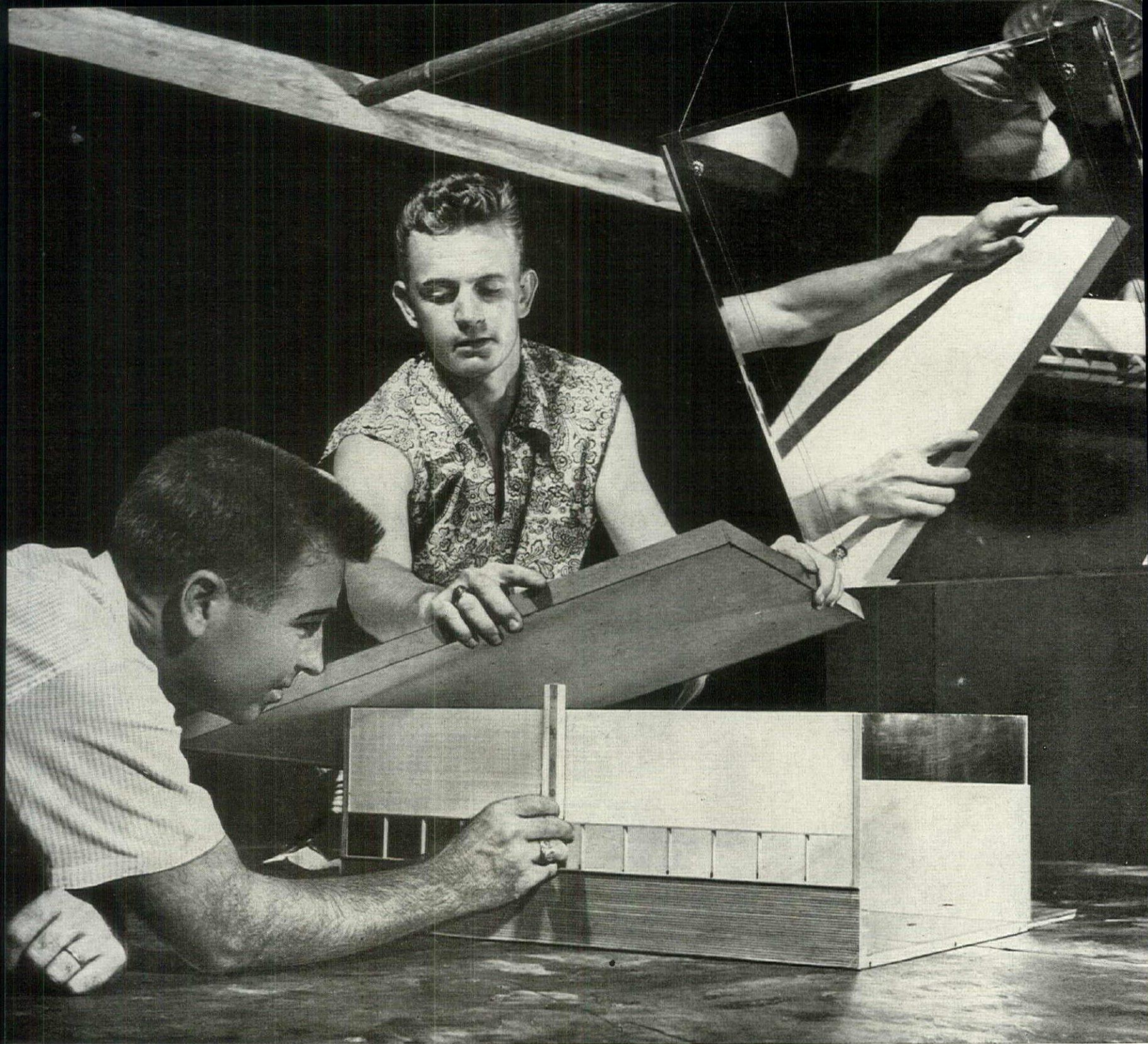
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WORTHINGTON



AIR CONDITIONING AND REFRIGERATION



Ronald Chatham photo

With special test equipment, velocity of air flow within model is accurately measured.

Measuring man-made breeze to bring better air to school children

Room model and wind tunnel tests show what kinds of fenestration systems provide the best ventilation.

Insulux Glass Block Division
Dept. MB-1, Box 1035
Kimble Glass Company, Toledo 1, Ohio

- ☐ Please send me the report on ventilating glass block panels.
☐ Send the booklet "Better Light for our Children"

Name _____
Address _____
City _____ Zone _____ State _____

WITH MORE AND MORE schools using Insulux Glass Block® for better daylight distribution, Kimble Glass Company wanted to be able to recommend ventilation practices that would keep pace with this modern method of daylight control.

The Texas Engineering Experiment Station tested a wide variety of schoolroom designs to determine the best meth-

ods of ventilation when using an Insulux Fenestration System.

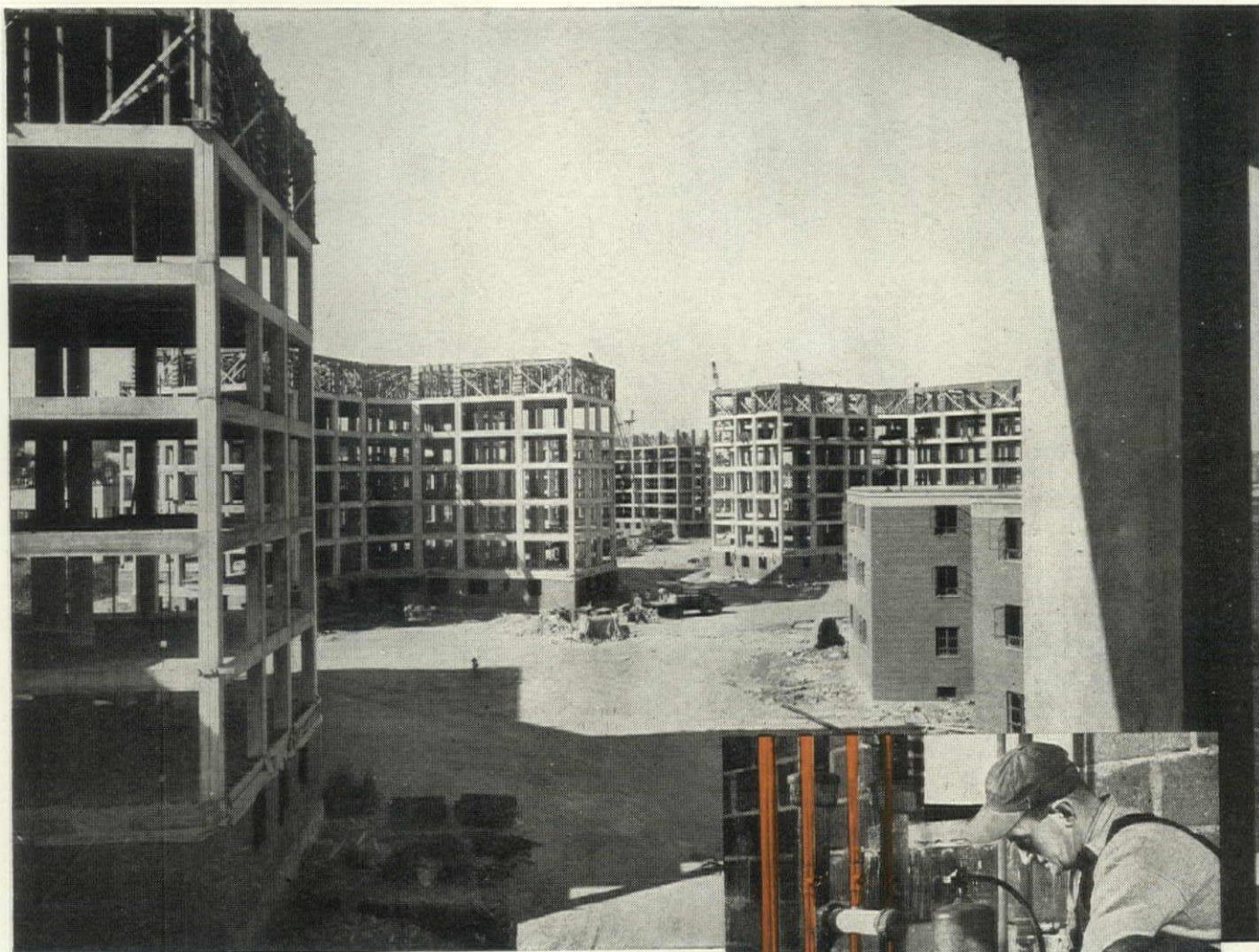
If schoolroom ventilation is a problem that concerns you, you'll want a copy of the test report. Just mail the coupon. And, if you don't yet have a copy of "Better Light for our Children"—the 24-page booklet that describes the advances being made in the field of schoolroom daylighting—just check that box, too.

KIMBLE GLASS COMPANY

Toledo 1, Ohio



Subsidiary of Owens-Illinois Glass Company



NEWARK HOUSING AUTHORITY PROJECT consists of nine 8-story, three 3-story apartment buildings, and one administration building. Most of the copper used in plumbing is Anaconda. ARCHITECTS: KRUGER AND FAVA. PLUMBING CONTRACTOR: ASTROVE PLUMBING AND HEATING CORPORATION.



How little savings can become BIG

"Here at the Newark Housing Authority Project, copper tube economy pays off in a big way."

When Wesley Fredericks says this, he knows what he's talking about. He's the plumbing foreman on this project of 630 apartments on 12 acres of land near the Passaic River. "Wes" really put his finger on one of the big advantages of copper tubing.

Easy bending on the job is just another reason why copper is so popular for so many uses in building construction. Copper is ideal for both heating and plumbing lines. At the Newark project 46,811 feet, or over 14 tons, of $\frac{3}{8}$ " to 3" ANACONDA Copper Tubing were used in the plumbing system. Type L (hard) was

specified for all interior plumbing lines; Type K for the service lines from the main through the foundations in each building.

Copper tubing—preferred by owner, architect and builder for permanence and quality — saves maintenance through the years. It also offers immediate savings in installation. Solder-type joints, lighter weight, easier handling save time and labor. It's always a good policy to investigate the use of copper first—for quality, cost and availability. See your regular supplier for all ANACONDA Products. The American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Limited, New Toronto, Ontario. 5213

modern plumbing calls for **ANACONDA[®]** copper tubes



How Many Elevator Operators Will This Office Building Need?

Westinghouse pioneered the operation of a bank of passenger elevators without operators in Detroit's Fisher Building in 1928.

Over the years, Westinghouse engineers have continued to improve elevator operation. Today, they have applied the operator-less principle to Selectomatic—the Westinghouse system that puts elevator cars where you want them, when you want them.

This combination of Selectomatic and operator-less service is being used successfully to control groups of elevators in heavy-traffic buildings occupied primarily by one organization. A careful analysis will show whether it can be applied to your particular needs. Our engineers are ready to study your individual requirements . . . to help you cut operating costs, and save money over the long haul.

Whether you're modernizing or planning a new building, there's a full line of Westinghouse elevator equipment to handle your vertical traffic. We invite you to test-ride our equipment. Call our local office for the name of a nearby installation. Or write Westinghouse Elevator Division, Dept F1, Jersey City, New Jersey.

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ELEVATORS

PASSENGER ELEVATORS • FREIGHT ELEVATORS • ELECTRIC STAIRWAYS • PROTECTIVE MAINTENANCE AND SERVICE

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This floor supports Cadillacs, Oldsmobiles and a Macomber belief that the owner of a building is interested in BENEFITS—not claims.

Put the Architect, the Builder and the Owner in a position to talk about this modern Sales and Service unit and never will you hear a more enthusiastic endorsement of Macomber engineering.

There isn't an organization in the construction business who wouldn't be proud of a floor like this.

Floor and roof systems designed from our Longspan Catalog information will put your organization on the BENEFIT end of a job well done. Write for it.

THE BEST FLOOR MONEY CAN BUY



STANDARDIZED STEEL BUILDING PRODUCTS

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Everything

**YOU COULD ASK FOR IN AN
AUTOMATIC DOOR CONTROL**

DOR-O-MATIC

INVISIBLE DOR-MAN



Completely Automatic

The very instant a person steps on the specially designed carpet which leads through the doorway, the Invisible Dor-Man goes into action . . . opens the door quietly, quickly, automatically.

Completely Concealed

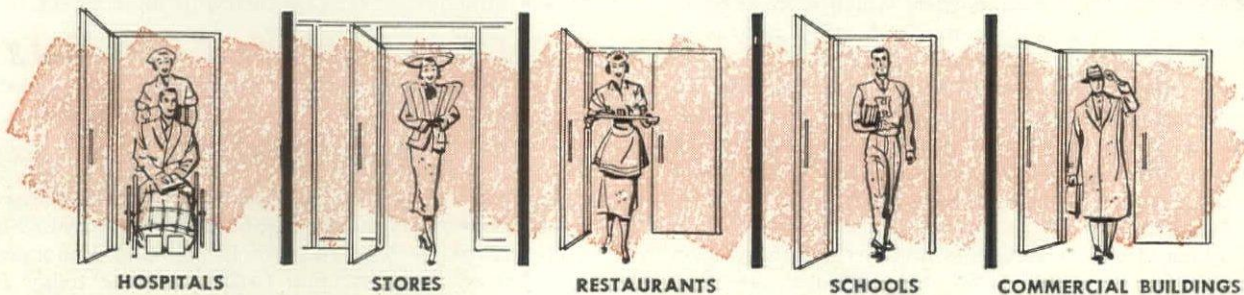
The Invisible Dor-Man can be applied to any standard stock door (glass, wood, or metal). No alterations are required—no devices in the head jamb. The operating units remain entirely "invisible."

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The Invisible Dor-Man can be installed for perfectly silent service. Not a whisper is heard as the door glides open and closed . . . mute testimony to quality design and construction.

**all this—and
OUTSTANDING ECONOMY
too**

THE IDEAL DOOR CONTROL FOR EVERY TYPE OF DOOR—EVERY TYPE OF BUILDING



Dor-O-Matic concealed door controls for manual operation are available in sixteen models.

Send for your
copy of the
Invisible Dor-Man
descriptive folder



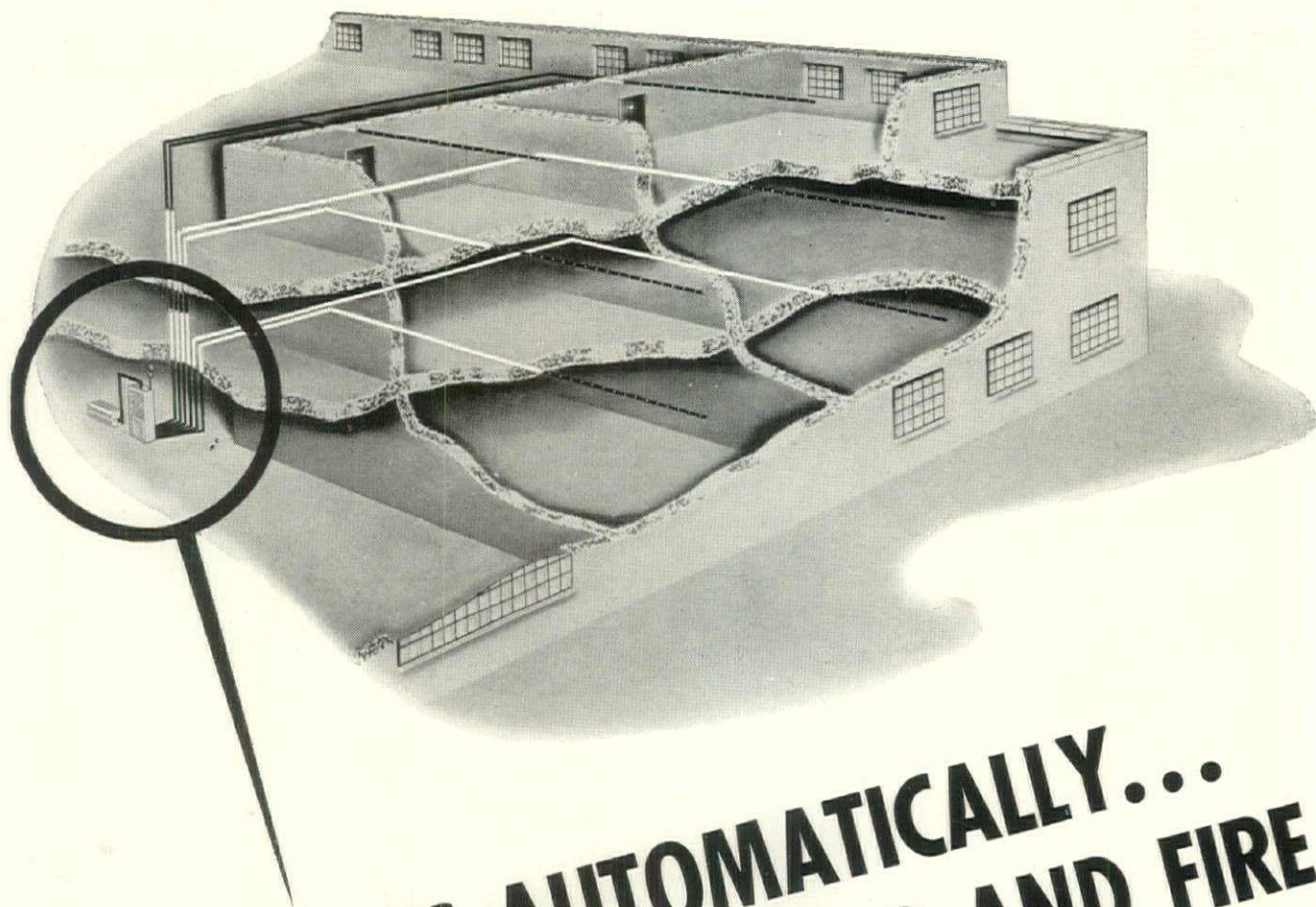
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Division of

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4440 North Knox Ave., Chicago 30, Illinois

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DETECTS AUTOMATICALLY...

SMOKE, SMOLDERING AND FIRE

at any location in your plant or warehouse!

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The first whiff of smoke sets off an alarm, based on an exclusive operating principle . . . no chance of smoke, smoldering or fire spreading . . . instantly, the air conditioning shuts down, doors and dampers close, operating equipment stops and fire extinguishing systems actuate . . . a truly automatic fire watchman.

Four types of smoke detectors and several installation arrangements are available to fit your particular needs . . . single space systems, double space systems, multiple space

systems, air conditioning duct systems . . . all function by drawing continuous air samples through simple piping to a smoke detector.

Actual fire tests made by the Underwriters' Laboratories, Inc. show that fire detection with this type of smoke detecting equipment is much quicker than other methods . . . because usually there is smoke or smoldering before flames break out.

Remember fire doesn't wait . . . so, with current expensive delayed replacements, why not let an expert C-O-TWO Fire Protection Engineer help you now in planning economical, fully approved fire protection facilities. Write today for complete free information . . . no obligation.



C-O-TWO FIRE EQUIPMENT COMPANY

NEWARK 1 • NEW JERSEY

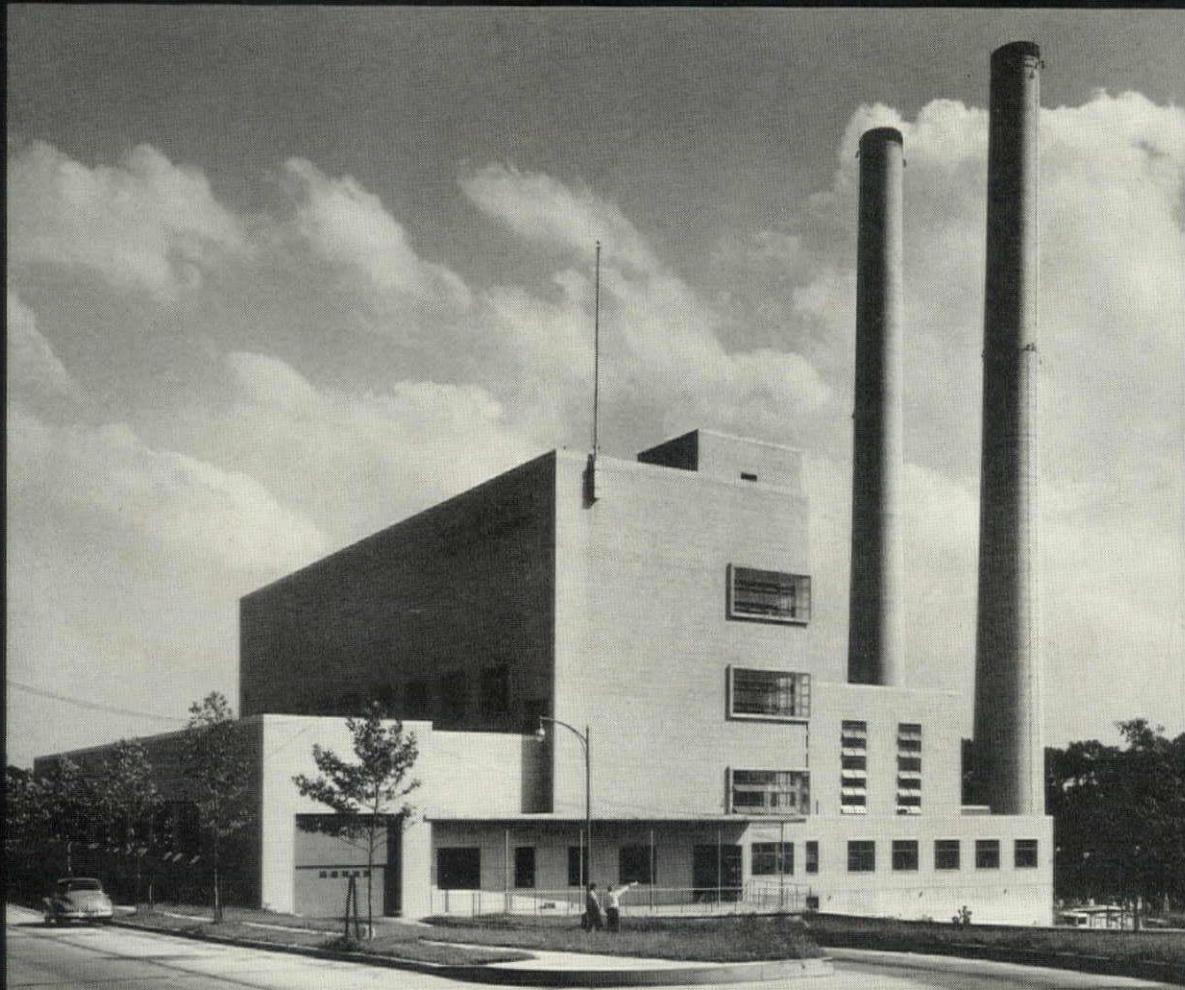
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The Name **HOPE'S** *Guarantees*
CUSTOM WINDOWS
WITH *BILTIN* SUBFRAMES



Betts Ave. Destructor Plant, New York City
Architect: The City of New York Dept. of Public Works, Division of Engineering and Architecture.
Contractor: Grove, Shepherd, Wilson and Kruege, Inc.

Here's another excellent example of a Hope's Custom Steel Window and *Biltin* Frame installation in one of the buildings of the Department of Sanitation, New York City.

The windows and frames shown here were rust-proofed by the hot-dip galvanizing process and will require little maintenance during the life of the building. To obtain full ventilation with a max-

imum of convenience many of the window ventilators in this building were gear-operated.

Hope's engineers work with the architect in designing and making custom installations to meet specific conditions. Whatever problems you may encounter in window design and function . . . Hope's engineers will fully cooperate in solving them. Just write!

HOPE'S WINDOWS, INC., *Jamestown, N. Y.*

THE FINEST BUILDINGS THROUGHOUT THE WORLD ARE FITTED WITH HOPE'S WINDOWS



NOW...

Wascolite Skydomes framed in

Extruded ALUMINUM

THE PIONEER PRE-FABRICATED ACRYLIC SKYDOME... NOW RESEARCH-IMPROVED FOR GREATER STRENGTH, GREATER BEAUTY, GREATER PERMANENCE, GREATER ECONOMY

FIRST with "the dome that floats in its frame"...

FIRST with the protected edge...

FIRST with Daylight Engineering Service...

NOW FIRST AGAIN with frames of extruded aluminum...
for a great advance in performance...

AT NO ADVANCE IN PRICE!

Extruded aluminum shapes .078" thick — 4 times as thick as sheet stock. Mitred welded joints. When Wascolite Skydomes go in, maintenance costs go out.

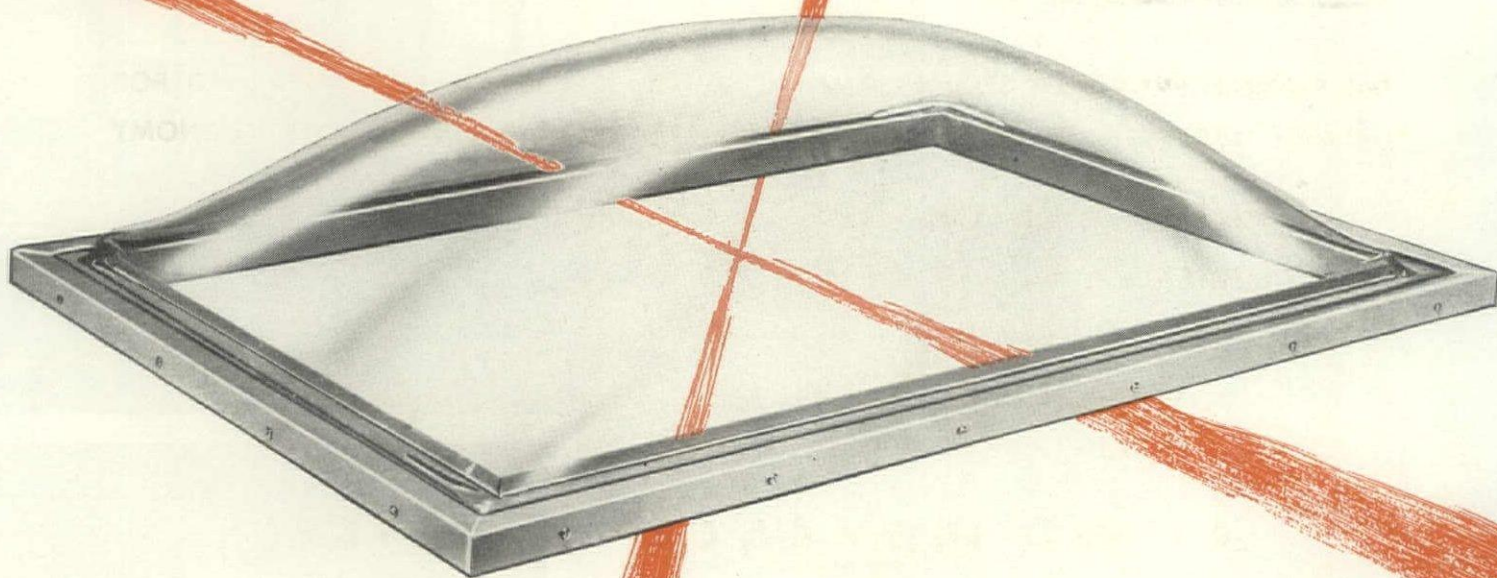
AND THE PRICELESS WASCOLITE **EXTRA**

We will prepare a scientific Daylighting Study on your next job without cost or obligation. Send us blueprints and lighting requirements; we will send you specs. and drawings showing size, type, number and spacing of Skydomes for correct balanced illumination.

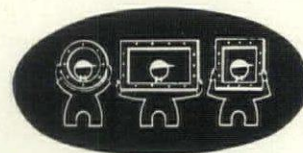
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WASCO FLASHING CO.

87 Fawcett St., Cambridge 38, Mass.



WASCOLITE



SKYDOMES

U. S. PAT. 2610593
Other patents pending

Interesting uses of SOLEX Heat- *in today's*



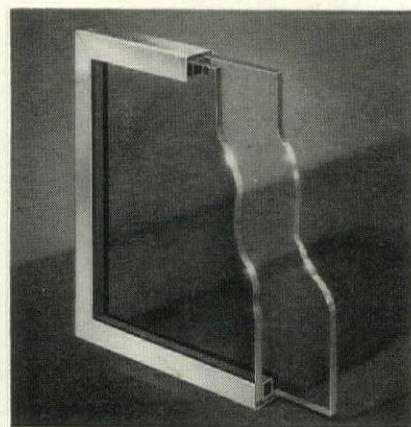
AT THE new and exciting radio and television studios of WCAU in Bala Cynwyd, Pa., a short distance from Philadelphia, $\frac{1}{4}$ " Solex Heat-Absorbing Glass was utilized for the exterior glazing. The inset shows an interior view of the front entrance of the building, indicating the use of large lights of Solex, as well as Herculite Tempered Plate Glass Doors. $\frac{1}{4}$ ", $\frac{1}{2}$ ", and $\frac{5}{8}$ " Pittsburgh Polished Plate Glass sound partitions and quadruple Solex, together with $\frac{5}{8}$ " Polished Plate Glass in four control booths, also are used in this modern communication center. Architects: The Austin Co., Roselle, N. J.; Robert Montgomery Brown, Philadelphia, Pa.



Absorbing Glass *structures*



THIS ENTRANCE of the new Continental National Bank building at Ft. Worth, Texas, is an interesting example of the use of Solex in today's commercial structures to reduce sun glare and keep interiors more comfortable. Among the other Pittsburgh products installed here are fourteen Herculite Doors. Inside, heavy Plate Glass is used for the teller screens, and Pittsburgh Mirrors are found in the rest rooms. Architect: Preston M. Geren, Ft. Worth, Texas.



SOLEX-TWILIGHT offers the dual advantages of Pittsburgh's Twilight—"the window with built-in insulation"—plus the heat-absorbing, sun-glare-reducing properties of Solex—"the best glass under the sun!" These units consist of two panes of glass—the outer is Solex, the inner clear Plate Glass. In between is a sealed-in air space. And to protect the seal and glass edges, as well as to make handling safe and easy, the units are enclosed by a stainless steel frame.

Design it better with **Pittsburgh Glass**



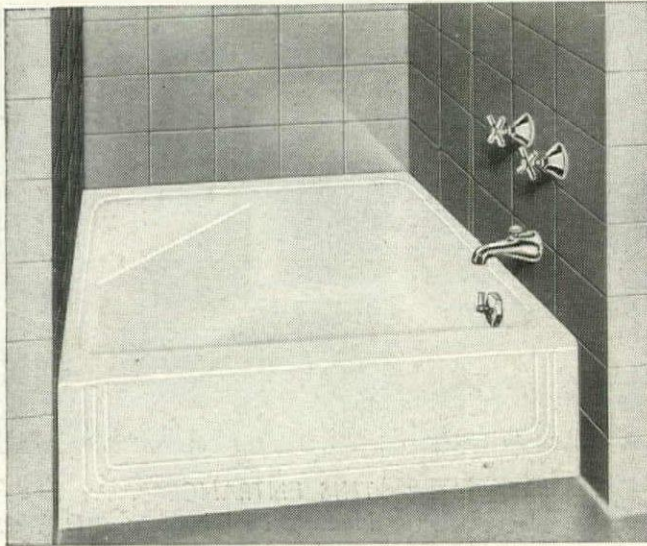
Your Sweet's Catalog File contains detailed information on all Pittsburgh Plate Glass Company products . . . Sections 7a, 13e, 15, 16b, 21.

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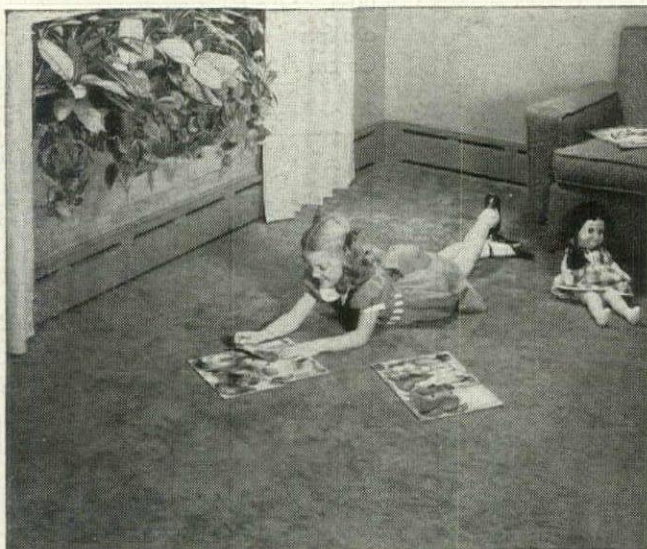
PITTSBURGH PLATE GLASS COMPANY

PRODUCT NEWS from **AMERICAN-Standard**

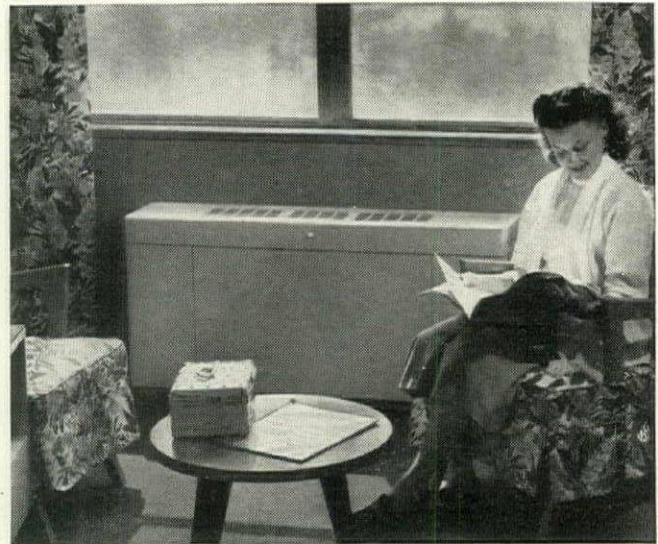
A review of products in the news and important features worth remembering



RESTAL RECEPTOR BATH. Here is complete bathing convenience in shower stall space. The 12" high Restal, with integral corner seat, fits a finished compartment approximately 36" x 38". In modernization, a closet or similar space often can be turned into an extra bathroom with the Restal. It's made of rigid cast iron with a thick enamel coating in white and five colors.



RADIANTRIM PANELS. For use with hot water or steam systems, these baseboard heating panels provide all the advantages of both convected and radiant heat. Taking the place of regular wood baseboards, they leave wall and floor space completely usable . . . deliver clean, uniform warmth floor to ceiling. Ideal for use under picture windows.



REMOTAIRE ROOM CONDITIONER. This remote type unit for multi-room installations heats in winter, cools in summer, filters and circulates the air all year 'round! Individually controlled units use chilled or heated water supplied through a simple piping system from a central water chiller and heating plant . . . no unwieldy ductwork needed.



SANISTAND FIXTURE. This wall-hung Sanistand urinal for women simplifies rest room cleaning, affords greater sanitation and convenience. Also available are a pedestal model of the Sanistand fixture and a tank model for installations where direct pressure valves cannot be used. All models come in white and a variety of colors.



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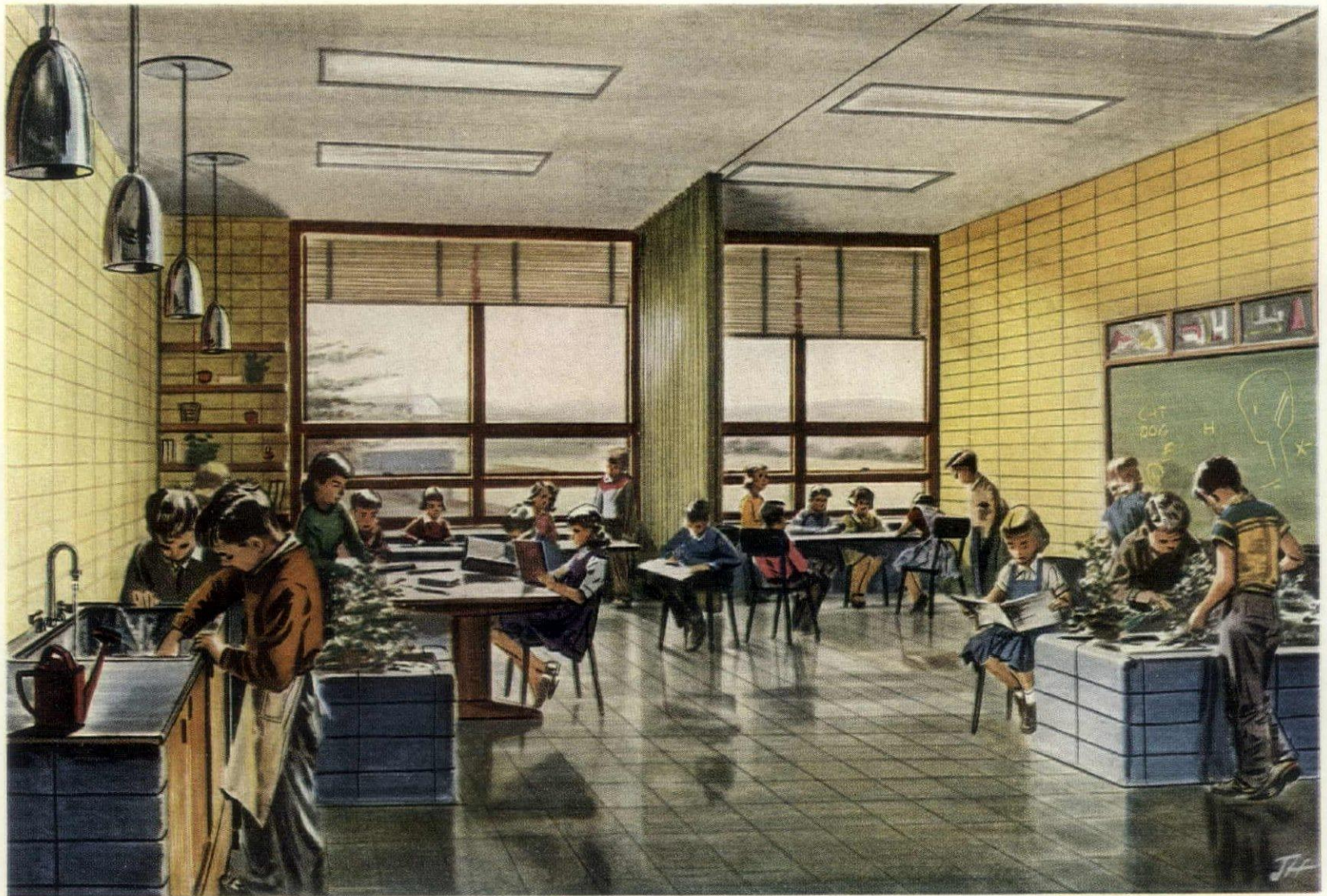
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school interiors of Facing Tile

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For full data on Facing Tile, glazed or unglazed, just write us on your letterhead. Address: Desk AF-1 of our Washington or New York offices.



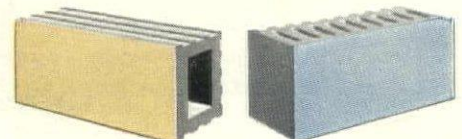
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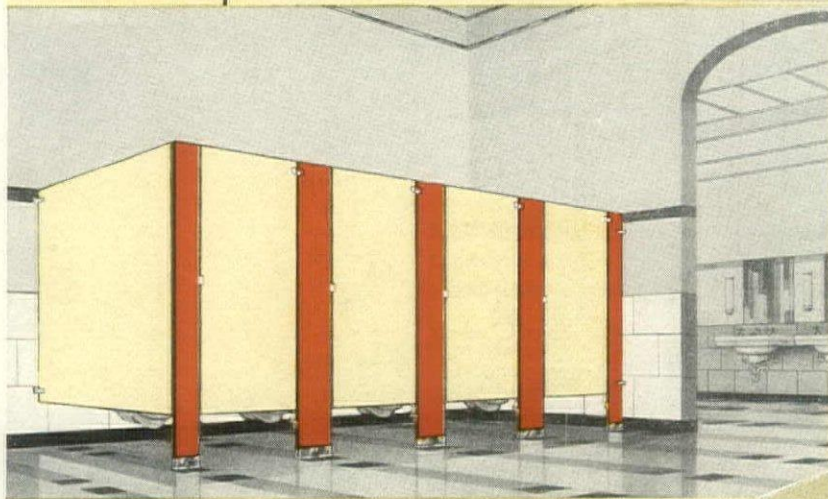
1949 Grand Central Terminal, New York 17, N. Y. 1520 18th Street, N. W., Washington 6, D. C.



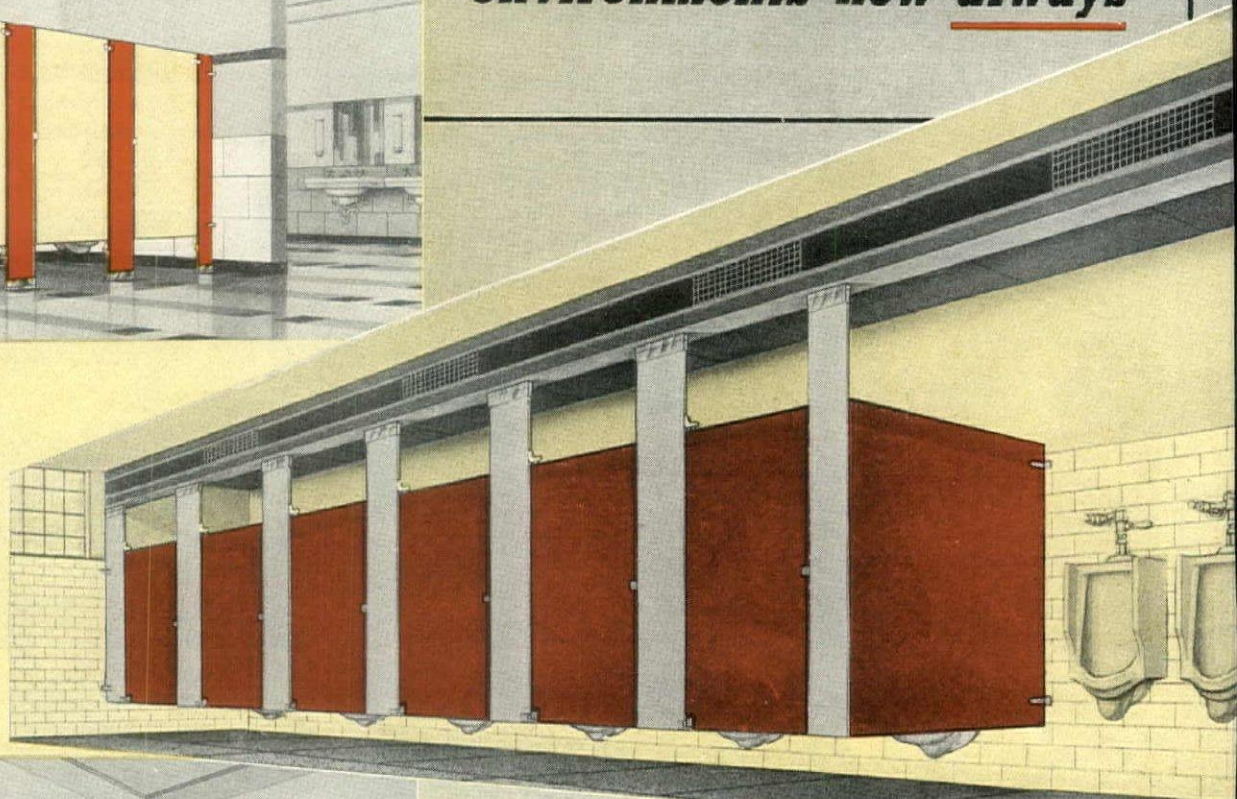
No other single building material gives you so much for so little... **IT'S FACING TILE!**

Sanymetal^{*}

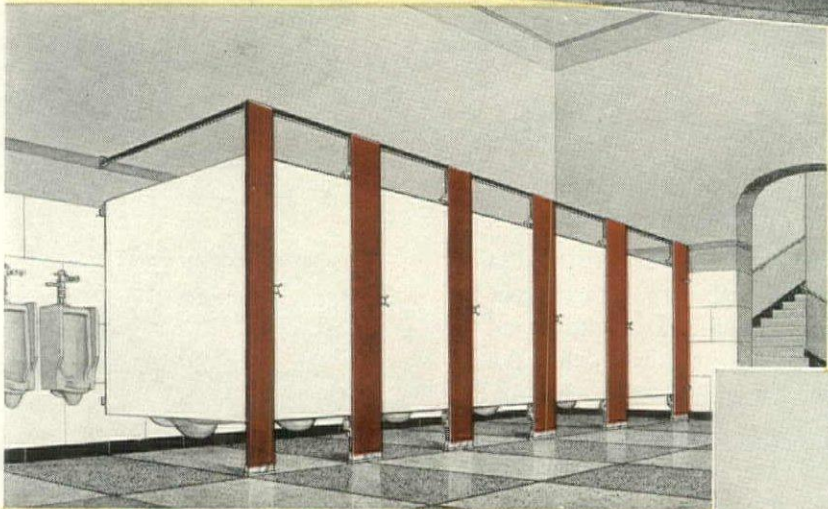
*... Toilet Compartments
help keep toilet room
environments new always*



Sanymetal NORMANDIE
Type Toilet Compartments endow a toilet room environment with dignity and good taste

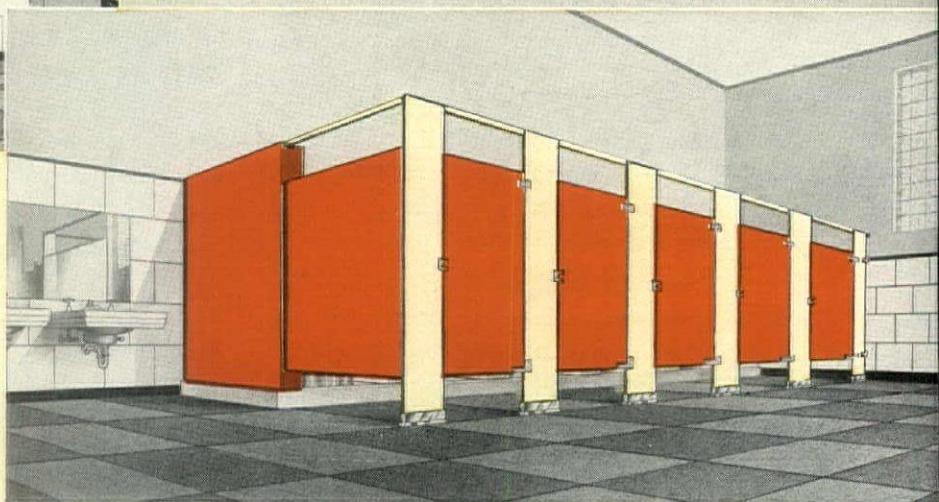


Sanymetal CENTURY Type Ceiling Hung Toilet Compartments offer the utmost in sanitation and provide modern, distinctive toilet room environments for schools, institutions, terminals and other public buildings.



Sanymetal ACADEMY Type Toilet Compartments are suitable for conservative but modern toilet room environments in all types of buildings.

Sanymetal ACADEMY Type Shower Stalls and Dressing Room Compartments provide the utmost in sanitation for gymnasiums, stadium dressing rooms, Y.M.C.A.'s, clubs, trailer camps, tourist motels, etc.



Sanymetal **USES TWO FULL-PURPOSE METAL BASE MATERIALS FOR TOILET COMPARTMENTS AND SHOWER STALLS**

This is Sanymetal "TENAC"

(Baked-On Paint Enamel over Galvanized Bonderized Steel)*

A metal base material that is notable for the positive adhesion of the baked-on paint enamel to the metal and its resistance to corrosion. Its lustrous, protective finish assures long-lasting newness. Available in 21 attractive colors.

FINISH COLOR COATS

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STEEL BASE



This is Sanymetal "PORCENA"

(Vitreous porcelain on steel)

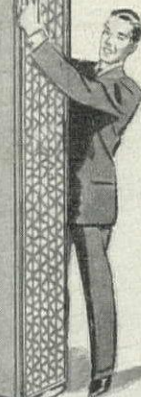
Vitreous porcelain on steel is an ageless and fadeless material that stays new always. It is in every respect unlike painted enamel or lacquer finished steel because it is fused to steel at a temperature of 1350°-1550°F. This impregnates the steel with vitreous porcelain enamel to the extent that it cannot be hammered out. This metal base material is impervious to moisture, odors, cleaning and uric acids, oils and grease. It is rust proof. Available in 21 glistening colors. It has no equal for strength and durability.

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The toilet room environment that stays new is the toilet room in which the most suitable type of toilet compartment available has been installed. Toilet compartments usually dominate a toilet room, influence the toilet room environment and emphasize the utility of fixtures and appointments. The bare functional type of toilet room is inadequate according to today's standards.

Sanymetal offers several different types of toilet compartments for creating the most suitable toilet room environment for each type of building. Sanymetal also offers and recommends Two Full Purpose Metal Base Materials which combine colorful attractiveness with long years of service life and effect important, day after day, savings in cleaning and maintenance cost. These Two Full Purpose Metal Base Materials—Sanymetal "Tenac" (galvanized, Bonderized* steel), a highly corrosion-resistant material; and Sanymetal

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THE SANYMETAL PRODUCTS CO., INC.
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Installations of Sanymetal Toilet Compartments have been made in over 150,000 different buildings including practically every type of building. Ask the Sanymetal representative in your vicinity for information about planning suitable toilet room environments that will always stay new. Refer to Sanymetal Catalog 22b in Sweet's Architectural File for 1952.



Sanymetal ^{*} **TOILET COMPARTMENTS • SHOWER STALLS • DRESSING ROOMS**

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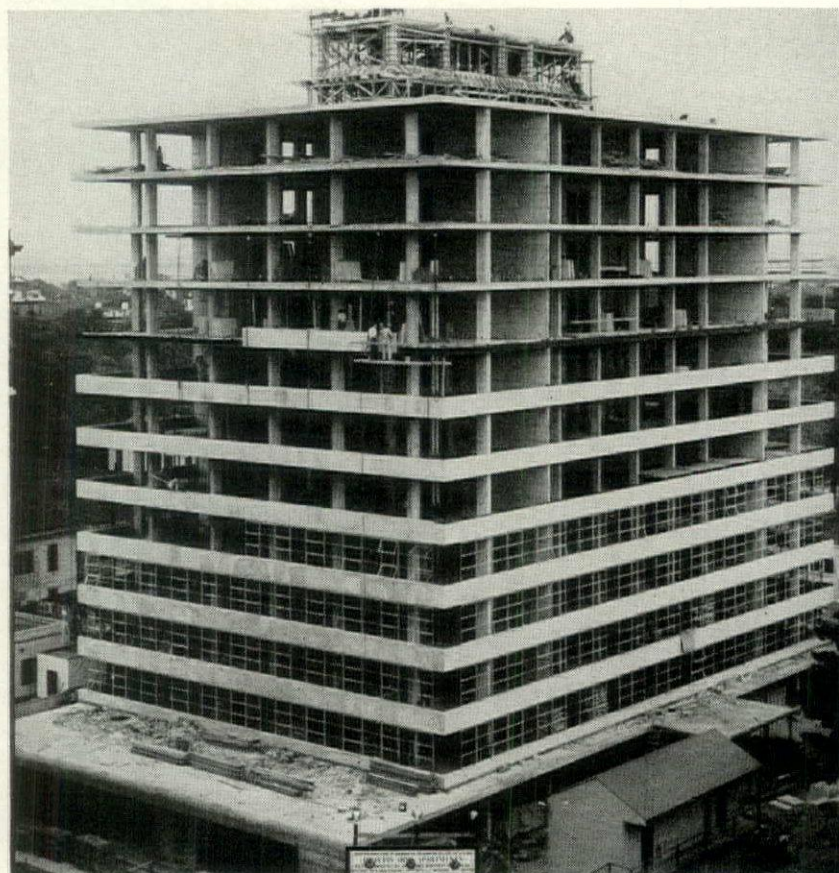
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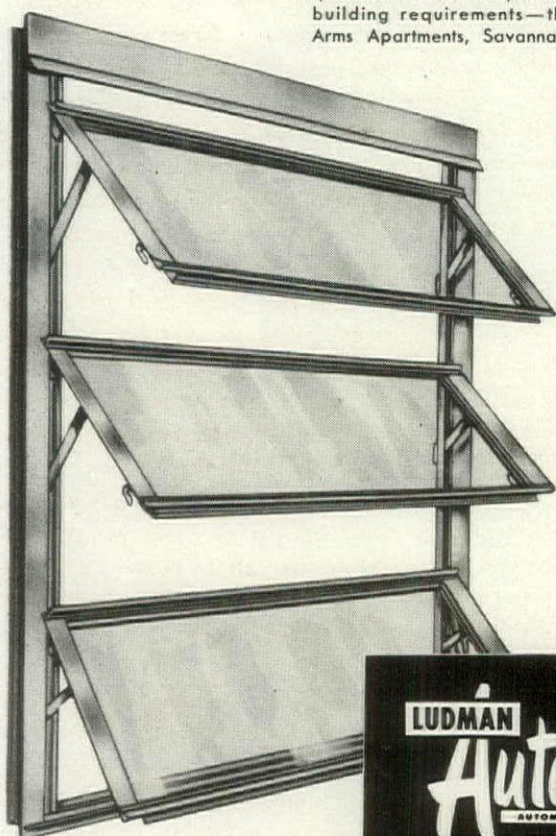
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LUDMAN LEADS THE WORLD IN WINDOW ENGINEERING

Building heads for new record in '53 as defense controls wane

Construction was coming into 1953 like a lion. By most accounts it would set a roaring new annual record, or at worst go out dipping only slightly below the \$32.3 billion peak it established in 1952.

Principal reasons behind a host of government and private forecasts of bigger, better and easier operations: 1) more civilian and military construction was still required for the defense program; 2) vanishing controls over materials would release a flood of nonessential projects; 3) the new administration was eager to create a more favorable climate for private enterprise; 4) the boom had sent employment and individual income to their highest rates in history at year's end; the steadily rising Federal Reserve industrial production index reached a postwar high of 233 in November, only six index points short of its 1943 wartime peak.

High industrial outlay. An SEC-Commerce Department survey found that business planned to enter 1953 spending at the record rate of \$28.7 billion annually for new plant and equipment. Concurring with the joint Commerce-Labor Department forecast that total new construction this year would rise to about \$33.5 billion (AF, Dec. '52, News) were the Associated General Contractors and Harold R. Berlin, vice president in charge of Johns-Manville's building products division. Berlin hedged: "If the Korean war or cold war in general is stepped up, the optimistic estimate of a \$1 billion increase would have to be revised considerably." But on this score an authoritative government source disagreed: Korean or defense activity speed up at this stage primarily would

boost the output from existing military supply facilities, have little or no effect on construction this year, even manpowerwise. At the most, a defense speed-up would mean that some schedules due to be reduced by early summer would be maintained on their present level. Sample: tanks, now set for an August cutback.

Knife-edge economy. Builders could hope that positive answers on the course of the cold and Korean war would be forthcoming from the Eisenhower administration before the spring building season. Of the nation's economy, men close to the new President said last month that in Ike's mind the most important thing was to keep it on an even keel. They said Eisenhower regards the economy as teetering on a "knife-edge" between potential inflation and depression.

Some signposts of inflation were visible in construction. Fir dimension lumber went up \$3 to \$5 a thousand feet. Cement prices

GOVERNMENT FORECASTS BUILDING DIP IN '54, '55

Construction may slacken a little in 1954 and 1955, but the industry can still anticipate substantial, prosperous activity at least until 1960, two long-term government economic studies forecast at year's end.

The Department of Commerce and the Committee for Economic Development cooperated in preparing one report, *Markets After the Defense Expansion*. It predicted "another good year of business" for 1953, declared "a downturn in 1954 is a real possibility," but thought it would not be until 1955 when defense spending starts to decline "that it will be of major importance sizably to expand private markets to maintain a high level of business activity." Into the report went a survey of 84 large firms covering 33% of American business investments. They planned capital investment for plants and equipment for 1954 and 1955 at 85% and 80%, respectively, of their 1952 rate. Moreover, an 18-million increase in population since 1945 would demand a large volume of schools, hospi-

tals, recreational centers and other public and private institutional construction, the report pointed out. Some needed building, however, will be limited by the ability of public or private agencies to obtain financing for it.

The Congressional Joint Committee on the Economic Report surveyed prospects up to 1960. It based calculations on a population increase of 24 million in the 1950-60 decade, said many industrialists plan to expand facilities in preparation for the huge market they see in 1960 and beyond despite any interim turndown. The legislators reported the Office of Education saw need between now and 1960 for \$20 billion of school construction: \$10 billion backlog, \$6 billion for growing enrollment, \$4 billion for replacements. They said \$14 billion was needed for hospital construction: \$1.1 billion this year, rising to \$2.5 billion in 1955 and holding that level until 1960, when the need could decline to \$1.9 billion.

NEW CONSTRUCTION ACTIVITY (expenditures in millions of dollars)

| Type | December | | | Year | | |
|-----------------------|----------|-------|----------|--------|--------|----------|
| | '51 | '52 | % Change | '51 | '52 | % Change |
| PRIVATE | | | | | | |
| Residential (nonfarm) | 840 | 953 | +13.5 | 10,973 | 11,101 | +1.2 |
| Industrial | 200 | 187 | -6.5 | 2,117 | 2,298 | +8.5 |
| Commercial | 92 | 107 | +16.3 | 1,371 | 1,095 | -20.1 |
| *TOTAL | 1,674 | 1,789 | +6.9 | 21,684 | 21,785 | +0.5 |
| PUBLIC | | | | | | |
| Industrial | 95 | 113 | +18.9 | 958 | 1,606 | +67.6 |
| Military | 88 | 107 | +21.6 | 887 | 1,346 | +51.7 |
| Residential | 66 | 47 | -28.8 | 595 | 647 | +8.7 |
| *TOTAL | 692 | 724 | +4.6 | 9,209 | 10,544 | +14.5 |
| *GRAND TOTAL | 2,366 | 2,513 | +6.2 | 30,893 | 32,329 | +4.6 |

Source: Joint estimates, Departments of Labor and Commerce.
* Minor components not shown, so total exceeds sum of parts.

CONSTRUCTION DOLLAR VOLUME set a record of \$32.3 billion in 1952, 5% above 1951. But physical volume dropped below both 1951 and 1950, reflecting cost increases.

appeared headed for a round of increases. One top economic adviser to Eisenhower, asked about prospects for a recession, said he was much more worried about the "boomlet" in business, based on post-election optimism. His first task, he thought, might be to devise ways to keep the boomlet from getting out of hand.

Continued controls? Such thinking suggested a strong possibility the Republicans may delay junking direct controls—or at least that Ike will ask some sort of standby price and wage control laws. Sen. Homer Capehart (R, Ind.), new chairman of the Senate banking committee, which shapes defense controls legislation, said bluntly that standby controls "might be necessary."

In his final quarterly report for 1952, Defense Mobilizer Henry H. Fowler recommended extension of wage, price and rent controls beyond their scheduled expiration April 30, but suggested that the Controlled Materials Plan for steel, copper and aluminum could be "modified progressively" this year. For all practical purposes, materials controls on steel already were dead. NPA was able to honor all requests for steel allotments for '53's first quarter. Fowler contended plans for more stockpiling of copper and aluminum held the possibility the two metals might remain tight throughout the year. Chairman James J. Russell of Revere Copper & Brass disagreed: decontrol of copper prices, now saddled with a multiple pricing system, should stimulate a bigger flow of scrap to refineries and boost production 150,000 tons (10%). That, said Russell, "would mark the long-awaited turning of the corner on the acute copper shortage problem."

Tax-incentive plants. Another Fowler recommendation: a program drafted by an

ODM committee headed by Studebaker Chairman Harold S. Vance calling for expenditure of \$1 to \$2 billion for construction and equipment of standby defense plants and large, special machine tools. The Vance plan would offer fast tax amortization to induce private industry to build such facilities, authorize the government to build the plants itself if private enterprise did not.

Unless Eisenhower backed the idea, Congress would probably balk at authorizing direct government construction. But legislators were likely to approve some additional tax write off for private building with military or civil defense features, authorize federal funds to maintain some existing defense facilities in good condition.

Nondefense construction competing for builders' attention would include such business as:

- ▶ An estimated \$250 million of theaters, country clubs and other recreation buildings previously blocked by materials restrictions.
- ▶ Construction or renovation of radio studios and

facilities for more than 100 TV stations. (The FCC had authorized 175 since last April, was still approving more this month.) A survey by the National Association of Radio and Television Broadcasters showed construction costs may run around \$110,000 each, although some may be as elaborate as a \$3.5 million center for WJBK-TV Detroit to be started this spring from plans by Skidmore, Owings & Merrill. (Also in prospect were an undetermined number of small "booster" stations that would cost about \$5,000 each.)

The lone note of caution amidst the optimism came from a surprising source: the US Chamber of Commerce. "Such unanimity," said the chamber, "should itself be a warning of precaution. This same widespread agreement prevailed at the beginning of 1929 and again in 1937. In both of these years major business declines took place. The record of economic forecasting seems to suggest that there must be at work an *Economic Law of the Inevitability of Incorrect Forecasts*." The chamber's own building forecast: "Total construction for the year may be as good as in 1952, with some possibility of a slight downtrend in the latter part of 1953."

More dispersal, ban on new housing, plants in target cities urged in civil defense study

Since Korea, civil defense in the US has been like the weather: everybody talked about it but practically nobody did anything about it. This month, a task force of 88 scientists, educators, businessmen and government experts handed top defense agencies a report on the problem that bristled with get-tough recommendations involving construction.

The reporting group, Associated Universities Inc, which operates Brookhaven (L.I.) National Laboratory for the Atomic Energy Commission, contained nine member universities: Cornell, Columbia, Harvard, Johns Hopkins, MIT, Princeton, Pennsylvania, Rochester and Yale. It was directed by Vice-President Otto L. Nelson of New York Life Insurance Co., who is a retired brigadier general.

More dispersion. One of the three cornerstones of survival under an attack which might strike any section of the nation, the report declared, is a stern program for decreasing target vulnerability by gradually reducing factory and population concentrations found around most big cities. (The other two: better air defense, a civil defense system on an equal footing with military defense.) To pump more space into cities and suburbs alike, the report urged these steps:

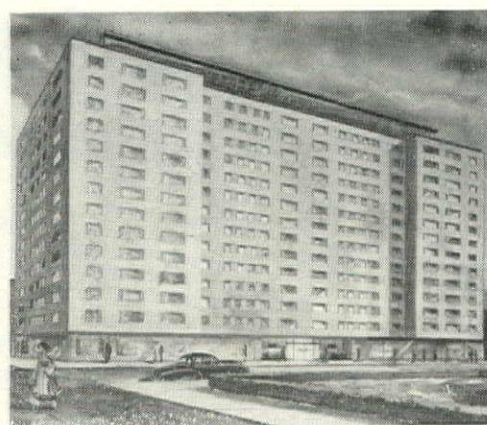
- ▶ No residential construction in "Class I vulnerable areas" except replacements which produce a 20% drop in population

density. A Class I vulnerable area: one with employment of 16,000 or more industrial workers inside a 4 mi. wide diameter, with a residential or daytime population of 200,000 or more, or one with strategically important installations.

- ▶ Similar restrictions on commercial building, with replacements reducing the ratio of floor area to lot area by 20%.
- ▶ An ironclad ban against new plants of all kinds in "Class I" areas.
- ▶ In "Class II vulnerable areas"—usually found on the fringes of Class I zones—no residential construction denser than 5,000 sq. ft. of lot per building. A "Class II area: one with population from 8,000 to 16,000 persons per sq. mi.
- ▶ For new or nondefense supporting buildings in Class II areas, the ratio of floor area to lot area must not exceed 1 to 1. (The average for central districts of most US cities is now under 2.4 to 1, said the report, but for skyscraper clusters like Rockefeller Center it is 10 to 1.)
- ▶ A ban on defense plants in both Class I and II areas.

Mandatory shelters. Inside choice target areas, said the report, these steps must be taken:

- ▶ New buildings should conform to bomb-resistant standards.
- ▶ The government should compel construction of shelter areas inside new buildings. (The report pointed out what most archi-



Philadelphia department store sells apartments

On Jan. 12, Gimbels in Philadelphia opened a department unique in US department-store annals, began selling cooperative apartments (above). The experiment looked like a success: even before models went on display, Philadelphians had responded to advance ballyhoo by plunking down deposits on 60 of the 300 units (cost, \$37 to \$177 per month). The \$3.2 million structure to be built near fashionable Rittenhouse Square was designed by George S. Idell, AIA, sponsored by Peoples Bond & Mortgage Co.

itects know but few clients seem to care: such shelters can be included at "nominal cost." Civil defense officials put the extra cost of atom blast protection in new buildings at 3%.)

- ▶ In all steel frame or reinforced concrete buildings, the framing members should be tied together to form a structural unit that will resist all loadings as a single unit. Bearing walls should not be used in vulnerable areas.

How to do it. Fully aware that the business-as-usual segment of the construction industry would raise a cry that the proposals would disrupt industry practices and raise costs, the report challenged the federal government to face the problem squarely, overcome it with leadership "that is now lacking." The report criticized DPA and other federal agencies handling fast tax write off and defense procurement for not insisting on more dispersion. It called attention to the pressure FHA and PHA could focus on its residential requirements through their mortgage insurance and public housing programs. It noted that while local building codes and zoning laws are the exclusive domain of local governments, federal intervention to protect the nation's defense may be necessary if they fail to act.

The diagnosis found one comforting thought: "American cities are growing so fast that reasonable controls over new development could effect a large reduction in over-all vulnerability." For instance, the physical structures of cities (houses, streets, stores, schools, factories, water system) grew 25% last decade.

Office building revival gets bolder; will set a record

Ever since the depression burned owners with disastrous 26% vacancy rates, office building construction across the nation had generally lain in the doldrums. Only Manhattan, Pittsburgh, Dallas and Houston had experienced sizeable (over 1½ million sq. ft.) postwar construction.

This month, the evidence was piling up that office building for the rental market was emerging from the storm cellar. To H. F. Manning of Architects Holabird, Root & Burgee it looked like "a small boom." Boom or not, clearly 1953 would set a national postwar record. At least six cities, Albany, Chicago, Denver, Jersey City, Louisville and Miami, would see their first rental market office construction of any size in more than 20 yrs. In 11 more cities, a FORUM survey found office building underway or stirring. In only four of 21 cities studied (Kansas City, Seattle, Philadelphia and Boston) were there no signs of office construction.

98% occupancy. Availability of materials would make it easier to build this year. But more important were continued high occupancy rates. Chicago management specialist James Downs Jr. estimated this month that occupancy was now 96.2% nationally. In its semiannual survey last Oct. (2,500 buildings, 2.28 million feet of space), the National Association of Building Owners and Managers found 98.03% occupancy. The 1.97% vacancy compared with a postwar high of 2.59% in May, 1950 (just before Korea), 10 to 12% from 1925-30, and 26% in 1933-34.

Air conditioning was universal. Tenants

were happy to pay 50 to 60¢ a sq. ft. extra for the comfort and increased employee efficiency. Parking facilities were considered a must in some cities, like Atlanta and Los Angeles; in others, they were rated a great asset but not absolutely necessary. Cost- and maintenance-conscious owners were insisting on engineered, modular floor layouts that made partition relocations quick and cheap, were turning more and more to operatorless elevators to cut running costs (see p. 154).

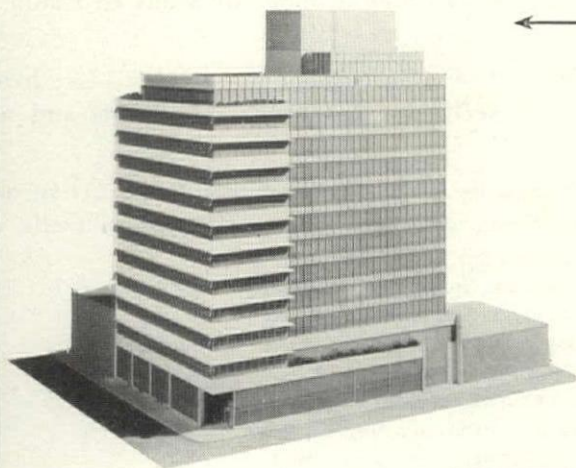
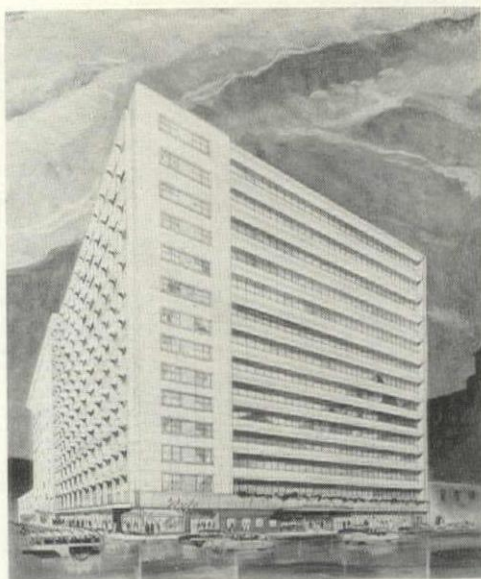
In New York, the postwar appetite for midtown office space still seemed almost a bottomless pit. Since 1946, 5.4 million

sq. ft. had been added to the city's supply. This year, at least eight more rental structures would rise, adding another 2.5 million sq. ft. (in addition to three owner-occupied offices).

That was still a long way behind the average of 4.8 million feet a year built in the world's office capital from 1928 through 1931. But Frederick Hardy of Cushman & Wakefield, one of the city's big realty brokers, averred: "I could rent 1 million feet of space tomorrow if I could find it in the right location at the right price."

Lenders at the helm. Builder Norman Tishman said midtown Manhattan could readily absorb about 12 million feet of new space, more than double its postwar total. Said Cushman & Wakefield's Vice-president L'Huillier S. Sheaff: "We don't need to fear any wild amount of speculative building. Lenders will look carefully . . . prevent the debacle of 1929."

New York's upcoming construction—all concentrated around Grand Central Terminal—included two office buildings on Park Ave., once the showpiece street of luxury apartments. They were a 400,000' Tishman building (see cut) and a 300,000 sq. ft. structure being built by ex-actress Marion Davies. They marked continuation



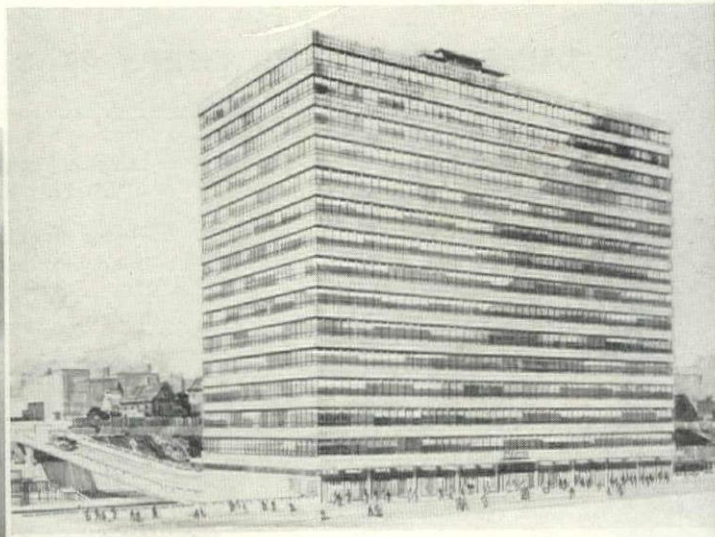
Photos: (top left) C. F. Weber; (right) John T. Bills; (bottom left) Bob Bailey.

MIAMI'S AINSLEY BUILDING will be city's first multistory downtown office structure since 1937. The \$2.5 million structure has welded steel frame because city forbids riveting noise. Morris Lapidus was architect, Oboler & Clark, structural engineers.

JERSEY CITY'S FIRST office construction in decades will be a 15-story building erected on stilts over the Hudson & Manhattan Tube's tracks at Journal Square. The \$6 million 300,000' structure was designed by Vincent J. Cerreta. Owner-builders are L. N. Rosenbaum, Bernard Rodetsky.

NEW ORLEANS has a \$5 million 14-story combination hotel and office building under construction. It will have 200 rooms and an auditorium for the adjoining Roosevelt Hotel, 65,000' of space for Shell Oil, and 83,000' of additional rental offices. August Perez & Associates are architects, and the Westminster Corp. owner-builders. Texas Oil is erecting a 95,000' building. Since 1950 five other office structures with 500,000' of space have risen.

ONE OF HOUSTON'S new buildings started this year is the 20-story South Texas National Bank building, designed by Architect Kenneth Franzheim with an aluminum and extruded ceramics exterior.



*Not Since Plaster Was Discovered
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of a new trend. In a few years virtually all of Park Ave from Grand Central to 57th St., 12 blocks north, would be converted to office buildings. One big reason: rent control made luxury apartments unprofitable. Uris Bros., for instance, were fighting in court to get possession of a block front, 18-story building, demolish it and erect an office this year or next. Just above Waldorf-Astoria Hotel, the Astor estate held a block of ritzy apartments that seemed likely to be replaced by a combination office building-hotel although some authorities thought the location made 100% office building the best potential. So far almost all Manhattan office construction was by speculative builders, the Astors and other old family landowners seemingly waiting for postwar construction costs to decline.

Rents held steady, with the bulk of the space (all air-conditioned) bringing \$5 to \$7 a foot on whole-floor, long term leases (about 20 yrs.). The range was from \$4 for several floors to \$7.50 and \$8 a foot for choice tower suites, fractional space subleased briefly from tenants acquiring enough space for future expansion.

Surprisingly, non-air-conditioned space in first-class prewar buildings rented for only about 50¢ a foot less. Reasons: there was little available; what there was came in small lots for lease terms as short as 5 yrs.

Atlanta: \$2.40 a foot. Outside New York, one of the busiest builders of office space was Ben Massell of Atlanta. Since the war, he had built 800,000 sq. ft. of offices in six structures of six to eight stories with air conditioning and parking space. Rents averaged an amazing \$2.40 a foot, against prices in other cities from \$4 to \$6.50. This year Massell will erect three more buildings totaling another 350,000' and renting from \$2.75 to \$3 a foot (only one downtown). His secret: cheap land

(about two miles from midcity), simple construction, long leases, 12 to 15 yr. financing. The situation elsewhere:

Albany, N. Y. An eight-story, 135,000' air-conditioned building with basement parking for 100 cars will be erected on a State St. plot leased from Equitable Life, despite start of New York State's edge-of-town office campus that eventually will let state departments move from more than a million feet of rented quarters.

Chicago. The Prudential Insurance Co's Midwest headquarters building, for 1955 occupancy, was Chicago's first new office structure with space for outsiders (720,000') since the 20's. It was leasing rapidly at \$6.50 a foot. Still unannounced: a 10-story downtown rental building on the boards of a leading architectural firm.

Dallas. Completed through 1952: 16 buildings with 1.6 million feet at a cost of \$28 million. Under construction or announced for this year: nine buildings with 1.8 million feet at a cost of \$51 million (one a 40-story Republic National Bank tower [see cut], another a 50-story skyscraper to be erected by Leo F. Corrigan).

Denver. The city's first two postwar rental structures, both to be started this year, would be a \$15 million, 20-story, 400,000' building erected by Webb & Knapp and Boettcher Realty Co., and a \$6 million, 20-story, 250,000' building to be built by fabulous Clint Murchison, the Dallas oilman.

Houston. Eight buildings with 1.5 million feet of rental space had been completed since the war. Three more with 410,000' of space were under construction or scheduled this year at a cost of \$13 million.

Louisville. First rental space construction since the war would be a \$4 million, 19-story addition to the 4-story Martin Brown building, raising its area from 52,000 to 192,000 sq. ft.

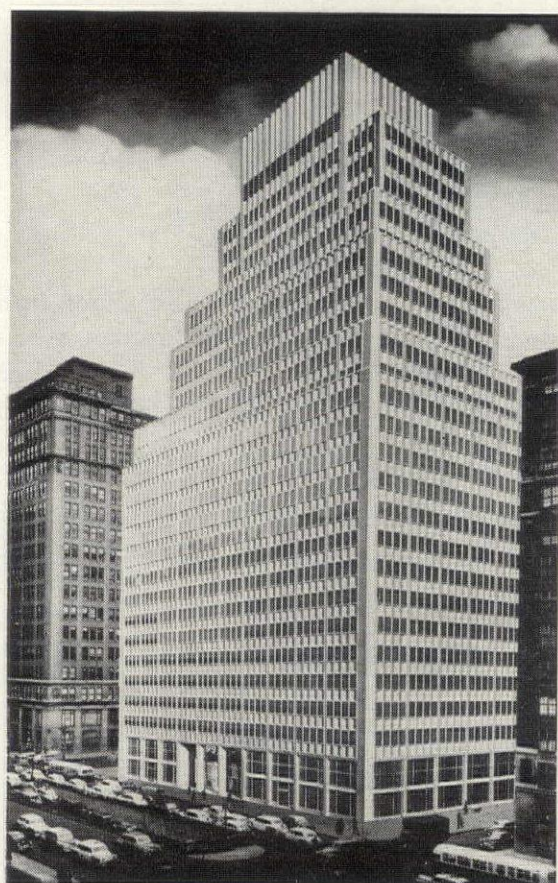
Pittsburgh. Activity was halting as a vacancy rate approaching 10% was reported after comple-

tion of seven notable postwar structures in the Golden Triangle. Only important structure in sight this year was a \$1.3 million, six-story Remington Rand building with three stories for rent.

In Washington, where the expanding government for years had been ready to rent almost anything available, postwar construction totaled 22 office structures. Latest scheduled was a \$26 million office and hotel development by Morris Cafritz. Washington zoning laws limit building heights to 130'. But last month the city gave construction a new incentive by raising the maximum allowable floors from 12 to 13.

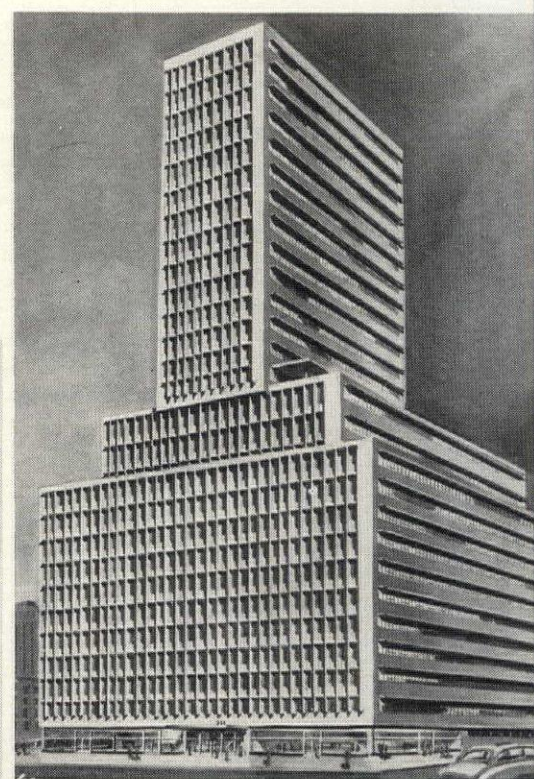
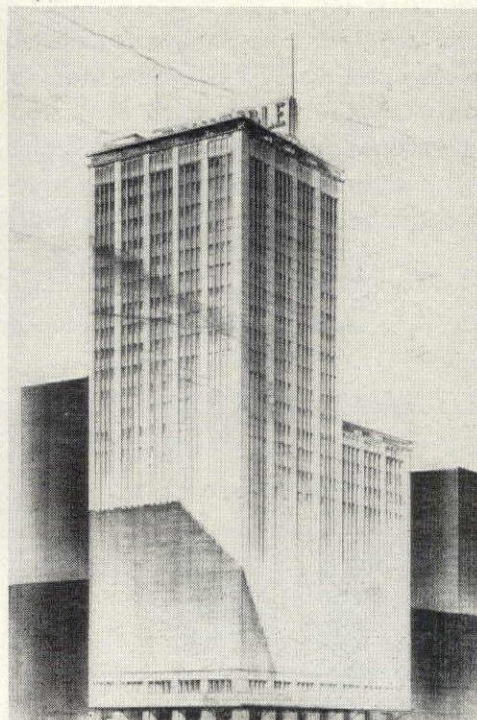
Conversion & caution. Where construction of office space lagged, the reasons were summed up by Board Chairman John Taylor of J. C. Nichols Co. in Kansas City: "Builders just don't believe they can get rates up high enough to realize a return at current building costs." In Boston, where only a dribble of space (64,000') had been built since the war, brokers called anything 25 to 30 yrs. old "new." In Philadelphia, buildings converted from garages were providing much of the postwar office space. The switch brought owners more return, too. Typically, a garage might be sold for \$4 a sq. ft. (including \$1.50 of land), reconditioned for \$1 to \$5 a foot and then rented for \$2 a foot instead of the 50-60¢ it brought before.

Despite its upturn, office construction was still the epitome of caution: it required big chunks of venture capital.



← **ALUMINUM SHEATHING** will be used on newest \$14 million Tishman Realty & Construction Co. building (left) at 99 Park Ave., New York. Unesthetic cake mold design is partly the result of archaic New York zoning law.

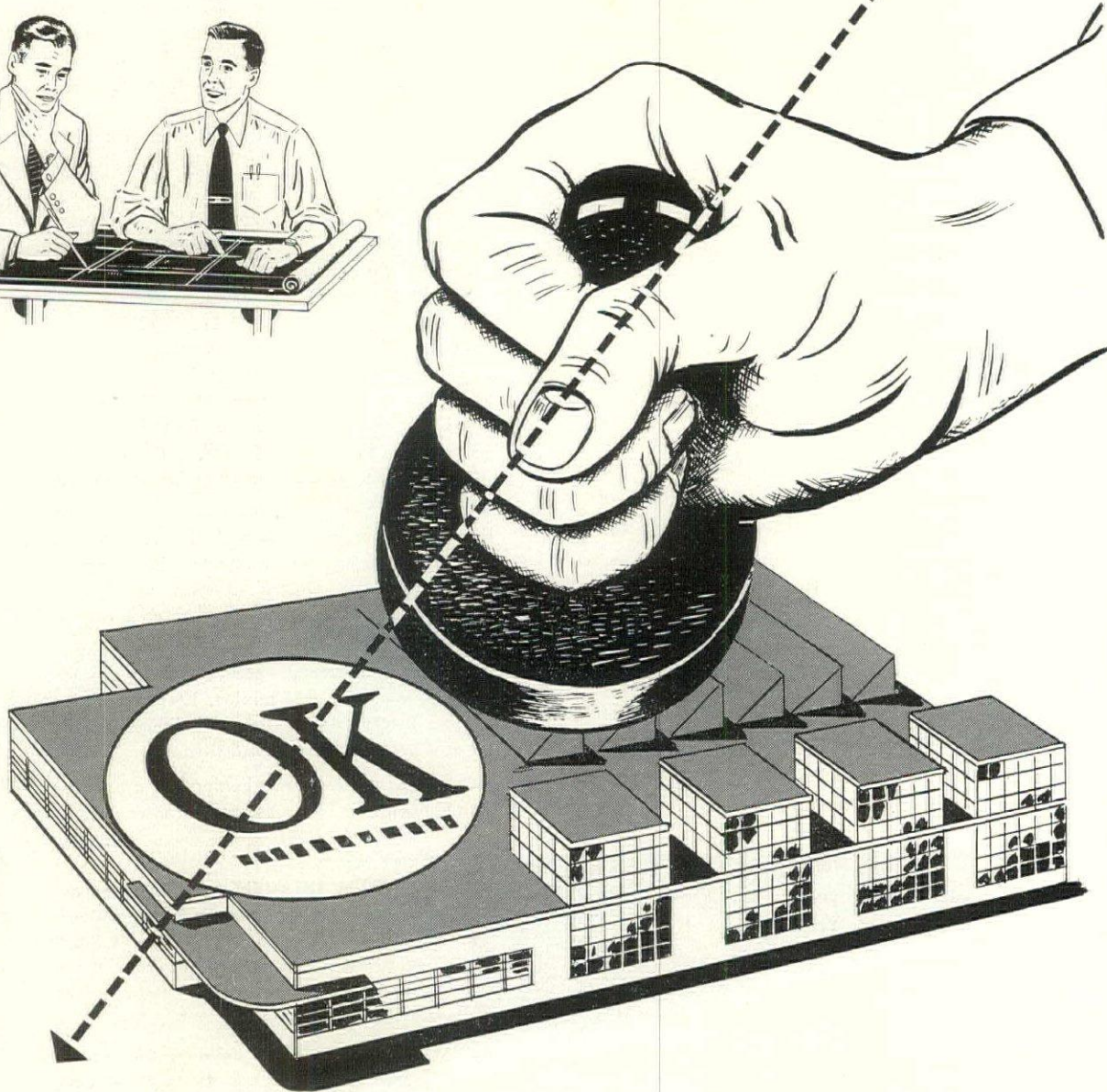
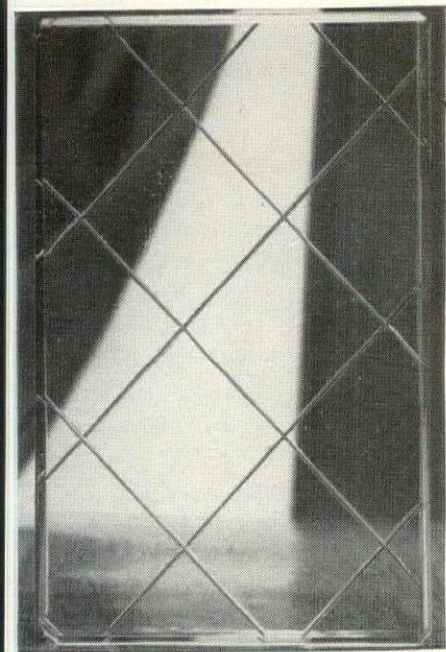
↓ **SAN FRANCISCO** building for Equitable Life Assurance Society to be started in July will rise 26 stories, cost \$10.5 million. W. D. Peugh is the architect.



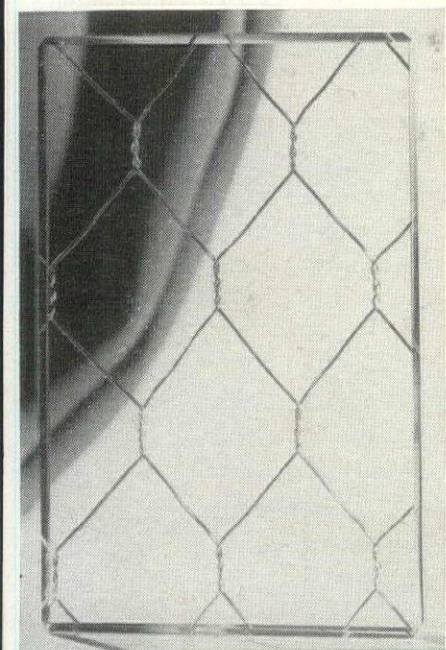
BUILT-ON SUNSHADES, vertical and horizontal fins to reduce direct sun and lessen cooling costs were designed by Architect William Lescaze for New York tower.

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Trend of offices to suburbs poses problems for New York's ritzy Westchester County

President Frank P. Tufaro of the New York State Home Builders Assn. took a look last month at a recently observable trend around Manhattan and decided: "Business is on the move from big cities to the suburbs."

Tufaro, an active builder in glamorous Westchester County, probably the nation's richest residential area, meant more than the exodus of New York City offices to suburbia. He thought the trend would spread across the nation.

Only New York? So far, there was little evidence outside New York to bolster Tufaro's forecast. In Detroit, MacManus, John & Adams, an advertising agency, moved its headquarters from downtown to a wooded spot on a Bloomfield Hills hillside 20 mi. away. Cargill Inc., the nation's largest grain trader, moved from downtown Minneapolis to the shores of Lake Minnetonka six years ago. Two St. Louis firms were building suburban offices and one had moved from Kansas City to the outskirts. But in San Francisco, Pittsburgh, Boston, Philadelphia, Seattle, Chicago and Cleveland there was little or no indication of companies leaving town.

In Tufaro's own bailiwick—435 sq. mi. of rocky, hilly countryside and small towns generally unsuited for and unwilling to harbor large industrial plants—the outward-bound movement of elite business firms was well defined if small: by the start of the year, more than 50 companies with New York offices (including nine large ones) had bought Westchester County land with the idea of moving some or all of their offices out of Manhattan.

Roll of big names. The shift began in 1950 when General Foods bought a 48-acre tract near White Plains—the favorite town for Westchester-bound offices. Its \$5 million executive office building is under construction. Last summer, Union Carbide & Carbon Corp. (one of the nation's ten largest) took options on 286 acres of Westchester estate for a \$17 million group of executive offices and laboratories (AF, July '52, News). Later, General Electric acquired 186 acres. American Telephone & Telegraph Co. broke ground last month for an \$8 million long lines switching and relay center at White Plains (see p. 45). Nestle's Co. was occupying two rented buildings at White Plains until it builds its own offices near General Foods. Standard-Vacuum Oil Co., a Far East joint venture of Socony-Vacuum and Standard Oil of New Jersey, announced in mid-No-

vember the purchase of a 25-acre office site at Rye, subject to rezoning. The company planned to move its staff of 700 there from three scattered Manhattan buildings in 1954. Allstate Insurance Co. announced it will move its executive offices to an eight-acre tract at Harrison.

Riding the tide, Contractor Sam Minskoff & Sons of New York announced plans for a \$2 million speculative, six-story office building in downtown White Plains. Minskoff solved the parking problem by locating alongside an 800-car municipal parking lot. So the basement will accommodate only 75 cars.

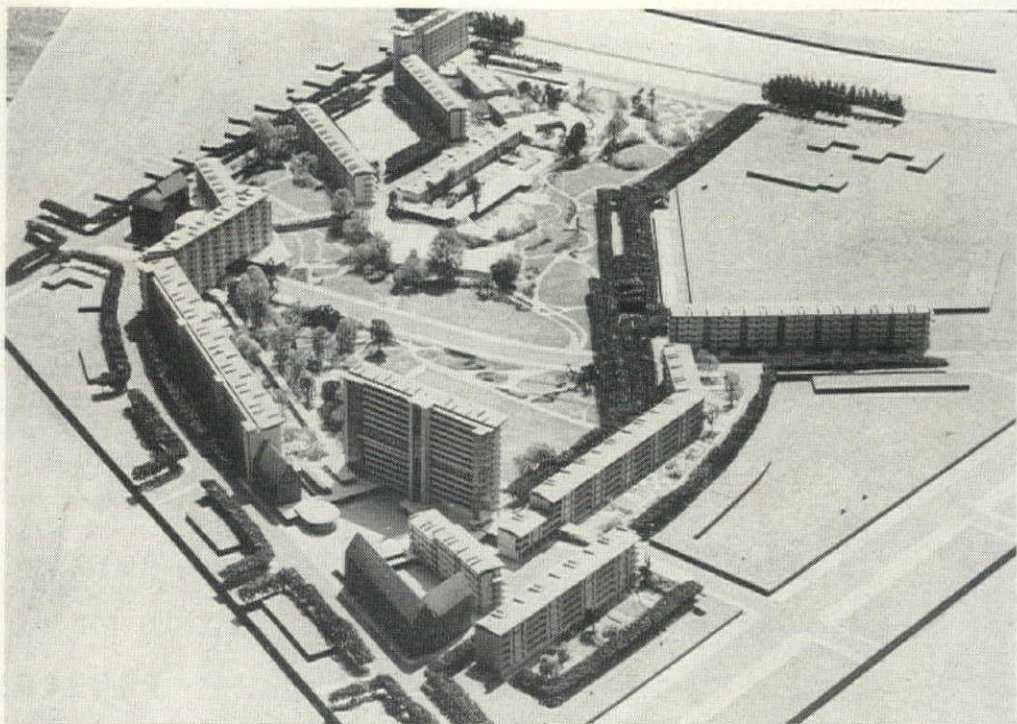
Reasons behind corporate moves varied. Many a big Manhattan company is scattered inefficiently throughout several buildings (like Standard-Vacuum and Union Carbide), cannot readily find more space except in new buildings at, say, \$6 a sq. ft.—two or three times what companies pay for similar space under long-term leases in old buildings nearby. Although executives do not like to talk about it, fear of atom bombing probably influences decisions as does the noise and crush of city

traffic and congestion, and the fact that many top brass already live in Westchester County or adjacent Connecticut.

Housing headaches. Whatever else it brings, the transition in Westchester County promised a crop of problems that other suburbs could do well to watch. Some officials feared the advantages which drew firms to Westchester—good schools, parks, parkways, rail transportation and country-like scenery—would be submerged. Worst of all, they feared zooming taxes such as have confronted many a suburban community whose postwar housing boom has swamped its school system and municipal services.

So far, tax rates have remained stable (\$4.33 per \$100 in White Plains, for instance). And the county was doing its best to open the door to corporate invasion only for firms whose plants will not add to school costs. Said Harold Delaney of the Westchester County Assn., a leading backer of selective surrender to commerce: "These home offices won't cost the communities much. They add a great deal through tax assessments. And they won't demand much of anything in the way of special services. They take care of their own roads. They won't need increased fire or police protection. They

Harang & Biaugeaud



Strasbourg housing project hailed as 'second radiant city'

One of war-torn Europe's most impressive reconstruction jobs was nearing completion this month for bombed-out residents of Strasbourg, France. The 808-unit apartment project (model above), designed by Architect Eugene Elie Beaudouin, had so captured the fancy of French newspapers they were calling it a second "radiant city." And plans were afoot for a duplicate at Draveil, near Paris.

