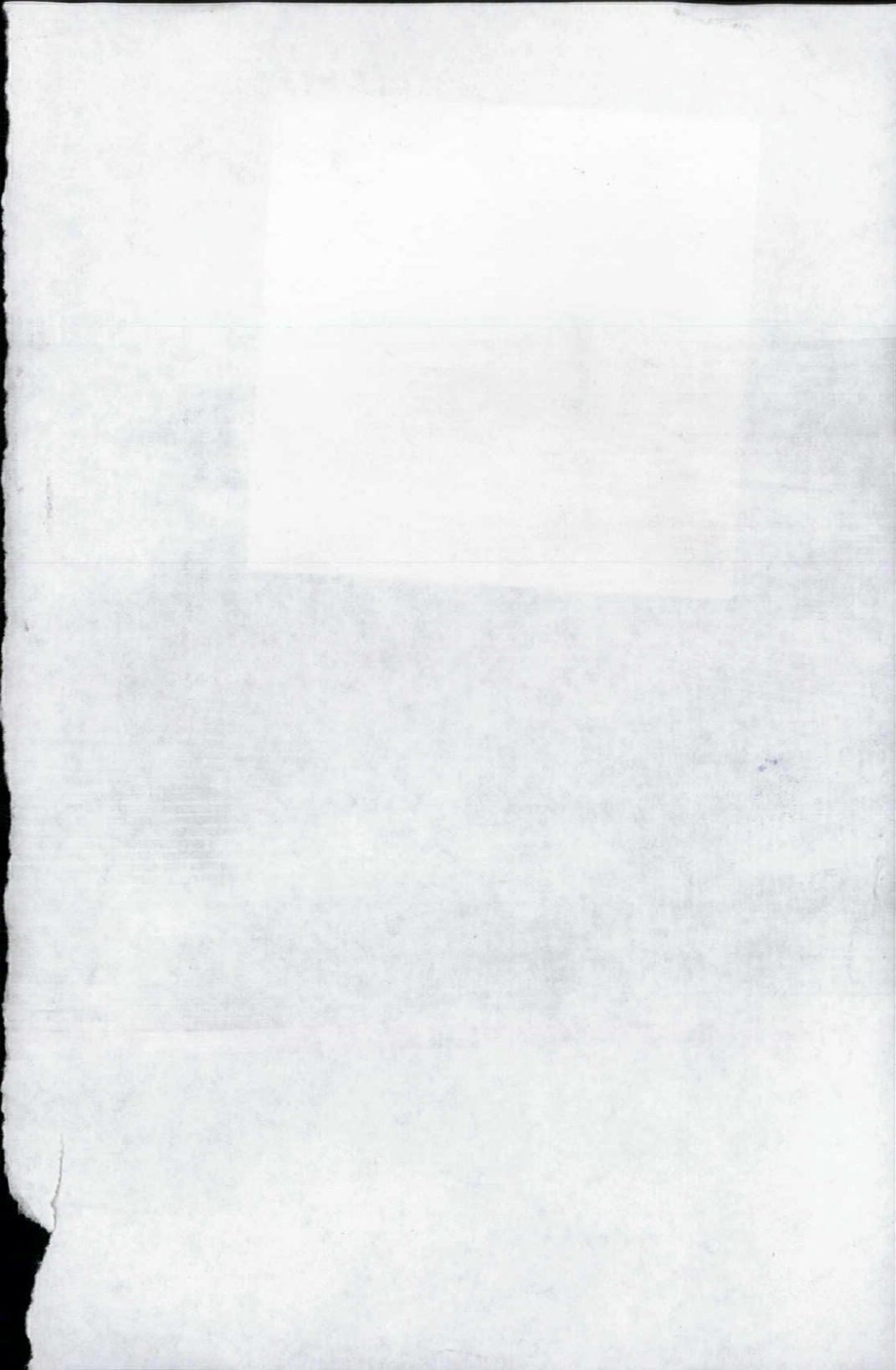
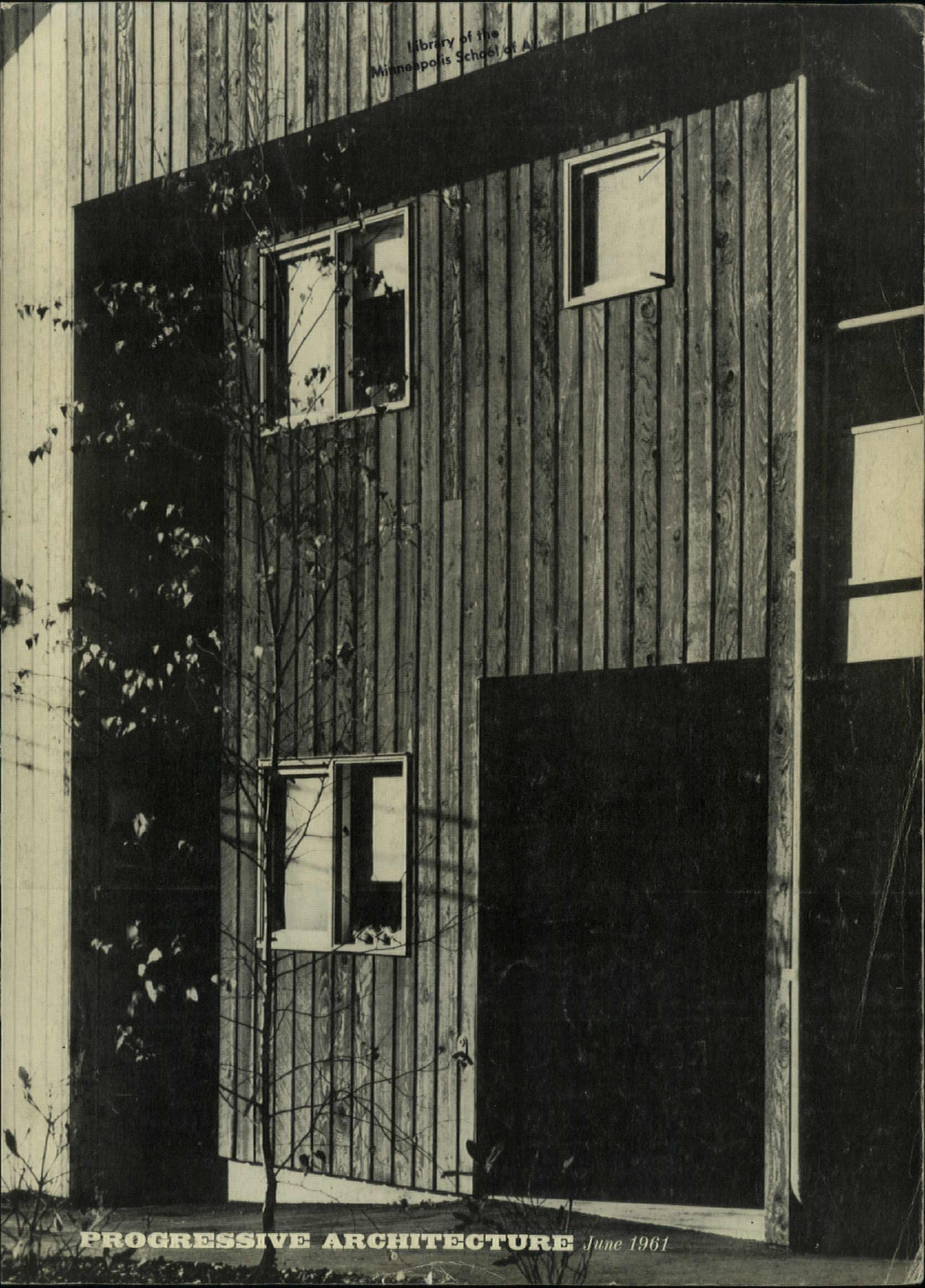


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Pattern Illustrated
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Blend Koroseal with natural materials

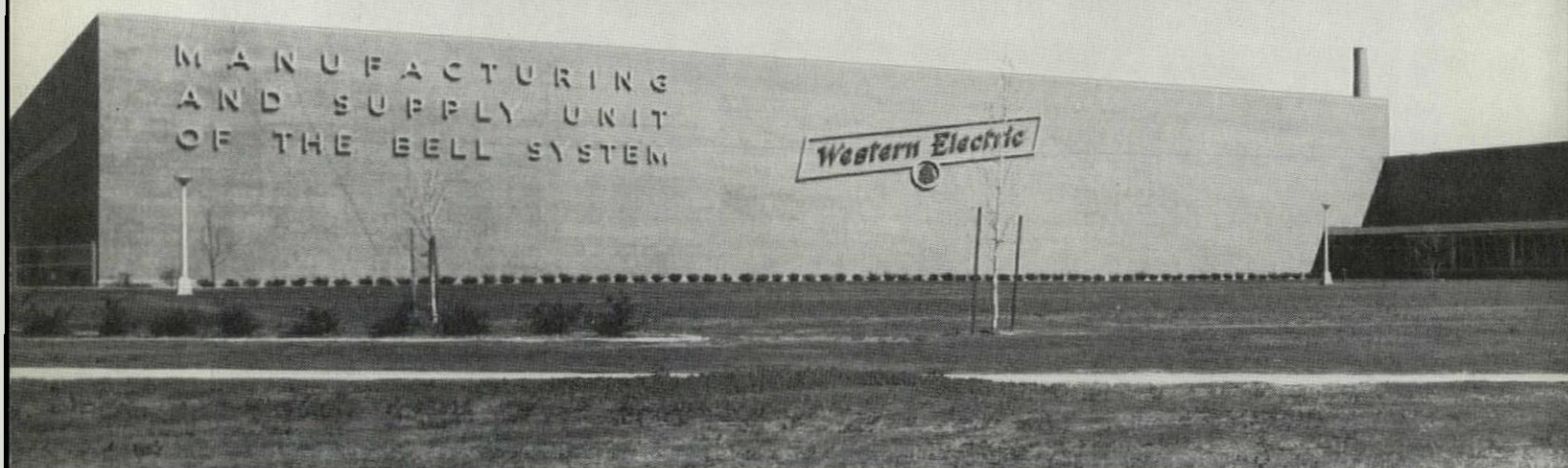
When you're designing with wood, marble, brick, tile—or whatever materials, you'll find a color and a texture in beautiful Koroseal vinyl wall covering that blends. And you'll know that the walls will keep their rich beauty, be easy to care for.

Koroseal keeps its bright appearance for years, resists scuffs and stains, and is flame-retardant. Washable with soap and water, Koroseal coverings eliminate the need for frequent redecorating, thereby cutting maintenance expense. On your next project, design with Koroseal in mind. For swatches and other information, write Dept. PA-6, *B.F. Goodrich Industrial Products Company, Marrietta, O.*

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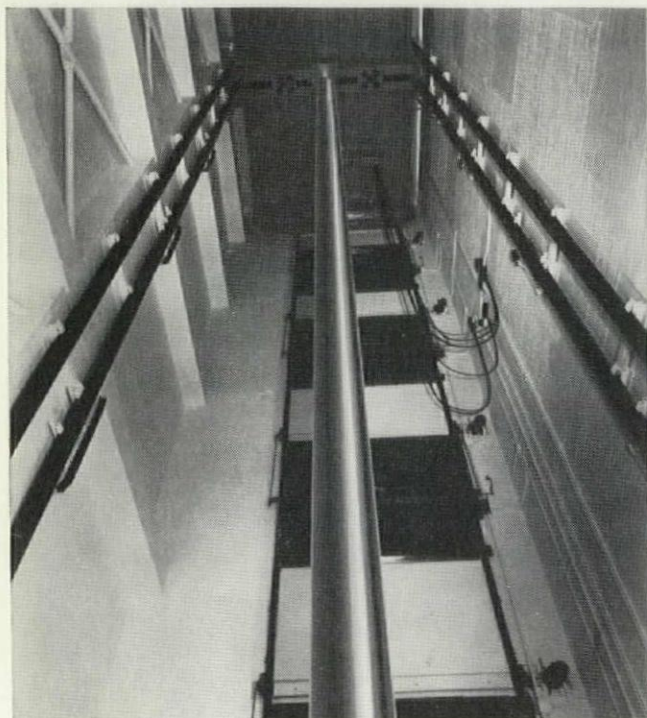
Now 56 Rotary Oildraulic



189 Rotary lifting and loading

In five years the number of Rotary Oildraulic Elevators installed in plants and offices of Western Electric Company has more than doubled. The 56 Rotary Elevators and 133 other Rotary-manufactured lifting and loading devices now in service testify both to the growth of this manufacturing and supply unit of the Bell Telephone System and the acceptance of Rotary products.

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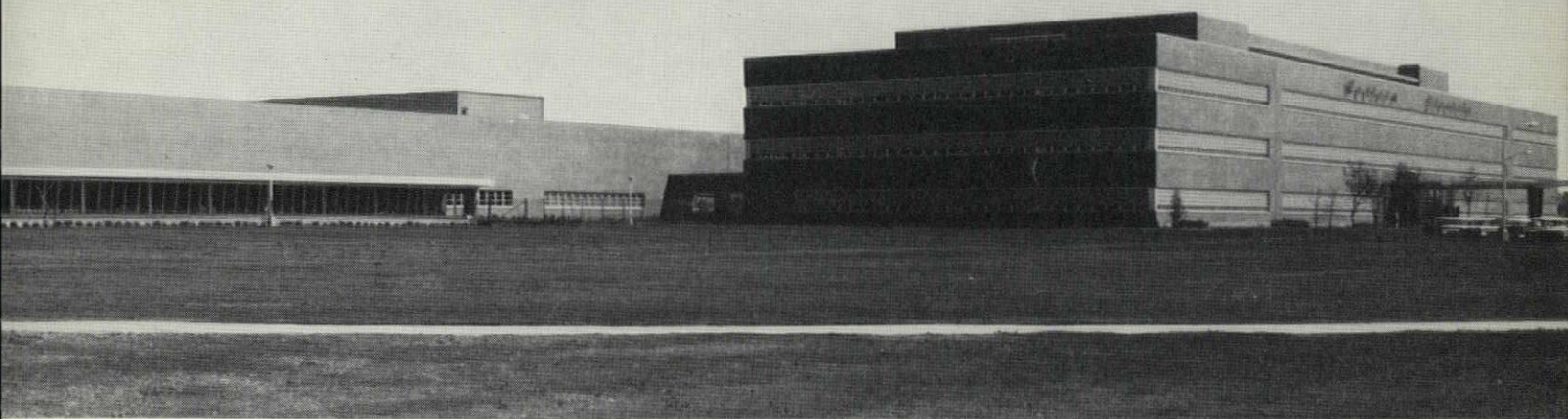


View from below of Rotary Oildraulic Elevator located in Western Electric's Hawthorne Works at Chicago shows powerful hydraulic plunger which moves and supports car. This elevator has a capacity of 32,000 lbs., speed of 150 feet per minute.



OILDRAULIC® ELEVATORS

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Five Rotary Oildraulic Elevators installed in this Kansas City Plant by Franchised Distributor Elevator Sales & Service, Inc., Kansas City

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Design freedom is only one of several reasons why Rotary Oildraulic Elevators are the best choice for buildings to six stories. Shaft walls can be lighter since they do not have to support heavy equipment at the top; this means construction economies, sometimes as great as 25%. Flexibility in machine room location often results in more effective use of building space. The relative simplicity of the Rotary Oildraulic system reduces maintenance requirements and contributes to operational economy and dependability.

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Horseshoes at 30 feet?



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unusual test, but

Durcon[®]

Laboratory Sinks
took it!

To prove ruggedness of Durcon Laboratory Sinks, one laboratory conducted a test, admittedly unusual, in which steel horseshoes were pitched at and into the sink from a distance of thirty feet. The sink survived with only a few scratches which were quickly smoothed out with emery paper and an oily cloth.

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THE DURIRON COMPANY, INC.
DAYTON, OHIO



THIS MONTH IN P/A

The World's Largest Architectural Circulation

65 NEWS REPORT

Hawaii: A new capitol for the Island State . . . Nervi roofs a field house at Dartmouth . . . AIA Convention memorabilia . . . SOM expresses structure in research building . . . Stylish city building for Los Angeles . . . Le Corbusier in the U.S.A. . . . Catching up with Oud: recent works . . . Sugar-cube exhibit design for Century 21 . . . Pittsburgh lift installed . . . PRODUCTS: New form for fluorescent lighting . . . MANUFACTURERS' DATA.

137 CONTENTS

138 EDITORIAL FEATURES

P/A features a 30-page article on the variety of approaches to designing campus buildings today; six significant new structures are discussed: a science building, two schools of architecture, and three residential complexes . . . Leslie Johnson attempts to redefine the meaning of form in architecture in terms of concepts drawn from psychology and philosophy . . . Georgi Minervin, in an article on Soviet town planning, construction techniques, and architectural aesthetics, states his opinion of new directions in Soviet architecture today . . . A discussion of the work methods of Yan Joors, the Belgian-born craftsman who produces large, hand-loomed tapestries that architects use to achieve an added dimension in their design work . . . A description of—and a suggested solution for—the optic problems an architect is likely to encounter in his job.

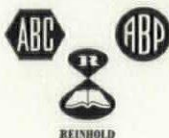
TECHNICAL ARTICLES: Report on a prototype prefab structure . . . Problem of foundation heave in multistory buildings . . . Techniques for controlling jet noise . . . Plastics used to augment product properties . . . MECHANICAL ENGINEERING CRITIQUE . . . SPECIFICATIONS CLINIC.

262 JOBS AND MEN

266 DIRECTORY OF PRODUCT ADVERTISERS

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Volume XLII, No. 6





Armstrong Acoustical Fire Guard can cut your ceiling construction costs up to 50%

From one construction project after another comes proof that Armstrong Acoustical Fire Guard can sharply reduce your ceiling construction costs.

Acoustical Fire Guard Cuts Material and Labor Costs

Acoustical Fire Guard eliminates the need for intermediate fire protection and, at the same time, provides a finished acoustical ceiling. One entire construction operation becomes unnecessary. Since you don't pay for an intermediate ceiling, plus a separate acoustical ceiling, your savings in material and in labor are substantial. And there are many other important advantages to specifying Acoustical Fire Guard.

Saves Up to Two Months' Construction Time

Before the introduction of Acoustical Fire Guard, a time-consuming "wet" procedure was used to install most fire-retardant ceilings. But Acoustical Fire Guard can be installed in a completely dry operation. Other trades, such as carpenters, painters, and floor finishers, can be on the job at the same time as the acoustical contractor. This not only saves you additional money, but weeks of time as well. Commercial buildings can earn revenue sooner. Schools and institutions can open up to two months earlier.

Two Types of Acoustical Fire Guard

In the Helmut Jacoby rendering you see on the opposite page, both types of Acoustical Fire Guard are used. The bowling alley's refreshment counter and passageway have a ceiling of Acoustical Fire Guard 12 x 12 inch *tile*. The playing area ceiling uses the new 24 x 48 inch *lay-in unit*. The lay-in unit is also available in a 24 x 24 inch size, and both sizes are available in Classic or Fissured designs.

New Lay-In System Is First of Its Kind

The exposed grid system for lay-in units makes installation fast and economical. The cost in many cases *drops below* a combination of conventional fire protection and an acoustical ceiling. Yet this system gives you a UL beam protection rating of 3 hours. Joints in the grid are designed to *expand* without buckling under intense heat, holding the units in place.

Call Your Armstrong Acoustical Contractor

For the complete story about either Acoustical Fire Guard tile or the new lay-in system, phone your Armstrong Acoustical Contractor. (He's in the Yellow Pages under "Acoustical Ceilings".) Or, call your nearest Armstrong District Office. Or write to Armstrong Cork Co., 4206 Watson Street, Lancaster, Pa.

HERE ARE SOME OF THE UL RATINGS FOR ACOUSTICAL FIRE GUARD MOST FREQUENTLY USED TO MEET FIRE CODE REQUIREMENTS:

Fire Guard Lay-In	
Floor and Ceiling Design	Rating
#13	2 hours (Beam—3 hours)
#21	2 hours
#8	1½ hours

Fire Guard Tile	
Floor and Ceiling Design	Rating
#31	4 hours
#21	4 hours
#8	2 hours
#7	1½ hours
#9	1 hour

Architectural design and
rendering by Helmut Jacoby

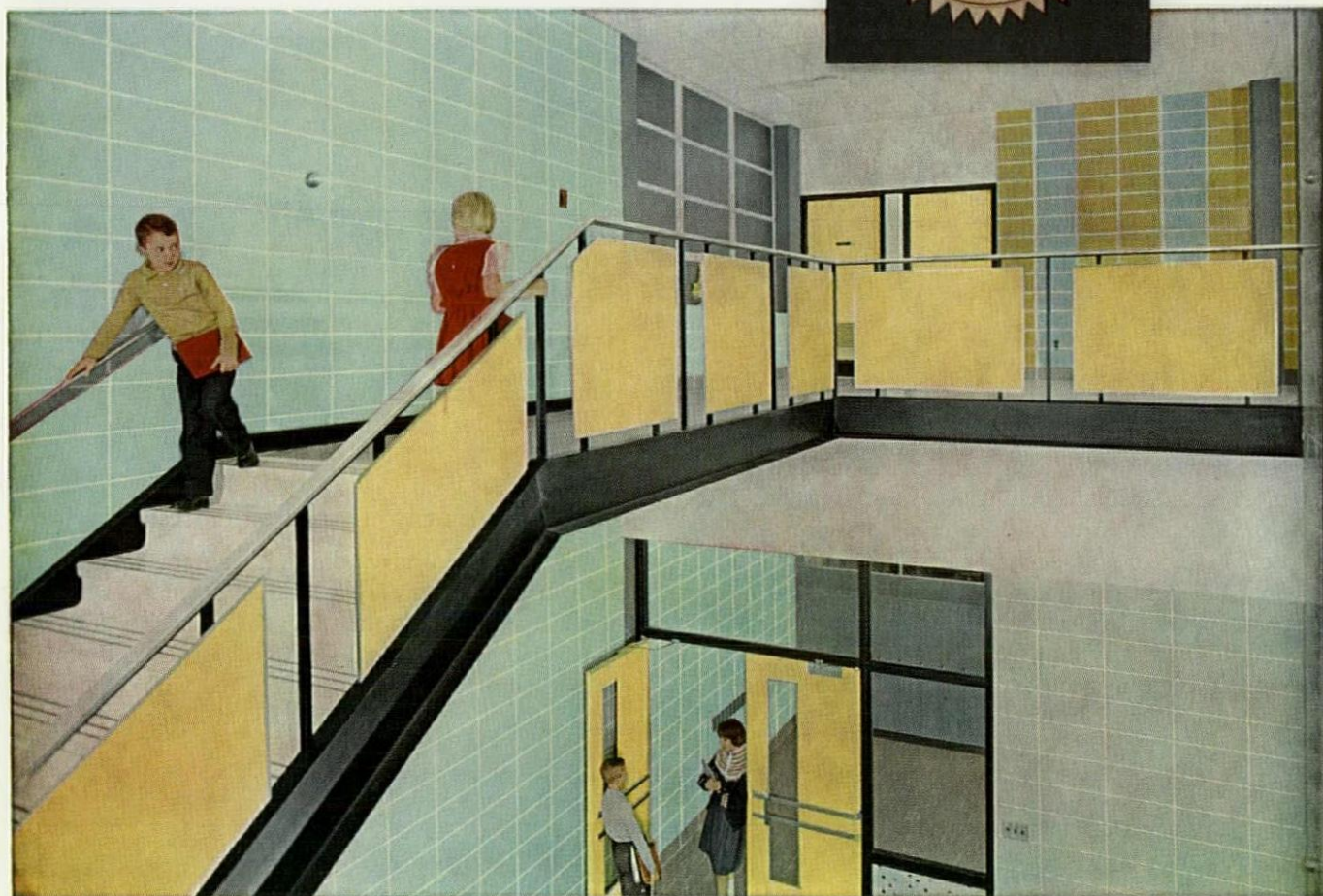
Armstrong ACOUSTICAL CEILINGS

First in fire-retardant acoustical ceilings

SCHOOL WALLS:

where beauty alone
is not enough

AN ARKETEX
GALLERY DESIGN



MASON CONTRACTOR: MAC FARLANE CONSTRUCTION COMPANY

...build with **ARKETEX** structural facing tile

From the new McNair Elementary School near Detroit — this Arketex Gallery Design was chosen for the expression it achieves within the disciplines of cost-saving Straight-Line Design. Note the enriching and economical use of lighter materials above the door lintels — the nature-rich tile tones from the Arketex selection of 36 contemporary Direction Colors. There's an extra measure of fire safety here, too. An Arketex wall will withstand fires that would quickly ignite most applied wall surfaces.

"ELEMENTARY SCHOOL
PUPILS PUT WALLS
THROUGH A SEVERE TEST."

Read what Architect R. S.
Rokicki says on the next page.



Stylon

CERAMIC
TILE

the deliberately lavish bathroom

... offers unusual new ideas, a unique new Stylon convenience — all for your individual adaptation! It's a double bathroom, with separate shower and sunken tub ... twin sinks ... twin toilet rooms. It uses Stylon high style ceramic tile extravagantly. And it features the new drip-free molded ceramic counter edge, "V-cap" ... ideally suitable also for industrial and commercial sinks.

Note also: the recessed towel closet, the dropped ceiling and sky windows.

Designed by Alfred Browning Parker, F.A.I.A. Color Planned by Lee Childress. Tile Contractor: Midland Tile Company. Room size 10'8" x 18'. Bathroom floor, tub and side walls: Stylon unglazed porcelain ceramic mosaic Brandy blend. Back wall: Creme de Mocha bright glazed wall tile; special one-inch glazed decorative inserts by Lee Childress. Drip-free counter: Stylon's Redondo "Wear-Ever" tile with V-Cap edge, Fawn color. Won't spot, rot, stain, cut, burn or wear out.

SEND TODAY FOR STYLON'S NEW HOME COLOR PLANNER

36 complete coordinated color schemes, created by Stylon and famed color consultant Lee Childress, to aid in your selection and creative use of color as it applies to ceramic tile. Use this coupon to obtain your Color Planner, and literature on Stylon's new "V-Cap" counter edge ... both free of charge, of course!

For more information, circle No. 380

STYLON CORPORATION ☐ Please send me Stylon's new Home Color Planner,
Dept. 81 Milford, Mass. ☐ Literature on Stylon's new V-Cap counter edge.

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City.....Zone.....State.....



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- They supply samples that show available sizes, colors, patterns, and textures of brick and tile units; keep the architect informed on the many new clay products which flow from industry technology.
- They supply constantly-updated information and literature on wall types appropriate to specific design problems; provide data on thermal, acoustical, fire and moisture resistance, and

other technical properties of walls built of clay products.

- They maintain high technical competence, acquired or maintained largely via industry schooling, constant liaison with producers, and knowledge of local conditions.

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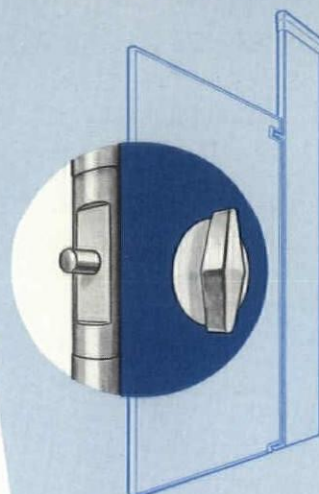


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Lowest "IN-PLACE" Cost

Sanymetal's completely flush design makes possible lower costs all along the line. Integral, factory-installed hinge brackets; concealed flush latch and recessed flush mounted hinges mean far faster, easier installation on the job site.

This unique flush design offers long, service-free life and lowest possible maintenance costs.

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Exclusive concealed latch offers smooth, maintenance-free operation. Working mechanism is completely concealed to greatly facilitate installation and cleaning.

Sanymetal®
 world's leading
 producer of toilet partitions

1721 Urbana Road, Cleveland 12, Ohio



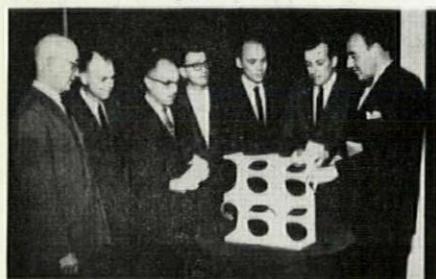
Nameplate identifies every compartment

"For information turn to reader service card Circle No. 302"

New Forms in Sculptural Walls And Facings

Modules by Arts For Architecture, Inc., Create Unique Three-Dimensional, Free-Standing Structures And Deep-Textured Walls

Arts For Architecture, Inc., formed just a few years ago in order to produce and market decorative and functional modular elements that would be consonant with the spirit of contemporary architecture, Arts for Architecture, Inc. has already made some important contributions to the architectural and building trades. Aware of the problems of the architect and designer, Arts For Architecture, Inc. has explored new directions, culminating in the manufacture of art forms that are (1) unique in today's array of available products; (2) sufficiently flexible for use in a broad range of exteriors; (3) economically priced and available within reasonable delivery periods. Outstanding among the products introduced by AFA are its Sculptural Pierced Walls, designed exclusively for the firm by Erwin Hauer, noted young Austrian sculptor. Already one design in the Sculptural Pierced Walls series—Design #5—has won the accolade of the Industrial Designers Institute, having been singled out in national competition as one of the three outstanding industrial designs of the past year.

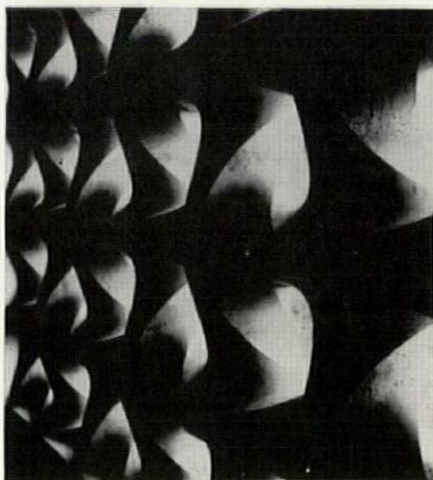


Presentation of I.D.I. Award

The Sculptural Pierced Walls, now available in four distinctive designs, are made by the repetition of the basic three-dimensional modules shown here. These modules build up into freestanding structural screens that represent a truly remarkable adaptation of sculptural form to architectural function. Acting simultaneously as light-diffusers and as integral decoration for larger structures, they offer to the eye of the observer a magical union of light and rhythmic forms, changing continuously with changes in illumination and with the angle of vision.

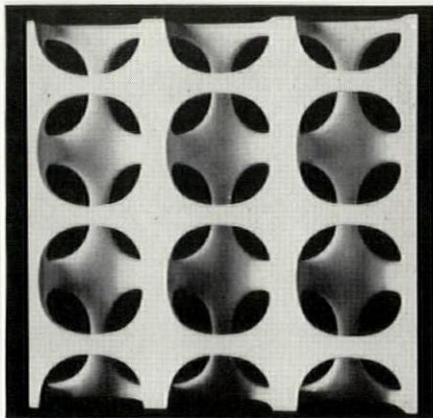


Erwin Hauer's I.D.I. award winner, Design #5 at Vassar's Chicago Hall designed by Schweikker and Elting.



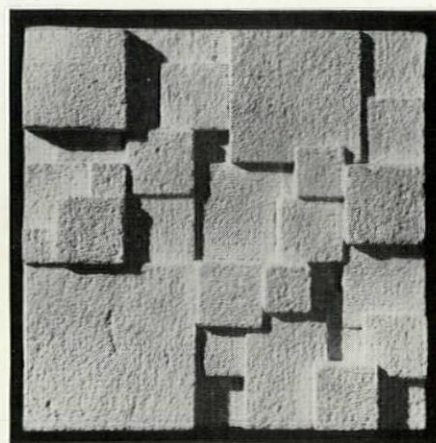
Design #2
Vienna Chapel Installation
by Erwin Hauer

Another Arts For Architecture product, Yucatan Stone Sculpture, enables the architect to create an endless variety of stone facings for interior and exterior walls. Made in 19 three-dimensional designs, Yucatan blocks, each 12 by 12 inches and approximately 2 inches thick, may be combined in repeat or mural-type arrangements, limited only by the designer's imagination. Yucatan blocks are made of concrete reinforced with heavy gauge galvanized wire mesh, averaging about 8½ pounds each in weight. They are cement gray in color, but may be painted in any color, or may be ordered from Arts For Architecture in special non-fading colors at a small additional charge. Yucatan is virtually maintenance-free, adaptable to every type of installation, both commercial or non-commercial, large or small.



Hauer Design #5-4

The Sculptural Pierced Walls and Yucatan Stone Sculpture are only two of Arts for Architecture's outstanding collections of modular decorative materials. AFA also designs and imports a comprehensive range of architectural



Yucatan Design K



The Americana Hotel, Miami Beach, designed by Morris Lapidus. Main Lobby wall of Yucatan.

tiling products from Italy. Ceramica Venezia, a series of glazed and semi-matte ceramic tiles, includes three new raised surface patterns in 2-inch square tiles: Garda, Orta, and Iseo, each available in 9 colors. The raised surface series also includes the Brazil Tiles, ¾" x 1½", which are available in 10 colors. All the Ceramica Venezia raised surface tiles are designed to create larger surface patterns through the repetition of the basic motif.

Another significant new import at AFA is Ravenna Marble Mosaics, roughly textured squares and rectangles of unpolished marble of ¾" x ¾", in a variety of colors, mounted on netting in 1-foot squares for easy application.

Catalogs and detailed information on Sculptural Pierced Walls, Yucatan Stone Sculpture, Ceramica Venezia, and Ravenna Marble Mosaics are available from Arts for Architecture, Inc., 134-12 Atlantic Avenue, Richmond Hill 19, N. Y. We suggest you write or call today, and consider these materials for your next commercial, institutional or residential installation.

WHO LOOKS AT THE ROOF?



CLUBHOUSE, YONKERS RACEWAY, YONKERS, N. Y.
Architect: Lionel K. Levy
Roofing Contractor: Munder-Sobel & Kraus Corp.
Ruberoid Specifications: Special Bitumen Spec. 202A, 203A

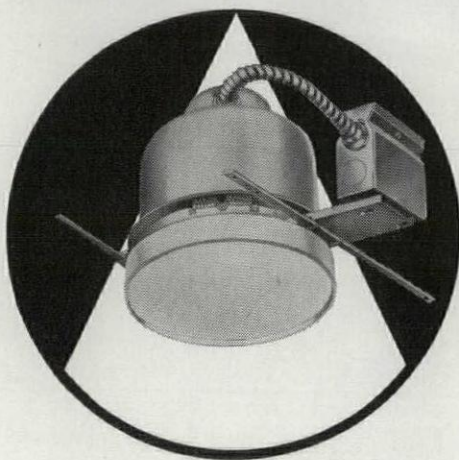
No one looks at this roof now...because a dependable Ruberoid built-up roof was specified. A Ruberoid roof built up with Ruberoid Special Roofing Bitumen, expertly applied by a Ruberoid approved roofer, assures years of weather-tight, maintenance-free service. For your next project, be sure to look to the finest in roofing—specify Ruberoid.

For full information, get your copy of the industry's most complete built-up roofing specification manual. Write today to: The RUBEROID Co., P. O. Box 129, New York 46, N. Y.

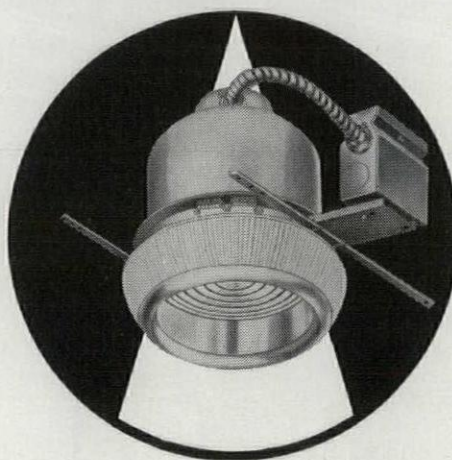
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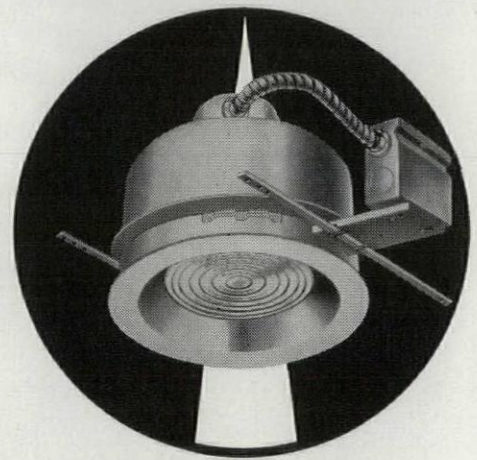
DOWNLIGHTING EFFECTS



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FLOATING LENS

LIGHT

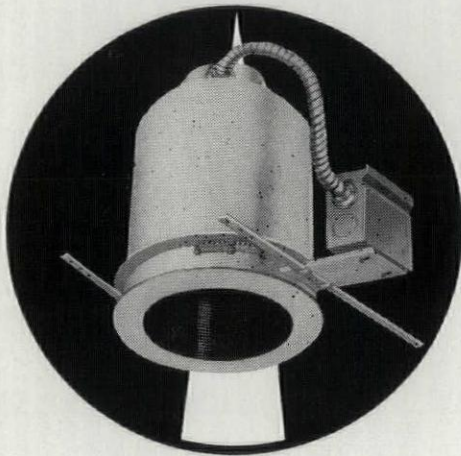
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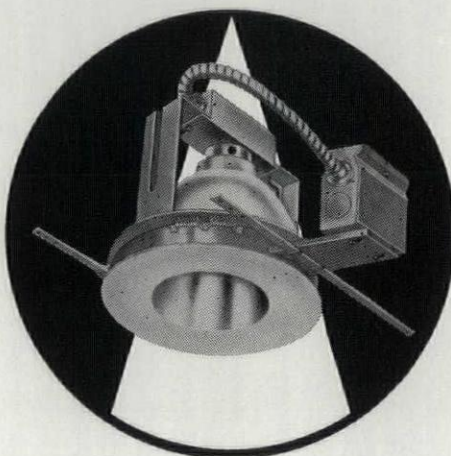
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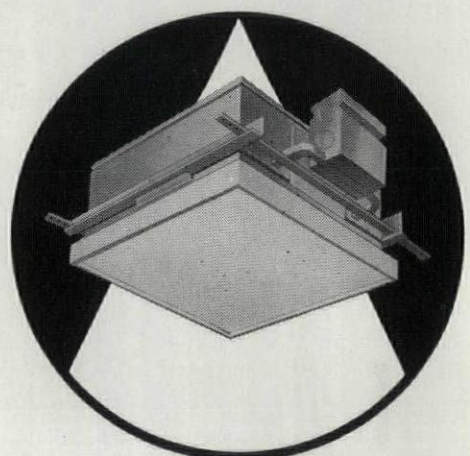
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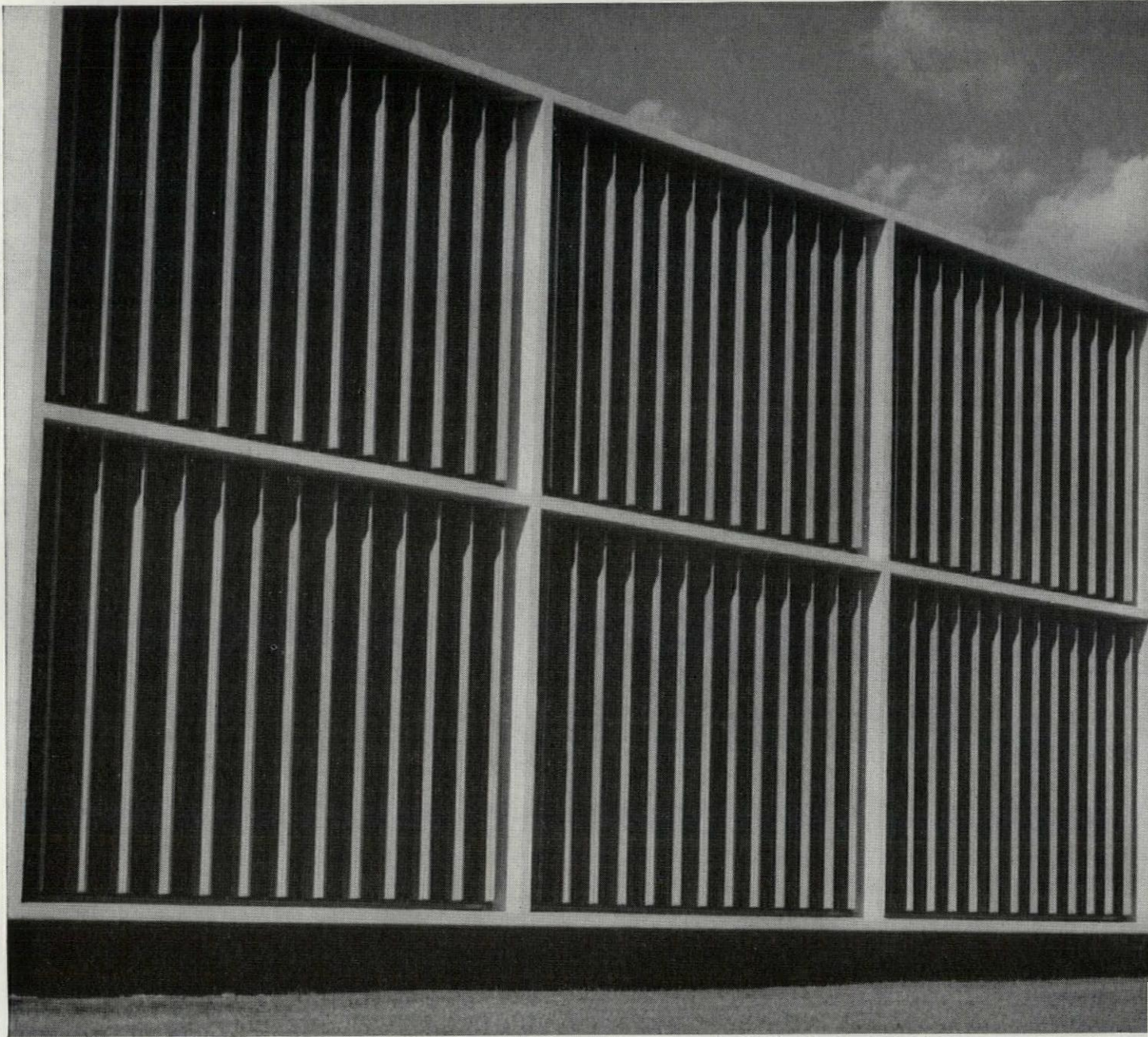
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The Arkla Gas air conditioning unit uses the same gas-fired boiler that heats in winter to cool in summer.

As the Building grows, the ARKLA

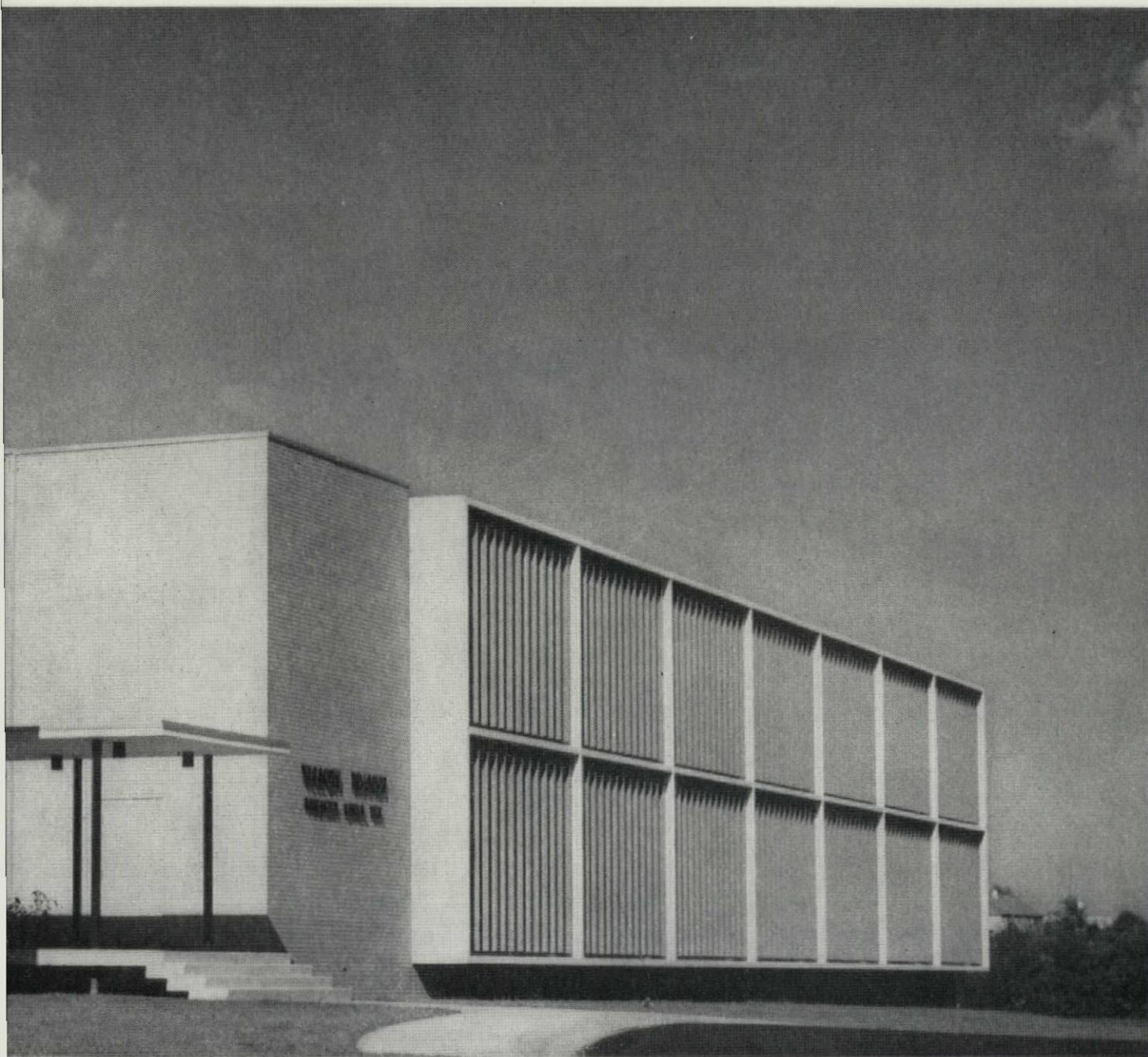
The headquarters building of Yellow Transit Freight Lines, Kansas City, Missouri, was designed to take a third story without major alterations. That's why they chose Arkla gas cooling units... a system that can "grow" quickly and at low cost.

When the building expands, they'll just add an Arkla unit. They go on the line right next to the rest, using the same basic piping — and steam from the same gas-fired boiler that energizes all the Arkla units.

The present cooling system includes five 25-ton Arkla Gas

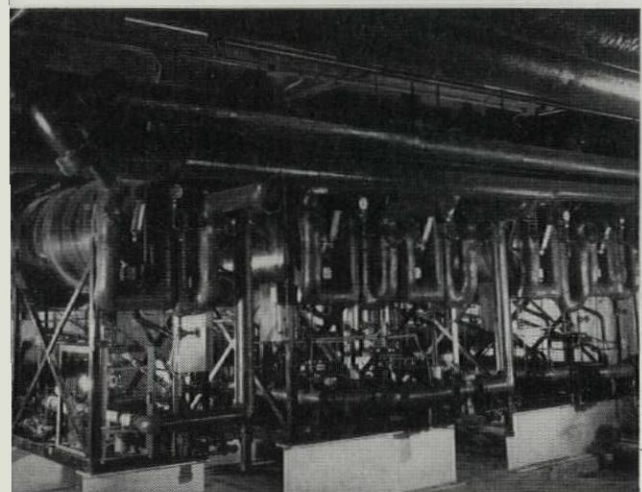


*Architect: Folger & Pearson;
Mechanical Contractors: Troug & Nichols.*



Modern gas cools and heats this headquarters building of Yellow Transit Freight Lines in Kansas City, Missouri.

GAS COOLING system grows with it



Absorption Water Chillers. These versatile units use steam from the gas-fired boiler to provide chilled water for comfort cooling. The same boiler heats in winter. And thrifty gas keeps fuel costs low.

For specific information on Arkla gas air conditioning, call your local Gas Company. Or write Arkla Air Conditioning Corporation, General Sales Office, 812 Main Street, Little Rock, Arkansas. *American Gas Association.*

FOR HEATING & COOLING...GAS IS GOOD BUSINESS!



For increased cooling capacity, at low cost, additional Arkla units can be installed.



LIFETIME GOOD LOOKS—Scheduled for completion by mid-1961, New York's United Engineering Center will provide 260,000 square feet gross area for 18 engineering bodies. Exterior of Nickel Stainless Steel

and glass will always be easy to maintain. Architects: Shreve, Lamb & Harmon Associates. General Contractor: Turner Construction Company. Nickel Stainless Steel fabricator: Moynahan Bronze Company.

Why engineers choose Nickel Stainless Steel for their own United Engineering Center

Engineers and architects know how well Nickel Stainless resists pitting and corrosion . . . how its high strength-to-weight ratio allows reduction of gauge thickness—without loss of strength—to make it competitive in cost with less durable architectural metals.


They know, too, that because it is solid metal—corrosion-resisting all the way through—Nickel Stainless holds its beauty even in industrial atmos-

pheres. Its surface stays so smooth that rainfall alone helps keep it clean.

These reasons explain why window frames, louvers, mullions and column covers will be made of Type 302 Nickel Stainless. And they also explain why Nickel Stainless was chosen in combination with masonry and glass to achieve striking effects for lobby and entrances.

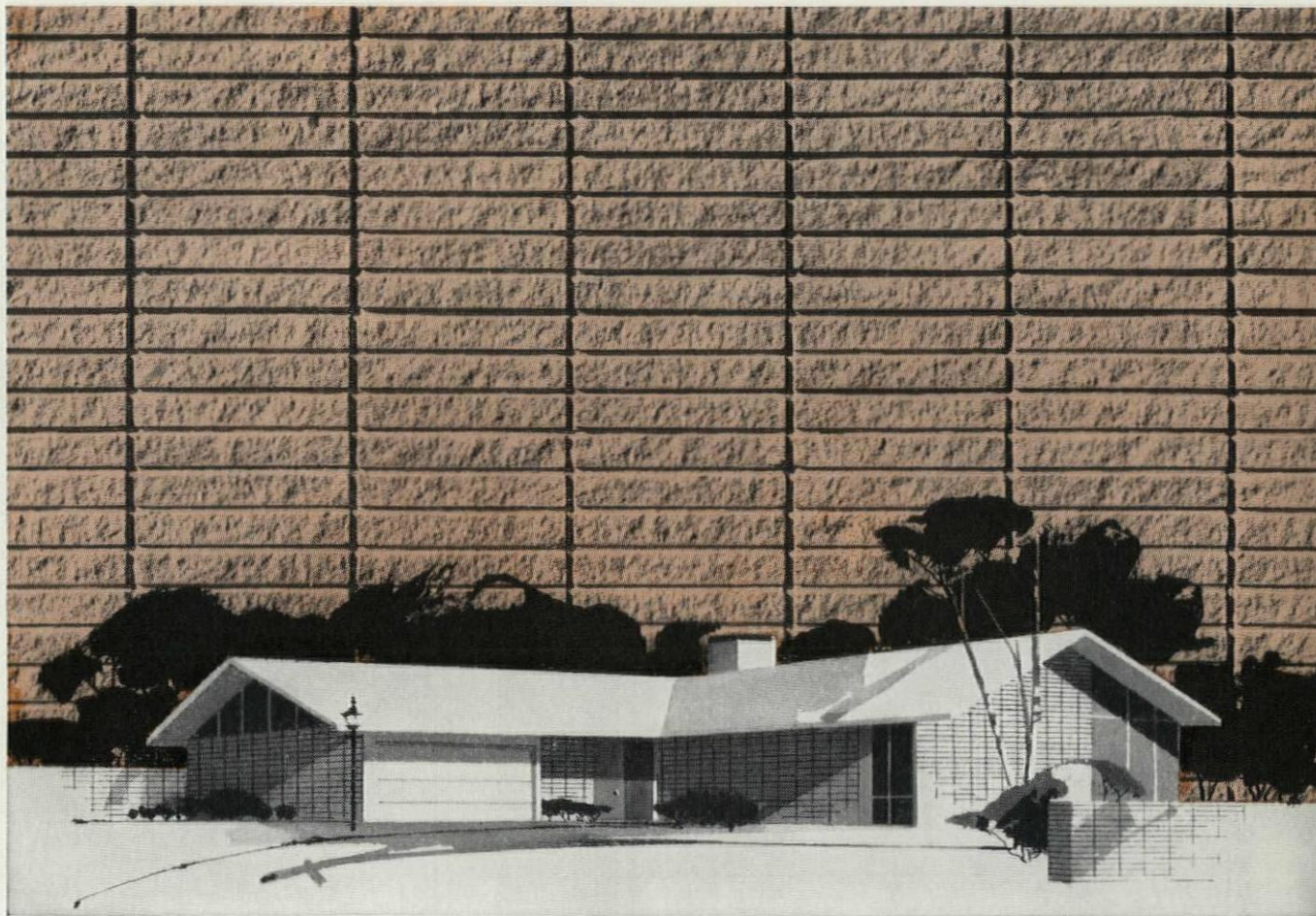
Now is the time to include Nickel

Stainless Steel in *your* plans. Inco will be glad to assist you in every possible way. As a starter, send for the booklet, "Architectural Uses of the Stainless Steels." It's free on request, and will make a valuable addition to your reference files.

The International Nickel Company, Inc.
67 Wall Street  New York 5, N. Y.

Inco Nickel

Nickel makes stainless steel perform better longer



*For outstanding
wall performance . . .*

MASONRY CEMENT

Bring out the best in your wall designs. Specify mortar made with masonry cement. Precision-made, masonry cement encourages good workmanship. It takes the guesswork out of making mortar as specified, makes tighter joints with uniform color and good bond strength. Simplifies and speeds work because everything except sand and water is delivered in one bag . . . and no special skills are needed for mixing. Masonry cement has excellent workability and high water retentivity thus assuring good wall performance. More and more architects are specifying mortar made with masonry cement for use with the newer forms of concrete masonry, as well as brick, tile, stone and glass.

PORTLAND CEMENT ASSOCIATION . . . *A national organization to
improve and extend the uses of portland cement and concrete*

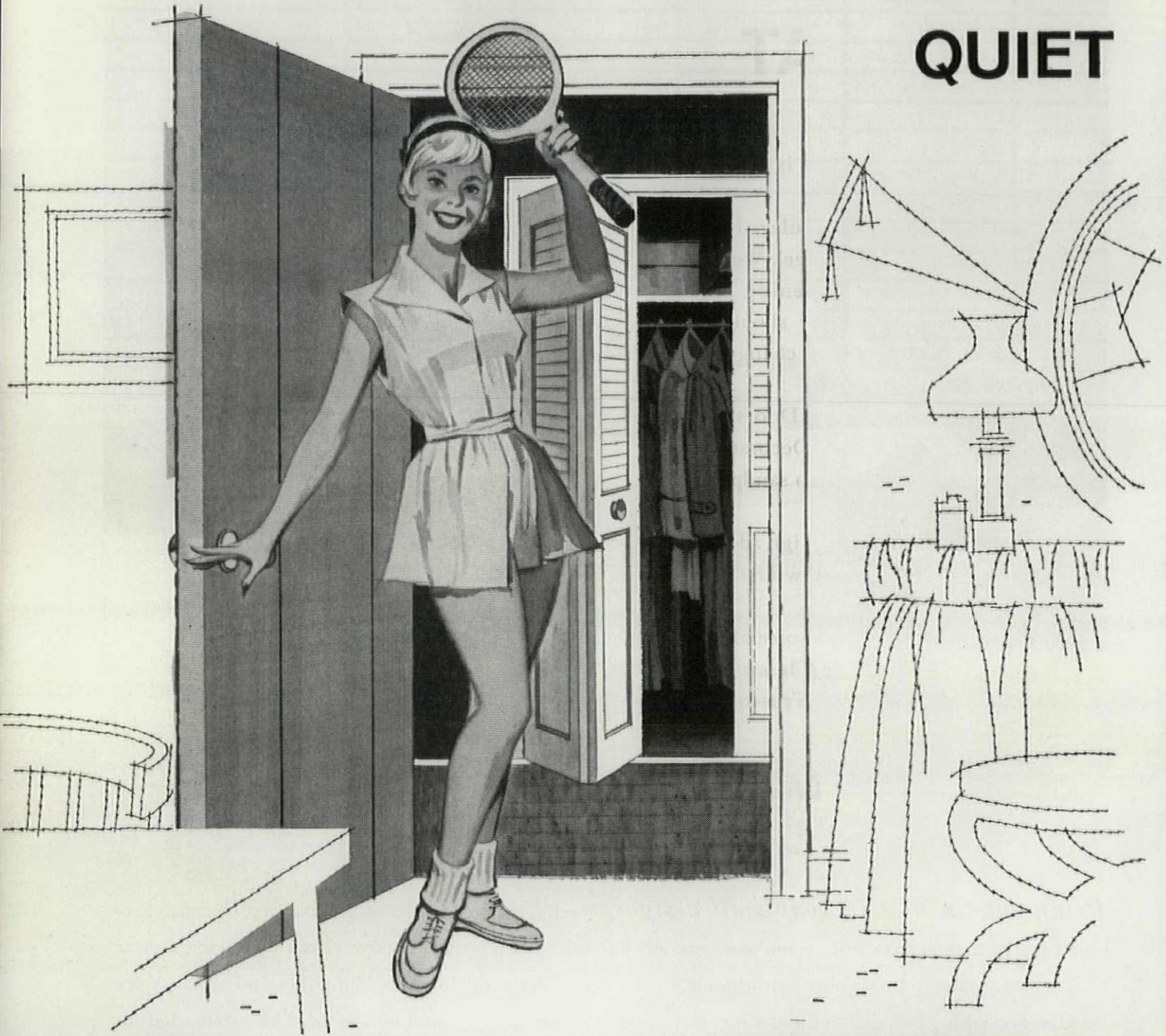
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Concrete Industries **HORIZON HOMES** Program

TRUSCON METAL DOORS

QUIET



TRUSCON BIG-VALUE ALUMINUM WINDOWS now available in complete selection of types and sizes. Truscon's major program of engineering excess cost out of window production and distribution is now complete. The best-known brand is a better value than ever. If you are tired of shoddy windows with an unknown name, take a new look at Truscon. There's a new value in the brand. Single- and double-hung styles, awnings and jalousies, sliding and fixed types ready now. Return coupon.



AND WINDOWS OFFER LUXURY AT LOW-COST

Unmistakably, the trend is to greater use of metal doors.

Steel doors, in particular, have a look of luxury and a solid, solid feel. Well-behaved, too, with their knack of opening easily, closing crisply as a proper door should. No sticking as weather and humidity change, because steel can't swell, warp or sag.

Colorful! Truscon Steel Doors are Bonderized and prime coat painted. Decorators finish paint with one coat and need no sandpaper, no sealer, no primer.

Flush fit and modern design add to appearance. Economy extends from low first cost through to fast, easy installation.

Truscon offers a wide choice of styles and sizes, including the luxurious Classic Louver Folding Closet Door. Call your Truscon representative or send coupon below.



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KITCHENS OF CHARACTER, LOW IN COST. Republic Steel Kitchens offer all the functional and installation advantages of steel cabinets; plus stay-new beauty in decorator colors—yellow, turquoise, pink, white. You design kitchens of character using Republic's widest selection of wall and base cabinets, sink centers, cabinets for built-ins, plus special purpose cabinets and drawer arrangements. Full line catalog is your starting point. Send coupon.

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How to build THE SHOPPING CENTER OF THE FUTURE—NOW!

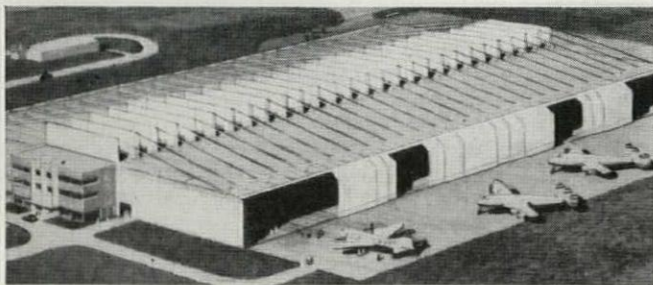
In this shopping center of the future, the suspended roof would leave every square foot of interior space completely unobstructed. An artist's conception, yes — but this is no unattainable "dream building." Modern suspended roof techniques pioneered by Roebling make it practical and economical now.

Consider the down-to-earth advantages. Floor space for supports would become paying space instead. Merchandise would be handled, displayed and sold with new ease and efficiency. Customer traffic would move

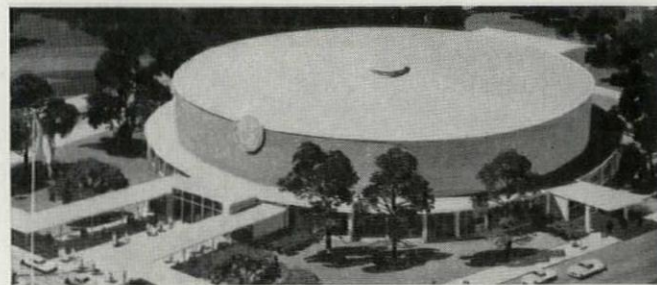
faster with fewer obstructions. Add low first cost and the prospect becomes even more alluring!

Suspended roofs are paying off handsomely in many types of buildings — plants, gymnasiums, airline terminals and hangars, auditoriums, stadiums and others.


Roebling's great experience with steel in tension enables it to take an active leadership in the suspended roof field. This experience is available to you. For information please call or write Roebling's Bridge Division, Trenton 2, New Jersey.



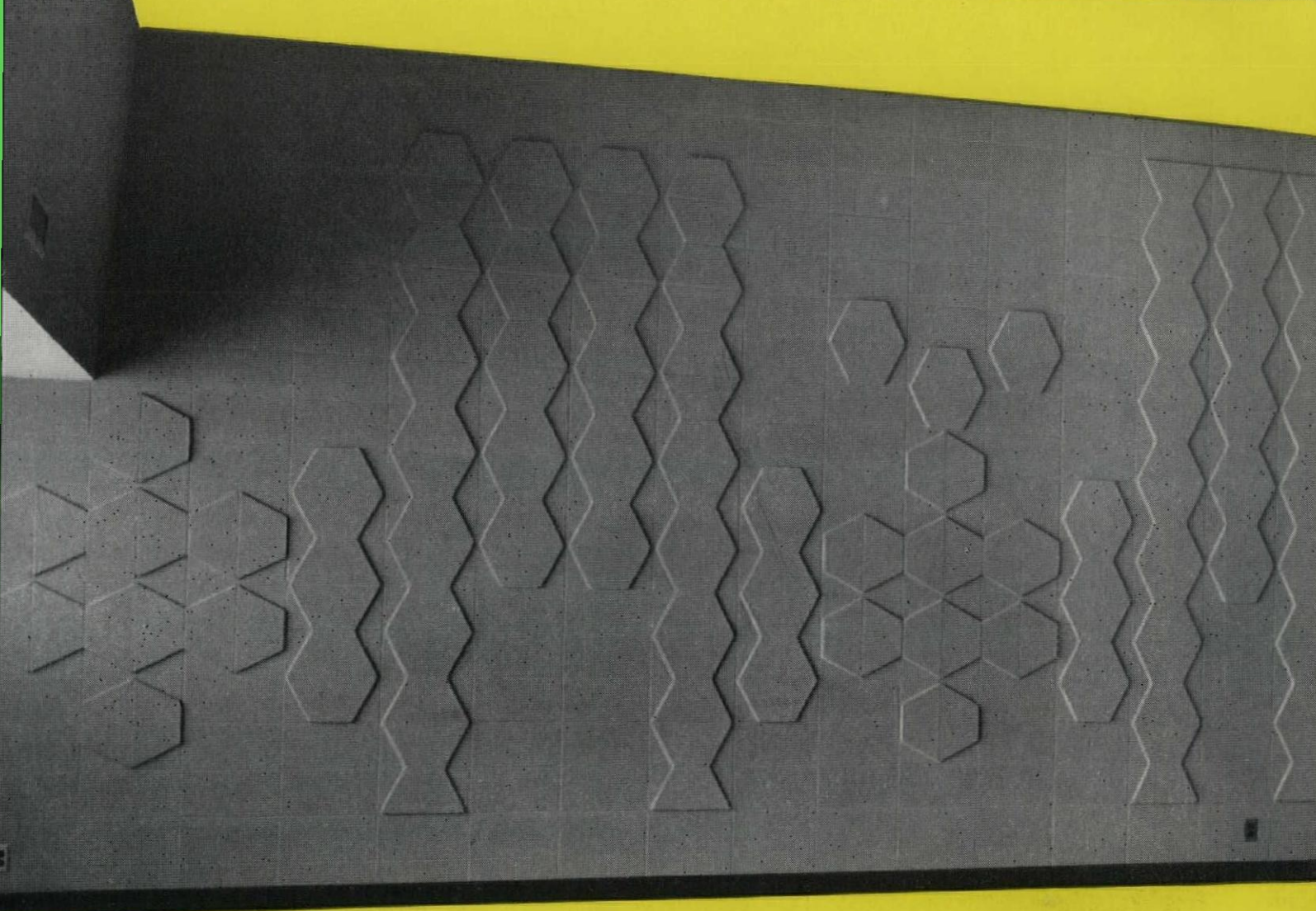
SUSPENSION ROOFS NOW AT WORK . . .
TWA HANGAR — MID-CONTINENT INTERNATIONAL AIRPORT, KANSAS CITY • Designed by Burns & McDonnell, Kansas City • Ammann & Whitney, Consulting Engineers, New York City • Contractors: MacDonald-Creighton, St. Louis and Nashville • Cables by Roebling



UTICA MEMORIAL AUDITORIUM, N. Y. • Architects: Gehron & Seltzer, New York City • Associate Architect: Frank C. Delle Cese, Utica • Consulting Engineer: Dr. Lev Zetlin, New York City • Contractor: Sovereign Construction Company, Ltd., Fort Lee, N. J. • Roof Supporting Structure, Including Cables, Furnished and Erected by Roebling

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Long live the beauty of block!—with Dur-o-wal to make it more than twice as strong!

When reinforced every second course with Standard Dur-o-wal, the flexural strength of a masonry wall increases 71 per cent—comparable to other types of reinforcement used every course. But Dur-o-wal can do even better. When Extra Heavy Dur-o-wal is used every course with Class A mortar, flexural strength increases a mighty 261 per cent!

Those are solid facts, estab-

lished by independent engineering tests and research.

Builders everywhere are relying on Dur-o-wal's trussed design, butt-welded construction, scientifically deformed rods, to give good-looking modern masonry extra years of life. Nationally wanted, Dur-o-wal is nationally distributed. Wherever you build a masonry wall, you can get Dur-o-wal. See us in Sweet's.



Two engineered products that meet a need. Dur-o-wal reinforcement, shown above, and Rapid Control Joints, below. Weatherproof neoprene flanges on the latter flex with the joint, simplify the caulking problem.

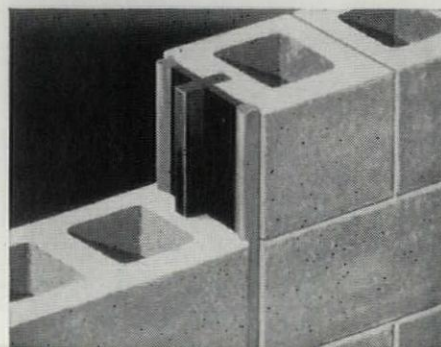
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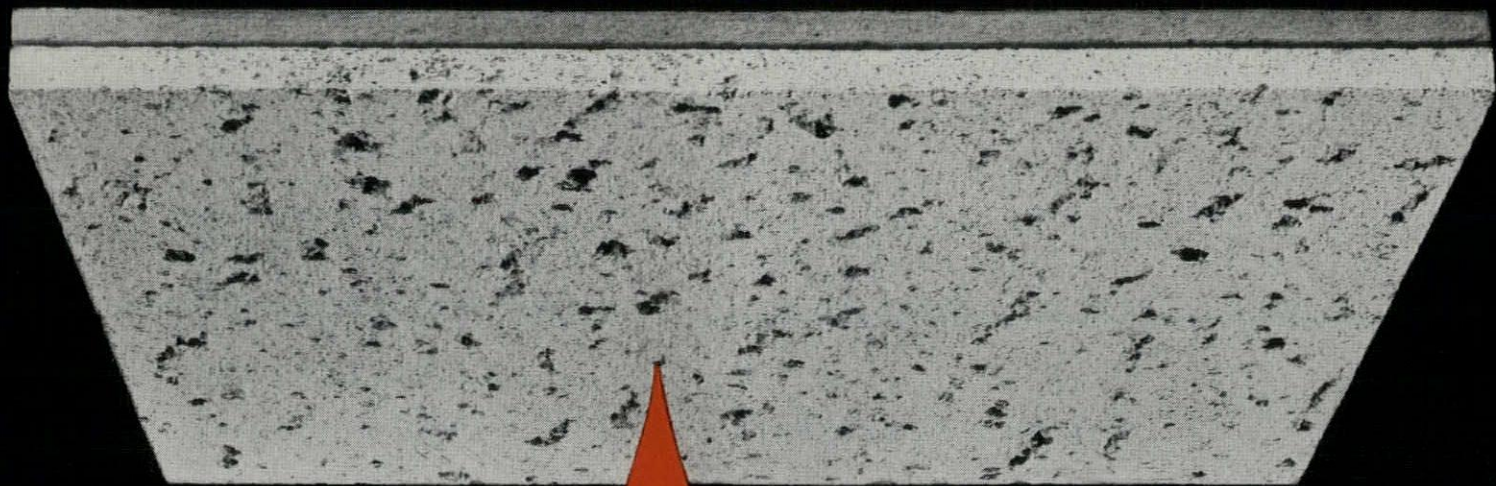
Masonry Wall Reinforcement and Rapid Control Joint

RIGID BACKBONE OF STEEL FOR EVERY MASONRY WALL

DUR-O-WAL MANUFACTURING PLANTS

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This U/L approved 12" x 12"

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the same features: high sound ratings,

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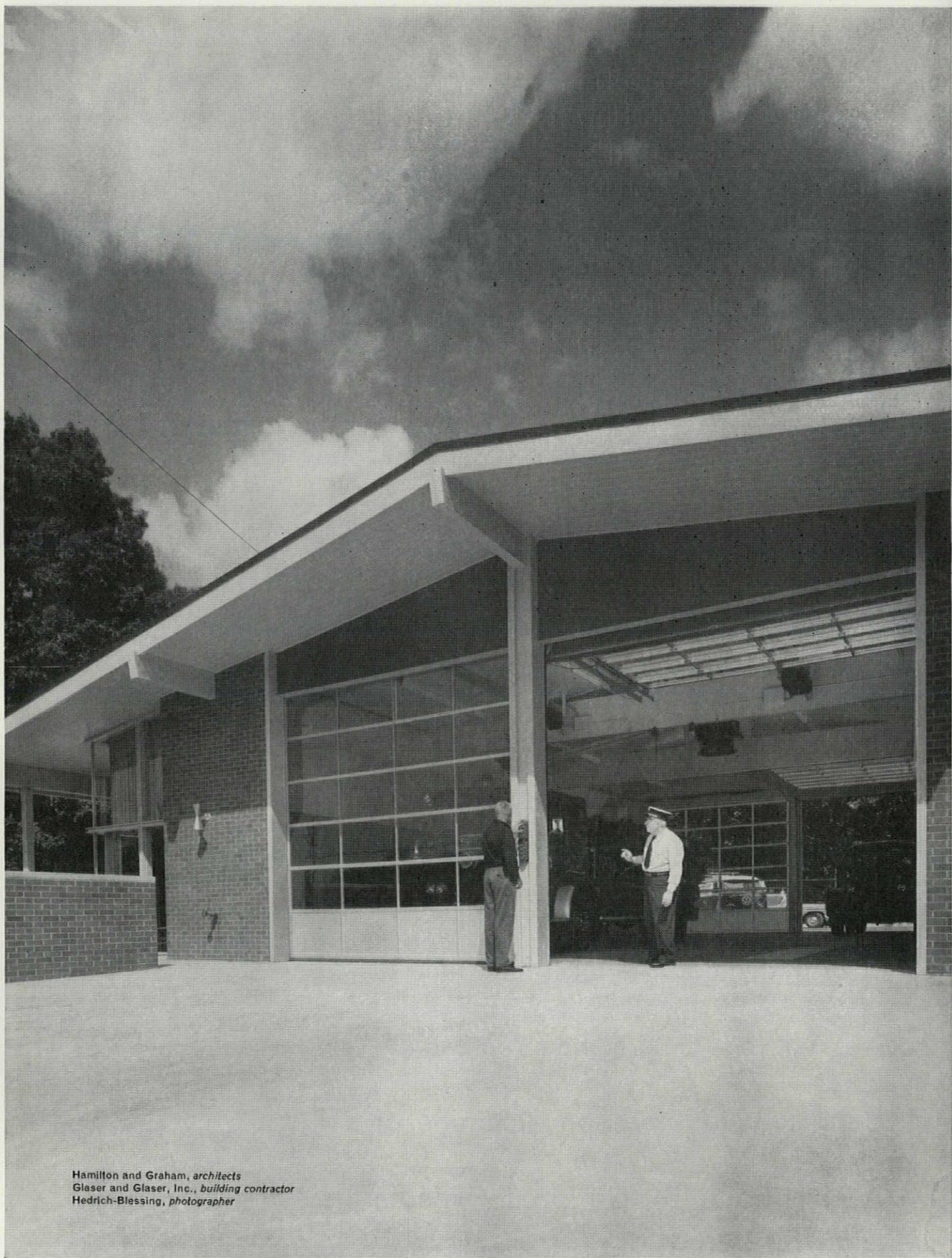


and striated.



Even edge detail is identical: beveled, kerfed and rabbeted for fast installation with less waste in the standard "J" suspension system. In short, there probably won't be another 2-hour rated product with as many features for a long time to come. Ask your Gold Bond® Representative for samples and specifications, or write Dept. PA-61, National Gypsum Company, Buffalo 13, New York.





Hamilton and Graham, architects
Glaser and Glaser, Inc., building contractor
Hedrich-Blessing, photographer

"OVERHEAD DOOR" opens a new door to space control

Doors permit maximum use of space . . . inside, and outside

"OVERHEAD DOORS" make the most of space by making it *accessible*. They are virtually *movable walls* that can open the front, back, and sides of a structure—multiply the use of both the building and the land around it.

As *exits*, "OVERHEAD DOORS" can make every part of the lot immediately accessible from the building, allow more design freedom in placing the building on the lot, and permit full development even of a poorly shaped lot. As *entrances*, "OVERHEAD DOORS" supply light and ventilation, as well as access to the inside, making the structure more useful, more adaptable for additional functions. As *movable partitions*, "OVERHEAD DOORS" instantly divide or enlarge rooms to fit varying interior space requirements.

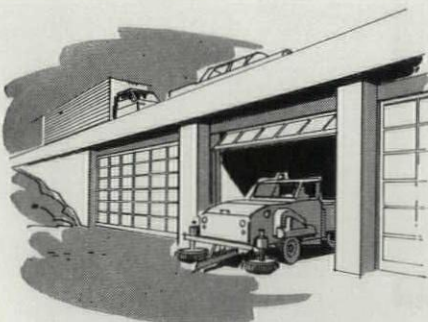
A typical space control application is in the Muncie, Indiana, fire station shown at left. "OVERHEAD DOORS"

in the front and back of the building provide access to a paved area in the rear, which is used to turn, park, and service the fire engines and other vehicles. In other buildings, this ready access, plus the admission of light and air, can give space valuable extra usability.

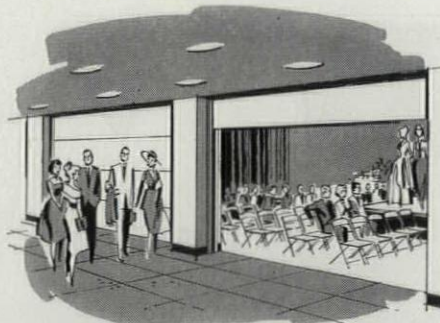
Many other new ideas in space control have been developed and tested by Overhead Door Corporation engineers—ideas that result from this company's 40 years of experience in the garage door field.

Get detailed information from your local distributor (see "OVERHEAD DOOR" in the white pages) for an application you may now be planning, or write to Overhead Door Corporation. *General Office:* Hartford City, Indiana. *Manufacturing Distributors:* Dallas, Tex.; Portland, Ore.; Cortland, N.Y.; Hillside, N.J.; Lewiston, Pa.; Nashua, N.H. *In Canada:* Oakville, Ont.

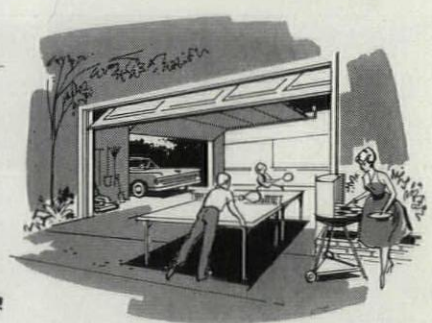
To solve many space control problems—



Viaduct garage. "OVERHEAD DOORS" help make more efficient use of space by providing *enclosure* as well as access. For example, the addition of doors and block walls can convert unused space beneath a bridge or viaduct into an inexpensive garage for public vehicles.



Movable partitions. Interior "OVERHEAD DOORS" can be used to convert small rooms quickly into a large auditorium area—and back again. Special flush panel doors that rise into a false ceiling are available with hinges, struts, and jambs concealed.



Convertible-garage-room. An extra "OVERHEAD DOOR" in the back or side wall of a residential garage supplies light and ventilation to make the space livable. With the car removed, the garage quickly becomes a warm-weather workshop, play pavilion, or covered patio.



the original upward-acting sectional door . . . made only by

OVERHEAD DOOR CORPORATION

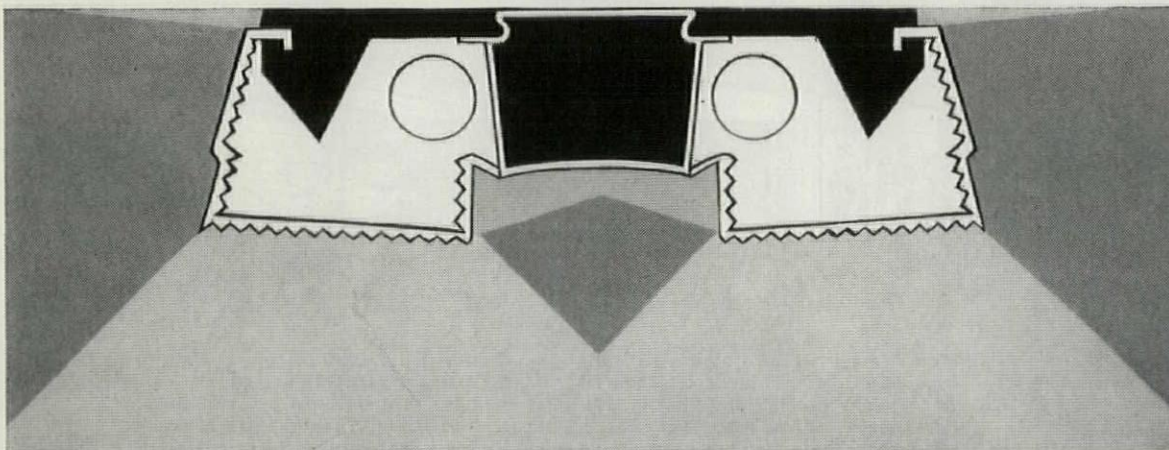
More seeing comfort by design . . .
NEVER BEFORE, SO MUCH SEEING COMFORT
AT SO LITTLE COST *in a Plastic-enclosed*
Fluorescent Fixture for Surface Mounting

Here is a fluorescent fixture that's completely new and different in appearance, construction, and performance. Especially performance! This is a precision lighting tool, optically designed for optimum *seeing comfort* and economy . . . a performance feature we call OPTICOMFORT. Duplex-a-lite controls and evenly distributes the right amount of the right kind of light where it's needed most . . . puts more usable light on the work or merchandise—less in the eyes.

Duplex-a-lite is particularly suited for lighting schools, offices and public buildings . . . working areas where there's a real need for obtaining more *seeing comfort* from the fluorescent lighting over prolonged periods of time. And, for stores—where the need is to direct attention to the merchandise rather than attract attention to the lighting equipment—Duplex-a-lite's low brightness offers distinct advantages.

Because it is a truly unique combination of fresh, trim appearance and *seeing comfort* at a modest price—this new fixture is a natural for newer buildings where ceilings are low and the lighting needs to be mounted flush on the ceiling.

For complete information on Duplex-a-lite by Miller, write Dept. 661, or contact your Miller Representative.



***Opticomfort*^{*} BY DESIGN**

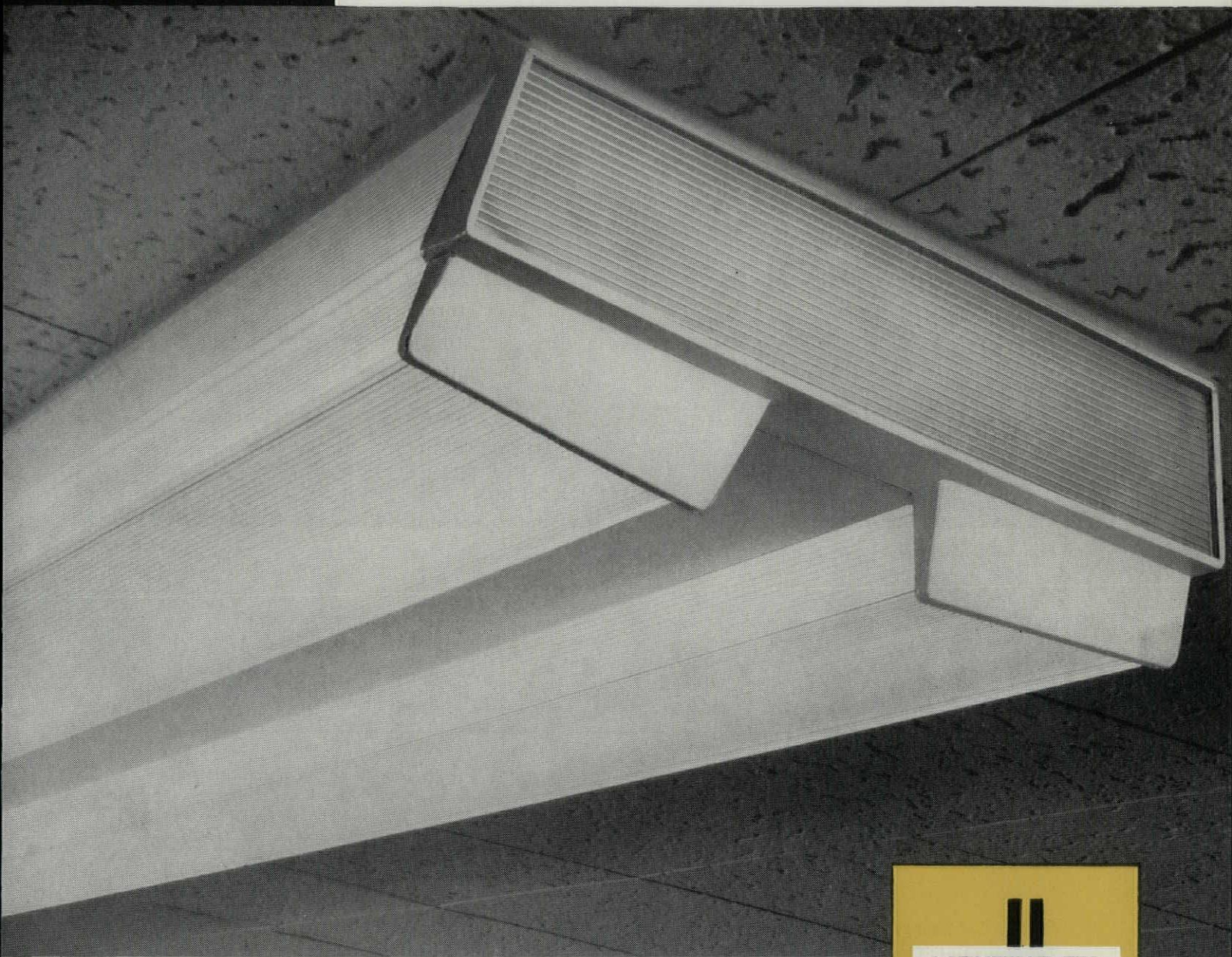
Another Miller First! Twin compartments separate and house each of Duplex-a-lite's two lamps in a unique manner that enables the optically designed, prismatic lenses to limit and control most of the light within the highly critical 45°-90° viewing zone. This assures optimum seeing comfort, or Opticomfort. Ceiling and center channel cover are softly illuminated. Enclosures of rigid plastic require no shadow-causing interior framework.

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Patent Pending

Duplex-a-lite®

LIGHTING by miller



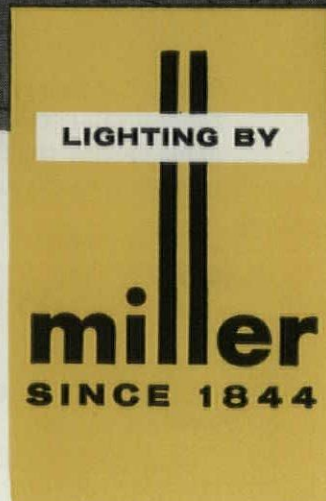
- Two lamp unit in 4' and 8' lengths; Rapid Start and Slimline; for use individually or in continuous rows • Choice of Clear, Acrylic or light stable Polystyrene lenses • Generous 13 $\frac{3}{16}$ " width.

- Cooler Lamp and Ballast Operation—each lamp has its individual compartment widely separated by an exposed metal channel which acts as a heat dissipator.

