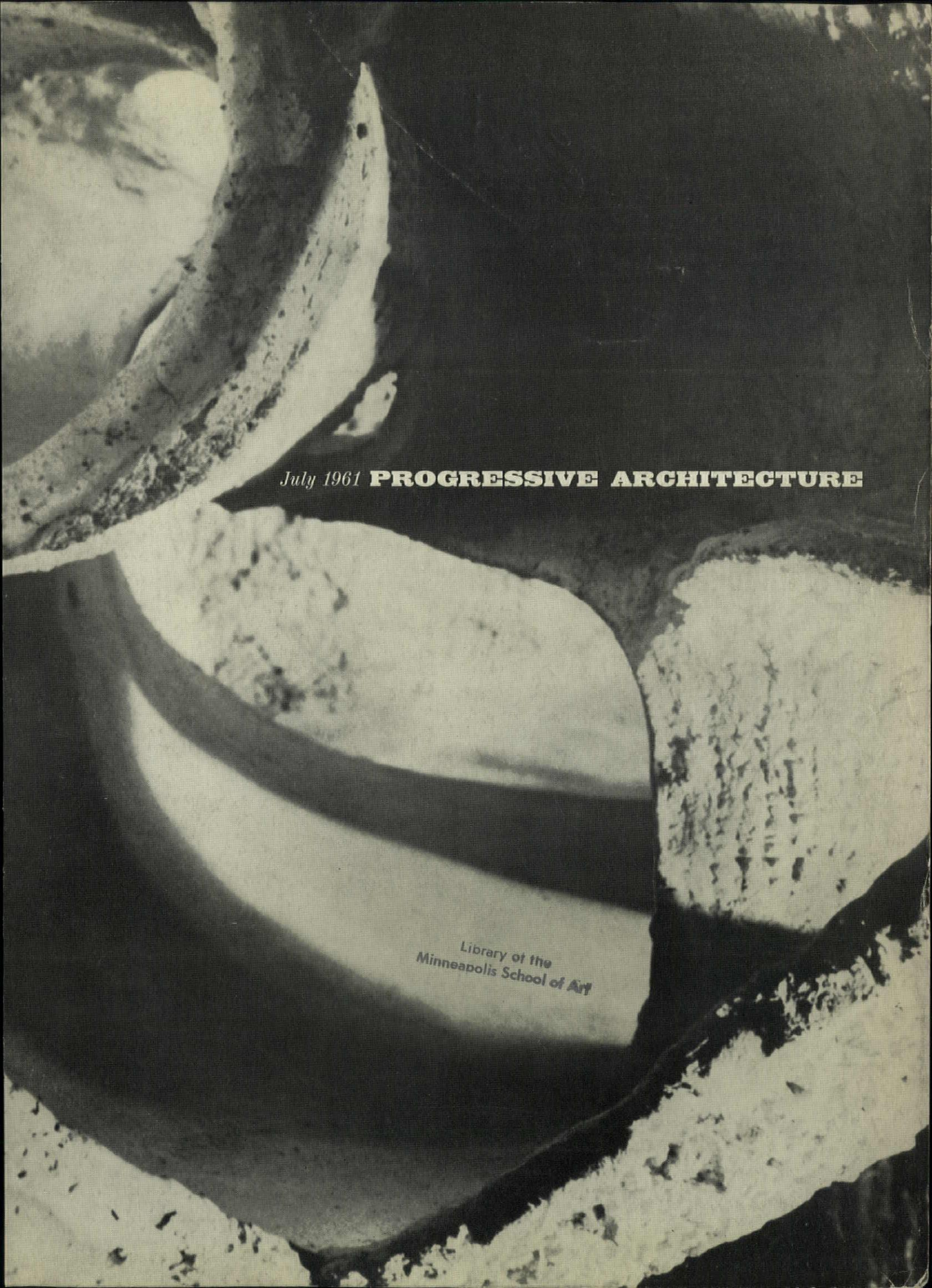
PA-1961-07



July 1961 **PROGRESSIVE ARCHITECTURE**

unique floor beauty that won't "walk off"...

Vina-Lux® 800 Series

Now, a vinyl asbestos floor tile with distinctive color chip styling that won't wear away under heavy, concentrated traffic. The chip pattern is distributed at every level through the full thickness of the tile. Vina-Lux 800 Series costs no more than ordinary vinyl asbestos tile... yet delivers so much more value.

The Vina-Lux 800 Series can be specified for installation over concrete – even below grade, or over wood subfloors. In 12 fashion-coordinated colors; 9"x 9" size; $\frac{1}{8}$", $\frac{3}{32}$" and $\frac{1}{16}$" gauges. See Sweet's Catalog or write for samples, color charts and complete architectural specifications – no obligation, of course.

For more information, turn to Reader Service card, circle No. 314

AZROCK FLOOR PRODUCTS DIVISION

Specialists in the manufacture of vinyl asbestos tile and asphalt tile flooring

UVALDE ROCK ASPHALT COMPANY • 524A FROST BANK BUILDING • SAN ANTONIO, TEXAS

AZROCK FLOORING PRODUCTS

Pattern Illustrated is Linen Weave

Blend Koroseal with natural materials

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

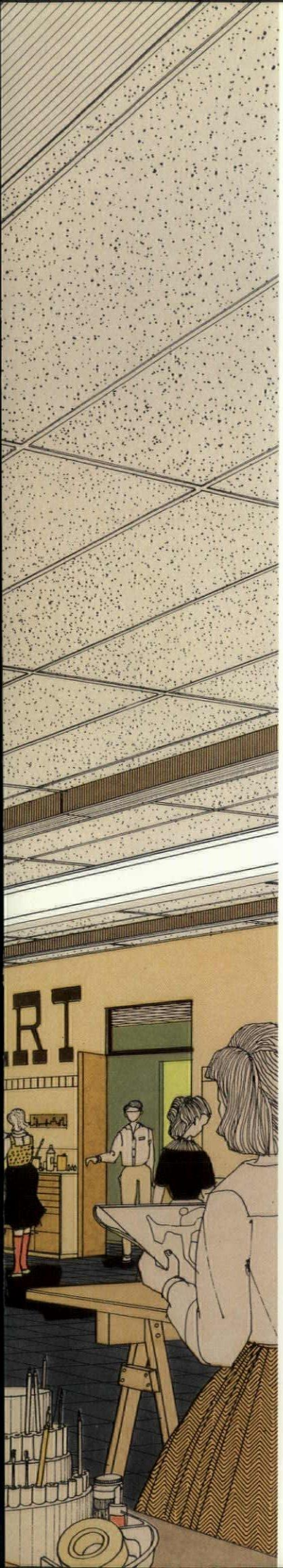
Koroseal keeps its bright appearance for years, resists scuffs, and stains, and is flame-retardant. Washable with soap and water, Koroseal coverings eliminate the need for frequent redecorating, thereby cutting maintenance expense. On your next project, design with Koroseal in mind. For swatches and other information, write Dept. **PA-7**, *B.F.Goodrich Industrial Products Company, Marietta, O.*

Koroseal®

VINYL WALL COVERING

B.F.Goodrich


HOW TO



How Armstrong Acoustical Fire Guard is saving this Indianapolis school $34,000 and eight weeks' construction time

THE NEW Perry East Junior High School was especially designed to be a "laboratory of learning" by Indianapolis architects Fleck, Quebe, and Reid Associates, Inc., in association with Mr. Paul W. Seagars, education consultant. It will have facilities for such advanced techniques as language labs, closed circuit television, and block-time teaching. Yet with these many advantages, this school will cost only $14.07 a square foot. One factor making this low figure possible is the specification of Armstrong Acoustical Fire Guard ceilings.

Acoustical Fire Guard 24 x 48-inch *lay-in units* are being installed in all classrooms, including the Art Room featured in this rendering. Fire Guard 12 x 12-inch *tile* is being used in the corridors. Including both tile and lay-in units, there will be 121,000 square feet of Armstrong Acoustical Fire Guard ceilings. The savings in money: $34,000. The savings in time: eight full weeks. Here's why:

Intermediate fire protection no longer necessary

Both acoustical and fire-retardant qualities are built right into Fire Guard. This eliminates the need for installing intermediate fire protection above the suspended acoustical ceiling. Based on the cost of installing conventional "intermediate" fire protection, the architect estimates that Acoustical Fire Guard will save this school approximately $34,000. And the floor-ceiling assemblies using Acoustical Fire Guard easily met Indiana's two-hour assembly and three-hour beam protection fire code requirements.

Fire Guard saves 8 weeks' construction time

With Acoustical Fire Guard, installation is a completely *dry* operation. Carpenters, painters, and other building trades are not delayed while wet work dries. They work right along with the acoustical contractor. Project designer, Mr. C. C. Shropshire, of Fleck, Quebe, and Reid Associates, Inc., estimates Fire Guard will cut this school's construction time 8 weeks.

Exposed grid suspension system

Because of a unique exposed grid system, the lay-in ceiling can be installed quickly and economically. Frequently, it costs considerably less than a combination of conventional fire protection and an acoustical ceiling. And, equally important, the lay-in ceiling allows accessibility to the plenum chamber.

Distinctive designs

To beautify, while they protect, Acoustical Fire Guard tile and lay-in units are available in both the Classic and Fissured designs. Tile also offers a Full Random design. General Contractor for this school is the F. A. Wilhelm Co., Inc., and the Acoustical Contractor is Commercial Floor Covering and Acoustics, Inc., both of Indianapolis.

For full details about Acoustical Fire Guard, call your Armstrong Acoustical Contractor (he's in the Yellow Pages under "Acoustical Ceilings") or your nearest Armstrong District Office. Or write to Armstrong Cork Co., 4207 Watson St., Lancaster, Pennsylvania.

Here are 9 Acoustical Fire Guard UL ratings most frequently used to meet fire code requirements

FIRE GUARD LAY-IN		FIRE GUARD TILE	
Floor & Ceiling Design	Rating	Floor & Ceiling Design	Rating
#30	2-hr. (Beam—3-hr.)	#31	4-hr.
		#21	4-hr.
#13	2-hr. (Beam—3-hr.)	#8	2-hr.
		#7	1½-hr.
#21	2-hr.	#9	1-hr.
#8	1½-hr.		

Armstrong ACOUSTICAL CEILINGS

First in fire-retardant acoustical ceilings

Rendering by Helmut Jacoby

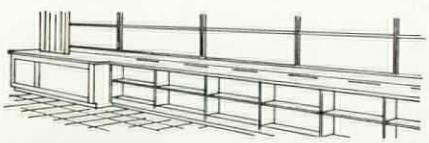
Norman schoolroom package provides

INDIVIDUAL CLASSROOM HEATING AND VENTILATING SYSTEMS

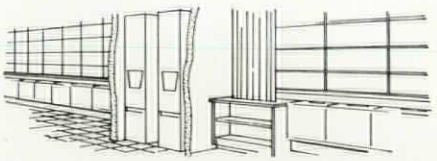
for complete comfort at low cost!

No two classrooms in a school are exactly alike in heating and ventilating requirements during the school day, due to occupancy, activity, location and other variables. So Norman Schoolroom Package Systems were installed in St. Francis Xavier School to provide true comfort in each classroom. The result was a happy combination of gas-fired forced warm air efficiency and economical construction and operating costs.

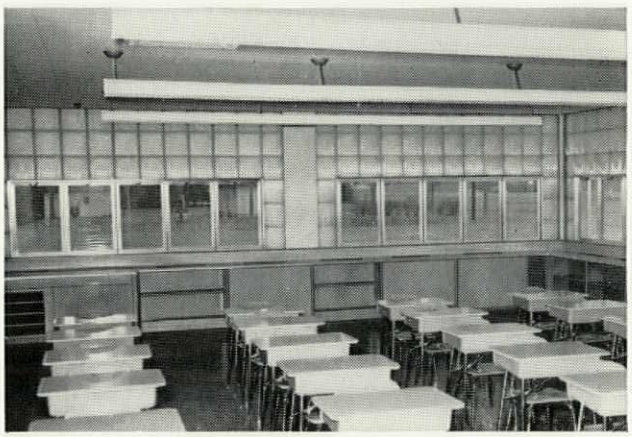
No separate building is needed to house a central heating plant. No tunnels or trenches for ducts or pipes. No unsightly chimney. Future expansion is simplified — just install additional Norman Systems as rooms are added. Other Norman gas-fired units are specifically designed for non-classroom areas.



NORMAN ENCLOSED HVS compact horizontal unit illustrated with Util-i-Duct bookshelf sections



NORMAN INN-A-WAL counter flow furnace in separate heater room, illustrated with economical Wall-i-Duct sections



School: St. Francis Xavier High School, Sartell, Minn. **Pastor:** The Rev. Frank H. Ebner

Write today for comprehensive Manual on Norman HVS Horizontal or Inn-A-Wal Counter Flow Models.

Architect: B. J. Knowles Co., St. Paul, Minn.
Engineer: Gausman, Moore, Inc., St. Paul, Minn.
Heating & Ventilating: Herb Johnson Plumbing & Heating, Sartell, Minn.

Norman® PRODUCTS CO. 1154 Chesapeake Ave., Columbus 12, Ohio

For more information, turn to Reader Service card, circle No. 352

THIS MONTH IN P/A

Cover: Interior of Frederick Kiesler's Endless House. Collection of the Museum of Modern Art.

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"We are sold on this method of heating and ventilating..."

—Karl W. Fuge, Engineer A.S.C.E.
Waterman, Fuge & Associates, Inc.

WATERMAN, FUGE & ASSOCIATES, INC.
ARCHITECTS ENGINEERS SURVEYORS
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ARTHUR E. WATERMAN, ARCHITECT A.I.A.
KARL W. FUGE, ENGINEER A.S.C.E.

February 27, 1961

DeGelleke Company, Inc.
4040 N. 126 Street
Brookfield, Wisconsin

Attn: Howard W. Harper

Re: Burgess-Manning Ceilings

Gentlemen:

As you know, we designed and supervised the construction of two schools using Burgess-Manning Ceilings, both for heating and for ventilating purposes. These schools were St. John's Ev. Lutheran School at West Bend and the first section of the new Evansville High School. The owners have been well satisfied with the operation of these systems.

The addition to our own office is also heated by a Burgess-Manning Ceiling, which has proven to be entirely satisfactory, and eliminated any type of wall hung or free standing units, which in our case would have been impractical. The use of any type of hot air system was also ruled out, because of the type of construction which we selected. In our office, the Burgess-Manning Ceiling provides both a heat source as well as an acoustical installation, combining the qualities of utility and low maintenance in one completely unobtrusive system. We feel this is a highly satisfactory solution to our heating problems. The entire office is almost completely devoid of structural tie between the lower and upper sections, making piping and duct work extremely difficult to introduce. With the use of the Burgess-Manning System, it required only four mechanical ties which are visible in the building. Two of these are one inch pipes supplying hot water to the ceiling system and these are almost invisible because they are over a projecting architectural shelf at the entry.

We are presently working on the design of a large high school. This will also utilize the Burgess-Manning Ceiling in all areas except the gymnasium and shop. We are so sold on this method of heating and ventilating school buildings that we are at the present time contemplating its use in several additional buildings now in the drawing stage.

We certainly appreciate your efforts in keeping us informed of new methods of procedure and design as well as cooperating with us whenever help is needed in developing new approaches to the use of this system.

Yours very truly,

WATERMAN, FUGE & ASSOCIATES, INC.

Karl W. Fuge

Karl W. Fuge, Professional Engineer

KWF:nl
encl.

First hand experience—an installation in their own office—is a solid enough reason why Waterman, Fuge & Associates, Inc. are *"sold"* on the Burgess-Manning Radiant Heating, Cooling and Acoustic Ceiling.

And . . . this is why this prominent Wisconsin architectural and engineering firm are continuing to utilize the Burgess-Manning Radiant Ceiling on their jobs now in the drawing stage . . . and, of course, on their future jobs, too.

For *better buildings* . . . with the *budget no bigger* . . . specify the Burgess-Manning Radiant Heating, Cooling and Acoustic Ceiling . . . it has many real dollar-and-cents advantages and assured design flexibility.

Today . . . write for complete literature, specifications, etc. Ask for Bulletin 138-3P.

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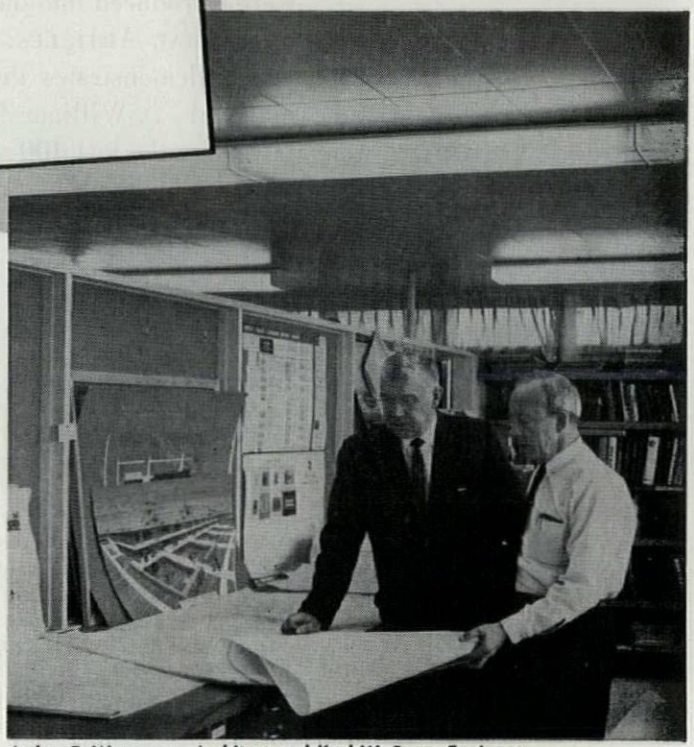
Architectural Products Division
749 East Park Avenue • Libertyville, Illinois

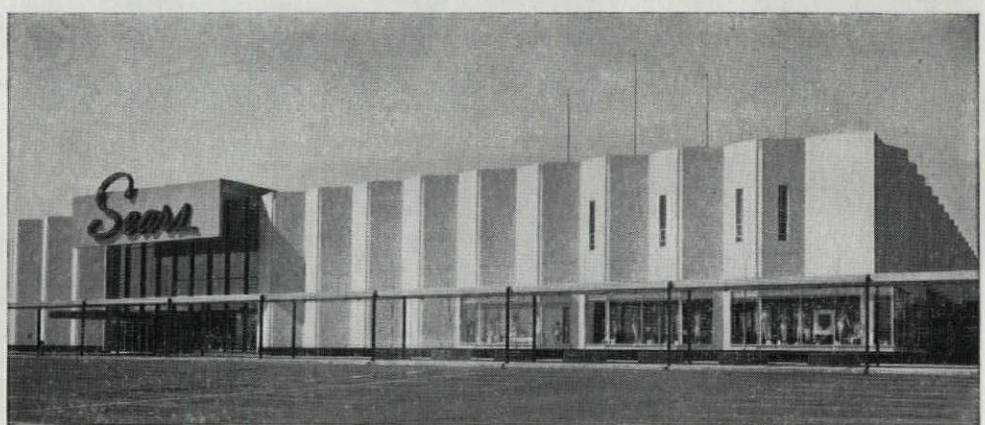


Arthur E. Waterman, Architect and Karl W. Fuge, Engineer

For more information, turn to Reader Service card, circle No. 316

THE ARCHITECTS COLLABORATIVE

specified precast white concrete curtain-wall panels for this new Sears store in New England. Anchoring the panels in pairs to a structural concrete frame, an unusual corrugated concrete facade was created. Each unit was precast with a gleaming surface of exposed white quartz aggregate and ATLAS WHITE portland cement . . . 1½ inches of foamed polystyrene insulation . . . and a gray concrete backup. After erection, joints were sealed with gaskets and calking compound. □ More architects are discovering the aesthetic potential of precast concrete in curtain-wall design. Any size, shape, color, texture or pattern can be achieved . . . and economically anchored to any structural frame. For details, consult your local precast concrete manufacturer or write Universal Atlas, 100 Park Avenue, New York 17, New York.



Sears, Roebuck & Co., Saugus, Mass. **Architects:** The Architects Collaborative, Cambridge, Mass. Partner in Charge: Norman Fletcher. **Contractor:** Vappi & Co., Inc., Cambridge. **Concrete Panels:** "Mo-Sai" by Cambridge Cement Stone Co., Allston, Mass.

Universal Atlas Cement
Division of
United States Steel

USS

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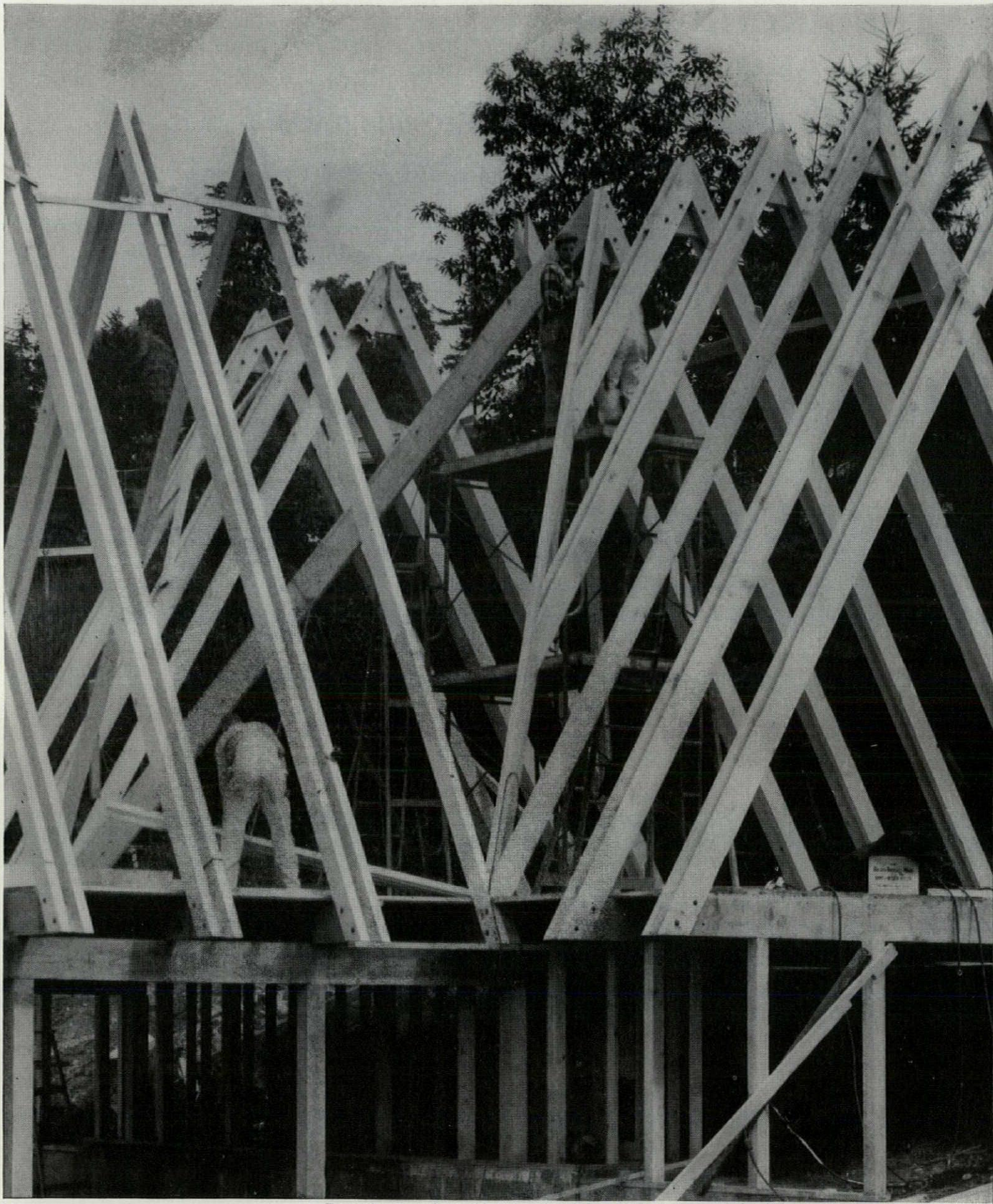
For more information, turn to Reader Service card, circle No. 372



From the ground up, this triangular skeleton tells the story of the A-frame. Sturdy, twin-bolted A-frame beams brace each other to successfully resist the strongest winds, attest to the traditional integrity of wood for minimum maintenance year after year. Dick A. Hill, designer.

For unique versatility, A-frame simplicity

find the better way with WOOD

Tent-shaped A-frame vacation houses are equally at home on a coastline or in a woodland. Wood's easy portability adds to its economies. Architect: Richard Whiteman of Jyring & Whiteman.

Wood brings out the best in every design, as exemplified in the increasingly popular A-frame. Because it makes the usual stud supports unnecessary, this design cuts corners for economy's sake. Yet, built of wood, the A-frame becomes a sound structure of distinctive quality and natural beauty.

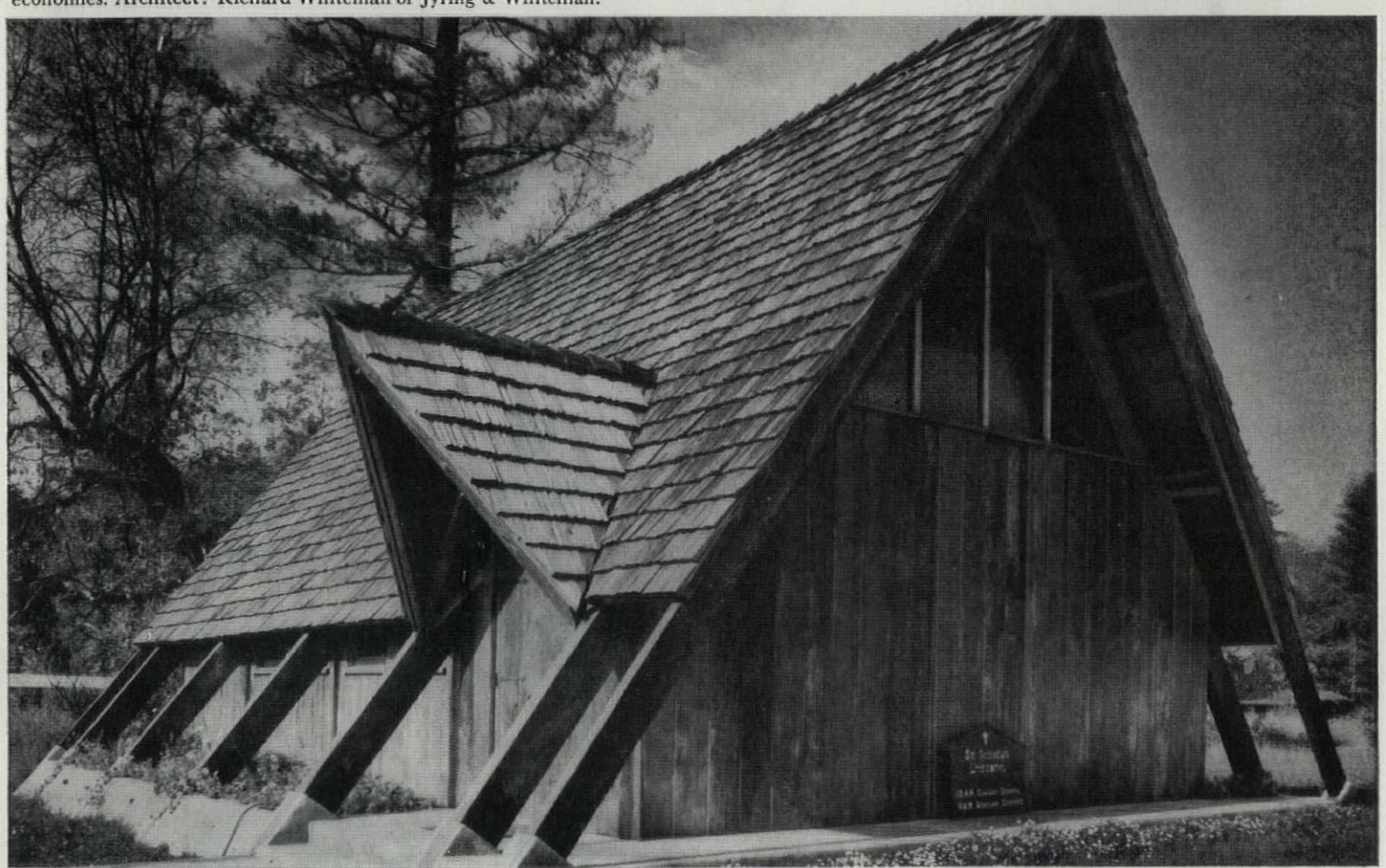
Workability is the key to wood's infinite uses. Sawed, planed, carved, sanded, turned, or drilled . . . wood takes the shape you want with ease, provides the familiarity to please any situation on any site. Its many diverse and rich grains bring warmth to stone, glass, or concrete. Its remarkable durability, strength-to-weight ratio, and inherent elasticity endow your designs with permanence. For more information on designing with wood, write:

NATIONAL LUMBER MANUFACTURERS ASSOCIATION

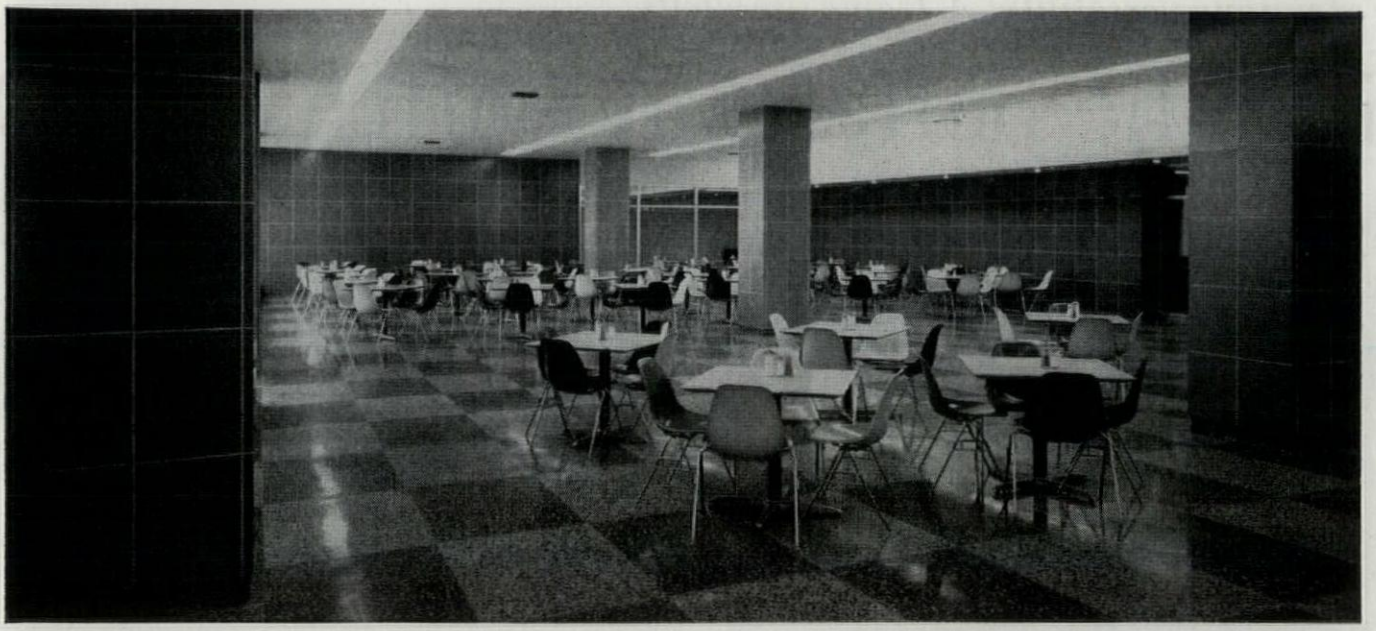
Wood Information Center, 1319 18th St., N.W., Washington 6, D. C.

nlma

for freedom of design, look to **wood**

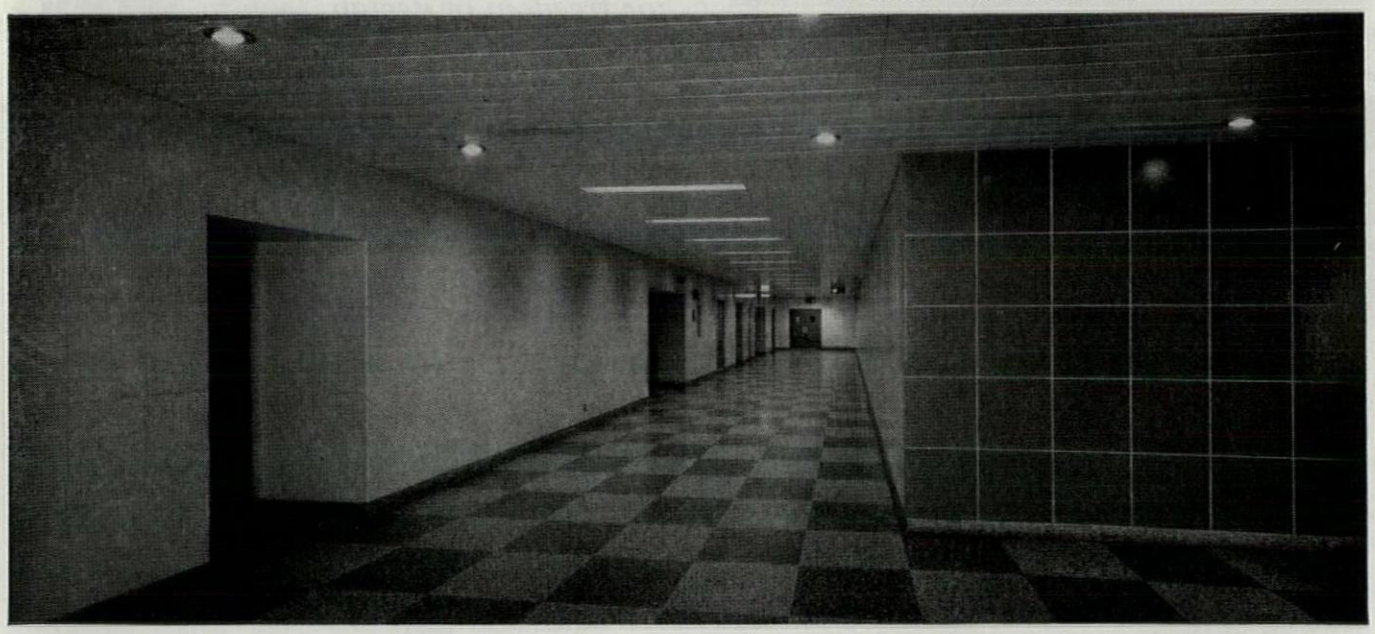


Economy in small church design uses the wood A-frame for maximum space inside. Outside, the naturally weathered shingled roof, heavy A-frame supporting members, and board siding create a welcome site for worship. Gerald Matson, architect.



OLD AGE & SURVIVORS INSURANCE BUILDING
BALTIMORE, MARYLAND
Meyer & Ayers—*Architects*
Fischer-Nes-Campbell & Associates—*Architects*
McCloskey & Company—*Contractors*
Ceramic Veneer in units 20" x 24" x 1¼" was specified for cafeterias, dining areas, serving lines, lobbies and vestibules. Colors selected are gray, yellow, coral, blue-gray and blue.

With walls of Ceramic Veneer,



color and cleanliness are "designed-in" for generations

Time, traffic, dirt and grime have little effect on the fire-glazed finish of Ceramic Veneer. Interiors of this modern architectural terra cotta require only soap-and-water washings to retain their original richness and beauty indefinitely. Exterior treatments — plain surfaces, polychrome panels or sculpture need only normal rainfall to keep clean and colorful. Besides minimum maintenance, Ceramic Veneer provides other important advantages — moderate initial cost, proved permanence and unrivalled versatility of color, form and texture. Whatever your specifications, every unit, large or small, is custom-made and faithfully reproduced by Federal Seaboard craftsmen. For complete information including new solar screen and color guide brochures, write us today. Without charge we will gladly furnish construction detail, data, advice and estimates on preliminary sketches involving Ceramic Veneer.

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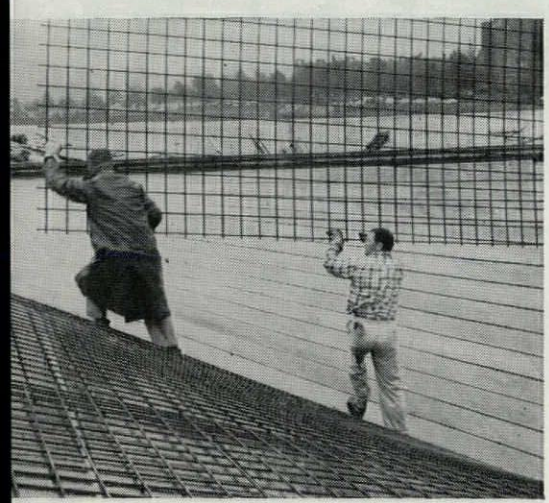
Now . . . extra-heavy ½″ USS American for design versatility and lower

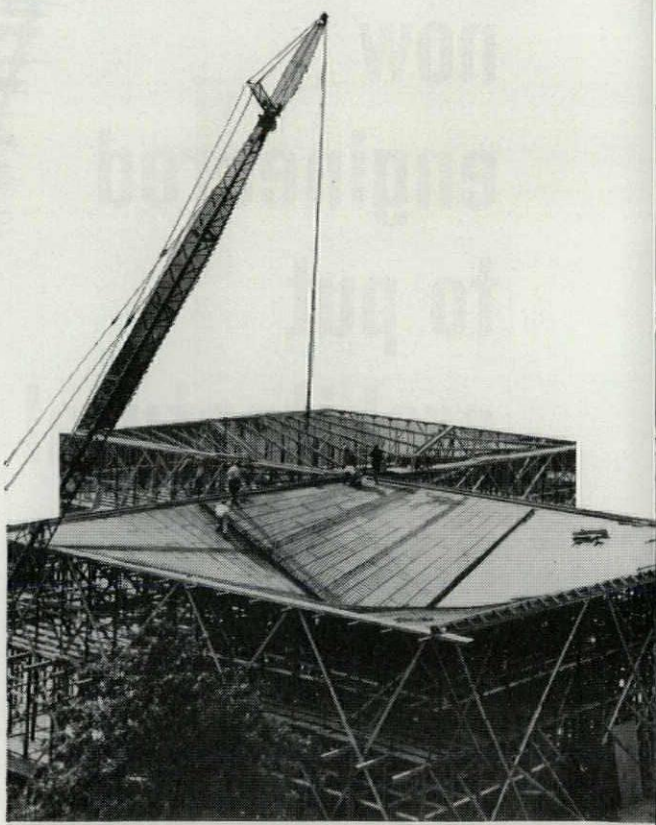


IN THIN-SHELL HYPERBOLIC PARABOLOID ROOF, SAVES 6 DAYS' CONSTRUCTION TIME.

The thin-shell roof of the new library at Hunter College consists of six 60-ft. square inverted concrete umbrellas. They are joined at the edges to form a roof 120 ft. wide by 180 ft. long. Each umbrella is divided into four hyperbolic-paraboloidal quadrants.

Steel reinforcement for the "inside-out" umbrellas was provided by USS American Structural Welded Wire Fabric. Each umbrella used twelve 31′ x 10½′ Welded Wire Fabric mats.

Installation was easily and speedily made by a small crew. When the concrete work was completed it was found that the use of pre-fabricated steel fabric had actually saved labor and material . . . and construction time had been cut by six days!



Structural Welded Wire Fabric cost concrete reinforcement

IN THIN FLAT-PLATE FLOOR SLABS, SAVES 15 WORKING DAYS

This handsome 12-story apartment building at 209-223 East 53rd Street in New York City was the first to be constructed with heavy welded wire fabric for reinforcement of thin flat-plate concrete floor slabs. Flat slab floor framing was selected because: (1) the thin (5½") flat-plate slab with its smooth surfaces unbroken by offsets for beams and girders, offers more ceiling height, and (2) it permits flexibility of partitioning and trims plastering and decorating costs.

Structural Welded Wire Fabric was selected to reinforce the slabs because the machine prefabrication of high yield strength steel wires offered: (1) Reduction in time and cost of handling 10′ x 20′ prefabricated wire fabric mats as opposed to placing and tying individual reinforcing members—a savings of 1½ days to 2 days per 140′ x 60′ floors . . . and with fewer lathers. (2) Assurance that steel will be placed where required. (3) Positive mechanical anchorage in the concrete to assure crack control. **USS American Structural Welded Wire Fabric is prefabricated with greater accuracy than can normally be relied upon in field work. This assures correct placement and distribution of the steel. The wires are drawn to the very close tolerance of plus or minus 0.003".**

The new high tensile strength (75,000 psi minimum) and high yield strength (60,000 psi minimum) of USS American Structural Welded Wire Fabric permitted a higher working stress for fabric than would have been allowed by the building laws of the City of New York for hot-rolled bars.

See next page . . .

USS **American Steel and Wire Division of United States Steel**

Here's why job-tailored USS American Structural Welded Wire Fabric is your best concrete reinforcement

You can now get USS American Structural Welded Wire Fabric with ½″ diameter wires spaced as close as 2″ on centers in both directions! These new areas of steel, plus the many time-tested advantages of Welded Wire Fabric, make it the best structural reinforcement for all types of construction.

1. USS American Structural Welded Wire Fabric is made from **cold-drawn** high tensile steel wire. This wire is carefully produced to conform to the requirements of ASTM Specifications A82-58T. The minimum tensile strength is 75,000 psi and the minimum yield, as defined in the specifications, is 80% of the tensile or 60,000 psi. Actually, the cold drawn steel wire has no yield point in the conventional sense of plastic stretch at a constant load. Yield occurs gradually with increasing load beyond the 60,000 psi minimum. This physical advantage of cold-drawn wire makes it **the ideal concrete reinforcement.**

2. USS American Structural Welded Wire Fabric is completely machine prefabricated by electrically welding all intersections to conform to ASTM specifications. This high-strength connection assures positive mechanical anchorage in the concrete.

3. USS American Structural Welded Wire Fabric is prefabricated with greater accuracy than can normally be relied upon in field work. The wires may not vary more than ¼″ center-to-center than the specified spacings. This assures correct placement and distribution of the steel. **Wires are drawn to the very close tolerance of plus or minus 0.003″.**

4. USS American Structural Welded Wire Fabric requires very little on-the-job tying. Large prefabricated sheets are shipped to the job and placed as a unit. This eliminates thousands of ties and results in important savings.

For more information on the advantages and applications of American Structural Welded Wire Fabric, get in touch with our nearest Sales Office or contact American Steel and Wire, Dept. 1178, 614 Superior Avenue, N.W., Cleveland 13, Ohio.

American Steel and Wire
Division of
United States Steel

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Dynaflite is but one result of the magic of Elevonics* . . . which, today, is shaping the new technology in vertical transportation. Get all the facts on Dynaflite, as well as Haughton's complete design, modernization and maintenance capabilities. The Haughton representative in your area will gladly consult with you—no obligation, of course. Or, write today.

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Quickly installed over old or new walls, Marlite offers almost unlimited decorating possibilities in remodeling or new construction. The large 4′ x 8′ panels or 16″ x 8′ planks are easy to cut and fit. They reduce your "in place"costs, help you meet promised completion dates.

Get complete details from your building materials dealer, consult Sweet's File, or write Marlite Division of Masonite Corporation, Dept. 714, Dover, Ohio.