The 11 buildings range from 2 to 14 stories high. Bigger apartments for families with

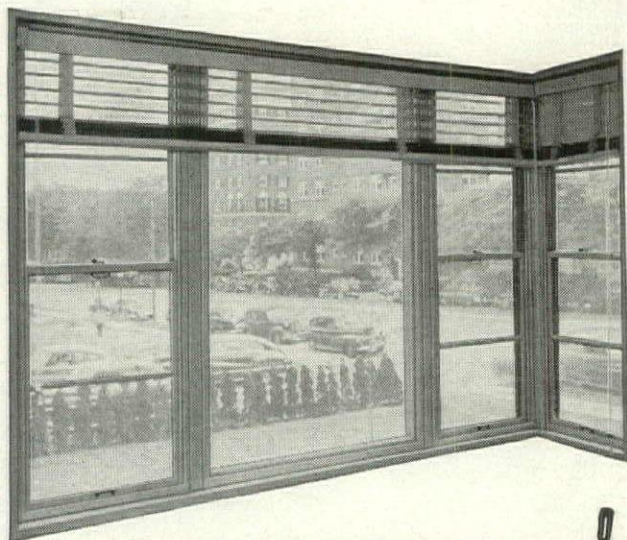
children are concentrated in the low ones. Concrete wall panels—bearing for low buildings and curtain for structures over 4 stories—were prefabricated on the site. At 20,000 francs per cu. meter (\$1.43 a cu. ft.), Beaudouin said the project will cost only \$1.55 billion francs (\$3.9 million), about 20% less than the going rate for residential building in France. Under construction for 18 months, the project is due for completion in March. One amenity: balconies that total 4½ mi.

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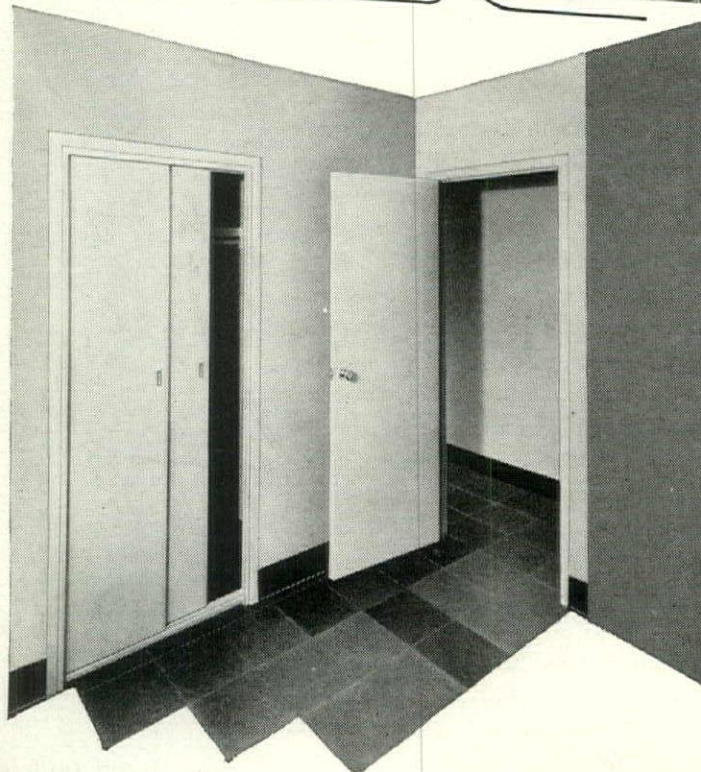
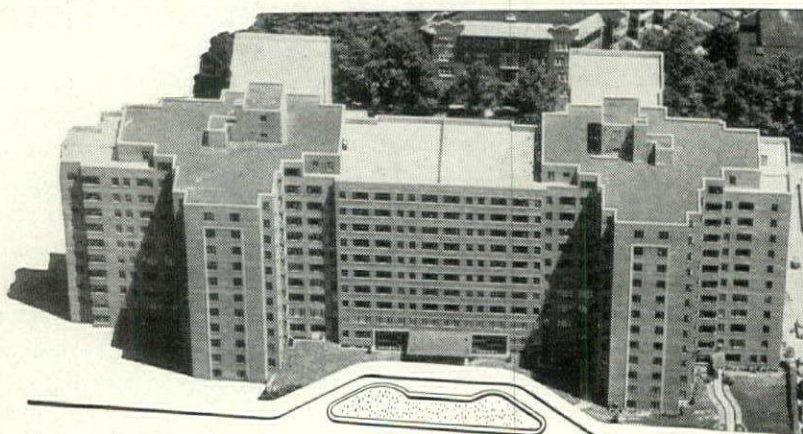
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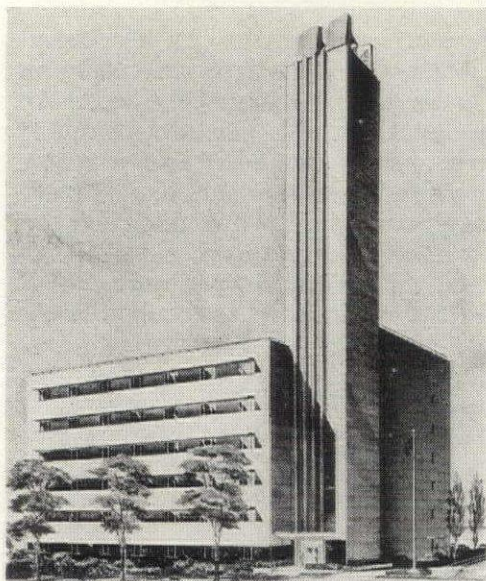
a name you can build on

are even putting in their own sewers."

The hardest problem emerging was how to build housing for modestly paid clerical help. Homes are not cheap in Westchester. Yet Tufaro estimated that three out of four newcomers will need apartments renting for under \$100 a month, or homes selling from \$12,000 to \$18,000. Many a Westchester city, fighting to preserve its high-toned integrity, has been legislating larger and larger minimum lot sizes. The town of Bedford has a four-acre minimum. One-acre minima are common. When one builder contracted to buy acreage in Mt. Pleasant, erect up to 800 small homes, the town board rezoned most of it into acre lots which balked the development. Later, the tract was sold to GE.

City hopes and fears. A few Manhattan realtors viewed the flight to the suburbs with grave misgiving. One was Broker James Felt, who wrote: "The movement of middle-income population out of the city and the heightening interest on the part of large organizations in locating their offices and plants beyond city limits should not be accepted with complacency." To Felt, the census disclosures were alarming: New York's nonwhite population swelled 62.4% between 1940 and 1950, while its white population grew only 2%. Felt thought this increase in New York's low-income families was an "underlying cause" of the city's chronic and staggering deficits.

Most others view the shift with more equanimity. As the New York State Department of Commerce pointed out at year's end, for every firm that has left for the suburbs, "others have eagerly sought the space left behind." Editorialized the *Herald Tribune* recently: "All that is happening here is merely that New York City is bursting its bounds."



AT&T'S SWITCHING center at White Plains will mean a move from Manhattan for 540 administrative employees, 5% of long lines force in N.Y.

Another House group raps military waste in construction but picks some poor examples

During his campaign, General Eisenhower promised to restudy military spending for waste and duplication. Last month, the Pentagon had a foretaste of how the GOP might go about it. Sen. Leverett Saltonstall (R, Mass.), new chairman of the Senate armed services committee, invoked a seldom-used committee power to halt the spending of some \$60 million for overseas air bases pending a top-level review by Ike. Said Sen. Styles Bridges (R, N.H.), new president pro tem of the Senate: "We are going to set up a commission to look for ways of eliminating waste in the armed forces, including waste in construction. It will be made up of engineers, scientists, union leaders and other authorities."

As far as waste in construction went, Frank R. Creedon, the outgoing Defense Department regime's director of installations, was well on the way to a formula which could answer the most frequently voiced complaint of Congressional investigators: an inexcusable lack of uniformity. Creedon, fighting both inertia and intra-service jealousy, hoped to put across a set of uniform construction criteria for repetitive-type buildings like barracks, mess halls, BOQs, warehouses.

Old construction hand Creedon still did not know whether Defense Secretary Charles E. Wilson would keep him on the job. Said Creedon hopefully: "I *do* want to accomplish something."

Whack the budget? Congressmen who aimed at accomplishing a reduction in the proposed \$2.7 billion budget for military construction got more talking points from Rep. Porter Hardy's subcommittee on government operations. Joining the year-long Congressional dirge over profligacy in military building, the Hardy subcommittee (a creature of the old Congress) cited 15 Army, Navy and Air Force domestic bases for building practices it considered wasteful. It complained about a wide range of unit costs for similar buildings for the three services in similar climates, said the military still has failed to discriminate between what is needed now and later.

The committee offered one explanation for varying costs for similar structures: "The construction cost of barracks for less than 200 men is . . . very costly." At Ft. Knox, for example, investigators found the army paid \$650 more per man than usual for small-size barracks. Recently, the services have switched entirely to big barracks.

The Hardy group complained that the Air Force was hiding the extra cost of its dormitory-style barracks by cutting con-

struction standards. The result, it said, was a structure with greater eye appeal, but one that probably would prove costly to maintain. At the Ft. Worth Quartermaster Depot, the probers noted that each new warehouse was being built with 6,000 sq. ft. of administrative space—an apparent waste of money since that base like most others already had enough office space.

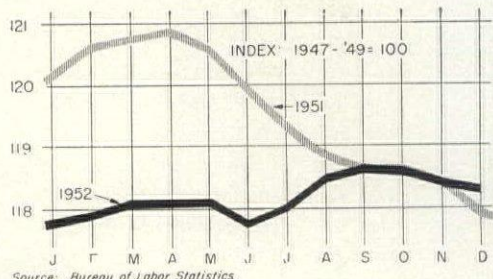
Like many another Congressional investigation, the Hardy report also censured as extravagant some building features which might actually be the wisest possible use of taxpayer money. Construction men were disconcerted to read that the committee thought folding plastic partitions in classrooms and wide use of double-glazing at the Air Force's Limestone, Me. base were examples of "plush features."

\$1 billion cutback. As the repeated Congressional gripes piled up, Ass't Air Force Secretary Edwin V. Huggins disclosed that cost studies and lower construction standards have enabled the Air Force to cut \$1 billion from its base buildup program. The cut comes off the \$9.5 billion the Air Force estimated last spring it would take to build accommodations for expanding from 48 to 143 wings.

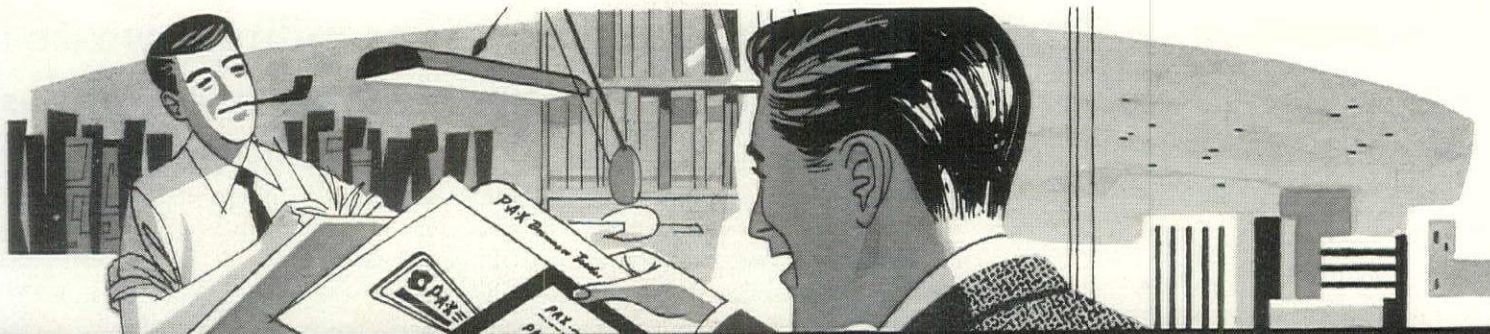
But Air Force building men defended dormitory-style barracks vigorously. Individual rooms, they argued, best serve round-the-clock airbase operations. Besides they encourage re-enlistments, which saves much of the \$18,000 cost of training new airmen. But the Air Force is still building two-story, 133-man barracks and three-story, 198-man units. It has abandoned 85-man barracks, which the committee saw.

Milwaukee kills rent control

On Labor Day Democratic Congressional candidate Andrew Biemiller announced Milwaukee had been placed under critical defense area rent control. Postscripts: Biemiller lost the election; last month the council voted 25-2 to remove the controls.



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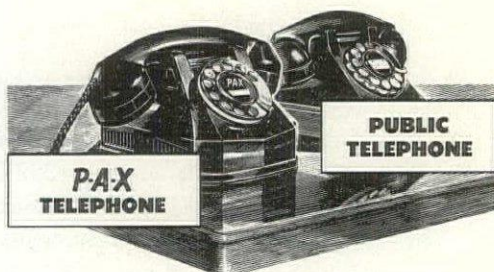


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Congress faces fight over bid shopping bill, Fanny May, reshuffle of building bureaus

As the 83d Congress took its seats, building's legislative horoscope took on a new luster. Not since the Hoover regime reached its halfway mark in 1929 had both the legislative and administrative branches exhibited such signs of friendship toward the business community. Yet if building men would not be crowded off the road so many times with reform innovations or new controls, they were less confident they would be freed from strait-jackets imposed during 20 yrs. of New and Fair Deals. GOPers, while anxious to slow paternalism, knew the political appeal of many New Deal measures, would stop, look and listen before scrapping some of them.

Nine lives of public housing. Public housing, for example, had a sizable block of adherents in the Republican party, although it runs against the grain of the high command. Eisenhower had taken no public stand on the issue but except for Senator Taft his team of Congressional leaders has no love for the program. Actually, Ike and his cohorts will find a public housing appropriation bill unavoidable. They may stop all new starts and look for a new and cheaper approach to low-rent housing needs—perhaps new federal aids to rehabilitation of old housing. But yearly grants for projects in operation or rebuilding still will have to be paid. The tab now totals \$18 million a year. In a few years, it will rise to \$54 million as projects already authorized are completed.

Best bet on subsidized housing: a token program will squeak through Congress—probably less than the 35,000 starts legislators reluctantly allowed last year and set as the limit for future years. Nobody considered Truman's farewell budget request for 75,000 units seriously.

Industry divided. On some building measures, Congress might have a hard time making up its mind because the industry itself was divided. In that category: the anti-bid-shopping bill introduced in the House on opening day, plans to reorganize the government's construction and housing agencies, and Fanny May.

The bid-shopping bill promised a nasty row between general contractors and specialty contractors. The measure would require general contractors to name subcontractors and their bid prices when submitting general bids on all federal projects. Except for opposition of government building agencies, who generally agree with general contractors that such rules would cost taxpayers money, the

bill would stand a fair chance of passage.

The special powers Congress granted the executive branch to reshuffle bureaus and departments will expire April 1. Under this streamlined procedure, shifts proposed by the President become effective unless either House of Congress rejects them within 60 days. To let Eisenhower put through his own plans for rearranging federal administration, the enabling legislation will be extended.

Consolidate or scatter? A long time dream of reorganizers has been to consolidate construction in one bureau instead of the dozen which now have a finger or a whole hand in it. Most plans make the Interior Department the chosen instrument, lumping public building, the public roads program, reclamation and irrigation, and the rivers, harbors and flood control functions of the Army engineers.

From Hoover through Truman, however, administrations have proved unable to strip the Corps of its civil work. In a century of log rolling on Capitol Hill, the engineers have so endeared themselves to lawmakers as to become sacrosanct. Contractor groups, anxious to preserve their satisfactory relations with engineer officers, have always helped the Corps maintain the *status quo*. Whether Ike will wade into this fight, try to make the politically potent engineers stick to military work was still an open question.

A complete reshuffling of housing agencies, strongly urged by most of the building industry and some Eisenhower advisers, would also be up for debate in Congress. Strong sentiment favored killing HHFA, assigning its research and slum development elsewhere, leaving FHA and the Home Loan Bank Board independent.

Fanny May (Federal National Mortgage Assn.) looked like a sure-fire battleground. Bankers, insurance companies and conservative Congressmen would like to see the government secondary mortgage market that buoys up FHA and VA paper liquidated. But many homebuilders will fight for its continuance. On balance, Fanny May seemed unlikely to be given any more taxpayer money to buy mortgages. Its power to issue advance commitments for defense, military and disaster housing expires June 30. It may win a grudging extension of this power.

Two identical bills that would make the mortgage fraternity squirm were introduced by Rep. Edith Nourse Rogers (R, Mass.), chairman of the House veterans affairs committee, and Rep. Olin D.

Teague (D, Tex.), ranking minority committeeman. They would extend the government's direct lending program for GI home loans two more years from its present expiration June 30. The measures would let the government lend up to \$25 million per quarter to veterans unable to find 4% loans from commercial lenders. Unhappy at the possibility of continued political interference with interest rates, lenders ruefully recalled the landslide vote by which Congress approved the last extension to the direct loan program.

Smoother sailing. Some legislative matters faced no quarrels. Both AFL and contractor spokesmen have agreed on amending the Taft-Hartley law giving the industry a clear-cut exemption from its union representation provisions. A likely version: the Taft-Humphrey bill, which passed the Senate last May; it permits contractors to make agreements with unions before work begins, permits a union-shop contract requiring workers to join a union after seven days.

Little opposition was in sight anywhere for giving FHA insurance ceilings another boost. Chief reason: FHA is self-supporting. Title I repair and modernization loans have limped along on payoffs since the \$1.25 billion insurance ceiling was reached five months ago. The regular FHA program under Title II and the defense housing Title IX section, for which the insurance lid is \$11½ billion, will run dry before 1953 is out.

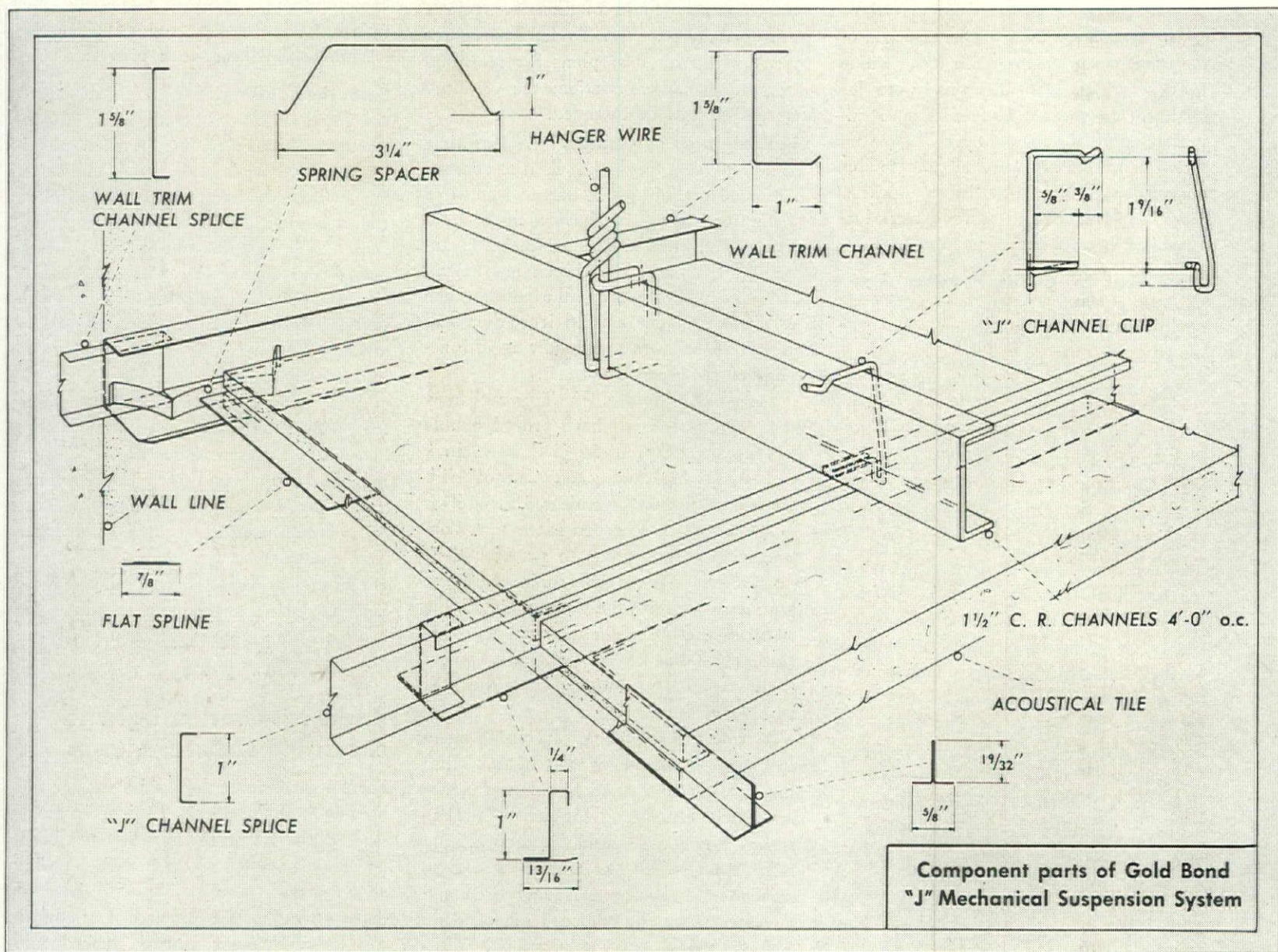
Code revision sought to check NY theater slump

For 25 yrs., not a legitimate theater has been built in New York City, the nation's stage capital. One reason: the city's obsolete building code, which forbids building above a stage, forbids theaters above or below street level in commercial structures. Yet movie theaters can be tucked into skyscrapers, even though they include a stage for live shows.

Three years ago, City Councilman Hugh Quinn introduced bills to wipe out such discrimination, permit sale of liquor in theaters, and ease the total ban on smoking (which also applies only to legitimate theaters). Last month, prodded by theater owners suffering from Broadway's slump, New York's fire department and creaking department of housing and buildings at last gave their assent, with minor changes. It looked as if the city council would vote the new deal into effect shortly. New Yorkers cheered, despite a warning by Operator Louis Lotito that building costs were too high for his City Playhouses, Inc. to build any new theaters now, anyway.

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PEOPLE: Harvard names José Sert architectural dean; Colorado architect examiners under fire on licensing

For its new dean of the school of design, Harvard University this month picked Barcelona-born Architect **José Luis Sert**, 50, of New York. On Sept. 1, Sert will succeed **Joseph Hudnut**, who is scheduled to retire at the end of this term. No successor seemed likely to be named for Bauhaus-founder Walter A. Gropius, who resigned last June as architecture department chairman.

In Sert, who is president of the CIAM (Congrès Internationaux d'Architecture Moderne), Harvard will get one of the world's top town-planner architects, yet one who is probably better known in Central and South America than in the US. Sert and his partner Paul Lester Wiener are authors of master plans for more than half a dozen South American cities, including Lima, Peru. No stranger to academic roles, Sert has lectured extensively on town planning at US architectural schools; in 1944-45 he was professor of city planning at Yale. His book on town planning, *Can Cities Survive*, is a text in several schools.

As a building designer, Sert is considered a devotee of Le Corbusier's ideas. Except for a year with Le Corbusier in Paris, Sert studied and practised in Barcelona until 1938. He came to the US in 1939. Sert said he expected to continue his New York practice despite his academic duties.

Legal vindication arrived last month for **Le Corbusier's** controversial 17-story "Radiant City" apartments just outside Marseilles (FORUM, Jan., Feb., Aug., '52, News). A French court dismissed a 20-million-franc (\$57,000) damage suit brought by the Society for the General Esthetics of France three years ago against Corbusier and nine of the 47 contractors on grounds that the project was "morally and esthetically unsuited for France," would disfigure the city's waterfront skyline. Ruled the court: esthetic notions are subject to frequent change, hence they cannot form the basis for a law suit. Corbusier could also count another vindication for his design: promotion to commander in the Legion of Honor.

Army Secretary Frank C. Pace Jr. officially "admonished" three engineer corps officers who were severely criticized last

summer by the Senate armed forces preparedness subcommittee for their roles in North African airbase construction. The three: former Engineer Chief **Lt. Gen. Lewis A. Pick** (retired last November) and two colonels in charge of the work, **F. F. Frech**, division engineer at New York, and **George T. Derby**, district engineer in Morocco. Pace disclosed that former AGC President Glen W. Maxon had been hired as an "independent expert" to study the costly program, had reported last September that "competent management" directed the operations and there was "no reason to think the government had paid an excessive value for the facilities constructed."

After a year of hearing congressional investigators hammer at expensive, disorganized US military construction abroad, the Pentagon reacted. Ordered from Washington to US forces in Europe, effective next month, was **Maj. Gen. George J. Nold**, deputy chief of Army Engineers. His initial assignment: "organizing a central construction authority for all three services in France," where the greatest concentration of US foreign construction lies.

Later, said reports from SHAPE headquarters, Nold may head a unified construction agency for all three American services throughout the continent. The agency might swell to some 1,000 people, would rush construction of long-delayed permanent barracks, schools, chapels and recreation halls for 15,000 US airmen who will occupy ten of the Allied airbases under construction in France. At the moment the US, footing the cost of an \$800 million chain of supply bases across France in addition to its NATO commitments, was spending about \$12 million a month for defense construction in France. Nold will operate from Orléans, France, communication zone headquarters. In a few months, he is expected to move to Frankfurt.

Last October, **Alfred J. Patrick**, construction superintendent for an airport project at Charleston, S.C. got into the local papers because he built the first home on a new subdivision's Easy St. This month, he was back in the local headlines, indicted on charges of using his company's employees and materials to build the Easy St. manse.



SERT

Berry Kramer



NOLD

US Army

Colorado's State Board of Architect Examiners came under legal attack by nine men to whom it refused licenses. Key suit was by **Nat Sachter**, 33, a licensed engineer of Denver, who claimed the 1909 law creating the board was unconstitutional because it prescribes no standards of qualifications for license seekers. District Judge William A. Black, before recessing a hearing on the case Dec. 31, said he had "grave doubt" about the law's validity. Sachter received an engineering degree from Colorado University in 1941, worked for a Detroit architect-engineer firm from 1941-43, was a master sergeant with the Army Engineers and since the war has designed industrial plants, supermarkets and warehouses. Twice he failed the board's four-day architect examination. He also was suing to restrain the board from interfering with his work as an architect or else compel it to license him.

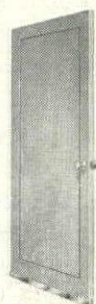
In another suit, **James H. Johnson**, 32, sought a reciprocity license in lieu of the four-day exam and charged that for many years the board "illegally, arbitrarily and unlawfully . . . formulated a secret policy and agreement that the number of persons admitted to practice architecture in Colorado will be extremely limited regardless of qualifications . . . [and] will remain a closed shop." Johnson, an MIT '48 graduate in architecture, passed a four-day Illinois exam in 1949, subsequently received reciprocity licenses from New York, South Dakota and Nebraska. He challenged a board rule that reciprocity applicants must have five years experience as a principal, claimed this exceeded the board's authority to register such an applicant provided he had met "substantially equivalent" licensing standards in another state.

As the Sachter and Johnson cases approached trial, the notoriety prompted seven more suits. Some were brought by Colorado citizens not licensed anywhere else but who demand examination-exempt licenses on claims of qualified training or experience. Despite the furor, Board President **James Hunter** of Boulder and his four comembers, **Dudley Smith**, **Thomas Fahey**, **Paul Atchison** and **Earl C. Morris**, kept silent.

NAMED: J. A. Olsson, civil engineering consultant, as temporary (and probably permanent) head of the Bakersfield, Calif. building department, reorganized following last summer's earthquakes which did \$3 million damage there; President **Maxwell A. Cantor**, of AIA's Brooklyn chapter, as recipient of the Sidney L. Strauss Memorial Award of the New York Society of Architects for his legislative activity and other work as the architect who did most for the profession in New York State last year;

continued on p. 50

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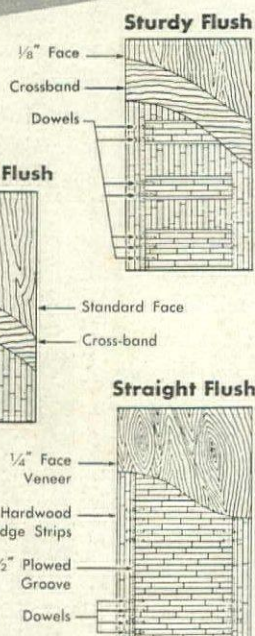
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Harold S. Osborne, retired chief engineer of AT&T and former president of the American Society of Planning Officials, as president of the New York Regional Plan Association; **Eduard Farber**, chief chemist of the Timber Engineering Co. research laboratory, as a Fellow of the Royal Society of Arts and an honorary member of the Mark Twain Society, in recognition of his 350-p. book, *The Evolution of Chemistry*; Architect **Wallace K. Harrison** as a trustee of the American Academy in Rome.

In July 1950, during the first year energetic **Ralph T. Walker** was AIA president, intense, nimble-minded **Frederick A. (Fritz)**



GUTHEIM

Reni Gutheim, 44, joined the institute staff as assistant to executive director **E. R. Purves**. Editor-author Gutheim (*Frank Lloyd Wright on Architecture*, 1941; *The Potomac*, 1949) became executive secretary for more than a dozen institute committees, represented AIA at many government conferences and public meetings. Institute activity grew more vigorous, blossomed with approval of a \$100,000 three-year public relations program voted last June and now about to get underway. But the Gutheim tone and tempo jarred some ears. At year's end, AIA quietly dropped Gutheim from its staff. Concurrently, inertia-battling Walker was resigning as chairman of the institute's international relations committee. Walker refused comment on his own action or the Gutheim jettison except to say they had no direct relation.

DIED: Reginald D. Johnson, 70, FAIA, who after a long career as a designer of Spanish and Georgian mansions in Los Angeles and Santa Barbara was so struck in 1934 by what he saw in Washington slums that he withdrew from general practice, spent most of the rest of his life battling for public housing, slum clearance, urban rehabilitation, and became a convert to contemporary design, Oct. 28 in Pasadena; **Robert Knight**, 82, former president of the Building Officials Conference of America and deputy building commissioner of Chicago for 35 yrs., Nov. 24 in Chicago; Architect **Hugh Tallant**, 82, Harvard and Beaux-Arts graduate, designer of the Brooklyn Academy of Music and several Broadway theaters, Dec. 8 in



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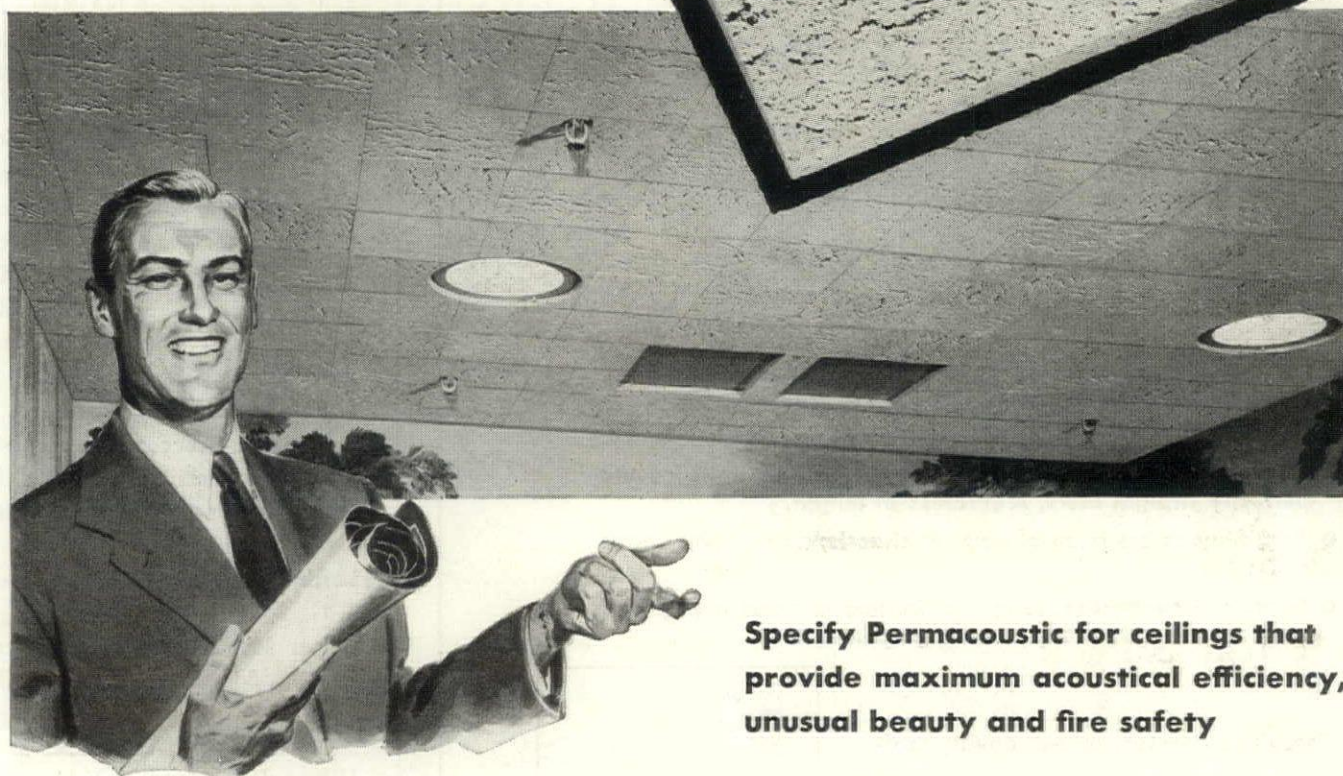
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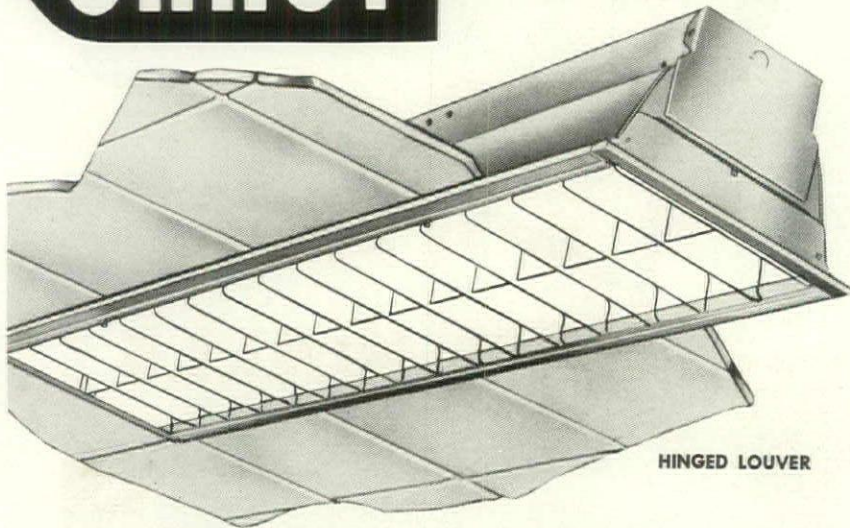


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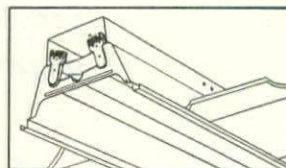
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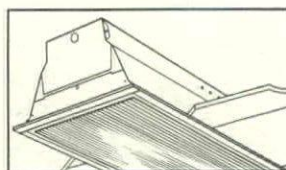
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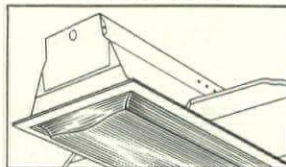
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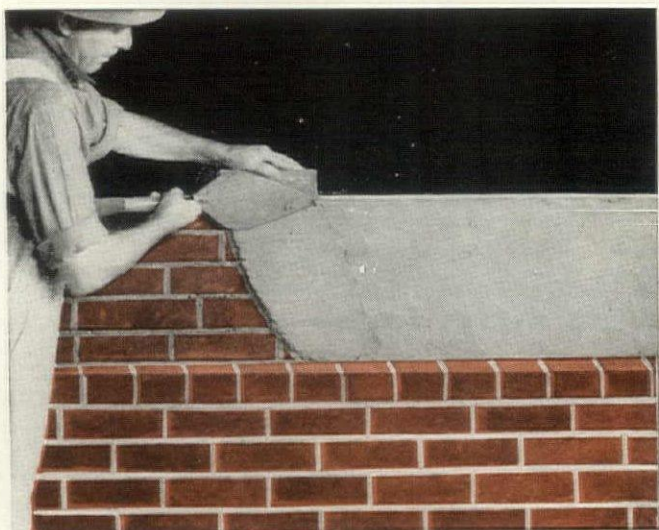
Savannah; **Albert James Wilcox**, 62, partner in Wilcox & Erickson, consulting engineers, and designer for the foundations and steel structures of the Commerce Department and National Archives buildings in Washington, the Salmon Tower and Roxy Theater in New York, Dec. 14 in New York; **Dr. Bowman F. Ashe**, 67, president of the University of Miami who directed reconstruction and expansion of the university with modern architecture after a 1926 hurricane destroyed the original, central "Cardboard College" building, increased enrollment from 236 that year to 10,000 students, Dec. 16 in Coral Gables; **Fred E. Wolcott**, 59, president of the Tulsa Association of Building Owners and Managers and a governor of NABOM, Dec. 16 in Oil City, Penn.; **Joseph Charles Rovensky**, 66, board chairman of the Patino tin organization, director of Massey Concrete Products Co. and Lone Star Cement Corp., Dec. 17 in Pelham Manor, N. Y.; **William Henry Hayes**, 61, professor of architecture at Columbia University, Dec. 19 in New York; **Charles W. Currier**, 66, board chairman of Kewanee-Ross Corp., subsidiary of American Radiator & Standard Sanitary Corp., Dec. 22 in Buffalo, N. Y.; **Adolph F. Bernhard**, 82, architectural engineer for the Harkness Memorial at Yale University, associated for 40 yrs. with the firm of James Gamble Rogers, Dec. 24 in Yonkers, N. Y.; **Henry A. Lardner**, 81, retired vice president of the J. G. White Engineering Corp., Dec. 27 in Upper Montclair, N. J.; **James B. Haddon Jr.**, 54, vice president of Hilton Hotels Corp. who supervised planning and construction of such landmarks as the Caribe Hilton, Jan. 4 in New York.

Moses' coliseum rushed to beat capital turnover

New York City's redevelopment and coliseum project (FORUM, Dec. '52, News) reached Washington this month despite architects' objections that it might add another artistic eyesore to the city's spate of third-rate postwar buildings. Sponsor Robert Moses hoped for US approval before Jan. 20 so he would not have to "face the prospect of going over this entire rigmarole with a new administration."

One sign of Moses' haste: HHFA reported receipt of an application for a \$5.9 million Title I redevelopment grant dated Dec. 11. Yet New York's city planning commission did not give its required approval for the project until Dec. 12, the city's board of estimate until Dec. 18. Review usually takes two to four weeks, said HHFA. Washington approval before Inauguration Day was a distinct possibility.

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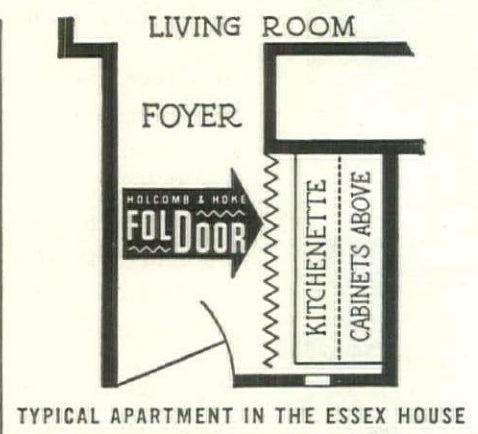
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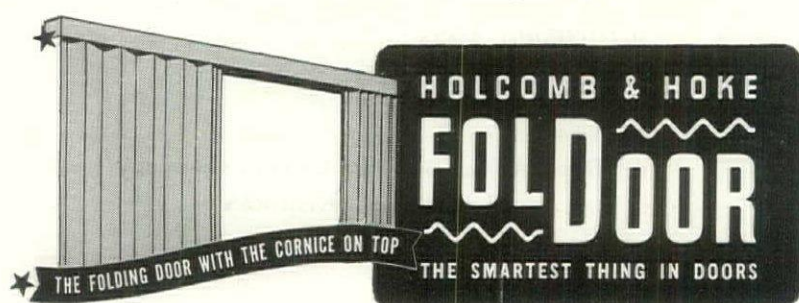
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EVENTS TO COME

Built in USA—annual exhibition at The Museum of Modern Art, New York City; **Jan. 21-March 15**. Includes 43 buildings selected for quality and contemporary significance, shown in models, color slides and photos.

Plant Maintenance Conference, sponsored by American Society of Mechanical Engineers and Society for the Advancement of Management, at Cleveland, **Jan. 19-22**.

American Society of Landscape Architects' annual meeting, **Jan. 25-28** at Ansley Hotel, Atlanta. Program will include both trade and professional exhibits.

American Society of Heating and Ventilating Engineers' 59th annual meeting, **Jan. 26-29**, at Conrad Hilton Hotel, Chicago, in conjunction with the International Heating, Ventilating and Air-Conditioning Exposition.

Architectural League of New York's nationwide Gold Medal competitive exhibition in architecture and engineering, **Feb. 3-27**, at the League's headquarters, 115 East 40th St., New York.

Church Architectural Guild of America's annual meeting **Feb. 12-14** in the Hotel Statler, Washington. Architects are invited to attend and to exhibit. Address the Guild's New York (16) headquarters at 27 East 39th St.

American Association of School Administrators' national convention, Atlantic City, N. J., **Feb. 14-19**, will feature the school-building architectural exhibit. Architects are invited to participate. For particulars write: AASA, attention: Dr. Shirley Cooper, 1201 16th St. N. W., Washington 6, D. C.

Plastics exhibit—the Reinforced Plastics Division of the Society of the Plastics Industry will demonstrate the versatility of reinforced plastics in architectural applications, in an exhibit at its annual conference, **Feb. 18-20**, Shoreham Hotel, Washington, D. C.

Scholarship—Department of Landscape Architecture, Graduate School of Design, Harvard University, announces a \$1,000 national scholarship for graduate study in landscape architecture. Open to US citizens who have received their bachelor's degree, or equivalent, within the past 4 yrs., or who are candidates for the degree in June, 1953. All inquiries should be received before **Feb. 1** by the Chairman, Department of Landscape Architecture, Robinson Hall, Harvard University, Cambridge 38, Mass.

Fellowship—Princeton's School of Architecture announces the Lowell M. Palmer Fellowship in Architecture (\$1,200) to assist a student of unusual promise to undertake the advanced study of architecture at Princeton. Applicants must be US citizens, holders of a bachelor's degree, less than 27 yrs. old on Oct. 1, 1953. Applications and supporting documents are due by **Mar. 1**. For further details and application blanks, address: The Secretary, School of Architecture, Princeton University, Princeton, N. J.

Associated General Contractors' annual convention, Miami, **Mar. 23-28**.

American Institute of Architects' annual convention: Seattle, Wash., **June 16-19**.

National Association of Real Estate Boards annual convention, Los Angeles, **Nov. 8-14**.

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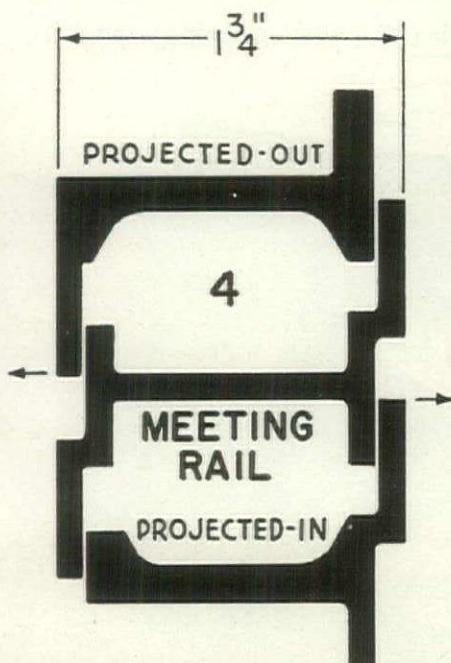
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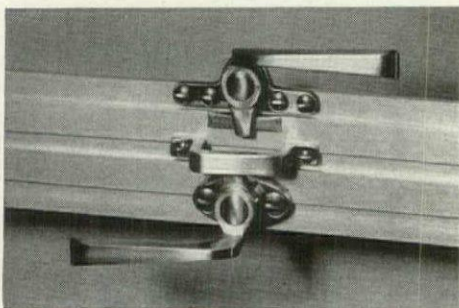
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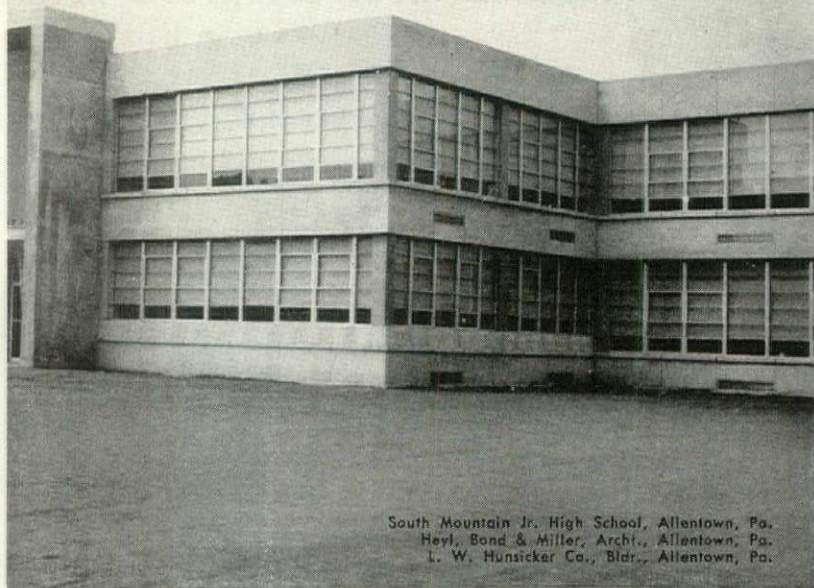


Extra Deep Sections: This full size section of the combined meeting rail and ventilator section (full $1\frac{3}{4}$ " horizontally and $2\frac{3}{4}$ " vertically) show how "Thermopane" or "Twindow" glazing can be accommodated. Also, ample room between ventilators and frame members is provided for substantial built-in hardware, such as ventilator shoes and limit arms.

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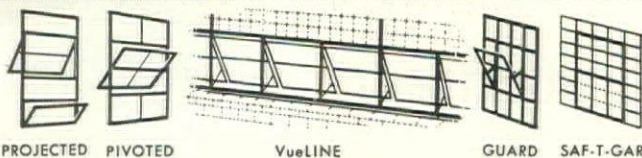
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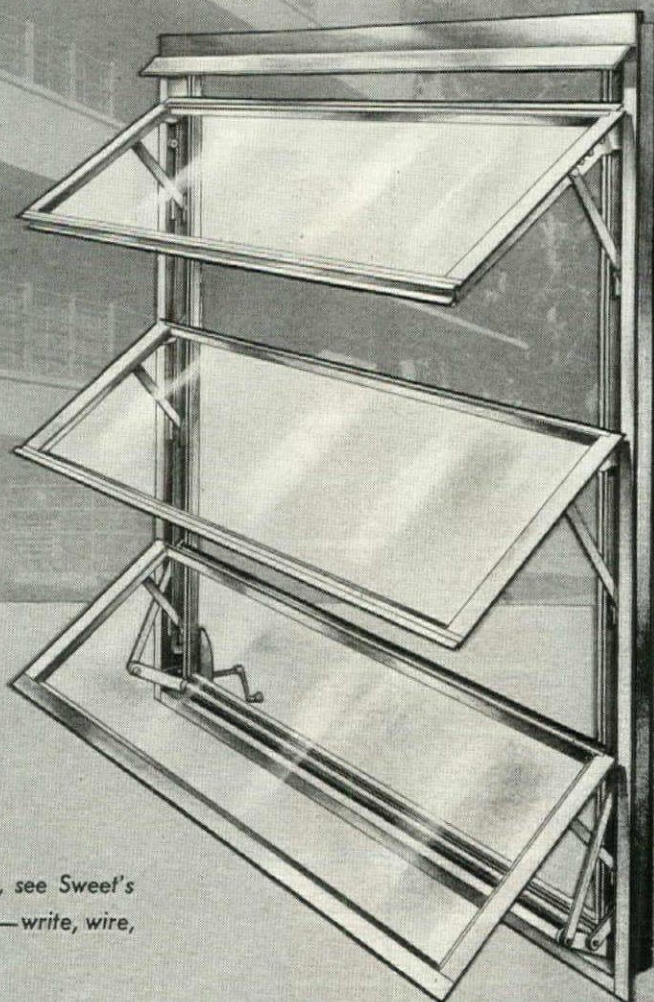
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LETTERS

SCHOOL BOARD VS. PERKINS

Sirs:

The article on the life work and history of Dwight H. Perkins (AF, Oct. '52) came to me as a breath from the past.

I have been in architectural work for over 50 years with various architects in Chicago until 1936, when I moved West.

I never worked in Mr. Perkins' office, but I had the pleasure of meeting him. I followed closely the case of the school board vs. Perkins and I believe that if anyone made an ass of himself, it was Alfred R. Union, president of Chicago's school board, not Dwight H. Perkins. We of the old school know that D. H. Perkins was many years ahead of the times in school-building construction.

I started reading your magazine in 1902 and have missed very few copies since.

FRANK M. FONDA, *architect*
Twin Falls, Idaho

OIL IN SCARSDALE?

Sirs:

Your presentation of the "Organic School" in Scarsdale, N. Y. (AF, Oct. '52) besides being very interesting was refreshing because of the imaginative thinking of Architects Perkins & Will.

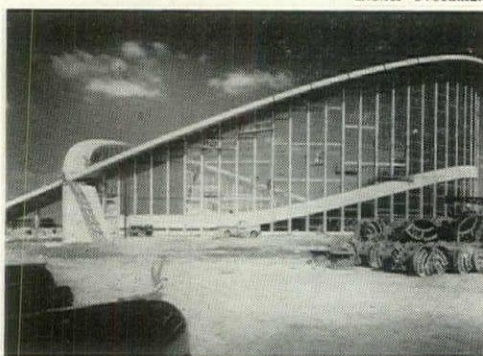
However, one question: How can one find enough money to build a school costing \$18.71 per sq. ft. and \$77,194 per classroom?

We have oil in Texas, but not that much!

ALBERT S. GOLEMON
Golemon & Rolfe, architects
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• A "bedroom suburb" of New York City, Scarsdale is the wealthiest community in swank Westchester County, which has no oil but boasts the highest per capita income (\$2,679) of any county in the state.—Ed.

Lionel Freedman



PARABOLIC PAVILION

Sirs:

It appears that the original conception of the design and structure of the Parabolic Pavilion (AF, Oct. '52) has been lost.

There is, in the oblique parabolic arches, the tension cables between them, the buttressing of one arch against another at their crossing, and the columnar effect of their crossed legs, a perfectly balanced system of

continued on p. 68

STOP LEAKS

Arch: D. A. Bohlen,
Indianapolis, Ind.

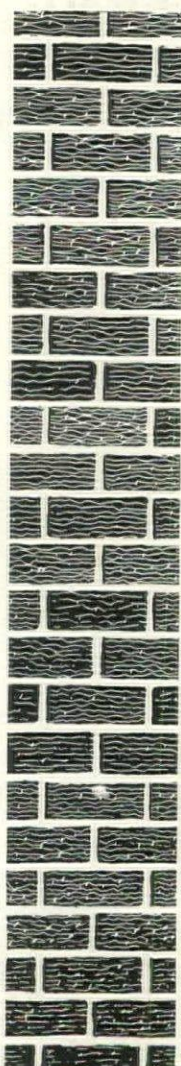


Arch: A. E. Doyle &
Associates, Portland,
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Arch: Naramore,
Bain, Brody & John-
son, Seattle, Wash.



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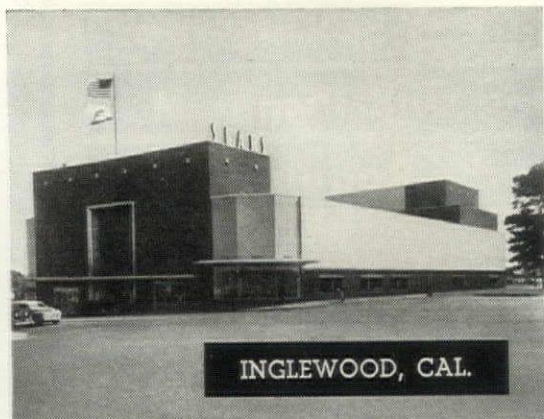
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Contractor: L. E. Dixon Co.*



CHARLESTON, W. VA.

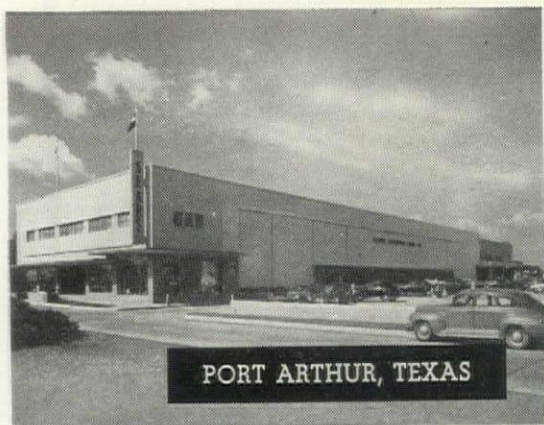
*Architect: The Ballinger Co.
Contractor: Wise Contracting Co., Inc.*



COMPTON, CAL.

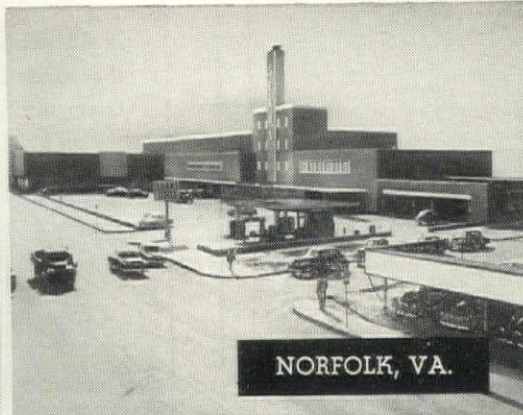
*Architect: Stiles O. Clements.
Contractor: L. E. Dixon Co.*

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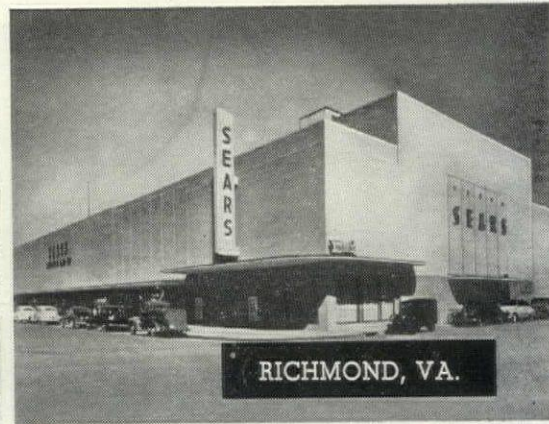
PORT ARTHUR, TEXAS

Architect & Engineer: George L. Dahl.



NORFOLK, VA.

*Architects: Shutze & Armistead. Engineer:
Robert G. Lose. Contractor: A. Artley Co.*



RICHMOND, VA.

*Architect: The Ballinger Co.
Contractor: Wise Contracting Co., Inc.*



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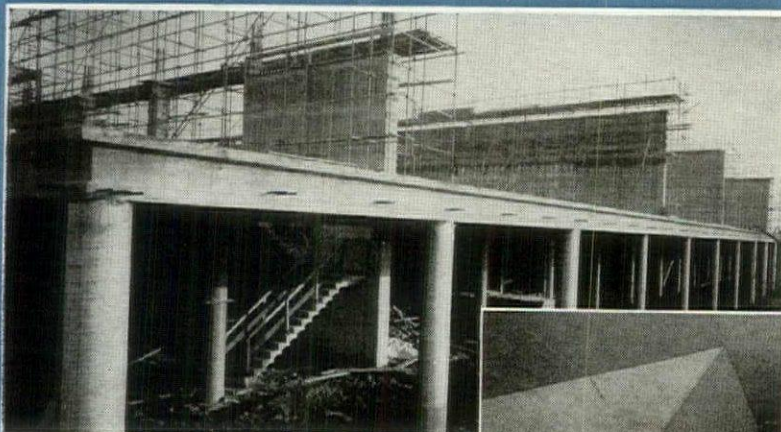
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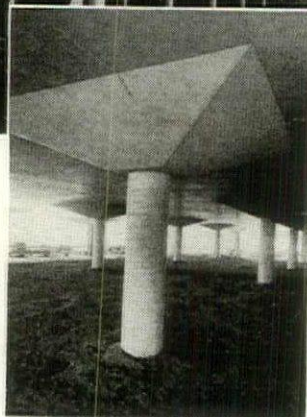
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Pereira and Luckman, Architects
William Simpson Construction Co., Contractor
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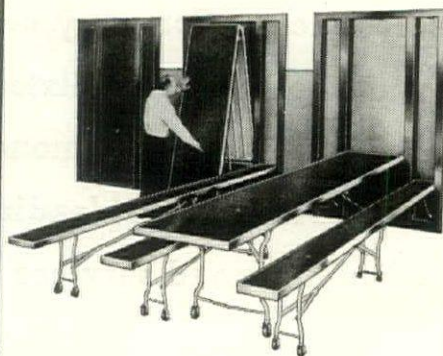


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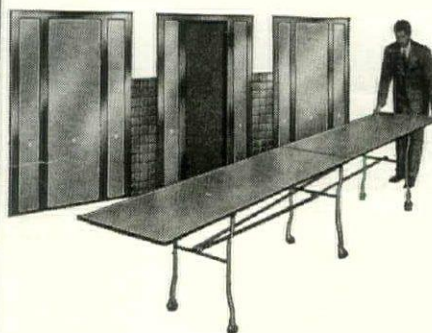


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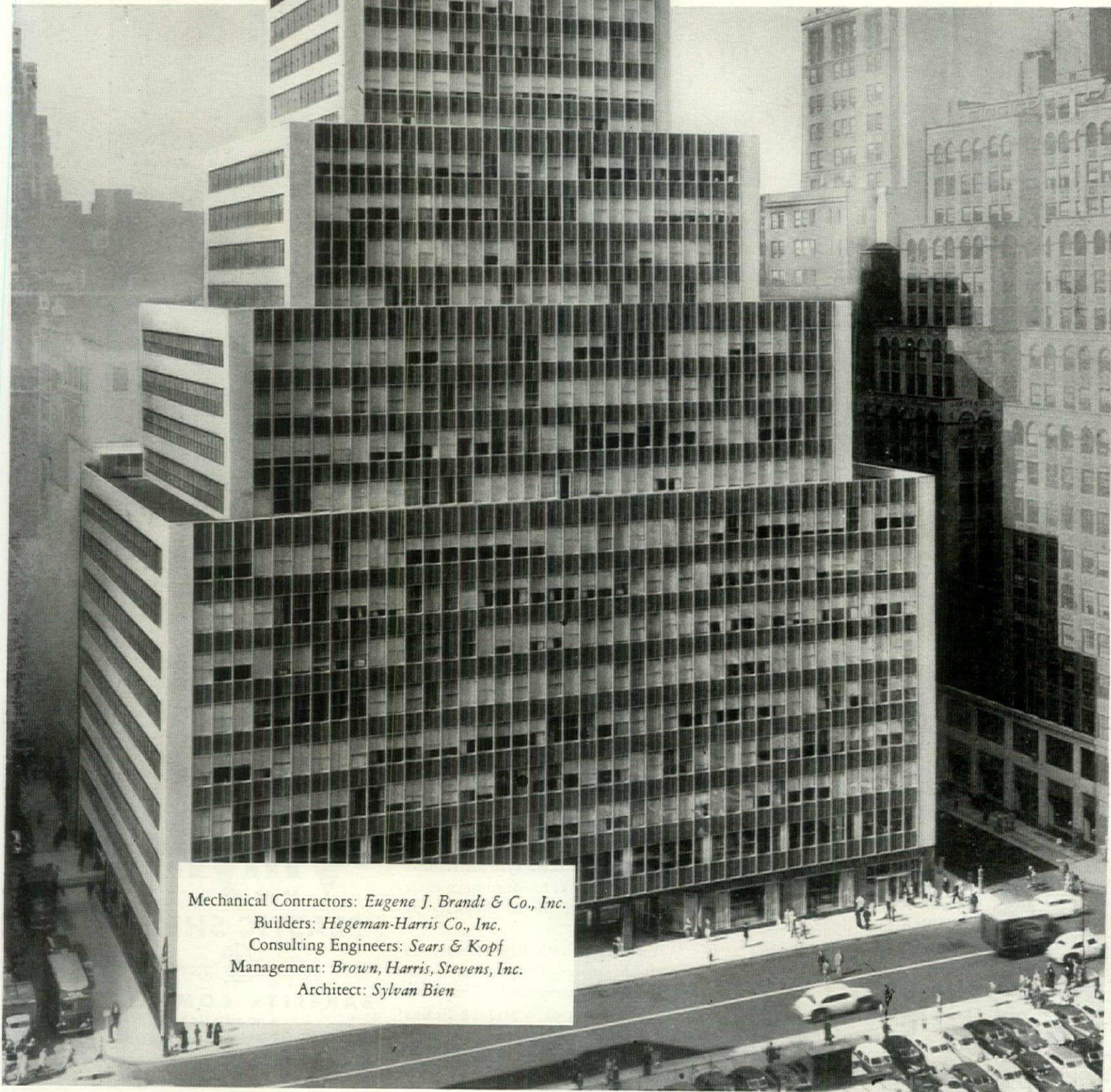
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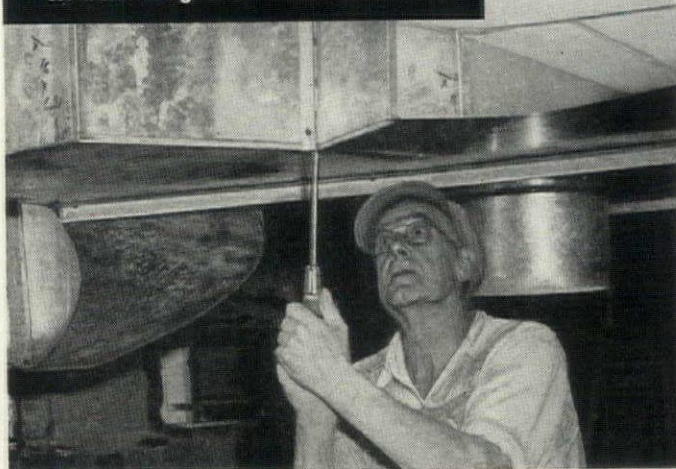
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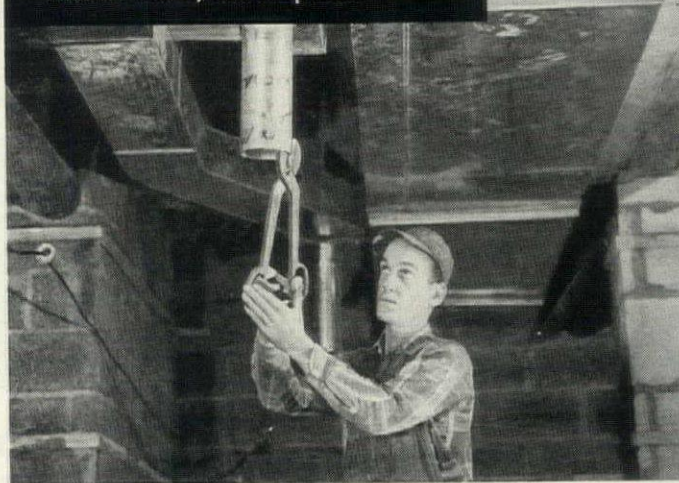


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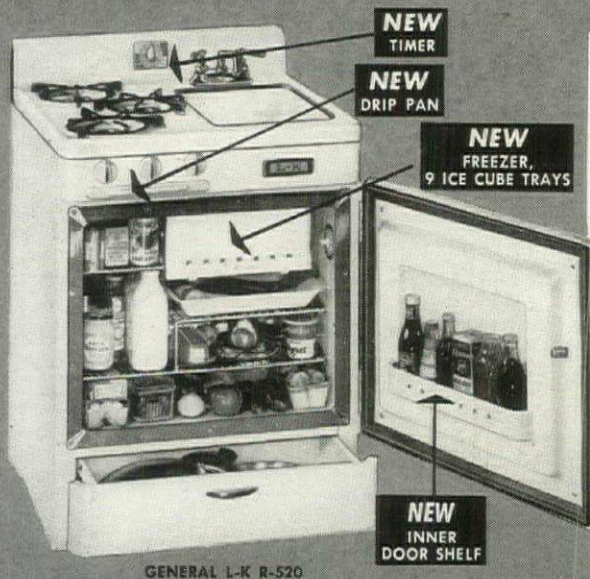
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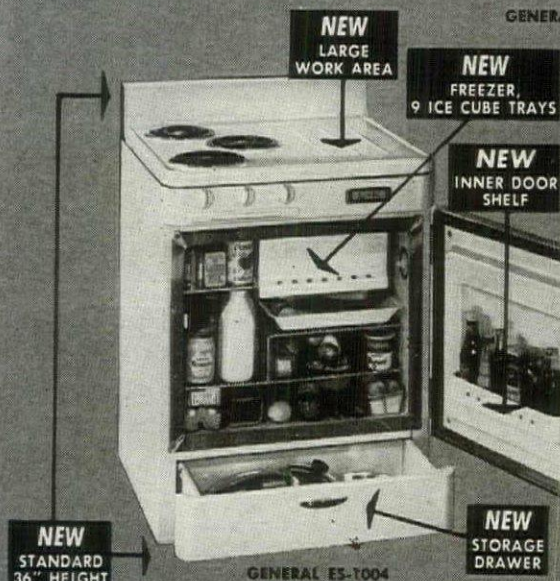
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LETTERS *continued*

forces which requires no further support of the arches.

The tension members following the line of the parabola could support the arches as long as the compression reaction is absorbed, as it must be by the buttressing of one arch against another. This table structure is then supported by the crossed legs which are in fact a triangular column formation. It then requires only the light "guying" or "staying" of the arch ends for wind bracing and practical stability.

This concept of Nowicki's is exciting, both esthetically and structurally, but what has happened to it? The suspension cables have become supports for the corrugated iron roof instead of for their magnificent purpose of supporting the arches, that obligation being taken by a superfluous cagework of concrete columns. The great parabolic arches then take and transmit the piddling load of these bits of corrugated iron. And why, in this case, the crossed legs?

A catenary roof in suspension could, I think, be more economically carried out on the straightforward suspension-bridge principle, and perhaps more elegantly.

The whole scheme is still exciting, but I think this principle of rationalizing "a spectacular testimonial to architect-engineer collaboration," as you term it, does more harm than good.

A critical analysis on your part might have made architects and engineers stop and think, and integrate a little more.

VINCENT ROTHER, *architect*
Montreal, Quebec, Canada

Sirs:

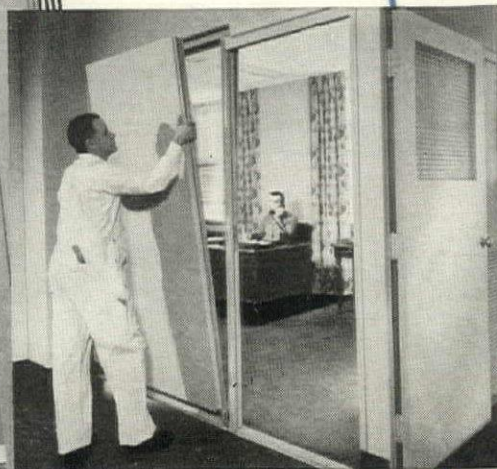
Your article on the Parabolic Pavilion and the explanation of its structural design made excellent reading and was dramatically illustrated.

Much credit must be given to the conception by Mathew Nowicki of a macroscopic canvas-topped folding camp stool as a roof. Equal praise is due to Severud and his staff for the development of the idea into a structure. The elements of a camp stool adjust themselves under the various loads and shapes of the supported weight, and the shape of the anatomy in contact also is self-adjusting under varying support possibilities. In the actual structure, no such adjustments are permissible—the designers must then fix the foundations, eliminate the pins at the crossing of the legs and provide inverted tension members to eliminate the possibility of flap in the roof covering. That the engineers performed their task well is best proved by the pleasing lines of the structure; there is nothing more graceful than a structural frame with all members in balanced stress.

An elastic catenary is the most efficient supporting element. But it is subject to rather large stress variations with relatively

continued on p. 74



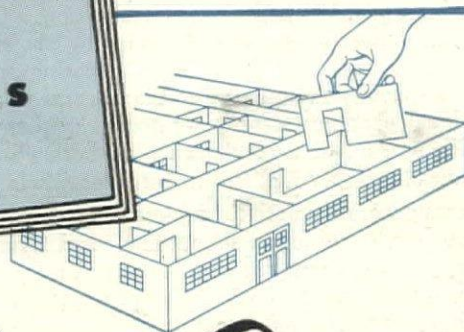


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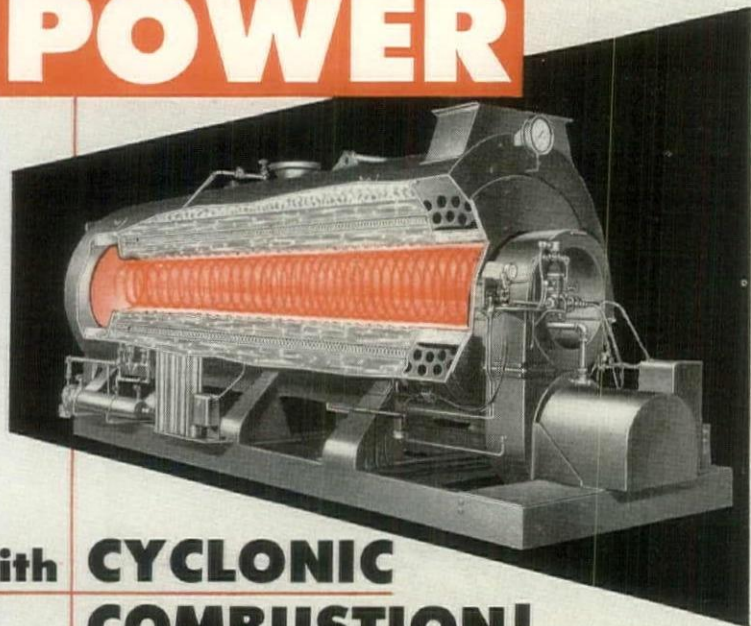
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Cyclonic Combustion is a revolutionary new concept in boiler heating. Not just a fire, but a whirling vortex of flame revolving at 200 mph sweeps the full length of the furnace, constantly heating every part of the combustion chamber surface. Complete combustion of air and fuel particles enables 65 to 75% of the heat transfer to take place in the chamber itself. With Cyclonic Combustion, a Cyclotherm steam generator can deliver a guaranteed minimum efficiency of 80%. Because Cyclonic Combustion requires less heating space, Cyclotherm generators, with fiber glass boiler insulation, save up to 1/3 the space of conventional package steam generators. Complete, smokeless combustion with gas, oil or a combination of both eliminates expensive stacks... means greater fuel and maintenance savings.

Cyclotherm generators arrive complete. Five easy connections—fuel, electricity, water, steam and a simple flue—and Cyclonic Combustion is ready to generate steam for any purpose. Full power from a cold start in 15 to 20 minutes. Cyclotherm generators are designed from 18 to 500 h.p., 15 to 200 psi operating pressures.

Proved superior in thousands of installations, Cyclotherm steam generators with patented Cyclonic Combustion offer the most efficient and compact package steam generator on the market today. Find out more about Cyclonic Combustion—write today for a free illustrated folder.

The Cyclotherm meets all state requirements and is built in accordance with A.S.M.E. and National Board Standards and bears the label of Underwriters Laboratories, Inc.

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STEAM GENERATORS



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Oswego, New York

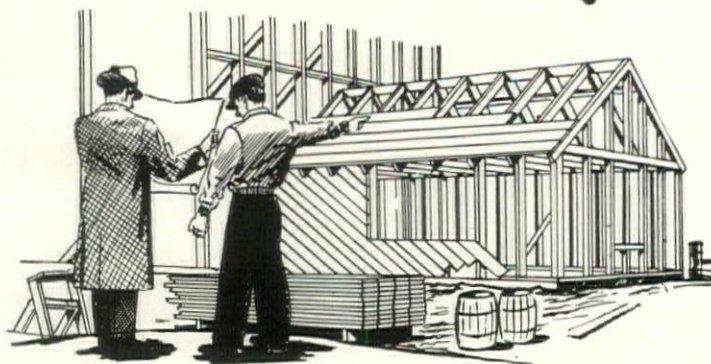
- ☐ Please send without obligation my copy of "All Your Questions Are Answered by Cyclotherm."
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CHAIN STORE AGE, in advising chain store operators on their selection of fluorescent lighting equipment, said:

"The ballast is the heart of a fixture. The surest way to choose a ballast is to look for the Certified shield . . . it is the only assurance of long lamp life. Inferior ballasts delivering wrong wattages result in low light output."

Experience has proved that **CERTIFIED BALLASTS** assure:



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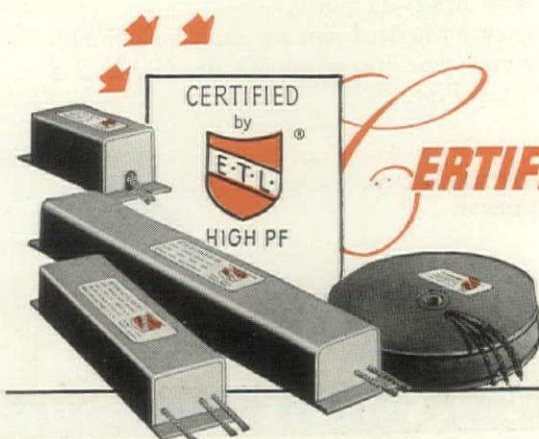
Rated Light Output

Maximum Ballast Life

CERTIFIED BALLASTS are made to precise specifications, then tested by Electrical Testing Laboratories, Inc., which certifies they conform to these high standards.

Write for complete information on the types of CERTIFIED BALLASTS available from each participating manufacturer.

Participation in the CERTIFIED BALLAST program is open to any manufacturer who complies with the requirements of CERTIFIED BALLAST MANUFACTURERS.

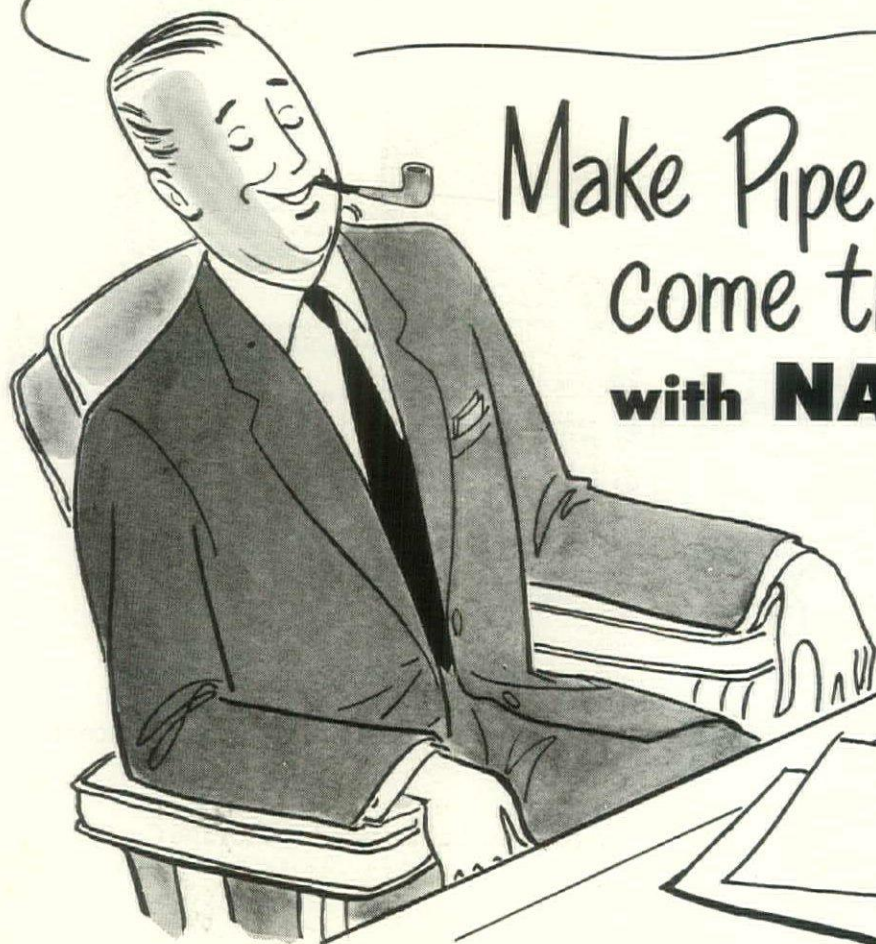


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Makers of Certified Ballasts for Fluorescent Lighting

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SPECIFY ONE WORRY-FREE PIPE... THAT HAS ALL DESIRED
QUALITIES... MEETS ALL SERVICE REQUIREMENTS...
LOW FIRST COST, MINIMUM MAINTENANCE.



Make Pipe Dreams Come true... with **NATIONAL**

If you have been wishing you could find *one* brand of pipe that would meet *all* service requirements, it's high time you got better acquainted with National Steel Pipe. So many architects, engineers and contractors have found the National line the solution to so many piping problems—during more than half a century—that they have made National the largest selling pipe in the world.

That preference was earned by the uniform high quality and complete dependability that is built into U·S·S National Steel Pipe. From raw material to finished pipe, every step in its production is controlled by one responsible organization. Improved

steel-making facilities, special manufacturing processes and the lifetime experience of many skilled craftsmen, combine to produce pipe whose metallic structure, strength, sound joints, superior welding, bending and threading properties, assure low cost installation and long trouble-free performance.

That is why shrewd pipe buyers—generation after generation—continue to specify National, whenever they need pipe. They know that it fits every purpose at a cost that fits every purse.

So, whenever you need pipe for any type of building, make your pipe dreams come true. Get U·S·S National Steel Pipe.

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COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

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UNITED STATES STEEL



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A group of great architects and engineers planned the United Nations buildings, which are a final expression of architectural beauty and functional design. These men determined that only mechanical equipment of the highest quality should be used. For the draftless diffusion of the conditioned air, they selected Anemostat Air Diffusers, 12,000 of which are now giving perfect service throughout the buildings.



*"No Air Conditioning System
Is Better Than Its Air Distribution"*

ANEMOSTAT®

DRAFTLESS Aspirating AIR DIFFUSERS

ANEMOSTAT CORPORATION OF AMERICA

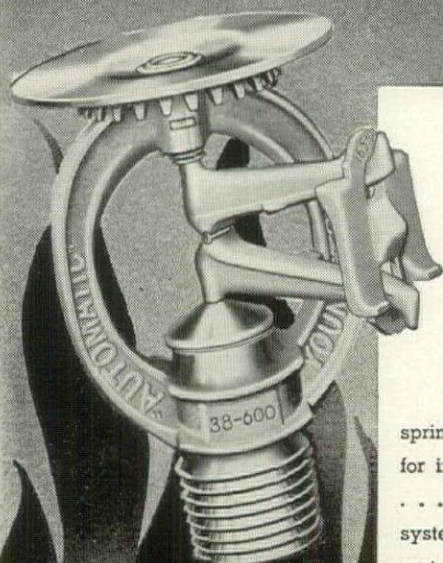
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Ask any fire insurance underwriter about "Automatic" SPRAY Sprinklers, the "sure fire killer." He knows the facts of fire and what's needed for maximum safety.

You can afford no less than the best. Get "Automatic" Sprinkler . . . FIRST IN FIRE PROTECTION.

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LETTERS *continued*

small displacements of the supports, or to temperature changes and must be allowed freedom of displacement if lateral loads are to be resisted.

The adjustable springs may require continuous maintenance if they are to function. Long wires and cables are subject to an inelastic flow with age and become progressively longer. In long-span bridge cables, transmission lines and antenna cables, the increased length is adjusted at the anchorages or as provided in a 2,600' span radio-station antenna (designed by the writer for Shanghai Station of the International T & T Co. in 1926), a counterbalancing weight over a large sheave keeps the maximum stress at a fixed value, and the length increase does not affect the catenary shape.

Whether a camp stool or an umbrella is used as the model, some interesting problems are conceived by the architect and the structural solutions are possible and, as in this Raleigh Pavilion, often result in breath-taking structures.

JACOB FELD, consulting engineer
New York, N. Y.

IS THERE A STRUCTURAL STEEL SHORTAGE?

Sirs:

I have read your article on structural steel (AF, Aug. '52) with great interest. While I disagree with some of the statistics, I do agree that, had there been at least a modest expansion of capacity for producing structural steel, that capacity would have found a long continuing and profitable market in the construction industry.

My disagreement with your figures arises because it is difficult to get historical data. I may have been able to use more refined methods than were available to you. Production and shipment figures do not check with each other. Production figures have tended to exceed shipments by 100,000 to 200,000 tons a year. As shipment figures are not generally available for early years, you relied upon production for these years. But a comparison of production data of early years with shipment figures for today tends to produce a bias. Bookings are also dangerous to use, as bookings are made in advance of fabrication and sometimes include tonnage that is eventually canceled. Reports are made by a varying membership which omits some types of structural fabrication. In addition, they include fabricated structural shapes and sizable percentages of plates and bars which are included in material finally shipped by the fabricator. Finally, probably not over two-thirds of the structural shapes going into construction move through structural fabricators because many shapes undergo little or no fabrication.

In the accompanying table I have attempted to measure in another way the production of

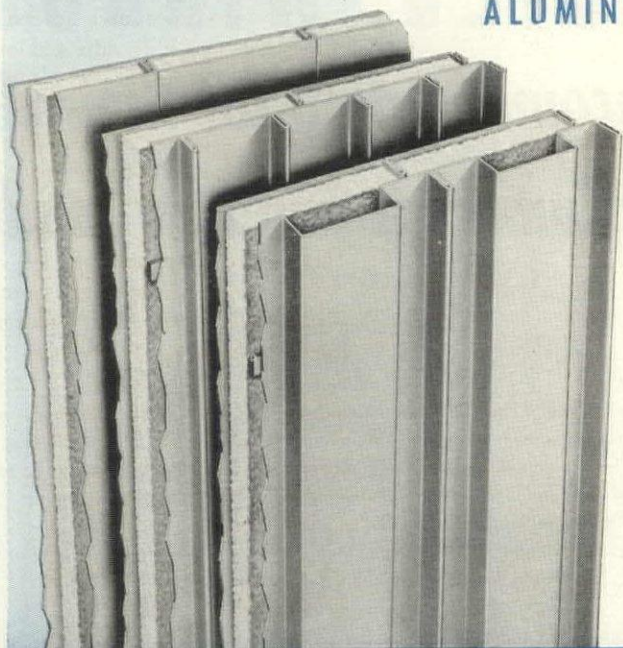
continued on p. 80

INSULATED

METAL WALLS

for INDUSTRIAL and COMMERCIAL BUILDINGS

ALUMINUM, STAINLESS or GALVANIZED STEEL



FLUSH, RIBBED, or FLUTED
Over-all "U" Factor of Various Types is Equivalent
to or Better than Conventional 16" Masonry Wall

Below you see the powerhouse of a completely new industrial plant in which over 225,000 square feet of Mahon Aluminum Insulated Metal Walls were employed on the exterior. 1,070,000 square feet of Mahon Steel Deck went into the construction of the roof on this same plant. Insulated Metal Walls are rapidly becoming standard construction for industrial plants in some of the world's largest industries. Among the advantages of this type of permanent wall construction are: light weight . . . lower cost in both material and labor . . . reduction in construction time due to rapid erection even in extreme low temperatures—and, an over-all "U" Factor better than a conventional masonry wall . . . these add up to a substantial saving in over-all building costs. Mahon Insulated Metal Walls are available in the three patterns shown at left. Each lends itself to individual architectural expression in design. The Mahon "Field Constructed" Fluted or Ribbed Wall can be erected up to sixty feet in height without horizontal joints—a feature of Mahon Walls that is particularly desirable in powerhouses or other buildings where high expanses of unbroken wall surface are common. See Sweet's Files for complete information and Specifications, or write for Catalog No. B-53-B.

THE R. C. MAHON COMPANY

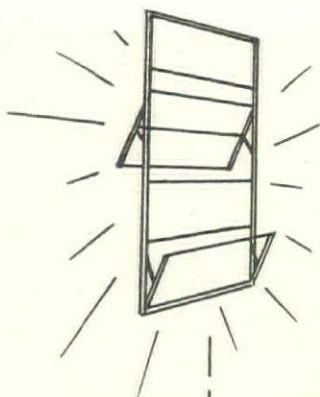
Detroit 34, Mich. • Chicago 4, Ill. • Representatives in all Principal Cities

Manufacturers of Insulated Metal Walls; Steel Deck for Roofs, Partitions, and Permanent Concrete Floor Forms; Rolling Steel Doors, Grilles, and Underwriters' Labeled Rolling Steel Doors and Fire Shutters.



Powerhouse of the new Ford plant, Kansas City, Mo. Mahon Fluted Type Insulated Metal Walls with Aluminum exterior plates were employed throughout in this ultramodern plant. Giffels & Vaillet, Inc., L. Rossetti, Architects and Engineers. Long-Turner Construction Company, General Contractors.

MAHON



See us in room 615-A NAHB Home Show Jan. 18-22



GOOD ARCHITECTS
know that when they specify
WARE Aluminum Intermediate
PROJECTED WINDOWS
they are recommending for their clients
the finest aluminum window made.

SOME REASONS WHY

The Ware Aluminum Intermediate Projected Windows are made with unusually heavy sections, equally suited to private living units, as well as commercial buildings. The satin aluminum adds modern, striking beauty to any architecture, never rusts, has minimum maintenance.

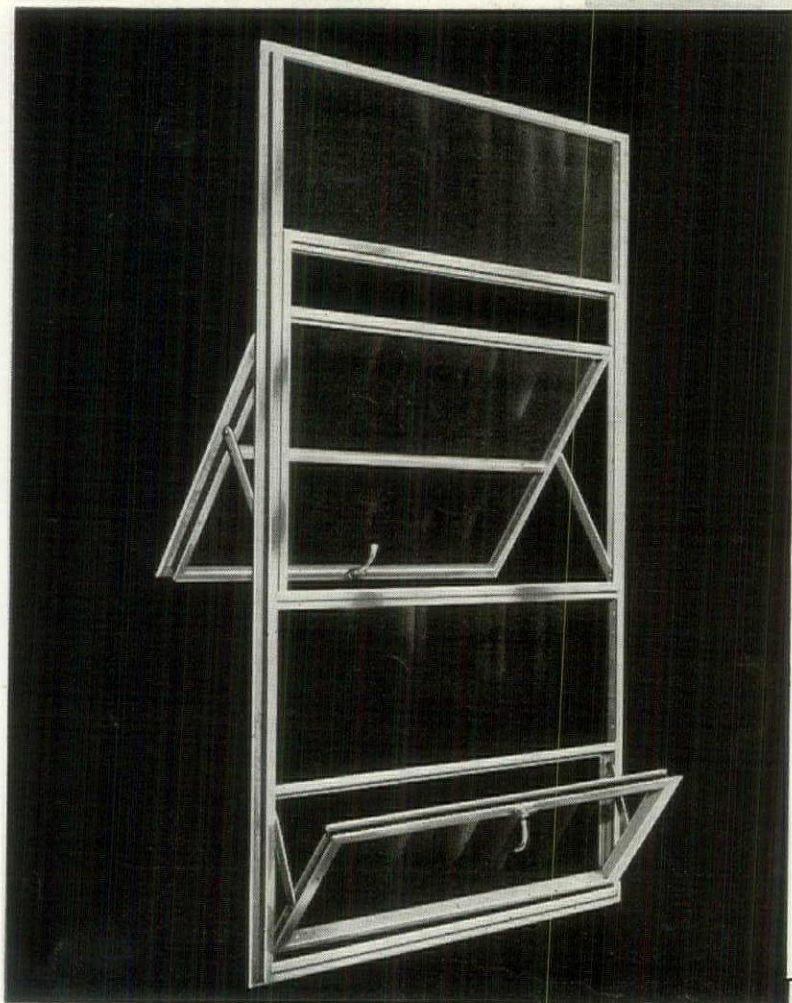
Ware Aluminum Intermediate Projected Windows have these outstanding features that make them first choice when specifying:

- SLIDING FRICTION PIVOTS ON VENTILATORS WITH NON-ABRASIVE SHOES AND CONCEALED COMPRESSION SPRINGS • COMES WITH OR WITHOUT WEATHER-STRIPPING • DEEPER SECTIONS AND WEATHER-STRIPPING (WHERE REQUESTED) GREATLY REDUCE COST OF AIR CONDITIONED INSTALLATION • THREE POINT METAL-TO-METAL CONTACT PROVIDED WHERE WEATHERSTRIPPING NOT REQUIRED • FINEST, TROUBLE-FREE HARDWARE THROUGHOUT • CHEMICALLY CLEANED AT FACTORY • BACKED BY WARE'S MANY YEARS OF FINE ALUMINUM MANUFACTURING EXPERIENCE.

For more detailed information, write direct to the factory or consult Sweet's Catalog for 1953.

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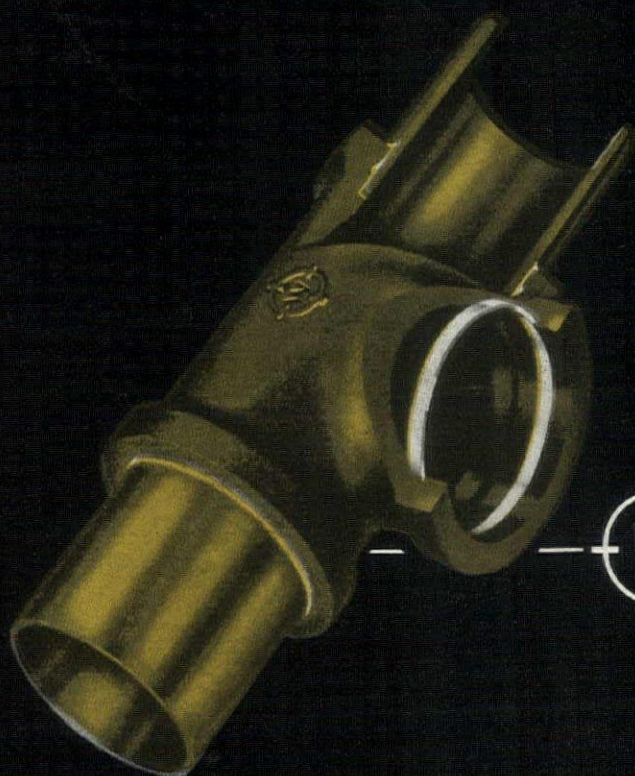
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Aluminum Intermediate
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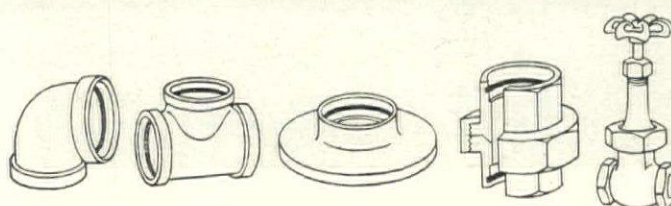


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COMPLETE LINES OF WALSEAL VALVES AND FITTINGS

WALSEAL is a smooth-bore, bronze valve or pipe fitting having a factory-inserted ring of silver brazing alloy in the outlet or outlets. The brazed joint that results when a Walseal product is installed is leakproof, vibration-proof, and corrosion resistant. The alloy fillet that appears upon completion of the joint is visual assurance of full penetration of alloy. This improved method of joining brass, copper, or copper-nickel pipe or tube is another Walworth contribution to the progress of the valve and fittings industries.

In addition to its complete line of Walseal products, the Walworth Company manufactures complete lines of valves, fittings, unions, and flanges in a wide range of sizes and temperature-pressure ratings. The company also makes three lines of pipe wrenches, the Genuine Stillson, Walco, and Parmelee. Walworth products total approximately 50,000 items and are sold through distributors or agents in all parts of the world.



The sectioned Walseal tee illustrated, shows: (a) the fillet of alloy that appears upon completion of the Walseal joint. This fillet is your visual assurance of complete penetration. (b) the factory-inserted ring of silver brazing alloy. (c) sectioned view of the completed Walseal joint showing penetration of alloy both ways from the insert. Walseal joints can be made only with Walseal valves or fittings. For further details regarding Walseal products, ask for Circular 84.

