MAGAZINE OF BUILDING

architectural **forum**

October 1952

This office was planned for a fast-moving business

• This company needed a place to work —*in a hurry.* Because of an unforeseen emergency, it was necessary to move key personnel into a new plant office weeks before the scheduled moving day. Fortunately, Hauserman *Movable* Interior Partitions already had been specified—had been ordered before the emergency arose.

At Hauserman, things moved in a hurry, too. Partitions were finished in record time. Factory-trained erection specialists were flown to the job site 700 miles away. And finished offices—like the one above—were ready when needed.

That of course, is not the end of the story. When the time comes to revise the floor layout to meet future expansion needs, things will continue to move fast. No tearing down and rebuilding "permanent" walls . . . no time-wasting construction delays . . . no prolonged interruption of office efficiency. These modern, streamlined walls will be taken down and re-erected overnight—efficiently and economically—by Hauserman's nation-wide service organization.

Any non-static business is a business that can profit from maintenance-saving Hauserman *Movable* Partitions. Schools and hospitals, too, find them invaluable. Get the complete facts from your nearby Hauserman Representative . . . or write today to The E. F. Hauserman Company, 7125 Grant Ave., Cleveland 5, Ohio. *In Canada: Cresswell-Pomeroy, Ltd., Toronto.*

HAUSERMAN
Movable Interiors

OFFICES • SCHOOLS • LABORATORIES
HOSPITALS • INDUSTRIAL PLANTS

Korweld* — the non-metallic panel construction which combines the best features of *all* types of interior partitions—is an *exclusive* Hauserman development. Ask your Hauserman Representative for facts about this revolutionary new product.

*Trademark

Plan now for
permanent flexibility
wherever
space needs vary

LABORATORIES

SCHOOLS

HOSPITALS

INDUSTRIAL PLANTS


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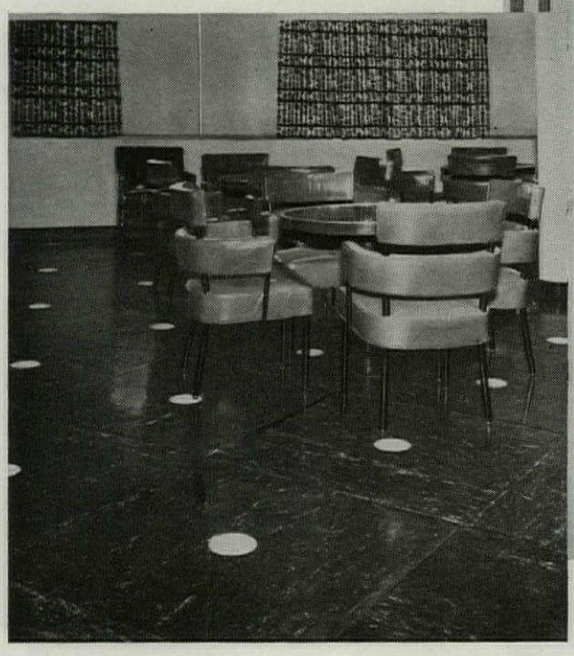
KWIKSET LOCKS INC.
MANUFACTURERS
ANAHEIM, CALIFORNIA
KWIKSET MEANS VOLUME SALES,
FAST TURNOVER
KWIKSET LOCKS ARE
PRECISION MANUFACTURED
AND
UNCONDITIONALLY GUARANTEED
KWIKSET SALES AND SERVICE COMPANY
ANAHEIM, CALIFORNIA

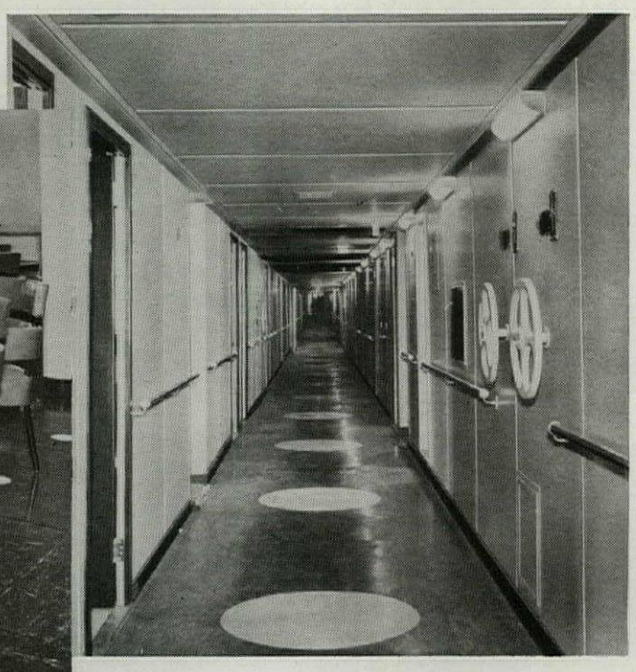
FOUR ACRES of GOODYEAR RUBBER FLOORING on the S.S. UNITED STATES

THERE is no parallel for the 170,000 square feet of Goodyear Rubber Flooring installed on almost 3½ miles of decks, passageways and other passenger areas on the new luxury liner, the S.S. United States. For this is the world's largest ship installation of rubber flooring. If placed in a single area, it would cover some four acres.

Goodyear Rubber Flooring was chosen because of its lasting beauty, durability, ease of maintenance, adaptability, and economy. That has been proved by its years of service on other fine ships—notably the S.S. America, which was placed in passenger service in 1940, pressed into military duty at the outbreak of World War II as the West Point. She carried more than half a million troops, and then converted back into passenger service, with the Goodyear Flooring still beautiful, still serviceable.

When you specify this enduringly lovely flooring for your clients, they too, will enjoy for years its beauty, resilience, comfort and quiet. See your Wingfoot Rubber Flooring dealer for samples and specifications, or write Goodyear, Flooring Department, Akron 16, Ohio.





Goodyear Rubber Flooring in striking patterns runs for miles in passageways and other areas of the new Queen of the Seas, the S.S. United States.

WINGFOOT *Rubber* FLOORING { SHEET and TILE

GOODYEAR

Makers of VINYL-TILE Flooring

Wingfoot—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

THE MAGAZINE OF BUILDING

architectural **forum**

OCTOBER 1952

Cover: UN General Assembly; photo by Ezra Stoller-Pictor

Published by TIME Incorporated

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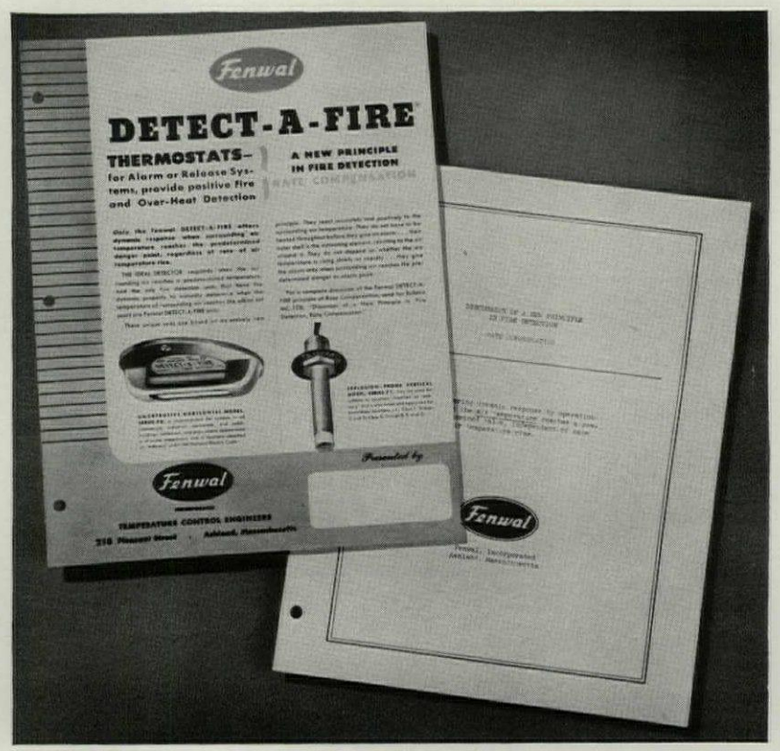
VOLUME 97, NUMBER 4

Are YOU risking fires like these?

A PROPERTY-CONSUMING FIRE resulted above when *full* fire protection was not provided for this rubber manufacturing plant. If you are responsible for protecting life and property, you can make sure of *full* fire protection by installing a carefully engineered alarm or release system that incorporates Fenwal DETECT-A-FIRE® thermostats.

A $3,000,000 FIRE occurred at this boarding school. It could have been quickly detected by Fenwal DETECT-A-FIRE thermostats activating an alarm or release fire protection system. These thermostats respond the instant temperature of surrounding air reaches danger point. No hazardous delays! No annoying false alarms! No other fire detection units are so positive.

A MONEY-SAVING ECONOMY is still another benefit to users of DETECT-A-FIRE thermostats. Besides cutting loss of life and property, these thermostats assure long-term economy in themselves. They offer built-in extra value by combining long life, corrosion resistance and repeatability. Fenwal DETECT-A-FIRE thermostats are listed by (UL) . . . approved by (FM)



THESE FREE BULLETINS give you complete details on Fenwal DETECT-A-FIRE thermostats and their new Rate-Compensation Actuation principle of fire detection. They are the only units operating on this principle. Fenwal engineers will be glad to work with you and your system installer in bringing you *full* fire protection. Write Fenwal, Incorporated, 2510 Pleasant Street, Ashland, Mass.

Fenwal

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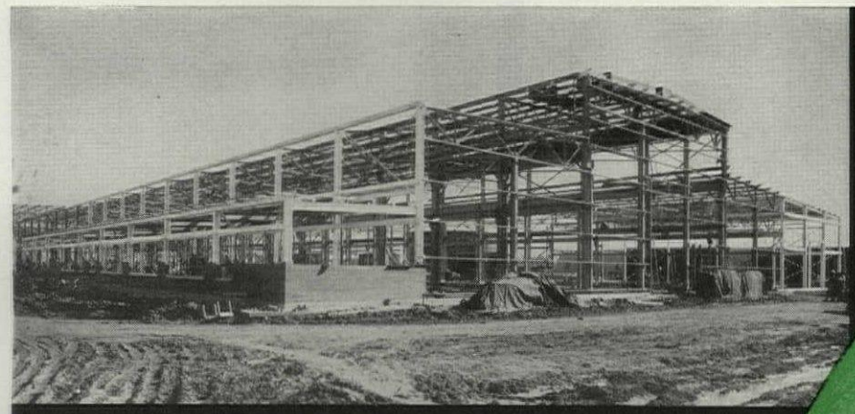
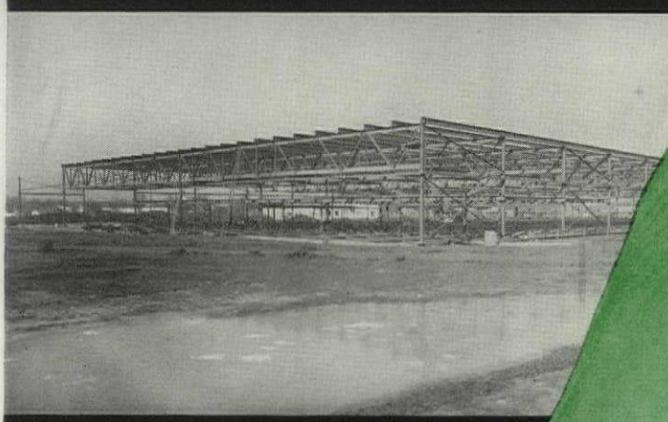
Thermostats

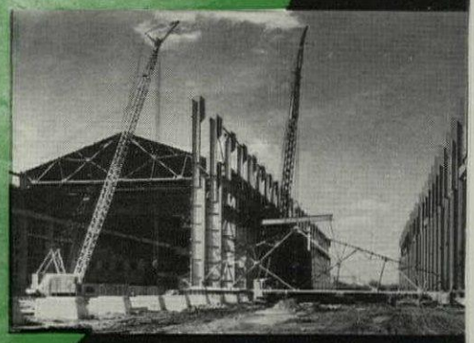
DYNAMIC, RATE-COMPENSATION ACTUATED FIRE DETECTORS



Aluminum Ore Company Plant, Bauxite, Arkansas



Sylvania Electric Products Company, Burlington, Iowa



Electric Furnace Building, Northwestern Steel & Wire Co., Sterling, Illinois

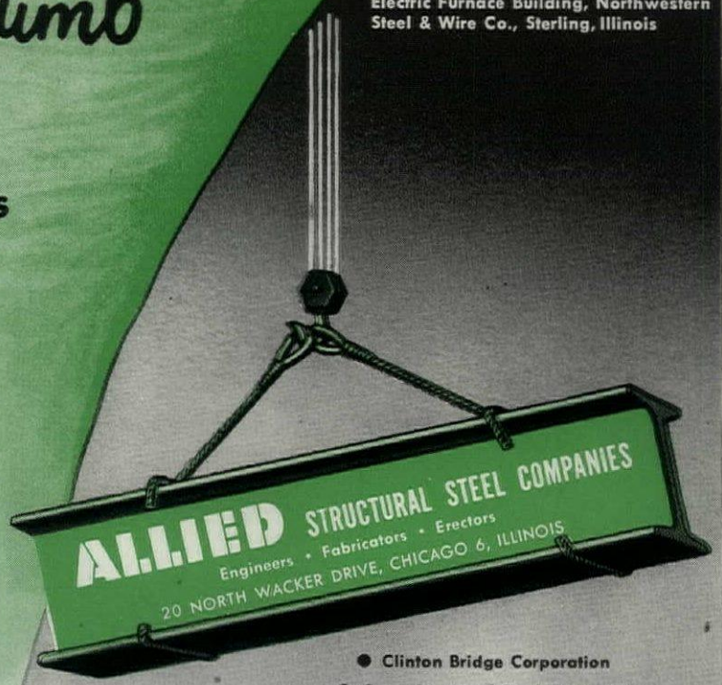
A green thumb FOR GROWING INDUSTRIAL PLANTS

Fabricated structural steel grows under the influence of skilled men who have a "green thumb" touch with steel. Three fabricating shops, located at strategic points and with identical equipment, break many a bottleneck in production.

Rail- and river-loading facilities insure shipment under the most favorable conditions.

On-location erecting crews apply their unique "know-how" to meet construction schedules.

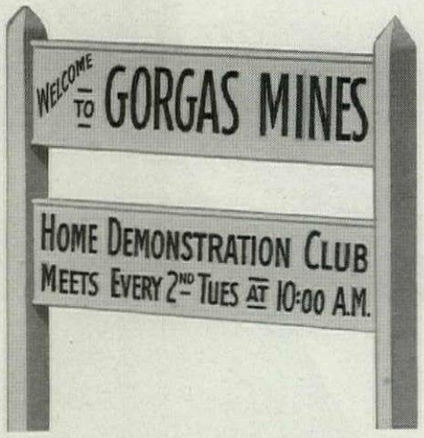
If you are sprouting new plants, or additions to existing plants, you might just as well have all of these advantages. Send your plans and specifications to us to be estimated.



- Clinton Bridge Corporation
- Gage Structural Steel Corporation
- Midland Structural Steel Corporation

Fabricators and erectors of structural steel for highway and railroad bridges; Industrial, office, school, and government buildings; Airport structures; Harbor facilities.

Monsanto Penta protects housing project



Gorgas, Alabama, is the location of one of the largest electric generating plants and coal mines in the Southeast. In the community surrounding these developments, Alabama Power Company owns about 300 houses and additional houses are constructed as the operation expands. Lumber going into the construction is protected against termites and decay by a formulation of Monsanto Penta.

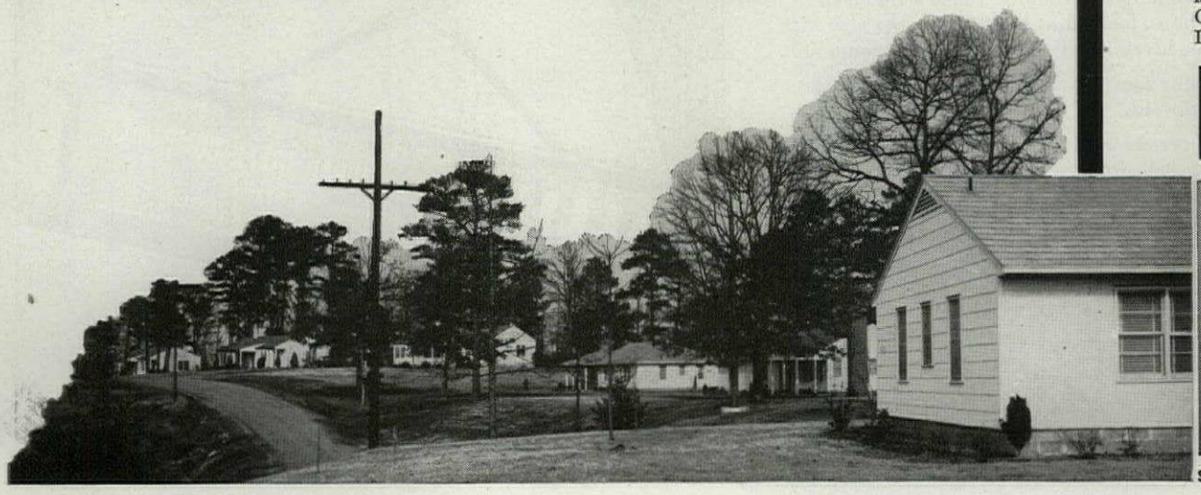
Alabama Power Company first used penta in this area eight years ago. In its construction and maintenance program, penta protects all outside lumber as well as joists, subflooring and floors. Much of the timber required is cut from the company's forests; then sawed, seasoned and treated with penta before use.

When untreated lumber was used, replacement of some parts was necessary in one to three years. With penta protection, the company already has proved that service life of the wood is substantially increased. If only ten years of life is obtained with treatment, the company estimates it will earn 200% on its treating investment.

Monsanto Penta (pentachlorophenol) is a stable chemical manufactured for wood preservation. It protects against termites and other wood-boring insects. It prevents decay. Penta does not leach . . . does not wash away in rain or ground water. Properly formulated penta gives a clean treatment so that paint or other finishes can be applied.

For information on the use of Monsanto Penta to preserve wood, for names of suppliers of penta-treated lumber or for names of branded wood preservatives formulated with Monsanto Penta, contact the nearest Monsanto Sales Office or write MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second Street, St. Louis 4, Missouri.

AVENUE OF HOMES in the Gorgas housing project of Alabama Power Company



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PENTA

MONSANTO CHEMICALS AND PLASTICS

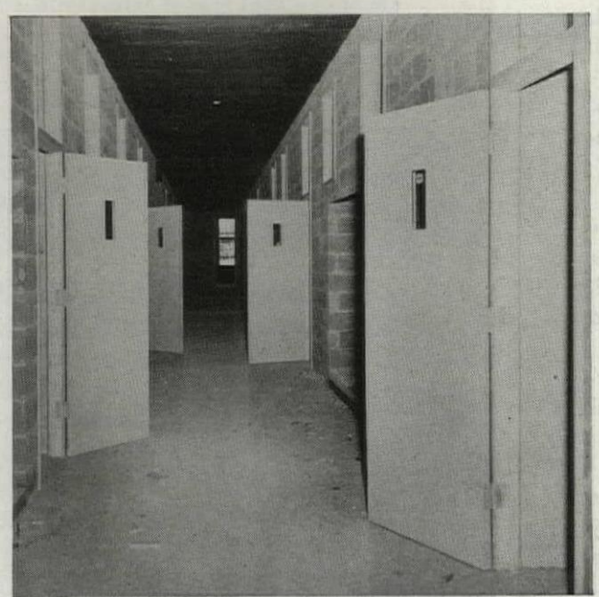
SERVING INDUSTRY . . . WHICH SERVES MANKIND

FOR

School Buildings

ESPECIALLY...

there's more to a door than meets the eye . . . . . .



The Hardee County High School at Wauchula, Fla., was designed by M. Leo Elliot & Associates, Tampa. The illustration above shows a few of the 147 Weldwood Stay-Strate Doors used in this building.

Of course, school doors should be beautiful

That's only one reason why you'll like the new Weldwood Mineral Core Doors – you just can't find more attractive doors for school use. Faced with beautiful wood veneers, these modern flush doors will be a source of pride to you, your staff, your students and taxpayers. They are available with birch veneer faces from stock, or may be specified in many other decorative hardwoods. Furnished with or without light and louvre openings.

But they have to be durable too—

School doors have to withstand a lot of service – and a lot of abuse – that's another reason more and more school authorities prefer Weldwood® doors. Made to meet exacting, high-quality standards, these durable doors stand up under years of continuous hard service.

The solid mineral core is impervious to fungus, decay and termites and is highly resistant to impact. Used in interior or exterior openings these Weldwood Flush Doors are guaranteed against swelling, warping or binding—they'll never shrink or stick.

Light in weight, easy to open and close—

Because Weldwood Flush Doors are light in weight, perfectly balanced and free from warpage, teachers and students, even small children, can open and close them easily. One Weldwood Door after being opened and closed 200,000 times under abnormally severe conditions is still as good as new.

And fire-resistant of course—

The incombustible mineral core of these Weldwood Doors provides an unusual and highly desirable margin of safety from fire. (For *maximum* fire protection, specify the Weldwood Fire Door – the only wood-faced fire door approved for Class B openings by the Board of Fire Underwriters.)

No other doors on the market offer such a desirable combination of qualities for school installations. Yet with all these features, Weldwood Mineral Core Flush Doors are moderately priced. Send coupon for complete information.

WELDWOOD® FLUSH DOORS

Manufactured and distributed by
UNITED STATES PLYWOOD CORPORATION
World's Largest Plywood Organization
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UNITED STATES PLYWOOD CORPORATION (MOB-10-52)
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Please send complete information about the Weldwood Flush Veneer Door with mineral core.

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Title_____

Address_____

industry's New work

National Electric "Plug-In" Busway and "Lo-Loss" Feeder Busway... The only busways with such rugged construction!

National Electric Busways are especially designed to meet the rugged requirements of American industry. They offer the most economical, convenient, flexible and salvable layout possible for industrial or commercial installations. Check these *money-saving* "workhorse" features:

TOUGH—National Electric busway incorporates a heavy 12 gauge steel channel to independently support and protect the insulator.

EFFICIENT—With "Lo-Loss" Busway, voltage drop is less than 2.2 volts per 100 feet for a concentrated load. Where the load is distributed, the voltage drop is approximately 1 volt per 100 ft.

FLEXIBLE—"Lo-Loss" is approved by Underwriters' Laboratories for horizontal or vertical mounting.

CONVENIENT—Factory fabricated sections go up *quick*. With "Plug-In" Busway, machinery can be "plugged-in" anytime without shutting down the production line. Especially convenient for congested areas.

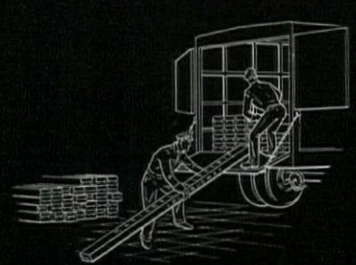
Approved by the Underwriters' Laboratories, Inc.

"PLUG-IN" BUSWAY

- **Rolled Edge Copper Bus Bars.**
- **All Bus Bar Joints are electro-silver-plated and have a heavy coat of silver.**
- **Simplified, fool-proof, sliding type "plug-in" opening covers. No removable parts or springs.**
- **Neutral gray finish baked to a hard surface inside and out.**
- **Insulators supported in a sturdy 12 gauge steel channel frame withstand rough handling during shipment.**

"LO-LOSS" FEEDER BUSWAY

- **"Lo-Loss" Feeder Busway is economical and efficient for conducting long runs of alternating current where voltage drop must be kept to a minimum. It is easy to install because single bolt contacts are used when joining sections.**
- **"Lo-Loss" Feeder Busway is designed for transmission of electrical current up to 4000 Amperes at 600 Volts or less.**



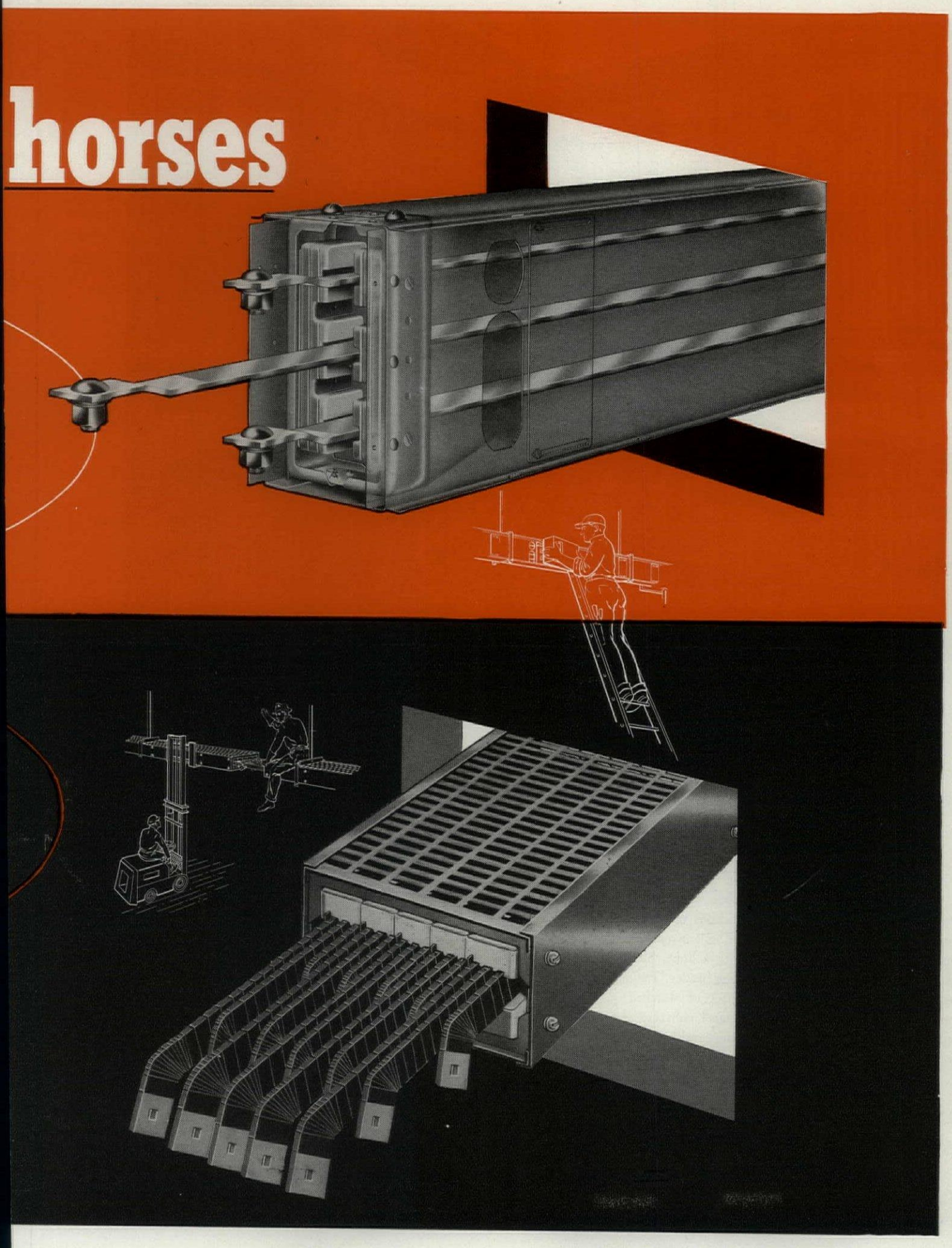
EVERYTHING IN WIRING POINTS TO

National Electric Products

PITTSBURGH, PA.

3 PLANTS • 7 WAREHOUSES
42 SALES OFFICES

horses



Office of Colonel Henry Crown, President, Material Service Corporation, Chicago
Architects, Friedman, Alschuler and Sincere, Chicago
General Contractor, Gerhardt F. Meyne, Chicago

WOODWORK OF DISTINCTION

For an executive office of impeccable taste

BUILT, FINISHED AND INSTALLED BY ONE GROUP OF CRAFTSMEN

The stately President's Office from which Colonel Henry Crown directs the vast operations of Material Service Corporation might well be described as a symphony in wood. Quartered walnut wall paneling with a light, bleached finish provides a background of rich, enduring beauty. The magnificent custom-built desk with its matching top of bleached quartered walnut and its burl walnut front panel enhances the overall impression of gracious dignity and impeccable taste. Throughout the new Material Service executive offices in Chicago's Mercantile Exchange Building the architects have used the beauty and adaptability of fine woodwork with comparable effectiveness. In producing and finishing the architectural woodwork and cabinetwork for these distinguished administrative offices, the craftsmen of Woodwork Corporation have "followed through" with traditional precise adherence to the architect's specifications. Final assembly, too, was handled by Woodwork installation specialists.

The new Material Service Offices furnish another example of how effectively this Woodwork combination of skill with wood and complete responsibility for construction, finishing and installation produces the quality you want and eliminates costly errors and delays. However large or small your plans, it is a combination you will want to know more about.

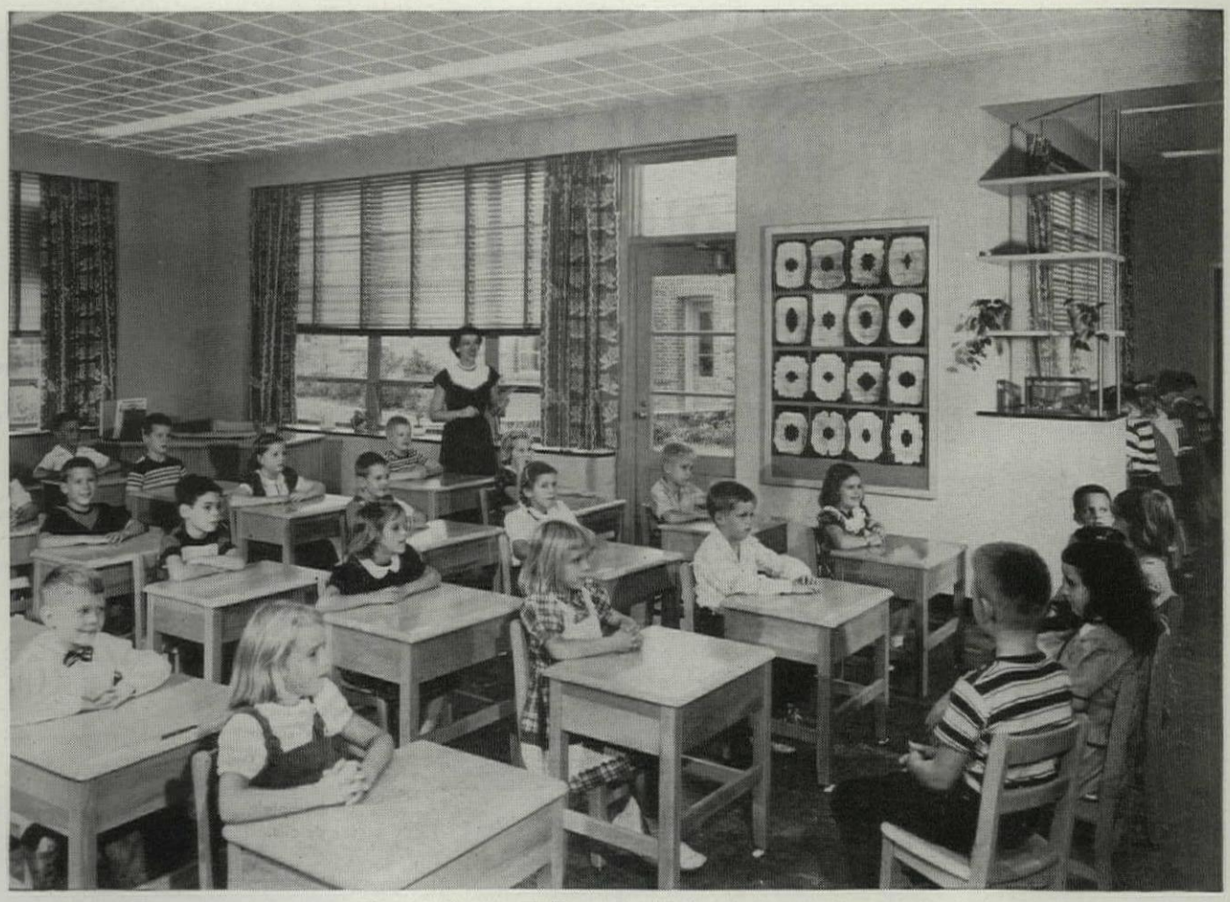
WRITE FOR ILLUSTRATED FOLDER
describing Woodwork Corporation services.

For Prompt Price Estimates, or Other Information, Send Your Plans and Specifications to

WOODWORK CORPORATION OF AMERICA
1432 WEST TWENTY-FIRST STREET, CHICAGO 8, ILLINOIS
Serving Architects, Designers and Contractors For Nearly Half a Century

Building:
Penn Valley School,
Lower Merion, Pa.

Architects:
Walter Kartcher &
Livingston Smith,
Philadelphia, Pa.



Classroom in Penn Valley School, Lower Merion, Pa. Over 54,000 sq. ft. of Fiberglas Acoustical Tile were used in this building.

individuality...quiet... *fire safety* for little children

The high objectives of this outstanding school included self-contained classrooms, work alcoves and individual play yards for key age groups . . . all in character with the well-to-do community served.

One important must was sound control at *reasonable cost* that offered *fire safety* as well as high acoustical value . . . and this was found in Fiberglas* Acoustical Tile. Its low cost, non-combustibility and sound absorption qualities were supplemented by other important values . . . high light reflection, dimensional stability and lightweight . . . in all, a combination of values that is unique.

For data on Fiberglas Sound Control products, get in touch with your Fiberglas Acoustical Contractor listed in the yellow pages. Or write to: OWENS-CORNING FIBERGLAS CORPORATION, Dept. 67-J3, Toledo 1, Ohio.

OWENS-CORNING
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SOUND CONTROL PRODUCTS

Textured, Perforated and Sonofaced* Acoustical Tile • Ceiling Board • Noise-Stop* Baffles

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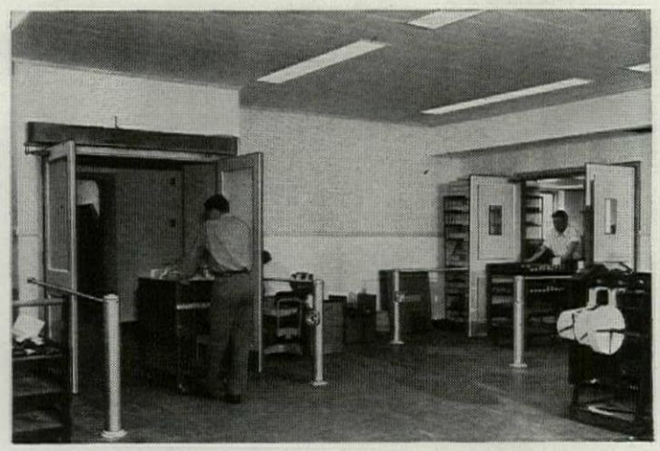
DESIGNED into the new READER'S DIGEST wing . . .



No work of opening and closing doors — Stanley Magic Doors operate automatically, actuated here by photoelectric controls.

- **to simplify the many handling tasks**
- **to hold high-grade personnel**

STANLEY MAGIC DOORS .. achieve both aims. Stanley Magic Doors help move mountains of stencils faster. They do this by opening automatically when stencil carts approach, staying open until passage is clear, then closing quickly and silently. Smooth, easy work flow results. Machine noise is isolated.

The excellent working conditions attract a better class of employee. People in the area prefer to work at Reader's Digest — a development foreseen by designers who specified the Stanley Magic Door Controls.

Include them in your plans where clients want to speed traffic, please customers, heighten employee morale or keep close control over conditioned air.

Easily adapted to remodeling work in stores, restaurants, banks, hotels, hospitals and industrial plants. Send the coupon for details.

No damage to doors — maintenance and repairs minimized.

Millions of stencils moved without damage or spilling.

Noise from machinery is kept out of surrounding departments.

STANLEY® *Magic Door* CONTROLS

STANLEY TOOLS
STANLEY HARDWARE
STANLEY ELECTRIC TOOLS
STANLEY STEEL STRAPPING
STANLEY STEEL

The Stanley Works, Magic Door Division
30310 Lake St., New Britain, Conn.
Gentlemen: ( ) Please send me Architect's File on Stanley Magic Door Controls. ( ) Have your representative call.

Firm Name_____

My Name_____

Address_____

City_____ **State**_____

Leader

CEILING OF LIGHT

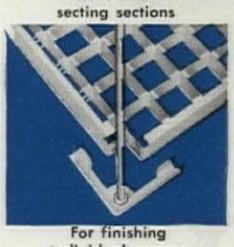
Leaderall ceiling installed in the drafting room of the W.K.M. Company, 200 Roberts St., Houston, Texas. Units are 4' x 4'. Shielding is 40° x 40°. 160 F.C. in center of room, 110 F.C. 12" from side wall.

New! Leaderall Suspension Clips

New grooved suspension clips of steel hold louvered plastic units firmly at end of adjustable tie rods to form a completely level, rigid ceiling at any desired height.

For joining 2 end-to-end sections

For 4 intersecting sections



For finishing individual corners

High footcandles...low brightness

Leader's plastic louvered ceiling provides light from wall to wall, evenly distributed and properly shielded for maximum efficiency, freedom from glare, and minimum shadows. The Leaderall grilles are easily installed, instantly removable... feather light, yet tough and warp-proof. May be used with any type of fluorescent fixture, in finishing new ceilings or remodeling old ones. No interference with air conditioning or sprinkler systems. Ideal lighting for drafting rooms, a wide variety of commercial interiors, offices, cafeterias.

Sold and installed by the better electrical wholesalers and contractors

Leader *America's No. 1 Lighting Equipment Manufacturer*

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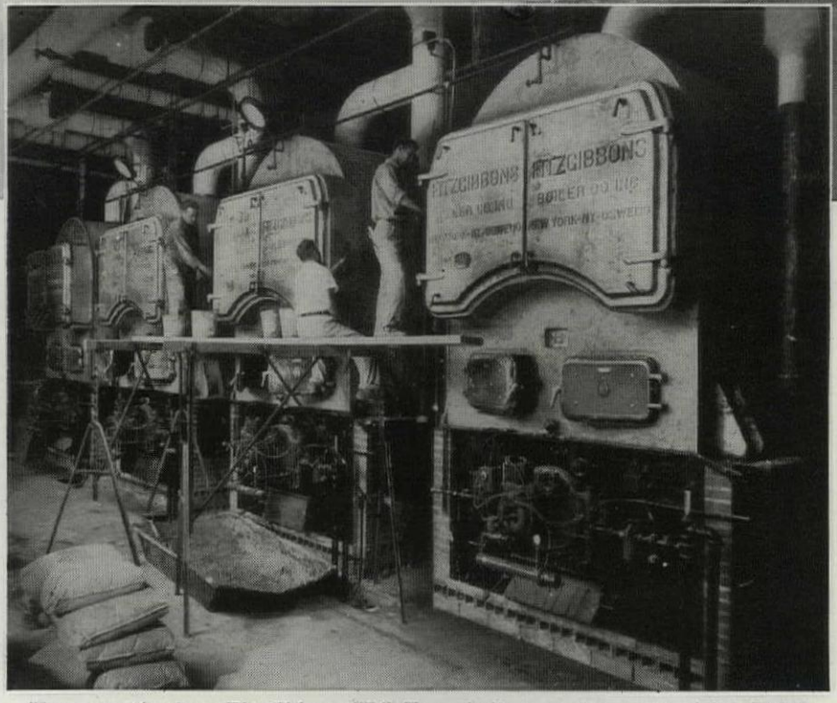
Leader Electric—Western: 800 One Hundredth Avenue, Oakland 3, California
Campbell-Leader, Ltd.: Brantford, Ontario, Canada

THE FITZGIBBONS BOILER®

Best Boiler Buy for SCHOOLS!

The new, thoroughly modern East Providence (R. I.) High School.
Architects and Engineers, Charles A. Maquire & Associates
Heating Contractor, Joseph P. Cuddigan
Fitzgibbons Distributor, Wholey Boiler Co.
All of Providence, R. I.



Here are the four Fitzgibbons "D" Type boilers, each one rated for 30,360 sq. ft. steam, in the East Providence High School. The photo shows lagging being applied. "D" Type boilers are available in sizes from 3650 sq. ft. steam, to 42,500 sq. ft. E.D.R. rating (S.B.I.) Types for oil, gas, stoker and hand fired coal. Full specifications and data in the "D" Type Bulletin, on request.

HERE IS ANOTHER of the many up-to-the-minute schools that enjoy the economy and abundant heating comfort of Fitzgibbons Steel boilers. Four Fitzgibbons "D" Type boilers handle the heating job with ease in the most severe New England winter, and do it with the outstanding fuel savings for which these boilers are famed in schools, colleges, and institutional buildings throughout the nation. School boards everywhere have learned that "the best boiler buy is Fitzgibbons."

SINCE 1886 · MOST ECONOMICAL IN FUEL · 1886 · THE FITZGIBBONS BOILER

Fitzgibbons Boiler Company, Inc.

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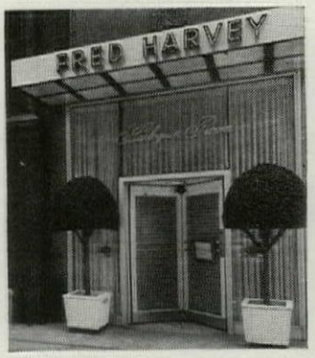
General Offices: 101 PARK AVENUE, NEW YORK 17, N. Y.
Manufactured at OSWEGO, N. Y. • *Branches in Principal Cities*

NEW FRED HARVEY RESTAURANT

maintains nationwide reputation for service with help of Frigidaire refrigeration equipment



For three-fourths of a century, the Fred Harvey Restaurants have been famous for their singularly attractive settings and high standards of service. One of the newest of these popular restaurants opened recently in the impressive Palmolive Building on Chicago's "magnificent mile." Invitingly modern in appearance, this new restaurant is designed to offer its patrons everything from a snack in the streamlined Patio Coffee Shop to a luxurious dinner in the festive Harlequin Room.

Throughout this new Fred Harvey Restaurant—the accent is on smooth, efficient service. That's why, like all Fred Harvey Restaurants, from Cleveland to Los Angeles, this new restaurant uses Frigidaire equipment. In this case, hidden, compact Frigidaire compressors provide constant, dependable refrigeration for the bars, fountains and restaurants. In other Fred Harvey Restaurants across the nation you'll find many Frigidaire products, including roomy Frigidaire Reach-In Refrigerators and Frigidaire Beverage Coolers.

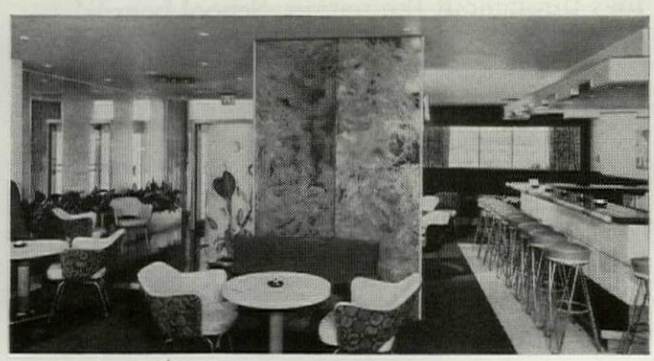
Throughout the building industry, more and more thoughtful equipment buyers are turning to Frigidaire with their refrigeration and air conditioning requirements. They know that Frigidaire products can be counted on for long years of dependable performance at full rated capacities, with minimum operating and maintenance expense.

For more information on Frigidaire commercial refrigeration and air conditioning equipment—and household appliances—call your Frigidaire Dealer—or the Frigidaire distributor or Factory Branch that serves your area. Look for the name in the Yellow Pages of your phone book. Or write Frigidaire Division of General Motors, Dayton 1, Ohio. In Canada, Toronto 13, Ontario.

An interesting arrangement of redwood-paneled walls and Roman brick piers gives the Harvey House grill a friendly, informal atmosphere.

The Harlequin Room lives up to its name, with its gay murals, interesting lighting, and holiday air.

The gold-and-white Columbine Cocktail Room uses handsome screens, mirrors and colorful chairs for an ultramodern look.



FRIGIDAIRE

Refrigeration and Air Conditioning Products

Reach-In Refrigerators • Display Cases • Air Conditioners
Ice Cube Makers • Ice Cream Cabinets • Water Coolers
Compressors • Beverage Coolers • Home Appliances

Any way you look at it . . .

GYPSTEEL PLANK

makes an ideal Roof Deck

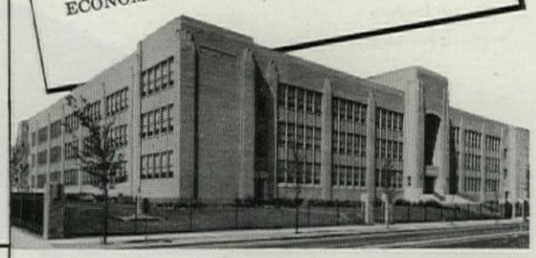
In schools, hospitals and multiple-dwelling units—in fact in *any* place where fire safety and economy are prime considerations, Gypsteel Plank is top choice for roof decking.

This lightweight, fireproof gypsum plank—reinforced by electrically welded, galvanized steel wire and frame—is tongued and grooved to assure speedy, easy installation. The size of Gypsteel Plank is 2″ x 15″ x 10.′

GYPSTEEL PLANK

First in Its Class

FIREPROOF QUALITY	(steel reinforced gypsum slab)	A+
LIGHT WEIGHT	(12 lb. per sq. ft.)	A+
STRENGTH	(safe load, 75 lb. per sq. ft.)	A+
HIGH INSULATION VALUE	(with 1″ insulation)	A+
EASE OF INSTALLATION	(tongued and grooved —handles like lumber)	A+
PERMANENCE	(rot, vermin and termite-proof)	A+
ECONOMY (quickly erected; no wastage)		A+



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Quality made Certain . . . Satisfaction Guaranteed

CERTAIN-TEED PRODUCTS CORPORATION

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See our CATALOG in SWEET'S FILE ARCHITECTURAL

ASPHALT ROOFING • SHINGLES • SIDINGS

ASBESTOS CEMENT ROOFING AND SIDING SHINGLES

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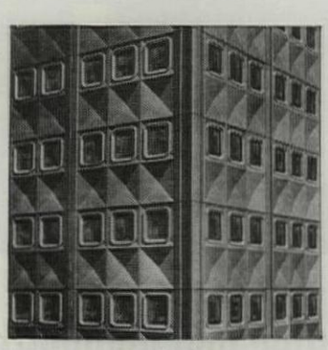
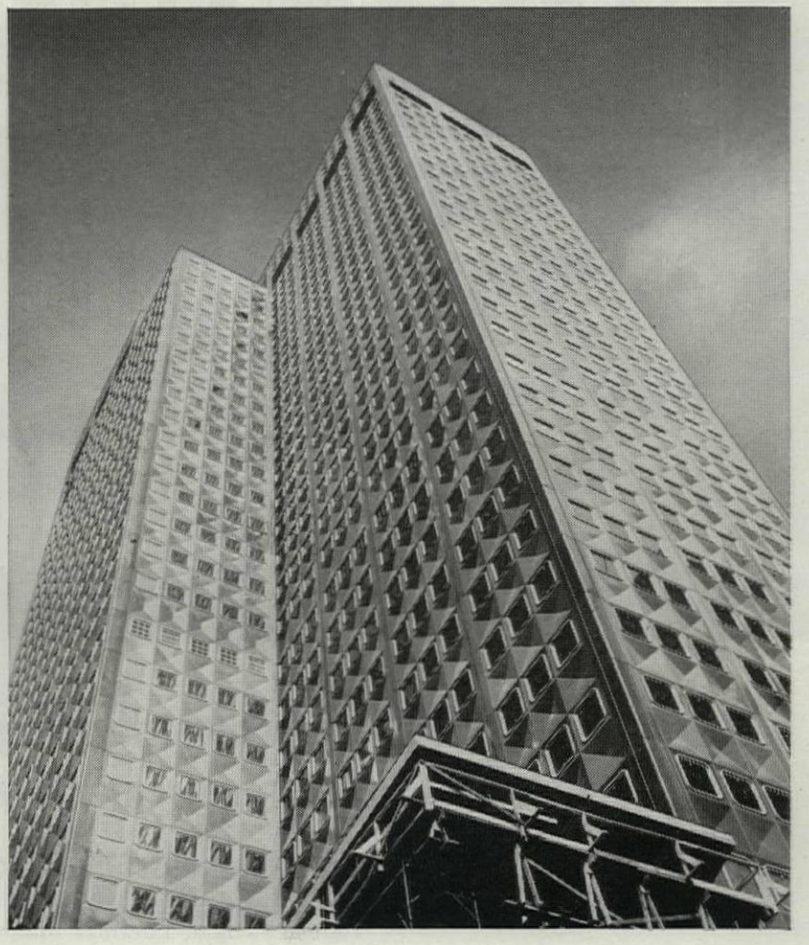


The new 30-story, aluminum clad ALCOA *office building in* PITTSBURGH, *is a convincing demonstration of both standard and new uses of weight-saving aluminum for exterior and interior functions.*

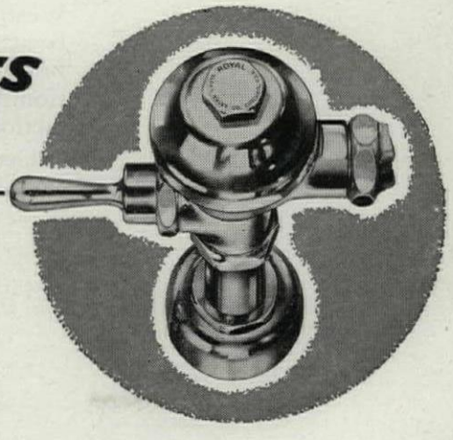


LUSTROUS ALUMINUM IN GOLDEN TRIANGLE

• The headquarters building of ALUMINUM COMPANY OF AMERICA, now nearing completion in the heart of PITTSBURGH'S GOLDEN TRIANGLE, embodies so many innovations as to defy comparison with any other structure now existing. Its exterior is made up of formed aluminum panels of inverted pyramidal pattern, with pivoted, aluminum-framed windows set in. Some of the other unusual uses of aluminum are the ceiling-installed radiant heating and cooling system . . . the ceiling finish panels perforated for acoustical control . . . the water storage and distribution system . . . and electrical conduit, wiring and lighting fixtures. Coupled with the many innovations are products of long-established superiority, such as SLOAN *Flush* VALVES, famous for efficiency, endurance and economy. As in thousands of other notable buildings, here is 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

NEW! Type NPLAB plug-in breaker panelboard...

One basic unit meets majority of lighting and appliance branch circuit application requirements without special adaptation

NOW, WESTINGHOUSE OFFERS YOU . . .

1. Industry's first Thermal Magnetic "De-ion" Plug-in Quicklag® Circuit Breaker—superior protection, proved efficiency.
2. Available for 1-phase, 3-wire, 115/230-volt SN, 3-phase, 4-wire, 120/208-volt SN services with 15 to 50-ampere, 1 pole branch breakers. (2 pole independent trip branch breakers available by adding handle extensions to two 1 pole breakers.)
3. Quick-make, quick-break action—fast, positive, safe.
4. New circuit breaker smaller than conventional Quicklag types—saves critical panel space.
5. New Type NPLAB Plug-in Panelboard smaller than conventional-type NLAB Panelboards—reduces job costs.
6. Permanent visible-phase identification on 3-phase, 4-wire panelboards, during and after installation; no guessing about load balancing.
7. Snap-on covers for neutral bar and main breaker—real time savers.
8. Rigid mounting of panel chassis assembly—offers a lifetime of protection against misalignment, breakage, accidents.

Westinghouse Type NPLAB Plug-in Panelboards have the flexibility, in one basic unit of standard design, to meet the majority of lighting and appliance branch circuit requirements with minimum engineering or special construction. Where else can you buy economical "De-ion" AB Circuit Breaker protection, fully pre-assembled into Westinghouse quality-built Panelboards?

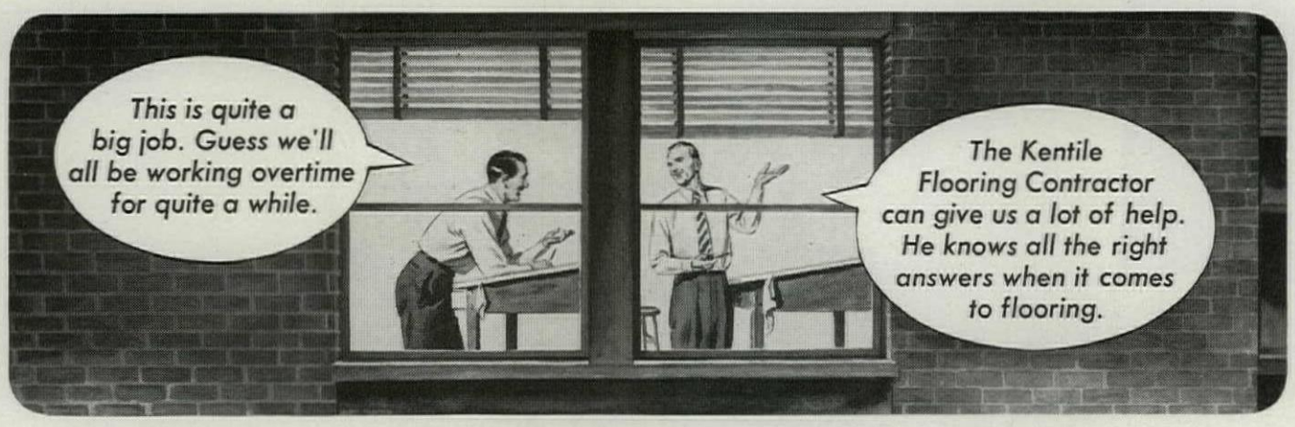
Get in touch with your Westinghouse Representative, or write for B-5644, Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pa. J-93486

YOU CAN BE SURE... IF IT'S Westinghouse

"DE-ION" BREAKER PANELBOARDS

New Westinghouse Type NPLAB Plug-in Panelboard —smaller than conventional-type NLAB Panelboard.

New Westinghouse Quicklag "P" Plug-in AB Circuit Breaker—smaller than conventional Quicklag Breaker.



Consider the Kentile Flooring Contractor a willing addition to your staff

DUE to the complexities of modern flooring materials available today, selection is increasingly a job for trained flooring experts... men like the Kentile Flooring Contractor whose years of study and experience qualifies him to choose the right floor for every installation... the one floor that has most to offer in appearance, durability, and economy in the use to which it will be put.

Whether the problem is one of new construction or the remodeling of existing facilities, the Kentile Flooring Contractor is available night and day to help you select the floor that will give you the most for your money. Call on him as you would any member of your actual staff.

KENTILE Asphalt Tile is preferred for commercial and industrial installation, large and small, because it always looks fresh and new in spite of constant daily traffic . . . resists dirt, stain and wear for long years of easy, inexpensive cleaning...retains its original, locked-in colors with only an occasional no-rub waxing. And, Kentile's low initial cost plus speedy, tile by tile installation over any smooth, firm surface provides money-saving advantages where business must continue without cost-consuming delay.

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TELEPHONE, JACKSON 5707
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.

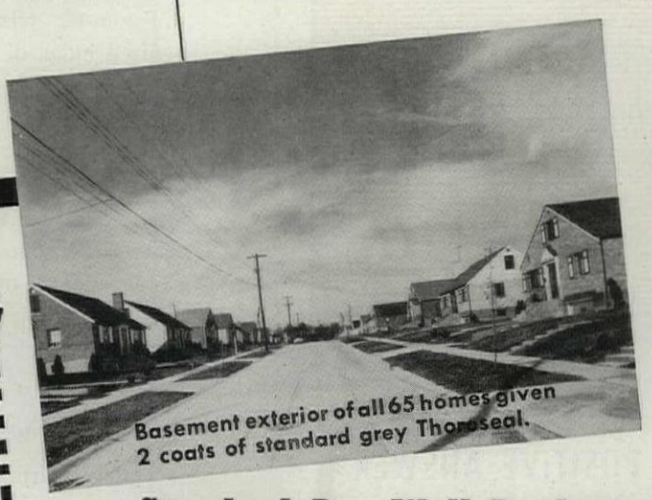
We have built sixty-five homes so far this year. Each of these homes were given a two brush application of Thoroseal. To date we have had but one complaint, which was minor and easily stopped with Water Plug. I am thoroughly convinced and sold on Thoroseal and Water Plug. I believe it is the best waterproofing on the market today. It is superior to anything we have ever used.

Yours very truly,
Grover L. Steinke 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.

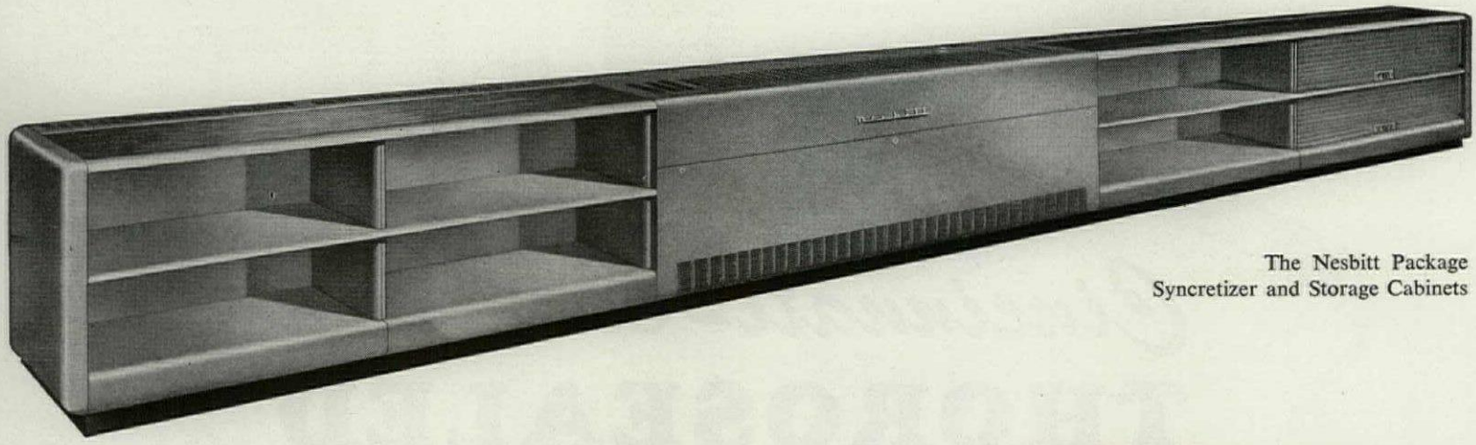
Thoroseal comes in beautiful pastel colors and can be applied also to the interior surfaces of your basement walls to seal and beautify.



Basement exterior of all 65 homes given 2 coats of standard grey Thoroseal.

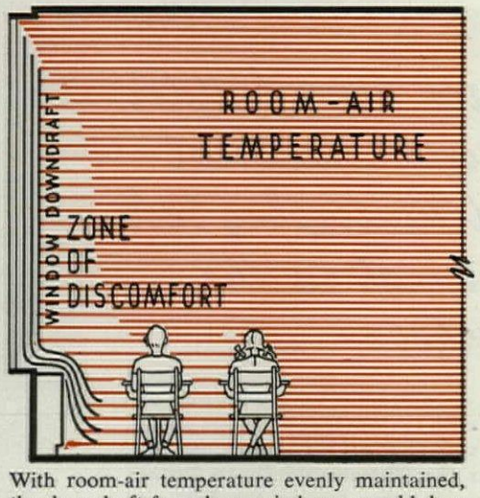
Get our 20-page brochure, pictorially described in detail "HOW TO DO IT"

Standard Dry Wall Products
NEW EAGLE, PENNSYLVANIA
Phone Monongahela 67

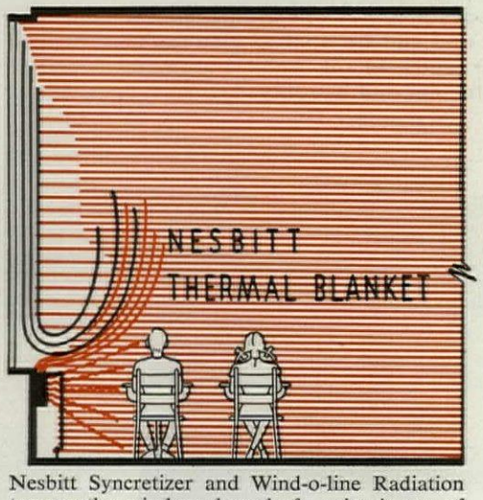


The Nesbitt Package
Syncretizer and Storage Cabinets

The Story of THERMAL



With room-air temperature evenly maintained, the downdraft from large windows on cold days may remain the robber of comfort for pupils.



Nesbitt Syncretizer and Wind-o-line Radiation temper the window downdraft, raise it out of the impression range, improve thermal balance.

THE POSITIVE ANSWER TO WINDOW DOWNDRAFT

Nesbitt

SYNCRETIZER with WIND-O-LINE

THE STORY of classroom heating and ventilating began many years ago with the need for artificial heat in a one-room schoolhouse. A potbellied stove provided the heat.

With multi-room schools came central heat and hot-air, then steam-radiator distribution. Schoolrooms soon became so hot that the need for regular ventilation was recognized.

NESBITT became a character in the story in 1917 with a schoolroom unit that introduced outdoor air and heated air on the bypass principle.

The story progressed as knowledge increased. The *heating* effect of room occupants, electric lights, and the sun's rays became better known. The need for *cooling* during a large part of the classroom day hastened the development of heating and ventilating units.

Room-air temperature was the recognized index of comfort. But the widely divergent temperatures of the unit ventilator's air stream created conflict—*drafts*. NESBITT brought the air stream under separate control—syncretized, or harmonized, its temperature within draftless limits to that of the room air. Syncretized Air, a new standard of thermal comfort, was created—but air temperature remained its popular index.

Comfort Can Now Be "Seen"

Today thermal comfort has another dimension. Besides *air temperature,* we consider the *radiant temperature differential* of the surrounding walls and surfaces of the classroom. The temperature especially of large windows in cold weather is so far below the room-air temperature that it soaks up the body heat of pupils sitting near it and, to a degree, of all others whose bodies can "see" it (are exposed to it). This explains why the comfort *impression* of some pupils is poor even when the air temperature is good—according to the room thermostat.

The Nesbitt Comfort Control

Within the Nesbitt Syncretizer heating and ventilating unit is the Comfort Control which "sees" and "feels" the outdoor air temperature at all times. This control automatically adjusts the temperature of the unit's continuous air stream so as to impose a protective thermal blanket—warm enough to shield room occupants from the chilling effect of cold windows, and cool enough to prevent overheating of the room air.

Wind-o-line Radiation

For conditions of large glass area and extremely cold outdoor air—which accelerate the problem of window downdraft—Nesbitt provides Wind-o-line Radiation for integration with the Syncretizer. Wind-o-line consists of fin-and-tube radiation in a grilled wall-hung casing to extend from both ends of the ventilating unit for the full length of the windows, at the sill line—and continued, if required, along cold outside walls. (Or it may be had as a component of the storage cabinets in installations of The Nesbitt Package.)

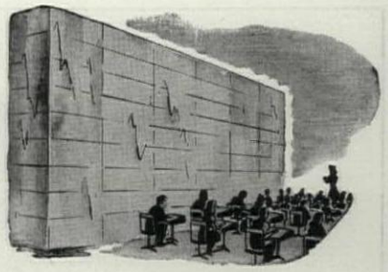
Unlike the attempts to draw off window downdraft as recirculated air—which are easily proved to be ineffective—Nesbitt Wind-o-line solves the problem of *heat loss* logically with a *heat gain* where and

Like all good stories

this one has *conflict...solution...*

and a *happy ending*

(READING TIME: Four minutes—and worth it.)



In very cold weather large window areas become a "wall-of-ice" in the classroom.

COMFORT in the Schoolroom

when needed. Convected currents of warm air from the grille temper the cold downdraft and divert its flow upward and above the heads of the occupants. Radiation from the casing or cabinet helps to balance the radiant temperature differential.

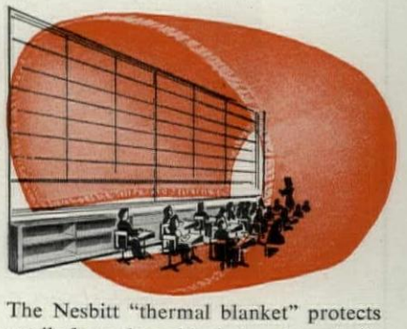
"Happily ever after"

For school officials, architects and engineers who have a personal interest in Thermal Comfort the story turns out well:

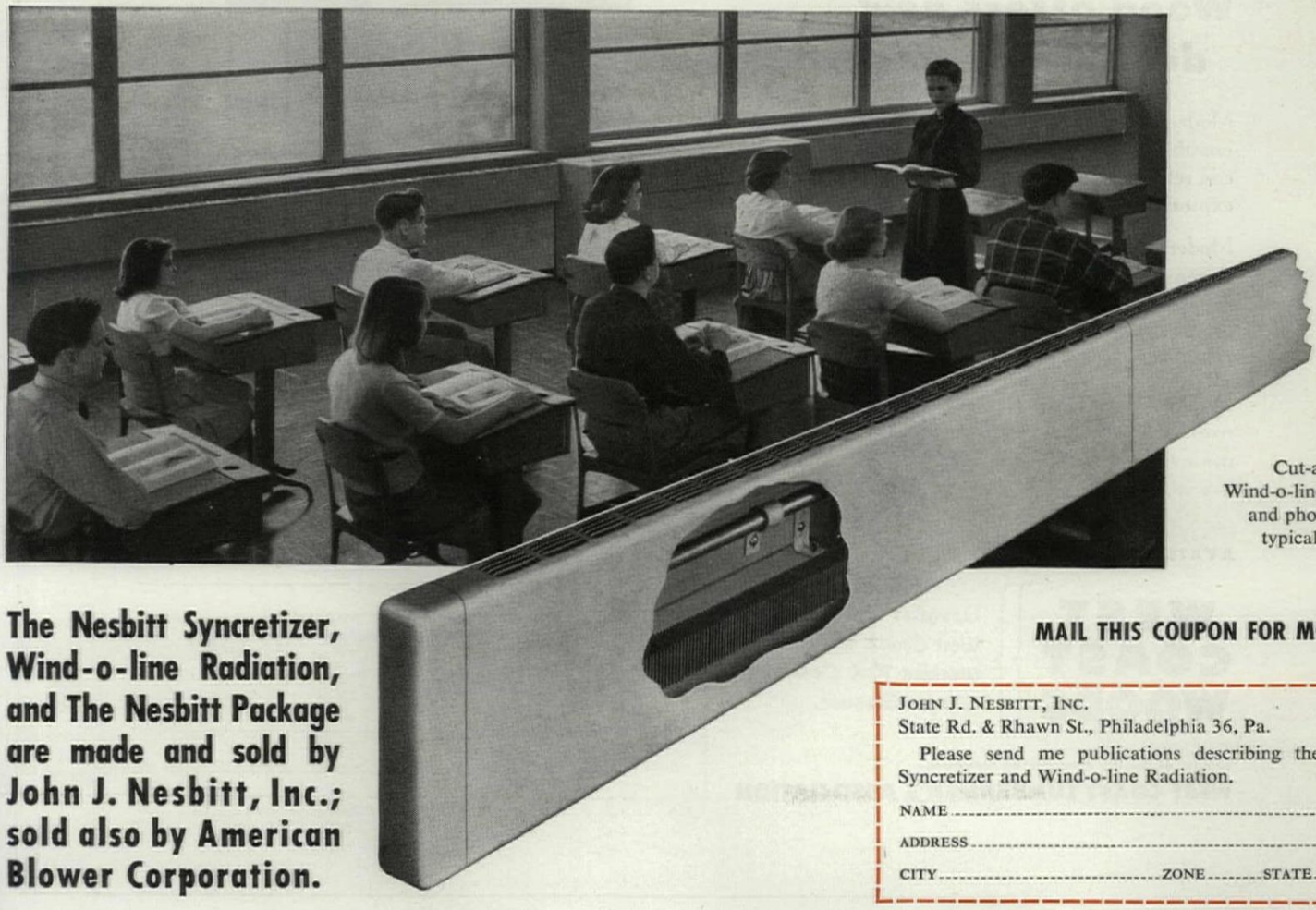
NESBITT SYNCRETIZED AIR—with Wind-o-line Radiation where desired—a *symmetrical* environment in which room-air and surface temperatures are better related to bodily heat exchange for a classroom comfort unequalled by any other system.

This is the story up to now. If it is ever to have a sequel, NESBITT expects to write it!

JOHN J. NESBITT, INC., STATE ROAD & RHAWN STREET, PHILADELPHIA 36, PA.



The Nesbitt "thermal blanket" protects pupils from the cold window downdraft.



Cut-away view of Wind-o-line Radiation, and photograph of a typical installation.

The Nesbitt Syncretizer, Wind-o-line Radiation, and The Nesbitt Package are made and sold by John J. Nesbitt, Inc.; sold also by American Blower Corporation.

MAIL THIS COUPON FOR MORE FACTS

JOHN J. NESBITT, INC.
State Rd. & Rhawn St., Philadelphia 36, Pa.

Please send me publications describing the Nesbitt Syncretizer and Wind-o-line Radiation.

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ADDRESS .....

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Modern wood construction offers almost unlimited possibilities for today's new churches. The architect can retain traditional styling or create new designs expressing his own individual ideas.

Modern laminated arches, ring-connectored trusses or conventional beams and girders combine beauty and strength in the basic framing. The natural beauty of wood paneling and siding permits an infinite variety of interior and exterior treatments.

For an enduring structure which embodies the beauty, warmth and dignity desired in today's house of worship, use ever-modern West Coast Woods.

SEND FOR FREE BOOKLET.
Some of the nation's outstanding modern churches are shown in this new 12-page booklet. Illustrated with photographs of both exteriors and interiors. Send coupon for free copy for your A. I. A. file.

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America's Largest Architectural Concrete Project

This modern housing development in Los Angeles is the largest single architectural concrete project in the United States. The postwar phase of the development consists of eighteen 13-story cross-shaped units. Each unit contains 153 apartments. Earlier prewar construction consisted of studio-type, two-story units. In all, housing is provided for 13,000 persons in 4,253 apartments.

Architectural concrete was chosen for this job because of its firesafety, durability, good appearance and ***low annual cost.*** Only one set of forms was needed for each 13-story building.

Versatile architectural concrete is adaptable to buildings of any size, style or function. More and more architects are discovering that architectural concrete is an ideal medium for giving form to their finest designs.

For more information about architectural concrete write for free illustrated literature. Distributed only in U. S. and Canada.

Leonard Schultze & Associates, New York, architects. Gordon B. Kaufmann and J. E. Stanton, Los Angeles, associate architects. Bowen, Rule and Bowen, Los Angeles, structural engineers. Starrett Bros. and Eken, Inc., New York, general contractor.

PORTLAND CEMENT ASSOCIATION

Dept. 10-7, 33 West Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

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WASCO is the only flashing that combines in one flexible material the life-of-the-building protection of copper with the bonding ability of asphalt-saturated fabric.

ITS COPPER CORE is as lastingly waterproof as heaviest copper.

ITS FABRIC COVERING prevents electrolysis, protects copper against damage in installation or use.

ITS ROUGH SURFACE becomes an integral part of the mortar joint.

ITS CRIMPED GROOVES permit expansion and contraction without movement.

ITS FLEXIBILITY allows forming by hand on the job.

ITS TOUGHNESS eliminates rips, holes, deterioration.

ITS ECONOMY is job-proved on thousands of installations. Reasonably priced, it is delivered cut to required sizes, applied at lower labor cost.

IMMEDIATE DELIVERY!
—Any quantity
—No allotments
—No red tape

THERE IS A WASCO FLASHING FOR EVERY THRU-WALL APPLICATION.

A complete line of flexible formed-on-the-job flashings including Wasco Copperseal, Wasco Fabric Flashing, Wasco Fabricote, Wasco Cop-R-Tex. Write for new file folder.

See Sweet's $\frac{7g}{Wa}$ for Flashing data.

See Sweet's $\frac{19a}{Wa}$ for information on better daylighting with Wascolite Skydomes.

WASCO FLASHING CO.
87 Fawcett Street, Cambridge 38, Mass.

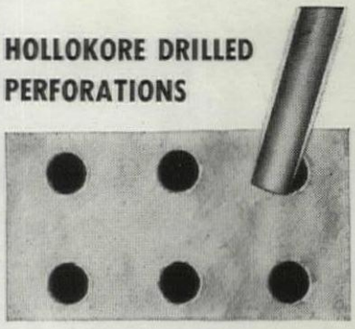
LOCATION:
Walter W. Gerlach Co.
Pasadena, California

ARCHITECT:
Luther Eskijian

ACOUSTICAL CONTRACTOR:
Coast Insulating Products,
Los Angeles, California

We're keeping this QUIET

HOLLOKORE DRILLED PERFORATIONS



The Hollokore Drill (cross section sketch shown above) developed by Simpson Research and Engineering, is responsible for the clean round perforations of Simpson Acoustical Tile. In the enlarged unretouched photograph reproduced above, notice the clean-cut holes . . . no fuzzy edges . . . no loose fibers to encourage unsightly bridging when repainting.

HERE is an example of sound-conditioning *and* smart interior finish—both aided through the architect's wise choice of Simpson Acoustical Tile. This architect-designed office is typical of many contemporary installations that take advantage of sound-conditioning with Simpson Acoustical Tile.

In multi-officed buildings and one-man offices; in churches and schools; in all types of commercial buildings—wherever people gather—Simpson Acoustical Tile provides *better* sound-conditioning.

Refer to Sweet's Architectural File for more complete information. Contact your nearest Simpson Acoustical Contractor for expert counsel.

SIMPSON LOGGING COMPANY
Sales Division, 1065 Stuart Bldg. Seattle 1, Wash.

WASHABLE FINISH

Easily cleaned with a damp soapy cloth, then wiped with a damp cloth. New whiteness and high light reflection is quickly restored!

FINISHED BEVELS

Bevels are painted with the same washable paint, which adds so much to the smart, crisp beauty of Simpson Acoustical Tile.

HIGH SOUND ABSORPTION

Independent tests, now backed by the experience of thousands of users, show that the sound absorption of Simpson Acoustical Tile is unexcelled when compared thickness for thickness with other perforated fiber materials.

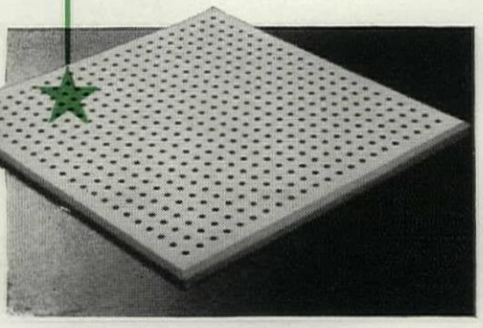
THERMAL INSULATION

Millions of tiny air pockets within the wood fibers as well as between them, act as an efficient barrier against passage of heat. Simpson Acoustical Tile makes rooms more comfortable.

Simpson
QUALITY SINCE 1895

ACOUSTICAL PRODUCTS

FOR BETTER SOUND CONDITIONING



To keep things QUIET

Simpson Acoustical Contractors Offer a Complete Service. Call nearest one:

ALABAMA
Stokes Interiors, Inc., Mobile

ARKANSAS
National Builders' Supply, Inc., Little Rock

CALIFORNIA
Coast Insulating Products, Los Angeles
Hal E. Niehoff & Associates, San Diego
Cramer Company, San Francisco and Fresno

COLORADO
Construction Specialties Co., Denver

CONNECTICUT
W. T. Roberts Construction Co., Hartford

DISTRICT OF COLUMBIA
Kane Acoustical Co., Washington

GEORGIA
Dumas and Searl, Inc., Atlanta

ILLINOIS
General Acoustics Co., Chicago
Melvin R. Murdy, Moline

INDIANA
The Baldus Co., Inc., Fort Wayne

IOWA
Kelley Asbestos Products Co., Sioux City and Des Moines

KANSAS
Kelley Asbestos Products Co., Wichita

KENTUCKY
Atlas Plaster & Supply Co., Inc., Louisville

MASSACHUSETTS
W. T. Roberts Construction Co., Cambridge

MINNESOTA
Dale Tile Company, Minneapolis

MISSISSIPPI
Stokes Interiors, Inc., Jackson and Greenwood

MISSOURI
Kelley Asbestos Products Co., Kansas City
Hamilton Company, Inc., St. Louis

NEBRASKA
Kelley Asbestos Products Co., Omaha

NEW JERSEY
Kane Acoustical Co., Fairview

NEW YORK
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Kane Acoustical Co., New York
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ceilings . . white to reflect maximum light

walls . . . canary yellow and aquamarine to promote comfort, avoid monotony

desks . . . light (non-gloss) to avoid glare

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system . . . semi-indirect for maximum comfort

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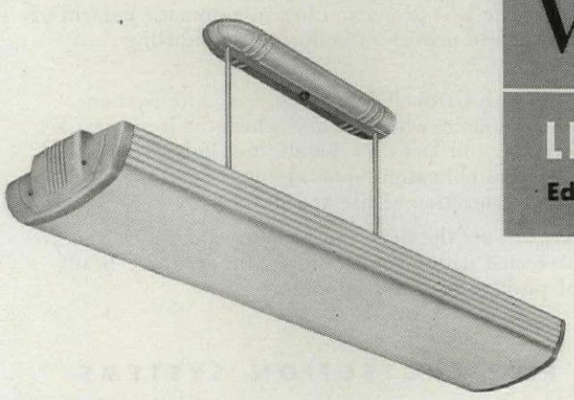
Semi-indirect lighting

Lighting at its best

A classroom should be pleasant and comfortable, and the lighting system should be an inconspicuous part of the background. That's why semi-indirect fluorescent lighting, which directs most of the light to the ceiling, is the best in classroom lighting. The entire ceiling becomes a part of the lighting system; all lamps are completely shielded.

Westinghouse Type CD Plastic Luminaires, used in this model classroom, are designed to blend with the light ceilings and easily become an integral part of the room.

This is the best, but not the only method of lighting classrooms. Westinghouse has a complete line of fluorescent and incandescent luminaires which meet classroom requirements. For an analysis of these methods get B-4556, The ABC Plan for School Lighting, Westinghouse Electric Corp., Box 868, Pittsburgh 30, Pa.



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Westinghouse
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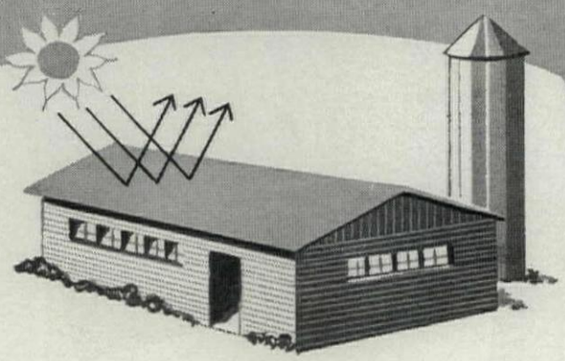

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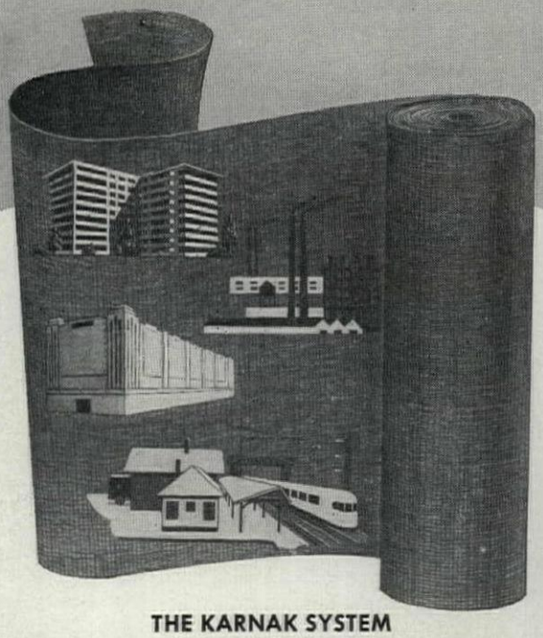

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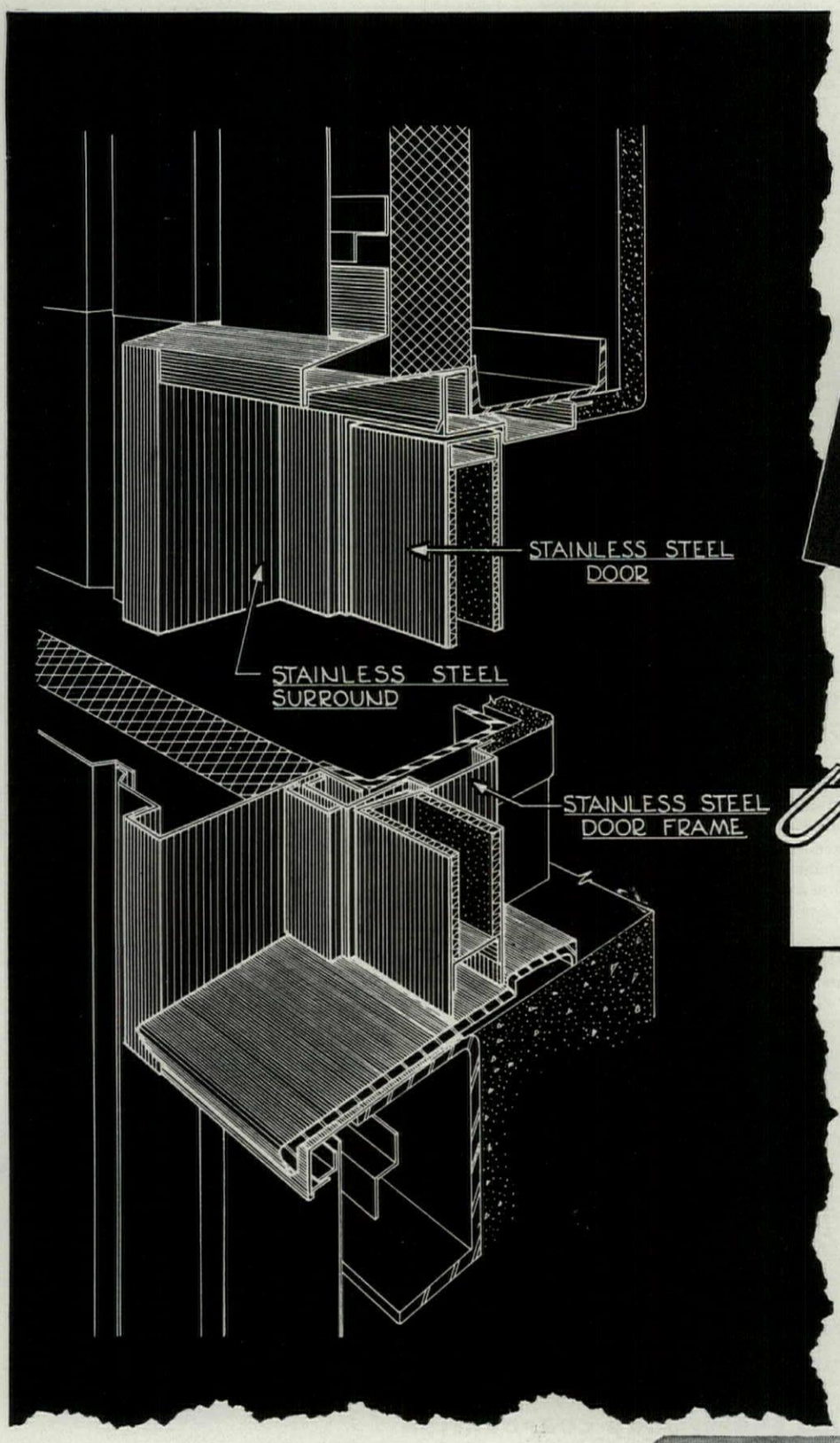

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Above: Brown U., Main Dining Room, Providence, R. I. Architects: Perry, Shaw & Hepburn. Pastel Green Kalistron covers wainscoting, Forest Green Kalistron on service doors.

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Kalistron is different because its color is fused to *underside* of clear sheet of wear-resistant Vinylite. Since nothing can touch this under-surface, Kalistron's beauty stays fresh and new-looking.

Kalistron cannot chip, crack or peel; minimizes maintenance costs. Cleans easily with a damp cloth. In 28 standard colors: special colors matched.

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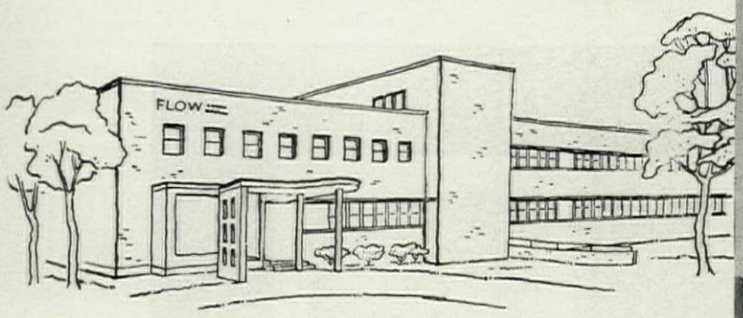
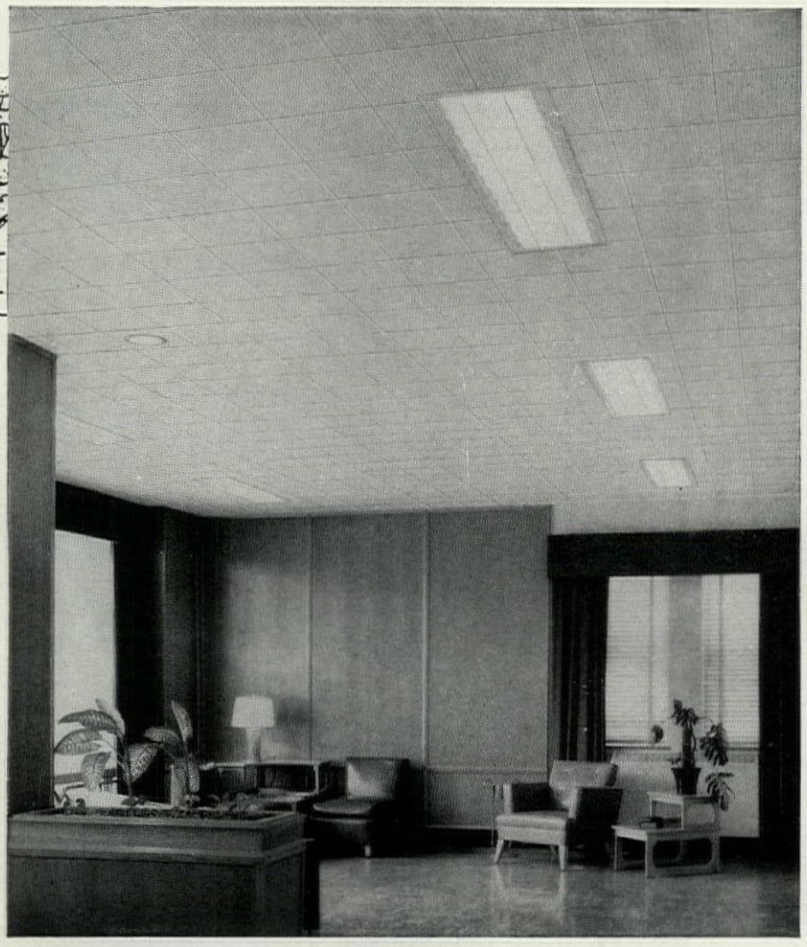
Color fused to underside of transparent vinyl sheet . . . backed by flocking

ACOUSTICAL MATERIALS AT WORK





Reception area showing Cushiontone ceiling.

FLOW MEMORIAL HOSPITAL,
Denton, Texas

Architect:
Bennett and Crittenden, Dallas

General Contractor:
Carpenter Bros., Dallas

Acoustical Contractor:
United Tile Co., Dallas

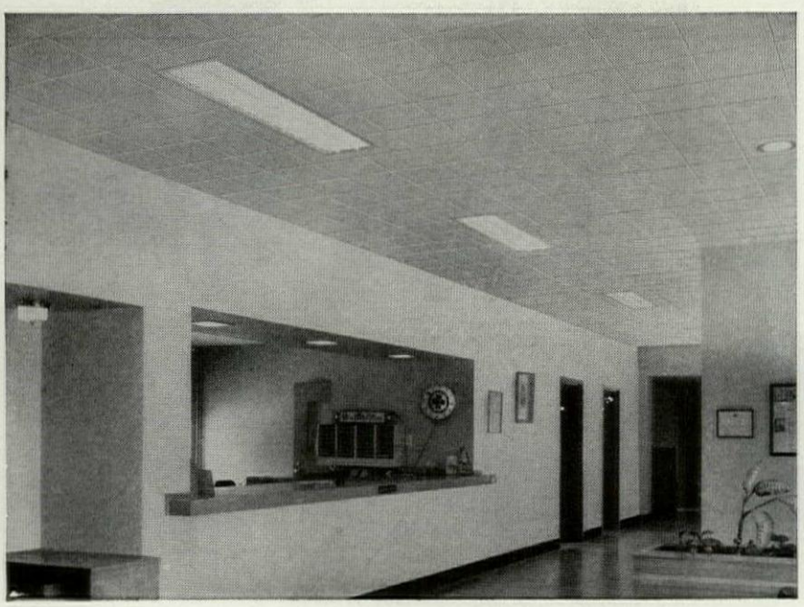
More and more, hospitals recognize the value of "quiet" as a tool in therapy. Sound conditioning need not be expensive; it is easily within most budgets.

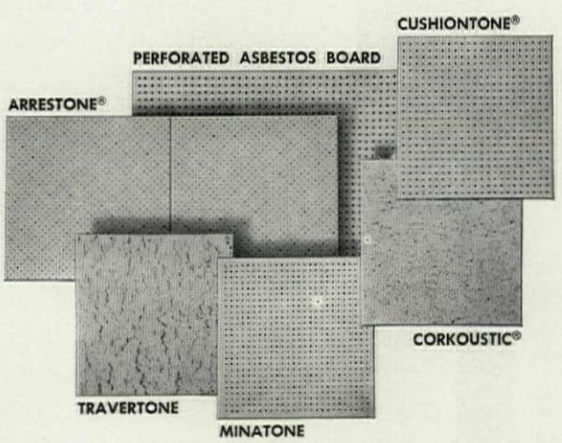
In the new Flow Memorial Hospital, economy was one of the important considerations. They were still able, however, to invest in effective acoustical treatment. For here, the architects specified Armstrong's Cushiontone®, a perforated wood fiber tile. With Cushiontone, they obtained high efficiency in sound conditioning for the lowest possible cost.

Aside from its low cost, Cushiontone actually saved money in another way. It was installed right over the brown coat of plaster and eliminated the need for a final plaster coat. High light reflectivity, ease of maintenance, and repaintability were other practical advantages offered by this material.

The complete line of Armstrong's Acoustical Materials offers you a wide range of special features. Your Armstrong Contractor will be glad to give you expert advice without obligation. For the free booklet, "How to Select an Acoustical Material," write to Armstrong Cork Company, 5410 Stevens Street, Lancaster, Penna.

Front entrance lobby with Cushiontone ceiling. Over 10,000 square feet of Armstrong's Cushiontone was used to sound condition lobby, reception area, corridors, offices, and rooms.





ARMSTRONG'S ACOUSTICAL MATERIALS

Critical area designations thwart cities letting rent controls die

As the presidential campaign reached the home stretch, vote-conscious Washington found a way to keep federal rent control in 15 communities (total population: 1,900,000) where city councils favored letting it die. The plan: designate backsliders as critical defense housing areas. This automatically nullified local decisions to accept the Sept. 30 decontrol in nondefense areas voted by Congress, or reimposed control if a community had previously voted for termination.

During August and September, the Office of Rent Stabilization recommended that 43 cities be designated critical areas to keep rent control. As required by law, the recommendations went to the Defense Areas Advisory Comittee, which in the full year from its inception (Sept., '51) had certified only 124 areas for critical area rent control. To forestall protests by citizens or local officials, the recommendations were kept secret.

Unconvincing data. The advisory committee formally rejected 15 of the 43 ORS recommendations *(see table)*, mainly because ORS failed to convince the committee that there were substantial shortages of housing or substantial in-migrations of defense workers, two of the four criteria required for establishing critical area rent control. The other two: marked expansion of defense or military facilities, and a threat of excessive rent increases. ORS withdrew seven recommendations.

The defense committee approved 22, waited until the eve of rent control's expiration to announce them, then put out the information in such driblets that almost the entire daily press missed the story altogether. Announcements of approved recommendations referred to surveys that had established all these criteria, but the only figures ORS saw fit to divulge were percentage averages of how far uncontrolled rents were above controlled rents in each area (from 33% to 73%; over-all average: 51%). What the announcements did not point out was that uncontrolled rents involved chiefly new postwar buildings—a misleading comparison.

Protest chorus. The number, and the unexpectedness of the designation in cities that had just voted for decontrol was too remarkable for coincidence. Denunciation came fast:

▸ "To keep a lot of people in jobs and keep their noses in other people's business, a bureau in Washington has overruled Congress," cried city councilman Walter R. Scott in Kansas City, Mo. Mayor William E. Kemp, who favored continuation, concurred: "It would have been better to have controls imposed by the council than this new federal move."

▸ Said NAREB's Herb Nelson: "Power-mad bureaucrats in Washington can't be stopped by a mere law. . . . They find sly ways of twisting words [to circumvent local desires]. . . . Apparently the drive will be to impose rent control through the back door."

In a week, the complaints grew so insistent, economic stabilizer Roger L. Putnam felt impelled to call a special press conference in Washington Oct. 7 to "clarify" what had happened. He confessed the maneuver was indeed no coincidence. The defense areas committee, of which he is chairman, "had stepped up its activity in recent weeks" to beat the Sept. 30 lapse date with its small flood of certifications, Putnam said. Washington felt that designations before Oct. 1 would "avoid a chaotic situation" between decontrol and possible recontrol in some cities, he explained.

While James McI. Henderson, new ORS director, nodded agreement, Putnam said he was "upset" by the "heckling" and volume of complaints. The designations were *not* simply excuses for retaining rent control over local opposition, he insisted, but were all based on conscientious studies of local defense conditions. Then he let the cat out of the bag: except for the advisory committee's action federal rent control would have remained in only six of the 26 areas designated as critical since July 25.

Secrecy reversed. Why hadn't local officials been advised or consulted? Replied Putnam: "Just to avoid stirring up the community." If the defense areas committee failed to approve an ORS recommendation a community might go through a "needless" period of protests, debate or heated controversy. And besides, local officials don't always know as much as federal officials, or know of all federal defense contract plans for an area. Nor would local people necessarily be consulted in the future.

On secrecy, official attitudes flip-flopped three days later. Henderson told FORUM that he'd had a talk with his boss, Putnam —"and from now on we'll go to the mayor or council and say 'we're in here gathering data to see whether rent control should be

WASHINGTON DIARY

9/12 *NPA names Rufe B. Newman, Jr. as acting assistant administrator for facilities and construction.*

9/22 *DPA distributes approximately same allotments of copper and aluminum to nondefense industries for first quarter, 1953 as preceding period, but only three fourths of the steel.*

9/26 *DPA interprets rules governing six-month time limit on certificate of necessity for fast tax amortization so that starting date of any one building in a group applies to all the structures (where amount certified is under $1 million).*

10/1 *DPA allots sufficient structural steel for first quarter, 1953 to continue construction already underway, permitting few new starts.*

10/2 *NPA permits distributors of brass mill products to sell increased amounts of their products on a single sale (M-82 amended).*

10/3 *NPA relaxes construction rules, effective May 1, 1953; increases volume of materials that may be self-authorized for commercial and other types of construction; lifts ban on recreational building.*

10/8 *DPA grants additional certificates of necessity for swift tax writeoffs, bringing program total to $2.82 billion, for 14,800 new or expanded facilities.*

RENT CONTROL RUCKUS

In August and September the Office of Rent Stabilization recommended that the Defense Areas Advisory Committee, now part of the Office of Defense Mobilization, classify 43 cities as critical areas to continue or reimpose rent control under the Defense Production Act. City-by-city results, shown here (as far as FORUM knows) for the first time:

RECOMMENDATION ACCEPTED

*Akron
*Allentown-†Bethlehem
*Bay City, Mich.
*Canton-Massillon
*Casper, Wyo.
*Cedar Rapids
†Columbus
*Denver
*Evansville, Ind.
*Great Lakes-North Chicago-Waukegan
*Harrisburg
*Kansas City, Mo.
Milwaukee
Monmouth County, N. J.
*New Castle, Pa.
†Portsmouth-†Chillicothe, Ohio
*Pueblo, Colo.
†Sandusky, Ohio
*Seward, Alaska
*Sioux City
†Youngstown, Ohio

RECOMMENDATION FAILED

REJECTED BY DAAC
*Boulder, Colo.
*Cheyenne, Wyo.
†Cincinnati
*Des Moines
†Durham, N. C.
*Goldsboro, N. C.
*Lexington, Ky.
†Mansfield, Ohio
†Montgomery-*Prince Georges County, Md.
†Raleigh, N. C.
*Seattle, Wash.
†Sidney, Ohio
*Toledo, Ohio
†Wilmington, N. C.
Wright-Patterson AFB Area (†Dayton-Springfield, Ohio)

WITHDRAWN BY ORS
†Albuquerque
†Altoona
†Baltimore
DeKalb, Ill.
*Huntington, W. Va.
*Lorain, Ohio
†Wilmington, Del.

** Rent control was to lapse, or was continued or reimposed against the wishes of city for Sept. 30 decontrol.*
† City voted for continued federal control beyond Sept. 30.

imposed under the critical area program.' " (And a spokesman said the defense areas advisory committee would give a straightforward answer to any inquiry whether there was an ORS recommendation for any particular city before it at any time.)

Henderson hoped local officials wouldn't "broadcast it from the rooftops" when a city is under ORS study, lest anyone attempt to distort survey results with slanted information. He also offered another belated reason for earlier "caution" about letting out word of any proposed designations: Tighe Woods, from whom he took over ORS on Aug. 27, had been accused of "blackjacking" cities to vote for extension beyond Sept. 30 by threatening them with critical area classification if they voted for decontrol.

Around the nation. As Sept. 30 passed, ORS estimated that only 30% of the nation's major cities gave up federal rent control, plus about 950 of the 2,400 affected smaller communities. About 7.5 million of the nation's 19 million rental units remained under controls, including all of New York State and the District of Columbia, which have their own rent laws.

Big cities that decided to continue under the federal rent rule until April 30: Boston, Providence, Jersey City and Newark, N. J.; Philadelphia, Pittsburgh, Chicago, Minneapolis, St. Paul, St. Louis, Cleveland, Cincinnati, Memphis and San Francisco. Among those that voted for freedom: Denver, Kansas City and Harrisburg (all promptly made "critical areas"), Detroit, Atlanta, Toledo, Nashville, Des Moines and New Orleans.

Chicago, Cincinnati and Cleveland city-council resolutions for control included recommendations for limited rent increases. Rent advisory boards in all three cities promptly approved boosts of about 10% above existing levels.

Critical area vetoes. Disillusion in cities that voted for freedom but ended up as critical areas for rent control (but, generally, not for housing) included the discovery that their new status would also bring under control hotels, rooming houses, and postwar construction that formerly was exempt. Only in two instances (Columbus and Canton-Massillon) were communities also certified as critical areas for housing under the Defense Housing Act, making them eligible for defense housing and community facilities benefits. (Four already had "housing aids" designation: Monmouth County, N. J; Portsmouth, Ohio; Sioux City; and Great Lakes-North Chicago-Waukegan.)

There was double disillusion in Denver because mayor Quigg Newton had advance word of the impending designation direct from Henderson, an old personal friend, but let the council vote for decontrol without telling it so.

The *Rocky Mountain News* quoted economic stabilizer Putnam as saying that Henderson told the mayor the order was coming, that the mayor welcomed the decision because it "will take the heat off the city council. We'll probably go ahead and vote against rent control, and you'll put it back." Later investigation, however, produced word that mayor Newton (since departed for a trip to Germany and unavailable for comment) told only the council president what he had learned, and hedged so much about it—withheld the fact that Henderson was his source—that the council president decided the information was too indefinite to give the other councilmen. On Oct. 6, the Denver council listened to protests against the effects of the federal action, but postponed action.

How to end rent lids. To gain freedom from critical area rent control, a city council can give ten-day notice of a public hearing on whether there is a shortage of rental housing. If it finds there is not, and sends a resolution asking that rent lids be lifted to the President, the controls end. Legally, rent controllers can move in again, reimpose rent control after another public hearing. So far, ORS has not invoked this power. Explained Putnam: "No one here has a desire to get into a running fight with any municipality." And Henderson told a protest committee from Akron that ORS would not fight back if Akron voted to get out from under critical area designation.

Cities where officials took sharpest issue with federal and action, and rebellious set-aside votes were most likely:

▸ Cedar Rapids—The surprise designation was based partly on a local employment survey, Washington informed mayor Milo Sedlacek, a Democrat. The Chamber of Commerce director, however, said none of eight of the city's largest industries that he checked, nor the chamber, had been contacted in any survey. Countering an ORS regional representative's statement that the city gained 1,900 in-migrant workers since 1950, the chamber's monthly survey of 27 largest firms, covering 80% of city's employment, found the labor force shrank steadily from 15,977 in January to 14,724 in July, although there was an upturn to 15,236 in August. A recent Community Chest survey of every firm employing five or more persons showed 506 fewer prospects now than a year ago. ORS scheduled a public hearing for Nov. 25, said it might decertify the area then if evidence warrants.

▸ Akron—The city council, which voted 10 to 3 for decontrol on Sept. 23, promptly moved to rescind imposed controls, voted unanimously (11 of 13 present) to hold a public hearing on Oct. 20. A city referendum also was being arranged.

▸ Evansville, Ind.—The city council, which on Sept. 29 voted 5 to 3 for decontrol, appointed a committee to consider its next step, probably a public hearing after election day. Neutral observers figured ORS might well be right in calling the city rental-vacancy rate a slim 0.4%. Moreover, defense work was definitely expanding. But the council, incensed at federal tactics, will probably vote for decontrol, they predicted.

Had Washington won any votes with its rent control circus? Only time might tell. But ORS' backdown in Cedar Rapids gave a clue to the next development: solicitous acquiescence to local objections by agreeing to some "decertifications" *after election day*.

Interest soars to 2½% on public housing bonds; PHA may postpone future issues

The fourth issue of permanent public housing bonds brought the highest interest rate yet—an average of 2.54%. The Sept. 23 issue covered 73 housing authorities in 23 states, totaled $170.7 million.

It scarcely could have struck the municipal bond market (like public housing bonds, municipal bonds are income tax exempt) at a worse time. The three earlier issues of Federally guaranteed public housing bonds had gone at average rates of 1.95% (January 1952), 2.05% (October 1951), and 2.07% (July 1951). But since January the market had been flooded with municipal issues, while demand dropped. Municipal bonds had dipped to the lowest mark since 1948. And heavy inventories of unsold tax-exempts still remained in dealers' hands.

At the whopping 2.54% interest, the new issue met big demand. Said a spokesman for the winning syndicate of dealers (Blyth & Co., Phelps, Fenn & Co., and Lehmann Bros.): "We're selling heavily in the Midwest and in small amounts to investors and banks we could never interest before." Reason: for persons and institutions whose income puts them in high surtax brackets, 2.54% tax-free bond interest meant more net earnings than 5% on taxable securities. And the public housing bonds bore a government guarantee.

From the taxpayer's viewpoint, the Public Housing Administration had picked an expensive way to do business. The Treasury could have loaned the money directly at 2¾ or even 3% as permitted by law. On a short-term basis, PHA might have used Treasury financing at less than 1.7%. PHA intimated that unless the tax-exempt bond market improves, no more public housing bonds will be offered this year.

Reg. X death little aid to commercial work; $31 billion in new construction seen for '53

The effect of suspension of Regulation X on commercial building would be spotty. In some areas, a spurt in construction of shopping centers, offices and supermarkets was in the making this month. But in other cities, the building industry's reaction to the end of 50% down payments on commercial building was so restrained it lent support to the prophets of a recession late next year.

A survey by FORUM in 14 major cities produced this mixed picture:

In Chicago, vice-president Theodore Binger of Dovenmuehle Inc., one of the region's biggest mortgage firms, said: "I had lunch today with a dozen mortgage and insurance people. They all agreed they hadn't noticed any spurt of activity. We had a couple of requests for stepping up loans from 50 to 60% but that's all. I don't think the lifting means a thing, nor that it will in the future. . . ."

Some gain, but no boom. In Cleveland, vice-president Harry R. Templeton of Cleveland Trust Co. observed: "We raised loans from 50 to 60% but it hasn't started any stampede. We expect it to have some effect . . . but there won't be any boom. Letting down Reg. X will be hardly more than a small contributing factor." Said secretary A. W. Hutton of Sam Emerson Co., big general contractors: "There has been a lot of shopping-center construction around here and it seems the field is getting filled up."

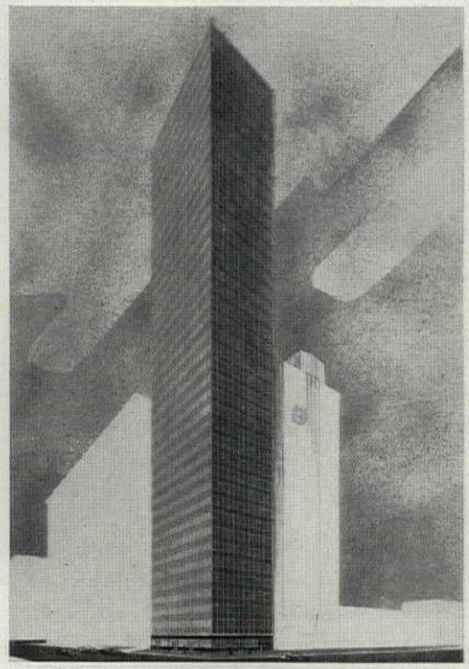
Seattle architects, lenders and contractors foresaw little chance their city would climb out of its slump on commercial work—even for small jobs. Said president Herschel Hart of Union Federal Savings & Loan: "The cost is too high now when figured in relation to the expected return. Everyone for some time has been predicting a business recession of some kind for next year and even more of a recession for the year following that. This naturally is having its effect, even though no one knows whether it will materialize."

At Bridgeport, Conn. contractor John Zandonella observed: "There isn't much life yet in private commercial building. If we don't get some jobs it will be pretty slow for us next year. There doesn't seem to be any spirit in the building game this fall." Said builder W. A. Hubbell, who is also a director of two banks: "We are overproduced on both homes and commercial space. In 1953, I estimate we will find building down 25 to 40% from this year."

Surge in the South. Against such pessimism, cities like Dallas, Houston, Philadelphia, Los Angeles, San Francisco and Boston could point to definite signs of an upsurge in commercial work. In Philadelphia, S. Yellin & Sons reported a rise in projects costing under $200,000. Said a spokesman: "We are bidding on three jobs a week where we only bid on two a week during Reg. X days. . . . I [expect] a marked increase in building." But savings and loan associations agreed they saw "no increase at all."

