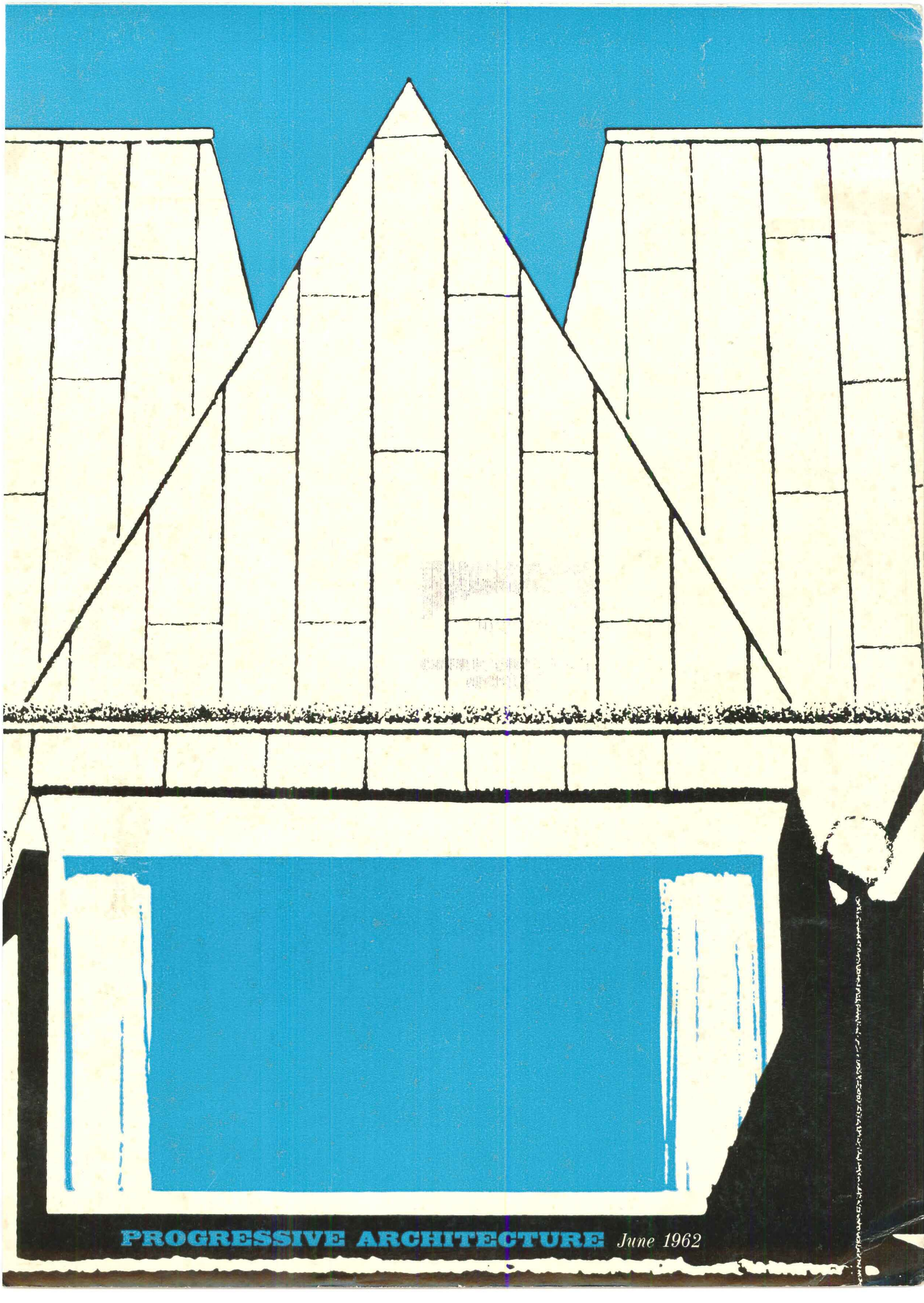

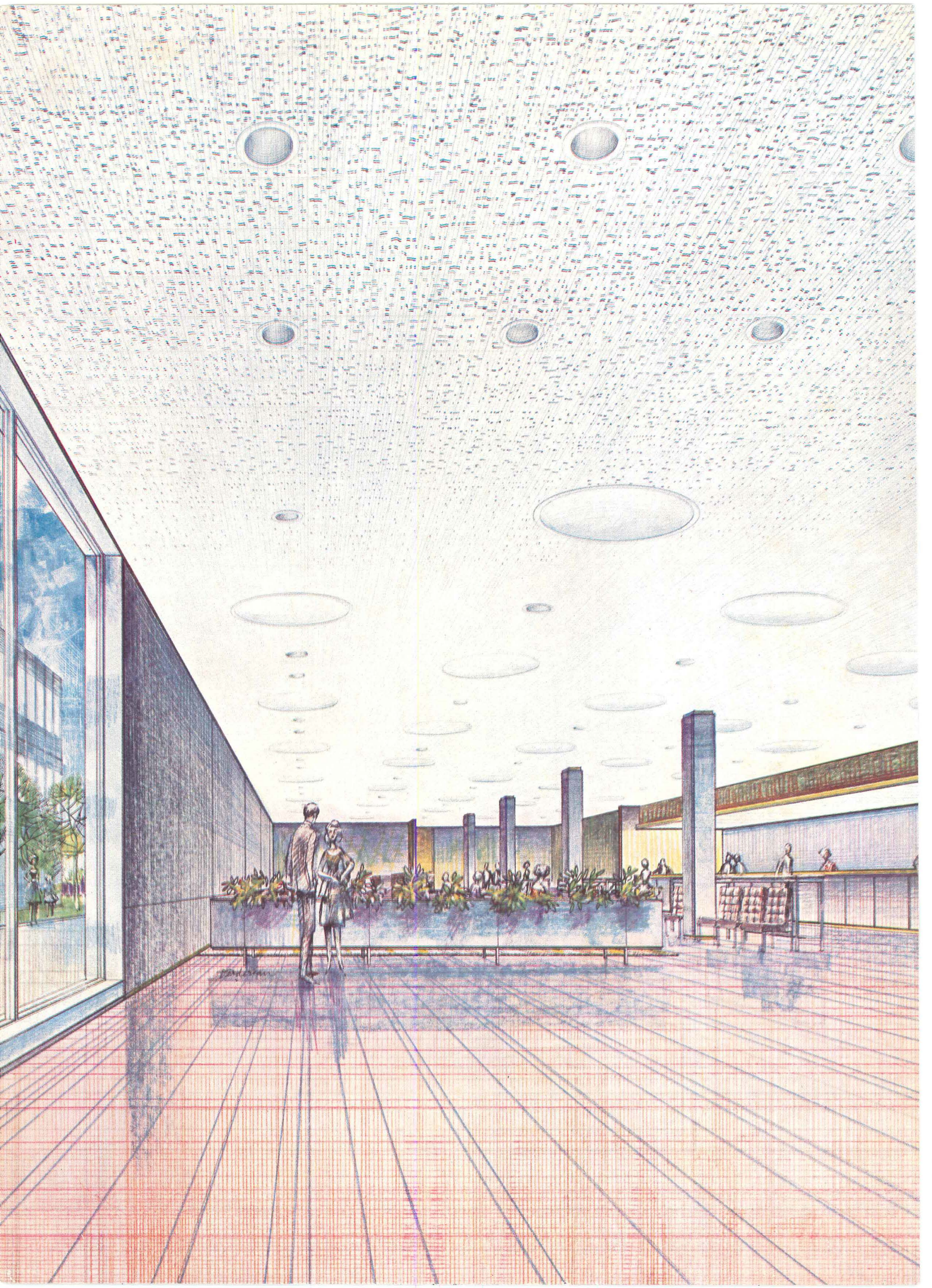

New bank and office building gets efficient air diffusion, 4-hour fire protection, $25,000 savings— with Armstrong Ventilating Fire Guard Ceilings

Uniform diffusion of conditioned air, summer and winter—that's one function of Armstrong Ventilating Fire Guard Ceilings in this new seven-story, Albany, N. Y., building. Conditioned air is fed through a single stub duct into each plenum and forced under steady pressure through thousands of perforations (blended into the ceiling pattern) – efficiently ventilating and cooling or heating the room below. And – even before the ceiling is installed – Armstrong's exclusive plenum-engineering procedures ensure that its performance will be satisfactory.

Ventilating Fire Guard Ceilings have all the advantages of regular Fire Guard; they hold Underwriters' Laboratories ratings for one- to four-hour fire protection. Here, they satisfy the Albany fire-code requirement for a time-design-rated floor-ceiling assembly, giving steel structural members four-hour fire protection.

Armstrong Ventilating Fire Guard Ceilings offer two big economies. Their ventilating function saves up to 15¢ a square foot by cutting supply ductwork, eliminating diffusers, and lowering construction costs. Being Fire Guard, the ceilings eliminate the need for intermediate fire protection, saving up to 30¢ a square foot, up to two months' time through dry installation, and often earning considerably lower insurance rates. (Ventilating Fire Guard Ceilings in this Albany building saved about $25,000.) Other economies include reduction of plenum height, thereby reducing floor-to-floor dimensions; and expected money-saving on rearranging office space—since partitions go anywhere under the Ventilating Ceiling without changes in ductwork or diffusers.

MECHANICS EXCHANGE SAVINGS BANK BLDG., ALBANY, N.Y. Architects: Julius Tauss & A. L. Lewis, Glenmont, N.Y. Consulting Architect and Architect for the Bank: George W. Clark, New York, N.Y. General Contractor: McManus, Longe & Brockwehl, Inc., Albany, N.Y. Acoustical Contractor: T. J. Bell & Co. Inc., Albany, N.Y. Owner-Builder: Bernard F. Picotte & Sons.

Armstrong ACOUSTICAL CEILINGS

First in fire-retardant acoustical ceilings

TECHNICAL POINTS FOR ARMSTRONG VENTILATING FIRE GUARD SPECIFICATIONS

MATERIAL DESCRIPTION

'Ventilating' acoustical materials will be used to distribute conditioned air from a pressurized plenum through small perforations extending through the tile. Perforations (approximating 2% of the tile surface) shall blend inconspicuously with the material's normal pattern.

JOB CONDITIONS

Standard recommendations of the Acoustical Materials Association will apply. In addition, before installing the Ventilating Ceiling, the Acoustical Contractor shall ensure that the supply-air plenum is adequately sealed by the contractor responsible for the plenum construction.

PLENUM HEIGHT

Ventilating Ceilings are to be installed so as to provide a minimum plenum height, as calculated by Armstrong's plenum-engineering procedures. This is to assure less than 10% variation in plenum pressure (about a 5% variation in the air flow rate through the ceiling) and to prevent negative pressure areas in the vicinity of obstructions.

ACOUSTICAL MATERIAL

Acoustical materials shall be Armstrong Ventilating Fire Guard (type and size) installed on a (concealed/exposed) mechanical suspension system according to manufacturer's recommendations. Materials shall qualify as one, two, three, or four hour fire retardant assemblies as listed by Underwriters' Laboratories, Inc.

CERTIFICATION & VERIFICATION

The manufacturer's representative and the acoustical contractor shall provide the owners with a signed statement that the Ventilating Ceiling material holds the rating required by UL specifications for fire-resistive materials, and was installed according to the manufacturer's recommendations. Technical data verifying the calculations for the engineered plenum must be submitted to the ventilating engineer prior to bidding.

PLACEMENT OF STUB DUCT

Size of the supply-air stub-duct opening shall be accurately calculated by Armstrong's plenum-engineering procedures to prevent 1) noise due to inlet duct velocity and 2) negative pressure areas in the vicinity of the duct. Stub ducts shall be placed as shown on the plans.

GUARANTEE

Manufacturer and contractor shall guarantee that air supplied to the plenum will be delivered through the Ventilating Ceiling in a manner consistent with the ceiling layout and in a quantity determined by the amount supplied to the plenum—as designated by the ventilating engineer. They shall also guarantee that the air flow will not exceed the safe load limits of the Ventilating Ceiling and the installation system.

For special plenum-engineering data, with all factors and formulae needed to design and engineer this Ventilating Ceiling system, contact your Armstrong Acoustical Contractor or Armstrong District Office. For complete specifications for Armstrong Ventilating Ceilings, write Armstrong, 4206 Watson Street, Lancaster, Pa.

Rendering by Ara Derderian

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built to meet the requirements of tomorrow

Elevator value must be measured in how well the equipment performs 20 or 30 years after it is installed. Dover Elevators are built with patient attention to detail to perform efficiently and last for the life of the building. Geared and gearless hoisting machines, motors, motor-generator sets—all rotating equipment—and all other major components are manufactured by Dover and mechanically and electrically mated for optimum performance. Beautifully styled cabs and entrances satisfy the esthetic requirements of the most modern buildings. Dover installation, maintenance service and long-term parts availability assure owner satisfaction. Write for catalog.

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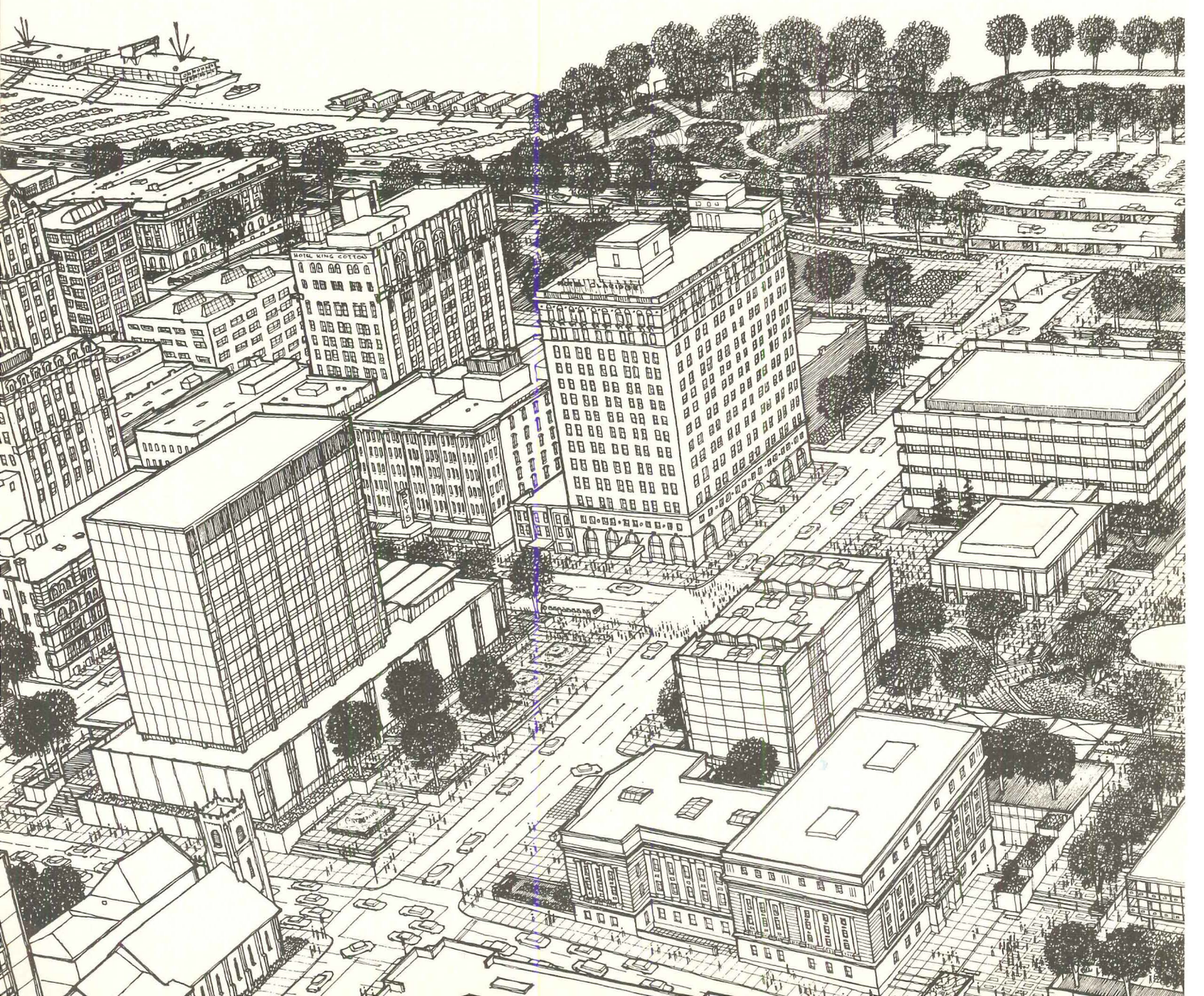
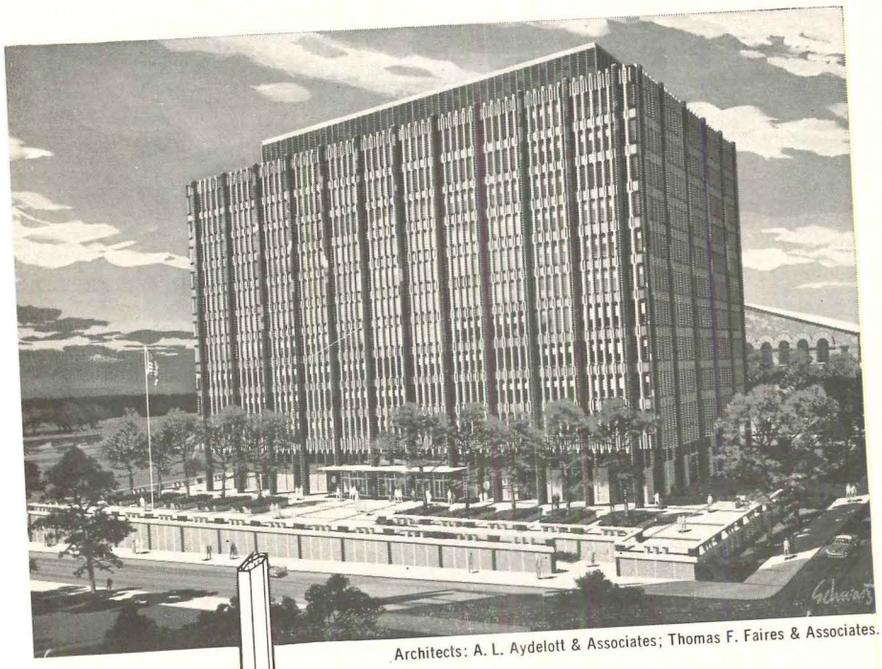
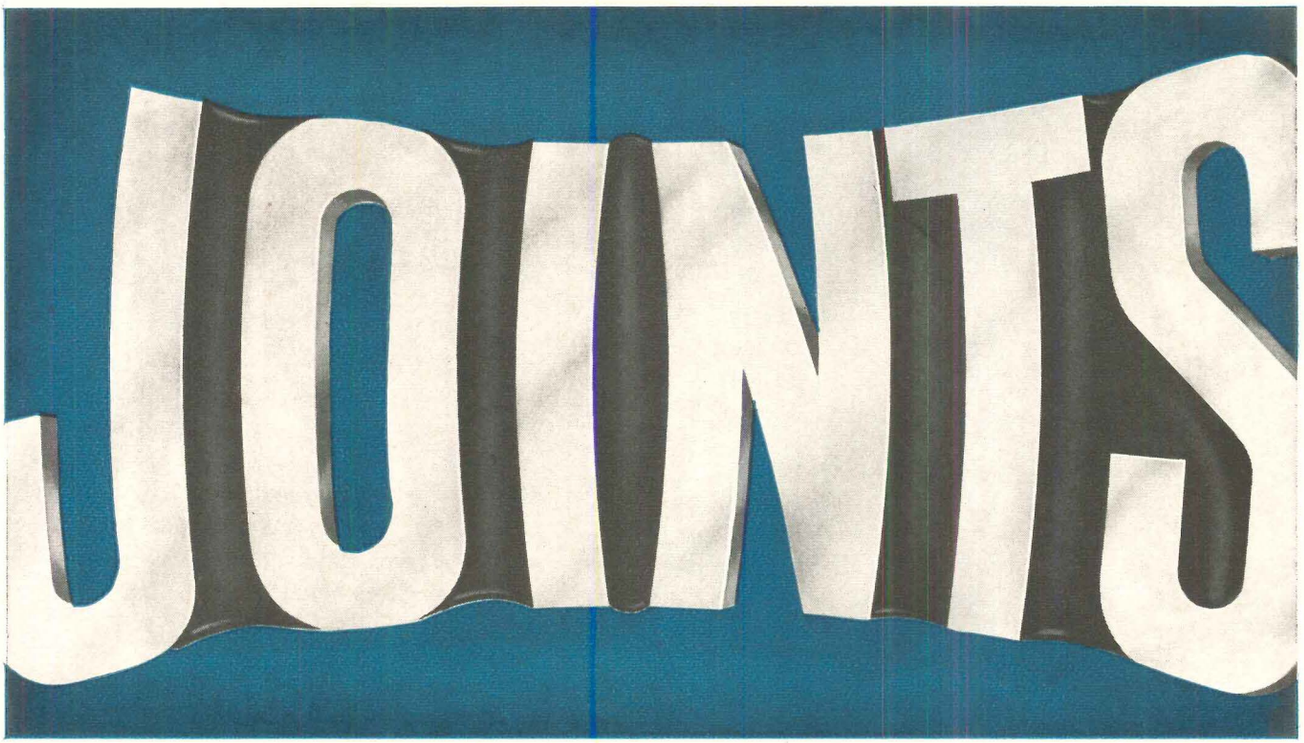




Architects: A. L. Aydelott & Associates; Thomas F. Faires & Associates.

MEMPHIS CIVIC CENTER

A master plan for the Memphis Civic Center, designed by the League of Memphis Architects, Inc., is shown below. Proposed as an eight-year program, it is now underway with construction of a new Federal Office and Courts Building (pictured at left), major structure in a dramatic superblock, well along. This 13-story building is being equipped with six modern Dover gearless passenger elevators.



Better than 100% expansion without bond or cohesive failure–measured against American Standard performance specification. Only polysulfide-base sealant does it!

For filling critical joints in any structure, for glazing, for reliable, long-life weather proofing, one sealant stands out beyond all others—sealant based on THIOKOL polysulfide liquid polymer measuring up to American Standard Specification A116.1. You can pay more for sealant but you can't buy better.

Polysulfide-base sealant applies by caulking gun, custom fits any joint regardless of size, form, or accidental variation from original design. It cures to a resilient solid rubber that bonds with weld-like strength to any and all building materials in any combination—and even adds a structural strength of its own. A polysulfide rubber seal resists aging, weather, moisture—elements destructive to lesser materials. It is performance-proved by 20 years of service in the field.

Above all—polysulfide-base sealant will expand to better than double its original width and return to normal—without tearing, sagging or losing its adhesive strength, or its weatherproofing serviceability. For a detailed brochure on the treatment and sealing of structural joints, write to Thiokol.

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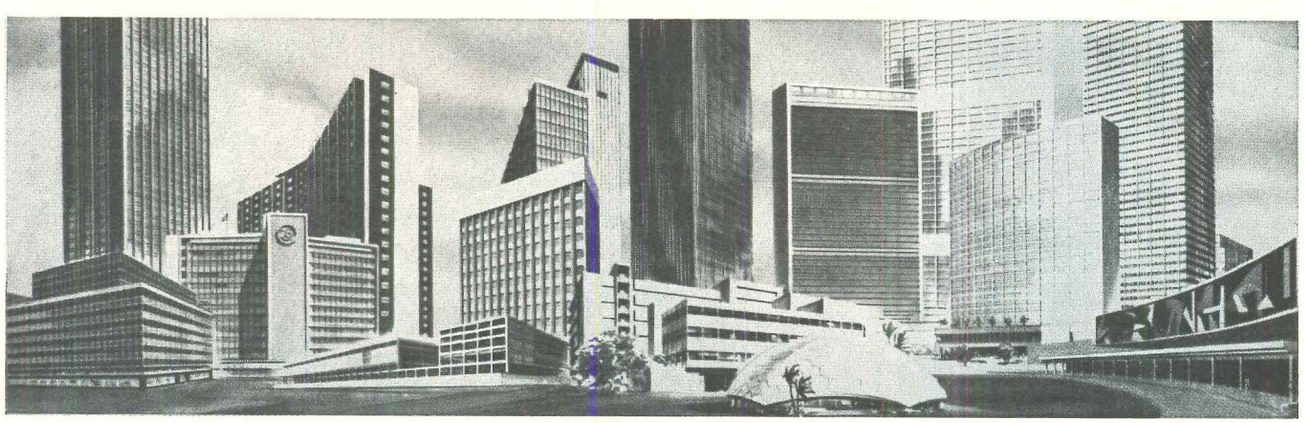

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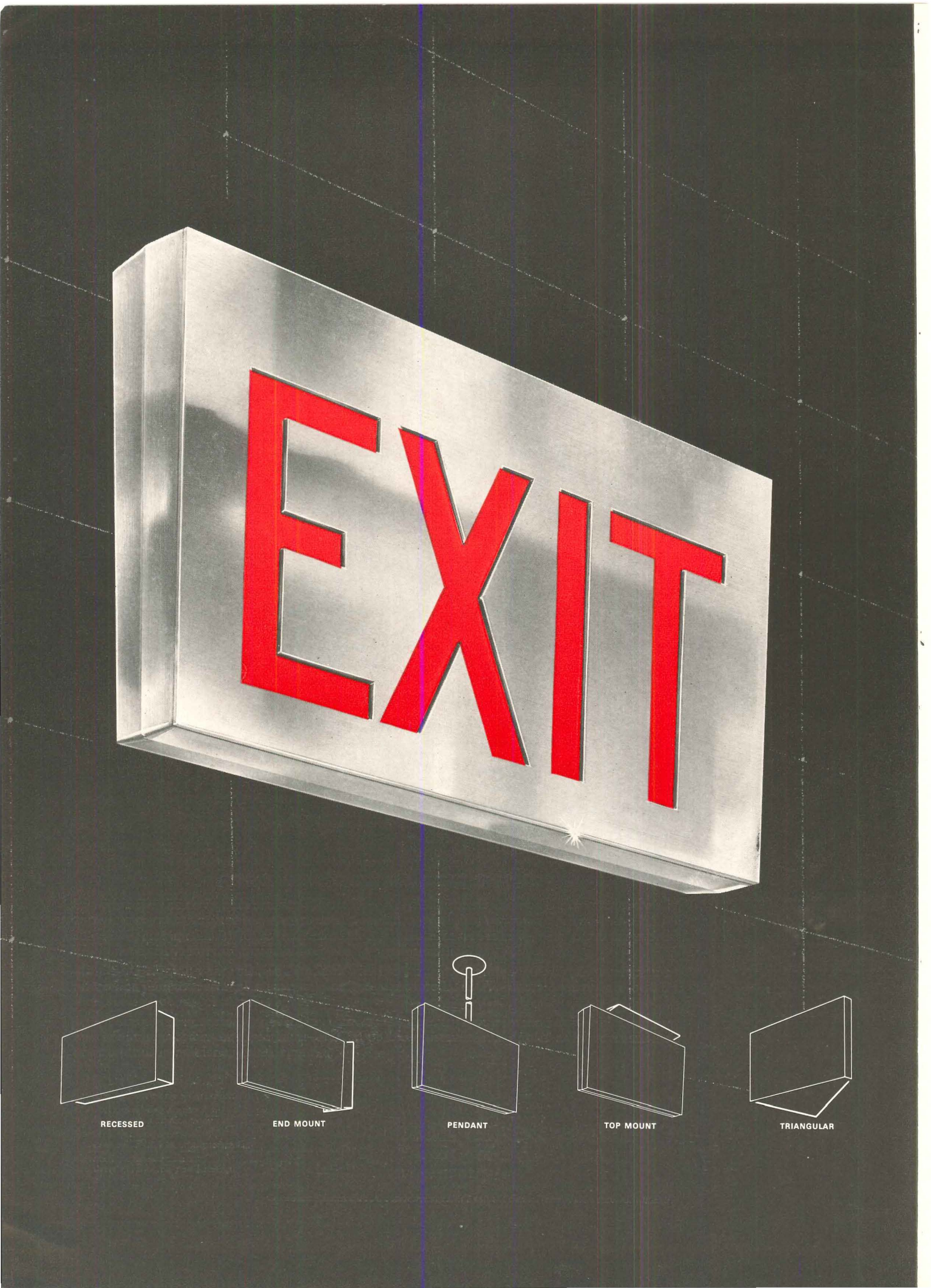
Indexed in Art Index, Architectural Index. Second-class postage paid at New York, N. Y. VOLUME XLIII, No. 6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Now, a completely new concept in lighted directional signs . . . the Miller PathFinder. This new line is made of die-cast aluminum with a satin finish that adds beauty to function. Taper-slim and shallow, PathFinder surface type units have the styling appeal of recessed units without the costly installation. Prices are surprisingly low. Before specifying exit signs on your next project, compare these features with conventional units. **LONGER LIFE** almost six years of continuous burning (50,000 hour lamp life) is guaranteed. **CUTS POWER AND LAMP REPLACEMENT COSTS** four 7-watt filament lamps operating at reduced voltage save $5.93 per year over conventional signs. Lamp replacement in PathFinder averages only 9c annually—or a savings of $2.52 over conventional units. Total *PathFinder savings per sign $8.45* **PLUS** *the labor savings achieved by eliminating as many as seven lamp replacements per year in a standard unit.* **MAINTENANCE FREE** install PathFinder now and forget costly lamp replacement until 1968. **COMPLETE LINE** both stencil and luminous field units are available for six different mountings: recessed, back, end, top (ceiling), pendant and triangular. All models offer a choice of red or green letters or background to meet local code requirements. Directional arrows can be furnished at no added cost. **MORE COMPACT** housings for all PathFinder units are 13″ x 9″. Surface type units have a thickness of less than two inches at the top, tapering to just over one inch at the bottom. For complete information and a fully illustrated brochure on the Miller PathFinder line, including directional arrows and downlight that are available, write: PathFinder, The Miller Company, Meriden, Connecticut.

*TM (Patents 2,821,800 and 2,886,911 other patents pending.)

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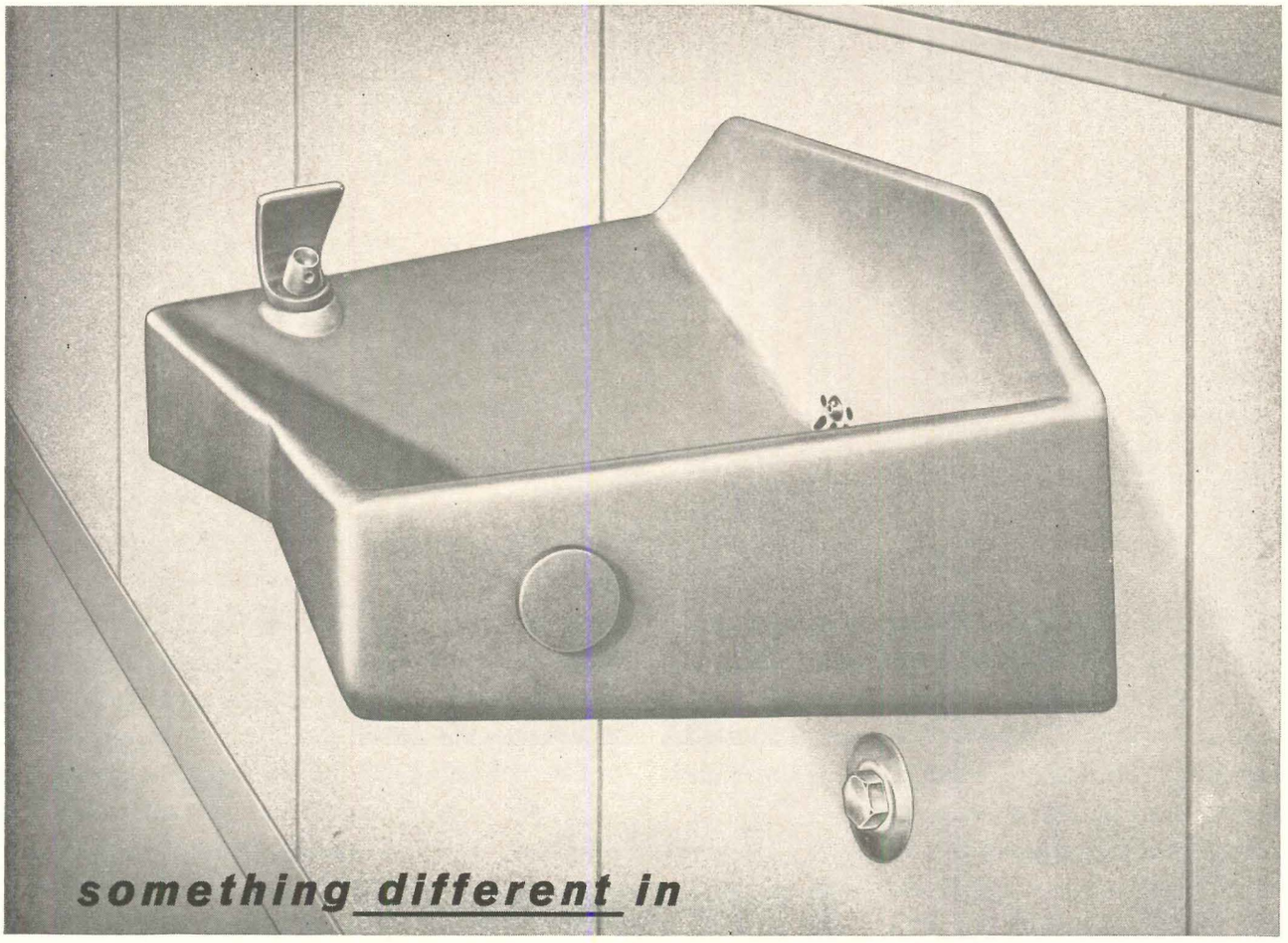

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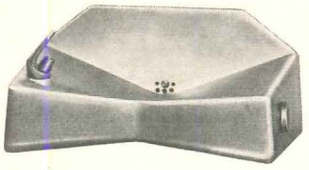
HAWS MODEL 7J

From every angle this Haws drinking fountain breathes distinction that matches your *own* distinctive ideas. It's cast aluminum, hard anodized to a permanent, abrasion-resistant, muted bronze color—with new push-button valve and sanitary angle stream bubbler. If you desire interior (or exterior) fixtures that do credit to your project, look to Haws! We'll send you specs on Model 7J: write us now.



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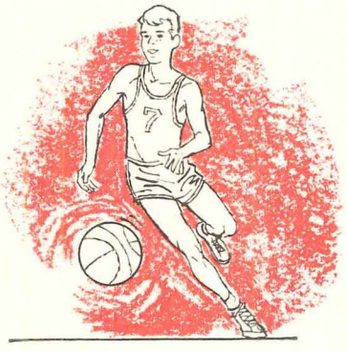
GIVES THEM WIDE, OPEN SPACES...



gives you more efficient, economical construction

How do you roof over a large area and still keep internal supporting columns to a minimum? This is a problem faced every day by designers of supermarkets, factories, gymnasiums and other structures requiring unobstructed floor space.

There's a simple, efficient and low-cost answer to this problem: New high strength "J" and "H" series open web steel joists. These efficient members provide a maximum of strength with a minimum of dead load. They can span considerable distances and bear heavy loads without intermediate support. They're available in lengths up to 48 feet, and even in the largest sizes are easy to handle and set in place.

Would you like to learn more about the construction and design of open web steel joists? The Steel Joist Institute specifications and load tables provide helpful technical information. Write for your copy.

***Joist-ol-o-gy, N.** (As Webster *should have* defined it.) The art or science of designing and building more economical structures through the use of open web steel joists.

6105

STEEL JOIST APPROVED INSTITUTE

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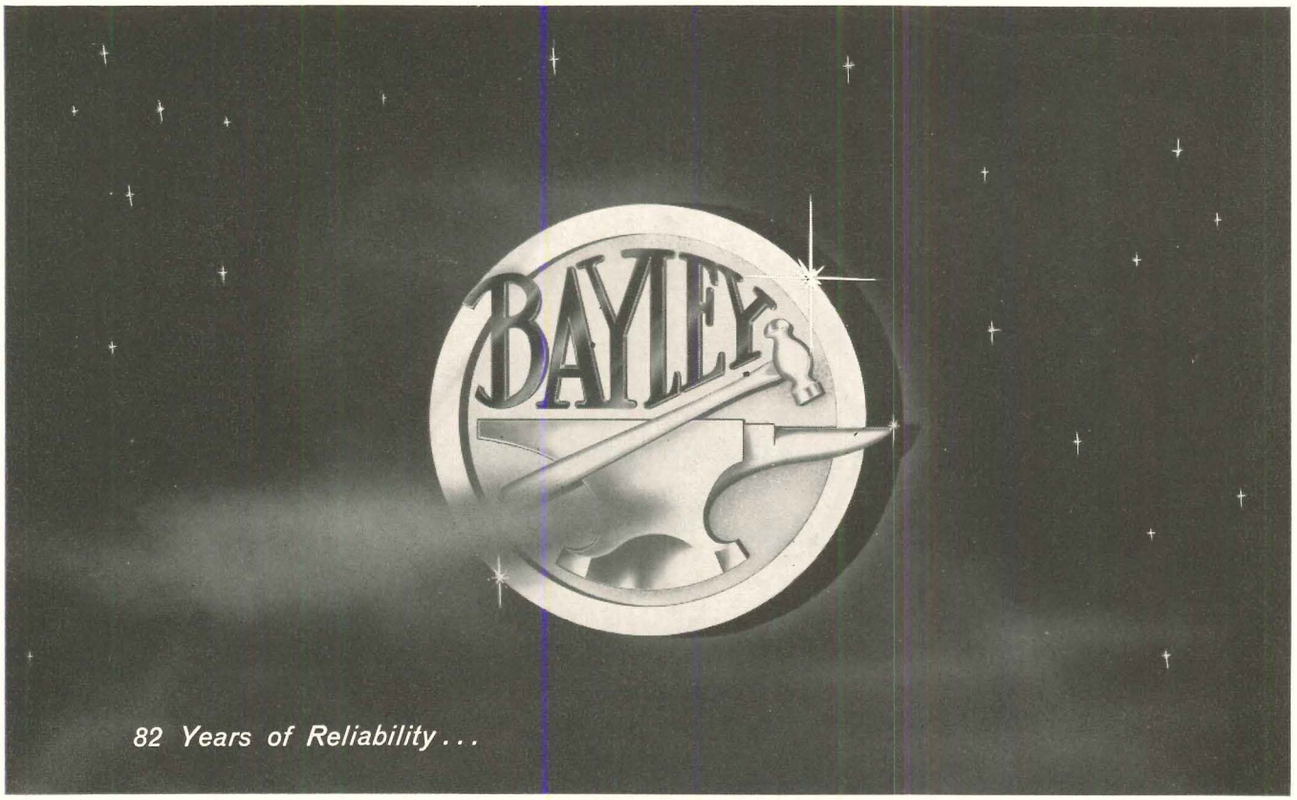
Another in a series of advertisements placed in the public interest by the STEEL JOIST INSTITUTE, Room 715, DuPont Circle Building, Washington 6, D.C.



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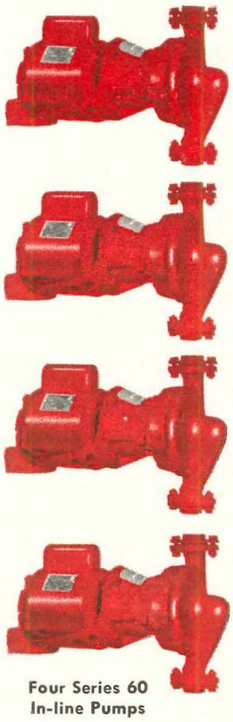

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Boosters

THE "SPACE NEEDLE"...B&G PUMP EQUIPPED FOR HEATING AND COOLING

Soaring into the sky above Seattle, the Space Needle is the dramatic theme structure of the Century 21 Exposition, America's Space Age World's Fair, open from April 21st through October 21st, 1962. This memorable architectural feat rises 600 feet and is topped by a saucer shaped restaurant and a flaming gas beacon.

Nine B&G Pumps were selected to handle the heating and cooling loads of the restaurant and office and to circulate water for domestic service. B&G Flo-Control valves are also included in the installation.

B&G Pumps are specifically designed to meet the exacting requirements of liquid heating and cooling systems. Approximately 4,000,000 have been sold to date...ample evidence of outstanding efficiency and dependability.

Owner: Space Needle Corporation
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the span between imaginative design and economical construction

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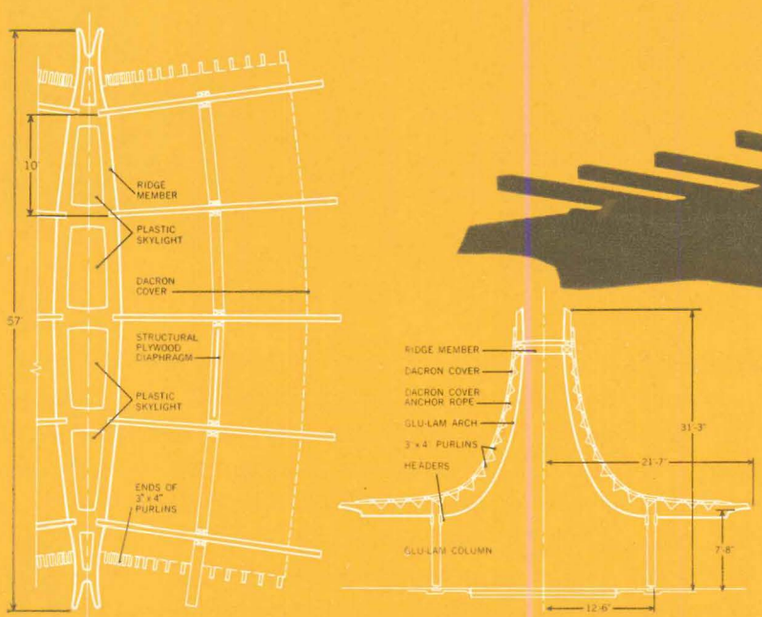


Ten Rilco arches rest on 3½" x 11⅜" spaced glu-lam columns. Spaced headers are 4" x 12" and 2" x 12", and the purlins are 3" x 4". The roof is a vinyl-coated dacron, anchored to the arches. Drop curtains are located in six bays and structural plywood diaphragms in the other two.

CENTURY 21 INFORMATION CENTER
GENERAL INSURANCE COMPANY OF AMERICA

LOCATION: Seattle, Washington

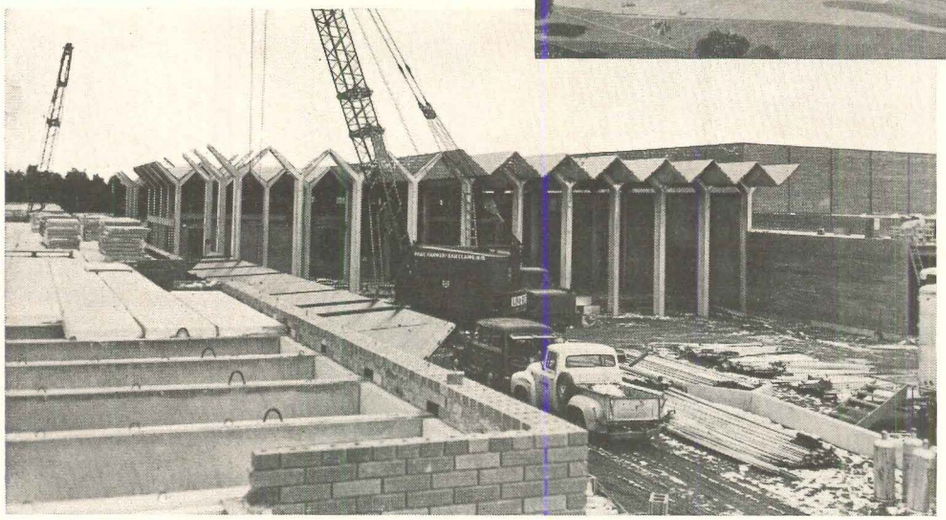
DESIGN: Austin Associates
Seattle, Washington

CONTRACTOR: McCann Construction Company, Inc.
Seattle, Washington

Variety of precast, prestressed concrete members

FOR BIG, NEW WISCONSIN SCHOOL

Architect's rendering of the school as it will appear when completed. The classroom complex on the right and the gym-auditorium-shop area on the left are joined in the center by the cafeteria.



Folded concrete plates supported by 25′ high Y columns form the cafeteria roof. At lower left are 2′ x 4′ lightweight roof slabs on prestressed joists. The roof slabs provide insulation and an attractive acoustical ceiling. All concrete roofing units are left exposed to inside view.

• Prestressed folded plates resting on "Y" shaped columns roof the cafeteria. Giant single tees up to 107′ long span the auditorium/gymnasium. And the classrooms are topped with lightweight concrete slabs supported by prestressed keystone joists. This variety of roof units, together with concrete masonry walls, make Eau Claire's new junior–senior high school completely fire-resistant, as well as architecturally pleasing inside and out.

LEHIGH EARLY STRENGTH CEMENT FOR ALL ROOF MEMBERS

In precasting the plates, tees, columns and joists, Eau Claire Stresscrete used Lehigh Early Strength Cement for both quality and maximum production efficiency. Use of this cement with steam curing made it possible to re-use forms on a daily cycle. And for the same reasons, Western Mineral Products uses Lehigh Early Strength Cement in the manufacture of their lightweight "Perl-Tile" slabs.

This is another example of the advantages of Lehigh Early Strength Cement in modern concrete construction.

Lehigh Portland Cement Company, Allentown, Pennsylvania.

LEHIGH CEMENTS

The folded plates for the cafeteria roof are 5′3″ wide, 2½″ thick. Along the length of the building they make three spans of 60, 48 and 60 feet, with an 8′ overhang at each end.

Architect/Engineer: Paul, Hallbeck, Anderson, Eau Claire, Wis.
Contractor: Bor-Son Construction, Inc., Minneapolis, Minn.
Mfr. of Concrete Units: Eau Claire Stresscrete, Eau Claire, Wis.
Erection of Precast Units: Paul V. Farmer, Inc., Eau Claire, Wis.
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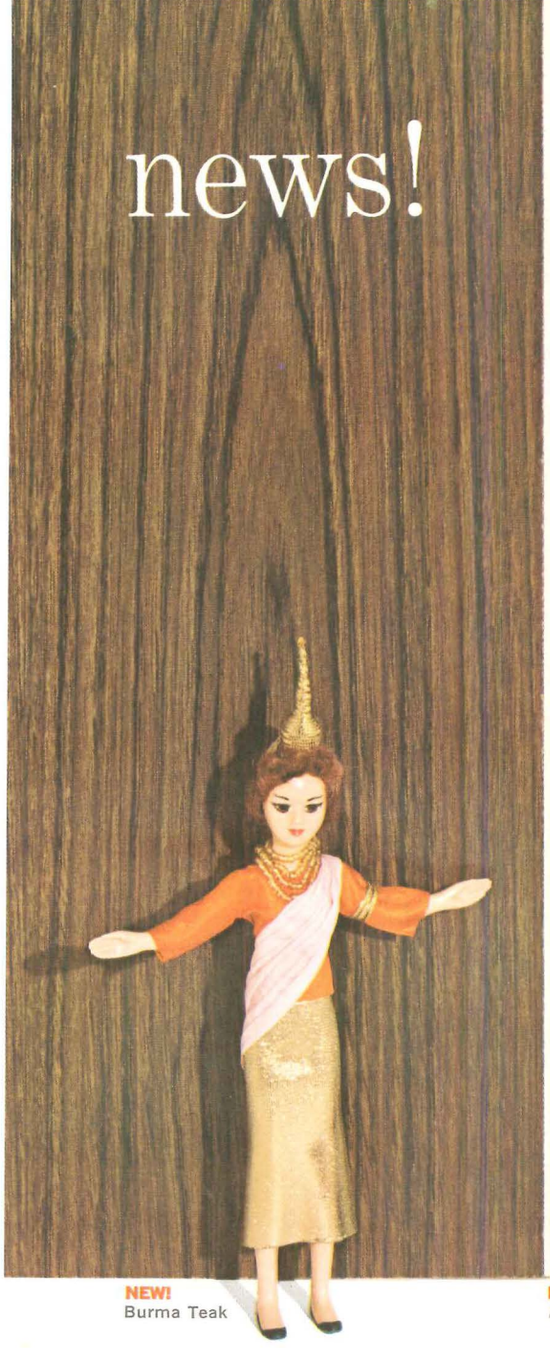

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NEW!
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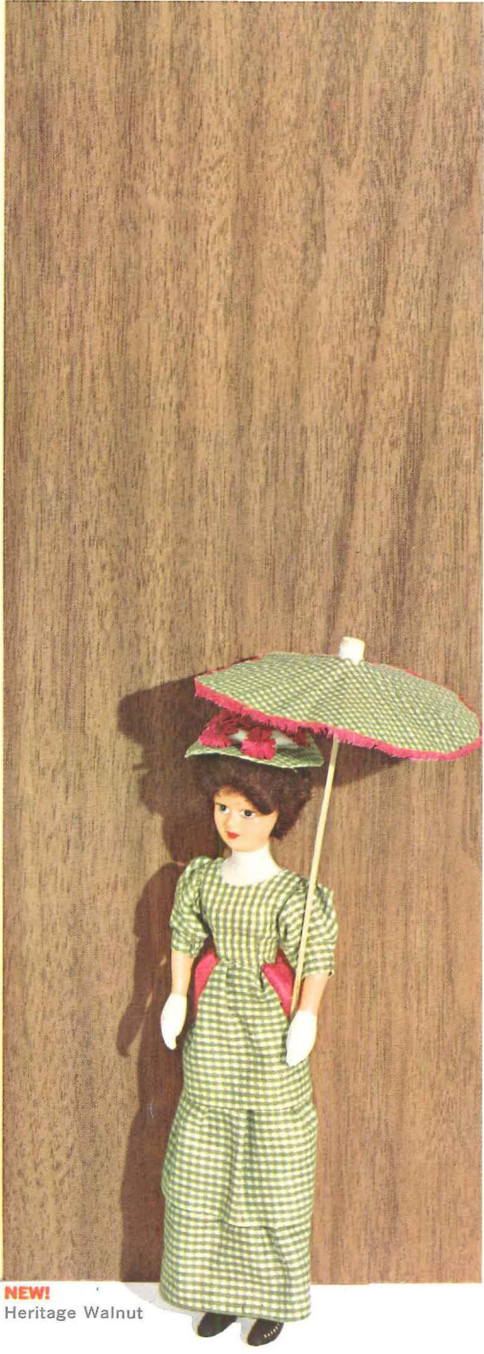

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Eleven rich Consoweld woodgrains are available in a complete range of panel sizes to fit *any* decorative scheme – and all feature the enduring beauty of maintenance-free laminated plastic. For more information refer to AIA File 35-C-12 or contact your nearby Consoweld distributor. Consoweld Corporation, Wisconsin Rapids, Wisconsin.

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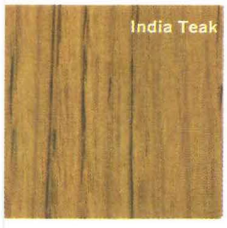

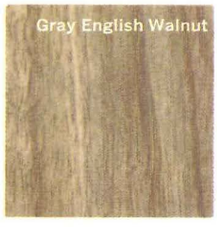

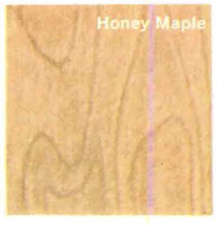

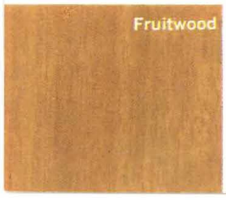

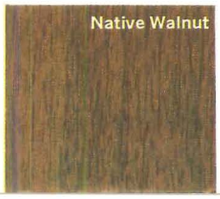

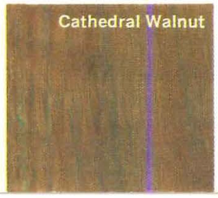

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☐ 1962 pattern and decorator rings

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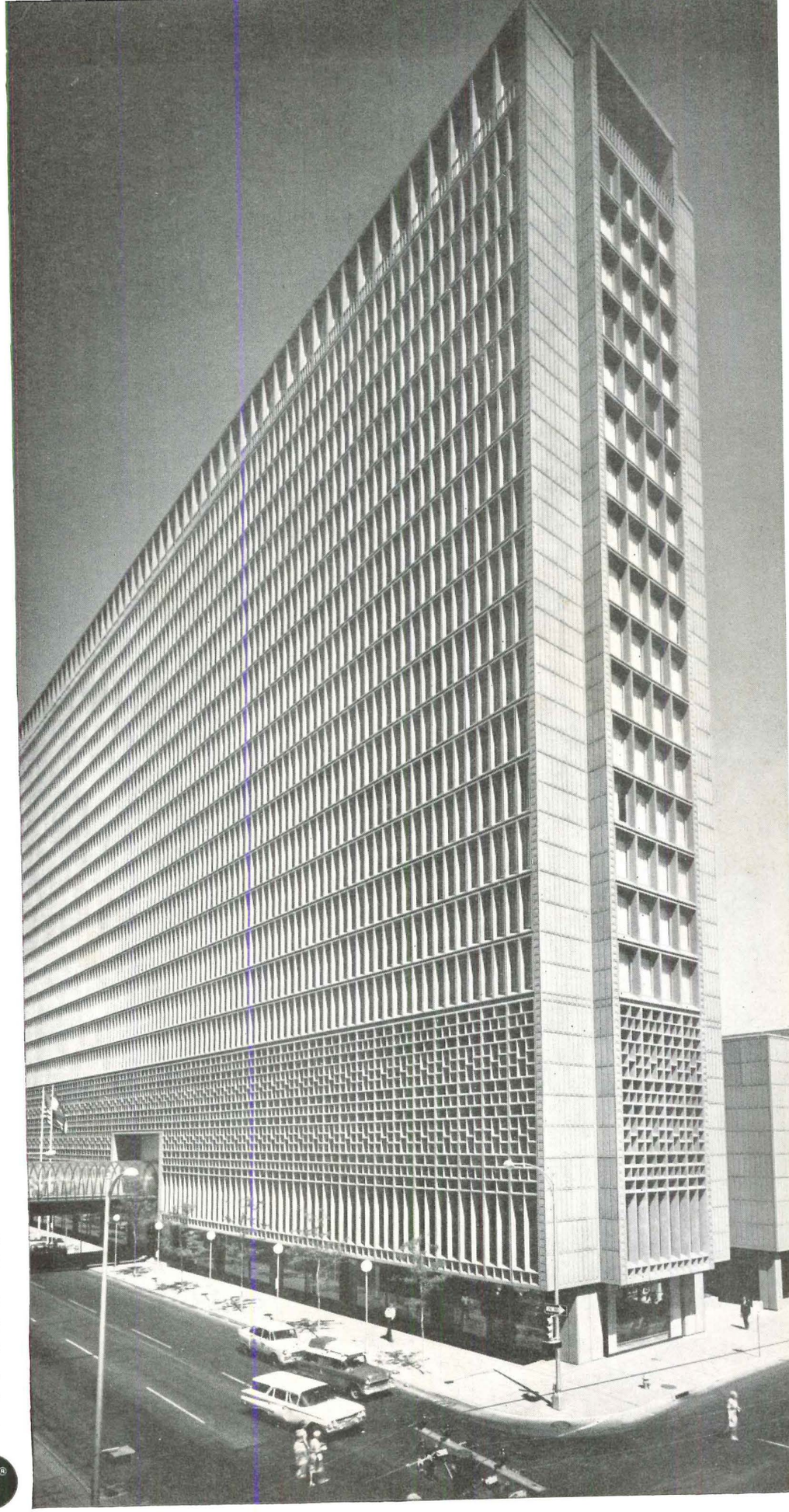
Plastic-faced flush doors offer beauty and durability in commercial, institutional, and residential installations.

WHO LOOKS AT THE ROOF?



No one has to look at the roof of this award-winning building (AIA Award of Merit, 1961), because a Ruberoid roof was applied.

A Ruberoid roof, expertly built-up with Ruberoid special roofing bitumen, by an approved Ruberoid roofer, assures years of weather-tight, maintenance-free service.

Look up to the finest in roofing on your next project. Specify Ruberoid!

For your copy of the industry's most complete built-up roofing specification catalog. Write: The RUBEROID Co., 733 Third Avenue, New York 17, N. Y., or refer to Sweet's File 8A-RU.

RUBEROID®

DENVER-HILTON HOTEL, DENVER, COLORADO
Architect: I. M. Pei and Associates
Roofing Contractor: Asphalt Products Company
Ruberoid Specifications: Special Roofing Bitumen, Asphalt Felt, gravel surface

For more information, turn to Reader Service card, circle No. 377

For more information, circle No. 309 ➤

COMPLETELY AIR CONDITIONED SCHOOL

Cooling AND Heating At A Cost Comparable To A Conventional Central Heating System

Each classroom has its own individual Norman Heating, Ventilating and Cooling System For Complete Room Comfort Control

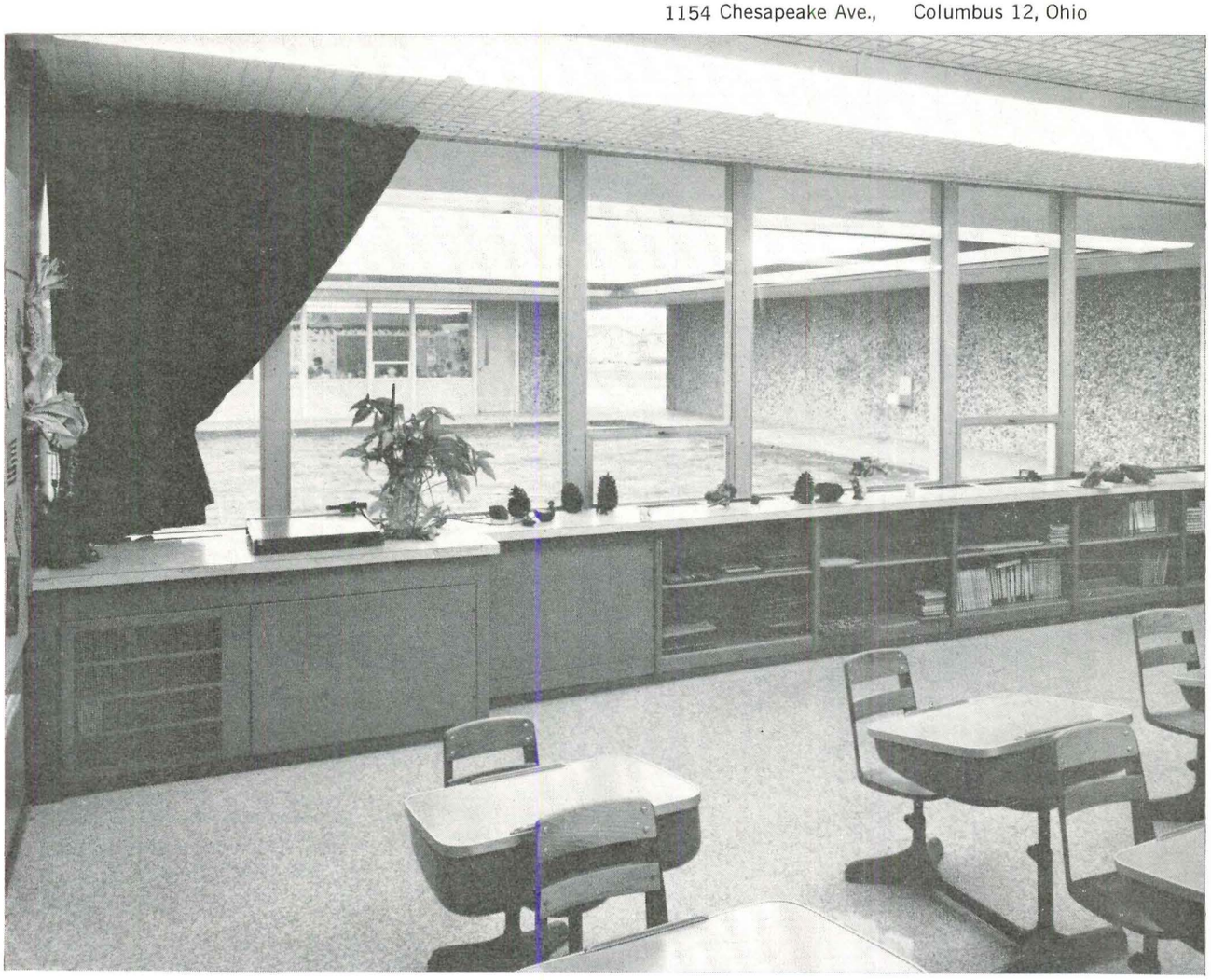
Norman Schoolroom Systems offer the bonus benefit of air conditioning. By designing this school around Norman Classroom Packages, it is completely air conditioned for year-round comfort. Yet the cost compares favorably with a conventional central heating system alone.

Each of the 12 classrooms has its own Norman Heating, Ventilating and Cooling System with Util-i-Duct bookshelf sections providing efficient air distribution. Three-ton air cooled condensing unit for each room is mounted on the roof, eliminating any noise in the classroom.

No costly extra building space for a central heating plant. No duct tunnels or pipe trenches. No chimney required. Future expansion is simplified. Just install a Norman individual classroom unit as each new room is added. And Norman flexibility permits air conditioning at the time of original installation or at a later date, if preferred.

Want to see the complete facts and figures on this completely air conditioned Fairbanks Elementary School, and descriptive literature on Norman Systems? Write today.

Norman®
DIVISION OF
JOHN J. NESBITT, INC.
1154 Chesapeake Ave., Columbus 12, Ohio



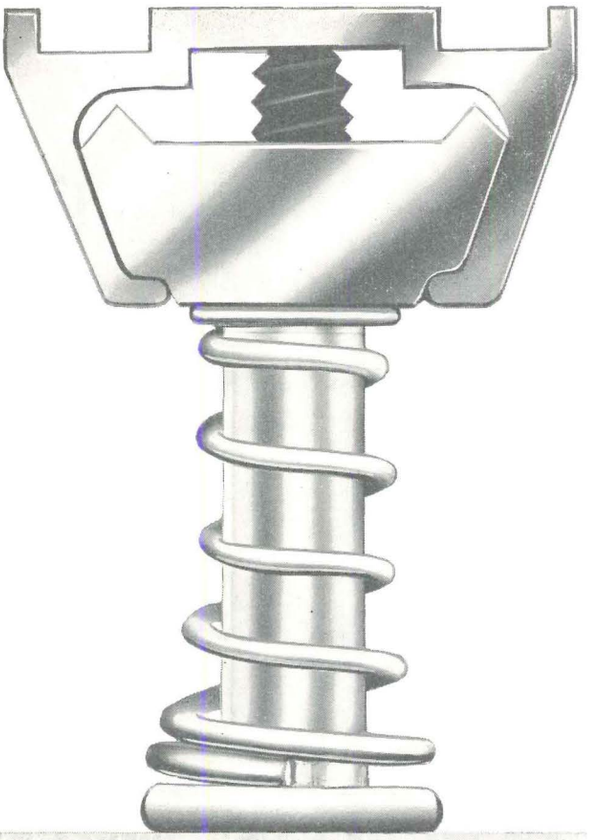
Fairbanks Elementary School: *Del Paso Heights, Sacramento County, Calif. Henry H. Kossow, Superintendent* ■ Architects: *Carter Sparks and Donald Thaden, Sacramento* ■ Engineer: *Leonard S. Stecher, Sacramento* ■ Contractor: *Emergency Refrigeration, Sacramento*

Bank cuts lobby upkeep with Terrazzo.

The smooth, jointless expanse of terrazzo flooring at Ogden's Commercial Security Bank accentuates the easy accessibility of its officers and services. Concrete-hard terrazzo will provide underfoot beauty and safety for decades—with never any waxing, buffing or repair. (It can save as much as 23¢ per square foot every year in cleaning labor alone.) ■ When you plan terrazzo floors, wainscots, stairs, specify a matrix of ATLAS WHITE portland cement. Its uniform whiteness brings out the true color tone of aggregates and pigments. Complies with ASTM and Federal Specifications. Ask your local terrazzo contractor. For terrazzo brochure with color plates, write to Universal Atlas, 100 Park Avenue, New York 17, N. Y.

Terrazzo flooring made with ATLAS WHITE cement at Commercial Security Bank, Ogden, Utah. Architects: Hodgson & Holbrook, Ogden. General Contractor: M. Morrin & Sons, Ogden. Terrazzo Contractor: J. A. Martina Mosaic, Inc., Salt Lake City.

USS **Universal Atlas Cement**
Division of
United States Steel



NO. 2500 FOLDING PANEL HARDWARE

only product with double-duty spring pivot facilitates installation and yields permanent door-track engagement/aluminum track, nylon guides/for two or four door, closet or between-room installations/hidden hardware for passageway use / designed by Grant, functional hardware craftsmen since 1895/complete catalog available on request

GRANT PULLEY & HARDWARE CORP.

49 High Street, West Nyack, New York
944 Long Beach Ave., Los Angeles 21, California

sliding door hardware • drawer slides • drapery hardware
pocket frames • pulls • special sliding hardware • closet rods

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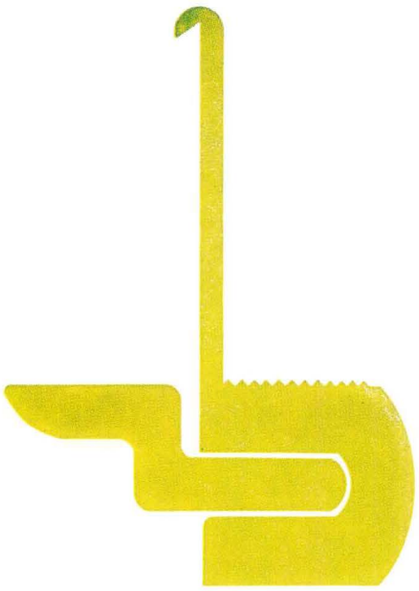
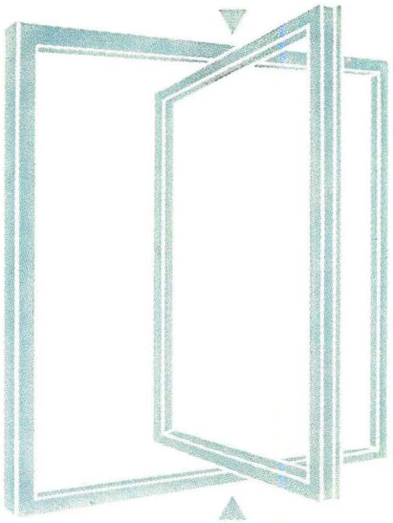


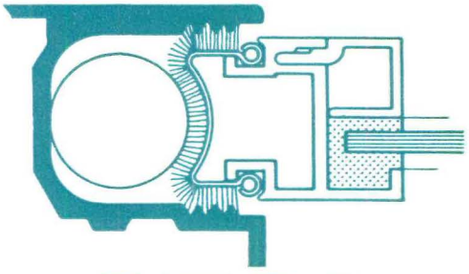
CLAMP

This clamp cuts fixed window installation time by seventy-five percent. An Adlake first (patent applied for), it holds glass, weatherseal and glazing strip under proper compression automatically. Never needs adjusting. Anchors the window frame to the building without a single screw. Put this clamp to work for you and save substantially. Specify Adlake on your next stationary fenestration. Write today for full information.



PIVOT

A reversible window is no better than its weatherstrip. If a weatherstrip turns brittle in winter or soft in summer, leaks occur. Windows may stick. Special maintenance will be required. Adlake weatherstrips for reversible windows are not affected by seasonal temperature extremes. They exert the same even pressure on vent and frame, year in and year out. Developed and patented by Adlake, this weatherstrip is available only on Adlake reversible windows. Specify them for your next fenestration.



SEAL

Twenty-five years ago, Adlake pioneered the use of woven pile weatherstripping especially for their single and double-hung windows. Combined it with Adlake patented, serrated guides to guarantee a reliable seal. To this day, no better method has been found, nor any as effective. This time-proven combination is still the only way to assure absolute dependability. Isn't this Adlake advantage worth stressing to your quality-conscious clients?

best with A+dlake®

WINDOWS AND CURTAIN WALLS

The Adams & Westlake Company, Dept. M-2206 Elkhart, Indiana

DIAL AREA 219 CONGRESS 4-1141

For more information, turn to Reader Service card, circle No. 400

Now comes a versatile new building material,  the Fiberglas Daylighting Panel. It combines the strength  of Fiberglas* with the durability of DuPont 100% Lucite® Acrylic. And it offers 9 performance benefits: 1. Installed cost at least 50¢ less per sq. ft. than sash and glass.  2. Best weather resistance  of any glass fiber reinforced panel. 3. Shatterproof;  won't dent. 4. Highest strength-to-weight ratio of any building material. 5. Translucent  – best daylight diffuser. 6. Colorful – and stays colorful.  7. Better thermal properties  than glass or metal. 8. Won't

rot, rust, decay, or corrode under chemical attack. 9. Low maintenance – no painting or replacing.  No other building material combines all 9 benefits. Let us show you actual samples. Just fill in and mail the coupon today.

Owens-Corning Fiberglas Corp.
Industrial & Commercial Div. Dept. RP
717 Fifth Avenue, New York 22, N. Y.

OWENS-CORNING
FIBERGLAS
T. M. REG. U. S. PAT. OFF.

* T-M. Reg (U.S. Pat. Off.) O-C-F. Corp.

Your new Fiberglas Daylighting Panel interests me. Please rush further information for an installation in _____

name _____ company _____

address _____

city _____ zone _____ state _____

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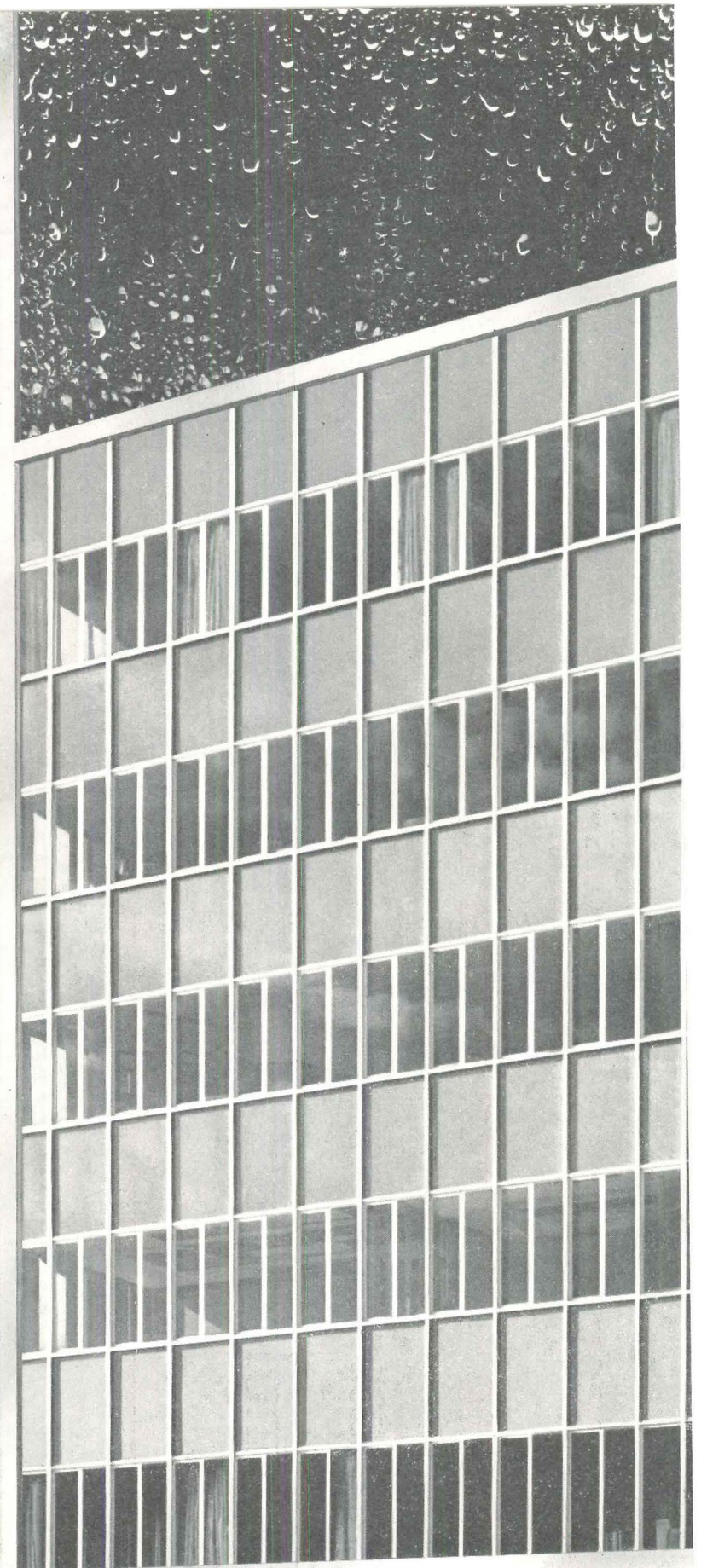
PITTCO®

curtain wall framing systems keep water where it belongs ...outside!



DESIGNED specifically for glass-clad curtain wall construction, PITTCO Framing Systems provide reliable protection against water penetration. To achieve this, the components used in every PITTCO System have been individually designed and precision-engineered to accommodate varying temperature, wind and weather conditions, while maintaining over-all design flexibility.

Metal-to-metal joints are weather-sealed with No. 1072 DURIBBON®, a special compound developed by our own laboratories for curtain wall glazing. Glass is dry set, with or without Neoprene glazing channels, depending on the system selected. A unique weep-vent system provides the necessary condensation drainage and spandrel ventilation.

In addition, PPG assumes full responsibility for the manufacture, fabrication and erection of the complete curtain wall. For complete details on the patented 82X, 25X, 670 and "900" Series PITTCO Framing Systems, call your PPG Architectural Representative or consult Sweet's Architectural File—Section 3e.

PITTCO
ARCHITECTURAL METAL

PPG®

PITTSBURGH PLATE GLASS COMPANY

Paints · Glass · Chemicals · Fiber Glass

In Canada: Canadian Pittsburgh Industries Limited

GLEN RAVEN SUNBRELLA

Woven Awning Fabrics

NEVERMORE FADE

GUARANTEED 5 YEARS

Glen Raven's all-new, 100% Acrilan* SUNBRELLA fabrics are immune to problems. The 100% Acrilan* acrylic solution-dyed fibers lock-in color. Nevermore complaints about fading . . . and nevermore complaints about mildew, cracking, shrinking, stretching, condensation or other annoying problems awning fabrics have been heir to in the past.

Write for your personal copy of the SUNBRELLA information booklet today.

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ACRILAN
acrylic fiber
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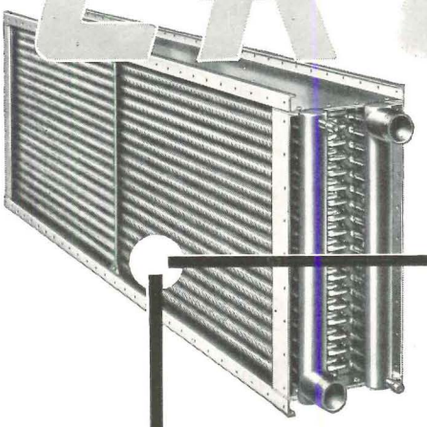
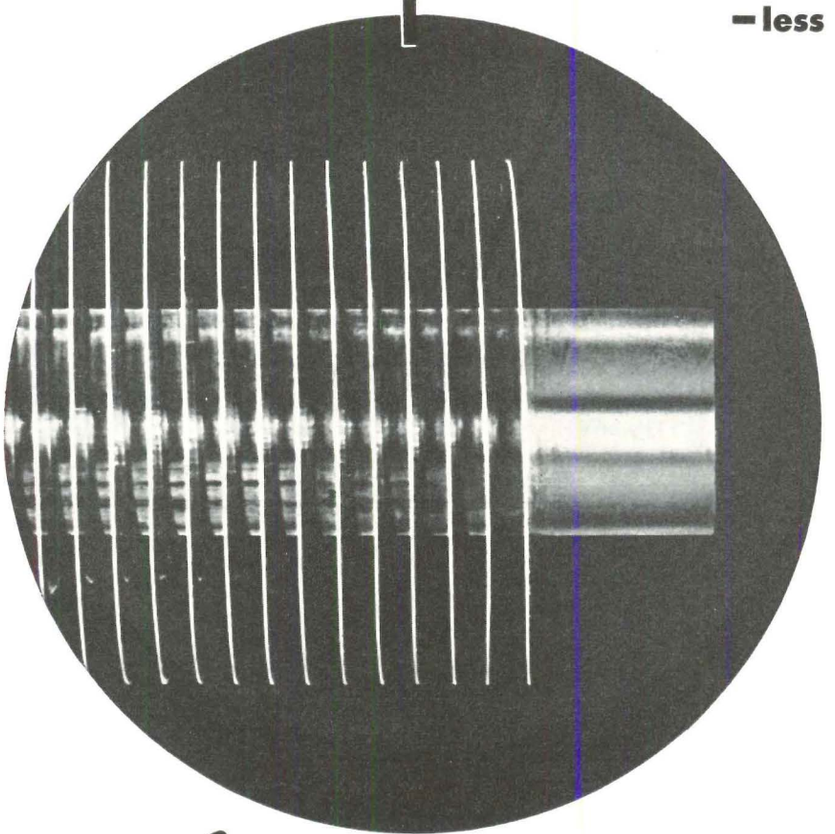
AEROFIN



Smooth-Fin Coils offer you:

Greater Heat Transfer
per sq. ft. of face area

Lower Airway Resistance
—less power per c. f. m.



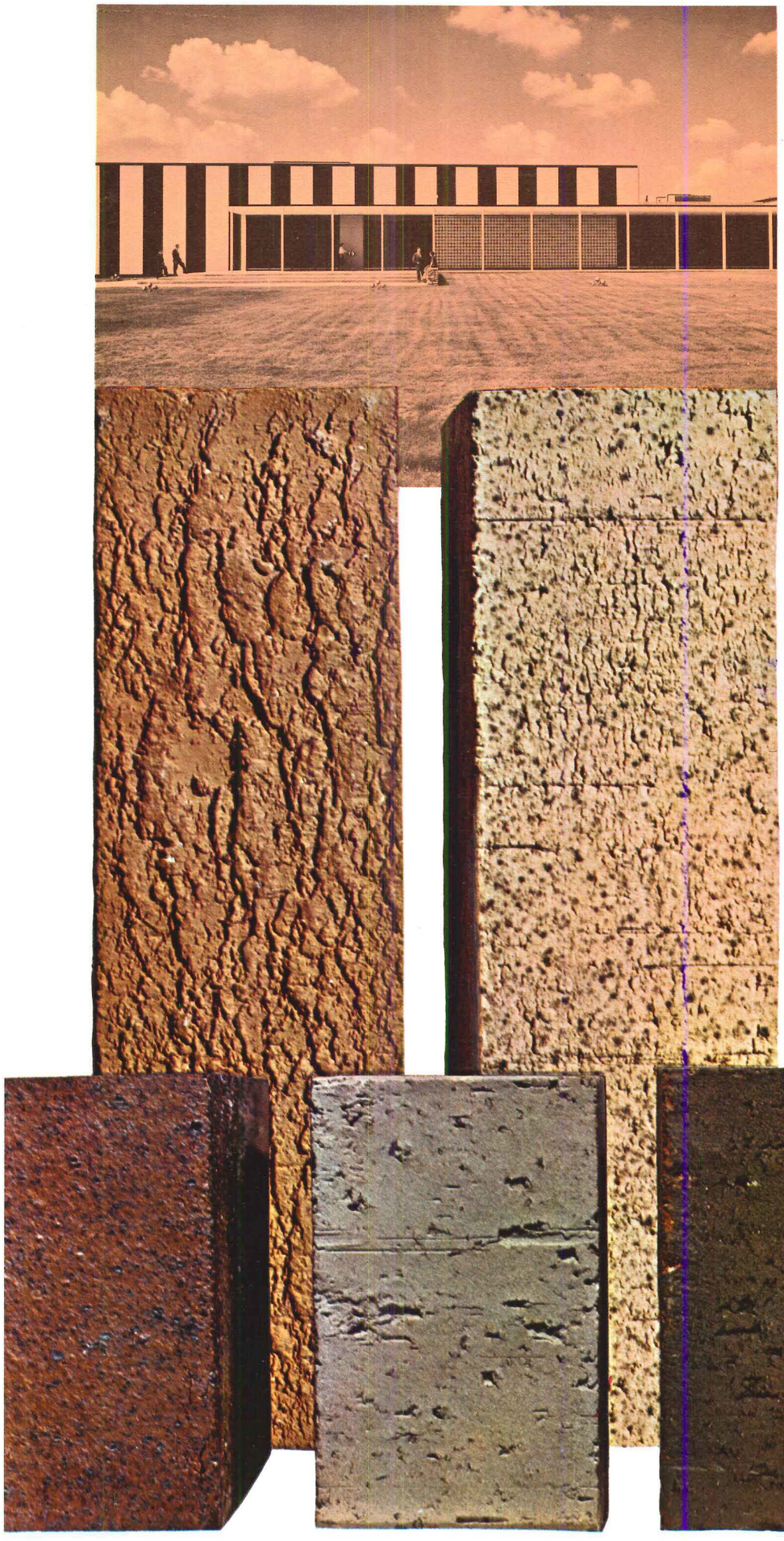
Aerofin smooth fins can be spaced as closely as 14 per inch with low air friction. Consequently, the heat-exchange capacity per square foot of face area is extremely high and the use of high air velocities highly practical. Tapered fin construction provides ample tube-contact surface so that the entire fin becomes effective transfer surface. Standardized encased units are arranged for simple, quick, economical installation.

AEROFIN CORPORATION

101 Greenway Ave., Syracuse 3, N.Y.

Aerofin is sold only by manufacturers of fan system apparatus. List on request.

ENGINEERING OFFICES IN PRINCIPAL CITIES

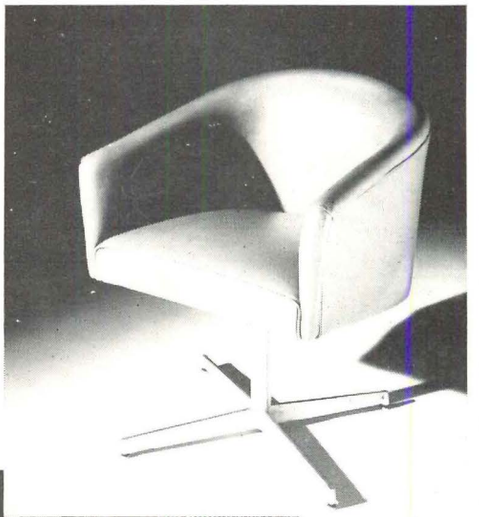


Loadbearing But Light

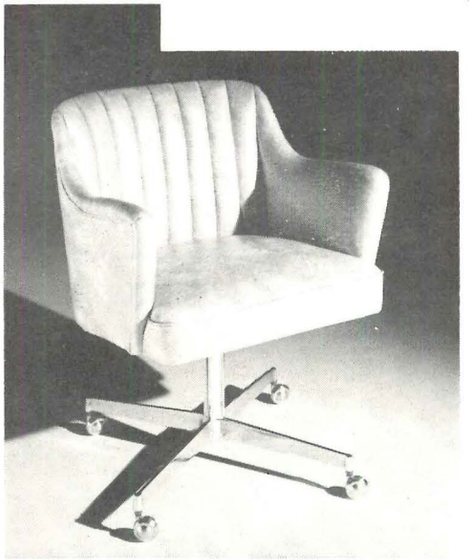
Its striking geometry visible across miles of Kansas plains, this first element in a large chemical production complex represents to Architects Linscott, Kiene & Haylett "the universal challenge, to make the ordinary and inexpensive look pleasant and dignified." With alternating bands of brick and glass, every second masonry band acts as structural pier, permits flexibility in office layout. A material that holds up the roof, fits in a panel, creates pattern and texture in structure: *brick.*

Structural Clay Products Institute 1520 18th St., N.W. Washington, D.C.

. . . your Invitation to Comfort



Style 9950



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MANUFACTURING, INC.
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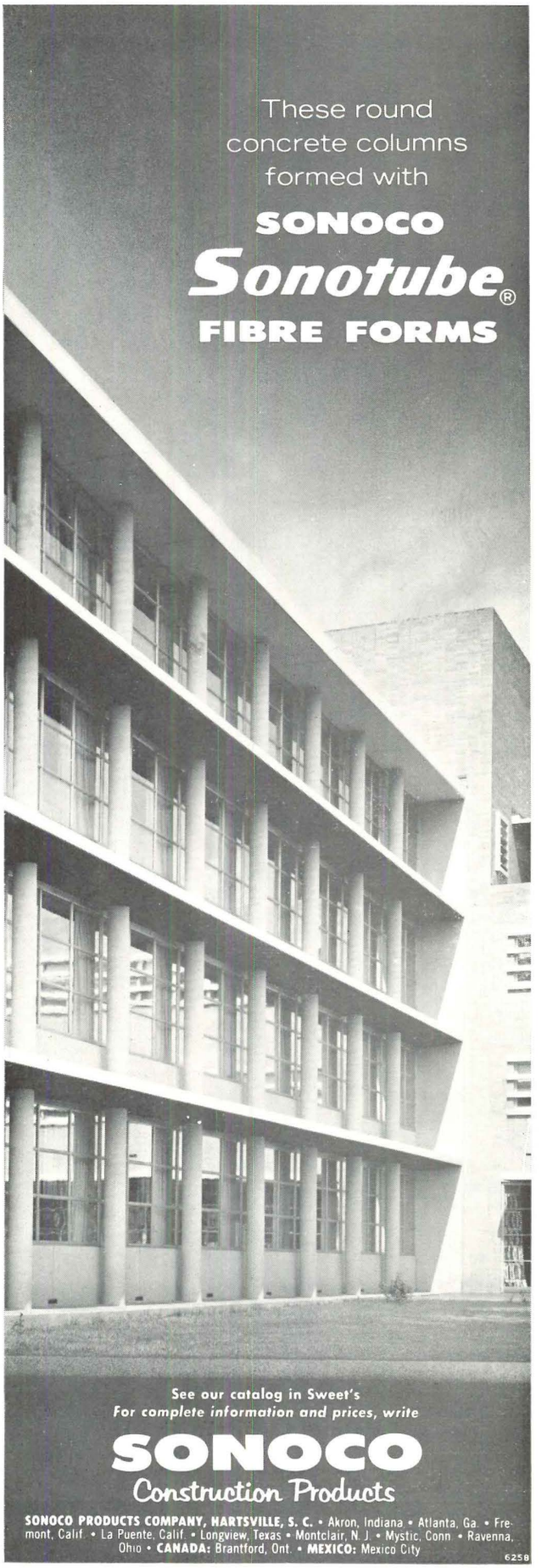

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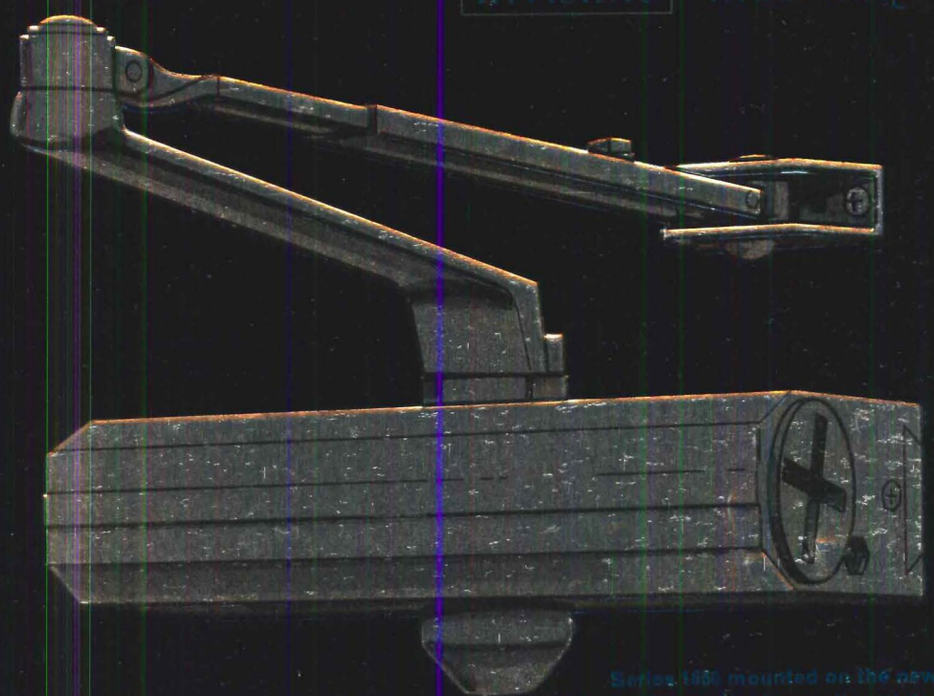
For more information, circle No. 370 ➤

NORTON®

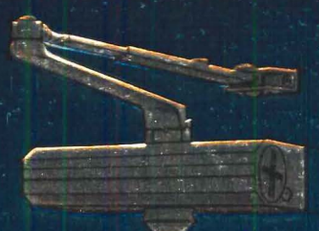
Tri-Style

something really new
in door closer styling!
invisible mounting



Series 1600 mounted on the new Norton Perma-Shield mounting plate. No visible mounting screws to mar the esthetic quality of your architectural design.