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Manufacturers since 1842

valves... fittings... pipe wrenches

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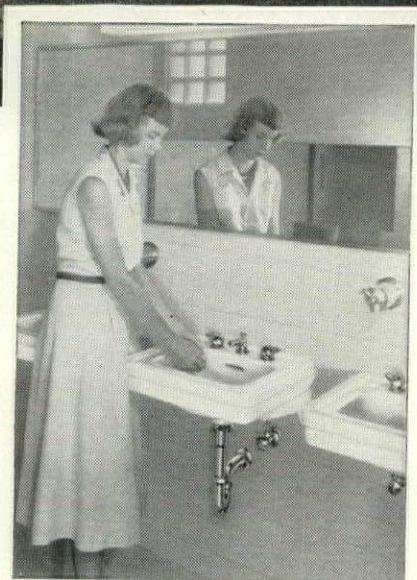
A DISTINGUISHED NEW BUILDING



Arizona State College Administration Building

Tempe, Arizona

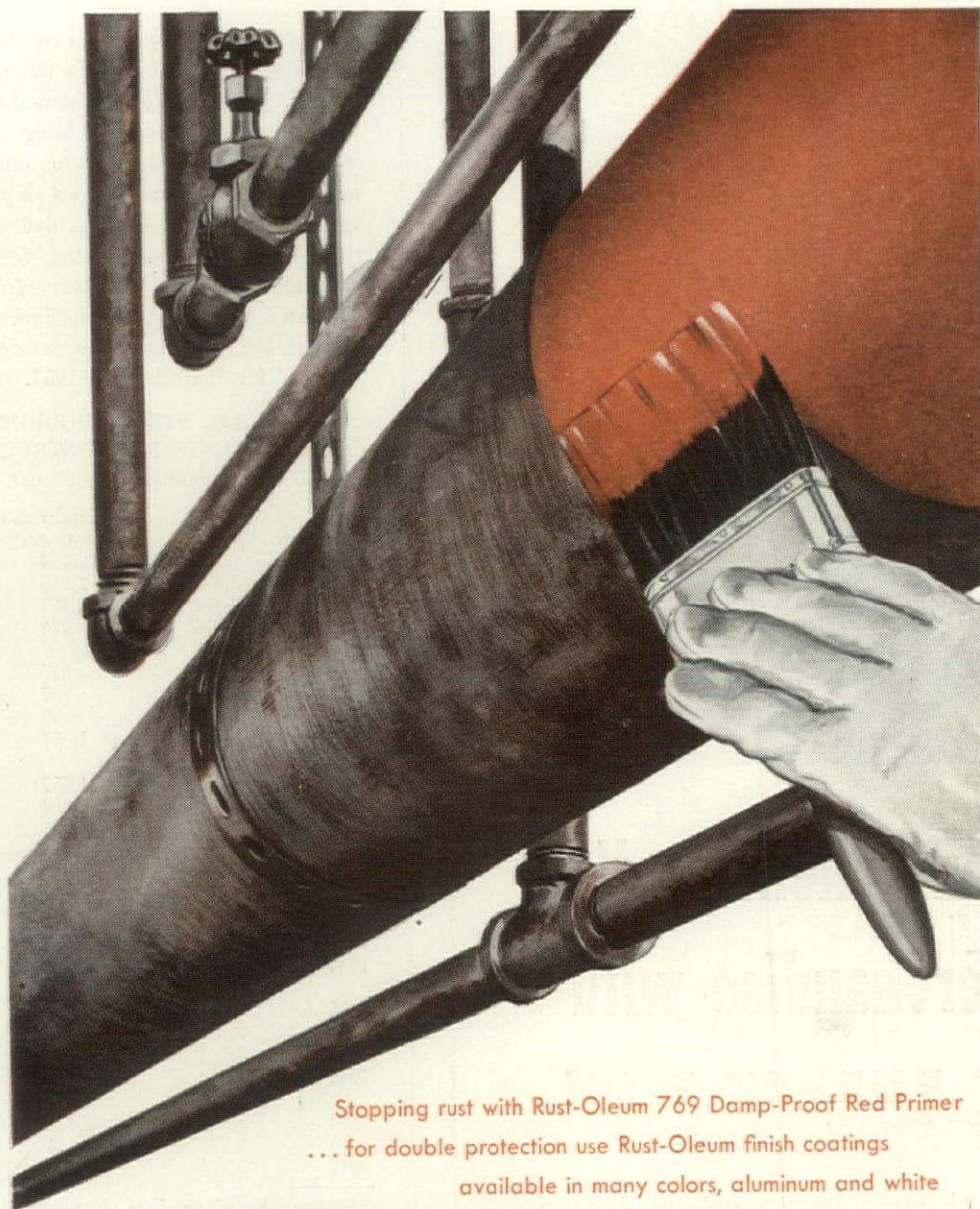
In the new Administration Building for Arizona State College, architect Edward L. Varney of Phoenix specified Crane plumbing throughout. General Contractor: Daum-Donaldson Construction Co., Phoenix. Plumbing Contractor: Don Wilson of Glendale.



Typical Crane installation in the new Administration Building. These are Crane Norwich 1-180-S vitreous china lavatories, with Crane Embassy Dial-ese control valves and indirect-lift waste fittings.

CRANE CO.

GENERAL OFFICES: 836 SOUTH MICHIGAN AVE., CHICAGO 5
VALVES • FITTINGS • PIPE
PLUMBING AND HEATING



Stopping rust with Rust-Oleum 769 Damp-Proof Red Primer
... for double protection use Rust-Oleum finish coatings
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STOPS RUST!

Applied by brush,
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Just scrape and wirebrush to remove rust scale and loose particles... then brush Rust-Oleum 769 Damp-Proof Red Primer *directly over the sound rusted surface*. Chemical pre-cleaning and other costly preparations are *not* usually required. Rust-Oleum finish coats in many colors provide *double protection*. Specify Rust-Oleum... prompt delivery from Industrial Distributor stocks in principal cities.

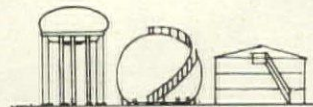
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FREE SURVEY: Ask a Rust-Oleum specialist to conduct a survey including actual applications, tests, and recommendations. No cost or obligation. See Sweets for nearest Rust-Oleum distributor or write for literature today.



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industry for
over 25 years

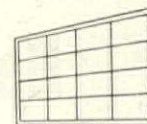
Such fields as Petroleum, Marine, Railroad, Mining, Agricultural, Steel, General Industry are but a few who rely upon Rust-Oleum. General weathering, heat, chemicals, salt water atmosphere, fumes, etc., are only a few of the conditions resisted by Rust-Oleum.



Water tanks, gas tanks, fuel tanks—
Rust-Oleum protects your investment.



One truck, or a fleet of trucks, applied
over rust, Rust-Oleum keeps them
looking better... in service longer.



Metal sash and steel windows, roofs,
gutters, fire escapes, railings—indoors
and out need Rust-Oleum to stop rust.



Wire fence maintenance? Rust-Oleum's
Extra-Long Nap Lamb's Wool Roller
cuts re-coating costs up to 50% in
some cases.

There is Only One Rust-Oleum



Rust-Oleum is an exclusive formula developed by a Master Mariner during more than 20 years battling actual rust conditions at sea. It in-

corporates a specially-processed fish oil vehicle that will dry, is odor-free, and is formulated in many colors. Be sure you specify genuine Rust-Oleum. Accept no substitute.



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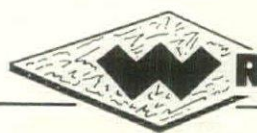
Help your clients sell more merchandise with **WRIGHT RUBBER TILE!**

In these competitive times, the success of a store depends more on its attractiveness than on any other one factor, and nothing will add more to that attractiveness than Wright Rubber Tile!

Leading architects and designers in all sections of the

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FLOORS OF DISTINCTION

- WRIGHTEX—Soft Rubber Tile
- WRIGHTFLOR—Hard Surface Rubber Tile
- WRIGHT-ON-TOP Compression Cove Base

3452

LETTERS *continued*

structural shapes going into construction over a period of years. In this table, structural shapes going to the construction industry have been estimated by adding 75% of the structural shapes shipped to jobbers to the tonnage for structural shapes shipped to construction. This approach is, obviously, not entirely satisfactory because the 75% is only an educated guess and may vary from year to year and because the basic figures for 1929 through 1939 were far less accurate than those reported for 1940 through 1951.

STRUCTURAL STEEL PRODUCTION AND SHIPMENTS TO CONSTRUCTION (thousands of net tons)

| Year | Struct. prod.* | Shipm'ts. to constr. (est.) Tonnage† | % |
|------|-------------------|---|------|
| 1929 | 4,542 | 2,758 | 60.7 |
| 1930 | 3,372 | 2,315 | 68.7 |
| 1931 | 1,981 | 1,463 | 73.9 |
| 1932 | 876 | 774 | 88.3 |
| 1933 | 956 | 627 | 65.5 |
| 1934 | 1,267 | 707 | 55.8 |
| 1935 | 1,460 | 835 | 58.4 |
| 1936 | 2,482 | 1,657 | 66.8 |
| 1937 | 2,852 | 1,657 | 58.1 |
| 1938 | 1,654 | 1,019 | 61.6 |
| 1939 | 2,678 | 1,754 | 65.5 |
| 1940 | 3,356 | 1,716 | 51.4 |
| 1941 | 4,671 | 2,693 | 57.7 |
| 1942 | 4,945 | 2,271 | 45.9 |
| 1943 | 3,870 | 1,042 | 26.9 |
| 1944 | 3,824 | 1,066 | 27.8 |
| 1945 | 3,572 | 1,654 | 46.3 |
| 1946 | 3,507 | 2,124 | 60.6 |
| 1947 | 4,551 | 2,498 | 54.9 |
| 1948 | 4,454 | 2,544 | 57.1 |
| 1949 | 3,793 | 2,416 | 63.7 |
| 1950 | 4,379 | 2,841 | 64.9 |
| 1951 | 5,174 | 3,172 | 61.3 |

* Source: American Iron & Steel Institute.

† Source: *Iron Age* through 1939; American Iron & Steel Institute in later years. Includes 75% of jobber tonnage.

A logical argument could be made for including steel piling in the structural shapes figures because piling comes off the same mills and goes exclusively into construction. Piling production, while relatively small in total, has more than doubled since 1929. The table does not include piling.

While the figures I have tabulated show more structural shapes shipped to construction in 1950 and 1951 than in the relatively good year of 1929, that does not mean that as many were shipped as the industry could have used or that the industry will be able to use in the future. While there is an increasing efficiency in the use of structural steel, which means that less steel is required per constant unit of construction in many areas, in other areas more steel is used per unit of construction than has been the case historically. For instance, highway construction is emphasizing improvement of transit facilities in urban areas more than it did in 1929 and this means a higher proportion of structural steel than was formerly required. Highways will

continued on p. 86

"Mr. FITZGIBBONS...

**I hear you are starting
a boiler business"**



The year was 1886 when a million people hailed the unveiling of the Statue of Liberty on Bedloe's Island in New York harbor. That was the year Patrick Fitzgibbons, experienced journeyman boiler builder, announced the formation of the Fitzgibbons Boiler Company.

Sixty-seven years have seen much history — wars, booms, depressions — and the rise and fall of many industrial organizations. In the case of Fitzgibbons, these years have meant steady growth in plant facilities and boiler making experience, new, improved and highly regarded products. And now —

THE YEAR IS 1953 and Fitzgibbons is starting not only with a modernly equipped plant, but also with a larger, more highly specialized organization dedicated to renewed attention to the "little things" of boiler building and service to customers, as well as to the broad tradition of quality which has always been the most notable Fitzgibbons characteristic.

The selection of a Fitzgibbons Steel Boiler has always been a wise choice — and will continue to be.



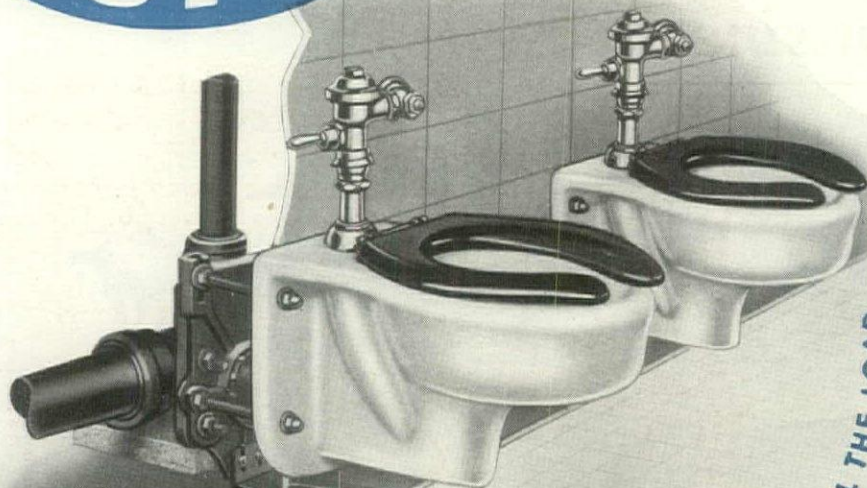
For complete details and specifications on the Fitzgibbons Steel Boiler for every heating need, contact your nearest Fitzgibbons representative or write Fitzgibbons Boiler Company, Inc., 101 Park Avenue, New York 17, N. Y.



THE FITZGIBBONS BOILER®



TYPE REST ROOMS HAVE FIXTURE-BARE FLOORS



THE ZURN WAY RELIEVES THE WALL OF ALL THE LOAD

Pat. & Pat. Pending

Perpetual cleanliness in rest rooms of an ultra-modern skyscraper is a must. Immaculate cleanliness is no problem where plumbing fixtures are off the floor, because there is nothing to interrupt the sweep of the broom and the swish of the mop. Fixture-Bare Floors reduce the day-by-day dollar cost of maintenance to an all-time low, while lifting sanitation to a new high. The New Way of building utilizes wall type plumbing fixtures throughout, installed the Zurn Way—the simple, safe way of installing wall type closets, lavatories, sinks, and other fixtures. This New Way saves time and labor, reduces the use of building material and *protects rest rooms from premature obsolescence*. Specify wall type plumbing fixtures installed with Zurn Wall Type Closet Fittings and Carriers. Write for booklet entitled, "You Can Build It (Cubic Foot of Building Space) For Less A New Way".

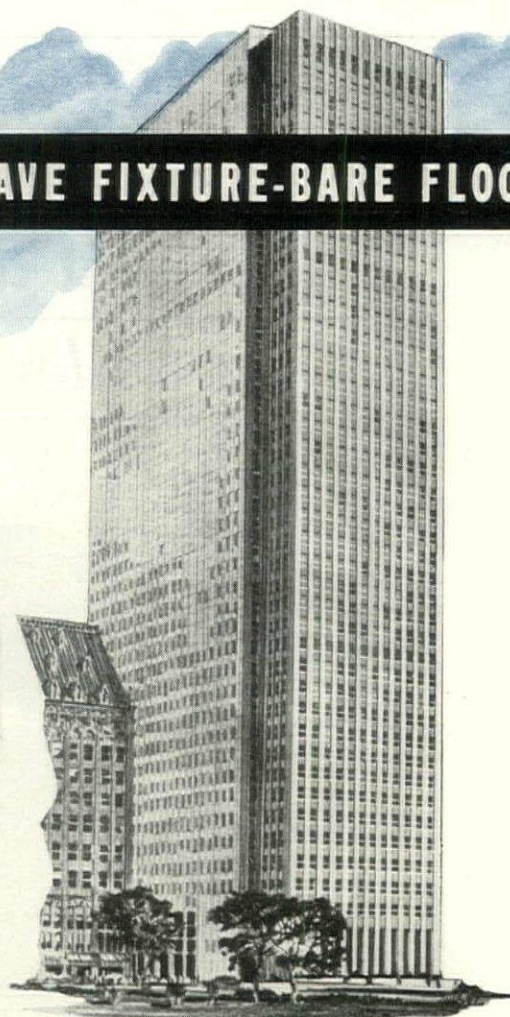
J. A. ZURN MFG. CO. ERIE, PA., U.S.A.

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Sales Offices in All Principal Cities

Pre-eminent Manufacturer of Sanitary Products for the Protection of Human Health and Modern Structures

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Pittsburgh's new 525 William Penn Place Corporation Building houses the U. S. Steel Company, Mellon National Bank & Trust Co. and T. Mellon and Sons. Architects: Harrison & Abramovitz, N. Y.; Consulting Engineers: Meyer, Strong & Jones, N. Y.

The hundreds of plumbing fixtures in this building, such as wall type closets, lavatories and sinks, were installed with Zurn Wall Type Closet Fittings and Carriers which give maximum protection against premature obsolescence of sanitary facilities. Zurn Engineered Floor and Roof Drains and other drainage equipment were also installed in this building.



Write for this booklet. It tells how "You Can Build It (Cubic Foot of Building Space) For Less A New Way".

J. A. ZURN MFG. CO., PLUMBING DIVISION, ERIE, PA., U.S.A.

Please send me the new Zurn Booklet, "You Can Build It (Cubic Foot of Building Space) For Less A New Way."

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Company.....

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Please attach coupon to your business letterhead. Dept. AF

Rest Rooms with Fixture-Bare Floors in These Buildings and Hundreds of Others:

OFFICE BUILDINGS: Farmers Mutual Insurance Company, Madison, Wis. • New Hampshire Fire Insurance Building, Manchester, New Hampshire • Southwestern Bell Telephone Co., Toll Building, Houston, Texas • International Business Machines, Endicott, N. Y. • General Food Building, Newark, N. J. • The Texas Company, Minneapolis, Minn. • Humble Oil Company, New Orleans, La. • **EDUCATIONAL BUILDINGS:** Fisher Memorial Dormitory, University of Notre Dame, Notre Dame, Ind. • Maple Heights High School, Maple Heights, O. • Dilworth School, Salt Lake City, Utah • New Engineering Laboratory, Virginia Polytechnic Institute, Blacksburg, Va. • Medical Research Building, University of Michigan, Ann Arbor, Mich. • **INDUSTRIAL BUILDINGS:** DeLaval Separator Company, Poughkeepsie, N. Y. • Houston Lighting and Power Company, Houston, Texas • Berkshire Knitting Mill, Andrews, N. C. • Minneapolis Honeywell Regulator Co.,

Minneapolis, Minn. • Chrysler Corporation, Trenton, Mich. • Dan River Mills, Philadelphia, Pa. • Court House and City Hall Building, Minneapolis, Minn. • Oregon State Penitentiary, Salem, Oregon • **HOSPITAL BUILDINGS:** Cuyahoga County Chronic Hospital, Warrensville, O. • National Jewish Hospital, Denver, Colo. • Terrell State Hospital, Terrell, Texas • Memorial Hospital, Algoma, Wis. • Central State Hospital, Petersburg, Va. • Oakwood Hospital, Dearborn, Mich. • **TERMINAL BUILDINGS:** New Norfolk and Western R. R. Warehouse, Roanoke, Va. • Holland American Line Terminal, Hoboken, N. Y. • New Greyhound Terminal, Phoenix, Ariz. • **MERCANTILE BUILDINGS:** Emporium, Oakland, Cal. • Sugarland Shopping Center, Sugarland, Texas • Federal Stores, Cleveland, O. • Macy's Kansas City Store, Kansas City, Kan. • Rexall Drug Company, National Headquarters Building, Los Angeles, Cal. •

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aluminum **WINDOWS** *by* **GENERAL BRONZE**

Whether you are planning a new school, a hospital, an apartment or a modern new office building like the one pictured here, General Bronze offers you a wealth of practical experience in solving your problems as they pertain to windows, spandrels, curtain walls and architectural metal work.

With a background of more than 40 years' experience, working with hundreds of leading architectural firms, we have learned what features architects want in windows—what kind of help they appreciate most in working out exterior curtain wall design problems—what makes their job run easier and smoother.

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Photo by Wurts Bros.

OFFICE BUILDING
260 Madison Ave., New York City
Architects: Sylvan Bien
Contractor: Hegeman-Harris
Company, Inc.



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STEEL WELDMENTS, INC. DIVISION—Custom fabrication in steel and iron.

Architects Freeburg and Lindquist of Jamestown, New York, say:



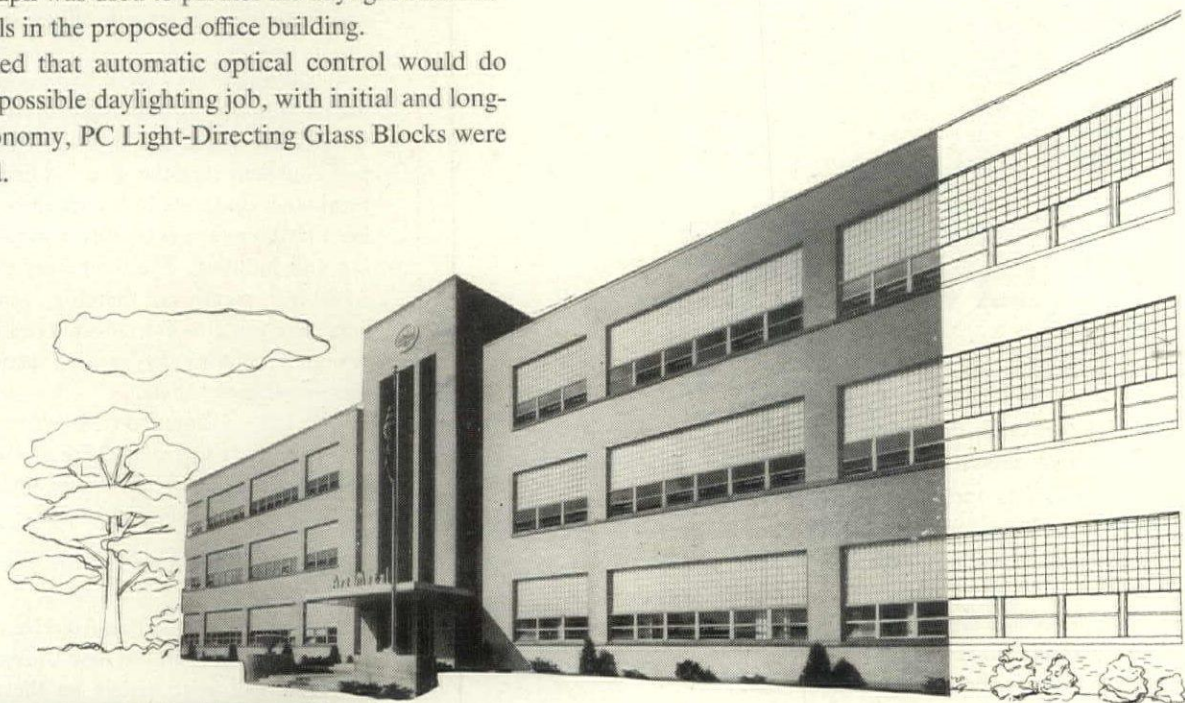
"PC Light-Directing Glass Blocks help us create an ideal office environment"

IN designing the new office building of the Art Metal Construction Company at Jamestown, New York, a good visual environment was one of the requirements which Architects Raymond A. Freeburg and Sherrill F. Lindquist, of the firm of Freeburg and Lindquist, had to meet. To be certain of the illumination levels that could be expected with the use of light-directing glass blocks, the engineers of Art Metal and the architects consulted illumination experts at the Pittsburgh Corning Daylighting Research Center. Utilizing the architects' plans, the newly developed PC Daylighting Nomograph was used to predict the daylight illumination levels in the proposed office building.

Satisfied that automatic optical control would do the best possible daylighting job, with initial and long-term economy, PC Light-Directing Glass Blocks were specified.

Architects Freeburg and Lindquist state: "The daylighting in the new building is of excellent quality. Good levels of illumination reach across the offices and work areas, and brightness contrasts are low. It is a comfortable, productive environment and a good visual environment."

In all your new building or remodeling plans, make sure that you give serious thought to PC Glass Blocks. Fill in and return the coupon for complete information.



Architects: Freeburg and Lindquist, Jamestown, N. Y.
General Contractor: Warren Construction Company, Jamestown, N. Y.

Pittsburgh Corning Corporation PITTSBURGH 22, PA.

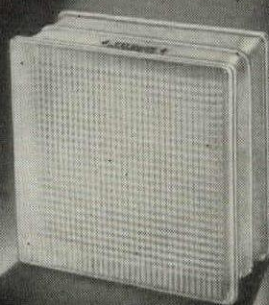
Pittsburgh Corning Corporation
Dept. E-13
Pittsburgh 22, Pa.

Without obligation on my part, please send me your FREE booklet on the use of PC Glass Blocks in public, commercial and industrial structures.

Name Title

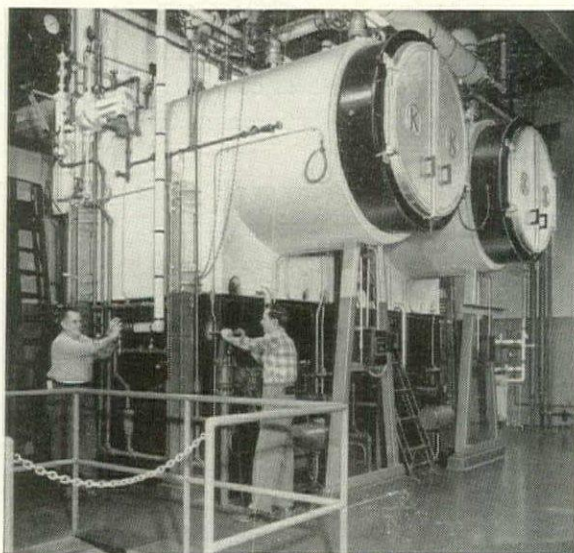
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With experienced engineers and mechanics on their staff, a great air line knows mechanical equipment. So it means much when concerns such as Northwest Air Lines install Kewanee Boilers in an important building.

NORTHWEST AIRLINES BUILDING
International Airport
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Designed and Engineered by
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2 Kewanee Heavy-Duty Boilers,
Oil-Fired from the rear by
W. E. BEGGS, INC., Seattle

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LETTERS *continued*

provide a growing market in the future and would help support a permanent increase in structural steel capacity.

I met several times in the early part of 1951 with representatives of various steel companies to discuss the market potentials which the construction industry offered for producers of structural steel. After it became evident that there would be very little expansion of structural steel capacity, I began to look into the possibility of providing government incentives to encourage such expansion.

Before I had gone very far, however, it dawned on me that competition was solving the problem better than governmental intervention could. The concrete industry, of course, pushes ordinary reinforcing concrete vigorously but in addition it has made rapid strides in applying European techniques of prestressing to meet American conditions. The construction industry is not particularly concerned whether steel companies or concrete companies get its business as long as satisfactory products are offered at competitive prices.

Our competitive system has worked, though not so rapidly as the construction industry would have liked, but it worked and we can feel confident that the men bidding for structural steel contracts in the future will remember that there are competitive ways of designing and building. The temporary shortage of structural members, therefore, may in the long run work to the advantage of the construction industry by causing pencils to be sharpened more finely.

ROBINSON NEWCOMB
*Executive Office of the President
Office of Defense Mobilization
Washington, D. C.*

MEXICO'S UNIVERSITY

Sirs:

Since attending the Pan-American Congress of Architects held in the new University City, I have reread your article on the university (AF, Sept. '52) and find it a very well distilled and sensitive analysis of Mexico's architecture and of the University City.

From the very nature and size of the project, no photos can give any adequate conception of its immense scale. It caused me to wonder whether the great over-all size of the project and the distances between the separate units are not going to create considerable problems when the city comes into use. It is anticipated that bicycles will be the major means of travel between buildings, and the many charming flights of steps that break up the miles of pathways and paved courts may well be a handicap to easy travel.

One of the first things one notices is the incredible amount of laborious handwork on the development. . . . It gives a beautifully rugged appearance to the whole project. But the question was raised as to whether the Uni-

continued on p. 92



LOCKWOOD puts 24 pages of data at your fingertips in SWEET'S 1953 ARCHITECTURAL FILE

Key 'n knob locks
— heavy duty
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For your guidance whenever an experienced hardware consultant is not available . . . 24 full pages, packed with detailed, down-to-earth information on finishing hardware.

It's renewed proof of Lockwood's program to make available complete information on its products in the handiest, most practical way for architects to use.

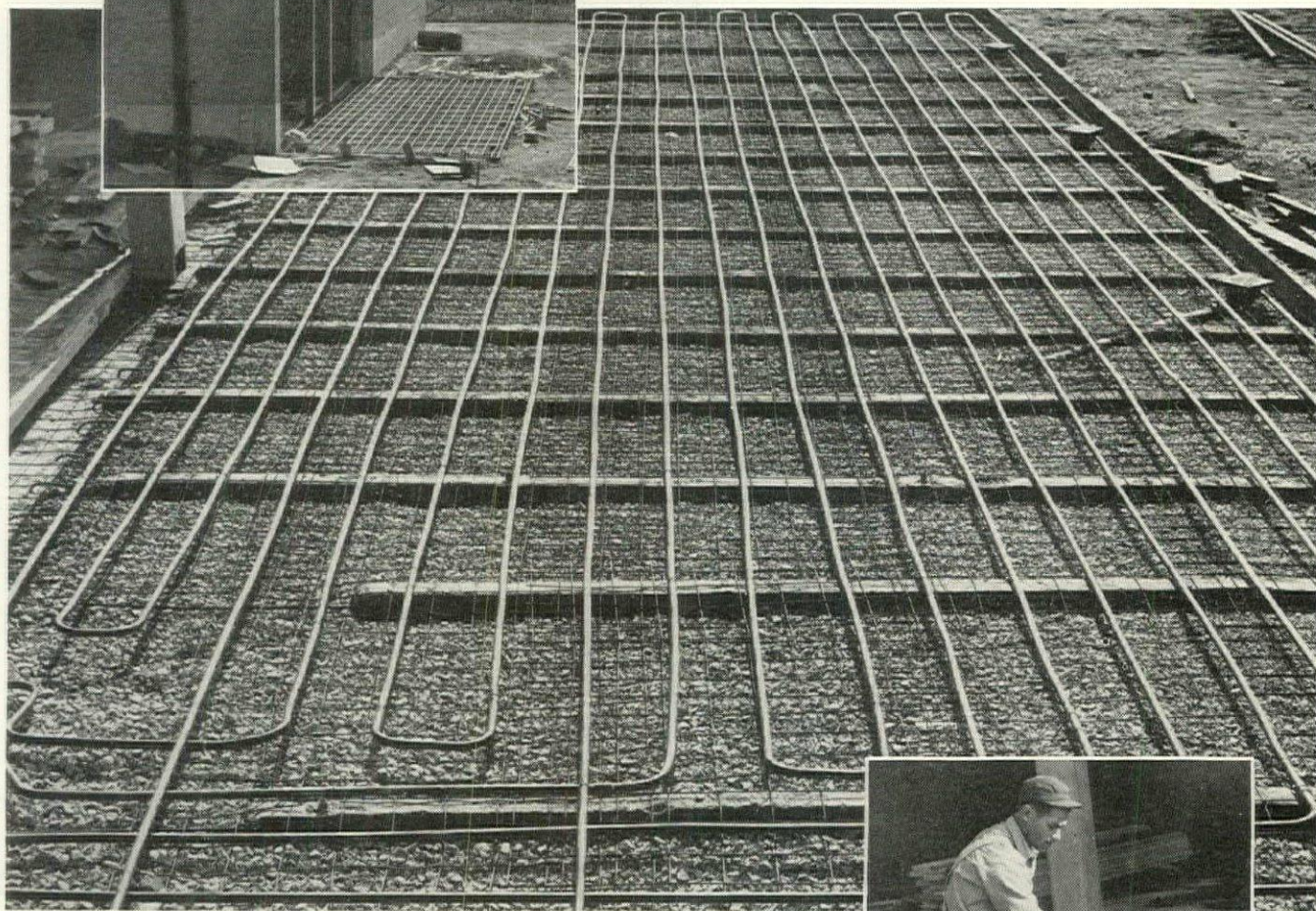
You'll find specific locks recommended for specific openings in all types of buildings. Also a simplified, 5-step formula for writing complete finishing hardware specifications. And you'll find basic information on all types of locks and accessories.

Every year, more architects discover the time-saving convenience of this aid to selection of builder's hardware. We'll be glad to send you a copy of this catalog, free. Just write, requesting catalog 17e/LO.



LOCKWOOD HARDWARE MANUFACTURING COMPANY
Fitchburg, Massachusetts

NEW WAREHOUSE AND SHIPPING CENTER
"JUNKET" BRAND FOODS
LITTLE FALLS, N. Y.

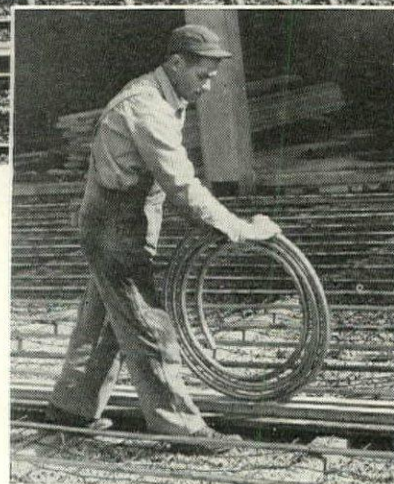


ANOTHER CASE OF
Copper
WHERE IT COUNTS!

During the winter months there will be no snow or ice troubles at the truck entrance of the new "Junket" Brand Foods Warehouse. A snow-melting system of Revere Copper Water Tube in the 20' x 60' concrete slab sees to that. This building was designed by Architects, Bagg and Newkirk. Heating Contractor was H. J. Brandeles Corp. Revere Copper Water Tube was supplied by the Crane Co., all of Utica, N. Y.

The contractor found the light-weight, 60' length coils of Revere Copper Water Tube easy to handle and install. Also, its soft temper permitted bending, reducing the number of fittings used. Other features that architects, contractors and builders like about Revere Copper Water Tube are: Because it is non-rusting it will last indefinitely . . . the solder or compression fittings used make it possible to use a thinner wall tube than is possible when threaded fittings are used, with a substantial saving in metal.

Now, with restrictions eased, and quantities permissible without allotments greatly increased, there isn't any reason why your next job can't have the many lasting benefits of Revere Copper Water Tube for hot and cold water lines, radiant panel heating, underground service lines, processing lines, and waste stack and vent lines. See the Revere Distributor nearest you today. And, if you have technical problems, he will put you in touch with Revere's Technical Advisory Service.



GUIDE PLANK is used by workman to facilitate installation of 1" Type K soft temper Revere Copper Water Tube. Revere Tube also comes in hard and soft tempers in straight lengths of 20 ft.

LARGE PHOTO ABOVE shows Revere Copper Water Tube in place ready for pouring concrete.

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COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

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SEE REVERE'S "MEET THE PRESS"
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in **SCHOOLS** there is always
heavy **INDOOR HIGHWAY** traffic
..... there you will find



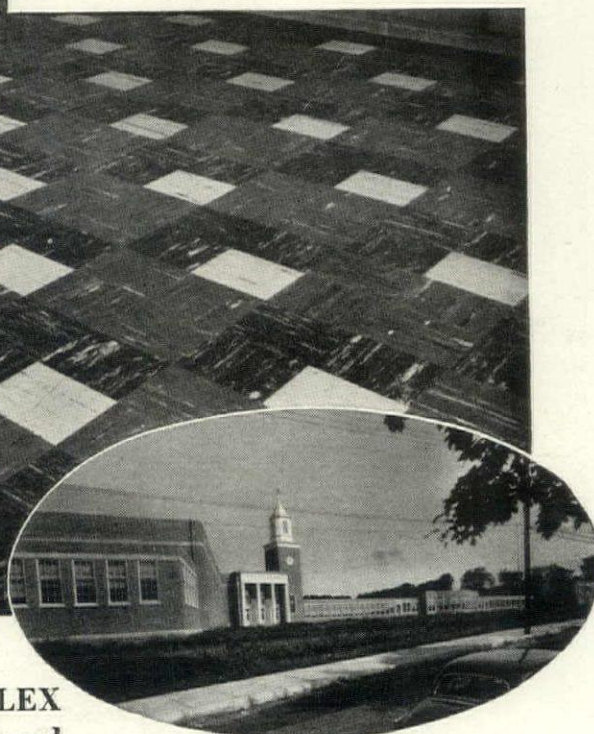
Vinylflex

PLASTIC FLOOR TILE

*Trade Mark

AND

HAKO ASPHALT TILE



Architects are specifying **HAKO VINYL FLEX PLASTIC FLOOR TILE** for floors in school rooms and corridors, where ruggedness, modern traffic-lane design and beauty is demanded. This all purpose floor tile with its low initial cost, ease of maintenance, safety and quietness underfoot plus its grease and acid proof features, toughness and longtime wearing qualities, meets the requirements for school floors where traffic areas are exposed daily to the severest kind of treatment.

Of course, Architects still rely on the dependability of **HAKO Asphalt Tile Flooring** to give complete satisfaction when budget economy is necessary.



SEND FOR our beautiful new full color descriptive brochures on **HAKO Vinylflex Plastic Floor Tile** and **HAKO Asphalt Tile Flooring**.

The Asphalt Tile brochure also contains full color illustrations and complete information about **Poly-Krome** and **Parquetry** design.



Since 1903

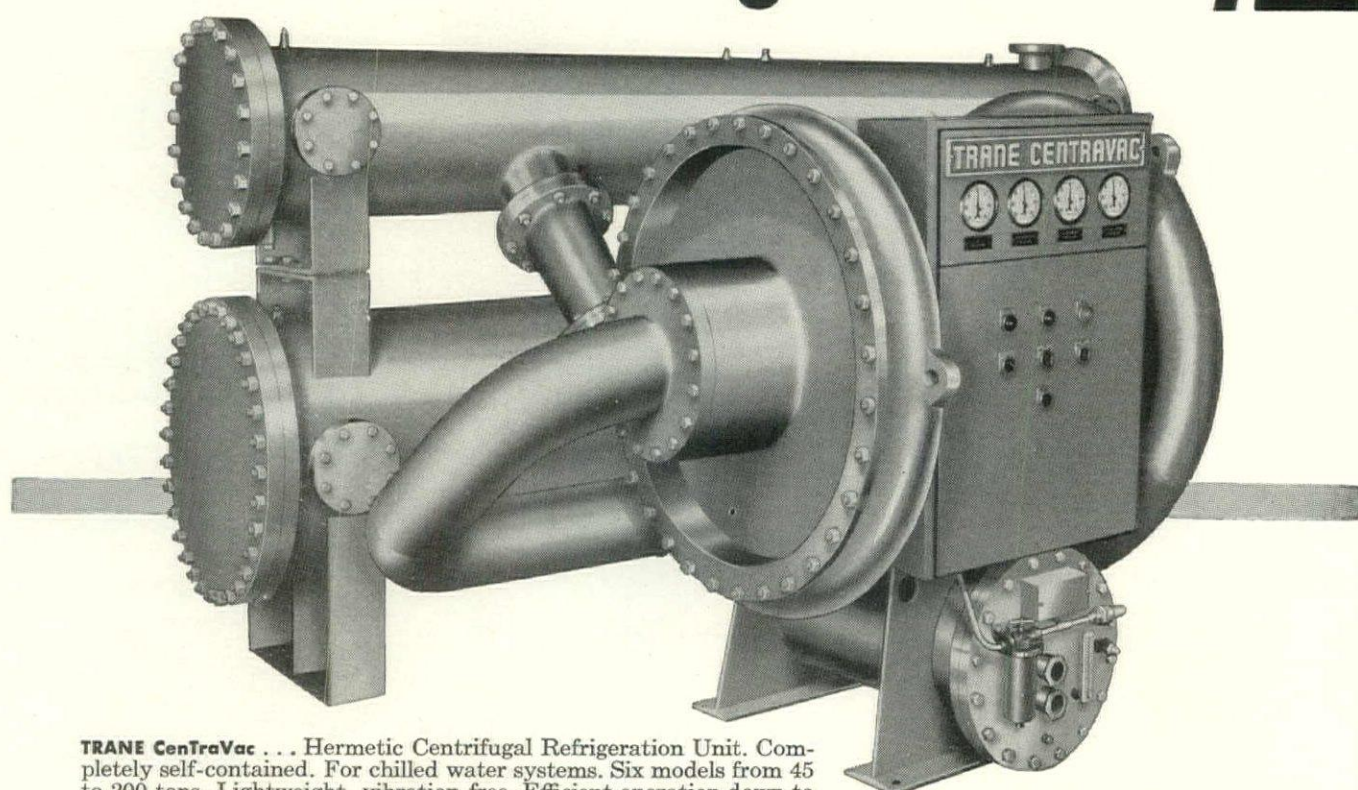
HACHMEISTER-INC.

General Offices

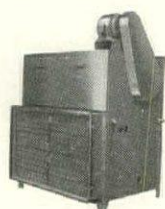
PITTSBURGH 30, PA.



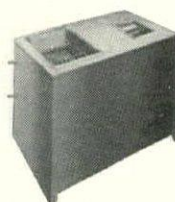
These **TRANE** products fit air conditioning results you



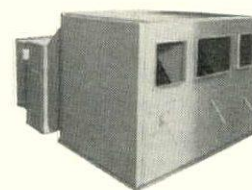
TRANE CentraVac . . . Hermetic Centrifugal Refrigeration Unit. Completely self-contained. For chilled water systems. Six models from 45 to 200 tons. Lightweight, vibration free. Efficient operation down to 10% of capacity, through automatic throttling controls. Power consumption very closely proportionate to load through entire range.



TRANE Climate Changers . . . basic air conditioning units, built for widest range of requirements. Combine coils, fans, humidifiers, filters, dampers. 450 to 22,000 cfm.



TRANE Evaporative Condenser . . . for condensing refrigerant in the air conditioning system where water is scarce or expensive. Cuts water consumption as much as 90%.



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TO MATCH THE JOB...

together to give you the want!

What air conditioning results do you want? Have you a simple cooling problem—or a complex one? Is it small or large? Does the job require only cooling or does it involve the related problems of heating and ventilating?

Regardless of the nature or scope of your next air conditioning project, the *complete* line of TRANE matched air conditioning products contains exactly the equipment needed to do a superlative job.

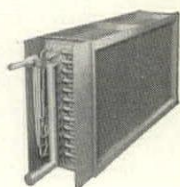
Consider these advantages:

1. UNDIVIDED RESPONSIBILITY The completeness of the TRANE line makes it possible to get the undivided responsibility of one manufacturer.

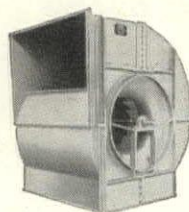
2. ONE SOURCE OF SUPPLY You save time by dealing with one competent specialist—the TRANE sales engineer—instead of many.

3. ONE SET OF CATALOGS From one handy and complete set of catalogs you can select all the equipment you need.

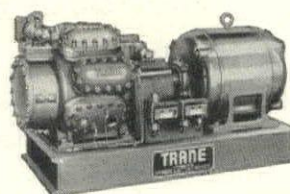
4. COMPLETE FLEXIBILITY There's a wide range of sizes and models. So flexible is the line, you can, for example, create 10 different 50-ton air conditioning systems.



TRANE Cooling Coils... Efficient fin-and-tube extended surface. For use with chilled water, well water, or direct expansion refrigerants.



TRANE Centrifugal Fans... Class I and II construction with backwardly inclined or forward-curved wheel design. Ruggedly built. Quiet operation.



TRANE Reciprocating Compressor... Capacities up to 50 tons. New, automatic cylinder unloading saves power through multi-step reduction.



TRANE Self-Contained Units... all-in-one package. 3- to 20-ton capacity. Heating coil optional. 15- and 20-ton available with built-in evaporative condenser.



TRANE UniTrane and Custom-Air Systems... Multi-room air conditioning. Individual room control of heating, cooling, humidifying.

We'd like to see you at the ASHVE show!

We have 5 important new products. You can see them *in operation*, Booth 615 and 627, International Amphitheatre, Chicago, Jan. 26 through 30.

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THE TRANE COMPANY, LA CROSSE, WIS.
Eastern Mfg. Division, Scranton, Pa.
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AND AIR CONDITIONING EQUIPMENT



Roof-truss design and fabrication by Timber Structures, Inc.

How American Textile protects their dye house trusses and roof-deck from rot and decay

• In 1951, when American Textile Processing Co., Inc. planned their new dye house in Paterson, New Jersey, they designed one of the most modern plants in the industry. The roof of a dye house calls for the insulating qualities of wood . . . but the constant presence of acid vapor, steam and condensate makes for a serious maintenance problem. American Textile Processing solved this problem by specifying that all wood used in the trusses and roof decking be pressure-treated Wolmanized* lumber.

Wolmanized lumber is clean, odorless, paintable and non-leaching. The ability of Wolman preservative salts to prevent decay or insect attack makes any lumber last longer in the presence of moisture and termites. There are Wolman preservative treatment plants in all parts of the country. For further information, write:

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Wolmanized
PRESSURE TREATED
Lumber



LETTERS *continued*

versity City is going to depend permanently for its maintenance on as large a supply of cheap labor. To trim the miles of slim grass edging between concrete slabs, to sweep and keep clean the acres of differently textured paving, as well as to maintain the great number of separate buildings placed so far from one another would be an almost intolerable financial burden if the standard of living should be raised appreciably in the future.

In conversation with several of the most prominent architects and planners in Mexico City I gathered that the whole sum of available resources has been devoted to the erection of the buildings, which are still going up at a very rapid pace. It seemed to be most uncertain where money with which to buy furniture and equipment and to hire additional faculty was to come from.

We had the good fortune to meet Diego Rivera at work on his stadium mural one morning. He made a comment that amplifies your statement that this mural represents an amalgam not seen since Gothic. Asked how he managed to supervise so many workmen to ensure that every detail of the design was in conformity with his original conception, he replied that he did not try to do this: he gave gladly to each worker freedom of judgment about the development of detailed elements of the design. They were mature craftsmen, more learned in the ways of stone than sculptors turned out of academies. He hoped they could derive the same creative satisfaction from their work as medieval craftsmen did from their labor on a Gothic cathedral.

EUGENE D. STERNBERG,
Architect and city planner
Denver, Col.

FRAMELESS STEEL BUILDINGS

Sirs:

Your interesting article on light-gauge steel for frameless building (AF, Oct. '52, p. 158) suggests a new trend in construction that offers attractive possibilities.

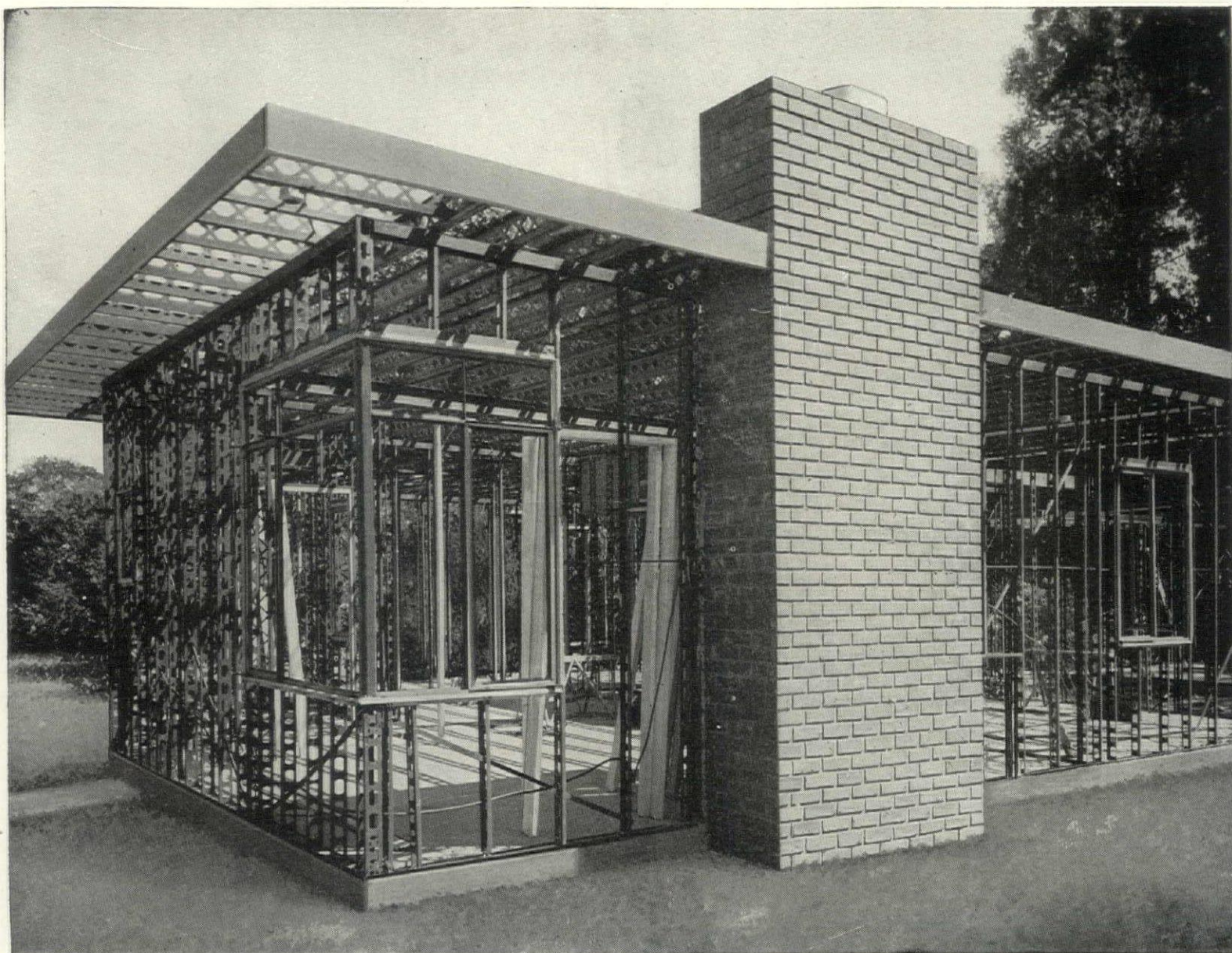
Inasmuch as this Institute and its Committee on Building Codes have been the biggest factor in these developments for effective use of structural shapes formed of flat-rolled steel, it is unfortunate that your article credits the wrong Institute for sponsoring the Cornell research program and the formulation of the light-gauge steel design standards.

B. L. WOOD, *consulting engineer*
American Iron & Steel Institute
New York, N. Y.

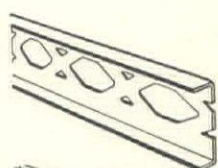
• Quite so, the Cornell research was sponsored by the American Iron & Steel Institute, not the American Institute of Steel Construction, as wrongly stated in the article. AISI published their "Light Gauge Steel Design Manual" in Jan., 49.—Ed.

ERRATUM

The November presentation of the Monterey Air Terminal failed to credit Edwin Abercrombie Verner as structural engineer.—Ed.

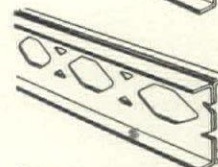


PENMETAL ANNOUNCES BRAND NEW Lightsteel STRUCTURAL SECTIONS



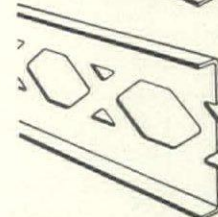
STUD

3 1/4" and 4"
16 and 14
gauge



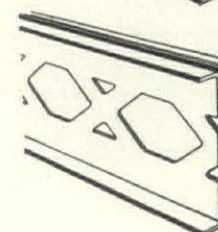
**DOUBLE
STUD**

3 1/4" and 4"
16 and 14
gauge



JOIST

6" and 8"
16 and 14
gauge



**DOUBLE
JOIST**

6" and 8"
16 and 14
gauge

ASK THE typical building owner—whether commercial, industrial, institutional or residential—how he'd like to have a house with a steel frame. You'll get a quick "yes" for an answer.

The good news is that he can have it! He can forget about rot and termites. Penn Metal Company, Inc. has devised a system of Lightsteel structural sections that brings the strength and permanence of steel to light construction for an economical figure.

PENMETAL Lightsteel Structural Sections have already been widely tested and well received on the West coast. When used with pumice concrete and gypsum, architects and builders are finding that they provide a long life, low maintenance structure. They're particularly well suited to the requirements of modern design.

How about cost? Cost is the best part of the PENMETAL story. The cold-rolled sections are available at a total cost less than most competitive materials.

The extra benefits of PENMETAL Sections are substantial. Pre-cut lengths in a variety of stock, plus a complete line of accessories, speed the job. Openings in studs and joists make for rapid installation of conduit and piping. A high strength/weight ratio means easy, quick handling, fewer man hours.

Fire resistance is excellent. A 2 1/2" concrete slab on PENMETAL Lightsteel Structural Sections with 1" of light-weight plaster on ceilings or walls wins a 4 hour rating, far above average. Insurance costs are reduced.



PENMETAL Sections are the ideal solution for the building owner who wants the satisfaction and comforting feeling

that his structure is framed with steel.

Our fact-filled catalog gives you complete specifications and data. It's yours for the asking. Address Penn Metal Company, Inc., 205 East 42nd Street, New York 17, New York. Ask for Catalog SS-21.



ACOUSTICAL MATERIALS AT WORK

A comfortably quiet atmosphere is provided by the sound-absorbing ceiling in this busy drafting room. Acoustical material: Armstrong's Cushiontone.

ARCHITECT'S OFFICE, New York City, N. Y.

Architect:

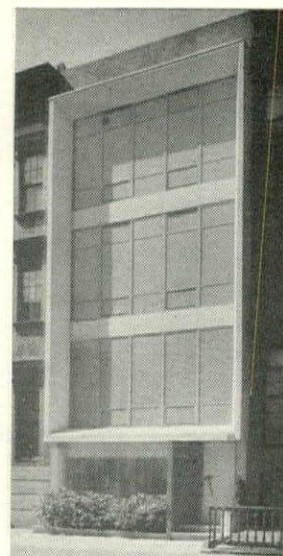
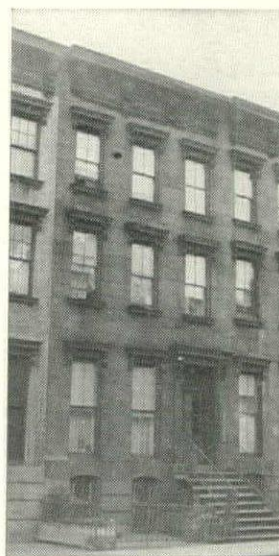
Morris Lapidus

General Contractor:

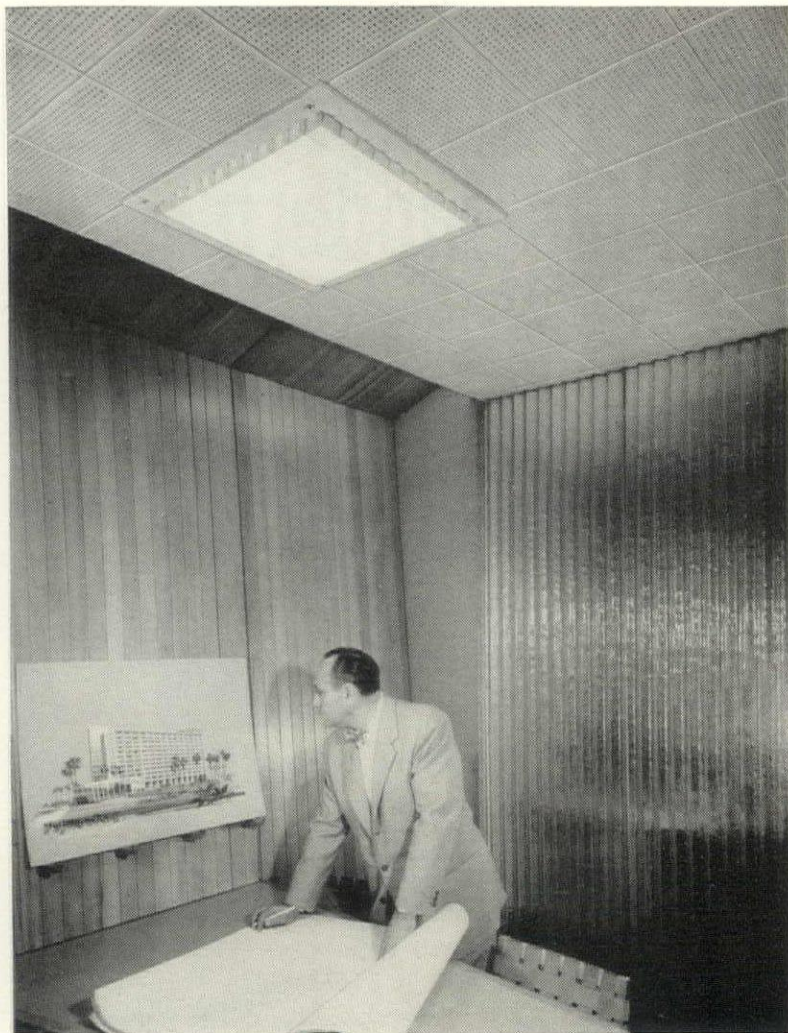
Herbert Construction Co.

Acoustical Contractor:

Hannam & Schede



From a brownstone house.....an architect's office.



Architect Morris Lapidus is shown here in his Cushiontone-treated conference room.



A Cushiontone acoustical ceiling in this private office adds much to its functional beauty.

Modern materials and creative imagination were combined to transform an old brownstone house into this strikingly designed office building.

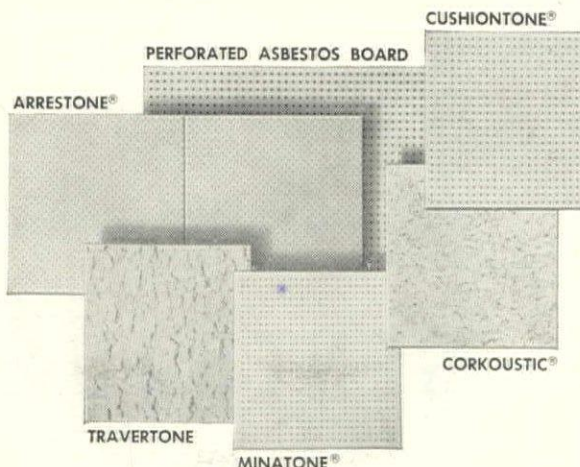
Both exterior and interior were completely remodeled by architect Morris Lapidus. Many factors influenced Mr. Lapidus' choice of sound conditioning for these offices. High acoustical efficiency, modern appearance, and ease of installation, all recommended Armstrong's Cushiontone® for the job.

Cushiontone is an economical, perforated wood fiber tile. A practical choice for remodeling jobs, Cushiontone is readily installed over old ceilings. It can be mechanically suspended to hide unsightly pipes and ducts and reduce excessive ceiling height.

Cushiontone's low cost enables the architect to sound condition large areas economically. Its repaintability, ease of maintenance, and high light reflectivity are other important factors in its favor.

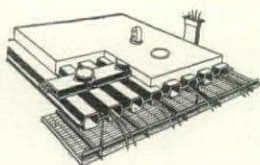
Armstrong has the most complete line of acoustical materials, offering a wide choice of special features to suit any sound-conditioning need. Your Armstrong Acoustical Contractor will be glad to give you expert assistance without obligation. For the free booklet, "How to Select an Acoustical Material," write to Armstrong Cork Company, 5401 Stevens Street, Lancaster, Pennsylvania.

ARMSTRONG'S ACOUSTICAL MATERIALS



Three G-E Wiring Systems that help keep buildings modern

Here are three examples of modern G-E wiring systems for the Construction Industry. They add exceptional utility—and sales appeal—to the structures in which they are installed.



Q-Floor wiring system.

This unique G-E wiring system uses the cells in Q-Floor steel floors for electrical raceways. No matter how changing tenants alter floor layouts, it will always be a simple matter to provide neat, unobtrusive electrical outlets for office machines, telephones, inter-office communication systems. One outlet is possible for each square foot of office space. The booklet "Your Stake in Q-Floor Wiring" gives full information.



Remote-control wiring system.

Control of 9 circuits from one location is one of many interesting features of General Electric's low-voltage remote-control wiring system. Home buyers like the extra safety and convenience it offers. Builders like the way it helps sell homes. The booklet "Remote-Control Wiring System" gives full information.

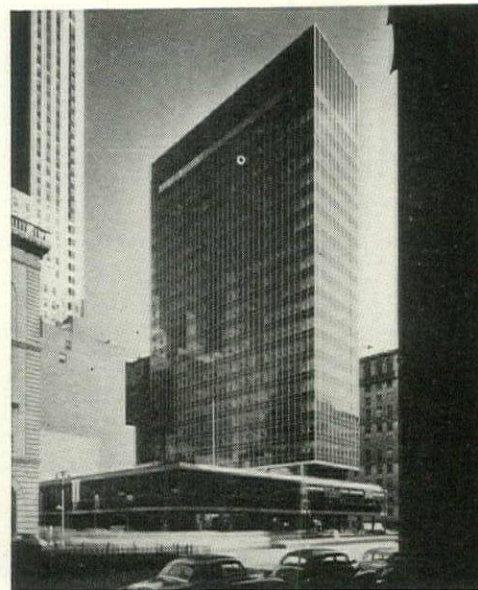
Builder Romeo S. Picerne, Providence, R. I., installed G-E remote-control wiring in these homes.



Interlocked armor cable system.

In the 440- to 15,000-v range, this remarkable cable permits factory management to wire or rewire their plants in less time, for less cost than with the usual raceway system. The system is permanent, for installation inside or out—yet with comparatively slight expense, it can be moved, expanded, or altered to fit every power need. Interlocked armor cable adds more value than it costs wherever it is installed. The booklet "Interlocked Armor Cable" gives full information.

For the booklets you want, write Section K7-14, Construction Materials Division, General Electric Company, Bridgeport 2, Connecticut.



Lever House, New York City, uses the G-E Q-Floor wiring system.



Midwestern tank plant rewired with varnished-cambric-insulated interlocked armor cable system.

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GENERAL  ELECTRIC

NEW HOTELS—Just Because They are Better

The new year brings us near the end of an era—the postwar era of necessitous building. Its end should give architects, engineers, and all other planners of better buildings a new chance and challenge to prove their worth.

For seven years now construction has boomed and prospered, not because it was offering something better planned or better designed, pleasanter to occupy or more economical to operate. Construction has boomed because war and depression had created a critical shortage and a critical demand for almost every type of building—more houses and apartments for more people, more schools for more children, more hospitals for more patients, more churches for more suburbanites, more offices and factories for more production.

As long as this fabulous demand lasts, quality may be forgotten to get quantity fast. But as the pressure falls off, **nothing but better planning and better design can keep construction booming on the replacement of obsolescent structures.**

* * *

So as the 1945-52 era of necessitous building nears its end, this might be a very good time to look at the record of the one building type where insistent demand vanished in 1929—the hotel.

For two decades only Miami Beach has cried for more and more hotels for more and more vacationers. And so, perhaps characteristically, Miami Beach until this year has contributed little or nothing to progress in hotel design.

But where there was no necessitous hotel building, **architects, engineers and owners have been spurred to create a revolution in hotel design, construction and economics.** So great is that revolution that before long 1929 hotels, bought up at 20¢ on their 1929 construction costs, may find it hard to compete against the greater convenience and more economical operation of the new types.

The milestones in this revolution are very few: The Statler in Washington with air conditioning and the “Statler bedroom” (AF, June '43); the Terrace Plaza in Cincinnati with its ground rent paid by the stores below (AF, Dec. '48); the balconied El Panama and its offspring the Caribe Hilton, which brought indoor-outdoor living back to hotel life (AF, Apr. '51, and Mar. '50); the Shamrock in Houston, which had a fine idea in moving away from the railroad station to the auto highway, but missed its chance by using the same old plan for the new kind of site (AF, Apr. '49).

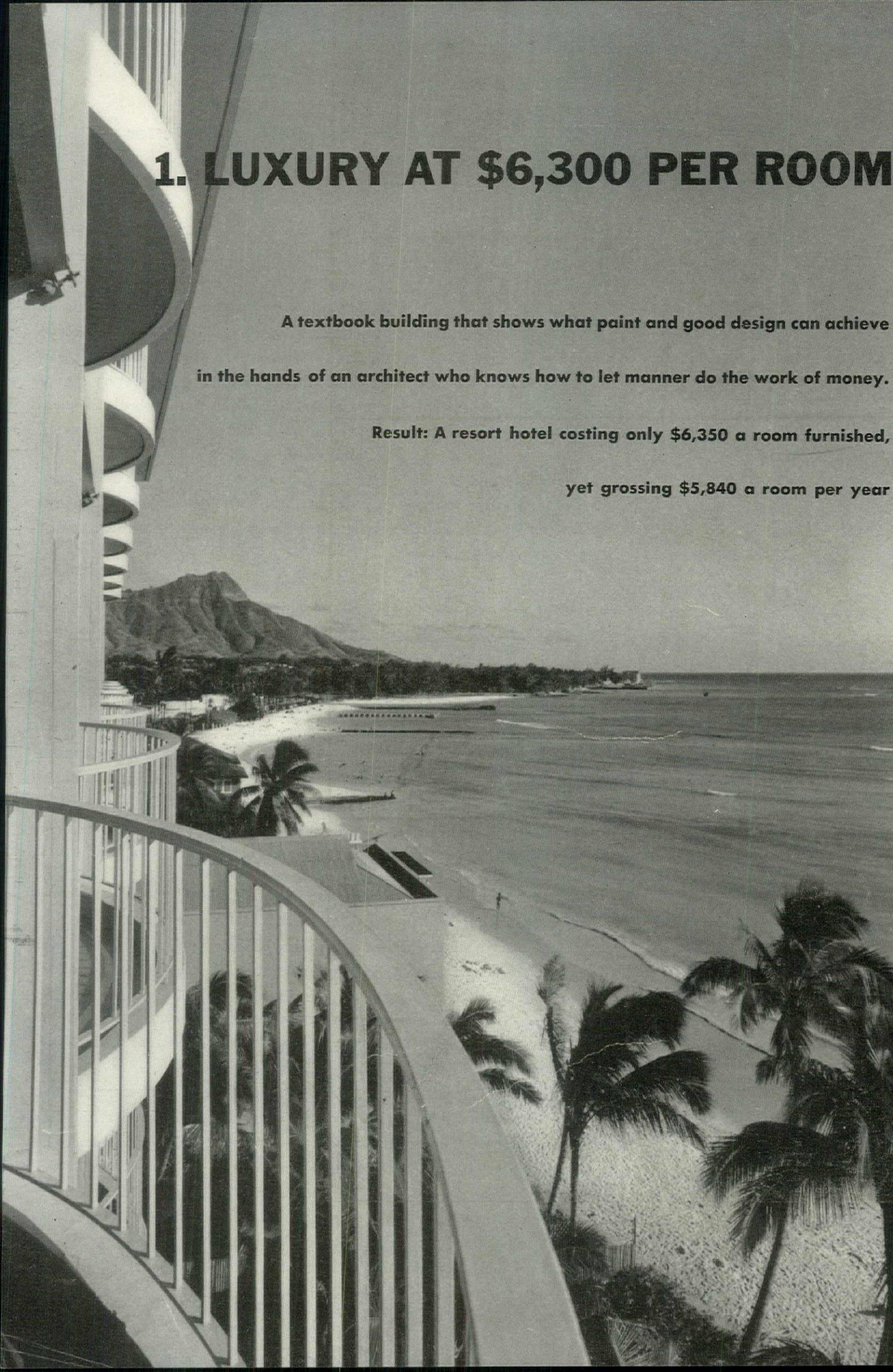
Now FORUM is proud to show in this issue **four new milestones in the hotel revolution:** Gardner Dailey's unbelievably profitable SurfRider in Hawaii, whose \$6,350-per-room cost shows the new hotel type can be as economical as it is attractive (p. 98); Edward Stone's new design for San Salvador, which carries forward the work he started in Panama (p. 106); Welton Becket's Beverly Hilton, which brings the balconied resort-type hotel to the outskirts of a great city and realizes the opportunity the Shamrock missed (p. 114).

Last but not least is an example of creative hotel design by Igor Polevitzky from the least likely place of all—Miami Beach (p. 112).

1. LUXURY AT \$6,300 PER ROOM

**A textbook building that shows what paint and good design can achieve
in the hands of an architect who knows how to let manner do the work of money.**

**Result: A resort hotel costing only \$6,350 a room furnished,
yet grossing \$5,840 a room per year**



Here is a striking example of how a good architect's design can more than overcome today's high construction costs.

Here also is timely evidence that better design can offer enough savings and advantages to keep construction booming long after the peak of necessitous construction is passed.

The popularity of this new 150-room resort hotel—it is 100% occupied virtually every day in the year—stems from Architect Gardner Dailey's artful exploitation of the reasons why people go to Hawaii at all: waving palm trees, surf and surf riders, the kiss of the trade winds, a sense of tropical luxury, the aura of exotic Polynesia—plus the way he has stirred all this together with a lot of sheer handsomeness that has nothing to do with geography.

The low cost and consequent fabulous profit stem from Dailey's understanding that the qualities he wanted, like many other good things of life, need not come high. The SurfRider is a masterly demonstration of how much you can leave out if you put the right things in.

It is also a masterly demonstration of how a skilful architect uses practical problems as a springboard for his best design ideas and conversely uses design ideas to solve practical problems. Take four instances:

► **The balconies:** The curve of the balconies is the outstanding visual feature of the SurfRider, the feature that sets it apart from all other balconied hotels. Was it done to achieve a pleasing effect, or to solve the practical problem of giving every balcony privacy from the balcony next door without cooping it in? Whether the chicken or the egg came first does not matter; the fact of apparently effortless practical and visual integration does.

► **The lobby:** Dailey had a tough problem in what to do with a big ground-floor area for which there was no function other than to provide space for people to sit indoors in a climate where nobody sits indoors. It could have been a big barn. He made it interesting visually by breaking it into two levels; at the same time he solved the practical problem of including a shallow basement (under the upper level) on a site only 5' above ocean-permeated sand.

► **The corridors:** One school of thought holds that hotel corridor walls should be straight, leave no recesses for a sneak thief to lurk in. Another school, which Dailey has joined here, holds that a flush wall corridor is too uninteresting. Dailey got a pleasant indented corridor; at the same time he accomplished the practical results of getting extra depth in his suites for bathrooms and extra corridor space outside the bedroom doors where it is needed for parking baggage every ten days when a tourist ship arrives and more than 50% of the rooms change tenants simultaneously. With his 9" jogs at each side, Dailey gracefully got away with a minimum 5½' width in the narrow corridor sections.

► **The shop awnings:** These are typical of the kind of small detail, present in a hundred forms, that makes the SurfRider add up as a beautifully coherent whole. Dailey needed color on his street front; he needed to harmonize the design of six shops and

Photos: Roger Surtevant



Curved balconies combine privacy with 180° view of sea

SURFRIDER HOTEL

LOCATION: Honolulu

GARDNER A. DAILEY, architect

WALTER T. STEILBERG, consulting architect,
structural engineering

WIMBERLY & COOK, superintending architects

HAWAIIAN DREDGING CO., general contractor

at the same time not lose the separateness of each shop in the total composition; he needed canopies that would not be destroyed by the incessant trade winds. He solved all these problems by the almost ludicrously simple expedient of hanging a separate but uniform awning over each front. The gay red and white canvas panels are fastened together and to the white enameled tubular frames by shipboard lashings that let the wind pass through.

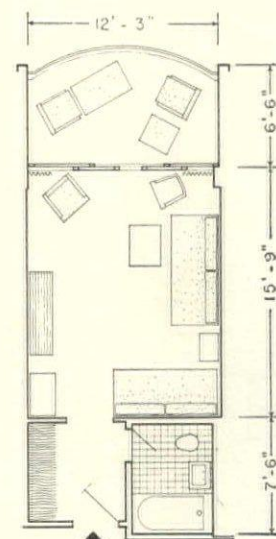
The design that does not show is just as good, just as soundly economical. For instance—and here is an idea that any hospital, office building or school could use handily—each pipe stack has a roof lid, as easy to remove as the top of a milk bottle. All pipe joints off the stack are in the furred bathroom ceilings, directly above an access door over the shower. When a water line has to be replaced, it will be disconnected at the access door, then hauled up and replaced through the roof lid. This device was the outcome of a lot of expensive, wall-tearing renovation at the nearby Royal Hawaiian. Another result of repair-consciousness is the design of the elevator penthouse. A ceiling hook and cable make it only a few minutes' work to lift the elevator machine right out.

Behind the rent-cost equation is good luck and good design. The Matson Line people—owners of Waikiki Beach's two other hotels, the Royal Hawaiian and the less expensive Moana—conceived the SurfRider as a low-cost overflow dormitory for the Moana. They figured to break even at an average of \$8 a room with 70% occupancy, hoped to average \$10 a room. Actually the rooms are renting for an average of \$16 with the cheapest \$12.

Matson hoped to keep costs to \$6,000 a room plus \$1,700 for furnishings. Actually construction costs worked out at \$5,000 per room plus \$1,350 for furnishings (\$750,000 for construction, plus \$50,400 architect's fee; \$9.65 per sq. ft.; 75¢ per cu. ft.).



Below the balconies too the SurjRider makes the most of its setting; beach terrace is a tourist's dream of Waikiki



TYPICAL ROOM

Rooms completely belie their skimpy dimensions and pared-to-the-bone economy. Full-scale mock-ups were tested in old house formerly on the site. Side sunshades for balconies, omitted to save money, may be added now that hotel is so successful.

The hotel is built without its own dining room, kitchen and hot-water boiler, shares those of the Moana next door. But let those who would jump to the conclusion that this explains the SurfRider's low cost per room note that \$15,000 would add a boiler system in present basement space, that a dining room and kitchen could be equipped for \$40,000 using existing ground-floor store and excess lobby space, or could be added as a wing for another \$60,000. At the outside, these additions would jack per-room cost only \$766.

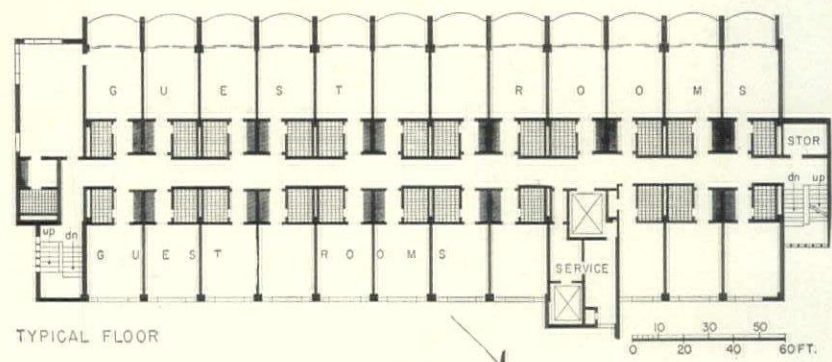
So here is the phenomenon of a hotel designed to a minimum budget with every possible chiseling but with the end result so good that the patrons clamor to get in.

The rooms, which the guests refuse to regard as dormitories, covet for waking enjoyment, are so small (11½' x 15') there was no wall space for connecting doors (a need met by putting doors between balconies on one floor). Rooms have about the same sq. ft. area as the smallest rooms in the newest Hilton (p. 114), 14 sq. ft. less than standard in the newest Statler.

But on the ocean side, sliding glass walls and curving *lanais* give each room the whole rolling Pacific; on the land side the windows bring in the mountains and glass jalousies the winds.

These winds, which sweep onto Waikiki Beach from the land, are absolutely indispensable for comfort and Dailey has cleverly designed the building to get breeze into every room. Closets stop 3½' short of the 10' ceiling, leaving in effect a big air duct for breezes through the corridor-side jalousies (see photos, right). In addition, the windward wall of the fire tower is one great open grille of cast concrete. In summer the stair doors (equipped with fusible links) are left open; the wind sweeps through the big grille, down the corridors and out through the ocean-front rooms.

The rooms have their interior allurements too: appropriate South Sea touches like reed screens; two lush, cool color schemes in gray and green for the sunny ocean rooms, warmer yellow



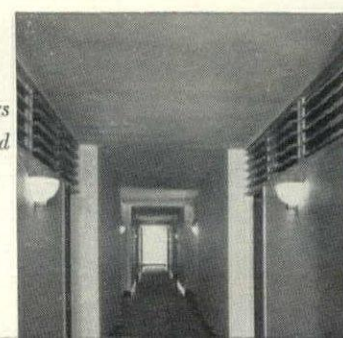
TYPICAL FLOOR



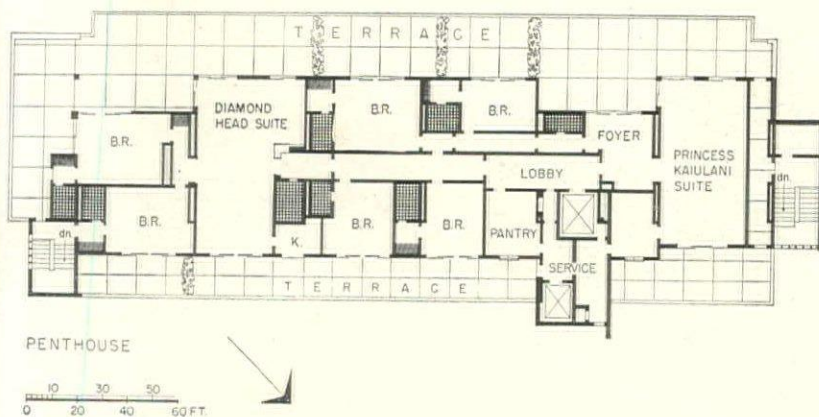
Corridors are jalousied, closet ceilings are dropped to let breeze into leeward ocean side.



Land side rooms have wall-to-wall windows but no balconies.



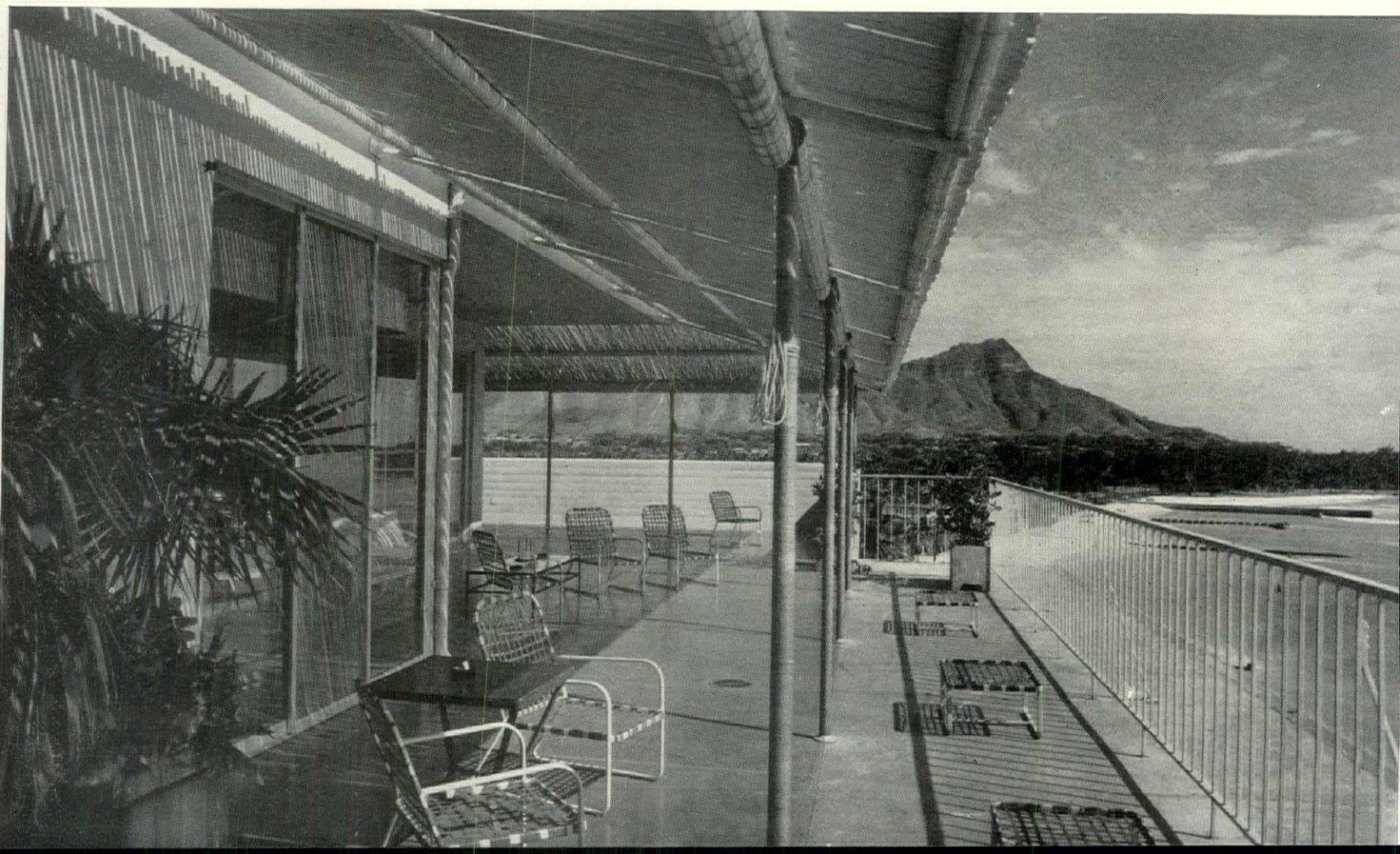
FOUR HOTELS



Even luxury of two penthouse suites was achieved with deceptive economy through bewitching texture and color. "Diamond Head" living room has grass cloth wall cover in cerulean blues, greens and purples of Waikiki waters.



Bamboo awnings with cord-wrapped stanchions give a South Sea yacht deck air to penthouse terraces. Awnings give shade but allow air to pass through.



and cocoa schemes for the land side; handsome aluminum and plastic furniture. (The existence of the balconies hung on this last item. Matson turned thumbs down because of the upkeep of outdoor furniture until Dailey came up with tables and chairs that cannot be harmed by rain or salt spray.)

Construction is just as economical as use of space and just as successful a vehicle for good design.

Structure is reinforced concrete, mostly left exposed. For instance there is no plaster on the ceilings, just the painted slab, and instead of attempting to get beautifully smooth, plasterlike concrete, Dailey used rough forms and made a virtue of the resulting texture. Carpets (chosen for lower maintenance and greater safety than tile) are laid on the slab. Interior partitions are metal lath and light plaster or plastered cement block.

On the exterior, Dailey simply specified where joints of the forms should fall, again made a virtue out of rough texture. Example of the Dailey talent for improvisation: basement vents are attractive clumps of little round holes made by inserting shellacked cardboard mailing tubes into the concrete. Cast concrete grilles are his adaptation of a traditional South Polynesian tapa cloth pattern.

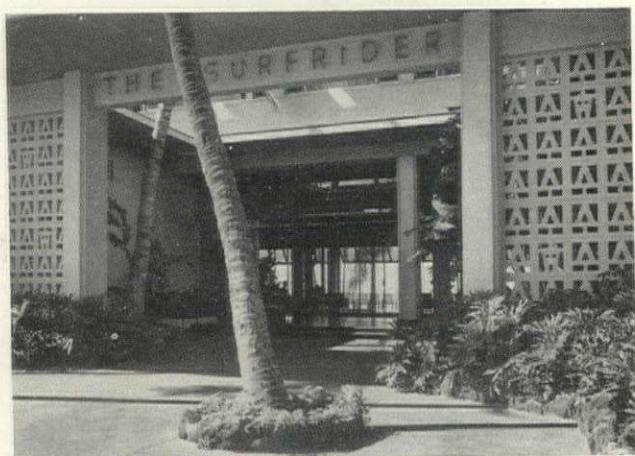
The balcony walls are structural, cantilevered out at the second floor and from the columns all the way up the face. The end balcony was omitted partly to make a design "frame," partly because winds whipping around the corner would make an end balcony unusable much of the time.

Economy of weight was as important as economy of material. The hotel rests on a crust of coral rock and hard sand underlain by several hundred feet of sand permeated by sea water. Foundations are snowshoe grid type; the building was calculated to settle about 3", actually settled 2 5/8" equally. The basement floor is only 2" above the water table and the elevator pit is a cofferdam. At first no basement was planned but backfill in the foundations cost as much as a cellar, so space was left for storage, access to the balcony drain system and a pantry for room service from the Moana.



Strict shop leases, masterminded by Architect Dailey, insure handsome street facade will remain as designed

Governing requirement for the first floor was Matson's desire for store rental space on the valuable frontage along Kalakama Ave., the main street of Waikiki. The lobby is really a breezeway with plenty of good solid glass to control the breeze, keep it from becoming a wind tunnel. Dailey has made it psychologically cooling with dark and neutral colors and masses of tropical foliage to offset the glare of the sea. Violent color accents, usually red, keep it from being soporific.



Concrete grille in tapa cloth pattern, canopy roofed with a living palm (see photo at top) and view across lobby to the sea give arriving guests an immediate sense of lighthearted, casual elegance.



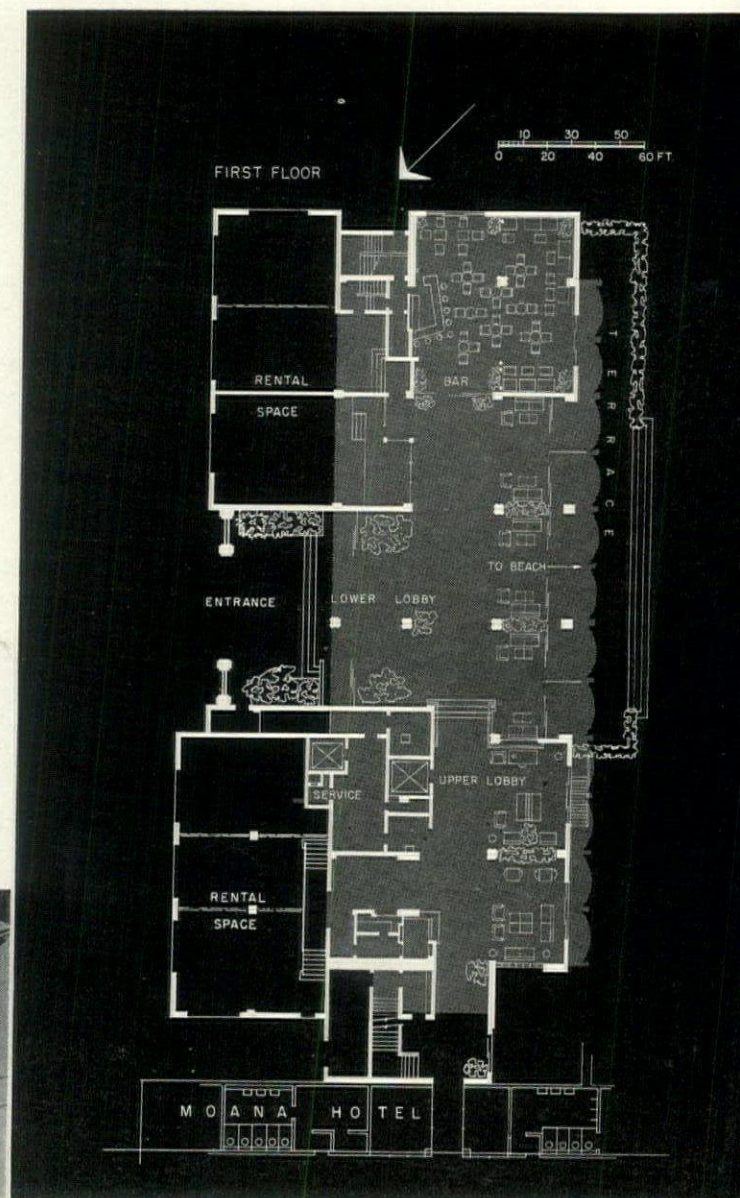


In the bar are painted mask designs and prints of early voyagers against wall covering of white, undecorated tapa cloth from Samoa.

Bar was an afterthought; shops were owner's chief requirement on ground floor. One tough problem was how to keep barnlike surplus lounge and lobby space from dragging down design.

The bar is the succès fou of the public area. Here Dailey the modernist gave way to Dailey the showman—the set designer who filled the San Francisco Drake Tavern with half-timbering and Elizabethan armor, and Trader Vic's with ship's ribs and Polynesian masks. For the SurfRider he let himself go with textures: white tapa cloth on the walls, handwoven primitive linen on the chairs, screens of square bamboo, notched wood, grass-cloth—sparkled with jungle colors. It couldn't be more popular. In fact it is so nice that people are willing to pay 75¢ for a beer there, against 45¢ at the Moana next door. What is more, the establishment is able to get away with making patrons walk all the way across the lobbies into the Moana to go to the toilet. Never underestimate the power of tapa cloth vs. plumbing.

Stair tower repeats entrance grilles, brings breezes inside



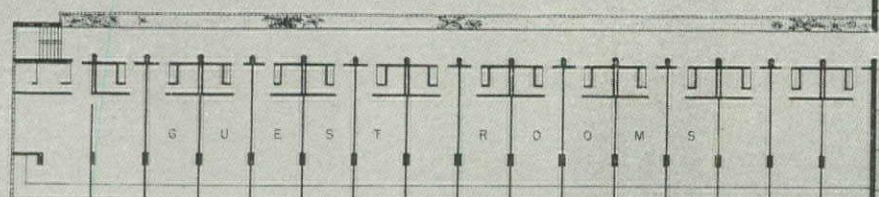
Teak-stained beams of dropped ceiling have Oriental feeling; bar is notched like Polynesian canoes.



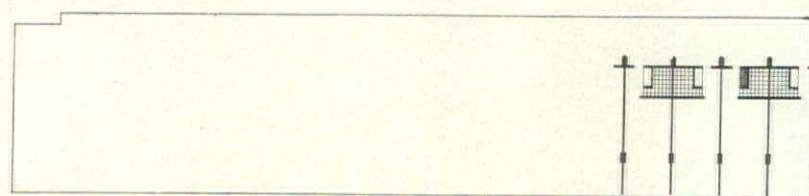
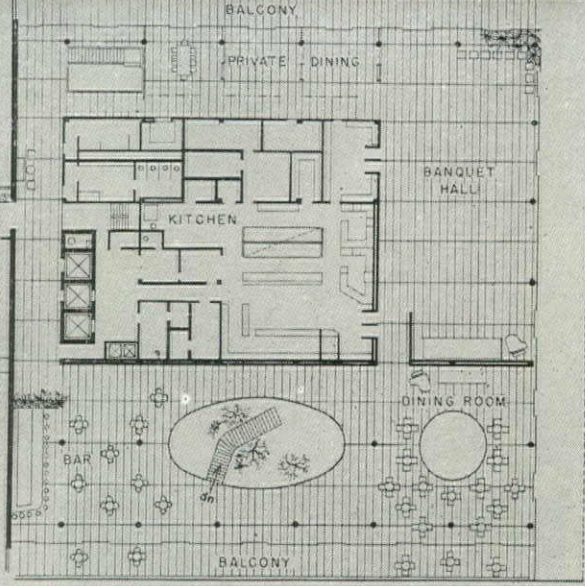
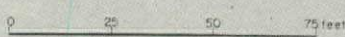
Lobby in dark and neutral colors offsets brilliance of terrace, beach and sea. Stone statues carry lobby lighting in head baskets. Hour glass shaped mask against far lobby wall is also lighting fixture.

View from upper lobby across to bar. Green and gold painted wood facing of columns is decorated with "bending knee" design of Hawaiian feather capes.

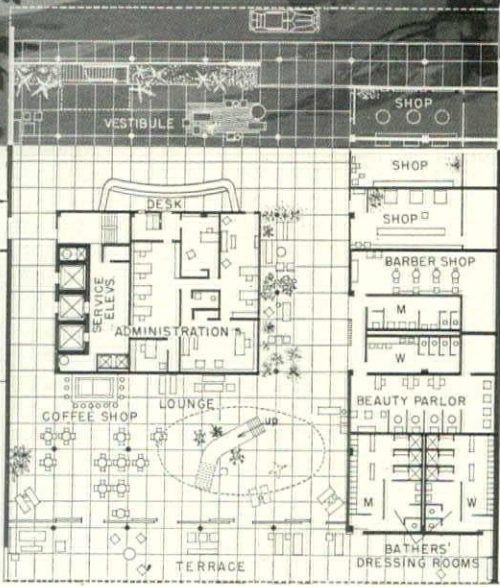




SECOND FLOOR



FIRST FLOOR



Glass-enclosed square section at end of El Salvador's dormitory slab contains all public spaces, opens to outdoor dance terrace, gardens, swimming pool

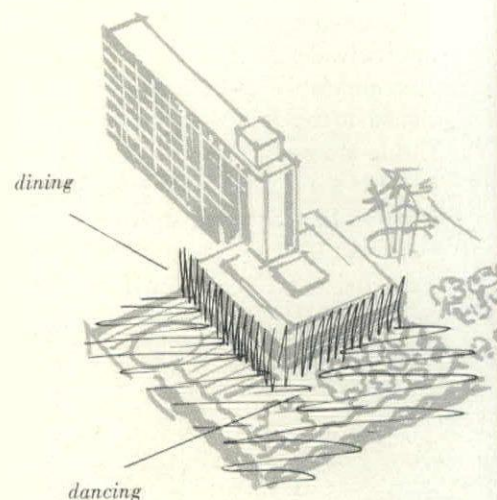
2. "IF I WERE DOING IT OVER AGAIN"

**Architect Edward Stone improves on his famous El Panama,
gives San Salvador a better hotel plan, embellishes
it with a full integration of the arts**

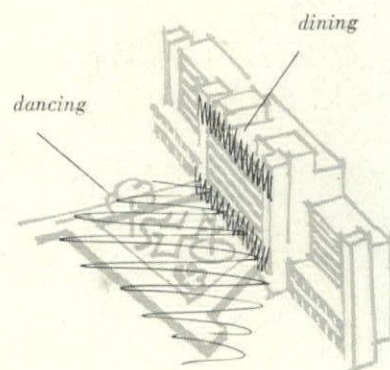
What changes would Architect Edward Stone make in his pace-setting Panama Hotel if he redesigned it?

Architect Stone got a chance to answer this question when he was commissioned to design a new hotel with a similar function in nearby Salvador:

- ▶ He discarded the conventional hotel plan with public areas at the top and bottom of the building block. Instead he put guest rooms in a dormitory slab ten stories high and put the public spaces in a square two-level structure at one end of the slab. Purpose: to carry away sounds of revelry which, at El Panama, had disturbed early retiring guests. And Stone cunningly oriented the hotel so that this sound dispersion was aided by the prevailing winds.
- ▶ He placed the entry and elevators (also kitchen and service areas) at the juncture between dormitory and public space for easy guest circulation and efficient short-line hotel service. In this position, these facilities add to the sound insulation between the dormitory and public areas.
- ▶ He used no air conditioning. The off-end position of elevators leaves the dormitory wing free of everything but a single-loaded corridor with all the guest rooms through-ventilated by tropical breeze.
- ▶ He exploited his breezeway-type rooms more extensively than in El Panama. Balconies in the Panama are reached through louvered double doors which open to invite the breeze. But in the Salvador the entire wall separating



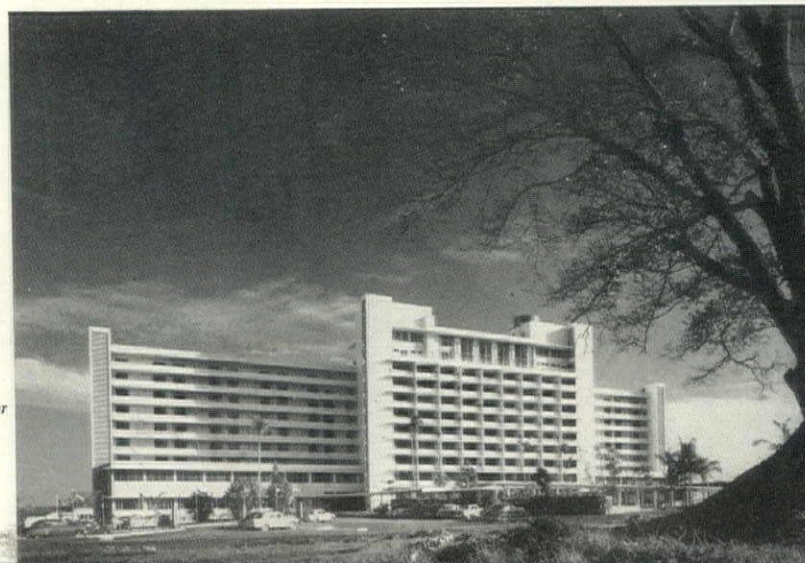
Noise from public spaces in center of El Panama (below) kept guests awake. In El Salvador (above) noise areas are removed from sleep areas.