Biggest rush of projects unveiled in the first weeks after Reg. X's suspension was in Texas. Dallas real estate man Leo Corrigan announced plans for an 11-story, 30,000 sq. ft. addition to his Burt building, and a 40-story glass skyscraper adjoining the Adolphus Hotel *(see cut)*. "Both projects were predicated on the relaxation of credit controls," Corrigan said. So, he added, was his decision to build a 25-story office building in Atlanta and a 300-room hotel in Albuquerque, N. M. Said Dallas architect George L. Dahl: "Our office has twice the number of projects and twice the customers we had a few months ago. They represent general commercial projects."

Houston foresaw zooming construction of shopping centers, banks and department stores. Typical was Brace & Carruth's announcement Oct. 5 of a $5½ million shopping center, with construction to begin early in '53. Architect Irving Klein, executive-director Loy W. Duddleston of the Houston AGC, and president A. P. Kinghorn of Campbell Mortgage Co. all forecast the upsurge in commercial building at from 20 to 25% "in the next six months."



GLASS-SIDED SKYSCRAPER, 40 stories high, costing about $10 million, is planned by promoter Leo Corrigan for downtown Dallas, adjoining Adolphus Hotel, which he also owns. Wyatt C. Hedrick is the architect.

CONSTRUCTION ESTIMATES, 1952-53

(Millions of dollars)

	1952	1953
TOTAL NEW CONSTRUCTION..	$32,000	$31,300
PRIVATE		
Residential	10,700	10,100
Nonresidential	4,870	4,700
Industrial	2,430	1,800
Commercial	940	1,300
Other nonresidential	1,500	1,600
Farm	1,700	1,600
Public Utility	3,850	3,800
Other private construction.	80	100
TOTAL	$21,200	$20,300
PUBLIC		
Residential	$ 700	$ 500
Nonresidential	4,000	4,200
Industrial	1,800	1,800
Educational	1,500	1,600
Hospital	400	500
Other	300	300
Military and naval	1,700	1,800
Highways	2,600	2,800
Sewer and water	700	700
Conservation, development..	850	800
Public service and other...	250	200
TOTAL	$10,800	$11,000

Source: Miles L. Colean

Decline of controls? There was little doubt in the industry's mind that commercial building would get its biggest shot in the arm early next year if materials restrictions are removed as expected. Said architect Arnold Agree of Detroit: "Lack of materials rather than financing has been the No. 1 roadblock to an unprecedented surge of commercial and industrial construction."

Another boost for commercial building should come from insurance companies, which normally find yields on such loans attractive and their servicing cheap. Moreover, a drop in demand for loans to finance industrial construction impends. And so long as the government continues to freeze interest rates on FHA and VA mortgages, these will remain unattractive.

In the over-all construction outlook for next year *(see table)*, public construction seemed certain to come close to this year's mark. That should mean good markets for both materials and labor. With controls on their way out, recreational and institutional construction should offset a big dip in industrial building. Most experts agree housing will slip as the rate of family formation drops because of the low birthrates of depression years. But even so, a 900,000 to 1 million house year was generally expected.

If next year would not be up to the last two, it still looked good by past norms.

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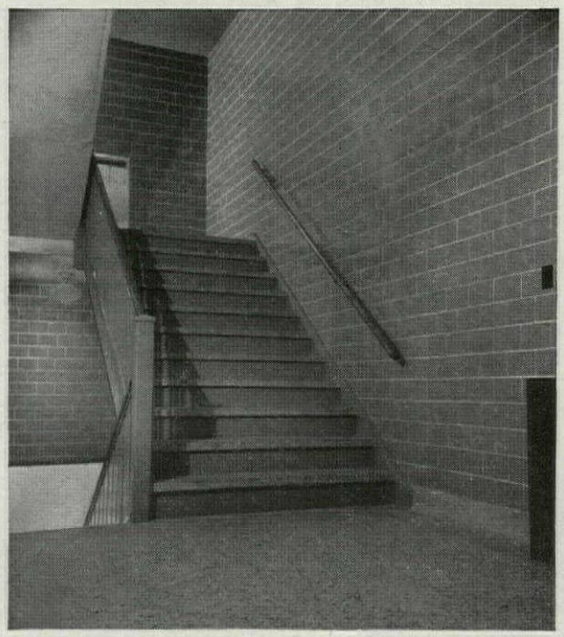
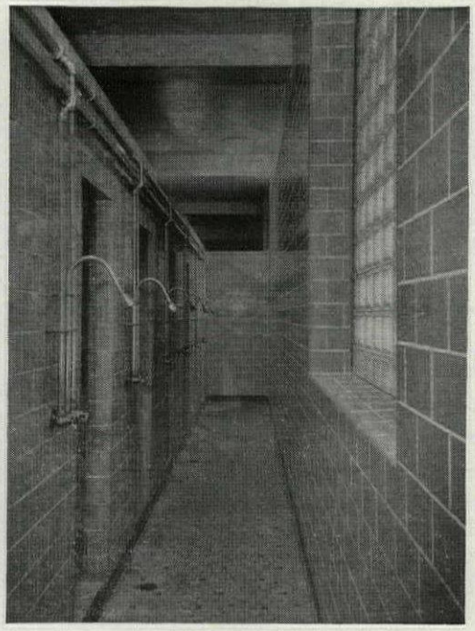


Two views of interior of Milwaukee County School for Dependent Children, Milwaukee, Wisconsin, showing use of Natco Ceramic Glazed Structural Facing Tile (Vitritile) 6T Series, for interior walls. Architect — John Messmer, Milwaukee, Wisconsin; Contractor — T. Bentley & Sons, Milwaukee, Wisconsin.



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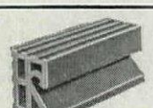
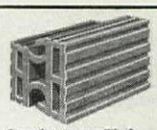
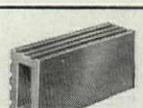


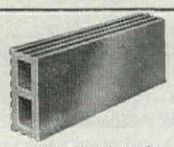
Raggle Blocks Prevent Water Seepage 4″ x 5⅓″ x 12″ Nom. Size



Speed-A-Backer Tile for Backing Brick Faced Walls 12″ long Varying Heights



Ceramic, Clear Glazed Vitritile 5⅓″ x 12″ Nom. Face Size



Ceramic Glazed Vitritile 8″ x 16″ Nom. Face Size

Non-Loadbearing Tile, Scored and Unscored, 12″ x 12″ Face In Standard Wall Thicknesses

Buff Unglazed, Manganese Spot, Salt Glazed, Red Textured Dri-Speedwall Tile, 5⅓″ x 12″ Nom. Face Size

GEORGIA TECH'S handsome brick-and-tile-faced school of architecture building was dedicated Sept. 20, during AIA's regional meeting in Atlanta.. The $1 million building, designed by Bush-Brown, Gailey & Heffernan, accommodates a school expanding into teaching industrial design, city planning and the light construction industry, thus rounding out the total building education of students not intending to become designing architects.

Architects' problems discussed at regional conferences in Atlanta, Spokane, Cincinnati

As the leaves began to fall, US architects availed themselves of balmy days—and of income-tax deductibility for expense accounts—to gather in regional centers, visit, talk out their more pressing concerns.

In Atlanta, a record 840 architects and kin answered the invitation of president Herbert Millkey and the Georgia AIA chapter to the new South Atlantic Region's first session Sept. 18-20. Governor Talmadge obligingly made the week of Sept. 14-20 "architects' week." The assembled architects centered their attention on schools—North Carolina, Georgia, and the city of New Orleans, all of them within the region, having made outstanding progress. They heard Walter D. Cocking of *The School Executive* magazine declare that the US must spend $1 billion a year for 15 years for schools to meet its population increase; that an exact reversal had taken place in school heights—before World War II 80% had been two or more stories; last year 80% were one story. They heard architect Henry Wright of Los Angeles describe classroom needs in detail, heard Chuck Colbert, Department of Education architect of New Orleans, describe remarkable plans formulated for new "downtown" schools *outside* the center of that congested city, heard Carl Feiss ask more attention to adequate site and site planning. And from architect O'Neill Ford of San Antonio they received so enthusiastic an account of "lift-slabbing" schools that one architect cracked: "O'Neill Ford dreamt last night that he opened the game in his maiden lift." On Saturday all thronged out to the dedication of Georgia Tech's handsome new architectural building (*see cut*).

The following schools in the architect's exhibition received merit awards:

Proposed library building for Georgia Tech, by Bush-Brown, Gailey & Heffernan, architects.

Proposed Langley-Bath-Clearwater High School, Lyles, Bissett, Carlisle & Wolff, architects.

E. E. Rivers School, Atlanta (completed) and Roswell High School (proposed) both by Stevens & Wilkinson, architects.

Proposed new Negro high school, Muscogee County, Ga., by E. Oren Smith, architect.

Proposed nuclear reactor laboratory, Raleigh, N. C., G. Milton Small, architect.

The following received mention:

Ring Theater for Miami University (completed), Robert M. Little and Marion Manley Associated Architects.

Men's dormitory, Fort Valley State College, Ga., Richard Aeck Associates, architects.

North Dade High School, Dade Co., Fla., Watson & Deutschman, architects.

At Dallas, the following Sunday and Monday the Dallas chapter was host to an all-Texas exhibition of "Texas Architecture 1952" assembled for the Texas State Fair in behalf of the Texas Society of Architects. Arch Swank and Herbert Tatum, plus Ed Bearden, assistant director of the Dallas Museum, united with out-of-staters Robert Alexander, Los Angeles architect, and Douglas Haskell of FORUM to crown the following buildings:

Phil Heine

CHAPTER PRESIDENTS at Spokane AIA conference inspect a model of the Columbia basin farm-in-a-day project (H&H, March '52 News). L to r: E. S. Gates, Idaho; H. Abbott Lawrence, Oregon; Victor L. Wulff, Spokane; J. van Teylingen, Montana; Paul Thiry, Washington.

A distinguished merit award to architect Don Barthelme's West Columbia School *(see p. 102)*.

Merit awards to:

Employers Insurance Building at Dallas, by George Dahl & Associates, architects.

The Barry and Dunwoodie houses at San Antonio by Milton Ryan.

The Hunt House at Houston by Hamilton Brown.

The Blum House by Howard Barnstone.

The new Negro high school, Sweeney, Texas, a second Don Barthelme school.

In Cincinnati, 200 attending the Great Lakes regional conference heard a prediction from Dean G. Holmes Perkins of the University of Pennsylvania's school of fine arts: "We are entering a period, following the aging of the great giants of contemporary design, which could be an age of insincerity and skill artifice, comparable to the age of aping the great Italian masters. But I believe we can be at the beginning of a great period of architectural adventure. The inventive mind must be encouraged." Another forecast (by Cincinnati architect H. M. Garriott): "The henhouse style of the ultramodern home is here to stay and the walled garden in cities will become increasingly popular."

At Lake Placid, New York, under chairmanship of Saranac Lake architect William G. Distin, the Lake Placid Club did as well for the New York State Society of Architects with steaks and such as Atlanta had done with liquid refreshments. Only complaint: the skies were too generous with water. Bright event: Roger Allen's discovery that "costing more than was expected" is an integral property of a house—not your house or mine or architect houses or builder houses but just houses.

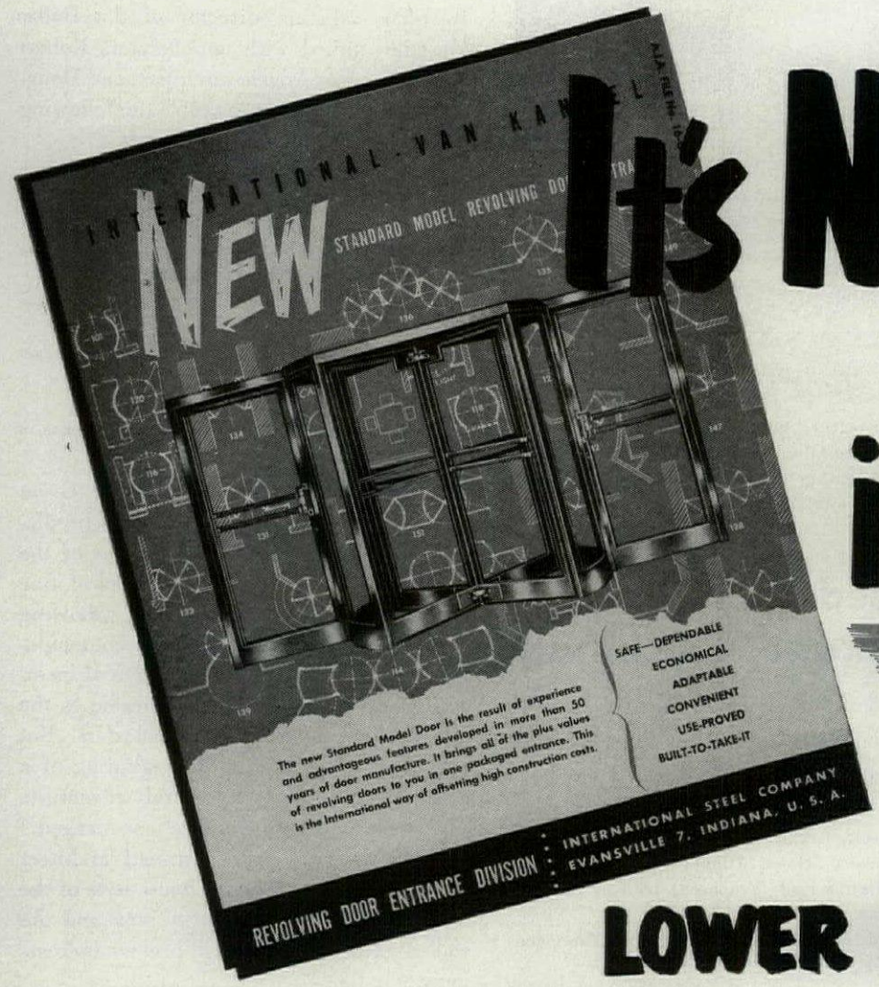
DISTIN

Merit awards went to:

The Ardsley Elementary School at Tarrytown, by Robert A. Green.

The Edward John Noble Hospital at Lawrence, New York, by Skidmore, Owings & Merrill and Sargent, Webster, Crenshaw & Folley Associated Architects, and to the Pan American Life Insurance Co. at New Orleans on which S-O-M were associated with New Orleans architect Claude Hooton.

In Spokane, some 150 architects from Washington, Oregon, Idaho and Montana gathered Oct. 3-5 for the first meeting of AIA's northwest regional council, chartered a new chapter, southwest Orgeon, AIA's 107th. Among the speakers: Francis Joseph McCarthy of San Francisco declared: "If



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there is a lack in the architect's position in his community, then it is the architect's fault for living in his own ivory tower. Architects are citizens of high technical training. They should be sought out for community leadership. They aren't because architects aren't accepting their share of community responsibility." Said president Paul Thiry of Washington's state AIA chapter: "This tremendous undertaking (development of the Columbia basin) is going on right before our eyes. Still we are not participating in it as a profession."

AGC, electrical contractors fight over bid shopping

Bills to outlaw bid shopping by general contractors for large federal public works will be pushed again in the next Congress by Sen. Harley M. Kilgore (D, W. Va.). "Reports since adjournment indicate that the evil is continuing . . . is widespread [particularly on defense jobs protected by security secrecy], and must be eradicated," Kilgore told the National Electrical Contractors in Chicago Oct. 8. Although it was tabled in subcommittee after hot debate in the last Congress, Kilgore promised to reintroduce S. 2907, which would require general contractors to name subs and the amounts of their bids on large federal contracts, and give the US any profit resulting from transfer of subcontracts elsewhere.

A week earlier AGC suggested that NECA and other subcontractor associations form joint cooperative committees to iron out differences on this score. NECA rejected the peace overture with resolutions recommending S. 2907 and companion bills.

NEW CONSTRUCTION ACTIVITY

(expenditures in millions of dollars)

Type	September '51	September '52	% Change	1st 9 months '51	1st 9 months '52	% Change
PRIVATE						
Residential (nonfarm)	958	1,053	+9.9	8,240	8,069	−2.1
Industrial	210	188	−10.5	1,512	1,735	+14.7
Commercial	101	101	0	1,088	777	−28.6
*Total	1,955	2,037	+4.2	16,284	16,096	−1.2
PUBLIC						
Industrial	103	162	+57.3	661	1,230	+86.1
Military	129	153	+18.6	620	2,238	+99.7
Residential	63	53	−15.9	395	513	+29.9
*Total	979	1,075	+9.8	6,794	8,146	+19.9
Grand Total	2,934	3,112	+6.1	23,078	24,242	+5.0

* Minor components not shown, so total exceeds sum of parts. Data from Department of Commerce and Department of Labor.

CONSTRUCTION EXPENDITURES for September exceeded the $3 billion mark for the third month in a row, producing the largest quarterly volume on record, $9.3 billion. For the first nine months of the year, private dollar volume dipped slightly below last year's total but public was up by a fifth, stimulated by military, atomic-energy and defense-plant construction.

ALTERATIONS (TOP AND BOTTOM) ALTER ELEGANT FACADE OF MAIMONIDES' PATIENT FLOORS

Cost-dictated remodeling mars beauty of San Francisco's Maimonides Hospital

Workmen reached the halfway mark last month in San Francisco's unhappiest chapter in recent architecture—the remodeling of Maimonides Health Center for the Chronic Sick.

The $1,250,000 hospital, as designed (in 1946) and built (in 1949) by architect Eric Mendelsohn, achieved a remarkable beauty on a cramped site through its cantilevered balconies across its southern facade. The balconies were more than decoration: they permitted the wards to face south into the winter sun but provided patients enough protection against summer sun and glare so that an expensive ventilating system was omitted. The balconies, with 4′ railings, were to be used as an outdoor gallery for bedridden patients while a ground-level patio served ambulatory patients.

Balcony ban. Misfortune first descended on Maimonides as it opened. Insurance companies decided the balconies were a hazard, refused to insure the hospital unless the windows to them were permanently locked, or attendants were provided whenever the balconies were open to patients. Maimonides locked up the windows.

Moreover, recounts Mendelsohn, the board of directors and the medical consultant (Dr. J. A. Katzive, medical chief of neighboring Mt. Zion Hospital) who approved the plans insisted on a basic patient unit of only four beds as the maximum beds per room for the chronic sick. Because of the narrow site, this resulted in an average of only 16 beds per floor and 1.8 employees per patient. Since April 1950, when Maimonides opened, operating costs of hospitals have risen (like building costs), although original operating expenses compiled by Dr. Katzive and the architect's office had shown that the hospital would be self-sustaining. Last year, Maimonides directors, confronted with a $75,000 operating deficit, began looking for a way out.

Merger for money. First, a financial prop was provided by a merger with the Hebrew Nursing Home, which already had a fund on hand to expand its old and cramped quarters in another sector of San Francisco. In the consolidation, Maimonides' 16-member board of directors (including officers) was increased to 32 to give the nursing home representation. Four members of the old Maimonides board who had entrusted Mendelsohn with the original design did not remain on the new board, and a fifth, Mrs. Walter A. Haas, has since resigned. The shuffle also put a new president in office: Dr. Charles M. Wollenberg, former California state welfare director. To Mendelsohn, this amounted to giving him an entirely different client.

The new board of directors decided to erase the deficit by upping Maimonides' bed capacity without adding the ninth and tenth story provided for in Mendelsohn's original plans and in the structure as executed. They hit upon the expedient of enlarging the basic ward unit from four to six patients by moving the nonbearing glass curtain separating the wards from the outside 6′ closer to the edge of the balconies. This reduced the balconies to a 2′ strip, suitable chiefly for window washers. Moving the glass walls so close to the balconies also

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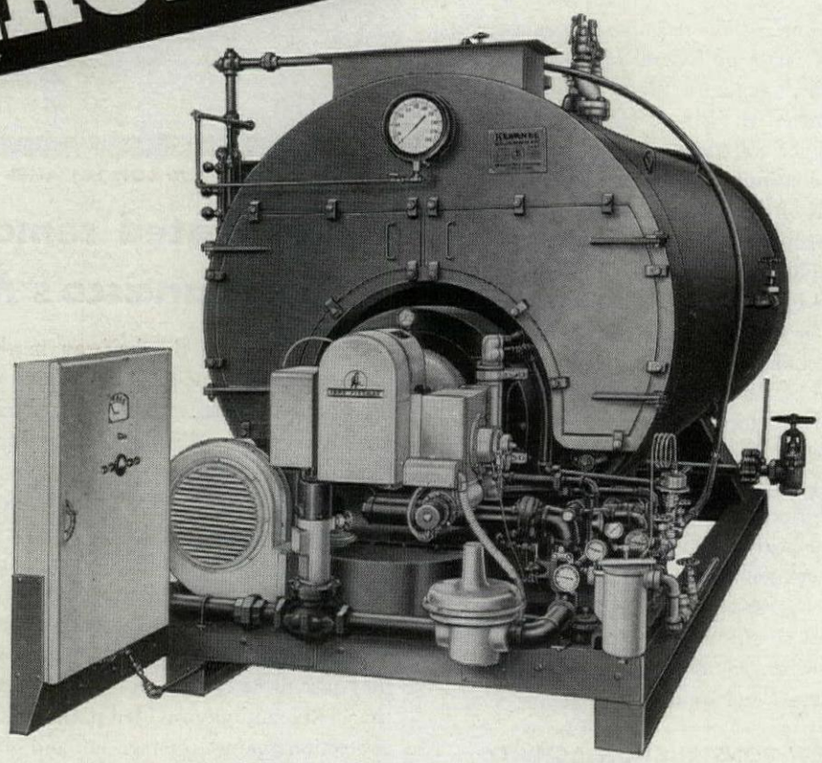

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required installation of more heating and a costly ventilating system to offset the heat and glare of the sun which the balconies once had shaded.

Administrator E. L. Kelly expects the $100,000 worth of alterations to bring Maimonides $90,000 a year more income without adding much to its staff, which will shrink from 1.8 to 1.2 per patient. Thus the hospital hopes to move into the black.

But it was becoming clear last month, as successive floors were glassed in over the erstwhile balconies, that the changes were reducing to the commonplace Maimonides' elegant facade, which was based on a delicate balance of masses and voids and lines that only a master could achieve.

Rift over $6,000. Though upset at the changes the new board demanded, Mendelsohn agreed initially to design them. But differences of opinion arose. The final break came when the new board refused to accede to Mendelsohn's detail of a 12″ deep recess between each of the five bays on each floor (to provide for expansion and avoid cracks). This, Wollenberg objected, would have added some $6,000 to the remodeling cost and required more steel plate, then a critical item. Mendelsohn declined to accept the board's dictum. Reluctantly, architects Hertzka & Knowles accepted the remodeling job, which is to be completed in December.

Out of the sad episode still remains the question: did putting Maimonides in the black have to involve destruction of an architectural masterpiece? Would spending $6,000 more have saved the beauty of a building that now will cost $1,350,000?

1,000th Hill-Burton hospital opens in Lebanon, Ore.

The Hill-Burton Act, Congress' 1946 effort to overcome the nation's depression and war-caused hospital deficit, reached a milestone this month: completion of its 1,000th project. It was a 50-bed general hospital at Lebanon, Ore. (pop. 6,000), for which townsfolk anted up $458,842 and the government contributed $193,667 (a third). Cost per sq. ft.: $22.18. It replaced an obsolete 31-bed hospital.

In all, the 1,000 projects (525 new hospitals, 330 additions, 145 health centers) cost taxpayers some $500 million. States and communities put up double that. But the US still has a lot of catching up to do in hospital construction. In 1928 there were 6,852 hospitals in the nation, an all time high, and 200 more than there are now for a far bigger population. As AIA's Ned Purves observed this month: "We haven't scratched the surface of hospital building. The VA overbuilt, but it was building for a certain segment of the population."

PEOPLE: C. P. Street and John MacLeod to head AGC next year; Producers Council names Spratt president

The Associated General Contractors nominated 1953 officers—a step tantamount to election. For president, AGC chose **C. P. Street,** 52, of Charlotte, N. C.; for vice president, **John MacLeod,** 58, of Paramount, Calif. After the formality of a mail ballot, they will be installed at AGC's convention in Miami next March.

STREET

MACLEOD

Street, who will step up from AGC's vice presidency and succeed **Arthur S. Horner** of Denver, is secretary and manager of McDevitt & Street Co., Charlotte, N. C., which builds schools, hospitals, public buildings, industrial plants, office buildings throughout the southeast. He has been chairman of AGC's public relations committee and building contractors' division, and president of its Caroline branch. Scotland-born MacLeod started his building career at 17 as a carpenter in Vancouver, later was a railroad construction worker and superintendent of Canadian Pacific's tie and timber department. He came to the US in 1923 and in 1929 formed the Macco Construction Co. in Los Angeles County which he now heads. His $350 million in war contracts involve airfields, bases, docks.

Elliott C. Spratt, 55, secretary of the Hillyard Chemical Co. of St. Joseph, Mo., was upped from first vice president to president

Photo: Tunich & Tunich

Los Angeles Statler hotel is biggest in 20 years

Los Angeles $25 million Hotel Statler, largest built in the US in 20 years, opened officially late this month. The structure, which has 1,275 air-conditioned rooms, 13 floors (Los Angeles' legal limit) and 120,000 sq. ft. of space, combines an office building with a hotel to increase the use of public facilities and assure a more stable income. The design is notable for the excellence of its three-dimensional flow of space in the lower floors where Holabird & Root & Burgee and associated architect William B. Tabler have turned the potential liability of a sloping site into a real asset. The rooms carry a step further the development of a compact combination sleeping and conference room launched by the Washington Statler (AF, June '43) and advanced by Cincinnati's Terrace Plaza (AF, Dec. '48). The new Statler also will put Los Angeles on the convention map. Many a building industry group already has scheduled meetings there for next year.

of the Producers Council at its annual meeting in St. Louis. He succeeds **A. Naughton Lane.** Spratt, who is also active in NABOM and the National Terrazzo and Mosaic Association, announced the producers will focus 1953 efforts on giving factual data on the proper uses of new materials to other branches of the industry.

Elevation of **Henry H. Fowler** from NPAdministrator to defense mobilizer led to a personnel reshuffle in the controls agencies. As his successor at NPA, Fowler picked **Richard A. McDonald,** who is on leave as chairman of the executive committee of Crown-Zellerbach Corp., West Coast paper makers. **Horace B. McCoy,** veteran Commerce Department executive, succeeded McDonald as deputy administrator. In another shift, **Rufe B. Newman, Jr.** advanced from director of NPA's construction controls division to head of its facilities and consruction bureau after **Frank Creedon** left to become director of installations for the Defense Department (AF, Sept. '52).

Assoc. Press

McDONALD

Wedding bells rang Oct. 11 in West Los Angeles for **John Rex,** 43, last year's president of the California Council of Architects and former president of the AIA's southern California chapter. His bride: Zola Halliburton Hall, 34, interior decorator and daughter of Erle P. Halliburton, Texas and California luggage manufacturer and head of an oil-well cementing company. It was the second marriage for both.

NAMED: **Howard T. Brinton,** 55, of Hastings-on-Hudson, N. Y., as president of the Phelps Dodge Copper Products Corp., succeeding the late Whipple Jacobs; **Ralph M. Walker,** former AIA president, as a Chevalier in the French National Order of the Legion of Honor; **H. C. Berckes,** formerly secretary-manager, as executive vice president of the Southern Pine Association, and **S. P. Deas** as secretary.

DIED: **Benjamin Zoss,** 62, president of Zoss Construction Co., West Coast housing and general construction firm, Sept. 14 at Malibu Beach, Calif.; **Richard V. Hyland,** 57, founder of Madigan-Hyland, engineering and construction consultants, Sept. 20 at Southampton, L. I.; **Dietrich Wortmann,** 68, retired New York and New Jersey area architect and International Olympics official, Sept. 21 at Upper Saddle River, N. J.; **Roland H. Hartley,** 88, lumberman and

former governor of Washington (1925-33), Sept. 21 at Seattle; **Paul E. Illman,** 69, vice president and director of Pease & Elliman, Inc., Manhattan realtors, Oct. 9 in New York.

For 2½ years, the Chicago Housing Authority and the Chicago city council have battled to a stalemate over public housing. Biggest reason: the needs of the city's growing Negro population. Public housers contend the council refuses to accept logical sites for new projects because Negroes will be among the tenants. The tension is not lessened by the fact that politicians know they cannot get a construction kickback, insurance contract, or preference in apartment assignments. In the front of the fight has been handsome, graying **Elizabeth Wood,** for 15 years CHA's executive secretary. Though there has been talk of removing Miss Wood as an obstructionist, many a nonpolitical Chicago leader admires her unyielding integrity. On Oct. 9, at Palmer House, some 400 of them told her (and the city council) how they felt with a remarkable "Tribute to Good Government" dinner. Among the sponsors: builder **Philip M. Klutznick,** real estate analyst **James C. Downs Jr.,** architects **Phillip Will Jr.** and **Nathaniel A. Owings,** HHFAdministrator **Raymond Foley,** merchants **Marshall Field** and **Gen. Robert E. Wood.**

SEC'Y WOOD

Outspoken Elizabeth Wood responded with a fighting speech. Said she: "Chicago is in a most violent though invisible state of war on this question [of housing for Negroes]. . . . Because it was so understood by the city council when it approved sites, the projects we have opened have been biracial, but the rumor has gone out that this is as far the city will go—and no further. So you can see . . . three facts: 1) a determination to sustain a policy of containment by all official acts that blaze out whenever a committee meets on housing; 2) a great overflow of Negroes, unofficially, out of their ghettoes into all parts of the city . . . for you cannot indefinitely squeeze people any more than you can water; 3) because this overflow is, as it were, against official will, it takes place with all the aspects of desperation and illegality, and new slums are created daily. . . . And the next generation will have to cure the slums created by this generation's official blindness." Editorialized the Chicago *Sun-Times:* "Her tenacity, vision and dedication to the cause of improving housing have made her a controversial figure, but one who commands the respect of her enemies."

Miami creates separate city slum-clearance department

Chief enemies of slum rehabilitation, which private enterprisers see as the principal answer to public housing, are misunderstanding, inertia and lethargy. Against these foes, six US cities were waging significant battles last month. Some of the results were encouraging, some were not.

Best news was that Miami, Fla. became the first city in the nation to create a slum-clearance department independent of other city bureaus and armed with sole authority (which was stripped from the city building division) to enforce Miami's housing laws. What put it over (by a surprise unanimous vote of the city commission): a stern talk by professor Ross C. Beiler of the University of Miami, who told of houses condemned for repairs by the building division as much as two years ago, still with nothing done about them. He charged that slum inspectors gave verbal instructions to owners, filed no records at city hall. Commented city manager E. A. Evans: "I was amazed [at the revelations]."

Better than Baltimore. Even in Baltimore, long touted as the nation's No. 1 specimen of urban rehabilitation, the men who have actually carried on its fight against blight regarded Miami enviously. Ironically, it was Yates Cook, director of the Baltimore health department's housing and law-enforcement section, who stirred Miami to action. Vacationing there, he talked with enough officials to arouse their interest, convince them that the new administrative set-up was what they needed to cope with Miami slums.

Baltimore itself — despite its achievements (Oct. issue, '50 *et seq.*)—was still struggling with the problem of ineffective municipal sponsorship. Last March, in a report to mayor Thomas D'Alesandro Jr., chairman James W. Rouse of Baltimore's housing-bureau advisory council had warned that the Baltimore Plan "needs . . . prompt and vigorous assistance if it is to survive." He explained: "When a problem arises which blocks progress in the improvement of a slum neighborhood it is studied by the Housing Bureau and its advisory council, neither of which has authority to take action or to negotiate with such other departments as may be involved. The Housing Bureau must proceed through the commissioner of health, who is free to accept or disregard its advice." Mortgage banker Rouse's solution: set up a nonpaid Commission on Blight (akin to a Redevelopment Commission) which would take over the health department's funcions and authority in slum-doctoring, with direct access to the mayor and broad authority to

coordinate work of all city departments fighting blight.

This month, the proposal was still stalled in the city solicitor's office. The legal problems in giving a Commission on Blight power to cope with its job, reported Rouse, were both complex and controversial, might well require amendments to the Maryland state constitution.

Old job, new team. In Los Angeles the city council, tired of health department inaction against some 60,000 "substandard" dwelling units, ordered the city attorney to draw up an ordinance shifting slum rehabilitation powers to Gil Morris' department of building and safety, which acted more eager to tackle the job. Public housers exposed themselves to a torrent of civic abuse by trying to block the switch. Sample (by councilman Ed Davenport): "I think it can be nakedly revealed, as never before, that these bleeding hearts—these labor leaders and others—don't give a hoot in hell about slum clearance but are only contributing to their own political propaganda hurrahs. They are not interested in the downtrodden but in where these public housing millions are going to be spent and how much they are going to benefit." Other developments:

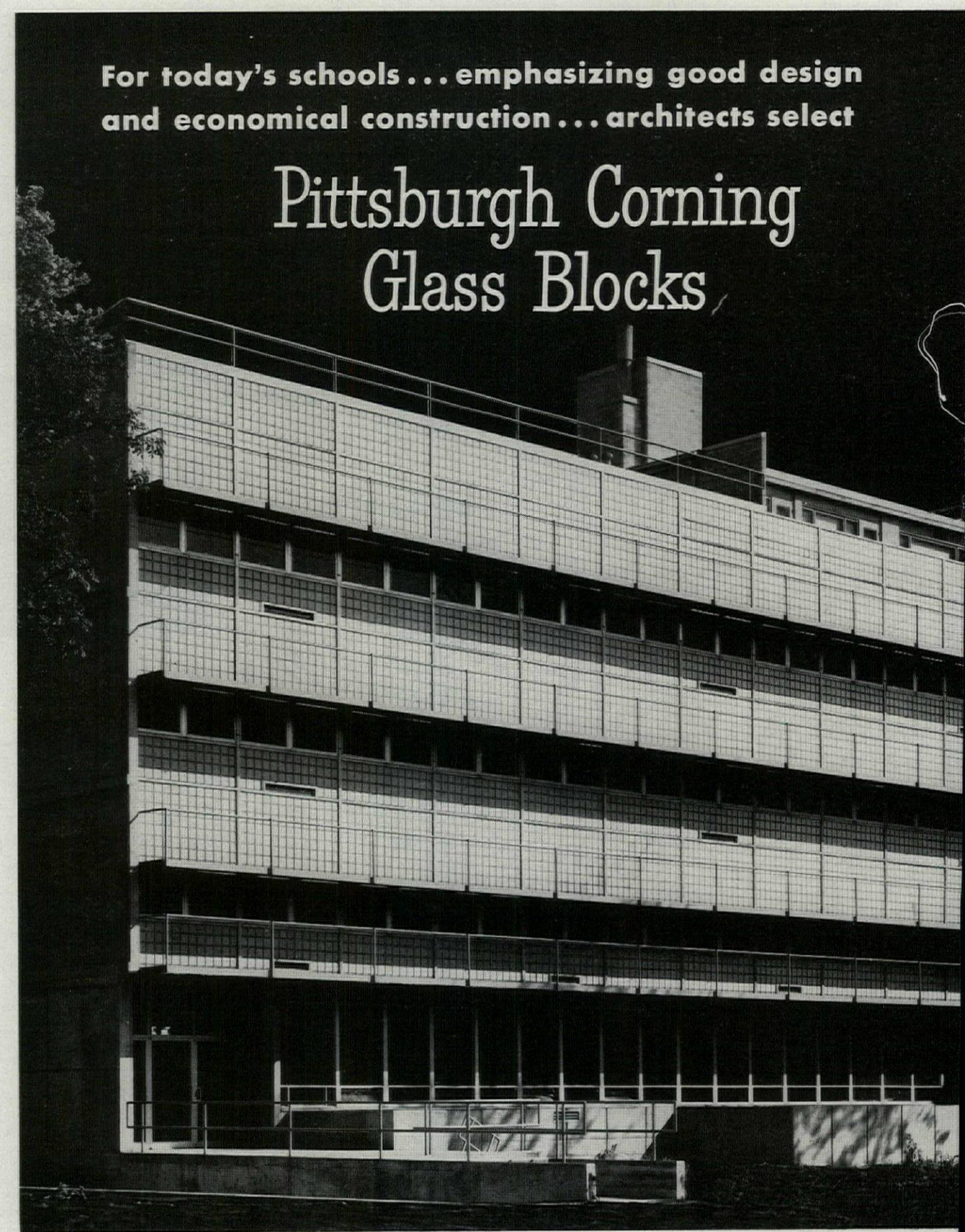
▸ In San Francisco, needled by a series in the *Examiner:* mayor Elmer Robinson ordered his fire, public works, health departments and district attorney to open a coordinated drive against housing law violations. Inspectors poking through the first block surveyed (in the firetrap Western Addition) found 270 violations.

▸ In New York, needled by City Council President Rudolph Halley (better known as the Kefauver crime commitee's prosecuting attorney), and prodded by a June fire in an illegal tenement that took seven lives (AF, July '52, News), the housing department added 95 new inspectors, began a block-to-block survey of slum areas. More encouraging, chief magistrate John M. Murtagh detailed himself and two other judges to hear fire, hazard cases exclusively, promised a "more than get tough policy."

That was the nearest any other city had come yet to imitating the *sine qua non* of the Baltimore Plan: a special housing court. In Los Angeles, however, alert Gil Morris was beating the drums for one.

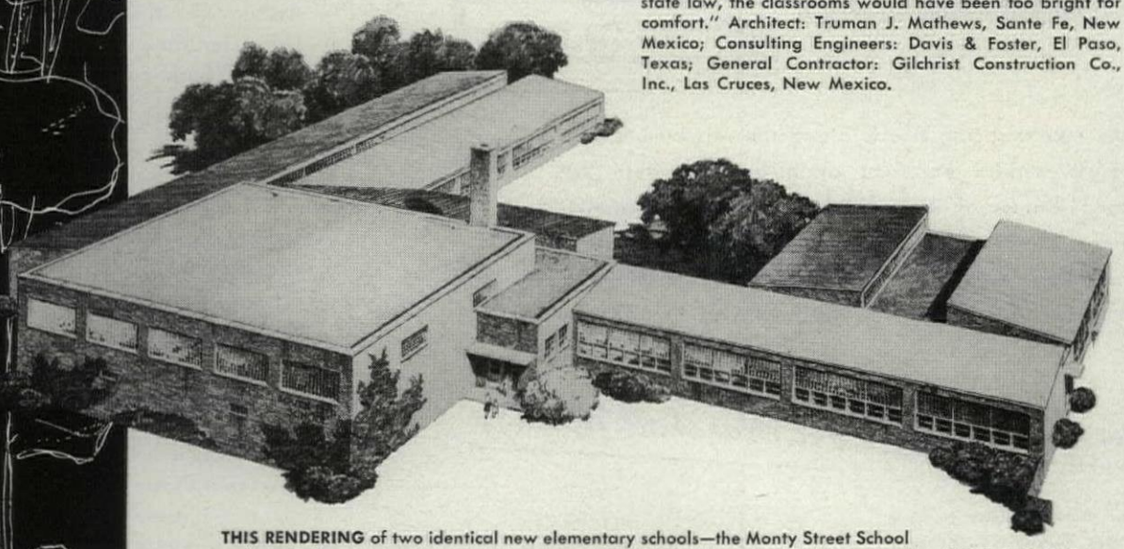
Tax district for slums? In Chicago, real estate analyst James Downs Jr., recently named chairman of the mayor's housing committee, began a study of how to fight slums that held hope of benefitting nearly every city in the country. Said Downs: "We have tax districts for mosquito abatement. Why not a tax district for conservation? It makes more sense today to have a block captain for urban conservation than for civil defense. There must be a reorganization of enforcement procedures."

NEWS continued on p. 52



THE LAYTON SCHOOL OF ART, Milwaukee, Wisconsin, highlights the **unusual** in almost every design detail. Involved in its architecture are cantilever floors, precast concrete members and various other functional design and structural elements. Here, PC Glass Blocks are used both above and below a clear glass vision strip which is shaded by a metal catwalk outside the building for maintenance access to the fenestration wall. Architectural Designers: Bartolucci-Waldheim, Chicago, Illinois; Architect: Myles E. Belongia, Milwaukee, Wis.; Engineer: Vern K. Boynton, Milwaukee, Wis.; General Contractor: Siesel Construction Co., Milwaukee, Wis. Photograph, Hedrich-Blessing.

THE SINGLE-STORY WINGS of the new Gadsen Junior High School, Gadsen, New Mexico, can easily be expanded at the ends to provide for senior high school facilities as they become necessary. Concerning the use of PC Functional Glass Blocks in this flexible design, Architect Mathews says: "Evenness of indoor light distribution is very important in our part of the country because of the bright sunlight. If we had used any other type of fenestration in the size areas required by state law, the classrooms would have been too bright for comfort." Architect: Truman J. Mathews, Sante Fe, New Mexico; Consulting Engineers: Davis & Foster, El Paso, Texas; General Contractor: Gilchrist Construction Co., Inc., Las Cruces, New Mexico.



THIS RENDERING of two identical new elementary schools—the Monty Street School and the Bailey Avenue School of Plattsburg, New York, illustrates, in the words of Architect Jack M. Sayer, "... an excellent example of good design in a case where the buildings had to be designed as simply as possible 'architecturally' in order to meet a limited budget and provide, at the same time, adequate facilities and a system of construction to conform to the regulations of the New York State Department of Education, with respect to light, air, fire safety, minimum maintenance costs. Aside from the practical considerations, the use of glass blocks produced a pleasing architectural feature." Architects: Benedict, Ryan and Sayer, Plattsburg, N. Y.; General Contractor: John J. Fitzpatrick's Sons, Plattsburg, N. Y.

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NEWS

New regional code planned by Midwest conference

In the 13 Midwest states*, 615 cities, towns and counties have building codes. But—as well as meager statistics can show—only 125 of them base their regulations on one of the nation's four recognized regional codes. To champions of standardized building regulations, the resulting anarchy in codes makes the region one of the sorest spots in the nation.

Last month, a newcomer among regional code groups, the Midwest Conference of Building Officials and Inspectors, set out to fill the void it saw in the 13 states. Meeting in Chicago's Drake Hotel, the conference adopted a procedure for writing what it hopes will become the US's fifth regional code, named a committee to do the job and set its sights on ratification of the completed document by next year. Named chairman of the code committee was Charles Bacon, Indiana state building commissioner. Other committeemen: Arthur H. Kuhlmann, University City (Mo.) building commissioner, and West E. Wright, building inspector at Joliet, Ill.

Why another code? Many a building materials' manufacturer, to whom a new code only means extra expense to get his new products approved by another set of bureaucrats, felt that the nation already had all the regional building codes it needed. In fact, a delegation from the Building Industry Association Representatives, led by Charles Gray of the Insulation Board Institute, appeared before the Midwest conference leaders. Another model code, the delegation complained, would only complicate an already muddled code picture, impose a hardship on manufacturers, produce no benefit to the public.

The Midwest conference, whose 94 regular members are drawn chiefly from small cities and towns, was unmoved. Explained executive-director John V. Gallagher: "We feel no one of the four codes specifically fits the requirements of this area of the country. For instance, we don't need the earthquake provisions of the Pacific Coast Building Officials code, but we have more worries about insulation and condensation. We don't have the wind loads considered in the Southern Building Code, but we do have snow loads."

Elected conference president was Donald J. Bandy, Dubuque (Iowa) building commissioner. He succeeds Michael J. Boyle, Dearborn (Mich.) superintendent of building and safety engineering.

* Ohio, Kansas, Indiana, Missouri, Kentucky, Michigan, Nebraska, Iowa, Illinois, Wisconsin, Minnesota, North and South Dakota.

NEWS continued on p. 56

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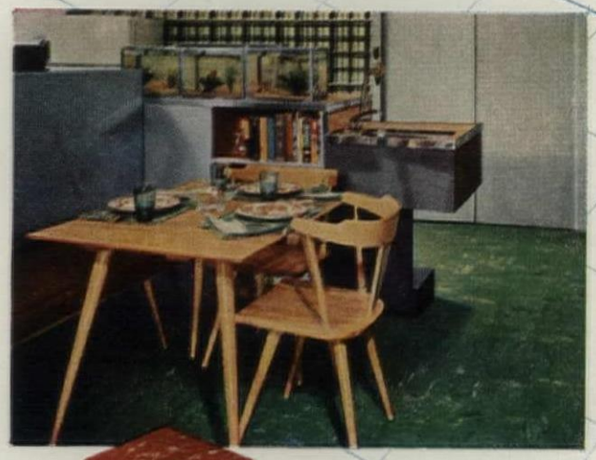

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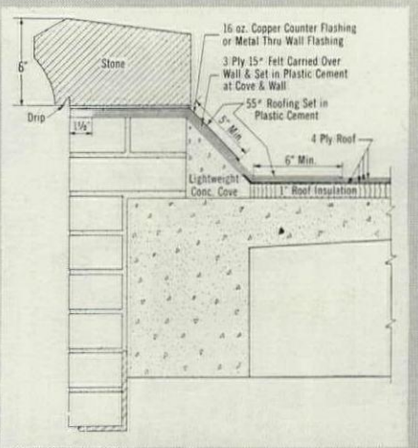

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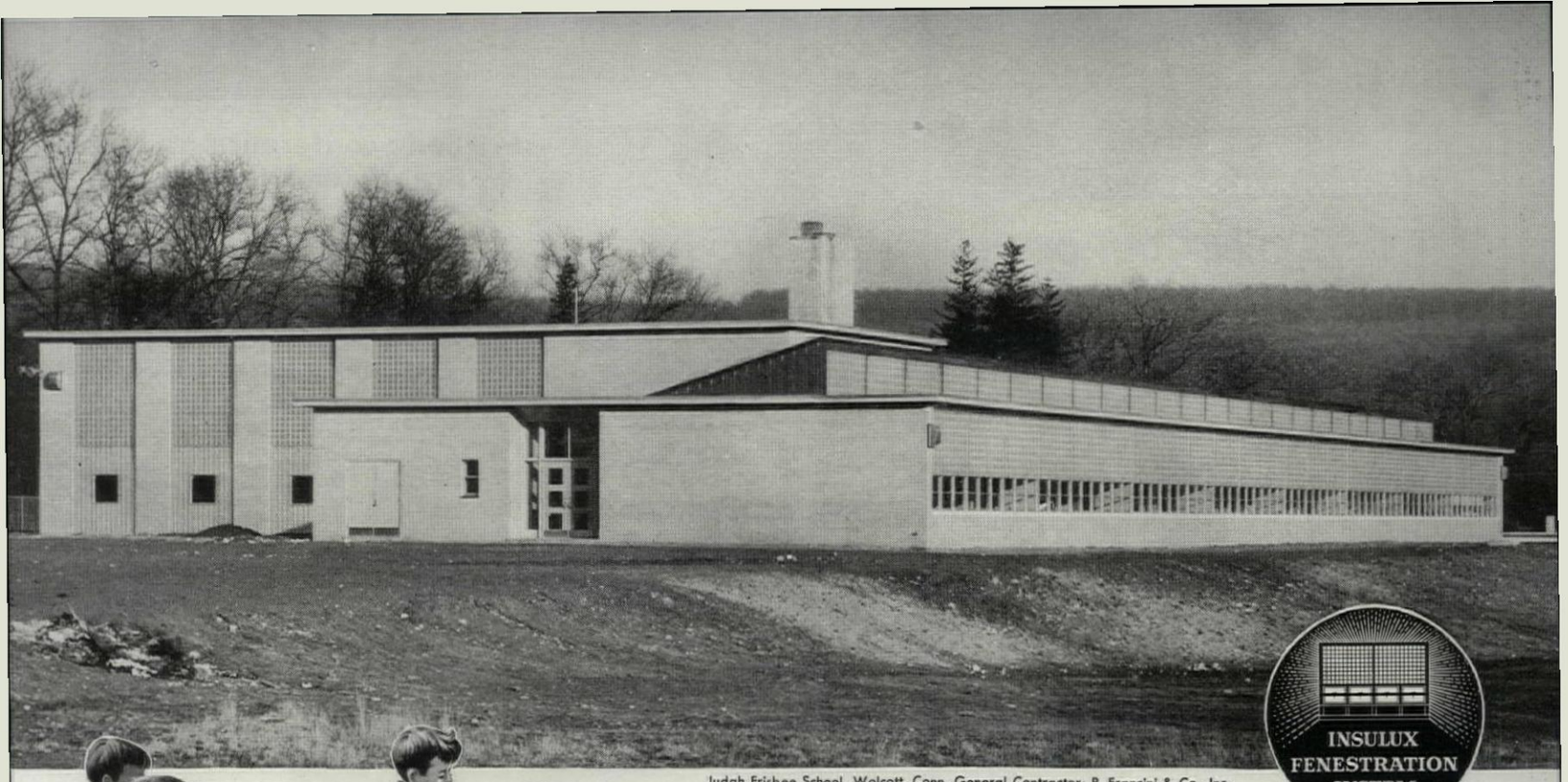

Judah Frisbee School, Wolcott, Conn. General Contractor: P. Francini & Co., Inc.
Architect: Warren H. Ashley and C. J. Malmfeldt Associates.

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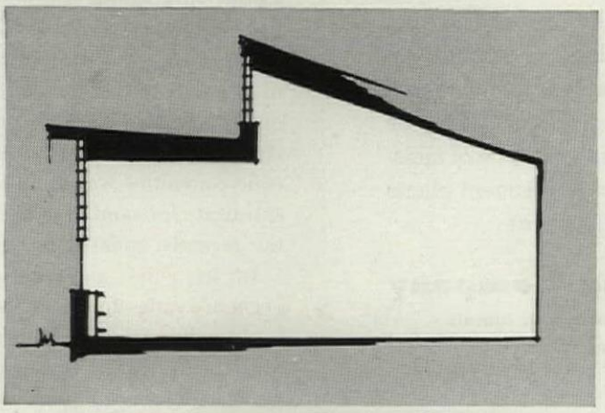

Cross sectional view of classroom. The primary fenestration consists of continuous panels of light-directing Insulux Glass Block over a steel sash vision strip. The secondary fenestration, having the same orientation, consists of five courses of light-directing block in a sawtooth arrangement.

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Code conference assails fire underwriters board

In 1945, the Pacific Coast Building Officials Conference fell out with the National Board of Fire Underwriters in an argument over the value of fire alarms. Insisted the building officials: "With a universal phone system, alarms are needless." NBFU disagreed, kept on assessing "deficiency points" against cities it thought had inadequate alarm circuits.

Last month, at its 30th annual convention in Spokane, PCBOC finally reached the boiling point, dragged the long-simmering feud between two of the nation's major building-code groups into the open where it could add fresh difficulties to the efforts of homebuilders and materials makers to encourage uniformity in US codes.

ARTHUR G. HOEFER

Complained delegates: the fire underwriters have used the threat of higher insurance rates to pressure cities to adopt NBFU's building code instead of PCBOC's "Uniform Building Code." In a resolution, the convention demanded such "coercion" stop. It specifically accused the fire underwriters of trying to delay adoption of PCBOC's 1952 code in Tucson, Ariz., and quake-wracked Tehachapi, Calif. As Tehachapi rebuilds, said PCBOC spokesmen, underwriters are attempting to force contractors to install four-hour fire walls on the entire main street. To PCBOC, one-hour fire walls would be plenty.

Code spreading. Despite the embattled resolution, many of the 320 delegates expressed concern over winning their tug of war with the fire underwriters. Said one: "Frankly, we're not too cocky on our chances." Only important suggestion of the code committee was to approve perlite as a substitute for sand in gypsum plaster under the recently updated uniform code.

In its chief and continuing fight—to get more cities to adopt its code—PCBOC could take pride in encouraging results. Since July 1951, the Uniform Building Code had been adopted by 25 more cities including Spokane (pop. 161,721). The Spokane adoption, approved only the week before the convention by the city council, was a personal victory for Arthur G. Hoefer (rhymes with gopher), 56, Spokane building inspector who was re-elected PCBOC president for a second year. For ten years, Hoefer had been urging his city to update its code, which he had written

continued on p. 60

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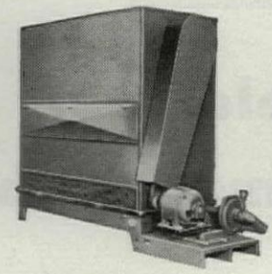

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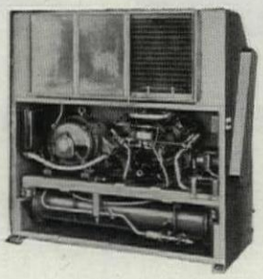
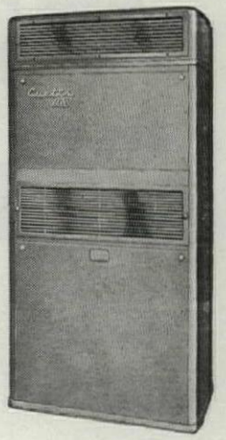
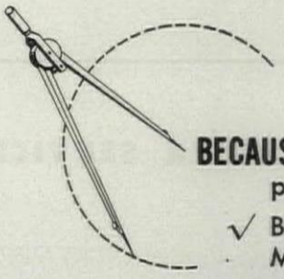


Central Type—10-15 Ton Air Conditioning



2, 4, 6, 8 Ton—Packaged Type Air Conditioning



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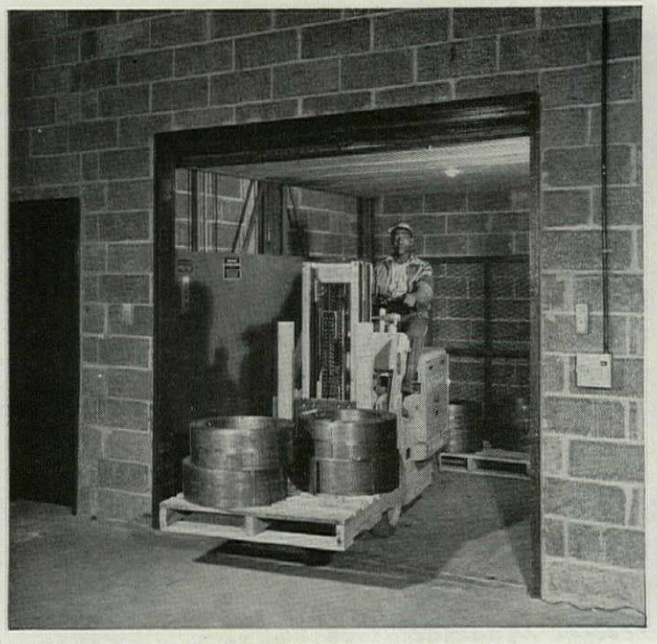

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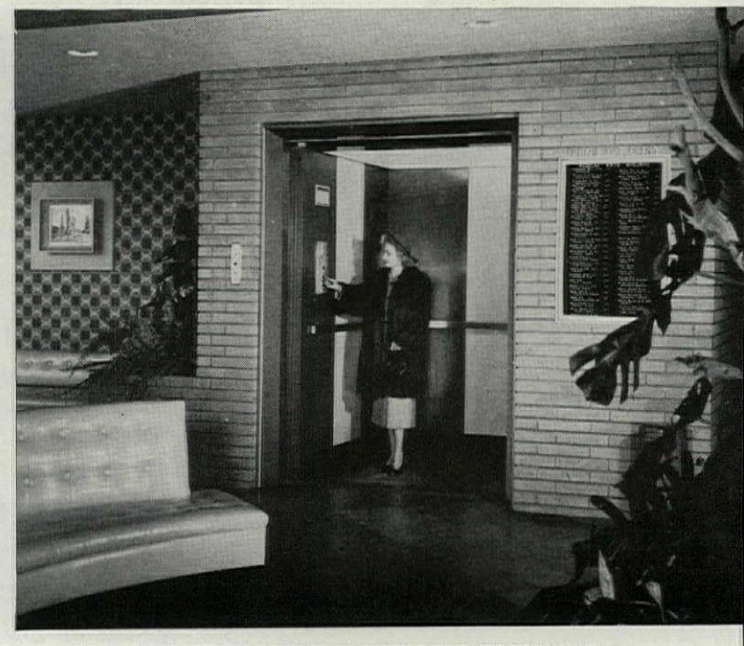
Long Island City, New York
Architects: David and Earl J. Levy, New York City
General Contractors: Caristo Construction Co., Brooklyn, N. Y.
Elevator Contractor: Burwak Elevator Co., New York City



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in a year and a half after his appointment as chief building inspector in 1935.

For self-improvement. The building officials left no doubt where they stood on the question of how to cut the waste out of US building codes. To courtly James W. Morgan, public works director of Birmingham, Ala., they gave an ovation as he roared: "There has been a lot of sniping at building codes. The answer is not a federal code. Not a state code. The solution is to accelerate, perfect and improve the work currently being done by building officials."

Air conditioning course set at University of Illinois

The architecture and mechanical engineering departments at the University of Illinois think *heating, ventilating and air conditioning* is a field where architects *for small buildings* are weakest. Last month, they scheduled an intensive course on the subject at Champaign-Urbana Oct. 29-31. It may be, said the university, "the first of a progressive series on the fields the architectural profession is confused about." Registration ($25) will be open to interested persons from any state.

Contest announced for best school and college designs

To encourage creative thinking in school design, *The School Executive* magazine, 470 Fourth Ave., New York, is sponsoring its second annual Better School Design competition. The AIA-approved competition is open to architectural firms in the US and Canada that have designed or constructed in whole or in part any school or college building this year. Entry blanks obtainable from the magazine must be submitted by Dec. 15. Awards will be ten bronze plaques for US buildings, one for Canada, and ten honorable-mention scrolls.

Prizes offered for welded construction machinery

Papers describing the mechanical design and construction of any machine or part whose performance or appearance has been improved or whose cost has been reduced through arc-welded construction will compete for $30,000 in a contest sponsored by the James F. Lincoln Arc Welding Foundation of Cleveland, Ohio. Three of the 18 classifications with top prizes of $500 each are construction and mining; woodwork, lumbering and milling; and jigs, fixtures and tooling. Grand prize is $2,000. The contest closes July 27.

News continued on p. 64

WHEN WINTER COMES ...have the answers on condensation

In a few short weeks "that man" will be here again . . .

"Old Man Winter" . . .

And with him will come all the problems of condensation in the home. But you can have the answers to what causes it and more important what to do about it . . . answers that will be eagerly sought by your customers.

Ceco Steel Products Corporation offers you a comprehensive booklet on condensation. Use the handy coupon to order your free copy. You'll discover how steel and aluminum windows can control condensation.

You'll get ideas on how home owners can free their homes of excessive moisture build-up . . . you'll want extra copies of Ceco's book to give your clients . . . they'll be ever so grateful for this helpful service from you.

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General Offices: 5601 West 26th St., Chicago 50, Illinois
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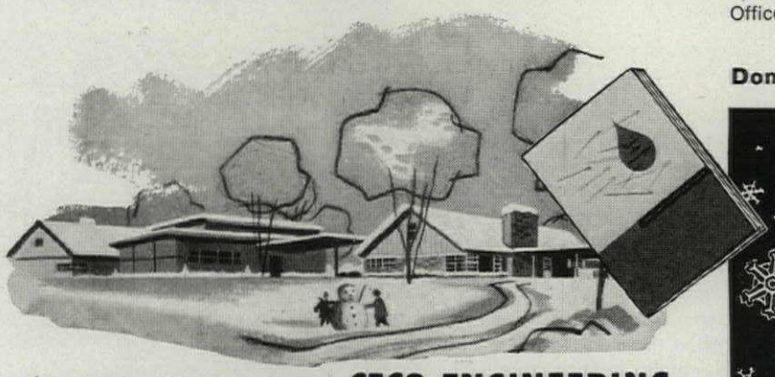

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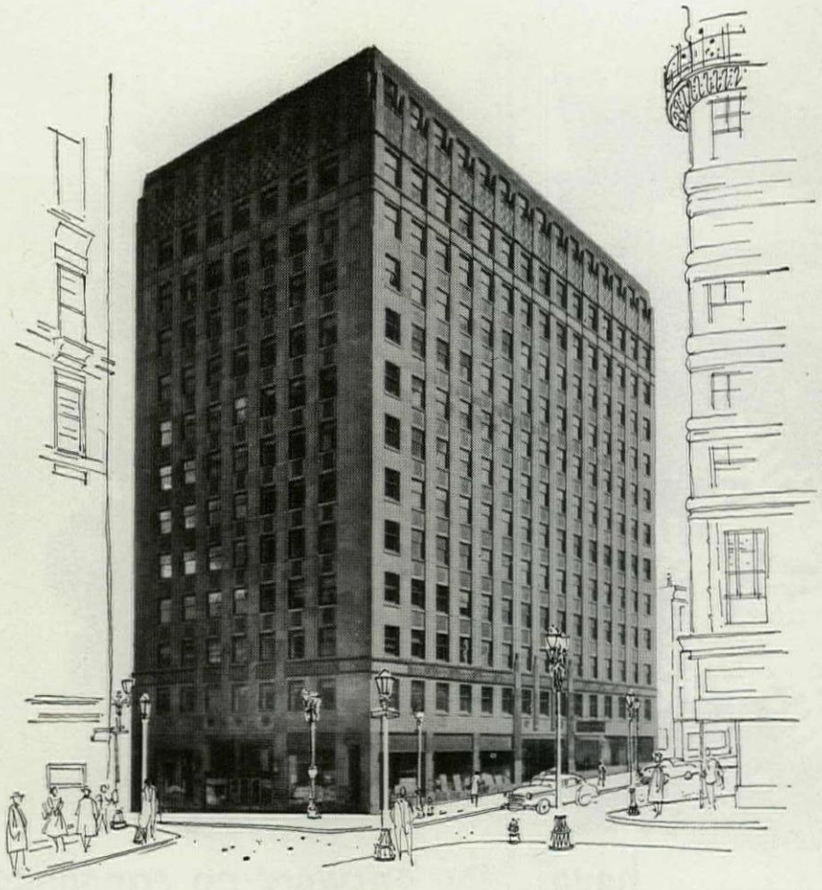


Two Honeywell Weatherstats mounted outdoors, high above the street, are the Minnesota Building's keys to comfort and remarkable fuel saving.

How Honeywell Customized Temperature Control Has Cut Fuel Bill 26% Over 15-Year Period in Minnesota Office Building

Specially designed system paid for itself in 3 years—while furnishing tenants greatly improved comfort

The Minnesota Building, located in downtown St. Paul, is a typical mid-twentieth century American office building, and just about the most comfortable big building in town—all winter long.

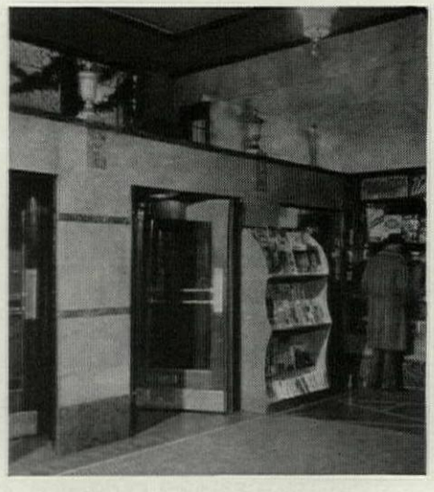
And providing every tenant with comfortable, even warmth—no matter how changeable the weather—is a Honeywell Customized Temperature Control System, installed fifteen years ago as a modernization project.

At that time Clapp-Thomssen Co., building managers, decided they'd go all-out to give tenants the finest comfort possible—and save fuel at the same time—by installing Honeywell Customized Temperature Control.

The customized system they had installed took the form of a Honeywell Weatherstat Zone Control System. And not only did this control system give the kind of comfort they expected—it made possible fuel savings that paid for the entire installation within three years!

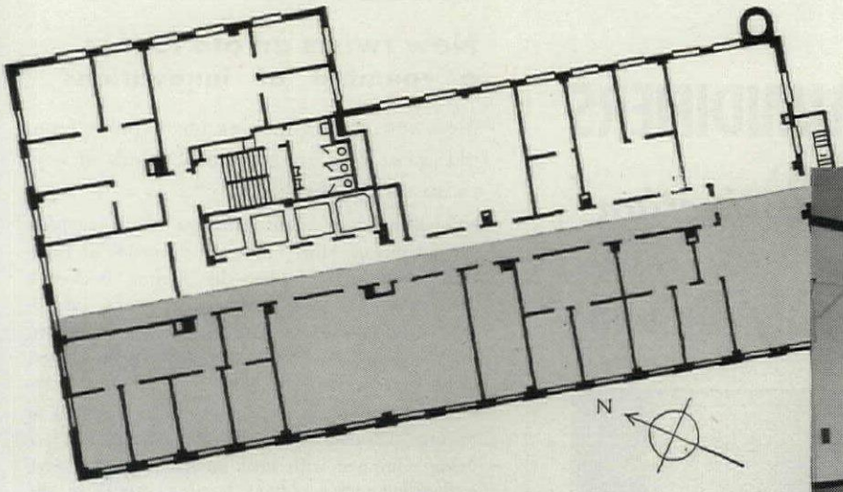
And since that time fuel savings have continued to average 26% a year.

Important to both comfort and fuel saving was the fact that Honeywell Customized Temperature Control compensated for exposure, use and occupancy differences. *How* it did is explained in the individual picture captions, and by the floor plan.



Special lobby temperature requirements are met by a separate thermostat system, and a unit heater. By making the lobby a special heating zone, cold air entering through doorways is compensated for easily by Honeywell Customized Temperature Control. Yet, visitors in winter street garb never become uncomfortably warm—and considerable amounts of heat and costly fuel are saved.

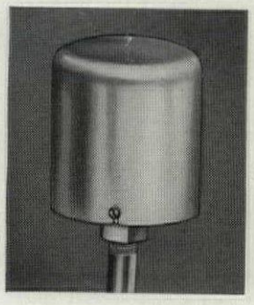
Ground floor locations that have less heat loss and generally higher temperature requirements than the lobby include the savings and loan office, shown at right, as well as shops, a cafeteria, and a blueprint company. All of these firms are located in a single heating zone. The thermostat for this zone is in the savings and loan office.



This view of a typical office shows two heating zones. The camera was set up in the northeast heating zone, while the portion of the office in view and around the corner is located in the southwest heating zone, shown in the shaded area on the floor plan. Both zones are controlled by Weatherstats mounted on the *outside* of the building. These truly remarkable Honeywell controls anticipate and compensate for changed heating requirements according to weather. In addition, separate thermostats *inside* give added control, make doubly sure of comfort all winter long.

Office Floors Controlled By Weatherstat

The heating zones shown above—set up according to exposure, occupancy and construction—each have a separate Honeywell Weatherstat mounted outside the building. The Weatherstats—actual miniature zones in themselves—call for heat not only in direct relation to outside temperature, as do ordinary outdoor controls, but in relation to *wind and sun conditions as well!*



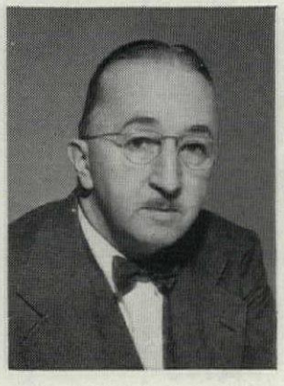
This type of control, together with indoor thermostats for each zone, means all tenants enjoy constant, comfortable temperatures. And because Weatherstat Zone Control eliminates over-heating, you get fuel savings like these enjoyed by the management of the Minnesota Building.

For Comfortable, Even Warmth in New or Existing Buildings —of Any Size, Specify Honeywell Customized Temperature Control

Whether it's a store, office, school, garage—or any size building—new or existing—Honeywell Customized Temperature Control can meet your clients' heating and ventilating problems.

Once equipped with Honeywell Customized Temperature Control, they'll have the newest, finest equipment available. They'll also have the right kind of controls to keep their employees, customers and tenants comfortable—and they'll save fuel besides.

For full facts on Honeywell Customized Temperature Control, call your local Honeywell office. There are 96 across the nation. Learn how Honeywell Customized Temperature Control can help your clients and your business. Or mail the coupon today.



"No more complaints—even in the most changeable weather," says building manager William D. Clapp.

"Before we had Honeywell Customized Temperature Control installed, you never knew how many complaints you'd get on a cold day. Now if we get even one it's exceptional. And the 26% annual fuel savings have paid for the installation of the controls many times over."

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Dept. MB-10-43, Minneapolis 8, Minnesota

Gentlemen:
I'm interested in learning more about Honeywell Customized Temperature Control.

Name _____

Firm Name _____

Address _____

City _____ *Zone* _____ *State* _____

NEWS

New twists on old ideas: a roundup of innovations

Most new, money-making ideas spring from old ones. Here are some new trends or new twists on old ideas:

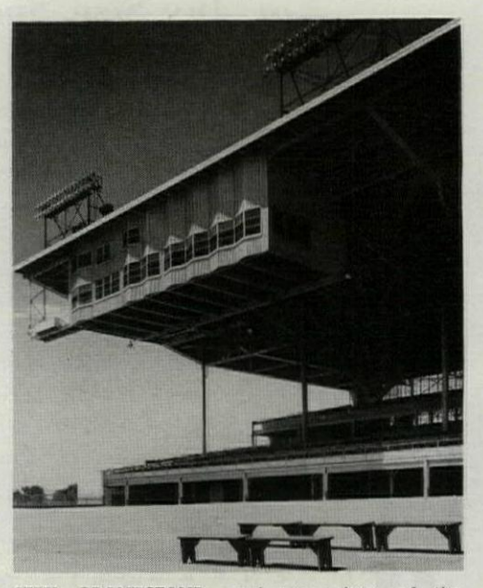
▸ Construction of a drive-in post office has been started in Los Altos Village, just outside of Long Beach, Calif. from plans by Welton Becket & Associates. The 12,000 sq. ft. structure, including several additional stores, is being erected for the Lloyd S. Whaley Co. and Home Investment Co. It also will have 500 parking spaces.

▸ New Pinellas County schools at Largo, Tarpon Springs, Clearwater and St. Petersburg, Fla. are being equipped with heat pumps that will serve a floor-imbedded radiant heating system in the winter and an air-conditioning unit in the summer. Philip F. Kennard, architect, says this will be the largest use of heat pumps by a single user anywhere in the world to date. Electrical operating expenses, he claims, will be less than for conventional heating and air conditioning.

▸ Said to be the only bakery building in the country constructed of Gunite, the new plant of the Lynchburg (Va.) Steam Bakery Co., designed by C. J. Patterson Co., Inc., Kansas City bakery and milling plant specialists, has a slag top roof constructed to carry 4" of water during the summer for insulation.

▸ Woolworth has opened a self-service store, similar to a supermarket operation, adjacent to the Stuyvesant Town apartment project in Manhattan, and S. S. Kresge has announced that it will open such a store next spring in Princeton, N. J.

▸ To boost merchant and municipal transportation revenues on "poor" days and special shopping nights, Memphis city buses carry passengers downtown free between 6 and 7 P. M. Thursdays. Salt Lake City does the same on Mondays, and Detroit will let family groups of any size travel in any direction for a single fare between 9 A. M. and 3 P. M. Tuesdays.



STEEL GRANDSTAND, and press box, of the Michigan Racing Assn. just outside of Detroit was awarded second prize by the Belgian magazine Ossature Mettalique for picture of steel structure design. Giffels & Vallet, Inc., and L. Rossetti were engineer-architects for this $3,600,000 grandstand and clubhouse completed in May, 1950, and O. W. Burke, Detroit, was general contractor. Seating section for 8,000 persons has steel plate floor, and steel columns support 75′ cantilevered roof.

YOUR CLIENTS SHOULD KNOW ABOUT

THESE USER-OWNED TELEPHONE SYSTEMS

FOR THEIR PLANTS, OFFICES, SCHOOLS

P-A-X Business Telephone Systems make any building *more efficient*

Inside telephone facilities will repay your careful attention in the planning of any building. For a properly designed inside telephone system—*entirely separate from the city telephones*—will make any building *work better!*

Hundreds of industrial, business and institutional organizations have learned this for themselves. They have stepped up work flow—tightened management control—improved customer service—with company owned P-A-X Business Telephone System.

P-A-X supplies fast, sure, automatic talking convenience, 24 hours a day. Direct economies from its use often pay for the P-A-X System within 3 to 5 years—and there are many *indirect* benefits as well!

"How P-A-X helps in the business of running a school." Write for this comprehensive booklet—a case study of communications in Detroit's Mumford High School. Detailed facts are presented in 8 abundantly illustrated pages. Write today.

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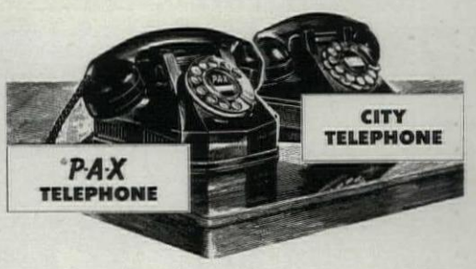

PAX is a system of "inside" telephones, separate from the city telephones, and owned by the user.

PAX is completely automatic and establishes all "inside" calls, within seconds, at any time!

PAX saves on city telephones and switchboard—permits marked economies in rented equipment.

PAX is manufactured by the originator of the automatic telephone.

PAX telephones and switchboards are identical in quality with your city equipment.

P-A-X business telephone systems

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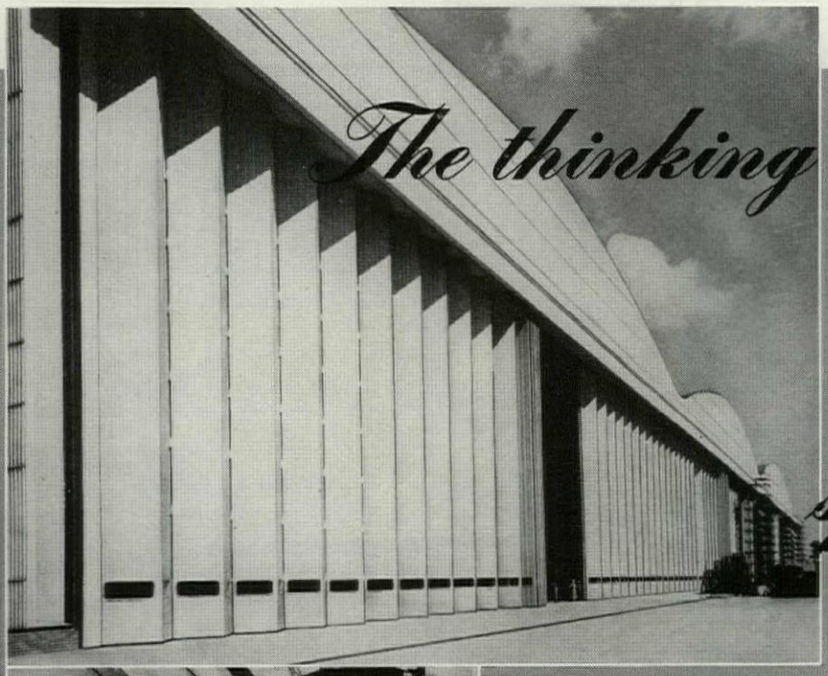
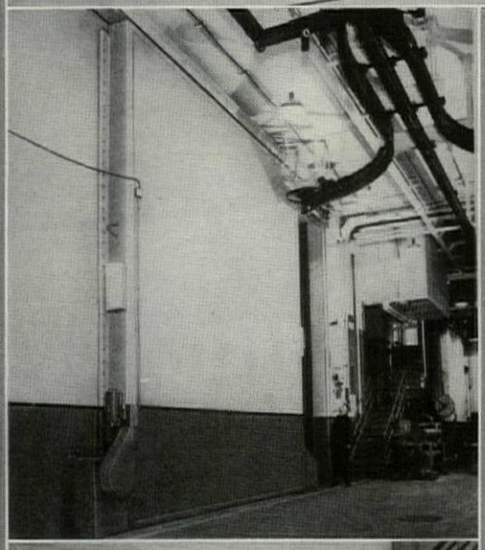


The thinking and experience that produced these special purpose doors



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

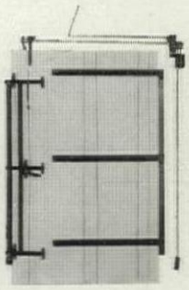
To contain and deaden the roar of jet engines on test, Pratt & Whitney Aircraft had The Peelle Company design and build ten of these huge concrete and steel doors for its new jet engine test cell block. Big enough to admit the most powerful engines of today and the even bigger ones to come, these doors 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.

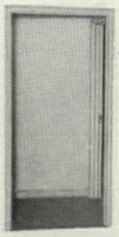
Engineered Doors



Richmond Metal Clad Fire Doors - Swing and Slide

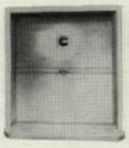
Richmond Flush Kalamein Doors

Richmond "MD" Tubular Steel Industrial Doors



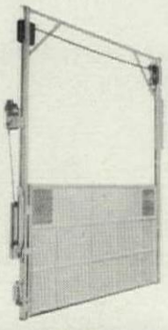
Richmond Steel Door Frames

FIRE DOORS Frames and Hardware



Peelle Dumbwaiter Doors

Peelle Counter-Balanced Freight Elevator Doors

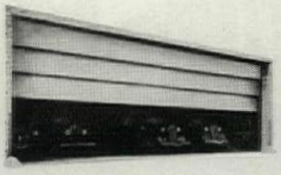


Peelle Motorized Solid Panel Car Gates

ELEVATOR DOORS

Peelle Horizontal Sliding Doors

Peelle Vertical Sliding Doors



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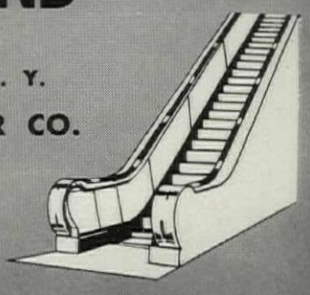
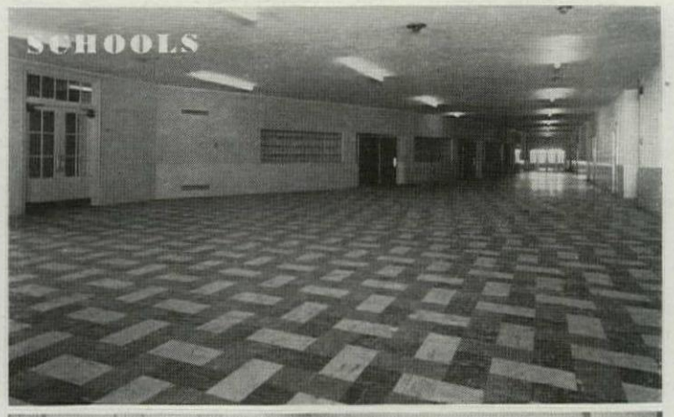
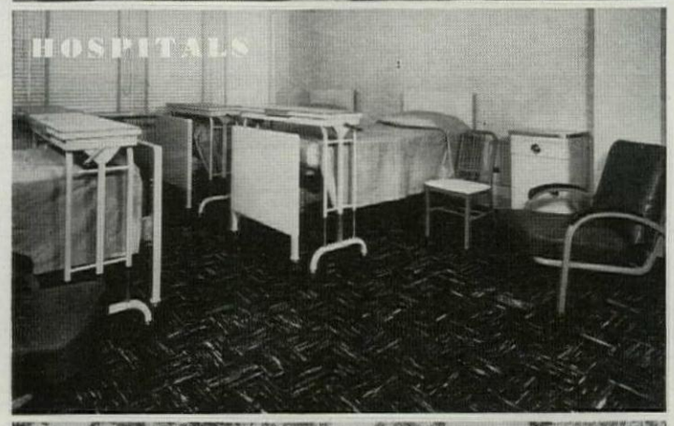


you name the indoor highway . . .

we have a floor covering to meet your specifications





HAKO Vinylflex PLASTIC FLOOR TILE *T. M.

= UTILITY + BEAUTY

Where greater grease-proof properties plus the every day resistance to alkalis, mild acids, fats, oils, naphtha and even gasoline is specified . . . VINYLFLEX, the all purpose vinyl plastic floor tile, is the answer. In addition, VINYLFLEX is exceptionally resilient, yet tough, assuring longer wear with minimum care. VINYLFLEX is made in 13 outstanding beautiful colors that can be applied on or below grade.

*Trade Mark Applied For

HAKO Asphalt Tile

= ECONOMY + DURABILITY

Durable, Resilient, Economical HAKO ASPHALT TILE features modern new pastel and standard marbleized colors in limitless patterns and combinations. For permanent protection, lasting utility, inexpensive luxury and durability, HAKO ASPHALT TILE is the choice of architects and builders all over America. Millions of feet of HAKO ASPHALT TILE have been installed in schools, hospitals, hotels, government buildings and housing and commercial projects throughout the country.

HAKO Parquetry FLOOR TILE

= DIGNITY + ADAPTABILITY

This newest type HAKO asphalt tile flooring, with the natural oak color and simulating hardwood parquet, has a quiet dignity that will enhance the appearance of residential, commercial and institutional floors. PARQUETRY is ideal for floors with Radiant Heating and is available in 9"x9" size in $\frac{1}{8}$" and $\frac{3}{16}$" thickness. HAKO PARQUETRY FLOOR TILE has all the best characteristics of HAKO asphalt tile plus beauty, economy and long wearability.

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Osmosis, you may recall from Botany I, is the way a fluid gets through a membrane.

And that's the way the stream of traffic gets inside your store, when it's equipped with *Tuf-flex** doors along with a Visual Front. With these clear glass doors, traffic *flows* in . . . effortlessly . . . abundantly.

On your next job—new building or remodeling—give thought to what Libbey·Owens·Ford *Tuf-flex* doors can do to invite traffic. Use them to give customers an entrancing view. *®

TUF-FLEX DOOR FACTS:

Thickness: ¾".

Strength: three to five times that of regular plate glass.

Sizes: widths to 48", heights to 108".

Fittings: bronze or alumilited aluminum.

LOF GLASS PLASKON FIBER-GLASS

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Please send me a copy of your booklet showing uses of *Tuf-flex* Doors, as well as your installation detail folder.

Name_____

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Sanymetal...*

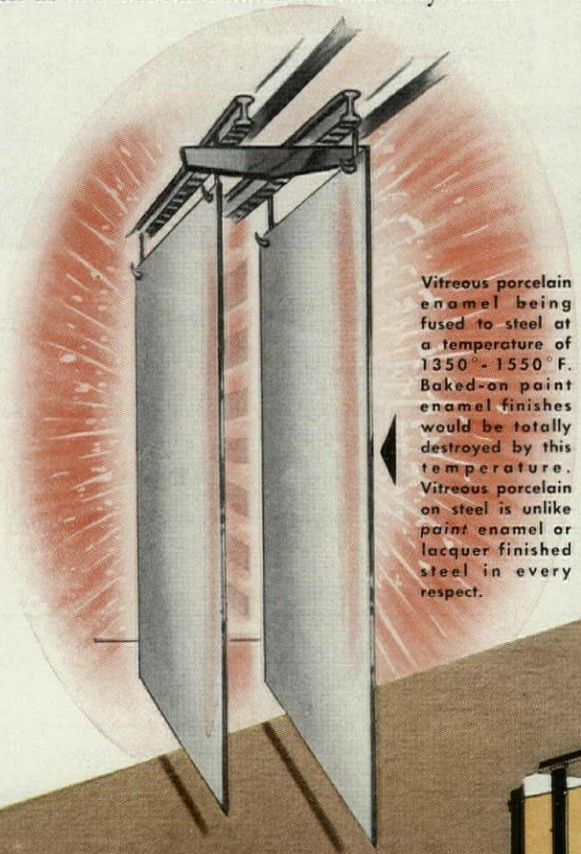
* Trade Mark Registered

...uses the ageless and fadeless material

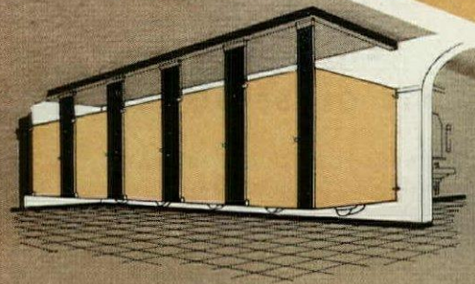
Vitreous Porcelain*

on steel for toilet compartments

Sanymetal "Porcena" (Vitreous Porcelain on Steel) is a *material*, not merely a finish. It is in every aspect unlike *paint* 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.* Sanymetal "Porcena" (Vitreous Porcelain on Steel) is incomparable with any other material commonly used for toilet compartments. It is a lifetime material that stays new.



Vitreous porcelain enamel being fused to steel at a temperature of 1350° - 1550° F. Baked-on paint enamel finishes would be totally destroyed by this temperature. Vitreous porcelain on steel is unlike *paint* enamel or lacquer finished steel in every respect.



Sanymetal Century Type Ceiling Hung Toilet Compartment of Vitreous Porcelain on Steel. There is nothing better—nothing so enduringly modern.

Vitreous Porcelain on Steel stays new two ways: (1) in appearance; (2) in structure! This newness does not depreciate. Vitreous porcelain on steel retains its original newness because this newness is the result of *a correct combination of the desirable qualities of the hardness of glass and the natural structural strength of steel.* Vitreous porcelain on steel is a product of the white heat of the enameling furnace—a material that is as new as tomorrow and as old as time! *In the judgment of Sanymetal Engineers, no other material is so ideally suited for toilet compartments because it provides the utmost in sanitation and a degree of protection against obsolescence that is otherwise unobtainable.* The use of vitreous porcelain on steel for toilet and shower compartments was originated by Sanymetal Engineers.

Vitreous porcelain on steel is in every aspect unlike paint enamel or lacquer finished steel. It is incomparable with any other finish or metal base material commonly used for toilet compartments. Vitreous porcelain on steel provides these features that *cannot be duplicated by any other material* suitable for toilet compartments:

It is a non-porous material that greatly exceeds the structural strength and durability of other materials now available for toilet compartments. It is often acclaimed as a lifetime material because it consists of no elements that are vulnerable to gradual depreciation.

It is impervious to moisture, odors, uric and other ordinary acids, oils and grease, and is scratch resistant.

Its flint-hard, glass smooth surface can be kept as immaculately clean as a china plate. There are no pores to collect dirt, harbor germs or absorb odors or moisture.

It reduces the cost of maintenance to an all-time low.

The glass-hard, lustrous finish of vitreous porcelain on steel does not fade, tarnish, peel or discolor. This surface is obstinately resistant to scratching, scrubbing, scribbling or defacement.

The orginal luster and freshness of colors is never lost. Its gleaming, colorful beauty does not fade or depreciate. It is truly an ageless and fadeless material.

Sanymetal "Porcena" (Vitreous Porcelain on Steel) Toilet Compartments are available in several different styles and a wide range of fadeless colors (refer to Sanymetal Catalog 89 for complete range of exact colors). Only Sanymetal offers "Porcena" (Vitreous Porcelain on Steel) Toilet Compartments. Ask the Sanymetal Representative in your vicinity to demonstrate the unusual and exclusive features of Sanymetal Vitreous Porcelain on Steel Toilet Compartments.

A FEW BUILDINGS, SELECTED FROM HUNDREDS, IN WHICH SANYMETAL "PORCENA" TOILET COMPARTMENTS HAVE BEEN INSTALLED:

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1687 Urbana Road, Cleveland 12, Ohio

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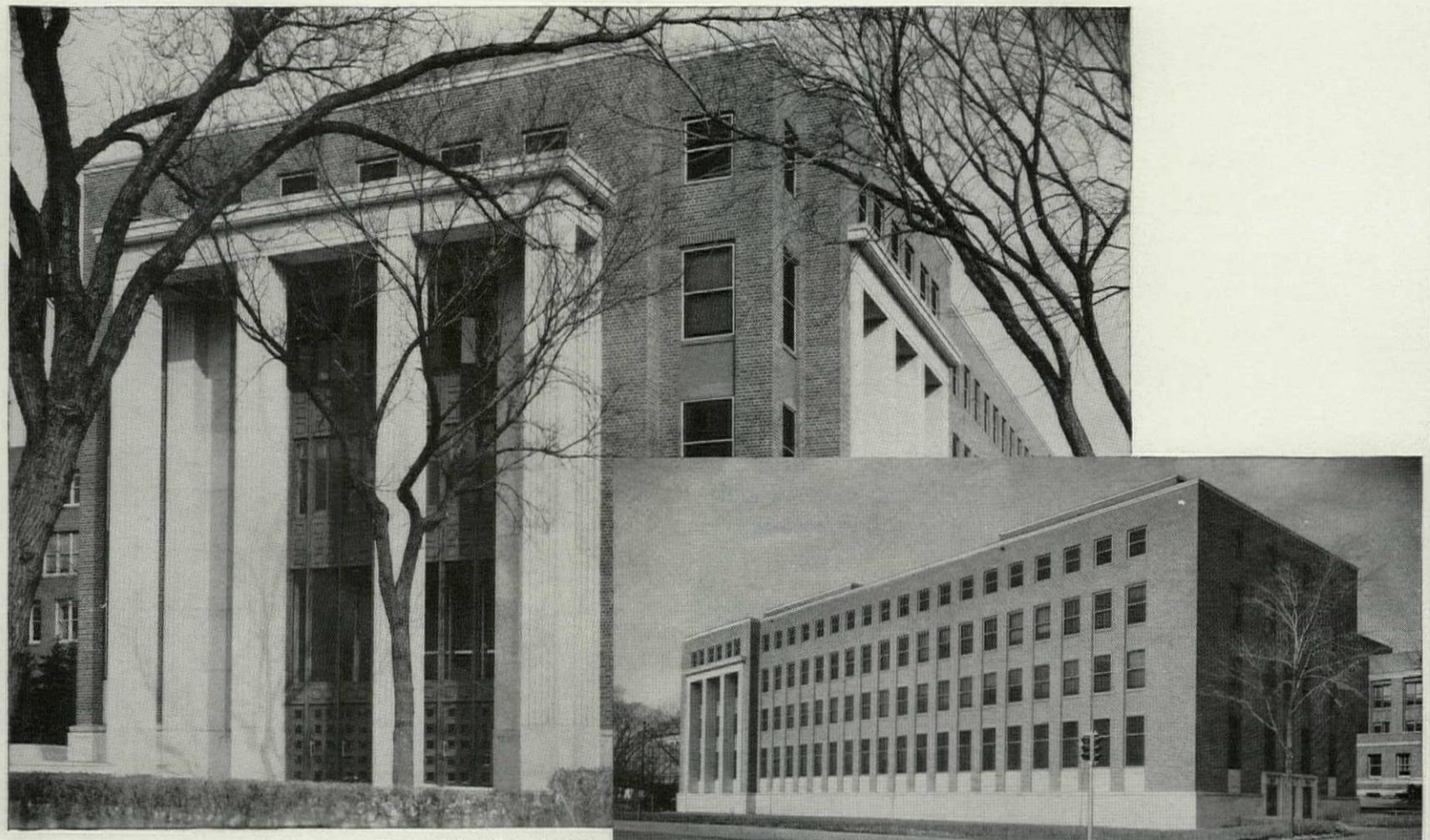
* Trade Mark Registered
Toilet Compartments, Shower Stalls and Dressing Rooms



Magney, Tusler & Setter, Architects;
Philip R. Reese, Inc., KoolShade Contractors.

How sun's heat and glare is kept out of University of Minnesota classrooms

When Ford Hall, the University of Minnesota's Social Science building on the Minneapolis campus, was first occupied, instructors and students complained of the excessive heat and blinding glare from the windows. The 117 windows on the south and west sides let in a tremendous amount of glare and heat whenever the sun shone on them—which was a good part of the day.

The Maintenance Department soon had Ingersoll KoolShade Sunscreens installed on all 117 windows. Now the rooms are comfortable inside even when the sun is blistering hot outside. Also, the bright highlights at the windows are reduced and only a cool, glareless light is admitted through the KoolShade louvers.

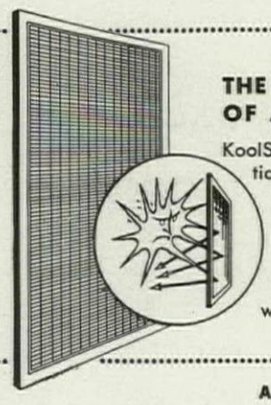
KoolShade Sunscreen blocks out as much as 87% of the sun's heat rays . . . 100 square feet of KoolShade on sun-exposed glazed areas is equal to one ton of air conditioning (12,000 B.T.U.'s).

KoolShade Sunscreen with thin bronze louvers set at a 17° angle is scientifically designed to admit glareless light; eliminating bright glare and deep shadows that cause so much eye-strain.

KoolShade Sunscreen can solve many of *your* problems of summer heat and glare . . . for school, hospital, office or residence. To secure maximum efficiency from any KoolShade installation, specify Ingersoll aluminum framing. At the present time, priorities will speed delivery on both KoolShade and framing.

KoolShade Sunscreen is supplied and installed by factory-trained men in Ingersoll KoolShade distributorships throughout the country.

Get the complete KoolShade story by writing for the "KoolShade Manual for Architects and Builders" to Ingersoll Products Division, Borg-Warner Corporation, Dept. MB-4, 321 Plymouth Court, Chicago 4, Illinois.



THE MOST EFFICIENT OF ALL SHADING DEVICES

KoolShade Sunscreen is like a miniature venetian blind woven of thin bronze strips. These bronze louvers set at a 17° angle, reflect and radiate up to 87% of the sun's heat rays outside windows before they reach the window glass. It's the modern way to insulate windows against sweltering summer heat.

A PRODUCT OF BORG-WARNER

Ingersoll KOOLSHADE® Sunscreen

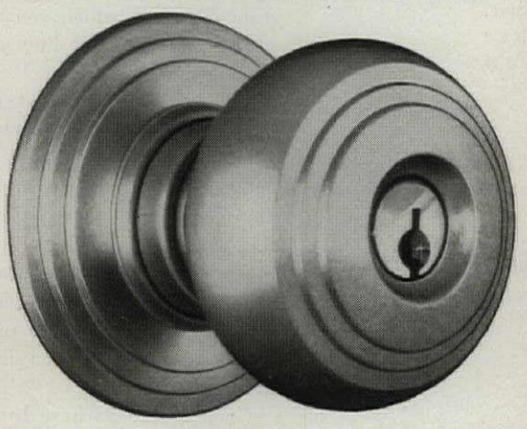
A PRODUCT OF BORG-WARNER

SCHLAGE CYLINDRICAL LOCKS...Time-Proven

Schlage Dependability—proven by 25 years service—makes Schlage Locks leading choice for today's important buildings

PEACHTREE—SEVENTH BUILDING

EQUIPPED WITH SCHLAGE "NOVO" DESIGN LOCKS



Peachtree—Seventh Building, Atlanta, Georgia
Architects, Alexander and Rothschild
Contractor, Charles R. Massell
Owner-Builder, Benjamin J. Massell

"The proved, low-cost maintenance record of Schlage Locks was an important factor in our final selection"—
Alexander and Rothschild, architects.

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LETTERS

STRUCTURAL STEEL

Sirs:

You did a very outstanding job in presenting the story on structural steel supply and demand (AF, July '52). I believe it will do just what it is intended to do: "stir up the cats" and get some attention to this neglected subject. . . .

J. W. Follin, *chairman*
Subcommittee on Construction
Conservation Division
Defense Production Administration
Washington, D. C.

Sirs:

In your article on steel production and prices (AF, Aug. '52) you wind up the question-and-answer period with the most potent item of all: diminishing production per man-hour; but then you blithely say the debate is over and proceed with the side issues.

Why not stick to the point? Is it not axiomatic that, if the steel riveter you mention and his comrades in the industry stepped up their production each to his full capacity, we would have more steel at lower prices and higher wages than ever before?

This is at the core of all our economic troubles.

Charles C. Platt, *architect*
New York, N. Y.

Sirs:

Enjoyed your August issue very much—particularly the article on structural steel shortage. . . .

J. Burnham
The Cooper-Bessemer Corp.
Mt. Vernon, Ohio

PUBLIC HOUSING AND DESIGN

Sirs:

I have just read with semiamusement your editorial on the benefits of public housing (AF, Aug. '52).

It is amusing to me for it clearly shows a human trait that is at times difficult to conceal. The trait that you so amply illustrate is one in which you will sing anyone's praises if they will line your pockets with monetary gain.

You clearly state that private enterprise must act to pay architects more money. I suppose the veiled threat is that if private enterprise does not pay architects more, your conscience will then be clear to dip into the taxpayers' pockets for fatter fees to design public housing apartments that as a national average have cost 50% more than comparable living space offered by builders of individual homes on individual plots of ground.

Good architects have been making a comfortable living in our capitalistic system that is based on costs. This is as it should be.

So please don't try to socialize a large

continued on p. 80

Otis

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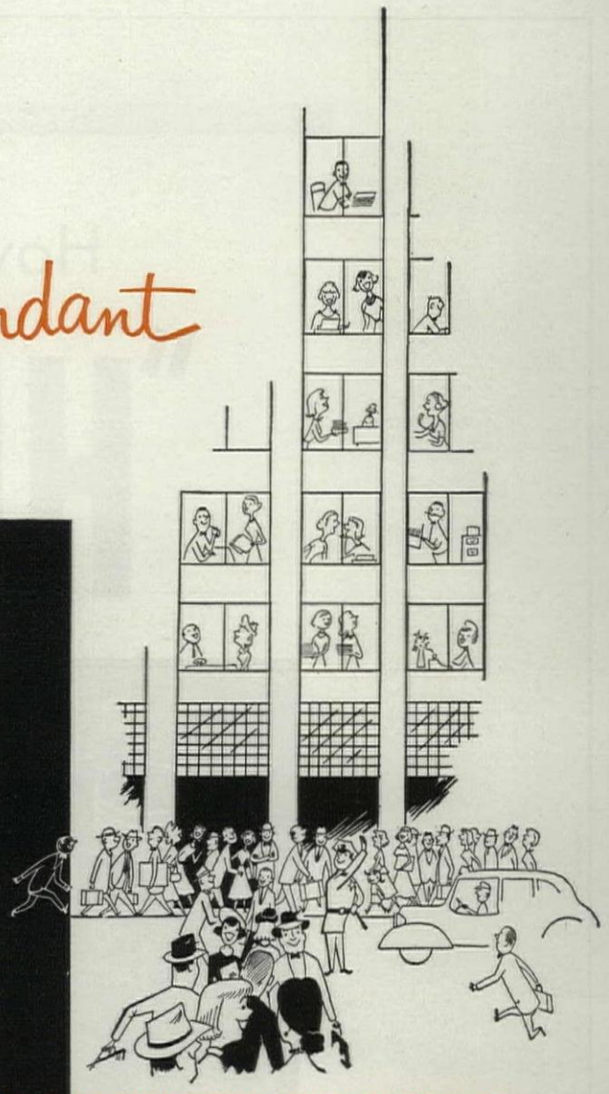
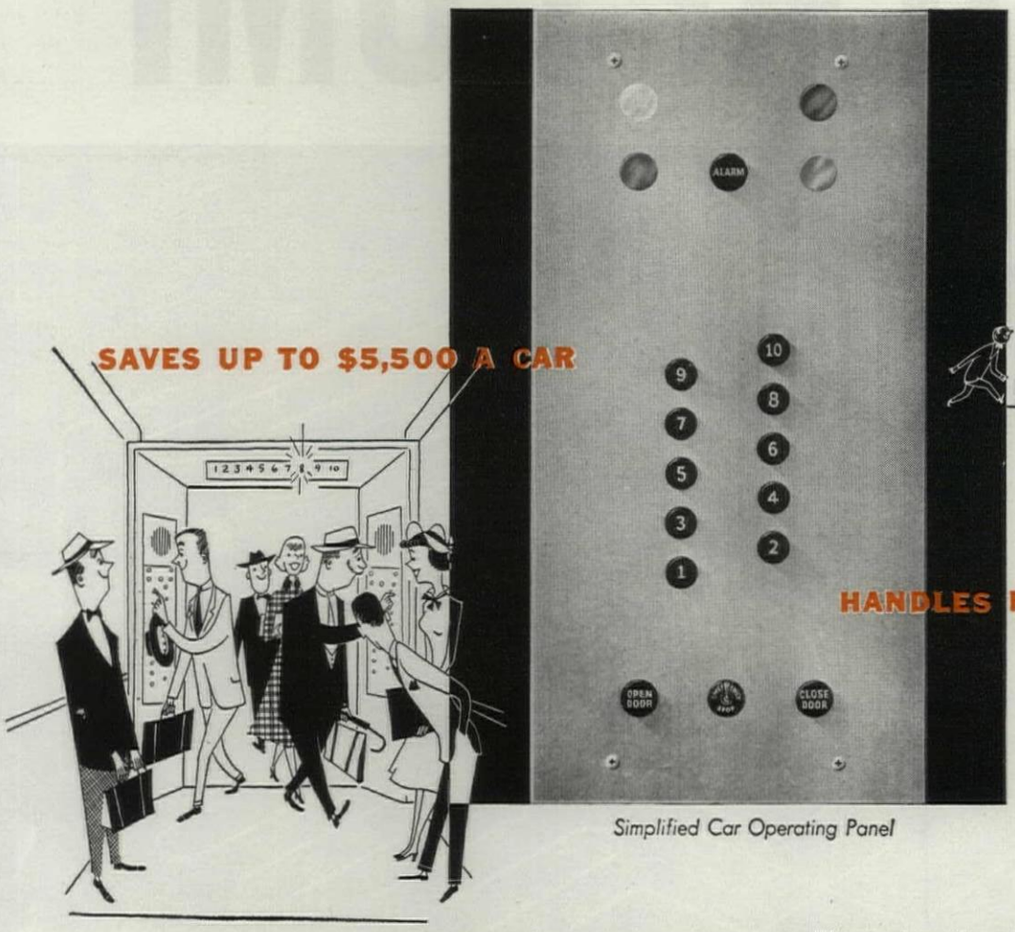
ELEVATORING





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Autotronic—WITHOUT ATTENDANT—Elevatoring offers the only substantial saving in building operation that is available today. It saves up to $5,500 a car, each year.

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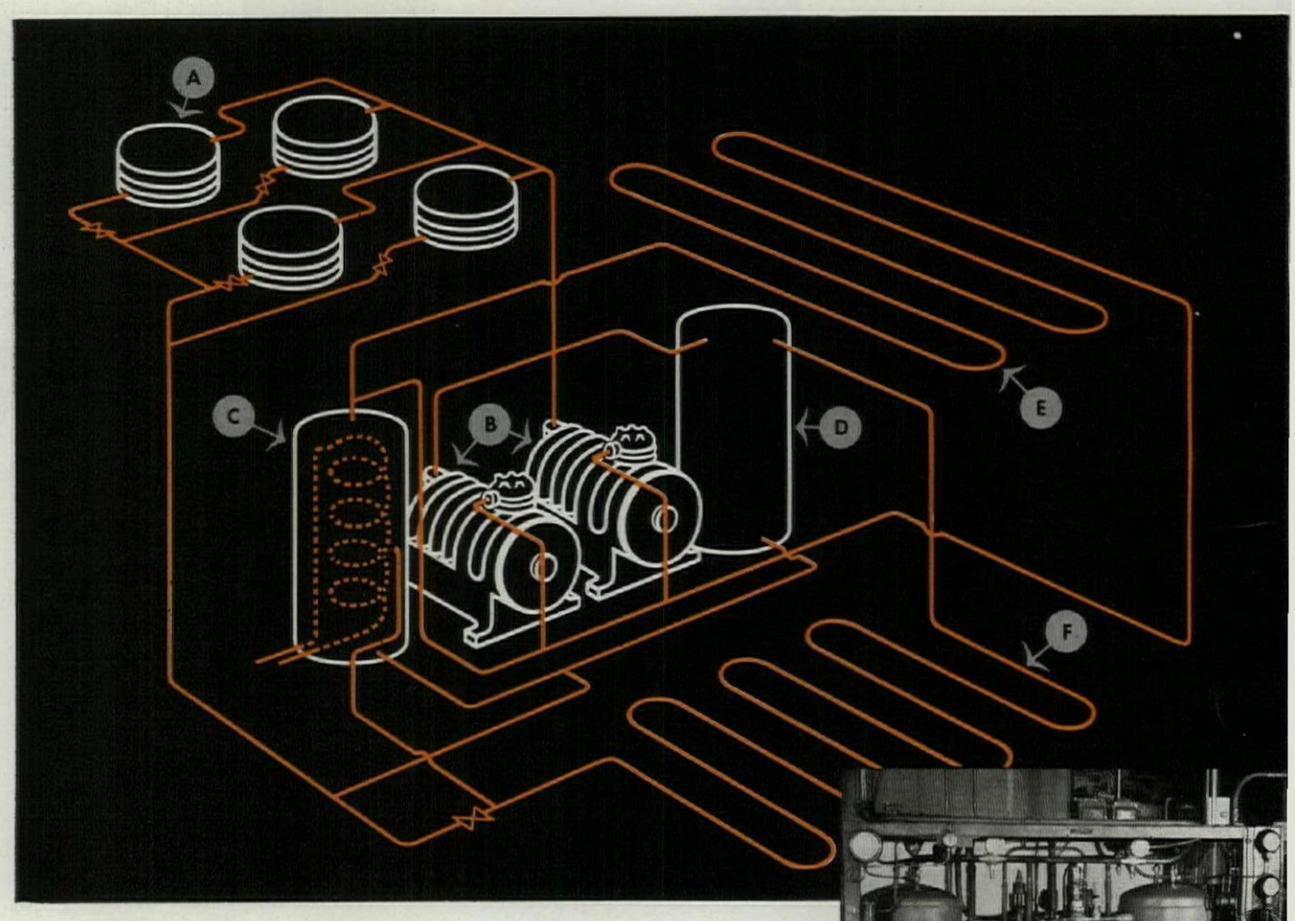
Autotronic—WITHOUT ATTENDANT—Elevatoring has been in successful operation for more than two years. It has proven itself in single-purpose buildings. It has handled diversified traffic to everyone's satisfaction. It has the speed and the automatic group supervisory control needed in many large buildings, yet is adaptable to small buildings. It can be used in hospitals. Its specific application is a matter of individual study.

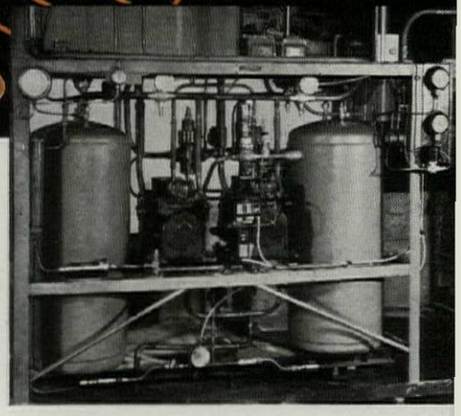
Why not visit an actual Autotronic—WITHOUT ATTENDANT—Elevatoring installation in a new or modernized building? Talk with the tenants and management. Ask any of our 266 offices for details. Otis Elevator Company, 260 11th Avenue, New York 1, N. Y.