Series 1600 Top and Regular Mounting



Series 1600 Back Mounting

Only Norton Tri-Style closer offers these exclusive features in one style.

- NON-HANDED
- UNIVERSAL REGULAR OR PARALLEL ARM
- ADJUSTA-POWER SHOE
- THREE DISTINCT MOUNTING METHODS

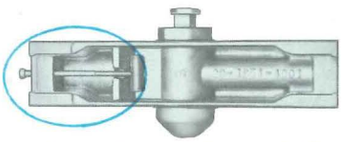
TURN THE PAGE FOR THE KEY TO NORTON INVISIBLE MOUNTING

EXCLUSIVE NORTON PERMA-HOLD PLATE • *the key to invisible mounting*

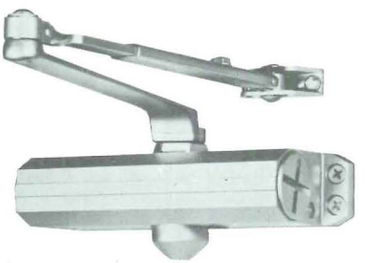
The new Norton Perma-Hold system provides dependable closer mounting with maximum styling and easy, fool-proof installation.

Perma-Hold is mounted to the door with four flathead screws.

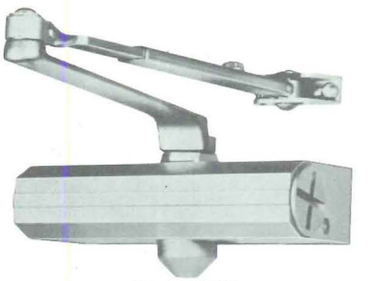
Closer slips on Perma-Hold plate and locks into place.



A combination dove-tail slot and taper-acting locking anvil provides the binding force to secure the closer to the Norton Perma-Hold mounting plate.



Series 1600
Exposed Mounting



Series 1630
Back Mounting

Norton Series 1630 Tri-Style closer offers the advantage of invisible mounting using through-bolts installed from the opposite side of the door.

Tri-Style features

■ **COMPLETELY NON-HANDED**—The pinion shaft extends through both sides of the closer. Either side will receive and operate the arm assembly. All Norton Tri-Style closers, except those having the fusible link feature are non-handed.

■ **UNIVERSAL REGULAR OR PARALLEL ARM**—All Norton Tri-Style closers are furnished with adapter plates allowing either regular or parallel arm installation. This feature is provided on both hold-open and non-hold open arm styles.

■ **ADJUSTA-POWER SHOE**—The exclusive Norton adjustable power shoe allows a total adjustment of closer power of 15%. Adjustment can be made without removing closer, shoe or arm.

SIZING CHARTS: NEW RANGE OF SIZES—Select from five closely graduated closers. Engineered to your requirements.

REGULAR ARM

Norton Catalog Number			Maximum Door Size		
Standard Mount	Backmount	Invisible Mount	Interior Door	Exterior Door In-Swing	Exterior Door Out-Swing
1602	1632	1652	2′ 8″		
1603	1633	1653	3′ 2″	2′ 6″	3′ 0″
1604	1634	1654	3′ 8″	3′ 0″	3′ 6″
1605	1635	1655	4′ 2″	3′ 6″	4′ 0″
1606	1636	1656	4′ 8″	4′ 0″	4′ 6″

PARALLEL ARM

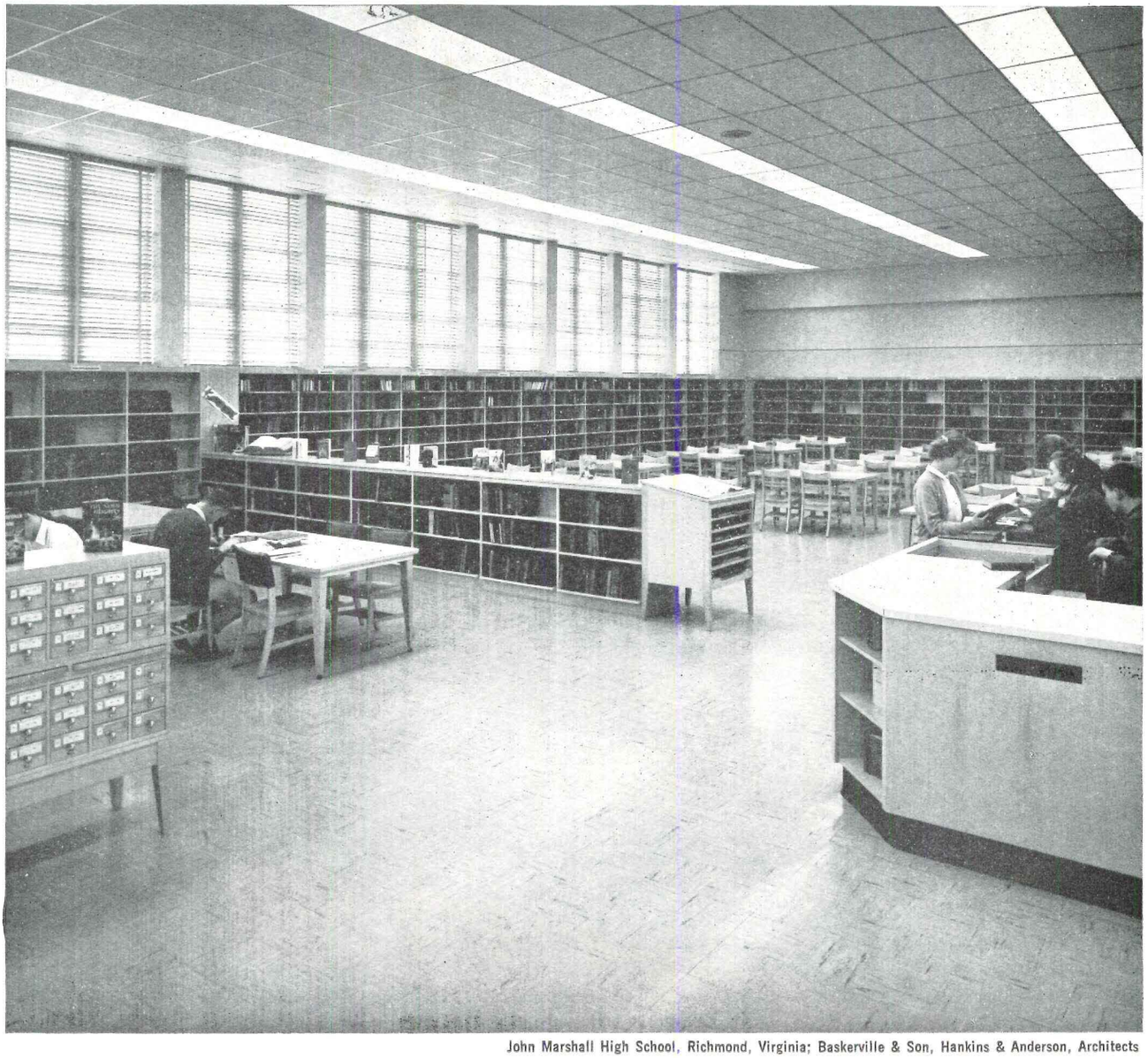
Norton Catalog Number			Maximum Door Size	
Standard Mount	Backmount	Invisible Mount	Interior Door	Exterior Door
1602	1632	1652	2′ 6″	
1603	1633	1653	3′ 0″	2′ 6″
1604	1634	1654	3′ 6″	3′ 0″
1605	1635	1655	4′ 0″	3′ 6″
1606	1636	1656	4′ 6″	4′ 0″

NORTON® DOOR CLOSERS

for Complete Architectural Compatibility 372 Meyer Road, Bensenville, Illinois

Form T4-295M—562

Printed in USA



John Marshall High School, Richmond, Virginia; Baskerville & Son, Hankins & Anderson, Architects

PRESTIGE . . .

When your architectural plans require fine library furniture, consider the unique benefits you can expect from Southern Desk. You can feel confidence in Southern Desk's experienced staff. You can call on them to work out with you the details of your creative planning . . . layouts, space and capacity estimates, engineering services. And you can feel confident that school administrators and librarians will be pleased with their completed library, because it will combine maximum efficiency, with satisfying visual appeal. Look to Southern Desk for the kind of fine furniture that will carry out your over-all architectural design. Look for example, at the spacious, airy interior of the John Marshall High School library, furnished with Southern Desk's all-wood "Prestige" line. Write for catalog today.

Southern Desk Company

A Division of Drexel Enterprises, Inc.
Hickory, North Carolina

Manufacturers of library furniture, classroom, scientific, dormitory and church furniture, and auditorium and stadium seating.

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ANNOUNCING GRANDVIEW DA

GRANDVIEW II

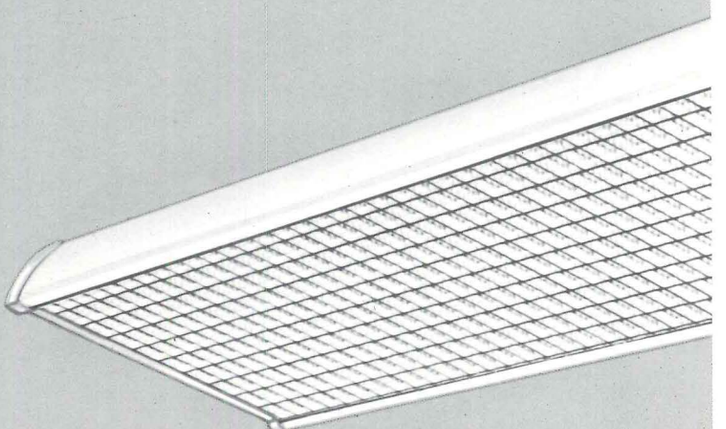
FOR ALL COMBUSTIBLE CEILINGS

GRANDVIEW II can be surface mounted on ANY ceiling . . . EVEN COMBUSTIBLE*. . . Two-lamp, 10" wide, 430-MA RAPID-START MODELS ONLY.

A shallow modern fixture design capable of providing proper illumination and enhancing Office, School and Store interiors.

Underwriters' Laboratories have listed these Rapid-Start models as fully acceptable for surface mounting on all combustible*, low density cellulose fiberboard ceilings. This enables you to combine the most economical method of mounting fixtures with the most economical type of acoustical ceilings, resulting in LOWER OVER-ALL COSTS!

*As defined by the National Electrical Code, Article 410-T4 (b).



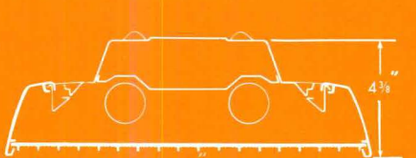
Day-Brite also announces the GRANDVIEW IV.

GRANDVIEW IV provides the flexibility needed for today's critical lighting requirements and the maximum in lighting comfort.

GRANDVIEW IV is 14" wide and only 4⅜" deep. Available in 2, 3 and 4-lamp models, giving you a wide choice of illumination levels with uniform appearance to fit practically any application.

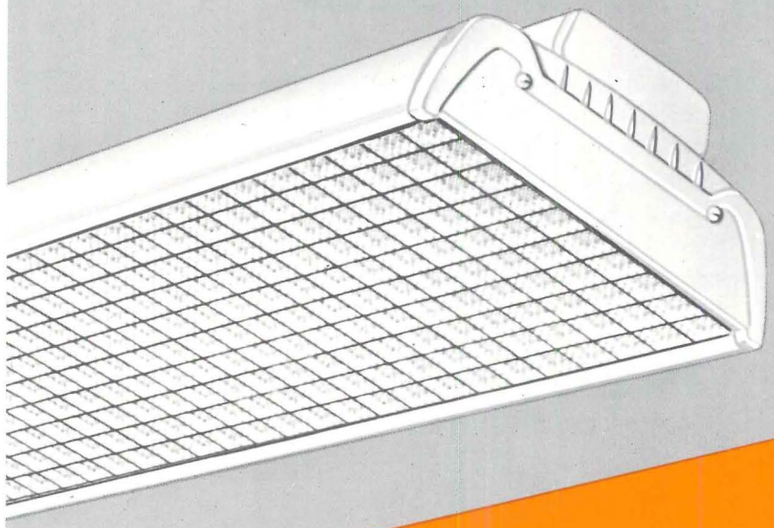
ALL GRANDVIEW models have the DAY-BRITE exclusive WAFFLETEX® bottom panels featuring smart contemporary styling and prismatic control of reflected glare. No dark contrasts . . . Diffuse side panels allow soft even illumination on the ceiling . . . resulting in more visual comfort.

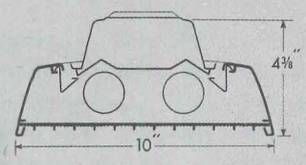
For more information on all models of the GRANDVIEW, contact your DAY-BRITE representative or write . . .

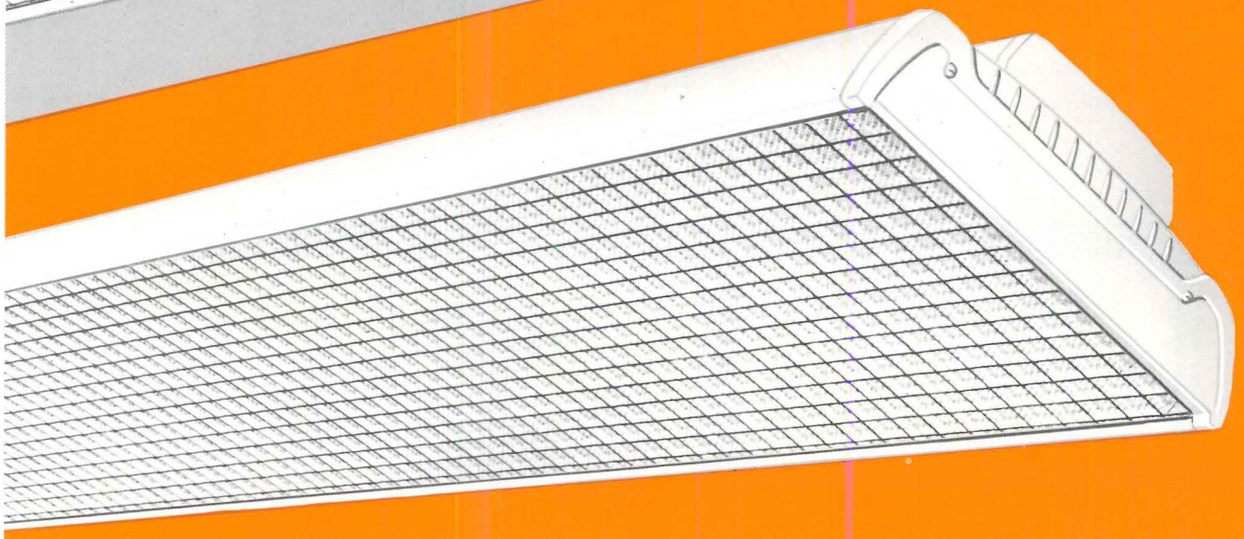


DAY-BRITE LIGHTING, INC., 6260 North Broadway, St. Louis 15, Missouri

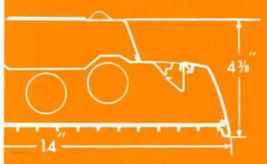
BRITE'S LATEST LIGHTING ACHIEVEMENT

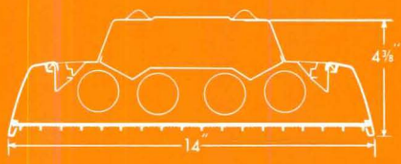






GRANDVIEW IV





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AN EMERSON ELECTRIC COMPANY

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NEOPRENE GASKETS KEEP LIGHT CONSTRUCTION TIGHTLY SEALED

Wind-driven rain. Freezing. Summer sun. To combat these weather extremes, curtain wall construction needs a reliable, permanent glazing seal. Du Pont Neoprene gasketing adds an element of dependability you can get with no other material.

Performance records over the past decade have demonstrated Neoprene gasketing's ability to seal out rain and cushion glass panes against winds of hurricane force. Neoprene gaskets accommodate horizontal and vertical expansion of glass and metal panels. This versatile synthetic rubber also resists ozone and airborne chemicals.

In addition to time-proved reliability, Neoprene gasketing offers two other important features. (1) Glazing is easier, can be done faster. (2) After installation, no maintenance is required. Preformed Neoprene gasketing is competitive in terms of installed costs since job-site labor is reduced to a minimum. Stores, shopping centers and schools are now using Neoprene effectively.

For more information and a list of reliable manufacturers of Neoprene sealing strips, write E. I. du Pont de Nemours & Co. (Inc.), Elastomer Chemicals Dept. PA-6-NB, Wilmington 98, Del.

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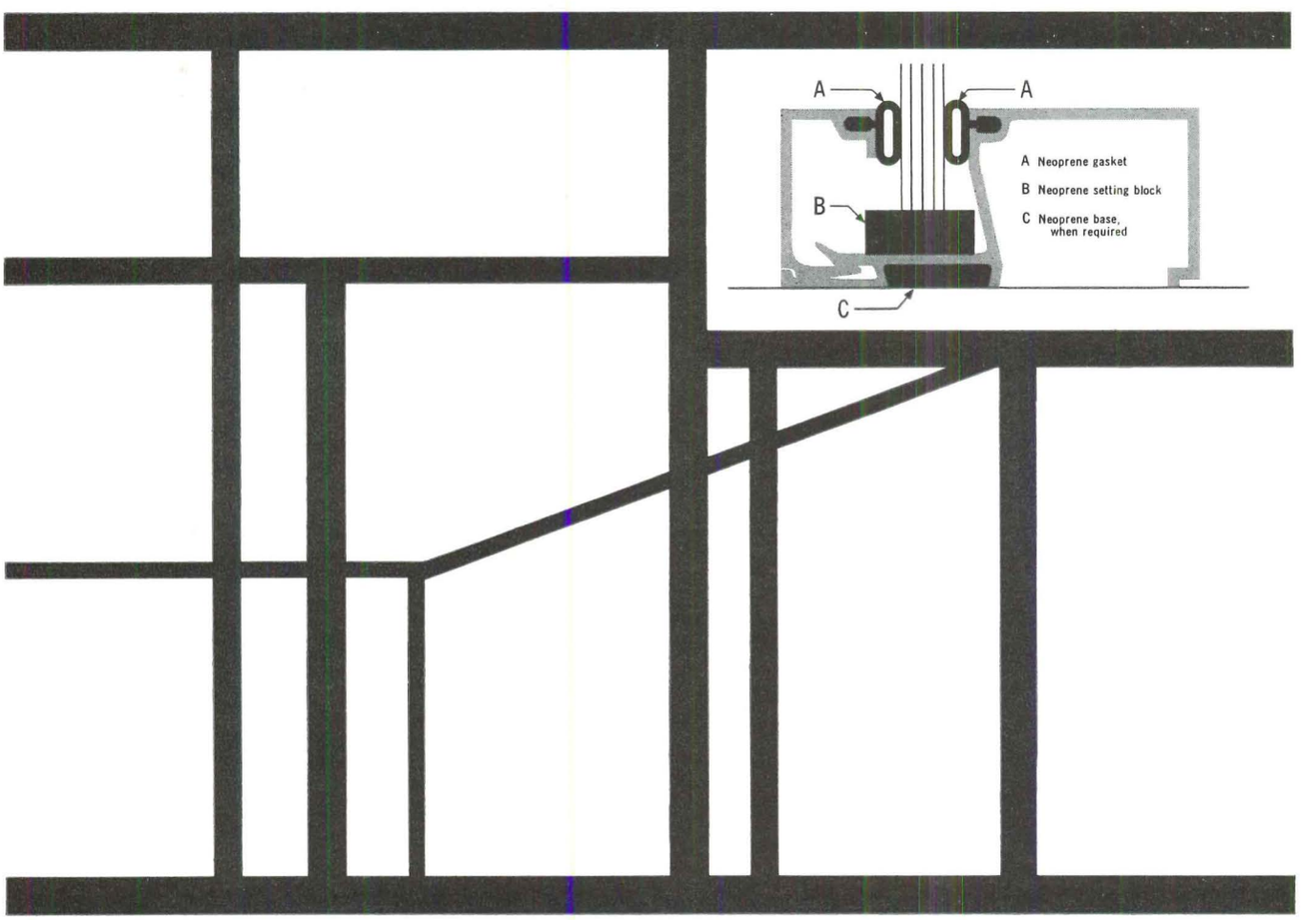
ELASTOMER
BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*



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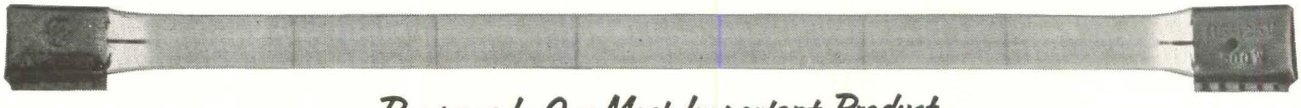

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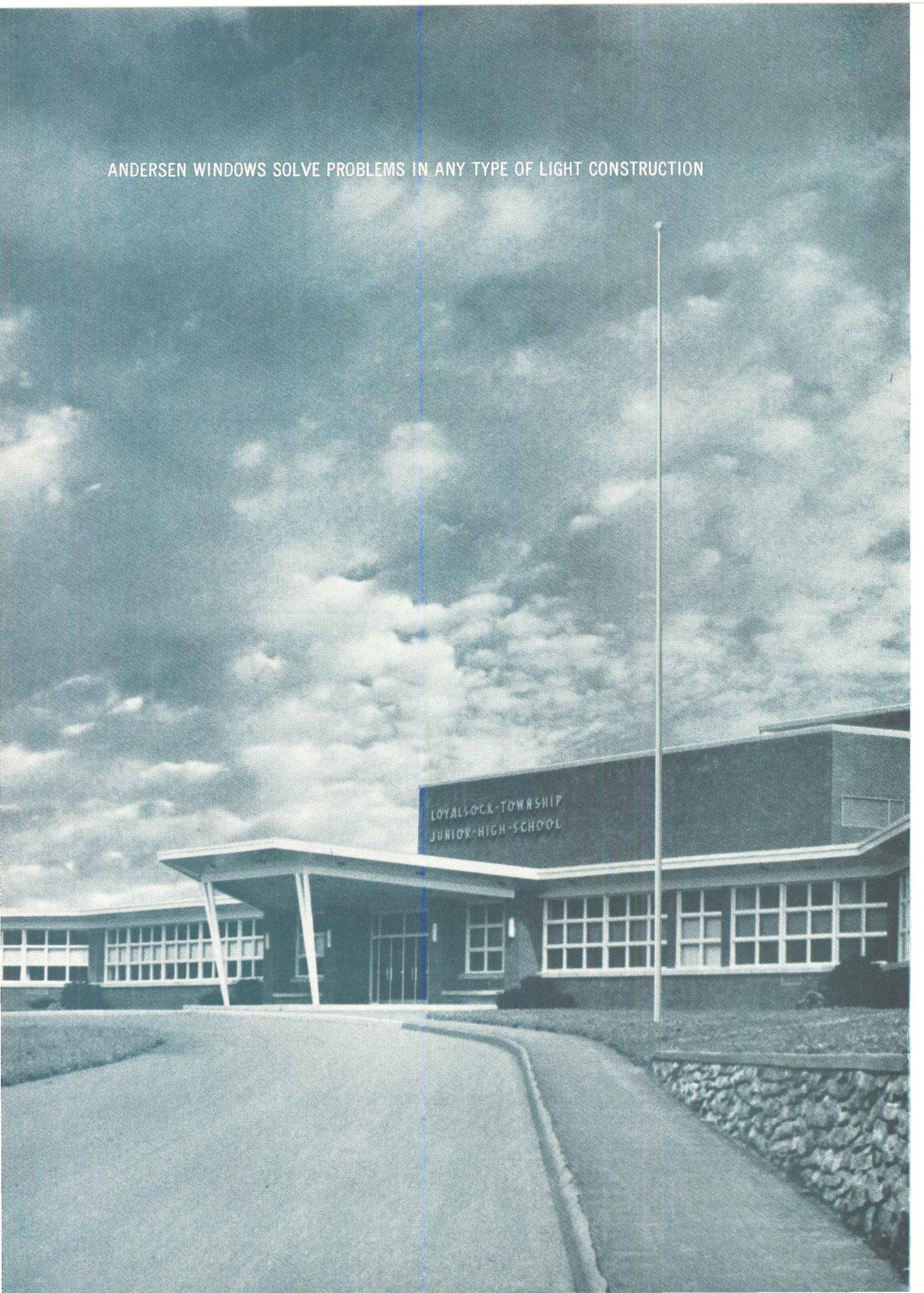

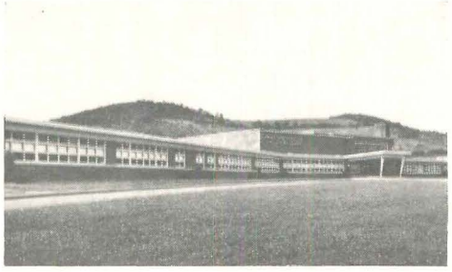

Loyalsock Township Junior High School
Williamsport, Pennsylvania
Architect: John Boodon

Ribbons of windows develop exterior character for this new school

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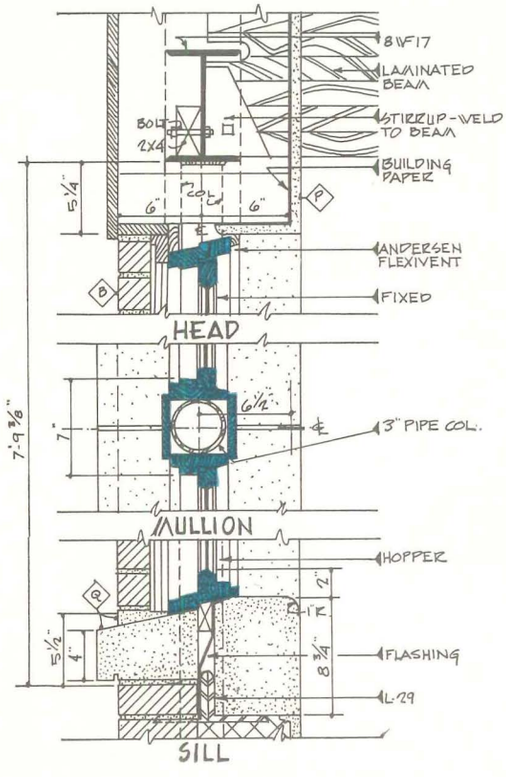
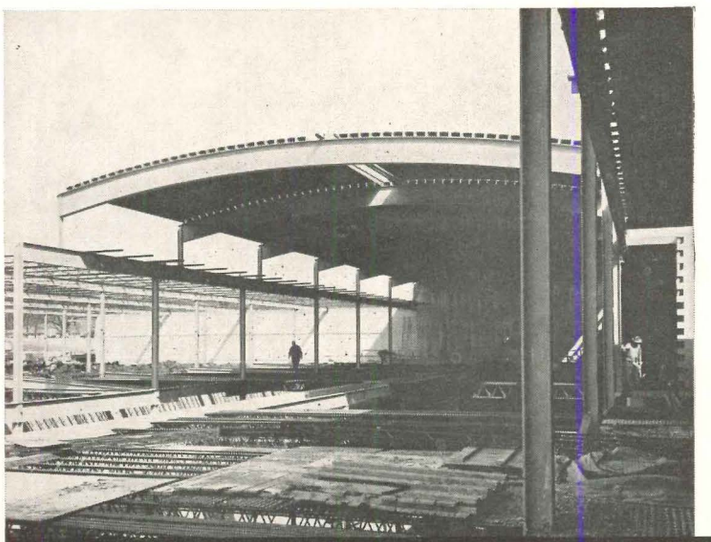
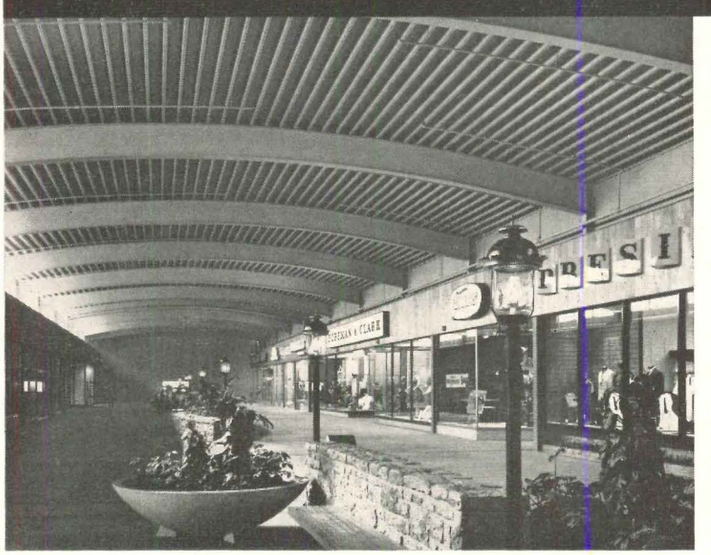


MAHON THIN ROOF LINE M-DECK...



a structural component...



a distinctive ceiling

This shopping center covered mall utilizes the 2 in 1 advantage of Mahon M-Deck. The long-span M-Deck sections are fast and easy to install and form a strong structural roof when welded to the supporting beams. From the underside, the pleasing beamed-ceiling effect requires no further treatment other than normal painting.

In addition to the open beam type section (M10B) shown here, M-Deck is also available in a cellular or closed beam form (M2SR) which gives a flat ceiling effect. The cells can then be used as raceways for wiring, sprinkler systems, light troffers, etc. For more details, see Sweets Files or write for Catalog D-62.

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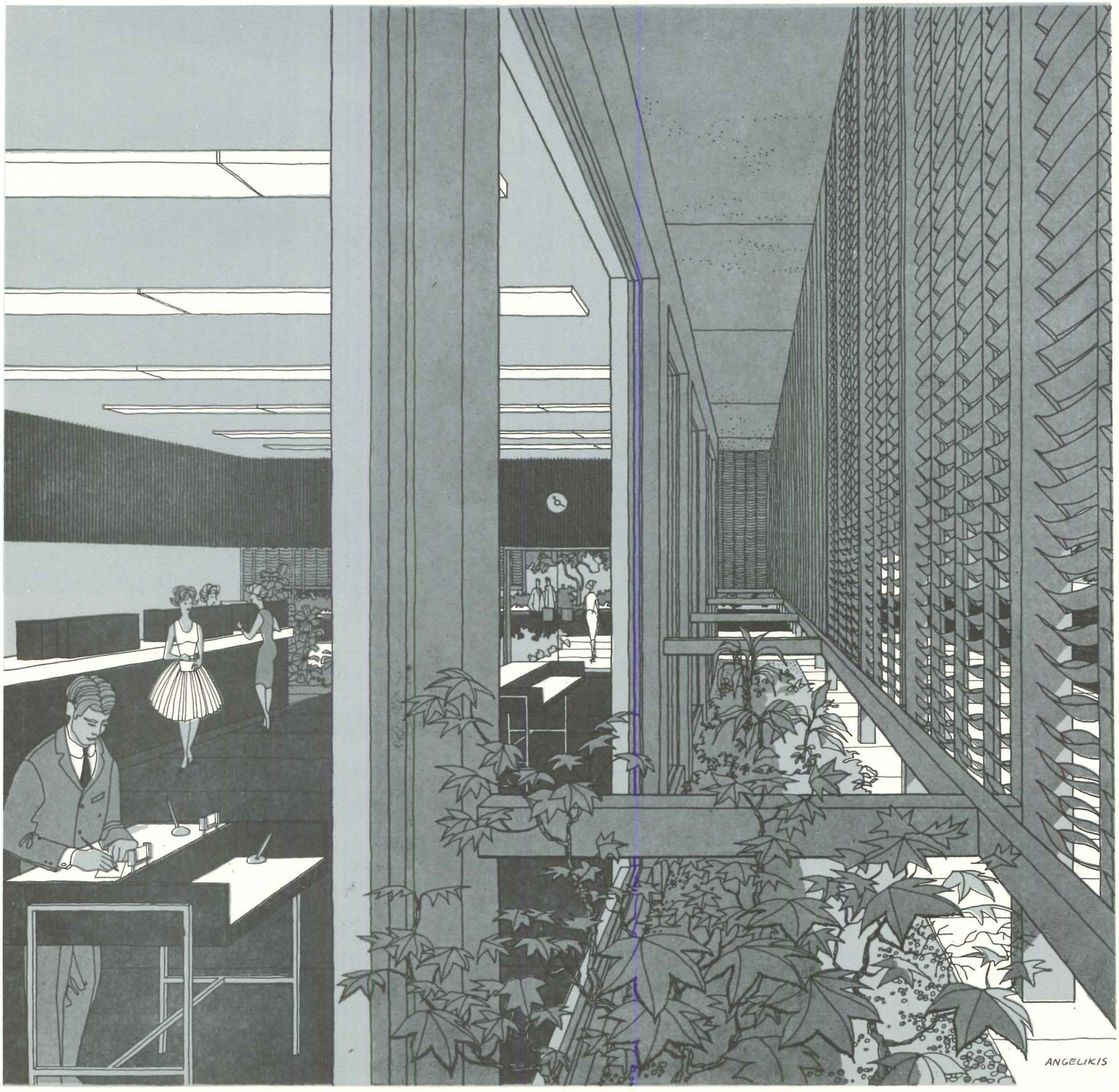

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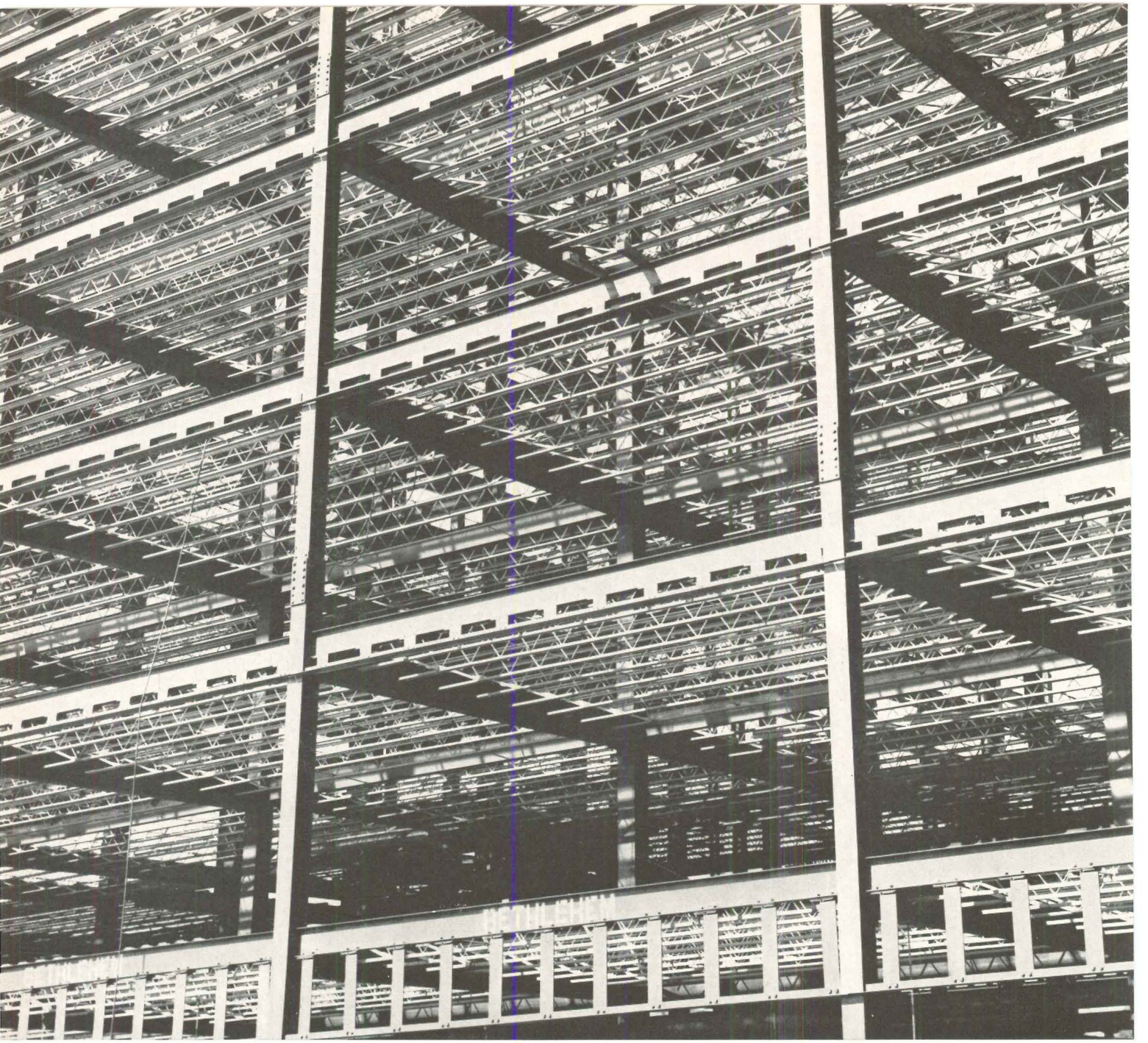

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Apartment's steel frame plus steel joists weighs only 8.87 psf

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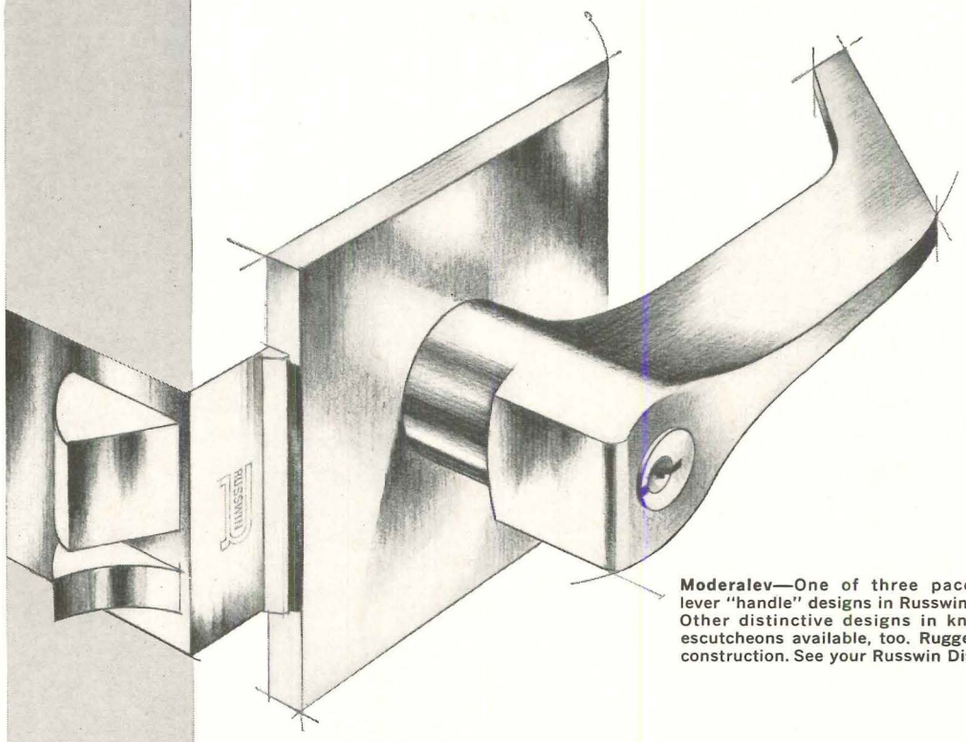

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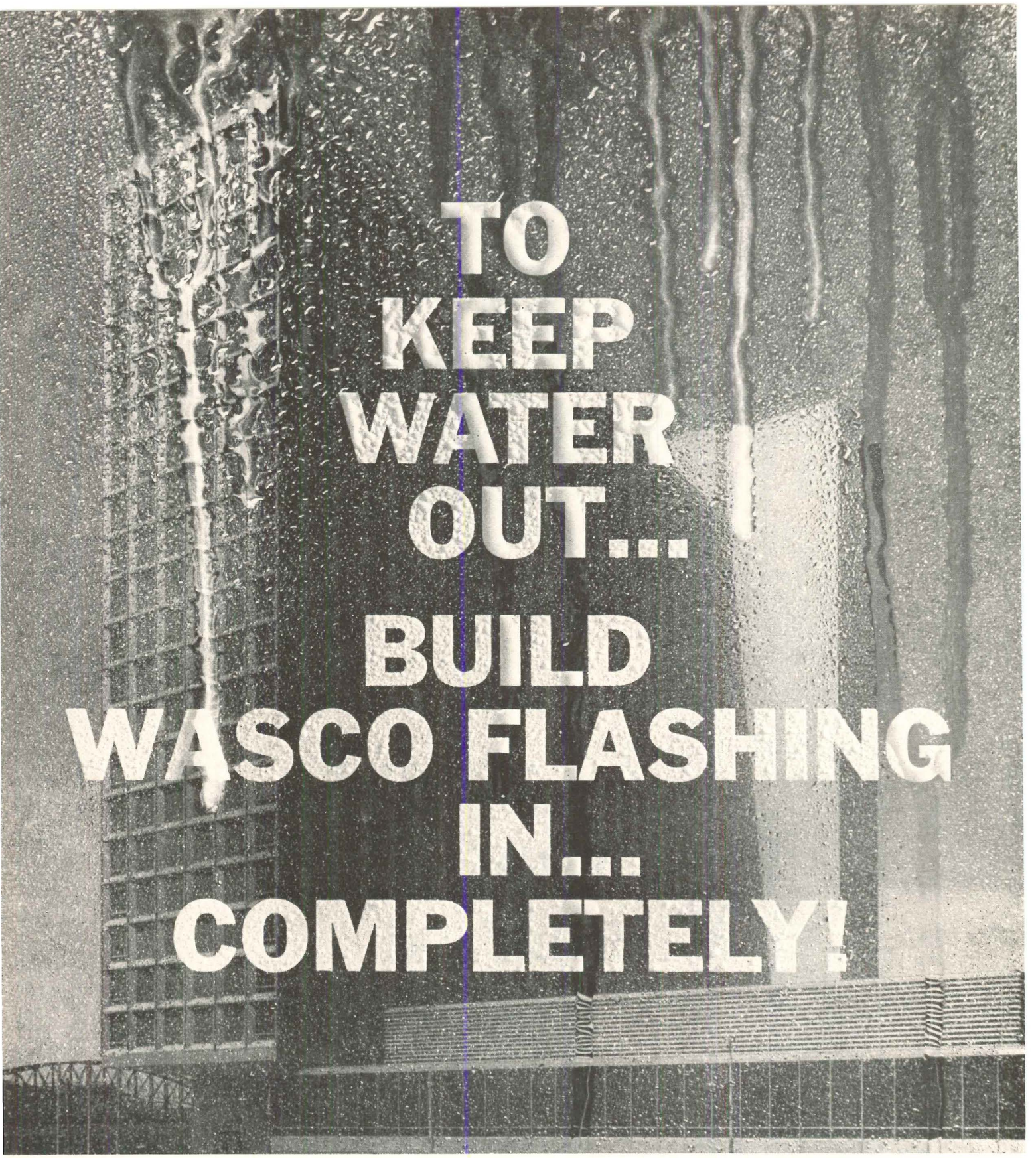

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NEWS REPORT

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

Photos: Hugh N. Stratford

The Space Needle soars 600 ft above the grounds of Century 21, the Seattle 1962 World's Fair.

New city hall at Hamilton, Ontario . . .

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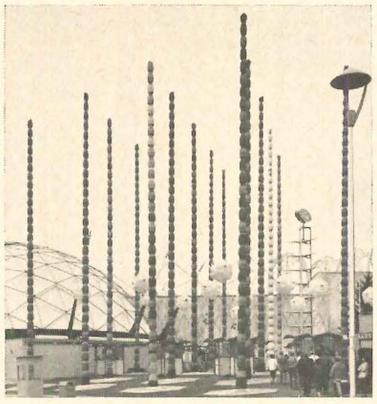

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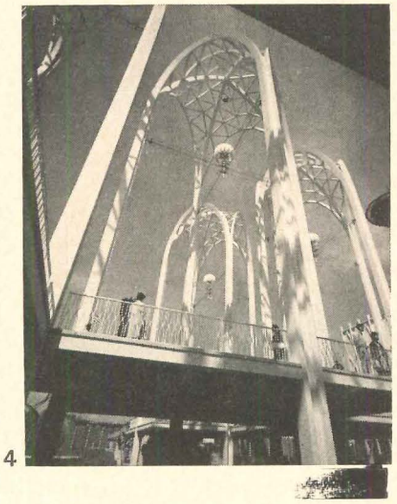

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The Architecture of Century 21

BY JAMES T. BURNS, JR.

SEATTLE, WASH. On April 21, Seattle opened the first world's fair to be held in the United States in 22 years. Not large in scale (74 acres as compared to the hundreds of acres in the late Brussels and forthcoming New York fairs), the Seattle World's Fair is nevertheless of significance to architecture and planning both for the quality of much of its design, and because most of the major buildings will remain after the exposition to form a cultural and sports center.

The fair's master plan, prepared under the direction of Primary Architect Paul Thiry, retains with few variations the site's original grid street system. This has the advantages of allowing the visitor to become easily oriented in a familiar pattern, and of opening the site to a flexible series of plazas and malls when the fair is over.

The Space Needle (p. 47) is, of course the *physical* high point of the fair. As a symbol, it works well, better than I had expected. Although it cannot be said to rival the Eiffel Tower in this respect, the Needle (by John Graham & Company, with design assistance from Victor Steinbreuck) is impressive, and the experience of drinking-in the panoramic view along with your Martini in the revolving restaurant is exhilarating. However, the value of this structure as a permanent, post-fair artifact might be questioned.

On this page are several views of the fair that are intended to give an impression of its design qualities. On the following pages, specific structures are discussed.

(1) Seattle Center Fountain (Kazuyuki Matsushita and Hideki Shimizu) before Coliseum Century 21 (Paul Thiry); (2) multicolored totems at South Entrance (Bassetti & Morse); (3) Washington State AIA Chapter pavilion (Victor Steinbreuck); (4) Federal Science Pavilion (Minoru Yamasaki and Naramore, Bain, Brady & Johanson); (5) Boulevards of the World (basic structures by Naramore, Bain, Brady & Johanson).

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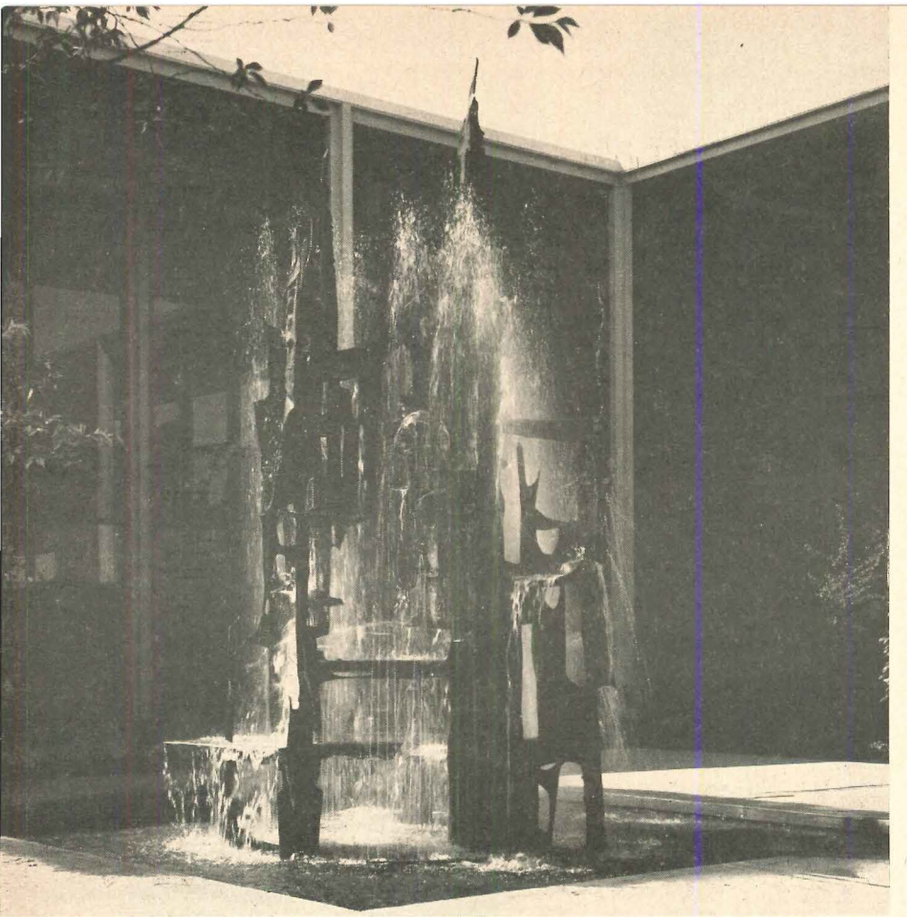

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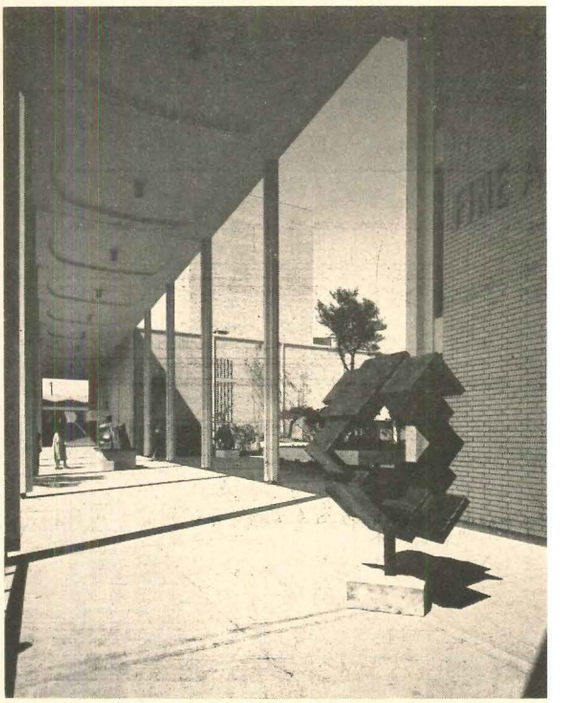

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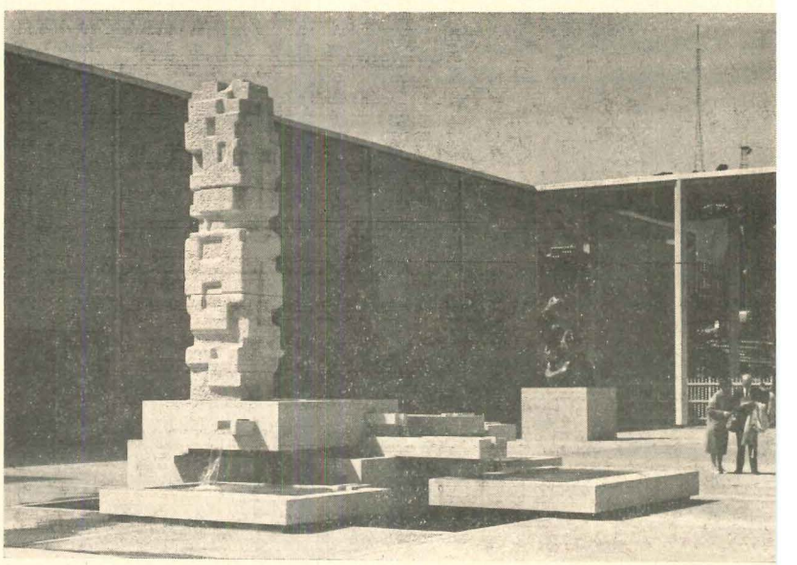

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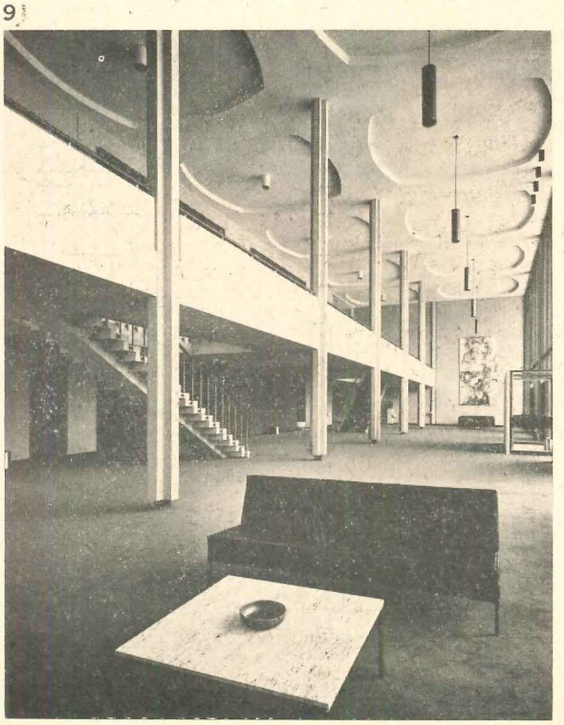


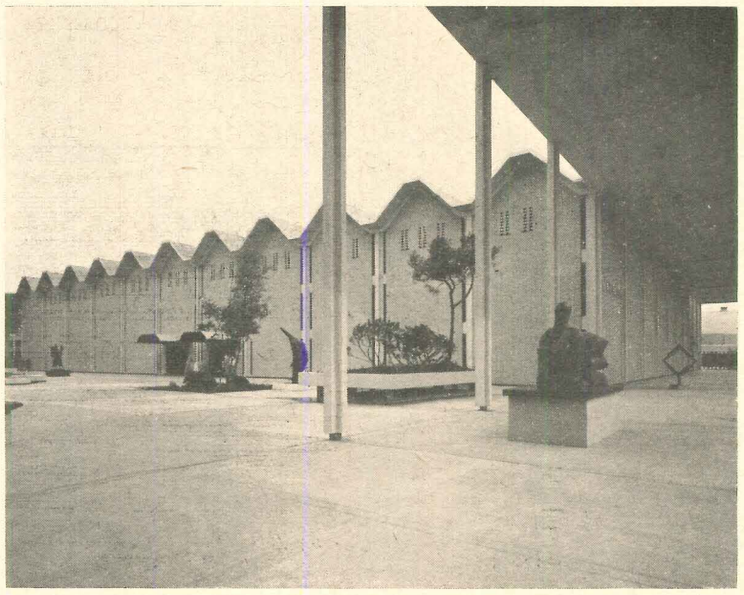
For me, the element of the fair likely to emerge as the most admirable, after all the tumult and hosannas for the more "spectacular" structures have died down, is the complex designed by Kirk, Wallace & McKinley to house the playhouse, exhibition center, and remodeled opera house and arena. In beautifully restrained style, using no elaborate methods of construction, the Kirk firm has provided a delightful series of exterior and interior spaces which may be said to be socially significant in a large sense, since they fulfill a need for graciousness and charm the citizen can very seldom satisfy in his private or business associations.

Both permanent and circulating art works have been incorporated into the complex. Notable examples of the former are James Fitzgerald's lyrical sculpture fountain in the court in front of the playhouse (6) and the contrasting, more subdued treatment by François Stahly in the mall between the playhouse and the exhibition building (8). The series of buildings —the light, buff-gray brick playhouse and exhibition building and the darker brick opera house—is tied together by a roof-high colonnade (7), which also gives on to the generous mall between the playhouse and exhibition building and the court behind the entrance to the opera house.

The playhouse, with its spacious, well-detailed lobby (9), has an auditorium for 800 spectators, with a proscenium that can adjust from 36 to 60 ft. On the day I was there, acoustical tests were being run, and Kirk has reported that they were eminently successful.

The exhibition hall (10), whose only exterior illumination comes through slit windows on the long sides, provides generous, flexible space for conventions and exhibitions of all sorts. For the duration of the fair, it is the site of a dazzling art show with works ranging from Ninth-Century Asian sculpture to a recent "sculpture machine" by Jean Tinguely (11).

The exterior remodeling of the opera house (12) was accomplished with taste by simply cladding it in brick and letting the colonnades and courts furnish the magic. Unfortunately, the interiors (by Chiarelli & Priteca), in use of colored lights and chrome, recall the old days of Jean Harlow and the Pantages movie houses.



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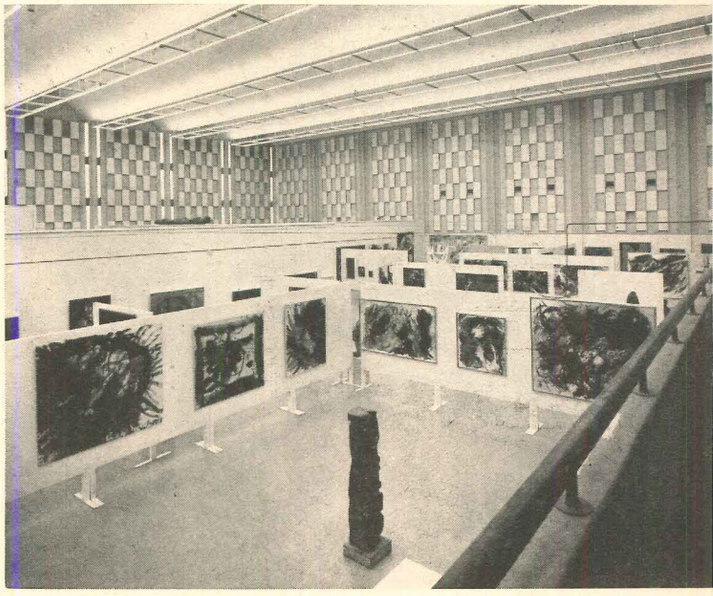

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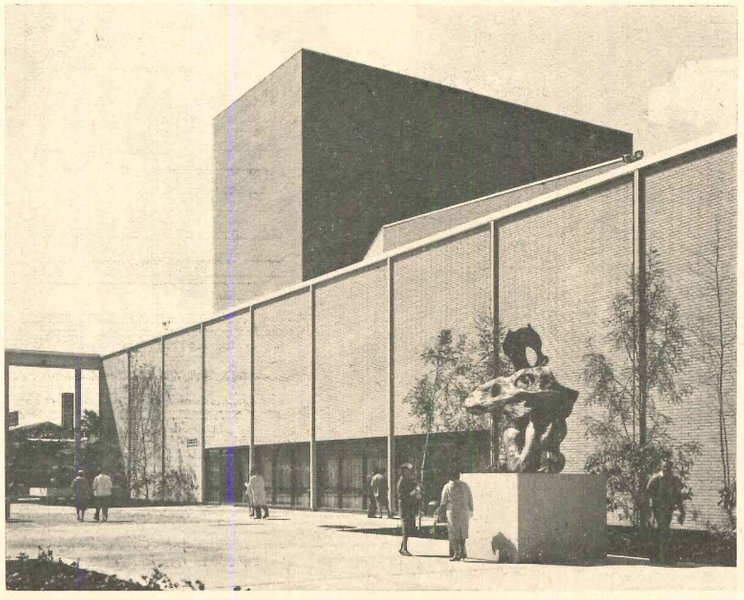

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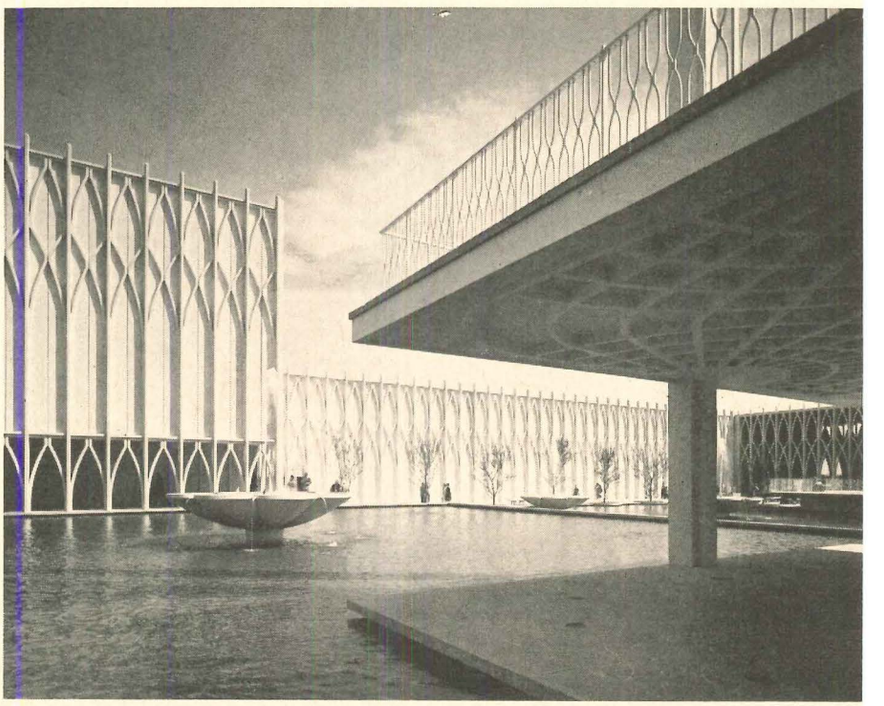

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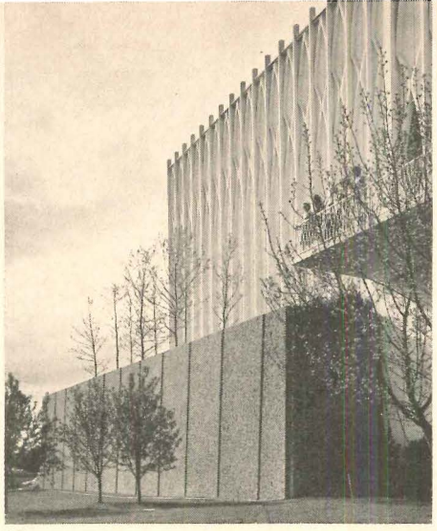

15

Take away the crowds and the space exhibits inside, and this could be the head abbey of a well-to-do monastic order or the central element in an admirably designed neo-Gothic campus plan. Add the crowds and the space exhibits, and Yamasaki's Federal Science Pavilion (with Naramore, Bain, Brady & Johanson) becomes a puzzling, if "delightful," anachronism **(13)**. My immediate reaction on experiencing the pavilion, which John Canaday of *The New York Times* has said "surely must join even the briefest list of the most beautiful structures of recent decades," was: yes, but why house exhibits on our life in space in the 21st Century in a Gothic envelope?

To me, the most appealing elements of the composition are the pools and rest areas **(14 and 16)**. Here Yamasaki's recognized talents for delicacy of design and his well-know search for "serenity" come into full, and successful, flower. With Landscape Architect Lawrence Halprin, the architects have created a cool, restful oasis in the midst of the crowded fair grounds, and the dark waters, studded with round fountains, act as an admirable foil to the gleaming white concrete walls of the pavilion. Handsome details come to view as one circles the building. The massive retaining walls of bank gravel aggregate **(15)** are beautifully handled, and make the viewer wish for more of this kind of strong statement in the rest of the building. The entrance and exit stairways beneath the lofty open-work arches **(17)** span a moat, giving a pleasant sense of going into and leaving a place apart.

Inside the pavilion, the generous spaces provided by the architects have been imaginatively used by designers and exhibitors, ranging from Charles Eames and Walter Dorwin Teague to the National Space Agency. Eames's multiscreen film, the only exhibit to be seen in toto when I was there, is an ingeniously contrived and expertly produced view of the backgrounds and horizons of science.

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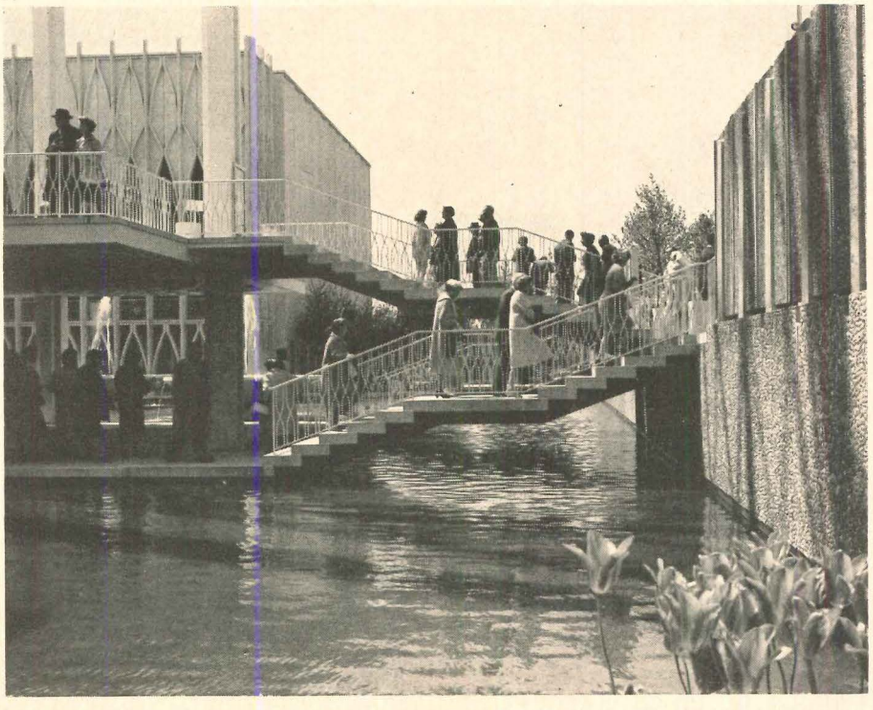

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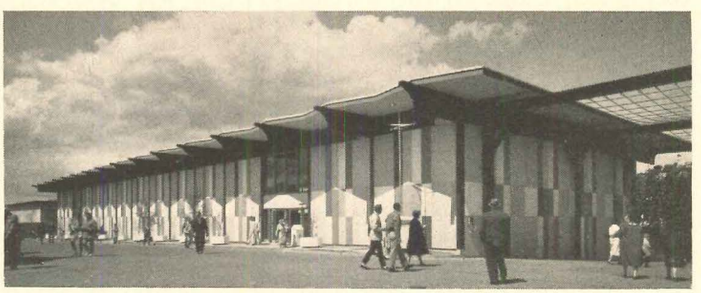
Perhaps the most successful general-use pavilion at the fair (excluding the somewhat specialized Coliseum) is Robert Billsbrough Price's Domestic Commerce and Industry Building **(18)**. Situated at what was to be the head of a monumental mall overlooking Seattle Center Fountain, this pavilion achieves its purpose of sheltering many varied exhibits while at the same time asserting a personality of its own. The all-glass front walls look out onto a restful terrace (one of too few at the fair) and an impressive set of stairs and fountains. Of particular interest is the interior lighting system, which consists of varicolored plastic lozenges that penetrate the roof and ceiling and serve as skylights in the daytime and are artificially illuminated at night **(19)**. The rear view of the pavilion, unfortunately, is not as thoughtfully done, presenting a blank —except for two entrances—wall of multi-colored panels to the rest of the fair grounds **(20)**.

A disappointing adjunct to this pavilion—not Price's fault—is the interruption of the monumental area between the steps and the Plaza of the States (22, Richard Bouillon, Architect) with a rather cheaply constructed restaurant concession **(21)**. A look at the early site drawings of the fair did not reveal this building, leading one to believe the rumors that it is under the management of a relative of a high-ranking state official! Since some of the exhibit buildings at the fair may be kept along with the Coliseum, playhouse-opera complex, Space Needle, and the Federal Science Pavilion, it is to be hoped that this building might stay and the restaurant be demolished.

19



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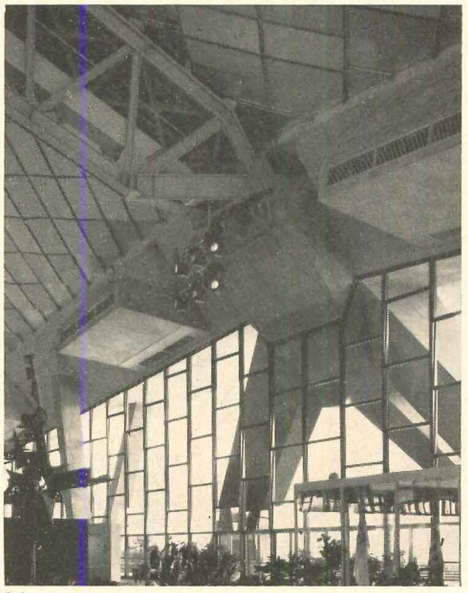

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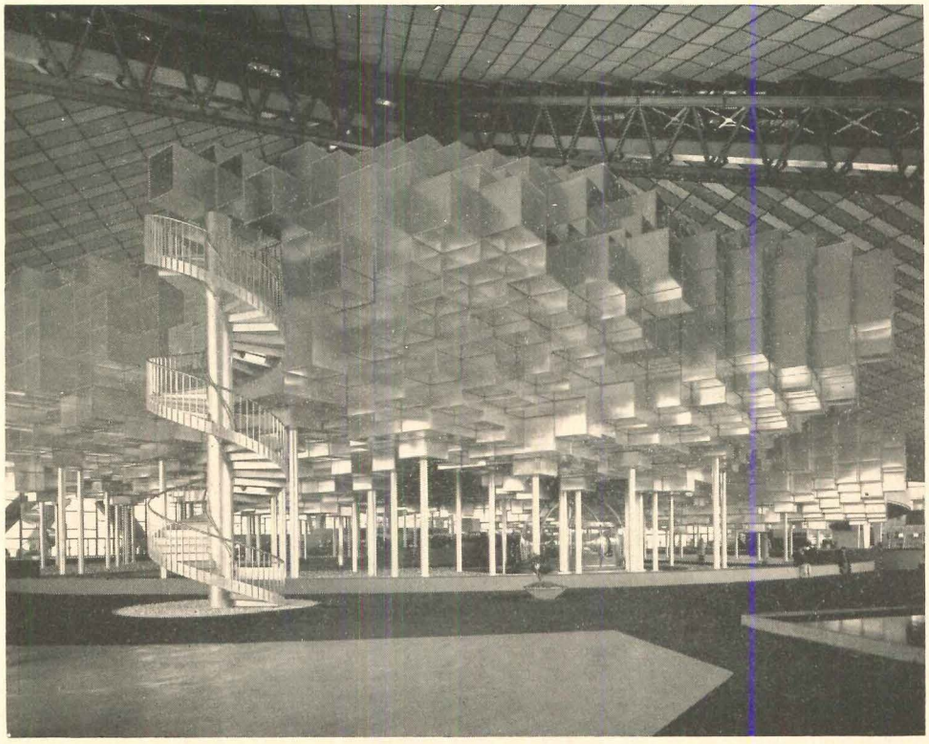
The vast scale of Paul Thiry's Coliseum is not readily apparent at the fair until one is quite close to it. The reason for this is that it is partly below grade on at least two sides, making the roof, which actually rises to 110 ft at its highest, seem curiously flattened.

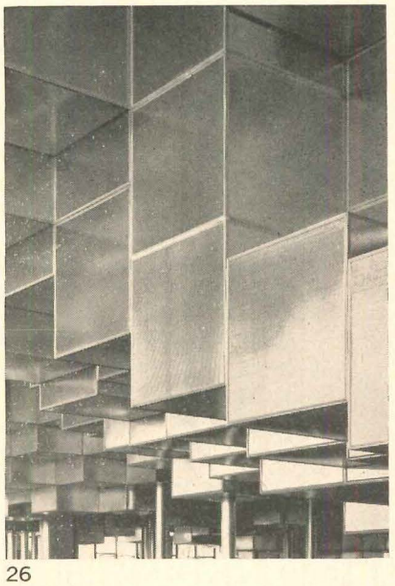
Upon entering the structure (23) past one of its four massive, concrete, tripedal buttresses, however, I found the space inside breathtaking, even with the presence of numerous displays and about 350 other press people. When this building assumes its permanent role of a sports arena, the space will be truly impressive.

Three elements of the design worried me. That old devil, the juncture between one structural system and another, has not been solved smoothly in the Coliseum. In this case, the concrete abutments and edge beams meet the immense steel roof trusses with a suddenness of transition (24) that might have been resolved with a little more attention to this detail. I found the little gold-anodized hat atop the structure (23), which contains a monitor system, quite disturbing—even annoying. It has a pasted-on, decoratory look that does not at all go with the basic strength of the building. The aluminum sandwich panels selected as roof cover and ceiling, which I am sure are admirably workable for their purpose, seem just a bit flimsy *visually* to conform (once again) with the structure's strong statement.

Inside, Donald Deskey Associates, Industrial Designers, have fashioned a stunning structure for the State of Washington "World of Century 21" exhibit (25, detail 26). The scheme consists of 3500 4-ft cubes housing a many-faceted display of life in the next century. Diverting as the show inside is, it cannot compare architecturally with the exterior form with its glittering cluster of boxes.

25





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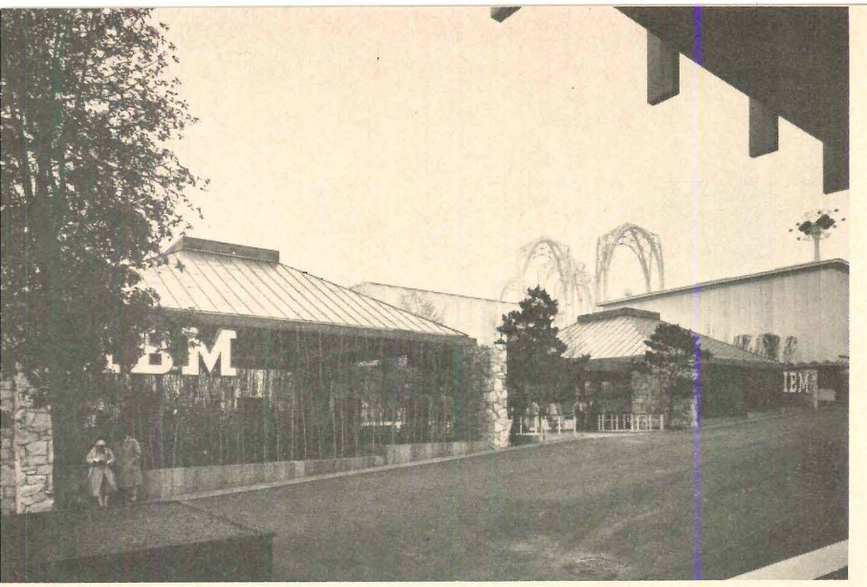

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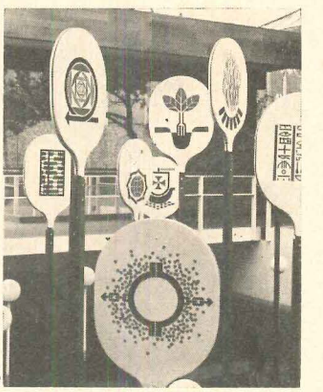

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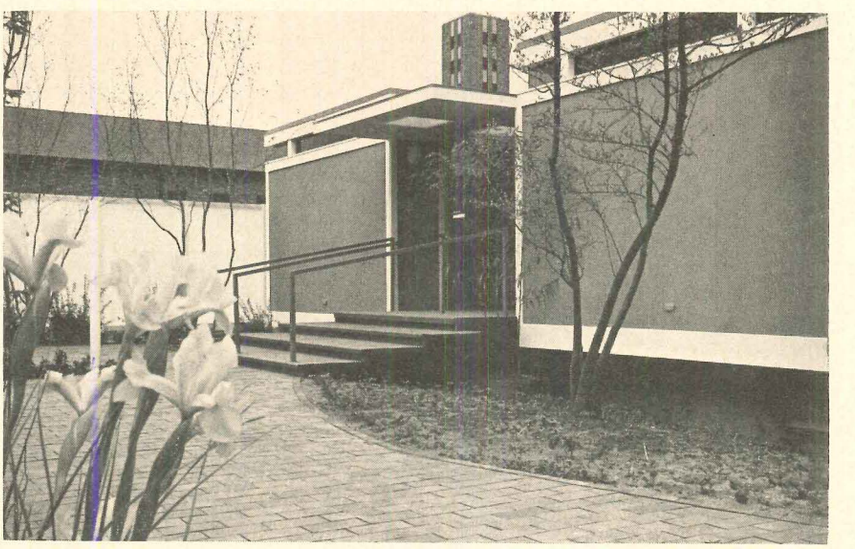
Among the smaller buildings, the IBM Pavilion (27) is particularly noteworthy. Consisting of *two* pavilions on either side of an entrance court, this building makes charming and effective use of materials and plants associated with the Northwest region—native stone, redwood, birches, maples, and poplars. This is unusual, since the design is by Philadelphians Carreiro Sklaroff Design Associates, Consulting Architect Charles E. Broudy, and Landscape Architect Karl Linn. In the pavilions (28) plastic-domed skylights penetrate the copper-sheathed roof, which is supported by stone corner columns. Walls are formed by silver poplars. An amusing group of symbolic signs (29) is set in the entrance pool.

28

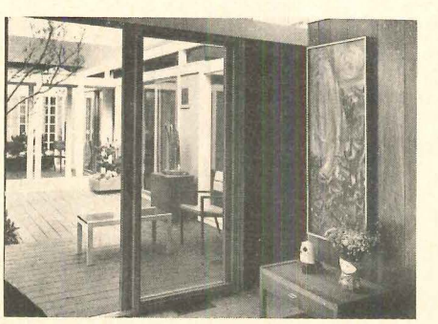


30

A refreshing oasis in a fair dedicated to life in the 21st Century is the U.S. Plywood American Home of the *Immediate* Future (30; italics mine). Designed by Robert Martin Englebrecht, the house is a neatly planned system of four 12′ x 24′ all-electric modules arranged, with private gardens between each unit, around a central courtyard (31). Each unit has built-in heating, air-conditioning, plumbing and lighting facilities.

The only complaint I had about the house is its small scale. The rooms seemed rather cramped, especially for an exhibit building that will have a lot of traffic. This was undoubtedly a result of having to design for a restricted site; with an increase in the module size, the house would be most effective.

Continued on page 58



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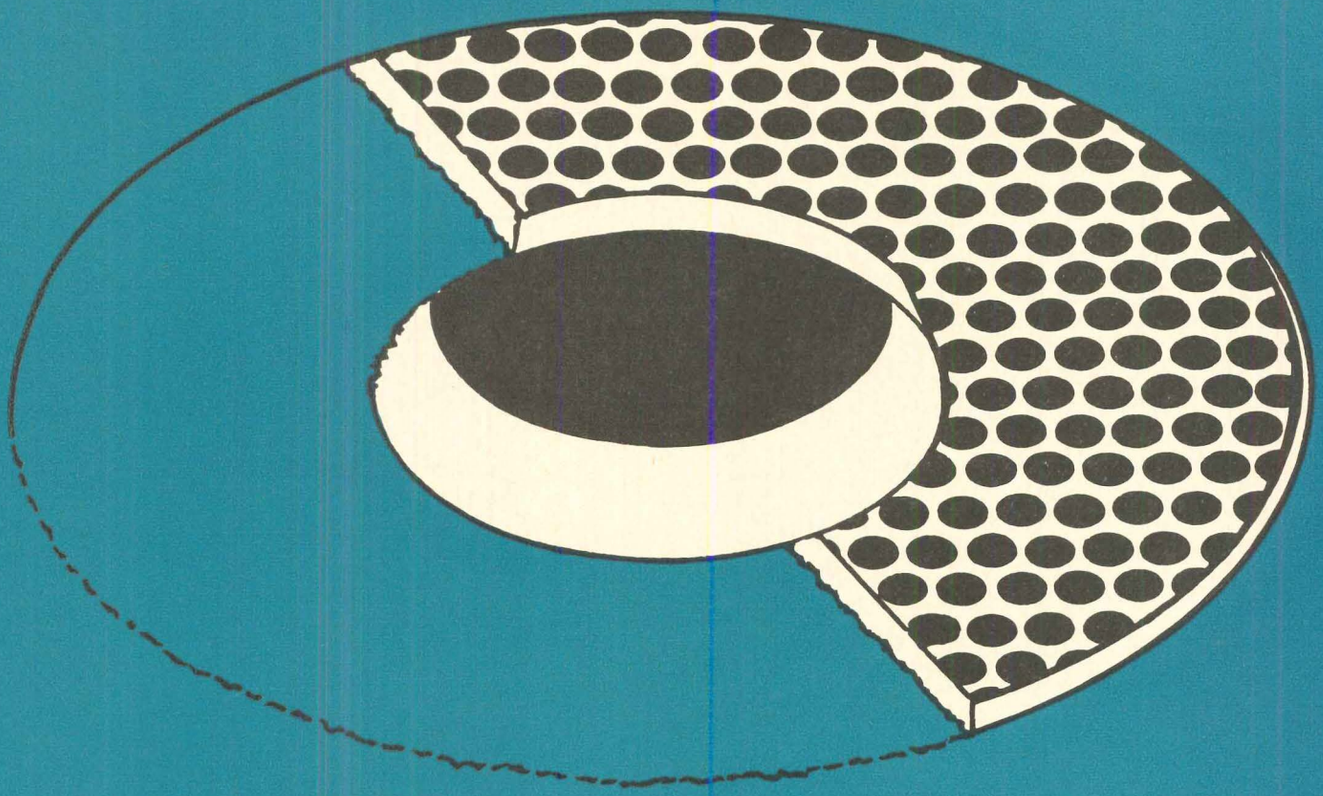

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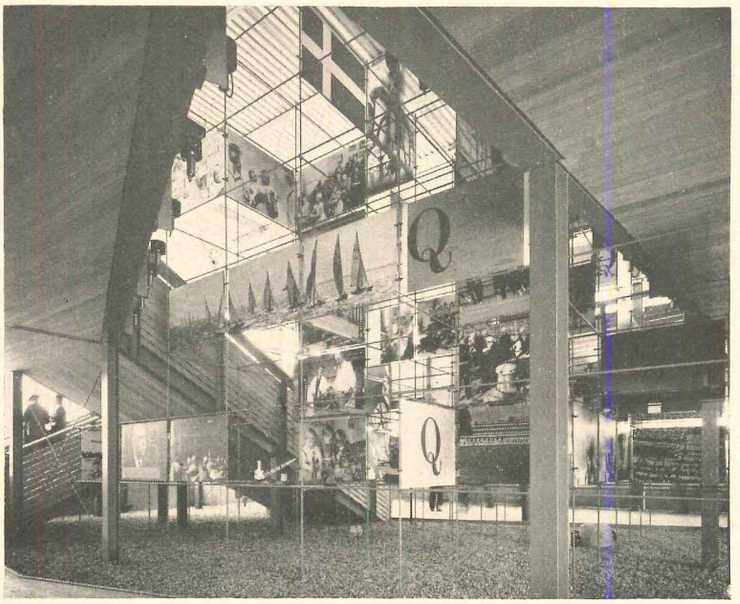

32

33

On two sides of the Coliseum is International Plaza, composed of exhibits from foreign countries housed in structures by Paul Thiry. Of these exhibits, by far the best, and one of the design triumphs of the fair, is the Danish Pavilion. Using two levels on a corner site, Copenhagen's Professor Erik Sorensen has designed a colorful, sophisticated interior organized around a ceiling-high scaffolded display structure **(32)**. The visitor circulates around the lower level, then climbs a handsome stairway **(33)** to a mezzanine embracing the central structure. Denmark's story is told by means of excellent graphics, traditional artifacts and native crafts, and contemporary products, including furniture, crystal, and foodstuffs.

A serene resting place in the otherwise crowded and "hard sell" Boulevards of the World (p. 49) is the Oregon State exhibit **(34)**. Consisting simply of a placid room with benches surrounding a double fountain and pool, this exhibit, designed by Robert Bosworth, allows the visitor to the fair a restful pause for "emotion recollected in tranquillity."

34

35

Domestic Commerce and Industry Building #55 **(35)**, which houses such exhibits as interior decoration and fashions, furnishes, on three levels dictated by the site, an efficient open space for a variegated clutch of activities (including a meagre booth housing ballyhoo for the 1964-65 New York World's Fair). The basic building, a space frame structure designed by Waldron & Dietz, fulfills its function with economy and restraint.