Unlike Salvador, Panama's double-loaded center requires air conditioning

EL SALVADOR HOTEL, Salvador, C.A.
EDWARD D. STONE, architect
MENDEZ & SANDER, associate architects
FRED N. SEVERUD, consulting engineer

Ezra Stoller © Pictor

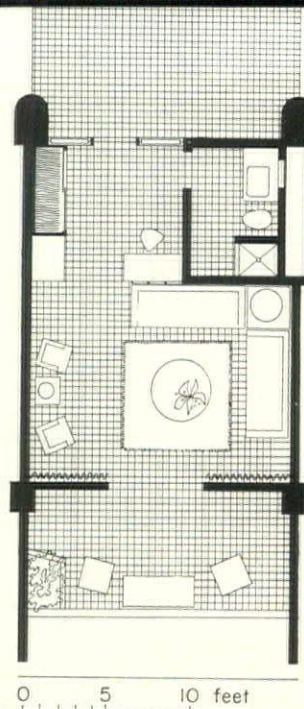


room from balcony is composed of sliding glass sections. With them, two-thirds of the room's 14'-9" width can be opened to the breeze.

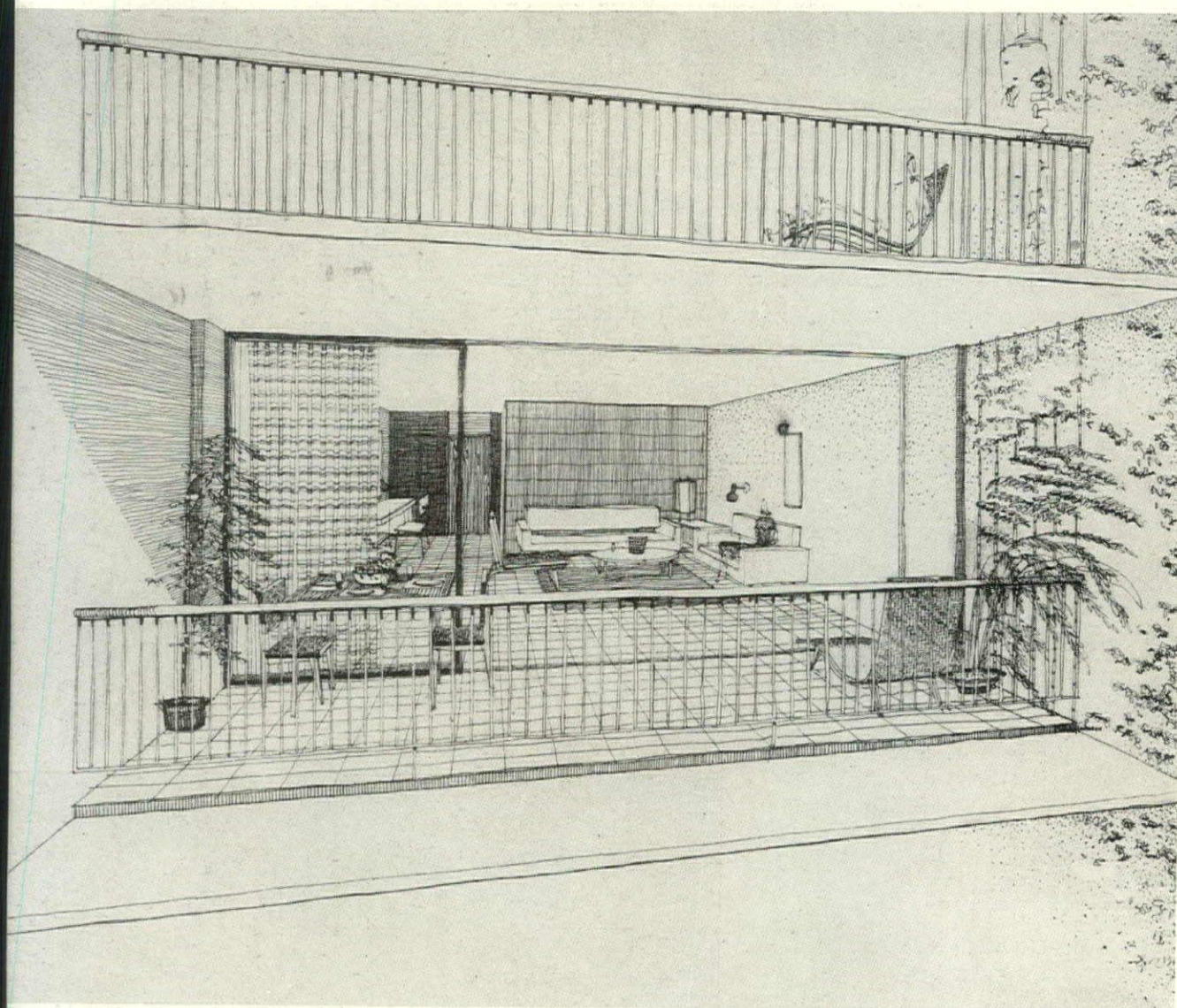
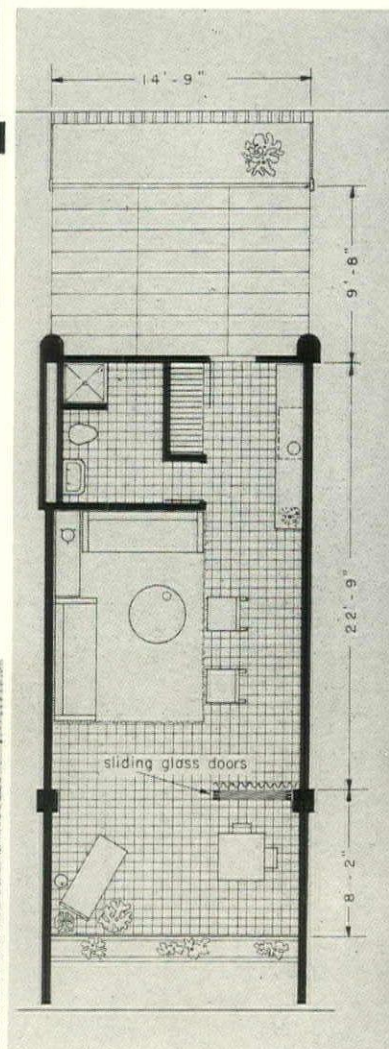
► He changed the distinctive egg-crate facade. Though the facade remains quite similar, the cantilevered floor slabs do not project so far beyond the walls. In El Panama, the floor slabs projected beyond the room walls far enough to form an unintentional passage between rooms outside the balcony balustrades. The arrangement in the Salvador should discourage strolling from balcony to balcony that has been reported in the Panama.

Essentially, the Salvador is a commercial hotel since tourists to San Salvador do not yet outnumber salesmen. Results: range of accommodation is limited with only a few of the 150 rooms designed to be joined into suites; each room is a combined bed-sitting-room-office.

All is not business, however, in the hotel. Its location—near the edge of San Salvador—gives every occupant a striking balcony view over the city's best residential area to El Boqueron, the local volcano beyond the town. Swimming pool, outdoor dance floor, cocktail terrace and large informal dining room offer relaxation when business sessions end.

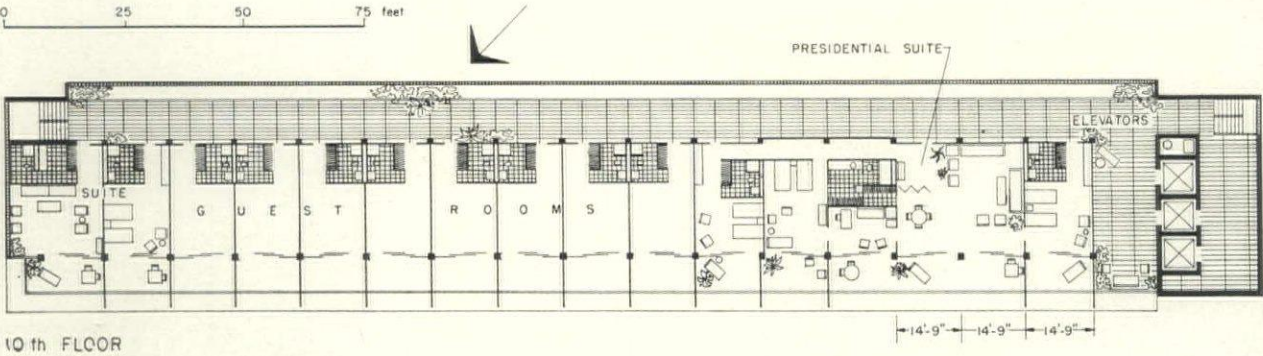


Panama room (above) opens double doors to tropic breeze but Salvador's glass walls (right) open farther.



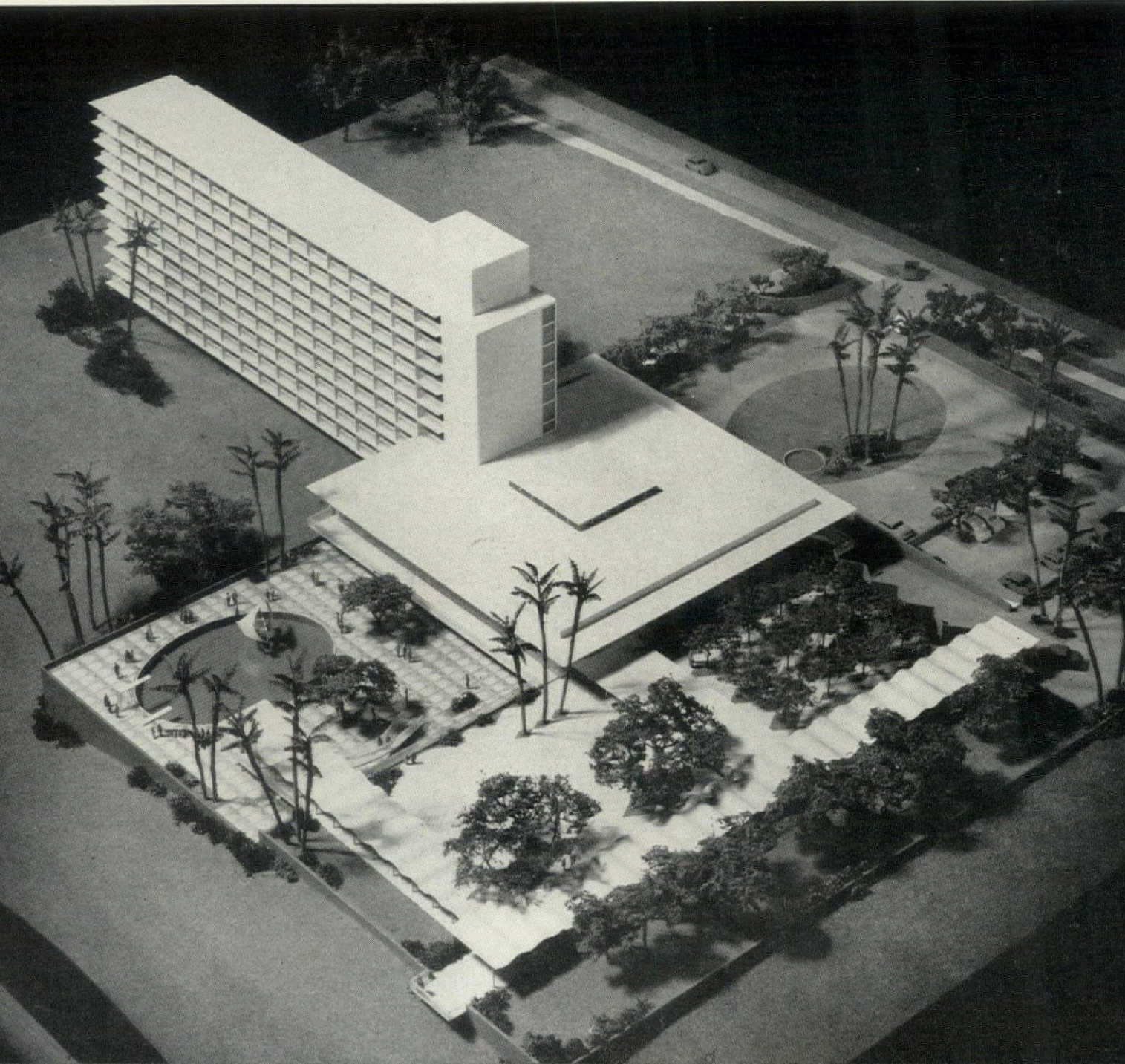
Balcony balustrades in El Salvador are open-rail type to expose maximum area to breezes. Panama balustrades are solid. Note sliding glass wall between room and balcony opens nearly 10' for ventilation, making room and balcony one big area.

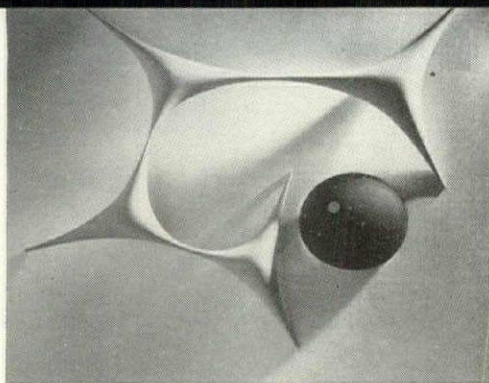
Exterior corridor wall of dormitory slab is of open tile to reduce effect of sun and rain without stopping breezes.



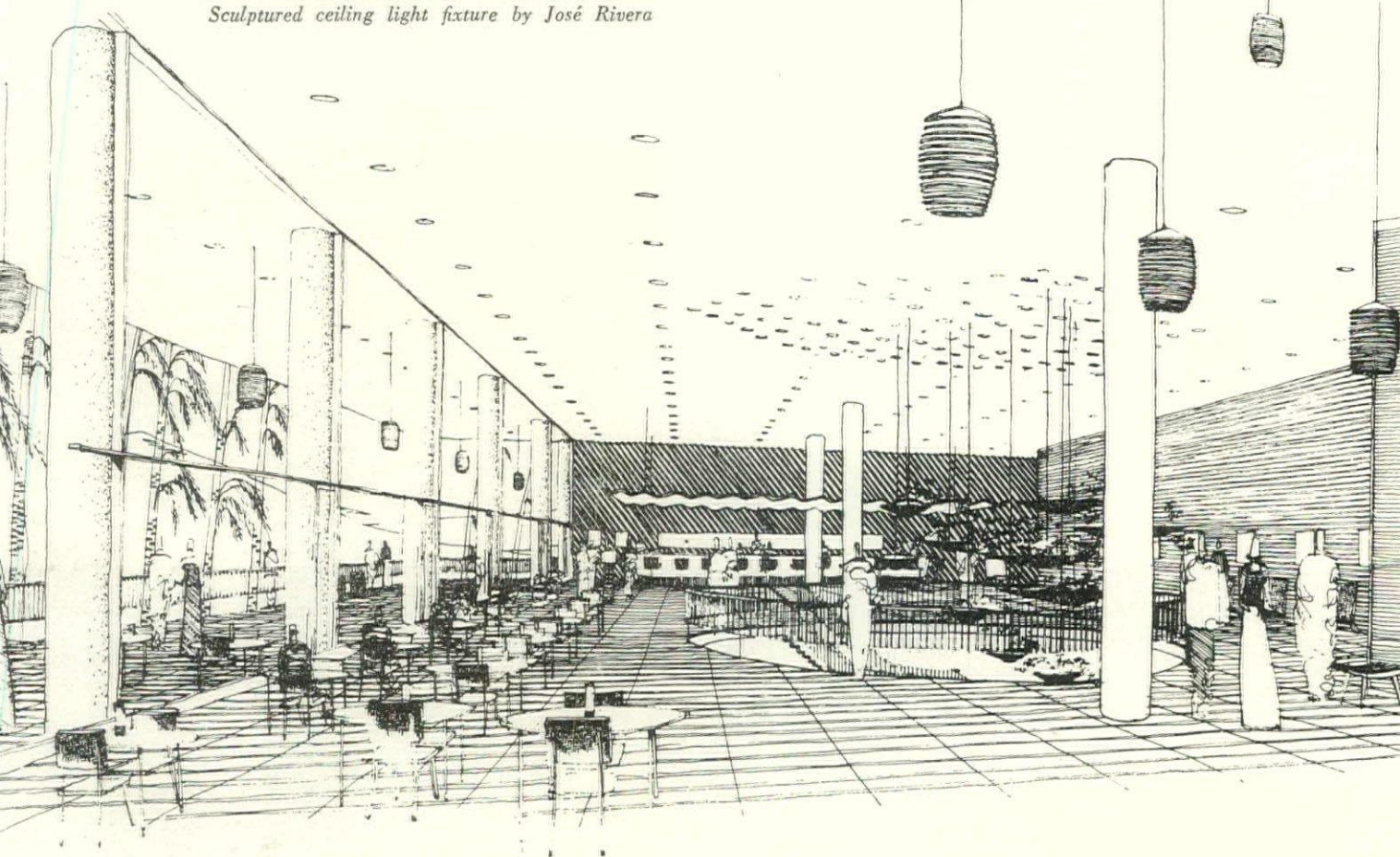
angle-loaded corridor gives same view to all rooms, makes air conditioning unnecessary

Richard H.





Sculptured ceiling light fixture by José Rivera



ic floor by Max Spivak extends from this lounge and grill area to the outside terrace which surrounds the swimming pool.

tists:

ALEXANDER CALDER, hanging gardens

MAX SPIVAK, mosaic

JOSÉ RIVERA, sculpture

GWEN LUX, sculpture

FINO TAMAYO, murals

ISAMU NOGUCHI, lamps



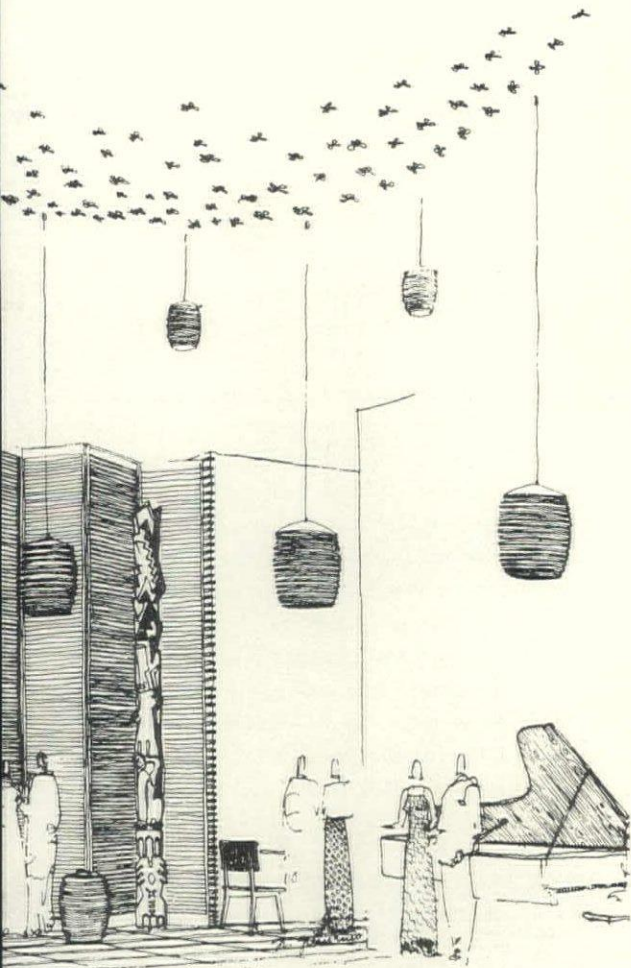
COOPERATING ARTISTS

So generous will be the use of art and artists that Stone says the hotel may be called a "museum to live in" as opposed to Le Corbusier's idea of a house as a "machine to live in."

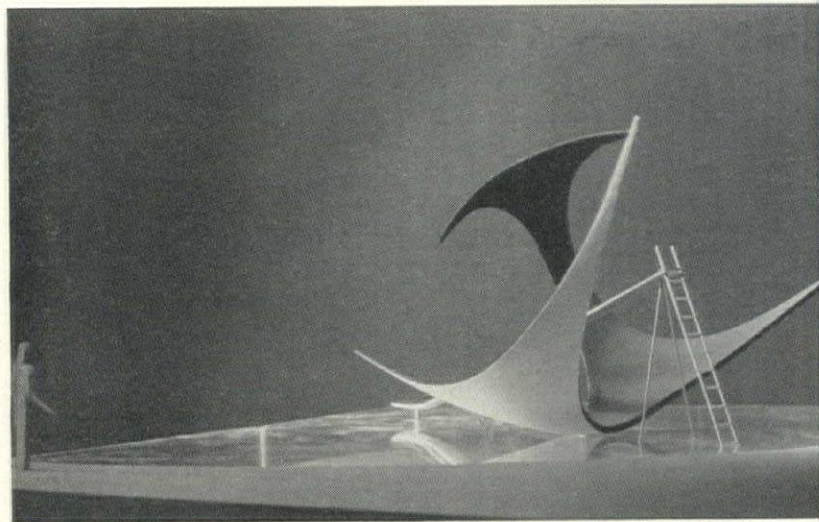
Emily Genauer, art critic of the New York *Herald Tribune*, gives the following description:

"Alexander Calder has designed a wonderfully imaginative hanging tropical garden for its main lobby, with plants growing in differently colored, oddly sized, elliptical vessels delicately balanced from the ceiling. Max Spivak has conceived an abstract mosaic floor. José Rivera is responsible for a free-form swimming-pool structure that will serve as a combination raft and diving board and in a scale model looks somewhat like a beautiful curl of lemon peel. Rivera has also designed a sculpture to serve as a dining-room lighting fixture. In the area encompassed by an oval-shaped driveway in front of the hotel there will be a construction by Gwen Lux of baked enamel sculptured objects somewhat suggesting Mayan stone carvings. The Mexican painter Tamayo may paint a large mural for the hotel lobby and sculptor Isamu Noguchi will do the lamps."

Extensive landscaping around public areas ties in with interior planting

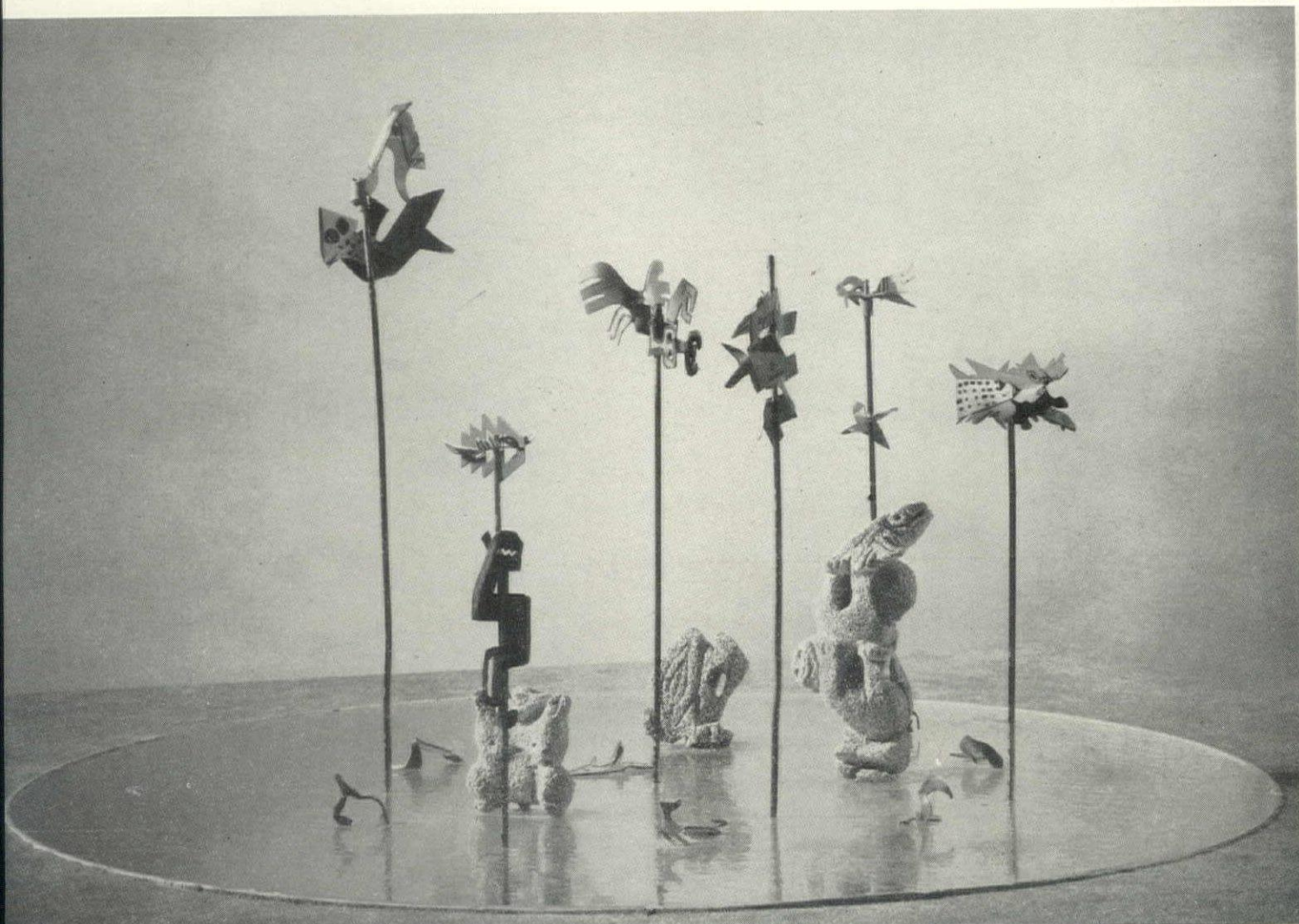


Spherical sculpture by Rivera playfully decorates swimming pool



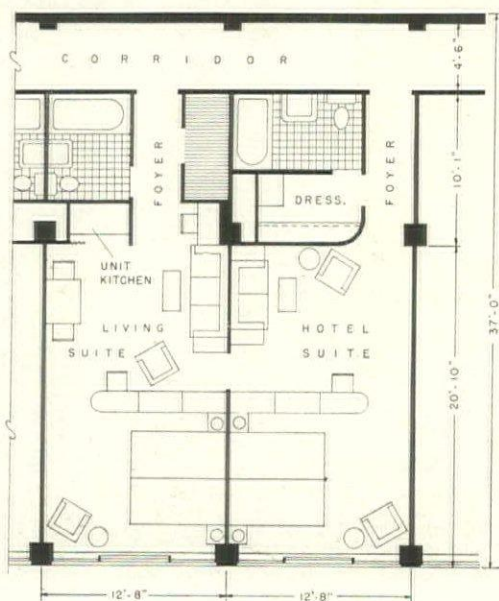
Gwen Lux sculpture suggesting ancient Mayan stone carvings is placed in pool at circular entrance drive.

Photos: Richard H. Althoff



3. HOW TO ATTRACT

This resort hotel does it by



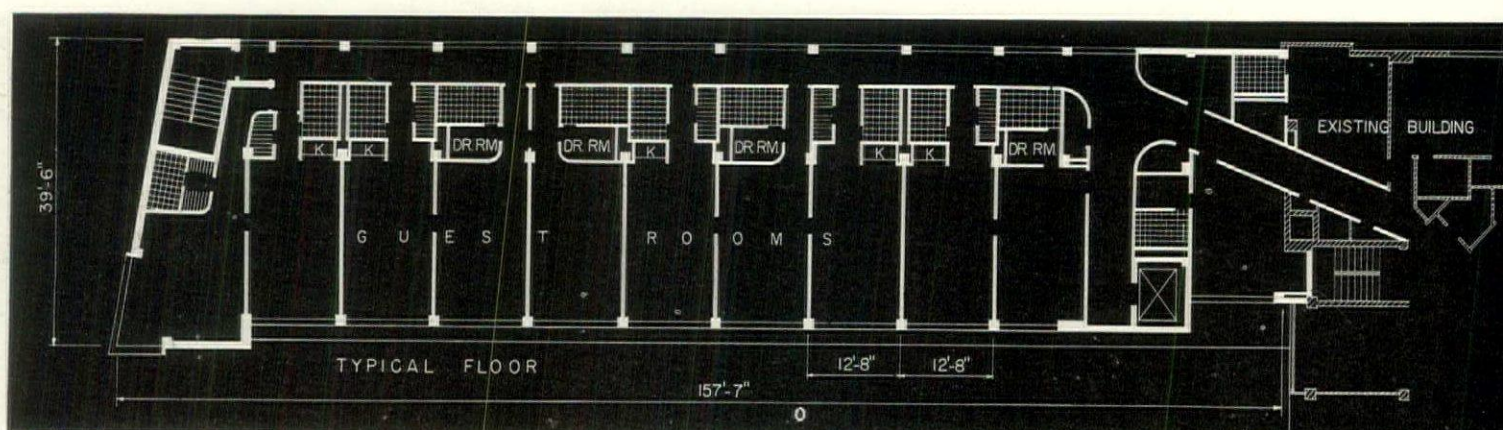
Divided bedroom will separate bed space from sitting space with a low storage partition and blinds above. Alternate rooms have kitchenettes instead of dressing rooms. Two adjacent rooms can be combined to form a suite.

Ten years ago the one thing a hotel did not need on crowded, commercial Miami Beach was a big lobby. But times have changed fast, and lobbies in new Beach hotels are now more determinedly impressive and inclusive than in most other cities. The reason: conventions.

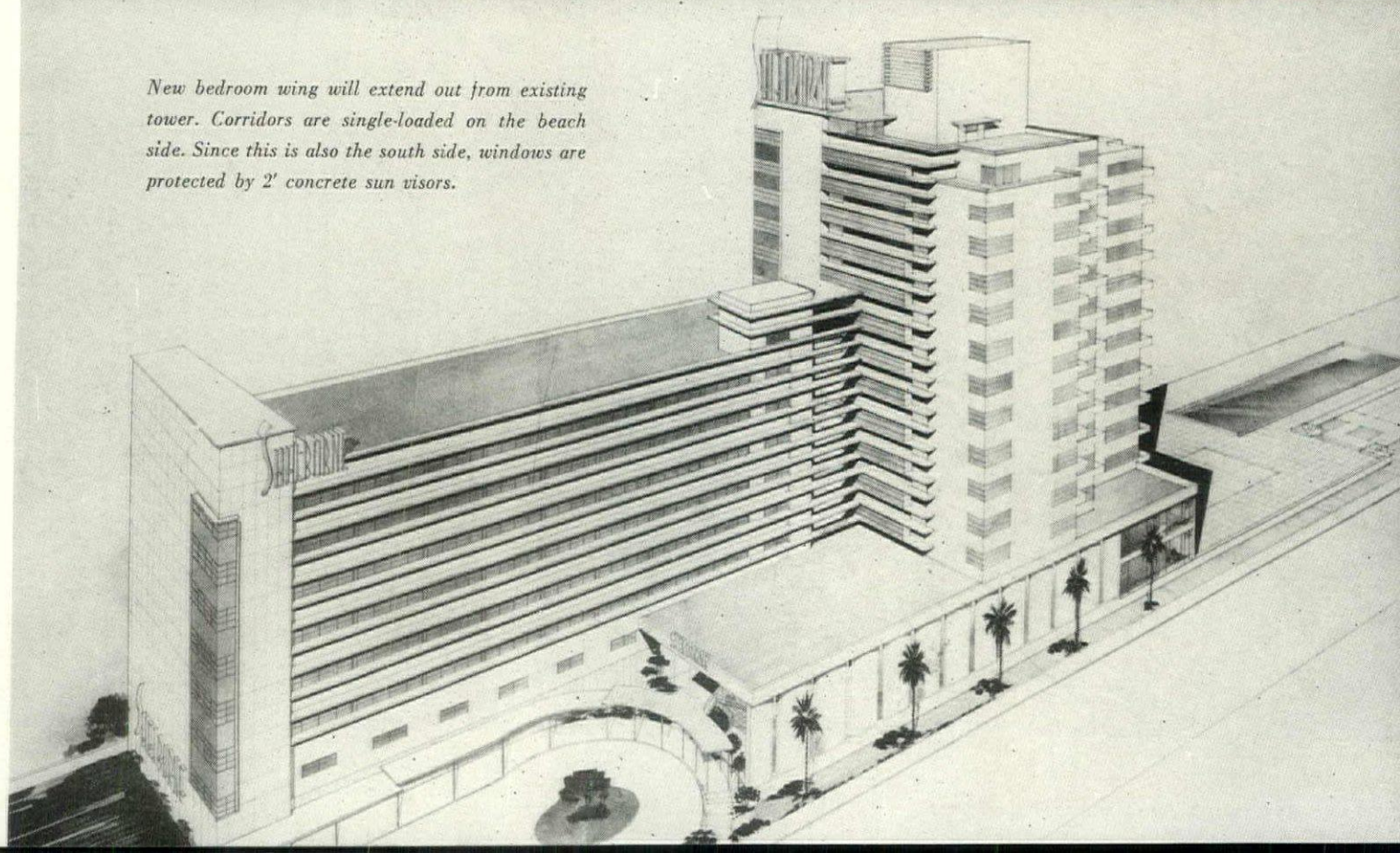
Conventions do two important things for hotel men: 1) in conjunction with air conditioning they pull the season around the calendar; and 2) they pull wayward guests back from the motels, which can handle almost anything now but a convention.

"Conventioners have to have a lobby where they can meet and compare badges," says one hotelman. No wonder the Shelborne, a leading Beach hotel, is rushing under lights to enlarge its lobby to convention proportions. With this investment of about \$300,000 the hotel expects to lure five or ten conventions a year more than it gets now. Since the 400 delegates who make up an average convention spend about \$200 a piece, eight conventions could gross roughly \$640,000 annually for the hotel.

But the Shelborne's architect, Igor Polevitzky, has another ace



New bedroom wing will extend out from existing tower. Corridors are single-loaded on the beach side. Since this is also the south side, windows are protected by 2' concrete sun visors.



CONVENTIONS

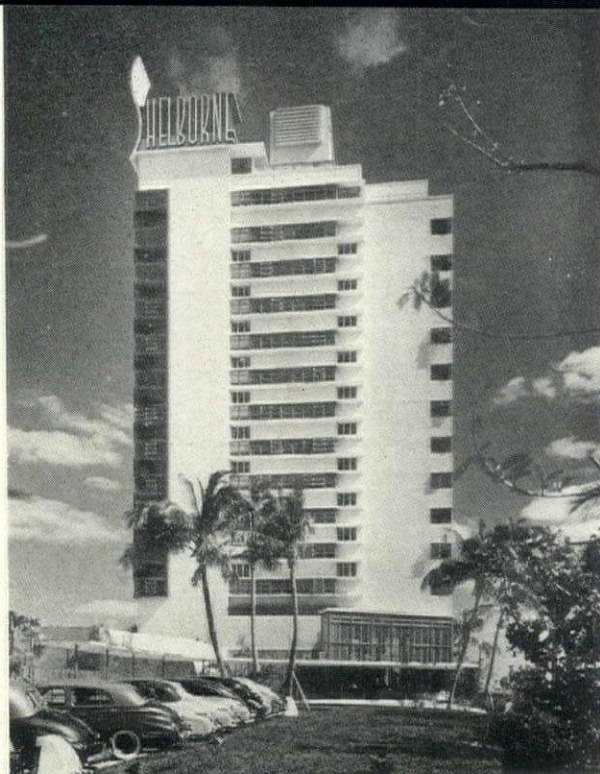
adding a big lobby and a wing of dual-purpose tourist rooms

up his sleeve for *next* year, when a new 75-room addition will extend the investment another \$1 million.

It is a guest room that unscrambles living and sleeping, day uses and night uses of the room, of which commercial hotels have lately been making a single omelet. Separate beds, for night only, will stand near the window, screened by waist-high shelves and bamboo draw-drapes from the daytime living space off the hall. Purpose: to avoid that rumpled character of the whole room before the maid gets around to make up "day couches." The living room loses part of the view ("they see it all day on the beach," says the architect). But the added space is at minimal cost since it adds neither a partition and door nor outside wall, and it puts only a minimal added load on air conditioning. (Room cost: \$13,300.)

Forty of the 75 rooms will have kitchenettes, will be combinable with adjacent rooms to form housekeeping suites. (Average stay is six days at \$25 per day.)

A third remodeling move will then air condition the original Shelborne tower. The Miami Beach season is stretching!



The hotel today

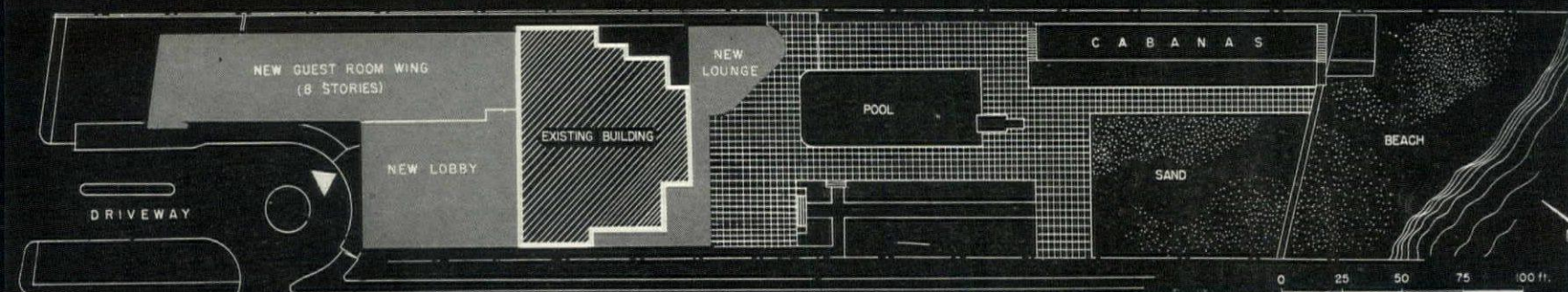
SHELBORNE HOTEL, Miami Beach, Fla.

IGOR B. POLEVITZKY, architect

PLAK CONSTRUCTION CO., general contractors

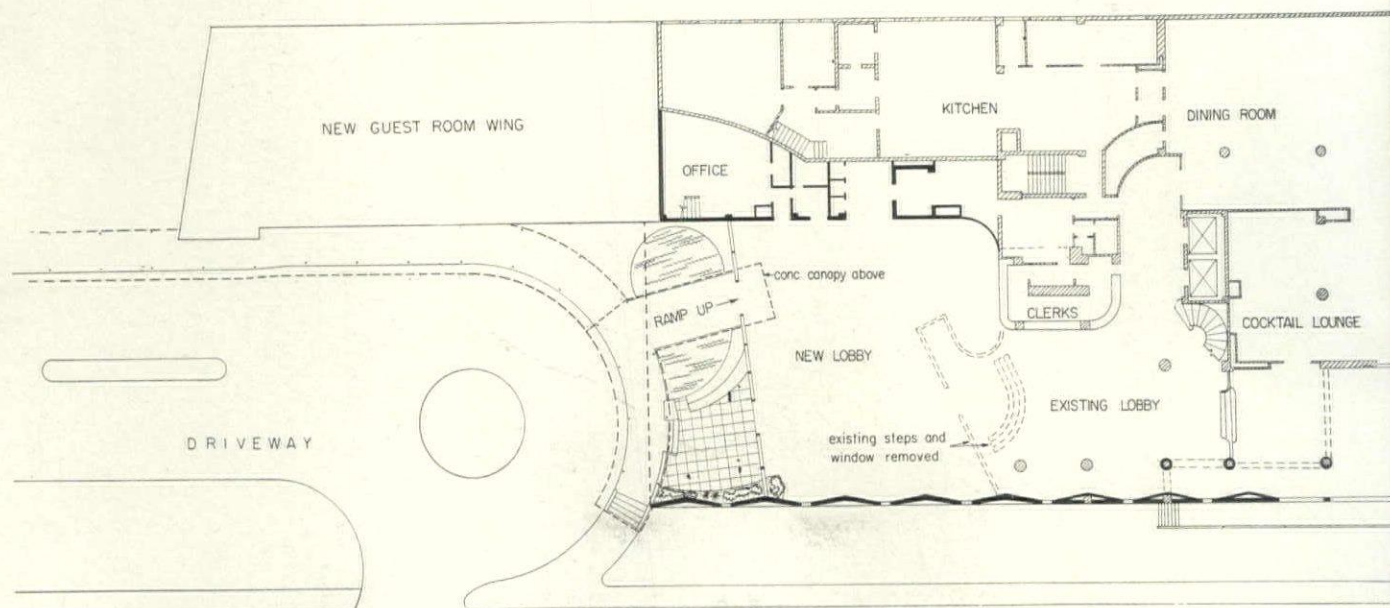
HAYGOOD LASSETER, interiors

FREDERIC STRESAU, landscaping



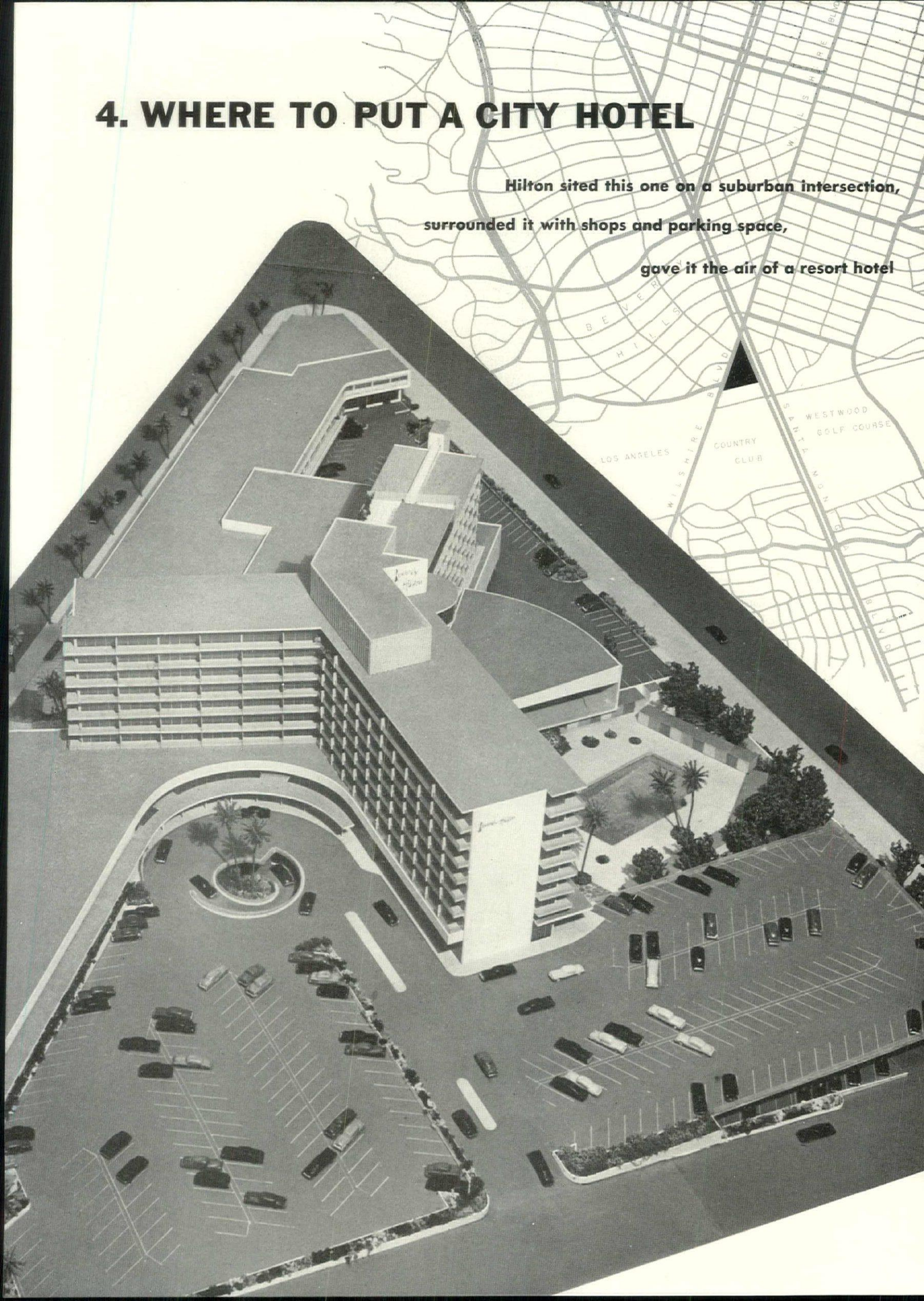
Another addition will be a cabana club to be built on the ocean side next year

Enlargement of the lobby includes an empty elevator shaft to be used when the new bedroom wing is added



4. WHERE TO PUT A CITY HOTEL

Hilton sited this one on a suburban intersection,
surrounded it with shops and parking space,
gave it the air of a resort hotel





BEVERLY HILTON HOTEL,
Beverly Hills, Calif.
WELTON BECKET & ASSOCIATES,
architects

Viewed from east, Y-shaped guest-room wings rise above low-lying shops and parking areas. Balconied rooms overlook nearby golf course.

Photos: Douglas M. Simmonds; renderings: Welton Becket

Viewed from the west, hotel sits on a triangle of land at junction of busy Wilshire and Santa Monica Blvds. Difference in grade of these two streets suggested the double-decked parking. Lower level is accessible from street (lower right) and circular ramp outside at hotel's main auto entry.

Location of this Hilton hotel is based on the automobile—the travel method preferred by 86% of all hotel guests. It is sited 8½ mi. from downtown Los Angeles at an important intersection in suburban Beverly Hills, and it raises the whole question of where a city hotel should be.

Heretofore only a few big city hotels like Chicago's Edgewater Beach, Washington's Shoreham and Houston's Shamrock have risked deserting the downtown area and its railroad station. The new Statler in Hartford is going up only two blocks from the railroad station—one block from the old Bond Hotel. Question: Would Statler have been wiser to locate on the Wilbur Cross Parkway with all the car traffic at its door? By his example in his Los Angeles location, Hilton's answer is "Yes."

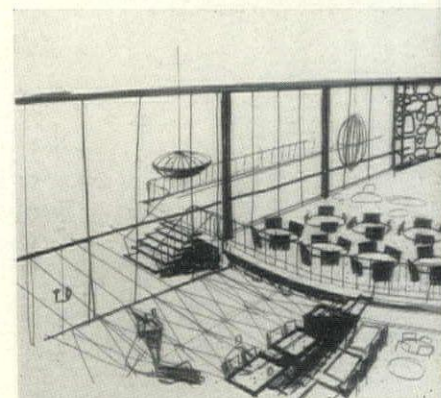
Hilton is backing up that answer with a \$13 million investment in a hotel which is designed inside and out to make the most of the suburban site and the auto:

Under the hotel and on the double-decked lot bounded by the sloping streets is space to park 1,000 cars. Such lavish parking facilities are only possible in an outskirt location such as this.

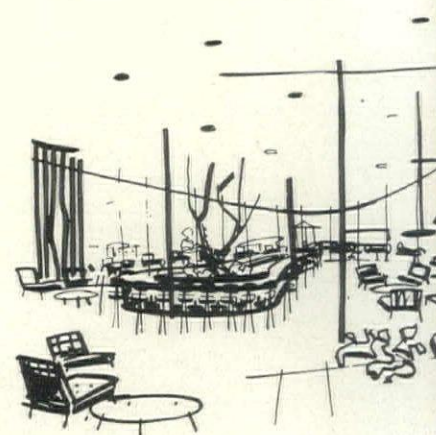
Around the hotel and the parking lots is a lot of rentable shop space—over 93,000 sq. ft. It will make the hotel the hub of a suburban shopping center, will give women guests the advantages of downtown shops in a leisurely suburban atmosphere.

On the hotel are private balconies for nearly all rooms—from which guests can enjoy view and air that are not available to midcity hotels. In fact, the Beverly Hilton brings back a modernized all-balcony resort-type hotel to the continental US. The idea, an old one, was given a tropical run by US architects who exported it to Puerto Rico, Panama and Hawaii (p. 98). Now the Hilton chain plunks the idea down in the third largest US city.

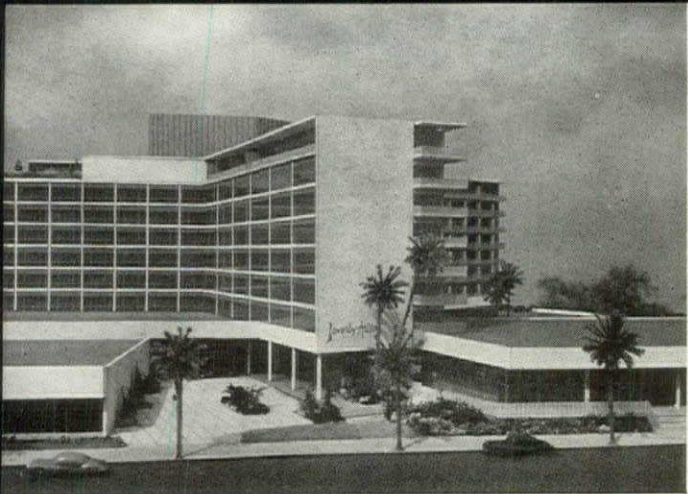
In the hotel is a plush version of the multipurpose guest room pioneered by the Washington Statler. This combined office, living room and dormitory was originally designed to give more utility and a sense of space to minimum rooms but the Beverly Hilton uses the principle in its medium and large-sized rooms to give the impression of even more space. Also in the hotel are public spaces designed to turn the building into an entertainment center to attract conventions as well as residents of the area.



Section of main dining room



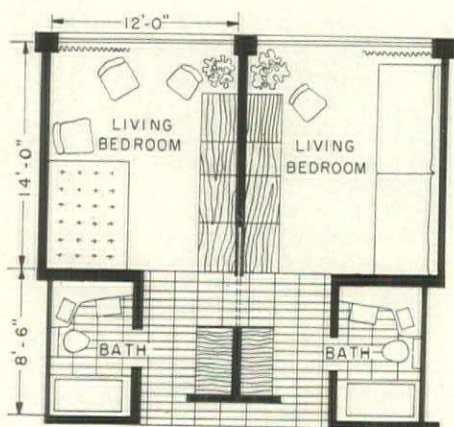
Top floor bar-café has view of mountains



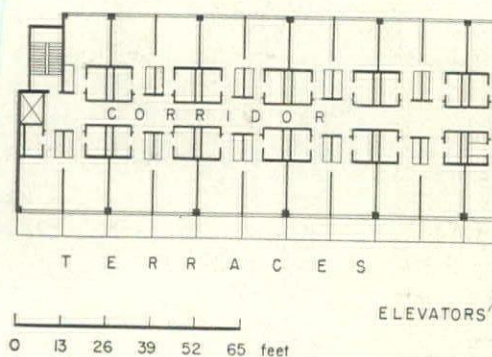
BEVERLY HILTON

All rooms and apartments have television and are air conditioned with room-to-room control. Mild climate conditions made unnecessary the underwindow air-conditioning unit (air conditioning comes from outlets near the door). This allows floor-to-ceiling windows which make the terraces an extension of the inside space.

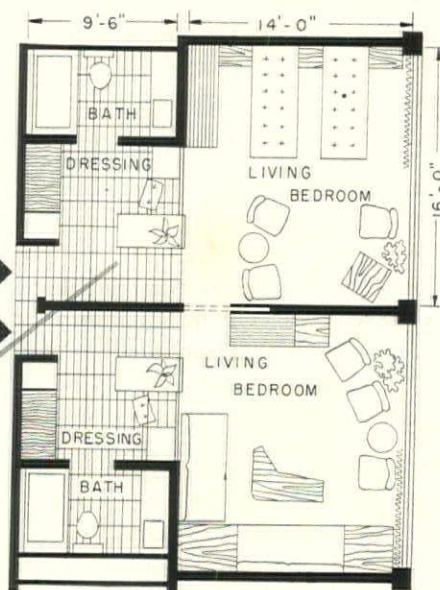
Main pedestrian entry under hotel's north wing flanked by shops



Minimum 12' x 14' rooms are in north wing (below). Only those facing west have balconies



Standard 3½ room apartments are on seventh floor in east, west wings. Each room has 16' window plus balcony.



Standard bedrooms on floors two through six have 16' window walls, can be joined.



Thanks to its suburban site, the Beverly Hilton is at once a luxury hotel, an entertainment rendezvous and a shopping center.

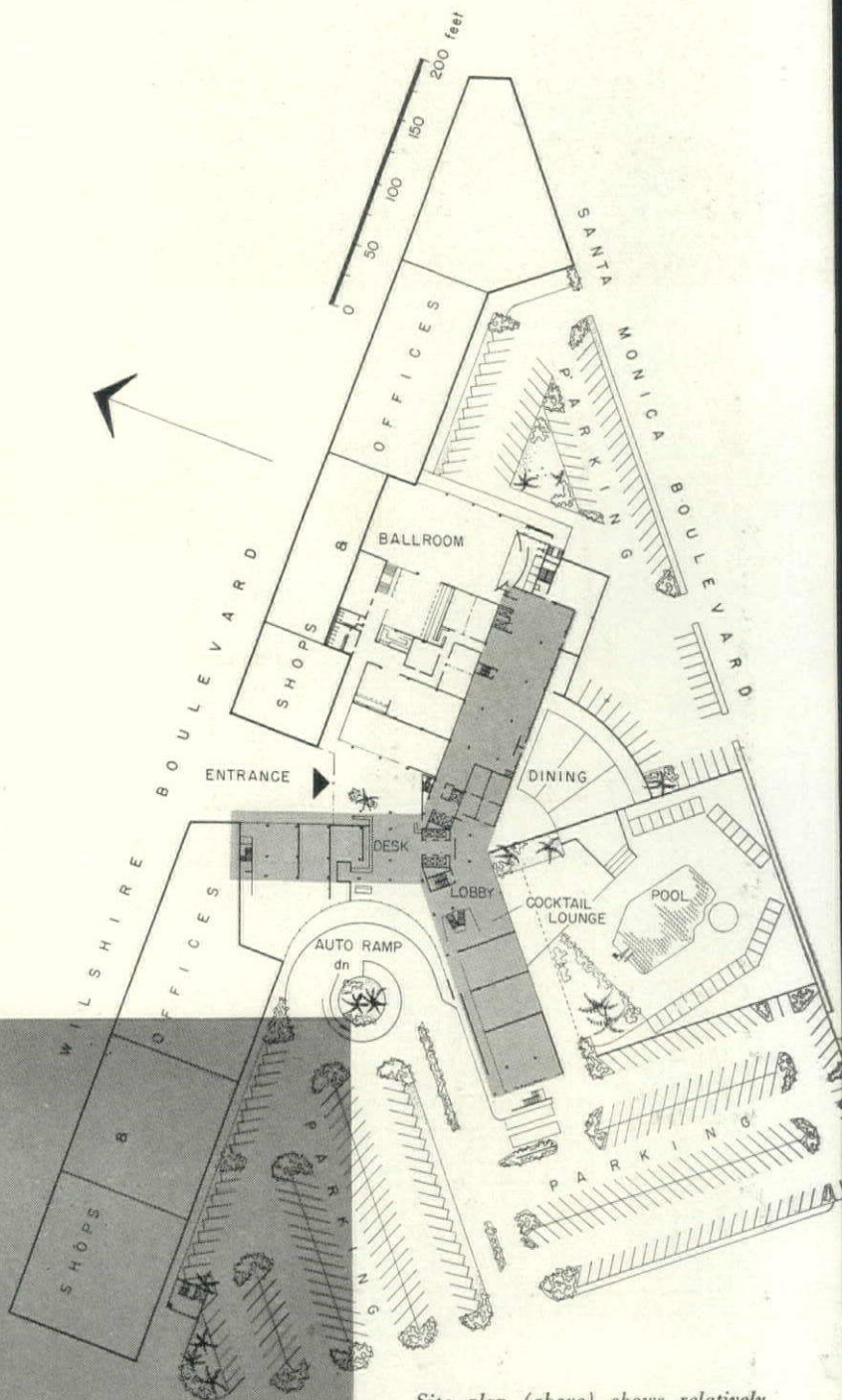
A luxury hotel. Two basic design decisions add greatly to the range and luxury of the guest rooms.

One was to vary the column spacing in the wings. In the north wing the columns are 24' apart so that two minimum (12' x 14') rooms fit between them. In the east and west wings, columns are 16' on centers allowing only one room between them.

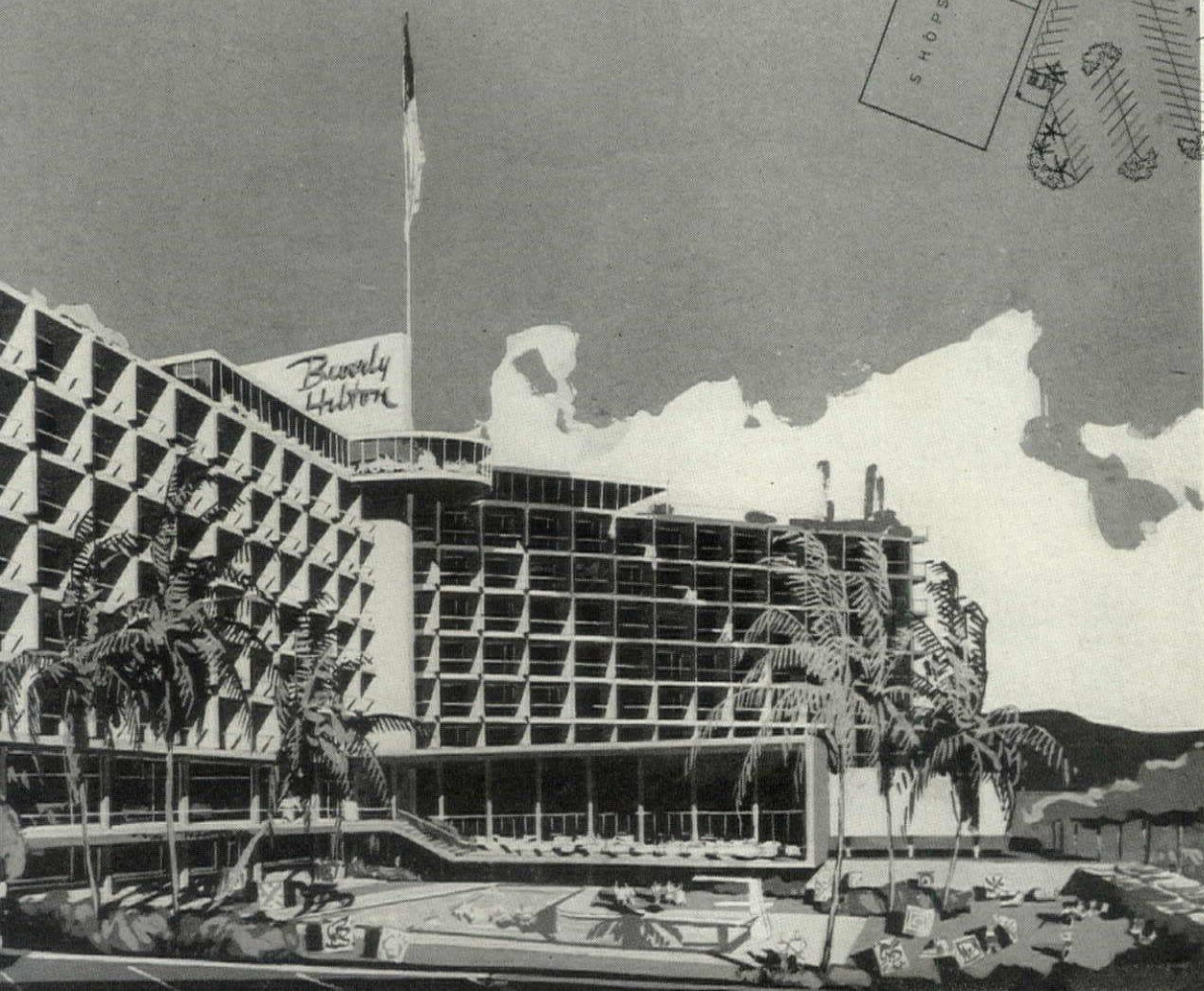
Hand in glove with that decision went the more revolutionary idea—to make the rooms larger by widening rather than deepening them. In economic terms this means the owners are willing to build more expensive perimeter wall to get larger rooms. Results: minimum rooms have 12' of window wall (5' more than the similar Los Angeles Statler rooms); larger rooms have 16'.

An entertainment center. The hotel is near the Beverly Hills business center, yet on the edge of an immense residential area. In this spot it expects to become an entertainment and convention center. Public spaces will include a rooftop cocktail lounge-café, a fan-shaped main dining room that can become a supperclub at night, a 700-person-capacity ballroom, large cocktail lounge off the lobby, bar on the lower level, coffeehouse, five private dining rooms and a party room.

A shopping center. Secondary income space built into the Beverly Hilton far exceeds that of most hotels. Compared with the 1,275-room Los Angeles Statler, the 450-room Beverly Hilton has 372% more retail shop space per room to lease. Even when the Statler's 150,000 sq. ft. of rentable office space is included, the Beverly Hilton has 19% more rentable space per room.



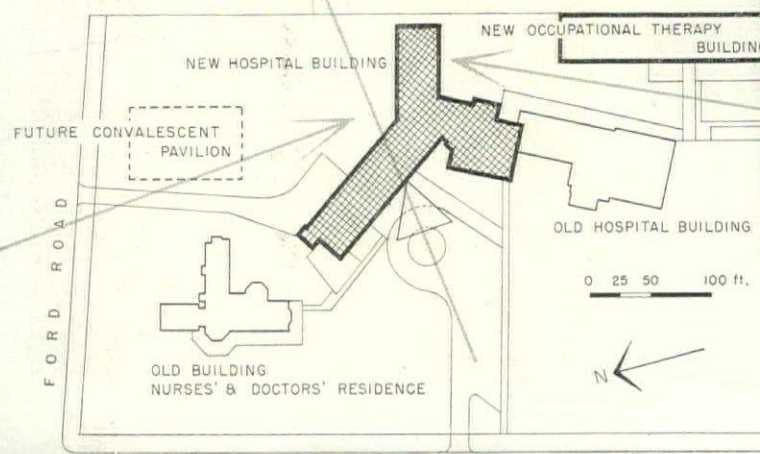
Site plan (above) shows relatively small ground area occupied by hotel, compared with string of shops and parking space for 1,000 cars. Cabana-ringed swimming pool (left), overlooked by main dining room, gives this big city hotel the air of a resort. Planting and west wing of hotel will screen pool from main entrance drive and streets.

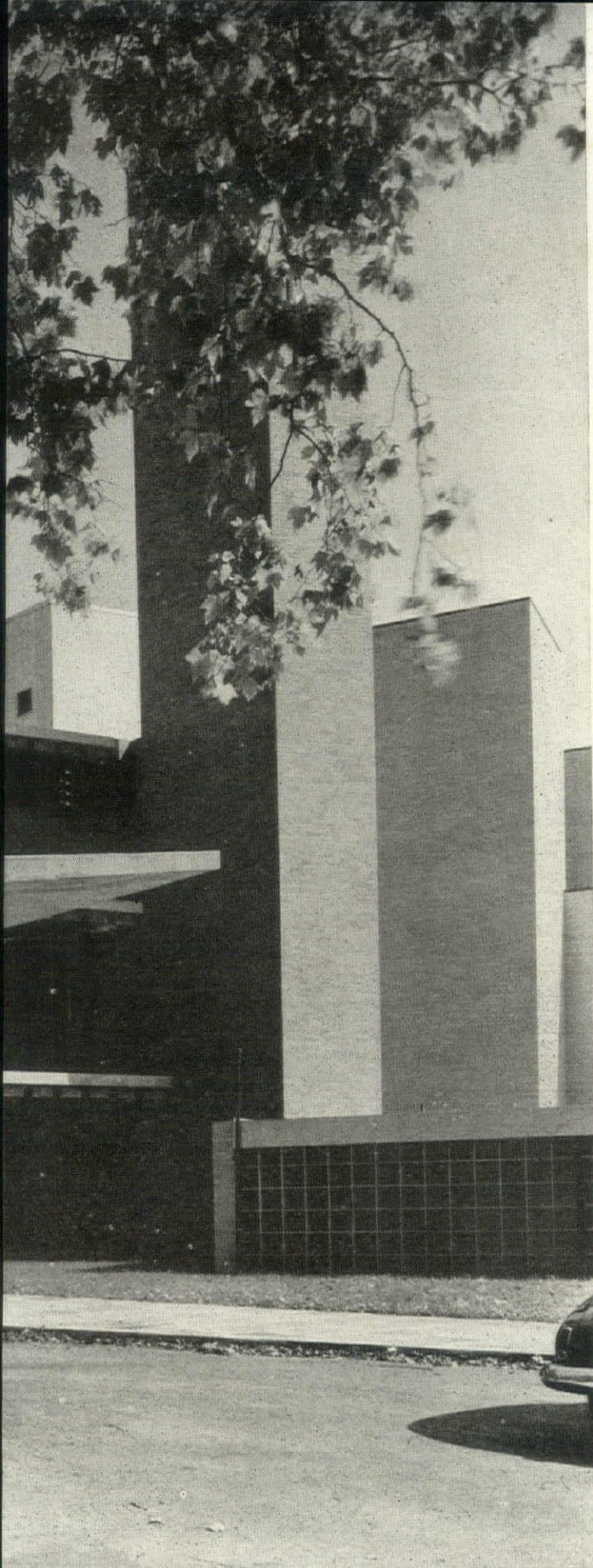




Cheerful sun patterns on slate and glass result from happy marriage of esthetics and structural requirements

Rear view: rhythm in concrete and slate





NEW HOSPITAL TYPE

**brings the sparkle of good architecture
to the mentally ill,
substitutes glass for bars**

This new building for a voluntary, nonprofit mental hospital is doubly important:

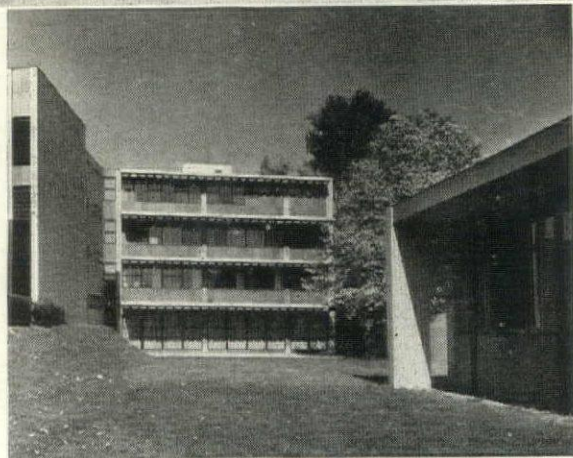
► *First, this is an example of a new type of hospital facility that is filtering into the vacuum between the huge state mental institutions and the expensive private rest homes. Hospital people, especially in medical centers, will give a lot of thought in the next decade to small but intensive psychiatric facilities.*

► *Second, this new unit is architecturally the finest example of the type yet built. It is blessed with a lovely parklike site once occupied by an old Quaker school, with a relaxed and rambling master scheme worked out by Consultant Isadore Rosenfield, and with a Louis Kahn design that goes far beyond embodying the mandatory efficiency, friendliness and warmth. Kahn has given his building gentleness and joy.*

The new unit adds 41 beds to 71 in the older (1940) two-story nursing building (see plot plan). It also replaces inadequate or outdated administrative, service, shock-treatment and psychotherapeutic facilities in the old building. (For the occupational-therapy building, also designed by Kahn, see AF, Sept. '51.)

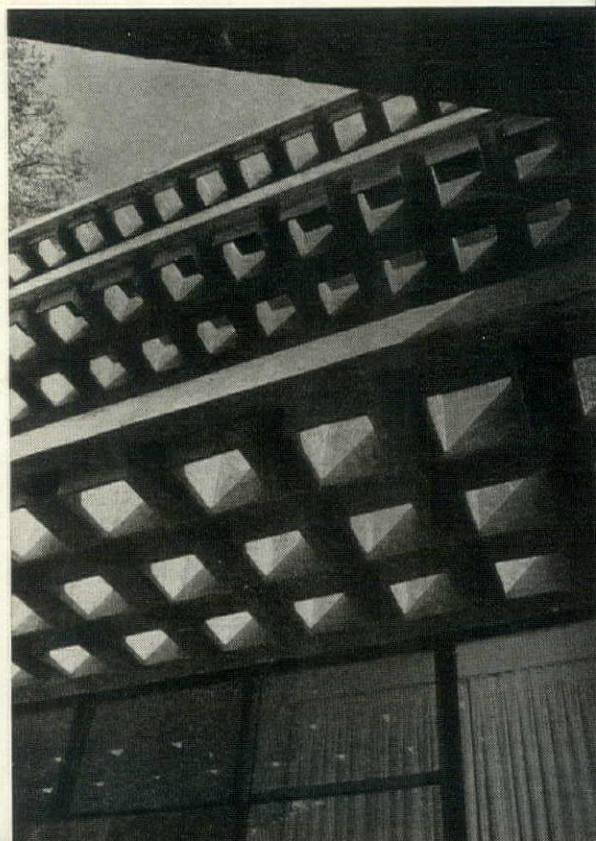
Kahn is past master of the art of graceful fun with fenes-

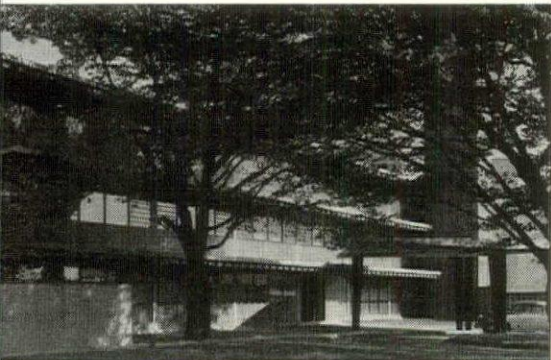
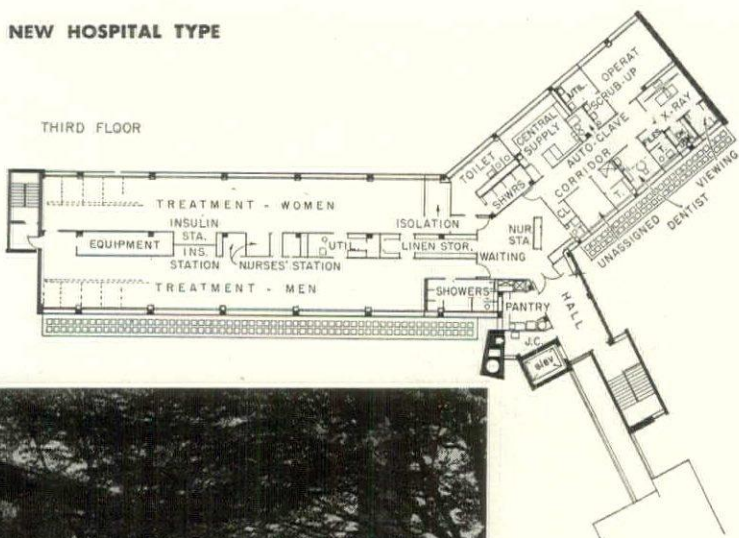
Flue tile and concrete cantilevered overhangs serve as counterweights to 21'-deep flat plate interior slab.



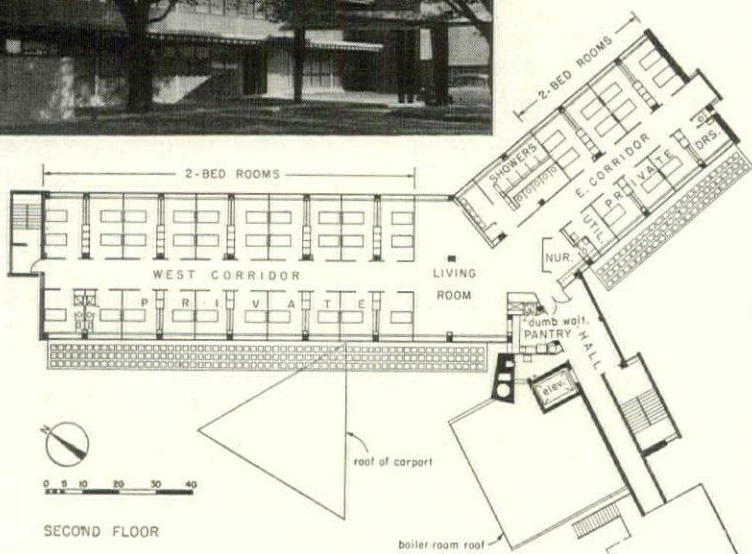
Ground-floor terrace opens on patients' garden.

Photos: John Ebstell





Wall in foreground screens staff terrace

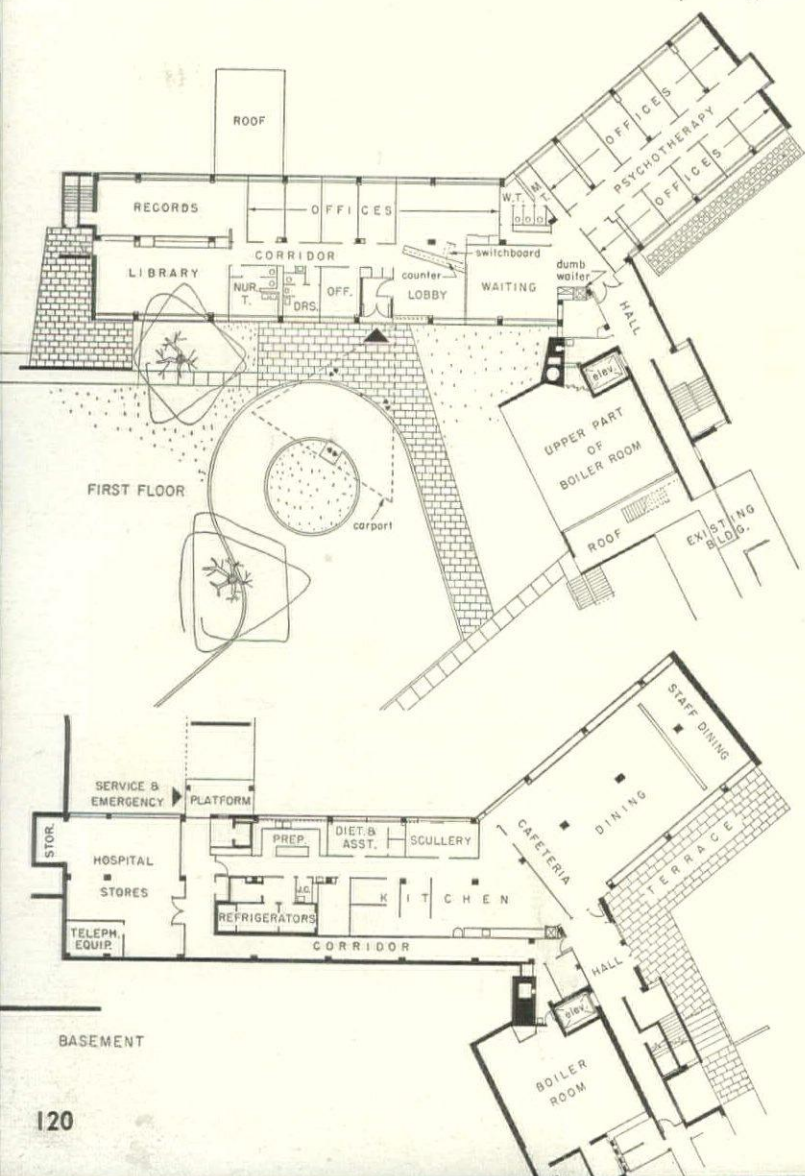
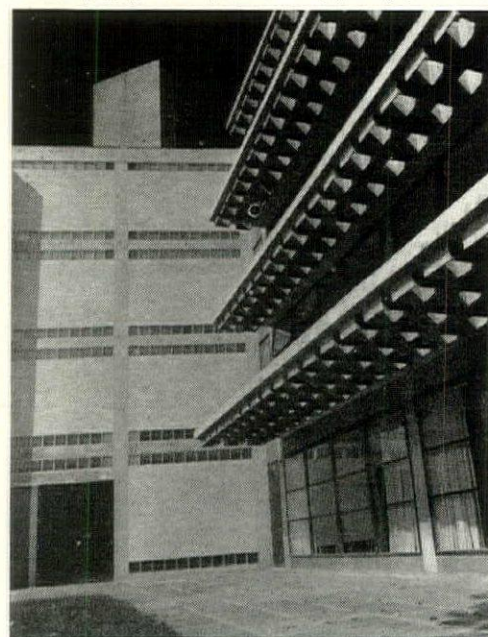


Glass-block-striped corridors join old building with new



For safe and handsome corridor daylighting: top and bottom glass-block strips

Photos: (top pp. 120-121) Ben Schnall; (others) John Ebstel

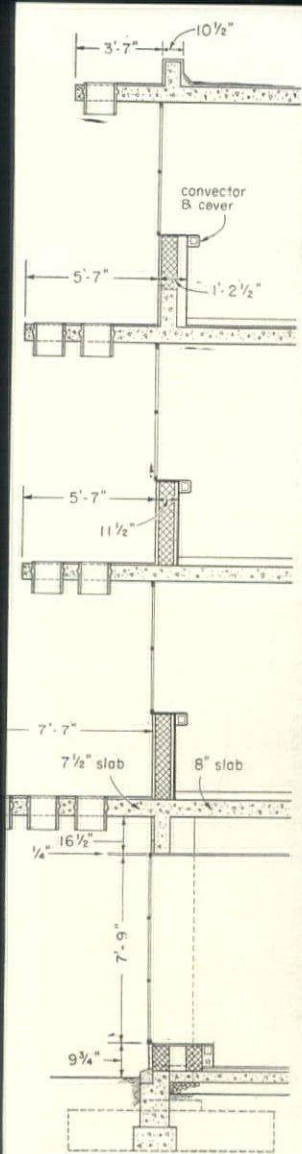


tration, a talent sorely (and triumphantly) tested here because of the radical differences in function of the three floors, and because windows for obvious reasons are always a problem in mental hospitals anyway. Kahn scrupulously gave each department appropriate fenestration, disciplined the variety with column rhythm.

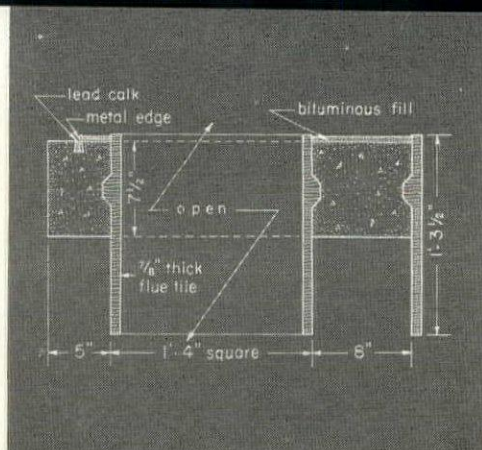
Here is the way it works out: big glass areas, no security protection for first-floor administrative and public rooms; fixed panes with security screens alternating with metal-framed louver-type operative windows on the second (nursing) floor; small, high strip windows on the third (shock-treatment) floor are screened but operative since patients here are always under closest surveillance. Exterior corridors, where patients at times walk unattended, are lighted by two 12" strips of glass block, one at the ceiling, one at the floor—handsome, unprisonlike and secure (photo, above).

The sunshade is built of ordinary flue tile with a special collar baked on to grip the poured cement frame (see detail). The open tile lets heat through, makes fascinating sun patterns that shift from irregular oblongs to squares to triangles to slits. Over the entrance, tiles serve as lighting fixtures and give rain protection in space between door and freestanding concrete canopy.

There is nothing namby-pamby about the gentleness of Kahn's design, no homogenized simplicity. "I like my buildings to have knuckles," he says. The bend in the slab at the knucky corridor intersection is primarily to express different



SECTION THROUGH SHORT WING



Typical private room. Large window sash is fixed and screened; metal-edged louvers of operative window serve as bars.

Detail shows construction of tile overhang. Collared tiles were laid on platform with box forms, concrete poured around.

SAMUEL RADHILL BUILDING,
PHILADELPHIA PSYCHIATRIC HOSPITAL
LOUIS I. KAHN, architect
CRONHEIM & WEGER, structural and mechanical engineers
CHARLES H. MELLOR, electrical engineer
ISADORE ROSENFELD, hospital consultant
MASTER MASONS CONSTRUCTION CO., general contractor

Electric and insulin shock-treatment room on top floor



Interior bays 16 x 20' and 22 x 20' are reduced to 10' in width at ends to reduce bending moments in unrestrained end bays of 7 1/2" thick slab.

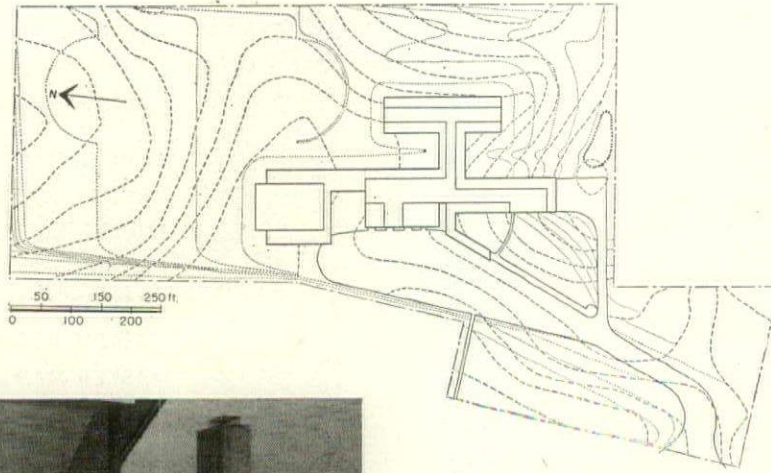
functions of the short wing on first and third floors and to give variety to second-floor interior vista. The bend also makes best use of slope and garden space for ground-floor dining room.

Kahn felt it was important, in a place where lock and key are inevitable, to give the nursing floor a free and open living room (see plan). The owners felt a lounge was more logical at the end of the small wing, had it built that way and put displaced patient rooms into the "bend" area. They have now decided original scheme was better, plan to return to it.

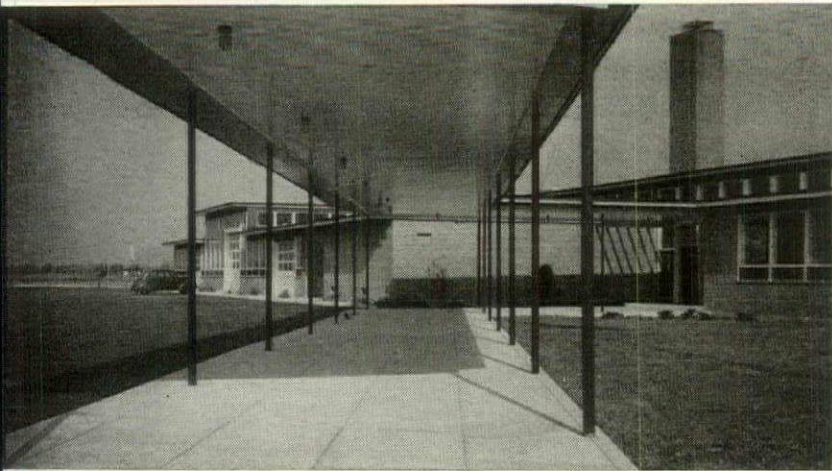
Here is how the building works: shock treatments are given in the morning to inpatients from both buildings, on certain afternoons to outpatients. Other afternoons, treatment room can be used for inpatient physiotherapy. Psychotherapy offices on first floor are used by outpatients in morning, inpatients in afternoon. Out- and inpatient traffic never cross, a factor highly important for morale of outpatients. Disturbed and emergency patients are brought in at ground-floor service entrance; separate ground-floor ambulance tunnel close to elevator was unfortunately omitted for economy.

Construction is flat plate concrete with exposed columns and brick and slate masonry. Building is not air conditioned. Cost, including all built-in and fixed equipment, was \$642,000 (\$18 per sq. ft.; \$1.71 per cu. ft.). Per-bed cost of \$15,659 is low, particularly since these 41 new beds carry facilities for the entire 112-bed institution.



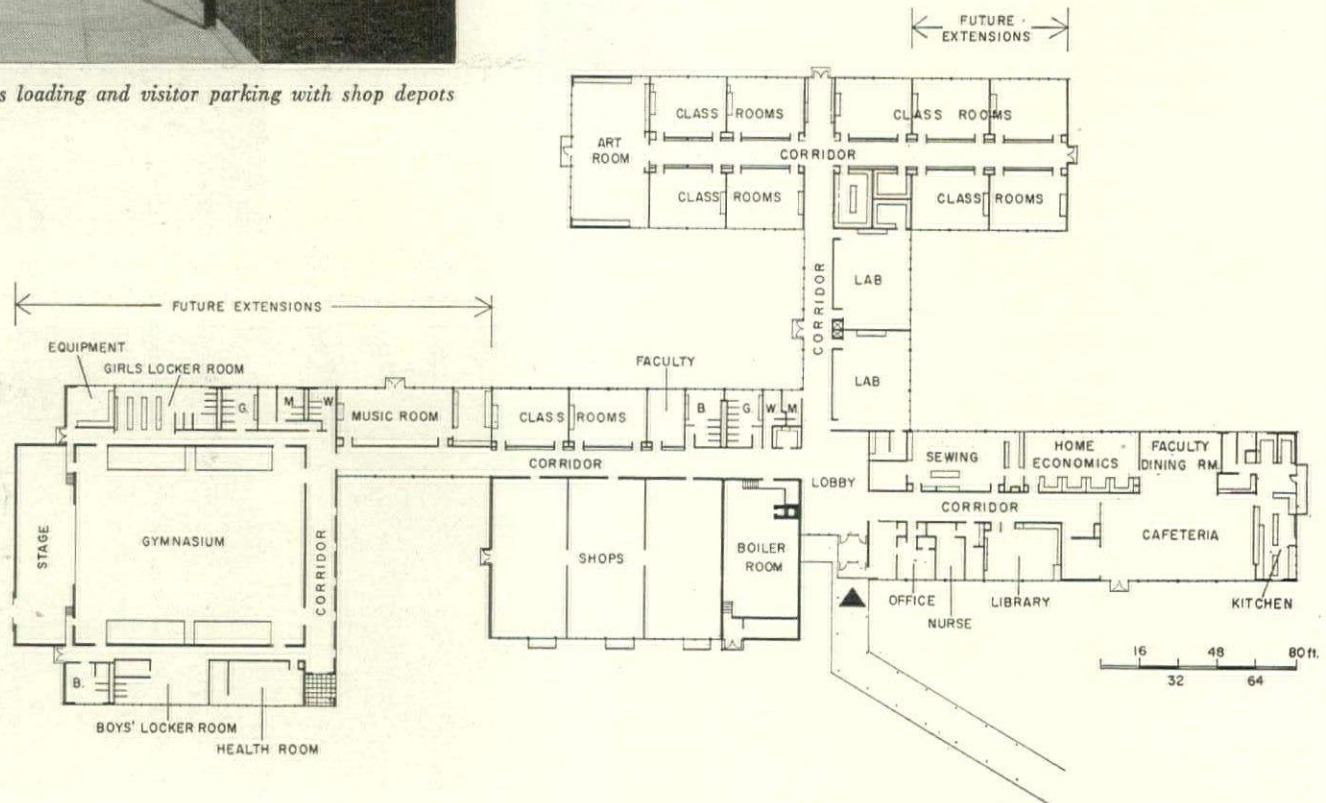


TWO-IN-ONE



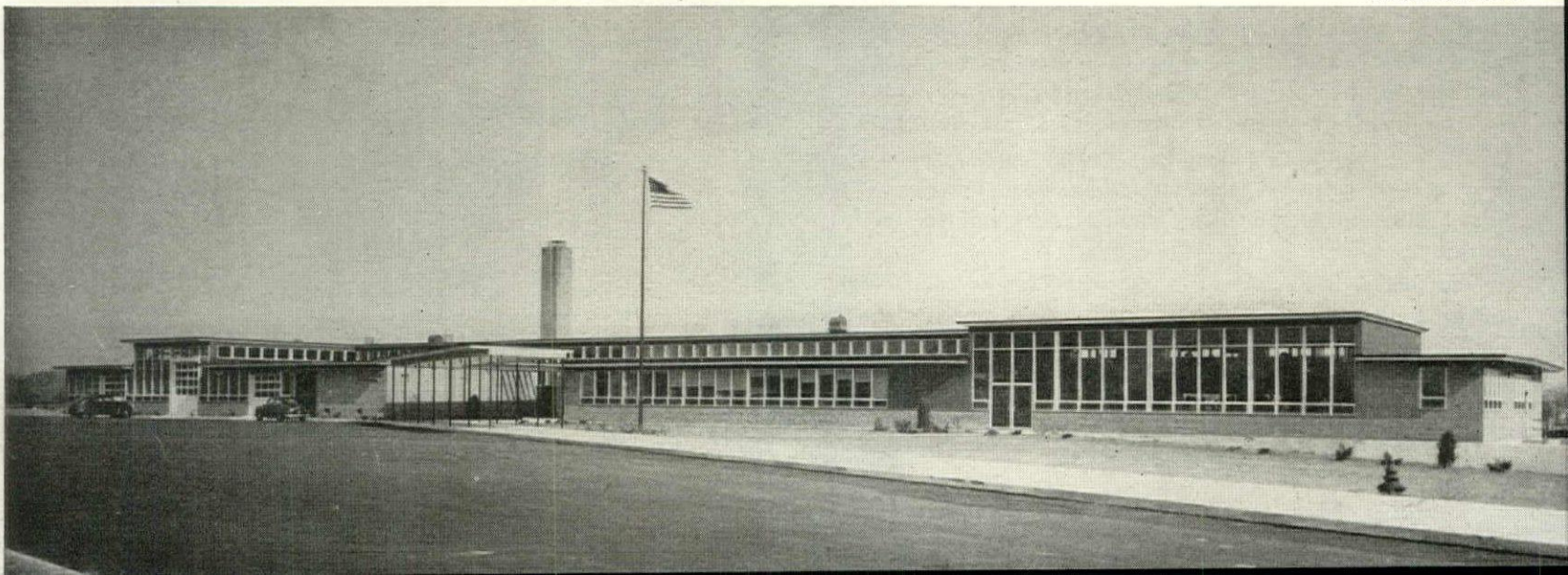
Site plan consolidates bus loading and visitor parking with shop depots

WILLIAM W. H. HENRY COMPREHENSIVE HIGH SCHOOL
 LOCATION: Dover, Del.
 VICTORINE & SAMUEL HOMSEY, architects
 LOUIS H. DOANE, structural engineer
 ERWIN FALLER, mechanical engineer
 JOHN E. HEALY & SONS, INC., general contractor



Unusual location of shops at front (left, below) works out neatly for both outside and inside traffic

Photos: Ben Schnall



HIGH SCHOOL

knits factorylike shops and

classrooms into harmonious whole

At first glance this 325-student comprehensive high school seems unusually nice but basically orthodox. A second look shows it is full of a quiet, sensible kind of unorthodoxy.

The principal problem—long familiar to architects of rural high schools and now beginning to confront urban school designers—was how to combine Latin classrooms and electric hoists, easels and tractor engines under one roof; how to keep the vocational and academic parts of the school separate to isolate noise and simplify traffic and at the same time tie both to common facilities.

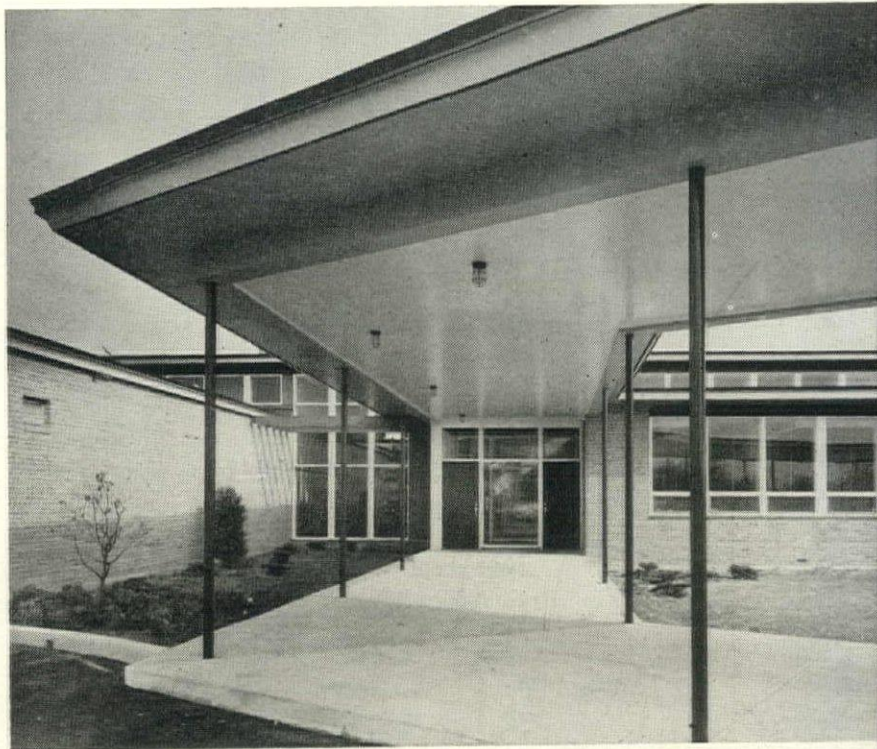
Unorthodoxy in plan: The Homseys boldly put the shops smack-dab along the front of the building instead of in their usual stepchild position as far from the main entrance as possible. Practical reason for this is the need for a loading area at the shops; the Homseys' arrangement combines shop access with bus and visitor parking, wastes no potential play or garden space on extra roadway.