BETTER ELEVATORING IS THE BUSINESS OF OTIS

How ANACONDA copper "HEAT PUMP"



HOW IT WORKS — *Heat pump system in sausage plant removes heat from sausage with forced-air refrigerating convectors (a). Compressors (b) use Freon-12 refrigerant. 80-gallon heat exchanger tank (c) warms domestic water running through 300 feet of copper tubing. Surge tank (d) takes care of vapor or liquid refrigerant. 500 feet of copper tubing in office floors (e) provides radiant heat, and 1800 feet in basement floor (f) dissipates heat in summer, stores it for radiant heating on nights, weekends.*



HEAT PUMP HEART — All mechanical equipment is assembled as a packaged unit. Two 3-hp. compressors, plus automatic controls, are located between heat exchanger (left) and surge tank (right). Charles Charlton, Hartford, Conn., Designer.

tubes contribute to

success story

When both heating and cooling sides of a refrigeration system are put to work, it's a true heat pump *with important operating economies.* Here's an interesting example of such double duty. In the Hartford, Connecticut sausage plant of Mucke & Sons, process heat warms offices. ANACONDA Copper Tubing plays an essential part. Its excellent heat-transfer properties, corrosion resistance, and consistent uniformity make for high efficiency.

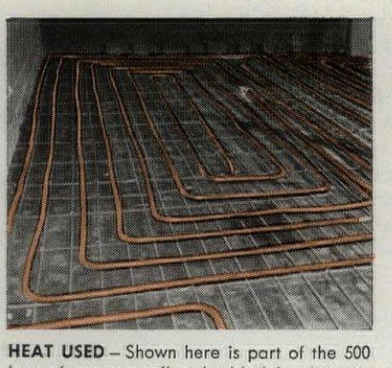
Primarily this system was designed to cool cooked sausage. However, it was apparent that *three* jobs could be done by the "heat" side. Designer Charles Charlton used heat removed from the sausage (1) to heat offices, (2) to provide washroom hot water, (3) as a reserve, stored underground, for use when sausage processing is not in operation.

Nothing succeeds like success. Results have been so encouraging that Mucke & Sons are thinking of expanding the system to make further use of the heat.

If this installation interests you, we will gladly forward a complete description on request. The American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

5211 C

HEAT REMOVED – Corner of the sausage cooling room shows two of the circular conductors in the ceiling. Temperature is kept at 0° F. Cooler is 25 ft. x 35 ft. with a cooling load of 60,000 Btu per hour.



HEAT USED – Shown here is part of the 500 feet of copper coil embedded in concrete slabs in the floor of adjacent plant offices and other areas. This tubing circulates the refrigerant gas to furnish radiant heat.

modern piping calls for ANACONDA copper tubes

Attractive Appearance

When a midwestern architect set out to reproduce the charm of a traditional style, he got the results shown in the picture above. Aiding his efforts was the special design of the Barcol OVERdoor sections, with vertical grooves suggesting the boards in barn doors of a bygone day. But back of this beautiful facing is solid, up-to-date mechanism that makes the Barcol OVERdoor "an *improved* overhead door" — a pleasure to own and use. We suggest you visit with your Barber-Colman representative on the subject of Barcol OVERdoors, electric door operators, and the Radio Control. He can give you full details and tell you the many advantages of these modern products, which are so useful toward improving the pleasure of good living.

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MECHANICAL FEATURES THAT GIVE

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LONG LIFE

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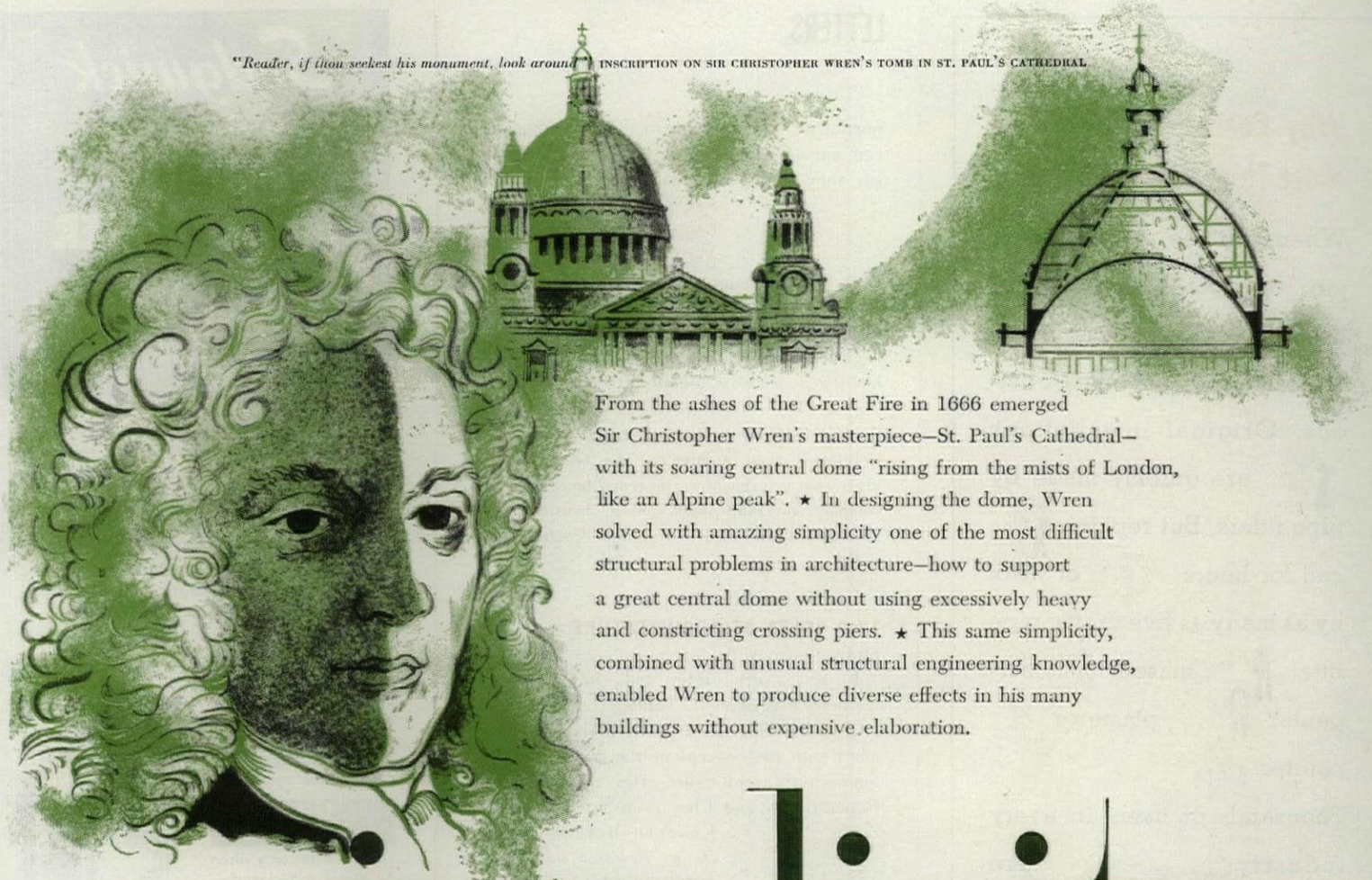
"Reader, if thou seekest his monument, look around" INSCRIPTION ON SIR CHRISTOPHER WREN'S TOMB IN ST. PAUL'S CATHEDRAL



From the ashes of the Great Fire in 1666 emerged Sir Christopher Wren's masterpiece—St. Paul's Cathedral—with its soaring central dome "rising from the mists of London, like an Alpine peak". ★ In designing the dome, Wren solved with amazing simplicity one of the most difficult structural problems in architecture—how to support a great central dome without using excessively heavy and constricting crossing piers. ★ This same simplicity, combined with unusual structural engineering knowledge, enabled Wren to produce diverse effects in his many buildings without expensive elaboration.

simplicity

Whether hidden from sight doing a functional job, or exposed to view just looking pretty, Van Huffel metal shapes and tubing simplify a lot of today's building problems. ★ Architects, designers and engineers know they can incorporate in their designs strength without excessive weight . . . economy without sacrificing quality . . . and simplicity without complicated assembly. That's why they are continually thinking up new uses. That, too, is why they keep coming to Van Huffel —where ideas take shape—in metal.

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LETTERS

portion of our economy so that we taxpayers can subsidize architects in a field that you say they cannot now compete in.

STANLEY W. SAMPSON, *pres.*
Glenn Lumber & Supply, Inc.
North Bessemer, Pa.

▶ Let reader Sampson take another look at our August editorial. He will note that it did not even mention the pros and cons of public housing. It simply made one point: that public housing projects are usually better designed than private FHA-insured apartment projects because the higher fees on public housing are sufficient to attract good architects. The editorial then urged that private-enterprise rental housing should compare favorably with public housing when measured by the yardstick of architectural design. —Ed.

TWO POLES OF ARCHITECTURE

Sirs:

I was very interested in Frederick Gutheim's review of Talbot Hamlin's book (AF, June '52). I am particularly in agreement with his concept of the duality of contemporary architecture—the two poles of Romanticism and Classicism. . . .

KENNETH BAYLES, *architect*
Design Research Unit
London, England

CHEESE BUILDING

Sirs:

I had planned to write a lengthy letter protesting the gross ugliness of the ALCOA Building (AF, July '52). Instead, I merely pose the question: "What manner of building would the same architects create for Kraft Cheese Corp.?"

BROOKS CAVIN, *architect*
St. Paul, Minn.

REVERSIBLE SITE PLANS

Sirs:

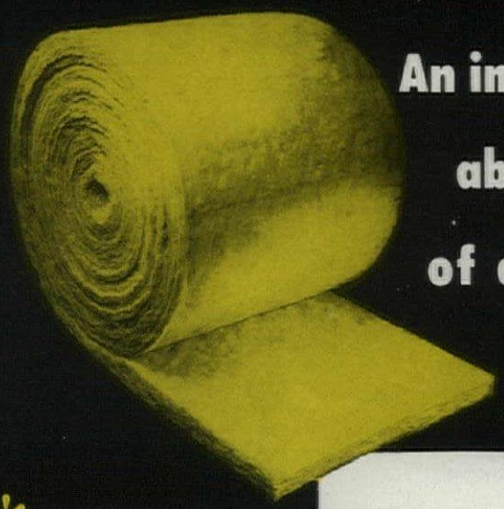
I have noticed very frequently in various publications that plans and aerial photographs are printed with shadows projected up the page away from the reader when much greater clarity would result if they were reversed and shadows pointed down toward the reader. The point is illustrated by the plan of a section of Washington published in your August issue *(p. 127)*. In this case I think you will agree that definition is much sharper if the page is reversed. . . .

I am surprised to see how many architects lose the full effect of their original drawings by using shadows ineffectively.

W. A. SHERRINGTON, *architect & surveyor*
Kent, England

● We agree. In drawing their site plans and bird's-eye perspectives, let architects heed reader Sherrington's suggestion which corresponds to

continued on p. 86



An important announcement about a complete new line* of acoustical insulations

***ULTRALITE** ...the long textile-type glass fiber insulation

***ULTRAFINE** ...the insulation of extremely fine, blown glass fibers

***ULTRACOUSTIC** ...a combination of Ultrafine and Ultralite separated by a flexible septum

Now, for the first time, one company offers a complete line of lightweight acoustical insulations — plus an acoustical engineering service.

ULTRALITE, ULTRAFINE and ULTRACOUSTIC are the insulations. All are lightweight glass fiber insulations (either plain or with a choice of 5 facings) that come in blanketlike rolls. Each is different in density and acoustical properties. Individually, or in combination, they will help solve any acoustical problem.

If you can use "sound advice" on the acoustical treatment of ducts, walls, studios, radio or TV stations, drop-pan ceilings — or any other project involving the control of sound — mail the coupon today. You'll receive samples, prices, complete performance data — and reliable advice on the many new and unique aspects of acoustical treatment of modern buildings.

Please send me your brochure on Gustin-Bacon's complete line of acoustical insulations. I am particularly interested in the acoustical treatment of:_____

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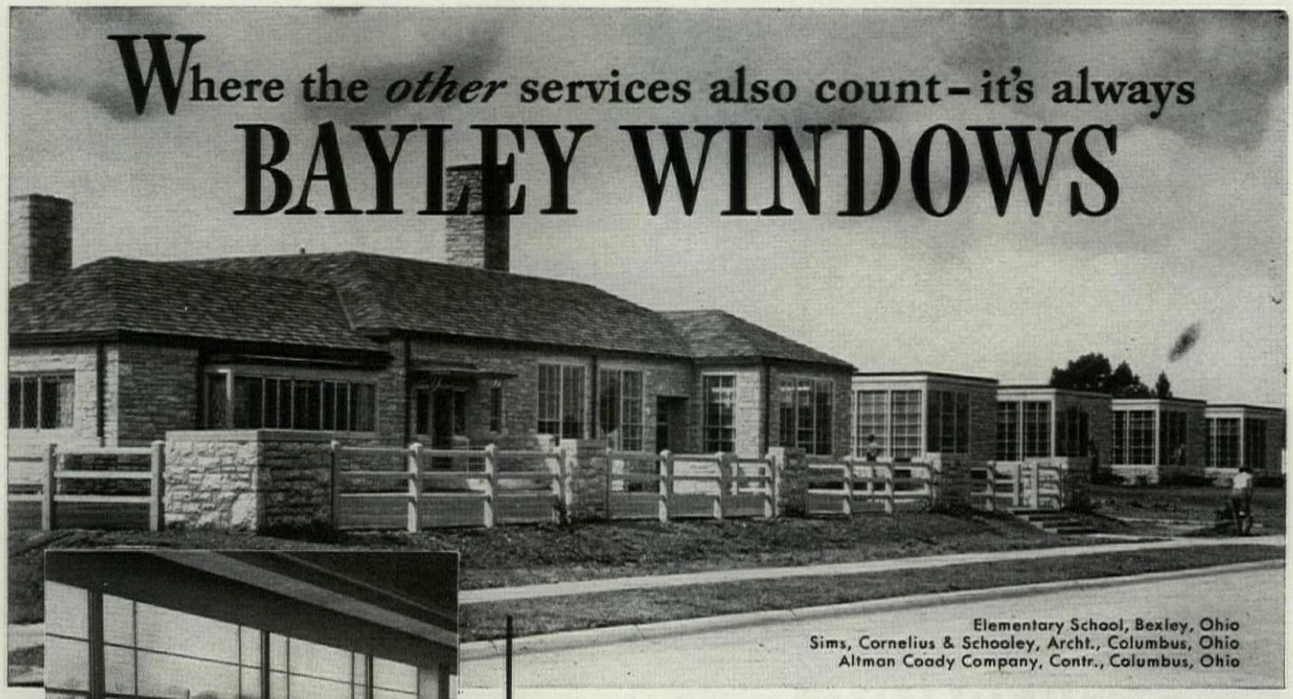
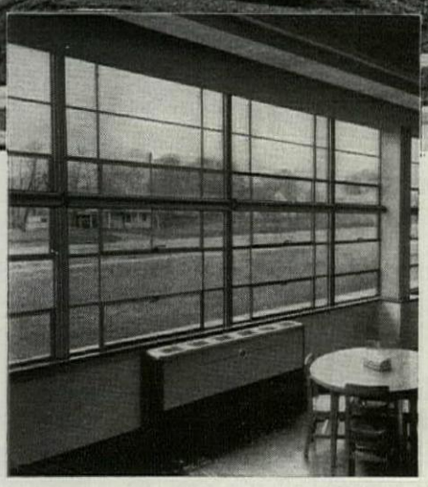
Where the *other* services also count – it's always BAYLEY WINDOWS



Elementary School, Bexley, Ohio
Sims, Cornelius & Schooley, Archt., Columbus, Ohio
Altman Coady Company, Contr., Columbus, Ohio



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Bayley Aluminum Projected Window

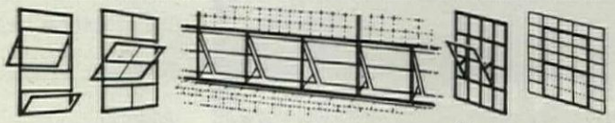
Offers New Features for Modern Schools of All Types

The *first* essential to a truly satisfactory relationship is a fine quality product. But much more is also required. Full appreciation of this fact is the bedrock of Bayley's policy — and is the reason descriminating designers from coast to coast have so highly favored Bayley for so many years.

Bayley's determination to better serve through all the building stages — from the building's inception to its occupancy — is again exemplified in the Bayley Aluminum Projected Window. It represents the culmination of years of conscientious endeavor. First to fully recognize the universal advantages of the projected window, Bayley refined its desirable features in the most enduring construction material developed through long research by the Aluminum Industry. The result is an ideal window for schools, hospitals, institutional and commercial buildings — but equally suited for private living units — that reflects Bayley's years of specialized window experience.

Regardless of window requirements, you too will find *extra values* in discussing your needs with Bayley. Write or phone.

See Bayley in Sweet's. Complete catalogs on aluminum windows, 17a/BA; steel windows, 17b/BAL; Saf-T-Gard Hospital Detention Window, 17b/BAY.



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HOW J & L JUNIOR BEAMS SAVE TIME, SOLVE DESIGN PROBLEM AT LOW COST IN ST. CHARLES SCHOOL

YOUNGSTOWN, OHIO

Architect P. Arthur D'Orazio and George J. Murphy Company, contractors-engineers, of Youngstown, Ohio, have employed lightweight J&L Junior Beams as cantilevered roof purlins at the Boardman Center's ultra-modern St. Charles School near Youngstown. J. A. McMahon, Ltd., Niles, Ohio, fabricated the 85 tons of structural steel and 35 tons of Junior Beam joists going into the framework.

Notched over lintel beams and cantilevered four feet beyond the outside walls, J&L Junior Beams support not only the roof but also an attractive permanent sun shield over classroom window walls.

Because of their versatility and adaptability, J&L Junior Beams go far towards meeting the demands of today's builders. They cost less to buy and less to erect. Lightweight, 12″ Junior Beams, 11.8 lbs. per foot, 30 ft. long, may be easily raised, placed and bolted directly into position by three men with the aid of only a hand-operated winch.

The lightweight and consequent ease with which Junior Beams can be handled led to fast, economical construction that helped hold building costs to a minimum. ALL STRUCTURAL STEEL INCLUDING THE JUNIOR BEAM ROOF PURLINS WAS ERECTED BY 6 MEN IN 2 DAYS.

ARCHITECTS—CONTRACTORS

If you're engaged in the design, or construction of light occupancy buildings, you'll be interested in these features offered by J&L Junior Beams. EASY TO INSTALL, RIGID, VIBRATION RESISTANT, SHRINK PROOF, LOWEST DEFLECTION FACTOR OF ANY STRUCTURAL SECTION OF EQUIVALENT WEIGHT.

Why not write today for our new booklet: "Skyscraper Construction for Every Building"? It shows how Junior Beams are used as floor joists, and roof purlins with loading and spacing tables for various spans.

JONES & LAUGHLIN STEEL CORPORATION
PITTSBURGH 30, PA.

Jones & Laughlin Steel Corporation
401 Gateway Center Building No. 3
Pittsburgh 30, Pa.

Please send me a copy of the booklet entitled, "Skyscraper Construction for Every Building."

Name_____

Company_____

Address_____

LETTERS

the alliterative warning the army gives its novice aerial-photo interpreters: "shadows stab stomach." Reason an air view appears more realistic when the shadows point toward the observer is simple: on the ground one never sees the shadows of objects which fall away from him. Presented "upside down," an air view frequently turns inside out, and the depressions become elevations—Ed.

FIVE PERCENTERS

Sirs:

Ninety per cent of architects' training and experience is in architectural subjects, only 5% in mechanical and electrical. Nobody can put out professional work on 5%. The reverse is true for the mechanical engineers and electrical engineers, so it is time to promote teamwork if we are to be rated truly professional.

The engineering phase of building is becoming increasingly complicated and should gravitate to engineers devoting full time to these features, thereby releasing architects to their architectural field for research and development where they are best fitted.

Lighting is the spiritual force that takes dead materialistic structures and makes them dynamic and economically sound for today's tempo.

Harold W. Howard
consulting electrical engineer
Akron, Ohio

BRITAIN'S PREFAB SCHOOLS

Sirs:

In Walter Gropius' statement in the May issue appraising today's architect, he referred to the Hertfordshire school building program of England as an effective example of the good teamwork he recommends. Last year while in England on a Fulbright I had numerous occasions to examine the activities and results of this group.

In my opinion, it is one of those pilot operations that show what we are going to have to do . . . to solve the problems of contemporary life in genuinely contemporary terms. For it has the quality of more than . . . a physical team, a state nonfluid group. It represents that new attitude of mind looking toward an interrelationed knowledge and . . . common denominators of action. . . .

I suggest that Forum look further into this effort. . . .

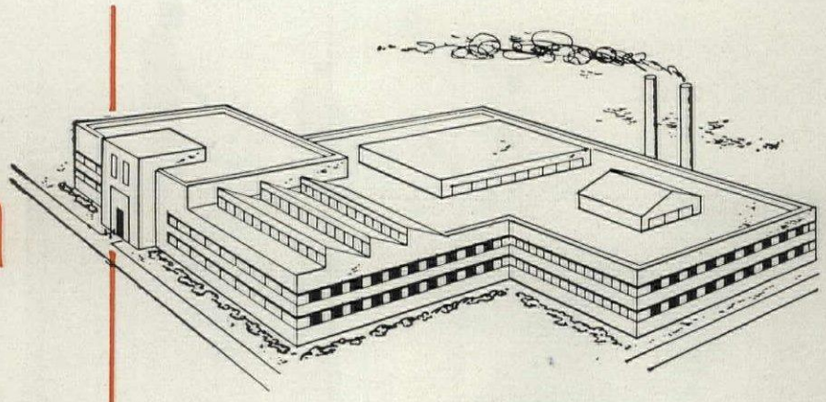
Charles Burchard
assistant professor of architecture
Harvard University
Cambridge, Mass.

● Reader Burchard and others interested in Hertfordshire's demonstration of teamwork in the development of low-cost prefabricated school buildings will find the full story elsewhere in this issue of Forum.—Ed.

continued on p. 90

Large area heating...

WITH OR WITHOUT DUCT-WORK

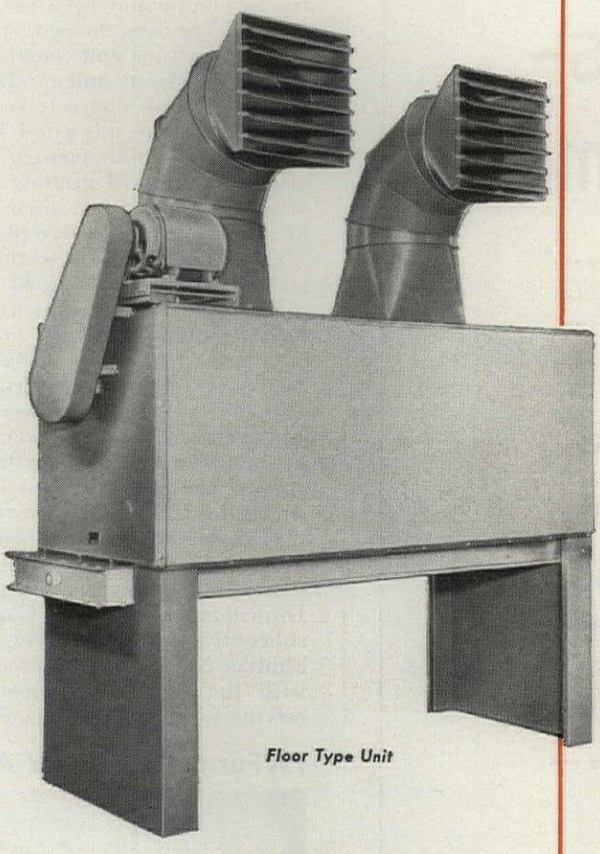


McQuay

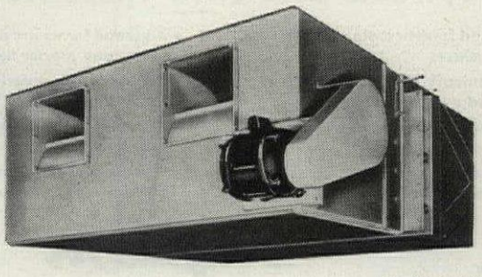
BLOWER-TYPE

Unit Heaters

Where heat must be diffused over large open areas, as in warehouses, garages and industrial plants, the McQuay Blower-Type Unit Heater has a wide application. Available in floor, horizontal, vertical, wall and inverted styles in 8 sizes, up to 1,600,000 Btu. Only McQuay can give you famous Ripple-Fin coils—the construction feature that assures maximum heat transfer efficiency. Representatives in principal cities. Write McQuay Inc., 1609 Broadway Street N.E., Minneapolis 13, Minnesota.



Floor Type Unit



Horizontal Unit

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HEATING
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MAKE THE SEASONS COME TO YOU

PANEL DISCUSSION

Plywood Forms Play Important Role in Parkmerced Project

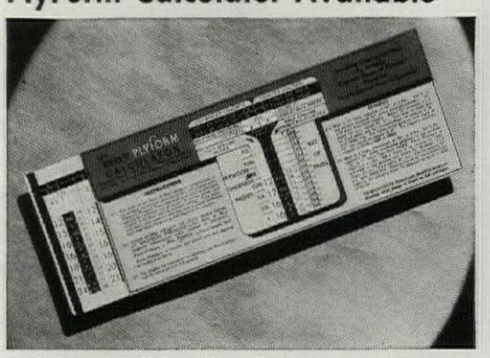
Three prime factors—re-use, speed and appearance—dictated specification and use of plywood forms for both interior and exterior concrete surfaces on the new Parkmerced apartment project, San Francisco.

According to W. A. Bender, superintendent for Starrett Bros. & Eken, Inc., contractors on the job, plywood panels gave up to 15-18 re-uses, helped speed formwork application time and construction costs by about 20 percent and produced uniformly smooth, fin-free concrete surfaces. In fact, Bender reports, plywood-formed ceiling slabs were smooth enough to be painted after a minimum of grinding and application of spackling material—permitting a savings by eliminating expensive plastering.

Large built-up form sections 11 feet high and ranging from 20 to 48 feet long, were used on the walls. Forms were built of ¾" Exterior plywood, nailed to 2x4 studs, 12" o.c., backed by 2x4 and 3x4 walers. After each pour, sections were stripped and raised to the next story. Forms were used 13 times on the eleven 13-story tower buildings, then in some cases re-used further on the two-story Colonial type apartment buildings which dot the 200-acre tract.

Parkmerced was planned and built by Metropolitan Life Insurance Co. General Contractor: Starrett Bros. & Eken, Inc. Dinwidde Construction Company was the subcontractor on concrete work. Leonard Shultze & Associates were the architects, with the firm of Thompson and Wilson serving as architectural consultants.

PlyForm Calculator Available



A handy slide rule calculator which gives plywood form construction data is available for $1.00 from Douglas Fir Plywood Assn., Tacoma, Wash. Included with the PlyForm calculator is a leaflet of design assumptions.

(Advertisement)

Plywood Helps Complete Rush Jobs on Schedule

A crew of 25 men completed construction of the new Lakewood (Wash.) Branch of the Puget Sound National Bank in 10 working days to hang up what might well be a record for buildings of its kind.

The final decision to rush construction of the 2,600 sq. ft. building was made by bank officials only 18 days before job completion. Architects Lea, Pearson and Richards went to work to meet the "impossible" schedule. To give the builder every opportunity to save time, they turned to virtually all-plywood construction. Drawings and specifications were completed within a week and work was begun under the direction of O. D. Parker, building superintendent for Ketner Bros., Inc., contractors.

According to both builder and architect, plywood made possible the speed of building. The big panels were used for combined siding-sheathing, gable ends, interior paneling, roof decking and underlay floors. The plywood board and batten siding is painted barn red to contrast with white flush-surfaced gabled ends. Interior paneling is painted light green.

Plywood Ideal Form Material Reports Highway Builder

A typical use of plywood forms in highway projects is the six-lane Stanley Drive highway underpass in Northern California —built jointly by M and K Corporation and Eaton and Smith. The builders used 5/8" Interior PlyForm for all exposed surfaces for this half-million dollar project.

"We wouldn't use anything but plywood for a job like that," says M and K Corporation President B. F. Modglin. "As far as we are concerned it is the ideal form material. It forms clean, smooth concrete, saves time and labor, and re-use cuts costs considerably."

Forms 16 feet high, 2½ feet wide at the bottom and 4 feet 7 inches wide at the top were used for the ends of the bridge piers. Plywood was nailed across 2x4 and 4x4 studs, 12" o.c., backed by double 2x4 and 4x4 walers. Panels for road slab were placed across 2x12 joists.

LETTERS

KUDOS

Sirs:

Your staff did a fine job on Mount Sinai Hospital (AF, July '52).

It was a tough subject to write about as it was complicated. However, the story was accurate and written with sparkle—a difficult task on a rather dry subject.

ROBERT ALLAN JACOBS, *architect*
Kahn & Jacobs
New York, N. Y.

Sirs:

We have noted your fine treatment of the Alcoa Building (AF, Aug. '52). All three parts of this story were crammed with information which might otherwise have gathered dust in our files had it not been for your good reporting. . . .

WILLIAM L. MCCAGUE
Aluminum Co. of America
Pittsburgh, Pa.

Sirs:

. . . You publish a really fine magazine. It will be many years before anything to equal it will be published here in Australia.

I have recently written to several companies for informative folders and booklets on every aspect of building and decoration. I am proud and pleased to say that every request was rewarded. This is a big thing indeed—it gives me a good feeling and a stronger bond of friendship with America and Americans!

. . . Yours sincerely from Down Under,

R. WOODS
Wollongong N. S. W., Australia

ASTRAGAL ON ZECKENDORF

Sirs:

In case you missed Astragal's amusing comments in *The Architects' Journal* (published weekly in Britain) about your presentation of William Zeckendorf's unusual office by architect I. M. Pei (AF, July '52), here's a clipping.

O'NEIL FORD, *architect*
San Antonio, Tex.

● Astragal's comments appear below.—Ed.

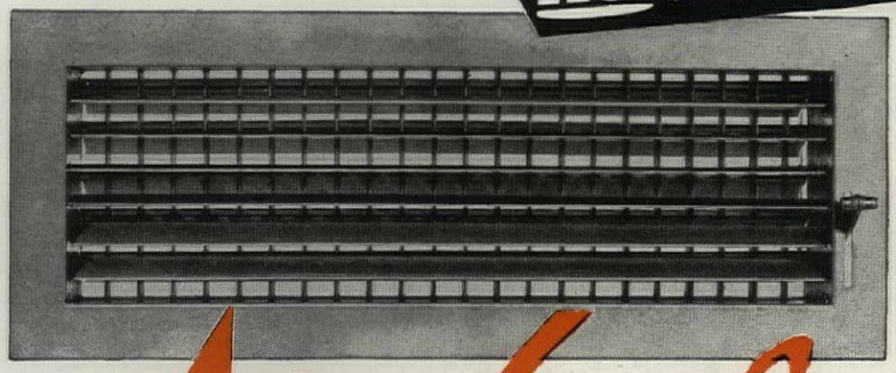
No wonder—with so bleak a prospect before us—that the British architect's mouth is inclined to water slightly as he looks at the architectural magazines of foreign countries, somehow more fortunate (but goodness how?) than we are. Tiny beads of sweat broke out on my even tinier forehead last week as I mulled through the pages of the American magazine illustrating the offices by Mr. Zeckendorf. Who is Mr. Zeckendorf? . . . He is a real estate magnate from New York, famous, among other

continued on p. 92

MAKES ANY AIR CONDITIONING SYSTEM A BETTER AIR CONDITIONING SYSTEM

Yet it COSTS LESS.....

● *Illustrated below—* #276 4-way multi-shutter register . . . features front louvers and rear damper blades parallel to long dimension . . . second row louvers parallel to short dimension.



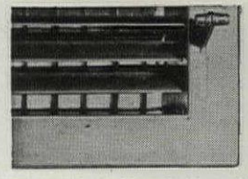
Air Foil

4-WAY MULTI-SHUTTER REGISTER

SOLID-SECTION AIRFOIL LOUVER

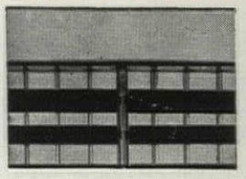
● Louver knifes air in wind tunnel tests. Turbulence has been almost eliminated giving noiseless control of air.

LEVER CONTROL



● Inconspicuous lever in face of frame controls dampers for complete shut-off.

EXTRA-STRENGTH FRAME . . . . .



● New, exclusive Titus *concealed support* eliminates unsightly mullions and butted construction.

The smartly designed #276 combines *4-way #270 grille* with the *multi-shutter damper* to assure maximum directional control with positive volume control and shut-off. Damper blades interlock for complete shut-off.

The two front sets of louvers are individually adjustable with blades on ¾ inch centers.

Dampers are controlled from face of grille by inconspicuous lever. Removable lever furnished at no extra cost.

EXTRA STRENGTH—LONGER LIFE

Sound, inspired know-how engineering gives the #276 superb simplicity of design with no unnecessary parts—no clumsy bulk. A special patented, *concealed support* eliminates unsightly mullions and butted construction permitting superior strength with no added weight.

EASY TO INSTALL

#276 grilles are light in weight—easy to carry—easy to fit—easy to put in place. *Save much costly time and labor.*

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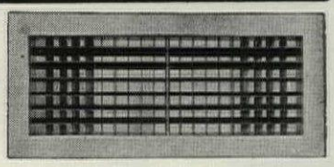
AIRFOIL grilles are priced down to give you more value—more performance—more efficiency—at less cost.

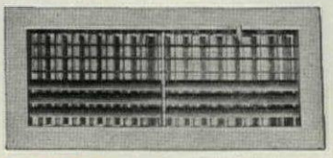
NOTE THESE OUTSTANDING AIRFOIL FEATURES . . .

- Smooth-as-glass AIRFOIL louvers.
- Extra-heavy frames.
- Airtight rubber gasket.
- Positive shut-off.
- Individual louver adjustment.
- Removable lever.

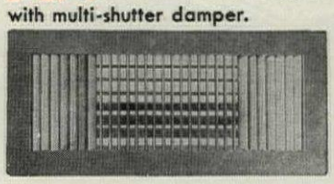
LOOK TO AIRFOIL FOR THE FINEST



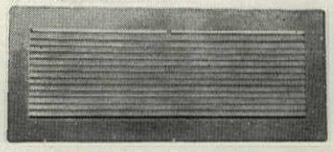
L-270 4-way directional grille for complete control of air stream.



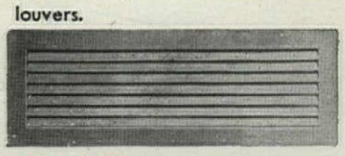
L-274 Double directional grille with multi-shutter damper.



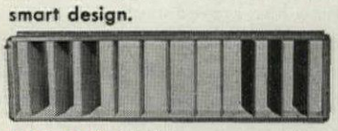
S-8 4-way grille with louvers on ½" spaced front.



RL-21 Return air grille of fixed deflection type with closely spaced louvers.



RL-230 Return air grille incorporates rugged construction and smart design.



AG-25 Volume controller designed to fit behind grille.

CHECK TYPE OF GRILLE ON WHICH INFORMATION IS DESIRED

- ☐ Air conditioning outlets
- ☐ Return air grilles and registers
- ☐ Volume controllers
- ☐ Perforated metal and ornamental grilles
- ☐ Door ventilators
- ☐ Special made-to-order grilles

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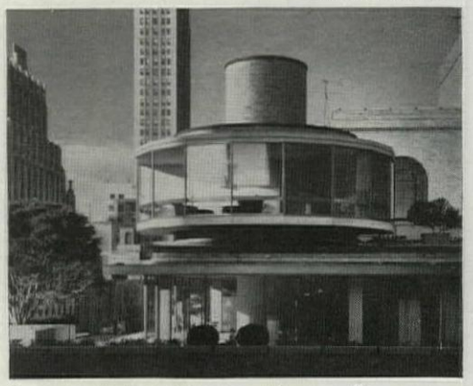
LETTERS

things, for his remark, "I don't get ulcers; I give 'em." *

It seems that Mr. Z., with the help of his architect, Mr. Pei, has built himself a plush eyrie on a Manhattan rooftop. . . . It consists of a handsome, fully glazed reception room and terrace in the off center of which stands the private sanctum—a 25′ diameter cylinder of teak, oak and glass. No harm done so far. . . . But more is to come. The office cost half a million ("Couldn't afford a penny less," said Mr. Z.), and is equipped with every sort of gadget, including "mood-

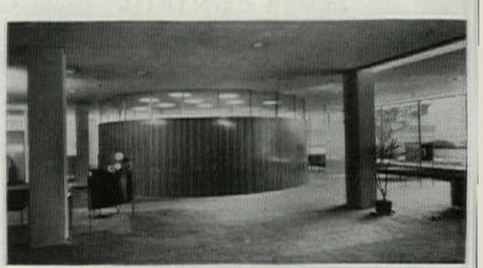
Photos: Ezra Stoller



". . . a plush eyrie on a rooftop . . ."

lighting"—a system of light changes controlled by Mr. Z. from his desk to match the mood of the moment.

Now let us recap. Mr. Z. is a big operative. Agreed. He is possibly the biggest real estate operator of his size in the world. Agreed. Clearly he needs an impressive, dignified, up-to-date, and efficient office. In his profession, too, an element of the bizarre is not inappropriate for its publicity value. Agreed. Mr. Pei is clearly also an imaginative and able designer, and there is no doubt that he has achieved an effect of



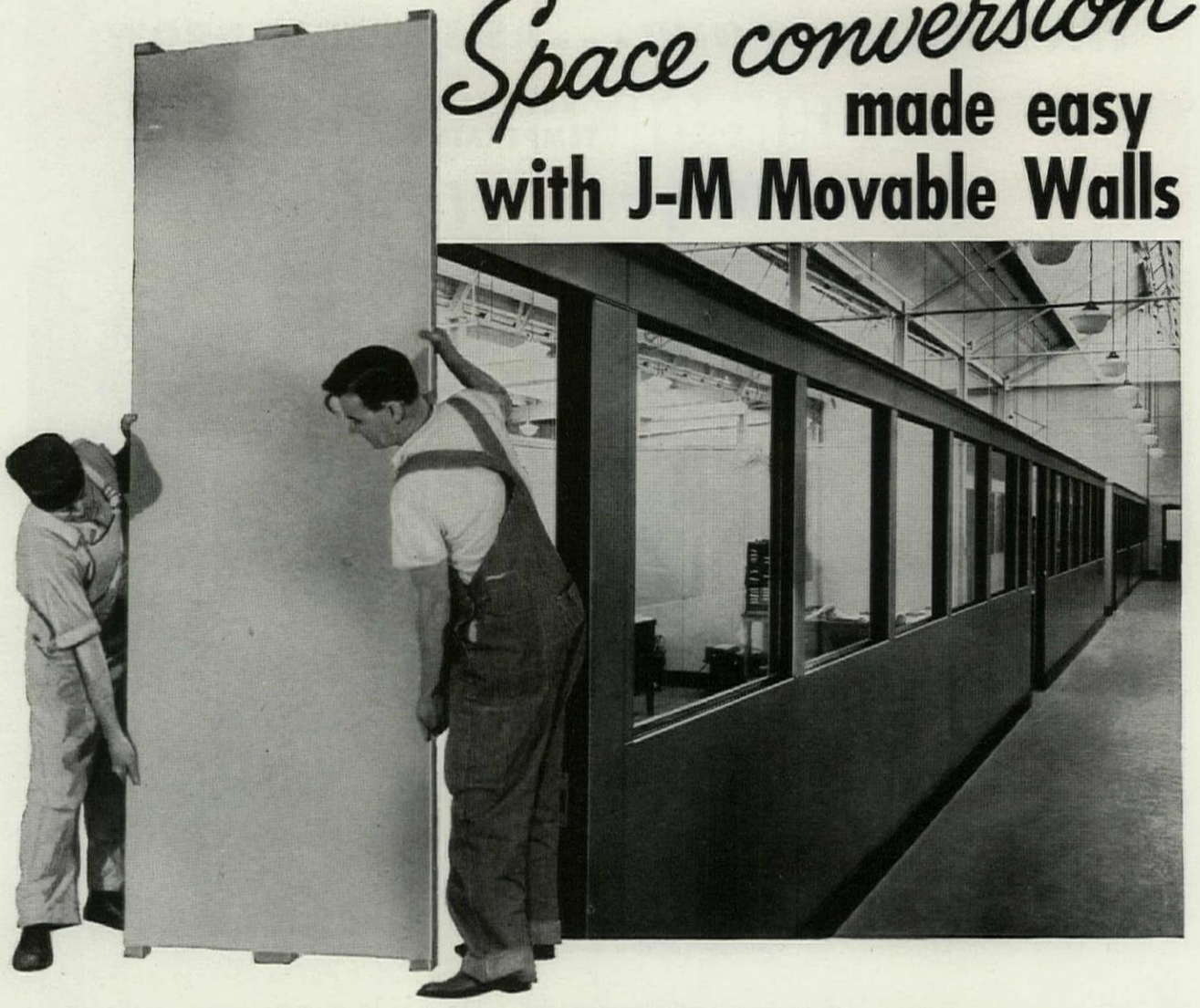
". . . the private sanctum . . . a windowless hatbox . . ."

considerable drama and discreet luxury—despite the technical difficulties encountered from in-driving rain and melting plastic domes. No eyebrows need be raised either at the fact that Mr. Z. is apparently happy to work in a windowless hatbox while a tre-

continued on p. 96

* This was not in FORUM's story. What dubious American could have wandered so?

Space conversion made easy with J-M Movable Walls



Johns-Manville Asbestos Movable Walls are made of noncritical materials. They permit the quick, easy space changes vital to today's rapidly expanding industries.

● Reallocation of existing space and partitioning of new space can be done easily and quickly with Johns-Manville Universal Movable Walls. Made of asbestos, these walls are ideally designed to help business and industry meet the space problems involved in the defense effort.

The flush panels have a clean, smooth surface that's hard to mar, easy to maintain, and will withstand shock and abuse. They're light, easy to erect and to relocate. The "dry wall" method of erection assures little or no interruption to regular routine.

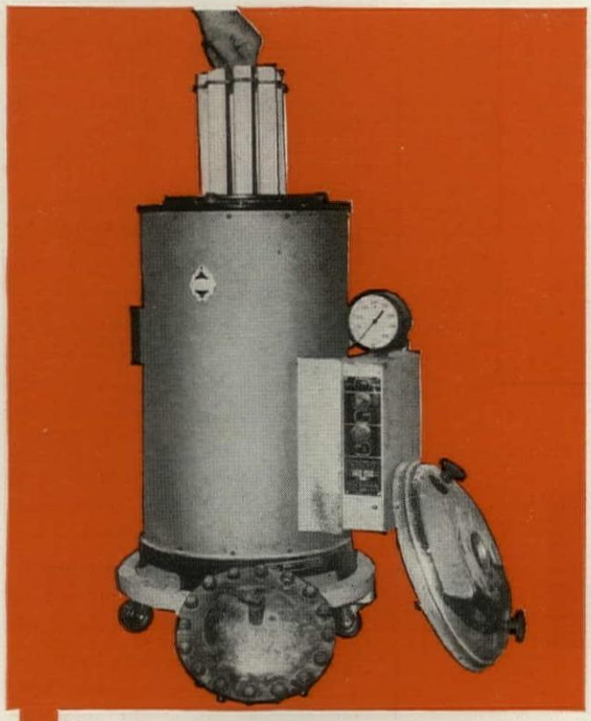
Johns-Manville Movable Walls may be used as ceiling-high or free-standing partitions. The complete wall, including doors, glazing and hardware, is installed by Johns-Manville's own construction crews and under the supervision of trained J-M engineers.

TRANSITONE Movable Walls—A recent and unique development of the Johns-Manville laboratories is the Transitone Movable Wall, with asbestos panels integrally colored. Nonfading pigments are blended into the asbestos fibres, thus eliminate the cost of periodic decorative treatment. The color goes all the way through each panel.

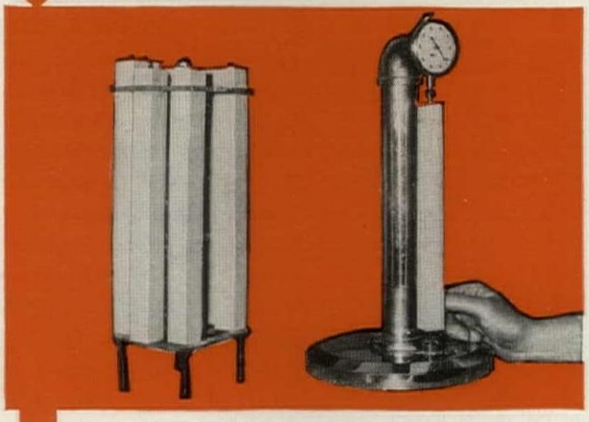
For details about J-M Movable Walls, consult your Sweet's Architectural File, or write Johns-Manville, Box 158, Dept. MB, New York 16, N. Y. In Canada, write 199 Bay Street, Toronto 1, Ontario.

JOHNS-MANVILLE JM PRODUCTS **Johns-Manville** ASBESTOS *Movable Walls*

INSTALLED NATIONALLY BY JOHNS-MANVILLE

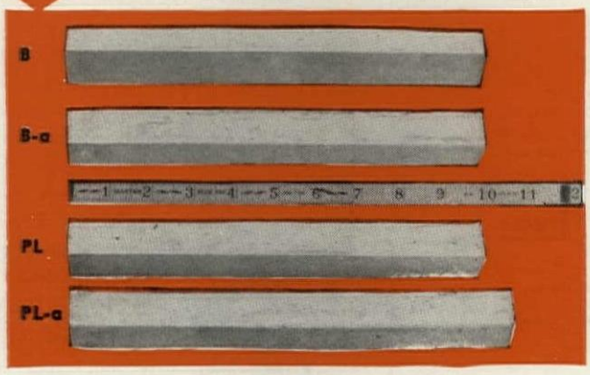


The autoclave test requires the use of a high pressure steam chest (above). Masonry cement bars approximately 1″ x 1″ x 10″ are exposed to 295 lbs. steam pressure, 420° F., for 3 hours. Measurements of the bars are made before and after test as shown below.



Below: Bars of Brixment, and of Portland cement and a lime which does not meet the autoclave test. The expansion of the Portland cement and lime bar, after autoclaving, is quite evident.

B—Brixment, not autoclaved.
B-a—Brixment, autoclaved.
PL—Cement and lime (1 to 1) not autoclaved.
PL-a—Cement and lime (1 to 1) autoclaved.



BRIXMENT MEETS AUTOCLAVE TEST!

At its meeting in June, the A.S.T.M. Sponsoring Committee on Masonry Cement recommended a new specification requirement for masonry cement — an autoclave test for soundness.

Sound mortar is essential for strong durable brickwork. To be sound, mortar must be free of constituents which may cause abnormal expansion after long exposure to weather.

Unsoundness in mortar material is readily detected by the autoclave test. This severe test rapidly accelerates the chemical reaction of mortar materials, and the slightest unsoundness is immediately revealed by excessive expansion.

Brixment more than meets the autoclave test. Therefore when Brixment is used, sound mortar and strong, durable brickwork are assured.

Louisville Cement Company, Incorporated
Louisville 2, Kentucky

LETTERS

mendous view of New York and the sky stretches—beyond his vision— within a few feet of his desk. That is a matter of personal choice.

Only Mr. Z. can provide us with an answer to these questions, and as from all accounts he is a cheerful, helpful, enthusiastic character, maybe he will oblige. Meanwhile, imagination can only boggle as the drops of envious saliva spot the photos.

What honestly baffles one about the whole project is what really goes on in Mr. Z.'s mind as in, say, six months' time, he sits dealing out ulcers from his carpeted pillbox. By now, presumably, the first excitement has worn off. The publicity has dropped from a blaze to a distant buzz. Clients are visiting the place for the second or third time and can no longer be diverted by cylindrical lifts mounting into bean-shaped bathrooms. Even the moodlighting has become a bit of a chore. "Quit going through that old moodlighting routine, Zeckendorf," I can almost hear a client snarl, "and take a good look at Clause 3 of this agreement."

Think, too, of the mental burden every day for six months of deciding exactly what mood you're in when you sit down at your desk. What, in other words, goes through Mr. Z.'s whirling mind that day six months ahead? Does he still feel proud—or faintly silly—in his "Caesar's crow's nest"? (FORUM's phrase, not mine.) What moodlight beats down relentlessly upon him through those plastic domes? Pink for pleasure? Mauve for ennui? Green for nostalgia? Scarlet for shame? (This, frankly, is what we hope.) Or perhaps just a shaft of honest, unassisted daylight casting its rays upon a desk littered, as desks should be, with office debris, and not swept clear, by the zeal of a crusading designer, of paper clips, dried-up inkwells and correspondence trays full of biscuits.

FLAMINGO VS. PROMONTORY

Sirs:

As a description of a structural method and a guide toward economy in design I found the article on Flamingo apartments (AF, July '52) both interesting and worthwhile. This type of article should appear frequently.

You refer to Flamingo's cost as $6.50 per sq. ft. cheaper than the Promontory Apartments in Chicago. Are these cost figures actual costs and what do they include? . . .

LATHROP DOUGLASS, *architect*
New York, N. Y.

▶ The comparative unit costs are actual costs reported by the builder of each building and cover total construction in each case.—Ed.

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- lower upkeep costs
- easier maintenance

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New vinyl-plastic tile flooring In low-cost standard gauge

It takes a tough flooring to stand up under constant hard knocks. That's why MATICO Aristoflex is used throughout all classrooms and corridors in the new Warren Oakes Elementary School, Framingham, Mass. This sturdy vinyl-plastic tile resists dirt, acid, alkalis, grease and fire; is quiet and resilient underfoot; can be installed on, above, or below grade because there is no felt backing. Bright Aristoflex colors play up the trend to livelier school decor . . . and the cheerful colors go clear through each tile; they can't wear off or fade.

Put your foot down on high flooring costs! Specify MATICO Aristoflex. It provides maximum efficiency for a minimum expenditure because Aristoflex is available in low-cost standard gauge (which is priced right in line with greaseproof asphalt tile) as well as ⅛" heavy-duty thickness. Aristoflex keeps on saving year after year, too, because it assures lowest maintenance costs.

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Superintendent of Schools: Mr. Richard Ankatell

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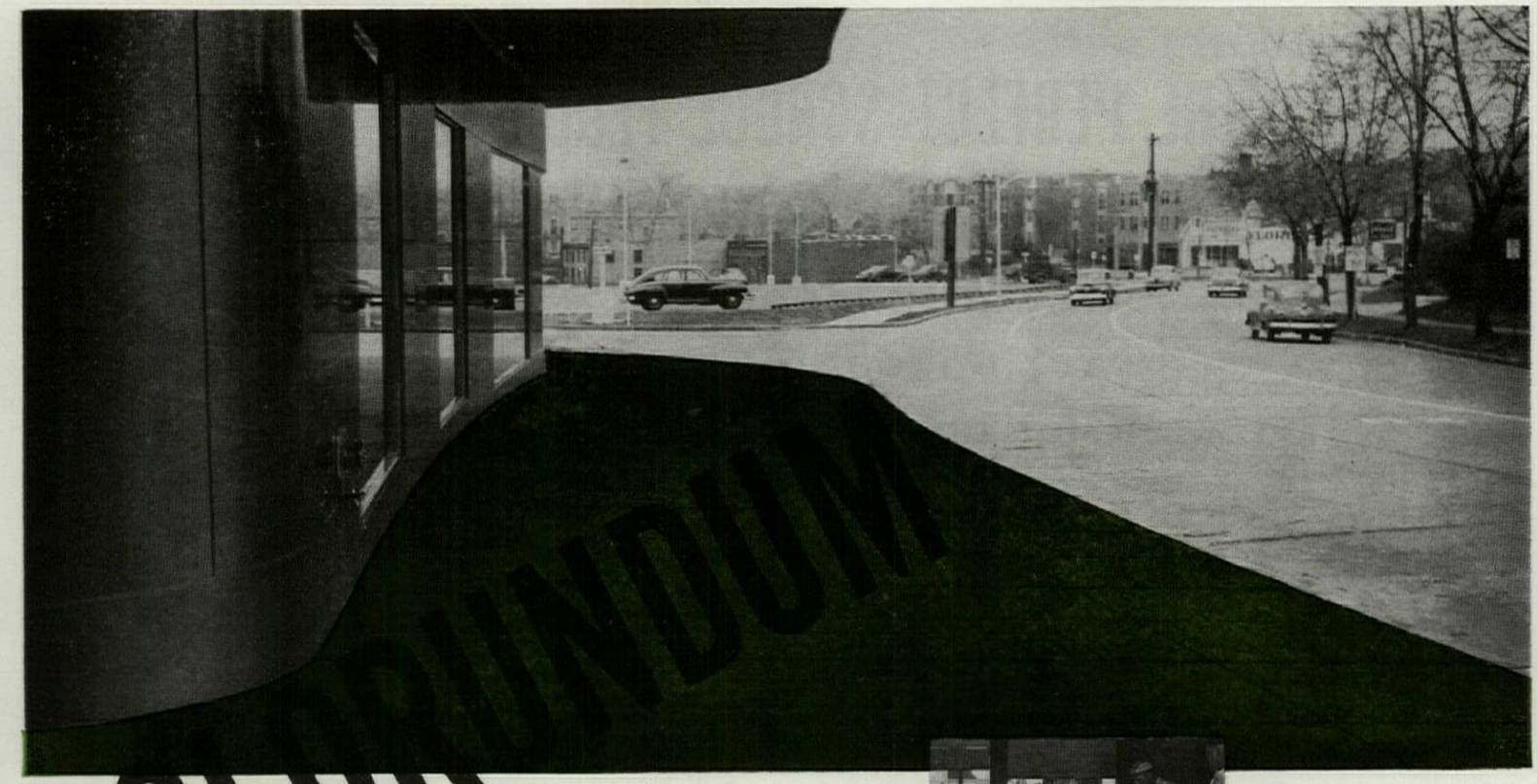


COLORUNDUM

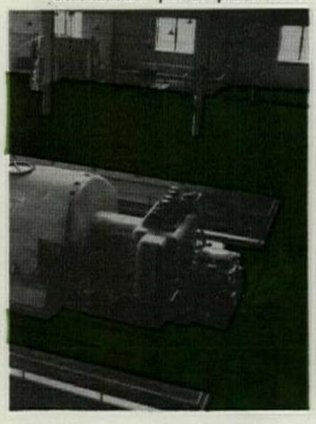
for colored concrete floors and sidewalks

use COLORUNDUM trowelled into the fresh concrete topping

Colorundum
central fire station floor

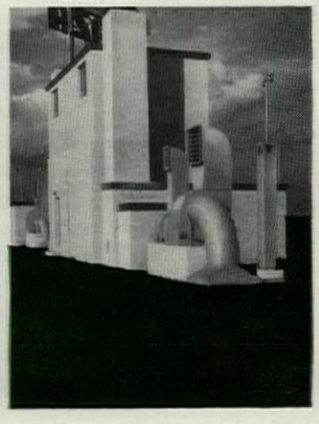
All over the nation modern building design now includes the use of Colorundum in colored concrete floors, sidewalks, roof decks, industrial and other walkways and driveways. Colorundum is used widely in exteriors or interiors . . . as a wear-resistant and colorful concrete topping of long life . . . at practically the average cost of ordinary concrete. Decorative color combinations are often employed of red, maroon, brown, green, dark green, french grey, black. Colorundum is a dry powder ready for use, composed of coloring mediums, fused aggregates, water-repellent and hardening elements. Colorundum is dusted on and floated and trowelled into the fresh concrete topping. The non-slip, non-metallic surface makes it an ideal flooring on new concrete or when replacing old concrete floors or sidewalks.

Colorundum power plant floor



Colorundum industrial floor

Colorundum hotel roof deck



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WINDOWS

BY

GENERAL BRONZE

Look at many of the outstanding architectural masterpieces of the past two decades and you'll see structures with "WINDOWS by GENERAL BRONZE."

Not surprising, then, that the architects and general contractor for the new Lever House on Park Avenue, New York City, selected General Bronze Corporation to fabricate the 1404 stainless steel windows, the spandrel frames and the architectural metalwork used throughout this distinctive new structure.

General Bronze—the world's largest fabricator of architectural aluminum and other non-ferrous metals—has been making fine windows and metalwork for prominent buildings for more than 40 years.

During these many years we have worked closely with hundreds of leading architectural firms on both large and small building projects—schools, hospitals, apartments and monumental buildings.

From this extensive experience, we have learned what features architects want in windows, spandrels, curtain walls and architectural metalwork—what kind of help architects appreciate most—what makes their job run easier and smoother.

Because of our unequalled facilities and our vast experience, we are well qualified to serve you, especially when your requirements are great, difficult or unusual. We will be glad to discuss your problems with you at any time. Our Catalogs are filed in Sweet's.

LEVER HOUSE, New York City
Architects: Skidmore, Owings & Merrill
Contractor: George A. Fuller Co.

Photo by Ezra Stoller

GENERAL BRONZE CORPORATION • GARDEN CITY, N. Y.

PERMATITE DIVISION—Custom-built Windows, Architectural Metal Work and Revolving Doors. **ALWINTITE DIVISION**—Residential Aluminum Windows.
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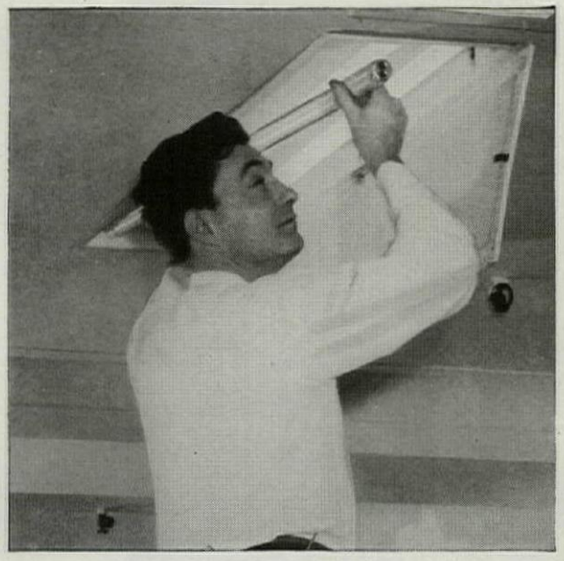
For stores, office buildings . . . Check wiring costs against the

New 277-Volt Lighting System



Standard lighting fixtures of any make are used with 277-volt lighting. Simply specify 240-280 volt ballasts. Lamps are the same.

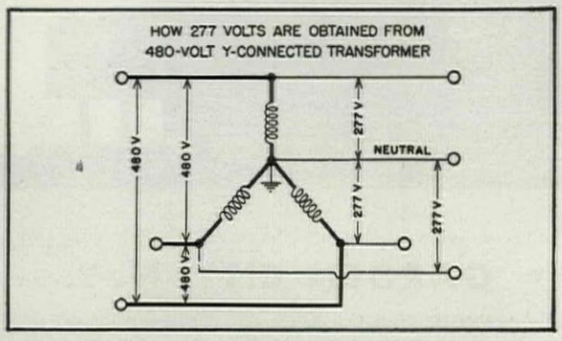
With the G-E remote-control relay and switch it is now practical to use 480Y/277-volt, 3-phase, 4-wire distribution for fluorescent lighting in stores, office buildings, and other commercial structures.

Only 24 volts are brought down below the ceiling level to wall switches. Switches and switch wiring can be moved as easily as telephone connections.

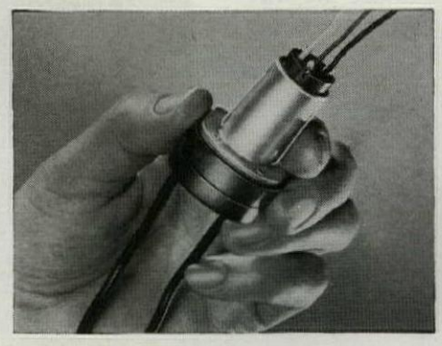
The use of this system for lighting circuits saves copper, cuts number of circuits required, and makes it possible to use the same distribution system for both lighting and power.

This 277-volt lighting system is already widely used in industrial buildings. Now G-E remote-control wiring makes this higher-voltage distribution system economically practical for new stores and office buildings, or for modernization of older ones—wherever large-scale fluorescent lighting is used.

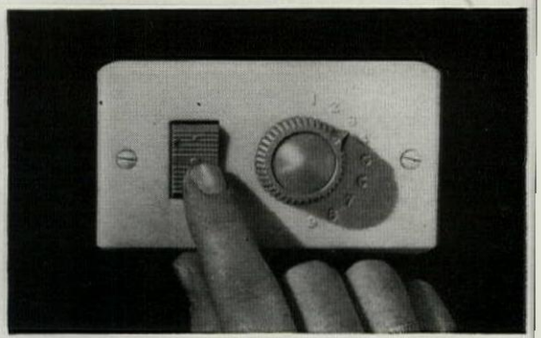
For additional information, or for a copy of the *G-E Remote-Control Manual of Layout and Installation,* get in touch with us. Address Section D15-104, Construction Materials Division, General Electric Company, Bridgeport 2, Connecticut.



With the common 480-volt, 3-phase, 4-wire distribution system, voltage between any line and ground is 277 volts. For 120-volt needs, small dry-type transformers are used.



Heart of the 277-volt lighting system is this RR-2 remote-control relay. It will switch up to 10 amperes of fluorescent load. Operates on 24 volts, mounts through ½-inch knockout of outlet box or fixture.



Individual switches are for surface mounting or flush mounting. Or you can use a master selector switch like this RMS-2 to operate up to nine relays. Control wire carries only 24 volts, less than most telephone circuits.

You can put your confidence in—

GENERAL ELECTRIC

SCHOOLS: fresh ideas and long-range criticism

Fresh ideas and informed criticism—these are the two essentials without which there can be no sound progress in school design.

Really important new school ideas are coming up so fast that no one special school issue could hold them all, and so it is fortunate FORUM is no longer forced to divide its space with houses, can now schedule another idea-packed new school for each succeeding month. For this issue we have selected:

Loft plan in schools—from California where architect John Lyon Reid and his associates have broken away from the now traditional finger plan to create a major departure in high schools—a one-story high school which uses top-lighting with glass block to achieve in one big economical rectangle all the planning flexibility of a modern loft building.

New materials in schools—from Texas where architect Don Barthelme has been exploiting a whole range of new technologies, from bar joists to marble curtain walls and plastic skylights, to create not a technological maze but a spirited and inexpensive school that can challenge the best in recent years.

Intangibles in schools—from the East where architects Perkins & Will, working for superintendent A. B. Shaw of Scarsdale, N. Y., have put together their "Sunday punch" school whose clusters of hexagonal classrooms exploit the use of architecture as an art of intangibles, and so have achieved the kind of atmosphere in which children flourish and enjoy learning.

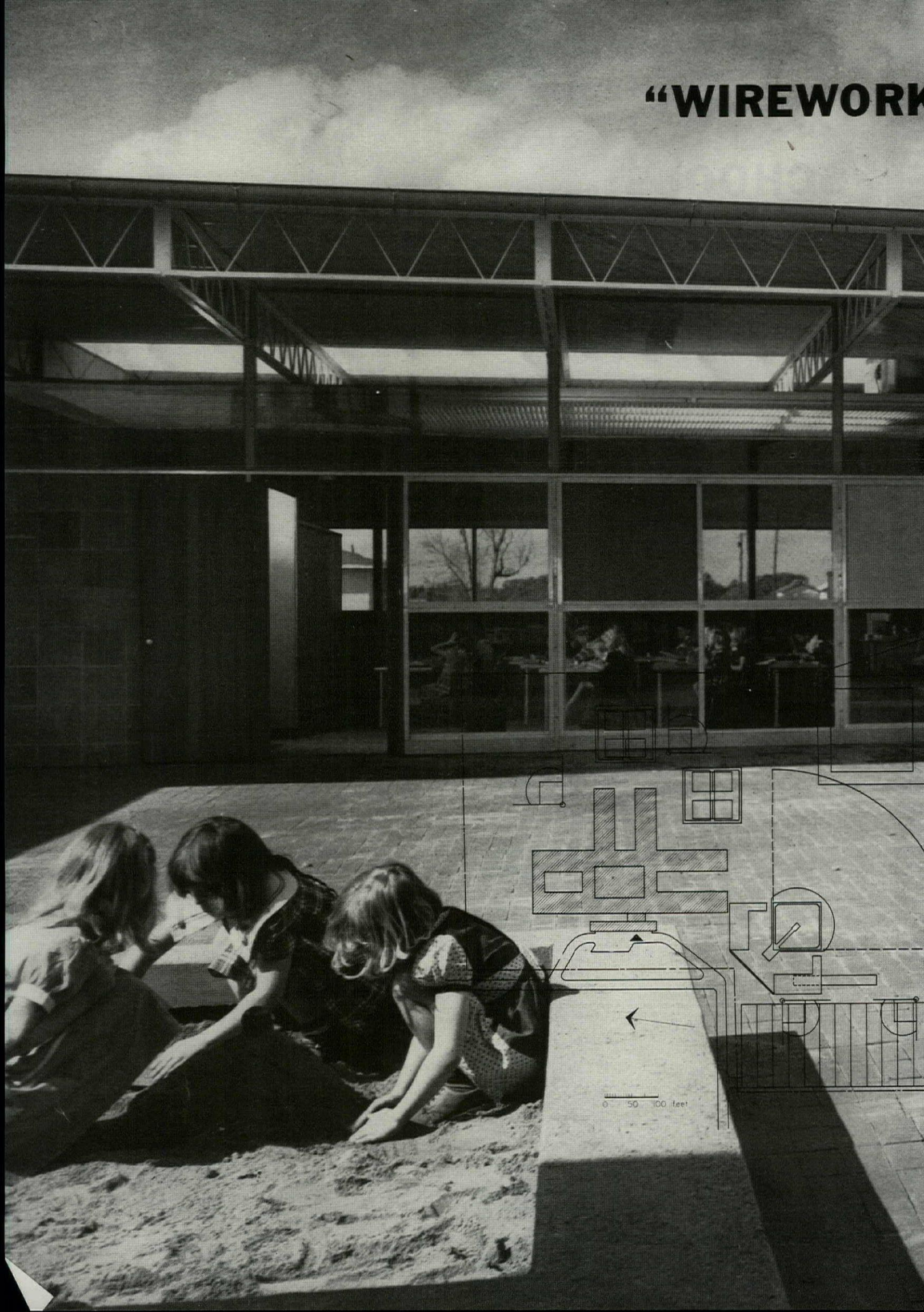
Prefabrication in schools—from England where the British have advanced far ahead in the use of prefabricated sections. Many American architects and schoolmen have been curious about this, and well they might be, for these prefabricated schools have achieved both speed and economy without sacrificing good design and with none of the shoddiness of most "temporary" construction.

School trends that include radical new ideas such as these can be appraised only against a background of long perspective, and so in this issue the comments and criticisms of our own editors are supplemented by:

1. **Perspective of distance**—provided by the comparisons between British and American schools by Antony Part, director of the School Building Program for the British Ministry of Education, who spent a full year in this country studying school construction from coast to coast and who certainly knows more about the good and bad points of American schools than any other foreigner. American schoolmen will be particularly interested in what he has to say about the much greater economy of British schools and in his caustic comments on the American school architects' obsession with sun control.

2. **Perspective of time**—made available by the rediscovery of Dwight Perkins, father of today's school architect Larry Perkins, a valiant pioneer doing school architecture 45 years ago. After hearing son Larry say time and again, "Oh, Dad tried that one back in 1910," the editors decided to turn to this laboratory of experience, even though it might deflate some of today's favored "brand new ideas."

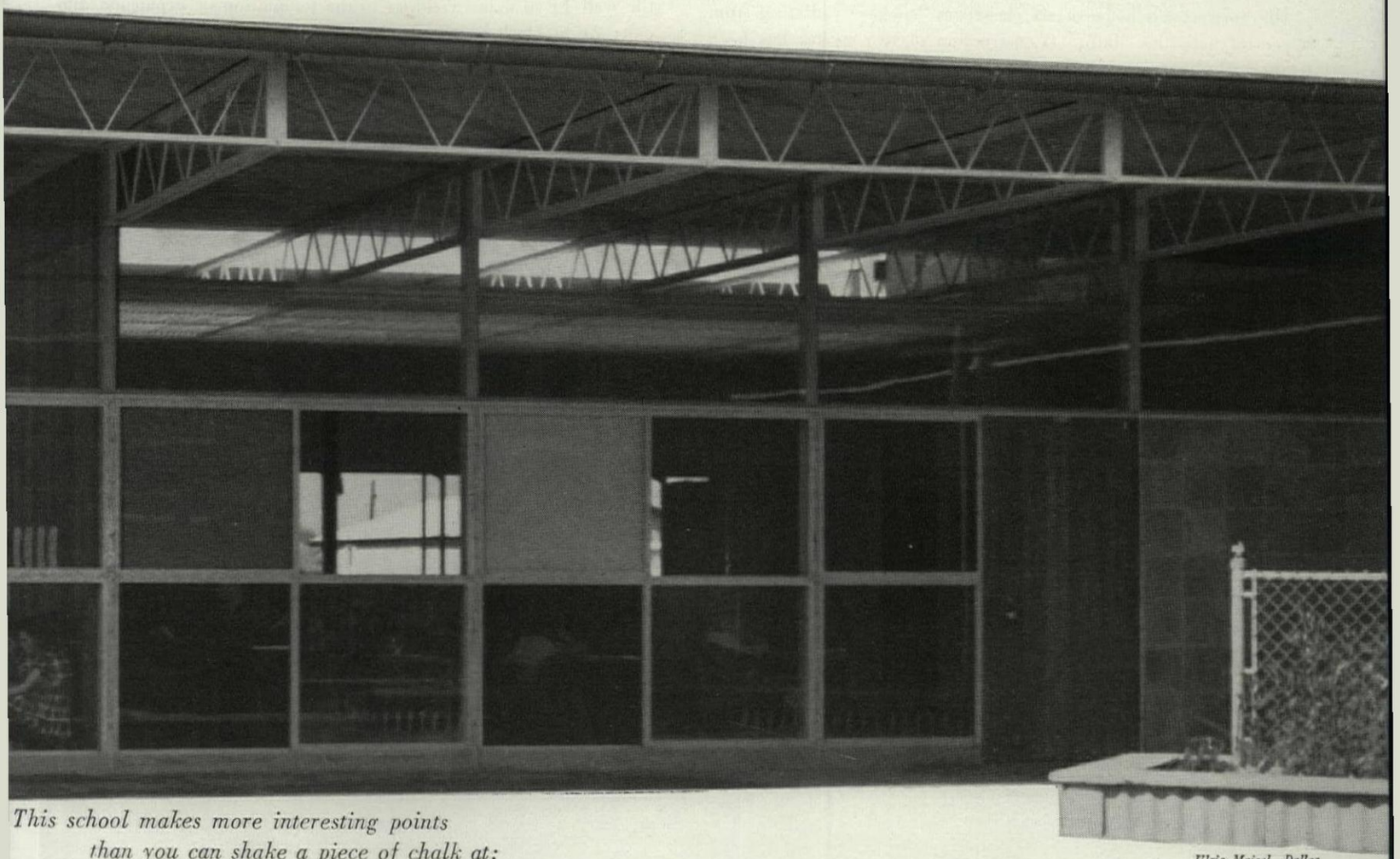
"WIREWORK



SCHOOL:

simplicity + ingenuity = low cost + high value

WEST COLUMBIA ELEMENTARY SCHOOL
LOCATION: Brazoria County, Tex.
DONALD BARTHELME & ASSOCIATES, architect
WALTER B. MOORE, structural engineer
FISHER CONSTRUCTION CO., general contractor



Ulric Meisel—Dallas

This school makes more interesting points than you can shake a piece of chalk at:

On pp. 104-5 look at its PLAN for the way it:

- *exploits courts to create little "neighborhoods";*
- *doubles the usefulness of central circulation space; and also separates age groups; provides easy expansion; reveals itself only in pieces; plays down scale.*

On pp. 106-7 look at its DESIGN for the way it:

- *gets decorative value out of simple industrial materials—open bar joists, clay tile, marble panels;*
- *achieves the fine luminosity of toplighting simply; and also integrates toplights with heating and ventilation; employs partitions as ducts.*

On pp. 108-9 look at its STRUCTURE for the way it:

- *brings the marble curtain wall to school; and also carries glass to the roof; repeats a few simple elements over and over; couples extreme lightness with long spans; windbraces with embedded tees.*

And look at its PRICE: less than $10 per sq. ft.

on a 1950-51 cost-plus-fixed-fee contract—with all mechanical services and general-use areas sized to take 18 more classrooms. *This is a 14-classroom body on a 32-classroom chassis.*

In almost every direction this school has fascinating new things to show, but the most remarkable thing of all is that architect Don Barthelme was able to provide all this for a very poor district, set among dwindling and inactive old oil fields south of Houston. Chances were against West Columbia getting much more than a bleak minimum structure to take pressure off its old school, crowded to more than twice its planned capacity. Nor was the setting any help, a drab, flat landscape pocked with cramped box houses.

All the more reason, architect Don Barthelme thought, for a building that would be "half school and half circus"—stimulating to teachers and fun for children. In the process, he created a prize winner (top award, Texas Society of Architects' 1952 exhibit, Texas State Fair).

Barthelme made a lot out of a little—esthetically; educationally and in sheer space—by practicing economy in its most fundamental sense: almost every feature of his school is made to earn its keep several times over. (For instance, light diffusers double as heat diffusers; there is hardly a foot of circulation space that does not serve for play or assembly; structure is directly decorative.) This kind of thinking can turn complicated, but Barthelme has kept it simple. For a closer look at the consistent cleverness of his double-duty economy, glance first at the plan.

THE PLAN breaks the building into three little schools

Barthelme is a liberated man—liberated from control by orientation. He is sold on toplighting, likes the way it lets him arrange classrooms however they mesh best (for his other reasons *see p. 107*) —so at West Columbia he was able to jump directly to two major problems: 1) separation of age groups; 2) an easy means for future expansion.

His answer: a scheme of six classroom "spokes" radiating from a central activities "hub." (Construction of two spokes has been temporarily postponed owing to lack of funds; *see plan.*) With additions to spokes, the school can grow gracefully to the 32 classrooms expected to be needed by 1958. And because the expansion is divided among four spokes, travel distance from classrooms to hub will not be greatly increased.

The feature that gives this scheme its real plus value, however, is the way Barthelme created little "classroom neighborhoods" around the courts that lie between each pair of spokes. Instead of orienting rooms outward into solitude, he faced them toward each other, gave them floor-to-roof glazing on the court, treated them as sheltered extensions of the courtyard, tied court and classrooms together with 11′ cantilevered overhangs. These overhangs really do four jobs: 1) form the classroom corridors; 2) shade the big glass walls; 3) provide outdoor play space for rainy weather; 4) make each yard a well-defined *place* in its own right, not simply an alleyway into the bigger playgrounds beyond.

It is possible for students in one wing to glance up at any time and see students in the opposite wing, but the 60′ distance across the court keeps this from becoming too distracting. Does the "neighborhood" idea work? Barthelme reports the only complaint has come from the teacher assigned to the library, temporarily used as a classroom. She laments that she and her students, tied to the hub instead of a court, are "out of things."

It was felt the primary court should be kept small, that instead of continuing to accommodate three grades, it should eventually serve only kindergarten and first grade. Barthelme gave it an overhang around all four sides and closed off its northern end with a tile wall 1) to make yielding to the temptation of expansion difficult; 2) to block northern winds; 3) to give the youngest group (and their teachers) the security of a closable gate. He fitted it out with tool cabinets, a pet yard and a vegetable garden. As in the upper-grades' court, walls of the planting-boxes (corrugated asbestos with concrete capping) serve for benches. Prevailing breeze is from the southeast, a circumstance turned to advantage in all parts of the present and future school, except the primary court, which is blocked to the south by the hub.

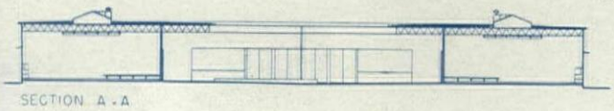
The 60′ x 75′ common room does double duty as a central hall with doors opening directly off it to all the spokes. Windows on the south open it to the breeze and a view of the upper-grades' court. At present it serves as dining and assembly rooms. Locker rooms (now useful as dressing rooms for plays) are ready for the day when a gymnasium program is developed.

The impracticality of a hub that is just too much of a hub was overcome by the "neighborhood" device, which draws a share of everyday activity out of the great hall, gives almost the same sort of decentralization as a campus plan. Lack of separate central circulation space has created no difficulties. "People just don't seem to notice that corridors are missing," says Barthelme. "Nobody comments on it."

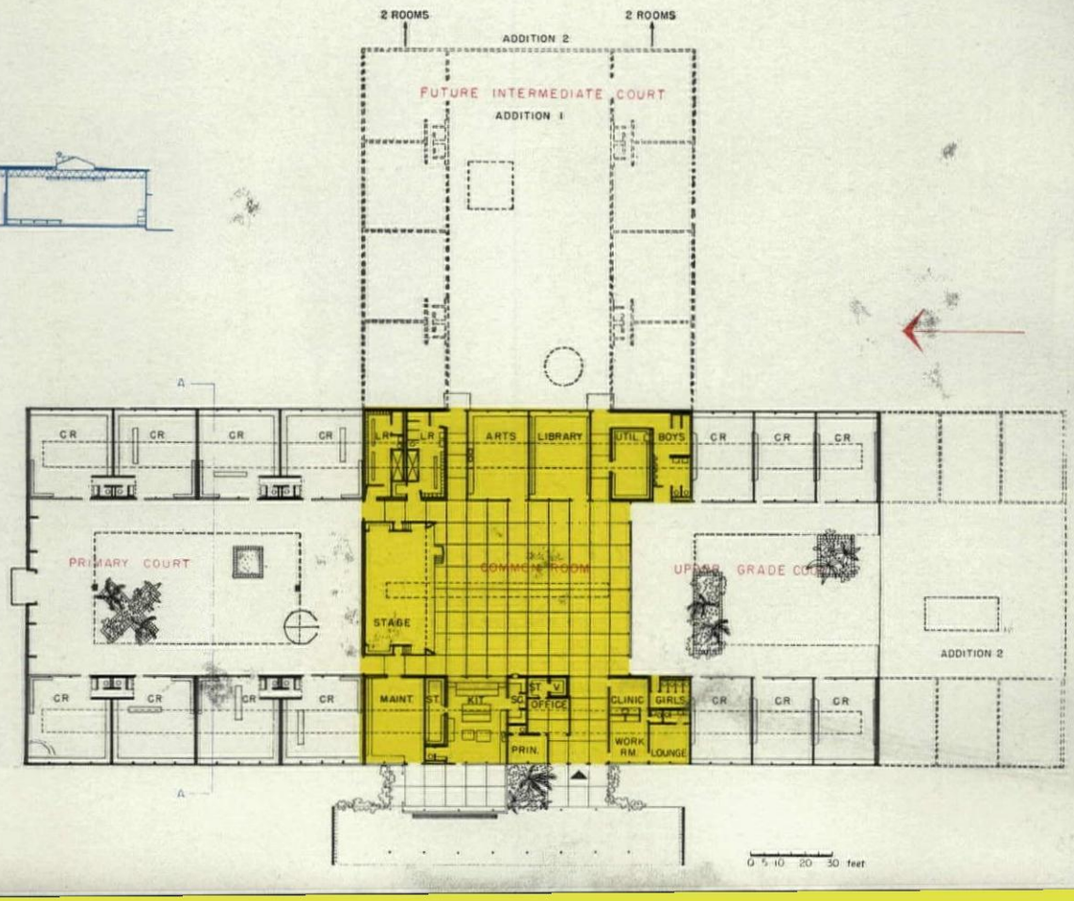
Classroom on south court. Rooms in each wing are oriented toward the court, creating a sense of "neighborhood" for each group of classes

Photos: Ulric Meisel—Dallas

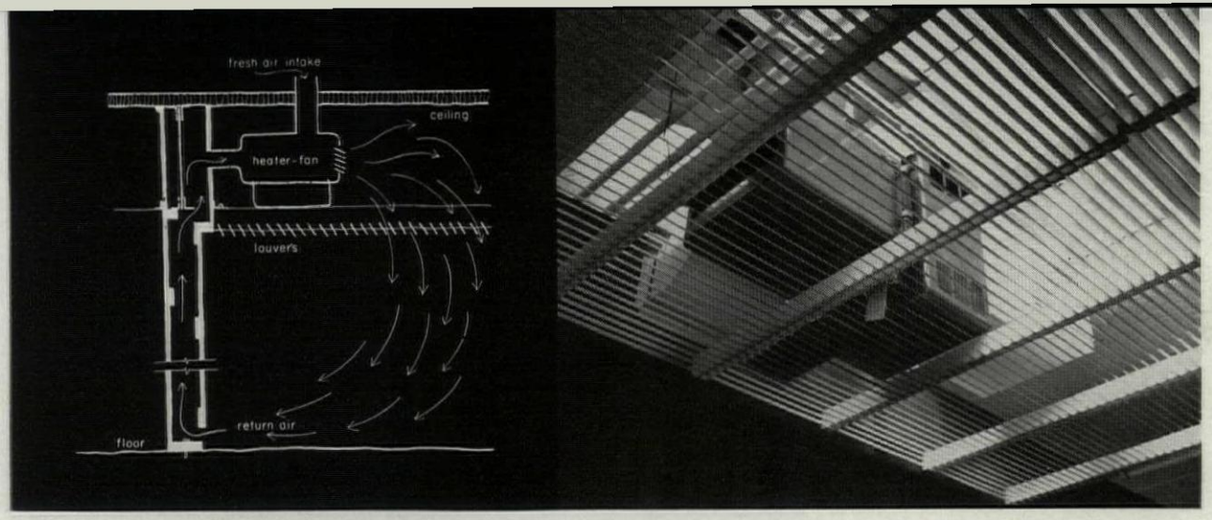
Bright sliding tackboards among windows and lacy pattern of joists contribute to charm of courts. View is toward north wall of primary court



SECTION A-A



Ulric Meisel—Dallas



Classrooms have continuous room-length strip of toplight (typical classroom view, left). Light is filtered through slanted louvers admitting only north light (see sketch at left). Ductless heating and ventilation scheme uses wall cavity for return air, louvers to diffuse warm, freshened air. Heaters are individual gas units. Solar heat is pulled off by exhaust fans in summer.

THE DESIGN gets gaiety out of utility, manages toplighting with simplicity

"As each holiday season approaches, the building takes on the aspect of a window dressers' convention [amateur]" Barthelme reports. "While the windows were not provided with that in mind, it seems a fine use for them." Obviously the children are in tune with Barthelme and his building.

On a more sophisticated plane, Barthelme also employed economical materials lightheartedly, turned structure and walls to thoroughly decorative use.

He played the airy patterns of open bar joists against glass, white marble and redwood siding; exploited the joist patterns in his court fascia; got brilliant color with orange partition tile; introduced big blocks of primary color into courts by interspersing sliding tackboards among the windows. The exposed joists require frequent repainting to combat rust. While this is a maintenance handicap, it guarantees a certain permanence of gaiety.

To counteract the regimentation of the exterior, Barthelme designed a "roller coaster" concrete loading canopy set entirely free from the building. When cost-paring time came, he first decided to relinquish this furbelow, reconsidered when the contractor assured him the cost differential between his bloops and a flat slab would be almost microscopic. The canopy was cast three forms at a time, then the forms reused.

The curtain wall above and below the vision strip on east and west facades is sand-rubbed Vermont marble (above the sliding windows marble forms both exterior and interior finished surfaces; below it is faced on the interior with siding and cabinets). Use of uninsulated marble on the west creates less of a problem for a school than for most buildings; the school day is over in midafternoon, before the western sun has done its worst.

Offhand, a marble curtain wall seems an odd choice for an economy school. Yet Barthelme chose it *first* for economy, second for its beauty, color and connotations. He was justified by a final figure of $2.25 per sq. ft. in place, less than the cost of double brick wall in this area. The trick was his method of hanging it (*see p. 108*).

Paradoxically, savings were disappointing on the partition tile, used as a masonry veneer on steel mesh and gypsum, for other exterior surfaces. A price of 7½¢ a sq. ft. for split tiles looked unbeatable. But they cost $1 a sq. ft. to lay up, compelling a switch to plaster on most interior end walls, halls and toilets.

Comparing his own sash-lighted and toplighted jobs, Barthelme thinks toplighting wins hands down for 1) efficiency—it is less affected by changing skies; 2) location—it is out of normal cone of vision; 3) quality—it is diffuse, all pervading.

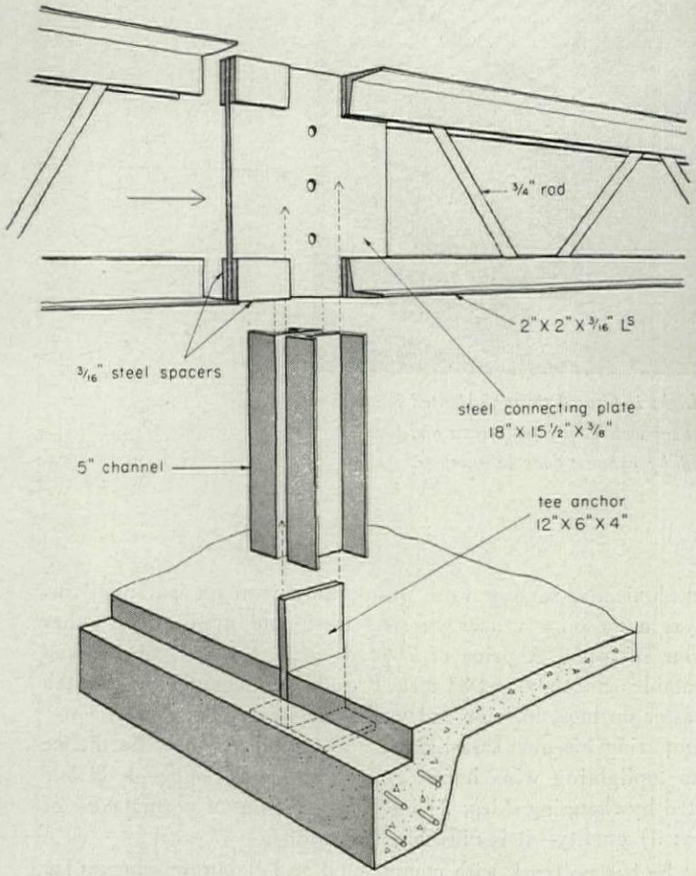
But he has no truck with complicated and elaborate schemes for reflecting and diffusing sunlight. At West Columbia he simply hung down the middle of each room a 12′-6″ wide blind with fixed wood louvers (commercially made, in panels 2′-6″ x 8′).

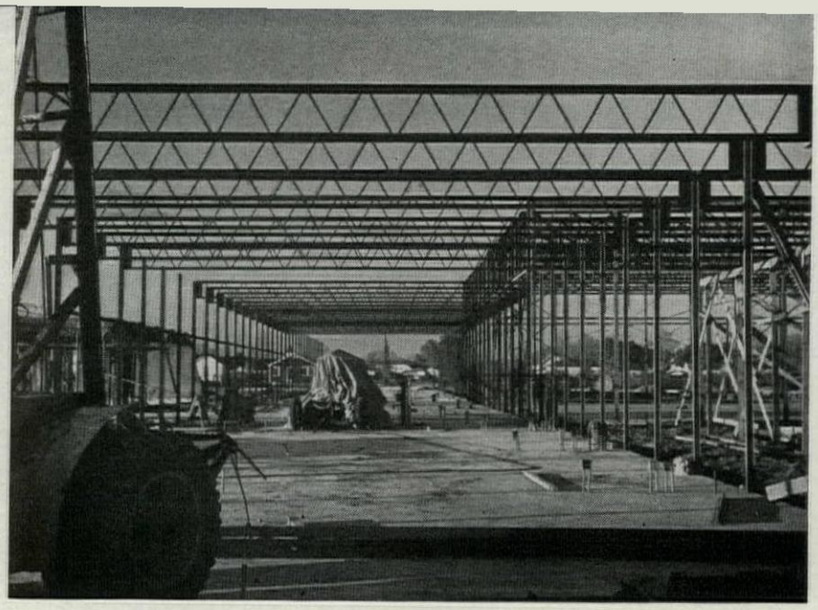
The method of sun filtering is simplicity itself. Louvers run east and west, are slanted to the north at an 87° angle *(see sketch)*, a figure determined by the maximum angle of the sun at this latitude —87° at noon June 21. Only north light gets through and it pours between the louvers unreflected. The sky itself thus serves as diffuser. *Dust or dirt on the louvers has no effect on the quality of light;* they could be painted black and the only difference would be a somewhat greater contrast between skylight and ceiling behind the louvers. Blinds are hung from bar joists with conduit clamps at a height of 10′-6″, well out of the normal cone of a child's vision. Teachers and school officials are delighted with the results, comment that the transition from outdoor to indoor light is hardly noticeable.

Barthelme used the chambers above the louvers for heaters, made walls double as ducts and louvers as heat diffusers. Here is how: Cross partitions of vertical siding on wood studs are open at the base; where studs meet bar joists, the partition cavity is widened to permit lateral flow of air inside *(see detail)*. Thus return air is drawn across the floor and up between studs, then sucked into an individual gas heater equipped also with fresh-air intake. Warmed, freshened air discharges through the louvers.

In hot weather an exhaust fan pulls off skylight heat; in winter the heat built up below the skylight is an asset. Barthelme reports the building heats well in spite of its large glass and marble areas, but points out the lowest temperatures have been in the thirties.

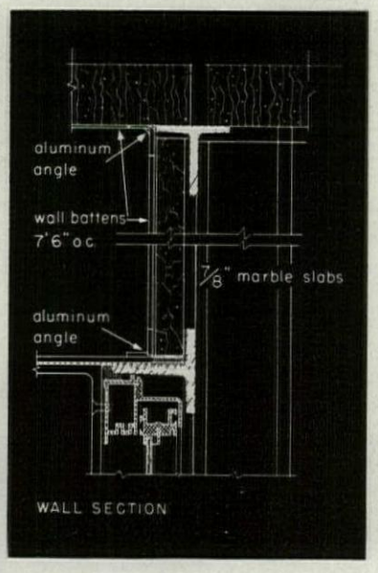
Playful "roller coaster" concrete canopy offsets regimented facade. End slopes of 45°—too steep to climb—shelter bicycle racks

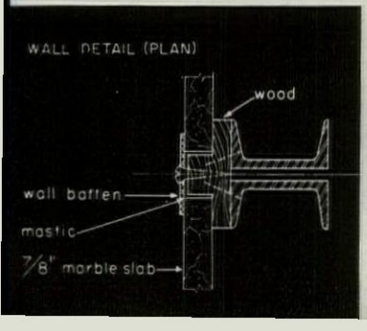




Entire building adheres to 7'-6" grid with heavier struts and bar joists used in high central area. Only three I beams are used: one in center of each east-west overhang. Upper wall of commons room (right) is tile outside, roofing panels inside.

Curtain wall of unbacked marble is one of school's most ingenious features. Slabs are held between steel tees and angles, wood studs and bars. They went up without a hitch.





THE STRUCTURE is light, modular, ingenious in detail

Biggest single factor in the school's economy is its absolutely regular grid. A combination of channel struts and bar joists, set 7'-6" on centers, is repeated 168 times without deviation. Columns for the high-roofed central area are formed of two 5" struts, back to back; in low-roofed areas two 3" struts are used. The joists support steel tee bars, which in turn carry a 2" thick insulating and sound-absorbing decking (wood fiber with cement binder), topped by lightweight concrete.

"The steel was so light, it looked as if it didn't have gumption enough to hold itself together," says Barthelme. To give it the gumption to withstand Texas winds, he semicantilevered struts by slipping them over 12" deep tees embedded in a reinforced concrete beam.

To cantilever bar joists over the courts, and at the same time carry glass past the joists, full to the roof, a special connecting plate only 3/8" thick was worked out *(shown in detail)*. Upper portions of the court walls are fixed glass. In the lower portion, each pair of sliding sash (or sliding tackboard) fits between a pair of struts.

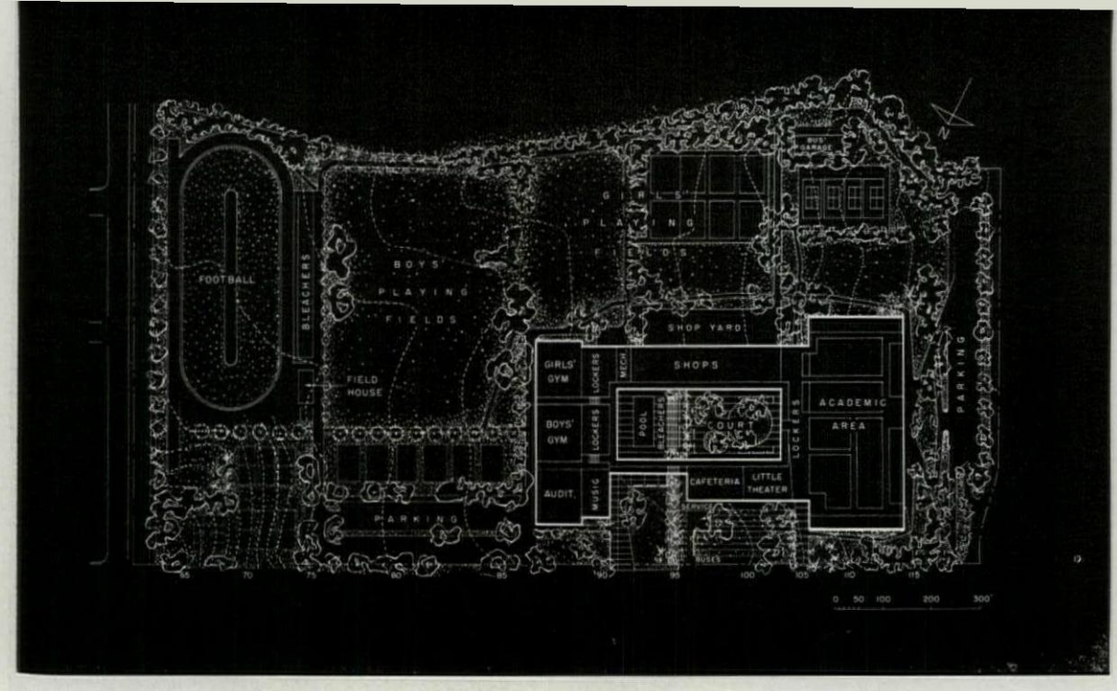
The thoroughgoing simplicity with which the structure was thought out is demonstrated in the marble curtain walls above and below the exterior vision strip. The 600 lb., 7/8" thick marble slabs "slipped in like a deck of cards," says Barthelme. To understand why, *see detail*. Vertical edges of the slabs fit against notched wood studs screwed to columns; joints are covered by an aluminum bar screwed to the stud. Top and bottom, the slabs are held between steel tees and aluminum angles, with the bottom edge of the lower slab laid in cement.

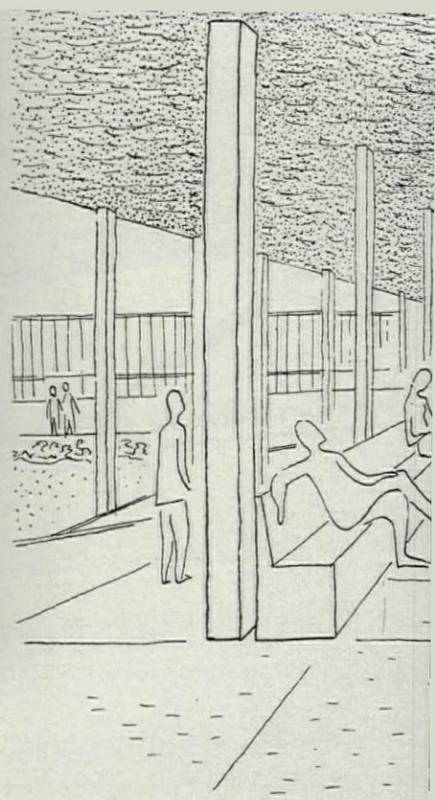
COST DATA:

Total (excl. architect's fee of $18,000)	$299,392.00
Per sq. ft.	9.98
Per classroom	21,385.00
Per pupil	713.00

Figured at the customary 1/2 for paved and roofed areas, 1/10 for paved areas. All unit costs are based on cost of entire building.

Ulric Meisel—Dallas





FLEXIBLE HIGH SCHOOL

uses factory construction plus some new tricks of its own

for easy adaptation to changing programs and enrollment

Look first at the floor plan of this school's classroom area, for there is nothing like it in any US school. The only fixed features in the whole layout are the toilets, the columns and the floor and roof slabs. The area is a perpetual clean slate. It can be entirely remodeled by the school's regular maintenance crew during summer vacation; whole departments can be modified during Easter week. Even though original construction cost of the floor as it stands runs about the same as wing schools in the same area, this is an economy school. The real savings—in convenience, fullest use of equipment, alteration and expansion costs—will pile up over the years.

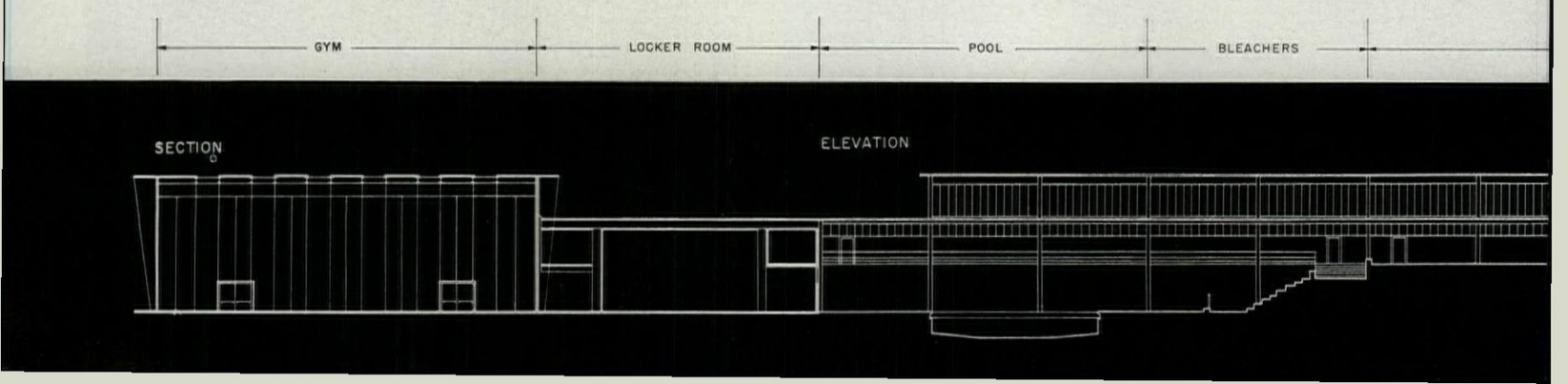
Here are the elements that make this school so flexible:

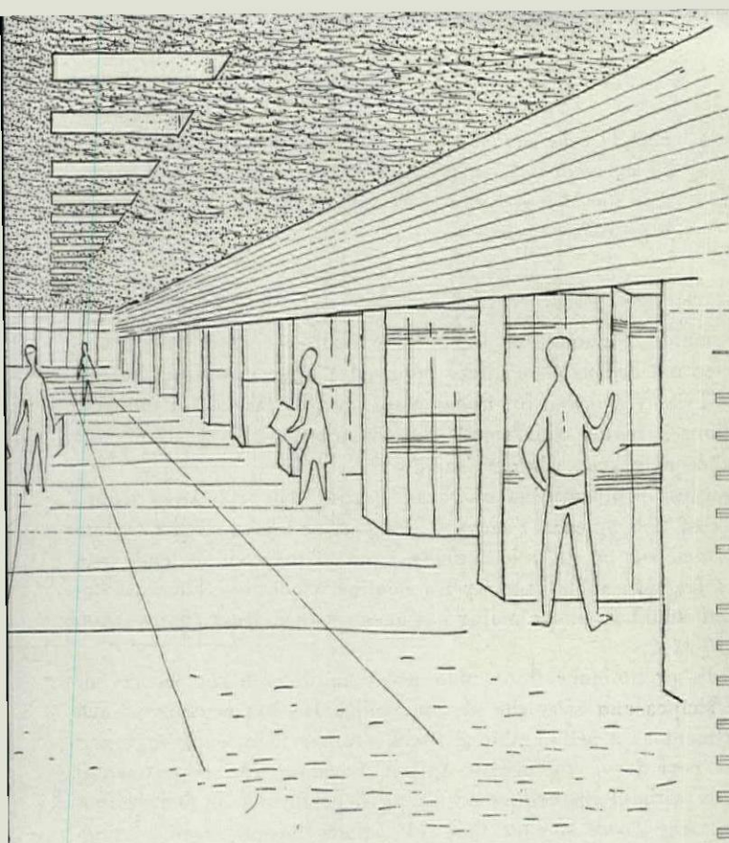
- A big-volume short-perimeter space made up of regular bays that do not change at corridors;
- Movable interior partitions (cement asbestos board on steel studs and metal office partitions, both with 1-hr. fire rating);
- Movable exterior walls (factory construction panels of fixed sash and steel);
- An overhead heating-ventilating-lighting unit that repeats itself in every 14′ square (four of the units to a 28′ bay);
- Standardized, movable cabinet and shelf units, chalkboard and tackboard panels screwed to partitions.

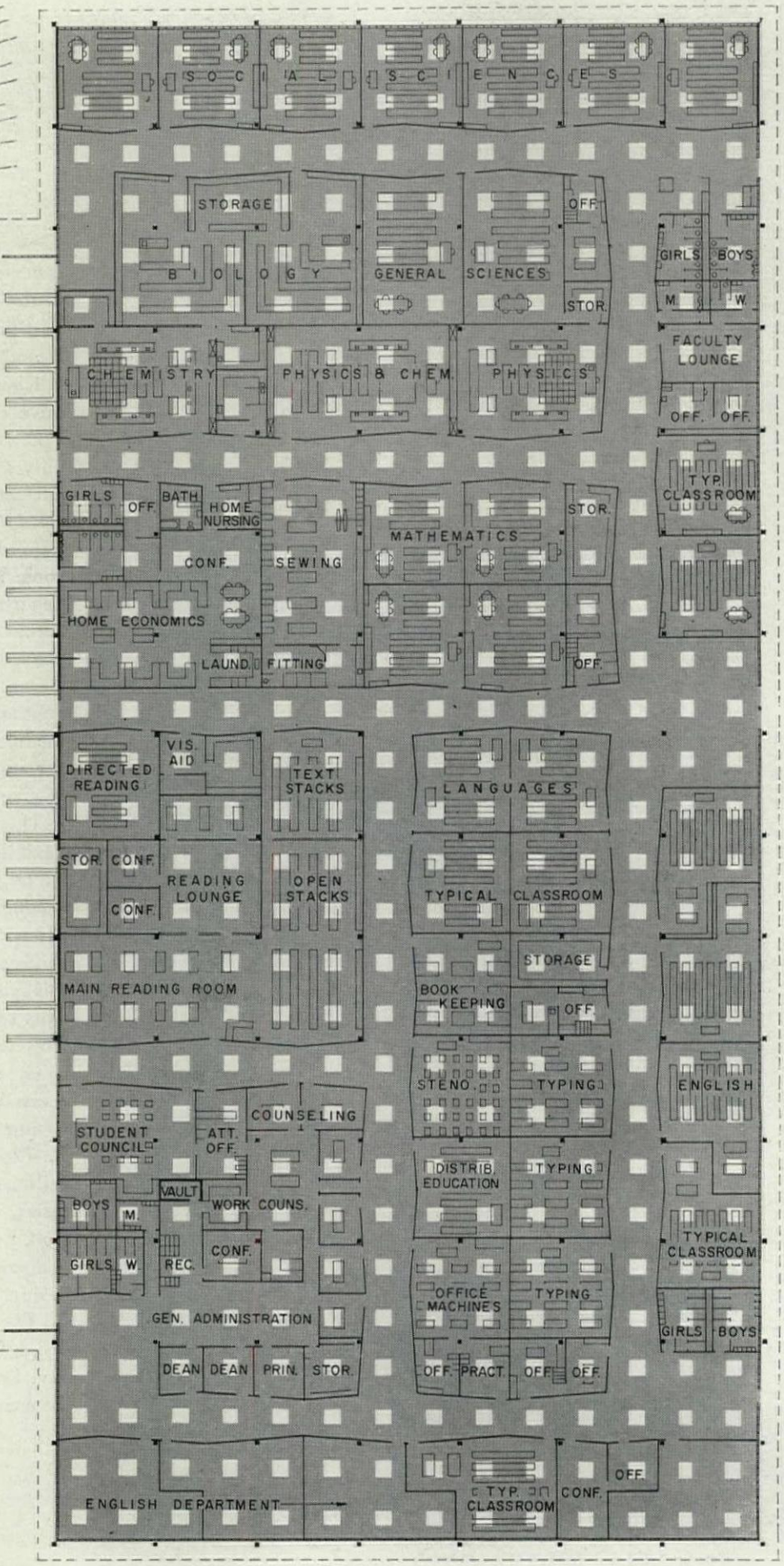
At first sight, the volume of windowless interior space is a shocker—although it was forecast by the FORUM school (Oct. issue '49) and confirms FORUM's hunch that school architects have been mulling over the nice fat spaces of factories.

The architects used several devices to minimize the closed-in feeling that might result from such a building:

- toplighting and plenty of it. They plan to use a directional glass block, laid to exclude south light, accept north;
- generous fixed windows in every perimeter room;
- a school program that insures no student will spend more than 30% of his school day in interior classrooms (most will spend less);
- a corridor arrangement that gives glimpses of the outdoors at almost every turn.





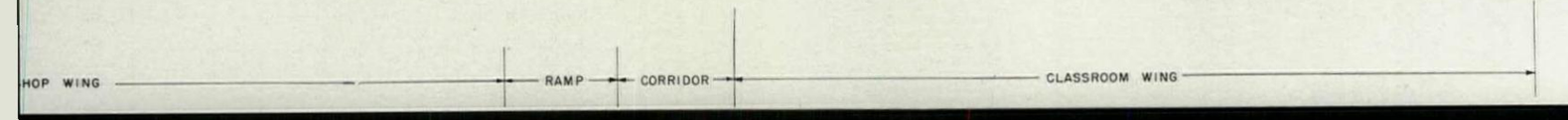


HILLSDALE HIGH SCHOOL
LOCATION: San Mateo, Calif.
JOHN LYON REID, architect

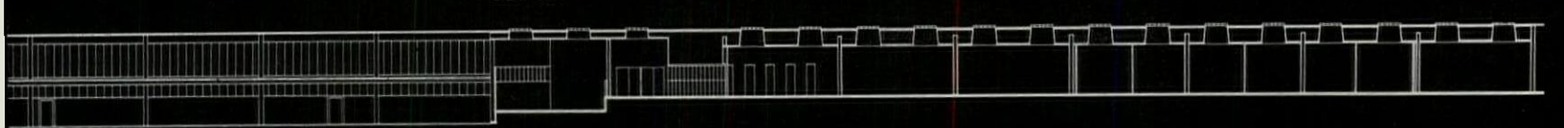
Burton L. Rockwell, project captain, assisted by John Cutler, Dennis F. J. Beatty, Dewayne Hodgdon.