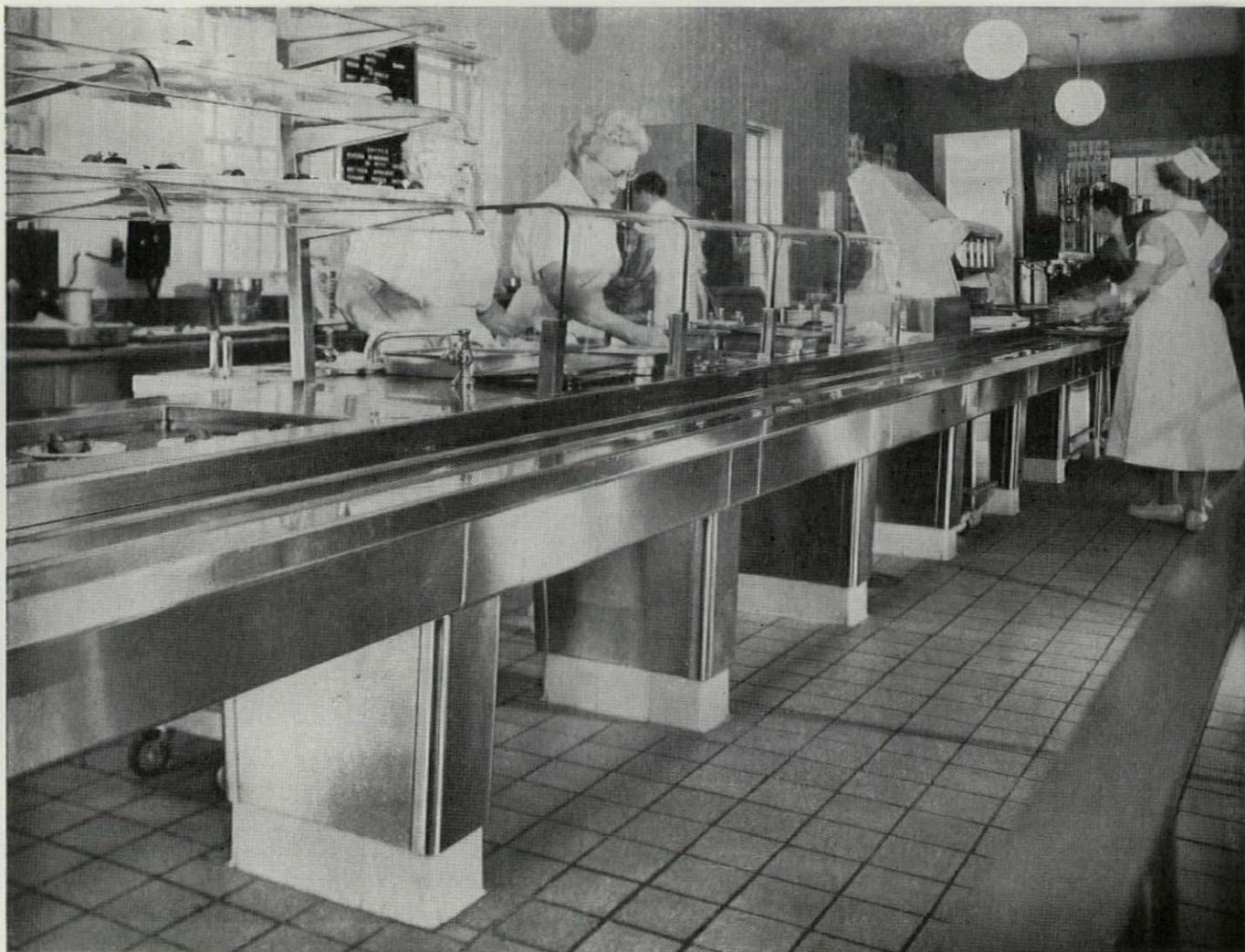
- Self Hinging Plastic Enclosure for Each Lamp is supported on both edges by continuous flanges in channel. Easy to Maintain—Uncluttered construction makes closure easy to wash and drain—8 ft. units can be relamped by one man from single ladder position. No Sag

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go first class

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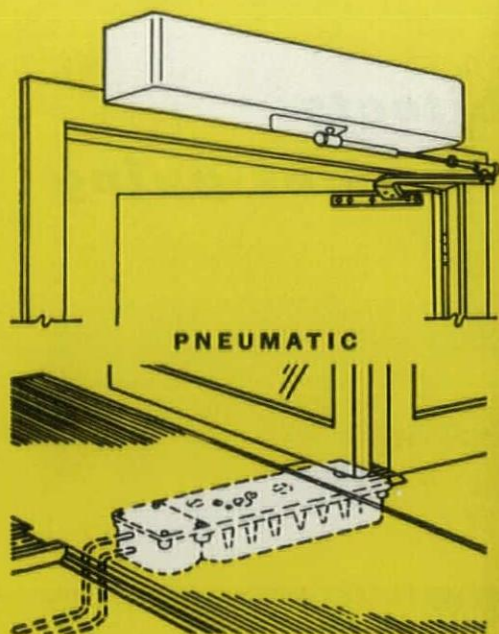
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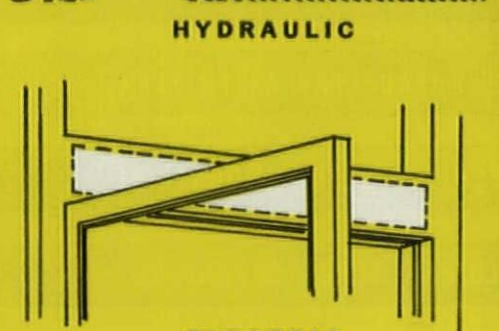
PRODUCERS OF *MicroRold®* STAINLESS SHEET & STRIP

WASHINGTON, PA.

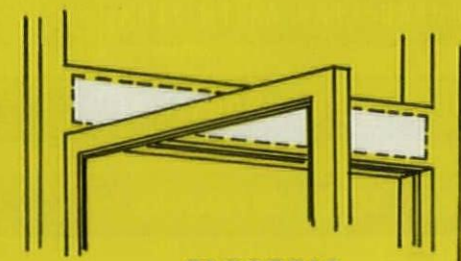




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or Visible Mounted
**ELECTRIC
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Packed with Power!
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Easy to Install

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Electric Automatic Door Operating Equipment

A new addition to the complete STANLEY MAGIC-DOOR line, this compact Electric Operator now makes automatic door operation—with all its advantages—economically practical for almost every type of commercial establishment. Designed for fast, easy, low-cost installation, this compact unit is realistically priced to fit limited budgets. And like all STANLEY MAGIC-DOOR Operators, it's ruggedly constructed and amply powered to insure year after year of dependable service.

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Favored with an honest natural finish that is striking alone, prestressed concrete combines well with other materials in important visual areas. A compelling spatial and structural interest is created wherever it is used.

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Write for the new, illustrated report "PRESTRESSED CONCRETE—Applications and Advantages." This valuable addition to your file illustrates 19 types of projects, how prestressing works, typical products and substantiates these advantages:

LONG SPANS, SHALLOW DEPTHS...for fewer columns, more usable floor space. High strength produced by prestressing allows the design of well proportioned building members of limited depth for given spans.

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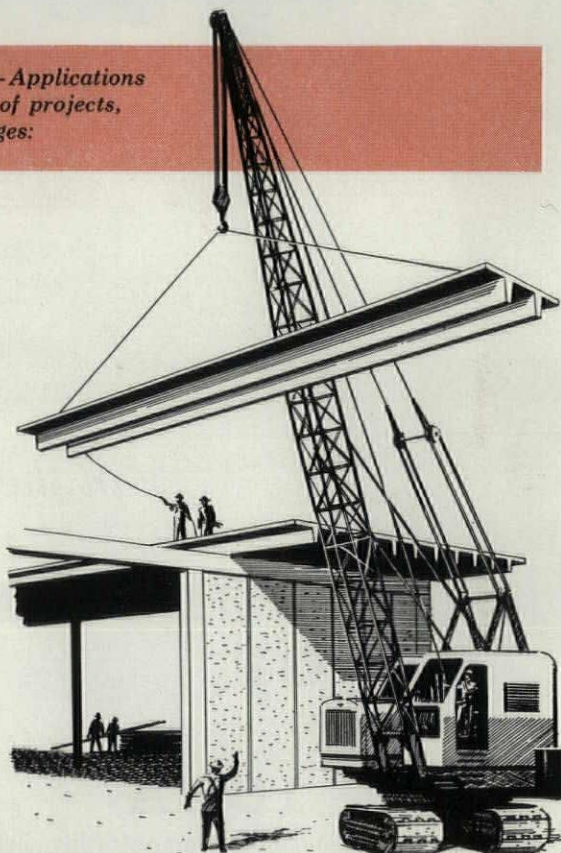
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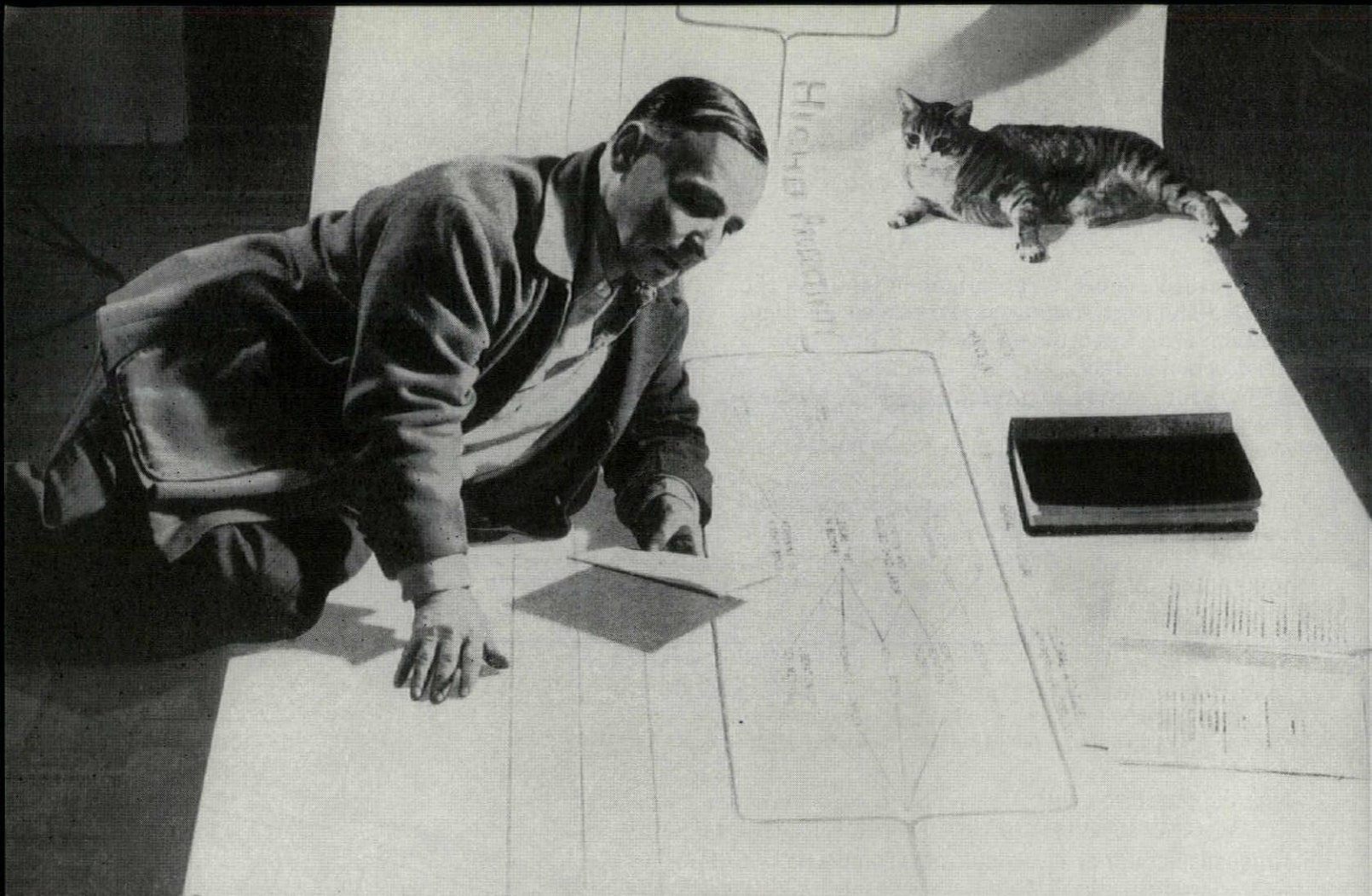
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in the July P/A...

PURSUIT OF AN IDEA

The one basic idea that Frederick Keisler (shown above) has been pursuing, demonstrating, justifying through this half century is that of continuity . . . the continuity he strives for in his designs, and the continuum that his life has been. The July P/A presents Keisler's recollections of various periods in the development of architecture (Keisler has been important in the history of contemporary design since the early 20's) with leading questions by P/A's Editor, Tom Creighton. The article is illustrated with the buildings Keisler talks about, and shows plans and details, as well as photographs, of the new Endless House.

Interior Design Data presents three different partitioning systems with varying degrees of versatility and with different emphases on purpose, function, and facility of installation.

Building Presentations include three high schools: Pontiac Northern Senior High School, Pontiac, Michigan, Eberle M. Smith Associates, Inc., Architects; Walt Whitman High School, Yonkers, New York, Eli Rabineau, Architect; and Carbon High School, Price, Utah, Edwards & Daniels, Architects.

Materials & Methods Articles are: Bearing Grilles for Concrete Tower; Origins of Structural Laws; and Lighting a Pedestrian Mall. These plus many other features make July a truly outstanding issue.

PROGRESSIVE ARCHITECTURE

A REINHOLD PUBLICATION



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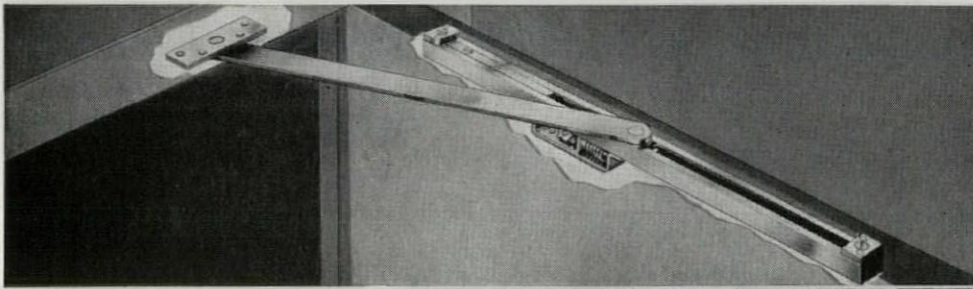
GF
BUSINESS FURNITURE

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GLYNN·JOHNSON

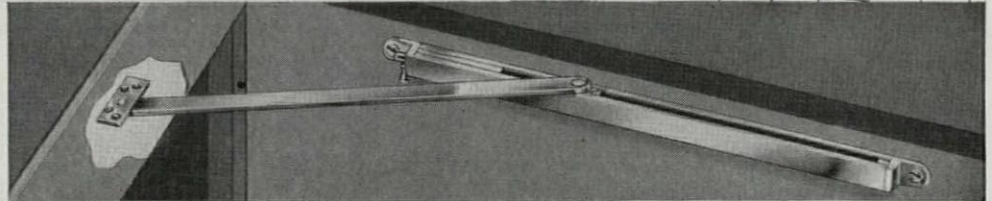
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**overhead means out-of-the-way...*
no stumbling hazards—no interference with cleaning



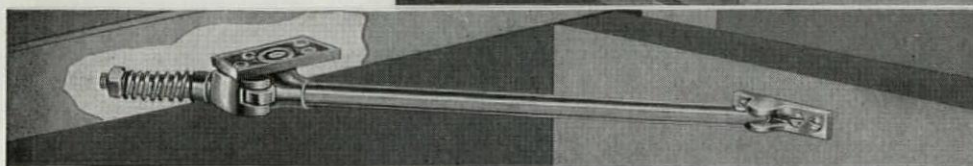
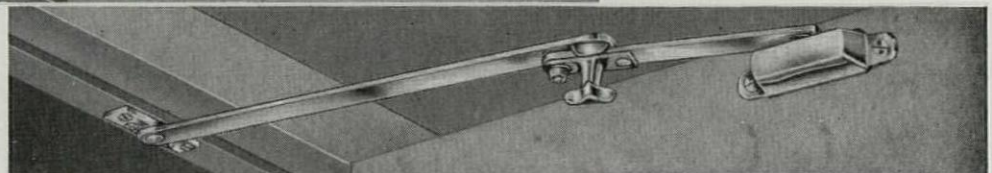
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concealed
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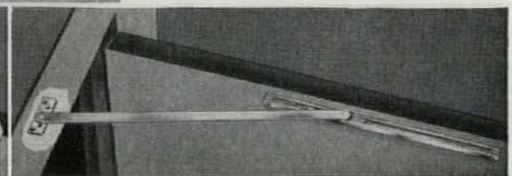
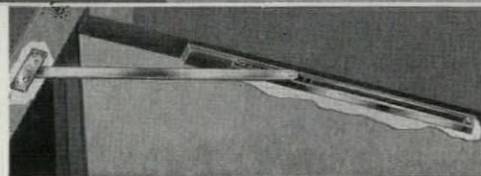
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silently absorbing
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open engages
silently... holds
firmly... releases
easily.

"Life of the building" GJ Overhead Door Holders are made of
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LEFT CENTER

Riverside School,
Menomonee Falls, Wisconsin
Architect: Kloppenburg & Kloppenburg
Contractor: W. Schober & Son, Inc.

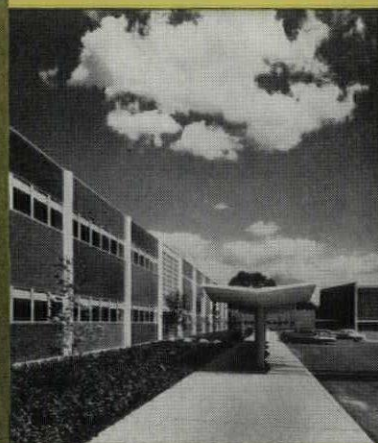
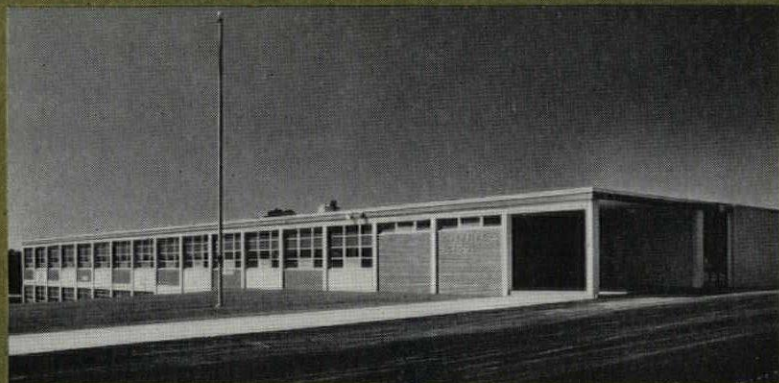
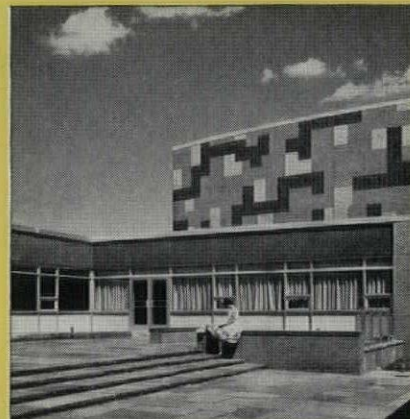
BOTTOM

Naugatuck High School
Location: Naugatuck, Conn.
Architect: Sherwood, Mills & Smith
Stamford, Conn.
General Contractor: Fusco-Amatruda Co.
New Haven, Conn.

TOP AND CENTER RIGHT

Drexel Hill Junior High School
Drexel Hill, Pa.
Architects & Engineers: The Ballinger Co., of Phila.
General Contractor: Wark & Co., of Phila.
Masonry Contractor: John B. Kelly, Inc., Phila.

CHEERFUL SCHOOL DESIGNS WITH HANLEY BRICK

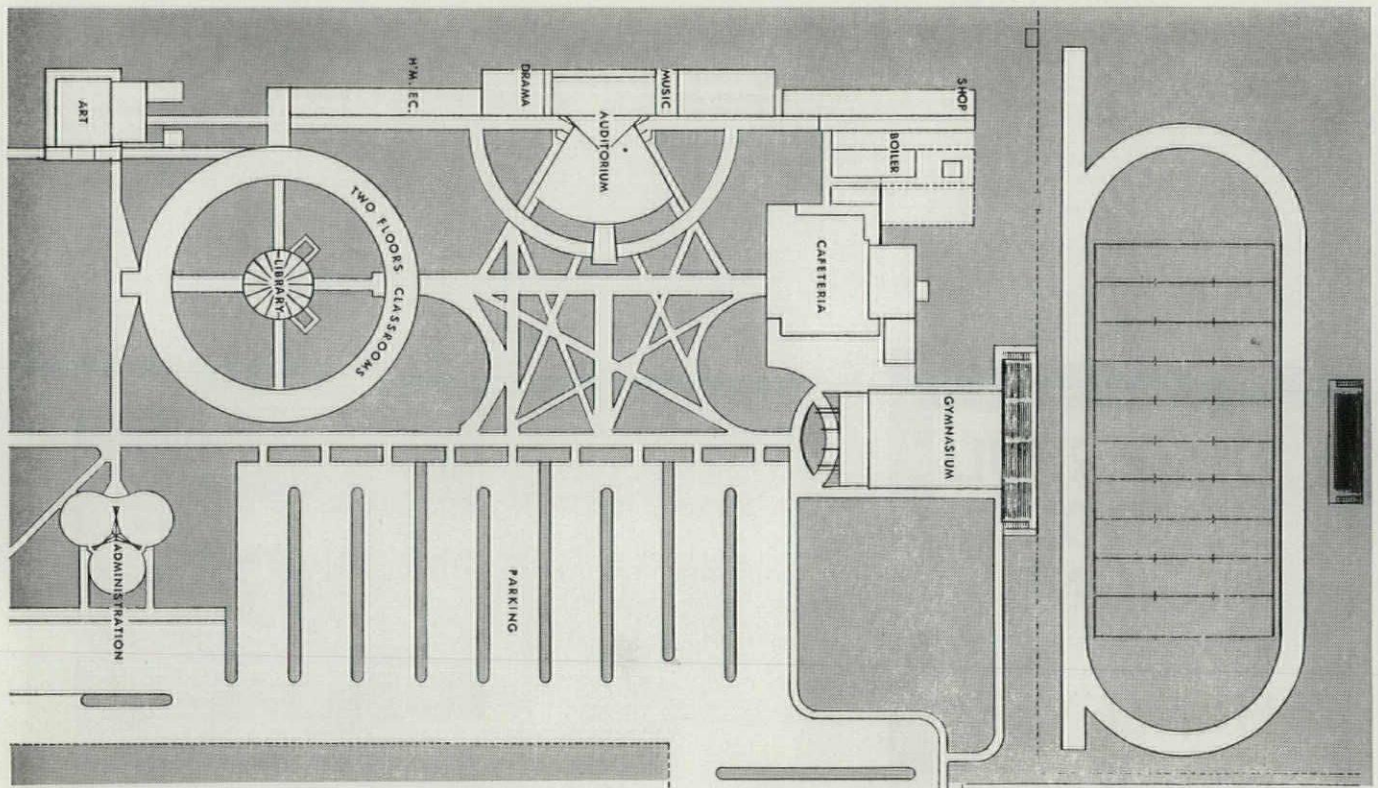


A warm, versatile material that is rugged as well as economical, HANLEY is the ideal choice in new school construction. The complete HANLEY line . . . Duramic® Glazed Brick, Duramic® Glazed Structural Facing Tile, Bradford Red Face Brick and Summerville Face Brick, offer the designer a wide selection of quality facing material. ■ On your next school specify HANLEY.

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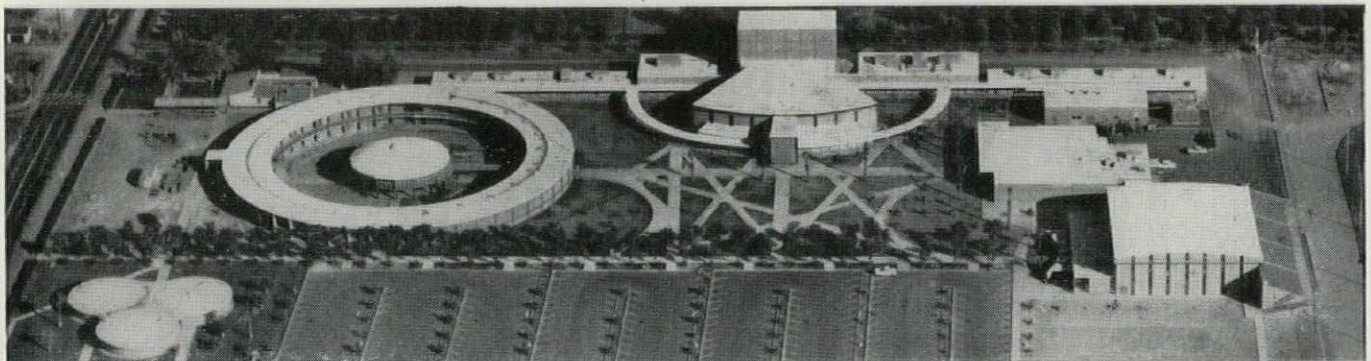
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A complete catalog—TIME AND SIGNAL EQUIPMENT—prepared for Architects and Engineers—is yours for the asking.



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Arcadia High School in Scottsdale, a suburb of Phoenix, Arizona, was planned in three phases with completion dates, August, 1959, February, 1960 and February, 1961. Cost—\$2,724,443.00 including land, site development and fees—a total cost of \$13.58 per square foot to accommodate 1800 students. This provided 55 classrooms (75 teaching stations), library, auditorium, cafeteria, administration area, teachers lounges and workrooms, book store, utility building, gymnasium and stadium locker rooms.

The School Board, Superintendent John L. Ashe, Principal Dr. Richard Bullington were advised in their choice and installation of a Time System by:

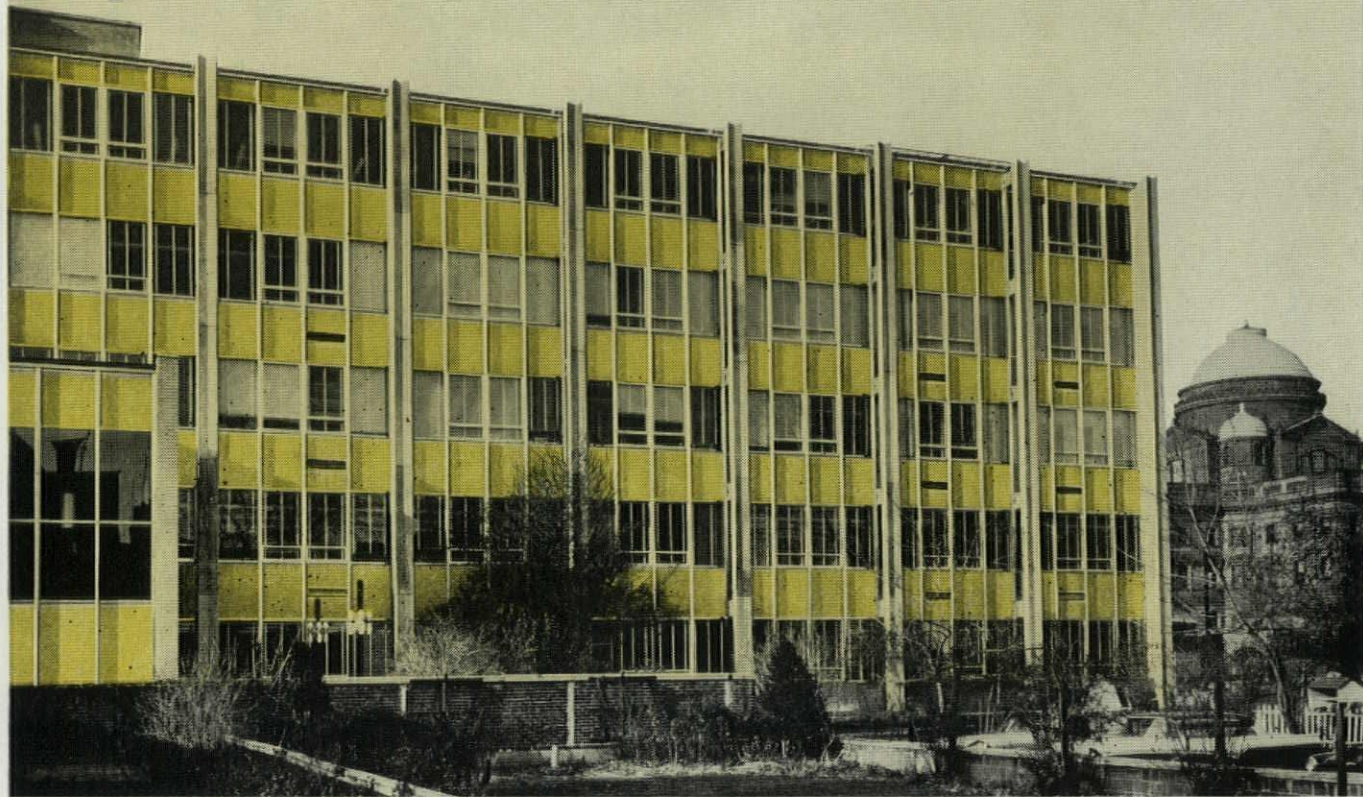
*Mel C. Ensign — Architect
Gilbert & Dolan Enterprises, Inc. — Contractors
David M. Demaree & Associates — Electrical Engineers
all of Phoenix, Arizona.*

STROMBERG DIVISION

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The profitability of curtain wall construction depends on compatibility of the core and the panel*



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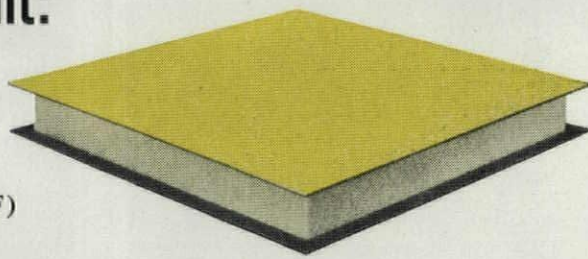
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- * Will not shrink, warp, swell or rot in use
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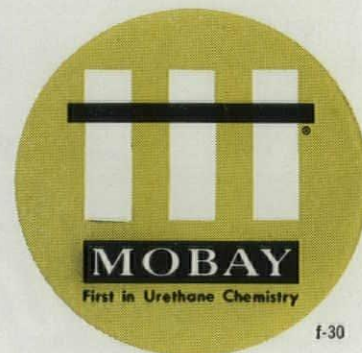
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Mobay is the leading supplier of quality chemicals used in the manufacture of both polyether and polyester urethane foams.



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an Important Message

on the subject of stock doors and entrances

Cupples new "40 LINE" offers complete design flexibility, simplicity of installation, dependability of product and manufacturer, at prices your clients will appreciate.

In designing and developing our new "40 line" of standard custom framing and stock entrance doors, Cupples has worked to give you a line of superior products you'll be proud to specify for any job. Embodying the latest advances in engineering and production, Cupples new "40 line" of stock doors and frames is simplicity itself. It not only saves time and labor in assembly and on-the-job installation, but it offers you complete design flexibility for any job requirement.

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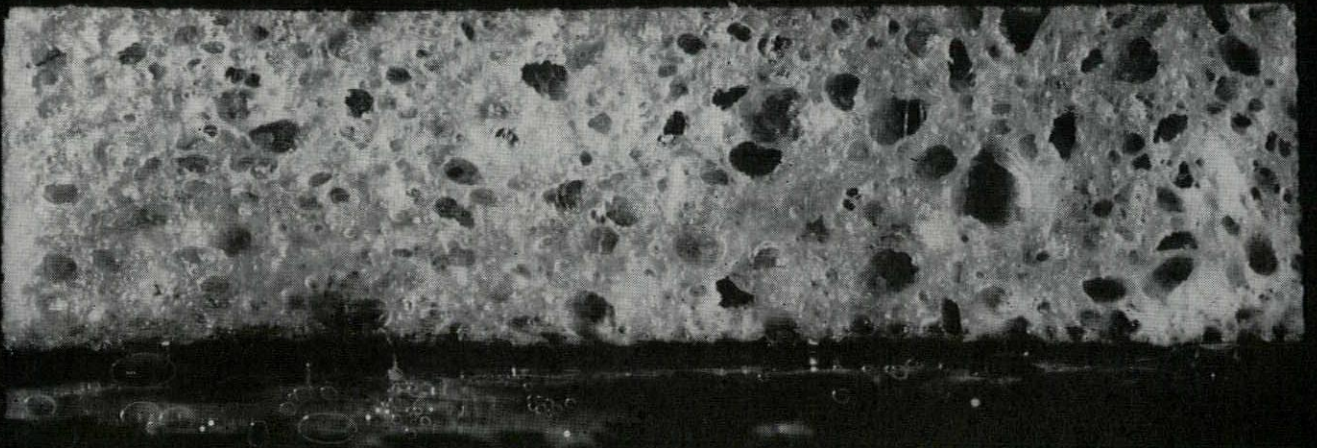
A DIVISION OF ALUMINUM COMPANY OF AMERICA
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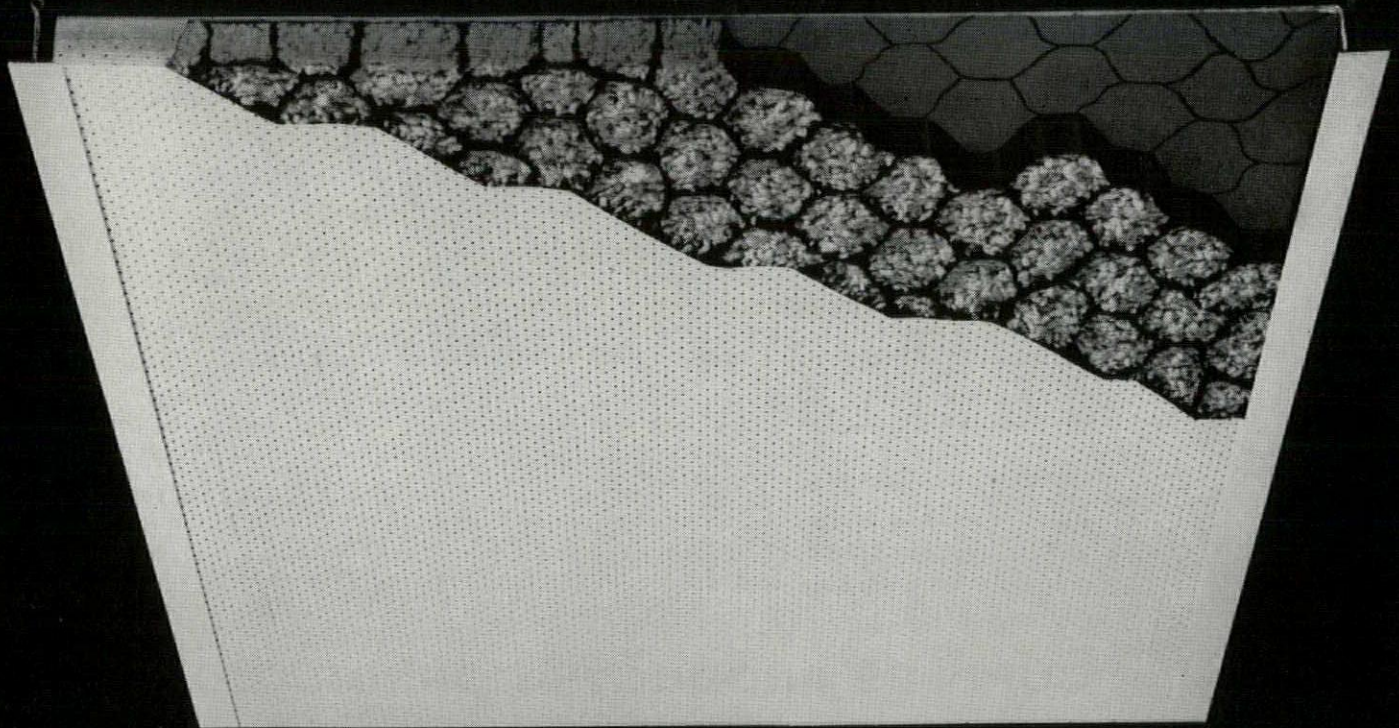
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A complete line of custom and standard doors, store front metal, custom and stock curtain walls, stock projected windows, stock and special sliding glass doors. All Alumilited finishes are bonded and guaranteed.



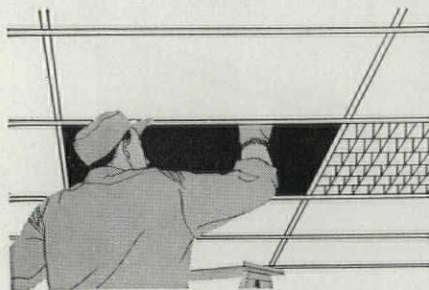
What a sponge does with water...
New SoundLock® does with sound



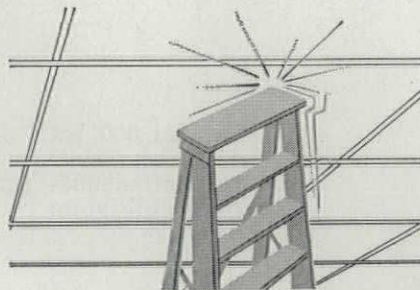
New SoundLock—the only structural metal lay-in acoustical ceiling—soaks up noise completely and ends annoying sound transmission.

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Fire-safe panels allow easy access to plenum chamber



Rugged SoundLock won't be damaged by workmen.

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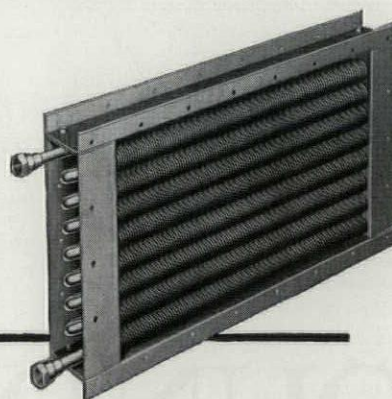


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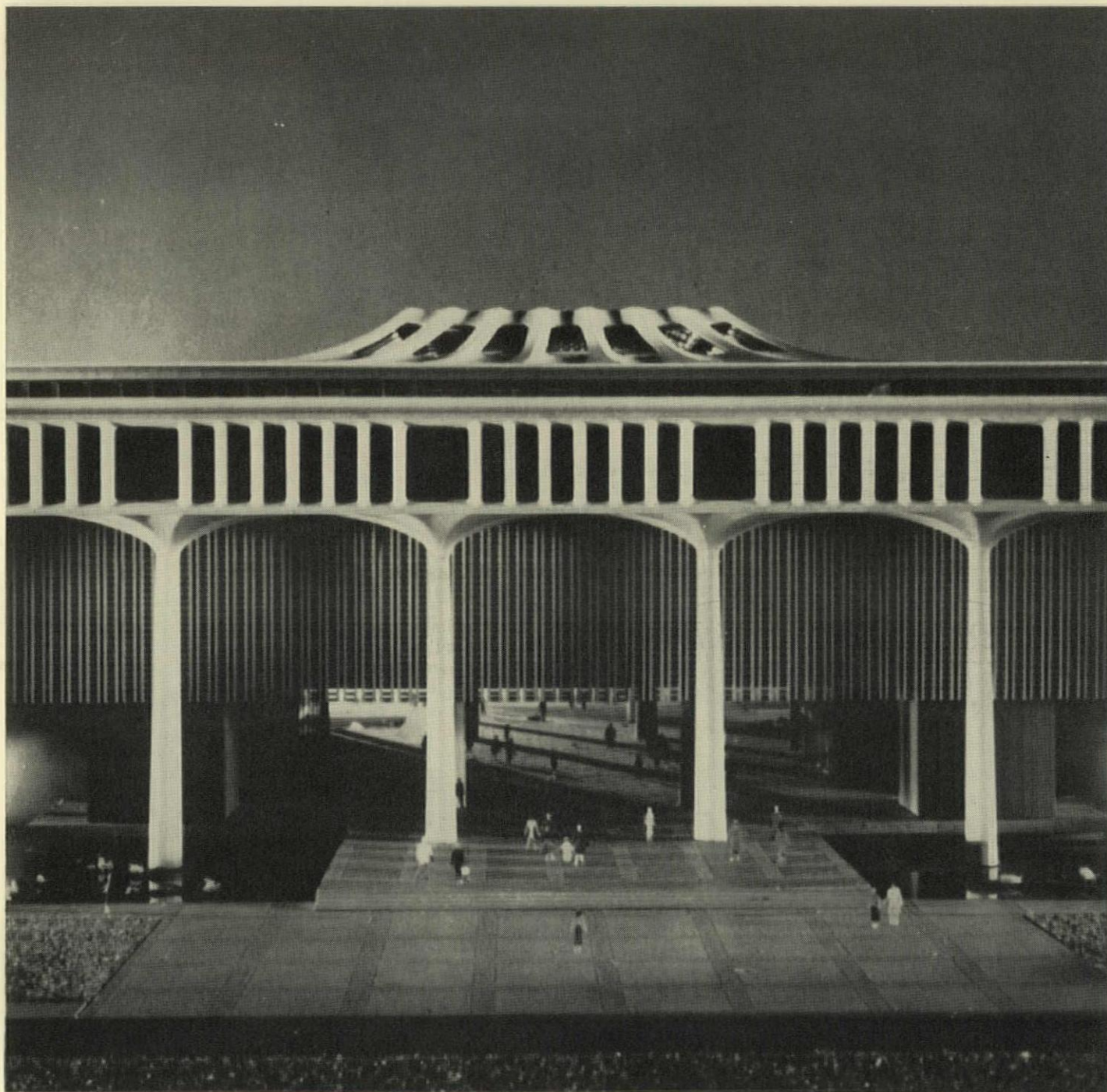
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PROGRESSIVE ARCHITECTURE JUNE 1961

NEWS REPORT

Architecture's Monthly News Digest of Buildings and Projects, Personalities, New Products



Great ceiling-high central court of the new Hawaii State Capitol will be approached over a lily-padded moat.

67 ISLAND CAPITOL SET FOR ISLAND STATE

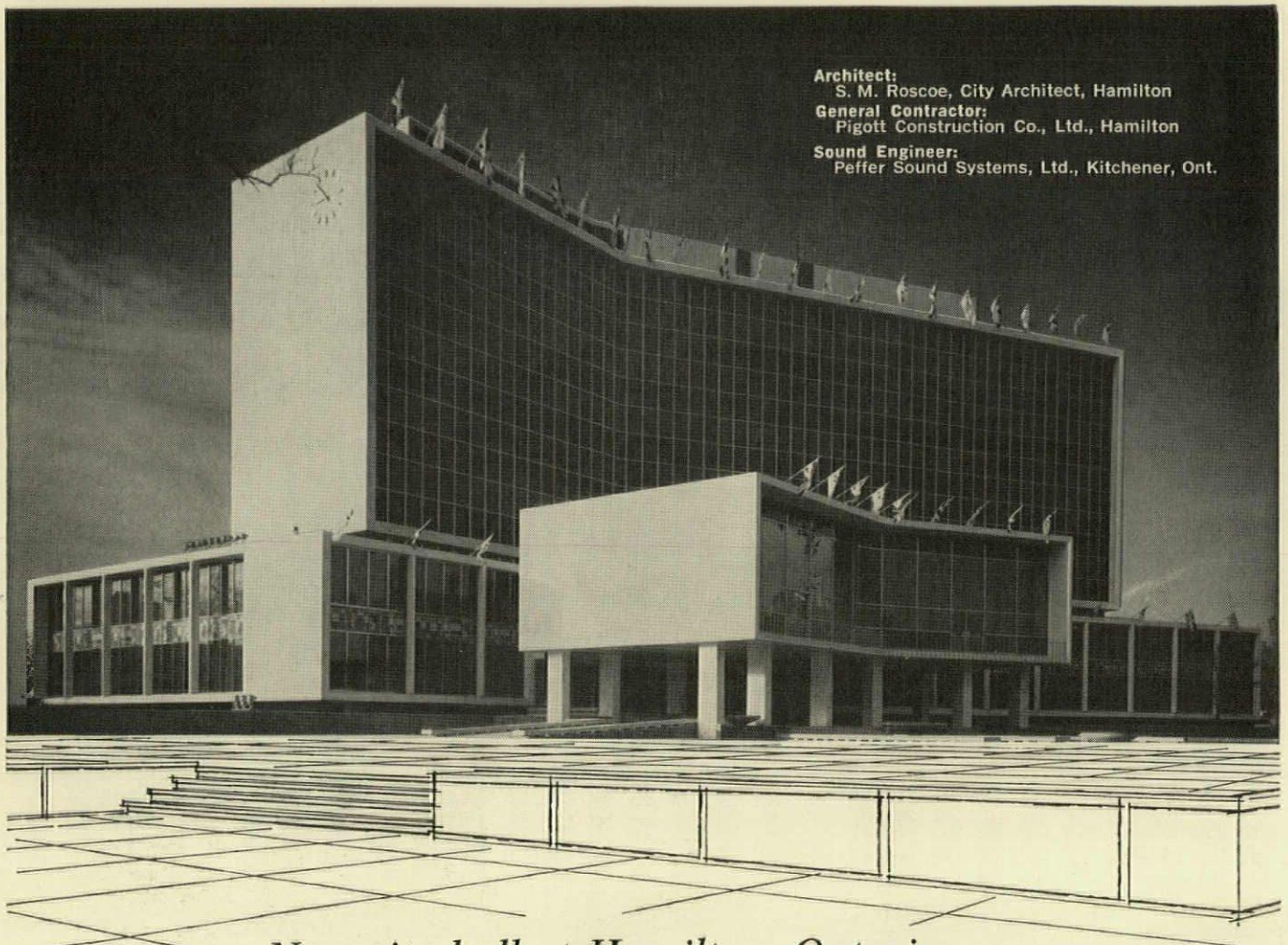
69 NERVI FIELD HOUSE FOR DARTMOUTH

71 LE CORBUSIER IN THE U.S.A.

72 RECENT WORKS OF J.J.P. OUD

75 PERSONALITIES: KNOLL, NAGEL

97 PRODUCTS: NEW FLUORESCENT SHAPE



Architect:
S. M. Roscoe, City Architect, Hamilton
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Colonnade and Court to Mark New Hawaii Capitol

Building To Stand In Rectangular Moat

HONOLULU, HAWAII. The long search for a capitol for our fiftieth state has ended with the selection of a design evocative of the ambiance of the South Seas. Architects are Belt, Lemmon & Lo of Honolulu in association with John Carl Warnecke & Associates of San Francisco. Cyril W. Lemmon is Architect in Charge of the project, and John Carl Warnecke is Director of Design.

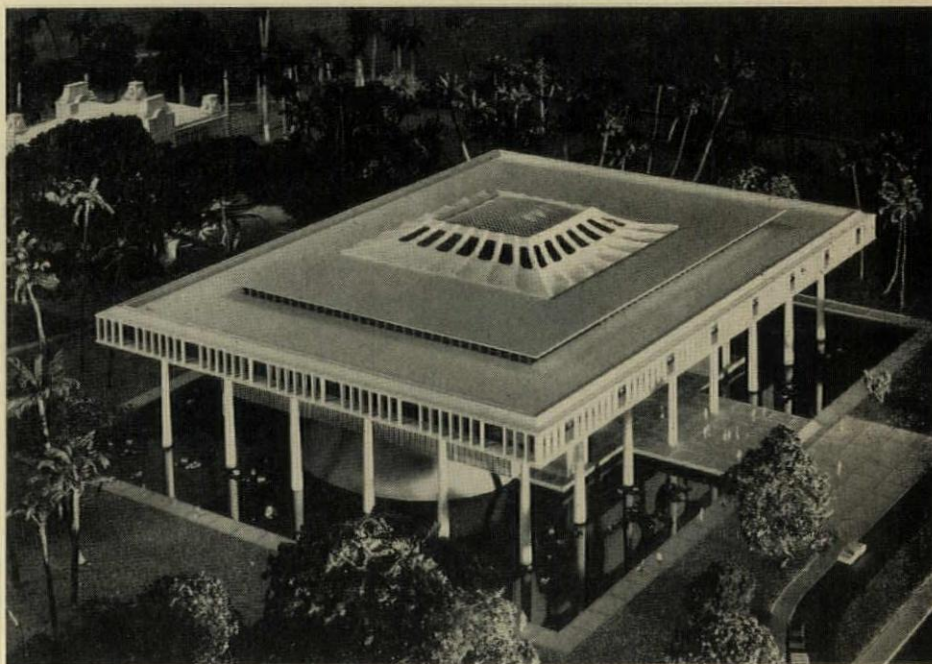
The new capitol will share grounds with Iolani Palace, which has been the traditional headquarters of Government since 1846. (The existing palace was completed in 1882.) To create the site—which will also contain the existing Library of Hawaii—a street between the capitol and the palace ultimately will be depressed to provide a landscaped area between the buildings.

Focus of the proposed capitol will be a great, building-high court. Approach will be via broad concourses over the fountained moat that will surround the building. The capitol will be on axis with a gigantic East Indian banyan tree that graces the palace grounds, and the tall columns which rise from the moat to spread their capitals at the cornice-floor of the structure are said by the architects to echo the lines of the tree.

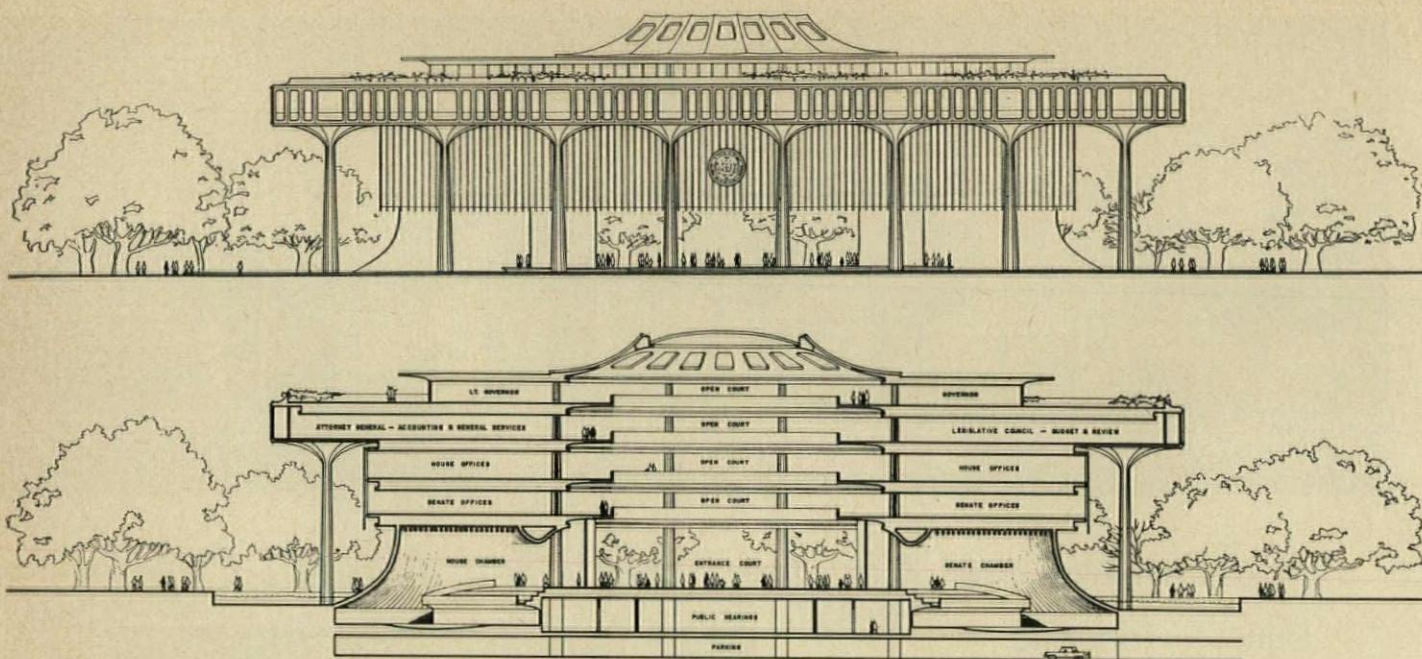
Beneath the hovering office floors of the building, the Senate and House chambers will appear as curved masses on either side of the great court. The visitors' galleries will be entered from the court; legislators will enter their chambers at the lower level via elevators. Areas for attorneys and public hearings will be between the chambers at the lower level.



Lofty columns, reminiscent of forms of native trees, spring from moat surrounding capitol.



Air view shows court penetrating structure. Executive level at top.



Elevation (top) shows entrance between masses of chambers and below suspended office floors. Longitudinal section below.

The two floors containing legislative offices will be similar in plan; legislators' offices will be located around the periphery. As on all floors, public circulation is provided for in the gallery around the open court. Committee rooms will be between the offices and the court on both sides of the building.

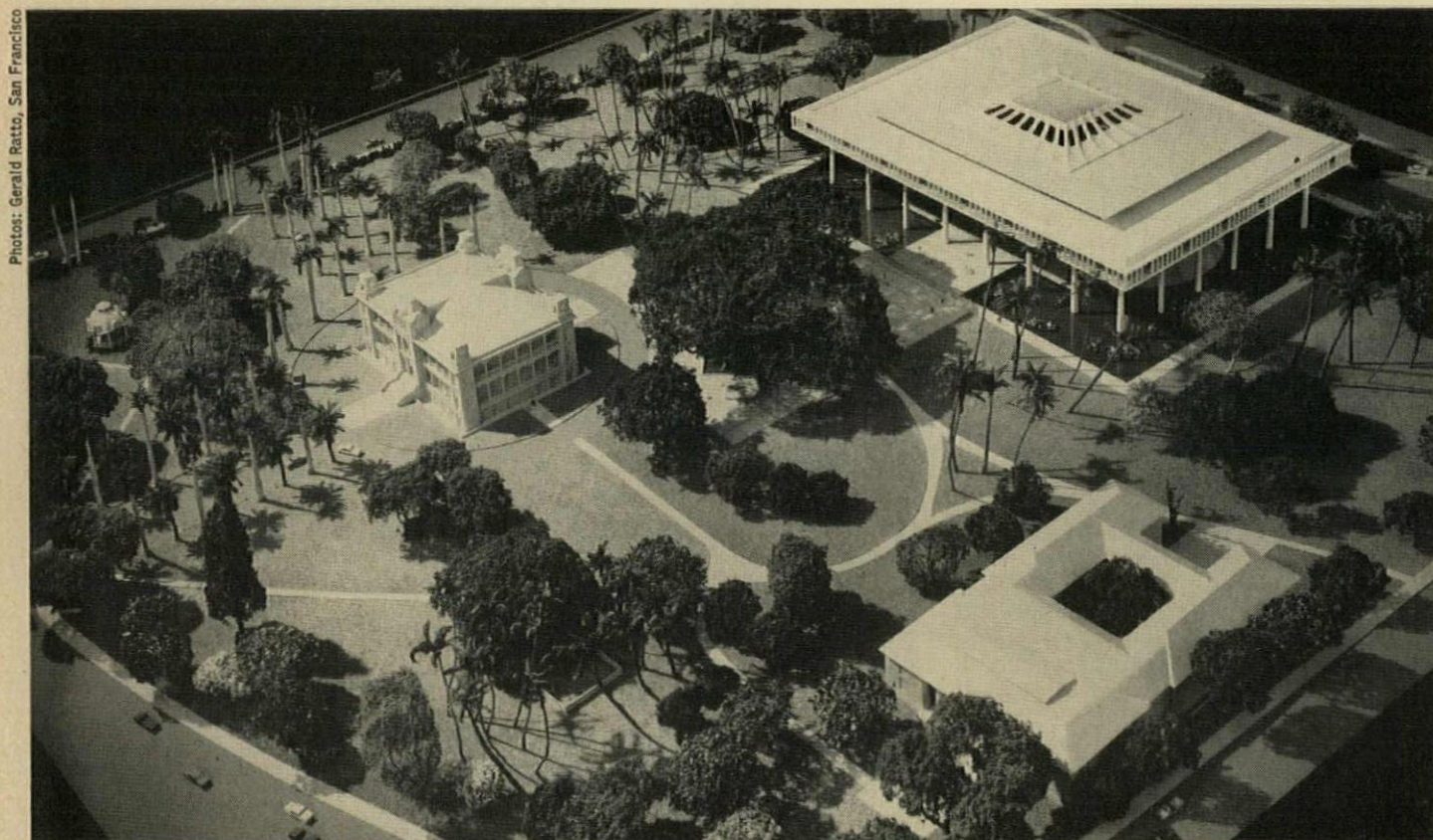
The "cornice" floor crowning the

columns will be the largest one in the building. It will contain staff agencies responsible to the administrative branch of the Government. A specially designed concrete frieze will probably surround this floor.

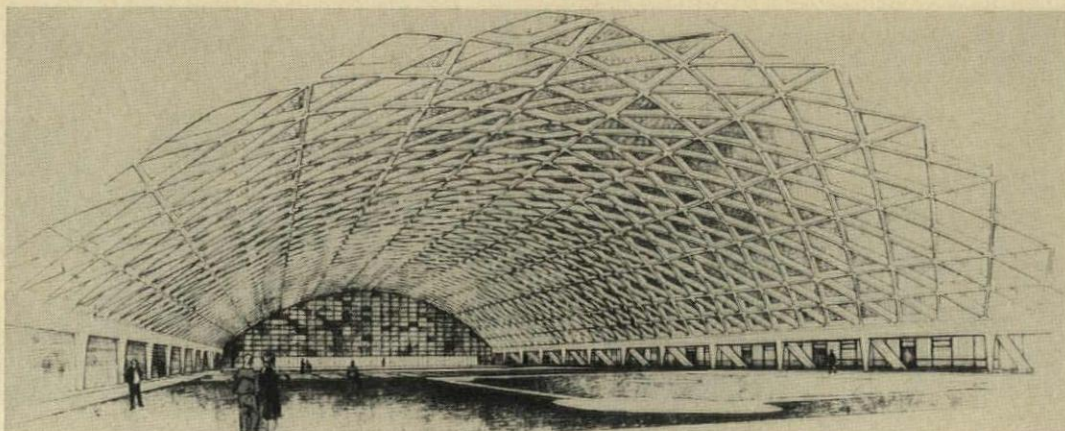
The executive level will be under the overhanging crown canopy of the roof, amid lanais looking out toward Punchbowl and the ocean. The gov-

ernor and lieutenant governor will occupy suites on either side of the court, with appropriate offices for assistants and conferences provided. The crown of the court will be over this floor.

The architects hope to include art, native artifacts, and lush planting in the colonnade circling the legislative chambers and on all levels of the galleries surrounding the central court.



Site photo: Iolani Palace, left; Capitol, center; Library, right. Group will be in new Honolulu Civic Center.



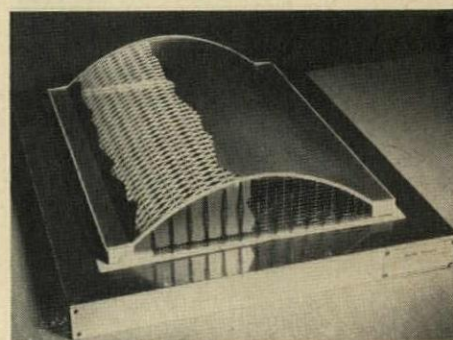
DARTMOUTH FIELD HOUSE: ANOTHER U.S. DESIGN BY NERVI

HANOVER, N.H. Second major project by Pier Luigi Nervi in the United States is a \$1.5 million field house for Dartmouth College. It joins the Port of New York Authority's uptown bus terminal in Manhattan, now under construction.

The arched roof of the field house will be composed of a diagonally-intersecting latticework of reinforced concrete. The units will be precast on the ground and positioned from a movable scaffold. When in place, they will be joined with steel reinforcing rods and concrete will be poured in

the channels between the units. The structure will include an 11-lap wood track, baseball practice, high jump, pole vault and weight throw, practice tracks, and a lacrosse court.

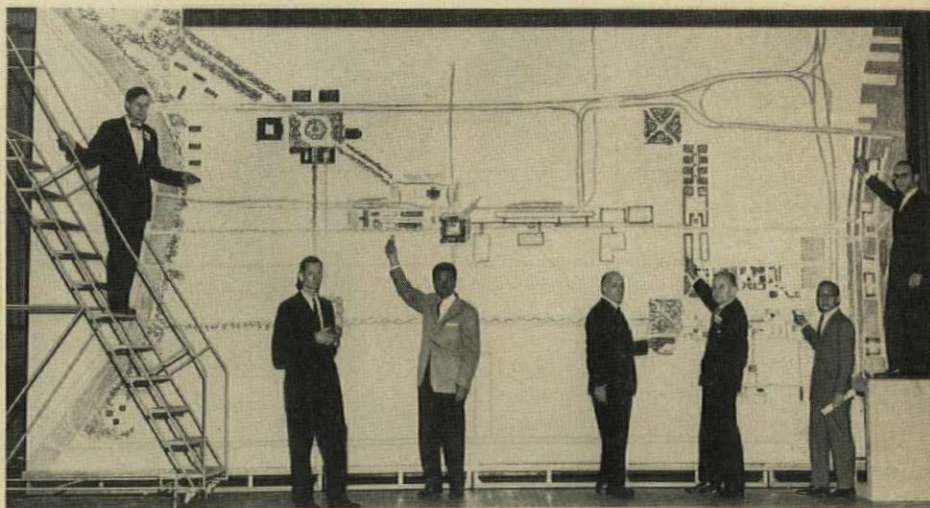
The form of the vast field house roof (*above*) will be reminiscent of the famous hangars Nervi did for the Italian Air Force in the late 1930's, since destroyed. Unfortunately, as in much of the work by engineer-designers, the force and delicacy of the structure is lost as soon as the "architecture" is put on. Campbell & Aldrich are Associate Architects.



Enclosed, Nervi's dramatic structure becomes just another field house.

AIA Convention Memorabilia: the Call to Arms

PHILADELPHIA, PA. Time and time again at the AIA Convention, attendants were exhorted to the architect's prime role in forming our cities. Key-noter Sir William Holford: "The architect cannot solve [Governmental crises and built-in obsolescence]; but if he took a more active and pervasive part in helping to solve them and in opening a vista to a more interesting future, I firmly believe the crises would be infinitely less acute." HHFA Administrator Robert C. Weaver: "You will have in your hands . . . a major part in shaping the urban life of this country. What you do will influence the lives of millions yet unborn, for decades yet to come. No other generation of architects had before it such an opportunity or such a challenge. America waits for your response." Lewis Mumford, on what we have accomplished so far: "Too often, under the illusion that they have assisted in an urban birth, the planners and architects have actually performed a hysterectomy." Bruno Zevi: "The very significance of the architectural profession is at stake. In the process of city-making, there is



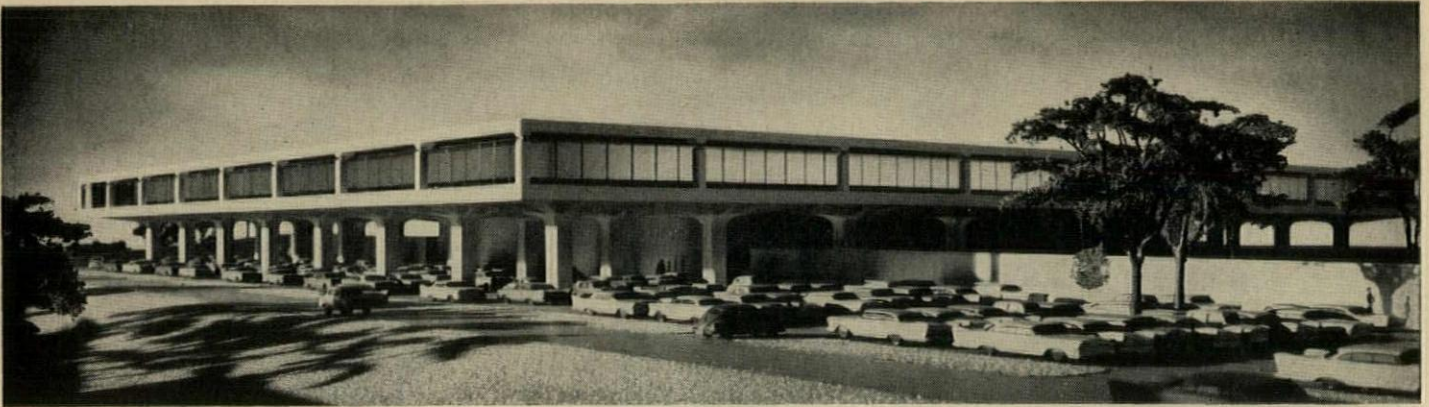
Von Moltke, Bacon, Kling, Stonorov, Larson, Pei, Geddes.

no second, or third, or fourth place that architects can occupy: either they come in first, or they are going to be the last." Edmund N. Bacon, Director of Philadelphia City Planning Commission: "The architectural profession has been propelled into a central position in the formation of our current society. If we fail our

profession now, we will have failed the society of which we are a part."

As an evidence of what *can* be done for the city by architects, the men responsible for Philadelphia's great resurgence explained their accomplishment to the convention in a staged demonstration (*above*) that almost became "a city planning ballet."

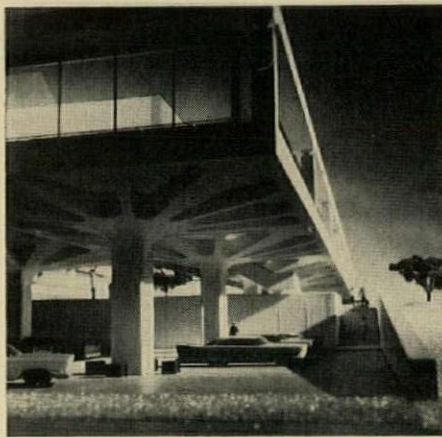
Photos: Erra Stoller Associates



Up-in-Air Administration and Research Building

BLOOMFIELD, CONN. The new administration and research building for Emhart Manufacturing Company will appear to hover over a rural hilltop here. Architects Skidmore, Owings & Merrill have designed an elevated, one-story administrative unit describing a hollow rectangle in which are situated a courtyard and the ground-level research facility. Emhart is a manufacturer of packaging and glass machinery, presses and feeds, and aerial lifts.

Administration building will sit on a reinforced concrete structure of columns supporting radial beam sys-



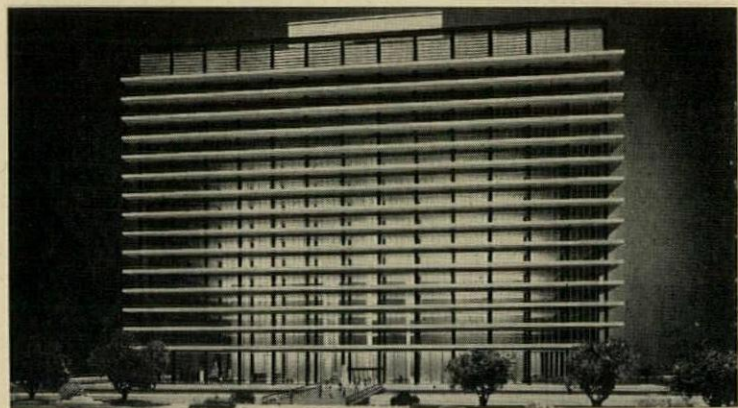
tems, somewhat evocative in feeling of Nervi's structure for the International Labor Exposition Pavilion in Turin (p. 63, NOVEMBER, 1960 P/A). Employees and visitors, after leaving their cars in parking areas beneath the administrative floor, will enter the building through a central entrance court. Thanks to this court and complete peripheral fenestration, 90 per cent of the main floor space will be within 40 ft of the window wall. Floor space will be completely flexible for possible future alterations. Syska & Hennessy is Consulting Mechanical Engineer.

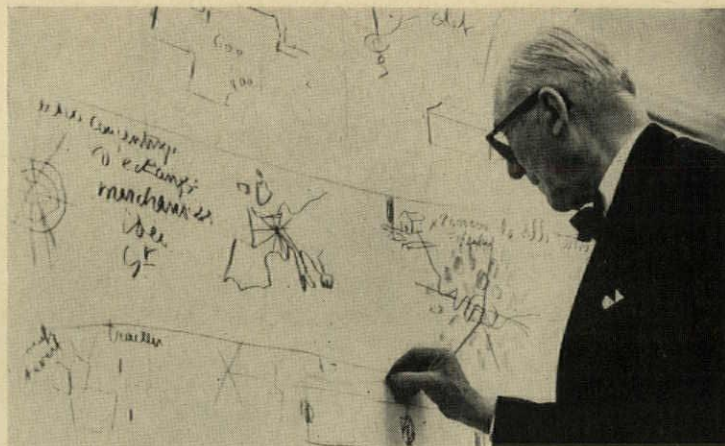
Spacious but Stylish City Building for L. A.

LOS ANGELES, CALIF. Headquarters for Los Angeles' Department of Water and Power will be the largest office building in the West and one of the largest in the world (1,683,405 sq ft as compared to Pan Am's 2,400,000). Excavation began in May near the city's new Cultural Center (see BULLETINS). Office is expected to employ 4000 by 1990, bringing together functions now in 11 city buildings.

The 15-story tower will rise from a rectangular moat, which will sit on a podium, with parking garages on three sides. The pool will have eight fountains. Structure will be steel frame with floor slabs projecting beyond the glass walls for shade. Olive-black granite will sheathe the columns; mullions will be olive-anodized aluminum. The entrance will be reached by a black slate bridge across the moat. Customer service departments and a display area for electrical appliances will be on the main floor. The floor below will hold an 800-seat cafeteria and an auditorium.

Architect and Engineer: Albert C. Martin & Associates; Consulting Architect: Ladd & Kelsey; Landscape Architect: Cornell, Bridgers & Troller.





LE CORBUSIER IN THE U.S.A.

The door from Customs at New York International Airport opened, and out popped Le Corbusier, waving the rolled-up plans for Harvard's proposed Visual Arts Center. On hand to greet him were Dean José Luis Sert of Harvard (who immediately took the plans), Dean Charles R. Colbert of Columbia, Professor James Fitch of Columbia, and such long-time Corbu cronies as sculptor Costantino Nivola and Architect-Planner Paul Lester Weiner. Thus began a whirlwind visit during which *le maître* received the Gold Medal of the AIA and an Honorary Degree of Doctor of Humane Letters from Columbia University.

Receiving his medal from President Philip Will, Jr., at the AIA Convention in Philadelphia, Corbu delivered himself of a few brief observations on a life spent in the service of architecture: "Great things are made out of a multitude of little things, and those little things are daily, successive, without end from morning to night. Daily life is made of perseverance, courage, modesty, and difficulties." And, later: "Today's problems remain in front of us—the world explodes; not only technology changes every day.

"I am going to make my definitive confession: I am living in the skin of a student."

The following day, when at Columbia to receive his degree as part of the School of Architecture's Four Great Makers series, Corbu spent the afternoon with students, and, after a celebrity-studded banquet in the evening, accepted his degree with a wise, Corbu-illustrated discourse on his philosophy of planning for cities of humans. Then, to the strains of *Gaudeamus igitur* from the Columbia Choir, he marched out to address crowds waiting for him in the rain.

The next morning, Le Corbusier flew back to Paris.



Sert, Fitch, Corbu
at Idlewild Airport.



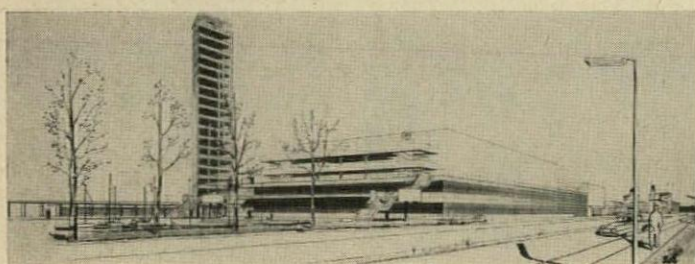
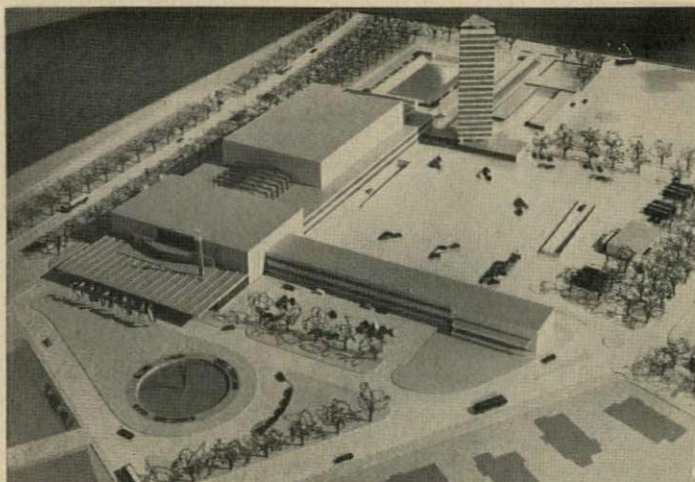
Corbu accepts Gold Medal of AIA.
AIA President Will at right.



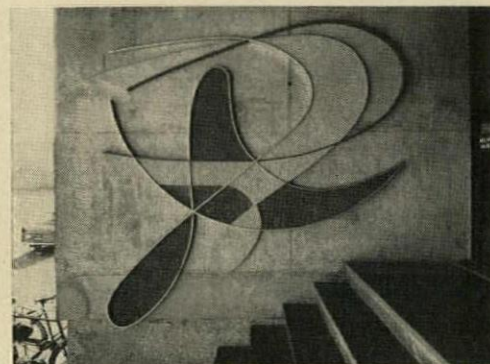
Columbia architectural students hear Corbu at an afternoon session.



At Columbia banquet, Sert toasts Corbu as Dean Colbert looks on.



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Recent Works of a Pioneer: J.J.P. Oud

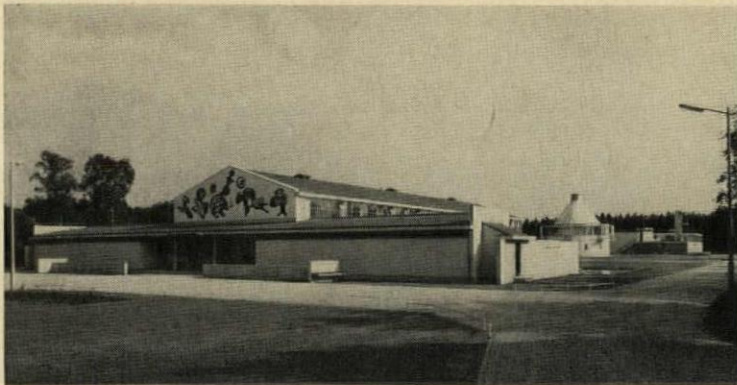
WASSENAAR, THE NETHERLANDS This is the year Le Corbusier receives his AIA Gold Medal and is lauded, together with Mies, Gropius, and Wright, as one of "The Four Great Makers" by Columbia University. What of another pioneer of the modern movement, almost coeval with Mies, Gropius, and Corbu—J.J.P. Oud, co-founder with Mondrian and van Doesberg of De Stijl?

After working first as official public architect, then with a private prac-

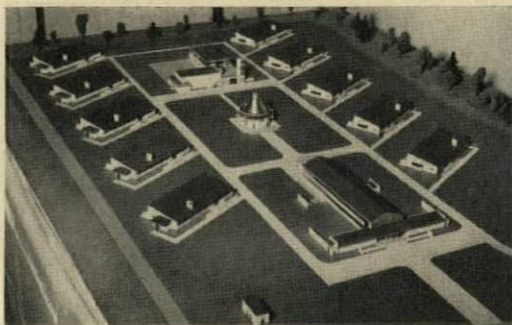
tice in Rotterdam for 36 years, Oud moved to the smaller city of Wassenaar seven years ago and set up shop. His practice has been quite successful there, ranging from large Governmental complexes to individual residences. Several of Oud's recent works are shown on these pages.

Perhaps the most impressive commission now in the Oud office is the Congress Building of The Hague 1. To be situated next to the Municipal Museum, designed by Berlage, the

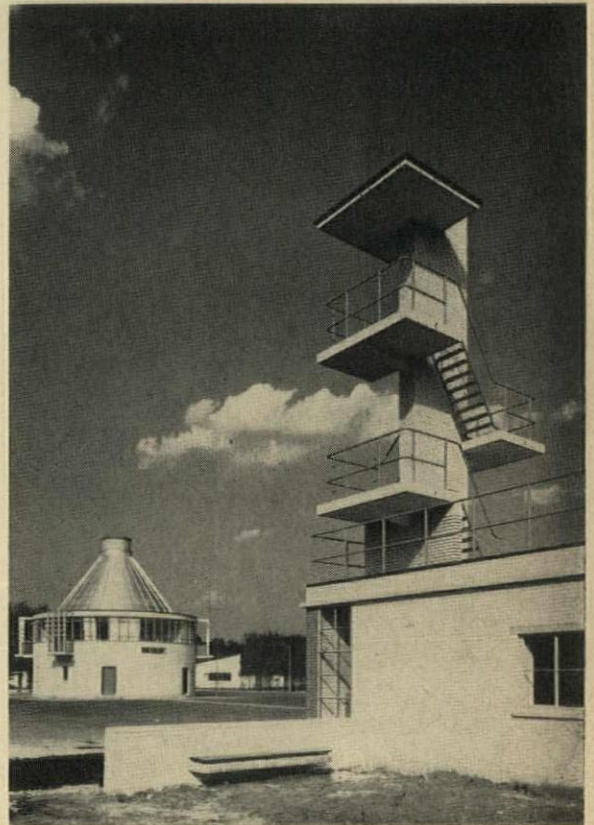
Congress Hall will contain under one roof an assembly auditorium, music hall, theater, cinema, conference rooms, delegation rooms, permanent and rental offices, restaurant and snack bar, and, in the basement, eight bowling alleys and halls for fencing, table tennis, and billiards. On the main level, the large hall will be separated from the smaller music hall and theater by a winter garden where delegates and visitors may relax and recreate themselves. A long, narrow



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wing will contain administrative and other offices. Connected to the Congress Hall will be a 17-story tourist hotel. This structure will be triangular in plan, with an elevator and mechanical core surrounded by three guest rooms on each floor.

The Utrecht Building in Rotterdam 3 is a rental office building with all floors planned on a flexible modular system. The structure is notable for its use of art, unusual in a speculative building of this type. An example

is the ceramic and metal wall mural by César Domela 2.

The "resort village" for children recovering from polio near Arnhem 4-7 is neatly planned to provide varied experiences using a few basic shapes, simple materials, and a little related art, such as the mosaic by Karel Appel on the administration building 4. Six of an eventual ten pavilions 7 have been constructed for the children. Each pavilion accommodates six boys and six girls, plus matron and staff.

Centrally located on the site 5 are the cone-roofed utility and heating building, which contains the caretaker's apartment on its second level, and the sports building, which contains, in addition to gymnasium and swimming pool, a butterfly-shaped bath for water therapy. The tower 6 is for visitors to look over the entire development. Over-all exterior wall material is white, glazed brick. According to Oud, "The white color is chosen to give the children gay surroundings."

Vast Seat Lift Begins Lifting in Pittsburgh

PITTSBURGH, PA. While gentlemen in Philadelphia were still abed, nursing AIA Convention hangovers, your intrepid News Editor was bouncing through the bumpy New York-to-Pittsburgh air in a two-engine Grumman Mallard to see the first public working of the immense seat lift in Pittsburgh's still-a-building Public Auditorium.

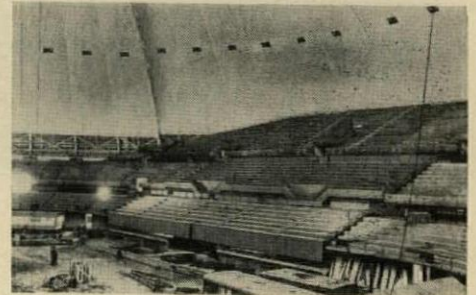
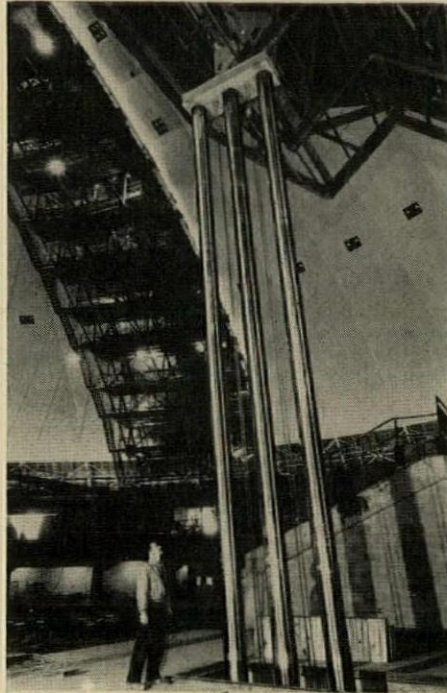
The trip and the *mal de l'air* were worth it, for the largest-yet lift operation is an impressive sight.

A 116' x 68' section of the arena-type seating of the auditorium is situated over a 118' x 64' stage and may be raised for concerts, musicals, and the like. Total number of seats lifted to expose the stage is 2100. Four hydraulic plungers, 12 $\frac{5}{8}$ " in diameter and 42'-1" long, raise and lower the seat section. Total weight lifted by the jacks is 445,000 lb. There are actually six gleaming steel cylinders, three on each side of the stage. One on each side serves as a locking post to secure the section in the up position. The jack assemblies are kept level with each other by a cable equalizing system similar in operation to a parallel ruler. Cylinder

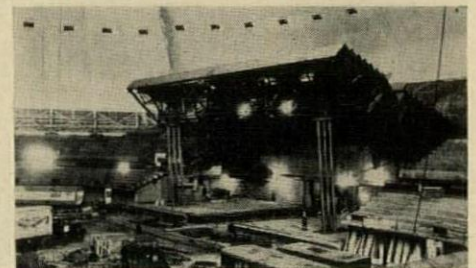
assemblies at each side are trunnion-mounted top and bottom.

The dome was designed by Mitchell & Ritchey. Rotary Lift Division of

Dover Corporation manufactured the lifts, and Marshall Elevator Company of Pittsburgh installed them. Work on the dome continues apace.

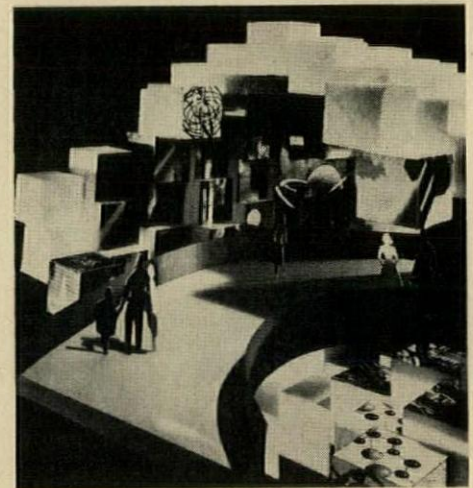
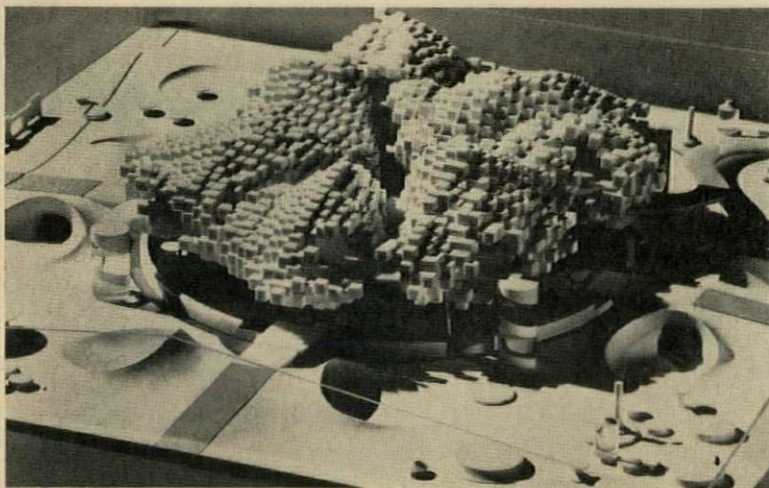


Seats in place complete "bowl"-type seating of Pittsburgh auditorium.



2100 seats raised by "Oildraulic Seat Lift" expose 118' x 64' stage.

SUGAR-CUBE STRUCTURE FOR CENTURY 21



SEATTLE, WASH. The "theme" exhibit for Seattle's Century 21 Exposition will be housed in clusters of modular boxes that will rise under the great roof of Paul Thiry's Theme Building like a mountain of sugar cubes.

Designed by Donald Deskey Associates, Inc., industrial designers, the exhibit will have as its theme "The Environment of Man in the 21st Century." It will deal with seven "major

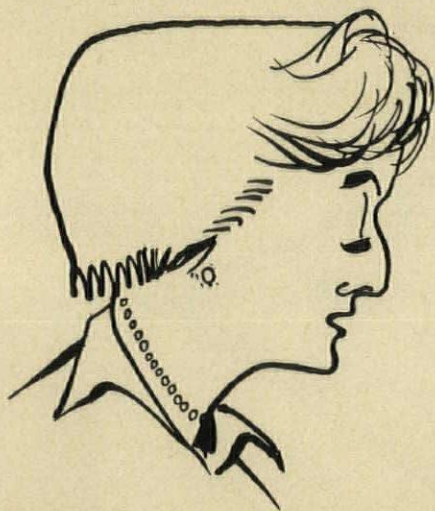
and interdependent areas" of man's life: housing, business and industry, communications, transportation, food production and distribution, education, and recreation and leisure time. On the ground floor will be exhibits of research and development on products and services that will affect man in these areas. Entering the maze of cubes which will depict life in Century 21, the viewer will move through

its spaces via ramps and ascending and descending platforms. He will see the entire exhibit in about half an hour, then return to the ground floor by means of a broad ramp. An estimated 3000 people per hour will visit the building at peak hours, and traffic patterns consequently have been carefully planned.

Back in New York, we are still stuck with the "Unisphere!"

PERSONALITIES

"You have abundantly justified your training as an architect as well as the rare fortune of being a protégée of Eliel Saarinen's family, and also a student of Mies van der Rohe. As Director of Design and Planning in the international scope of Knoll Associates, your leadership in developing furniture, textiles, and the accessories of interior design has made available the work of eminent designers in the service of contemporary architecture here and abroad. In this broad field your training, skill, and unfailing good judgment have written your name high on the roll of masters of our contemporary design." Lavish but well-deserved praise for one who has been serving the design professions for less than twenty years. It was thus that the AIA worded its Industrial Arts Medal citation presented to **Florence Knoll**—Florence Schust Knoll Bas-



sett, to be complete—at the recent Philadelphia convention.

Florence Knoll's intensive design background started with a degree from Cranbrook Academy, study time at the Architectural Association in London, and a degree in architecture from Illinois Institute of Technology, where she studied under Mies. She married the late Hans Knoll in 1943 and went to New York as partner of Hans Knoll Associates and head of the Knoll Planning Unit. Knoll Associates, Inc., was formed in 1946. Since then, the practice has grown to include showrooms in 11 cities throughout the U.S., and with Knoll International, Ltd., showrooms in 21 foreign countries. Since Knoll affiliated with Art Metals Company a year ago, the Planning Unit has undertaken the much-to-be-desired goal of improving office furniture design.

Perhaps the most distinguishing

hallmark of the Knoll operation is the use of architects as furniture and fabric designers. Her stellar list of designers includes Mies, Eero Saarinen, Sven Markelius, Breuer, Nakashima, Abel Sorensen, and Pierre Jeanneret. The third dimension is also the haunt of sculptors Bertoia and Noguchi, Knoll's nonarchitect designers.