Continued on page 62

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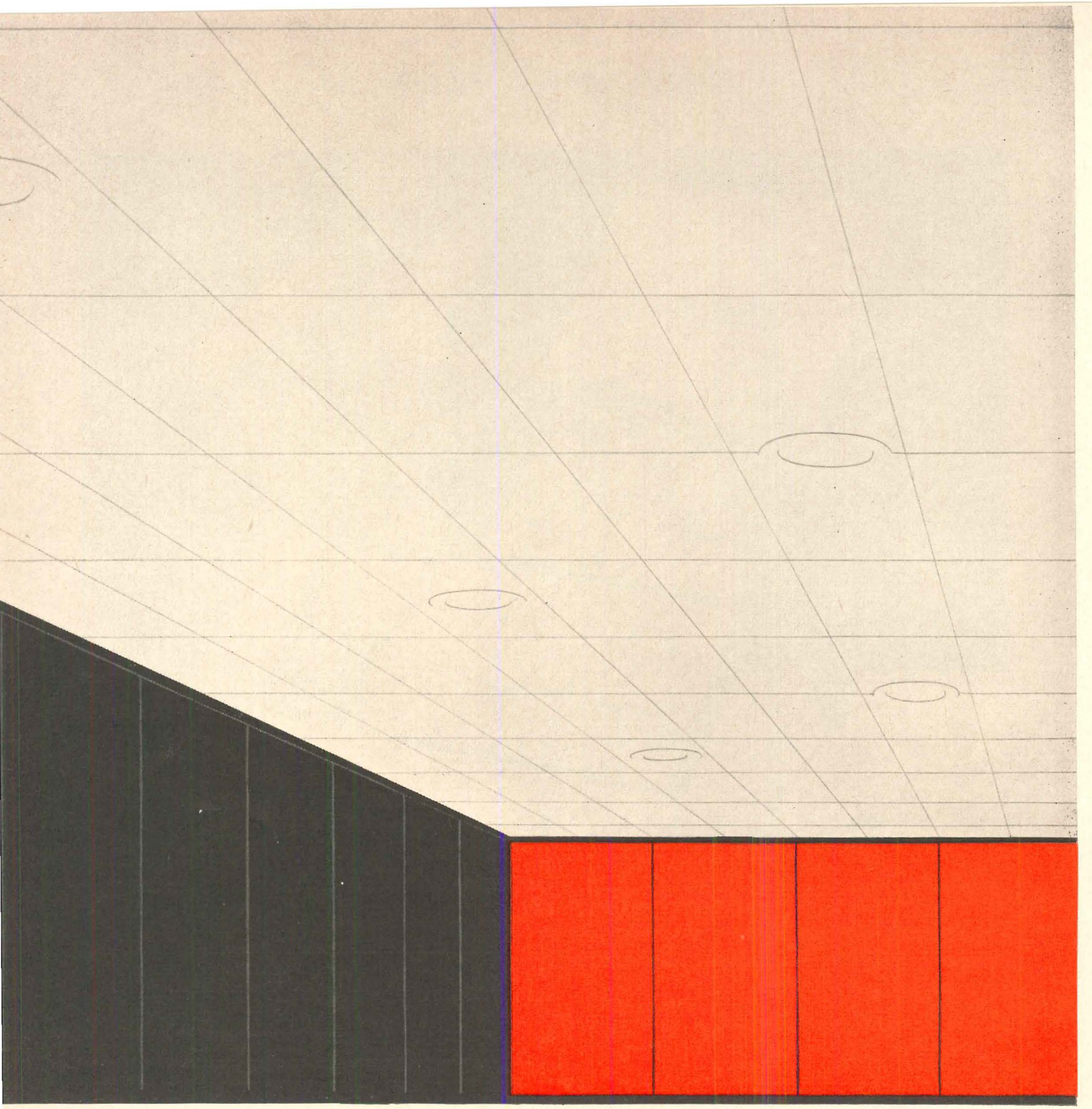

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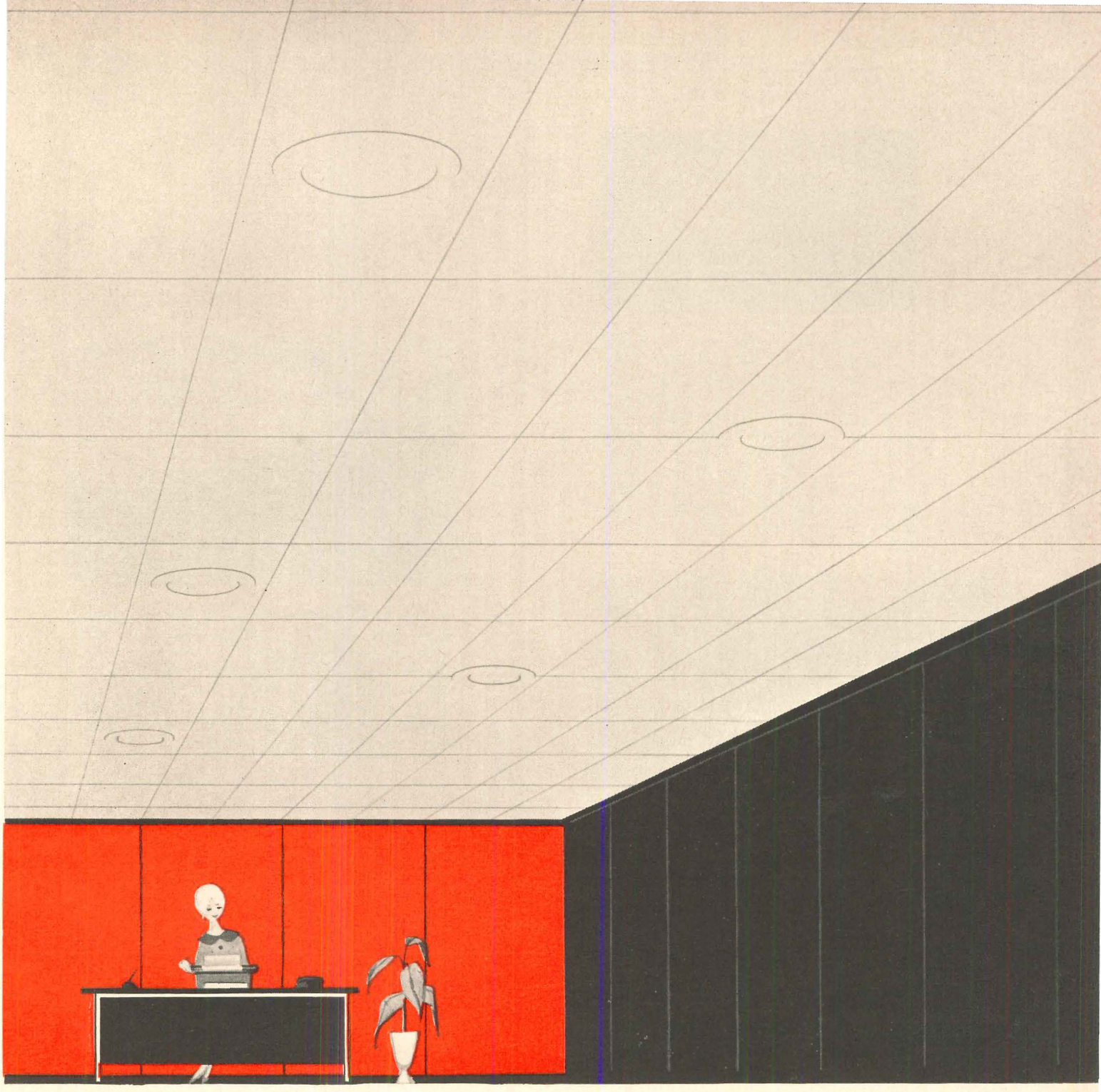

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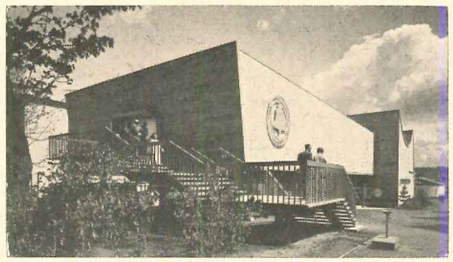


36

Some pavilions, while not successful architecturally as total designs, have elements which are pleasant. Such a one is the Bell Telephone Systems Pavilion. Designed by industrial designer Raymond Loewy-William Snaith, Inc. (John Graham & Company, Architect-Engineer) this building uses obvious forms —the structure on pilotis, the catenary roof—but does have a sensitively detailed, if out of scale, stairway at one end **(36)**.

37

The central element of Seattle Center Fountain (37, p. 47) is a majestic, changing series of water jets leaping from what looks like the armature of a floating mine. This aqueous extravaganza rests on a wide bed of marble chips in a recessed oval stone bowl. Unfortunately, the design provides that the water drain immediately from the bowl, rather than furnishing a lively receptacle pool. When I saw it, landscaping around this major fountain had not been undertaken, and it was spouting away in a barren expanse of gray pea gravel.

38

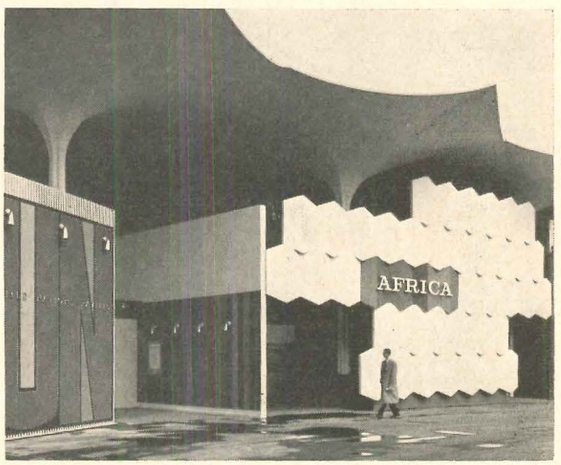
La Fiesta Restaurant **(38)**, by Burhans Design Associates, Inc., is a retreat from the hurly-burly of the fair grounds in which to have a tequila sour (Mexican cuisine is featured) and overlook the main fountain. The dining portion of the wood-framed building is a glass-walled rectangle; bar, restrooms and kitchen are located in the redwood-walled rear section.

39

A glass mosaic mural **(39)** whose only distinction, as far as I am concerned, is that it is "the largest single work of art in the Pacific Northwest," was designed by noted local artist Paul Horiuchi and mounted on a wall designed by Paul Thiry. It stands in uncomfortable neighborliness to the soaring entrance of Yamasaki's Federal Science Building, and will continue to do so, being one of the permanent ornaments of the eventual civic center.

Continued on page 64

40



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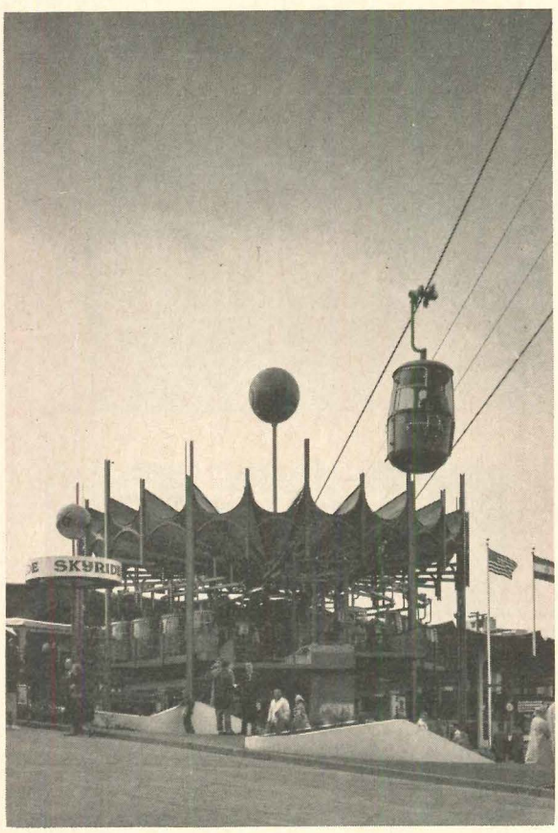
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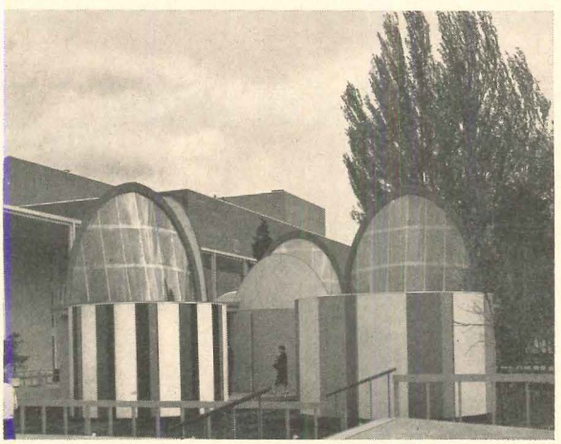

42

Every fair, from the most regional to the most "world's," must have its share of *kitsch** architecture, and Century 21 is not renegade on this score. This is all to the good, as long as it is not taken seriously. I would hate to see a fair without its rides, girlie shows, and general gallimaufry.

Among the examples I saw in Seattle were the Gaufres de Bruxelles **(40)**, a prefabricated whiff of olde Brussells serving short-order *crêpes* to ladies on the run from Metrecal; the façade of the African exhibit **(41)**, which sits uneasily under the hyperbolic paraboloid shelter provided in the International Mall by Walker & McGough; the House of Living Light **(42)** by Liddle & Jones, a house-of-the-future whose revolving skylights will give us the sun in the morning and the moon at night; and the terminals **(43)** of the Skyway which wafts people back and forth above and across the fair, by Tucker & Shields. There are lots more, believe me.

The fair, from Kirk to *kitsch,* comprises a parade of contemporary architecture that should be of great interest and comfort to professionals and which, it is hoped, will awaken some lay eyes to current design. As one who went expecting an overemphasis on the jazzy and superficial, I was well pleased with the generally high design level of the fair. The executives of the show were intelligent in appointing and fortunate in having a Primary Architect — Paul Thiry — who maintained a benevolent control over good planning and design.

*"kitsch: artistic . . . material often produced to appeal to popular taste, and marked esp. by sentimentalism, sensationalism, and slickness." *Webster's Third New International Dictionary.*

PROTECTING DOWNTOWN FROM DETROIT

By E. E. Halmos, Jr.

Answer to municipal traffic problems—and the growing battle over the impact, both aesthetically and commercially, of more and more new freeways—is really very simple: just bar all private automobiles from downtown areas.

That's not even a new suggestion (it was once the subject of a short story in a popular national magazine), but it came up in all seriousness in Washington early in May. Ohio Congressman Charles A. Vanik pushed the idea not only in committee hearings on highway and mass-transit bills, but insisted on taking the House floor for a speech as well.

His theory had some point: Architects and planners in Washington and other cities are increasingly concerned not only with aesthetics, but with the absolute necessity of providing vast parking areas for new Governmental and business buildings in downtown areas—an obviously uneconomic use of enormous, expensive land areas, and no great addition to a city's looks. (Washington's mammoth Pentagon, for instance, covers some 34 acres, but its parking lots cover more than 67 acres. Most newer Government buildings have had to provide interior parking at considerable expense, as have many new office and store structures.)

And Washington would be a perfect city in which to try an experiment: The vast majority of city workers (an estimated 300,000) are employed by the Federal Government, and could simply be ordered to leave their cars at home; they could even be barred from existing available parking spaces.

The fact that the city has a transit system (all buses), which probably couldn't cope with such a mass movement, didn't get into the argument at all.

But Vanik's thesis is more than a symptom of a matter that has been flagged in P/A for some time: growing concern of the cities that they may be destroying themselves and their reason for existence as residential and business centers by constantly devoting more space to the automobile.

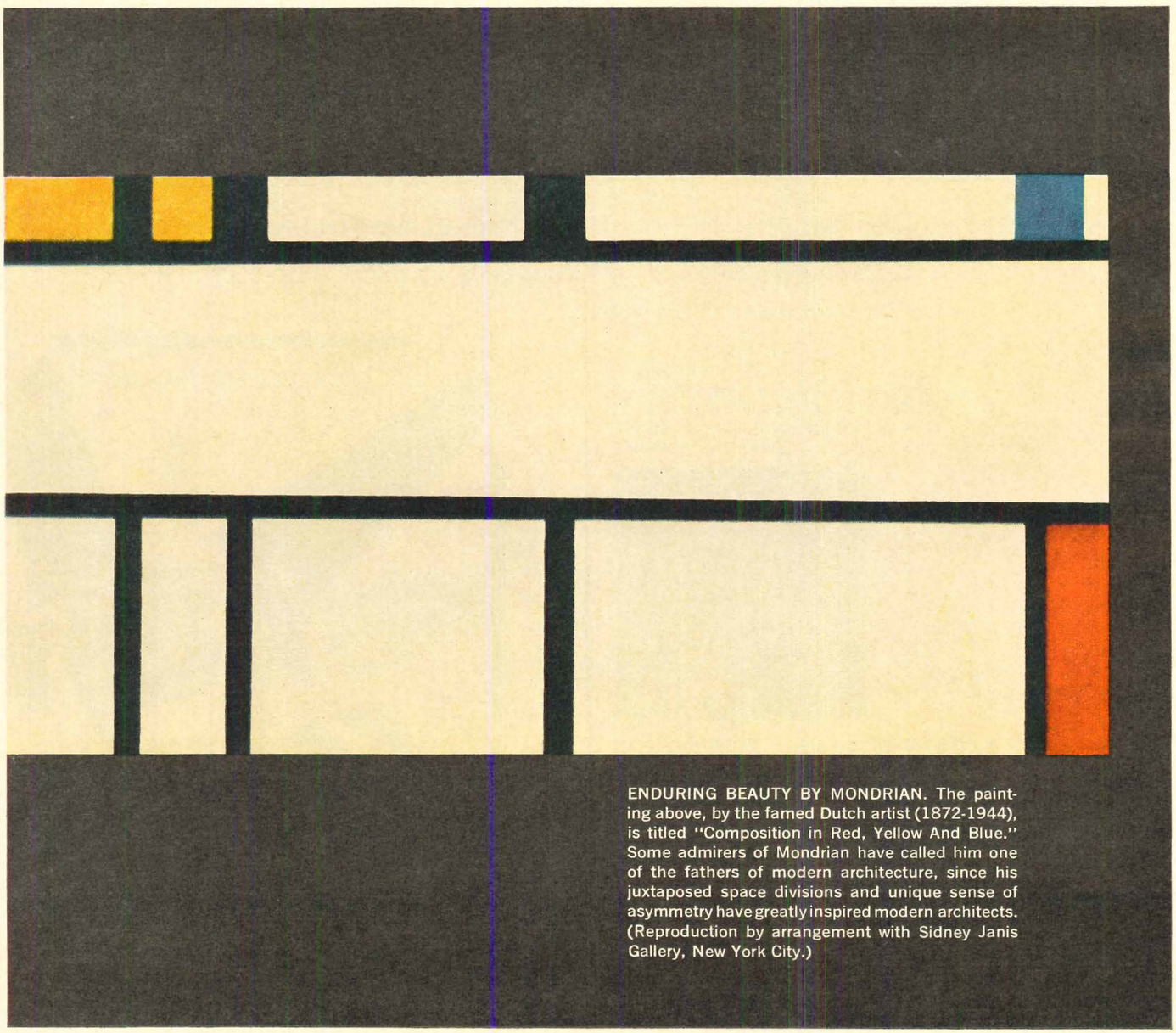
It ties in very directly with debate in Congress early in May over Administration proposals for a $500-million, 3-year program (to be administered by the Housing and Home Finance Agency) to aid cities in building and otherwise subsidizing mass-transit schemes.

Debate on the proposal is complex enough, even without aesthetic considerations: It includes some Congressional suspicion that the proposal is a sneaky attempt to get more power for HHFA, thus forcing it into some sort of an Urban Affairs department anyway; efforts of railroads to get subsidy help for their commuter operations; sharp criticism of highway builders—and sharp resentment by the builders and their friends; and much else, including mounting Congressional fears as to the size of the Federal budget.

A direct tie-in to the whole problem of transit is the fact that Urban Re-

Continued on page 68

Now...for enduring beauty in acoustical



ENDURING BEAUTY BY MONDRIAN. The painting above, by the famed Dutch artist (1872-1944), is titled "Composition in Red, Yellow And Blue." Some admirers of Mondrian have called him one of the fathers of modern architecture, since his juxtaposed space divisions and unique sense of asymmetry have greatly inspired modern architects. (Reproduction by arrangement with Sidney Janis Gallery, New York City.)

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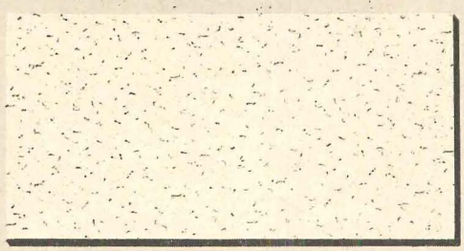

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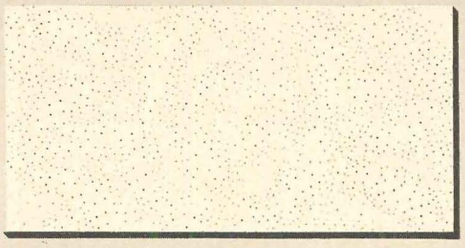

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LO-TONE® MINERAL CEILING TILES AND BOARDS

Continued from page 65

newal Administration has approved more grants for urban renewal projects (in the 1962 fiscal year) than in any year since the program started in 1949.

As of March 31, these grants topped $581 million—and a majority of the 1130 projects involved are aimed at rehabilitation and conservation of center-city areas.

And add one additional point: The Urban Land Institute predicted that within 40 years more than half the population of the entire world will be living in cities.

Prototype Towers by Pei

The Federal Aviation Agency, which wants a "distinctive" design for the 70 or more control towers it will build over the next three years, has hired a New York architectural firm (I.M. Pei & Associates) to come up with proper plans.

Idea is to develop a standard free-standing tower that will vary in height and accommodations depending on size and type of the airport. Costs of completed towers will run between $200,000 and $500,000.

Financial

The lull in general business activity [APRIL 1962 P/A] had gotten well beyond the stage of a feeling: it was a fact as May began.

It was also producing a spate of "explanations"—ranging from the real scare industry (and labor) got out of the Government's slapdown of the steel industry, to uncertainty over what Congress will do about tax reforms, to the annual struggle (in April) with income taxes, to anything else the "expert" cared to discuss.

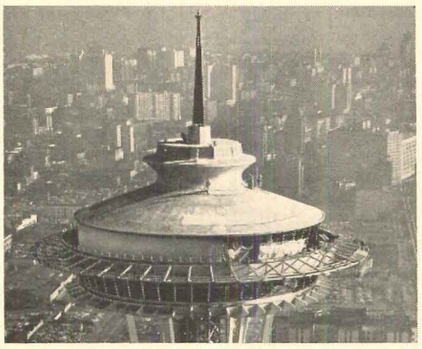
For construction, the lull was showing up in heavy construction, running even or slightly less than last year, according to most indexes in both public and private sectors.

But there was plenty of work on the books in both areas—and a heavy increase of highway and bridge awards with, the coming of the spring and summer season, could take up the slack.

Housing, rather surprisingly (in view of statistics showing that vacancy rates in rental housing are almost unchanged in nearly a year) was a bright spot in the economic picture, showing gains over last year (9 per cent) and running (in March) at the near-record rate of 1.4 million units for the year.

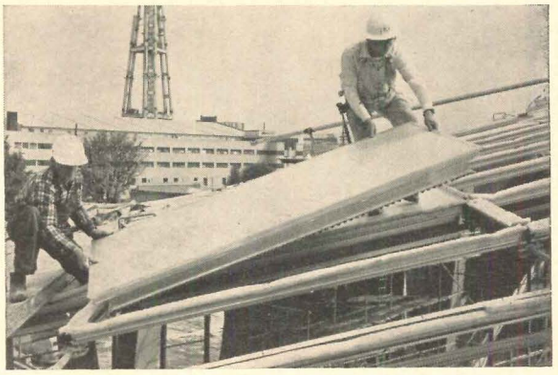
Utility companies, continuing their expansion programs, provided most of the action in other private construction sectors.

CENTURY 21 PRODUCTS



The roof of the now-famous Space Needle gleams with an epoxy-modified vinyl coating called "Vinylelastic," in a color called "Galaxy Gold." The new coating's major distinctions are its ease of application and its exceptional resistance to weather and corrosion. The film may be hot-sprayed to a thickness of 30 mils at a rate of 2000′ a day, employing only two men. It is highly elastic, designed for substrates where expansion and contraction is a problem. It can bridge structural faults, fissures, and surface irregularities of as much as 1½″. Other successful applications are on rooftop parking areas, patios, and building exteriors. Union Carbide Plastics Company supplies the basic resin components. Coloron Div., Kish Industries, Inc., 1301 Turner St., Lansing 6, Mich.

On Free Data Card, Circle **101**



Roof of Paul Thiry's Coliseum is made up of 3700 aluminum sandwich panels that provide both exterior roof and interior acoustical ceiling. The 4′ x 8′ panels are set in grids of aluminum extrusions tied to a system of steel cables. Four "tripods" of reinforced concrete, acting as buttresses for steel trusses, support the structure. Reynolds Metals Co., 6601 W. Broad St., Richmond 18, Va.

On Free Data Card, Circle **100**

Colorful translucent cones —72 in all—give interior and exterior sparkle to the Domestic Commerce and Industry Building. Made of Alsynite, the plastic cones enable natural daylight to infuse the space in a unique manner. Colors match the building's wall panels: blue, yellow, orange, and white. The skylights are approximately 3′ x 3′ at the base, 4′ deep. Alsynite is making its second World's Fair appearance with this installation, having been incorporated in the roof of the U.S. Pavilion at Brussels. Alsynite Div., Reichhold Chemicals, Inc., San Diego 9, Calif.

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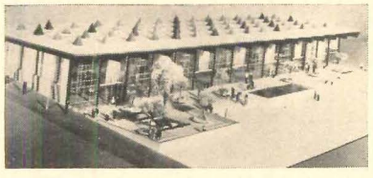

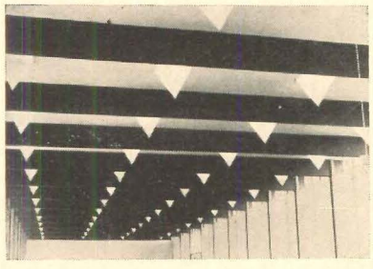

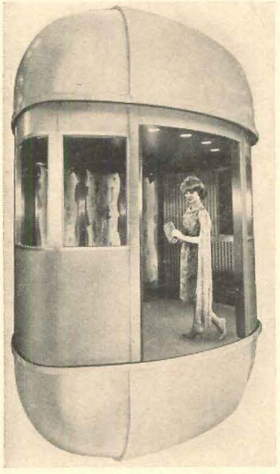

Whizzing to the top of the Space Needle, in one of three specially designed elevators, is guaranteed to get one into the spirit of the 21st Century. Cars travel in the area between the three legs, and passengers look out through green-tinted safety glass to the intricate structure of the Space Needle around them, and to the fairgrounds below. Speed is a spectacular 60 mph. Adding to the feeling of space-age travel are the elliptical plan of the cars and the parabolic domes at top and bottom. Interiors have illuminated mural panels of textured glass-fiber—presumably for those who want to fix their gaze on an immovable object during blast-off and re-entry. Otis Elevator Co., 260 11th Ave., New York 1, N. Y.

On Free Data Card, Circle **104**

Casting of concrete units for the Federal Science Pavilion was done using fiber glass-reinforced plastic forms, which permitted extensive reuse and superior adaptability to the "sensuous" shapes involved. Use of white cement and white quartz chips for exposed surfacing gave the building a sparkling, shining appearance. Portland Cement Association, 33 W. Grand Ave., Chicago 10, Ill.

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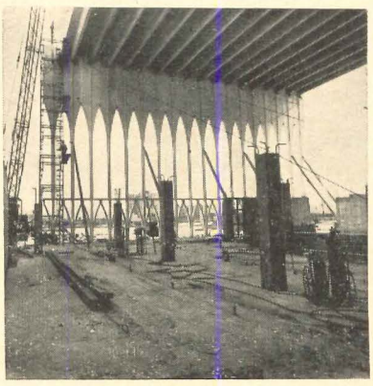

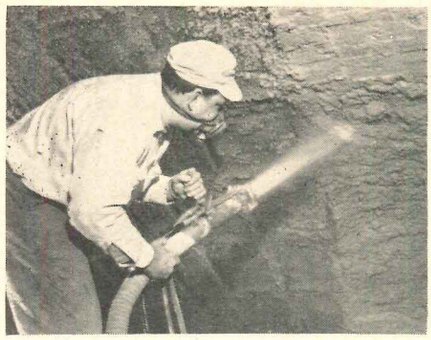

Roof Shell Sprayed from Beneath

In a patent-applied-for technique, a plastic-surfaced fabric is attached to the walls of a building with an air-tight seal, high tensile steel strands are attached to the underside of the fabric and anchored to the walls and blowers inflate the form to a pressure of 30 to 40 lb per sq ft. Then, entering through an air lock, workmen spray concrete until the tension strands are buried. Either during or after the concrete setting period, spray-on "Limpet" asbestos is applied to the undersurface of the shell. Application shown is a warehouse in Chicago; the technique is called "Harbild" and was developed by Engineer Horrall Harrington. Keasby & Mattison Co., Ambler, Pa.

On Free Data Card, Circle **105**

New Aluminum Structural Beam

A new aluminum box-type structural member called the "Dynabeam" truss, said to be competitive in cost with galvanized steel beams of comparable strength, is fabricated of aluminum plate and extrusions connected by a mechanical-joint system requiring no welding, riveting, bolt-holes, or diagonal lacing members. Beams are available in lengths up to 50 ft, with face dimensions of 3, 6, 9, and 12 in. Olin Mathieson Chemical Corporation, whose aluminum is utilized, assisted in many of the phases of research on the new member. Alrectic Div., McGraw Edison Co., 2101 Brooklyn Rd., Jackson, Mich.

On Free Data Card, Circle **106**

Air Conditioner Installs Between Studs

New "Seasonmaker Junior" room air conditioner installs between studs spaced at the standard 16″ o.c., and is suited for new construction or renovation. Two models are available—recessed and free-standing—each with capacities of 150 cfm or 300 cfm. Efficient air movement is provided by an aluminum centrifugal fan; direct-drive motor has thermal-overload protection and automatic reset. A variable rheostat permits manual control of air volume from 50% to 100% of capacity. McQuay, Inc., 1600 Broadway N.E., Minneapolis 13, Minn.

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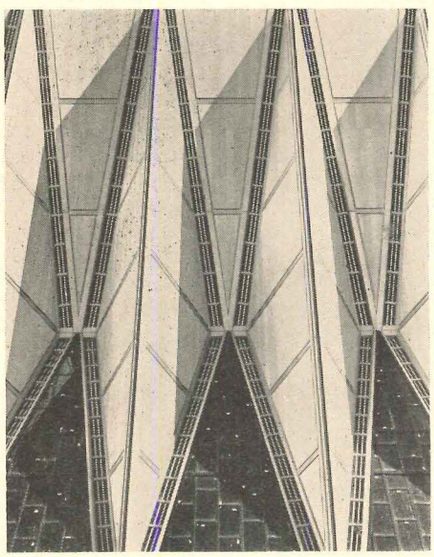
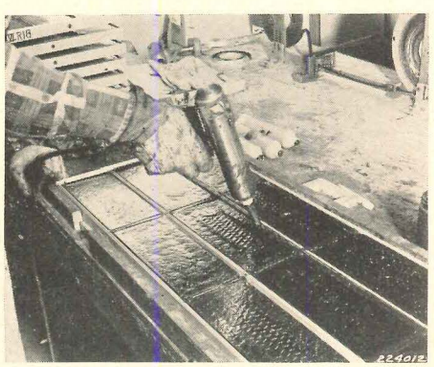


Applying Glass to Air Force Chapel

The great stained-glass windows of the United States Air Force Academy Chapel contains 24,384 dalles (units) of pot metal antique stained-glass of various thicknesses set into aluminum frame panels with a total combined weight of 82,408 lbs. How to set these dalles into their frames and have them stick presented a problem, one that was solved by the use of two sealing preparations: "Weatherban Brand Ribbon Sealer" and "Weatherban Brand Building Sealer." The Ribbon Sealer was applied around the edges of each panel section and the dalles positioned against the sealer. A bead of the Building Sealer was applied by pressure flow gun around the edge of each dalle. Aluminum strips were then fastened to the frame to hold the glass in place, and an additional bead of Building Sealer applied along each side of the holding strip. The panels were stored for 18 to 24 hours to permit curing of the sealer. Architects: Skidmore, Owings & Merrill; Glass Designers: Judson Studios. Adhesives, Coatings & Sealers Div., Minnesota Mining & Manufacturing Co., 900 Bush Ave., St. Paul 6, Minn.

On Free Data Card, Circle **108**



Plexiglas in New Colors

"Plexiglas" acrylic-plastic sheet is now available in a new series of nine colors for facing and spandrel panels. The handsome, subdued colors are almost opaque; surface may be satin-finish, conventional high-gloss, or a new textured pattern. Noteworthy characteristics of the acrylic plastic include ease of forming, quick installation, light weight, low maintenance, and excellent weather resistance and color stability. Rohm & Haas Co., Plastics Dept., 222 Washington Square, Philadelphia 5, Pa.

On Free Data Card, Circle **109**

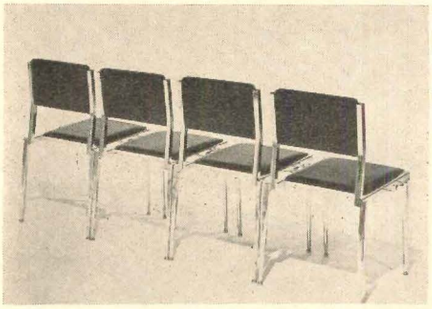
Reinforcing Fabric Uses Deformed Wire

A new and improved weld-wire fabric —using deformed wire—is expected to minimize concrete cracking and to provide greater holding power than the smooth wire fabric that has been widely used for the past 50 years. The bond between steel and concrete has heretofor been accomplished by mechanical anchorage made possible mainly by the welded intersections of the crossed wires. Recent research has indicated, however, that crack-control properties of welded-wire fabric would be enhanced if there were also deformations on the wires themselves. American Steel & Wire Div., United States Steel Corp., Rockefeller Building, 614 Superior Ave., N.W., Cleveland 13, Ohio.

On Free Data Card, Circle **110**

Stacking-Ganging Chairs

A tidy stacking-ganging chair has been introduced in the contract field. Ganging device is fabricated from square wire rod; a chrome-plated dolly is offered for transporting the stacked chairs for short distances. Designed by C. Douglas Turnbull, the chairs are of heavy-gauge square tubular steel with urethane foam filled



backs and seats upholstered in knit-back supported vinyl. Available in seven metal finishes and a number of upholstery colors and patterns, the chairs were designed for comfort and timelessness of style. Kuehne Manufacturing Co., Mattoon, Ill.

On Free Data Card, Circle **111**

A New Knoll

Knoll has unveiled a new armchair with lines somewhat reminiscent of the traditional "director's chair." De-

signed by Charles Pollack, the chair features heavy natural cowhide suspended on a frame of polished chrome steel tubing. There is a snap-on foam rubber seat pad covered in black capeskin, and the back tilts to conform to the position of the sitter. Rounded arms and stretcher of cast aluminum with a black fused finish contract with the gleaming frame. Dimension: 25″ width, 26″ depth, 26″ height. Approximately $250 retail. Knoll Associates, Inc., 320 Park Ave., New York 22, N.Y.

On Free Data Card, Circle **112**

New Wood Siding with Baked-on Prime Coat

"Primewood" is a wood bevel siding with all vertical grain coated with a baked-on prime coat suitable for all finish paints. The coat carries a money-back guarantee against blistering or peeling. The siding is supplied in preferred lengths to minimize job-site cutting and to reduce application costs. Weyerhaeuser Co., Tacoma Bldg., Tacoma, Wash.

On Free Data Card, Circle **113**

Fused Glass Murals

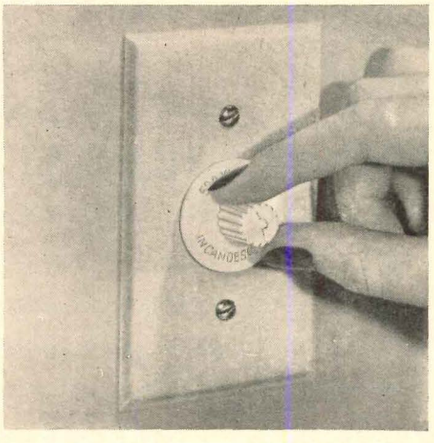
Fused glass mural results from technique using three layers of glass interspersed with color and glass chips melted into one unit. Panels can give impression of abstract forms suspended in glass, or arranged in predetermined designs. Leonard Rodier Co., 187 Lafayette St., New York 13, N.Y.

On Free Data Card, Circle **114**

Unpolished Plate Has Design Possibilities

An expanded selection of rough plate glass products in a greater variety of thicknesses, surface finishes, and glass types has been announced. The new forms, suitable for any number of partitioning and decorative applications, include regular plate, gray plate, and greenish-blue heat-absorbing plate in thicknesses of $\frac{3}{32}$″ and $\frac{7}{64}$″. Maximum size of the former is 100″ x144″, unpolished on both sides. Maximum size of the latter is 96″x138″, polished on one side. Libbey-Owens-Ford Glass Co., 811 Madison Ave., Toledo 1, Ohio.

On Free Data Card, Circle **115**



Small-Sized Incandescent Dimmer

Another electronic light control no larger than an on-off light switch is on the market. "Luxtrol Light Control SBD 500" will dim, blend, or brighten up to 500 w of incandescent lighting on a single circuit. Installation is easily completed by detaching the present wires and then attaching them to screw posts on the SBD 500. Continuous and uninterrupted dimming from off to full brightness is possible, with no interference with radio or TV reception. The unit lengthens lamp life because electric surges are eliminated, and saves power because only the electricity needed for illumination is used when lights are dimmed. Price is approximately $30 for operating unit and knob. The Superior Electric Co., Bristol, Conn.

On Free Data Card, Circle **116**

Heating System Is Size of Briefcase

An electric home-heating system requiring only 6″ of wiring and weighing only 36 lb has been introduced. The extremely compact unit, known as "Microtherm," is a new adaptation of hot-water heating using electricity as a power source. Microtherm requires only two connections to the home water supply and can be situated just 6″ away from fuse box. Standard circulating pump and standard plumbing parts are used. The briefcase-sized heating system delivers 82,000 Btu, more than enough to heat the average home, apartment, or small store. Because the unit uses a minimum amount of water in the heating chamber, heat is delivered to radiators or baseboards without standby losses in seconds. Thermotronics Corp., 27 Jericho Turnpike, Mineola, Long Island, N.Y.

On Free Data Card, Circle **117**

Honeycomb Panel Is 40′ Long

Production has begun on honeycomb panels 8′ wide and 40′ long, which are designed to form the complete wall of a new manufactured home. The single continuous, machine-made wall was developed by Honeycomb Products, Mt. Vernon, Ohio, and consits of a 3″ thickness of plastic honeycomb with aluminum facing on each side. (If desired, walls can be curved at the factory. Panels can also be cut to greater lengths.) The particular house for which this 40′ panel is intended will be produced by the Aluminum Housing Corp., owned jointly by Canaveral International Corporation and Honeycomb Products. Because of the savings in labor costs—both in production and construction—price of the homes will range from $5500 to $12,500. Canaveral International Corp., 1766 Bay Rd., Miami Beach 40, Fla.

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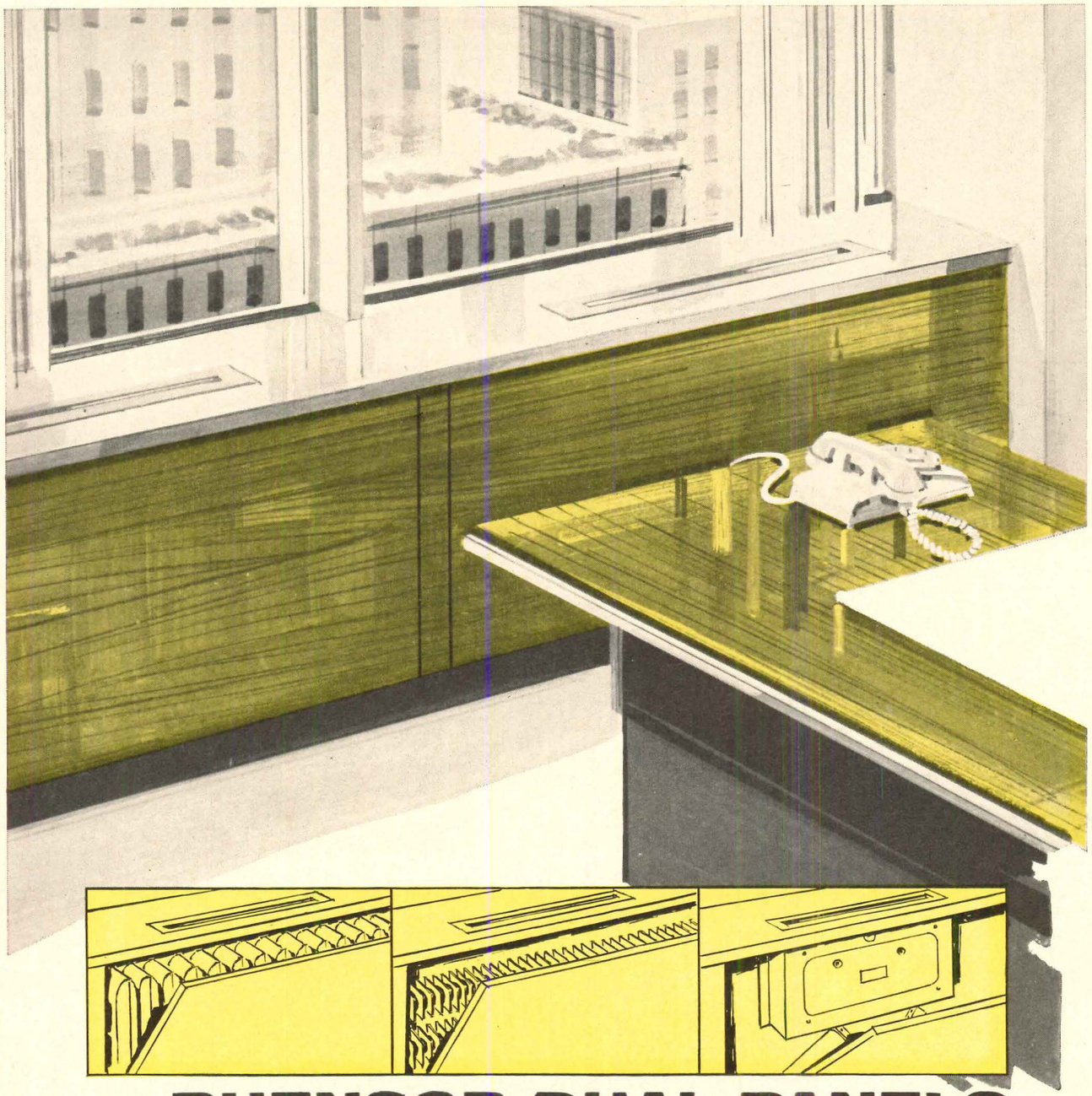


new BUENSOD DUAL PANELS

...UNIVERSAL UNDER-WINDOW ENCLOSURE PANELS AND SILLS

Dual Panels, Buensod's unique approach to under-window enclosure design, have set a fast sales and installation pace. A major reason that these rigid, lightweight panels and sills have been so readily accepted is their universal nature. Dual Panels quickly, and handsomely, enclose *convectors, radiators, unit ventilators, fan coil units, induction units* and, of course, our own *Dual Duct air mixing units.* Add to this the flexibility of size, shape, color and finish, plus fast field installation, and you can see what makes Dual Panels "tick." How about your next job? *Write for free, colorful brochure, #MP10.*

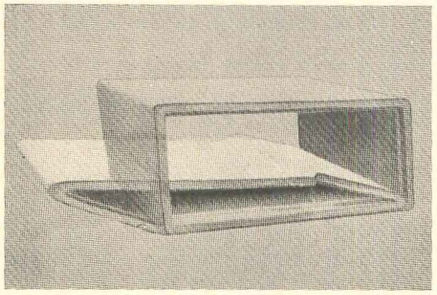
BUENSOD-STACEY CORP. Manufactured Products Division
45 West 18th St., New York 11, N. Y. Subsidiary of Aeronca Manufacturing Corporation

BUENSOD-STACEY

AIR/TEMPERATURE

New Duct System

Comprehensive 52-page manual details fabrication and installation methods for a new "Fiberglas" duct system. The new system for commercial and



residential buildings combines air duct, thermal insulation, acoustical liner, and vapor barrier in a single product. The manual contains 150 illustrations describing the system, showing its application and the speed with which it can be installed. Owens-Corning Fiberglas Corp., Dept. 2024, P. O. Box 901, Toledo 1, Ohio.

On Free Data Card, Circle **200**

CONSTRUCTION

ACI Publications

A 12-page catalog listing its more important publications is offered by the American Concrete Institute. More than 100 titles cover all phases of concrete design, construction, and technology. Some of the headings under which publications are grouped are: ACI Standards, Special Publications, Reprints of Special Interest, Bound Proceedings Volumes, and Committee Reports. A tear-out order form is provided. Publications Dept., American Concrete Institute, P.O. Box 4754, Redford Station, Detroit 19, Mich.

On Free Data Card, Circle **201**

TECO Products and FHA Standards

New 4-page folder, *How to Comply with FHA Minimum Property Standards Through the Use of TECO Products,* is available. Excerpts are presented from the MPS paragraphs dealing with roof anchorage, post-and-beam construction, floor framing, plywood sheathing, and bridging; the exact TECO product is then related to these paragraphs. Safe working values and other design information are provided. Timber Engineering Co., 1619 Massachusetts Ave., N.W., Washington 6, D.C.

On Free Data Card, Circle **202**

Poured-Gypsum Roof Decks

Precise information for the selection and design of gypsum-concrete roof decks is presented in 14-page folder. Recommendations and limitations on this type of construction are spelled out, comprehensive details are shown, and full design data is given. Material is organized for the designer's easy selection of the proper components for specific span and load. Short specifications are provided for roof decks, both with and without subpurlins. Gypsum Association, 201 N. Wells St., Chicago 6, Ill.

On Free Data Card, Circle **203**

Complete Data on Translucent Panels

Comprehensive 90-page *Technical Information Manual* is available from Filon Corporation, and covers the company's complete line of standard, fire-retardant, and "Filoplated" translucent plastic panels. Among the subjects discussed and illustrated are: mechanical and physical properties, code approvals, use of adhesives with glass-fiber-reinforced panels, comparison with other materials, and specific types of installations. Technical & Field Services Dept., Filon Corp., 333 N. Van Ness Ave., Hawthorne, Calif.

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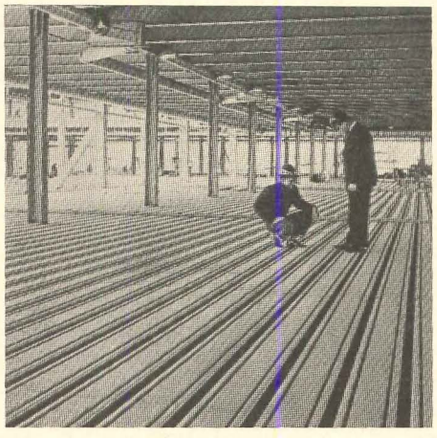


Steel Subfloors

New bulletin covers Mahon "M-floor" sections, cellular steel subfloor sections that are designed for a broad range of load and span conditions, and provide electrical availability in every square foot of floor. Features of the sections are more raceway capacity, more latitude in location of floor-service fittings, fireproofing economy, and structural rigidity. Catalog, 16 pages, contains electrification details, architectural applications, load tables, and suggested specifications. The R. C. Mahon Co., Building Products Div., Detroit 34, Mich.

On Free Data Card, Circle **205**

Porcelain Enamel with 12-Year Guarantee

New 4-page folder, *Architectural Porcelain Enamel,* illustrates Davidson's complete line and provides details and specifications. Information is given on two types of standard facing panels, three types of curtain-wall panels (including a laminated model), a porcelain enamel window surround, a gravel stop fascia, and "Sculpturama" panels (where a variety of special effects is possible with color, surface texture, and embossed designs). In addition to the one-year guarantee required under Porcelain Enamel Institute specs, Davidson guarantees its finish for a period of 12 years from date of installation. Davidson Enamel Products, Inc., 1104 E. Kibby St., Lima, Ohio.

On Free Data Card, Circle **206**

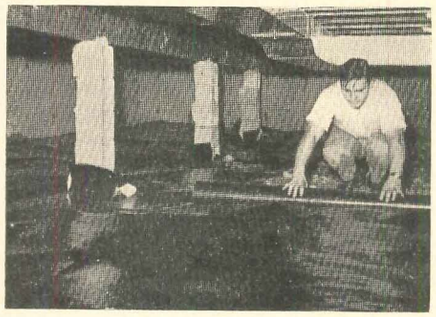
Concrete Control

Brochure, 8 pages, describes the use of "Elastizell" in giving complete control over such physical properties in concrete as density, weight, strength, and insulating value. Elastizell is a liquid chemical, a foaming agent, incorporating in one package "all the advantages found in today's diverse aggregates." It costs less than comparable concretes, yet gives maximum flexibility of design. There are three Elastizell-type concretes: (1) *insulating* for roof fill and underground insulation; (2) *semistructural* for on-grade slabs, flooring in multistoried construction, and monolithic floor and roof fill; and (3) *structural* for precast floor and roof panels, monolithic floors and roofs, and precast units. Elastizell Corp. of America, P.O. Box 321, Alpena, Mich.

On Free Data Card, Circle **207**

Loose-Leaf Book on Vapor Barriers

Loose-leaf manual prepared for architects contains detailed information on vapor barriers, insulation, flashing,



waterproofing, and concrete curing. Ten different bulletins combine to present the complete Sisalkraft line of these products; for each product there are property descriptions, suggested applications, and specifications. Of special interest is a new noncombustible vapor barrier. Actual samples, 8½″ x 11″, are also included. American Sisalkraft Co., Div. of St. Regis Paper Co., 61 Starkey Ave., Attleboro, Mass.

On Free Data Card, Circle **208**

DOORS/WINDOWS

Surfaced Doors

Flush doors surfaced with "Micarta" plastic laminate are described in new 4-page booklet available from Architectural Systems, Inc., a wholly owned subsidiary of Westinghouse Electric Corp. Sizes, styles, and core materials available in the "Flex-A-Plan" line of doors are illustrated. Specifications are included. Architectural Systems, Inc., 4300 36th St., S.E., Grand Rapids 8, Mich.

On Free Data Card, Circle **209**

Store-Front Shapes

A portfolio of details on 68 store-front shapes is available. The drawings are at full or quarter scale, on sheets that facilitate reproduction or tracing. The comprehensive "Bon-Vue" line of extruded-aluminum store-front designs includes a box-frame system, a flush-frame system, and a flush frame-sash system. Portfolio also gives general information on the Bon-Vue line and on the company. The William L. Bonnell Co., Inc., Newnan, Ga.

On Free Data Card, Circle **210**

ELECTRICAL EQUIPMENT

Parking Lights

Simplified design of parking-area lighting is explained in a portfolio of four brochures offered by Steber. Only two factors (size of over-all area and amount of illumination desired) need to be known to determine the number of lighting units required. There is a choice of three lighting types—incandescent, mercury vapor, and fluorescent—and all are pre-rated at a specified level of illumination for a specified modular area. Brochures include comparison of lighting units, photometric data, and installation details. Steber Div., Pyle-National Co., 1334 N. Kostner Ave., Chicago 51, Ill.

On Free Data Card, Circle **211**

Baseball Floodlighting

New 68-page catalog gives complete specifications and installation data of baseball and softball floodlighting. Minimum mounting heights of floodlights, spacing of lighting poles, and types of lights required for specific applications are discussed. Material lists are offered for complete installations. Benjamin manufactures a complete line of floodlights, including the "Olympia," which is designed primarily for sports lighting but is equally suitable for any large area (golf-driving ranges, swimming pools, recreational areas, etc.). Benjamin Div., Thomas Industries Inc., 207 E. Broadway, Louisville 2, Ky.

On Free Data Card, Circle **212**

FINISHERS/PROTECTORS

Acrylic Paints Star in Film

Up-dated version of Rohm & Haas' 16-mm film on acrylic-emulsion paints is available for showings to interested groups. Entitled *The Story of Acrylic Paints,* it emphasizes recent advances in these coatings for exterior application on wood, as well as their established use on masonry. The 19-minute film discusses the chemistry and uses of acrylic-resin emulsions, and shows how these paints meet a variety of typical painting problems. Particular attention is given to the properties of acrylic-based paints: their weatherability, color stability, low odor, rapid drying, ease of application, and convenient clean-up. Write to: Rohm & Haas Co., Resinous Products Div., Washington Sq., Philadelphia 5, Pa.

Industrial Floors

Mastic materials for patching and resurfacing are presented in *Floor Surfacings for Industry.* Products described are "Flintdek" coating for anti-slip surfaces, epoxy flooring for problem areas, "Flintmastic" for heavy-duty floors, and latex flooring for minimum-thickness topping and patching. The 4-page catalog gives information on use, characteristics, and method of application. The Flintkote Co., 30 Rockefeller Plaza, New York 20, N. Y.

On Free Data Card, Circle **213**

SANITATION/PLUMBING

Cast-Iron Pipe

In 8-page illustrated booklet, *Considering Underground Pipe,* ten reasons are given for specifying cast iron for water and gas mains. Only cast iron, states the bulletin, meets the following 10 qualifications: long life, assured high-flow capacity, strength to withstand bursting pressure, rugged inherent toughness, ability to resist heavy beam loads, resistance to external crushing loads, imperviousness, strong permanently tight joints, strength for tapping, and tensile strength. Cast Iron Pipe Research Association, 3440 Prudential Plaza, Chicago 1, Ill.

On Free Data Card; Circle **214**

Prefab Shower Stalls

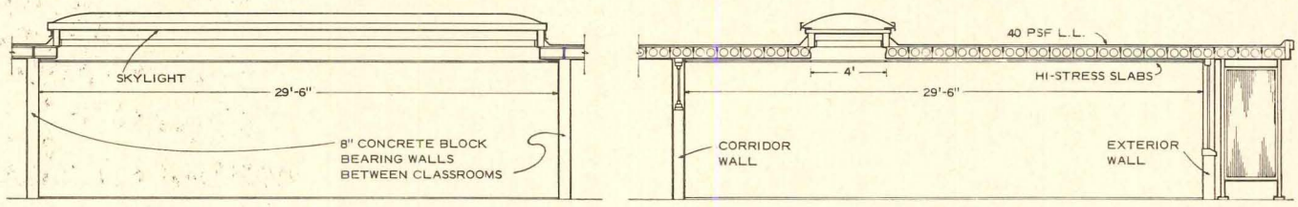
Plan Book for Institutional Bath, Shower, and Dressing Rooms features Fiat's new "Wonderwall Commander," a rigid-wall shower that is designed for dormitories and other heavy-duty installations. Three prefabricated sandwich panels are assembled quickly and easily by means of an exclusive "double-barrier" joint. Several pages of the 12-page booklet show the features of Wonderwall Commander, with typical layouts and specifications. Other items illustrated are combination shower and dressing enclosures, terrazzo shower floors, and precast mop basins. Fiat Metal Manufacturing Co., Inc., 9301 Belmont Ave., Franklin Park, Ill.

On Free Data Card, Circle **215**

Unbreakable Showers for Institutional Use

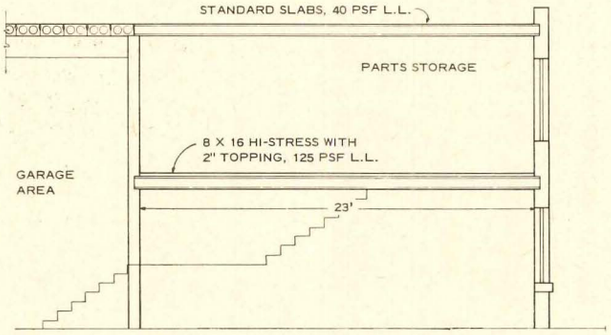
Brochure presents "Super Secur" showers, which cut maintenance costs, eliminate replacement costs, and "are recognized as the ideal stall shower for institutional use." The showers are damage-proof, tamper-proof, crack-proof — in short, unbreakable. The

Continued on page 80

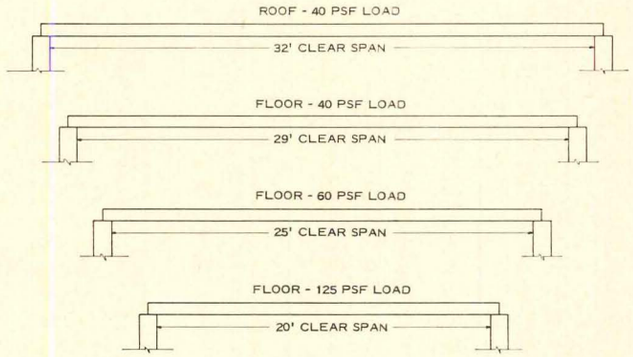


SCHOOL WITH CLASSROOM SKYLIGHTS. Flexicore Hi-Stress slabs with two 7/16" stress-relieved strands clear span the 29'-6" width of the rooms, are designed to carry 40 psf roof load. Four slabs, two on each side of skylight, have three 3/8" strands to carry the extra load of the skylight.

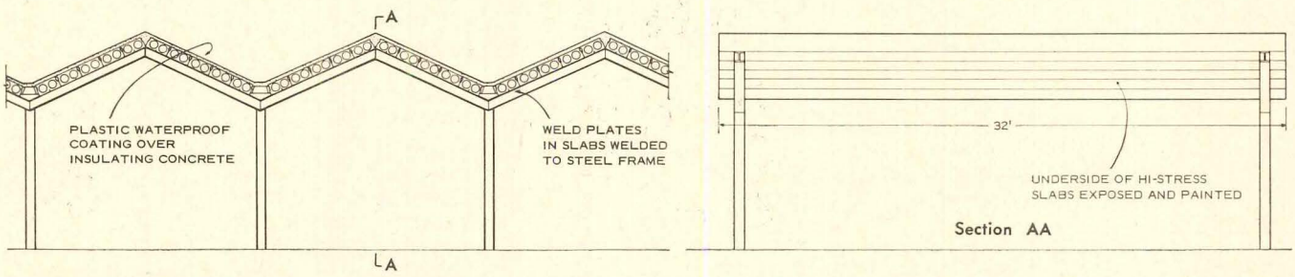
New Hi-Stress Flexicore Slabs Combine Longer Spans, Greater Loads, Improved Structural Performance



PARTS DEPARTMENT FLOOR in garage was designed for 125 psf superimposed load. Two inches of concrete topping on Hi-Stress floor gave a composite design to adequately handle this load on the 23' clear span. Standard Flexicore slabs were used on the roof.



TYPICAL LOAD AND SPAN combinations for 8 x 16 Hi-Stress Flexicore slabs. Superimposed loads shown may be increased with composite design.



ONE-STORY COMMERCIAL BUILDING ROOF DESIGN requires only a steel frame on each side of the building to carry 8-inch Hi-Stress units on long clear span. Design can be repeated in any direction for larger building. Underside of slabs was exposed for neat, maintenance-free ceiling.

Floor or roof slabs erected quickly

New 8" x 16" Hi-Stress units are fully prestressed slabs (f_{si} 175,000 psi) cast in steel forms, with stress-relieved strands tensioned before concrete is poured. Appearance is similar to standard Flexicore slabs which use pretensioned intermediate grade steel bars.

For more information on these projects, ask for Hi-Stress Flexicore Facts 2, 4 & 5. Write The Flexicore Co., Inc., Dayton, Ohio, the Flexicore Manufacturers Assn., 297 S. High St., Columbus 15, Ohio or look under "Flexicore" in the white pages of your telephone book.

flexicore®
PRECAST CONCRETE DECKS

$3.00

PER SQ. FT.

COST OF NEW HOSPITAL WALL SYSTEM

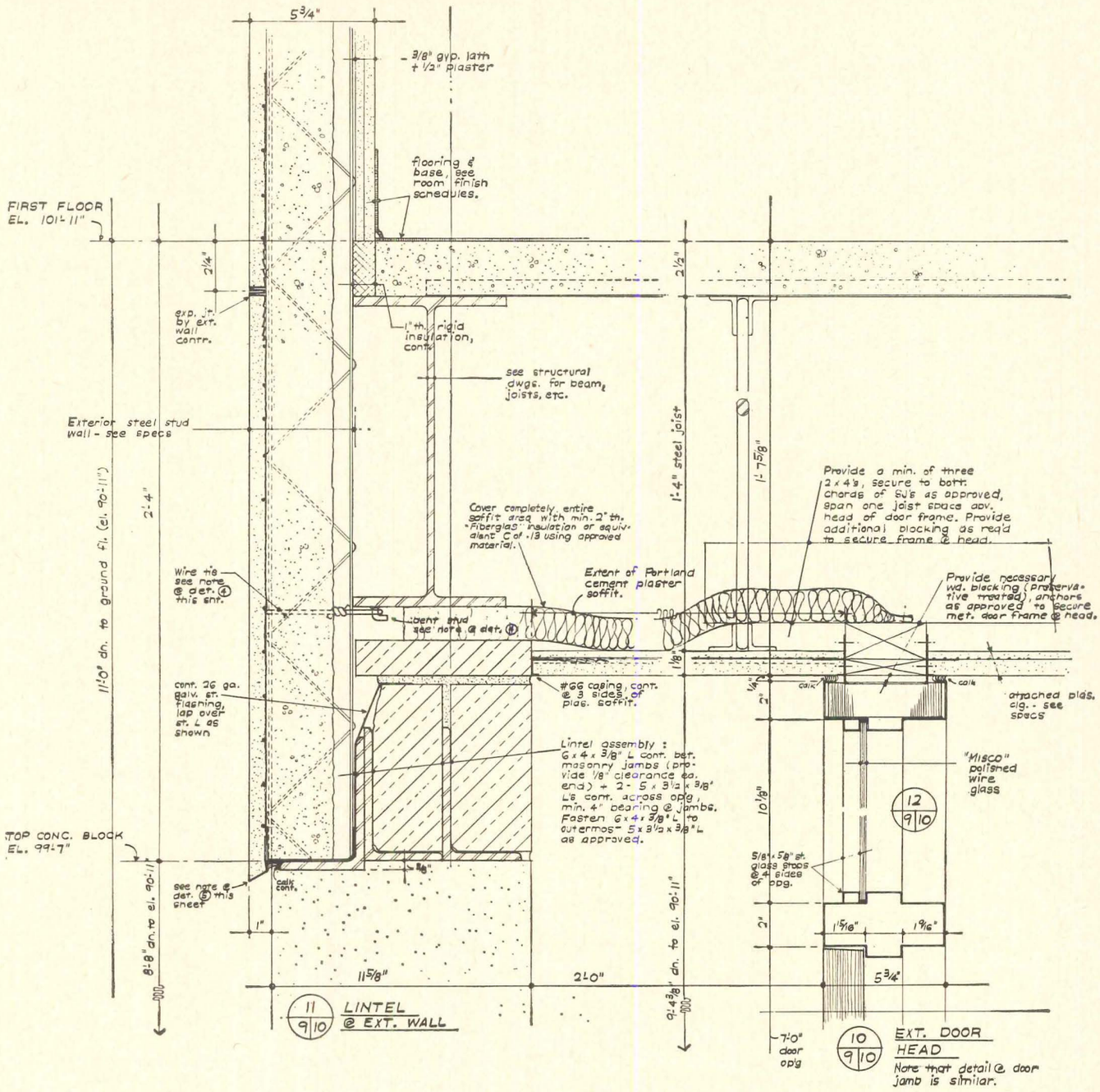
new construction method utilizes simple system of metal studs, KEYMESH® Paperbacked Lath and spray-on exterior wall; gets 2-hour fire rating.*

*This wall meets the 2-hour fire rating for hospitals.

Architectural and engineering ingenuity create an exciting new development in low-cost wall construction for buildings where fire safety is a prime factor. Schools, hospitals, offices and valuable industrial buildings can all use this method of construction—utilizing Keymesh Paperbacked Lath—profitably. Wall surface is flexible to meet any design requirement: Texture, color and finish. For complete information about applying this simple system to your next job, call your Keystone representative, or write

KEYSTONE STEEL & WIRE COMPANY • Peoria, Illinois

MAKERS OF KEYCORNER • KEYSTRIP • KEYWALL • KEYMESH® AND KEYMESH PAPERBACKED LATH • WELDED WIRE FABRIC • NAILS



Eureka Hospital addition,
Eureka, Illinois

Architect: Evan A. Thompson, A.I.A., of
Foley / Hackler / Thompson / Lee, Peoria, Ill.

Plaster Development: L. H. Hobson,
Plaster Development Center, Chicago, Ill.

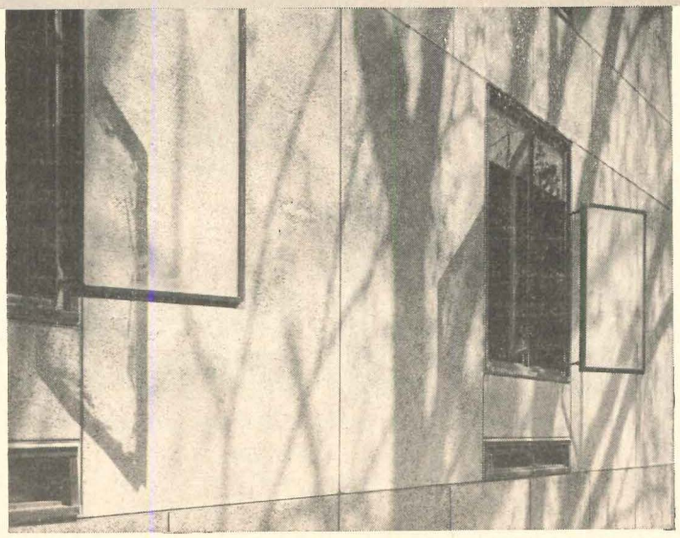
Mechanical Engineer: S. Alan Baird, *Peoria, Ill.*

Structural Engineer: Edwin A. Lampitt, *Peoria, Ill.*

General Contractor:
O. Frank Heinz Construction Co., Inc., Peoria, Illinois

Plastering Contractor:
J. J. Kinsella & Son, Peoria, Ill.

(Note: Construction costs in Eureka, Ill., are approximately the same as those in Chicago, a high-cost construction area.)



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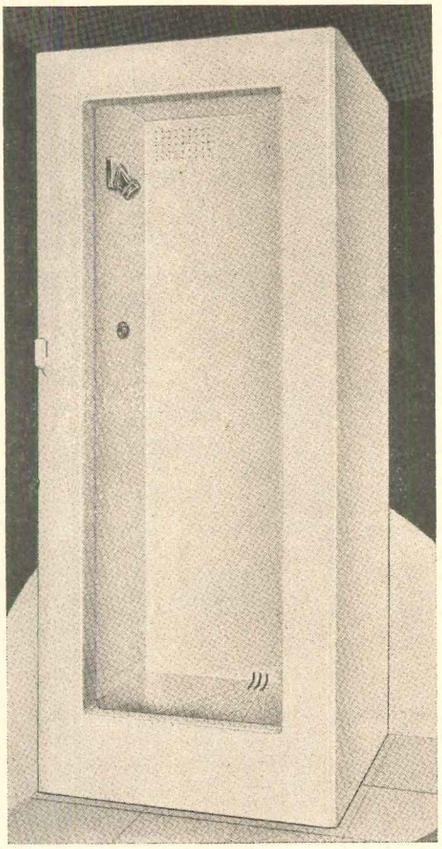
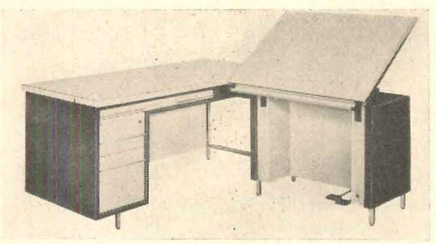


hard epoxy coating (over ¼" aluminum plate) assures utmost sanitary conditions. In addition to the 4-page brochure, there are two additional data sheets that give information and specifications on particular models. Super Secur Showers Inc., 778 Burlway Rd., Burlingame, Calif.

On Free Data Card, Circle **216**

SPECIAL EQUIPMENT

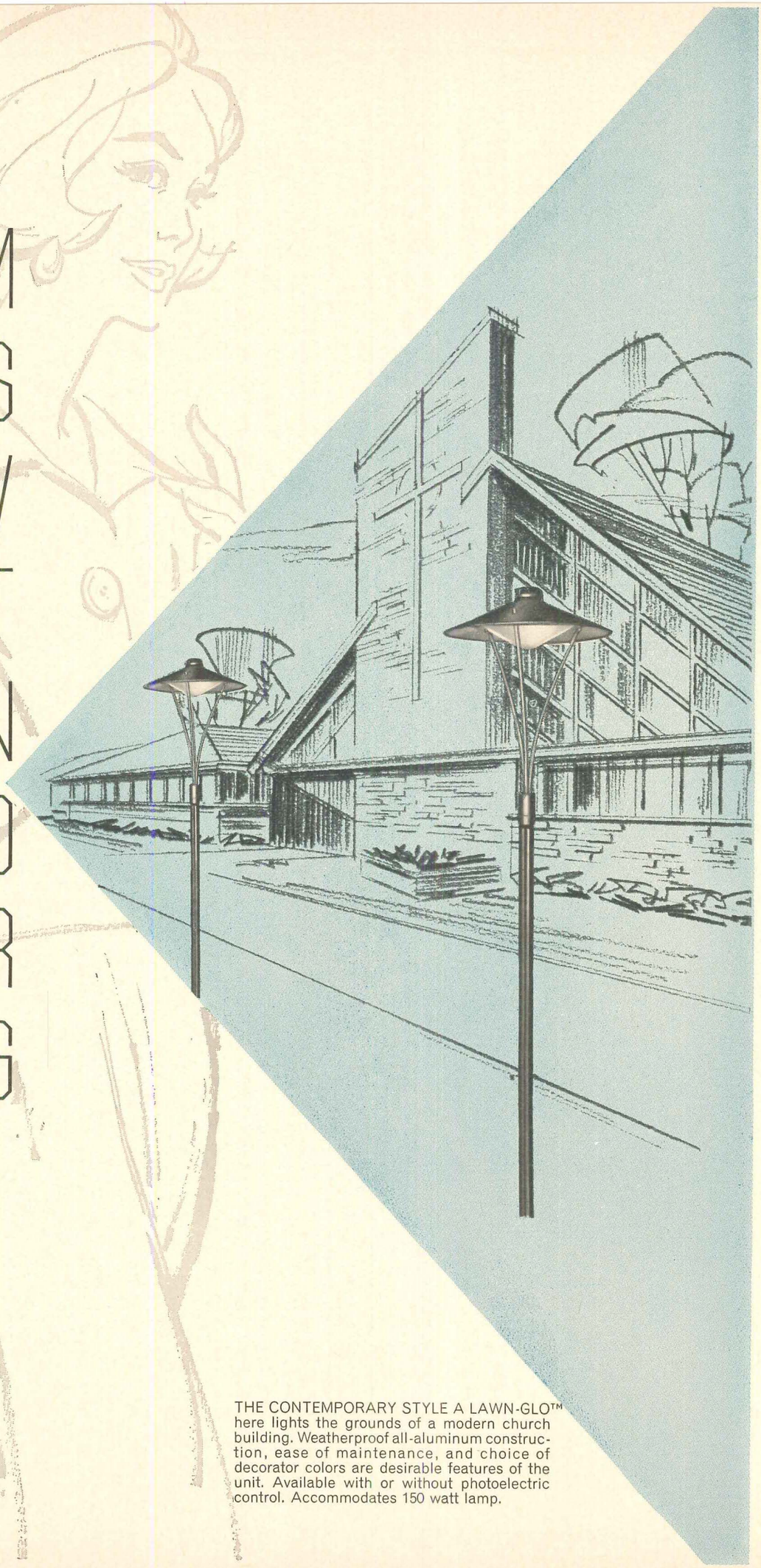


Modular Drafting Desks

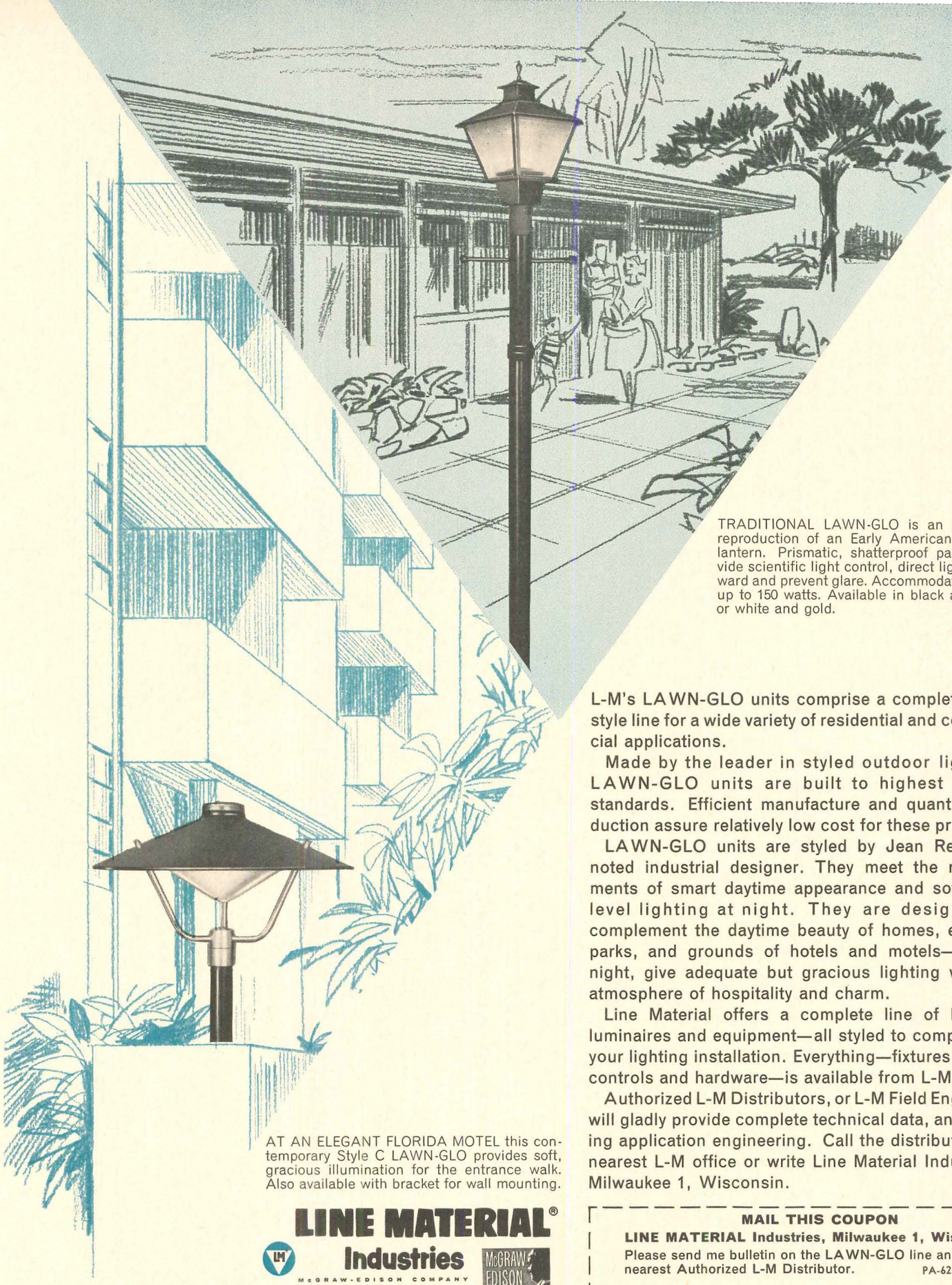
The "Stacor - Matic Co - ordinate Group," a new concept in modular design for greater drafting room efficiency, is presented in 4-page brochure. There are 25 models in three basic modular groups: the "L" series, a drafting table and reference desk ensemble; the "D" series, a single-unit drafting desk; and the "D-A"

Continued on page 84

L-M DESIGNS THE NEW CONCEPT IN STYLED OUTDOOR LIGHTING



THE CONTEMPORARY STYLE A LAWN-GLO™ here lights the grounds of a modern church building. Weatherproof all-aluminum construction, ease of maintenance, and choice of decorator colors are desirable features of the unit. Available with or without photoelectric control. Accommodates 150 watt lamp.



TRADITIONAL LAWN-GLO is an authentic reproduction of an Early American carriage lantern. Prismatic, shatterproof panels provide scientific light control, direct light downward and prevent glare. Accommodates lamps up to 150 watts. Available in black and gold, or white and gold.

L-M's LAWN-GLO units comprise a complete, high style line for a wide variety of residential and commercial applications.

Made by the leader in styled outdoor lighting, LAWN-GLO units are built to highest quality standards. Efficient manufacture and quantity production assure relatively low cost for these products.

LAWN-GLO units are styled by Jean Reinecke, noted industrial designer. They meet the requirements of smart daytime appearance and soft, low-level lighting at night. They are designed to complement the daytime beauty of homes, estates, parks, and grounds of hotels and motels—and at night, give adequate but gracious lighting with an atmosphere of hospitality and charm.

Line Material offers a complete line of lighting luminaires and equipment—all styled to complement your lighting installation. Everything—fixtures, poles, controls and hardware—is available from L-M.

Authorized L-M Distributors, or L-M Field Engineers will gladly provide complete technical data, and lighting application engineering. Call the distributor, the nearest L-M office or write Line Material Industries, Milwaukee 1, Wisconsin.

AT AN ELEGANT FLORIDA MOTEL this contemporary Style C LAWN-GLO provides soft, gracious illumination for the entrance walk. Also available with bracket for wall mounting.

LINE MATERIAL®

Industries

McGRAW-EDISON COMPANY

McGRAW EDISON

Outdoor Lighting

DISTRIBUTION TRANSFORMERS · RECLOSERS, SECTIONALIZERS AND OIL SWITCHES
FUSE CUTOUTS AND FUSE LINKS · LIGHTNING ARRESTERS · POWER SWITCHING EQUIPMENT
PACKAGED SUBSTATIONS · CAPACITORS · REGULATORS · OUTDOOR LIGHTING
LINE CONSTRUCTION MATERIALS · PORCELAIN INSULATORS · FIBRE PIPE AND CONDUIT

571

MAIL THIS COUPON

LINE MATERIAL Industries, Milwaukee 1, Wisconsin

Please send me bulletin on the LAWN-GLO line and name of nearest Authorized L-M Distributor. PA-62

Name_____

Title_____

Company_____

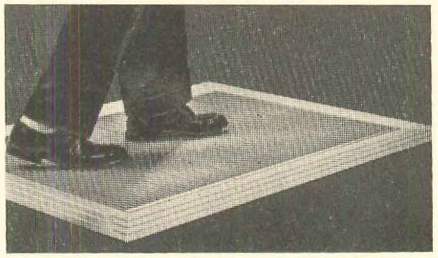
Address_____

City_____ State_____

Continued from page 80

series, a drafting desk with integral drawer unit. Drawing boards are adjustable in both horizontal and vertical directions with "Toe-Touch" pedals. Drawing surface is a self-sealing material that does not retain impressions, yet is resilient for clean, sharp lines. Stacor Equipment Co., 285 Emmet St., Newark 5, N.J.

On Free Data Card, Circle **217**



Automatic Floor Mat

Brochure, 4 pages, contains details and specifications for "Miracle Mat," a completely automatic floor mat that gives built-in floor maintenance. The Miracle Mat appears to be nothing more than a simple extruded-aluminum grille. But at the slightest foot pressure, thousands of tough bristles rise through the grille openings and oscillate against soles and heels, brushing dirt away. An easy-to-clean trap below the mat collects all dirt. Sizes range from 15″ x 18″ to 36″ x 60″, to serve residential, industrial, and commercial needs. Progressive Engineering Co., Holland, Mich.

On Free Data Card, Circle **218**

Fire Fighting Equipment

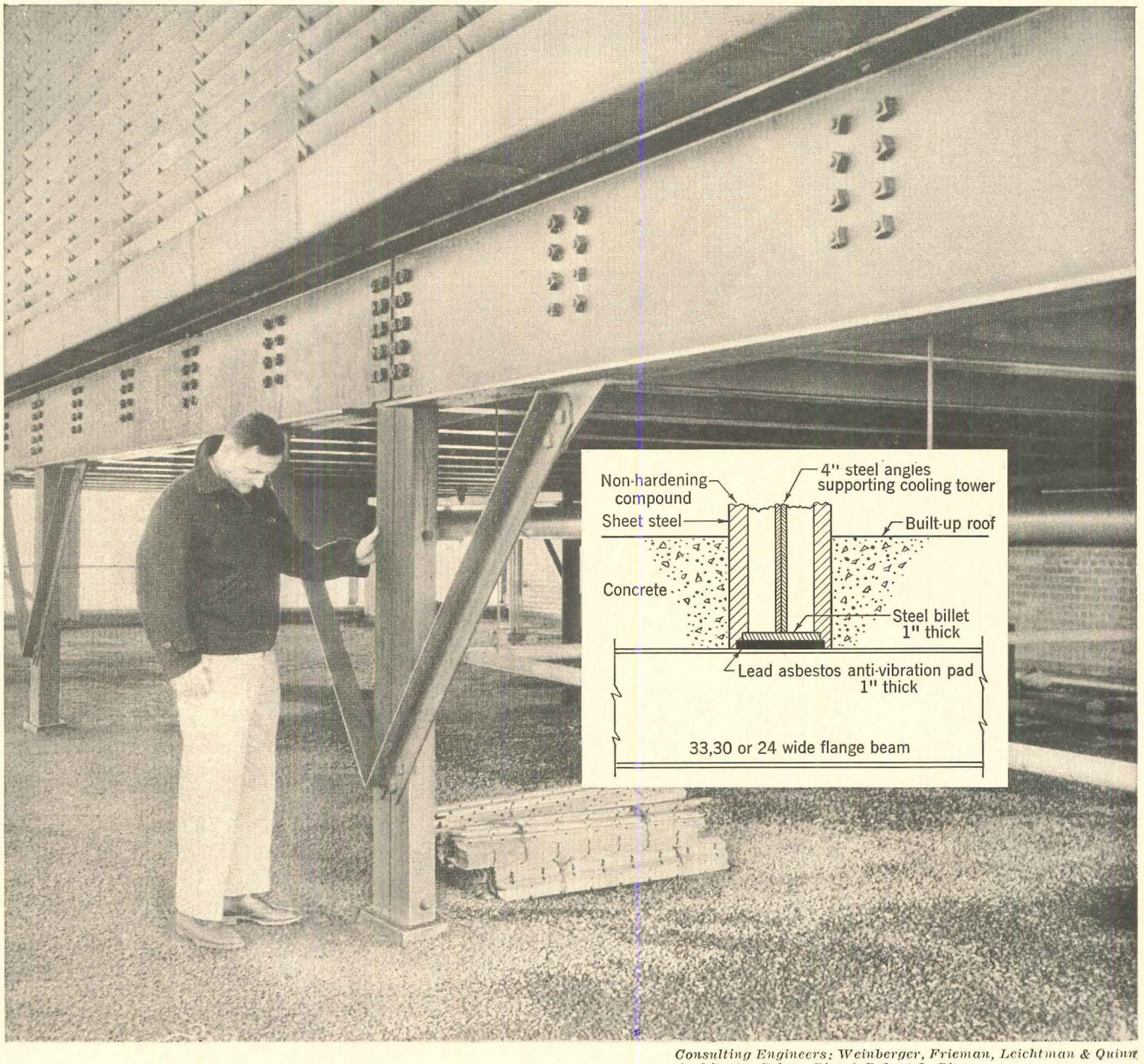
1962 edition of *Interior Fire Fighting Equipment Catalog,* enlarged to 20 pages, has been published. Descriptions and specifications are given for the complete line of safety products manufactured by Fyr-Fyter: fire hose and extinguisher cabinets, portable fire extinguishers, hose racks and reels, angle valves, Siamese connections. A number of items are catalog-listed for the first time. The Fyr-Fyter Co., Customer Services Dept., 221 Crane St., Dayton 1, Ohio.

On Free Data Card, Circle **219**

Executive Furniture

"Template Group" of executive office furniture is illustrated in 24-page booklet. Among the pieces shown are a top-executive split-level desk, L-shaped

Continued on page 88



Consulting Engineers: Weinberger, Frieman, Leichtman & Quinn
Architects: Sylvan Bien & Robert L. Bien
Pads supplied by John F. Abernethy & Co., Inc.

Machine vibration tamed with feet of LEAD

Give machinery in motion lead asbestos pads to stand upon, and a designer may have noise and vibration problems quickly under control. An example is the air-conditioning unit atop the new 35-story skyscraper at 575 Lexington Avenue, New York. Here lead asbestos pads just one inch thick, placed between the cooling tower and the building's structural steel, cushion the wide spectrum of noise and vibration created by the 205,000-pound unit and confine it to the tower.

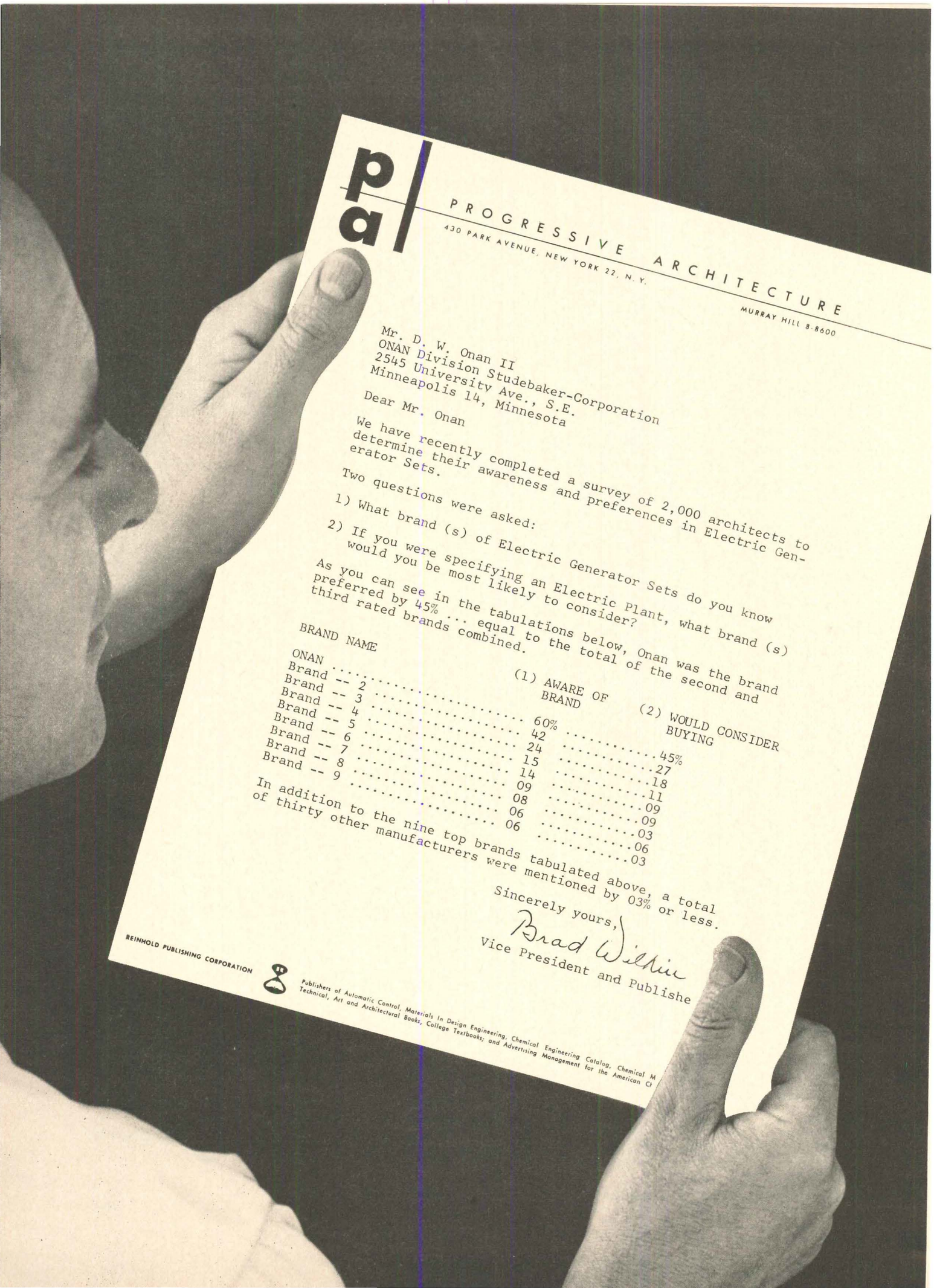
This use of lead asbestos also saved considerable time and money. Pads and supporting columns for the tower were positioned while major steel work was in progress. It was not necessary, as with usual methods, to wait until the concrete roof slab had been poured.