G. M. RICHARDS, mechanical engineer
CHARLES A. VON BERGEN, electrical engineer
THEODORE KUSS, consulting engineer
DARIEL FITZROY, acoustics consultant
R. A. BOYD, lighting consultant
ECKBO, ROYSTON & WILLIAMS, landscape architects
JAMES MACCONNELL and WILLIAM ODELL, educational consultants
THOMAS F. REYNOLDS, schools superintendent

All indoor and outdoor partitions of academic area are movable. Rooms and corridors can be shifted at will. Site plan provides for expansion of academic block to the southeast. Integration of varying ceiling heights with ground slope is shown in longitudinal section below.



SECTION



Each 14′ square of the academic area has its own toplighting, heating and ventilating unit, independently controlled. Auxiliary heating units line slab perimeter below fixed exterior windows. Rendering shows library reading room.

Construction economy of big-volume short-perimeter space was canceled out because fire safety required a Type I building instead of the Type V allowed for finger plans, and initial cost of movable partitions is higher than wood stud construction. Fireproofed steel was chosen to keep columns small.

Knottiest problem was overhead heating (floor heaters would have cost $50 apiece to move). The forced tempered air system *(see isometric, p. 113)* is actually sized to the cooling load, uses only a fraction of its capacity for heating. Cool air is drawn from covered chambers above major passages between areas *(see section, pp. 110-11)*.

Reid's preliminary floor plan gives an idea of the variety of room shapes and sizes the system yields. He has organized each department as a self-contained block (rather than leapfrogging it across corridors) to permit fullest freedom for departmental changes without disturbing adjoining departments or main circulation. Any room smaller than 14′ square has to share heating-ventilating controls with a neighbor. However, fractions of a module between two toplights *(see isometric)* can be nicely used for storage. Corridor walls are curved to break up reverberations, to give visual relief and to accommodate knots of conversationalists.

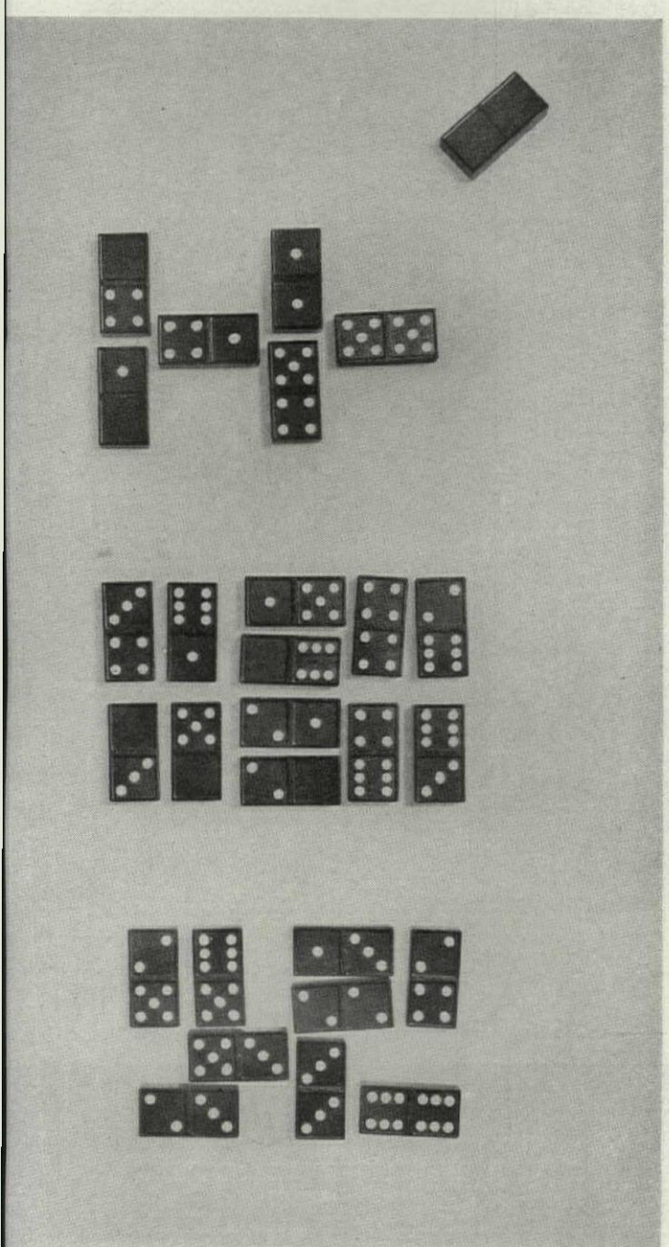
This school has much more to commend it than its revolutionary flexibility. Especially good points:

1. *Organization of the over-all scheme to make best use of a gradually sloping site.* Note how gymnasiums and auditorium are placed on the lowest part of the site; cafeteria, little theater and shops at the intermediate level and classrooms at top. Visually this yields a long level-topped block with a stepped-down foot. This sort of patness can easily become forced, but here the architects sensibly lowered the roofline of the corridor between music room and cafeteria. Most difficult problem, nicely solved, was accessibility of athletic lockers from the wind-protected pool, gymnasiums and playing fields.

2. *Treatment of the court and its borders:* for instance, a low-ceilinged "committee meeting" area on the court side of the cafeteria; sandwich bar opening directly off the court; use of the bank between intermediate and low levels for pool bleachers. Court and sandwich bar can be open to spectators of auditorium or gymnasium events, with the school proper closed off.

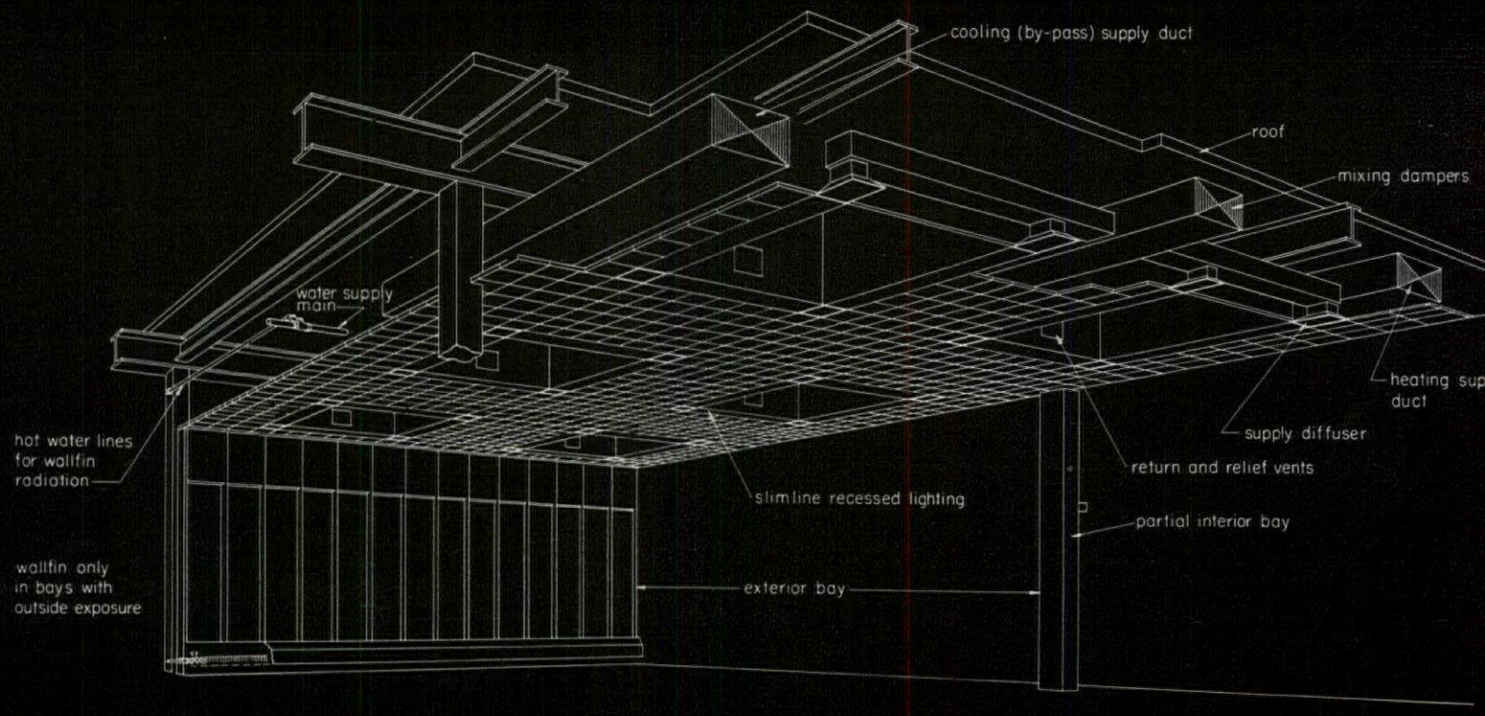
3. *The academic-area locker room.* The architects have made a delightful shaded porch out of this usually grim, utilitarian necessity. Ends of the porch are protected from wind but it is open on the court side. *(See rendering, pp. 110-11.)*

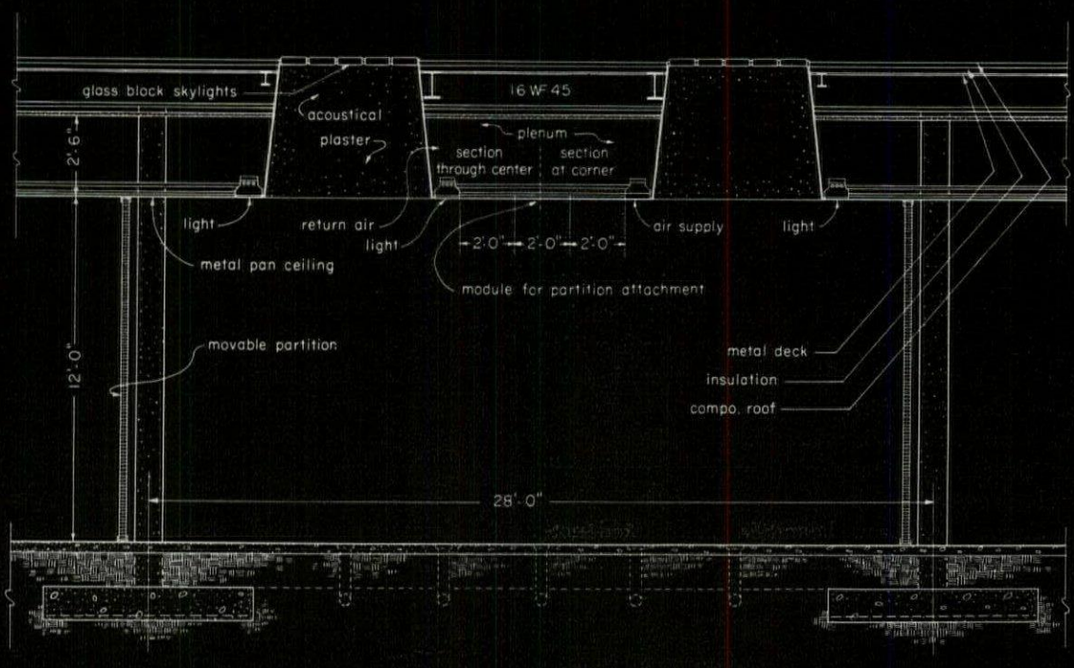
Top: Familiar finger plan adds classrooms like dominoes. Center: Reid's scheme adds space in chunks, arranges the dominoes within it. Bottom: Should the interior spaces of Reid's scheme prove oppressive, walls can be pulled out, courts let in.



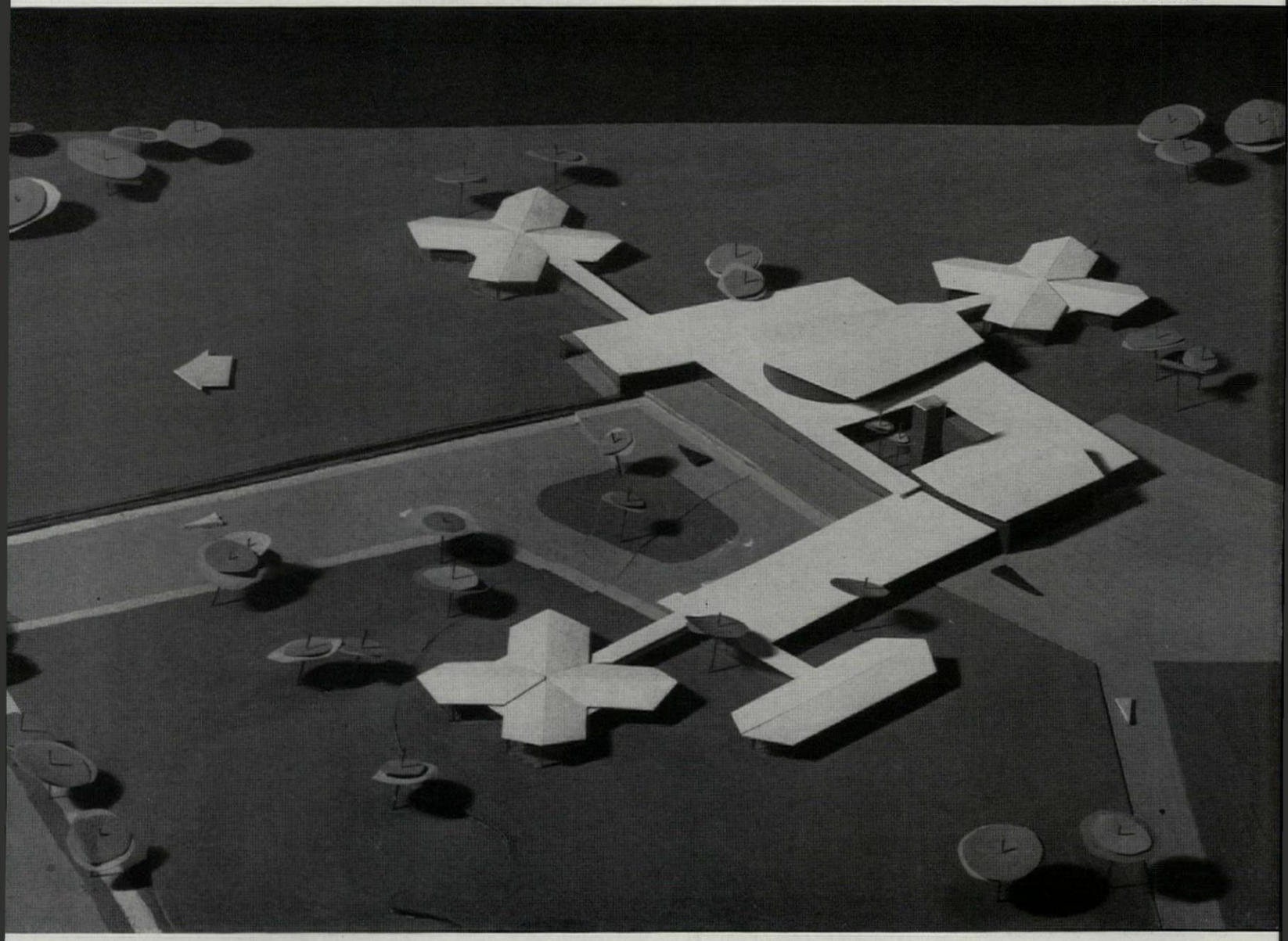
Cost estimate:

Total	$3,329,194.00
Per sq. ft.	
academic area	16.34
shops	12.93
cafeteria, little theater	14.08
gymnasium	14.99
music department	18.20
auditorium	20.38
average	15.58
Per classroom, approx.	66,500.00
Per pupil	1,900.00


cooling (by-pass) supply duct
roof
mixing dampers
water supply main
heating sup duct
hot water lines for wallfin radiation
supply diffuser
return and relief vents
slimline recessed lighting
partial interior bay
wallfin only in bays with outside exposure
exterior bay


glass block skylights
16 WF 45
acoustical plaster
plenum
section through center
section at corner
2'-6"
light
return air
light
air supply
light
2'-0"
2'-0"
2'-0"
metal pan ceiling
module for partition attachment
movable partition
metal deck
insulation
compo. roof
12'-0"
28'-0"

Edward K. Everard



L-shaped central body crouches along ridge; classroom clusters are at ends of gently sloping "stems"

ORGANIC SCHOOL:

humanist approach yields bold new ideas for classrooms and auditorium

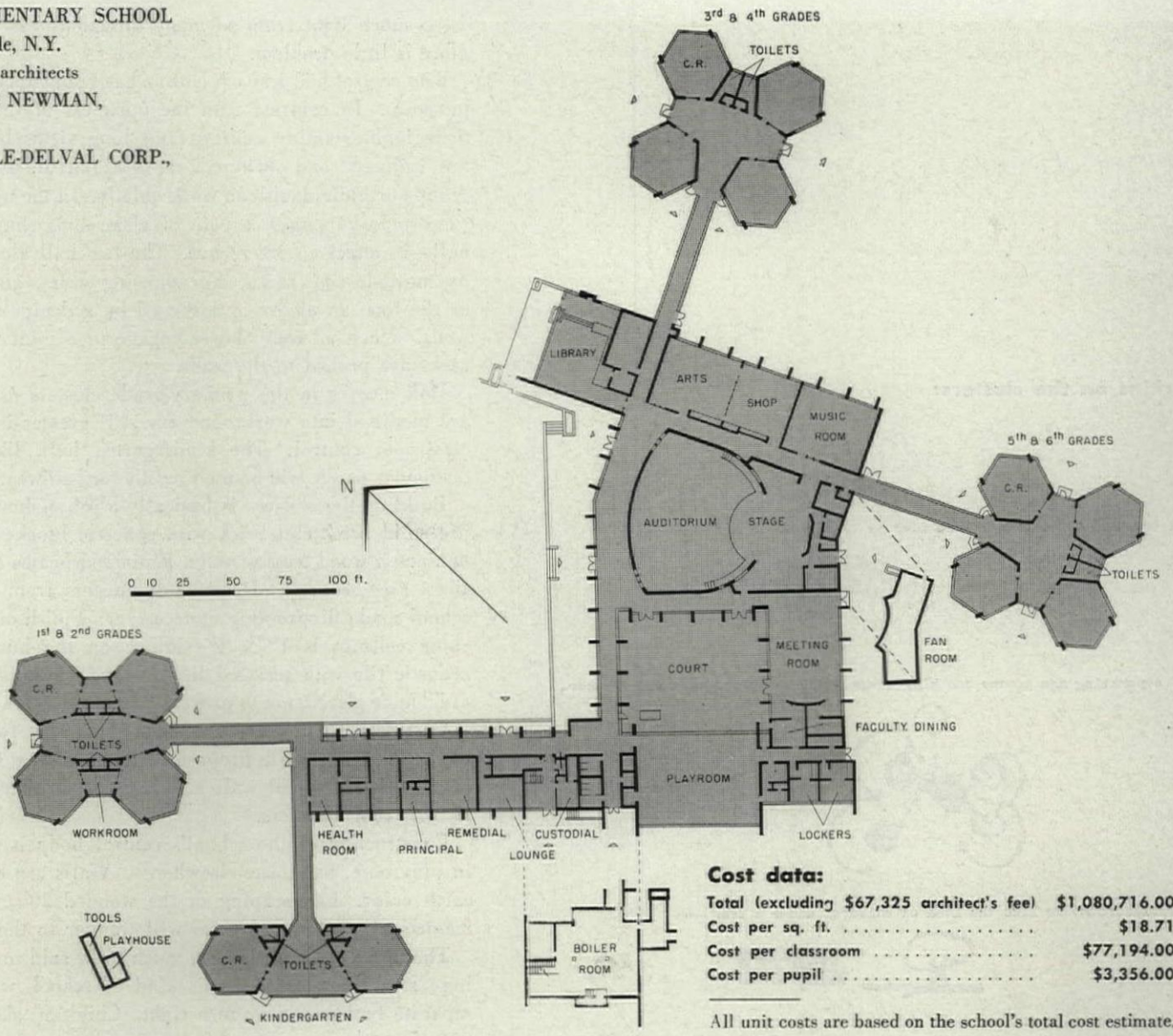
This 14-classroom elementary school now abuilding in one of New York's plushest suburbs is a significant school, because it digs into the fundamental question of atmosphere. Architect Larry Perkins and partner Phil Will have concentrated on (Perkins speaking): "the in'ards of the child. We are working here with the subjective qualities of space." Attainment of this atmosphere plus provision of an outsize collection of special facilities put this school in the premium class *(see cost data, opposite)*.

Let those who would shrug this off as luxury stuff be reminded that 12 years ago the same architects built another expensive school for another plush, progressive suburb—the Crow Island School in Winnetka (AF, Aug. '41). Crow Island is remembered not for brightness ratios or structure but as a charming place for the exciting business of learning. And whether by influence or forecast, Crow Island ideas are reflected in many a modest school today.

Heathcote goes further than Crow Island. It represents a rebellion against "the current concentration on how to pour air over a child, throw light on his book, fit his contours to the seats. This building is not an exercise in lighting and ventilation," says Perkins. Educators may see its point faster than architects.

The school was designed, above everything else, to be a place that children would love. A child's eye perspective was adopted by the architects and Scarsdale's creative schools superintendent Archibald B. Shaw. ("It's hard to tell where our ideas began or Shaw's ended; we built on each other.") This perspective shows everywhere: in the library-story alcove, in the closed court with grass stage and plant-screened nooks, in the kneeling seats overlooking the turnaround. But the features richest in architectural ideas and educational implications are the flowerlike clusters of classrooms and the deep-staged, boldly curving auditorium.

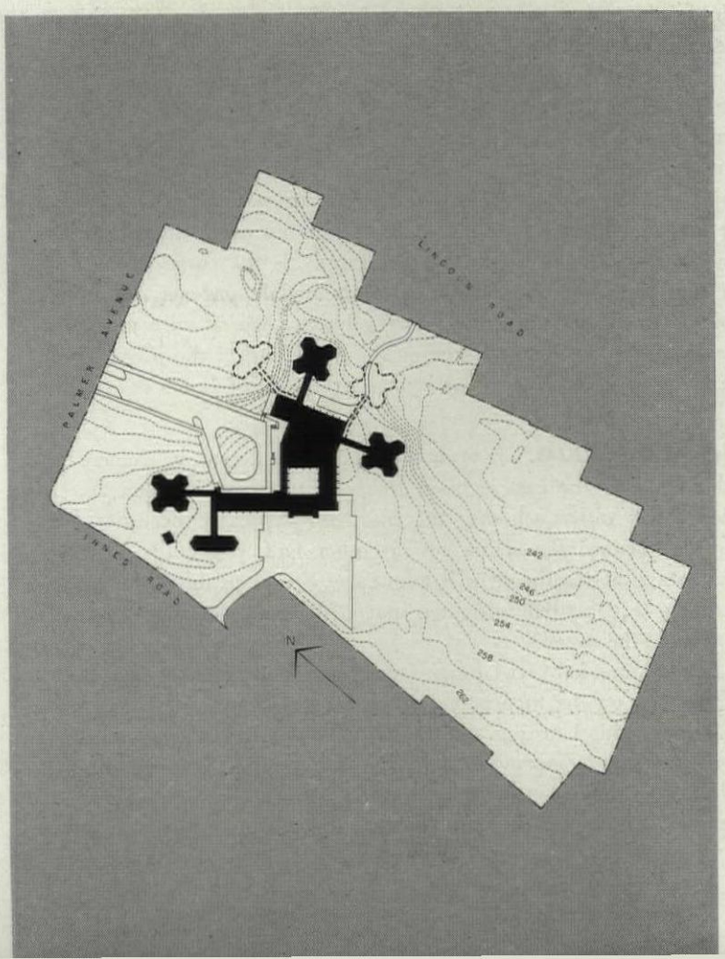
HEATHCOTE ELEMENTARY SCHOOL
LOCATION: Scarsdale, N.Y.
PERKINS & WILL, architects
BOLT, BERANEK & NEWMAN,
acoustics consultants
ARTHUR D. STOLLE-DELVAL CORP.,
general contractor



Cost data:

Total (excluding $67,325 architect's fee)	$1,080,716.00
Cost per sq. ft.	$18.71
Cost per classroom	$77,194.00
Cost per pupil	$3,356.00

All unit costs are based on the school's total cost estimate.



THE CLUSTERS hark back to the commonest kind of town school a generation ago—the box of four classrooms, one to a corner. And the scheme wins back the intimacy of the "school family" which those small, tightly knit schools often had.

But there the resemblance ends; the differences imply a whole history of changing educational theory.

First for the shape of the classrooms: the hexagon came out of a search for a room that would improve on the flexibility and activity space of the square (just as the square improves on the oblong). The architects used trial and error with full-sized rooms drawn in chalk on a gym floor. A circle proved more sterile than the square; an octagon was confusing; a pentagon seemed to work pretty well; but the hexagon, like the little bear's porridge, was just right. (The Yale Clinic of Child Development has meantime made solemn observations on how six nooks with 60° angles break up a group of children enough but not too much.)

Now for the way the hexagons are put together: each room faces outward, like an island in the foliage, to become almost part of the outdoors. Natural light streams in through four walls (chalkboard and tackboard are carried on two interior walls).

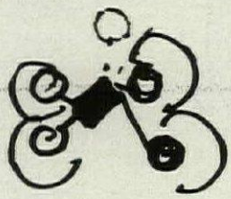
All rooms get direct sunlight sometime during the day. This is heresy in the eyes of illuminating engineers but it reflects a question in many minds today: Should the germicidal and psychological value of sunshine be thrown away? Perkins & Will say no.

Sun control is outside the classrooms: 6′ overhangs, evergreens shading the eastern exposures during the long school mornings, deciduous trees the western during short school afternoons. There

Perkins on the clusters:

"We began with the Crow Island idea --

"Of separating age groups and play areas. But we pulled them out farther.

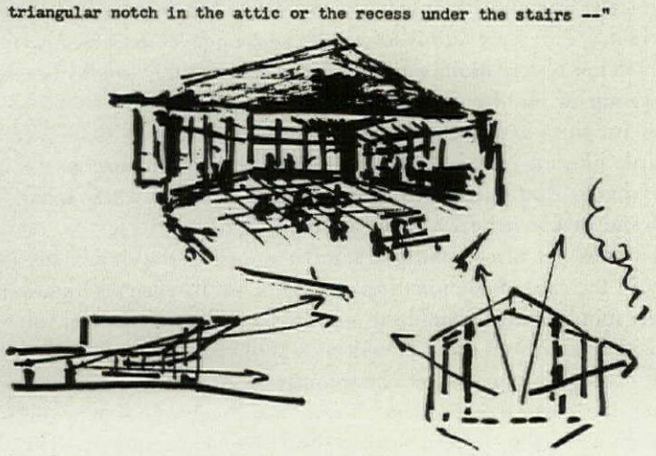


"For classrooms we like the idea of children under a tree --

"Cluster four of these 'tree rooms' together --

"That's just about what we did --

"Inside of the cluster is a secret place, cozy, a cave.
As you walk into the classrooms the space opens up, farther and farther.
I think -- I hope -- it's exciting.
The classroom is the most-of-the-time space -- the big outdoors.
The cave is the kind of place you probably found as a child if you think back --
the triangular notch in the attic or the recess under the stairs --"



is so much light from so many directions (as under a tree) that glare is little problem.

The central hall in each cluster has both practical and emotional purposes. In contrast with the openness of the classrooms, with their high, slanting ceilings and long vistas beyond, the hall is low ceilinged and sheltered. It is a retreat, a place where small groups or individuals can work quietly. In the upper-grade clusters *(see opposite page)* a pair of classrooms shares an end of the hall—in effect an 18′ alcove. The two hall alcoves are separated by movable coat racks. For showing slides, giving puppet shows or the like, an alcove is darkened by a denim curtain at its outer walls. When all four classes engage in a joint wingding, the coat racks are pushed to the walls.

Hall alcoves in the primary-grade clusters *(see full floor plan)* are modified into workrooms for still greater intimacy and closer classroom control. The kindergarten hall, like a big enclosed triangular porch, will be used mostly for bad-weather play.

Building the clusters is basically a job of housebuilding. Walls are solid brick and brick with concrete block; roof members are laminated wood trusses set on laminated beams supported by brick piers *(see section)*. Distance of clusters from main body of the school made fireproofing unnecessary. Finish on the slanted classroom ceilings is 1″ x 4″ siding; on the hung central ceiling, acoustic tile with recessed lights. Low windows in the classrooms are double glazed, not to prevent heat loss but for comfort.

Corridors to clusters are gradual ramps, following the slope of the land. They are fireproofed with asbestos siding and gypsum roofs. Mullions and wall members are steel tees bent at the top to form roof members.

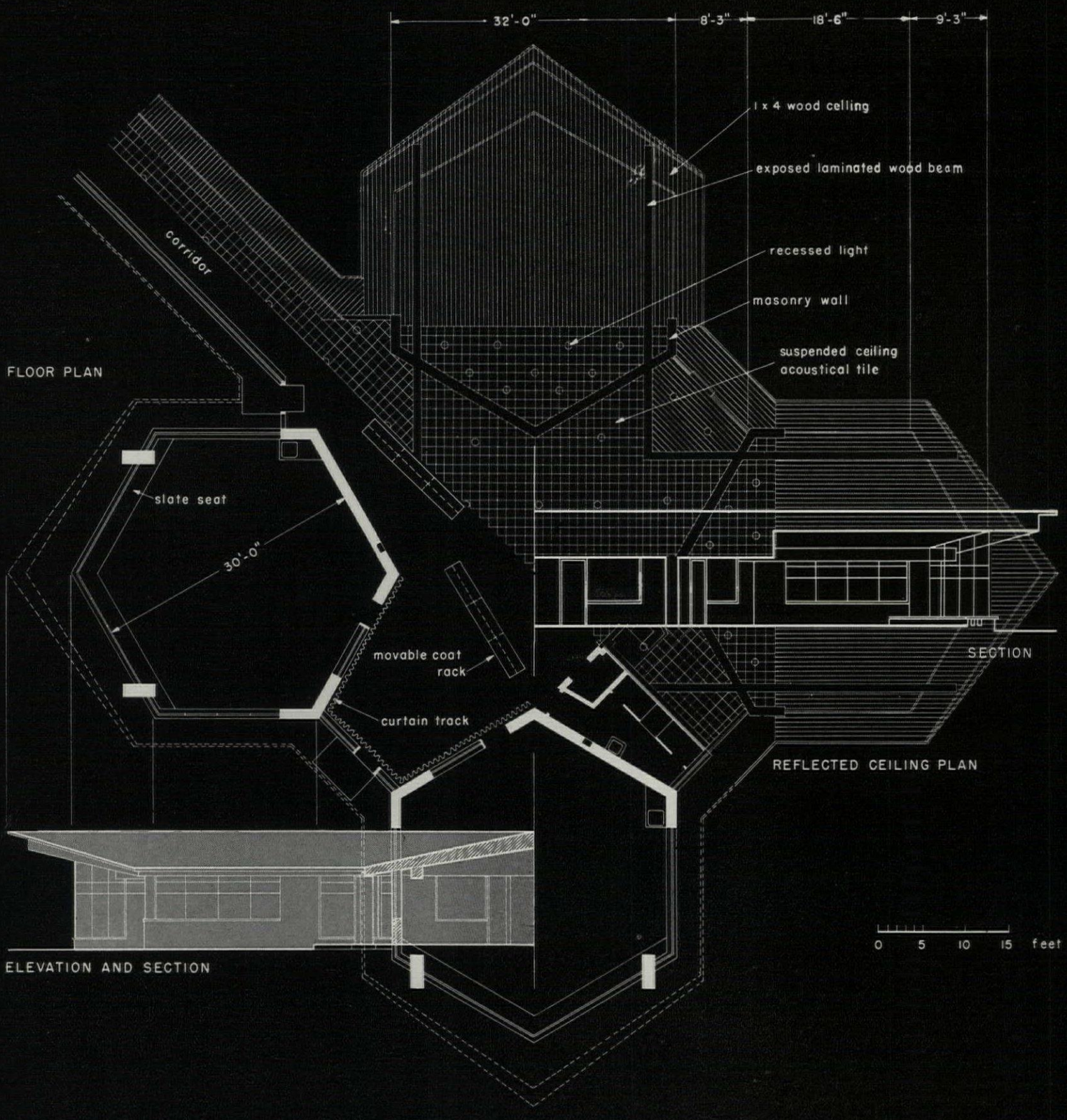
Construction of the school's central body is steel (rigid frame in playroom, bar joists elsewhere). Walls are brick in a subdued earth color. Landscaping of the wooded 20-acre lot will not be manicured; weeds and vines will wander to the foundations.

The architects feel there is much to be said in favor of eliminating "stem" corridors in this kind of school, with each cluster a separate building in its own right. Children take kindly, it seems, to a fast nippy run out of doors every so often but teachers do not. This appears to involve the difference between teachers' and children's underwear, and there, for the moment, the architects have discreetly let the matter lie.

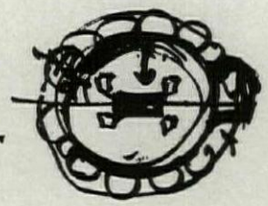
The school does have two surprising omissions, however—no public-address system, no cafeteria. These lacks tell almost as much about the school (and the community) as anything that was put in. A community-teacher preliminary planning committee rejected "the concept of a principal broadcasting announcements or bits of superior wisdom." Shaw sums up cafeteria policy: "If one starts with the thesis that the family is the cornerstone, adds to that the unquestioned ability of Scarsdale parents to provide sound nourishment and good eating habits, caps it with an understanding of the forces weakening the home and of the pressures on children, it is difficult to justify the provision of lunch at school."

THE AUDITORIUM. Everybody gets in the act at an elementary-school show—the cast is more likely to number 100 than 20. In Scarsdale's older schools, the audience typically occupies half the auditorium; the actors get the other half, plus stage. The 36′ deep stage at Heathcote will take care of that problem (and incidentally serve as band-practice space, folk-dance floor and a small theater-in-the-round).

Productions here will range from historical pageants to amateur planetaria, on the theory that when a child shares what he knows he clinches his learning. Shaw says, "We could run a good school with just the classrooms and this auditorium. This is the first additional room I would have." As Perkins' sketches hint, the design aims at drawing audience and performers closer together


32'-0"
8'-3"
18'-6"
9'-3"
1 x 4 wood ceiling
exposed laminated wood beam
recessed light
masonry wall
suspended ceiling
acoustical tile
corridor
FLOOR PLAN
slate seat
30'-0"
movable coat
rack
curtain track
SECTION
REFLECTED CEILING PLAN
0 5 10 15 feet
ELEVATION AND SECTION

Perkins on the auditorium:



"The most breath-taking assembly room I ever saw was an Indian Kiva near Shiprock --

"What sense of participation that place gave! We wanted something like that --

"Not a movie house --

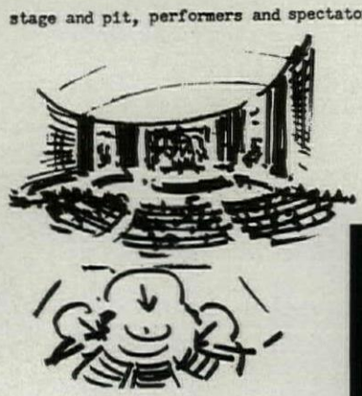
"Or a lecture hall --

"Or a theatre --

"But this.

"Reluctantly — for efficiency -- we modified it --

"So. But I don't think we lost the one-ness of stage and pit, performers and spectators."



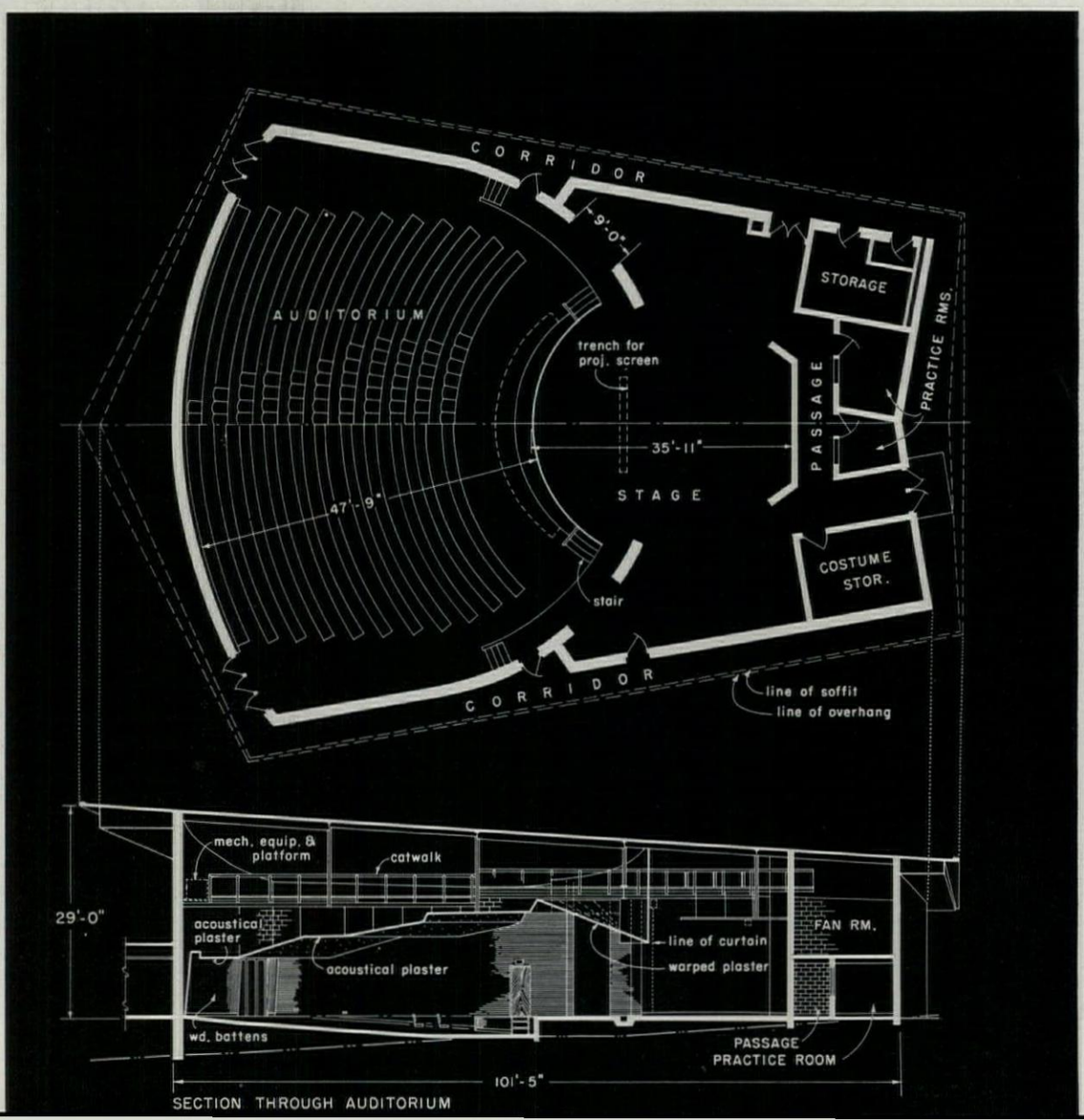
psychologically; the whole thing is essentially a modified theater-in-the-round. The aprons and separate 9′ openings on the sides are partly to increase this sense of intimacy, partly to ease the technical problems of rambling productions. (The main stage can be given over to "village streets," with "house interior" and "hide-away in the mountains" on the sides, for example.)

Architects and clients both preferred continental seating—benches in long, uninterrupted arcs, set far enough apart for aisle space between. They were balked by a state law requiring conventional aisles every 14 seats. A few seats in extreme forward corners are outside vision lines for movie screen. Projection is from seats so a teacher showing a film can control children or lecture.

Heathcote's place in schoolhouse history

Biggest question mark about schools such as Heathcote and West Columbia (are they mavericks or bellwethers?) is, at bottom, a question mark about our society. Is the try at a new emphasis futile? Preoccupation with mechanics at the expense of humanism is not confined to—nor even most evident in—school architecture. The mark is everywhere on our cities, our up-to-date farmyards, our clinics, markets, working places.

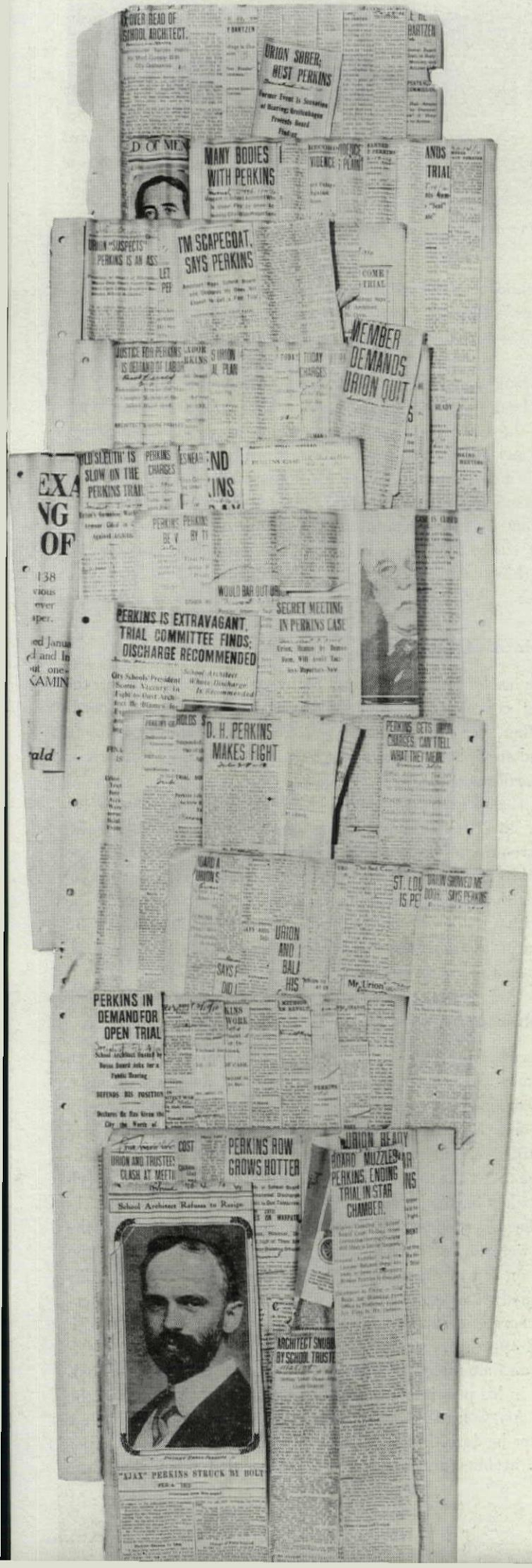
Among the vast variety of aims and efforts within a society, one kind has special significance and dignity: the effort that bravely declares societies too have free wills and can deliberately and consciously set their own cultural directions. Whatever its influence, Heathcote has this dignity.



Deep central stage and auxiliary side stages are for school pageantry. Curve of ceiling is in sympathy with wall curves; acoustical problems were worked out with alternating areas of acoustic and hard plaster. Shape of room dictated that roof members (built-up steel trusses) slope upward at wider rear; this runs counter to slope of ceiling, yields chamber somewhat larger than needed for mechanical equipment.

DWIGHT H. PERKINS

—father of today's "new" school ideas. He tried them all . . . and the board of education tried him



"The one-story building is the latest approved type of school"

"Boards of education have . . . a responsibility . . . for education of the entire community regardless of age"

"The advantage of steady light from the north is recognized, but is not . . . so essential as sunshine"

"Diffusion given by the factory like row of windows in the rooms makes them superior"

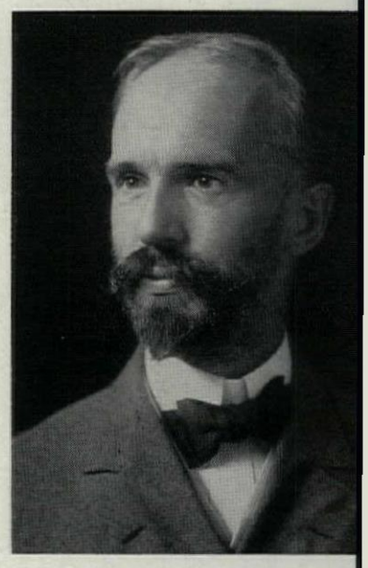
"Corner rooms should have blank outside walls on the end, making them identical with the inner rooms"

"Ceiling light may be added . . . for rooms in the top story"

"The sash should be doubled to prevent drafts"

"Tinting of the room affects the light materially"

—DWIGHT HEALD PERKINS, 1910



On Wednesday, May 8, 1910, Halley's Comet was scheduled to approach the earth for the first time since 1835, and the apprehensive *Chicago Daily Journal*, anticipating a collision, sent a polite reporter around to ask prominent Chicagoans, "What would you do if this were the last day of the earth?" Most Chicagoans were basically brave about it, but slightly nervous.

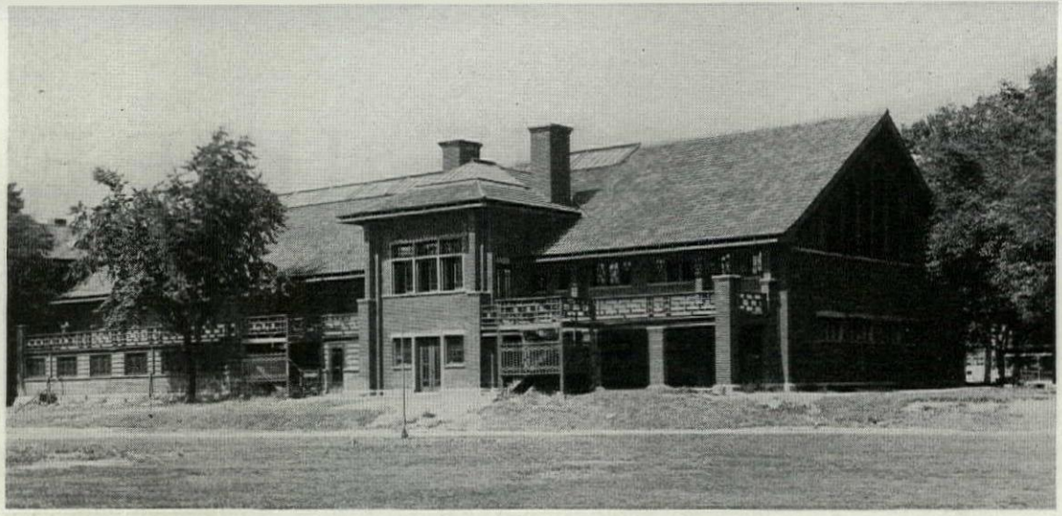
But when the reporter put the question to Dwight Heald Perkins, the most famous architect in Chicago that year*, he replied, "I am not afraid of the comet. Let it do its worst. I had a little comet of my own strike me lately and that did not frighten me any."

Perkins was not merely dramatizing. He had just been through five weeks of hearings, accused by the president of the Chicago school board of incompetence, extravagance and insubordination. He had won the hearings, in the opinion of everyone except the school board, but he had lost his job as school-board architect.

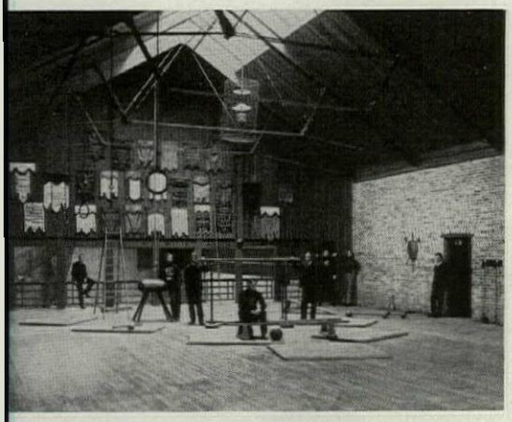
The specific charges are classics that will still bring a shudder to every school architect who has ever been denounced by an irate PTAer. The roofs of some of his schools leaked, it was charged. He was guilty of vanity—of building "monuments to himself"—they said, of lavish expenditures on unnecessary decorations. On

* and father of Lawrence Perkins *(see p. 114)* of Perkins & Will.

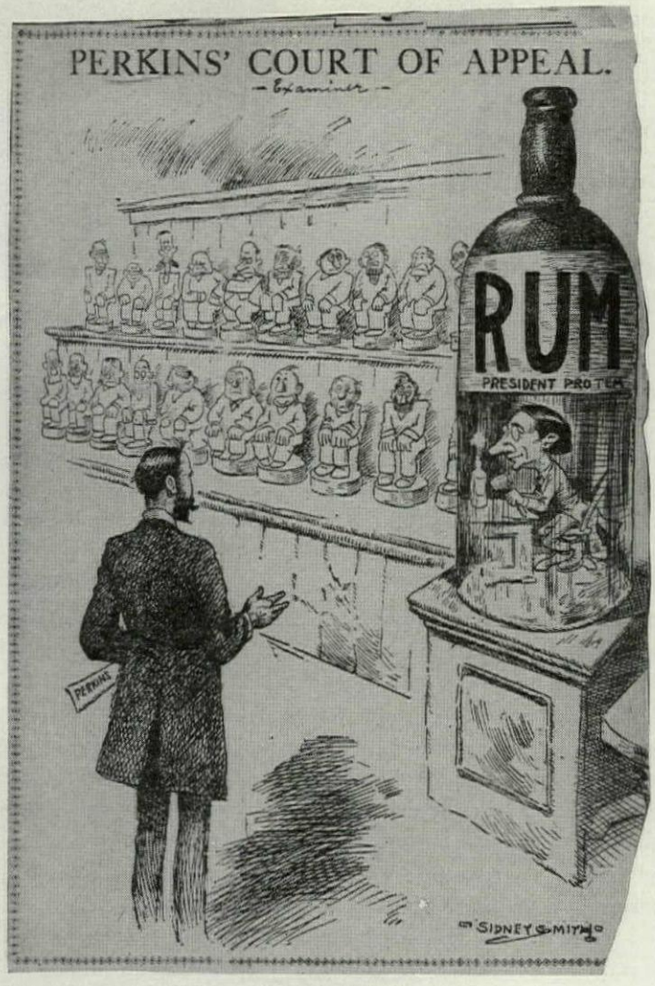
DWIGHT H. PERKINS



Hamlin Park Field House, built in 1912, is a good example of Perkins' uninstitutional style



. . . and the top-floor gymnasium made good use of the building's form.



Famed cartoonist Sidney Smith suspected the president of the school board of intemperance during the trial.

the other hand he was building too severely, schooling the children "in factories." The walls of his schools were "unnecessarily thick," and he failed to submit building plans for approval "to enough people."

When Dwight Perkins was charged with these misdeeds, he snapped, "I can't tell what they mean or what I will have to answer." But when the hearings came, he presented a masterly defense—one which any school architect might well study.

But even more important than his defense are the things which were not mentioned during the trial. For almost all the ideas which have dominated contemporary school architecture of the past dozen years were either tried or described in the buildings or writing of Dwight Perkins during his years as architect for the Chicago board of education, 1905 to 1910. They include three large categories:

1. The place of the school in the community

He was an early believer in and perhaps the formulator of the park-school concept—in which park districts and school boards work together, pooling their land resources, to provide more room and air and sunlight, and more space for play than might otherwise be economically possible.

He also was an early advocate of using the school as a center for community life, deliberately scaling auditoriums, assembly halls, gyms, playroom and shops to the year-round, day and evening use of both children and adults. He specifically favored planning school buildings so that these community facilities might be opened in the evening without opening the rest of the school. (But when he designed large auditoriums and other facilities, with this in mind, he was accused of extravagance.)

2. The philosophy of design of the school

Perkins recognized that schools are really places for children primarily and teachers secondarily—and scaled them accordingly. He also recognized the need for recreating the home atmosphere in the classroom. A startling example of how backward schools and school boards were in the early 1900's is the fight which Perkins had to wage to get the tower toilet system in Chicago schools. Previously the toilets had been concentrated in the basements, and children had been herded into them at specific hours. The rest of the time they were locked. When Perkins instead began stacking the toilets one on top of another and zoning them for classrooms, this too was called extravagance. Even when he pointed out that stacking toilets saved in plumbing bills, the change did not meet with unqualified approval.

Perkins also attempted to bring art and sculpture into the schools —not only in his position as school architect but as a member of the Municipal Art Commission. He said, "Building merely for effect should never be done, but instead all buildings should be done effectively . . . architecture is an art. I believe that school buildings

properly designed have within themselves an impressive but solid power for education. . . ." Although Perkins did not hold out forever against the eclectic influences of the period, he obviously attempted to keep his designs honest.

3. The building and engineering of schools

He limited as many of his schools as he could to a height of one story and placed them on grade, without cellars. (For his reasons, as good as any ever given, *see below, right.)* He was far ahead of his time in daylighting and sunlighting—it is possible that he is *still* ahead of the present-time practices of most school architects. To diminish light contrasts within classrooms he intuitively used the same sort of hues and colors which other architects have since demonstrated to be scientifically correct.

This is what he had to say in 1908 on the subject of exposure of classrooms, and ribbon windows: "Classrooms with large windows on two sides have cross lights which interfere with the uniform left-hand light and cast conflicting shadows. In addition they cause windows to be directly in the eyes of either pupils or teacher, which results in their being obscured by drawing the shades most of the time. . . . The rear rooms of many of our new schools were better than the front ones where the windows were arranged with reference to exterior design only. Where we tried least we succeeded best, and the diffusion given by the factorylike rows of windows in the rooms makes them superior to many of those in the fronts where the glass area may be the same.

"We have, therefore, evolved a room in the latest schools which has five equal windows in a row, separated by narrow piers. The end windows are close to front and rear end wall and blackboards, and they go as high as the fireproof construction permits. The corner rooms have blank outside walls on the ends, making them identical with the inner rooms."

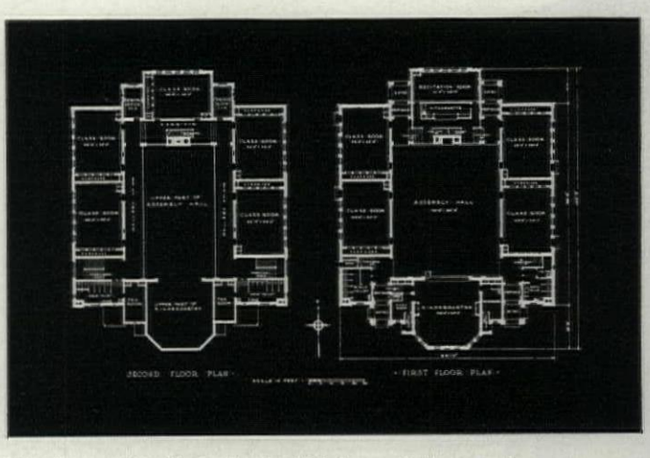
On the subject of refracting glass, still a "new" subject today, he said, "Prismatic lights may be introduced to help out poorly lighted rooms, but my opinion is that they are undesirable; the glare is too strong to be ignored. The same applies, to nearly the same extent, to tinted, frosted, or crystalline glass. All glass should be clear, in a sufficient area with proper exposure to make diffusing shades unnecessary.

"Ceiling light may be added, but, obviously, this can only be done for rooms in the top story. It adds greatly to the general diffusion and is good, but should not result in reducing the window area in the wall. The sash should be doubled to prevent drafts. Ceiling lights are good for many kinds of drawing and shopwork."

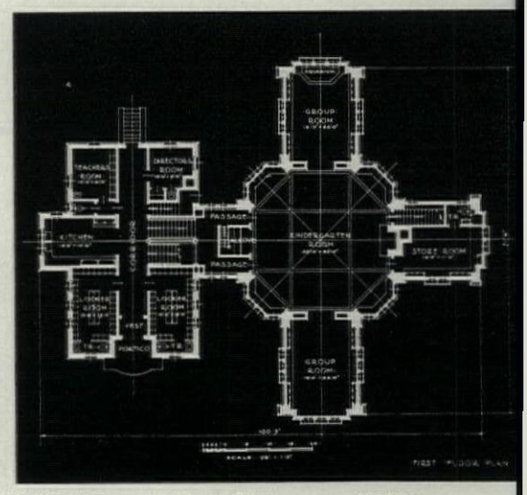
One of the most interesting of Perkins' early experiments, although it was one of the few which did not succeed, is shown in the plan for the Bragg School in Wisconsin. *(Above, right.)* Central playroom and assembly in this school were surrounded by galleries off which the classrooms opened. The object here was economy; corridor space was to be eliminated by putting it in the general-purpose space. It did not work out because it was overdone —the central playroom was too big and too noisy. But if it had not been designed almost a half century ago, this could be called a conscientious aberration of the 1949 "Forum school" presented by Matthew Nowicki (AF, Oct. '49), and is a design device which dozens of school architects have discovered in the last five years *(see p. 110).*

But Perkins was more than an imaginative mechanic. His real approach to architecture was intuitive.

Dwight Perkins was a legitimate, if late coming, member of the Chicago School—that band of gifted architects who developed the steel frame into a taut muscular style expressing the commercial building in the late 19th century, only to cook its honest dough into fancy confectionery in the Columbian exposition of 1893. Perkins' Carl Schurz High School is the only public building generally ac-



Here is one of Perkins' schools which fattened the general-purpose and assembly area by using it also for circulation. This (the Edward S. Bragg School at Fond du Lac, Wisc.) was built in 1914 for a total cost of $48,000 (15¢ per cu. ft.).



Perkins' Downers Grove kindergarten (1912) had central octagon with radiating bays. Compare with his son's exploration of this form on p. 114.

Why the one-story school?

Dwight Perkins' answer in 1910:

"1. The fire risk is entirely eliminated. The children cannot be burned. Every window is a fire escape.

"2. There is a great gain in the ease and efficiency of administration.

"3. Better light. All rooms are lighted from above as well as from the side.

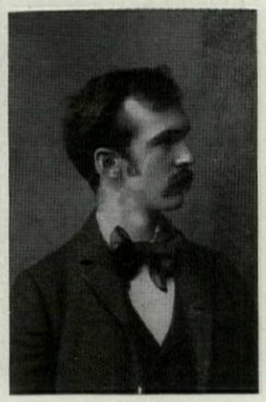
"4. The one-story building is the latest approved type of school building. Besides being thoroughly serviceable it is beautiful and unusual.

"5. The cost is less than that of the two-story building of the same capacity. . . .

"The reasons for this are:

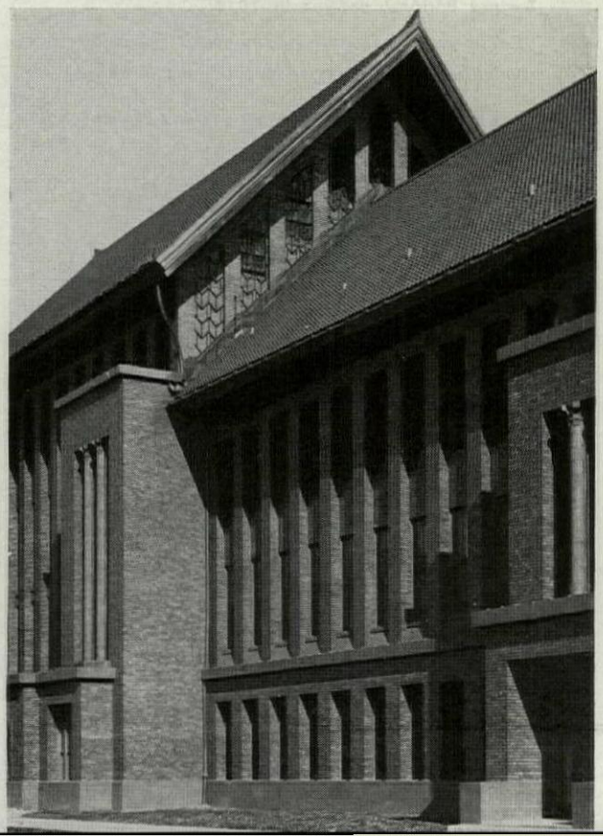
- *"Lighter construction is possible in the one-story building, with corresponding reduction of cost.*
- *"Stairway space and extra corridors are eliminated.*
- *"No fire escapes are necessary.*
- *"No fireproof construction is necessary, as would be the case in a two-story building. . . ."*

Carl Shurz High School, built in 1910, shows Perkins' strength in design. Colors are vivid, with green tile roof over red brick walls.



Perkins about 1895

Close-up of Schurz school shows how Perkins favored masonry patterns over applied decoration.



credited to the select group of the Chicago School structures still standing, the group dominated by Louis Sullivan's Carson, Pirie & Scott Store.

Perkins was born in 1867, the year that Major William LeBaron Jenney came to Chicago to set up his practice, and to found the Chicago School. Perkins' father, a federal judge in Memphis, died when the boy was ten, and his mother took him back to Chicago, her home town. She became a social worker with Jane Addams in the stockyard area, and young Dwight had to quit school to go to work in the yards at the age of 12. He was always to resent the necessity for the individual solutions of social workers to social problems and to press toward solution on a broad environmental base. In the words of his son, Larry Perkins, he sought to work with multipliers, rather than units.

After four years in the yards he decided to become an architect, and went to MIT to learn how. He got in without a high-school diploma, but he could afford to stay only two of the three years required for graduation, even though he held down a teaching job on the side.

He worked around Boston as a draftsman for a year, then in 1888 headed back to Chicago and a job with Burnham & Root, who were riding the wave of commercial expansion in Chicago. They were also the acknowledged leaders at that time of the new "commercial style," as the simple skyscraper was then being dismissed.

After only a year young Perkins was made general superintendent of the office, and he was chosen to remain behind and run the main office when Burnham, Root, William Holabird and Ernest Graham moved to the South Side in 1890 to take over design and construction of the enticing Columbian exposition. Perkins was 24. Some of the buildings he spent that part of his youth upon were such masterpieces of the Chicago style as the Great Northern Hotel, the Ashland Block, and the north half of the Monadnock Block. John Wellborn Root, Sr. always remained the strongest influence on his design.

When Uncle Dan Burnham came back from planning the florid fair, he found himself with too much big brass on his staff, so he offered to set young Perkins up on his own—guaranteeing him a year's office rent and turning over several important commissions to

him. These included Steinway Hall, a theater and skyscraper. Perkins jumped at the chance, and when this, his first skyscraper, was complete, he rented the entire top floor as his office—perhaps in emulation of Adler & Sullivan's fancy quarters atop their Auditorium Building. A painter and three other young architects shared the 29-year-old Perkins' reception room: Jules Guerin, Myron Hunt, Robert Spencer, and Frank Lloyd Wright. Wright also was working on his first independent assignment, a settlement house.

In the next ten years Perkins did well. With his handsome Vandyke (first adopted for its aging characteristics), high stiff collar, low-cut vest and impatient expression, he was a forceful figure. Deeply immersed in his profession, he was also vocally public spirited, a hard driver who was always confident of his direction. In 1907 he was elected president of the Illinois AIA. His avocation was hiking around Chicago, and eventually he turned even this to good use. He formed a hiking club of prominent citizens, walked them all over the lovely wooded scenery near Chicago, and eventually persuaded them to protect it as the Cook County Forest Reserve—61 sq. mi. of outlying parks which Chicago still enjoys.

Perkins started designing schools early, and in 1905 was named architect for the board of education, a job which brought him $8,000 annually and a good deal of public attention. In this period the fear of fire in public schools was justifiably widespread and fire safety was the major requirement of the public. Perkins, in time, added other requirements.

Items in the Chicago papers in August, 1909 testified to three aspects of Perkins: he had become a public figure; he had a sense of humor; he was a good public-relations man. A headline in the Chicago *Interocean*, August 19, 1909, said: "DWIGHT H. PERKINS SHAVES BEARD TO GIVE HIS WIFE BACK 'HER BOY.' "

The story began " 'My wife said she was tired of an old bald-headed, gray-bearded man. She wanted to see the boy she married.' "

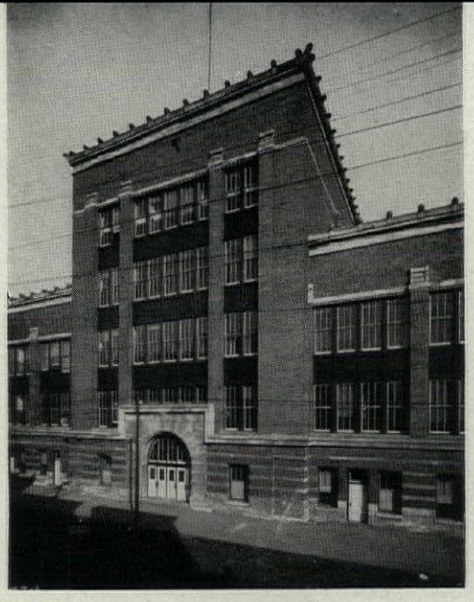
After Perkins had started a wave of beard shearing, he let his grow back in again. Perhaps he knew that he was going to need all his dignity and impressiveness within the year.

The board of education was never an easy employer (Perkins also retained his private practice in the firm he headed—Perkins, Fellows & Hamilton), even though he soon was turning out some of the best schools in the country, as testified by architects and administrators in other cities. One of the things he had done was increase classroom sizes from 30′ x 22′ to 36½′ x 23′. But he had to please a varied group of school trustees, as every school architect must, and tempermentally he was rather testy for the job. One trustee, a contractor named Downey, gave him particular trouble; Downey had precipitated the discharge of the preceding school architect, who charged that Downey tried to make him throw jobs to high bidders.

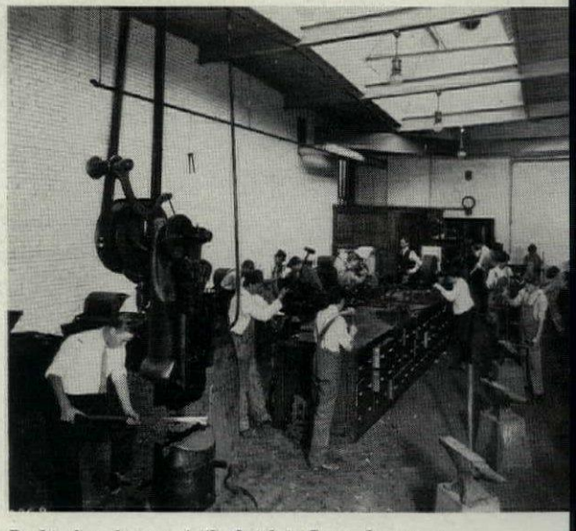
For four years Perkins had his troubles, but nothing startling. For example, he fired a political character named "Colonel Old Bill" Haskell who was school building superintendent, for letting painters use poorly leaded paint, and the Colonel's friends demanded a hearing. Perkins won the hearing, but during the course of the proceedings, he called Old Bill a grafter, so Old Bill sued for $1,000 damages, charging slander. The courts threw the case out, with a surprising ruling, "Grafter does not necessarily imply dishonesty. If a man tipped a waiter the latter might be called a grafter."

Old Bill's attorney queried the court, "Would your Honor consider it a compliment if you were called a grafter?" But the judge said this was not the question, and Perkins sighed with relief.

Another time, there was a municipal uproar when Perkins had 40 of the school buildings painted crimson. "The new coats of paint have to last about four years," he explained softly, "and we don't want anything that will lose its individuality." Some of the words the trustees used about the sturdy color were "unsightly, vicious,



William Lane High School, completed by Perkins in 1908, has an early version of the compact curtain wall.



Perkins' early use of tile finish in Lane shops was assailed by school board as extravagant.

What is the latest in orientation?

Perkins' answer in 1908:

"The advantage of steady light from the north is recognized, but is not considered, by many including myself, as so essential as sunshine; and, given a unilateral light, one cannot have north exposure and sunshine, too. Those rooms which face south only receive too much sunshine and require the drawing of shades to such an extent that they do not get enough light. While they are better than north rooms they still are not perfect.

"The nearest approximation is a room facing either east or west. In the morning the east room gets sunshine and the west room gets steady light of north quality, and the afternoon conditions are reversed, giving the advantage of both north and south exposure in a modified degree to all rooms.

"For these reasons, wherever possible, rooms in the latest buildings in Chicago face either east or west. Direct sunlight is regarded by many as necessary for some time each day as a matter of sanitation . . . and is planned for wherever possible. . . . Exclusively north-lighted rooms are not built except in certain additions to old buildings where it seems unavoidable."

Perkins Vain, Says Urion at Tr...

Every Possible Offense Is Named

DWIGHT H. PERKINS

ALFRED R. URION

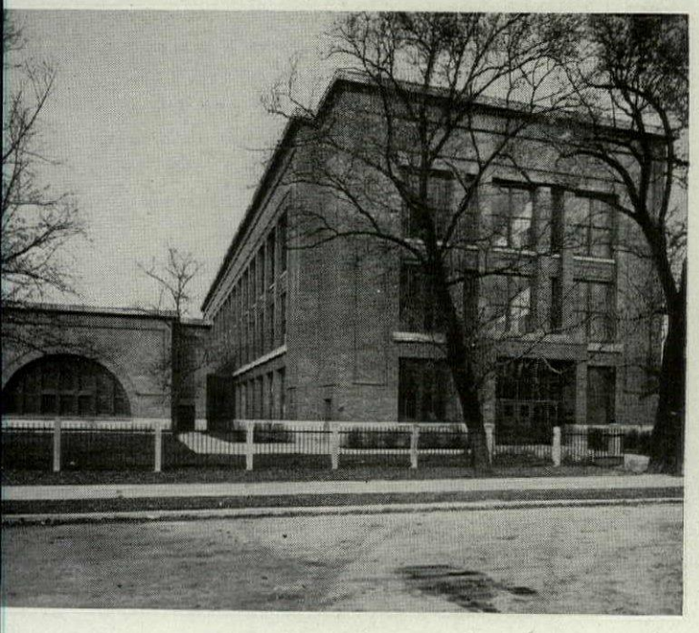
Board Head Avers Extravagance of Architect Has Cost Hundreds of Thousands.

"Vanity Costs Thousands."

"I Can Prove All"—Urion.

Newspapers gave full, delighted coverage to the trial. This is a typical clipping.

This is one of Perkins' "economy" schools



deplorable, fierce, wicked and horrible." No official action was taken, however.

Another time Perkins reported that he was unable to get enough local draftsmen, and had been compelled to import five Englishmen. A local newspaper thought this compelled "serious, not to say sad, reflections. It seems a little strange that, in a great city like Chicago, where millions of dollars are being monthly invested in buildings, enough draftsmen cannot be secured without employing five Englishmen. . . . Architect Perkins may be able to sail along in comparative safety under Gothic skies and normal conditions, but he may jolly well expect Decorative styles on the King's birthday anniversary, Perpendicular on the 24th of May, and possibly Flamboyant when the foreign dispatchers announce a heavy fog in *Lunnon*. In brief, how will he manage to control a string of five English architects when disturbing influences are in the air?"

But until Alfred R. Urion became president of the school board, Perkins got his way within reasonable limits, and Chicago got good schools. Urion was a lawyer and general counsel to the giant Armour Co. He was also an impetuous man, and he immediately tangled with Perkins.

Soon the two were table-pounding about costs at meetings of the school board. Actually Chicago's schools were for the most part built economically. The comparison with other cities ran this way: Chicago—15¢ per cu. ft.; St. Louis—17¢ to 19¢ per cu. ft.; New York—21¢ to 23¢ per cu. ft.; Boston—21¢ to 25¢ per cu. ft.

But fire regulations were pushing costs up, and Perkins, when he had to save money, was doing it by making buildings simpler, not smaller. He was leaving off fancy cornices and attempting to provide the necessary decoration with masonry patterns. *(See p. 122.)* Because of this, Urion and he continued to be on poor terms—and it was also later brought out that Urion had suggested use in these schools of a flooring material made by the company of which Urion was general counsel. Perkins, after testing it, had refused.

Urion and Downey also were against the idea of designing each school separately; to placate them Perkins designed a school for standard production. The small version had 24 rooms and would be built for $175,000; the larger was 32 rooms and would cost $210,000. But the reaction to this design was that Perkins had made it "so plain in exterior and radical in departure as to subject the board to ridicule had they adopted it."

Then Urion suddenly demanded square-foot figures on enclosures and paving for the 266 existing school buildings in the city, many of whose drawings had long since disappeared. When Perkins could not provide this with his six men in two weeks, Urion exploded. A private school-board meeting was held December 22, 1909, and Perkins was then charged publicly by Urion with extravagance. When Perkins demanded a hearing, it was set for February—but it was to be closed.

This, however, did not work. Perkins rallied the newspapers behind him in protest against the Star Chamber proceedings, and such divergent organizations rallied to his support as the conservative City Club, the Chicago *Daily Socialist*, the Chicago Federation of Labor, and the Winslow Park Women's Club. The story began to get as much coverage in the papers as 1951's Kefauver hearings, and Urion pulled back somewhat in his open attacks. Downey went to Hot Springs for his health.

The next move of the school-board's president was to call a meeting of the trustees and pass a ruling that no employee could hold an outside job. When Perkins defied this, and refused to resign, Urion charged Perkins' staff in the board of education with doing outside work on city time—a charge he later retracted. Then Perkins was officially notified he had been ousted, with the beginning of his hearings set for February 17, 1910.

Four days later a reporter with a good memory interviewed "Colonel Old Bill" Haskell and asked him what he thought of all this.

The story read:

"As he expresses it himself, the Colonel isn't a bit 'mealy mouthed' when it comes to expressing deep satisfaction over Mr. Perkins' troubles. . . . So deeply interested is he in Perkins that a week ago he called on the architect to swap condolences.

" 'I says to him' said Colonel Bill, 'Well, Perk, how do you like it?'

" 'I never have enjoyed myself as I have the last four days,' Perkins answers."

The reporter asked Colonel Bill if he thought "They would get Perkins."

"Well, I should say they will, and he knows it."

They did.

It took weeks of hearings. Witnesses for the defense included some of the foremost school architects and administrators in the country, the president of the AIA, and—most eloquently—Perkins himself with facts and figures. But, said Urion, "If Mr. Perkins keeps on in the present strain, he will be suspected of being an ass." And "I can take two of Mr. Perkins' assistants and run his office as well as he can." Perkins' lawyer was denied a summing up at the close of the trial, and on April 7, 1910, the vote of the trustees was 3 to 1 against him—and against a high volume of public indignation.

Like any other school architect, Perkins was not really surprised. He said he had expected this, and packed up.

The result of the trial, however, was unorthodox: Perkins was famous, the kind of man newspaper reporters ask what he plans to do the last day of the world. But Urion's public career was shattered. He was finished as a public figure—particularly after the newspapers had hinted very broadly that he had come to an after-dinner hearing during the trial in his cups *(see cartoon)*. One newspaper even headed the story of the final verdict:

"Twenty-one men on a dead man's chest! yo, ho, and a bottle of rum (there are 21 school trustees on the Chicago board of education)."

Following his ouster Perkins went back to private practice and built up Perkins, Fellows & Hamilton until they were designing almost as many schools as Perkins & Will do today. Nor was Perkins a man to become embittered. He subsequently devoted years of energy to Chicago's Municipal Art Commission—which he originally sponsored—and to the Chicago Regional Planning Association—of which he was founder and honorary life president. He also had more time for walks now . . . . He became personally responsible for selection of almost all the sites and the broad planning of the 39,000-acre Metropolitan Park System, and one park is now named for him. Perkins also was made a fellow of the AIA. But the one honor he always prized highest was informal, yet very rare.

This was praise from a man whom most Chicago architects privately admired above all other men, although many did not like him. It was Louis Sullivan, the conscience of them all, who by the 1920's had become a martyr to the old convictions.

George Elmslie wrote Perkins a letter May 10, 1928, in which he said he thought Perkins might be interested in knowing that Sullivan, some time before he died, had said this about Perkins: "He is a real man, George, and I have more respect and admiration for him than for any other architect in this part of the country. He acts like a man and can stand on his feet and THINK like a man."

Perkins died in retirement in Pasadena in 1941, a good 31 years after Halley's Comet missed Chicago.

Living room in the house Perkins designed for himself.

What about paint colors in the classrooms?

Perkins' answer in 1908:

"The tinting of the room affects the light materially. Without question the ceiling should be flat and tinted a light cream—nearly white—so that it is not bluish. That will go with any color selected for the walls.

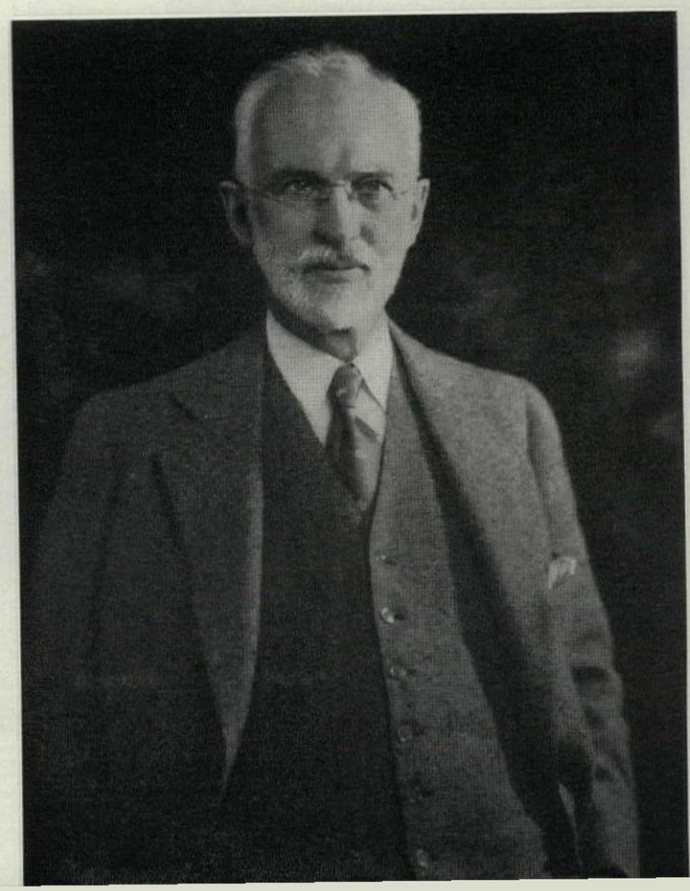
"A light grayish green is the best color if a universal one is to be selected. It is restful and does not absorb light.

"Buff tones warm up a cold north room but when these tints are strong they are unrestful or even exciting to the pupils. They may be fatiguing to tired teachers so they should be used temperately.

What about the school and community use?

Perkins' answer in 1909:

"Boards of education have, generally speaking, a responsibility only for the education of normal children under 18 years of age, but expansion is taking place and such boards will ultimately be charged with responsibility for the education of the entire community regardless of age or previous training, and will be obliged to make more and more use of school buildings outside of regular hours, for such public purposes."



What can be learned from

BRITAIN'S NEW SCHOOLS?

British school designers are making great changes in the concept of a school, its design and construction. Their progress should make US architects and school administrators sit up and take notice:

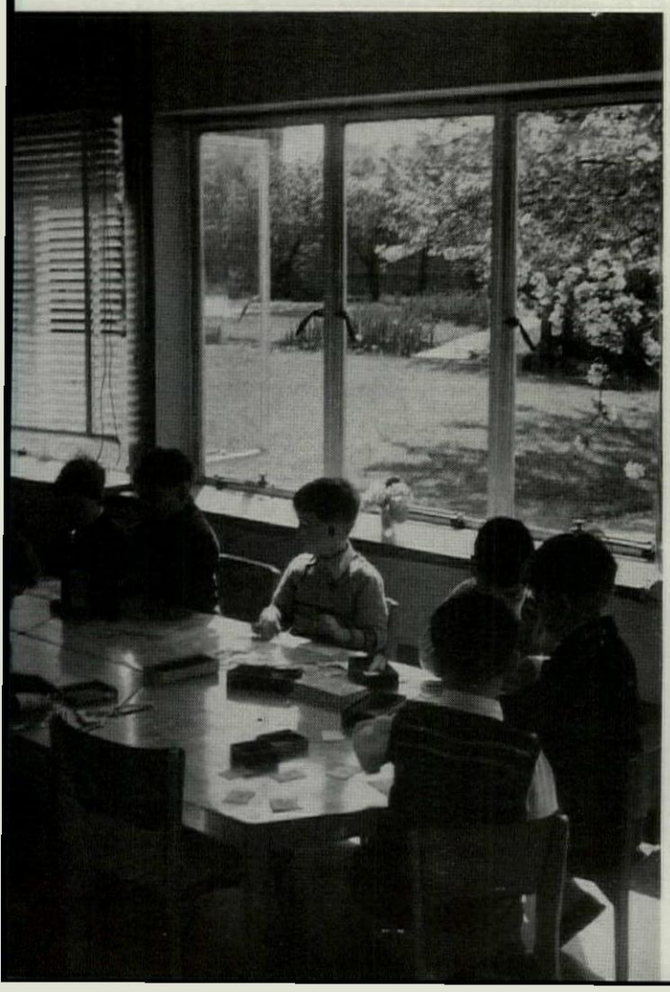
- **They have stopped building "strings of classrooms" in the popular finger system. Instead, they are designing schools more compactly with special attention to integrating the site, the building and the educational program.**
- **They have abandoned the idea that the one-story school for even the lowest grades is necessarily best educationally.**
- **They have put auxiliary spaces like the assembly hall and cafeteria to greater use, have even located them at the core of the building.**
- **They have developed modular prefabricated structural systems to reduce school construction time.**
- **They have cut down the per-pupil cost of school buildings 25% despite a 27% rise in general building costs. Result: They are staying nearly even in the cost versus budget race.**

In both Britain and the US the death knell of the "school-board monument" has been sounded. More and more the new buildings are designed as places for children to grow and work in. In both countries, too, larger sites are now being bought and more schools are being built as part of a properly considered long-range plan rather than as patchwork developments.

On both sides of the Atlantic the "modern" architect is being given his head, and competent judges declare that the design of schools compares well with that of other buildings. But how much has been contributed to the history of the architecture? How much beauty and efficiency has been created to inspire and serve British and US children?

It is difficult to make a direct comparison between school buildings in two different countries. How indeed can one compare a pioneer society of 150 million people of widely varying origin living on a continent 3,000 miles wide with a deeply rooted society of 50 million people living in a country the size of Oregon? Of course, all school buildings have something in common, but the buildings reflect, or should reflect, the education they give. The education in turn depends on the kind of people for whom it is designed.

From the architectural point of view, too, one would expect to



Britain concentrates on child environment, while . . .

"British tradition emphasises the importance of environment. . . . The best British designers blend external and internal surfaces, curtains, flowers, shrubs and trees into a unity which will be beautiful as well as practical, gracious as well as economical."

Rex Lowden, A.I.B.P.

Two outstanding British schools: Beaumaris County Primary School (above) and Aboyne Lodge Primary School, St. Albans, Hertfordshire.

While the US has been perfecting classroom plans and lighting techniques, Britain has made basic design and structural advances which cut costs 25%—a comparison by Antony Part *

find school buildings in the two countries related not so much to each other as to other buildings built in the same climate for the same community and maybe with the same materials.

Surprising indeed, then, is the extent of the similarity between the best school buildings in the US and Britain.

In Britain—lower school costs through prefabrication...

In Britain the main emphasis in school development work since World War II has been on structure. To save site labor, about one fifth of the schools now being built have a superstructure largely prefabricated. New developments include a light hot-rolled steel frame with precast concrete cladding, a frame of cold-rolled sections used in conjunction with asbestos cement panels, a third system based on aluminum, and a fourth on prestressed concrete. (For a detailed report on recent prefab developments in Britain, *see p. 125.*)

Faced with the same proportional increase in school population as the US, Britain has concentrated on providing the extra accommodation needed at a cost which would infringe as little as possible on the resources required for new steel plants, oil refineries, electricity generating stations, housing and, more recently, defense.

Since 1949, a vigorous economy campaign has been in progress and the average capital cost per student of new schools has been reduced in two years by 25% in spite of a simultaneous general rise in building prices of 27%. This has been backed by a flexible system of cost control† and some enterprising development work.

A main factor in this saving has been the change from single-story buildings patterned after the Californian "finger plan," but with enclosed corridors, to a more compact layout, often partly two story, which has been described by a recent visitor from Denmark as "the cauliflower plan." This is not just an architectural device to reduce circulation space, introduce more economical coat-hanging and toilet arrangements on the best US pattern, and make savings in the design of, say, windows and heating systems. It springs equally from a modified conception of the school as a

* Antony Part, director of the building branch of the British Ministry of Education, recently completed a year's study of public school buildings in the US. During that time he examined 250 schools and colleges in 36 states and talked with 1,200 educators and school architects.

† Described in Ministry of Education Building Bulletins 2A (New Secondary Schools, Supplement) and 4 (Cost Study) obtainable from British Information Services, 30 Rockefeller Plaza, New York City.

US architects busy themselves with the school lighting mania

"School lighting in the US is a field in which angels fear to tread among the glass blocks, louvers, 'light diffusers,' Venetian blinds, canopies, curtains and main north windows. It is complicated by the contrast in climate between such places as Arizona, Wisconsin, Virginia—and Maine, whose latitude is roughly the same as Britain's and where they like to have sunshine in classrooms. Thus, these few conclusions are stated dogmatically and without supporting argument.

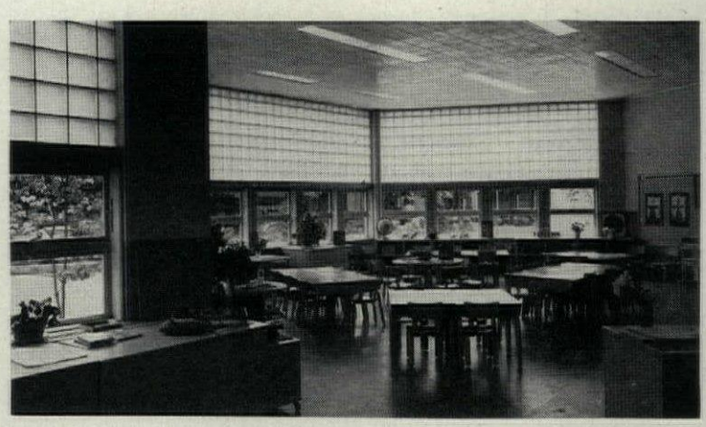
▸ *"As the US recognized earlier than Britain, quality of light is just as important as quantity. But before methods to avoid glare are devised, the medical evidence should be carefully studied. The human eye is perhaps a stronger, more versatile instrument than some investigators —and some architects—think.*

▸ *"Control of daylight should not be allowed to overshadow all other factors in a school design. Some US schools gave me the dominant impression of being draped with louvers.*

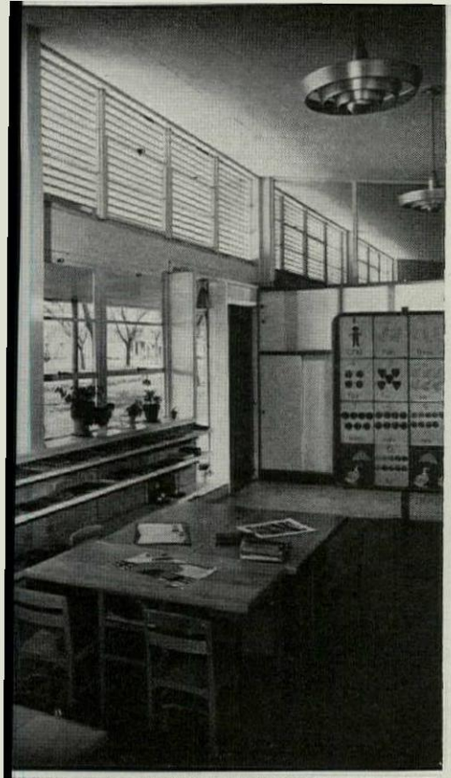
▸ *"Toplighting has great attractions. The light can be controlled and there is no reason why top lights should leak if they are properly designed.*

▸ *"I do not like prismatic glass block as a material. . . . To me there is an uncomfortable contrast between the panel of glass block and the vision strip below it. Almost all architects seem to have difficulty co-ordinating it with the rest of the building.*

"An exception is the cleverly handled extension by architect Emil Schmidlin to the Stockton Elementary School at East Orange, N. J. It is, however, the only satisfactory solution that I have seen to the lighting of the first floor of a two-story building with double-loaded corridors—a condition rare in Britain."



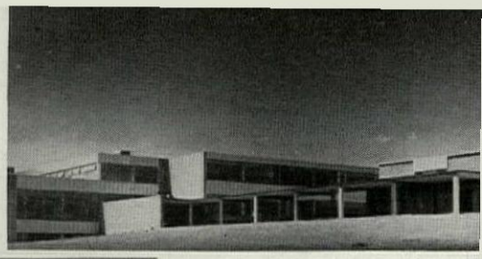
Typical classroom and exterior facade of addition to Stockton Elementary School, E. Orange, N. J., where Part says glass block is well used.

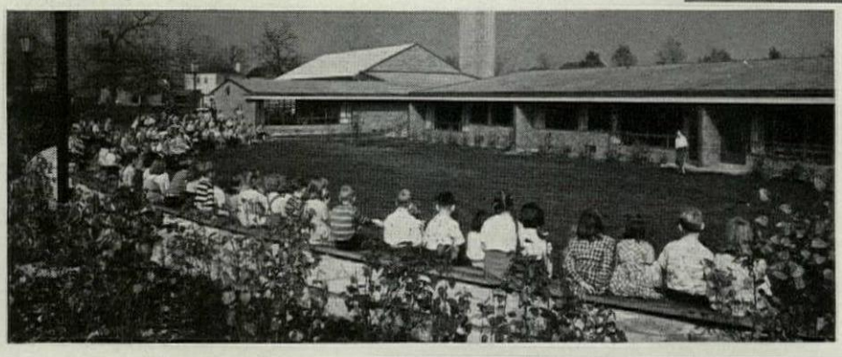


Photos (above): Julius Schulman

Four US schools *considered outstanding by Mr. Part after his tour of American educational plants.*

Hedrich—Blessing





Top R.: Washington High School, Shreveport, La. Above: elementary school, Blythe Park, Ill. R.: Montecito Elementary School, Martinez, Calif. L.: Typical classroom (top), exterior of elementary school, Blackwell, Okla. Note similar use in all schools of the finger-plan system, extensive window areas and a generous number of light-control devices.

whole. Here is the suggestion that teaching spaces should be designed for more than one purpose, so that they may be used as nearly as possible for 100% of the school day. This applies particularly to secondary schools.

In Britain's new schools spaces other than classrooms have a central part to play educationally in the life of the school and one of their main functions is to act as a social concourse. If this is right, then why not make these spaces the physical hub of the school and allow them to flow into each other with the classrooms grouped around them?

The main British strength lies in attention to this organization and atmosphere of the school as a whole. In this we are assisted educationally by new teaching methods which tend to break down the barriers between different "subjects" and architecturally by a tradition which emphasizes the importance of environment. Hence the constant attempt of the best British designers to blend external and internal surfaces, curtains, flowers, shrubs and trees into a unity which will be beautiful as well as practical, gracious as well as economical.

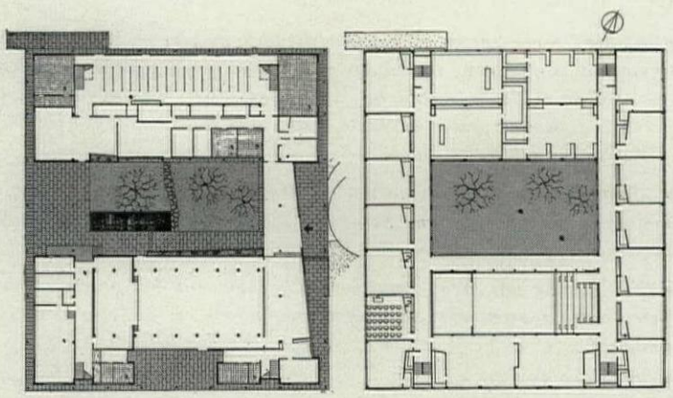
Common to both countries is the idea that a school is not now so much an institution where teachers instruct the young as a meeting place where children are helped to learn. The best architects on both sides of the Atlantic have now had time to digest some of the problems posed and solutions recommended in recent years by the scientists. This means that their design is becoming freer and more confident. In this they are fortified by the newest ideas of some educators who believe that a child's development is more flexible than some of the current theories suggest.

In the US—bigger rooms, better lighting

As for US design, one is struck by the repeated emphasis on three things: 1) classroom design, 2) single-story construction, and 3) lighting control.

No praise can be too high for the recent US trend toward the larger classroom; all developments in teaching suggest that more space is needed for a greater variety of purposes than in the past. Welcome, therefore, to the classroom of 900 sq. ft. or so with a shape more nearly square than oblong! But should there not be a corollary in the design of the furniture? Do not modern school programs demand furniture which is movable and stackable, so that either a large working surface can be formed for, say, painting, or most of the floor cleared for the construction of a model?

continued on page 170



Secondary school in Ruislip illustrates British trend toward compact planning

BRITAIN'S PREFAB SCHOOLS

Construction is speeded with factory-made modular steel and concrete parts —and with no loss of design quality and flexibility

John Maltby; Courtesy Architectural Review

Interior of typical Hertfordshire classroom. Note exposed open-web joists. Glass-topped interior partitions are light, insulated panels. Plainness of finish is alleviated by bright paint.

When architect Walter Gropius said Britain had the most advanced new schools in the world (AF, May '52, *p. 111*), he was talking primarily about her prefabs. Like the US, Britain has urgent need for economical schools, fully equipped, quickly erected and permanent. Most successful among Britain's systems is the one developed by architect C. H. Aslin and used in Hertfordshire, an area of 632 sq. mi. with 600,000 population in which more than 40 schools have been erected on the same system of prefabrication.

A prefab school as fully equipped as conventional schools can be erected in a fraction of the time required for a customary brick-by-brick structure. (Britain's scarcity of bricklayers in effect prompted a design that avoids bricklaying as much as possible.) And the use of units factory-built far from the site reduces the strain on the area's building capacity.

How does it save time?

- All units can be transported on ordinary trucks.
- Nearly all steel units can be manhandled on the site, thus eliminating heavy machinery. In a test, one half the steel for an 18,000 sq. ft. school was erected in one day.
- One mason and helper can bolt up, grout in and point up over 200 sq. ft. of precast concrete wall units per day.
- One school was roofed and walled in only ten days. Since walls are essentially of dry (precast) construction, drying-out time is minimized.

What is the cost?

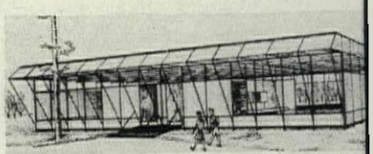
Objective of prefabrication, says Antony Part of the British Ministry of Education, is not to save money so much as to save time getting quickly needed schools. In fact, Hertfordshire's primary schools last year averaged the full £140 "per place" ($392), which has been set as a nationwide ceiling, whereas all schools in England and Wales shaved off £4 and averaged £136 "per place." Cost-saving progress is still underway. Through continued research the number of basic units has been reduced in 6 years from 26 to 6. And 80% of the plumbing is now done in the shop. Also open-web roof joists and purlins are left exposed under the wood-fiber slabs of the roof.

Why has the US done so little that is comparable?

There are several reasons. The first is that US prefabricators allowed themselves during World War II to be pushed into emergency make-do situations where quick, cheap and temporary schools were required. The poor construction and dismal design of these temporaries has given the very word "prefabrication" a bad sound. Children and teachers alike hate these temporaries.

Britain's prefabs, on the contrary, are full-quality, permanent structures and are in no way to be confused with emergency make-dos. And Britain's system of putting school buildings under government control on a nationwide basis has assured prefabricators of an adequate market. US programs are conceived by local school boards and usually financed one at a time. This has led to a great variety of innovation and local flavor in schools, but not to prefabrication.

In Britain local pride is sustained by letting each community draw up its educational requirements to be filled by modular units. Once the US develops a school prefabrication system of high enough quality and flexibility, local boards may be persuaded that even their unique needs can be met by such a program.



Nearest comparable US prefab system is experimental demountable school developed by Mich. U (AF, Nov. '51).

How Hertfordshire system works

Heart of the system is a modular "cage" 8′-3″ square in plan and 8″ high in elevation. All units fit this modular cage and are being continually refined. At one time the modular dimension was changed to 3′-4″. Although this resulted in greater design freedom, it created a greater complication of units, resulted in higher cost, and was therefore abandoned. Latest schools have been returned to the 8′-3″ module.

First step in the construction of a British prefab is pouring a concrete floor slab with reinforcing around the perimeter to create a continuous beam supporting exterior columns. Chases (6″ x 6″) are cast in the slab to receive water pipes.

Metal sills are bolted to the slab and leveled and the building is ready to receive the prefabricated parts. First in place are the 5½″ sq. columns made up of four angles welded to base plates and, at intervals, to steel formers. All columns are predrilled on a standard pattern so that the open, latticework beams, next members in place, can be bolted through an end plate welded to them. Reinforced concrete units 2½″ thick and 8′-3″ long are next bolted to columns, grouted and pointed up to form the exterior walls. Window units (selected from a range of 40 galvanized-steel or aluminum designs on the same module) span one bay, are bolted to columns and imbedded in mastic. Steel purlins support a roof of wood-fiber blocks (exposed inside to form the ceiling) and screed-topped with bituminous felt. Cantilever brackets bolted to column cap plates receive a precast concrete gutter that forms the eave. Aluminum flashing is finally fastened to bolts imbedded in the outside edge of the gutter.

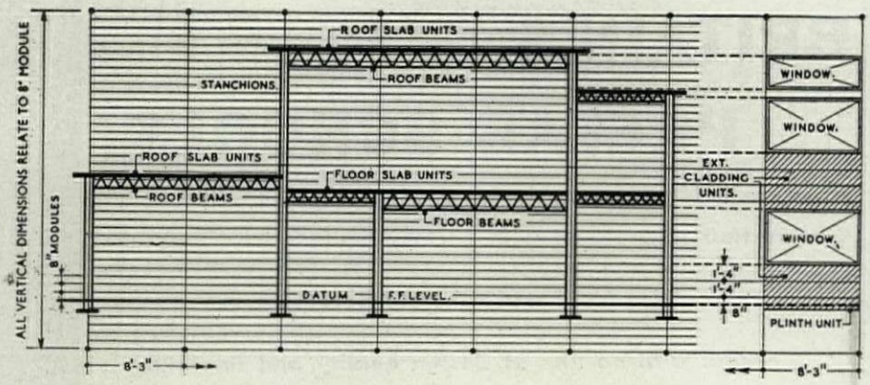
Walls are finished with 2′ wood wool slabs plastered both sides. Interior partitions are the same wood-fiber units (where noise is a problem, thicker slabs are used) prefabricated in units one bay wide. Columns are cased in a ¾″ coat of fibrous plaster.

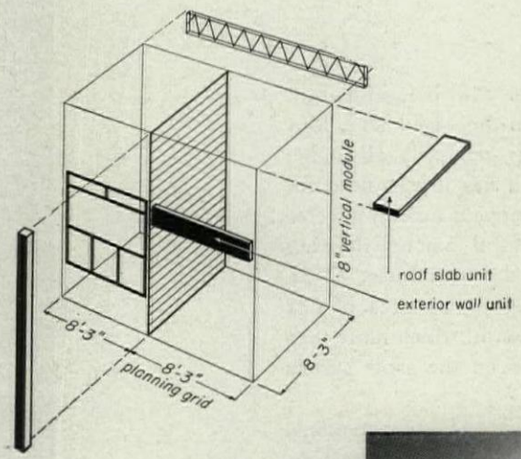
Heat is warm air. The air, drawn from outside, passes over hot-water coils in thermostatically controlled unit heaters. Water to heaters is supplied by pipes from the boiler room that run exposed along corridor ceilings—and through the open latticework of beams.

Toward industrial architecture

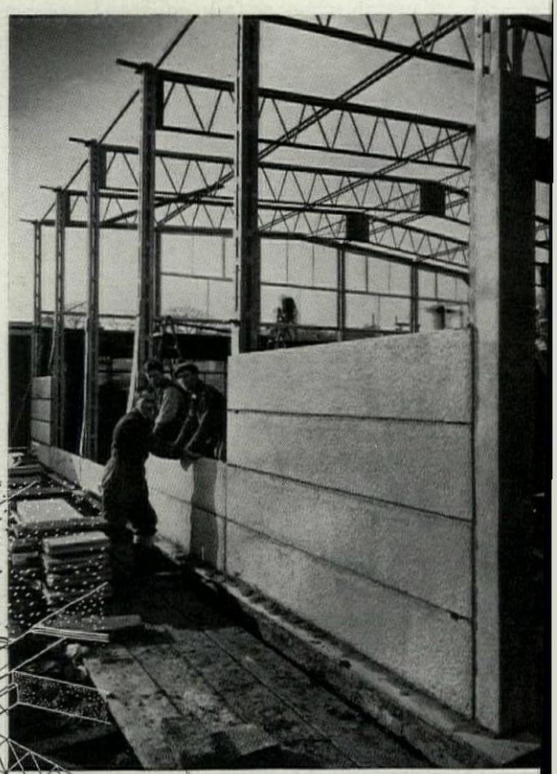
The slow, unspectacular revolution taking place in Hertfordshire has long been forecast by visionary architects. As long ago as 1927, for example, Walter Gropius designed and built a house constructed on a rigid 1 meter (3′-4″) module of factory-produced components. Until now, however, no one has worked out a system as elaborate as Aslin's whereby completion of an individual school building is only noted in passing while the continual refinement of the modular prefabrication system progresses.

One stumbling block in the US has been the professional code limiting architects in their participation within the industry. Britain's outstanding contribution has been that industry has engineered the production of architecturally excellent designs.

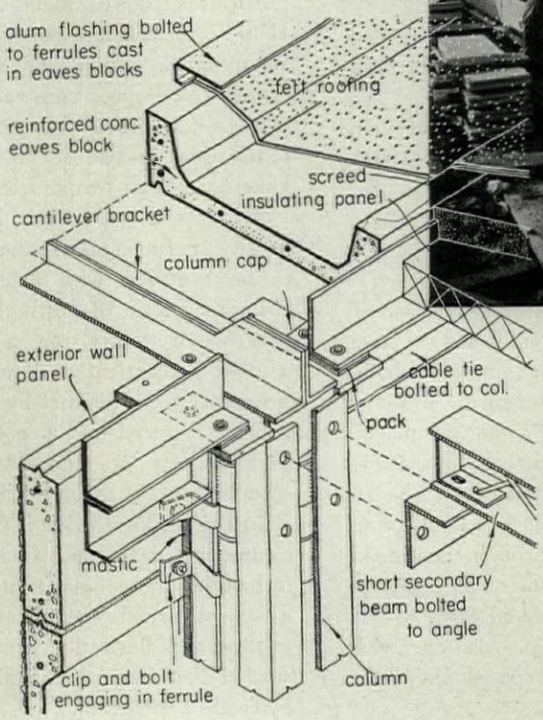




Modular cage of standard units (left) forms all Hertfordshire's new schools. Diagram above shows use of built-up columns, light steel beams in one of many possible variations. For long spans, deeper beams in multiples of the 8′-3″ module are used. Precast concrete panels and windows form walls.



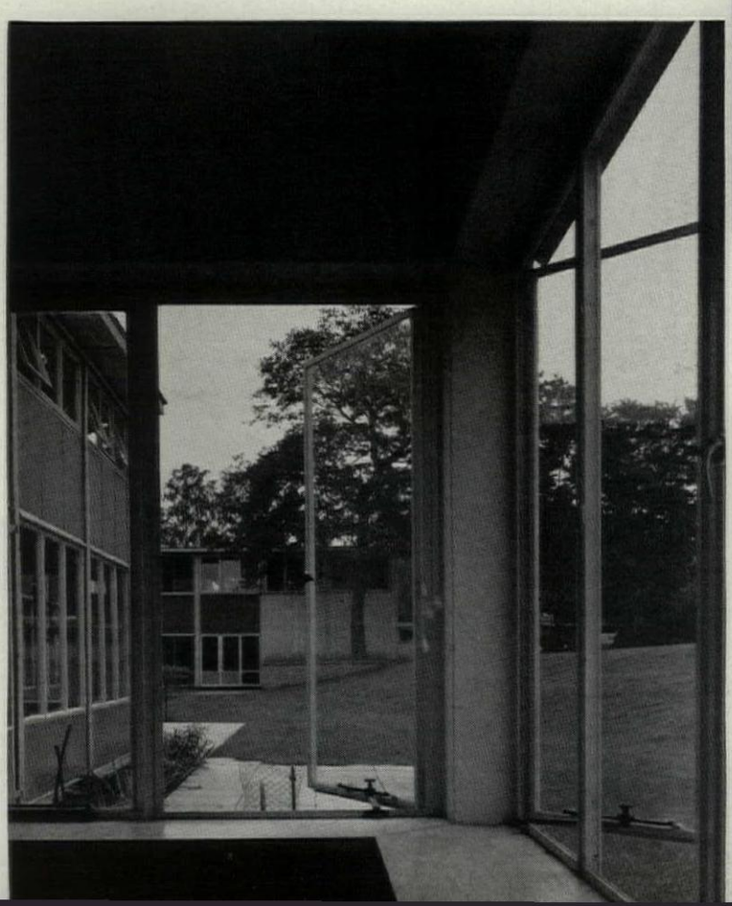
Precast wall panels spanning bays are quickly clipped, grouted in place. Note columns of four angles welded to interior forming straps. Each side being alike makes connection from any direction identical.



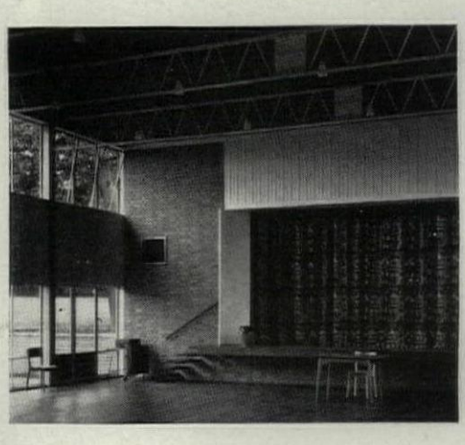
Column, column plate and eave detail show how elements are easily bolted together. Eave bracket bolted to column plate takes precast concrete trough which forms gutter and eave. Square, hollow columns can carry heavy flexible rubber-covered cable.

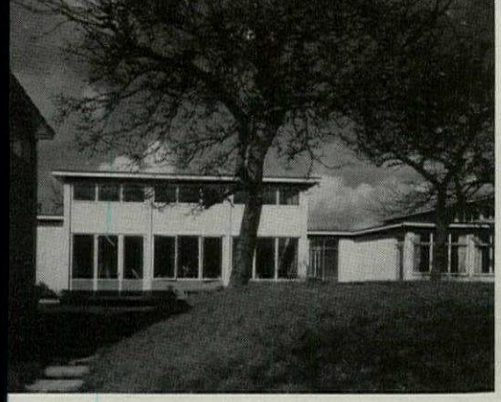
Photos (pages 130-131) Courtesy Architectural Review

School erected during intermediate stage of system's development (above) shows use of vertical precast wall panels, flat roofs. More than 40 different window shapes varying from transom type (above) to floor-to-ceiling (below) permit flexibility of design. All windows are based on some division or multiple of the 8'-3" horizontal and 8" vertical modules and are made of painted galvanized steel or aluminum.

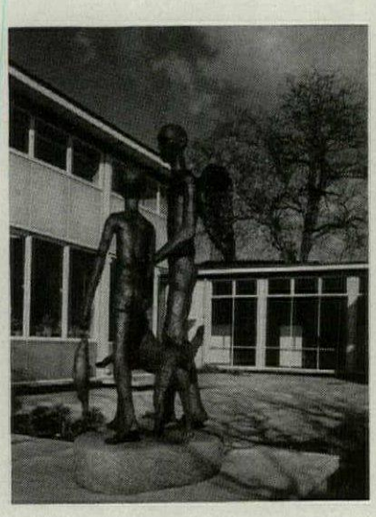


Murals (as in dining hall above) or bright paint decorate interior walls. Assembly hall (below) shows simplicity of interior finish.