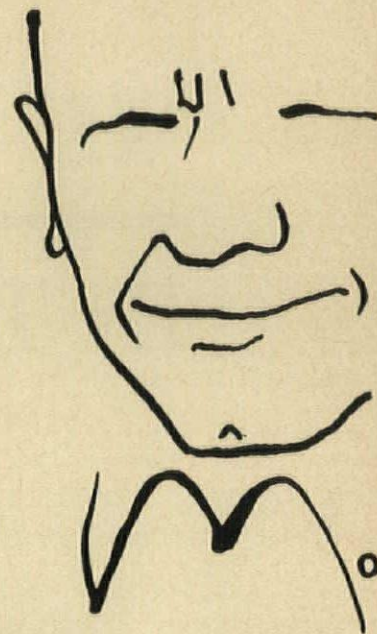
Today, Florence Knoll spends her home life in Miami as the wife of Harry Hood Bassett, whom she met several years ago when Knoll was doing his bank in Miami. She makes constant lightning trips to New York to keep an eye on the business. Soon, the Bassetts will have a summer place in the Hamptons on Long Island, designed by Craig Ellwood and Peter Blake.

New director of the Solomon R. Guggenheim Museum is 40-year-old **THOMAS M. MESSER**; he comes from directorship of Boston's Institute of Contemporary Arts. . . . **MARTIN L. FRIEDMAN** is new director of Walker Art Center in Minneapolis. . . . First Lieutenant **GERALD F. OUDENS** of the Air Force Medical Service received National Capital Award, presented annually to an outstanding young architect in the Washington area; he has been working on new approach to planning Air Force hospitals.

"The view his assistants and associates take of him reads like a take-off on the Boy Scout oath: fair-minded, polite, generous, flexible, humorous, patient, decisive, interested and encouraging, constructively critical." So Reginald R. Isaacs, Director of the Department of City and Regional Planning of Harvard's Graduate School of Design, writes P/A about his friend **Chester Nagel**.

The man with these imposing references studied under Gropius, then taught and worked with him for many years, first at Harvard, then as a member of The Architects Collaborative. On the subject of architectural education, he still quotes Gropius on Zen Buddhism: "Develop an infallible technique, then place yourself at the mercy of inspiration." He believes that the student must be helped to develop a purpose outside himself toward which to work, that he must be made to see "the grandeur of nature's order" and how to translate this to the uses of man, using the tools provided by our technology. Nagel cites the need for the practicing architect to continue to learn: "I believe we serve best when we search incessantly as lifetime scholars."

Service is evidently one of the



touchstones of his approach to architecture. Isaacs notes that most of the projects he undertakes are social in nature—for education, health, or housing. Nagel's dedication is seen in his comment, "I have found in the philosophy of Gropius a mission as broad and compelling as any within the clergy or medicine. The sad state of most of our man-made environment is evidence surely of the need for visions and actions of consequence."

How does a graduate of TAC run his own office? Nagel (who set up his own practice in 1958) states that he maintains close contact with all jobs from start to finish. Staff members function as assistants "at the highest possible levels of their individual abilities." He says that their contributions to design and planning are often of a major character. As one who has consulted on projects with Nagel, Isaacs says: "In Chester Nagel's practice, there is actual collaboration with landscape architects, city planners, engineers and others as being equals. . . . There is also team operation for the young architect members of the firm."

In his home study, Nagel keeps a large collection of *objets trouvés*—shells, grasses, plant forms. To him, they recall nature's efficiency of form which he attempts, in his designs, to translate into architecture. He also derives from them a "sense of peace and communion" with those areas of the spirit where—he quotes Shelley—"the owl-winged faculties dare not soar."

Sketches by *Romino Corbelli*

“H” is for heating... **“C”** is for

IN THE NEW J-M RADIANT



cooling... "S" is for sound control

SANACOUSTIC[®] HCS SYSTEM

THE CEILING THAT PROVIDES UNIFORM YEAR-ROUND TEMPERATURE AND NOISE QUIETING

Sanacoustic HCS presents—for the first time—an easily-installed, reasonably-priced and *workable* radiant ceiling. It provides draftless cooling and uniform heating.

The HCS ceiling is simplicity itself. It consists of standard-perforated, white-enameled metal panels . . . water-carrying radiant copper tubing . . . and an acoustical blanket. This assembly is carried by conventional 1½" suspension channels.

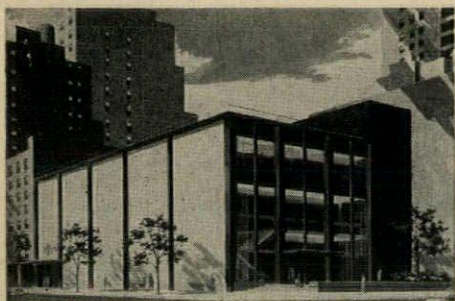
You can use the HCS ceiling for heating only—as in schools; or for both heating and cooling—as in hospitals or offices. It easily adapts to any ceiling layout . . . floors can be free of under-window apparatus . . . electrical and fuel costs are lowered . . . maintenance is reduced . . . and the system is fully accessible at any point. In cooling installations, you can eliminate 50-75% of duct work.

Installation is done under the complete responsibility of Johns-Manville. The installed system is turned over, ready for connection to supply and return water piping, to the mechanical contractor.

You'll find the complete story of HCS makes interesting and exciting reading. For full information, write to Johns-Manville, Box 158, Dept. PA, N. Y. 16, N. Y. In Canada: Port Credit, Ont. Cable address: Johnmanvil.

JOHNS-MANVILLE





Brotherhood House for NYC Garment District

A four-story, steel-frame building called Brotherhood House is planned for Seventh Avenue and 40th Street in New York. It will house a 300-seat synagogue on the first floor, and the remaining space will be occupied by Brotherhood House headquarters. Second floor will contain a 400-person-capacity meeting room, which can also serve as a ballroom for 260 people. The upper two floors will hold seminar

rooms, administrative offices, and a library. Two elevators will serve the building. Exterior materials will include limestone, glass, and bronze. Architect: William Lescaze; Mechanical Engineer: Jaros, Baum & Bolles; Structural Engineer: Charles Mayer.

Puerto Rican Bank Plans Central Office

Banco Popular de Puerto Rico will begin construction of its new central office building in San Juan early this summer. Architect is Chauncey W. Riley of New York City, designer of the original Banco Popular Headquarters Building in downtown San Juan, which was published in *Pencil Points*, P/A's predecessor (p. 89, FEBRUARY 1941). The project includes a 25-story, reinforced-concrete office building, a shopping center, and space for 1000 cars. Shear walls at ends of



the tower structure will absorb lateral stresses in case of an earthquake or hurricane. Extensive landscaping will include fountains on the plaza near the main entrance and also on the set-back roof. Facilities will include an employees' club, a 300-seat auditorium equipped with stage and stereophonic cinema, and equipment for private radio broadcasting. The top floor will contain a private dining club, while the main roof area will be public observation space with a view of the ocean and the mountains. Tower windows will be small, in order to protect the offices from tropical sun. Mechanical Engineer: Tizian Associates; Structural Engineer: Throop & Feiden.

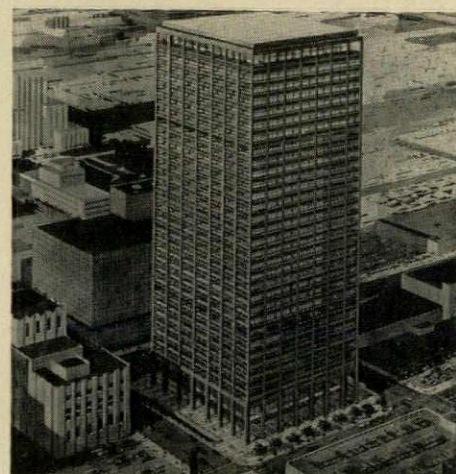


Cross Tower, Concourse for City Building

When completed in 1964, Philadelphia's Municipal Services Building will climax more than ten years of study aimed at integrating the city's administrative departments in one facility. The 21-story building will be built on Rebyburn Plaza opposite City Hall and diagonally opposite Penn Center. Occupying almost the entire site below street level, a concourse area called the Municipal Services Center will bring together a variety of public services—licenses, permits, tax payments, information, etc. This concourse will be able to handle 2000 people at a time, will be connected to subways and a 600-car underground garage, and will be illuminated by a

series of light wells and a block-long open court.

As designed by Vincent G. Kling, the reinforced-concrete tower will be cruciform in plan, occupying only 25 per cent of the landscaped, street-level plaza. The plan, with mechanical services at the core, opens up a maximum number of offices to the light. The tower will be faced with precast stone panels, off-white in color, which will project 14" beyond the spandrels to give a strong façade pattern. Windows will be tinted bronze, with double panes 5" apart having a dead air insulating space to contain built-in vertical blinds. Construction will begin in May 1962.



Tennessee Gas Tower in Houston by SOM

A 33-story tower faced with glass and anodized aluminum will be completed in early 1963 for the Tennessee Gas Transmission Company in Houston, Texas. The glass walls will be set back 5 ft from the face of the building and

Continued on page 82

SILENCE...

Lead at work!

Chalk up one for lead when it comes to a genuine genius for isolating sound. That's because, thickness for thickness, lead is 13 times more effective at blocking sound transmission than the next best commonly used construction material... up to 24 times more effective than some others.

And lead's characteristic density and limpness also make it stack up better pound for pound.

Lead gets an "A" for conduct and cooperation, too. It's tackable, paintable, fireproof and malleable—folding or bending to "dress" even over complicated surfaces. It is applicable to buildings, machinery, transportation equipment and almost every area where sound control is a problem.

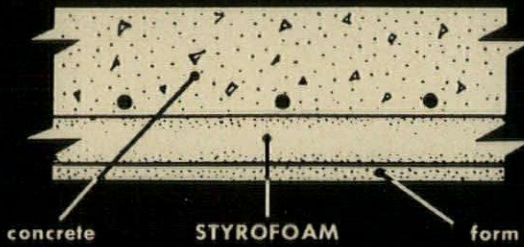
LOOK AHEAD WITH **LEAD**



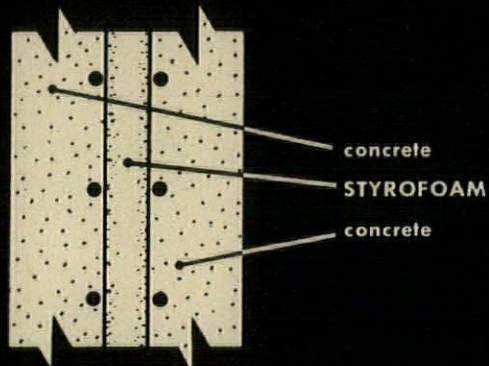
Technical data and charts prepared by the acoustical consulting firm of Bolt, Beranek and Newman are all contained in this brochure.

For your copy of the new 12-page report, *Improved Sound Barriers Employing Lead*, write to Lead Industries Association, 292 Madison Ave., New York 17, N. Y.

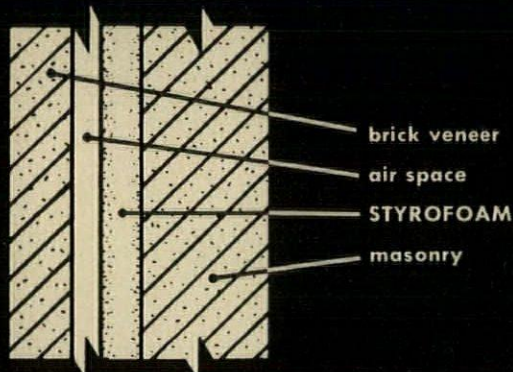
Form liner for poured roofs



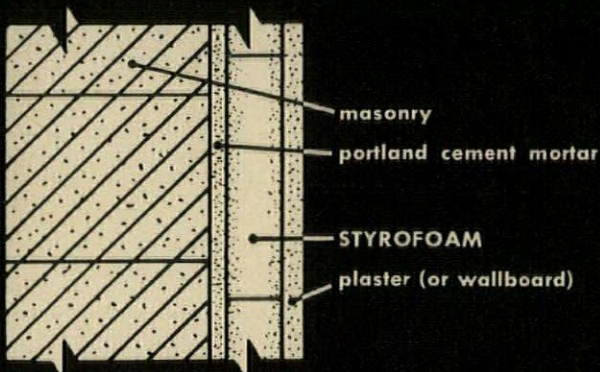
Insulating core for curtain wall panels



Insulation inside cavity walls

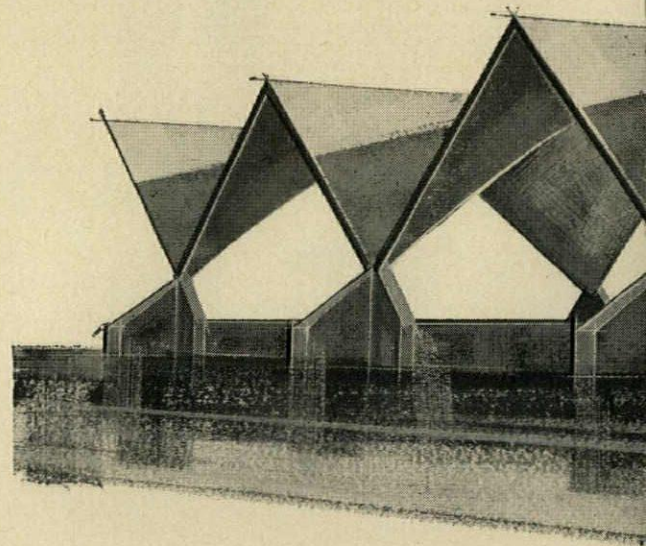


Insulating base for plaster



Styrofoam simplifies construction
of insulated . . .

- THIN-SHELL ROOFS
- CONCRETE CURTAIN WALLS
- CAVITY WALLS
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STYROFOAM®

**solves design problems, speeds construction
... and adds permanent insulating values!**

Styrofoam brand insulation board provides triple benefits for commercial building construction. Proved by long use, Styrofoam retains superior insulating values year after year . . . permits use of new, more efficient techniques . . . and cuts the time and cost of insulated construction.

Styrofoam insulation is both a superior insulating material and a rigid structural material. Styrofoam has a low "K" factor that stays low, because water and water vapor don't penetrate it and build up inside. Buildings stay more uniformly warm (or cool) and dry in any weather, saving on heating and cooling costs.

Styrofoam insulation makes new techniques practical. For example, lightweight, insulated concrete curtain walls can be produced quickly using Styrofoam as the core. Positive keying

action to concrete minimizes need for fasteners or ties. The final concrete-insulation-concrete "sandwich" is strong, lightweight and economical.

For thin-shell application, Styrofoam insulation is a valuable construction material and insulation. For form work of all kinds, it serves as form liner, permanent insulation, and vapor barrier applied in a single step! The use of Styrofoam in this way provides a minimum 70% reduction in heat loss.

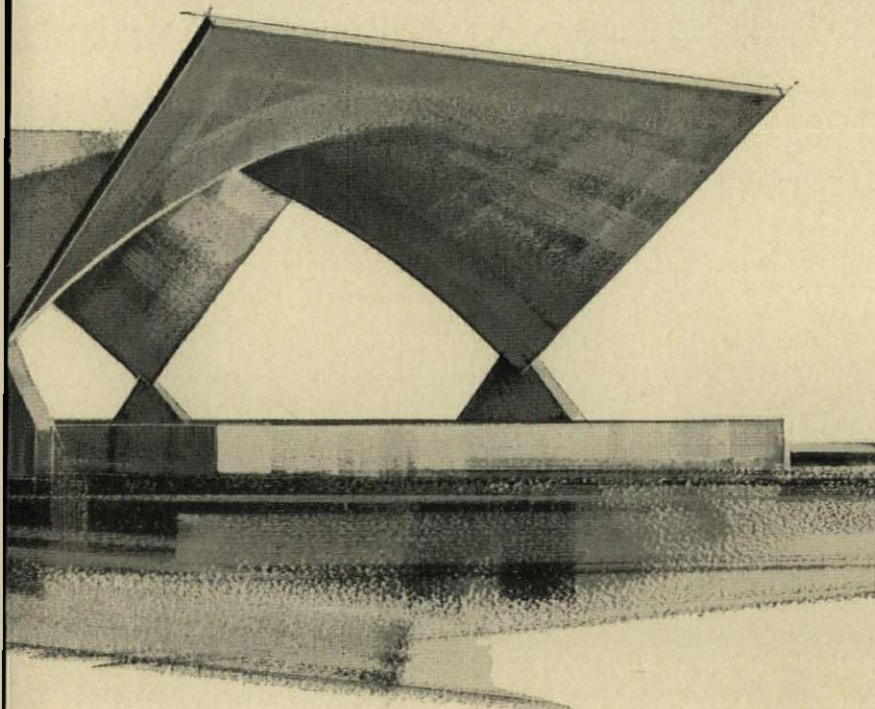
Insulating plasterbase—Styrofoam insulation eliminates the need for furring and lathing when insulating masonry walls. Just adhere Styrofoam to the wall with portland cement mortar, then apply plaster . . . or wallboard, if you wish. The use of Styrofoam as an insulating plasterbase provides 35 to 45% reduction in heat loss.

Cavity-wall buildings stay warm and dry when Styrofoam insulation is in

the cavity. Simply adhere it to the outside face of the inner wythe. Because of its high resistance to water vapor, Styrofoam eliminates the need to build in a separate vapor barrier. The addition of Styrofoam to cavity-wall construction provides a 50 to 60% reduction in heat loss.

Low-cost Styrofoam has no food value to attract insects, and will not rot. Installation and handling are quick and easy. For more information on Dow Building Products, write THE DOW CHEMICAL COMPANY, Midland, Mich., Plastics Sales Dept. 1502EB6

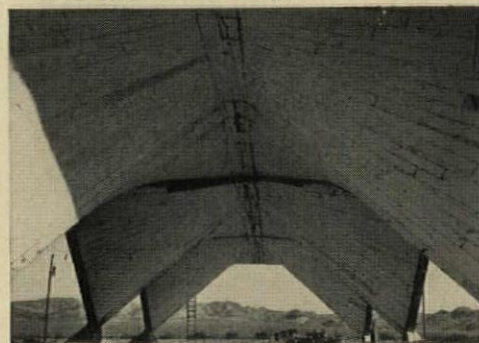
Styrofoam is a registered trademark of The Dow Chemical Company. It is applied only to the homogeneous expanded polystyrene made according to an exclusive Dow process. Styrofoam brand insulation board is available only from Dow and its authorized representatives.



This unique h-p roof was poured over Styrofoam, which was finished on the underside with two coats of plaster and a sprayed acoustical finish.



Styrofoam is laid over wood form and covered with reinforcing.



After removing form boards, the Styrofoam in the ceiling is ready for finishing.

THE DOW CHEMICAL COMPANY



Midland, Michigan

Continued from page 78

will be dark gray, heat-absorbing glass. The absence of interior supporting columns in the office areas will allow great flexibility in layout. The 1,100,000-sq-ft building will be surrounded by a block-square, landscaped plaza of natural stone. The ground-floor lobby will be enclosed in glass and set back from the perimeter col-

umns. An underground concourse will connect the basement with a seven-level, block-square parking garage. Architect: Skidmore, Owings & Merrill of San Francisco.

Subaqueous Venice

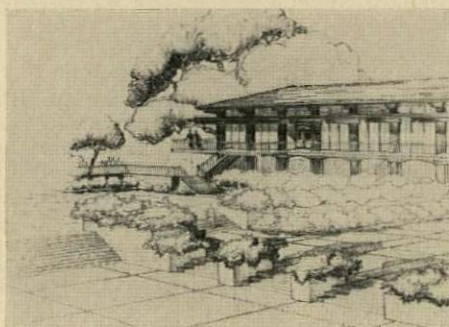
Architectural lecturers who would be

struck dumb if they did not have that good old slide of Piazza San Marco to talk about may indeed be mute in a few decades. This commendable state of affairs, however, is the only happy aspect of news from Venice that the city is sinking into her lagoon at a faster rate and that the Piazza and the ground levels of St. Mark's Basilica and the Doge's Palace may be under water at high tide 30 or 40 years hence. Principal causes of the accelerated sinking are thought to be the drawing of water from the subsoil through artesian wells, erection of large buildings on sites formerly occupied only by gardens, dredging of canals, and lapping of waves produced by *vaporetti* and other power craft. Possible means to slow the sinking before the city is awash are prohibiting the use of the wells and (eventually) blocking the passages connecting the lagoon with the Adriatic Sea. The latter method would permit the control of the level of the lagoon (which would become a lake) by a system of pumps and locks.



Stanford to Get Bay-Style Union

Tressider Memorial Union at Stanford University, designed by Spencer & Lee, will be an inviting example of the Bay Area style. Lower level of the two-story union will contain bowling, billiard, and ping-pong facilities, barber shop, store, travel agency, and dining areas both indoors and outdoors. Second floor will have office, music and reading areas, lounges, and an exhibit area. A banquet-ballroom will be added later.



WHERE WAS MOSES WHEN THE LIGHTS WENT ON?

(World's Fair Frolics, Cont'd.)

Things continue to move resolutely backward out at Flushing Meadow Park, headquarters of the 1964-'65 New York World's Fair. Speaking at Brandeis University, Fair Fuehrer Robert Moses gave the design philosophy—or lack thereof—of the exposition: "The Fair administration belongs to no architectural clique, subscribes to no aesthetic creed, favors no period or school, and worships at no artistic shrine. . . . There will be no predominating architectural concept." The man to whom AIA once—for some reason—gave its Allied Professions Medal said, "I get a little weary of the avant garde critics who see in a World's Fair only an opportunity to advance their latest ideas, to establish a new school of American planning, architecture and art, and place their individual seal on one grand, unified, integrated concept which will astonish the visitors from the hinterlands and rock the outer world." Having thus cavalierly dismissed the latest ideas, a new school

of American planning, architecture and art, and concepts which would astonish and amaze, Moses said that his administration's message to potential exhibitors is that ". . . we don't care whether you are a traditionalist, modernist, or eclectic. The exhibitor makes his choice. Fair officials who issue a blanket invitation to all comers need not lean toward the smugness of the traditionalist or yield to the exigency of the avant garde, nor sit with the eclectics. They have no position at all except as benign spectators."

Unfortunately, Brandeis students were not the only persons to hear these commandments from Moses' own Mount Sinai; the Fair broadcast them to all of Western Europe in special advertising inserts in the Paris edition of the *New York Herald-Tribune* and the International Edition of *The New York Times*. The ads also showed pictures of his big piece of costume jewelry, the Unisphere. So much for American prestige abroad!

They Like Us Somewhere

Governor Robert Meyner has proclaimed the week of June 4th to June 10th as "Architects' Week" in New Jersey. He commended the profession for bringing the rich, full life to Jerseyites.

NATIONAL DRAWING COMPETITION

If the recent article, "Architects Can Draw Again" (pp. 134-143, MARCH 1961 P/A), was correct, a number of architects should be entering "Drawings U.S.A.," the 1st Biennial National Drawing Competition conducted by the St. Paul Gallery and School of Art. Prizes of \$2500 and purchases for the permanent collection of the museum will be given. Judging will take place October 27-28, and the exhibit will be shown from November 16 through December 22. About 75 of the drawings will be selected for a traveling exhibition following the St. Paul show. Entries must be delivered by October 1 to the St. Paul Gallery, 476 Summit Ave., St. Paul 2, Minn.

Lescaze: Let's Put the Architect in Charge

A plea for architectural control of related arts going into a building was made by William Lescaze at the re-

the art
of building



flows through finite matter
in seemingly infinite variations
— and creative imagination
quickly catches up a new material
which signals a happy union
of the practical with the esthetic

HYDRO-T-METAL®

HYDRO-T-METAL is a new alloy of titanium, copper and high-grade zinc, with traces of manganese and chromium. Distinguished architects throughout the world have discovered its esthetic, economic and material advantages.

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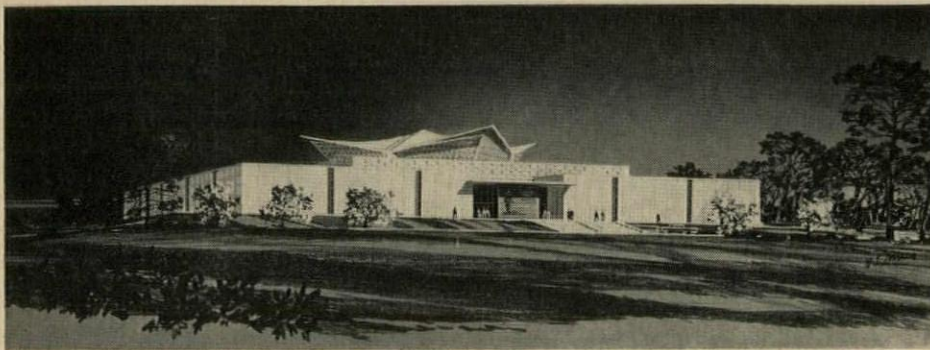
cent dedication of a New York City courts building he designed. Lescaze said the architect should be the chief of a team, chosen by himself, which includes the artist and sculptor.

The New York Times snatched the torch from Lescaze's hand and, in an editorial, said that "For the architect to select the team is a reasonable and even imperative arrangement if our

public buildings are not to run the risk of aesthetic scrambling." The *Times* went even further, and, echoing the theme of the AIA Convention in Philadelphia, wrote: "The problem, actually, goes far beyond that of a single building. A master plan for the relationship of the elements composing such projects as city centers is as necessary aesthetically as it is prac-

tically. Architecture, traditionally the mother of sculpture and painting, has social responsibilities today on a scale not even approached in the past. A very large part of that responsibility is the creation of a harmonious environment from the hodge-podge of our cities."

Bravo, *Times*!



National Medical Library Has H-P Roof

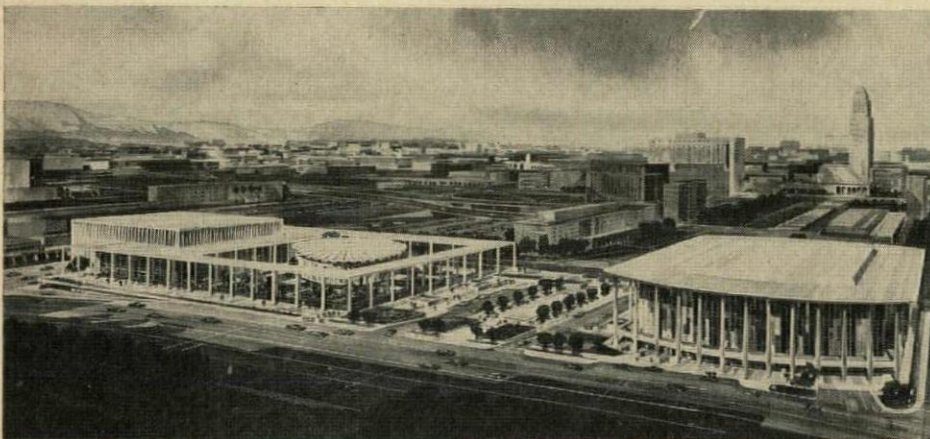
National Library of Medicine in Bethesda, Maryland, is currently under construction. The rectangular building will be sheathed in limestone and granite and will have a roof composed of four connected hyperbolic-paraboloids over the public catalog area and main reading room. The two floors above grade will be steel framed; three stack floors below

grade will be reinforced concrete. A fourth, below grade level, will contain mechanical equipment. A "History of Medicine" reading room will receive special interior treatment. There will be seating space for 206 readers in the 231,855-sq-ft structure. Architect: O'Connor & Kilham; Structural Engineer: Severud-Elstad-Krueger Associates.



Nursery for Physically Handicapped Children

A one-story steel and masonry structure will be the Nursery Building for handicapped children at the Lapeer State Home and Training School in Lapeer, Michigan. The 50,000 sq ft building will contain 200 beds in five wards. Each ward has small, fenced-in playyards with pools and sand boxes. Architect: Linn Smith Associates, Inc. of Birmingham, Mich.



Additions for L.A. Culture Center

The new Los Angeles Music Center (p. 62, SEPTEMBER 1960 P/A) by Welton Becket & Associates has been joined by two other structures—an 1800-seat theater and an 800-seat forum (whatever that is)—in an attempt to infuse culture into the City of the Angels. The forum will be a circular building 132 ft in diameter, set in a sunken garden. It will be surrounded by a sculptured mural. The building will have a round stage to be

raised or lowered depending on the attraction. The theater will be joined to its neighbor by a white marble colonnade and, in addition to its being used for drama and musical comedy, will house musical events too intimate for the 3200-seat music hall. The three structures together will be known as "The Music Center," and will be dedicated as "A Living Memorial to Peace." Peace? With a bunch of prima donnas scheduled to show up?



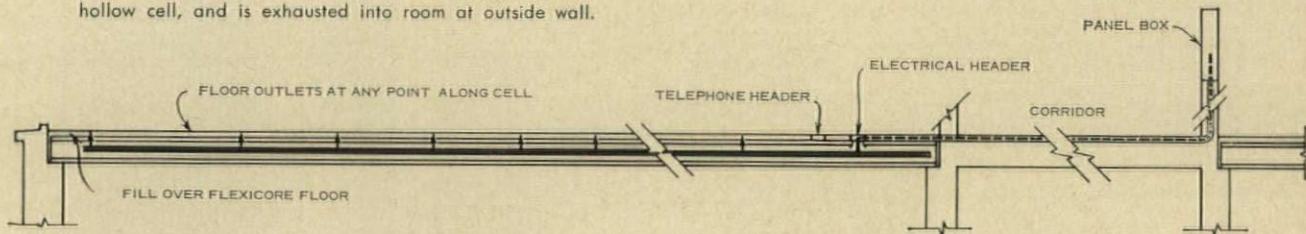
Sheraton-Cleveland Adds Ballroom-Exhibit Space

A three-story, 400-car garage partially concealed by a precast-concrete screen will form the base of the ballroom-exhibition hall addition to the Cleveland-Sheraton Hotel. The two-story, 35,722 sq ft ballroom-exhibition space will be sheathed in limestone and supported by reinforced-concrete columns. The elliptical ballroom and the 167-booth exhibition area are designed to attract more convention trade to the city. Architect: Perry, Shaw, Hepburn & Dean of Boston.

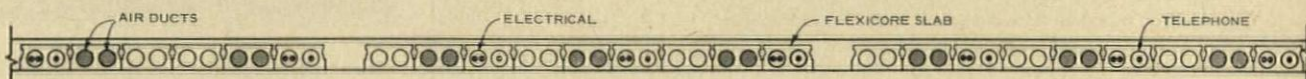


Ask for
Flexicore Facts
No. 82

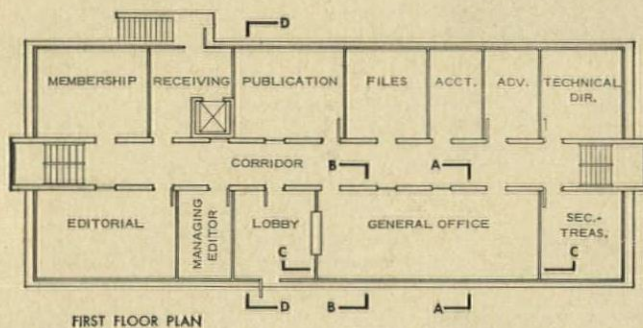
Section AA. At American Concrete Institute in Detroit, warm or cool air flows from supply duct, through Flexicore hollow cell, and is exhausted into room at outside wall.



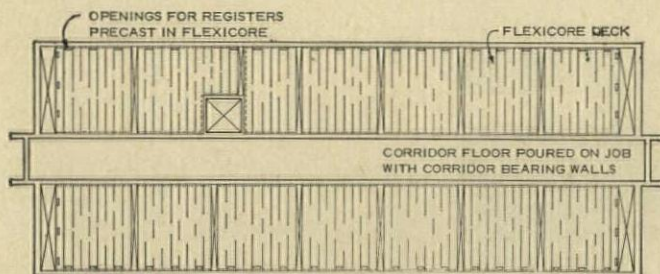
Section BB. Electrical wiring runs from panel box, through header, then through Flexicore hollow cell to floor outlet. Similar system is provided for telephone.



Section CC. Selected cells are used for electrical, telephone, and for air ducts. Electrical fittings by Conduflor Corp., Cleveland.

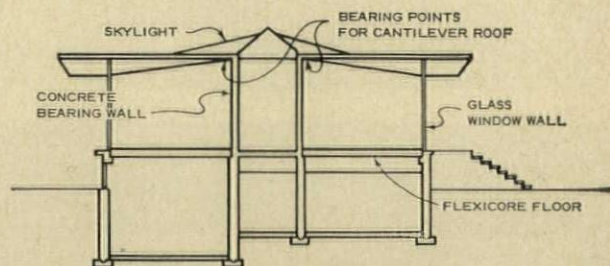


FIRST FLOOR PLAN



First Floor Framing. Corridor floor was cast in place with corridor bearing walls. Flexicore clear-spans from corridor walls to outside walls.

HOW TO USE CELLULAR CONCRETE DECKS FOR ELECTRICAL AND AIR DISTRIBUTION



Section DD. Corridor walls are sole support for roof.

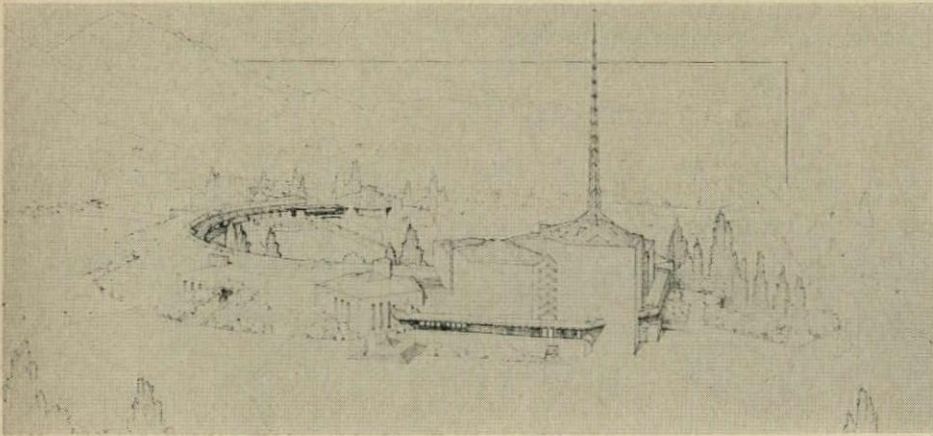
Minoru Yamasaki & Associates, Architects, Birmingham, Michigan



Hollow cells in Flexicore precast, fireproof floors are used for electrical and telephone wiring, and as air ducts for warm air heating, air conditioning and ventilating at American Concrete Institute Headquarters, Detroit.

For more information on this project, ask for Flexicore Facts No. 82. Write The Flexicore Co., Inc., Dayton, Ohio, the Flexicore Manufacturers Association, 297 S. High St., Columbus 15, Ohio or look under "Flexicore" in the white pages of your telephone book.





Church with Earthworks in Arizona

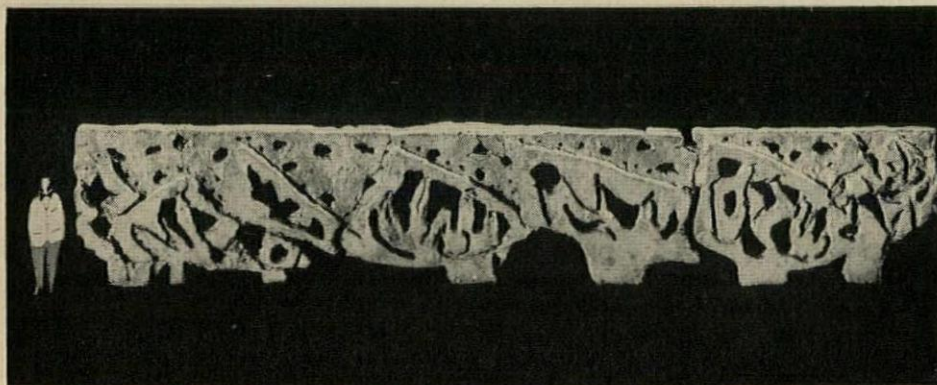
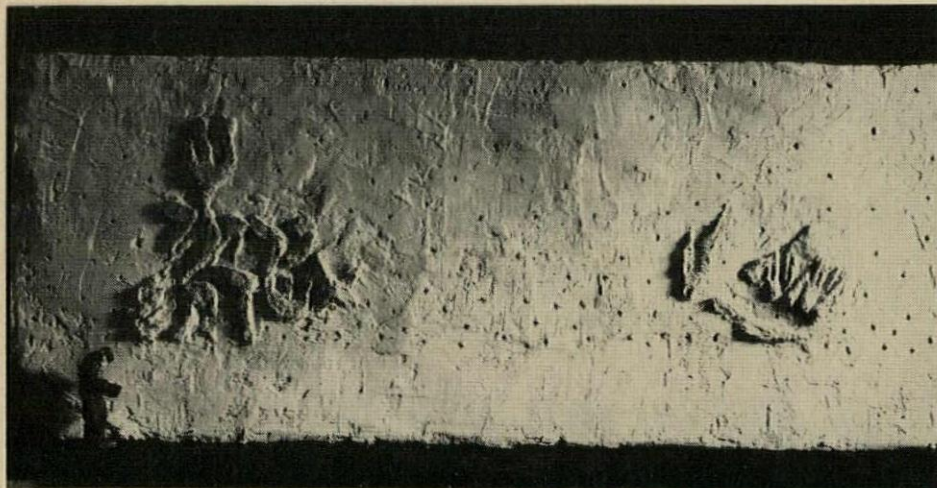
Scottsdale, Arizona, home town of Taliesin West, will have a new church by Wright's heirs, Taliesin Associated Architects (William Wesley Peters, Chief Architect). Ascension Evangelical Lutheran Church, which will sit at the foot of Mummy Mountain, will

consist of a multidomed sanctuary and a semicircular wing containing classrooms and offices. The sanctuary roof will be topped with a series of polygonally patterned domes that will graduate upward to the highest dome, over the altar.



Glass, Concrete Tower For Tallest Apartment

A 35-story co-operative apartment building at 190 East 72nd Street on Third Avenue will be Manhattan's first sheer tower residential building and its tallest as well. "Tower East" (they all have a name!) will rise without a setback above a one-story base and will occupy only 25 per cent of its site. Façade of the building will feature exterior concrete columns on the easterly and westerly sides and a sheer structural concrete wall on most of the north and south sides; tinted glare-resistant glass will be used. The 132 suites (only four to a floor) will have corner exposures and a 37-ft continuous glass wall spanning both living and dining room areas. They will also have outside kitchens. Parking for only 80 cars will be provided. Architect: Emery Roth & Sons.



Art in Geriatric Architecture

Two studies for integrated art for a home for the aged project in Massachusetts show care in providing for art at the proper stage of a project—at the beginning. The models were prepared by Krokyn & Krokyn of Boston for the Hebrew Home for the

Aged in West Roxbury, Mass. Top photo shows a study for an interior wall of the synagogue, and the bottom picture is of the model for the sculptural wall at the main entrance. Joseph D. Weiss is consulting architect for the project.

CSI Awards Fellowships at 5th Annual Convention

Five members of the Construction Specifications Institute were made Fellows at its Fifth Annual Convention in New York City on May 22-24. Harold R. Sleeper was made a Fellow posthumously on the basis of his achievements in science and education. J. Stewart Stein of Chicago, Harry C. Plummer of Washington, Rolf T. Retz of Sacramento, and H. Griffith Edwards of Atlanta were made Fellows on the basis of their achievements in service to the institute. Other activities at the convention included a speech by Philip Will, Jr., President of the AIA, over 100 exhibits of building materials, and panel discussions dealing with specification writing problems.



Engineer: CHARLES A. MAGUIRE & ASSOCIATES, Providence; General Contractor: GILBANE BUILDING COMPANY, Providence; Cafco Contractor: E. F. BYRNES COMPANY, Boston

PROJECT TURNKEY - INTELEX ELECTRONIC POST OFFICE, Providence, Rhode Island

The thin-shell concrete roof structure and steel tie beams were **CAFCO** treated for sound control, fire retardancy, and elimination of concrete finishing costs.

Here's real **DESIGN FREEDOM . . .** and **INSTALLATION ECONOMY!** Cafco Sound-Shield quietly follows the parabolic contours of the nation's first, fully automated post office building, Project Turnkey, Providence, Rhode Island. A continuous Cafco "blanket" of **INTEGRALLY HARDENED** fiber was mechanically applied to Turnkey's sweeping ceiling in a **SINGLE APPLICATION**.

CONTOUR ADAPTABILITY speeds the job. Joint alignment, scribing, fitting and other operations required for pre-formed acoustical materials are eliminated. **MONOLITHIC** Cafco may be applied directly to exposed beams, metal deck, concrete and other wall and ceiling surfaces with facility, efficiency and economy. Travertine textures — fine, medium and coarse fissuring — with complete **COLOR SELECTION** and **UL-tested** fire retardancy further distinguish Cafco Sound-Shield installations from coast

to coast and throughout Canada. Our catalog in Sweets Architectural File (39-B-1) further details Sound-Shield advantages.

For design freedom and job economy, consult your Cafco sales engineer or contractor. Cafco-trained contractors, servicing the construction industry in 50 states, Canada and Australia, are equipped to provide every specification and job service.

ROOM-TO-ROOM SOUND TRANSMISSION

A Sound-Shield ceiling system offers a 50 db. reduction in sound transmission over ceiling height partitions — unmatched in economy and performance by preformed systems — yet providing these plus values . . .

- UL-tested 3-hour fire retardancy
- High sound absorption
- Controlled, joint-free texture

Write for complete details and specifications.

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- CAFCO BLAZE-SHIELD, Structural Fireproofing
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- CAFCO HEAT-SHIELD, Thermal Insulation

Easing of Rules for Federal Consultants



By E. E. Halmos, Jr.

One of the most important bits of news for architects and other professionals was contained in a little-noted passage in the President's message to Congress on "Ethics in Government Agencies," and in the accompanying "suggested" law to make corrections in agency practices:

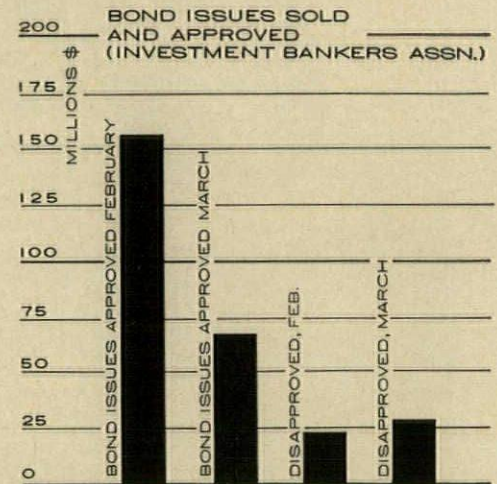
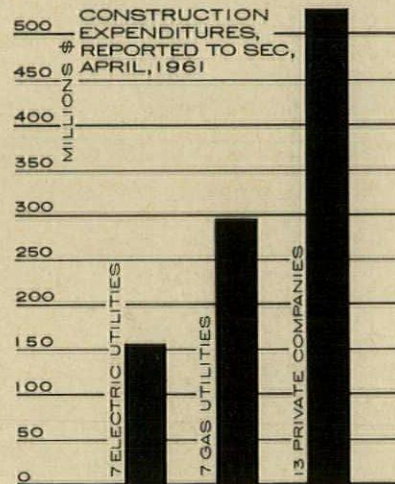
It would permit professionals who serve as part-time consultants to Government agencies to do business with the Government—even with the agencies with which they are concerned.

At present, such consultants are barred from Government business (together with their firms and partners) under interpretations of conflict-of-interest statutes.

Said President Kennedy: "These restrictions [under conflict-of-interest] prove an even more formidable barrier to the part-time consultant who works in a partnership, since he and his partners would be excluded from participation . . . [which is] a severe and unnecessary penalty for contributing to public service. It is possible to cite many examples of excessive restrictions which serve no ethical purpose, but effectively bar the Government from using available talent. . ."

"The [accompanying] bill establishes special standards for skilled individuals whose primary activity is in private, professional, or business life, but whose skills are used by the Government on a part-time, or advisory, basis. By permitting such individuals to carry on private business, even business with the Government, as long as there is no direct conflict between their private and public work, ethical principles are maintained and a wide range of abilities are made available to the Government."

Implementing the President's words, the bill as presented to Congress sets up a special definition—"Special Government Employee"—for consultants. The term is defined as including: "A Government employee . . . who is retained, designated, appointed, or employed (1) to perform, for a term not to exceed 130 days during any consecutive period of 365 days, temporary duties including conduct of spe-



BOND ELECTION RESULTS - MAR. 1961 BY USE OF PROCEEDS

USE OF PROCEEDS	APPROVED		DISAPPROVED	
	AMOUNT	NO	AMOUNT	NO
EDUCATION:				
ELEM. & SEC.	52,865,000	59	25,954,000	23
OTHER	480,000	1	—	0
ROADS & BRIDGES	315,000	3	830,000	1
WATER & SEWER	6,093,000	17	1,010,000	4
OTHER UTILITIES	300,000	1	—	0
HEALTH & WELFARE	—	0	—	0
RECREATION	750,000	4	—	0
PORTS & AIRPORTS	3,635,000	2	—	0
INDUSTRIAL	1,085,000	4	—	0
REFUNDING	—	0	—	0
FLOOD CONTROL	—	0	—	0
PUBLIC HOUSING	—	0	—	0
VETERANS AID	—	0	—	0
ADMIN. & OFFICE BLDG.	—	0	—	0
UNCLASSIFIED	1,400,000	3	245,000	2
TOTALS	\$ 66,923,000	94	\$ 28,039,000	30

BOND ELECTIONS SCHEDULED AS OF MARCH 1, 1961

MONTH	AMOUNT
JANUARY	—
FEBRUARY	—
MARCH	—
APRIL	357,612,000
MAY	255,895,000
JUNE	22,010,000
JULY	7,750,000
AUGUST	—
SEPTEMBER	6,395,000
OCTOBER	2,840,000
NOVEMBER	1,200,024,000
DECEMBER	—
NO DATE SET	105,540,000
TOTAL	\$ 1,959,067,000

USE OF PROCEEDS	AMOUNT
EDUCATION:	
ELEM. & SEC.	157,041,000
OTHER	17,623,000
ROADS & BRIDGES	38,934,000
WATER & SEWER	308,371,000
OTHER UTILITIES	917,756,000
HEALTH & WELFARE	59,105,000
RECREATION	13,976,000
PORTS & AIRPORTS	153,248,000
INDUSTRIAL	602,000
REFUNDING	—
FLOOD CONTROL	26,300,000
PUBLIC HOUSING	—
VETERANS AID	—
ADMIN. & OFFICE BLDG.	9,897,000
UNCLASSIFIED	256,204,000
TOTAL	\$ 1,959,067,000

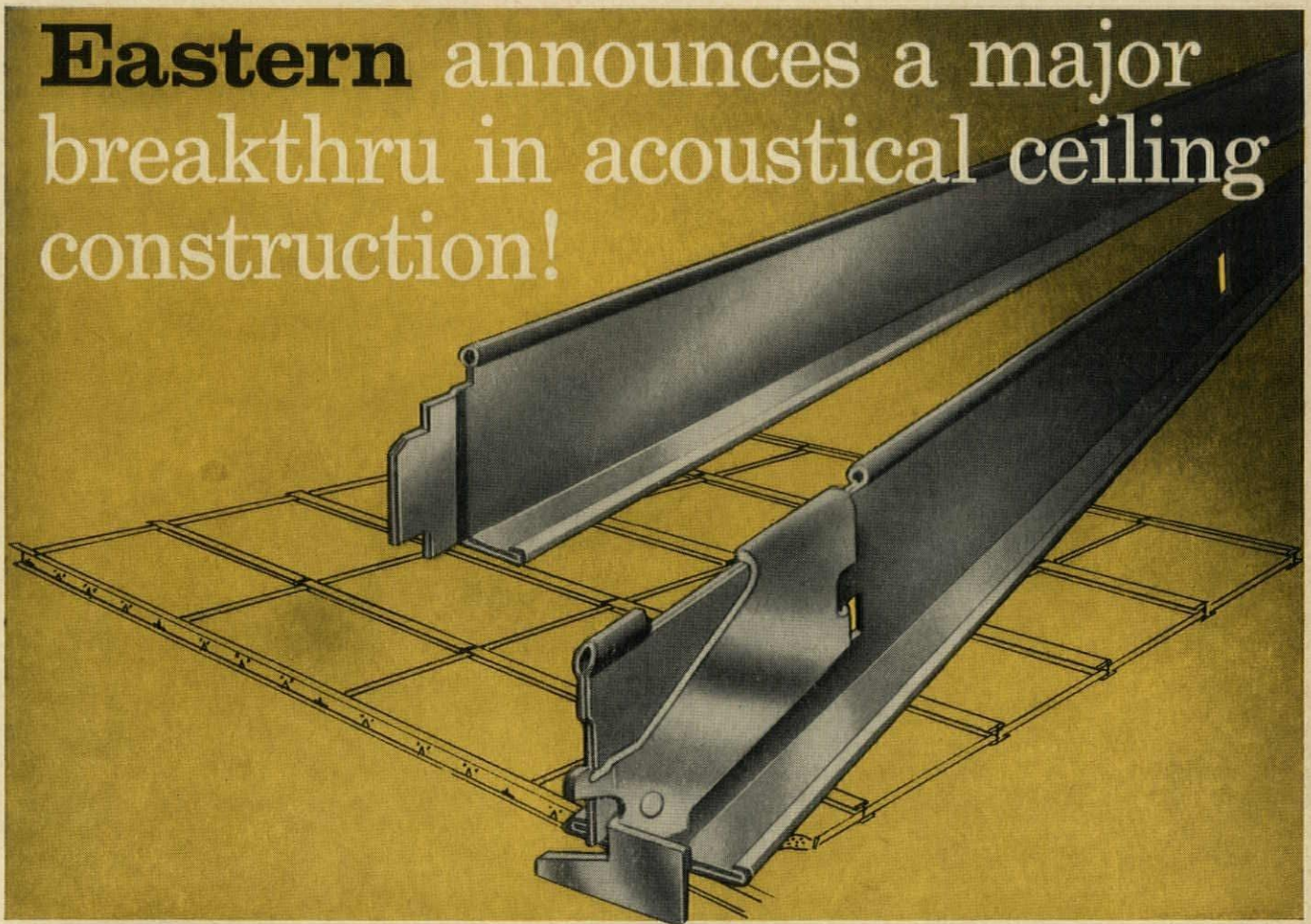
cific litigation . . . (2) to serve with compensation as a consultant, adviser, or member of an advisory panel, board, committee or commission on an intermittent basis; or (3) to serve without compensation other than expenses. A reserve officer of the Armed Forces . . . shall be classified as a special Government employee while on active duty solely for training (unless otherwise a regular Government employee) . . .

"Except in the course of his official duties, a special Government employee shall be subject to prohibitions . . . only with respect to a transaction in-

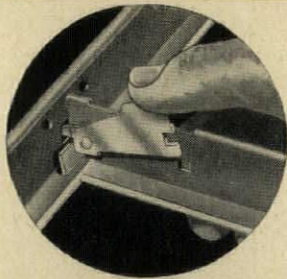
volving the Government in which he has at any time participated personally and substantially as a Government employee. . . . Nothing in this section shall prevent a special government employee . . . from assisting another person in the performance of work under a contract with or for the benefit of the United States, provided the head of such employee's agency shall have certified in writing that, in his opinion, the national interest will be promoted by permitting such employee to assist . . ."

If approved by Congress (and there

Eastern announces a major breakthrough in acoustical ceiling construction!

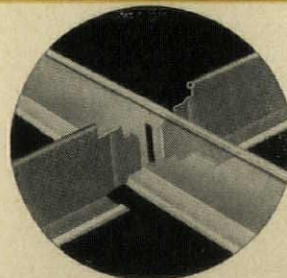


Patents applied for



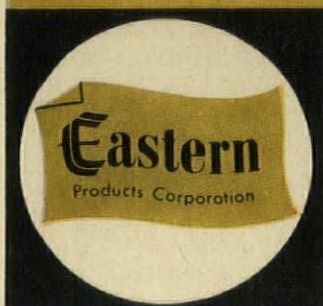
*exclusive **LEV-O-MATIC** installation needs no tools!*

The ingenious new Lev-O-Matic End Clip is a pivoting cam-lock which snaps in place **by hand** for positive, permanent, level-perfect attachment. It makes a single cross tee adaptable to rectangular as well as ashlar patterns without extra parts.



new bridging tee needs no clips . . . no bending or crimping!

New end tab design provides a snug, secure fit—**instantly . . . automatically!** Full 1 1/4" bulb-shaped web on bridging tee, as well as cross tee, increases load carrying capacity up to 90%, permits wider spans, effects additional savings in material and installation. 2' O.C. pre-routing eliminates measurement.



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Please send, without obligation, your complete new catalog featuring **LEV-O-MATIC** installation.

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Street

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was little evidence of any opposition) such changes would obviously open up a lot of previously closed doors for architects.

Construction Funds in Depressed Areas Bill

That \$451-million "depressed areas" bill signed by the President early in May came through approximately as the Administration wanted it—but the bill, in its details, represents a lot of hard-fought compromises.

Most important victory for President Kennedy was House agreement (after a four-week battle in conference committee) to go along with so-called "back door" financing of the \$300 million in loan authority granted for the four-year program: financing the program by direct Treasury funds, rather than annual appropriations (and Congressional review).

But the conferees wrote in strong language to prevent "pirating" of labor from one area to another, and required that 10 per cent of the financing for new plants be supplied by state or local governments, 5 per cent by private investors. And, most significantly, House conferees insisted on—and won—the inclusion of a provision that the Secretary of Commerce (who will run the program through an administrator) must utilize other existing agencies to the fullest extent, to avoid duplication of existing staff and facilities.

It is this last provision, incidentally, that has made some critics dubious that the new legislation will accomplish anything very much in its stated objective of aiding depressed areas—anything more, that is, than could have been done under existing legislation.

For the construction industry and its practitioners, however, the legislation seems to offer the prospect of a lot of new work. In brief, here are key items:

\$100 million for urban plant construction loans, including cost of clearing land and construction, and, in some special cases, equipment;

\$100 million for construction of plants in rural areas;

\$100 million for public facility loans—urban and rural areas may borrow up to 100 per cent of the cost of improving industrial water supplies, sewers, railroad spurs, etc.;

\$75 million for public facility grants—which won't have to be repaid;

\$4.5 million for technical assistance grants, for hiring of planning talent to draft local programs;

\$14.5 million for occupational retraining and retraining subsistence payments to workers.

Urban renewal: Federal Government can make grants of up to two-thirds of net cost of clearing slum areas. (In this case, funds would come from existing urban renewal programs.)

Construction and the Minimum Wage

Nobody—either in top labor or in management circles—seems able to find those one million construction workers that Administration proponents have said will be brought under provisions of the minimum-wage laws.

Best guesses in Washington are that, out of an estimated total of five million, the number of construction workers who are not already receiving well over \$1.25 an hour, or who aren't covered by overtime provisions in their labor contracts, amount to not more than a few thousand.

Only exceptions anyone seems willing to mention are a few unskilled laborers in the Deep South—and in some areas of the housing industry, where many workers customarily work more than 40-hour weeks (often in the guise of independent contractors themselves) for flat hourly rates.

So basic effect of including construction under the minimum wage laws can be twofold: increased pressure by unions to maintain their traditional differentials; and greatly increased paper work for contractors.

On other labor aspects in Washington, chances of a "common situs" picketing bill seemed very dim, under the concerted attack of organizations such as the Associated General Contractors; and very particularly in the light of testimony before Senate committees on how labor disputes have held up work on vital missile-base construction work.

Oddly enough, agreement on a no-strike pact between AGC and the building trades (WASHINGTON/FINANCIAL NEWS, MAY 1961 P/A) may also affect chances of any further legislation in this area: Congress finds it hard to see the need for legislation, when labor and management seem to have outlawed strikes anyway.

Business: Help Me, But Don't Regulate Me

The apparently unfavorable reaction of the business community to the President's tax program (which would, in effect, stimulate purchase of up to \$3 billion of new construction material and equipment each year) is a little surprising at first glance.

But, on closer examination, it comes out this way: Businessmen would prefer a program that would give con-

cessions to all business, regardless of whether they invest in new plant and facilities or not; they don't like the balancing proposals (to make up for losses to the Treasury) that would eliminate foreign "tax havens," bring closer scrutiny of amounts claimed as inventory, tighten up on expense accounts. And, very particularly, business doesn't like the idea of withholding taxes on all dividends and interest, and repeal of the \$50 exclusion and 4 per-cent tax credit on dividends. They fear these last proposals would kill off a lot of private investment in company stocks and bonds.

The tax program proposed, however, would mean a lot for construction—at least from companies that are prepared to invest in new plants right away. It would permit subtraction from the tax bill of: 10 per cent of the first \$5000 spent on new plants and equipment; 6 per cent of spending in excess of 50 per cent of the depreciation allowance (and not more than 100 per cent of it); 15 per cent of any spending beyond this point. Under this formula, a company that spends \$2 million could thus, in addition to a \$1 million depreciation allowance, deduct a total of \$180,500.

Down to the In-Fighting

The real legislative battles are being joined now, as the Congressional session begins to get into the traditional July "homestretch."

So far (into mid-May, anyway), Congress has been concerned with matters of relatively lesser importance, on which really basic divisions between political philosophies don't exist: No one is really opposed to aiding children of unemployed parents; or raising minimum wages for underpaid workers; or building factories in chronically depressed areas.

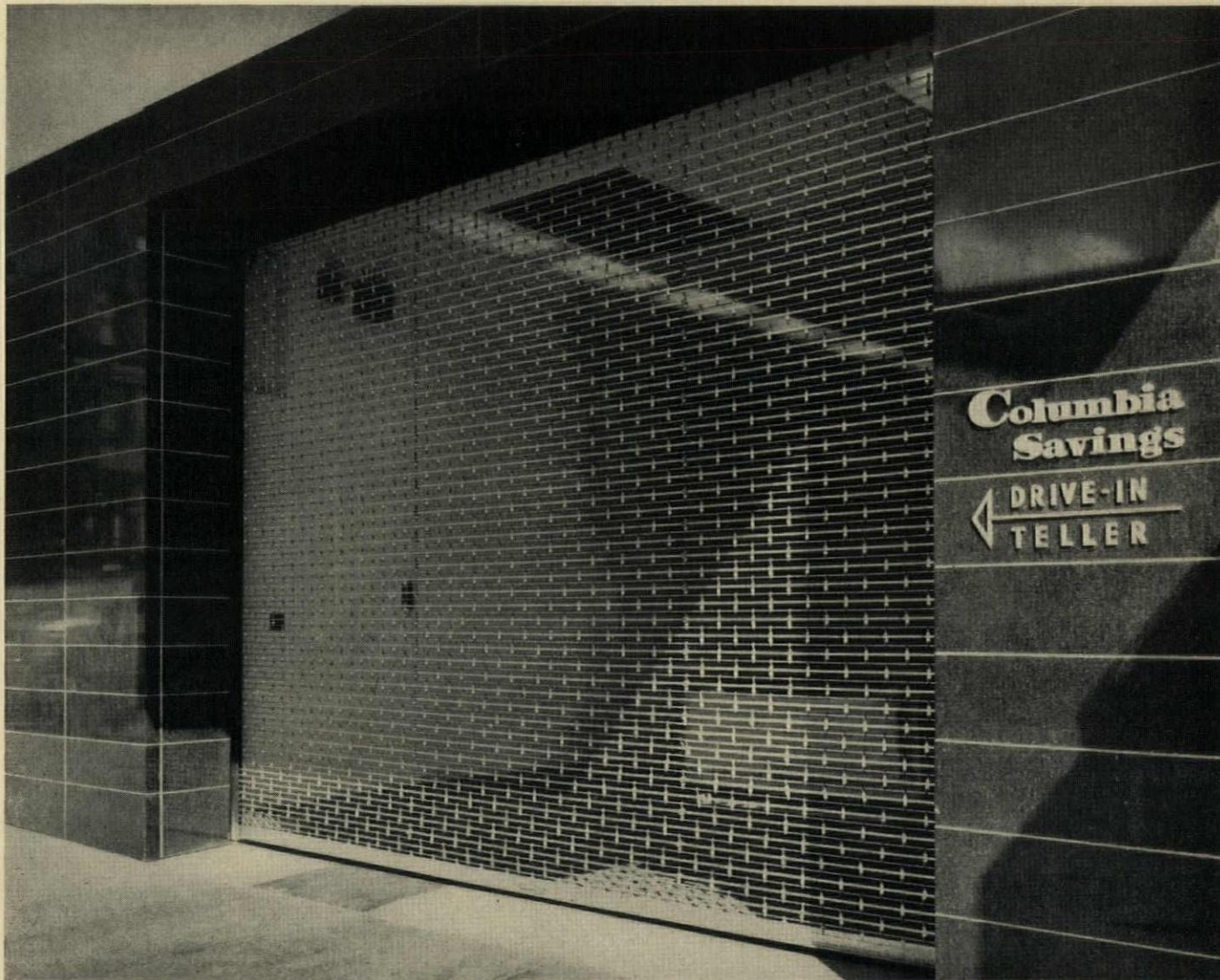
But with these matters now pretty well cleared away, the key programs come up—programs about which a lot of heat has been generated, and on which there are deep divisions of opinion.

These include the half dozen Senate bills, and more than a dozen in the House on school aid; the various proposals for aid to housing; the proposals for establishment of two new Cabinet departments (Urban Affairs and Transportation); and, of course, the various appropriations bills for regular operation of the Government, as well as for some newly proposed operations.

As has been mentioned in these columns previously, the odds still favor some sort of a school program—though those odds are getting shorter in direct proportion to the length of

Continued on page 94

Designing a drive-in entrance?—consider THE BEAUTY OF ROLLING GRILLES BY CORNELL



Cornell Motorized Rolling Grille: Drive-In Bank: Petroleum Club, Denver • Architect C. D. Strong • General Contractors: N. G. Petry Construction Co.



Light and airy as a butterfly in appearance

...yet they give "ROLLING STEEL DOOR" protection

The functional beauty of Cornell Rolling Metal Grilles is in accord with the contemporary design of the above bank, where light and vision are essential.

When open, Cornell Rolling Grilles roll up completely into a coil box—out of sight and out of mind. Coil box can be concealed in the ceiling and the side guides let into the wall.

When closed, Cornell Grilles provide a positive barrier against entry. Widely

used since 1931 to protect store fronts, counter openings and to partition school corridors without obstructing light, air or vision.

Cornell Butterfly Design Rolling Grilles are available in galvanized or stainless steel, bronze and in silvery satin or color Anodized aluminum—manual or motor operation. For complete details, see Sweet's or write for general catalog.



CORNELL ROLLING STEEL DOORS

Cornell Rolling Doors have been progressively improved since 1854. New weathering and silencing features, and availability in aluminum, bronze and stainless make them architecturally correct for all types of contemporary buildings.

CORNELL IRON WORKS, INC.

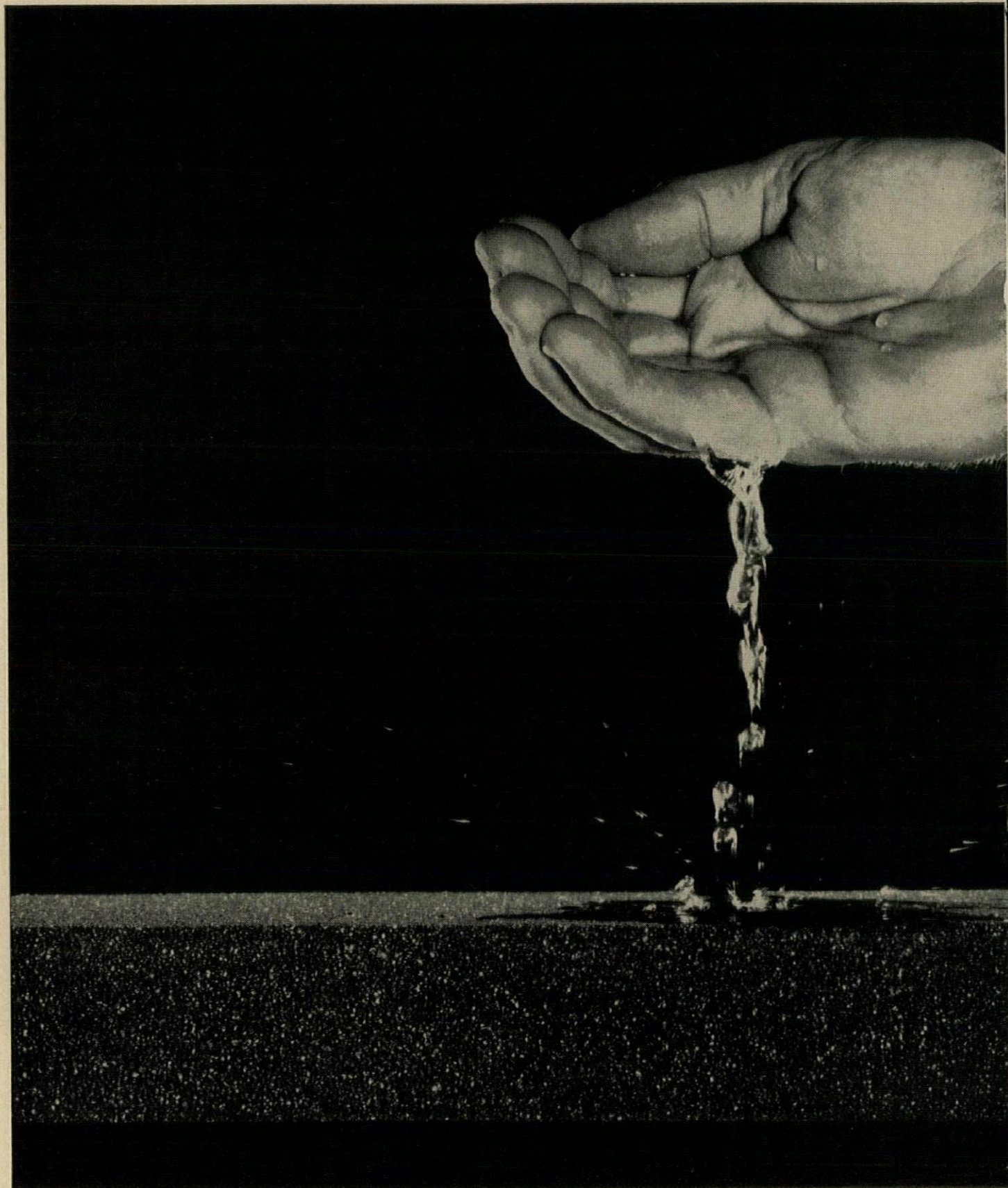
Established 1828

36th Ave. and 13th St., Long Island City 6, N.Y.

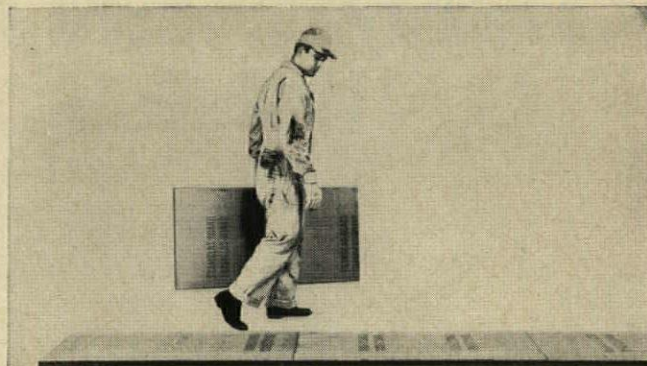
Representatives in all Principal Cities



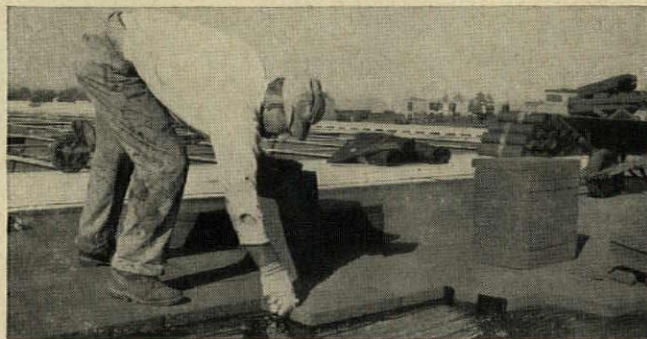
FOAMGLAS® Insulation . . . a better . . . a better insulation because



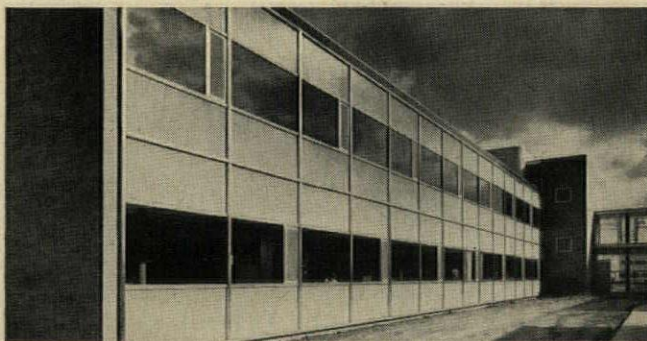
building material because it's **waterproof** it's cellular glass



New FOAMGLAS-BOARD presents the quality of FOAMGLAS in an easy-to-handle new size, 2' x 4', for fast, economical, trouble-free roof installation. 1½" FOAMGLAS is sandwiched between specially laminated sheets of kraft paper, reducing the number of insulation joints.



FOAMGLAS Insulation clears the air beneath this roof. Cold outside temperatures contrasting with a hot, humid interior atmosphere, had caused a fog-like condensation. FOAMGLAS roof insulation eliminated the problem. And the incombustibility of FOAMGLAS was an important extra-benefit here.



RCA selected FOAMGLAS to insulate porcelain enamel panels for vast curtain wall areas at their Cherry Hill Project, Camden, N.J. FOAMGLAS remains moistureproof in all kinds of weather and contributes important rigidity to the panels.

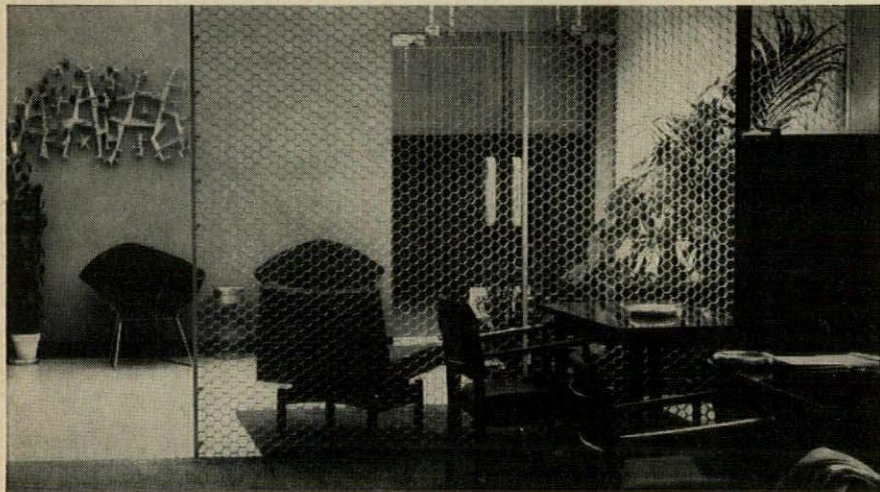
◀ **The sealed glass cell** composition of FOAMGLAS makes it completely impervious to any form of moisture. On roofs, it remains dry even if the roof leaks.

See how these important FOAMGLAS benefits can work for you. Write for our Building Insulation Catalog. Pittsburgh Corning Corporation, Dept. AB-61, One Gateway Center, Pittsburgh 22, Pa. In Canada: 3333 Cavendish Blvd., Montreal, Quebec.

PITTSBURGH

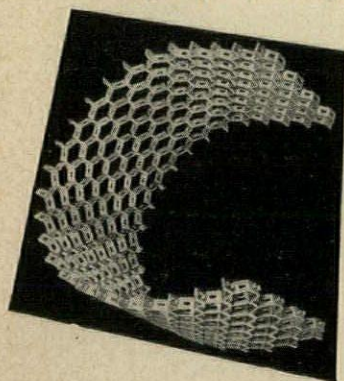


CUSTOM EFFECTS in ORNAMENTAL GRILLES at low cost!



IRVICO'S mass production of "ALUMINUM GRIDSTEEL" now enables the designer to achieve the "custom look" in grillework economically.

"ALUMINUM GRIDSTEEL" is a honeycomb mesh that allows great flexibility in scale and texture, and diversity of application. Its third-dimension affords varying degrees of opacity depending on angle of view.



"ALUMINUM GRIDSTEEL" is available in rigid or flexible panels of various sizes... anodized, painted or mill finish.

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For more information, turn to Reader Service card, circle No. 342

Continued from page 90

time it takes to get the measures out of committee and onto the Congressional floor. Chances for Urban Affairs must continue to be counted dim—in spite of the President's call for such a department in his budget message; and chance for a Transportation Department must be set at practically nil.

At this point, it is hard to assess what will be done with the appropriations measures themselves. Much will depend both on the domestic and international situations when those bills finally come up for approval. However, the odds favor considerable cutting in President Kennedy's proposals, even though the totals will come out higher, in most cases, than those proposed by former President Eisenhower.

Senator Monroney's \$75-million program for airport construction, however, seems likely to get through with little change. Among other things, it represents a compromise with the Administration, and now has full backing from the White House.

FINANCIAL

Strong evidence of a persisting business upturn continued to come in during the past month, bolstering P/A's own optimism about construction industry prospects for the rest of this year and extending into the future.

As shown in the charts, (p. 88), private industry continued to plan heavy construction spending—though the current chart is pushed out of normal balance by a whopping program (\$500 million) on the part of U.S. Steel to replace and expand its facilities.

And there were ample additional signs:

The Department of Commerce's "Survey of Current Business" indicated a "definite firming tendency," showed new orders for durable goods going up (in March) for the second consecutive month.

Value of total new construction put in place in March was set at \$3.9 billion by the Census Bureau—up 8 per cent over February, and even with March a year ago.

Steel fabricators reported that their business rose too, in March, with bookings reaching about 295,739 tons. This is still below what it was a year ago, but well up over February.

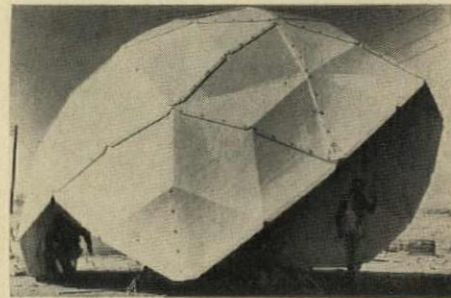
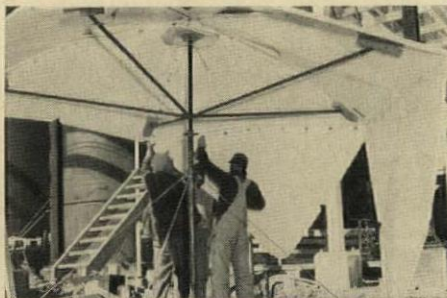
And the U.S. Savings and Loan League reported that mortgage loans made during March were up 18 per cent over a year ago—marking the third consecutive month this year that loans have topped previous highs. That would indicate loans totaling \$1.4 billion within the month—near an all-time high.

Skin-Supported Geodesic Dome for Many Uses

BAXLEY, GA. Filtered Rosin Products Co., subsidiary of Monsanto Chemical Co., has introduced a line of light-weight domes that will be marketed under a license with R. Buckminster Fuller. Termed "Geospace," the domes are field-assembled from 45 triangular sections of "Fomecor" board ($\frac{1}{2}$ "-thick rigid plastic foam board laminated inside and out with heavy-duty, 69-lb kraft paper). Each section comes dipped in a weather-resistant, plastic-based coating. The skin-supported shelters provide 350 sq ft of floor space and 3000 cu ft of usable shelter. Uses include any kind of emergency or temporary shelter, plus a number of other applications, such as for recreation pavilions.

In construction, an erection mast is set up and the first assembly of panels mounted thereon. As assembly proceeds, the mast is raised to make room for the next "course" of panels. When the dome is complete and attached to the base ring, the mast is removed. Panels can be bolted and/or glued together. Cost of dome: \$345. Filtered Rosin Products Co., Baxley, Ga.

On Free Data Card, Circle 100

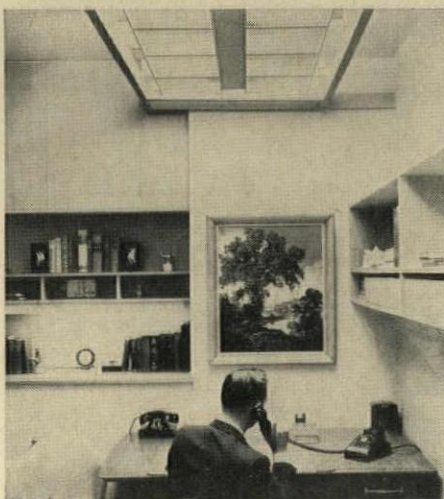
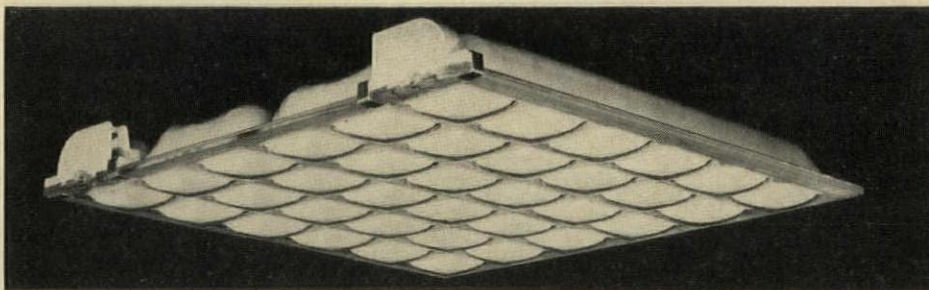


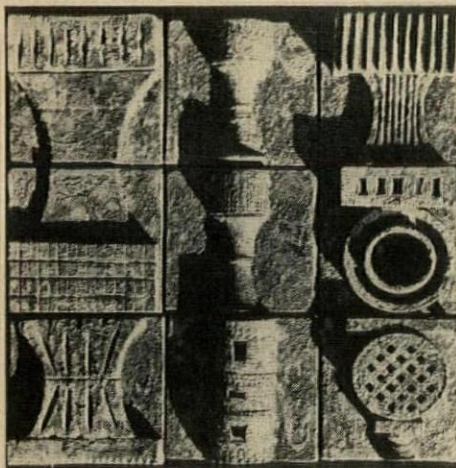
New Fluorescent Shape Widens Design Possibilities

CLEVELAND, OHIO A thin, square fluorescent lamp has been introduced and described as "one of the most significant product innovations since General Electric introduced the first fluorescent lamp in 1938."

The $11\frac{3}{8}$ " square, $1\frac{1}{2}$ " thick lamp is designed to fit a 12" square module, and features a face plate configured with $1\frac{3}{4}$ " embossed squares. Since average brightness is about 3200 ft-L, the embossing helps diffuse the light. Louvers may be fitted into this grid to provide further light control. Lamp may be used singly or in groups, and is appropriate for built-in, surface-mounted, suspended, and free-standing applications. It operates at either 80 or 50 w; at 80 w producing 4800 lm or an efficiency of 60 lpw, and 50 w producing 2900 lm or 58 lpw. Rated life of the lamp is 7500 hours. Lamp is composed of two glass squares, one the face plate and the other having an open trough which snakes across the lamp six times, compressing a 5'-long arc path into the lamp area. General Electric Co., Nela Park, Cleveland 12, Ohio.

On Free Data Card, Circle 101



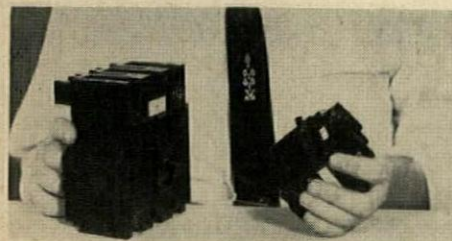


Stoneware Wall Tiles Designed by Craftsman

A group of sculptured, stoneware wall tiles by Eloise Norstad Harmon received an International Design Award from AID at its recent awards dinner. Virginia Frankel Gallery, exclusive distributor of the tiles, also received an award. The Gallery, a contract art service for architects and interior designers, represents artists and craftsmen who work in various media.

The tiles, each 12" square, are individually hand-sculptured, with no two bearing the same design. Suitable for both indoor and outdoor use, they can be turquoise, green, metallic blue, black, antique white, or a variety of earth colors; they also are available in flat textures. The tiles are drilled for wall bolts or may be set in cement. They are designed according to the requirements of each installation. Mrs. Harmon feels that modern architecture can use some of the decorative elements inspired by other eras. Virginia Frankel Gallery, 235 East 58 St., New York, N.Y.

On Free Data Card, Circle 102



Case Breakers Break Space Barrier

Substantial savings in cost and space are provided by new 100-amp, two- and three-pole circuit breakers, the smallest ever available for use as main breakers. Designated "EQ-P" (for plug-in connection) and "EQ-B" (for bolt-in connection), the new

breakers replace much larger E-frame breakers that formerly were needed for 100-amp ratings in residential, commercial, and light industrial applications. Only 2 7/8" high, and 2" or 3" wide, the new breakers can reduce mounting-space requirements by as much as two-thirds. I-T-E Circuit Breaker Co., 1900 Hamilton St., Philadelphia, Pa.

On Free Data Card, Circle 103



Air Duct Performs Three Functions

New "Armoglas Duct" is air duct, thermal insulator, and sound absorber in one unit. It is molded from fine glass fibers and encased with an airtight vapor barrier. Duct is manufactured to same inside diameters as standard galvanized sheet metal furnace pipe. It is furnished in six-ft lengths, ready for installation with standard galvanized sheet metal fittings, air boots, register boxes, and other fittings commonly used with round sheet metal ducts. K factor of the duct is 0.22 at 75 F. When in place, duct has a noise reduction level of 2 to 3 db per ft; a six-ft section reduces loudness of airborne duct noise by more than 50%. Additional advantage is that, when air conditioning is added to furnace unit, ducts need not be insulated and vapor sealed. Armstrong Cork Co., Lancaster, Pa.

On Free Data Card, Circle 104

Sealant Resists Heat and Cold

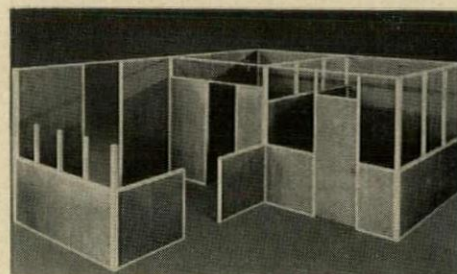
A silicone rubber sealant is available that is always ready for application without heating or refrigeration. Called "Dow Corning 780," the sealant is said to be the first material of this type to be offered commercially. Before application, it retains its smooth, "toothpaste-like" consistency despite wide variations in temperature. After curing, the sealant retains

excellent flexibility and adhesion from -80 to 350 F. The material cures to a dry, tack-free surface less than an hour after exposure to moisture in air. It requires no catalyst or pre-mixing. Dow Corning 780 is nonstaining and



may be applied to light-colored masonry and other porous materials. Company offers a five-year written warranty on the properties of the material. A recent use (shown) was application between Pyrex tubes that serve as windows on the research tower of Wright's S.C. Johnson & Sons complex. Sealant has eliminated severe water and dirt leakage that had afflicted the building. Dept. WTR, Dow Corning Corp., Midland, Mich.

On Free Data Card, Circle 105



Partition System of Wood-grained Hardboard

Simpson Timber Company's new partitioning system is surfaced with random-grooved, wood-grained hardboard with a vinyl surface that makes it washable, stainproof, scuffproof, and fadeproof. There is a choice of Cherry Mist (silver-gray) or Cherry Mocha (dark brown) wood-grain patterns, or the surface can be a factory-applied opaque prime if a paint finish is desired. The components have a solid core of wood-fiber insulating board, which provides structural rigidity and an adequate amount of sound insulation. The partitions and paneling may be cut at the job site with a hand or power saw.

The partitions are 2' x 8' and 2' x 10', 1 5/8" thick. Matching paneling

is $\frac{5}{8}$ " thick, consisting of the insulating board faced on one side only with the prefinished hardboard. Matching doors are 6'-8" 7'-11", and the interlocking components are made from kiln-dried wood painted a light beige. Literature on the product has a series of enlightening detail drawings. No framing, studs, taping, or painting is required, and tight spline joints assure alignment of the components. Simpson Timber Co., 2041 CE Washington Bldg., Seattle 1, Wash.

On Free Data Card, Circle 106

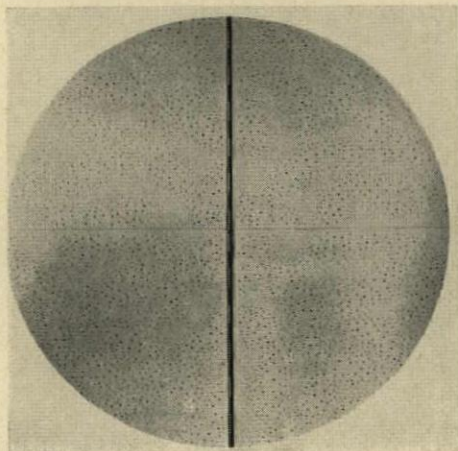
Aluminum Backs Up Glass Spandrel

"Huetex," a polished glass spandrel panel, combines its glass outer surface with a metallic-faced inner surface to achieve better insulating values. A sun-fast ceramic enamel (from a selection of many colors) is applied to the inner face of the glass panel and aluminum backing is bonded over it. The aluminum reflects heat and also protects the enamel coating. Combination of the polished panel and a non-reflective, patterned glass panel also in the Huetex line provides opportunity for varied façade treatments. American-Saint Gobain Corp., 60 E. 42 St., New York 17, N.Y.

On Free Data Card, Circle 107

Splines Are Backbone of Air-Distributing System

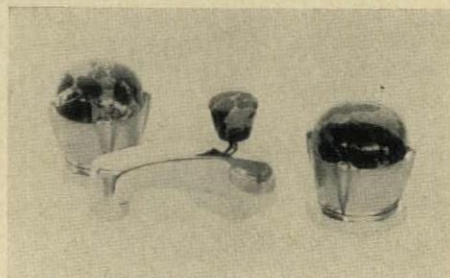
New controlled method of air distribution can use any kind of suspended acoustical-tile ceiling to form a plenum. The "Vent-Spline," an extruded plastic member, is minutely ad-



justed from within the room to provide almost infinite air-distribution patterns within the area. This acoustical-ventilating system permits free-

dom of acoustical-tile selection from standard manufacturer's stock, freedom of partition and furniture relocation, and freedom from air stratification. Savings—compared to other ceiling ventilating systems and conventional diffusers—are obtained through omission of duct work and diffusers. Acoustical Div., Elof Hansson, Inc., 711 Third Ave., New York 17, N.Y.