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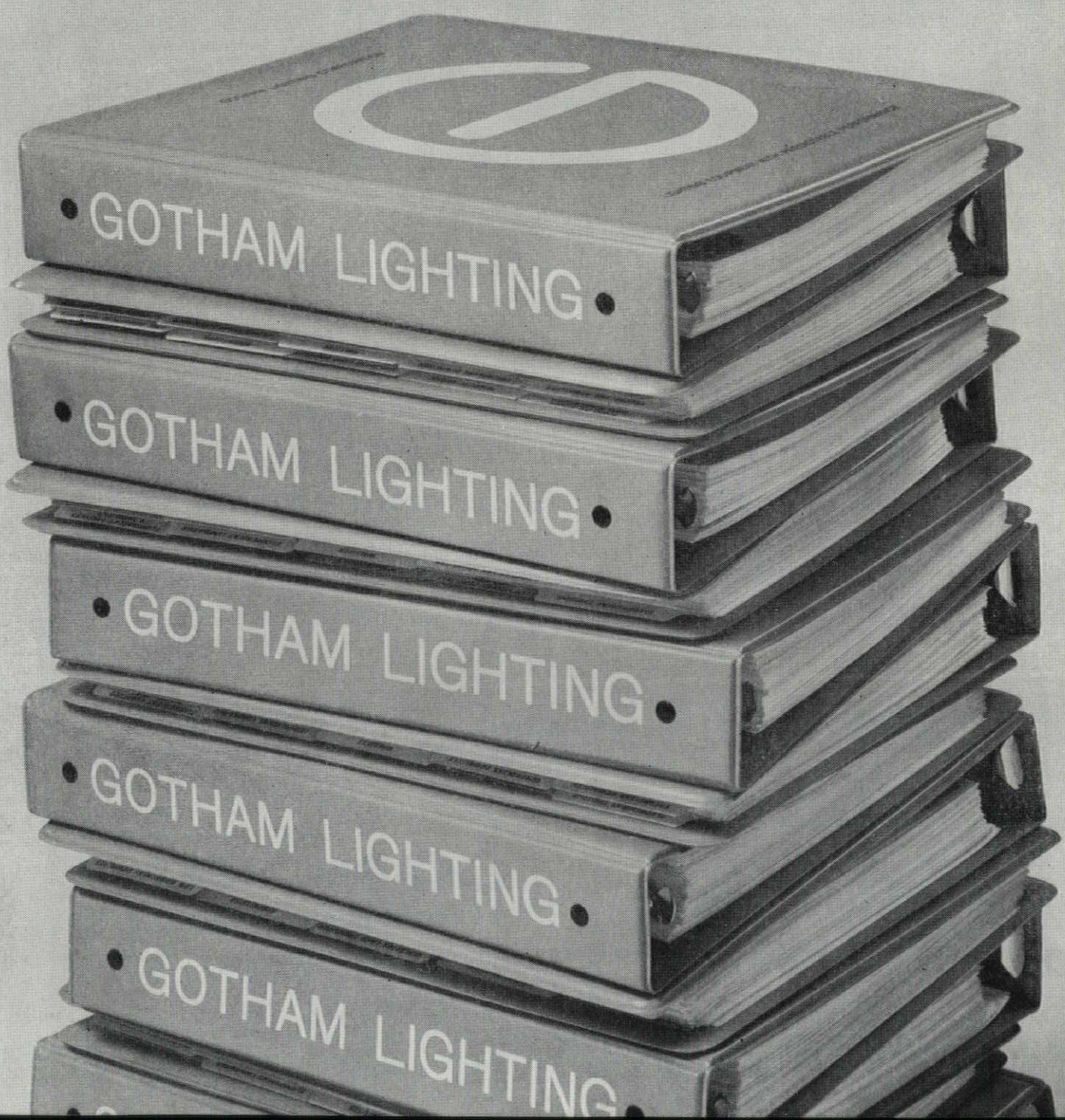
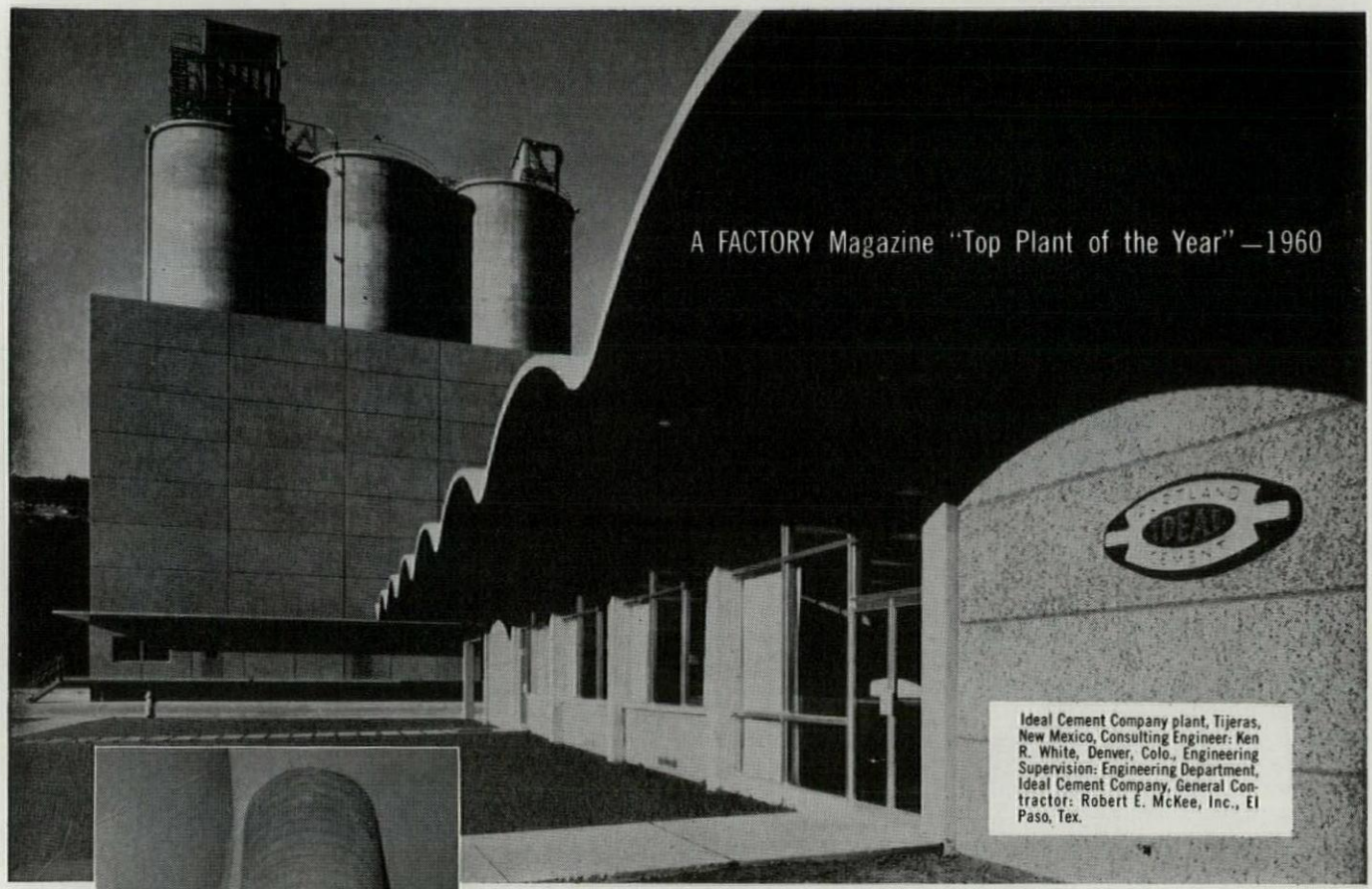
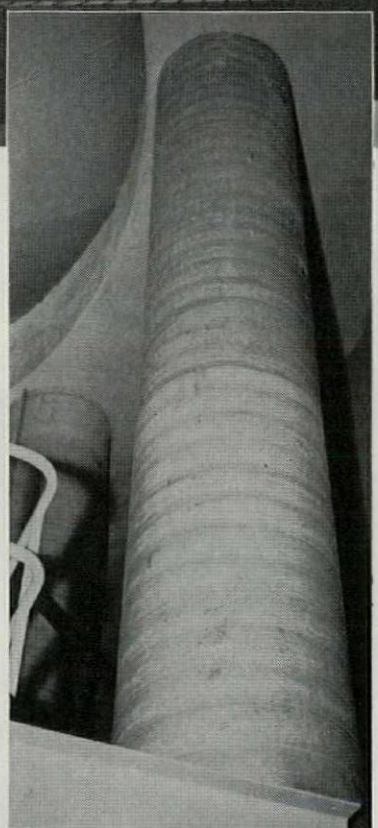
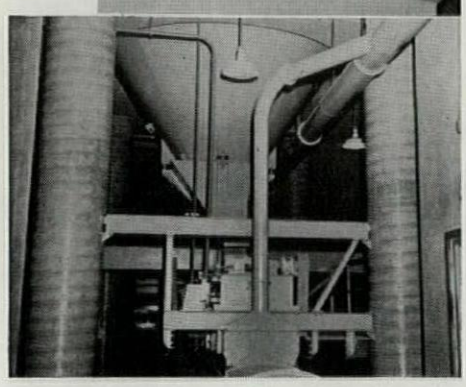




Ideal Cement Company plant, Tijeras, New Mexico, Consulting Engineer: Ken R. White, Denver, Colo., Engineering Supervision: Engineering Department, Ideal Cement Company, General Contractor: Robert E. McKee, Inc., El Paso, Tex.





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For more information, turn to Reader Service card, circle No. 328

Curves of canopy and wall panels show design versatility of **Mo-Sai®**

The unique design for the First Federal Savings and Loan Association in Sarasota, Florida, is beautifully executed in genuine Mo-Sai. The repetitive curves of the canopy over the front entrance project through the facade to repeat in the lobby. Individual canopy units were approximately 14′ long, with a spread of about 3′6″. Mo-Sai wall panels, too, picked up the gentle curve motif. Aggregates used on the Mo-Sai panels were a white crushed quartz for the canopy, and a brown, coarse-textured red, black and white combination for the concave wall panels.

MO-SAI INSTITUTE, INC.

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BUEHNERS AND CO., *Mesa, Arizona*
CAMBRIDGE CEMENT STONE COMPANY, *Allston 34, Massachusetts*
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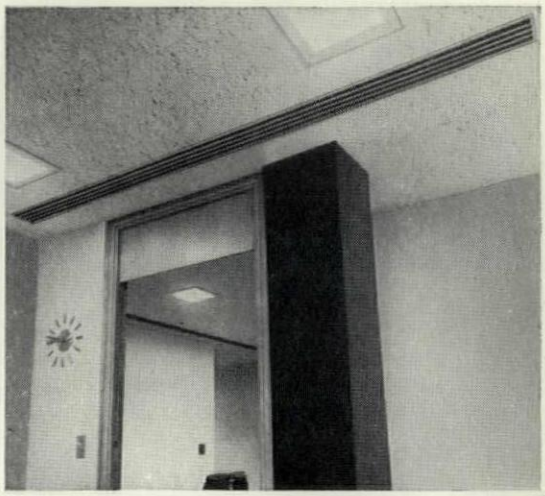
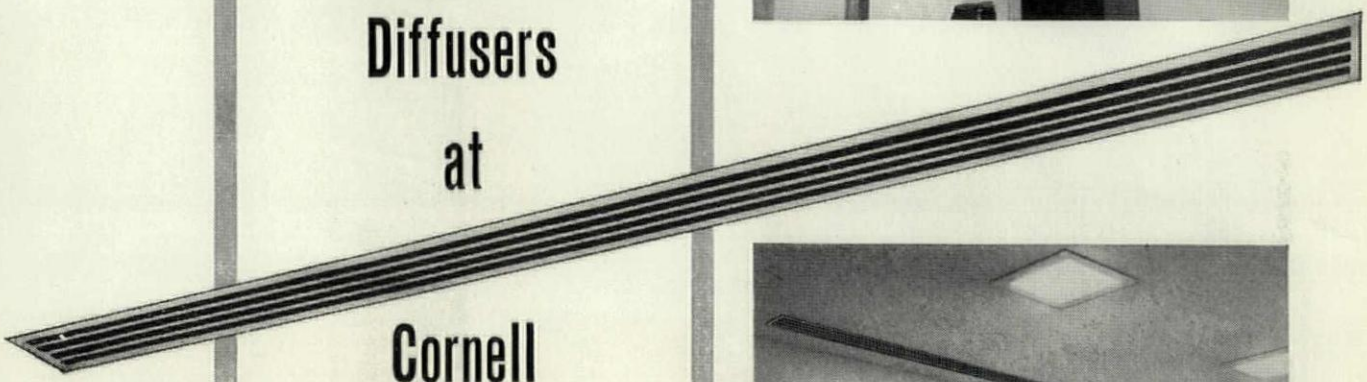
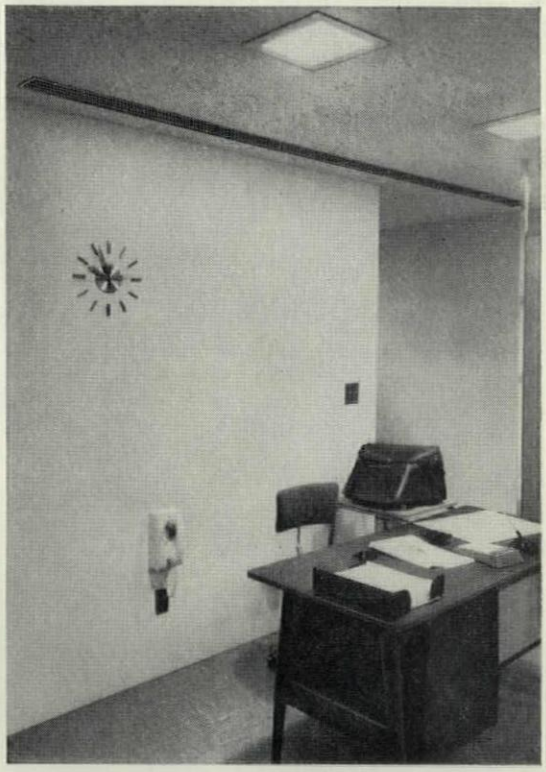
WAILES PRECAST CONCRETE CORP., *Los Angeles, California*
WILSON CONCRETE CO., *Omaha 7, Nebraska*

First Federal Savings and Loan Assn. / Sarasota, Florida
Architect: Dean Parmelee
General Contractor: Rappaport Construction Co.

New Anemostat Architectural Straight Line Diffusers at Cornell University







Here is the new Anemostat ASL Architectural Straight Line Air Diffuser installed in the Willard Straight Hall of Cornell University at Ithaca, New York. This new ASL unit for ceiling or wall application combines the superior air diffusion characteristics of all Anemostat air diffusers with the esthetic appearance of a slender unit with symmetrical vanes. The ASL diffusers are easy to install; no screws, nuts or bolts are needed.

Write for Anemostat Catalog ASL-70

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ENGINEER:
Leigh St. John Associates, Binghamton, New York

CONTRACTOR:
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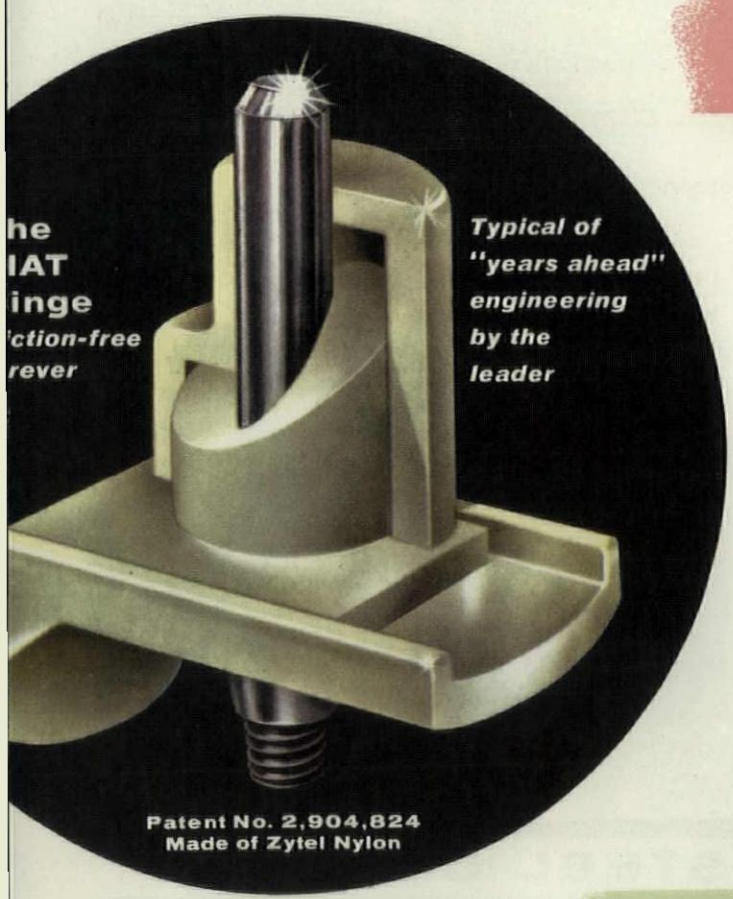
  FROM FIVE STRATEGIC PLANT LOCATIONS



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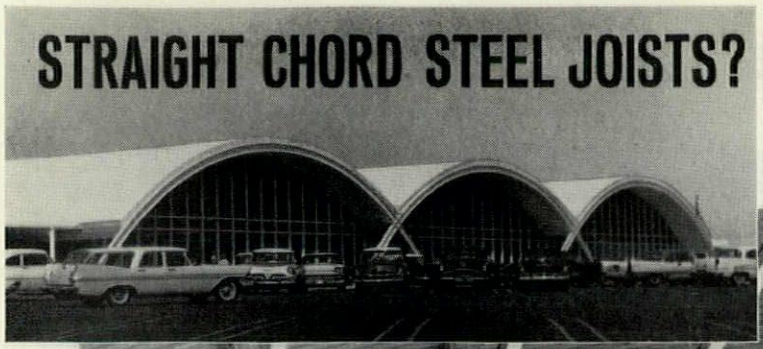
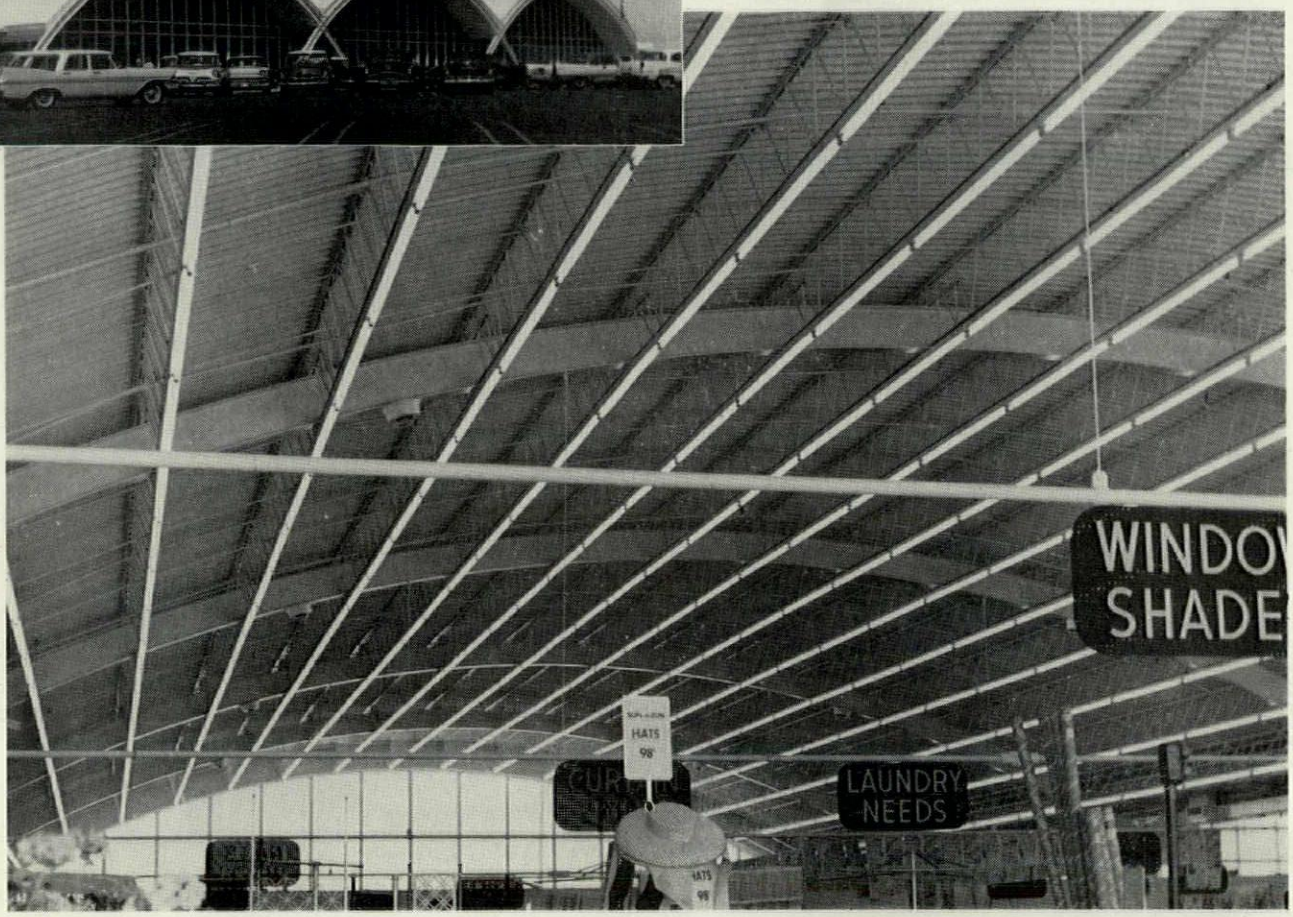
STRAIGHT CHORD STEEL JOISTS? IN THESE CURVED ROOFS?





They were used here—with economy and efficiency!

One of the biggest advantages of Laclede Open Web Steel Joists is their versatility—their adaptability to practically any architectural style.

Here's an example: the interesting new store recently opened by Central Hardware Company, biggest and best known retail hardware chain in the St. Louis area. It was designed by Schwarz and van Hoefen, and built by Alport Construction Co., both of St. Louis.

Notice how the joists were set longitudinally across the arched I-beams, forming a strong, lightweight, firesafe base for the cylindrical arches. Observe another practical little touch: the fluorescent lighting tubes attached to the bottom chords of the joists for the entire depth of the store.

No matter in which style you design or build, you'll find many time-saving, cost-saving uses for versatile Laclede Open Web Steel Joists.

STEEL JOIST INSTITUTE MEMBER

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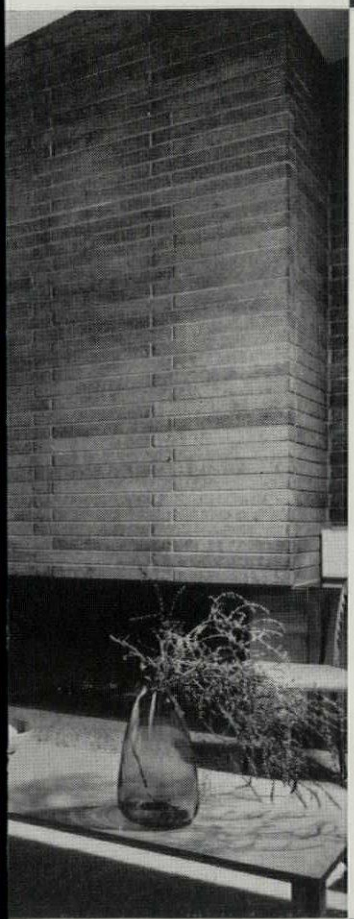
custom-created elegance with the world's most economical home-building material

RIGHT: Three distinctively different patterns are featured here. At right, an eye-catching offset pattern to give your walls new dimension and interesting shadow play. In the background, a stacked pattern to add quiet dignity to the dining area. Running bond pattern at right creates an expanse of flowing motion while wrapping the living room in timeless beauty. Photograph courtesy "Living for Young Homemakers."



INTRIGUING NEW HOME IDEAS

from the wonderful new world of block:

Elegant wall renditions of Concrete Masonry are setting new trends in home design. Truly, here is a marriage of fashion and function. So natural in beauty. So profoundly mature. So alive with design and dimension. So low in cost. Choose from a myriad of patterns—for block is as versatile as your own imagination. Know a lifetime of priceless security—for block is fire-safe. Relax in the comfort of quiet—for block absorbs a maximum of unwanted noise. Send 50c for your copy of the new 28-page book, "Smart homes in SHADOWAL block." Consult your architect, contractor or local NCMA member-block producer.

NATIONAL CONCRETE MASONRY ASSOCIATION

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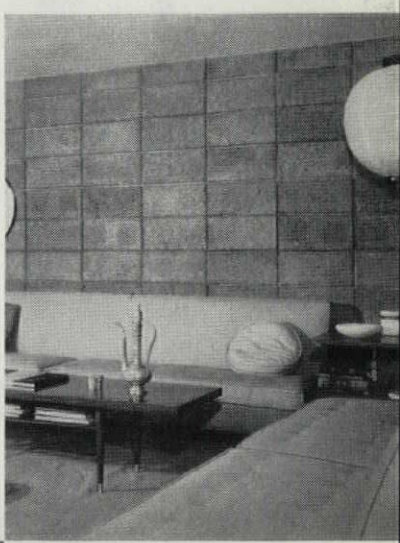
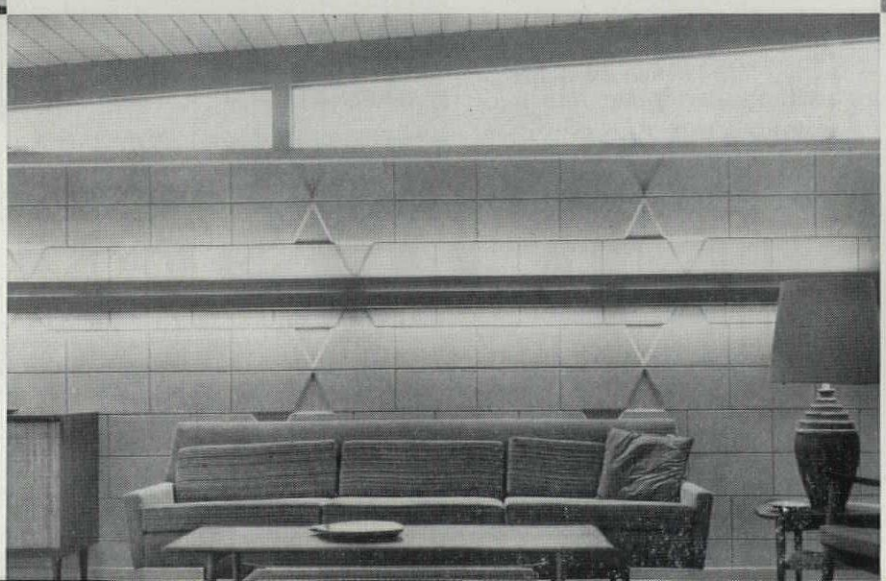


ABOVE: Split block exhibits the extreme flexibility of Concrete Masonry. Here an interlocking pattern provides an unusually handsome fireplace. Split block is specially ideal for interior-exterior renditions.

RIGHT: Here is Shadowal block, newest innovation to amazing Concrete Masonry! As light crosses its sculptured corners your pattern is stylishly defined. Now virtually thousands of distinctive wall designs can be created with excitingly new Shadowal block. Pattern shown is hour-glass.



ABOVE: Simplicity and smartness of this horizontally stacked pattern offers natural outdoor atmosphere to the living room and ranks tops with those who want to go modern all the way.

Architects helped us perfect

This new Architect Color File contains 39 folders of colors, grouped by families. File tabs showing the deepest hue of each group speed up selection. Each folder also holds 8½ x 11-inch swatches of colors. These are partially perforated into individual chips for use in preparing color schedules.

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• **Pittsburgh color scientists,** working with a large group of architects, have developed the most practical color system ever designed for architects and decorators.

• **Pittsburgh's new Architect Color File** is not just another haphazard series of colors in a deck or album. It is a scientifically coordinated system of 372 Pittsburgh Colors. These are arranged by families, in an orderly progression of tints and shades, to make color selection easier and more accurate.

• **Large color swatches,** 8½ x 11 inches, perforated into individual chips, are included with each group of hues. On each chip are mixing formula code, light-reflectance data, and the types of Pittsburgh Paints in which the color is available.

• **This comprehensive color file** consists of 39 folders of colors grouped by families, color swatches and complete data about each hue. It is available for only $50.00. Call your nearest PPG branch to have one of our color experts give you additional information about this valuable new Architect Color File, or mail coupon below.

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☐ Please have one of your color experts give me more information about your new Architect Color File
☐ I would like to purchase one of your new Architect Color Files for $50.00

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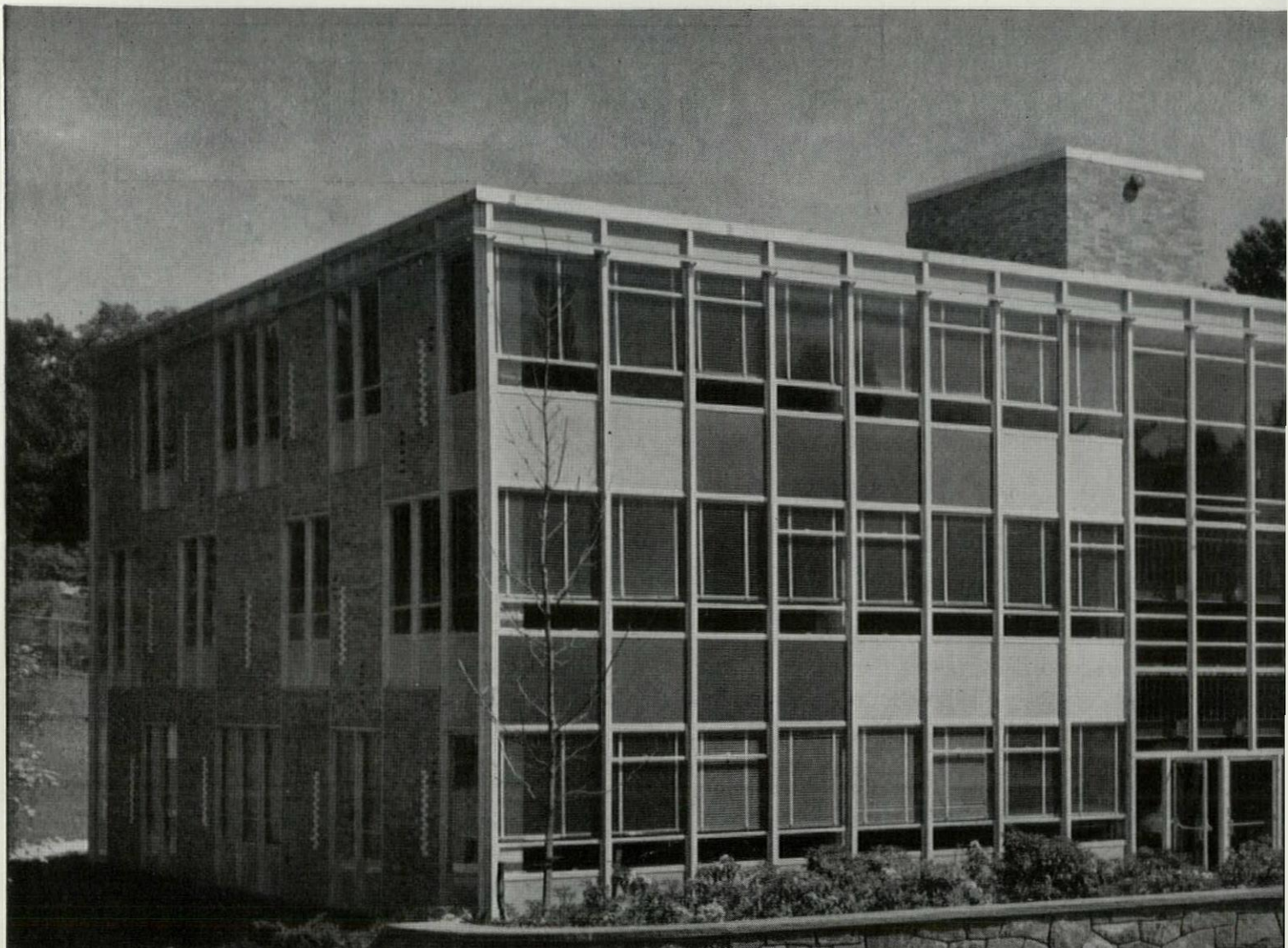
COMPANY_____

ADDRESS_____

CITY_____ COUNTY_____ STATE_____



LUPTON aluminum curtain walls create striking patterns in color at Yonkers' new Walt Whitman Junior High School

The bold, imaginative use of colors and patterns . . . in interiors and exteriors . . . is the most dramatic feature of ultra-modern, new, three-story Walt Whitman Junior High School, Yonkers, N.Y.

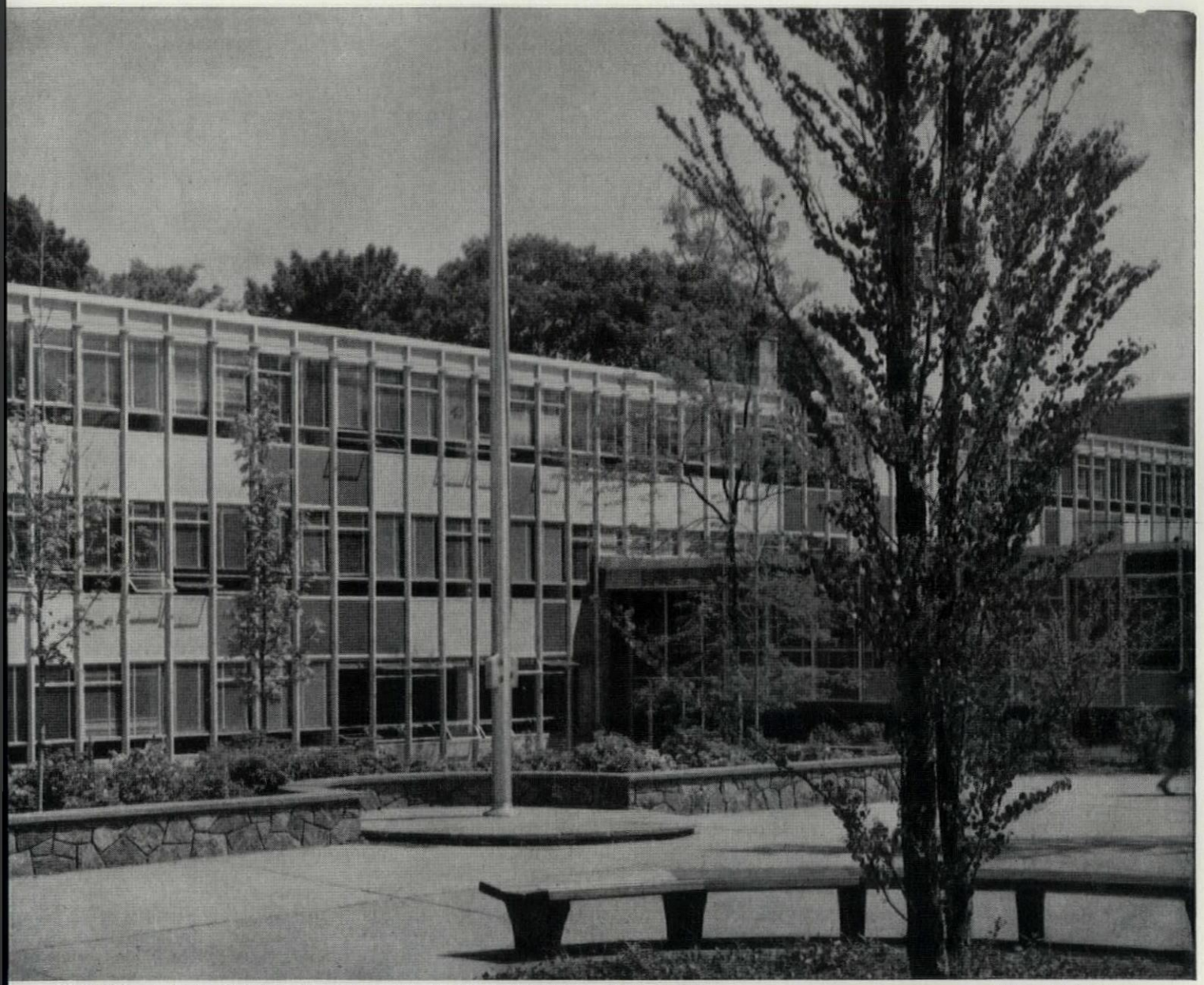
On two sides of the building, the architect utilized LUPTON Aluminum Curtain Walls . . . their spandrels forming attractive random patterns of several colors.

The Walt Whitman Junior High School illustrates the exciting design possibilities for you inherent in LUPTON Aluminum Curtain Walls. A wide range of colors, windows in various styles, panels of metal or glass allow you unlimited creativity in design. This handsome modern wall construction provides striking visual effects when used alone or with brick, stone, and other materials.

LUPTON Aluminum Curtain Walls and Windows offer you such dollars-and-cents features as: low initial cost, virtually no maintenance, and effective thermal insulation (two metal skins form a built-in vapor barrier).

Installation is worry-free because LUPTON assures you of accurate fitting and alignment of all component parts. It offers you a single source of responsibility for both the manufacture and the erection of the entire assembly.

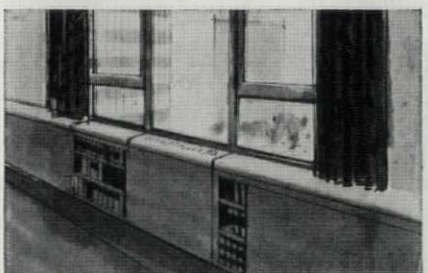
See the LUPTON Aluminum Curtain Wall and Window Catalog in Sweet's (sections 3 and 17).Then talk to your local LUPTON man or write to us for details.



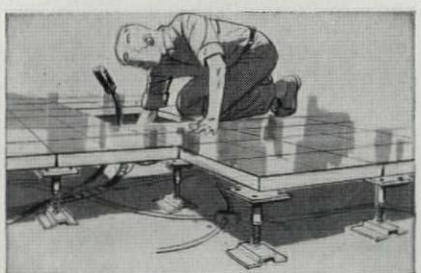
Walt Whitman Junior High School, Yonkers, N.Y.; Architect: Eli Rabineau, Yonkers, N.Y.; Engineers: Abrams & Moses, New Rochelle, N.Y.

Photograph by C. V. D. Hubbard

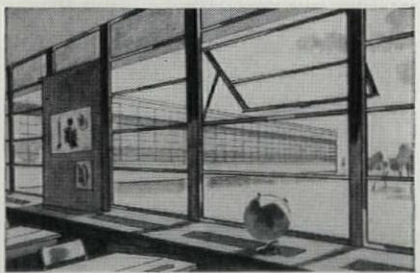
OTHER LUPTON PRODUCTS THAT MAY SOLVE PROBLEMS FOR YOU ARE:



Comfort Conditioning.* LUPTON air-to-air heat-pump, electrically operated, puts a personalized cooling, heating and ventilating system right in the curtain wall . . . provides year 'round comfort with individual temperature control. **Trade Mark*



Raised Floor System. LUPTON aluminum raised floor supports electronic data processing equipment above normal floor level. Conceals cables and air ducts while providing 100% accessibility to underfloor space.



Engineered Windows. LUPTON "Master" windows in double-hung, projected or casement types—used equally well in curtain walls or in masonry construction. Weatherstripping optional for all types.

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For more information, turn to Reader Service card, circle No. 327

Report by Engineering Firm on Economics of a Glass-Walled Skyscraper

Study predicts Thermopane® insulating glass in L·O·F Building will pay for itself in 3½ years

The new Libbey·Owens·Ford Building in Toledo, Ohio, is not just a "glass showcase for a glassmaker". It is a practical, economical building.

This 120-foot-square, 15-story, air-conditioned office structure was completed in early 1960. It provides 12 office floors, a ground lobby floor, an underground floor for service operations, and two upper floors for air-conditioning machinery.

Because it is a very new and outstanding example of office building architecture . . . because its designers were given broad scope in its creation . . . considerable interest has been focused on its operating results.

Guy B. Panero Engineers, the air-conditioning and heating engineers on the structure, have completed an analysis that shows how the air-conditioning and heating costs are affected by the glass used.

Vision glass 77% of wall area

Vision glass in the L·O·F Building comprises 77% of the gross wall area. Walls are oriented approximately 30° counterclockwise from the cardinal directions. *Thermopane*, with vertical Venetian blinds, is used in all vision areas above the ground floor.

$55,200 saved on air-conditioning equipment

For this building, the outer pane of *Thermopane* is *Parallel-O-Grey*® and the inner pane is *Parallel-O-Plate*® glass. Calculations by Guy B. Panero Engineers show that the use of *Thermopane*, as compared with a single pane of *Parallel-O-Grey* plate, reduced the air-conditioning requirement by 92 tons. This lowered the initial cost of air-conditioning equipment by an estimated $55,200.

Saves $7,220 annually on operating costs

They next found that operating costs on the same comparison should bring an annual reduction of $2,190 for air-conditioning and $5,030 in heating costs. This combined saving of $7,220 plus the $55,200 would pay for the premium cost of *Thermopane* in 3½ years.

These studies also compared the *additional* capital cost of insulating glass at an investment of 3 per cent, and that of single glazing of *Parallel-O-Grey plus* the extra cost of the air-conditioning equipment it would require. The comparison has shown that it would be more economical to glaze the building with *Parallel-O-Grey Thermopane*.

The same comparison could have applied equally if the building had been glazed with *Heat Absorbing Thermopane* instead of *Parallel-O-Grey Thermopane*. They are about equal in solar radiation reduction.

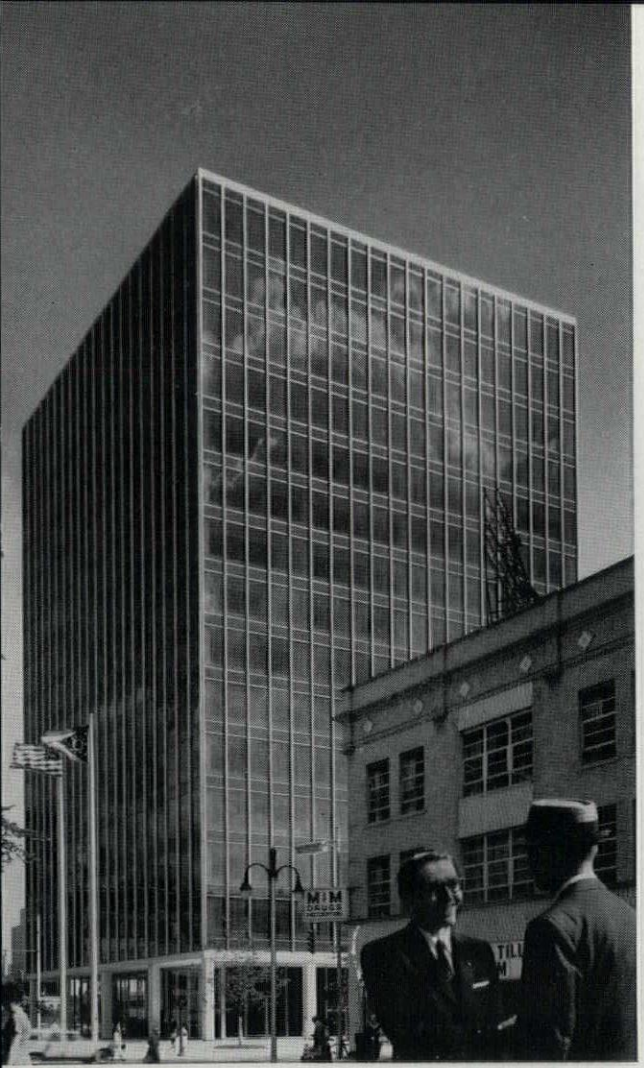
Additional advantages

Guy B. Panero Engineers also found many other advantages not calculated in dollars during their detailed study. During cold weather, for instance, personnel may work comfortably closer to *Thermopane* than single glass. In effect, this provides more usable floor area.

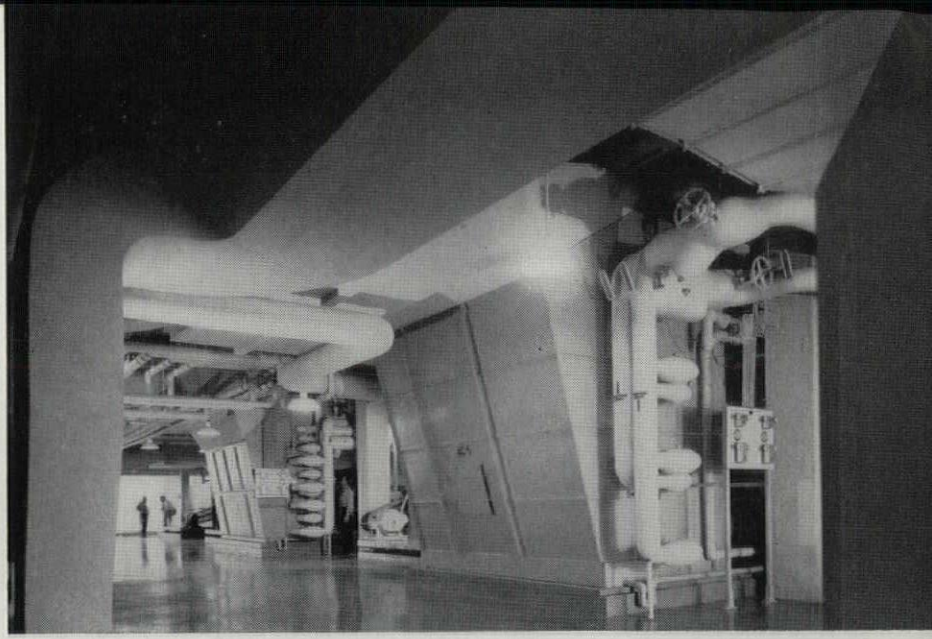
Appreciable outdoor sound reduction may add to efficiency. And through the use of *Thermopane*, possible complications of temperature control, architectural layouts, space conditions and louder air-circulating equipment noise levels are avoided.

Without the use of *Parallel-O-Grey Thermopane*, they concluded it would have been practically impossible to have these advantages which exist in the L·O·F Building—small, compact air-conditioning units in each room, reduced ductwork space in the ceilings, and minimum space for the air-conditioning equipment.