The second bold move was to put the boiler room at left of the entrance—usually considered one of the most favored spots in a school and certainly in the middle of things. This is the kind of spot engineers would always like for economical pipe runs but they seldom get it. They got it here because the Homseys needed a solid masonry mass to flag the main entrance and to break apart the otherwise confusing masses of windows.

Location of the shop put academic rooms to the rear and along the south (quiet) side of the link between wings. Note how neatly and simply the lobby takes traffic from four directions through the staggered corridors.

This happens to be a Negro school in a segregated area of Delaware where parents of students have few facilities.

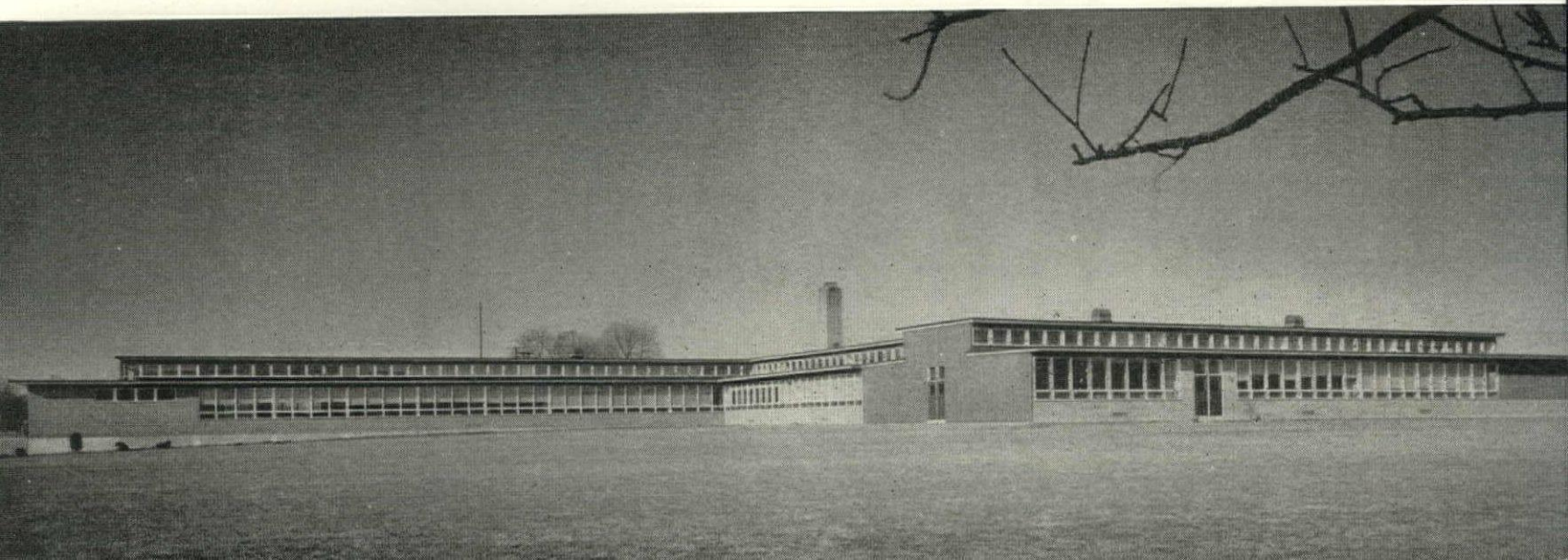
Academic wing has wood end walls for expansion in two directions



Lally columns with heavy mill-type wood beams are used throughout. Agricultural students will develop gardens at entrance and in courts.



Lobby with art-gallery lighting has become community exhibit center for local and traveling shows.



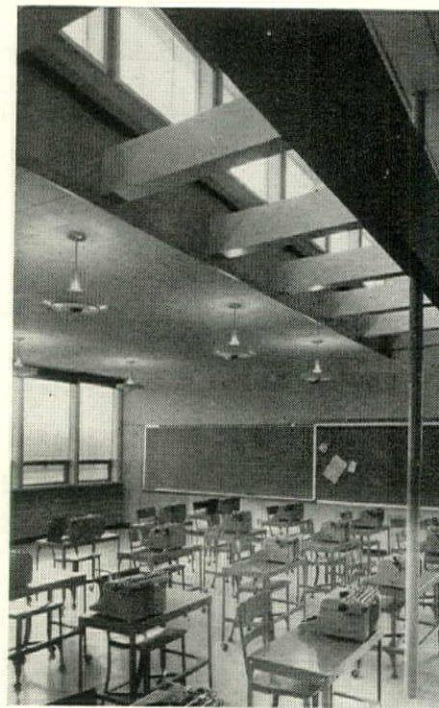
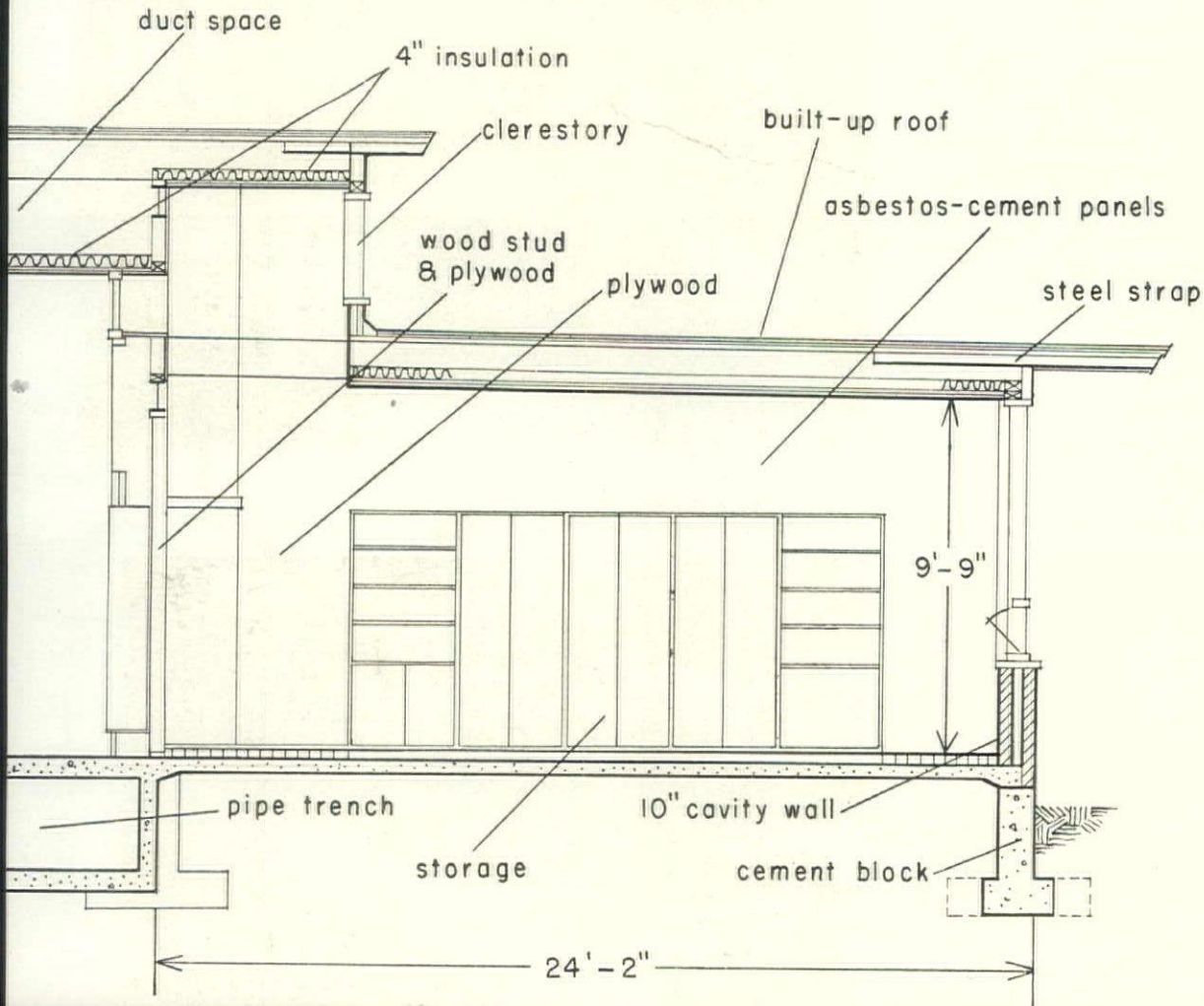
ties for recreation or study. Hence the building was planned for public exhibits in library and lobby, large and small parties or entertainments in the two dining rooms, and heavy community and evening use of all special rooms. Only anomaly is location of the art room at far end of the rear wing; however, the fire door does provide a convenient separate access when the rest of that wing is closed.

Unorthodoxy in structure: Cost limitations meant double-loaded corridors and a complicated clerestory pattern to get daylight to inner parts of classrooms. But the Homseys knew they would run into endless trouble if right-angle roof intersections were finicky.

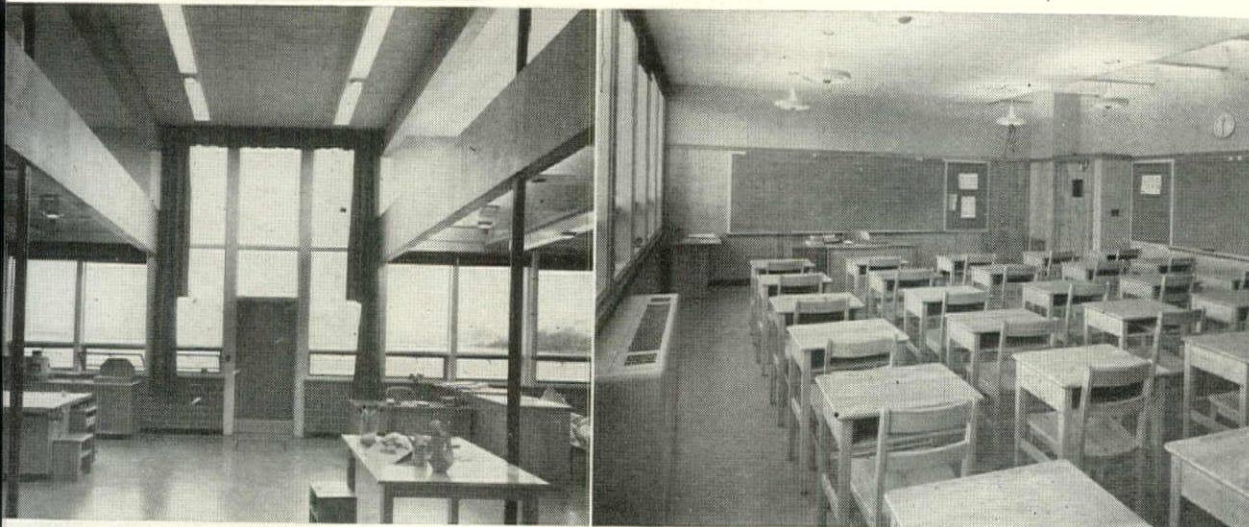
They kept all roofs flat and framing ingeniously straight-forward, using a combination of steel- and mill-

type framing. Lally columns at the corridor walls support longitudinal I beams. These carry heavy wood mill-type beams, set 4' on centers, which span from corridor to exterior walls and carry the low outer section of the roof. Second-decker corridor columns, above the first I beams, carry the higher middle part of the roof which is cantilevered 6' over the classrooms where the clerestory joins it with the lower outer part of the roof. Photos of art and secretarial classrooms (below) where the corridor walls are omitted, show how the two-decker system works. Photo of ordinary classroom shows normal appearance.

The entire school was under cover eight weeks after foundation work started. The structural system also simplified installation of wooden frames for the fixed clerestory and view windows. The 4' roof module was re-



Beams of high and low roofed areas overlap; double-decker interior columns support, first, the I beam which carries the heavy wood beams of lower roof and, above this, a second I beam for cantilevered clerestory roof. In typical classroom (left and section), columns come at corridor wall. Art room (far left) and secretarial classroom (above), which absorb corridor space, reveal structure most clearly. Corridor portion of secretarial room will be closed off when academic wing is expanded.



tained; lines were simply dropped from the beams to locate window frames.

Partitions are drywall for flexibility, with lots of natural wood for warmth and graciousness and brightly painted wallboard for fun. End walls where expansion is planned are redwood (instead of the cavity brick construction without interior finish used elsewhere).

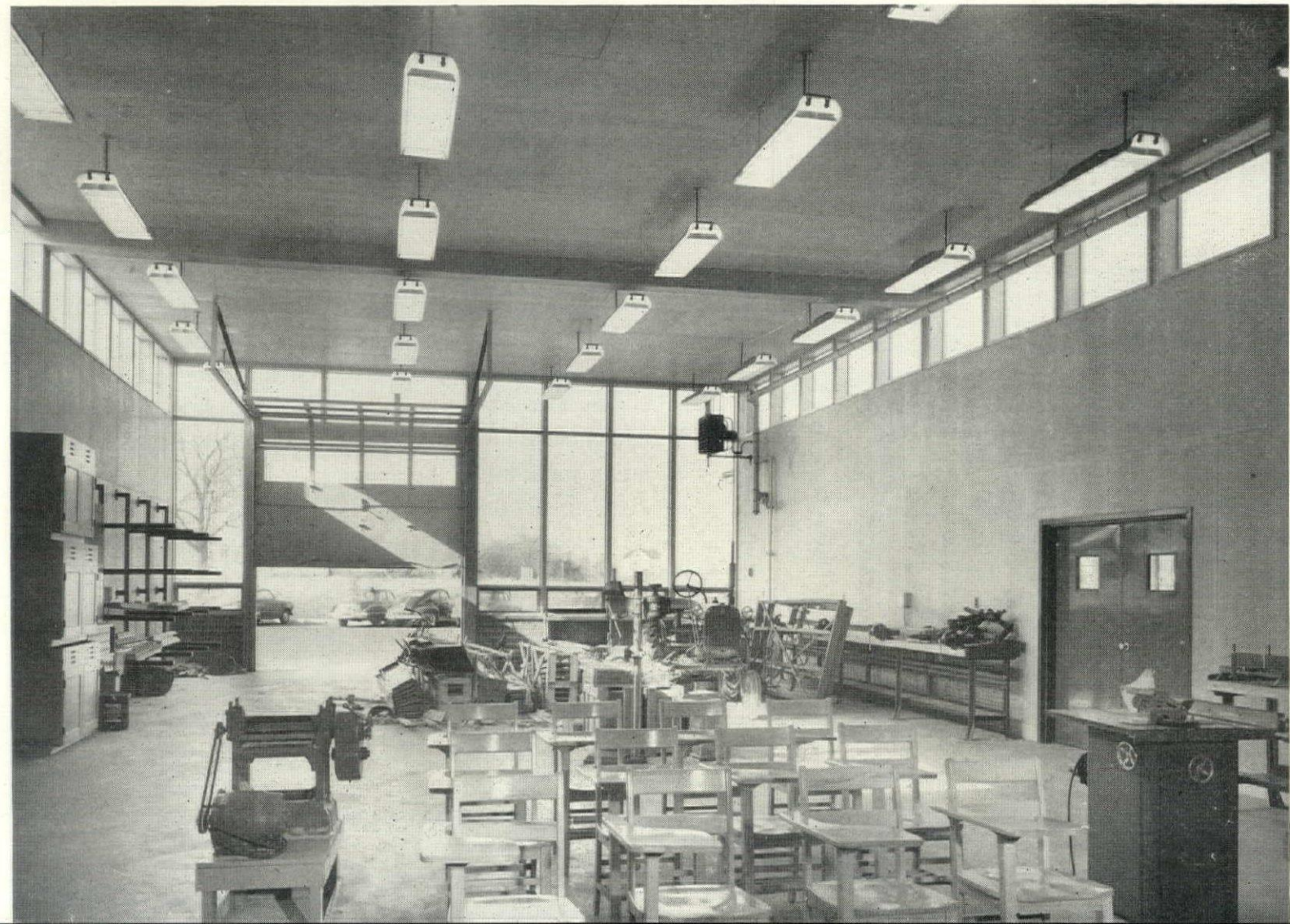
COST DATA:

| | |
|-----------------------------|--------------|
| Construction | \$734,867.00 |
| per sq. ft. | 19.40 |
| per cu. ft. | 1.15 |
| per classroom (gross) | 56,528.00 |
| per pupil | 2,261.00 |

Cafeteria seats half of student body at meals, entire student body for assembly or audiovisual work. Faculty dining room (separated from cafeteria by folding partition) serves for home economics practice, conferences, small parties. Windows throughout school have wood frames for warmth, scale, economy and partitioning flexibility. Most glass is fixed; projecting sash at bottom of full-size windows is stock size.



Automotive shop is high roofed to accommodate hoists. Other two shops are for agricultural and construction classes



SAARINEN CHALLENGES THE RECTANGLE,

designs a domed auditorium and a cylindrical chapel for MIT's laboratory campus,
raises these six questions about the accepted shape of buildings:

1. Is the conventional column-and-beam structure still the most economical and practical way of enclosing a big space like an auditorium—as it has been to date in terms of the American building economy? Has the time come when a shell concrete dome will be just as cheap, more efficient and less wasteful of material and space—as it would be in Europe and South America?
2. Does a modern auditorium have to have the angular, wedge-shaped plan now considered "modern"? Is there a better way of bringing audience and speaker into more intimate contact?
3. Is there any reason why "polite" contemporary architecture should not throw off the straight jacket of T square and triangle and employ the daring forms of some modern industrial construction?
4. Does a chapel have to be oblong? Might not a cylindrical chapel give you a greater feeling of enclosure and, thus, a sense of security through religion?
5. Is there any reason why a chapel need have windows? Could it not be illuminated by light reflected through water as in the beautiful grottoes of Capri?
6. Is there really a fixed relationship between Form and Function—as Louis Sullivan declared? Have our building functions become so complex and our available building forms so numerous that any number of forms combined with any number of functions can produce an efficient building?

SAARINEN'S ANSWERS to these and other questions are incorporated in the two buildings shown opposite. Like the answers MIT's scientists get from their laboratory experiments, Saarinen's buildings for MIT need to withstand a great many tests before they will be generally accepted. But regardless of whether or not each of his experiments is an unqualified success, American architecture and building are not likely to be quite the same after MIT's new center is finished.

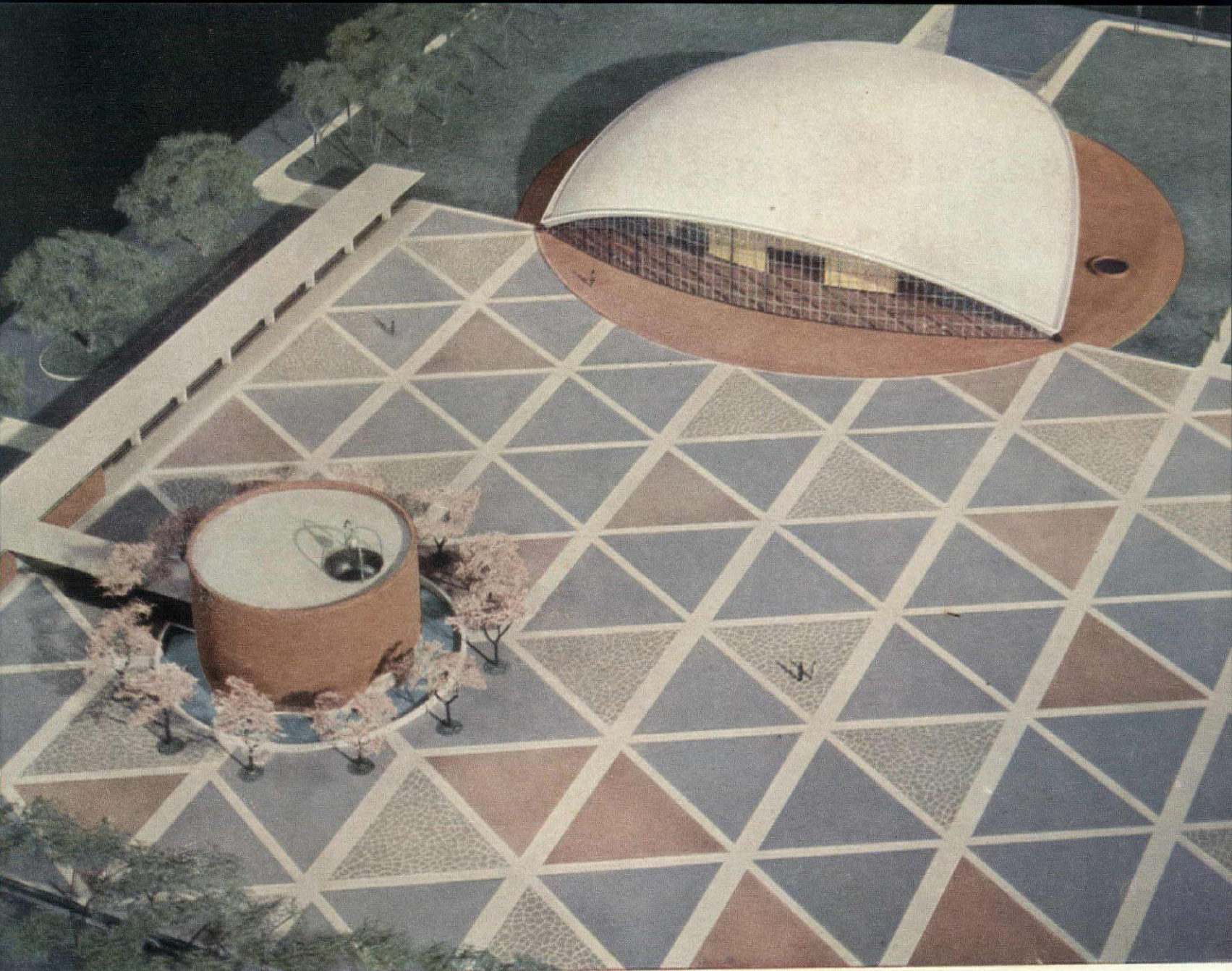
The questions listed on the left make it very clear that Eero Saarinen and his associates have given MIT something more than a very handsome auditorium and a strange, haunting chapel, both set on a patterned platform. They have challenged current thinking and started some basic rethinking about architecture and building.

The auditorium is a wide departure from the more conventional shapes that the Saarinens had made familiar earlier in the Buffalo Kleinhans auditorium or in the Berkshire Music Sheds. It is a shell concrete dome, $\frac{1}{8}$ of a sphere, supported at three points on heavy abutments, the dome cut away between these points for segmental window walls. A highly competent and recognized firm of engineers, Ammann & Whitney, is making the computations and is convinced that this auditorium will be at least competitive to the conventional "modern" auditorium shape in cost (p. 128). MIT's own famed acoustical experts, Bolt, Beranek & Newman, are convinced that the acoustics can be solved not only adequately but with considerable grace (p. 128). But there are deeper reasons why the dome became a dome and these are discussed on the next page.

In the brick cylinder chapel Saarinen and his associates have out-traditionalized today's traditionalists just as conclusively as they out-modernized today's modernists in using a dome instead of the familiar wedge shape for the auditorium. More specifically, the chapel is as timeless as the dome is timely. The architects used the cylindrical form and the masonry arch support for an emotional content associated with religion as far back as the temples of Vesta and beyond. The fact that the chapel depends on a moat of glittering water under the arches to bring in light instead of using windows, and the way it depends on light from above for a climax at the altar make it one of the most extraordinary religious buildings of our time (p. 130).

Before getting into such details most readers will want to know how Saarinen came to these remarkable solutions. Was this simply an effort to be original or was there something deeper behind it?

To answer this, one would have to remark that Saarinen, a careful designer, has been weighing the MIT problem for a number of years, and that behind the originality lies some rather profound thinking about architectural fundamentals.



Richard Shirk

Aerial view from northeast shows Saarinen's complete center. Cylindrical chapel is joined to elongated, flat-roofed element containing administrative offices and shelters. Charles River is 400' to southwest.

Specifically, the two buildings on their platform represent an overhaul of Louis Sullivan's credo (which Sullivan phrased much more simply than he practiced) that "form follows function." To speak of the auditorium first, what we know as "modern" auditoriums had their structure derived as directly as possible out of the best knowledge of the twenties concerning sight lines and acoustics. The enclosure was designed as nearly as possible to fit these requirements like a glove, and "form following function" produced the unique "auditorium" shape with ordinary post-and-beam construction.

Saarinen's dome, however, is obviously not a special auditorium shape derived directly out of supposed auditorium functions. His dome is, on the contrary, a generalized kind of structural shape—the universal kind of shape which would span that kind of space with greatest economy of material regardless of whether the space were an auditorium, an exhibition building, or even a supermarket.

Obviously what Saarinen has done is to act as a matchmaker—matching a set of auditorium functions to a structural form chosen as a structural form. And in all marriages, the success depends upon two things: first, how well the partners were suited to one another, and second, how well they can adapt themselves to one another. In this case, on both scores the rating is high—especially since this particular auditorium requires no stagehouse (p. 129).

But beyond its significance as a mating of function and form,

this auditorium does something others have not attempted: it brings the graceful and fluid technology of airplane hangars and shopping centers into "polite" architecture—recently so dominated by the rigid rectangular forms of post-and-beam construction.

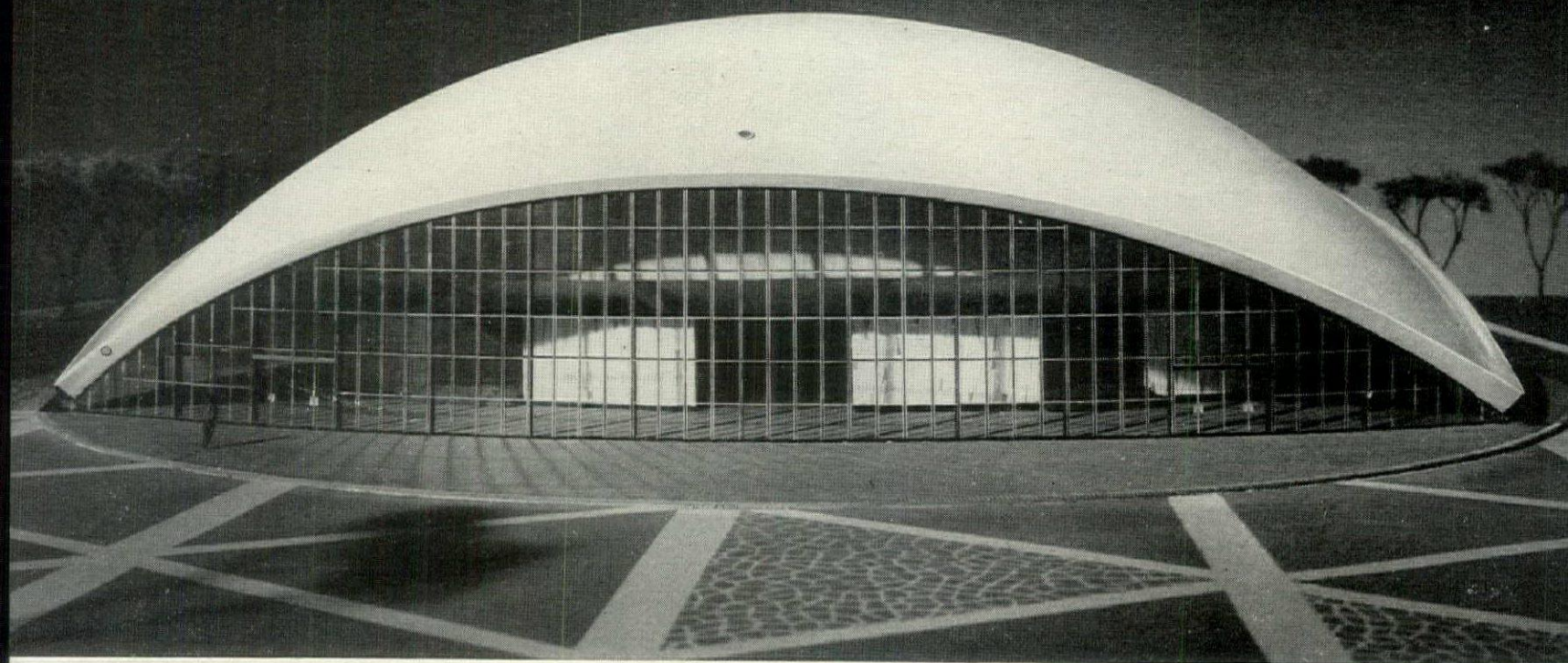
In the chapel the functional problem was more difficult.

Because religious architecture has not produced many original answers in the recent past, Saarinen had to find his own. They were: Here is a campus full of activity, excitement, bustle, noise. The chapel, surely, should be a retreat—a complete enclosure, quiet, dim, remote. How to make it so? A solid wall around it, or even a moat? And the light should create a magic aura—not stained glass, but something out of Nature in an age of science.

The result—a solid brick cylinder resting on irregularly spaced arches that in turn stand in a moat filled with water! The light is reflected from the moat through the arches and into the chapel.

What could be a better symbol of an inner security attainable through religion? What could be better than this structure without time or place—and therefore of all times and places? What could be a better foil for the dome across the plaza?

The plaza is the third architectural element. It is not just what is left over after the rest has been built—it is a big, gregarious outdoor space, free from automobile traffic (there is a huge parking garage under the paved area). It is a big outdoor living room like the Piazza San Marco in Venice, the heart of the community.

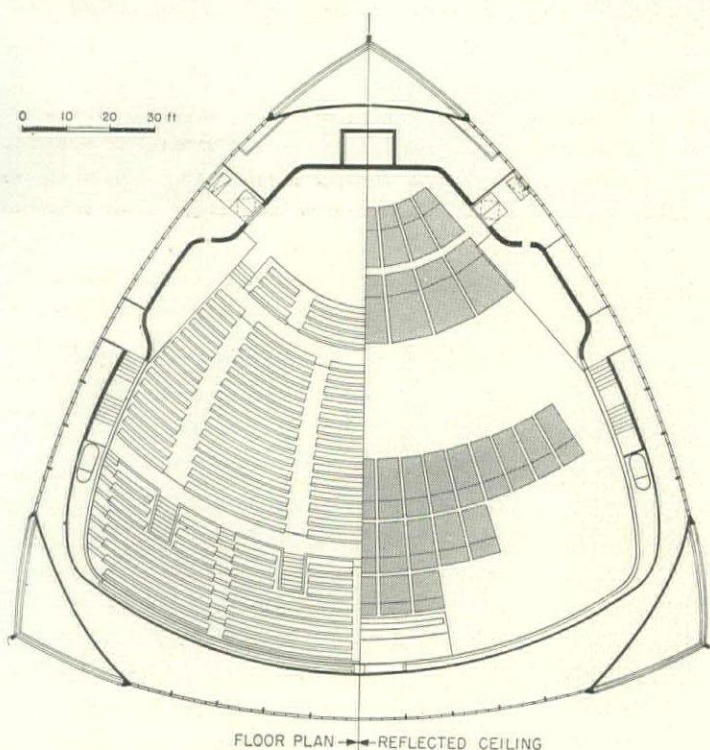


Dome structure: Crown of dome may be constructed by supporting reinforcing rods on a series of concentric wooden rings, each erected on wooden scaffolding. Next, plasters would

form inside surface of shell against rods and wire mesh. After plaster dries, it would in turn support the remaining concrete to be applied from above. The three pointed ends of the dome would

be shaped by wooden forms applied on the outside; the concrete would then be sprayed or poured against those forms and finished by plasterers. The 18" turned-up edge stiffens the shell.

Richard Shirk



The auditorium—a billowing sail of concrete

For some years Eero Saarinen has wanted to break away from the rectangle (in the conviction that architecture should be more fluid).

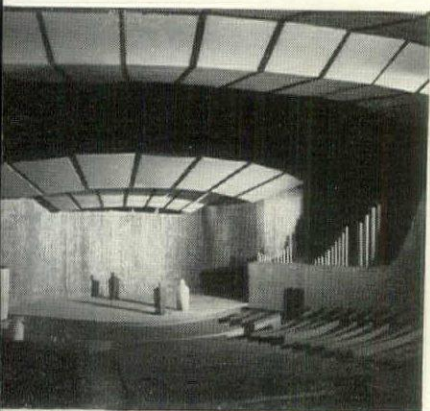
His reasons, of course, were not only esthetic. After all, the shell is just about the strongest form you can get with the least amount of material. Higher erection cost somewhat offsets the material saving; but even in the US, with its high labor costs, the engineers think Saarinen's dome will be easily competitive in terms of cost with more conventional auditorium construction.

Even if the dome were to cost more, it would not radically affect the cost of the total building. The actual cost of the shell structure down to its three supports may be less than \$60,000; adding the three buttress-type footings and a tile roof the total might go up to about \$100,000. This is only 8% of the total expected cost of the building. Consequently an increase of 25% in the dome's cost would only be a 2% increase in total building cost.

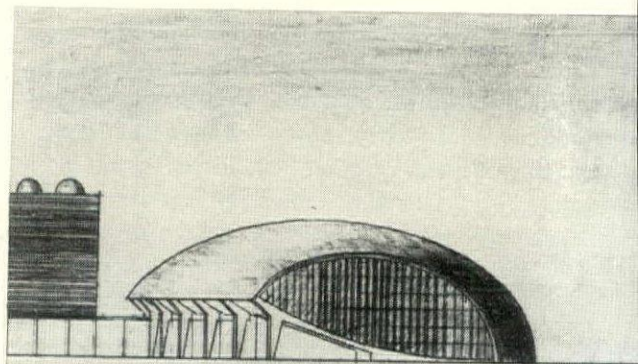
The three-pronged dome does something else for the auditorium which the ordinary column-and-girder structure cannot do: After the latter is up, you still have to build side walls and put up a

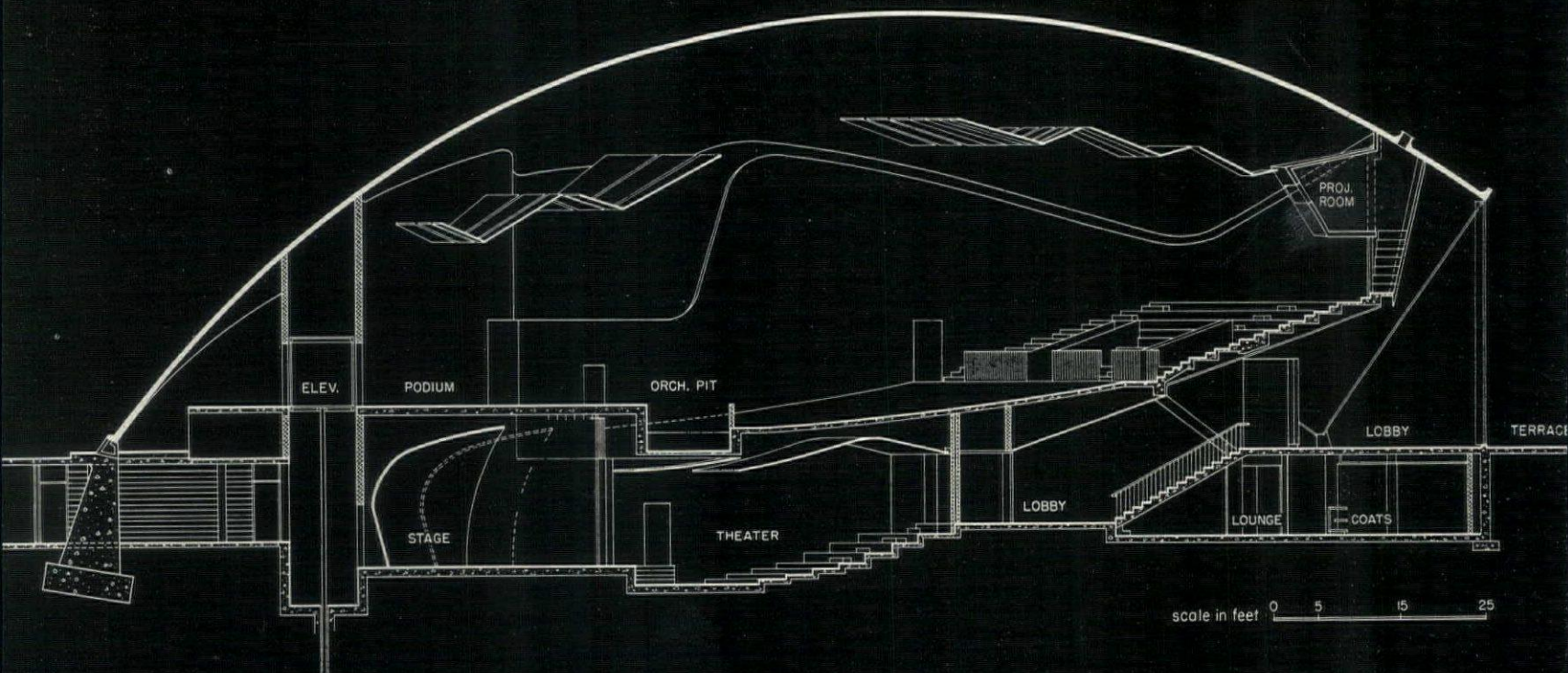
Plan of auditorium is half-way between triangle and oval, makes seating area and stage a continuous integrated space.

View towards stage (left) shows "floating clouds"—white acoustical baffles suspended from grayish-blue shell-concrete ceiling.



Early studies show that Saarinen was determined to use fluid structural forms from the start to span the large auditorium space. First sketch had half of four-pointed dome on stilts, the rest on the ground.





Dome cost: Total auditorium cost is being kept to around \$1¼ million—i.e. about \$900 per seat. (Section above shows small 200-seat theater under 1,200-seat auditorium proper.) Average

per-seat cost for a small theater is \$1,100 today; since MIT required no stagehouse, Saarinen felt he could work toward \$900 figure. **Dome section:** “Floating Clouds” by acoustical consultants are

shown suspended from shell structure to direct sound and correct acoustics. Clouds will be white; dome above, grayish blue. Three hinges of dome are supported on huge, buried concrete buttresses.

roof. In the MIT dome, there will be virtually no exterior walls left to build (except for the glass areas) once the shell is up. Say the engineers: “The more we work on this, the more sense it makes.”

The dome (exactly $\frac{1}{8}$ of a sphere) makes particular sense at MIT, for on this campus the dome shape is a repeated *motif* that helps pull together some of the otherwise unrelated buildings. It is particularly well suited to the *kind* of auditorium Saarinen wanted—a 1,200-seat hall in which there must be an intimate relationship between audience and performers or speakers (see plan).

That space is, in effect, created by a second bowl, this one containing the seats and platform. The result is a building that is like two cupped hands placed palm to palm. This graceful composition will be apparent from the outside of the building, for its exterior walls are all glass, leaving only the dome and the seating bowl as opaque forms resting on the circular, paved pedestal.

Says Saarinen: “There are two opposite poles of thinking on auditoriums. You have the concept developed by Le Corbusier in his League of Nations project. Here the auditorium was shaped according to the best knowledge of acoustics at the time. The structure followed the lines of this knowledge. In other words, all

water was squeezed out of the mass. Now, actually, one ideal acoustical shape might be some kind of cone where the listener sits in the pointed end of the cone. *But the ideal seating shapes for an auditorium tend to be the exact opposite.* There is an inherent conflict, no matter what you do. Actually, I don’t think of it as a conflict because I think of acoustics more as a servant than a dictator. There is no ideal acoustical shape. There are millions of combinations of shapes that might add up to perfect acoustics—and one of them is the best answer to one particular problem.”

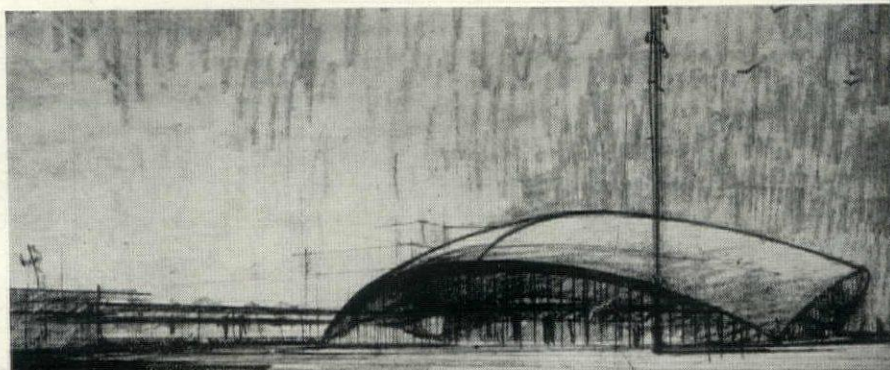
Saarinen took advantage of the fact that today’s acoustical treatment need not stick to the building shell—it could be hung.

“We found, however, that there was no need to put a hung ceiling under the *whole* dome to get the best reverberation and distribution of sound. Instead we only had to break up the ceiling partially with our ‘floating clouds’ [see cut]. They are very useful in connection with the lighting and air conditioning as well, and they look nice, especially as you see them against the dome above.”

Saarinen’s “floating clouds” will be painted white to contrast with the grayish-blue dome above them—the dome forming a kind of night sky whose horizon you are aware of but cannot see.

Next sketch still shows a four-pointed dome because Saarinen felt that interior space requirements made three-pointed shape too tight. Later, requirements were reduced. Note above-grade buttresses in this sketch.

Third sketch shows four-pointed dome with buttresses buried in the ground, as in final scheme (see top of page). Both second and third schemes show a vertical, campanile-type element beside the dome.



The chapel—a cylinder of brick

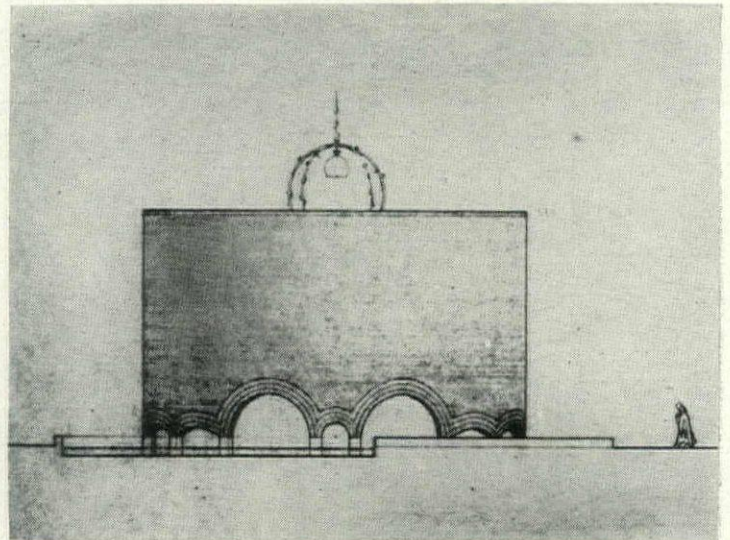
While the dome will go ahead this spring, the 130-seat chapel still awaits acceptance by MIT. It is characteristic of our time, with its spiritual crisis, that the design of this religious building proved to be more difficult for the architect in many ways than that of the auditorium.

Saarinen says that "religion today does not have the expanding optimism of the past and is sustained during this nonreligious period by the force of its traditions. In such a soil," he thinks, "new forms don't grow. Therefore, religious architecture as we find it today depends either on traditional forms—or else, on forms developed in residential and other architecture."

This meant that Saarinen and his collaborator, Bruce Adams, felt their problem to be twofold: first, the building had to be timeless—not of 1953, not of 1253, not of 53 A.D., but of no particular time and of no particular place (and consequently of all times and places). Second, they felt that the building had to be as unlike the rest of MIT as they could make it. The chapel had to be a quiet retreat, a place into which one could withdraw and in which one could contemplate and release the tensions of jet-propelled life in an Institute of Technology. So Saarinen and Adams went ahead and committed the greatest sin modernists could possibly commit: they designed something that had no relation at all to anything else done in this century and no relation at all to any inventions to be made in the next. They designed a brick tower, a cylinder which rests (in the Age of the Module) on arches irregularly spaced and irregularly shaped. These, in turn, stand in a circular moat. The light of the sun will be reflected from the rippling surface of the water, will bounce up from the water's surface and through the masonry arches, and wash across the wavy interior walls of the chapel in a mysterious and dim play of brightness and shade (see section opposite).

There is no way of describing the effect in graphic form. Those who have seen the grottoes on the Island of Capri may get some idea of the strangely fascinating glimmer of light which will permeate this chapel. To balance this mysterious light from below, the designers placed a circular skylight in the roof of the chapel (see section) to direct a shaft of dim light onto the altar. This light from above will have a very different character from the other: it will be stronger and sharply defined. For the designers stretched stainless steel wires from the periphery of the circular skylight to the periphery of the larger circular altar below. The wires will glisten in the light from above, will surround the altar with a semicircle of silvery rays.

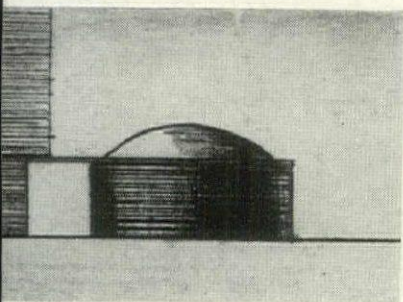
The chapel went through several stages of development, may yet be subject to some minor changes. Here are some of Saarinen's early studies for the building, and the reasons he rejected other forms:



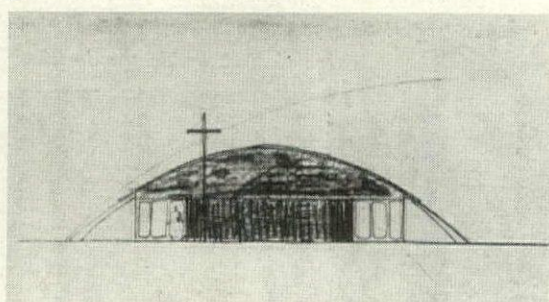
Chapel structure: A brick cylinder with irregular undulating exposed brick walls inside. These are an important acoustic device. Piers that stand in glittering moat occur where inside and outside brick "skins" coincide—and since undulations are irregular, arches between piers are irregular also. Roof is on steel trusses that frame into steel ring around deep eggcrate under skylight. Eggcrate keeps light from spilling around altar below. Light will exceed but not compete with light reflected upward from the moat. Illustrations (opposite) explain light reflection from moat through arches, and light direction from skylight along stainless steel wires around altar. Ironwork above skylight was suggested to Saarinen by bell tower at Orvieto. Estimated cost of chapel is \$125,000.

Early studies show a cylindrical but domed chapel (1) repeating the dome-motif prevalent at MIT. Scheme (2) had a vault for the chapel structure to relate to the shell-concrete vaulting of the auditorium. Scheme (3) shows chapel rectangular to contrast with the auditorium dome. This building had glass walls, was given sense of enclosure and remoteness by high brick walls outside. Rendering on opposite page shows near-final scheme: Embrasure-like openings in upper portion of cylinder will be omitted.

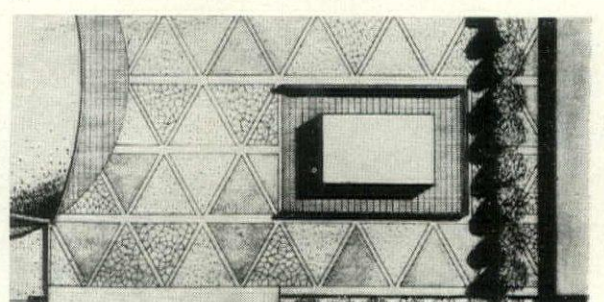
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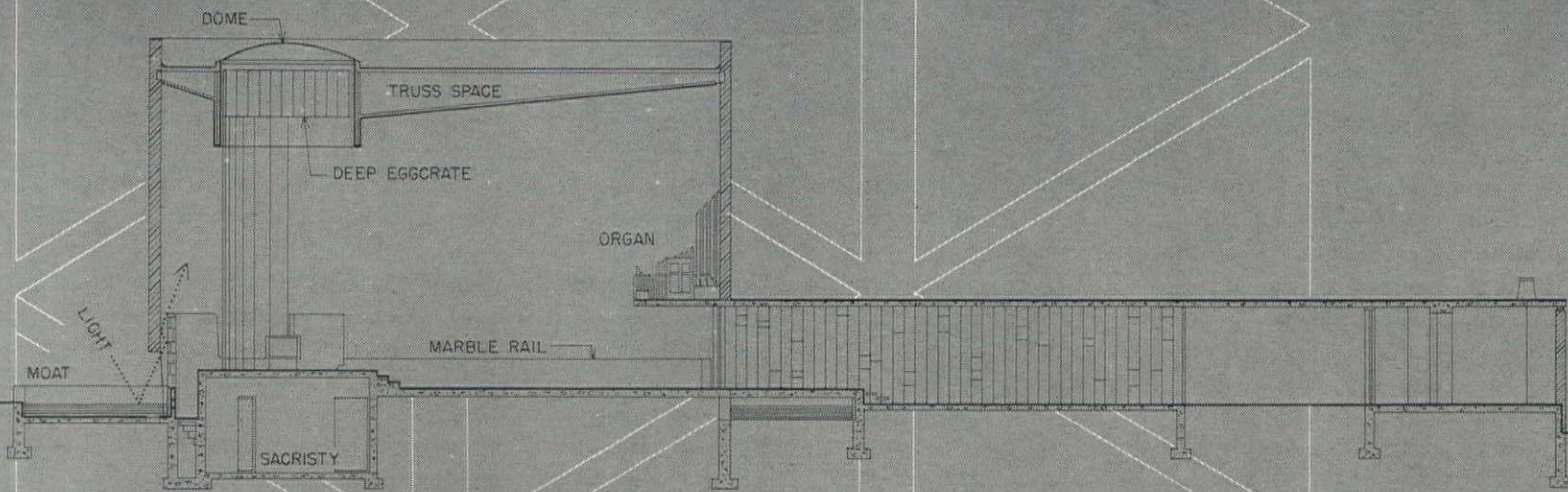


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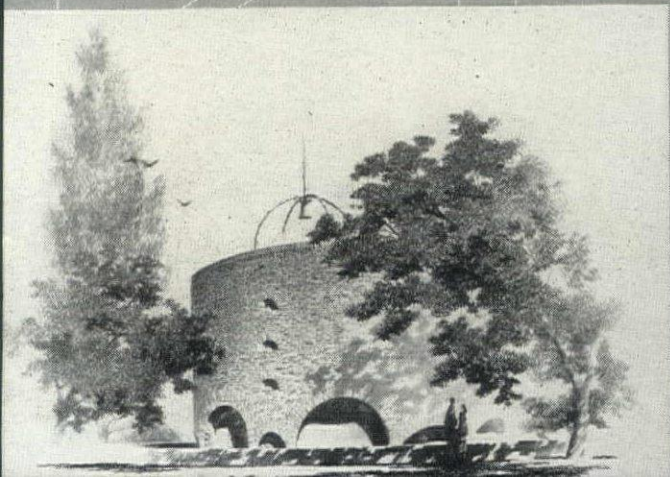
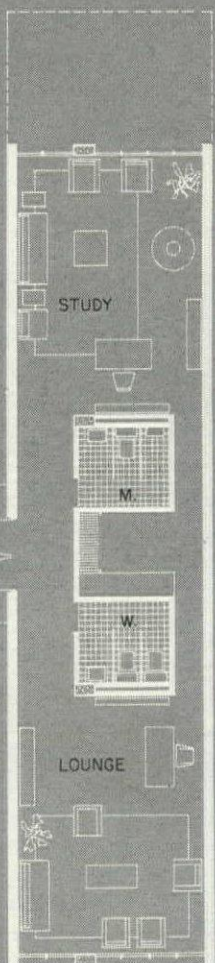
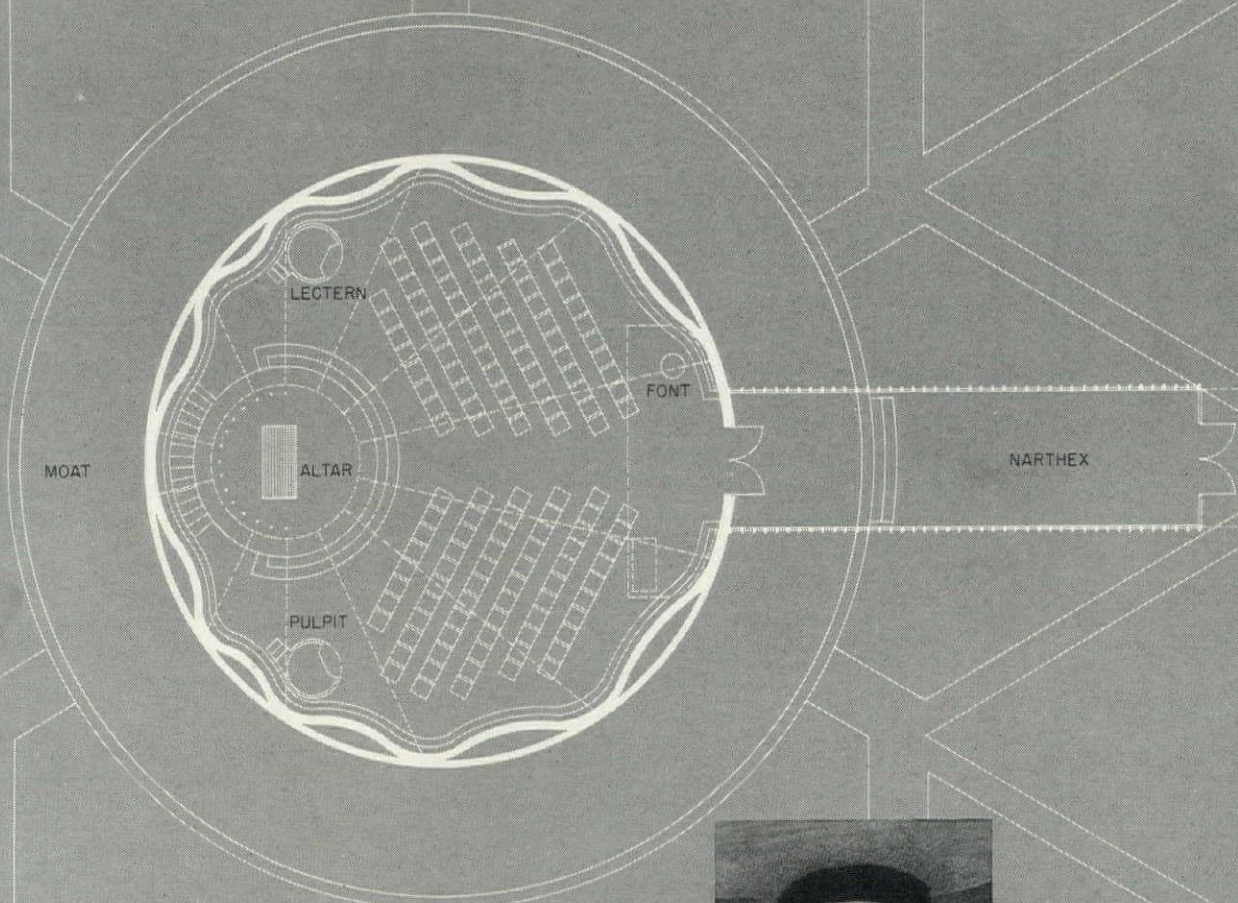


3





scale in feet: 0 5 15 25



The plaza—contrast of ideas and forms

The dome and the cylinder in Saarinen's design not only represent two extreme opposites in contemporary architecture; they also pose a pretty tough problem of architectural relationships.

It is relatively easy to relate a rounded form to an angular form (viz. Trilon and Perisphere); it is relatively easy to relate *three* freestanding forms (especially if the third is a tall tower, or something like it); finally, it is relatively easy to relate two forms of very different size but of similar shape.

Saarinen tried all of these ways. In his early sketches (see below) there were times when (a) the chapel was rectangular and the auditorium the only rounded shape; when (b) there was a free-standing and very tall campanile off to the northeast of the auditorium entrance; and, finally, when (c) the chapel was made as a kind of "baby dome"—closely related to the "mother dome" of the auditorium, but very much smaller. All these were rejected.

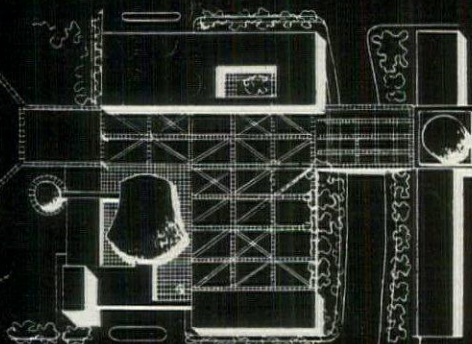
The present scheme is about as difficult to solve as any that Saarinen could have picked for himself. He has *two* rounded forms; they are not very different in height; and the chapel (being round and massive) may, from some angles, look almost as big as the auditorium (which is almost triangular and light).

Here is how Saarinen overcame these problems: first, he used a low-slung, flat-roofed element as a link that almost connects the two buildings, contains some administrative offices and sheltered passages; second, he used scattered trees both to give the chapel a sheltered feeling, and to screen it slightly against the auditorium; and, finally and most importantly, he saw the plaza in relation to the surrounding campus buildings.

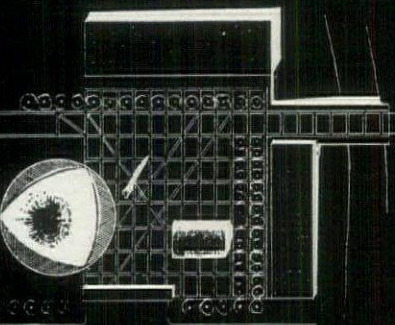
These buildings are quite tall. In future years, new and even taller buildings will be added to those existing today—including a long, eight-story building along the north side of the Saarinen plaza. This means, of course, that any vertical element in the plaza would have to be a little Eiffel Tower to count for anything at all

Relationship of new center to MIT campus is shown in picture below. Tall structure is a future possibility. Access to plaza is on axis with entrance to existing school of architecture. Parking garage under plaza was suggested by MIT's Dean of Architecture Belluschi, who closely collaborated with Saarinen.

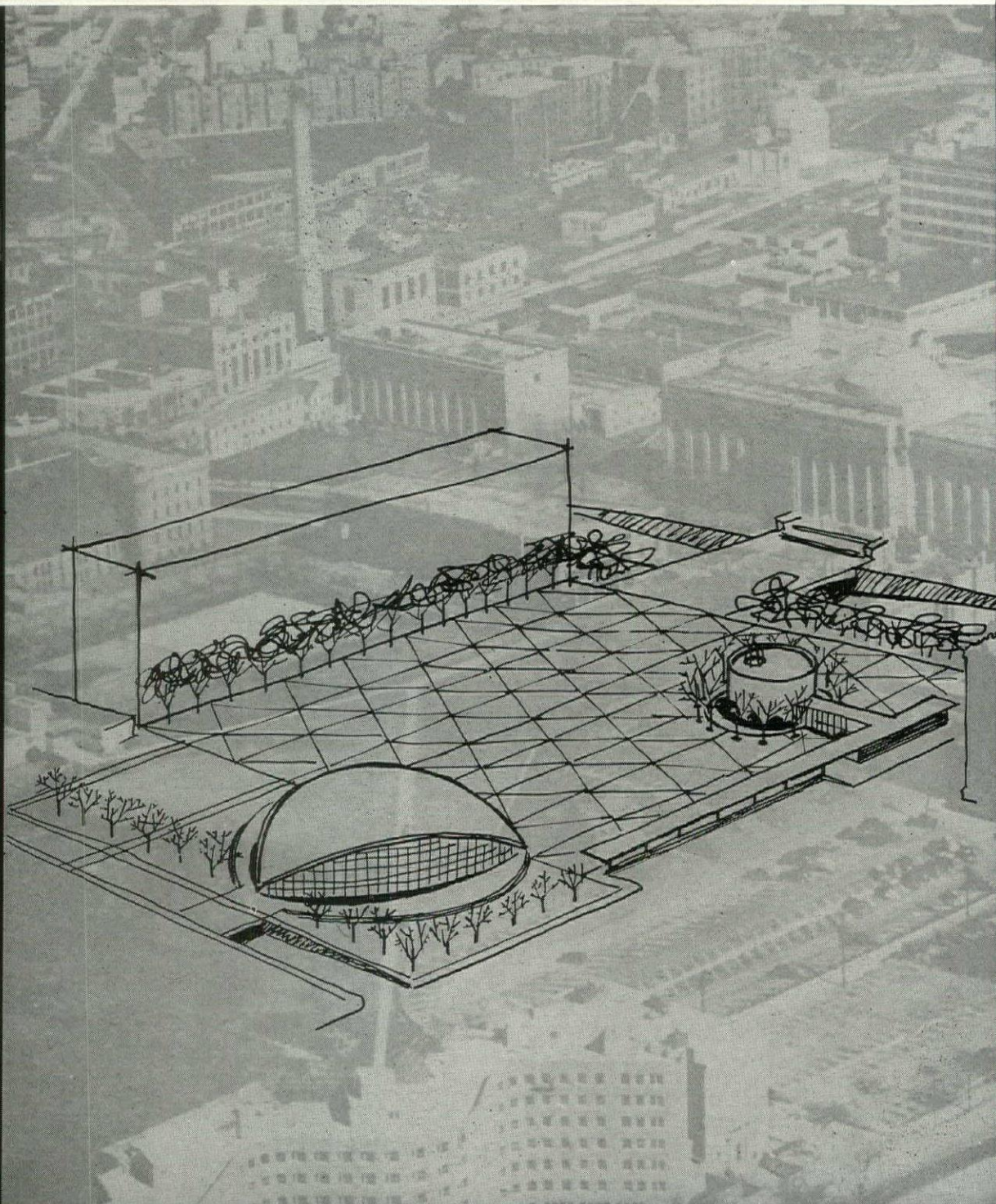
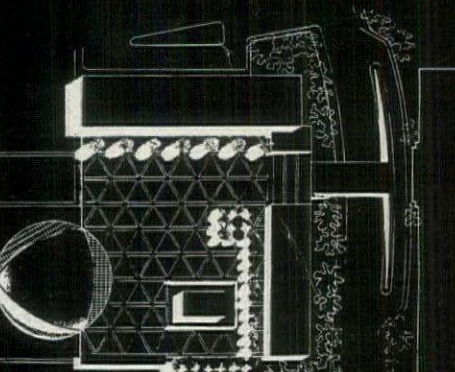
Early scheme was too large for budget, had domed chapel to repeat MIT motif. Auditorium was 4-pronged dome on stilts.



Next stage opened up site plan, created spacious plaza, used vertical campanile as focal point in outdoor space. Chapel



was vaulted. Third scheme had no vertical element but contrasted auditorium dome with rectangular chapel.



on the campus as a whole—and, by that time, it would look ridiculous within the framework of the plaza.

So Saarinen developed his two buildings in a close and even intimate coherence, awaiting the arrival of the eight-story slab to the north to provide him with a plain backdrop on that side of his plaza. To the south, his long, flat-roofed element will define that boundary, while a screen of trees will stand between the plaza and the principal MIT buildings to the east.

MIT—the “laboratory college” whose fine reputation for foresight and vision was never more strikingly demonstrated—will need the plaza as a focus in a college community that has no real center to date. It is no accident that Saarinen solved this problem in a manner which many critics feel is his best effort to date, for this is to him the most interesting architectural problem of our time. As he said recently: “Civilizations of the past seem to have placed a greater, almost spiritual value on architecture . . . is it not possible that architecture may, some day, play this higher role again?”

LOCATION: Cambridge, Mass.

EERO SAARINEN & ASSOCIATES, architects

ANDERSON & BECKWITH, associate architects

AMMANN & WHITNEY, structural engineers

HYDE & BOBBIO, mechanical engineers

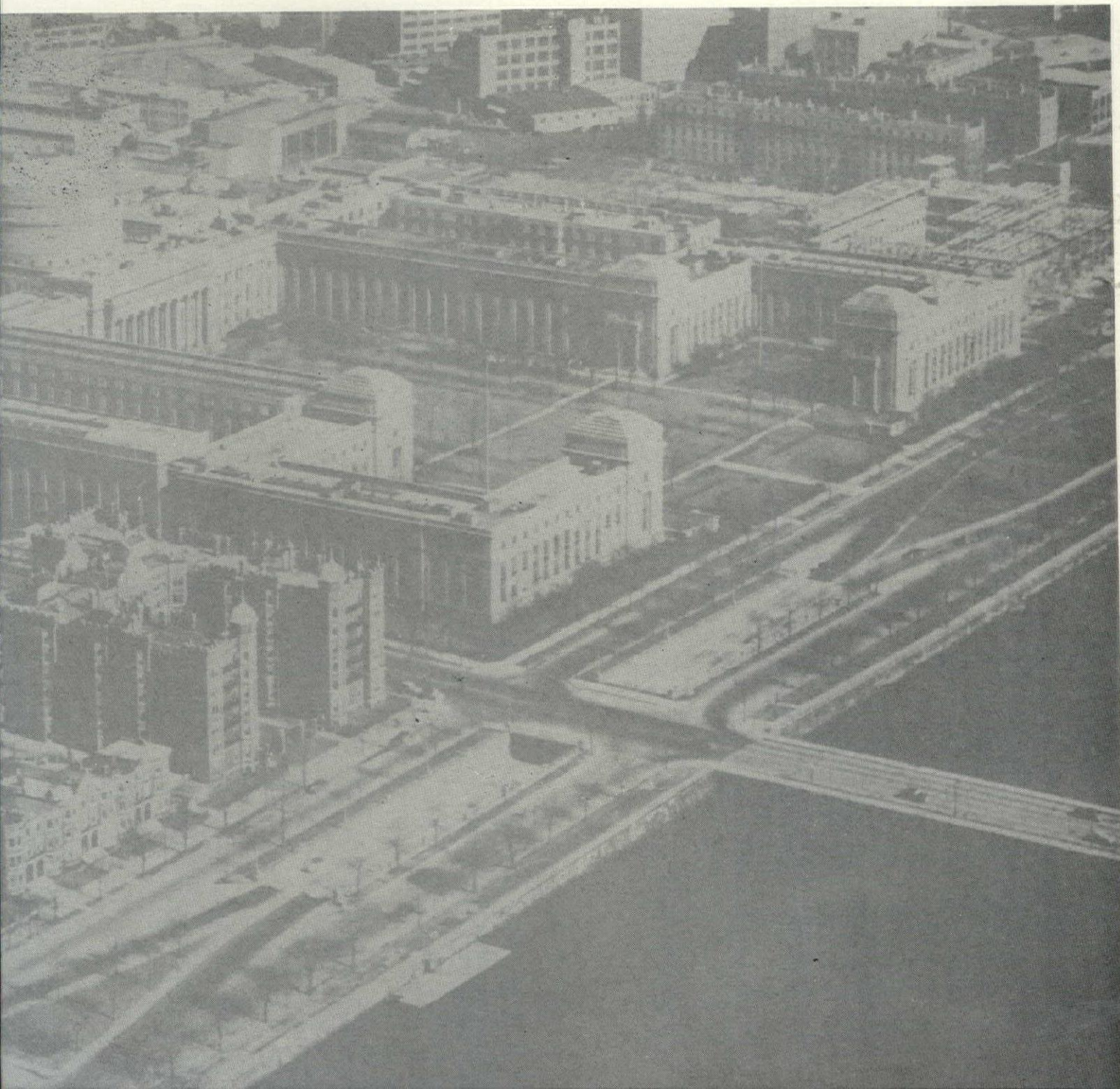
BOLT, BERANEK & NEWMAN, acoustical consultants

STANLEY McCANDLESS, theater and lighting consultant

Richard Shirk



Approach view with chapel at left

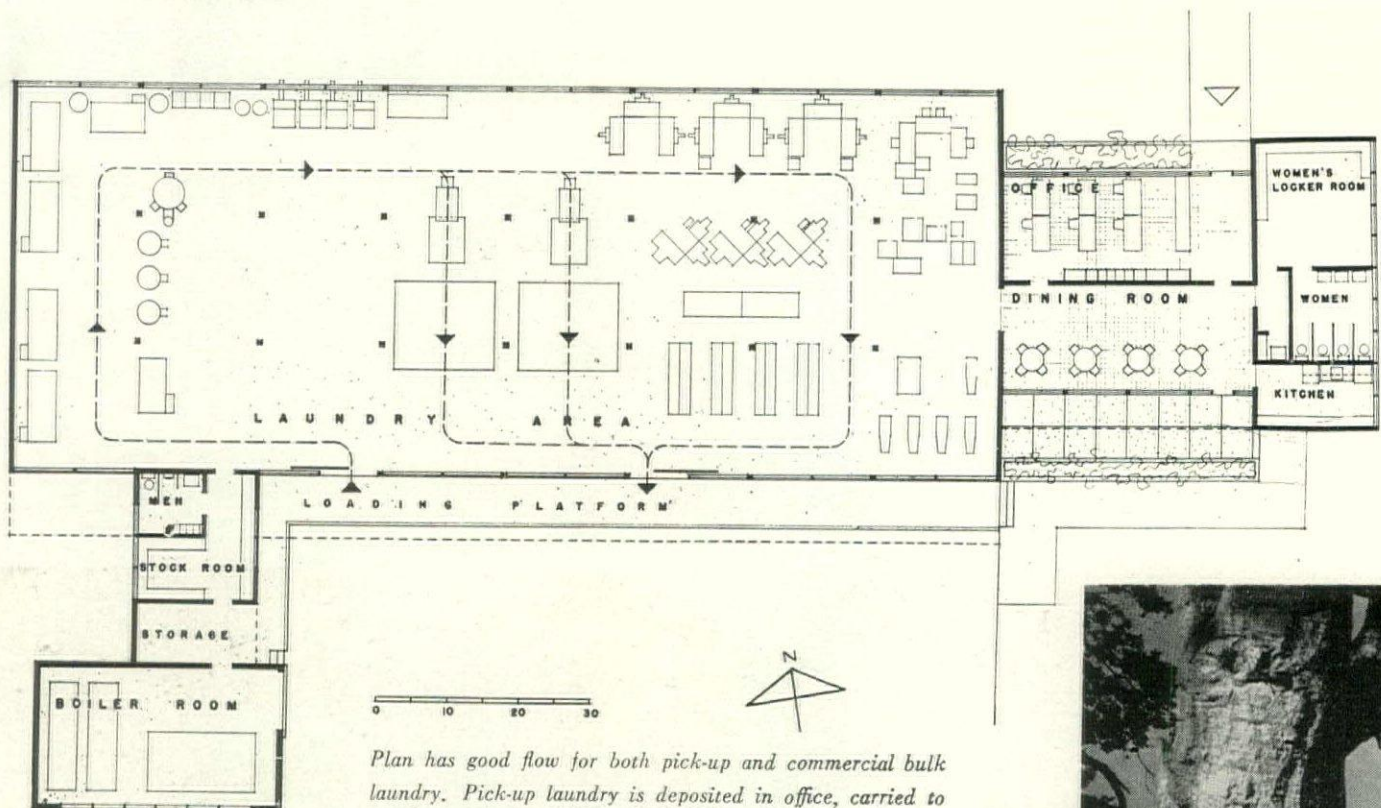




THIS LAUNDRY

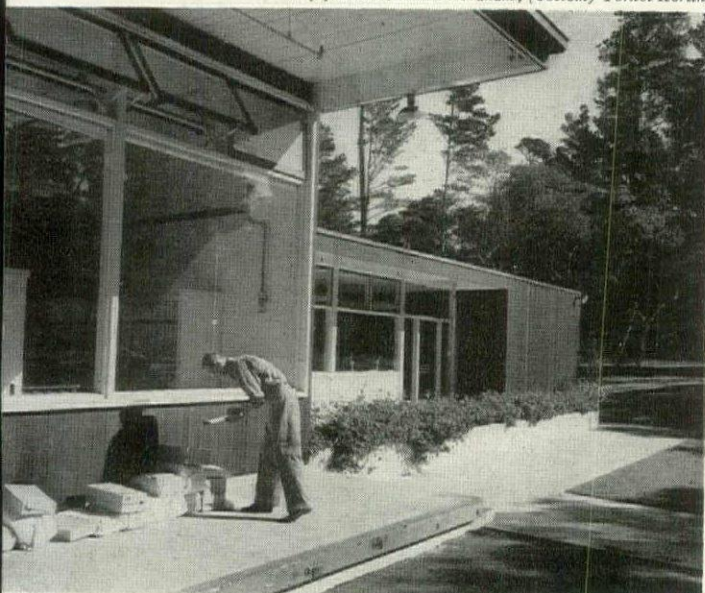
DEL MONTE LAUNDRY, Pacific Grove, Calif.
GARDNER A. DAILEY; SKIDMORE, OWINGS
& MERRILL, associated architects
ROBERT BARDELL, general contractor

Laundry area is light, airy and uncrowded. Rest of building has unit heaters, but mangles and machines throw off enough heat to warm this section in winter. Exhausts over machines draw off heat in summer.



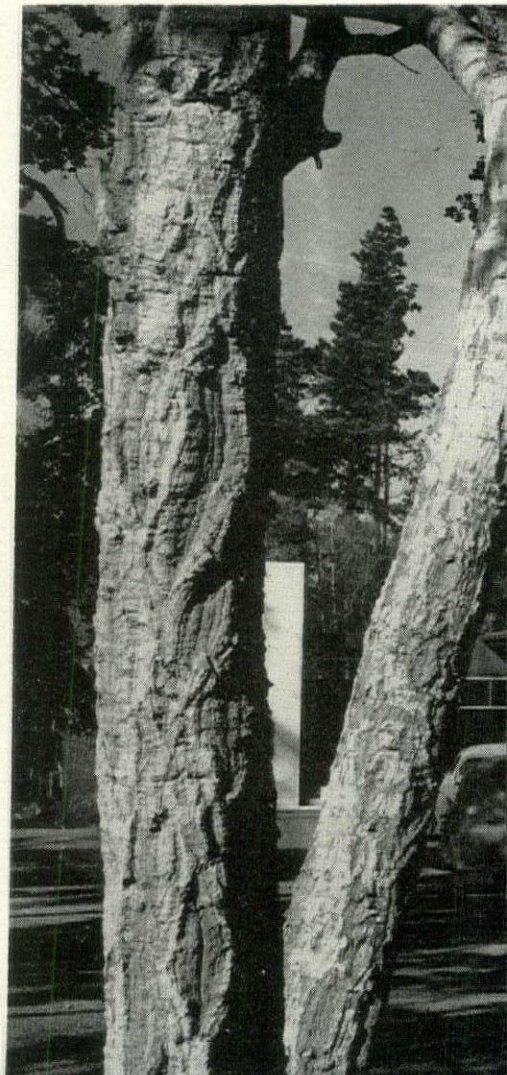
Plan has good flow for both pick-up and commercial bulk laundry. Pick-up laundry is deposited in office, carried to wash area, processed and stored near pick-up area. Commercial laundry has direct U flow.

Top photos: Julian P. Graham; (bottom) Torkel Korling



Wide overhang allows exterior stacking of finished laundry. Note sprinkler system continued outdoors.

Walls are natural redwood vertical siding with cream trim; sash and doors are forest green.



LOOKS CLEAN

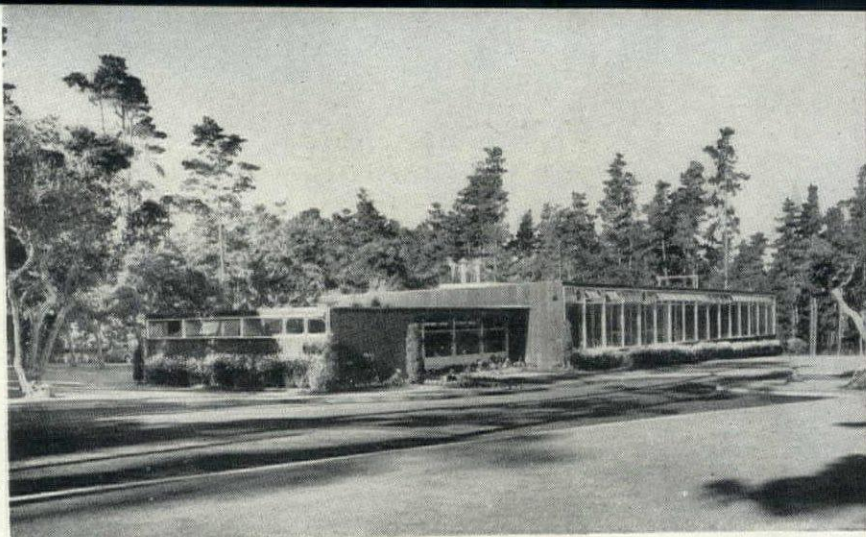
**Good design makes light industry
at home in a residential area**

Calling a building cleanly designed is a cliché of architectural writing, and this cliché is particularly handy whenever the meticulously detailed work of such experts as Skidmore, Owings & Merrill or Gardner A. Dailey is considered.

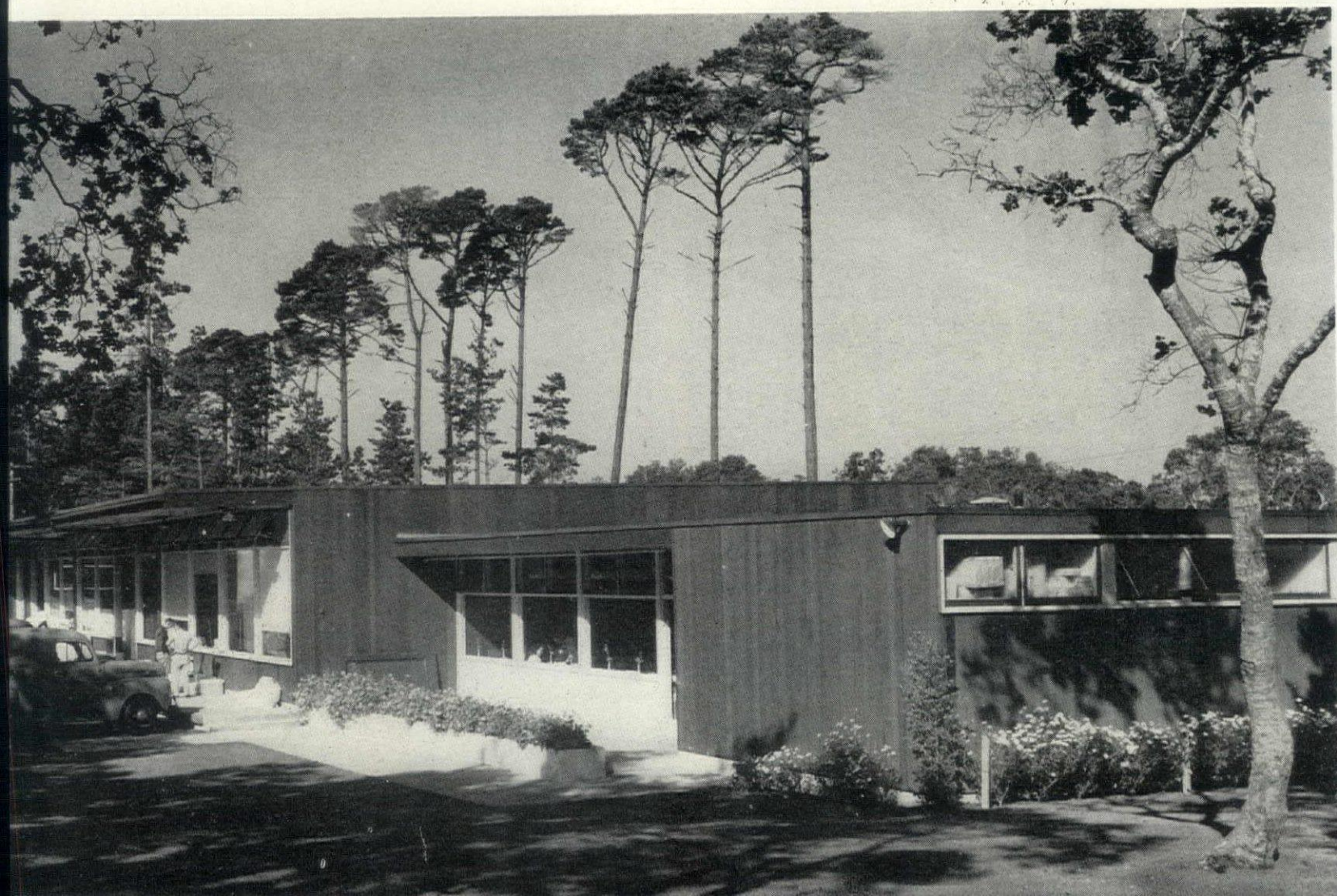
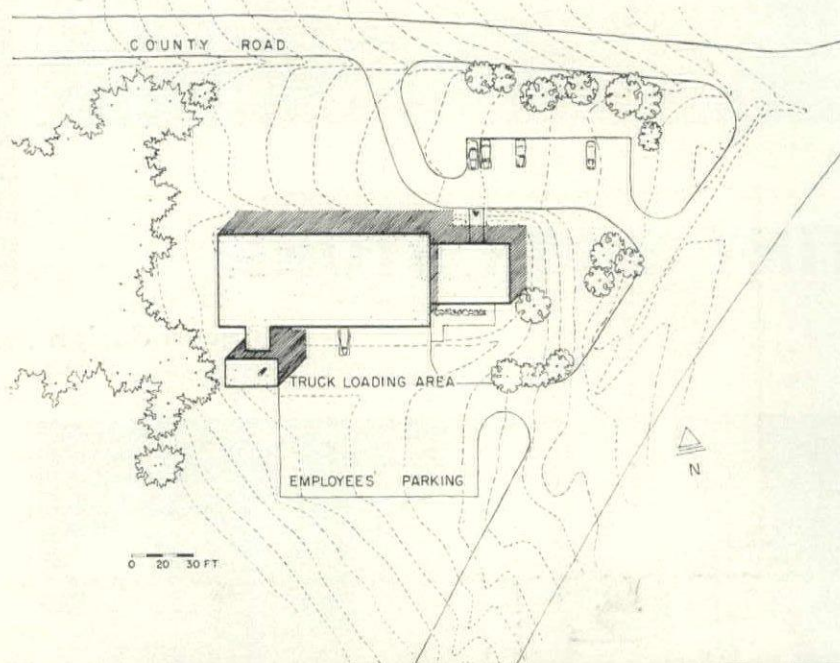
This laundry, done by S. O. M. in collaboration with Gardner Dailey, is just that. So, let's get it said: neat, clean, semistarched—a well-run wash.

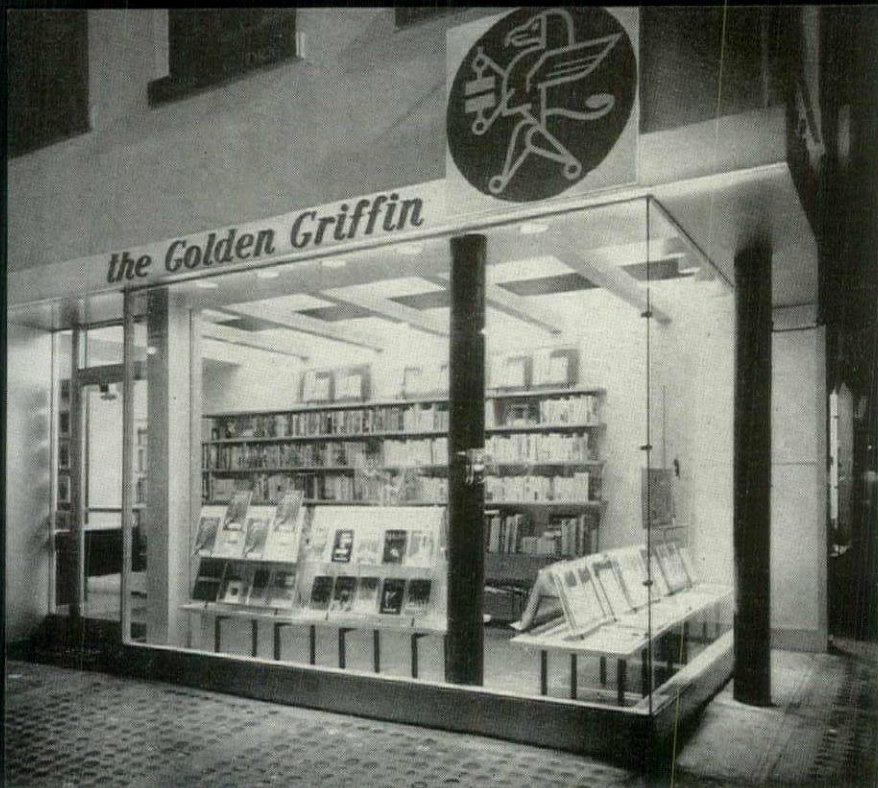
But it is also a design that succeeds in being warmly appropriate to the residential neighborhood it adjoins without resorting coyly to residential details, and this character is more difficult to accomplish. Its mill construction is discreet, with only a light industrial accent (the fireproof, reinforced concrete boiler room is semi-detached), resulting in an unpretentious and pleasant structure.

Total cost was about \$92,000 or \$8.60 per sq. ft.



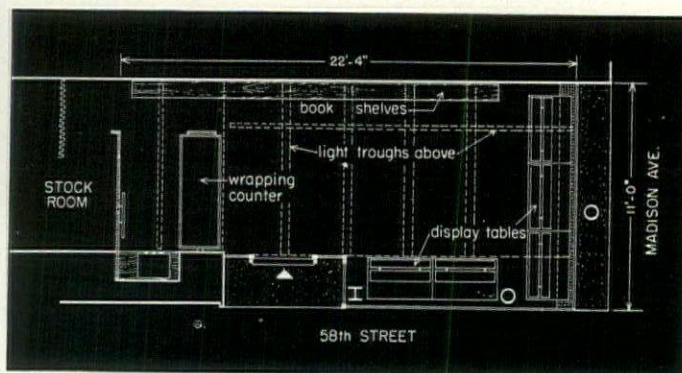
Site is 380' x 380', allowing plenty of room for future expansion





TINY BOOK STORE

Its good design makes it seem big and act big



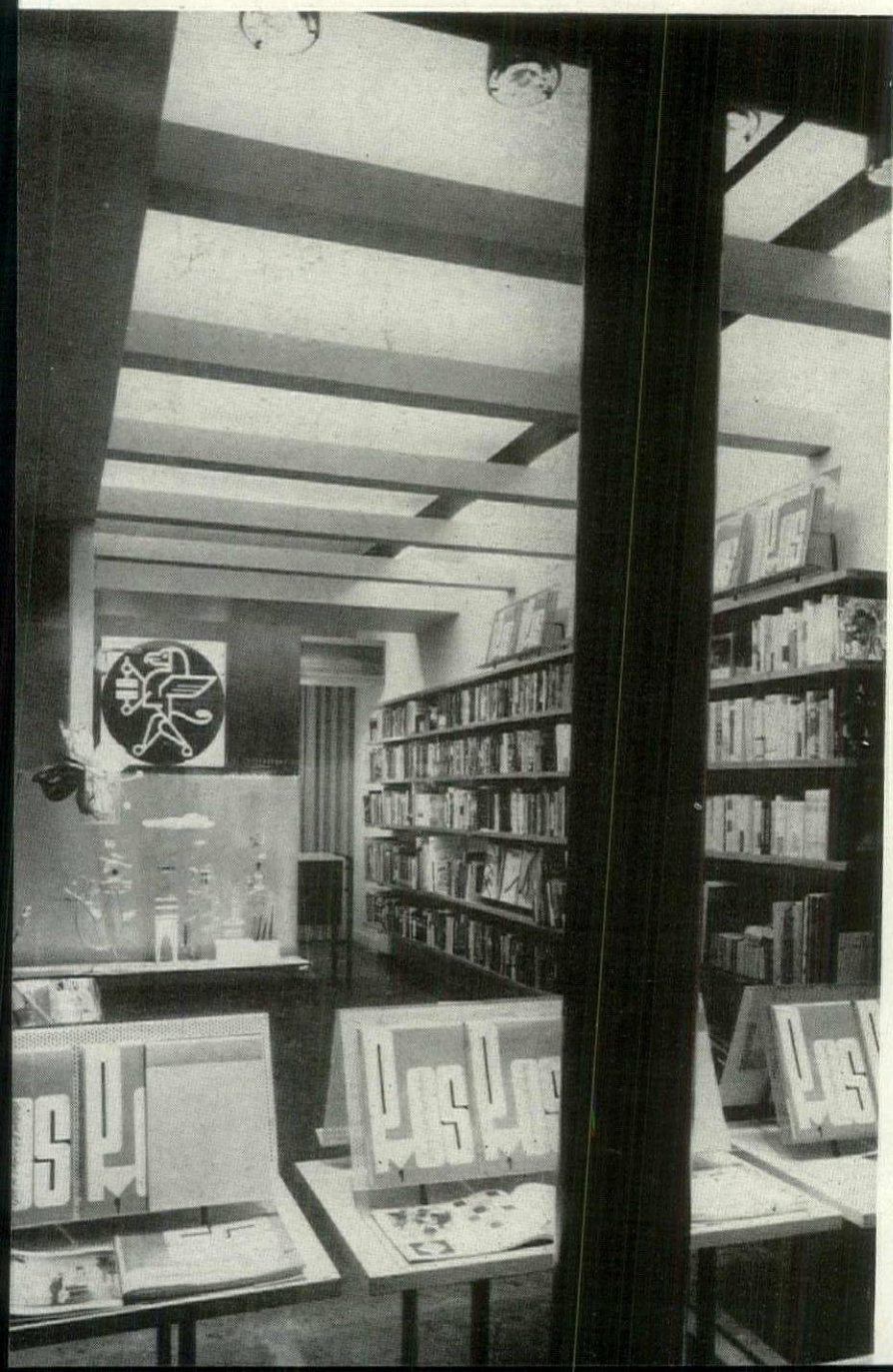
Perforated metal fixtures designed to display art books are so low that they do not obstruct view of interior. Plan (below) shows simple layout in tight space.

Sometimes a really tight budget or a really tight space brings out the best in an architect. In this little book store, Architects Raymond & Rado were faced with both, came up with one of the neatest shops in Manhattan.

The Golden Griffin—a corner store dealing in fine art books and other US and foreign publications—is about as big as a good-sized bedroom: 11' x 17'. Behind this space is a stock room only 8' wide. Obviously, the architects' first problem was to make the store *look* bigger; their second problem was to make it *act* bigger; their third problem was to make it *draw* bigger crowds than its big neighbors. To make the store *look* bigger, they surrounded it with two sheets of plate glass, each about 8' x 11' (no mullions or muntin bars to cut down the scale!). To make it look wider, they ran their fluorescent ceiling troughs the short way.

To make the store *act* bigger, the architects designed efficient, space-saving and compact fixtures. Also, persuading the owners to put the door on the side street, they vastly improved the space. Finally, to make the store *draw* bigger crowds, they used bright yellow and black accents on a white background, placed the porcelain enamel trademark of a griffin *inside* the store as well as on one street facade. Graphic-artist Ladislav Sutnar helped with his lettering and signs to turn one of the smallest stores in town into one of the biggest and most effective showcases. Its \$8,000 cost included all remodeling, fixtures, lighting, new air conditioning.

Showcase character of tiny store is apparent in this view looking in from Madison Ave. Griffin trademark in back of store helps draw in customers. Bright lights and colors aid display.



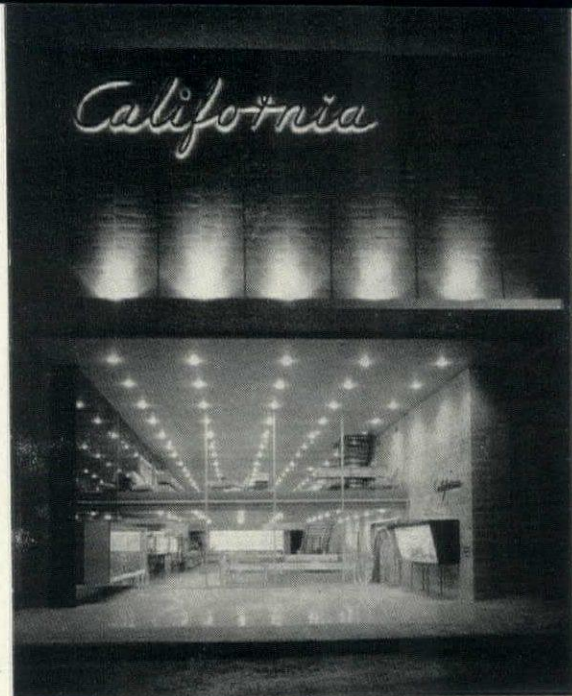
Photos: Ben Schnall

FOUR-LEVEL SHOE STORE

shoehorned into space for two floors gains excitement and profit

Space was bountiful in this Havana shoe store but the owner was resigned to wasting it. Custom decreed a 5½-meter ceiling height (better than 18') for the ground-level selling floor (as found also in many older US buildings used for store remodeling). A second floor was to be used for storage. But the architects, designing the first Cuban building intended specifically for a store, forced three more levels out of the remaining space. Directly behind the recessed glass front, and looking like a "cave" from the street, is the stair to open bargain basement. A little farther back another stair leads *up* to the mezzanine, carpeted for high-style selling. The open view into three levels at once would tease curiosity and sales in any city.

And cheap materials are used effectively. Cinder blocks of the side cavity wall are laid in stacks and every second vertical joint deeply scored for pattern and texture. (Some wall area is of black structural glass.) Perforated stair rails are of cheap pressed board. Basement is asphalt-tile floored; main floor rubber tile. Basement has 96" cold cathode lights; upstairs has spots and floods.