On Free Data Card, Circle 108



Bathroom Fittings in Marble

Neatly designed hot and cold handles characterize new line of bathroom fixtures. Basin set (shown), shower, tub, and shower-tub sets have handles and release controls topped with white, rose, or black marble. Fixtures are available in six finishes: satin and polished brass, satin and polished chrome, and satin and polished gold (that's what they say—gold). Gold and brass surfaces are protected by baked enamel finish. Artistic Brass Inc., 2857 E. 11th St., Los Angeles 23, Calif.

On Free Data Card, Circle 109

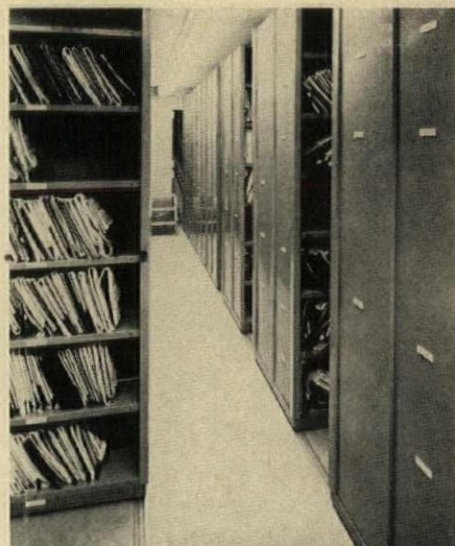
Vinyl-Covered Cork Tile Now in Parquet Pattern

Armstrong's Custom Vinyl Cork Tile has appeared in a parquet pattern in which each 9" x 9" tile has seven resin-bonded ribbons of cork, laminated side by side. All vinyl cork tiles have a layer of clear vinyl fused into the cork surface under extreme pressure to give it a durable wearing surface. Armstrong Cork Co., Lancaster, Pa.

On Free Data Card, Circle 110

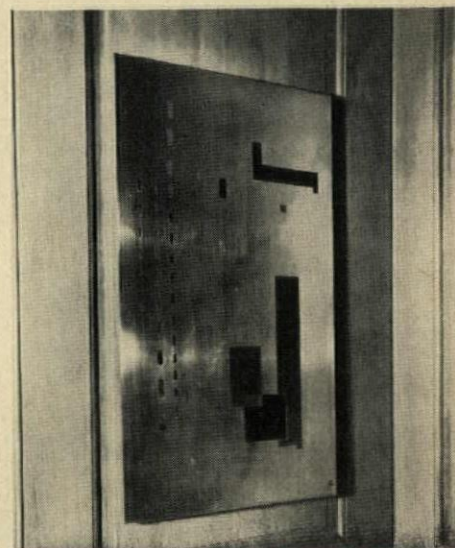
Roll-Aside Units Increase Storage Space

New storage system that mounts standard steel shelving in pairs, back to back, thereby increasing capacity significantly, was used recently in the



securities department of a New York bank, expanding storage area from 2460 linear feet to 3600. Shelving is mounted on four-wheel mobile bases that roll along tracks affixed to the floor. Rows of the shelves are placed before a fixed row with only 3 in. between the rows. Access to any unit is accomplished simply by rolling it aside at the proper location. Mobile Storage Div., Dolin Metal Products, Inc., 315 Lexington Ave., Brooklyn 16, N. Y.

On Free Data Card, Circle 111



New Designs; Old Technique

New heat and alcohol-resistant lacquer panels made in France after the 17th-Century technique of André Charles Boulle are adaptable as table tops, ornamental doors or screens, and as abstract wall hangings. Regnard-Saladin builds up a lacquer background around a metal inlay or, conversely, fills a lacquer design into a

metal ground (as shown). Choice of lacquer color is wide; metals can be pewter, bronze, brass, silver, or combinations of them. Custom designs can be executed. Stock designs can be seen by appointment only through d'Argout-Ferguson, Inc., 6 East 79 St., New York 21, N.Y.

On Free Data Card, Circle 112

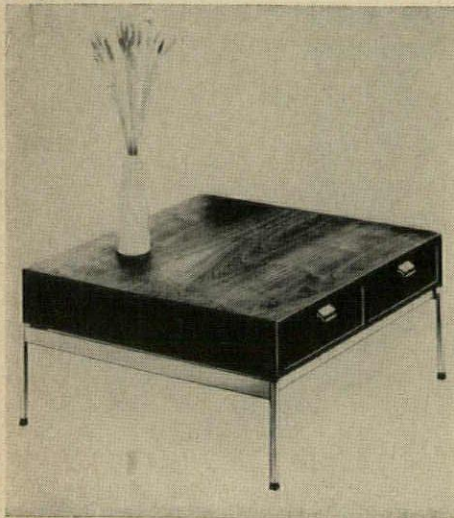
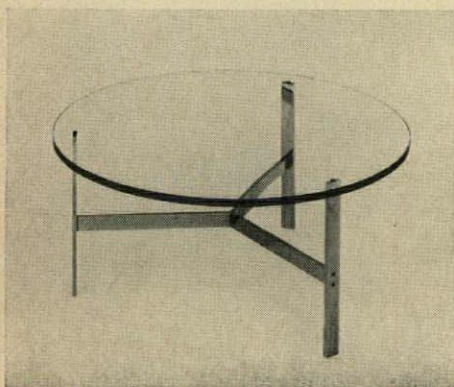


Table for Ultra Group

Two-drawer walnut table with oiled walnut or Formica top stands on metal base finished in satin or polished chrome or in satin brass. Standing 14½" high and 28" square, the table is designed to co-ordinate with desks, chairs, and conference tables in the Ultra Group. Illustrated brochure of the complete line is available from the manufacturer, Robert John Co., 821 North Second St., Philadelphia 23, Pa.

On Free Data Card, Circle 113



Metal-Base Tables

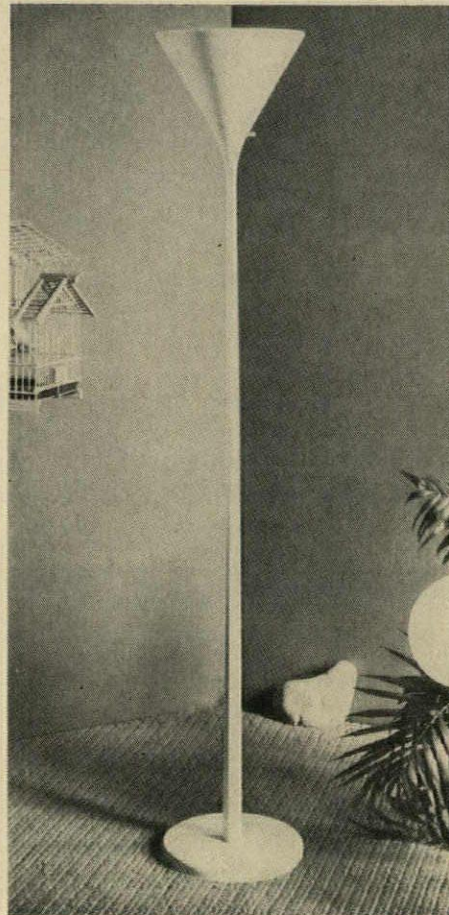
New polished chrome, steel-based tables have tops of clear or smoked glass, marble or slate. Bases for round tables are 3-legged with black or chrome stretchers; square and rectangular tables are 4-legged with same choice of stretcher finish. Cocktail

table (shown) is 36" in diameter, 16½" high, and retails for \$330 f.o.b. New York. Cumberland Furniture Corp., 4 East 53 St., New York 22, N.Y.

On Free Data Card, Circle 114

Pedestal "Torchiere"

Lily-shaped standard lamp finished in satin white hard-baked enamel has a mogul socket for 100-200-300 w bulb providing indirect illumination. Tap-



ered tube, 64½" high, flares to top reflector, which is 11½" in diameter. Retail \$66 from Nessen Studio, Inc., 317 East 34 St., New York 16, N.Y.

On Free Data Card, Circle 115

Pure White Sealant Won't Stain or Fade

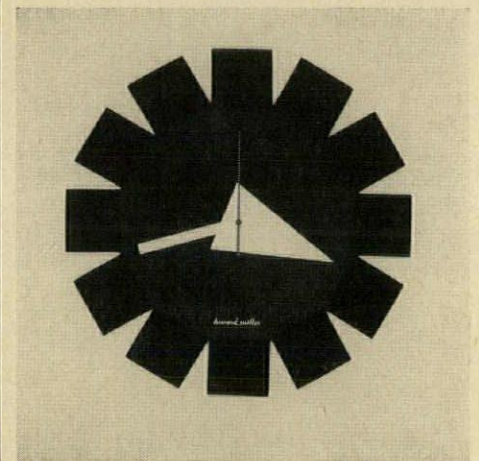
New "Thiocalk" sealant overcomes the problems of fading and staining that have plagued the industry since the introduction of polysulfides. Brilliantly white when applied to marble, limestone, brick, porcelain, or cement surfaces, the product stays white with virtually no dirt pickup. The achievement of a pure stable white makes possible the creation of any color to match or harmonize with surrounding

surfaces. Manufacturer states that Thiocalk's adhesion to nonporous and primed porous surfaces far exceeds that of conventional calking compounds. Its watertight seal has a calculated life expectancy of 20 to 25 years; its rubber-like flexibility is maintained at temperatures from -65 to 250 F. Joint expansion of 200% can be absorbed without breaking the seal. Steelcote Manufacturing Co., 3418 Gratiot St., St. Louis 3, Mo.

On Free Data Card, Circle 116

Elegant Clock Designs

New line of Howard Miller clocks, created by George Nelson & Co., is a series of six elegant designs to complement or accent their surroundings. The clocks are all built-in; the



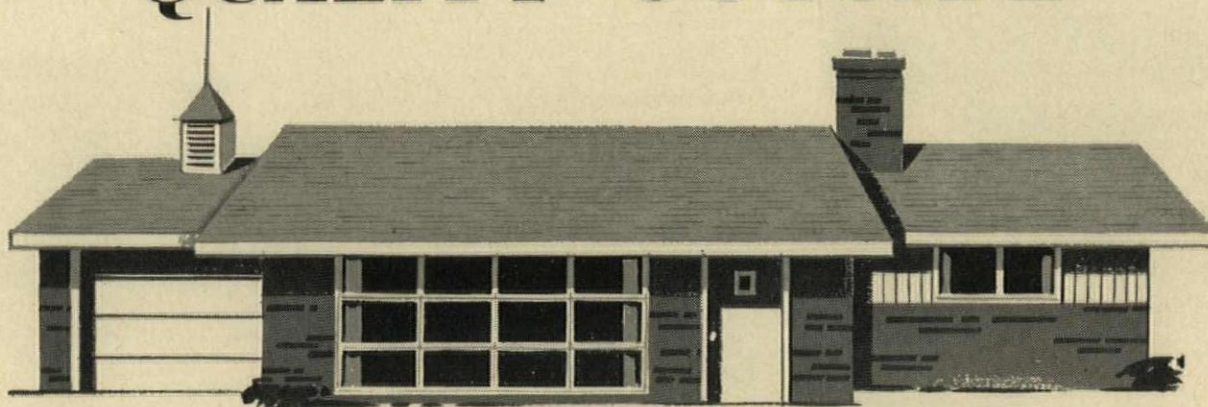
works case is buried in the wall, and "numerals" and hands are supported away from the wall. Materials are brushed brass, brushed chrome, and natural or anodized aluminum. Hands are available in white or black finish. Sizes range from 12" to 16" in diameter. Howard Miller Clock Co., Zeeland, Mich.

On Free Data Card, Circle 117

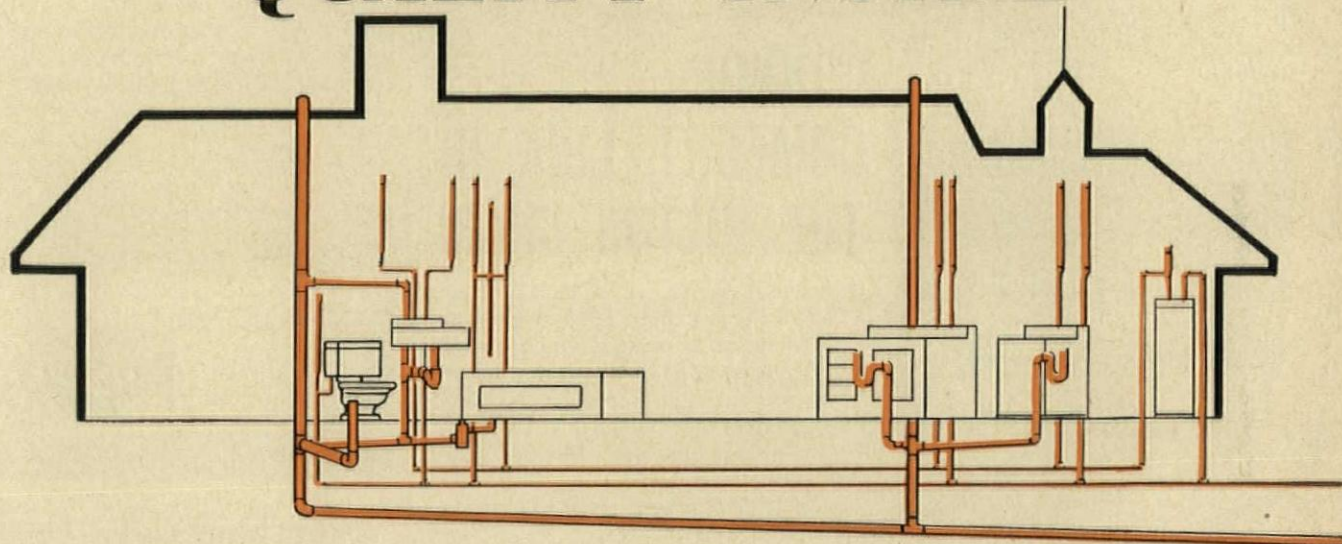
300-Person Grandstand Has Aluminum Structure

Grandstand in Florida's Cypress Gardens for viewing water skiers is constructed of two basic parts—identical struts and identical joints—joined in octahedron and tetrahedron shapes. The 13,000 struts and 3000 joints were assembled in sections at the site and erected by an unskilled five-man crew using simple tools. Struts and joints are heat-treated aluminum alloy in natural satin finish, clear lacquer-dipped. System of octahedron-tetrahedron structures is being manufac-

QUALITY OUTSIDE



QUALITY INSIDE



Streamline® COPPER TUBE AND FITTINGS FOR A MODERN PLUMBING SYSTEM...

A modern plumbing system, fabricated from Streamline copper tube and fittings, is the mark of quality in any home. Such a system costs no more than one made of rustable materials yet has many outstanding advantages. Plumbing contractors like copper's ease of handling and installing. Builders like the space-saving feature of copper drainage (standard 3" stack fits within a 2" x 4" partition . . . "furring out" is eliminated). Everyone likes the durability of Streamline supply and drainage systems. Copper quality costs no more, so why not specify and install Streamline tube and fittings?

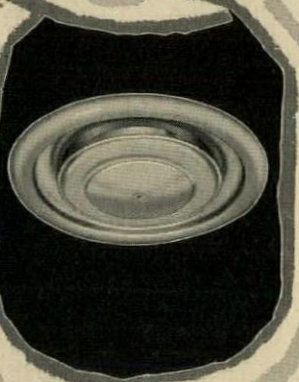
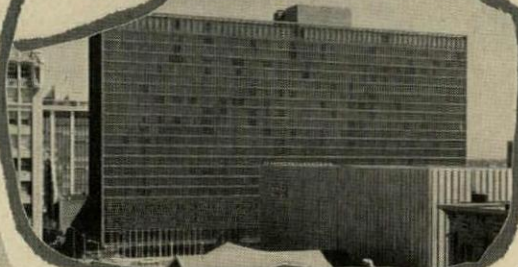


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New, Complete 66 page
Streamline Plumbing and
Heating Products Catalog S-361
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MUELLER BRASS CO. PORT HURON 27, MICHIGAN

The Denver Hilton
I. M. Pei, Architects
Jaros, Baum & Bolles, Engineers
Geo. A. Fuller, Gen'l Contrs.
Kerby Saunders, Inc., Mech. Contrs.



CONNOR... COMFORT LINK IN THE HILTON CHAIN

In these two handsome additions to Hilton hospitality, more than 5000 Connor air distribution units make a vital contribution to the comfort of travelers, conventioners, and hotel employees. Virtually every product that Connor manufactures—from famous Kno-Draft overhead diffusers to Pneumavalve-equipped Series 45 P valve attenuators—is installed in these glamorous new buildings.

In the 900-room Denver Hilton, 1100 feet of Connor's attractive, functional KLS linear diffuser were used to complement the interior's essentially rectilinear pattern.

The Pittsburgh Hilton—800 rooms and 24 stories—features many Connor linears, squares, and rounds.

Leading architects, engineers, and contractors agree that Connor's complete line offers the ideal combination of function and design... a combination that suits a wide variety of structural demands.

Representatives in principal cities.

The Pittsburgh Hilton
William B. Tabler, Architects
Jaros, Baum & Bolles, Engineers
Turner Construction Co., Gen'l Contrs.
Limbach, Mech. Contrs.

CONNOR... for Constant Comfort Conditions

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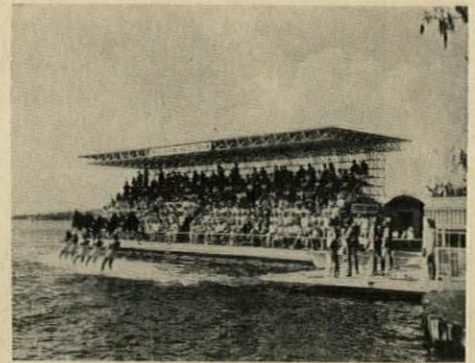
AIR DIFFUSERS

CONNOR ENGINEERING CORPORATION

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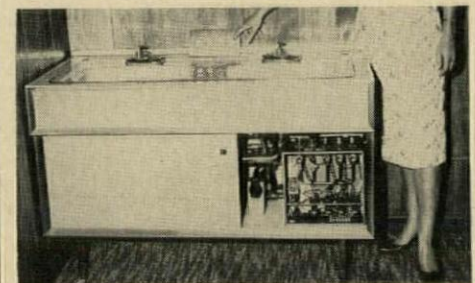
For more information, turn to Reader Service card, circle No. 321

Write for
detailed
information



tured and erected by patentee, Up-Right, Inc., in either steel or aluminum. Company believes greatest use for system is in tetrahedron space frames used as diaphragm or cantilever structures for clear span buildings. Frames can be flat, arched, or domed. In span range of 100 to 200 ft, cost per sq ft is said to be competitive with other roof structures. Up-Right, Inc., 1013 Pardee St., Berkeley, Calif.

On Free Data Card, Circle 118



Minusculer Water Heater

"Microtherm" electric water heater is briefcase-size, weighs 16 lb, can be installed in homes or commercial buildings without large water storage tanks or lengthy double pipe lines. Its "Thermal Brain" unit senses temperature differential between incoming water supply in summer and winter and automatically monitors and controls flow and balances heat transferred to outgoing water at temperature consistent with preset standards. Accessory for washers, "Flow Touch" attachment, permits electronic precision control of flow and temperature as well as automatic cycling of fill, drain, and rinse operations. As heating unit, Microtherm can heat entire house. Advanced elements of its design include Union Carbide's new graphite, woven-fabric resistance element, and "solid state matter" controlled rectifiers. Unit has 10-year guarantee against defects in manufacture, and key components are UL approved. Thermotronics Corp., 548 Pan American Bank Building, Miami 32, Fla.

On Free Data Card, Circle 119

IT'S WHAT YOU CAN'T SEE

WHEN YOU SPECIFY FLOOR TREATMENTS you demand visible proof of performance—approvals, recommendations by Flooring Manufacturers, Contractors and their Associations—U/L proof of liability protection—and field service by manufacturer's representatives.

For over half a century the **invisible** ingredient—Hillyard experience—has created highest performance standards. Endless research in techniques of manufacture, researching raw materials, finalizing formulations, timely raw material buying in world markets, continual testing and precise laboratory controls guarantee you uniform high quality products.

The first trademark-registered drum design in our industry—the blue and white

checkerboard container—for generations has protected users with the promise—"You Know it's Right if it Comes in the Checkerboard Drum."

The final step—**service in the field**. Over 170 Hillyard trained "Maintaineers" serve as architect consultants and job captains—work with owners to prescribe maintenance—train the custodian. There's one near you—"On Your Staff—Not Your Payroll."

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Write for Free Hillyard A.I.A. Files. Practical treating guides, one for each type of flooring.



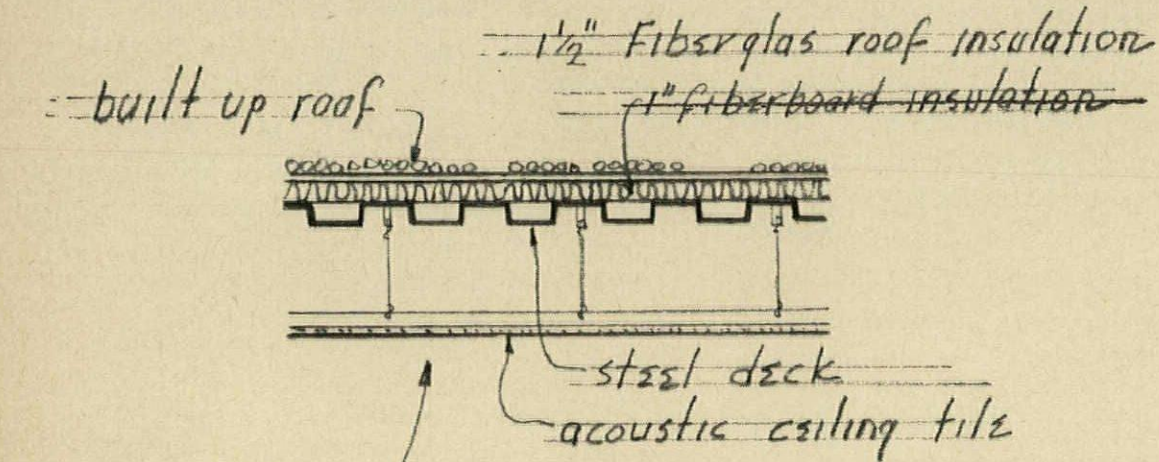
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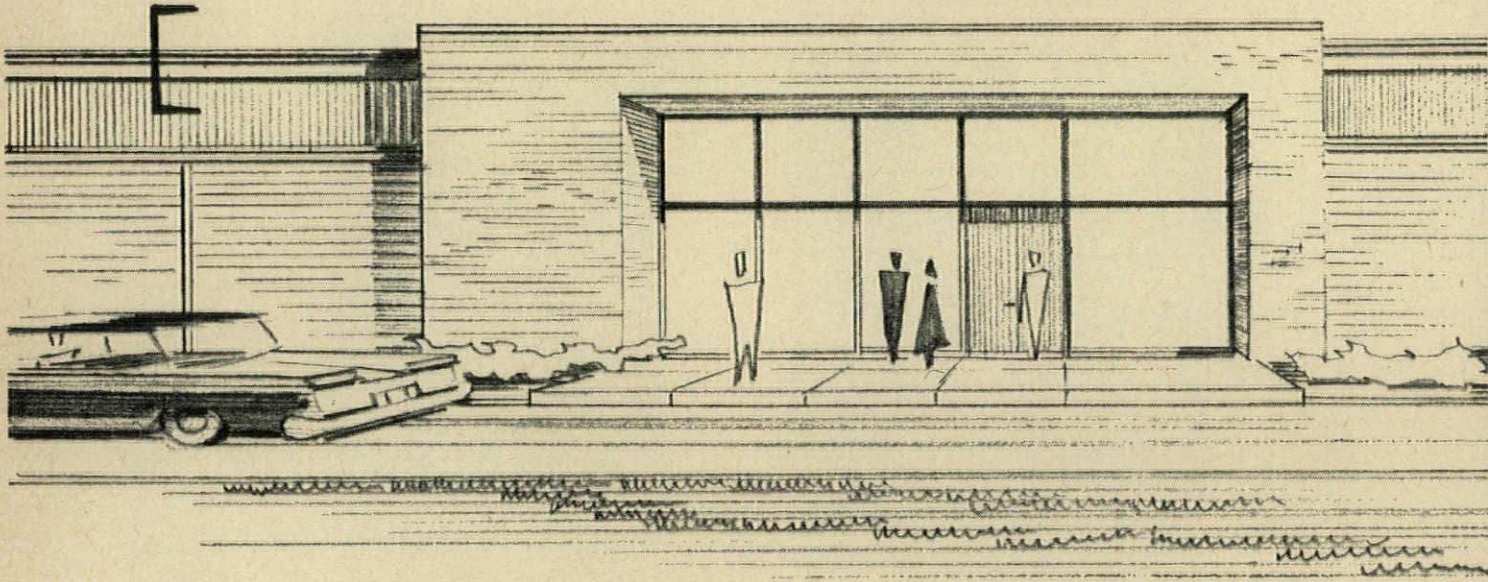
Branches & Warehouse
Stocks in Principal
Cities

DIVIDEND ENGINEERING*

FORECASTS AN \$8,000 SAVING IN INITIAL COSTS AND \$1,800 IN YEARLY OPERATING COSTS AT NEW SPEIDEL PLANT AND RESEARCH LABORATORY



***DIVIDEND ENGINEERING** is a service Owens-Corning will provide to demonstrate to builders, designers, management and financial groups that optimum use of Fiberglas materials can result in reduced initial and operating costs and improved building performance.



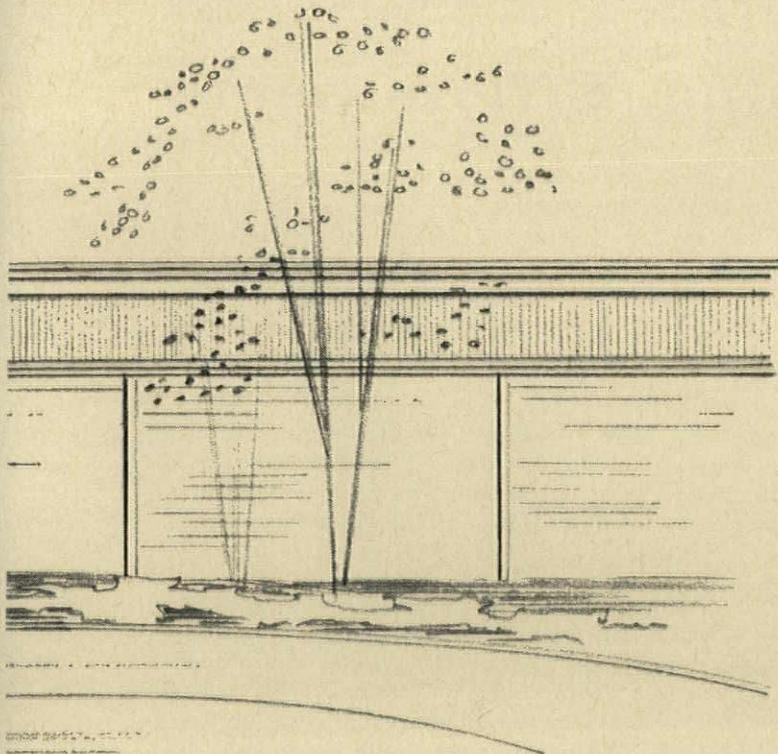
Plant and Research and Development Laboratory: Speidel Corporation,
Industrial Division, Warwick, Rhode Island
Engineers and General Contractors: Bowerman Brothers, Providence, Rhode Island

\$4,000 FOR ADDITIONAL INSULATION WILL BRING THESE ESTIMATED SAVINGS:

\$12,000 ON MECHANICAL EQUIPMENT—Original specifications called for one-inch fiberboard roof insulation. A Dividend Engineering analysis forecast that increasing the thickness to one and one half inches of Fiberglas† Roof Insulation would produce optimum heat savings. The added efficiency made it possible to predict a \$12,000 saving on the cooling equipment alone.

\$1,800 PREDICTED SAVING IN ANNUAL OPERATING COSTS—\$784 on power and water; \$700 on financing; \$316 on depreciation and insurance. Without a Dividend Engineering evaluation to point out the optimum "thermo-economic" performance of the roof, \$1,800 would be wasted every year.

Let us show you how Dividend Engineering forecasts significant savings, and makes the comfort benefits of year-round air conditioning an economic possibility for more and more industrial and commercial structures. Just talk to your Fiberglas representative, or write: Owens-Corning Fiberglas Corporation, Industrial and Commercial Div., 717 Fifth Avenue, New York 22, N.Y.



DIVIDEND ENGINEERING DOLLAR-SAVING PROPOSAL

Cost of Heating

& Cooling Equipment

Original Specifications	\$32,000
Dividend Engineering Specifications	20,000
Predicted Saving	\$12,000
Additional Insulation Cost (in place)	4,000
Net Initial Saving	\$ 8,000

Projected Annual Operating Costs

Original Specifications	\$ 9,947
Dividend Engineering Specifications	8,147
Annual Saving	\$ 1,800

OWENS-CORNING RESEARCH pioneers new ideas in Fiberglas

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NEWS from Dow Corning

This Brick Stays Beautiful



STORY OLDSMOBILE, INC., LANSING, MICH. FREEMAN AND SMITH, AIA-ARCHITECTS

Silaneal Reduces Staining, Efflorescence

This new auto showroom is truly a showplace — and will be for decades to come. Why? Because the architects specified brick protected with Silaneal®, the factory-applied sodium silicate treatment that helps brick repel water . . . prevents unsightly discoloration due to rain, dirt and efflorescence.

How Silaneal Protects Beauty

The chief cause of brick discoloration is water that carries soil, soot and other dirt *into* the brick . . . actually embeds the dirt in brick surfaces. Once inside, water also leaches salts *out* of the brick, forming efflorescence. But Silaneal treatment *controls* the absorption rate of high suction brick. Result: brick turns back water, keeps dirt outside where surface discoloration is rain-washed away. And when water cannot penetrate, ugly efflorescence is minimized.

How Silaneal Improves Construction

When high suction rate brick is placed on fresh mortar it immediately sucks considerable water out of the mortar. Thus, the mortar dries too quickly and shrinks, leaving a

hairline crack at the interface of mortar and brick. But by treating bedding surfaces with Silaneal, suction rate is controlled; proper mortar hydration is permitted; shrinkage and cracks are eliminated; a stronger bond results; water leakage through the finished wall is reduced. Clean-up seldom requires more than just simple brushing. And maintenance is minimized because mortar does not crumble.

If you want more information on this new aid to constructing better brick buildings — including a list of leading brick manufacturers now supplying Silaneal-treated brick — write Dow Corning, Department 6818.

NOTE: There are several brick manufacturers who produce brick having low suction which already perform similar to a Silaneal-treated brick. Little improvement in efflorescence control and reduction of dirt pickup could be accomplished by treating this type of brick with Silaneal. Silaneal treatment would not improve the laying properties of this type of brick.



Dow Corning CORPORATION
MIDLAND, MICHIGAN

AIR/TEMPERATURE

Electric Heating of Classrooms

Application of electric heating to the "Comfort Curtain" system of classroom heating is described in new 6-page bulletin. The brochure explains application of heat pump for both heating and air conditioning, application of resistance electrical heating to the Comfort Curtain air-distribution method, and techniques for applying additive cooling. Types of furnaces and styles of electrical duct heaters are pictured. Also illustrated are the bookcase-duct and wall-duct types of classroom equipment. Lennox Industries Inc., 200 South 12th Ave., Marshalltown, Iowa.

On Free Data Card, Circle 200

Specifications, Prices, on Ventilating Units

Contractor's Buying Guide, 66 pages, describes specifications, installation techniques, and list prices of "Trade-Wind" home and commercial equipment. Products include ventilating fans, range hoods, bathroom ventilating units, electric heating equipment, automatic exhaust fans. Guide is 3½" x 8" in size, an excellent on-the-job reference book. Trade-Wind Division, Robbins & Myers, Inc., 7755 Paramount Pl., Pico Rivera, Calif.

On Free Data Card, Circle 201

New Monthly Publication

First issue of *The b.t.u.*, 4-page illustrated bulletin, has been published. To be issued monthly, the bulletin provides information on new trends, and technical data and case histories on radiant heating, cooling, and acoustic ceilings. Write (on letterhead) to: Architectural Products Division, Burgess-Manning Company, 749A East Park Ave., Libertyville, Ill.

CONSTRUCTION

Basic Roofing Manual

New 1961 *Built-Up Roofing Manual*, 52 pages, reflects a new approach to the organization of information and specifications for Barrett-bonded roofs. Directed primarily to architects, the manual was prepared in consulta-

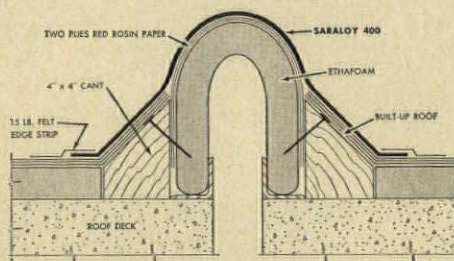
tion with architects and the editors of Sweet's Catalogs. Of particular importance is the new version's emphasis on basic requirements for trouble-free, built-up roofing installations.

Included are new roofing specifications that reflect intensive field and laboratory research. These new specifications require a coated base sheet over all forms of roof insulation. Recommendations are also offered for temporary roofing to protect new roof decks from weather and permit other trades to operate until the application of roof insulation and built-up roofing is practical. The manual gives specifications for each type of bonded roof, discussing fully both pitch and asphalt applications on all types of roof deck. Greater emphasis has been given to the advantages of fiberboard roof insulation. In addition, many flashing details are depicted. Product News Section, Barrett Division, Allied Chemical Corp., 75 West St., New York 6, N. Y.

On Free Data Card, Circle 202

Revised Specs for New Expansion Joint

Technical data sheet, one page, gives revised specifications for the expansion joint using "Sarafoam" flexible flashing, and "Ethafoam" polyethylene foam. The three revisions make a substantial contribution to improving

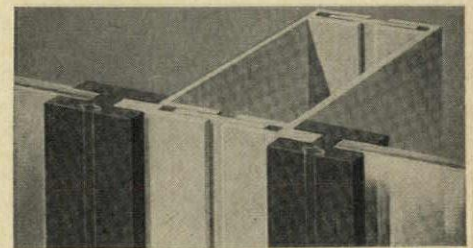


efficiency of operation of these products. Data sheet itemizes new procedures, and gives detail drawing. The Dow Chemical Co., Midland, Mich.

On Free Data Card, Circle 203

Curtain-Wall Sealants

Preformed Sealants for Curtain-Wall Construction, 4 pages, describes and illustrates the manufacturer's various synthetic-rubber products for sealing, supporting, spacing, and imparting resiliency to the glazing units used in curtain-wall construction. Specifications, details, and installation instructions are provided for structural gaskets (which suspend panels free of the rigid structural framing mem-



bers), and for both wet-seal and dry-seal compression gaskets (rubber extrusions which band the edges of the glazing panels). Also included is descriptive information about setting blocks and spacer shims for conventional glazing of low-rise buildings and store fronts. Pawling Rubber Corp., Pawling, N. Y.

On Free Data Card, Circle 204

Asbestos-Cement Faced Sandwich Panels

An up-to-date architectural and engineering manual, on asbestos-cement faced sandwich panels for interior or exterior use, has been published. The 28-page manual contains both application information and design data for "Gold Bond Asbestone Panels." It covers such uses as curtain-wall applications with both asbestos-cement and aluminum-batten systems, roof deck and window-wall construction, and interior partitions. National Gypsum Co., 325 Delaware Ave., Buffalo 2, N. Y.

On Free Data Card, Circle 205

Nonshrinking Mortar

The use of nonshrink mortar to achieve better results in 12 important construction operations is shown in new 4-page *Bulletin E-38*. Operations include waterproofing walls and joints; grouting building columns, machinery, and anchor bolts; calking sewer-pipe joints; patching defects in concrete; and setting floor brick and quarry tile. Illustrations of these areas are shown in a large building cross-section, with references below to further publications on each of the subjects. The Master Builders Co., Division of American-Marietta Co., 2490 Lee Blvd., Cleveland 18, Ohio.

On Free Data Card, Circle 206

Traffic-Bearing Tile

Folder, 4 pages, describes "Promenade Tile," a new traffic-bearing roof tile of asbestos cement. The folder illustrates some of the product's uses in providing usable roof space for

commercial, industrial, and recreational purposes, and gives condensed data on available sizes and weights. The material is fireproof. Keasbey & Mattison Co., Ambler, Pa.

On Free Data Card, Circle 207

Literature on Aluminum

Six new booklets on the use of aluminum in architecture have been published. The most comprehensive of these is the 36-page *Industrial Building Products*, which includes details on corrugated roofing and siding, sandwich wall, field-formed flashing, and fasteners. *Roofing and Siding Products*, 8 pages, gives descriptions and specifications on batten roofing, corrugated roofing, V-beam roofing and siding, ribbed siding sheet, and perforated corrugated sheet. Depicting aluminum as the "architects' metal" is the 8-page *Aluminum in Architecture*, describing the advantages of aluminum, its specifications, finishes, and properties. Color chips are included. Others in the current series of booklets are *Exterior Wall Products*, *Products for Industrial Building Construction*, and *Gravel Stops and Copings*. Aluminum Company of America, 774 Alcoa Building, Pittsburgh 19, Pa.

On Free Data Card, Circle 208

Working Guide for Curtain-Wall Design

Curtain-Wall Index, 72 pages, is a working guide for determining the wall system most applicable to a particular building. Standard-system types are detailed in duplicate so that they may be detached for study and further development. Other available dies are illustrated in full scale opposite the details. Booklet is handsomely and effectively designed. The Michaels Art Bronze Co., Inc., P. O. Box 668, Covington, Ky.

On Free Data Card, Circle 209

Grid Framing System Is Simple, Versatile

"A radically different concept, Kawneer's 'Core' building system," is presented in handsome 20-page booklet. The system is simple, yet versatile; component parts have only four basic shapes, which have been developed to give 14 basic parts, and from these, 36 assemblies can be formed. Core does not need to be used in conjunction with other systems, because it is

a complete building exterior system in itself. (However, other Kawneer systems can be easily adapted into it.)

The basic idea of the Core system is that by joining two components of the system, any needed member can be produced. With these members, one can build up, out, and/or around. And by the use of a few simple adapters that are part of the system, one can integrate most Kawneer building front components into the system, such as entrances, windows, facings, fixed lights, and insulating panels. The net result is that Core system can be used for any building exterior, new or old, single or multistory, within the system's lenient physical limits. Booklet shows basic components, explains the system, and provides specifications. Kawneer Company, 1105 N. Front St., Niles, Mich.

On Free Data Card, Circle 210

New Catalogs on Steel Deck and Floors

Three new bulletins on steel deck and floors are available, with a total of 48 pages of information. New section property and load tables are an important inclusion in the revised catalog sections. Titles of the bulletins are *Steel Deck* (for roofs, sidewalls, partitions, ceilings, and floors); *Long Span M-Decks* (to eliminate roof beams and roof purlins, and to provide complete structural roof and combined roof-ceiling); and *M-Floors* (for electrified sub-floor construction). The R. C. Mahon Co., P. O. Box 4666, Detroit 34, Mich.

On Free Data Card, Circle 211

Southern Pine Millwork

Technical Data on Southern Pine: Architect's Bulletin #13, 12 pages, discusses millwork. Presented in the bulletin are a specifications guide, recommendations for treatment, information on designing special millwork, a pattern guide, and a cross-index to all standard moldings. Among Southern Pine's qualities are strength, good nail and screw holding power, resistance to abrasion, and fine finishing properties. Southern Pine Association, National Bank of Commerce Building, New Orleans 4, La.

On Free Data Card, Circle 212

Lightweight Concrete

The 1961 issue of *Perlite Lightweight Concrete Aggregate Data Catalog*, 4 pages, is currently available. With de-

tails, specifications, and data, bulletin describes uses of perlite aggregate for roof decks, floor fills, granular-fill insulation, and heated and unheated grade-level slab floors. Load-test data and typical mix designs are detailed graphically. Perlite Institute, Inc., 45 W. 45th St., New York 36, N. Y.

On Free Data Card, Circle 213

Cold-Weather Masonry

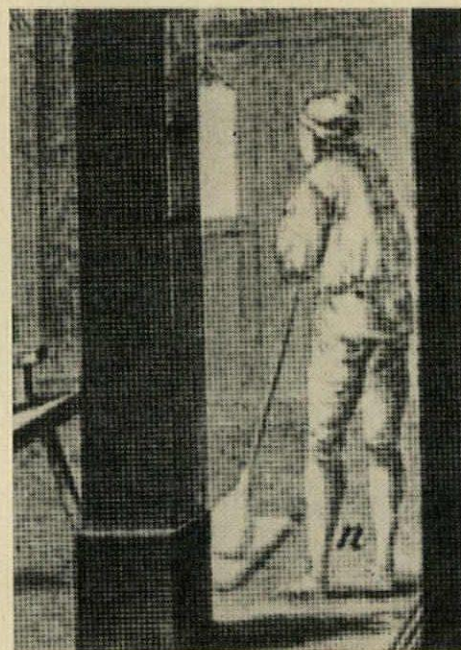
Latest 4-page edition of *Technical Notes on Brick and Tile Construction* discusses the construction of masonry in cold weather. Bulletin presents recommended specifications, general protection requirements, data on storage of materials and preparation of mortar, and special precautions. Structural Clay Products Institute, 1520 18 St., N.W., Washington 6, D. C.

On Free Data Card, Circle 214

DOORS/WINDOWS

The Story of Glass

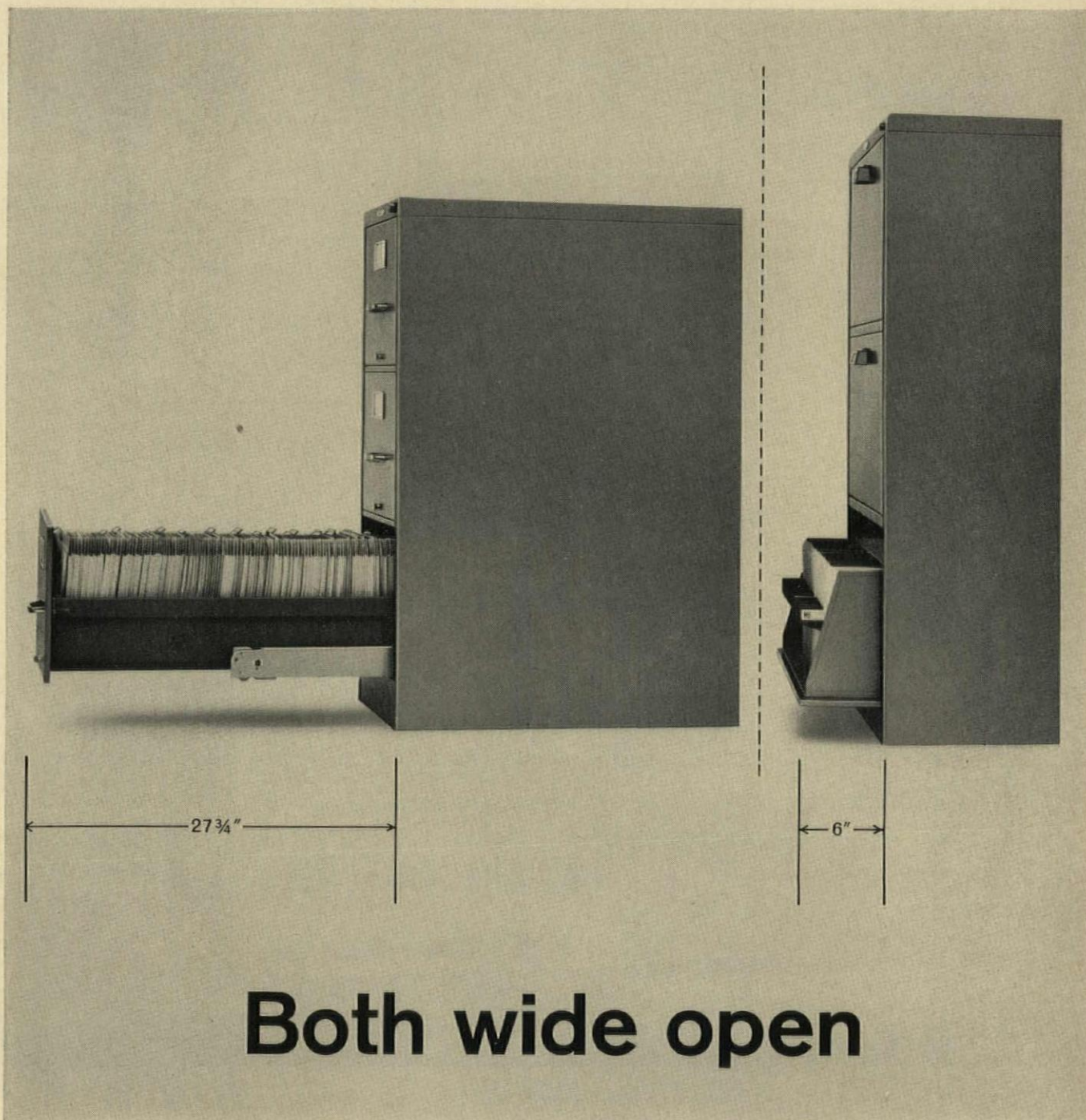
Revised edition of *This Is Glass*, 68 pages, gives a comprehensive picture of glass and glass-ceramics. It reviews



the history of glass, and describes the expanding role of glass in industry, science, electronics, lighting, and the home. Booklet also includes a section on "Pyroceram," the new glass-ceramic material. A preview discusses the extensive research with these glass and glass-ceramic materials. Corning Glass Works, Corning, N. Y.

On Free Data Card, Circle 215

Continued on page 112



Both wide open

You could design the file on the right into a 12½"-deep wall space facing a narrow aisle and forget about aisle blocking when the compartments are opened.

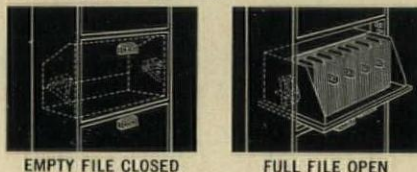
For this file has no drawers to eat up valuable space. Wide open, with all contents visible and reachable, this file projects only 6" (8" for legal size).

Even if this file were not built into a wall, you could save your client a fat 30% of floor space.

To recommend them, you would specify Y&E Pro-Files.*

The idea that makes Pro-File work to your advantage is a neat patented

Rock-A-Tilt mechanism which in sketch looks like this.



The center of gravity remains within the shell, even with all the compartments loaded and open. These files may be stacked to the ceiling with no fear of overbalancing or tipping.

Design them into walls. Utilize them as divider half-walls, back to back, or built in under bookcases or shelving.

Or, better, use your own imagination.

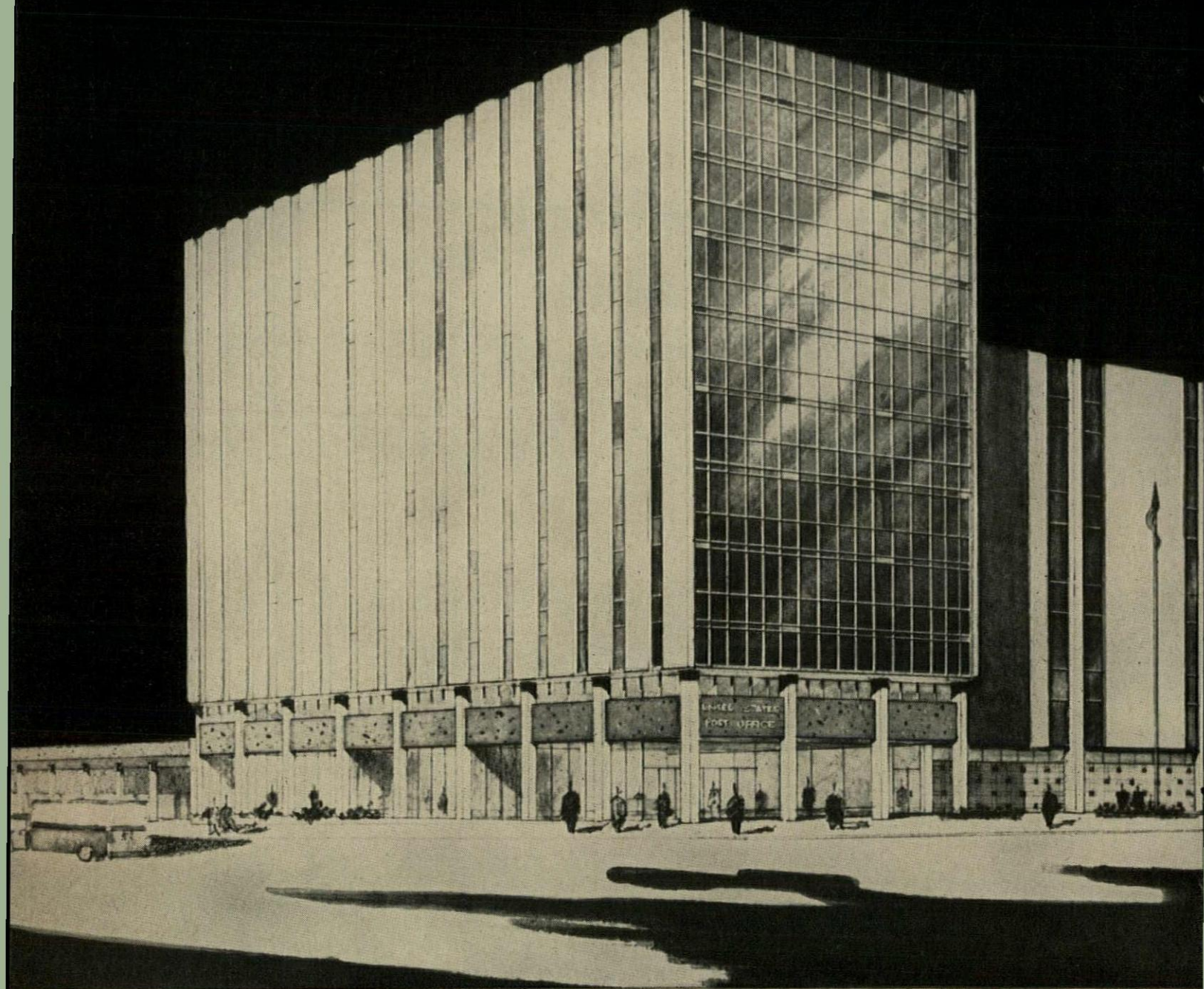
If you would like specification literature on Y&E Pro-Files, tear out this ad and mail it to us with your name and address.

Since we also build darn good standard files, like the one on the left above, we'll send you specifications on them, too, if you'll just ask. **Patented*



**YAWMAN
& ERBE**

A STERLING PRECISION CORPORATION
1093 Jay Street, Rochester 3, N. Y.



Keywall masonry reinforcement

*"Most economical
masonry wall
reinforcement
I have used,"*

SAYS MASONRY CONTRACTOR

Sixty percent of Michigan's mail flows through the new Detroit Post Office—a marvel of automation. One example: the "Mail-Flo" system can move trays of mail between sorting points at a rate of 8 million pieces an hour.

Everything is on a grand scale in this building. More than 10 miles of Keywall were used to reinforce the masonry partitions.

Because Keywall is of uniform width and easy to place accurately, it won't protrude past the surface of the wall; permits clean, smooth striking of joints.

And the fact that Keywall doesn't thicken the joint when it's lapped is a point in its favor.

Perhaps even more important is that the distribution

Newest, most highly automated post office in nation

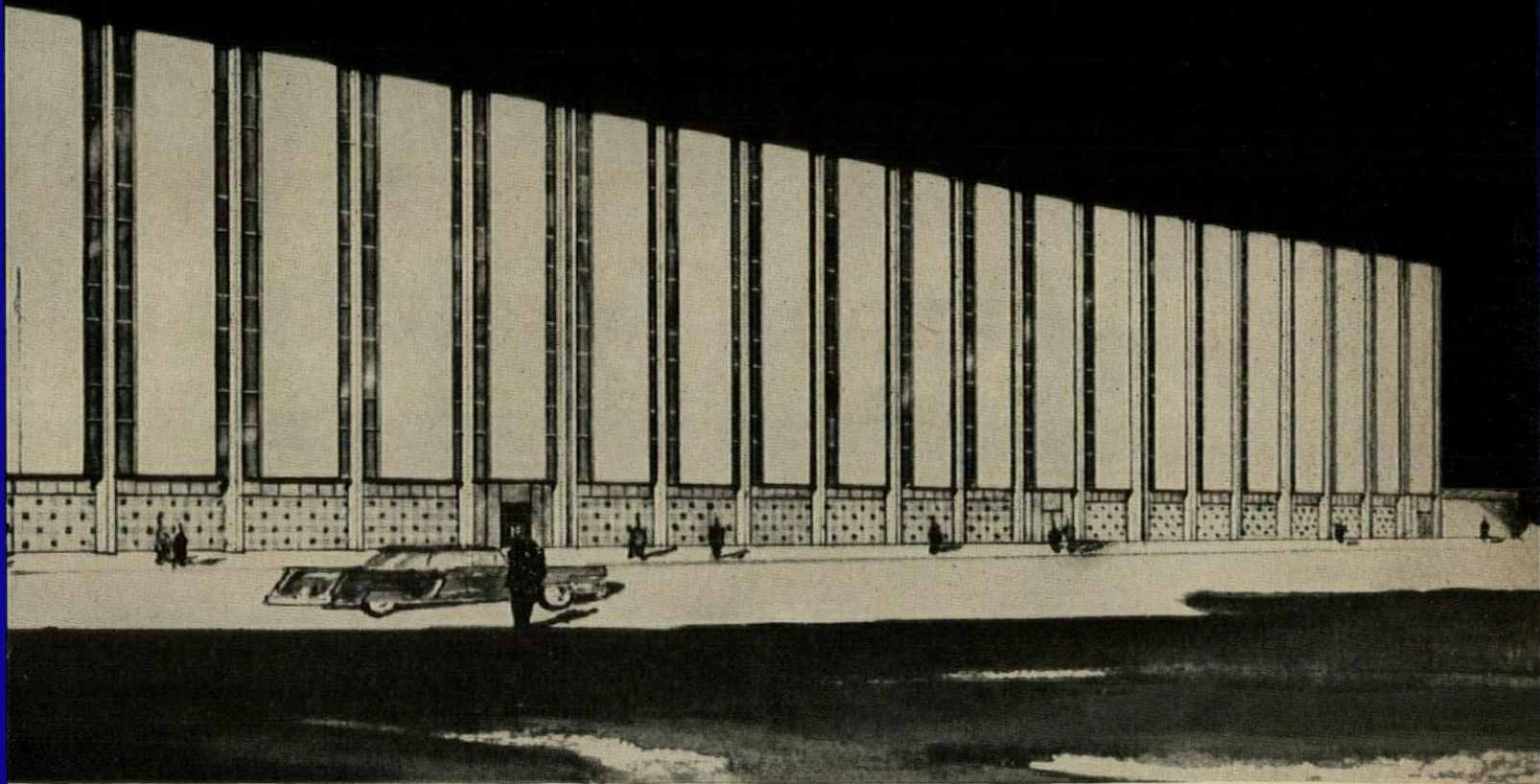
has just been completed in Detroit, Michigan.

The cost: \$23,000,000.

Architects & Engineers: Giffels & Rosetti, Inc.

General Contractor: Barton-Malow Company, Detroit

Masonry Contractor: Smith Fireproofing Company, Detroit



used in Detroit post office

of the metal in Keywall reinforcement maximizes shrinkage resistance.

You would think that a reinforcement with such obvious advantages would necessarily cost more. Not so.

Mr. C. T. Hessee, president of Smith Fireproofing, the masonry contracting firm, says, "I find that Keywall is the most economical masonry wall reinforcement we have used."

It makes sense to use Keywall. Try it on your next job.

KEYSTONE STEEL & WIRE COMPANY

Peoria, Illinois

For more information, turn to Reader Service card, circle No. 345

because Keywall comes in rolls,
workers handle it more easily and quickly.



Continued from page 108

ELECTRICAL EQUIPMENT

Hospital Lighting Guide

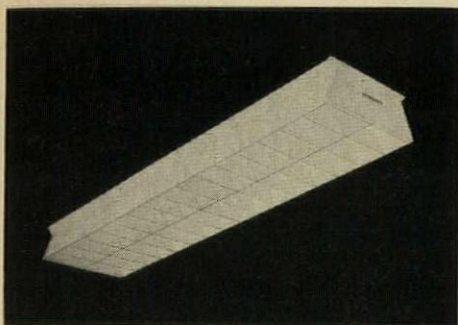
Recommended lighting levels for 112 specific areas in the modern hospital are given in new 24-page manual. *Hospital Lighting Manual* also contains illustrations of well-designed lighting installations. A breakdown of the various types of lighting equipment available, and suggested lighting layouts, are included. Every hospital area is covered: those which are for patient care, public and traffic, administrative and service. Day-Brite Lighting, Inc., 6260 N. Broadway, St. Louis 15, Mo.

On Free Data Card, Circle 216

School/Office Fixtures

Have 83 Per Cent Efficiency

New "Decathlon Series 21" fixtures for schools and offices demonstrate over 80 per cent efficiency and provide



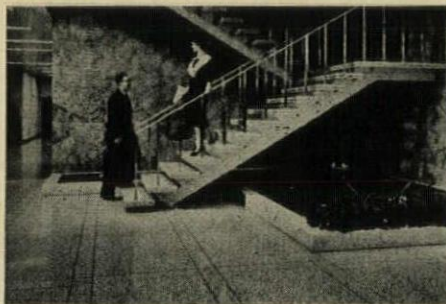
more light in the useful zone, according to 4-page catalog. Fixtures are constructed in 4' and 8' lengths, and can be installed on stems or directly on the ceiling surface. Litecraft Manufacturing Corp., 100 Dayton Ave., Passaic, N.J.

On Free Data Card, Circle 217

FINISHERS/PROTECTORS

Maintenance and Repair of All Floors

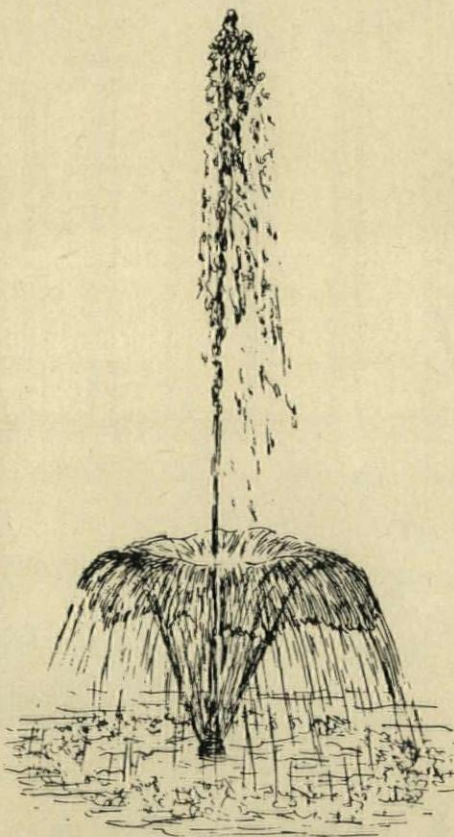
Comprehensive and fact-filled bulletin, 8 pages, gives directions and specifications for the proper care of all types of floors, new or old. According to the bulletin, a complete floor-maintenance program should be included with the architect's specifications, to insure proper finishing of the job and to provide for continued upkeep. Data is given for concrete, terrazzo, ceramic



tile, marble, wood, asphalt tile, vinyl, cork, and conductive floors. Huntington Laboratories, 6300 State Rd., Philadelphia 35, Pa.

On Free Data Card, Circle 218

SANITATION/PLUMBING



Fountain Nozzles

New data file on decorative fountain spray nozzles, 26 pages, has been published. The new bulletin describes company's full line of nozzles—hollow-cone, solid-cone, and flat-sheet spray nozzles; jet nozzles; adjustable nozzles; and mushroom-spray nozzles. Complete specifications are given for each type, including sizes, capacities, and spray characteristics. A section of the bulletin illustrates typical applications, with detailed drawings of the spray effect of the various types of nozzles, including dimensions of spray height, diameter, cone, etc.

Schutte & Koerting Co., Cornwells Heights, Bucks County, Pa.

On Free Data Card, Circle 219

New Sink Designs

Catalog supplement, 4 pages, has been issued by "nation's oldest and largest manufacturer of stainless steel sinks," to cover 1961 products. Highlighted in the catalog is the "250 Plus" unit, a combination of regular size bowl with an extra-large compartment to accommodate large kitchen utensils, giving a total of 250 cubic inches. Also featured in the supplement are new lavatory units for powder room and bath. Elkay Manufacturing Co., 2700 South 17 Ave., Broadview, Ill.

On Free Data Card, Circle 220

SPECIALIZED EQUIPMENT

Draperies Control Heat, Muffle Sound

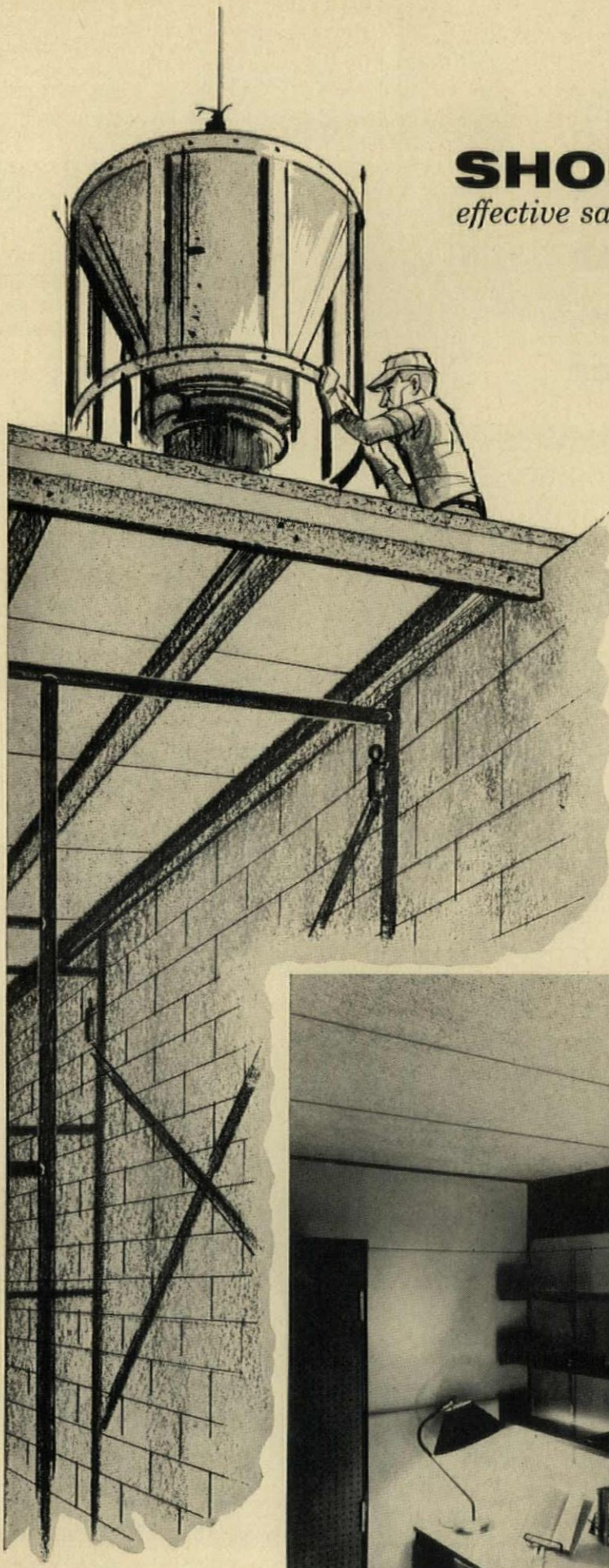
Method of controlling solar heat, muffling sound, and diffusing light with "Fiberglas" draperies is detailed in new 12-page brochure. Technical data is included on thermal efficiency for various window-shading devices, along with light-transmittance values and noise-reduction coefficients. Case histories of some of the country's largest high-rise buildings, using glass-fiber draperies to control environmental effects, are given. Publication of brochure is by prime contractor, who furnishes fabrics, track, and installation. Fenestra Fabrics, Inc., Subsidiary of Glass Fabrics Inc., 620 N. Almont Dr., Los Angeles 46, Calif.

On Free Data Card, Circle 221

Two New Systems of Movable Walls

Manufacturer of movable interior walls has announced the publication of new literature on its two newest products, "Signature" and "Delineator." The brochures, 32 and 16 pages respectively, contain complete product details and specifications, suggested applications, and installation photos. The Signature system makes use of a 2 1/4" universal post, permitting the same slim lines in two-, three-, and four-way conditions as in a one-way connection. Another of numerous advantages cited is greater sound privacy than any other movable wall, more

Continued on page 116



SHORE AND POUR

effective savings for concrete construction

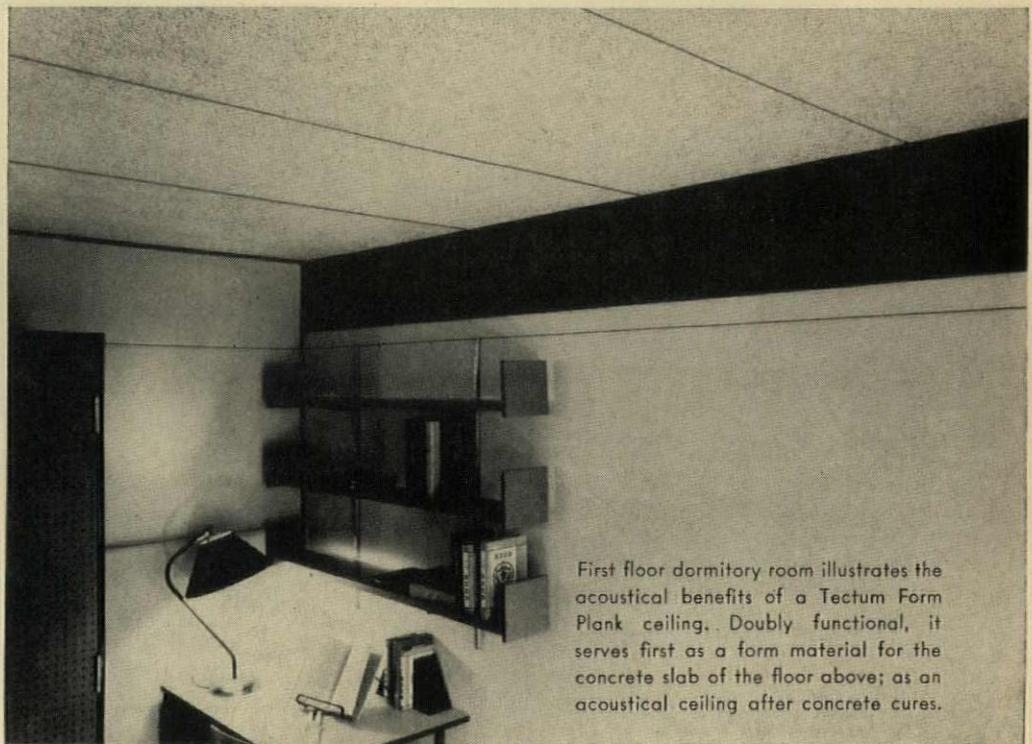
Tectum Form Plank has natural advantages for concrete construction—in any form. Flat slab, pan system, reinforced beam, hyperbolic paraboloid—any of the new roof shapes can be effectively formed with savings in time, labor and materials.

Tectum as a form. Tough, structural Tectum with tongue and groove joints bonds permanently with concrete slab. *It's safe* for roof loading, for workmen and for abnormal load conditions during construction.

Tectum as an acoustical ceiling. Tectum form plank remains in place as a beautifully textured acoustical ceiling. Saves form stripping, grinding and finishing of interior ceilings. Takes paint beautifully — can often be used unpainted if care is taken during handling of the material. Noise reduction coefficient of .60 to .85 for a choice of 3 different thicknesses. *Adds the warmth of wood to cold concrete construction.*

And Tectum insulates, is noncombustible and available in a range of sizes and thicknesses to fit every need. Custom sizes for special modules also available. Write for complete information. TECTUM CORPORATION, 535 East Broad Street, Columbus 15, Ohio.

Tectum®



First floor dormitory room illustrates the acoustical benefits of a Tectum Form Plank ceiling. Doubly functional, it serves first as a form material for the concrete slab of the floor above; as an acoustical ceiling after concrete cures.

**The unique look of
GEOCOUSTIC™
on this wall
identifies a room
with
acoustical balance,
acoustical brilliance**

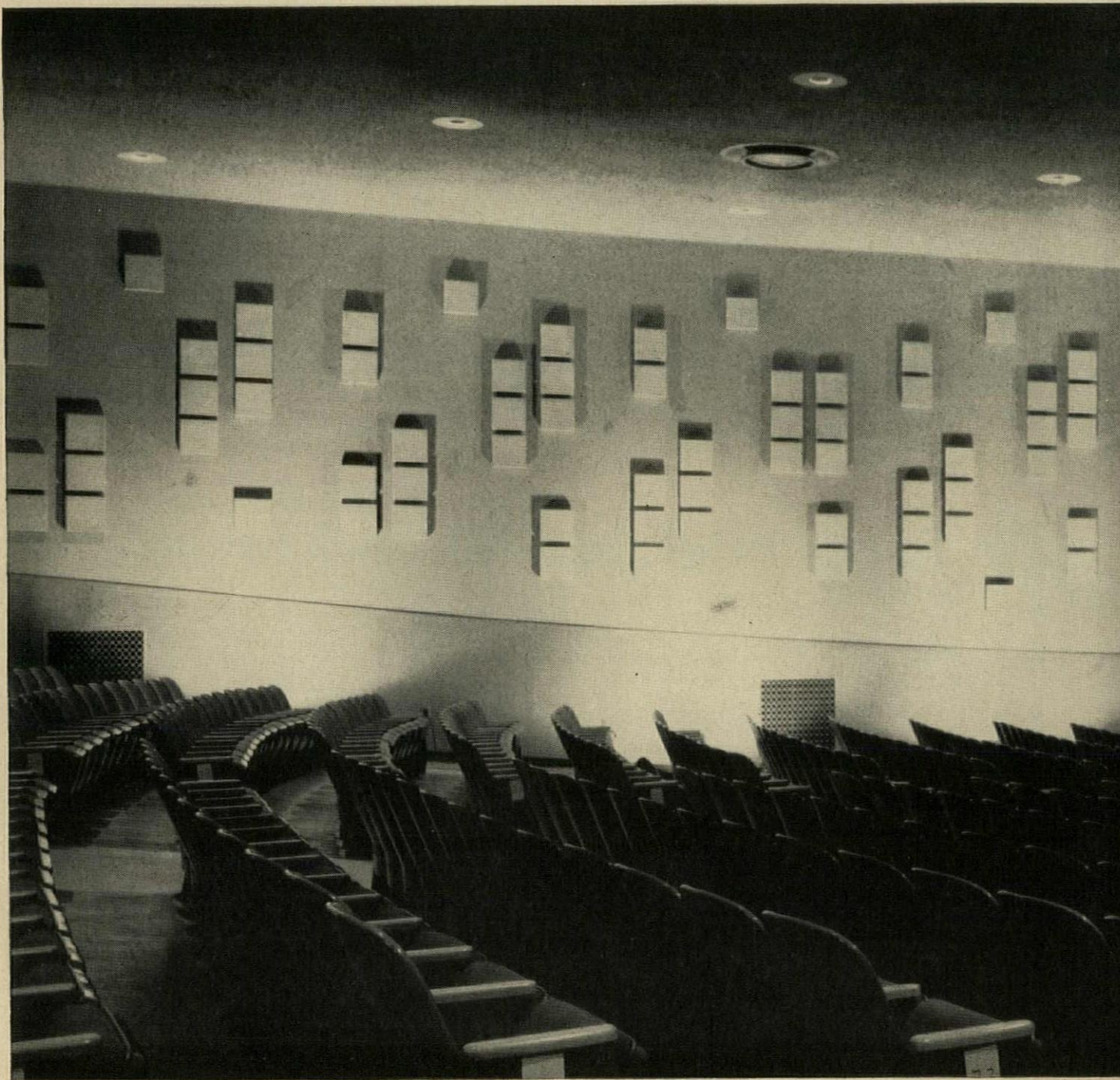


You are looking at the picture of a virtual revolution in the use of acoustical materials. The key is a new material—GEOCOUSTIC—

and its unique placement as demonstrated in the room you see here. The result is new progress in gaining full intelligibility of sound in a room.

Consider the actual results using GEOCOUSTIC in this large auditorium at the Plainview High School, Long Island, N.Y. Michael J. Kodaras, Acoustical Consultant, Long Island City, advises that, "This treatment provided us with the acoustical absorption and sound diffusion necessary for optimum conditions."

This remarkable result was obtained by placing 13½"



square units of GEOCOUSTIC on the walls of the auditorium with each block separated. Absorption and reflection of sound were brought under control by the use of the "patch technique"—long recognized as a most effective method for handling sound treatment in a room. The use of the patch technique is made physically and economically practical by the material of which GEOCOUSTIC units are made. Their cellular glass composition delivers high acoustical absorption in a strong, rigid mass of minimum size and thickness.

In new rooms or old, the addition of GEOCOUSTIC units insures that you will have a room in which to hear and be heard. And GEOCOUSTIC adds visual delight as well. An endless variety of arrangements is possible in the placement of the units—and their interesting textured surface can be colored without destroying the efficiency of the unit.

Learn more about how GEOCOUSTIC can add new brilliance to your acoustical designs. Write for our new booklet. Pittsburgh Corning Corporation, Dept. AB-61, One Gateway Center, Pittsburgh 22, Pa.

Plainview High School Auditorium, Long Island, N.Y.

Architect: Knappe and Johnson, New York, N.Y.

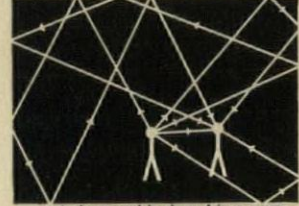
Acoustical Consultant: Michael J. Kodaras, Long Island City, N.Y.

Acoustical Contractor: Jacobson and Company, Long Island, N.Y.

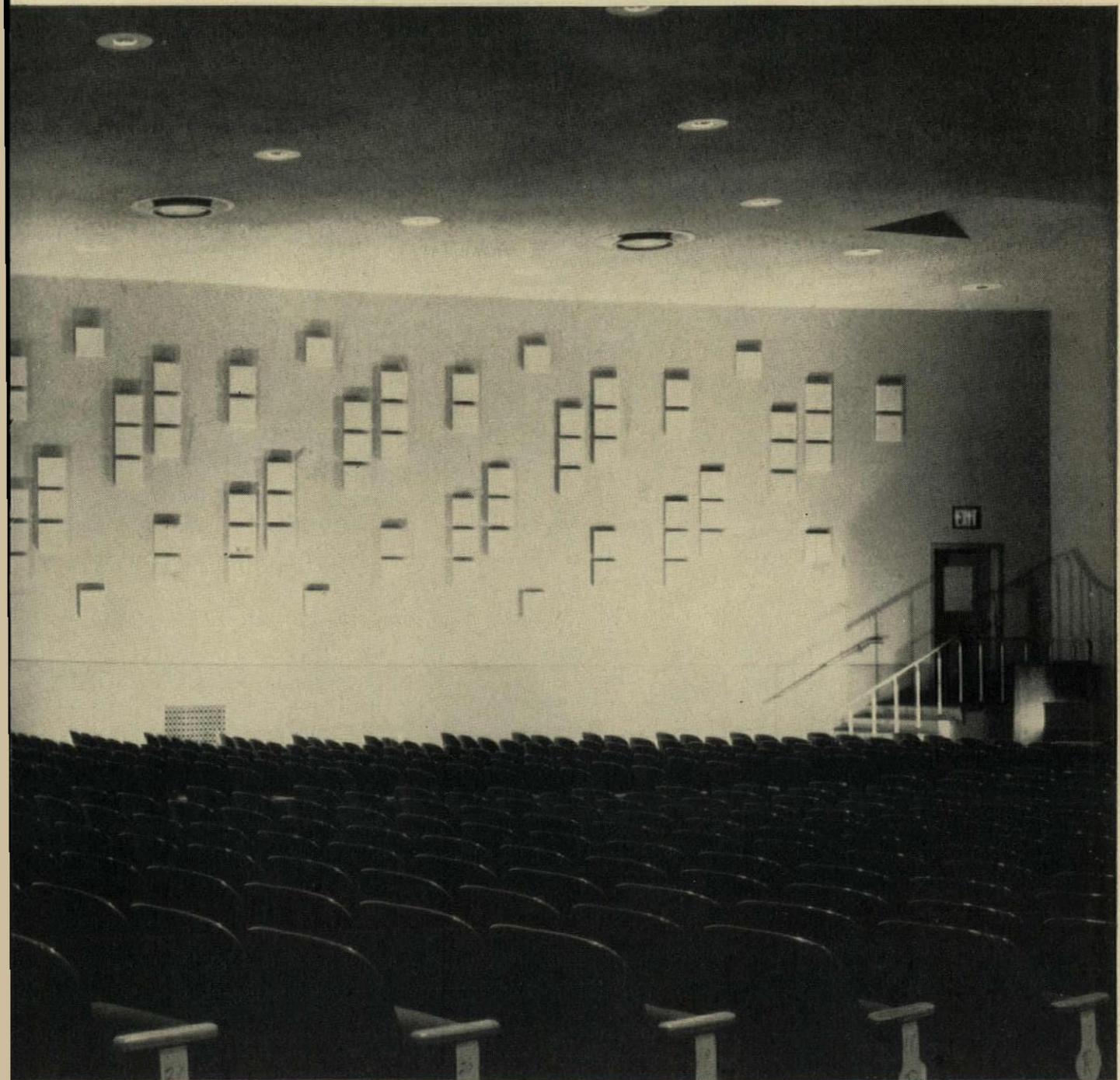
PITTSBURGH



GEOCOUSTIC: A material and a method

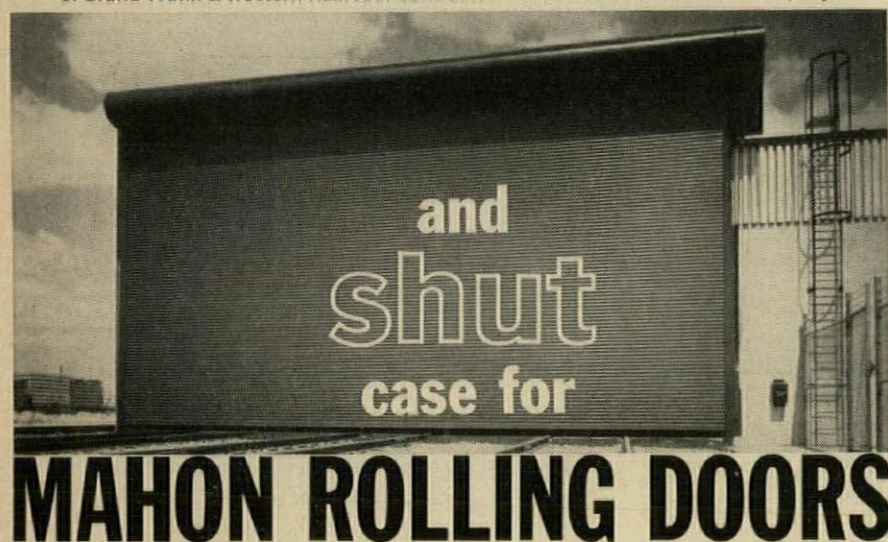


... to hear and be heard in a room

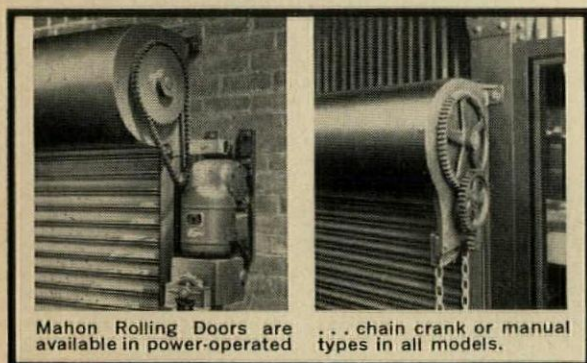




King-size (43-ft. wide, 22-ft., 7-in. high) Mahon Rolling Steel for a Detroit warehouse of Grand Trunk & Western Railroad. Contractor: F. H. Martin Construction Company.



Open: Mahon Rolling Doors are versatile space savers. **Shut:** they are sturdy protection. In between both stages, they are convenient, quick-acting, work and time savers. Mahon supplies Rolling Doors in standard or Underwriters' Labeled Types to suit your specific needs for new or old openings. All-metal construction with Bonderized slats insure long life, minimum maintenance. Whether you're building, modifying or replacing—investigate the multiple-benefit 'case' for Mahon Rolling Doors.



Mahon Rolling Doors are available in power-operated ... chain crank or manual types in all models.

MAHON COMPANY BUILDING PRODUCTS

- Aluminum or Steel Curtain Wall
- Rolling Steel Doors (Standard or Underwriters' labeled)
- Fire Walls (Underwriters' rated)
- M-Floors (Steel Cellular Sub-Floors)
- Long Span M-Deck (Cellular or Open Beam)
- Steel Roof Deck
- Acoustical and Troffer Forms
- Acoustical Metal Walls, Partitions, and Roof Deck

CONSTRUCTION SERVICES

- Structural Steel—Fabrication and Erection
- Steel Fabrication—Weldments
- Geodesic Domes—Fabrication and Erection

THE R. C. MAHON COMPANY DETROIT 34, MICHIGAN

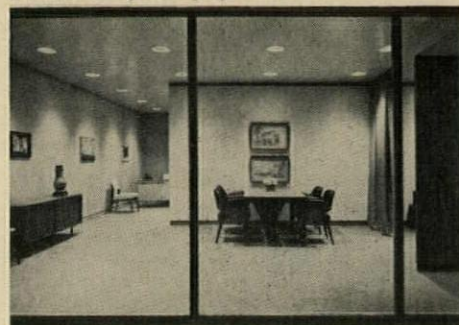
MANUFACTURING PLANTS—Detroit, Michigan and Torrance, California
SALES-ENGINEERING OFFICES—Detroit, New York, Chicago, Cleveland, San Francisco and Torrance, Calif. and E. Orange, N. J.
REPRESENTATIVES IN ALL PRINCIPAL CITIES.

MAHON

WRITE FOR ROLLING DOOR
CATALOG G-61—ALSO IN
SWEET'S FILES.

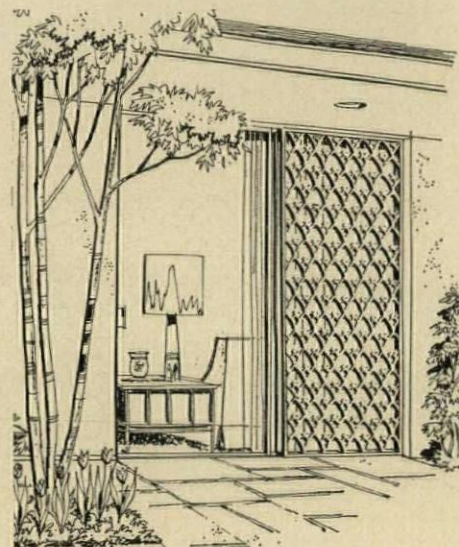
For more information, turn to Reader Service card, circle No. 351

Continued from page 112



than fixed walls up to seven times its weight and twice its thickness. Advertising Dept., The E. F. Hauserman Co., 6800 Grant Ave., Cleveland 5, Ohio.

On Free Data Card, Circle 222



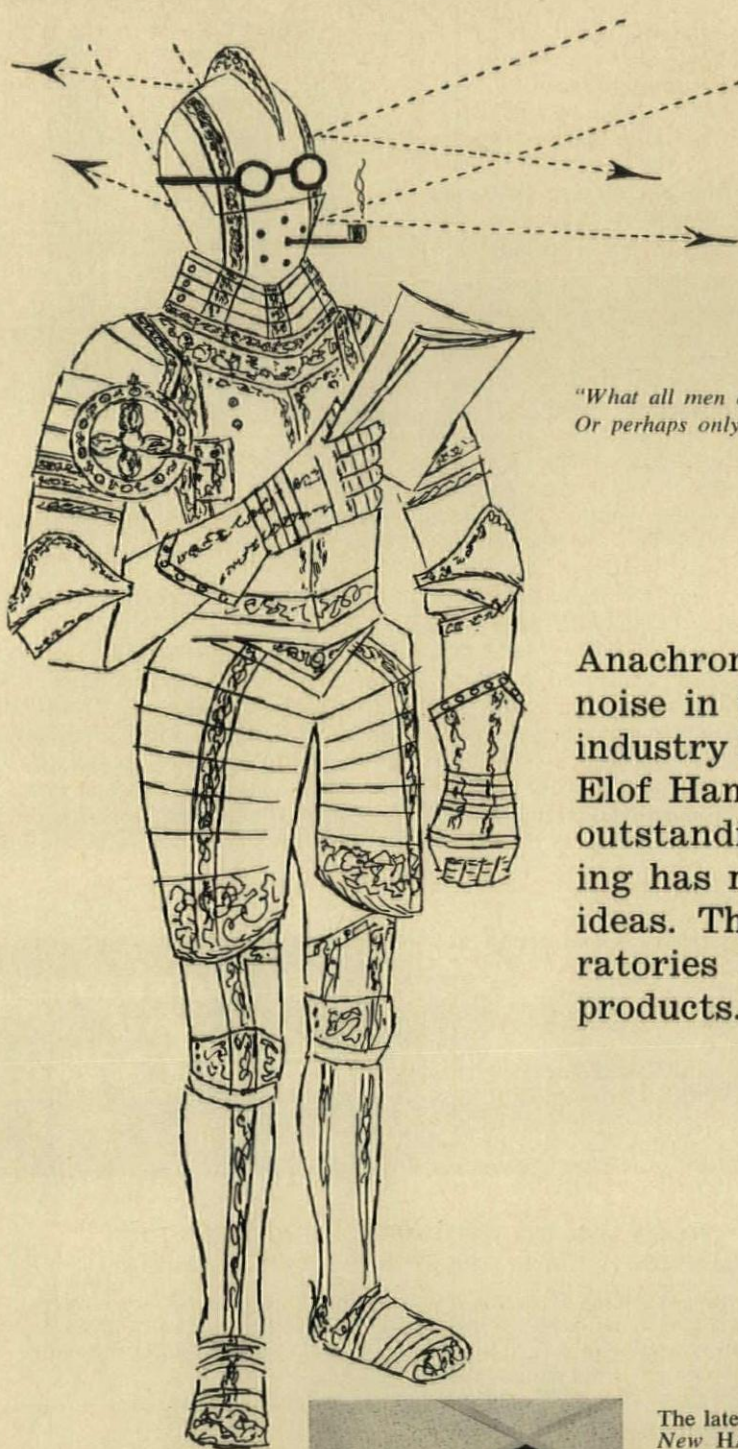
Ornamental Metalwork

New catalog, 20 pages, aids in the design and selection of ornamental metalwork. It includes many scale drawings of suggested designs fabricated from stock malleable iron ornamental castings, and suitable for railings, columns, balustrades, gates, fences, verandas, space dividers, and other applications. Architectural drawings of typical applications are given, together with information on materials, production, and cost. Julius Blum & Company, Inc., Carlstadt, N.J.