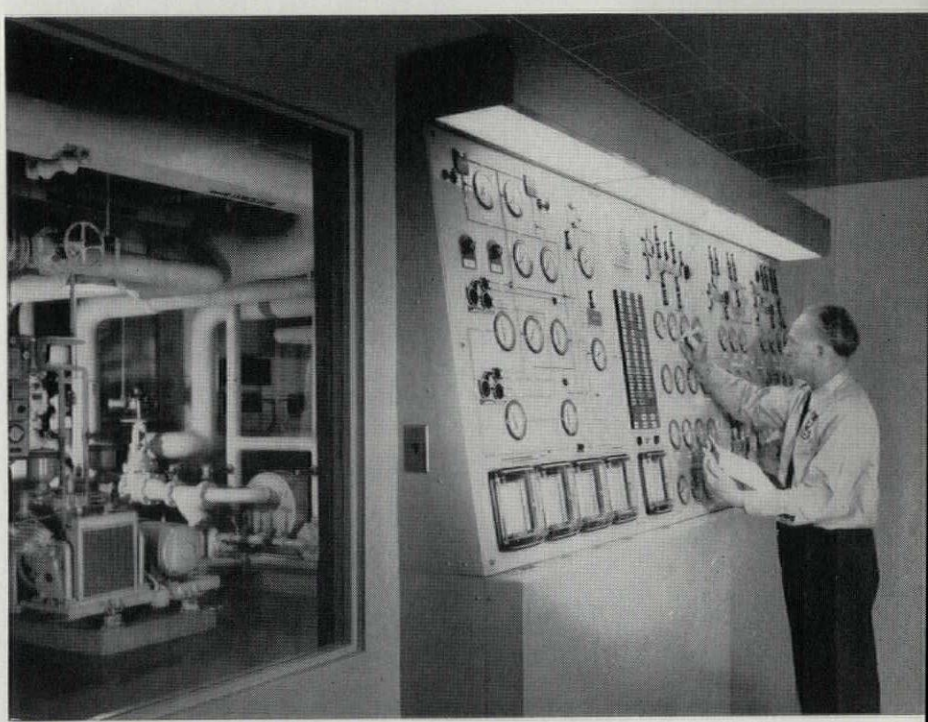
Tenants Samborn, Steketee, Otis and Evans report more efficient use of drafting-room space due to comfort provided by Thermopane insulating glass.



L·O·F Building, Toledo, Ohio. Architects: Skidmore, Owings & Merrill. Structural Engineers: Severud-Elstad-Krueger Associates. Mechanical Engineers: Guy B. Panero Engineers. General Contractors: George A. Fuller Company.



Air-conditioning and ventilating equipment inhales and exhales as much as 200,000 cu. ft. of air per minute.



Master control board tells at a glance how equipment is functioning anywhere in the building.

One of the air-conditioning and heating specialists in the office of Guy B. Panero Engineers states that "in reality it would not have been economically practical to air condition this particular building properly by means of conventional units, had single glazing been used".

Complete analysis available

In arriving at these conclusions, the engineers made a detailed study of the factors that determine glass performance and its effect on air conditioning and heating. The complete study is available to architects and engineers who wish to make a study of their own designs. Use coupon.

As predicted by the designers, overall performance of the air-conditioning and heating systems in the L·O·F Building has been extremely successful. The *Thermopane* glazing has resulted in savings for the building management. It also has afforded many comforts, controls and environmental benefits for those who use the building daily. This attractive new building, which has won praise from its tenants and the occupants, has functioned superbly to fulfill all the requirements of its builders.

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Please send me complete report on L • O • F Building, showing how findings were determined.

NAME_____
(please print)

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Two new air conditioning records were set at 1 Chase Manhattan Plaza

The largest centrifugal refrigerating machines ever built for comfort cooling supply chilled water to the largest number of room terminals ever installed in a single building.

The air conditioning system designed for the Chase Manhattan building by Jaros, Baum and Bolles is the largest ever installed in a new commercial building. The colossal job was handled jointly by Raisler Corporation and Kerby Saunders, Inc.

The four Carrier Centrifugal Refrigerating Machines that provide 9100 tons of cooling include two units of 3500 tons each —the biggest ever used for comfort cooling.

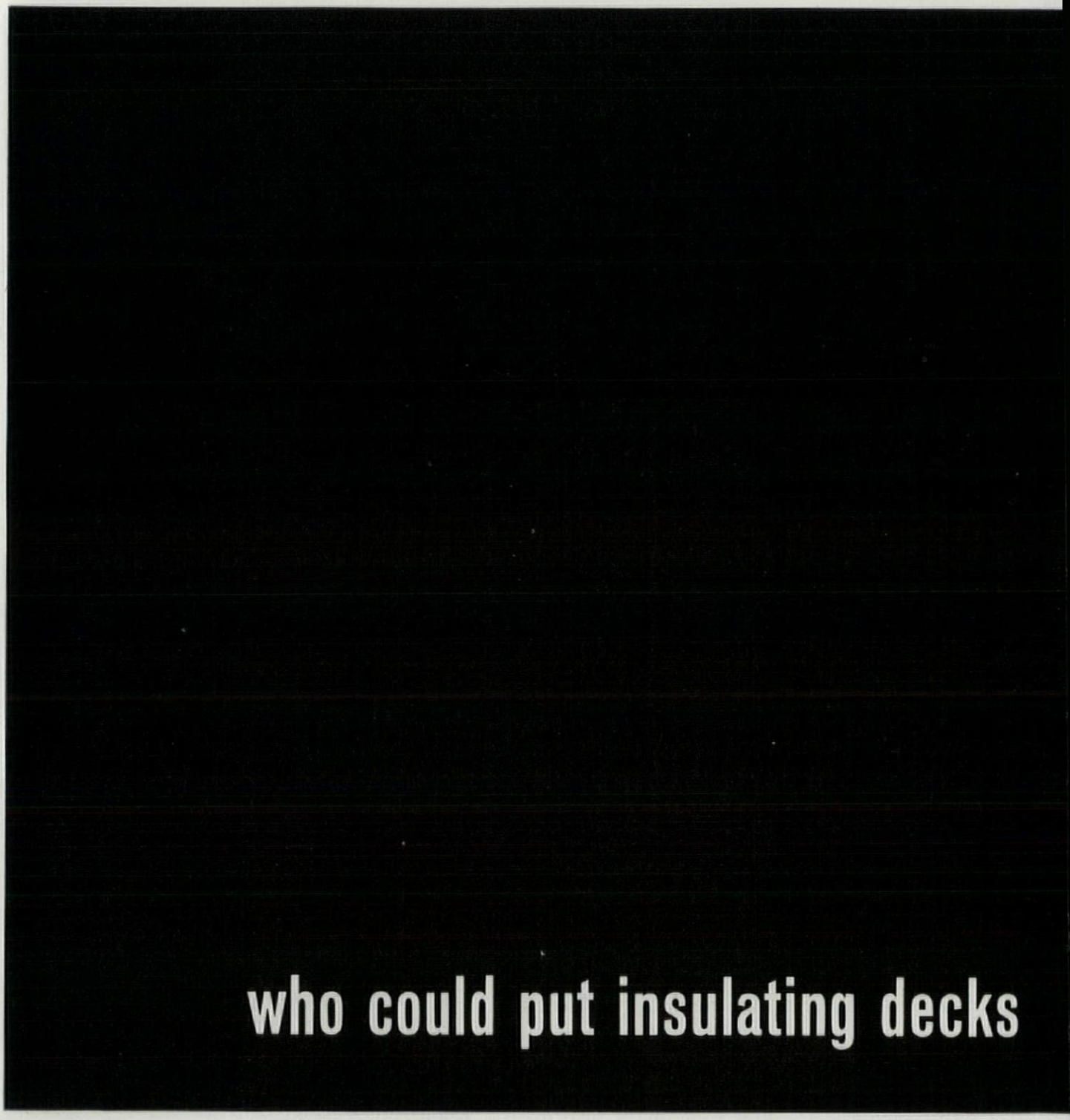
The 6475 Carrier Conduit Weathermaster* Units that rim the periphery of each floor are the largest number of high-pressure window units ever installed in one building.

But perhaps the key fact about any air conditioning system is simply this. It helps creative architects like Skidmore, Owings & Merrill design structures that combine exceptional utility with an outward expression that man calls art.

Reg. U.S. Pat. Off.

Photos by Alexandre Georges

Carrier Air Conditioning Company



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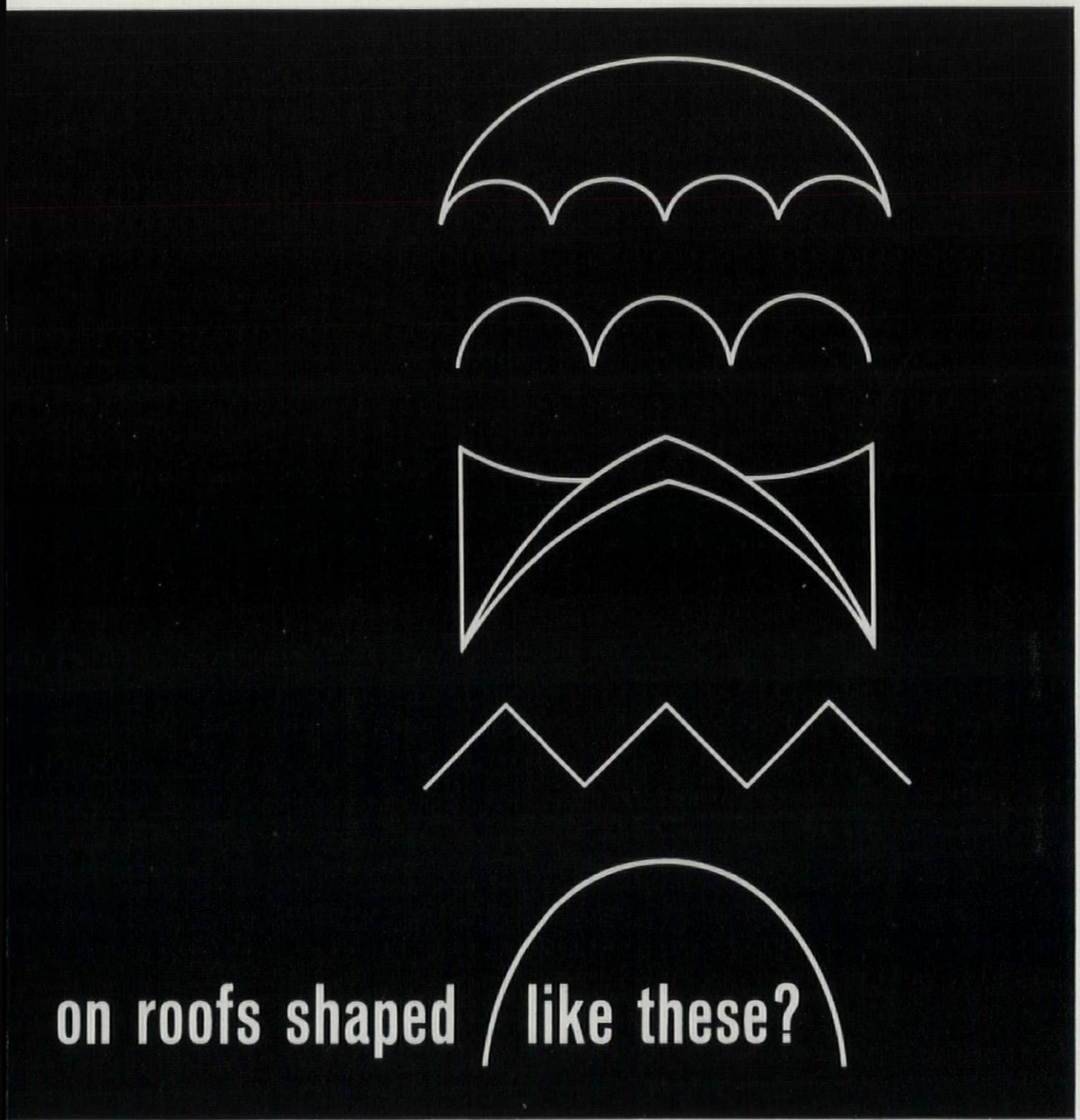
It insulates. It fire-protects. It's monolithic . . . doesn't require expansion joints. It works equally well over structural concrete, steel, or other supporting forms . . . whether the surfaces are curved, sloped or irregular.

As proof of the fact that Certified Zonolite Roof Deck Applicators know what they're doing, look at the job at right. The trained Zonolite Roof Deck Applicator did it as a matter of course. (But wouldn't



on roofs shaped like these?

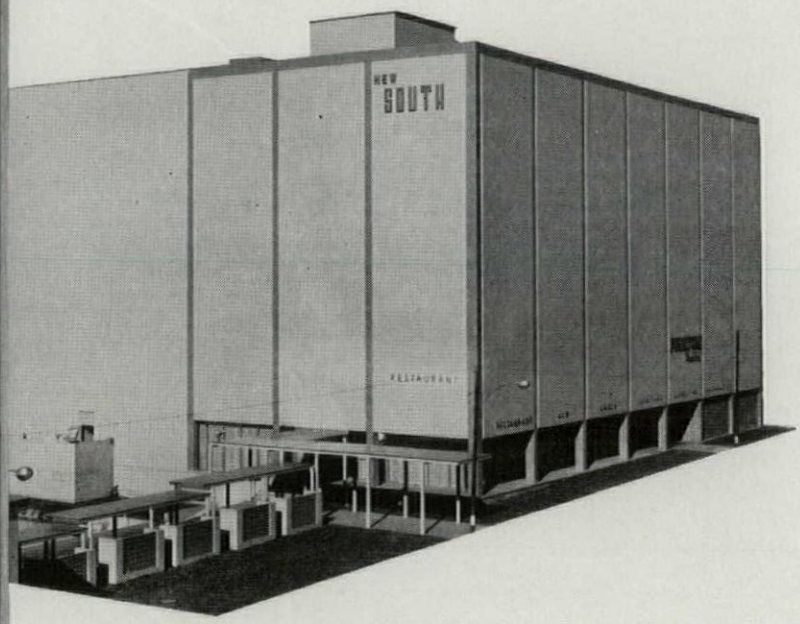
you hate to turn over a job like that to a bunch of hope-for-the-best operators?)

For complete information about Zonolite Vermiculite Concrete roof deck systems, contact your Zonolite Representative, or send for new Catalog CA-56.

ZONOLITE
COMPANY
135 S. La Salle St., Chicago 3, Illinois

Moisant International Airport, New Orleans, La.
Architect: Goldstein, Parham & Laubouisse, New Orleans, La.

High speed at High Point earns $150,000 ...with STEEL



STEEL brought early occupancy and extra income for the New South Furniture Exposition, High Point, N. C.—wood furniture manufacturing center.

The Furniture Plaza, a display mart, had to be ready for the season's opening on October 21, 1960.

H. L. Coble, president of H. L. Coble Construction Company, the contractor, credits structural steel with making it possible to meet a tough completion schedule.

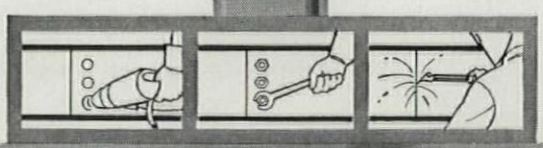
The steel frame for the six-story "showcase" was completed in exactly 30 days—faster than possible with any other material.

Here's what the contractor says this meant to the owners:

"$150,000—In additional rentals due to faster construction."

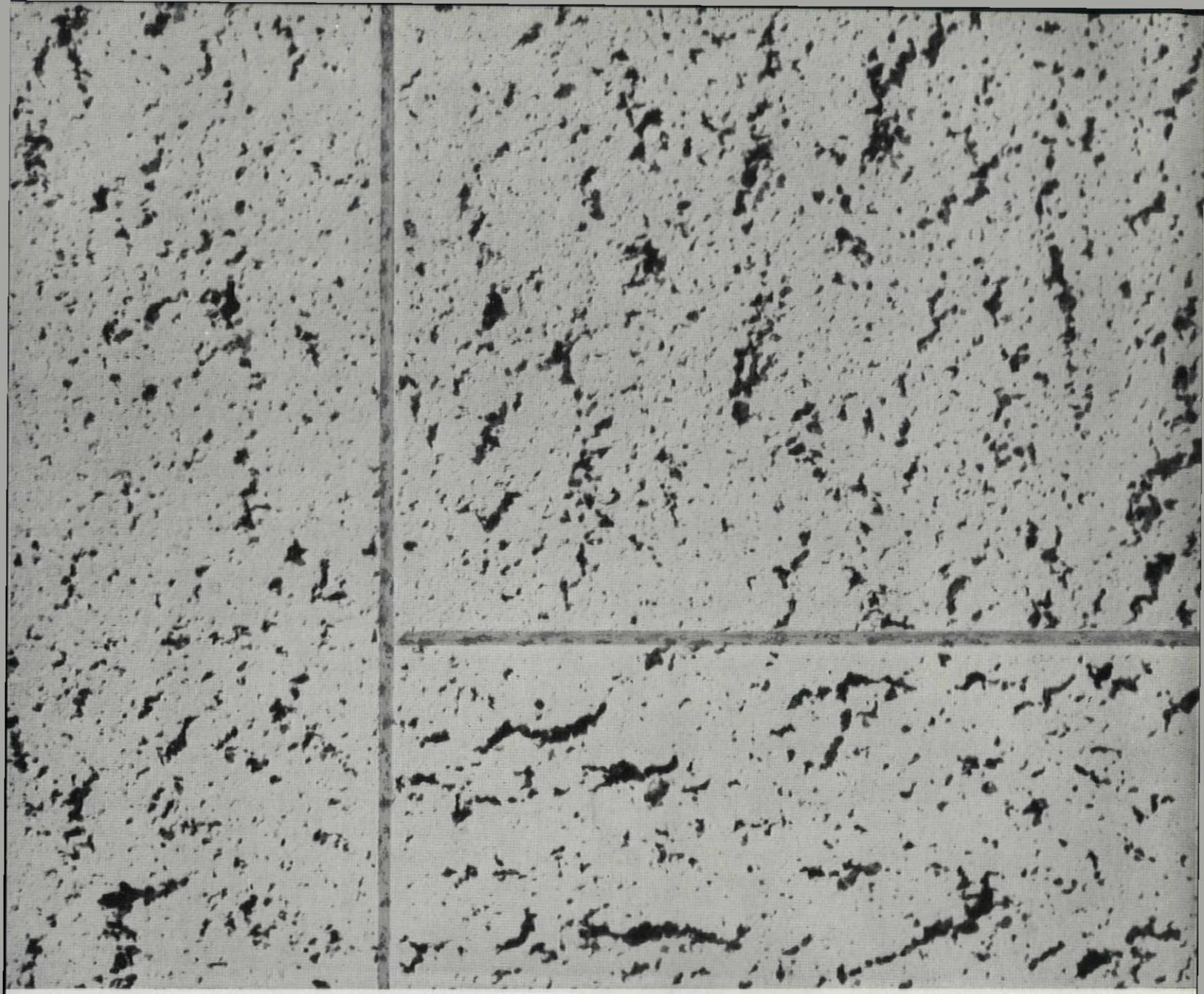
It pays to build in **STEEL**—
—for quicker completion and for earlier rentals.

American Institute of Steel Construction
101 Park Avenue, New York 17, N. Y.



Steel **STANDS** *for the future*

AISC



look at it this way!

You can see the difference in each tile of Baldwin-Ehret-Hill Styltone. A unique manufacturing process assures slight differences in fissure size and design to provide the dramatic overall effect of beauty. This is just one reason why in today's growing acoustical field so many of the big jobs specify Styltone. Other important reasons you should know about include the fact that Styltone delivers a noise reduction coefficient of .80, sure to reduce noise levels. In addition, Styltone is manufactured from non-combustible mineral wool, thereby it will not rot or decay, nor will it sustain life of fungus, insects, or rodents. Baldwin-Ehret-Hill Styltone is manufactured in ¾″ thickness with either beveled or square edges in 12″ x 12″, 12″ x 23¾″ and 12″ x 24″. For complete information along with the name of your nearest qualified Baldwin-Ehret-Hill acoustical contractor write Department ST, Baldwin-Ehret-Hill, Inc., 500 Breunig Avenue, Trenton, New Jersey.

STYLTONE

BALDWIN-EHRET-HILL

Baldwin-Ehret-Hill supplies a complete line of mineral, wood fibre and metal pan acoustical products.

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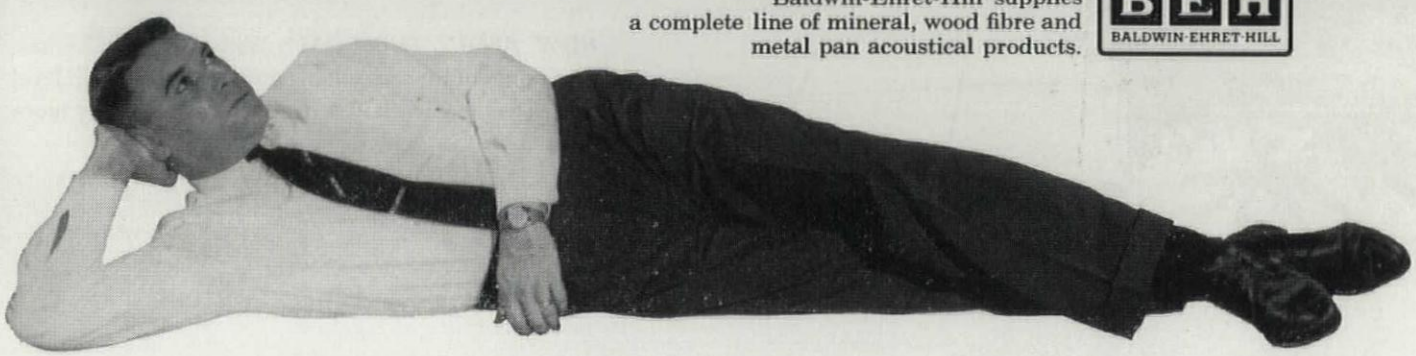


Would your client like living in a steel-framed house?

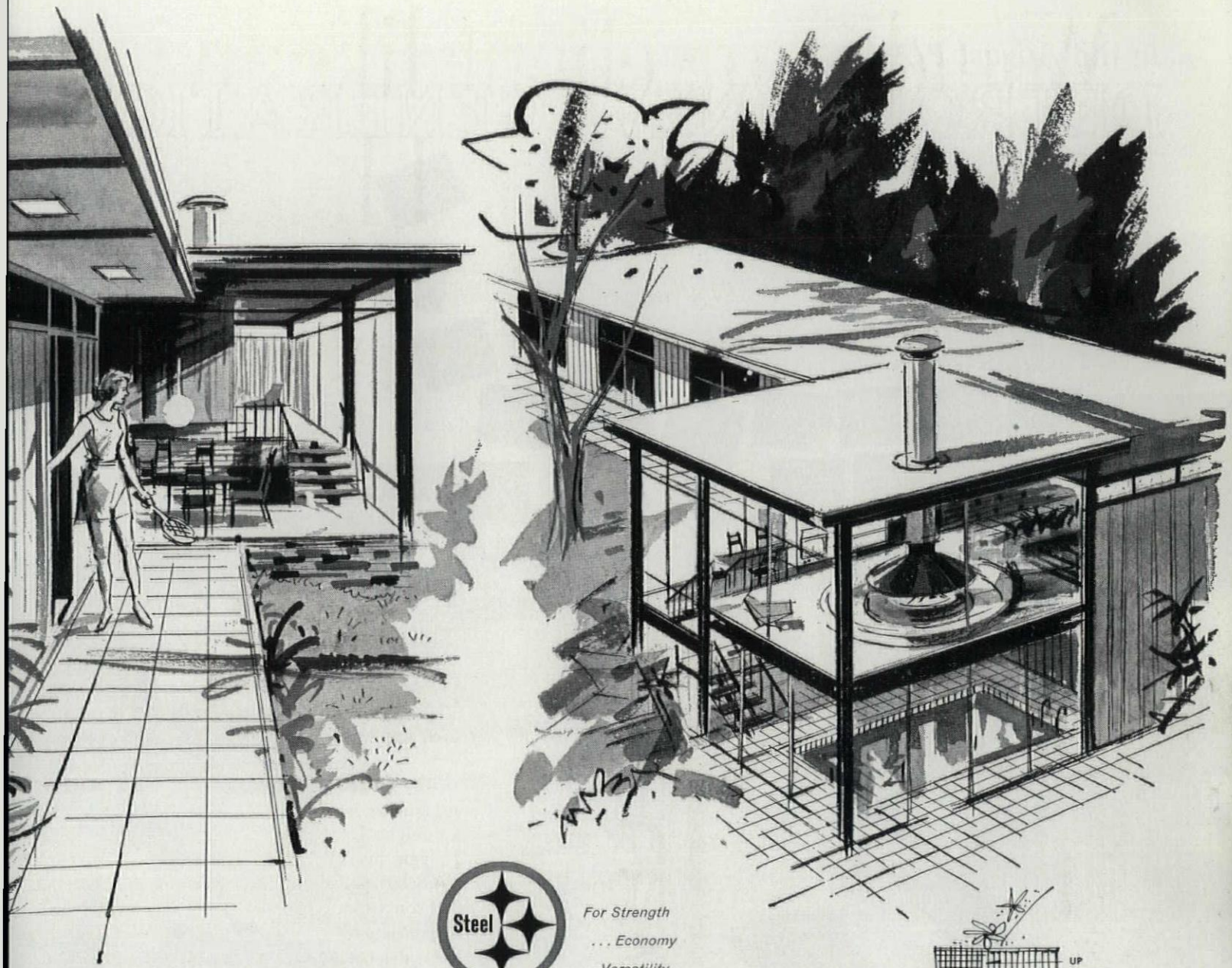
If your client likes crisp, contemporary design . . . if he likes outdoor-indoor living along with absolute privacy, a steel-framed house might be his cup of tea. Here's why.

STEEL PERMITS FREEDOM OF DESIGN. The limitations of other materials disappear when you design with steel. It's just right for contemporary architecture. It allows big, open areas, 30, 40 or more feet wide without any interior supports whatsoever. Steel framing also permits flexible interiors, often with movable partitions instead of fixed walls. Steel-framed houses can easily be expanded to meet future family needs, too. And you can design generous overhangs outside for sunshade effects, for patios, or covered walkways.

CURTAIN WALLS OFFER DRAMATIC POSSIBILITIES. When a house is framed with steel, the walls do not carry weight. Exterior walls need be designed only to provide insulation and security. Many types of panel materials can be put in place for less than the cost of conventional wall systems. For instance, huge glass panels and sliding glass doors can be placed between the steel columns to bring the outdoors in. Where opaque wall materials are preferred, you can use anything you like — porcelain-enameled steel, plastics, wood, brick, or stone.

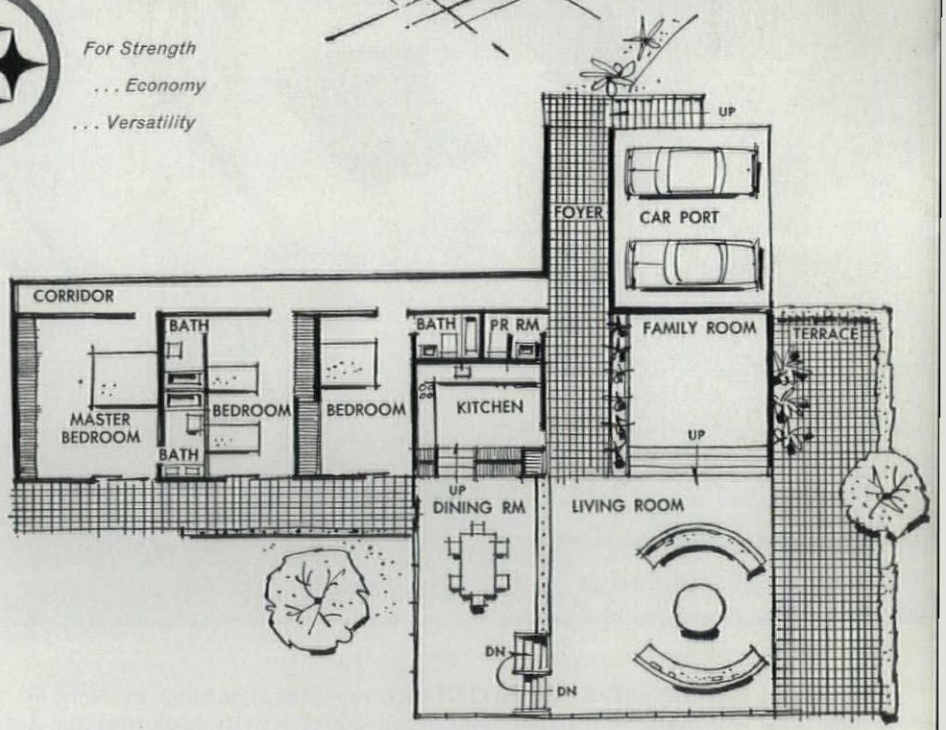
PROBLEM SITES. With steel you can build on the side of a steep hill, or on top of rock formations. You can even build *over* the terrain—elevating the house on steel stilts. This makes "impossible" sites usable. Such lots can often be bought at bargain prices, and save on grading, too. And if the "problem" site is rugged but attractive, its natural beauty needn't be bulldozed away. Save the trees, the shrubs, the rocks.

HOW ABOUT THE COST? With "problem" sites, steel commonly *saves* clients money. But even on level lots a steel-framed house need not cost a penny more than any other type of construction.



Steel

For Strength
. . . Economy
. . . Versatility



HOW ABOUT TIME? Once you complete the design of a steel-framed house, it can be ready for occupancy faster than any other type. A fabricating shop can prepare the steel in a few days; most likely the entire frame can be put up in a matter of hours—and quickly roofed over—compared with many days required for a carpenter-built house.

FREE LITERATURE AVAILABLE. We'd be happy to send you our own publications showing what other skilled architects and builders have done for clients just like your own. Write to Publications Department, Bethlehem Steel Company, Bethlehem, Pa.

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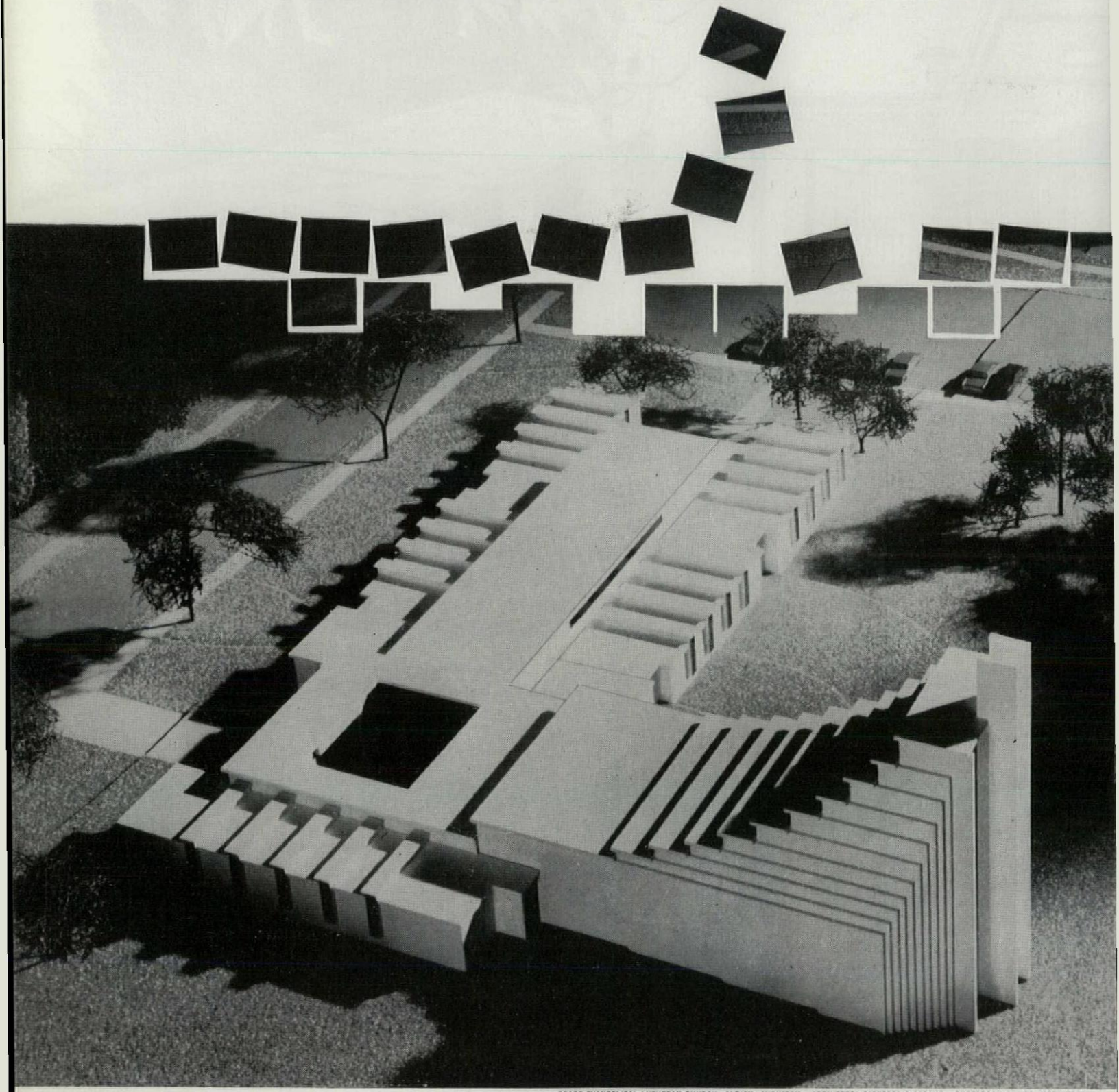
In the August P/A . . .

DETROIT'S NEW GENERATION



GRACE EVANGELICAL LUTHERAN CHURCH, ALBION, MICHIGAN ARCHITECT: BIRKERTS & STRAUB PHOTOGRAPHER: BALTAZAR KORAB

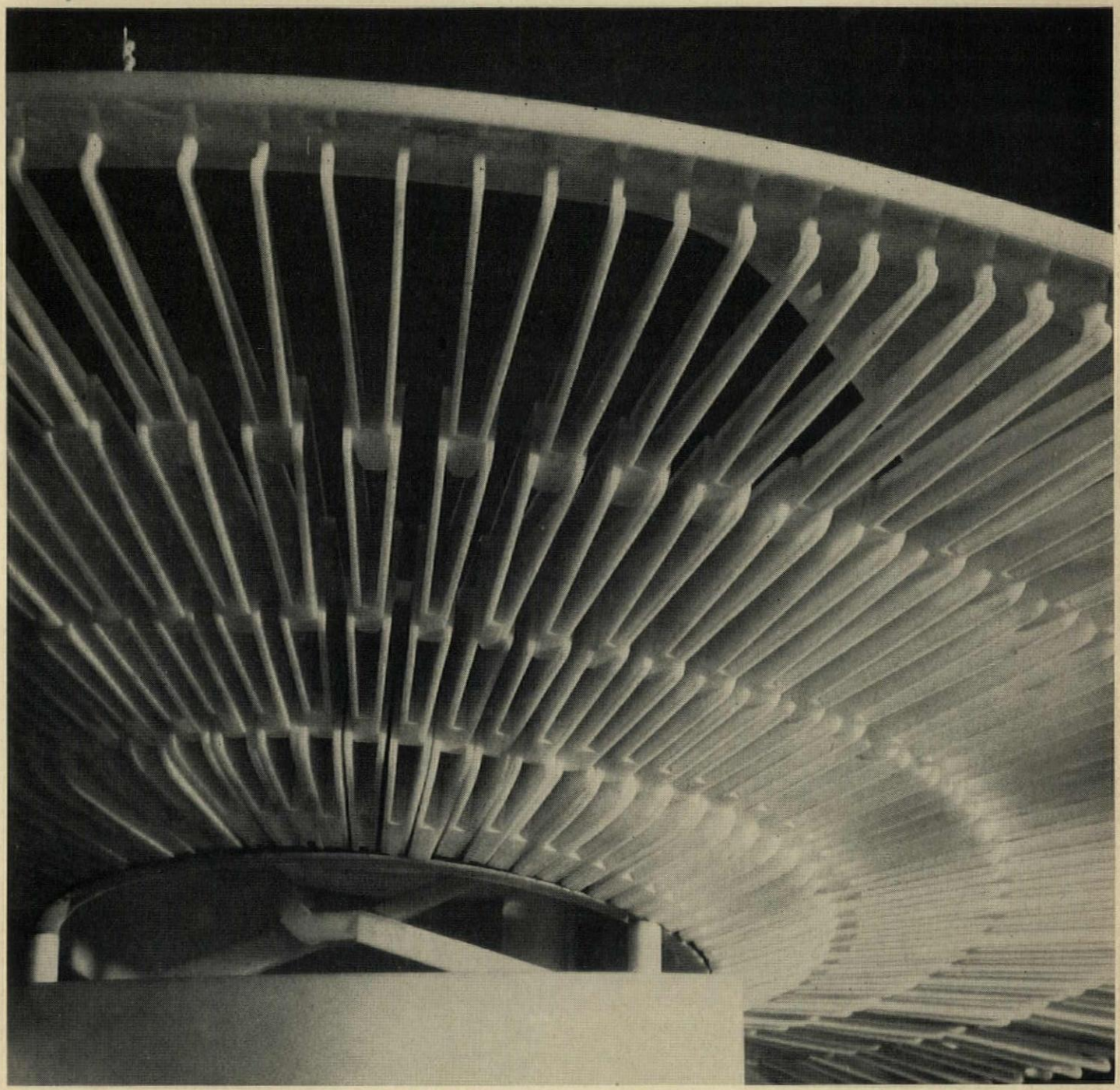
The August PROGRESSIVE ARCHITECTURE presents significant projects of "Detroit's New Generation"—the work of ten noteworthy young firms which are representative of architectural activity in Detroit and demonstrate the richness of its modern architectural development. The projects presented include a wide range of building types and sizes . . . three high-rise residential schemes, five churches, two elementary schools, three commercial buildings, and three private residences. "Detroit's New Generation" is another example of P/A's concentrated studies of the latest architectural thought in one locality. "The Philadelphia School" was discussed in the April issue. **Other articles include** a discussion of the convent Sainte Marie de la Tourette—one of the latest buildings by Le Corbusier—by Olindo Grossi, Dean of Pratt's School of Architecture, and a critical article—"Whither Paul Rudolph?" by the architectural historian Peter Collins. **Materials and Methods Articles** are "HP Roofs for Houses," "Cold-Glazed Cements Reviewed," and "Sound Systems." **Interior Design Data** presents the remodeled and redecorated Rieveschl Residence, Grosse Pointe Farms, Michigan; Meathe, Kessler and Associates, Inc., Architects.

PROGRESSIVE ARCHITECTURE *A Reinhold Publication • 430 Park Ave., New York 22, N. Y.*

PROGRESSIVE ARCHITECTURE JULY 1961

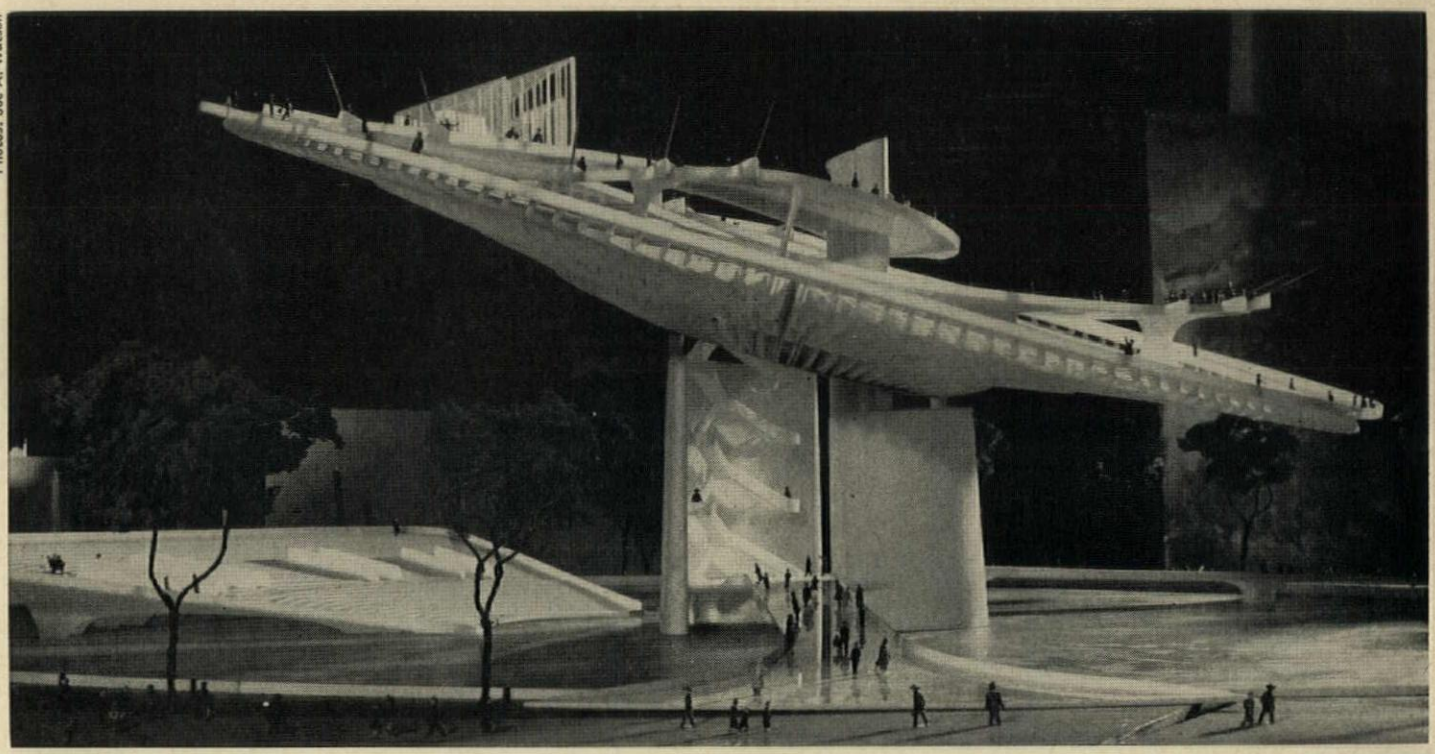
NEWS REPORT

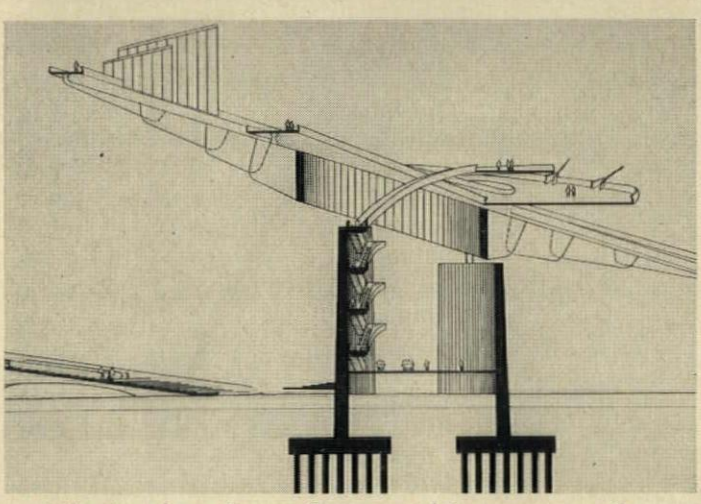
Architecture's Monthly News Digest of Buildings and Projects, Personalities, New Products



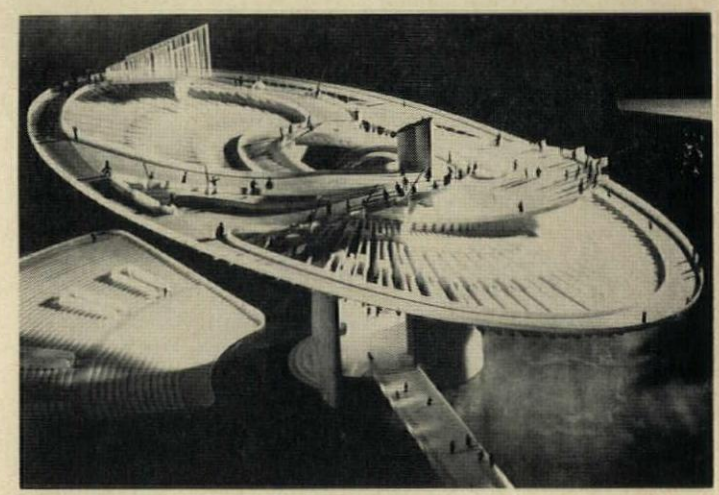
Prestressed, precast concrete elements of Paul Rudolph's "Galaxon" are pinned together, cantilever from central ring.

Photos: Joe A. Watson





Section shows "saucer" supported by concrete walls.



Radiating elements beneath ramps leading to perimeter.