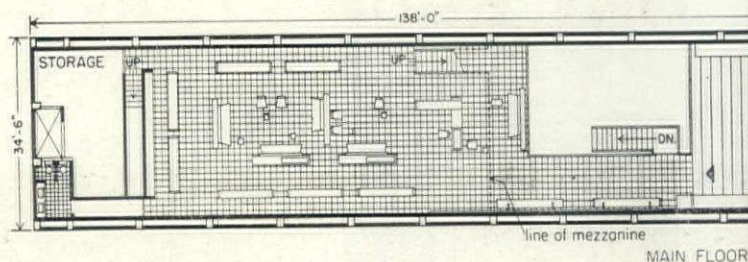


Front view: three levels visible (above the basement)

LOCATION: Havana, Cuba

CALIFORNIA SHOE STORE, owner

SILVERIO BOSCH & MARIO ROMANACH, architects



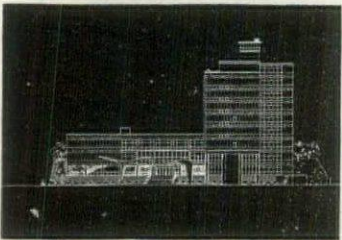
View from rear: main floor and mezzanine. Basement shows in background as a well under mezzanine

24-1111a

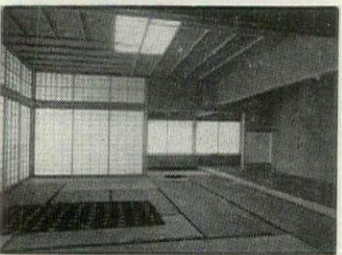




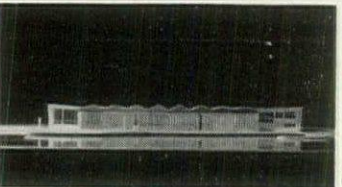
1 PEACE CENTER



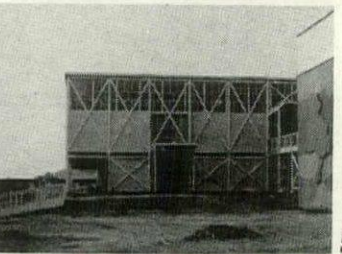
2 CITY HALL



3 HOTEL



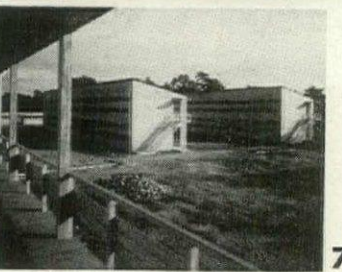
4 AQUARIUM



5 EXHIBITION



6 SCHOOL



7 DORMITORIES



8 MUSEUM

1. page 142
2. page 143
3. page 144
4. page 145
5. page 146
6. page 146
7. page 147
8. page 148

JAPANESE ARCHITECTURE AND THE WEST

**They have needed each other in the past;
they need each other today**

It is impossible to understand the rise of modern architecture in the West without some reference—all along the line—to the architecture of Japan.

It is equally impossible to understand the rise of modern architecture in Japan without reference, especially in recent times, to that of the West.

This story is concerned with the architectural give-and-take that has been going on between Japan and the West for three quarters of a century. But more specifically, this story is concerned with the latest results, in Japan, of that exchange of ideas.

Before getting down to cases, here are some of the things all modern architects in the West should remember with gratitude:

- ▶ 1. It was the discovery, in France and elsewhere, of the exciting natural forms in Japanese art that helped bring about the *Art Nouveau* movement at the turn of the century, with its sinuous plant-inspired forms and ornament; and it was the *Art Nouveau* movement in England, France, Germany Austria, the US, that upset eclecticism in architecture and design and thus opened the way to important later developments.
- ▶ 2. It was the discovery of the Japanese structural tradition, the traditional Japanese "open plan" and the traditional Japanese integration of architecture and landscape that made a lasting impression upon Frank Lloyd Wright and others.
- ▶ 3. It was the discovery of all these things plus the tradition of Japanese wood craftsmanship that shaped—and continues to shape—much of the domestic architecture on America's West Coast.
- ▶ 4. And, finally, it was the discovery of Japanese simplicity, understatement and geometric, modular elegance that profoundly influenced men from Mies van der Rohe to Charles Eames, from Antonin Raymond to the designers of Lever House.

Now for the other side of the coin:

What is happening in Japan today is this—

The young architects there have been importing a new design tradition from the West. It started, of course, with Frank Lloyd Wright. More



RYUICHI HAMAGUCHI, an editor of the Japanese magazine *Kokusai-Kentiku* (International Architecture) last year visited the US, worked with FORUM editors for a month to pick the eight "most important modern postwar buildings in Japan." His choice is shown above. He excluded Raymond & Rado's Reader's Digest building only because it had already been published (AF, Mar. '52), but feels that this building is the most significant postwar structure in his country. FORUM'S and Hamaguchi's comments will be found on pp. 142-149.

In the 1890s, the natural forms and "whip-lash" curves

found in Japanese prints influenced much art nouveau painting,

typography, furniture and architecture...

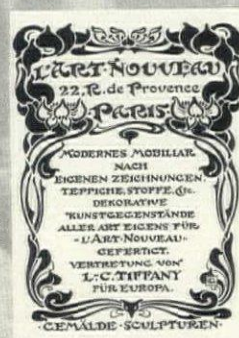
After 1900...



ISHIKAWA TOYONOBU (1722)



TOULOUSE-LAUTREC (1899)



TIFFANY POSTER (c. 1910)



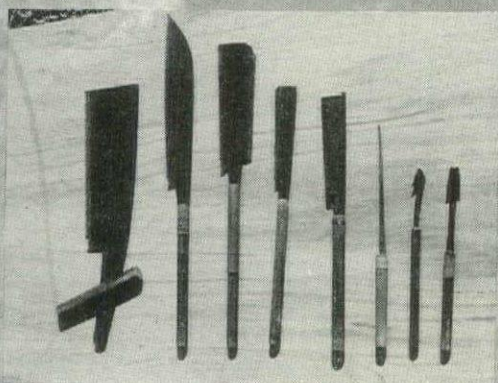
HECTOR GUIMARD (1908)



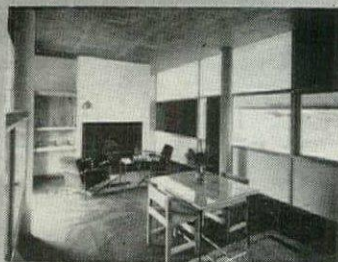
VICTOR HORTA (1893)

...traditional Japanese craftsmanship and architecture

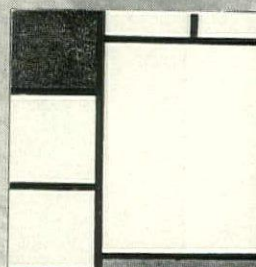
began to exert a powerful influence upon the architecture of the West.



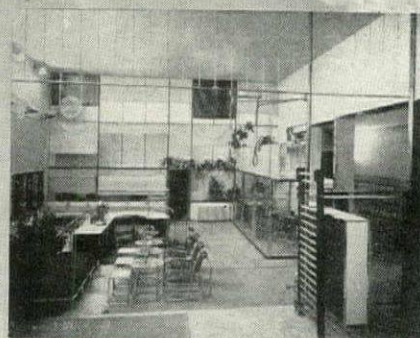
TRADITIONAL JAPANESE TOOLS



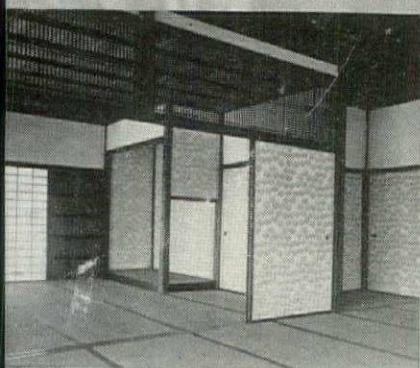
LE CORBUSIER (1930)



PIET MONDRIAN (c. 1917)



WALTER GROPIUS (1930)



KATSURA PALACE (1590)



FRANK LLOYD WRIGHT (1902)



BERNARD MAYBECK (1912)



MIES VAN DER ROHE (1930)

recently it has been the tradition of Le Corbusier, Gropius, Mies van der Rohe, Breuer and others.

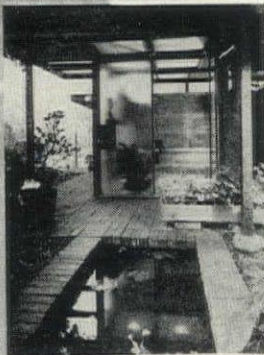
Perhaps the young Japanese architects are not always aware that the thing they have been *importing* recently is about what their grandfathers exported 70 yrs. ago—but not digested and “industrialized” in the drafting rooms of Dessau, Berlin, Paris, New York and Rio.

So they are really getting something that is one part Japanese tradition, one part Western esthetic preference (Le Corbusier’s, or Gropius’, or Mies’ or what have you), and one part Western industrialism.

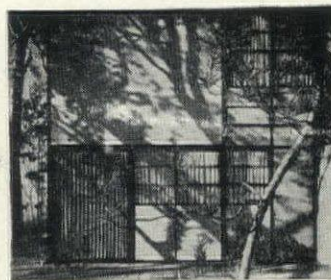
What of the future?

The crucial question for Japanese architects is whether or not they can swallow the last part—industrialism—and, for that matter, whether they should; whether or not they are ready to accept an “industrial style” and throw out their own handicraft tradition; whether or not, in other words, Japan must await the completion of her own industrial revolution in building before trying an architecture that is expressive of that revolution.

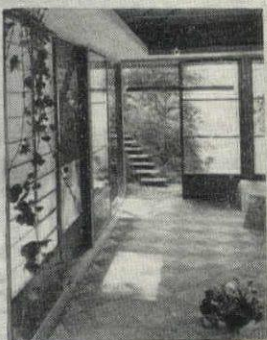
The story on the following pages is an attempt to find the answers to some of these questions.



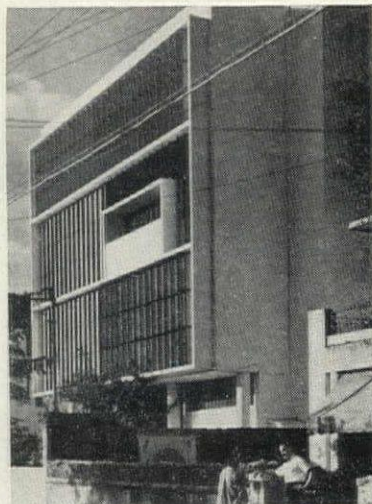
GORDON DRAKE (1947)



CHARLES EAMES (1950)



HARWELL HARRIS (1936)



OSCAR NIEMEYER (1938)



RAYMOND & RADO (1952)

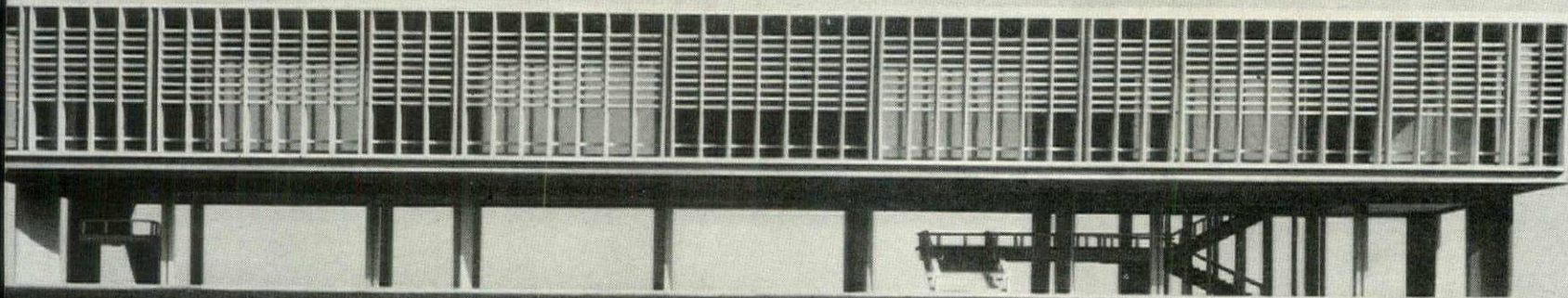
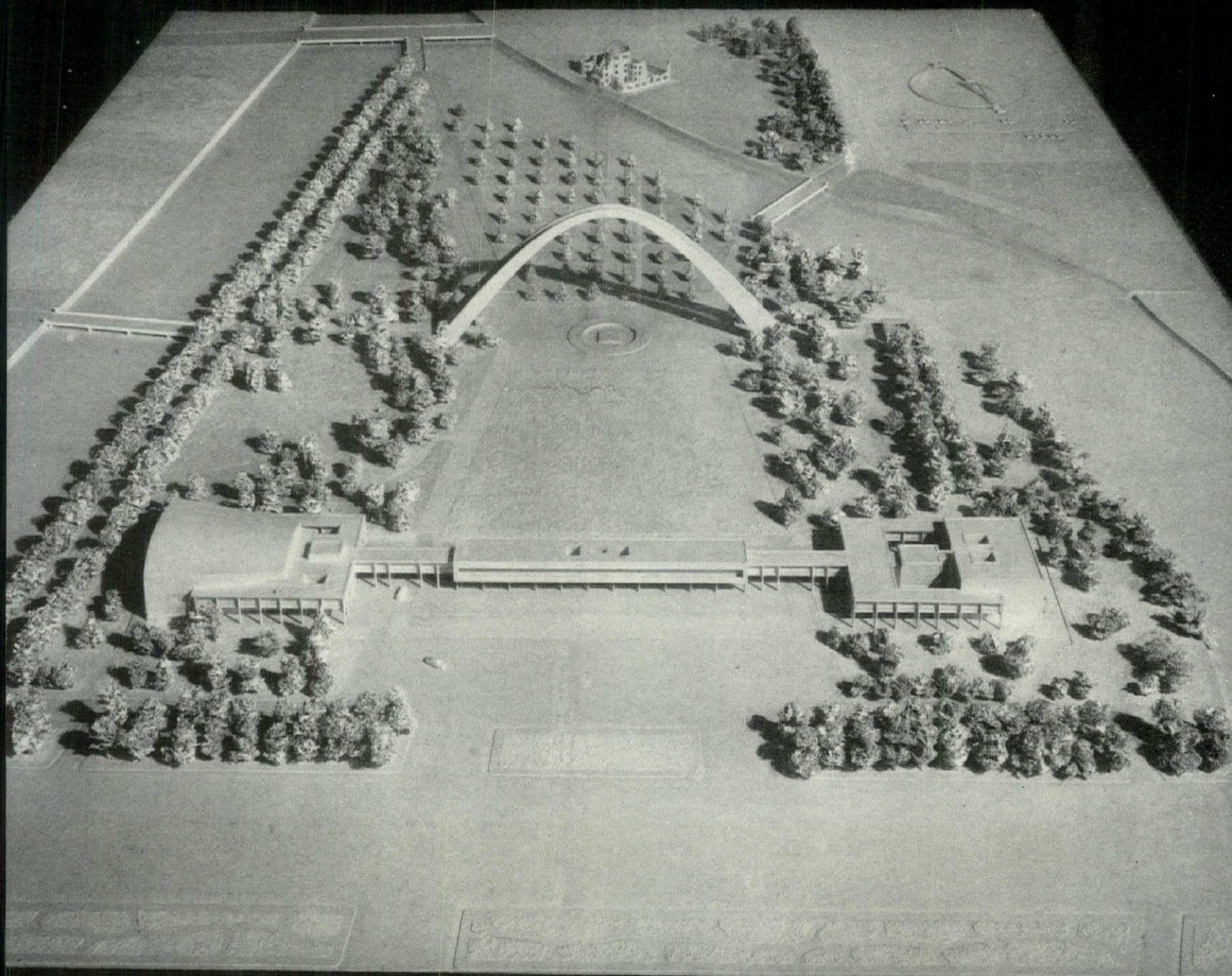


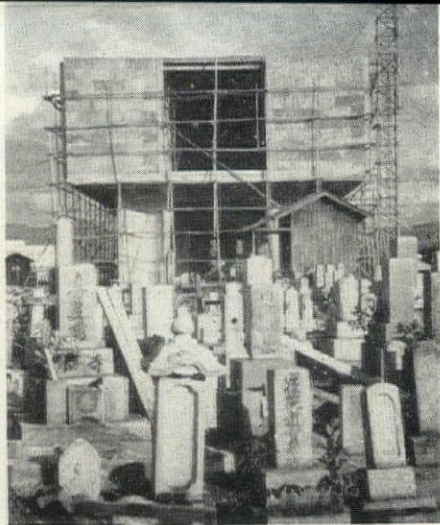
RICHARD NEUTRA (1939)

Now the development has come full circle,

and the architecture of the West is transforming

the cities of postwar Japan. For proof, turn the page.





US Architects on Japanese Architecture

FRANK LLOYD WRIGHT: "During my later years at the Oak Park workshop, Japanese prints had intrigued me. . . . Ever since I discovered the print Japan had appealed to me as the most romantic, artistic, nature-inspired country on earth. Later I found that Japanese art and architecture really did have organic character. Their art was nearer to the earth and a more indigenous product of native conditions of life and work, therefore more nearly modern as I saw it, than any European civilization alive or dead." (From his *Autobiography*)

MIES VAN DER ROHE: "Where can we find greater structural clarity than in the wooden buildings of old? Where else can we find such unity of material, construction and form? Here the wisdom of whole generations is stored. What feeling for material and what power of expression there is in these buildings!" (From his *Inaugural Address*, Chicago, 1938)

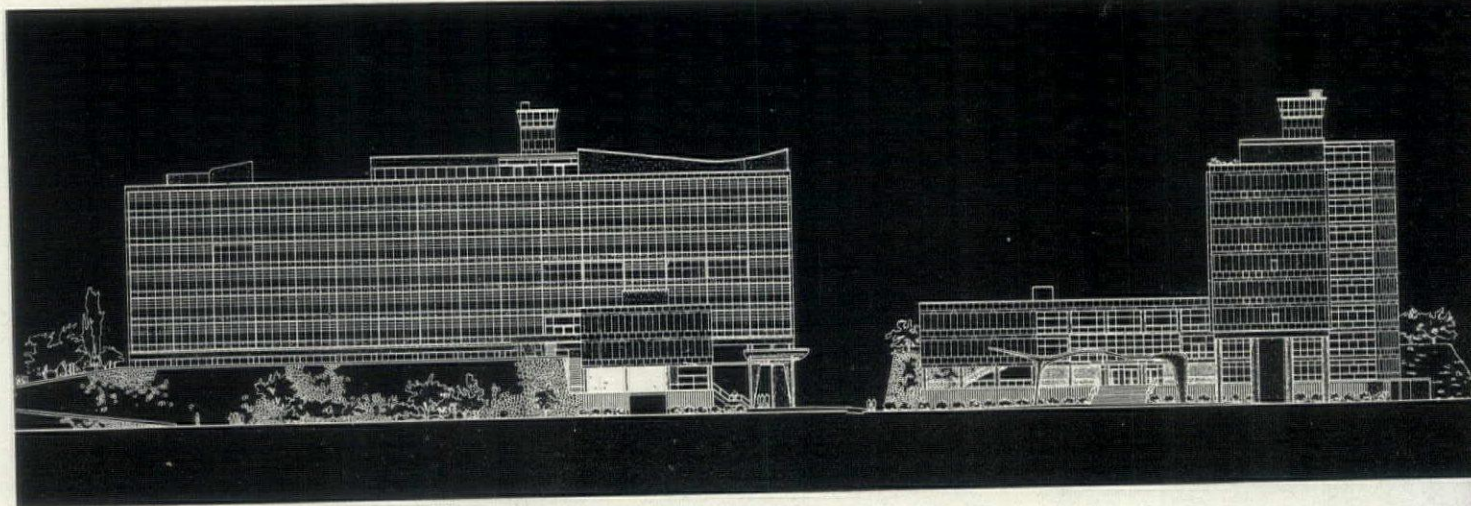
CHARLES EAMES: "Whether it is a paper toy or a tea-house, or a garden or a palace, these traditional Japanese things seem to represent a super understanding of humble materials and elements in relation to human scale and human needs. The question in applying it seems to be in recognizing just what are the humble materials in our environment—what is our scale and what are our needs. . . . We have a long way to go before we know the humble materials of our environment well enough to select from them."

1. Memorial Museum, Peace Center, Hiroshima

Architects: KENZO TANGE & ASSOCIATES

On the spot where the atom bomb exploded, Japanese architects are constructing a Memorial Peace Center. The first structure to be completed in this reinforced concrete museum on stilts; other structures include bridges by the sculptor Noguchi and a huge parabolic arch. The picture above, showing the museum rise out of a forest of tombstones, is a tragic symbol of this effort.

To US architects the antecedents for this development are not difficult to trace: The building on stilts is clearly inspired by Western work—from Le Corbusier to Raymond & Rado's *Reader's Digest* Building (March '52 issue). The louvered walls are just as clearly an adaptation of the work of Le Corbusier and Niemeyer in Brasil. The parabolic arch—most recently used in Saarinen's Jefferson Memorial scheme for St. Louis—came to the West from Persia. More than any other postwar work shown here, this development proves how strongly international architecture has appealed to young Japanese architects and how well they use it.



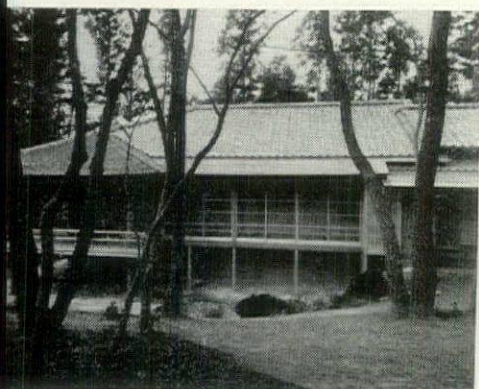
2. Winning Design, City Hall Competition, Shimonoseki

Architects: MAKOTO TANAKA & ASSOCIATES

The competition for a new City Hall for Shimonoseki (pop.: 180,000) attracted the largest number of entries of any postwar Japanese design contest. Editor Hamaguchi says that although the Korean War has forced postponement of the building program, the competition result has had a profound influence upon postwar Japanese development.

The building contains the city administrative offices and an assembly hall. According to the architect—who worked

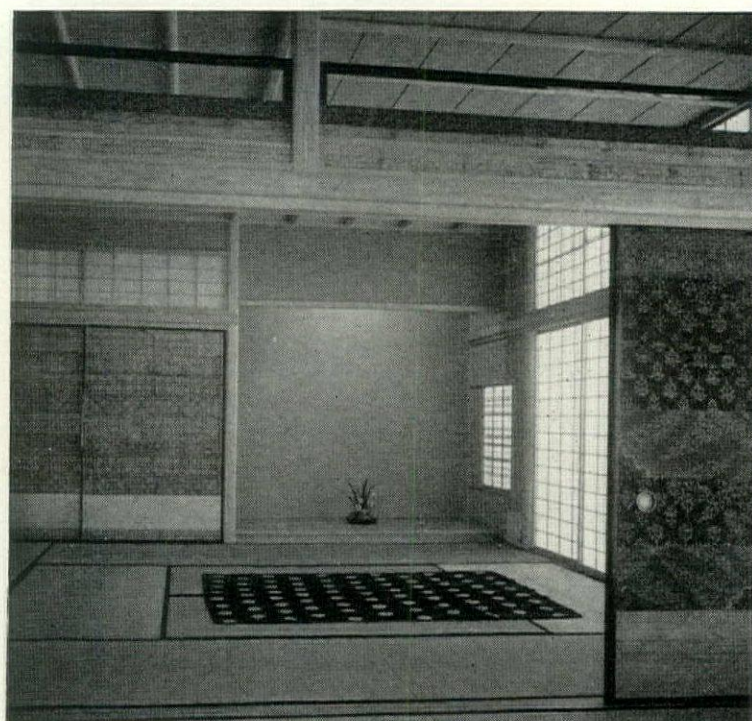
in Antonin Raymond's Tokyo office in the early '30s—the aim of the design is to create "a democratic city hall atmosphere in which officials and citizens can meet on friendly terms." The notion of placing a building on stilts leaves the Japanese landscape architect free to form his gardens without meeting visual and physical obstacles—a concept as familiar to Le Corbusier as it was to the builders of Katsura Palace, more than 350 yrs. ago.



3. Reception Rooms, Hotel Hasshokan, Nagoya

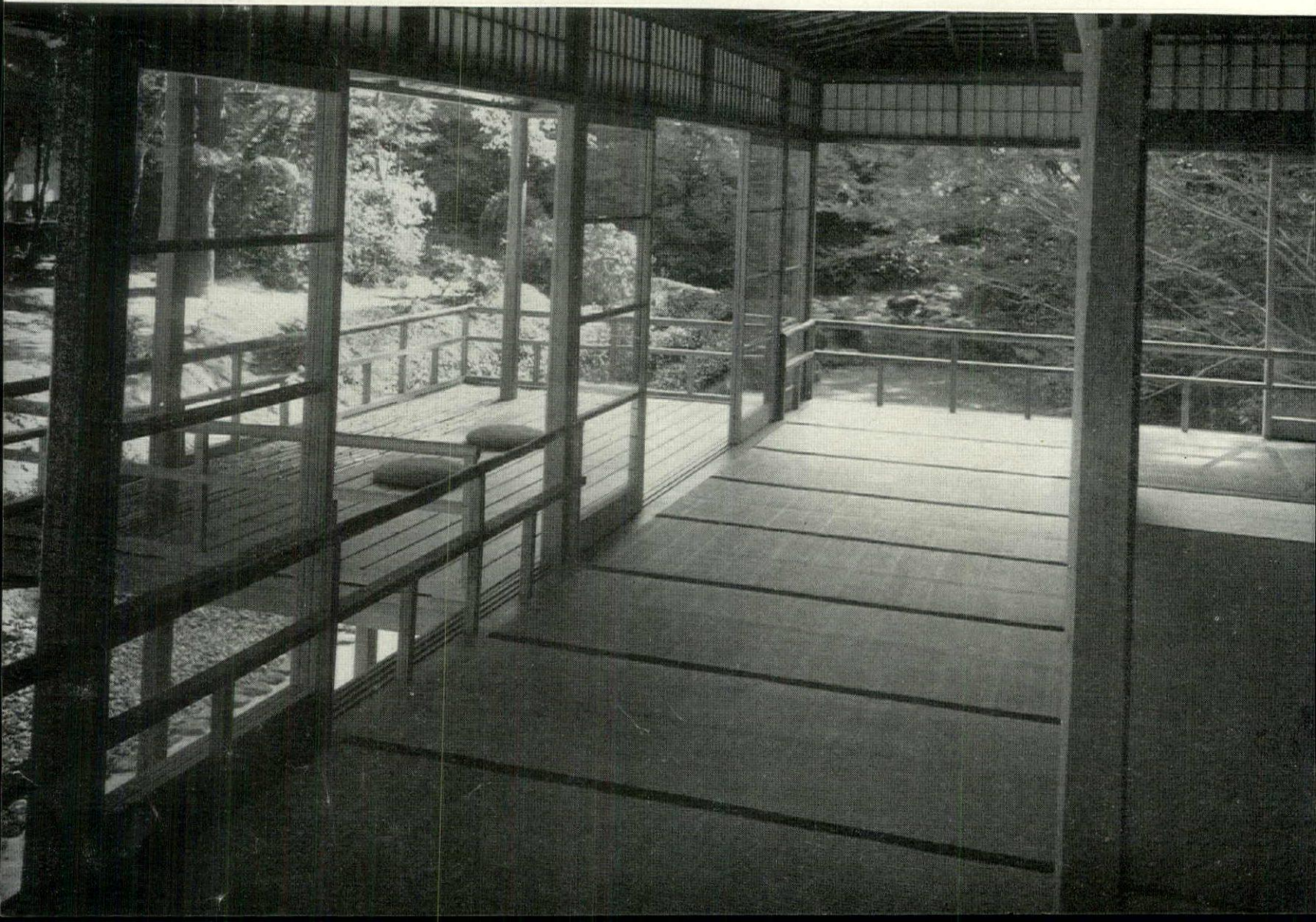
Architect: SUTEMI HORRIGUCHI

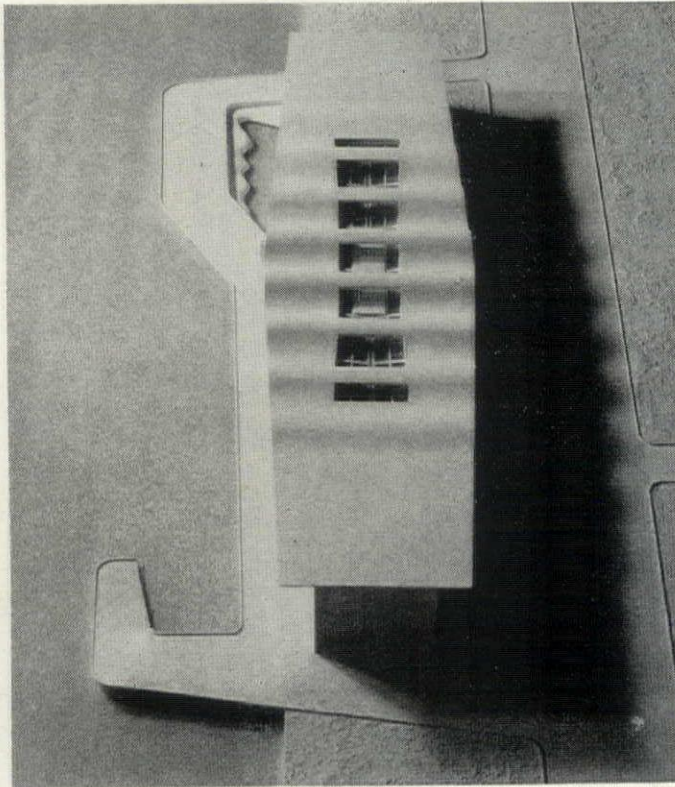
While most Western architects are sure to marvel at these remarkable designs (made for the occasion of the Emperor's visit in 1950), many young Japanese feel that Architect Horriguchi is an arch-conservative. It is true that Horriguchi began as one of the first Japanese proponents of Western modernism; it is also true that he later returned to the study of Sukiya-Zukuri, the most refined traditional style in Japanese architecture; but however much the younger generation of Japanese architects may criticize Horriguchi as a "backslider," they—and architects everywhere—can still learn



a good many important things about proportion, scale, module and wood construction from this skilled designer.

The room and porches shown here are strongly reminiscent of the style of Katsura Palace, use the traditional *Tatami* floor mats, the *Shoji* screens, the *Fusuma* sliding doors. Fluorescent ceiling fixtures are covered with white rice paper to diffuse the light. The rest of the ceiling is of wood paneling ("no plywood, of course!" says Editor Hamaguchi. . .). The structure is exposed, and posts on stone footings support the main floor in the traditional manner.

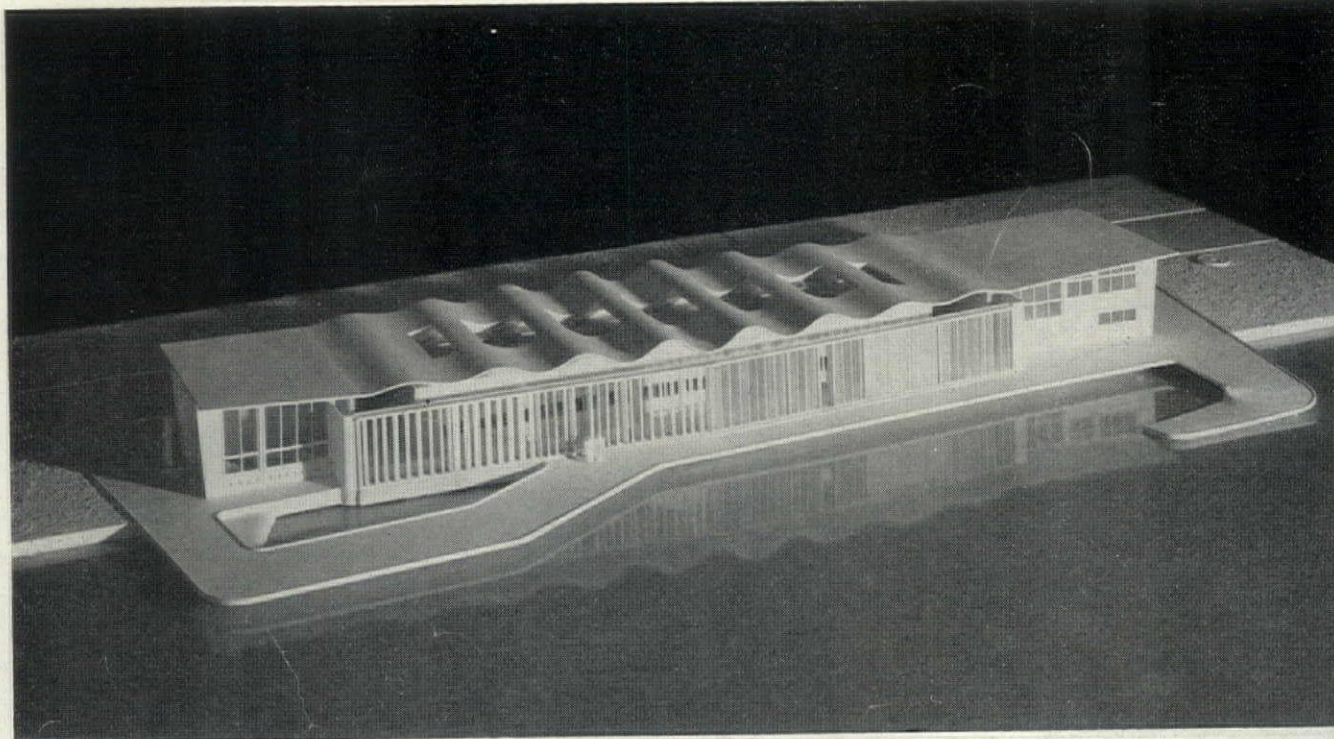




4. Aquarium Project, Ueno Park Zoo, Tokyo

Architects: KENZO TANGE & ASSOCIATES

Architects of the Hiroshima Memorial Museum (pp. 142-143) are responsible for this (as yet unbuilt) design as well. Again there is evidence of a strong influence emanating from the work of Le Corbusier and others; but here a sensitive and imaginative notion has been added. Say the architects: "The theme of this project is a house of water . . . the ripples of the Shinobazu Pond, a place beloved by the citizens of Tokyo, are echoed in the ripples of the concrete roof, which in turn is reflected in the ripples of the pond . . . a sonnet between architecture and water in the midst of a noisy metropolis."



I. M. PEI: "The Katsura Palace in Kyoto should be considered as seriously as the Acropolis, but I don't believe it was even mentioned in Bannister Fletcher."

PAUL SCHWEIKHER: "It might have been better for my work to date had it been more directly affected by Japanese architecture. The early domestic and monastic (Shinto only) dwellings show a simplicity and discipline that we here have not learned as architects or wanted as dwellers. No people have done better in relating the building to the land—and both building and land to the scale of human use. . . ."

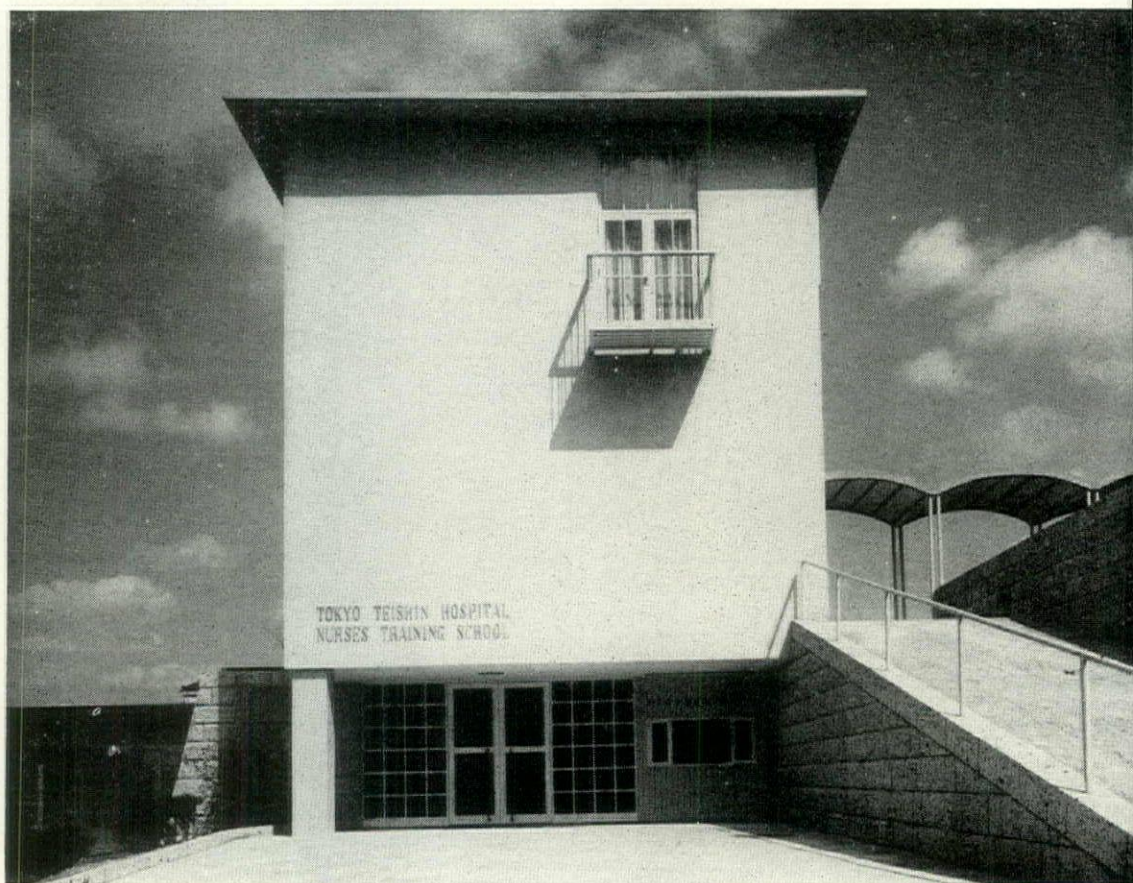
ALDEN B. DOW: "I greatly admire the sensitivity the Japanese have for the relationships of form and space. It is most completely demonstrated in their gardens."

L. L. RADO: "Where we, being at the beginning of an era, are necessarily groping for knowledge and its expression, Japanese architecture is at a point of maturity molded by an effort of generations searching for the truth."

"This applies to traditional architecture—as exemplified, for instance, by the Katsura buildings, and to new buildings that continue the tradition, constantly re-creating it to fit life."

"Unfortunately there is a strong tendency in Japan, manifested by recent buildings, to disrupt this tradition and swing over in an imitative process to our Western ways. I can see the reasons for this tendency, but it would be most unfortunate should the Japanese architects discard their tradition which is a treasure we can only wish for and will have to strive for for a long time to come."

RICHARD NEUTRA: "The standardized, lightweight, most simply furnished Japanese home, so neatly related to a well-balanced way of living, has been a deep moral inspiration to me for several decades, as well as the thorough, consistent technical propriety of its essentials and details. I feel warmly grateful to a people who have made this grand offering to the world."



6. Nurses' Training School, Teishin Hospital, Tokyo

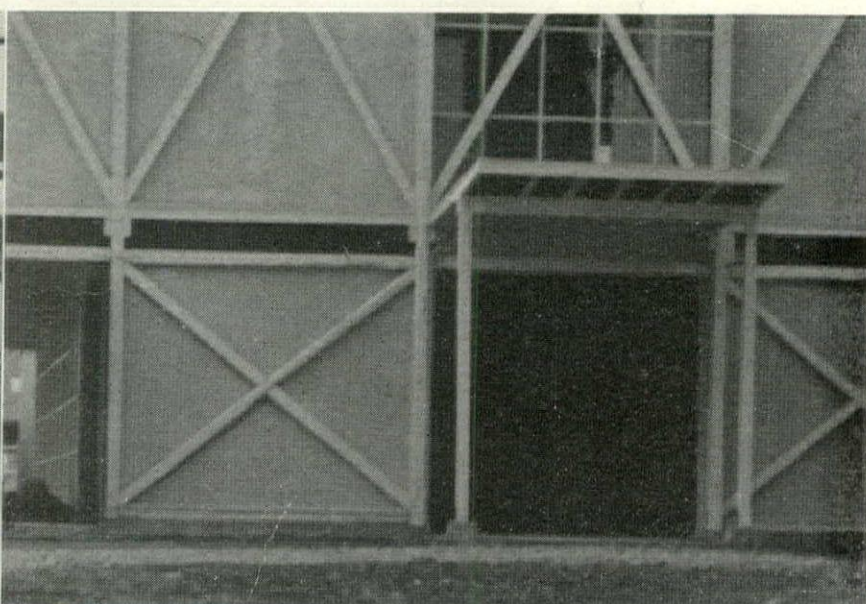
Architects: HIDEO KOSAKA & GOVERNMENT ARCHITECTS

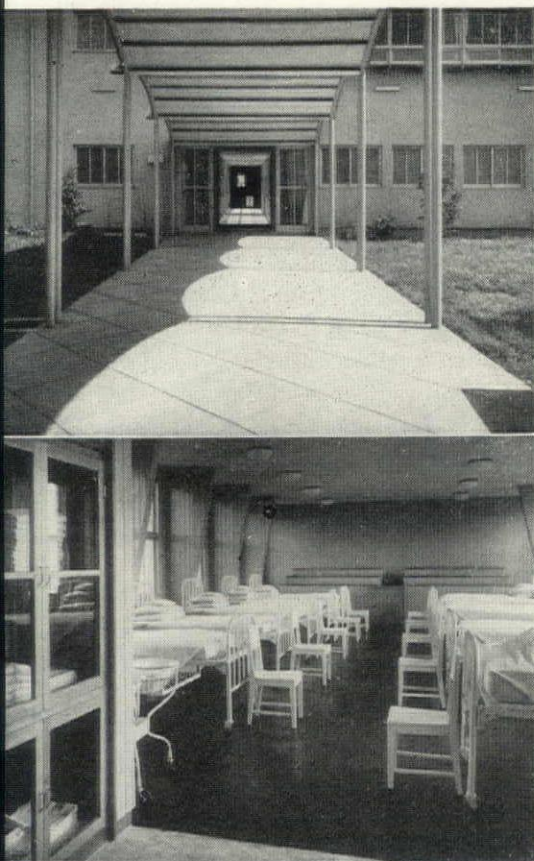
5. Exhibition Building, Kobe Fair

Architects: KENZO TANGE & ASSOCIATES

This temporary structure is possibly the most interesting modern building in postwar Japan. Its plan is a square with a central court; its structure is wood. But the traditional Japanese material is used in a nontraditional manner: the connections are no longer complex, interlocking joints—they are made of steel plates and bolts—and the bracing of the frame is diagonal, a method disliked by traditional Japanese craftsmen. In its combination of a traditional material, of a traditional sense of delicate understatement, of a modern method of assembly and of a modern industrial panel system, this building seems to point a new way for Japanese architecture.

On the face of it, this looks like a good example of modern Swiss architecture. Actually, this inexpensive structure (which won a *Grand Prix* in 1950) has many features that are typically Japanese—e.g. its structure is wood (sprayed with stucco for code reasons); its detailing is especially fine; its thin roof is covered with aluminum sheets; and the vaulted passages between school wings are pipe-supported steel arches covered with sheet iron. It is a curious mixture of traditional or makeshift techniques and an esthetic expression based upon a developed industrial society.



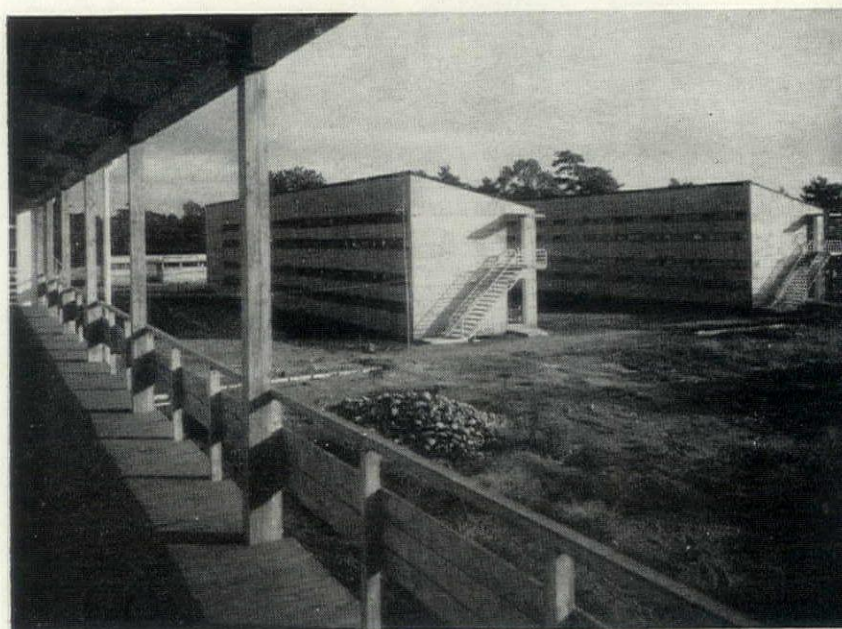


HENRY HILL: "Many times the 'influence' of the Japanese architecture on the West Coast is mentioned—I cannot accept this. If there is a similarity of result, it is only because of a possible similarity of conditions. . . . The ways of life are very different, and I believe the basic thinking and consequent results . . . must again be very different."

ERIC MENDELSON: "Japan's ancient art is an important part of art history. Japan's domestic architecture is much more than two by fours, modular design, or prefabrication, i.e. the easy methods of industrialized architecture; it is the perfect expression of climatic and social conditions, of national heritage and cultural refinement alien to our mode of life. As such it has never affected my own ideas."

CAMPBELL & WONG: "Western (or American) wooden residential structure has gained appreciably from traditional Japanese architecture and its emphasis on indoor-outdoor living, cleanly modular design, exposed structure, emphasis on natural materials, a new sense of related house to garden, and the reduction of interior elements to a minimum. These things, at least, the contemporary house of today has in common with the Japanese. This has not been a direct importation, but rather an evolvement of a pattern that was introduced many years ago by Frank Lloyd Wright and others who felt its influence early."

WALLACE K. HARRISON: "Japanese Art, Architecture and Gardens have had a profound influence on our Architecture—chiefly through leaders like Wright and Wurster. To the Japanese we owe the open plan and the combination of the living room with the gardens. Their understanding of materials we will do well to emulate in the future."



7. Dormitories, Tel. & Tel. Training School, Tokyo

Architects: SHOSAI UCHIDA & GOVERNMENT ARCHITECTS

About these dormitories Editor Hamaguchi says: "All building materials used here are inexpensive. The lightness of open wood balconies and the massiveness of the unfinished concrete end walls (used as earthquake bracing) give a strong contrast to the whole design. Projected stairs add variety to facades. Although the influence of Le Corbusier (his summer house in Mathè) may be seen in the

open balcony structure, the framing is bold and the detail functional and clean. Monotony was avoided by the use of bright color accents. These buildings may lack the refinement of traditional Japanese architecture, but that refinement used to be produced by cheap manual labor. Here is a truer expression of social and economic conditions in Japan today."

8. Museum of Modern Art, Kamakura Architect: JUNZO SAKAKURA

The most widely publicized postwar building in Japan is this Museum of Modern Art whose architect also designed the magnificent Japanese Pavilion at the Paris World's Fair of 1936. His new museum obviously owes much to Mies van der Rohe's Barcelona Pavilion of 1928 (just as Mies owes much to the Katsura Palace). But this museum is more than another "Miesian" design: it is symbolic, in a sense, of the entire dilemma of Japanese architecture today. The esthetic here is steel-and-asbestos-and-aluminum—a reasonable expression in Chicago, Ill., or in Paris, France. But in today's handicapped Japan? The building itself answers the question, for the industrial finishes are poor—through no fault of the architect's, but only because Japan's industry is not yet up to the standards of the Western prototypes. As if the architect sensed this dilemma, he introduced a nostalgic and beautiful detail from traditional Japanese building: the post on a stone footing.

CHRISTOPHER TUNNARD: "Their feeling for inanimate Nature has made the Japanese supreme in such matters as the placing of stones, the management of contour lines and the use of water. All the important gardens are products of a highly stylized art in which experiment is encouraged and conventional repetition avoided."

"The Japanese grasp of rhythm and accent in plant arrangements far excels our own, as does the marshaling of detail into significant and relevant patterns. It is the esthetic conception which is the foundation of this virtuosity that must be allowed to seep into our artistic consciousness." (From *Gardens in the Modern Landscape*)

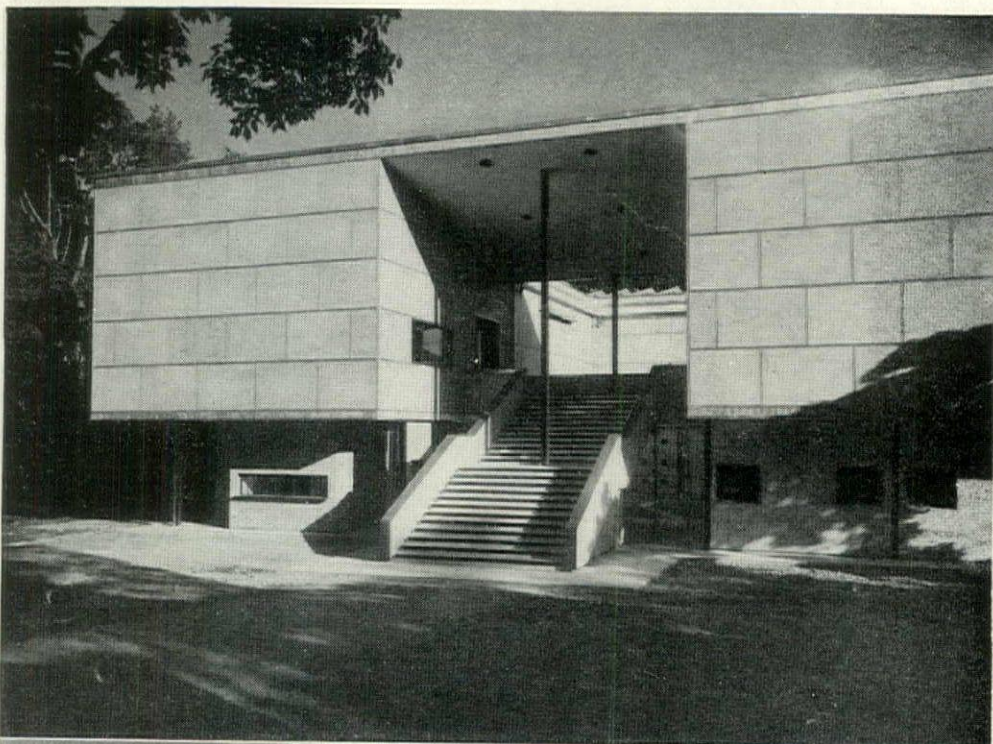
MARCEL BREUER: "Traditional Japanese architecture was not widely known in Europe at the beginning of the Twenties. . . . I don't know whether there was any direct influence from Japanese architecture on modern architecture while the basic development took place. Later on, of course, I was very much impressed by traditional Japanese architecture, and I found in it at many points a confirmation of my own aims."

GARDNER A. DAILEY: "Japanese wooden architecture . . . will have a strong influence . . . upon all modern architectural design."

"To me it is inspirational in its simplicity, its usefulness of purpose, its recognition of forms in nature and finally in its conformity to a mode of simple yet elegant living."

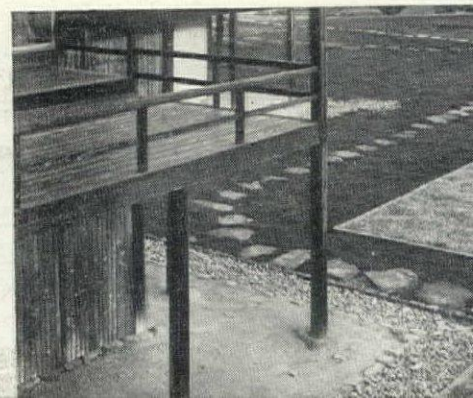
WALTER GROPIUS: "From my early beginnings as an architect, I was greatly intrigued and attracted by the Japanese house. Its lightness, its flexibility and pleasing lines impressed me deeply. The restrained order of its standardized building parts appealed to me as the hallmark of a deeply rooted culture adaptable to any new development. The elements for today's industrial prefabrication seem to be inherent in this ancient modular conception which simultaneously left freedom for a great variety of compositions, avoiding monotony."

"I consider it a challenging task for the new generation of Japanese architects to find the fitting links between that flexible, traditional concept of the old craft periods and the new development on an industrial basis."



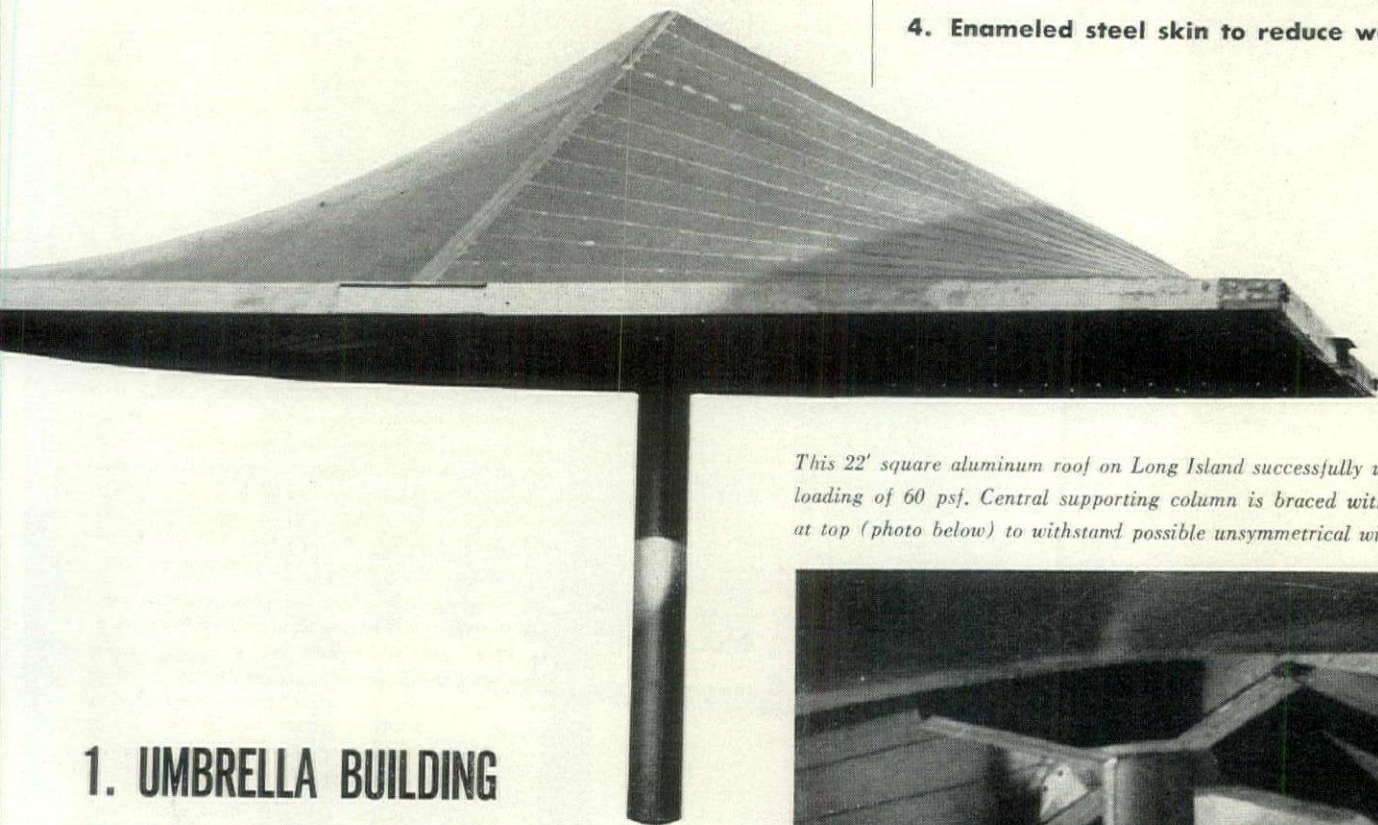


Western industry's steel stanchions on the stone footings of a Katsura Palace! Is this the right way for a country with a great handicraft tradition? Japan's young architects say that they will soon have the technology they need to realize the dreams of today's Western leaders. But is there not something in the tradition of Japan herself which can make a new and original contribution? If there is, then the young Japanese architects may again have a lesson to teach the West, just as their fathers had before them.

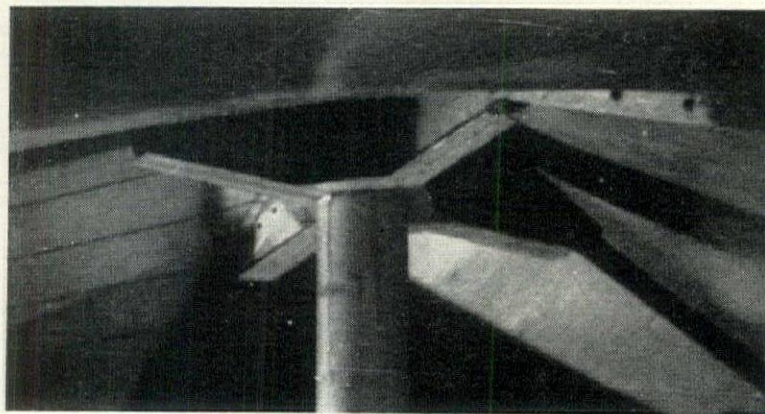


BUILDING ENGINEERING

1. Curved roofs to eliminate bending moments
2. Luminous ceiling at \$3.10 per sq. ft.
3. Operatorless elevators for hotels and office buildings
4. Enameled steel skin to reduce weight and upkeep



This 22' square aluminum roof on Long Island successfully withstood a uniform loading of 60 psf. Central supporting column is braced with rigid connections at top (photo below) to withstand possible unsymmetrical wind and snow loads.



1. UMBRELLA BUILDING

In aluminum these warped roofs span 40' x 40' with only 1 lb. per sq. ft. of sheet metal, in concrete 160' x 150' with shells only 1" thick

This intriguing roof structure eliminates bending moments by shaping surfaces to follow precisely the lines of force developed in uniform loading. In any section through the roof the surface clings to the directions of principal stresses as closely as the cables in a suspension bridge—but here we have a tentlike structure supported on a single column. The surface acts almost like a series of suspension cables radiating about this central column, only in this case the “cables” form part of the roof surface and receive tremendous lateral support.

Nearly all structural members used in conventional building contain high bending moments, which enormously increase the weight of materials needed to cover any given area. Their elimination in these structures permits 150' x 150' areas to be spanned with extremely little material per sq. ft.—1.3 lbs. using aluminum sheet, 3 lbs. using steel and 12 lbs. using 1" thick shell concrete containing 1 lb. of reinforcing steel.

These roofs were first engineered in 1934 by Milan University Professor Giorgio Baroni, who has since used them in various

sizes for many factories and warehouses in Europe and South America. Now he is in the US planning to mass-produce aluminum roofs that he confidently expects will cost under \$1 per sq. ft. erected, including column supports. (Current warehouse construction costs range from \$2 to \$3 per sq. ft.)

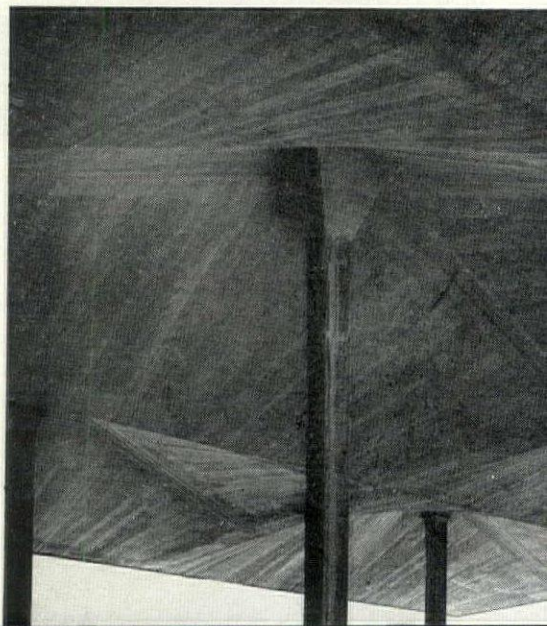
While the 22' span aluminum test roof shown above was riveted, for greater economy the factory-made roofs will be made a quadrant at a time by twisting and stretching flat sheets of 15 ga. aluminum in a single operation by a special machine. Since all quadrants are identical they can nest together, each 22' square roof in an 11' x 11' package 3" thick and weighing 650 lbs. Walls will also be prefabricated, and so designed that they can either hang from the edges of the roof or be freestanding, depending upon what foundations are available.

Baroni became interested in these warped surfaces while searching for a cheaper way to build efficient doubly curved shell concrete roofs to cover square areas. The method he wanted had to be

simple and foolproof enough to be erected by inexperienced labor and, if possible, without formwork.

All this he achieved in his first doubly curved roof in 1934, a 15' x 20' concrete shell reinforced with chicken wire. Two 15' and 20' horizontal crossbeams, were supported on eight sloping edge beams, which transferred loads to the four corner columns. Tops of these columns were 21½'

Photos: (top) Dupre; (bottom) Vasari-Roma



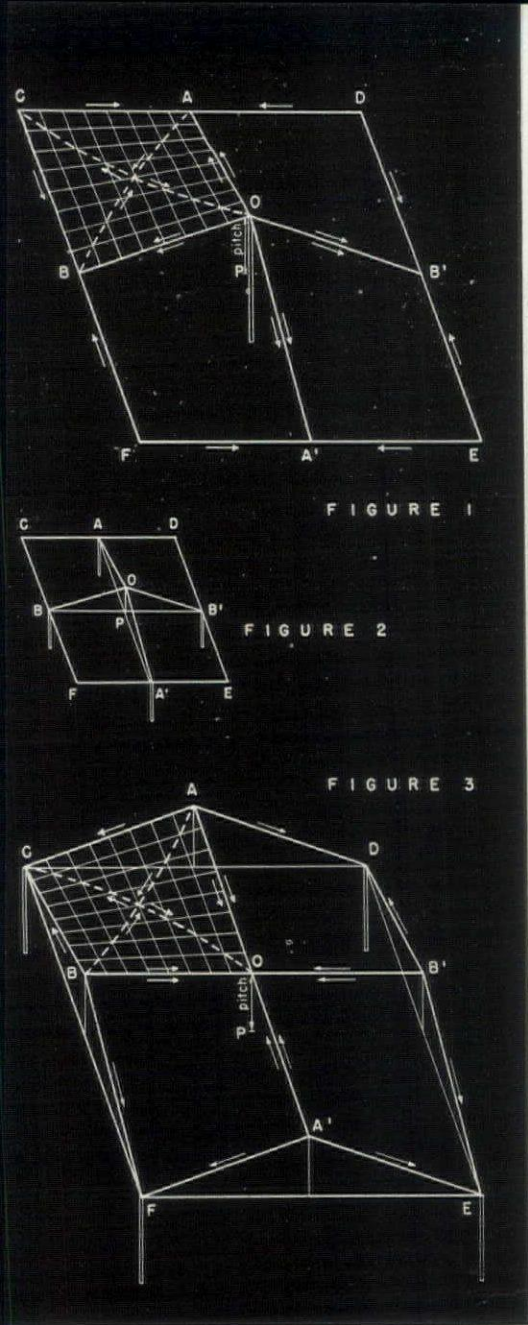


FIGURE 1

FIGURE 2

FIGURE 3

HYPERBOLIC-PARABOLIC SURFACES— an analysis of how they eliminate bending moments

Analysis of Baroni's warped roof surfaces shows them to be a self-contained system of tension and compression forces with no bending moments. All stresses are tangential and resolved within the surface of the structure itself.

FIGURE 1 shows the tent-type roof, supported by a single central column (at O). In plan the roof is square with the center point raised above the perimeter by the pitch of the roof. Thus in a typical quadrant (BCAO) three points (B, C and A) are in the same horizontal plane.

The warped surface is developed by laying straight members along the four sides of the quadrant (BC, CA and AO, OB) dividing these into any convenient number of equal parts (eight in the diagram) and joining each pair of diametrically opposite points. The result is a doubly curved surface, parabolic in one direction (vertical plane OC) and hyperbolic in the other (vertical plane AB).

Under uniform loading and supported at the center point such a surface acts as a stressed skin, with the fibers in the vertical planes parallel to OC in tension and those in the vertical planes parallel to AB in compression. At the edges of the quadrant, where a shear force is developed parallel to the pitch of the roof, the resultant single forces act along the edges. Along CB, for instance, this is a compressive force, zero at C and a maximum at B where it is equalized by an identical and opposite force along the edge FB. Likewise, along the ridges AO and BO, similar shear forces are developed, also parallel to the pitch, which result in tensile forces acting along each ridge, each force being zero at A and B and a maximum at center point O.

Each of the four quadrants has similar reactions so the supporting column is subject to four

equal forces acting along each of the spines (OB, OA, OB' and OA'). These resolve into a single vertical force acting in the line of the central column and equal to the weight of the roof plus the uniform loading upon it. Therefore such a roof can be supported by a single column, provided the foundations and connections of this column are strong enough to withstand possible unsymmetrical wind and snow loadings. For greatest economy in materials the pitch should be about one-fifth of the span; a lower pitch develops undesirable high stresses.

FIGURE 2 shows this same structure supported by four columns placed at the midpoint on each side. Now the stresses are reversed, the ridges are in compression and it is necessary to join each pair of columns with tie bars (AA' and BB'). With such supports the pitch should be about one-eighth of the span between columns.

FIGURE 3 shows an alternate structure for larger uninterrupted spans up to 200' with 1" thick shell concrete and even greater spans using 15-ga. corrugated aluminum. The square roof is supported by columns at each corner with tie bars along each side. Compared with the umbrella-type roof (fig. 1), each quadrant is reversed, with the midpoint of each side (A, A', B and B') now in the plane of the center point (O).

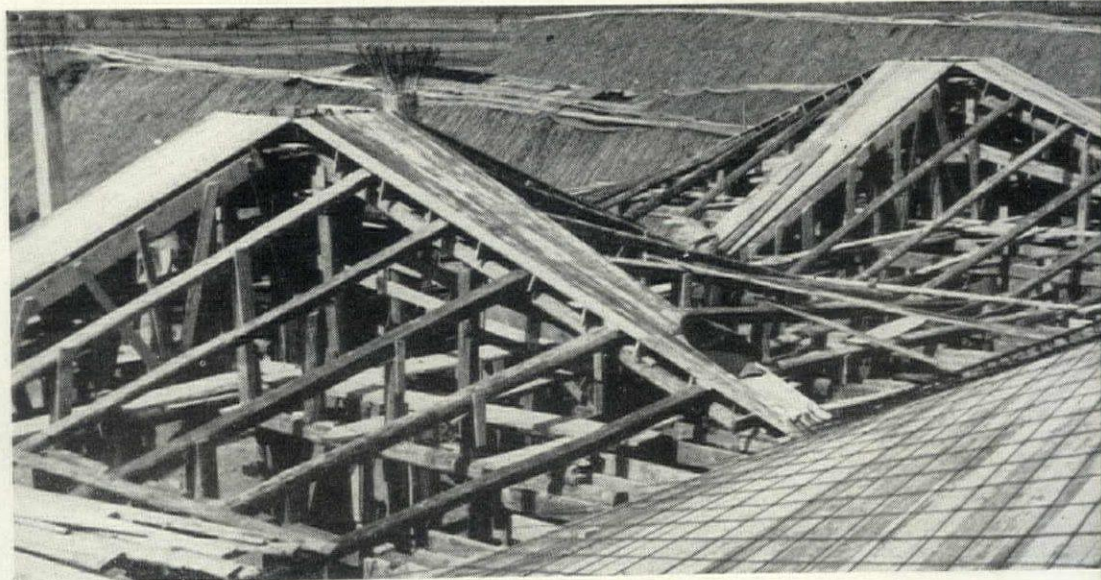
Under uniform loading, stresses are now compressive along the parabolic curve (CO) and tensile along the hyperbolic curve (AB). Shear stresses at the edges remain parallel to the pitch (OP). They result in compressive forces along the ridges (AOA' and BOB'), which are zero at the edges of the roof and maximum at the center where they equalize one another.

Compressive forces are also developed along the edges. In CBF, for instance, these forces are zero at B and maximum at C and F, where they are balanced by an edge tie bar CF. Thus all forces are resolved within the roof; resultant loads on supporting columns are vertical and amount to the weight of the roof plus its uniform loading.

below the plane of the crossbeams; thrust of the sloping edge beams was taken by tie bars between each pair of adjacent columns.

This framed four quadrants, in each of which the doubly curved surface was developed by stretching 0.1" wires about 9" on center between each pair of parallel (in plan) beams. After tensioning with turn buckles, these wires supported a chicken-

continued on p. 152



Formwork for these warped roof surfaces (photo above) is simplicity itself. Straight main beams outline each quadrant; in each diametrically opposed pair one is horizontal and the other sloping. Secondary beams, equally spaced between main beams, are laid straight, giving the required warped surface. In foreground, formwork and reinforcing is positioned ready for pouring. Small models are used to help teach construction method to inexperienced workmen.

The same umbrella roofs can be built of shell concrete. Here are a group of eight 52' square units built in 1947 to form a market shelter at Caserta, Italy, using shell concrete only 1" thick. Inset view shows same roofs from above.

wire mesh fastened to the wires. This mesh defined the required doubly curved surface and served as both reinforcing and a base to which the cement was plastered from beneath until all the wire mesh was completely covered. In effect, the resulting $\frac{1}{2}$ " thick concrete shell became a "stabilized mesh," hardly fireproof, yet strong enough to take a uniform loading of 120 psf.

Since then, nearly all of Baroni's shell concrete roofs have been of larger spans, too great to permit the use of stretched wire formwork. Next month, however, he is off to Israel as UN technical adviser to build 300 low-cost houses. He will use a variety of structural methods and expects to demonstrate the economy of doubly curved roofs built of local "mud cement" plastered on a chicken-wire frame.

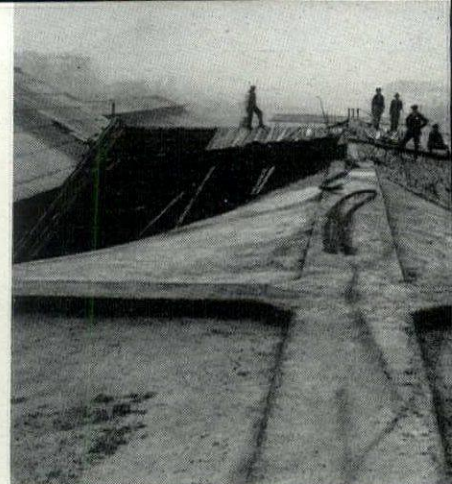
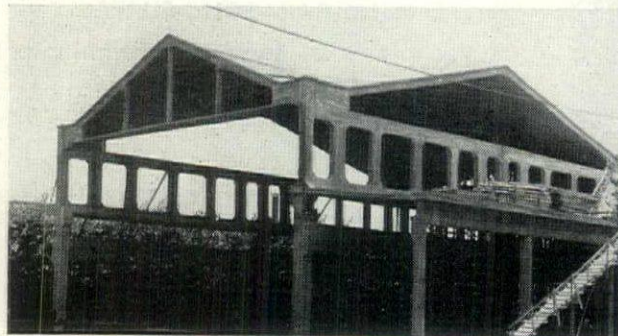
In Italy, Baroni found that his warped surface structures could be built for 65% less than the cost of conventional factory building. This was proved in several notable works:

▶ A factory for Alfa-Romeo at Milan built in 1940 of eleven $150' \times 160'$ roofs supported on corner columns and covered with doubly curved shell concrete only $1\text{-}\frac{3}{16}"$ thick.

▶ Eight $52' \times 52'$ market shelters at Caserta built of 1"-thick shell concrete, each with 45'-high center-column supports.

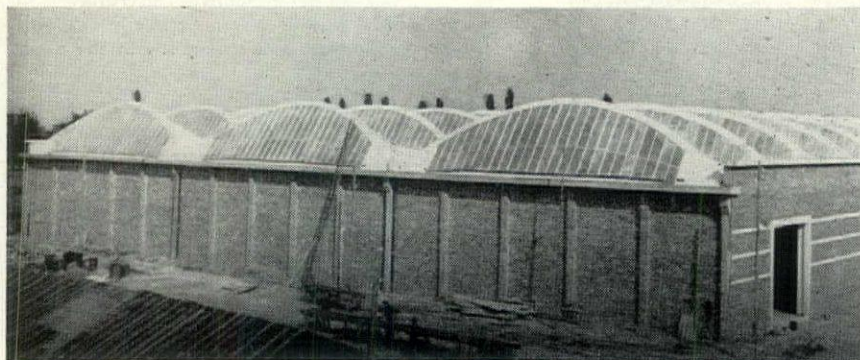
▶ A textile factory at Ferrara spanning $72' \times 40'$ between columns again with $1\text{-}\frac{3}{16}"$ shell concrete. Here Baroni used a conoidal-shaped surface that permitted huge north lights every 20' throughout the 160'-long building.

Baroni's outstanding design has yet to be built—a 500' span aircraft hangar for the Argentine government. Designs were completed in 1949 but construction was postponed due to Argentine's budget difficulties. This $200' \times 500'$ hangar is spanned with five rows of 12 umbrella-type, 1" thick shell concrete roofs each $40' \times 40'$. These are supported by "sky hooks" hanging from five huge welded steel arches, spanning the full 500'. In section these are box shaped, 20" wide and 28" deep, made of 1" steel plate with strengthening ribs. Waterproof expansion joints between each $40' \times 40'$ roof unit allow for differential expansion in the steel arch. The electrically operated doors are 65' high and of free-standing, folding aluminum construction with top lateral support at edges of the roof to resist wind pressures. When this hangar goes ahead it will be the lightest wide-span construction ever built; with a minimum of material per sq. ft.—9 lbs. of structural steel, 2 lbs. of reinforcing steel, and 18 lbs. of concrete, including both roof units and foundations.

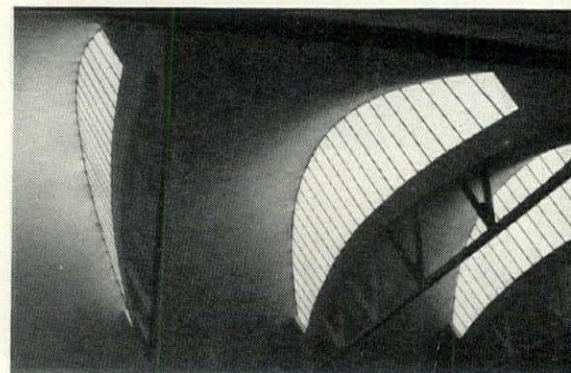


Photos: (above) Alfa Roma

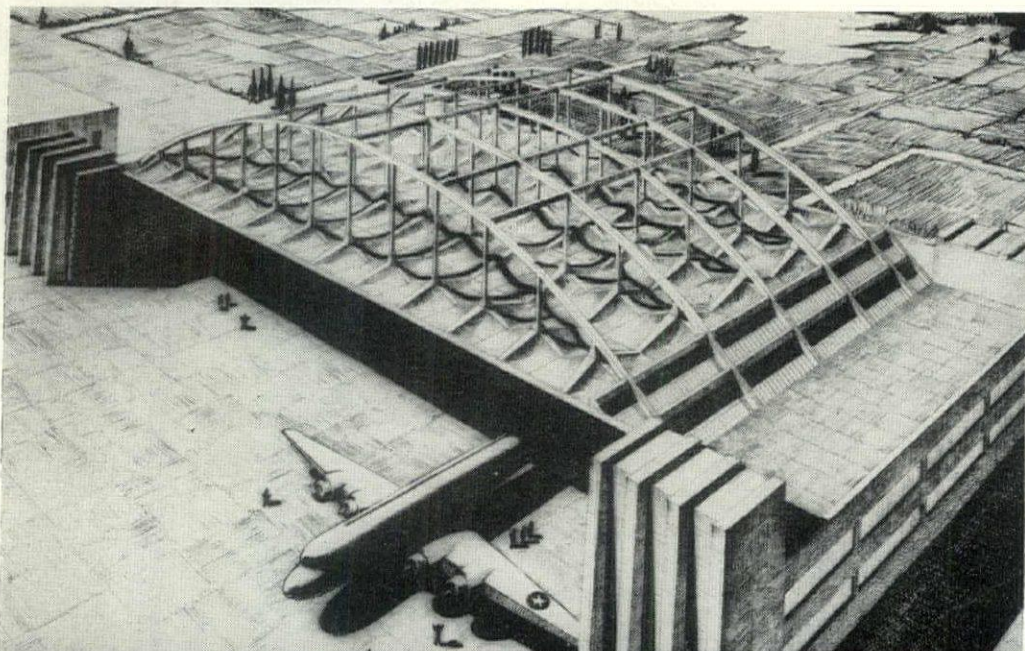
Seven shell concrete roofs cover the Alfa-Romeo factory in Milan. Each roof spans $150' \times 160'$ with concrete only $1\text{-}\frac{3}{16}"$ thick, and is supported on four corner columns with tie bars along sides. Columns are extra heavy to carry traveling cranes. Right, formwork being positioned for construction of these roofs in 1940.



Engineer Baroni varied his doubly curved surfaces in this textile factory at Ferrara, built in 1939. To provide high standard of north lighting, one side of each of the span shells is straight (glass) and the other is curved (concrete). The concrete shell is only $1\text{-}\frac{3}{16}"$ thick but has both strength and lateral stability. Right, each two shells form a unified structure, supported on four corner columns, with thrust in each shell taken by a slim, concrete-covered tie bar.



This 500' span hangar designed for the Argentine government shows the great possibilities of these warped surfaces. Here the shell concrete umbrella-roofs hang from "sky hooks"—steel ties hung from a welded steel arch.



2. LUMINOUS CEILING + INTENSITY CONTROL

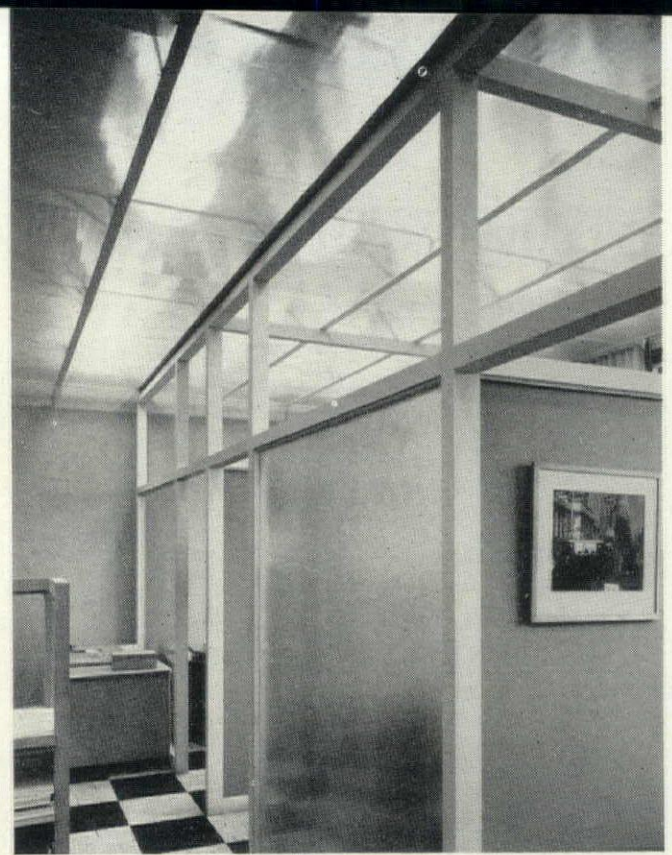
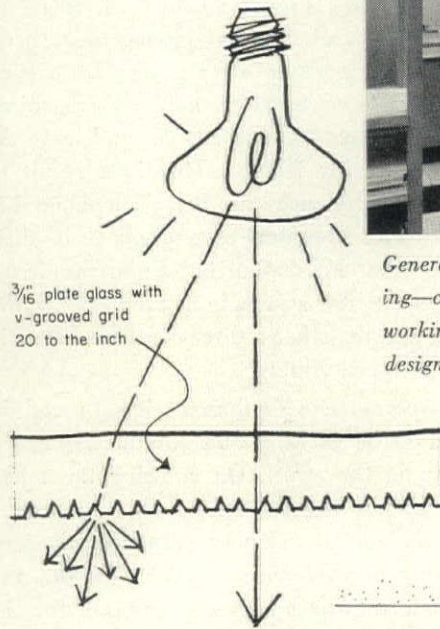
Incandescent spots above cut-glass ceiling provide a flexible luminous ceiling at only \$3.10 per sq. ft.

This Fifth Ave. office contains an entirely new system of ceiling lighting. It uses incandescent spots shining through a glass surface of limited refraction to give high-intensity light on working areas—yet without the glare usually associated with incandescent down-lighting. It cost \$3.10 per sq. ft., about 15% below the average going rate for fluorescent luminaires in a plaster ceiling.

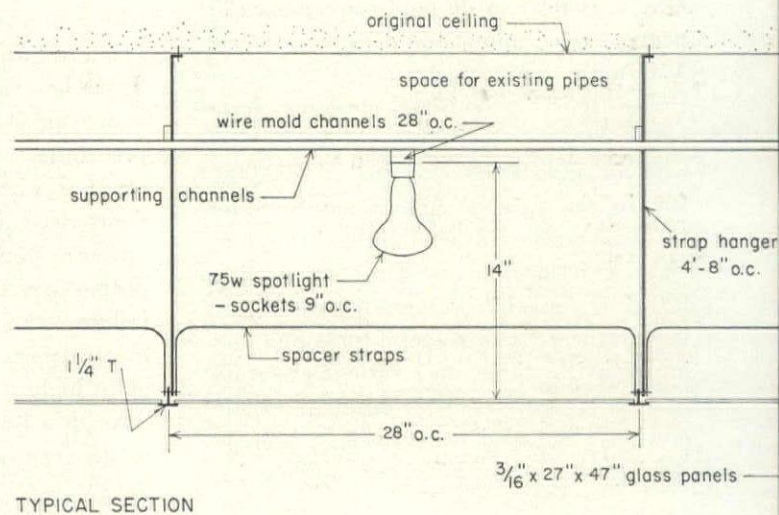
Key to the reduction of glare is the limited diffusion of light sources. Fine diamond-shaped cuts on the underside of 10'-high glass panels break up and diffuse slanting rays of light without interrupting direct down-lighting from the spotlights 14" above the panel. Underside of each 28" x 47" panel is cut with 20 tiny diamond-notches per inch (see sketch). The angle of notching increases the light thrown upon the desk immediately below the lamp but reduces the glare liable to hit a person looking across from the other side of the office. Thus occupants are screened from direct glare except when they look vertically upward. Glass panels are supported in 24' long wall-to-wall channels, which are braced by bent steel strips 4' o.c.

Incandescent lamp sockets are 9" o.c. in wire-mold channels spaced 28" apart. This permits flexibility of focused lighting—above desks many lamps can be used, while between the desks and along the corridors few lamps are used. At present, about 300 lamps are fitted in the 1,000 sockets available in this ceiling. Use of 75 w. spotlamps, with upper surfaces silvered, provides 75 ft.-candles at desk height when all lamps are on; 40 ft.-candles when only every fourth lamp is on. To counteract heat generated by these incandescent lamps, adequate space is provided for air circulation above the glass panels. The ceiling was in operation last summer and the heat of these lamps did not prove uncomfortable although the office is not air conditioned.

In all, 1,720 sq. ft. of this ceiling was installed at a cost of \$5,370 (\$3.10 per sq. ft.). Glass panels cost 35¢ per sq. ft.; bulbs, \$1.05 each. The system was developed by lighting designer and engineer Richard Kelly; architect was Landis Gores.

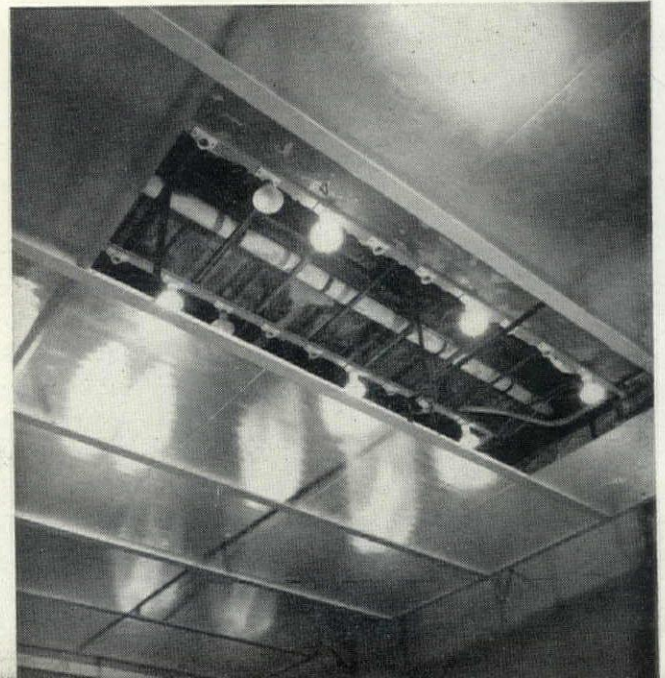


General view of office shows the soft nature of this ceiling lighting—concealed, but sufficiently direct for the highlighting of working areas. Open partitions are carefully related to the ceiling design.



TYPICAL SECTION

Incandescent spotlights above panels allow flexibility in lighting simply by filling as few or as many bulb sockets as required. Note that glare of spotlights becomes apparent only when ceiling is viewed almost vertically because the 27" x 47" glass panels are grooved to direct light vertically downward.



Photos: Ben Schnall

3. OPERATORLESS ELEVATORS

New control devices reduce operating costs and waiting time in hotels and office buildings

One of the greatest operating expenses in large buildings is the cost of elevator attendants. In an office tower, the annual cost is between \$5,500 and \$7,000 for the average 1½ attendants required for each elevator; in hotels, with elevators working nights and week ends, this cost goes up to \$12,000.

For years elevator engineers have been trying to develop equipment that could be safely operated by the public, and yet retain the slick efficiency and flexibility of equipment run by smart, well-trained attendants. They now claim to have achieved their goal with electronic "memory" controls that automatically organize individual cars for optimum service by the bank as a whole, safety doors that close automatically but not if people are still boarding or leaving a car, and weighing devices that dispatch cars ahead of schedule once they are 80% full. These operatorless elevators have already received public acceptance in many notable applications. Among them:

1. In the ten-story Atlantic Building in Dallas four operatorless elevators have been running successfully since April, 1950 with an annual labor saving of \$22,000.
2. In the General Accounting Building in Washington 12 operatorless elevators (largest installation to date) are saving \$200,000 annually in operating cost.
3. In the 13-story General Shoe Building in Nashville three operatorless elevators provide a service 30% faster than the previous attended equipment. Average waiting time was 25-30 secs., is now 19.

4. In the 17-story Clift Hotel in San Francisco operatorless control is being fitted to the original three hoisting machines at a cost of \$220,000, with estimated annual labor savings of \$56,000.

5. In the 10-story Wolvin Building in Duluth, three operatorless elevators are handling 100 people per min. at peak periods with cars carrying 17 people dispatched at 30-sec. intervals. Cost of remodeling was \$120,140, annual operator savings \$11,500.

6. In the 17-story Broad St. office of the New York Bell Telephone, four operatorless elevators are replacing five existing ones. The more efficient automatic machines are expected to handle traffic and leave the fifth car for freight. This is a result of good experience the Bell Telephone has had with operatorless equipment in their two other Manhattan buildings, the first a three-elevator system in a seven-story building and the other a three-elevator system in a 13-story building.

Operatorless equipment has proved itself to be exciting and stimulating to the man in the street. On entering the lobby of a building containing this equipment he is confronted with illuminated signs telling him which car is the next one up. Inside the car he presses a button for the floor he wants; illuminated indicators above the door tell him where he is. At predetermined intervals, usually 25 to 30 secs. or when the car is 80% full, the doors close automatically and the car starts upward, stopping wherever necessary for people to get on or off. In case of power failure there is direct communication between the car and the starter's panel in the main lobby; the starter's voice is relayed through a loudspeaker in the car and passengers can reply through a microphone in the car.

Group control. Key to operatorless elevating is the mechanical brain, an electronic group-supervisory dispatching and control system (AF, Oct. '50). It provides automatic scheduled timing based upon what each elevator is capable of doing and goes a long way to disprove the old elevating axiom, "five elevators can't give five times the service of one." In effect an electronic brain provides a continuing evaluation of the demand on each floor of the building and gives an immediate optimum response to it. The system coordinates car movements to suit the main four programs of elevator traffic:

1. *Up peak*—first thing in the morning for an office building;



Photo: courtesy Otis Elevator Co.

2. *Down peak*—at closing time;

3. *Balanced*—when roughly the same number of people want to go up as want to come down; and

4. *Intermittent*—night and week-end operations in offices. There are usually two additional programs to fit specific types of buildings and service conditions—a total of six programs in all.

These programs are set into the electronic brain eliminating unnecessary travel by a combination of high- and low-call reversals. (Automatic reversal of direction after the car has made its last up or down call, whichever floor it is on.) The particular program required is selected by positioning a switch at the starter control panel. Apart from changing this switch several times a day the starter has nothing to do, thus the functions of the starter and a lobby receptionist can be combined. Except in small private buildings it is a good idea to have somebody in the lobby to initiate people unfamiliar with the operatorless equipment. In hotels, bellhops serve this purpose.

Electronic scheduling equipment with elevator attendants is used in many new buildings, including the UN Secretariat and 100 Park Ave., N. Y. Elevator attendants in these buildings have nothing to do except close the doors of the elevator and press buttons for the floors required.

Safety devices. Operatorless equipment requires special door-protective devices to avoid hurting or even frightening people. Speed of closing is decreased to 2 secs. from the 1 sec. closing of attendant-operated cars. Automatic opening time remains at 1 sec.

Further, controlling devices in the leading edge of the doors cause them to reopen should anybody be in the way. One such



Photo: courtesy of Westinghouse

General Accounting Building in Washington has 12 elevators operating without attendants. Service is more rapid and savings are \$200,000 annually over attended cars.



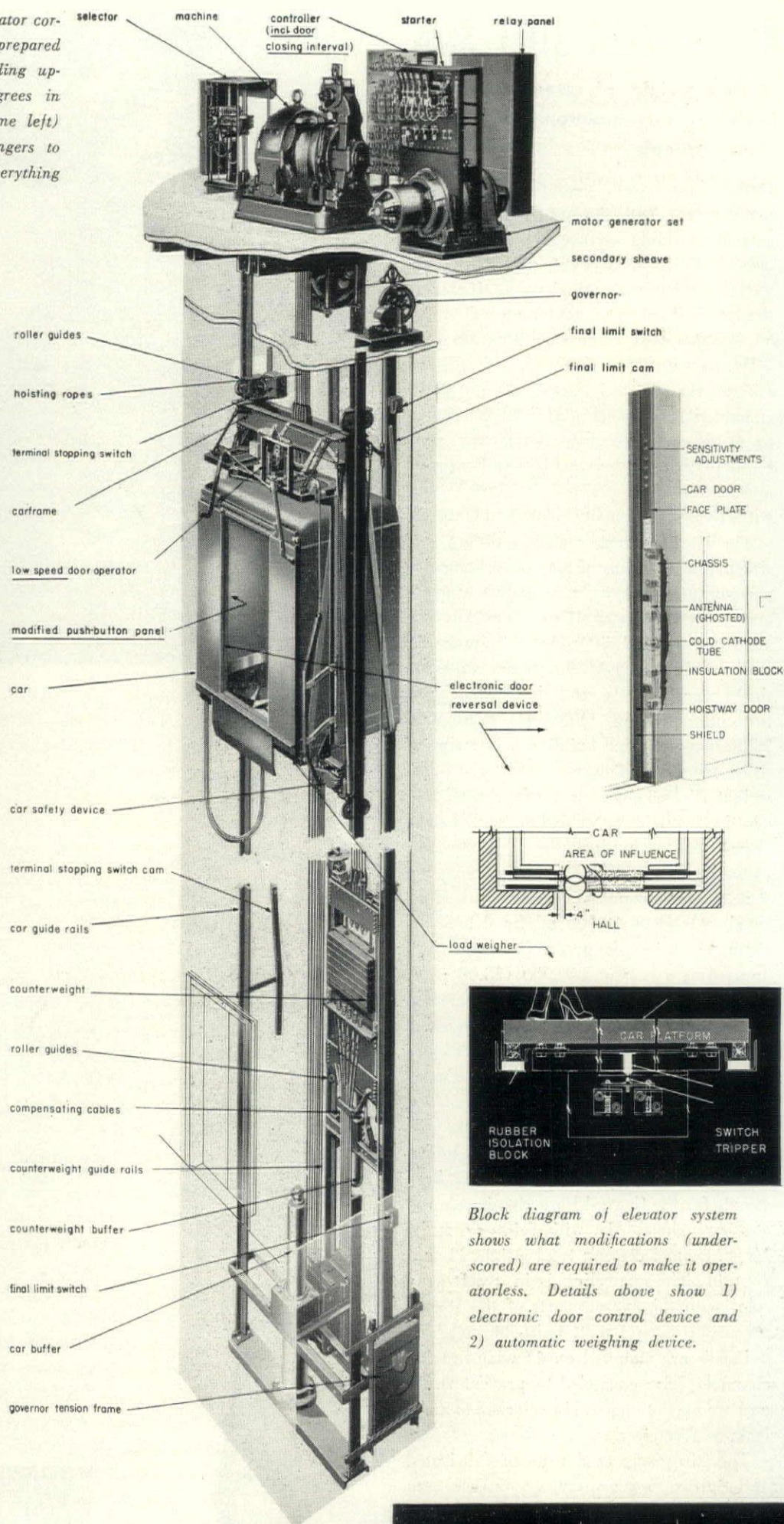
Dial on starter panel in elevator corridor is set for any of six prepared elevating programs, speeding up-traffic, down-traffic or degrees in between. Car panel (extreme left) contains buttons for passengers to press for desired floors. Everything else is automatic.

control device acts like radar; it is basically an electronic valve that generates an electrostatic field having a range of 3 or 4". When this field is grounded the door stops closing and opens again even before touching any person who might be in the way. After waiting a moment the door again starts to close, this time with a slow nudging action. Other devices use a reversing switch set in the rubber leading edge of the door or three light rays in the plane of the door, which can close only when these light rays are unobstructed. In addition, all systems use "Door-Open" buttons in car panels and starter panels to stop doors closing and hold them open when required.