On Free Data Card, Circle 223

Molding Techniques For Reinforced Plastics

The six basic techniques used by the reinforced-plastics industry to mold thousands of products—from pleasure boats to nose cones for missiles—are explained in a 10-page, letter-sized booklet. Intended as a convenient guide for design engineers and others



"What all men are really after is some form,
Or perhaps only some formula, of peace."

—JOSEPH CONRAD
Under Western Eyes—1911

Anachronistic ideas are a poor shield from noise in today's cacophonous world. Modern industry has discovered the effectiveness of Elof Hansson sound control. Not that our outstanding progress in acoustical engineering has made us complacent—we're all for ideas. The look-ahead kind that our laboratories develop into dependable, quality products.



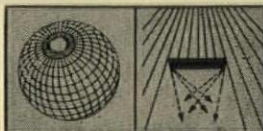
The latest in our multi-purpose acoustical ceiling line—
New HANSOGUARD Fire Protective Acoustical Ceiling Board*

This new ceiling board version of HANSOGUARD Fire Protective Acoustical Tiles provides 2-hour fire rating combined with excellent acoustical efficiency. Designed to protect the structural components of a building from dangerous heat transmission.

Available in perforated mineral ceiling board in HANSO-STAR needle-point pattern, $\frac{5}{8}$ " thickness, for 2' x 2' or 2' x 4' exposed metal grid systems. Fissured HANSOGUARD ceiling board will be added to the line in the near future. Write for complete information.

*Trade mark reg. pending U. S. Pat. Off.

- The complete line of researched and engineered sound control products
- Send for Catalog 61 for descriptions and illustrations of the complete line
- Our Acoustical Engineering Staff is at your disposal—without charge or obligation

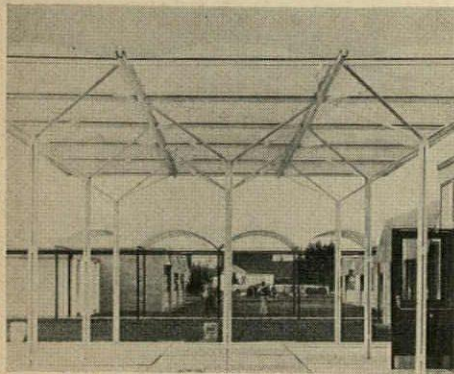


ELOF HANSSON, INC.
ACOUSTICAL DIVISION

711 Third Avenue, New York 17, N. Y.
Authorized sales representatives in every major city in the U. S. and Canada

interested in reinforced-plastics molding, the booklet describes each molding technique and lists its specific advantages and applications. Also given are physical and chemical properties of parts molded by each method. Reinforced Plastics Division, The Society of the Plastics Industry, Inc., 250 Park Ave., New York 17, N.Y.

On Free Data Card, Circle 224



Varied Uses of Plexiglas

Plexiglas in Architecture, 20 pages, is published to assist architects and builders in the use of Plexiglas acry-

lic-plastic sheet. The booklet discusses Plexiglas in skylights, window glazing, spandrel panels, luminous walls, luminaires and luminous-ceiling panels, illuminated façades, and lettering. Properties and characteristics of the material are described in detail; installation photos and drawings are included. Rohm & Haas Co., 222 West Washington Sq., Philadelphia 5, Pa.

On Free Data Card, Circle 225

Quiet Phone Booths

Folder, 4 pages, describes line of "Acousti-Booths," open-construction acoustical telephone booths. Units are available for wall, floor, or free-standing installation. With no doors to open, booths can be entered easily even by persons laden with packages. Ample shelf space is provided, and luggage is safely deposited on floor. Booths are always clean and airy, yet acoustical efficiency permits quiet and private telephoning even in noisiest areas. Suggested locations are passenger waiting rooms, industrial areas, etc. Architectural Products Division,



Burgess-Manning Co., 749 E. Park Ave., Libertyville, Ill.

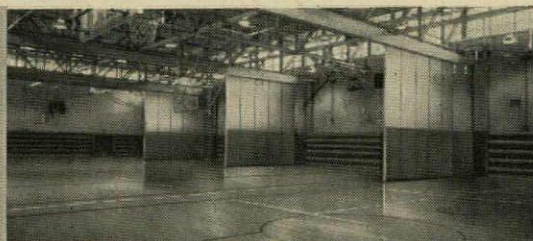
On Free Data Card, Circle 226

Burglar Alarm Devices

Information on new electronic burglar alarms is contained in two, 2-page data sheets. "Photolarm" and "Photolarm, Jr." have hidden cameras to photograph burglars in action. Units are fully automatic, tamperproof, and portable. When burglar crosses an invisible projected beam, the device

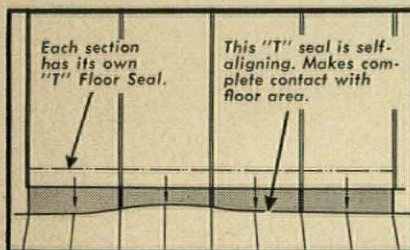
a revolutionary new
feature in

TORJESEN FOLDING PARTITIONS



THE INGENUOUS "T" FLOOR SEAL

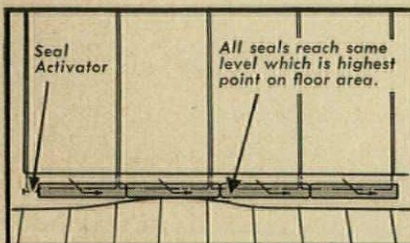
Activated by Compressed Air!



NEW "T" FLOOR SEAL ON TORJESEN FOLDING PARTITIONS Effects 100% Closure Regardless of Floor Contour!

Each section of a Torjesen Partition has its own "T" floor seal. *An electro-pneumatic activated unit in the bottom does the job!* Regardless of high or low floor points, each panel is held rigidly in 100% contact with the floor making the entire partition immovable.

**The new "T" Floor Seal is now standard equipment on all Torjesen Folding Partitions at no extra cost!*



OLD TYPE FLOOR SEAL NOW IN GENERAL USE Cannot Effect 100% Closure Unless Entire Floor is Dead Level!

The drawing at left shows this. When the partition is closed the seal in the first door section is triggered and in turn activates each following door section seal. They all reach the same level which is the highest point on the floor area. Any irregularity in floor contour will cause the rest of the panels to hang loosely thus affecting the rigidity of the entire partition.

Visit our plant and tour its facilities • Write for fully detailed catalog

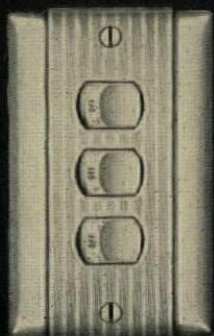
TORJESEN, INC. 209-25th ST., BROOKLYN 32, N.Y. • TEL.: SOUTH 8-1020

Over 50 representatives in key cities to serve you

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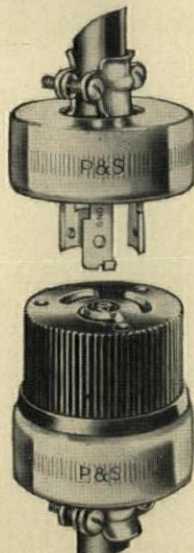
For more information, turn to Reader Service card, circle No. 383

*P&S means
ROCKER-GLO*



and

TURNLOK
too!...



The same engineering know-how that goes into the manufacture of world-famous Rocker-Glo switches, makes Turnlok wiring devices supreme in their field, too. On heavy duty devices or residential, the P&S mark is your guarantee of the best your money can buy.

For free information about Turnlok
and Rocker-Glo
Write Dept. PA 661



PASS & SEYMOUR, INC.
SYRACUSE 9, NEW YORK

60 E. 42nd St., New York 17, N.Y. 1440 N. Pulaski Rd., Chicago 51, Ill.

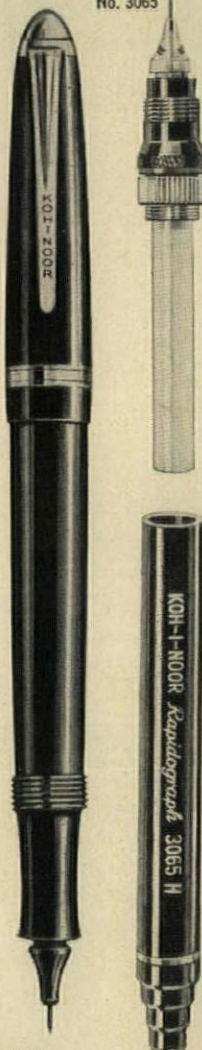
In Canada: Renfrew Electric Co., Ltd., Toronto, Ontario

For more information, turn to Reader Service card, circle No. 369

KOH-I-NOOR

PRECISION MATCHED INSTRUMENTS

No. 3065



No. 3060

Koh-I-Noor offers draftsmen an important new dimension in a comprehensive line of instruments and accessories meticulously matched to provide new high levels of professional performance, efficiency and convenience.

NOW...TWO KOH-I-NOOR RAPIDOGRAPH TECHNICAL FOUNTAIN PENS

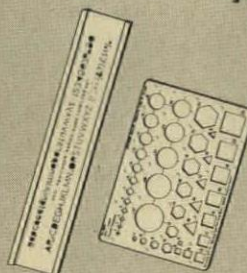
In 7 "color-coded" precision line widths: 00, 0, 1, 2, 2½, 3, 4. Uses India (or regular) ink for ruling, lettering, tracing or writing with equal facility.

MODEL NO. 3065: A new model with 7 interchangeable drawing point sections, each color-coded to indicate a different line width. Best buy for the professional who requires frequent change of line widths. Each drawing point section complete with airtight refillable ink cartridge. Interchange is accomplished quickly, cleanly. Comes in handy desk top container.

MODEL NO. 3060: The regular Koh-I-Noor Rapidograph "Technical" Fountain Pen with self-contained automatic filling system, and pocket clip is a standard drafting room tool.

KOH-I-NOOR RAPIDOGUIDE AND TEMPLATES

for use with corresponding
Rapidograph Fountain Pen



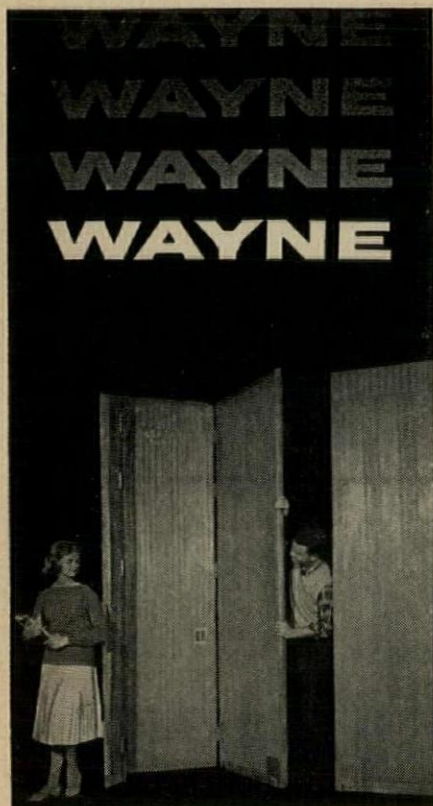
Rapidoguide: High quality lettering guides with elevating metal rails, developed to fit the seven different point sizes of Rapidograph Technical Fountain Pens. Each has upper and lower case letters, numerals, and characters all on one guide.

Templates: Precision engineered for use with Rapidograph Fountain Pen, Koh-I-Noor Drawing Pencil, Leads and Holders.

Write for Descriptive Literature

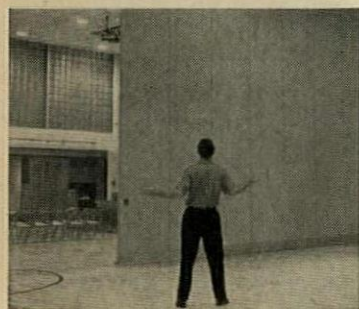
KOH-I-NOOR INCORPORATED
Bloomsbury 2, New Jersey

For more information, turn to Reader Service card, circle No. 347



WAYNE FOLDING PARTITIONS

work wonders in saving space (and dollars)

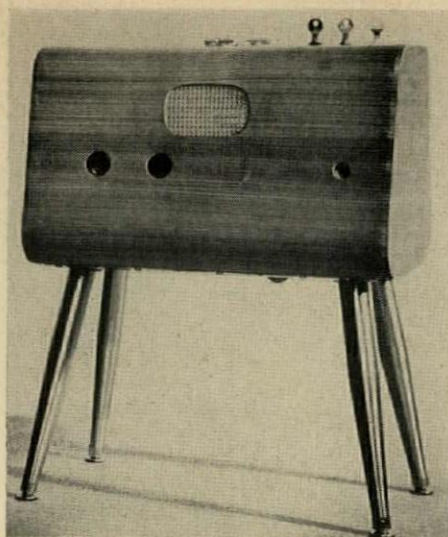


In gymnasiums, auditoriums and classrooms.

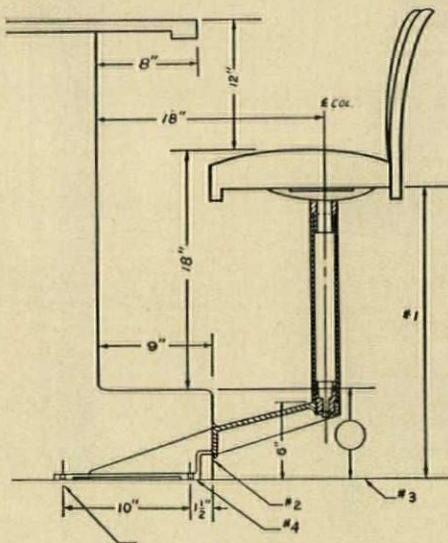


Available in seven facing materials, including beautiful long-wearing vinyl plastic at no extra cost. Choice of four core materials, automatic or manual operation. Engineered for all budgets. Send for new catalog today.

WAYNE IRON WORKS • WAYNE, PA.
For more information, circle No. 388



turns on a floodlight, takes a moving picture, and rings an alarm bell. No installation necessary; units plug into standard outlet. Photolarm, Inc., 15006 Wick Blvd., Allen Park, Mich.
On Free Data Card, Circle 227



New Stool Bases Leave Floor Clear

Two new cantilevered stool bases, of cast-iron and tubular-steel, have been introduced for "floor-clear" installation. Both of the new designs are available in a choice of standard heights—20", 22", 24", and 26". Data sheet, 2 pages, gives full dimensions, floor-mounting details, and spacing information. Sales Division, Chicago Hardware Foundry Company, Commonwealth Ave., North Chicago, Ill.
On Free Data Card, Circle 228

Mobile Classroom Units

Six mobile "Classroom Helpers" are described in new catalog sheet, 2

pages. Designed to meet modern educational requirements, the units are equipped with rubber casters to permit easy handling by teacher or pupil. They are attractive and colorful, in addition to providing valuable, flexible storage space. The units are a double-sided book cart, a book cart with closed back, a utility cart, a clay cart, a toy cart, and a toy shell. Data sheet contains photos, descriptions, and dimensional drawings. Grade-Aid Corp., 46 Bridge St., Nashua, N. H.
On Free Data Card, Circle 229

Guide to Remote Control of Garage Doors

New 8-page booklet answers four common questions about door operators: What is a garage-door operator, what are its benefits, what does it cost to own and operate, and what brands can be relied upon? Door Operator and Remote Controls Manufacturers Association, 110 N. Walker Dr., Chicago, Ill.

On Free Data Card, Circle 230

SURFACING MATERIALS

One-of-a-Kind Design in Vinyl Wallcoverings

A new method for blending individual ideas with "Vicrtex" wallcovering patterns for exclusive effects is explained in new *Handprints on Vicrtex*. Some of the unlimited design possibilities made practical by this new custom approach to wall decoration are shown by close-up photos of sample combinations. The wide range of effects that can be achieved through the use of harmony or contrast is discussed. Information regarding samples is also listed in the 4-page booklet. L. E. Carpenter & Company, Inc., Empire State Bldg., New York 1, N.Y.

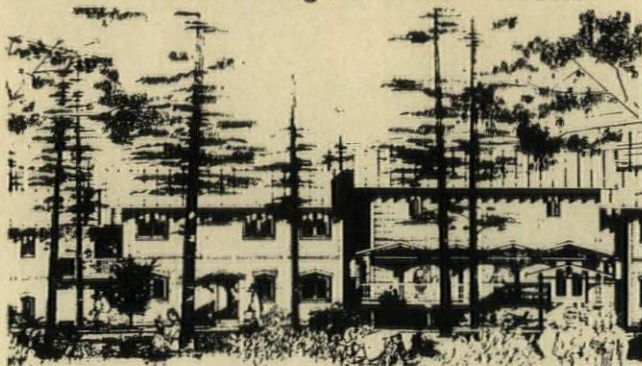
On Free Data Card, Circle 231

Resilient Tile Specs

New *Guide to Architects' Specifications for Resilient Tile*, 14 pages, has been published. The guide contains complete specifications for asphalt, vinyl asbestos, solid vinyl, and "Polymerite" tile. Polymerite is a new product that has just been introduced at the same price level as asphalt tile. It conforms to several specifications not met by asphalt, and according to the manufacturer there is no "or

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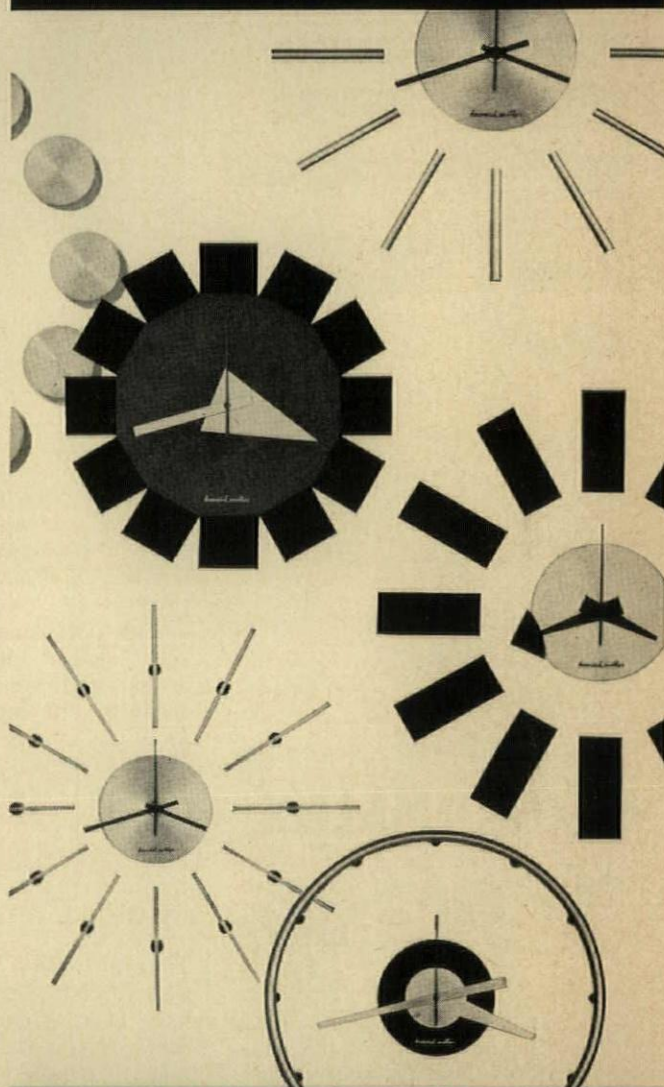
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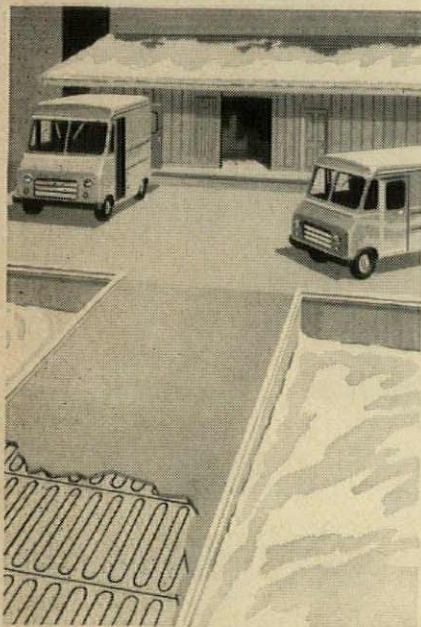
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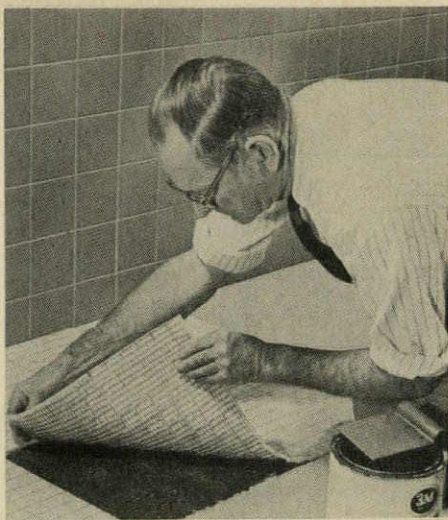
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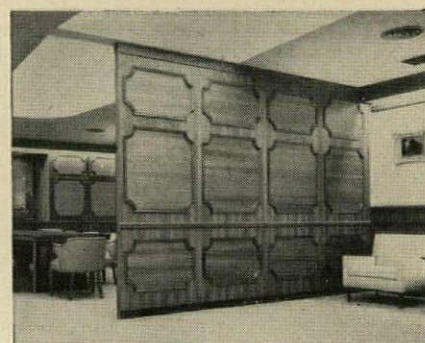
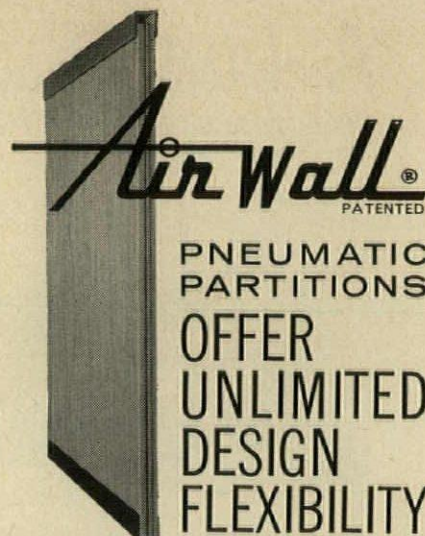
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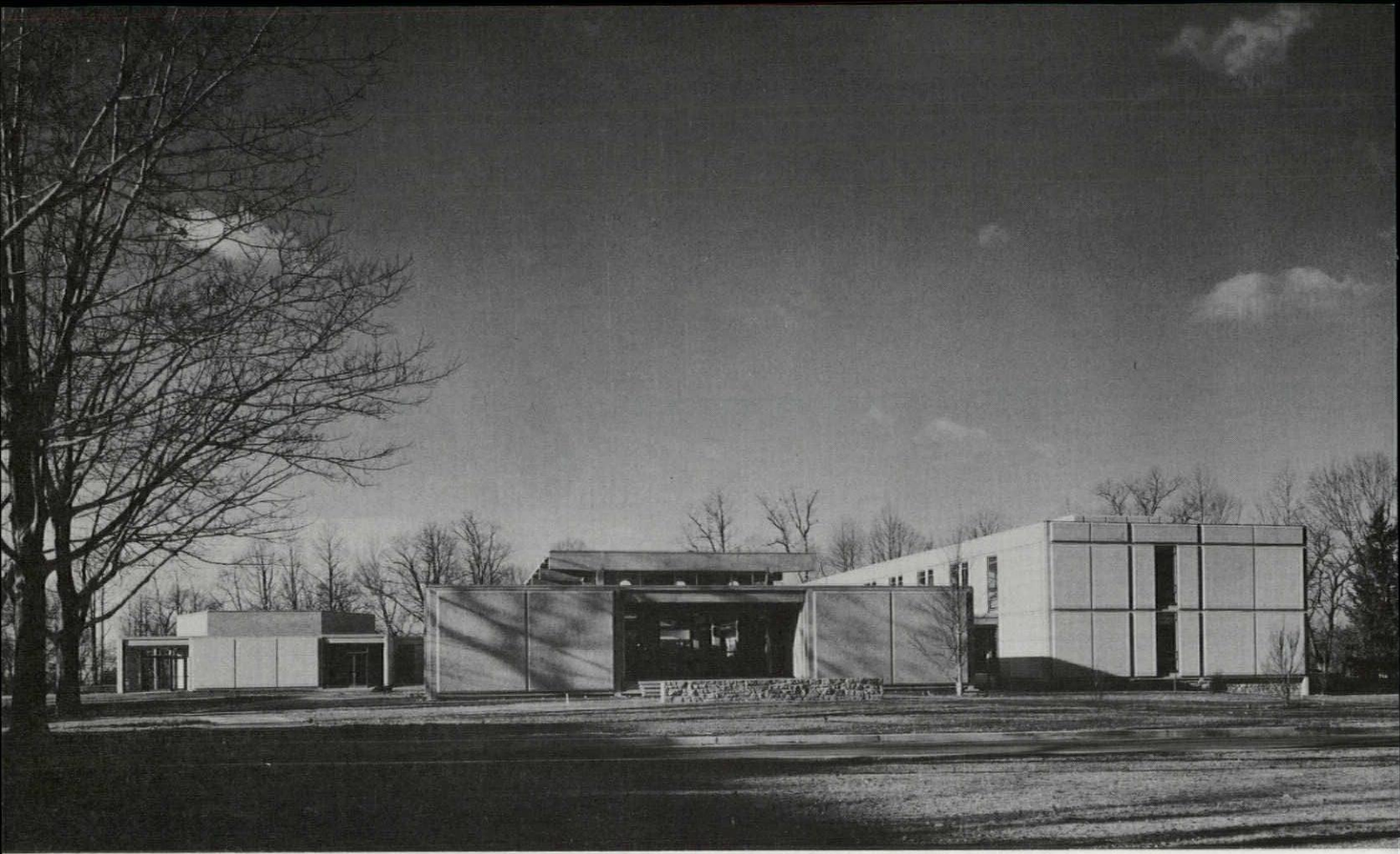
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CONTENTS

- Cover* STAFF HOUSING AT UNIVERSITY OF WASHINGTON (page 160)
Photo: Hugh N. Stratford
- Frontispiece* FOOTBRIDGE AT REED COLLEGE (page 166) Photo: Art Hupy
- 142 **CAMPUS BUILDINGS**
Exposing Structure for Science: Pierre S. du Pont Science Building, Swarthmore College, Swarthmore, Pennsylvania; Vincent G. Kling, Architect
Wall Section and Panel Detail: Selected Detail, du Pont Science Building
Glass Panel and Door Detail: Selected Detail, du Pont Science Building
Within a Disciplined Envelope: School of Architecture, University of Manitoba, Fort Garry, Manitoba; Smith Carter Searle Associates, Architects and Engineers
Under Hyperbolic Parasols: School of Architecture, University of Minnesota, Minneapolis, Minnesota; The Cerny Associates, Architects and Engineers
Jackstraws Under the Eucalyptus: Escondido Village, Stanford University, Palo Alto, California; Wurster, Bernardi & Emmons, Architects
Fishing Village for Interns: Staff Housing, University of Washington Hospital, Seattle, Washington; Bassetti & Morse, Architects
Glass Houses for Clear Thinkers: Men's Dormitories, Reed College, Portland, Oregon; Neil Farnham and Shell & Hoyt, Associated Architects
- 168 **FORM AND ARCHITECTURE** by Donald L. Johnson
- 171 **RECENT DEVELOPMENTS IN SOVIET ARCHITECTURE** by Georgi Minervin
- 178 **TAPESTRY MURALS: RELATED DESIGN FIELDS**
- 182 **OPTIC PROBLEMS OF ARCHITECTS: PRACTICE OF ARCHITECTURE**
By James R. Gregg, O.D.
- 185 **FOUNDATION HEAVE AND MULTISTORY BUILDINGS** by Bramlette McClelland
- 188 **PROTOTYPE PREFAB STRUCTURE**
- 193 **CONTROLLING JET NOISE** by Leland W. Beal
- 197 **LITTLE-KNOWN USES OF PLASTICS** by Ralph W. Hastings
- 200 **RG&E SPECIFIES 200 FT-C FOR OWN OFFICES: MECHANICAL ENGINEERING CRITIQUE** by William J. McGuinness
- 202 **THE "OR EQUAL" CLAUSE—AGAIN: SPECIFICATIONS CLINIC**
By Harold J. Rosen
- 204 **DISTINCTION BETWEEN PERFORMANCE BOND AND PAYMENT BOND: IT'S THE LAW** by Bernard Tomson and Norman Coplan
- 208 **VIEWS**
- 210 **TRADITION vs. CREATION—A DRAW: BOOK REVIEWS**
- 268 **THE CHANGE IN SOVIET ARCHITECTURE: P.S.**



Photos: Lawrence S. Williams

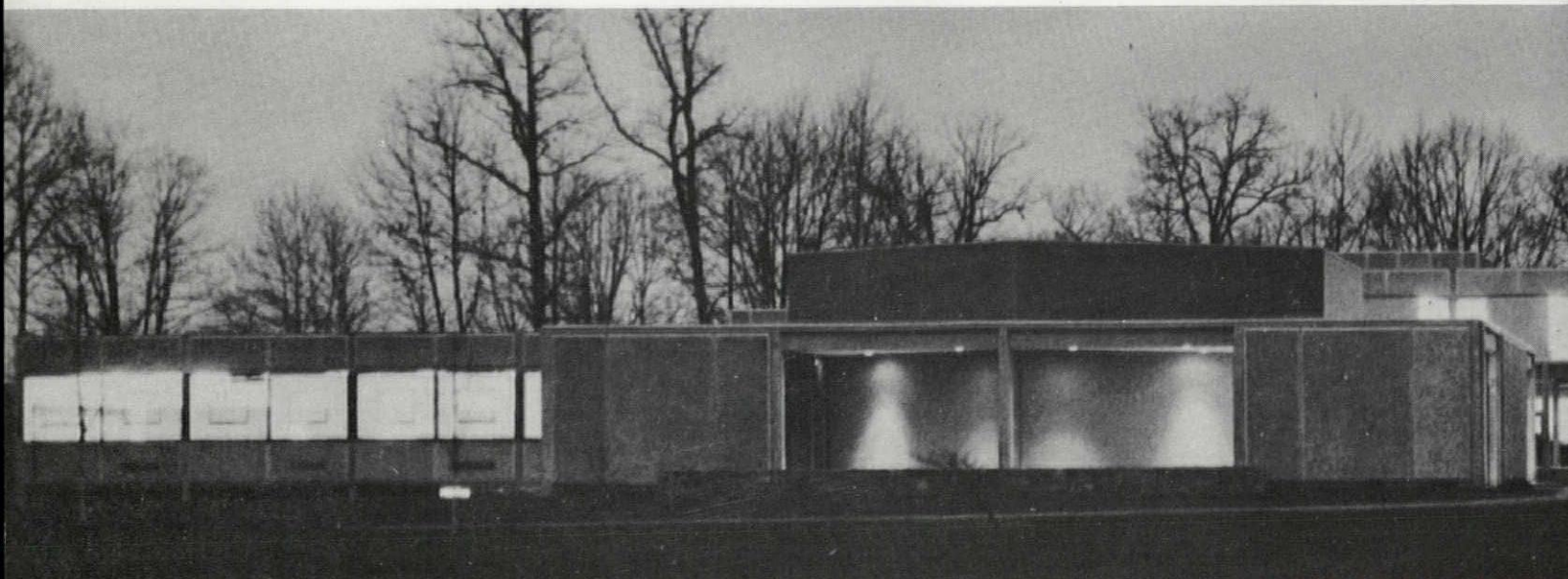
CAMPUS BUILDINGS

The need of our colleges and universities for expanded and improved physical facilities continues to grow. These institutions are currently spending almost a billion dollars per year for construction. The U.S. Office of Education has estimated that 19 billion dollars' worth of physical expansion will be required over the coming years to provide for antici-

pated increases in enrollment.

Last September, P/A presented a discussion of the planning principles on which any effective program of campus growth must be based ("Form and Style in Campus Design," by Richard P. Dober). In this issue, we present six exemplary building projects—three of them academic and three of them residential.

These buildings are not examples of the unrestrained design experiments for which our campuses have become known in recent years. Instead, they represent attempts to create a stimulating environment for the student, recognizing normal financial limitations, which at the same time respect the continuity—in time and space—of the campus.



PIERRE S. DU PONT SCIENCE BUILDING •
SWARTHMORE COLLEGE, SWARTHMORE,
PENNSYLVANIA • VINCENT G. KLING, ARCHI-
TECT • ALLABACH & RENNIS, STRUCTURAL
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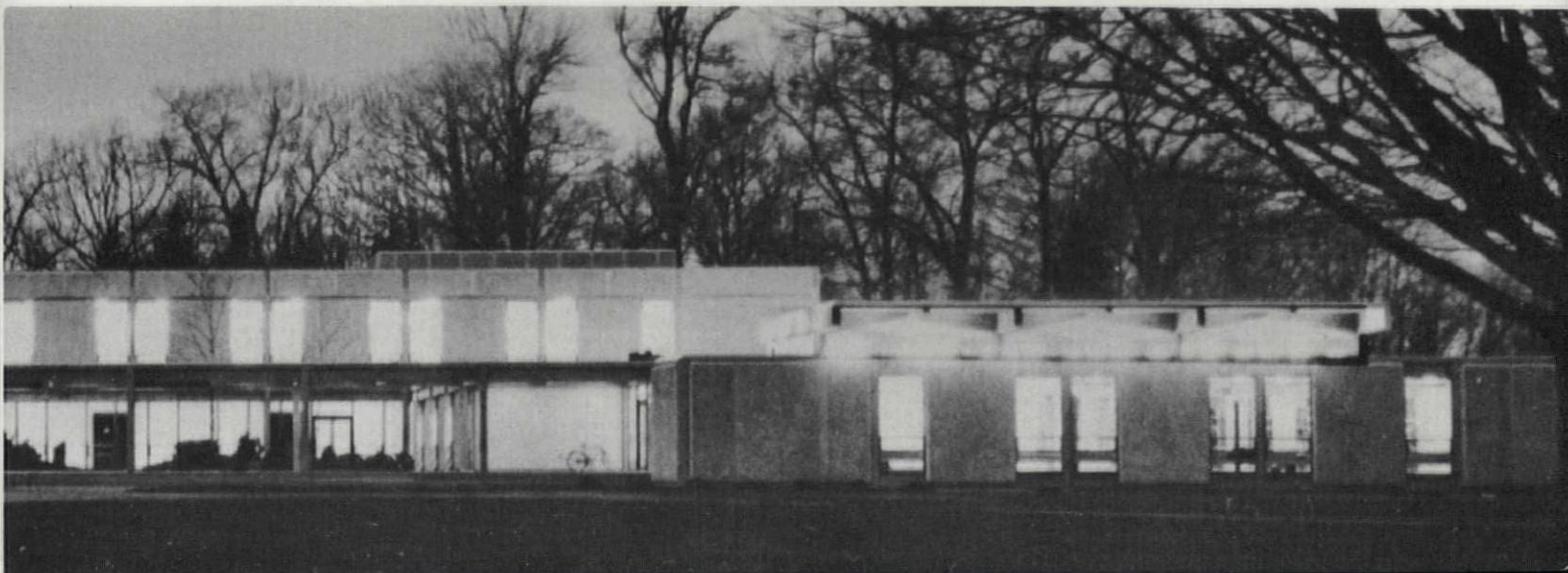
An awareness of the importance of science in the liberal arts curriculum is reflected in the program and design of this building. Traditionally, science laboratories on the college campus have been relegated, in the words of the architect, "to the cellar under the gym." Swarthmore, a 900-student coeducational institution with a down-to-earth Quaker tradition, has housed its chemistry, mathematics, and physics departments above ground, each in its own building, since the turn of the century.

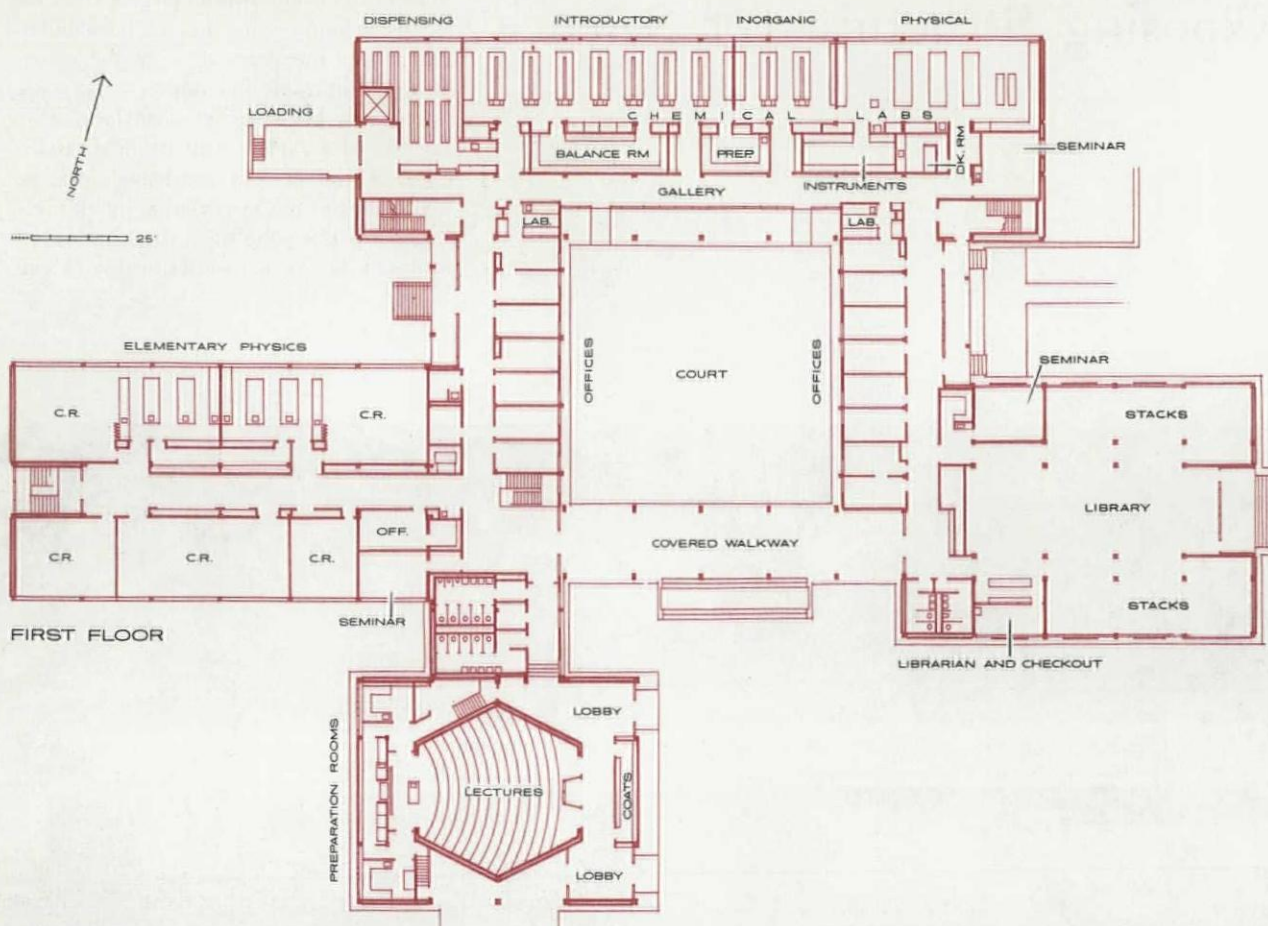
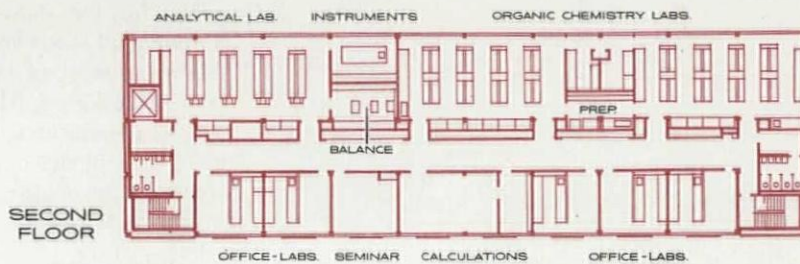
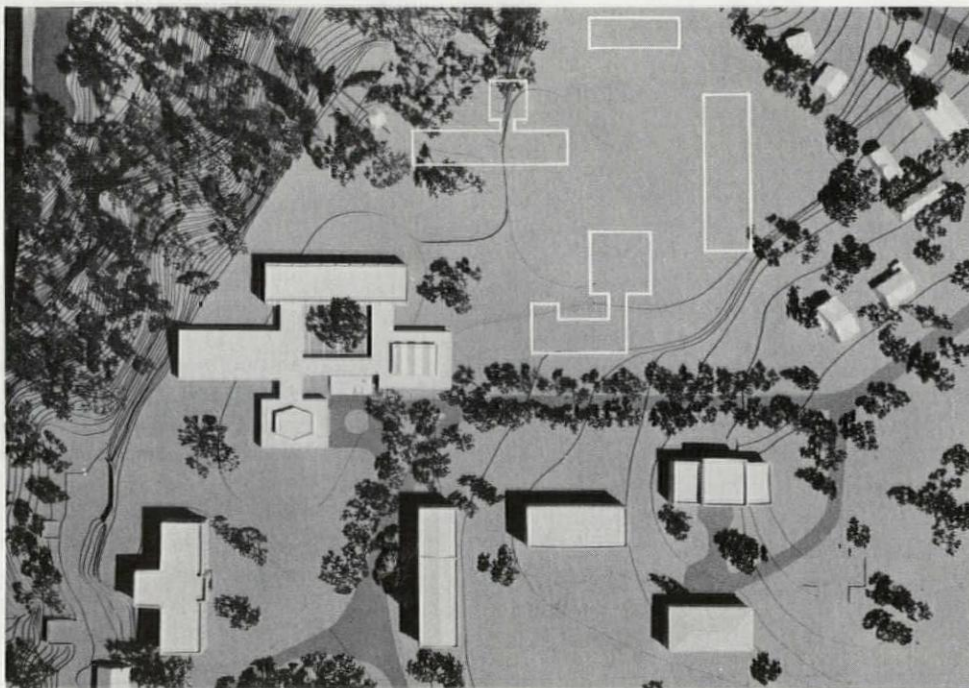
In planning new, up-to-date facilities for these departments, it was decided to bring them together under one roof to allow for the sharing of library, auditorium, and shops and to permit the flexible assignment of laboratory, classroom, and office space. The construction of a single, prominent science building, moreover, was intended to express the interdependence of the sciences and their significance among the academic disciplines.

The existing campus is composed of fairly plain buildings in several architectural styles, executed in light-colored stone and concrete block. The attractive appearance of the whole results largely from the extensive landscaping that has been undertaken over the years through the efforts of a philanthropic foundation.

The new building has been located on the site of a former athletic field, at the edge of the present academic area, so that it carries out the existing quadrangle layout. At the same time, the locations of future buildings that would further extend

Exposing Structure for Science





the pattern were tentatively determined.

The building is organized into several distinct blocks, which are arranged around three sides of a landscaped court. The fourth side is enclosed by a covered walk, which serves as the main entrance from the existing campus. Faculty offices, which can be allocated freely among the three departments, are ranged along the two main corridors, facing the court. On the second floor of the chemistry wing, overlooking the court from the north side, there are five office-laboratory suites. These are provided to allow faculty members to carry out independent research projects without interference from other activities. Two of the first-floor offices are also arranged in this way.

In the design of the physics wing, to the west of the court, advantage was taken

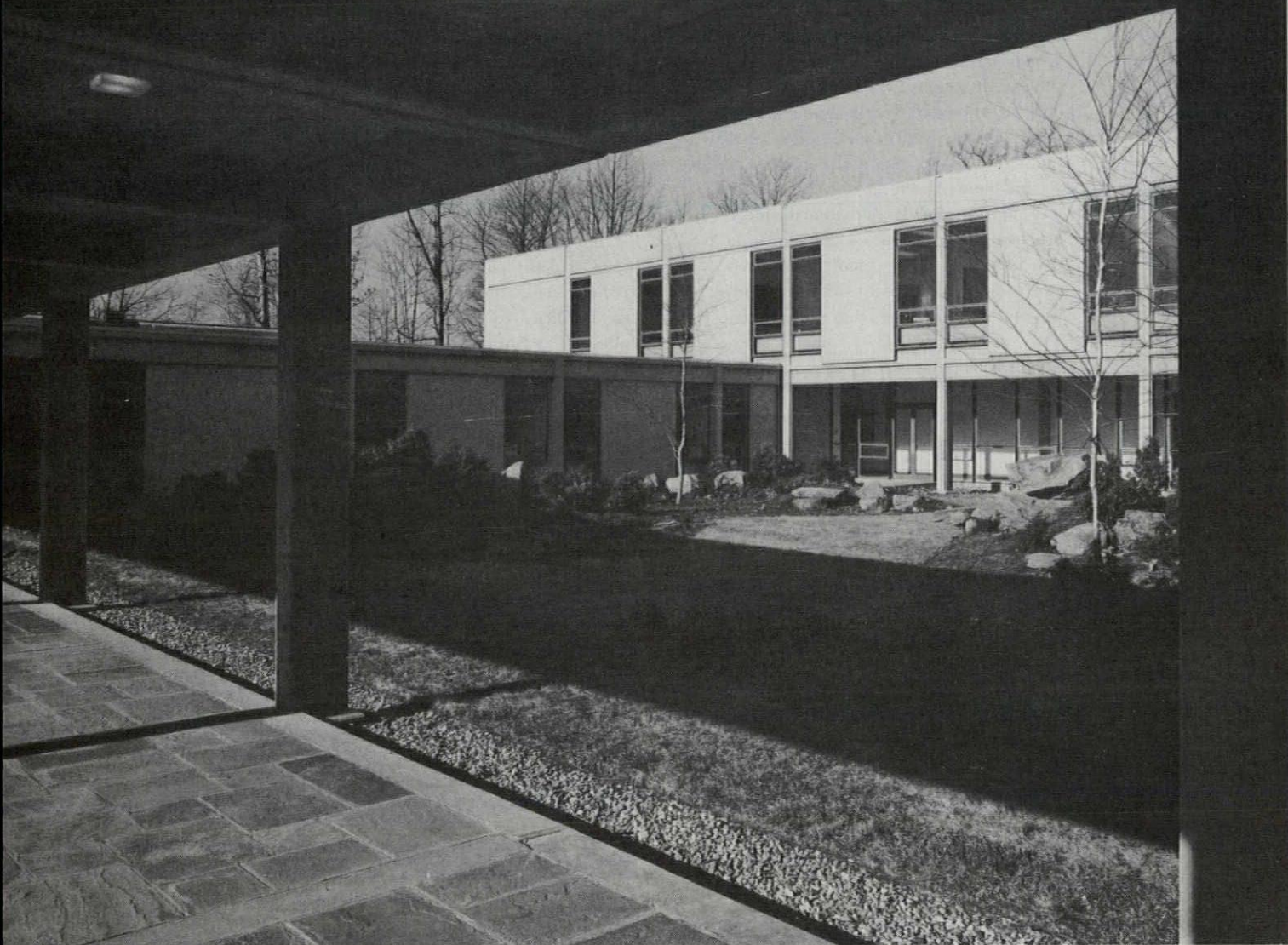
of the drop in grade to provide laboratories and offices one story below the main floor. At the same level, beneath the chemistry wing, are the workshops, which serve all three departments. The classrooms in this wing are for the use of all three departments. Those on the north side can be used in conjunction with the laboratories or separated from them for other types of courses while experiments are being set up.

The lecture hall and library have been located to provide convenient access from the rest of the campus and were given individualized forms to mark them as separate facilities to be shared by the entire college. The library houses the science and engineering collections of the college. Large clerestory windows under a canopy of exposed concrete construction effec-



The lecture hall (top left) is equipped for many types of presentations and experiments. In the laboratories (top right), mechanical services running along the ceiling are obscured by the suspended lighting fixtures. Girders along the corridor wall are tapped for future additional piping. The concrete roof structure of the library (above and right) produces a distinctive ceiling.





tively illuminate the central reading room.

The hexagonal, 200-seat lecture hall was designed to provide good hearing conditions without electronic aids. The sloping ceiling is of hard plaster and the walls are of fabric-covered fiber board with V-shaped wood strips applied to it. The lighting system is switched so that five progressively larger areas can be illuminated to control the apparent size of the room for groups of various sizes. The lecture platform is equipped with interchangeable chalkboards, a projection screen, and a demonstration hood. An overhead trolley for bulky or heavy exhibits runs across the platform and into the preparation rooms on either side.

The structural design is based on a planning module dictated by the needs of the laboratories. The enclosure of the re-

inforced-concrete frame with precast, insulated concrete panels, exposed on both sides, was felt to produce an expression consistent with the methods of science and in harmony with the rather plain texture of the surrounding buildings (page 144, *SELECTED DETAIL*). These panels are finished and painted on the interior; the exterior surfaces have an exposed aggregate of white, tan, and black crushed stone in an off-white matrix. A standard steel section is used to frame window and door openings and to trim the concrete panels (page 145, *SELECTED DETAIL*).

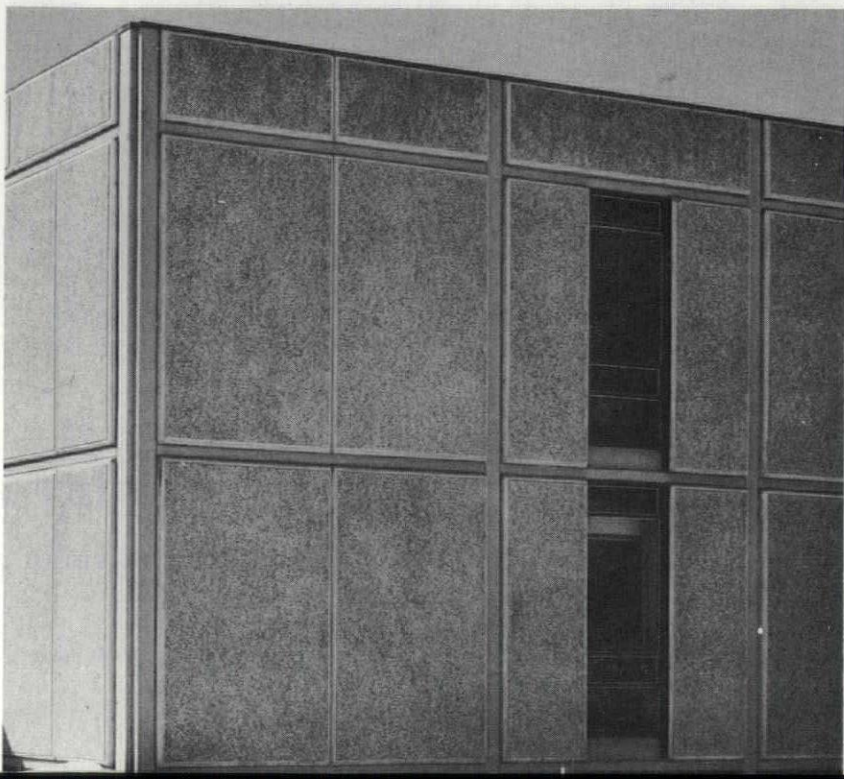
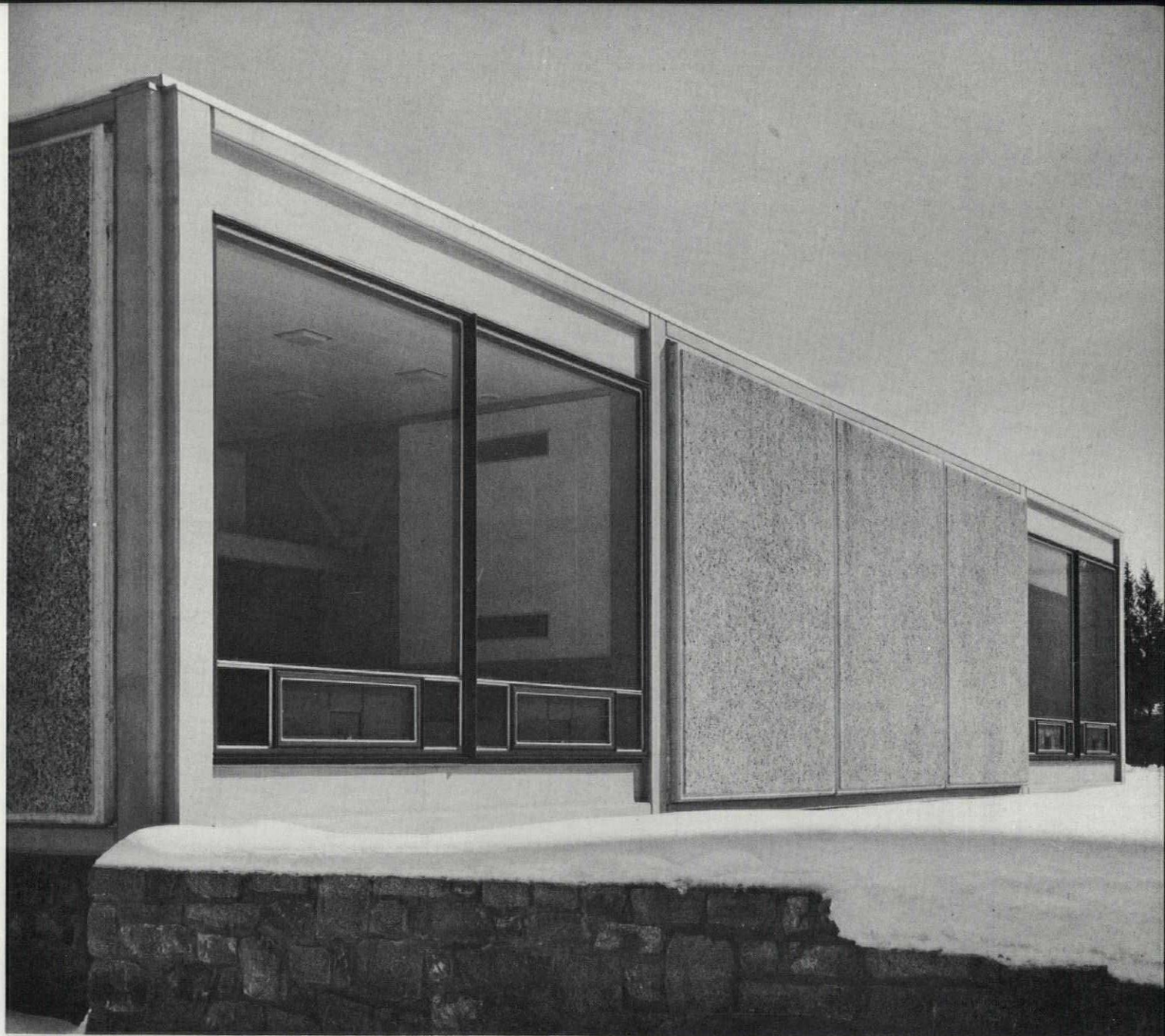
Main mechanical services are located in the suspended ceilings over the corridors; laterals to each laboratory table run along the ceiling of the floor below. The modular integration of the structure with the laboratory layout permits the uniform de-

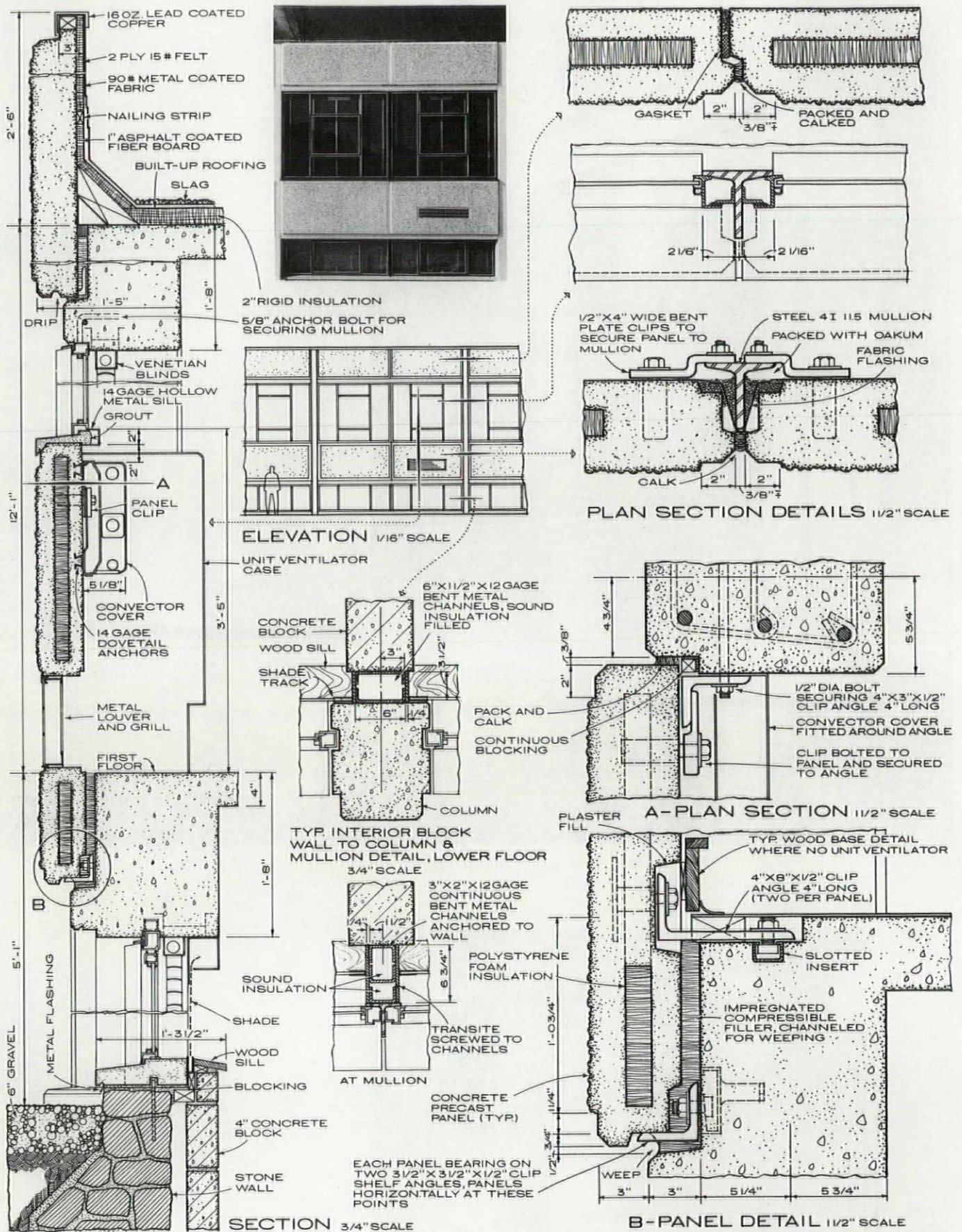
sign of these mechanical installations.

The building appears to be set on a platform of natural stone; below the plane of the main floor, stone is used consistently for the foundation, retaining walls, and paving. The central court is landscaped with specimen trees and shrubs that are set among vines and large natural rocks. It was designed by Harry Wood and William Frederick, in co-operation with the Arthur Hoyt Scott Horticultural Foundation.

Hot-water heating units in each room can be used to circulate fresh air. Fumes from hoods are drawn through vertical ducts to penthouse exhaust fans.

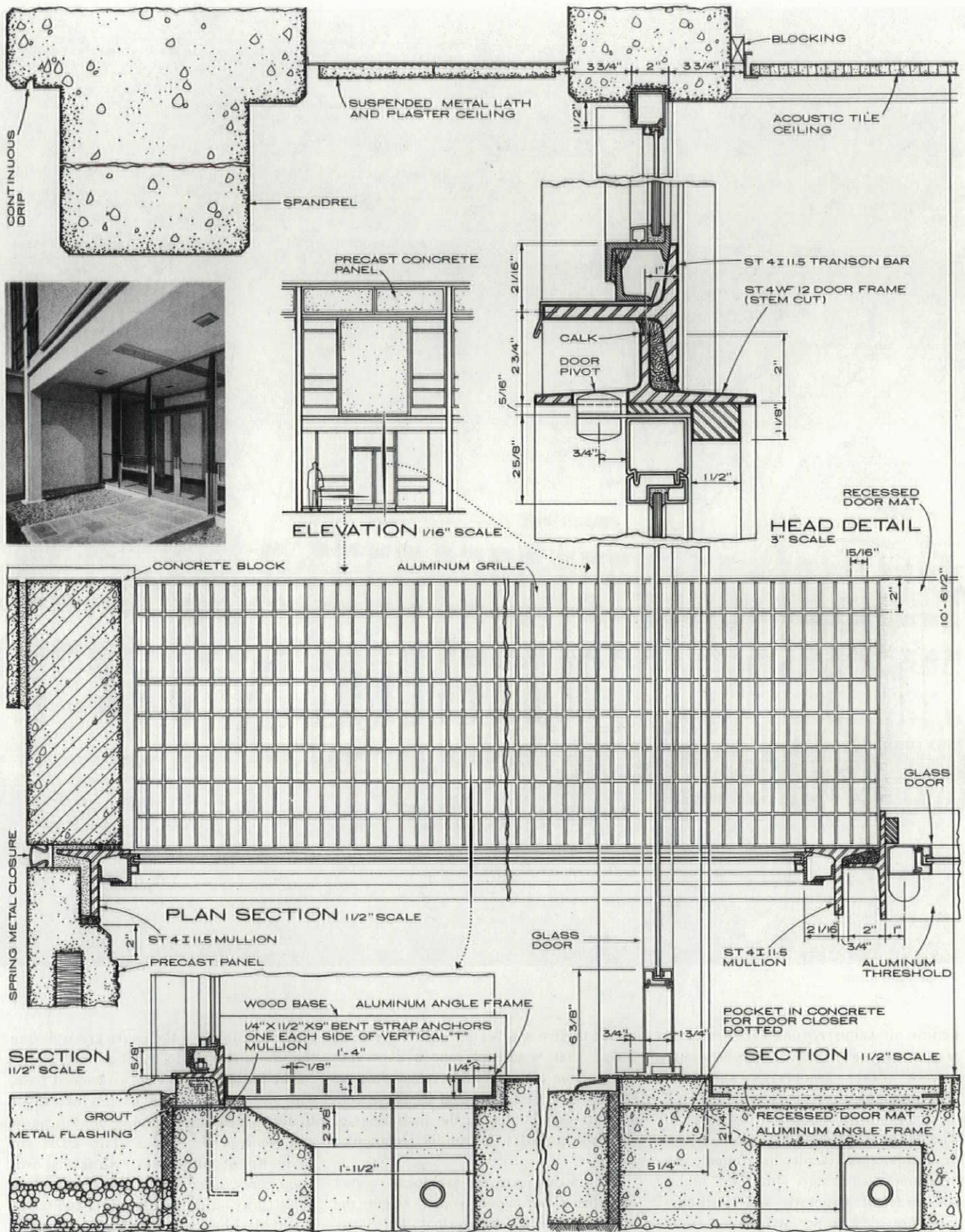
The entire building comprises 70,600 sq ft and cost \$22.89 per sq ft, including all fixed furniture, draperies, and blinds, but excluding landscaping and fees.





PIERRE duPONT SCIENCE BLDG., SWARTHMORE COLLEGE: Swarthmore, Pa.
VINCENT G. KLING, Architect

SELECTED DETAIL
WALL SECTION & PANEL DETAIL



PIERRE duPONT SCIENCE BLDG., SWARTHMORE COLLEGE: Swarthmore, Pa.
 VINCENT G. KLING, Architect

SELECTED DETAIL
 GLASS PANEL & DOOR DETAIL



Photos: Henry Kalen

SCHOOL OF ARCHITECTURE • UNIVERSITY OF MANITOBA, FORT GARRY, MANITOBA • SMITH CARTER SEARLE ASSOCIATES, ARCHITECTS AND ENGINEERS

The design of a school for architects, with an architectural faculty as a client, is an exceptional challenge. Only "the highest standards of structure and aesthetics" could provide a proper environment for the study of architecture, according to the program prepared by John A. Russell, director of the school.

The site selected for this building is near the center of the campus and exposed to view from all directions. The architects

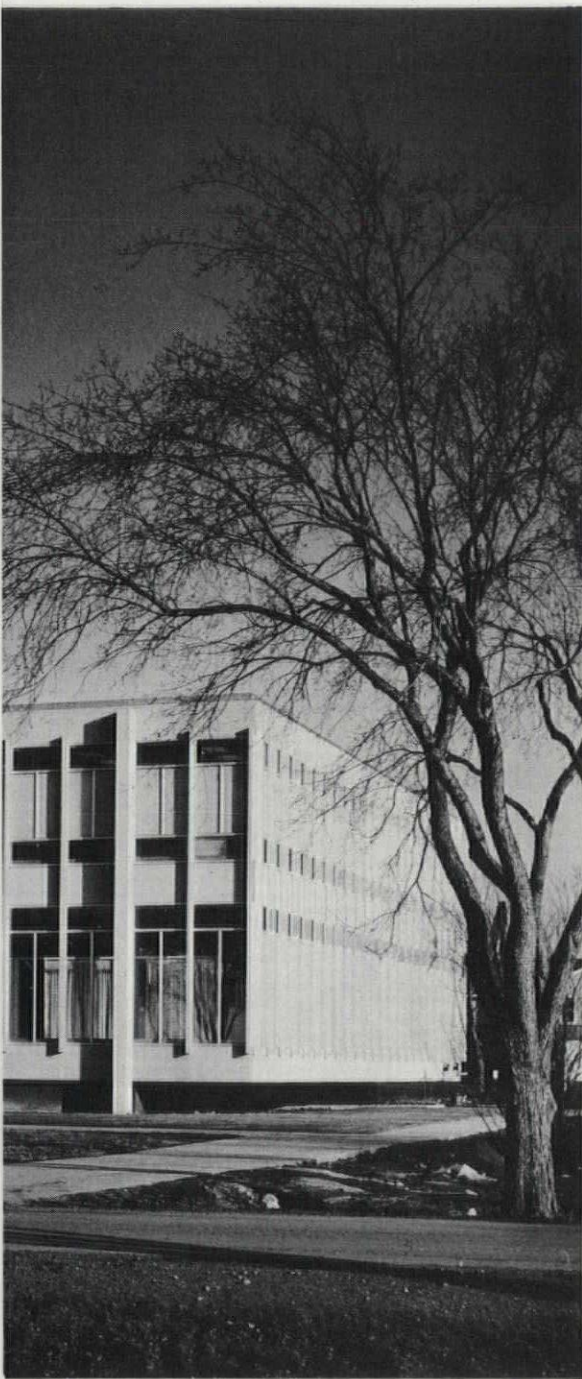
strove to give it a "calm, almost classical, form" that would present a consistent image from all sides and coexist with the confusion of styles around it. These considerations, along with the limitations of the budget, led to a simple rectangular design.

Within this form, the architects created an open landscaped court, which the major interior spaces overlook. This introspective scheme was considered preferable to the contemplation of the prairie horizon or fragmentary views of the neighboring buildings. The experience of the students and staff has confirmed the validity of this concept, and there is now a

movement to keep the court green during the winter months by roofing it over.

The building is set on a recessed base, with the steel framing clearly expressed in the projecting columns on the north and south walls. The curtain walls are made up of aluminum extrusions over wood cores, filled in variously with clear glass (gray on the south side), and translucent glass backed up with asbestos sheet. Precast concrete sections have been employed for the spandrels and column covers.

Floor-to-ceiling glazing has been limited to the walls of the court and to entry and staff office areas. Other ground-floor areas



Within a Disciplined Envelope

have only a two-foot strip of glass at the ceiling. The drafting rooms, which occupy most of the second floor, have two-foot bands of glass above and below a 640-foot linoleum tackboard that encircles the entire floor.

The drafting rooms are equipped with 25-ft fixed black-metal tables, onto which drafting boards and drawer units may be fastened. The number of students at each table varies from six to three, depending on the level of instruction. When the enrollment reaches the planned capacity of 350, each freshman will have about 34 sq ft and each senior 55 sq ft of drafting-room space. Movable partitions with tackboard





and chalkboard panels are installed to separate the classes.

The exhibition-assembly area on the first floor is flexibly equipped to accommodate displays, lectures, films, and concerts. Metal strips in the terrazzo floor are spaced 43 inches on center as a guide for placing the stacking chairs.

Staff offices are organized as an island of glazed cubicles within a glazed space. Each office has an area of about 113 sq ft, which is adequate for study and inter-

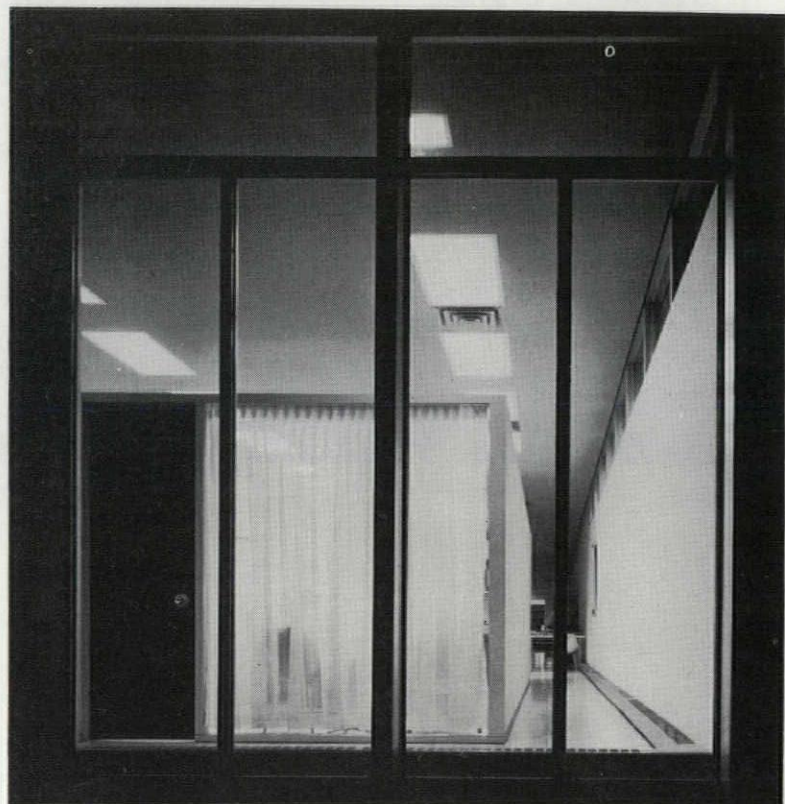
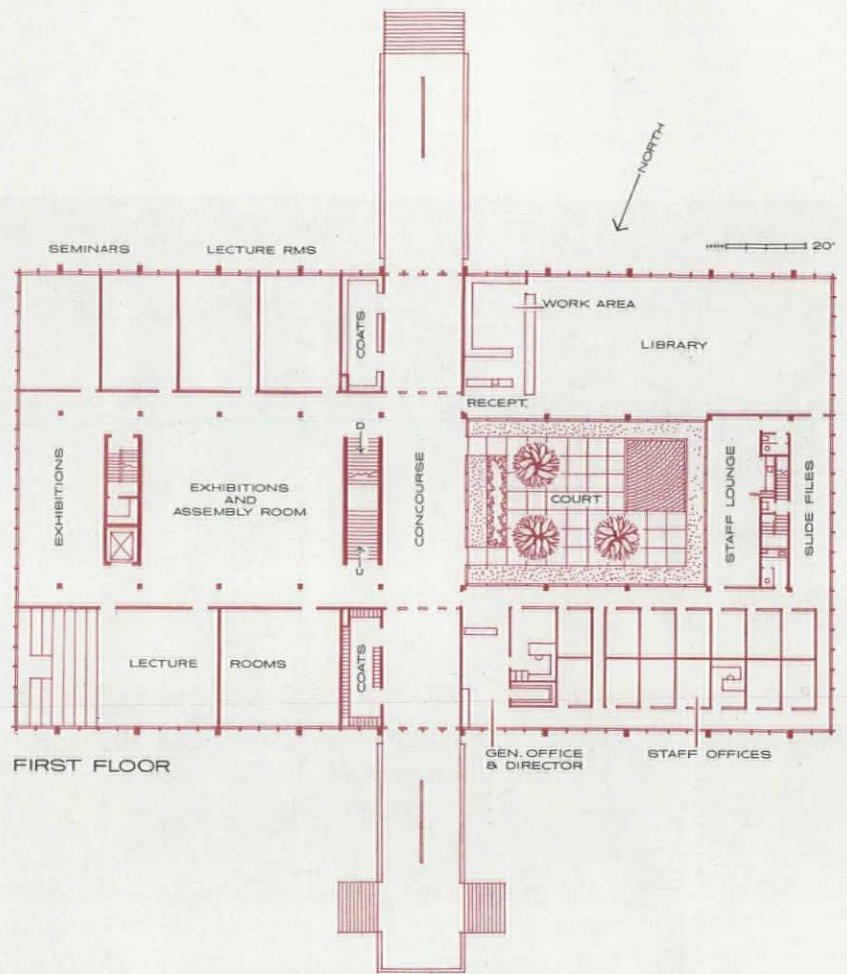
views, but will not accommodate drafting or grading of graphic assignments. Circulation area on the main floor has been made unusually large to accommodate through traffic between two sections of the campus.

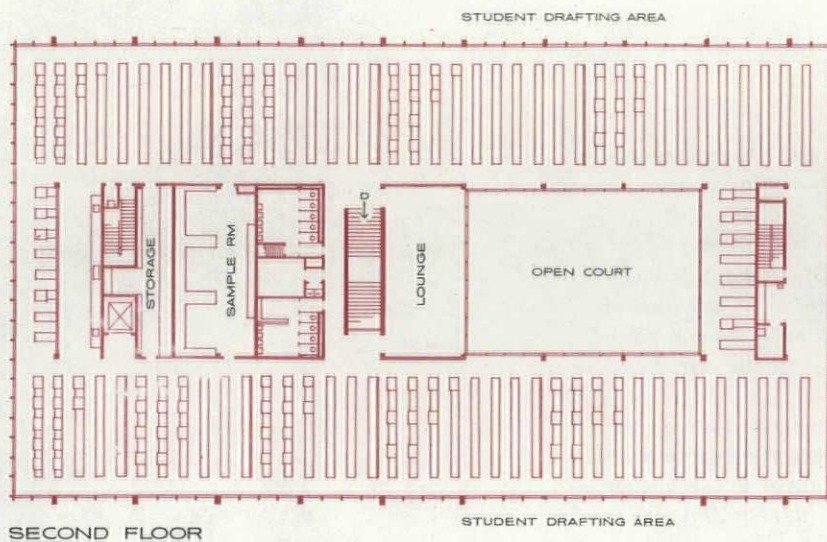
The basement houses the workshop, the photo laboratory, and drawing, painting, and sculpture studios. There is a ramp from grade level to a service area on this floor.

The total cost of the building, without

movable furnishings, was \$913,500, or \$16.10 per sq. ft. The architects did not feel unduly limited by the budget. They would have preferred, however, to use a quartz aggregate for the exposed concrete, rather than local limestone, and to have further refined the profiles of the precast elements. They feel that air conditioning might have been considered. At present the building is ventilated throughout and provision has been made for future air conditioning in some areas.







The drafting rooms (acrosspage left) have fixed tables that can be fitted with boards and drawer units as desired. Staff offices are housed in a cluster of glazed cubicles (acrosspage right). The library (below left) and the adaptable exhibition-assembly areas (below right) each have distinct ceiling patterns based on the type of lighting required.



SCHOOL OF ARCHITECTURE • UNIVERSITY OF MINNESOTA, MINNEAPOLIS,
MINNESOTA • THE CERNY ASSOCIATES (FORMERLY THORSHOV & CERNY),
ARCHITECTS & ENGINEERS

Like the new school of architecture in neighboring Manitoba, this building turns its back on the rest of the campus and directs the attention of its occupants inward toward a central court. In this case, the court is a perfect square in shape and is roofed with four hyperbolic paraboloid "umbrellas."

The circulation pattern of the building runs around and through this focal space, which serves as a gathering place for meetings and exhibitions. This year, the P/A Design Awards Banquet was held there, in conjunction with the dedication of the building (NEWS REPORT, MARCH 1961 P/A.)

The clerestory between the hyperbolic paraboloid canopy and the surrounding roof provides ample natural light to the court. The court floor is separated from the building itself by a "moat," which admits light to the basement corridors. A similar moat, encircling the exterior of the building, lights the below-grade classrooms. The outside walls are of brick, the predominant material of the existing campus, with only small windows to provide an occasional glimpse of the campus. The orderliness of the square court within the square building relates well to the formal

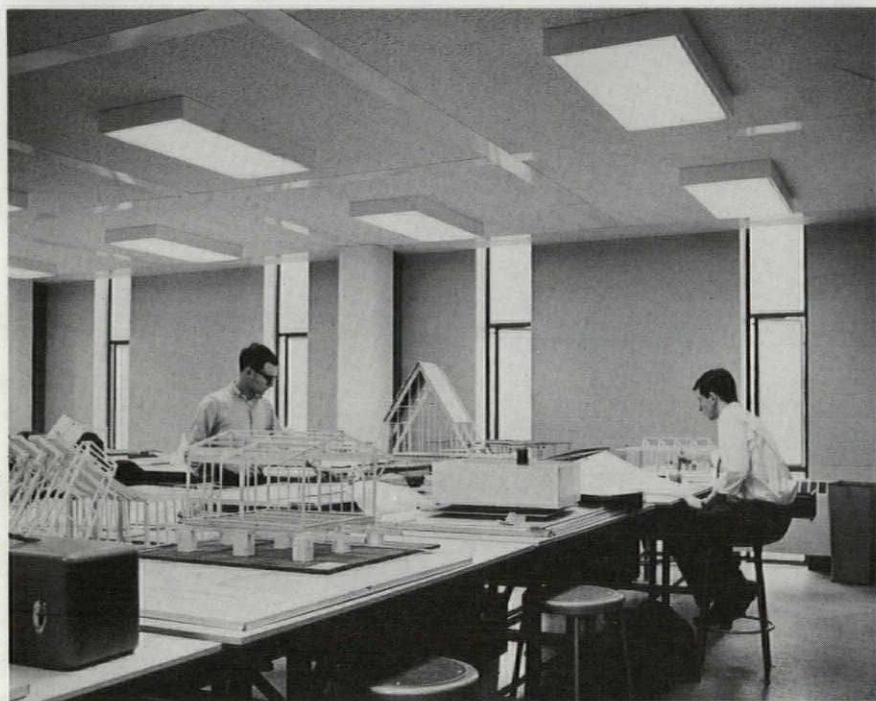
Under Hyperbolic Parasols



Photos: Warren Reynolds, Infinity, Inc.

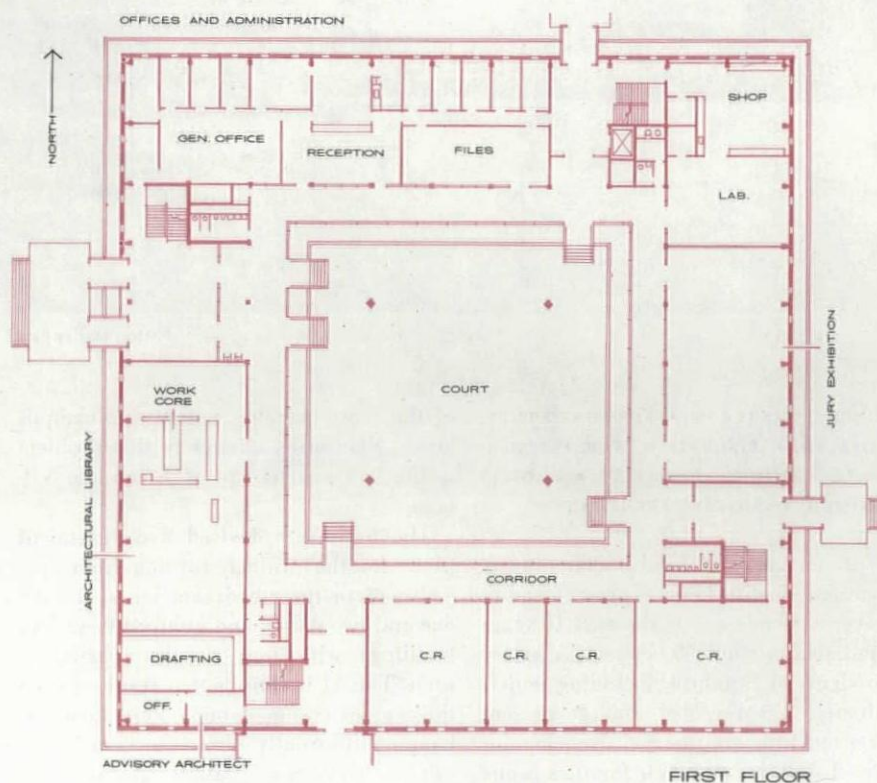
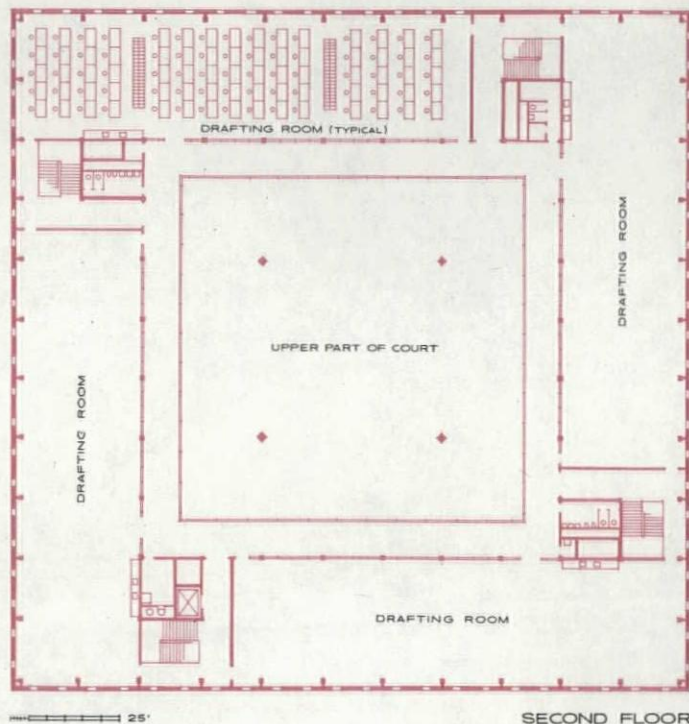
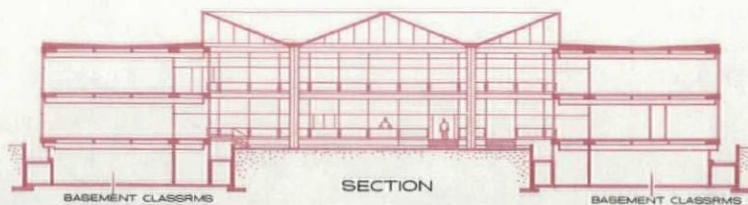






The building turns a brick wall with a regular pattern of small openings toward the classically designed campus. Only the small, hyperbolic-paraboloid canopy over the entrance hints at the character of the interior. The students can look out at the campus through the casement windows, but their attention is more likely to be drawn toward the court at the heart of the building.





classicism of the existing campus design.

Although particular attention was given to designing a building that would appropriately identify the school of architecture, the program also required overflow classroom space for the adjacent mechanical engineering department. It was necessary, moreover, that the facilities should be adaptable for other occupancy should the School of Architecture be moved to another location in the future. Approximately 35,000 sq ft of the building are presently assigned to the School of Architecture. The remaining 25,000, comprising for the most part basement and first-floor classrooms, are available to other departments.

The entire structural frame is of reinforced concrete. The hyperbolic paraboloid roof of the court is completely separated from that of the surrounding building. The clerestory between them incorporates a vertical slip joint.

The major portion of the building is framed in 17' x 34' bays, with pan-joint floor construction. The four hyperbolic paraboloids over the court are each 51 feet square, with a shell thickness of 3 in. The building is designed for the addition of another floor and the shells are constructed so that they can be lifted an additional story height.

Original studies had proposed that the court be developed as an open landscaped area. At the suggestion of the university building committee, the cost of roofing, heating, and ventilating the court was studied and compared to that of the exterior wall construction originally required. It was found that the hyperbolic paraboloid structure would be the most economical type of enclosure, costing about \$1.95 per sq ft of area covered. The additional cost was found to be only \$50,000.

The final cost of the building, excluding site work, fees, furniture, and equipment, was \$1,500,134, or \$13.85 per sq ft of gross area.

Floors in the basement and the entrance areas are of terrazzo. Granite paving is used on the exterior porches and stairs and on the court stairs. Other floors are of vinyl-asbestos tile.

The underside of the hyperbolic paraboloid shells is coated with acoustic plaster. Other ceilings are of mineral fissured acoustic tile. Surface-mounted fluorescent fixtures with plastic grids serve as the primary source of light throughout.

The balustrades and floor fascias in the court are of steel, as are the exterior floor-band fascias. Interior partitions are of concrete block or of hollow metal frame with glass or cork infilling.