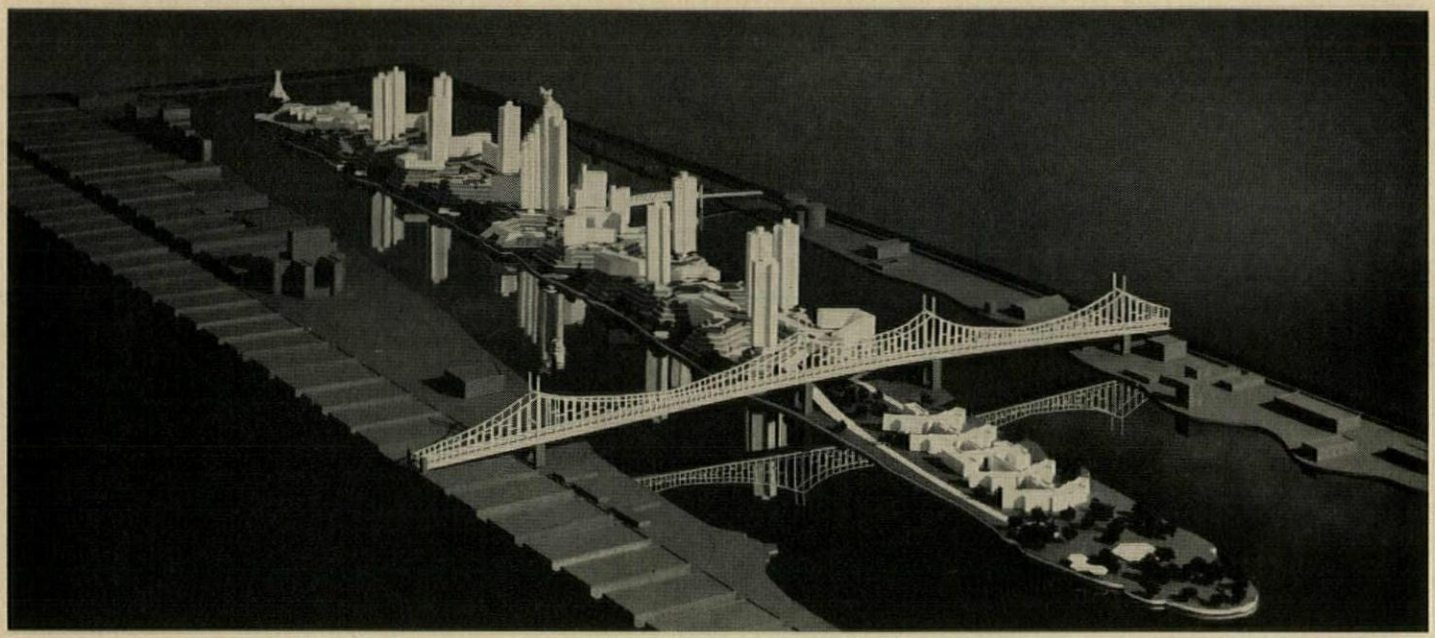
MOON-VIEWING PLATFORM SHOWS CONCRETE

"Space Park" by Yale Dean Exhibited by PCA

NEW YORK, N.Y. To serve as an illustration of what imaginative uses can be made of concrete in designing structures for forthcoming world and trade fairs, the Portland Cement Association commissioned Paul Rudolph, Dean of the Yale University Department of Architecture, to design a "Galaxon" or exhibition structure devoted to man in the space age. This structure, although a "visionary" prototype, joins such designs as the U.S. Science Pavilion at Century 21 by Minoru Yamasaki and Naramore, Bain, Brady & Johanson (p. 49, JULY 1960 P/A) and the Exposition Hall near Paris by Camelot, Demailly and Zehrfuss (p. 51, JANUARY 1960 P/A) as indications of what might be done in exhibition buildings for fairs and expositions.

The Galaxon consists of a great saucer-shaped platform of white portland cement reinforced concrete held high over a moat by two curved walls of the same material. The 300-ft-diameter platform would be tilted at an 18-degree angle to the earth for ideal viewing of the spectacle of the heavens. A stage would project from the base at ground level, faced by an amphitheater where visitors might view performances appropriate to the theme of the exhibition. Visitors reaching the central, supporting ring of the saucer via escalators and elevators would walk over curved ramps to a moving sidewalk around the perimeter. A restaurant, planetary viewing stations, and other exhibits would be located around the rim. The perimeter would be 160 ft high at its highest point, and 70 ft above ground at its lowest. Structurally, Rudolph's Galaxon is composed of a series of circles of prestressed, precast elements pinned to each other and cantilevered from a central, cast-in-place ring.

In encouraging architects and designers to consider reinforced concrete for exhibition design, PCA has prepared a 166-page brochure for 1964-65 New York World's Fair.

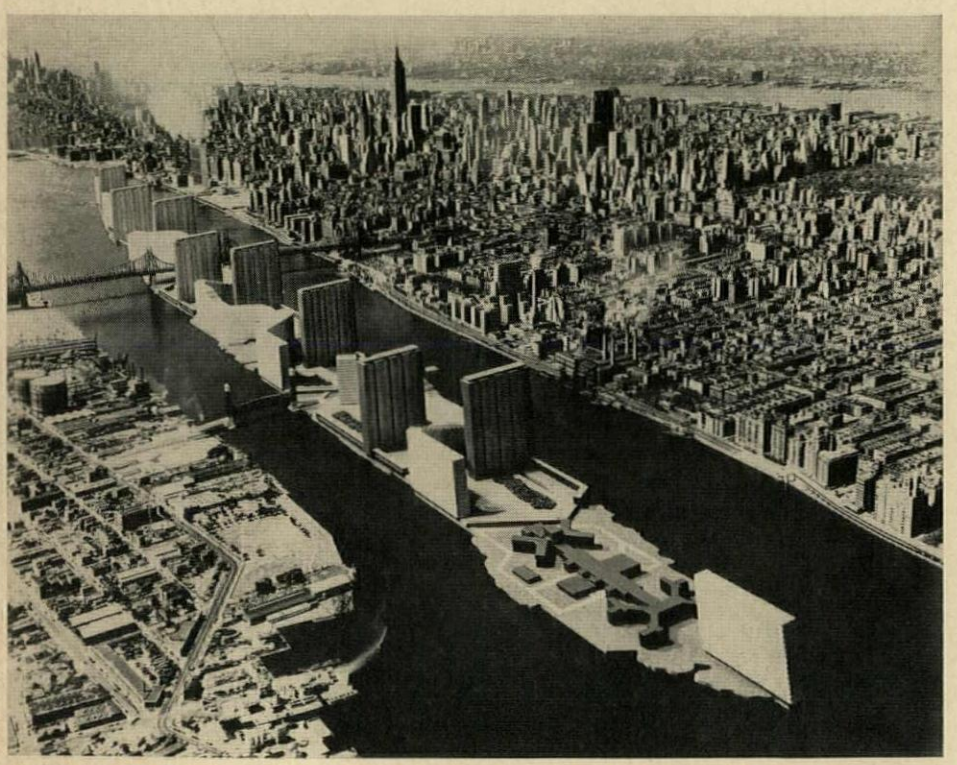


Viewed from UN (right), *Columbia design rises beyond Queensborough Bridge. Access would be by subway, car, ferry.*

Gruen's Chinese Wall and Columbia's Terraces for Welfare Island

NEW YORK, N.Y. Welfare Island is a 2½-mile-long, 700-ft-wide strip of land lying in the East River off Manhattan between 44th and 86th Streets. It is presently used for two hospitals —Bird S. Coler and Goldwater Memorial—which treat the aged and chronically ill, and for very little else. Someone was bound to come forward with a proposal for this immensely valuable space, and recently a commercial proposal and a school solution were advanced almost simultaneously.

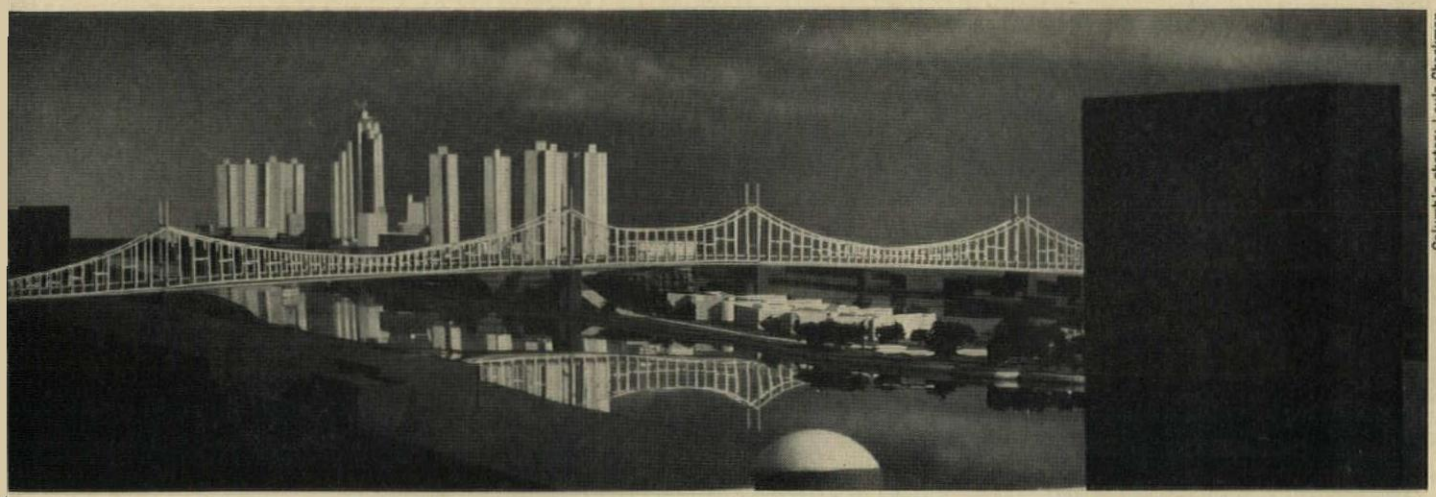
The $450 million commercial plan (*bottom this and facing page*), advanced by a team composed of Architect-Planner Victor Gruen, Financier Frederick W. Richmond, and Developer Roger Stevens, consists of a residential community for 70,000 inhabitants on the 167-acre island. Apartments would be in the low-income and middle-income brackets, in order to lure "suburban refugees" back to mid city. "East Island," as the project is known, would be a self-contained community with schools, shopping, and social and recreational facilities located beneath a 22-ft-high platform on which apartment buildings and town houses would sit. The platform would actually be in three elements, interrupted at two points by five-acre, ground-level parks. A transportation system of the "carveyor" type would traverse the island lengthwise to deliver inhabitants to points —including a subway stop—within the under-slab, facilities level. Cars, except for ambulances, fire trucks, and other emergency vehicles, would be banned from the island. Apartments would be in eight, 50-story slab buildings and three long, curved buildings undulating in height from eight to 30 stories. Town houses would occur along the perimeter of the platform, overlooking the river. The profile of the island from the Manhattan side would take on something of the quality of a "Chinese wall," cutting off much of the view to Queens, such as it is. Under this proposal, the older Goldwater Memorial Hospital would be demolished, and Bird S. Coler Hospital would be retained and enlarged by the addition of an apartment building for the aged.



Gruen scheme proposes apartments atop slab sheltering other facilities.

A redevelopment proposal for Welfare Island was prepared at Columbia University last session under the aegis of Professor Percival Goodman. Project team was composed of Morton A. Bernstein, Elam L. Denham, Richard M. Foose, Jr., Mahesh Kauschik, and Donald I. Singer.

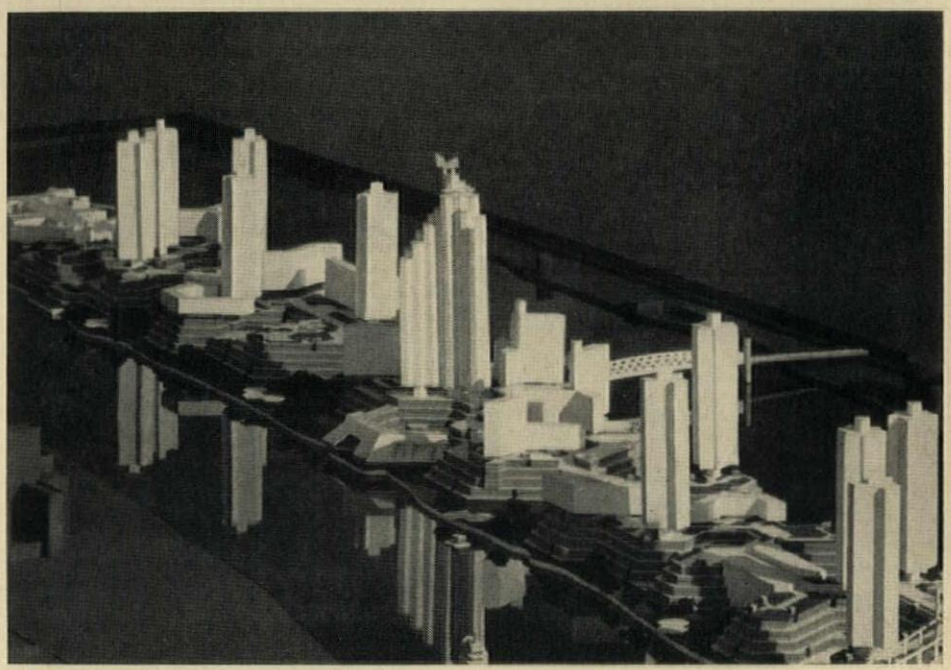
The Columbia design (*top this and facing page*) is based on Goodman's concept of a "Terrace City," in which



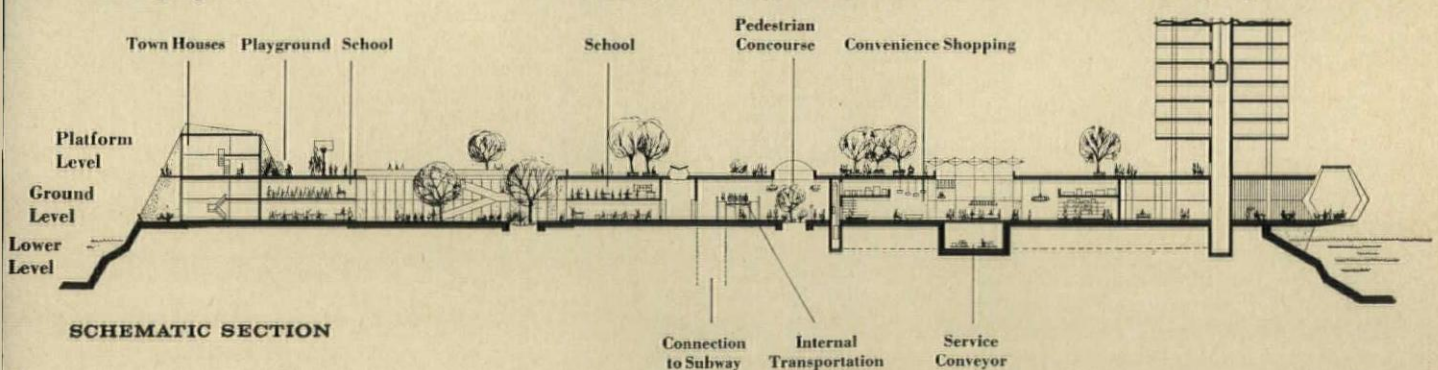
Columbia photos: Louis Checkman

Viewed from UN (right), *Columbia design rises beyond Queensborough Bridge. Access would be by subway, car, ferry.*

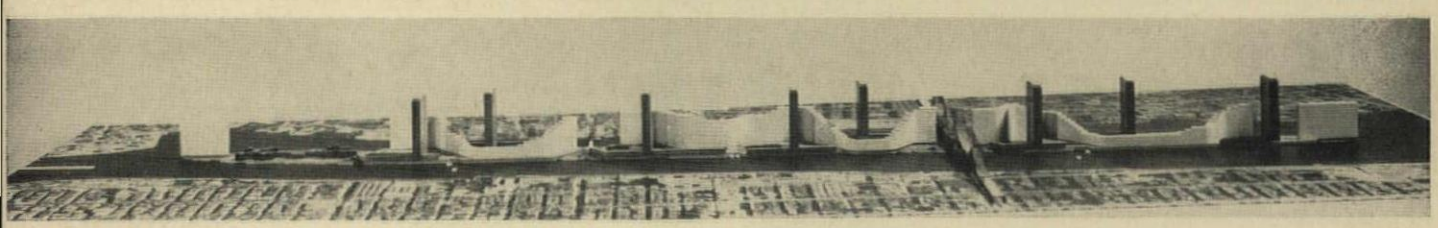
dwelling units and areas needing light and air would be raised over man-made hills containing those facilities which do not require natural light and ventilation (work, shopping, parking, etc.). (This man-made mountain concept, incidentally, will receive detailed consideration in the OCTOBER 1961 P/A.) Since this proposal is intended as a self-contained community for persons connected with the nearby headquarters of the United Nations, population would be approximately 20,000 (although additional units could be added with the demolition of Goldwater Memorial, retained in this plan). This UN-connected proposal goes along with a suggestion made by Le Corbusier in 1946 that a self-contained "city" be created for UN personnel. The towers-on-hills concept of this design would present a lively, open silhouette when viewed from across the river, as contrasted with the more "developmenty" look of the East Island proposal.



Built-up terraces supporting towers shown in detail. Note peripheral road.

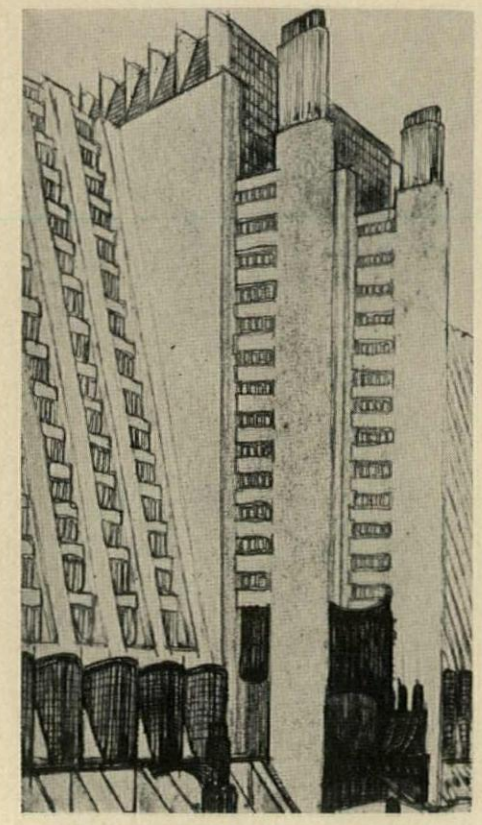


Schematic section of Gruen proposal shows manner in which various facilities would work beneath 22-ft-high platform.



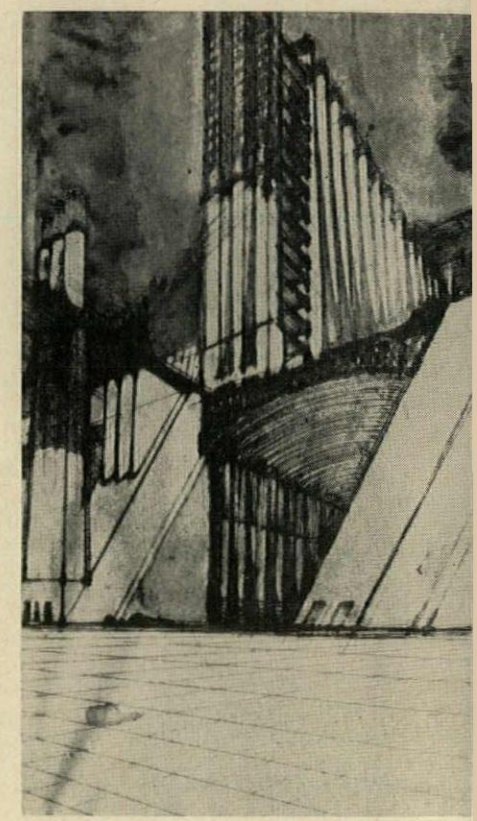
Viewed from Manhattan side of river, Gruen's curved and slab buildings would be more "opaque" than Columbia design.

Visionary Architecture and a One-Man Show at Museum of Modern Art



NEW YORK, N. Y. More "visionary" architecture (p. 78, OCTOBER 1960 P/A) went on view at the Museum of Modern Art recently with the opening of the exhibition of Futurism. In addition to works by the leading painters and sculptors of the short-lived but influential Italian movement of 50 years ago—Boccioni, Severini, Balla, Carra, etc.—the show includes five architectural sketches by Antonio Sant' Elia, who was killed in World War I at the age of 28 before he had a chance to put any of his imaginative design ideas into actual construction. Drawings are from his "New City" and "New Power Plant" series.

A *real* building—one of the realest buildings to be built for some time, in fact—is the subject of a one-man, one-building show at the same museum. Louis I. Kahn's Alfred Newton Richards Medical Research Building at the University of Pennsylvania (p. 61, JUNE 1960 P/A), is shown in original drawings, plans, models, mounted photographs, and color-slide viewers. The Kahn show is the eleventh exhibition of one building by one architect in the museum's history.

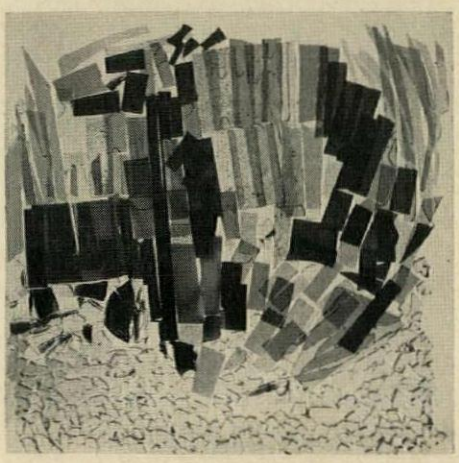


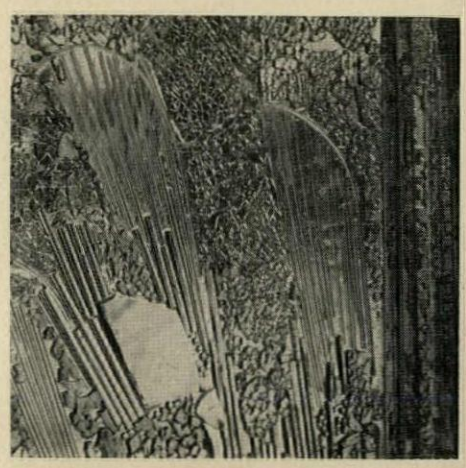
Cranbrookite Creates Areas of Glass, Mosaics

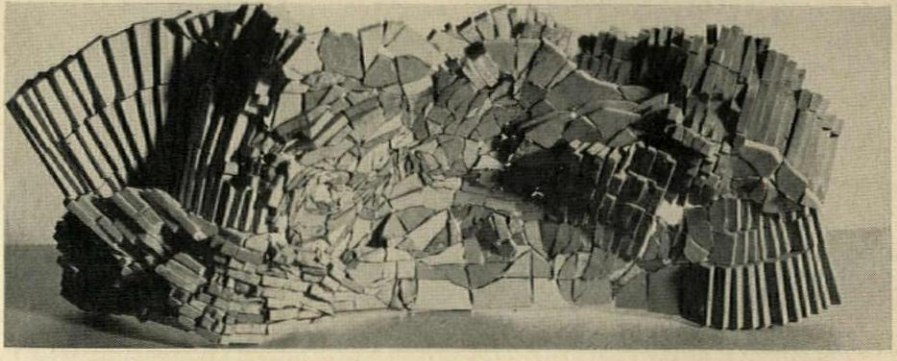
BIRMINGHAM, MICH. After exciting a good deal of notice with his show at New York's Bertha Schaefer Gallery last fall, Glen Michaels, Supervisor of the Young People's Art Center at Cranbrook Academy of Art, has become increasingly interested in creating "architecture-size" panels and screens of glass, tile, and *objets trouvés*.

In the gallery show, Michaels exhibited a sensitive command of his materials, creating curiously moving mosaic panels from tile chips, keys, wooden boxes, and many other items. Glass has attracted his attention since then, and he has prepared a number of squares and panels ranging from the colorful to the serene (*top, right*). In some instances, he fuses glass bits, beads, rods, and bubbles between two panes to cause a lacy, ethereal effect. In others (such as a current restaurant project in New York), he adheres great chunks of glass to the surface of a pane to create an illusion that is at once crystalline and virile.

The wall, composed of ceramic and tile pieces (*below, right*), shows Michaels' idea for large-scale use of more rugged materials.







AISC Announces Nine Awards of Excellence Winners

NEW YORK, N. Y. Nine firms from seven states have won Architectural Awards of Excellence for designs making good use of steel in construction from the American Institute of Steel Construction. Awards jury was composed of Thomas H. Creighton, Editor of PROGRESSIVE ARCHITECTURE; Arthur Drexler, Director of the Department of Architecture and Design, Museum of Modern Art; Olindo Grossi, Dean of the School of Architecture, Pratt Institute; and Morris Ketchum, Jr., Ketchum & Sharp, New York regional director of AIA.

Winners, shown below, are **(1)** Bethlehem Steel Company Building, San Francisco, by Welton Becket & Associates; **(2, 3)** two residences in Houston, Texas, by Howard Barnstone of Bolton & Barnstone; **(4)** Municipal Utility District Headquarters, Sacramento, California, by Dreyfuss & Blackford; **(5)** John Jay Hopkins Laboratory for Pure and Applied Science, San Diego, by Charles Luckman Associates; **(6)** University of Washington Faculty Club, Seattle, by Paul Hayden Kirk & Associates and Victor Steinbrueck; **(7)** First Federal Savings & Loan Association, Denver, by W. C. Muchow Associates; **(8)** Southwestern Community High School, Flint, Michigan, by Eberle M. Smith Associates, Inc.; and **(9)** Pan American World Airways Passenger Terminal, New York International Airport, by Tippetts-Abbett-McCarthy-Stratton and Ives, Turano & Gardner.

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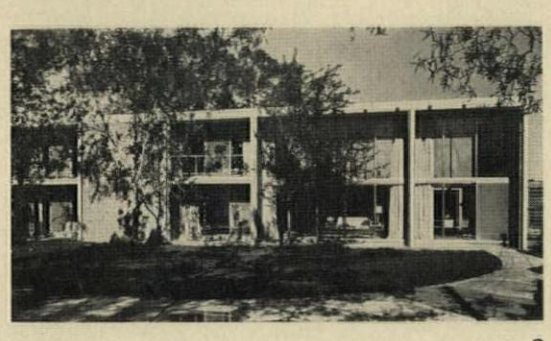

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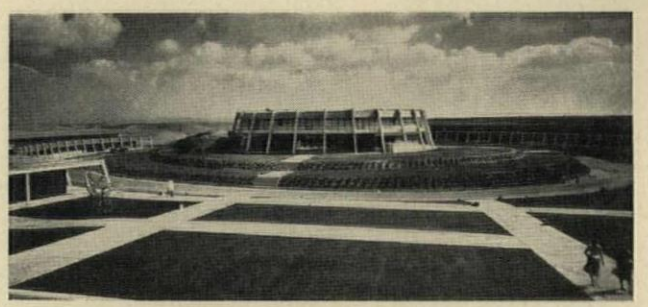

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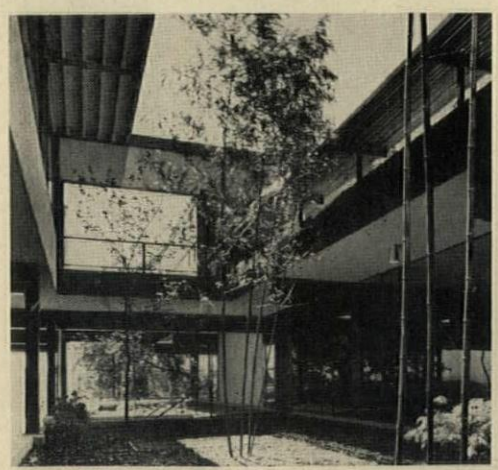

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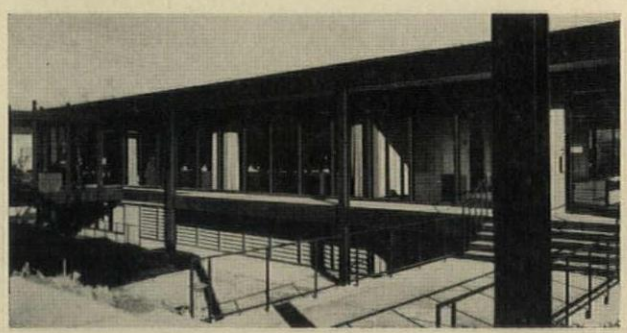

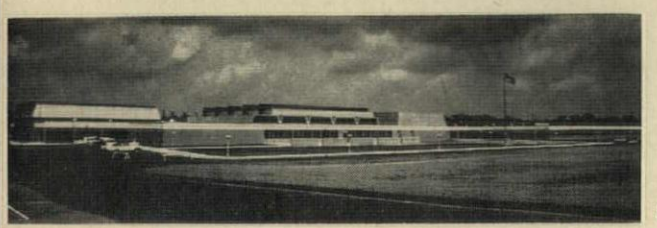

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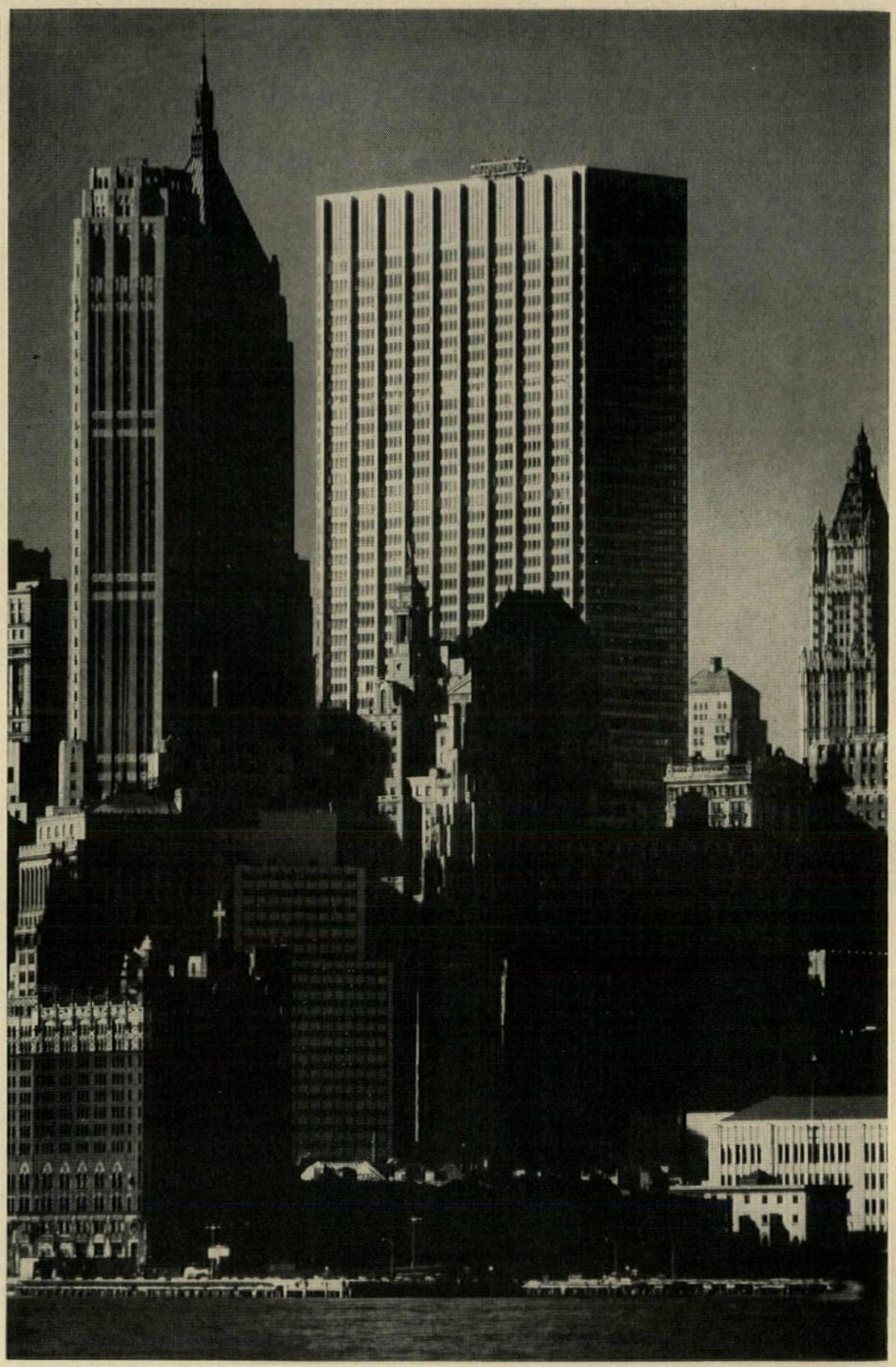


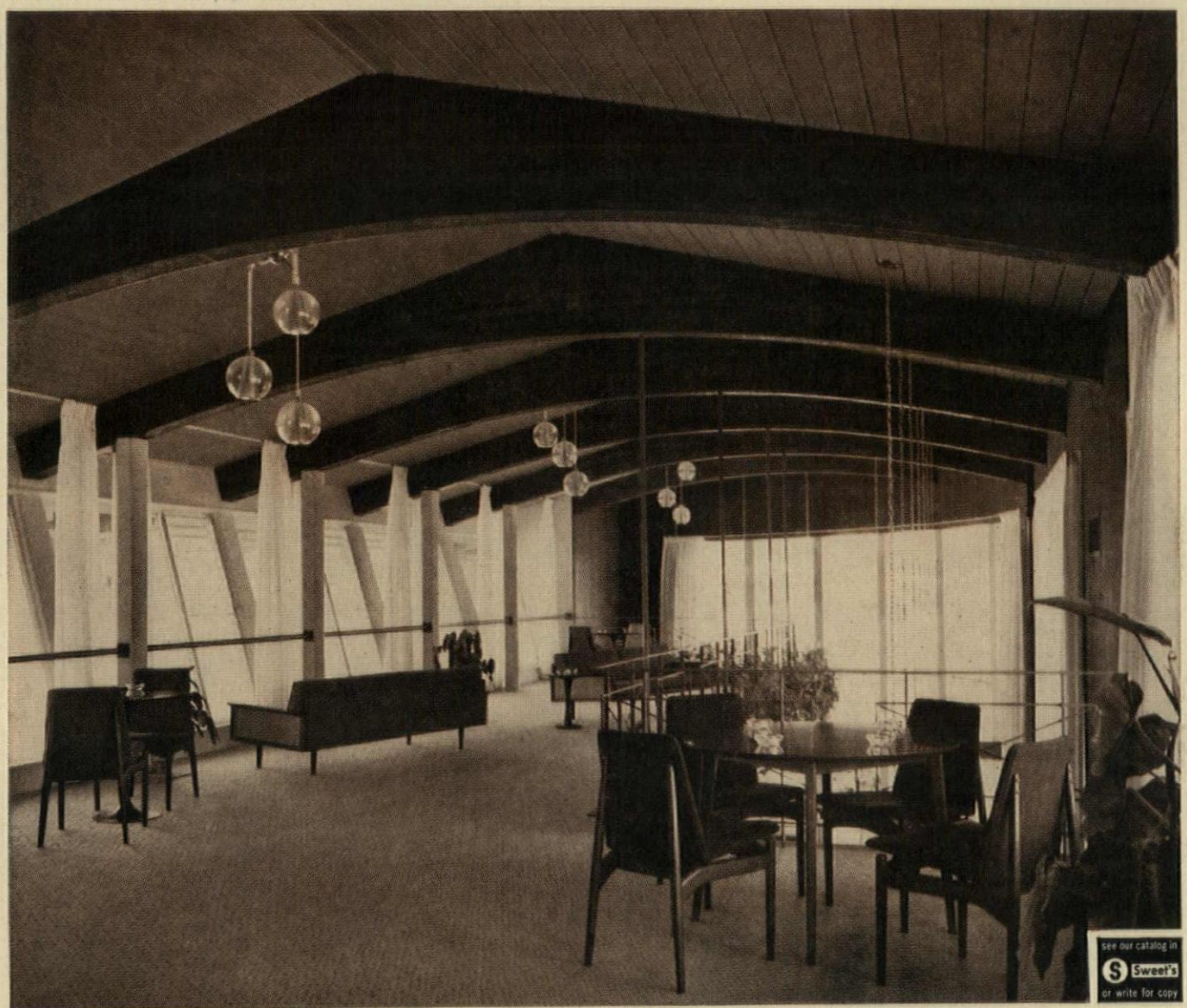
Photo: Elwood P. Johns

New Escarpment Among Cliffs of Lower Manhattan

NEW YORK, N.Y. The skyline of lower Manhattan has taken on additional oomph with the opening of Skidmore, Owings & Merrill's headquarters for Chase Manhattan Bank (pp. 86-87, MAY 1956 P/A). The sleekly detailed structure, which will poke a light-and-air hole into the grimy environs of Wall Street with its 2½-acre plaza, is a prestige job in every respect, down to the Cézanne color lithograph in President David Rockefeller's washroom. Rockefeller sees the building as a giant opening wedge for the redevelopment of downtown Manhattan.

Guest Lounge of Los Altos Inn, Los Altos, California. Designer: Stan Mattson, Mountainview, California. Contractor: Surety Building Co., Inc., Cupertino, California.

Space provided: motel office, restaurant, guest lounge, two conference rooms, two executive suites, manager's apartment. *Structural framing:* glulam floor beams spaced at 8' and 12'-6", resting upon glulam columns; glulam peaked and cambered roof beams spaced at 8'. *Exterior walls:* Palo Verde stone. Texture One-Eleven plywood, stucco. *Interior walls:* wood paneling, gypsum board. *Floors:* carpeting over concrete on ground floor; carpeting over Tim-Deck on mezzanine floor. *Roof:* felt and tar with crushed aggregate surface over Tim-Deck and rigid insulation. *Heating:* gas-fired forced air. *Lighting:* incandescent fixtures. *Area:* 7,309 square feet. *Cost:* $11.63 a square foot.



PERSONALITIES

From a life in the towers of learning into a top spot with one of the most active firms in the country is quite a jump, but is one that **Harold D. Hauf** is making right now. Hauf is moving from the deanship of the School of Architecture at Rensselaer Polytechnic Institute to the post of vice-president in charge of design and planning for Charles Luckman Associates in Los Angeles.

Aside from military service, Hauf left the halls of ivy once before, when he resigned as chairman of the Department of Architecture of Yale University in 1949 to become, for a while, editor of an architectural magazine. His war service, both in World War II and the Korean War, saw him bring his architectural-engineering talents to his nation's aid. In the big war, he was head of the Hospital Facilities Division of the U. S. Navy. Recalled for the Korean dust-up, he co-ordinated design and construction of new naval air, fleet, and civil works facilities for the First Naval District. Aside from his Yale period (1929-49) and his time at R.P.I. (1954 to date), Hauf has worked for more and better construction research and information as chairman of the Building Research Advisory Board of the National Research Council. He is currently a member of the Board of Governors of the Building Research Institute.

JAMES A. HOWELL is acting head of the Department of Interior Architecture at Rhode Island School of Design . . . . RICHARD NEUTRA received the "Klimt Honor," highest honor given by Association of Painters and Graphic Artists of the Vienna Secession . . . . New Field Director for The Producers' Council is R. HARTLEY EDES, JR. . . . . Dr. ROBERT W. VAN HOUTEN, president of Newark College of Engineering, is president of American Society for Engineering Education . . . . JOHN LANE EVANS is new City Architect in the Department of Public Property for Philadelphia. . . . Recently appointed Director of the Division of Public Affairs of AIA is MATTHEW L. ROCKWELL, architect of Winnetka, Illinois. . . . ALDEN B. DOW received President's Award from Columbia University Architectural Alumni Association for "outstanding accomplishment in the field of design." . . . Recipients of Rome Prize Fellowships in Architecture from the American Academy in Rome were ROBERT M. GOLDER, Philadelphia, BERNARD N. STEINBERG, New York City, and CHARLES T. STIFTER, Birmingham, Mich. . . . Arnold W. Brunner Scholarship of New York Chapter AIA went to RICHARD A. MILLER and ARNALL T. CONNELL for a study of visual perception as related to design; grants-in-aid went to HAROLD EDELMAN and STANLEY SALZMAN for work on a book about architectural composition, and G. E. KIDDER SMITH for work on *A Guide to Contemporary Architecture in Europe*. . . . WELTON BECKET was named "Man of the Year" at annual banquet of local construction industries; he also was appointed Honorary Mayor of Century City (a redevelopment project) at its dedication. . . . PIERO GAZZOLA's plan for the Nubian monuments (p. 58, APRIL 1961 P/A) has been approved by the U.A.R. Government.

Much of the reason for the reputation Pratt Institute has as being a place where something is always going on is the Dean of its School of Architecture, **Olindo Grossi.** "Lee"

Grossi, as he is known throughout the profession, joined Pratt in 1945. He was recently elected president of the Association of Collegiate Schools of Architecture, succeeding Dean Harlan McClure of Clemson College School of Architecture.

Grossi's interest in architectural education goes beyond the bounds of Pratt; in 1949, he was the recipient of an AIA grant to execute a study of "Architecture and Planning," which is now touring New York City high schools. For his *own* education, he got his BA, Bachelor of Architecture, and Master of Architecture degrees from Columbia University, Pratt's biggest architectural rival in the New York area. After receiving his Master's in 1933, he went on to the American Academy in Rome as winner of the Rome Prize in Architecture, studying there until 1936. Grossi later worked in the offices of Eggers & Higgins and York & Sawyer, among others. In addition to his duties as dean and ACSA president, he conducts a practice in residential and commercial design and does quite a bit of research and writing (the latter activity to bear fruit in an article on Le Corbusier's La Tourette in next month's P/A).

Aluminum Window Manufacturers Assn. elected ROBERT RUSSELL president; he is president and chairman of the board of Miami Window Corp. . . . . STUART B. SOLOMON of Carnegie Tech won the John Stewardson Memorial Scholarship for 1961 . . . . New curator of American Arts at the Wadsworth Atheneum is HENRY P. MAYNARD . . . . ARTHUR TRACY ROW, JR., Assistant Executive Director of Philadelphia City Planning Commission, has been named Director of Yale University's Graduate Program in City Planning . . . . Re-elected president of the New York Building Congress was BRADFORD N. CLARK, partner in Eggers & Higgins . . . . WILLIAM PERREAULT, assistant professor of architecture at Cornell University, is now head of Department of Education, Division of Member Services, for national AIA . . . . GLENN P. BAKKEN, president of Chase Brass & Copper Co., Inc., was re-elected president of the Copper & Brass Research Association . . . . Two honored by American Institute of Timber Construction at its recent Las Vegas meeting were: retiring president WARD MAYER and Engineer VERNE KETCHUM . . . . ALFRED JOHN JAKSTAS becomes Conservator of The Art Institute of Chicago; he comes from same post with Isabella Stewart Gardner Museum in Boston.

Sketches by Romano Corbellini

50th Year of N.Y. Public Library's Central Office

On June 6, 1899, New York City began demolishing the old Croton Reservoir between 40th and 42nd Streets on Fifth Avenue to make way for the Main Branch of the New York Public Library. The land was then valued at $20 million. For New Yorkers in the middle of the last century, a favorite diversion on Sunday afternoons was to walk up to 42nd Street (then considered far "uptown") and promenade along the top of the reservoir. For contemporary Manhattanites, somewhat comparable amenities are provided by daily recorded concerts in Bryant Park, adjacent to the rear of the library.

The library building, designed by John M. Carrère and Thomas Hastings, and dedicated by President Taft on May 23, 1911, is 390′ x 270′. The main reading room is 295′ x 77′ and 50′ high, covering half an acre and seating 800 readers. The famous lions flanking the steps on Fifth Avenue were created by Edward C. Potter.

I.M. Pei Accepts NIAL Brunner Award

Accepting the Arnold Brunner Memorial Prize in Architecture of the National Institute of Arts and Letters recently, I.M. Pei said, "In honoring me you have encouraged me to hold to the belief in the importance of reemphasizing the fundamental discipline in architecture. Today, there exists a disturbing tendency to overstress originality and refinement. These would be laudable objectives were there not such overtones of desperateness. Diversity of expression is richness itself provided there is unity; innovation is necessary to progress when there is a continuity of past experiences."

APROPOS

Building Research Institute reports that the new offices of the Timber Decay Enquiry Bureau in London are situated on Wormwood Street.

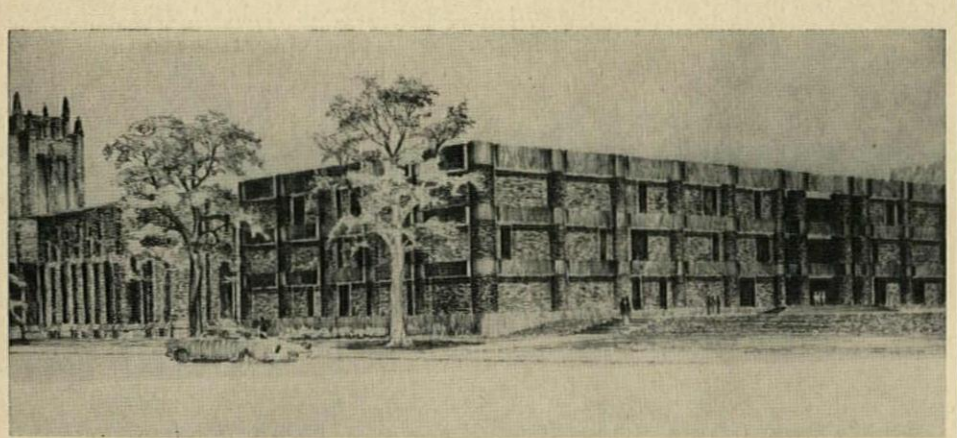
Watch Out! He Might Do It!

In Venice to exhort Italian support for the 1964-65 New York World's Fair, Thomas J. Deegan, Jr., Chairman of the Fair's Executive Committee, in a masterpiece of unintended humor, told the Second World Congress of Public Relations, "If you should ever wish the canals of Venice filled in and the landscape enhanced, I suggest you call on Robert Moses."

Fellowships, Better '62 Announced by Columbia

Happy admirers *(shown)* of the Columbia Proposal for Welfare Island (pp. 46–47) are seven of the eight winners of the William Kinne Fellows Memorial Travelling Fellowships from Columbia's School of Architecture. Left to right, they are: James L. Groom, Theodore W. Litzenberger, Arthur Pettorino, Luellen Fields, Peter Amato, David E. Glasser, and Herbert M. Mark. Absent is James Falick. Unique aspect of travel arrangements is that, at separate times, each of the fellows will visit Nervi's International Labor Organization pavilion in Turin (p. 63, NOVEMBER 1960 P/A), and, upon return to the United States, meet at Columbia (possibly with Nervi) for an extended discussion of the building.