If *you* have a vibration or noise problem, perhaps the solution lies in one of the many forms of lead. We'd be more than pleased to help you find it. Write to: Lead Industries Association, Inc., Dept. N-6, 292 Madison Ave., N. Y. 17, N. Y.

LEAD INDUSTRIES ASSOCIATION, INC.
292 Madison Avenue, New York 17, New York

Look Ahead with Lead

3978



PROGRESSIVE ARCHITECTURE

430 PARK AVENUE, NEW YORK 22, N. Y. MURRAY HILL 8-8600

Mr. D. W. Onan II
ONAN Division Studebaker-Corporation
2545 University Ave., S.E.
Minneapolis 14, Minnesota

Dear Mr. Onan

We have recently completed a survey of 2,000 architects to determine their awareness and preferences in Electric Generator Sets.

Two questions were asked:

1) What brand (s) of Electric Generator Sets do you know

2) If you were specifying an Electric Plant, what brand (s) would you be most likely to consider?

As you can see in the tabulations below, Onan was the brand preferred by 45% ... equal to the total of the second and third rated brands combined.

BRAND NAME	(1) AWARE OF BRAND	(2) WOULD CONSIDER BUYING
ONAN	60%	45%
Brand -- 2	42	27
Brand -- 3	24	18
Brand -- 4	15	11
Brand -- 5	14	09
Brand -- 6	09	09
Brand -- 7	08	03
Brand -- 8	06	06
Brand -- 9	06	03

In addition to the nine top brands tabulated above, a total of thirty other manufacturers were mentioned by 03% or less.

Sincerely yours,

Brad Wilkin

Vice President and Publishe

REINHOLD PUBLISHING CORPORATION

Publishers of Automatic Control, Materials In Design Engineering, Chemical Engineering Catalog, Chemical M... Technical, Art and Architectural Books, College Textbooks; and Advertising Management for the American Ch...

More architects prefer Onan electric plants than the next two leading brands combined

Here are reasons why Onan has earned this industry leadership

How does a manufacturer attain two-to-one preference among architects?

First, of course, it takes a better product. A product that has proved superior on the job, under all kinds of application demands, over a long period of time.

But it takes much more.

Service is a big factor.

At Onan, this is known as *continuing* single-source responsibility.

Responsibility for helping determine what size Electric Plant is needed. The best building location. The best kind of fuel and cooling system.

Responsibility for recommending the proper accessories and supplying them . . . everything from line transfer controls to fuel lines and tanks.

Responsibility for proper installation, including running-in and testing under actual operating conditions.

Continuing responsibility for service for the life of the installation. Local availability and responsibility for parts and service, anywhere, anytime. More than 100 factory-trained Onan distributors are located in major cities coast to coast, only a phone call away anytime you need service.

Next time Standby Power is a consideration in one of your buildings, give your local Onan distributor a call. He's listed in the Yellow Pages, Thomas Register, Sweet's.

Onan Electric Plants—gasoline, gas or diesel driven—are available in sizes to 230 KW. For more details, write for Bulletin R-235 "Factors to Consider When Installing Emergency Generators."

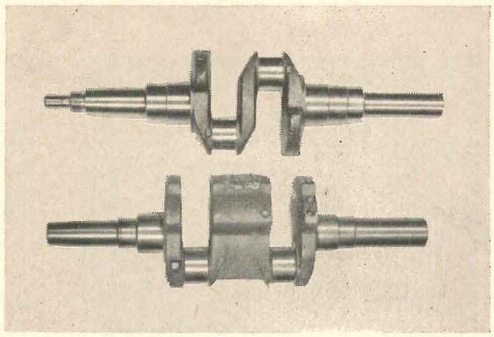
Only Onan is Performance Certified. Every Onan Electric Plant is run-in and tested under full load before shipment. Then certified by a nationally recognized independent testing laboratory.*

**Name and sample test report available on request.*

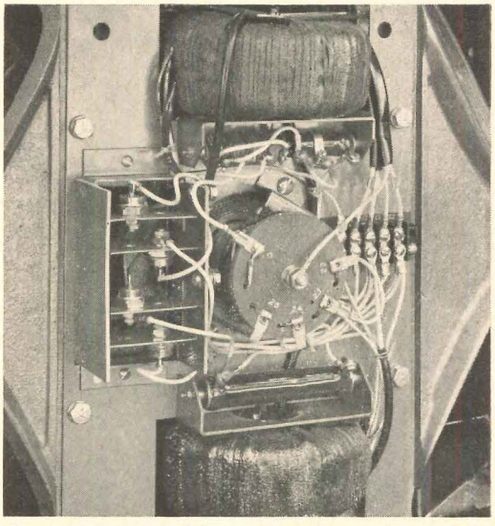
World's Leading Builder of Electric Power Plants

Onan®

ONAN Division, Studebaker-Packard Corporation
2545 University Ave., Minneapolis 14



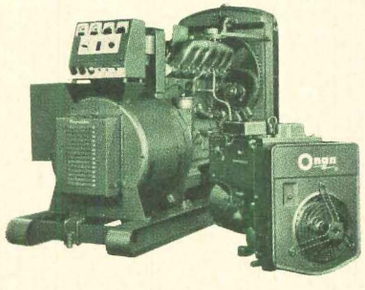
Onan's bigger, stronger crankshaft, compared to typical competitive part, typifies the extra ruggedness Onan builds into all Electric Plants.



Onan's exclusive Magneciter generator is static excited to eliminate rotating exciter and mechanical regulator. Moving parts are eliminated in *both* exciter and regulator. Voltage recovery is five times faster than brushless type generators.

PERFORMANCE CERTIFIED

We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.



Continued from page 84

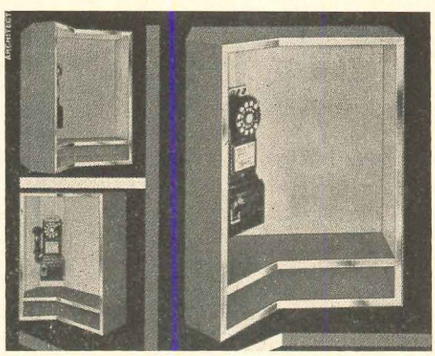
executive desks, bi-level desks, conference and free-form desks; also cabinets and tables of varied size and function. Alongside the photos are a series of checklists that double as order forms. All features of a desk —such as size of top, arrangement of pedestal, locks, materials, etc.—can be seen at a glance, then specified with these forms. The Leopold Co., Burlington, Iowa.

On Free Data Card, Circle **220**

Classroom Cabinets

Natural birch storage cabinets for schools are illustrated in colorful 16-page catalog. Among the units for classrooms are demonstration centers, wardrobes, wet-area cabinets, instructor's desks. Also shown are storage and counter-top units for administration area, nurse's room, library, arts and crafts, homemaking. Detail drawings show "balanced quality" of the cabinets, a product of "sound design + select components + precision manufacture." The complete line of units is shown in thumbnail drawings on a two-page spread. Educators Manufacturing Co., Lincoln & Alexander Sts., Tacoma, Wash.

On Free Data Card, Circle **221**



New Telephone Booth

"Model 20 Acousti-Call" telephone booth, new from every angle, is presented in 4-page brochure. The booth is a compact 27″ in width, and can be installed in a variety of space-saving arrangements. A unique mounting bracket permits economical installation by one man in 45 minutes. Acoustical construction of the booth assures a private atmosphere even in the busiest areas. Finish is a colorful baked enamel. Acoustics Development Corp., 1061 N. Northwest Highway, Park Ridge, Ill.

On Free Data Card, Circle **222**

Moving Sidewalks

A 16-page brochure describes "Speedwalk" moving sidewalks and "Speedramp" moving ramps for mass transportation of pedestrians. Units are currently in use in a variety of congested areas: transportation terminals, shopping centers, sports arenas, exhibitions. In addition to providing specific case-history information, *Bulletin 1060* contains drawings and charts showing the general arrangement of the systems, plus dimensions and capacities of the various units. Speedwalk Div., Stephens-Adamson Manufacturing Co., 45 Ridgeway Ave., Aurora, Ill.

On Free Data Card, Circle **223**

Industry Standard on Hospital Paging

Many years of coordinated efforts by architects, engineers, and manufacturers have culminated in a comprehensive standard on silent visual paging systems to meet all requirements of function, performance, and service. The new publication, *Hospital Staff Paging Systems, Visual Type,* was developed through the combined talents of the major manufacturers, working together in the NEMA Signalling Apparatus Section. Although

the standard is specifically written around hospital staff paging, this same equipment has a broad application in commercial, industrial, and institutional buildings. Write (enclosing $1.00) to: National Electrical Manufacturers Association, 155 E. 44 St., New York 17, N.Y.

SURFACING MATERIALS

Weldwood Paneling Data

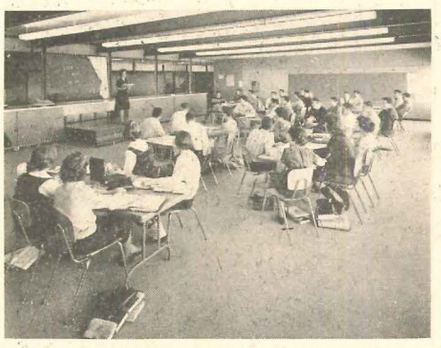
New fact-filled edition of *Weldwood Architectural-Grade Paneling,* 26 pages, has been specially prepared for architects. Clear diagrams or charts show types of veneer cuts, patterns of veneer matching, and figure characteristics of veneers. Panel layouts, based on a typical room, are illustrated, as are accepted methods of joining panels and detailing built-in furniture. Specifications and swatches are included. United States Plywood Corp., Dept. 2227, 55 W. 44 St., New York 36, N.Y.

On Free Data Card, Circle 224

Flooring Installation

A revised and expanded Technical Service Bulletin entitled *Installation Specifications* has been published by Congoleum-Nairn. The 64-page bulletin gives complete data on installation of all the company's resilient floor coverings, plus its "Wondertop" all-purpose surfacing material and its cork bulletin boards. Also included are detailed maintenance information, adhesive data, federal specifications, and a tile-calculation chart. Congoleum-Nairn Inc., 195 Belgrove Ave., Kearny, N.J.

On Free Data Card, Circle 225



Carpeting in Schools

Excellence and Economy: A Report on the Benefits of Carpeting in Three Public Schools cites three recent schools where the use of carpet

achieved "excellence in performance, combined with practical economy in maintenance and service." The three architects of the schools are William Caudill, John Lyon Reid, and Henry Blatner. Emphasis in the well-designed, 32-page report is placed on time and cost of maintenance, accoustical advantages, cost of installation and replacement of materials, and psychological effects of various building materials on students and teachers. The American Carpet Institute, 350 Fifth Ave., New York 1, N.Y.

On Free Data Card, Circle 226

A Color by Any Other Name

1962 Color Comparison Charts for both asphalt tile and vinyl asbestos tile have been released. Published annually, these charts have become well recognized for their usefulness in listing commercial equivalents of the various manufacturers' color lines. The charts cover products of Amtico, Azrock, Congoleum-Nairn, B. F. Goodrich, Johns-Manville, Kentile, and Tile-Tex. Asphalt & Vinyl Asbestos Tile Institute, 101 Park Ave., New York 17, N.Y.

On Free Data Card, Circle 227

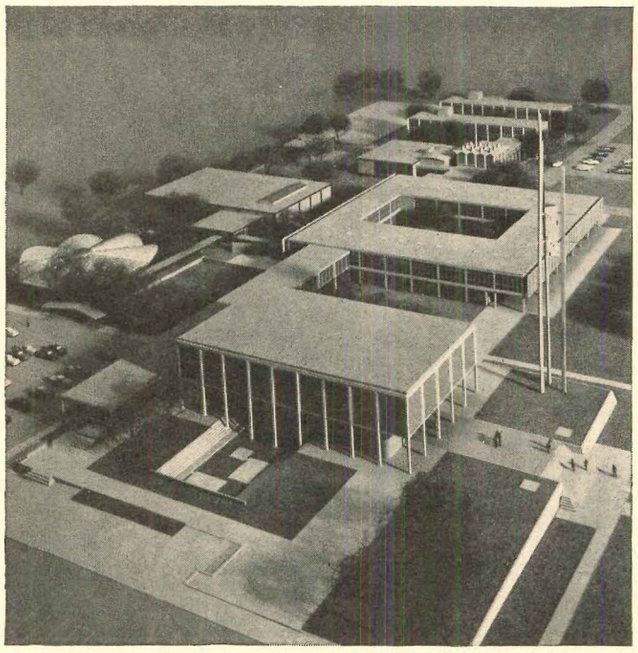
Plywood Treatment Stops Termites and Decay

New 4-page brochure, *Wolmanized Pressure-Treated Plywood,* shows how pressure treatment provides plywood with built-in protection against termites and decay. "Wolmanized" plywood is either air- or kiln-dried after treatment so that it is almost down to its original weight. It may be handled, shaped, and painted like standard untreated plywood; since the preservative salts are noncorrosive, any type of metal fastenings may be used. Clean and odorless after treatment, the material may be handled without gloves. Life of treated wood is up to five times longer. Wolman Preservative Dept., Koppers Co., Inc. 750-P Koppers Bldg., Pittsburgh 19, Pa.

On Free Data Card, Circle 228

PROGRESSIVE ARCHITECTURE
NEWS REPORT

REINHOLD PUBLISHING CORPORATION
430 PARK AVENUE NEW YORK 22, N.Y.
Publisher.....D. Bradford Wilkin
Editor.....Thomas H. Creighton
News Editor .....James T. Burns, Jr.



P&S ROCKER-GLO

HEAD OF THE CLASS AT HOCKADAY SCHOOL

In modern, spacious Hockaday School in Dallas, Texas, 20 ampere Rocker-Glo switches control the lighting in all areas.

As many architects and electrical contractors are discovering . . . there's a good reason for specifying P&S wiring devices.

P&S wiring devices are time-tested for the highest quality, and most functional design. P&S Rocker-Glo can be used on fluorescent and tungsten filament lamp loads at full current rating.

Always insist on the best . . . Performance Specified P&S wiring devices. For more information write Dept. PA 662.

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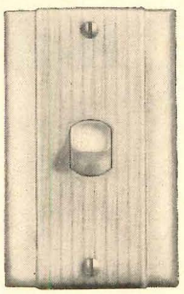
Architects

Hall-Fisk Electric Company
Electrical Contractor

Gregerson & Gaynor
Mechanical and Electrical Engineers

Robert E. McKee
General Contractor



Rocker-Glo,,2231

PASS & SEYMOUR INC. P&S
SYRACUSE 9, N. Y.
BOSTON CHICAGO LOS ANGELES SAN FRANCISCO
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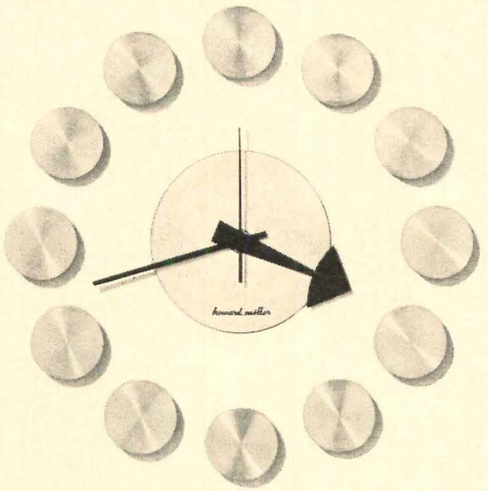
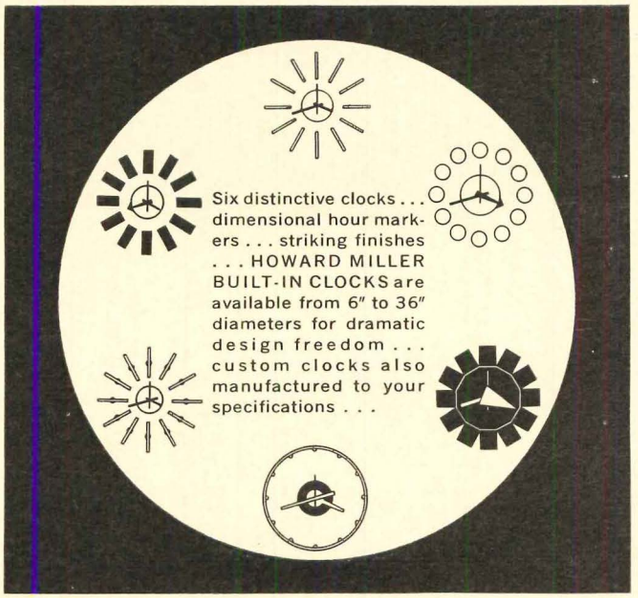
BUILT-IN CLOCKS
BY
HOWARD MILLER
DESIGNED BY
GEORGE NELSON



No. 6773 13″ or 20″ dia., Aluminum, Brass or Black hour indicators, Black or White hands, White or Aluminum center disc.



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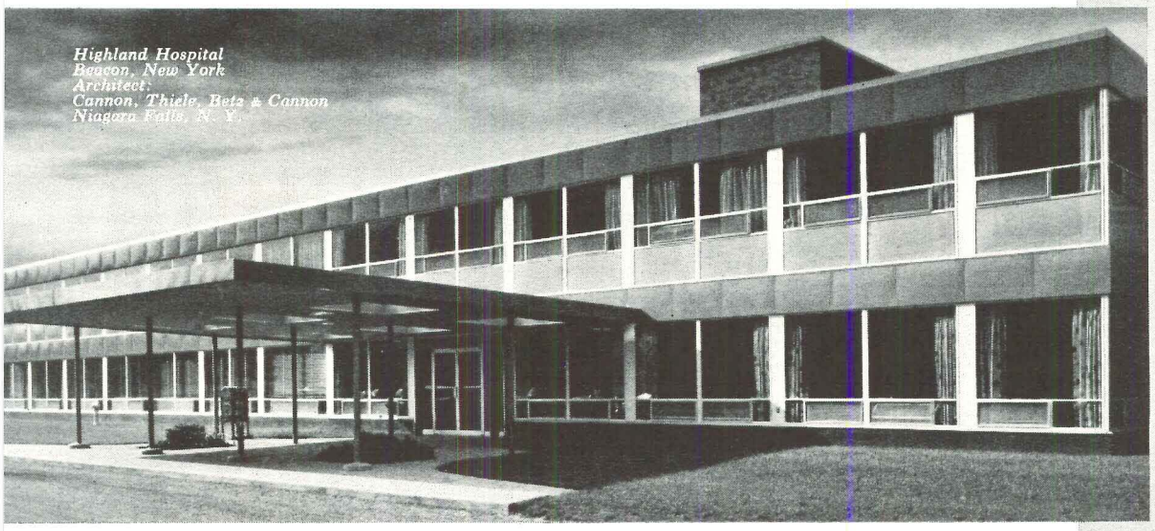
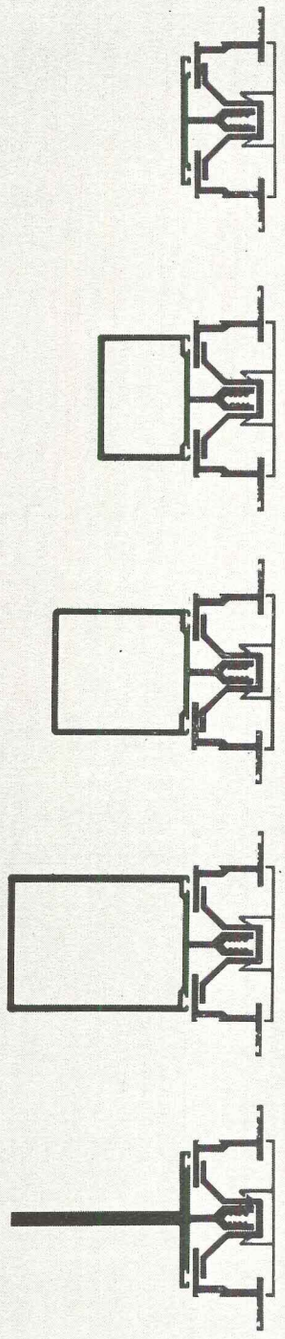
HOWARD MILLER CLOCK COMPANY
BUILT-IN DIVISION / ZEELAND, MICHIGAN
For more information, turn to Reader Service card, circle No. 366

CUSTOM FACE EFFECTS

for the design man with standard MARMET AP's



Highland Hospital
Beacon, New York
Architect:
Cannon, Thiele, Betz & Cannon
Niagara Falls, N. Y.



choice of mullions and cross members

Even on tightly budgeted jobs, MARMET architectural projected series gives you full freedom of design on face effects with a standard window system. A whole array of mullion and cross member shapes, varying in depth of section (as shown at right) offer a choice of final effect for varying shadow patterns on the building face.

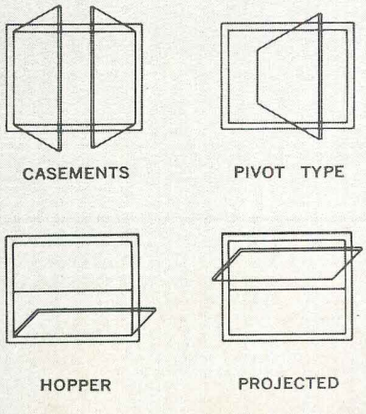
Selection of operating sash includes all of the basic types illustrated at right, in two series. Windows are 1½" in depth in the 5142 series and 2⅛" in depth in the 5212 series. Tubular sash is available in either series for ventilating lites where window design requires a large expanse of glass. In AP's or in Curtain Wall, the flexibility of MARMET window systems gives you monumental treatment at standard engineered system's cost. For full freedom of design on a tight budget . . . plan to specify MARMET for your next job.

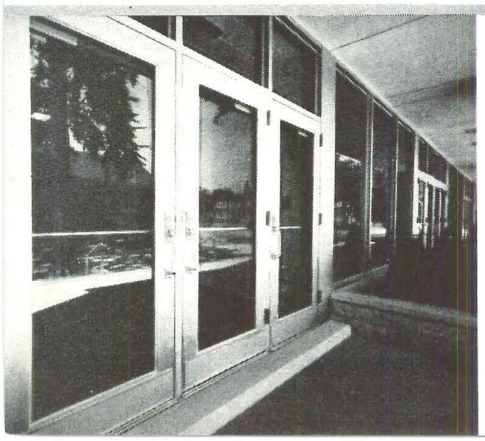
For additional information on the complete line of MARMET products — consult Sweet's Catalog File No. 17a and 16a or write to MARMET Mar Mar

MARMET CORPORATION
322-D Bellis St., Wausau, Wis.

For more information, turn to Reader Service card, circle No. 361

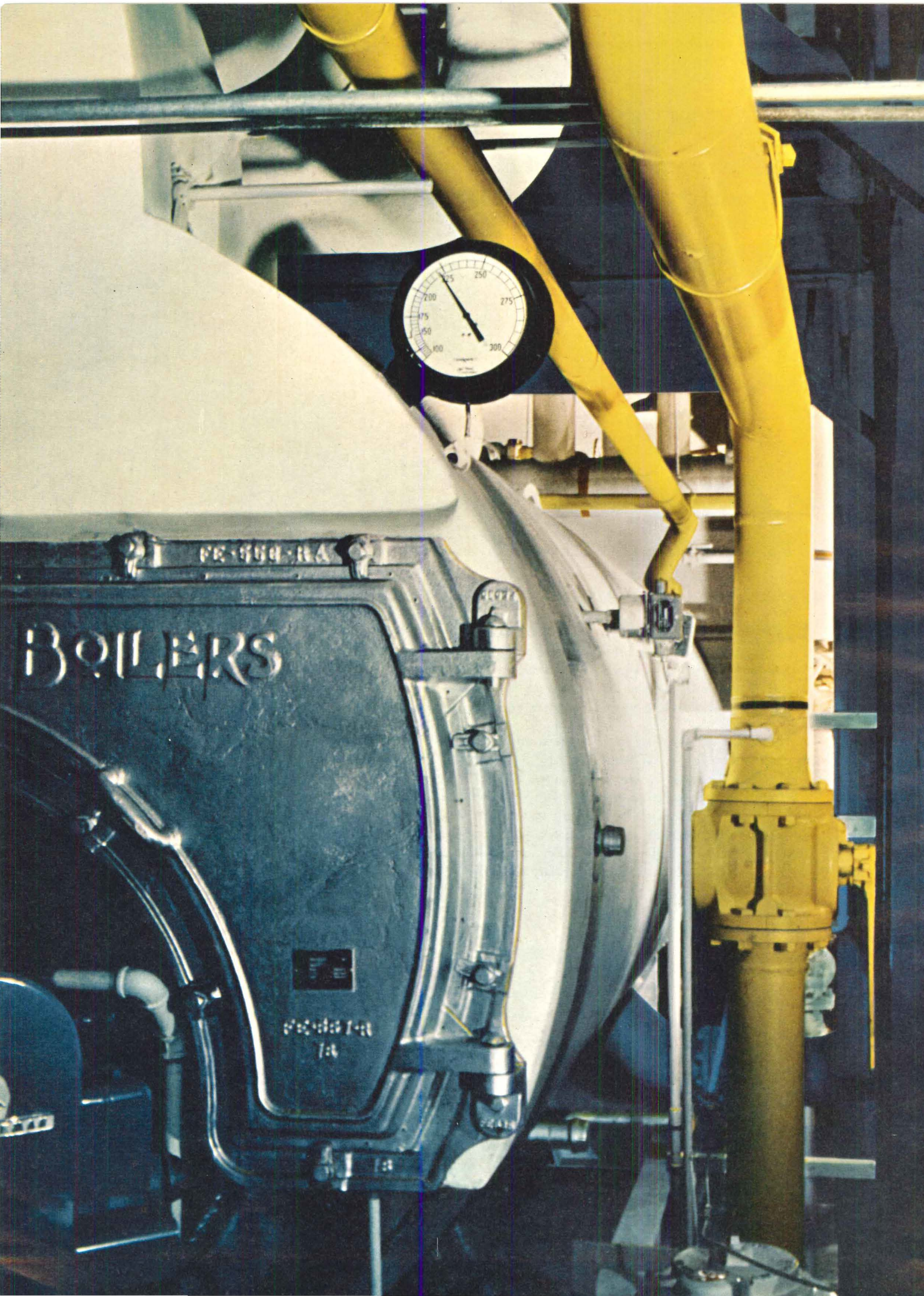
CHOICE OF OPERATING LITES





SERIES 1000 DOORS AND ENTRANCES

Designed for the ultimate in appearance and function, MARMET monumental, wide stile doors are custom engineered to fit any entrance requirement. Fabricated from ⅛" extruded aluminum alloy, all doors and frames have MARMET's full weld construction, leaving no unsightly halos, only a neat hairline joint. Frame members are available with special reinforcing if desired. Snap in door stops are weatherstripped as specified.


BOILERS
100
150
175
200
225
250
275
300

SPECIFIC WEIGHT COMPARISON AFTER 2 YEARS SERVICE IN STEAM CONDENSATE RETURN LINE

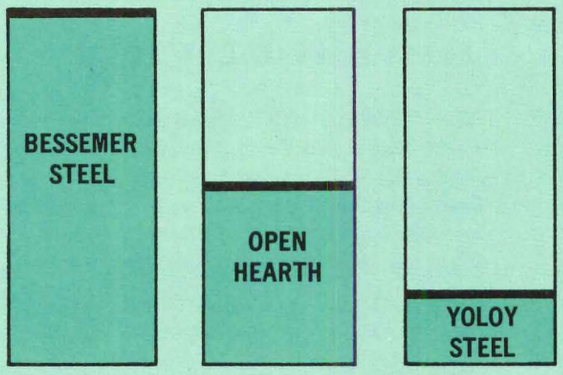
	Specific Pipe Weight Grams per lineal inch		Change in Specific Pipe Weight	
	Original Pipe	Corroded Pipe	Grams per Lin. Inch	Per Cent
YOLOY PIPE	39.8462	39.7416	—.1046	—.27
WROUGHT IRON PIPE	40.7138	39.2582	—1.4556	—3.57

Steam condensate pH, — 6.65 Pipe samples, ¾ " nominal standard weight size.

SEA WATER IMMERSION TEST

Materials	Days In Test	Wt. Loss (Grams)	Corr. Rate Mdd	Corr. Rate IPY	Pitting—Mils Max.	Pitting—Mils Avg.
Mild Steel	2162	1439	36	.007	Perf.	128
Hand Puddled Wrought Iron	2384	1401	32	.006	Perf.	115
Mechanically Puddled Wrought Iron	2384	1247	28	.006	139	80
Yoloy	3429	1616	25	.005	90	62

WEIGHT LOSS DUE TO ATMOSPHERIC CORROSION AFTER 3100 DAYS EXPOSURE.



STEAM

Specify complete piping systems, including fittings, of Yoloy where corrosive, erosive effects of steam return line condensate is a problem. Or in air conditioning chill lines. Despite Yoloy pipe's higher strength, you can cut, bend, weld, thread and install it with ease. Corrosion costs money, raises maintenance costs. Next time save money. Order corrosion-resistant, high strength Yoloy steel pipe from stock in sizes ⅜" to 12", from Youngstown, growing force in steel.

Youngstown Steel

THE YOUNGSTOWN SHEET AND TUBE COMPANY

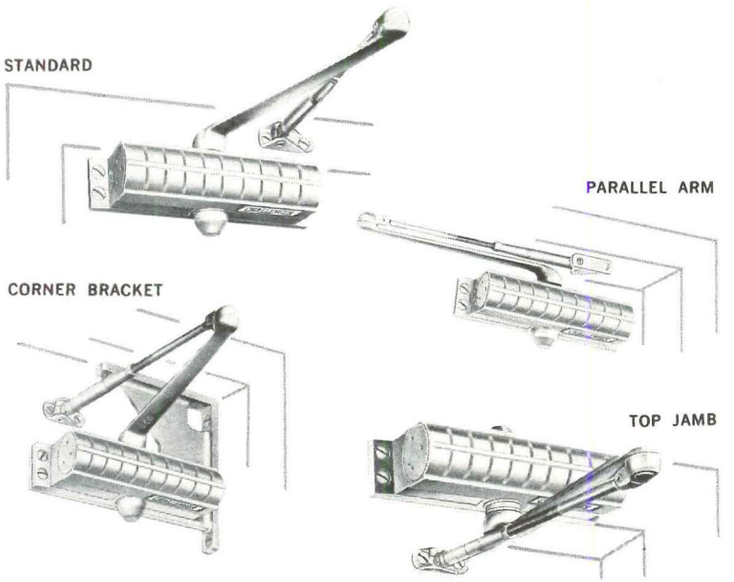
For Yoloy test data and other information write: Dept Y19A2
THE YOUNGSTOWN SHEET AND TUBE COMPANY, YOUNGSTOWN, OHIO

Steel

slimmer, smoother, safer "slim-stile" door closer

by

CHALLENGER®



Ask your local Challenger Representative, or
CALL COLLECT PRospect 4-1044
OR WRITE FOR COMPLETE INFORMATION
CHALLENGER LOCK CO.
2349 W. La Palma Avenue, Anaheim, Calif.

CHALLENGER IS ON THE MOVE — Building one of the most complete lines of locking and latching hardware in the industry.

proven– one of the most popular modern closers on the market today

The CHALLENGER "Slim-Stile" door closer was called *new* just a short while ago. Today its performance has been proven; it is being specified—and used—on commercial and institutional doors from coast to coast. Here are some of the reasons why:

SLIM . . . Fits on 1¾" door or frame members including modern glass or metal doors.

SMOOTH . . . Permanent lubricating hydraulic fluid is non-freezing and non-gumming. Quality steel compression springs.

SAFE . . . Improved rack and pinion mechanism gives more reliable checking action.

UNIVERSAL . . . Non-handed arms permit more installations without special orders.

TROUBLE-FREE . . . Non-corrosive aluminum case and rugged construction assure extra years of dependable operation.

ALL PURPOSE . . . Four applications all in one closer.

Back checking; delayed action; fusible link holdopen arms; 2-point hospital holdopen arms, and other optional extras also available.

Meets Requirements of Federal Specifications FF-H-121C, types 3009 and 3230 Modified. Has Underwriters' listing for fire doors.

A gallery of ten new solids for Panelyte's* growing Designer Line

To Panelyte's Designer Line come ten new and beautiful decorator shades. From the brilliance of Frost White to the deep richness of Espresso, ten unique tones to lend even greater variety and individuality to your choice of basic solids. Solids which now number eighteen, ranging from delicate pastels to dramatic darks.

Panelyte's Designer Line now totals more than *forty* elegant solids, rich wood grains, authentic marbles, and striking patterns including delicate new Canterbury. It's *your* line, specially selected to meet today's — and tomorrow's — exacting requirements of architects and designers. See it for yourself, and you'll see why Panelyte is now, more than ever, America's style leader in decorative laminates.

*Panelyte is a registered trademark of St. Regis Paper Company for decorative laminates.

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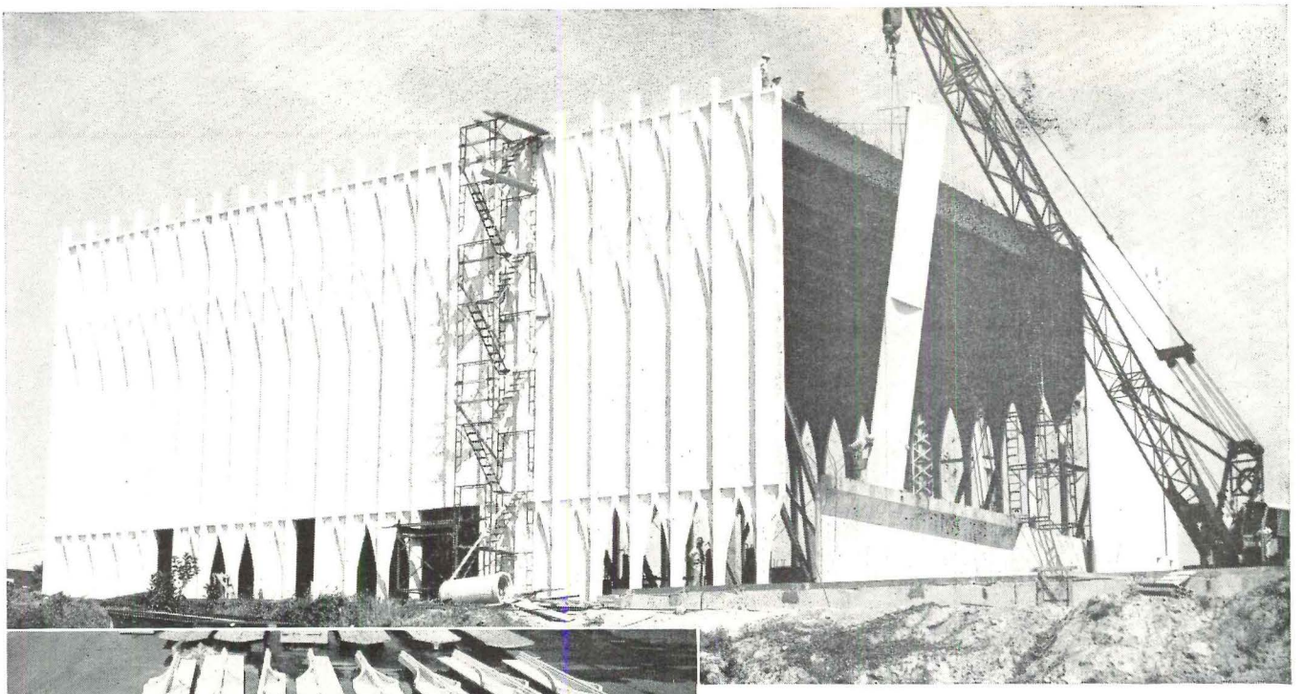
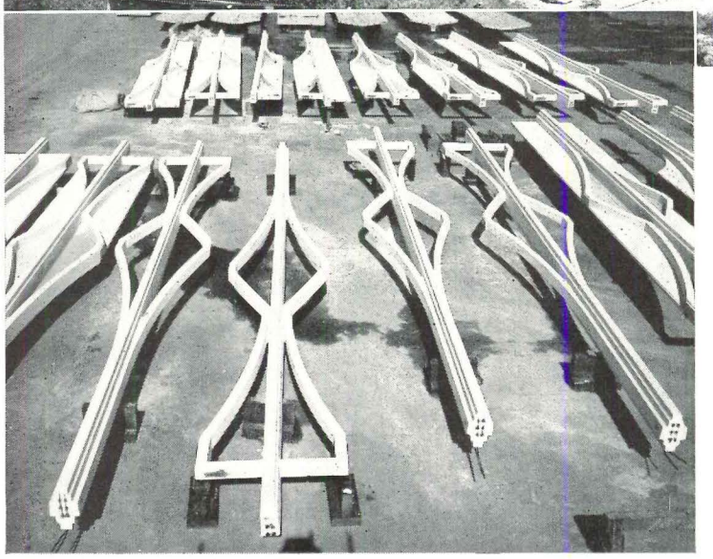
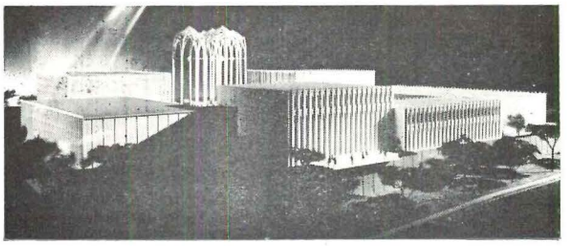




ABOVE: Swinging the panels into place
LEFT: The prestressed components
BELOW: Model of Science complex when finished

Architects: Minoru Yamasaki & Associates, Detroit
Naramore, Bain, Brady & Johanson, Seattle
Precast Concrete Units: Associated Sand & Gravel, Inc., Everett, Washington
Engineers: Worthington, Skilling, Helle & Jackson, Seattle



...wherever concrete must be beautiful

The United States Science Pavillion is one of two principal theme buildings of the Seattle World's Fair. After the Fair it becomes the city's cultural center.

The load-bearing S-type stud wall panels are 32 and 52 feet long. They are faced with Trinity White portland cement and white quartzite aggregate. They are prestressed. The high strength of Trinity White and the high-early-strength gray cement back-up permitted the forms to be stripped in 12 to 14 hours with steam curing. Panels are secured in place by either welding or bolting.

Problems of repeated turning, handling and transporting these massive members were neatly and ingeniously solved with specially outfitted lift trucks.

—use Trinity White

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June 1962 **PROGRESSIVE ARCHITECTURE**®

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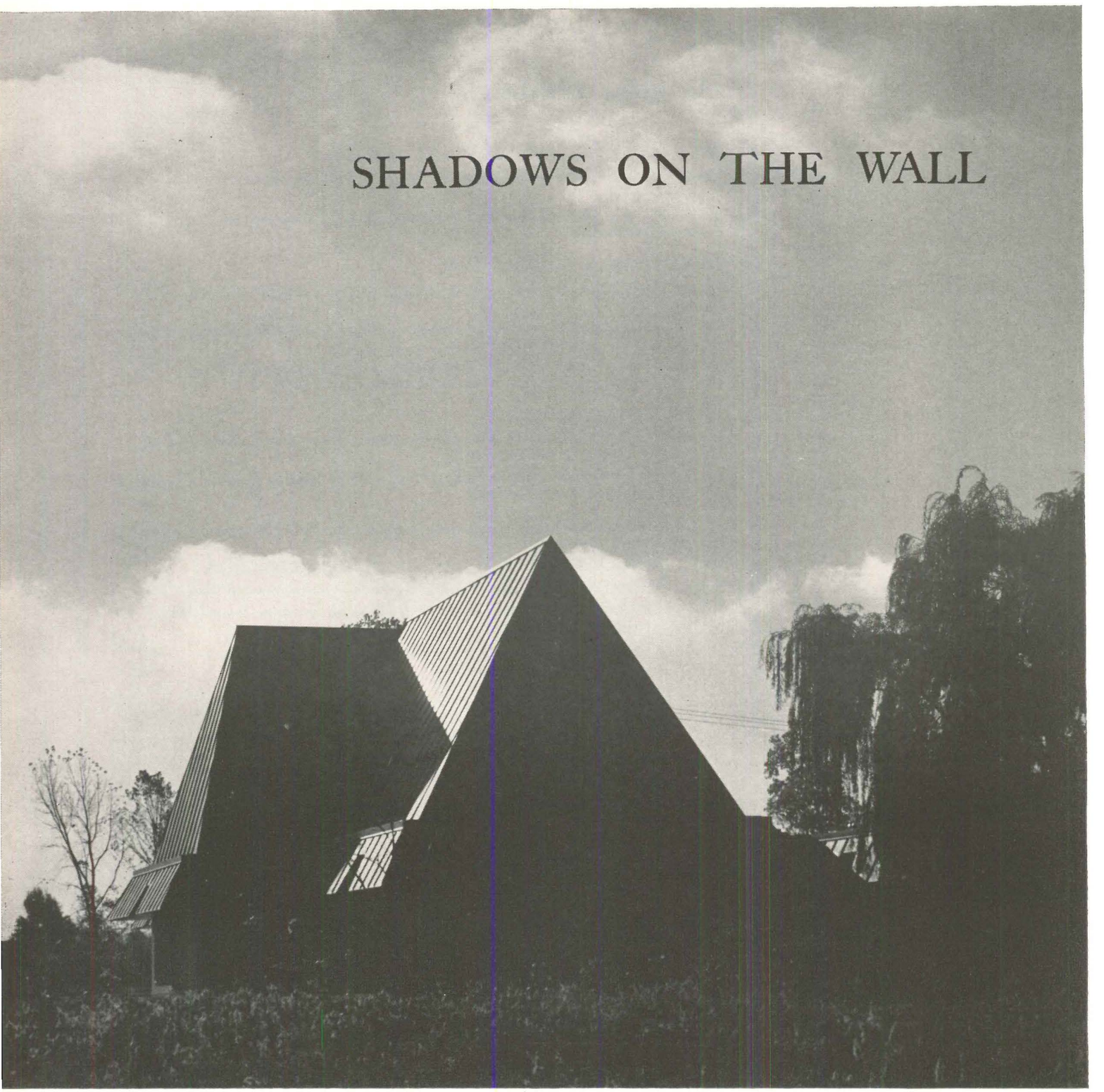
EDITORIAL FEATURES

SHADOWS ON THE WALL



HALEY FUNERAL HOME • SOUTHFIELD, MICHIGAN • BIRKERTS & STRAUB, ARCHITECTS • GUNNAR BIRKERTS, PARTNER IN CHARGE OF DESIGN • FRANK A. STRAUB, PARTNER IN CHARGE OF CONSTRUCTION • CLIFFORD HOLFORTHY, STRUCTURAL ENGINEER

"The prime concern in design was to create a building that would work well for the owner and would truly express its very special function." So says Gunnar Birkerts in introducing this unusually expressive—if not expressionistic—funeral home.

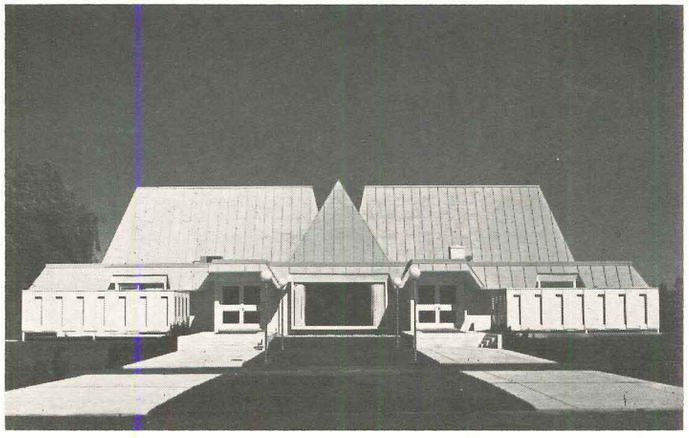
The building is prominently visible from the major suburban thoroughfare on which it is located (*right, upper photo*). The entrance has been placed at the rear, however, where there is a secluded parking area (*right, lower photo*). Thus Birkerts has avoided both the "inviting façade" and the "rather dubious backyard" typical of such establishments. Tall wood fences to either side of the entrances conceal the service area and the caretaker's private yard.

The program called for four chapels that could be used in combinations of two or three, or all combined for larger services. Two small side lobbies opening from a central entrance lobby provide gathering space for two simultaneous services. Preparation rooms are in the basement, along with storage and mechanical functions.

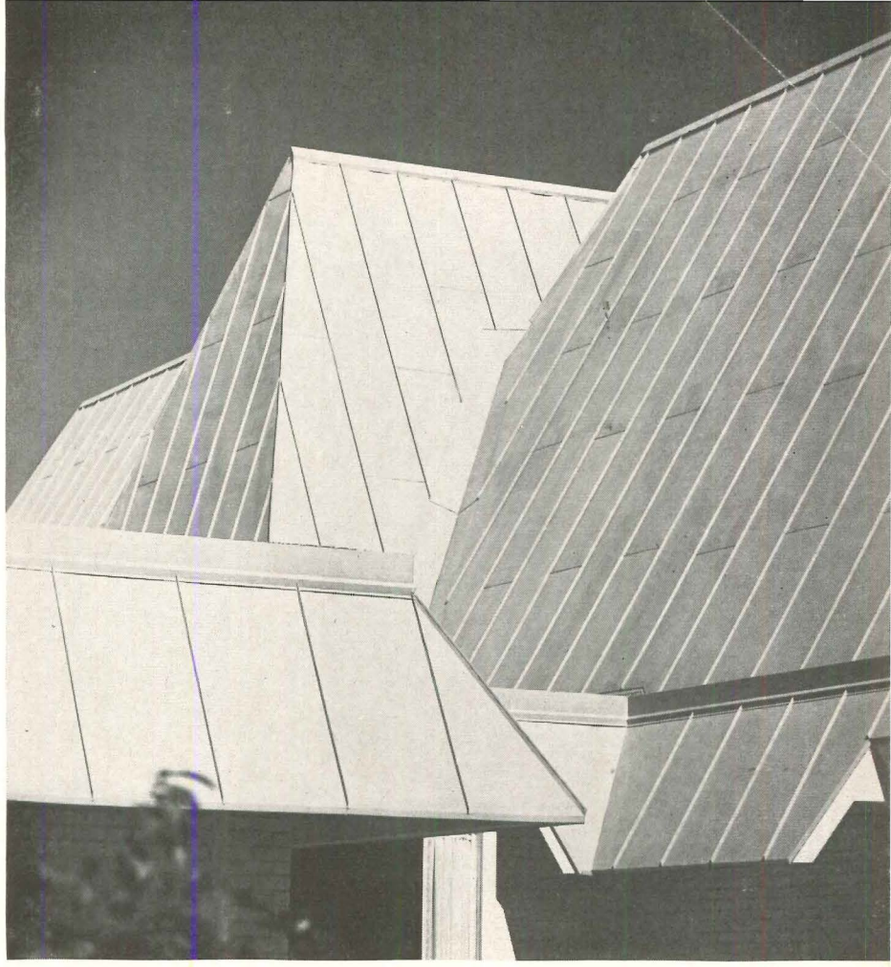
The steep hipped roofs are articulated to express the locations of the three major chapels. Lobbies, office, apartment, and service areas have low flat roofs with projecting awning roofs to carry out the theme of low overhangs and deep shadows. The projecting windows give the interiors a feeling of remoteness without complete isolation.

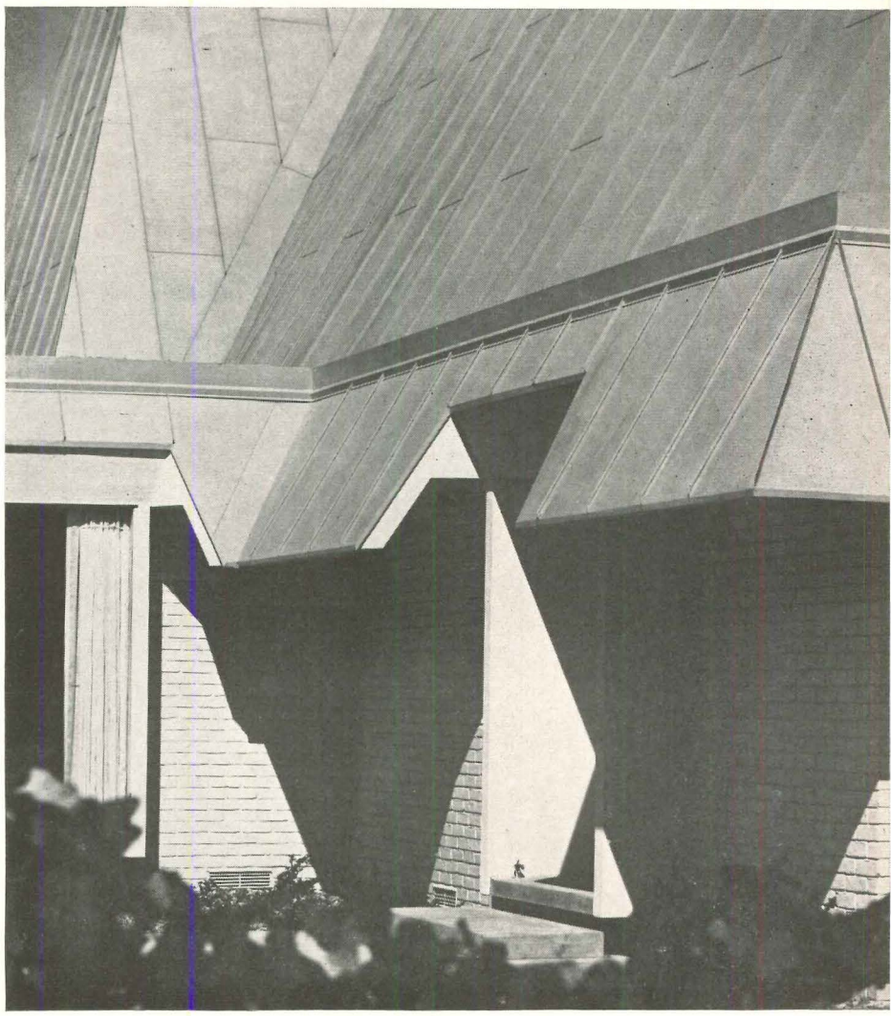
The building has bearing masonry exterior walls and wood stud interior partitions. The floors are concrete over steel joists, finished with wood in the lobbies and carpet in the chapels. Most of the walls are plastered; walnut paneling has been used in the central lobby. Ceilings are hard plaster in the chapels and acoustic plaster in the lobbies. The building is fully air-conditioned.

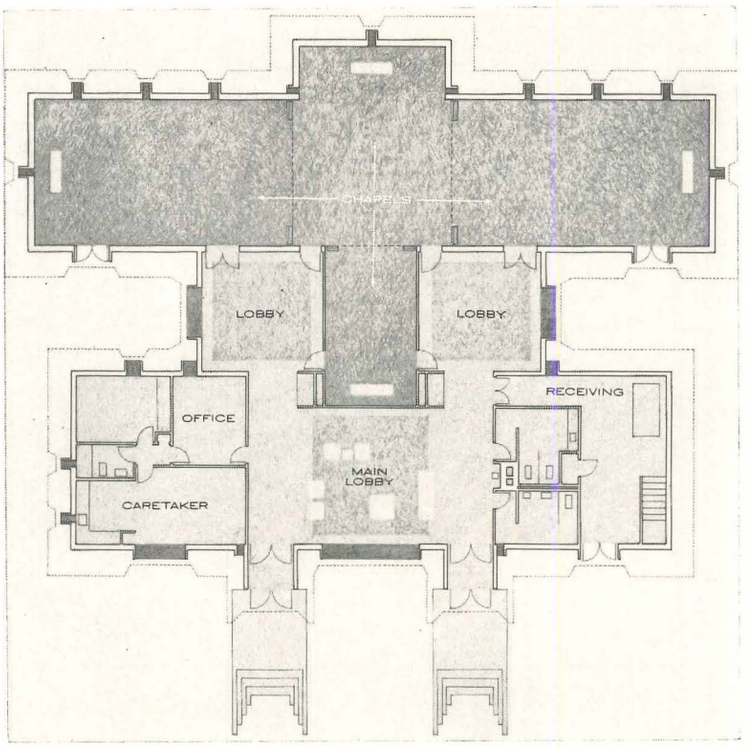
PHOTOS: BALTAZAR KORAB



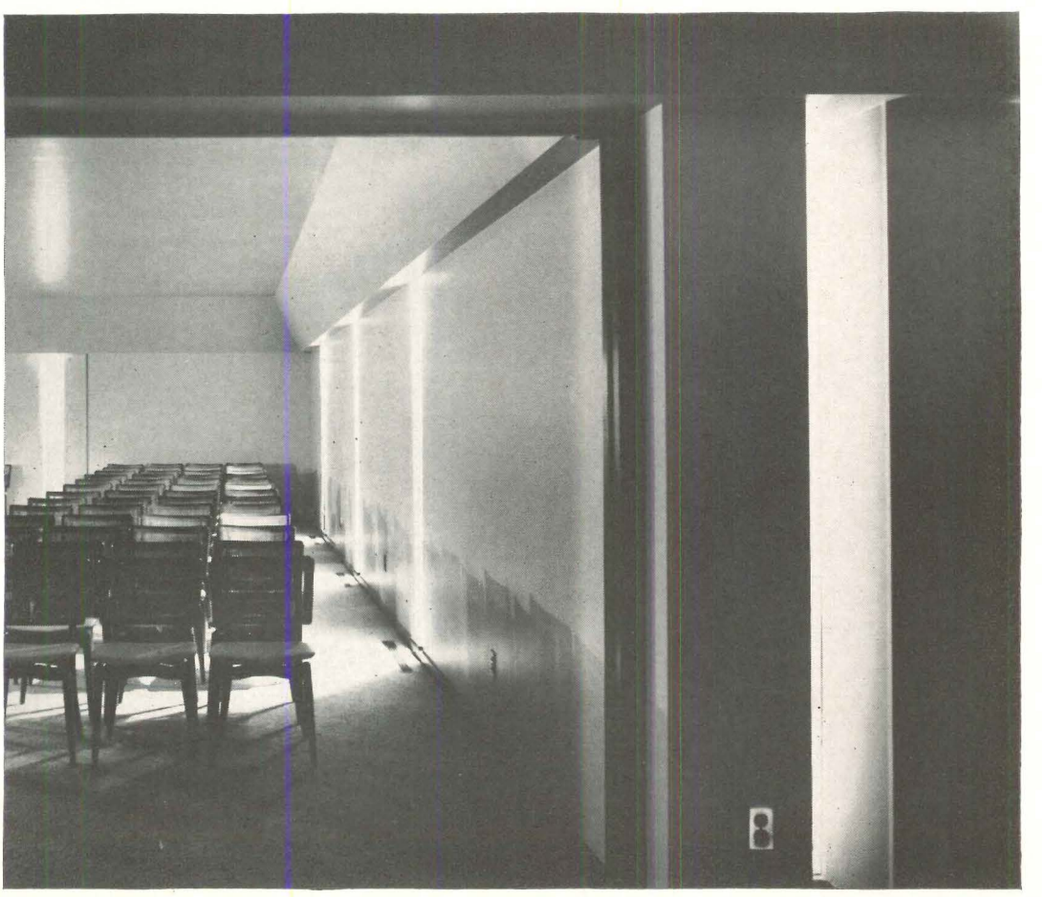
The roof was designed to create a low, unifying horizontal line around the entire building, to cast deep shadows on the walls, and to produce a serene and shielded atmosphere. Steep hipped portions indicate the locations of the chapels. The exterior brick bearing walls are painted white and the terne roofing is painted gray-green. The projecting windows and door frames are distinguished by deep cutouts in the roof. A white-painted stucco soffit seems to fold around each opening, tying it to the roof and walls [SELECTED DETAIL, *p. 144*].

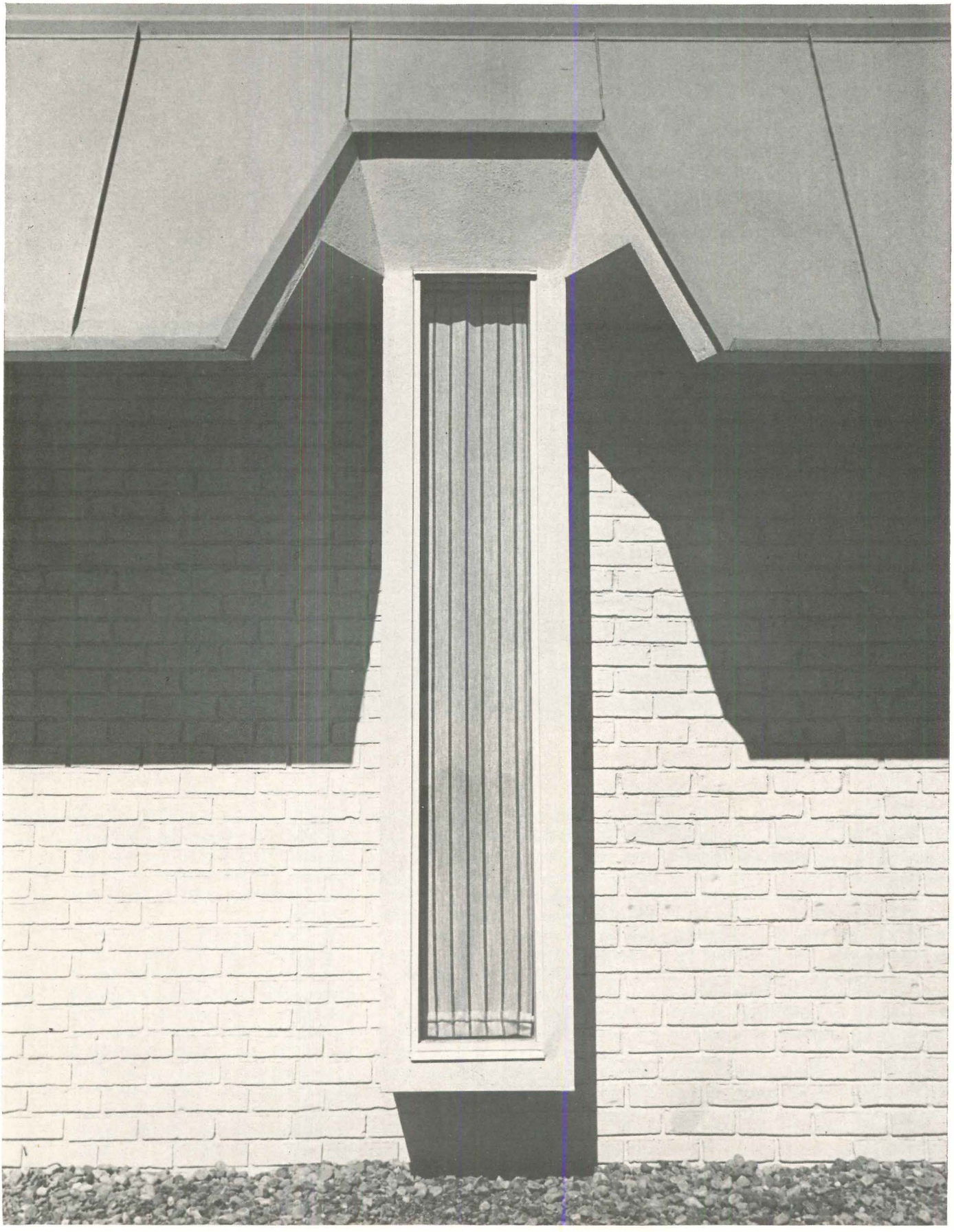






Although little natural light was required in the chapels, some reference to the outside was desired. The deeply recessed, narrow windows give protection from outside distractions and act as blinders to ensure privacy both from the outside and from other parts of the building. The chapels were intended to have high ceilings following the form of the roofs, but lower flat ceilings were introduced at the client's request.





Three Buildings for the FBO

Now awaiting authorization and an appropriation from Congress is a group of new projects worth upward of $30,000,000 to carry forward the revitalized program of the State Department's Office of Foreign Buildings. Although at the present Congress is proceeding cautiously, 53 of the 89 projects authorized since 1954 have already been completed. Even the more modest of these architectural ambassadors proclaim the sound diplomacy, the maturity, and the responsible contribution of FBO policy. The broad outlines of the policy stipulate that designs represent modern American architecture abroad, that they adapt themselves to local cultures and conditions, such as geology and climate, and that the materials used come from local or other non-American sources.

Ecuador

1

PHOTOS: ESTUDIO WUTH

UNITED STATES EMBASSY OFFICE BUILDING, QUITO, ECUADOR • VINCENT G. KLING, ARCHITECT • SEVERUD-ELSTAD-KRUEGER ASSOCIATES, STRUCTURAL ENGINEERS • MIGUEL A. MARIN, ENGINEER-CONTRACTOR

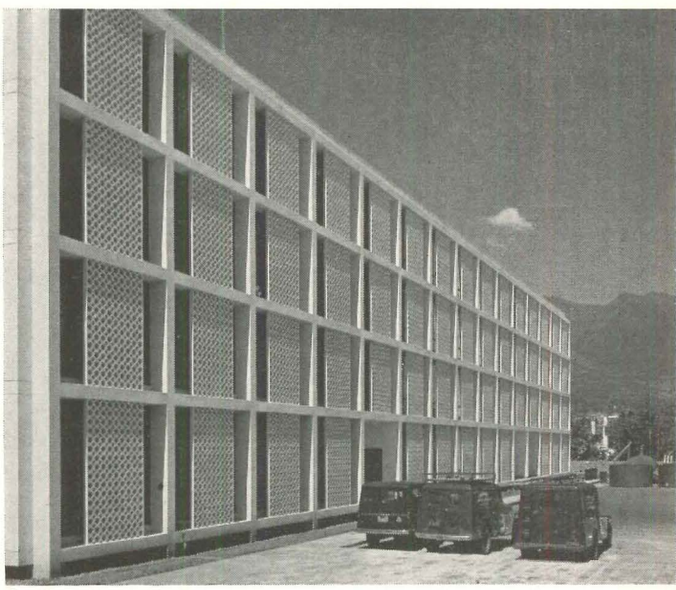
During the first year of its existence, the Quito embassy had an eventful history: as a political symbol, it was the object of anti-American demonstrations that resulted in considerable window damage to the property; as a work of architecture, it was honored when the City Council of Quito awarded Gold Medals to the U. S. Government and to the architect for "the best private building for public service" to be erected in Quito that year.

The embassy is organized into three clearly distinguishable elements (**2**): a four-story rectangular office building housing offices for the ambassador and his staff of about 100; a square one-story auditorium accommodating 250 seats; and an entrance lobby connecting link, approached under a long portico (**5**), which serves as foyer to the auditorium and as an exhibit area for the U.S. Information Agency. A stone perimeter wall around the site helps fulfill the requirement to use local materials (**1, 4**).

The site, high in the Andes, required the structure to be earthquake-resistant, a factor that seems to have been a major influence on the straightforward design. The office building structure is concrete beam and slab, which has been expressed on the solid end walls by a double chase (**3**) and on the long sides by setting the floor-to-ceiling, wood-sash window panels back of the slab line. Tile screens are set on the slab line but do not fill the entire bay, stopping short of the operable side lights; the screens give the structure added rigidity and protect the interior from the intense glare of the sun at that elevation—9000 ft above sea level (**6**).

The lobby adjoining the office block is glass-walled on both sides so as to take advantage of a spectacular view of distant peaks of the Andes. The lecture auditorium, which completes the leg of the L-shaped plan, is of local brick that has been stuccoed; its roof is composed of 16 pyramidal concrete vaults, which have a slight but unforced resemblance to the clusters of pitched rooms in the surrounding residential district. Indeed, the unpretentious honesty of this building gives it an air of stability that is appropriate to geological requirements and to Government use as well.

2



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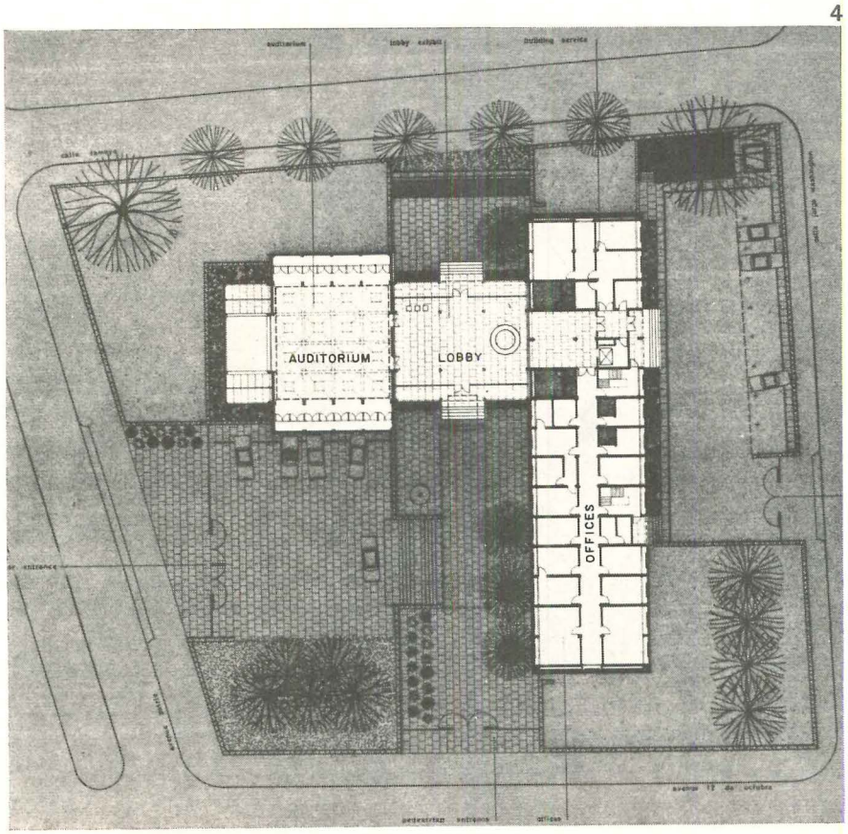
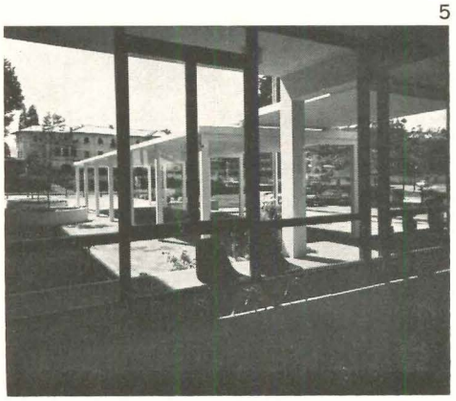

auditorium
lobby exhibit
building service
AUDITORIUM
LOBBY
OFFICES

5



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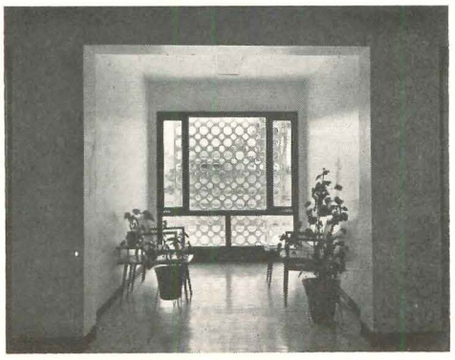

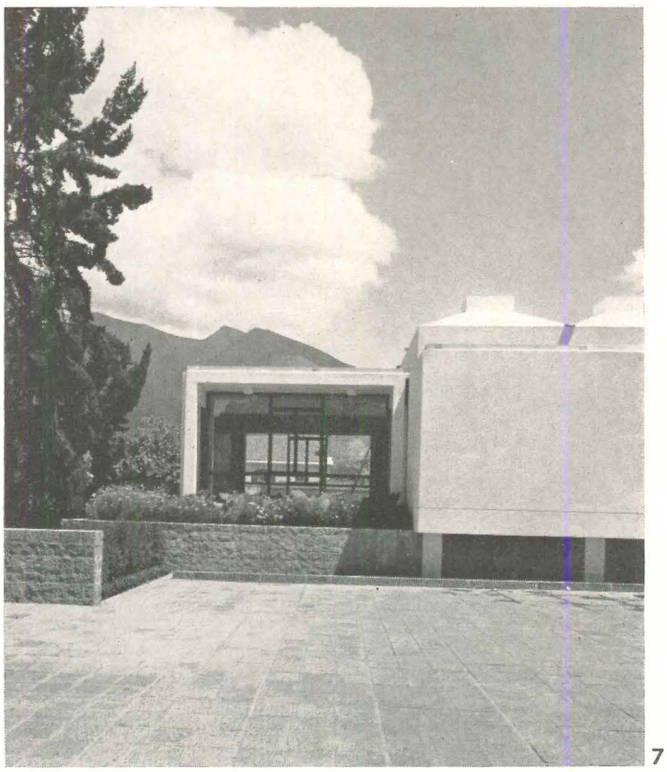

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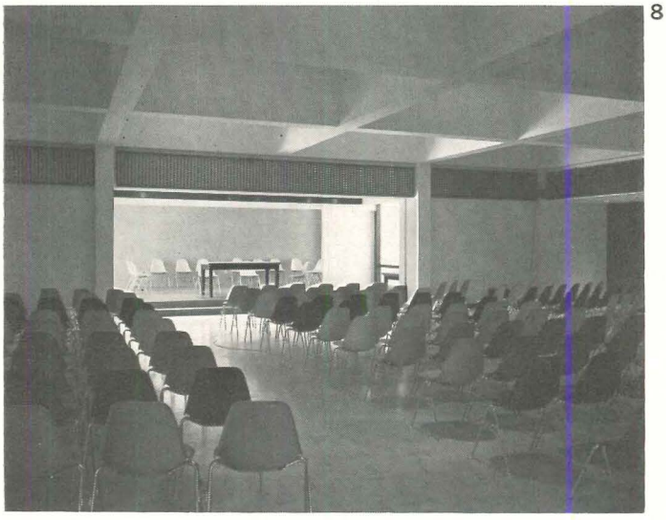

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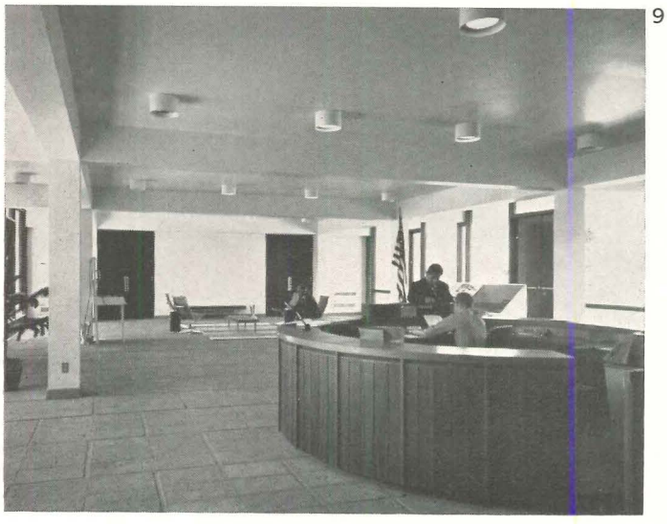
Glass walls on either side of the stage enclosure ***(7)*** *permit natural side lighting of the stage during the day* ***(8)*** *and make the room alive even when it is not in use; neutral and lemon yellow Herman Miller chairs give the hall a bright atmosphere. The lobby has a circular reception desk of native wood* ***(9).*** *Glazed wood partitions* ***(10)*** *screen the entry ways of two offices.*



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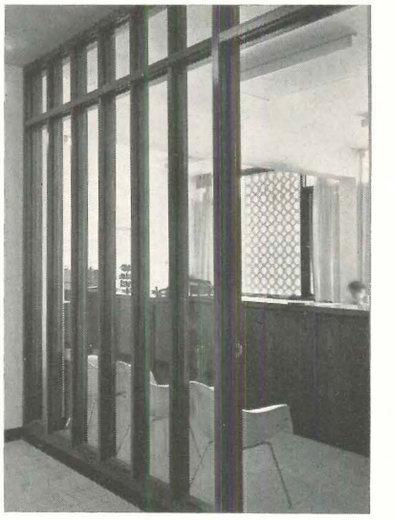


1

PHOTOS: CHARLES W. MILLER & SONS

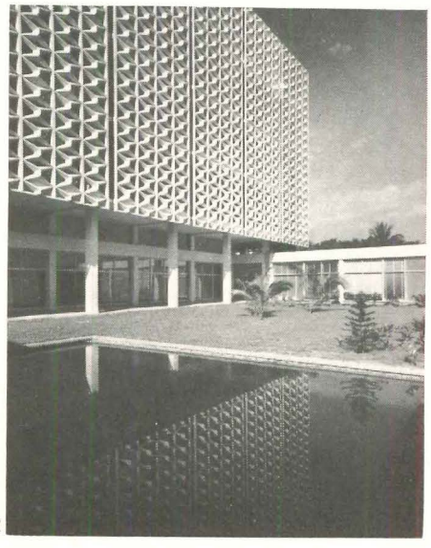
UNITED STATES EMBASSY SUPPLEMENTARY OFFICE BUILDING, MANILA, PHILIPPINES •
A. L. AYDELOTT & ASSOCIATES, ARCHITECTS

Philippines

Local response to the most recent FBO building in Manila (**1**) was summed up by these words of a Philippines newspaper: "[The structure is] a combined monument to the Philippines' historic past and a tribute to her development as a modern nation."

The office building, which is adjacent to the embassy proper and borders on Manila Bay (**3**), was built to house the Consulate, the U.S. Information Service, Veterans Administration, American Legion, and several other Government agencies.

A one-story quadrangle with two in-



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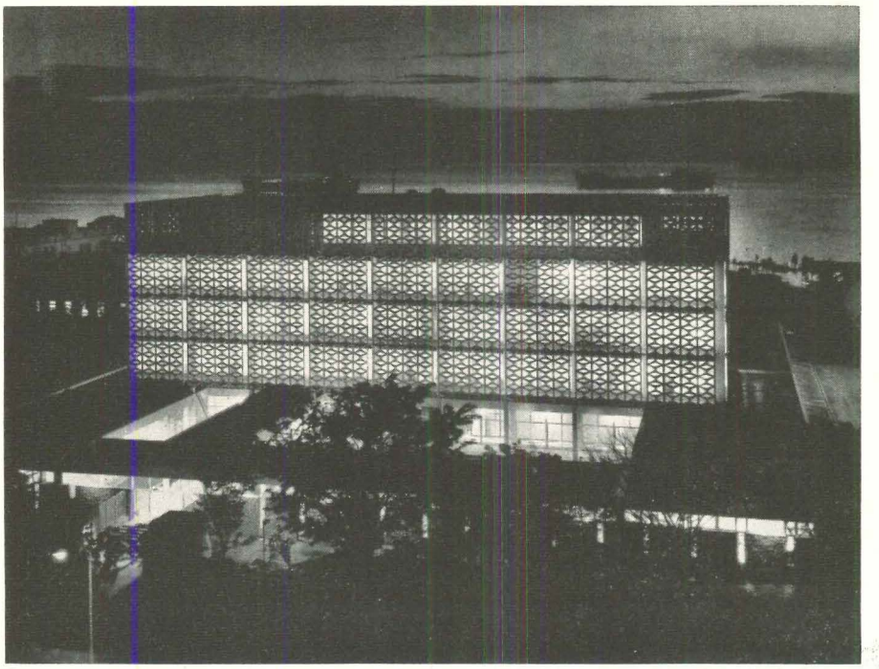
terior courts **(2, 7)** houses most of the public-contact agencies **(4)**; a five-story block rising from the center of this base and "in keeping with the modern rise of the young Republic" contains the U.S. Treasury and general offices and a penthouse cafeteria on the top floor.

The one-story base uses the same native volcanic stone for the battered facing of its walls **(6)** as that used in the walls of Intramuros, the 16th-Century, Spanish-ruled Manila, from which the quadrangle derives its inspiration. Vertical windows and a clerestory, under an exposed concrete fascia, illuminate the interiors **(10)**.

The five-story block has a structure of reinforced concrete; its exterior walls are of aluminum-framed glass, both fixed and sliding panels, which are set back of the slab line. Precast, reinforced concrete grilles, composed of panels one-floor high, are hung around the building to screen the glass from sub-tropical glare and heat. Their effect is illustrated in the office of the Veterans Administration's manager **(8)**. The grilles derive their inspiration from the woven bamboo blinds that are characteristic of local nipa huts, but this tenuous intellectual symbolism is less important than the individual and highly sculptural quality the screen adds to the building.

On the interior, diamond and hexagon patterns in terrazzo **(5, 9)** carry the lines of the grille into the details of the interior design. Several mosaic tile panels also reiterate this theme, and it is recalled in wrought aluminum screens and railings throughout the building.



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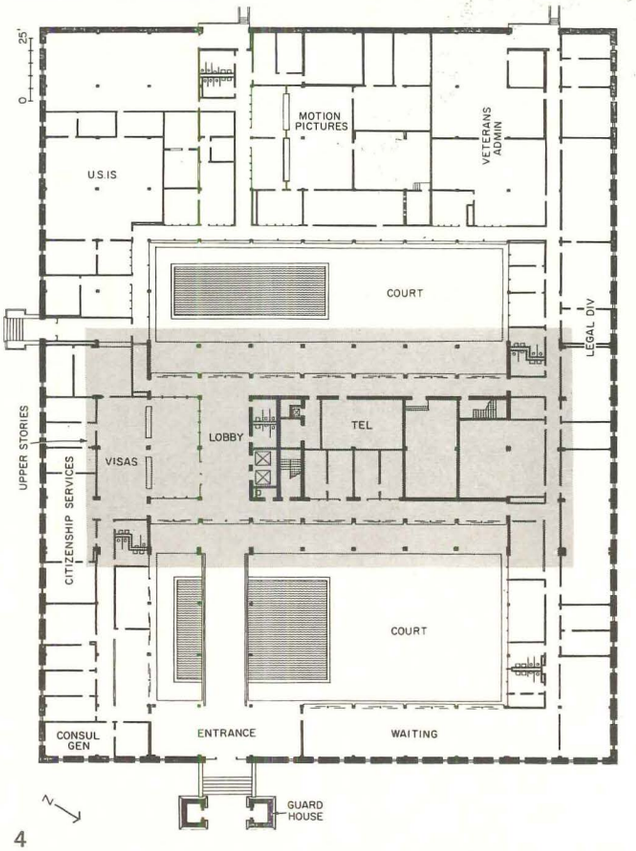

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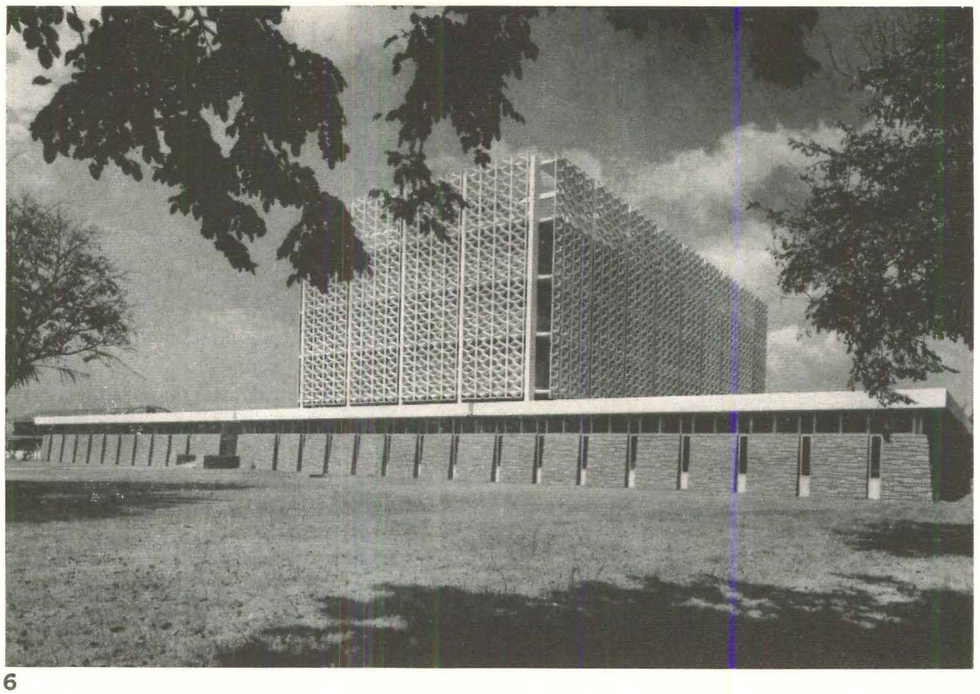

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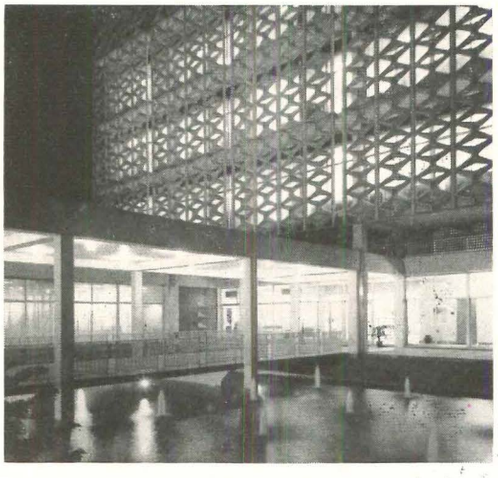

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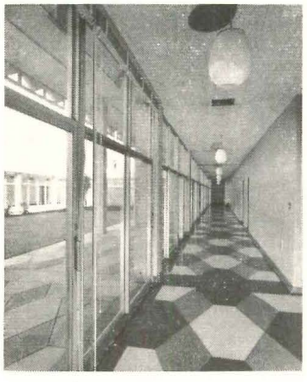

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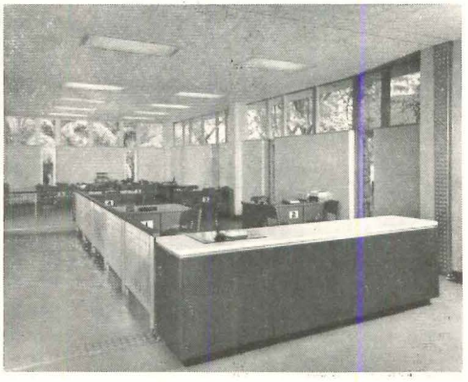


Japan

UNITED STATES CONSULATE OFFICE BUILDING, FUKUOKA, JAPAN • HERVEY PARKE CLARK, JOHN F. BEUTTLER, AND GEORGE ROCKRISE, ASSOCIATED ARCHITECTS • WILLIAM B. GILBERT & ASSOCIATES, STRUCTURAL ENGINEERS

No attempt was made in the consulate at Fukuoka to imitate the traditional architecture of Japan. Classic simplicity, serenity, and articulation of structural elements were the principal architectural effects sought. Both photographs and reports indicate that the goal has been achieved with subtlety and variety.

The consulate is located in a good residential district and is adjacent to a park on the east. The architects have respected both of these neighbors and profited from them: the building is only two stories high and reiterates the pitched roofs of surrounding residences with a concrete folded-plate; a forecourt (**5, 6**), designed by Lawrence Halprin & Associates as a "modern American garden at home in Japan," brings the adjoining park right up to the building.

The L-shaped plan of the consulate (**3**) comprises two units: a one-story wing (**5**) devoted to administration and to spaces for limited public contact; and a two-story structure (**6**) that houses, on its first floor, the main public-service areas, and on its second floor, which overlooks the garden and the entrance from the park side (**1**), offices for the consul, vice-consul, and their aides.

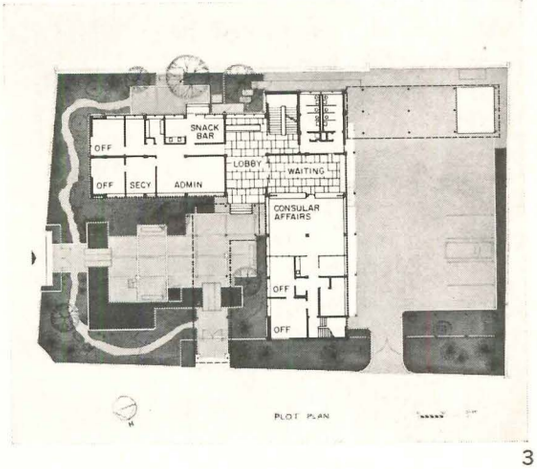
Since the structure is in an area subject to typhoons and earthquakes, it was designed to resist the stresses these would produce: precast concrete piles were used for foundations; the frame, floors, roofs, and exterior walls are of reinforced concrete. The wall panels are finished with Araidashi—a fine, sparkling, white marble aggregate; the structural frame is painted medium gray. The steel window sash is painted white; operable hoppers and air-conditioning vents above and below dark slate spandrels give the walls linear movement (**10**). On the west side of the building, fixed steel louvers painted white (**2, 4**) shield the interiors from intense glare and heat (**11**). A covered entryway (**5**) and carport (**4**) are of post-and-beam construction in natural hinoki wood.

The different colors and textures of these materials, each of which has its natural identity, achieve a subtle articulation of the structure that give it an appearance of delicacy. Indeed, the consulate captures the spirit of the best traditional Japanese architecture without artificially or slavishly imitating it.