Also essential in operatorless control is a load-weighing device to dispatch cars as soon as they are 80% full, ahead of schedule if necessary. It also operates to bypass any intermediate floor calls when cars are too full to take on more passengers. Whenever calls in the lower part of the building have been waiting a predetermined time, usually 1 min., that part of the building is automatically divided into two zones, and the next up-car to complete its up trip drops directly to the highest call in the lower zone.

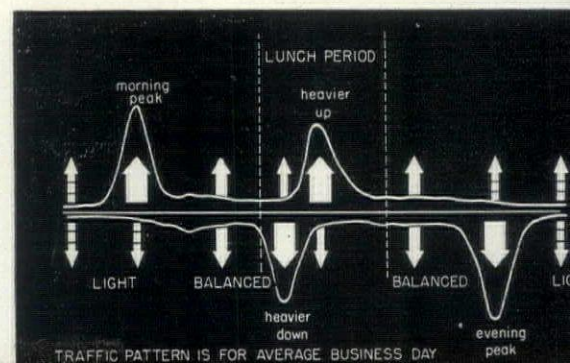
Elevators are self-leveling to an accuracy of $\frac{3}{8}$ "; doors begin to open during leveling. Experience in buildings with operatorless elevator equipment shows that the system proves more efficient than with attendants. People appear to walk more briskly on and off elevators knowing that the doors are open only for a limited time.

Automatic controlled elevators can often save shaft space in a remodeling program. Four such elevators can do the work of five old-style manually operated cars, thus saving shaft space for air-conditioning ducts and equipment.



Block diagram of elevator system shows what modifications (under-scored) are required to make it operatorless. Details above show 1) electronic door control device and 2) automatic weighing device.

Diagram (right) shows the six main types of elevator programming used in the electronic supervisory system.



4. ENAMELED STEEL SKIN

It cuts weight of remodeled office building, cuts maintenance of new church steeple

Here are two unusual examples of the growing use of porcelain enameled steel as an exterior building surface: 1) a remodeled office building in Denver, and 2) a new church steeple in Birmingham. Both exploit the material's notable advantages:

- ▶ it is light—with 18 ga. steel it weighs only 3 lbs. per sq. ft.;
- ▶ it is cheap—initial cost of porcelain enameled 18 ga. steel is \$1.70 to \$3.10 per sq. ft. depending on the application;
- ▶ it is permanent—enamel is both rustproof and acidproof;
- ▶ it is available in many colors and textures.

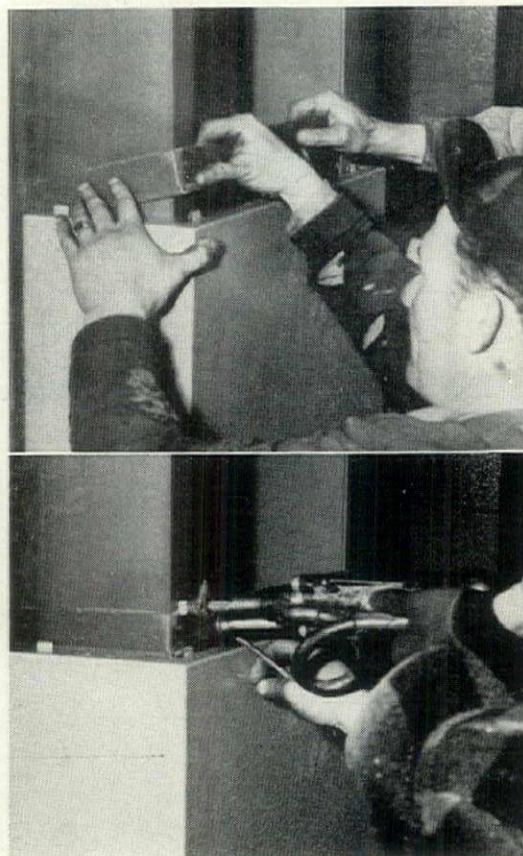
The 12-story Denver office building was stripped of 950 tons of massive ornamental masonry and given a clean, modern appearance with 18 tons of 4' x 4' porcelain enamel panels and 30 tons of supporting steel. This increased the rental value of the property at a cost low enough to be self-amortizing. Built in 1926, this 75,000 sq. ft. office building was stripped to its reinforced concrete frame, and light-weight 7" steel channels, prefabricated into a lattice frame, were welded to existing shelf angles on each floor level. Porcelain-enamel panels are fixed to this lattice frame with welded, stainless steel hanging clips. In all a total of 13,000 sq. ft. of acid resisting, pastel-green porcelain enamel was applied at a cost of \$40,000 (\$3.08 psf). Total cost was \$138,600 including removal of masonry and addition of supporting steel floor panels. Architect was Roland L. Linder & Associates; Engineers, Phillips-Carter & Osborn and Porcelain Enamel Inc.

* * *

Another interesting application of porcelain enamel is its use to enclose a 147' high steeple for the Central Park Baptist Church at Birmingham, Ala. with 7,400 sq. ft. of 16 ga. enameled steel; total weight 11 tons (3 psf). The enameling is in a soft gray color with the curved parts of the steeple green, all given a matt finish to cut glare.

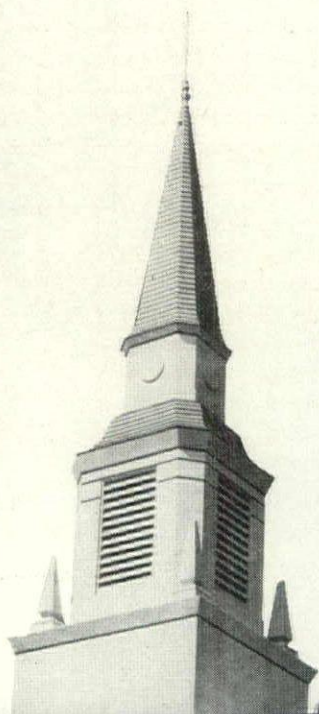
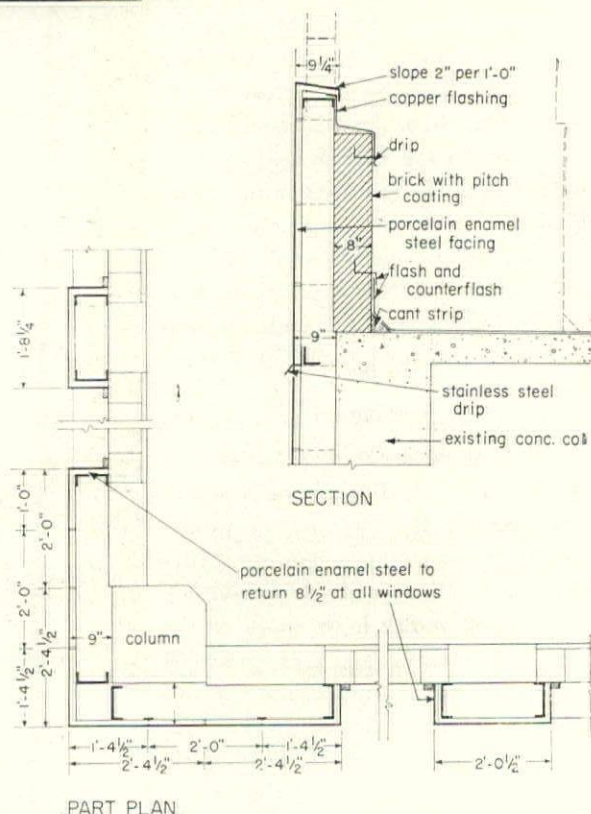
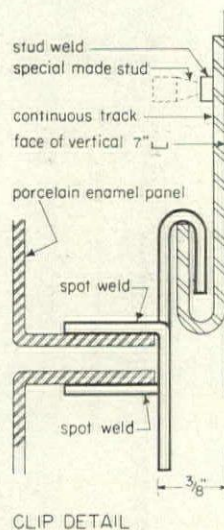
Panels are mounted on 4" wide bracing channels (also enameled to prevent rust), and are overlapped and interlocked to make leakproof connections.

The 910 pieces used were prefabricated and full-size mock-ups made of each connection to avoid time-consuming fitting on the job. Manufacture of the panels took 3 mos; erection, 6 wks. Total cost was \$2.48 per sq. ft.; \$1.70 for fabrication; 78¢ for erection. Architect for the church was Lawrence N. Whitten; porcelain enameled panels were engineered by Bettinger Corp.



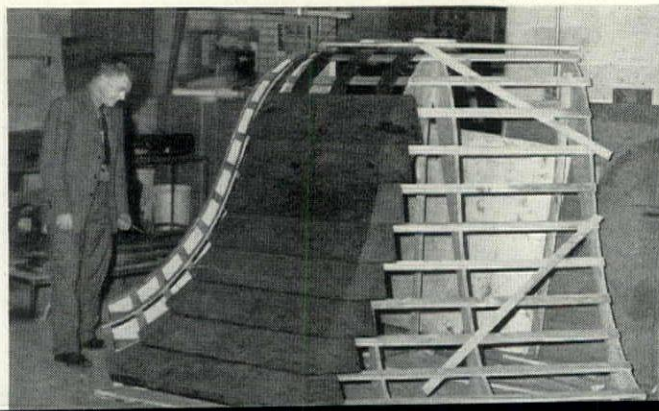
Photos: (top) C. F. Bateman

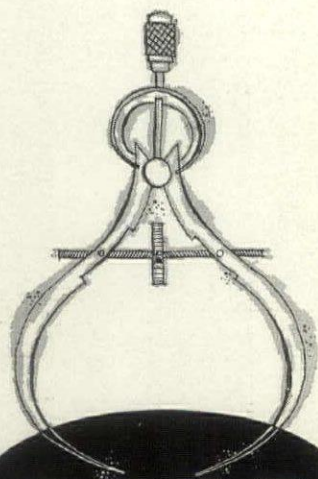
Security building, Denver, refaced with 18 tons of 18 ga. porcelain enamel, supported on 30 tons of light steel framework. Removal of 950 tons of dangerous heavy masonry and replacement with 13,000 sq. ft. of enameled steel took eleven weeks. Close-up photos (left) show one of the panels being attached to a column.



Finished church steeple in Birmingham, Ala. (left) is made of 18 ga. enameled steel supported by a prefabricated steel framework. The 149' high structure is enclosed with 11 tons of gray and green enamel. Below, enamel "shingles" fitted to mock-up frame in shop.

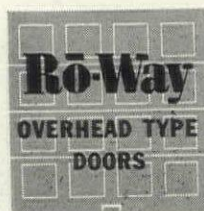
Jeannette Waltham





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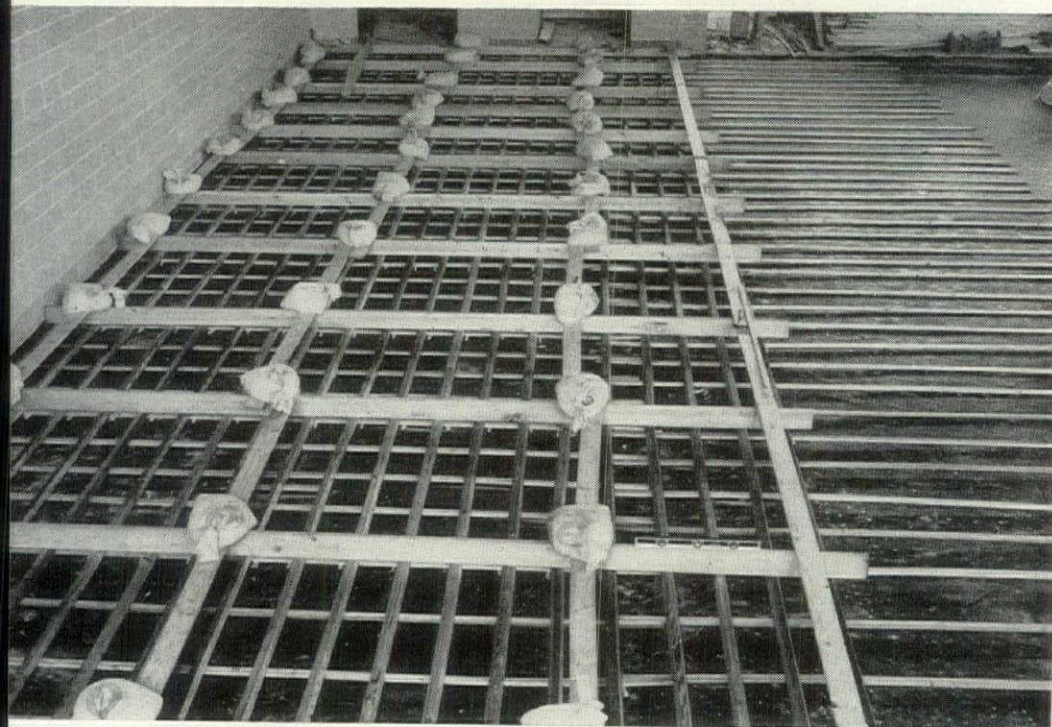
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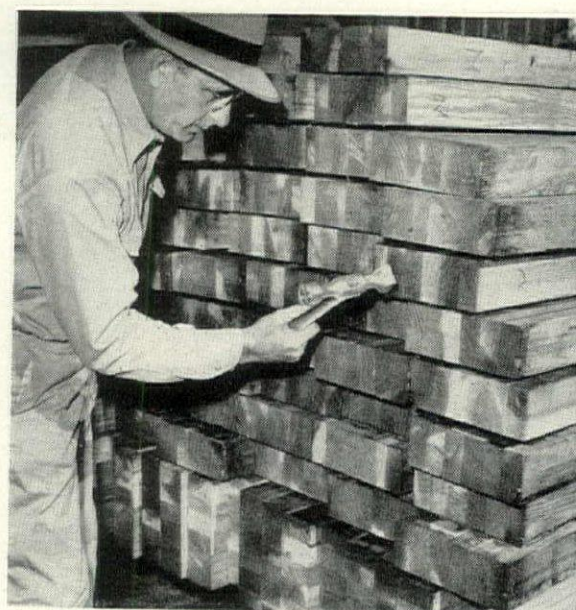
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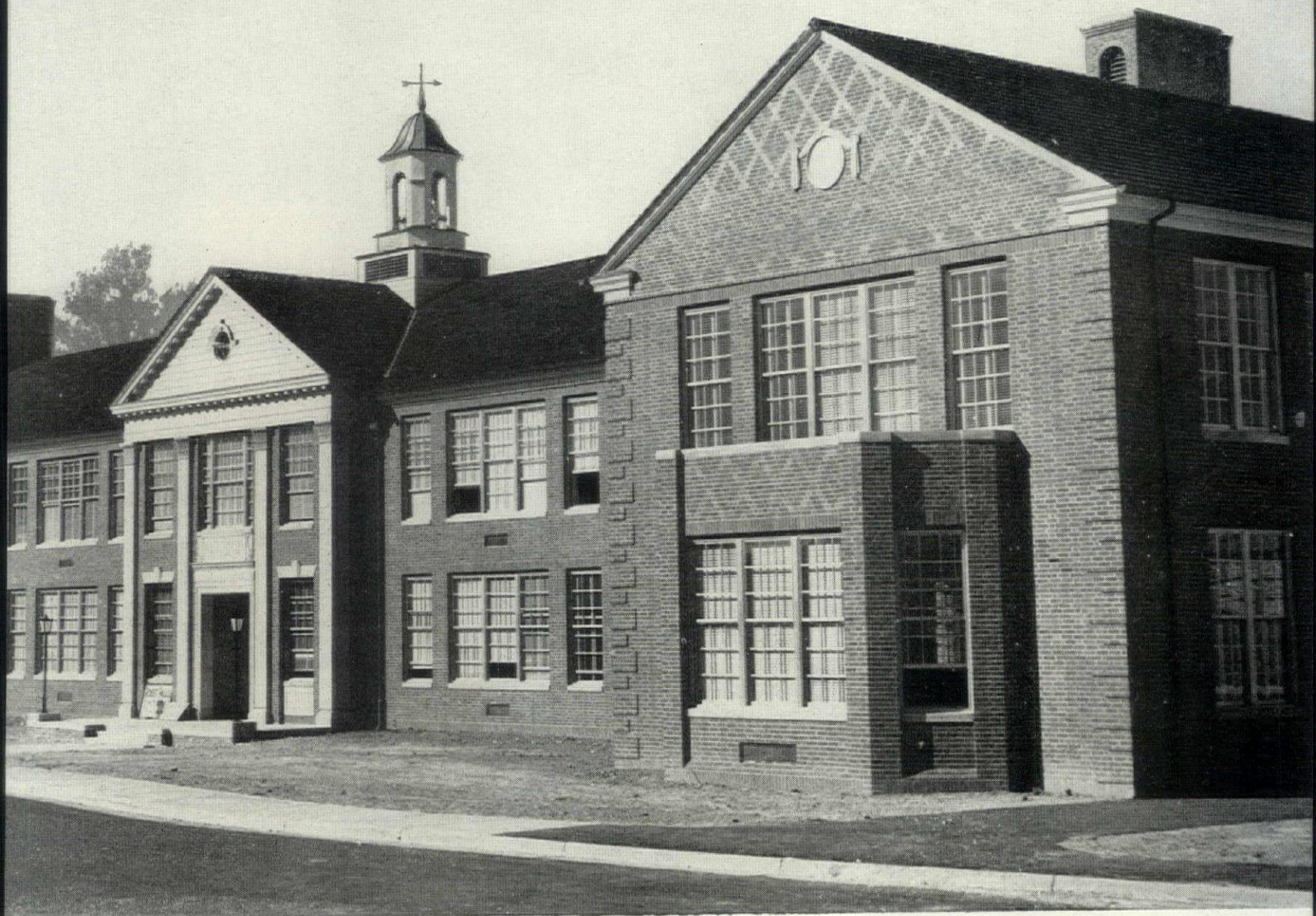
WILLIAM B. ITTNER, INC., ST. LOUIS, Architect
ROBERT PAULUS CONSTRUCTION COMPANY, ST. LOUIS, Contractor
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Noted for school design, the firm of William B. Ittner, Inc., writes penta into the specs for St. Louis area construction as protection against termites—and against rot, a serious local problem due to humidity and temperature extremes. From left: David Stephen, R. G. Alexander, Mr. Ittner, Lester C. Haeckel.



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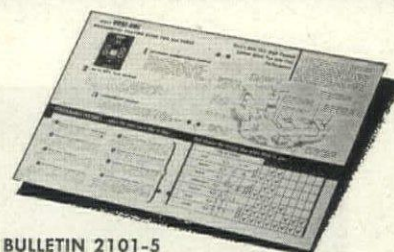
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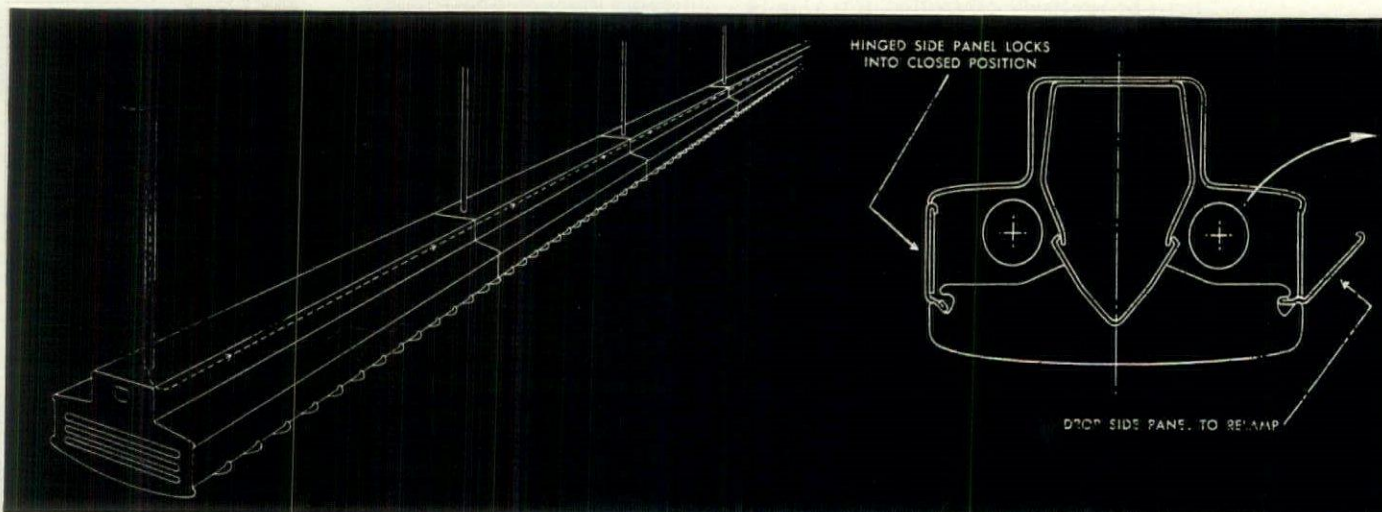
Creative design added spaciousness and beauty to this confined building interior with an unusually high ceiling. Modern, flexible lighting systems and more freedom in architectural design techniques are the basic ingredients.

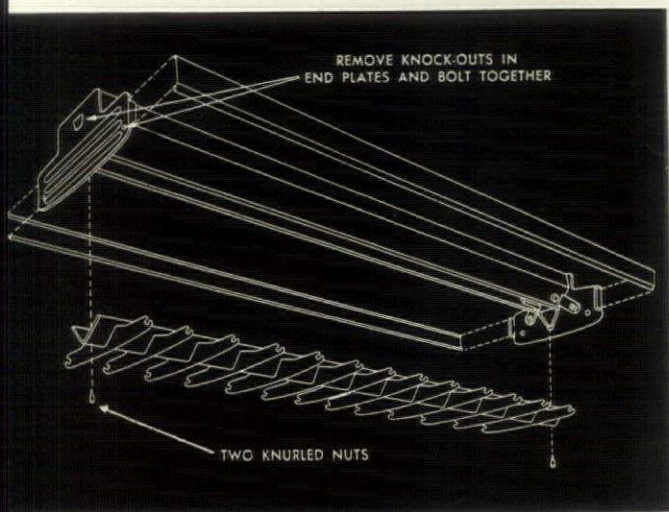
In the Anglo California National Bank's office at Hayward, California, the architect cleverly planned a second working level to minimize the high ceiling. An off-ceiling (or suspended) lighting system became an integral part of this design. Individual working areas are more than adequately lighted (over 40 footcandles) *with good, comfortable lighting.*

Open office spaces and carefully selected decorating colors help provide "spill-over" light for the main area; a device that might be used in many office buildings where the problem is one of high ceilings and limited space.

Westinghouse Type CC, 8-foot slimline fixtures with plastic sides were selected. Low in first cost, they are economical to install and maintain, since a minimum number of fixtures are needed. This is only one of a wide variety of lighting systems designed by Westinghouse for flexibility in planning. Send for B-5254, "Lighting Sets the Stage" and see an analysis of our complete commercial line. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

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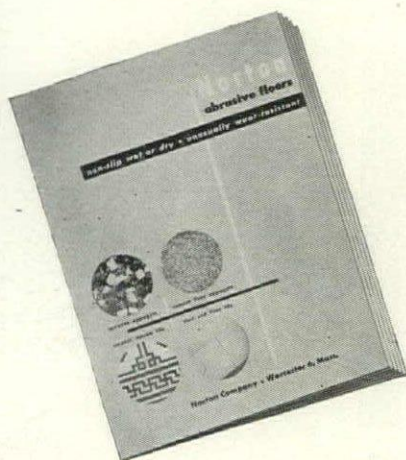
LIGHTING DIVISION

Edgewater Park, Cleveland, Ohio





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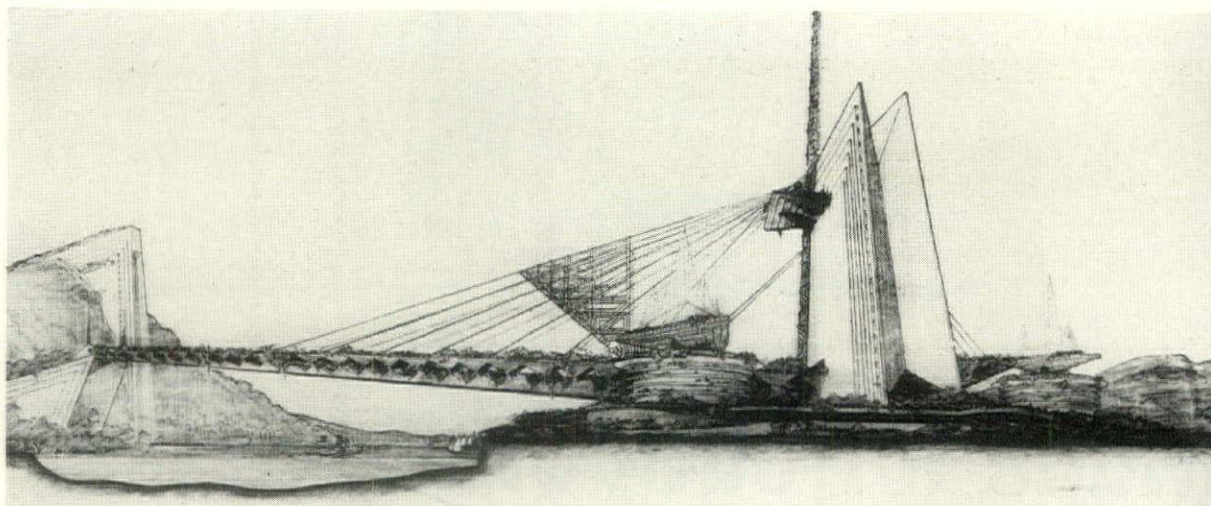
That's why Duro-Test is unique... these premium quality fixtures and long-life lamps out-perform all others. They were made for each other! Made to deliver the highest lighting efficiency for the longest period at the lowest cost. To be sure of the best, specify Duro-Test!

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Point Park project for Pittsburgh: from a "vast pylon of concrete . . . illuminated webs of steel cables, intricately cross-braced in triangular patterns stretch down to support two counter-balancing triple-decked bridges that connect suburbs to the town. . ."

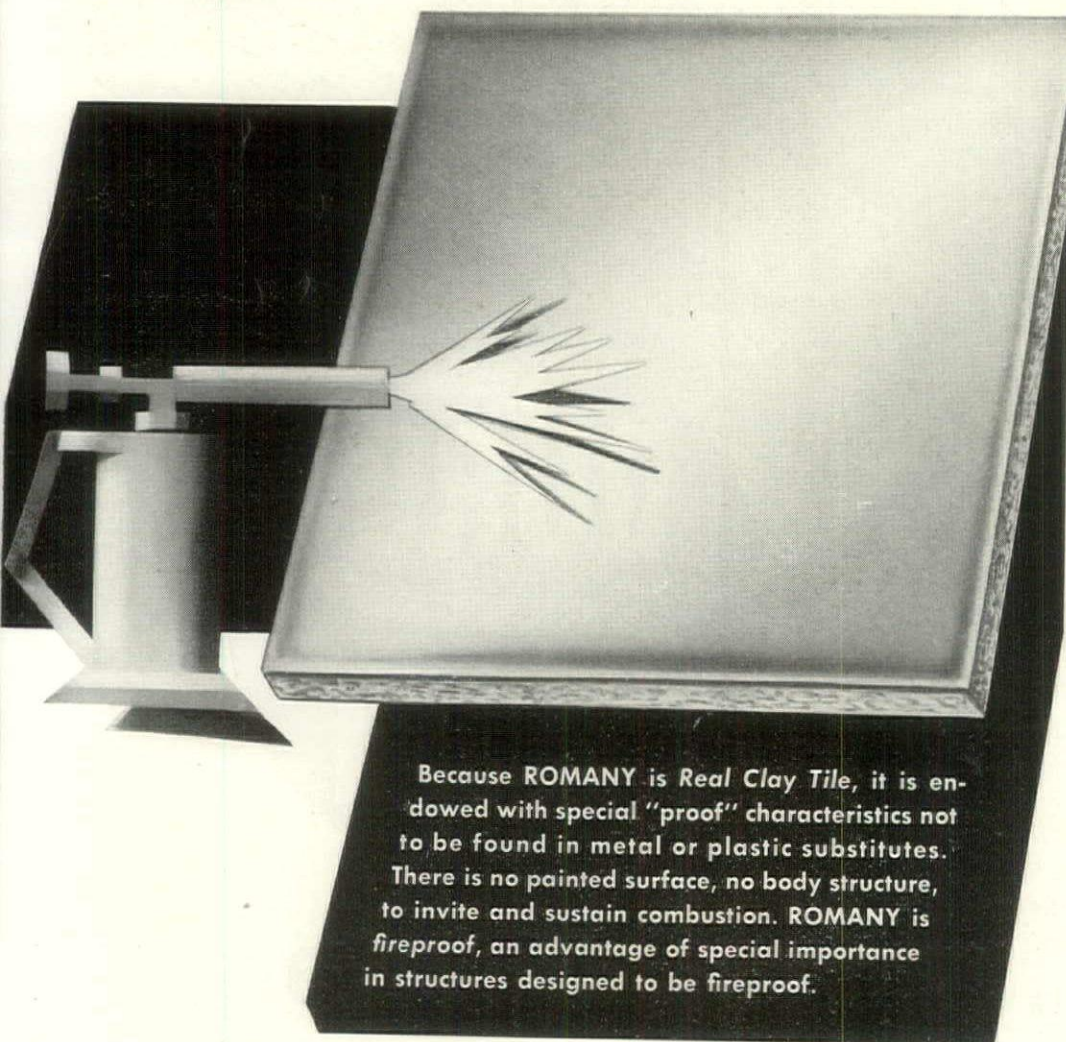


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TALIESIN DRAWINGS. Recent architecture of FRANK LLOYD WRIGHT selected from his drawings. Comments by Edgar Kaufmann, Jr. (Problems of contemporary art No. 6). Wittenborn, Shultz, Inc., 38 East 57th St., New York 22, N. Y. 64 pp. 9" x 11". Illus. \$2.50

Not all great architects are marvelous draftsmen too, but most are. The ability to predict by pencil on paper the shape of an unbuilt structure, to imply not only its physical dimensions but by some magic stenography, its character—this seems to be an integral part of the great artist's visionary equipment. There are other architects whose sketching abilities are largely with slide rules, words and/or financial statements, and their respectable achievements are not to be dismissed. But the original and most important picture of the architect is the man at the drawing board.

Frank Lloyd Wright's unique drawings are an example of this. The visions are well delineated. When you first read the rich, intricate, honest drawings, and later on see the completed buildings you feel as if you have shared in the project, so intimate has been the preview.

This book collects a number of drawings from Taliesin (the introduction says Wright has assisted first hand in drawing many of them, in addition to having developed and taught his recognizable drafting style). Do not expect too much from the reproductions—the intricacy of Taliesin drawings is blunted even by good mechanical reproduction, and these inexpensive reproductions are not good at all. But it is an exciting volume nonetheless; the drawings have the truth in them.

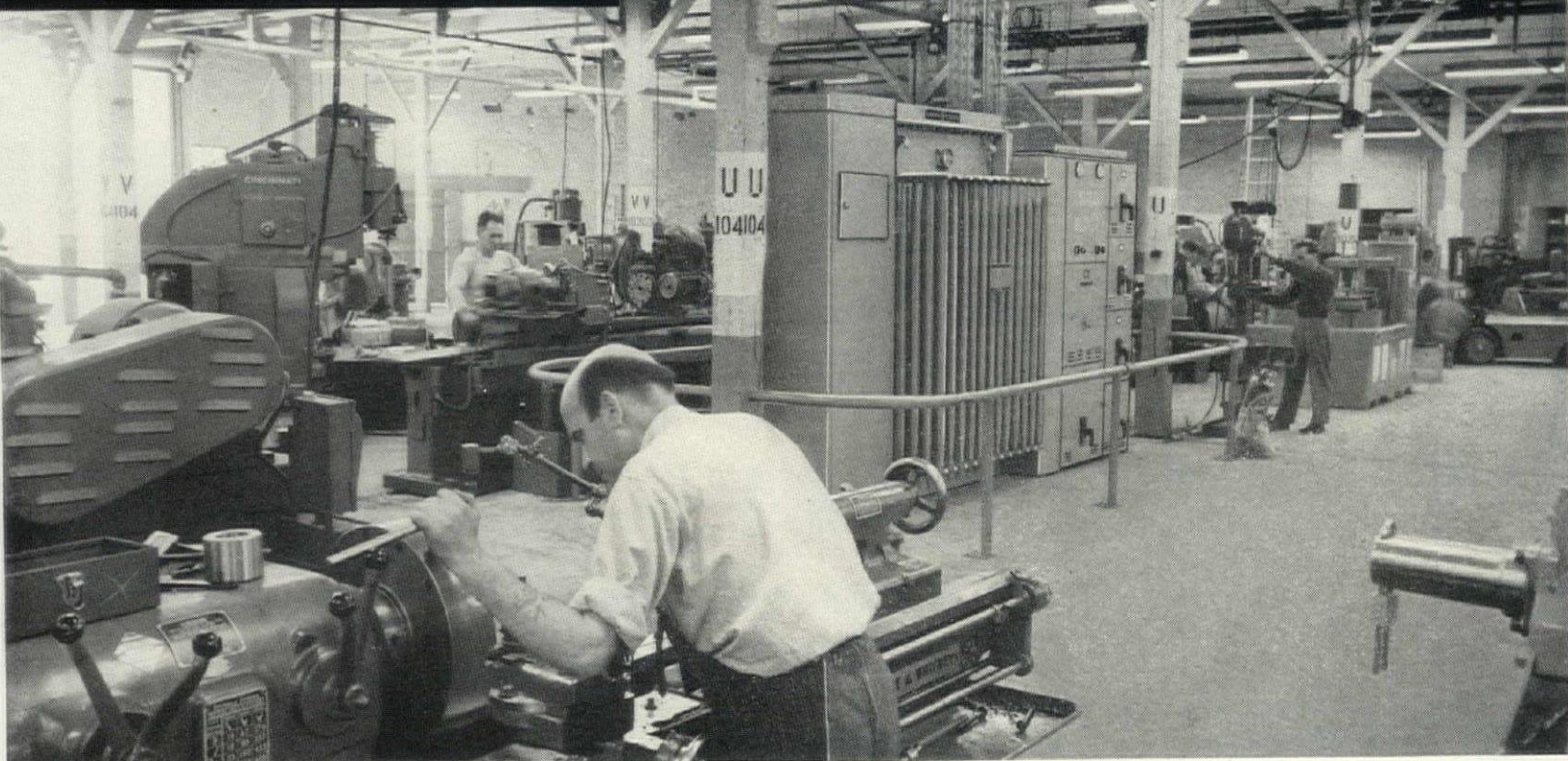
ROBERT MOSES: BUILDER FOR DEMOCRACY. By Cleveland Rodgers. Henry Holt and Co., New York, N.Y. 356 pp. 5 1/2" x 8 1/2". Illus. \$6

Scrappy Robert Moses, New York's Park Commissioner (and holder of nine other municipal and state jobs), is the subject of a rambling biography authored by his old friend Cleveland Rodgers, himself a city planner. The length and breadth of the book is filled with controversy, amply documented with Moses' invective, describing countless

continued on p. 172



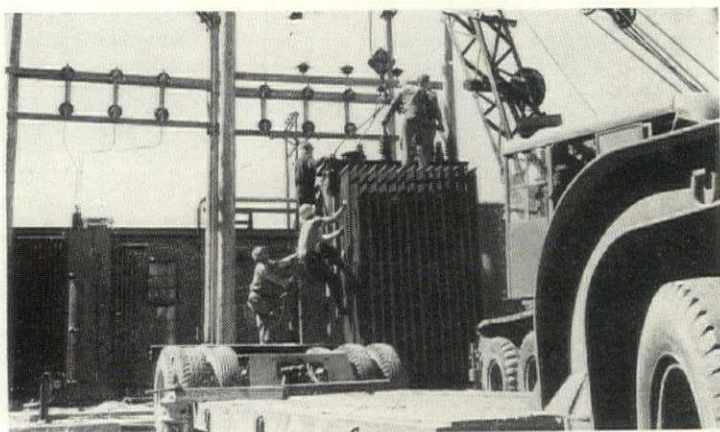
ENGINEERING REPORTS:



G-E 480Y/277-VOLT ELECTRICAL DISTRIBUTION SYSTEM serves both fluorescent lighting and machine load through five load-center substations. Motors

operate at 480 volts line-to-line, lamps at 277 volts line-to-neutral. System saves distribution copper, cuts branch-circuit installation time.

"Packaged power" speeds Kaiser-Frazer modernization



FAST ASSEMBLY of equipment is made possible by G-E packaged shipment, coordinated components. Here, outdoor transformer is installed by Koontz-Wagner Electric Co., Inc., electrical contractor.

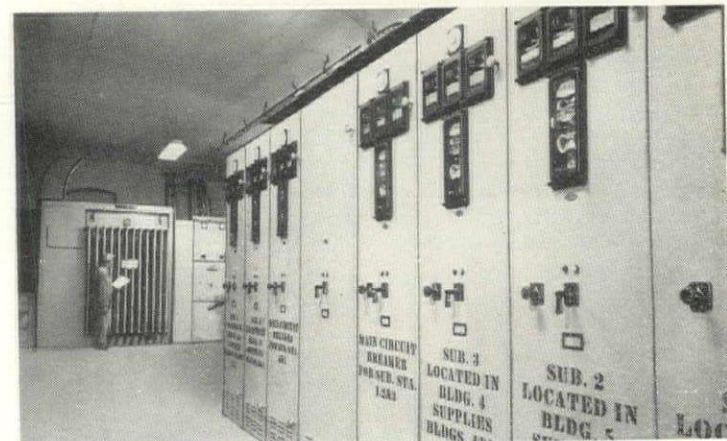
Pre-engineered, factory-assembled G-E equipment saves months in renovation of engine-parts plant

Demand for increased production, plus a recognized need by plant management for greater protection of personnel and equipment, dictated a new power distribution system for the Dowagiac, Michigan plant of Kaiser-Frazer. Since time, as usual, meant money, K-F plant engineers wanted a fast renovation, but with no sacrifice in equipment quality and system reliability.

Their solution was typical: a system made up of "packaged" G-E components and tailored to plant layout and production needs. Their decision was justified when easy-to-specify, easy-to-install G-E equipment saved many months of design and installation time, resulted in completion of the project ahead of a tight schedule.

You can save time and money on industrial-plant electrification by specifying user-preferred G-E equipment. And you'll find expert G-E engineering assistance in system planning a valuable extra. Contact your G-E Apparatus Sales Office, early in the planning of your next project. General Electric Co., Schenectady 5, N. Y.

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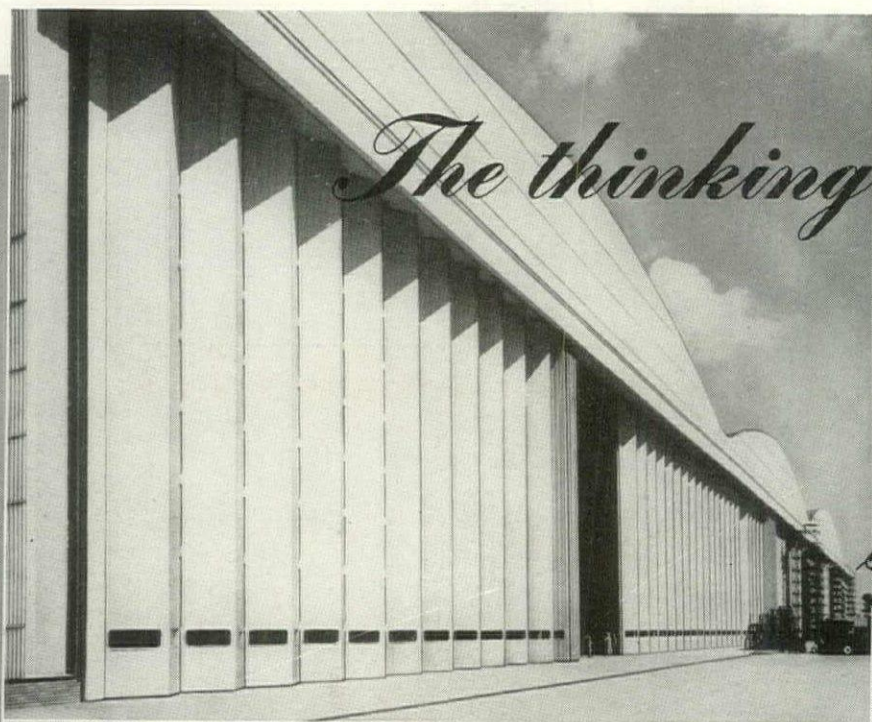


INCREASED PROTECTION of equipment and personnel is provided by G-E metal-clad switchgear. Line-up consists of two incoming-line sections, tie breakers, five sections feeding load-center substations.

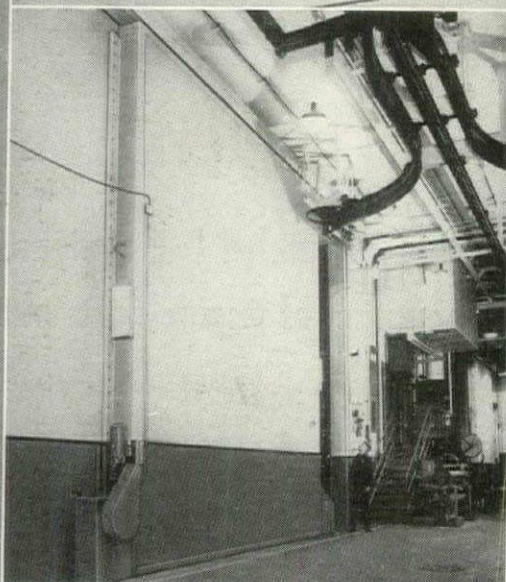
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these
special purpose
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Peelle-Esavian Door - BRISTOL AEROPLANE ASSEMBLY PLANT—Filton, England

The front of this huge, three-bay hangar presents a continuous opening of 1045' in width and 65' 9" in height. To close this opening it was necessary to build one of the largest doors in the world, consisting of 3 pairs of sliding-folding aluminum-covered sections. Motive power is housed in the power mullions at each leading edge of the door structure.

The Peelle-Esavian Door is based on an entirely new principle which eliminates the necessity for expensive structural features in the building. The entire weight of the door is carried on the bottom track and the motivating power is on the door. This door offers many unique advantages, particularly for large openings of unusual height.

Write for new Peelle-Esavian Brochure.

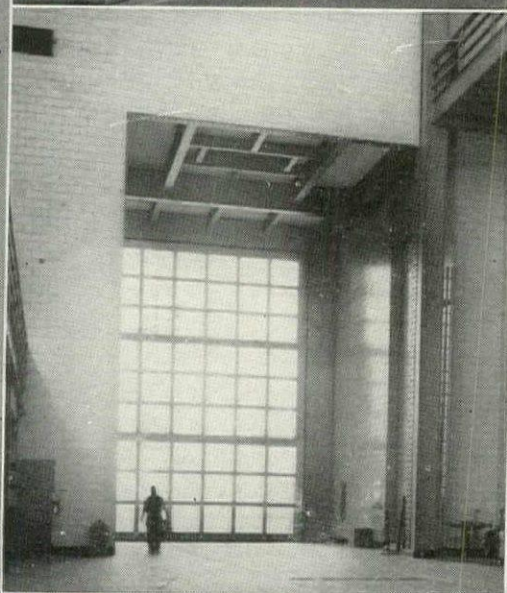
Jet Engine Test Cell Door - PRATT & WHITNEY AIRCRAFT, East Hartford, Conn Albert Kahn Associated Architects & Engineers - Builders: Turner Construction Company

To contain and deaden the roar of jet engines on test, Pratt & Whitney Aircraft had The Peelle Company design and build ten of these huge concrete and steel doors for its new jet engine test cell block. Big enough to admit the most powerful engines of today and the even bigger ones to come, these doors had to be built as thick as the walls of the cells themselves to control the enormous volume of sound produced by the engine while running. Constructed in place, these dense concrete doors weigh 45 tons each, yet their electric motor drive travels them horizontally at the rate of 10 feet per minute quite easily. And, from outside the closed door, only a moderate hum can be heard of the earth-shaking roar of the jet engine running inside.

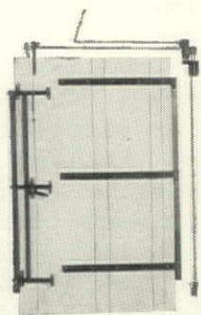
Motorized Door Measuring 24' x 35' - SEWAREN GENERATING STATION Owners and Engineers: Public Service Electric and Gas Company of New Jersey Consulting Architects: Walker & Poor - Builders: United Engineers & Constructors, Inc.

This towering stainless steel and glass door was engineered and built by The Peelle Company to carry out the architectural treatment of the building and to satisfy the engineering requirements. Three vertical sliding panels in the door are counter-weighted and are operated by a triple parallel gear head reducing unit with brake. Door panels move at varying speeds to arrive simultaneously at open position.

This is one of many types of motorized doors and partitions designed and built by The Peelle Company for factories, power stations, warehouses, terminals, hangars, mills, garages, hospitals and schools. Peelle Engineered Doors merit consideration in your plans.



Engineered Doors



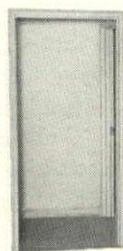
Richmond
Metal Clad
Fire Doors -
Swing and Slide



Richmond
Flush
Kalamein
Doors



Richmond
'MD'
Tubular Steel
Industrial Doors

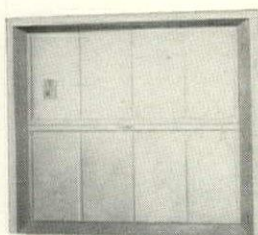


Richmond
Steel
Door Frames

FIRE DOORS Frames and Hardware



Peelle
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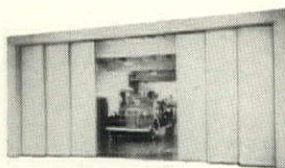


Peelle
Counter-Balanced
Freight Elevator
Doors



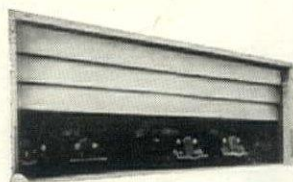
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Solid Panel
Car Gates

ELEVATOR DOORS



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Peelle
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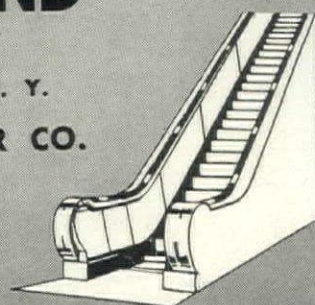
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knock-down, drag-out fights waged by Moses to give New York, among other things, one of the most impressive parkway systems in the US.

Professor Siegfried Giedion, who views the parkways as the forerunner of the future city on a new scale, pays tribute to Moses' handiwork in *Space, Time and Architecture*. Says Giedion: "It was Chicago which in the late eighties introduced the new potentialities in architecture. To New York in turn must go

credit for the creation of the modern parkways." And it was on the back of Long Island's parkways that a postwar boom of 265,000 new homes in Queens, Nassau and Suffolk Counties was carried.

Despite his over-all success, Moses lost some of his highway skirmishes. One exasperating saga, called the "Battle of the Parkway Bulge," takes Moses through the courts in a battle with property owners of the swank North Shore, who finally succeeded in chang-

ing the course of Long Island's Northern State Parkway. The curious kink the estate owners put into that highway now takes motorists on a five-mile detour around Wheatley Hills.

Though parks have commanded Moses' interest for 30 yrs. and brought him an international reputation (who hasn't heard of Jones Beach?), he has also played a vigorous role in New York's housing and slum-clearance drama, its bridge-building program, its rezoning movements. As a member of the City Planning Commission, Moses has advocated zoning changes to restrict height and bulk of buildings and make it mandatory to provide parking facilities and off-street loading berths in new buildings. But he is unalterably opposed to the comprehensive plan submitted by Harrison, Ballard and Allen (AF, Sept. '50). It has languished for two years before the Planning Commission. Author Rodgers says Moses anticipated "the difficulties sure to be encountered in any drastic changes in the controls of private property, especially if new and complicated methods were employed." Unkind critics mutter no plan would get Moses' approval unless he engineered it.

A favorite *bête noire* of Robert Moses is the modern architect, and any prize-winning, contemporary design evident in the huge collection of Moses' public works is no fault of his. Nevertheless, the delicate, spidery White-stone Bridge is one of New York's handsomest. The Municipal Asphalt plant along the East River, which the Museum of Modern Art selected for "Built in USA, 1932-44," evoked this typical Moses message to Borough President Edgar J. Nathan Jr.:

Dear Edgar:

Is this architecture or what? I suppose the explanation is that these things are functional. Who had the idea of the Cathedral of Asphalt and the Corrugated Shoe Box? Can't you put a restraining hand on designs of this sort? These things are unnecessarily ugly and obtrusive. They interfere with residential development to the west. If we must have freakish experiments, why shouldn't they be privately financed? After all, we shall have to live with these monstrosities a long time.

The Museum disagreed. It termed the structure "industrial architecture which is a distinct asset to the residential neighborhood."

Probably the best statement of Moses' design philosophy is his own. Says Moses: "An 'eclectic' is every designer and builder who has to make a living. The average purchaser of his wares instinctively wants what will wear like the things he has seen and used before."

Moses' caustic, colorful prose peppers the whole book. Some of the choicest bits are reserved for the "long-haired planners" and for functional architecture. Frank Lloyd

continued on p. 176

Line of best
resistance to corrosion

DURIRON ACIDPROOF DRAIN PIPE

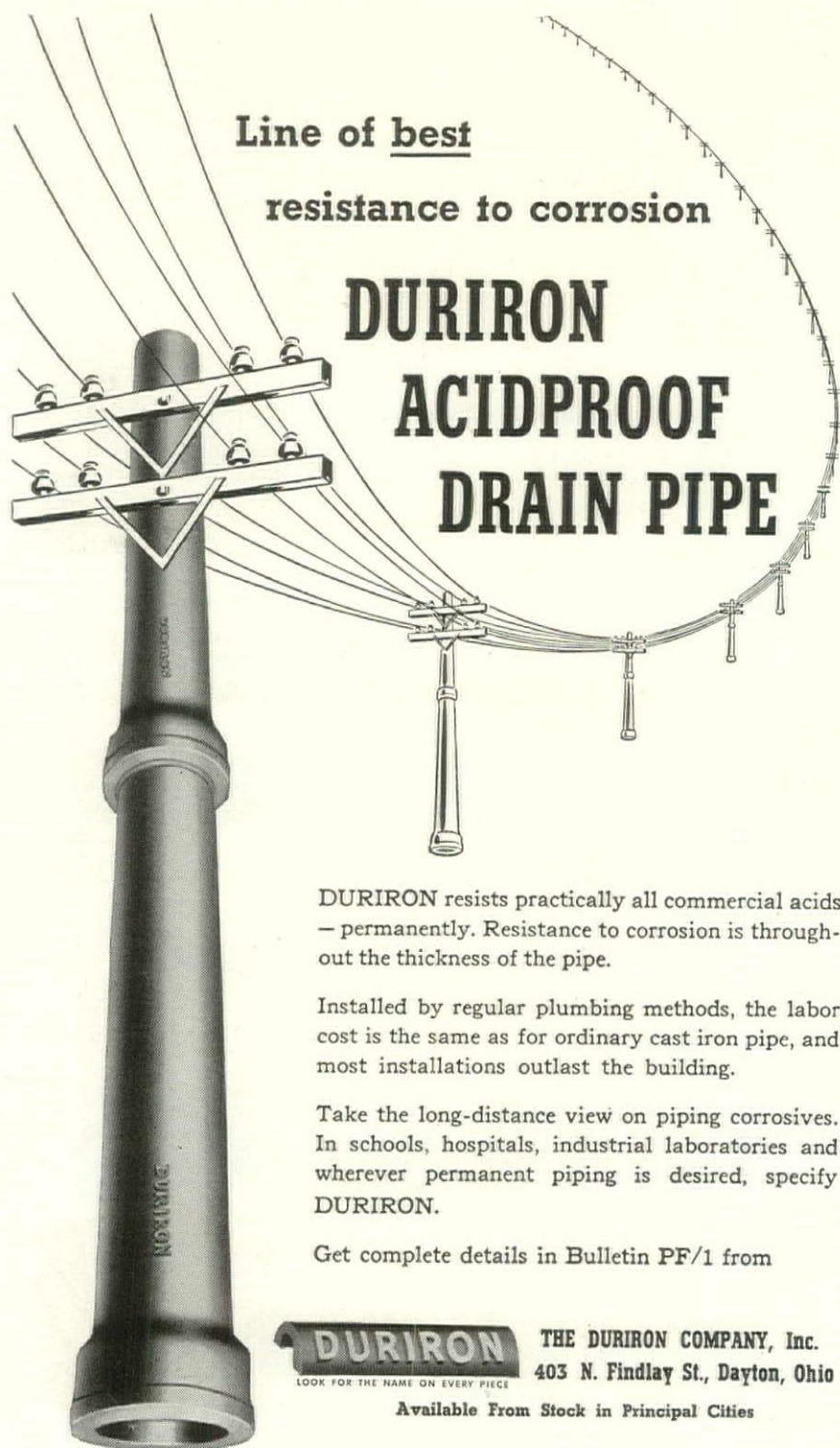
DURIRON resists practically all commercial acids — permanently. Resistance to corrosion is throughout the thickness of the pipe.

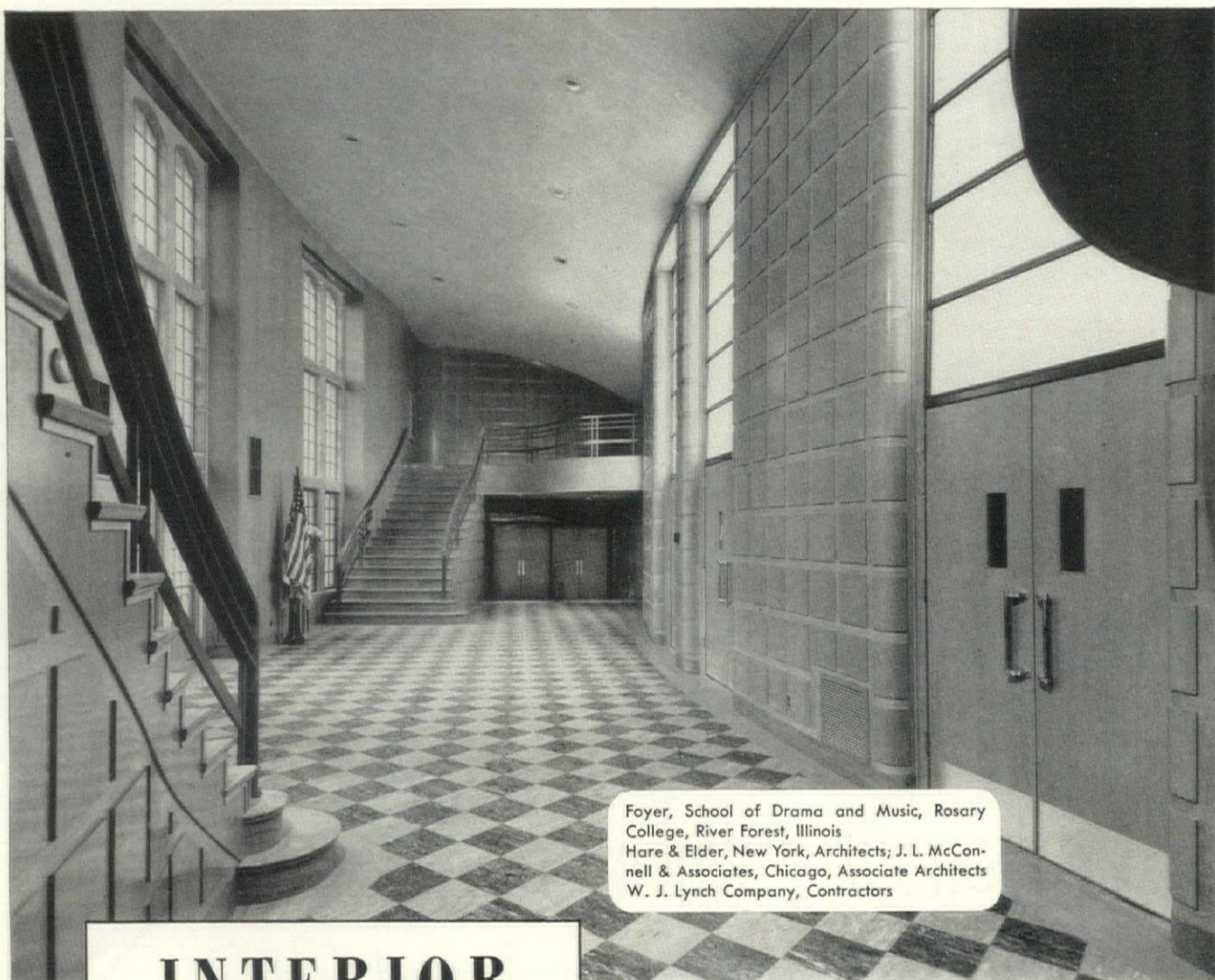
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**ROSARY COLLEGE
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The foyer of the Rosary College School of Drama and Music shown in the above photograph splendidly portrays the function of custom woodwork in modern interior design. The architects have used the light beauty of Rift Sawn Appalachian White Oak in the wall paneling, doors, stairs and balcony to produce a modern interior that blends the theatrical and scholastic atmospheres with superb effect. The architectural woodwork for the Rosary School of Drama and Music was built, finished and installed by

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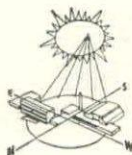




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How to borrow a sunbeam ...to better daylight schools



Borrowing a sunbeam to daylight a school is a very neat trick if you can do it.

And that's just what Perkins & Will, architects did in designing the Keokuk, Iowa High School. Ceco steel windows played a big part in this unique method of daylighting for better vision.

Functional use of daylight was achieved through window arrangement and purposeful positioning of the building. Built side by side, corridors and classrooms all have outside exposures. Classrooms face north utilizing diffused indirect north light. Corridors take the shape of window walls from floor to ceiling with a southern view and on one side open strips at the top of the inner walls of classrooms admit "borrowed light" from the corridor areas. Corridors become pleasing

sun-lit passageways strikingly different from the dark tunnels so prevalent in central corridor schools.

Ceco Architectural Projected Windows were selected because their slender muntins mean more light gets in, more view, too. They won't rot, warp, stick or swell . . . provide controlled ventilation. Cost? Lowest of all installed with generous savings in maintenance.

Ceco's network of multiple offices offered a plus value. Liaison contact with the contractor J. E. Lovejoy & Co. came from Des Moines. In St. Louis windows were adapted to architectural design . . . Chicago adds erection work and drawing of window detail.

Today more and more architects, contractors and engineers depend more and more on Ceco in solving their building problems.



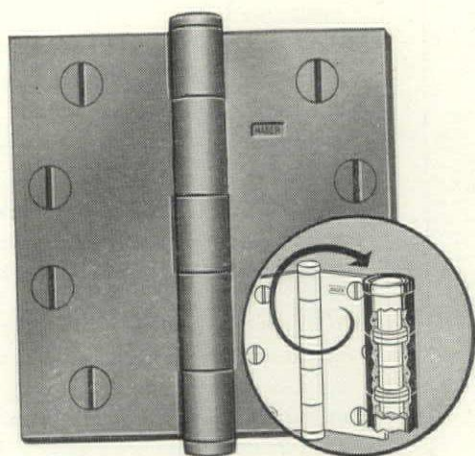
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BRASS BEAUTY and STEEL STRENGTH!

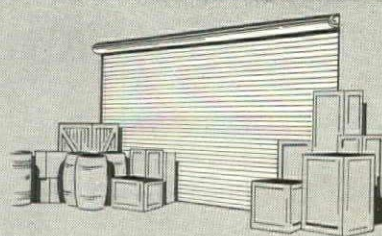
Hager combines the glistening elegance of luxurious solid brass with the timeless strength of steel (at the critical point of knuckle joint wear) to reinforce permanent beauty with long life performance!

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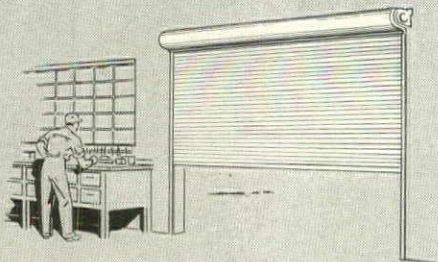
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All space in and around Kinnear-equipped doorways is fully usable at all times — both inside and outside the opening.



Work space and window areas can continue right up to the jambs of Kinnear Rolling Doors.

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maximum door efficiency,
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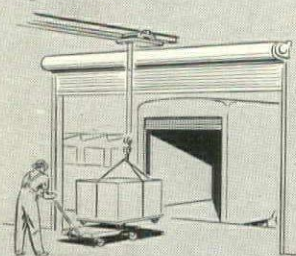
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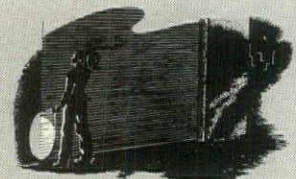
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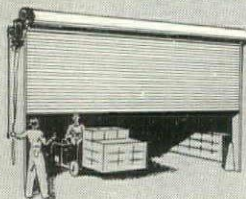
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Ceiling space remains clear, for maximum use of cranes, conveyors, or hoists in and around door areas. Kinnear Doors can also be arranged to accommodate crane tracks extending through opening.



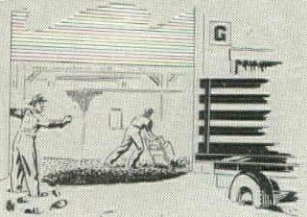
No other type of service door combines such high efficiency with the effective protection of Kinnear Rolling Doors.



Kinnear Motor Operated Doors open, close, or stop at the touch of a button, or by means of other types of manual or automatic control devices.



Wind is never a hazard to Kinnear Rolling Doors. The rugged steel slats are anchored in steel jamb grooves from floor to lintel.



The vertical action of Kinnear Rolling Doors is not blocked by snow, ice, gravel, or uneven ground.

REVIEWS *continued*

Wright, a distant cousin of Mrs. Moses, has been his relative's target, too. Wright's Fifth Ave. Museum of Abstract Art, wrote Moses, is "designed like a gigantic inverted cup and saucer with a silo added for good luck—unless you subscribe to the theory that students of nonobjective art are happiest riding up in elevators and shuffling down a spiral ramp. . . ." Moses' complex personality and his staggering accomplishments are fully treated by Rodgers. But Moses' own literary efforts prove most fascinating of all.

PRINCIPLES OF HOSPITAL ADMINISTRATION. By John R. McGibony, M.D. G. P. Putnam's Sons, 210 Madison Ave., New York 16, N.Y. 540 pp. Illus. \$6.80

Except by implication, the architect will learn little about how to build a hospital from this book—that is not its purpose. He will, however, learn a great deal about hospital administrators, the men with whom he must work, whose clinical and administrative requirements he must translate into architectural realities.

For the administrators themselves, the book should prove to be invaluable, covering, as it does, every phase of hospital administration from selecting a site for the institution to drawing up a payroll. It is a concise and authoritative textbook by the Chief of the Division of Medical and Hospital Resources of the US Public Health Service.

Among other services, it will perform the indispensable one of informing administrators of precisely what information an architect must have before setting to work. He should have "in writing," advises Dr. McGibony, "all requirements, including bed needs, departmental needs, area requirements, major equipment, personnel to be used and, in general, departmental functions and relationships." He should have, in brief, an administrator very much like Dr. McGibony and, if not that gentleman, then one of his readers.

"THE MODERN SHOP" by Bryan and Norman Westwood. The Architectural Press, London, England. 183 pp. 7" x 9 1/2". Illus. 30 s.

"Corbusier's principle that 'the house is a machine to live in' can be applied with much greater force to the shop as a machine for selling things." Bryan and Norman Westwood have written a comprehensive guide for those interested in making the latter machine function profitably, be it a shop catering to "impulse," "convenience" or "demand."

They have recognized that the problems involved are perhaps two parts psychological to one part architectural. Why was it, for instance, that shops along London's Bond St. sold more goods before the intrusion of a bus route into that sacrosanct passage? High-class shops, we are told, ideally are

continued on p. 180



Can choosing the wrong floor put you "on the hook?"

Of course it can! Flooring poorly suited to the area for which it was chosen will result in a dissatisfied client or an actual loss on the job. And, because you're in business for profits, you will find it pays to call on an expert to help you...a man fully qualified to match every floor perfectly to the job it must do.

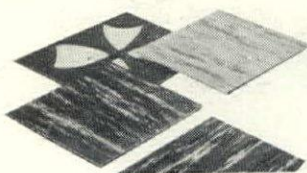
The Kentile Flooring Contractor has complete and up-to-date information on the countless flooring products available. And he's at your service whether your problem is one room in a home or thousands of square feet in a major installation. Let him offer you the benefits of his specialized knowledge whenever you're planning or executing a construction or remodeling project of any sort.

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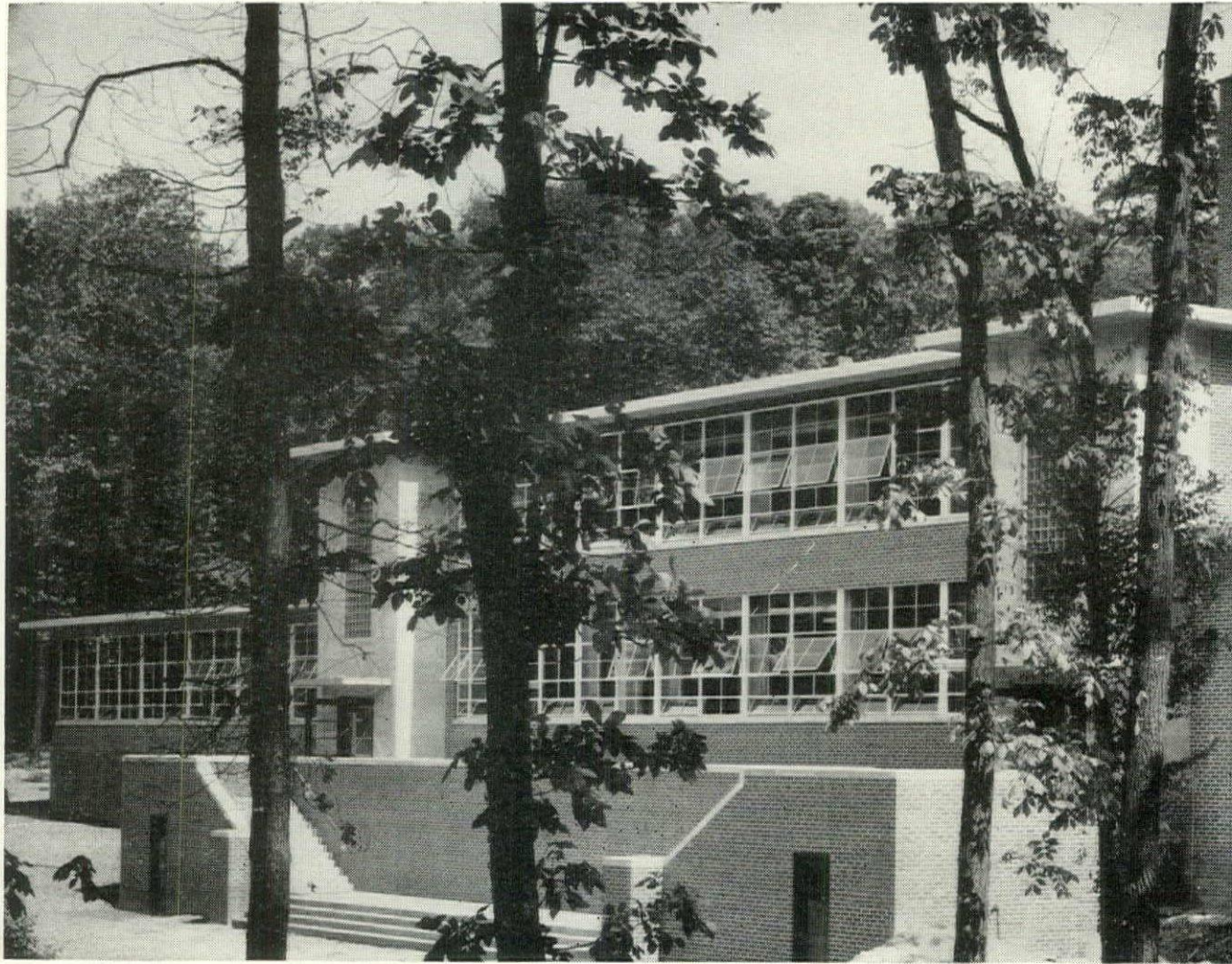
Consult the Kentile Flooring Contractor for information on these Kentile, Inc. floors. His name and address are listed under FLOORS in your classified directory...or write: Contract Dept., Kentile, Inc., Brooklyn 15, N. Y.



KENTILE INC.
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Warren, Knight and Davis, architects and engineers, realized that large exposed glass areas, typical of school buildings, created a need for Honeywell Customized Temperature Control in the Charles B. Glenn Vocational High School. Other participating firms were: General Contractor, Richardson Construction Company; Mechanical Contractor, H. L. Eskew and Sons. All firms are located in Birmingham.



New high school demonstrates need for Honeywell Customized Temperature Control even in mild climate of the South

Birmingham's Charles B. Glenn

Vocational High School features individual room temperature control

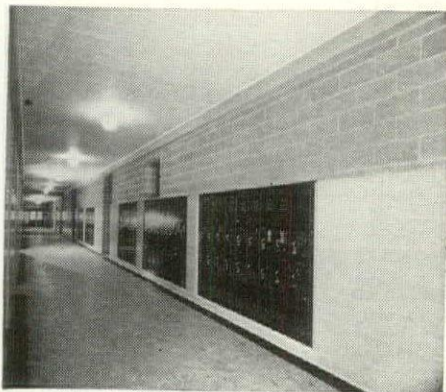
In developing the new school you see here, an enterprising architectural-engineering firm and an understanding school board are leading the way to greater comfort and more efficient learning for thousands of southern teen-agers.

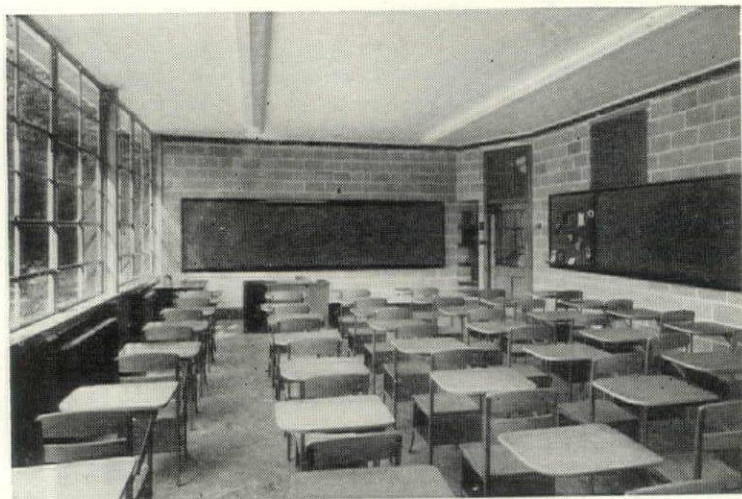
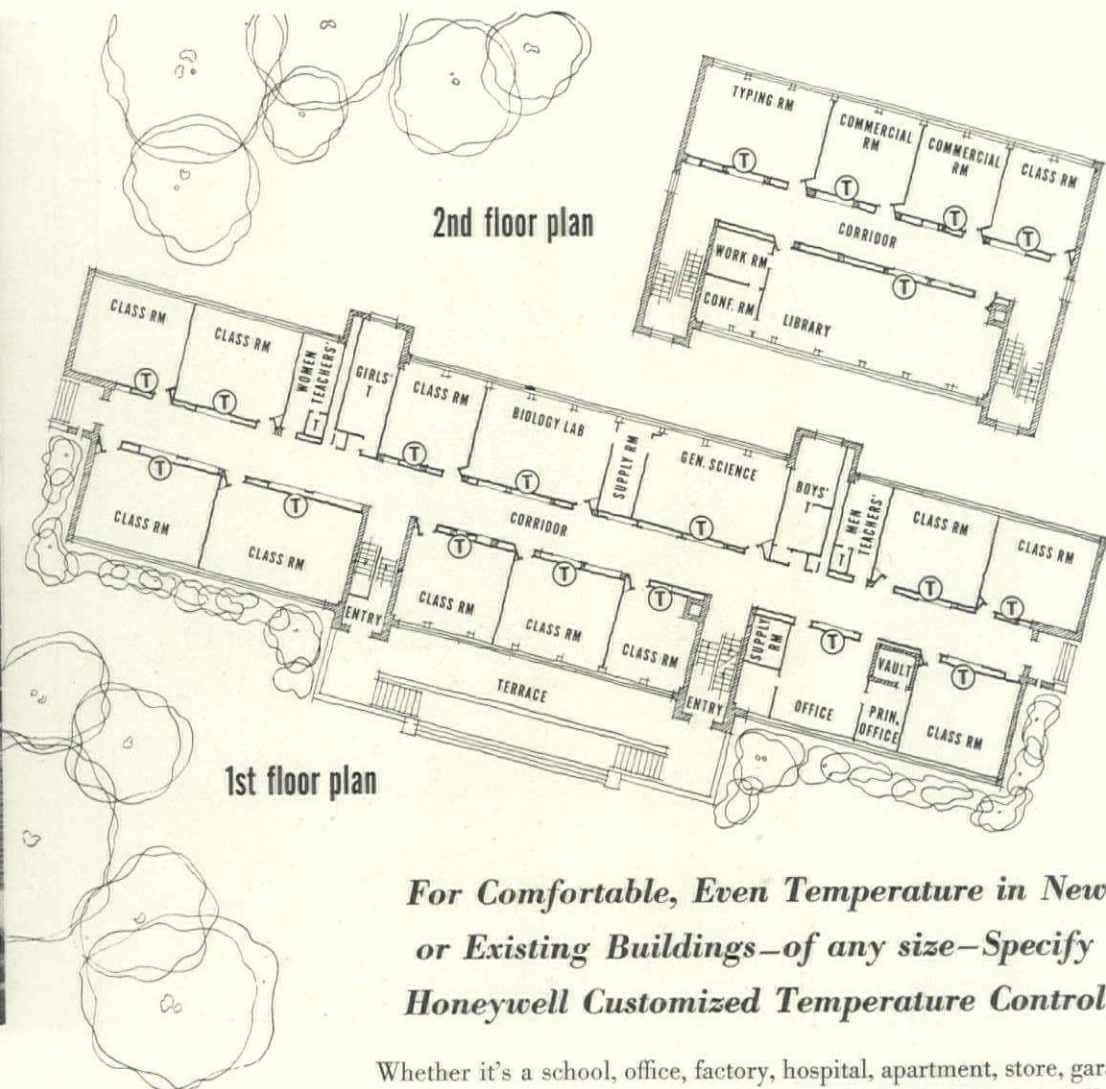
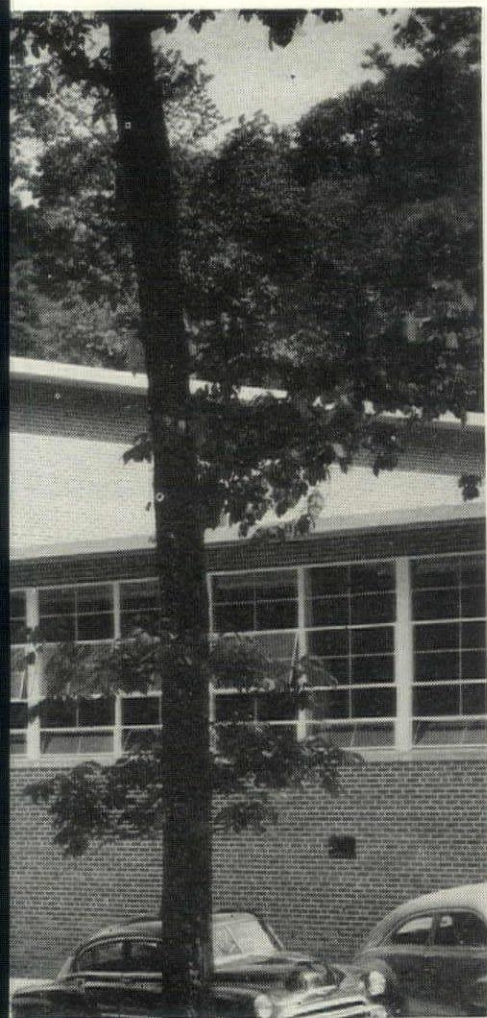
And a Honeywell Customized Temperature Control installation is helping them provide these benefits for Birmingham students.

In the case of the Glenn School, the Honeywell installation is in the form of individual room temperature control—a thermostat in each classroom. The floor plan at right gives the location of the thermostats.

Today, in this school, teachers may keep temperatures right for most efficient learning—simply by adjusting a dial.

If the wind blows cold against the windows of their individual classroom they can easily adjust for the extra heat loss. And if during certain periods of the day the room is crowded, or the sun is hot, they can as easily *lower* the temperature.





In winter months, even in the South, classroom windows are a major source of heat loss. Chill winds reduce their temperature greatly—and this “draws” heat in large quantities. But with an adjustable Honeywell thermostat in each classroom such heat loss is easily compensated for. Above you see a typical modern classroom in the Charles B. Glenn school.

For Comfortable, Even Temperature in New or Existing Buildings—of any size—Specify Honeywell Customized Temperature Control

Whether it's a school, office, factory, hospital, apartment, store, garage—or any size building—new or existing, Honeywell Customized Temperature Control can help meet your clients' heating, ventilating, air conditioning and industrial control problems.

Once equipped with Honeywell Customized Temperature Control, they'll have an ideal indoor “climate”—and save fuel besides.

And with a complete line of pneumatic, electric and electronic controls to choose from, Honeywell Customized Temperature Control offers you the greatest flexibility in design. Then, too, when it comes to performance, Honeywell-built controls assure years of trouble-free operation. And they're backed by the finest service organization in the controls industry.

For full facts on Honeywell Customized Temperature Control, call your local Honeywell office. There are 104 across the nation. Or mail the coupon today.

H. L. Eskew, heating contractor of Birmingham, says: “More and more in the South we're coming to realize the importance of proper temperature control and adequate heating methods. I think the Charles B. Glenn High School job is good evidence of that.”



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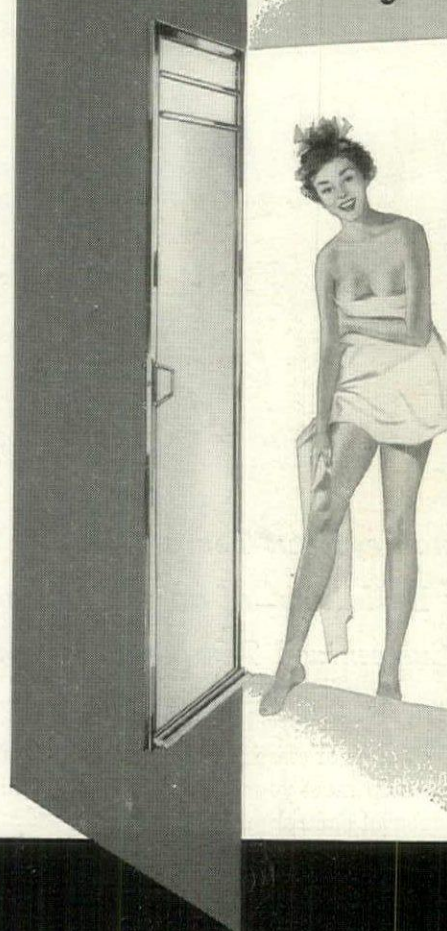
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MORE QUALITY built-in means
MORE SATISFACTION. Inspect a
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Look to FIAT DOORS for added
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stall, include the vital, finishing
feature . . . a FIAT DOOR.



Simple design and attractive ap-
pearance at low cost—here's the
fine quality and sound construction
you would expect to find only at a
much higher price. The Neptune
measures 24 by 64 inches and is
reversible for right, or left-hand
hanging; one-piece satin-finished
heavy aluminum frame with
mitered corners and glass set in
rubber channel. Extruded aluminum
jambs, top and bottom suspension
hinges. Bullet catch, offset handles
and water deflector.



Here's unrivaled quality, finest
construction! Standard 24 by 72-
inch size—a full height door with
grille; one-piece chrome plated
frame of extruded brass with
mitered corners; glass set in
rubber channel. Chromium plated
brass jambs and continuous piano
hinge riveted to frame. (FIAT'S
moderately priced Zephyr has
the same appearance and fea-
tures as the Dolphin but is made
with satin-finished extruded alu-
minum frame).

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REVIEWS *continued*

located in streets *adjoining* main traffic arteries rather than in such streets themselves. Crowds and traffic noises distract customers from the important business of inspecting window displays and seriously impair the prestige and attractiveness of high-priced quality stores.

Problems as diverse as the selecting of a site for the shop, the harsh effects of fluorescent lighting on merchandise, the disadvantages, inherent in curved, nonreflecting windows, the necessity for restrained facade advertising—all are examined at length in the book and a substantial number of photos and diagrams are used to document the text.

Where the book errs, it errs in typical British fashion: at times its authors seem alarmingly conservative. Frank Lloyd Wright's china and gift shop in San Francisco (AF, Feb. '50), for example, is described as being of questionable commercial advantage. "It precludes window shopping which usually attracts some custom," caution the authors.

But it is to be remembered, as the Messrs. Westwood themselves point out, "that the design of shops is not so much an affair of dignity or structural ingenuity as a study of human traits and social trend." The British shopper asks for courteous intimacy; he is looking for quality and thrift. More dynamic appeals to his sense of style or to his longing for luxuries serve only to make him feel less comfortable.

Architects, designers and shopkeepers catering to just such a client will find this common-sense manual of particular value. In it, one learns that a marble floor is advisable only in florist shops: it is noisy and lacks resilience; but it is unaffected by water and therefore a boon to florists. *Indirect* lighting, we are informed, is best for displays of velvet gowns or other textiles which show creases or surface marks easily. "At the other extreme good carpets should be shown under entirely *direct* light, so that the beauty of texture is well brought out."

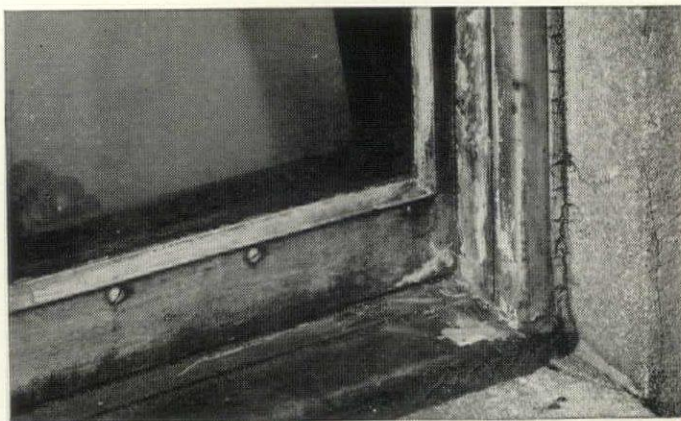
Thus carefully, we are led step by step through the problems of creating the well-made shop. We are even given all necessary information about burglar alarms.

PAINTING TREES AND LANDSCAPES IN WATERCOLOR.

By Ted Kautsky. Reinhold Pub. Corp., 330 W. 42nd St., New York 36, N. Y.

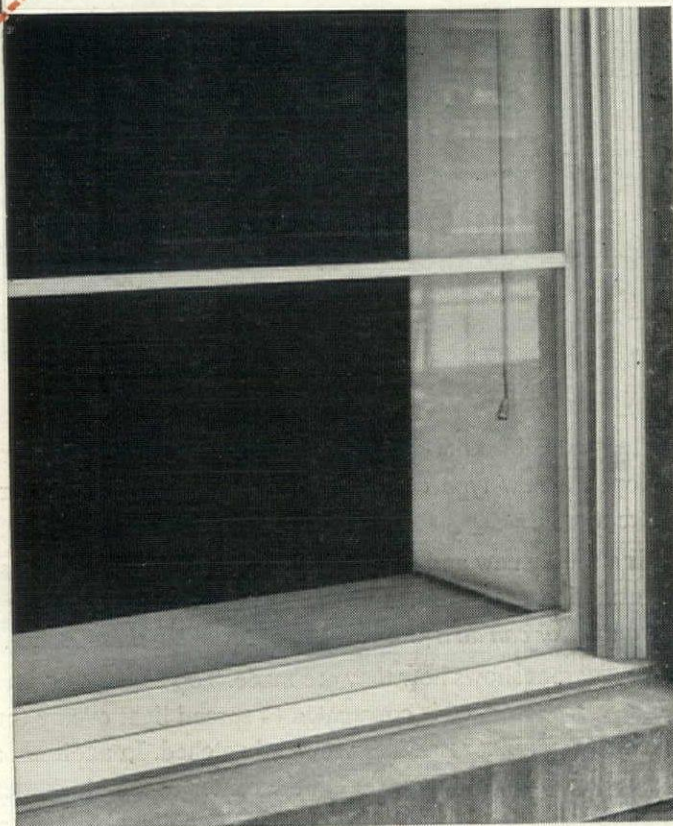
111 pp. 7" x 10". Illus. \$9.95

While this beautiful book with its catalogue of tree forms, in-the-process illustrations (in sepia-tone gravure) and 16 full-color plates will prove of greatest value to art students and amateur painters, it will also interest architects who would improve the quality of the entourage in their architectural renderings. Kautsky, whose pencil drawings for years have illustrated the fourth cover advertisements in this magazine, is indeed a master of the watercolor tree.



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• After years of cautious research, Pittsburgh Corning Corporation has developed a new type of glass block expressly designed for skylight construction.

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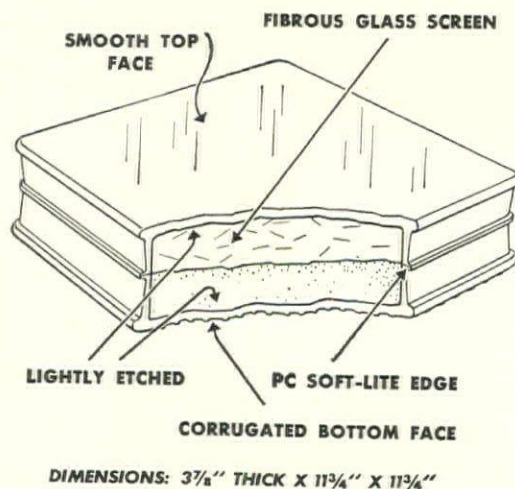
The diagram shows how they are made. Top face is smooth and self-cleaning. Bottom face is corrugated to spread light evenly throughout the room. Both inner surfaces are lightly etched. In addition, a fibrous glass diffusing screen is inserted in the center of the block, performing two important functions: (1) It divides the hollow block into two insulating dead air spaces for *extra* insulating efficiency ($U=0.43$), and (2) the use of the screen plus the exclusive PC Soft-Lite* edge provides a softly-illuminated skylight panel.

PC Glass Blocks in skylights give the insulating value and durability of masonry construction—and the light transmitting value of glass.

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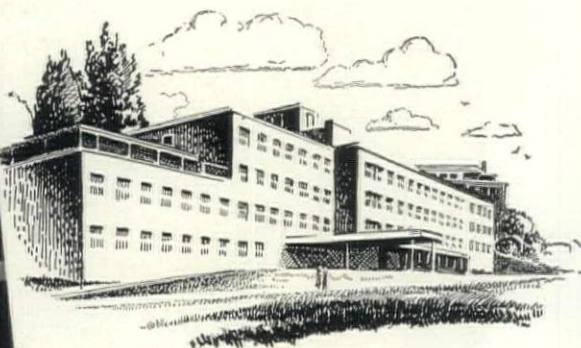
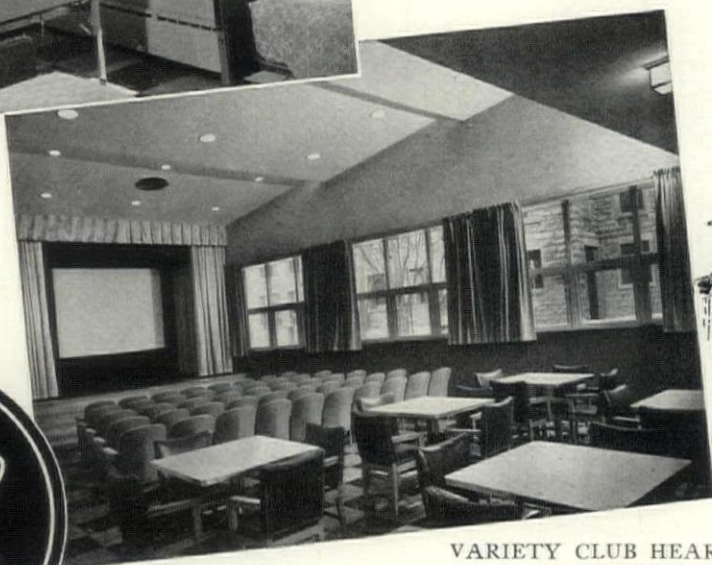
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COLOR in a Therapeutic Rôle



Reynolds, Photographs, Inc., Minneapolis



The interiors of this new hospital were color-styled by Johns Hopkins, University of Minnesota Color Consultant, to make full use of the therapeutic value of colorful surroundings during convalescence. Pratt & Lambert Paints and Varnishes were used throughout, both for the artistic propriety of their "job-tested" colors, and because of P&L's unquestioned reputation for enduring quality. Wherever paints and varnishes are used, you can count on P&L for just the right product to meet your most critical requirements. And whenever you call on them, you can likewise depend on your P&L Architectural Representative or nearest Architectural Service Department for specifications and color planning assistance.

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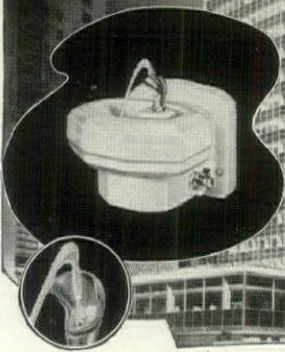
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Toronto, Canada: No alcohol stains, no cigarette burns, no scarred bar or tables in the beautiful Cobra Room of Letros Tavern. Ribbon mahogany Realwood* on tables and bar serves both guests and host to the Queen's taste. *Trade Mark

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Fixtures by Devon Store Fixtures, Ltd., both of Toronto, Canada.
4631 Spring Grove Ave., Cincinnati, Ohio

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Fronting on Park Avenue between East Fifty-third and East Fifty-fourth Streets, New York, is Lever House, housing the offices of Lever Brothers. In this new-day structure, a marvel of functional design and beauty, are to be found the most modern appointments to promote comfort, health and convenience. Among them, as in so many metropolitan edifices, Halsey Taylor fountains are installed throughout!

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The Hamilton Hotel of Laredo, Texas installed Modu-Aire, usAIRco's individual conditioning units of fan and coil design, in free standing cabinets. Three Freon-12 type compressors in the basement provide cooling to two water chillers when summer cooling is required. An instantaneous "flash" heater of shell and tube

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NPB Electric-Centers blend into surroundings naturally, don't have that "electrical look." Wireway extensions replace exposed conduit pipes on wall leading from ceiling to panel cabinet. Column may be extended to floor if desired.



Slim dimensions make it easy to install NPB panels where wall space is limited or not available. They slip easily inside a standard 8" H-beam, fit snugly because of rounded corners. Front overlaps back for deep recessing.

LIGHTING PANELS CAN BE ATTRACTIVE

No maze of conduit pipes or cables leads into these compact lighting panels! Architects who specify NPB's can be sure that they will have top-notch appearance when installed, will cut installation costs for clients.

Specify NPB Electric-Centers for any commercial or industrial surface-mounted lighting-panel installation up to 32 circuits. They get rid of "open-plumbing look" in offices, hallways, factories and shops. They may be mounted against walls, on columns, or in H-beams. Streamlined for appearance and safety; no sharp corners to snag, scrape or bump. No jutting cabinet or columns to hamper traffic of personnel or mobile mechanical equipment. Beautiful gray enamel finish.

Bulldog NPB Electric-Center lighting panels let your clients eliminate the high expense of bending pipes to fit panel knockouts, and of pulling wires down through conduit pipes. All wires, from ceiling to panels, are contained in wireway extensions. Neutral wires are attached to neutral bar in Pull Box at ceiling (or in false ceiling), eliminating individual neutral wires down to cabinet. Wiring can be inspected any time by simply removing front. Pushmatic® Circuit Breakers, interchangeable from 15- to 50-amps., make NPB Electric-Centers compact, versatile.

Investigate NPB Pushmatic Electric-Centers now! Write for NPB Bulletin, or request call from a Bulldog field engineer.

Bulldog Narrow Column (NPB) Pushmatic Electric-Centers make attractive lighting panels; give easier, lower-cost installation; eliminate unsightly conduit pipes and cables.

NPB FEATURES ARE YOUR ADVANTAGES!