Dean Charles Colbert told P/A at the fellowship luncheon that the awards program will be at least doubled next year. There will be 10 fellowships in graduate architecture and planning, for instance, where this year there are only two (Amato and Litzenberger).



Yale Building Boom Produces Geology Laboratory

Latest project announced in Yale's burgeoning construction program is the Kline Geology Laboratory, designed by Harvard man Philip Johnson. The laboratory, for which ground will be broken by the end of the year, is the first of several buildings to be known as Kline Science Center, after C. Mahlon Kline (Yale, '01), former president of Smith, Kline & French Laboratories who has given Yale $10 million toward creation of the center. Other disciplines to be housed include chemistry and the biological sciences; there will be a central auditorium for the sciences.

The geology laboratory will be a concrete and brick structure next to Peabody Museum of Natural History on Whitney Avenue. Three aboveground stories and two levels below ground will provide 100,000 sq ft of space. The building will be connected to Peabody Museum by passageways in the basement and on the second floor. Five existing but separate libraries of geology will be integrated into a single unit in the new building.

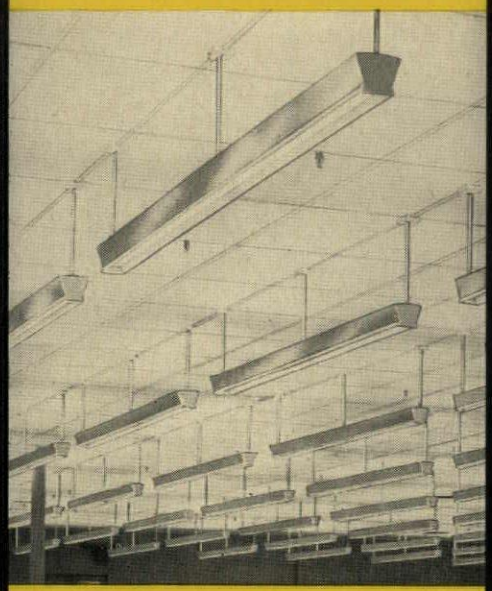
Suburban Bank Designed for Expansion

Construction has begun on the Mont Clare Savings and Loan Association

Continued on page 58

Litton Industries
LOK-Electric Series 3000
Pendant Fixtures (1500 M. A.)

Architect: A. C. Martin & Associates
General Contractor: C. L. Peck
Electrical Contractor: Newberry Electric



Autonetics
A Division of North American Aviation
LOK-Electric Series 3000
Pendant Fixtures (1500 M. A.)

Architect: Bechtel Corporation
General Contractor: Lindgren & Swinerton
Electrical Contractor: Carsten Electric

Collins Radio
LOK-Electric Series 2000
Two-lamp 12" wide
Recessed fixtures

Architect: A. C. Martin & Associates
General Contractor: Alpha Construction Co.
Electrical Contractor: Harman Electric

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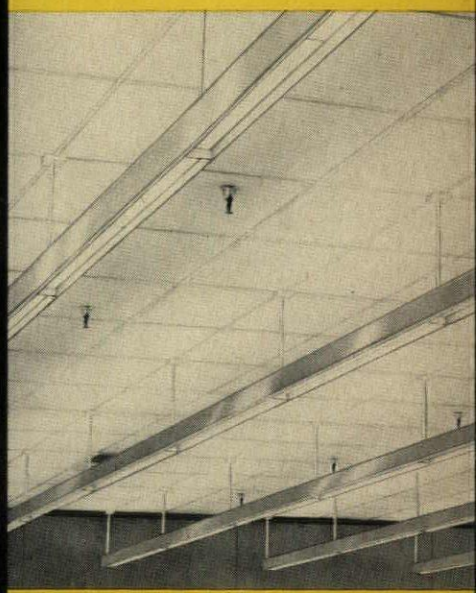

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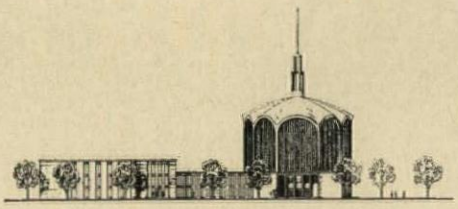
ANNUAL P/A

Continued from page 54

of Elmwood Park, a suburb of Chicago. Structure will be steel frame with precast concrete panels, black Norwegian granite spandrels, and gray glass. The 24,000 sq ft building was designed to permit the addition of a fourth floor for future expansion. Entrance to an adjacent parking lot is through an arcade with a folded plate roof. Architect: Walter H. Sobel.

Revolving 4-Sided Altar for Interfaith Center

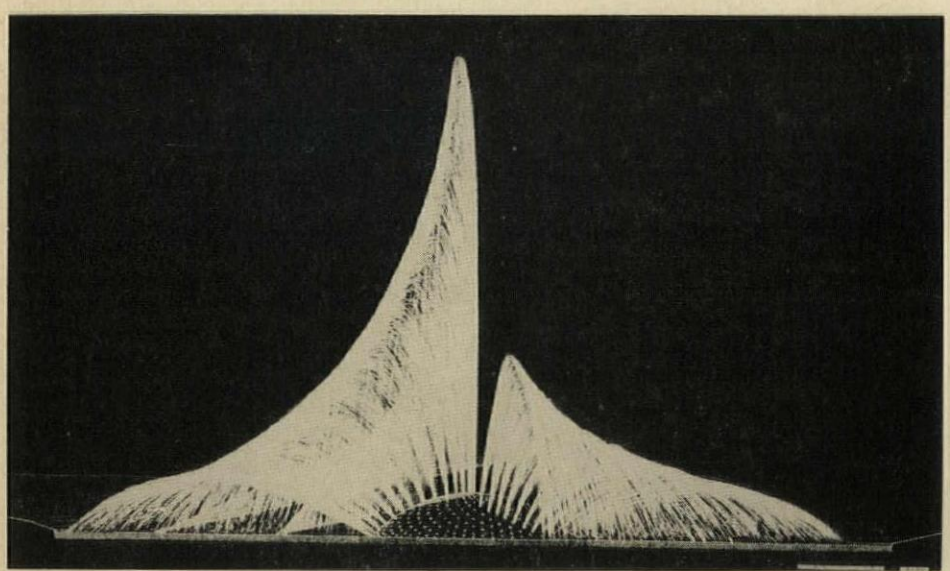
The Interfaith Center, designed by Mills, Petticord & Mills for George Washington University, Washington, D.C., will have a chapel with a revolving altar. It will have four sides —one each for Jewish, Catholic, and Protestant faiths, and one interfaith side. There will also be four small chapels in the complex of buildings which will include the large domed chapel (*right*), a building for religious education, and administrative offices connecting the two. The main chapel will have a 12-sided plan with 12 arches beneath the 88-ft-high reinforced concrete dome and will hold



700. The educational wing will have an auditorium for 400 people, as well as lounges, classrooms, and a library for religious records.

Cruciform Plan for Balconied Motel

The Harlan House Motel, Detroit, will be a 14-story, cruciform tower atop a landscaped podium concealing a 300-car garage. It will rise on Lodge Expressway between West Grand Boulevard and Milwaukee and will have 300 soundproofed rooms with floor-to-ceiling sliding glass walls opening onto balconies. Shops, a cocktail lounge, and a dining room will be on the first floor; several 300-seat banquet and meeting rooms on the second. A cocktail lounge on the roof will have a view of the city. The swimming pool area will be landscaped and used for garden parties as well as for recreation. Architects: King & Lewis.



Young Tokyo Architects Win Fountain Competition

Seattle's international fountain design competition, to provide a central plaza for its Century 21 Exposition, has been won by two Tokyo architects still in their early twenties. Hideki Shimizu and Kazuyuki Matsushita won over a field of 265 entries from 11 countries. The jury was composed of Architects Nathaniel A. Owings and H. Peter Oberlander, Sculptor Bernard Rosenthal, and Landscape Architect Garrett Eckbo.

The winning design sites a spectacular fountain in a large, multileveled, granite plaza. Water will rise in heights up to 100 ft from a circular ceramic bowl 100 ft in diameter. Water patterns will be controlled by electronic tape or by manual keyboard located in a subsurface chamber. At night, colored lights will be used.

Appropriately enough, Hideki Shimizu's name in translation means "Ambitious Waters."

Speculator Threat Felt by Felt

In receiving the annual award of the New York Municipal Art Society, James Felt, Chairman of the New York City Planning Commission, put his finger on one of the major threats to creative planning of cities which also will keep us in touch with our past:

"In World War II, the Allied armed forces set up various Monuments, Fine Arts and Archives divisions in order to spare art treasures from the consequences of war. The fact that most of our art works survived is testimony to the wisdom of such a plan. How ironic it is that we have no plan to protect our architectural and historic landmarks from becoming casualties of a peacetime real estate market." In preserving neighborhoods and individual buildings, Felt said, "we must distinguish between nostalgia or special group interest and true value to society."

OBITUARIES

Adolph G. Syska, partner in the consulting engineering firm of Syska & Hennessy, Inc., New York, died while on a trip to Texas.

David Lynn, Architect of the Capitol from 1923 until 1954, died at Doctors Hospital in Washington.

Theodore Crane, Yale professor emeritus of architectural engineering, died. He taught at Yale from 1924 until his retirement in 1954.

DESIGN AWARDS PROGRAM

for projects not yet built

PROGRESSIVE ARCHITECTURE announces its ninth annual Design Awards Program. Awards will be made to architects and their clients for projects now in the design stage to be built in 1962 in the United States.

PURPOSE of the Design Awards Program is to give recognition to good design in the period of design development, rather than after completion, in order to encourage the designers and owners of the projects so honored.

AWARDS will be given by the Jury listed below to the best projects chosen from nine categories—COMMERCE, EDUCATION, DEFENSE, HEALTH, INDUSTRY, PUBLIC USE, RECREATION, RESIDENTIAL DESIGN, RELIGION. AWARDS will be on the basis of site use, choice of structural system and materials and methods of construction, solution of the client's program, and over-all design excellence.

FIRST DESIGN AWARD will be given to the one best building submitted. AWARDS AND CITATIONS may be given in each of the nine building categories.

AWARDS will also be given in Planning and Urban Design. Under this phase of the program the Jury will consider projects in Urban Redevelopment, Campus Planning, Industrial Park Planning, Recreational Area Planning, etc.

FIRST DESIGN AWARD IN PLANNING wil be given to the best project submitted. AWARDS AND CITATIONS IN PLANNING may be given to other projects.

The Jury will assign projects to the various categories, and reserves the right to withhold an AWARD in any category.

JURY will be composed of Fred Bassetti, Architect, Bassetti & Morse, Seattle, Washington; Arthur Drexler, Director of Department of Architecture and Design, The Museum of Modern Art, New York, N. Y.; G. Holmes Perkins, Dean, School of Fine Arts, Department of Architecture, University of Pennsylvania, and Chairman of Philadelphia's City Planning Commission; Henry A. Pfisterer, Consulting Engineer, New Haven, Connecticut, and Eero Saarinen, Architect, Eero Saarinen & Associates, Birmingham, Michigan.

JUDGMENT will take place in New York during September 1961. Winners of AWARDS and CITATIONS will be notified (confidentially) immediately after the judgment.

ANNOUNCEMENT of the winning projects will be made at a presentation in the home town (if practicable) of the recipient of the FIRST DESIGN AWARD. Winning projects will be presented in January 1962 P/A. As in the past, PROGRESSIVE ARCHITECTURE will arrange for general publication of winning projects in other media, particularly those in the localities of all the AWARD and CITATION winners.

DEADLINE FOR MAILING is August 28, 1961. No application blanks are necessary. For each project you submit, simply send:

1. Client's name; location and proper name for project.
2. Brief explanation of the program and your solution.
3. Description of materials and construction methods used, and the reasons for their use.
4. Site plan; basic building plans; pertinent sections and details.
5. Perspectives or photographs of model. Submit prints, photostats, or photographs. Original drawings, actual models, or mounted exhibit panels will not be accepted.
6. A statement that (a) the project is now in the design stage and that construction is anticipated in 1962; and (b) other commitments have not been made for publication in the architectural press.

ADDRESS on or before August 28, 1961, to:
Awards Editor, PROGRESSIVE ARCHITECTURE
430 Park Avenue, New York 22, N. Y.

P/A will guard and return all material that is submitted.

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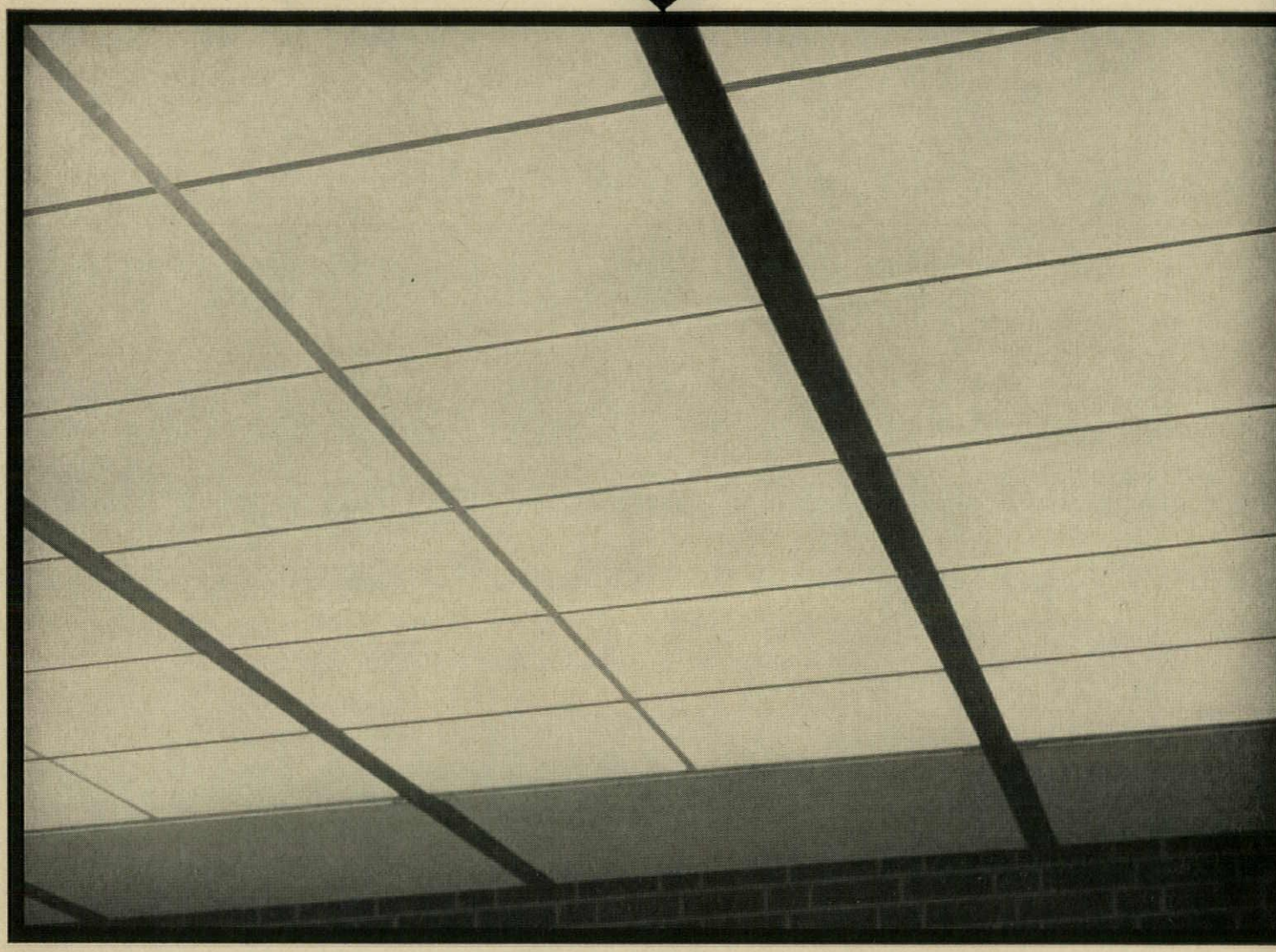

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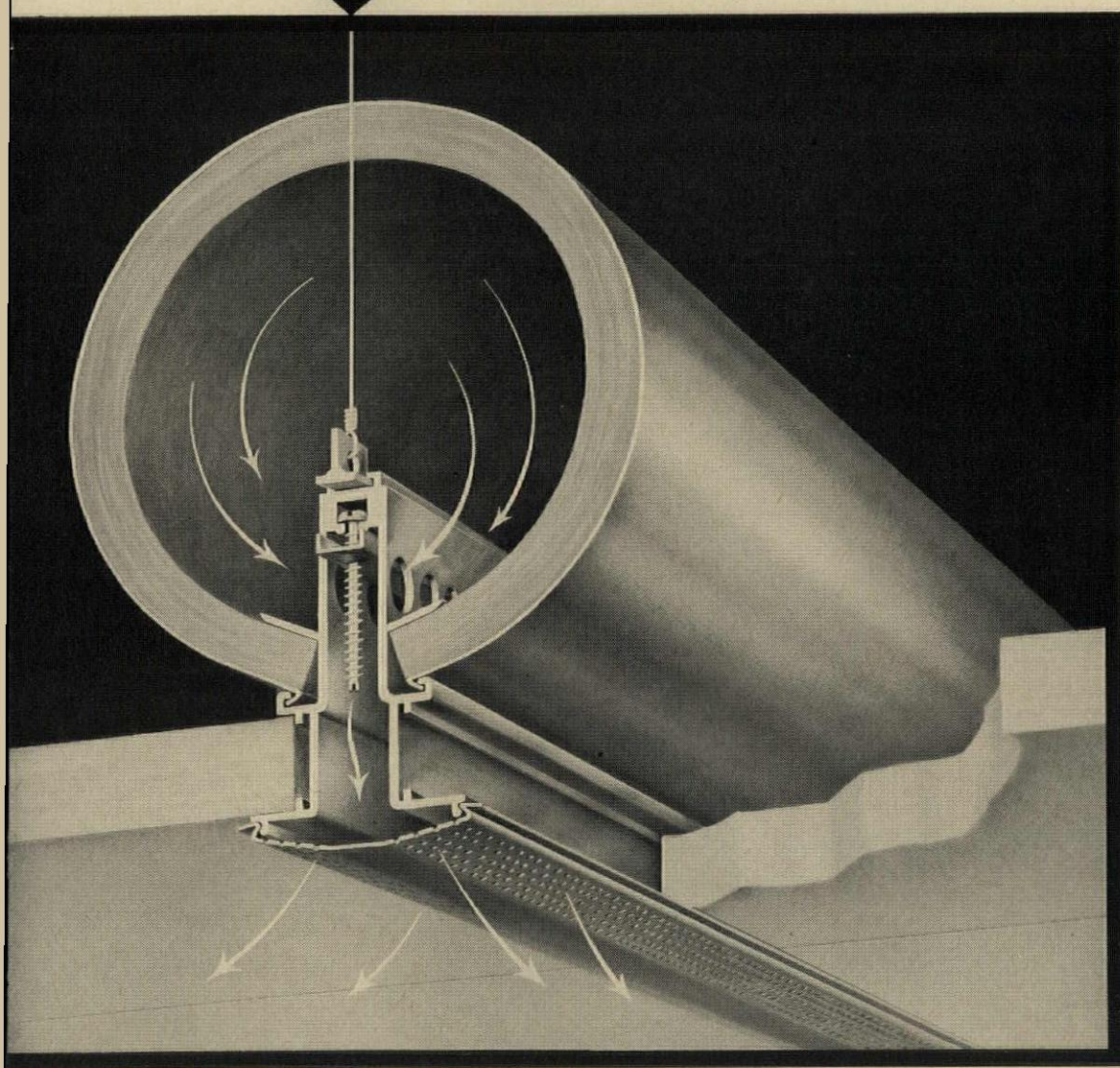

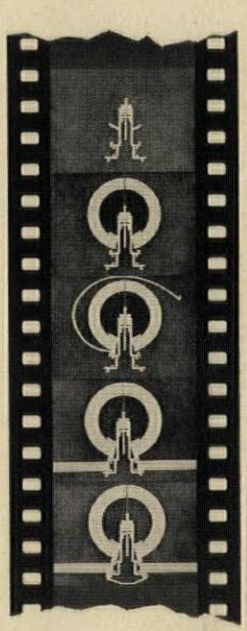

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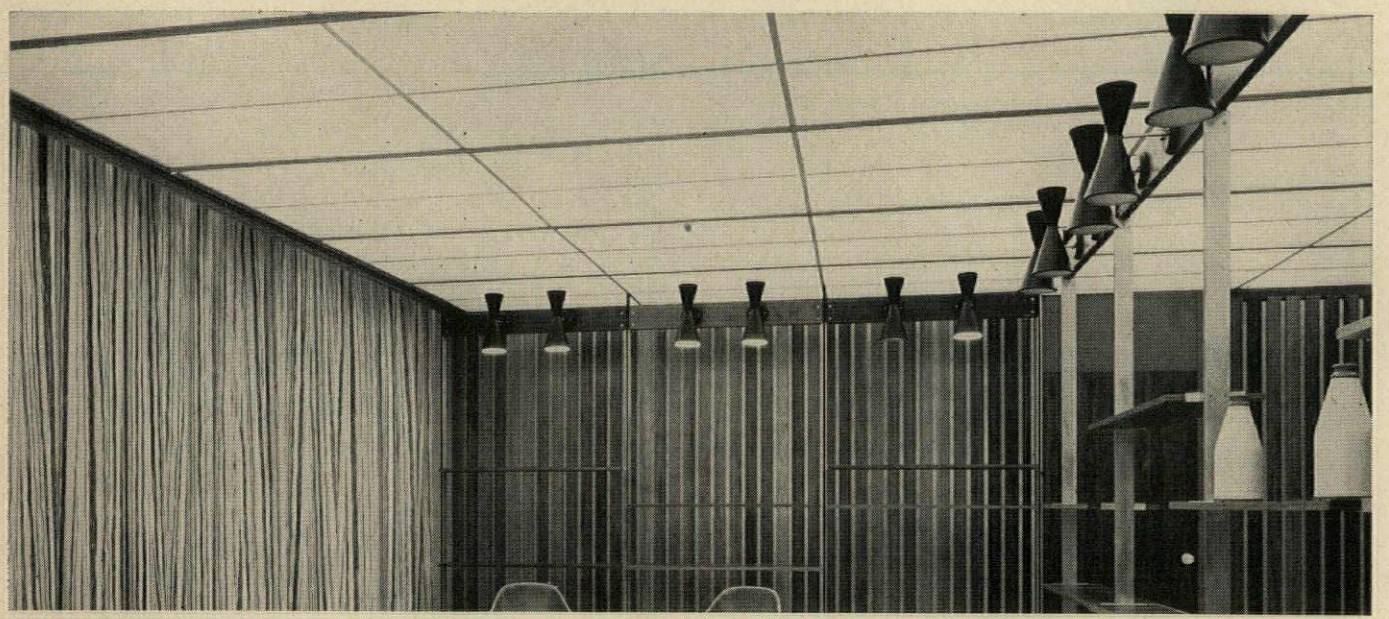

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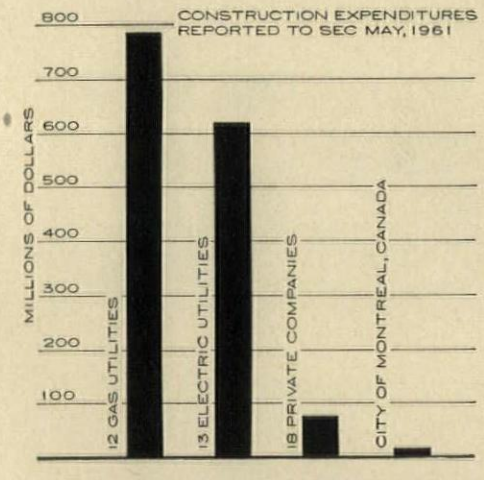
FINANCE: GOOD DAYS AHEAD

By E. E. Halmos, Jr.

The now substantial evidence of a booming construction economy, riding the crest of general business recovery, has to be the top story for architects, whether written from Washington or anywhere else.

Fact is that there had been relatively little slackening of actual construction work, even during the recession period of the past several months. But there had been a definite slowdown in long-range planning in the private sector.

That situation now seems ended, according to almost any indicator that might be consulted. Prime evidence is P/A's own check on business plans (see chart), which shows that



in the month of May alone, private business (including utility companies) was planning construction work for the year 1961 that would cost a total of nearly $1.5 billion.

That report is particularly interesting because it reflects a steady upturn in plans of companies other than the utilities. During May, for instance, plans were announced for a $35-million aluminum plant, a $12-million hotel in Puerto Rico, a $5.8-million steel mill, in addition to many smaller factory, office, and recreational structures.

Coupling these facts with an upturn in housing starts during April (though still slightly below 1960 figures), and the Department of Commerce's report that value of new construction put in place for April was up 3 per cent (at $4.3 billion) over a year ago, the general construction picture had to be bright.

There also was ample evidence that money markets were more than able to sustain a high rate of construction financing, particularly when reaction to a further cut in FHA mortgage rates (to 5¼ per cent) produced hardly a ripple.

And there was one startling statistic of particular interest to building supply organizations, as well as to architects: The Bureau of the Census found that a total of $13 billion had been spent in 1960 on maintenance and repair of dwellings alone—a far higher figure than has generally been expected (admittedly based on guesswork) by most observers. In fact, most estimates of all maintenance and repair (and, of course, improvement work) for all construction have usually been set at about $12 billion annually. The Census figures indicate that housing work alone accounts for almost 75 per cent as much money as was spent on new housing construction during the year.

Add to this, now, the roughly $7 billion that the Federal Government normally spends on all of its construction activities, and the huge construction share of some of the programs that have already been proposed or okayed by Congress, and the business picture looks bright indeed for the next year or two.

Activity on the Hill

The business of writing about Washington was well into its riskiest phase as June began: Much had been done, but much remained to be done, and things could happen quickly enough to make the soundest predictions look silly.

Congress was definitely speeding up —but it still had most of the President's major programs to enact, and most of its own pet projects had yet to be considered. In fact, out of a total of 10,732 measures introduced in both houses as of June 1, only 78 had been enacted into law—and half of those were the so-called "private bills."

Tempers and politics were beginning to heat up too, as Washington's normal muggy summer finally arrived after a cold, wet spring.

As June began, here was the status of bills of most concern to architects: The Senate, after eight days of debate, okayed the Administration's $2.5-billion school-aid bill by the unexpectedly tight margin of eight votes; the House had yet to begin floor debate. Military construction, NASA, Health Education and Welfare, and Public Works bills had been passed by the House and awaited Senate action, as did financing for highways.

Hearings had started in the House on the controversial proposal for establishment of a Department of Urban Affairs; the Senate had passed a bill calling for establishment of a commission (to contain no professionals) to study needs of small towns and rural communities.

There had been no floor action at all on several measures of great interest to professionals: establishment of a National Science Academy, change of status for civil service professionals, a chance for consultants to do business in private capacities with the Government, tax deductions (for retirement programs) for the self-employed.

The Senate had opened debate on a new housing bill—including provisions of 40-year, no-down-payment mortgage loans and money for urban and transit planning by housing authorities. (This bill has since been approved by a vote of 64-25, *ed.*)

School-Aid Bills

Although (in mid-June) it appeared unlikely that the House would complete action on school-aid bills before mid-July, it was still risky to predict the outcome except to say that prospects of any legislation in the manner of the bill passed by the Senate were considerably dimmer than when the session began.

The long Senate debate finally brought the key issues in the Administration's $2.5-billion program into focus, however; there was fear of Federal control of academic curricula and standards if pay for teachers were authorized, and a growing concern with what seems to many Congressmen to be an all-out attack on states' rights—on local control of anything. (Another example of this attack: The House-passed stream-pollution bill, which permits Federal intervention even on streams that lie entirely within the boundaries of a single state.)

There's a serious point for architects and construction men to consider in the loosely discussed $2.5 billion figure included in the bill. It is virtually impossible (at least in the Senate version) to determine how much money would go for construction or planning work. Any or all of the money could go for salaries, purchase of books or buses, or general main-

tenance work, if a local school district so desired.

Gouging John Q.

The series of "who struck John" exchanges between labor unions, contractors, the military, and Congress over costs and labor troubles at missile bases don't obscure the really disgraceful gouging that's been going on in pay and pass-along costs to the public.

Result has been somewhat milder action than anyone had a right to expect—Secretary of Labor Goldberg's plan for an 11-man commission plus on-the-spot labor-management groups, to try to thrash out labor problems. Goldberg's plan is backed by a Presidential order (setting up the commission), but it has a major weakness in that there's nothing compulsory about compliance with decisions of the commission. It is hoped that focusing national attention on the issues, plus the authority of Presidential backing, will suffice.

The plan is somewhat parallel to the recently signed agreement between Associated General Contractors and construction unions. However, the AGC plan makes decisions of its 15-man board binding on both parties (through contract clauses), provides machinery that would be considerably slower, and isn't concerned with inter-union squabbles.

Views of a "Personnel Psychologist"

Talking of labor, incidentally—architects could take to heart some comments by a personnel psychologist on unionism among professional employees, which blamed schools as well as company policies and individuals for the tendency of younger men to turn to unionism.

According to Leonard Ostreicher, manager of Martin Company's education department, schools prepare engineering students for a "glamorous career," only to discover the graduates disenchanted when they find themselves stifled in a maze of drafting boards on their first professional assignments.

Ostreicher was addressing a meeting of the Baltimore section of the Institute of Radio Engineers. But the comment was broad enough to concern all professionals, in any engineering or architectural regimen.

Said the personnel psychologist:

"[Some of] the weight of responsibility for the plight of the engineer in large companies . . . falls on the shoulders of the engineers themselves, because of their cynicism, lack of loyalty, and stand-offish attitude. . . .

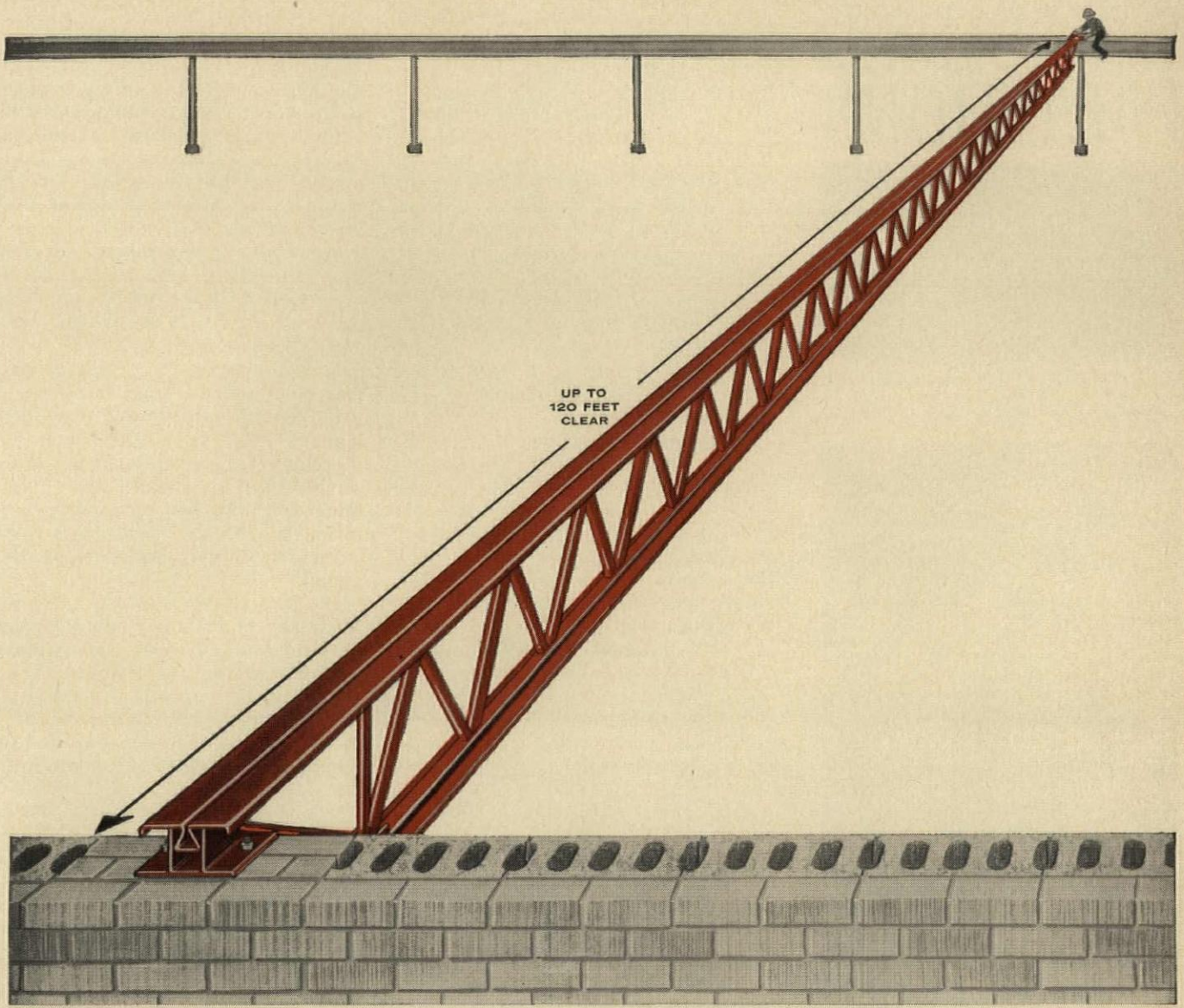
"A 12-year study shows that non-professional technicians and clerks exhibit a higher sense of company loyalty than does the professional. . . .

"The tendency to compare [the engineer] . . . with the doctor or lawyer as a select professional class is unfair . . . primarily because the doctor works alone, the engineer does not. . . .

"Another area of discontent has been the failure of management to devote more time to interviews with job applicants. . . . Too many technical managers lack those intimate skills so necessary in personnel handling, and completely disregard the natural hunger of the individual for recognition. . . ."

Incidentally, there was comment in a similar vein—this time to civil engineers in Washington. Said John W. Macy Jr., chairman of the U.S. Civil Service Commission:

Professional organizations must concentrate on improvement, rather than protection, of the breed. . . . Our great professional organizations [must] cast off remaining vestiges of



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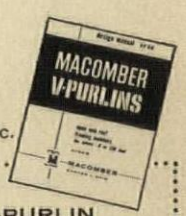

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parochialism and concentrate on improvement . . . of the breed to meet broader responsibilities. . . ."

For Your Shelf

Bookshelf item: New highway and bridge specifications for Federal projects, a 371-page document (FP-61) sold for $2.25 by the Superintendent of Documents, Washington 25, D.C. It updates the 1957 edition of Standard Specifications for Construction of Roads and Bridges for Federal Highway Projects.

Getting Your Fix

The Department of Justice's drive against bid-rigging and other pricing shenanigans is likely to veer into the area of construction materials, and very soon. (The recent indictment of six Washington-area building supply firms isn't part of the current campaign, but is based on long-standing investigations).

What's been of increasing interest to Justice is the practice of "price leadership"—particularly in the steel industry, where many steel companies traditionally wait for "Big Steel" to set a price, then follow along.

Who Filches from Me My Good Name . . .

An engineer who argues that state licensing laws also permit him to call himself an architect has appealed a state-court conviction to the U.S. Supreme Court.

The case (Docket No. 899) revolves around a phrase in the Maine state licensing law, which says that a licensed professional engineer "may do such architectural work as is incidental to engineering work. . . ."

Melvin W. Beck, of Waterville, Me., was charged (by the state board of architecture) because Beck displayed a sign in front of his office calling himself "Engineer and Architect." A county court held Beck guilty, fined him $300, and the conviction was upheld on appeal to higher state courts.

WASHINGTONIANA

In Washington itself, there was plenty of excitement about architectural matters, ranging from a running battle over statues to plans for dozens of new structures of all kinds, a continuing argument over the F.D.R. Memorial, and the greatly increased costs of the city's new Dulles airport.

Controversial Interior Secretary Udall—already embroiled in such discussions as whether or not the local professional football team should employ Negroes—got into another fight when he expressed views that were uncomplimentary toward the capital's plethora of statuary of varying styles and tastes. Despite attempts by Udall's office to ease the impact of the Secretary's comments, they had the effect of bringing in two august organizations: the National Academy of Design and the National Sculpture Society. Gist of their advice: The Secretary should consult the Fine Arts Commission in all matters pertaining to civic art—that being the express desire of Congress.

Discussions of the F.D.R. Memorial began to indicate support for the controversial design selected some months ago. A local newspaper's poll of an 11-member Congressional commission indicated that a slight majority, at least, had been won to favor the design selected. One suggestion was favored however: addition of a statue of the late President.

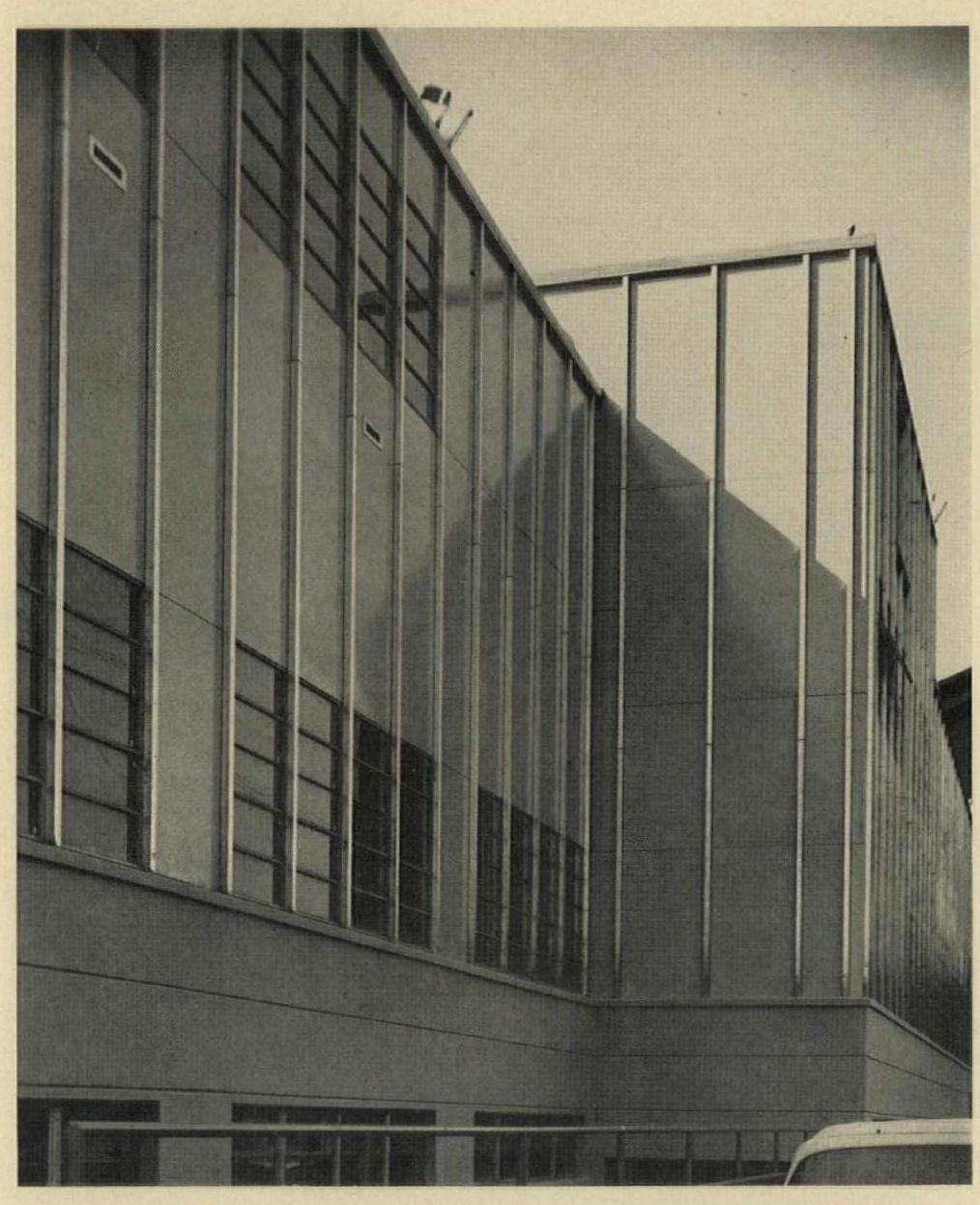
As for the new Dulles airport at Chantilly, Va., new Federal Aviation Administrator Najeeb Halaby startled Congress with a statement that the 15-square-mile airport would cost $175 million to complete (instead of $85 million), and that its opening would be delayed at least 18 months—well into 1963 instead of mid-summer of 1962. Reasons, said Halaby, included poor management by previous FAA chiefs, and the unwillingness of airlines to build their own hangars on leased land—necessitating construction of such structures by the Government. A bad winter was also responsible for construction delays.

As for buildings, Washington was having a private (as well as Governmental) building boom all its own. No less than 10 major, privately owned office buildings, with an aggregate value of more than $40 million, were under construction; nine Federal structures (including the $22 million stadium) were under way for a total value of $234 million.

In nearby Alexandria, plans were made public for a $20-million hotel complex flanking the Potomac River, and construction of small plants, mostly for "scientific-type" industries, was proceeding in almost every suburb on every side of the city.

In a final note, Washington's much-criticized Redevelopment Land Agency announced it would seek the advice of architects in connection with selling and leasing land in the Southwest Redevelopment area.

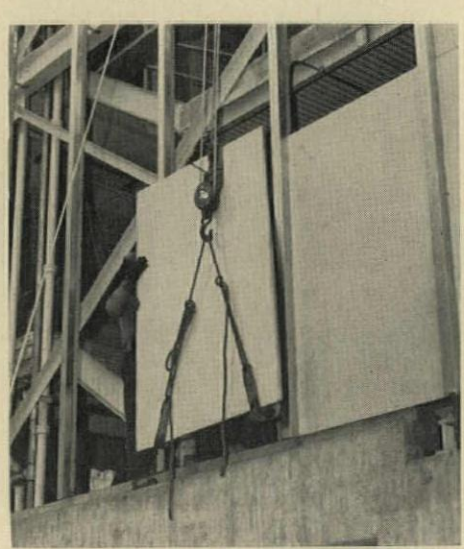
The agency, which is threatened with extinction through having its functions transferred to the District Commissioners, said it would set up an architectural advisory board that would pass on designs.



FOAM SANDWICH PANELS FOR MODULAR STEEL CONSTRUCTION

HOMESTEAD, PA. A physical testing laboratory for U.S. Steel Corporation recently erected here by its American Bridge Division serves as a good example of economies inherent in modular steel construction utilizing panels of steel face sheets with a core of fire-retardant foamed plastic.

The framework of the 2½ story, 200′ x 500′ laboratory is an assembly of tubular steel columns with open-web steel trusses and hot-rolled, light beam sections. This frame is enclosed with preassembled exterior wall panels of steel sheets with a foamed-in-place, polyurethane plastic core called "Hetrofoam." In fabricating the wall modules, panels were placed in a mold and preheated for 15 minutes; filling with foam took place at 165 F. Fifteen minutes after filling, the plastic was cured and the molds were opened.



Panels of steel sheets sandwiched with Hetrofoam are raised into position.

The panels were finished with porcelain enamel on the exterior and baked enamel on the interior. Finished panels are 2″ thick, allowing 5 per cent more floor space than would have been possible with equivalent masonry construction. Weight of the wall system—about 6 lb per sq ft—compares with conventional wall weight of from 80 to 100 lb per sq ft, contributing a substantial reduction in foundation size and costs. Use of preassembled components accelerated building completion.

Hetrofoam, in addition to assuring superior thermal insulation, provides a high degree of fire retardance. Other characteristics are rigidity and strong adhesive properties. Durez Plastics Div., Hooker Chemical Corp., North Tonawanda, N. Y.

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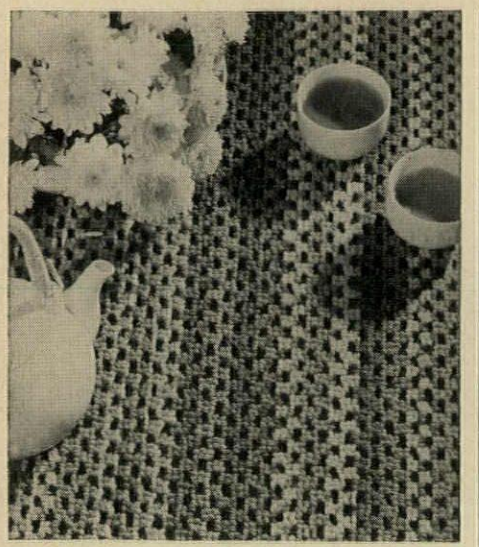

Rustic Chemistry

"Country Home" is a new carpet of Acrilan Acrylic fiber woven into a casual, provincial pattern reminiscent of country-made braid rugs. Available in six colors, the Acrilan fiber makes "Country Home" highly practical—resistant to stains and soiling and easy to clean with ordinary detergents. About $9.95 per sq yd from Firth Carpet Co., 295 Fifth Avenue, New York, N.Y.