1

PHOTOS: AKIO KAWASUMI, COURTESY THE JAPAN ARCHITECT

2


SNACK BAR
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ADMIN
CONSULAR AFFAIRS
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PLOT PLAN

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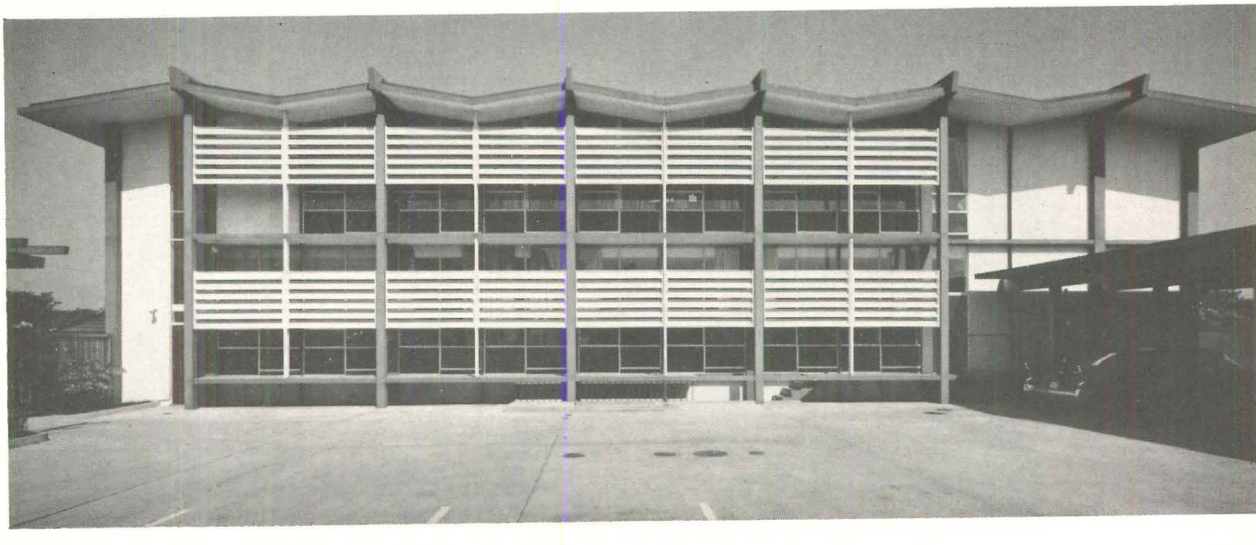

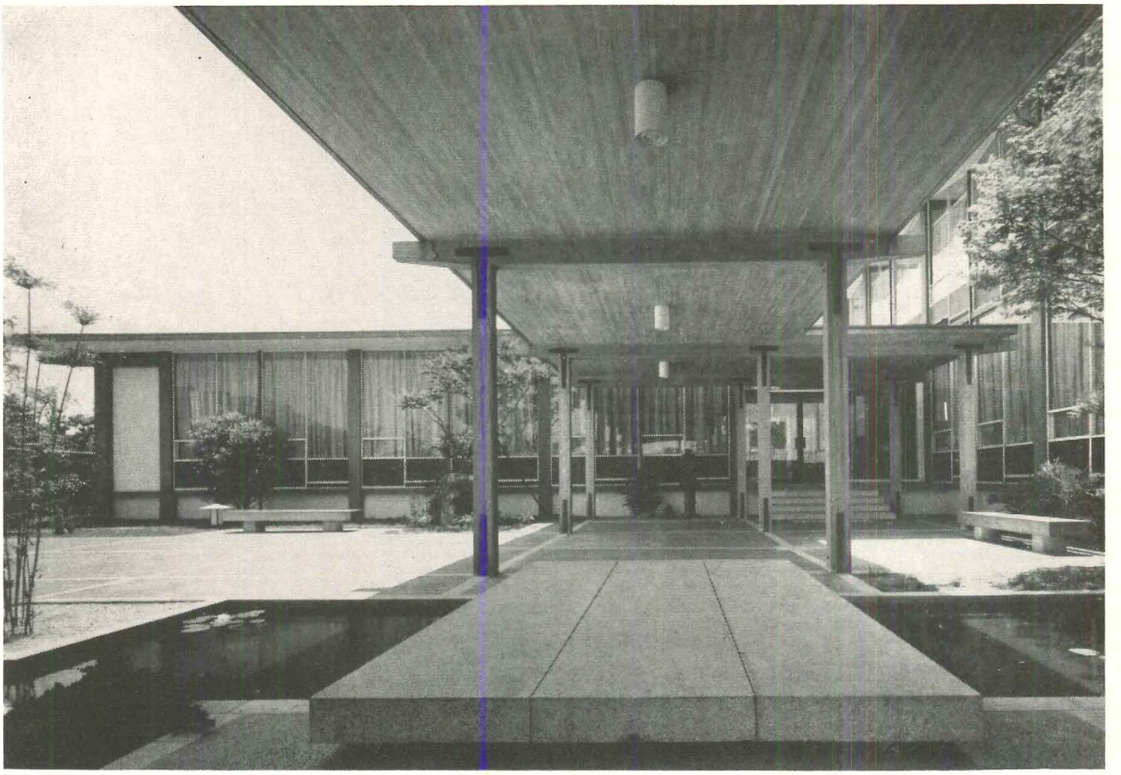

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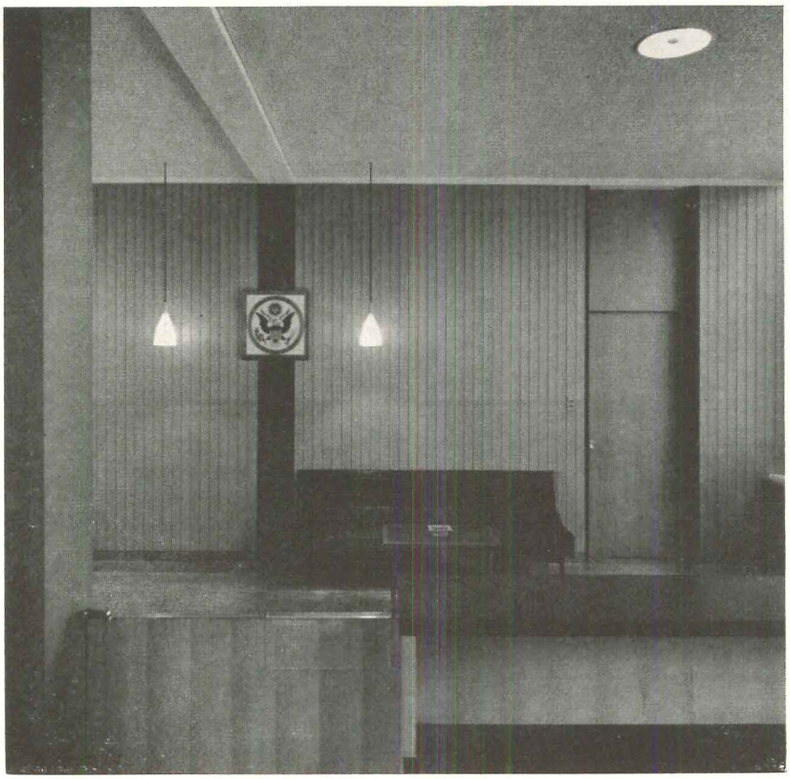

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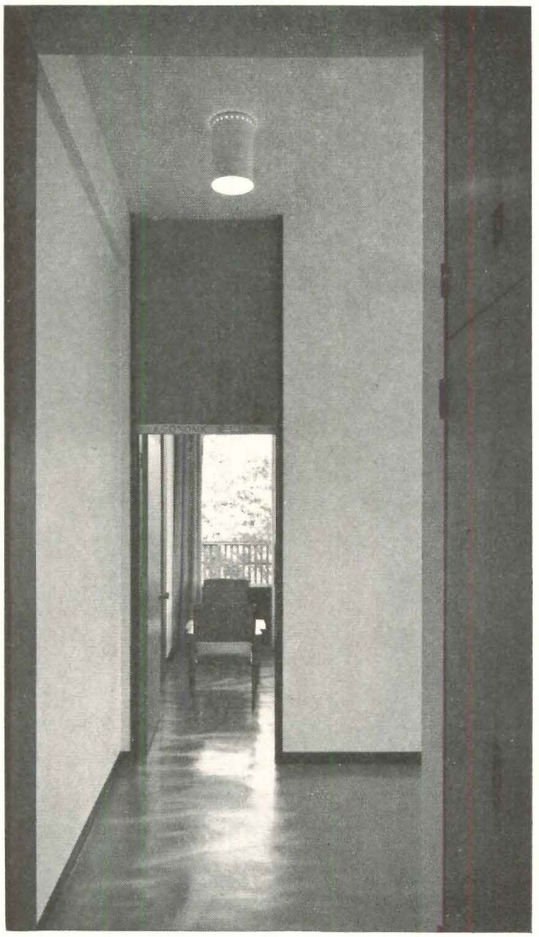

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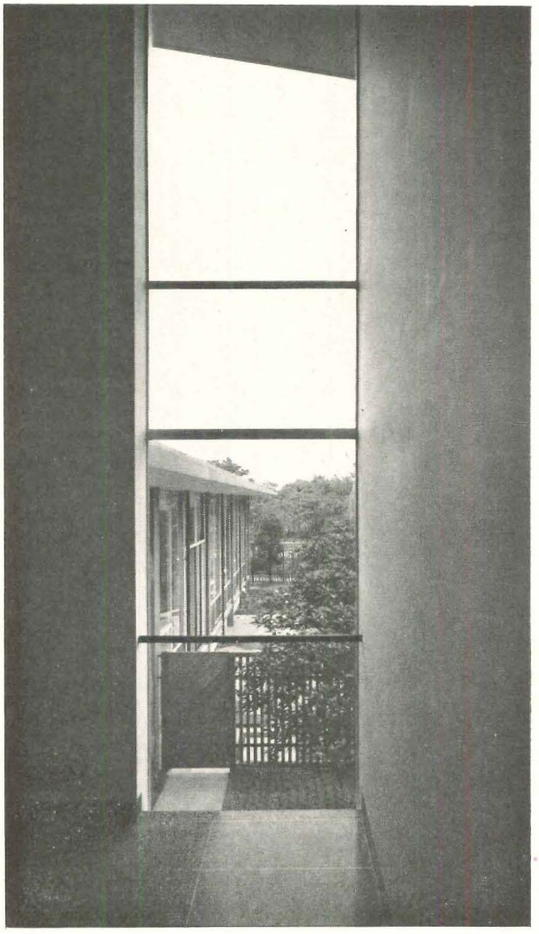
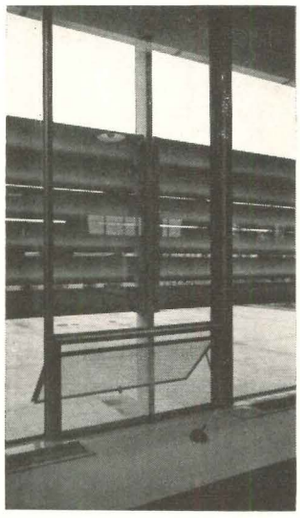


The interiors ***(7, 8, 9)*** *have vertical elements that complement the horizontality of the exteriors. Some of the walls have vertical wood paneling* ***(7)****; doors have matching wood over-panels that continue the doorway lines to ceiling height* ***(7, 8)****. The stairwell has a continuous vertical window that looks out on the one-story wing* ***(9)****. In the garden* ***(5, 6)****, pools, bridges, and a meandering path complement a rigid rectilinear forecourt, composed of exposed concrete panels with marble strips in a grid pattern.*

11



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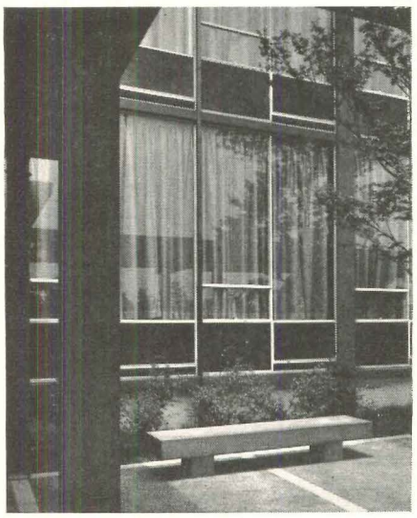


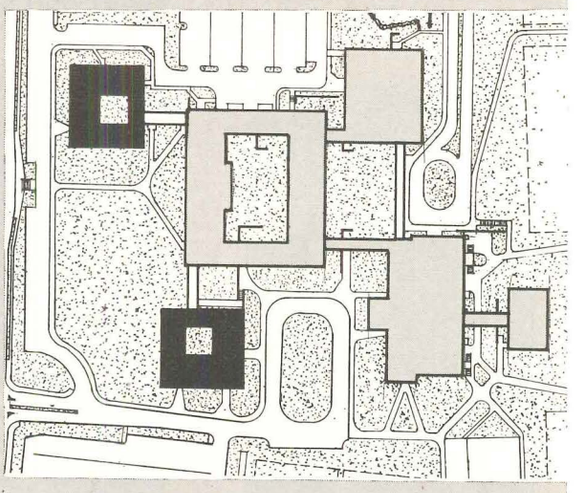
SCHOOLS WITHIN SCHOOLS

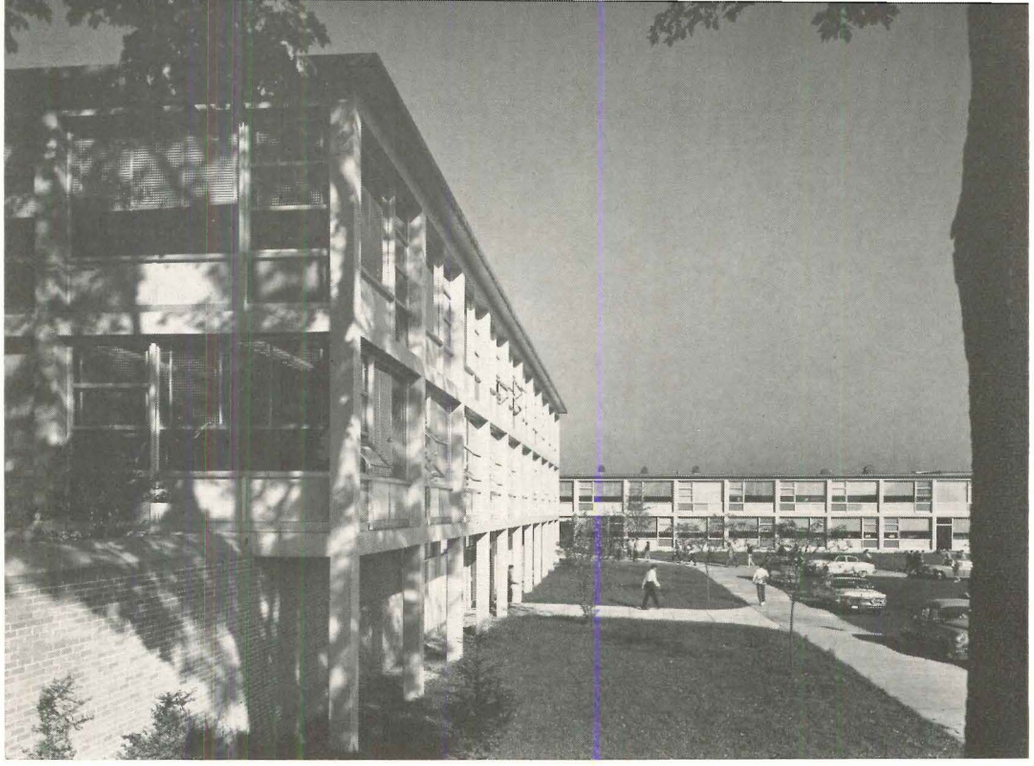
The senior high schools presented here illustrate two distinct variations on the "school-within-a-school" approach to planning. Under this system, the student follows the major part of his program in a "sub-school," going to other parts of the school plant for courses—such as shop, music, science, and athletics—that require special spaces or equipment. At Mount Tahoma, each grade has a sub-school of its own. At White Plains, the division is more pronounced: here the sub-schools contain students of all grades and curricula and have separate administrative and dining facilities.

The reasons for the adoption of this concept were similar in both cases. Perkins & Will describe it as a way to "combine big-school resources with small-school personal relationships between students and staff, and among students themselves."

Although 3000 miles apart, the two schools have many characteristics in common. Both schools are located in substantial cities, yet they are built on generous acreage in areas that are suburban in character. Both are designed for year-round community use of the auditorium and athletic and academic facilities. Both comprise several buildings with landscaped spaces within and between them. Both are designed for substantial future expansion.

In their architectural treatment, however, they differ sharply. The White Plains school is a multilevel complex of connected buildings with concrete framing and metal curtain walls, while the Tahoma school is a one-story development of detached structures built almost entirely of wood.





PHOTOS: JOSEPH MOLITOR

Community of Sub-Schools

WHITE PLAINS SENIOR HIGH SCHOOL • WHITE PLAINS, NEW YORK • PERKINS & WILL, ARCHITECTS • ENGELHARDT, ENGELHARDT, LEGGETT & CORNELL, EDUCATIONAL CONSULTANTS • SEELYE, STEVENSON, VALUE & KNECHT, STRUCTURAL ENGINEERS

The six buildings of this school cover seven acres of a 60-acre site. Built for 2250 students in the last three secondary grades, the plant is planned for expansion to accommodate 4500. The present student body has been organized into "divisions" of 500 to 550 pupils, each of which functions as a sub-school. Assignment of students to divisions is permanent and is done on a random basis. Each division has proportionate numbers from each course of study and each grade.

The division has its own administration, student organizations, and eating facilities. Ten teacher-counselors assigned to each division provide personal guidance to the students throughout their three-year stay. These teacher-counselors, supplemented by 16–18 other teachers, give instruction in basic courses, which are exclusively the concern of the division.

The four initial divisions are housed in two wings on the west side of the complex, isolated from the noisier activities of the school. In the future, four additional divisions will be located in two more wings almost identical to these.

Each division occupies one floor of a wing. Its activities focus on a large central space that serves as a study hall, assembly room, lunch room, and student activities center. Food prepared in kitchens located in the partial basements of the two wings is served from service rooms in each division. Landscaped courts at the center of each wing admit light and air and can be used as sheltered outdoor teaching areas.

The two sub-school wings are linked to the lower, broader central building, which houses many of the "big-school resources" on which the divisions rely. In this building are the central administration and testing, placement, and psychological services. Here are also to be found the central library and the teaching areas that require special accommodations: sciences; homemaking; industrial and fine arts; and business education. The large court at the center of the block might be used for expansion of any of the surrounding departments, if changes in program necessitate them. (They are planned to accommodate 4500 students under the present program.)

The auditorium wing has been situated for convenient access from shops and parking areas. The 1000-seat auditorium and stage have been designed to meet the needs of the community, as well as the school. Music and practice rooms have been located on the side of the wing facing away from the academic areas.

The physical education department is housed in a three-level block, with a satellite structure that contains the swimming pool. The public entrance at the top level and the exits to the playing fields two stories below had to be considered in planning. Separate circulation is provided for spectators and participants for both the gymnasiums and the pool. The gymnasiums can accommodate 1500 spectators on folding bleachers, and the pool has permanent seating for 300.

The structural system is of reinforced concrete, except for steel framing over some of the longer spans. The exposed concrete frame has been painted on the interior and treated with an epoxy coating on the exterior. The 84,000 sq ft of window-wall is composed of clear glass and porcelain enamel panels in two shades of blue, set in aluminum frames.

The total construction cost, exclusive of site work, furniture, equipment, and fees, was $6,555,000 — approximately $19.90 per sq ft, or $2924 per pupil. Expansion of the school to its ultimate capacity is expected to reduce both of these indexes of unit cost by substantial amounts.

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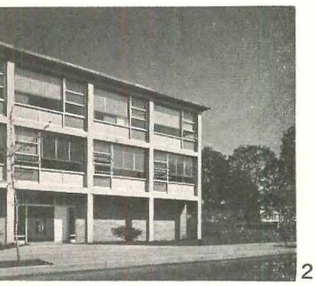

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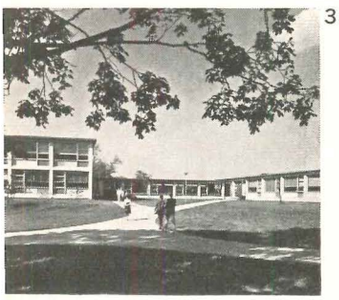

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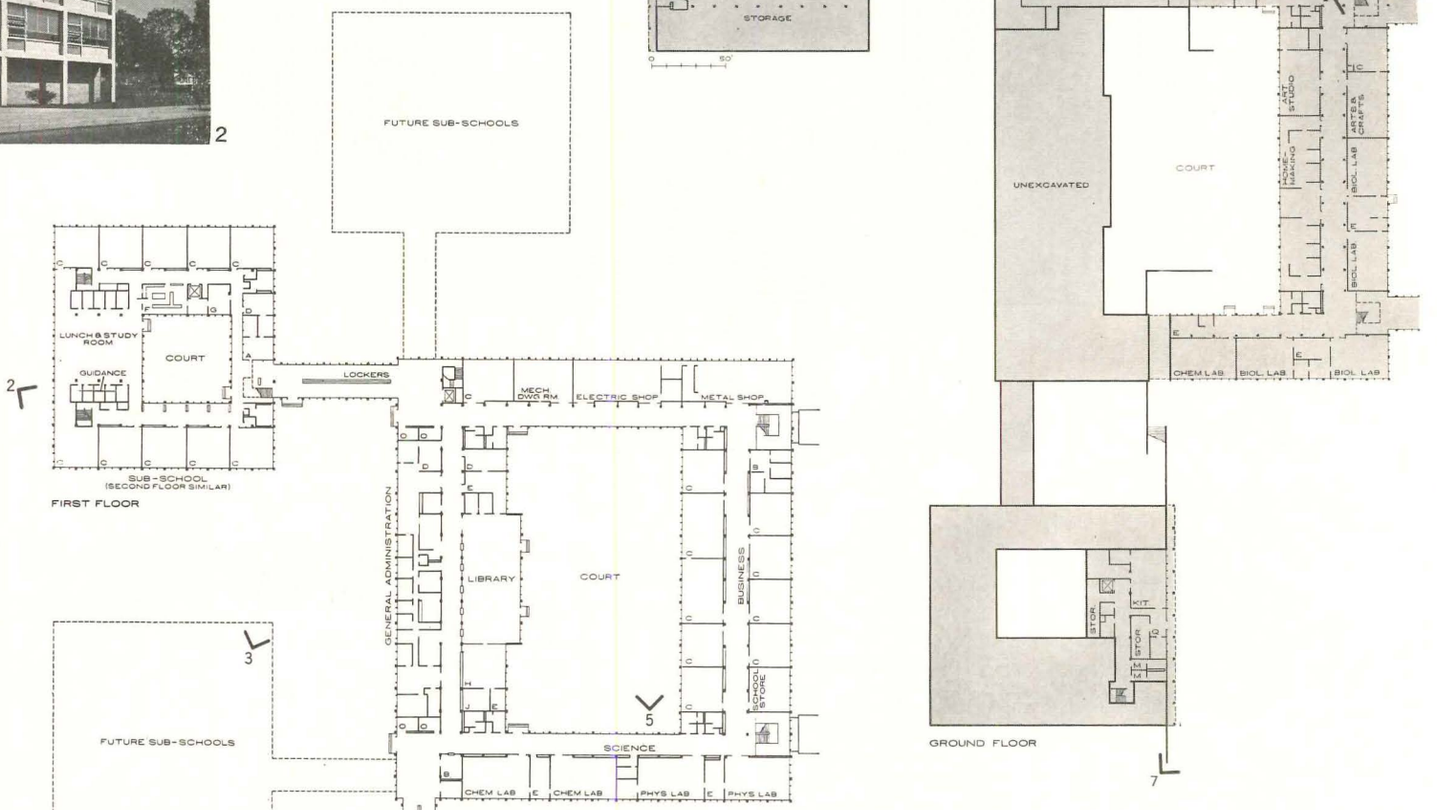
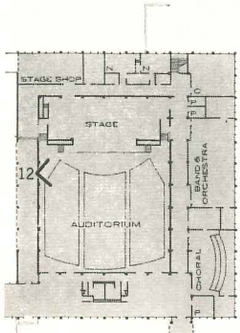

KITCHEN
STOR
BOILER ROOM
STORAGE
TRANSP. SHOP
WOOD SHOP
UNEXCAVATED
COURT
ART STUDIO
HOME MAKING
ARTS & CRAFTS
BIOL. LAB
CHEM. LAB.
BIOL. LAB.
BIOL. LAB.
FUTURE SUB-SCHOOLS
LUNCH & STUDY ROOM
GUIDANCE
COURT
SUB-SCHOOL
(SECOND FLOOR SIMILAR)
FIRST FLOOR
LOCKERS
MECH. DWG RM.
ELECTRIC SHOP
METAL SHOP
GENERAL ADMINISTRATION
LIBRARY
COURT
BUSINESS
BOOKS STORE
SCIENCE
CHEM. LAB.
CHEM. LAB.
PHYS. LAB.
PHYS. LAB.
FUTURE SUB-SCHOOLS
GROUND FLOOR
KIT.
STOR.
STOR.
COURT
LUNCH & STUDY ROOM
GUIDANCE
SUB-SCHOOL
(SECOND FLOOR SIMILAR)

12



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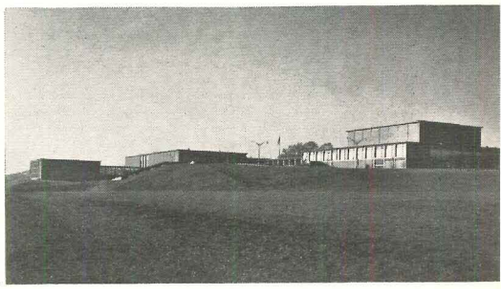

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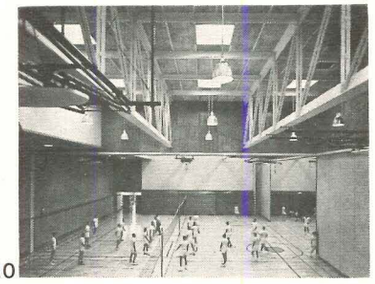

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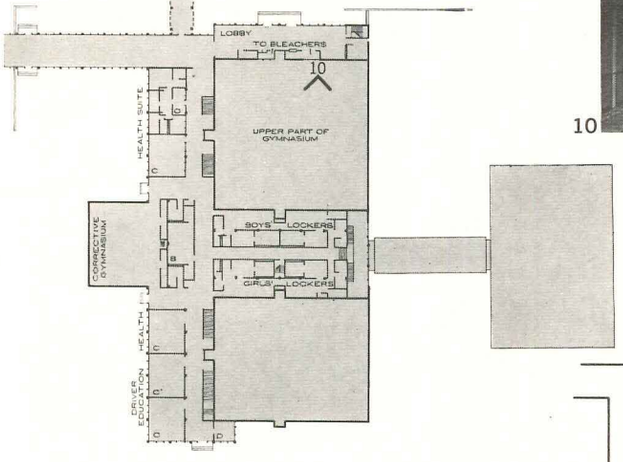

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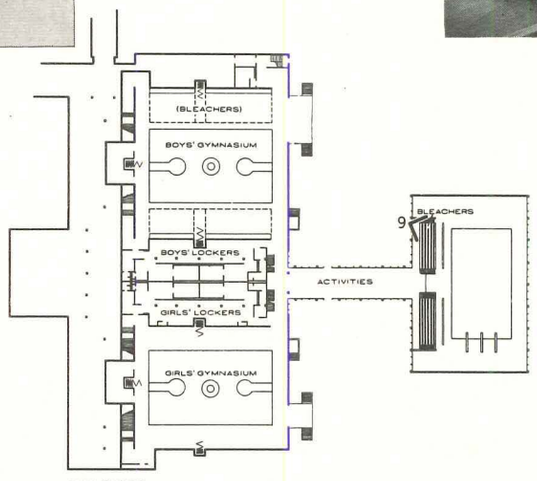
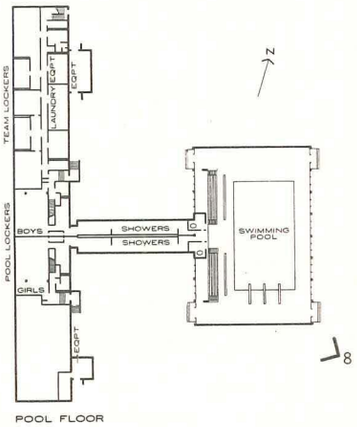
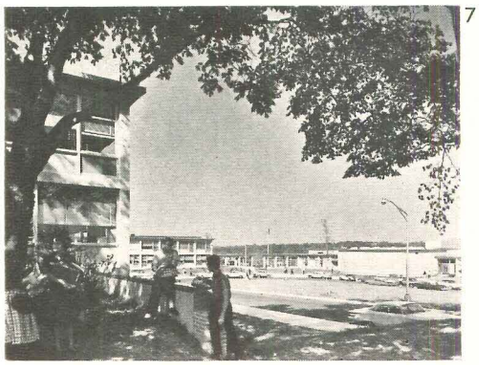
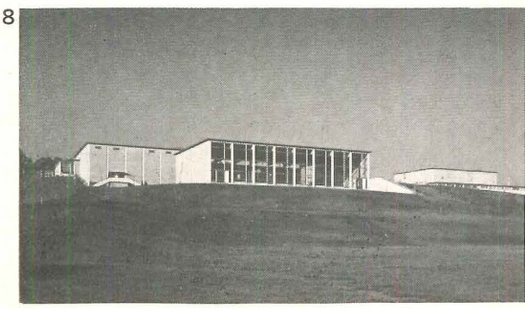






7

A *Administration*
B *Departmental Office*
C *Classroom*
D *Conference*
E *Work Room*
F *Food Service*
G *Faculty Dining*
H *Teachers' Work Room*
J *Viewing Room*
K *Custodian*
L *Employees' Lunchroom*
M *Employees' Lockers*
N *Dressing Rooms*
O *Office*
P *Practice Room*
Q *Receiving*



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PHOTOS: MORLEY BAER

Subdivision by Grades

TACOMA, WASHINGTON • ROBERT BILLSBROUGH PRICE, ARCHITECT • LAWRENCE HALPRIN & ASSOCIATES, LANDSCAPE ARCHITECTS • JOAN A. PRICE, INTERIOR DESIGNER • HORACE J. WHITACRE & ASSOCIATES, STRUCTURAL ENGINEERS

"A symbol in the community of education and culture" was the stated objective of the educators, architect, and landscape architect who collaborated on the design of this high school campus. A sense of identity is established by a 75-ft wood bell-tower standing on the edge of a plateau overlooking the southern part of Tacoma.

Grouped around it are buildings housing the academic departments, administration, library, cafeteria, auditorium, and fine arts rooms. Shops and athletic facilities are situated 35 ft below, at the edge of the playing fields. The land between the buildings and the courts within them have been richly modeled and landscaped with pools and fountains, as well as planting.

The school is designed for an initial enrollment of 1386 and maximum ultimate capacity of 2000 students. This capacity should be sufficient to serve the anticipated needs of the South Tacoma area. The growth of the area might be accelerated, however, by several unpredictable factors — not the least among them the construction of the school itself and the conversion of a swamp adjacent to it into a public recreation area.

Educational specifications for the school were drafted by a committee of 12 that included the future administrators and departments heads and the architect, who had already been appointed. One of the major provisions of the program they schools" for each grade, where the student would spend the major part of his academic time. This arrangement is adaptable to a variety of teaching methods, including team teaching and the establishment of an integrated "core" course for each grade. Adaptability of the final plan to a conventional high-school program, in case one should be instituted in the future, was also considered necessary.

The committee report stressed the importance of flexibility in the planning. Provisions for the rearrangement of teaching spaces to meet both day-to-day needs and long-term changes in program were called for. Year-round use by the community of auditorium, shops, studios, swimming pool, and playfields was also recognized as a vital part of the program.

The campus plan was adopted to facilthe plant and simplified the administraitate the expansion of individual parts of tive and maintenance problems of afterhours and community use. Certain problems inherent in the scheme had to be accepted. Passing periods had to be made longer and provisions for coats had to be included in all teaching areas.

The area where the academic building stands was originally a hill rising 60 ft above the street. Earth removed from it was used to fill the swampy area at the foot of the slope, yielding about 40 acres of recreation area. The playfields and tennis courts were a joint project of the school and the city park board.

To solve the drainage problem in the lower area, a basin was created into which water from above could be directed. It is lined with granite boulders from the excavations so that it remains presentable when the water subsides. On the slope itself, the original growth of trees was

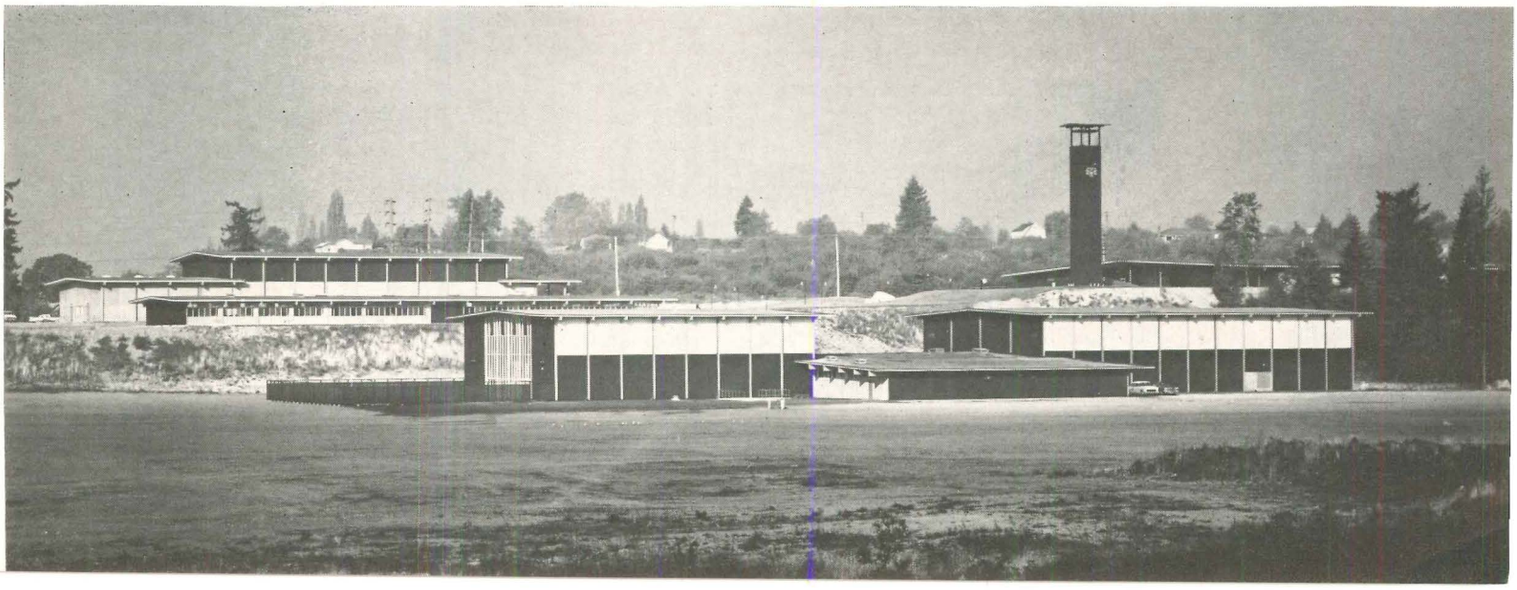
The "town square" at the center of the upper building group was conceived as a meeting place and visual center for the entire campus. The tower is spotlighted at night to maintain its symbolic importance in the community. Bells from the old city hall, which is to be razed this year, will be installed in it.

Several courts are distributed throughout the complex, each one related to a sub-school or activity. Some of them are paved and have benches for outdoor classes. One contains a concrete fountain sculpture that was cast on the site by unskilled workmen. In others, natural rocks have been used as seats (and as a graceful deterrent to the unauthorized entrance of cars). The science court features a greenhouse and planting beds. A space adjacent to the auditorium has been developed as an outdoor theater.

The academic building houses four subschools, one for each grade and one for the science department. Each grade has its "home base" area, with counseling rooms, sub-library, and a large central space that serves for lectures, study, class meetings, and social events. The plan of these areas (and the cafeteria) is based on a system of decentralized food service from carts, but it has not been put into effect.

An all-wood structural system was chosen strictly on the basis of economy in this locality. The system is based on laminated wood beams and columns laid out on a 15-ft module. All roofs are of wood joists with plywood sheathing, except those of the pool and gymnasium, where 3-in. tongue-and-groove, pressure-treated decking was used.

Interior partitions are either of wood stud construction, with lath and plaster



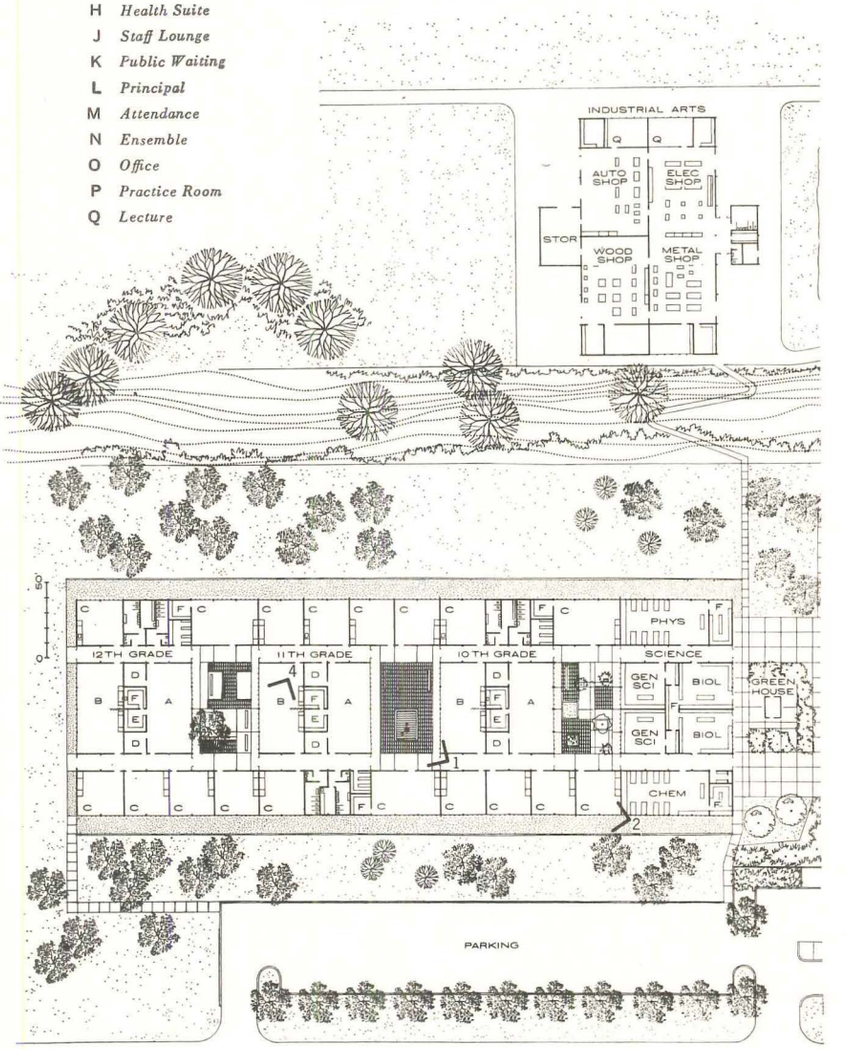
on resilient clips, or of the cloth-surfaced accordion type. The use of clear glass from a height of 7′-0″ up to the extensive planes of the ceiling gives a feeling of continuity. Lighting is by a combination of recessed fluorescent fixtures and natural light from windows and from domes above the corridors.

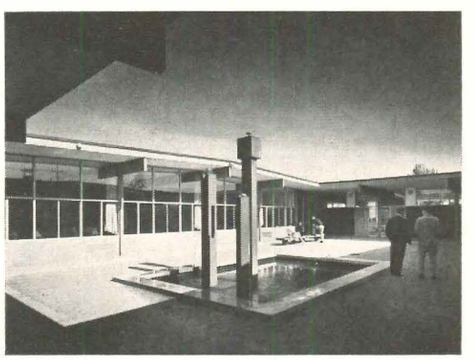
Exterior walls are of cement plaster with an exposed-aggregate finish and rough-sawn cedar stained black-brown. All beams and columns have been stained signal red; soffits have been painted white and fascias, gold. Accent colors on the interior are two shades of blue, white, gold, and signal red.

Electricity has been used to provide all heating. Unit ventilators in all spaces afford maximum flexibility in the use of spaces after hours.

The cost of the complex, including site development, fees, furniture, and movable equipment, was about $2,487,000. On the basis of 1386 pupils, the cost per pupil was $1787.

A *Academic & Social Center*
B *Team-Teaching Station*
C *Teaching Laboratory*
D *Conference & Counseling*
E *Sub-Library*
F *Work Room*
G *Faculty Dining*
H *Health Suite*
J *Staff Lounge*
K *Public Waiting*
L *Principal*
M *Attendance*
N *Ensemble*
O *Office*
P *Practice Room*
Q *Lecture*

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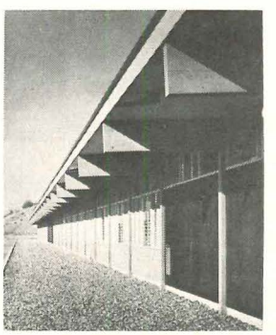
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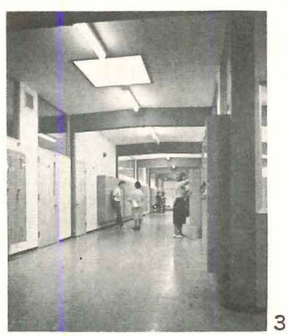
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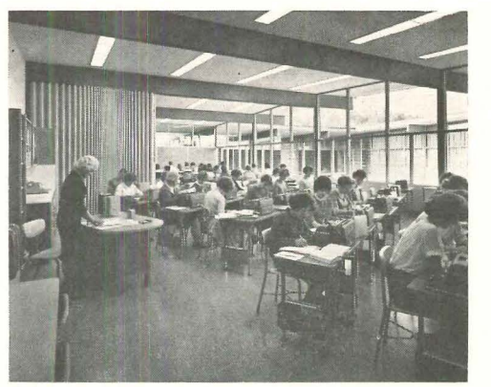
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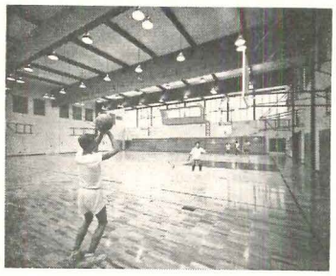

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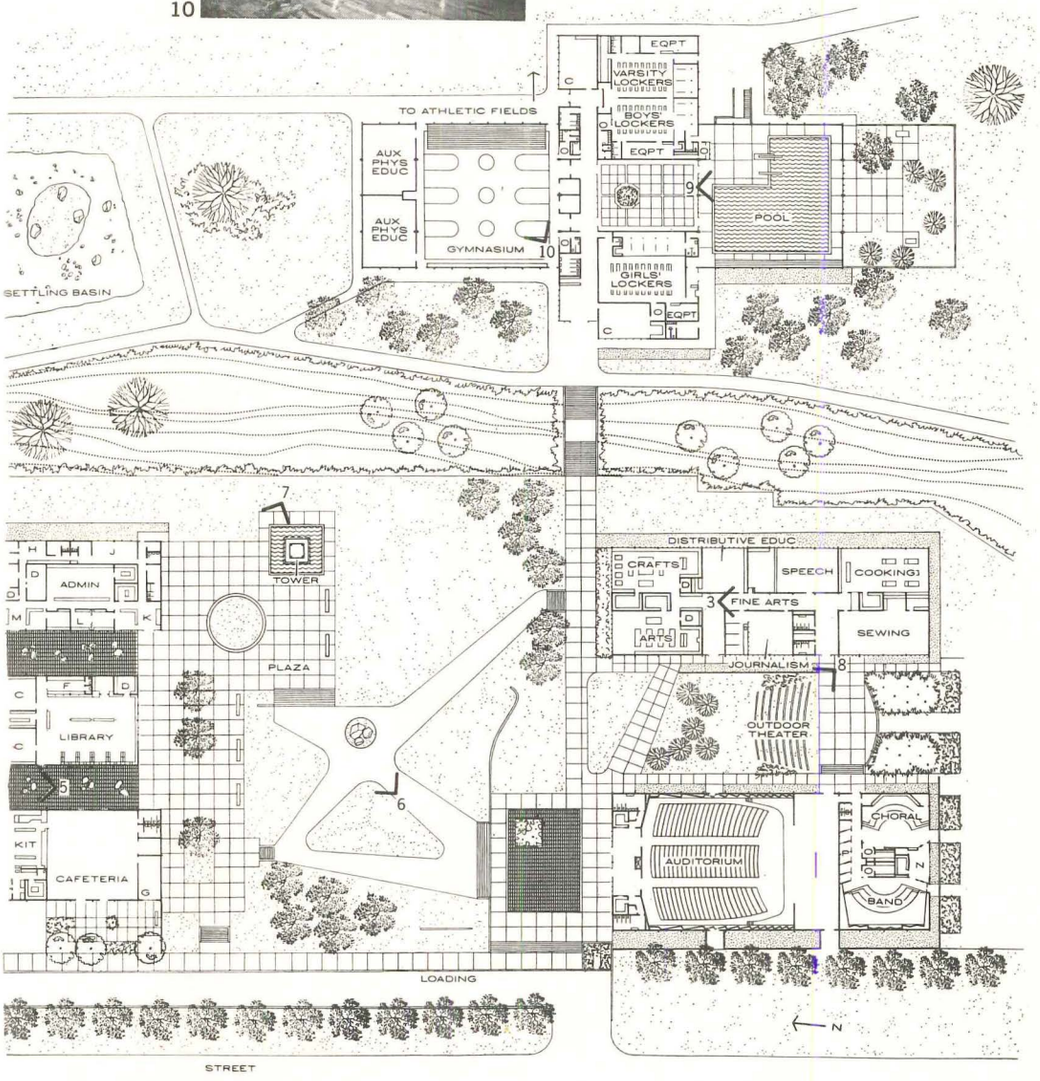
TO ATHLETIC FIELDS
EQPT
VARSITY LOCKERS
BOYS' LOCKERS
EQPT
AUX PHYS EDUC
AUX PHYS EDUC
GYMNASIUM
POOL
GIRLS' LOCKERS
EQPT
SETTLING BASIN
TOWER
ADMIN
PLAZA
DISTRIBUTIVE EDUC
CRAFTS
SPEECH
COOKING
FINE ARTS
SEWING
ARTS
JOURNALISM
OUTDOOR THEATER
LIBRARY
KIT
CAFETERIA
CHORAL
AUDITORIUM
BAND
LOADING
STREET
N

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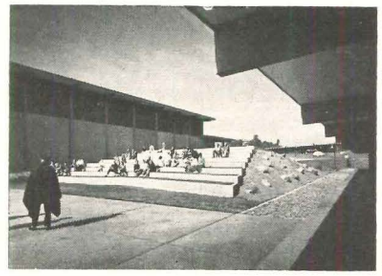

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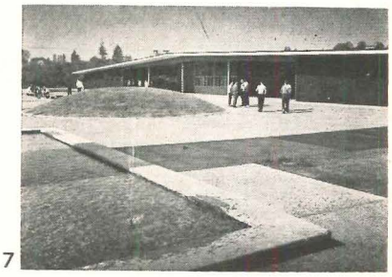

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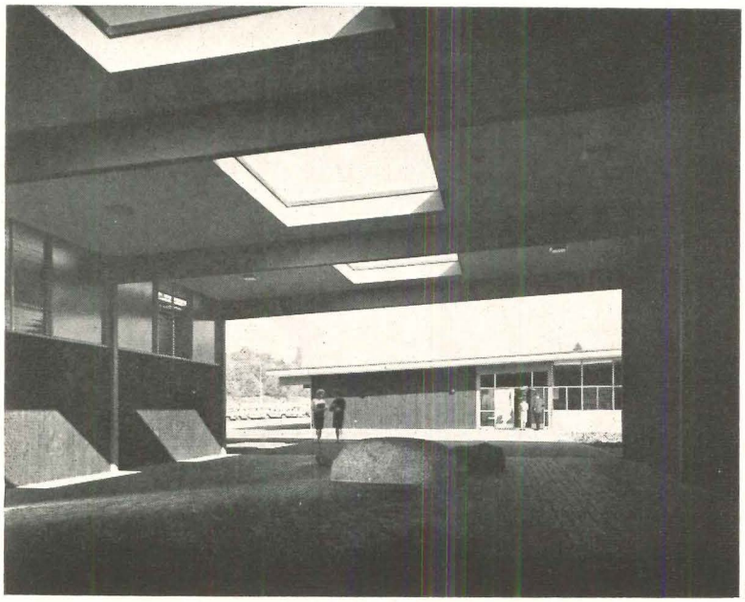

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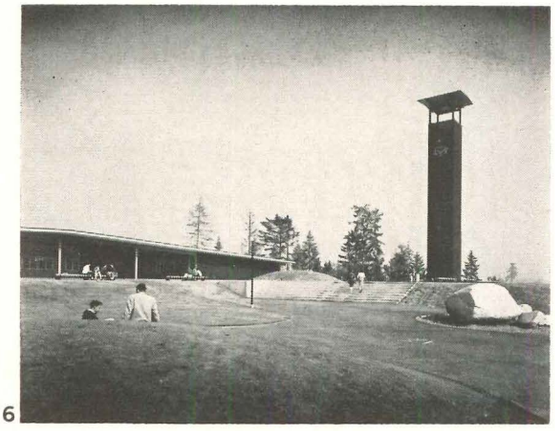

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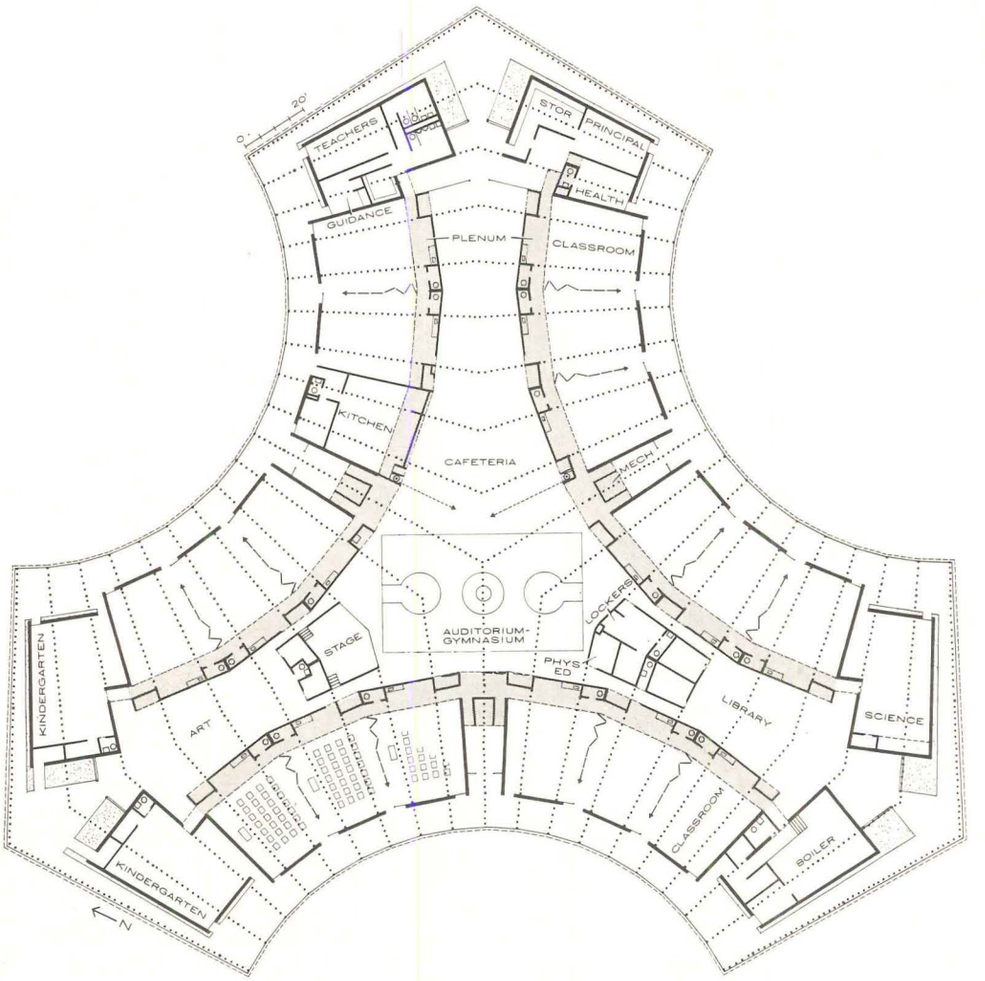


Tricorn for Teaching

HILLSPOINT ELEMENTARY SCHOOL • WESTPORT, CONNECTICUT • VICTOR A. LUNDY, ARCHITECT • SEVERUD-ELSTAD-KRUEGER, STRUCTURAL ENGINEERS • FRED S. DUBIN ASSOCIATES, MECHANICAL ENGINEERS • WILLIAM LAM, LIGHTING CONSULTANT

Spread out beneath the trees on a rolling suburban site, this school is outwardly unassuming. Only the swell of the smooth built-up roof over the center of the building gives an intimation of the dramatic space inside.

The school has no corridors. Explaining the plan, Lundy asks, "Why spend ten to fifteen per cent of the budget on lifeless corridors that have so limited a use? I took them out and put them into positive values for the school."

Three arcs of classrooms enclose a central space that serves as gymnasium, auditorium, cafeteria, art studio, and library. Exits from this space at the middle of each arc break the classrooms into groups of three, each of which can be made into a single large space—for one of the six grades of the school—by opening movable partitions.

When the central space is not reserved for a special use, it provides a means of circulation that allows the teachers and students to experience the spatial unity of the building. Doors between classrooms create an alternate circulation system.

A single roof canopy constructed entirely of wood covers the whole school. Lundy chose the laminated-arch structural system because it was the most economical of the types that could be molded to the "sculptural image" he had in mind. The arches are of Douglas fir in ¾-in. laminations. They support double decking of tongue-and-groove inland white fir.

The arches bear on concrete-filled steel columns, which are braced by a few interior shear walls and by tilt-up wall panels around the entire perimeter. These panels were formed by placing local stone face down in beds of sand and pouring concrete over them.

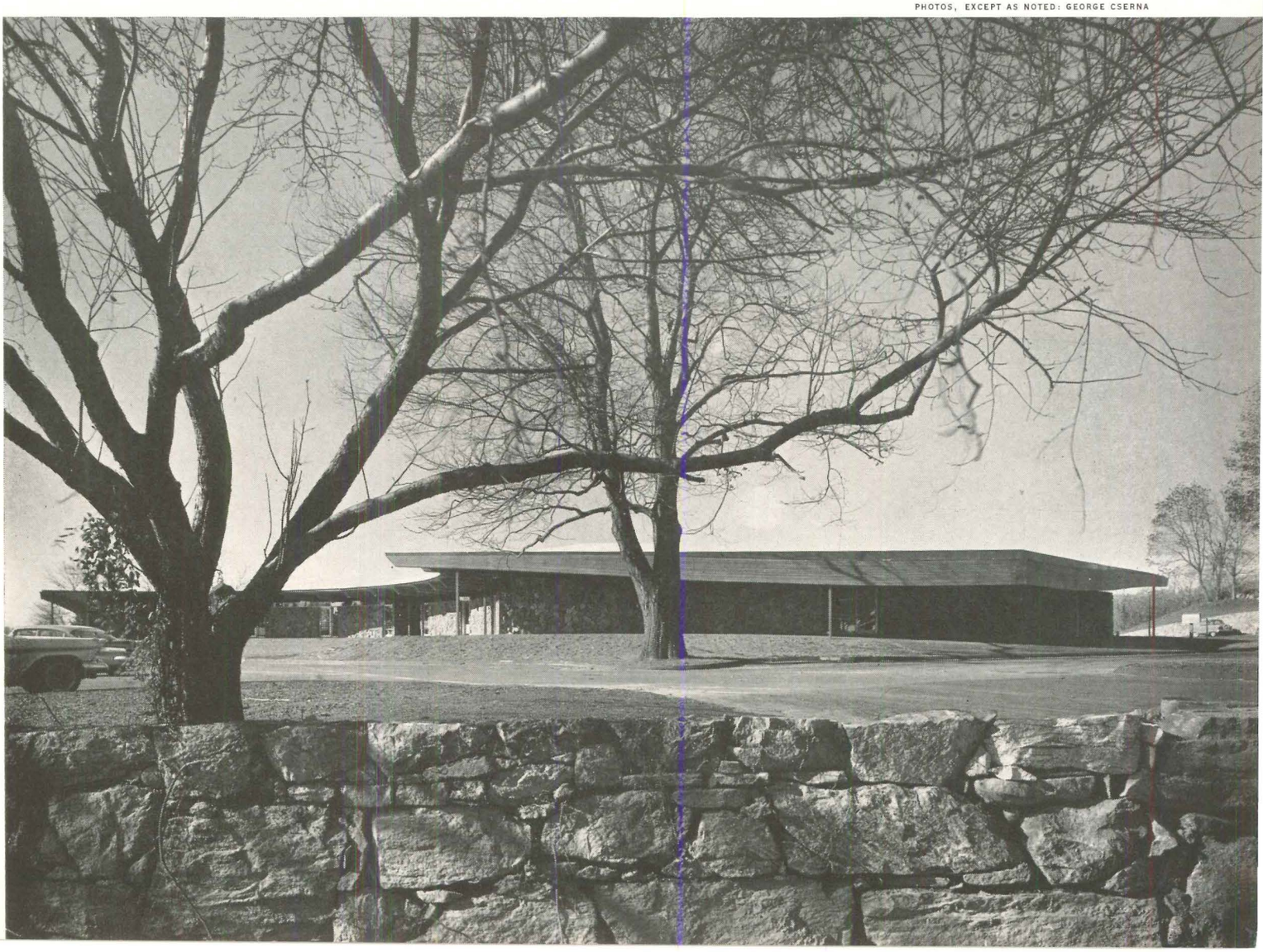
Lundy wanted to articulate the mechanical systems—to make them "as simply and clearly defined as on a ship." Thus, the heating system can be traced visually from the three air-handling units at the center of each arc of classrooms through the continuous plenum along their interior walls. Water supply and vent pipes for classroom plumbing and exhaust ducts from toilet rooms are contained in the same plenum.

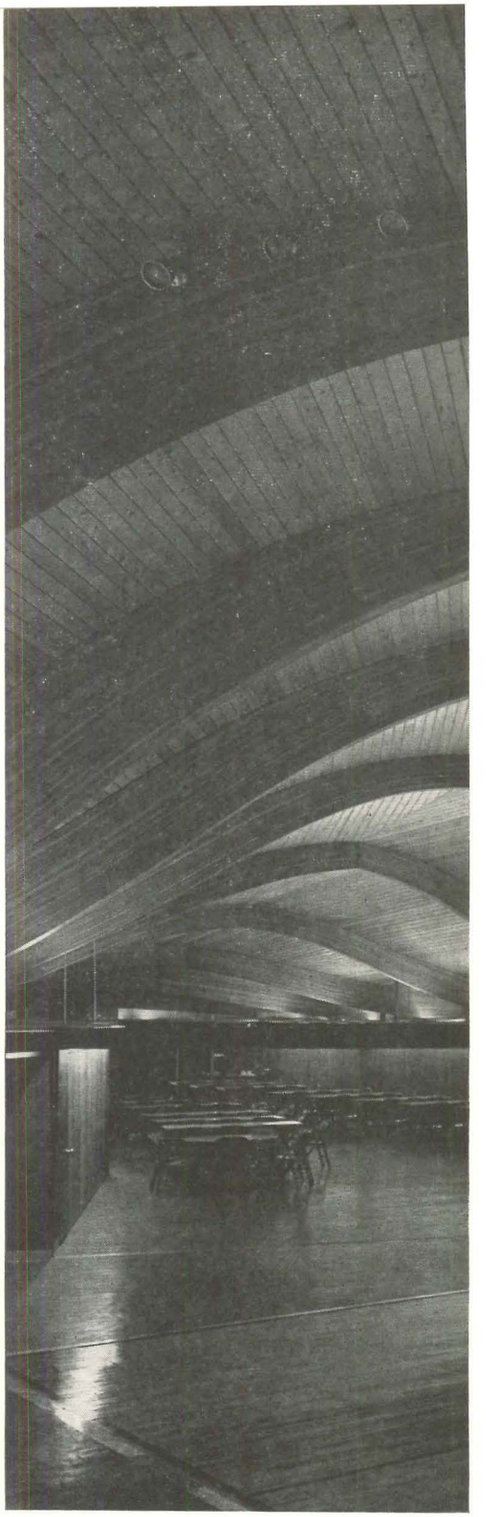
No mechanical equipment penetrates the roof. Air is drawn in through underground ducts from pits outside the building. Supplementary heating is provided by individually controlled fin-tube units along the outer classroom walls, which use hot water from a central boiler.

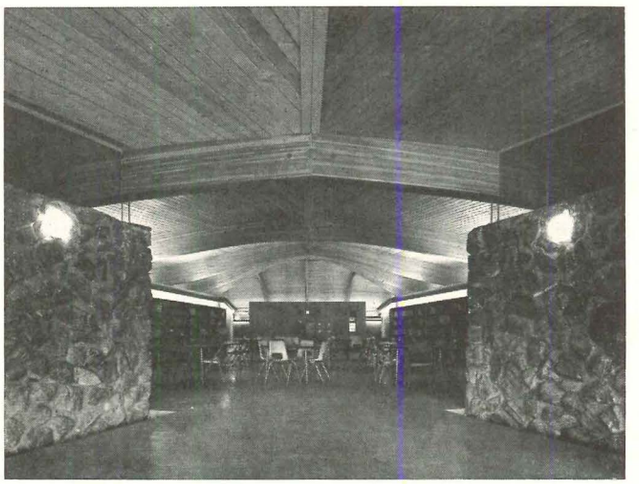
Exceptional interior materials and detailing are included in the cost of about $18 per sq ft for the 36,000 sq ft structure.

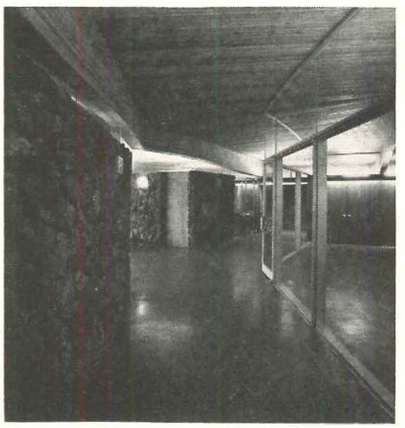
The building was opened before the architect or engineers had made their final inspections. The adverse local reaction that developed when one large panel of glass was accidentally broken and another pane fell out has been widely publicized. The installation of tasteless metal grilles over low glass panels and extra stops around overhead glass have now compromised the appearance of the building, but Lundy still hopes that the children will benefit from it, that it will be "a beautiful experience in their lives."

PHOTOS, EXCEPT AS NOTED: GEORGE CSERNA

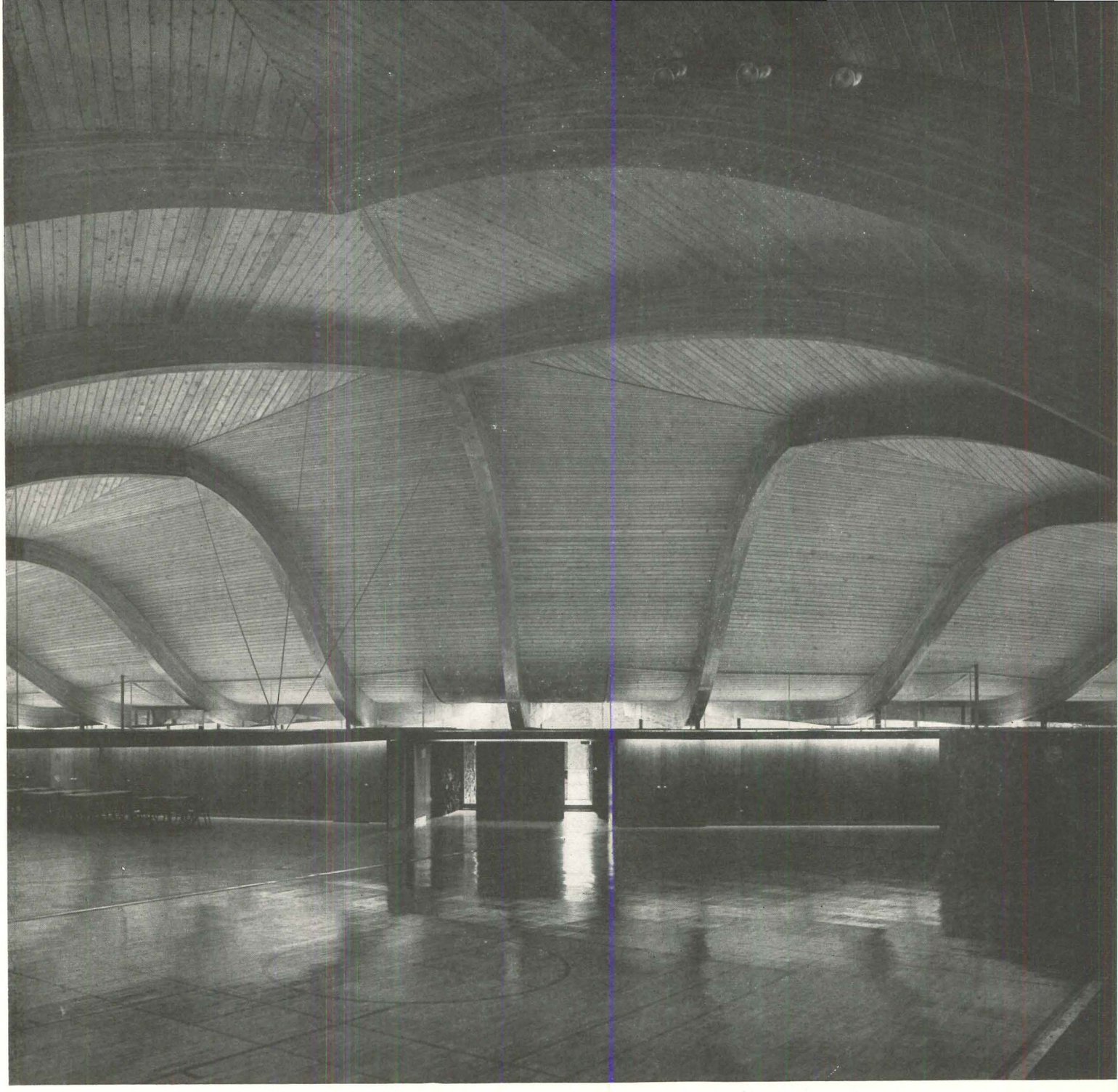


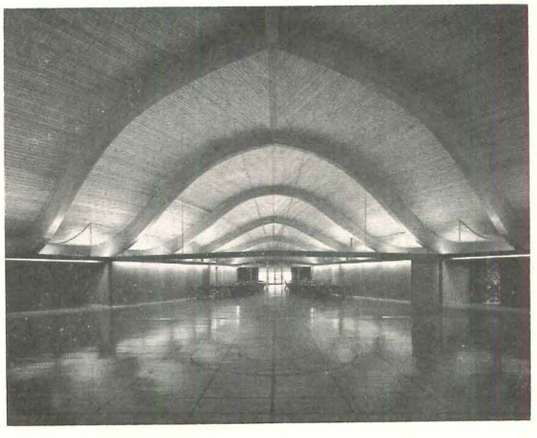


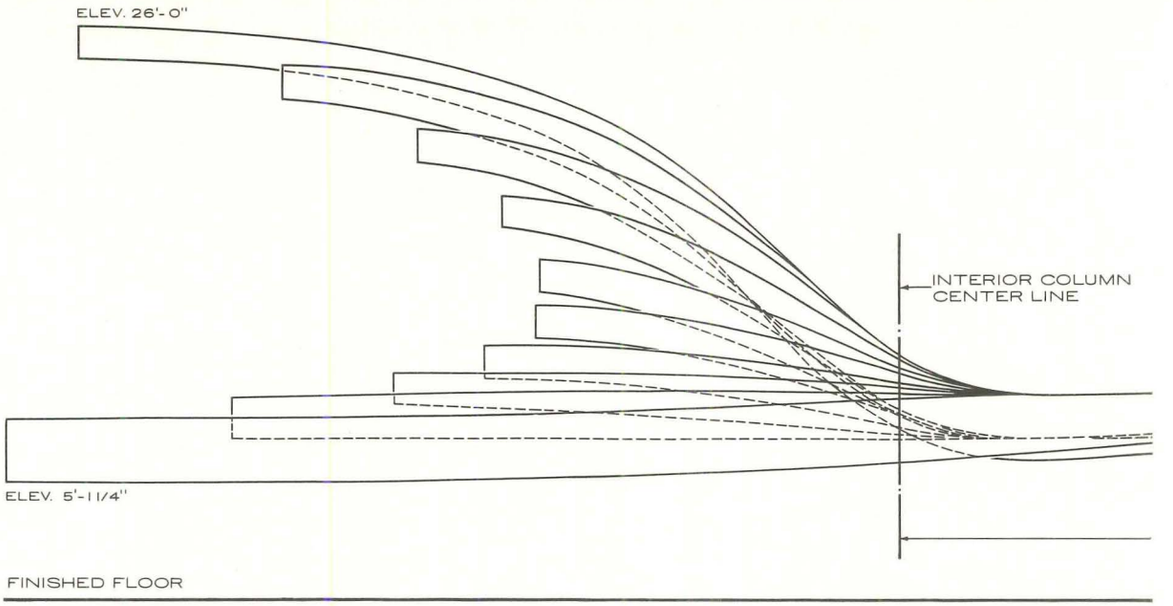




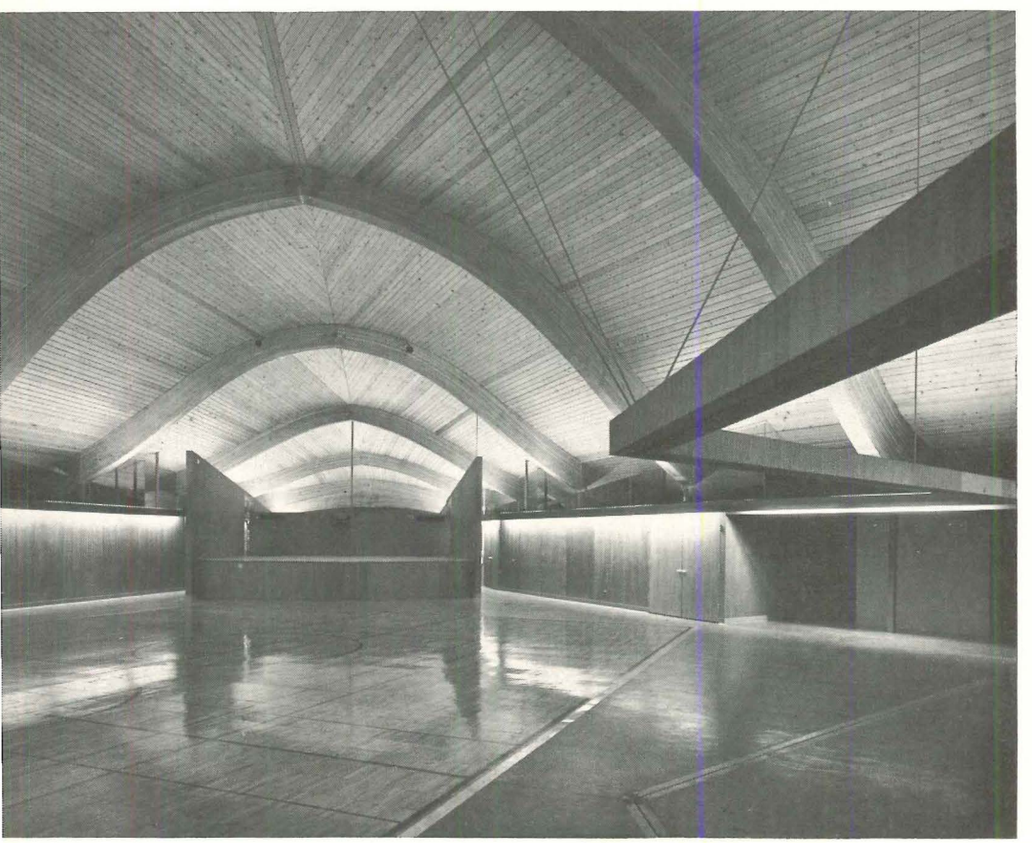
The entire interior is organized under a single wood canopy that conforms to the height requirements of the spaces beneath it. At the extremities of the three-cornered plan the roof is at its lowest (left), *producing an intimate scale for the entrances, kindergartens, and administrative offices. As one approaches the center of the building* (above), *the space swells toward a high point over the gymnasium-auditorium* (above right). *From there, one can see the arches receding over the cafeteria* (facing page, bottom), *which can be closed off by a coiling wood-slat partition.*





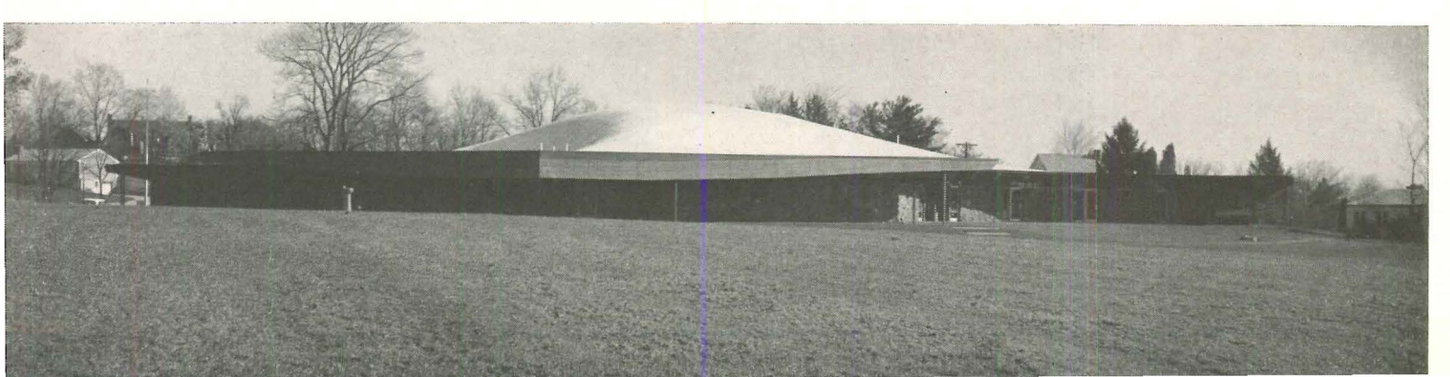


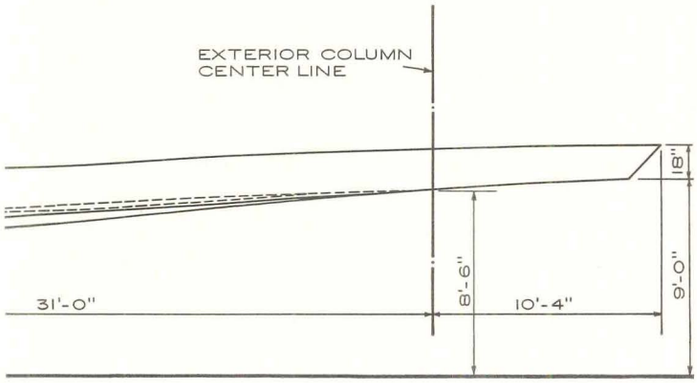
ELEVATIONS OF LAMINATED WOOD BEAMS



The profiles of the laminated wood structural members (above) *determine the form of the interior. All are of uniform shape and elevation at the outer end* (below right) *and are supported on two uniformly spaced rows of columns. The height of the arches they form drops steadily from the center of the building to the points* (left and below).

The classrooms have an almost constant cross-section. Although the ceiling rises slightly toward the exterior, there is a feeling of facing inward toward the common space (right). *The use of glass above door height gives a feeling of unity to the interior.*





The plenum running along the inner side of the room provides a lowered ceiling over the toilet room and defines an alcove for the work counter and storage units.

Continuous light valances illuminate the tackboards and chalkboards below and the ceiling above. The white fir decking acts as a reflector lighting all the major spaces.

Interior materials and colors are related to the natural wood and stone that predominate in the structure. Wall paneling of ribbon-striped mahogany has been used in some areas. The floors are of a vinyl asbestos tile closely resembling cork.

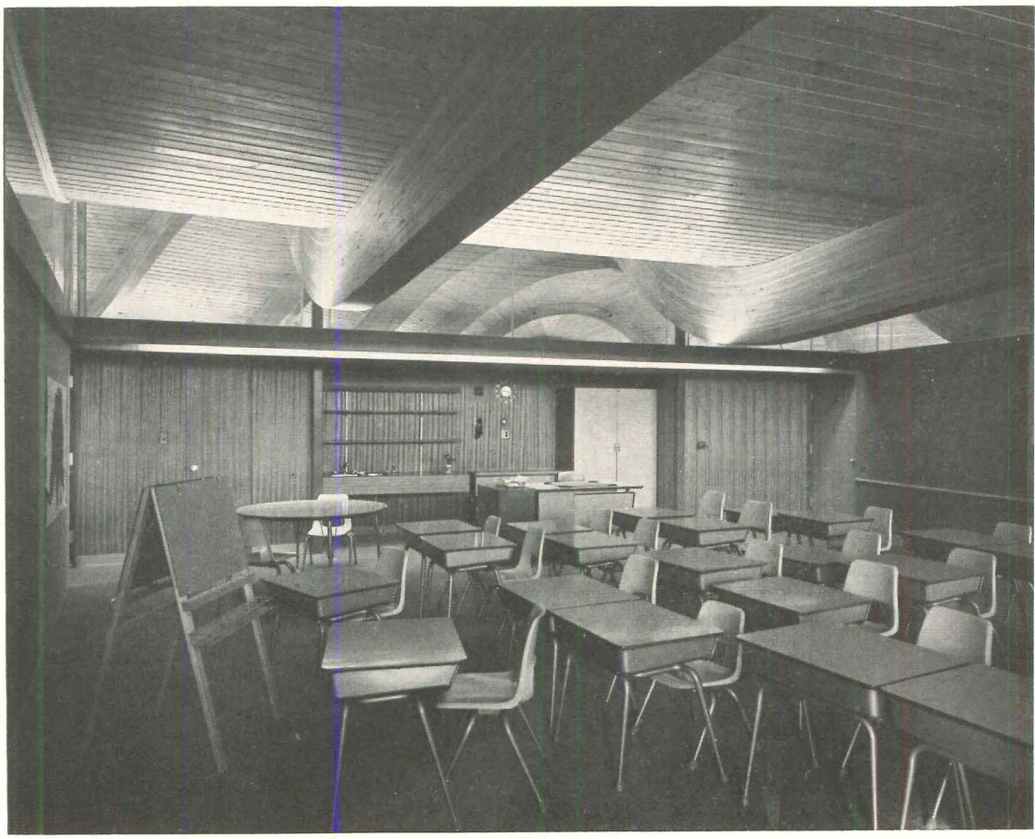
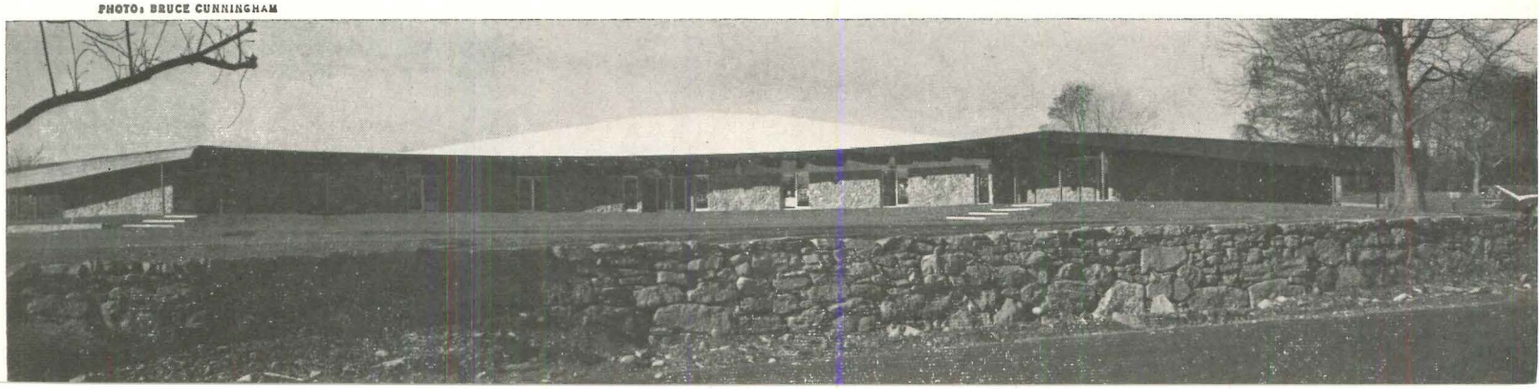


PHOTO: BRUCE CUNNINGHAM



SOM's Landscape Architecture

One of the real pleasures of Park Avenue at this time of year is the luxurious greenery that graces the employee garden on the third-floor terrace of Lever House. The afternoon sunlight filters through the delicate canopy of honey locust trees, and the ivy trailing over the planting beds realizes, probably more successfully than any other, the complementary effect of planting of the sort that Frank Lloyd Wright so often depicted in his drawings.

Lever House represents a midpoint in the development of Skidmore, Owings & Merrill's landscape architecture; one of their earliest efforts was at the Venezuelan Pavilion at the New York World's Fair of 1939. SOM's handsome and remarkably urbane landscape architecture, which the firm has achieved both independently and in collaboration with consultants of high calibre, has received attention as each major project has been completed; but until now there has been no over-all review of this aspect of the firm's concept of total design.

When asked how it happened that an architectural firm has a department of landscape architecure, one of the partners in the New York office replied, "We never thought about not having one. It is all part of the design service." As a general policy, SOM's goal is "always to achieve the maximum architectural potential of each project"—and this naturally includes landscape architecture. As a matter of practical economics, the firm has its own landscape departments because there is a sufficient volume of work to keep them active.

The scope of SOM's landscape architecture is broad: they have designed urban rooftop gardens, the first in 1945 at the Terrace Plaza Hotel in Cincinnati (**1**), which landscape consultant Henry Fletcher Kenney still considers "of a pioneering nature." They have designed country landscapes, such as that surrounding the Connecticut General building (**2, 3**). Courts have been included within buildings both in city and in country settings, such as the one in the Reynolds building (**4**) and the four in Connecticut General (**5**), which consultant Isamu Noguchi calls "sculptural topographical" work. That urbane apartment block, Manhattan House, has an informal garden (**16**), which is a boon to New York's Upper East Side. For the USN Postgraduate School in Monterey, California, (**14, 15**) the firm sited a complex of buildings among the old trees of a former nursery and, in an intellectual exercise, laid out a grid-pattern of paving to unite the plan.

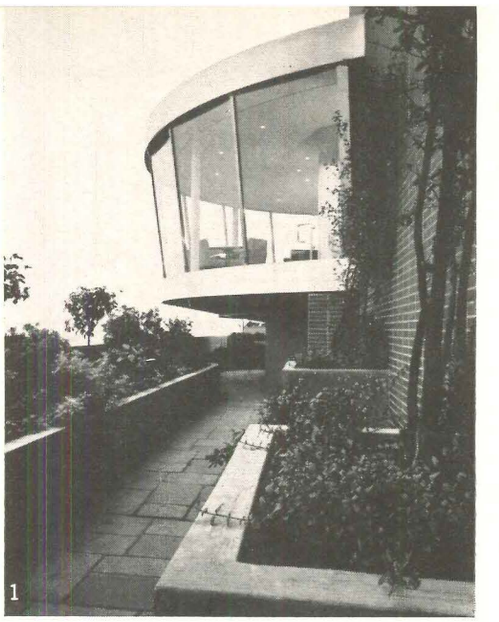
SOM has employed a fairly wide vocabulary of landscape architectural elements: the reflecting canal (**9**), at the Reynolds building; the water garden (**6**), at the Deering Milliken building, which functions as part of the air-conditioning system; sculpture, such as Noguchi's "foursquare" pieces for the First National City Bank of Fort Worth, Texas, (**8**) and his new sculpture-fountain for the John Hancock building in New Orleans (**9**), which suggests "a river of plenty" to its sculptor and has been named "The Mississippi" by locals. Furniture shows the SOM touch, as in the L.O.F. building's granite bench (**10**), which "contains" its plaza by a bold, architectural line.

What these elements reveal is more than an assemblage of careful details; they demonstrate a total strategy to redeem open spaces for people. The "Caterpillar" bench (**12, 11**) and the courts at Connecticut General (**13**), for example, afford comfort and delight.

There are two primary motivations of SOM's landscapes, says one of the partners: "First, both the owner and architect have a civic responsibility to discharge; and second, a good building requires an appropriate and handsome setting."

Where the provision of landscaped or open spaces is possible and proper, they try to build them into the design from the very first. Their method of landscape design is identical to their approach to the building itself and to its interiors: "As the project grows in definition, we repeatedly refer to the original concept to insure that its integrity remains intact and that the details are compatible in all respects."