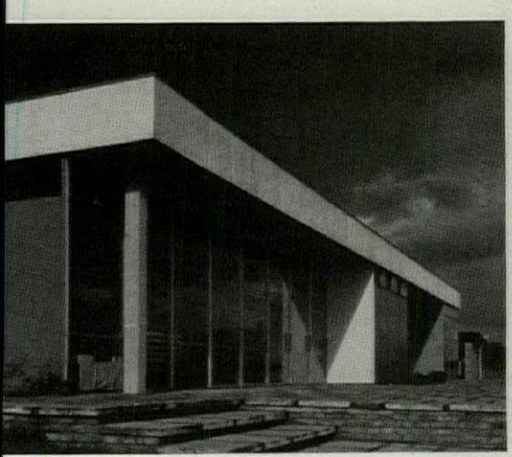
Design diversity is achieved in British prefab yet all parts fit its modular cage. Below: Small part of school's budget (a fraction of 1%) goes for mural or sculptural decoration.



This is a typical classroom in one of more than 40 prefabricated Hertfordshire schools using a single prefab system based on an 8'-3" plan grid.

At this point in system's evolution, eaves were abandoned to simplify construction. Exterior precast wall units had variety of finish from sand plaster to gravel. Later an independent eave detail (p. 126) permitting quick construction was developed.

Day nursery was one of first schools to use a 40" grid rather than the original 8'-3" standard. Though the new standard permitted more design flexibility, it complicated industrial production of parts, was abandoned and the old grid restored. Steel beams support roof here while all walls, exterior and interior, are of laminated plastic. Facia is fluted asbestos.



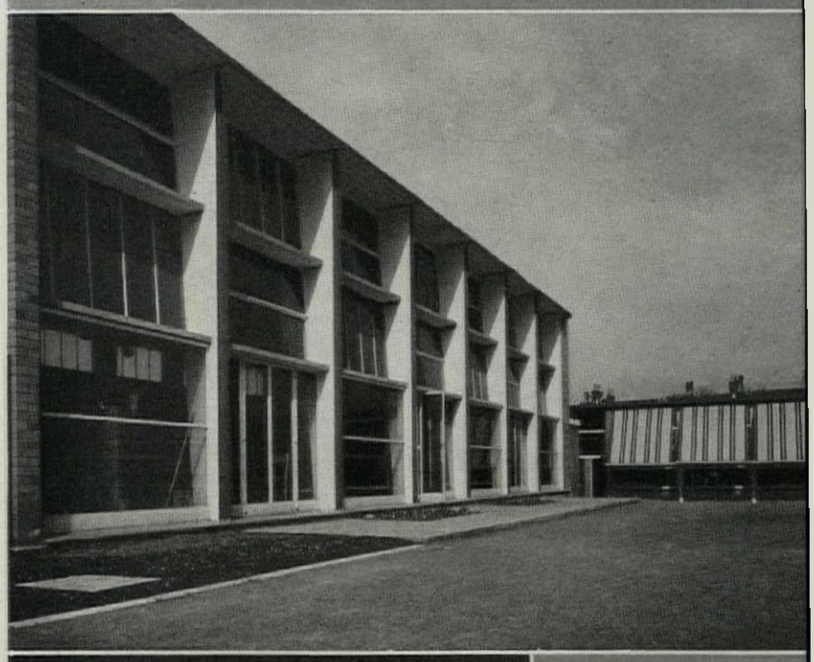
Concrete prefab system

In direct contrast to the light, easily handled prefabrication system used in Hertfordshire is the prestressed concrete system employed on schools in Putney and Hamersmith. Here, columns and beams, sills and lintels are of reinforced concrete. These form a long gallery which is covered with prestressed concrete boards and steel decking units. Walls and partitions are of traditional type: 11″ cavity brick walls and 4½″ brick partitions.

Three considerations determined the choice of this system: speed of fabrication and erection, cost and steel economy. The reinforced concrete units took only half the steel needed for the most economical steel structure. Only ten basic units were employed so that the goal of speed could be attained. Since this system has so far been employed on only two schools, its costs, being those of a prototype, are not noticeably lower than normal construction.

Chief advantage over the Hertfordshire system is the saving in steel—a critical factor in steel-hungry Britain. But its large concrete members demand heavy equipment to put them in place. Also, it is less flexible in design, being confined to a system of long galleries in which interior partitions must be fitted to meet educational needs. The result, however, should drive out thoughts of prefabricated schools being in any way temporary structures. After one look at the large, masonry members, their permanence is obvious.

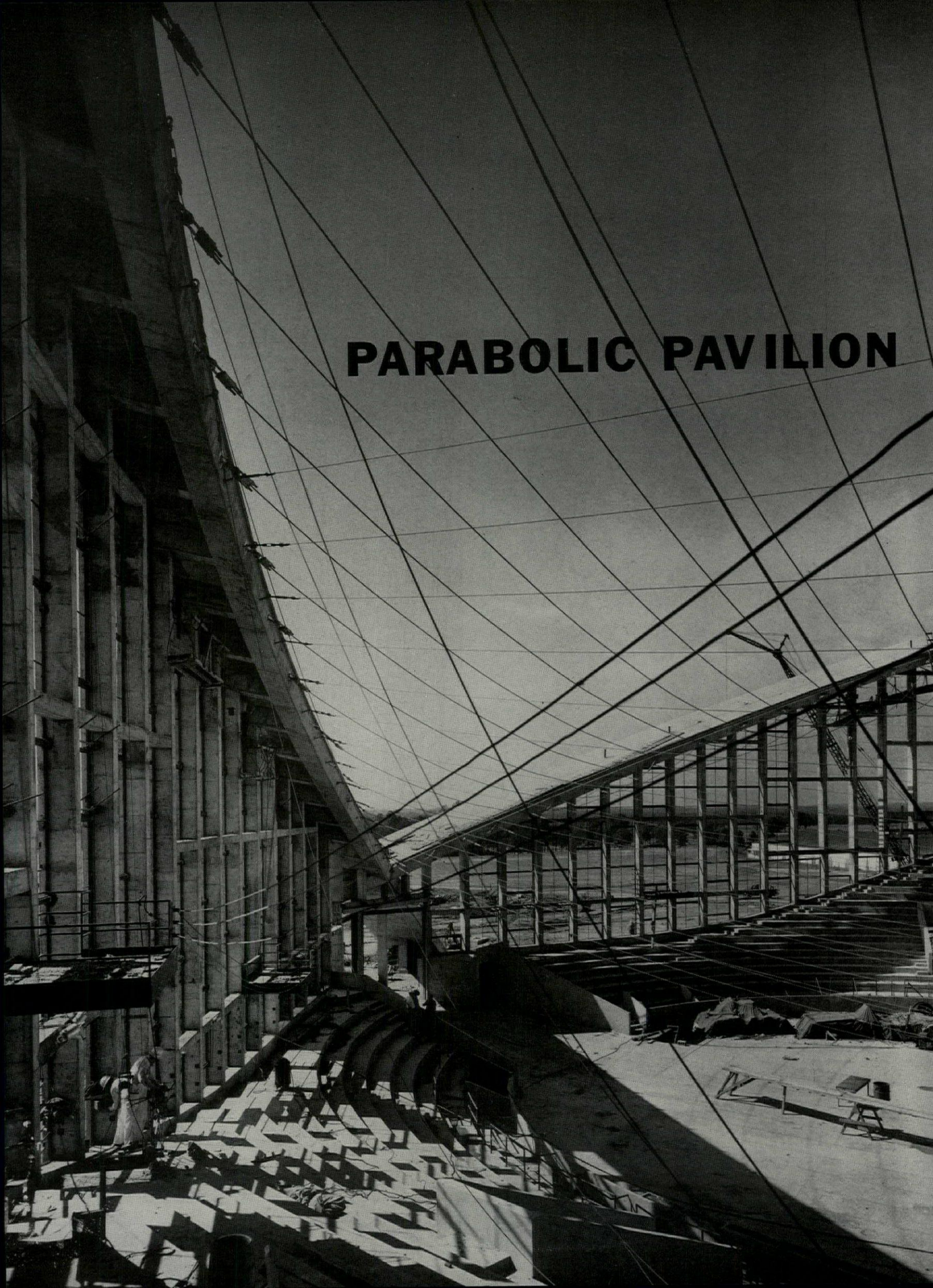
All photos (132-133) Courtesy Architectural Review



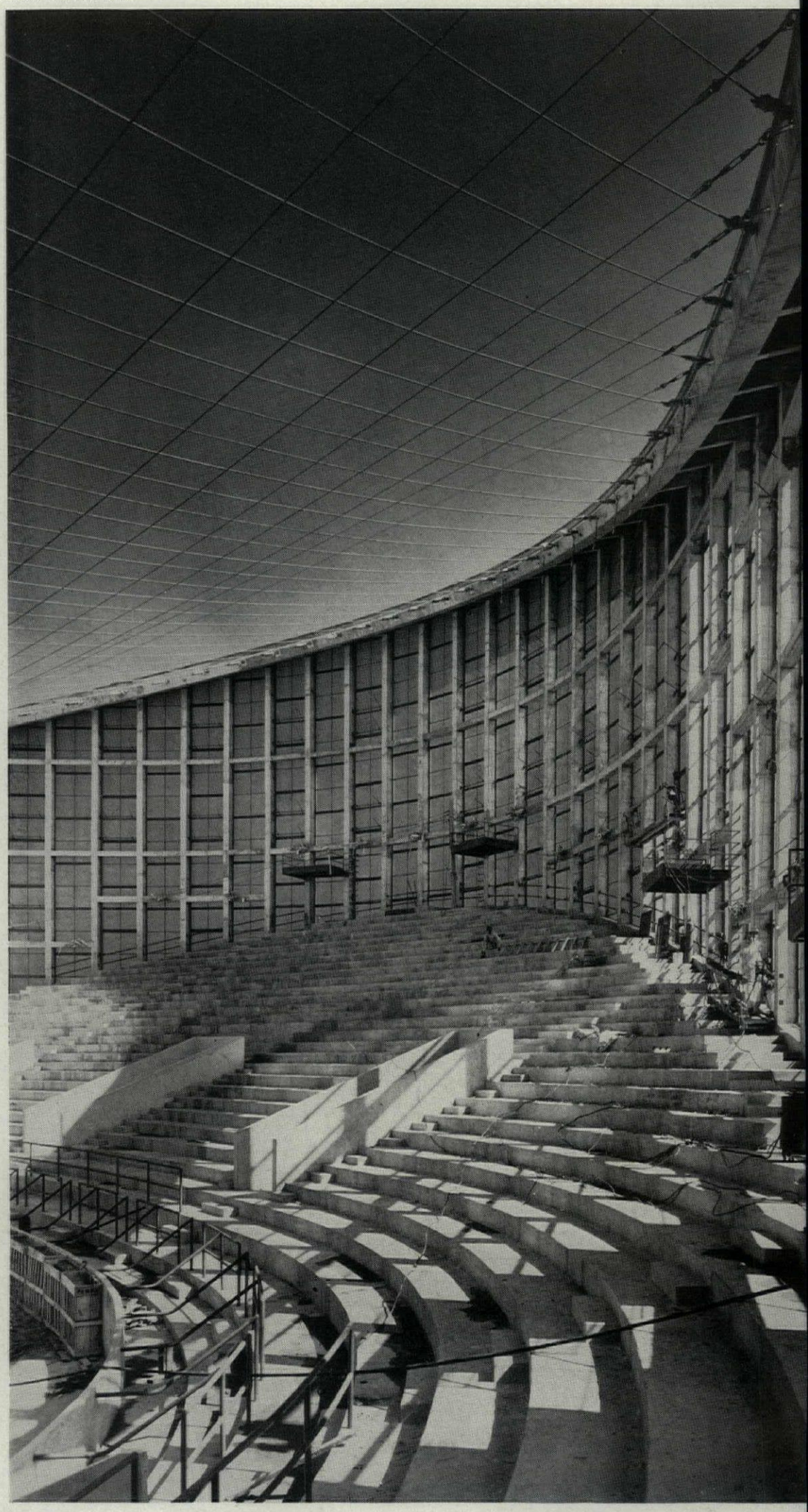
Top: Assembly hall and awning shaded class wing. Above: Assembly hall interior.

Access corridor

Diagram shows elements of concrete prefabrication system. Below: Typical class room with exposed beams.


PARABOLIC PAVILION

Photos: Lionel Freedman



A spectacular testimonial to architect-engineer collaboration

It's just the frame for a livestock-judging pavilion of a state fair but the ardent discussion in North Carolina papers shows a whole countryside already responding to its drama.

It raises the question: Why, in this land of the engineer, are there so few frank expressions of integrated engineering that create dramatic architecture?

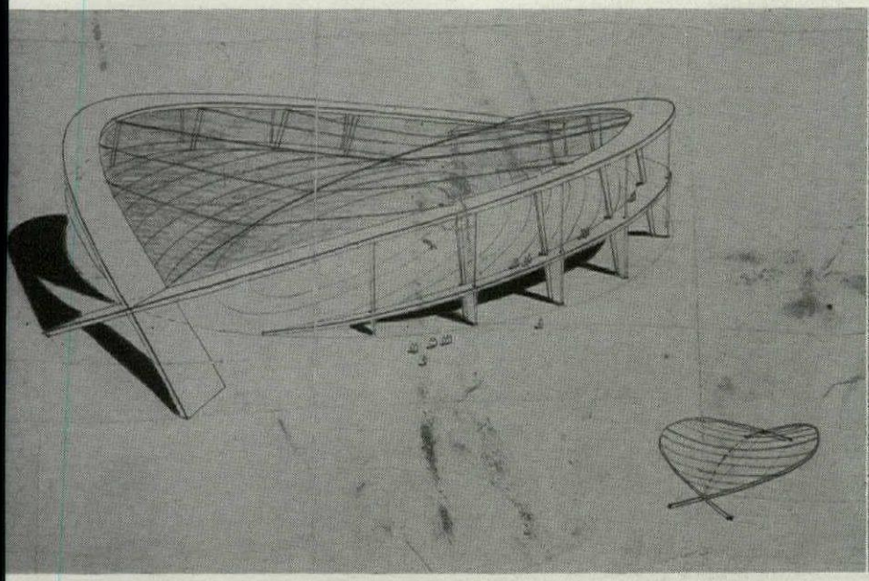
To professionals the meaning of the bold structure is more precise:

The great interlocked parabolic arches rising obliquely from the ground form "compression rings" as a key to the construction.

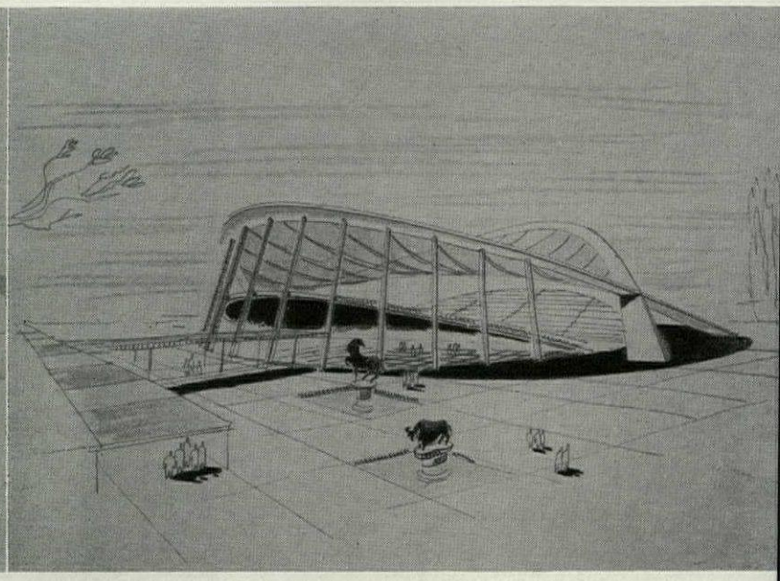
The suspended catenary roof strung between these two arches is the first such roof at large scale since the Chicago World's Fair of 1933; and this one is more complex, more exciting.

The slender vertical framing of steel box columns serves a series of functions: support, bracing, glazing.

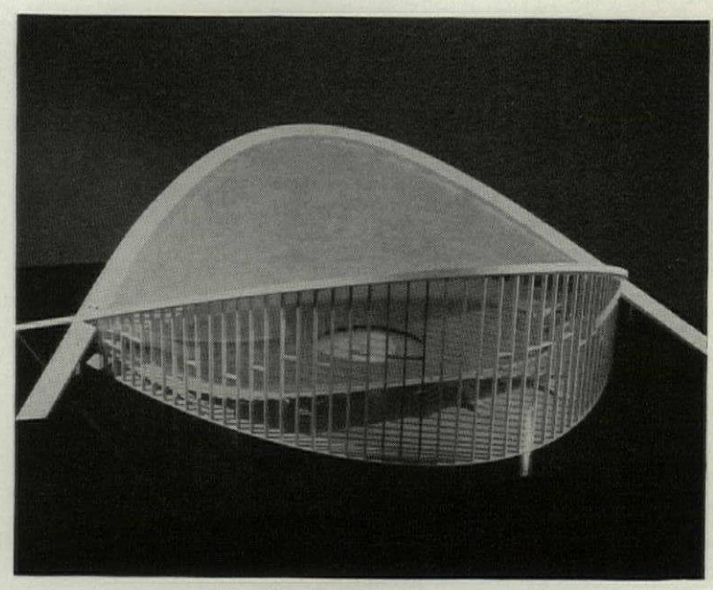
The grace and verve is abundantly evident in the accompanying progress photos of the structure, which will be finished by year's end.



Scheme 1: *Nowicki's original conception: few columns, two arches in compression carrying a suspended roof in tension.*

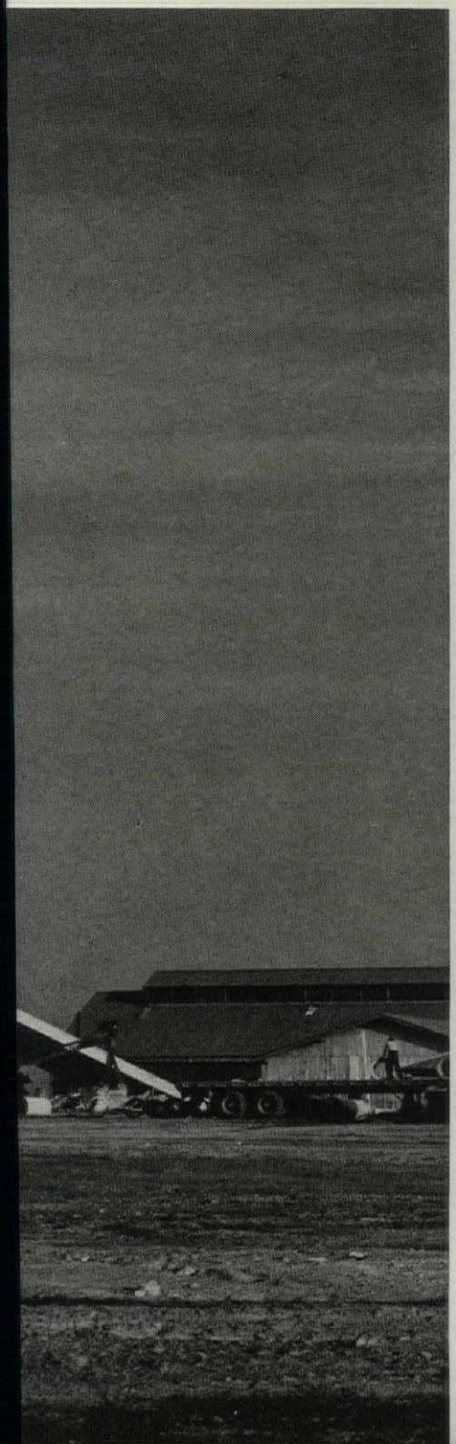


Scheme 2: *To carry arch loads more efficiently columns were sloped farther and spaced closer together.*



Louis H. Dreyer. Model by Rogey

Scheme 3: *Final Design: when sides were to be enclosed, columns were placed vertically, spaced close enough to receive sash.*



Photos: (opp. p.) Lionel Freedman

NORTH CAROLINA STATE FAIR
LIVESTOCK JUDGING PAVILION
WM. HENLEY DEITRICK, architect
MATTHEW NOWICKI, consultant
SEVERUD, ELSTAD & KRUEGER, consulting engineers
WM. MUIRHEAD CONSTRUCTION CO., general contractor

Collaborative methods

The original concept arose in the fertile mind of young architect Matthew Nowicki, whose untimely death at 40 in an airplane accident (AF, Sept. '50) has been called a catastrophe to architecture by able critics. But invaluable assistance came from creative engineer Fred Severud and his staff, and from his close friend, veteran architect William Deitrick. With the devoted aid of *his* staff Deitrick carried on after Nowicki's death, holding to just one aim: that necessary changes be held to a minimum, that all be done "as Matthew would have wanted it." And as construction began, further aid and advice were given by contractor William Muirhead, subcontractors, suppliers and workmen on the unprecedented structure. Equally important was the enthusiastic attitude of State Fair manager J. S. Dordan toward this new kind of building. Whatever may be the ultimate judgment of the result—and it promises wonderfully—the work was a fine victory of collaboration and devotion.

Spatial design

In terms of design, Nowicki was seeking first of all not for a unique structure but for a unique space. Under the big hung roof there would not only be clear sightlines to the central arena but the topmost spectator on the grandstands would be aware of just as much room overhead as the lowest. Moreover, the remarkable *warping* of the space upward, the exact reverse of a dome, would guarantee maximum daylight admitted from the two sides to the central arena. This labile kind of curvature of enclosed space marks a new epoch in architecture.

Engineering design

First sketches by Nowicki himself show all the essential elements of the finished scheme: the crossed oblique compression arches supported on columns, the tension cables meant to hold the roof. In Scheme 1 the span between arches is very wide, the columns are sloping and widely spaced. In Scheme 2 the arches are raised higher, the spans between them decreased, the sloping columns still tilted toward the center of the structure — all this in order to reduce stresses, increase stability.

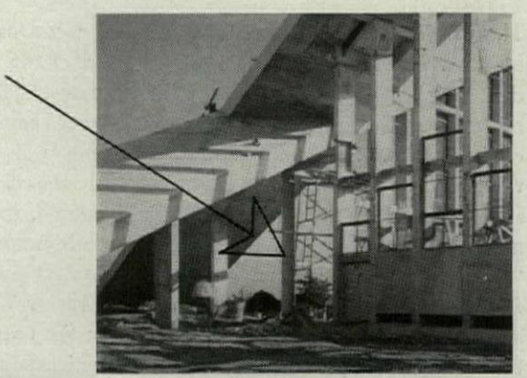
Ultimately it was decided to enclose the sides with glare-reducing glass. Rather than confuse the design through a whole new series of vertical mullions between the wide-spaced columns, just to hold the glass, the structural columns were now drawn close enough together so they themselves would double as mullions. At this point, too, it was decided to make the columns vertical *(see Scheme 3)* instead of sloping: a) to eliminate the hazard to spectators of broken glass falling on them from a sloping enclosure; b) to ease erection; c) to simplify fabrication and installation of windows.

Catenary roof

Chief difficulty with a catenary roof is the extra suction caused when wind blows across the hollow surface, causing "flutter." The designers crossed the primary roof cables (running transversely from

arch to arch) with a second cable system at right angles to the first, forming a two-way grid, then guyed all the intersection points (except a few in the middle) to posts to tighten down the roof and eliminate flutter. (For further discussion, *see page 162.*) The first idea of a fabric roof covering has been abandoned in favor of a corrugated metal decking topped with a regular bonded roofing. Drainage will be off the low ends, to catch basins forming part of the landscape plan.

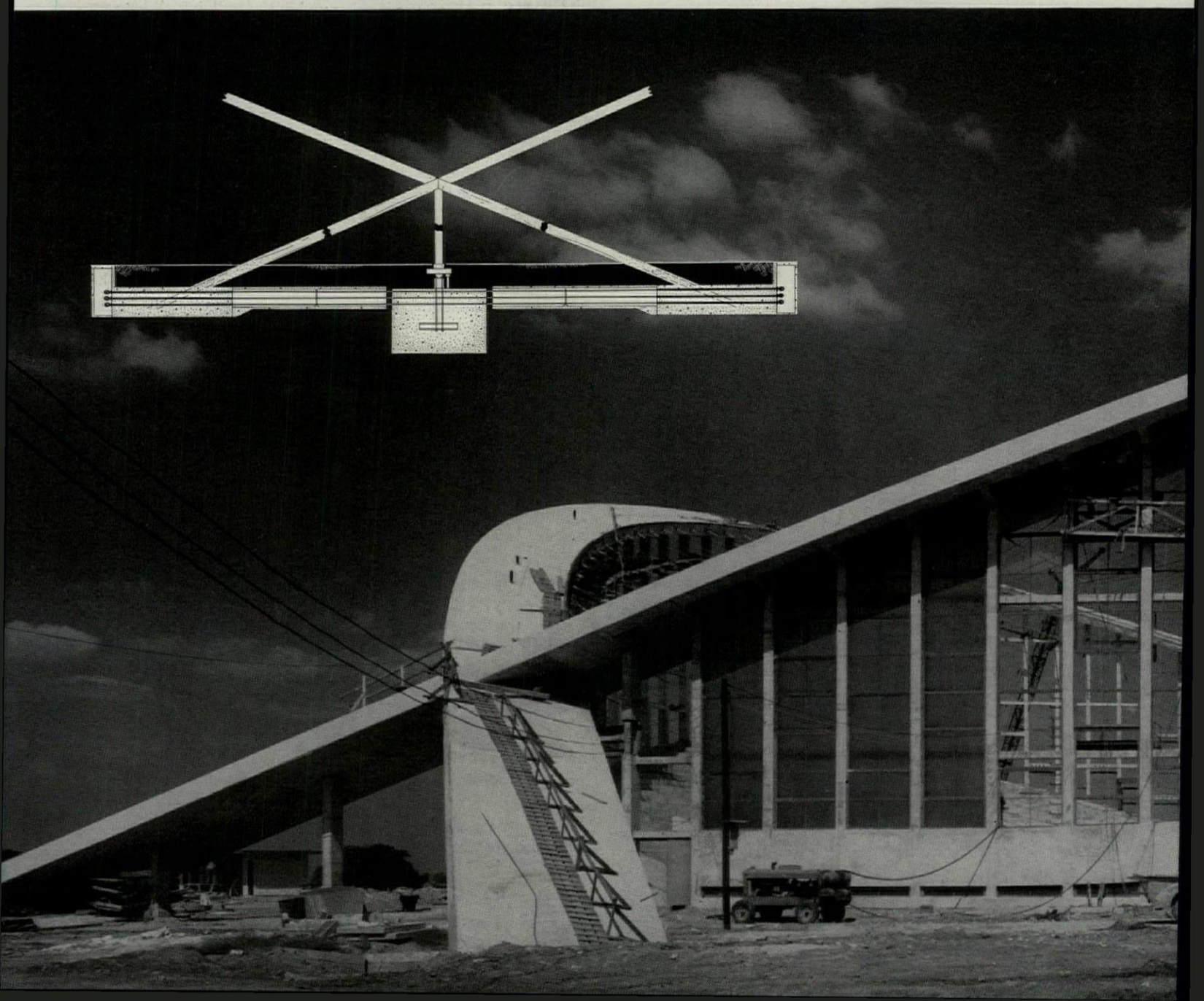
Progressive installation of steel roof decking atop the cable structure will create shifting loads and require adjustment of uneven stresses in the abutments. In addition, slackening and tightening of the steel roof cables due to temperature variation is expected to vary stresses in the abutments. To equalize these variable stresses, the column beneath each abutment intersection (below) has a welded collar under the rim of which a 25-ton jack can be placed. Abutment ends are tied together through an underground tunnel.



Erection experience

The idea that, once erected, the arches acting in compression and primary cables in tension would produce equilibrium was sound. After the relatively short abutments of the two arches were in place, they were tied together by means of prestressed steel cables running through a tunnel between them. In addition, the column under the intersection was fitted with a welded steel collar under which a 25-ton jack can be placed. Thus when roof decking is installed, stresses in the critical intersections can be controlled by varying tension in the prestressed cables or operating the jack.

Since the arches had to be continuous to perform correctly, the



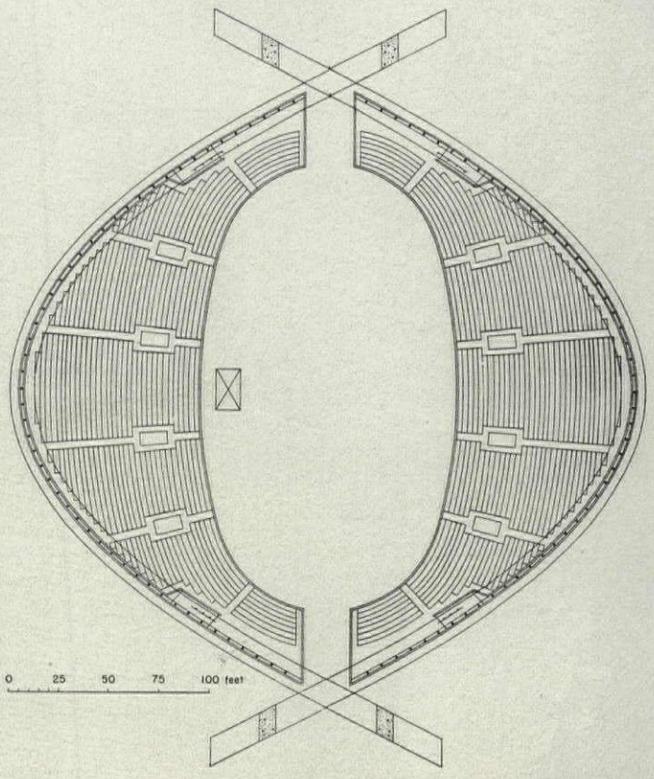
usual expansion joint had to be omitted. Instead, expansion and contraction were taken care of by a hinge in each arch at the intersection point.

Plan of pavilion

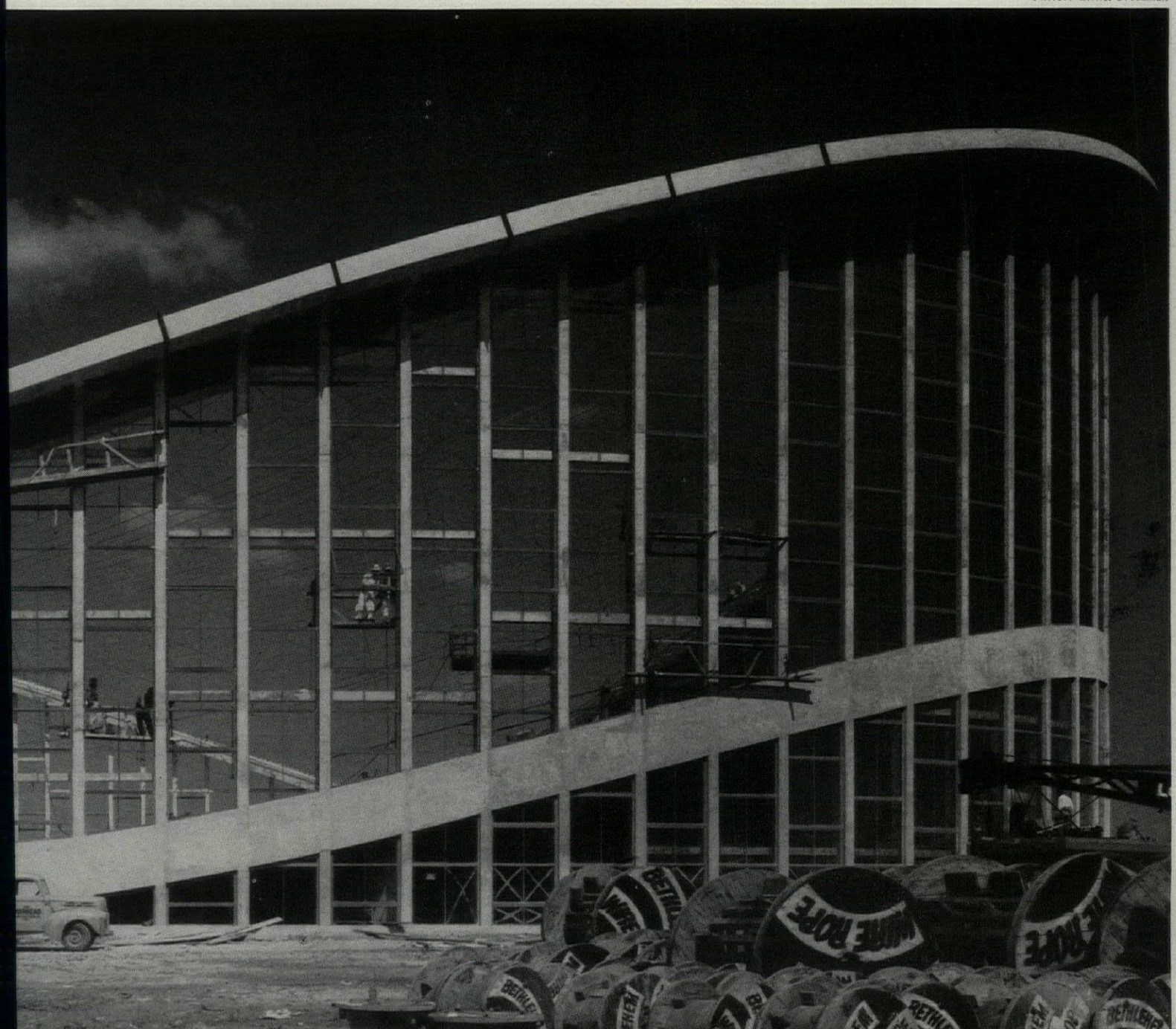
Main entrances are from the pavilion's sides to the seating stands, which hold 5,500 people. (An additional 4,000 can be seated on chairs set up in the arena.) The arches rise to a height of 90′ and the topmost row of seats paralleling the arch rises 34′. Lighting platforms high on the walls above the tiers of seats will be equipped to spotlight any area in the pavilion. To control the lighting, each platform is connected by an intercommunication system.

On the basement level below each side of the pavilion are large exhibit rooms connected by a corridor that parallels the exterior walls of the arena. Also on the basement level will be dressing rooms, toilet facilities, storage and mechanical space.

The whole pavilion will be heated by forced hot air from the basement level. Cost of the pavilion, completely equipped, will be about $1.5 million. The bare building cost: 37¢ a cu. ft.



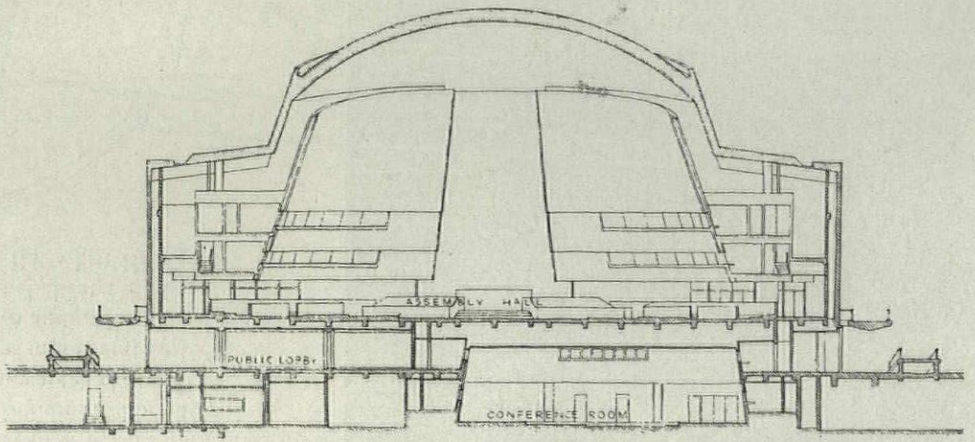
Photos: Lionel Freedman



UN GENERAL ASSEMBLY

Does it mean a turning point of modern architecture?

Or is it the "bankruptcy of the international style"?



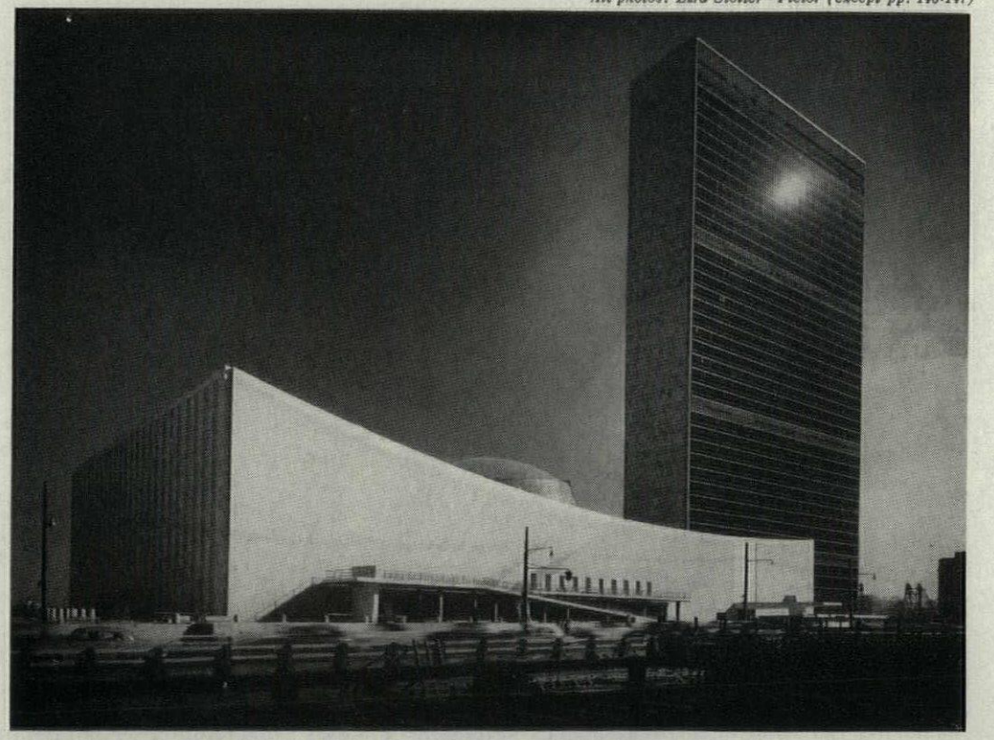
When UN delegates met this month in NY they got a big surprise, for their new Assembly Hall is almost as different as possible from the expectation raised by its chaste marble shell. Indeed, the room in which they foregather challenges current architectural models as strongly as the delegates are likely to challenge one another.

The reign of clearly translated and systematic functionalism is what the new Assembly Building secedes from, opening the question what other forces are on the way.

Not many architects have yet been inside the chaste white marble shell with its drawn-in middle and its flaring corners, its scooped roof surmounted by a blister dome; but comments already made have been explosive. Most explosive are the words of those disciplined in some modern school of architecture. What architect Wallace K. Harrison conveys to them through his building—and this one is basically his responsibility alone—can be described simply and objectively as "shock."

That a modern architect who only recently made an obedient translation of widely held "modern" tenets in his striking skyscraper slab of the UN Secretariat (AF, Nov. '50) and was still within the fold in his spacious Conference Building (AF, Apr.'52) should have departed so far in a major structure for the world's most prominent public body, bespeaks not only personal daring and conviction but also some loosening of surrounding dogma. For no architect proceeds

All photos: Ezra Stoller—Pictor (except pp. 146-147)



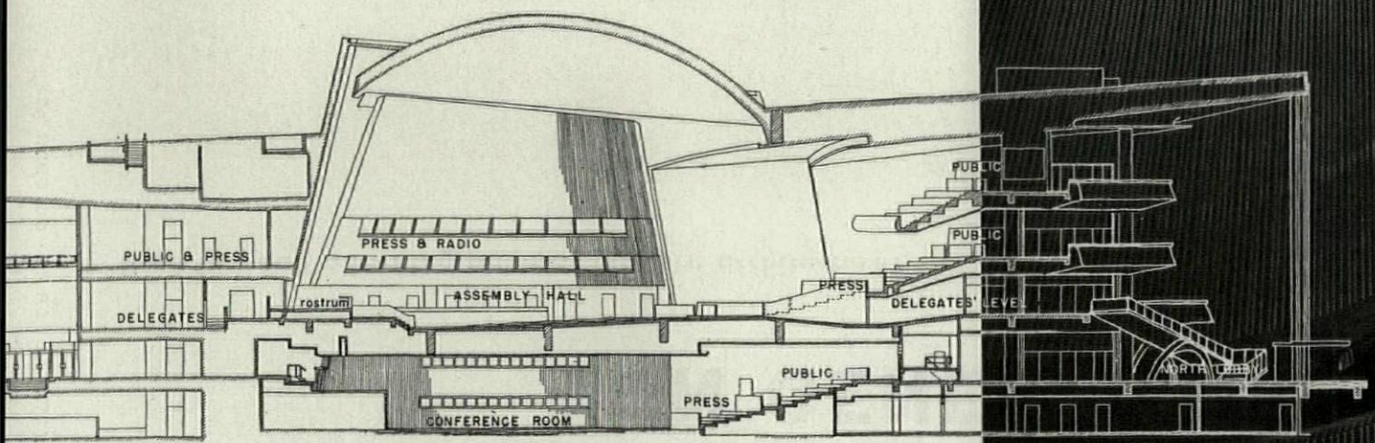
on a structure so important without permissive attitudes by many important people.

The Assembly Building is consequently an invitation to lay aside hasty judgment, to try to see exactly what Harrison did and how he came to do it.

Quite obviously the building is, first-off, a major building treated as a free sculptural shape. This trend has been evident in the work of the great Le Corbusier himself—witness especially the top and bottom of his Marseilles apartments (AF, Mar. '52)—and it is carried further among "Corbu's" brilliant successors such as Nowicki *(p. 134, this issue)*. The T-square, which had turned so much modern architecture—including the big UN Secretariat—into slabs and boxes, has lost its dominance in favor of fluid curves which modern technology builds with increasing ease. Corbu himself helped set the exterior shape of the Assembly (AF, May '50) knowing that its sweeping curves would give the smaller building the power of bringing the whole group to a climax (a piece of sophistication that escaped critic Lewis Mumford, who demanded more importance for the Assembly through the primitive device of simply making it bigger).

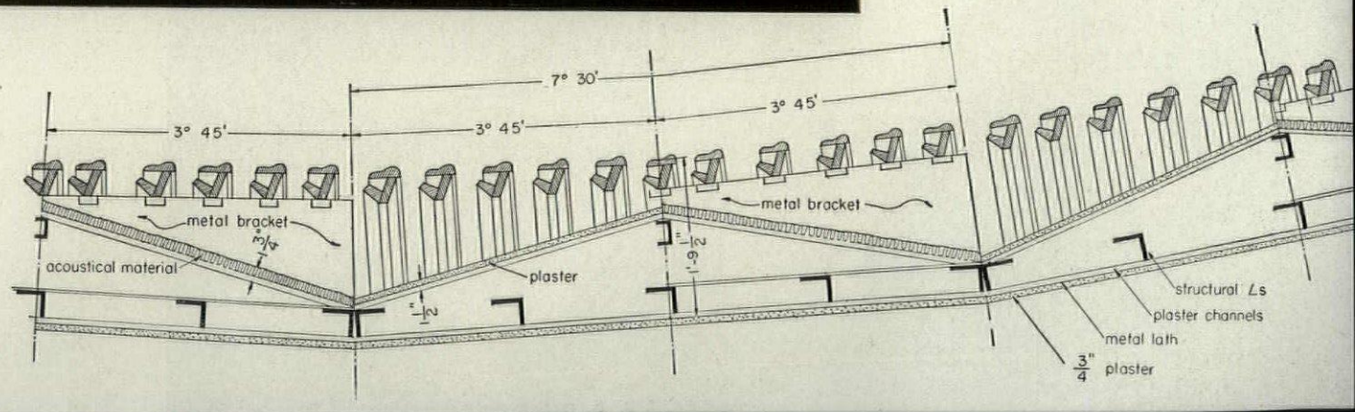
But here a big difference begins. Other fluid modern buildings are still broadly and clearly functional; the Assembly's shape strikes many as "arbitrary." In a fluid building such as Nowicki's pavilion the flowing lines are in direct and legible keeping with both the structure and the space inside; in Corbu's Marseilles building the fat legs that hold it above the ground, though not the cheapest of structural supports, are directly expressive: they speak of a building deliberately raised into the air and they clear the ground of unwanted clutter.

The derivation of the Assembly's fluid shape was more complicated. When Corbu helped design it there were to be two auditoriums head-to-head, each fanning outward like a conventional theater designed simply for acoustics and the "peephole" shows. But when Harrison,



Acoustical treatment of the tilted side walls of the delegates' hall (above) takes the form of a gilded fence of irregularly spaced wood rails, behind which are slanted surfaces (detail below). Some of these surfaces are finished with acoustical plaster, some with plaster. The aim is to break up reverberations and overlapping echoes, and it is well realized. Reverberation was the only real acoustical problem in the design of this shape, since all voices are mechanically projected to the participants and the audience by means of amplifying equipment. Original plans called for plastering the dome overhead, which might have focused noise on one spot in the floor, but the unhidden roughness of the finally exposed framing took care of that problem.

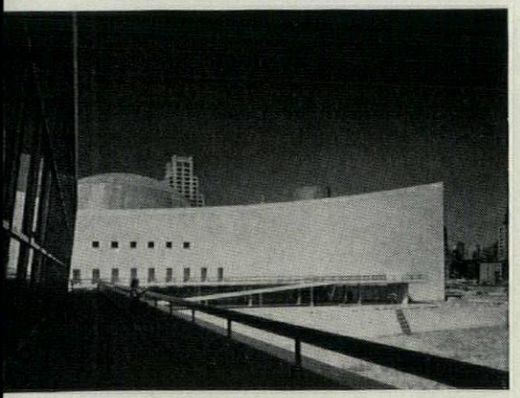
The assembly hall, viewed from beside the rostrum. Missing at the time this photograph was taken were the off-white delegates' chairs; blue chairs shown are for alternates, who sit behind delegates. Leger murals, one of which can be seen above, were drawn at an original size of about 8" x 8", then enlarged.



for reasons of economy, had to redesign the Assembly in terms of a single meeting room, he made a real study of the need—and with thorough attention to every existing legislative hall; then he emerged with what was basically a "theater in the round." He did so for the same reason that theater managers do: for a greater sense of intimate observation. Here the delegate "actors" were to be a great crowd, 850 of them; and Harrison decided to ring them with the "eyes and ears of the world," the press and television booths that would radiate messages from this circle to the ends of the world and that could practically be accommodated no other way. (The live audience, though welcome, was relegated to a low-ceilinged bleacher section and comfortable mezzanines.) And once the big round room was there it needed a dome for impressive height; and the dome punched through the roof, which was lowest at the center.

Now in logic this redesign of the room might have called for redesign of the building as a whole; but for reasons of policy (dealing with a sensitive international group of advisers) Harrison did not want to disturb general relationships won through costly negotiation. So he changed the interior plan but retained the major elements of the exterior shape, and a contradiction was there to be either resolved or brazened out. The original "meaning" of the outside shape was gone.

For most modern architects such a conflict between function and legible form would have been insufferable. They have come to view architecture through 30 years of looking at Wright and Le Corbusier, superimposed on any number of years of the "Beaux-Arts." All these years architecture has resembled classical music in the development and knitting of a series of chosen "themes" inside and out. Even McKim, Mead & White held to this in design, repeating exterior moldings in the interior though at different scale and refinement. So Wright might carry through the same brick from the outside in, or Corbu the same flat painted surfaces from inside out. The great aim is architecture so *modulated* as to be "of a piece." Grids, modulations, expressed construction, interpenetrations, all hold the consistent pace.



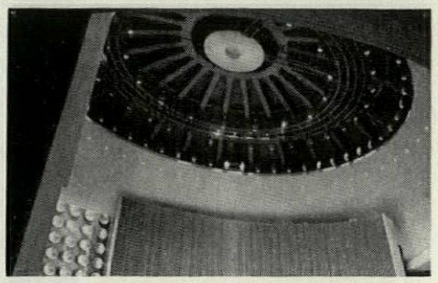
But all through the Assembly Harrison goes a different path. He

These are the balconies which face the translucent north end of the General Assembly Building, overhanging the main lobby for the public (see also picture, lower left on page below). Ductwork under roof of this lobby is left exposed, painted darkly.

PAUL RUDOLPH, *a leader in the young generation of architects, inspected the General Assembly Building and made this critique for the* **FORUM:***

"The interiors of the UN Assembly Building bring the so-called International Style close to bankruptcy. Of course the building is not really a product of the International Style but rather a background for a grade 'B' movie about 'one world' with Rita Hayworth dancing up the main ramp. In the north entrance lobby there is no balance between the volume of the lobby and the extremely violent movement of the balconies and ramps, and the vertical movement of the prisonlike northern facade. One does not dominate the other; they merely fight each other. In true baroque architecture one finds many forms which cause the eye to rush forward only to be retarded and then caught by other forms thereby creating a delicate balance of movements.

"The extreme height of the entrance lobby makes the height of the connecting side foyers and lounge areas seem oppressively low. The exposed steel arch supporting a portion of the ramp and the exposed mechanical equipment at the ceiling seem naked and crude indeed when seen next to the



highly polished surfaces of the marbles, glass, stainless steel, woods, etc. Indeed every trend and school of thought is represented in the interiors so that one finds Scandinavian homilies juxtaposed to Miesan icebergs producing a truly surrealistic effect.

"This is not a plea for less variety but merely a reminder that an underlying philosophy is needed in any effort. If such a philosophy existed among the architects responsible for the buildings one would not find certain members arbitrarily reduced to their minimum size while others are enlarged to the point of grossness (notably the frames of the entrance doors to the north lobby, the concrete support of the main entrance ramp where it turns, the foot-wide doorknobs, etc.) Caprice has a place in architecture but that place is not in a world capitol.

"Perhaps the most disconcerting feature of the assembly room is the lack of identification with the exterior form of the building. The complicated intersections of the compound curved ceiling forms and the lack of a visual resting place for the exposed ribs of the center dome (it appears to rest on a curved plaster surface) is not to be excused. The sloping walls surrounding the timid dome seem to unwittingly symbolize a world which has indeed gone a long way toward crashing upon itself. One cannot help but wonder what is behind the tremendous circle surrounding the 'eye' of the dome although it at least gives it added importance whereas the 'eye' in the north lobby is completely lost. An observer is not led smoothly from one element to the next for there is no cohesive idea. The two murals seem to be particularly ineptly placed for they are designed as a 'spot' but placed approximately at mid-point between the front and rear and therefore stop the eye in its natural desire to sweep from front to rear. The International Style has never been more misunderstood. Le Corbusier's diagram unfortunately did not indicate the way for the interiors of the UN Assembly Building."

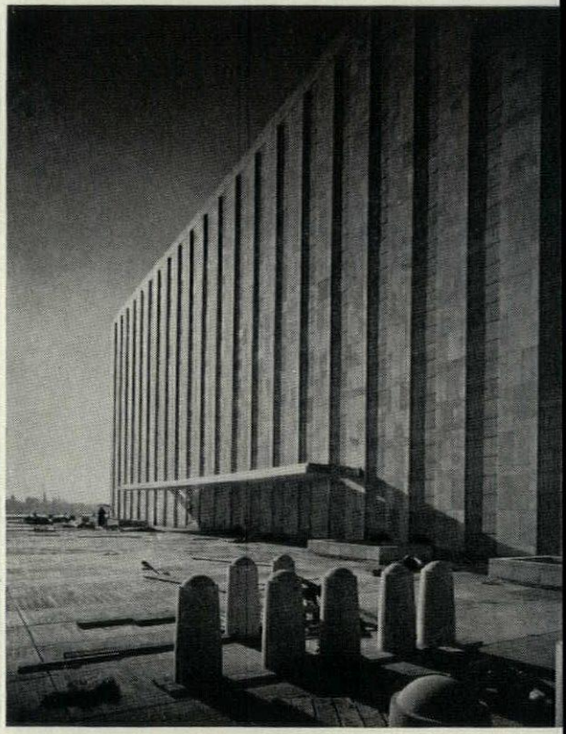
---

* Month ago FORUM set out to get the opinions of a considerable number of outstanding architects on the Assembly Building, but so few had seen the building before this went to press that this symposium had to be postponed. Rudolph's comments are published this month only to show how strongly architects react.—ED.

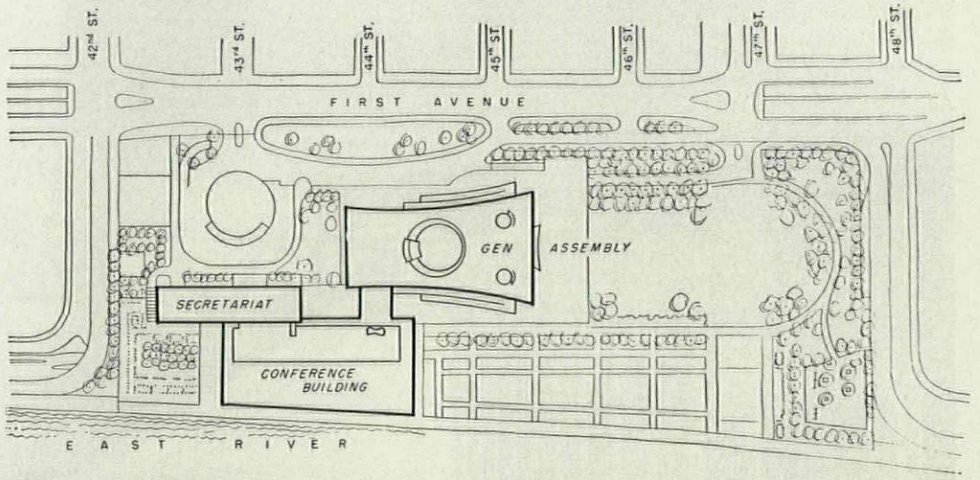
The north lobby again (far left). Workmen still were cleaning up when photo was taken, as paraphernalia at bottom of ramp shows.

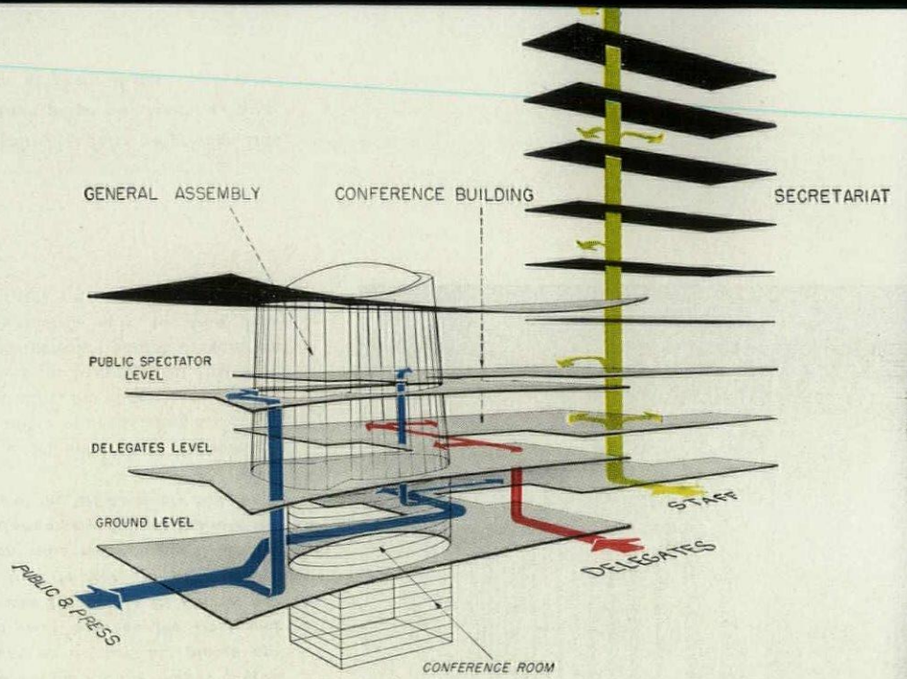
Above you are looking up into the dome over the delegates' area in the hall. This entire area is stage lighted for benefit of television cameras.

Below is the exterior of the north end of the building, with a few unplaced stanchions in the foreground. Architects specified a new type of photosensitive glass, with a line pattern, between the marble-clad piers.



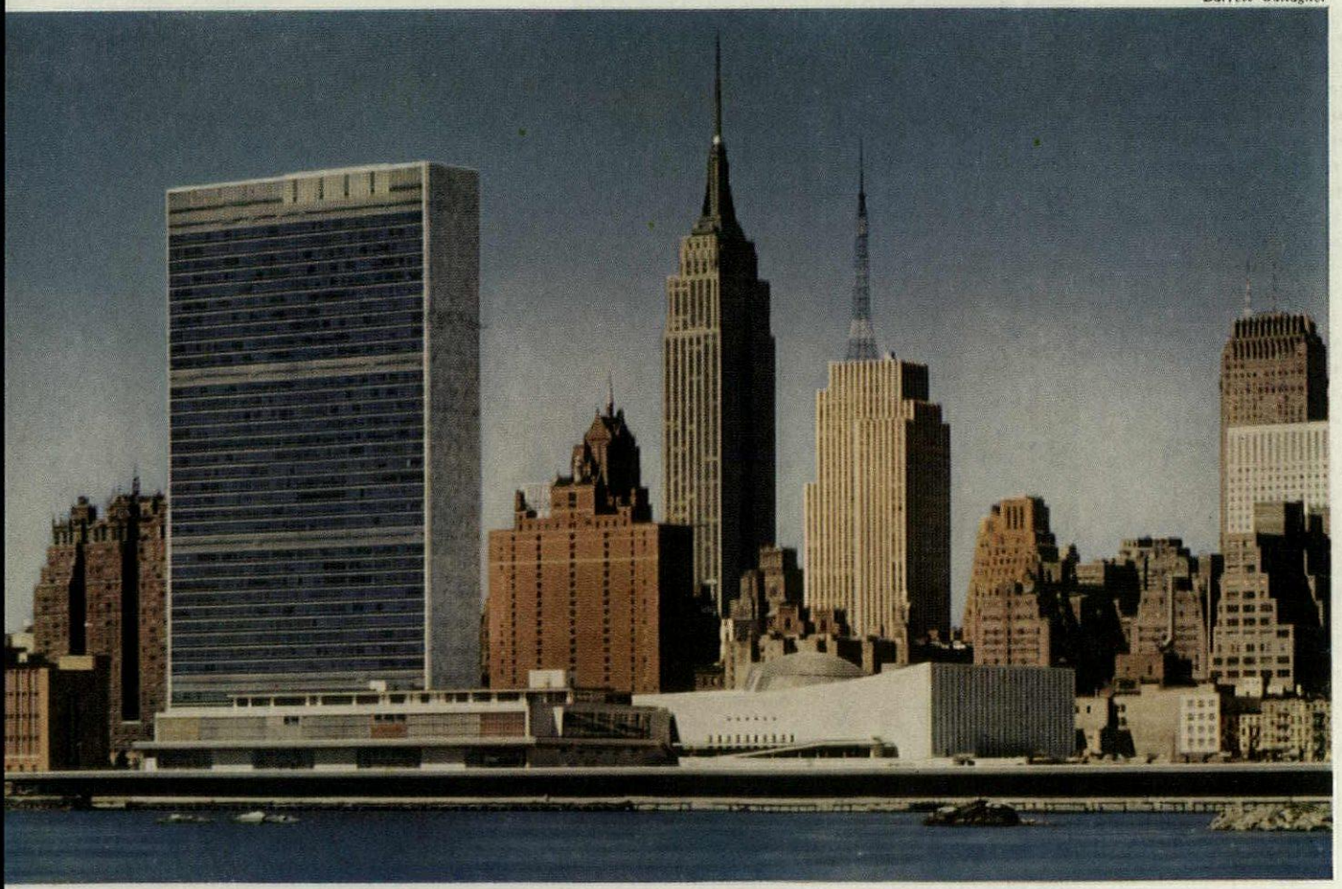
UN GENERAL ASSEMBLY





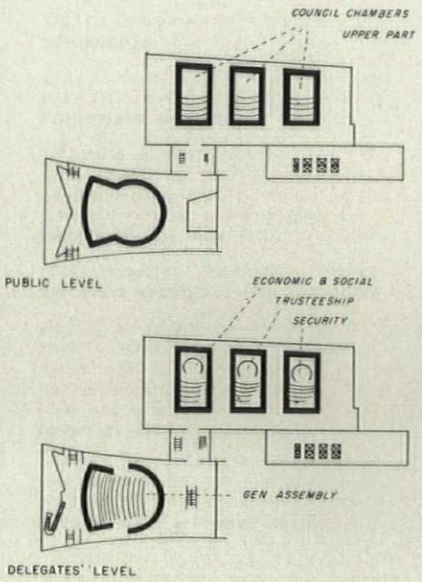
Exploded diagram shows how circulation of delegates, public and press, and staff was kept clear and unentangled. All public and press enter group at north end of new General Assembly and circulate either on ground level or "third floor." Delegates enter west side, miss public, and circulate on "second floor" to conference building. Most of staff enters Secretariat, where offices are, but can reach General Assembly on several levels.

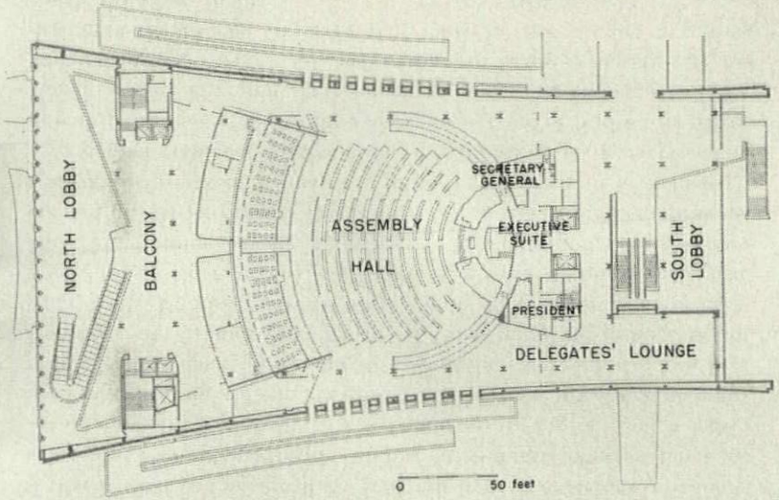
Barrett Gallagher

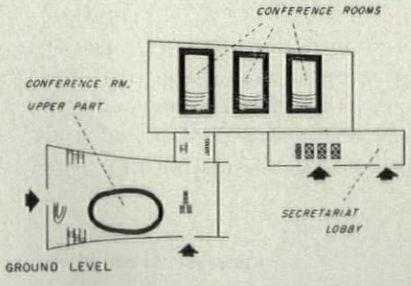


From the East River the limpid shape of the General Assembly is a good foil for the geometrical Secretariat

UNATIONS







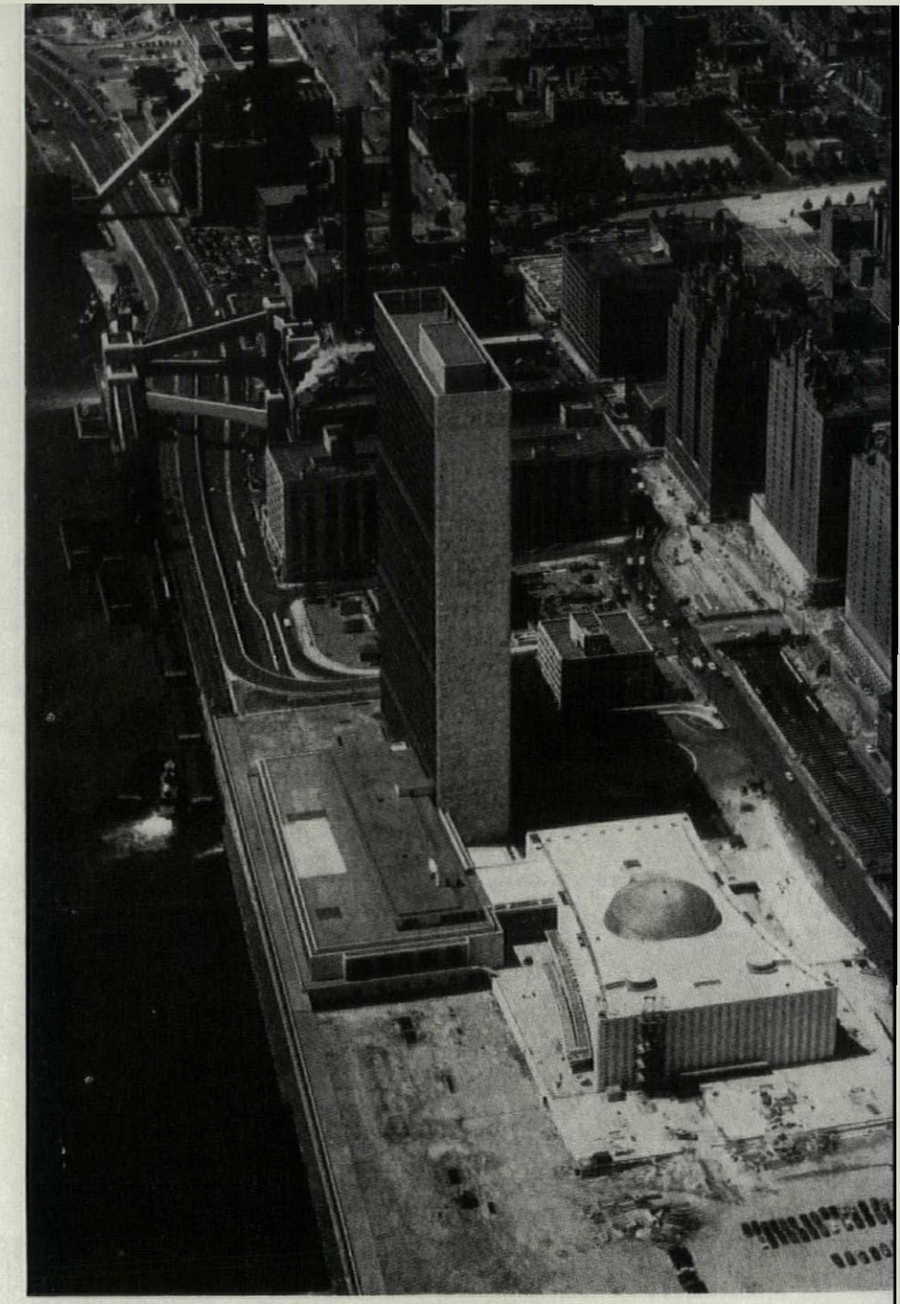
brings in new themes suddenly, like an improvising modern, drops them after they have shocked and pleased.

Moreover, Harrison loves contrast as well as surprise. The tall entry foyer on the north is wholly vertical in its north wall. What shows on the exterior as a series of alternating marble and translucent strips shows here as strips of translucent photosensitive glass alternating with brown painted piers trimmed with gilded heating risers. Yet directly across and close by, the balconies of successive floors—all white—set up a violently contrasting horizontal theme, rising tier on tier with their rounded edges like a vast rack of racing canoes.

From this tall foyer space the visitor is led through sudden low-ceilinged, close, low-lit passages—the change in scale and light is another Harrison trick—to emerge suddenly at the bottom of the flood-lighted assembly room's splayed dome-capped cylinder. Its fluted converging surface brings in another sudden new theme (the fluting is for acoustics but it recalls those forward-leaning Aalto wood walls at the New York World's Fair); the slot of light behind the speaker, buttoned with coats of arms, is yet another spectacle. Almost the only uniform element throughout the building—as indeed in other buildings of the UN—is a sudden stopping of fine wall finishes close to the ceiling. Here the "working" ducts declare themselves in a deep gray-blue flat paint against the same color in the revealed structure of the roof, running their work-a-day errands like waiters at a ball—a little bow to our new mechanical servants.

All of this points to a different temper and a different approach from some of the best known modern masters. Here is a building that represents an intuitive series of treatments rather than development of a closely reasoned scheme; a series of episodes rather than a close-knit event; an empirical set of experiments rather than the compact exposition of a theory. *What is depended on to hold it all together is taste, judgment, personality.* Individual judgments may vary widely as to successes and failures but these are the terms in which the building asks appraisal.

The phrase "new empiricism" has recently been floating through the British architectural papers to represent efforts of those who have found modern rationalism too confining, have loosened up the doctrinaire forms of "international" or other styles with whim, spontaneity, experiment. If no one has seriously used the phrase here, it's not—as the British are so delighted to believe—because Europe has something that would shock us, but quite the contrary because something of the sort has been a long-standing US tradition, especially in the Western work of leaders from Maybeck (early in the century)



UN group from the uptown air. Franklin D. Roosevelt Drive, the major east-side peripheral road of Manhattan, is roofed over by the UN terrace. Second Ave., the boundary to the right, is also being dug in, currently.

down through Wurster. Now the Harrison approach is similar but not quite the same—it rests on less of a continuing tradition. It reminds one somewhat of the late Raymond Hood, Harrison's good friend and admired fellow worker on Rockefeller Center, who used to hate what he called "doctrinaire" modernism, used to answer its "why" with "why not?"

That Harrison applied it to so large a building was the chief reason for the way architects have reacted so strongly. This empiricism—if that is what you must call it—this improvising mode has in it something like a popular baroque, aiming at dramatic effect without too strong a regard for purity. Its strength lies in the fact that it leaves its designers uninhibited. Anyone can predict, of the work of many of our leading firms, just about 90% what their next job will look like. Nobody could predict what Raymond Hood might do in his time, or what Wally Harrison may in ours. At its happiest it leads to creations such as Harrison's Alcoa Building, a truly significant performance which none of the doctrinaire cliché architects would have arrived at. At its worst it can lead to big bloopers, since there is not a strong gridwork of formal discipline for the work to be held in.

One final comment FORUM itself might make: in the very act of damning the Assembly Building as a new version of Radio City Music Hall its critics have put their finger on something important. There may be here a closer relationship than in many a closely rational design to the hidden impulses that motivate the people: a subject worth thinking about.

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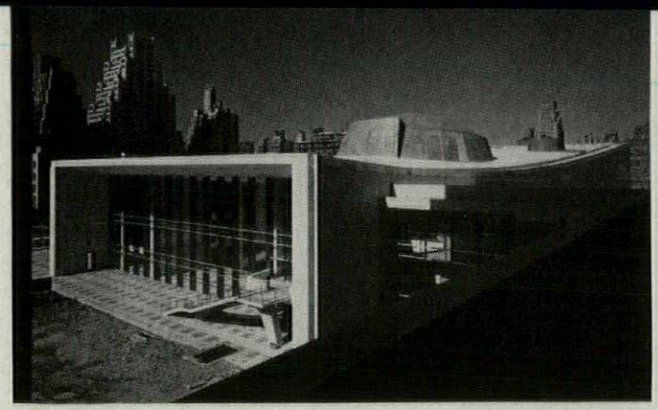
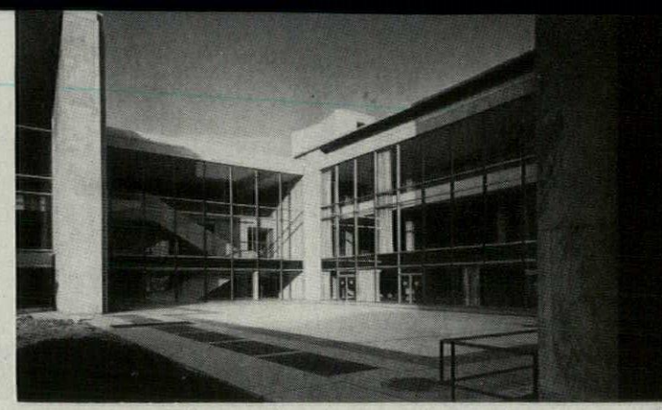




South end of the new General Assembly and the connecting link between the Conference building and General Assembly

South lobby of the new building is a gigantic window, viewing the Secretariat and the fountain before it. Photo above is from inside this lobby; photo below is from across the fountain.

UNESCO HOUSE

Stunning 20th-century monument of richness and restraint is given Paris by the Breuer-Zehrfuss-Nervi team

Here is the first preview presentation of the new scheme for UNESCO in Paris—the European prototype of the UN in New York and correspondingly the most important architectural undertaking in Europe since the war.*

When an international team made up of architects Marcel Breuer (US), Bernard H. Zehrfuss (France) and engineer Pier Luigi Nervi (Italy) was given the UNESCO House commission last July, there was much speculation on the sort of design so brilliant a team might produce. Past performances of the three men (AF, Aug. '52) indicated it would be a magnificent job. It is—as the pictures on these pages attest.

Like any child, the UNESCO design will promptly be compared with its handsome parent, the UN headquarters in Manhattan, for looks, temperament and manners. For make no mistake, UNESCO is very much the architectural child and heir of UN. The Manhattan UN design came up in the world the hard way; it was a battle the whole trip. Some of the members of its design team were traditionalists, some modernists. They had to fight that one out; then there was the battle as to whether the UN should be a slab building or a series of eight-story boxes as urged by the high priest of low buildings, Lewis Mumford. Finally, when the designs were published, spokesmen from AIA, the Municipal Art Society and the like, attempted to save New York City from "slabs turned up and slabs lying on their belly," "a sandwich on edge and a couple of freight cars."

By the time Breuer, Zehrfuss and Nervi met in Paris, these basic issues were settled, and the verdict had been finalized by the swift and silent failure of Eugene Beaudouin's first compromise UNESCO scheme *(see text, p. 154)*.

The physical family resemblance between UN parent and UNESCO child is strong: each has its dominating Secretariat slab for workaday business, its Plenary Hall for full-dress meetings, its Conference Center linking the other two, a fundamental functional analysis that UN bequeathed to UNESCO as a starter. The cultural resemblance is also strong, as it should be. Like the UN design UNESCO cuts free from ancient symbols (dome, spire, tower, column) inspired by the monumental forms of nature. Both UN and UNESCO take as the material of their symbolism the man-conceived forms of pure geometry; both express these forms by openly and joyfully celebrating mankind's exploring mind and technical skill.

Yet the UN and UNESCO designs are also very different. As a *composition*, the smaller UNESCO House (⅓ the size of UN headquarters, 1/5 the cost) is less daring, less dynamic. It is more restrained, more formal—as formal as a Renaissance palace. In its architectural and engineering *detail*, UNESCO House is the more refined, imaginative and rich. Its textures, or the visual effects of its reinforced concrete engineering, would alone make it a landmark in the architecture of our time.

Photo: Maquette EPI

These differences between the two headquarters are a proper reflection of the different economies in which they were built. The Manhattan UN team had to design for US construction methods and US labor costs; that means they had to design for standardization, prefabrication, simplification. The Paris UNESCO team had to design for an economy of relatively low wages and material scarcity; their most reasonable luxury was therefore a luxury of detail. Architecturally *and* sociologically, UN is right for New York, UNESCO is right for Paris.

As a building for France, UNESCO makes another point. It reasserts the Le Corbusier influence at a strategic time—at the moment when France seems to be trying to forget "Corbu" and to adopt the Auguste Perret type of classicism—hard and almost brutal—as taught by Perret at the Beaux-Arts.

In its own way, the story of how the Breuer-Zehrfuss-Nervi team worked is almost as remarkable as the building it produced. Before July 15, none of the three had ever met the others ("an Arab marriage," says Breuer). In the next 62 days the three strangers completed their negotiations with UNESCO, organized an office out of thin air (they even had to buy the furniture, hire a secretary and round up draftsmen—who turned out to include ten nationalities) and planned, designed and engineered three sizable buildings for a complicated $13 million group (estimated US building cost). Ten of these days Breuer was hospitalized with a high fever. But two months to the day after it was commissioned, the team turned over to UNESCO's advisory Panel of Five* a complete set of preliminaries. "Not only practical but inspired," reported the Panel, recommending the team be retained to carry the project through. Next step: approval by UNESCO's General Conference, meeting next month.

Harmony among peers

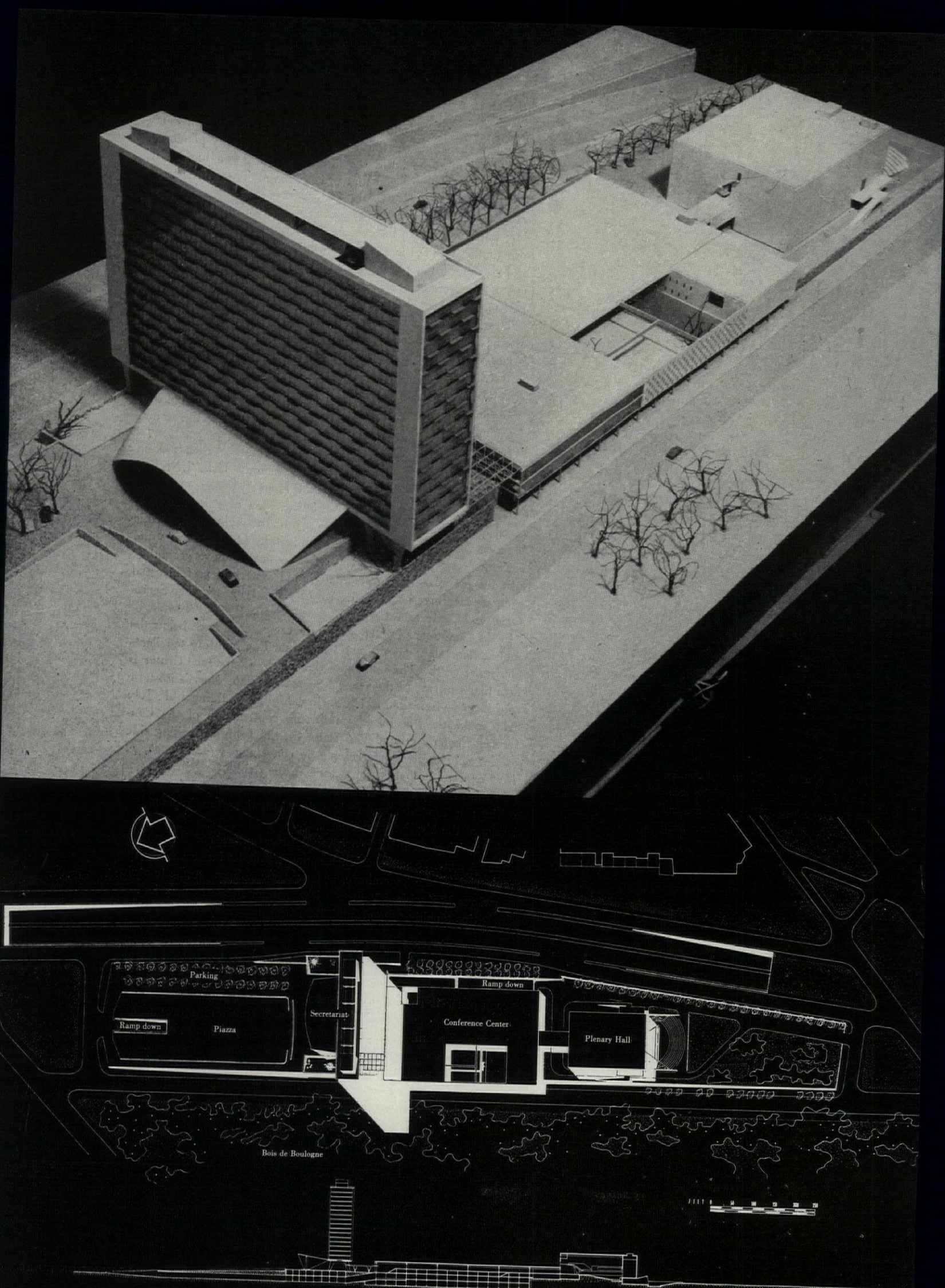
Secret of the team's incredible speed seems to have been incredible harmony. It had no chairman.† All worked as equals. Each member respected the resources of the others; each attempted to channel his own talents to harmonize with the others' strong points. FORUM readers can make some shrewd guesses as to the several contributions of the three men, but the team would like to discourage this kind of parceling, hopes the joint product will be looked upon as a joint effort. This remarkable harmony (or even the uncompromisingly modernist make-up of the team) would hardly have been possible of course had it not been for the time-consuming but trail-blazing disharmony five years ago in New York. If omens mean anything, this phenomenon augurs well for international UNESCO.

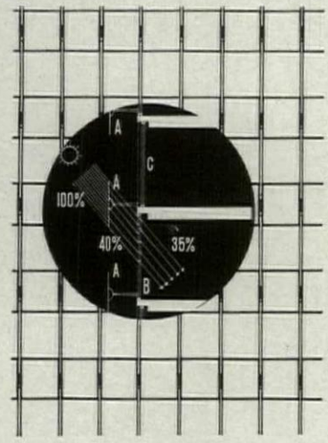
Team members believe that paradoxically the very lack of a big going office made for speed and efficiency of the work. Says Breuer: "This ought to disprove the idea that only a big office can do a big job. I have always thought that the most efficient office is small enough to be encompassed by the partners' personal design capacity and time; several small offices can associate on a big job if need be. I don't know of any big office that could have turned out this job in two months."

* United Nations Educational, Scientific and Cultural Organization.

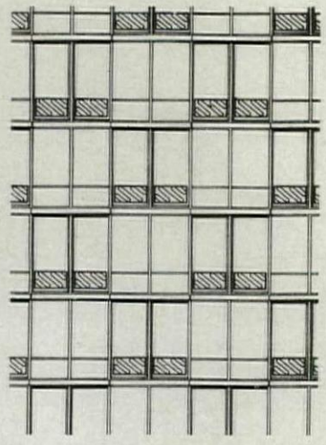
* Lucio Costa (Brazil), Walter Gropius (US), LeCorbusier (France), Sven Markelius (Sweden), Ernesto Rogers (Italy).

† As erroneously reported in FORUM.

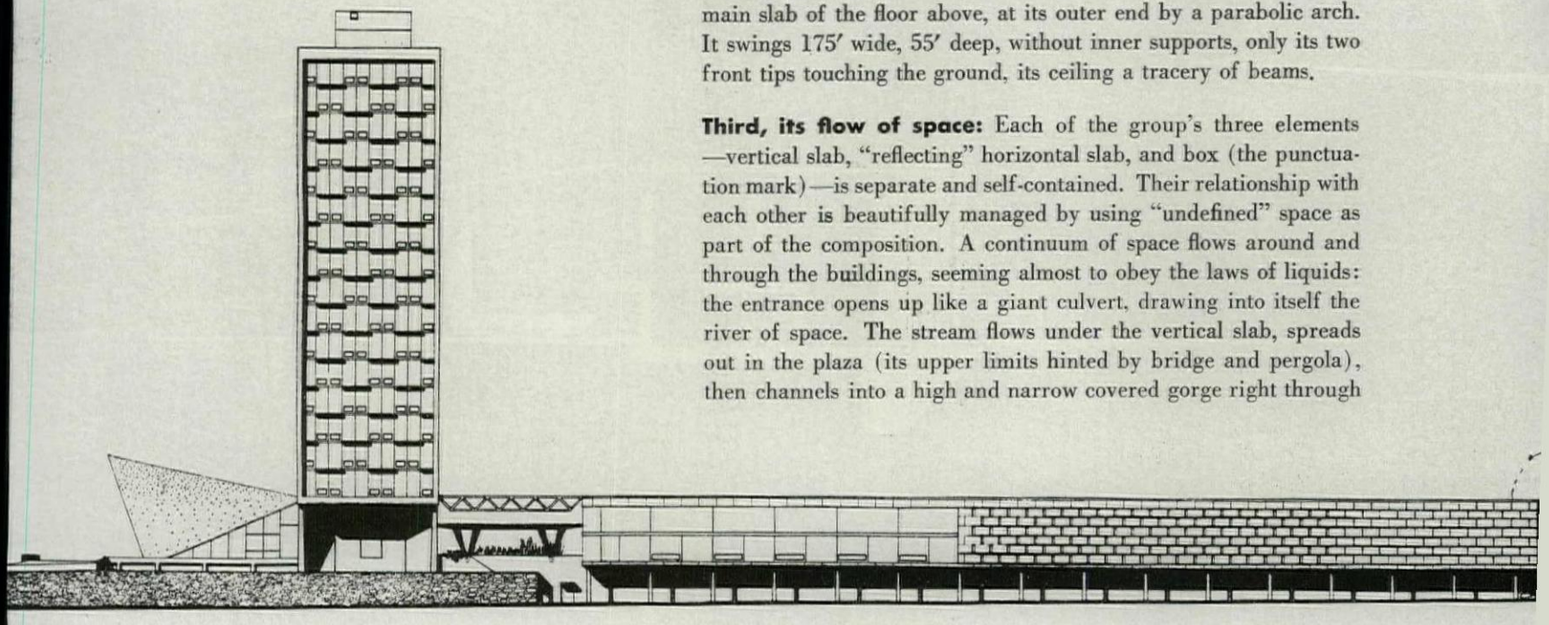

Parking
Ramp down
Piazza
Secretariat
Ramp down
Conference Center
Plenary Hall
Bois de Boulogne



Heat-absorbing glass is hung 4′ outside sliding sash of slab's south and east faces. Idea is heat from outer glass will dissipate in air space, yielding 65% total heat loss.



Texture of slab's northern and western faces is created by blue Ardoise stone projections above sliding windows, and black aluminum railings below. Sash is silvery aluminum.



The riches of UNESCO

Haste of design did not mean superficiality. There is a depth of concept that hints the ideas were long and lovingly pondered. This is one of those buildings where, the more you look at it, the more lovely things you find in it. Some of its wealth:

First, its texture: The great surfaces—vertical and horizontal—are patterned. Even the roof of the Conference Center—visible from southern offices in the slab—will be a richly textured polychrome composition of stones and plants. Northern and western faces of the Secretariat slab are a tapestry of blue stone, black and silver metal and glass *(see sketch)*.

The more delicate (and more dazzling) veil of the southern and eastern faces is created by the play of blue-green glass panels set 4′ outside the clear sliding sash of the slab face *(see sketches)*.

Stretches of the Roman travertine wall of the Conference Center are perforated with slit-windows, to be filled with colored glass *(see rendering, below)*. The Plenary Hall has a light striated wall texture, produced by recessed vertical joints between the stones.

Second, its sculptural engineering: From the breathtaking lobby shell to the diagonally framed Plenary Hall, UNESCO House is superbly engineered for visual effect:

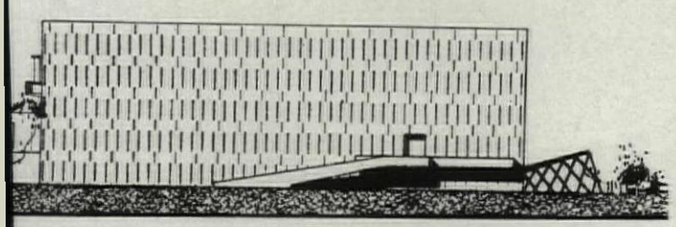
- In the Secretariat slab—the Corbusier idea of stilts has been given a new fluidity and life by means of the eight great, plastic V forms which—together with the solid shafts enclosing stairs and elevators—carry the Secretariat slab two stories above ground.
- In the pergola—an interlaced pyramid system of prefabricated concrete members leaps across 70′ of plaza, tying together Secretariat and Conference Center.
- In the Conference Center—the walls are notched back below the ground-floor slab, giving an illusion that this building too floats above the earth. The horizontal slab of the Conference Center is thus like a mirror of the vertical Secretariat slab. Nervi's isostatic roof beams—first used in his Turin exhibition building (AF, July '51) make the "beamless" mushroom construction of the Conference Center's ground-floor slab. On the basement ceiling side of the slab, their wonderful plastic convolutions *(see sketch, p. 154)* express the pattern of stresses in the slab.
- In the Plenary Hall—crisscrossing diagonal beams sculpture the ceiling; a top-to-bottom stair void dramatizes the independent sweep of the big light roof spans.
- Epitomizing all this high-riding lightness and grace is the magnificent concrete entrance shell supported at its inner end by the main slab of the floor above, at its outer end by a parabolic arch. It swings 175′ wide, 55′ deep, without inner supports, only its two front tips touching the ground, its ceiling a tracery of beams.

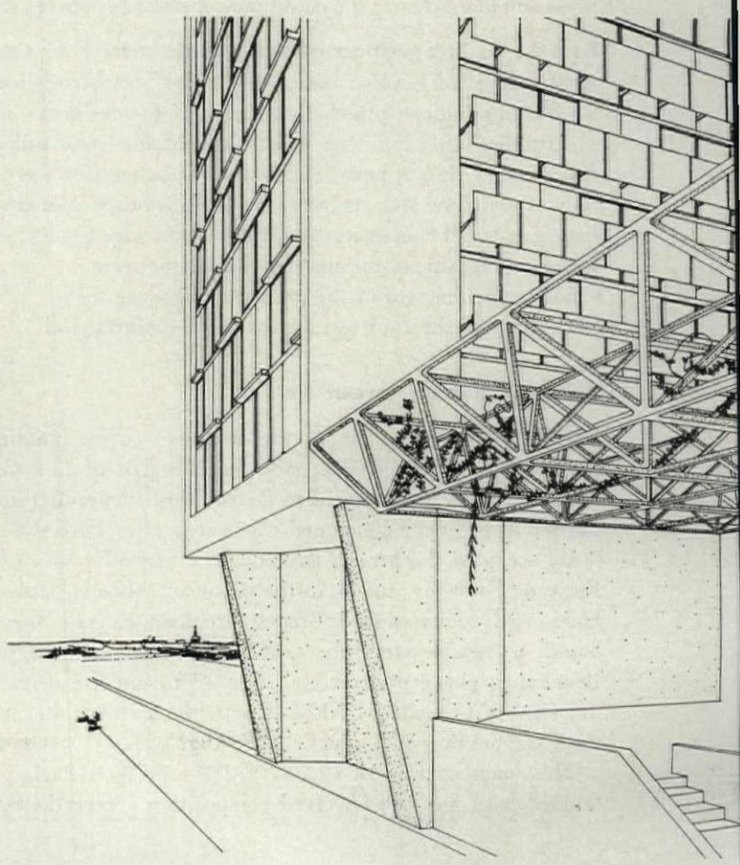
Third, its flow of space: Each of the group's three elements—vertical slab, "reflecting" horizontal slab, and box (the punctuation mark)—is separate and self-contained. Their relationship with each other is beautifully managed by using "undefined" space as part of the composition. A continuum of space flows around and through the buildings, seeming almost to obey the laws of liquids: the entrance opens up like a giant culvert, drawing into itself the river of space. The stream flows under the vertical slab, spreads out in the plaza (its upper limits hinted by bridge and pergola), then channels into a high and narrow covered gorge right through

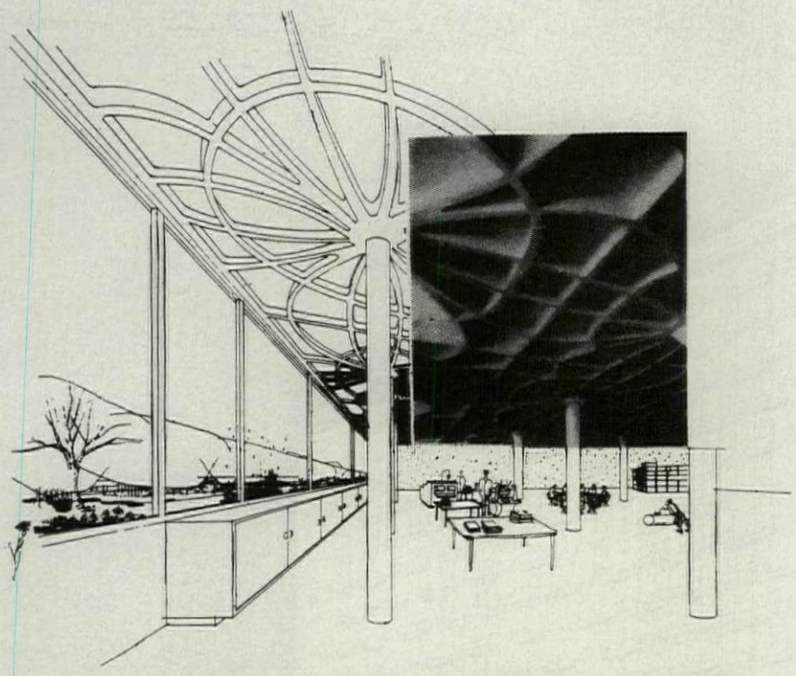
Main approach gives view of 175' wide concrete entrance shell and tapestrylike north facade of slab. Esthetic of pure geometry is plainly stated by stone frame of slab and sweep of parabolic arch.

Two-plane glazing of slab's south and east faces (right) creates shimmering blue-green veil. Pergola over restaurant terrace is engineered from prefabricated concrete members with joints poured in place.

All great surfaces are richly textured (below). Wall of central building is perforated with colored glass slits (indicated by double-line joints). Plenary Hall is striated by shadow lines of recessed joints.







Ceiling of print shop in Conference Center basement reveals isostatic beam construction of slab.

the center of the Conference Building. Here it divides into upper and lower levels opening into each other and sharing the pool of space at delegates' lounge and patio *(see plans, p. 157)*. Climax of this journey with the space stream comes after the funnel at the neck of the Plenary Hall in the great space of the theater.

The architectural potential of the plaza between Conference Center and Plenary Hall has not been realized in this scheme—one of the few criticisms made by the Panel of Five. The designers now plan to lengthen the neck between these two buildings, integrate a larger plaza into the composition. Inside the Conference Center, they plan also to widen the space between library and bar *(see plan)*, move the stairs out of the corridor center, to express still more clearly the continuity of passage between buildings.

Fourth, its integration of the plastic arts: Ever since architecture rejected applied ornament, it has been struggling toward a valid integration with the other arts. If the designers' intentions are fulfilled, this building will be one of the great milestones in that journey. It has been imaginatively planned for the collaboration of painters and sculptors on such unusual assignments as:

- the great roof composition atop the Conference Center;
- color compositions for the slit window patterns;
- mosaic for the roof of the parabolic entrance shell;
- ensemble of the roof terrace for the Secretariat slab.

UNESCO and the great axis

UNESCO House is a lot of useful things—office building, print shop, theater, radio studios, etc—but it is first of all a monument and specifically a monument in Paris. This is a peculiar and trying burden as everyone concerned discovered after UNESCO thoughtlessly accepted the French government's first offer of a site on the Place de Fontenoy, smack in the center of a Beaux-Arts neighborhood, and commissioned French architect Eugene Beaudoin to design a suitable structure. After the embarrassing rejection of Beaudoin's plans, presumably designed to suit the neighborhood, the French presented UNESCO with the present site at Avenue Foch and the Bois de Boulogne (AF, Aug. '52).

This long, narrow lot (2,200′ x 280′) in West Paris is not entangled with any preconceived composition. Nevertheless it does bear a radial relation to Paris' "great axis." Along the axis, or close to it, march Paris' cherished monuments, beginning with 12th-century Notre Dame, ending with 19th-century Arc de Triomphe. Breuer, Zehrfuss and Nervi were well aware that their creation must slip into place as part of that great procession.

To this end, they endowed their building with good manners and tact. It conforms to the grand plan by placing itself respectfully parallel to the great axis and at the same time pleases the neighbors who like their view of the park, by considerately turning its narrow axis to the Bois *(see sketch, right)*. Although the Secretariat slab is Paris' first skyscraper, it rises a modest 190′ vs. the Invalides' 350′; and because the slab stands on low ground, it appears lower than even the 160′ Arc de Triomphe. Its elongated profile fits serenely into Paris' dominantly horizontal pattern.

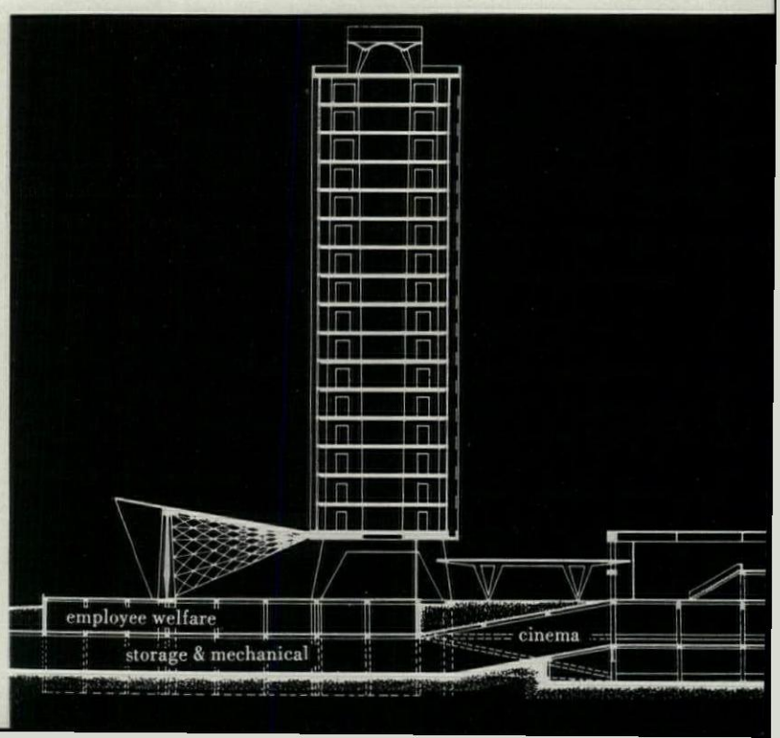
Normal approach to any of the three buildings is across the piazza and through the entrance shell. Visitor and staff parking is in a sycamore-shaded area at one side of the piazza. For delegates' cars, ramps lead into a 107-car basement garage. Because the Plenary Hall is to be used also as a theater and concert hall, it has direct automobile and pedestrian access. The slight assymetry of the over-all plan, forced by the plot's fish shape, will probable be accentuated: the entrance shell may be offset to bring it into direct line with the Conference Center entrance.

The buildings

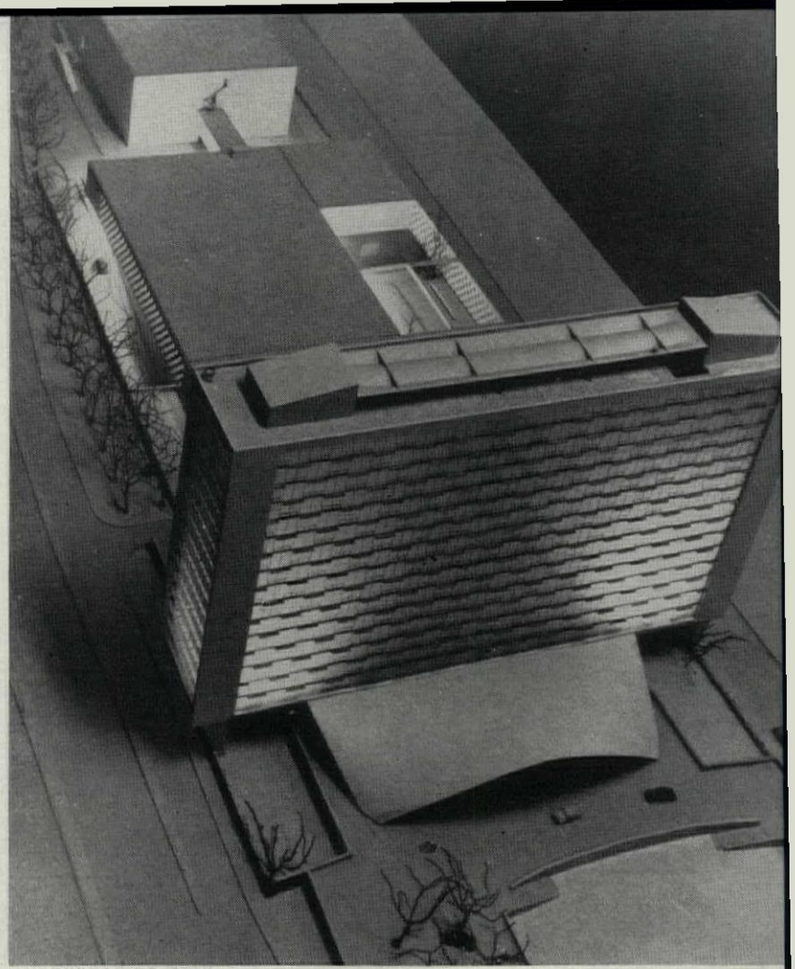
Requirements for the group were extremely complex (the documents section alone is as large and complicated as a good-sized printing plant). After a good look, the designers agreed they must hit on a basic simplification of some sort. They recalled the Italian palazzos, with everything clearly and understandably on the right or the left; this was the genesis of the central space-stream scheme. "Architecture is getting terribly complicated with its circulation," says Breuer. "It's time to strike out for simplification anyway."

In the **Secretariat slab,** this left-right symmetry is carried out by the two end elevator stacks. Note, however, that elevators and stair wells are pulled in from the ends. Advantages: end office space, more fun with the exterior, a cleaner roofline. Elevator halls look skimpy but are ample for the slab's working population (500 against UN's 3,500).

Use of reinforced concrete for a 16-story (18 stories off the ground) tower is sure to be controversial. The choice was made because reinforced concrete, not steel, is the material familiar to

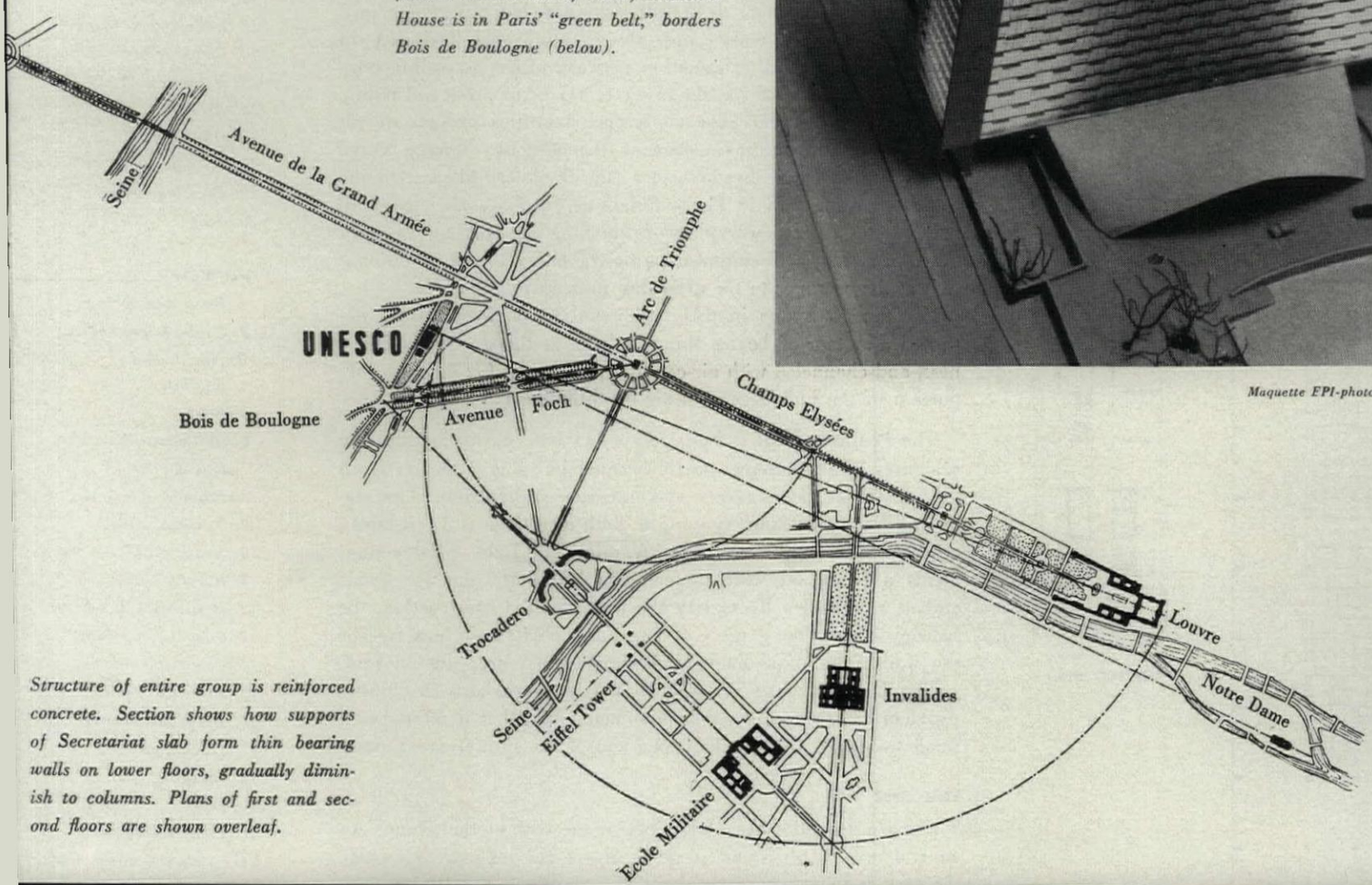


Lighted model shows slit windows in central building; roof will be polychrome composition of stones and plants. Roof of slab has covered terrace.