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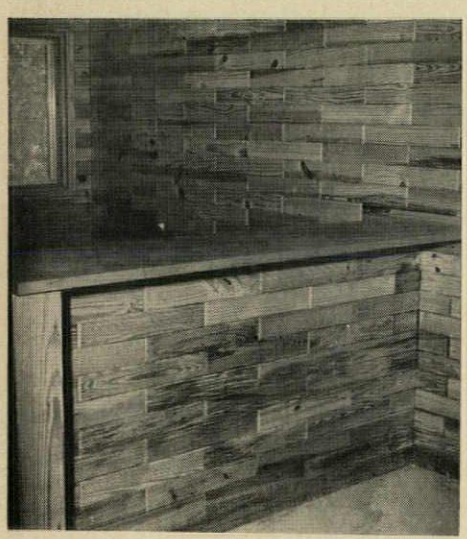
"Wood Bricks" Have Three Functions

"Wood bricks" of Southern Pine perform triple duty in two Texas pilot homes: exterior finish, structure, and interior finish. Bricks are of kiln-



dried timber, and the 4″ thickness is said to have the same insulation value as a 24″ masonry wall. Four lengths are available: 20″, 10″, and, for corners and tees, 16⅜″ and 13⅝″. Holes for two eight-penny nails are in each brick; glues are used in between for additional strength. As each course is completed, small wood strips are inserted in grooves in the vertical joints. Calking compound in the grooves makes tighter and more waterproof joints. Southwestern Settlement and Development Co., 229 N. Bowie St., Jasper, Texas.

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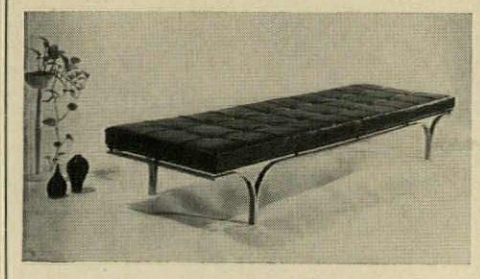

Elegant Bench

Tufted and welted calfskin covered foam-rubber cushion is elevated from its stainless-steel leg structure giving the bench virtuosity and a feeling of suspension. Bench shown, which is 8′ long x 33″ wide ($867), is also made 6′ x 24″ and 10′ x 33″. Choice of leather colors is available. Also new are several cantilevered "Invisible" chairs, a sofa, and a bar stool, all of clear plastic on steel legs. Designed by Estelle and Erwine Laverne for Laverne, Inc., 160 East 57 St., New York 22, N. Y.

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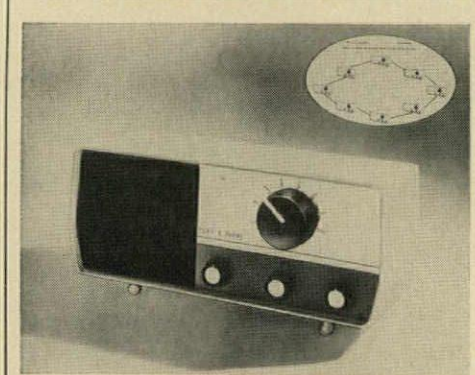

Set Up Wireless Intercom In 10 Minutes

Possible for the first time is a wireless intercom system that gives complete eight-channel privacy, yet requires no costly and cumbersome laying of cable. The units are simply plugged in; four separate conversations may then be carried on simultaneously. Automatic volume control adjusts every message to the same volume regardless of distance of the sending stations. Another extra: new static eliminator to shut out unusual line noises. Cabinets for "Select-O-Matic Port-O-Phone" are available in gray, with harmonizing front panel of silver, black, and blue. Feiler Engineering and Manufacturing Co., 8026 N. Monticello Ave., Skokie, Ill.

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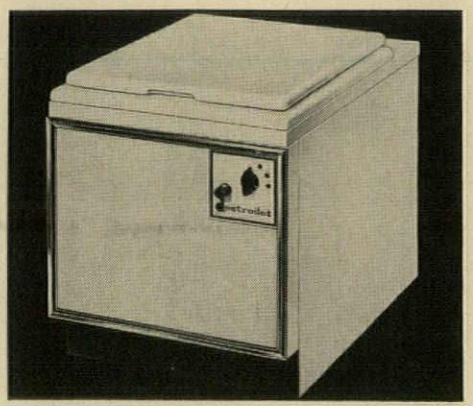

Look Ma, No Water, No Chemicals

Unique method of human-waste disposal—a waterless, nonchemical toilet—is being manufactured, after research that began as far back as 1934. New "Destroilet" transforms waste matter into odorless, invisible, harmless water vapors and carbon dioxide. Plumbing as we know it today is not used. Septic tanks are no longer needed. The primary cause of water pollution is nullified. In operation, the Destroilet relies on gas as fuel to burn off waste matter at extremely high temperature. The combustion process is completely controlled with safety features as dependable as those found in standard automatic furnaces. Installation requirements, in addition to the gas supply, consist of a 110-v, AC electrical outlet and a flue to the outdoors that acts as outlet for the waste vapor. Since no water is required, ready application is indicated in areas of water scarcity, as well as in homes, farms, camps, trailers. La-Mere Industries, Inc., Walworth Wisc.

On Free Data Card, Circle **105**

"Going Down"— Down in Weight, Too

Revolutionary new step in elevator-cab design has reduced the weight of the car by approximately 30%. This weight reduction is made possible because walls, doors, and roofs of the new cabs are constructed around a honeycomb core (manufactured by Hexcel Products Inc.). With its high strength-to-weight ratio, the honeycomb-sandwich core provides maximum tensile strength and withstands

rough wear and abuse. The new cabs offer several advantages over standard types, both in new construction and in modernization: they weigh about 300 lb less, are easier to install, do not require additional counterweighting or powerful machinery, and absorb noise and vibration more efficiently than the ordinary solid panel. Triumph Metal Products, Inc., 4144 Park Ave., New York 57, N.Y.

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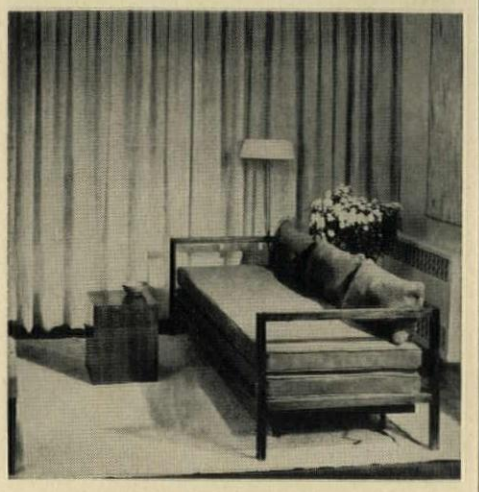

Updated Trundle Bed

Cube table 14″ x 14″ x 14″ of carefully matched walnut graining (retail about $79) and a trundle sofa of walnut in oil finish (32″ x 76″ x 26″ high, in muslin about $435) are new pieces designed by Darrell Landrum, A.I.D., for Avard Inc., 353 East 62 St., New York 21, N. Y.

On Free Data Card, Circle **107**

Onward and Upward with the Computers

New automatic-control system for elevators reduces average waiting time for passengers by as much as 30%, according to extensive tests made on its pilot installation at the Tishman Building, 666 Fifth Ave., New York. Heart of the "Mark IV Selectomatic" is a highly refined computer, programed to handle an *unlimited* number of *varying* traffic conditions. (Conventional systems are programed to serve a limited number of predetermined traffic patterns.)

Thus, instead of the conventional system (cars being dispatched at regular intervals to make the full trip to upper or lower terminal), Mark IV system dispatches cars only to meet a particular demand. Cars reverse at any floor if there is no demand beyond that floor; a car will travel down to answer an up-call, or up to answer a down-call; and when not needed, a car remains at the place of its last use. The electronic scanning device senses the total demand at any given moment and feeds this information to the computer, which sends the proper car to answer a call. Mark IV Selectomatic is particularly suited to large buildings with heavy and erratic traffic conditions, and heavy inter-floor traffic. It can be used in new buildings or as replacement of existing controls in old installations. It definitely replaces the "starter," whose efforts at the lobby floor are no longer needed (or desired!) with this system. Elevator Division, Westinghouse Electric Corp., 150 Pacific Ave., Jersey City, N. J.

On Free Data Card, Circle **108**

Quarry Tile Now 5/16″ Thin

Natural-clay quarry tile has been perfected to a new 5/16″ thickness, resulting in less weight, savings in freight, and greater ease of handing. In the past, quarry tile has required extra thickness (up to 2″), not for strength, but to minimize warpage and to maintain a uniform size in its production. "Thinline Quarry 66" has reduced the thickness with no sacrifice in strength or uniformity. The tile is designed with "Self-Spaced" lugs on the sides to assure 1/16″ mortar joints, rather than the wide joints that often detract from the appearance of quarry-tile installations. Other new quarry-tile product is "Contour 78" shape; both shapes are available in a red or yellow earth tone. Royal Tile Manufacturing Co., P.O. Box 7292 Sylvania Station, Fort Worth, Texas.

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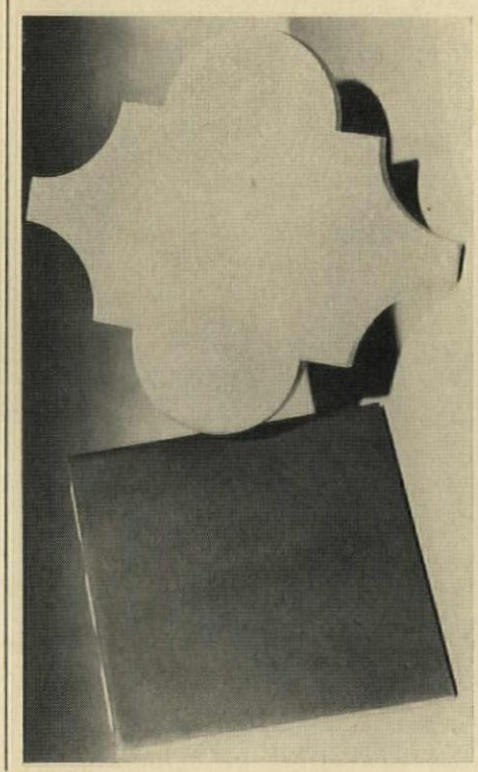

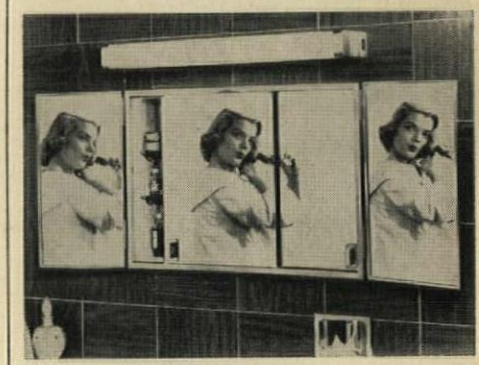

Mirror, Mirror, on the Wall

New medicine cabinet shows trend in bathrooms toward more storage space combined with more luxury in appearance. Large recessed cabinet has sliding, mirrored doors; additional vanity mirrors are hinged at the sides to swing out to any angle. The F. H. Lawson Co., Evans and Whateley, Cincinnati 4, Ohio.

On Free Data Card, Circle **110**

Complete Hydronic System Saves Estimating Time

"Hydro-Flo Pak," a pre-planned, pre-engineered hydronic residential heating control and accessories package to complement gas or oil-fired boilers in sizes up to 90,000 Btu/hr reduces cost estimating time by giving a single quote on a complete hydronic system and cuts installation costs by providing pre-engineered and pre-cut parts for shop installation. Manufacturer's Product Application Department works with boiler manufacturers to "develop the correct assembly of accessories for the package." Included in the package are a booster pump, air control system, compression tank, and choice of the proper relief or control valve. Market Development Div., Bell & Gossett Co., 8200 North Austin Ave., Morton Grove, Ill.

On Free Data Card, Circle **111**

Wall-Mounted Heat Pump

New heat pump attaches directly to an outside wall, greatly reducing the cost of its installation. First of its kind, the wall-mounted heat pump

promises to bring a quiet, practical form of central air conditioning to the mass housing market. (The new unit is equally suited to a variety of other applications—apartments, motels, service stations, light industry, etc.) Each unit serves a house of 1000 sq ft area; for larger homes, two units are used. The heat pumps may also be used in multistory dwellings, with one unit serving each floor level; installation is possible from balcony, porch, or garage roof. Westinghouse Electric Corp., 3 Gateway Center, Pittsburgh 22, Pa.

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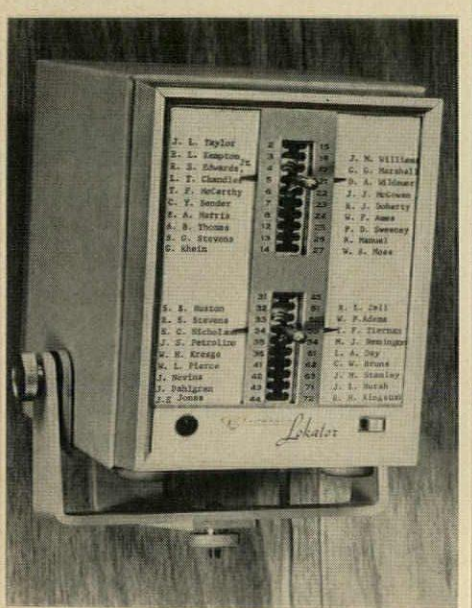


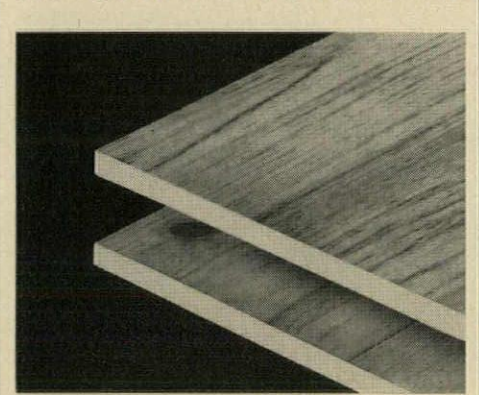
Private Paging

Automatic and private paging can be obtained "for less than the cost of an electric typewriter" with new "Lokator" system. Each person frequently paged is assigned a code number consisting of one, two, or three digits. Through a network of signals, the Lokator can feed, automatically or manually, sequences of selected code impulses. Since paging is coded, privacy is assured. Electronic interlock prevents scrambling. The compact selector unit is generally installed at the telephone switchboard. By means of a universal bracket, unit can be conveniently swivel-mounted (as shown). Edwards Co., Inc., Norwalk, Conn.

On Free Data Card, Circle **113**

Vinyl and Gypsum Meet in New Wallboard

Gypsum wall paneling now has a vinyl-protected surface—for high style, medium price, and low maintenance. "Vinyl-Guard" is composed of ⅜" gypsum wallboard surfaced with a photographically reproduced wood-grain pattern that is protected with

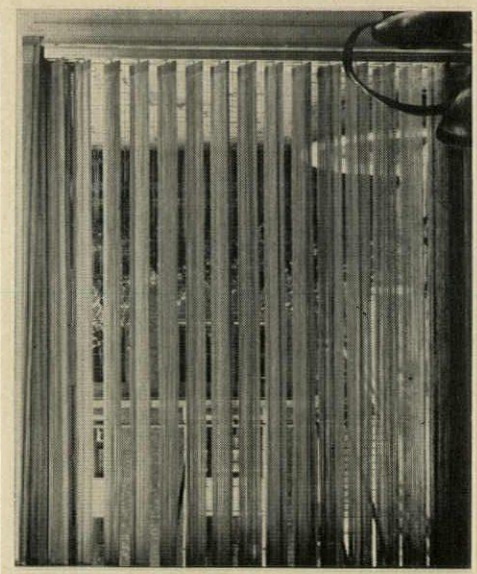


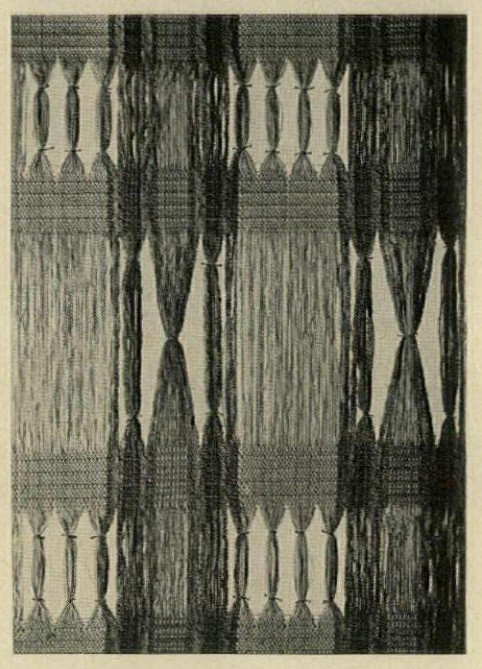
a clear film of vinyl plastic. The vinyl finish protects against scuffs and stains, gives over 100 times the abrasion resistance of regular gypsum-grainboard products. Even though the core is fireproof gypsum rock, the 4′ x 8′ panels can be easily sawed (or scored with a knife and snapped) to the desired size. Patterns available are Ermine Teak and Plank Pine. National Gypsum Co., Buffalo 2, N. Y.

On Free Data Card, Circle **114**

Variegated Vertical Blinds

Mexican-born textile designer, Matias Lozano, resourcefully combines a variety of materials in his new collection of blinds and casements for window walls. Wool, cotton, vinyl, glass and aluminum yarns, asbestos, lacquered sticks, and aluminum rods are used in many of the ornamental weaves, which are reminiscent of leaded or stained glass. Vertical bands of unwoven wool yarns that are dyed in varying color values produce an apparent iridescence and color move-





ment. The richly colored collection with complementary upholstery fabrics is on view at Lozano-Fisher Studios, Inc., 64 East 55 St., New York 22, N. Y.

On Free Data Card, Circle **115**

Louvered Screen Sealed into Glass Unit

New "Comfor-Lite" screens out direct rays of the sun, yet provides up to 84% clear visibility. Unit consists of a louvered screen that is hermetically sealed between two panes of glass. The horizontal louvers are spaced 17 to 23 to the inch and tilted at the required angle. Comfor-Lite keeps interiors 15% cooler, lowers air-conditioning loads. Amerada Glass Corp., 3301 S. Prairie Ave., Chicago 16, Ill.

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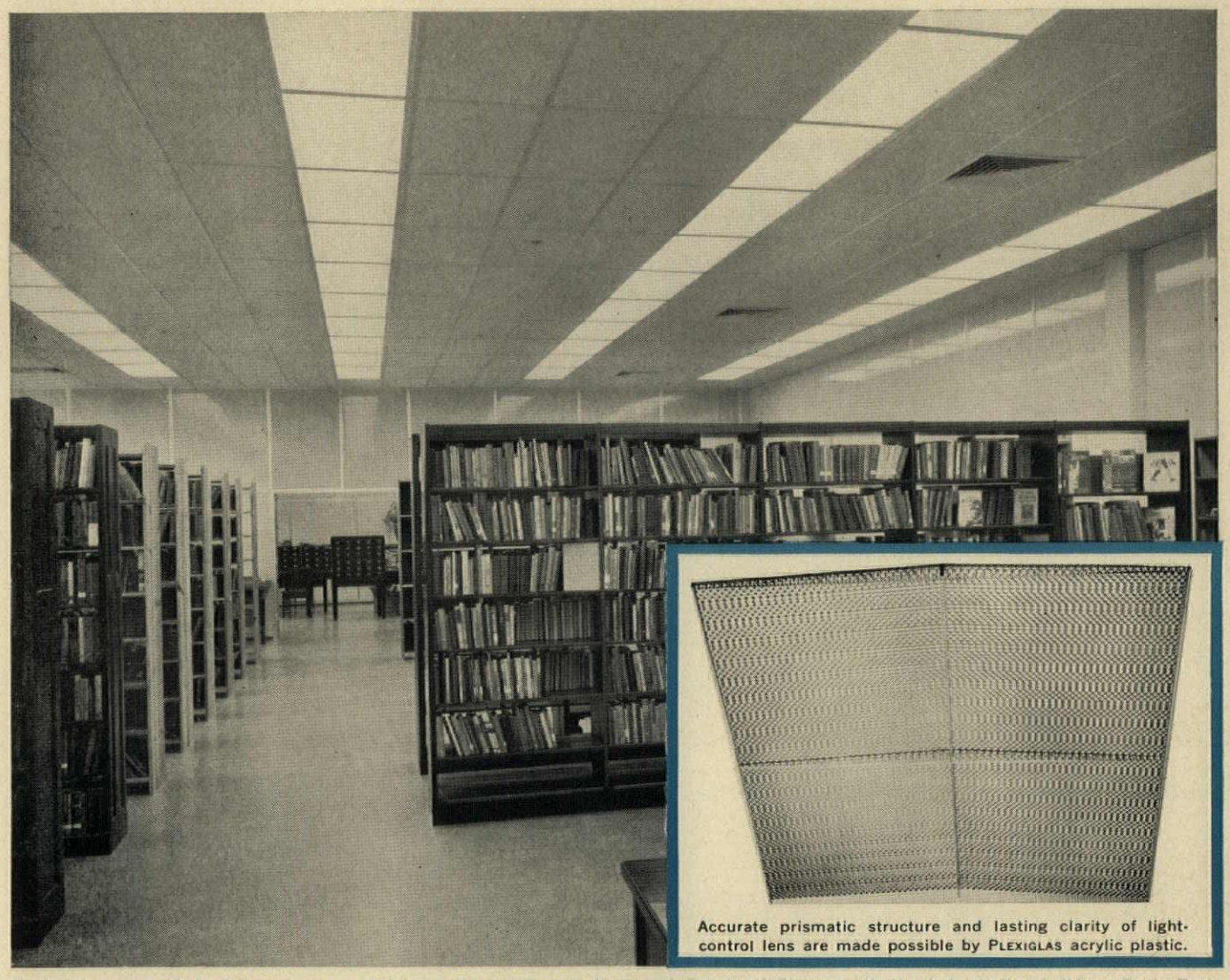

Accurate prismatic structure and lasting clarity of light-control lens are made possible by PLEXIGLAS acrylic plastic.

Control lenses molded of PLEXIGLAS mounted in continuous rows in library of County of Sonoma school administration building, Santa Rosa, California. Architects: Steel & Van Dyke, Santa Rosa.

Plexiglas...for lighting that stands out and stands up

When lighting equipment includes control lenses molded of PLEXIGLAS® acrylic plastic, the result is illumination of the highest quality. This is because PLEXIGLAS makes possible a precisely designed optical element that directs light to the area where it is required and, at the same time, minimizes the surface brightness of the lens as seen from normal viewing angles.

In addition, lenses of PLEXIGLAS remain free of discoloration even after years of exposure to fluorescent light. They are strong and rigid yet light in weight, resulting in safety overhead and ease of maintenance. And the crystal clarity of PLEXIGLAS assures full utilization of light.

Full details on the use of PLEXIGLAS as a lighting material are contained in our 40-page technical bulletin "PLEXIGLAS for Lighting". We will be glad to send you a copy.

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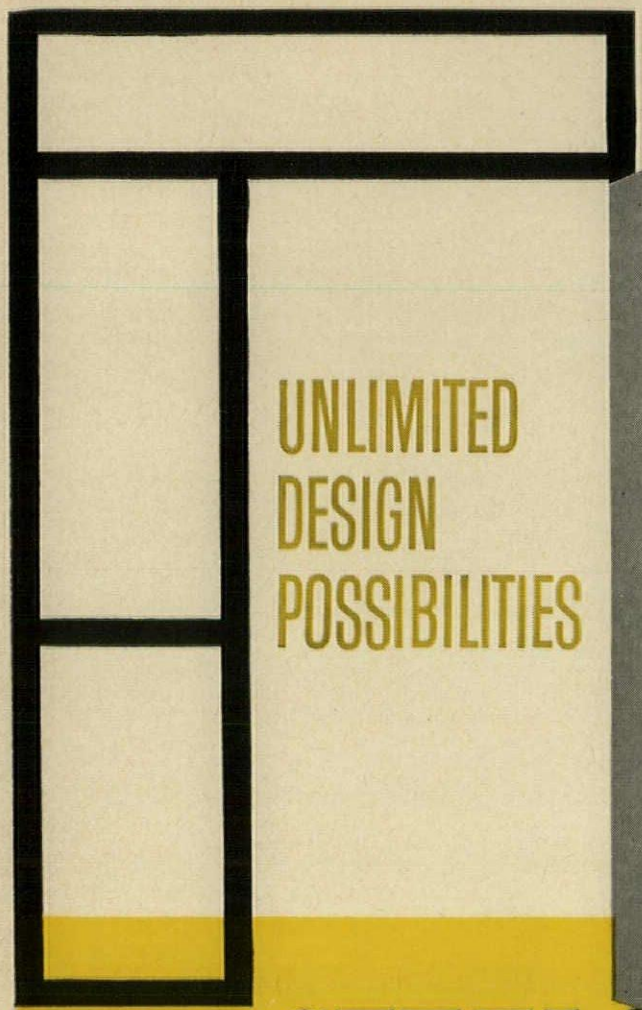


UNLIMITED DESIGN POSSIBILITIES

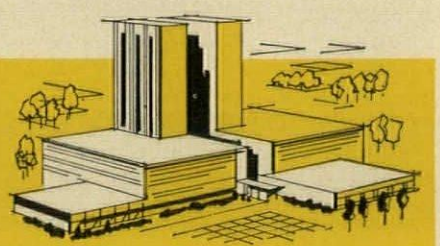
HONEYCOMB CORE—a "first" in the standard industry. Cutaway shows this new jet-age material—sandwiched, permanently bonded to both steel surfaces.

Vision lights and glass panels in great variety.

Standard preparation for the greatest variety of hardware . . . Standard cut out for cylindrical, mortise, unit and integra-locks . . . Your own choice of hardware, panic devices, concealed closures, trim and finish. Frames prepared for Universal Strike (ASA) to receive variety of locks.

Louvres—four types available: Air Conditioning, Fixed Slat, Adjustable Slat, Stamped.

Bonderized and prime painted. May be color matched with a durable baked enamel finish. A handsome wood grain finish also available.



Steelcraft's pre-engineered components permit literally thousands of design variations in transoms, sidelights, borrowed lights. Warehoused stocked distributors throughout the U.S. can prepare these sidelight and transom frames for daily delivery.

STEELCRAFT standard METAL DOORS and FRAMES

Over 4,000 door types, styles and sizes . . . over 7,000 frame variations

Now you can have complete versatility in standard metal doors . . . and frame variety to match. For Steelcraft offers the broadest line in the industry. Rugged, handsome doors—flush, exceptionally sound deadened, and with "billiard table" flatness due to their unique honeycomb core that tests prove to be superior to girder type construction. Quality at low cost, too—for Steelcraft's standardization and modern-flow assembly make possible passed-on production economies. *Get the full story today on why more and more architects specify Steelcraft. Valuable brochure on request.*

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STEELCRAFT

THE STEELCRAFT MANUFACTURING COMPANY
9017 Blue Ash Road, Cincinnati 42, Ohio

The Steelcraft Mfg. Company
9017 Blue Ash Road, Cincinnati 42, Ohio

Please send me the Steelcraft brochure on the most complete line of standard steel doors and frames in the industry.

NAME.....

ADDRESS.....

CITY.....ZONE.....STATE.....

For more information, turn to Reader Service card, circle No. 368

AIR/TEMPERATURE

New Room Conditioners

Four-color magazine on the 1961 "Airtemp" room air conditioners has been published. The magazine details exclusive decorator panel and weather seal, describes installation ease possible with the new window-mount kit and telescopic sleeve, and lists specifications for the 20 new models. One page of the 12-page booklet is devoted to an air-conditioner selection guide, which indicates capacity of room unit needed for rooms of various sizes. Write (enclosing 10¢) to: Advertising Dept., Airtemp Div., Chrysler Corp., 1600 Webster St., Dayton 4, Ohio.

Steam-Heating Coils

New booklet, 24 pages, gives application information on blast heating coils, distributing tube heating coils, and dual-feed distributing tube coils. Photos and drawings show construction details and installation procedures; piping diagrams illustrate high-pressure and low-pressure systems. Several pages are devoted to performance characteristics—final air temperature and rate of condensation—for the various types of coils. Dept. T-448, Sturtevant Div., Westinghouse Electric Corp., Hyde Park, Boston, Mass.

On Free Data Card, Circle **200**

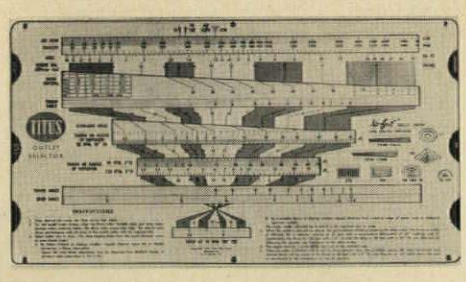
Brick-Size Vents in 18 Modular Sizes

"C-S Cast Aluminum Brick Size Vents" are now available in an expanded line of 18 modular sizes, fixed and operating. The rugged vents fit neatly into the exterior wall of standard and jumbo brick, cinder and concrete block. Vents do not rust, crack, or stain adjacent building materials. Aluminum screening is supplied unless otherwise specified. Complete descriptive data and specifications are presented in 4-page bulletin. Construction Specialties, Inc., 55 Winans Ave., Cranford, N.J.

On Free Data Card, Circle **201**

Slide Rule Picks Outlet, Figures Air Flow

New slide rule, the product of five years of research, permits quick and accurate determination of outlet size



and air-flow rate. During the development period, comprehensive data was compiled on outlets with discharge patterns of all types; correlation of this information provided the slide-rule factors for all grilles and diffusers. With the slide rule, one can determine outlet and size based on available space and noise criteria. Manufacturer claims it to be "the perfect instrument" for designing and balancing air-conditioning systems. Instruction booklet, 24 pages, gives details and examples for operation. Write (enclosing $2.50) to: Titus Manufacturing Co., Waterloo, Iowa.

CONSTRUCTION

Shear Connections for Composite Construction

Latest in a series of valuable short studies in structural arc welding is *Shear Connections for Composite Construction.* Author of the 6-page paper is Omer W. Blodgett, Design Consultant. Paper discusses the purposes of shear connectors, their design and detailing; tables give capacities and other data. Bibliography of recent papers and articles is also provided. The Lincoln Electric Co., 22801 St. Clair Ave., Cleveland 17, Ohio.

On Free Data Card, Circle **202**

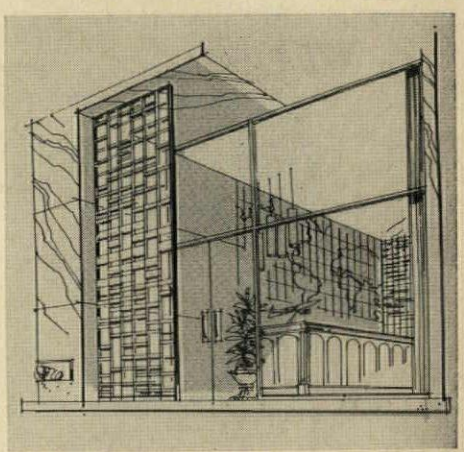
Structural Clay Products

A complete line of structural clay products — for exterior and interior use in a variety of applications—is presented in new 24-page catalog. These building materials are available in many shapes, textures, and colors, meeting a variety of design requirements. Highlighted in the catalog is ceramic glazed "Vitritile," which is produced in 30 standard colors, 12 accent colors, and 2 vivid colors in a variety of sizes. Natco Corp., 327 Fifth Ave., Pittsburg 22, Pa.

On Free Data Card, Circle **203**

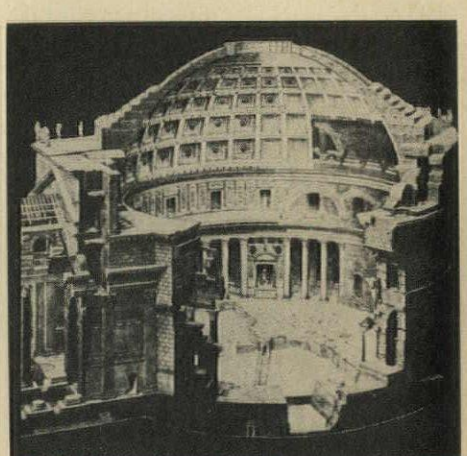
Versatile Screen System for Interior, Exterior

"Curtainscreen," new system of interlocking components for screens and railings, is presented in attractive 20-page booklet. Typical applications of the system are shown—in vision



screens, partition screens, facing screens, railings, space dividers, solar screens and exterior space dividers. These designs are offered only as samples of possible effects; countless other possibilities can be created with the flexible, adaptable components. Details are profusely provided. Julius Blum & Co., Inc., Carlstadt, N.J.

On Free Data Card, Circle **204**

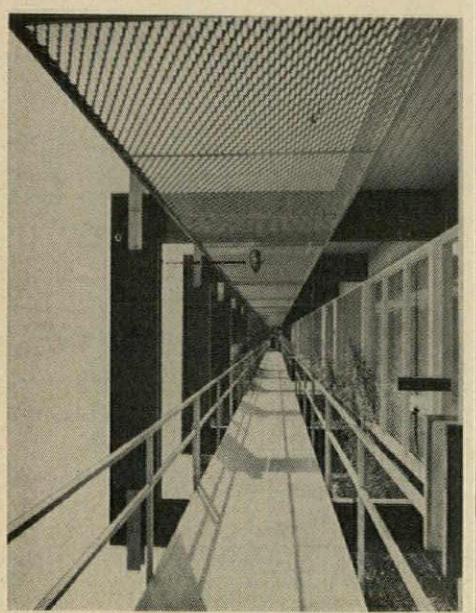


Curves in Concrete

The latest in PCA's series on concrete in architecture, *Curvilinear Forms in Architecture,* is devoted to the concrete shell roof. An introductory essay by Architect Clovis B. Heimsath com-

pares the Pantheon with Nervi's Olympic Sports Palace. Then follow discusions of the characteristics of shells—space geometry, single curvature shells, barrel shells, folded plates, double curvature shells, rotational and translational shells. Simple diagrams are presented here. Final section of this handsome 28-page booklet includes photographs of recent outstanding examples. Portland Cement Assn., 33 W. Grand Ave., Chicago 10, Ill.

On Free Data Card, Circle **205**



Expanded Metals in Architecture

New 16-page catalog, *Design Unlimited*, illustrates varied design possibilities for decorative meshes. Façades, sunshades, railing guards, fences, directional screens, room dividers, and signs of expanded metal are shown. Full-scale photographs depict 4 in. "Armorweave" and 1 in. "Cathedral" patterns, along with other special styles. Additional data: fastening, framing, and finishing. Dept. 122, United States Gypsum Co., 300 W. Adams St., Chicago 6, Ill.

On Free Data Card, Circle **206**

New Plastering Specs

Several points in this comprehensive *Recommended Specifications for Lathing, Furring and Plastering* were recently discussed by Harold J. Rosen in his "Specifications Clinic" (APRIL 1961 P/A). The 42-page specifications give extensive data on all types of lathing and plastering. Foreword states that no preferences are indicated among the materials and methods described; however, only those which are tried and proven are recommended. Clearly written and presented, this should be a valuable working reference. Contracting Plasterers' and Lathers' International Assn., 622 Sheraton Bldg., 711 Fourteenth St., N.W., Washington 5, D.C.

On Free Data Card, Circle **207**

Masonry Anchoring

Install It for Less, 8 pages, is a guide to the economic installation of a wide range of fixtures, from air-conditioning equipment to window frames. Selection of the proper masonry anchor and anchoring method is the key to reduced costs. Two tables summarize pertinent information, simplifying the selection of sizes and types of anchors. Another feature of booklet analyzes the total cost of masonry anchoring according to anchors, drills, and labor; user is shown how to compare anchors and methods for lowest installed cost. The Rawlplug Co., Inc., 200 Petersville Rd., New Rochelle, N.Y.

On Free Data Card, Circle **208**

Laminated Wood Roofs for Industrial Building

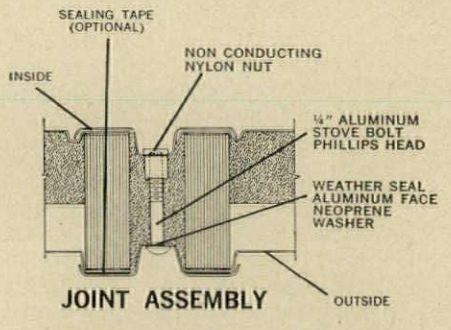
New catalog, 8 pages, is devoted entirely to laminated-wood roof systems for industrial construction. Important information on roof systems using various fabricated structural members —laminated beams, arches, bowstring trusses, and tied arches—is spelled out in an easy-to-read table. Advantages of the systems are listed. Also included in booklet are photos of these products in recently built industrial buildings. Rilco Engineered Wood Products Div., Weyerhaeuser Co., W-817 First National Bank Bldg., St. Paul 1, Minn.

On Free Data Card, Circle **209**

New Sheet Metal

Various applications of "Hydro-T-Metal," a new alloy of titanium, copper, and zinc, are graphically presented in 36-page brochure. The metal has the excellent corrosion resistance of zinc-rich alloys, as well as the structural strength and stability of other nonferrous alloys. Booklet gives extensive technical information—comparison with other metals, fabricating techniques, economies, forms and sizes, procedures in working, suggested gages. Main portion of book, however, is devoted to large detail drawings of flashing, gutters, gravel stops, etc. Hydrometals, Inc., 405 Lexington Ave., New York 17, N.Y.

On Free Data Card, Circle **210**



Low-Cost, Insulating Curtain-Wall System

Bulletin, 12 pages, presents "Condowall" and "Condo-lux"—new low-cost, insulating curtain-wall system. Condowall is a fully prefabricated double-wall panel with aluminum or steel skins and a glass-fiber-and-air insulating core. Translucent Condo-lux is a factory fabricated, double-wall insulating panel with glass-fiber-reinforced skins. It is designed to be used with Condo-wall, in place of sash, or in conjunction with sash. Bulletin gives tables of availabilities, typical details, and specifications. Dresser-Ideco Co., 875 Michigan Ave., Columbus 15, Ohio.

On Free Data Card, Circle **211**

DOORS/WINDOWS

Glare-Reducing Glasses

Revised folder, *How to Reduce Glare, Brightnesss and Solar Heat*, 6 pages, is now available. Data is presented on manufacturer's heat-absorbing and "Parallel-O-Grey" glasses, both plate and insulating. Special sections of the folder deal concisely with uses, installation suggestions, maximum sizes, characteristics, and suggested specifications. Heat and light transmission values are given. Libbey-Owens-Ford Glass Co., 811 Madison Ave., Toledo 1, Ohio.

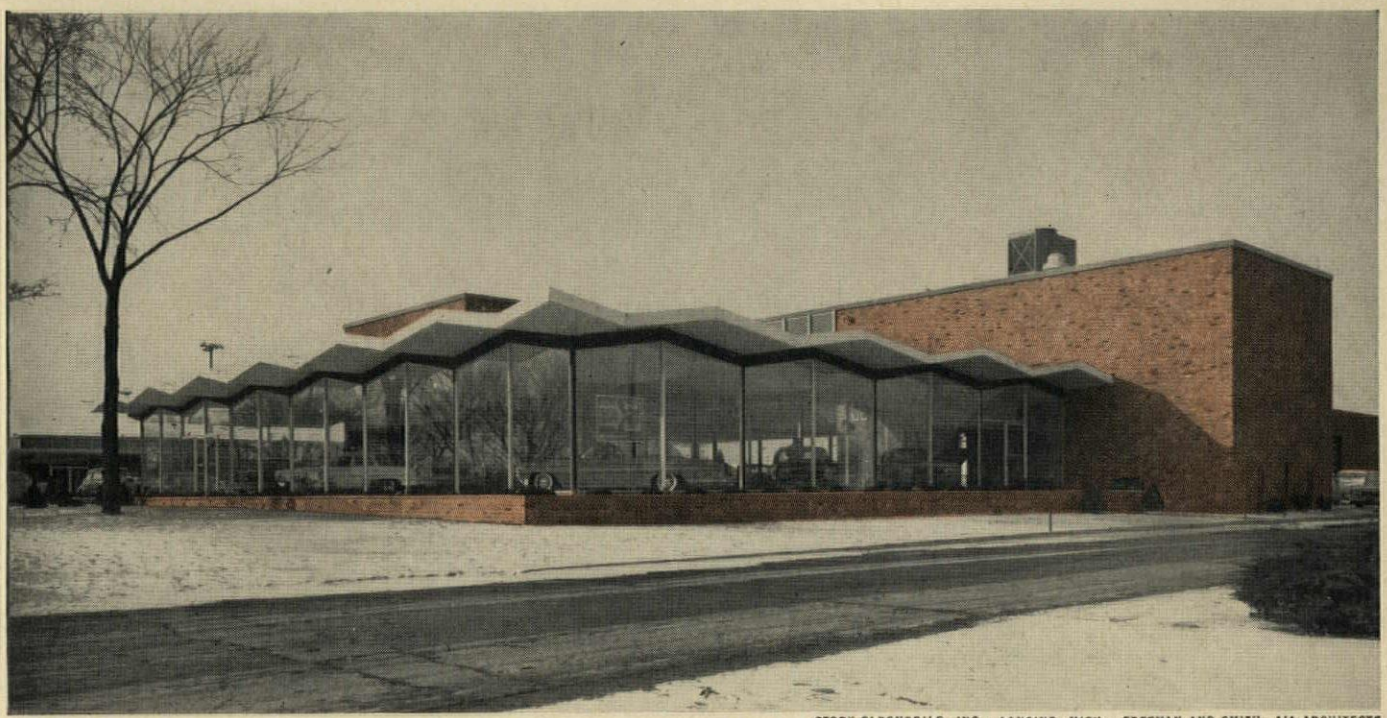
On Free Data Card, Circle **212**

Steel Panels Cut Noise in New Folding Door

New "Soundmaster 240" folding door, with twin walls of steel that "form the most efficient and durable sound-barrier ever put into a folding parti-

NEWS from Dow Corning

This Brick Stays Beautiful



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

Silaneal Reduces Staining, Efflorescence

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

How Silaneal Protects Beauty

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

How Silaneal Improves Construction

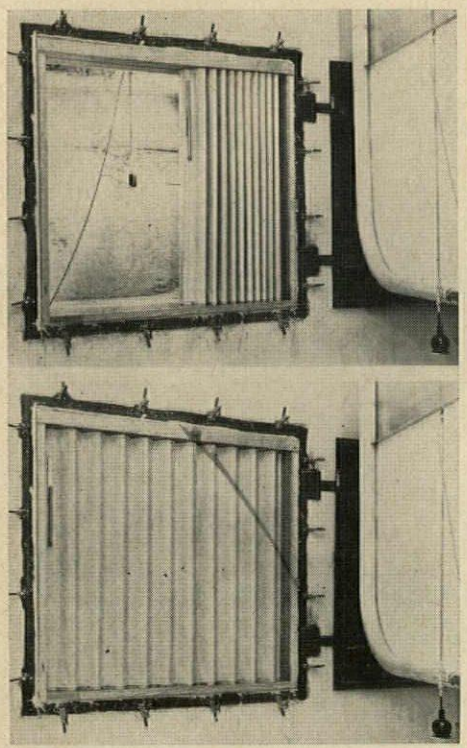
When high suction rate brick is placed on fresh mortar it immediately sucks considerable water out of the mortar. Thus, the mortar dries too quickly and shrinks, leaving a hairline crack at the interface of mortar and brick. But by treating bedding surfaces with Silaneal, suction rate is controlled; proper mortar hydration is permitted; shrinkage and cracks are eliminated; a stronger bond results; water leakage through the finished wall is reduced. Clean-up seldom requires more than just simple brushing. And maintenance is minimized because mortar does not crumble.

If you want more information on this new aid to constructing better brick buildings — including a list of leading brick manufacturers now supplying Silaneal-treated brick — write Dow Corning, Department 6819.

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

SILANEAL®
keeps brick clean

Dow Corning CORPORATION
MIDLAND, MICHIGAN



tion," is presented in 4-page bulletin. Large photograph points to partition's construction advantages — air-release vents to guarantee easy operation, sealer strips at top and bottom of both sides, and a total of 12 separate layers of material for sound absorption. Tests certified by Geiger & Hamme Laboratories indicate a sound reduction of 41.8 db, which means that complete privacy from the sound of normal speech is assured. Modernfold, New Castle Products, Inc., Box 353, New Castle, Ind.

On Free Data Card, Circle **213**

New Sliding Door Has Jump-Proof Screens

Revolutionary sill of new "El Patio" and "El Patio Del Norte" aluminum sliding doors is described in 6-page folder. The new sill, on both single and double glazed units, for the first time provides a screen-track lock and jump-proof screens. In addition, the sill is engineered to eliminate drainage problems. The Heller Co., P.O. Box 4512, Houston 13, Texas.

On Free Data Card, Circle **214**

Laminated Glass

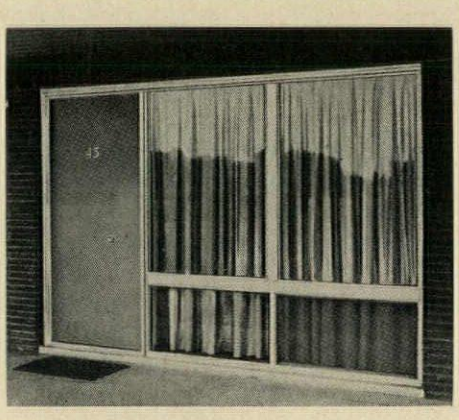
Methods and materials for installing laminated architectural glass are described in 8-page folder. In its simplest form, laminated architectural glass consists of a layer of polyvinyl butyral plastic sandwiched between two sheets of glass. These elements are bonded permanently under heat and pressure to produce a clear, resilient, and shatter-resistant glazing material. The glass, similar to that used in automobile windows, is recommended for use in partitions, room dividers, doors, windows, decorative panels, shower stalls, skylights, curtain walls, railings, and spandrels. Construction of laminated glass can be varied to obtain additional benefits of light and sun control, noise reduction, and decorative effect. Dept. HH, Plastics Div., Monsanto Chemical Co., 600 Monsanto Ave., Springfield, Mass.