The landscaping of many SOM projects is handled entirely within the firm. The architectural designer assumes the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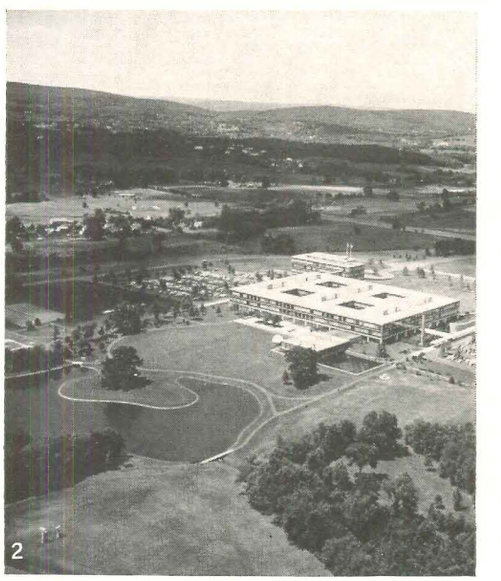
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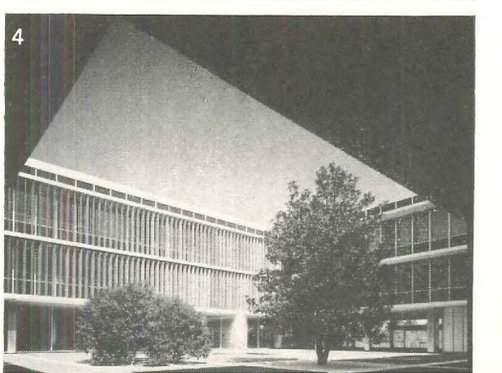
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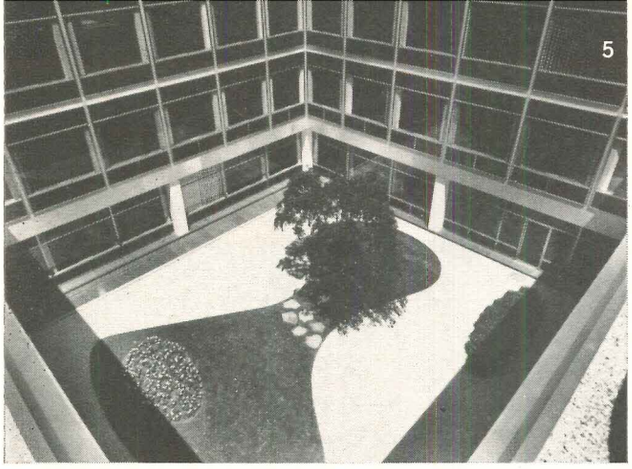
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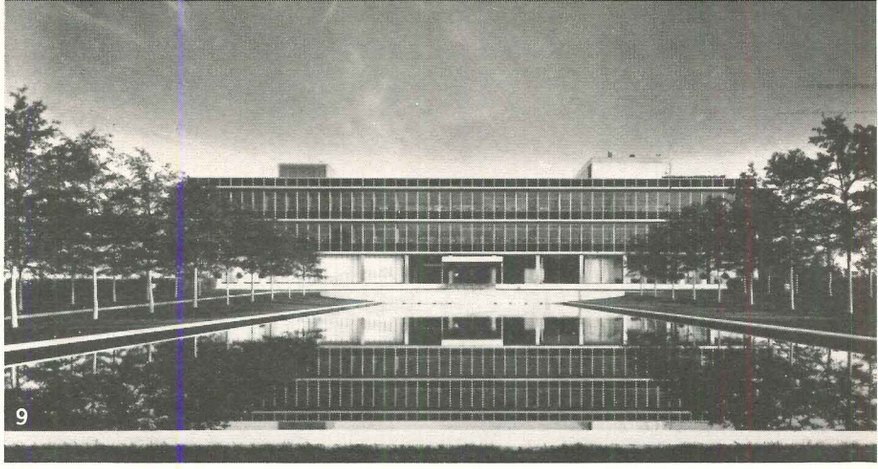
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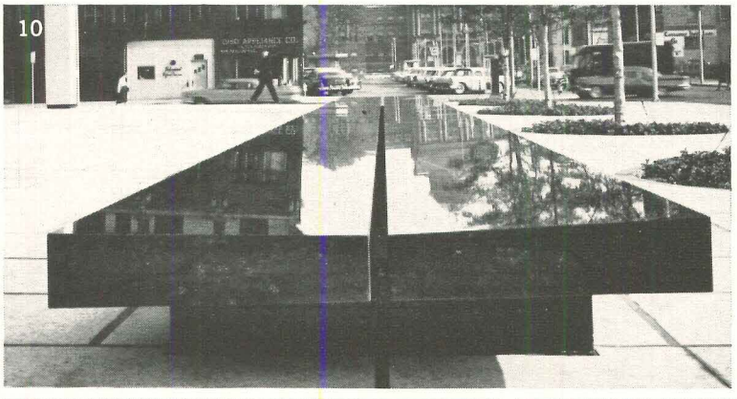
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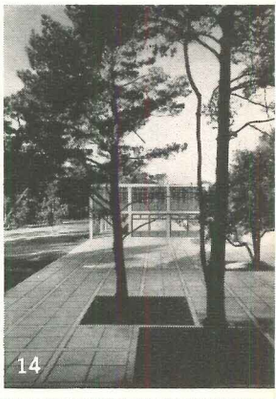
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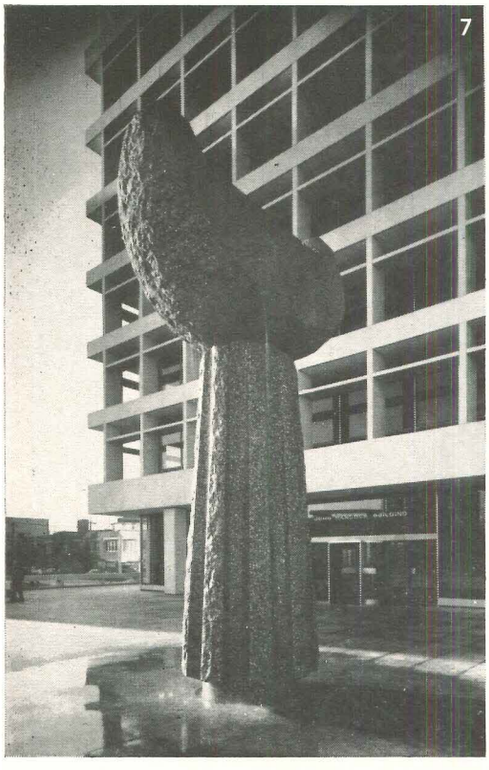
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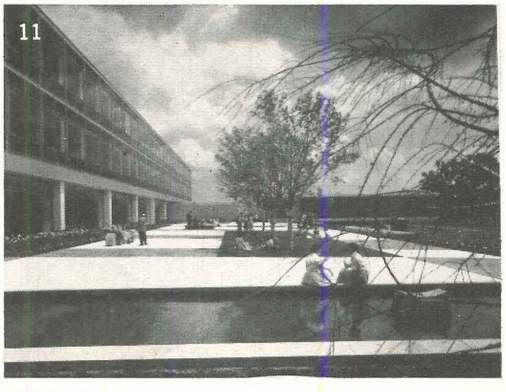
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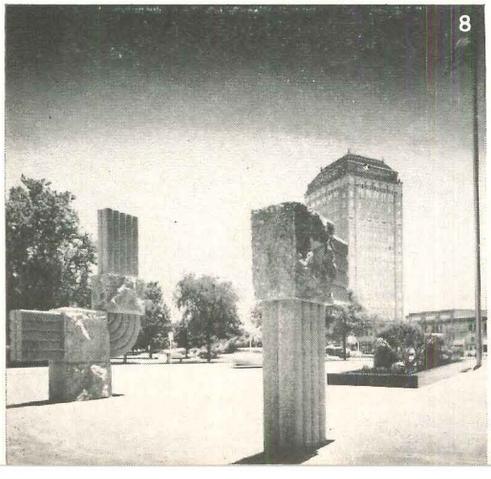
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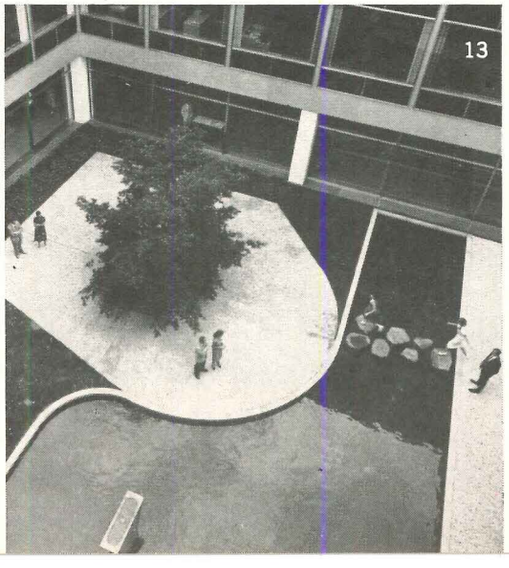
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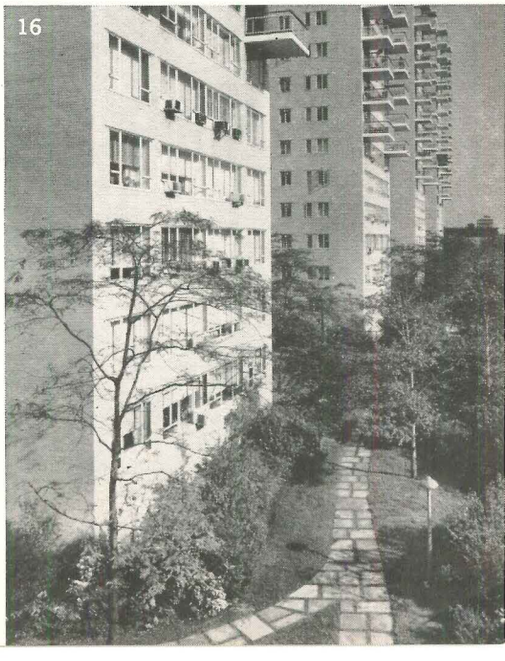
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Lever House *SOM's rooftop garden at Lever House* (this and facing page) *has survived city's atmosphere with minimal replacement.*

open spaces as an integral part of his project, and the design concept comes from him and the design department. He is aided, mainly in technical matters, by the landscape department, whose members are planners and technicians in daily function but who are landscape-oriented in background and talent. The architect in charge, says one of the partners, "may not know one flora from another by name, but he describes the effect he wants to achieve." Another partner continues, "We say we want something low and evergreen, or something gossamer-like, or a great rock; then our landscape technicians go out and find the appropriate material."

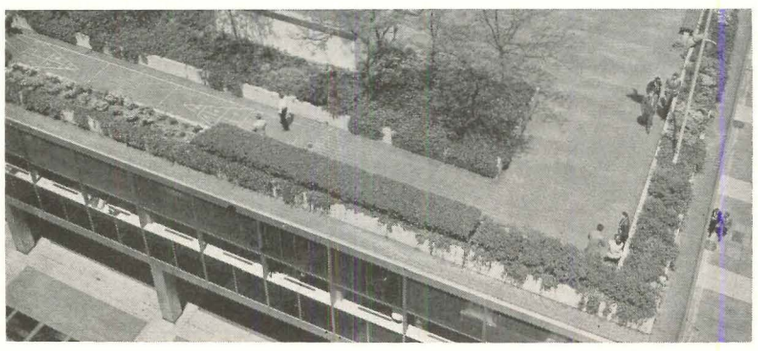
Landscape architects who are concerned about the grand strategy of land-use may feel that SOM seems to consider landscape architecture a kind of decorating of outdoor space. Their total comprehension of programs and potentials, however, has produced landscapes—executed with notable refinement of taste—that satisfy human requirements.

Consultants are sometimes called in by SOM, most often "because we feel that a particular talent can add another design dimension to a project." This is a decision made by the partner in charge. At the John Hancock building in San Francisco, for instance, Lawrence Halprin was consulted to permit him "to exercise his forte for small, intimate garden spaces."

If there is one statement to be made about the aesthetics of SOM's landscape architecture, they feel it is "simplicity." Their landscapes complement their architectural geometry without dominating it. The Union Carbide building is an extreme illustration of this approach, a kind of "negative landscape architecture": the tower rises sheer from an unadorned plaza. It shows ultimate restraint. "And that," says one of the partners, "is a hard thing to do."

SOM works closely with the client from the inception of each project so that he will understand the importance of landscape architecture to his building and so that he will recognize his responsibility to redeem open space for the benefit both of architecture and of people. Convincing a client that he should provide good landscape architecture is no different from convincing him that he can afford a good building.

For photo credits; associated architects: see p. 188.



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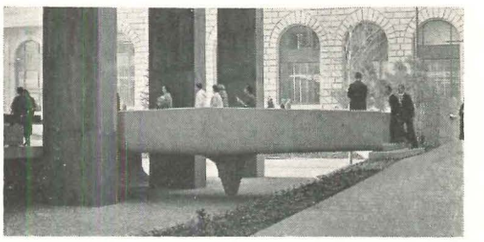
Crown Zellerbach Plaza

The most sensitive urban landscape designed by SOM is the sunken plaza setting for the Crown Zellerbach building and the Wells Fargo Branch Bank in San Francisco ***(1)****. From street level, one crosses a bridge* ***(3)*** *to the lobby of the tower* ***(5)****, or descends to the plaza by a gradual stair of irregular treads (left of bank* ***2*** *and* ***4****), which, on sunny days, take on the appearance of an outdoor theater as people*



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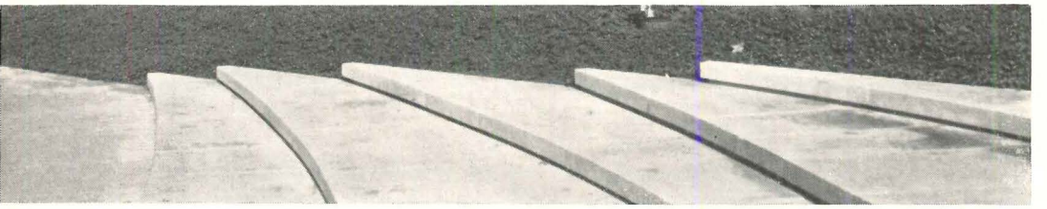

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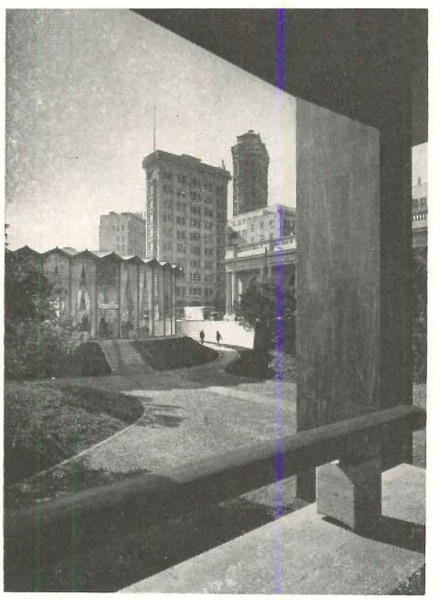
gather on them. The pebble paving is varied by a Noguchi-like insert ***(1)*** *that provides a smooth walking surface. The arc shape is reiterated in David Tolerton's sculpture-fountain* ***(8)****, which adds sparkle, motion, and a baffle to the sound of traffic. In the paths, the arc grows and changes into a serpentine walk* ***(6, 7)*** *around free-form, Eckbo-like mounds of ivy and beneath the shelter of occasional trees* ***(9)****. This richly orchestrated composition of landscape architectural effects produces a varied cityscape any community would be proud to possess.*



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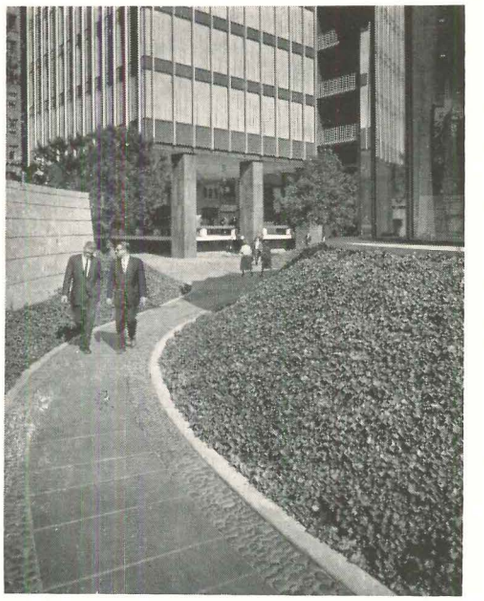

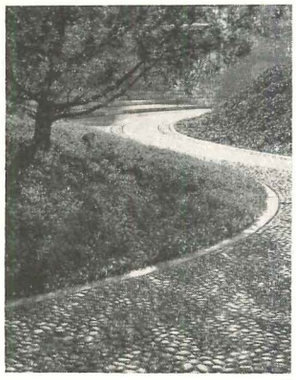

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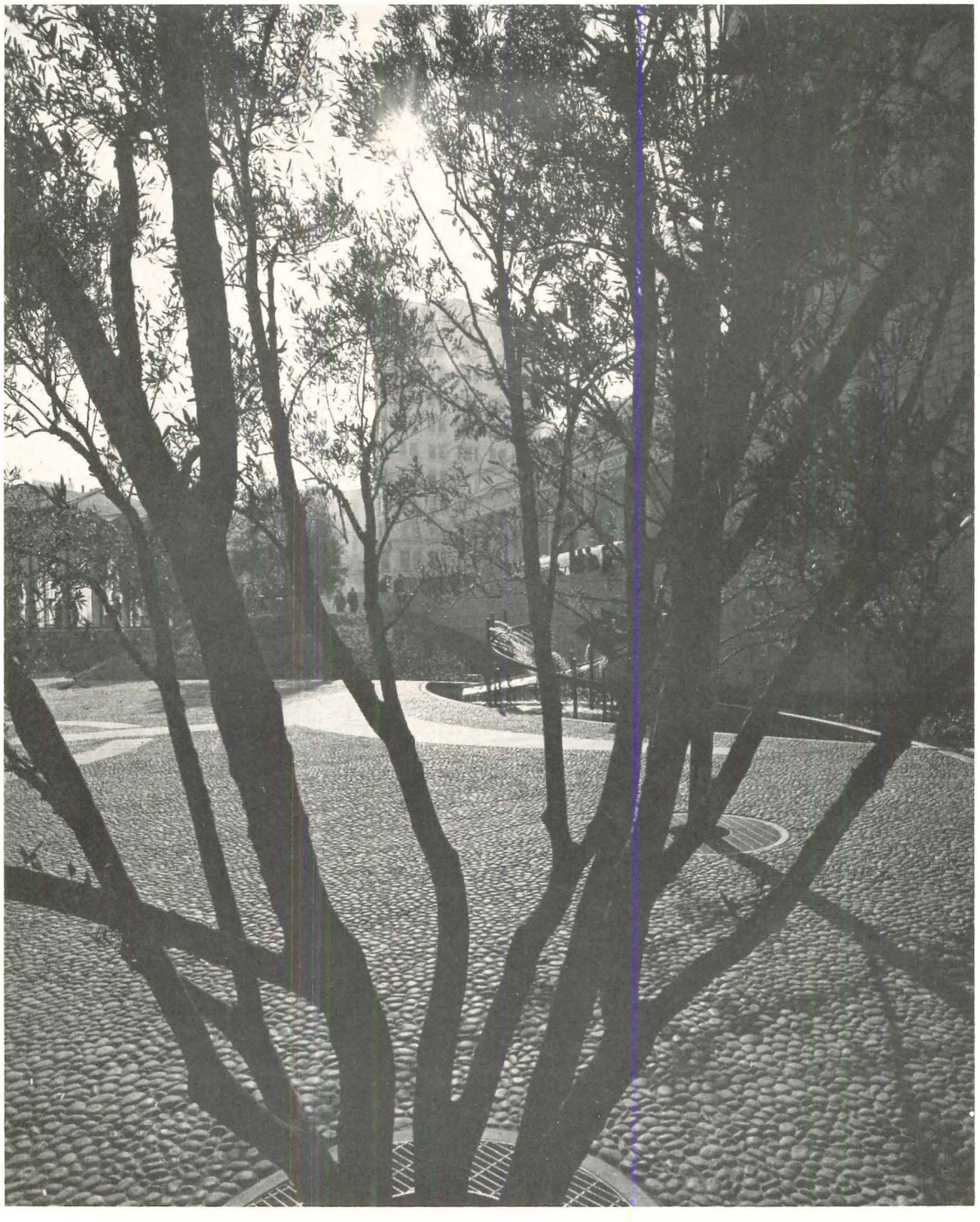
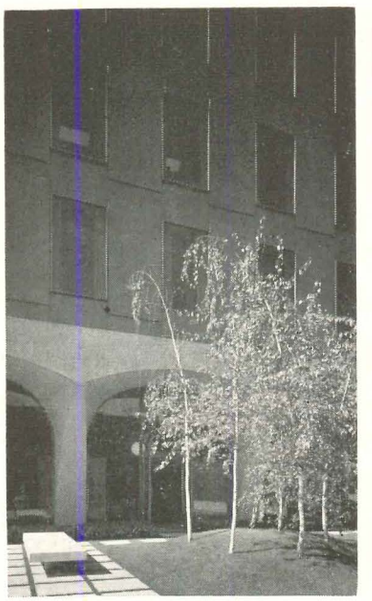
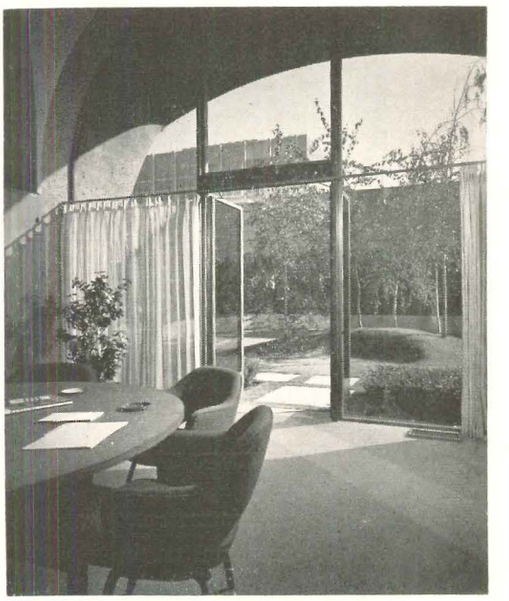


Landscape consultants work with SOM in various ways. Of the John Hancock garden in San Francisco (right and facing page) *SOM says, "The design was a mutual affair; Lawrence Halprin then took over plant selection and supervision, and we designed and detailed the garden walls, paving, and furniture." Halprin continues, "I started talking with SOM about the garden, its spaces, its impact, its conception, and its feel. In many ways, the sketch resulting from our first conversation has all the elements of the final design. Throughout the design period, there was a great deal of mutual comment and critique. These cross-fertilizings are of enormous value, when creative people are on the same wavelength. I believe that art is a process, primarily, and that the product is only as good as the process." The John Hancock garden is on a second-story rooftop off the tower*





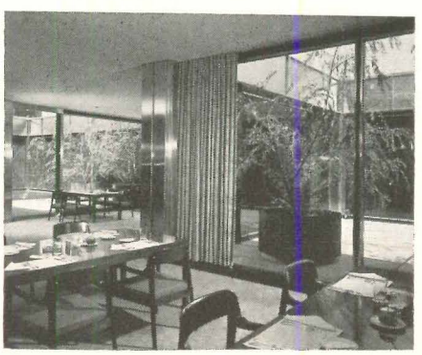
John Hancock Building

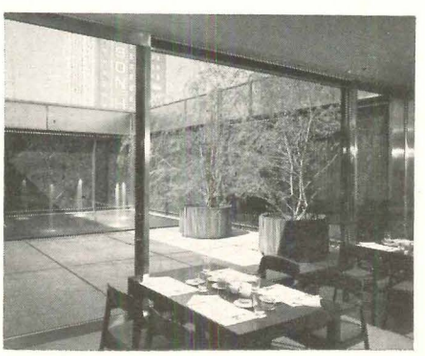
Harris Trust Company

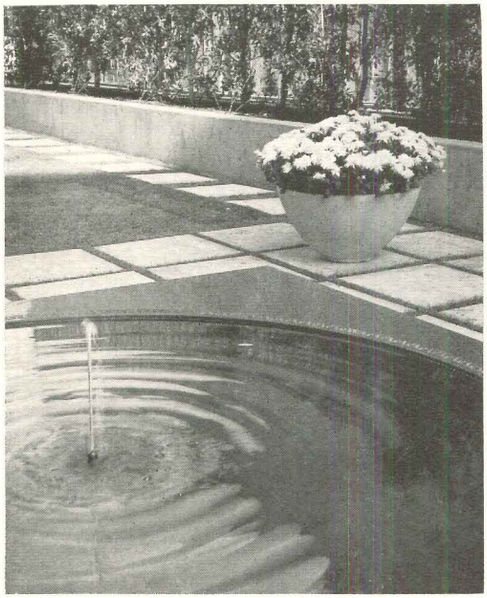
reception area. "The idea," in Halprin's words, "was to throw down a carpet of green grass and within this envelope to dispose paving blocks of travertine and a fountain and pots and some benches and trees in order to generate an urbane but green-bowered space. This was to be somewhere between a plaza and a garden, and urbane and urban—not suburban. The garden recaptures for us a space in a city, where land is at a premium, that might otherwise have been devoted to tar and gravel and vents."

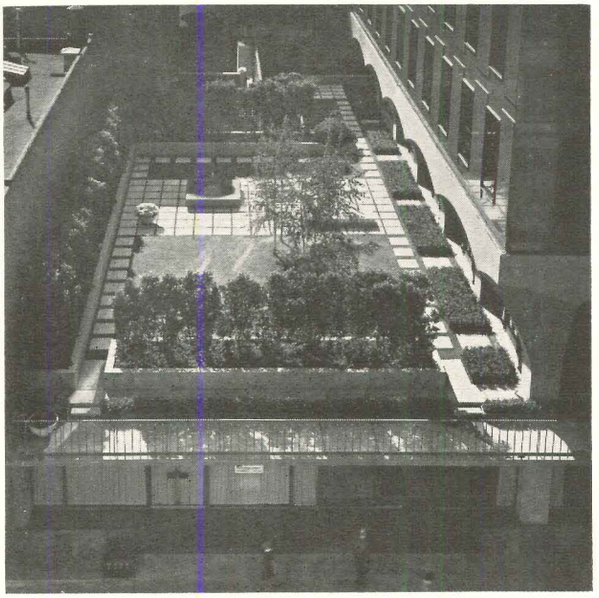
A close integration of landscape, architecture, and interior was achieved: the relationship between the mound under the clump of birches, the arches of the building itself, and the furniture of the conference room (above right) *is exceptional.*

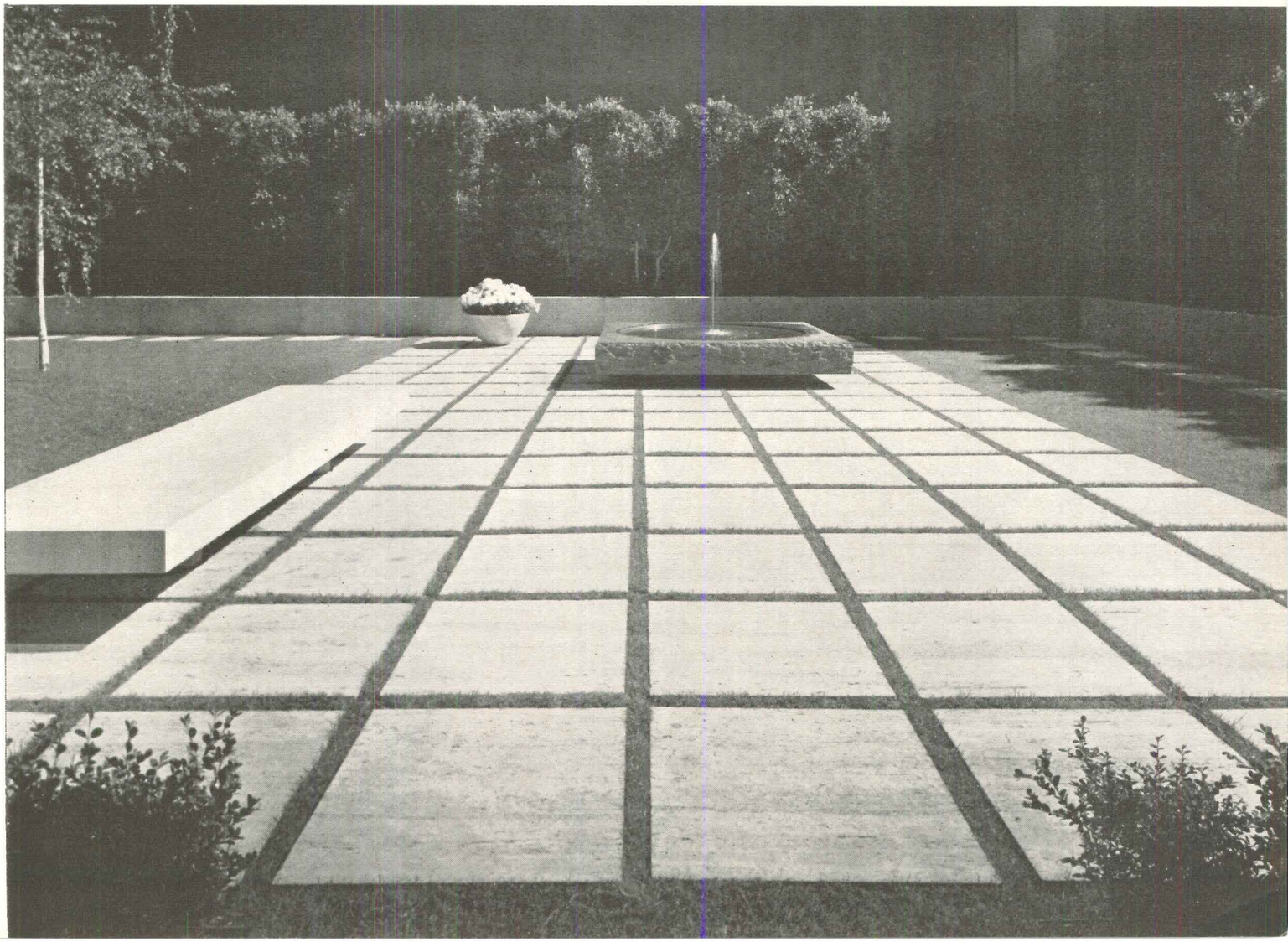
Two courts designed by SOM on the twenty-third-story rooftop of the Harris Trust Company building in Chicago (left and below) *are surrounded by glass-walled dining areas. The garden courts, say SOM, "are really fountains with trees." Every table has a view of the outside—the cityscape beyond the willow trees and a splashing yet quiet sound of water falling into limpid pools.*

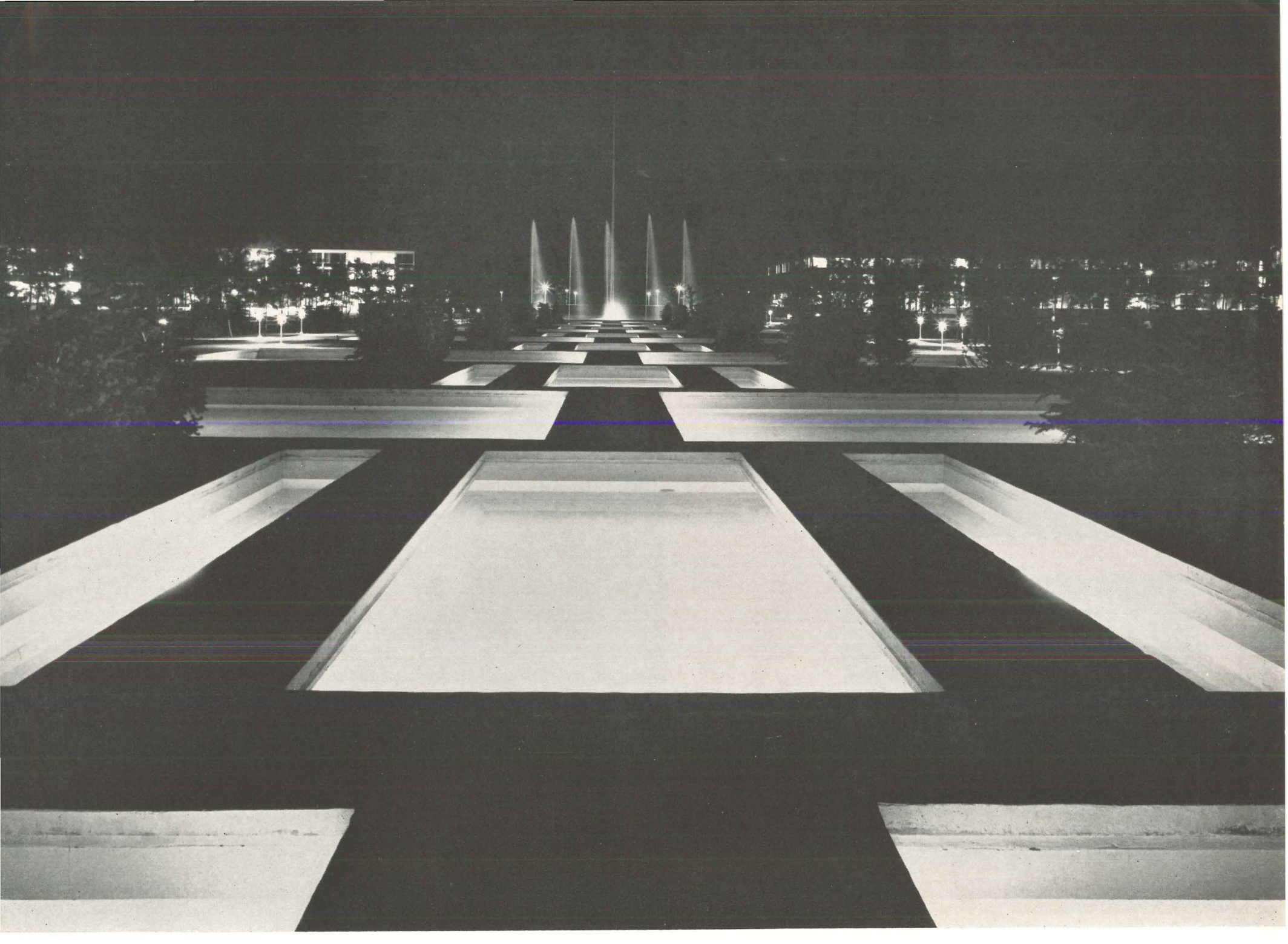












U. S. Air Force Academy

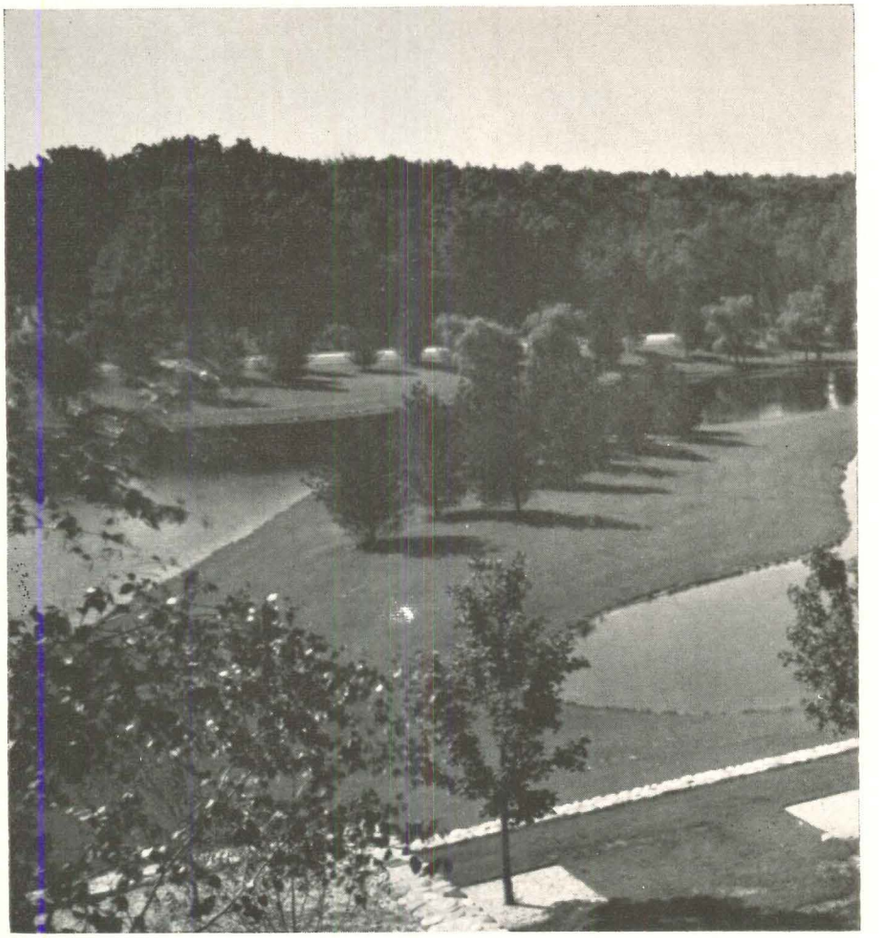
The mall at the U.S. Air Force Academy, which relates the dining hall (below) *to the cadet quarters* (above), *is referred to as the "Air Garden" by landscape designer Dan Kiley and SOM. The garden is on the arid eastern slopes of Colorado and is reminiscent of Indian and Moorish water gardens, where water was equally precious. Its formal geometry is given spatial variety by quartz aggregate bridges, which afford a pleasurable zigzag walk through the water mall.*

"At the Upjohn Company site" says Hideo Sasaki, "we worked closely with SOM from the inception of the design and carried it through working drawings, selection of materials and supervision; while on other projects, such as the Parke Davis building, we did only the design part, and SOM's staff did the working drawings and supervision."

*"Our intention," continues Sasaki, "was to provide a completely unified design, contrasting biomorphic forms with rectilinear geometry" **(3)**. The site is graded "to reflect the rolling countryside of Michigan" **(1)**, and an outline of pines, recalling the local fence rows, protects it from suburban encroachment.*

The planting reflects ecology: willows are close to water, birches on middle ground, and pines and sugar maples on higher levels. Water is used extensively to relate to Michigan's nearby lake district. Where a large pond was envisioned, a sewer line cut across diagonally; the designers created interlocking lagoons, deemphasizing the diagonal division with planting.

*Seven courtyards **(2, 4, 5, 6)** exhibit diverse characters: a marble court, typical of SOM's approach **(2)**, is off the formal offices; other courts are more oriental in character **(4)**. "Biomorphic materials"—plantings and native Michigan rocks—are contrasted with rectilinear vents and grilles and with the space frame. SOM feels that the space frame works well throughout, just as the entablatures of Roman architecture and the elaborate eaves of Japanese temples complemented their landscapes.*



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The Upjohn Company

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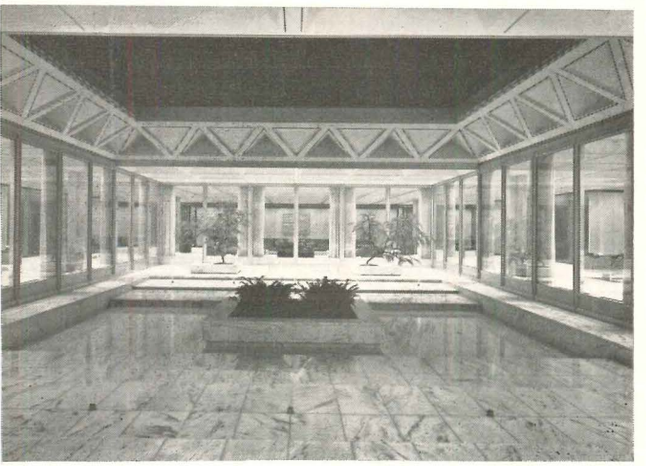

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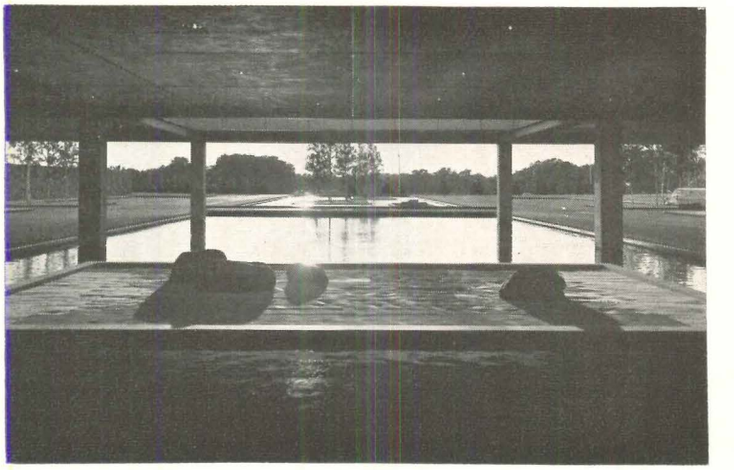

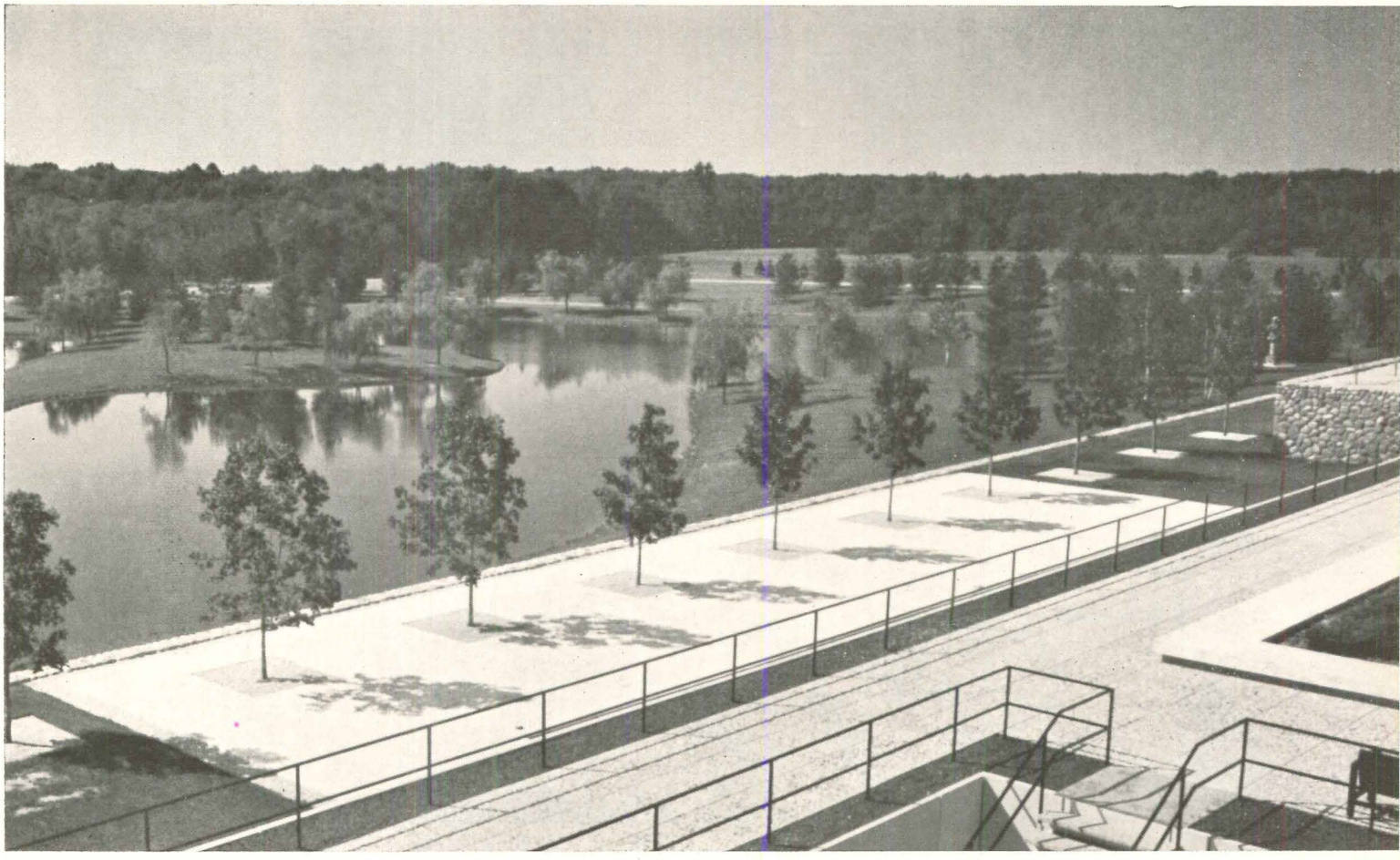

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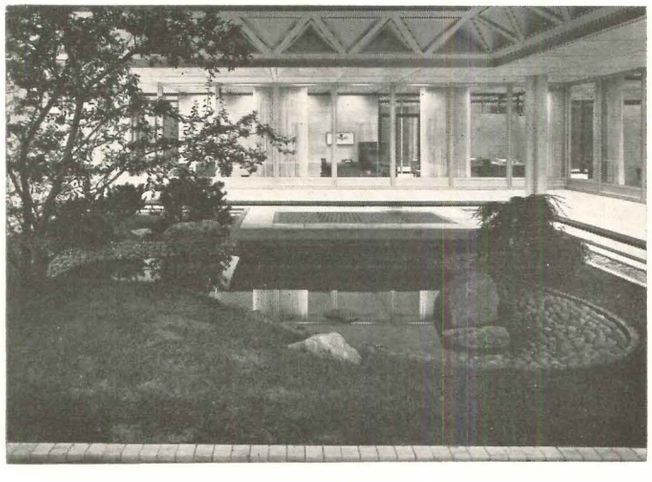

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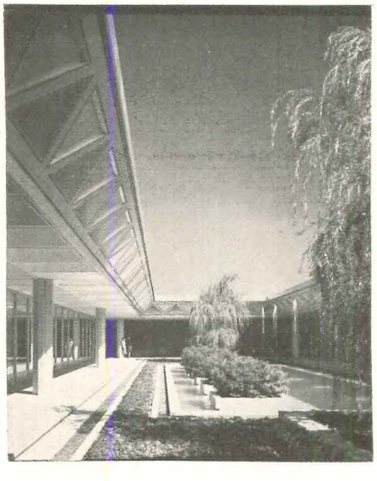

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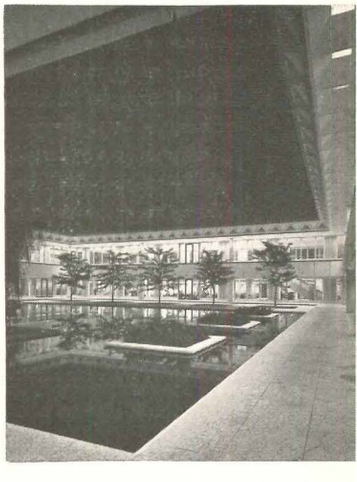

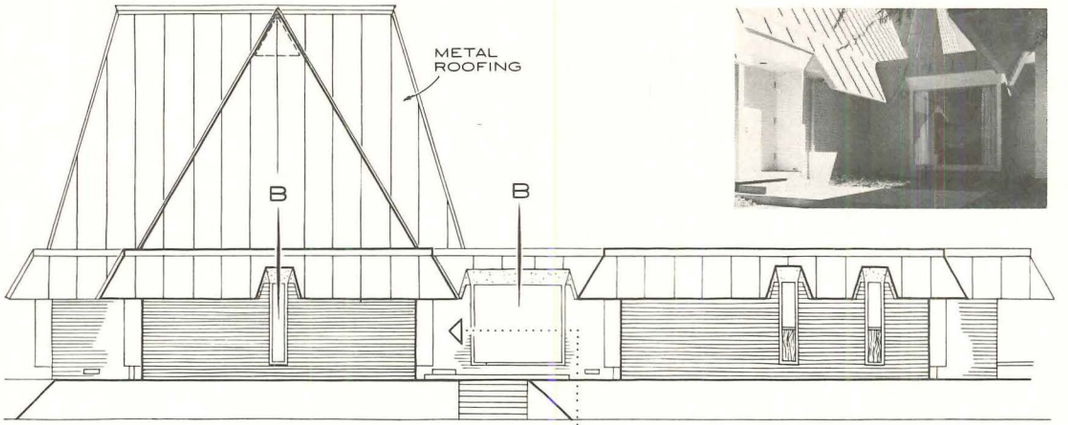

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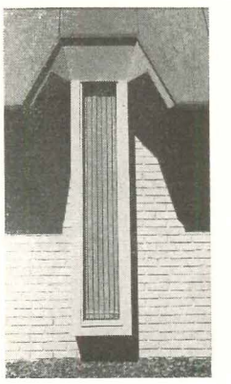
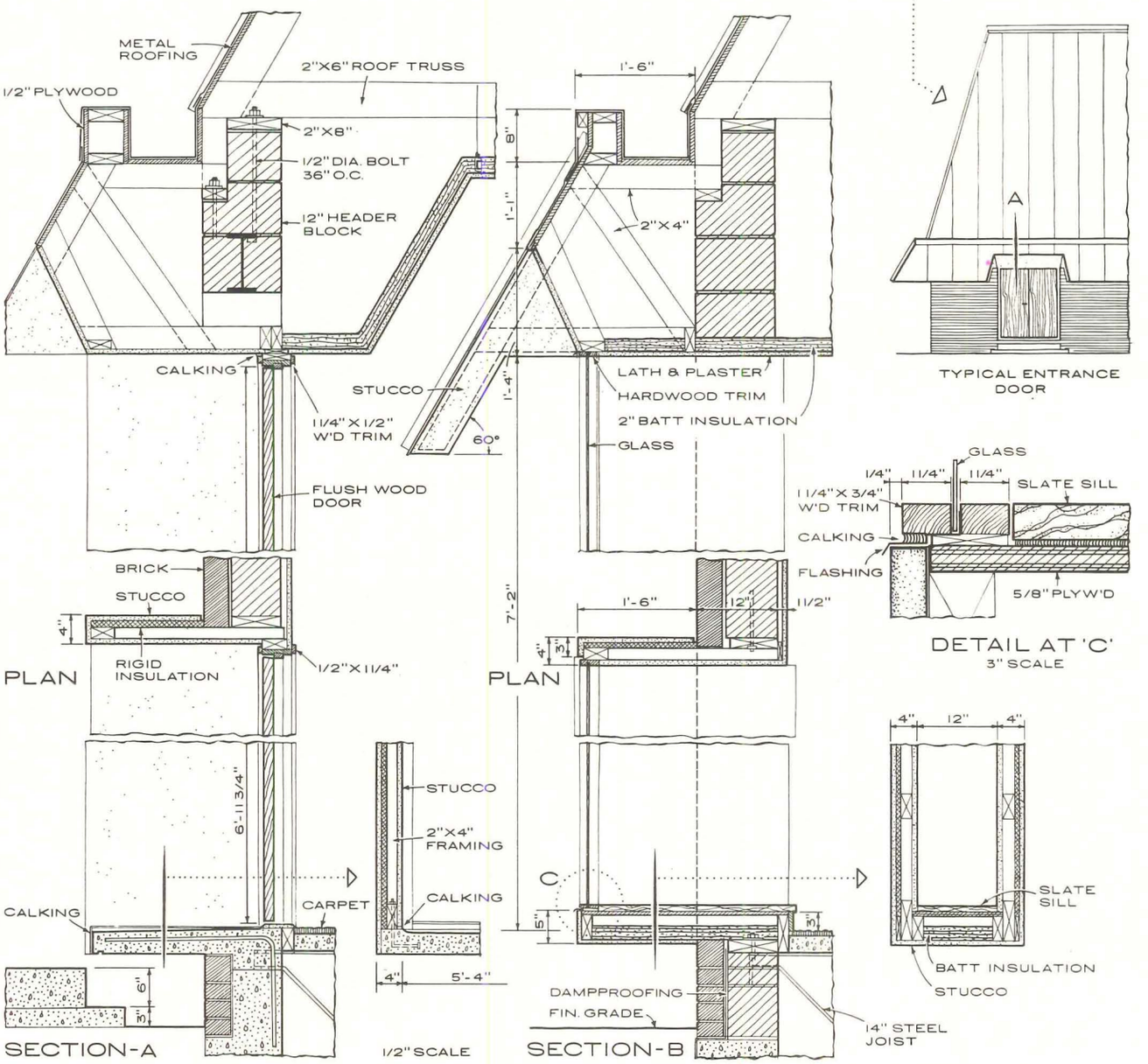
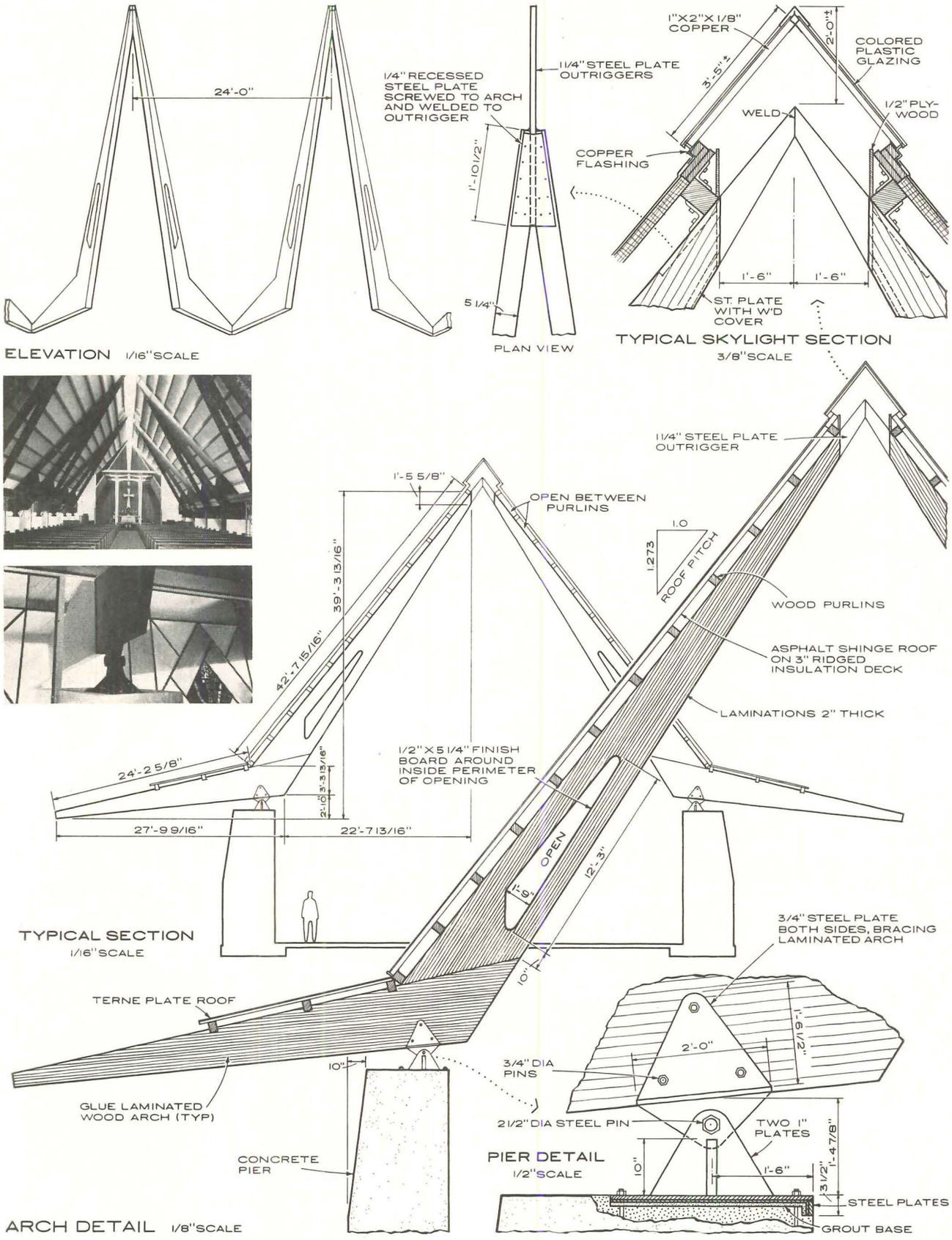




HALEY FUNERAL HOME: Southfield, Michigan BIRKERTS & STRAUB, Architects	SELECTED DETAIL ENTRANCE AND WINDOW DETAIL



GRACE CHURCH: Massapequa, Long Island SLATER & CHAIT, Architects	SELECTED DETAIL ARCH DETAIL

MATERIALS OF TOMORROW

BY H. R. CLAUSER

A new technology of materials, presently emerging, will become one of the dominant factors of our industrial life in the next 25 years. How it may affect future architectural structures and building components is discussed by the Editor of Materials in Design Engineering, *a Reinhold publication. This article has been adapted from a talk given by Hank Clauser earlier this year before the New York Chapter of the Producers' Council.*

The three eras designated by historians as the Stone Age, the Bronze Age, and the Iron Age, were thus labeled for a particular reason: because each was dominated by and dependent upon one of these materials. Today, we are in a new age of materials; evidence everywhere indicates that they are becoming the dominant factor in the design of our products and buildings.

What are the characteristics of this new era—one that is certain to influence significantly the building industry in the coming years? One is the tremendous increase in the number and variety of available materials. For several centuries, a relatively small number of them seemed sufficient to meet most of our needs. Around the beginning of this century, however, new ones began to appear in increasing numbers. Within the last several decades, we have seen a host of new materials—aluminum, magnesium, plastics, alloy steels, to name a few—come into practical use. Recently, Dr. S. W. Herwald, vice-president in charge of research at Westinghouse, stated that his company now makes use of 14,000 different materials in its products.

Since the turn of the century, the number of materials has been increasing at an exponential rate (1). For example, plastics and rubbers, practically unknown at the beginning of the century, have increased in variety several hundredfold. It is also evident that their rate of growth (as well as that of ceramics and glasses) will continue to increase in the future.

Not only have they increased in number, but also in the variety of combinations. New laminates, clad and precoated materials, reinforced plastics, and honeycomb materials are being introduced almost every day.

This availability of an almost unlimited variety of materials is greatly altering our approach to materials selection and application. Until recent years, manufacturers and builders were forced to fit and tailor their products and structures to the properties provided by the relatively few existing materials. Now, to an increasing extent, the desired performance of a structure can be established first, and then the material or materials with the right combination of properties to meet the performance requirements can be obtained.

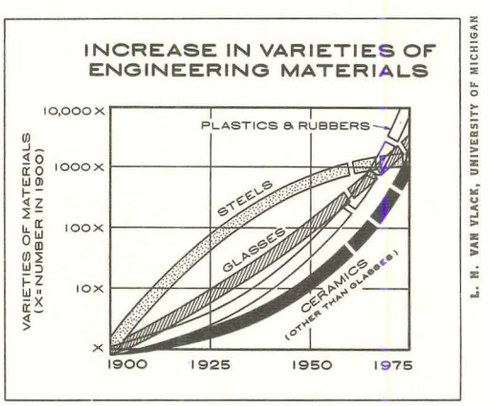
In the future, this "functional" approach will, in many cases, lead us to the ultimate goal of truly tailor-made materials. Thus, the architect and engineer will decide what they want to achieve in a structure, and then materials will be actually designed to meet their requirements.

What will make all this possible is the emergence of a new science and technology of materials. Although it is still in its formative stages, many leaders in our technical world believe that the next quarter century will see this new science become one of the dominant factors in our industrial technology.

Its principal aim will be to explain the behavior of materials in terms of their internal architecture. For it is the structural arrangement or pattern of the atoms, molecules, and crystals that determines a material's strength, its resistance to heat, and its performance under other service conditions.

It follows that once the relation of the microscopic structure to engineering properties is known, the structures of materials can then be arranged or tailored to give us the exact behavior we want. As Professor Arthur R. Von Hippel of MIT has said, the engineer "can play chess with elementary particles according to prescribed rules until new engineering solutions are apparent. Instead of taking prefabricated materials and trying to devise engineering applications consistent with their microscopic properties, one builds materials from atoms and molecules for the purpose at hand."

The balance of this article will demonstrate how this modern-materials science,



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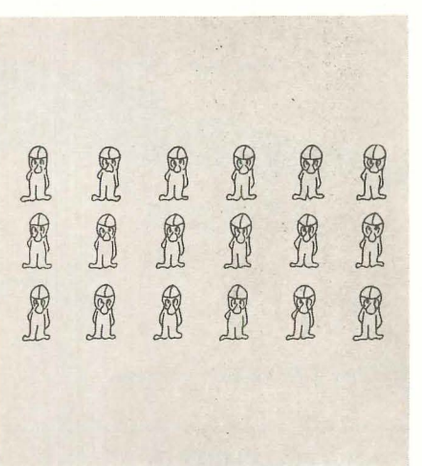

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and related engineering concepts, will shape the materials of tomorrow.

Strength of Materials

Because the advance of the engineering side of our civilization is closely tied in with the rising strength of materials, let us first consider how strong these materials of the future will be.

For the last 10 or 12 years, many materials experts have been predicting the advent of materials with strengths of over 1,000,000 psi. This is 10 to 20 times the strength levels obtained in the structural materials commonly in use today.

Why and how is the tremendous increase in strength possible? The answer is that we have learned why metals break —that is, we have discovered the basic mechanism of fracture at the crystal and atomic level. With this knowledge, ways are being devised to counteract this basic fracture mechanism and thereby greatly increase the strength of our structural materials.

Let us consider briefly why metals break and how materials men hope to multiply present-day structural strengths ten to twentyfold. A model of a perfect crystal, composed of atoms arranged in a regular pattern, is shown (**2**). Each of the little gremlins represents an atom. If we could produce materials composed of perfect crystals like these, in which all the gremlins behave and stay where they belong, then we would easily achieve our 1,000,000 psi strength. In our present-day materials, however, the gremlin atoms usually do not behave as they should. As the next illustration indicates (**3**), one of them has disappeared and a column of three extra gremlins has appeared. This type of behavior causes all sorts of difficulties—or dislocations, as they are technically called. Under stress, then, these dislocated gremlins move like a wedge through the crystal, causing weaknesses that subsequently lead to cracking.

A number of ways have been devised to control or frustrate the movement of such dislocations, and herein lies the hope of producing ultra-high-strength materials. One method, now employed, introduces a different kind of atom into the path of the dislocation, thereby stopping the movement of the gremlins through the crystal (**4**).

Metals

What will be the practical results of these advances in the next 10 years? In the area of steels, theoretical attainable strength is 2,000,000 psi (**5**). At present, the common structural steels are below 100,000 psi. The new American Institute of Steel Construction Specifications provide for use of steels up to 70,000 psi (that is, 50,000 psi yield strength). Today, other industries, notably aerospace, are using steels up to 350,000 psi. Thus, by 1970, we can almost certainly expect that wrought-steel shapes having strengths of at least 500,000 psi will be commercially available. Incidentally, steel wire with strengths of 700,000 psi is already being commercially produced.

Within the next 10 years, most other metals will also increase in strength anywhere from 50 to 100 per cent. Aluminum alloys, for example, will most likely reach the 150,000 psi mark (ultimate), or almost double present-day strengths.

Reinforced Plastics

Next, let us examine the future strengths for reinforced plastics (**6**). At present, glass-cloth, reinforced plastics can resist a tensile stress of 85,000 psi, and filament-wound structures go as high as 160,000 to 200,000 psi.

As one can see, the potentially attainable strength of glass fibers is around 600,000 psi. By 1970, glass-cloth constructions may hit 100,000 psi, and filament-wound structures, 250,000 psi.

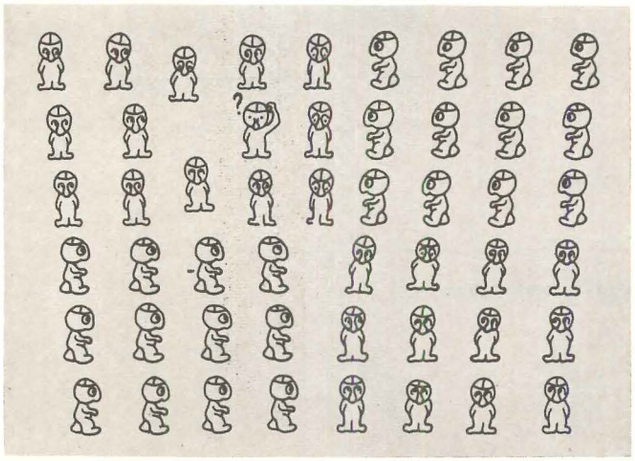
Other Fibers

But we have just begun to realize the potential of reinforced plastics. Greatest advances will be made with other types of fibers. With these, the potential strengths are 1,000,000 psi plus boron fibers, for use in high-strength, lightweight structural composites, are already under development and have a tensile strength of 500,000 psi and modulus of 55,000,000 psi, which indicates extremely high rigidity.

Composites

One of the important results of the functional approach to materials selection and

ADAPTED FROM DRAWINGS BY L. S. DARKEN, UNITED STATES STEEL CORP.



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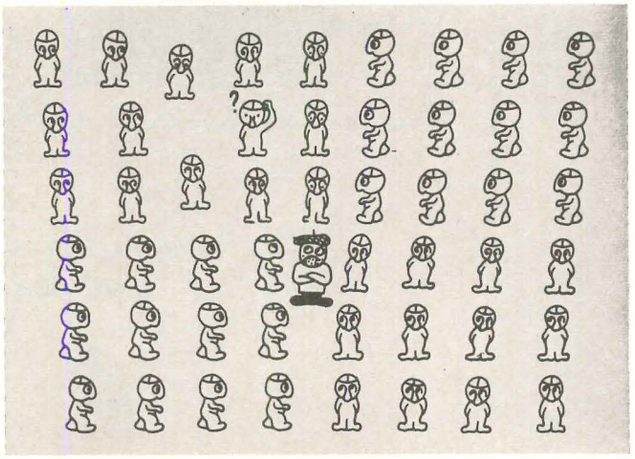

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application, described earlier, has been the rise in the development and use of composite materials, such as sandwich construction and reinforced plastics. In composites such as these, the advantageous properties of two or more constituent materials combine to provide the desired service performance.

The line of development in composites is proceeding from the original concept of joining or bonding two or more different materials together to a second stage of incorporating or mixing one material internally within the other, and to the final procedure of combining atoms and molecules of several different materials.

Sandwiches

The first stage of development has in the short space of a decade provided us with prepainted wall panels, plastics-metal and metal-wood laminates, and sandwich structures. In particular, we have seen the tremendous growth of plastic-metal laminates that combine the strength, rigidity, and dimensional stability of steel and aluminum with the decorative textures and colors of vinyls.

Refrigerator cabinets have been completely constructed of a plastic sandwich composite. The sandwich is simply cut to proper size and folded to form the refrigerator walls. The core is a rigid foam to provide insulation and rigidity; the faces, which become the inner and outer surfaces, can be any sheet material, depending on the particular requirements.

U.S. Steel's "Study in Steel" developed deck components for a patio which combine steel and any one of a variety of surface treatments: wood, cement, terrazzo, or plastic with nonskid aggregate.

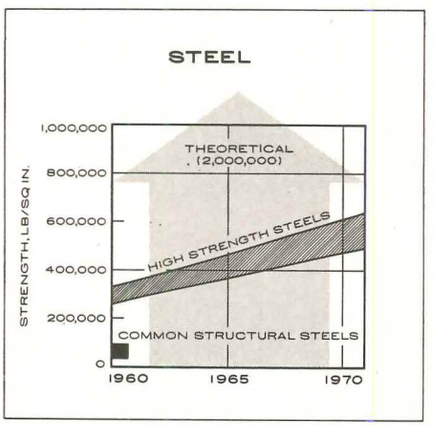
These instances indicate the continued trend to prefab panels that will be composed of materials layers, which, taken together, will be an integrated structural system providing exterior protection, strength and rigidity, soundproofing, insulation, interior lighting and heating, and decorative characteristics.

Intermixing of Materials

From the layer composites, we have already progressed to the second stage of intermixing different materials to form composites. Glass-fiber reinforced plastic is a classic example. Reinforced plastics, however, are only one of many such composites. Now, metal-ceramic composites are being used in missile applications (7). In various stages of development are plastic-metal composites in which the metal phase is in the form of powders, particles, fibers, or filaments. A plastic-steel wire composite has been suggested for use as an overhead sun screen. The material consists of a woven-wire fabric embedded in vinyl plastic.

Functional Materials

Traditionally, we have viewed materials as monolithic, inert entities. But the findings of materials science increasingly indicate that materials can be treated as dynamic systems; that they can be designed as end products and made to perform the functions of mechanisms. It is



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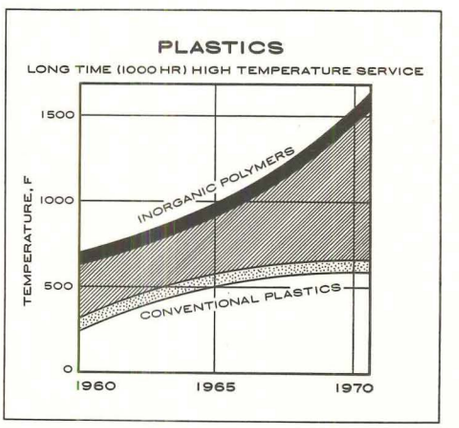

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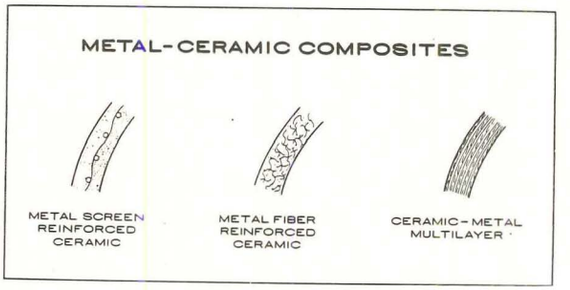


through this functional approach to materials that the greatest advances in the future will be made.

Let me illustrate what is meant by functional materials. A presently used method for shading the interiors of buildings is found on the exteriors of the new Ala Moana office building in Honolulu. Over 3000 aluminum louvers automatically open and close, depending upon the position of the sun. Solar-battery sensing devices and 76 power units are required to operate the system [FEBRUARY 1962 P/A]. However, in the future, the shading might be accomplished by using a functional material. The material would be light- (or sun-) sensitive; it would darken under the direct rays of the sun, but would become progressively more translucent as the sunlight diminished **(8)**. It has been reported that such a glass is already in the advanced development stage.

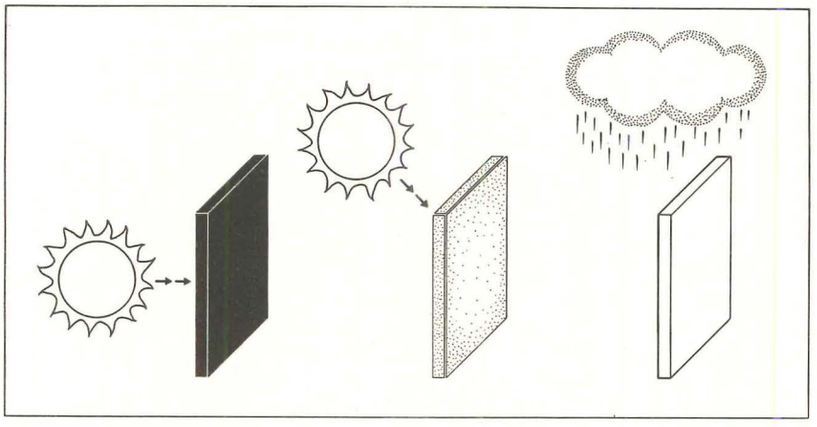
This is an example, therefore, of a situation in which we do not simply have an inert piece of material. We have, instead, a material that adjusts itself the way we want it to, to a changing service condition or a changing environment. Of course, we have always known that materials can and do react to their environment. However, we have almost always acted as if they did not; or we have always thought of them as reacting adversely, as in the case of rusting in steel. However, in the case of aluminum, reaction to its exposure to atmospheric conditions is beneficial, because of the formation of a tough oxide coating that increases its corrosion resistance. In the case of manganese steel, which is used for power-shovel teeth, the steel actually increases in hardness and in its resistance to wear under conditions of service.

Metamorphic Materials

One class of modern functional materials that has many intriguing future possibilities has been termed metamorphic materials by Dr. Myron J. Coplan of the Fabrics Research Laboratories, Inc. These are materials produced with one set of characteristics, which, during service, are actually changed by the service conditions to provide an improved or different set of performance characteristics in the material.

A current practical demonstration of this metamorphic approach is the plastic ablative re-entry nose cones on our missiles. Here, the material is tailored so that the high frictional heat during re-entry will carbonize the material, making it more heat-resistant for the length of time required to deliver the payload.

This simple concept will be the basis of an entirely new and highly sophisticated area of materials development. We can foresee materials that will literally improve with age: flooring materials and counter-tops that will improve in wear-life under traffic and abrasion; materials that will change in color or texture under given circumstances; materials that will improve in moisture resistance or weathering during exposure; and materials that will become more flexible or more rigid, harder or softer, in service accord-



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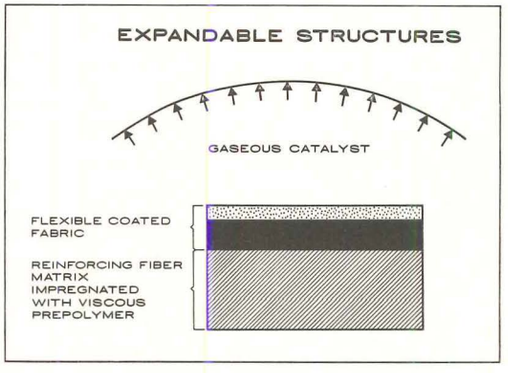

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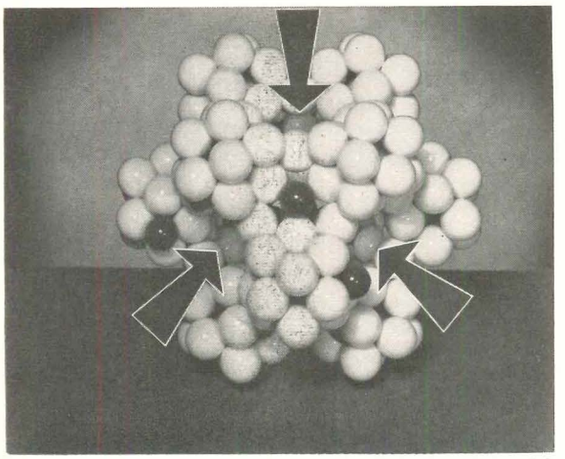

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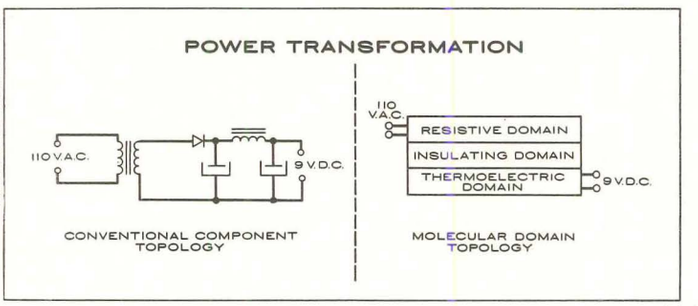
WESTINGHOUSE ELECTRIC CORP.



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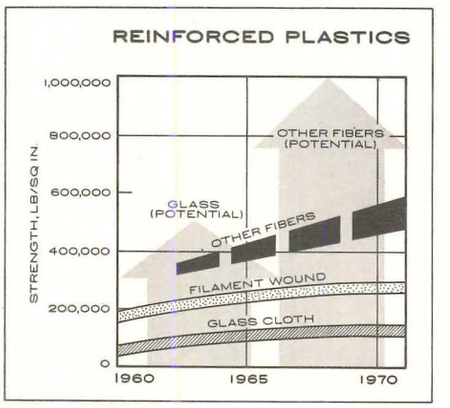

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ing to whatever our wishes may be.

Application of this same concept will produce materials that are self-cleaning, that provide lubricating surfaces that change with varying bearing conditions, and paints that have built-in fire extinguishing characteristics. Paints of this kind are already in the advanced development stage.

Expandable Materials

Another group of functional materials with exciting future possibilities are those designed to assume their final form and shape at the point of application. Foamed-in-place plastics, now finding wide use, are the forerunners of these materials.

A proposed expandable structure for use in space would be possible with this kind of functional material (**9**). It consists of an outer fabric layer with an external elastomer coating and an inner layer of glass-fiber cloth impregnated with a viscous plastic composition.

The structure is formed by releasing a gas which, in addition to inflating the structure, contains a reactant (such as water vapor) that converts the semiliquid plastic in the inner layer to a rigid, reinforced structure capable of withstanding the light pressures of rarified atmospheres.

Along the same lines, foamed-in-place plastics are being considered for space structures and even for space furniture. Thus the astronaut will be able to produce a chair by simply squeezing a plastic bag containing the foam ingredients and a reactant. The expanding foam will inflate the plastic bag, which will assume the shape of the chair—or any other shape for that matter.

We can anticipate that this functional concept will be applied to materials at the molecular or microscopic level. As a matter of fact, it is already being applied

in some present-day materials, an example of which is the so-called molecular sieve. In a model of a chemically-loaded molecular sieve plastic material (**10**), the white spheres are atoms of the resin materials and the black spheres represent a second substance that is caged within the resin molecule. When the material is activated, the caged atoms escape to perform whatever function they are designed to accomplish. In this particular case, we have an epoxy-plastic system. The caged particles are the catalyst or hardener, which, when released by the action of moisture, activate or cure to final form the coating, adhesive, or plastic casting, whichever the case may be.

Future of Functional Materials

The future potential of this kind of functional material to the building field is enormous. To mention just a few possibilities: ductwork or piping could be installed in some convenient form and then activated to achieve its final shape; roofing or flooring materials could be put down in easy-to-handle form, perhaps as a powder or pellets, and then transformed to their final service condition; and finally, construction in remote areas would be greatly facilitated by using expandable materials that, in effect, would "grow" to the desired structural shape on the building site.

The final, and perhaps the most important, kinds of of functional materials for the future will be those that will perform the function of mechanisms and components, and that will transmit and/or transform energy from one form to another.

The transistor, of course, is the classic example of such a functional material. Currently there is much interest in so-called molecular electronic materials: these are small wafers, or blocks of material, composed of several different atomic structures or domains, each of which performs a given function. For example, a functional material block can be created with different atomic or molecular domains to perform the job of power transformation, which normally requires many different electronic components, as schematically illustrated (**11**). Another example is a button-like object that is actually an amplifier performing the same function as the conventional amplifier shown (**12**). It is easy to see that the size of our TV sets might be reduced until they consist merely of a picture screen and a block of functional material no larger than a pack of matches.

Although this approach has found the widest application in electronic materials, it is reasonable to expect that the same concepts will be applied to materials that are subjected to other conditions, or inputs, such as heat, nuclear radiation, magnetic flux, and mechanical stress and loads. It is conceivable that our future refrigerators will consist merely of a shell and shelves, which in themselves will provide the cooling and insulation. The complex power-steering mechanism in today's car may be reduced to a functional block of material; the material in the car's axle might be designed to be rigid and strong as well as to function elastically, similar to a spring under a given shock or load condition. To speculate even further, our building elevators might be lifted by a moving magnetic field that would travel along vertical slide shafts and pull along with it the elevator cab.

Improvements For Established Materials

Although the emphasis in this discussion has been on the newer and more revolutionary concepts in materials engineering, this does not imply that our traditional materials will soon be obsolete.

In spite of the future development of many revolutionary-type materials, the established materials will undoubtedly continue to be used for many years to come, and will be constantly improved. We have already seen that the strengths of established materials will increase, some as much as 20 times their present values. There will be improvements in other properties as well. The copper, lead, and zinc industries, for example, are all undertaking extensive research programs that will yield tangible results in the next five to ten years. Stronger zinc alloys and significant improvements in the creep strength of zinc sheet are forthcoming. New copper alloys and perhaps even a stainless copper will be developed. And the research now underway on lead will yield new composites in which lead will be used to advantage in combination with other metals. Already it is being combined with plastics to take advantage of its sound-absorbing qualities.

In the field of conventional plastics, one of the important improvements will be the rise in service temperatures at which plastics can be used. To be specific, some of the thermoplastics will be improved to the point where they could be used for heating ducts and for hot-water piping.

The expected future improvement in plastics for service at relatively high temperatures is projected (**13**). Although there will be significant improvement in high-temperature resistance of conventional plastics, the big advances will come with further development of the so-called inorganic polymers—that is, metal-containing plastic materials (boron, aluminum).

Precast-Concrete Garage

Last year, a five-story, 400-car parking garage was constructed at a saving of $186,000, and in a total elapsed time of less than seven months. Details of the construction techniques that were used are examined here from data made available by the Portland Cement Association.

Although bridges have dominated prestressing operations for several years, new construction techniques and revised building codes have made possible an increased use of prestressed concrete in many buildings. By accepting a long-span, prestressed-concrete garage instead of a short-span, conventionally designed structure, $186,000 was saved last year by the City of Beverly Hills, California. This saving was realized in a five-story, 400-car parking garage designed by Welton Becket & Associates, Architects, with T.Y. Lin & Associates, Consulting Engineers (**1**).

Before construction, 24 columns and 77 T-beams were prefabricated at a nearby casting yard (**2**). By using high-early-strength cement, 3500 psi concrete was obtained in 16 hrs. Concrete was carefully placed and vibrated in the forms to assure thorough consolidation and bond to the heavy reinforcing steel. Screeding and finishing was done by hand.

Using lifting shackles bolted to the five-story columns, cranes were able to raise them easily to trucks for transport to the job site (**3**). There, after being positioned and accurately aligned, columns were bolted to footings. While still held in place by cranes, temporary braces were placed between columns and connected to the completed stairwell and elevator shafts (**4**). Concreting the shear wall at the center of the building to second-floor level provided further lateral stability.

The T-beams were positioned so that their reactions were resisted by metal stirrups cast in the shear walls, and by the precast steps of the tapered columns (**5,7**). The 6 ft width of the T's not only provided a laterally stable unit for erection, but also a working platform for the erection crew. Spaced 20 ft on centers, the columns and beams form the main rigid frames of the building; they are joined by 5-in.-thick, post-tensioned concrete slabs.

To facilitate floor placement, special movable formwork was used. Plywood panels, strengthened by aluminum channels, were partially supported by hanging from the T-beams and partially held up by shoring extending to the floor below (**6**). Forms were moved mechanically to the next bays to be cast by a specifically modified truck. An electrically powered elevator mounted on the vehicle raised the 14′ x 45′ sections of formwork to proper level. After the forms for the slabs were in position, workmen placed post-tensioning cables, each containing six ¼-in. wires, 3 ft on centers in both directions.

Heavier strand post-tensioning cables, which were precast into the T-beams, were passed through column openings. The live ends of these cables were shielded with tin to allow freedom of movement after the slabs had been poured. After the slabs had gained sufficient strength, they were post-tensioned in two directions to produce a continuous crack-free and watertight slab without roofing membrane. Cables were elongated 5 in. at each end, by hydraulic jacks, producing a force of 168,000 psi in each strand. Metal shims hold the cables under tension; after stressing operations were completed, cable ends were capped.

Post-tensioning of the beam cables (penetrating prepared holes in the columns) was accomplished by working from a platform suspended on the outside of the structure. These cables were likewise stressed to a tension of 168,000 psi while being anchored to the columns (**7**). This operation, which was performed after the floors had been placed and the spaces between beams and columns grouted, was the final step in completing the rigid frame.

Rigid-frame action of the bents enables them to carry all earthquake forces in the direction of the bents. Lateral forces in the other direction are resisted by the center shear wall.

Sufficient concrete coverage protection was given to the post-tensioned members to comply with requirements of fire rating. A minimum cover of 2 in. insured a 2-hr rating for the beams, while a minimum cover of 1½ in. furnished the required protection for the slabs. In order to reduce the weight of the building and to minimize both horizontal and vertical loadings, lightweight aggregates were employed throughout. At 28 days, concrete strengths were over 6500 psi.

Erection of the 24 columns and 77 T-beams was completed in 18 working days: total elapsed construction time was less than seven months.