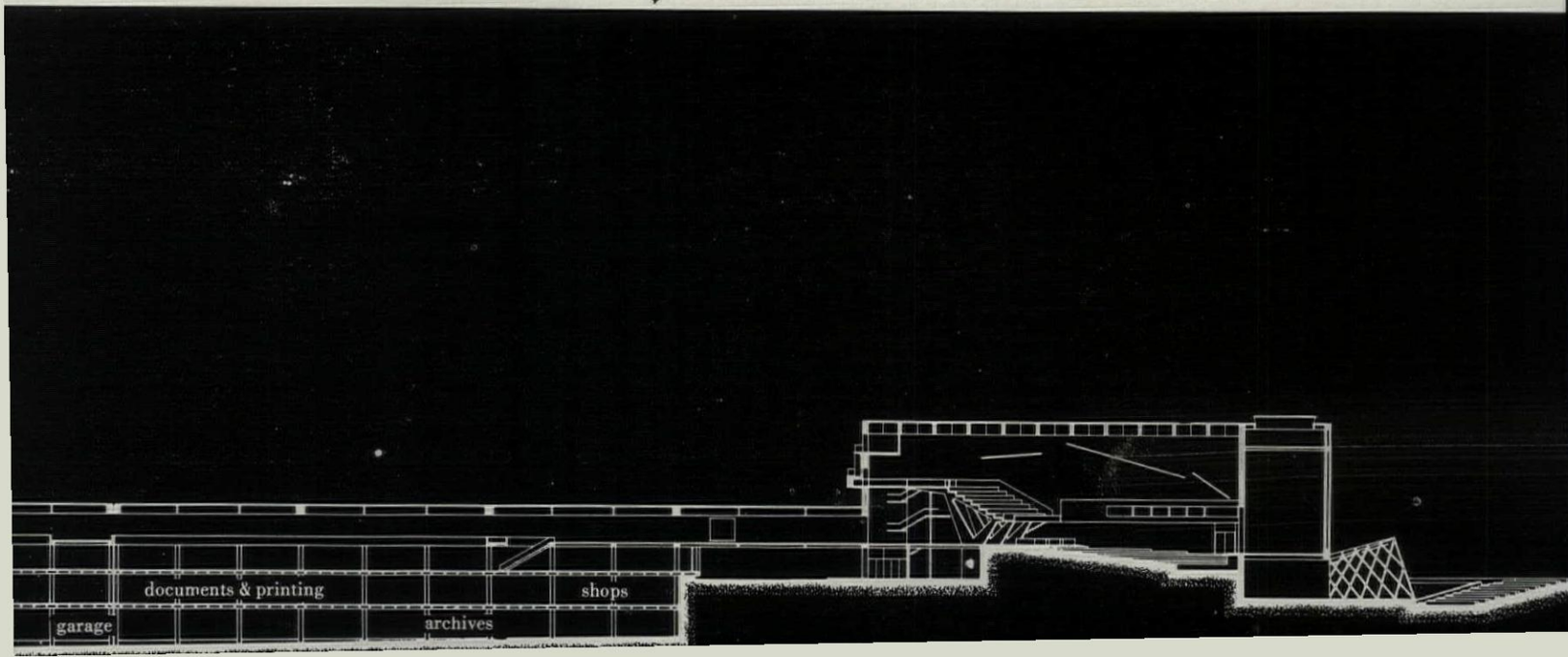


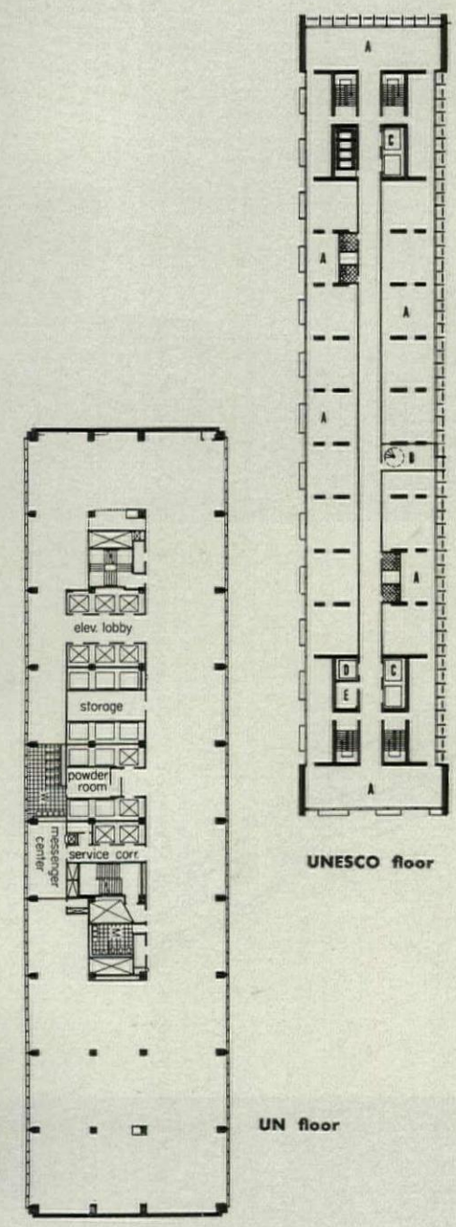
Maquette EPI-photo Duprat

First addition since Eiffel Tower to famous monuments of Paris, UNESCO House is in Paris' "green belt," borders Bois de Boulogne (below).



Structure of entire group is reinforced concrete. Section shows how supports of Secretariat slab form thin bearing walls on lower floors, gradually diminish to columns. Plans of first and second floors are shown overleaf.





Office floors compared: 16-story UNESCO slab is same length but thinner than 39-story Manhattan UN. Fenestrated end walls of UNESCO will be used for offices. Structure forces inflexible partitions on lower floors.

the French building industry; because the team included, in Nervi, perhaps the world's greatest reinforced concrete engineer, a resource the other two members did not want to waste; and because it was thought to be cheaper. To avoid the awkwardness of great pillars in the lower floors, Nervi treated supports as bearing walls with door-sized openings. As the building rises, the bearing walls gradually become lighter *(see section, p. 154)* until they are only columns on the upper floors. Although this structural system appears beautifully light and unchunky, it yields an inflexible partition system on more than half the floors.

The two upper floors of the central **Conference Center** are treated like one high-ceilinged space with a mezzanine. Each functional element (as library, nursery school for staff children, conference secretariat) is a self-contained block with its own stair. This device makes possible an admirable flexibility in room sizes, a fine discrimination between offices accessible only to delegates and staff (on the lower level) or to press and public (on the upper level). The conference facilities proper are all grouped around one main element, the delegates' lounge, nerve center of the entire headquarters (the designers liken it to the famous waiting hall in Paris' Palais de Justice). The designers believe that their newer plan of widening the corridor between bar and library will emphasize a desirable bottleneck of circulation at the entrance to the delegates' own area.

For the 68′ spans in this building's upper floors, Nervi designed a system of beams thinned down at the center for lightness, and channeled with air-conditioning ducts. (This is the only portion of the buildings with air conditioning.)

The **Plenary Hall** is built like a big box, partly because the designers like the shape, partly because building a theater from the inside out means costly and intricate construction. The system of diagonal beams, running in both directions and constantly crossing, gives 130′ spans with relatively light construction, yields a frame on which panels can be hung from any point and at any angle. To clarify the free, tentlike construction, the balcony stands like a piece of furniture, on its own legs free of the walls. The stairs hang from the balcony, drop into a void.

The designers have not solved the knotty (perhaps insoluble) problem of how to expand a monument. Best that is offered is a small two-story addition atop one end of the Conference Center.

The cost

There are several ways of looking at the cost of the group. An equivalent US job would come to about $13 million. Normally the cost in Paris would be about $8½ million. But UNESCO is exempt from taxes and import duties, bringing the estimated cost down to $7,427,833 (including architects', artists' and consultants' fees, landscaping and sitework, and $72,000 already spent on the abortive Place de Fontenoy scheme).

Original estimate for cost of a headquarters project, made in 1950, was $6 million, but this sum did not allow for fees, landscaping and administrative costs. Subtracting these from the Breuer-Zehrfuss-Nervi job gives $6,664,000 for the present project, an increase of less than 12%. Meantime, since the first estimate, Paris construction costs have gone up 20%. Noting these facts, UNESCO's director commended the team for its economy.

Following the first estimate, the French government offered UNESCO a $6 million long-term interest-free loan; it is likely this offer will be renewed. Whether it will be increased, and whether UNESCO member nations will want to obligate themselves for so large a sum is at this point problematical. Initial enthusiastic reaction to the Breuer-Zehrfuss-Nervi design seems to indicate, however, that UNESCO and a proud Paris will not let cost stand in the way, will start building next summer.

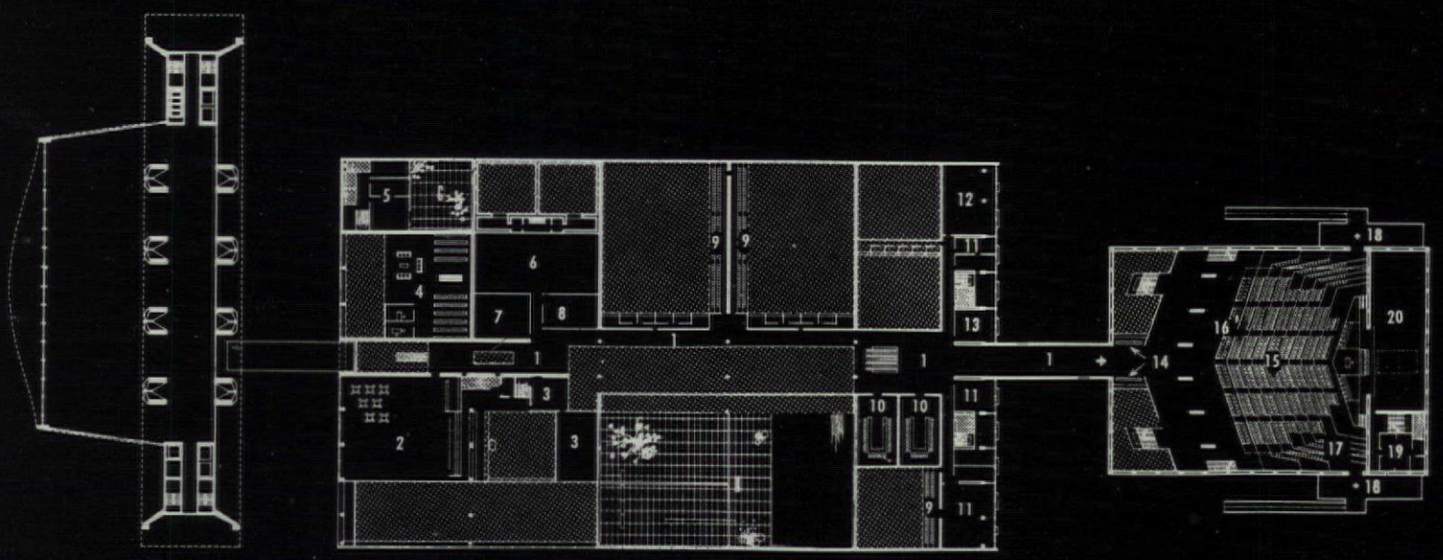
Second floor →

(Shaded areas indicate voids)

1. *Public gallery*
2. *Cafeteria*
3. *Kitchen offices*
4. *Library stacks*
5. *Nursery school*
6. *Press, recep., info.*
7. *Unallocated*
8. *Air conditioning*
9. *Public & press*
10. *Committee rooms*
11. *Conf. secretariat*
12. *Transcription*
13. *Interpreters' lounge*
14. *Cloakrooms*
15. *Delegates*
16. *Press*
17. *Observers*
18. *To balcony*
19. *Dressing rooms*
20. *Stage*

First floor →

1. *Bookstore & info.*
2. *Cable & post office*
3. *News stand*
4. *Exhibits*
5. *Bar*
6. *Restaurant & terrace*
7. *Kitchen*
8. *Library*
9. *Nursery school*
10. *Radio & TV studios*
11. *Record library*
12. *Despatches & editing*
13. *Commission rooms*
14. *Committee rooms*
15. *Executive board*
16. *Delegates' lounge*
17. *Cloakroom*
18. *Delegates' bar*
19. *Pond*
20. *Conf. secretariat*
21. *" " (documents)*
22. *" " (del. recept.)*
23. *Cloakrooms*
24. *Bar*
25. *Orchestra pit*
26. *Understage*
27. *Open-air stage*
28. *Amphitheater*



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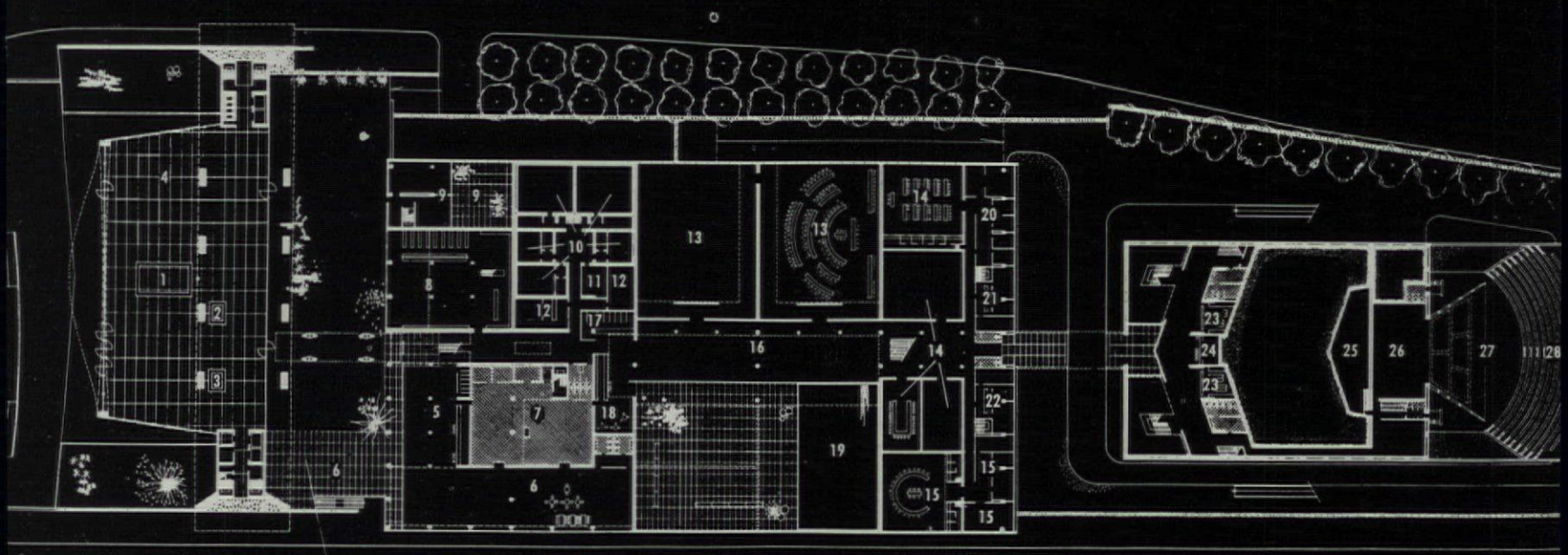
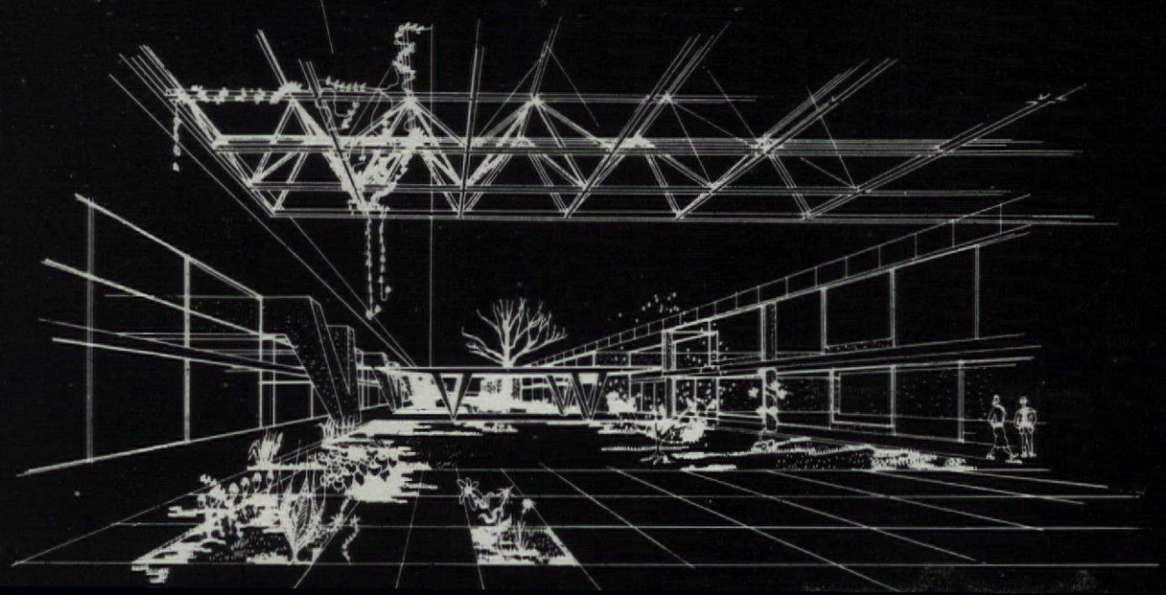


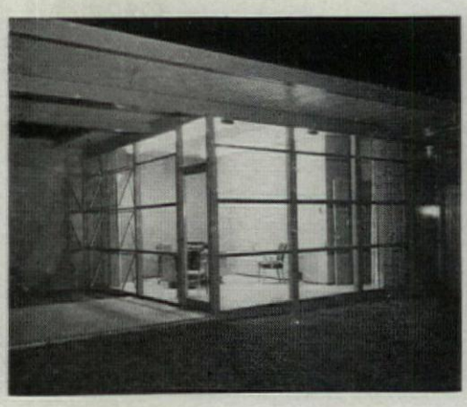


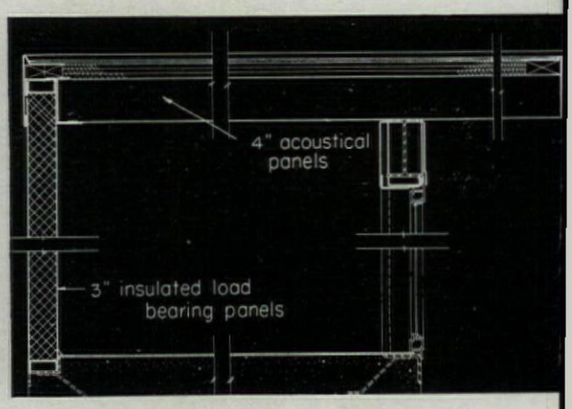
BUILDING ENGINEERING

1. **Structural curtain walls eliminate framing**
2. **Spherulized clay for light, fluid concrete**
3. **Tensioning before casting speeds prestressing**
4. **Prestressed beams from building blocks**
5. **Anticlastic cable roof for arched pavilion**

1. LIGHT-GAUGE STEEL FOR FRAMELESS BUILDING

Hollow structural panels welded into a stressed skin diaphragm serve as both curtain wall and frame; lateral stability proved by load tests

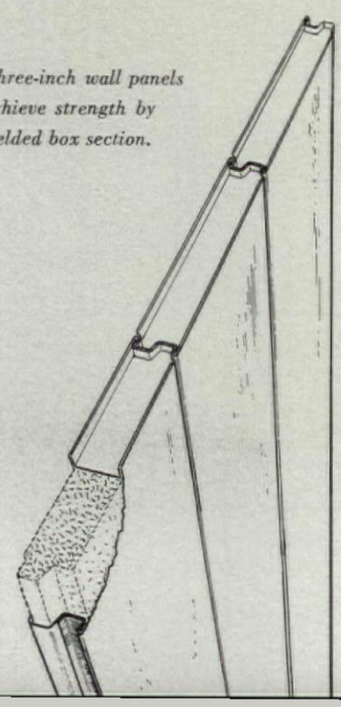




Engineering office in Los Angeles is built of 16-gauge cellular steel panels rigidly combined to resist both lateral and vertical loadings with no structural frame. Entrance to office, left, section through entrance, right.

This full-scale frameless steel building pioneers a radical new approach to building construction. It is a 3,100 sq. ft. single-story office in Los Angeles for Detroit Steel Products Co. in which all walls and roofs are composed of load-bearing light-gauge steel panels that combine, in a single modular material, the functions of both structural support and protective covering. Though essentially experimental, it was built at a modest $5.25 per sq. ft.

Most building research concentrates upon either more efficient curtain walls or more efficient framing; rarely is an attempt made to integrate structural and nonstructural uses of building materials. In the case of structural steel too much weight is involved. Standard shapes cannot be hot-rolled in thicknesses below ¼", which limits their use to columns and beams in a framing system—they cannot in themselves form the surfacing material. With the development of cold-forming and automatic welding techniques thicknesses from 1/10" to 1/30" (10 to 30 gauge) have been made, but until now they have been used only in wall and floor panels hung upon the usual steel frame.



Three-inch wall panels achieve strength by welded box section.

In 1939 the American Institute of Steel Construction sponsored research at Cornell University to develop codes for the "Design of Light-Gauge Steel Structural Members." Prepared under the guidance of Professor George Winter, these specifications have now received national acceptance. They provide for two main uses of light-gauge steels: 1) as structural shapes having more or less conventional outline except for their small thickness; and 2) as load-carrying panels developing strength as a result of their hollow section. The main advantages of light-gauge members are their high strength vs. weight ratio and their ease of handling. Main disadvantage: the possibility of loss of strength through corrosion —they should be galvanized or painted for external application.

Designed by Robert A. Schoenberner for Detroit Steel, the frameless building in Los Angeles promises to simplify low, nonfireproof construction. Basic structural panel is made of 16-gauge painted steel stamped and welded at the factory to form strong box sections 3" and 4" thick, 16" wide and 9½' to 22' long as required. Wall panels are 3" thick and contain glass-fiber thermal insulation giving a "U" factor of 0.20; roof panels are 4" thick and are filled with acoustical insulation of 1" thick, 4¼ lb. density glass fiber. Underside supports a perforated acoustical material to give a noise reduction coefficient of 80%. Metal-to-metal contact between interior and exterior surfaces is avoided by a strip of felt inserted the full length of the joint during manufacture of the panel. Panel units are positioned side by side, firmly wedged with a mastic caulked tongue and groove joint and spotwelded in the field to develop full diaphragm action. Complete stability of the structure is assured by rigid welded joints at the head and foot of the walls. The roof is covered with 1½" rigid thermal insulation and a 20-year built-up roofing.

The contention that spotwelded light-gauge steel diaphragms have good lateral strength in floors and good loadbearing strength in walls was proven in recent seismic load tests carried out by structural engineer S. B. Barnes upon both Detroit Steel and H. H. Robertson panels. In both cases the tests satisfied the West Coast Building Officials Conference that these panels develop a diaphragm action able to resist lateral forces and can be used in earthquake resistant structures.

Panels 48' x 16' in size were tested with 6:1 and 3:1 length-width ratios. Loads

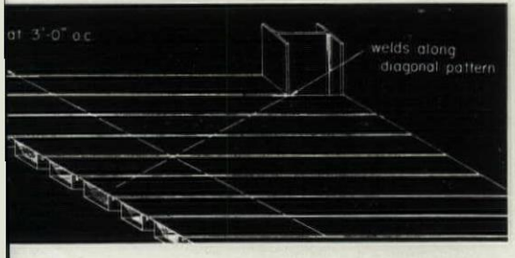
Light-gauge steel panels are given initial coating of paint at factory and a final coat after erection.

were applied at the third points by hydraulic jacking between stub columns on which the test panel was mounted and a 36″ girder, to which were attached reaction ties at corner stub columns.

In the Detroit Steel panel a 4½″ deep unit (weight: 5.3 lbs. per sq. ft. in 18-gauge steel, 6.5 lbs. in 16-gauge) having an "X" pattern of topwelding *(see picture)* to provide a diagonal bracing action may be designed for a working shear of 1,000 lbs. for 16-gauge and 710 lbs. for 18-gauge steels with a safety factor of 1.8. These panels were not loaded to destruction. In the Robertson panel a 1½″ deep 16-gauge unit with side laps welded (weight: 6.3 lbs. per sq. ft.) withstood a lateral force of 3,500 lbs. per lineal ft. before failure.

Considered alongside the light-gauge steel frameless building, these tests prove that a strong curtain wall can carry out both the functions of protective covering and of structural support.

Cellular panels are tested for lateral stability (above). Strong diaphragm action is developed by "X" pattern of spotwelding (below).



2. GLOBULAR CLAY AGGREGATES

Tiny sealed balloons, with high-strength/weight ratio, promise to cut weight of 3,000 psi lightweight concrete

Here is a new way to make lightweight concrete using fine spherulized clay that has all the strength of fine sand aggregate with a quarter the density. Such concrete is 20% lighter than slag concrete. Cost of the new aggregate is, however, still too high—$14 a cu. yd. vs. $1.75 for coarse slag and $1.75 to $5.00 for fine sand.

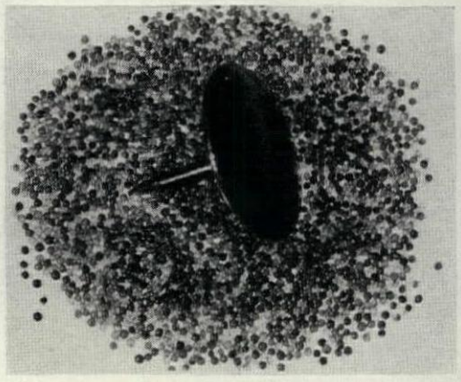
Being hollow the fine clay globules are light (15-24 lbs. per cu. ft. vs. 80 lbs. for sand), yet they have consistently strong walls permitting their use as a fine aggregate in good quality concrete. They improve its insulation values and add to its fluidity when fresh, to such an extent that it can be pumped into place.

Ordinary 3,000 psi concrete weighs 150 lbs. per cu. ft. and costs anything from $25 to $85 per cu. yd. (including formwork). At present two main types of lightweight aggregates are being used to reduce the dead load of concrete: 1) Pumice, expanded vermiculite and expanded perlite are used in nonloadbearing applications where low weight and good insulation are the important criteria—strength is between 70 and 1,100 psi with a concrete density of 24 to 70 lbs. per cu. ft.; 2) Foamed slag and spherulized clay giving strengths up to 3,000 psi with concrete densities as low as 75 lbs. per cu. ft. Whereas foamed slag aggregates weigh 35 to 55 lbs. per cu. ft. to give a 3,000 psi concrete weighing 103 lbs. per cu. ft., the new spherulized clay aggregate cuts the weight of 3,000 psi concrete to 89 lbs. per cu. ft.

Lightweight concrete can also be produced by introducing air or gas bubbles into the plastic cement mix aerated to give the concrete a spongelike structure; such concrete is non-loadbearing, with strengths between 60 and 1,150 psi and densities between 22 and 88 lbs. per cu. ft. Such aeration is often combined with lightweight aggregates. The use of air-entraining chemicals or additives does not produce true lightweight concrete since the amount of air which can be entrapped is only about 5% by volume. Such concrete is quite distinct from aerated concrete, has high strength and is valuable in being more resistant to frost action than normal concrete.

The new spherulized clay aggregate is made by feeding fine screened clay into the top of a tall furnace. Grains are blown into tiny globules as they pass through an intensely hot flame (2,700° F.) and are set in that shape by cooling as they fall to the bottom of the furnace. This produces sealed spheres having a high strength-weight ratio and good insulation properties ("K" factor about 0.60, about twice that of vermiculite at 0.34).

Used in a mixture of cement, fine spherulized clay and coarse foamed slag in the ratio of 1:1½:5½ with 33 gals. of water per cu. yd., spherulized clay makes a concrete that has a 28-day strength of 2,932 psi and a weight of 89.4 lbs. per cu. ft. Its slump when fresh is 7½″ and its percentage absorption is 6.9% by weight and 9.8% by volume. Thermal conductivity ("K" factor) is 2.94. This aggregate is being developed by the Armour Research Foundation of the Illinois Institute of Technology.



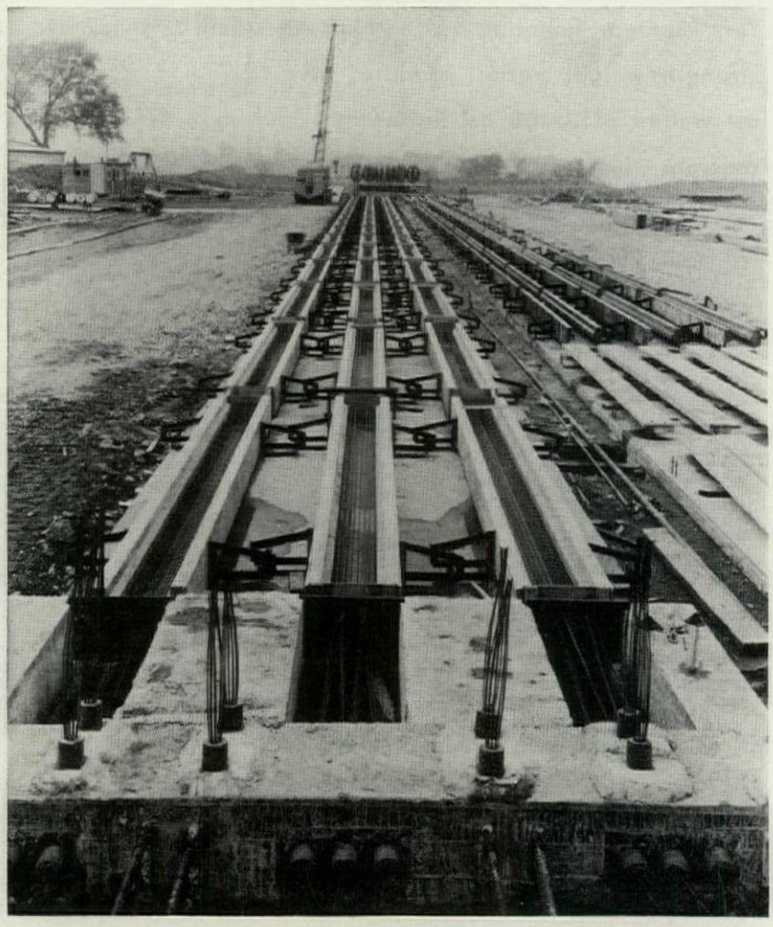
Spherulized clay is shown here with thumbtack to illustrate size of globules.

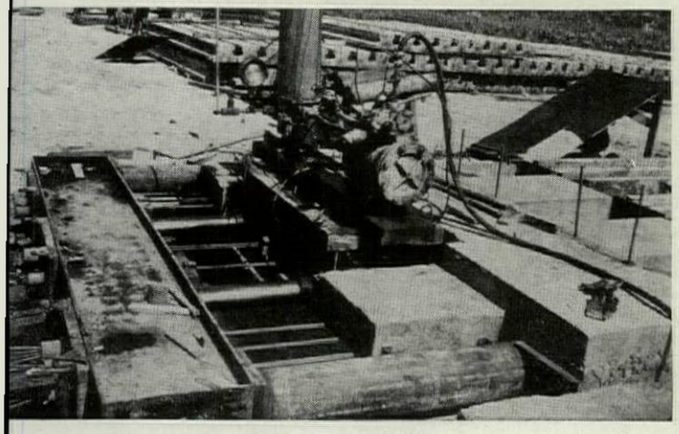
PROPERTIES OF LIGHTWEIGHT CONCRETES

Aggregate	*Cost of aggregate per cu. yd.*	*Density of aggregate lb./cu. ft.*	*Mix proportions normally used*	*Concrete density lb./cu. ft.*	*Compressive strength psi*	*Modulus of rupture psi*	*Drying shrinkage %*	*Thermal conductivity "K" factor*
Nonloadbearing (Coarse aggregates)								
Pumice	$8-$10	30-55	1:6 or more	45-70	200-550	100-150	0.04-0.08	about 1.4
Expanded Vermiculite	$9-$10	4-12	1:3 to 1:9	28-50	130-500	40-75	0.28-0.35	1 to 1.9
Expanded Perlite	$7½-$12	5-15	1:3 to 1:9	24-70	70-1,100	40-70	about 0.2	0.75 to 1.5
Load-bearing								
Foamed Slag (Coarse aggregate)	$1.75	30-50	1:6	80-105	300-3,000	200-300	0.04-0.05	1.5 to 3.0
Spherulized Clay (Fine aggregate)	Est. $14	15-24	1:6	75-90	500-3,000	250-350	0.005	2.3 to 4.2

3. ASSEMBLY-LINE PRESTRESSING

Single pretensioning operation produces 48 concrete stringers a day

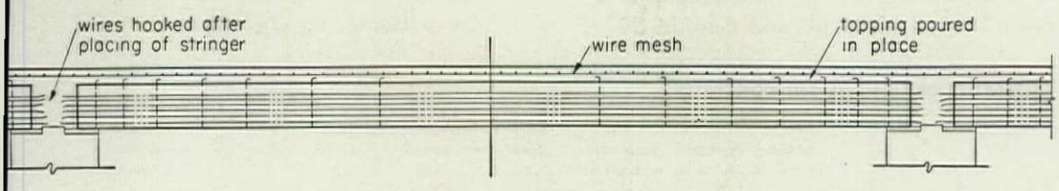




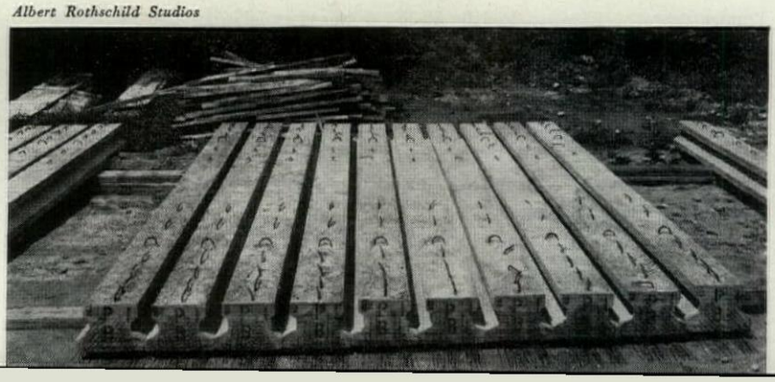
Above, two of the four casting beds. Each 350′ bed contains three rows of 16 stringers each; working each bed in turn produces 48 stringers each day.

Left, tensioning end of bed with cables stretched their full 24″ ready for pouring of concrete.

Diagram shows how these 19′ stringers will fit into Pier 57. Bottom picture shows stringers cast and ready for transportation to pier. Each 12″ deep stringer weighs 3,500 lbs., contains 30 tensioning wires and is designed for a 600 psf live load.



Albert Rothschild Studios



Until now all US prestressed construction has been post-tensioned with cables mechanically anchored and stretched after the concrete has set. This means each unit had to be tensioned separately. With the aid of pretensioning, however, 3,148 prestressed stringers for Manhattan's Pier 57 are now being mass produced 48 at a time.

A single casting bed 350′ long accommodates three rows of 16 stringers each. Thirty wires (0.192″ diameter) are stretched the full length of each row of stringers, and, after spacers have been positioned to form the ends of the 19′ stringers, concrete for all 48 units is poured in a single operation. The concrete sets and bonds closely to the tensioned wires. After hardening for three days the spacers are removed, wires between stringers are cut and the tension in the wires applies a negative bending moment to each stringer.

Casting is done on a slab of 7″ reinforced concrete where abutments are prestressed to withstand the 210-ton jacking force necessary to give the required 24″ elongation to the 90 wires. This applies an initial tensile stress of 160,000 psi in each wire for a design stress after shrinkage of 130,000 psi.

Full-scale load tests show the natural bond between wire and concrete is more than adequate. Two 19′ stringers tested to destruction supported the dead load plus 4½ times the 600 lb. design live load before failure; and that failure was not due to inadequate bond, but to excessive compressive stresses in the 6,000 psi concrete.

Weighing 3,500 lbs. the I-shaped beams (12″ deep, top flange 14″ wide, bottom 18″ and web 11″) will be placed side by side in the 150′ x 700′ pier to span between 2′ thick reinforced concrete girders 20′ o.c. Ends of beams will be fixed with in-situ concrete.

Cost of these 3,500 lb. prestressed stringers is $86 each. Equivalent steel beams would weigh 600 lb. and cost about $50 for the steel alone, which would have to be encased in at least 3″ of concrete (to give full protection against sea-water corrosion) and would require heavier concrete decking. Conventional reinforced concrete beams would weigh 3,500 lb. each but the 320 lb. of reinforcing bars required would cost $15 more than the 65 lb. of high tensile cable used in prestressing, and the bars would be subject to salt-water corrosion through the cracks that always occur in the underside of reinforced concrete beams. Thus prestressed beams proved most economical in this case. They are designed by Freyssinet Co.; engineers are Madigan-Hyland Associates; contractors: Corbetta Construction Co. and Merritt-Chapman & Scott Corp.

4. PRESTRESSED BLOCK FLOORS

Slab beams up to 25′ long for two-story school cost $1 per sq. ft.

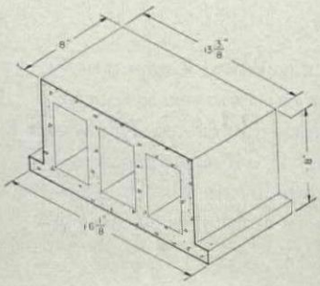
Concrete block, joined into prestressed slab beams with double-tensioning cables, proved 10% cheaper than conventional concrete slab construction for the two floors and roof of the Cumberland High School extension at Bordeaux, Tenn. Cost of the prestressed floors and roof, including a 2″ cast in place concrete topping, was $1 per sq. ft. in place. Even more remarkable: because of the simplicity of the construction, the two-story, 13,000 sq. ft. addition was completed six weeks ahead of schedule.

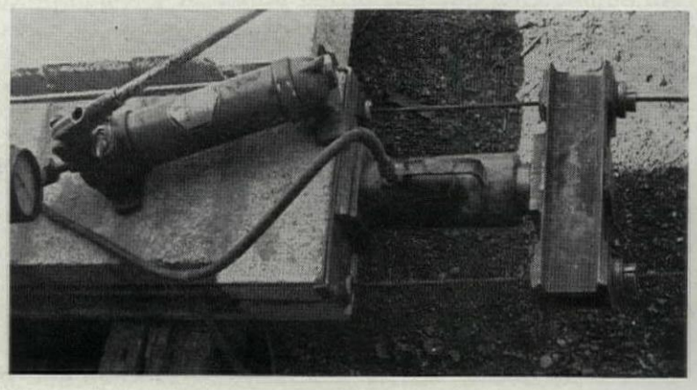
Basic structural unit is an 8″ deep hollow concrete block made up into 694 prestressed beams, 10′-8″ to 24′-8″ long. Individual blocks are 8″ long and 13⅜″ wide with a bottom flange extending 1⅜″ on either side. Tension cables are positioned by lugs above these flanges and are encased in concrete when the 2″ topping is poured. No formwork is required since the flanges are set close enough together to prevent the topping concrete from seeping between adjoining beams. Their underside forms a smooth, finished ceiling ready for painting.

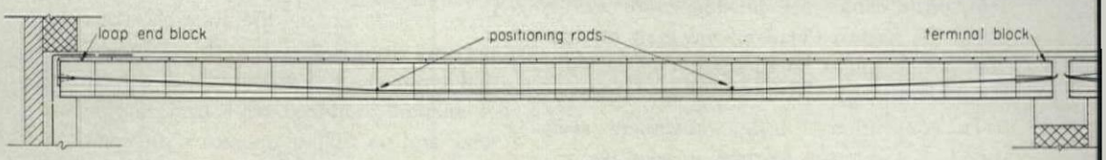
Concrete blocks prepared with cement and limestone aggregate are steam-cured for eight hours at 170° F., then air-cured for 28 days to develop a minimum compressive strength of 3,750 psi. With the aid of a rigid assembly form, blocks are assembled into beams by embedding them with high-strength mortar. While this mortar is still wet, a single 0.196 diameter tension cable is slung along one side of the line of blocks, around a specially shaped end block and back along the other side. The two cable ends are then threaded through an anchoring block and some initial tension is applied to develop firm joints between each block. After the mortar has hardened to at least 2,000 psi, the cables are fully tensioned to 120,000 psi and the load transferred to a steel plate in the anchor block by screwing down the tension nuts. (Actual tensioning is done by two men in 15 minutes.) Cables are greased and wrapped in two layers of asphalt paper to prevent bonding with the topping concrete.

Beams are handled by crane, supported only at the ends. Each 6,600 sq. ft. floor is laid by five men in ten hours at an average cost of $1.85 per beam. Original estimate was 30 days per floor; actual time, one week.

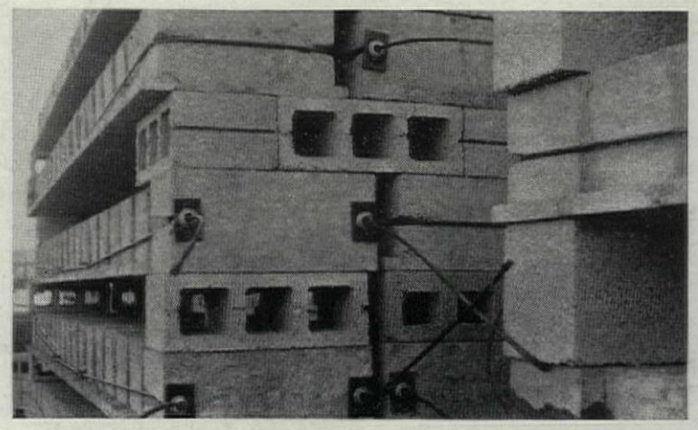
Architect: Billis, Macdonald-Johnson; prestressing engineers, Bryan & Dozier; prestressed beam fabricator, Nashville Breeko Block Co.



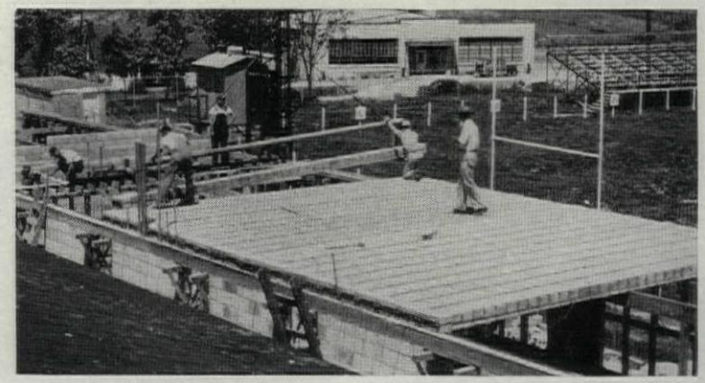




Building blocks are combined into a beam by prestressing with hand jack. Cables are fixed by threaded units in anchor block. Diagram shows how beams are rigidly tied into floors and roof of this high-school addition at Bordeaux, Tenn.



Cables pass along one side of beam, back along the other, to be anchored at one end only. Here, 24′ beams are stacked ready for hoisting into position.



In hoisting beams are supported only at ends. Roughly 300 beams were positioned by five men in only ten hours.

Electrical conduits are positioned before 2″ concrete topping is poured. Concrete completely covers tensioning cables and end anchorages.

5. ROOF STRUCTURE IN TENSION

An engineering analysis of the parabolic pavilion in Raleigh, N. C.

By IGOR V. VOSHININ, senior associate of Severud-Elstad-Krueger, structural engineers

Based on Matthew Nowicki's ideas for roof members working exclusively in tension and supports working exclusively in compression, the structure of the Raleigh Pavilion *(p. 134)* is in two parts: 1) main cables to carry the load and transfer it to the supports; and 2) crossing arches to resist the pull of the cables and transfer these loads to the ground. To stabilize this system, cross cables are introduced to withstand the negative loads of any part of the roof which might be in suction in certain wind conditions.

In conventional design, members are used either as beams working in bending, or columns working in compression, or combinations of both. Even in pure bending, some fibers are working in compression, and the full strength of the material is, therefore, limited by the possibility of buckling. Even if it were possible to use a grade of steel for these members with such high-tensile stresses as those allowed for cables, the buckling stresses would remain low and weight of material required would be high. Only the complete elimination of compression members permits maximum economy in steel.

Cable framework

Compression members can be eliminated by either a stressed skin, continuous in two directions and suspended on its periphery, or a system of cables. Skin construction is uneconomical since it cannot be fabricated as thin as theoretical computations allow. It is economical, however, to concentrate structural material in cables. This was done in the Raleigh Pavilion to produce a cable framework which can absorb maximum tension stresses and not be subject to buckling.

Suction and temperature control

Since the weight of the Raleigh structure per unit area is very low (6 psf for cables and roofing), it is vulnerable to the effects of suction produced by a combination of wind and possible temperature differentials inside and outside the building. When this negative suction load equals the positive dead load, the actions of the cable systems are reversed—the cross cables become the carrying members, while the main cables perform the secondary distributive function. For the cross cables to fulfill this new function, their curvature must be in the opposite direction of the main cables. Result: the surface of the roof is a so-called anticlastic surface (saddle shaped). It is also important that the radius of curvature of the cross cables be small, otherwise their weight would be excessive.

Even with these requirements met there would be a tendency for local instability under uneven suction. It is most difficult to fulfill the requirements of curvature and at the same time design an economical supporting structure for such a roof. Therefore a new structural element—the "guy wires"—are introduced. These guy wires supplement the action of the cross cables by resisting suction forces wherever the cables have a large radius of curvature (where the curve is very flat or where there happened to be a point of inflection and reverse curvature).

A rise in temperature slackens the framework by expansion of the cables. This affects the efficiency of the cross cables, but not the main cables. Even in a perfect anticlastic system, when fully expanded at high temperatures the cross cables would not resist suction forces and must therefore be prestressed.

In the Raleigh Pavilion this prestress is introduced in the cross cables near the axis of symmetry passing through the entrances to the arena. Where the shape of the cross cables did not permit prestressing, negative pressures are resisted by the guy wires. To be effective through the assumed temperature range (—10° F. to + 120° F.) guy wires are provided with adjustable springs with load indicators to control tension.

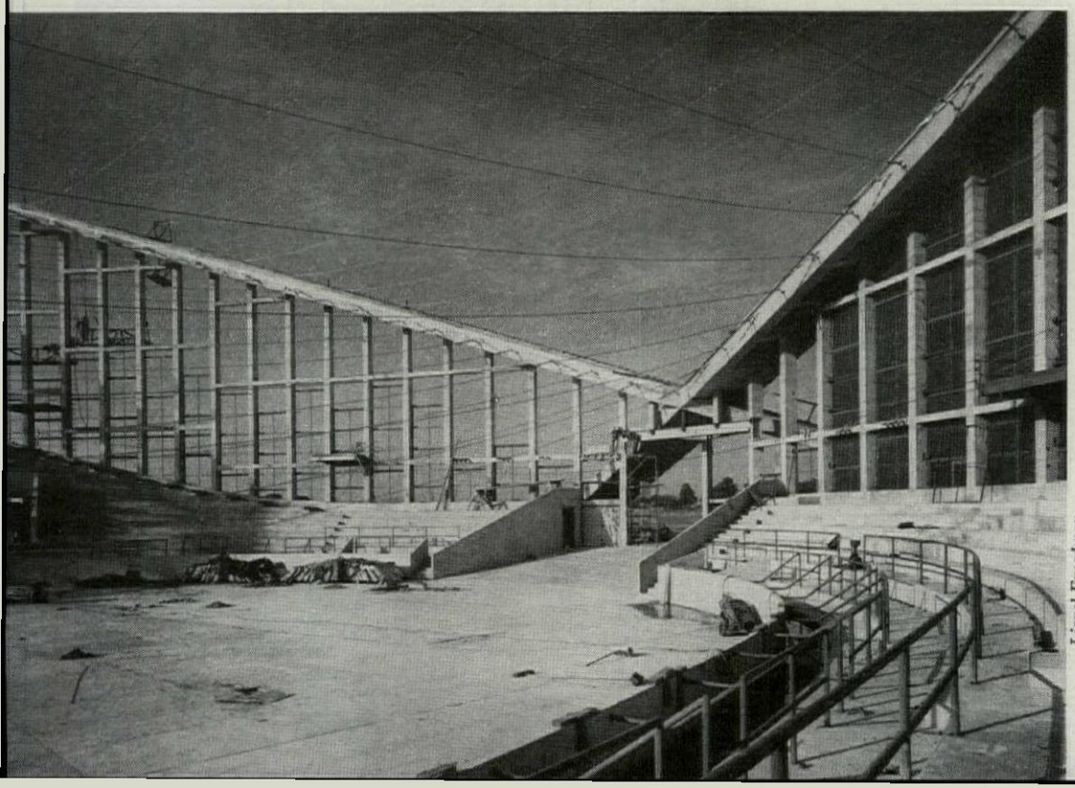
Supporting construction

Dome construction requires a supporting tension ring. This suspended roof is a "reversed dome" and therefore requires a compression ring to equalize the horizontal components created by the tension in the cables. The compression ring is formed by two intersecting parabolic arches inclined so that the resultant tangential force at the cable ends lies in the plane of these arches. Thus the roof load is transmitted through the reinforced concrete arches directly into the abutments, and the columns beneath the arches support only the vertical load of the dead weight of the arches. It was considered impracticable to construct these arches as fully fixed for this would have introduced high moments into the abutments. It seemed natural that the supporting elements of a flexible construction should also be flexible to a certain extent and the influence of temperature variations be minimized at the same time. For these reasons, the arches were constructed as two hinged members, a pair of inclined hinges being placed in each abutment.

Each abutment contains a pair of reinforced concrete legs, a natural extension of the arches, and a vertical column where these arches intersect. These columns not only support dead weight at the intersection but also act as tension members to prevent any uplift of the arch intersection should the pressure in the arches become excessive.

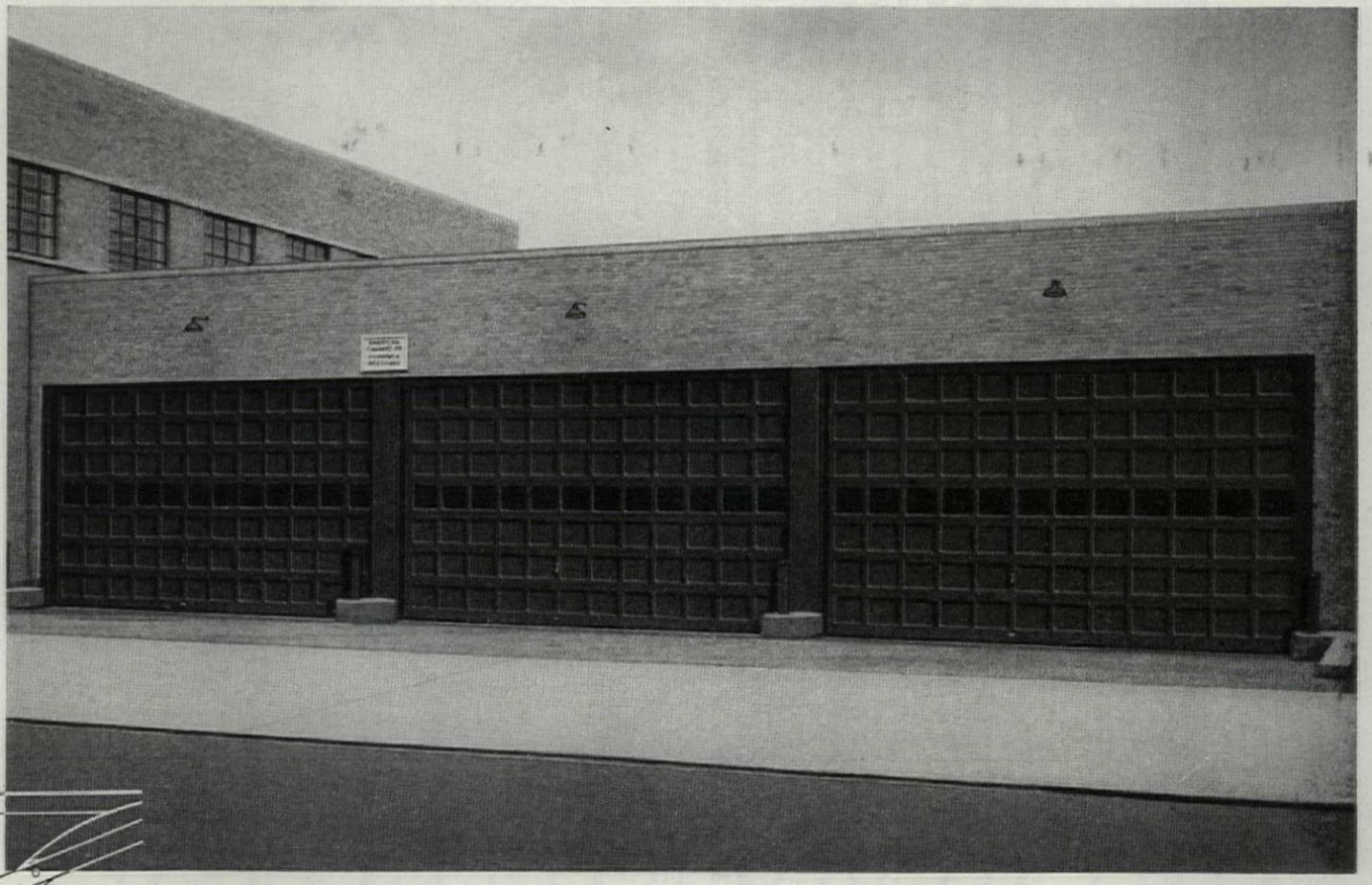
To prevent movement of the footings, they are connected by a set of prestressed cables. This prevents any possible spread of the footings should the horizontal components of stresses in the legs exceed the frictional resistance of the ground.

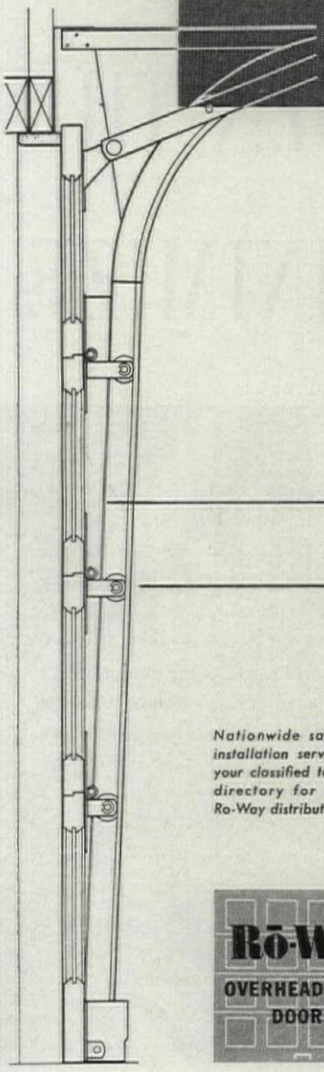
Raleigh Pavilion—roof cables in tension, supports in compression



Lionel Freedman

again Rō-Way pioneers garage door improvements





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2 **SEAL-A-MATIC HINGES—an exclusive design of graduated height—guide the closing door tightly against side and head jambs. On opening, the hinges instantly free the door from jambs to provide easy, frictionless operation.**

Pace-setting features like these—plus Power-Metered springs, Double-Thick Tread rollers, and other outstanding Ro-Way developments—make Ro-Way first choice in overhead type garage doors.

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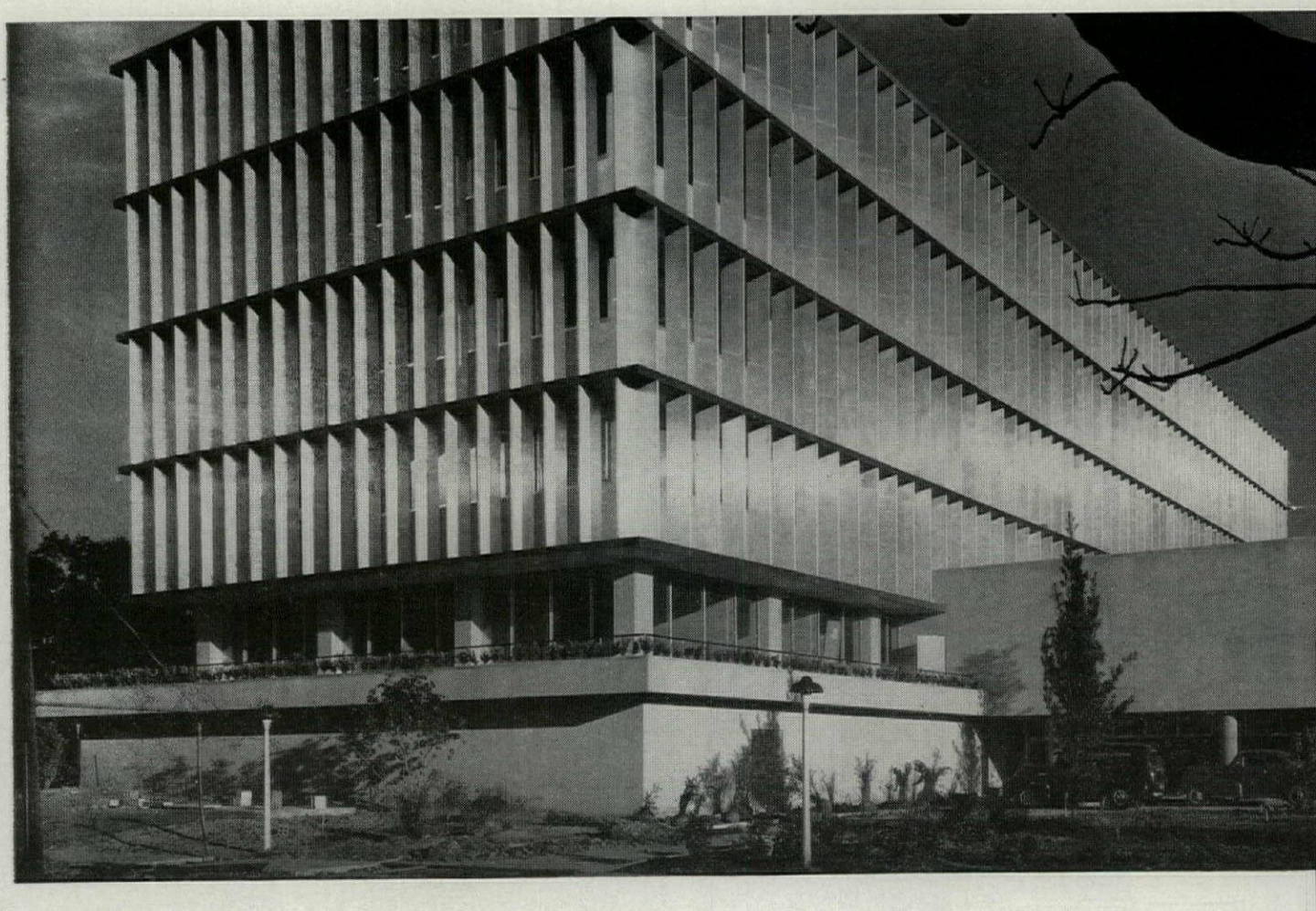
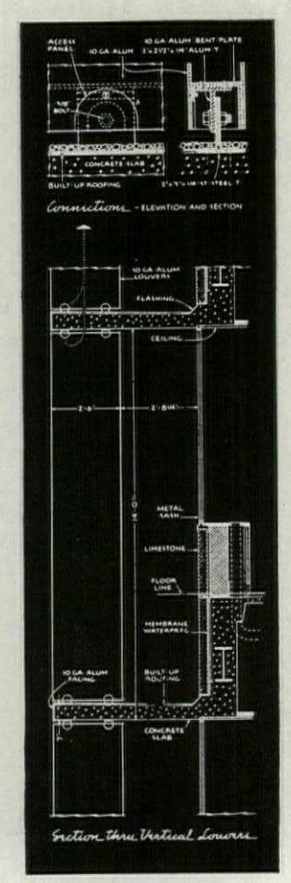
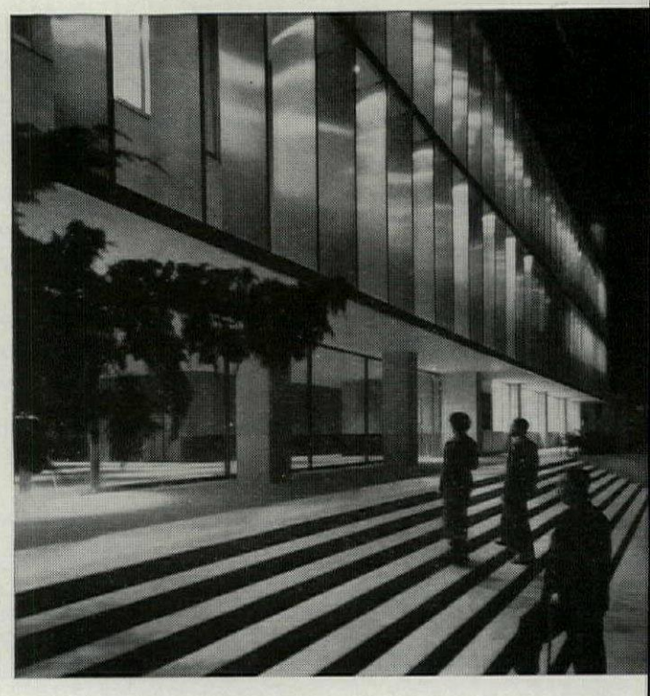


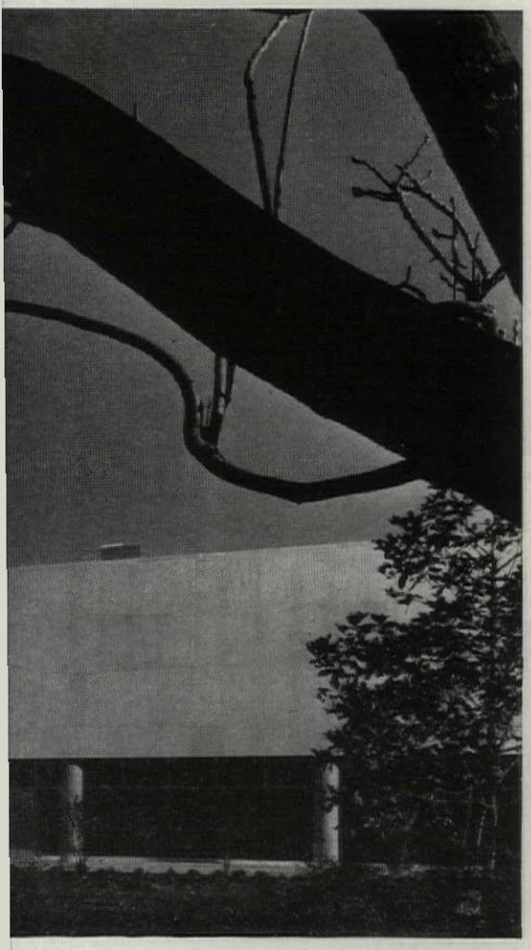
"ONLY ALUMINUM COULD LESSEN THE ...MINIMIZE



Fixed solar shading of cantilevered canopies and aluminum vertical louvers creates a striking pattern when illuminated at night. ▶

◀ Detail of aluminum louvers.

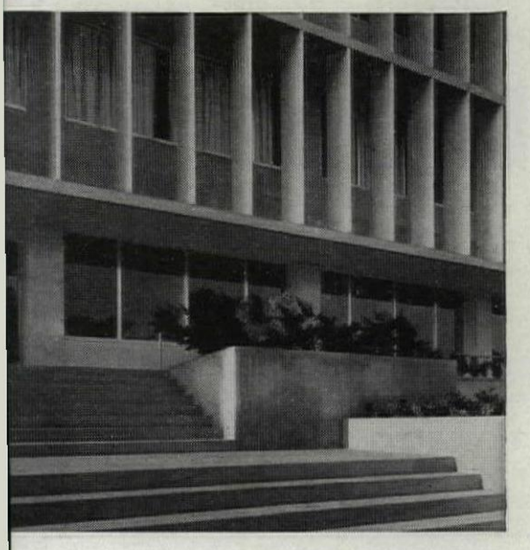




Pan American Life Insurance Building, New Orleans, La. Architects: Skidmore, Owings & Merrill and Claude E. Hooton. General Contractor: George J. Glover, Inc.

WEIGHT MAINTENANCE"

Louvers and windows were fabricated of Alcoa Aluminum by General Bronze Corp., Garden City, Long Island, N. Y.



Handsome aluminum louvers and windows emphasize the modern thinking and design incorporated in this striking addition to New Orleans' tradition of fine architecture.

According to Vice-President F. W. Gleason of Pan American Life Insurance Co., aluminum was used because, "we were interested in two things . . . lessening the weight and minimizing maintenance. This, in our judgment, can only be accomplished by the use of aluminum."

Today, aluminum is the preferred material for hundreds of architectural applications. No other material so well combines economy, workability, corrosion resistance, lightness and lasting good looks.

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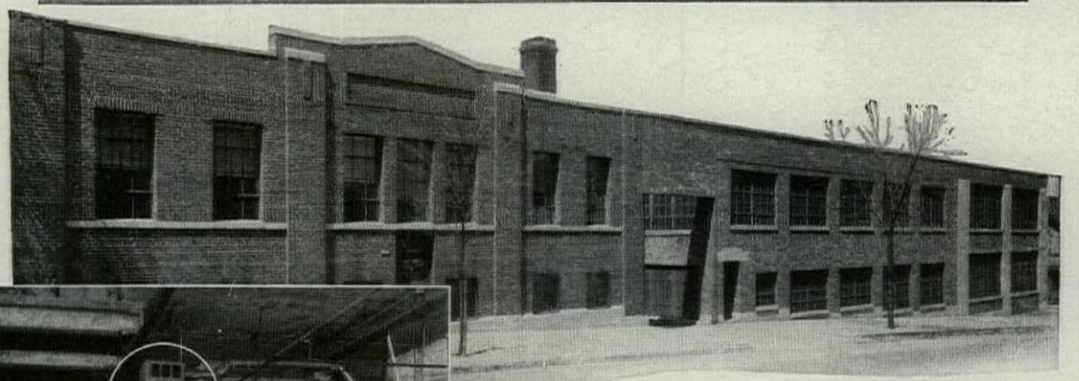
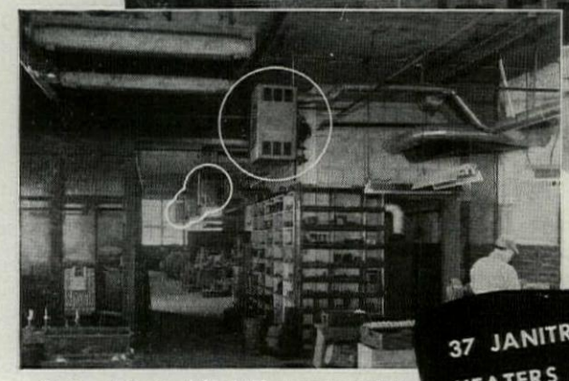


Modern plant of Milwaukee Valve Company, Milwaukee, Wisconsin. Manufacturers of Milvaco valves for the plumbing and heating industries.



Series of Janitrol Unit Heaters installed in manufacturing area.

37 JANITROL UNIT HEATERS PROVIDE 3,228,850 BTU/HR

Consulting Eng., Frank Glas.
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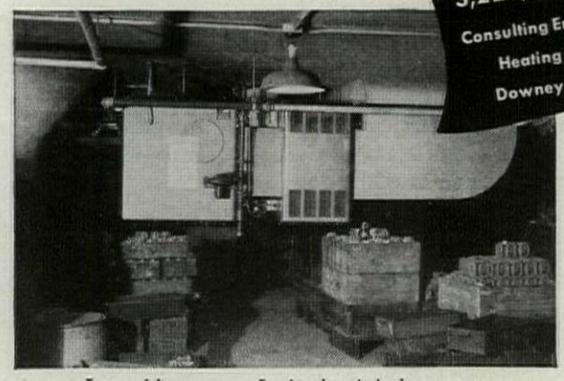

Large blower type Janitrol unit in basement stockroom directs uniform heat through ducts to locker rooms.

By serving the plumbing and heating industries for over 50 years, the Milwaukee Valve Company has wide experience in the problems of this field.

In 1950, they decided to do something about their own heating problems and advancing costs. With the increases of fuel and labor, their total heating operating and maintenance costs were running over $20,000 annually.

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Write for specifications on the complete Janitrol line of Suspended Units, Duct Heaters, Blower-equipped Models and Big Capacity Floor Types.

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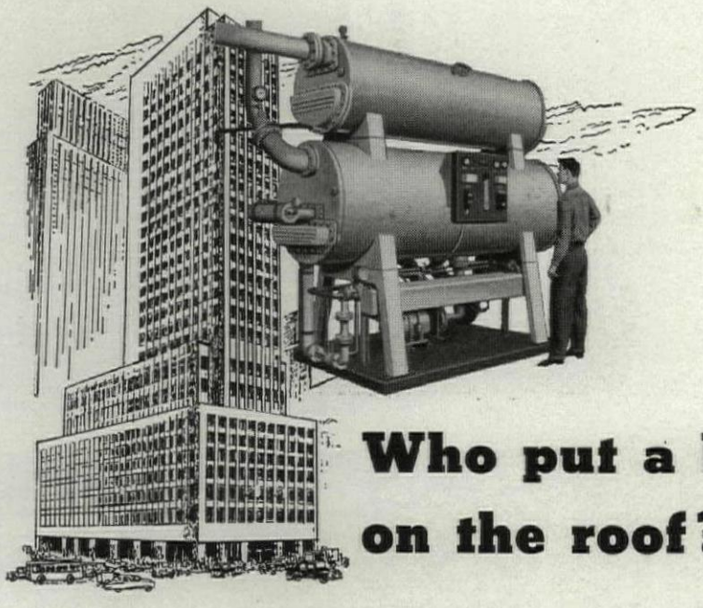

Who put a bonus on the roof?

It's no mean trick to turn a problem into a bonus. But the owners and builders of New York City's new 27-story Sinclair Oil Building did it. Here's how.

Problem: because there was a bed of solid rock beneath Fifth Avenue and 48th Street, the cost of blasting for a sub-basement refrigerating plant for air conditioning would have been terrific. Solution: Carrier Absorption Refrigerating Machines chill water with steam by absorption. They have no major moving parts and are practically vibrationless. So it was practical to put them on the roof.

Bonus: Instead of long, costly condenser water lines, and pumps with extra horsepower and extra-heavy casings to withstand the hydrostatic pressure of 27 floors which an ordinary basement plant would have required, the roof-top installation used short water lines and pumps with standard casings . . . a clear saving of some $25,000 on first costs alone!

Another bonus: the Carrier Absorption Refrigerating Machine handles extremely light loads automatically with high efficiency. This is mighty important in a year-round air conditioning system like Sinclair Oil's, where only a small amount of refrigeration will be needed during cool weather.

The Carrier Absorption Refrigerating Machine is built in five sizes, from 115 to 350 tons. Maybe it can help *you* turn a problem into a bonus, too. The nearest Carrier office will give you all the information you want. Or write for our folder, "Absorption Refrigerating Machines." Carrier Corporation, Syracuse, New York . . . *for 50 years — the people who know air conditioning best.*

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Carrier

AIR CONDITIONING
REFRIGERATION
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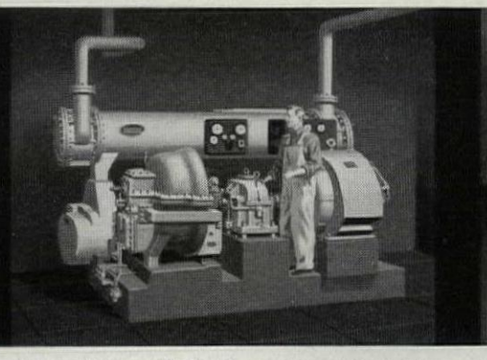
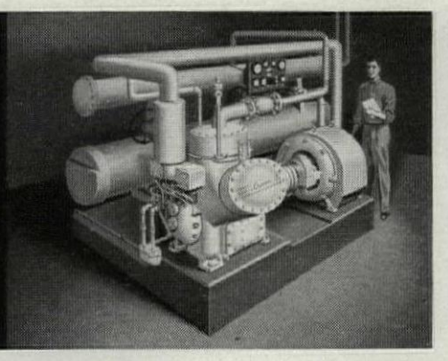


Your particular chilled water system might best be handled by the Carrier Centrifugal Refrigerating Machine.



In many applications, the Carrier Reciprocating Refrigerating Machine — a single package — is the most economical choice.

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Think how simple it is to specify an electric motor to meet your exact requirements. You can do the same with Armco Steel Buildings.

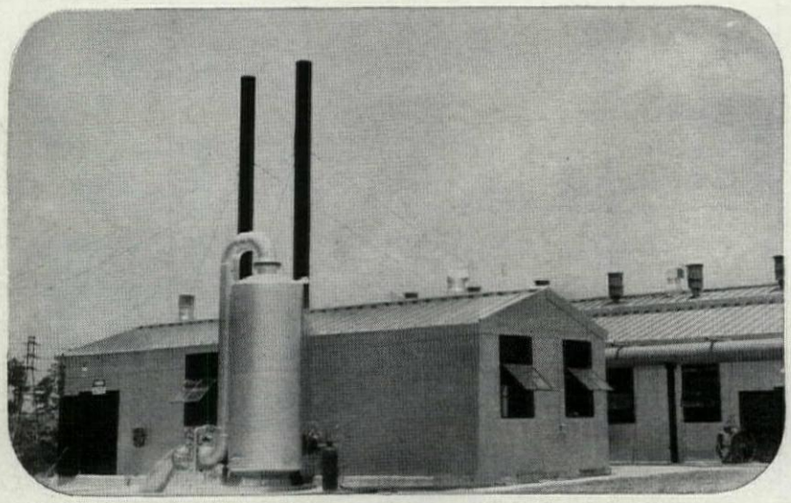
It's easy to select a soundly engineered structure to meet your needs—offices, locker rooms, warehouses, pump houses and similar utility buildings. Economical, mass-produced Armco Steel Buildings offer a range of sizes that permit wide flexibility of use.

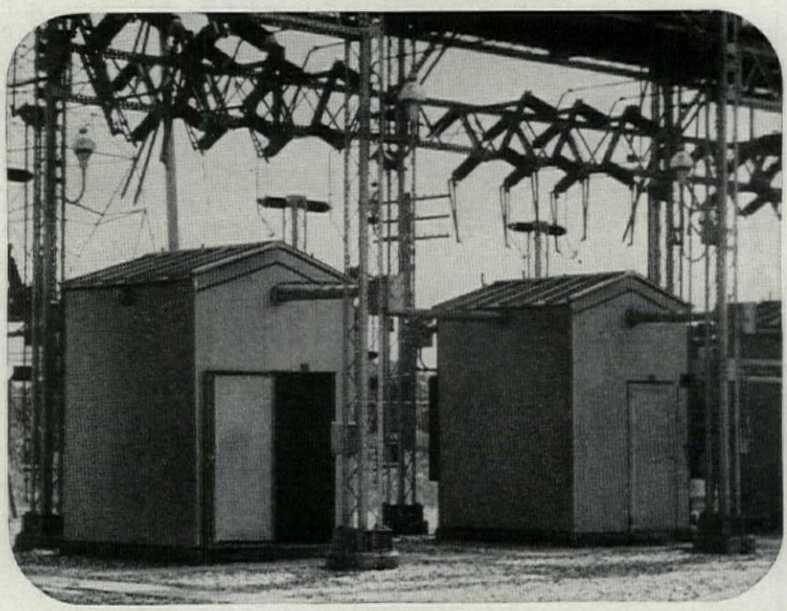
Both architect-engineers and industrial users have found them the simple and economical solution to many mutual problems. And whether one or a hundred Armco Buildings are specified, they are identical in construction, strength and durability.

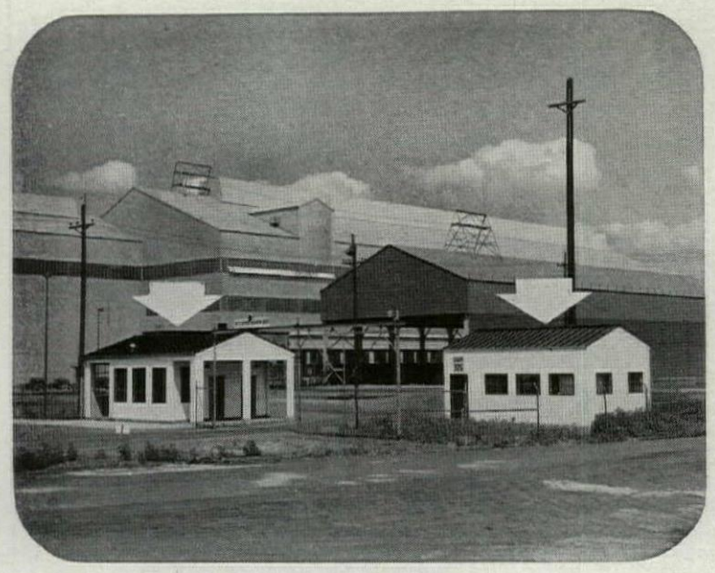
With Armco Steel Buildings there is almost complete freedom in the placement of doors and windows or interior arrangement. There is no danger of obsolescence because these buildings can be easily rearranged, extended or moved to a new site. They are weathertight and noncombustible.

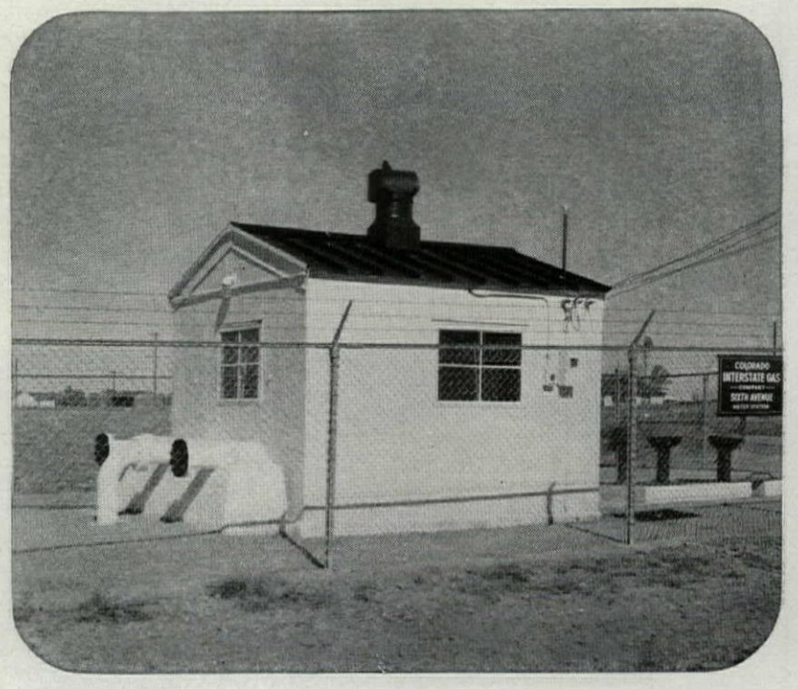
Erection is easily and quickly done by industrial crews or local contractors in a matter of hours. Labor costs are low.

The next time you are hampered by time and cost, yet require a neat, efficient structure—try an Armco Steel Building. Write for data. Armco Drainage & Metal Products, Inc., 4422 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.









ARMCO STEEL BUILDINGS

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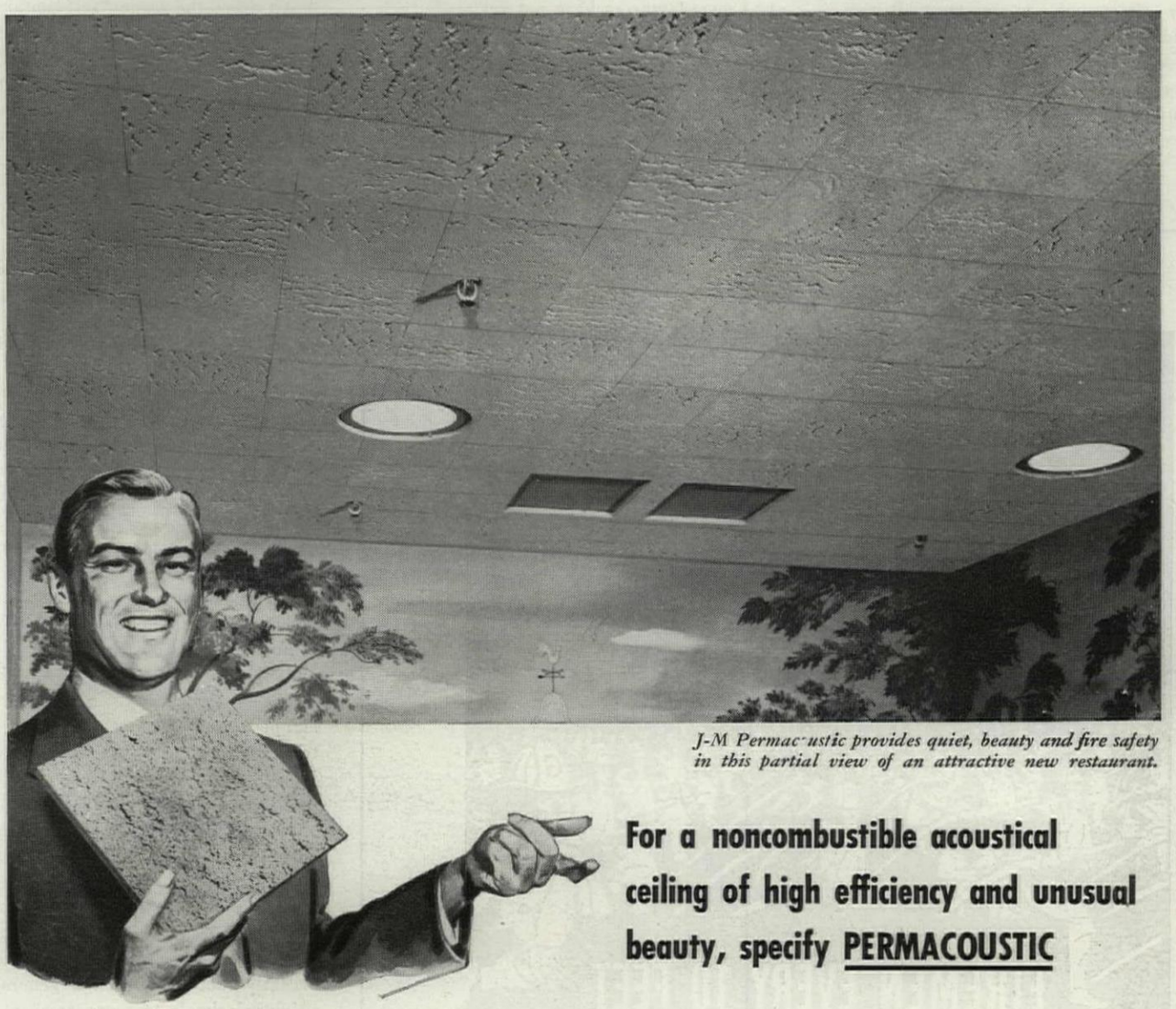

J-M Permacoustic provides quiet, beauty and fire safety in this partial view of an attractive new restaurant.

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J-M Acoustical Materials include Sanacoustic* Units, Transite* Acoustical Panels, and drilled Fibretone*

During the last ten or fifteen years spread-out single-story designs seem to have become increasingly popular—due largely to particular ideas about daylighting.

The usual arrangement for daylighting in American classrooms—as in most British schools for the first five years after World War II—seems to be a main window wall with a clerestory opposite. The chief problem is to find a suitable form of "control." My own preference is for curtains, provided that some can be developed which are cheap, do not require frequent cleaning and are available in colors. I do not think this is impossible. (Simple canvas awnings are also effective, *see p. 133—Ed.*) As an alternative, perhaps the glass manufacturers have not yet made their final contribution to the solution of this problem.

Widespread appreciation of the need for good daylighting is only one facet of the wider problem described by the Texas Engineering Experiment Station, which is doing valuable work on the subject, as "environmental engineering" (AF, May '51). To daylighting—and artificial lighting—are added studies of heating, ventilation and acoustics. Apart from the large "self-contained" classroom, this is where the main strength of post-war US school building lies. Architects like Kistner, Curtis & Wright of Los Angeles have indeed achieved standards in the efficient functioning of a building from the point of view of physical comfort which would be hard to match anywhere.

In Britain—economy demands clear-cut design and higher buildings

In Britain most architects, grappling with shortages of labor and accustomed materials, have not yet shaken themselves free enough from the trappings of borrowed styles. Many newer techniques are being tried but they are not yet handled with the confidence that expresses mastery of finish and coordination of detail.

On the other hand, the demands of economy have led to a clear-cut approach to design and a frank expression of structural elements enhanced by a lively use of color. The facade is no longer the starting point of the design and the modern school does not have a "front" and a "back." Schools are not now slapped down in a sea of asphalt—the hard-topped playgrounds are kept away from the immediate vicinity of the buildings. The buildings in turn are fitted carefully into the site, trees are preserved and inexpensive landscaping is used to help the illusion that the structure has grown out of its site.

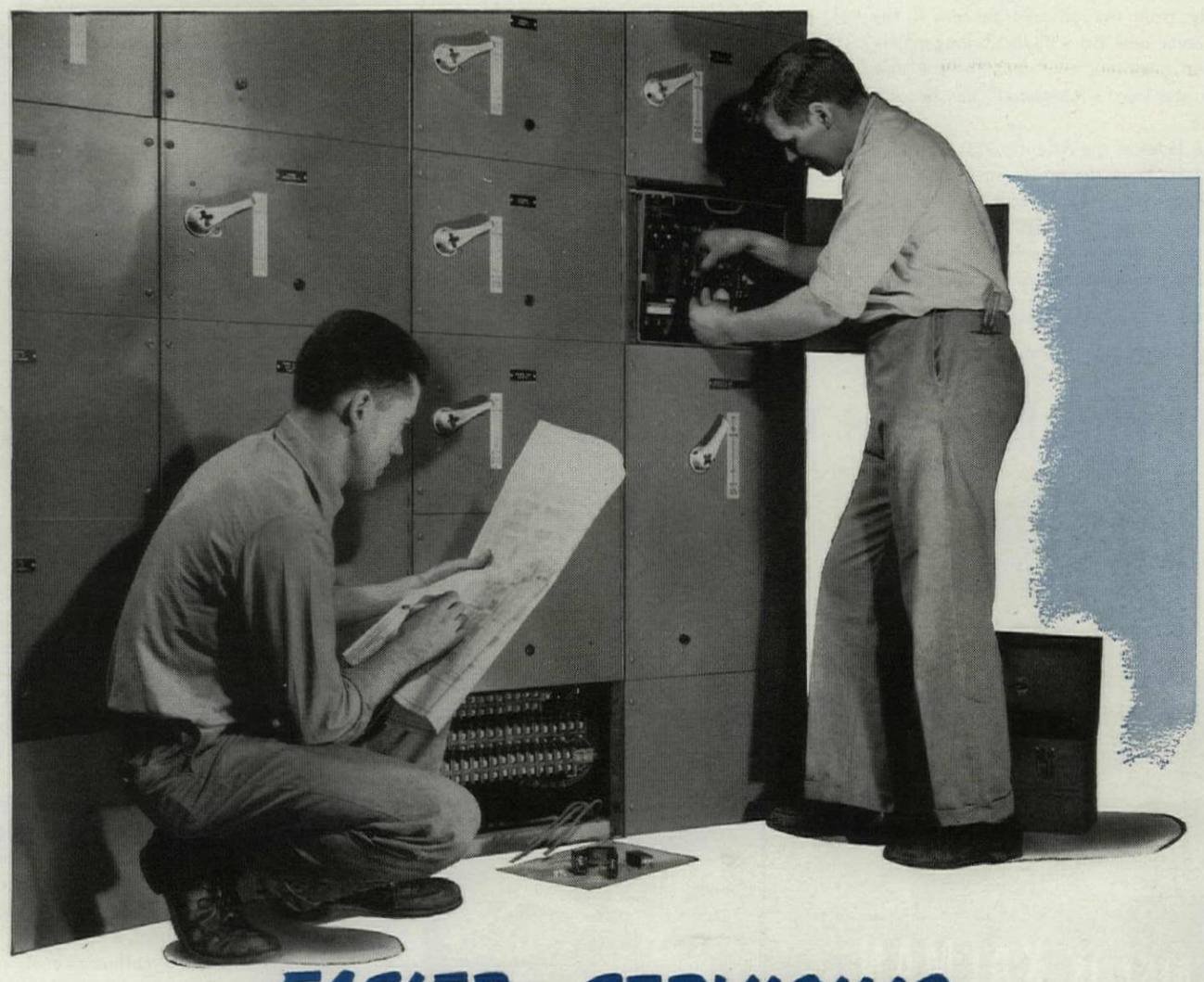
Most of the new schools are inviting, not forbidding. Immediately after the war most of them were of open single-story design, but recently there has been a general trend in primary schools to more compact buildings, parts of which are two stories high. For secondary schools the usual arrangement is now a building (or a series of buildings) of varying heights, the tallest of which may be three or more stories.

Inside, "municipal green" and "tobacco brown" have given way to cheerful colors chosen for their reflection value, and the contribution they make to differing atmospheres in different parts of the school. A small part of the cost is allocated to mural decoration or free-standing sculpture.

In the US—functionalism dictates the plan and requires greater design skill

In most parts of the US I saw the same attempt to design simple, friendly buildings. Except in parts of New England and the South, where school boards seem to depart

continued on page 172



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All men go for the fact that removing and replacing starter units is positive and not a matter of "feel and twist". Guide rails, located on either side of each starter unit, make this a positive operation... as simple as opening and closing a filing cabinet drawer.

Then there are those operations that can be performed right on the structure. Each unit can be pivoted forward to the tilt-out disconnect position where it is completely disconnected from the power buses and is "dead".

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CONTROL CENTERS

reluctantly from the pillared facade of the Colonial style, new US schools no longer proclaim their historical ancestry. For the new approach, the word "functional" has become the slogan.

On both sides of the Atlantic, the buildings are designed "from the inside out." The only complaint which laymen have about this style is that many of the buildings look as though the architect had never reached the outside. As one American architect said to me: "Is the school-board monument to be succeeded by the hencoop?"

The modern building, being more individual in every respect than its predecessors, requires a greater degree of design skill to make it a success. Lawrence Anderson and John Lyon Reid, for instance, have demonstrated at Lincoln, Mass., and in California respectively how a first-class designer can create an inexpensive building in which utility and simplicity are not divorced from dignity.

In both countries—architects often know less than their clients think they do

The functional approach depends greatly on the ability of the client. A school is not a simple building, particularly if it is a high school, and architects often know less than their clients think they do about what goes on in a modern public school. If the client cannot—or does not—tell the architect enough about these activities, the building is likely to appear sterile architecturally.

That is why the preparation of a good educational program is so important. From the Crow Island School at Winnetka, Ill.* to the Richmond Secondary School in Yorkshire† all the best new schools in either country have been the product of intensive cooperation between educators and architects.

In this respect British-US contrasts are more noticeable. The US has 90,000-100,000 school districts ranging from New York City to the "little red schoolhouse," with widely varying financial capacity and educational experience, some receiving state aid, some not. On the other hand, Britain has only 146 local education authorities, all backed by an elaborate system of subsidies from the national government.

The US is seen perhaps at its best in the district of moderate size (containing six to 12 schools) where "grass roots democracy" really works; where, with the help of a talented school superintendent and an objectively selected architect, a school board enlists the experience and enthusiasm of an entire community. The new schools then become a tangible expression of that community's pride in its children and faith in its future.

In Britain the best practice is by a larger organization, with a skilled educational and architectural staff working under the direction of an understanding local education authority.

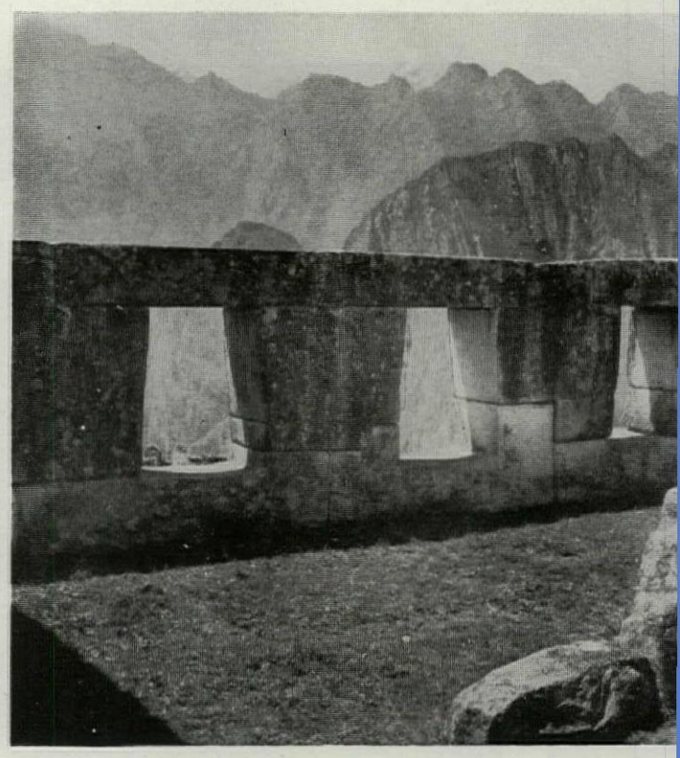
As for possible improvements in the US, I would plead for a modified financial framework, based on a more methodical appraisal of total needs and local ability to provide for them—something approaching the arrangements in Michigan and California. This suggestion implies the assurance that all children, wherever they may live, can be provided with school plants of an acceptable minimum standard and that architects will be confronted with a budget more realistically related to the task.

In Britain I would hope for more positive cooperation between the "experts" and the public, a stronger sense that the building belongs to the community, and a more effective link between the school and the parents of the children attending it.

* Architects: Perkins, Wheeler and Will in collaboration with Eliel and Eero Saarinen

† Architect: Denis Clark-Hall

BOOK REVIEWS



THE ART OF ANCIENT PERU. By Heinrich Ubbelohde-Doering. Frederick A. Praeger, 105 West 40 St., New York, N. Y., 1952. 240 pp. 8″ x 11″. Illus. $12.50

The ancient cultures of Peru grew slowly and strongly in their terribly serene mystery, gathering legend for 2,000 years until the year 1532 A.D. But the culture did not include gunpowder, so when the piously larcenous Spaniard musketeers came to Cajamarca and pulled the trigger, the culture collapsed. The pieces are still being put together by prehistorians like Heinrich Ubbelohde-Doering, director of the Ethnological Museum in Munich.

Early in this book, he writes, "The Spaniards entered these countries as Aladdin with the magic lamp entered the gardens glittering with precious stones: they understood neither the material side nor the spiritual side, and the latter in particular was sealed to them. It is archaeology which unlocks, one by one, the gates into that world of terror and beauty . . . which presents to us these works of art and tries to make them speak to us."

Doering and other diggers into Peru's past have discovered and named a number of cultures antedating the famous Incas. Long before that famous, formal period, all the early Peruvians lived up in the mountains, coming down only to bury their dead in the plains by the sea. For they believed it was there on the coastal plain, "The Land of the Dead," that transfiguration into new forms of existence took place. There they built memorials and left llamas tethered for the future use of their transfiguring relatives—a Peruvian primitive felt lost without his llama. Then these early people went back to the hills. "Only later and gradually did mountain folk begin to enter the Land of the Dead and the Gods to cultivate the ground between temples and sepulchres. Seafaring people, too, may have landed and erected sanctuaries such

Fragment of a clay head with lacquerlike dark crimson coating. From the valley of the Rio Grande de Nazca, coastal culture, about 500-800 A.D.

as that near Lambayeque in the north, where Naymlap, the strange king, appeared with his *cortège* on balsa floats and founded a dynasty. To the present day, nobody can safely say from whence he came."

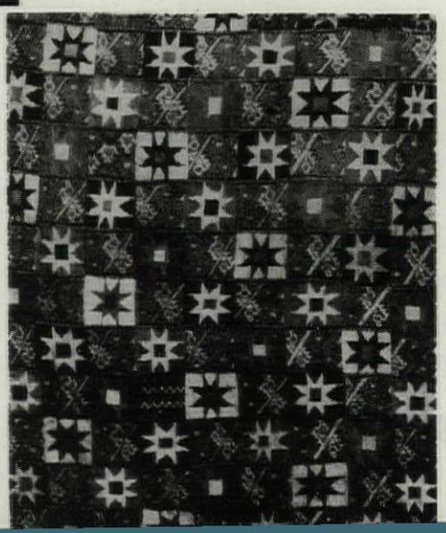
The author of this handsome book indulges in very little speculation—even about strange King Naymlap—but presents the fragments of these cultures in their hypnotic opacity. The nature of his book is provocative ...it is not a text of archaeology, but an art book. He presents beautifully to us these entrancing remains from the early Peruvian cultures in weaving, ceramics, sculpture and architecture, in order to spread their fame and glory.

Stone joints are as precise as graven lines (detail above). This is in Cuzco, in the wall of the Royal Palace of Inca Roca, from ancient times. The bumps were lugs for the lifting ropes used in placing the heavy blocks.

Statuette of a woman in chased silver, from the Sun Island, Titicaca Lake. This is of the Inca culture, 13th-16th centuries A.D. *Statuettes of this kind were generally wrapped in garments, so only the head was seen.*

Detail (about ¼ actual size) from a large, heavy woolen blanket in Gobelin technique. This is also from the Inca culture, 13th-16th centuries A.D.

: (above & top left) Hein-Ubbelohde-Doering; (others) ogical Museum, Munich; by H. Stubenböck



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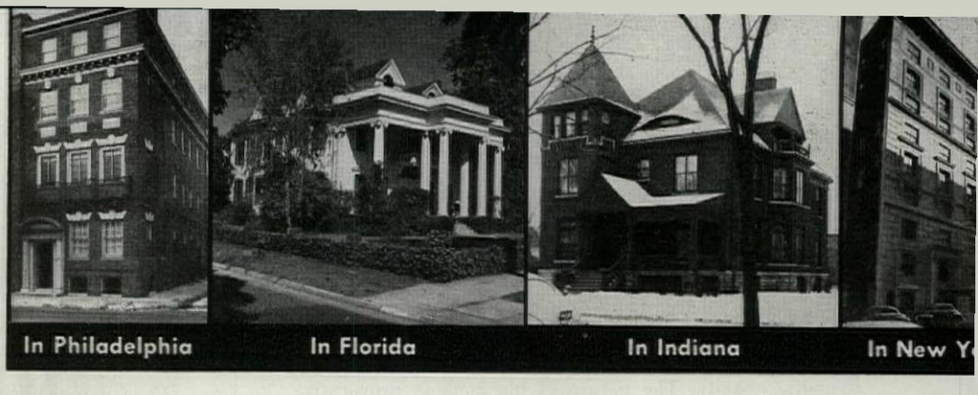

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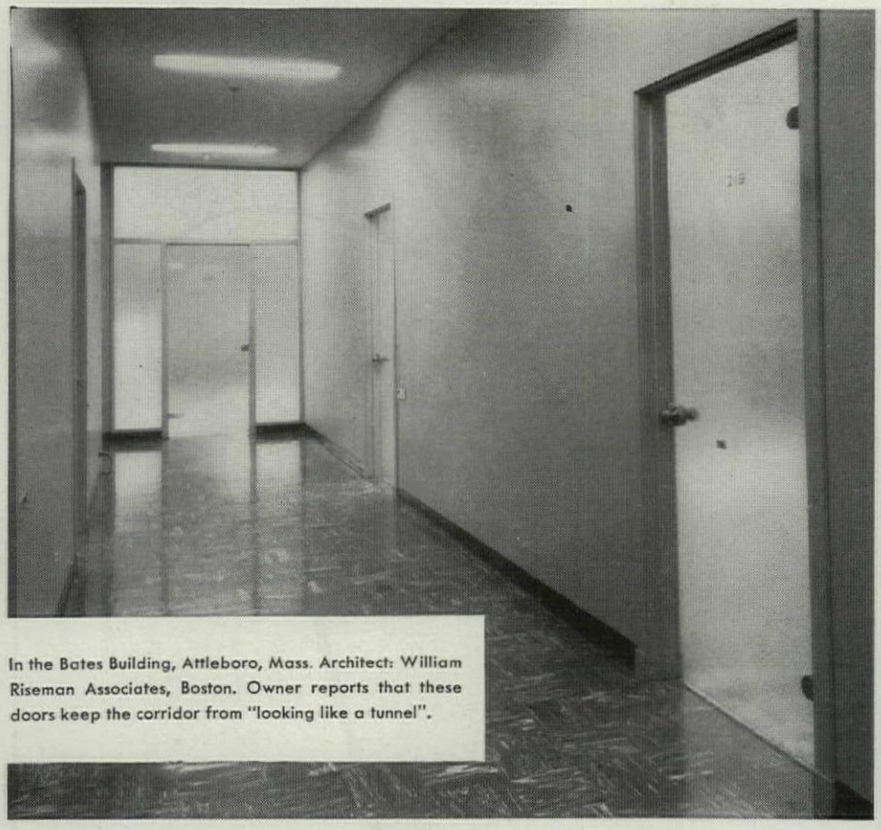

In the Bates Building, Attleboro, Mass. Architect: William Riseman Associates, Boston. Owner reports that these doors keep the corridor from "looking like a tunnel".

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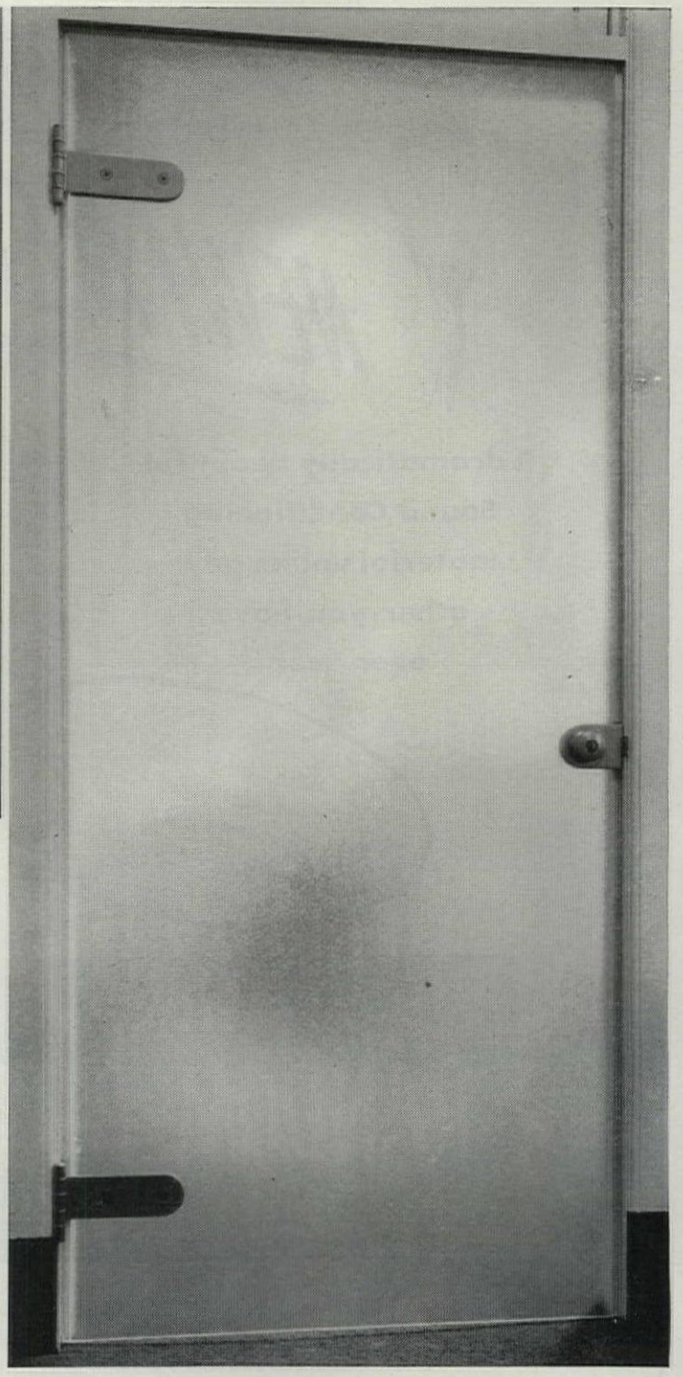

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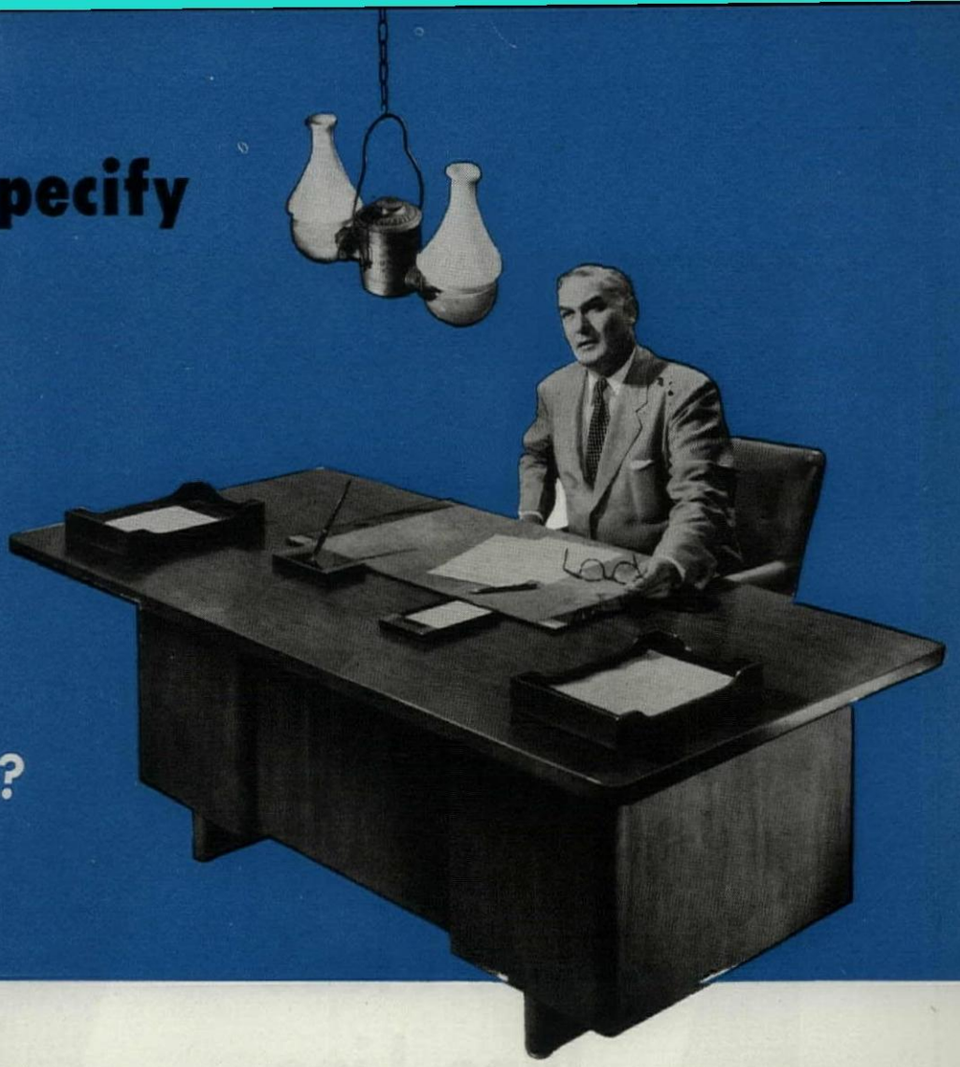

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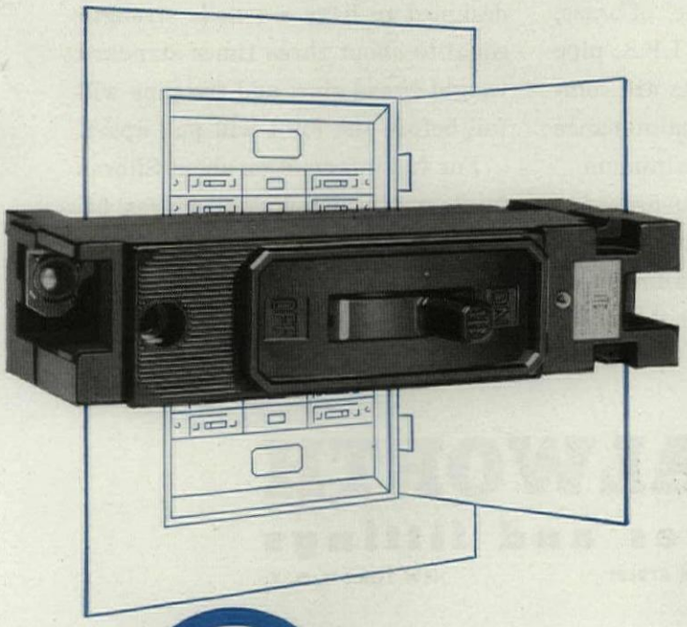

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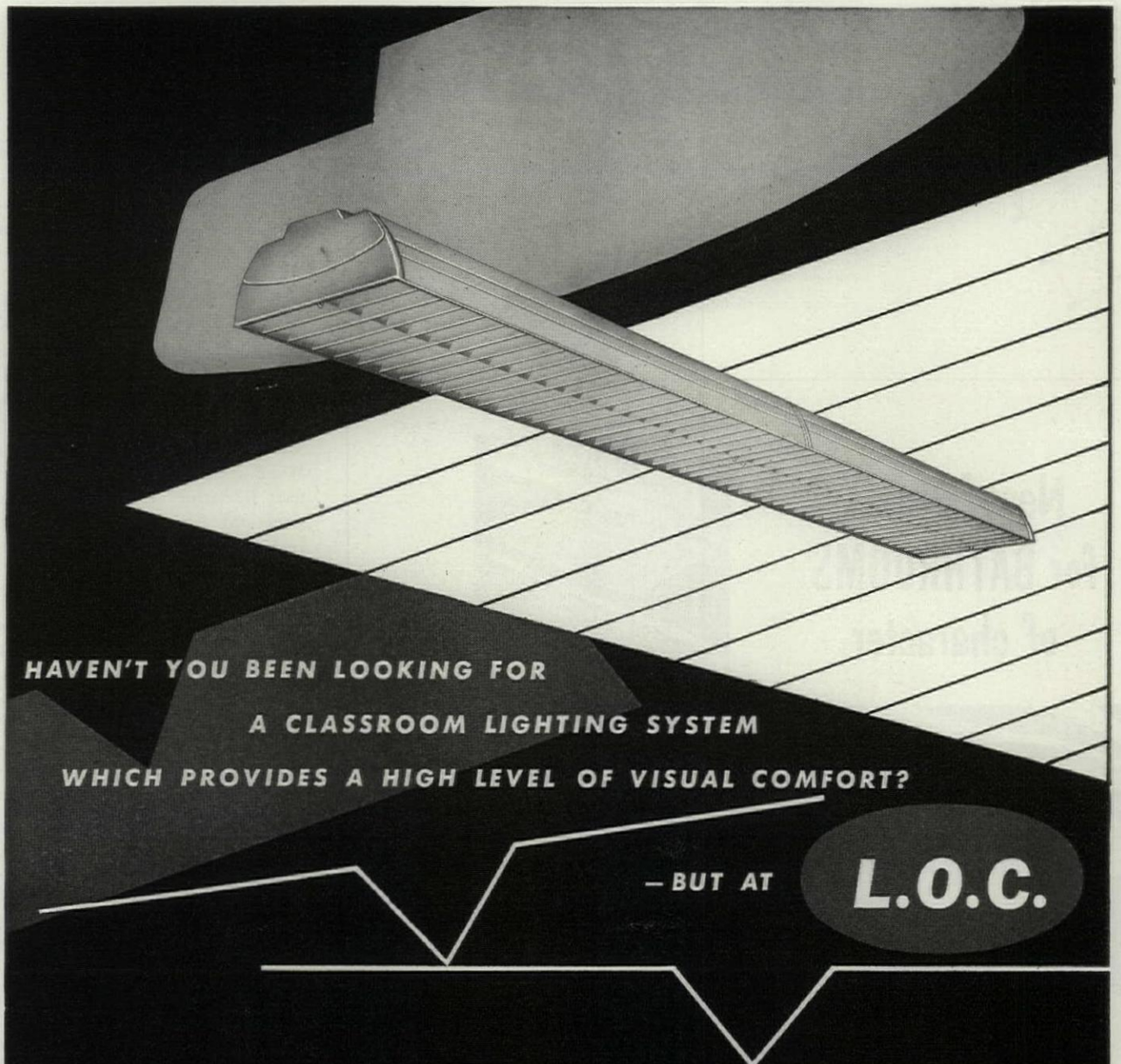

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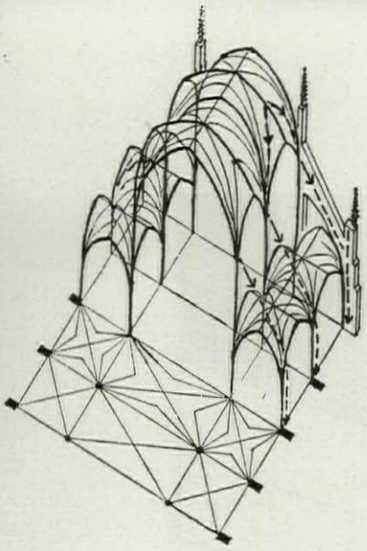

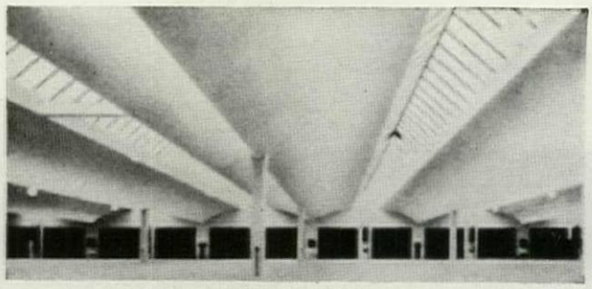

Medieval cathedral builders, who in those days combined the functions of architect and structural engineer, made full use of three-dimensional structures to obtain lateral stability (left). Similar stability is achieved in the newly-completed shell concrete factory roof at Nuremberg (above) where crossed cantilevered end frames above the shell permit 10' wide glazing in each bay.