Photos: Morley Baer

Jackstraws Under the Eucalyptus

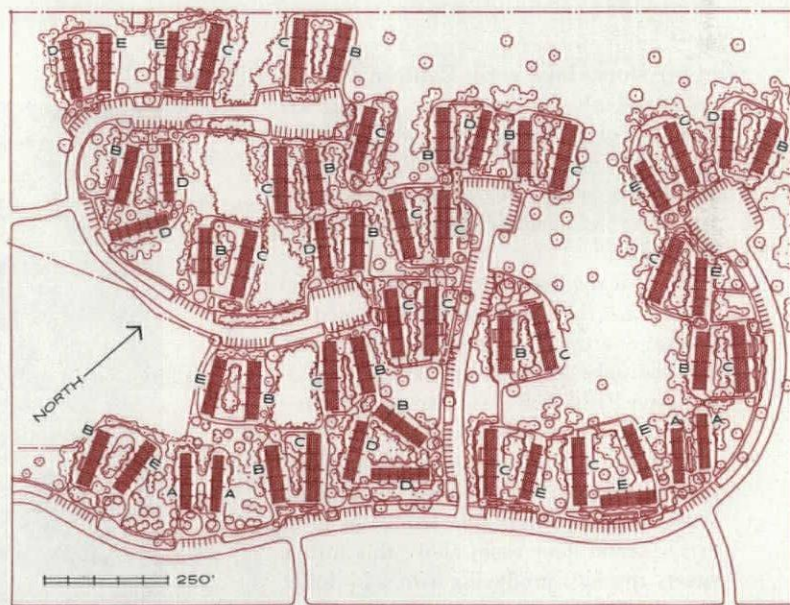
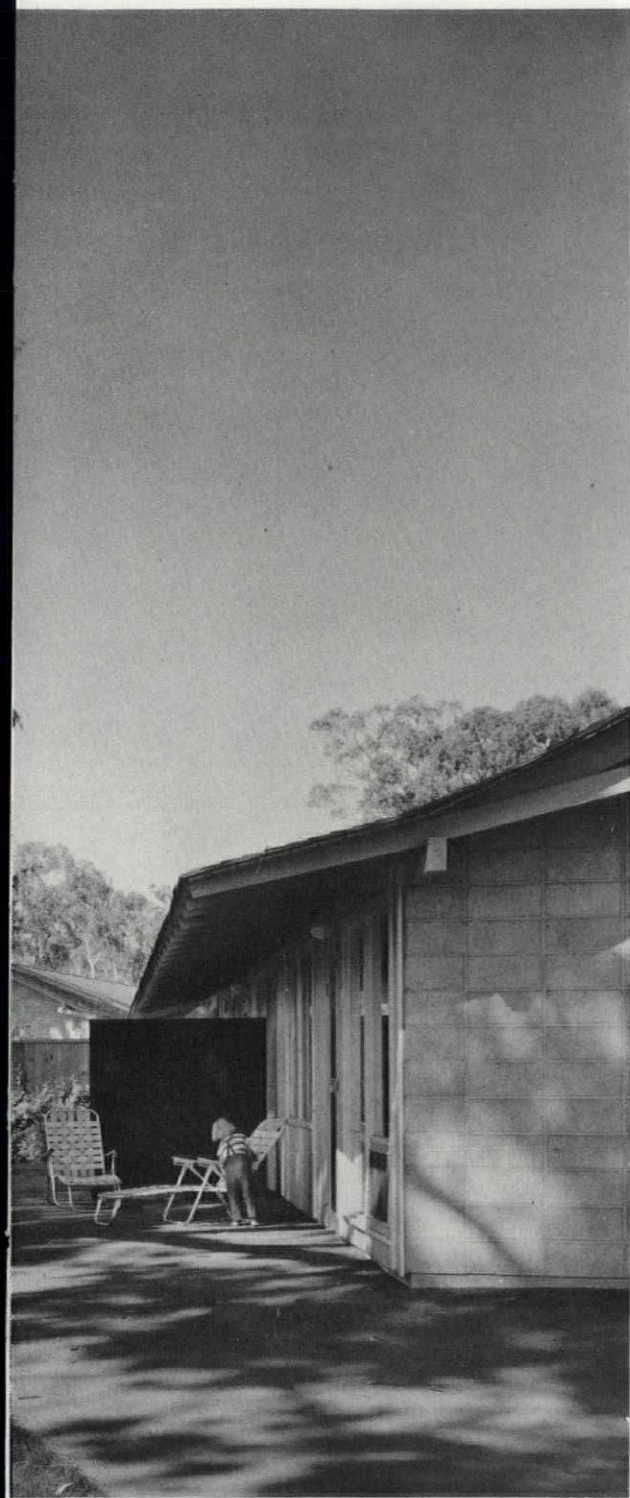
ESCONDIDO VILLAGE • STANFORD UNIVERSITY,
PALO ALTO, CALIFORNIA • WURSTER, BERNARDI & EMMONS, ARCHITECTS • THOMAS D. CHURCH, LANDSCAPE ARCHITECT

The proportion of married students in our educational institutions has grown steadily for over a decade and in the next 10 years is predicted to reach 35 per cent. A survey of students at Stanford, including undergraduates, has revealed that at present nearly one-fifth are married. Housing for married students and their families is one

of the most pressing nationwide campus needs. Stanford's answer to this problem is the 250 apartments of Escondido Village.

The architects devised five apartment plans for the project, varying from one-bedroom to three-bedroom units of both one and two floors, and grouped them into buildings with four or six apartments each. The 54 buildings that resulted from this apportioning of units were then distributed informally across the 45-acre site.

The "jackstraw" pattern produced by



SITE PLAN

this random arrangement was deemed an effective way of avoiding excessive regularity. Furthermore, a casual distribution permitted the preservation of a grove of old eucalyptus trees and several large white oaks.

The entire site is surrounded by a green belt 200 feet wide that separates it from main streets. Gently curving subsidiary roads, which carry no through traffic, provide parking near each apartment. Two old houses on the property have been converted, one into an administration building

for the project, and the other into a central laundry building with adjacent play yard and lounge. The latter is becoming a center of the community. Meadows surrounding the site on two sides were allowed to flow between building clusters so that there is no apparent separation of the natural environment and the new buildings. Placement of utility lines underground contributes appreciably to the rural atmosphere.

Each cluster of two or three buildings has a common fenced play area, compris-

ing a grass plot with trees and a surrounding asphalt raceway for wagons and bikes. Easily supervised from kitchen windows, these areas meet the University's requirement of safety for the children of tenant students.

The buildings themselves are long, low wood-frame structures that employ cement asbestos panels over plywood as side walls and a veneer of concrete block on end walls at the ground-floor level. On two-story buildings, driftwood-finished redwood boards and battens sheathe the

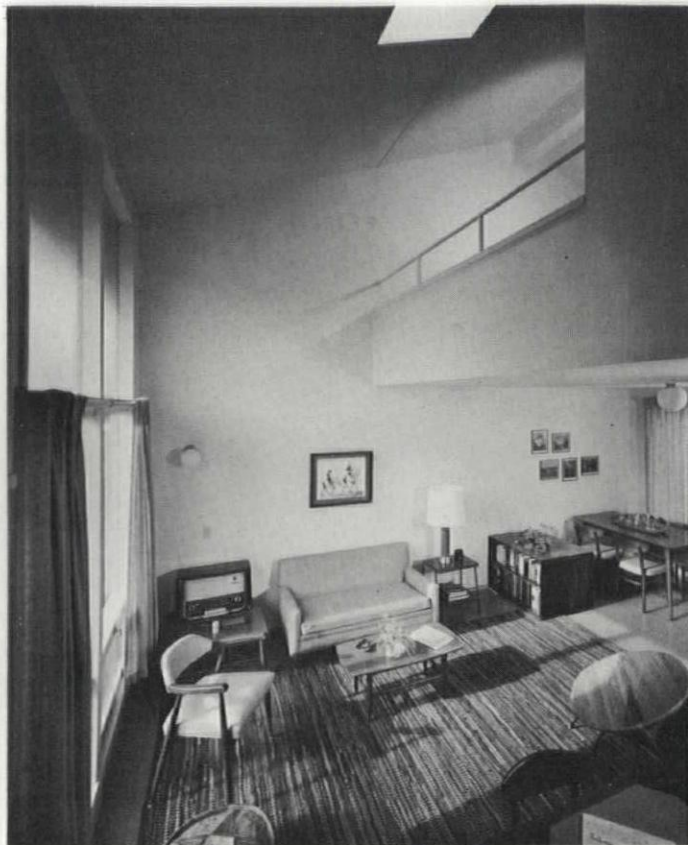
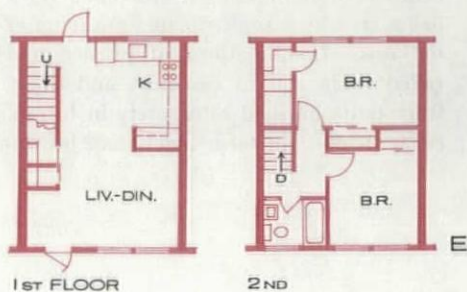
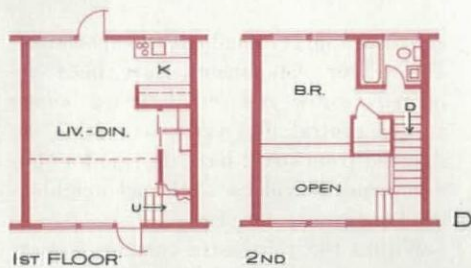
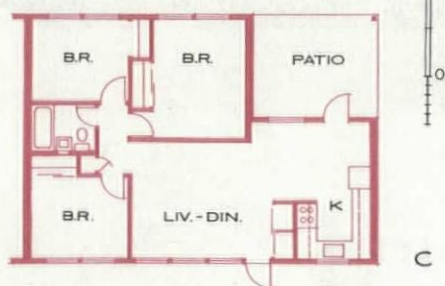
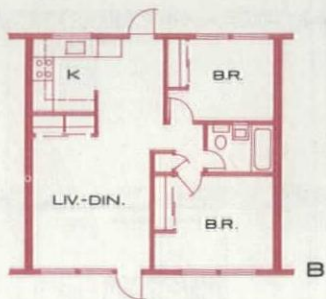
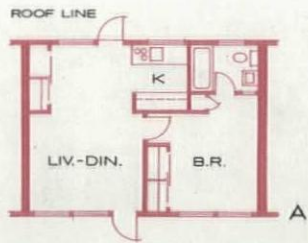


upper story. Like early California ranch buildings, all the units have low-pitched shingle roofs and wide eaves, which shelter apartment entrances. What might have resembled a jostled barracks area is given an air of refinement by the Bay Region detailing.

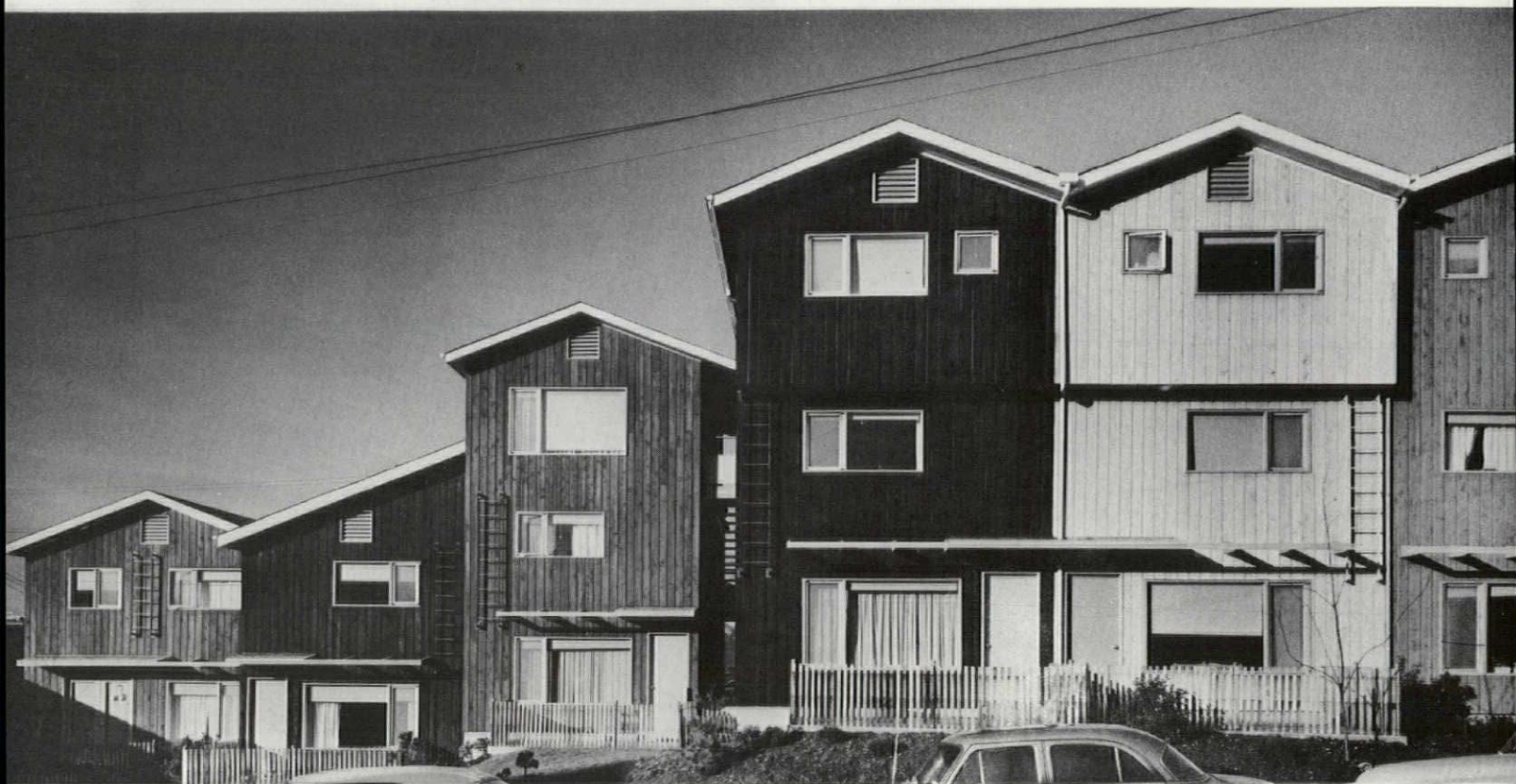
Each of the five building types, lettered A to E on the site plan, is composed of several apartments of the type that is correspondingly lettered acrosspage. Building type C, however, is composed of one type C unit at each end and two units similar to type B between them. Each building has a utility room in the middle; some of the two-story apartments gain an extra second floor room above this utility space, thereby producing two additional plan variations.

A double layer of glass-fiber insulation has been used between party walls in order to provide acoustical isolation. Along with the ample spacing of the buildings, this adds to the restful quality of Escondido Village. The University has stated that the project "allows a high degree of family privacy without limiting neighborliness."





Apartment type D (above) has a balcony bedroom opening onto its two-story living room. Both transparent and translucent glass are used in the floor-to-ceiling window; bottom panels are wired safety glass. A plastic dome admits additional light to both bedroom and living area. The view through the window (below) indicates the informal, unregulated effect of the jackstraw planning.



Photos: Hugh N. Stratford

Fishing Village for Interns

STAFF HOUSING • UNIVERSITY OF WASHINGTON HOSPITAL, SEATTLE, WASHINGTON
• BASSETTI & MORSE, ARCHITECTS • ECKBO, DEAN & WILLIAMS, LANDSCAPE ARCHITECTS

For the interns and medical school staff of the University of Washington Hospital, Bassetti & Morse, Architects, have completed the first phase of a minimum budget on-campus housing project (see site plan on next spread).

Even the first stage demonstrates that the project has been developed with an eye toward creating a neighborhood environment of individual character with a

definite sense of the spirit of the locale. Like the fishing villages of other northern timberlands, these wood-framed buildings, with their cedar channel siding, reflect the surrounding forest country. And the steel-framed concrete slab stairs and balcony-bridges to the third-floor apartments have the air of a ship's superstructure and make the project reminiscent of a houseboat community with docks and interconnecting bridges, like those that have long been a colorful feature of Seattle.

The entire complex is made up of only four apartment plans: a two-bedroom unit, a three-bedroom unit, a small one-bedroom

unit, and a larger one-bedroom apartment. These four components have been arranged as row and semidetached houses around central play-yard courts that are shielded from street hazards, safe for children, and provide a sheltered neighborhood for young couples.

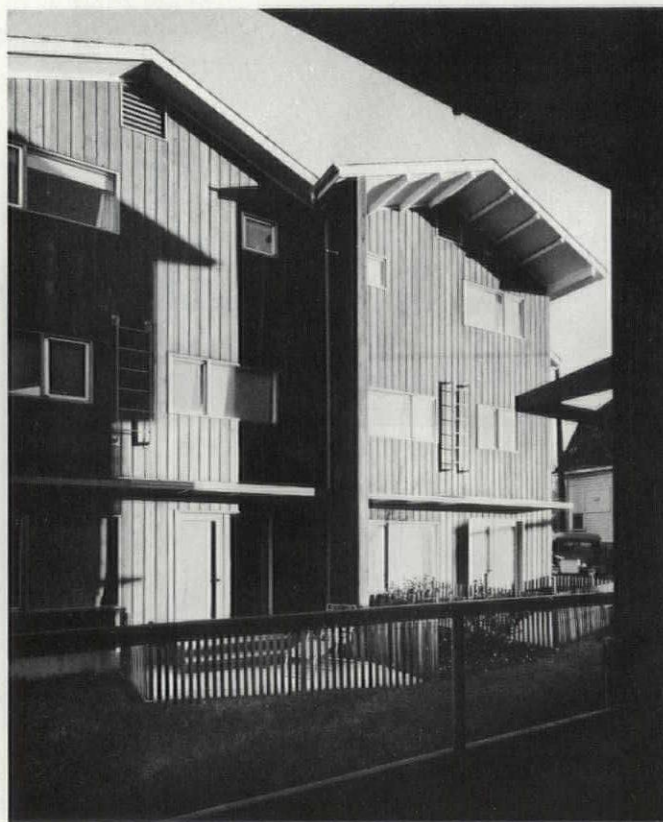
Within the row-house concept, variety has been achieved by staggering the setbacks of buildings, by overhanging third floors, and by a sophisticated grouping of the rows. Combinations of pitched and raked roofs and of two-story and three-story units finished alternately in brown, cedar, white, mustard, black, and brown-

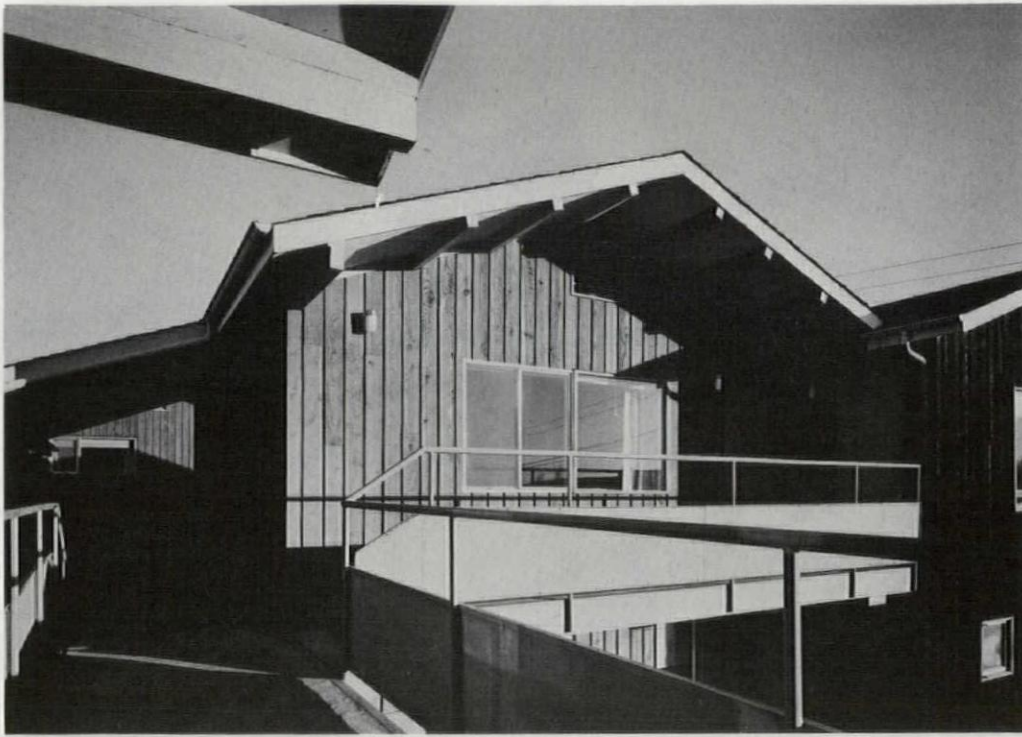


green, "for gaiety and identification," give the project the noninstitutional variety of a city-scape in microcosm and a friendly intimacy that has prompted Washington students to dub it "Barnyard College."

The site is hilly ground surrounded by sloping streets and unattractive neighbors—such as a coalyard that will eventually disappear. An alley presently running through the site will give way to pedestrian ways for the community and its children, scooters, and pets. Central courts are black-top with free-form beds for indigenous plant materials.

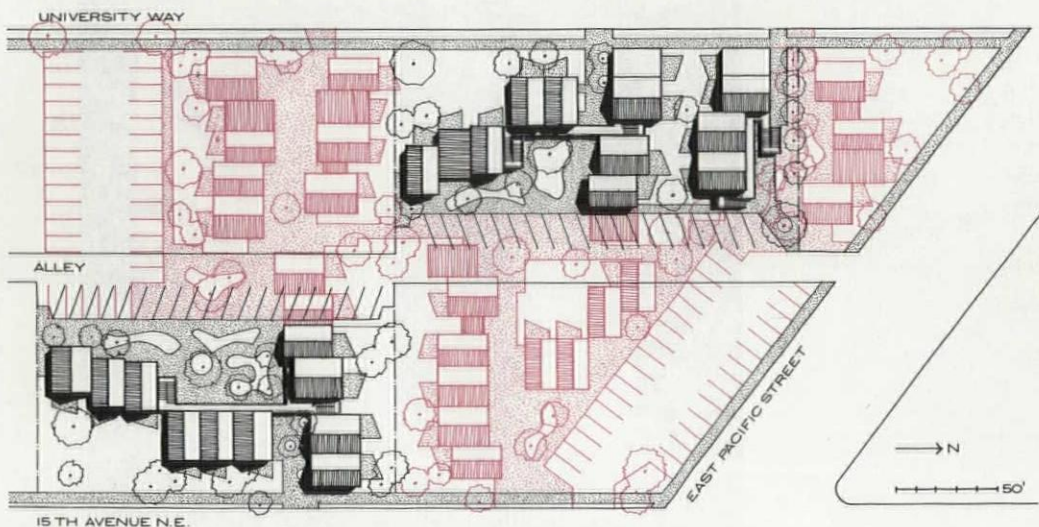
All two- and three-bedroom apartments

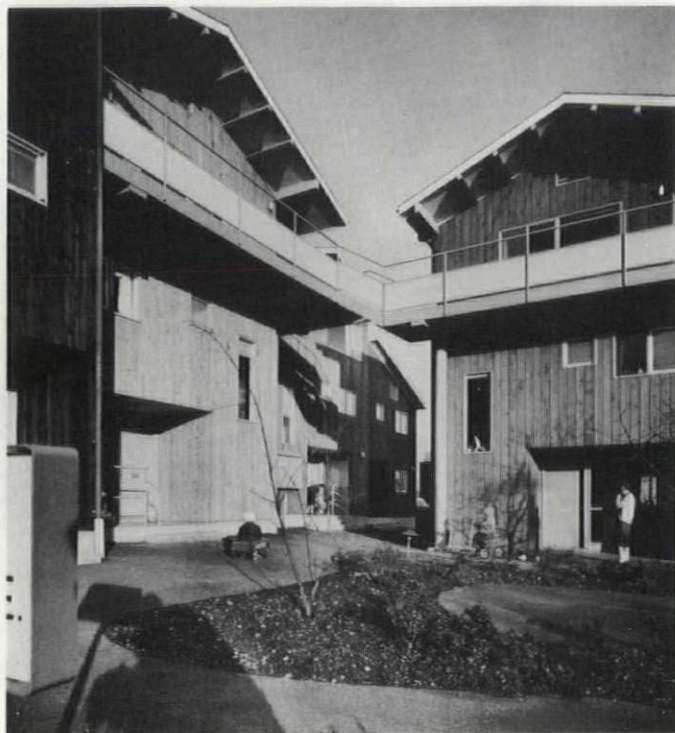




The steel structures of the stairs and bridge-balconies, which are the access to third floor studios, are painted differently for each group — gray-brown, blue-gray, and red-brown; balustrade panels are light gray. Trim and roof soffits are white.

The plans (center) show a typical arrangement of the four apartment types. The site plan (below) indicates the final development of the area with asphalt pedestrian ways flowing between the buildings and across the alley that presently bisects the site. The two sections of the work already completed are shown in black.





are entered on the ground floor so as to be more accessible for children and to provide fenced rear-yard play pens for children not yet old enough to roam the central courts.

All one-bedroom units, intended for couples without children, are on the third floor and are reached by the outdoor stairs and balcony-bridges. It was hoped that this arrangement would encourage a kind of studio community among the tenants of balcony apartments.

Though the architects thought steel and concrete not in character with the buildings, the building code required incombustible platforms and stairs as well as fire-escape ladders as exits from the third floors of the wood-framed buildings. It can be argued that this emphasizes the affinity of the project with the houseboat communities.

The contract construction cost of the 39 apartments, including kitchen and laundry equipment and all site work, was \$350,000; cost per square foot: \$11.40.



Wood siding and plasterboard painted warm white are used on interior walls. The view at left shows the living room of a two-bedroom apartment seen from the kitchen. Kitchen cabinets are natural wood. Electric base-board heating units are used throughout.



Photos: Art Hupy

MEN'S DORMITORIES • REED COLLEGE, PORTLAND, OREGON • NEIL FARNHAM AND SHELL & HOYT, ASSOCIATED ARCHITECTS

The four new men's dormitories at Reed College are near the main campus yet set apart from it. A path from the campus center leads across a foot bridge over a man-made lake and through a stand of trees that separate the dormitories from the principal facilities of the college. This natural barrier, which has lent the name "Cross Canyon Dormitories" to the new buildings, has permitted the architects to

make a complete departure from the architectural styles of the main campus without disturbing its architectural continuity.

Selection of the site came about through a process that is indicative of the liberal tradition of Reed College. Student and faculty members of the Buildings and Grounds Committee discussed the social, practical, and visual aspects of selecting a site that would perpetuate Reed's traditions of undergraduate life. It was recommended that the dormitories be isolated, in order to provide good study conditions, without diminishing the feeling of an inte-

grated educational community. The Cross Canyon site best suited these demands.

Since there was sufficient space, and since a desire for individuality within the dormitory group was frequently stressed, a horizontal house cluster, rather than a single vertical building, was adopted. This arrangement has the additional advantages of eliminating long bleak corridors, minimizing sound transmission, and permitting more variation within the area. Four buildings, each accommodating 25 students, are arranged in an informal pattern following the contours of the site.

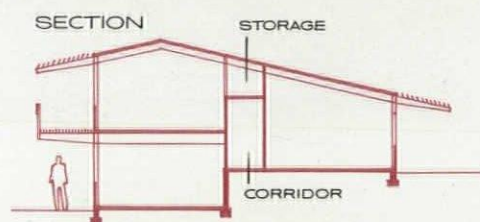
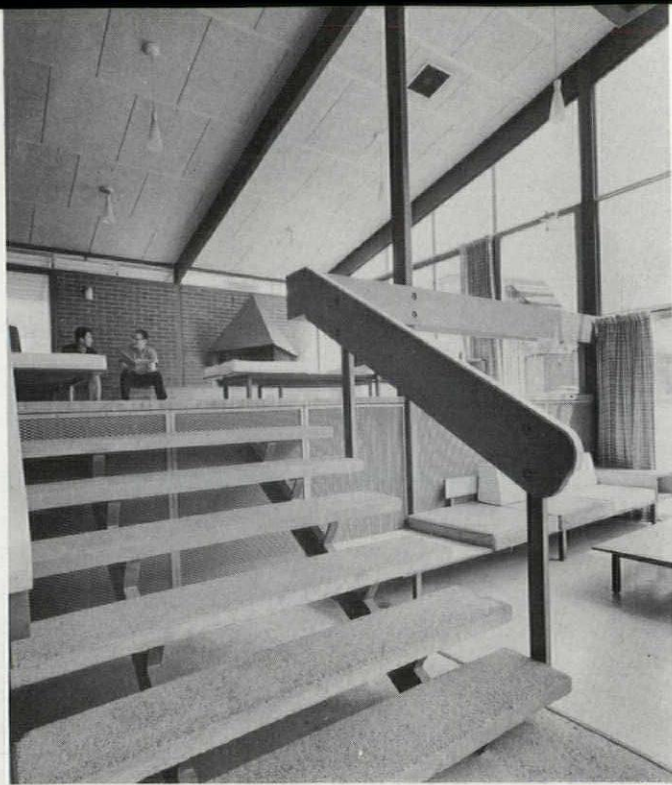


Glass Houses for Clear Thinkers

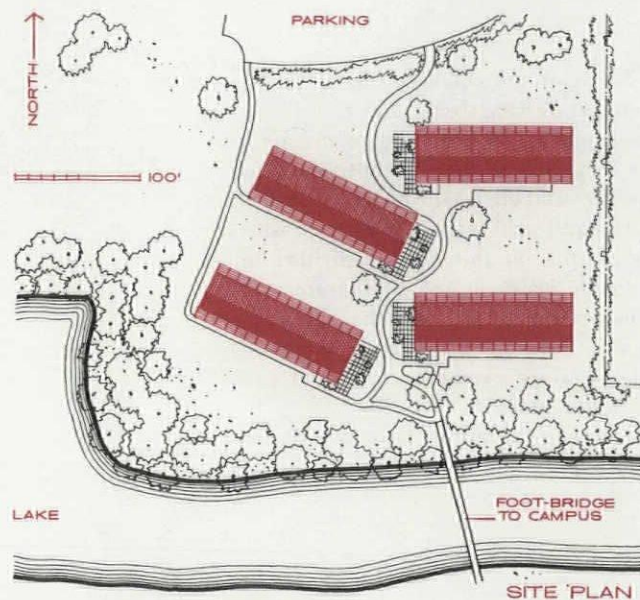
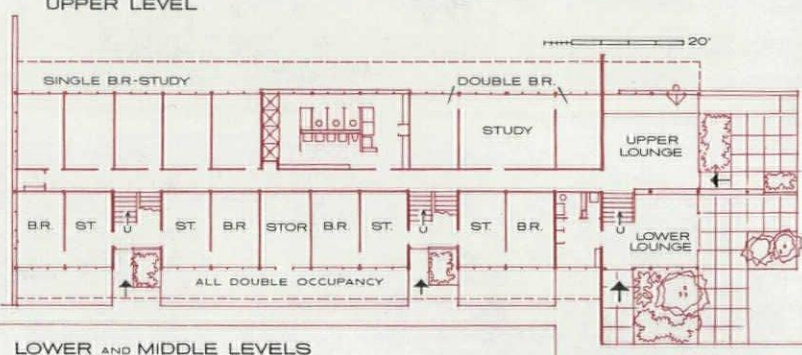
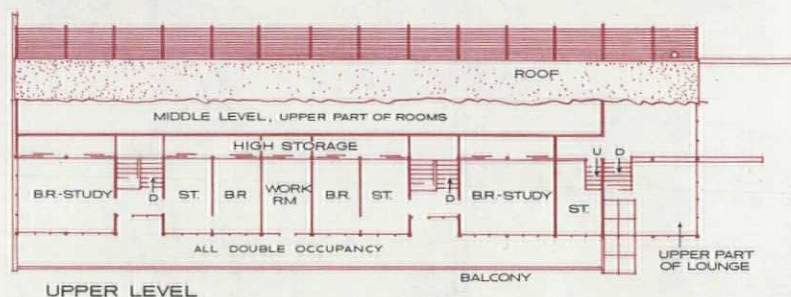
North of the complex the property is bounded by city streets and a residential development. Most of the rooms are on the south side of the dormitories and face the trees and the lake, which offer students a tranquil and ever-changing prospect. Each suite on this side is divided into a double bedroom and a separate study. Outside the curtain wall there is a continuous deck along the upper floor; red-wood louvers extending from the eaves shade the glass.

The four buildings have a split-level plan appropriate to the slope of the site.





The bridge (below) consists of four triangular, stressed-skin plywood box beams cantilevered from two pyramidal concrete piers. The design was particularly simple and efficient from an engineering point of view, but the novelty of its structural system discouraged several contractors before one was found who would accept the challenge.



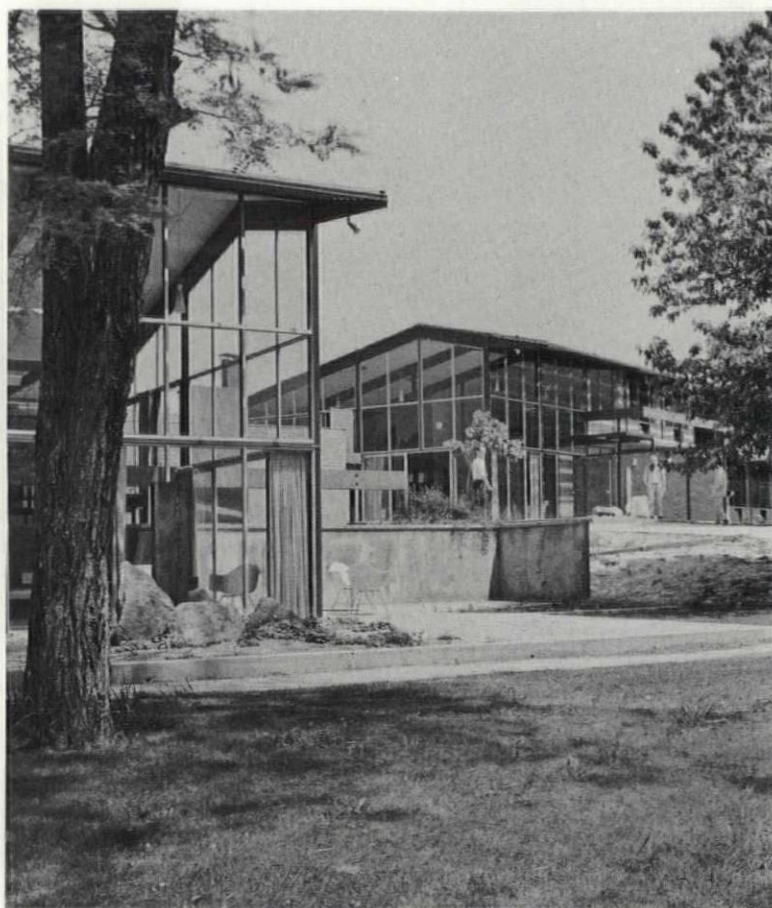
Each lounge (acrosspage, right) is a versatile area of two levels: a high-ceilinged, glass-walled corner and a more intimate balcony with a fireplace. Small discussion groups can find isolation from each other; for a beer blast the room would be varied and interesting. The furniture is custom-designed of hardboard laminated to plywood and bolted to steel tubing frames; cushions are vinyl-covered foam rubber. The construction defies roughhousing. In good weather, students can spread out onto the adjacent terraces (right and below).

A single corridor at the middle level serves all three levels. Stair wells provide acoustical isolation between the rooms, and punctuate the horizontal lines of the buildings. Storage and utility rooms also serve to separate accommodations so that there are no two units adjoining except the five single rooms.

The path from the footbridge to the dormitories winds between the buildings where they mesh together. It weaves in such a way that one's attention is focused on the entry of each dormitory in turn. On the ends of the buildings adjacent to this path are the lounges, which are the social centers of each dormitory.

The structure of the buildings is an exposed steel frame supported on square tubular columns. Both the lower and middle levels are slabs on grade, while the upper level is a slab over insulation plank on steel beams. Aluminum sash and insulated asbestos-cement panels are used as curtain walls; solid walls are exposed brick. Construction in the field was relatively simple ("like assembling a big erector set"); parts were set in place and bolted together.

The color scheme emphasizes the modular frame. The light blue-green doors and trim and the dark red brick appear as inserts within the steel frame, which is painted dark blue-green.



Form and Architecture

BY DONALD LESLIE JOHNSON

When he submitted this article to P/A, the author stated that "this paper is the product of a growing concern about the state of architecture." We therefore include it as material that relates to the P/A Symposium on the State of Architecture, which began with the MARCH 1961 P/A. The author, who completed last year postgraduate studies at the University of Pennsylvania and is now practicing in Seattle, Washington, attempts to redefine the meaning of form in architecture in terms of concepts drawn from the fields of philosophy and psychology. His analysis leads to an interpretation of form somewhat akin to Louis I. Kahn's concept described in detail in the APRIL 1961 P/A.

Critics have generally acknowledged, and to some extent so have the public and architects, that they are dismayed and disgruntled by the current state of architecture. For it is sadly evident that architects and our technological civilization have lately made architecture into an industry. The disillusioning thing is that they have allowed that industry to become the dictator.

Industrial expediency, aptly characterized by its curtain walls, has reduced today's architecture to a repetitive, artistic chaos: it is neat and slovenly, slick and lifeless, and usually cheap (and inexpensive). The mannerists of steel and glass and rectangular modulation have decisively misused the space concepts of Wright, the Bauhaus, and the classicism derivative of Mies van der Rohe. Their attempts to emulate the individualistic Wright are sheer idolatry and plagiarism; pioneers like the esoteric Le Corbusier have never really been understood from the practitioner's point of view.

Thus it is no surprise that we have a new rebellion—or rather, a new protest, for one could not claim there is a wish for complete overthrow of the modern in architecture. That would be absurd. Nevertheless, though this protest is not so strong or bold as a great revolution such as that of the 20's and 30's, it has become an important force in architecture, and it tends to center around a concern with the idea of form.

The protest, however, remains unorganized. As an article by Herbert McLaughlin put it (JULY 1958 P/A): "One

is unable to say whether it is a real direction or just an aberrant. . . . Although in its specifics this work has not borne any close resemblances to the work of Louis Kahn, and although its philosophy is generally nonstructural, which Kahn's never is, there is a similarity. The similarity exists in the desire to make sculpture of the building, and in many ways to depart from familiar forms and disciplines." The desire to make a sculpture of the total building, and not just the façade; to use function as an integral part of the design, and not as the thing from which the external shape develops; in short, to make form and function, form and content, an insoluble unit—this is the goal of the new protest, and the subject of the present discussion.

We architects do not—cannot—forget that architecture is perforce the most practical of the fine arts; but we do forget that the inertia of practical consideration tends to subvert, insidiously and unconsciously, the great cliché and fact that architecture is an art, an art of forms. And we forget that practical necessities are not goals, but are the bounds of the world within which we are free, as the musician is free only within the world and limitations of sound.

My subject, then, is architectural form, and my opinion is that it is widely misconceived.

Form, according to a dictionary definition, is a "definite shape; external shape or appearance considered apart from color or material." Shape is defined as "the quality of a thing depending on its outline or external surface." And form is further defined as configuration: "The relative disposition of the parts or elements of a thing." What could be more academic, and more inadequate.

Inadequate as it is, though, I do not believe it would be an exaggeration to say that this is the idea of form that lies behind the architectural maxim, "Form follows function." At least there is the clear implication that function determines form, and therefore that form is largely the "outside" of function. But this conception of form is totally inadequate for the architect as artist. For the goal of the artist is beauty, and it is form that determines beauty in architecture, not function. Beauty that functions is one thing, functional beauty another.

It is not necessary, however, to wade through the turbid philosophical shallows of aesthetics. As Douglas Prall once pointed out: "Aesthetics is in fact only a pseudo-science or pseudo-philosophy. . . . Its subject matter is such wavering and deceptive stuff as dreams are made of; its method is neither logical nor scientific, not quite wholeheartedly and empirically matter of fact . . . without application in practice to test it and without an orthodox terminology to make it into an honest superstition. . . . It is neither useful to creative artists nor a help to amateurs in appreciation." Let it suffice, then, that we agree that beauty does exist, and that whatever it is it does relate to form, and through form it does determine to a very large degree which things (buildings) are considered preferable to others.

A more manageable idea of form, however, is that of its universality. Now the prime consideration rendering all buildings—and thus all architecture—universal is form. I do not mean to imply that there is an absolute form. I recognize that each age has its unique expectations and vision of form, and I recognize that, despite its uniqueness, each period contributes to the underlying universality of mankind's perception of form. But in our century, the idea of form has had a spectacular uniqueness, and often produces nothing but a sense of disorder, chaos, and lack of universality. Actually, the multitude of practical necessities that control the architect have not allowed so many incoherencies to develop as in certain of the other arts; nevertheless, the problem is acute. Instead of the ineffective puzzles of a mediocre painter, mediocre architects produce buildings that are merely dull. This is a rather old-fashioned attribute of poor art, and if for no other reason than this, we could accuse architecture of being behind the other arts. Be that as it may, the idea of architectural form, for a variety of reasons, some of which I have mentioned above, has lagged.

Even the earliest architectural writings assume that form determines beauty, but from the standpoint of classical absolutism. The principles of the architect's art were based on a selected theme from traditional forms, forms deemed immutable, perfected, and codified. As in rhetoric or poetics or the other arts, the formula stated that the proper manipulations of

the known and true and fundamental forms yield beauty.

Thus, from Vitruvius' commentaries to the end of the absolutist domination of Western thought in the 18th Century, the concept of form as absolute, universal, and, above all, established, dominated the minds of those who were concerned with architecture. It is true that the questions that arose during the passage of time tended to modify received tradition and thus to give rise to "periods," such as the Baroque or Neo-classical. All of these were characterized by a certain amount of corruption of the classical ideal, but for all practical purposes the basic forms remained unchanged in an unbroken stream—with the exception, that is, of the independent Gothic.

With the Age of Enlightenment and the advent of the philosophers of Sensationalism, absolutistic doctrines of form began to lose ground. After the work of men like Locke, Rousseau, and even Kant, objects—and hence their forms—were no longer seen in relationship to a system of standards. Each object was unique and had its unique effect on the senses of each separate man. This effect was sensation, the awareness of a stimulus, and it led to perception, the awareness of an object. Each sensation and its co-ordinate perception was a private and unique experience, newly and uniquely experienced by each individual. This doctrine brought about, in the consideration of form and all other matters as well, an emphasis on those things that describe the relative particularity of each thing and not, as formerly, those things that describe the absolute likeness of things. Western man began to give the dignity of individuality to each experience and object that impinged upon his mind, and soon he had progressed to giving himself and his creations the same dignity. Thus the 18th Century developed the foundation of the modern idea of form.

But it was those 19th-Century thinkers like Hegel and Schopenhauer who actually began to build toward what we may call the 20th-Century, Gestalt conclusion. I mean by this that they moved toward a definition that proclaimed that form and content are inseparable, that they are different aspects of the same thing. Indeed, form came to be seen as the only identity and significance that an object might have, for it is form that organizes all the

motion, time, experience, matter, shape, etc., that constitute an object.

To better understand the contemporary concept of form, we can approach Gestalt through two of its late 19th- and early 20th-Century precursors.

Croce recognized that aesthetic experience takes place in the mind, and that it is a union of form and matter. For him, moreover, form and matter were inseparable for as long as the experience was to exist.

William James went further. He gave a temporal dimension to form. In considering the nature of man's interaction with his environment (objects), he declared that, insofar as a man's life has form in its continuity, it is made up of discontinuous sets of sensations of thought. Yet these sets add up to form the whole life. Consciousness is consecutive, not continuous, and each consecutive moment of it is a product of the entire psycho-physical condition of a man at a given moment.

The thinking of the Gestalt psychologists developed from this point. They see form as the whole organization, and therefore the whole perceptibility of the universe. Knowledge is the perception of forms, or, to use the Gestalt term, configurations. Each experience or thing has its configuration, which may be temporal, as in a melody; spatial, as in a chair; or both, as in a dance. Order, or organization, must be found in these configurations in order that they may be grasped—but this order is not necessarily inherent in the configuration. As one Gestaltist has said: "Where organization is naturally strong, we have spontaneous association; where there is practically no organization, association does not occur until some organization is created intentionally."

What do these psychological ideas have to do with art in general and architecture in particular? The bridge between the psychological and the aesthetic experience of form is found in a remark by John Dewey in his book, *Art As Experience*:

"Wherever perception has not been blunted and perverted, there is an inevitable tendency to arrange events and objects with reference to the demands of complete and unified perception. Form is a character of every experience that is an experience. Art in its specific sense enacts more deliberately and fully the conditions that effect this unity. *Form may then be*

defined as the operation of forces that carry the experience of an event, object, scene, and situation to its own integral fulfillment. The connection of form with substance is thus inherent, not imposed from without. It marks the matter of an experience that is carried to consummation.

"The problem of discovering the nature of form is thus identical with that of discovering the means by which are effected the carrying forward of an experience to fulfillment. When we know these means, we know what form is. While it is true that every matter has its own form, or is intimately individual, yet there are general conditions involved in the orderly development of any subject matter to its completion, since only when these conditions are met does a unified perception take place."

Let us accept this as a tentative definition of form. It is the whole communicative, the whole aesthetic aspect of the work—the total experience.

Some years ago, Adelbert Ames, in an article entitled "Architectural Form and Visual Sensation," brought a more practical and architectural focus to this attitude to form. Mr. Ames' reliance on Gestalt psychology, and certain later developments such as motivational psychology, is apparent. He says: "Architecture is an example of the highest type of artifact that man has devised to help him carry out his purposes. . . . For if the only reason man creates artifacts is to help him carry out his purposes, it of necessity follows that the form of the artifact should be such that those who look at it will be unequivocally aware of what it is used for." And he goes on to say: "But when we consider form in its connection with artifacts for individual use, although the same basic principles apply, their application requires that the form must be varied to fit the unique purposes and value satisfactions of the particular individual. *The 'form' of a private house should be such as to arouse visual awareness in the owner of his particular unique purposes and value satisfactions.*" I have italicized the final sentence of this quotation in order to emphasize the difference between Ames' and the functionalist's ideas of form. The key words here are "value satisfactions." But notice that in Ames' context they are not opposed to "purposes"; they are coordinated with them.

We have seen how form can be thought of as the basis of the aesthetic experience, and how form is the ordering aspect of our psychological environment. Now, with the help of Ames, we can take the final steps. Why should form in architecture be totally, absolutely subordinated to the

function it encloses when it can have a life of its own—or rather, a separate existence that is organically co-ordinate with function?

Architectural forms should be enhancements and extensions of what they enclose. They should not contradict, but complement, what is to be found inside. Let the function and the architecture be an integrated experience in which each expands and is fused with the other.

Since we have spent so much time speaking of form and its relation to function, we must say something about function too. And here, perhaps, we will find at first glance what appears to be a paradox: that is, function is itself form. Yet at second glance we can see that this is a natural result of the Gestalt definition of form.

First of all, I believe that function is static, and that it must itself be considered a Gestalt, an experiential form. That is, the activity within a given building has recurring elements and purposes that add up to its definition, its form. Consideration of the form of the activities is the architect's first concern.

This can be exemplified in the problem of the housing of music.

The function of music is that it be heard. Pleasure, memory, relaxation, and personal interpretation are also involved, but basically it functions as an aural experience. The perception of a symphony in the mind of the listener is the product of its patterns and organization, its forms. The notes themselves, the melodic configurations, the texture of various voices, the harmony—all these contribute to the form of the whole.

The function of a violin in the symphony is to produce sound. That which gives a sense of organization to the ear is the form of the sound. The function of an auditorium is to be a place where the audience can gather and hear the symphony to best advantage. The function of the architect is to create the auditorium; and to create such a building properly, he must, in my opinion, be fully aware of all the forms that the building involves. In other words, the architect must be aware of the forms of sound (acoustics), the forms of music, the forms involved in the entrance, gathering, and exit of the audience, etc.; and finally, he must be aware that the building itself must have an aesthetic (and structural) form that is concurrent with all the rest. Or, in Gestalt terms, he must work with all the mutually interacting material, spatial, and temporal configurations of his building and its functioning, and make them one—so that form and content are inseparable.

A nonarchitectural example of what I mean can be taken from the work of the Cubist painters, who were concerned with the forms created by people or things in movement and time. Picasso's well known *Guernica* shows a lean, pathetic face suddenly moving out from a stairway door. It is depicted as movement-in-time-made-spatial, a flicker of experience involving an object, its time, and its motion—in short, all the contents of a momentary perception. Nothing can be changed or removed, for if it were, the whole form, the whole experience would have a different configuration and would be a different event.

Recognition of total form is a familiar notion for all artists except architects. Architecture, lagging a bit, did make a step forward when the Bauhaus made use of the form interpretations of the Gestaltists. But something happened. There sprang up a mechanist functionalism in which form is an unintegrated shell for function. It is this idea that has dominated modern architecture. The functionalists, architects who have perverted the ideas of Louis Sullivan, brushed aside the influence of Gestalt with a meaningless cry of "form follows function."

But look at the work of Wright. His term "organic" is not limited to considerations of the functional. It involves the same ideas that are found in Gestalt. Wright's sense of the organic forms necessary to produce a building involved, for him, consideration of what was to be seen in its rooms, what was done there, and how people arrived in it. Look at the magnificent corridors in his houses where his knowledge of the forms of motion, of light and its patterns, and of matter arranged in repetition or sequence are dramatically developed.

We must understand that to say that a corridor's function is to connect one room with another is not enough. If we did, its form, following its function, would be just another tube. If we must say that form follows anything, let us say that form follows *forms*—the forms of light, sound, movement, persons or groups, mechanical requirements, things in sequence or repetition, ad infinitum. And let us not forget the many temporal forms that are inherent in the existence of any building: the passing of night and day; its setting with the alternations of the seasons; the ebb and flow of life within it; and all the other things that come and go, perpetually. Forms are static and dynamic. They must have order to be experienced, and architecture must control them. Architecture is the knowledge and the orderly arrangement of forms.

Vast changes are going on today within the U.S.S.R., as a result of the Government's effort to raise the living standard. P/A is presenting this article by the assistant director of the Scientific Research Institute of the Theory and History of Architecture of the U.S.S.R. Academy of Building and Architecture, because American architects—indeed, all Americans—should be informed about these changes and about the ideology motivating them. Since the deletion of all propagandistic comments would have left only a dry, though impressive, statistical report, enough of the original text was retained to show the author's dependence on Marxist dogma for his explanation of Soviet progress. Architect Minervin's thesis—that in the post-Stalin era, the traditional monumental approach has given way to a search for an architecture more attuned to the needs of a fast-growing industrialized society with emphasis on urban planning, standardization, prefabrication, and new directions in aesthetic theory—is discussed in this month's "P.S."

Soviet architecture has traveled a long and difficult road in the four decades of its development. In the years since the Soviet Government came to power, the growth of the economy has been particularly evident in the increase of the number of cities, and in the growth of the urban population to about 3.7 times its former size. The old cities have changed radically; new towns and settlements have appeared. The total amount of housing, in cities and urban-type settlements alone, has increased 4.5 times over that of 1917.

The current direction of Soviet architecture and town planning is determined by the goals of the Seven-Year Plan (1959-1965) for the development of the national economy of the U.S.S.R. This plan provides for a continued rise in the production forces of the country, and a maximum increase in the output of consumer goods.

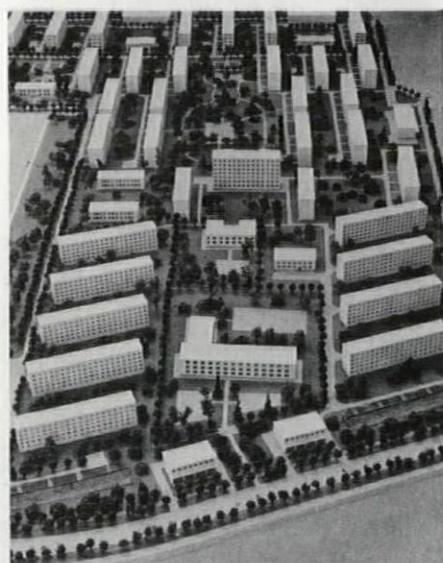
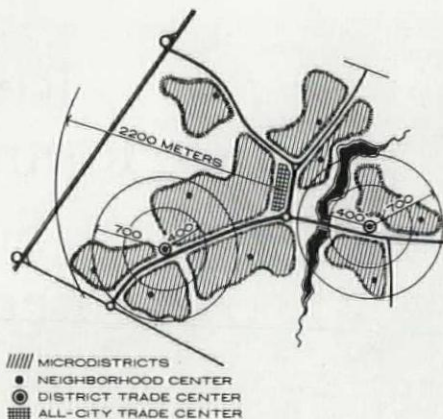
A colossal amount of construction work, however, amounting to millions of square meters of living space, still remains to be done. The reader should keep in mind, though, that building expenditures are generally borne by the state, so that the cost of construction of a residential building, for instance, is not included in determining the rent. In the U.S.S.R., in other words, the working man receives his living quarters and enjoys the use of public

Recent Developments in Soviet Architecture

BY GEORGI MINERVIN



Photos: Sovfoto



Typical plan for a satellite town with a population of 65,000 to 80,000, showing the arrangement of micro-districts and commercial centers (top of page).

Details of models of experimental residential districts for 40,000 residents to be built in the suburbs of Moscow, showing the use of open spaces and the placement of residential and public buildings (photos above).

buildings practically free of charge. [In the U.S.S.R., the designation "public building" includes any structure that provides the population with social, economic, or cultural services; for example, schools, hospitals, department stores, laundries, theaters.—ED.]

In solving the problems facing them, Soviet architects are being guided by what is best in contemporary as well as traditional architecture the world over. Of particular significance in defining the current direction of Soviet architecture was the All-Union Conference of Builders, held in 1954. This conference summed up the great achievements in the field of construction, but at the same time subjected to serious criticism various negative aspects of current Soviet architectural theory and practice. The consequent decisions of the Communist Party and of the Government directed future development along the appropriate lines; they insured, in particular, that provision be made for the creation of a powerful production base for construction—a building industry.

Town Planning

Characteristic of modern Soviet architecture is mass-scale town planning. This is an emphasis due, for one thing, to the destruction during World War II of more than 1700 Soviet cities and tens of thousands of villages. All of these were gradually rebuilt.

In addition, many completely new towns were built. A typical example is Angarsk, located 60 km northwest of Irkutsk on the Trans-Siberian Railway. Founded in 1949 in the taiga, this town grew rapidly, and today has a population of more than 100,000. Characteristic of the planning of this town is the use of separate zones: industrial, transport, residential, rest, and recreation. The city has a central heat and hot-water supply system that operates 24 hours a day, as well as storm sewerage. Each dwelling is equipped with gas, radio, TV, and telephone. The buildings in Angarsk are of standard design, and progressive, continuous high-speed methods and prefabricated parts were used during construction. It is anticipated that in the next 8-to-10 years the population of Angarsk will increase to 200,000.

One of the most decisive changes in town planning was the introduction of the principle of dividing residential areas into "micro-districts." This meant, for one thing, that residential buildings—generally four or five stories high and of standard design—could be better located and arranged in separate sections. For another, it allowed buildings housing cultural and communal services to be more logically



Views of apartment houses and play areas in a new district recently completed in Moscow (above and on previous page); the buildings are of reinforced-concrete prefabricated panels. This development was a pilot project and is now a prototype for similar developments throughout the country.

A typical street in the new town of Angarsk, founded in 1949 (below).



grouped. Even the way in which highways and streets are used has changed considerably; they are now no longer mere corridors. Residential buildings are separated from roads by stretches of greenery, among which stores and other public buildings are located. All in all, this innovation has produced better living conditions for the population, and has made possible the creation of more attractive housing.

Of long-standing concern to the state in the U.S.S.R., as far as town planning is concerned, is the insufficient number of public buildings of various types; schools, restaurants, hospitals, laundries, and so on. Buildings of this type that are presently in use are inadequate to the needs of the population.

The micro-districts now being built will include new types of buildings that provide certain innovations. School facilities of various types, which till now have been scattered, will be unified by being housed in a one-story building with auxiliary facilities including garages and a gymnasium. In addition, the location of other buildings serving the needs of the public will be planned as follows: (1) those services that cater to the daily needs of the community (foodstores, cafeterias, etc.) will be located relatively close to the residences; (2) those that are not used every day, such as department stores, will be located in local shopping centers, but never further than 1000 m from the homes. Lastly, located at the center of residential districts (a residential district consists of three or four micro-districts, each of which accommodates between 6000-8000 people), there will be a group of buildings for cultural and sports activities.

Since 1954, therefore, the development and growth of Soviet architecture has produced encouraging results. However, the All-Union Conference on Town Planning, which was held in June 1960, showed that much still remains to be done. The attention of architects was directed toward planning communities that take into consideration such related factors as the development of local production forces, locating a worker's home and his place of work in close proximity, and creating for the people a comfortable and healthy environment. Particularly significant will be the attempt to achieve solutions to such problems as regulating the size of a town's population, the proper organization of city traffic, and the relocation of industrial concerns now close to residential areas.

In other words, the needs and demands of the national economy will be the overriding considerations on which future

town planning will be based. Thus regional planning, which takes into account the trend of economic development of a particular industrial or agricultural region, will gradually become the basis for Soviet town planning.

Residential Buildings

During the past four years, the volume of housing construction in the U.S.S.R. has more than doubled, and the Soviet Union now occupies first place in the world for the number of apartments going up. (In 1959, the figure was 145 apartments for every 10,000 members of the population.) This sharp upsurge in housing construction became possible due to the industrialization of the building process based on a series of standard designs. The use of standard-designed houses in building projects led, in turn, to a considerable drop in construction costs, and a radical improvement in residential housing conditions.

The research institutes of the U.S.S.R. Academy of Building and Architecture worked on the problem of carrying through the programs for the design of new types of standard dwellings and public buildings, as well as initiating work on new experimental designs. The projects for residential buildings concentrated attention on providing housing that takes into account the relation between dwelling or apartment size and the number of people—family or individuals—for which it is intended, thus creating greater comfort by decreasing the number of people per room.

Of greatest interest among the designs for sectional four- and five-story residences are the new proposals for completely prefabricated, large-panel houses. These designs provide for the use of transverse partition walls with suspended and self-supporting outer panels. The arrangement of the inner walls along the boundaries of the apartment, with a span of 6.0 m, makes it possible to increase living convenience in the new houses (at the established cost per square meter of dwelling space), inasmuch as conditions are made available for a choice in the arrangement of the apartments by the use of partitions in the form of closet blocks.

The Research Institute of Experimental Design of the U.S.S.R. Academy of Building and Architecture is one of a number of large organizations working on designs for houses of the so-called hotel type. Until now, there were no standard designs available that satisfactorily solved the problem of housing a number of small families and individuals. Experimental houses with apartments for one, two, and

three people are now being built. The type and size of auxiliary facilities (i.e., sanitary and cooking) have been reduced in such apartments; instead, allowance for these has been made by providing units, located on a particular floor or section, which the apartment occupants share.

Public Buildings

Solving the housing problem, the most important social problem during the building of communism, requires for its solution the creation of new types of buildings that will provide various social and economic services for the people, as well as those for cultural and other needs.

As has already been pointed out, the construction of public buildings based on standard designs, and the combining of previously separate facilities into a single unit, proved to be of particular significance to the direction of Soviet architecture after 1954.

Typical of the buildings now going up is the café on the Sokolniki Park of Culture and Rest in Moscow, which is notable for its simple, spacious composition, and the effective use of new building materials.

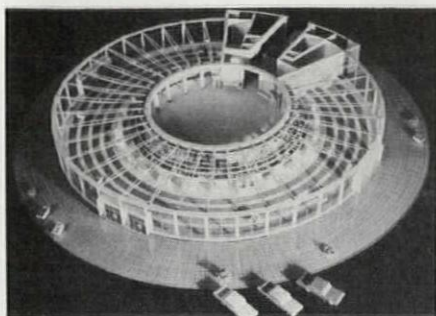
This is merely the beginning, however, of the great changes now taking place in the design and construction of public buildings on a district and city scale. Today, experimental designs show a general tendency toward simplification of these structures, toward grouping together buildings providing social services to the population, and toward establishing a new architectural form.

A striking illustration of this new trend is the design and construction of buildings which, although used by the public, are individually designed. A case in point is the U.S.S.R. pavilion at the Brussels Exhibition, which was awarded the Grand Prix, and which evoked favorable comment among world architects.

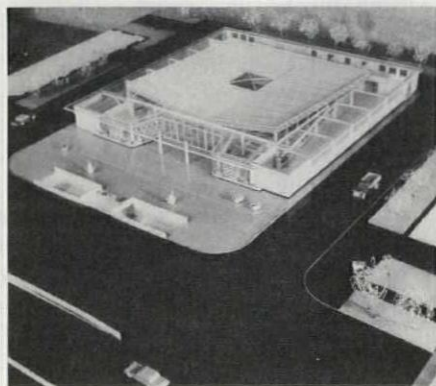
In addition, there were various competitions, among them one for the Palace of the Soviets, which were of exceptional interest for their bold and original architectural concepts; they were outstanding for the lightness of their structural solutions, their well-thought-out structural schemes, and their quest for new aesthetic features.

In the competition for the Palace of the Soviets, held in 1958, the projects submitted revealed that outdated ideas as to what the Palace of the Soviets should be like—ideas that still have not been suitably modified—are still evident. Yet despite the fact that not a single design was considered worthy of the first prize, inasmuch as their creators had not as yet achieved an artistic image of the Palace of the Soviets that embodied the achieve-

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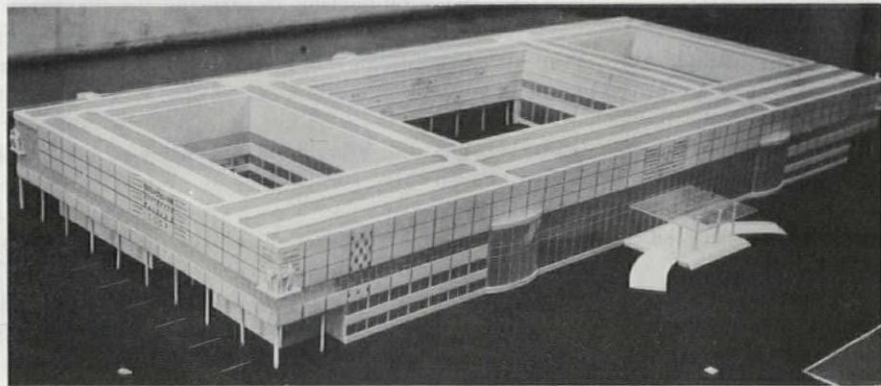
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ments of the new social system, there were many interesting features in the best designs. In the one submitted by A. Vlasov, Vice-President of the U.S.S.R. Academy of Building and Architecture, the clever arrangement of the lobbies resulted in a parallelepiped-shaped building that accommodates three oval rooms. It proposed making the ceilings of the lobbies of glass and concrete. The free, spatial plan of the lobby, combined with the originality of

its structural solution, lends it a new aesthetic quality.

Industrial Buildings

Along what lines are Soviet architects working in the field of industrial construction?

Plans are now in progress for the design of new types of buildings for industrial enterprises that will satisfy the strictest demands modern industry may make of

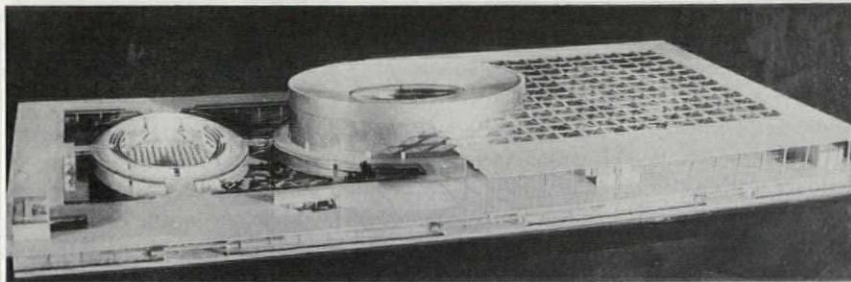


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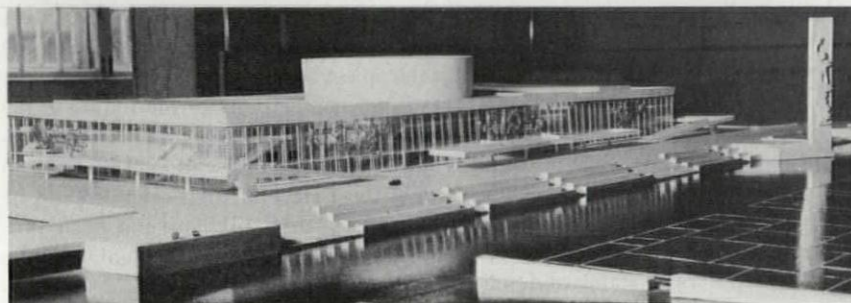
Models of two standardized designs by Mosproyekt Institute for vegetable and fruit markets to be built in the Moscow region 1, 2. Restaurant in Sokolniki Park, Moscow 3. Model of proposed State Art Gallery for Moscow 4. Model of proposed 1750-seat concert hall of the Georgian Philharmonic to be built in Tbilisi 5; the lower floor will contain a 1000-seat movie house.

Models of two of the entries for the Palace of the Soviets competition 6, 7, 8. Vlasov's project (6, 7) is described in the article.

6



7



8



them, and which will, in particular, contribute to a rise in labor productivity and a fundamental improvement in working conditions.

To give the reader some idea of the specific nature of some of these projects, mention should be made of the work of one design bureau in Moscow, the Promstroiprojekt (Industrial Construction Design Bureau), which has created standard designs of one-story, multipurpose buildings for various enterprises of the light and metal-working industries. A distinguishing feature of the shops of these enterprises is the wide spacing of the columns (24.0 x 12.0 m), which makes possible more flexible arrangement of the equipment, thus allowing quicker and more efficient replacement of obsolete equipment. Construction of the building is deliberately simple, to allow prefabricated units to be used.

A similar type of industrial building has been designed by the Institute of Experimental Design of the U.S.S.R. Academy of Building and Architecture in conjunction with the Concrete and Reinforced Concrete Institute. This project envisions making use of the truss space for the purposes of accommodating an entire story of technical, auxiliary, and even production facilities. This would be accomplished by a design that proposes using girders without diagonal web members, with the planking resting upon the lower and upper flanges. For the flooring, ribbed, prestressed concrete slabs would be used. The outer walls of the building could be made of aluminum panels or of glass blocks.

Industrial Methods of Construction

The most recent phase in the evolution of modern Soviet architecture is characterized by new construction methods that make possible an increase in the volume of construction, a reduction in cost, and an improvement in quality. This amounts to a genuine technical revolution, which is due, in great part, to the switch-over to industrial methods; and it is this rapid growth of the construction industry that will pave the way for the future development of Soviet architecture.

The most effective method today for industrializing construction is the widely applied use of prefabricated reinforced concrete parts. In 1953, the U.S.S.R. produced 2.4 million cu m of prefabricated reinforced concrete; in 1960, the total amount reached 29 million cu m. One of the resulting benefits was a considerable reduction in labor costs. (The saving in housing construction was as much as 40 per cent.) In some cases, as in Magnitogorsk, where large-panel construction amounts to 60 per cent of the total, labor

expenditures for housing construction have been cut almost in half.

In addition, house construction employing large-element, completely prefabricated (including prestressed) units is being developed and new methods of rolling and other mechanized and automated methods of making reinforced concrete parts are being introduced. Lighter materials (e.g., porous concretes) are now being used more frequently, and the production of gas concrete and Keramzite (burned clay aggregate) concrete blocks and panels has been mastered. A typical application of these materials is in large, self-supporting, room-high wall panels whose width depends on the diameter of the autoclave, in large-size slabs for ceilings, and in suspended panels for insulated

curtain walls of industrial buildings.

In new designs proposed for prefabricated, prestressed, load-bearing parts of buildings, light, economical panels are being used. In certain housing construction, for instance, thin-walled units have been found acceptable that are constructed as multilayer panels; these include, in the load-bearing partitions, a concrete layer 4 cm thick, and in the walls, a concrete layer 3 cm thick.

Prestressed elements have an important place in construction today; by 1965, they will constitute a fourth of the entire output of plants producing prefabricated reinforced concrete. The chief use for prestressed, reinforced concrete is for the production of slabs for ceilings and roofs, the slabs being prepared in special forms



Model of the terminal of the new airport near Moscow (left) that will serve the capital. Construction photo (below) shows the interior of a hangar and maintenance shop.



with electrothermal stressing or continuous reinforcement. Partition slabs, 3 x 6 m in size, in which the ribs are prestressed, have been recognized as the most effective.

The development of plants for the fabrication of reinforced-concrete parts under a maximum degree of factory control has made it necessary to perfect the technology of production. Today, elements for large-panel construction of buildings are made at plants of the stationary, continuous-unit, and conveyor type, as well as at the so-called house-building plants.

In Moscow, for instance, the continuous rolling of reinforced-concrete parts is conducted at six plants, which produce slabs for roofs, partitions, and walls. A panel is made of two slabs, between which an effective thermal or sound-insulating material (mineral-cotton or wood-fiber) is inserted. Outer walls are of one story

height and two or three rooms long. Partition panels have a concrete thickness slightly more than 8 cm, and wall panels a thickness of 6.7 cm.

Production of reinforced-concrete components for houses has been organized at a number of plants where partitions, roofs, stairs, landings, walls, etc., are made.

Another innovation in house building is the use of brick panels for load-bearing walls. The outer walls consist of brick panels, of half-brick width, which are insulated with cellular glass or some other insulating materials. The first attempt to build houses using such panels has proved them superior to large brick blocks.

An important step in the development of completely prefabricated construction is the manufacture of even larger elements. Calculations show that when modern methods of producing large panels are used, labor expenditures at the plant are only 25 per cent of the total, whereas labor at the building and erection site accounts for the other 75 per cent. Hence the idea of producing on the conveyor of the plant completely finished and equipped rooms, and even entire apartments, is gaining an ever-increasing number of advocates.

The use of this type of construction has already been begun in a number of cities. In 1959, an experimental two-story house made of "room-size" elements was built in Moscow. Today, the production of five-story houses with elements the size of two rooms, and of a room and kitchen, is now being mastered at a number of plants in an experimental way using different technologies. This type of house, with volumetric two-room elements running transversely across the building, has numerous advantages. It is possible, for instance, to have three-apartment sections where there is the flexibility of different combinations of 1-, 2-, and 3-room apartments, and additional advantages from the technological and economic viewpoints.

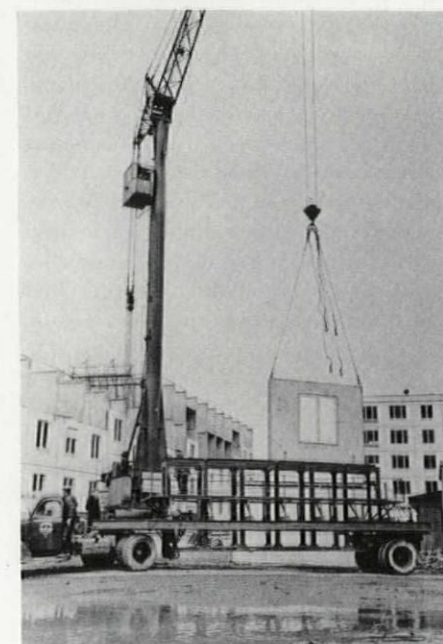
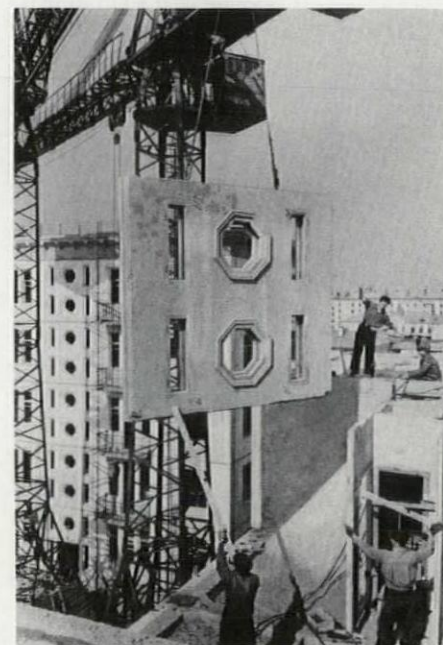
The experimental production of volumetric elements at one of the Moscow plants is based on thin-walled, multi-ribbed, reinforced-concrete shells produced on a continuous vibro-rolling mill. Three main types of standard elements—3.02 x 1.20 x 2.70 m—are produced there.

The standardized plans for five-story houses make it possible to include in the manufacturing process such items as built-in furniture, kitchen equipment, and sanitary fixtures. Furthermore, under mass-production conditions, it is possible to produce a five-story, 60 unit apartment house of volumetric elements in one mill in 20 working days.

Erection techniques are also being perfected. The method of erecting buildings



Typical scenes from apartment house construction sites where prefabricated concrete parts are being delivered for erection.



An experimental, movable "house building machine" used for construction of five-story brick houses near Leningrad. The lower truss moves vertically, and workers' cabin (located on the truss) moves horizontally. The two cranes on the upper level have a capacity of five tons each. Eight men in the machine (three bricklayers and five men at the control panels) are the only construction workers employed on the site.

by means of raising the story-height partitions is already known in international building practice. Leningrad builders have introduced an improvement to this method; an entire floor is completely assembled at the ground level, and is then raised hydraulically to the necessary height.

An experimental four-story house of the hotel type was erected in this way. It has a system of columns that are placed at distances of 6.4 x 6.4 m from one another. The floor slab (monolithic reinforced concrete 16 cm thick) as a cantilever projection along the perimeter, on which thin (17.5 cm), reinforced-cement panels with fibrous insulation are installed.

This experiment showed that when panels of lightweight materials are used, the cost of materials can be reduced, the total weight of the building can be decreased, and the arrangement of the apartments in such a house is solved more freely.

New projects have now been drawn up for residential houses, public buildings, and public-service buildings that will be erected by means of this new, effective method of raising the floors.

These, then, are some of the new methods of construction that are being introduced all over the Soviet Union. In a number of cases, they are still being tried on an experimental basis. There is no doubt, however, due to the tremendous pace and scope of the industrialization of building construction in the U.S.S.R., that they will soon be used on a large scale. This industrialization, based on unification and standardization of construction methods, has been aided by the new social conditions, the development of science and engineering, and general technological development, which will make its extension to mass-scale use an event of the near future.

New Aesthetics

The aim of Soviet architects is to make the new buildings, residential blocks, and districts not only comfortable and economic, but also beautiful. Simple outlines, good proportions, the avoidance of decorative forms that are not justified functionally, the proper use of materials and color—these are the most important factors characterizing the modern building. The struggle against superfluity in architecture is a struggle not only for economy, technical progress, and the industrialization of building; it is also a struggle for a new understanding of what beauty is, for a new aesthetic in socialist architecture.

Beauty in architecture, in our opinion,

is obtained primarily by best satisfying the needs and the demands of good taste. It is achieved through construction of a building that is harmonious, and that meets the functional, material, and practical demands made of it. A change in functional requirements and building conditions invariably leads to a revision of the very concept of beauty in architecture.

The new designs that reduce the weight of buildings through use of the most advanced designs and materials, that raise the level of mechanization of construction work through a transition to industrial methods of producing large prefabricated elements—all of these radically change the aesthetic ideas and categories that had become established in architecture over many centuries. The traditional concepts of monumentality, scope, and proportion are changing. Today beauty is associated with feasibility—feasibility of the materials used, of the methods of construction, as well as convenience of arrangement.

A number of original solutions for blocks and micro-districts have appeared in Soviet town planning over the past three or four years. A distinguishing feature of their construction is not only the convenient structure of the house, but also a certain harmony in the free arrangement. The architects have resolutely departed from the idea of closed squares and deliberate symmetry in the planning and arrangement of individual buildings and structures. In making use of standard designs and residential and public buildings that are light in form, they try to create a picturesque arrangement of the entire system of the micro-district in which the yards of groups of houses, which are planted with greenery, are joined to the micro-district park, which includes sports grounds and nooks for quiet relaxation.

It is self-evident that the aesthetic level of the construction undertaking is directly dependent upon the aesthetic features of the types of buildings and structures used. Gradually, on the basis of large-panel, completely prefabricated construction, new houses are arising which, although still requiring some improvement as regards exterior architectural form, are nevertheless already favorably solving the problem of beauty in architecture.

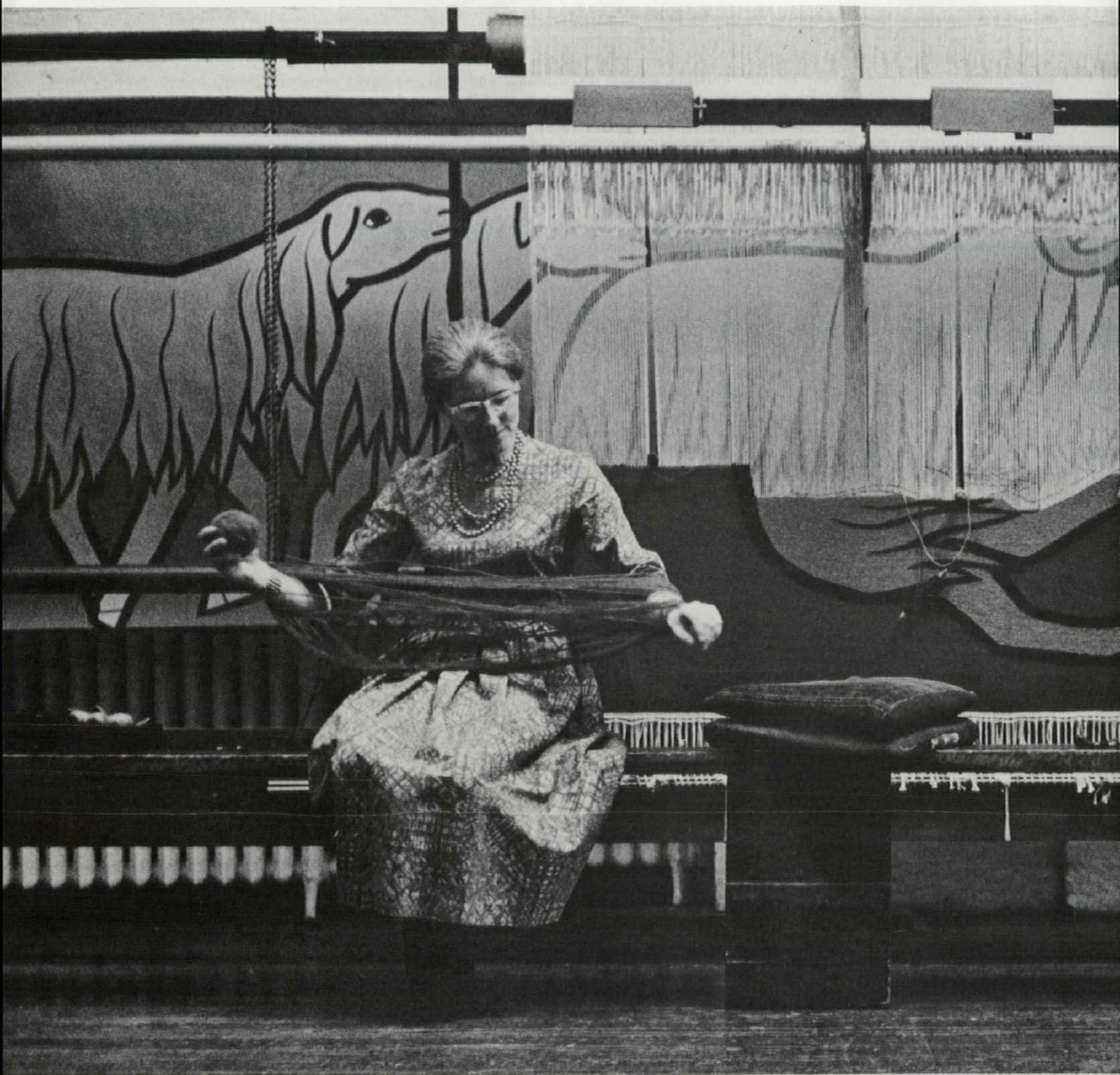
Not unexpectedly, the aesthetic problems involved in large-scale housing have not as yet reached the level of solution that has been achieved, say, by the new technology of construction. Soviet architects, however, are exerting all their efforts in that direction in order that the aesthetic idea of a building will express more precisely the social aspirations of the people, while at the same time bringing it more

in line with the advances in construction methods.

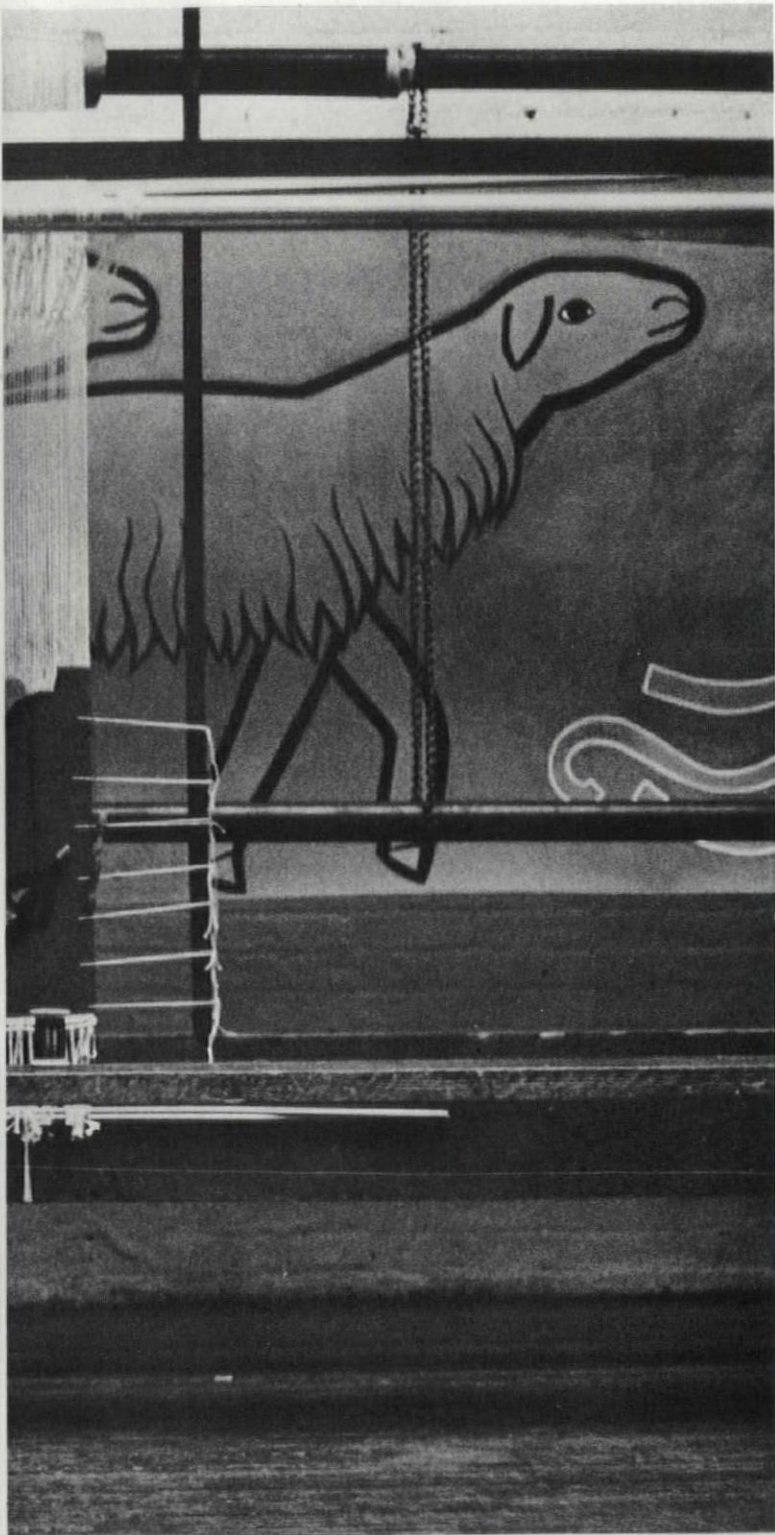
Typical of the approach and thinking of Soviet architects in this respect is the use being made of the fine arts. When these are wedded to architecture, to a building, they help to reveal more profoundly its aesthetic idea; they help, as well, to express patriotic ideas, thus embodying the achievement of the people in their architecture. That is why the project for the Palace of Soviets devotes so much place to sculpture and painting. In some projects, such as the one by Architect A. Vlasov, the wall reliefs and painting form an integral part of the composition of the interior. Continuing the tradition of Lenin's plan of monumental propaganda, they create an atmosphere of solemnity, and remind future generations of the glorious deeds of their parents and grandparents who, in struggle, won the right to work in freedom, and the right to unlimited economic and intellectual development.

The wide use of the fine arts in architecture demands, in turn, that these arts take into consideration all that is new in the profession and, together with it, seek new means and forms of expression. The idea, expressed by certain foreign theoreticians, that modern architecture borrows its forms from abstract painting, does not, in our opinion, merit attention. Abstractness of architectural form and so-called abstract art are different in character. Geometry in architectural forms, which is determined by the conditions of material production, has nothing in common with abstraction that destroys the realistic foundations of any art truthfully reflecting life. Soviet architects uphold socialist realism, and together with artists and sculptors pursue one and the same goals.

The Palace of Soviets, and other monumental buildings that are going up in the big cities of the U.S.S.R., will be distinguished by their compositional oneness and noble simplicity. The new volumetric-spatial solutions, the use of modern designs, materials, and engineering equipment, the truthful reflection of the practical and ideological-artistic designation of one or another building or group of buildings—all of these enable us to assume that among these buildings there will be those that will play a leading role in the formation of a new, socialist style in architecture. Its most distinguishing features will be simplicity, severity of form, and economy of solution. The fight for a socialist style is not an abstract, formal task, but a struggle for a Soviet architecture that is perfect in all respects.



Tapestry Murals

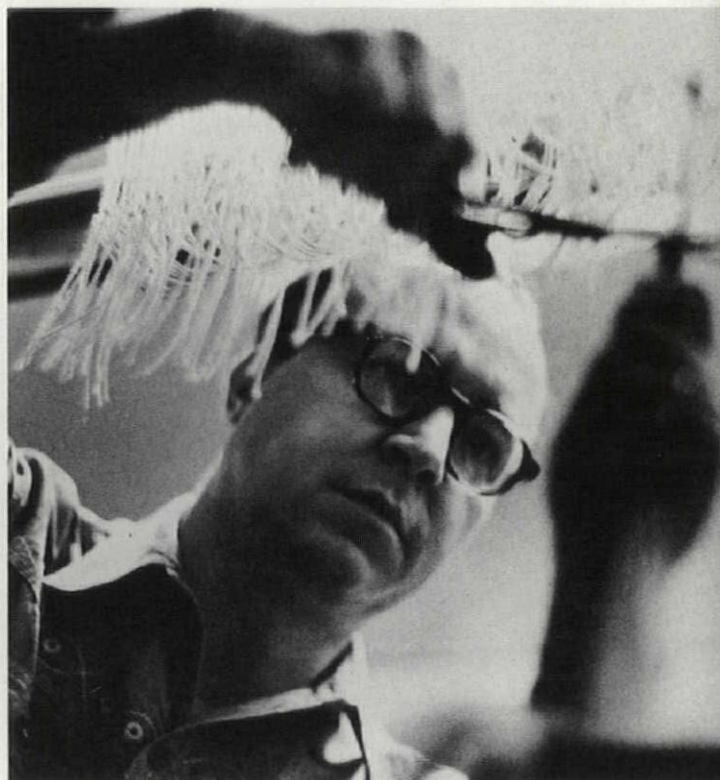


Photos: Marvin Bolotsky

Just off the sometimes turbulent United Nations Plaza in Manhattan, the tapestry studio of Jan Yoors is a retreat for the pure spirit of the Arts and Crafts. Inside the huge, skylighted, white loft, which retains the sculptor's block and tackle of a former tenant, Yoors and his wife, Annebert (*left*), and her sister, Marianne, work with patient and loving care at an 18-foot high-warp loom on the wool tapestries that Yoors designs from sketch to final stitch. The music of Bach and Mozart quietly plays in the background, and conversation, accompanied by Turkish coffee, reveals the dedication of an artist-craftsman.