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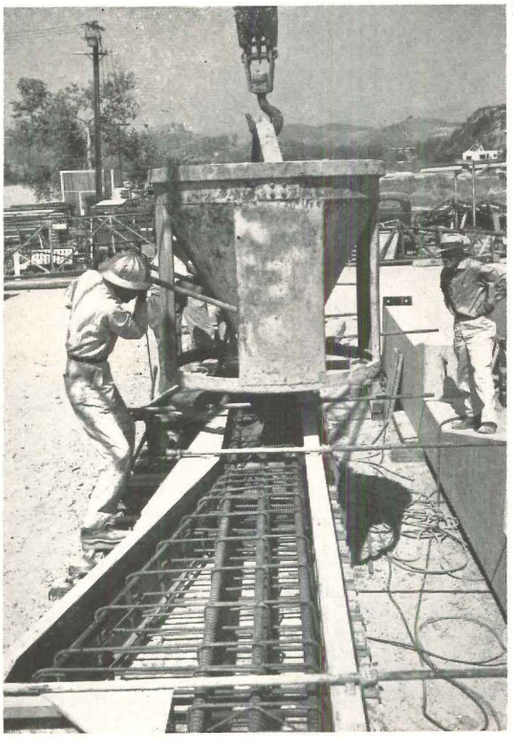

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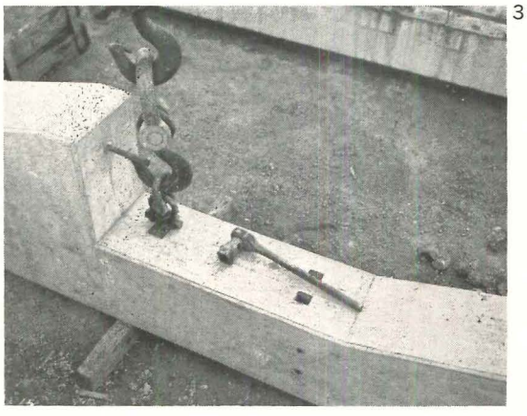

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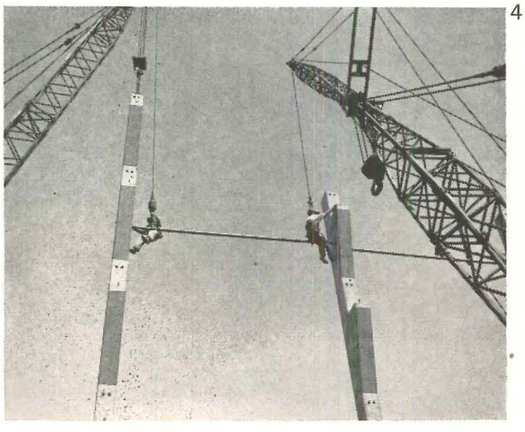

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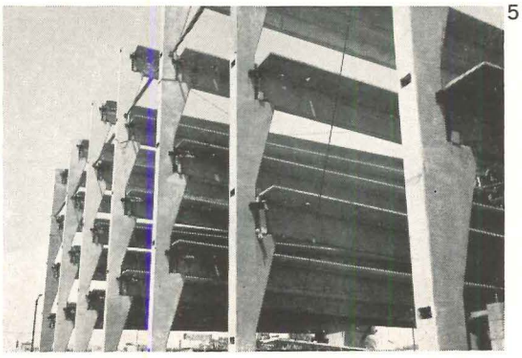

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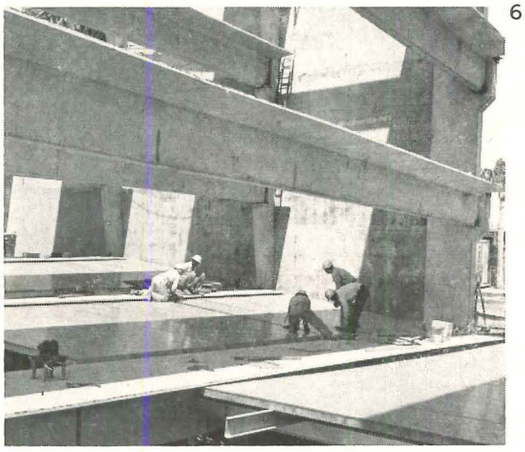

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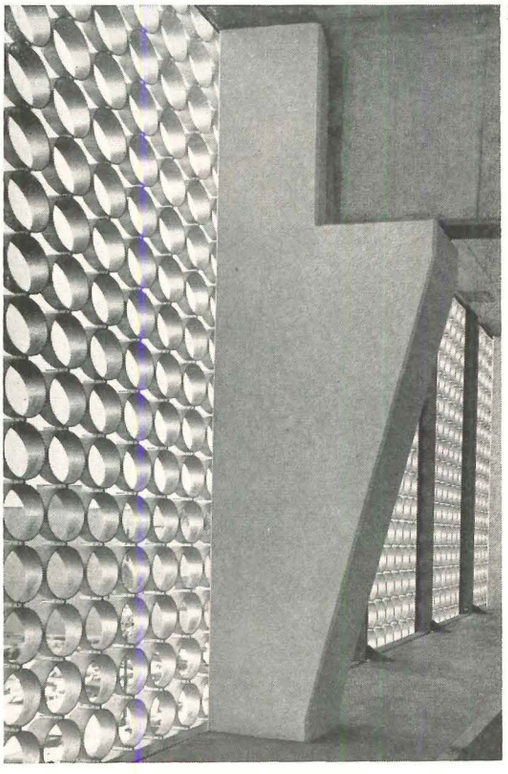

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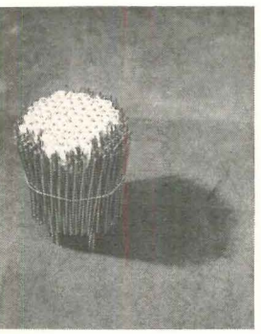
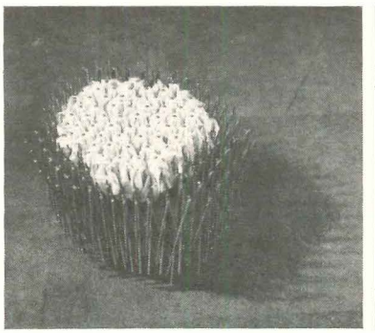
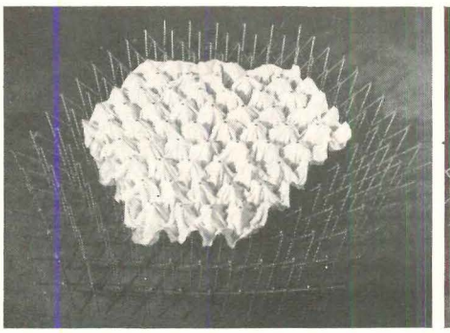
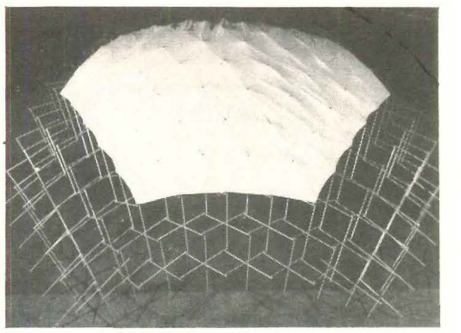
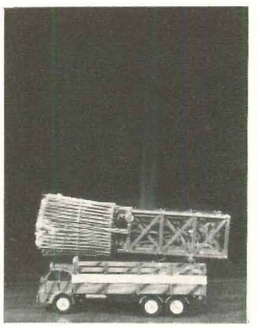
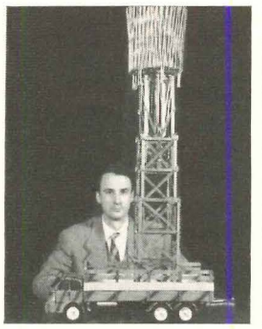
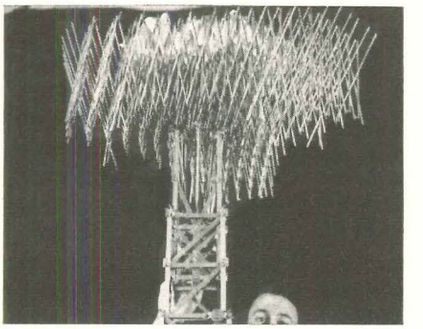
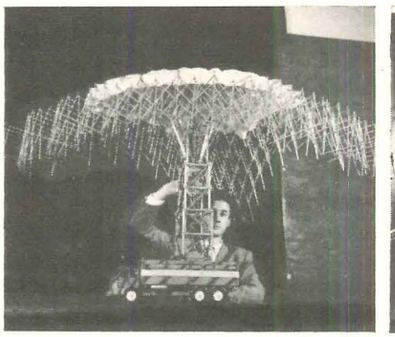
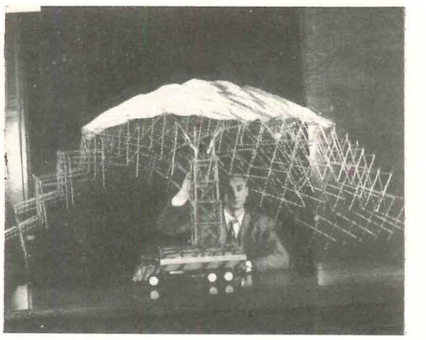
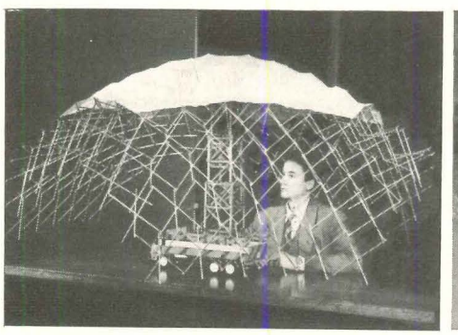
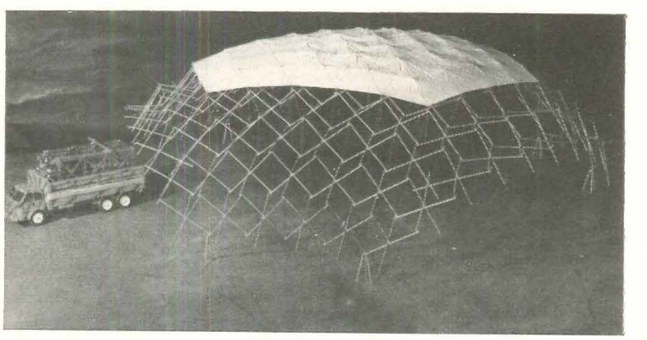









Expandable Space Framing

One of the highlights of the student exhibition at last year's UIA Congress in London was a folding space frame designed by an architectural student from Spain. Structural details of his project are discussed briefly; sequence photos show the expansion process.

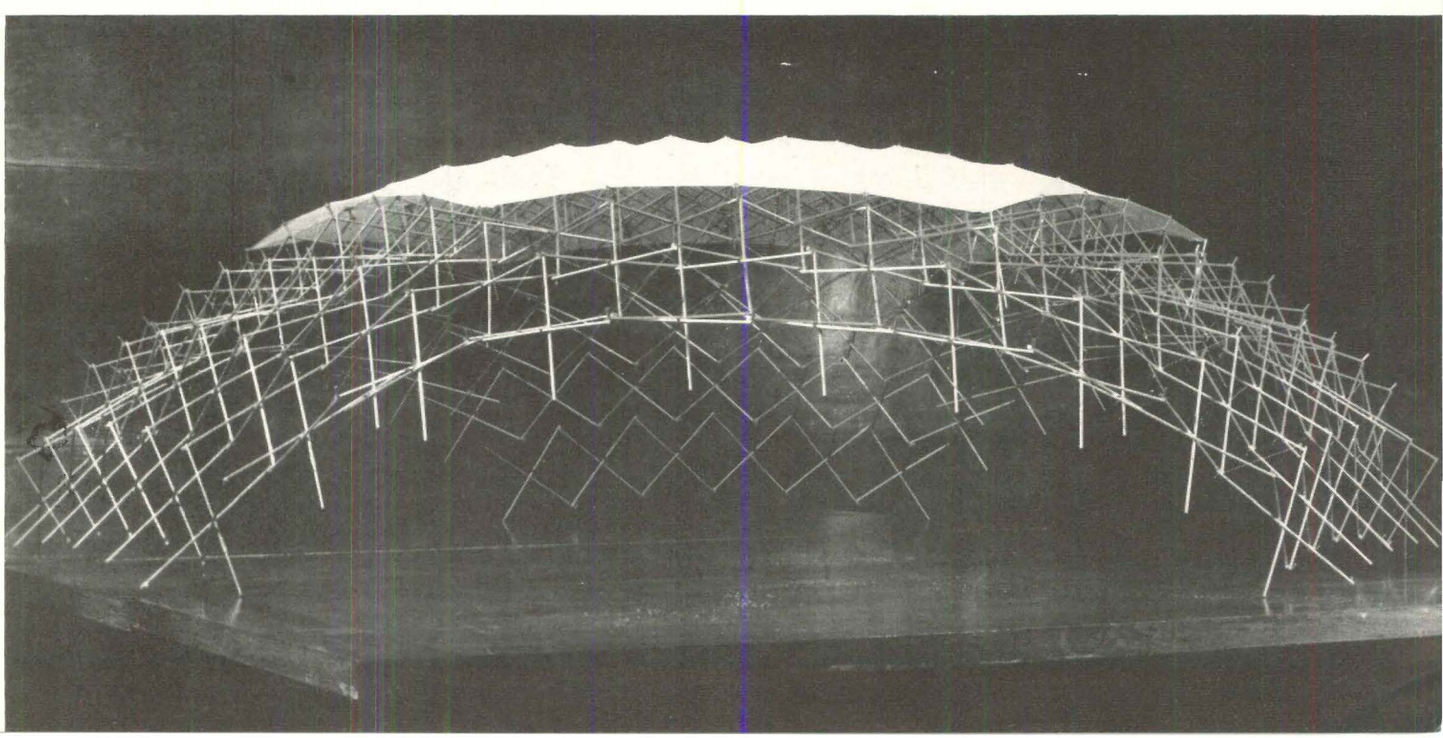
A major attraction at the recent UIA student exhibition was a space-framing system that unfolds to 100-ft diameter from a bundle of bars only 10 ft in length and 6 ft in diameter. Working model of the "Spatial Reticular Structure" is shown on these pages with the young Spanish designer, Emilio Perez Piñero.

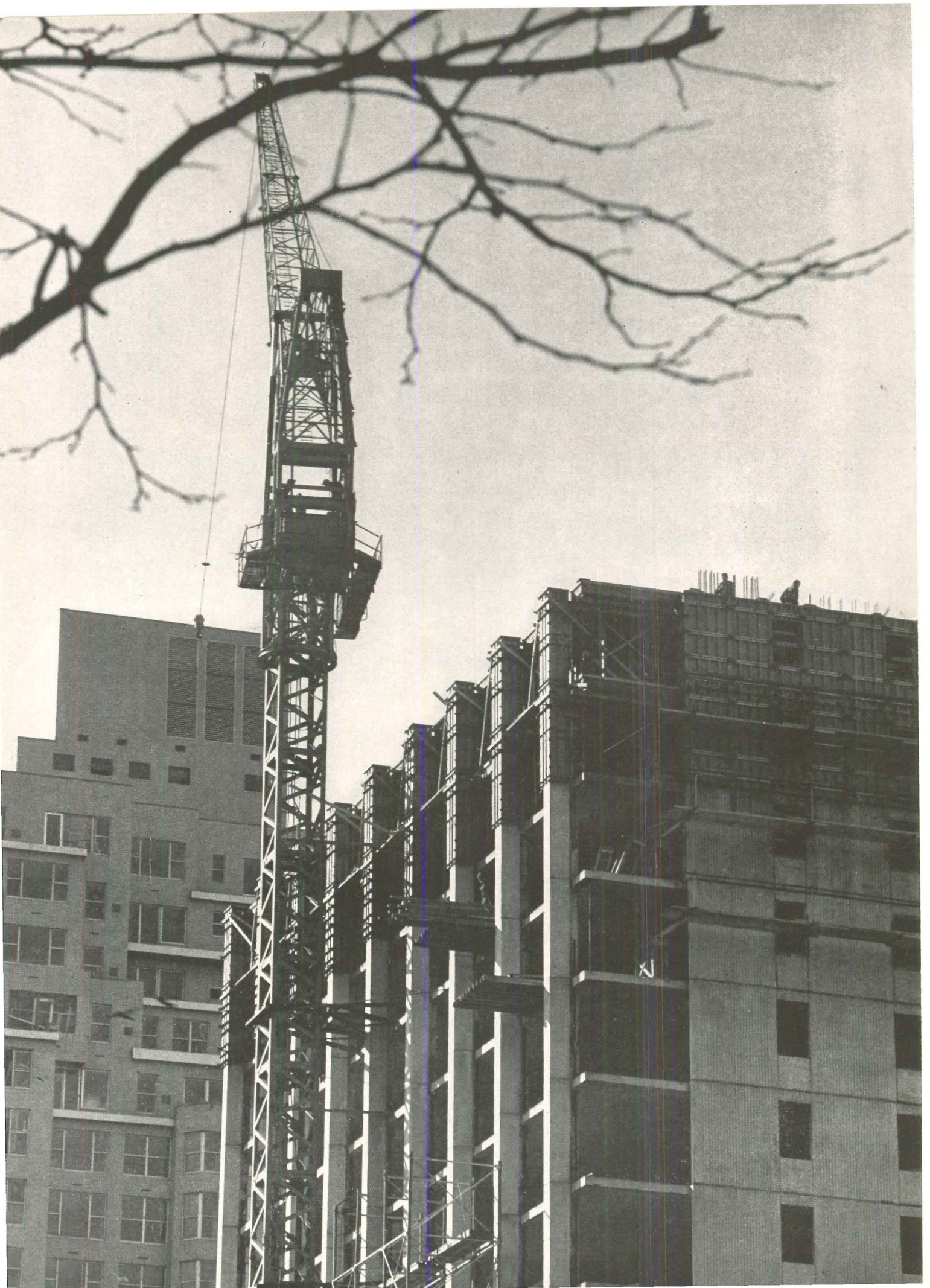
The structure is composed of rigid bars and flexible wire cables, the bars working in compression and the cables in tension. Bars are joined to form an accordion-like framework that is capable of being folded or unfolded in every direction. Two types of cables are used. One type is permanently fixed at both ends (between two upper joints or two lower ones) and serves to keep the assembly of bars from opening beyond a prescribed limit. The upper and lower nets thus established will tighten as the structure unfolds and slacken as it folds. The second type of cable is fixed at one end only; when connected at its free end, it joins an upper knot and a lower one, to prevent the structure from folding and to permit it to bear weight and pressure.

According to Piñero, the two major problems of the design were: (1) geometrically distributing the members—each bar has three axes of simultaneous rotation—so as to permit folding and unfolding without difficulty; and (2) keeping the structure rigid.

Covering for the space frame can be attached in a variety of ways. Placed over the structure, it is fastened to each knot, and (as seen in the photos) folds neatly when the space frame is retracted. Placed in the lower part of the structure, the covering may be either permanently fixed or pulled on and off with a pulley system.

Weights and dimensions must be tentative at this time. The designer is currently studying a model 38 ft in diameter, and foresees that the use of light metals and plastics will produce a structure of extremely light weight. Piñero anticipates that his expandable space frame can take many different forms—square, circular, flat, bent, with double or single curvature.





Tower-Climbing Crane

Report on advantages of European-made crane now in operation in New York.

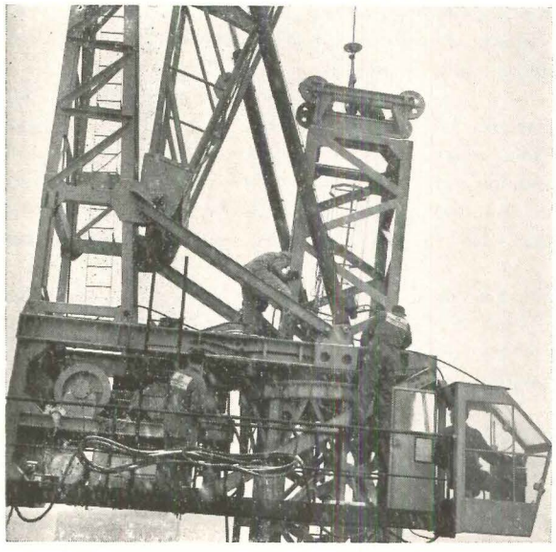
An unusual type of crane is being used to speed construction of New York's Tower East luxury apartment building, a structure designed by Emery Roth & Sons and currently being erected by Tishman Realty & Construction Co., Inc. When completed, this 35-story structure will possess the tallest reinforced-concrete framing in the city.

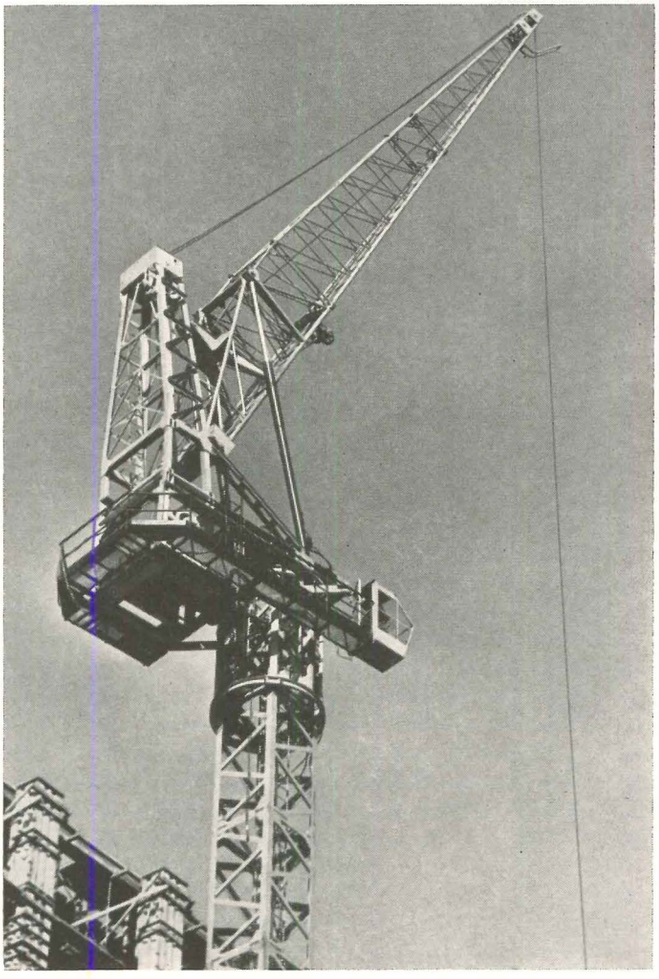
Besides the need for a crane that could lift heavy shear-wall and column forms to a height of more than 300 ft above street level, other problems were involved in crane selection. Since the building is rising in the heart of a busy residential area, maximum crane operating safety was essential. In addition, the forms being hoisted have costly special finishes that require extra care in handling. The European-made P&H-Liebherr crane, which is being used, has a live jib that increases operational flexibility and eliminates the problem of horizontal-boom overhang beyond property lines.

The tower is positioned as a stationary mast outside the building and is braced with a structural-steel yoke every five floors. The crane raises itself as the building rises by adding 10-ft sections to the mast. It can dismantle itself by dropping and removing mast sections without aid of special equipment.

Another advantage of this crane is that it permits concrete to be placed at the exact spot where it is needed: the loaded boom is swung into proper location and the concrete bucket is lowered to waiting workmen. The method of placing concrete by the use of buggies is eliminated. The crane's load capacity is 1½ yd of concrete at full horizontal-boom distance of 82 ft; its hoisting-line speed is 245 rpm.

PHOTOS: DONN KENT WIER





Product Approval Standards: Advantages and Administration

BY HAROLD J. ROSEN

Last month, a proposed substitution for the "or equal" clause was presented in this column. This month, its advantages are highlighted and tips for its successful administration suggested by the Chief Specifications Writer of Kelly & Gruzen, Architects-Engineers.

In the MAY 1962 P/A, this column submitted to its readers a method for specifying materials and equipment entitled "Product Approval Standards." In this issue, we will discuss the advantages of this method and how it should be administered.

Although no one system is perfect, the "Product Approval Standard" does achieve the following:

(1) Control of products by the specifying agency.

(2) Competition.

(3) Fairness in attracting potential bidders that the specifying agency may not have been aware of at the time of preparation of documents.

(4) Owner's preferences and requirements may be honored.

(5) Elimination of the gamble by prime contract bidders on acceptance of products.

(6) Closer bidding.

(7) Discouragement of bid peddling.

(8) Administration of equality at the proper time and by the proper agency.

(9) Complete flexibility.

This method lends itself to use in projects involving public funds. Manufacturers of materials and equipment receive consideration under competitive bidding procedures. The possibility of the successful contractor submitting (after award of a contract under the "or equal") material or equipment not previously known to all bidders, and which in effect prevents the owner from obtaining competitive prices, is precluded.

This method may be acceptable for use by public agencies if they are apprised of it and give it their approval.

It should be noted that the intent of equality, to obtain competition, is not changed or excluded from the specifications, but merely the time for evaluation is adjusted so as to occur prior to bid date.

The greatest apparent drawback is the possibility of a substantial number of requests for approval within a limited time. Carefully prepared specifications, a slightly extended bidding period, and the allotment of sufficient time prior to bid date as deadline for approvals minimize the problem.

Control of the project is achieved so that at the time bids are received, there is no doubt about the quality of products to be used. Where space considerations may dictate the use of a limited number of products, when normally many are accepted, control can be achieved and the design finalized.

Competition is obtained through the basic qualification. In addition, other products that prove to be acceptable can further increase competition. No one with an acceptable product needs to be closed out.

It permits manufacturers who may be able to comply, but do not show the specific product in their literature, an opportunity to present their product for approval.

Prime contract bidders can be confident of the product bids they are using in their estimates. Less gamble, less contingency, and sharper bidding is the result.

Bid peddling and shopping is reduced, resulting in more competitive bids from product suppliers. The competitive products are known, and it is also known that a lower-priced nonspecified product cannot be offered, and possibly accepted, after bids are received. Therefore, the best possible price consistent with the quality can be offered as a firm bid, with reasonable assurance that the price will not be undercut by an unknown or "non-equal" product.

This method removes the problems of prime contract bidders claiming that a certain product is "equal"—and that it was used in their bid. The contractor is not damaged financially as a result of a rejected product. The owner and project are not affected by accepting a possible marginal product.

Complete flexibility can easily be realized. Recognized standards can be presented completely, if available. One product or 20 can be specified depending on criteria and owner's requirements, and every element of design and function can be considered. Conditions can be varied from project to project, from public work to private work. The length of time for approvals can be varied.

Where considered necessary on a few selected items, specified alternates for other products may be utilized with this method.

The same care is essential with this method as with most others: products must be properly and clearly specified. The basis for evaluation of products must be stated. Proposed substitutions must be given complete consideration, careful review, and honest evaluation.

The following are suggestions for administering the "Product Approval Standards":

State or specify the conditions only once, under the appropriate article of the general or supplemental general conditions. This establishes the conditions of consideration. The term "or equal" is omitted under individual specifications sections or detailed requirements. This forces a bidder to refer to the proper article regarding approval.

List all known products acceptable for the project. This is not an overwhelming task; a file can soon be built up to reduce the bulk of the work for most items.

Wherever possible, use established standards such as ASTM, Federal Specifications, etc., which are determined as acceptable for the project.

Insofar as possible, list basic criteria that must be met for product considera-

Continued on page 178

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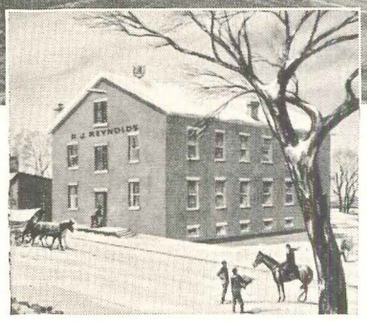

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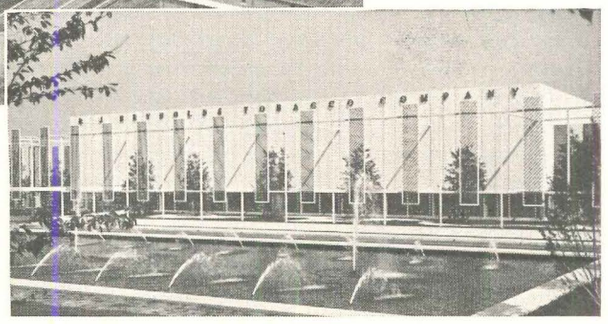

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Change Orders in the Construction Contract

BY BERNARD TOMSON AND NORMAN COPLAN
Nassau County District Court Judge and a New York attorney discuss a recent decision in which a contractor sucessfully brought suit against his client for "substantially" changing the quantity of work stipulated in the construction contract.

A "substantial" change in the size of the construction contract can constitute a breach of the contract entitling the contractor to damages. This principle was enunciated by the United States Court of Claims in an action involving a change, not in the nature or type of work provided for in the construction contract, but in the quantity of work there specified (*Saddler* v. *U. S.*, 287 F. 2d 411).

In the Saddler case, the United States Corps of Engineers and the contractor entered into a contract for the construction of a levee embankment on the Methow River in the State of Washington. The contract provided a unit price for the placement of estimated quantities of embankment, backfill, and stone riprap. After the contractor commenced the work, a severe flood inundated the work site and compelled a temporary abandonment of the work. It then became apparent that the levee, which had been constructed to the specifications called for by the construction contract, would be inadequate to withstand a future flood of the same magnitude. The project was redesigned to provide changes in the length, alignment, and profile of the levee, and the new specifications called for an increase in the quantity of earth to be placed from 5,500 cu yd of embankment, as originally estimated, to 7,950 cu yd. The contractor submitted a new bid proposal on the new quantities at the same unit prices as provided in the original contract.

After the contractor resumed work on the contract, a change order was issued calling for 13,264.8 cu yd of embankment. This resulted from a further change in the alignment and profile of the levee and a further extension of its length. Also involved was the abandonment of 300 ft of embankment already in place. The unit prices provided by the change order were the same as in the original schedule, and the contract price was increased thereunder from $12,575, as provided by the original contract, to $17,916.90. The contractor continued the work under protest.

Eventually, the contractor filed a claim with the Corps of Engineers alleging that the change order constituted a breach of contract entitling him to damages of over $21,000. This claim was denied by the Contracting Officer, and, on appeal to the Corps of Engineers Claims and Appeal Board, it was ruled that the contract had not been breached. The nature of the damages claimed by the contractor included the cost of bringing back certain equipment to the job site necessitated by the change order, and certain other labor, travel, and engineering expenses that would not have been incurred had the change order not been issued.

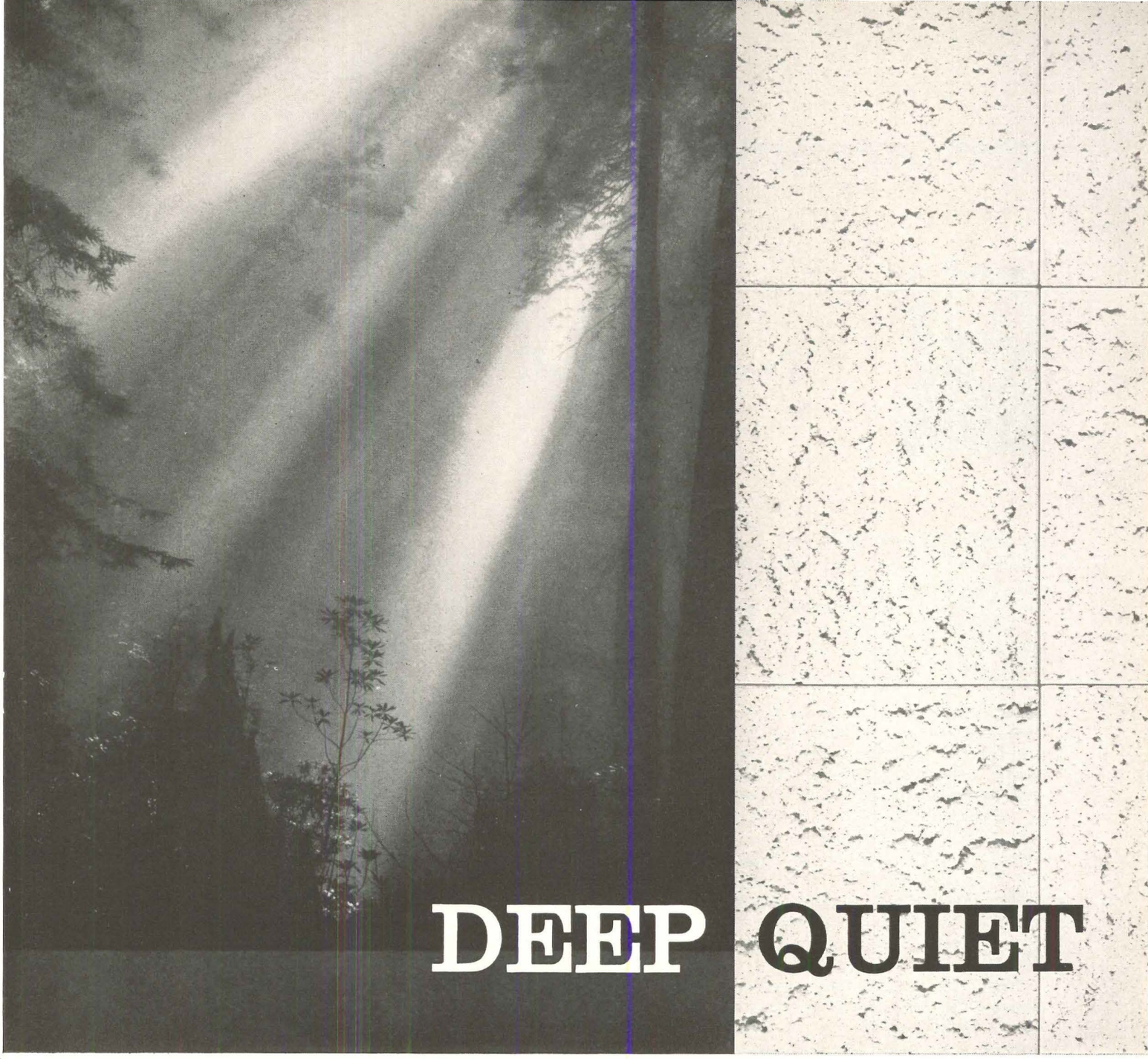
The construction contract expressly permitted the contracting officer to make changes in the contract specifications, provided they were within the general scope of the contract. The Government contended that the change order in question did not alter the nature, quality, or character of the work contemplated by the contract, and that it was therefore within the scope of the contract. The United States Court of Claims, however, ruled that a quantitative change of sufficient magnitude can constitute a change in the scope of the contract entitling the contractor to reimbursement for additional expenses beyond an equitable adjustment in the contract price. The Court said:

"The number of changes is not, in and of itself, the test by which it should be determined whether or not alterations are outside of the scope of a contract. . . . . A single change which is beyond the scope of a contract may be serious enough to constitute an actionable breach of that contract. . . .

"The plaintiff believes that the change, which resulted in more than doubling the amount of earth to be placed, was a cardinal change in the contract into which he had entered. We must agree with this contention.

"Plaintiff cannot be said to have waived the impact of the extensive change. His bid on the proposed specifications changes in June was a bid on an amount of earthwork only slightly increased over the original estimate, viz., from 5,500 yards to 7,950 yards. It became apparent that he had not intended to make such an offer on an amount of earthwork approaching that ultimately required in the final change order. . . . In view of the contract provision requiring the contractor to perform even if the estimates were not met or were exceeded, the situation might have been different had the variance been within reasonable limits. We think that this provision in this particular contract cannot be effective where the variance is so substantial as to amount to a cardinal change. A unit price bid on 7,950 yards of embankment can not be enforced where the amount under these circumstances is increased to over 13,000 yards. . . . ."

It is significant that the Court was of the opinion that a substantial reduction in the scope of a project could also constitute a breach of the construction contract. In referring to an earlier decision in which the Government contracting officer had eliminated one building from a hospital complex that caused a 10 per cent reduction in the contract price, the Court of Claims stated that such a modification "amounted to a cardinal change or alteration of the contract itself, a thing that could only be consummated with the consent of both parties to the contract." This legal conclusion would appear to be of particular interest for the architect in two principal areas: (1) as it affects his own contract with the client; and (2) as it relates to the architect's responsibilities for recommending to the client a "substantial" change in the size of the project.



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Twin-Tube A-C

BY WILLIAM J. McGUINNESS

Refinements in air conditioning for occupied spaces aboard ships, have led to twin-tube systems that have promise for several building types. Background and present status of one system is described by a practicing mechanical engineer.

Recent development and use of high-velocity, dual-duct air-conditioning systems in large buildings has provided an efficient and appropriate method of climate control. The high velocity of the air permits small duct sizes that reduce bulk in the distribution system. Availability of both cool and warm air at the terminal attenuation mixing boxes has facilitated the delivery of blended, low-velocity air to provide a room temperature exactly as dialed at the local thermostat.

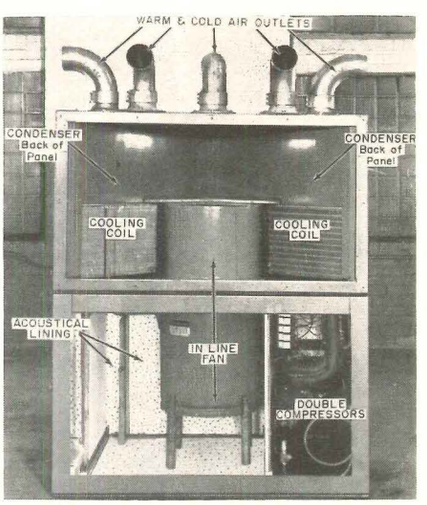
During this development, a similar movement has been seen in the design of air conditioning for the occupied spaces of ships. Under even more exacting conditions of space economy, and the need to adapt the twin tubes to intricate ship structure and to other mechanical services, marine applications have rapidly produced improvements that will be available for buildings. They will extend, in package arrangement, the dual-duct, high-velocity principle to a new range of relatively smaller applications (about 20 to 60 tons), and provide an economical, standardized, vibration-free, and silent air-distribution system for these and for conventional larger installations.

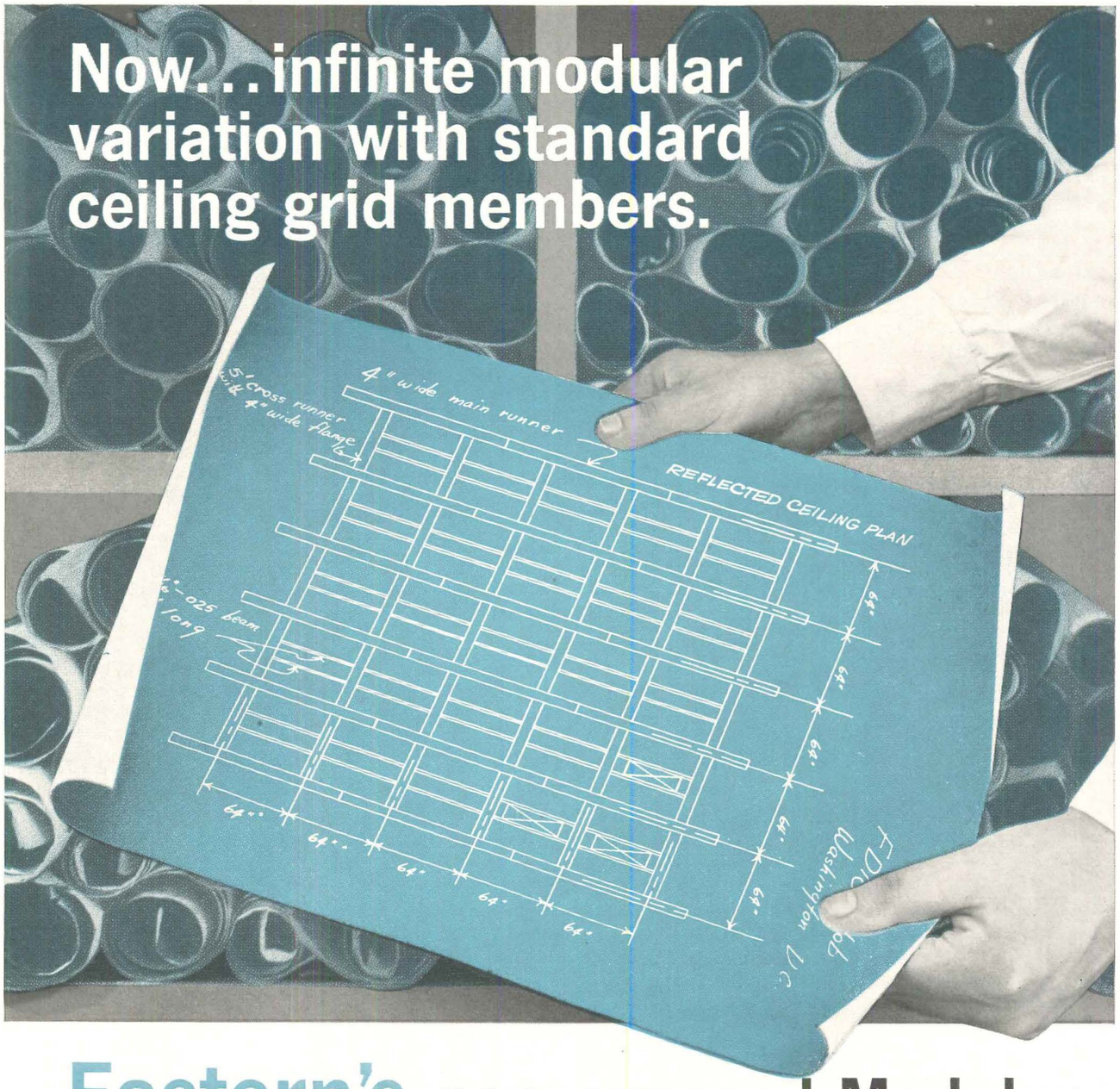
Recently active in the promotion and application of new principles and equipment for ships, S. W. Brown, President of Hi Press Air Conditioning of America, Inc., plans to make these units adaptable for use in buildings.

The new products include air conditioners similar to the prototype illustrated. Through a number of space-saving small tubes (sometimes 12 or more on a connected plenum-manifold), dehumidified cool air and dehumidified warm air are delivered at a velocity of 6000 fpm to be decelerated and blended at an acoustic mixing chamber adjacent to the conditioned space. Both the units and the distribution tubing (not ductwork) are unique. The central unit has two compressors, one of which operates continually during any cooling demand. The second cuts in as required to adjust exactly to a varying demand. There are two cooling coils and a double-pass arrangement. One pass over a section of the coil produces an intermediate temperature and humidity. The second pass provides a low temperature, dehumidified air. Reheating the intermediate air by passage over the condenser provides a warm, dry air for blending at the terminal mixing chamber to prevent chilling in an area during partial loads when normal dehumidifying is required. For winter conditions, steam or hot water can be utilized during extremely cold periods. Silence in the conditioned space is assured by the remote location of the fan and compressors in the central unit. In a new installation in the Chrysler Building in New York, a unit using central chilled water is four stories away.

The extra dividend of silence is afforded by the method of distribution. The 14- and 16-gage shipboard-type tubing of galvanized steel (may be slightly lighter ashore) offers interior smoothness, considerable mass, and isolation, one length from the next. Heavy fittings of the large-radius type connect the tubing by screws that clamp a metal element against a cylindrical neoprene gasket. These gaskets and tube-end plastic separators prevent metal contact of tube to tube, or tube to fitting. The system floats.

Most of the fan noises, including the troublesome low-frequency ones, are absorbed by acoustical treatment at the central unit. Any remaining noises are reduced by the attenuation in the air-piping system and the acoustical boxes. Transmission along the tube dies at each fitting. Regenerated sound, such as rattles that might occur in the more usual 20- to 24-gage sheet metal, are virtually nonexistent. Air leaks that sometimes develop at the taped joints of high-velocity, sheet-metal ducting, and which become audible squeaks, are not expected at the clamped and gasketed joints of the tubing. To avoid possible vane rattles at registers, a massive slot-type high-induction grille will be used for draft-free delivery of air to the conditioned space.





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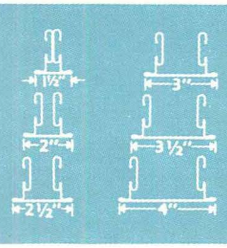

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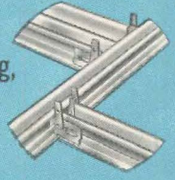

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1601 Wicomico Street, Baltimore 30, Md.

Election to the IIAL: A Warning to Architects

Dear Editor: I have been following with interest reports in various of the architectural magazines that certain architects have announced with pride that they had been elected to membership in the International Institute of Arts and Letters. I, too, received an invitation to join this impressive organization. The literature, credentials, and lists of new members they sent me are indeed impressive, and one does feel extraordinarily flattered to be tapped to join such an eminent group.

There was a slightly fishy smell to this, however, and I checked with a professor at NYU who tends to know about things of this sort. By pure chance, he had on his desk the winter (1961) issue of the *Bulletin*, a publication of the American Association of University Professors, and opened it for me to "The Editor's Page." This document rather competently speaks for itself.

ELIOT NOYES
New Canaan, Conn.

[We reproduce below the letter Mr. Noyes wrote to Dr. Helmut Demel at IIAL headquarters in Kreuslingen, Switzerland. This letter, which raises appropriate questions as to the integrity of the organization, was never answered. Architects who may wish additional information are referred to an article by Fred M. Hechinger in The New York Times *of July 6, 1960, as well as the AAUP* Bulletin *mentioned in Mr. Noyes's letter to P/A. The latter article warns its readers that IIAL lists no major officers, schedules no meetings, has no publications, and is not included in recognized indexes of legitimate scholarly societies.*—ED.]

Dear Dr. Demel: I must confess to considerable ignorance about the International Institute of Arts and Letters, and would appreciate very much a little more information about it.

I am interested to know who your officers are. I find no mention of the president or other administrative figures.

I am interested in what kind of headquarters are maintained in Europe. Since I travel a good deal and often come through Switzerland, what facilities are available to me if I become a Life Fellow?

I am very much interested in research and educational programs, but find no statement about these that would give me any insight as to the type of activity you engage in.

I would like to know when and where academic sessions of the Institute are held.

I would be interested to know whether a full list of members is available, rather than just the short list of recent ones that you sent me.

In general, I would like to obtain any additional information you can give me, at which time I will be able to make a decision about your invitation.

ELIOT NOYES
New Canaan, Conn.

Wheels Within Wheels: The FDR Memorial Competition

Dear Editor: We should like to comment on the decision by the Washington Fine Arts Commission to disqualify the winning entry in the Franklin Delano Roosevelt Memorial Competition.

The Commission, by reviewing and annulling the decision of a highly considered professional jury, has rendered the jury useless and powerless. We deplore the fact that an outstanding competition, which was from a professional viewpoint well run and whose jury probably attracted a great percentage of the talented practitioners who entered, should have been allowed to be set up in such a compromising manner. If it was felt that no jury of architects could have the interests of the District of Columbia completely at heart, certainly a jury composed of both Commission members and architects could have been selected at the outset. This would have eliminated the resulting "judging of the jury," a practice which can never be completely acceptable.

At a time when the arts promise to become more integrated into national life, it would be unfortunate if architects are accepting of any limitations which prevent them from performing their services in the most complete manner possible.

IRVING MOGENSEN
President
The Pratt Architectural Club, Inc.
New York, N. Y.

Significant Form

Dear Editor: I have been meaning for some time now to comment on your article, "Form in Churches" [DECEMBER 1961 P/A], but the busy work schedule for us here in Seattle has prevented me from doing so till now.

It is my opinion that if architectural form is to be significant, it must do much more than invite one's attention. It must also be convincing in that it solves the problems and produces an aesthetic and comprehensive solution of the total scheme, including not only the building itself, but its site and its relationship to other areas.

The church at Tampere, Finland, appears to me to be most exciting in plan and achieves a sense of interest in its structurally-formed, concave surface. However, it does not achieve the same in its elevation solution to these problems. In fact, the sawing off of all of these volumes at one arbitrary point seems to be in great contradiction to the free form of the plan.

It seems to me that the Protestant cathedral at Liberia—considering that the site is limited to 80 ft—would be a very strange companion to an abutting building on the adjoining sites. A building that makes such a dramatic architectural statement as this certainly would require a site of sufficient magnitude to give it room to make its statement. I personally feel that this building is really trying to make its point, but that it is difficult to say that this is the form that church architecture should be taking.

The church at Ann Arbor appears to be the most complete in its solution and the most continuous in its design. Again, however, it is difficult to imagine a building of this size on such small pieces of property, flanked by buildings on both sides. However, it is handled in a simple and stately manner and could certainly stand as a symbol of a church in a community.

PAUL HAYDEN KIRK
Seattle, Wash.

"Fashionable" Architecture

Dear Editor: Good for you and Albert Bush-Brown for the review he wrote of Cranston Jones's *Architecture, Today and Tomorrow* [MARCH 1962 P/A].

Mr. Bush-Brown's piece is more than a review: it is a thoughtful analysis of our current confusion in architectural imagery. We are almost as breathless as those followers of transient fashion who await the excitement of the season's revelations by a Chanel, a Balenciaga, a Dior, an Oleg Cassini.

Why are the confusing works of stylists or architects covered by double talk?

If they become not the wearer, or if they serve not the use to the fullest measure, what a pity! If they do not work, or do the job they were meant to

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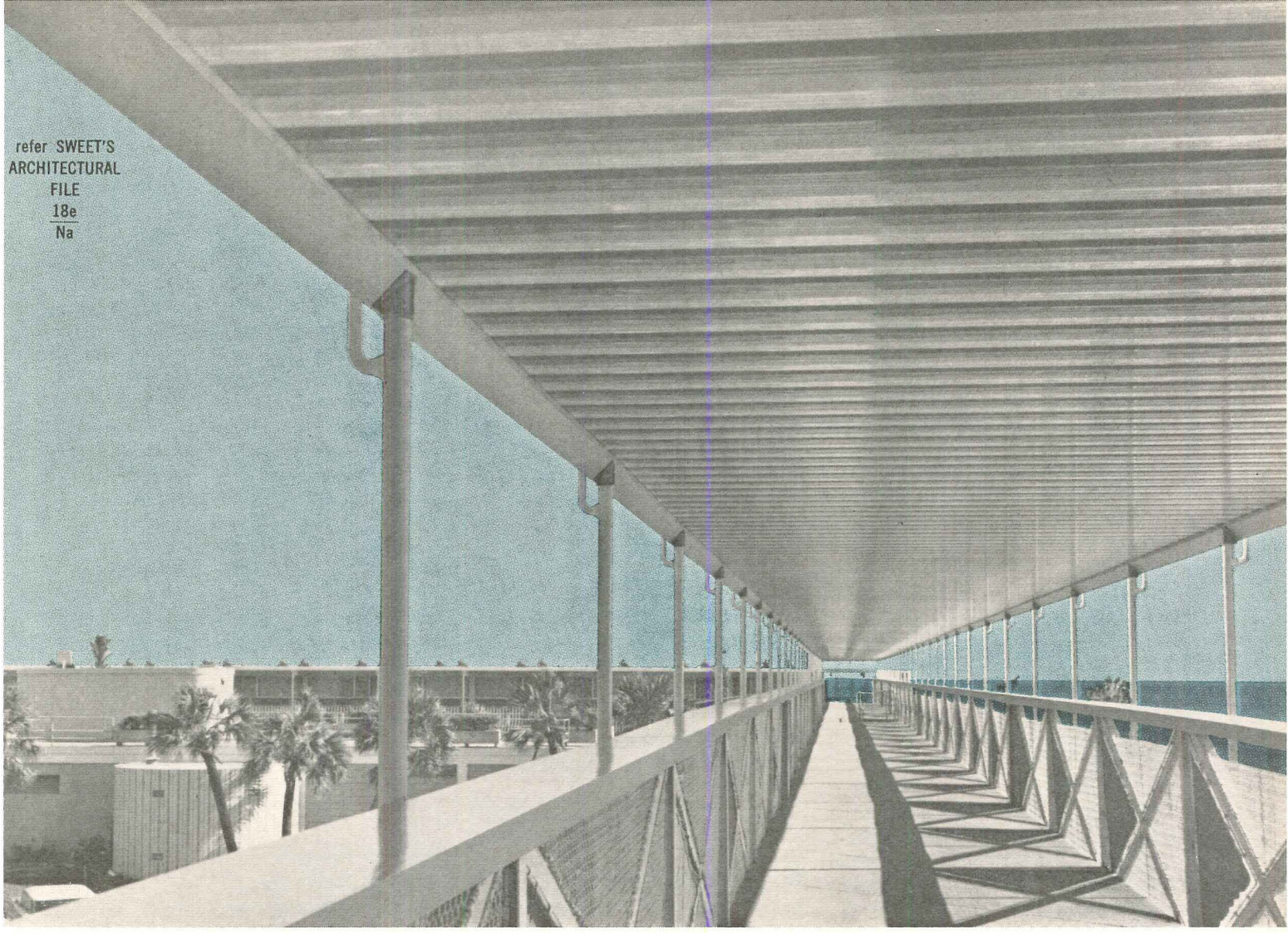

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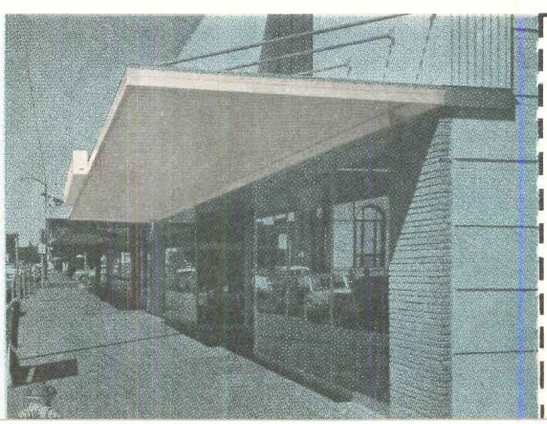

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do, something is lacking. Is "function" now a "dirty" word?

My good friend Carlos Contreras once said of a daring building at the University of Mexico, "Well, functionally, it doesn't function."

So many of us await your revelations of the maestros' *dernier cri* to see if it is still glassed, girdled, grilled, or gross.

GLEN STANTON
Stanton, Boles, Maguire & Church
Portland, Ore.

A Crude Prototype

Dear Editor: T. J. Kauffeld's letter in "Views" [MARCH 1962 P/A] expresses a strange and seemingly narrow attitude.

Mr. Kauffeld is concerned about the similarity between his structure and that proposed for the Philippine-American Cultural Foundation by Leandro V. Loscin & Associates. He feels it is important for his structure to remain novel, that it be something new, something different. Shouldn't he be proud, rather, that he has discovered something of architectural value, and hence be eager to give information to members of the profession who are also trying to produce good architecture?

Mr. Kauffeld's structure seems to be very crude and lacks human scale. It is mere exhibitionism. Perhaps, however, he will allow future architects to improve upon and develop with sensivity this crude prototype, thus producing a worthwhile piece of architecture.

ROSS E. HAYES
Montreal, Canada

The Architecture of Wealth

Dear Editor: I noticed in the MARCH 1962 P/A that you are planning to review *Mid-Century Architecture in America: Honor Awards of the American Institute of Architects, 1949–61.* I would like to set down a few comments about this book.

I find the photographs generally meaningless, and the book quite lacking in visual appeal. But this is not its most serious flaw: what about the awards themselves? What does the AIA consider significant building in our time? For whom is today's "architecture" produced?

I find that the majority of awards fall into the following categories: showplaces for wealthy corporations; schools, etc., for wealthy suburban communities; and residences and apartment houses for wealthy suburbanites and city-dwellers.

In other words, by the AIA's own standards, today's architect is a failure. His work has not even begun to touch the lives of the masses in our cities—those whose environment is most in need of improvement. Note that most of this work is not even *in* the cities, where most of our people live.

In short, "architecture" is for those who can afford it; we have not come *so* far from the days of Standford White and Richard Morris Hunt.

A. M. TITUS
Boston, Mass.

Flemingdon Park

Dear Editor: I would like to thank and congratulate you on the presentation of Flemingdon Park in the MARCH 1962 P/A. It was laid out extremely well, and portrayed the essence of what we have been after very clearly.

IRVING GROSSMAN
Toronto, Canada

Finest Description

Dear Editor: The article by Fred Sackett, "The Walrus and the Carpenter," which was published in the MARCH 1962 P/A, is the finest description of the client-architect-contractor triangle that I have ever read.

R. E. STITT
Acorn Wire and Iron Works
Chicago, Ill.

Contemporary Masonry

Dear Editor: We are thrilled with your handsome, vital issue on "Contemporary Masonry" [APRIL 1962 P/A]. It will be the pride of our industry for a long time.

LEN KIRSTEN
Structural Clay Products Institute
Washington, D. C.

Theater Issue: A Cheer and a Reminder

Dear Editor: I have only praise for your theater issue [FEBRUARY 1962 P/A]. I feel it is one of the most contributive issues on the theater field. Your symposium, composed of many of the serious and thoughtful people of the theater, was a brilliant stroke. I have already recommended it to many.

MAX ABRAMOVITZ
Harrison & Abramovitz
New York, N. Y.

Dear Editor: I read your series of articles on theater design with great interest. I am an electrical engineer who spends a great deal of his time with little theater groups. Because of my training, I am naturally engaged in the technical aspect of play production. As a result, I am vitally interested in theater design from a practical viewpoint.

In reading your issue, I was particularly disturbed by the fact that the two most common faults in theater construction were not mentioned. These are: hardwood floors and inadequate wiring. In the design of professional or college theaters, the two categories with which you principally concerned yourself, I realize that there were points that would naturally be picked up by the architect in conversations with the technical director. The vast majority of modern theaters, however, are built for public schools and churches. With these, the same mistakes are invariably repeated. I believe this is primarily due to ignorance on the part of architects and school officials.

I want to tell you again how much I enjoyed your issue. These articles gave me a number of new ideas, and, most important of all, they started me thinking.

Some time ago, the pastor of my church asked me to advise him on the installation of a stage in their gym. After studying your issue, it occurred to me that the proposal I had submitted was defective in several respects. Thus your articles had a practical result in the design of at least one new stage.

PAUL HINCKLEY
Hicksville, N. Y.

Progress Report: Seeing is Believing

Dear Editor: I found your "P.S." on "The Art of Seeing" [MARCH 1962 P/A] of very particular interest. I want to assure you that there are a few of us in the lighting field who are actively fostering the concept of perception vs. seeing.

In the talks I have been giving around the country over the past five or six years, I have been stressing the fact that seeing is a mental process. To some extent this is a "gimmick" expression. The point I am trying to make, however, is that in both our lighting application and lighting research, we cannot afford to overlook the fact that knowledge of the physics of light and the physiology of the human body simply present a situation that must be interpreted with reference to the psychology of the human mind. Although progress toward the understanding and acceptance of this thesis has been slow, I can report that some gains have been made.

I trust that others will find your editorial as interesting as I have, and that it will stimulate greater interest in understanding the process of seeing."

GEORGE W. CLARK
Manager of Marketing
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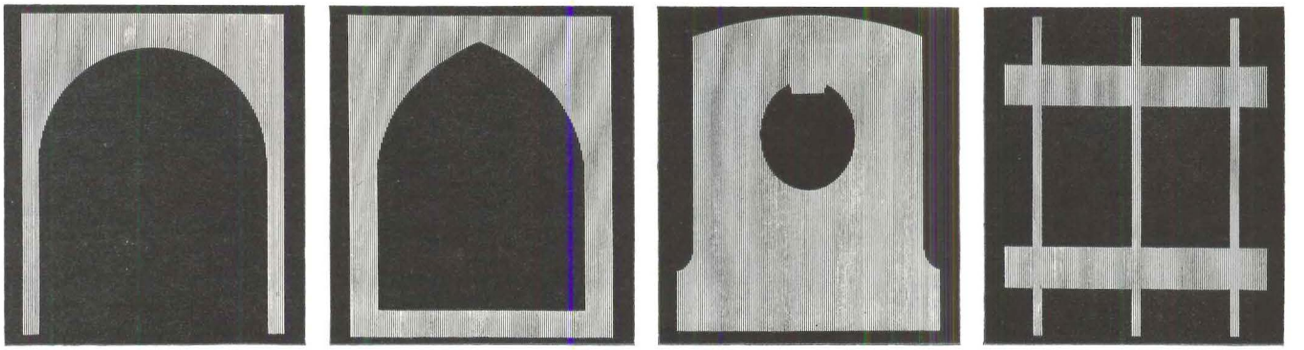

Roman . . . Gothic . . . Baroque and Rococo . . . Modern

High-Level Beginning

BY JAMES MARSTON FITCH

THE GREAT AGES OF WORLD ARCHITECTURE: ROMAN ARCHITECTURE *by Frank E. Brown.* GOTHIC ARCHITECTURE *by Robert Branner.* BAROQUE AND ROCOCO ARCHITECTURE *by Henry A. Millon.* MODERN ARCHITECTURE *by Vincent Scully, Jr. Published by George Braziller, Inc., 215 Park Avenue South, New York 3, N.Y. (1961, 128 pp. each, illus., $4.95 each). Reviewer is a Professor at the School of Architecture, Columbia University.*

A formula that might seem impossible on the face of it—the analysis of any great period of architecture in 14,000 words—is actually converted into an asset by the four men who have written the first four books in this new series. If it is completed at the same high level at which it is begun, the series will constitute a genuine contribution to the literature of architectural history.

The scope and format of these first four books is fairly uniform. Within the limits given, they must obviously sacrifice detail for comprehensiveness; and yet the amount of detailed information they manage to give is quite surprising. This is due almost as much to the discrimination shown in the selection of illustrations as to the masterly compression of the text. (The books would be even more illuminating if the editors gave up their present policy of rigidly separating text and pictures and permitted future authors to integrate them more closely.) They differ quite widely in style. The Branner and Millon studies are cool and detached; the Brown and Scully books, by contrast, are incandescently committed to their thesis. All four accomplish a great deal in very little space.

Of the group, Brown's book is almost certainly the best. His style is spare yet highly polished, so allusory that one can scarcely believe he has given us the essential features of 950 years of Roman architectural history. In fact, by itself, without his brilliantly chosen illustrations, this 48-page essay might well miss its mark. But *with* his illustrations, Roman architecture leaps into vivid and convincing reality. Ten or twenty volumes could not give us a clearer over-all picture of the Roman genius for construction. Despite its enormous extent in both time and space, its accomplishments are displayed here to stunning effect. Especially impressive is the way Brown succeeds in portraying stylistic developments in metropolitan Rome and relating them to those in the provinces. Clearly, he has the latest data and documents of Roman archaeology at his fingertips. A more informative selection and organization of material than these 100 plates is hard to imagine. Roman architecture has won many admirers. Seldom has it had a better expositor.

Quite different in style and tone, Robert Branner's book on the Gothic is precise, orderly, informative. One of our leading young Medievalists, Branner here gives us an admirably clear account of the development of four centuries of Gothic architecture in all the countries of Western Europe. Despite the complexity of this development, his exposition of it is always easy to follow—and would have been even easier, had the pictures been placed alongside the relevant text. These plates are uniformly good, illustrating the text in the truest sense of the word.

In so confined a space, Branner could not be expected to treat the art of these churches. Yet, in one glancing reference to "the contrast in color provided by the dark Purbeck marble" in Salisbury Cathedral, we are reminded that he nowhere mentions the use of polychromy in this and other churches. From all accounts, polychromy played a role of some importance in both the choir screen and in the Chapter House of Salisbury. Some of the sculpture at Westminster was polychromed; and Hope and Lethaby, examining the façade of Wells Cathedral from a scaffold, concluded that the entire façade must once have been colored, "resembling a colossal reredos glowing with brilliant colors." In any event, such polychromy must have radically altered the appearance of Salisbury, which is, today, the coldest and most mechanically consistent of all English churches.

Millon's study of the Baroque and Rococo is a thoroughly competent handling of a complex historical period. Here again the text is paced with well-selected plates; especially valuable are those of the work of the North Italians, Guarini and Ju-

Continued on page 170

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Continued from page 168

vara. There is, however, one puzzling omission—Michelangelo, who is only incidentally mentioned in the text and shown not at all in the plates. Yet surely his plastic manipulation of the Classic orders (as on the rear elevations of St. Peter's), or his distortion of Classic volumes (as in the Laurentian Lobby or the Medici Sacristy), prepared the way for the Baroque — if they did not, indeed, mark its first great accomplishments. Such, in any case, has been the opinion of men from Palladio to Wright.

At another point in his book, Millon shows the charming little Piazza San Ignazio as a typical example of Baroque manipulation of exterior space. He might well have supplemented it with an interior shot of the church itself, for Pozzo's painted ceiling is perhaps the most exhuberant example of trompe l'oeil in Rome. The vaulting of nave and apse are dissolved in exemplary Baroque fashion with painted perspectives, clouds, and sunbeams attending a host of heavenly personages. Indoors and out, the spatial concepts are the same.

In some ways, Scully's handling of the 19th and 20th Centuries is the most brilliant compression of all. Though he has much less time to cover than his colleagues, it is *our* time and consequently of much more significance to us. It is a terrain which he knows extremely well, and about which he writes with passion. The results are often illuminating. But Scully's is a florid style and sometimes dangerously self-indulgent, at least for factual material, as when he tells us that Horta's architecture ". . . is an environment of flux and becoming, a Bergsonian world . . . endless continuities that move through all things, including man, and in which all separateness drowns."

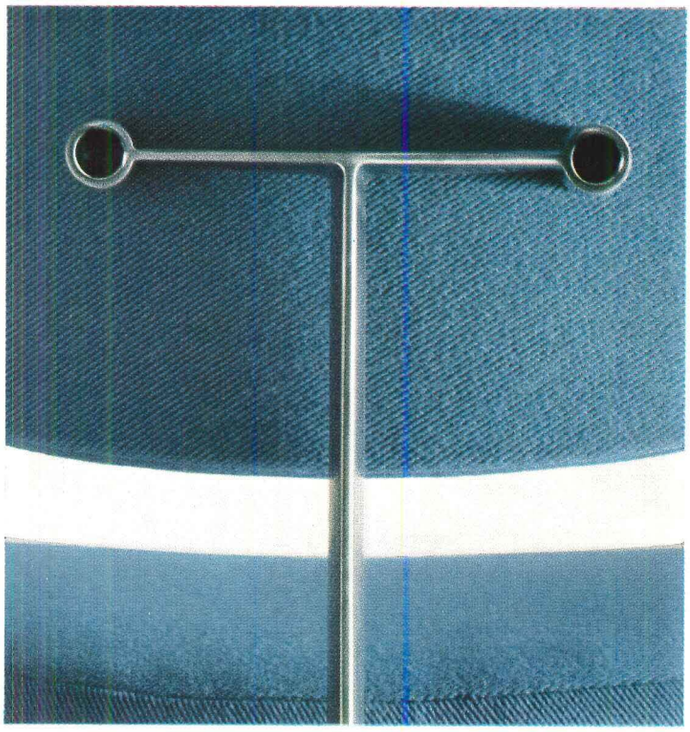
His propositions are often extremely intricate. Thus, at one point he seems to imply that Cretan painting is the direct progenitor of Art Nouveau; but at another point he says that "Evan's free-wheeling reconstructions at Knossos were as much Art Nouveau as Minoan." To document this elliptical thesis, he juxtaposes photographs of a Minoan vase with Horta's Maison du Peuple and Van Gogh's *Starry Night*. Visually, the correlation is striking; factually, any casual connection seems preposterous. The pictorial section of his book is studded with such parallels, as brilliant as they often are risky.

In his current enthusiasm for Classic antiquity (and who cannot share this with him?), Scully sees such analogues everywhere. Thus it is "certainly clear" that Wright's Florida Southern College was "closely derived" from the plan for Hadrian's villa. The evidence? Scully's biography of Wright last year, in which Florida Southern "would seem to have derived from the plan of Hadrian's villa." The published plans have a certain resemblance; but for anyone who has visited both sites, two complexes less alike in scale and feeling are hard to imagine.

Generally speaking, Scully handles the founders of the modern movement with sympathy and justice. The one exception is Gropius and the Bauhaus, where his hostility is undisguised. This, of course, is his privilege; but when he seems to imply that the Bauhaus was stylistically merely a derivative of the Dutch *de Stijl* movement, he runs counter to easily verifiable fact. When he attributes to Gropius a "venomous dislike of the humanist tradition of the Renaissance," he is hard to follow; and the sheer inadequacy of describing Gropius as merely "one of Behrens' many excellent students" becomes apparent if we complete the sentence thus: "Gropius was one of Behrens' many excellent students who would later create and direct a Bauhaus."

Scully tells us that the nude in the

Continued on page 176



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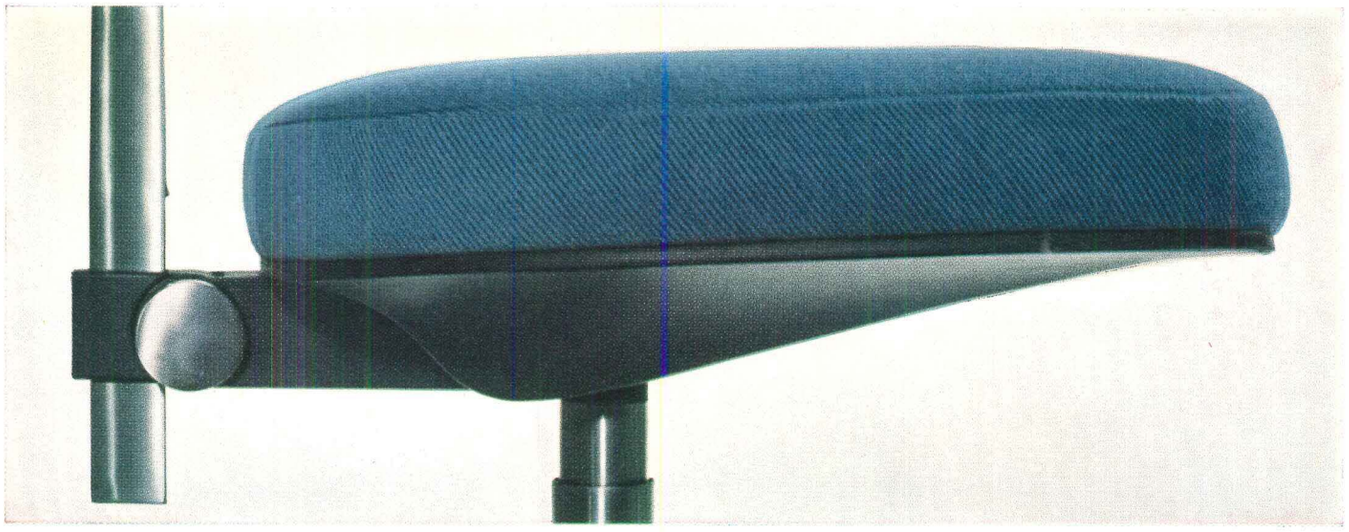

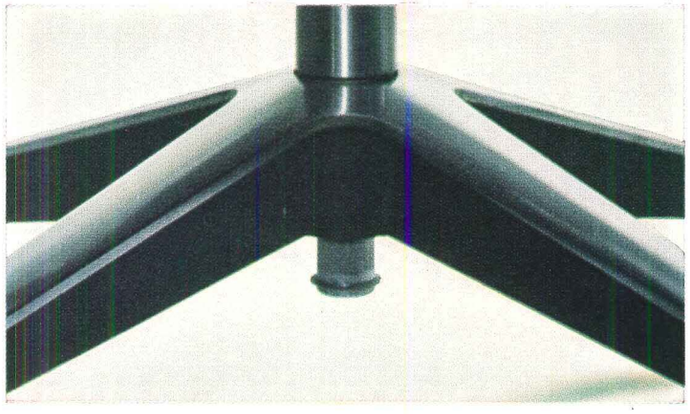

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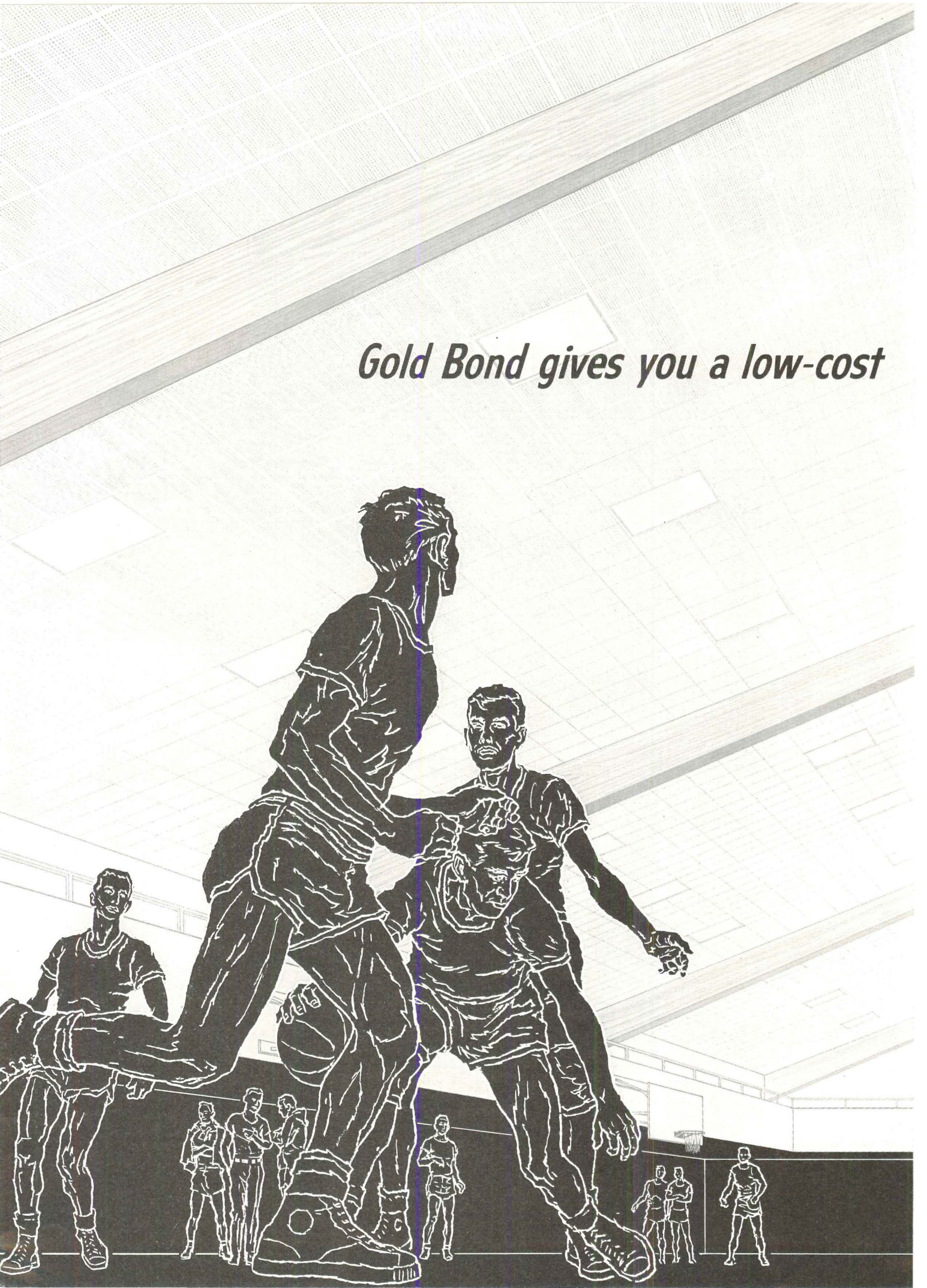

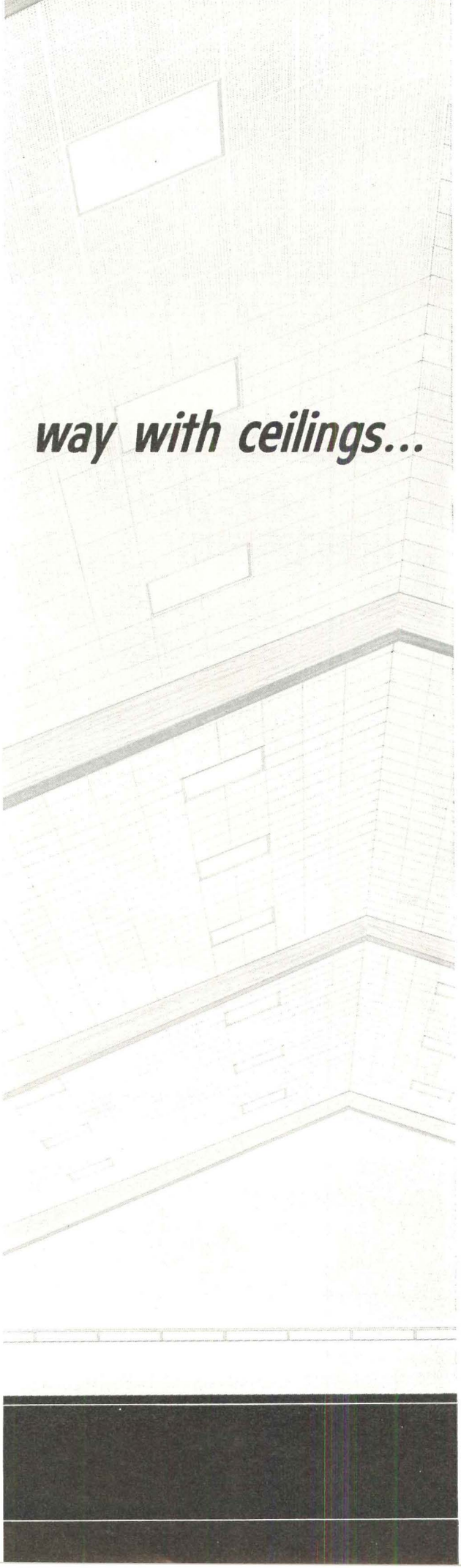

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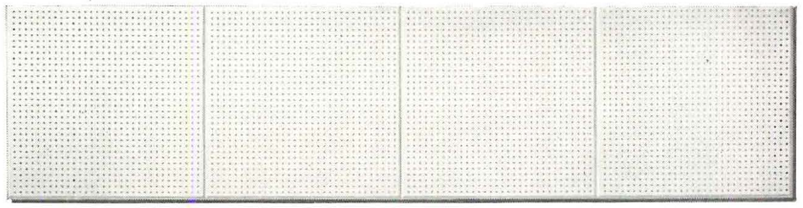

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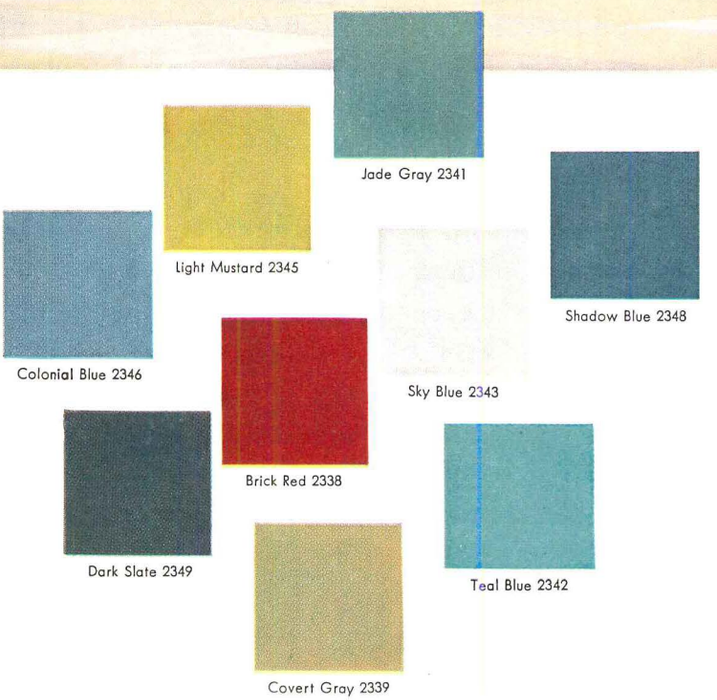

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Continued from page 170

pool of the Barcelona Pavilion is that of a man. The one extant set of photographs upon which we must all base our judgment indisputably shows the figure to be a woman. Scully says the glass walls were black. Mies describes them as having been gray and green.

Though this new series is presumably aimed at a literate layman, it will constitute a good addition to the average architect's library as well.

OTHER BOOKS TO BE NOTED

All the Paintings of Leonardo da Vinci. Edited by Costantino Baroni. Hawthorn Books, Inc., 70 Fifth Ave., New York 11, N.Y., 1961. 60 pp. plus illus. $3.95

One of a series of art books (The Complete Library of World Art) *that will ultimately exceed 150 titles. Each volume contains photos of the complete work in one medium of a major artist. In addition, there are sections on his life and work, notes on lost and attributed works, an index of cities where the works are located, a selection of critical comments, and a bibliography.*

A Dictionary of Art Terms. Reginald G. Haggar. Hawthorn Books, Inc., 70 Fifth Ave., New York 11, N.Y., 1962. 418 pp., illus. $5.95

A compact dictionary of terms from the practice and literature of art (including architecture, painting, sculpture, and the graphic arts). Glossary gives French, German, and Italian terms most commonly used, along with their English equivalents.

Heating and Humidifying Load Analysis. F. W. Hutchinson. The Ronald Press Co., 15 E. 26 St., New York 10, N. Y., 1962. 494 pp., tables, diagrams. $12.50

To be reviewed.

Moment Distribution: A Rapid Method of Analysis of Rigid-Jointed Structures. Edgar Lightfoot. John Wiley & Sons, Inc., 440 Park Avenue South, New York 16, N.Y., 1961. 361 pp., illus. $11

Up-to-date treatment of important developments in the moment-distribution method. Author shows that many of the mathematical procedures formerly used can be simplified, with no loss of accuracy and with considerable saving of time.

Office Buildings. Leonard Manasseh and Roger Cunliffe. Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y., 1962. 208 pp., illus. $12.75

To be reviewed.

Vasari on Technique. Giorgio Vasari. Dover Publications, Inc., 180 Varick St., New York 14, N.Y., 1961. 328 pp., illus. $2 (paperbound)

Written as an introduction to Vasari's famous Lives of the Artists, *this 16th-Century treatise surveys the materials and techniques of Renaissance architecture, sculpture, and painting. Of interest are such chapters as "How one is to recognize if a Building have good Proportions, and of what Members it should generally be composed."*

Double-duty walls constructed in one operation with Natco Uniwall

The American Sugar Company's new Bunker Hill Refinery in Charlestown, Mass., constructed of Natco Uniwall, was chosen as one of the country's "top 10" industrial plants of 1961. Engineer-Contractor: Bechtel Corp.

Natco Uniwall is a single load-bearing, structural clay tile unit with two finished faces. Its *exterior* face has an unglazed rugg-tex finish with the texture and appearance of high-quality face brick. Its *interior* face has a permanent, durable ceramic glazed finish available in a variety of attractive colors.

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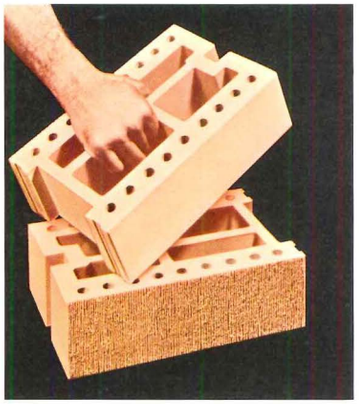

Two Natco Uniwall units showing the interior ceramic glazed face and the exterior unglazed rugg-tex face.

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Continued from page 158

tion. The meeting of these criteria, however, may not always qualify a product, due to the many intangibles and variables.

Written requests are essential, and should be mandatory for the following reasons:

(1) They form a basis of understanding in the event of a later claim of misinterpretation.

(2) It eliminates endless, worthless hours on the telephone with persons who are reasonably sure they do not comply, but feel a telephone try is worthwhile.

(3) Written requests are generally submitted only by persons with a genuine interest in bidding.

(4) They permit review and evaluation "in the quiet" of the normal office procedure, without the pressure of a possible sales pitch.

(5) For a given level of quality, it weeds out requests from persons with a product obviously below requirements. After an unsuccessful attempt or two, for the same quality level, no further requests are received.

Requests should be considered only from prime bidders. If the architect-engineer elects, however, requests may be considered from subs, distributors, manufacturer's representatives, and other sales persons. This is due to the many varied distribution methods and practices in our industry.

The time for receiving requests for approval can be varied, depending on length of bid time, complexity, and size of work.

Time must be alloted for review and evaluation of requests. This is maybe difficult at first. However, time always has to be made available for such review after bids are received, and the process is merely reversed to pre-bid time.

The method must be administered and enforced with a strong will. Deviations cannot be permitted—even to "friends" in the industry. If the product is not specified, it cannot be used. Deviations from the policy result in a great many problems, and the requirements specified soon become worthless.

Occasionally, an "equal" product is omitted, possibly by oversight. This does not change the conditions, and if the bidder did not find his product he should have applied. Each job and each owner's prejudices are individual considerations. A bidder *cannot assume* he is approved.

Approval can be given for a manufacturer, without giving all particulars of model, size, finish, etc., if the approval is conditional upon meeting the criteria. This eliminates errors in transposed numbers, etc., and a complete description is avoided. It is only essential that one is satisfied that the manufacturer is able to comply.

In fairness to bidders, prompt consideration should be given. Addenda should be issued as the bidding period progresses, so those who make early application may know if they are approved or not in time for their "take off."

The method does not eliminate the need for follow-up. At times it is known that a manufacturer can comply and produce, but there may be a question on whether he intends to. Listing any item does *not* necessarily give automatic and total approval. To implement the follow-up, it is essential to request a complete list of subcontractors, equipment, materials, etc., including items where only one product is named. This serves the purpose of: (1) making sure a nonlisted item is not slipped in; (2) offering an opportunity to clear up any misunderstanding with the proposed supplier; (3) forming a permanent record. Of course, shop drawings, etc., on all items, including those of base specifications items, are required.

On the rare occasion that a change needs to be made to a "nonapproved" item, possibly as a result of an owner's demand, it can be processed on a change order.

NOTICES

New Branch Offices

KUMP ASSOCIATES, Architects and Planning Consultants, 121 East 54th St., New York 22, N.Y.

New Addresses

WELTON BECKET AND ASSOCIATES, Architects-Engineers, 300 Park Ave., New York, N.Y.

DONALD J. BROWN, Architect, 2045 Wantagh Ave., Wantagh, N.Y.

CONSULTING ENGINEERS COUNCIL, Suite 801, World Center Building, 16th and "K" Sts., N.W., Washington 6, D.C.

CULLER - GALE - MARTELL - NORRIE AND DAVIS, Architects-Engineers, 707 Peyton Building, Spokane 1, Wash.

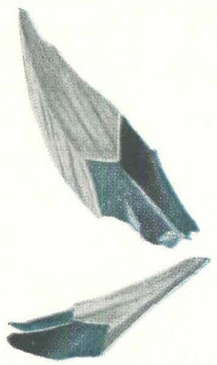
HUSBAND & WALLACE, Architects, 120 Hughson St. S., Hamilton, Ontario, Canada.

TASSO KATSELAS, Architect, 5471 Coral St., Pittsburgh 6, Pa.

KATZMAN ASSOCIATES, Architects, 1807

Continued on page 188

hard to part with



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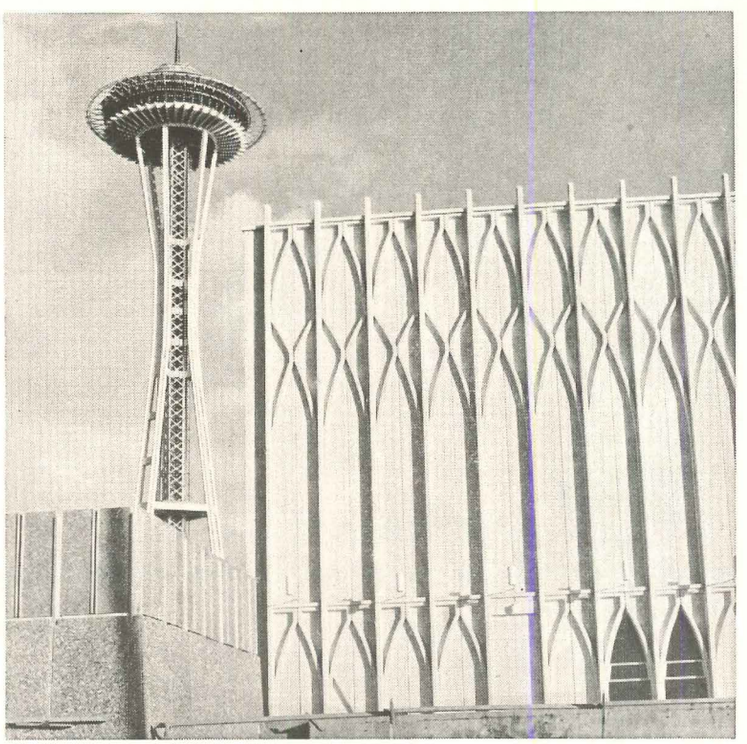
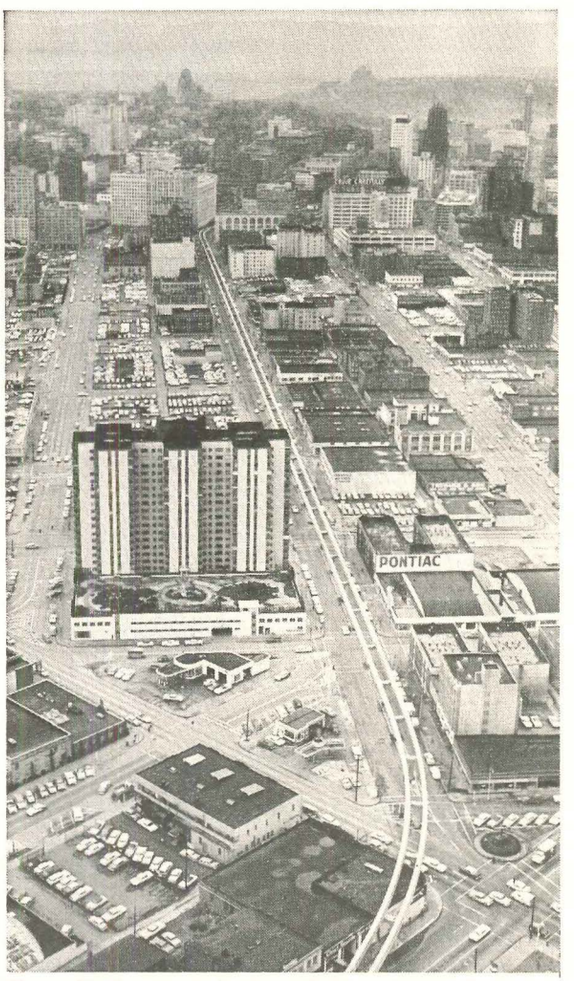
Five prestressed Gothic arches, 100 feet high, span the entrance court of the Science Pavillion, Seattle World's Fair. Note the filigreed pattern in the domes and slender columns.