REVIEWS *continued*

STRUCTURE IN BUILDING. By W. Fisher Cassie & J. H. Napper. The Architectural Press, 9-13 Queen Anne's Gate, London, S.W.1, England. 266 pp. 6¼" x 9", illus. $4.20

By definition, an architect is a masterbuilder, a leader in the art of building. The word is derived from the greek—"teckton" art of building; "archi" chief, principal, leading, pre-eminent. Graduates from architectural schools must earn this proud title by responsible, creative leadership in building design and construction. Not all of them do so; there are timid members of the profession for whom architecture is merely a matter of fashionable interpretation of prevailing obsolescent building codes. Conversely there are engineers like Maillart, Nervi and Samuely, Amirikian, Wiedlinger and Severud who are truly architects by virtue of their outstanding work in structural forms and techniques. Thus the real architect and the real engineer are not so far apart after all.

Recognizing this, and overcoming their natural (though misplaced) professional jealousy, the Text and Reference Books Committee of the Royal Institute of British Architects felt there was a need for a textbook on structures that brought together the outlook of both the engineer and the architect. The idea was not new. In 1950, though working quite independently, architect Leonard Michaels' well-illustrated *Contemporary Structure in Architecture* showed how new engineering techniques were producing new architectural forms. In this case, however, the RIBA was fortunate in persuading both an engineer and an architect to carry out the work. The engineer, W. Fisher Cassie and the architect, J. H. Napper are eminently qualified in that they both practice, have worked together on building design, and are both teachers in the same architectural school in London. The result is a meaty analysis of what an architect should know when he is starting a design and working it up, with special reference to the design and initial calculation of the indeterminate structures obtained in present-day spatial architecture.

Emphasizing the need for lighter and more durable construction, the authors point out that nature achieves maximum economy in materials through continuity and sectional forms. In the walnut, for instance, high strength is obtained by corrugations in a shell structure reinforced by internal tension diaphragms—nature's lesson to architects is the strict avoidance of right angles for transmitting forces.

In classic and medieval dome and roof structures, loads were carried in three-dimensional space-frames. They were built by men who intuitively felt just how the forces acted. Even today, any attempt to solve such structures graphically would prove a highly complex problem, beyond the scope of many en-

continued on page 186

Rolling Steel DOORS

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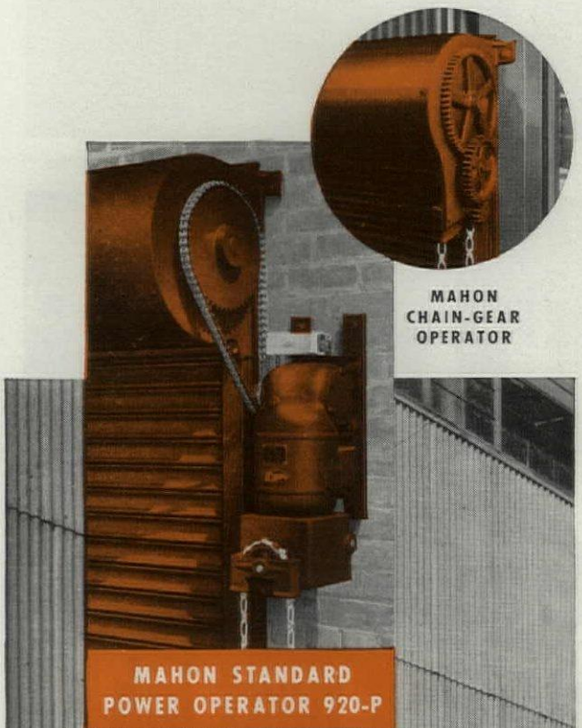

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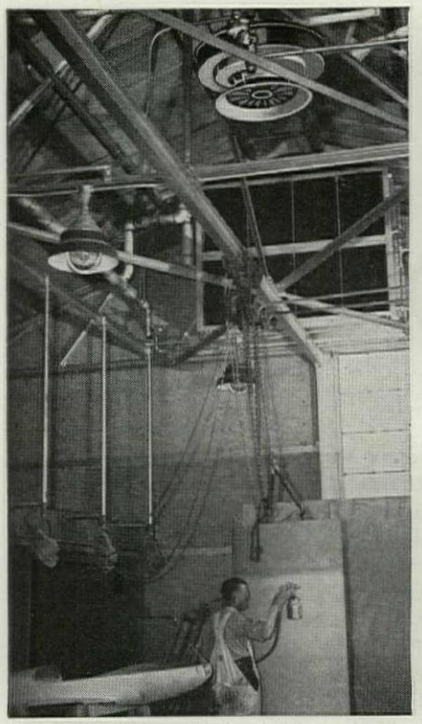
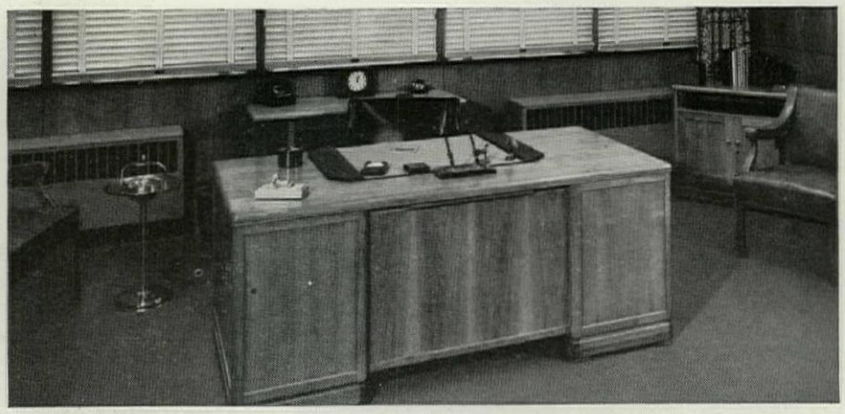


Projection Heater features Louver Cone.



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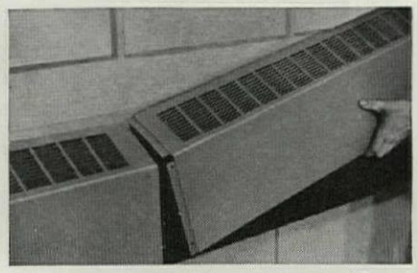

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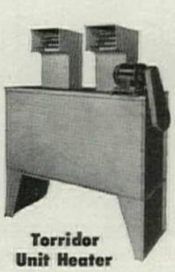
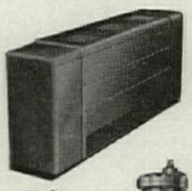
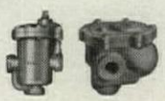


Torridor Unit Heater



Unit Ventilator



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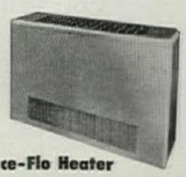

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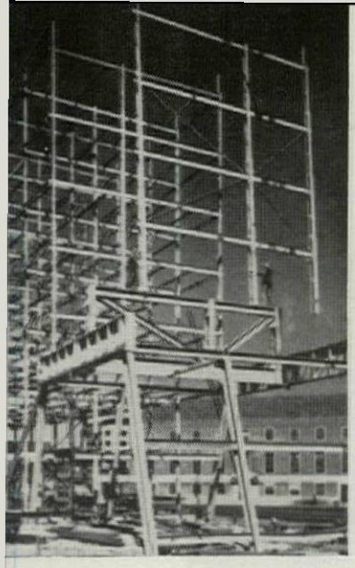


Light steel frames (left) developed by Mopin Co., England, are welded into eight-story units on the ground and hoisted into position where they receive additional rigidity from wall panels in the finished building. Precast concrete frames (above) show promise where repetition can bring down unit costs as in this north light factory.

REVIEWS *continued*

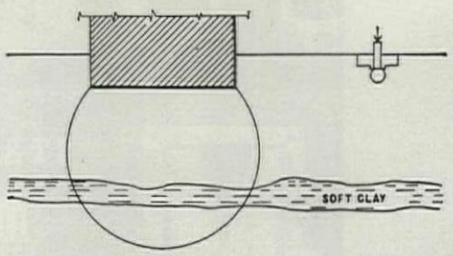
gineers accustomed to simple column-and-beam construction. In breaking out of the limitations imposed by two-dimensional blueprints, structural engineers are developing new techniques for the rapid computation of highly indeterminate space-frames giving the architect more freedom in the choice of architectural forms.

Present-day spatial architecture is striving for greater economy in materials through the integration of structural and nonstructural uses in a monolithic structure. The result is a statically indeterminate or redundant structure that contains more members than are strictly necessary to carry the load. In effect, the structure is almost "alive"; the structural members assume loads in proportion to their strength and ability to do so, and the frame cannot be analyzed until the size and strength of the members is decided upon. Without becoming too technically involved the authors show how the design of indeterminate structures is facilitated by the use of hinges, adding that it is highly dangerous to assume the existence of hinges where they might be corroded and so fail to operate.

The fact that steel is subject to plastic deformation can be used to achieve economical design in a redundant structure; a few sections can be permitted to develop stresses beyond the plastic limit, forming plastic hinges which relieve the stresses on the rest of the structure. Computation of redundant structures by the comparison of displacements is described in detail. It is a lengthy process and can be speeded up considerably by the technique of photo reflective analysis of structural models under loading. The advantages of redundant structures are greater rigidity and more uniformly stressed members; the disadvantages are the complexity of the design and the susceptibility of the structure to differential displacement, which calls for careful examination of the foundations before selecting a redundant design.

An extremely comprehensive chapter on foundations emphasizes the need for careful analysis of soil conditions to avoid settling. Soils are graded in terms of particle size and

continued on page 194



Foundation of a building in clay-type soils will exert a bulb of pressure having a depth of one and a half times width of foundation. Loading tests on a single pile cannot be applied to a group of piles for the larger bulb of pressure of the group might extend down to a weaker strata.

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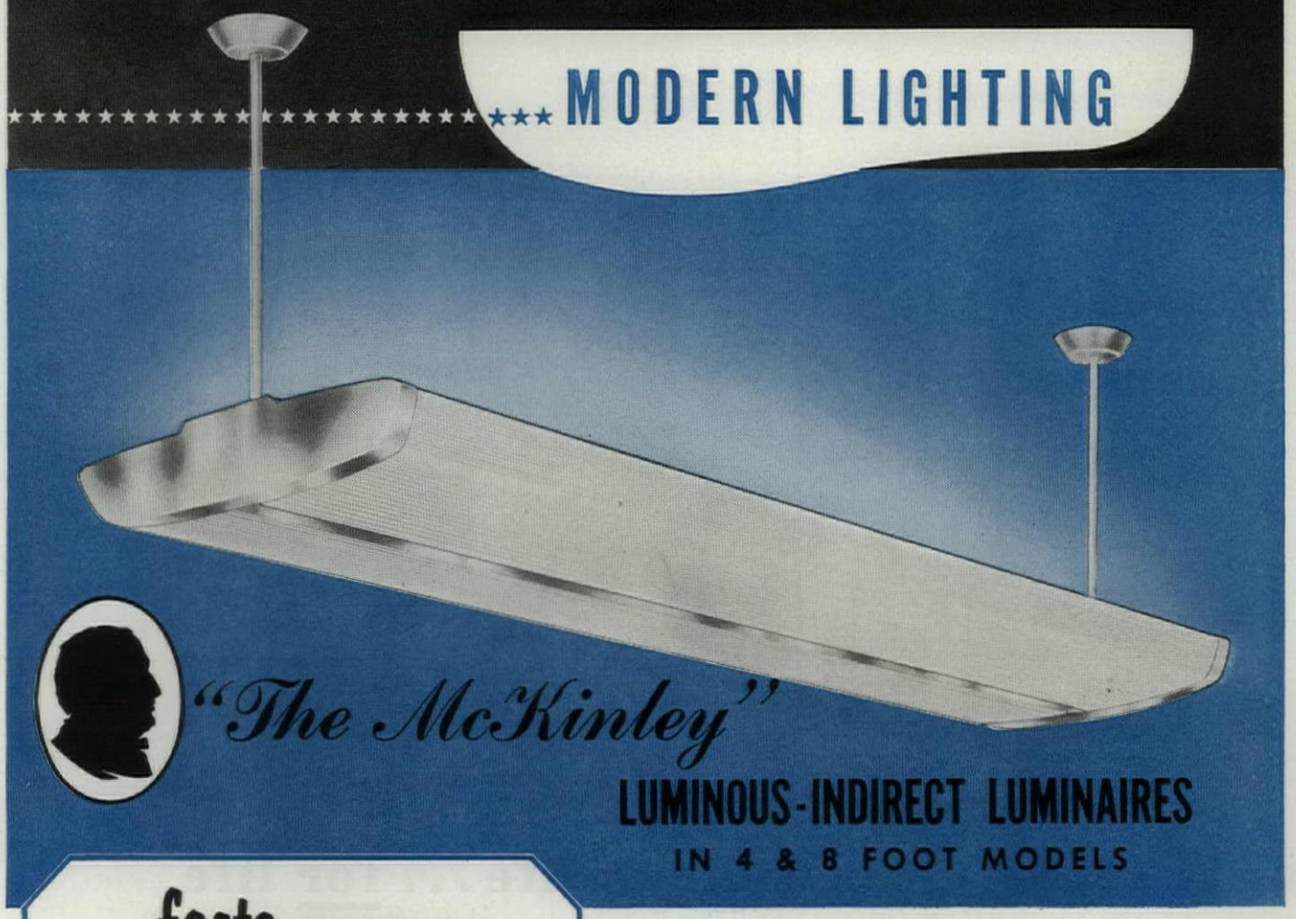

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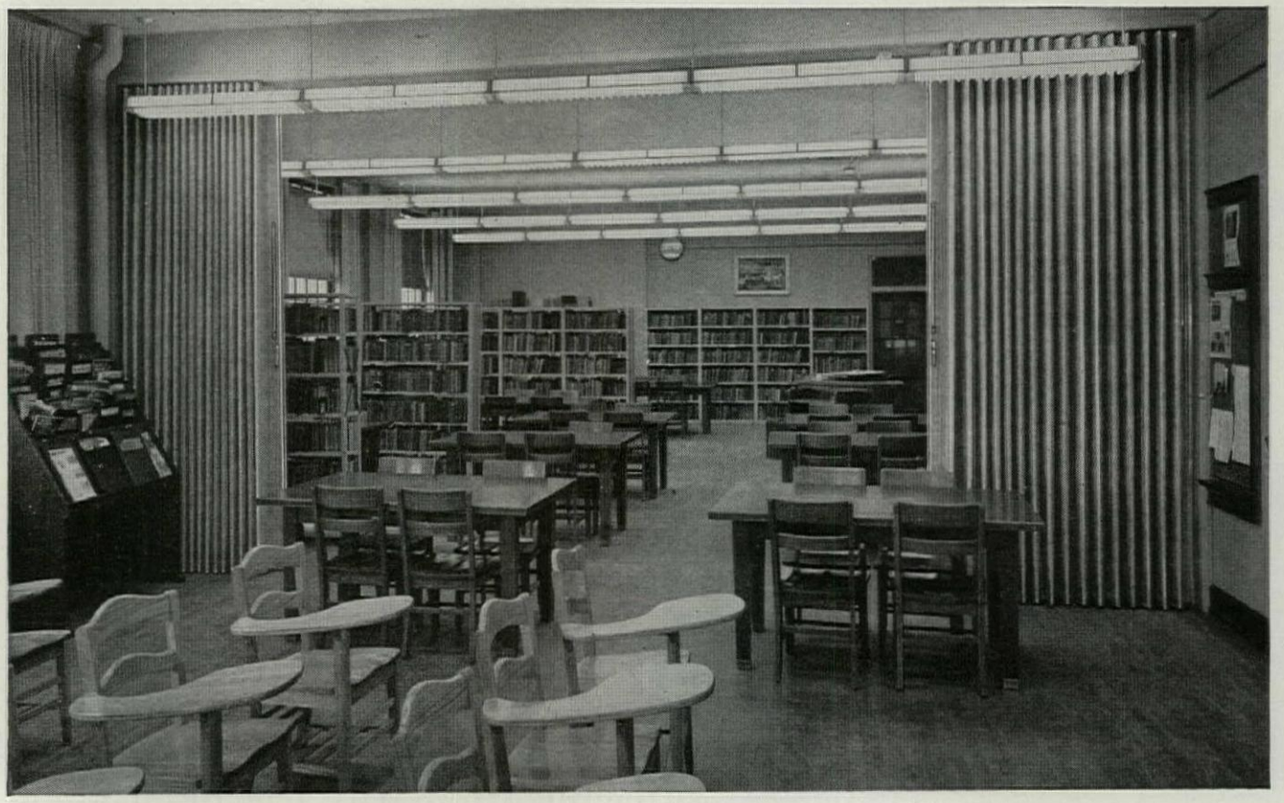

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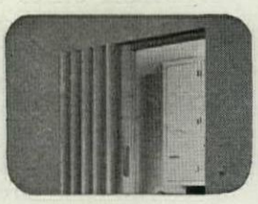

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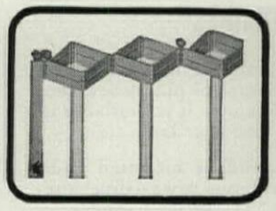

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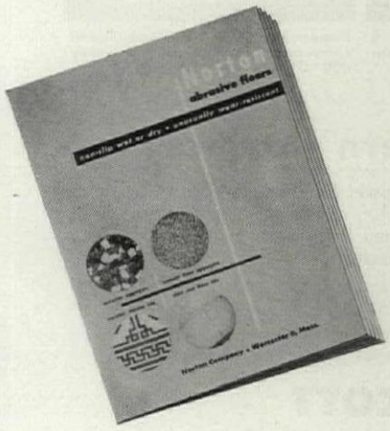

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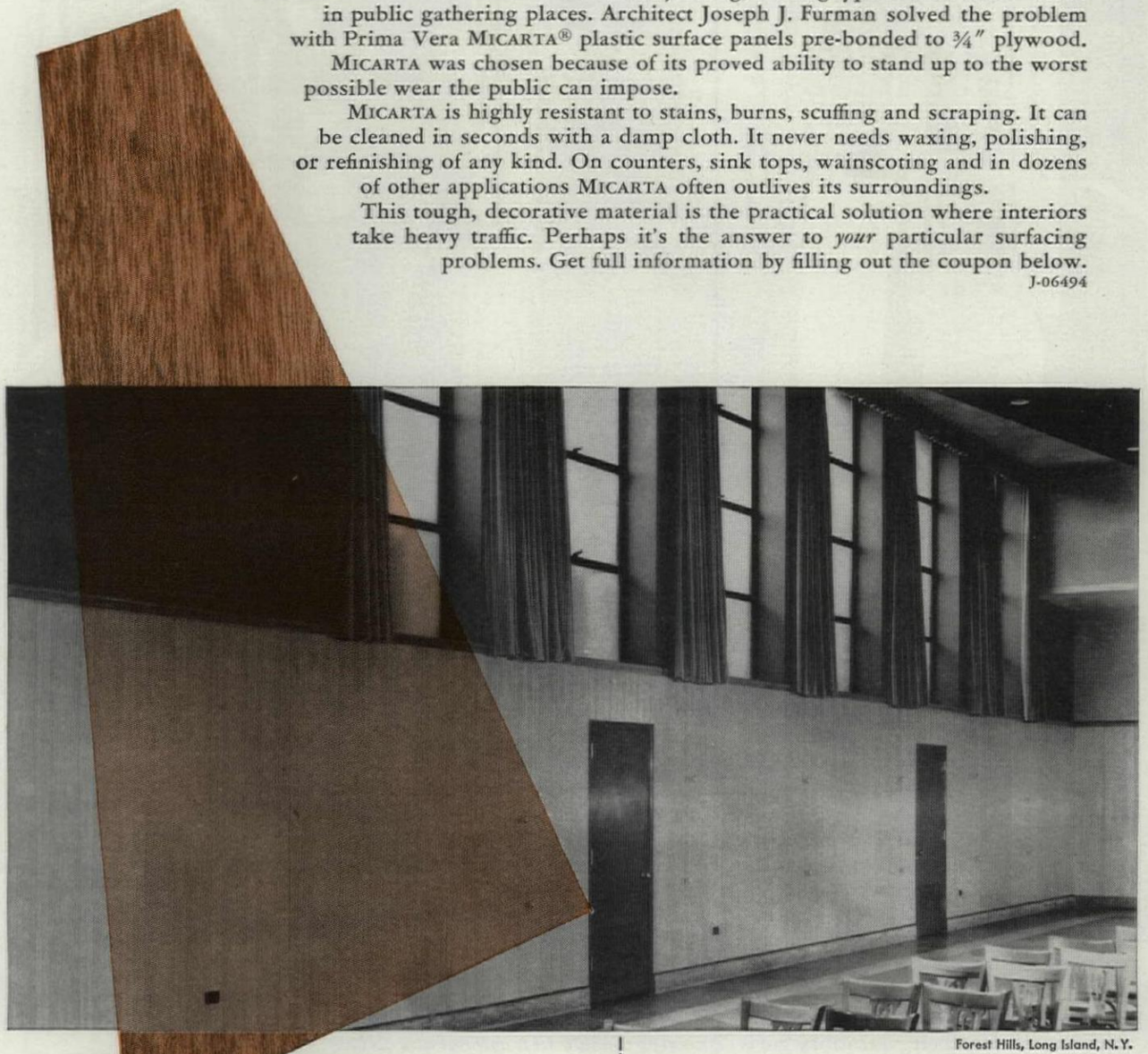

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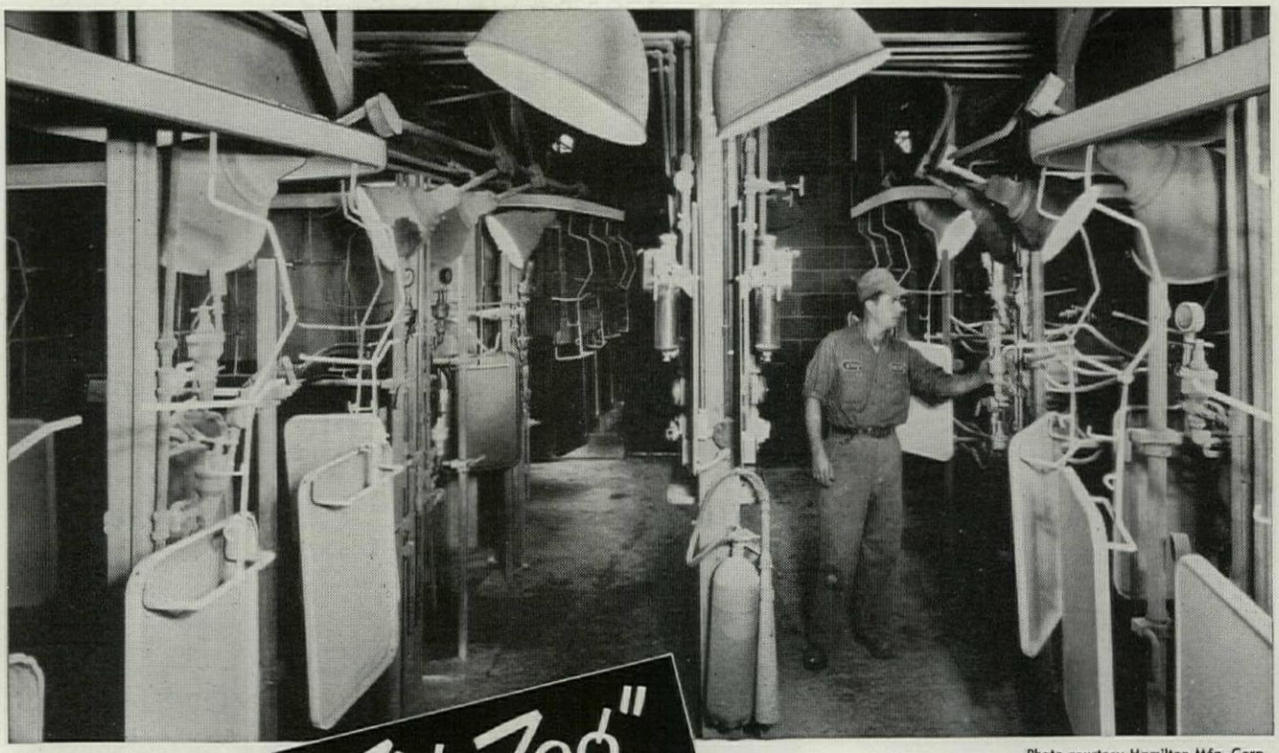

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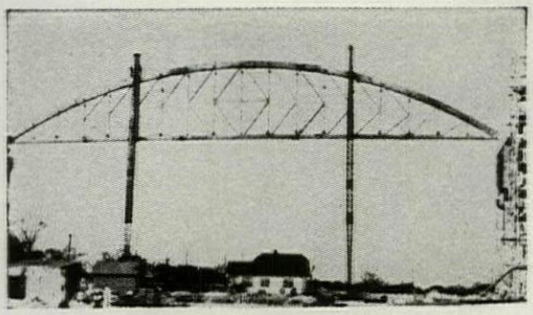

This 232' span timber truss in the US (left) is made possible by lamination and new jointing techniques. Concrete box-frame construction (above) used in a London apartment building by engineer Ove Arup, simplifies formwork by the elimination of columns. It is monolithic.

REVIEWS *continued*

moisture content. Silts and clays are fine grained and impermeable. They form the most dangerous soil conditions since they tend to contain voids and compact slowly, continuing to settle long after a building is in position. Such settlement occurs by consolidation of soil within an effective bulb of pressure whose depth may be as much as one and a half times the width of the foundations; exploration of subsoils should therefore be carried down to this depth.

Differential settlement may be controlled either by means of varying the load over the site (following the soil strength patterns) or by digging cellars underneath the building. Piled foundations are no cure-all. Floating piles, for instance, which carry the load by friction against the foundation soil, may transfer the bulb of pressure down to a lower level where the soil might be stronger or weaker than that above.

In building techniques the trend is to dry assembly with finer tolerances, producing less shrinkage and settlement effects and more rapid erection. In concrete this is achieved with precast methods which prove most economical where simple shapes and the repetition of large units are possible. In steel the trend is to the assembly on the ground of large frames that can be lifted and fitted as a single unit.

The book stresses the need for improvement in site operations, and the need for young architects and engineers to visit the building site to determine where time and labor can be saved without injury to the structure, what waste motion is employed, where materials can be handled only once instead of two, three or four times, and what holdups are caused by bad weather conditions.

This brings up the whole question of the application of time and motion study methods in building. Such methods have long proved most beneficial for both management and labor in the manufacturing industry but have yet to spread into building industry. It might be worthwhile for young architects to do research on the job-site carrying out such time and motion studies. They would benefit from the experience and the industry would benefit from the data they accumulate.

Though the text is lucid and stimulating, the illustrations in this book are somewhat disappointing. There are few line drawings and the photographs are arranged in an appendix, so losing the visual impact achieved when text and pictures are seen side by side. Leonard Michaels' *Contemporary Structures*, although it does not contain such a wealth of meat in the text, is excellent as regards visual communication, but then it is a considerably more expensive production. The two books complement one another admirably and should be kept side by side in every architectural library.

continued on page 200

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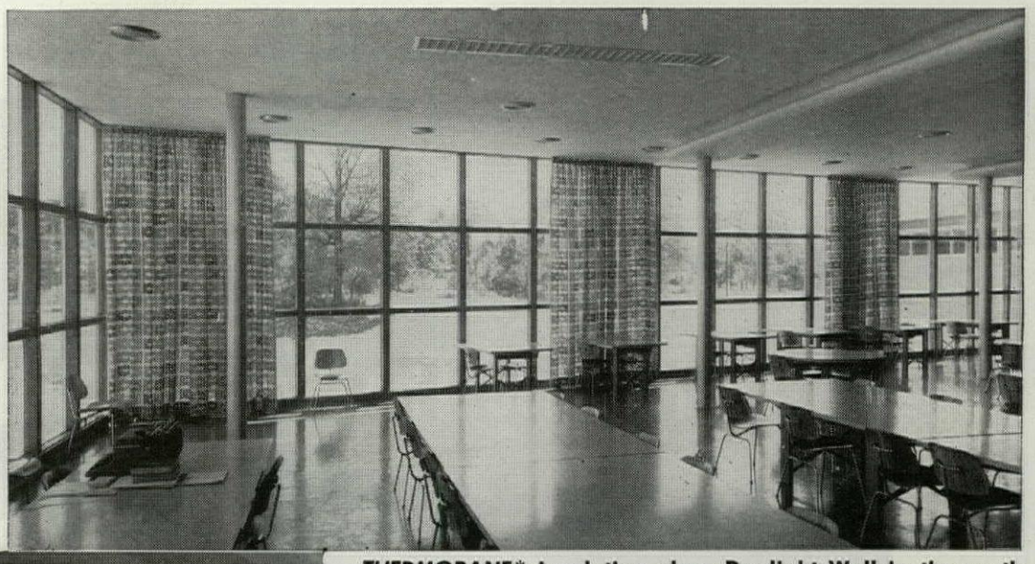

THERMOPANE* **insulating glass Daylight Wall in the north**
Swanson Associates specified *Thermopane* insulating glass for Daylight Walls in the Birmingham (Mich.) High School to conserve heat and eliminate a cold zone near windows.

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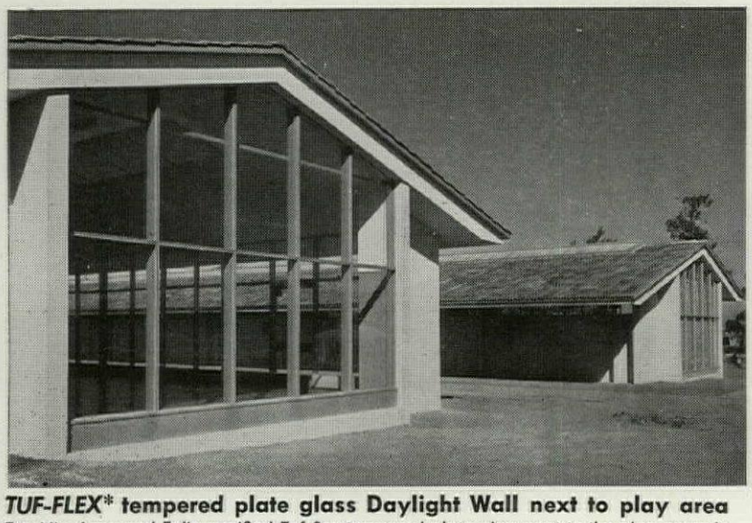

TUF-FLEX* **tempered plate glass Daylight Wall next to play area**
Franklin, Jump and Falk specified *Tuf-flex* tempered plate glass next to the play areas in the Laurel School at San Mateo, Calif. *Tuf-flex* is three to five times stronger than plate glass of the same thickness.

THERMOPANE insulating glass Daylight Wall in the south
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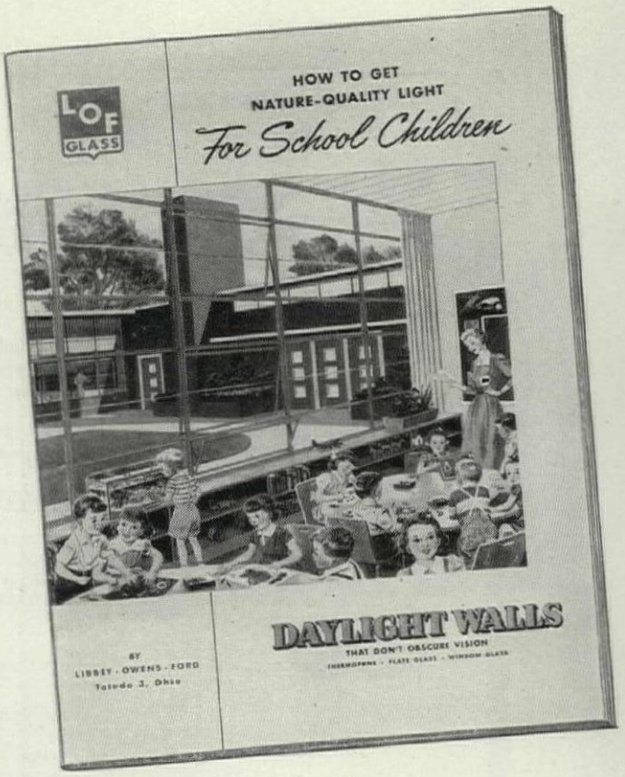

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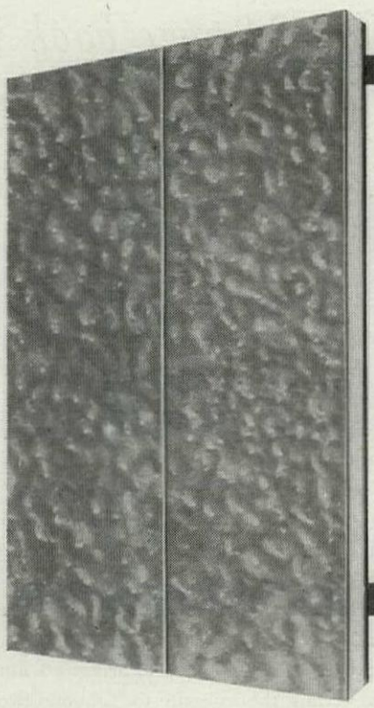

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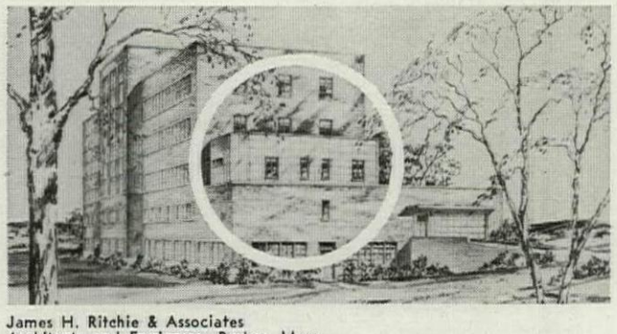

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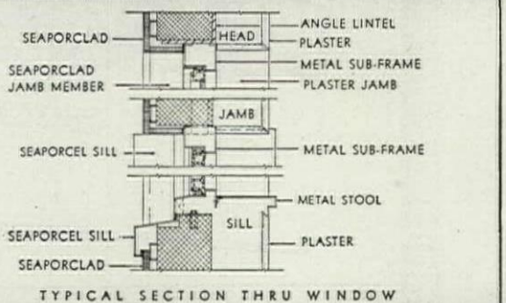
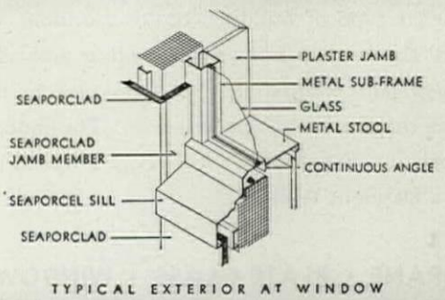


TYPICAL SECTION THRU WINDOW



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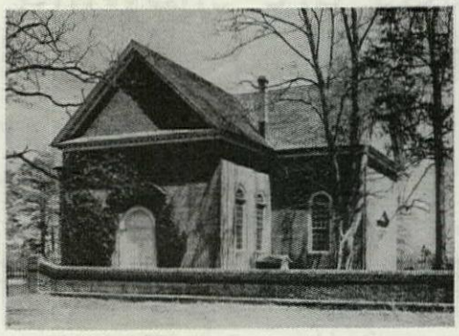

"Old Glebe House of Abingdon Parish, now privately owned, apparently dates from the last quarter of the seventeenth century, if not earlier."

EARLY ENGLISH CHURCHES IN AMERICA, 1607-1807—A Visual Essay. By Stephen P. Dorsey. Oxford Univ. Press, 114 Fifth Ave., New York, N. Y., 1952. 206 pp. 11¼" x 8¾". 118 Illus. $10

More often than not, architecture writes better history than historians. It is not subject to a later historian's sentimental indulgence or to the projection of his private views. And when the evolution of a singular type of building such as churches is carefully followed, as in this volume, the story of the period is told well.

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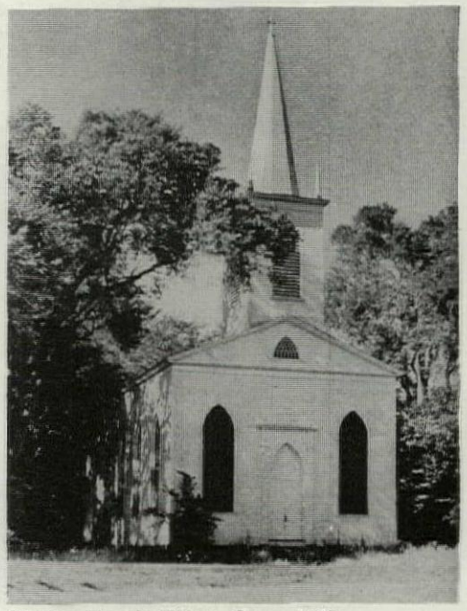
All this is told within the framework of the architecture of the churches themselves. Thus there are pictures ranging from the earliest simple churches (still in existence) to urban renditions in the manner of Gibbs and Wren.



Trinity Church, Wilton, Conn., 1802

Necessity selected materials for early rural architects and to a great extent limited them to the simplest structures with the only decoration being that obtained in pediments, doorways and fenestration. In richer urban areas the almost literal transfer of English church styles occurred. Where any originality was evident, it could generally be traced to a desire to make the church less autocratic than

(Continued on page 206)

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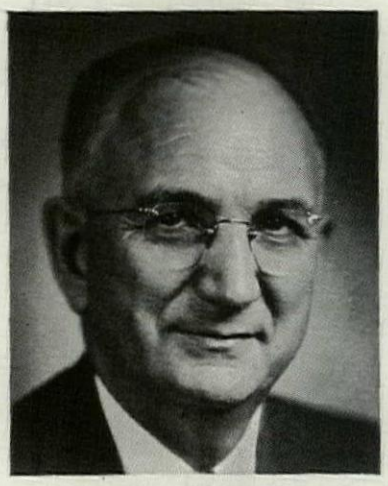
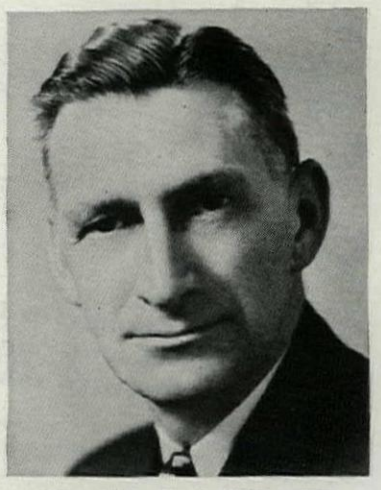


M. E. WHEELER
WHEELER HARDWARE CO.
St. Paul, Minnesota

Years of close contact with the builders' hardware problems which confront architects and contractors have made these Corbin consultants among the top men in their field. In your locality there is a Corbin representative of similar high calibre who will gladly work with you in the selection of builders' hardware. Put his experience, integrity, and know-how to work for you *now!*

Corbin offers all the hardware to equip a building . . . a complete line that, through honest service and honest value, has become *the world's most widely used builders'* hardware.

GEORGE BRABNER
McGOWIN-LYONS
HARDWARE & SUPPLY CO.
Mobile, Alabama



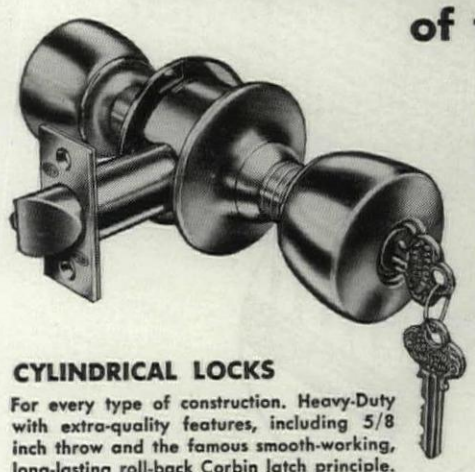
ALLAN E. WEBSTER
WAITE HARDWARE CO.
Worcester, Massachusetts

STORY

A COMPLETE LINE

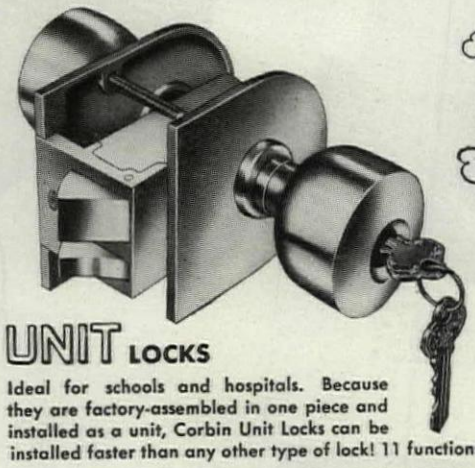
of top-value products . . .

CORBIN
The World's most widely used BUILDERS' HARDWARE



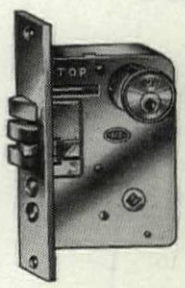
CYLINDRICAL LOCKS

For every type of construction. Heavy-Duty with extra-quality features, including 5/8 inch throw and the famous smooth-working, long-lasting roll-back Corbin latch principle. 100% reversible. Made in 24 most-used functions.



UNIT LOCKS

Ideal for schools and hospitals. Because they are factory-assembled in one piece and installed as a unit, Corbin Unit Locks can be installed faster than any other type of lock! 11 functions.

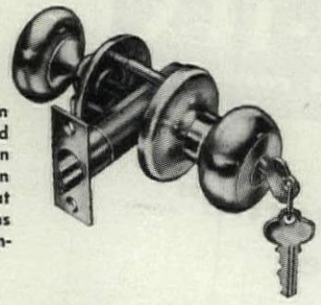


MORTISE LOCKS

Made in a variety of functions and sizes for every requirement. Can be master-keyed with other Corbin cylinder locks.

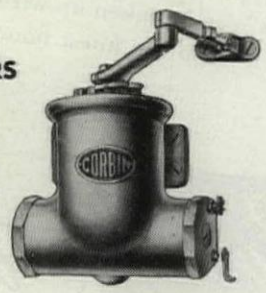
TUBULAR LOCKS

Excellent for use in residences and apartments. Corbin time-tested pin tumbler security at low cost. Functions for every residential door.



DOOR CLOSERS

Can be used on right or left-hand doors. Adjustable hold-open attachments available. Made in six sizes and all popular finishes.



EXIT FIXTURES

To insure *unfailing performance*, Corbin Exit Fixtures have drop-forged levers and are precision-made throughout in solid brass, or bronze. Also available in cast iron and steel. Rim or mortise types for all doors.

GOOD BUILDINGS DESERVE GOOD HARDWARE

P. & F. Corbin DIVISION
The American Hardware Corporation • New Britain, Connecticut, U.S.A.

CORBIN®

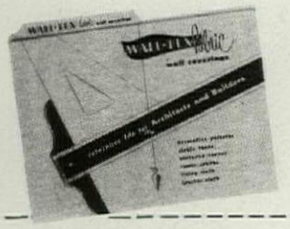
Manhattan House, New York. Wall-Tex "grasscloth" pattern used in all corridors of this New York Life Insurance Co. project. Skidmore, Owings & Merrill, Architects.

WALL·TEX
fabric wall coverings

an "Investment Favorite" for Manhattan House

Wall-Tex has built a solid reputation as something special in wall decoration for housing projects, hotels and public buildings of all kinds. No bleak, austere walls—instead inviting, luxurious Wall-Tex wall fabric with time-tested service features.

Recent research tests show remarkable color fastness of Wall-Tex—great resistance strength (controls plaster cracks)—and ability to withstand 2000 scrubbing strokes without signs of wear. Safely washable Wall-Tex looks new for years.



Now 24 inches wide, pre-trimmed

New pre-trimmed 24-inch Wall-Tex is ready to paste and hang. Easy to apply. Straight, true edges, invisible seams. 200 beautiful patterns and colors. Mail coupon for swatches and File Folder.

Guaranteed by Good Housekeeping

Columbus Coated Fabrics Corporation
Dept. AF-102, Columbus, Ohio

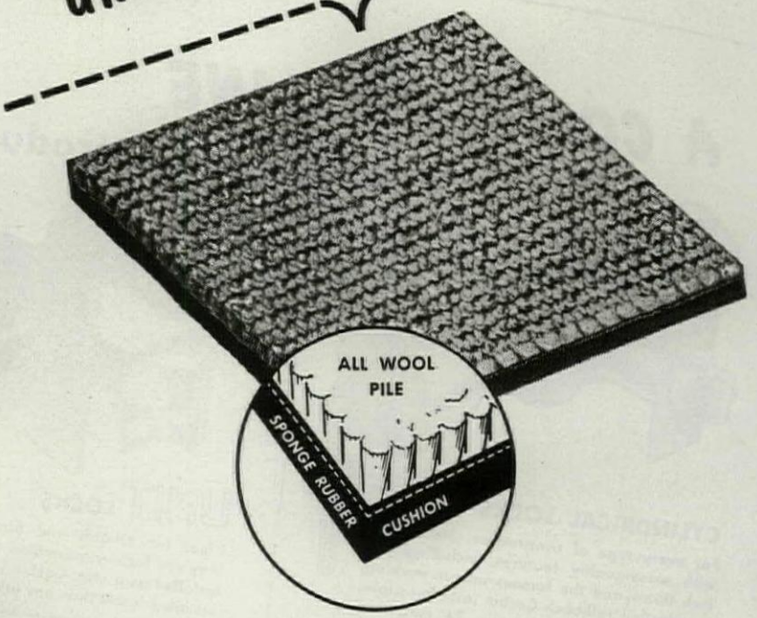
Send your new File Folder on Wall-Tex and Sample Swatches.

Name_____

Street_____

City_____ State_____

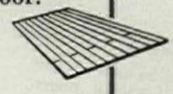
there's something NEW underfoot...



THAT SAVES FLOORING

"Loma Loom" carpet — the carpet with the built-in sponge rubber back, can save the cost of a hardwood floor. This sensational carpet can be installed over concrete, plywood, or a wood sub-flooring, as the sponge rubber cushion moulds to the available type of flooring.

"Loma Loom" can be taken up without damage to itself or to the finest floor.



Loma Loom

the carpet with the
BUILT-IN SPONGE RUBBER CUSHION

MADE BY | *The Shelton Looms*
SIDNEY BLUMENTHAL & CO. INC

Selling Agents
WEIL BROS. TEXTILES, INC.
31 East 32nd Street, New York 16, N. Y.

• *May we send you samples?*

.....NOW YOU SEE THEM

NOW..... YOU DON'T

..with VIKING FLUSH TYPE Sprinkler Heads

GENERAL OFFICES: MERCHANDISE MART

Here's proof of the greater beauty of Viking Flush Type Sprinkler Heads. Notice how Viking Flush Type Heads blend quietly and beautifully . . . even ADD a note of beauty to the office in the illustration. The Flush Type Head is unobtrusive. When a fire starts it springs into action . . . equalizes the chance of water against fire by instantly drenching it. In fact, the Flush Type Head is unexcelled for water distribution.

The Viking Flush Type Head is a typical example of the farseeing yet practical engineering that makes Viking the leader in the sprinkler field. And this engineering skill is complemented by the best distribution system . . . and the finest installation and service facilities available.

Your nearest Viking representative is ready to help you with the design of a sprinkler system for your next building. Because he maintains a completely stocked warehouse, a complete engineering staff, and an experienced, full-time installation crew, you'll find that he gives you the finest sprinkler system available. Contact him today, or write direct to the Viking Corporation.

Write for your copy of "Fire and Your Business" . . . facts on how a Viking Sprinkler System can protect your buildings from fire; forever.

ALL VIKING DEVICES ARE APPROVED BY UNDERWRITERS' LABORATORIES AND FACTORY MUTUAL LABORATORIES

the VIKING corporation

HASTINGS, MICHIGAN

OFFICES IN PRINCIPAL CITIES

its English forebearer. "Could the people hear the minister?" eventually became more important in placing the pulpit than the question, "Where does tradition place it?"

Yet even the simplest churches retained the air of formal worship and devout colonists' gifts of fonts, chancel screens and chandeliers tended to maintain the character of this ritualistic architecture.

The unsparing honesty of such an architectural report knocks several illusions to kingdom come. During the frenzy of the revolution, for example, many southern churches were mutilated or abandoned because colonists associated the church not only with the crown but also with the wealthy, patronizing planters, many of whom had loyalist tendencies. In many areas, royal coats of arms were torn from chancels and references to the king scratched from prayer books.

The tradition of white churches in New England gets its come-uppance. In the mid-eighteenth century, New England clapboard churches were painted Spanish brown, red, blue or yellow and trimmed in contrasting colors. Only after that time did white paint become a tradition.

Since the book deals only with Episcopal churches, no Protestant meeting houses are shown. This limitation prevents a more complete view of emerging religious architecture in America. A visual comparison of Episcopal and other churches would have helped determine the degree of originality that was mixed with the transplanted traditional style.

PRINCIPLES AFFECTING INSULATED BUILT-UP ROOFS. By C. E. Lund and R. M. Granum. University of Minnesota Institute of Technology Engineering Experiment Station, Bulletin No. 34. 97 pp. 6″ x 9″. Illus.

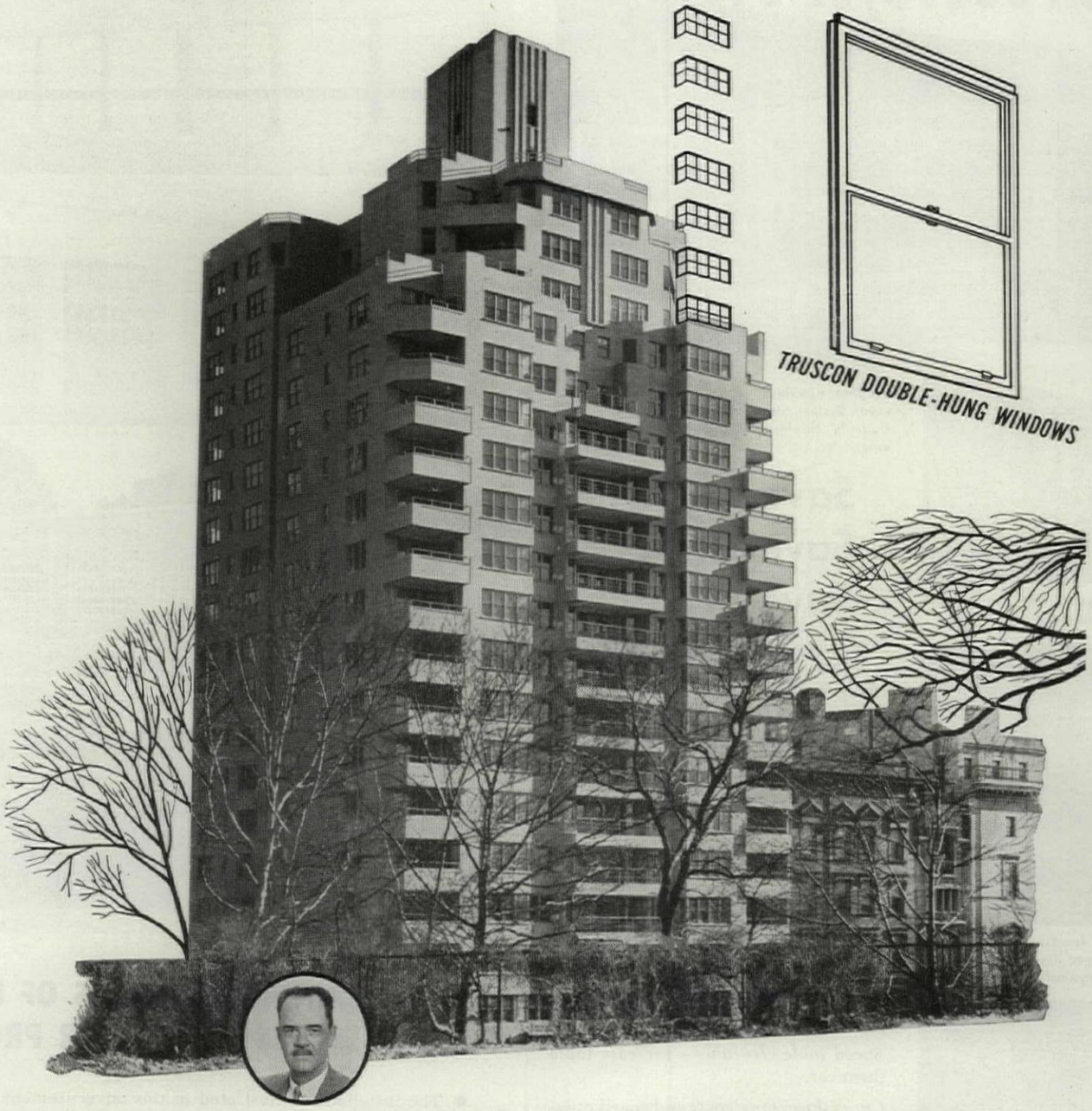
After five years of detailed study of the problems of blistering and other types of failures in built-up roofs, Professor Lund and his associate at Minnesota's research station, R. M. Granum, have published an excellent detailed report. (For article based on part of their findings, *see* Dec. issue, 1951, *pp. 208-210.)*

The types of roof failures have been classified into mechanical, construction and roof blistering; the latter includes several types of deformation of roofing plies. Among the interesting data is the tremendous pressure generated when faulty workmanship permits water vapor to penetrate the plies: "If dry air alone, that is, air without any moisture present, is confined within a space at atmospheric pressure and then heated from a temperature of 70° F. to a temperature of 150° F., the increase in pressure will be 2.2 lbs. per sq. in. However, if, for every cu. ft. of confined space, approximately 1/6 of an oz. of water (76 grains of moisture) is added, the pressure will be 5.6 lbs. per sq. in. The presence of the moisture more than doubles the existing pressure in exerting its own pressure of 3.4 lbs. per square in."

The importance of such information is hard to underestimate. This is a book which should be in the hands of every building professional.

SHADES AND SHADOWS — Their Use in Architectural Rendering. By William Wirt Turner. The Ronald Press Co., 15 East 26th St., New York 10, N.Y. 115 pp. 6¼″ x 9¼″. Illus. $3.25

This book is intended to serve both as a text and as a reference volume. The various methods of determining shades and shadows that are most commonly used and most easily remembered are explained and illustrated in detail. Practice problems cover those architectural elements which constantly occur in professional practice.



Architect George F. Pelham II endowed the 1056 Fifth Avenue Apartments generously

with free sunlight and fresh air

Truscon Series 138 Double-Hung Steel Windows serve an efficient three-fold purpose in this handsome New York City Structure:

1. **The simplicity, safety and operating convenience of the time-proven, double-hung design provides a trouble-free window on lot-lines, verandas and street elevations.**
2. **Expansive window areas assure generous daylighting through all apartments.**
3. **Freedom from air leakage in upper floor openings exposed to high winds is assured by complete stainless steel weatherstripping.**
4. **Finger-tip operation of window permits adequate and simple control of ventilation.**

Additional features of the Truscon 138 Double-Hung Steel Window include welded tubular sash members; full counterbalancing of sash; solid bronze hardware; freedom from warping, shrinking, swelling or rotting. Convenient low-cost standard screens also available.

See SWEET'S for complete specifications, and write for catalog describing the entire line of Truscon Steel Windows for every need

TRUSCON MARK OF MERIT PRODUCTS

TRUSCON a name you can build on

TRUSCON® STEEL COMPANY
1102 Albert Street • Youngstown 1, Ohio
Subsidiary of Republic Steel Corporation

Olson Subveyor Systems

Loading openings of OLSON Subveyor System for self-bussing in the students' cafeteria of a large state university.

OLSON Subveyor System for self-bussing in large mid-western high school.

Save LABOR
Save TIME
Save SPACE

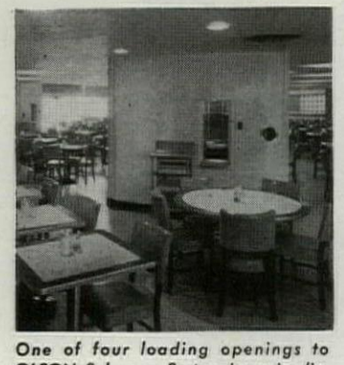
for Schools, Restaurants, Cafeterias, Hotels, Hospitals, Clubs, Post Exchanges, Mess Halls.

Save steps by the million and make practical use of remote areas for kitchens and dishwashing—

1. Carry food from kitchen to dining rooms and steam tables, also carry trays, pans, dishes, etc., back to kitchen.

2. Carry soiled dishes from dining rooms to dishwashers.

3. Carry clean dishes from dishwashing room to kitchen and dining rooms.



One of four loading openings to OLSON Subveyor System in main dining room of large cafeteria.

Simplify supervision and aid in maintaining smooth orderly operation.

Make self-bussing practical wherever practiced.

Speed table clearance—increase table turnover.

Cut dishwashing costs and speed operation. Automatically carry dishes through in orderly flow, for systematic scrapping, sorting, rinsing and washing.

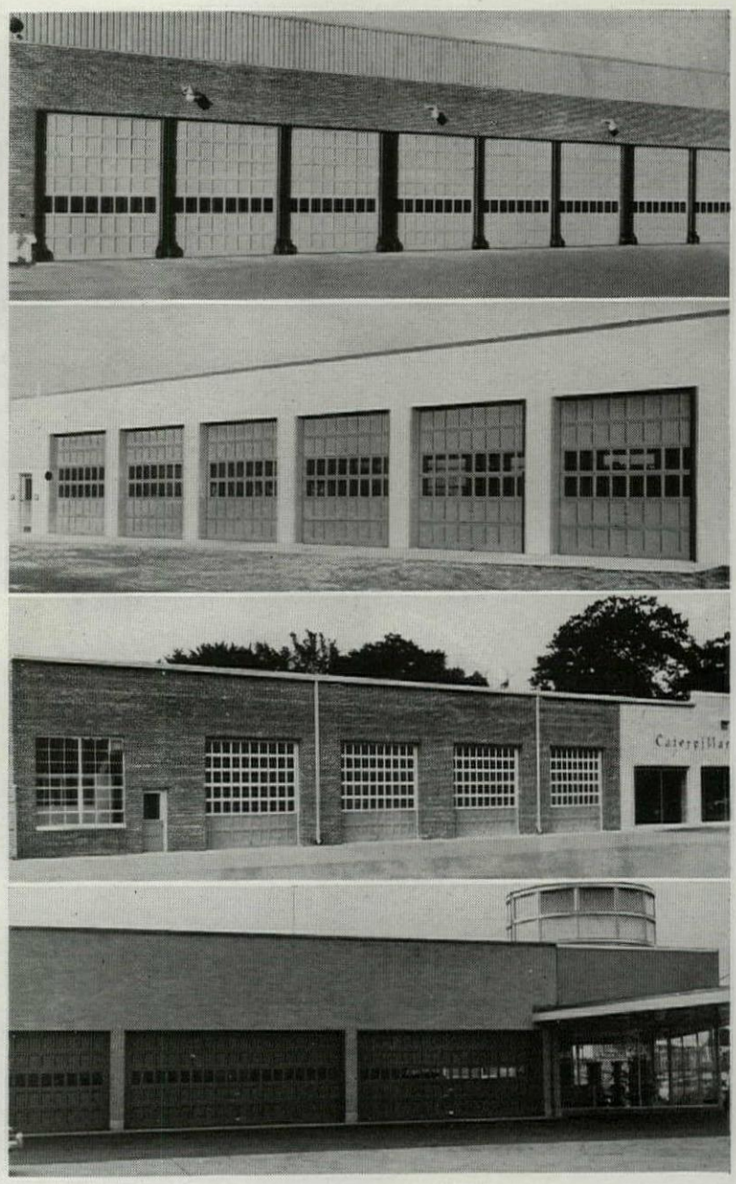
Reduce dish breakage by minimized handling and automatically controlled, orderly flow.

Improve employee morale—avoid toting heavy trays and lugging heavy dish baskets.

OLSON Subveyor System at scrapping table in dishwashing room.

OLSON Subveyor Systems are used in schools, restaurants, cafeterias, hotels, hospitals, clubs, etc., from coast to coast. They are engineered for the application, LARGE or small, and installed by specialists. *Catalog and list of nearby installations furnished promptly on request.*

SAMUEL OLSON MFG. CO., INC.
2436 Bloomingdale Ave. Chicago 47, Ill.



FOUR SHINING EXAMPLES OF HOW RAYNOR SOLVES YOUR DOOR PROBLEMS

● The installations illustrated in this advertisement are typical examples of Raynor Wood Sectional Overhead Doors, tailor-made to fit the opening.

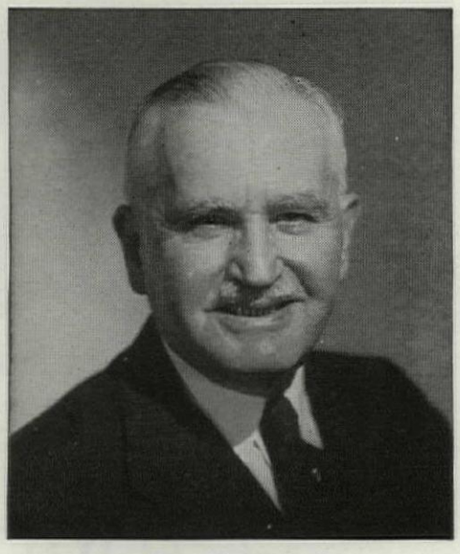
These doors were made complete in the Raynor plant—assuring well co-ordinated, closely supervised construction. Many of the details pertaining to the individual installations were worked out by the Raynor Engineering Department—a service that is at your disposal for the asking.

These doors embody the finest in materials and construction and like all Raynor doors, large and small, are equipped with patented Graduated Seal that guarantees an efficient weather tite seal and smooth operation at all times.

● For full details on the Raynor complete line of Wood Sectional Overhead Doors and all accessories, see your Sweets file or write direct for the Raynor Catalog.

SEE OUR CATALOG IN SWEETS

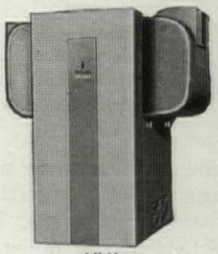
RAYNOR MANUFACTURING COMPANY
DIXON, ILLINOIS
Builders of a Complete Line of Wood Sectional Overhead Doors



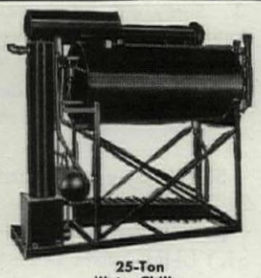
"I compared them all and chose Servel Air Conditioning equipment!"

Make Your Own Point-for-Point Test And Discover Servel's Amazing Extras!

No other installation offers all these amazing features	SERVEL	OTHER
No Compressor—no vibration, quiet, no moving parts to wear.	✓	
Light Floor Loading—no need for special foundation or floor braces.	✓	



All-Year Air Conditioner



25-Ton Water Chiller

SELECT SERVEL . . . the air conditioning that offers low operating cost, guaranteed dependability, in residential, commercial or industrial installations.

RESIDENTIAL COMMERCIAL INDUSTRIAL

Servel

AIR CONDITIONING

Made by the makers of the famous Servel Refrigerator

SERVEL, INC. • Evansville 20, Indiana

No other installation guarantees such lasting performance	SERVEL	OTHER
Pressure Free—refrigerating system operates under a vacuum. Conforms to building codes without extra expense.	✓	
Choice of Energy Source—use present steam source under any pressure . . . or use gas, oil, LP gas, even waste heat.	✓	
Minimum Maintenance—factory guaranteed for five full years.	✓	
Lighter per Ton of Capacity—can even be installed on the roof.	✓	

Get all the facts and you'll get Servel! Write for complete information *today!*

Servel, Inc., Dept. MB-10, Evansville 20, Indiana

Gentlemen:
I'm interested in the dependability and low operating cost of Servel Air Conditioning. Send me full details on

☐ Industrial ☐ Commercial Units

*NAME*_____

*FIRM*_____

*ADDRESS*_____

*CITY*_____ *ZONE*____ *STATE*____

HOW TO MAKE A BETTER "PACKAGE" OF YOUR SCHOOL PROPOSAL

The trend in school design is to multiple use of space. This provides a means of keeping within school building budgets in the face of rising prices and by reducing costs in one department permits incorporation elsewhere of wanted features. This equipment is now in use in hundreds of schools from coast to coast and is specified by more than 85% of leading school architects.

In-wall

FOLDING TABLES AND BENCHES

Write for catalog or consult SWEET'S

Conversion of activities room to lunchroom for 200 can be made in 8 minutes with no interruption of routine.

SCHIEBER SALES COMPANY

Detroit 23, Michigan

As a part of its continuous modernization program, the popular G. Fox & Co. store in Hartford recently completed a 300-unit SKYLIKE installation. Notice how these 300-watt, surface-mounted SKYLIKE units spaced every 10′ provide soft, glare-free light (approximately 17 foot-candles) for this corner of the boys' department.

G. FOX & CO.

HARTFORD • CONNECTICUT

installs new SKYLIKE lighting system

Like many other commercial users, G. Fox & Co. have selected SKYLIKE units for their economy, ease of maintenance, and lighting quality.

Blending the soft indirect light of silvered-bowl incandescent lamps with the modern look of fluorescent-type troffers, Silvray SKYLIKE units combine advantages found in no other lighting system:

1. Low cost — only ½ to ⅓ as much as other equipment delivering comparable results.

2. High initial and maintained light output — built-in reflector eliminates light loss due to darkening walls and ceilings.

3. Softly diffused shadows, comfortable low-brightness levels, and 90° shielding.

4. Warm color — most desired by merchandising experts.

5. No flickering, blinking, or hum — instant starting.

6. Variable lumen output — 150- to 500-watt lamps are easily interchangeable.

7. Quickly converted for accent or directional lighting through use of simple accessory and semi-silvered-bowl lamp.

8. Floor-service relamping — no ladders or scaffolds.

9. Hermetically sealed silver reflecting surface.

SKYLIKE systems are flexible and easy to plan. Units fit 24″ x 24″ ceiling tiles . . . can be fully or partially recessed, or surface mounted — in rows or patterns. The weight of SKYLIKE units is less than half that of other store lighting fixtures — they require minimum support . . . eliminate the extra labor and materials involved in heavy framing.

SEND FOR COMPLETE DETAILS

SKYLIKE LIGHTING, INC. — a Silvray-associated company.
105 West Main Street, Bound Brook, New Jersey

Gentlemen:

Please send me further information on the SKYLIKE lighting system.

1927 1952 OUR 25TH YEAR **Silvray** *ALWAYS... the best in lighting*

Name_____

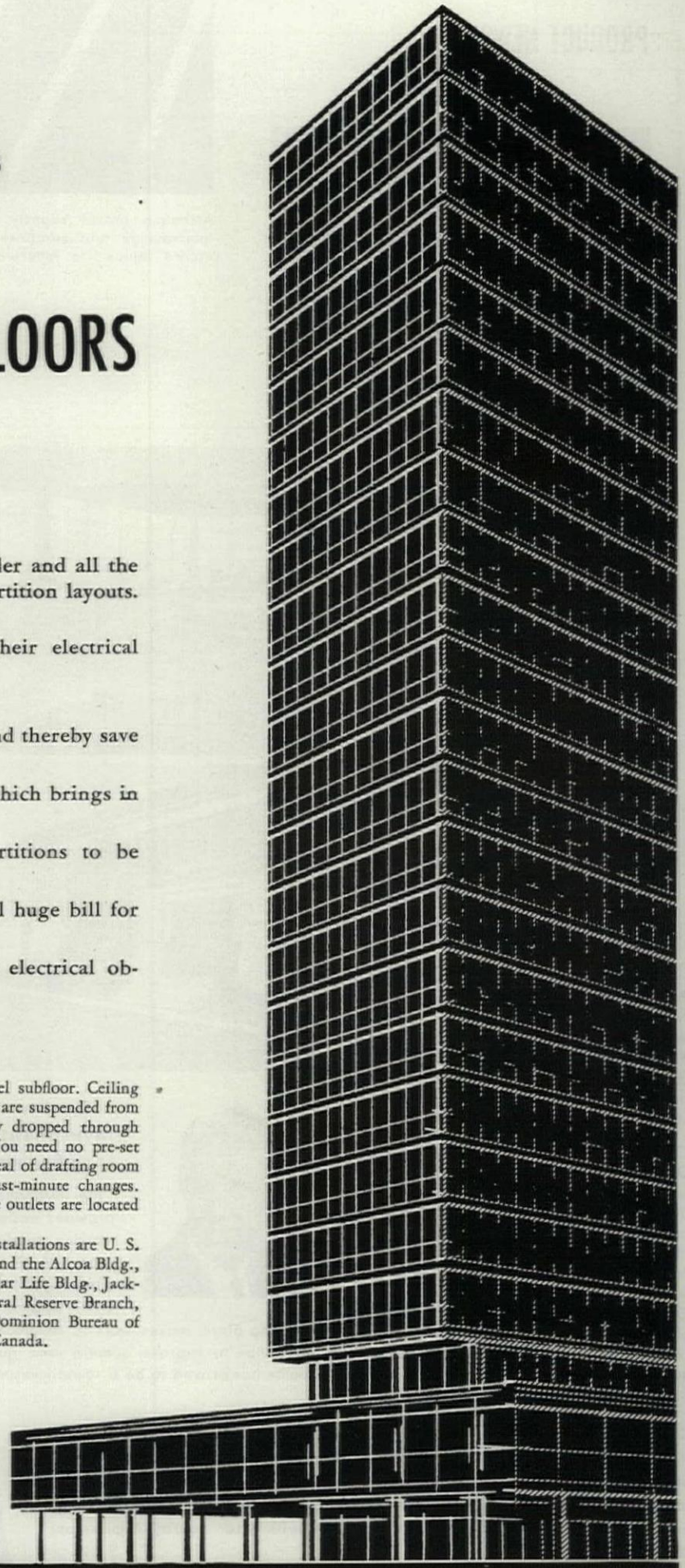
Firm_____

Address_____

City_____ State_____

New York's Tower of Glass has Floors of Steel

ROBERTSON Q-FLOORS IN LEVER HOUSE



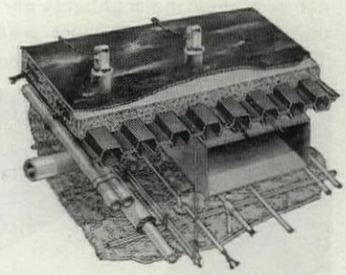
HERE THE ARCHITECT had only one tenant to consider and all the time he needed, to make perfect electrical and partition layouts. He specified Q-Floor—

Because even Lever Brothers cannot anticipate their electrical requirements ten years from now.

Your clients can benefit from Q-Floor—because—

- Q-Floors cut construction time 15 to 20% and thereby save labor, materials and financing costs.
- Q-Floors effect an earlier completion date which brings in revenue sooner.
- Q-Floors permit electrical outlets and partitions to be located after tenants move in.
- Q-Floors spare prospective tenants the usual huge bill for electrical alterations.
- Q-Floors protect the building owner from electrical obsolescence.

In a word—*Q-Floors are profitable!*



Q-Floor is the modern steel subfloor. Ceiling and mechanical equipment are suspended from hangers which are simply dropped through holes in the steel floor. You need no pre-set inserts. You save a great deal of drafting room time because you avoid last-minute changes. Partitions and convenience outlets are located after tenants move in.

Other recent Q-Floor installations are U. S. Steel-Mellon Bank Bldg., and the Alcoa Bldg., in Pittsburgh; the Peninsular Life Bldg., Jacksonville, Florida; the Federal Reserve Branch, Portland, Ore.; and the Dominion Bureau of Statistics Bldg., Ottawa, Canada.

Architects—
Skidmore, Owings and Merrill
Contractor—
Geo. A. Fuller Co.

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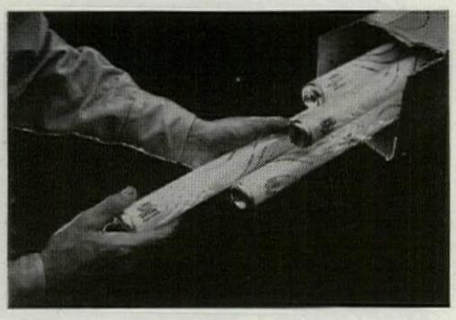
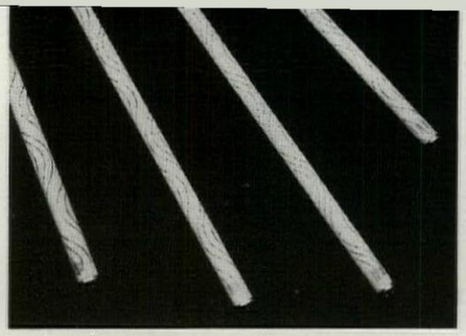
2403 Farmers Bank Building Pittsburgh 22, Pennsylvania
Offices in ALL Principal Cities in the U. S. A. and Canada

World-Wide Building Service





Although priced slightly higher than regular fluorescents and slimlines, these candy-stripe etched lamps are reported to emit less glare.

ETCHED FLUORESCENT LAMP needs no louver

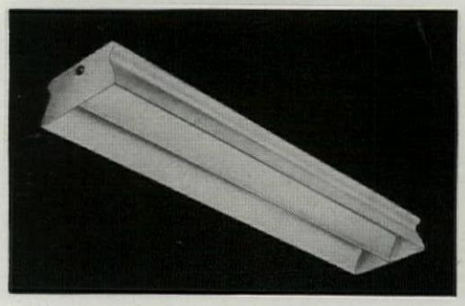
Bare bulb economy and comfortable seeing conditions can be obtained with Sunray's *Rip-L-Lite* fluorescents. Etched with clear spiral bands that break up the surface illumination, the lamps require no special glare-reducing louvers or shields (which, incidentally, cut lumen output by about 25%). Maintenance also is simplified, as the exposed tubes present a minimum topside dirt-collecting surface. In addition to the regular 20 w. and 40 w. fluorescents, *Rip-L-Lites* are made in 4′, 6′, and 8′ slimlines. They are available in five tones of white and eight colors engineered for specific lighting needs. *Aqua-Lite*, a cool pale green, is intended for good, restful illumination in such eye-strain areas as libraries and drafting rooms. Developed especially for factories where precision work is done, *Industrialite* emits a slightly deeper green—the part of the spectrum the eye is most sensitive to and consequently can utilize best. *Tropic Tone*, warm with pleasant reds and yellows, is suitable for stories, restaurants and offices. The magenta-colored *Fiestalite* is suggested for fanciful contrast lighting. Used in equal numbers with *Aqua-Lite* lamps. The combination of green and magenta produces true white light for fabric showrooms and industrial processing.

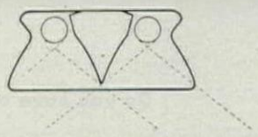
Prices range from $1.65 to $2.25 for the fluorescents and from $2.35 to $5.65 for the slimlines. Each type has a guaranteed life expectancy of 13,000 hrs.

Manufacturer: Sunray Products Corp., Warren, Pa.

LIGHTING FIXTURE engineered for glare-free illumination

Leader's low-brightness ceiling fixture will not cast annoying highlights on a worktable top or even on slick-paper reading matter. The new luminaire utilizes parabolic side and





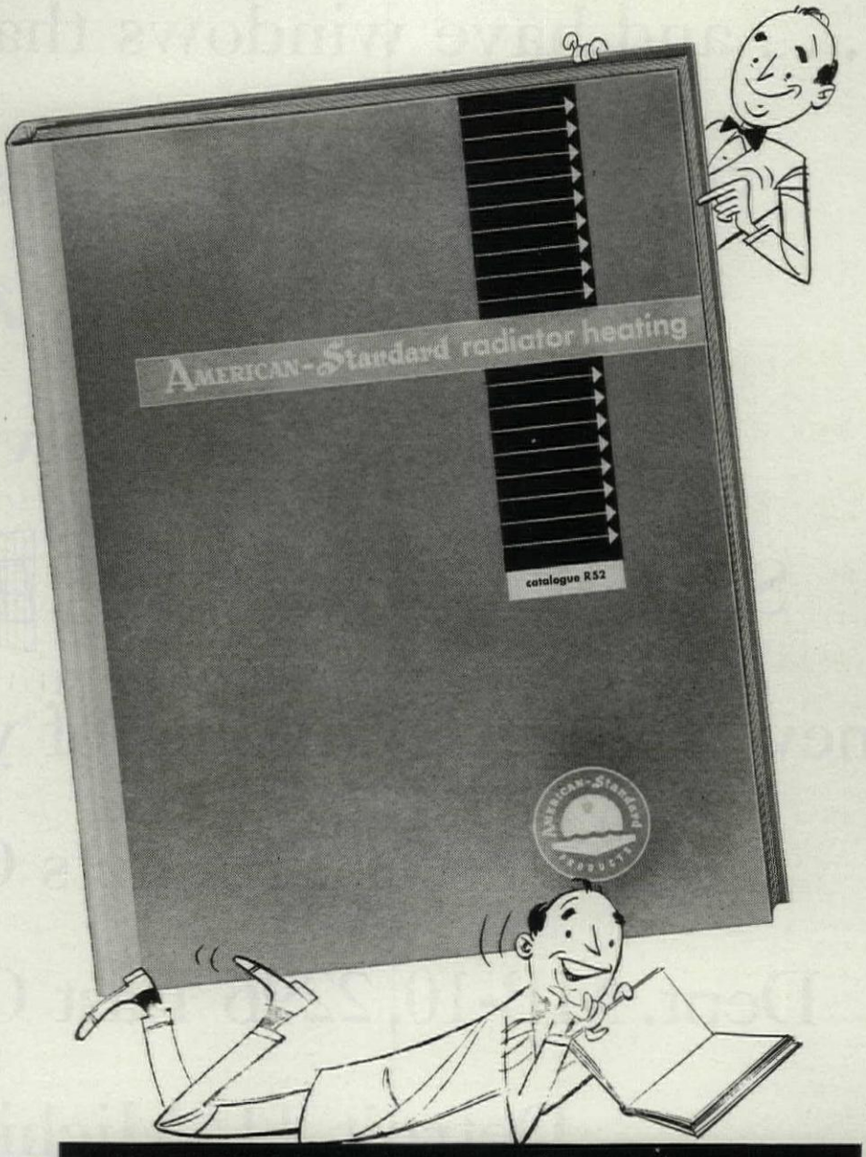
center reflectors to eliminate glare from its two T-17 fluorescent lamps. It may be mounted on the ceiling or suspended; used singly or in continuous rows. It lists at $35.

Manufacturer: Leader Electric Co., 3500 N. Kedzie Ave., Chicago 18, Ill.

continued on p. 218

Here's the new
AMERICAN-Standard Radiator Heating Catalogue

. . . the easy way to get accurate product information in a hurry!



THE new 202-page American-Standard Radiator Heating Catalogue R52—companion piece of the award-winning Warm Air Heating Catalogue—is so efficiently arranged that a flick of the finger will disclose full information on any American-Standard radiator heating product.

Since all allied material—such as dimensions, ratings, construction details and illustrations—is always located in the same place on the pages describing respective models, you can compare the models and select the *right* equipment for virtually any job in a matter of seconds.

The compact catalogue contains the latest and most comprehensive information on the complete line of American-Standard boilers, baseboard panels, convectors, convector cabinets, radiators, conversion burners, water heaters, heating accessories, and controls. A 24-page engineering section provides useful installation and application data.

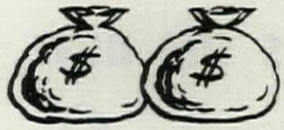
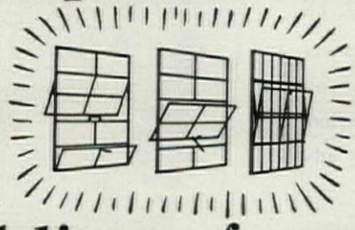
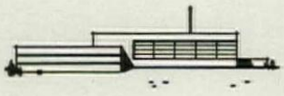
For your copy of the new catalogue, and for product information on any American-Standard products, contact the American-Standard sales office serving you . . . *soon.*

AMERICAN-Standard
HEATING

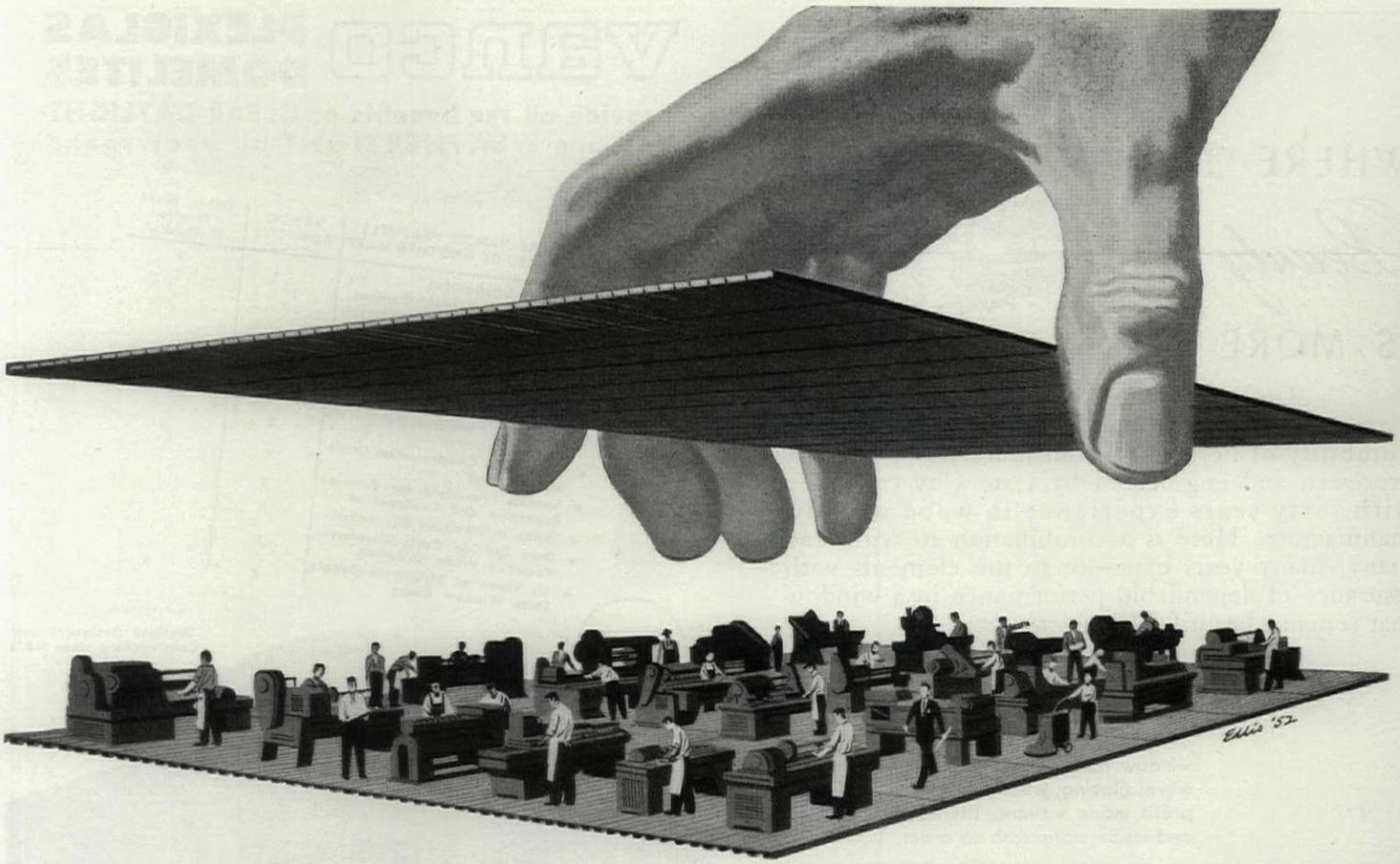
American Radiator & Standard Sanitary Corporation, P. O. Box 1226, Pittsburgh 30, Pa.

Serving home and industry

AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS • DETROIT LUBRICATOR • KEWANEE BOILERS • ROSS HEATER • TONAWANDA IRON

You can save big money  by eliminating  maintenance-painting . . . and have windows that are really rugged, rigid and strong  . . . by specifying *Fenestra*® Super Hot-Dip Galvanized Steel Windows  for that new  building of yours. Write Detroit Steel Products Company, Dept. MB-10, 2296 East Grand Blvd., Detroit 11, Michigan, for the story 

on how strong, steel *Fenestra* Windows stay 



THIS ROOF IS A "SOUND BLOTTER" THAT SOAKS UP RED INK

NOISE IN YOUR PLANT IS A COSTLY WASTREL. It scrapes nerves red-raw . . . handcuffs production . . . causes accidents.

Industrial noise causes a reported $4,000,000 a day loss in worker efficiency. And it has been the underlying cause of some pretty serious labor disputes.

Your answer to the problem is a wonderful new building idea: a combination acoustical-structural roof that costs as little as 75 cents per square foot . . . *installed.* In one compact unit you get: (1) Perforated light-gauge Holorib Steel Deck, which provides a smooth-finished metal-faced interior ceiling; (2) Sound absorbing element; (3) Efficient heat insulation; (4) Strong steel surface for support of finished roofing.

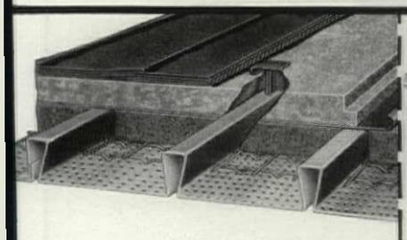
Holorib is lightweight. It saves you building time, labor, materials and money. It's practically maintenance-free. But, if you want to, you can wash it or paint it time and time again without hurting its acoustical efficiency a bit. And, it's noncombustible.

General Motors Technical Center, Warren, Michigan; Standard Press Steel Company, Jenkintown, Pa.; Simmons Saw & File Company, Fitchburg, Massachusetts . . . these are just a few of the companies taking advantage of this great Fenestra* development.

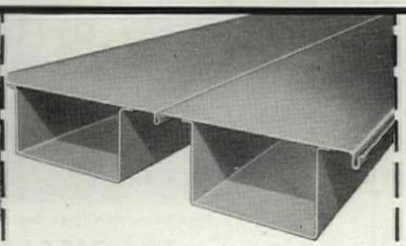
Write us for complete information — or have your architect write — and check on Fenestra floor panels and wall panels. Light-gauge Fenestra Metal Building Panels speed building and lessen the need for structural steel. Write Earle C. Hodges, Vice President, Detroit Steel Products Company, Dept. MB-10, 2296 East Grand Boulevard, Detroit 11, Michigan. *®

Fenestra METAL BUILDING PANELS

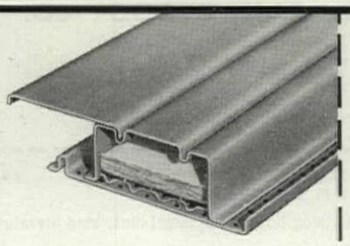
. . . engineered to cut the waste out of building



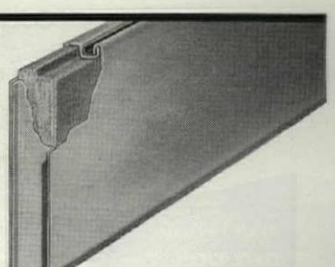
Acoustical Holorib for acoustical-structural roof. Width 18". Depth 1½".



"D" Panels for floors, roofs, ceilings. Standard width 16". Depth 1½" to 7½".



Acoustical "AD" Panels for ceiling-silencer-roof. Width 16". Depth up to 7½".



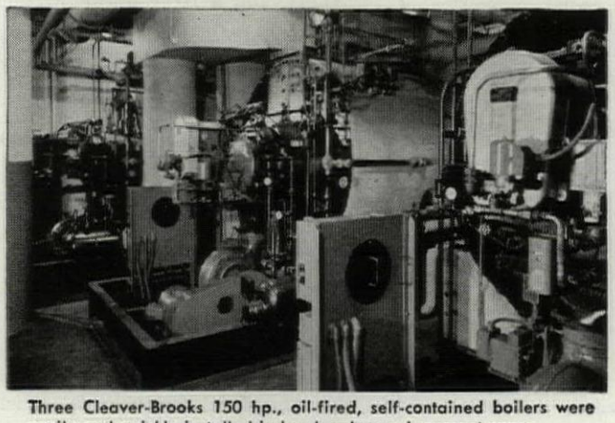
"C" Insulated Wall Panels. Width 16". Depth is 3".

3 Cleaver-Brooks Self-Contained Boilers Supply Steam for Combination Heating System in WASHINGTON POST'S New Building

In this modern newspaper building passersby can see running presses through 11 ft. plate glass windows, located directly behind flag pole in this picture.

WASHINGTON POST BUILDING, Washington, D. C. Albert Kahn Associated Architects and Engineers, Inc. John McShain, Inc. — General Contractor. Standard Engineering Company, Engineers and Contractors.

THE WASHINGTON POST'S new 7-story building is heated by a combination of a hot blast ventilating system for the inside areas and convector radiation along the outside walls. The steam distribution system is divided into two sections, one supplying the fan blast coils at 3 lbs. to 5 lbs. pressure and one supplying the radiation at 3 lbs. to 5 lbs. pressure.



Three Cleaver-Brooks 150 hp., oil-fired, self-contained boilers were easily and quickly installed in low headroom, basement space.

Three Cleaver-Brooks 150 hp. oil-fired, self-contained boilers, installed in the basement location, supply steam for the entire heating system.

Modern Cleaver-Brooks boilers are increasingly specified for heating service. Completely self-contained and compact in design, requiring minimum headroom and floor area, Cleaver-Brooks boilers offer many installation and operating advantages — oil, gas, or combination oil and gas firing — fully automatic — clean — dependable performance — operate at a guaranteed efficiency of 80%. Available in sizes from 15 to 500 hp., 15 to 250 psi.

Write for the latest, fully illustrated Steam Boiler Catalog — Cleaver-Brooks Company, Dept. L, 336 East Keefe Avenue, Milwaukee 12, Wisconsin, U.S.A. *Cable address*: CLEBRO-Milwaukeewis.

Cleaver-Brooks
Originators of Self-Contained
STEAM BOILERS

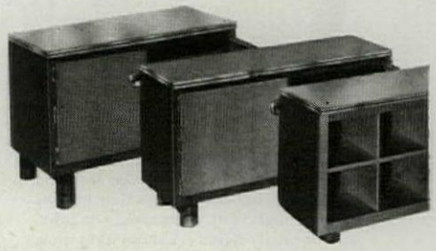
Oil and Bitumen Tank-Car Heaters • Distillation Equipment • Oil and Gas-Fired Conversion Burners

FREEWHEELING SCHOOL FURNITURE grows with students

As school curricula run far beyond the three R's, classroom furniture must keep pace. The *Adjustable* line of working storage pieces not only follows the pupil around the room in his divers learning experiences but, if necessary, will grow up with him. Double wheel casters account for the mobility, and bolted peg-leg *Adjusta-Discs* raise the tabletops to heights of 24″, 26″, and 28″. Given such a lift, many of the kindergarten furnishings can go as far as sixth grade.

From a teacher's view, the accessible storage space for all kinds of materials, including toys, should be welcome as well as the adaptability of the furniture to various arrangements.

Adjustable cabinets and benches are sturdily built to meet the rugged requirements of an elementary school. Solid hardwood is used for the frames, and the work surfaces are 5-



ply birch or maple plywood with or without plastic laminate topping. The wood's lacquered finish has a protective coat of hard wax, and stripping and hardware are chromium plated. Besides the group of shelved and cubed storage pieces ranging from $159 to $180, the firm makes a clothing cubicle ($135), a sink-storage unit ($190), reading benches in three lengths (around $80 each), a portable craft bench ($232), a round reading table 4′ in diameter ($74), and three stationary pieces: a wall-hung storage cabinet ($99), a teacher's wardrobe closet ($174), and a large drawer-cabinet ($415). *Manufacturer:* Adjustable Cabinets, Inc., 400 Scajaquada St., Buffalo 11, N. Y.

FOLDING BLEACHER needs no anchorage; can be rolled from place to place

By virtue of its mobility, Beatty's *Mobile-Unit* steel bleacher can add to the flexibility of gymnasium-auditorium space. The new free-standing grandstand has a retractable baseboard and is fitted with casters so that it may be wheeled easily from one location to another. Like the wall-anchored stands made by the same firm, the movable model is fabricated of steel "I" beams, rigidly cross-braced, with seat and floorboards of 2′ x 10′ select structural Douglas fir. Designed for lib-

continued on page 224

For Study or Play all through the Day...

... Weldwood® Plywood provides Beauty, Strength and Economy in every school location

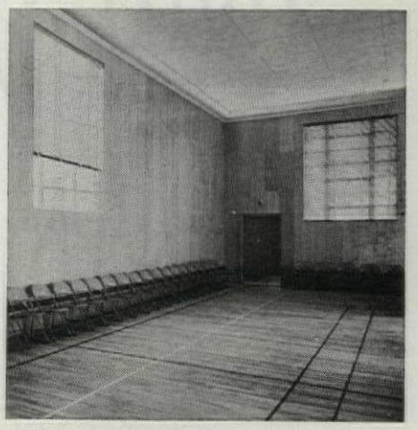
Add charm and utility to every location throughout your school . . . classrooms, gymnasium, auditorium, assembly rooms, corridors . . . with Weldwood Plywood.

The *perfect* answer to your requirements, Weldwood Plywood reflects dignity and good taste . . . yet is so tough and strong, it stands up *beautifully* under children's abuse.

It saves time and money in new construction because it is quickly applied over the studding.

And in redecorating, Weldwood Panels go up fast and easily, right over existing walls . . . even over cracked, unsightly plaster.

Let these 4 fine schools show you 4 important ways to *improve* and *save* with Weldwood Plywood!

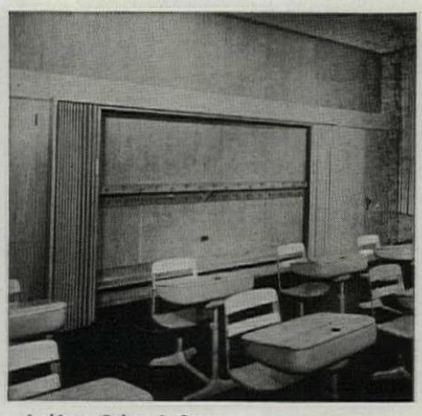


Architect: **Burnett V. Vickers**

The Hebrew Institute, White Plains, N.Y. used Oak Weldwood Plankweld to give its combination auditorium - gymnasium unusual beauty and dignity — with the added advantages of long-lasting durability and low cost.

Architects: **Moore & Hutchins**

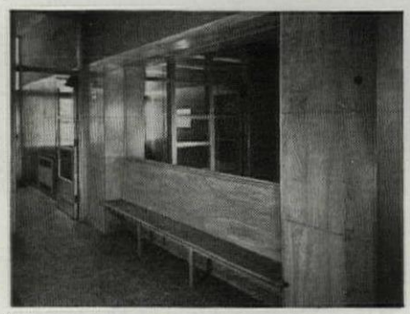
The new Greenville School in Scarsdale, N. Y. shows how handsome, knock-resistant maple Weldwood Plywood Storage Cabinets, in *natural* finish, add much to a classroom's attractiveness, yet completely achieve the functional end for which the cabinets are intended.



Architect: **Robert A. Green**

This classroom in the Transfiguration School, Tarrytown, N. Y., takes advantage of Weldwood's structural-decorative qualities to build a practical wardrobe. (Note simple molding and sheer wall treatment.)

Structural strength enables you to use Weldwood as a *building* material. And the many fine hardwoods that are available . . . both imported and domestic . . . make Weldwood an ideal *finishing* material.



Architects: **Warren S. Holmes and Emilio Di Rienzo**

The entrance of the Hamilton School, Mt. Vernon, N. Y. — with its beautiful panels of Birch Weldwood Plywood. What a wonderful *first* and *lasting* impression these panels give!

Weldwood Plywood gives an entire building or a single room a beauty that never goes out of style . . . and Weldwood Plywood is *guaranteed* to last as long as the building in which it is installed.

WELDWOOD® Plywood

Manufactured and distributed by
UNITED STATES PLYWOOD CORPORATION
New York 36, N. Y.
and **U.S.-MENGEL PLYWOODS, INC.**
Louisville 1, Ky.
Branches in Principal Cities • Distributing Units in Chief Trading Areas
Dealers Everywhere

new for narrow stile doors - specify

Von Duprin

NC

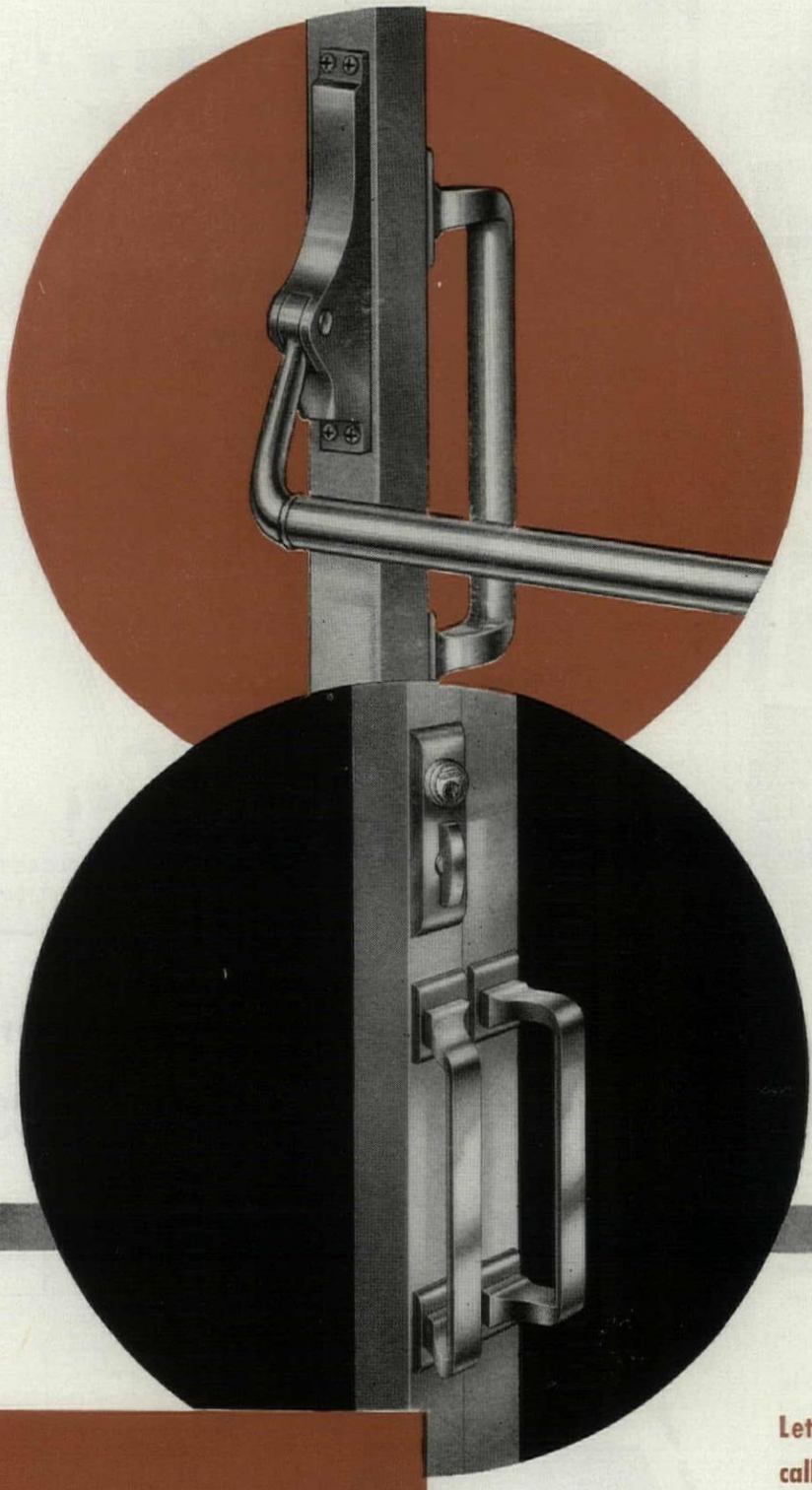
Narrow Concealed Exit Devices

● Wherever plans call for doors with narrow, hollow stiles, there's a need for Von Duprin NC exit devices!

These reversible, spring-actuated devices—with the vertical rods concealed within the hollow stiles—are applicable to single or double doors. Only requirements are that the stiles have an outside dimension of at least 1¾″ square and an inside dimension of at least 1½″ square.

Like *all* Von Duprin devices, the type NC is easy to install, requires virtually no maintenance, and is quality-constructed to last a lifetime. The mechanism is precision-made and foolproof; pressure anywhere along the crossbar instantly releases the latches and opens the door.

So for *any* door—whether it's a daily thoroughfare or an emergency escape—install Von Duprin exit devices . . . and be sure of "the safe way out."



INSIDE TRIM

OUTSIDE TRIMS

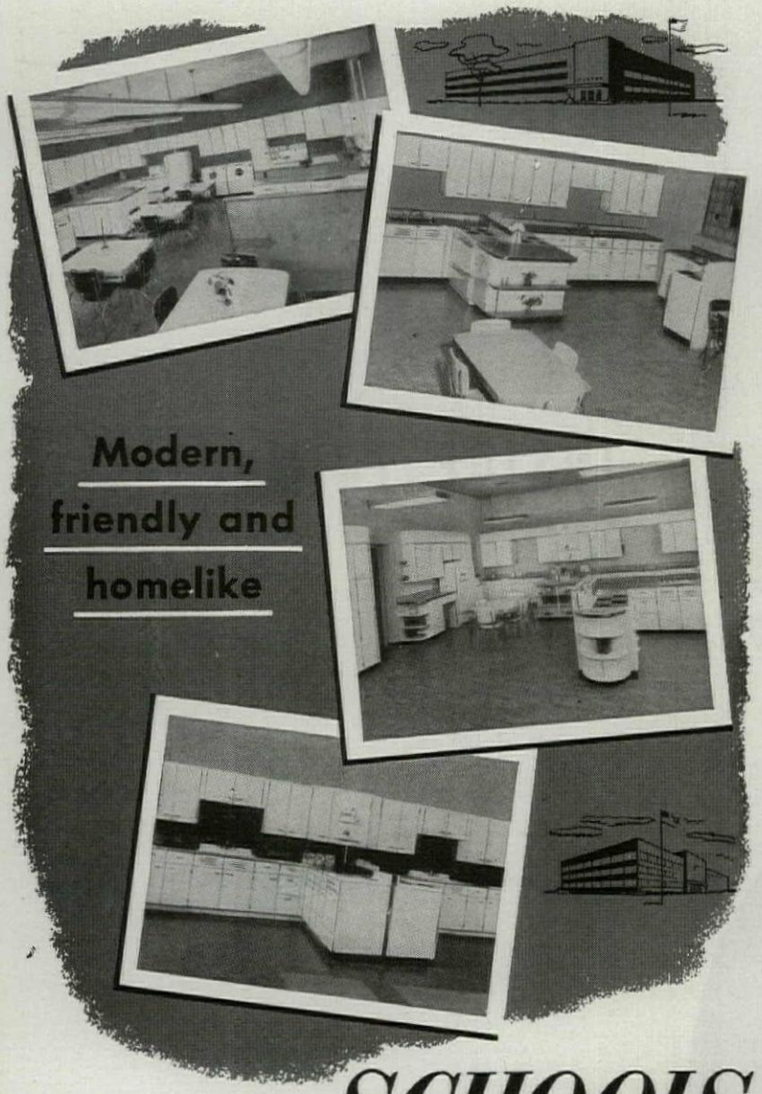
Check these NC features!