Since 1950, Belgian-born Yoors has been weaving tapestries in America, where, he feels, one need only be "willing to be lucky." He considers tapestry weaving "not a vocation, but an addiction, a way of life," and that, as a labor, it provides the deep "satisfaction of continuity." In a solemn operation (*below*), Yoors "fells" a tapestry from its warp threads.

The walls of the studio are hung with tapestries of grand scale and powerful forms; the colors vibrate. Discarding the "refinements" of 18th-Century techniques, such as shading that imitates painting, Yoors has stripped his designs to planes



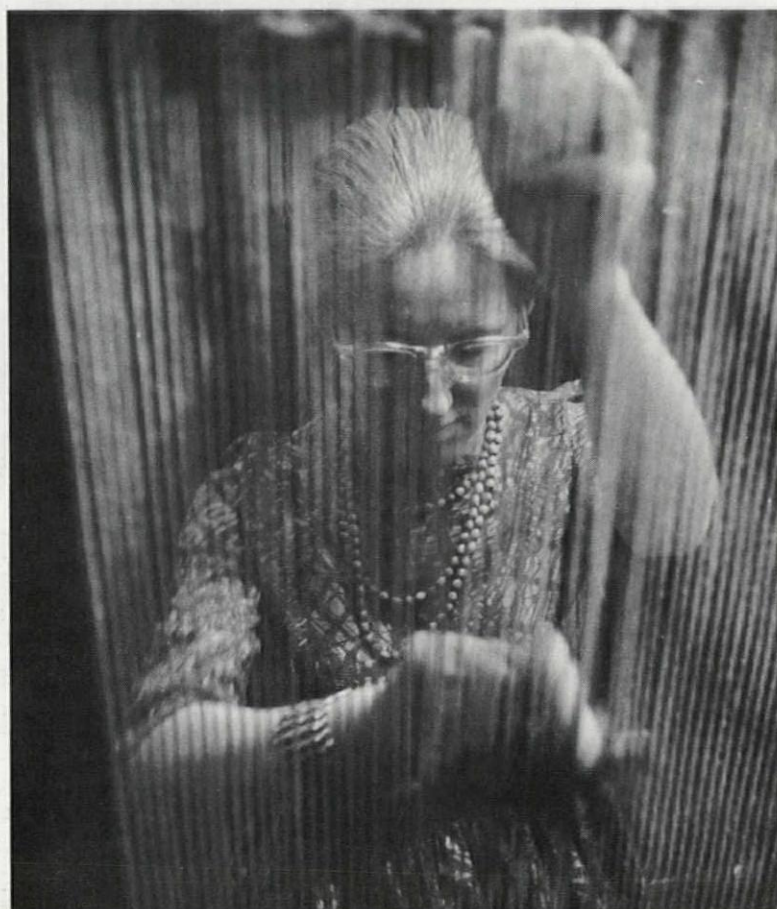


of flat, rich color. Most of his designs begin with natural forms as inspiration and show the signal influence of Matisse's flowing line, Gauguin's strong colors, and Roualt's heavy black outlines.

Yoor's technical contribution to the craft is significant. Rather than weaving from the reverse side of the fabric and watching designs grow in a mirror, as is traditional, Yoor weaves in obverse on a high-warp, or "upright," loom with the face of the tapestry toward the weaver.

Behind the loom (*above*), is a cartoon, which Yoor paints in full size, with a black ground and flames of brilliant red, purple, and electric blue. On the preceding pages one can see, through the warp, a cartoon of a 30-foot dorsal for a Lutheran church, *The Shepherd on the Hill*. On a red-and-orange ground, natural buff-colored sheep graze beneath purple-outlined hills.

The vivid colors and relatively low price of \$50 per square foot seem to appeal to many architects, who are commissioning Yoor's tapestries to enrich their buildings.





The view of the studio (above) gives an idea of its cavernous scale. Mrs. Yoors' sister, Marianne, (right) is seen at work from behind the loom. In traditional studios, the face of the tapestry would be away from the weaver in order to prevent wear and soiling as the hand moves across the fabric. The cartoon behind the loom (across-page) runs horizontally; the tapestry is woven at right angles to it.



Optic Problems of Architects

BY JAMES R. GREGG, O.D.
The author of this article, who teaches at the Los Angeles College of Optometry, was a member of a research team which made a study of over 200 occupations in order to determine optic problems and needs specific to each type of work. The researchers concluded that architects not only have intense and unusual seeing problems, but that these problems are seldom solved. This is because architects understand neither the problems nor what their part is in solving them.

Recent studies of how architects use their eyes revealed that they have surprisingly unusual seeing problems, and that many are working inefficiently and uncomfortably as a result. Some are wearing glasses not suited to their occupational needs; others are in need of optical care. Headache, eyestrain, fatigue, errors, and sluggish work may be the price they are paying for this. They need not, however, suffer such annoyances. Whatever optic problems an architect has can be solved today with new types of lenses and the increased knowledge optometrists have of occupational demands on vision.

One should not be misled by the term "20/20 eyesight." An architect's eyes must focus very precisely at times, then relax and adjust for a variety of working distances. They must perform rapidly and accurately, and they must do it easily, without fatigue.

The term "20/20" refers only to an individual's ability to read letters three-eighths of an inch high from a distance of 20 feet. Most people are able to do this, although lenses may be necessary. If the letter size has to be increased for an individual to identify it clearly, the denominator of the fraction becomes larger: for example, 20/40, 20/60, 20/100, and so on. The larger the second number, the weaker the vision.

A person with 20/40 vision will require letters twice the size of someone with 20/20 vision; someone with 20/100 vision will require letters five times the size. This does not mean that 20/100 vision is five times as bad as 20/20, because other factors must be taken into account. These fractions simply indicate how distinctly a person's eyes see at a given distance, and they express only one of the many skills a person's eyes must have in order to function well. They tell nothing about indirect fields of vision, eye-muscle action, and the ability to see at a close distance. Above all, they do not indicate how much "effort" or nervous energy may be necessary to see objects distinctly, a point that is particularly important for the architect.

Few people can stand the strain of prolonged close-up work without having to wear glasses. Although an architect's distance vision may be perfectly good, the precise and detailed nature of his work may make glasses helpful for work or study, a fact that may have been true for him as far back as his college days or in the early stages of his career. Fine work

on the drawing board must be done frequently from a distance of 10 to 12 inches. This is hard on the eyes. Working at 10 inches requires nearly three times as much focusing power as the usual reading distance. The possibility that this type of work will cause difficulty depends on how often it is done and on the condition of the eyes. Also, this does not mean that an architect's work is damaging to his eyes. The price, rather, is in terms of comfort and efficiency. Blurred vision at close distances, double vision, headache, eye fatigue, frequent loss of place, and loss of interest are familiar symptoms.

Whatever the state of his eyes, an architect should work only under the best lighting conditions: that is, an abundance of general room lighting and additional light directed upon the work area, with no shadows or glare. As a rule, the work area should be three times as bright as the surrounding area. Work should never be done with a bright light aimed directly on the desk or drawing board, while the rest of the room is dark.

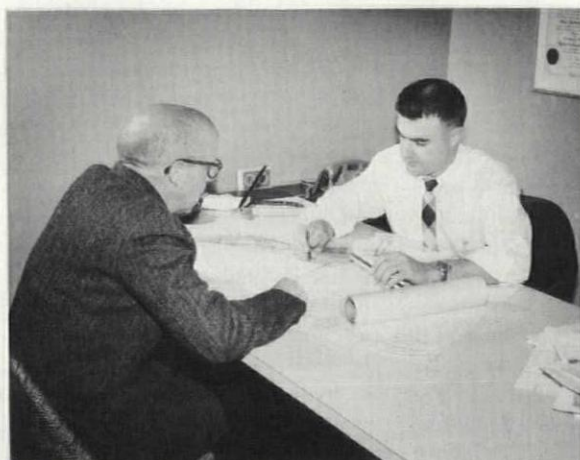
Reading and working with working drawings requires 20 to 30 ft-c of light. This is approximately the amount produced by an uncovered 100-w bulb $3\frac{1}{2}$ to 4 ft away. If a heavy shade absorbs or blocks some light, it may take a 150-w bulb to produce the desired amount of illumination. If the work is extremely difficult, a 50 per cent increase in illumination may be necessary. Eyes should be shielded from glare. No visible light source (open bulb or too bright shade) should be closer than 45 degrees to the line of sight. Soft, diffused, indirect light is far better, since it cuts shadows and provides maximum visibility. It does not matter if the light used is incandescent or fluorescent.

Posture also is important for ease of seeing. Eyes should be equidistant from the work surface and the material should be centered and within easy reach. The surface should be tilted 15 degrees upward, if possible, since this places the work at the proper angle to the line of sight. Brief rest periods every hour can cut down fatigue and lengthen the effective working time. Even eyes can benefit from a "coffee break."

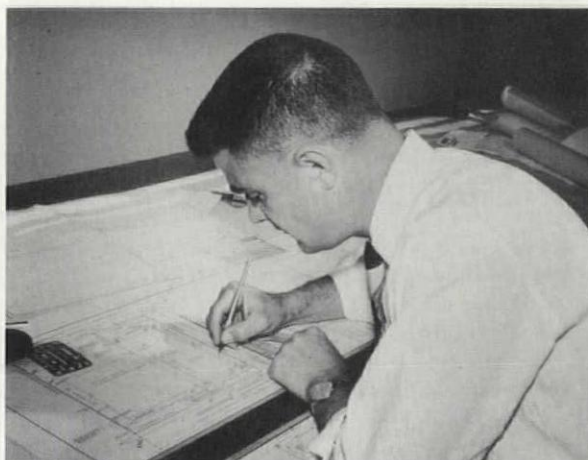
Up to the age of forty, the strain from close-up work is generally relieved by ordinary prescriptions for glasses. For many architects, although they have no other problems with their eyes, this may mean glasses for desk and drawing-board



1



2



3

1 Drawing and sketching is done at an 18-to-20-in. working distance and glasses may be needed. 2 Client conferences require good vision at near, intermediate, and even far distances; ordinary "reading" glasses can be used, although this necessitates removing them frequently when looking at the client. 3 Detailed drawing is done at a 10-to-12-in. working distance and special lenses may be needed. 4 A critical problem is the ability to see the working area beyond the range of bifocals which are usually designed for close viewing only; trifocals or special vocational lenses may be needed.



4

work. For others, glasses alone may not be the answer, since these individuals may be defective in the co-ordination of their eye muscles, which is an important skill in reading and drafting. The eyes follow the lines of the text, pause to fixate, then move on with accuracy and speed. Efficient use of the eye muscles may, therefore, require special training.

Viewing objects at close distances becomes a problem for everyone who is past the age of forty. A single lens prescription will no longer prove sufficient when viewing the wide ranges and the various heights demanded in an architect's work. The eyes need extra focusing power to see at close distances, and the lens necessary for this will blur anything farther than a few feet away. In other words, "reading glasses" can be used only for work that is viewed at a close distance.

The most practical solution to this problem is bifocals, because they permit looking over the working area, across the desk, and around the room. The spectacles need not be removed each time the wearer looks up to see someone or glances more than a few feet away. Bifocals will serve well if worn in time, and if the eyes can still focus sufficiently to see outward to an arm's-length distance or more.

As time goes on, the focusing ability of the eyes continues to lessen and the architect's seeing difficulties become quite intense. Materials viewed at arm's length become a hopeless blur, and any type of desk work—such as working on the drawing board, scanning large blueprints or sketches—becomes very annoying. Bifocals, made for distance and close-up viewing only, will not solve this problem. The difficulty arises because the range of vision, irrespective of the type of lens, becomes less and less.

Results of research indicate that many bifocal wearers are improperly fitted and that only a few multifocal lenses are made to suit the architect's exact occupational needs. But what are these needs? They depend on the individual: his habits, his posture, and his work routine, a topic that is fully discussed in the book by Holmes et al., *Guide to Occupational and Other Visual Needs* (Anderson, Ritchie, and Simon, 1958).

The architect is faced with a great variety of visual tasks—anywhere from detailed work at close distances to casual observations on the construction site. How much time is spent on any one of these visual tasks depends upon job assignments, work load, and just how the indi-

vidual operates. But whatever the frequency or intensity of any part of the architect's work, at one time or another he is confronted with all these various visual tasks.

What might be called "ordinary" reading glasses are generally focused for 16 to 18 inches from the eyes (depending upon the person's arm length and reading posture). They may help the architect greatly in his work: in reading and studying plans, routine office work, perhaps some drawing and sketching that can be done at this same distance. But such a lens prescription will most likely be inadequate for a 10-to-12-inch working distance—for fine drawing, for instance, and other conditions at the desk and drawing board. That is why the architect's lenses must truly be geared to his professional needs and why the optometrist must be informed that the architect works at distances closer than average.

But now the real problem develops, because the architect, in addition to having to work at close distances, must also be able to view more distant objects. A common requirement of his work, for instance, is the need to view objects at intermediate distances (24 inches to arm's length and even farther). Unfortunately, the top of the bifocal lens is usually too weak and the bottom too strong for this intermediate range; as a result, the architect has to move closer to the material in order to distinguish details clearly. Besides, the bifocal section of the lens is frequently positioned too low to permit looking through it at eye-level or above, or to take in a large working area. This is the most annoying optic problem architects face: the need for glasses that will allow them to view objects at varying distances—a sketch at 30 inches, prints or drawings mounted on the wall, material at arm's-length distance, or the multitude of details the eye needs to take in when inspecting a job. It is an annoying problem because ordinary prescriptions are not equal to the task.

There are several possible solutions—trifocals being one. These have an intermediate section just above the bifocal that can be focused for any distance desired (usually taking over where bifocal lenses leave off for focusing outward). Trifocals may be helpful in scanning material on a desk, where papers and plans are usually spread over a wide area. They can also be helpful for viewing wall charts or files at eye-level—in fact, for anything at about arm's length, providing the object is not

too high. Though trifocals do set higher than bifocals, it is still necessary to tilt the head back somewhat to see through the middle section of the lens.

Another solution is to have a bifocal with the top portion focused for arm's length. This provides a big area with which to see the working surface, and is thus better than the trifocal. Although distant objects will appear blurred, it is excellent for desk and drawing board work.

Still another solution is to have a large intermediate trifocal, which is composed of a small window for viewing distant objects, a wide section for seeing at arm's length, and a bifocal at the bottom for close-up viewing.

Not all the optic problems of the architect's work are encountered in the office. Glare, for instance, may become a problem on a construction job, where eyes that are adjusted to indoor brightness most of the day may be irritated by the bright sun. Tints in lenses should be chosen with care: they should generally not be too dark, and should be used only for the purpose for which they were designed.

But the big problem when inspecting building operations is the variety of heights and distances that have to be viewed. Bifocals set too low will make inspection work at eye-level or above difficult, since a backward tilt of the head is required in order to see through them. Set too high, they will make it hard to look downward when walking over difficult terrain or a hazardous construction area. Furthermore, arm's-length viewing of a detail, sometimes overhead, is also required. So the solution will depend upon the need—how often the eyes must be used for unusual visual tasks and how all these tasks can be accomplished with lenses also used for office work.

It is necessary for an architect to know these facts about his optic problems so that when he consults an optometrist he can inform the doctor about the individual habits and the particular visual requirements of his work—requirements the doctor should assess before he makes an eye examination.

Also, the architect must accept the fact that the unique requirements of his work may necessitate special prescriptions. Glasses are only a tool, one of many tools, which help to perform one's work more easily and efficiently—a quality upon which professional success so intimately depends.

Foundation Heave and Multistory Buildings

BY BRAMLETTE McCLELLAND

The problem of foundation heave, rather than the more familiar problem of foundation settlement, has become an important consideration as the design of multistory buildings has evolved over the past two decades. Discussing these changes, and their effects, is the President of McClelland Engineers, Inc., Soil and Foundation Consultants, Houston, Texas. The author's firm acted as consultants for the two buildings reported below.

New to the construction of multistory buildings on compressible soils is the problem of foundation heave, as illustrated in the recent planning of two projects in Houston, Texas: the new 44-story Humble Oil and Refining Company office building, and the new 33-story First City National Bank Building.

These two projects highlight two economic and architectural changes that have brought about major problems in the construction of tall buildings. The Humble Building, which was designed by Welton Becket & Associates, Architects-Engineers, has a tower occupying about 40 per cent of its block, with the remainder of the site covered largely by a plaza raised a few feet above sidewalk level. The First City National Bank Building, designed by Skidmore, Owings & Merrill, Architects, includes a tall office building, also occupying about 40 per cent of the block, with most of the remaining area devoted to a one-story clear-span structure housing the principal banking floor.

Originally, plans for each building included multiple basements beneath the entire block. In one instance, there was a need for extra storage space; in the other, parking space for employees' cars.

Foundation heave, rather than the more familiar problem of foundation settlement, became a consideration because of these basement plans. Modern lightweight construction adds to the intensity of heave that can develop, as described later. Furthermore, the weight differential between a tower and an adjoining low-level structure creates a substantial difference in foundation pressure and thereby increases the seriousness of the problem.

Earlier Construction Methods

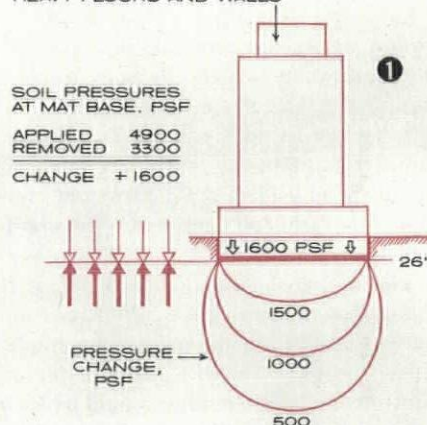
To illustrate the difference between architectural and structural designs of 20 years ago, and those more prevalent today, we can consider a hypothetical building whose design and materials were common about 1940. This assumed structure has a nomi-

nal basement, its walls are of heavy masonry, and its floors are of reinforced concrete 1.

The typical sustained load applied by this type of building to its foundation averages 175 lb for each sq ft of floor space. A 35-story building of this type, with some spreading of the load at foundation level, produces a gross bearing pressure of about 4900 psf. However, the effect of this applied load is reduced by the weight of the soil removed in excavating the basement.

The net effect of the applied load is determined by subtracting the weight of the soil removed in the excavation from the gross bearing pressure of the building. In the illustration 1, the basement is 26 ft deep, for which the average pressure relief, produced by excavation, is 3300 psf. By deducting this figure from the gross bear-

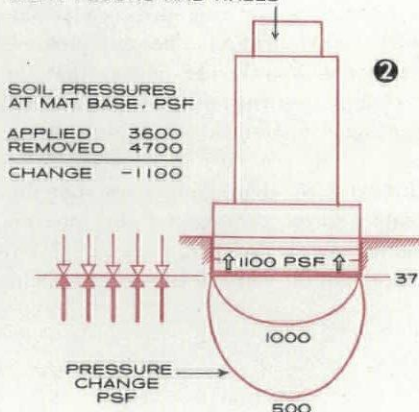
35 STORIES, SINGLE BASEMENT, HEAVY FLOORS AND WALLS



ing pressure of the building (4900-3300), we arrive at a net bearing pressure of 1600 psf.

Such a substantial pressure increase beneath the wide foundation mat will affect a mass of soil extending deep beneath the mat itself. Assuming the soil to behave elastically, we compute the distri-

35 STORIES, MULTIPLE BASEMENTS, LIGHT FLOORS AND WALLS



bution of pressure by use of a theoretical formula known as the Boussinesq equation. Results of such computations are given by the equal-pressure curves shown 1.

This illustration shows that, for a mat width of 150 ft, the soil 150 ft below the bottom of the foundation will experience a pressure increase of 500 psf. Settlement of the building resulting from consolidation of foundation soils can be expected. Two factors govern the magnitude of such settlement: (1) the pattern of stress increase, and (2) the compressibility of the various soil layers in the affected zone. Computations to determine the effect of these factors are part of the responsibility of the soil engineer.

Effect of Design Changes

To illustrate the effects of some of the evolutionary changes in building construction during the past two decades, a structure of the same shape and height as the one discussed above is shown 2. It differs, however, in that panel walls have replaced masonry, and floors are lightweight concrete fill over metal deck rather than reinforced concrete.

The average foundation load per sq ft of floor area in this case is 120 lb, as compared to 175 lb in the previous example. Thus, the gross bearing pressure for an equivalent modern building would be 3600 psf as compared to 4900 psf for the older building.

A second difference likely to be present in the newer building is that of greater basement depth, to accommodate occupants' cars. If three basement levels are to be provided, the required excavation depth will be about 37 ft, and the average load removed will be about 4700 psf, as shown 2.

Subtracting this unit excavation load from the gross bearing pressure (3600-4700), we arrive at a net bearing pressure of *minus* 1100 psf. This means that the long-time experience of this structure will be upward movement — or foundation heave.

Lines of equal pressure show that this negative effect can extend far into the ground 2. If the building rests on a 150-ft square mat, the soil 120 ft below the foun-

dation will experience a net pressure reduction of 500 psf.

A pressure reduction of this magnitude, occurring uniformly beneath a structure, does not necessarily pose a serious problem. Modern design forms, however, can intensify the problem by causing significantly nonuniform soil pressures.

Unequal Soil Pressures

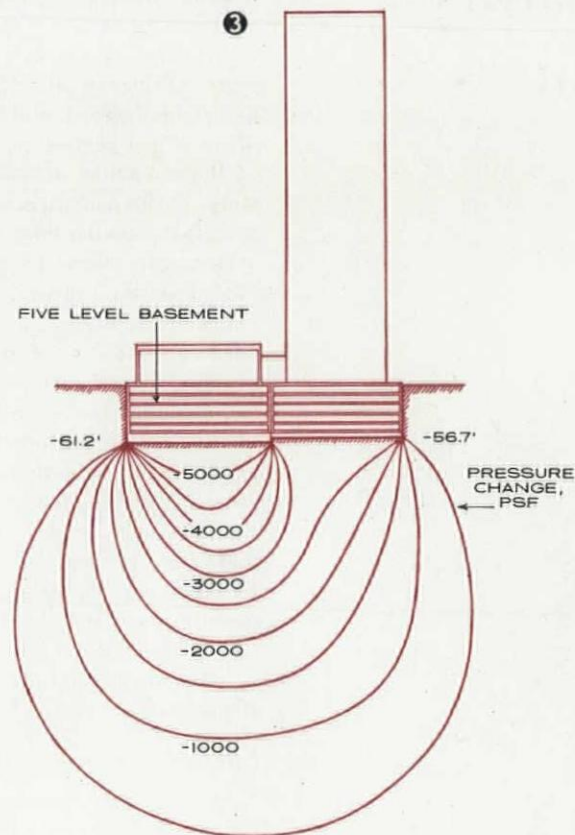
The First City National Bank Building design, for example, involves a tall, lightweight structure in the form of a slender tower, which is joined to a contrasting low-level structure. A deep, five-level basement under this building, as originally planned, would more than balance the tall tower, and even greater negative pressures would be exerted under the low-level wing. These pressures are plotted 3.

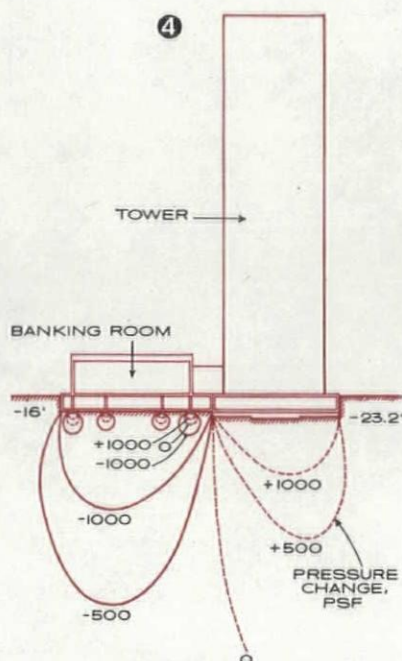
For this condition, long-term upward

heave of the tower section would be about 2 in., while the upward movement of the adjoining low-level structure (the banking room) would be approximately 13 in.

As a result of these findings, the original plan of constructing five basements was abandoned, and an alternate design with one basement level was selected 4. In the final structure, foundation heave has been limited to a negligible amount. Naturally, elimination of basement parking dictated the provision of separate car-storage facilities.

Original plans for the Humble Oil and Refining Company office building posed a similar problem. One of the designs considered 5 included three basements under the plaza as well as the tower, and the differential movement between these units would have been approximately 5 in. Because of difficulties anticipated in provid-





ing a watertight connection between lower basement levels across a moving joint, this plan was not recommended.

Ultimately, provision was made for use of multiple basements only beneath the tower and a single basement beneath the plaza. In the final design 6, the expected differential long-term movement is in the order of 1 to 1½ in.

Other Compensations Needed

Of course, the effects of various soil pressures involved in excavation and construction have been simplified here for clarity of presentation. Actually, detailed analyses of foundation movements included consideration of variations in ground-water level, effects of adjoining structures, and other factors. Results of these analyses led to the recommendation of several construction procedures to compensate for the expected movements. For example, it was suggested that the two sections of each building be connected by simple spans to spread the differential movement across one panel. It was also considered a matter of discretion, in the case of the banking unit of the bank building, to pour the terrazzo finish of the main floor after all other principal dead-load elements of the structure were in place.

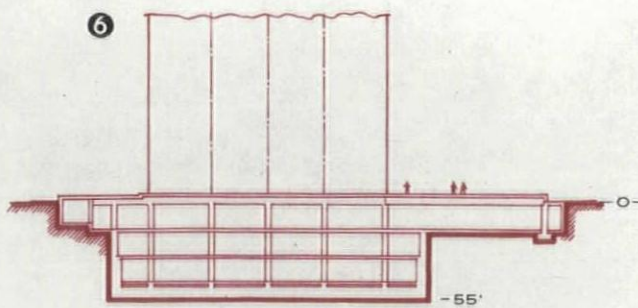
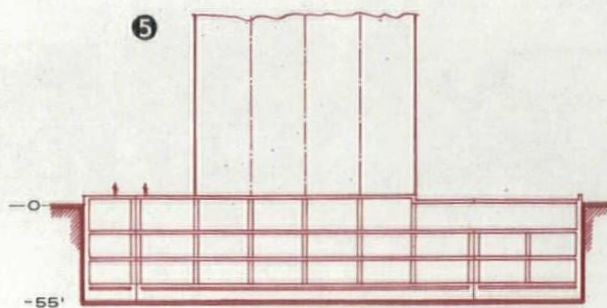
Consideration was given, as well, to the fact that the extended drought in the Houston area during the past ten years had depressed the water table below the level to which it may be expected to rise when precipitation is above normal. Thus, although the water level was found to be 20 ft below ground surface, tests indicated

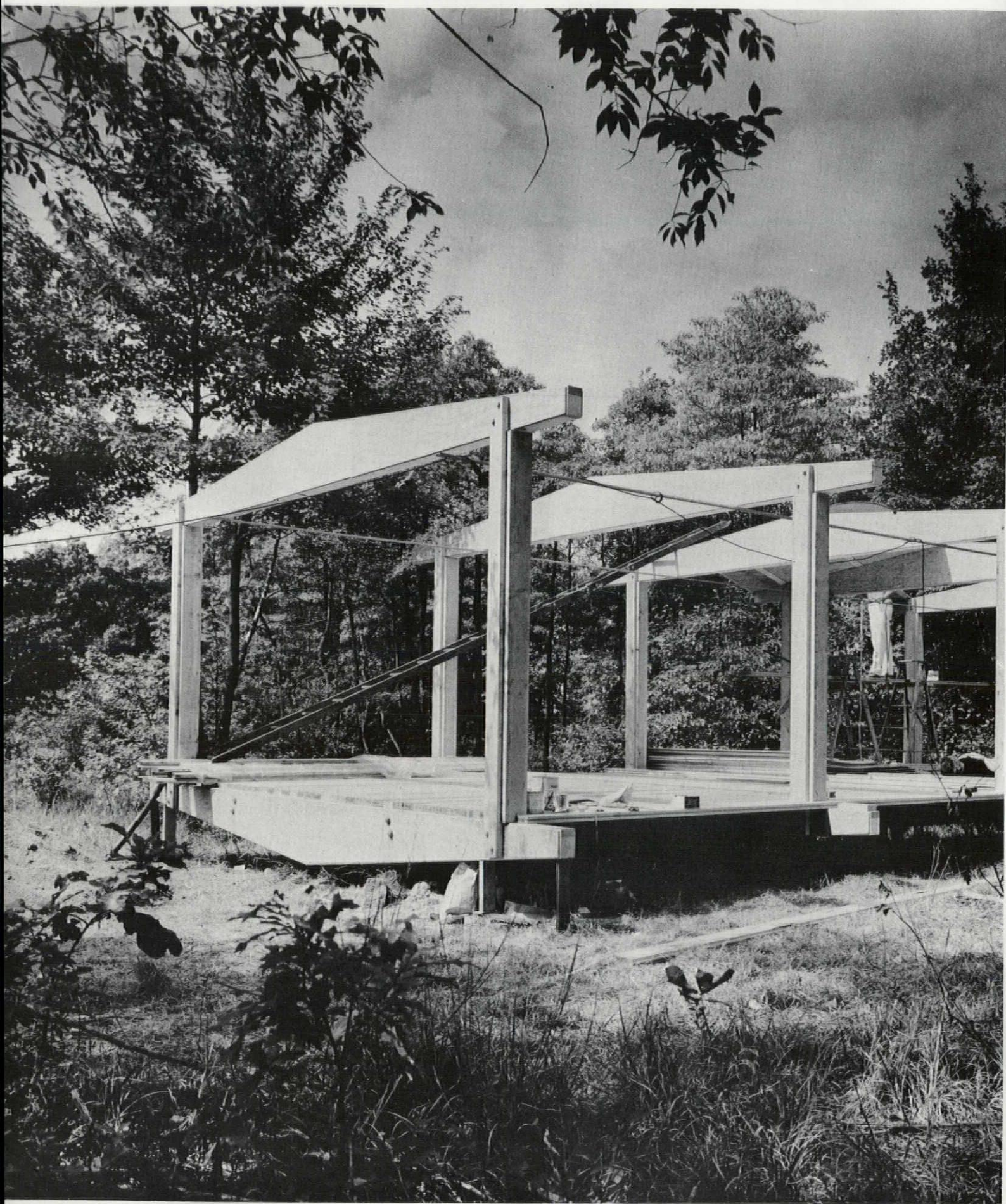
that it had risen appreciably in the last 18 months. The conclusion was drawn that an additional rise of approximately 5 ft should be prepared for, making it necessary to design foundations and waterproofing for hydrostatic uplift produced by a water level at 15 ft.

Special laboratory tests to determine volume-change characteristics of the foundation soils were made to support the studies that have been described. Also, as a matter of routine, additional tests were made to aid the structural engineers in establishing foundation designs and construction procedures. These included the determination of allowable bearing capacity, lateral earth pressures on excavation sheeting, de-watering procedures, and the like.

However, foundation heave remained the major soils problem in terms of its influence on the designs for both buildings, and the solution of this unique problem was an important soils engineering function. Although many people, including soils engineers, have come to think of soil and foundation investigations as separate activities, success in the instances described here was achieved by the closest co-operation among the three groups of specialists charged with the planning of construction. Each found that his efforts were closely dependent on the work of the other two.

Structural engineers for the Humble Building were Stacy & Skinner, of Los Angeles; structural engineer for the First City National Bank Building was Robert J. Cummins Company, of Houston.

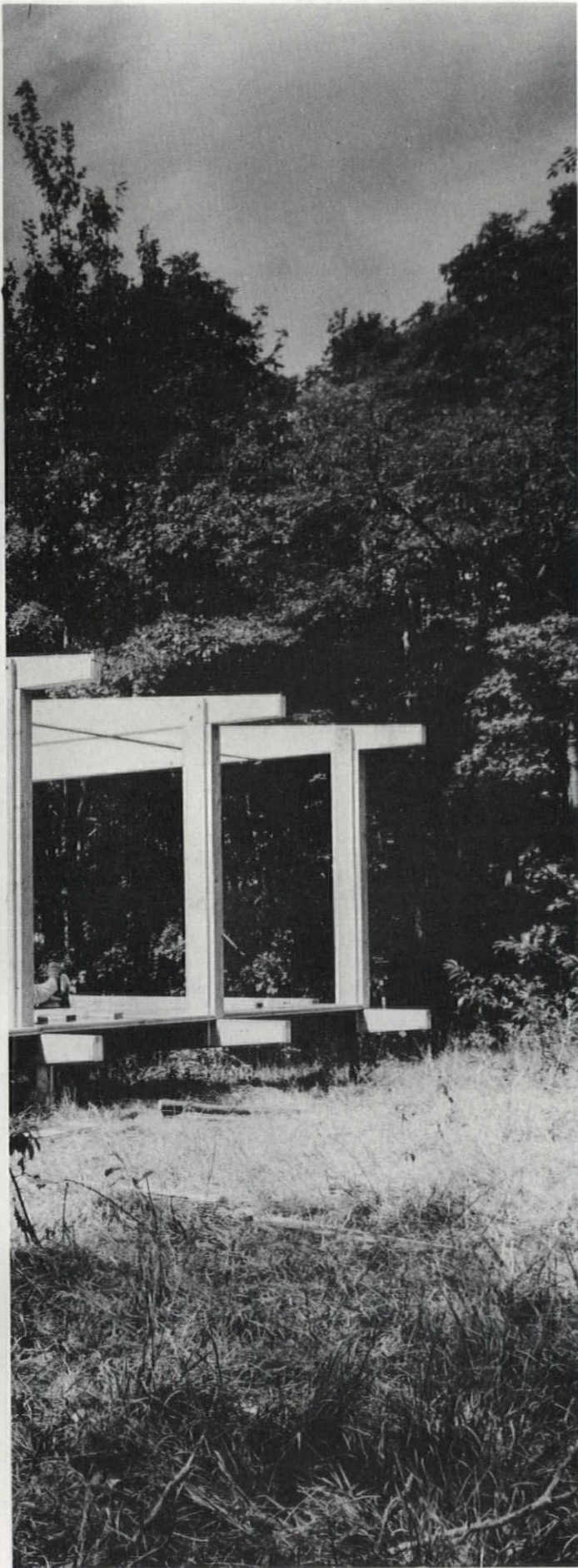




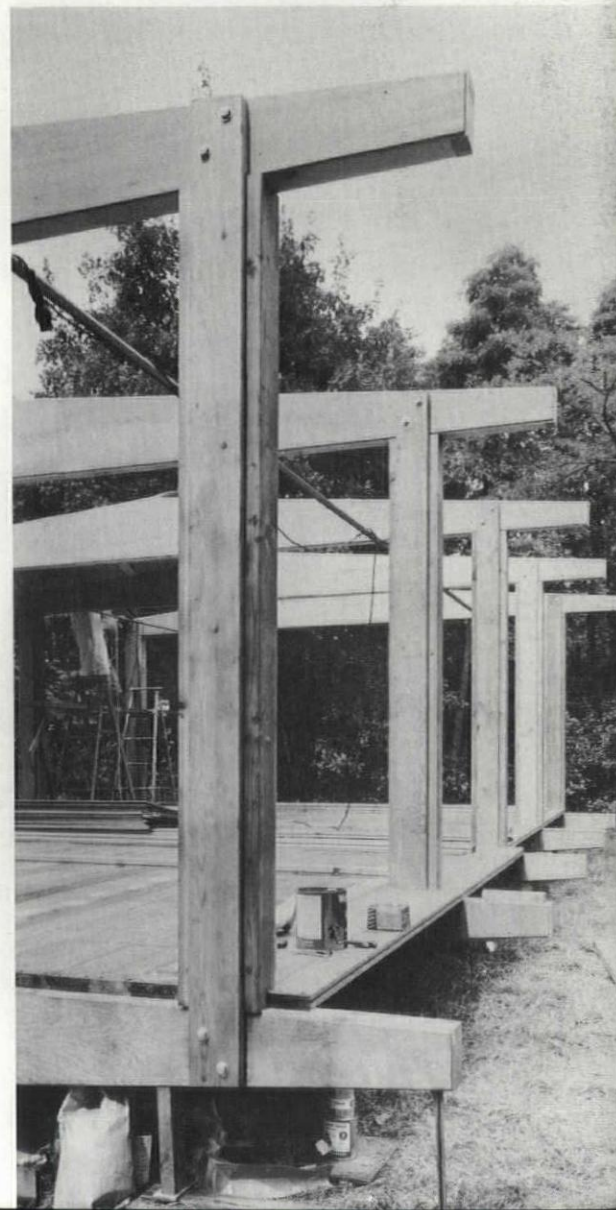
PROTOTYPE PREFAB STRUCTURE

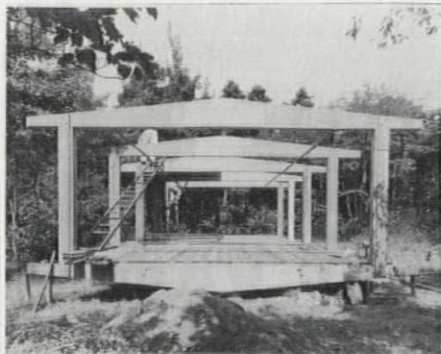
A prefab system for light construction—its heaviest component, the truss, weighs less than 130 lb—provides a 320 sq ft, two-bay nucleus with a concrete pier spacing of 8' x 16'. Of special interest is its framing system and method of erecting roof, wall, and partition panels.

Alfred Bush, research consultant with a special interest in house construction, has recently completed a prototype structure for a completely prefabricated summer residence or light commercial building—such as a motel, roadside restaurant, or shop. Nucleus of his system is a two-bay



Photos: Michael Miller





1

1 Framing system provides 7' floor-to-ceiling height and approximately 16' between exterior columns. 2 Early roof panels in place. 3, 4, 5 Sequence of springing roof panels into position with aid of "T-helper." 6 Space between panels at roof peak, forming ventilator and skylight, is closed by hardboard strip. 7 Final roof surface is two-coat white acrylic finish. 8, 9 Exterior wall panels were erected by same method as roof sheets. Windows are of the sliding type having a 1" x 2" frame with recess to carry $\frac{1}{2}$ " x $\frac{3}{4}$ " sash.



2



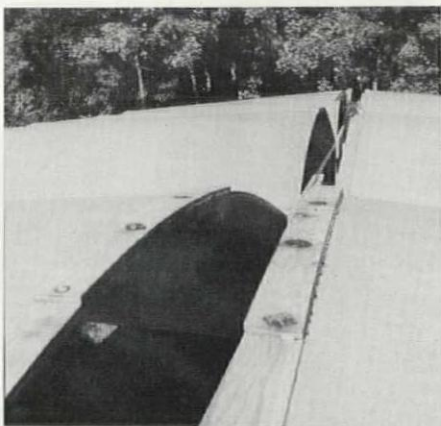
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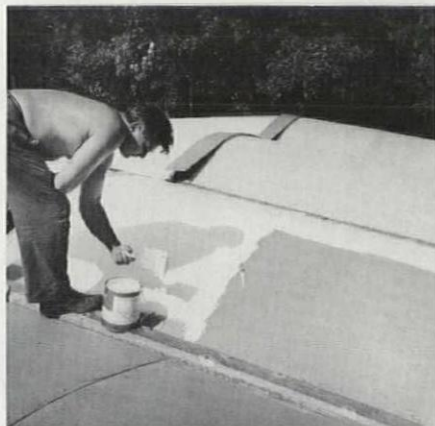
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6



7



8

unit comprising 320 sq ft that can be expanded in two directions. Bush's present structure, built for his own use as a studio-workshop at Croton-on-Hudson, New York, demonstrates the application of stressed hollow-box trusses and the varied uses of hardboard sheet for vertical and horizontal sprung applications—both inside and outside.

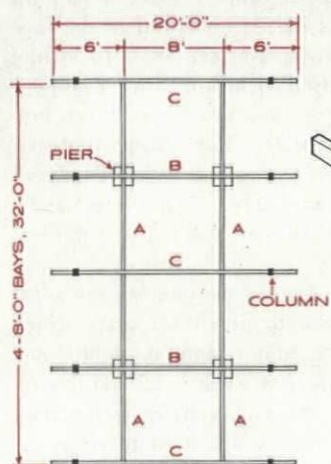
Two days were required by Bush and an associate to erect the truss and column framing of the four-bay studio; a trained

crew could no doubt reduce this time significantly. Floor trusses are cradled in chases cast in concrete piers; interlocking, pin-fastened, and bolted connections are found at various locations. Prior to erection, each truss was buttered with an elastic epoxy calking compound at points of truss intersection and where the trusses meet the piers.

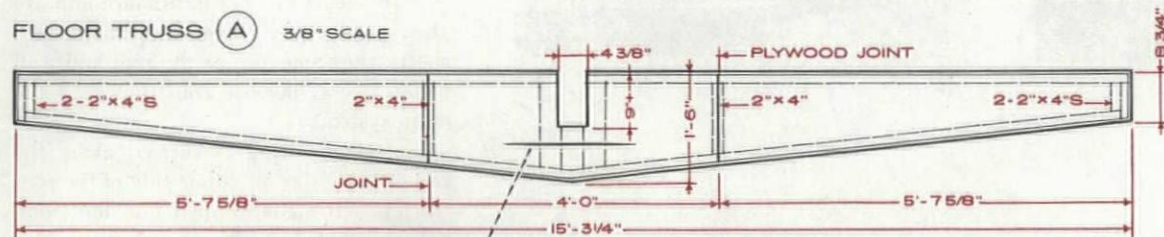
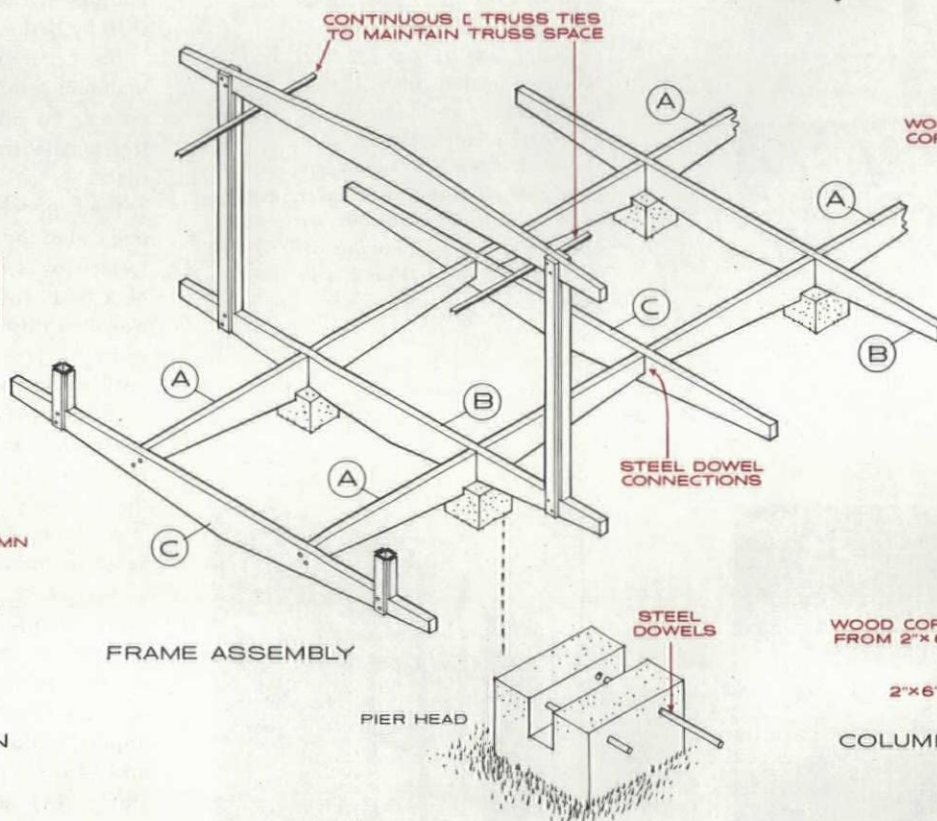
Predrilled floor members of 2" x 6" T&G fir, screw-fastened to floor trusses in an alternating pattern of 8' and 16' lengths,



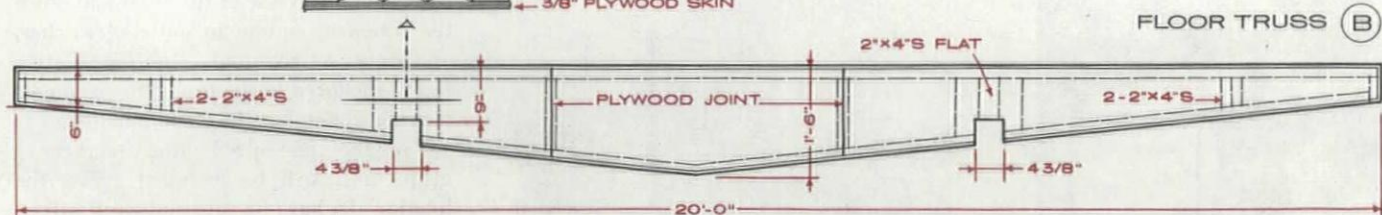
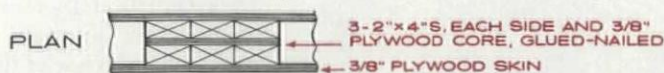
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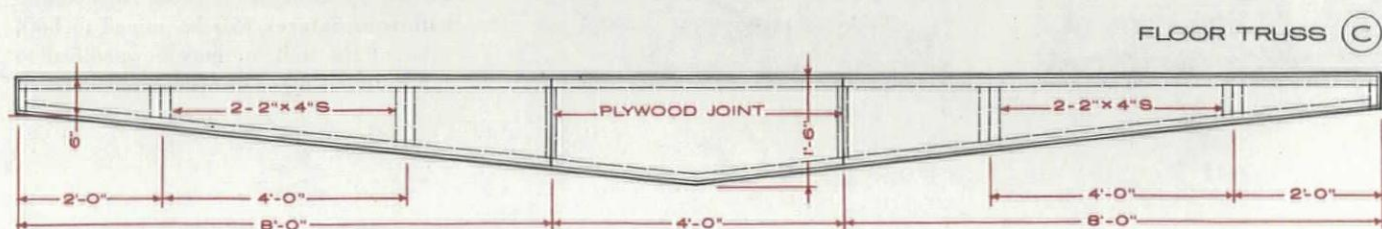
FLOOR TRUSS PLAN



FLOOR TRUSS (A) 3/8" SCALE



FLOOR TRUSS (B)



FLOOR TRUSS (C)



1

1 Trusses on concrete piers establish elevation of floor at about 2' above ground level. 2 A stair prefabricated of 2" x 8" stringers and 2" x 12" treads is bolted to end of floor truss and to cast-in-place concrete pier. 3 Full-height closets are hung outside of framing to conserve floor space. 4 Prefab windows are fitted into place in arches under edge of roof. 5 Partitions are also sprung into position in similar manner to roof and wall panels.



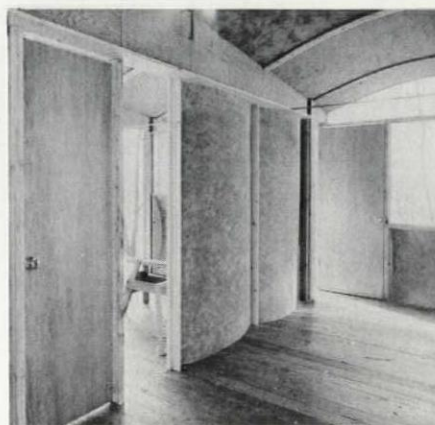
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3



4



5

serve as top tension members of a combined floor and truss T-section. In this manner, end and center loads of the hollow-truss bents were balanced and carried to the piers.

The identical columns were readily bolted in place, since they were match-template drilled with the trusses and could thereby be located in any position.

Steel channel tensile ties, $\frac{1}{2}$ " x 2" x $\frac{1}{8}$ ", maintain a top roof truss spacing of 8' on center. To insure exact peak spacing, a top tensile tie wire was turnbuckled in place.

Roof panels were installed by lifting one end of the hardboard sheet into a joint formed by a batten anchored to the face of a roof truss. The center of the panel was then raised by means of a "T-helper" while the free edge was forced down into position on the face of the opposite truss. Stress created by removal of the "T-helper" causes the panel to remain in place. Lastly, a batten plank was applied to complete the assembly.

At the roof peak, the panels were separated in order to provide a space which serves as ventilator and skylight when open. Reinforced sheets of hardboard, fastened at the arch centers and sprung at the truss ends, are used to close the openings. Four types of roof coating were applied to the panels: (1) a one-coat gray alkyd base material; (2) a two-coat white vinyl; (3) a two-coat white modified epoxy; and (4) a two-coat white acrylic.

Wall sheets are $\frac{1}{8}$ " hardboard and are also sprung into place. Insulation-board sheets, the same size as the roof and wall panels, were likewise constructed by the same system.

Electrical wiring is carried along the two channel ties on either side of the roof trusses. Wiring is clipped into the channels and sealed in with a continuous cover plate. Outlets and sockets pierce the plate at desirable intervals. Extensions run along the underside of the truss and down the columns, ending in outlets, switches, or fixtures as required. Fluorescent strip lights anchored to the top of the channels provide general ceiling illumination.

For the mass-production market, a utility unit will be installed across the interior of a bay; its vent and stack will be carried up through the peak. Kitchen and bathroom fixtures will be joined to both sides of the unit, or may be modified to suit different types of occupancy.

BY LELAND W. BEAL

An acoustical problem resulting from the testing of jet airplanes, and the methods of solving it, are described by the Manager of Cellular Steel Floors and Deck, The R. C. Mahon Company.

The advent of the jet plane, and more specifically the first practical operation of a supersonic air vehicle by a military service, has brought with it acute sound problems that have never before been confronted by designers of buildings. Those who have been responsible for the planning of terminal facilities, hangars, and related service and maintenance structures have become aware of the additional acoustical requirements that must be reviewed in the selection and method of assembly of related building materials.

The Convair Division of the General Dynamics Corporation, under contract with the United States Air Force to produce, test, maintain, and modify the supersonic B-58 bombers, was confronted with this situation. A B-58 is powered by four jet engines and has a maximum operational sound-output characteristic of 140 db, with variation in frequency from 125 to 4000 cps. Performance tests, of course, require operation of the plane under various conditions on the ground at the point of manufacture. Tests carried out on parking ramps adjacent to the plant in the open air reduced efficiency of workmen and technicians involved in other projects in the immediate area. Not only were working conditions made difficult but residents located in nearby areas were subjected to objectionable noise levels which limited operations primarily to daylight hours. It was thus decided to construct run stations which would completely encompass the airplanes to minimize passage and dispersion of sound.

Shelter Requirements

A run station was therefore needed that would meet the following requirements:

- 1 Minimize transfer of jet-motor sound to adjacent operational areas where other planes are likewise being tested, maintained, or modified.
- 2 Absorb a maximum amount of sound at all frequencies in the operation or test cell itself.
- 3 Completely house the planes so that tests could be carried out in all types of weather at any time of day or night.

4 Include materials that could be prefabricated, shipped, and assembled in any part of the world under any climatic condition.

5 Provide maximum fire resistance between test cells.

6 Provide a structure which would require a minimum of maintenance.

7 Allow for exposed fasteners to be welded both inside and outside the structure, to prevent any small parts from being sucked into the powerful jet engines.

8 Provide a structure to be erected as rapidly as possible to keep in step with the B-58 production program.

9 Keep cost of building materials and assembly method economical and competitive with other modes of construction.

Six special run stations were built, each divided by a center partition to accommodate two planes simultaneously. The important consideration was to determine which materials would most satisfactorily suit the acoustical requirements. Various types of building materials were assembled in different ways and acoustically tested to develop a method of construction that would meet the requirements specified.

The characteristics required of a sound-absorption barrier are the reverse of those needed for minimum transmission. Maximum weight is required for attenuation of sound through a material, while a lightweight porous substance is desirable for purposes of sound absorption. Combinations of thin-gage steel, gypsum board, and glass-fiber pads for walls, doors, and roofs best fulfilled the building requirements, and affected an approximate reduction from 140 to 100 db in the sound level created by the engines of a B-58.

Structural Details

Exterior walls are composed of 18-gage, ribbed-steel sheets faced on the inside with a 1" thickness, or two ½" thicknesses, of gypsum board, and a 4"-thick glass-fiber pad of 2¼ lb density. The interior face of the pad is covered with a bonded glass-fiber/neoprene mat to prevent filtering or sucking in of glass fibers by the airplane engines. The inner face of the wall is 1"-deep, ribbed 20-gage steel, with 20 per cent of the flat surface perforated to take maximum advantage of the sound-absorption qualities of the assembled panels. All

Controlling Jet Noise



of the steel material received a shop coat of baked-on enamel. Laboratory tests indicated that walls so constructed developed a noise-reduction coefficient of .85, and an average attenuation or transmission loss of 41 db over the complete frequency range.

The removable interior partitions are similar in fabrication and assembly. Interior cores consist of a 4"-deep ribbed-steel deck placed vertically, with 1" of gypsum board attached to one side. The 4" glass-fiber insulation and perforated-steel surfaces are mounted on both sides. Inner faces of run-station doors are covered by 4" glass-fiber mat and 20 per cent perforated steel.

A 6", 18-gage, long-span type steel deck was used for the roof. Vertical webs of the ribbed deck are perforated with $\frac{3}{8}$ "

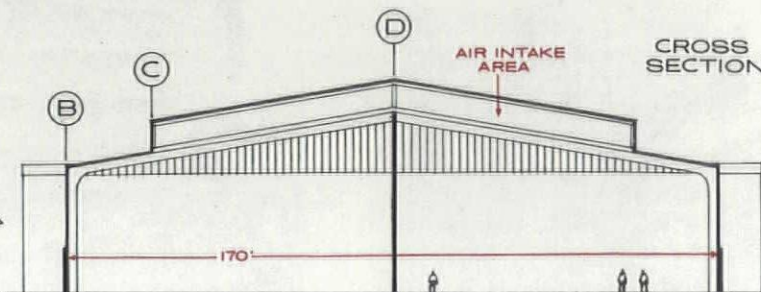
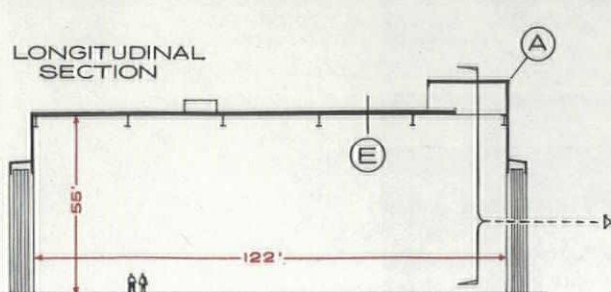
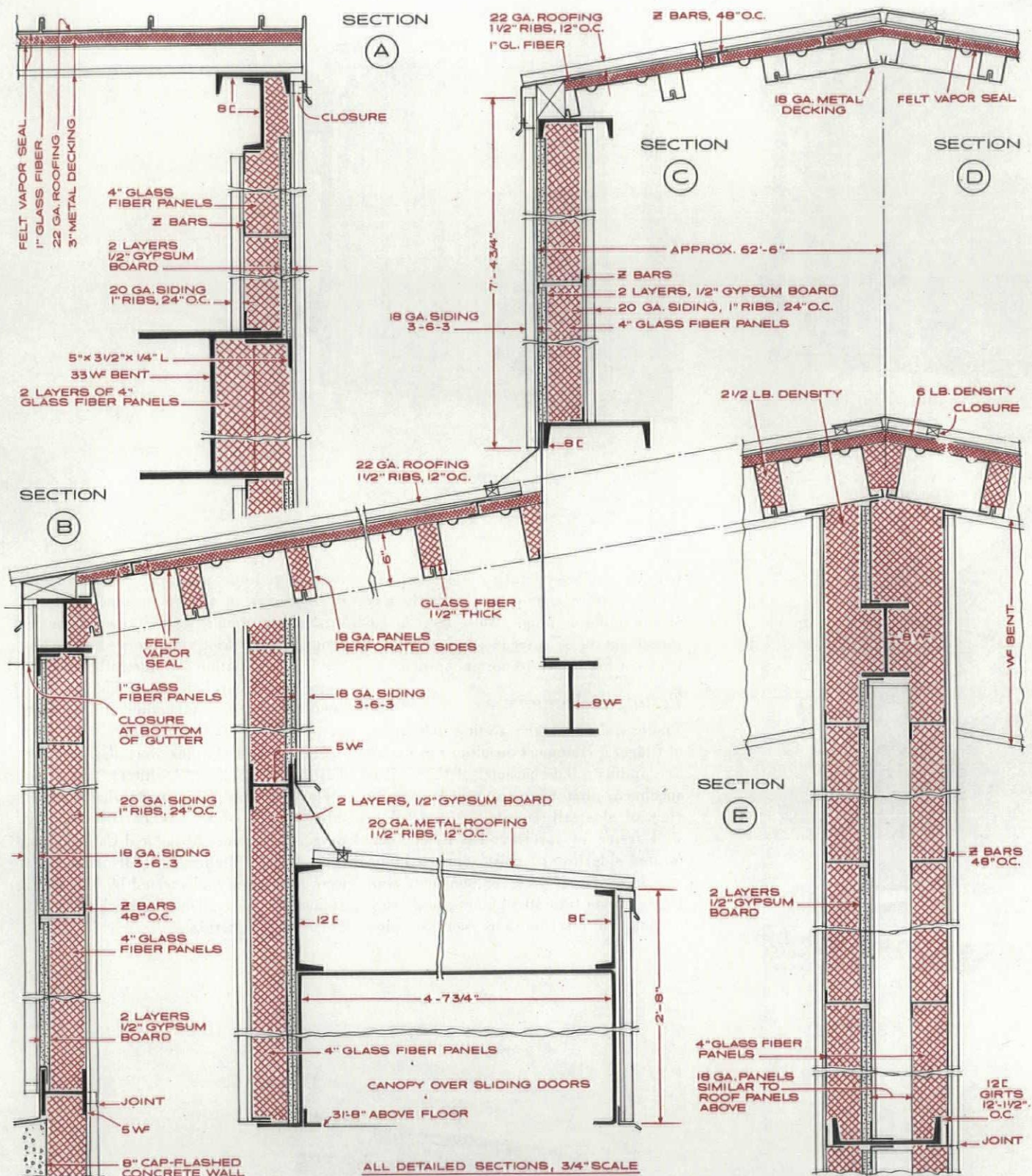
holes over 10 per cent of the surface. Glass-fiber pads, of $2\frac{1}{4}$ lb density, were inserted in the $2\frac{3}{8}$ " cavity between webs with chairs to isolate them from the perforated surface. The glass mat is also faced on each side with a neoprene surface. Similarly, because of the danger of foreign material being sucked into the jet engines, a tar-and-gravel roof was not permitted on the structure. Z-bars were welded to the basic long-span deck and perpendicular to the spans. Hardboard insulation was placed between the Z-bars with a covering of membrane felt. Galvanized vertical ribs, $1\frac{1}{2}$ " deep and 1' on center, were welded to the Z-bars with the ribs of the deck parallel to the slope of the roof. Laboratory acoustical tests indicated a noise-reduction coefficient of

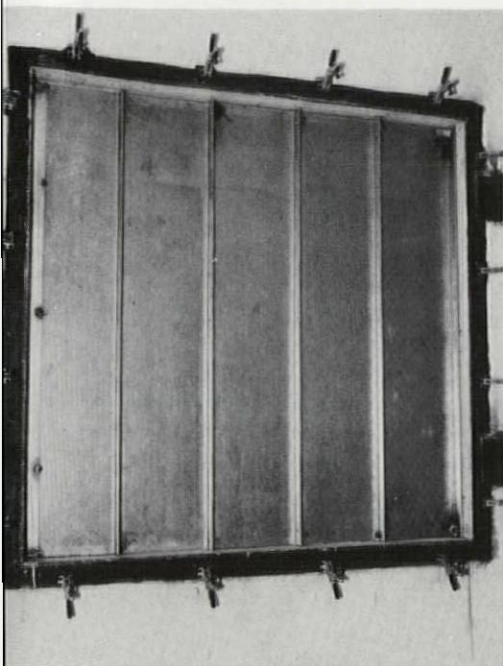
.65, and an average sound-transmission loss of 40 db.

Acoustical Summation

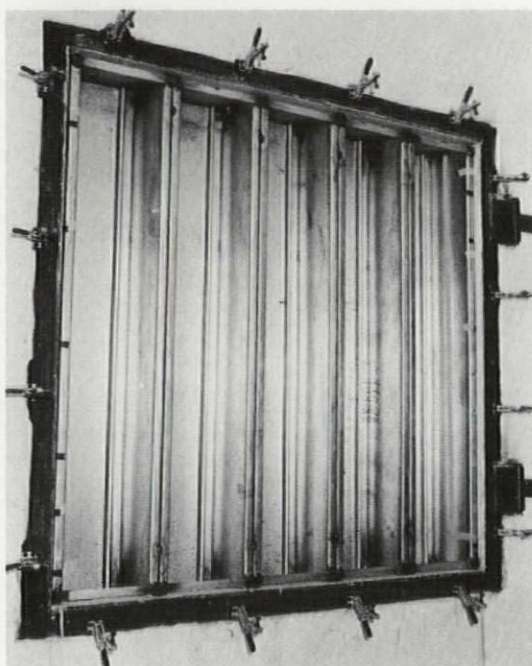
It will be observed that the 40 db sound loss for the roof and the 41 db sound loss for the walls do not completely kill the total 140 output of the airplane. However, the 140 db condition occurs at only two locations in relation to the airplane, and those on lines 130 degrees from the nose of the plane. Further, this maximum sound output only prevails when the motors are producing full power.

Building these run stations permits air technicians for the first time to work in areas of aircraft testing without the ear protection formerly required. Now, only those persons employed in the same space

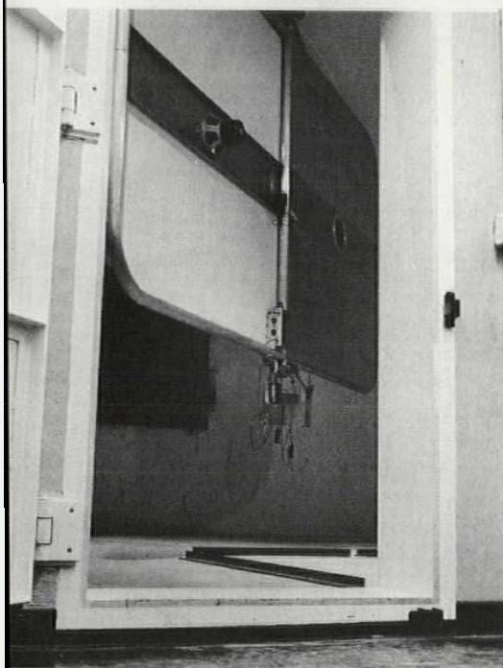




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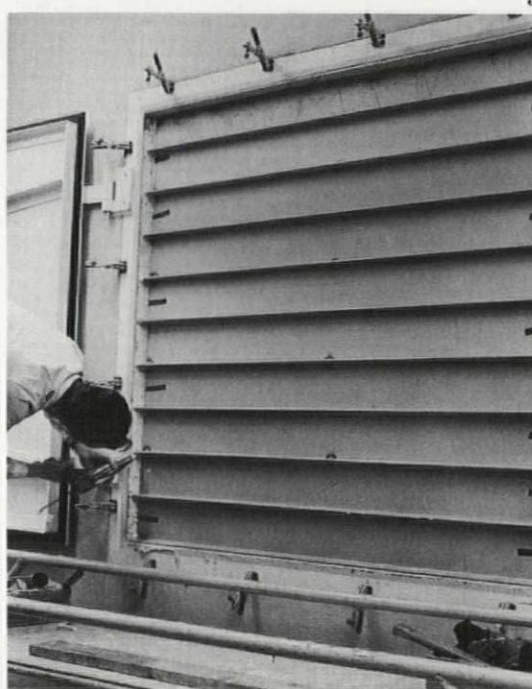
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5

with the engines operating under test conditions require some protection in the way of ear muffs or plugs. Noise level in adjacent spaces is so reduced that it is no longer a hindrance to normal speech.

Testing Laboratory

Photos taken at the testing laboratory of Geiger & Hamme, Consultants in Acoustics, indicate the character of the various specimens that were examined: interior view of sidewall sample as installed in wall frame of reverberation room (perforated side toward noise source) 1; inside face of roof-deck component in wall frame previous to attenuation test 2; view of door to reverberation room showing

rotating reflector vane with amplifiers and microphones in the foreground, and reverberation room wall frame in background 3; exterior view shows author observing installation of sidewall panel in frame 4; researcher makes final adjustment of exterior connection of roof-deck sample 5.

The six run stations were designed by Turnbull Associates, Architects and Engineers, Cleveland, Ohio, and Dallas, Texas; laboratory testing was carried out by Geiger & Hamme, Acoustical Consultants, Ann Arbor, Michigan. Walls and roofs were fabricated and erected by The R. C. Mahon Company, Detroit, Michigan, and Torrence, California.

Little-Known Uses of Plastics

BY RALPH W. HASTINGS
AND JOHN R. DANNER

The addition of pastics to nonplastic objects, for building products of improved quality, is a rapidly expanding part of the plastics industry. This use of additives—polyvinyl acetate and polyvinyl alcohol in the form of resins, solutions, and emulsions—is discussed here by the Chief Engineer and Technical Service Representative, respectively, of Shawinigan Resins Corporation, Springfield, Mass.

In discussing plastics used in building construction, one seldom thinks of products other than the brightly colored, form-shaped objects that serve a variety of practical purposes—polyester-faced blocks, high-impact polystyrene light fixtures, foamed insulation, polyester translucent panels, and polyethylene film moisture barriers. Rarely do resins, powders, or emulsions come to mind. Yet the practice of adding plastics to nonplastic objects to increase product properties is a substantial and rapidly expanding market that influences virtually every phase of construction.

Some areas in which these unseen and little-known plastic additives have already become indispensable are roof coatings, joint cements, dry-mix cement-based paints, bonding agents, mortars and grouts, and underlayments and fill coats. It is our purpose here to examine the use of the plastics—polyvinyl acetate and polyvinyl alcohol—that are added in the forms of resins, solutions, and emulsions to these products.

Roof Coatings

Roof coatings, in general, serve to improve the appearance of a building, to reflect heat, and to hold stones in place on a gravel roof. They are especially popular in Southern states, although their use is now spreading throughout the country. Of the two main types, paint and cementitious, we shall discuss the cementitious coatings.

Good adhesion to a variety of substrates is of prime importance in cementitious roof coatings. Polyvinyl alcohol as an additive to the coating has been demonstrated to greatly improve its adhesion. In Florida,

for example, it was once common to recoat roofs every six months. With coatings containing polyvinyl alcohol, however, there are jobs more than two years old that have not required recoating. Additional evidence of improved performance was seen during last fall's Hurricane Donna, when Florida roof coatings containing polyvinyl alcohol stood up to high winds and driving rains significantly better than other roof coatings.

The superior adhesion in roof coatings properly formulated with polyvinyl alcohol is the result of two actions: (1) the mechanical bond is stronger because the plastic additive works its way into the interstices of the substrate, and (2) a chemical bond is formed between the polyvinyl alcohol and the substrate.

There are examples where the adhesion to the substrate is stronger than the cohesion of the substrate itself; attempts to chip or pry off the coating alone have resulted in dislodging bits of the substrate before the coating's bond has broken. Because of this exceptional adhesion property, one commercial company gives five-year guarantees of its roof coatings. There are more than 10,000 roofs containing polyvinyl-alcohol resin in the South and Southeast that have been completely satisfactory.

These roof coatings, which are mildew resistant, can be applied to low-pitched gravel roofs, to both glazed and unglazed tile, to precast cement tile, and to cement-asbestos shingles. The result is a reflective roof coating of higher quality and greater durability than has been possible with coatings that do not contain the polyvinyl-alcohol resin additives.

Coatings with the plastic additive are applied, the same as others, by spray equipment that usually includes a rig with pump, compressor, pressure pot, hold tank, and double-hose line out to the pole gun. Costs of these roof coatings will depend on local wage rates and other conditions, but the range is usually from \$6 to \$10 per 100 sq ft.

Joint Cements

Joint cements, used in the building industry for dry-wall construction, consist of a resin binder compounded with in-

expensive, inert fillers or extenders. Joint cements are available in either the dry-mix or paste-type form.

Casein is a binder frequently used in dry-mix compounds; however, results of field work indicate that powdered polyvinyl-acetate emulsions offer considerable promise as a replacement for casein. Adding polyvinyl acetate improves the working properties of the formulation, overcomes the putrefaction problems associated with casein, and yields a borax-tolerant system. The slightly increased raw-material costs of formulations based on powdered emulsions appear justified by the improved product characteristics.

Paste-type joint cements currently on the market utilize either polyvinyl acetate or styrene-butadiene latices. Advantages of the paste-type over dry-mix include time saved in mixing (and thus in labor), lower loss of material, and a can life of more than six months. Polyvinyl-acetate joint cements exhibit the important properties of adhesion, lack of shrinkage, and sandability. They have shown good workability in an automatic taping machine, good handling properties under the knife, can stability, and flexibility.

As far as cost is concerned, resin-containing cements meet the industry requirements of 5¢ per lb or less. Because 75 per cent of construction today is dry wall, and an average of 250 lb of joint cement is required for each house, the future market appears to be excellent.

Cement Paints

A cement paint can be defined as a water-diluted paint in which portland cement is the primary binder. (A binder is any material that promotes adhesion between inert particles.) Both one-package and two-package cement paints are now used, each employing a secondary binder, which may be polyvinyl acetate or polyvinyl alcohol.

The advantages of a secondary binder in a cement paint are threefold: (1) the checking or cracking that would normally be experienced upon curing of a cement film that did not contain a resin binder is eliminated; (2) adhesion of the cement paint containing a secondary binder is substantially upgraded; and (3) the

cement-paint film containing a secondary binder will be a hard cohesive film that is virtually water-impermeable.

Cement paints containing polyvinyl acetate or polyvinyl alcohol are characterized by their ability to dry to firm, tough, abrasion-resistant coatings even under conditions of low humidity, as compared to the crumbly films deposited by conventional cement paints under similar low-humidity conditions. Even thick films are shrink-resistant and display excellent adhesion to a wide variety of surfaces—including old cement, cinder block, glass-fiber insulation, gypsum wallboard, cement asbestos, plate glass, and metal. Water resistance ranges from good to excellent, depending upon the conditions of cure, the quantity of resin present, and the thickness of the film that is applied.

Cement-paint formulations can be mixed with water to yield any desired consistency—a smooth paste for troweling, or a liquid for brushing or spraying. Cement paints can be used as fill-coat primers for stucco, cinder block, concrete block, or other masonry surfaces, to provide a firm, uniform base suitable for top coating. They can also be used as a finish coat themselves, in which case limeproof colors such as those normally used for cement may be employed.

These paints withstand hydrostatic pressure, thereby providing good waterproofing; they have also exhibited excellent weatherability. The paints form a hard coat that can be nailed; when struck with a carpenter's hammer, the coat will dent but not crack or shatter.

Generally, the cost of cement paints (labor included) is about $1\frac{1}{2}\text{¢}$ per sq ft.

Underlayments

Underlayment compositions and cement-patching compounds differ primarily in the size of the aggregate used with the cement and sand. An underlayment, as the term implies, is a leveling material applied to an existing floor so that a flexible tile or linoleum can be applied. The underlayment composition must exhibit excellent adhesion to the substrate, have equal strength in thin and relatively thick sections, and be able to be "feather-edged" where necessary.

Cement-patching compounds, on the other hand, are ordinarily applied in thicker sections and generally over a much smaller area. Patching compounds are

used to fill holes ranging from several inches down to fractions of an inch where there are spalled, eroded areas.

The addition of polyvinyl alcohol and spray-dried polyvinyl acetate significantly upgrades the strength and resistance properties of underlayments and patching compounds; moreover, resin-containing compositions are water resistant, relatively nonshrinking, and can be used under a water-based mastic without softening. They can also be "feather-edged" easily.

One of the more popular products on the market contains gray cement and silica sand with resin additive plus a wetting agent that promotes the wetting out of the substrate, thereby permitting the polyvinyl alcohol to penetrate the substrate and form a permanent bond. Generally, the adhesion with this product is better than the cohesion of the substrate itself.

Graphic evidence of the quality of underlayments containing polyvinyl alcohol and polyvinyl acetate is found in the story of a floor constructed in Massachusetts. Due to a misunderstanding between the contractor and a workman, the underlayment for the basement floor was given a smooth steel finish rather than a screed finish suitable for a vinyl-tile covering. When the owner of the house saw the completed floor, he decided not to cover it. Today, after two years' use, his floor is still in excellent condition.

Installation costs for underlayments generally run around 4¢ per lb, or $1\frac{1}{2}\text{¢}$ to $1\frac{3}{4}\text{¢}$ per sq ft.

Mortars and Grouts

Conventional (thick-set) mortars for ceramic-tile setting have two drawbacks: their heavy weight, and the fact that curing requires wet conditions.

Newer (thin-set) mortars based on polyvinyl-alcohol resins have improved on conventional mortars by having less installation weight and a dry cure. In addition to having greater durability, easy clean up, and no odor, they are nonflammable, nonshrinking, and water resistant.

Adhesion to absorptive and nonabsorptive tile is significantly upgraded with the addition of polyvinyl alcohol. Such a mortar may be used over a wide variety of surfaces for both wall and floor installation—concrete, concrete block, cinder block, portland cement, brick, cement-asbestos board, and gypsum wallboard.

Polyvinyl alcohol holds water in the mix and builds body into it as well as adhesion. This same mixture is also suitable for grouts; if a white grout is desired, slight modification of the formulation will produce whiteness. Polyvinyl alcohol is used as an additive to ceramic-tile grouts to increase adhesion and bond strength, reduce shrinking and cracking, improve water resistance, and obtain better workability.

As a mortar, cement functions adequately alone, but by adding polyvinyl alcohol the water resistance and bond strength to surfaces are increased, and cures that once took four to five days now only require two to three days.

Cost for thin-set mortars installed is about 2¢ per sq ft; for grout, about $\frac{1}{2}\text{¢}$ per sq ft.

Bonding Agents

A bonding agent may be defined as a resinous material that promotes adhesion between a substrate (such as cement, rock lath, gypsum lath) and a topping material (such as plaster or cement). A modified polyvinyl-acetate emulsion bonding agent makes it possible now to apply skim-coat plaster directly to a concrete wall, to adhere mortar to many substrates, and to adhere new cement to old. This last category is especially applicable in a patching job, where it is necessary to adhere a new cement layer to old cement where spalling has occurred.

For skim-coat application, the bonding agent is sprayed on; for patching, it is brushed. It is, of course, best to correct any moisture problem that might exist before applying the bond coat.

Costs run about 2¢ per sq ft for the installed plaster coat.

Conclusion

Building products containing plastic additives are performing many jobs never before done, and with more economy and higher quality. All of these applications discussed above are new and have come about within the last five years. Most of them have appeared in the past two years, so that information is limited in some areas. These new applications do point, however, to the great strides in chemical technology in relation to building products in recent years and to vast new areas in this field that are continually opening for development.



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RG&E Specifies 200 Ft-c for Own Offices

BY WILLIAM J. MCGUINNESS

Updated IES recommendations on lighting intensities are implemented in an integrated lighting, heating, and air-conditioning remodeling job. Features of this installation are described by the Chairman, Department of Structural Design, School of Architecture, Pratt Institute.

An integrated lighting-heating-air conditioning installation in the newly rebuilt headquarters of Rochester Gas and Electric Corporation, Rochester, New York, represents the culmination of many recent developments. They all began two years ago following the publication of the learned and convincing report of Dr. Blackwell's 10 years of research on adequate lighting intensities for various seeing tasks. The Illuminating Engineering Society promptly revised its recommendations for general lighting (see table). The Galemme Report disputed the adequacy of available standard luminaires to provide the new high levels of lighting. E. J. Benesch, of Syska & Hennessy, addressed the Building Research Institute on "The Effect of the Recommended New Levels of Illumination on Air Conditioning Design and Noise Control." W. S. Fisher and J. E. Flynn of General Electric reported on the contribution of the lighting energy to winter heating and investigated the desirability of exhausting directly,

in summer, the lamp-produced heat to relieve the extra burden on the air-conditioning system. Finally, much impetus was given to the wall-to-wall luminous ceiling. Most of these developments have been reported in previous columns of ours (September 1959, January 1960, and March 1960).

For a utility company, the modernization of a 1926 building presented a challenge to demonstrate to its customers (the consumers of electricity for lighting and air conditioning) the implementation of the new standards and designs. When the Rochester Gas and Electric Corporation first occupied its building, the lighting level was 15 ft-c. Later, by replacing the 300-w incandescent bulbs with 500-w bulbs, the level was raised to 25 ft-c. In 1950, fluorescents raised it to 60. When the present modernization was planned, it included provision for 100 ft-c. With the concurrent raising of IES standards, the decision was made to go to 200 throughout. Studies showed that this could be done within 10-w per sq ft of floor area. This will give the building more than 13 times its original illumination for only 3.3 times the power consumption.

This is one of three types used on the first three floors to be changed. One of these types will be selected for the other floors. There are 10 floors in all. The photographs show the systems used in the drafting room and private offices.

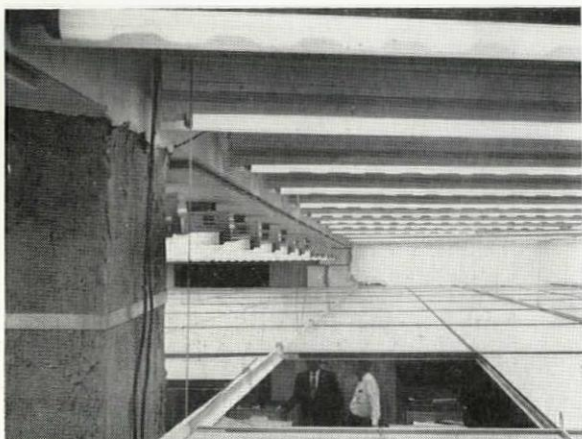
It is obvious that the power needed for the lighting approaches that suitable for electric heating and, indeed, it proved to be sufficient for all interior areas. Only at peripheral locations will supplementary heating be provided, located below glass. A high-pressure, dual-duct air system reduces excessive heat at interior areas when this is needed. It has mixing boxes for each office or zone, and diffusers at ceiling level. High and low returns carry the air back to conditioning centers. Return air can be reused or exhausted. During the warm months, the lighting system's heat will be exhausted from the building to reduce the air-conditioning load.

Lighting for this 150,000 sq ft structure will cost \$4 per sq ft, and air conditioning and heating \$6 per sq ft.

LIGHTING INTENSITIES AT WORKING LEVEL.

Values in footcandles recommended by the Illuminating Engineering Society based upon the Blackwell Report, compared with earlier standards.

Example	Current IES Recommendation	Pre Blackwell-Report Standards
1. Cartography, designing, detailed drafting	200	50-100
2. Accounting, business machine operation	150	40-60
3. Regular office work	100	40





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Duplication in Drawings and Specs

BY HAROLD J. ROSEN

What correctly belongs in contract drawings and in contract specifications, without duplication that can lead to contradictions, confusion, and misunderstanding, is discussed by the Chief Specifications Writer of Kelly & Gruzen, Architects-Engineers.

Construction documents consist essentially of the contract drawings and the contract specifications. Since the necessary information for the construction of a building is given to the contractor by means of these two documents, they should be complementary. Each document fulfills its own proper function: in broad terms, the drawings are a graphic portrayal and the specifications a written description of the technical and legal requirements forming the contract documents. Each should convey its own part of the story completely, and neither should repeat any part that properly belongs to the other, since duplication can very often result in differences of meaning.

Drawings present a picture, or a series of pictures, of the building or parts of the building to be erected. They give the size, form, location, and arrangement of the various elements. This information cannot be described in the specifications, since it is shown by means of lines, dots, and symbols peculiar to drawings. In fact, a drawing is a special language or means of communication to convey ideas of construction from one person to another. These ideas cannot be conveyed by the use of words.

Specifications, on the other hand describe the quality of materials, processes, and workmanship required to complete a building.

To maintain the separate yet complementary character of these two documents, so that they will be interlocking but not overlapping, requires the devel-

opment of definite systems for each. What is better described in the specifications should not be shown on the drawings and, likewise, what is better shown on the drawings should not be described in the specifications.

Drawings should generally show the following information:

- 1 Location of materials, equipment, and fixtures.
- 2 Detail and over-all dimensions.
- 3 Interrelation of materials, equipment, and space.
- 4 Schedules of finishes, windows, and doors.
- 5 Sizes of equipment.

Specifications should generally describe the following items:

- 1 Type and quality of materials, equipment, and fixtures.
- 2 Quality of workmanship.
- 3 Methods of fabrication, installation, and erection.
- 4 Test and code requirements.
- 5 Gages of manufacturers' equipment.

Specifications should not overlap or duplicate information contained on the drawings. Duplication, unless it is repeated exactly word for word, is harmful in that it can lead to contradictions, confusion, misunderstanding, and differences of opinion. Duplication, word for word, is redundant.

To achieve this separation of information that is destined to be shown on the drawings and described in the specifications, it is essential that the development of the specifications should go hand in hand with the preparation of the drawings. At the outset, someone in the office should be responsible for establishing and keeping the all-important check list for a specific project. This check list should establish a schedule of what shall appear on the drawings, what shall be described in the specifications, and what is to be itemized and listed in schedules. The check list should include prelimi-

nary or outline specifications, lists of all decisions made in the drafting room, and notes of all changes made on the drawings since the last set was printed for the specifications writer, including questions to be settled.

The broad guide lines previously noted for the separation of material that appears on the drawings and in specifications does not go far enough in establishing a line of demarcation between these documents.

While collecting material for this article, I have found areas of disagreement as to the specific information that should be shown and/or specified among authorities on specifications writing. For example, one authority suggests that the drawings should indicate a material as concrete and the specifications should determine whether it is to be precast or cast-in-place concrete. I would assert that the drawings should delineate the location of these two materials. Another authority argues against the customary hatching and other indication of materials on plans and elevations.

If the experts disagree, how can we expect the draftsman and the neophyte specifications writer to settle the issue. Duplication exists between drawings and specifications for lack of a clear-cut and well-defined policy that should emanate from authoritative sources.

The Construction Specifications Institute is slowly achieving its goals of improving specifications. The AIA, I am certain, is concerned with the establishment of standards for drafting and drawings. It will require a combined effort of both CSI and AIA to establish procedures that will define in more detail what should be shown on drawings and what should be described in specifications. Such a delineation will establish, once and for all, clearly defined criteria to be followed by all practicing architects and specifications writers.

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Distinction Between Performance Bond and Payment Bond

BY JUDGE BERNARD TOMSON AND NORMAN COPLAN

A recent court case involving priority of claims was settled on the basis of the distinction between a contractor's performance bond and a labor and materials payment bond.

The distinction between a contractor's performance bond and a labor and materials payment bond determined the issue as to priority of claims in a recent New York case (*State Bank of Albany v. Dan-Bar Contracting Co., Inc.*, 23 Misc. 2d 487).

In this case, the contractor had entered into four separate public improvement contracts with the State of New York. The contractor had been required to secure a performance bond and a labor and materials payment bond in respect to these four projects. Certain of the subcontractors who were unpaid, filed mechanic's liens upon the property and the surety company that issued the bonds paid the subcontractors and received assignments from them of the moneys due and owing from the contractor.

The contractor, in order to finance his work, had borrowed money from the bank, and as security had assigned to the bank a portion of the funds payable by the owner to the contractor for his services. The issue before the Court was the relative priority of the claims of the bank and of the surety company against the funds payable to the contractor but in the possession of the owner.

The surety company contended that the payments it had made to the subcontractors were by way of "completion" of the contract of the contractor and that, therefore, it was subrogated to the rights of the owner to the respective balance due to the contractor by the owner. The bank, on the other hand, contended that since its money was also utilized for the completion of the project, its rights were at least equal to those of the surety company.

In determining the question of priority, the Court first considered whether the

surety's payments were under its performance bond or its payment bond. The Court pointed out that at the time the payments were made, the contractor had completed his performance and the work had been accepted by the owner. Since there had been no default in his performance, the Court concluded that the surety company had incurred no liability under the performance bond and had not made the payments in question in order to effect "completion" of the contractor's services. These payments, rather, stated the Court, were made pursuant to the labor and materials payment bond, which would thus result in a lower priority position for the surety company than if the payment had been made pursuant to the requirements of the performance bond.

In its opinion, the Court stated that there is a basic difference between a performance bond and a materials and labor payment bond, and that "they serve and are intended to serve entirely different purposes." In describing the function of a performance bond, the Court said:

"The performance bond, or, as it is sometimes called, the completion bond, is given pursuant to section 38 of the Highway Law. Its purpose is to insure the State that a contract once let will be completed within the amount for which the contract is let. If 'Contractor' defaults, the State, in the absence of a performance bond, would have to expend its own funds to complete the contract, even if the cost of completion were to exceed the balance unpaid on the contract. Where, however, there is a performance bond, the surety completes the contract, at its own cost and expense, and becomes equitably subrogated to the same rights as the State had in and to the unpaid balance of the contract price."