On Free Data Card, Circle **215**

Windows for Radiation Shielding

Bulletin, 16 pages, describes products used for radiation-shielding windows in radioactivity hotcells, X-ray therapy rooms, and cobalt-irradiation cells. Background information on how these types of glasses function is clearly presented. "Hi-D Glass" is the only American 6.2 density lead glass (75% lead metal) having the following unique properties: will not etch from atmospheric moisture, will not cause angular distortion, and reflects only 1.4% of visible light. Penberthy Instrument Co., 6701 Maynard Ave., Seattle 8, Wash.

On Free Data Card, Circle **216**



Aluminum Windows with Insulated Frame

Catalog, 20 pages, presents aluminum windows, sliding glass doors, and wall panels complete with dimensional data, details, and specifications. "TM" windows have unique two-piece frame construtcion that reduces conductivity and protects against condensation on the inside. A number of the window models can be double glazed, eliminating the need for storm panels. Another feature: sash is easily removable from the inside, offering complete and convenient cleaning. Titan Metals Co., P.O. Box 144, Pottsville, Pa.

On Free Data Card, Circle **217**

ELECTRICAL EQUIPMENT

Shallow Fluorescents

A 28-page brochure on "Contempo" series of shallow, surface-mounted fluorescent fixtures is now available. The series includes squares and rectangles with a wide choice of light-control media. Finger-actuated, spring-loaded latches are recessed into the frame; no projecting elements or hinges are visible. Comprehensive data includes specifications, construction features, installation methods, mounting dimensions, cost-comparison chart, and "luminarea estimator." Globe Illumination Co., 2121 S. Main St., Los Angeles 7, Calif.

On Free Data Card, Circle **218**

Basic Requirements of Service-Entrance Devices

New bulletin, 6 pages, details the operating and safety requirements of service-entrance equipment. Entitled *Facts You Should Know About Service-Entrance Equipment*, it covers the three basic aspects of the service-entrance function — current-carrying efficiency (including heat rise at contacts), manual switching facility (under adverse conditions that include overloads), and speed and capacity of short-circuit interruption. Bulletin also includes a step-by-step description, with illustrations, of the operation of manufacturer's bolted-pressure switch. Dept. 37, Pringle Electrical Manufacturing Co., Inc., 1900 N. Sixth St., Philadelphia 22, Pa.

On Free Data Card, Circle **219**

National Award for Floodlighting Bulletin

Area Floodlighting Made Easy has received an award in the 1961 nationwide competition of technical and product literature, sponsored by the Consulting Engineers Council and the Producers' Council. The brochure, 16 pages, gives quick reference guides for selecting floodlights of various types, and for determining the number of floodlights needed. Footcandle charts and installation diagrams are included. Crouse-Hinds Co., Syracuse 1, N.Y.

On Free Data Card, Circle **220**

Ornamental Chandeliers with Built-In Sound

New "Audio-Lite" ornamental chandeliers with built-in sound sources are presented in 16-page brochure. The fixtures are designed to solve both the acoustical problems of high ceilings and the aesthetic problems of illuminating churches and other special interiors. Over 30 Audio-Lites in traditional and contemporary design are presented. Soundolier Manufacturing Co., Inc., 9380 Watson Industrial Park, St. Louis 26, Mo.

On Free Data Card, Circle 221

IES Guide to Residential Lighting

Lighting—Keyed to Today's Home, 88 pages, is a comprehensive guide to residential lighting. Illustrated with more than 250 photos, drawings, and construction details, the booklet covers a multitude of lighting problems and solutions. Chapter titles include: architectural lighting, ceiling and wall fixtures, lighted interiors, outdoor living and gardens, dimmers for light control, interior design characteristics, lighting for decorative accent. Write (enclosing $1.50) to Publications Office, Illuminating Engineering Society, 1860 Broadway, New York 23, N.Y.

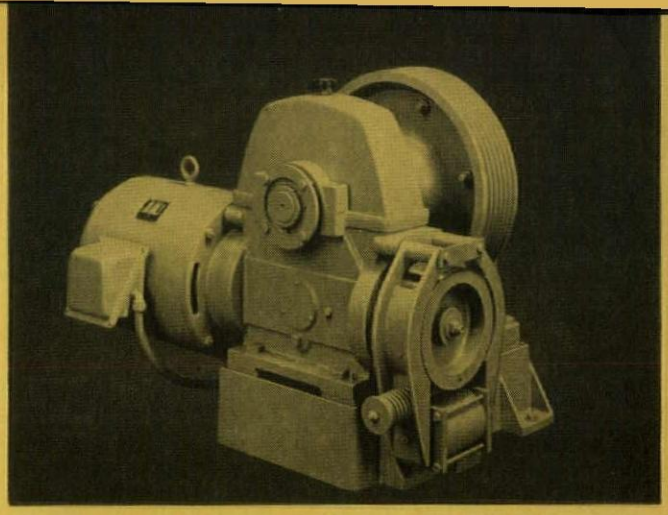
FINISHERS/PROTECTORS

Color by Ketcham

Three new books, 16 pages each, show color schemes by Howard Ketcham, one of the nation's leading authorities on color. His recommended color schemes cover all areas of the school, the hospital, and the factory. Paint swatches are included in each booklet. Write (enclosing 65¢ for each book) to: The O'Brien Corp., 2001 W. Washington Ave., South Bend 21, Ind.

Roof Coating Repairs and Resurfaces

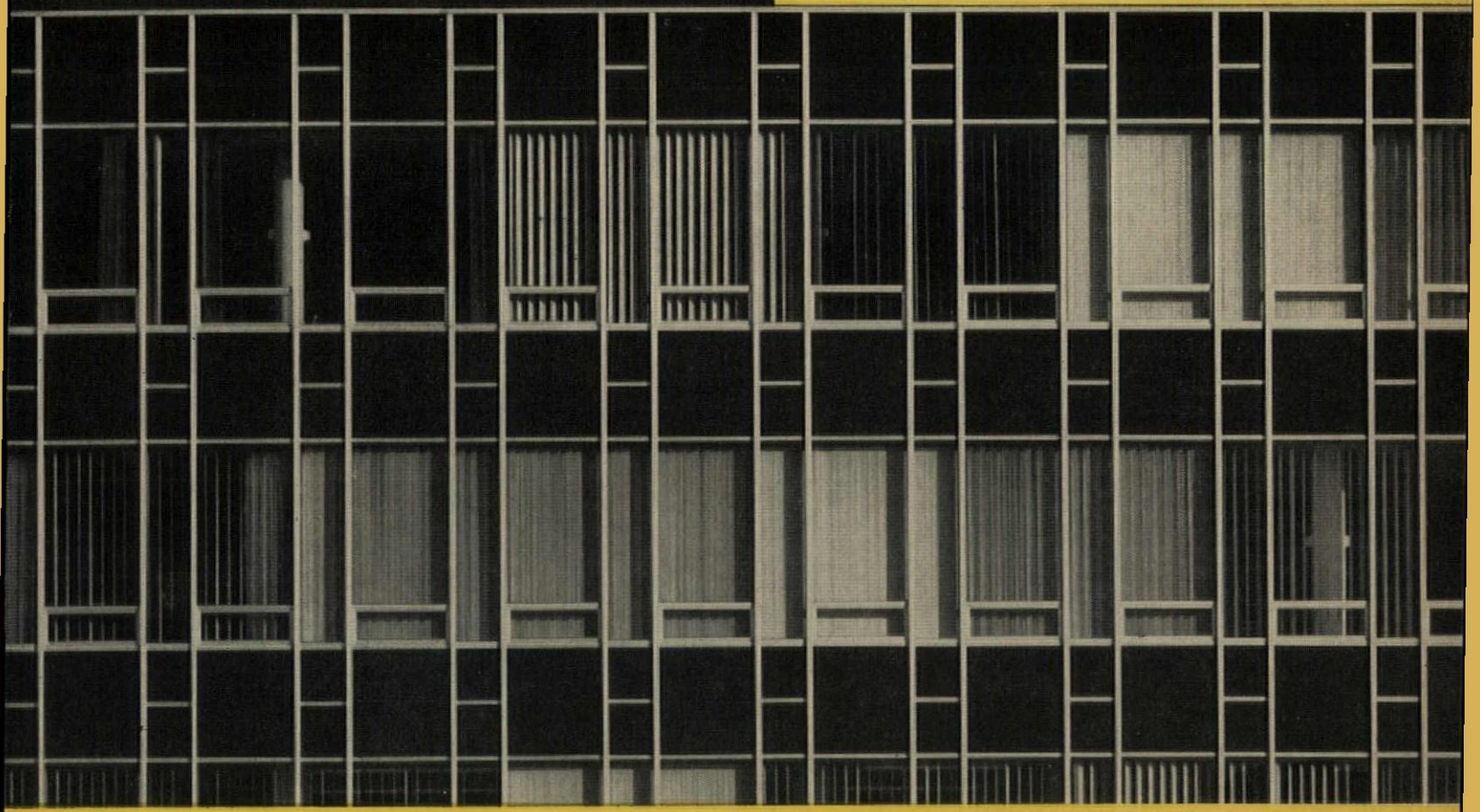
New catalog bulletin, 4 pages, describes "Emulsi-Glass," a glass-reinforced roof coating. According to bulletin, this coating repairs and resurfaces roof decks that are weathered to the point where ordinary roof coating cannot asssure complete protection. Emulsi-Glass coating consists of a spun-glass mat in roll form, plus a



ATTENTION TO DETAIL

■ Order and rhythm and attention to detail create the interesting facade of this Cincinnati bank building... handsome addition to the suburban community it serves. The crisp handling that gives character to the facade is only one aspect of the scrupulous attention to detail which marks the entire structure. Like so many modern buildings it is served by Dover (formerly Shepard) Elevators, which are built with patient attention to detail to insure dependable vertical transportation. Dover's new Model GDF-25 (above) is a medium duty geared hoisting machine with many advanced features. It is ideal for apartments, clinics, motels, small offices, banks and similar buildings. For complete information see Sweet's Files or write Dover Corporation, Elevator Division, 1132 Kansas, Memphis 2, Tennessee.

For more information circle No. 322



DOVER ELEVATORS

DOVER

Fine elevators since 1861

special liquid emulsion. These weld together into a completely new roof surface that is tough, elastic, and highly weather resistant. Weight of the surface is only ⅐ that of a comparable felt covering. Barley-Earhart Corp., Portland, Mich.

On Free Data Card, Circle 222

Primer on Primers

Brochure on "Syncron" metal primers, 8 pages, provides basic information on primers in general—their essential characteristics, the importance of good surface preparation, and the relationship of surface preparation to their selection. In following pages are the manufacturer's products, shown in vivid swatches and described in tabular form. M. J. Merkin Paint Co., Inc., 1441 Broadway, New York 18, N.Y.

On Free Data Card, Circle 223

Tests on Exterior Paint

Progress Report #7, 64 pages, gives detailed information on the results of a seven-year study of exterior paints made with "Rhoplex AC-33," a 100% acrylic resin emulsion. Tables show formulations and test results on applications in various climates. Substrates include wood (both new and previously painted), asbestos-cement shingles, stucco, cinder block, concrete and brick. Rohm & Haas Co., 222 West Washington Sq., Philadelphia 5, Pa.

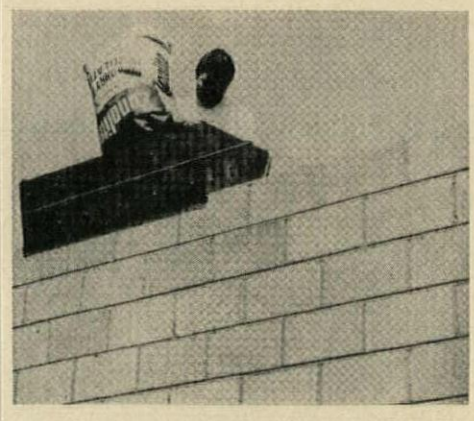
On Free Data Card, Circle 224

INSULATION

Heat, Cool, Absorb Sound All in One Ceiling

Bulletin, 4 pages, describes "Sanacoustic HCS" system, which heats, cools, and absorbs sound all from one ceiling. Heating and cooling are radiant, warming or cooling surfaces rather than air for year-round comfort without drafts. The acoustical blanket above the perforated-metal ceiling absorbs up to 90% of the sound striking it. With the HCS system, there are considerable savings in floor area and floor height of buildings, in fuel, and in power. Brochure also describes design features, performance, and installation. Johns-Manville, 22 E. 40 St., New York 16, N.Y.

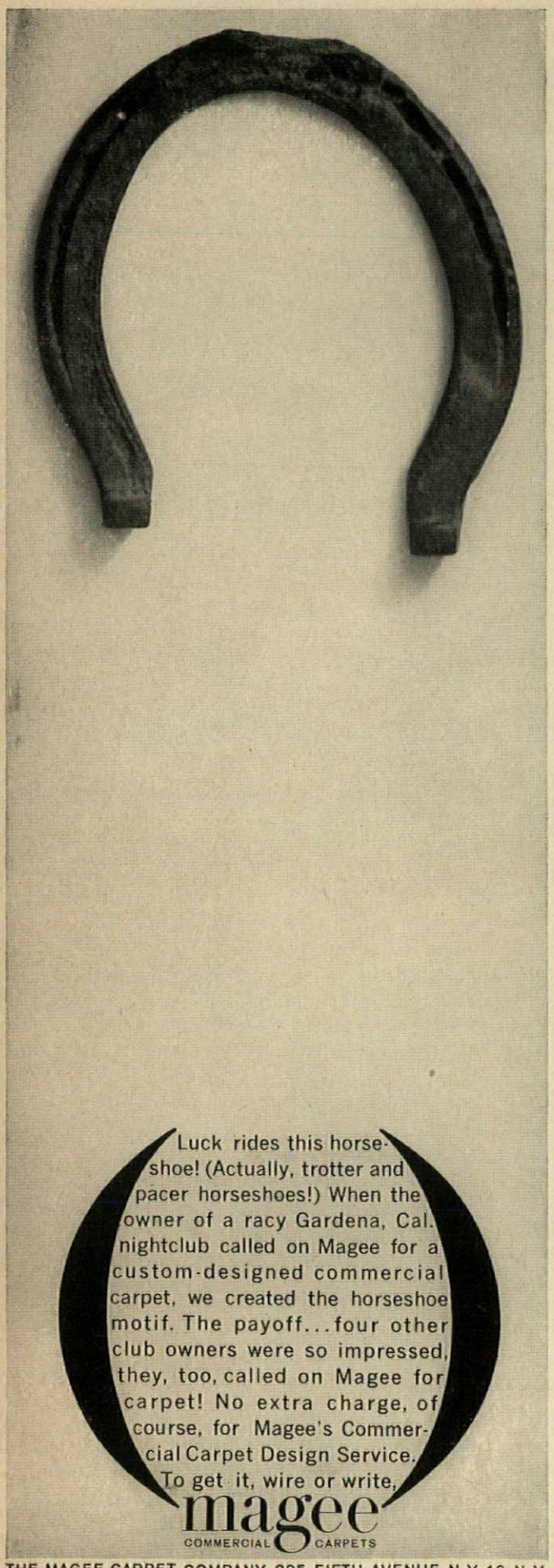
On Free Data Card, Circle 225



Insulated Masonry Walls

The economics of insulating brick-cavity or concrete-block walls with a water-repellent masonry fill are described in new 4-page brochure. Tables provide information on the thermal efficiency and heat transmission of various types of walls. Bro-

Continued on page 86

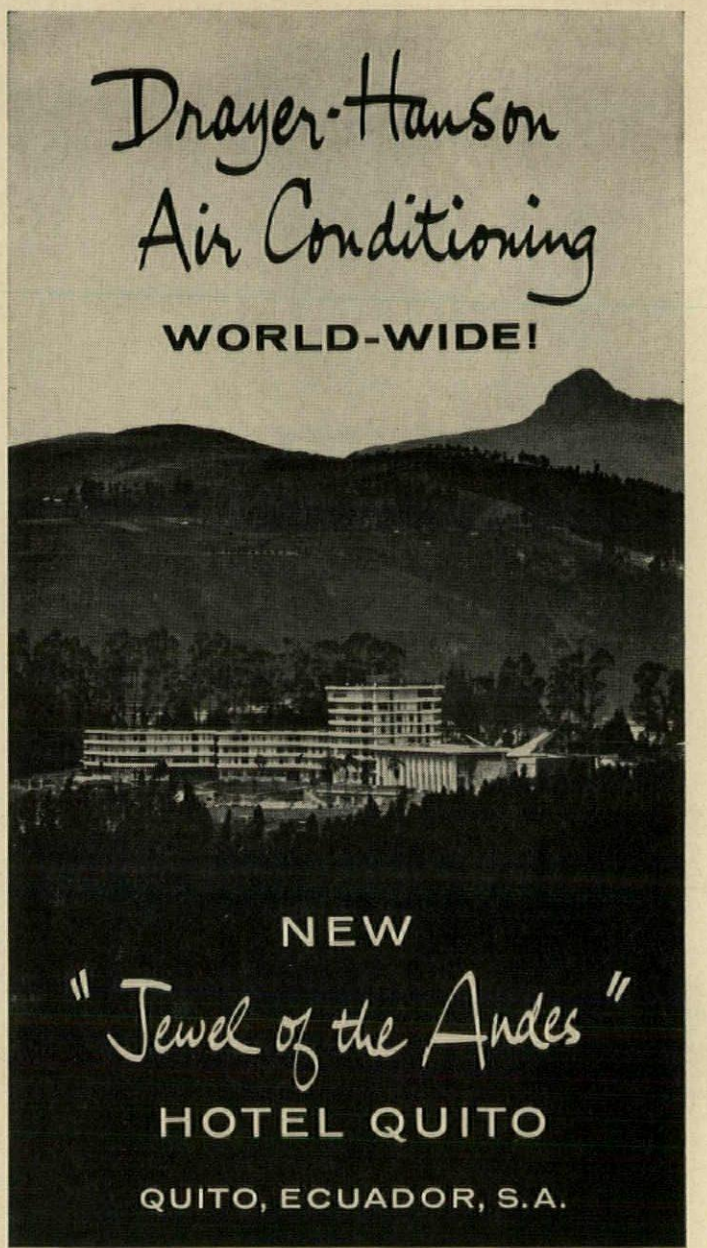


Luck rides this horseshoe! (Actually, trotter and pacer horseshoes!) When the owner of a racy Gardena, Cal. nightclub called on Magee for a custom-designed commercial carpet, we created the horseshoe motif. The payoff... four other club owners were so impressed, they, too, called on Magee for carpet! No extra charge, of course, for Magee's Commercial Carpet Design Service. To get it, wire or write,

magee
COMMERCIAL CARPETS

THE MAGEE CARPET COMPANY, 295 FIFTH AVENUE, N. Y. 16, N. Y.

For more information, turn to Reader Service card, circle No. 344



20 D-H FLOOR/CEILING-MOUNTED PUBLIC SPACE AIR HANDLERS

CREDITS: ARCHITECT: Charles F. McKirahan, Ft. Lauderdale, Florida. AIR CONDITIONING CONTRACTOR: Josueth Gonzalez, Quito, Ecuador. D-H INTERNATIONAL SALES REPRESENTATIVE: Climate Control International, Inc., Los Angeles

Send for Brochure CSHV 312.01

d-h H-P

drayer-hanson
DIVISION OF
HI-PRESS AIR CONDITIONING OF AMERICA, INC.
3301 Medford Street, Los Angeles 63, California
(Cable: Cliconi, Los Angeles)

For more information, turn to Reader Service card, circle No. 386

Continued from page 82
chure discusses installation costs, savings in heating and air-conditioning, and return on investment. Dept. MF-45, Zonolite Co., 135 S. La Salle St., Chicago 3, Ill.
On Free Data Card, Circle 226

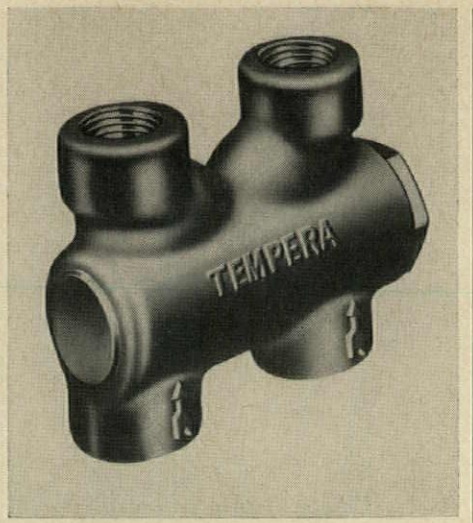
SANITATION/PLUMBING

Toilet Partition Glamor

Design Studies, 8 pages, contains full-color sketches of unusual and delightful toilet-partition installations. Both ceiling-hung and floor-supported types are used. The ideas suggest some novel layouts and decorative effects. Sanymetal Products Co., Inc., 1701 Urbana Rd., Cleveland 12, Ohio.
On Free Data Card, Circle 227

Scald-Proof Shower Valve

Constant water temperature at all times is assured with new "Tempera Valve." The valve is a balancing-line valve, not a water mixer, and is operated by water pressure. Its over-all



length is 3⅞", height is 3⅛". Installation, in either new or existing construction, is simple and inexpensive. Independent tests have shown that water temperature remains within one degree of its setting despite extreme changes in water pressure. Brochure, 4 pages, gives full details. Tempera Corp., 4035 N. Interstate Ave., Portland 17, Ore.
On Free Data Card, Circle 228

Group Showers and Washfountains

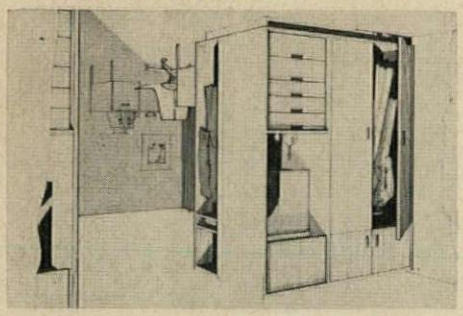
New Directions in Contemporary Washroom Design, 4 pages, includes data on group washing and showering equipment. The various models are depicted and described; full dimensional data is given. A composite table shows minimum practical clearances for group washfountain equipment. Bradley Washfountain, 2203 W. Michigan St., Milwaukee, Wis.
On Free Data Card, Circle 229

SPECIAL EQUIPMENT

Dormitory Wardrobes

Wardrobes for Residence Halls, 8 pages, contains sketches of some outstanding installations for colleges and institutions. An additional 6 sheets, provided in an insert pocket, give traceable details of each design—scale elevations and construction sections. A specifications guide covers species
Continued on page 90

Continued from page 86



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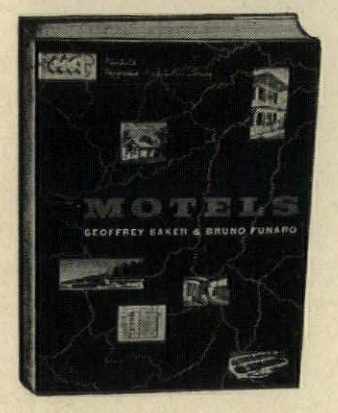

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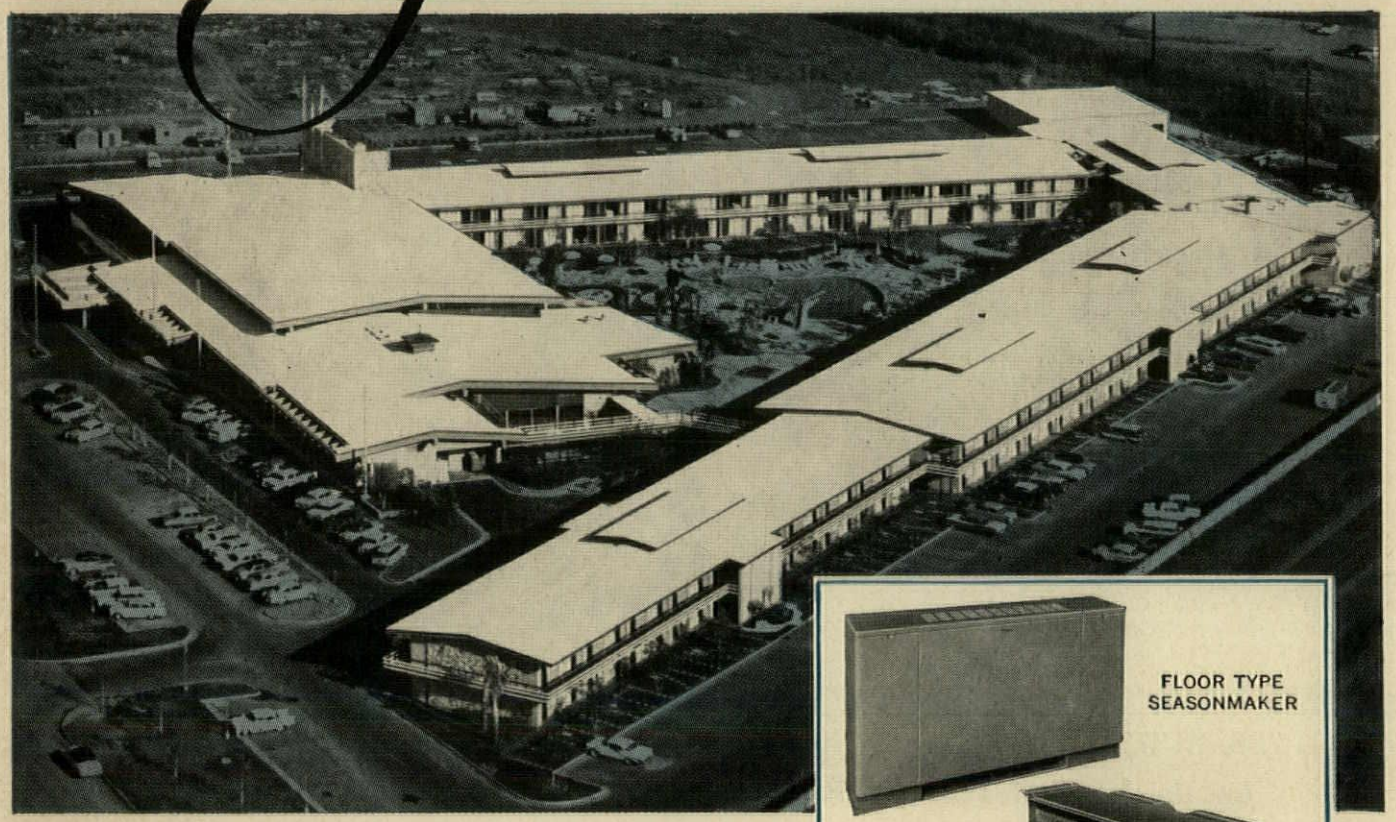

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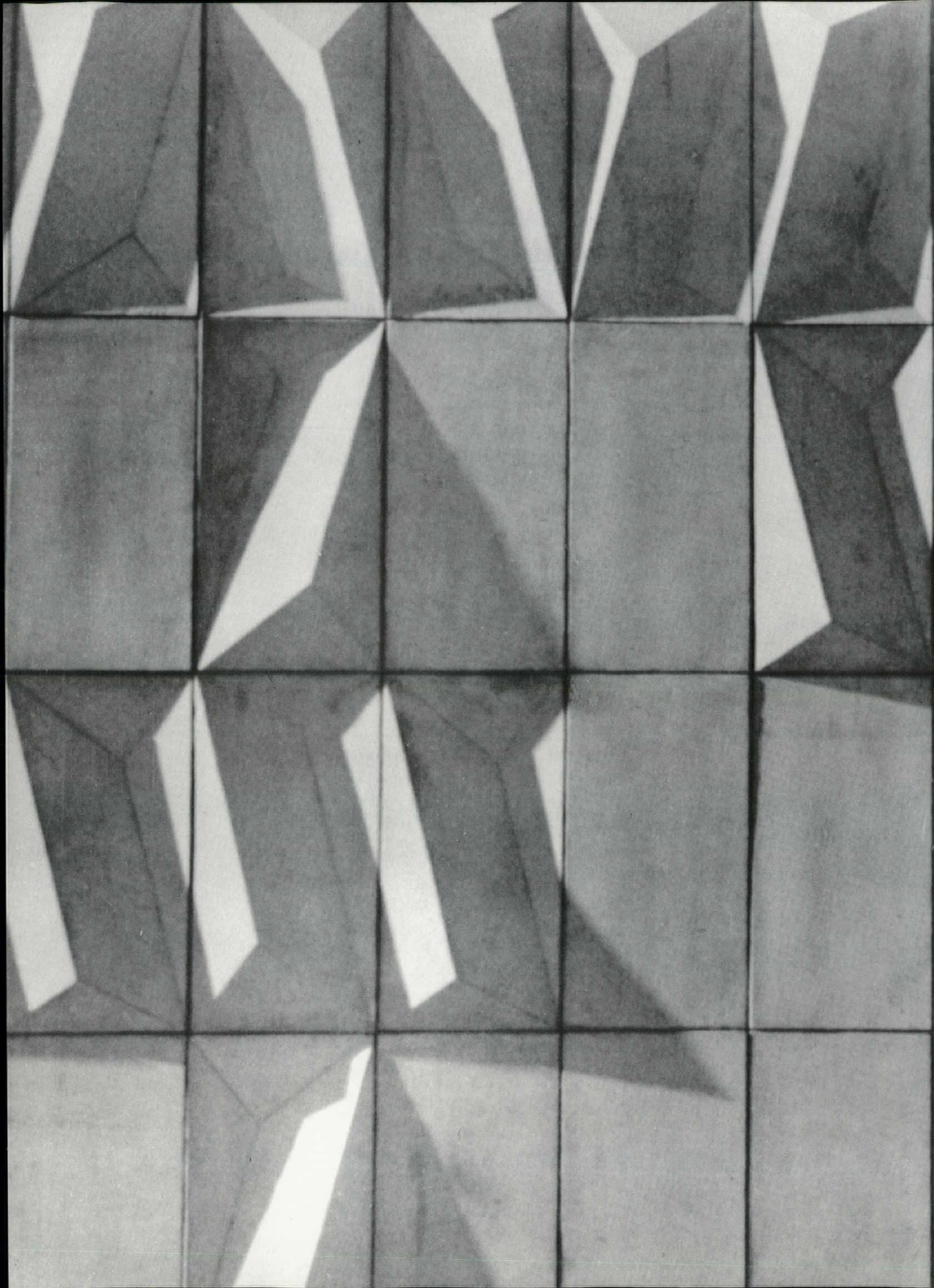

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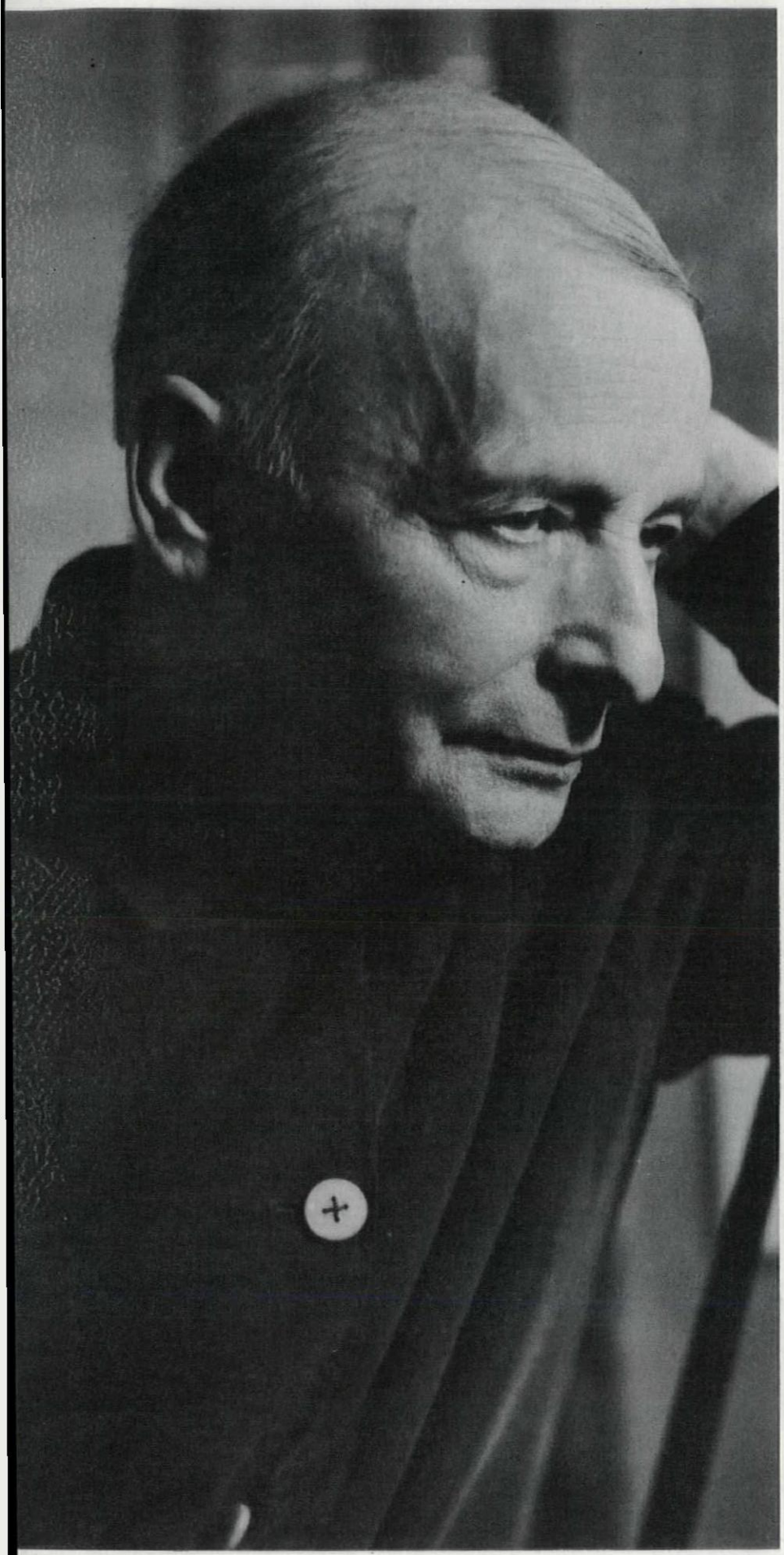


KIESLER'S PURSUIT OF AN IDEA

The name and the personality of Frederick Kiesler have been important in the history of contemporary design, in Europe and in the United States, since the early 20's. The "one basic idea" that Kiesler has been pursuing, demonstrating, justifying through this half century is that of **continuity.** Starting in theater design, where the principle of continuous movement in space—time and space working in tension—could be used effectively and startlingly; through various interpretations and functional adaptations of the Endless building concept; in a spatial grid in 1925; in a series of continuous-vision galleries and theaters in the 40's and 50's, through galaxial (noncontained) paintings and sculptures of his own; to his present busy practice, Kiesler has preached **continuity.** The continuity has two interpretations, as a matter of fact: the continuum he strives for in his designs, and the continuum that his life has been. "I have compassion," he says, "for someone who tries to get away from his past by a detour . . ." Kiesler has no desire to get away from his past. He is proud of it, and he loves to talk about it. This man, who is placed in the stylistic slots of Expressionism, De Stijl, Futurism, Elementarism, Cubism, Neo-Plasticism, and other categories in the contemporary histories, simply wants to remember that he knew and worked with the great figures of the early period of the modern movement, that his was a unique relationship to them and their movements, and that he never has varied from his "basic idea." It seems clear that Kiesler's 1924 "Endless" was the first plan for a continuous shell construction in our time; his 1924 "space-theater" and his 1931 "Universal" were the prototypes of the convertible, proscenium-arena, double-theater plans now being used.

Today, the interest in the newest version of the Endless House makes its actual building very possible. In addition, Kiesler, in association with his partner Armand Bartos, has a lot of work in progress under the firm's name of Kiesler & Bartos; one of their current projects, for example, is for the "Shrine of the Book," which will go into construction this summer in Jerusalem.

These reminiscences of Kiesler's are the result of taping a discussion one evening last year with P/A's Editor. Some of the remembrances may vary from other recorded history; some of the comments are contentious. But it is lively personal history and inspiring insistence on an idea.

". . . everyone has one basic idea . . . he will always come back to it . . ."

T.H.C.: Kiesler, some time ago when we published two articles which we called The New Sensualism—pointing out primarily the renewed interest in plastic architectural forms—you commented to me that you thought they had one fault: they ignored the earlier moves in this direction. This we recognized as true; your own Endless House, and other studies made some years ago, pointed the way to much that is being done today and considered new. Would you tell me something about this earlier period; your part in it, of course, but also the other figures who were important.

Kiesler: Tom, you know that three great fathers of so-called modern architecture were Otto Wagner in Vienna, Berlage in Holland, and Auguste Perret in France. It has perhaps already been forgotten that the first building with a concrete frame was done by Perret in Paris, in 1921 or 1922. It is the Théâtre des Champs Elysées, with high-relief panels by Bourdelle.

T.H.C.: Why did Perret's work in later years—such as St. Joseph's Church, in Le Havre—become so very stiff and tight?

Kiesler: Well, a man of any period who has no chance of developing his own ideas at that period but survives it and tries to do them later, becomes stiff and petrified. So it was with Perret.

Otto Wagner, on the other hand, had a wonderful chance in Vienna; for instance, the famous subway stations he did there. Magnificent examples of *art nouveau*. You see, Otto Wagner was professor and head of the Architectural Section at the Academy of Fine Arts, and the younger man then in Vienna was Josef Hoffmann, head of the Department of Architecture at the School of Applied Arts—two different approaches to learning how to design contemporary architecture. Wagner had created the City for the Insane outside Vienna, with the famous "golden dome," which is one of the most perfect examples of the overornamented, luxuriously executed architectural buildings in the modern-craft manner of that period. But he also had in him, strangely enough, the opposite desire—the feeling for elimination of all ornament. He made, I believe, the most modern building of the first decade of the 20th Century—the People's Bank (the Postal Savings Bank) on the Ringstrasse. It had no ornament whatsoever, with its façade in huge white marble slabs (each slab about four feet square) held together at the corners by aluminum bolts. (Look at the lobby of the Time and Life Building done this year in New York, and compare.) And he used ship-railings, which others used later with great pride, as balustrades. The most amazing thing about this bank was the main teller hall, done entirely in aluminum; the floor was in linoleum and the ceiling was a slightly curved vault in glass. That was in 1904, and it still stands and holds out against our curtain walls.

Most amazing are the units for heating in the big room, small aluminum coils sticking out about three feet from the ground, symbols of artificial heat, beautifully sculptured.

I remember Wagner as a tall, elegant-looking gentleman, climbing the front steps of the Academy with elasticity (Frank Lloyd Wright!), and holding in his right hand a pair of rose-brown, neatly pressed leather gloves; thus giving the appearance—together with his Archduke Eugene white beard (Van Dyke)—of a personage self-contained and truly aristocratic. He was, I think, 71 years old when I had the chance of meeting him and asking for advice.

You see, Wagner really was the wave and crest at the same time. He not only created very much in the manner of *art nouveau;* he also changed over to a new movement, and brought it to a turning point. The difference between Gaudí, for instance, and Wagner is that Gaudí got stuck in *art nouveau* whereas Wagner stepped out of it towards functional architecture. Later, at the School of Applied Arts, which was followed by the Wiener Werkstätte, Hoffmann created new industrial designs, as is well known. Dishes, silverware, glass, particularly the Lobmeyer, which is still the most famous glassware in Czechoslovakia. It was all an Austrian revival of William Morris' teaching: the return to handicraft at a time of the industrial revolution. You see, Wagner was the first generation. Then came Adolf Loos and Josef Hoffmann. I was the third generation; and now there is a fourth generation continuing.

T.H.C.: What happened, do you think, that made architects lose interest in freer forms? You spoke of Wagner's slightly curved ceiling, the sculpture of columns, and so forth; was it an influence of personalities or the influence of machine technology that ended this?

Kiesler: Neither; it was really simply a socio-economic development. When the big war of 1914 came and everything collapsed in Austria and the monarchy was gone and the German Kaiser was gone, my generation was right in the midst of the turmoil. We felt that the whole world was going into a new realm of living together in peace and harmony; now everybody would have what had been promised and society finally would be the fulfillment of utopia.

And that was when the arts started to grow because the chains which fettered the imagination were falling, also as far as architecture was concerned. There was a socialist government in Vienna. It was a great innovation, because Vienna was ac-

customed to miraculous luxury, which it loved, but the new idea of social freedom it now apparently loved more.

The idea of mass housing was rolling on. We wanted to be helpful—doing things for the populace, clamoring for more hygiene, for more sunlight, for fresher air, for children's playgrounds, for housing; in other words, the whole architectural movement at this point was on a social basis, away from aristocracy, away from the bourgoisie, and toward the people. This point of view was accepted by all architects of fresh spirit and was taught in the academies. There was no longer any necessity to promote; it had been accepted. When you are young, you quickly jump into something else; the power of creative spontaneity transforms itself into another strata. There it was, quite suddenly, the new trend which was later to be called "functional" design. Wagner abandoned plastic surfaces, ornamentation, and what not, and built the Vienna Sparkasse.

We hoped that everybody would be part of a community of free individuals and we really didn't care that we had nothing to eat. I recall well my own situation; after the war I lived on the dole for many years; I got about seven Kronen a week, which would be the equivalent of about seven dollars per week now. But one could live on that monastically; I had rice, chiefly, and mushrooms. I remember only too well the mushrooms which I dried and reheated again just as I did with tea-leaves. As in our eating habits, we started to clean off everything that was surplus in design—ornamentation, certain luxurious materials, moldings, this and that. Everything became, over the years, simpler, cleaner, whiter, and . . . you know, what we call functionalism was on its natural way.

So functionalism was really a reaction to the overstuffing of the Victorian age. Architecture had to be put on a diet. And the rectangular style did it. Now the period of diet is over and we can eat normally again. However, that does not mean that we should overeat, stuff ourselves with whipped cream, ice cream—or with architecture either.

T.H.C.: Would you say that the Bauhaus was a rationalization of this move toward a "stricter diet"?

Kiesler: No, it's a good moment now to speak about the origin of that school. Henry van de Velde was, before Gropius, director of the Grand Ducal School of Applied Arts in Weimar. Van de Velde was just the opposite of Otto Wagner: very much, in his slight curvatures and sensuousness, in the vein of *art nouveau*, or if you want, of "emotional architecture," but it was less ornamented, it was done more in a sculptural and structural way. He was a very temperamental gentleman and resigned when the box-architecture made its entrance. He was succeeded in 1918 by Gropius, who combined the School of Applied Arts and the Academy of Arts to form the Bauhaus and reorganized its curriculum. Many of the theories of the Bauhaus were adapted from other sources—mainly the De Stijl group, which was formed in Holland in 1916–17. The Bauhaus published *Neue Gestaltung* by Mondrian, and *Grundbegriffe der Neuen Gestaltenden Kunst* by van Doesburg, and my book on the "City in Space" was announced the year I went to America—that was in 1926. Gropius' merit was to have molded these theories into an excellent method of teaching.

T.H.C.: You spoke of Loos and Hoffmann as "the second generation." Were they friends?

Kiesler: At that time, there was a double trend in Vienna. One group followed the school of Arts and Crafts, led by Hoffmann, and was interested in the revival of handcraft. This was opposed by that free-wheeling spirit and highly individual architect—Adolf Loos. Loos considered ornament superfluous from the social point of view; from a craftsman's point of view, from an economic point of view, it was a crime. Loos and Hoffmann were opposed to each other. Loos claimed that Hoffmann tried to educate students to produce a modern Biedermeier, and he was violently opposed to it. He said that Austria would lose the war (the First World War) because the Austrians cared more for ornament than function, and that instead of making as many simple loaves of bread as possible in a given time, they made twists in them—and wasted energy.

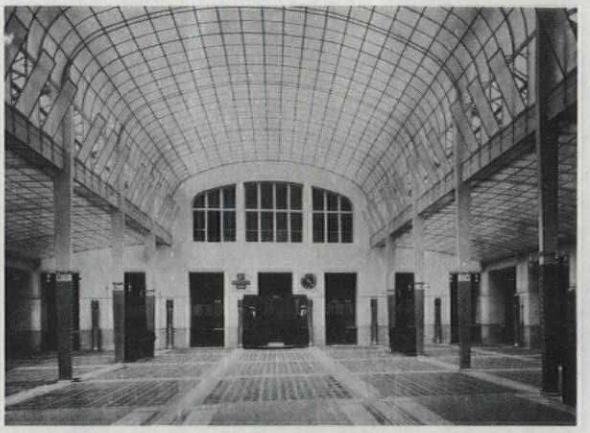
But Hoffmann had a quality that was—and still is—rare with architects of high repute. When he reached the age of about sixty, he diverted most of his jobs to young artists and architects. Appointed Commissioner for the Austrian section of the World's Fair in Paris in 1925, after failing to have Loos accept an assignment, he invited Peter Behrens (who had succeeded Otto Wagner at the Academy and lived then in Vienna) to design the Austrian Pavilion, gave other sections to his very talented students Haerdtl and Fellerer, and asked me to design the International Theater Section in the Grand Palais. "Do the very best you can," he told me. "Don't tell me your ideas or show me your plans. I rely on you. But don't forget to invite me to the opening of your section." Hoffmann died only a few years ago after being pensioned and honored by the City. Loos died much earlier—in poverty.

T.H.C.: Vienna must have been a very interesting city at that time.