- All bronze.
- Drop forged cam and lever arms.
- Crossbar X-Bar reinforced.

Let a VON DUPRIN "Exit Specialist" call on you. There's a Von Duprin representative or a Von Duprin contract hardware distributor near you. These men have had many years of experience in exit planning, and will be happy to bring all the facts on Von Duprin devices right to your desk. Get acquainted with the Von Duprin "Exit Specialist" in *your* area. For his name, write:

Von Duprin PANIC DEVICES ASSURE SAFE EXIT ®

VONNEGUT HARDWARE CO., VON DUPRIN DIVISION, INDIANAPOLIS 9, INDIANA



KITCHENS FOR SCHOOLS

Kitchens for schools should not be cold and institutional. Students learn faster in friendly, comfortable surroundings. Kitchen Maid cabinets and Kitchen Maid planning give modern home economics departments an atmosphere of warmth and friendliness that is beneficial to teaching, and valued highly by school administrators.

Finest wood construction

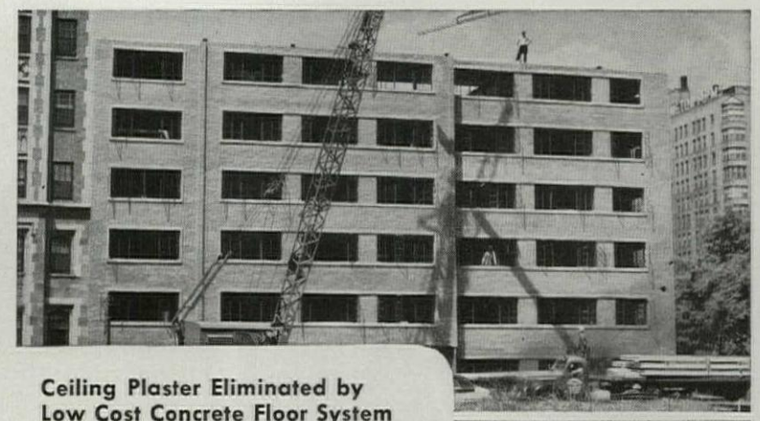
Kitchen Maid cabinets are built of strong, selected hardwoods, warm to the touch, pleasant to live with, long lasting. They are available in a variety of standard sizes to facilitate planning, and incorporate every practical convenience. Rubber-cushioned door latches are quiet, drawers of aluminum slide easily, wood shelves are permanently fixed for safety. Construction is the finest known to woodworking. Kitchen Maid dealers, well trained and experienced, are a source of valuable assistance. Call yours for your next school project. See Sweet's Catalog. Write for literature.

KITCHEN MAID
FIRST AND BEST IN
KITCHENS

THE KITCHEN MAID CORPORATION, 620 Snowden Street, Andrews, Indiana. Please send new folder showing the complete line of Kitchen Maid units with details and specifications. I am an ☐ ARCHITECT, ☐ BUILDER, ☐ EDUCATOR.

Name_____

Address_____



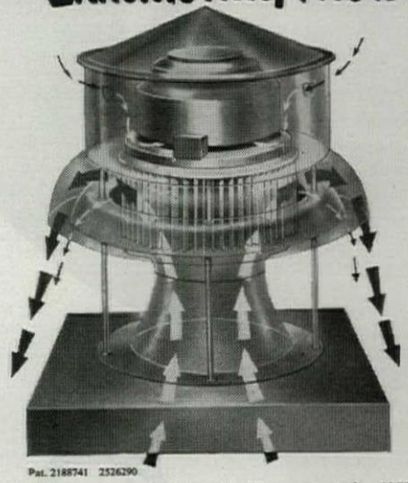
Ceiling Plaster Eliminated by Low Cost Concrete Floor System

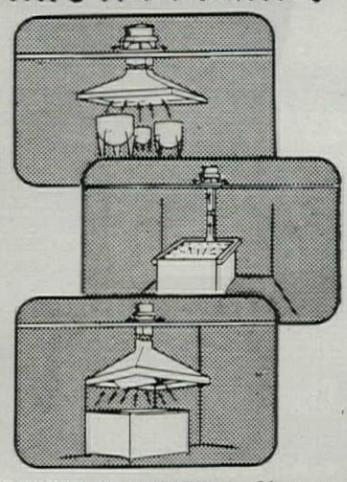
Fire-safe Flexicore slabs gave this Chicago luxury apartment 18′ clear spans "at less cost than any other method." Smooth underside of slabs made pleasing, paneled ceiling. Hollow-cast Flexicore slabs make sound structural floors and roofs that cut solid slab weight about 50%. For catalog and nearest manufacturer, write The Flexicore Co., Inc., 1757 E. Monument Ave., Dayton 1, Ohio.

Catalog in Sweet's Architectural

flexicore® PRECAST CONCRETE FLOOR & ROOF SYSTEMS

IT PAYS to know these Facts about Exhausting Moisture and Fumes





Pat. 2188741 2526290

CERTIFIED RATINGS: Gallaher Air Vans are tested by an independent laboratory — a test of the whole unit *not* just the fan wheel. You can be sure of Gallaher performance data — it's tested *not* interpolated.

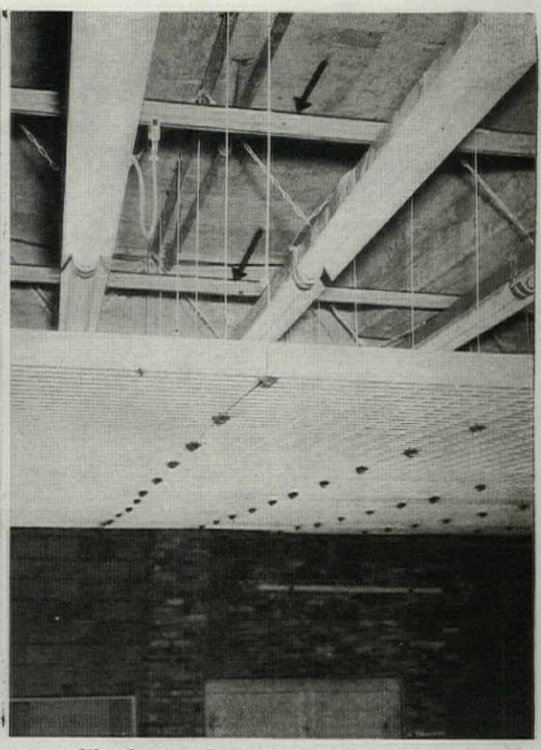
SAFE MOISTURE AND FUME REMOVAL—Motor out of the air steam with the exclusive patented air seal off to make it certain. How safe? Gallaher units are safely used for ether and air concentrations *without* explosion proof motors.

EFFICIENT: SCROLL EFFECT designed into the unit and exclusive with Gallaher. Research tests show that efficiency against *even normal* static pressures is not possible without it.

STRONG: We invite comparison with any comparable unit. Our specifications are *published* and available by asking your local Gallaher representative or writing Dept. A, 4108 Dodge Street, Omaha, Nebr.

Capacities 150-11,000 CFM; Static Pressures to 1¾"

The GALLAHER Company
Omaha, Nebr. Owatonna, Minn.



1. YES, TRUMBULL'S LTG FLEX-A-POWER is the most advanced way of solving low-voltage distribution problems yet devised. No matter what the building layout FLEX-A-POWER is completely adaptable to your plans. Across the ceilings in a modern department store, like the one above, its unique functional design easily makes possible a concealed current supply for lower-cost installation and greatest flexibility in use.

THIS IS MODERN POWER DISTRIBUTION

FLEX-A-POWER®—Trumbull's pre-fabricated plug-in or trolley busway— is designed to meet today's needs, tomorrow's changes

2. POWER TOOLS PLUG IN WHERE THEY'RE NEEDED, not just where the wall outlet is located. Power tools as well as lights in this machine shop get their power supply from the LTG line above. LTG FLEX-A-POWER serves equally well on assembly lines, crane and hoist installations, and of course can supply lighting of any kind in plant or office (see above). LTG FLEX-A-POWER is rated 50 amps at 300 volts a-c or d-c. Comes in 2-, 3-, or 4-pole construction.

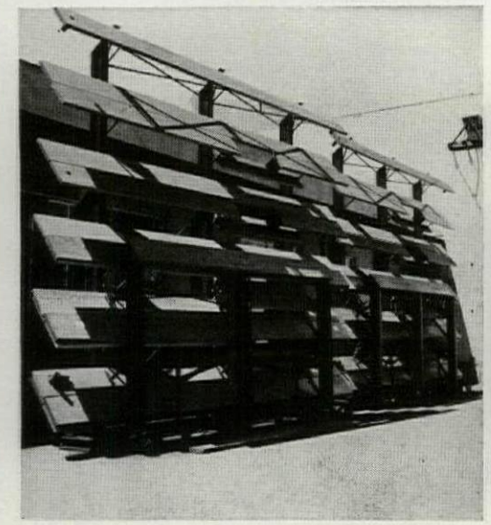
Write for circular TEC-3 on LTG FLEX-A-POWER. Trumbull has FLEX-A-POWER of other types for *every* distribution need from service entrance to low-voltage appliances.

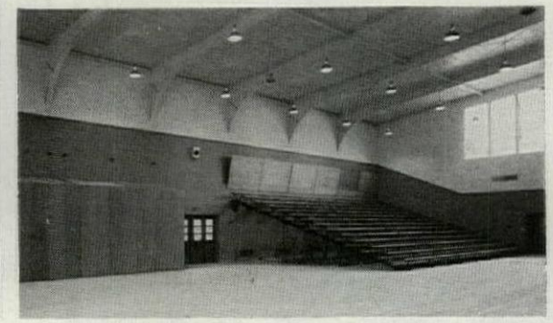
NO SHORTAGE—Your Trumbull distributor's supply of FLEX-A-POWER is backed by ample factory stocks to meet all your distribution needs.

Trumbull Assures Lasting FLEXIBILITY in Power Distribution

TRUMBULL (T) ELECTRIC

DEPARTMENT OF GENERAL ELECTRIC COMPANY
PLAINVILLE, CONN.





eral leg room, it is said to permit about 30% greater capacity than other folding units: a nine-row unit can seat 99 people. Measuring 16′ wide, the *Mobile-Unit* extends 17′-6″ front to back; accordioned, it covers one third as much area. A few turns of a ratchet wrench lowers the base beams to the floor and a handle unfolds the rows and locks them in place. For protection against tinkerers, there is a padlock on the handle. (A safety brace, joining the riser beam to the carriage, prevents swaying or capsizing when a lively live load piles on.) To refold the stand, the handle is unlocked and raised, and the base jacked up above the casters. Cost runs about $16 to $18.50 per seat, depending on specifications for extras such as stairway aisles. Sections may be ordered 4 to 14 rows deep.

Beatty also has announced a *Rollway* bleacher for low-ceilinged rooms. Dubbed *Double-fold*, a nine-row 16′ wide section stands only 7′ high as compared to 10′-7″ for the standard unit but extends to about the same depth.

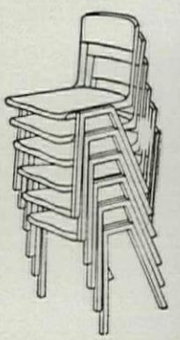
Manufacturer: Beatty Scaffold, Inc., San Francisco, Calif.

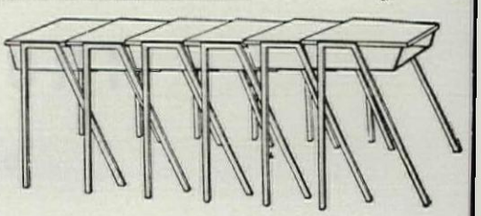
STACKABLE DESKS AND CHAIRS add to utility of cramped classrooms

Combining design for nesting with good seating, the *Spacemaster* desk and chair is a practical classroom duo. When not in use, both items may be stacked with their counterparts to take up very little floor space and thereby release valuable square footage for the more athletic classroom enterprises. The chair's deep saddle seat and the desktop's pitch work together to encourage good posture. Their widespread legs of bent metal tubing require no obstructive cross-bracing, and so allow children free knee action and permit the janitor to get in and around the furniture easily with broom or mop. Price for the *Spacemaster* set is $25.

Manufacturer: E. W. A. Rowles Co., Arlington Heights, Ill.

continued on page 230





Structure designed under direction of Ing. Jose Menendez of Comision de Fomento Nacional; Manuel Ray, Resident Engineer.

Raymond FORGES AN IMPORTANT LINK IN HAVANA-VARADERO HIGHWAY

This graceful reinforced concrete bridge spanning the Canimar River in Cuba was completed by Raymond ahead of schedule. Hailed as one of the most functionally beautiful structures in the Caribbean, the three-span bridge is 115 feet high and has an overall length of 973 feet—a fitting symbol of the wide variety of Raymond activities.

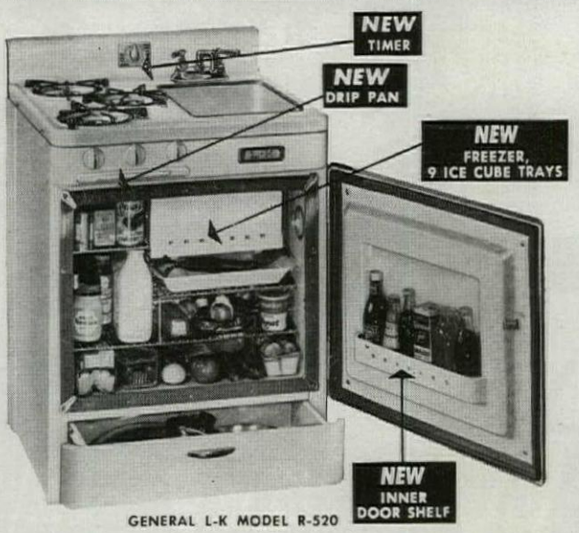
Constructed for Cuban Comision de Fomento Nacional by Raymond Concrete Pile Company of South America

a wholly owned subsidiary of Raymond Concrete Pile Co.

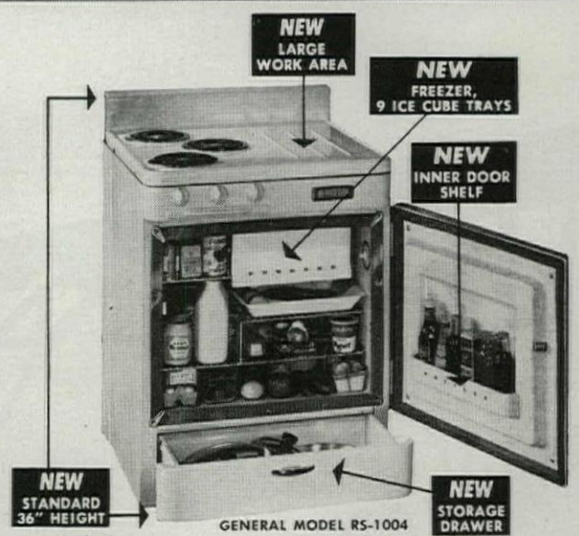
AROUND THE WORLD FOUNDED 1891

Raymond
CONCRETE PILE CO.

140 CEDAR STREET • NEW YORK 6, N. Y.



GENERAL L-K MODEL R-520



GENERAL MODEL RS-1004

SAVE DOLLARS . . . SAVE SPACE with the NEW General Kitchens

A COMPLETE KITCHEN: REFRIGERATOR, COOKING-TOP, SINK Has horizontal freezer, 9 ice-cube trays, inner door shelf. In 27½" combines refrigerator, sink, storage drawer and 3 gas burners adjustable to natural or bottled gas. Also available with electric burners for 220 v. or 110 v.

COOK ON YOUR REFRIGERATOR. General Chef—now is standard 36" height. Requires only 4.1 sq. ft. of space.

These units advertised in LIFE

5 YR. GUARANTEE

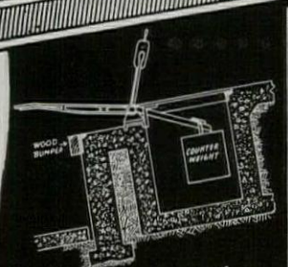
GENERAL air conditioning corp.
NATIONWIDE SALES AND SERVICE

Distributors — Dealers — Builders — write:

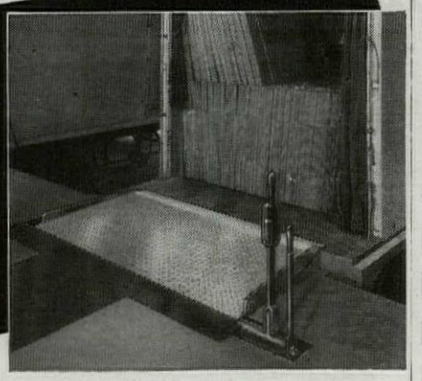
4542-C E. Dunham St. • Los Angeles 23, Calif.
Chicago Office: Dept. 11, 323 W. Polk St.

You get top efficiency with . . .

RITE-HITE ADJUSTABLE LOADING DOCKS



Simple, Low-Cost Installation



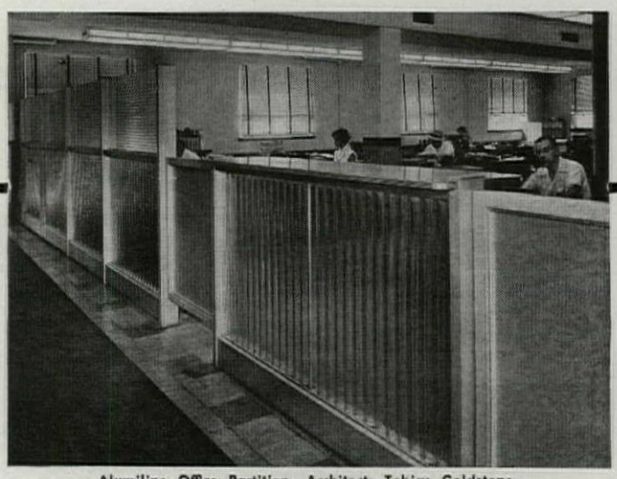
Include RITE-HITE Adjustable Loading Docks in your design. You'll get . . .

- Ease of Installation
- Trouble Free Maintenance
- Modern and Efficient Performance
- Speedy Cross-Dock Operation

No piping ✓
No compressors ✓
No pumps ✓
No motors ✓
No lubrication ✓
No machinery ✓
No operation expense ✓
Counter-balanced ✓
Easy to operate ✓

For complete details, sizes, and specifications write to: Dept. 12

LOOMIS MACHINE CO. • CLARE, MICHIGAN
RITE-HITE DIVISION



Alumiline Office Partition. Architect: Tobias Goldstone.

ALUMILINE

EXTRUDED ALUMILITED ALUMINUM PRODUCTS

Specified by Leading Architects for:
HOSPITALS • SCHOOLS • RELIGIOUS BUILDINGS • BANKS
STORE FRONTS • OFFICE BUILDINGS • INDUSTRIAL PLANTS
HOUSING PROJECTS • SHOPPING CENTERS

- Extruded Aluminum Store Front Construction
- Extruded Aluminum Factory Assembled Entrance Frames
- Narrow and Wide Stile Extruded Aluminum Doors
- Custom Built Extruded Aluminum Windows

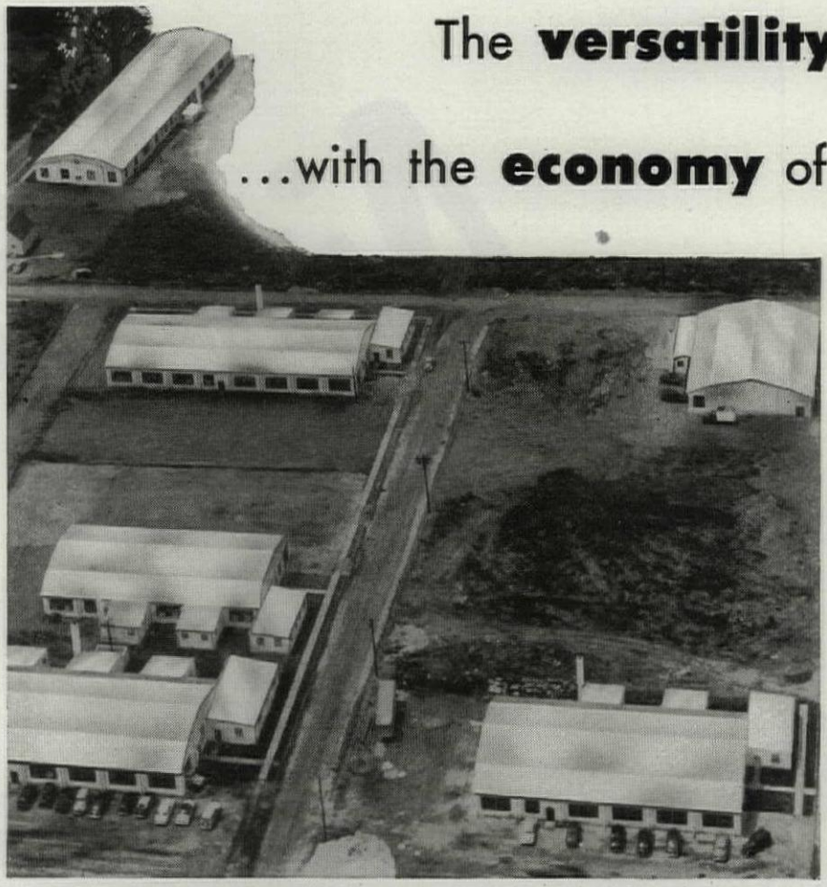
Send for new 1952 Catalogs: "Alumiline" Store Front Construction and "Extrud-A-Line" Entrances

THE ALUMILINE CORPORATION
1540 COVERT ST. BROOKLYN 27, N. Y.

see our CATALOG in SWEET'S FILE ARCHITECTURAL

The **versatility** of aluminum

...with the **economy** of standard products!



Reynolds *Lifetime* Aluminum Industrial Corrugated spreads its bright roofs all over the Amityville, L. I., area — through George Mole, contractor. Three schools, eight industrial plants, five commercial buildings. Sixteen in all (six shown in photo above)—and more coming! This is .032" with extra-deep corrugations (⅞"). George Mole says that besides low initial cost, this roofing gives him greater permanence, lowest maintenance, and heat-reflected comfort inside.

New forms and treatments of versatile Reynolds Aluminum continue to come from building designers. But standard forms can also be handled with originality ... and with obvious economy. Economy in initial cost, through mass-production. Economy in application ... through well developed methods, understood by more and more workers.

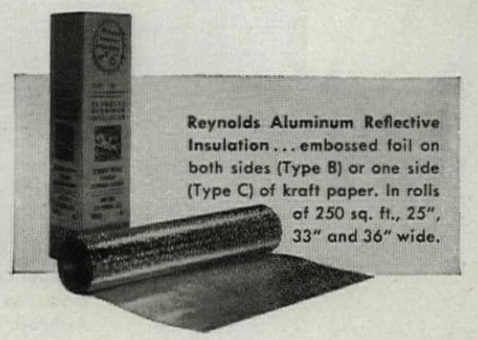
Consider the adaptation of these popular and proved products to any plans, conventional or not. You will be getting the important advantages of lightness, strength and rustproof durability at low cost. Consider, too, the heat-reflection value of aluminum ... in roofing and siding or insulation.

Write for literature.

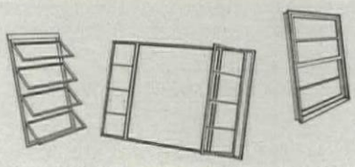
Reynolds Metals Company, Building Products Division, 2020 South Third Street, Louisville 1, Kentucky.

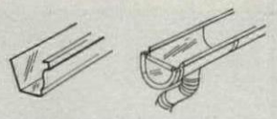
Reynolds Aluminum Residential Windows—Casement, Awning, Double-Hung — can be adapted to many uses. Made of Reynolds own extruded shapes, superbly finished. Above: Kansas City apartments — J. F. Lauck, architect; George Norton, owner-builder.

Reynolds *Lifetime* Aluminum Gutters come in 5" Ogee and Half-Round, smooth and embossed; also 6" Industrial Half-Round. Above development, Overland Park, Kan., has 5 miles of Reynolds gutters. Architects: Duncan & Mulhern. Contractor: Geo. Miller.



Reynolds Aluminum Reflective Insulation ... embossed foil on both sides (Type B) or one side (Type C) of kraft paper. In rolls of 250 sq. ft., 25", 33" and 36" wide.



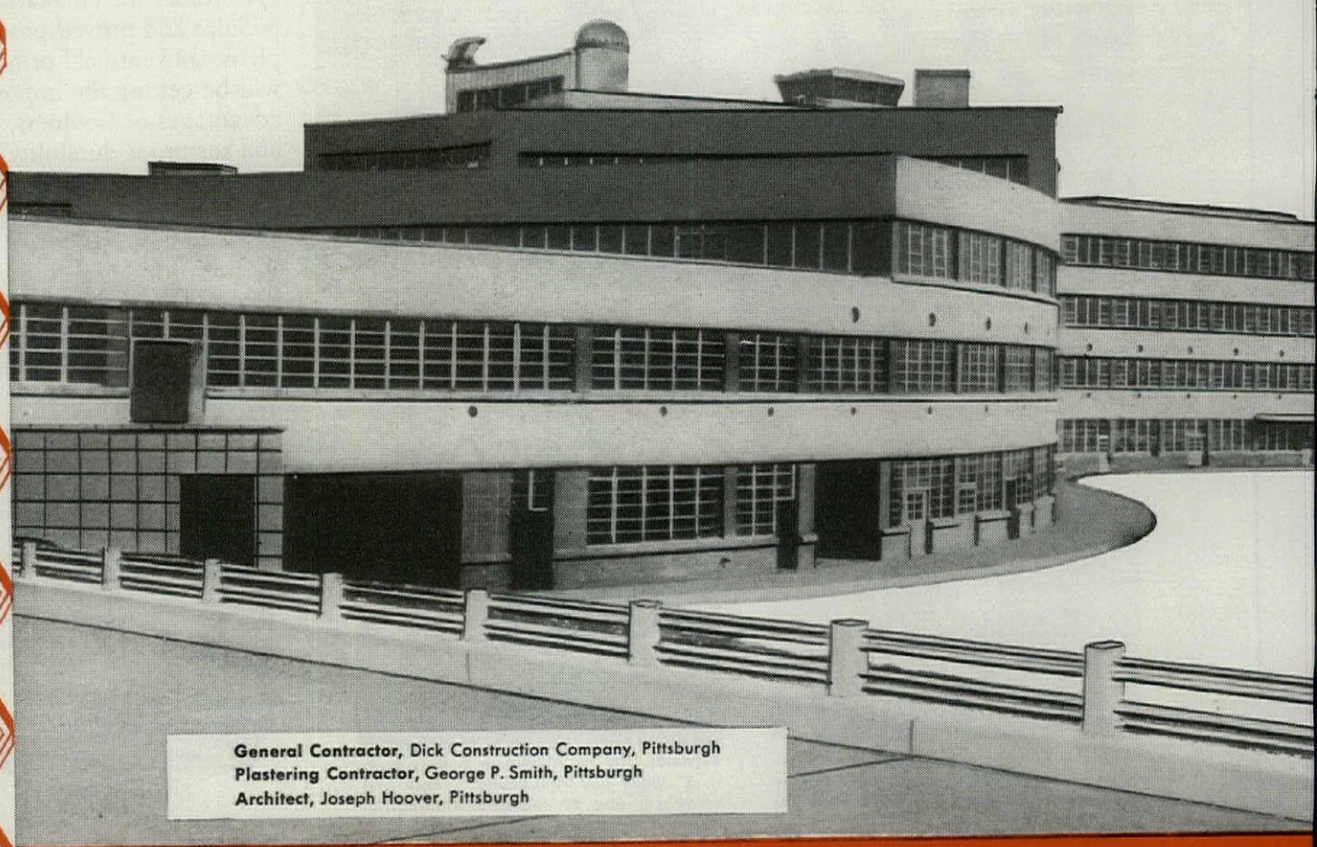


Specify Reynolds *Lifetime* Aluminum Flashing. Remember, aluminum costs far less than any other rustproof material.

Military demands for aluminum limit supply of these products. Reynolds is rapidly expanding aluminum production. Keep checking your supply source.

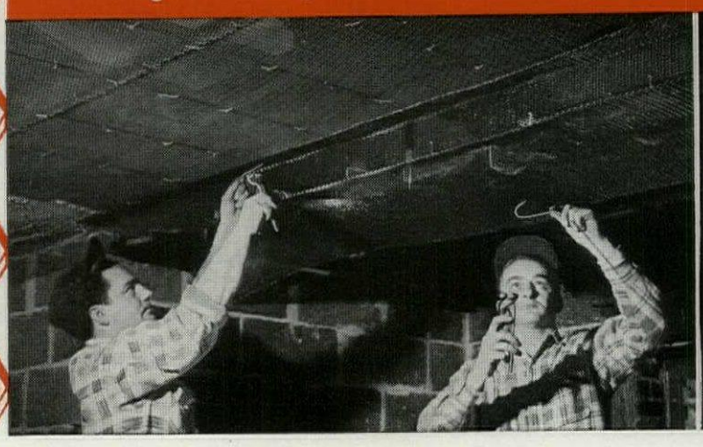
REYNOLDS ALUMINUM

FOR PITTSBURGH'S *Airport*

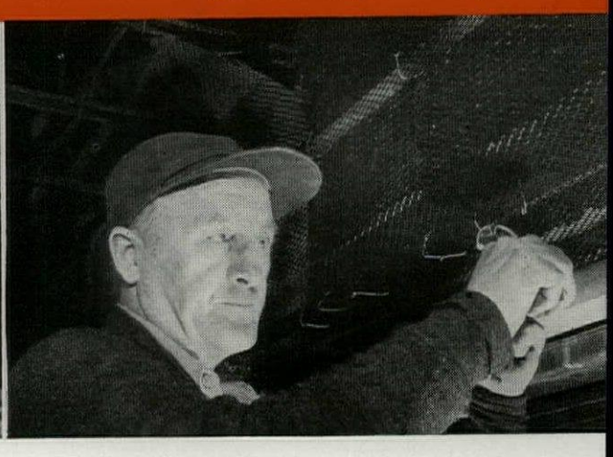


General Contractor, Dick Construction Company, Pittsburgh
Plastering Contractor, George P. Smith, Pittsburgh
Architect, Joseph Hoover, Pittsburgh

Extra rigid Wheeling Metal Lath goes up faster.



Lath lies flat, ties easily.



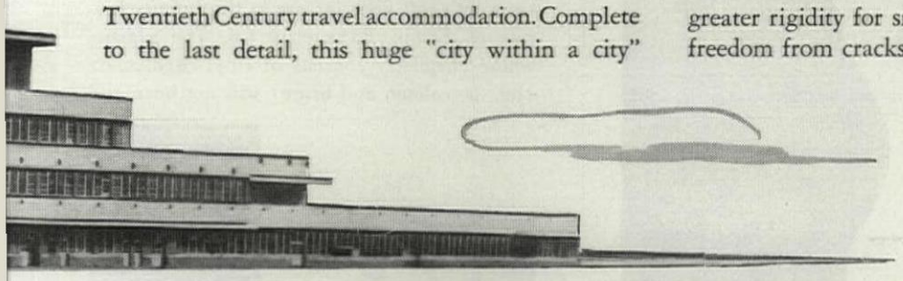
of the Future

...IT'S WHEELING METAL LATH!

Transportation standards reach new heights as the vast 33-million dollar Greater Pittsburgh Airport starts full-scale operations. The 1,600-acre airdrome, with runways and approaches ranging up to 6,200 feet long, with the largest terminal building in the world... and plans to grow *still larger!*

Nerve-center for this giant installation is its modern, 7-story terminal building, offering the ultimate in Twentieth Century travel accommodation. Complete to the last detail, this huge "city within a city" includes a fully-equipped 62-room hotel, garage, dining space for 4,200 people, drug store, post office, bank, recreational center and facilities to comfortably handle 2½-million passengers a year.

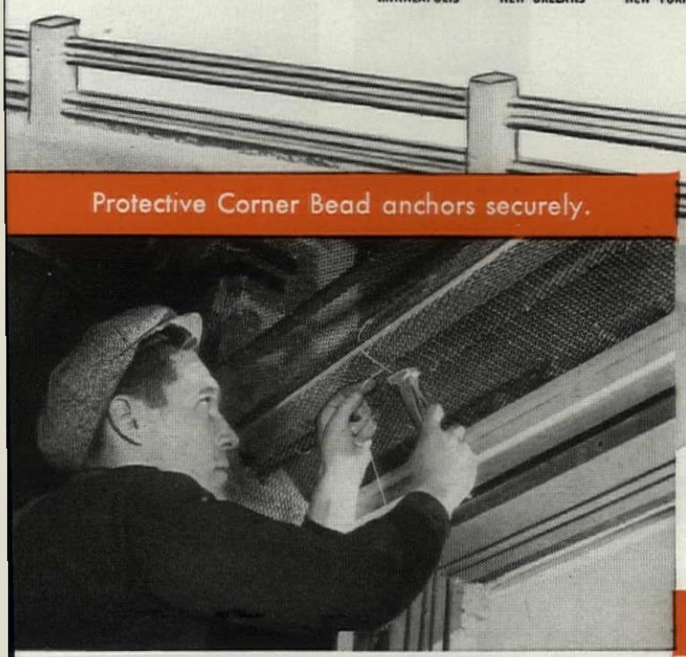
To give firm foundation to 90% of all plastered surfaces, Wheeling Metal Lath and Lath Accessories were the builders' choice. Reasons: Quicker, easier Lath erection; a more uniformly flat surface of greater rigidity for smoother plastering and lasting freedom from cracks.



WHEELING CORRUGATING COMPANY, WHEELING, W. VA.

BUILDING MATERIAL DIVISION

ATLANTA BOSTON BUFFALO CHICAGO COLUMBUS DETROIT KANSAS CITY LOUISVILLE
MINNEAPOLIS NEW ORLEANS NEW YORK PHILADELPHIA RICHMOND ST. LOUIS

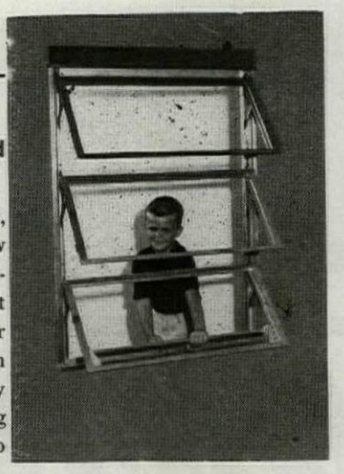


Protective Corner Bead anchors securely.

W Wheeling CORRUGATING COMPANY ®

The Wheeling line of building materials includes: Steelcrete Reinforcing Mesh, Expanded Metal, Metal Lath and Metal Lath Accessories, Tri-Rib Steel Roof Deck, ExM Angle Frame Partitions, Steelcrete Vault Reinforcing.

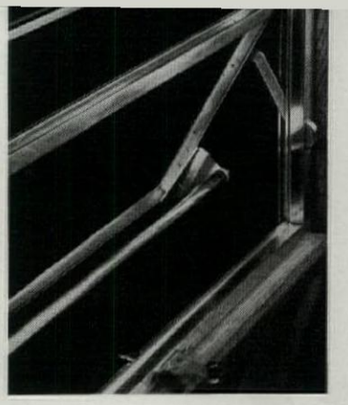
PRODUCT NEWS



ALUMINUM AWNING WINDOW opens and closes via a push bar

Instead of the conventional crank operator, Ludman's new *Push-Out Auto Lok* window designed for school buildings has an easy-to-work push bar. This rigid rod, neatly set within the window reveal, works like the bar on a fire door. It not only operates the bottom vent but those above; all can be opened to any position just short of a right angle. Sliding shoes on the frame prevent slamming and also eliminate the need for projecting hardware which detracts from the clean lines of the awning window and, consequently, the structure. When the window is closed, a center latch automatically locks all vents against vandals and weather. None of the hardware parts are detachable and outside contacts are protected by vinyl weatherstripping. Price for the C24 aluminum-alloy unit pictured *above* is about $40, without glazing, screen, and storm sash.

Manufacturer: Ludman Corp., Box 4541, Miami, Fla.



FLAMEPROOF FABRICS woven of plastic have woolly look and feel

Firecode-conscious buildings need not be denied the warmth and grace of heavy drapery and upholstery fabrics. Lumite Corp.'s *Saran*, familiar as the shiny extruded threads of insect screening and auto seat covers, is now spun into soft fiber for use in the *Infinity* fabrics of Edwin Raphael & Co. The plastic, whose chemistry consists of vinyl copolymers (i.e., petroleum and brine) will not burn and needs no costly spraying or vat dipping to render it flameproof. Even when subjected to intense heat and fire, the fabrics will not support combustion nor will they have an afterglow. Being inorganic they are also mildew-proof, mothproof, stretchproof and sagproof. They drape in soft folds, sew without puckers and stand hard wear when used as furniture covering. Woven 54" wide in smart colors in reversible tweedy textures and subtle geometrics, the *Infinity* fabrics range from about $7.15 to $9.75 per yd. Unlike many synthetic materials, these take on a rich luminosity akin to natural fibers.

Manufacturer: Edwin Raphael Co., 157 Central Ave., Holland, Mich.

Technical Publications page 234

3 OUT OF 4

CLASS "A" WINNERS OF GOLD SEAL AWARDS

USED UNISTRUT®

CHANNEL, HANGERS AND FITTINGS

All photographs by permission of Metals & Controls Corporation.

Entry No. 284

Over toolmaker's benches continuous rows of louvered, double 40-watt fixtures are supported by UNISTRUT channel at a height of 8'6". Over machines (in other photo) the same type UNISTRUT supported units are installed on 8' centers in rows 7' apart.

Unique metal framing system contributes perfect fixture alignment, added safety and better appearance to winning industrial lighting installations.

In the Merit Award Competition sponsored by the Fourth International Lighting Exposition (Cleveland, May 6-9, 1952), Gold Seal Awards were made for three outstanding industrial lighting jobs* using the UNISTRUT system of fluorescent fixture supports.

The advantages of using the UNISTRUT method as shown in the accompanying photos are obvious. It permits faster, easier, more accurate installation—requires fewer hanger stems and canopies. Cleaning and servicing cannot disturb fixture alignment. Lowers wiring and rewiring costs. UNISTRUT channel is approved as wireway in Chicago and more than 20 other major cities—additional proof of its versatility and usefulness. Try it on your next lighting job!

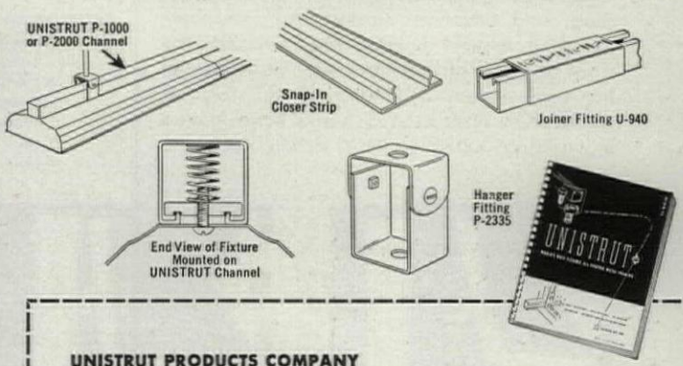
*Planned and executed by G. E. Pieper, Materials Engineer, Spencer Thermostat Division, Metals & Controls Corporation, Attleboro, Mass.

Entry No. 287

In the finished rolling mill of this plant, continuous rows of fixtures are supported by UNISTRUT channel.

Entry No. 290

In this high bay area the lighting units are supported in 3 continuous rows by UNISTRUT channel at a height of 21' to avoid a traveling crane.



UNISTRUT®

The World's Most Flexible All-Purpose Metal Framing

U.S. Patent Numbers
2327587 2329815
2345650 2363382
2380379 2405631
2541908
Other Patents Pending

Distributors and Warehouse Stocks in Principal Cities. Consult your Telephone Directories

Write today for your FREE copy of New 78-page Catalog No. 700! Includes above drawings and countless other examples of how to mount, rack, frame, suspend and support all kinds of electrical and mechanical equipment.

UNISTRUT PRODUCTS COMPANY
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Please send without obligation the items checked below:

☐ Catalog No. 700 ☐ UNISTRUT Sample

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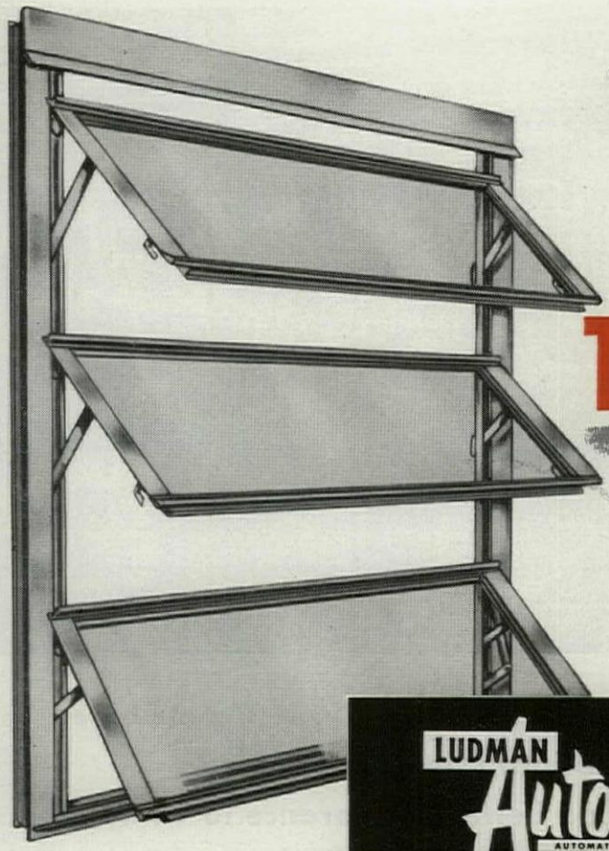


Tightest Closing Windows *Ever Made!*

TEN TIMES TIGHTER

cuts fuel bills or air conditioning costs for a Lifetime...

Patented Auto-Lok operation, acting together with "floating seal" weather-stripping, provides and maintains for the life of Auto-Lok Windows a degree of weathertightness heretofore thought impossible in any window.

LUDMAN Auto-lok AUTOMATIC LOCKING PATENTED
WINDOWS
ALUMINUM OR WOOD

This degree of weathertightness is maintained always since Auto-Lok hardware eliminates the wear at critical hinge points that results in vents that cannot be closed tight. In other awning-type windows, destructive force must be applied on the hinges at the top of each vent in order to close the vents at the bottom. With patented Auto-Lok operation no force is applied on hinges. Every vent in an Auto-Lok Window closes tight automatically—always. *The result: guaranteed minimum air infiltration*... no wear, no hinge adjustments... ever!

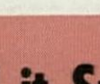
Watch the "Hook" and the "Lug" Pull it Snug!

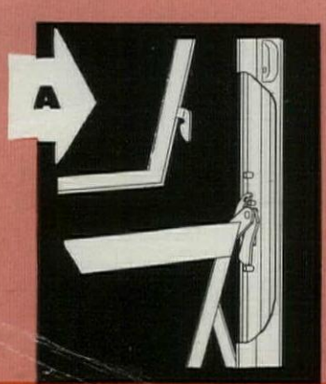
Closes Ten Times Tighter Than Generally Accepted Standards...

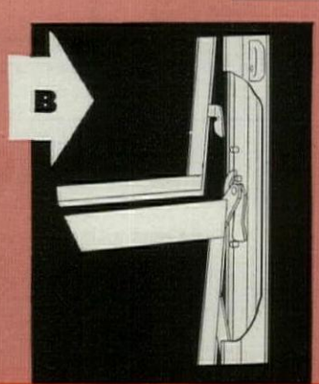
Here's how: (a) While vents are swinging in toward the frame, the vertical operating bars at each side of window *move up*. (b) Note how lugs on operating bars engage hooks on vents as the bar moves up... applying the wedging action that pulls the vents in tightly against the frame. (c) The vents are pulled in snug, and pressure against vinyl weather-stripping assures a complete seal (like the door of your refrigerator). Automatic locking has commenced. (d) Final "locked" stage of AUTO-LOK operation... hooks have moved in, adding extra locking action near the bottom of the vents, on both sides... without any strain on hinges.

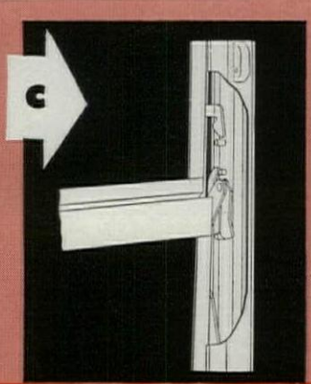
This action is entirely automatic and is accomplished during the normal, effortless turning of the operator handle. There is no destructive force on the hinge points... no periodic adjustments of hinges necessary to close vents tight against frames, and keep them closed tight.

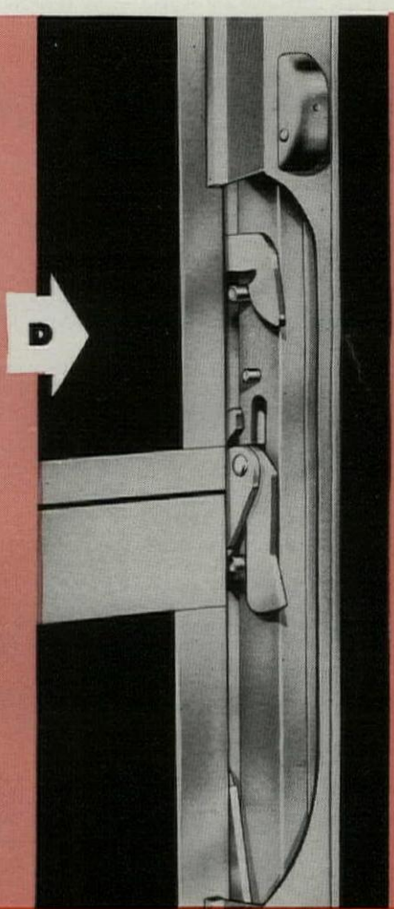
New Center Safety-Lok in convenient center position, pulls bottom vent in tight and securely locks it...provides extra protection against intruders.









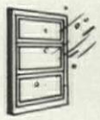


LUDMAN LEADS THE WORLD

ONLY LUDMAN Auto-Lok GIVES YOU ALL 10 OF THESE *Outstanding* FEATURES

FRESH AIR WHILE IT'S RAINING...

No more running to close windows... slanting vents keep rain out when window is open.



WARMER IN WINTER...

Auto-Lok Windows are the *tightest closing windows ever made* by actual laboratory tests. Heat stays in... cold stays out... cutting fuel costs!

COOLER IN SUMMER...

Auto-Lok Windows open widest... almost 90°. The slanting vents help to scoop in even the slightest breeze ... always inward and upward thus eliminating drafts.

CONCEALED HARDWARE

Extra heavy extruded aluminum sections conceal operating hardware. No unsafe, unsightly mechanism exposed to collect dust. Operator does not interfere with drapes, blinds, etc.

CENTER SAFETY-LOK...

A new improved locking feature that securely locks the bottom vent. Center position makes it handier, more accessible. Extra protection against intruders.

EASIEST TO CLEAN...

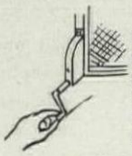
Nothing to lift out... no vents to remove... no gadgets to disengage. Simply open wide and clean all glass from the inside... top vent, too!

FRESH AIR NITE-VENT...

Bottom vent opens slightly for night ventilation, while upper vents remain securely locked... fresh air circulation during bad weather, too!

PRACTICAL BEAUTY...

Narrow horizontal lines and graceful tilt of vents in every open position add distinction to any home... lend themselves to a wider variety of architectural arrangements.



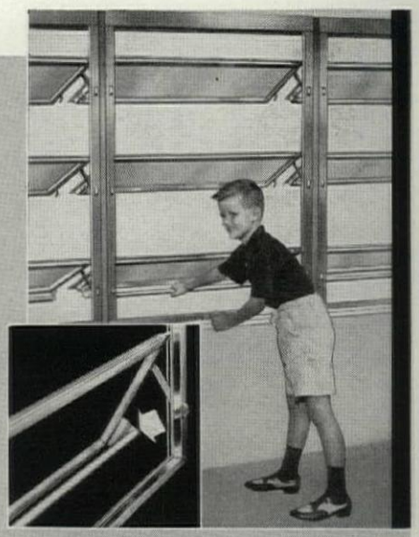
FINGER-TIP CONTROL..

for a lifetime. Perfectly balanced, friction-free mechanism operates window at the touch of a finger. No adjustments ever necessary... never sticks, never rattles!

INTERCHANGEABLE SCREENS AND STORM SASH...

Can be handled all from the inside. Just flip the clips... no tools required. Reduce a day's work to an hour!

New Control Bar



THE NEW LUDMAN *AUTO-LOK* CONTROL-BAR... An example of how LUDMAN SOLVES WINDOW PROBLEMS...

THE *Simplest* OPERATING WINDOW EVER MADE!

Here is a new AUTO-LOK Window especially adaptable for schools and institutions... where extraordinary severe usage makes it advisable to use an operating means that is sturdy yet designed for quick, simple, easy operation. A handsome destruction proof smooth aluminum alloy bar takes the place of the conventional operator... *an effortless push-out or pull-in operates the window!*

Specify Windows on the Basis of Facts

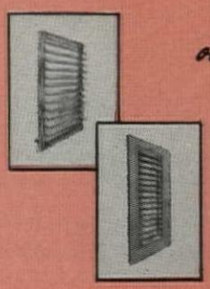
shown by this check chart

Here's proof that Ludman Auto-Lok Windows give you every feature that is important in a window! Here's proof that Auto-Lok Windows are designed and manufactured to give a lifetime of outstanding window service ... *plus a lifetime of trouble-free operation.*

NOTE AIR INFILTRATION COMPARISON FIGURES SHOWN IN THIS CHART... WHICH *PROVE* AUTO-LOK THE TIGHTEST CLOSING WINDOWS EVER MADE BY ACTUAL LABORATORY TESTS!

* Cubic Feet Per Minute per lineal foot of crack perimeter.
** According to Pittsburgh Testing Laboratories.
*** Generally established standards.

FEATURES	Auto-Lok	DOUBLE HUNG	CASEMENT	OTHER AWNING WINDOWS
1. Automatic Locking	✓			
2. Elastomeric Vinyl Weatherstripping	✓			
3. Center Safety Lock	✓	✓	✓	
4. Feather-Touch Operation	✓			
5. Clean outside from inside... top vent too ... Without removing any part of window	✓		✓	✓ Excepting hinged types
6. Delayed Action Opening	✓			
7. Concealed Hardware	✓	✓	✓	
8. Interchangeable *Inside* Screens and Storm Sash	✓		✓	✓
9. Flip Clips for screen and storm sash retention	✓			
10. Weather protection when window is open (ventilation even while it is raining.)	✓			✓
11. 100% Ventilation (90° opening)	✓		✓	
12. AIR INFILTRATION*	0.095**	0.5***	1.0***	0.75***
13. Draft Free Ventilation	✓			✓



other LUDMAN *products*

LUDMAN WINDOTITE JALOUSIES... will turn an old-fashioned porch or breezeway into the *most talked about* room in the house. And in new building construction, their popularity is increasing at an amazing rate.

LUDMAN JALOUSIE DOORS... These beautiful doors bring brightness and light into dark foyers and hallways! 3 doors in one —regular door, screen door and storm door.

LUDMAN ENGINEERING & ARCHITECTURAL PLANNING SERVICE

Ludman Window "know how" can help solve your window problems. Our engineering and planning staff is at your service.

LUDMAN *Corporation* Dept. AF-10
Box 4541, Miami, Florida

LUDMAN Auto-Lok AUTOMATIC LOCKING PATENTED WINDOWS ALUMINUM OR WOOD

IN WINDOW ENGINEERING

TECHNICAL PUBLICATIONS

SCHOOL CONSTRUCTION. Unistrut School Construction. Prepared by College of Architecture and Design, Engineering Research Institute, University of Michigan Press, Ann Arbor, Mich. 64 pp. 11" x 8½"

A handsome graphic summary of a study of demountable steel members for school construction, this book will be an important reference for important school architects. The project described, which included building a mock-up of a bolted frame school (*see* FORUM, Nov. '51), was sponsored by the Unistrut Corp. of Wayne, Mich. in an effort to familiarize designers with attributes of channel framing which are particularly desirable in low-cost schoolhouse construction: durability, expansivity and reusability. Beyond the practical features, the excellent photos and detail drawings attest to the design flexibility —even romantic geometry—of such industrial materials, creatively approached.

CHALKBOARD. Armorply Chalkboard. United States Plywood Corp., Weldwood Bldg., 55 W 44 St., New York 18, N. Y. 8 pp. 8½" x 11"

Sheet steel, porcelain enameled a matte-finish green and bonded to fir plywod, comprises the unique *Armorply* chalkboard described in this brochure. (*See* Product News, AF, Jan. '52.) Complete technical data on the utilitarian and attractive school-building material is included in the literature in addition to some suggestions for using it for desktops and, with magnetic devices, bulletin boards.

ELECTRIC TIME AND SIGNAL SYSTEM. Time Is a Precious Element. The Cincinnati Time Recorder Co., 1733 Central Ave., Cincinnati 14, Ohio. 16 pp. 8½" x 11"

Tucked into a sturdy file folder are specification sheets and illustrated two-color brochures on the manufacturer's line of electric signaling and recording devices. Engineered for schools and other institutions as well as factories, the equipment described ranges from bells, horns and clocks to master-control systems. Wiring and mounting details are shown for each item.

KITCHEN EQUIPMENT. Hotpoint Glamour Line Scale Templates, Form 7000. Hotpoint, Inc. Commercial Equipment Dept., 227 S. Seeley Ave., Chicago 12, Ill. 12 pp. 8½" x 11"

In planning kitchens and cafeterias for restaurants and institutions, these scaled templates of the firm's commercial cooking appliances should prove very useful. Clearly drawn on heavy stock paper, the templates may be traced directly on a layout, or cut out and attached to the plan. If various equipment arrangements are possible, the templates can be cut out, mounted on cardboard and shuffled around until the most suitable scheme is determined.

HEATING. The Finest Industrial Heaters for Your Plant—Thermobloc, Catalogue MGC-10-52. Pratt-Daniel Corp., South Norwalk, Conn. 8 pp. 8½" x 11"

Printed in two colors, the catalogue features a large cutaway rendering of a *Thermobloc* direct-fired heating unit. Various models are illustrated by photographs and line drawings, and dimensions and capacities are listed.

continued on page 242

beautiful homelike interiors . . .

pocketbook-practical decorating . . .

with amazing

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VARLAR gives you an amazing combination . . . the beautiful decorator effects of wallpaper . . . and the world's easiest-to-care-for walls. No other decorating medium solves cost and maintenance problems so completely.

Varlar is functional—resists stains of all kinds! Grease, grime, smoke, ink, crayon, lipstick, food spots, Mercurochrome and countless more, WASH OFF with plain soap and water! And up to 25,000 times without injury to surface or colors.

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There are more than 180 styles, many excitingly new. Unlimited decorative scope for every room, every building . . . in beautiful walls that won't need redecorating . . . just WASHING . . . for years to come.

Find out how PRACTICAL Varlar will be for YOU . . .

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a product of United Wallpaper, Inc.

VARLAR, Dept. AF-102
Merchandise Mart, Chicago 54, Illinois

Please send FREE TESTING SAMPLE and full information on VARLAR Stainproof Wall Covering. I am particularly interested in VARLAR for

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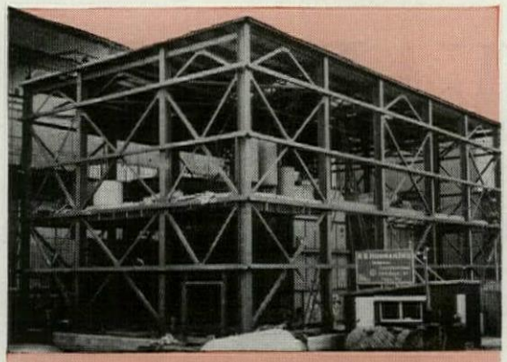
USING LIGHTWEIGHT,

Complete walls of

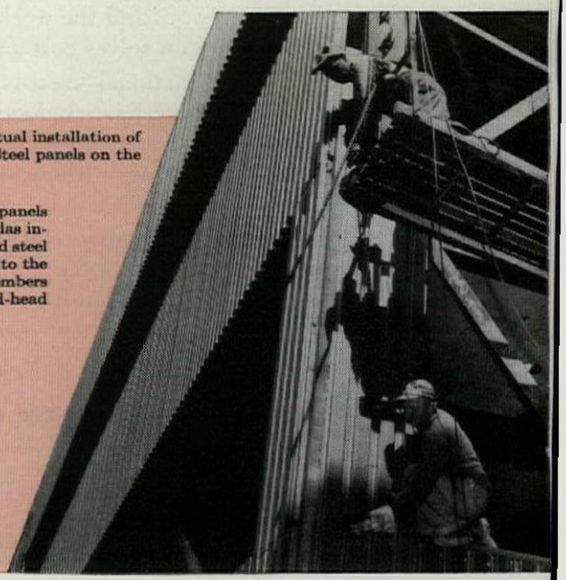


STRUCTURAL STEEL framework of the building, ready for installation of insulated Stainless Steel panels.

PROTECTIVE PAPER covering that kept the panels completely damage-free during fabrication and shipment is removed with a commercial preparation.

ON THE GROUND, panels are drilled for bolts which are used in erection. Two holes are positioned at the top and two at the bottom of each panel.

THE 24" WIDE Stainless panels backed with 1½" Fiberglas insulation and metal-coated steel inner plate are attached to the building's structural members by four ⅜" x 3" round-head Stainless Steel bolts.



TWO MEN handle actual installation of insulated Stainless Steel panels on the building.

MORE than 7,000 square feet of U·S·S 17 Stainless Steel insulated panels form the complete walls of this new building which is an addition to existing steam generating facilities at the jet engine overhaul line at Olmsted Air Force Base, Middletown, Pa.

These Stainless Steel panels were installed by a crew of eight men in only 11 working days. One group of four men removed the protective paper and drilled the panels, and a second group of four drilled the girts and bolted the panels into place.

Quick installation like this—*in any weather*—means much lower labor costs. And that's but a part of the dollars-and-cents advantage of using Stainless Steel panel construction.

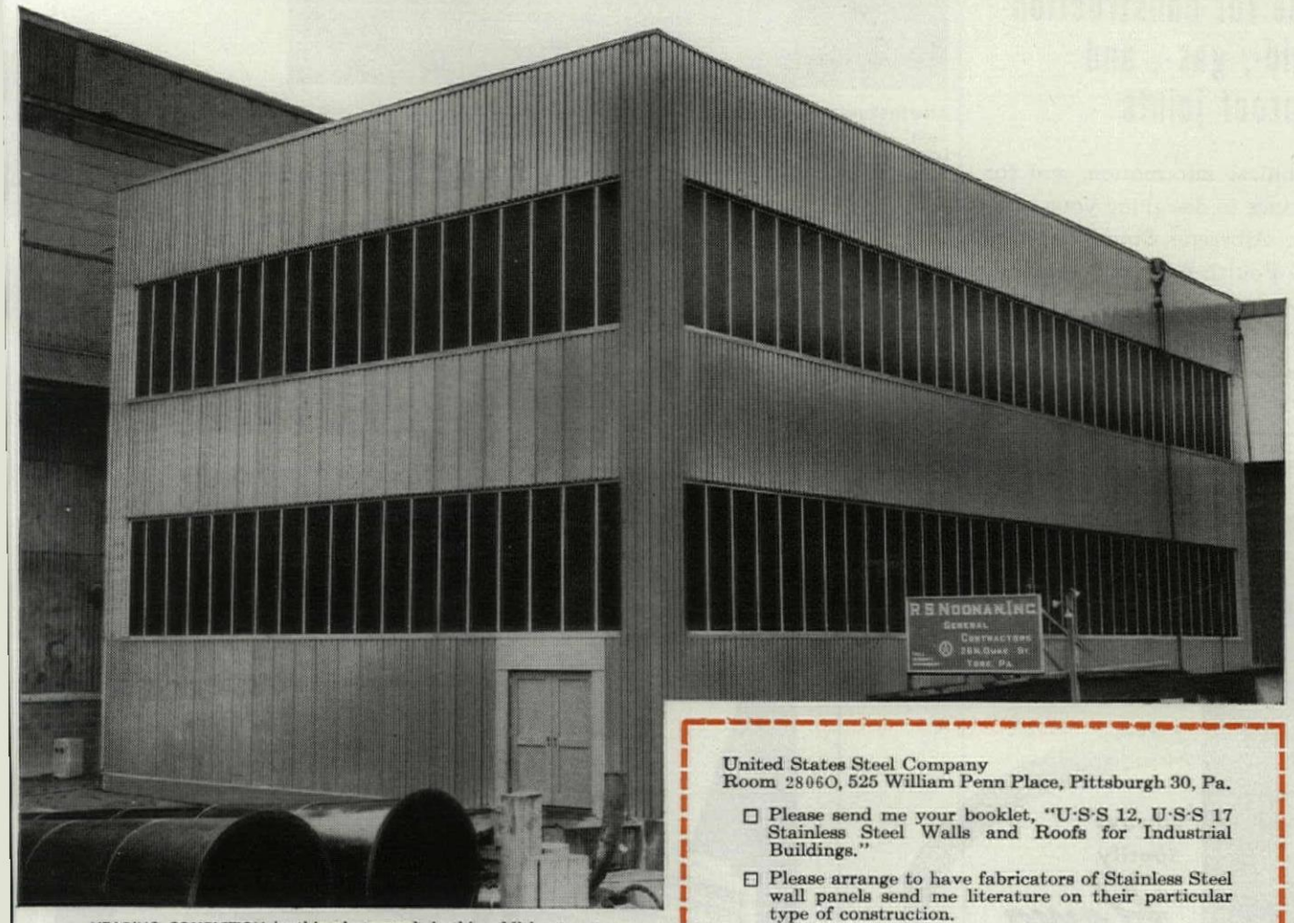
In the long run, the durability and corrosion resistance of Stainless Steel walls, the light weight in comparison to conventional building materials, the low "U" value or heat transmission factor all indicate that the cost-per-year will be lower than many building materials that may have a slightly lower initial cost.

Best news of all is that U·S·S 17 Stainless Steel for walls is available *now* for use on your current projects. You can obtain it without CMP tickets for use on any authorized construction.

No matter what type of building you are designing—factories, mills, warehouses, power plants, service or office buildings—U·S·S 17 Stainless Steel deserves your careful consideration. If you'd like additional information, write for our book, using the coupon below. Remember, United States Steel only produces the Stainless sheet and strip from which panels of this type are made; the panels themselves are fabricated by a number of our customers whose names will be sent you on request.

LONG-LASTING, INSULATED BUILDING PANELS

U·S·S 17 (Type 430) Stainless Steel installed in 11 working days



NEARING COMPLETION in this photograph is this addition to steam generating facilities at Olmsted Air Force Base, Middletown, Pa. The 86½′ by 46′ building is sided with panels of U·S·S 17 Stainless Steel. Architect-Engineer: Gannett, Fleming, Corddry & Carpenter, Inc., Harrisburg, Pa. General contractor: R. S. Noonan, Inc., York, Pa. Stainless Steel panels fabricated and erected by H. H. Robertson Co., Pittsburgh, Pa.

United States Steel Company
Room 2806O, 525 William Penn Place, Pittsburgh 30, Pa.

☐ Please send me your booklet, "U·S·S 12, U·S·S 17 Stainless Steel Walls and Roofs for Industrial Buildings."

☐ Please arrange to have fabricators of Stainless Steel wall panels send me literature on their particular type of construction.

Name..... Title.....

Address.....

City..... State.....

UNITED STATES STEEL COMPANY, PITTSBURGH · AMERICAN STEEL & WIRE DIVISION, CLEVELAND · COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
NATIONAL TUBE DIVISION, PITTSBURGH · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. · UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
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SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

-1252

UNITED STATES STEEL

This Sloane Koroseal Tile Supreme floor provides low-cost, care-free service, beauty and quiet comfort in the display room of the Peoples Gas, Light and Coke Co., Chicago, Illinois.

Underfoot Beauty that Keeps Every Service Promise!

KOROSEAL TILE SUPREME provides luxurious beauty and quiet, underfoot comfort . . . defies heavy traffic . . . saves money through years of service and low-cost care.

A Sloane Koroseal Tile Supreme floor provides greater beauty . . . more service and economy than any other resilient floor made. Its all virgin-vinyl composition has unmatched color-clarity . . . plus unequaled toughness that assures excellent service long after most resilient floors require repair and replacement. Grease, oil, acid, alkalies and strong soaps will not affect Koroseal Tile Supreme . . . the through-and-through colors won't fade or stain . . . it won't crack or break . . . and tests show that its indentation recovery is far superior to any other type of resilient floor.

You save money year after year on maintenance because the nonporous surface of Koroseal Tile Supreme stays beautiful with a minimum of care . . . dirt can't cling to it, or mar the smooth, tough surface . . . soap and water mopping keeps it clean and bright . . . even occasional waxing is optional.

Sloane Koroseal Tile Supreme comes in a beautiful, large range of 18 striking colors—either Marbletone or Crystaltone effect—that create attractive floors to match any décor.

Send for complete Koroseal Tile Supreme details. Write Sloane-Blabon Corporation, Dept. F10, 295 Fifth Avenue, New York 16, New York.

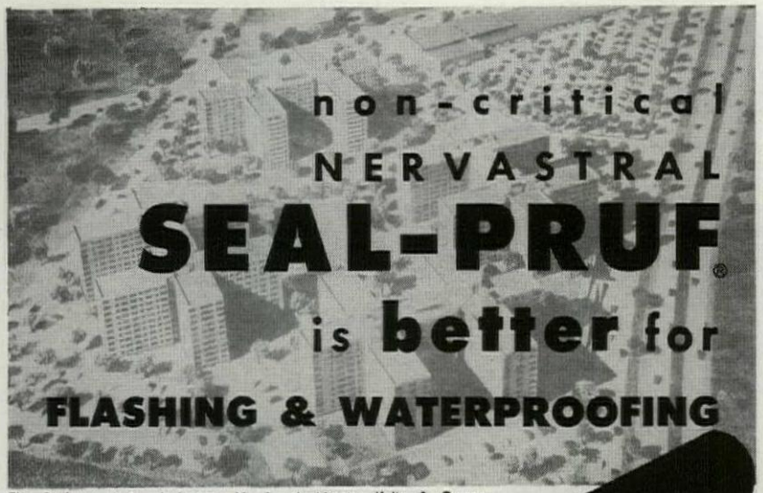
SLOANE Quality PRODUCTS

*Koroseal is a registered trade-mark of The B. F. Goodrich Company.

SLOANE *Koroseal** TILE SUPREME

SLOANE-BLABON CORPORATION • A DIVISION OF ALEXANDER SMITH, INC.

FINELINE • TEXFLOOR • TERANO • KOROSEAL TILE • RUBBER TILE • TREN-FLEX TILE • TRENWALL • TRENTONE



The Parkway Apts., Irvington, N. J. – Architects: Kelly & Gruzen Owners & Builders: George, Maurice & Louis Levin – Newark, N. J. Concrete Construction: Industrial Engineering Co., Inc.–New York, N. Y.

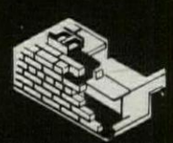
because–

- **It has exceptionally high resistance** to water, weather, water vapor, acids and alkalies, since it is impermeable throughout its entire thickness.
- **It is unaffected by the laitance of Portland cement or concrete**—Retains its excellent, initial waterproofing qualities when in direct contact with these materials.
- **It is extremely versatile**—In addition to waterproofing, it reduces vibration, increases resistance to corrosion, and affords good protection for outdoor insulated ducts, pipe lines, and industrial equipment.
- **It is easy to handle**—Remains flexible and pliable in winter and summer.
- **It is economical**—Reduces labor costs—a superior, yet inexpensive material.
- **Eliminates need for multi-layers**—Under normal conditions one ply of **Seal-Pruf** gives ample protection — is completely waterproof, stormproof, dampproof and mildew resistant.

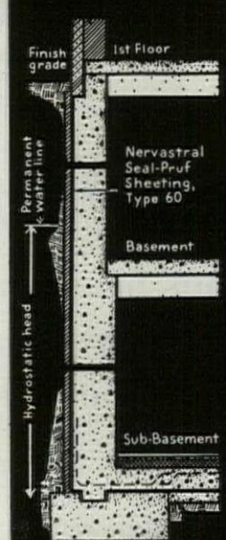
Nervastral **Seal-Pruf** is an impermeable plastic-like sheeting which does not need to be embedded in mastic and is easily installed. It is available in two types: Type #30 is excellent for general construction in the residential housing field—28 mils thickness—rolls 72 feet long—in widths 36", 30", 24", 20", 18", 15", 12", 8". Special widths provided on request. Also available in Type #60 for heavier constructions.

Nervastral is sold all over the country. Use coupon for complete technical information and sample.

PARAPET WALL WATERPROOFING



SPANDREL BEAM WATERPROOFING



MEMBRANE WATERPROOFING

RUBBER & PLASTICS COMPOUND CO., INC.

30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

SEE OUR CATALOG IN SWEET'S

Nervastral Seal-Pruf

REG. U. S. PAT. OFF.

☐ Please send sample of Nervastral SEAL-PRUF and more information.

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Company.....

Street.....

City.....Zone.....State.....

DUR-O-WAL TRUSSED Design

ARCHITECTS everywhere are hailing the economy and performance of time-tested, custom-designed Dur-O-waL . . . the steel reinforcing member that gives masonry walls a backbone of steel.

the Quality plus the Gross Area of the Steel will alone determine your Net Results

Strength comparison	Area	Strength
2¼" Round Rods—55,000 lbs. steel	.0982	5401 lbs.
Standard Dur-O-waL—3 No. 9 Rods, 100,000 lbs. steel	.0518	5181 lbs.
Extra Heavy Dur-O-waL—2-3/16" Rods, 1 No. 9 Rod, 100,000 lbs. steel	.0724	7247 lbs.

With this strength comparison PLUS the added mechanical bond provided by the unique triangle construction and the high tensile strength steel provided in a small area, it is easy to see why Dur-O-waL is the reinforcing member to specify for buildings you design. Cedar Rapids Block Co., Dur-O-waL Div., 651 12th Ave., SW, Cedar Rapids, Ia.; Dur-O-waL Products, Inc., P. O. Box 628, Syracuse 1, N. Y.

modern control of interior doors

RIXSON invisible UNI·CHECK

Rixson Unichecks are widely accepted as the modern closer for interior doors in hospitals, schools, commercial buildings and institutions. Every door is under full control . . . gently brought to a quiet close after each opening. No mechanism, arms or hinges are visible . . . achieving the trim simplicity of modern design. Concealed in the firm rigid floor, Unichecks cannot be tampered with, or collect dust and dirt.

shallow . . . concealed in the rigid floor

replaces bulky surface types...

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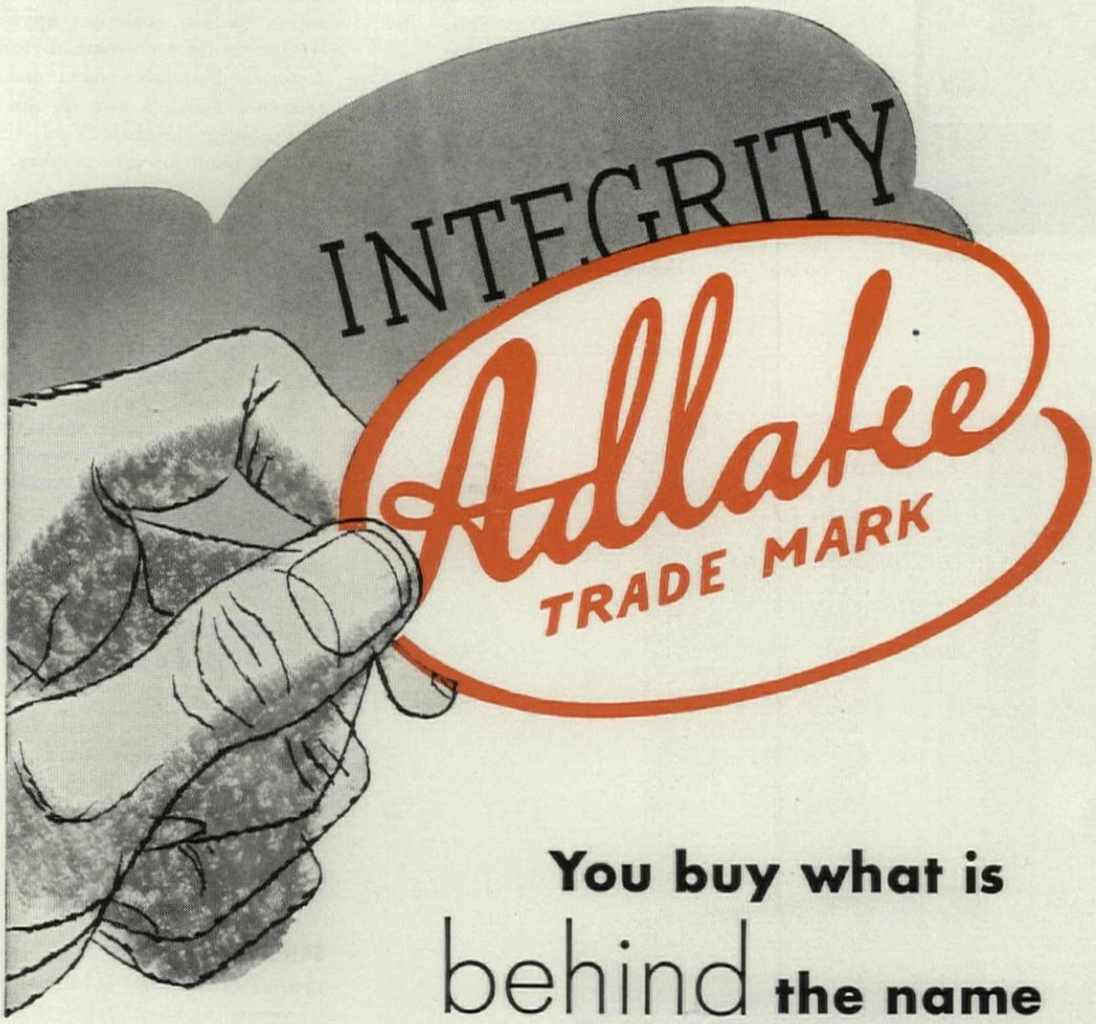


You buy what is behind the name

When you buy an ADLAKE product, you receive something with it that never shows up on an invoice . . . the integrity of the manufacturer.

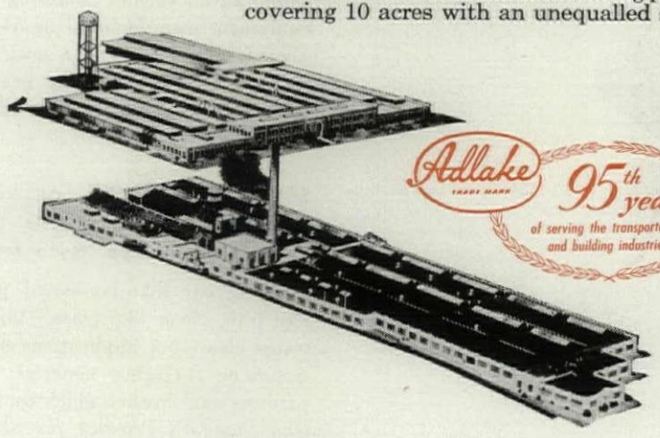
Integrity is made up of many things. In the case of The Adams & Westlake Company, it's a combination of

• **Experience** Almost a century of manufacturing know-how is behind each ADLAKE product.

• **Facilities** A modern manufacturing plant covering 10 acres with an unequalled staff of specialists to maintain the high level of ADLAKE workmanship.

• **Good Faith** ADLAKE's policy has always been to keep faith with its customers. For that reason, no effort is spared to make sure that every purchaser gets precisely what he bargained for and that he is always satisfied.

This integrity is an integral part of every ADLAKE Aluminum Window . . . as architects, builders and managers of schools, hospitals and commercial buildings all over the nation can testify!



Adlake TRADE MARK 95th year of serving the transportation and building industries

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New York • Chicago

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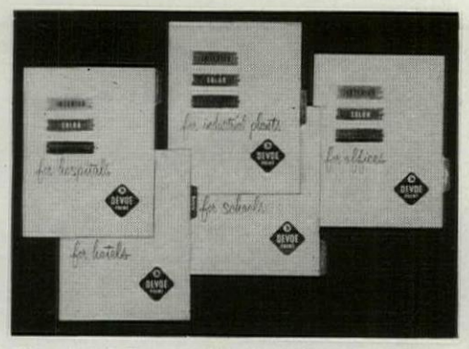


Five new folders on interior painting schemes

TECHNICAL PUBLICATIONS

COLOR. Interior Color Suggestions—Schools, Industrial Plants, Hospitals, Offices, and Hotels. Devoe & Reynolds Co., 787 First Ave., New York 17, N. Y. 100 pp. 9" x 11"

Psychologists, lighting experts and designers are winning the battle to get "institutional" colors out of institutions, and more pleasant and functional schemes in. Displaying cooperation beyond the call of manufacturing, paint company Devoe & Reynolds has prepared this series of handsome folders which contain numerous appropriate color treatments for every type of room in schools, factories, hospitals, offices and hotels. The reference booklets also discuss briefly general problems involved in selecting tones and types of paint for various areas.

SOUND SYSTEMS. Specifications on DuKane Sound Equipment and Flexifone Intercom. Dukane Corp., St. Charles, Ill. 120 pp. 8½" x 11"

A new line of intercom and sound equipment for schools, factories, hospitals and commercial buildings is detailed in this comprehensive set of specification sheets. According to the eight-page introductory brochure, DuKane equipment may be expanded or altered quite simply to meet job requirements. All components carry the Underwriters' Laboratories' seal of approval.

STAINLESS STEEL. Stainless Steel Curtain Walls—Progress Report on Methods. Allegheny Ludlum Steel Corp., Pittsburgh 22, Pa. 22 pp. 8½" x 11"

Clearly illustrated by structural detail drawings which explain the application of stainless steel in curtain walls, the booklet brings the reader up to date on current hanging and attachment methods for this lightweight building material.

SCHOOL PLANNING. The School Planning Laboratory. School of Education, Stanford University, Stanford, Calif. 16 pp. 8½" x 5½".

A new and gratifying relationship between education and industry is revealed in this folder on Stanford University's School Planning Laboratory. Neither an architectural exhibit nor a demonstration of structural principles, the laboratory is a center for advanced research in education where graduate students can learn just what the physical tolerances of a child are. These future school administrators are trained to help architects plan classroom environments favorable to normal child development and maximum education advancements. Building materials and equipment manufactured by 54 firms are displayed in the lab and a scale model classroom is used for studying heating, lighting, color and other factors that affect the learning process.

SCHOOL FURNITURE. GE Textolite School Desk Tops. General Electric, Chemical Div., Pittsfield, Mass. 4 pp. 8½" x 11"

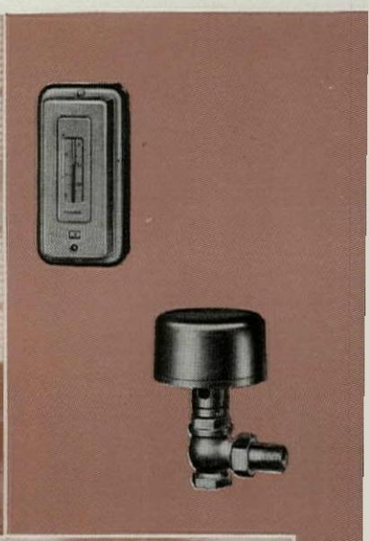
Pointing out that laminated plastics "wear like iron, clean like glass," this folder illustrates classroom applications of *Textolite*, a melamine surfacing material. Available in patterns and finishes which conform to *American Standard Practice for School Lighting* requirements for light reflectance on school desk and tabletops, the hard plastic is said to cut maintenance costs.

Armstrong's De Luxe Asphalt Tile offers distinctive floor beauty and unmatched durability in its price class. Its handsome swirl marbleization is produced by an exclusive manufacturing technique. This process also interlocks the fibers and binders in many directions, giving the material exceptional strength and flexibility.

Employees' Lounge, Lever House, New York City
Skidmore, Owings & Merrill, Architects
The Raymond Loewy Corporation, Interior Design

ARMSTRONG'S ASPHALT TILE

ARMSTRONG CORK COMPANY • LANCASTER, PENNSYLVANIA



Lincoln Elementary School and Classroom, Mt. Prospect, Ill.
Architects & Engineers:
Childs & Smith and T. Maseng & Associates
Contractor: Plonsker Engineering Co.

Some of the Many Installations of

POWERS *Pneumatic Systems of* Temperature Control

In Contemporary Elementary Schools

These five new modern schools and thousands of others represent one of our nation's most valuable assets. Present and future returns on this investment are incalculable.

Maximum returns on the investment in automatic temperature control have been assured by the selection of Powers equipment. Regardless of outside weather, classrooms are held at comfortable temperatures automatically. Teachers and pupils are more efficient in rooms that are not OVER-heated. Also, important fuel savings will pay sizeable dividends year after year.

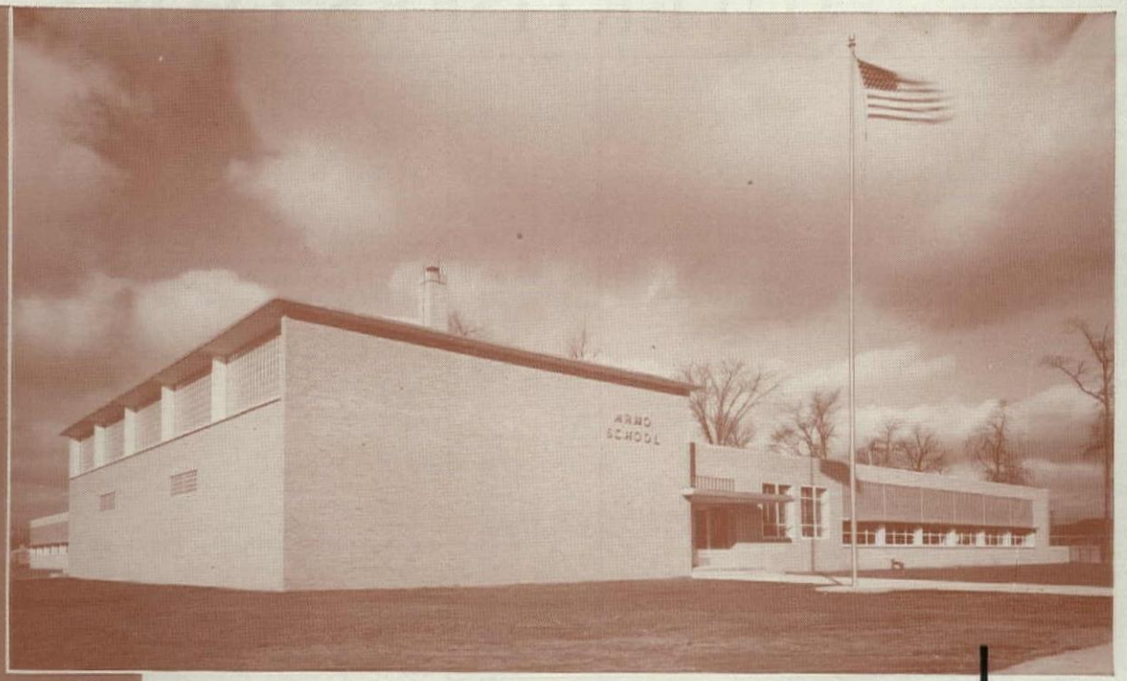
When you want a temperature control system that usually gives over 25 years of reliable-low-maintenance-cost service consult Powers nearest office. There's no obligation.

Established in 1891 • THE POWERS REGULATOR COMPANY • SKOKIE, ILL. • Offices in Over 50 Cities

McCandless Elementary School, Hutchinson, Kansas
Architect: McCrackin & Hiett
Engineers: Horwath, Scott & Kinney
Contractor: Stevens, Inc.

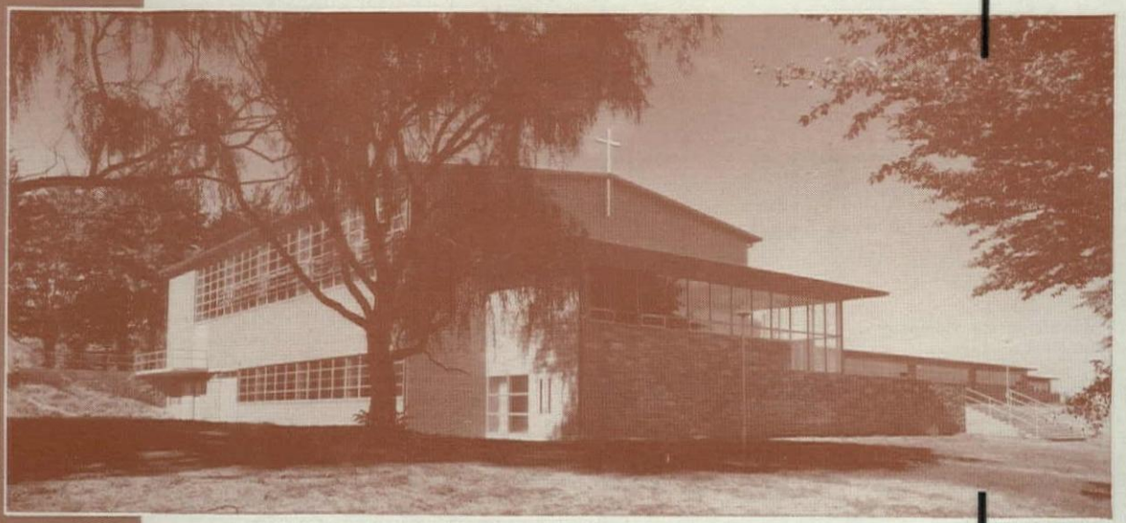
Modern Controls
for All Types of
Heating and Ventilating
Systems

(a74)



POWERS

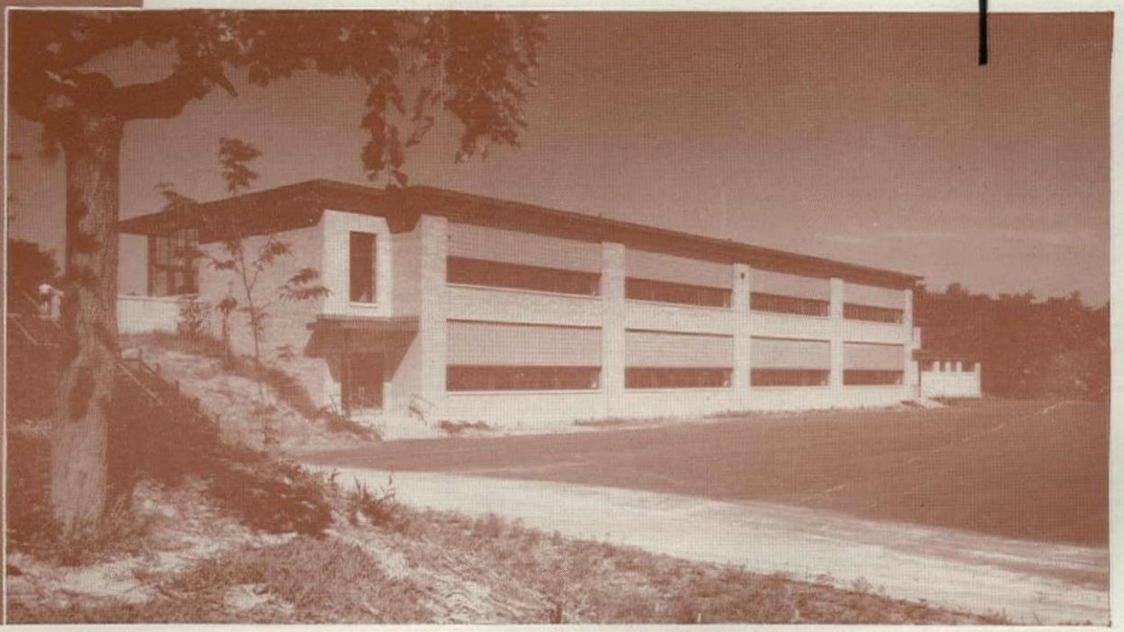
Above: Arno Elementary School, Allen Park (Detroit), Mich.
Architects & Engineers: Eberly M. Smith & Associates, Inc.
Contractor: Page Plumbing & Heating Co.



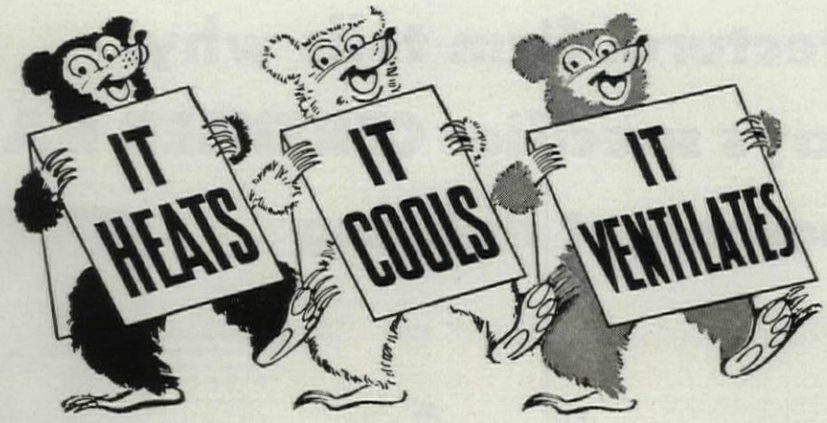
St. Therese of the Child Jesus Parochial School, Philadelphia, Pa.
Architect: James A. Nolen, Jr., Herbert H. Swinburne, Associate
Engineer: A. Ernest D'Ambly • Contractor: Charles J. Williams

POWERS

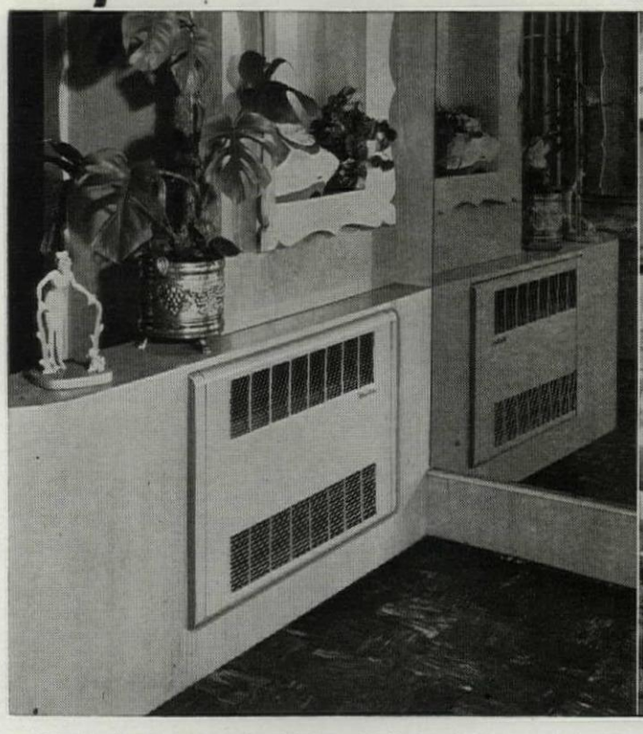
North Street Elementary School, Rittman, Ohio
Architect: Spahn & Barnes • Engineer: Vincent Eaton
Contractor: Kraus Plumbing & Heating Co.



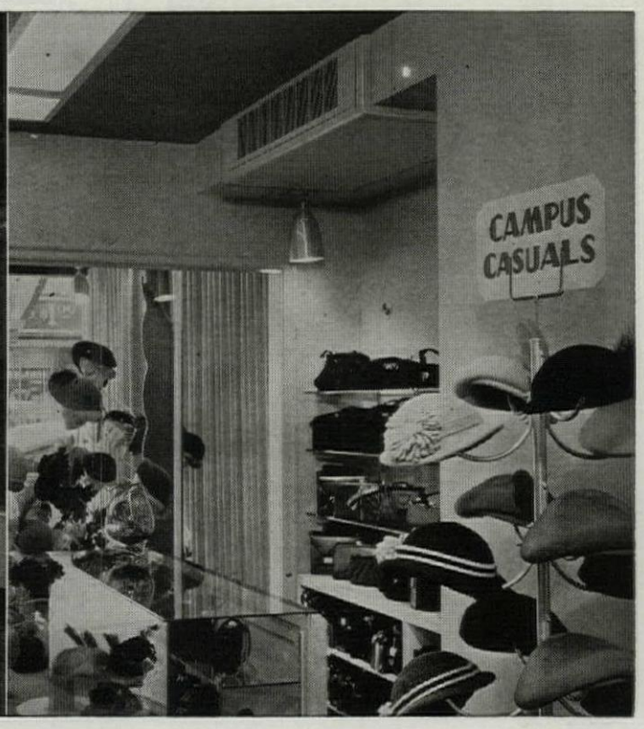
ADVERTISERS INDEX



Yes, Modine Cabinet Unit gives you ALL 3!



TYPE FF for heating only. Basic unit designed for exposed or recessed installation. Floor, wall or ceiling mounting.



TYPE BT for heating, cooling (in floor-mounted position), ventilating, with or without ducts. Floor, wall or ceiling mounting.

IF you need economical equipment for heating, cooling and ventilating—and the expense of unit ventilators or air conditioners is not warranted—you'll find the perfect answer in Modine's newly expanded line of Cabinet Units.

Here, in a single unit, you can get quick, positive, quiet distribution of heated or cooled air . . . with or without ducts. Inexpensive accessories permit introduction, filtering, heating and distribution of fresh outside air for ventilation.

Whether it's new construction or modernization work—Modine Cabinet Units harmonize perfectly with any interior. You can choose from five different models—some for heating with steam or hot water only . . . others for heating plus cooling with chilled water.

Next time you have a heating application for commercial, institutional or public buildings—check **Modine** Cabinet Units. They're the low-cost answer to year 'round comfort.

Modine **CABINET UNITS**

Tear out coupon and mail today **for your free copy of 28-page, profusely illustrated Bulletin 552. Or see your Modine representative listed in your classified phone book.**

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Please send me immediately a free copy of 28-page Bulletin 552, "Modine Cabinet Units."

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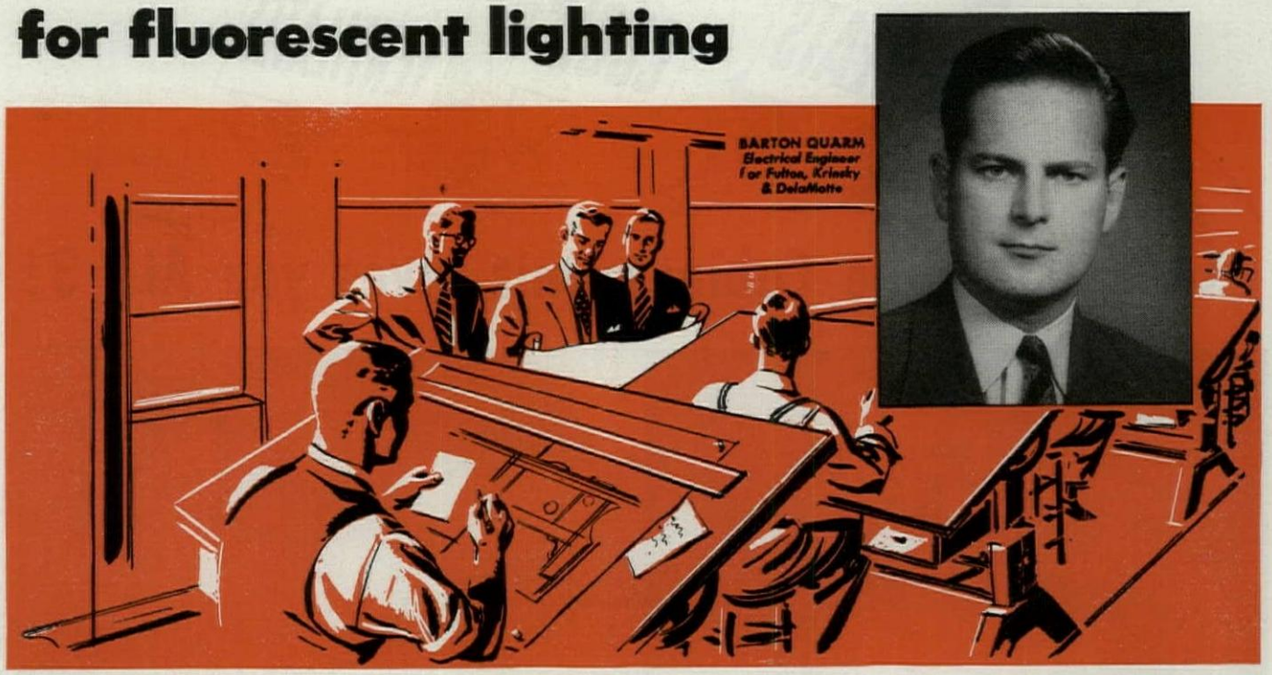
C-1166

Architectural firm tells why it always specifies CERTIFIED BALLASTS for fluorescent lighting



Fulton, Krinsky & DelaMotte, prominent Cleveland architectural firm specializing in schools, requests CERTIFIED BALLASTS in *all* fluorescent fixtures they specify.

Mr. Barton Quarm, their electrical engineer, says, "We always specify Certified Ballasts because we want trouble-free installations. Client satisfaction is assured by using Certified Ballasts."

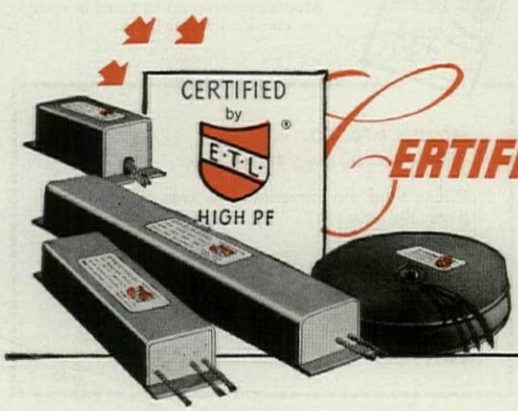
More and more CERTIFIED BALLASTS are being specified and used because CERTIFIED BALLASTS assure—

Full Lamp Life **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.



CERTIFIED BALLAST MANUFACTURERS

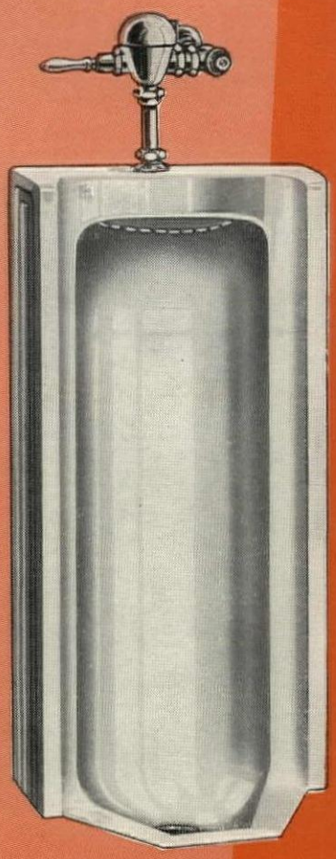
Makers of Certified Ballasts for Fluorescent Lighting

2116 KEITH BLDG., CLEVELAND 15, OHIO

ELJER *finest quality*

to meet every requirement

Every month more Eljer Plumbing Fixtures and Brass Goods are being installed in industrial, commercial, institutional and government buildings . . . because, Eljer design combines functional beauty with ease of cleaning features that cut maintenance costs. The long life and trouble-free quality of every Eljer Product is guaranteed *second to none*. Manufactured in efficient modern plants, Eljer Vitreous China, Enameled Cast Iron and Brass Products are *quality controlled* by rigid laboratory tests and meticulous manufacturing inspections. Engineering and design service is geared to meet special fixture requirements. See Eljer's Condensed Catalog in Sweet's File, Architectural, and Sweet's File for Builders, or write Eljer Co., Ford City, Pa., for specific information.



E-8001-V—Vitreous China Stall Urinal. Straight front. Use singly or in battery. Width, 18". Height overall, 42". Top spud ¾".

Delta E-3344-B—Vitreous China Lavatory with Eljer Fittings. Concealed overflow under front anti-splash rim. Sizes, 24" x 20"; 20" x 18".

Service Sink E-2700-M—Acid Resisting, Enameled Cast Iron with iron trap standard to floor or wall, as required. Depth inside: 13". Sizes over-all: 22" x 18", 24" x 20".

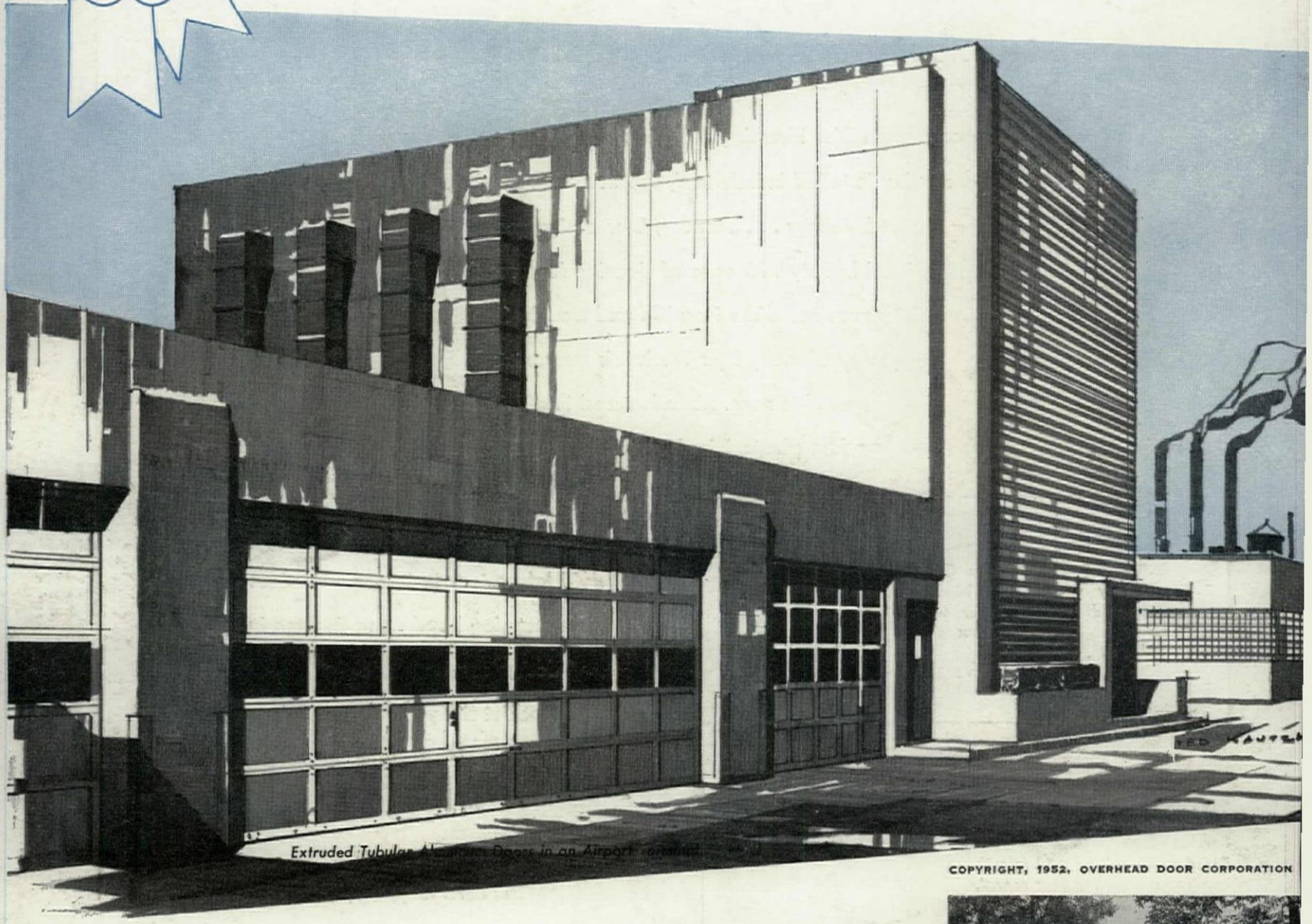
uburn E-6710-V—Syphon-jet ll closet with elongated rim. 2" top inlet for flush valve, as ecified. Large trapway and 3" al. Projection from wall, 25".

Millson E-4980-B—Vitreous China Drinking Fountain with Chrome Plated Fittings. Non-squirting bubbler, automatic volume control, self-closing stop, regulating valve. 1¼" trap. Size, 12" x 14".

Quality THROUGH AND THROUGH

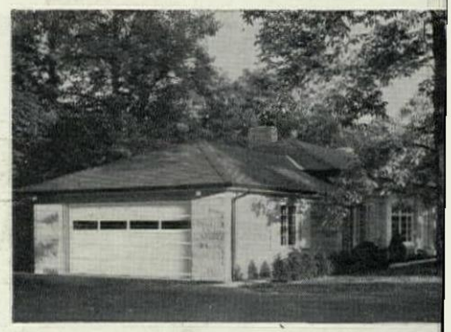
ELJER

First to create a sectional, upward-acting garage door–The "OVERHEAD DOOR"–192



Extruded Tubular Aluminum Doors in an Airport Hangar

On December 4, 1921, the *first* sectional, upward-acting garage door was completed by the founders of Overhead Door Corporation. Since then we have devoted our entire time and expanding production facilities to the manufacture of doors that give *blue-ribbon performance* . . . always!



SPECIFY THE "OVERHEAD DOOR

Home-owners will thank you for this qua door backed by Nation-Wide Sales-Instal tion-Service.

FREE PRINTS FOR FRAMING!

Write us if you would like an 11" x 17" print of the above pencil drawing by Ted Kautzky, acknowledged master in the field of pencil renderings.

THE "OVERHEAD DOOR" TRADE MARK

YOU CAN BE SURE IF IT BEARS THIS TRADE MARK

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