- NPB's are only 6 $\frac{3}{4}$ " wide, 6 $\frac{5}{8}$ " deep. Come in 16-, 24-, and 32-circuit capacities. Listed by Underwriters' for 1 ph., 3 wire, s.n., 120/240V AC or 3 ph., 4 wire, s.n., 120/208V A.C.
- Wireway extensions reach to ceiling or false ceiling regardless of height, or to wiring in truss-constructed buildings.
- Lightweight, easy to handle; no loose parts to misplace.
- "Open-plumbing look" eliminated with wireway extensions.
- Numbered wire retainers are attached to back of box for circuit identification. All wiring, including main lugs, can be done before interior is installed.
- Attractive, interchangeable Bulldog Pushmatic Circuit Breakers make NPB Electric-Centers compact, versatile.
- All copper current-carrying parts silvered for greater conductivity.
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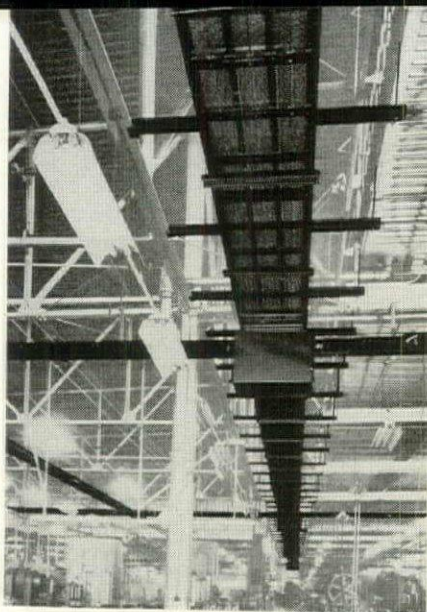


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PRODUCT NEWS

SILVER-COATED ALUMINUM BUS BARS weigh less, cost less than copper

Although electrical engineers have long recognized aluminum as an excellent conductor of electricity (almost on a par with copper) they have given it a wide berth because its conductivity is not wholly dependable: when exposed to air, an impeding oxide forms on its surface and has to be brushed off periodically. War-born shortages of favored copper, however, have alerted the industry to the

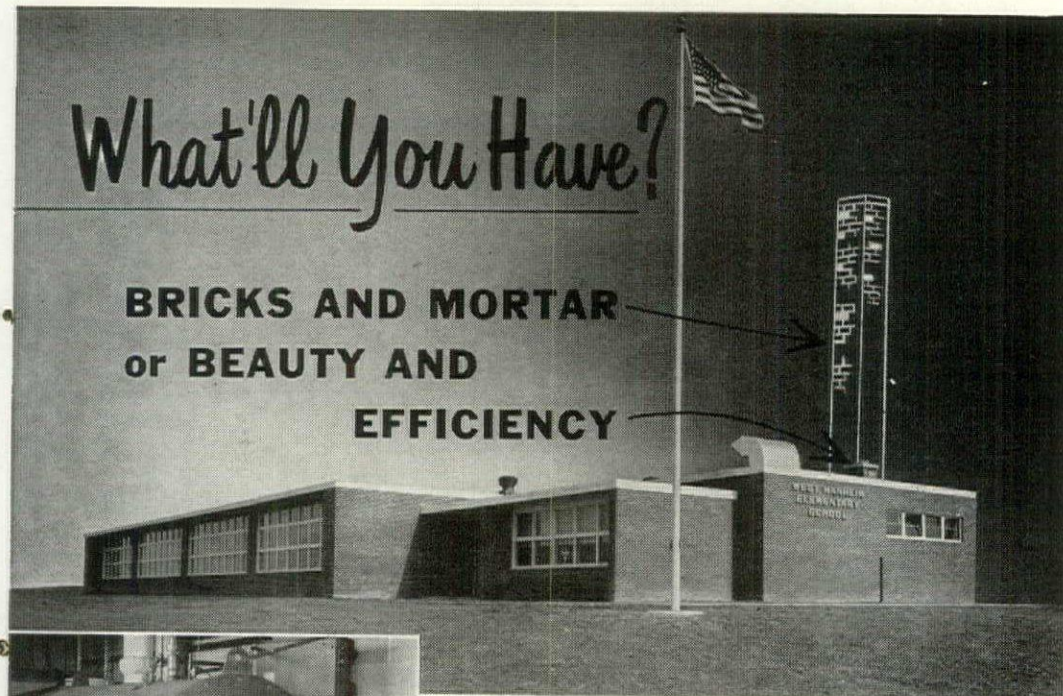
problem of using the more plentiful metal. After extensive research, metallurgists of Bulldog Mfg. Co. developed a protective triple-plating process. First the aluminum (a special cold-worked hard alloy developed for high mechanical strength) gets a bath in zinc, then copper, then a silver topcoat. Besides preventing aluminum oxide from forming, the plating also does away with the electrolytic corrosion caused by one metal touching another, since all contact surfaces are of silver.

To maintain operating characteristics comparable to copper—low voltage drop and temperature rise—the aluminum conductors are made slightly larger through the middle. However, they weigh only a third as much. Systems using aluminum bus with standard connections weigh about 40% less than a copper duct system. Prime advantages of the new bus bars: easier handling, thus installation cost savings; less dead weight, consequently lighter building frame; and lower initial cost—a 10' aluminum bus runs about 10% less than a 10' copper bus. Like their copper cousins, the new bars are listed by Underwriters Laboratories.

Manufacturer: Bulldog Electric Products Co., Box 177, Detroit 32, Mich.

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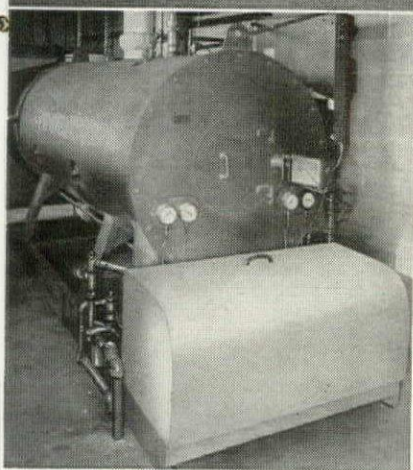


STEAM-PAK generators cut building costs

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UPPER—New elementary school for West Manheim Township, Pa., Buchart Engineering Corp., York, Pa., Architect & Engineers. LOWER—Model SPL-60-50 Steam-Pak Generator. Heating plant designed by W. K. Hood, Associates, York, Pa.

GET YOUR COPY OF THIS MANUAL TODAY

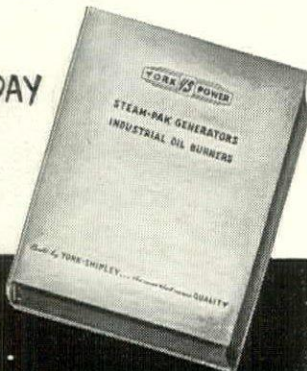
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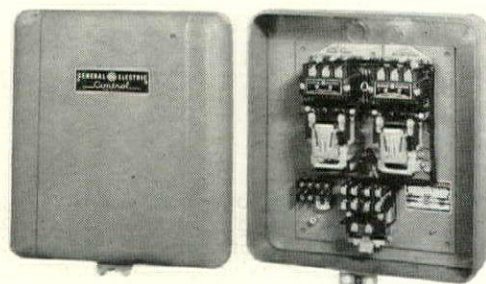
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CONTROL PANEL switches power lines to standby source

Although relative newcomers in the safety-device field, throwover controls are already a legal must for public buildings in many states. Even where not mandatory they make good sense—especially in hospitals, schools, factories and theaters. Should the normal power source fail, these panel devices will automatically channel electric lines—the vital



nerve system of a building—to an emergency plant. When the regular source is re-established, the controls make the switchback. In areas where momentary voltage lapses are sometimes encountered—such as from lightning—a time-delay relay may be installed to hold up the transfer. GE makes 60 different models ranging in price from \$124 for the two-wire AC open-type panel up to \$1,294 for the enclosed three-wire DC unit.

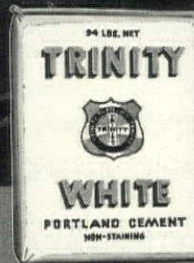
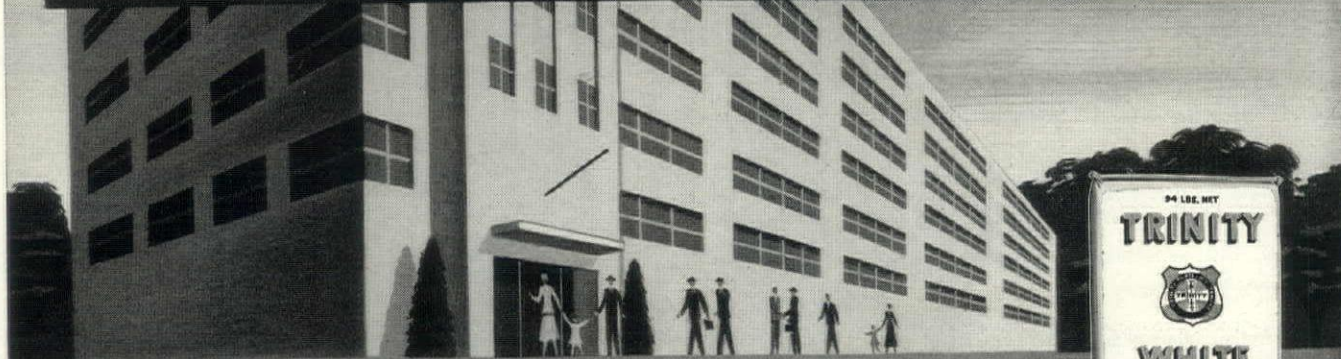
Manufacturer: General Electric, Schenectady 5, N. Y.

continued on p. 190

Trinity White

PORTLAND CEMENT

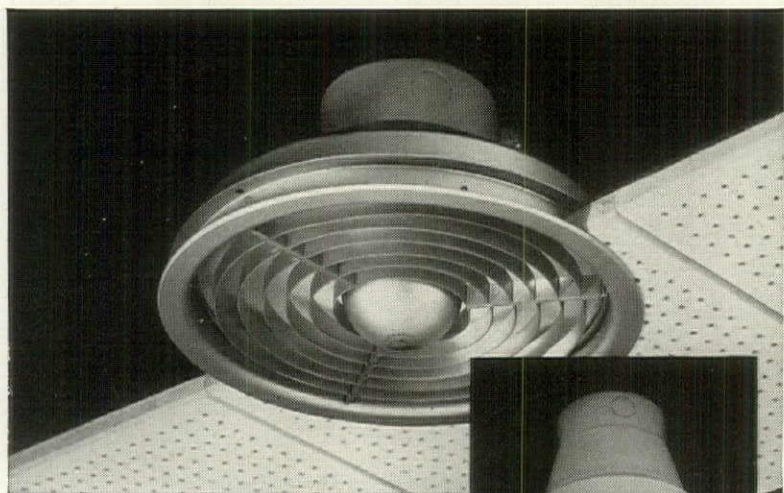
Buildings achieve added distinction by the use of Trinity White. » Use it for mass or contrast, in exteriors; for light reflection in many interiors; for terrazzo floors. » Trinity is a true portland cement that meets Federal and ASTM Specifications. » A product of General Portland Cement Co. • Chicago Dallas • Chattanooga • Tampa • Los Angeles.



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The **SILVER-DOT** — companion unit to the Silver-spot — for glare-free accent or special-effect lighting of commercial and residential interiors.

Versatile Silver-spot and Silver-dot downlight units are designed for use with the new 100-watt A-21 silvered-bowl lamp. They produce more candle power than equipment using 150-watt projector or reflector lamps . . . use less energy . . . generate less heat — without glare or wasted spill light.

Easy to maintain and install, these new units can be relamped from the floor without handling of fixture parts. A new lamp automatically restores initial efficiency.

In addition to providing warm color quality and soft, even light distribution at high illumination levels, these new Silvray units offer the following features:

The Silver-spot

- Complete shielding of light source — 45° shielding of reflector.
- Recessed units fit opening 5 1/8" deep by 9 1/4" in diameter.
- Simple accessory permits surface-mounting—unit projects only 3 1/2".
- Easily convertible to either flood-light or spotlight distribution.

The Silver-dot

- 4" ceiling aperture controls a 6' light circle at a vertical distance of 6'.
- Requires a recess opening only 7 1/4" deep by 6 1/2" in diameter.
- Complete shielding of light source — no bright areas on interior of housing.
- Minimum initial cost.

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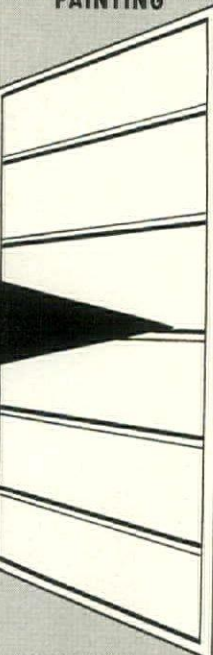
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architects



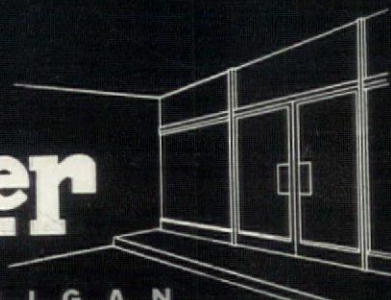
KAWNEER services to architects include modern plants and production methods, skilled craftsmen, products architect-designed—for architects. KAWNEER literature provides complete information and details. KAWNEER-trained applicators make installation easy...insure client satisfaction. And the experience of KAWNEER-trained Dealer Personnel and Field Representatives is available, on request, to architects everywhere.

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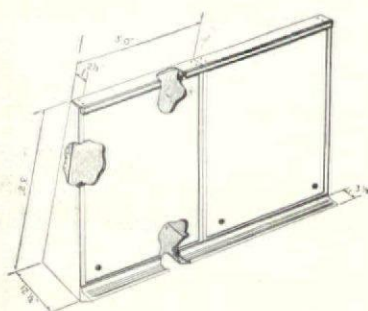
N I L E S • M I C H I G A N

Store Front Materials • Doors and Entrances • Zourite Facing • Aluminum Roll-type Awnings





PRODUCT NEWS



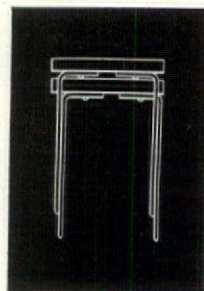
CHALKBOARD pitched for eye and arm comfort, extra storage

Delivered ready-to-hang, the packaged *Vers-A-Tilt* has a slanted surface which helps prevent glare reflections as well as writer's cramp. Behind each board is a generous storage space for maps, art supplies, papers, etc. And the board itself is reversible: one side is plastic coated hardboard and the other cork, so that it may be used either as chalkboard or bulletin board. Each section weighs 22 lbs. and measures 3' long and 3'-2" high, projects 2" from the wall at top and 1'-1/2" at the base. The unit, which sells for \$75, may be used alone or in tandem. Continuous chalk trough and display rail are furnished to run the breadth of grouped sections. Two combination map hooks and paper clips come with each unit.

Manufacturer: Claridge Equipment Co., 4608 W. 20th St., Chicago 50, Ill.

STACKING STOOL AND FOLDING TABLE are functional and fashionable

Institutional furniture does not have to be self-consciously rugged—or so these two Stambaugh pieces might indicate. Suitable for extra seating in clubrooms, offices or libraries, the stacking stool has a craftsman

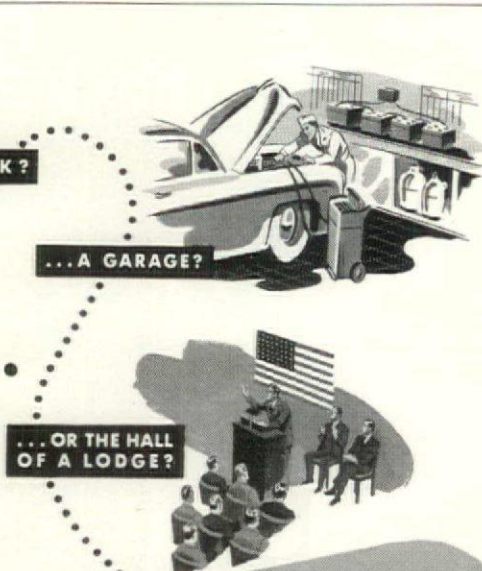
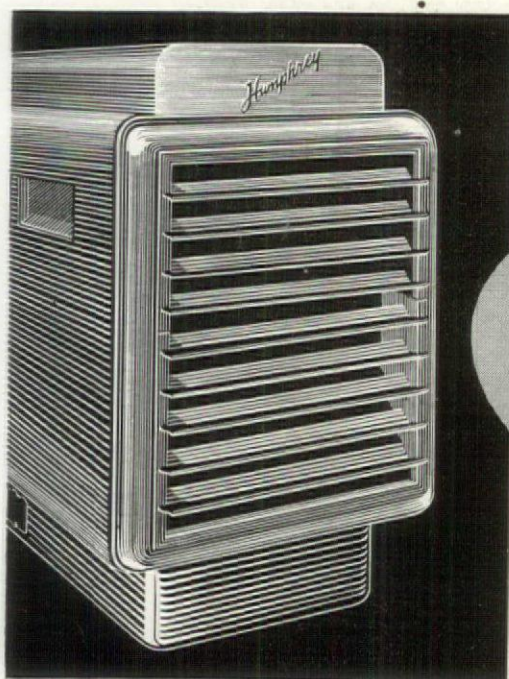


touch in its solid walnut or cherry-wood seat with a mellow hand-rubbed finish. Its cold-rolled square steel legs are lacquered dull black or white. The stool stands 18" high and is 13" across the top. It retails for \$15.50. The table's tray top, also of walnut or cherry, comes off the metal legs, which fold. It will serve as a luggage rack in a hotel bedroom or as a utility table. Price is \$27.50.

Manufacturer: Richard Stambaugh, Inc., Ada, Ohio.

continued on p. 194

Want to heat...



INSTALL
Humphrey
AUTOMATIC GAS
UNIT
HEATERS

Today you find Humphrey Unit Heaters installed in most every kind of commercial and industrial building.

They are standard equipment in factories, warehouses, garages, filling stations, grocery stores, and other working places.

They are likewise widely used in more elegant establishments such as dress shops, banks, churches, offices and auditoriums.

The Humphrey Unit Heater is a complete, self-contained heating plant. It requires only a gas line, electricity for the fan motor, and a vent pipe. No steam or hot water lines—no boiler—no fuel storage tanks or bins. No floor space required, either—it's ceiling-hung.

The Humphrey is the most advanced unit heater ever built, with such exclusive design features as Free-Flow heat exchanger; non-clogging, dust-proof Pilot; Tilting Front; and stainless steel Dual-Flame burner tips.

Humphrey Unit Heaters are also handsomely styled, with smooth, beautiful lines and eye-pleasing proportions. Their finish is a rich, dust-resisting, Ivory baked enamel that harmonizes with all interiors.

Whatever kind of business place you want to heat, you can cut fuel and maintenance costs by selecting Humphrey Gas Unit Heaters. Write today for free engineering bulletin.

GENERAL GAS LIGHT COMPANY

KALAMAZOO, MICHIGAN

Cincinnati - CITY WITH THOROSEALED HOMES

"Beautiful Homes for Your Very Own"



ROYAL W. JACKSON
2745 W. GALEBRAITH ROAD
TELEPHONE JACKSON 8707
CINCINNATI 24, OHIO
October 25th, 1951

Standard Dry Wall Products
New Eagle
Pennsylvania

Gentlemen:

During the past five years we have built four hundred homes in the greater Cincinnati area. I have to admit, and most builders will, that water is one of our greatest problems. We have had our share of dampness and troublesome leaks as most builders do, until we were at our wits end as to know what to do.

The past winter and spring was about the coldest and dampest ever recorded in the state of Ohio. Having tried just about every waterproofing on the market without the best results, we decided to try Thoroseal.

We have built sixty-five homes so far this year. Each of these homes were given a two brush application of Thoroseal. To date we have had but one complaint, which was minor and easily stopped with Water Plug. I am thoroughly convinced and sold on Thoroseal and Water Plug. I believe it is the best waterproofing on the market today. It is superior to anything we have ever used.

Yours very truly,

George L. Steinhilber, Supt.

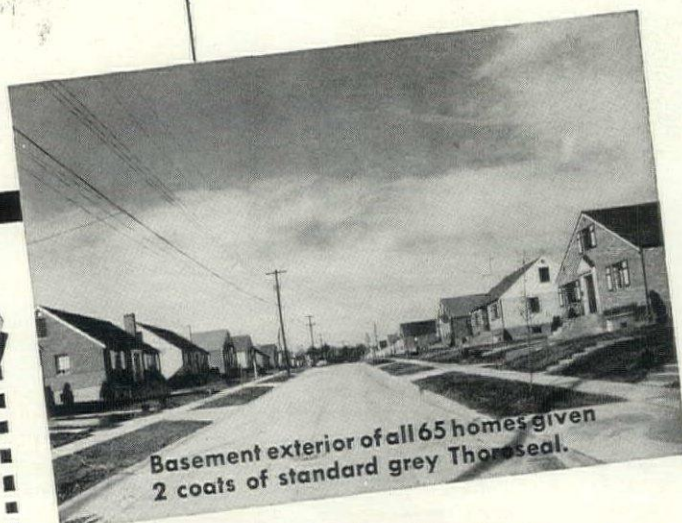
*Noted home builder
claims Thoroseal
and Waterplug best
material on the
market --*

Here's a contractor who won't be annoyed with customer complaints again. To be sure that all his homes are dry, he uses the 40-year-old Thoro System Products, a name top on the list with famous contractors the world over.

Thoroseal comes in beautiful pastel colors and can be applied also to the interior surfaces of your basement walls to seal and beautify.

Get our 20-page
brochure, pictorially
described in detail

"HOW TO DO IT"



Basement exterior of all 65 homes given
2 coats of standard grey Thoroseal.

**Standard Dry Wall Products
NEW EAGLE, PENNSYLVANIA**

Phone Monongahela 67

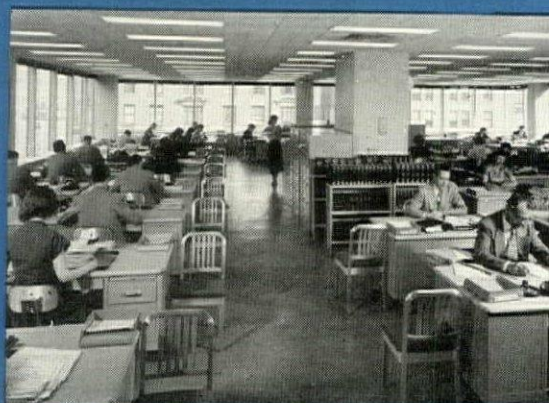
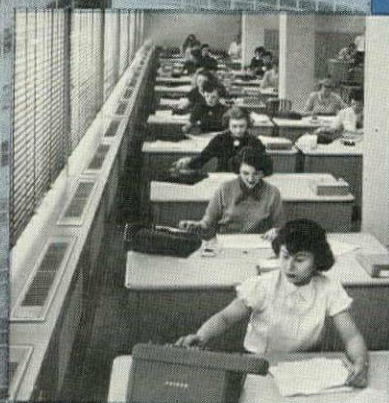
RECEIVED 1952
A.I.A. HONOR AWARD

Lever House.

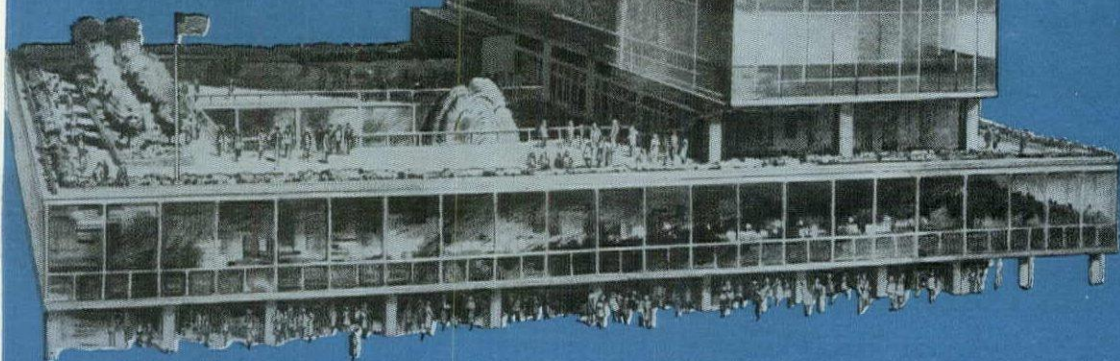
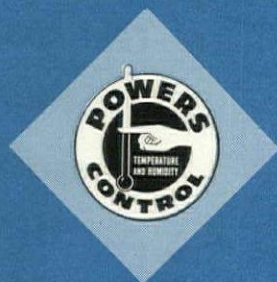
Architects: Skidmore, Owings & Merrill

Engineers: Jaros, Baum, & Bolles

Contractor: Kerby Saunders, Inc.



Conditioned air in interior zones is controlled
by POWERS Type D Sub-Master Thermostats
located on various floors.



another New York landmark equipped with

POWERS

Pneumatic System of AIR CONDITIONING CONTROL

Individual selection of desired temperature in each office and other spaces at Lever House provides year 'round comfort with important benefits of increased employee efficiency, less fatigue, absenteeism, illness, and lower cleaning costs.

Air conditioning here is by means of a split system — individual units shown below, for the glazed periphery of the building are fed with high pressure filtered and humidified air and heated or chilled water. In the center of the office space high velocity conditioned air is distributed thru ceiling diffusers.

Right-temperated-air at proper humidity is assured at all times by a Powers pneumatic control system. Only a few of its important controls are shown below, most

are "behind the scenes" performing their tasks with unfailing dependability.

Other Prominent POWERS Installations

United States Capitol Building

UN General Assembly and Conference Buildings

New York Stock Exchange • Columbia Medical Center

Madison Square Garden • Radio City Music Hall

New York Times • Manhattan House • Esso Building

Harvard University • Massachusetts Inst. of Technology

Prudential Insurance Co. • Anheuser Busch Inc. Newark

Esso Research Center, Linden, N. J.

New York City Veterans Administration Hospital

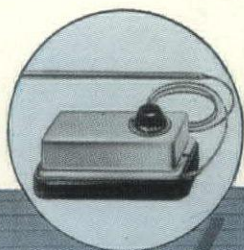
Washington National Airport • LaGuardia Airport

Experience we have gained in many installations such as these may be helpful to you. When problems of temperature or humidity control arise contact POWERS nearest office, there's no obligation.

THE POWERS REGULATOR COMPANY

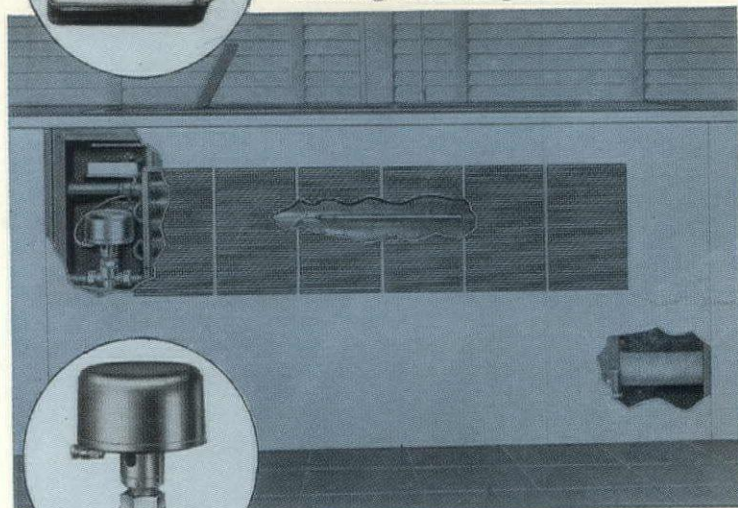
Over 60 Years of Automatic Temperature and Humidity Control

Skokie, Ill., Offices in Over 50 Cities, see your phone book

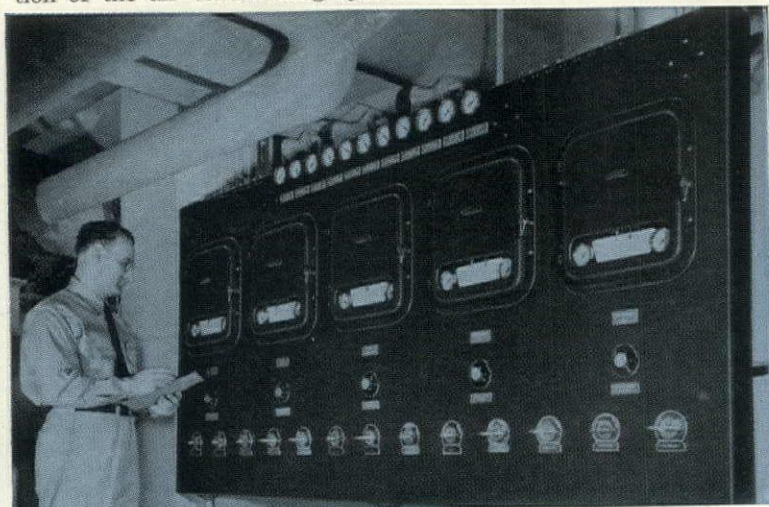


Powers Summer-Winter Thermostat and No-Pak Valve, below, regulate air conditioning units in perimeter zones.

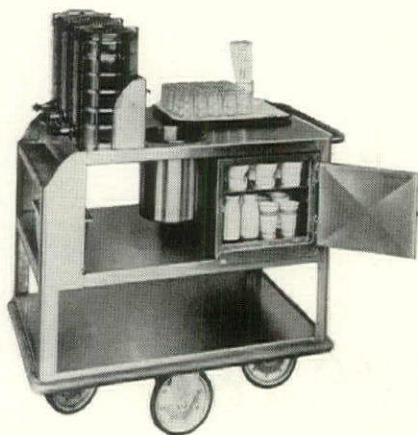
Powers Master Control Panel for primary air and water circuits plays an important part in the efficient regulation of the air conditioning system.



Powers NO-PAK Valve has unique Duo-Seal packless feature. It prevents water leakage — requires no packing maintenance.



(b4)



PRODUCT NEWS

SNACK BAR ON WHEELS. Morale booster for hospital patients

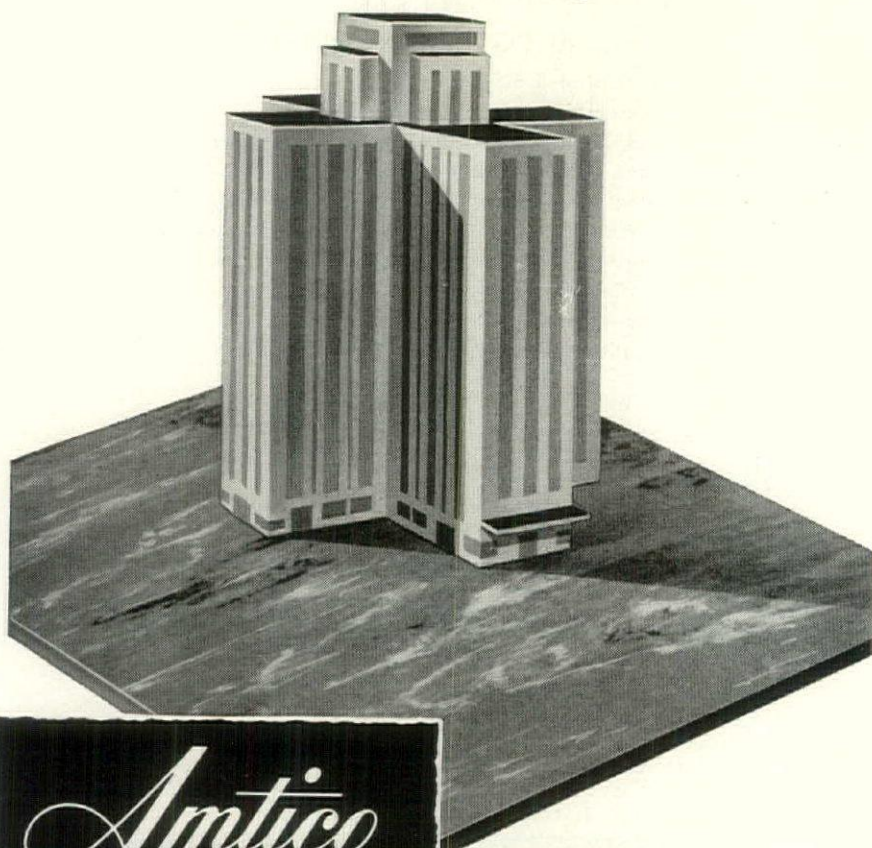
Mealpack has expanded its popular line of hospital food carts to include a junior rover for patients' between-meal snacks and periodicals—both as important for *esprit de corps* as for nourishment. Fitted with sundry accessories, the model HC cart is adaptable as a hot tray server in small hospitals with compact nursing units. In a large institution,



the "ladies auxiliary" could mobilize its gift shop on the HC to boost sales among visitors. The new model is constructed of heavy-gauge welded stainless steel and comes with three beverage dispensers, insulated food jars and box, two paper-cup dispensers, toaster, display rack and magazine rack. Total cost is \$641.90 f.o.b. factory. Stripped of accessories, the cart is \$270.

Manufacturer: Mealpack Corp., 2014 Ridge Ave., Evanston, Ill.

Put America's most beautiful flooring in that new office building...



Amtico
RUBBER FLOORING

AMERICAN BILTRITE

RUBBER COMPANY
TRENTON 2, NEW JERSEY

Also makers of Biltrite NURON for Shoe Soles, Luggage and Accessories—and Biltrite Rubber Heels

AFFILIATES... BILTRITE RUBBER COMPANY, CHELSEA 50, MASS. • AMERICAN TILE & RUBBER CO., TRENTON 2, N. J. • PANTHER-PANCO RUBBER CO., CHELSEA, MASS. • AMERICAN TILE & RUBBER CO. (CANADA) LTD., SHERBROOKE, QUEBEC • PANTHER RUBBER CO., LTD., SHERBROOKE, QUEBEC, CANADA



SAMPLES ON REQUEST

AMTICO, Dept. MB-1, Trenton 2, New Jersey

Gentlemen:

Please send me free box of 4" x 4" samples of Amtico Flooring in standard 1/8" gauge and all 26 stock colors—also illustrated literature.

NAME.....

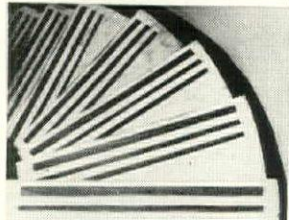
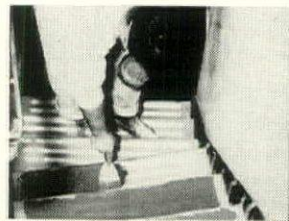
FIRM.....

ADDRESS.....

CITY..... STATE.....

DURABLE COATING skidproofs treacherous floors and stairs

Slippery floors, decks, ramps and steps can be made safer for pedestrian traffic simply and inexpensively with *R-Mir-Dex*. This non-slip coating contains durable aluminum oxide granules suspended in a chemical base, and is claimed to outlast other skidproof decking. (In test installations at a large shipyard, the manufacturer reports that *R-Mir-Dex*



stood up under 242,000 trampings while competitive materials lasted for only 85,000.) On the spiral stairs pictured above, the coating tape was first applied in strips, the coating brushed on, and the tape removed. *R-Mir-Dex* cost about \$7 per gal. for the trowel-on type and \$7.50 for the brush-on. Coverage per gal. ranges from 60 to 130 sq. ft. depending on consistency.

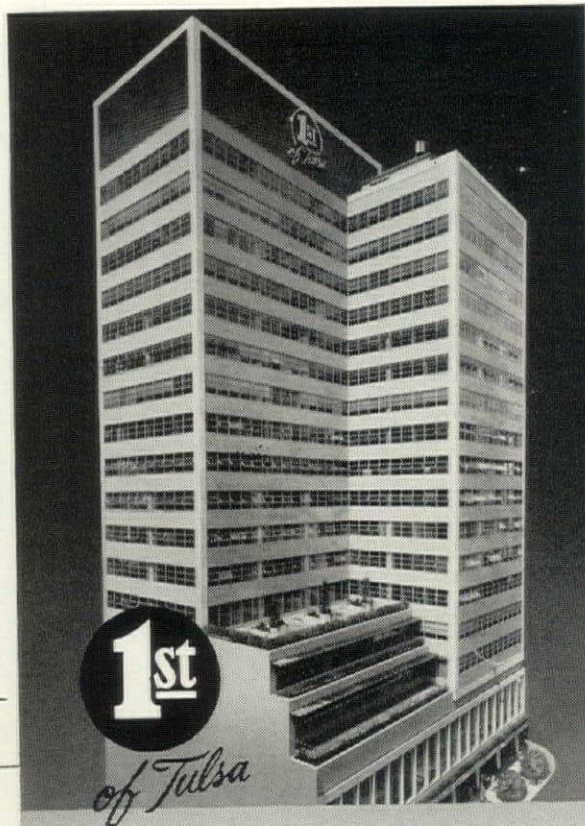
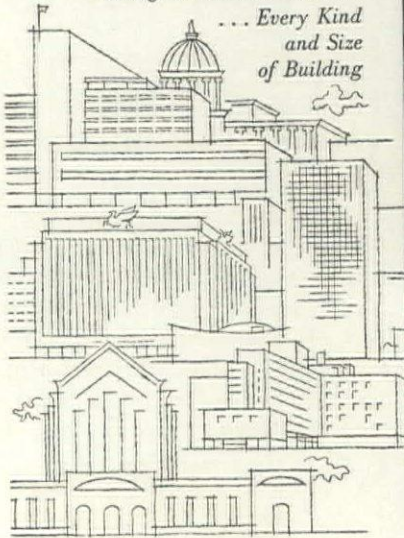
Manufacturer: Miracle Adhesives Corp., Dept. TJW-P, 214 E. 53rd St., New York 22, N. Y.

Technical Publications p. 200

*In the Nation's Skyscrapers
is Evidence of
Sloan Leadership*

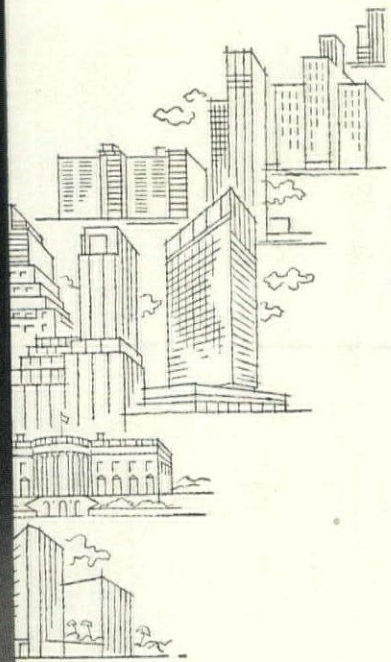
In Office Buildings . . .
Retail Enterprises . . .
Government Buildings . . .
Hotels and Apartments . . .
Athletic and Social Clubs . . .
Libraries and Museums . . .
Hospitals and Sanitariums . . .
Recreation Buildings . . .
Financial Buildings . . .
Publishing Buildings . . .
Industrial Buildings . . .
Railroad Buildings . . .
Aviation Buildings . . .
Public Utilities . . .
Private and Public Schools . . .
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*... Every Kind
and Size
of Building*



**FIRST NATIONAL BANK & TRUST CO.
TULSA, OKLAHOMA**

CARSON & LUNDIN, architects. GAYNOR & ALBRIGHT, mechanical engineers. JOHN W. HARRIS & ASSOCIATES, supervisory contractors. MANHATTAN CONSTRUCTION CO., general contractors. J. L. HEATH COMPANY, plumbing contractors. ATLAS SUPPLY DIVISION OF JONES & LAUGHLIN CORPORATION, plumbing wholesalers.



BOILERS WHERE BUILDING MEETS SKY!

• The new \$6,000,000 home of the 1st National Bank of Tulsa is a dramatic structure in a dramatic city. It is a marble-banded skyscraper perched above a hospitably open ground floor, beautified by a tier of garden terraces and combining excellent design and sound economics. One of its many innovations is its roof-top room for gas-fired boilers, so placed to provide maximum basement space for vaults and other facilities and

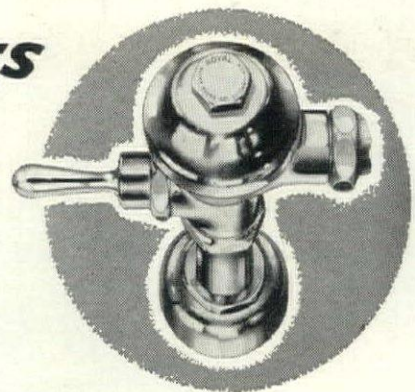
to effect structural economies. Another feature is continuous windows, both sides of which can be washed from the inside. Those on western exposures have glare-resistant glass. Still another modernism is air conditioning which adjusts itself to movement of the sun around the structure. This is another notable building equipped throughout with SLOAN Flush VALVES—more proof of preference that explains why . . .


more **SLOAN Flush VALVES**
are sold than all other makes combined

SLOAN VALVE COMPANY • CHICAGO • ILLINOIS

Another achievement in efficiency, endurance and economy is the SLOAN Act-O-Matic SHOWER HEAD, which is automatically self-cleaning each time it is used! No clogging. No dripping. When turned on it delivers cone-within-cone spray of maximum efficiency. When turned off it drains instantly. It gives greatest bathing satisfaction, and saves water, fuel and maintenance service costs.

Write for completely descriptive folder





YOU CAN BE **SURE**...IF IT'S
Westinghouse

SYSTEM PLANNING



Chrysler Building East, center above, reflects modern trend in building design.

Reinhard, Hofmeister & Walquist, Architects; Guy B. Panero, Consulting Engineer; Turner Construction Co., General Contractor; Fishbach & Moore Inc., Electrical Contractor.

PLANNED POWER PAYS

Chrysler again matches modern power with modern architectural design

When the original Chrysler Building was constructed, Westinghouse helped engineer the most modern electrical system available at that time. Since then, it has given 15 years of outstanding service—a vital requirement for this massive, 77-story structure.

When Chrysler Building East was built, Westinghouse *again* assisted the owners, architects, engineers and contractors to plan a modern distribution system—served by the utility network. Its main feeders are protected by a Westinghouse Standard Building-Type Distribution Switchboard, and the power and lighting circuits are protected by Westinghouse Circuit Breaker Panelboards. Special lighting panelboards provide tenant submetering.

This system assures maximum safety and low-cost maintenance, since there are no live parts

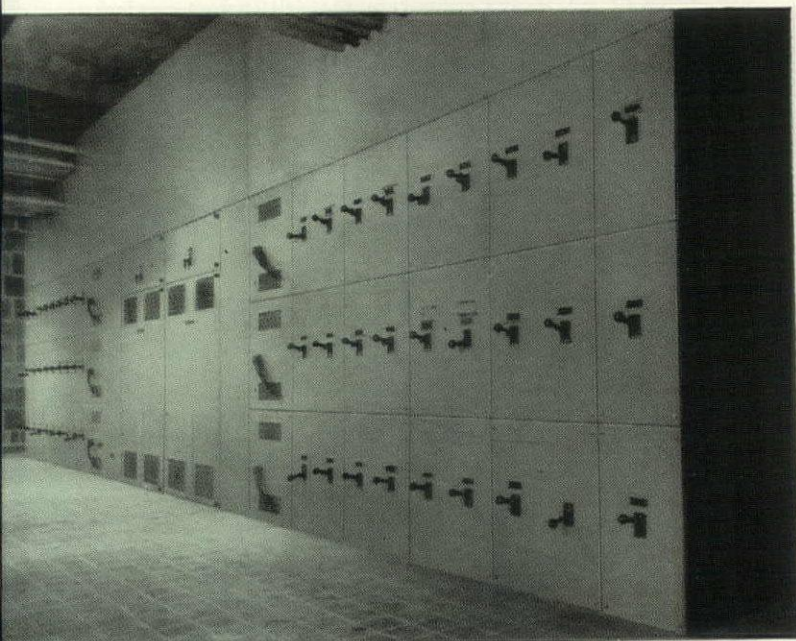
exposed to personnel . . . no fuses to replace; It can be laid out and installed easily.

CONSIDER THIS: A building's distribution system is a vital design consideration. It must be treated as an integral part of the over-all design . . . and be *coupled* with distribution equipment of the highest caliber.

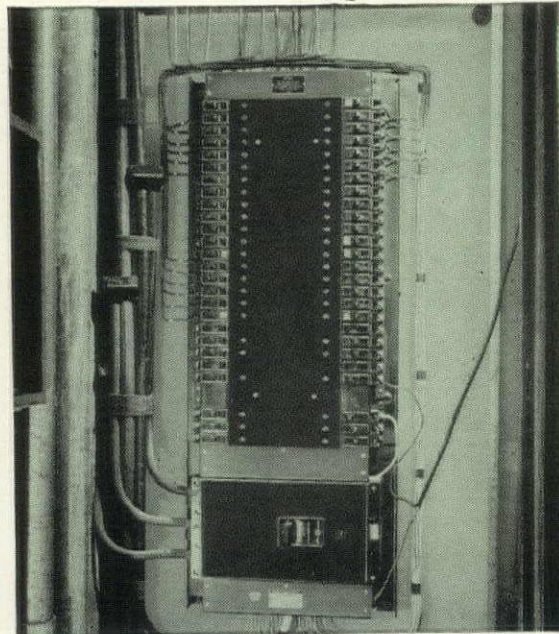
Westinghouse offers you assistance on both of these requirements—and backs it with years of experience. You benefit by getting more freedom in design techniques . . . by providing your customer with the best possible system for *his* building.

There is one best system of distributing electrical power for *every* building. Let Westinghouse help you select it on your next job. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-94958-A



Westinghouse Standard Building-Type, Metal-Enclosed, Dead-Front Switchboard has full-length pull box at top. This permits neat arrangement of the many large conduits.

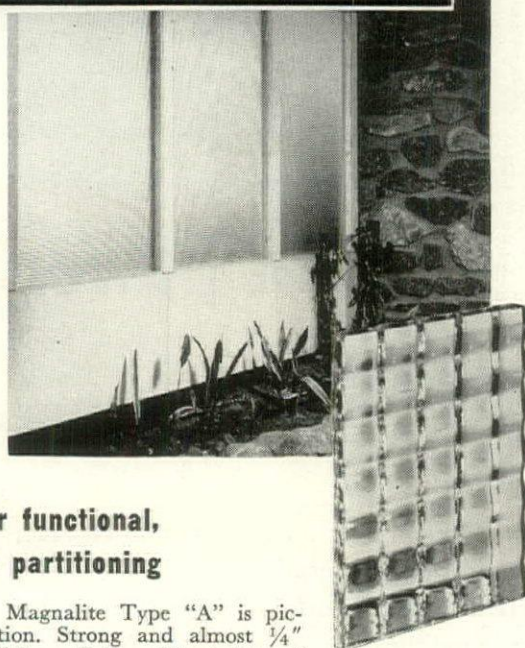


Westinghouse Lighting Panelboards are NLAB type with Quicklag® circuit breakers. They are specially designed so that part, or all, of a floor can be metered separately.

Magnalite

obscuring-diffusing glass
for distinctive beauty
in modern designs

Magnalite Type "A" used for interior corridor partitions in new Lancaster Grammar School, Lancaster, N. H. Perley F. Gilbert Associates, Architects.



**perfect for functional,
decorative partitioning**

In this modern school, Magnalite Type "A" is pictured in a corridor partition. Strong and almost $\frac{1}{4}$ " thick, it permits the use of large lights without fear of breakage. Magnalite is also installed in the school offices, providing great visual security.

Send for descriptive brochure M-1953 illustrating numerous applications of Magnalite. Samples on request. Magnalite is sold by leading glass dealers everywhere.

Magnalite is manufactured by the Mississippi Glass Co. Type "A" lenses approx. $\frac{1}{2}$ " O.C.; Type "B" and "C" wired approx. $\frac{1}{4}$ " O.C.

J. Merrill Richards
25 Huntington Ave., Boston, 16 Mass.



Thermotainer Type CPT

Pass-through unit with doors on both sides for use between kitchen and service area.

4
of the
complete
line of
11



Thermotainer Type E

Four compartment unit with full width doors. Large capacity. Shelf supports for 12 x 20 pans.

Thermotainer ELECTRIC FOOD WARMERS

Ideal hot food storage for domestic,
institutional and commercial use



Thermotainer Type UC

Small, one or two compartment unit for use under steam table or serving counter. Ideal where space is limited.

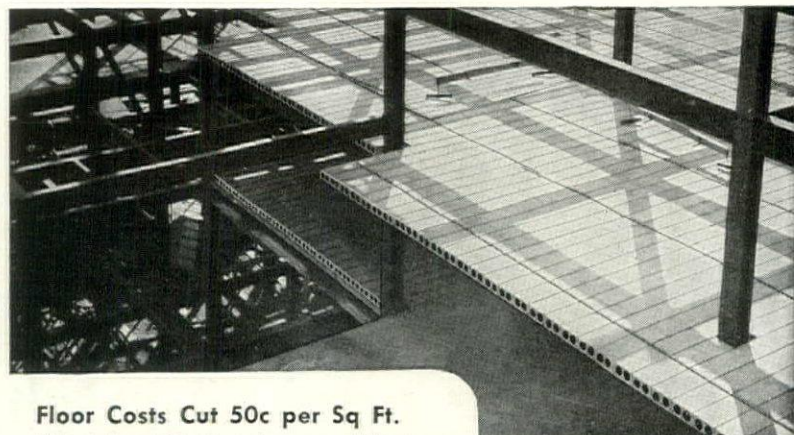
Thermotainers
made in
standard
types and
sizes, or
to your
specifications



Thermotainer Type AA

Combination worktable and hot food storage unit. In 2, 3 or 4 section sizes. 34 inches high, 30 inches wide.

FRANKLIN PRODUCTS CORP.
2155 PERSHING ROAD • CHICAGO 9, ILLINOIS



Floor Costs Cut 50c per Sq Ft.

This Arizona Hotel used precast slabs to cut concrete floor costs 50c sq. ft. and save two months' job time. Workmen placed three floors and roof of Flexicore slabs before first floor pours were completed. Smooth underside of slabs eliminated plaster on guest room ceilings. Cantilevered slabs formed economical five-foot balconies. For catalog and nearest manufacturer, write The Flexicore Co., Inc., 1760 E. Monument Avenue, Dayton 1, Ohio.



photograph it!

**A photo record is quicker, more accurate;
and it may prove to be priceless.**

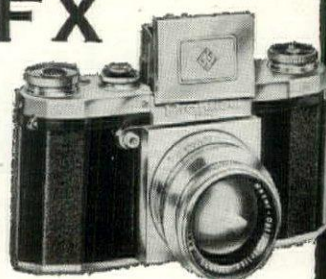
LOOK HOW MUCH you can do with the new 35-mm.

PRAKTICA FX single-lens reflex camera: Sell custom services and equipment by sample photos, in color or black and white. Show merchandise too bulky to carry. Photograph every field installation. Record construction progress. "Before and After" photos. Train personnel, etc. Easy to carry. Practically foolproof. An excellent camera for the home photographer, too. From \$99.50 to \$199.50 (Tax incl.). The Praktica Co., Inc., 48 West 29th Street, New York 1, N. Y.



**39 tested ideas
Free for you!**

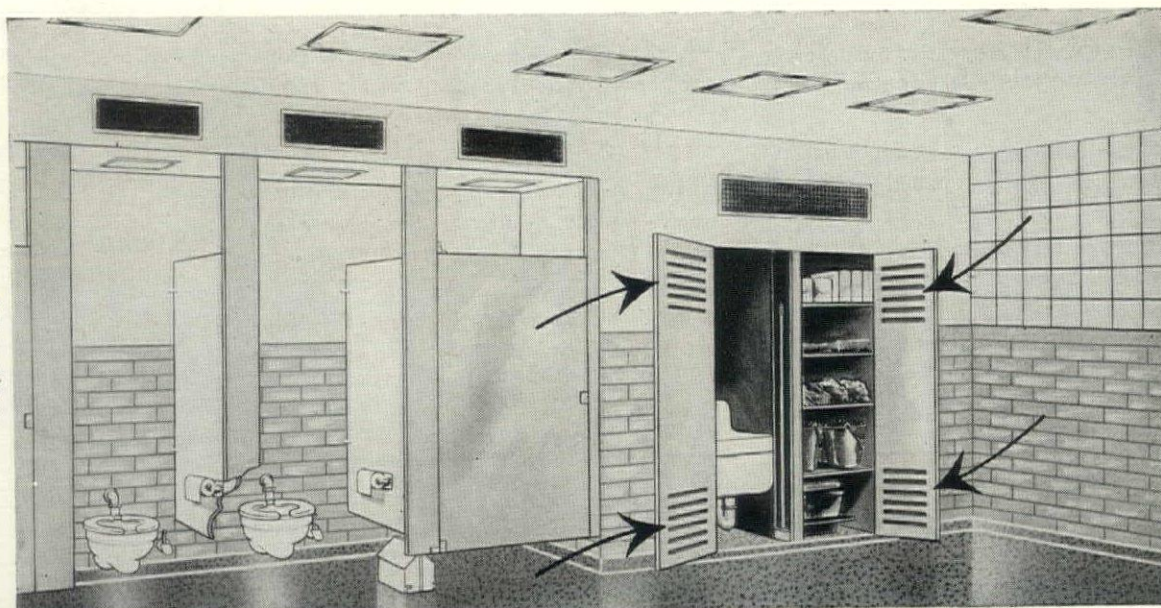
**PRAKTICA
FX**



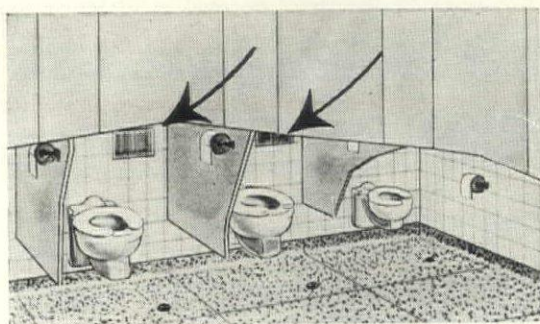
The Praktica Co., Inc. Dept. 513
48 West 29th Street, N. Y. 1, N. Y.
Please send me a copy of "PHOTOGRAPHY IN SCIENCE AND INDUSTRY."

Name.....
Position.....
Company.....
Address.....
City.....Zone... State.....

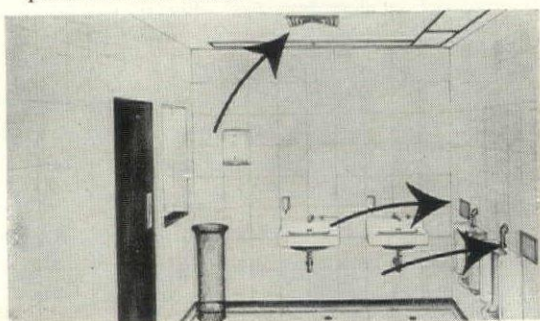
For best air circulation, odor and fume removal . . . provide ventilation louvers in doors of janitors' supply closets.



Ventilation planning can make or break a modern washroom



In large washrooms, exhaust vents near each toilet remove odors quickly. Correct positioning is important for best results.



Combination of ceiling air diffusers and exhaust vents close to urinals—a successful arrangement for smaller, heavily used washrooms.



SCOTT
Symbol of
Modern Washrooms

Trade Mark "Washroom Advisory Service" Reg. U.S. Pat. Off.

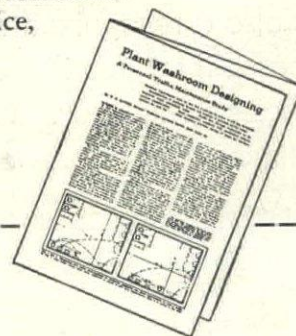
WASHROOM VENTILATION has a noticeable effect on the health and morale of employees. When a washroom has a fresh, clean smell about it, you can be sure it has correctly positioned, properly functioning vents. Look for good production records, less illness and absenteeism, too.

In your next building plans, make allowances for correct washroom ventilation. It's a wonderful opportunity to give your client good employee relations for years to come—*built right into his plant!*

QUESTIONS? Call in your Scott Washroom Advisory consultant. He's one of a group of trained specialists who have gained real know-how from servicing over 500,000 washrooms. And he's ready to give you the answers to any of thousands of questions on modern washrooms.

Contact Washroom Advisory Service,
Scott Paper Company, Chester, Pa.

Send for FREE Leaflet...
"Plant Washroom Designing"



Washroom Advisory Service
Dept. MB-1
Scott Paper Company
Chester, Pennsylvania

At no cost or obligation, please send me your study of personnel, traffic and maintenance problems, "Plant Washroom Designing."

Name _____ Title _____
Company _____
Address _____
City _____ Zone _____ State _____

LIGHTING. Acusti-Luminus Ceilings. Luminous Ceilings Inc., 2500 W. North Ave., Chicago 47, Ill. 8 pp. 8½" x 11"

Graphic presentation of a combination acoustical and fluorescent lighting system.

LIGHTING. Surface Lighting by Gruber, Folio No. S-50. Gruber Lighting, 125 S. First St., Brooklyn 11, N. Y. 8 pp. 8½" x 11"

A series of two- and three-lamp fluorescent

luminaires for surface mounting is illustrated and described in this two-color specification folder.

WIRING. Report on Aluminum Electrical Conductor. National Electrical Contractors Assn., Inc., 610 Ring Bldg., Washington 6, D. C. 8 pp. 5" x 9"

An excellent summary of the uses of aluminum electrical conductors. Although more

easily obtainable than copper, aluminum is not so well understood; therefore, this report explains special problems and tells where and when aluminum or copper may be used in electrical wire, cable and bus.

WIRING. Leviton Electrical Wiring Devices, Catalogue No. 51. Leviton Mfg. Co., Brooklyn 22, N. Y. 96 pp. 8½" x 11"

More than 1,000 wiring devices for industrial, commercial and residential use are described and illustrated in this well-organized specification catalogue.

LIGHTING. Guardian for Service Station Lighting, Catalogue No. 52. Guardian Light Co., 301 Lake St., Oak Park, Ill. 32 pp. 9" x 11¼"

Photos, drawings, technical data and general ordering information on fluorescent lighting fixtures for service stations.

LIGHTING. Commercial, Industrial, Institutional Lighting Equipment, Catalogue No. 52. The Kayline Co., 2480 E. 22nd St., Cleveland 15, Ohio. 68 pp. 8½" x 11"

Complete specification data on the manufacturer's fluorescent, incandescent and slimline lighting fixtures.

HARDWARE. Grant Cubicle Hardware. Grant Pulley & Hardware Co., 31-85 Whitestone Parkway, Flushing, L. I., N. Y. 4 pp. 8½" x 11"

This two-color folder describes Grant's ceiling-mounted cubicle hardware for hospitals.

HARDWARE. Cee Loc Dual Purpose Door Lock. Electric-Aire Engineering Corp., 209 W. Jackson Blvd., Chicago 6, Ill. 4 pp. 5" x 8½"

Brochure describes a unique combination door lock and cigarette shelf with built-in ash tray designed for toilet stalls.

HARDWARE. Corbin Hardware for the Specialized Requirements of Hospitals. P. & F. Corbin Div., The American Hardware Corp., New Britain, Conn. 4 pp. 8½" x 11"

Heavy-duty locks, door closers, exit fixtures and other hardware suitable for hospital applications.

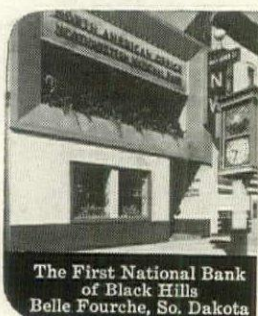
METAL FIXTURES. Kindorf Devices, The Kindorf Co., Subsidiary of Steel City Electric Co., Pittsburgh 33, Pa. Catalogue K-11. 34 pp. 8½" x 11"

A prefab system of pipe and conduit hangers and supports made up of perforated steel channels utilizing standard nuts and bolts.

AIR CONDITIONING CONTROL. Central Control Panel Systems, Bulletin F-5265. Barber-Colman Co., Rockford, Ill. 8 pp. 8½" x 11"

Details and automatic central control panels for the regulation of heating and air-conditioning systems. *continued on p. 204*

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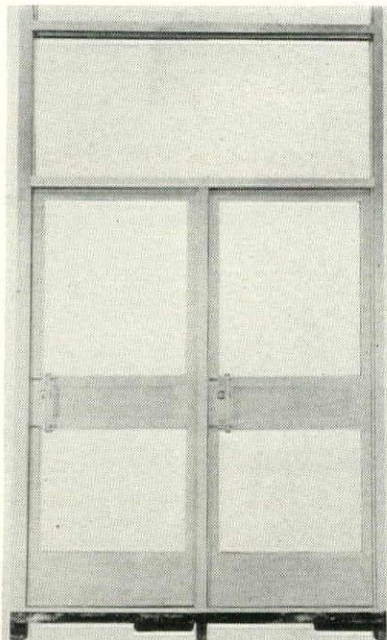
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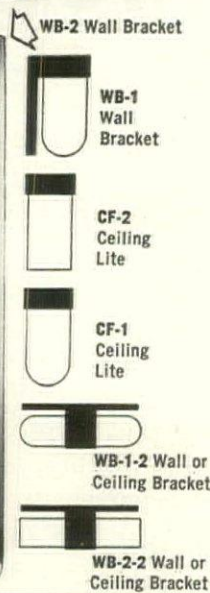
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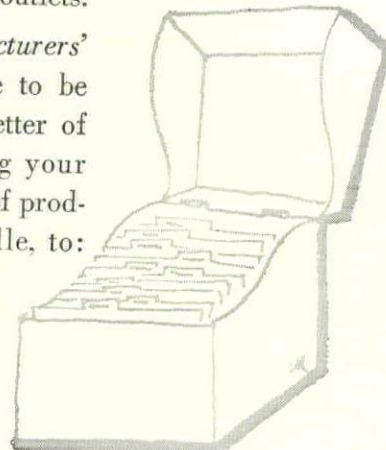
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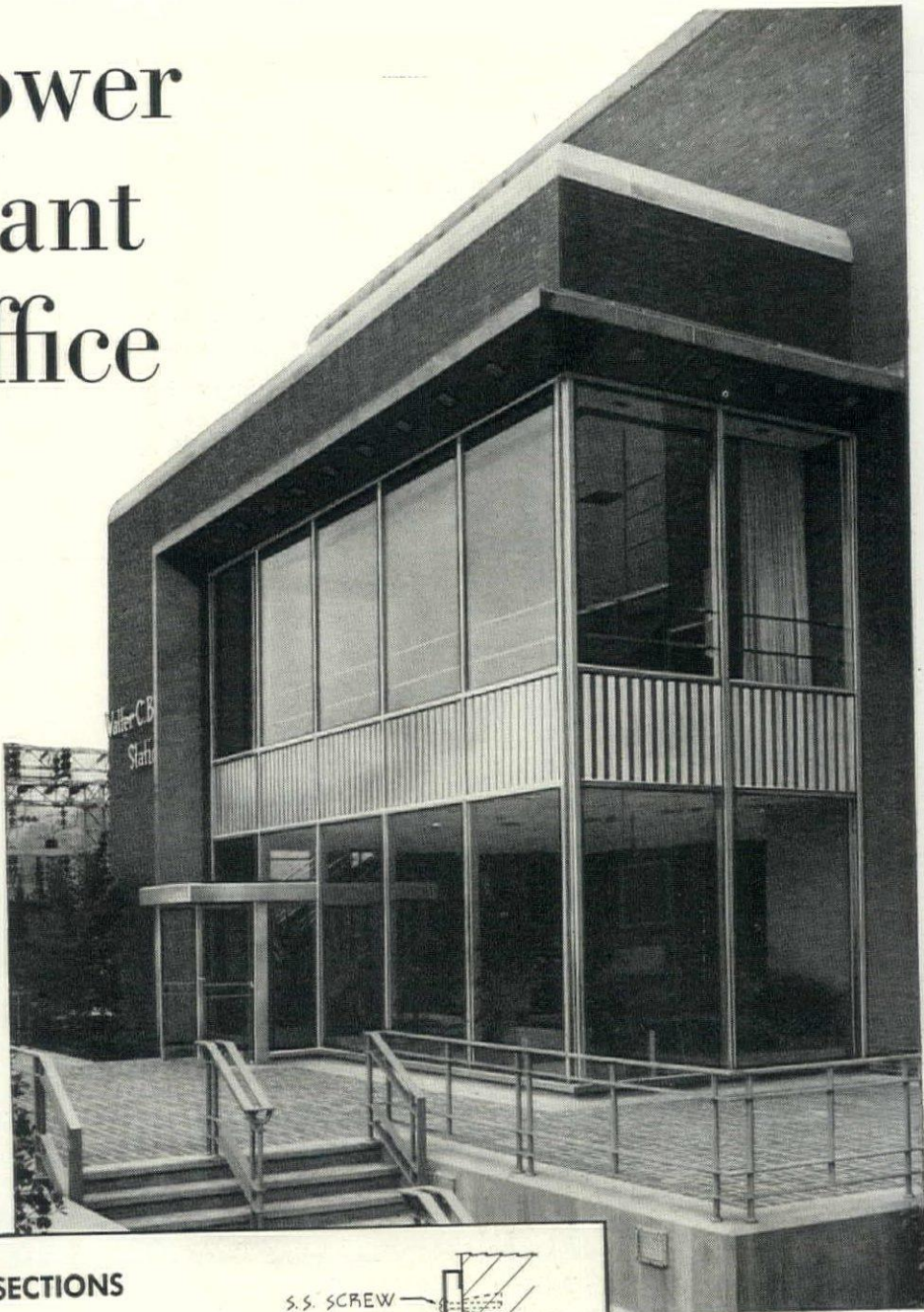
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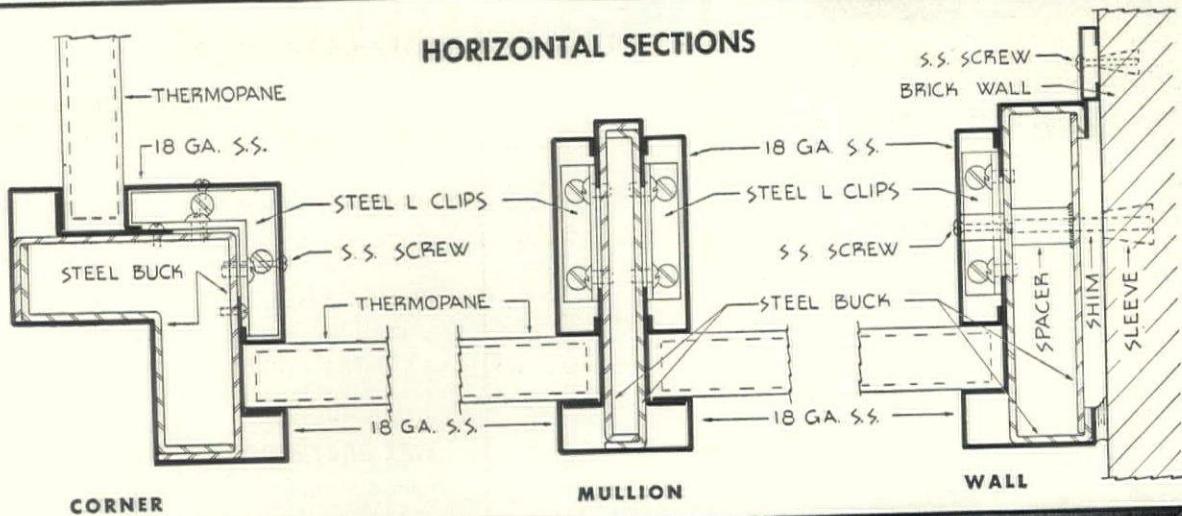
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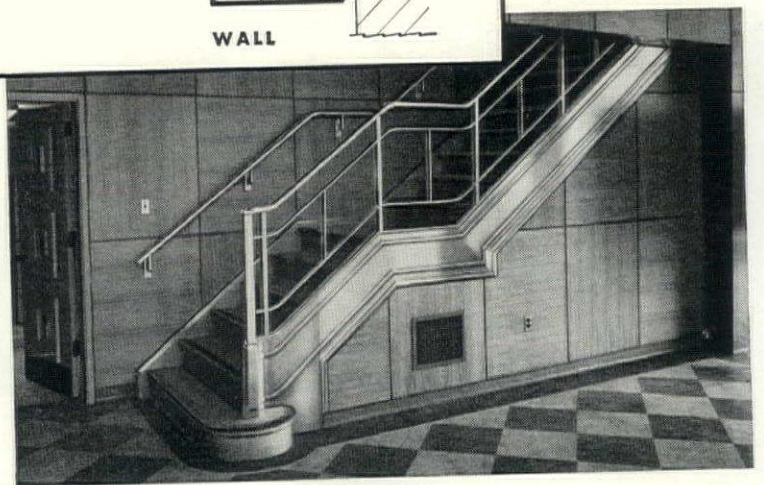
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AIR CONDITIONING. Uni-Flo Engineered Air Distribution Products, Bulletin F-4471-1. Barber-Colman Co., Rockford, Ill. 4 pp. 8½" x 11"
Air-distribution grilles, registers, ceiling outlets and accessories.

WATER SYSTEMS. Lancaster Shallow Well Pump, Lancaster Pump and Mfg. Co., Inc. Lancaster, Pa. 64 pp. 9" x 11¼"
Tab-indexed and illustrated, this catalogue

gives general information on shallow well pumps including details on a new line of submersible units.

PLASTIC FLOOR TILE. Dodge - Vinyl - Cork, Tile Catalogue No. 53. Dodge Cork Co., Inc., Lancaster, Pa. 8 pp. 8½" x 11"

Some impressive findings of an independent laboratory comparison of the manufacturer's vinyl-cork tile and other hard-surface floor

coverings are tabulated in the specification booklet. A two-page color chart illustrates the six natural cork blends and nine solid tones available in Dodge's rugged, resilient floor covering.

FLOORS. The Key to Gymnasium Floor Finishing. Huntington Laboratories, Inc., Huntington, Ind. 6 pp. 8½" x 11"

Useful information on finishing and care of gym floors—from the correct use of wood sealers and maintenance products down to official rules affecting the painting of basketball court lines.

PAINT. ACP Phosphate Coating Chemicals and Processes, Data Sheet No. P-100-46. American Chemical Paint Co., Ambler, Pa. 12 pp. 8½" x 11"
Chemical coatings for paint-bonding, rust-proofing, and protection of friction surfaces.

CONSTRUCTION. Open-Web Steel Joist Construction, Catalogue ST-52. Steel Joist Institute, 1346 Connecticut Ave. NW, Washington 6, D. C. 40 pp. 8½" x 11"

Covering standard specifications for open-web steel joist construction, this design manual presents complete safe load tables, and technical data on dimensions, sections and properties of joists approved by the Institute.

WATER SYSTEM CONTROLS. Autocon Type M Selectrols, Bulletin No. 3500. Automatic Control Co., St. Paul 4, Minn. 4 pp. 8½" x 11"

Covers control mechanisms for water, sewage, irrigation and flood-control systems. Feature of the *Type M Selectrol*: one float can provide coordinated operation of two to 18 pumps, valves, etc.

AIR CONDITIONING. Modern Practices in Hospital Ventilation, Bulletin No. 1510. ILG Electric Ventilating Co., 2850 N. Crawford Ave., Chicago 41, Ill. 18 pp. 8½" x 11"

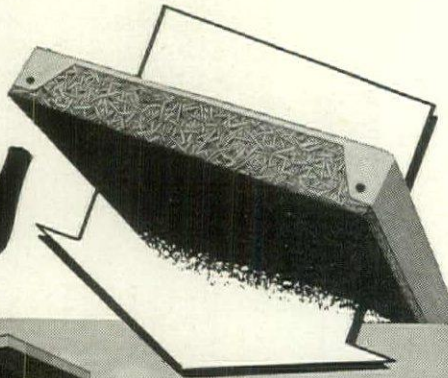
General hospital ventilating needs are explained in this new bulletin and recommended air changes are listed for various areas. Photos illustrate solutions to particular problems.

FIRE PROTECTION. The ABC of Fire Protection, Bulletin No. 66. Automatic Sprinkler Corp. of America, Youngstown 1, Ohio. 36 pp. 8½" x 11"
A well-illustrated and comprehensive study of the economies and technical details of Automatic's temperature rate-of-rise sprinkler system.

COMMUNICATIONS. P-A-X Business Telephone Systems, Circular No. 1735. Automatic Electric Sales Corp., 1033 W. Van Buren St., Chicago 7, Ill. 8 pp. 8½" x 11"

The circular details P-A-X Business Telephone Systems for efficient intercompany use. The adaptability of P-A-X to various types of organizations is stressed throughout the text.

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Harwell Hamilton Harris, architect.*

Other January features: 10 ways to save 10% in house construction costs.

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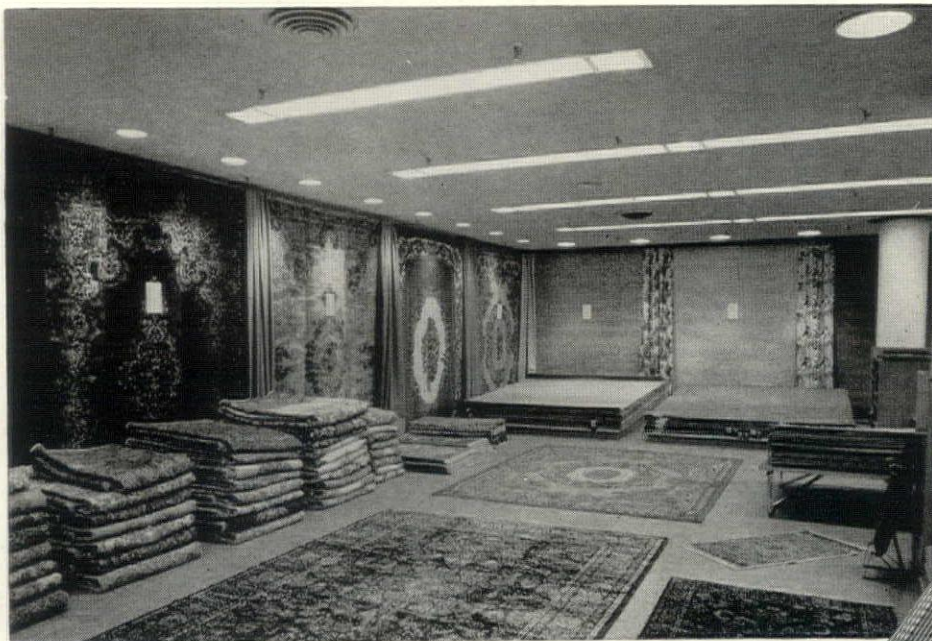
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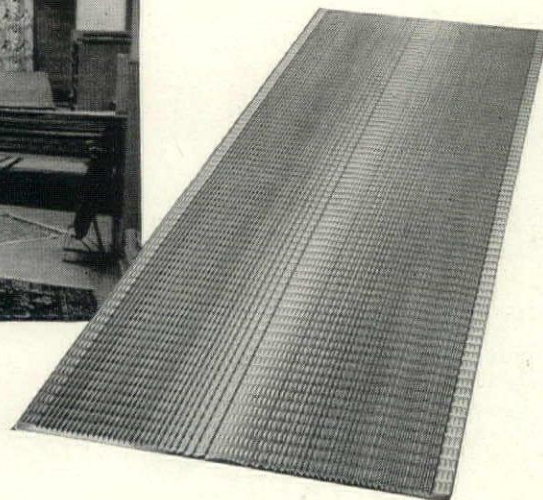
Installation: Emporium Store, Stonestown Development Project, San Francisco

Architect: Welton Becket and Associates, Los Angeles

Fixture Manufacturer: Haluk Lighting and Manufacturing Co., San Francisco

Control of fluorescent lights by Corning Lens Panels puts the right light where it is needed, eliminating fixture brightness, glare and shadows. Merchandise is shown

in true color. Pyrex Lenslites offset incandescent light beams, highlighting rugs hanging on the walls and adds dramatic interest to the over-all display.



A combination of incandescent and fluorescent light is achieved in these unique circular fixtures. The incandescent source in the center is surrounded by fluorescent lamps and the two sources are blended into a uniform light through Alba-Lite.



Here's ladies' wear, silverware and gifts look their best because Corning Lens Panels direct true-color light to individual counters while Pyrex Lenslites provide highlights for contrast. Notice how the fixtures blend with the over-all modern appearance of the area.



Direct beaming of incandescent light is exceptionally important in the beauty shop. Pyrex Lenslites do this in a particularly effective manner, while adding to the decor of the shop itself.

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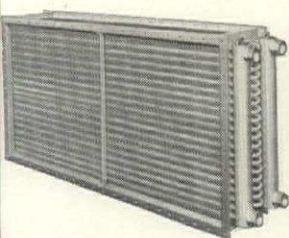
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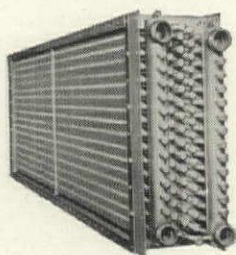
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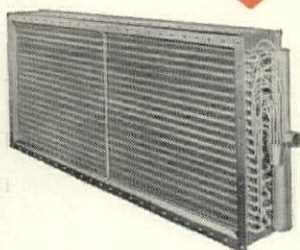
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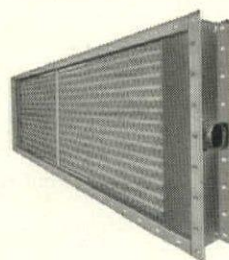
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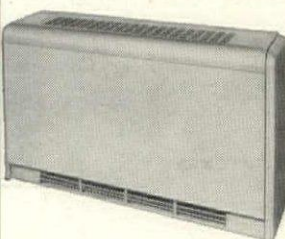
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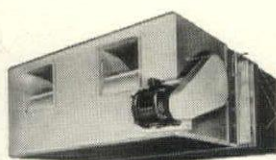
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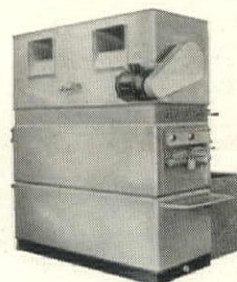
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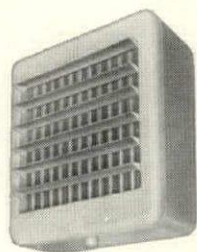
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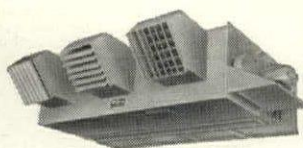
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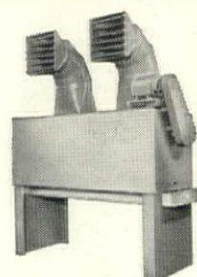
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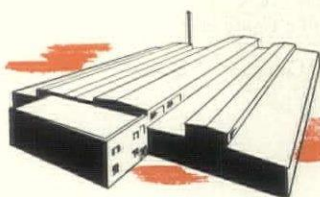
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| 96, 169 | General Electric Company | 184 | Taylor, Halsey W., Company, The |
| 190 | General Gas Light Company | 70 | Thomason Plywood Corporation |
| 187 | General Portland Cement Co. (<i>Trinity Division</i>) | 52 | Titus Manufacturing Corp. |
| | | 90, 91 | Trane Company, The |
| 89 | Hachmeister-Inc. | 188 | Tremco Manufacturing Co., The |
| 175 | Hager, C., & Sons Hinge Mfg. Co. | 187 | Trinity Division (<i>General Portland Cement Co.</i>) |
| 50 | Hardwood Products Corporation | 44 | Truscon Steel Company |
| 1 | Hauserman, E. F., Company, The | | |
| 9 | Higbie Mfg. Company, Avon Tube Division | 65 | Union Carbide and Carbon Corporation (<i>Bakelite Company, Division</i>) |
| 56 | Holcomb & Hoke Mfg. Co., Inc. | 184 | United States Air Conditioning Corp. |
| 27 | Hope's Windows, Inc. | 168 | United States Quarry Tile Co. |
| 206 | HOUSE & HOME | 4, 5 | United States Steel Company |
| | | 72 | U. S. Steel (<i>National Tube Company</i>) |
| 212 | Inland Steel Products Company | | |
| | | 184 | Wakefield Brass, F. W., Company, The |
| 53 | Johns-Manville | 77 | Walworth Company |
| 51 | Jones & Laughlin Steel Corporation | 76 | Ware Laboratories, Inc. |
| 57 | Josam Mfg. Co. | 28, 29 | Wasco Flashing Company |
| | | 22, 23, 162, 163, 196, 197 | Westinghouse Electric Corporation |
| 189 | Kawneer Co., The | 66, 67 | Wheeling Corrugating Company |
| 177 | Kentile, Inc. | 173 | Woodwork Corporation of America |
| 86 | Kewanee-Ross Corporation | 19 | Worthington Pump and Machinery Corporation |
| 20 | Kimble Glass Company (<i>Subsidiary of Owens-Illinois Glass Company</i>) | 80 | Wright Manufacturing Company |
| 176 | Kinnear Manufacturing Company, The | | |
| | | 186 | York-ShIPLEY, Inc. |
| | | 82 | Zurn, J. A., Mfg. Co. |

BARCOL OVERdoors



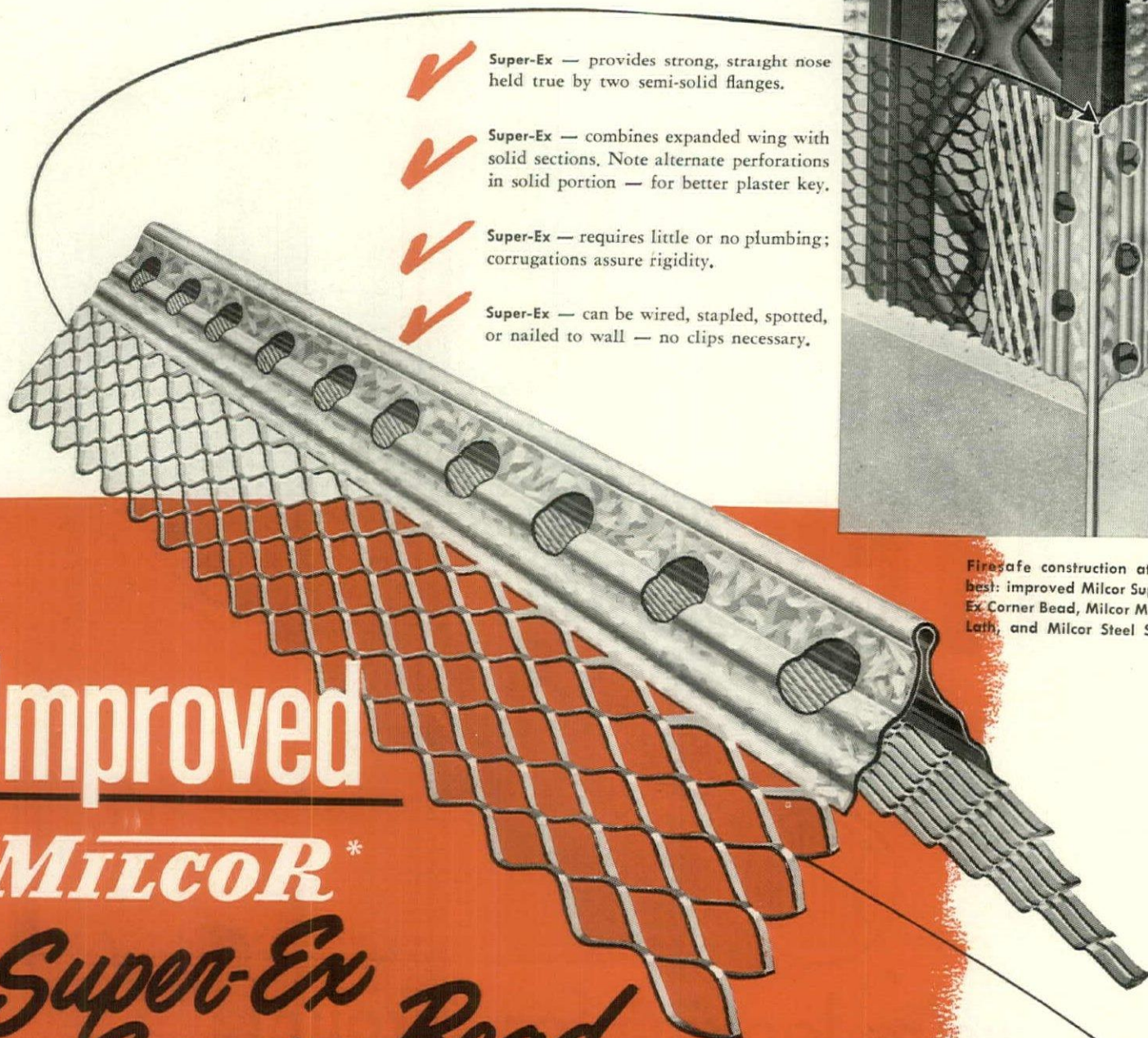
we're looking for "trouble" ...

The kind of "trouble" we look for is illustrated above. The trouble here was that the door — a big one for a truck entrance — had to go up and into a restricted space between the ceiling and a hoist rail. This called for some figuring and the use of a few Barcol OVERdoor features specially designed for situations of this kind. The result is a very satisfactory and smooth-running job, push-button operated by a power-matched Barcol Electric Door Operator. Other plants have other problems, and our people are prepared to handle them. We like "trouble" of this kind and are ready for it. So call your Barcol representative today — look for his listing in the "yellow pages" of the telephone book — and tell him YOUR trouble.

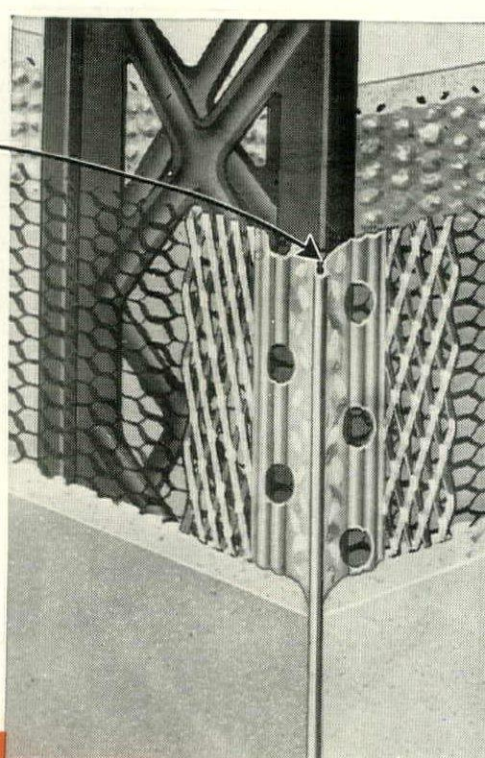
Factory-Trained Sales and Service Representatives in Principal Cities



BARBER-COLMAN COMPANY
158 MILL STREET, ROCKFORD, ILLINOIS



- ✓ Super-Ex — provides strong, straight nose held true by two semi-solid flanges.
- ✓ Super-Ex — combines expanded wing with solid sections. Note alternate perforations in solid portion — for better plaster key.
- ✓ Super-Ex — requires little or no plumbing; corrugations assure rigidity.
- ✓ Super-Ex — can be wired, stapled, spotted, or nailed to wall — no clips necessary.



Firesafe construction at its best: improved Milcor Super-Ex Corner Bead, Milcor Metal Lath, and Milcor Steel Stud

Improved

MILCOR^{*}

Super-Ex Corner Bead

for longer plaster life, lasting plaster beauty

— now provides for greater depth of plaster adjacent to the bead — regardless of the plaster grounds!

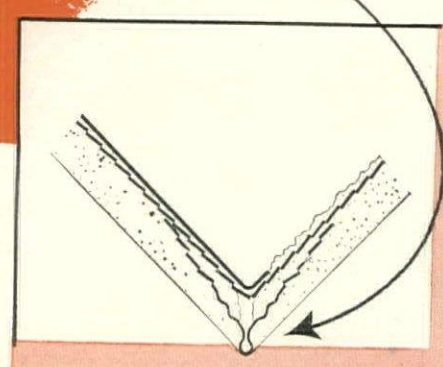
Improved Super-Ex Corner Bead, with its exclusive design, combines the rigidity of a solid wing with the added plaster reinforcement of expanded metal.

Super-Ex wings are formed at a minimum angle of 60° (max. 70°) for spring fit on a 90° corner, and easy adaptability to specified plaster grounds,

whether $\frac{3}{4}$ ", $\frac{5}{8}$ ", or $\frac{1}{2}$ ".

Milcor Super-Ex goes on fast . . . reduces erection costs . . . protects corners against cracking, chipping . . . assures straight, true-edge beauty.

Standardize on Super-Ex in your specifications.



Here's why Super-Ex corners are stronger, last longer: note greater depth of plaster adjacent to bead area . . . spring fit which adapts easily to any specified depth of plaster ground — whether it be $\frac{3}{4}$ ", $\frac{5}{8}$ ", or $\frac{1}{2}$ " . . . and solid metal that protects corner at point of greatest strain.

F-382

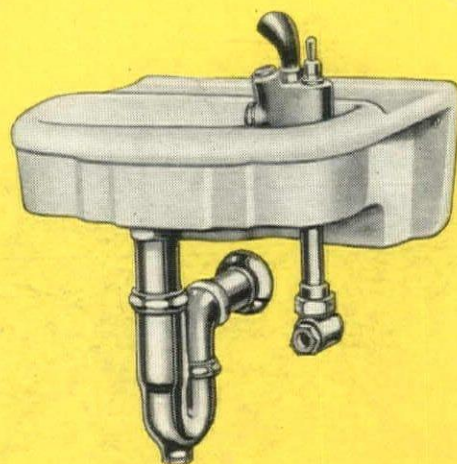
*Reg. U. S. Pat. Off.

INLAND STEEL PRODUCTS COMPANY

Formerly Milcor Steel Company
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 BALTIMORE 25, MD. — 5300 Pulaski Highway • BUFFALO 11, N. Y. — 64 Rapin St. • CHICAGO 9, ILL. — 4301 S. Western Avenue Blvd. • CINCINNATI 25, OHIO — 3240 Spring Grove Ave. • CLEVELAND 14, OHIO — 1541 E. 38th St. • DETROIT 2, MICH. — 690 Amsterdam Ave. • KANSAS CITY 41, MO. • LOS ANGELES 58, CALIF. — 4807 E. 49th St. • NEW YORK 17, N. Y. — 230 Park Ave. • ST. LOUIS 10, MO. — 4215 Clayton Ave.

Before you specify Plumbing Fixtures

✓ check **ELJER**



✓ check FEATURES

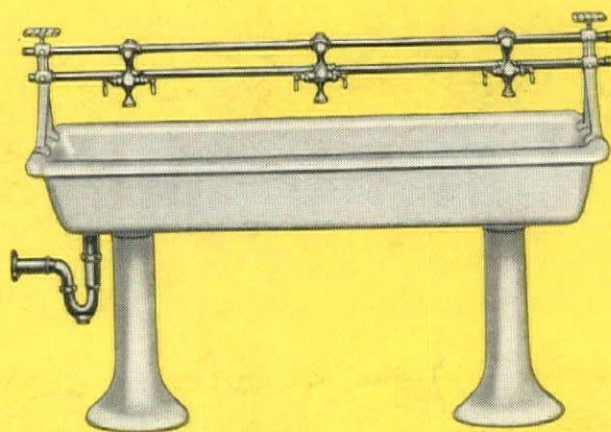
Many Eljer Fixtures have an *extra* feature that makes them an *extra* value . . . in lower maintenance costs, longer life, more beauty or greater convenience.

ILLUSTRATED: E-5910-V Sanus, vitreous china, syphon-jet closet, with elongated rim. 1½" top inlet for flush valve, as specified. (Also available with round front.)

✓ check QUALITY

The *finest* quality is Eljer's first consideration . . . in vitreous china, enameled cast iron and brass goods. User satisfaction is our prime objective.

ILLUSTRATED: E-4995-C Crystal Fountain, vitreous china, with chrome-plated fittings. Size: 11" x 11½". Non-squirt-bubbler, automatic volume control, self-closing handle.



✓ check SERVICEABILITY

In almost half a century, Eljer has manufactured more than fifteen million plumbing fixtures, to meet virtually every requirement. Eljer users are Eljer's best boosters.

ILLUSTRATED: E-8200-V Pedestal-type vitreous china urinal with flush valve, as specified. Width: 14". Projection: 23½". Height, floor to top of lip: 19½".

✓ check ADAPTABILITY

The engineering features of Eljer Fixtures provide maximum adaptability. Engineering and design service is geared to meet special fixture requirements.

ILLUSTRATED: E-1810-E Double Wash Sink, enameled cast iron, with painted pedestals and double pipe supports. Fittings shown. Length: 4', 5', 6', 8'. Width: 30".

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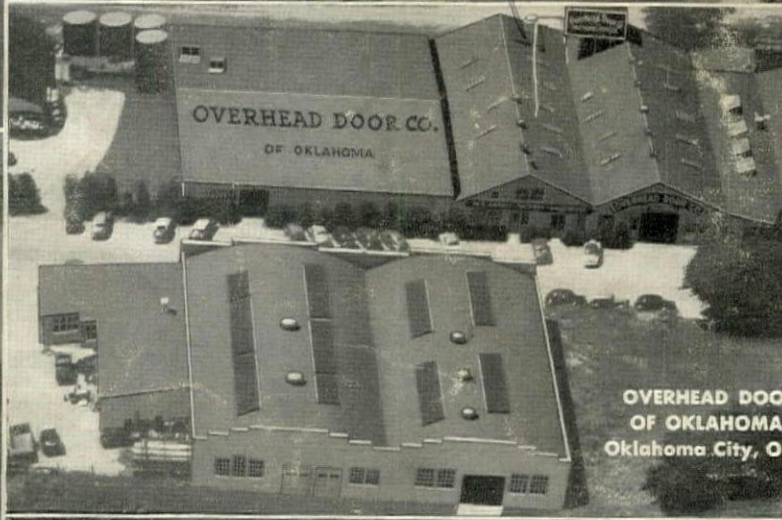
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