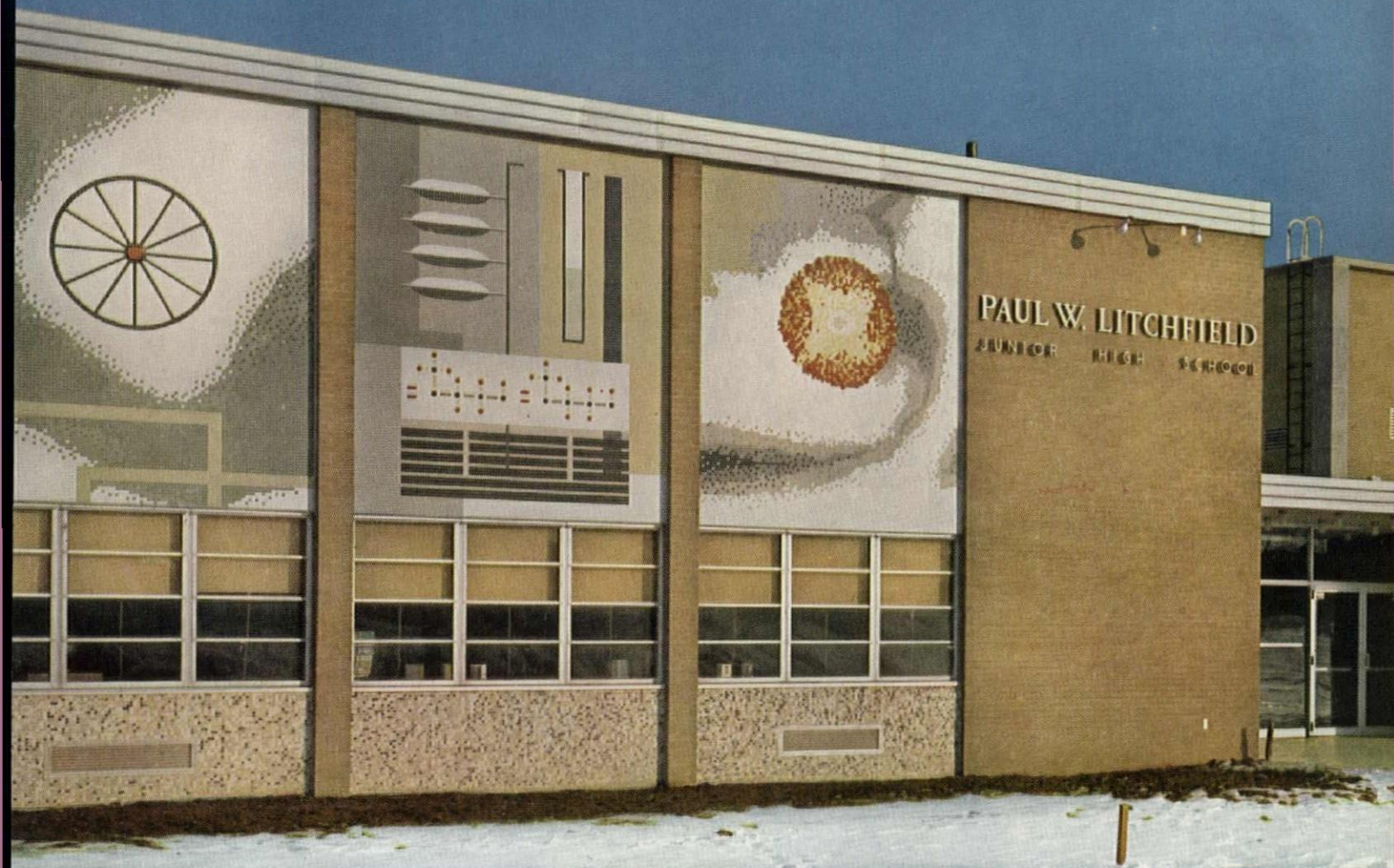
The Court pointed out that, if the surety company is required to expend moneys to complete a contract, any assignee, such as the bank in this case, could collect nothing from the owner, since an assignee's lien could only attach to the balance due to the contractor, and in the situation where the surety company completes the contract, there

would be no such balance due to the contractor.

On the other hand, a payment bond, which must be furnished by the contractor to the State of New York on public improvements, although running to the owner as obligee, guarantees payment to persons supplying the contractor, and the bond enures "to the benefit of the persons supplying such labor and materials." The purpose of this bond is stated by the Court as follows:

"... the State has declared its policy to be that persons furnishing labor and materials to a contractor on a public project shall be paid by the contractor, even if by so paying, the cost to the contractor to complete the contract exceeds the contract price; that such persons shall not be left exclusively to the remedies provided by the Lien Law, since there are often cases where the balance due the contractor is not sufficient to pay the lienors in full. Since the State has no obligation to make such payments, the labor and material bond is not for the benefit of the State at all. Such a bond is exacted in order that the public policy of the State that the persons for whose benefit the bond is exacted, shall be paid in full, without regard to the status of what may be due to the 'Contractor' under his contract, or what may be due to the State, from the surety, under the performance bond."

In other contexts, there are many judicial decisions holding that a failure by the contractor to pay for labor and materials was just as much a failure to perform and carry out the terms of the contract as an abandonment of the work would have been. Payment of materials men by the surety company under such circumstances would, therefore, be a completion of the contractor's performance. The conclusion of the Court in this case, however, that the payments of the surety company were not such a completion of performance, was made to determine a question of priority, and should not be construed as questioning the general rule that failure to pay for material and labor constitutes a failure of performance on the part of the contractor.



PAUL W. LITCHFIELD JUNIOR HIGH
Plate No. 1095 Akron, Ohio

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Akron, Ohio

Mural Artists: LUKE & ROLAND LIETZKE
Akron, Ohio

Tile Contractor: J. F. BERTOLINI CO.
Akron, Ohio

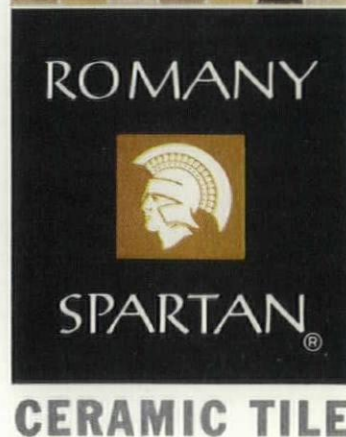
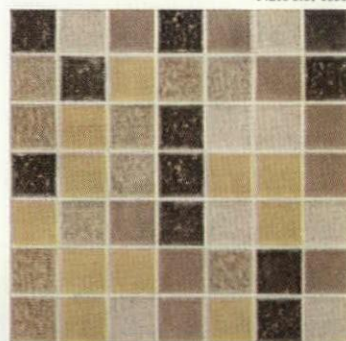
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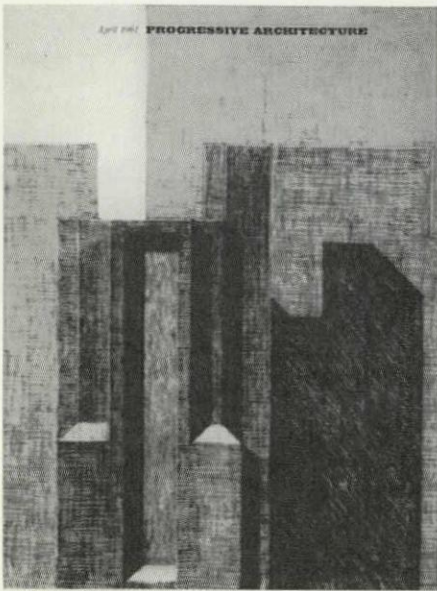
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Comments on The Philadelphia School

Dear Editor: I want to convey my admiration for the extraordinary technical feat of recording in such a wonderful way Kahn's ideas. It is a superb example of creative editorship and I think that Jan Rowan's article ["Wanting to Be: The Philadelphia School," APRIL 1961 P/A], will prove to be an important contribution to history.

Also, needless to say, it is profoundly exciting to see the work here recognized as a "school." We will try to continue to put forth material to make it deserving of this recognition.

EDMUND N. BACON
Executive Director
City Planning Commission
Philadelphia, Pa.

Dear Editor: I congratulate Jan Rowan on his effective presentation of both the personality and ideas of Lou Kahn, a man of exceptional talents and authentic originality, who makes many of his contemporaries look like cheap reproductions. This sort of intellectual stimulus is what the American architectural profession badly needs.

LEWIS MUMFORD
Amenia, N. Y.

Dear Editor: I read the article on Louis Kahn with great pleasure. I know Lou very well and feel that his great philosophy and his fundamental understanding and belief of architecture were extremely well expressed. Kahn is certainly

one of the very great architects of our time, and I am so happy that Jan Rowan was able to present his thoughts and his work so ably to the profession. It should serve as inspiration for all.

MINORU YAMASAKI
Birmingham, Mich.

Dear Editor: Jan Rowan's article, "Wanting to Be: The Philadelphia School," is one of genuine enlightenment—an enlightenment of deep and lasting comprehension into one's own nature, and of the achievement of Louis Kahn after unflagging personal effort.

Formulations and adaptations of Kahn's philosophy of design principles lie at the root of all architectural awareness; not only the meaning of design, but also that deeply sensed rhythm of life flowing eternally through all things and creatures.

I feel indebted to P/A and Jan Rowan for the existence of this article, and also to Kahn for that immanent spirit or essence that he reflects so persuasively in his elusive yet revealing architecture.

EDWARD KORETZKY
New York, N. Y.

Dear Editor: Jan Rowan did a splendid and painstaking job. All of us who care about Lou's work are grateful to him. Thank you for this solid and valuable contribution to architectural publishing.

VINCENT SCULLY
Dept. of History of Art, Yale University
New Haven, Conn.

Dear Editor: We wish to congratulate Jan Rowan for the good writing and the intelligent presentation of the Philadelphia School.

ROMALDO GIURGOLA
Mitchell & Giurgola
Philadelphia, Pa.

Dear Editor: Jan Rowan's superb work on Kahn had a great impact on our faculty and students. As for myself, I have for the first time, a correct, intelligible exegesis of our friend Lou's thoughts. It could not have been done with greater tact and comprehension.

R. LE RICOLAIS
Philadelphia, Pa.

Dear Editor: Many compliments for the Philadelphia School article. It successfully defined what will, I believe, become a very significant (and healthy) direction for our architecture.

NORMAN HOBERMAN
New York, N. Y.

Dear Editor: Just a word to say that the Kahn piece was splendid: very well

studied and written. A real contribution.

ADA LOUISE HUXTABLE
New York, N. Y.

Variety of Responses to Part I of P/A Symposium

Dear Editor: As I read along in the too fine print of the P/A Symposium on the State of Architecture ["Part I: The Period of Chaoticism," MARCH 1961 P/A], the obvious realization slowly came to me. You had the country's leading chaos-givers and confusion-makers on your couch. Let us return architecture to the people.

P/A, though, is still the best and getting better.

VICTOR STEINBRUECK
Seattle, Wash.

Dear Editor: Read with the greatest interest the P/A Symposium on confusion. I get the distinct feeling that most of these gentlemen wish they could be as free as the painter and the sculptor and practice nonobjective architecture.

It would be fun at that. Keep up the good work.

LEONARD COX
Coral Bay, Virgin Islands

Dear Editor: I have just read with much interest the P/A Symposium on the State of Architecture. Your contributors put forward many interesting and valid observations on present-day "chaoticism," but very few are optimistic on the emergence of a universal "style," which probably would be the worst thing that could happen anyway. In my opinion, most architects today are suffering from an overdeveloped sense of "aggressiveness" in their designs.

We are bombarded on all sides with hyperbolic paraboloids, concrete tents, pinwheels, and what have you, which can only be described as fairground structures. What I think is needed to counteract this aggressive confusion is a sense of "serenity"—and I don't mean the clinical, sterile serenity of Mies van der Rohe. We already have too many glass boxes of varying sizes, shapes, and heights. Of the top contemporaries, I think Yamasaki is approaching this serenity.

Don't get me wrong. I couldn't be thinking of anything further from "sensualism."

WILLIAM WOOD
Edmonton, Canada

Dear Editor: I enjoyed your March issue—particularly the P/A Symposium. I cannot help but compare the comments of the Symposium participants with the



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supposedly defunct Dadaist movement among the painters and sculptors of the teens and twenties—a nonsensical philosophy.

A good deal of what your participants say is true only within the context of some sort of "total architecture." Such a "total architecture" does not exist today, nor do I foresee it as a possibility in the years to come. We are at the present a specialized society; architecture as an expression of our society consists of divorced, constituent parts: building architecture, landscape architecture, product architecture, etc.

When the Symposium members speak of a "growing chaoticism," they refer, no doubt, to the environmental scene and its lack of cohesiveness in growth and form. As a philosophy, this has been applied very little, with exception of a few who have "shucked" the cloak of professionalism and have begun to experiment with the full ramifications of environmental science. Building architecture is but a part of this total scene, and cannot possibly hope to develop the sort of homogeneity necessary to solve the visual—and other sensory—problems of the total environment. What we should hope for is a tighter intergration of the architectural professions into a union of environmentalists, capable of collective action with a unified front.

JOHN B. FRAZIER
East Lansing, Mich.

Dear Editor: Your Symposium on the State of Architecture is certainly a stimulating and thought-provoking contribution for which your readers will be deeply grateful.

Perhaps we are only now realizing the futility of getting our inspiration from the machine, which, in contrast to nature, is a cold, dead thing. Being a part of nature, we find the machine forbidding and emotionally unsatisfying; a "machine for living" is a very cold thing. We are just going through a period of disillusionment, and are a little confused.

When we go back to nature for our inspiration, then we will find harmony with life. Our buildings will then harmonize with each other, regardless of how individually different they may be; just as in the jungle, living forms merge to form a unified whole. After all, man is a natural, living animal and is happiest when in natural surroundings. The machine is a terrifying—not a happy—thing.

The machine-made article will never be as beautiful as the handmade, nor will it age and get more beautiful with time. The qualities of crispness and

cleanness are trivial, and not of a great and enduring type. A freehand drawing is always more humanly beautiful than a mechanical drawing.

When we are inspired by nature, we are inspired by God Himself. All natural things are in harmony with each other. When we wake up to this fundamental truth, the chaos will disappear. We can all be individuals, yet all be in harmony.

T. LOFTIN JOHNSON
Mt. Kisco, N. Y.

Corbu and Stauffer Comment on Garrick Theater

Dear Editor: We are much obliged to you for your notice in the MARCH 1961 P/A (NEWS REPORT) regarding the lost battle to save the Garrick Theater building. As you may know, many of the ornaments have been saved for distribution to museums, schools, and so on. This was made possible by moneys from the City, the owners, many private individuals, schools, etc., and from the Field Foundation. The work was carried out largely by volunteers led by Richard Nickel, our secretary, and was supervised by the local AIA, the Society of Architectural Historians, and the Mayor's Commission on Architectural Landmarks.

You may also be interested to learn that our committee is incorporating as a nonprofit organization, and will continue its efforts to maintain some selectivity and organic continuity in the growth of the city and to preserve its recognized masterpieces. After incorporation, contributions to the committee will be tax-deductible.

THOMAS B. STAUFFER
President, Chicago Heritage Committee
Chicago, Ill.

[In his letter to P/A, Thomas Stauffer enclosed correspondence sent to various Chicagoans in support of the committee's work. From among these, we reproduce below a copy of the letter sent by Le Corbusier to the Mayor of Chicago.—ED.]

Dear Mayor Daley: I have just learned about the controversy in Chicago concerning the demolition of the Republic Building of Holabird and Roche, the Garrick Theater building of Sullivan; and that the same wave of demolition also menaces other existing buildings of The Chicago School.

I should not want to give the impression of busying myself with issues that do not concern me, but I permit myself to let you know my opinion, and authorize you to use it as you may wish in the press or elsewhere.

A century ago—that is to say, with the birth of machinism—a new era began, unknown even to modern times: the era of machinism, the arrival of a machinist civilization. This has developed in the last hundred years with unconscious and disordered fury, and with an irresistible power. Some men, in certain times and places, recognized this situation clearly. In 19th-Century France and England, the men who built the great constructions of iron and glass left behind them remarkable testimonies: the Crystal Palace in London and the Eiffel Tower in Paris. A great number of these edifices have been demolished. America brought forth Sullivan and his School (called The Chicago School), which, around 1880, was of the highest importance—most particularly for America itself. To demolish the works of Sullivan, therefore, seems to me truly a sacrilege. Being a city planner myself, I know to what extent it is possible to preserve the life and usefulness of such buildings. It is a question of imagination. The buildings of Sullivan and his School must be saved, even if it means that some streets must be turned aside.

LE CORBUSIER
Paris, France

Praise for P/A

Dear Editor: May I take this opportunity to congratulate you on the fine quality of P/A, and the great contribution I am sure this publication must be making to the architectural profession in general.

D. L. PINCKSTON
Edmonton, Canada

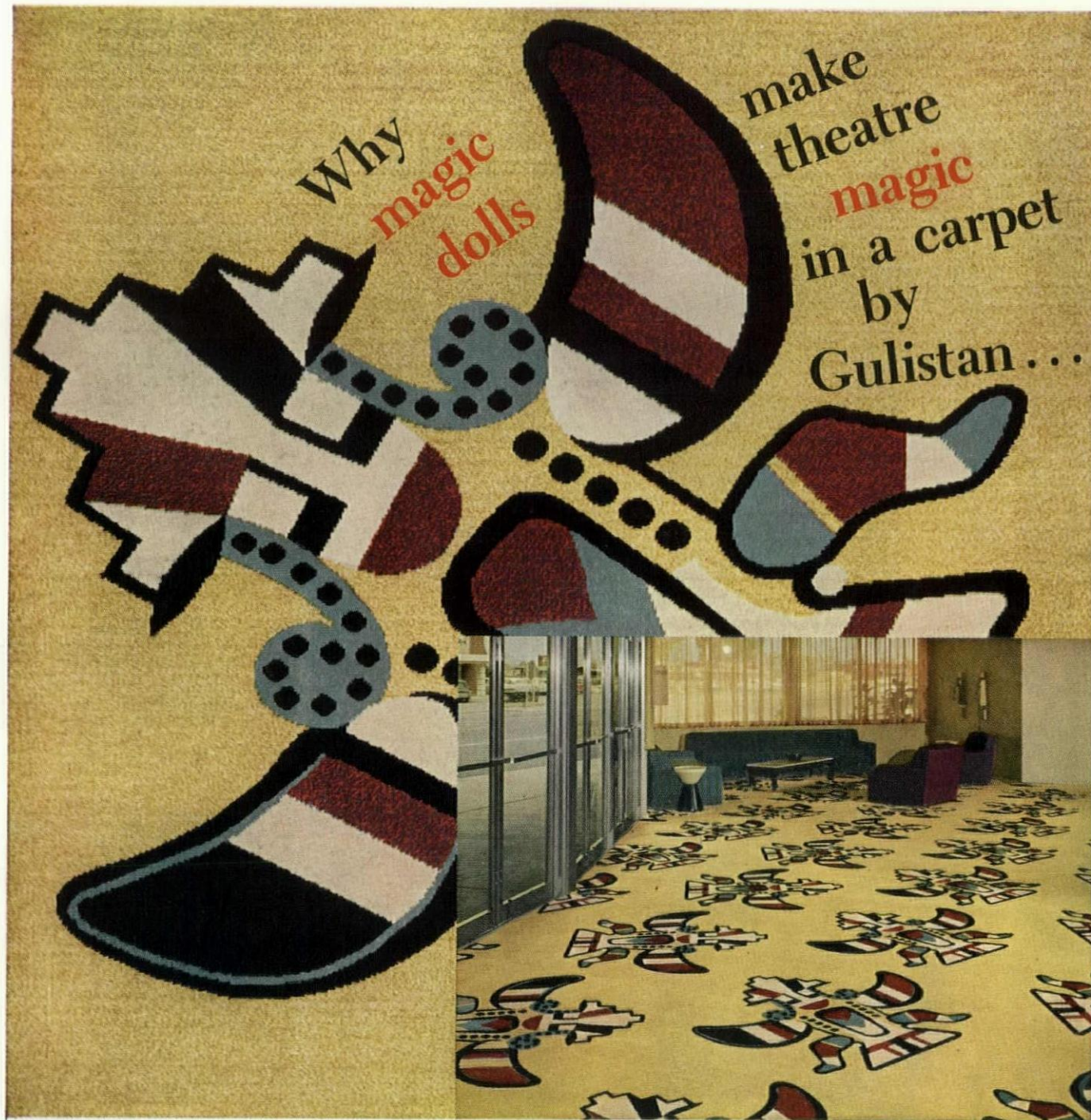
Dear Editor: For your information, I am an exchange student from Ecuador, South America. Before coming to this country, I was already acquainted with P/A. We (architects and engineers) consider it the best magazine in this field.

MARCONY A. RODRIGUEZ
Ithaca, N. Y.

The Climatron: A Correction

Dear Editor: In the APRIL 1961 P/A, page 174, you pictured and described the Missouri Botanical Garden Climatron in an article entitled "And Suddenly Last Summer." The article is well written and nicely presented. However, I would like to call your attention to an inaccuracy in the naming of the mechanical engineers who handled the design of the rather elaborate air-conditioning system. The mechanical engineers should have been listed as Fred S. Dubin Associates of St. Louis, with Mr. Paul Londe, Associate in charge of design.

NORMAN D. KURTZ
Engineering Administrative Assistant
Fred S. Dubin Associates
Consulting Engineers



Kachina Theatre, Scottsdale, Arizona. Contracted by B. F. Shearer, Los Angeles. Carpet design by R. L. Lemanski. Architect, Ray Parrish. (Design shown in 1/8 actual size.)

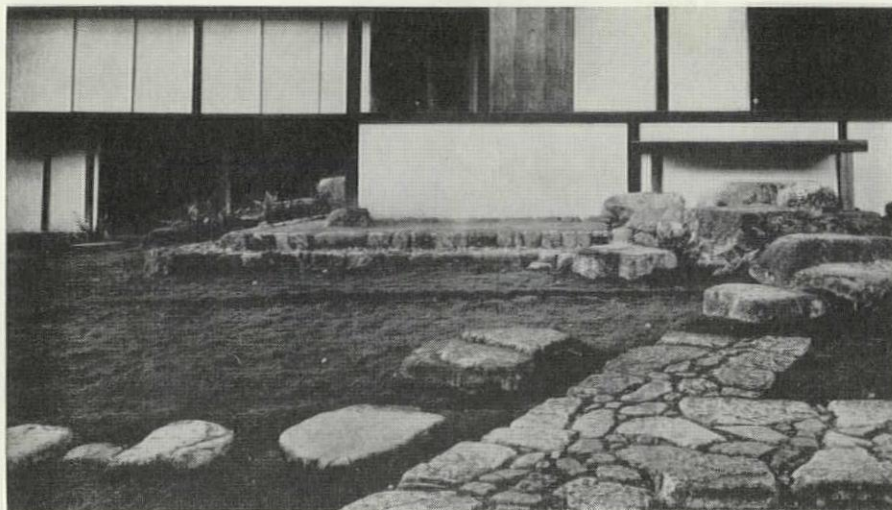
Because *this* theatre is in Arizona—famous for its Hopi magic dolls. Because the doll design is bold enough to catch the eyes of theatre-goers hurrying through the lobby. Bright enough to chime in with their cheerful “evening out” mood. And its authenticity appeals to pride in local traditions. The deep-colored design also hides footprints in heavy traffic areas. The pile is tightly woven too—to *wear* well, *feel* quietly luxurious. All in all, another uniquely handsome Gulistan carpet, uniquely suited to its purpose and its locale.

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Tradition vs. Creation: A Draw

BY JOHN MORRIS DIXON

P/A's Associate Editor discusses Katsura: Tradition and Creation in Japanese Architecture. Kenzo Tange. Introduction by Walter Gropius. Photographs by Yasuhiro Ishimoto. Yale University Press, New Haven, Conn., 1960. 188 pp., illus. \$15

In his Foreword, Kenzo Tange writes, "This book does not tell everything there is to tell about the Katsura Palace. It is neither a definitive introduction nor a historical study." Instead, it is a highly personal interpretation of the most famous work of historical Japanese architecture by the most famous contemporary Japanese architect—with equally personal photographs by Yasuhiro Ishimoto and an introduction by a famous architect of another culture and another generation, Walter Gropius.

Of the three, Ishimoto's message, clarified by Herbert Bayer's layout, is the most readily comprehended. Each photograph is a handsome image of some fragment of the complex. The reader will have difficulty, however, in building from them a total image of the palace. Tange points out that this problem is inherent in the work itself. The palace is a collection of exquisite views and details, all harmonious, but impossible to order into a single concept of space and form. The goal of the design was the illusion of an *endless* environment, and it was achieved (within an area of 16 acres).

Both Tange and Gropius discuss the palace as a product of historical proces-

ses. Both point out its antecedents in the earlier shrines, temples, aristocratic residences, and farmhouses. Both attempt to explain the influence of Zen Buddhism and the related tea ceremony on the design. But Gropius sees it as exemplary of all Japanese architecture, whereas Tange, from his closer vantage point, considers it an exceptional work, illustrating in its internal tensions the conflict of two opposing cultural forces.

Gropius, like several of his contemporaries, holds up Japanese architecture as a lesson to the West in the discipline of standardization, the control of space-time, and the richness of asceticism. His Katsura is the apogee of a consistent development and the embodiment of the goals of our modern movement. The palace itself refuses to conform to this ideal, and Gropius is forced to admit "that even the Katsura Villa shows some traces of decline." ("Villa" is perhaps less correct than "palace," but more consistent with the Western image.)

As Tange points out, the palace is not the product of a consistent tradition, but a sophisticated hybrid, with elements of revivalism, which flouts the conventional modular system of the time, and is anything but simple or economical.

Tange discussed the palace as a unique product of the "dialectic of tradition and creation." He traces these two forces back into prehistory and follows them up through a selective history of Japanese aesthetics. One force represents order and calm—the ideal of the aristocracy; and the other, innovation and emotion—the creative energy

of the peasantry. His history is neatly constructed, and leads, not to the violent overthrow of tradition, but to a momentous but precarious reconciliation in Katsura.

This thesis leads him to a conjectural reconstruction of the design process of the palace. The design is generally thought to have originated with the first owner, a princely connoisseur, and his principal consultant, a member of the newly risen merchant class. The specific contributions of each of them, or of other artisans and designers, are not known. But in Tange's analysis the client represents the force of aristocratic tradition, and the designer that of plebeian creativity:

"Did not the building result . . . from a combination of ideas which included on the one hand the Prince's nostalgia for the past and on the other the approach introduced by the townsmen and artisans involved in the work?"

"A closer look at the palace itself seems to confirm this. In front of the very proper white wall which supports the veranda of the Old Shoin there is an uncanny, dynamic rock arrangement which destroys the stability of the façade . . . In the midst of the elegant vista provided by the shoin, the wide veranda, the moon-viewing balcony, the pond, and ultimately the moon itself, there is this sudden interruption—this importation from the farm breaking the flow of space."

Tange's analysis is hard to accept. The conflicts he speaks of have all been expertly resolved. It seems most likely that both client and designer—products of the same cultural environment whatever their differences in birthright—appreciated such dissonances and consciously sought them.

Similar conflicts are discernible in other buildings of the period and in the Zen temple compounds which were the immediate precedents for Katsura. "Importations from the farm" had not previously been found in *palaces*, but then palaces were not often found, as this one is, among farms.

This same conflict of forces is clearly illustrated today in Tange's own work (where it can hardly be attributed to the efforts of two distinct personalities). In them we can see a similar counterpoint: the plane surface, uniformly divided (reminiscent of ancient imperial buildings) against a new kind of creative form, massive and plastic (imported from France by Tange and his contemporaries).

The significance of the Katsura Palace
Continued on page 214



Architect: Warren, Knight & Davis, Plate No. 423

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Illustration: shows 6" x 6" x 1/2" Murray Sahara. Walls: Glazed tile, 8 1/2" x 4 1/4", 56 Leaf Green.

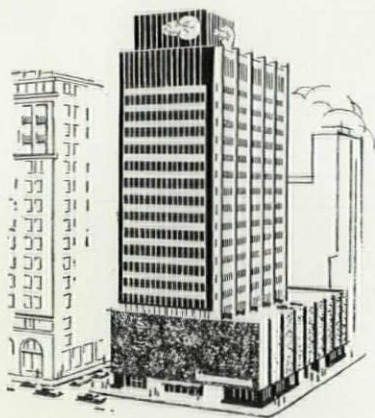


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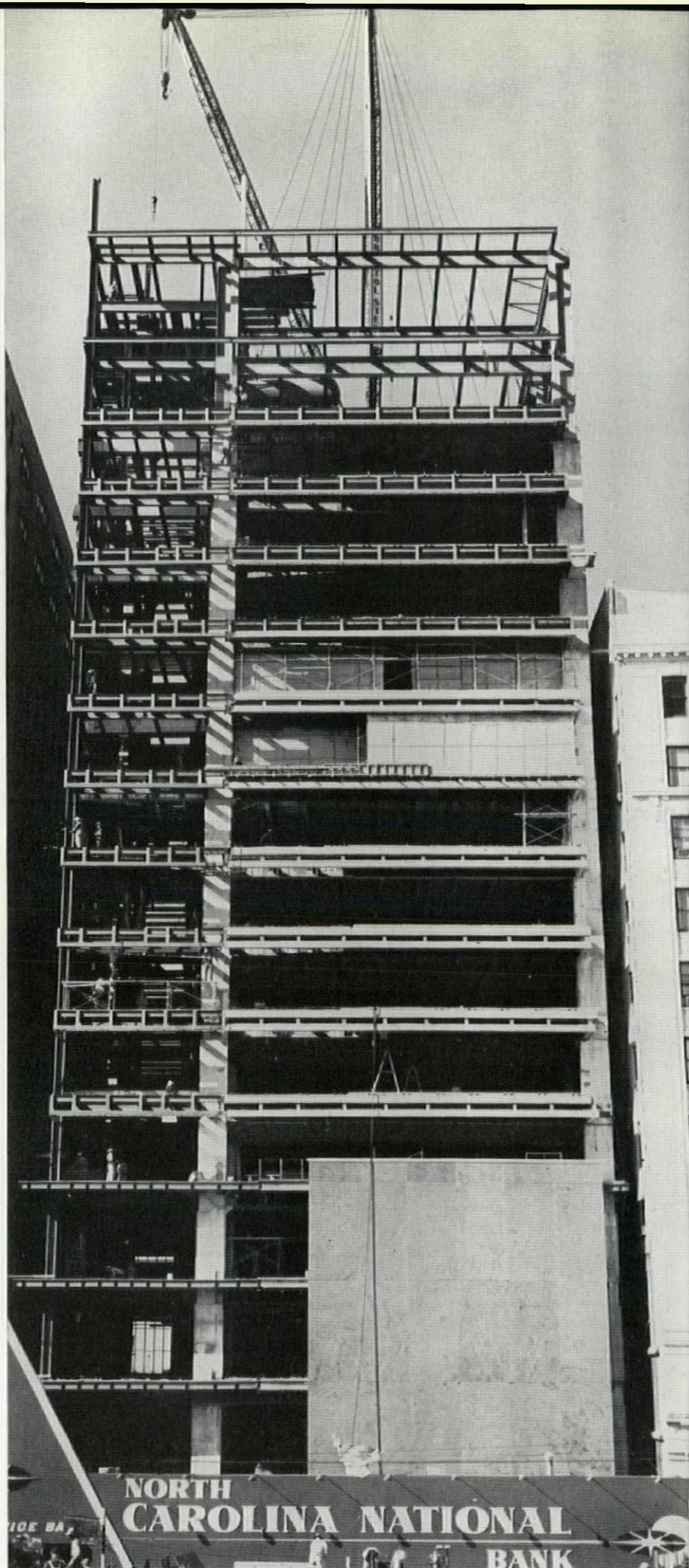
Using these heavy sections as the column core, the columns are welded, built-up members with a 20-in. x 2 $\frac{3}{4}$ -in. cover plate welded flat on one flange, and two 30-in. x 2 $\frac{3}{4}$ -in. plates welded perpendicularly to the edges of the other flange. The finished, fabricated columns weigh 1,100 lb per lineal foot.

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American Electric Power Company, New York City. Architect: Emery Roth & Sons.

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CORNING GLASS WORKS
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Continued from page 210

in the eyes of the West—already exaggerated—is likely to be further inflated by this book. Both Tange and Gropius discuss earlier buildings merely as precursors of it and fail to mention that the same energetic period produced a great diversity of other works.

Neither of them points out that some important achievements of Japanese architecture are not embodied in Katsura: the relationship of buildings and gardens to hilly terrain; the manipulation of larger-than-domestic scale, as in

the older palaces and temples, and of almost geographical scale, as in the Shugakuin Villa gardens; the aesthetic symbolism of the sand garden; the endless variation within a rigid module, as in the anonymous streetfronts of Kyoto.

It is, nevertheless, the greatest single architectural work of Japan, and this book offers a rich and meaningful visual reconstruction of it. The text is full of stimulating insights and hypotheses, but as "the first full book in English on Katsura," it might have taken a more objective approach.

Legal Structure of Architecture

It's the Law! (Recognizing and Handling the Legal Problems of Private and Public Construction). By Bernard Tomson. Channel Press, Inc., 159 Northern Boulevard, Great Neck, N. Y. 1960. 436 pp. \$7.50.

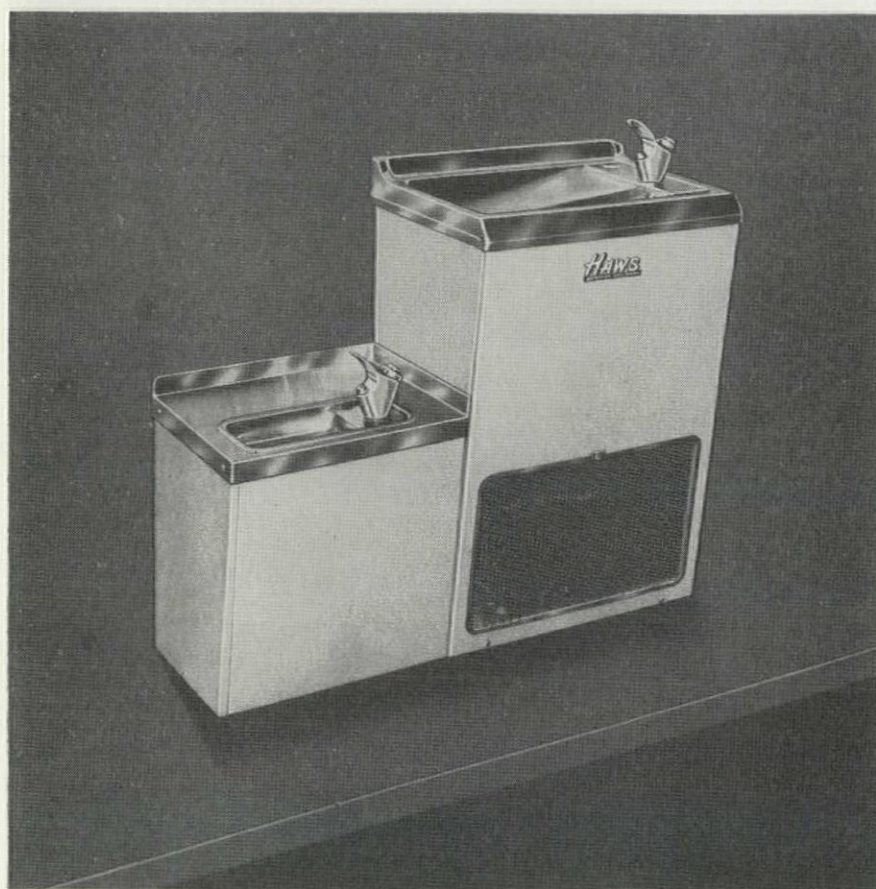
The profession of architecture has had no stronger advocate over the last decade than Judge Bernard Tomson. I have said this before, and I will undoubtedly say it again, because Tomson continues making contributions not only to better legal guardianship of the architect's rights and responsibilities, but also to the improvement of the standing of the profession in society and its position in the building industry. Judge Tomson continues this interest and concern with the architect's status through his monthly columns in P/A (now in collaboration with Norman Coplan), through talks and lectures to architectural groups, and now through the medium of a new book—even though he is no longer a practitioner in the legal field, but a District Court Judge in Nassau County in New York.

Tomson's new book is arranged differently from his previous *Architectural and Engineering Law*, and it covers much ground that the previous book did not. Although a large part of the contents is drawn from the monthly columns in *Progressive Architecture*, it has been collated, edited and arranged, and sufficient introductory and explanatory text has been added, so that there is a continuity that makes the book a fresh statement, and a necessary reference work in the practicing architect's library.

There are five major subject headings, which, if I may simplify their full titles, are: Statutes, Organization, Relationships, Rights and Liabilities, and Property Restrictions. Under each topic there are a number of chapters, and within each chapter various essays, in each case headed by a short explanatory paragraph. Important and pertinent court decisions are cited, and the book becomes valuable not only to architects but also to the attorneys of architects, in giving them guides, or what Tomson calls "beginning points to initiate research on a specific problem."

The values of Tomson in this field lie not only in his comprehensive knowledge of it, but in his ability to express himself clearly and readably, and in his understanding of architectural problems, architectural design and construction

Continued on page 217



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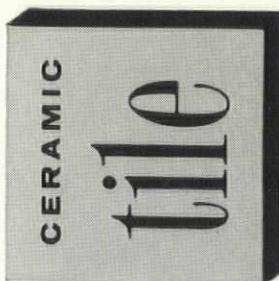
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THE MODERN STYLE IS...

For more information, turn to Reader Service card, circle No. 382

Continued from page 214

procedures, and architectural attitudes. The thesis of the book is a direct and helpful one: there is a legal framework within which architecture must be practiced; a successful practice requires a knowledge of the limitations imposed, but it implies also a realization of the full possibilities permitted.

T.H.C.

A Godsend for the Student

Structural Engineering: Review and Problems. *Nathan S. Glassman and Harry H. Graef, III. Department A, International Business Services, 1026 20th St., N.W., Washington 6, D.C., 1960. 96 pp., diagrams. \$7.50.*

For the architect who must somehow master engineering in order to pass his board examinations, *Structural Engineering* is a godsend. Clearly, and step by step, it takes up the design of concrete, steel and wood columns and beams, footings and retaining walls, and various roof trusses, illustrating each situation with a typical problem. All the material is taken from lectures to students preparing for the architectural examination.

Needless to say, this sort of crutch, which dwells upon method instead of theory, is not likely to further the understanding of engineering among architects. However, the fault does not lie with this book, which only provides a useful service, but with the architectural exam itself and the teaching of engineering, both of which discourage any understanding of fundamentals. It will be a good day for architecture when a book like this is no longer needed.

GORDON F. TULLY
New York, N.Y.

Fragments and Flavors

The Mexican House, Old and New. *Verna Cook Shipway and Warren Shipway. Architectural Book Publishing Co., Inc., 151 E. 50 St., New York 22, N. Y., 1960. 188 pp., illus. \$12.50*

Ideally, the best way to approach this book is to pack it in the suitcase you are taking to your winter-home-for-two-weeks in Cuernavaca, Mexico. Once there, after several breathless days (altitude 5000 ft) exploring the town, you retire to poolside for an afternoon of utter lassitude. In the garden is a splendor of perhaps a hundred flowering plants. To the left, in the distance, is Popocatepetl, changing each day under the combined effect of intermediary

Continued on page 230



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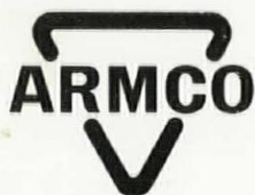
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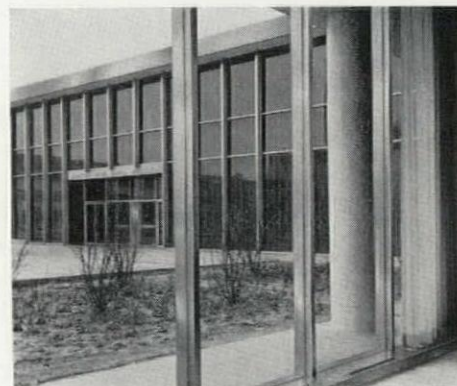
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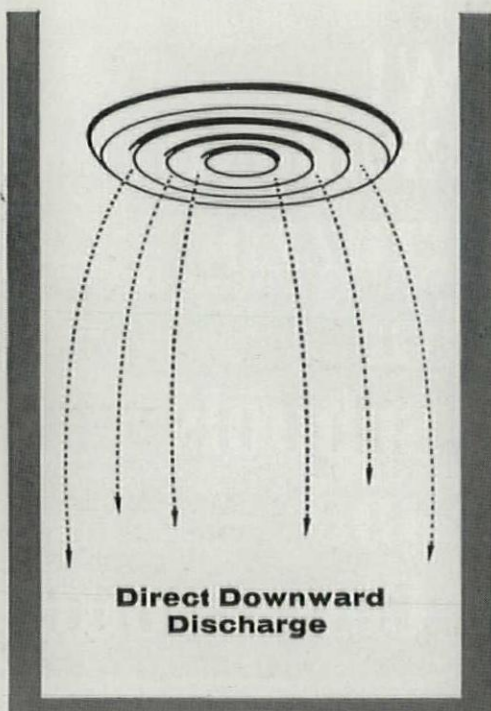
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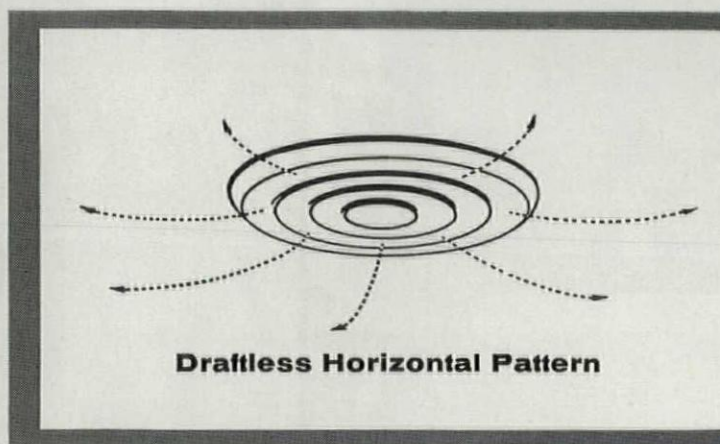
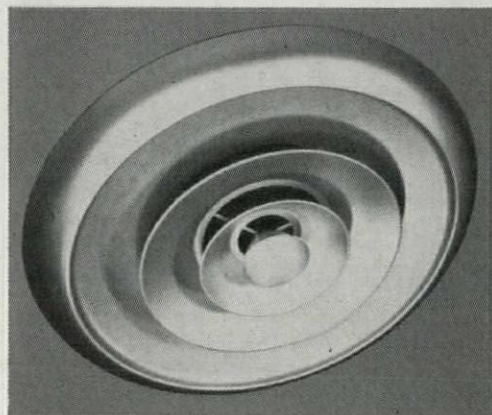
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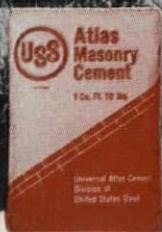
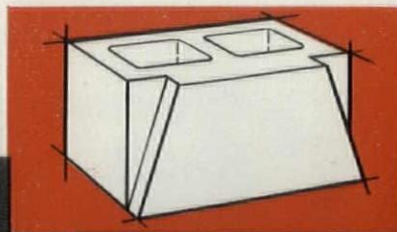
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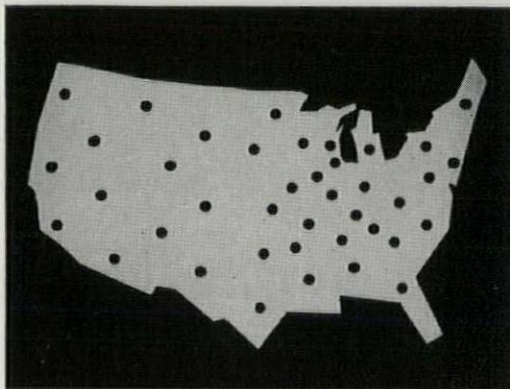
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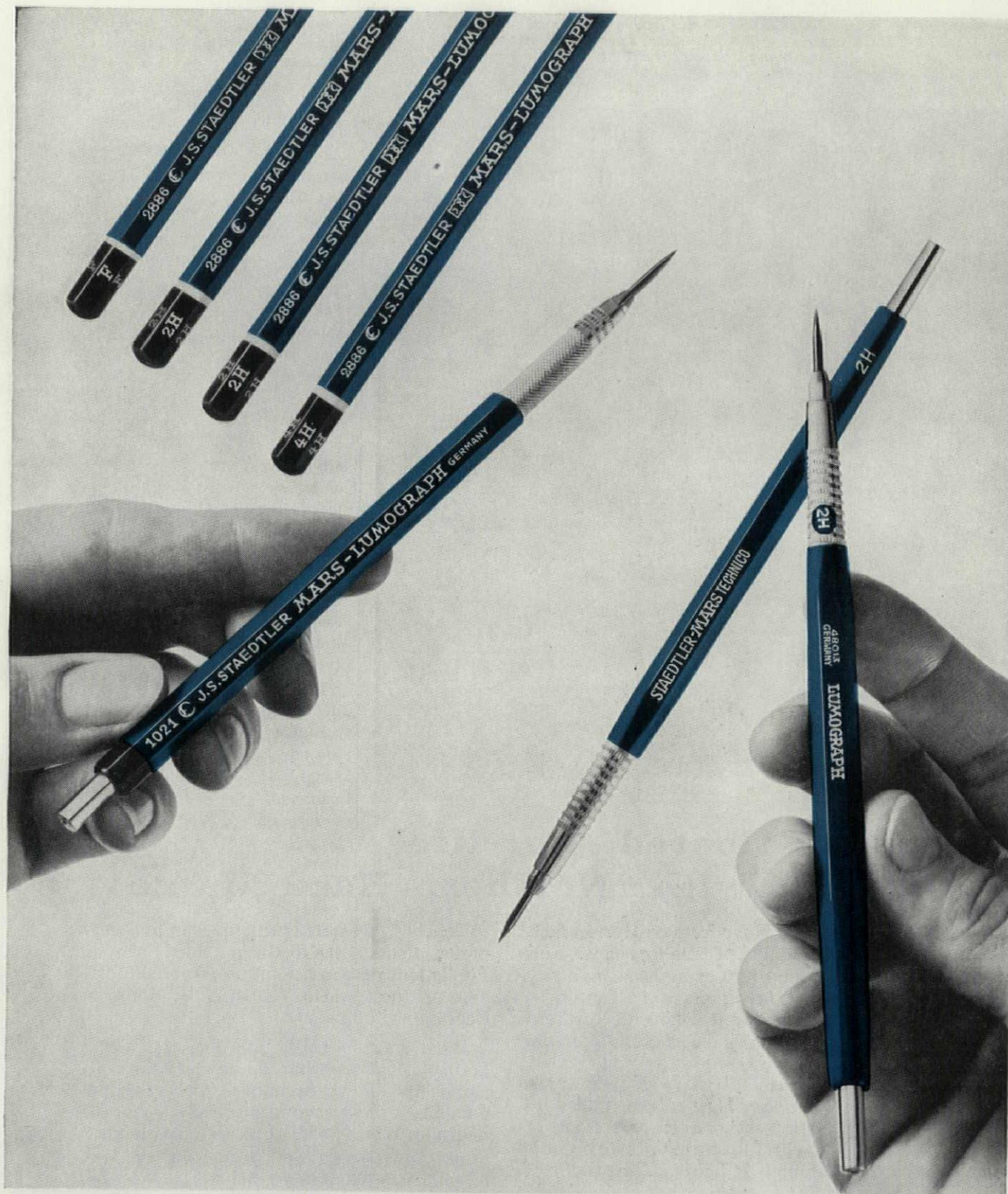
outside, empty inside. The point is that they were arranged as part of the total design, with their slick modern covers supplementing the spirit of the decor. *The Artist in His Studio* would not be out of place in such a setting. It has extracted the thorn from the lion of art and sealed off its madmen in a functional, "naugahyde" asylum. Inside and out, it is an arrangement of art according to a mystique.

As a picture-book showroom of art, *The Artist in His Studio* proves that the popularity of art today goes no deeper than its function as an element of the grand design for modern living. As the critic Harold Rosenberg put it, people are more interested in Art than they are in paintings. And because they are, we are greeted every Christmas with a rash of art gift books that are designed to look well on a table or on one of those modern bookshelves with its tilted racks for the display of "recent acquisitions." What puts this book (which came out last Christmas and will look exactly the same next Christmas) in a class by itself, like Dickens' *Christmas Carol*, is that it has caught up with the hero-worshipping element that passes for taste in art nowadays. In this form of cultural cannibalism, one collects the artist, and his work only secondarily. It is the personal stamp, the authenticity of his particular *angst* that adds the touch of pure gospel to spiritualize taste.

At such times as he could get away from his job as Art Director of *Vogue Magazine* and Condé-Nast publications (and from his own studio, for he is a painter also), Alexander Liberman over the past 13 years photographed in their studios the artists of what he takes to be the French School. Where the artists were no longer alive, he photographed their studios and the landscape in which they worked. The span is from Cézanne to Manessier. The French School is an inconclusive designation not worth quibbling over. Liberman got around to as many artists and studios as he possibly could, and it is something of a surprise to find artists like Larionov, Gontcharova, and Kupka mentioned, much less photographed, outside of obscure or esoteric texts on modern art. Liberman was fortunate to be able to combine his job with an apparent interest in his subject matter, and I hardly desire to demean his devotion.

The photographs are in color and in black and white. Some very handsome—if not always representative—reproduc-

Continued on page 250



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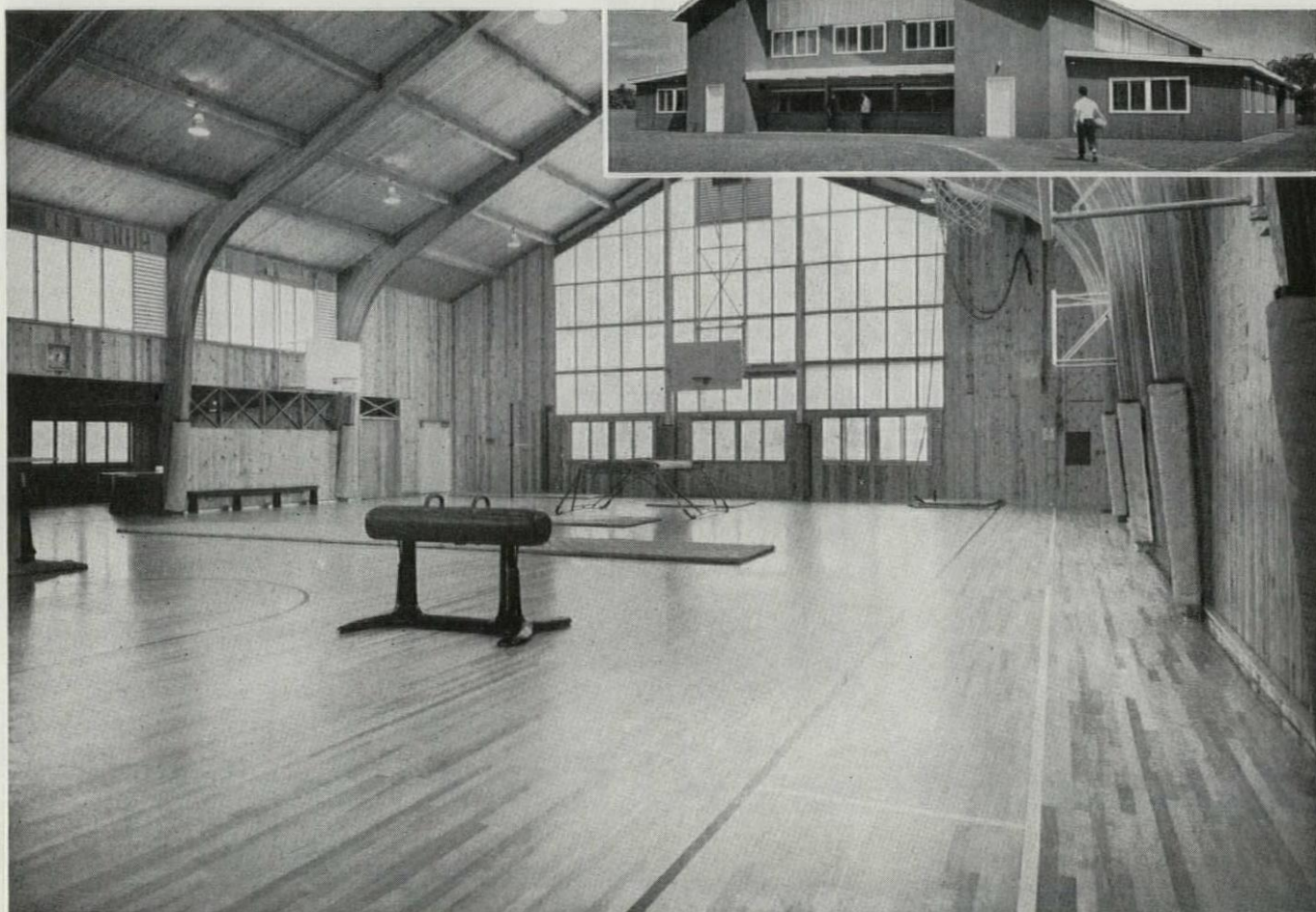
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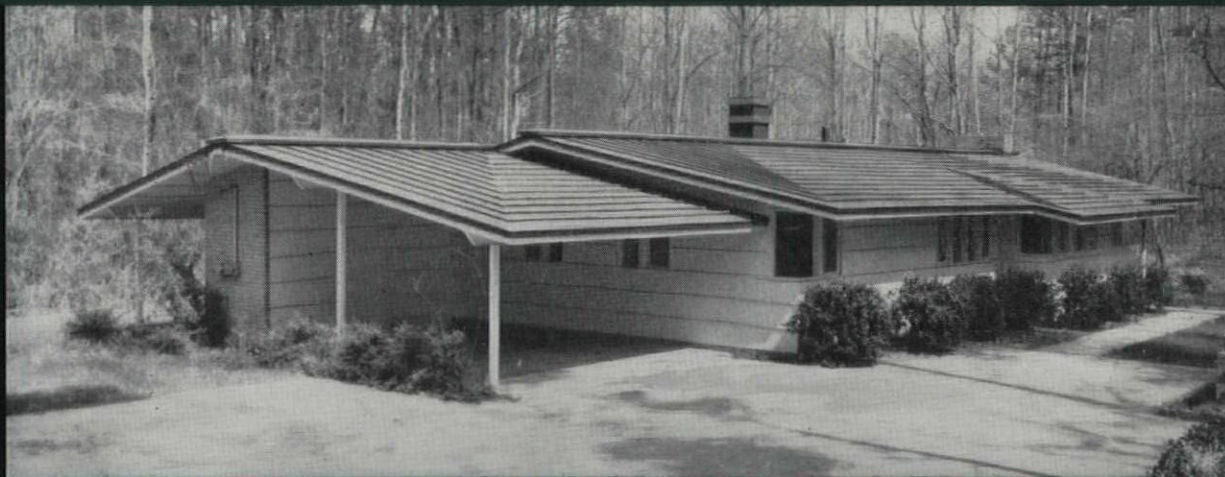
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Most officials and architects connected with school construction agree on the *desirability* of Terrazzo for classrooms as well as for corridors and lobbies. Some, however, overly concerned with first cost, specify other kinds of flooring.

The experience of Henrico County proves the value of looking to ultimate cost as the major criterion. Mr. J. Henley Walker, AIA, architect for the 30-classroom Maybury Elementary, and Fairfield Junior High specified monolithic Terrazzo floors. They cost more initially—about 30¢ a sq. ft. more than the next best floor. However, expectation was that reduced maintenance costs would pay for Terrazzo in five years. The facts are that Terrazzo floors have paid for themselves in less than two years—and have permitted manpower reductions of one man each in the three junior high schools built on the campus plan. Savings in the smaller elementary schools have been comparable.

Further proof of maintenance economy comes from Mr. George R. Grubbs, custodial supervisor for Henrico schools. He notes, "Men can now do one-third more work on campus school Terrazzo floors (than on resilient floors in conventional schools). We have eliminated a night man in each campus junior high because of the new floors. We damp mop Terrazzo twice a week, sweep daily. We use plain water or a neutral cleaner, scrub only once a year. Wax for resilient floors costs \$200 annually, plus application and removal costs. Materials for Terrazzo maintenance are a negligible item."

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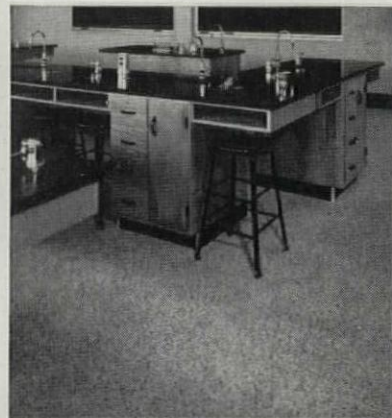
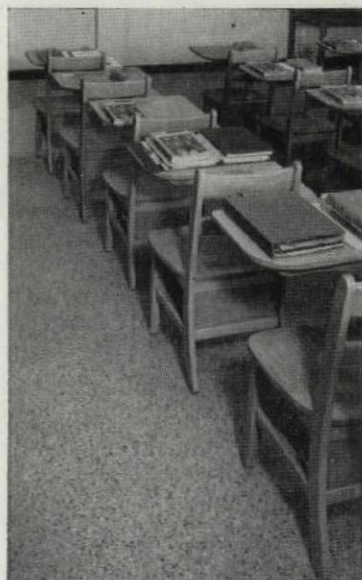
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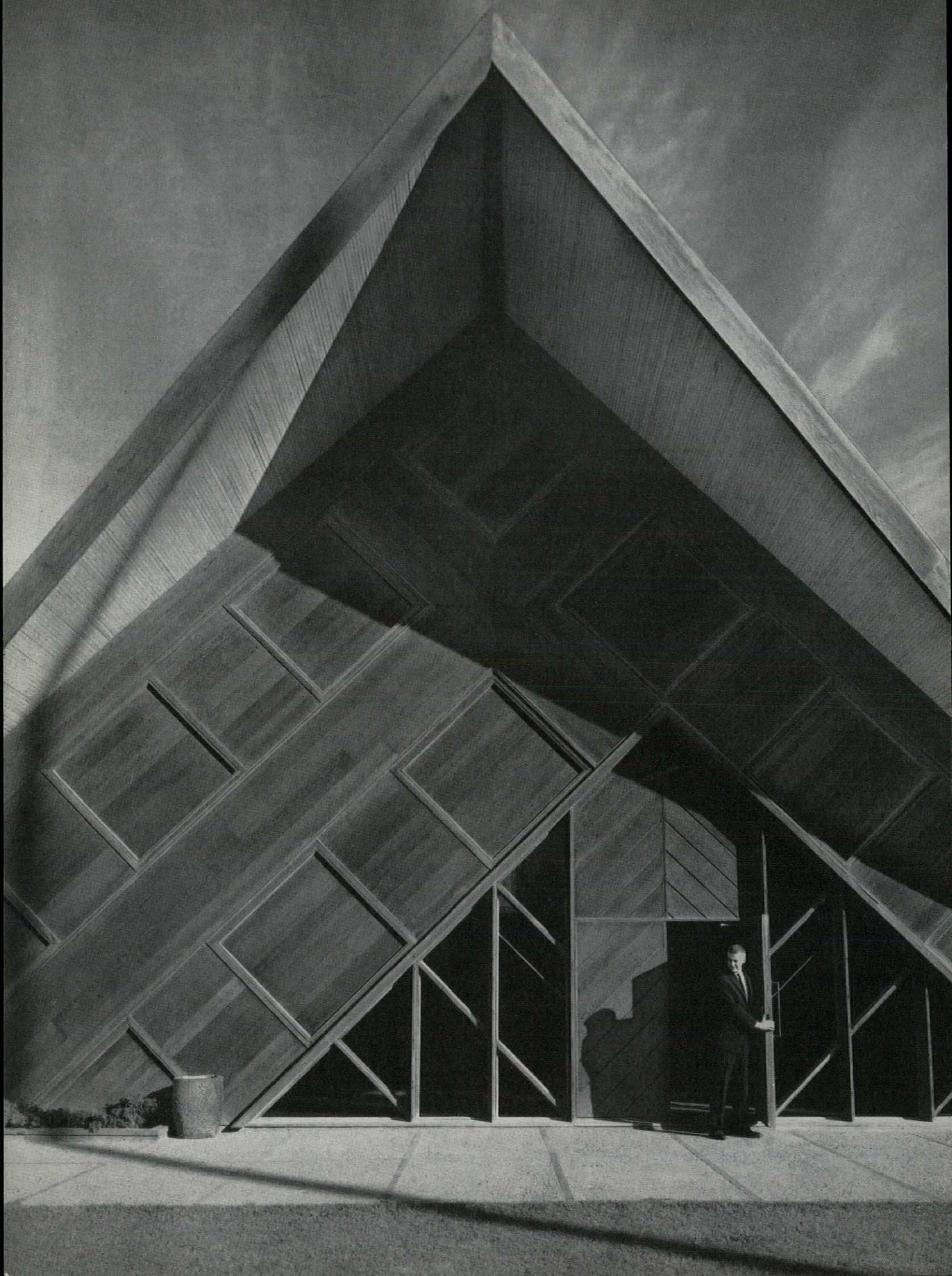
Terrazzo classroom floors like these (left) are used in 14 schools in the Henrico County, Virginia school system. The number is being expanded as new schools are built.

Laboratories (below), as well as classrooms, benefit from Terrazzo floors.

Terrazzo floors are clean and sanitary. All told, there are approximately 834,000 sq. ft. of Terrazzo in the Henrico County schools with more to come.



Architect: Mario Corbett, A. I. A.



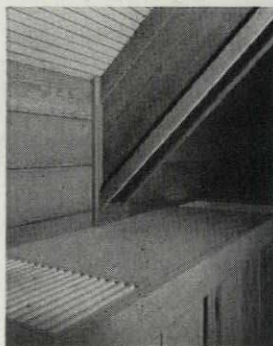
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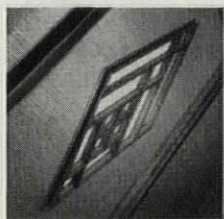
innovation and reward ingenuity. In this striking



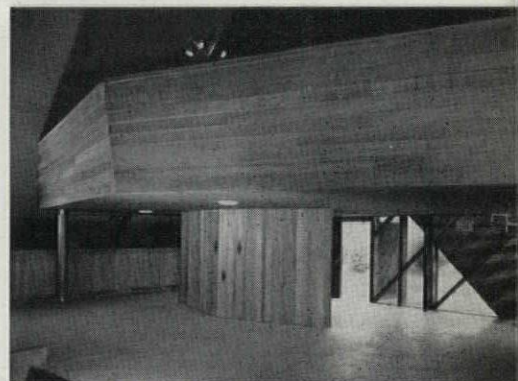
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Continued from page 240

tions of paintings by the artists are also included. But it looks suspiciously like padding. Derain, for instance, is represented by a Fauve-period self-portrait, which is consistent with the erroneous tendency to downgrade his achievement for the following forty-five years or so. He died in 1954!

The visual material, whose illuminating character I shall take up in a moment, is accompanied by essays varying in length from the detailed interview to a few biographical paragraphs. The author's zeal is purely rhetorical at times and rarely critical. It is the people he is interested in: the artist as divinity. Liberman tends to see art and artists in a kind of dream; he is a bit put out by those artists who insist on becoming real. He can barely conceal his disappointment over the fact that Rouault in his last years was a petty and embittered monomaniac, and he all but calls a spade a spade in the case of Utrillo's shrewish wife who, though not the artist, dominates the interview like a prison guard. That's to his credit, but then it wasn't as if poor Utrillo, substituting by then religious fanaticism for alcohol, had much of a choice.

But it is the photographs which are the real heroes of this book. Or do I mean villains? They brought to mind a remark made by a young poet who set aside—temporarily—her poetry for photography. She said, "The camera never lies, but I do." Yet there is an emotional patina to these photographs of Liberman's that represent the distortion of the camera's eye by his. Here both deprivation and luxury, ease and despair, are but the raw stuffs of a leveling romanticism. Braque's slippered comfort, Picasso's indifference to it, Giacometti's seeming unawareness of the world around him (the important shot here is a two-page spread of empty bottles on Giacometti's slovenly paint table), and Kupka's hermetic insularity seem to reflect in the photographs only Liberman's projected exaltation at the sight of them. He photographed the artists and places as if they embodied something like the crumbling perpetuity of the Roman Forum. This is, when you come right down to it, a book of photography exploiting the "popularity" of art, but the photographs looked much better when they were shown at the Museum of Modern Art without the distracting layout. (I wonder, incidentally, when layout artists will end the subject-destroying process of bleeding photographs off the end of the page. Photographs

need their own edge.)

This misplaced emphasis goes right on into the cover, which I single out because it more readily typifies the extent of the infection that the modern art book represents. The jacket is white with the title in a large elegant face (with serifs) printed as an overlay on an "abstract" design of transparent strips of green, blue, shocking pink, and yellow. It is castrated Matisse, the cultural reverberations of which reach right into the interiors for which it was designed. We are back, then, in Herman Miller's showroom, and at the heart of the matter.

SYDNEY TILLIM
Arts Magazine
New York, N. Y.

OTHER BOOKS TO BE NOTED

Motopia: A Study in the Evolution of Urban Landscape. G. A. Jellicoe. Frederick A. Praeger, Inc., 64 University Place, New York 3, N.Y., 1961. 165 pp., illus. \$9.50

Residence and Race: Final and Comprehensive Report to the Commission on Race and Housing. Davis McEntire. University of California Press, Berkeley 4, Calif., 1960. 409 pp., maps, tables. \$6

Architecture in America: A Battle of Styles. Edited by William A. Coles and Henry Hope Reed, Jr. Appleton-Century-Crofts, Inc., 35 W. 32 St., New York 1, N.Y., 1961. 412 pp., illus. \$2.40 (paper-bound)

Arkitekten Kay Fisker. Hans Erling Langkilde. Arkitektens Forlag, Nyhavn 43, Copenhagen, 1960. 131 pp., illus. \$7

American Building Art: The Twentieth Century. Carl W. Condit. Oxford University Press, 417 Fifth Ave., New York 16, N.Y., 1961. 426 pp., illus. \$15

Design of Prestressed Concrete Beams. William H. Connolly. F. W. Dodge Corp., 119 W. 40 St., New York 18, N.Y., 1961. 252 pp., illus. \$11.50

A rational and clear-cut method for designing pretensioned and post-tensioned concrete members. Book avoids unnecessary academic discussions, treating its subject in a strictly practical manner. Over 120 tables, charts, and diagrams are included.

The Kremlin. Text and photographs by David Douglas Duncan. New York Graphic Society, Greenwich, Conn., 1960. 170 pp., illus. \$25

Collection of vivid tipped-in color plates—many full-page or two-page spreads—showing the art treasures, interiors, and buildings of the Kremlin.

Community Builders Handbook. (Third Edition). Edited by J. Ross McKeever. Urban Land Institute, 1200 18th St., N.W., Washington 6, D.C., 1961. 476 pp., illus. \$15

Guide to planning, financing, building and operating new residential developments and suburban shopping centers. Editor is associate director of ULI, an independent research organization specializing in urban planning and development.

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NOTICES

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New Addresses

FRED BUFORD & ASSOCIATES, Architects-Engineers, Suite 1100, Rio Grande National Building, 251 North Field, Dallas, Tex.

CRAIG ELLWOOD ASSOCIATES, Architects, 8322 Beverly Boulevard, Los Angeles 48, Calif.

HUNTER, HEIGES & GROSS, Architects & Engineers, Shenango and Reno Streets, Sharon, Pa.

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ROBINSON & HISSEM, Architects, 211 East First St., Wichita, Kans.

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ROBERT L. SCHREINER AND WILLIAM T. SCHMITT, Site Planners and Landscape Architects, 19 Second Ave., Port Washington, N. Y.

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GEORGE GROSS, made Associate in firm of AMMANN & WHITNEY, Consulting Engineers, New York, N.Y.

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LOWELL BRODY, RAY E. CUMRINE, HERBERT W. RIEMER named Associates in firm of KETCHUM AND SHARP, Architects, New York, N. Y.

Correction

On page 250 of the APRIL 1961 P/A, the firm of SASAKI, WALKER AND ASSOCIATES, INC. were erroneously referred to as Architects. They are Site Planners and Landscape Architects, Design and Planning Consultants.

Expansion and Relocation

The general offices of LOXIT SYSTEMS, INC. are now located in the Knight

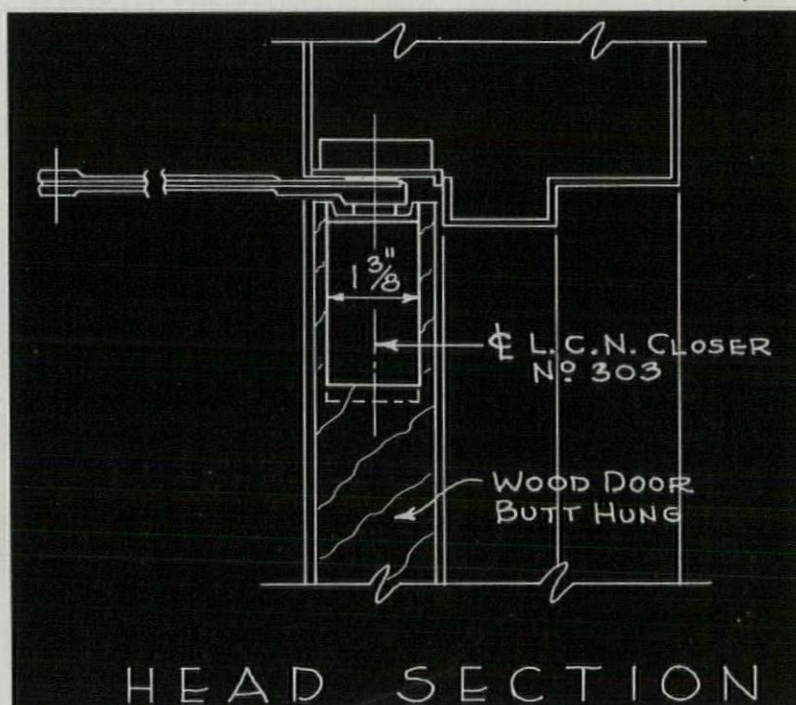
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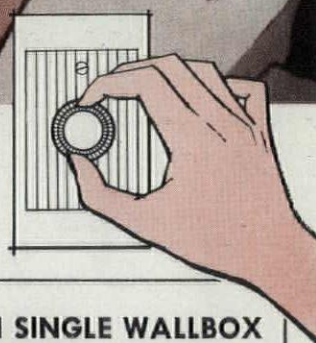
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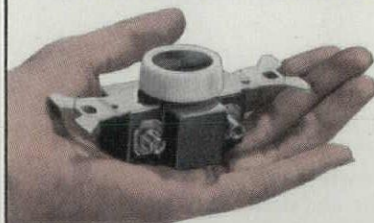
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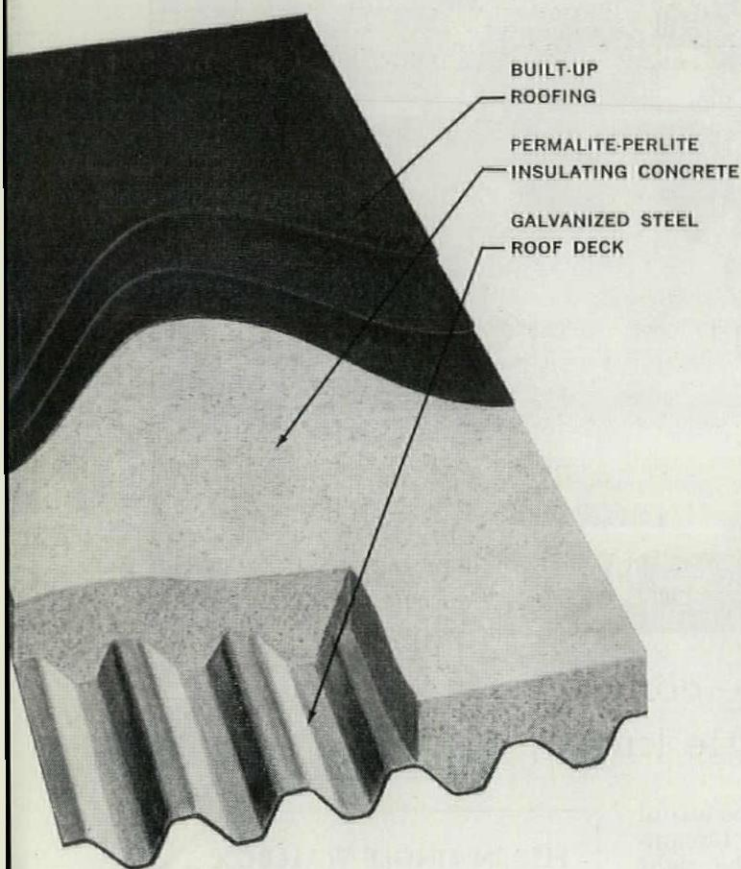
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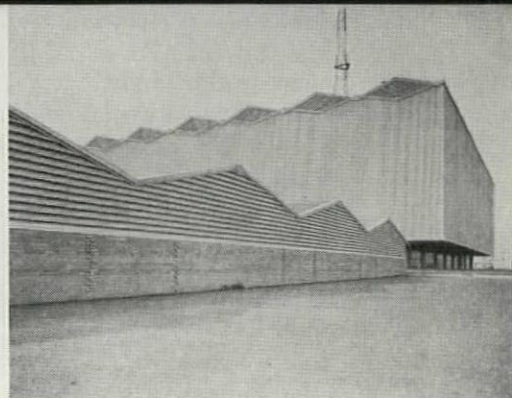
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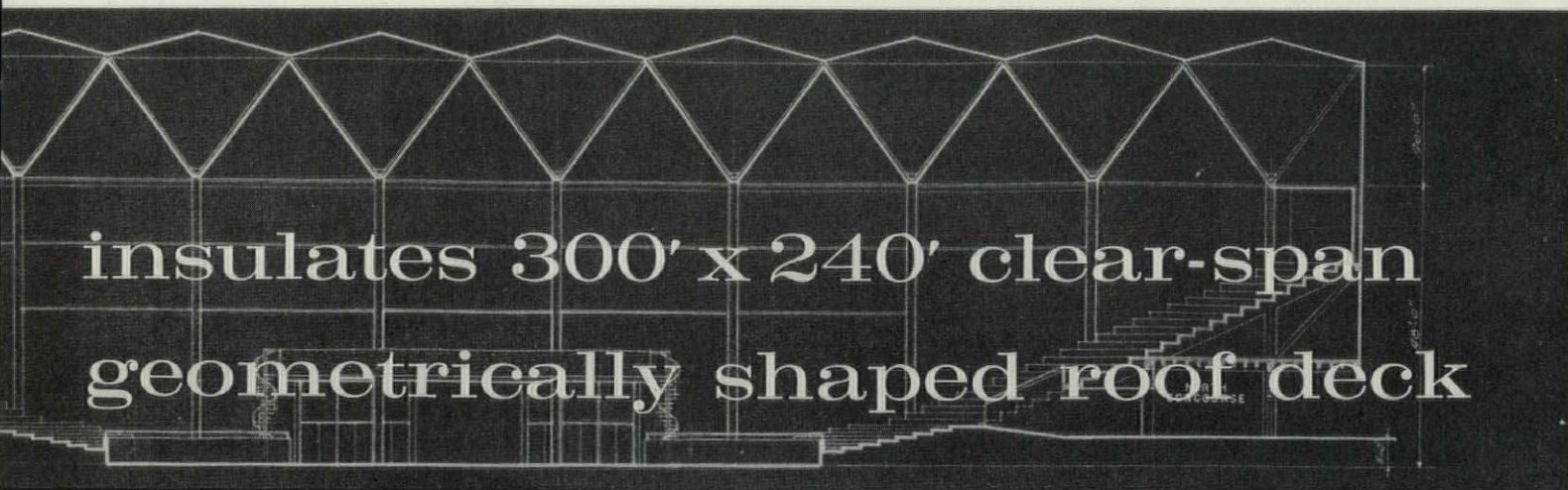
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Architects: Harper & Kemp, Dallas, Texas

Assoc. Structural Engrs.: Frank W. Chappell
A. M. Brenneke

Gen. Contr.: Wohlfeld Construction Co., Dallas

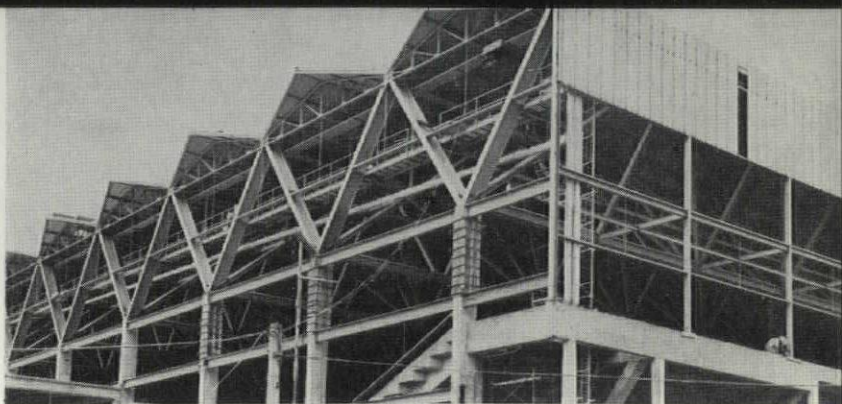
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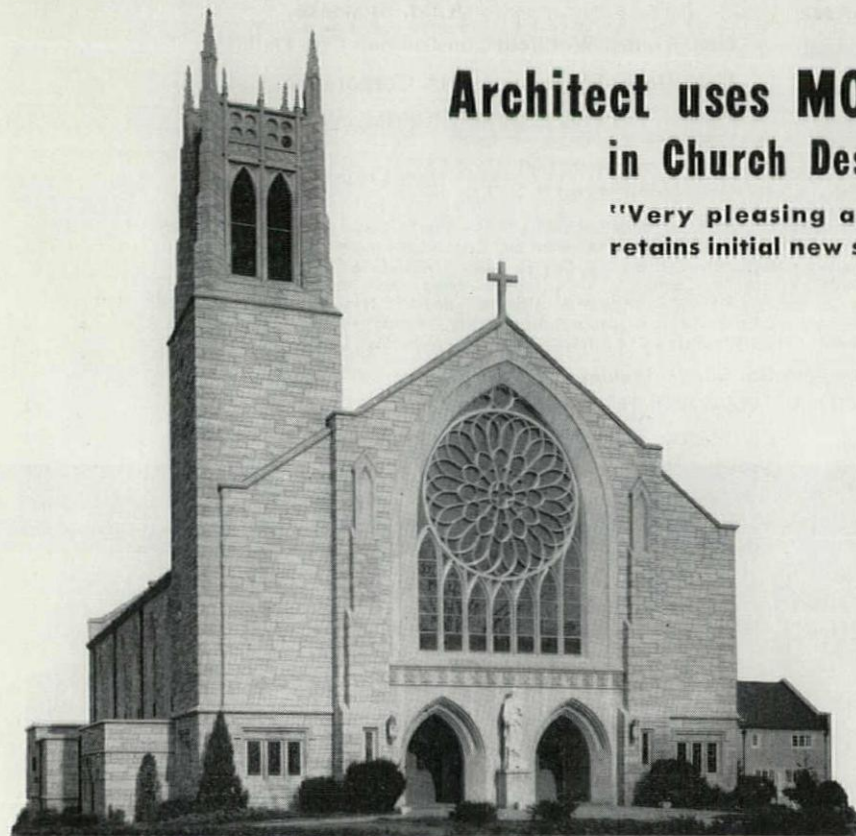
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Continued on page 264



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Architect: Thomas H. Moran, Princeton, N. J.
Contractor: John McShain, Inc., Trenton, N. J.

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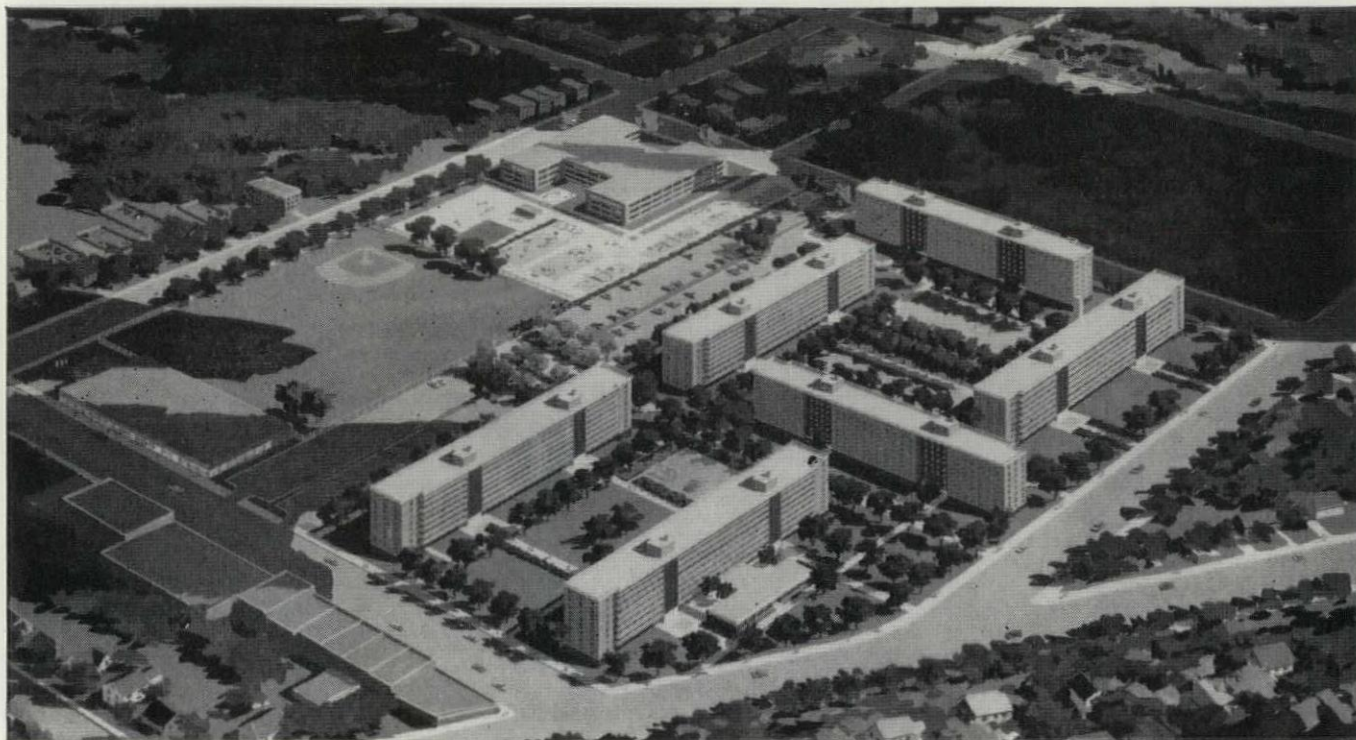
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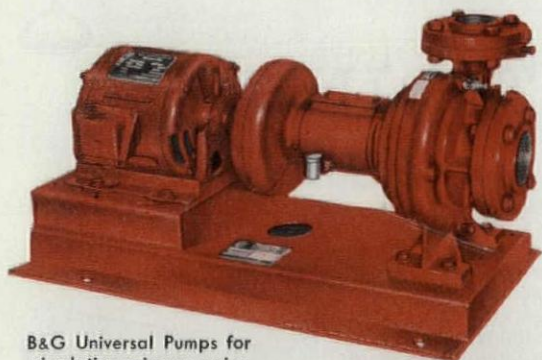
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Continued from page 262

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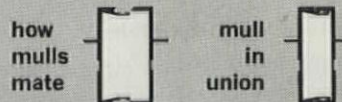


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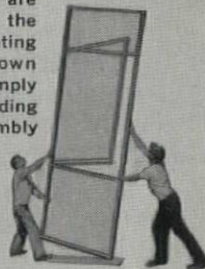


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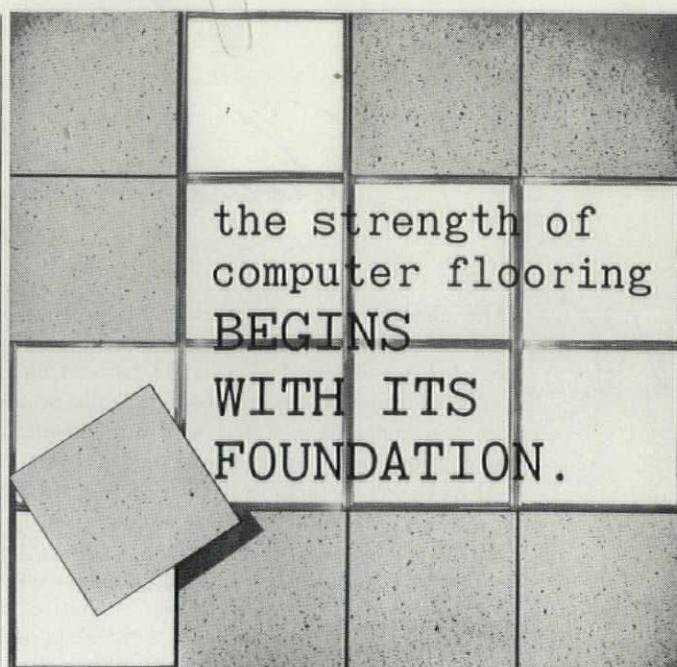
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Thomas H. Lougher

P.S.

The change in Soviet architecture, described and explained in Mr. Minervin's article (page 168), I found most interesting, and I hope that others of you do also. I had hoped to visit the Soviet Union this spring, simply to see what the new, contemporary approach is really producing, but I have had to postpone the trip and satisfy myself with this exposition and the increasing number of photographs of completed work and projects that are coming through.

I had several reactions to the article. First, very naturally, as I read the arguments Mr. Minervin used in explaining a "general tendency toward simplification... and toward establishing a new architectural form," I thought of the interview I had had at an international conference in Warsaw in 1952 with Alexandre Vlasov, the man who submitted the design for a parallelepiped building whose lobby ceilings are "of glass and concrete" and where "the free, spatial plan of the lobby, combined with the originality of its structural solution, lends it a new aesthetic quality." Vlasov, at that time Chief Architect of Moscow, discussed the reasons why the Soviet Union was then doing pseudo-classic architecture. The change in attitude is pointed up sharply when one compares that discussion with the expressions of Minervin today.

Vlasov had said that "...simplified architecture—bands of windows, concrete forms" was not appropriate, because it was "not dear to anyone but the architect himself." Now, says Minervin, "beauty in architecture... is achieved through construction of a building that is harmonious, and that meets the functional, material, and practical demands made of it." In 1952, Vlasov said to me: "In the West, the building industry is entirely tied up to the new building forms. We do not consider that this would give us the 'material' we need." In 1961, Minervin says: "The most recent phase in the evolution of modern Soviet architecture is characterized by new construction methods." Vlasov spoke of our lack of appreciation of history, and said Soviet architecture was "based on the deep roots it has... in a tradition of architecture and the arts." Today, writes our correspondent, the aim is "simple outlines, good proportions, the avoidance of decorative forms that are not justified functionally." The circle has been completed. Vlasov, who said he had been, in his youth, a modernist "like Le Corbusier or Gropius," who went through the Stalin period as a classicist and a defender of classicism, has once more accepted "a revision of the very concept of beauty in architecture."

The second thing that strikes me in the description of "the new aesthetic in socialist architecture," is the use of the early 20th-Century arguments for modernism, as though these are new thoughts and directions. The words and phrases that Gropius, Mies, Le Corbusier, and Wright used in the second decade of the century are all here, expounded as though they were new: "simple... 'the struggle against superfluity'... 'a new understanding of what beauty is'... 'technological progress'... the change from 'the traditional concepts of monumentality, scope and proportion'... 'harmony in free arrangements'... 'industrialization based on unification and standardization'... and so on. Not that one would argue with these perfectly valid concepts today; it is just curious to read them, advanced as new, Soviet-incepted ideas.

And the third thing that interested me was the unwillingness, so far, to accept contemporary attitudes toward painting, sculpture, and the other plastic and visual arts. There is "wide use of the fine arts in architecture," but one wonders what the results will be when the new functional, industrially produced architecture is embellished with works of "socialist realism." The other art forms, current photographs indicate, still remain completely academic, and eschew the "so-called abstract art," which, Minervin says, "destroys the realistic foundations of any art truthfully reflecting life." It will be interesting to see whether the time comes when the Soviet Union discovers modernity also in the other arts.