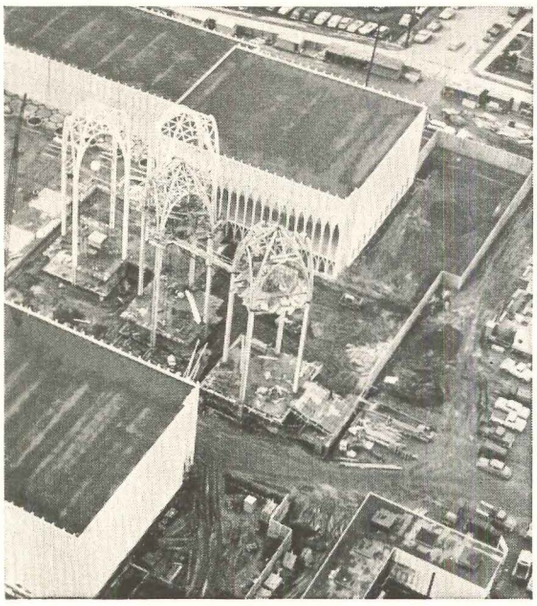


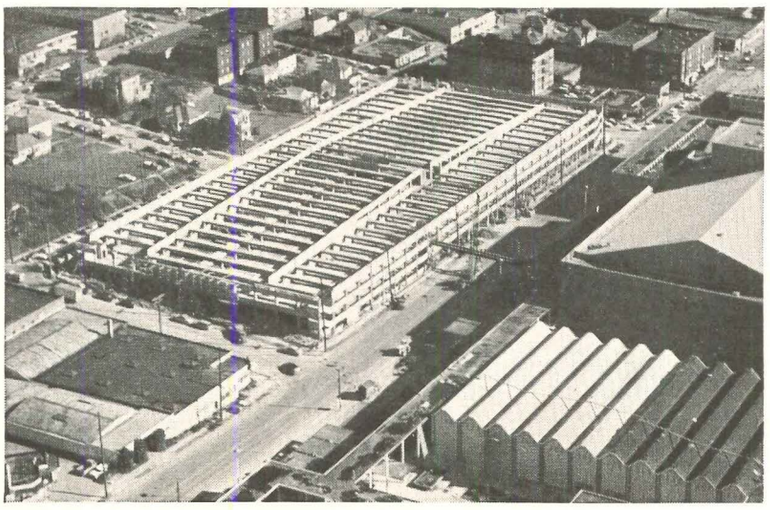
Thin wall panels of the Science Buildings are sculptured in prestressed concrete. Some have open filigreed pattern. All are faced with crushed white quartz mixed in white cement. Panels bear the load of prestressed T-section beam supported roofs with spans up to 112 feet.

U. S. Science Pavillion. The six buildings and five 100′ arches are of prestressed concrete from the ground up. This new concept in construction offers freedom for aesthetic expression.



Monorail Transport System. Rubber-tired 4-Car trains will carry 450 passengers on prestressed, hollow concrete track cast in 120 feet lengths. Speed 97 seconds per trip. Said to be the solution to mass transportation in the future.





Four-story, 1505-car parking facility. A new design concept employs 313 prestressed T-Girders. Cost $1070 per car stall—almost ⅓ less than similar car parking and storage facilities.

The Prestressed Concrete Industry Offers--

adaptability unlimited!

Architects and engineers everywhere are seeking greater freedom in aesthetic expression. Many are closely watching the searchlight as it focuses sharper and sharper upon the growing exploitation of the design potentials of prestressed concrete.

Currently in sharp focus is the wide diversity of adaptations of prestressed concrete in structures at the Seattle World's Fair. They range from 100 foot high Gothic arches to the mile long monorail transport system.

Particularly in the structures of the U. S. Science Pavillion is the aesthetic fully expressed in the filigreed patterns of the Gothic arches and the wall panels. Here are some of the ways in which prestressed concrete enables you to put warmth, depth, color and texture into facades:

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2. Panel shapes which enable you to break up the monotony of conventional, rectangular structures.
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5. Panels with colorful aggregate materials exposed.
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E. Faster installation.
F. Virtual elimination of maintenance.
G. Inherent fireproofness.

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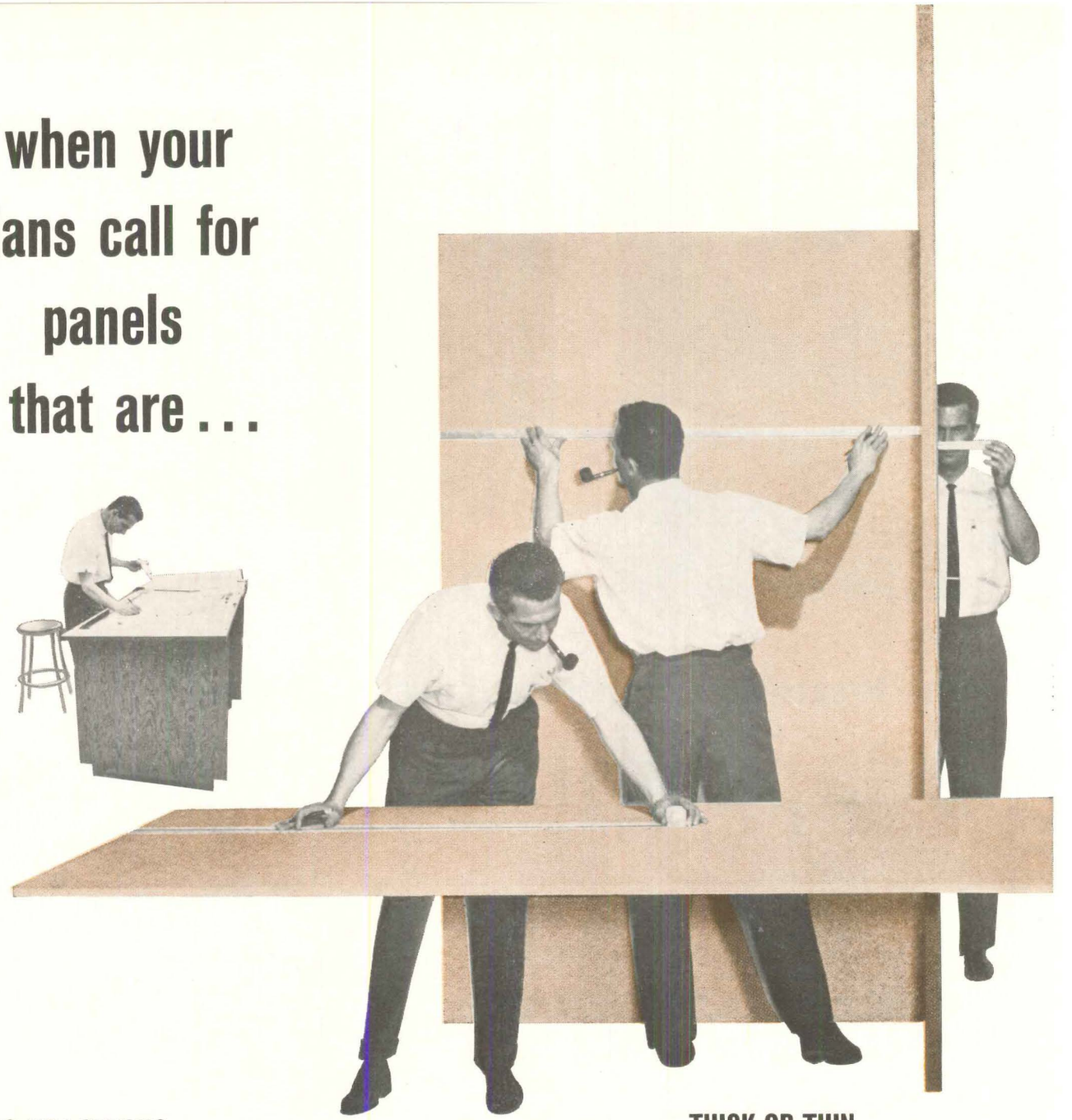

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Timblend is available in stock lengths up to 16 ft. Outstanding edge-gluing strength enables assembly of longer or wider custom-size panels.

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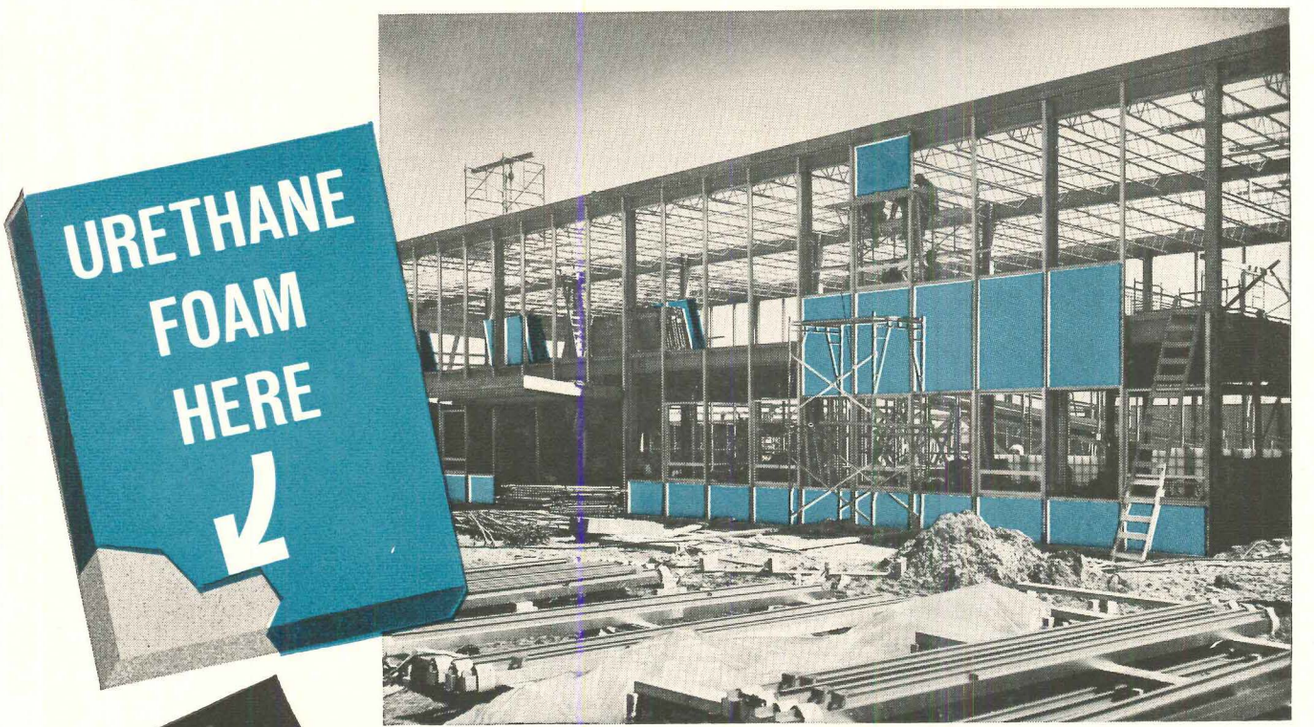

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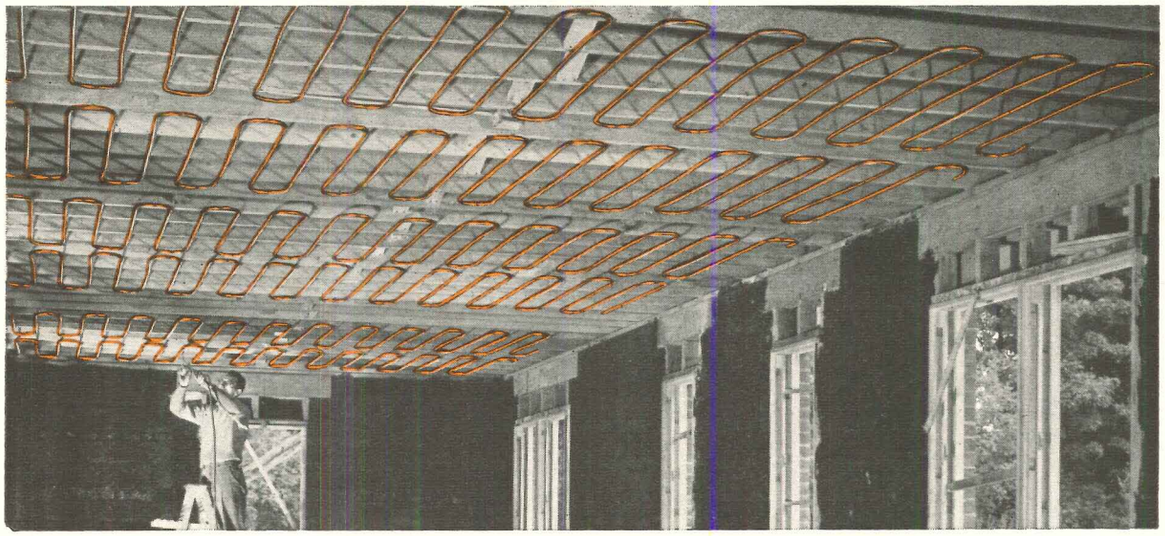

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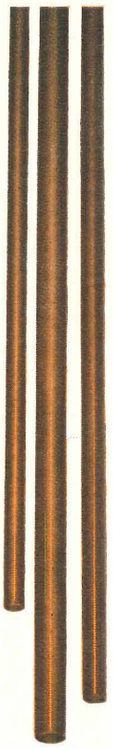

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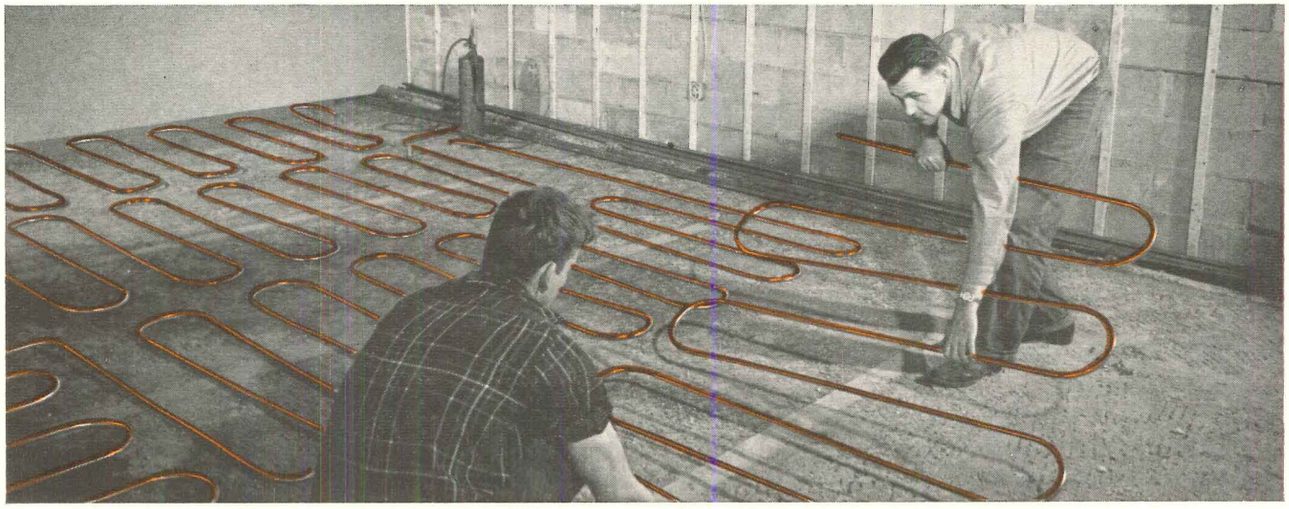

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Architect: George Matsumoto
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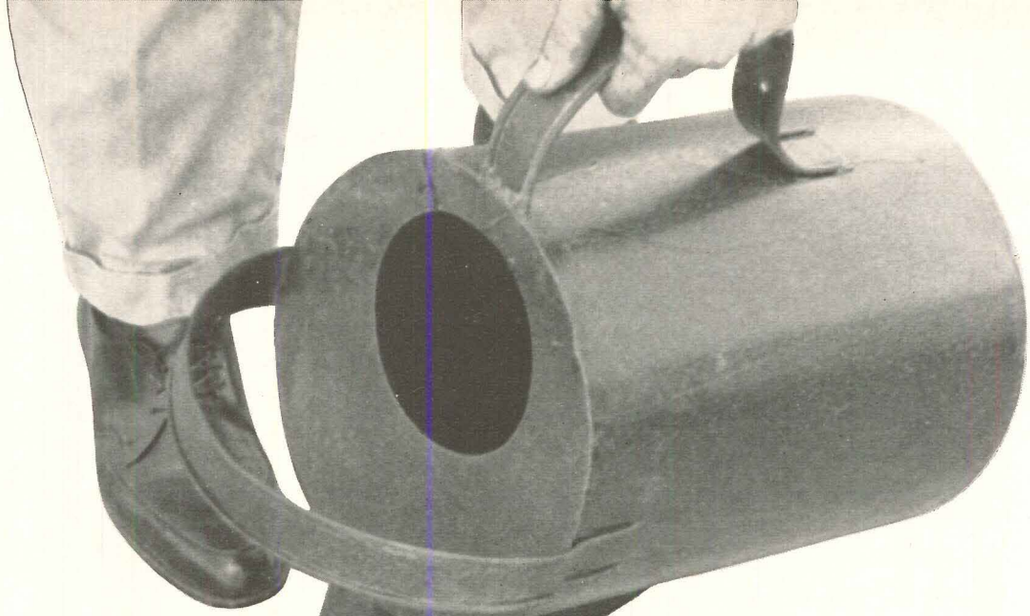

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Continued from page 178

N. Central, Phoenix 4, Ariz.

ROBERT A. LITTLE & GEORGE F. DALTON & ASSOCIATES, Architects, 11900 Shaker Boulevard, Cleveland 20, Ohio.

JOHN W. LONG, Architect, Suite 506, Bamlett Building, 630 8th Ave., S.W., Calgary, Alberta, Canada.

SHERWOOD, MILLS AND SMITH, Architects, 777 Summer St., Stamford, Conn.

New Firms

ROBERT M. BLUNK, Architect, 1290 Bayshore Highway, Burlingame, Calif.

BERTRAM BERENSON, EDMUND GLENNY, principals in firm of BERENSON-GLENNY, Architects, 889 W. McKinley St., Baton Rouge, La.

MORRIS KETCHUM, JR. AND ASSOCIATES, Architects, 227 E. 44 St., New York 17, N.Y.

MENDELOW-KEYWAN, Architects, Thorncliffe Park Drive North, Thorncliffe Park, Toronto 17, Canada.

PAUL P. SANZARI, Architect, 630 Saw Mill River Rd., Ardsley, N.Y.

J. STANLEY SHARP, Architect, 227 E. 44 St., New York 17, N.Y.

New Partners, Associates

JAMES J. MORISSEAU, appointed Editorial Associate in firm of EDUCATIONAL FACILITIES LABORATORIES, INC., New York, N.Y.

HERBERT POMERANTZ, made Partner in firm of BROWN & POMERANTZ, Consulting Engineers, New York, N.Y.

MARC WEISSMAN, made Senior Associate in firm of LAWRENCE WERFEL & ASSOCIATES, Flushing, N.Y.

PHILIP WESLER, named Associate in firm of FRAIOLI-BLUM-YESSELMAN, Consulting Engineers, New York City and Norfolk, Va.

DONALD W. WINKELMANN, named Associate in firm of NARAMORE, BAIN, BRADY & JOHANSON, Architects, Seattle, Wash.

VALETON J. DANSEREAU, named Associate in firm of CURTIS AND DAVIS AND ASSOCIATED ARCHITECTS AND ENGINEERS, New Orleans, La. and New York, N.Y.

STANLEY R. GEDA, THEODORE M. RANDMETZ, named Associates in Landscape Architecture and Site Planning in firm of MORTON S. FINE & ASSOCIATES, Hartford and Norwich, Conn.

Name Changes

ARTHUR V. MCCONVILLE, MAURICE W. WASSERMAN, appointed Associate Members in firm of IRA KESSLER & ASSOCIATES, Architects, New York, N.Y. Formerly IRA KESSLER, Architect.

CREDITS

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PAGE 134
Gottscho-Schleisner, Inc.

PAGE 135
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(1) Jon Brenneis; **(2, 3, 4, 5, 6, 7)** Morley Baer; **(8, 9)** Jon Brenneis

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Top Row: Both, Morley Baer
Middle: Hedrich-Blessing
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All: Morley Baer

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All: Stewart's Commercial Photographers

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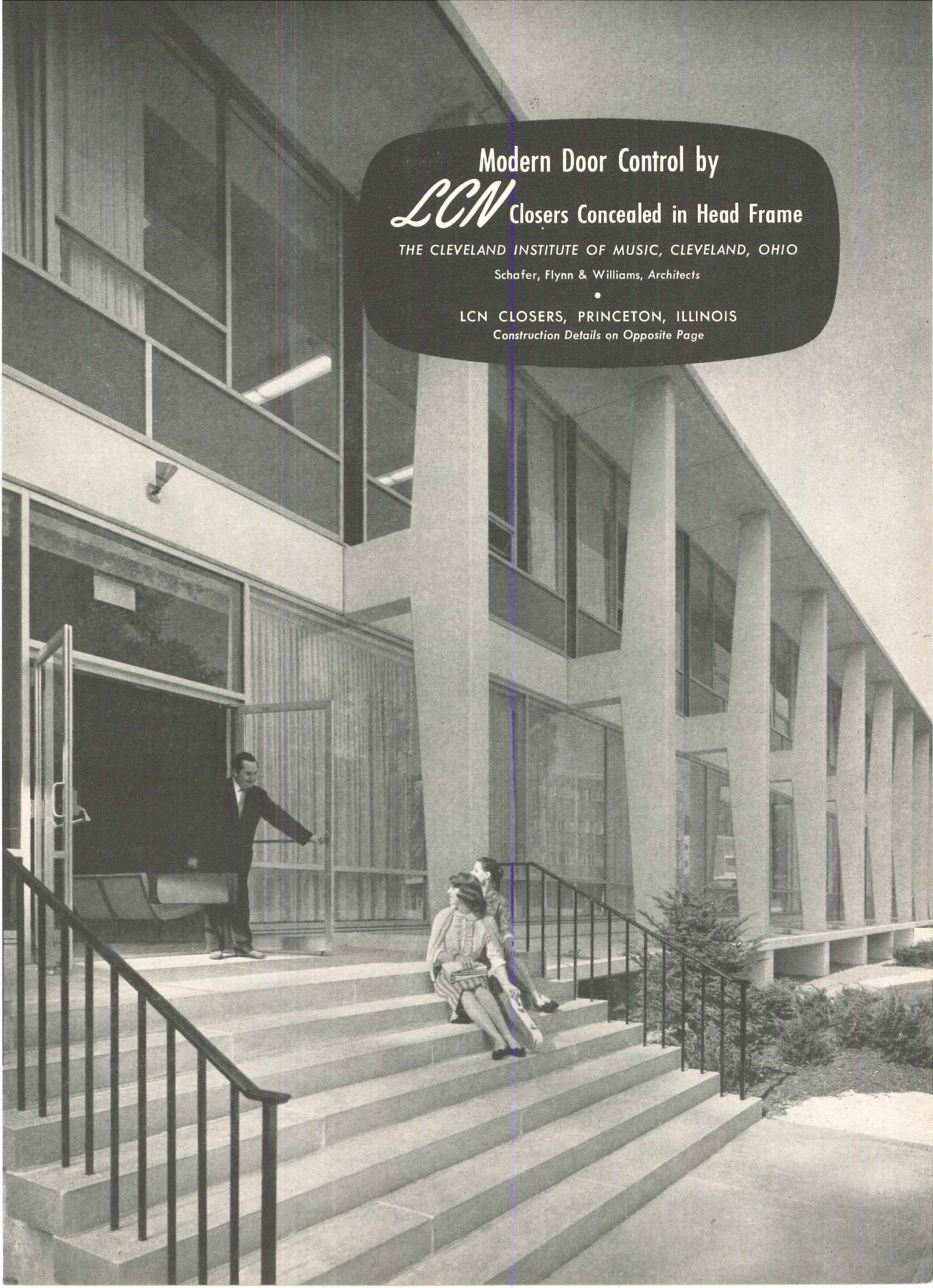
SOM's Associated Architects

PAGE 133
(7) John Hancock Building, New Orleans, Louisiana: Nolan, Norman & Nolan, Associate Architects; **(8)** First National City Bank of Fort Worth, Texas: Preston M. Green, Associate Architect

PAGE 136
Crown Zellerbach Building, San Francisco, California: Hertzka & Knowles, Associate Architects



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Schafer, Flynn & Williams, *Architects*

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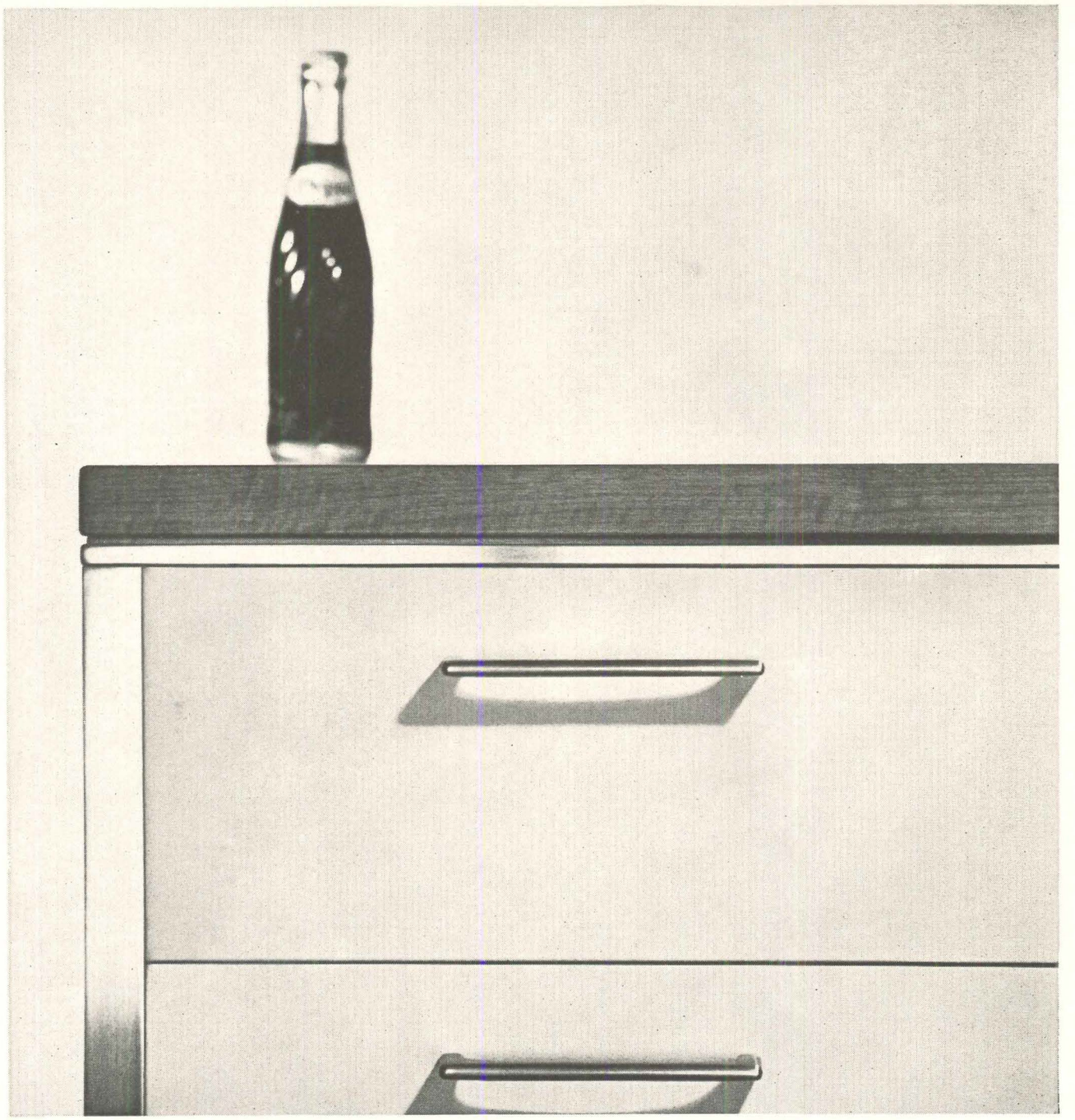
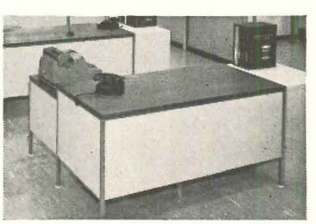


AT PEPSI, DORIC TREATS THE OFFICE TO A WORK-BREAK



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You reduce job time and costs on space-saving solid plaster partitions with this new track, because it: **1.** Eliminates ties or other supplemental fastening of channel studs or ⅜" rib metal lath at the floor. **2.** Saves installation of separate plastering grounds by providing strong, straight grounds for both sides of the partition. **3.** Avoids lost time for repairs, since the strength of the inverted channel design protects the grounds against damage by on-site traffic. **4.** Provides quick, accurate 12" or 16" channel stud spacing — without premeasuring — through location of retaining slots 4" o.c. Milcor Solid Partition Track is too new to be in Sweet's. Write for literature.

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ML-59

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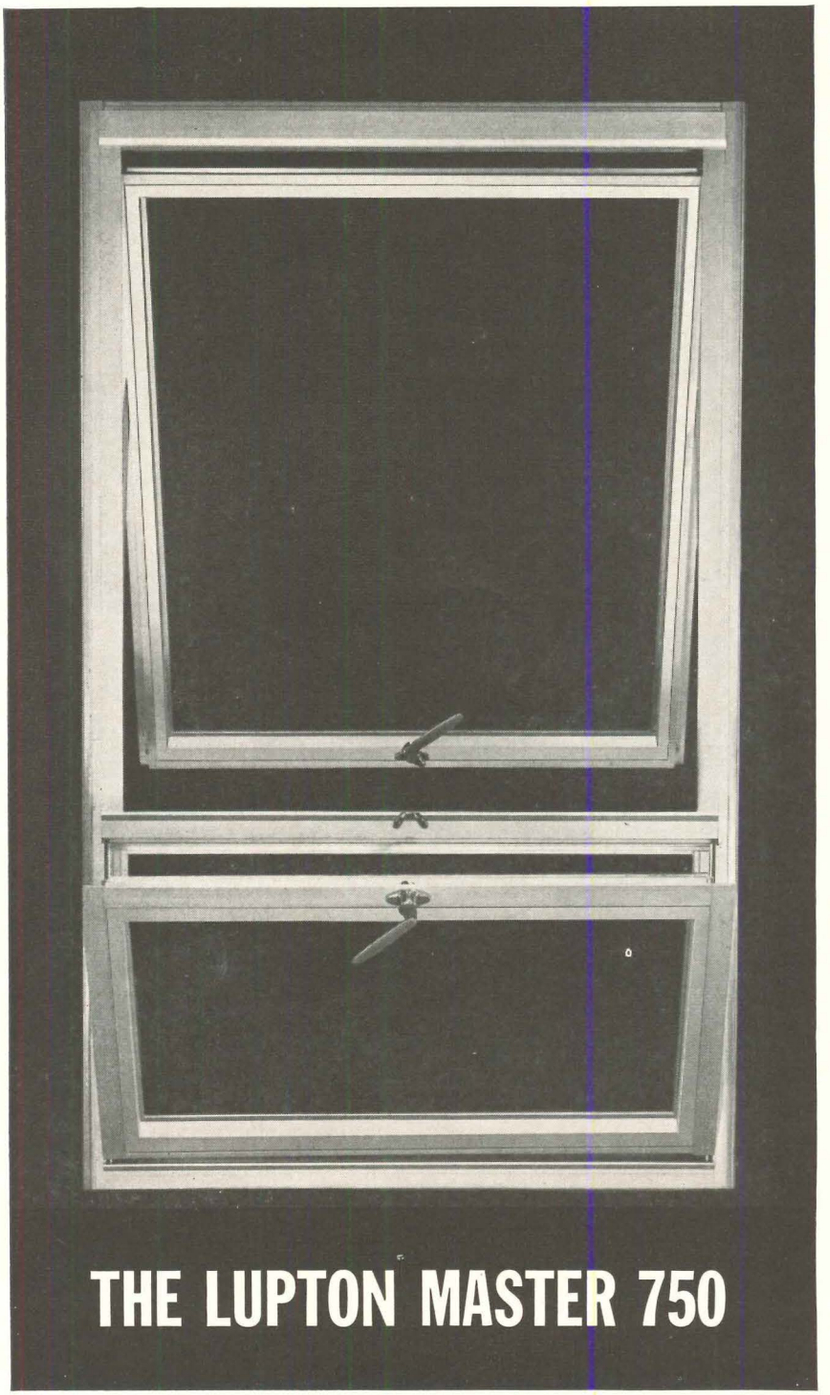
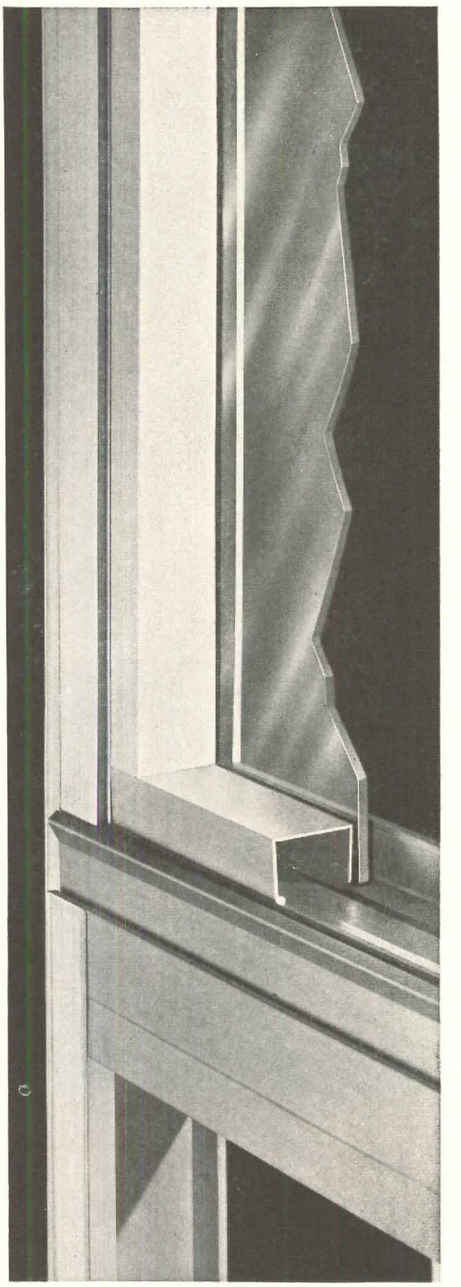




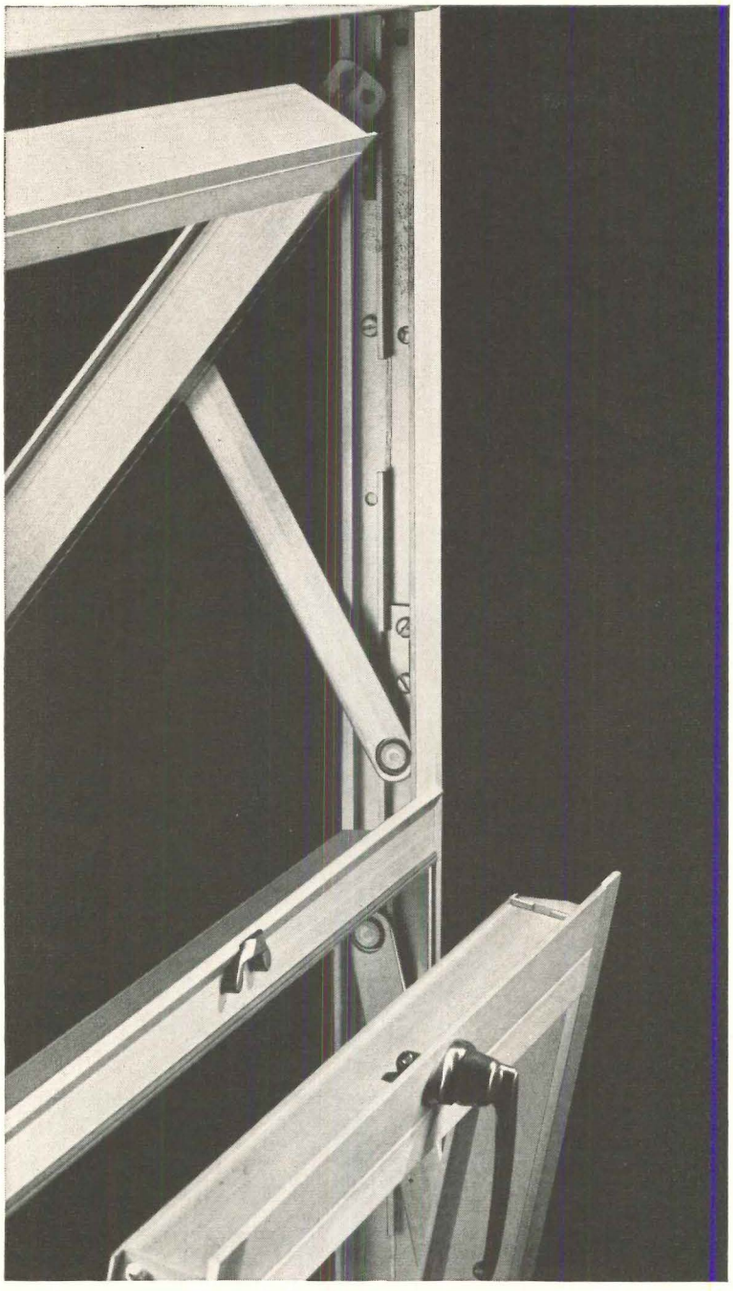
¾" glazing stop and inside snap-in bead— The ¾" deep glazing rabbet is a must for today's glazing requirements—assures a watertight installation. Bead snaps in place on inside to present a uniformly superior appearance at virtually no greater cost than that of outside putty glazing.

A NEW DESIGN BREAKTHROUGH THAT CAN CHANGE

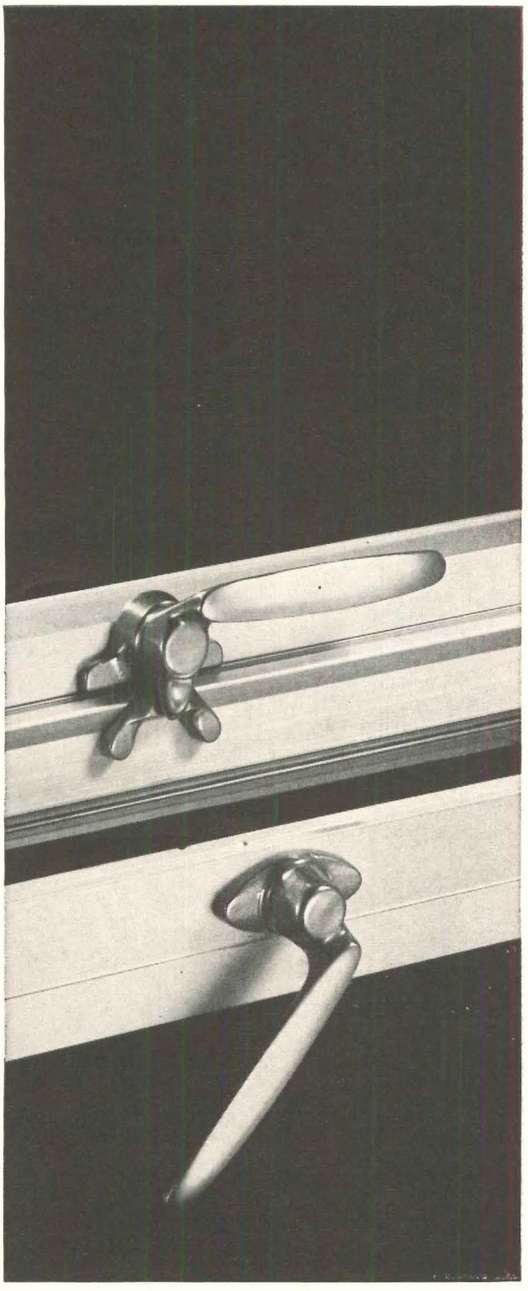
Permanently rigid construction. Smoothly operating, hurricane-tight ventilators. ¾" glazing stop. Inside glazing with snap-in aluminum glazing bead. Unexcelled workmanship. This is the essence of the Master 750, Lupton's new projected aluminum window for schools, offices, hospitals and similar buildings of an institutional or commercial type.

The key to the outstanding rigidity of the Lupton Master 750 window is a thoroughly tested technique of corner construction. This results in strong, uniform mechanical joints without the objectional features of welding. Dimensions are held to closer tolerances. Surfaces are cleaner, neater . . . better suited to modern finishes.

The unique design of the ventilator sections assures a weather-tight seal, too. There is no "reverse bar" construction. Ventilators close tightly along a single plane, making unbroken contact against a weatherstrip of



Weather tight ventilators operate easily and smoothly—New type construction with ventilator surface in a single plane eliminates the "reverse bar"—makes possible a continuous, unbroken contact between frame and ventilator. Contact is sealed with elastomeric vinyl at all points. There are absolutely no gaps in the weatherseal. Safe, smooth operation is provided by the nylon friction shoes, safely locked in channels extruded as part of jamb bars. Shoes cannot jump out of track. Note, sturdy supporting arms, and nylon ventilator guides that automatically center ventilators when closed.



Attractive locking handles—Simply designed white bronze handles are attached to the window with invisible fasteners . . . there are no screws exposed on the inside. If desired, ventilators may be operated mechanically in groups.

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elastomeric vinyl around the entire perimeter. Lupton Master 750 Aluminum Windows are available in sizes up to 60″ x 132″ with ventilator sections up to 60″ x 44″. Above are a few of the unique design features that make the Master 750 the new standard for quality and performance in engineered aluminum windows. Please read them. Call your nearest Lupton representative for further information, or write directly to us.

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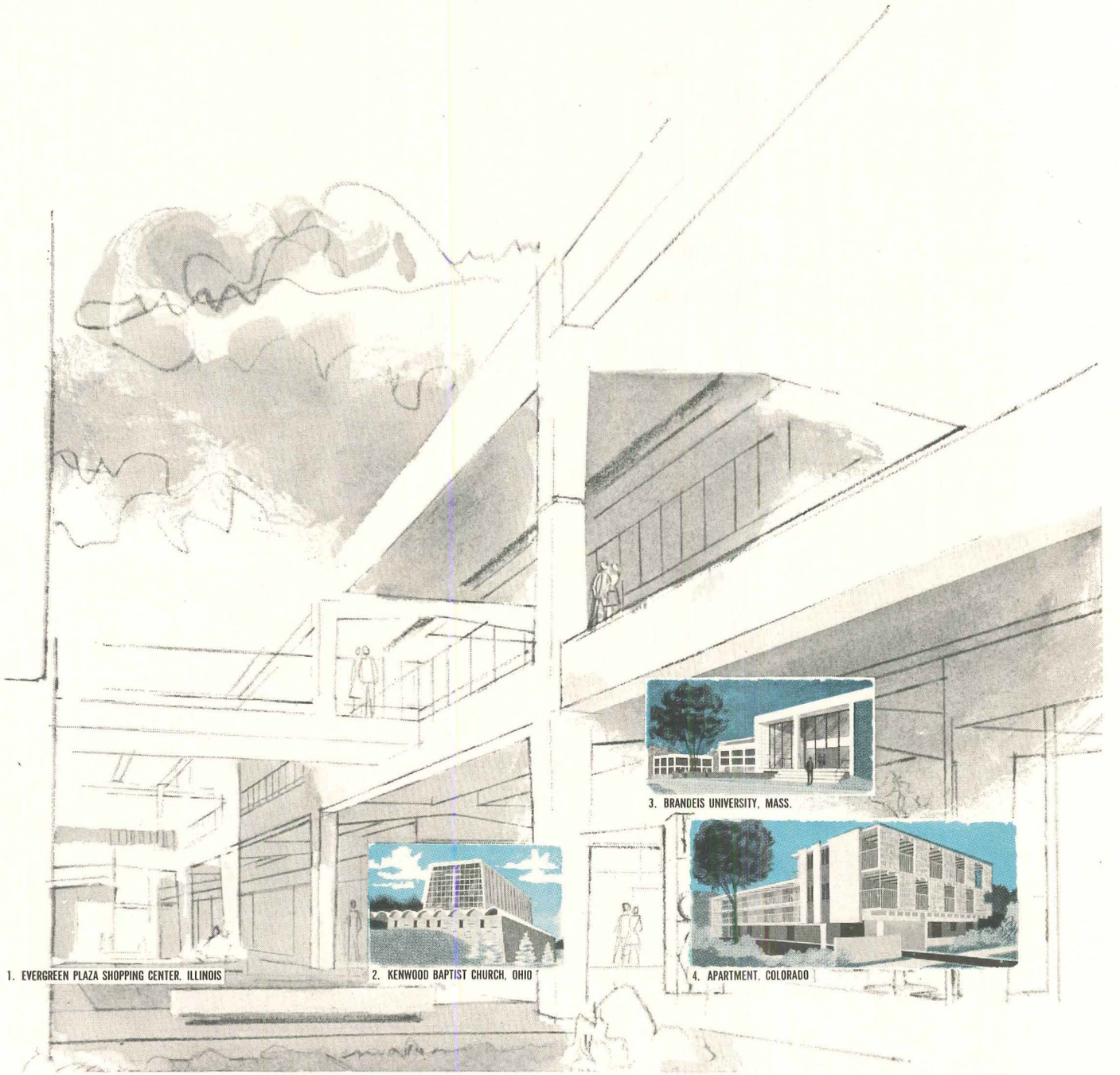

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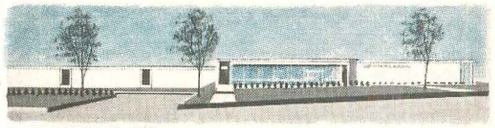

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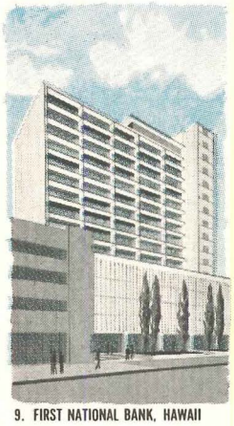

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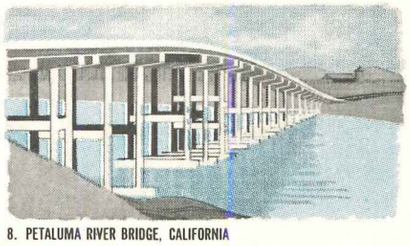

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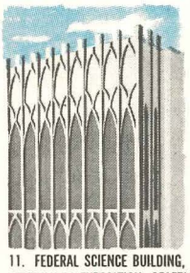

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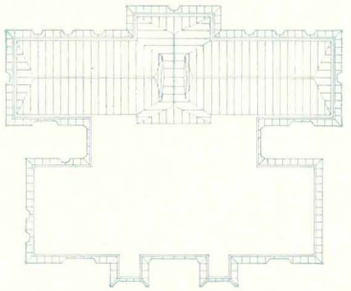

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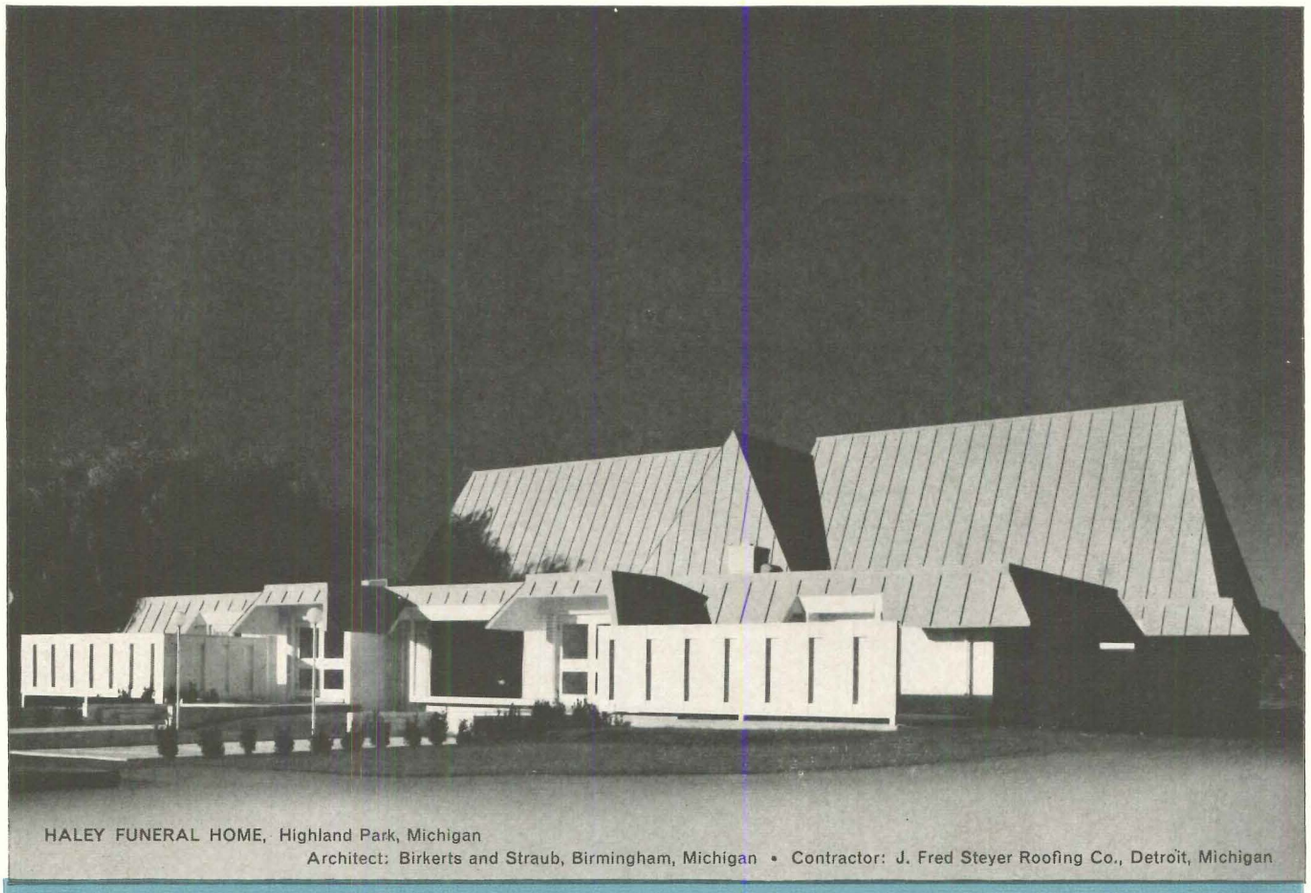

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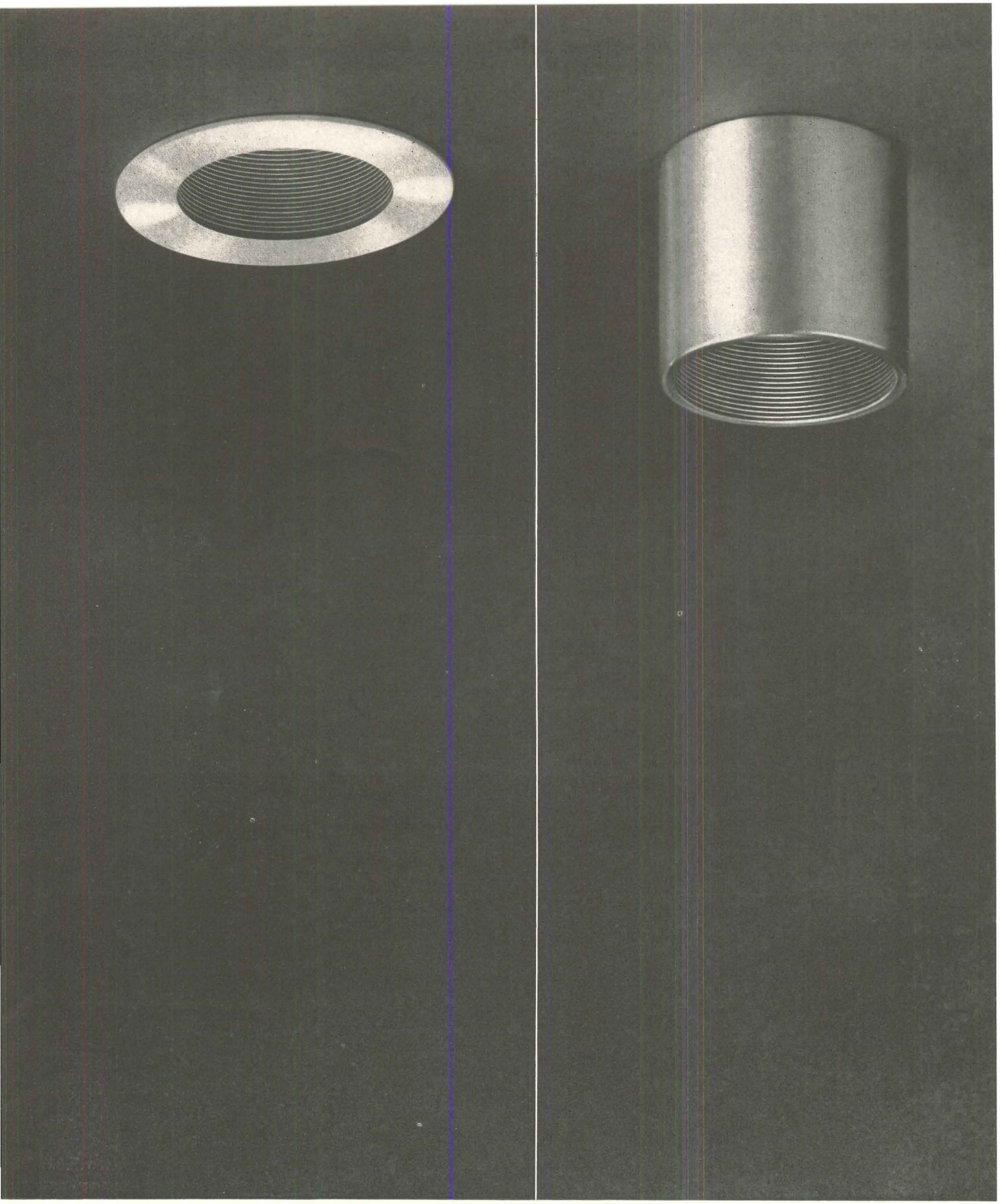

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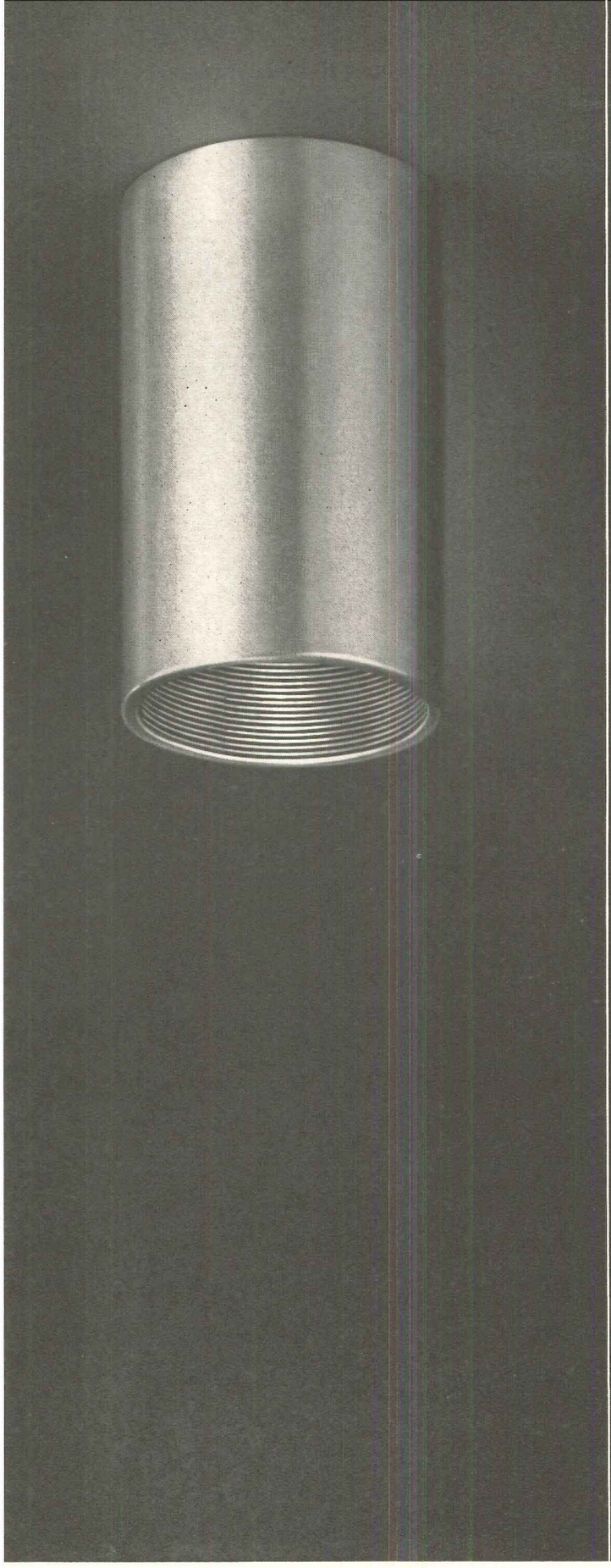

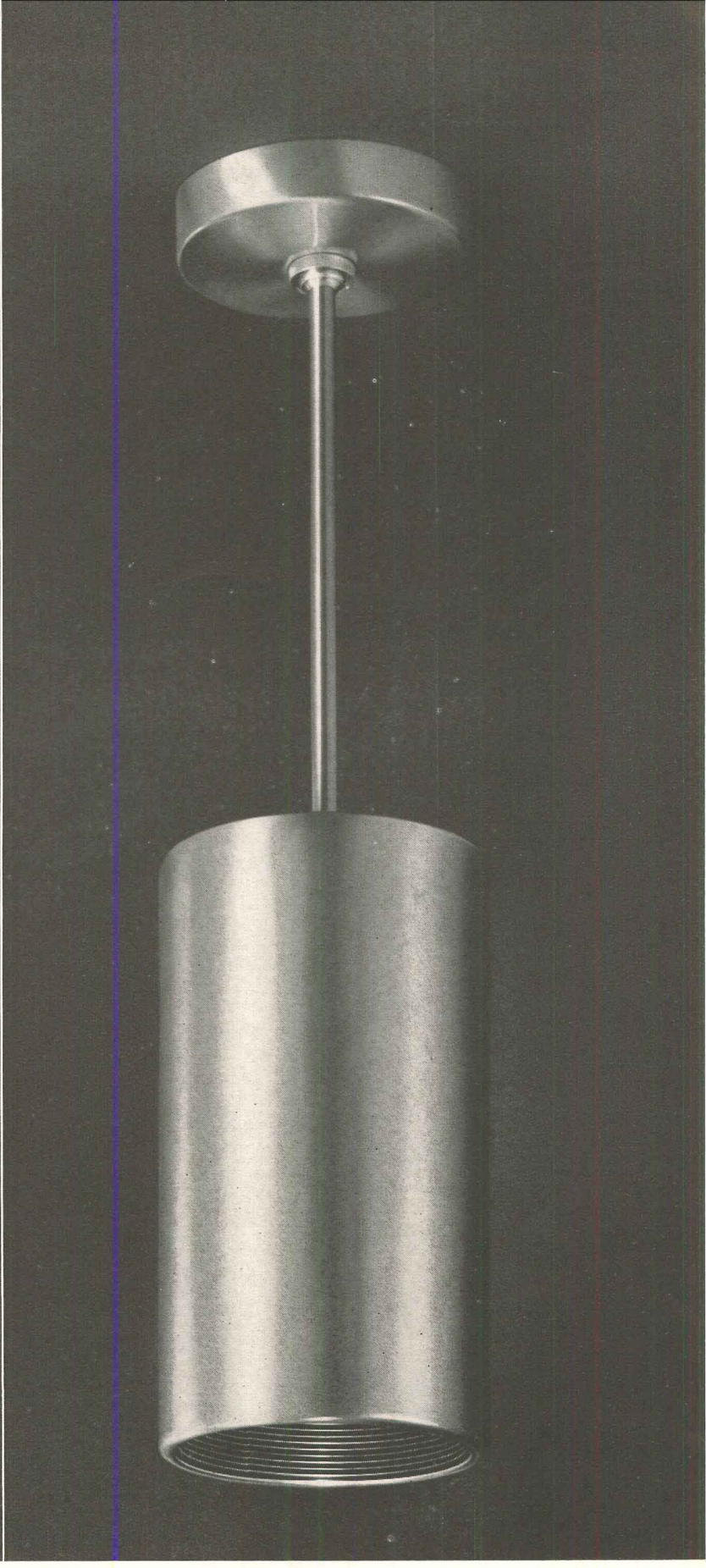

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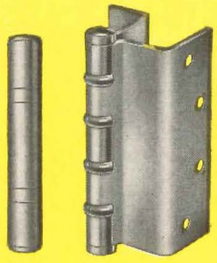

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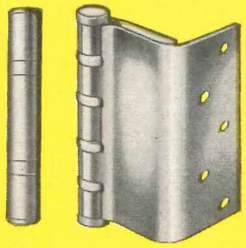

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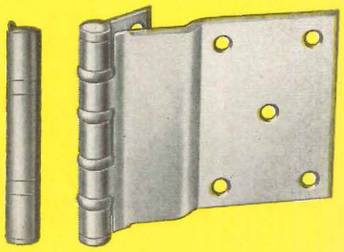

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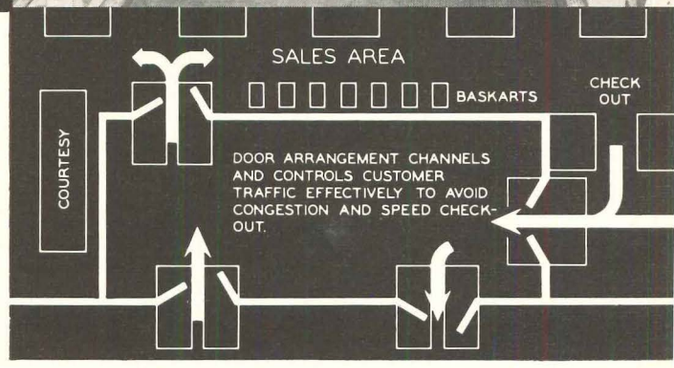

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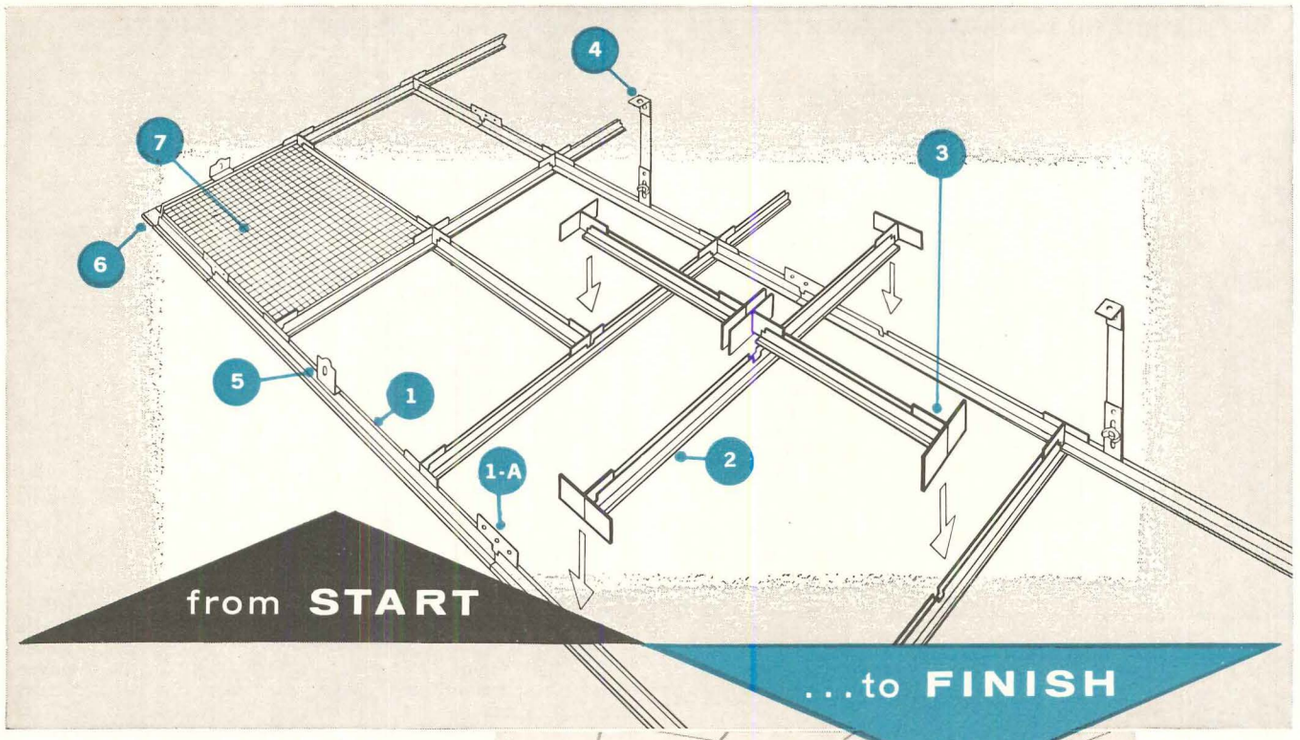
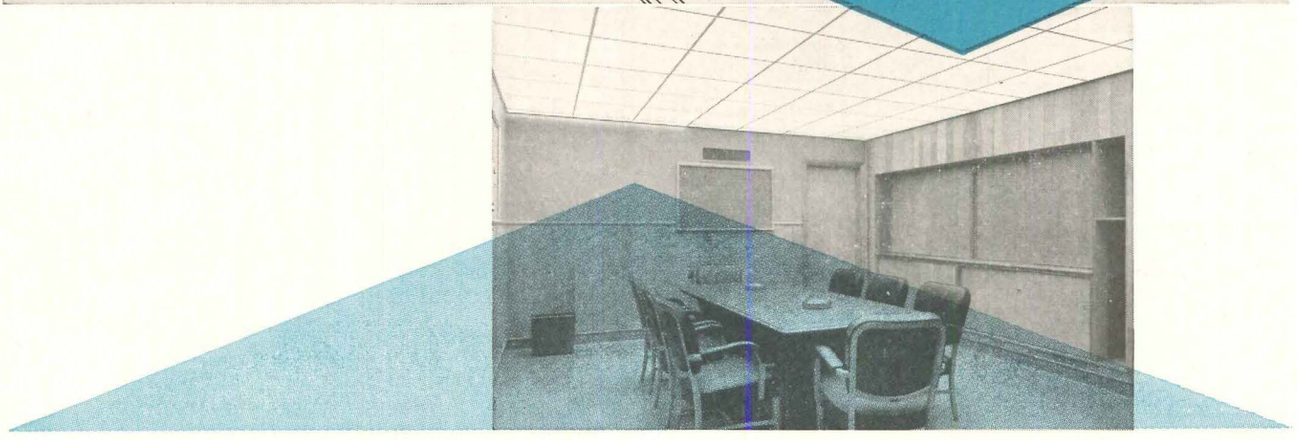
Continued on page 206





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Concrete design and performance report:

SEATTLE WORLD'S FAIR FEDERAL SCIENCE PAVILION

POZZOLITH controlled performance concrete speeds construction of all-precast Federal Science Pavilion

Six remarkable buildings on a six-acre site make up the $3½ million Federal Science Pavilion, one of the main "theme" features of the Seattle World's Fair. Built completely of precast, prestressed concrete components weighing a total of 11,000 tons, it is believed to be the largest building group ever to utilize this type of construction. It will provide permanent quarters for possibly the most comprehensive science exhibit ever assembled.

Gothic in white—The dazzling white concrete buildings are grouped around a central plaza and rest area containing a pool and fountains. A striking effect is achieved at the entry to the plaza by five open-ribbed vaults rising to 100 feet in height. Gothic in style, the soaring, slender concrete arches symbolize science's continuing search for knowledge.

Exterior surfaces are of white concrete, treated to obtain an exposed quartzite aggregate finish that gives a gleaming white mosaic effect.

Precast concrete throughout—All of the buildings and the 100-foot arches are built of precast, prestressed concrete units. The T-type wall panels are 52′ long and up to 4″ thick. On two sides of all buildings are S-type load bearing stud wall panels, designed to repeat the Gothic motif of the open-ribbed arches. These S-type panels are 32′ and 52′ long, 3″ thick, with a main section 18″ deep and 10″ wide. The largest components supplied were the single-T roof beams, 60′ to 112′ long, 5′ wide, 2½″ to 4½″ thick, and weighing up to 28 tons.

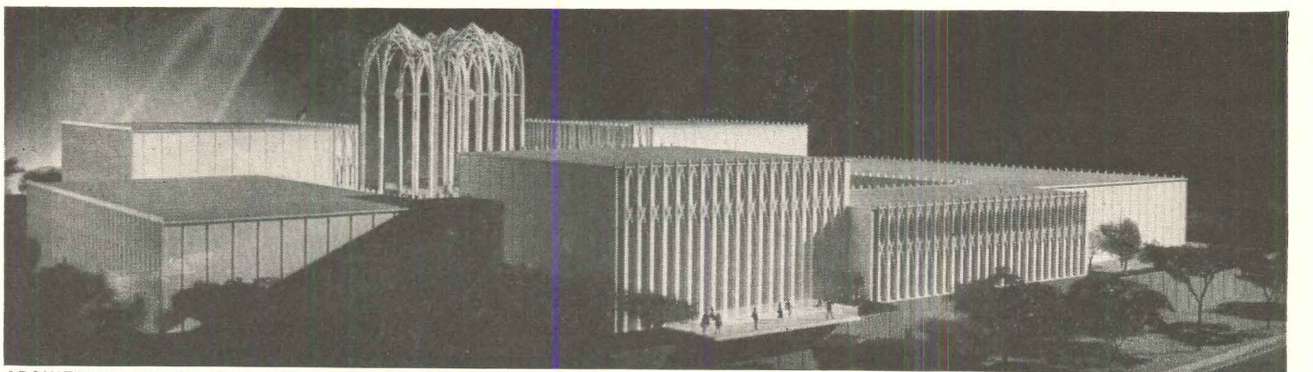
Special concrete considerations—Because of the limited construction time allowed, high early strengths were imperative to the prestressed concrete producer.

All of the S and T wall panels that were to have the white finish were cast face down with white concrete to desired depth, then gray concrete was used to complete the panel. The white concrete mix proportions were 1 part Trinity white cement to 3½ parts of ¼″ top-size quartz aggregate, and a special POZZOLITH formulation which further enhanced the appearance. For backup, a gray concrete mix containing 7 sacks of Type III Incor cement, ¾″ aggregate and POZZOLITH was used. With 140° steam curing, *release strengths of 5000 psi were obtained in 12 to 14 hours. Average strength at 7 days was over 7000 psi.*

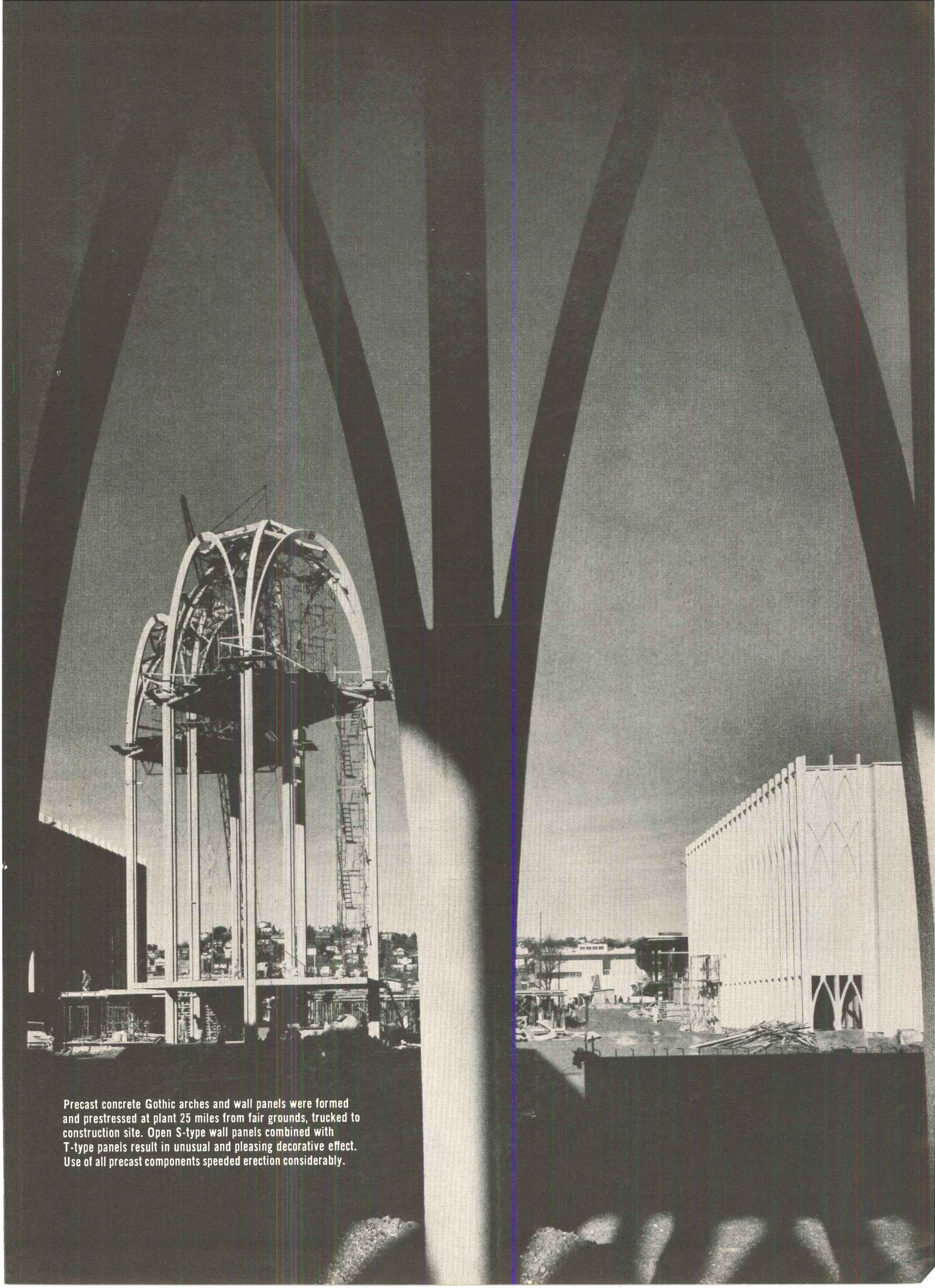
It was extremely important that the two separate concretes develop their ultimate strengths close together, varying not more than 15% in psi. Another consideration here was to provide sufficient retardation in the white concrete to allow integration and bonding of the two layers. *Use of POZZOLITH in the mix enabled the producer to control these factors and meet the performance specifications.*

The local Master Builders Field Man, working closely with Associated Sand & Gravel Company, producers of the precast, prestressed components, helped them develop the ideal mix formulations for fast production, specified strengths and superb finished appearance.

For your next project, call in the Master Builders Field Man near you. Without obligation, he will demonstrate how concrete made with POZZOLITH produces a superior building material—superior in performance, in quality, and in economy to plain concrete or concrete produced with any other admixture.



ARCHITECT'S MODEL OF FEDERAL SCIENCE PAVILION, Seattle World's Fair, Seattle, Washington—11,000 tons of POZZOLITH concrete used in completely precast, prestressed structure under supervision of U. S. Government General Services Administration for U. S. Dept. of Commerce. • Architects: Minoru Yamasaki & Associates, Detroit, and Naramore, Bain, Brady & Johanson, Seattle • Engineering: Worthington, Skilling, Helle & Jackson, Seattle • General Contractor: Purvis Construction Company, Spokane • Precast Concrete Components: Associated Sand & Gravel Company, Inc., Everett, Wash. • Prestressed Concrete Mix Designs and Control: Herman Adalist & Associates, Seattle.



Precast concrete Gothic arches and wall panels were formed and prestressed at plant 25 miles from fair grounds, trucked to construction site. Open S-type wall panels combined with T-type panels result in unusual and pleasing decorative effect. Use of all precast components speeded erection considerably.

P/A JOBS AND MEN

Continued from page 202

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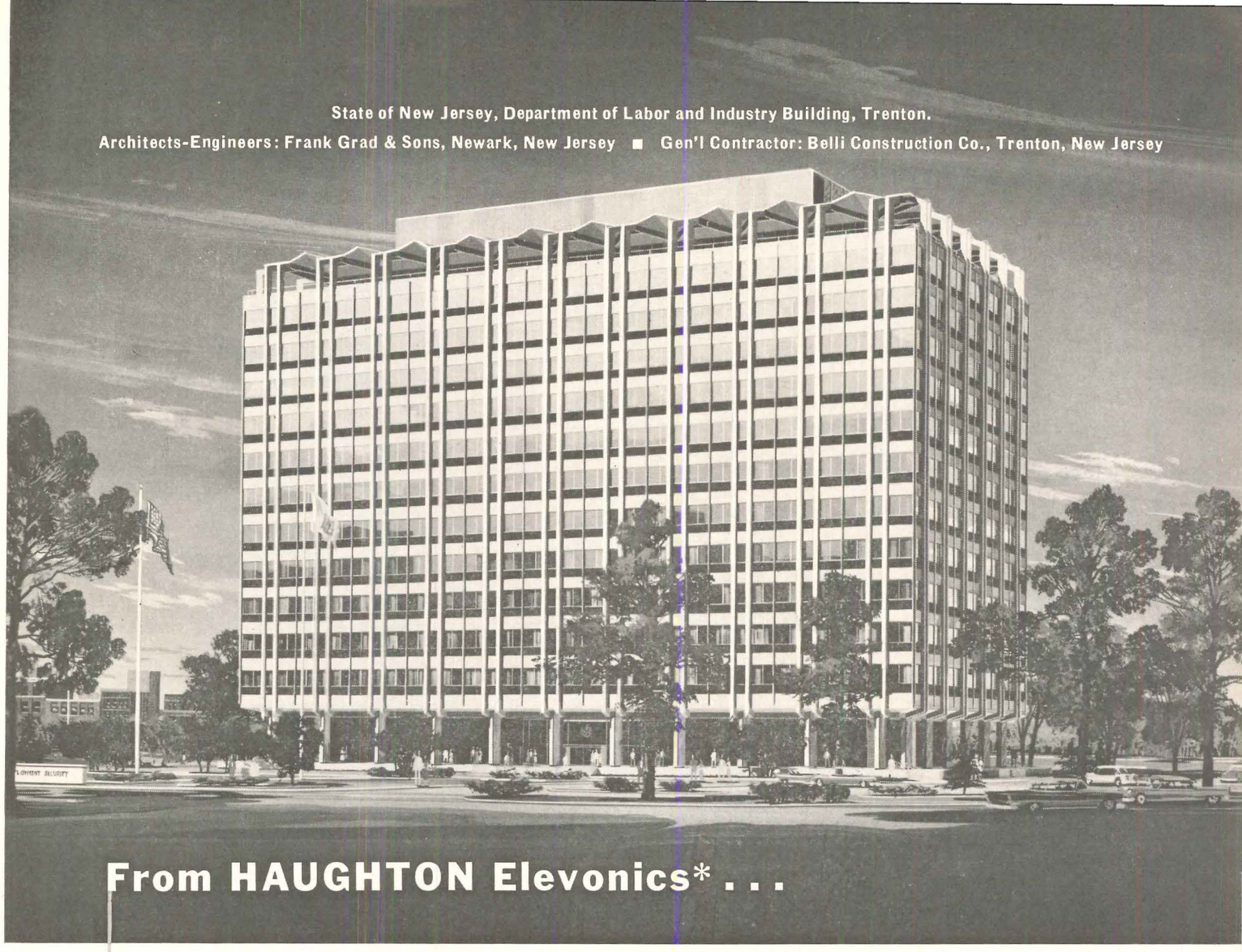

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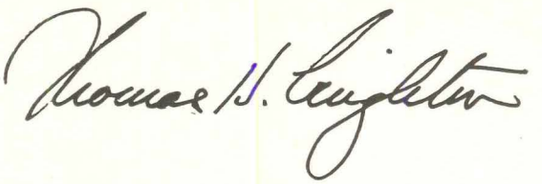

P.S.

The program for expanded services of the American Institute of Architects is a thoughtful approach to the changing position of the architect in society, and PROGRESSIVE ARCHITECTURE heartily endorses it. The concept that the architect should be concerned not only with design and supervision of construction in the limited sense of past eras, but should also co-ordinate and take responsibility for the adjunct problems of land acquisition and use, financing, interior design, and, in a much larger measure, contracting (to name the most obvious of the "expanded" services) is a bold and intelligent one. When the architect is simply a useful instrument at one stage of the entire building process, no matter how completely he may control that one phase, his position is a limited one and a frustrating one. The beginnings of his creative design act are restricted by decisions already made without his advice, and its conclusions are restricted by decisions made by others at a later stage. The position of PROGRESSIVE ARCHITECTURE has always been that the architect is the one person with sufficient over-all concern, responsibility, and information to co-ordinate and integrate all of the factors impinging on the design of space. But the ideal situation has seldom obtained: for one reason because society has not recognized this full service as the architect's role, and has instead accepted the fragmented services of quasi-professional groups; and for another because the architect, by and large, has neither sufficiently interested himself in the problem nor trained himself adequately for the more complete job. The Institute's program, then, has two facets: one of them must face the generic client with reasonable arguments; the other must face the architect with usable information.

It would be easy enough to argue against this new program. It is tempting to say that the architect, in broad terms, should improve his capabilities in the fields that are now indisputably his, before going on to claim others. The median quality of architectural design being produced and built in the United States today is not very high. That below the median is quite miserable, and even that above it is capped by only a very few truly distinguished works each year. Neither in a formistic sense nor in a functional sense are the bulk of our buildings now being produced by architects anything more than a routine collection of copied mannerisms and quick, easy solutions, far below a truly creative level.

If this is true, then how can one urge on the architect even further responsibility? Because, we think, one valid reason for the lack of creativity may be this very limitation of prerogatives of the architect to an abstract phase called "design," when many of the factors that affect design are determined by others. If his larger role is recognized, it may well be that design will benefit from his having more control over his own creative destinies. If he continues to produce a feeble result, he will have no one to blame but himself. Society cannot suffer, because the effect of the land speculator, the package dealer, the interior decorator, the bid-shopping builder, and others is already taking its toll, and an increasing architectural influence cannot be anything but salutary.

Several other questions remain, however. There are architects only interested in design, who will not be at all ready to assume the increasing business responsibility this new program implies. Perhaps, as John Johansen suggested in our Symposium on the State of Architecture last year, we should make a distinction between the full-business-services architect and the "aesthetic innovator who practices architecture as a pure art." And then, further than that, for the architect who wishes to extend his practice to new responsibilities but who needs additional educational bolstering, there must be a serious and fully mature body of literature published, and a high-level series of courses arranged. As to what changes in the curricula of the schools of architecture are implied, that is a big, long-range problem to be faced.

It does seem clear that the architect today confronts a challenging situation. To better his creative product, he must either eschew the "practical" problems that are growing ever more complex, and pay more attention to the art he is left to practice, or he must face up to a program similar to that the Institute is proposing and seriously carry it through. AIA's approach is a bold one; it deserves active support.

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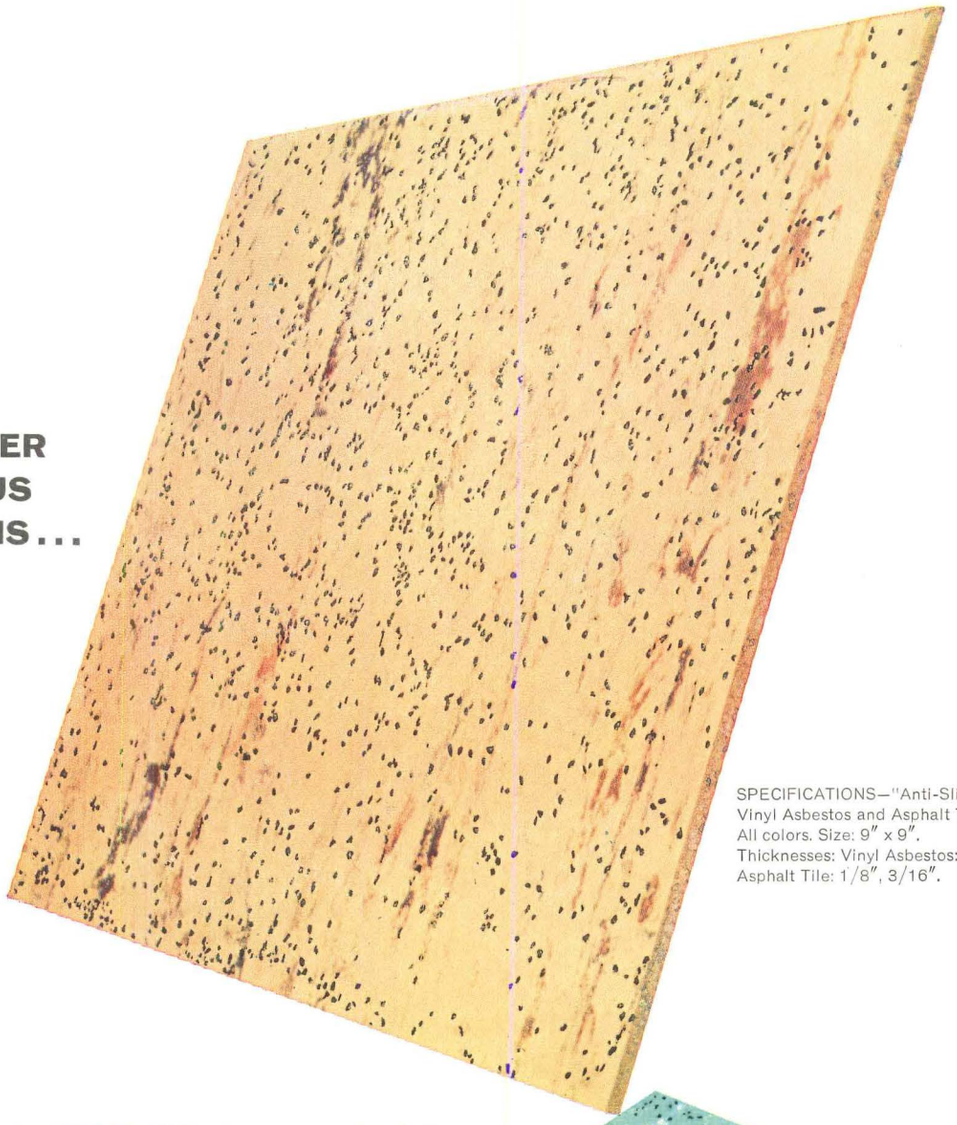

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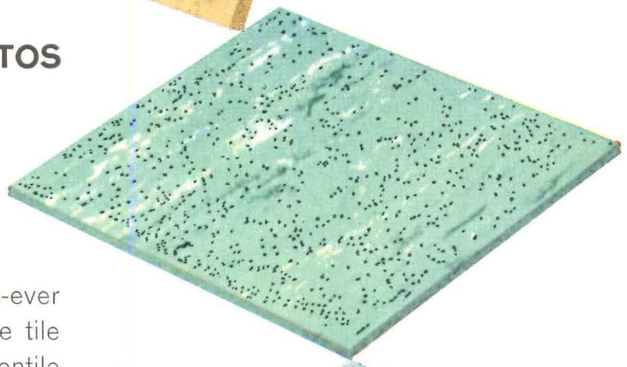

Kentile puts tile...and style...on a firmer-than-ever footing. Skid-resistant chips embedded into the tile at the factory add greater grip to "Anti-Slip" Kentile Vinyl Asbestos and Asphalt Tile. Available in all Vinyl Asbestos and Asphalt Tile colors, "Anti-Slip" Tile makes for unbroken color schemes where "Anti-Slip" meets regular tile. Call your Kentile Representative or consult Sweet's File.

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