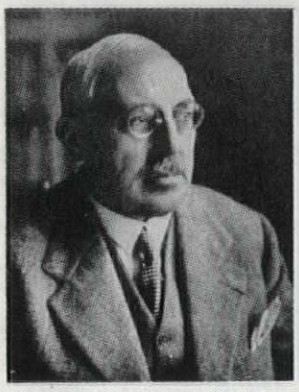
Kiesler: When I think back, I realize now how rich the middle teens and early 20's were in Vienna. There were not only extraordinary individuals, but extraordinary groups and, most significantly, meeting places, private apartments, studios, and above all cafés where we would gather.

Imagine, Tom, a simple open area, off center in Vienna, partly park, partly plaza, around which were some of the most important cultural centers of the capital and of Europe. The piazza's name was Karlsplatz, and these institutions were around it if I remember correctly: The Sezession, built by Olbrich (according to Wright, it decidedly influenced his architecture); the Künstlerhaus, the official Art Center of society artists (opened every autumn by the Emperor); on the same square the long stretched-out building of Vienna's "M.I.T." (where I studied); the most venerable Carnegie Hall of Vienna, the Musikvereinssaal; two blocks away in two directions, the Academy of Fine Arts (Wagner) and the Opera. But even more important for the creation of a warm climate for artists to thrive were the cafés: the Museum (designed by Loos), the Kremser (designed by Hoffmann), the Imperial, and a bit further north the Café Central—where the famous chess champions and amateurs played every day (Lenin, a short time before that, then Adler, disciple of Freud, and Robert Musil, the novelist).

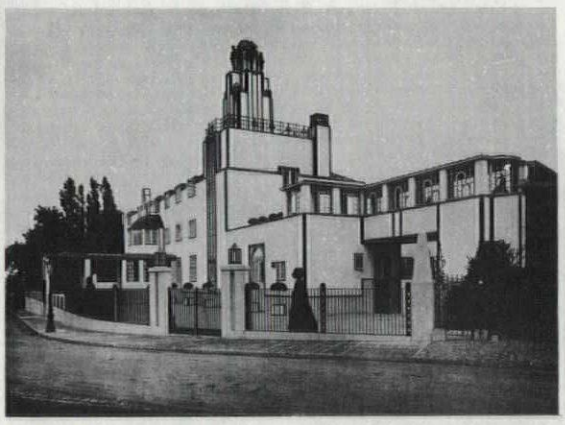
Just as recently the new American painters and sculptors gathered at the Cedar Bar in New York and made it their home for discussion, so in Vienna different groups met at specific places. At the Imperial, it was Karl Kraus (most feared satirist and critic), and with him gathered daily, among others, Adolf Loos, Kokoschka, often Schönberg, Alban Berg, and Anton von Webern; and at the Café Museum I remember a long table at the end of the room in front of an all-wall mirror where after lunch and after dinner assembled the composers—Franz Lehar,

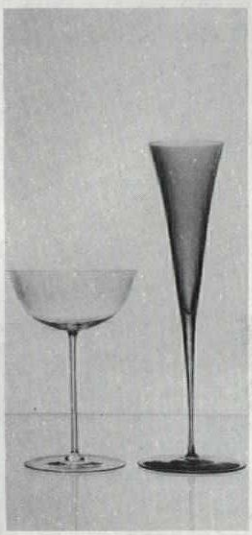


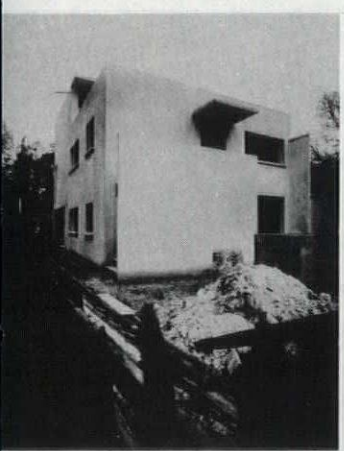
Otto Wagner, a "tall, elegant-looking gentleman," and (above *and* at right) *his Postal Savings Bank in Vienna, built in 1904–1906.*



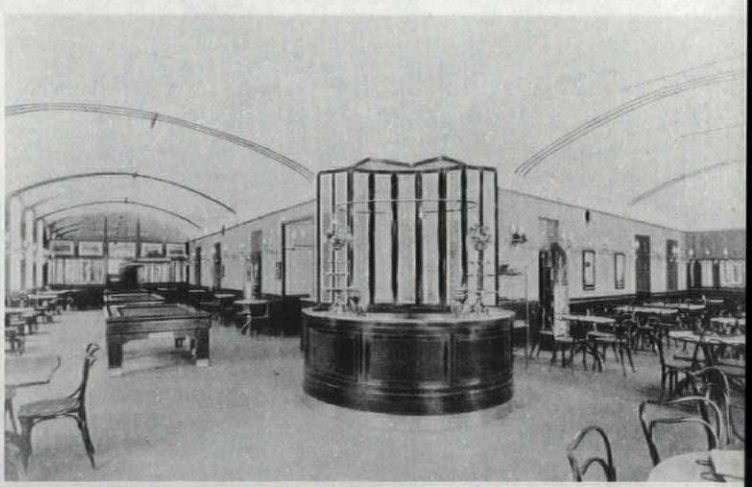
Josef Hoffmann and (below) *Palais Stoclet, Brussels, designed by him in Vienna, 1905. The two Lobmeyr goblets are by Hoffmann (left) and Oswald Haerdtl (right).*





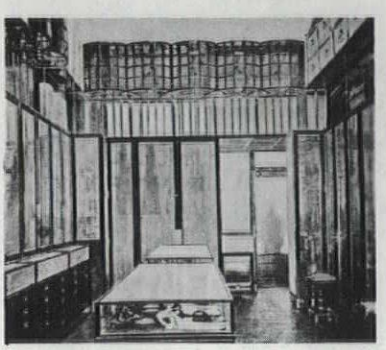


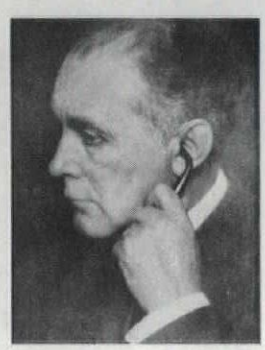
Theo van Doesburg's house at Meudon, 1929 (left). *Kiesler, at left, and van Doesburg, founder of De Stijl, in Paris in 1931* (below).



Café Museum on Vienna's Karlsplatz, designed by Loos.

Adolf Loos (right), *who was "opposed to a modern Biedermeier," and his sketch for a men's shop interior in 1898.*





Kiesler's drawing of Vienna's Karlsplatz in the 1920's.

Oscar Straus, and others. The Museum was "the Café" for all of us young artists and architects. And in the Kremser am Ring Hoffmann presided, with the professors of the School of Industrial Design. There were intense group meetings at the home of writer Fritz Lampl, with Franz Werfel, Kafka, and Albert Ehrenstein.

No wonder, as I recall it now, that such groups, fighting it out with each other and against each other, caused the heat-lightning and the showers that produced what are now so nostalgically called the "creative 20's."

That, my dear Tom, is what's missing here—the caves of the artists for the germination of their ideas.

T.H.C.: You spoke of van Doesburg and De Stijl. How did you know him, since he was Dutch and you lived in Vienna?

Kiesler: By one of those fateful chances. During the war van Doesburg appeared, once out of Holland and once out of Paris. Everything was broken down in Austria and Germany, and in France too at that time. Doesburg was a great spirit of righteousness; also, he had talent and especially great talent for uncovering other talents. He had discovered his great countryman Mondrian, who was living in Paris, and he and Mondrian and van der Leck and Rietveld and Oud formed with others a neoplasticism group. He traveled to Berlin and Paris and Yugoslavia, and to Vienna and to Weimar (the Bauhaus) and spread the gospel through violent discourses and discussions and through his magazine called *De Stijl.*

En route, he discovered me too, in 1923, in Berlin, where I had come from Vienna to design the settings for *R.U.R.* for Karel Capek at the Theater am Kurfürstendamm. This *R.U.R.* play was my occasion to use for the first time in a theater a motion picture instead of a painted backdrop, and also television in the sense that I had a big, square panel window in the middle of the stage drop which could be opened by remote control. When the director of the human factory in the play pushed a button at his desk, the panel opened and the audience saw two human beings reflected from a mirror arrangement backstage. The actors appeared in this window as a foot-and-a-half tall, casually moving and talking, heard through a hidden loud-speaker. It was quite an illusion, because a minute later you saw the same actors appear on stage in full size. There was, inevitably, a burst of applause at this moment. Then there was another innovation, namely a huge diaphragm in the back of the stage. When the director of the factory wanted to demonstrate to visitors how modern his robot factory was, he opened a diaphragm, which disclosed a moving picture projected from the back of the stage onto a circular screen, and you could see the interior of an enormous factory with workers walking busily back and forth. This was an illusion, since the camera was walking into the interior of the factory and the audience had the impression that the actors on the stage walked into the perspective of the moving picture, too. I mention it only because these new devices to present the interplay of reality and illusion brought many artists to the theater.

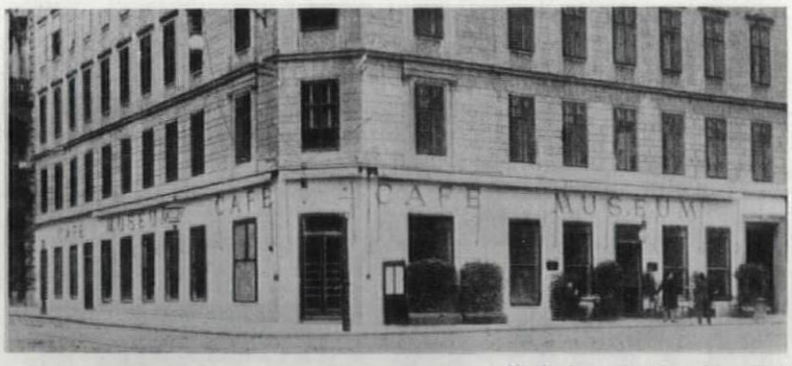
After the second performance, as I walked out through the stage door at night, a man pushed his way in. He was tallish. I remember he had on a black shirt and a white necktie, and a monocle was screwed in his eye; his hands were in elegant chamois gloves—and he had no hat. It was van Doesburg. He pushed me aside and asked, "Where is Kiesler?" I was rather astounded at this behavior of a stranger and I said, "He is right here," pointing at myself. He said (evidently surprised), "*You* are Kiesler?" and he made a sign, as you do when you call your gang, you know. The gang came in and the gang was Kurt Schwitters, Hans Richter, Moholy-Nagy, Eli Lissitzky, Werner Graeff and Theo van Doesburg. They came in, grabbed me without saying a word, lifted me up, and took me 6 or 7 blocks around the corner to a club where we met Mies van der Rohe and spent the whole night talking about architecture and the future theater (I described "The Endless") and it seemed to each of us as though we were individuals who had known one another for a long, long time. And this is how I joined the group known as "De Stijl," which so ardently continued the job of cleaning up the architecture of the Victorian age which Wagner and Berlage had started.

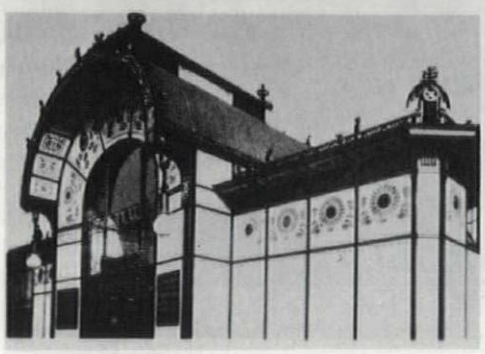
T.H.C.: When did you work in Paris?

Kiesler: As I said, Josef Hoffmann invited me to do the International Section of the theater at the Grand Palais, for the World's Fair of 1925 in Paris. The theater exhibition was inside the Grand Palais, but along the Seine next to it I schemed my only "neoplastic" building. It was called the Optophon, and was a horizontally stretched building more or less in a cross form, built in between the trees. Where the four wings met in the

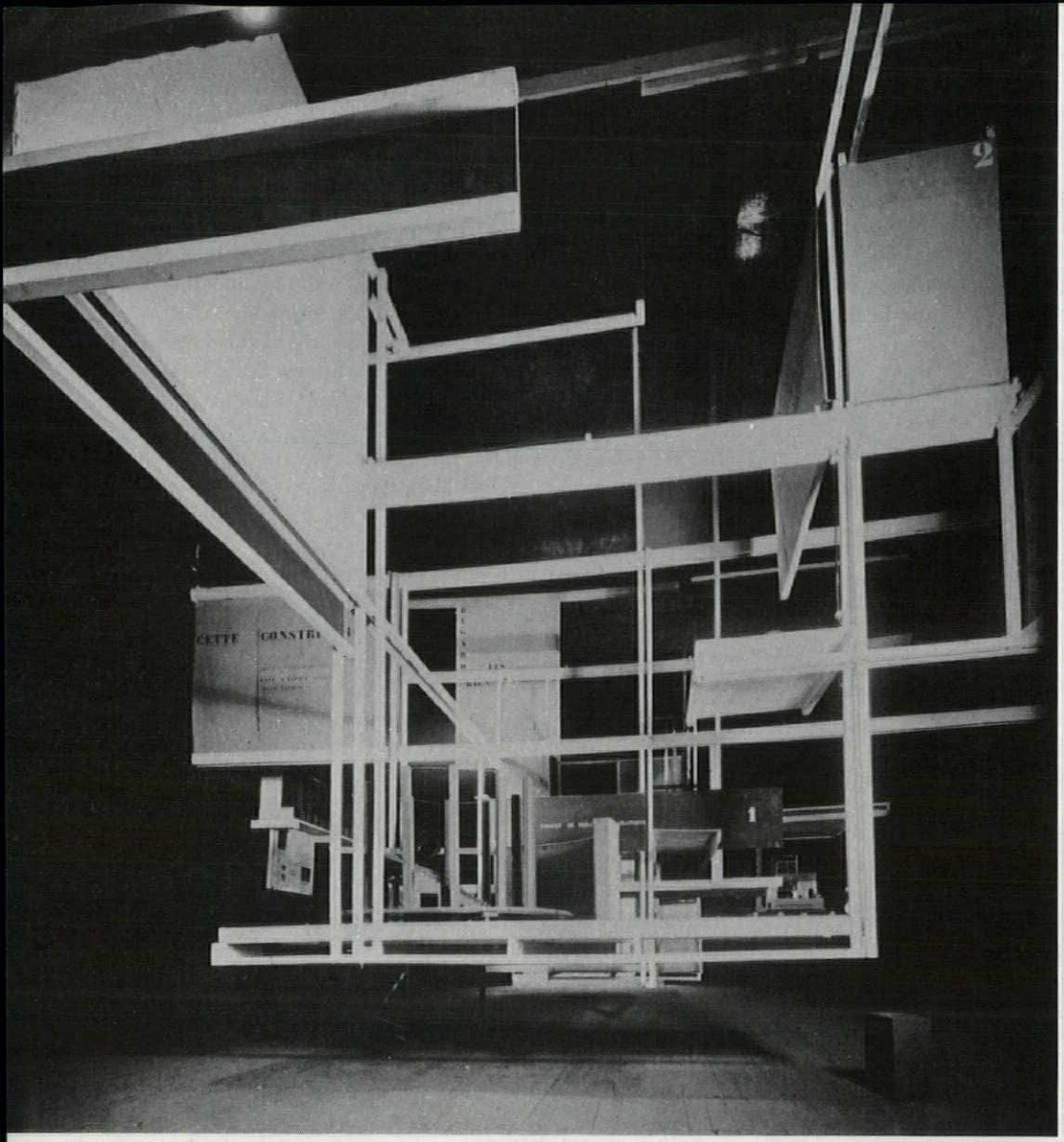
LEGEND

1 Institute of Technology (Technische Hochschule)
2 Church (Karlskirche)
3 Plaza (Karlsplatz)
4 Vienna Philharmonic Building (Musikvereinsgebaeude)
5 Café Museum, by Loos
6 State's Opera House (Staatsoper)
7 Museum of Fine Arts (Kunsthistorisches Museum)
8 Museum of Natural History (Naturhistorisches Museum)
9 Sezession, by Olbrich
10 Academy of Fine Arts (Akademie der Bildenden Künste)
11 Theater an der Wien
12 Goethe Monument
13 Museum, City of Vienna; original project by Wagner
14 Concert House (Konzerthaus)
15 Café Kremser, by Hoffmann
16 Café Central
17 Artists' House (Künstlerhaus)
18 Subway Station, by Wagner





Karlsplatz landmarks: Café Museum (above) *designed by Loos. Subway station* (left) *by Wagner.*



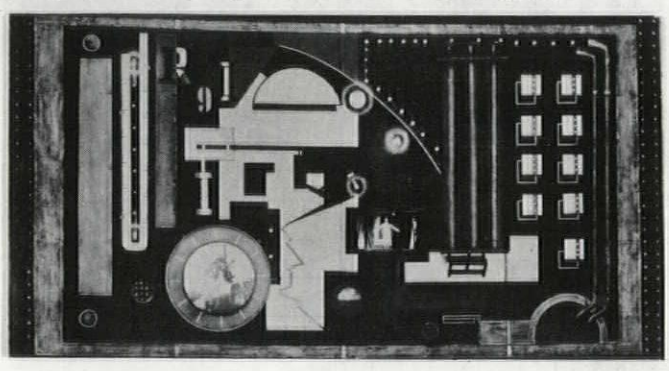
The City in Space: exhibit designed by Kiesler at the Grand Palais in Paris, 1925; a group gathered around Kiesler (hand on chair) at this exhibit, included Pierre Loring, van Doesburg, Auguste Perret, George Antheil, Tristan Tzara, and Juan Gris.

center was a mobile-machine for partly abstract or realistic visual and phonetic plays which would run automatically.

It was not built, and I have lost all my drawings. The Austrian Government couldn't get any money even for ordinary types; this was too vague and too fantastic anyway to spend Government money on.

But, thank God, I did proceed to build in the Grand Palais—under the guise of exhibiting pedestals for theater models—a city, decentralized and entirely suspended in space. It was a rectangular structure for a suspension-town, called the "City in Space." I took the chance of doing something completely improvised. Long live youth! A week before the exhibition at the Grand Palais opened with official fanfares I had an unprovoked quarrel with van Doesburg. But the day after the opening of the "City in Space" I sneaked in to see my exhibition (I wasn't at all apprehensive about it, but very curious) and there was van Doesburg with Mondrian. He turned, saw me, made a veritable leap at me and with tears in his eyes said, "You have done what we all hoped one day to do. You did it." We remained friends until his death parted us.

Kiesler's mobile wall relief for Karel Capek's play R.U.R. *shows film projection diaphragm at left and "television" panel.*



T.H.C.: When did you first conceive The Endless House?

Kiesler: The three years 1922, 1923, 1924 were the most fruitful years of my life. What I am doing today are follow-ups of these ideas, and I'm still looking, as I was 40 years ago, for a chance to build them. My Endless House I had started to conceive for the Theater and Musical Festival of the City of Vienna, which opened in May 1924, even before the Optophon and the City in Space. I was the architect and director in charge of the Festival. The completed plans of The Endless were meant for a capacity of ten thousand people, all in one double-shell building of "cast glass." This double shell would contain the heating and the cooling, and consisted of an interplay of ramp, platform, and elevator—an endless showplace throughout the whole space. This theater and music center included also hotels, parking lot, gardens, all enclosed in the same shell. Looking at Wright's ramp approach to a museum, I see the same spirit in my plans. The Endless had a continuous intertwining of vast ramps which lead into others at several levels until spectators and actors practically reach the ceiling. The various levels connect through three elevators which are exposed; the elevators are nothing but platforms that take off from one level to another. The players

and the audience can intertwine anywhere in space. There, I feel, is a first attempt at an architectural expression of spatial integration. It fully used the construction principle of continuous tension—there was not a single column in the whole structure.

T.H.C.: Was this principle of continuity your own idea, or from where did it derive?

Kiesler: No one can invent creative ideas; that's out of the question. You are born with them or not. They might never be brought into the open; it's up to you, to your courage, and it's up to circumstances that break the shells, the layers of your false-life experiences. I apparently had in me the feeling for space and for acting in space. After *R.U.R.*, I did the space-stage for *The Emperor Jones*, by O'Neill, in a very poor theater in East Berlin. Viertel (who later went to Hollywood) arrived in Vienna, stayed in my studio, and persuaded me to go to Berlin.

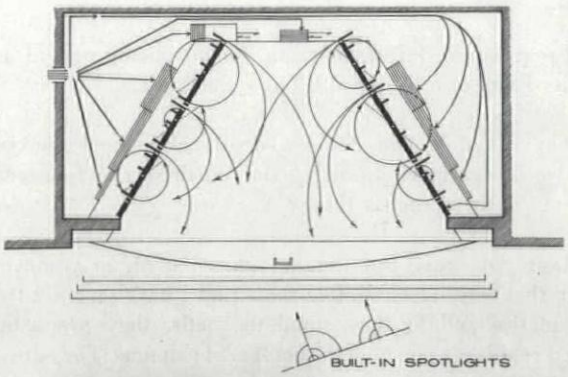
The stage was elevated. I left the stage open with no curtain. The stage floor was inclined to an angle of 32 degrees. The ceiling was tilted toward the back of the stage by 20 degrees. The stage represented an extension of the auditorium into a square-shaped funnel.

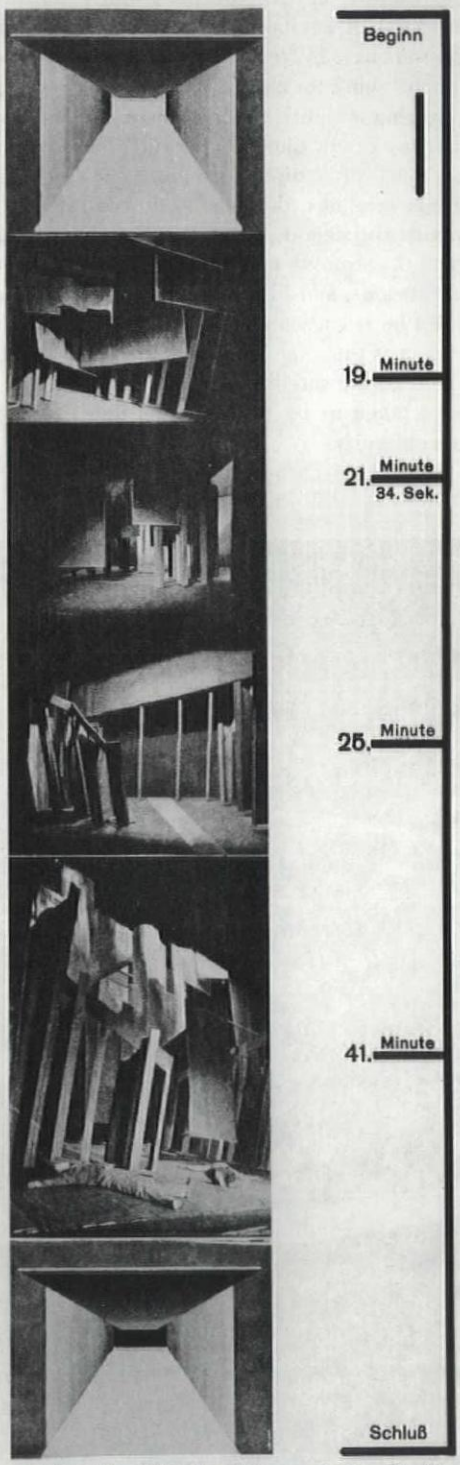
The motive for this type of plastic stage was in the play itself, which is a pursuit of the Emperor by his people until he escapes them. (The Emperor, by the way, was played by Oscar Homolka. It was his first role after release from the army.) He runs away, takes refuge in a forest and is haunted by visions of his wrong-doing in this little island. At the end he comes back to his palace room and shoots himself with his last silver bullet. Well, the performance started with this funnel-shaped room I had devised; the floor was painted brilliantly red, the sides were painted black and the ceiling was painted black-green; rear-stage one saw just a little slit of a cyclorama. There the Emperor appeared, and he walked down the incline of the floor; thus space became visible. As he hears the beat of a tom-tom, he tries to escape. He starts to run, and as he moves the transformation of the stage begins. The drum beat gets faster and faster, indicating the passage of time, and time merges into space. I carried this inspiration into the scenery, designing it kinetically and having it move through the length of the play. The sides of the funnel opened up, and the ceiling opened. From the sides, flats moved across the stage, turning, moving continuously back and forth. From the ceiling, semitransparent materials in various colors were dropped and made to move rhythmically. Usually a hanging drop can be moved in only two directions; I made them revolve. The Emperor's fleeing figure cast fleeting shadows. It was convincing in its dream quality, but more important to me was the translation of the beats of the drums into a continuous flow of light, moving scenery, and color. Only now, so late, is kinetic plasticity being fostered in painting, sculpture, and architecture.

This experience led me from the static aspect of a room to opening it up into multiple mobility of all its parts. It was a constant change; this brought to my consciousness the meaning of continuous tension. Returning to Vienna, I went ahead further to crystallize the Endless.

T.H.C.: Have you had any engineering experience or background?

Kiesler: I was trained at the Institute of Technology in Vienna. But Tom, engineering often becomes one of the most reactionary arts and crafts today, manipulated by the engineering profession, the industry, and the building code. We all speak now of Nervi; you have here or there an extraordinary person who





Set for O'Neill's The Emperor Jones, *Berlin, 1923. Time sequence, at right, and continuous change of scenery are co-ordinated. At top, the stage plan.*

has a real feeling for engineering, for advancing new ideas. It took an Eiffel or a Fuller to set new standards.

T.H.C.: Candela and Nervi—Torroja also—have spoken of intuitive design in engineering. Do you think this is a tenable concept; is there such a thing?

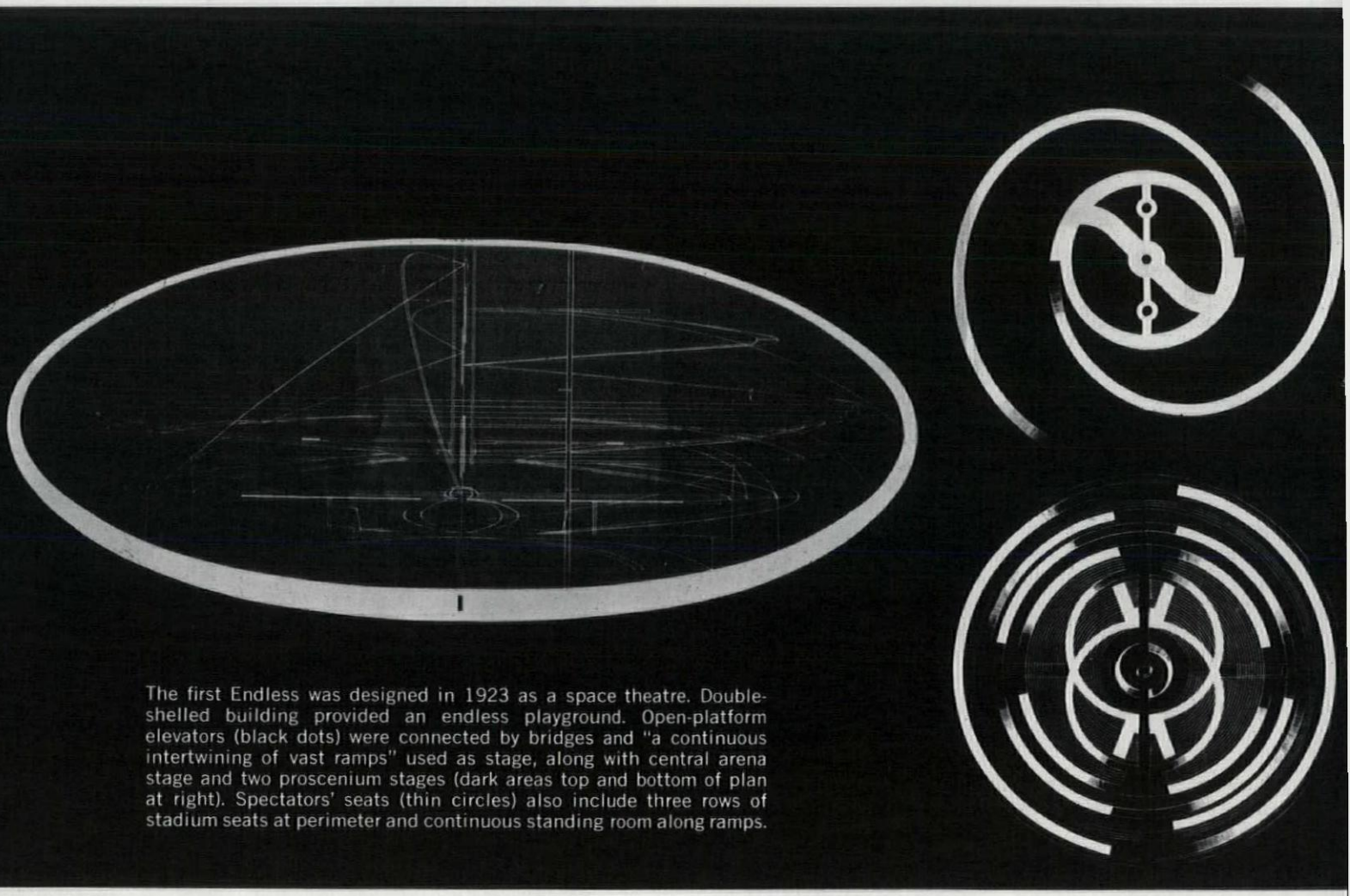
Kiesler: Oh, yes! But it takes an artist of an engineer to design that way. The intuitive roofs that I have seen are frozen mathematics. While they simulate shells, they are actually twisted roofs set upon understructures of columns. They are split architecture; there is no structural continuity and integration. Nervi is an excellent engineer, but in love with antiquity; the only thing that is new in Nervi is that, being an Italian, he has an extraordinary sense for classic beauty and is very economical in his engineering weights and measures. He will not overdo anything the way Frank Lloyd Wright did, for instance. Wright used an overload of sculpted concrete in the Guggenheim. His building is sensuous, the most architectural in New York, but structurally overweight. Nervi knows exactly the minima in materials, and the strength necessary to carry loads. But he still uses columns, beams, and fillings to make a complete structure. In that respect he is truly un-modern. The quality of bones and skin is over, just as the reign of the various dynasties of columns.

Let's be honest; the satellites, the rockets, the flying dogs and monkeys have taken us by surprise, and now everyone is concerned with continuity.

T.H.C.: How do you relate continuous tension structures to interest in outer space?

Kiesler: This is very important. The so-called mystics, the Egyptians, the early astronomers, the East-Indian mathematicians of older centuries were all seriously curious about the mechanism of the cosmos. They measured the relationship of our planet to outer space without IBM-computers. But we had forgotten that our earth is not the alpha and omega of the cosmos. When we looked up to the sky it was just to see if it promised to be a beautiful or a rainy day; we never seriously thought that there might be worlds beyond our earth, perhaps people of a higher civilization than ours. We are so cocky about our headline-information wisdom.

We were—up to the man-made satellites—true isolationists as far as outer space is concerned. But when the first space-niks were shot into the void of the night and remained in space without being hooked by mechanical means, this was a shock. Now our whole existence becomes more and more related to everything around us, unavoidedly correlated, not solely to the fate of our petty ego or to our cute earth, but to the fate of our solar system, or at least a part of a mighty super-galaxy. It awakens in us a new sense for active continuity far beyond the grasp of our five senses, but not out of reach of our instinct. This reawakened sense of continuity will grow and grow and finally become the most positive, the most important new sense human beings will develop. My dear Tom, why should people



The first Endless was designed in 1923 as a space theatre. Double-shelled building provided an endless playground. Open-platform elevators (black dots) were connected by bridges and "a continuous intertwining of vast ramps" used as stage, along with central arena stage and two proscenium stages (dark areas top and bottom of plan at right). Spectators' seats (thin circles) also include three rows of stadium seats at perimeter and continuous standing room along ramps.

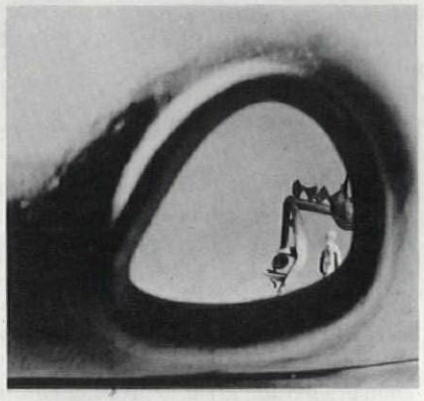
only now suddenly become interested in building the Endless House? It was ready thirty-five years ago, fifteen years ago, or five years ago.

T.H.C.: I cannot quite believe, despite this nice explanation that you have given, that our interest in outer space suddenly makes the Museum of Modern Art, or any other institution or individual client, so space-time conscious that they are for the first time seriously concerned with building Kiesler's Endless project.

Kiesler: How else do you account for the fact that the first ten years of my stay here were so difficult? When I came to this country in 1926, I had the sections and plans of the Endless with me, which had been exhibited in 1924 in Vienna and which were shown in 1926 in an exhibition in New York sponsored by the Theater Guild. The only person who paid real attention to it was Harvey Wiley Corbett.

T.H.C.: He was a remarkable person.

Kiesler: He was a remarkable person indeed. He said, "Although I don't understand your plans, you Europeans seem to design abstractly. I am fascinated by them and I would like to try to build the Endless. Won't you join our firm for a year or two?" And that was why I stayed in the United States. Harvey Wiley Corbett made me an associate in his firm. The chief designer in the office at that time was Wallace K. Harrison. That was in '26, '27, and '28. Naturally nothing came of it; Corbett couldn't put the Endless through; but he had the sense of the thing and knew that sooner or later it would be built. Philip Johnson came with Henry-Russell Hitchcock to see plans of my work. Among our friends of the De Stijl group it was known that I had deviated from the "quadrat," but van Doesburg stood by me enthusiastically, as did Mondrian. The others were doubtful; Mies was neutral and reserved. I was terribly poor, because nothing came of the dreams of Corbett; I was on a salary of $1000 a year. I designed many projects for friends—all in vain. Many people made propositions—without offers of pay. I



Endless House concept exhibited at Kootz Gallery in New York, 1950. Collection of The Museum of Modern Art, New York. Interior sculptured stair by David Hare.

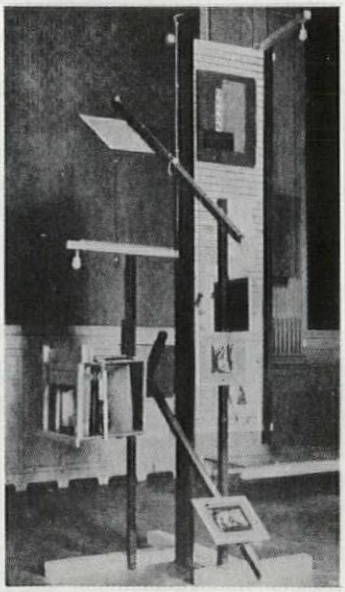


Exhibit at Theatre and Music Festival, Vienna, 1924. (Above) *Kiesler seated, van Doesburg standing on chair.* (Right), *the "L and T" exhibit technique that Kiesler devised to show paintings at various angles for continuous viewing.*

worked hard but nothing came of anything. I so hoped that someone would understand, but you see, the time was not ripe; no friend could change time.

Here were plans for a building that looked like an egg, not like the customary box. It wasn't square, it wasn't in steel, it wasn't in glass, it wasn't in aluminium, it was absolutely outside the mode of the International Style. That made it difficult enough; but the great depression had moved into our land, too, and life and work looked hopeless.

T.H.C.: But later Philip Johnson did support your work.

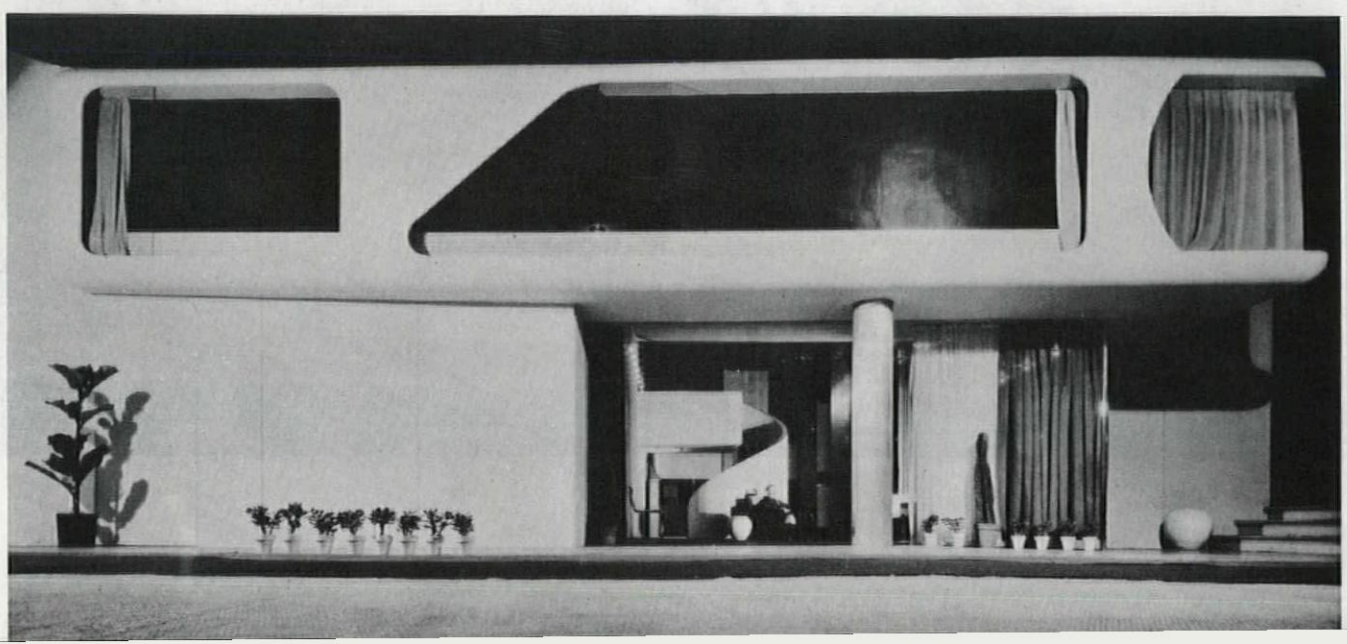
Kiesler: Yes, that is the point: twenty-five years later Philip Johnson did recognize the validity of the Endless House, and this is how it actually happened. In 1950 the Kootz Gallery had an exhibition of the work of sculptors, painters, and architects who had made common projects. The architects who were invited were Johnson, Gropius, Breuer, and a few others—I was not. David Hare, the sculptor, asked me: "Could you design a house for me so that I can make a sculpture in relation to it and we can exhibit together?" (In 1947 I had designed a large surrealist exhibition in Paris for the Gallery Maeght and had given David Hare the job to construct a large sculpture. And now he was gallant, and as a sort of *revanche* he asked me to design a house for him.) "David," I said, "I cannot design you a house; I can do only one thing, and that is, I can make you a one-family version of the Endless House, and since one enters the Endless from underneath near the center, there is a chance of making a beautifully sculpted staircase." I made the model, with a "launching pad" for it to rest on. David lived that summer near the Canadian border, and I took the model to his place in the north. David decided to enlarge the model to about five times its size (mine was only about a foot long and eight or nine inches wide and seven or eight inches high) because he had to enlarge it so that you could view the staircase inside. However, although it was apparently the same shape and form, it was not the same thing. Strange, we both were stunned and worried. The Endless House, you see, isn't like a square house that is square anyway, no matter how long or high. . . . Here the calculation of the inclinations of every part must be exact, otherwise the co-ordination of the whole doesn't work. "I don't think," David admitted, "we should exhibit this model, and there is no time to do another one. Let's exhibit the little one, and at the side of it we will have the staircase in a larger scale." And so it was. Small as it was, Philip Johnson acquired it for the Museum of Modern Art.

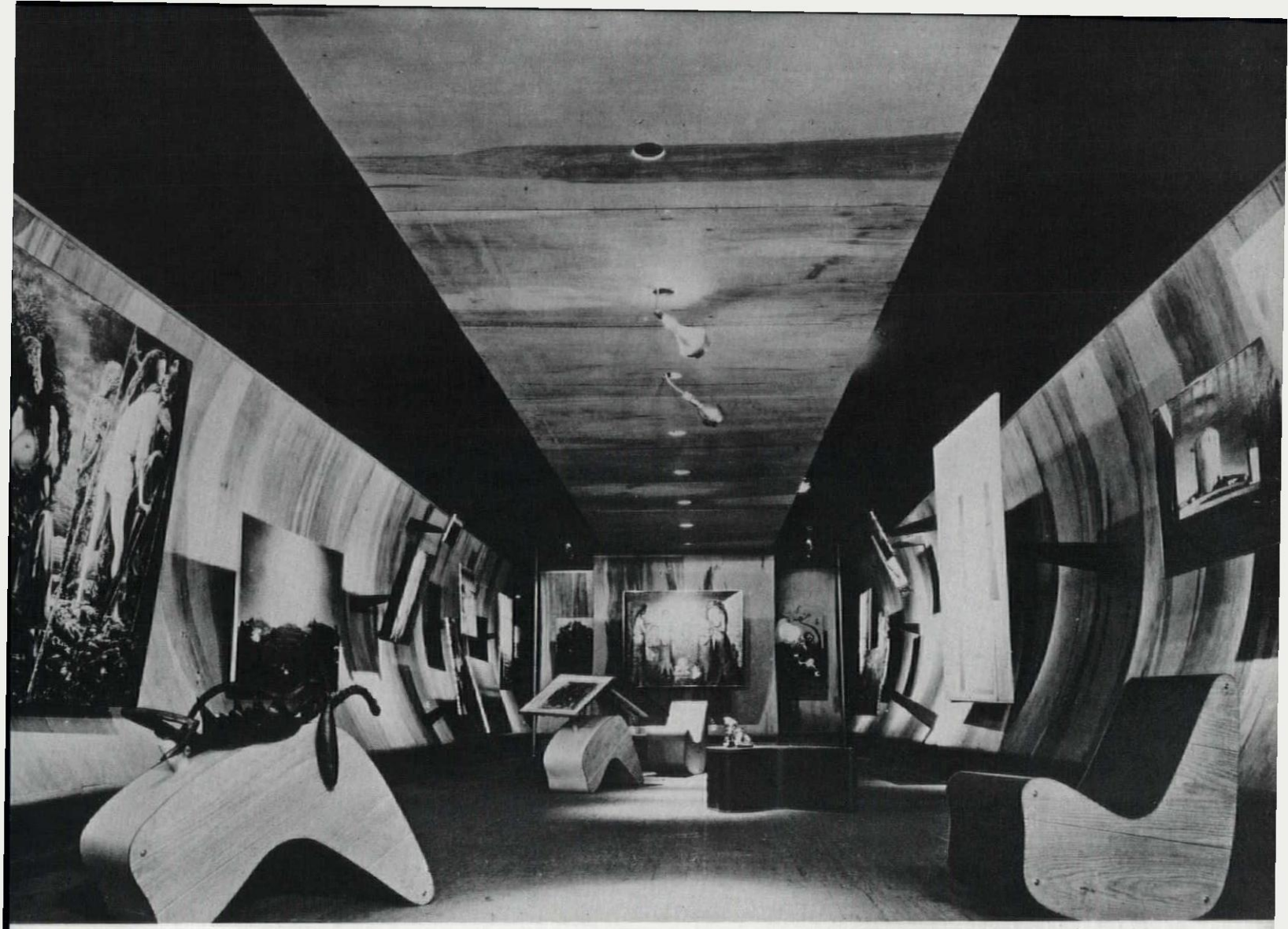
So coming back to your question about people suddenly becoming space conscious—time has done it. When Arthur Drexler was architectural editor of *Interiors*, before he joined the Museum of Modern Art, he came to me to write an article about this Kootz exhibition of the Endless House, particularly about the lighting. . . . He did an elaborate and exquisite story, going into the meaning of continuity of design of light. But more years went by, and nothing happened. Now Arthur has become curator of the architectural section of the Museum of Modern Art, and the atmosphere has gotten thick with space-bullets, and people are again—finally—interested in the Endless. The push came as nuclear science, fission, fusion, and satellites unexpectedly rocketed everybody's imagination into outer space, and suddenly made the Endless a natural. The basis of the Endless House has always been the principle of the continuum; the new terminology has entered our vocabulary with decisiveness, whether we like it or not.

T.H.C.: When I wrote the articles on New Sensualism, I speculated about the possibility that people were thinking in more emotional terms today for a number of reasons. I wasn't thinking of the interests in space-time and outer space, but rather of the emotional reaction to superefficiency.

Kiesler: That's correct; but it all ties together. Because the conquest of outer space leads, naturally, to a concern with your own innermost world, they are related. What the interest in outer space brought about is the awareness of man's fate in a world shaken in its traditional beliefs in religion, later on in

Space House designed for Modernage at Grand Central Exhibit, New York, 1933.





Peggy Guggenheim's gallery, Art of This Century, New York, 1942, showing surrealist hall in curved-wall construction, outstretched paintings, and multi-use chairs.

science and now in technology and super-jet superstition. This sudden awareness of blindfolded progress has planted a terrific fear in our hearts. No one is immune to it. It has created a new emotional climate for us, in which we begin not to care about the machine-robots or even material profits; we really want to save our small lives, our small emotional satisfactions, and live in an emotional peace, in a balanced psychic state. Of course, the greatest saving grace is inner strength, but not everybody is a Ghandi.

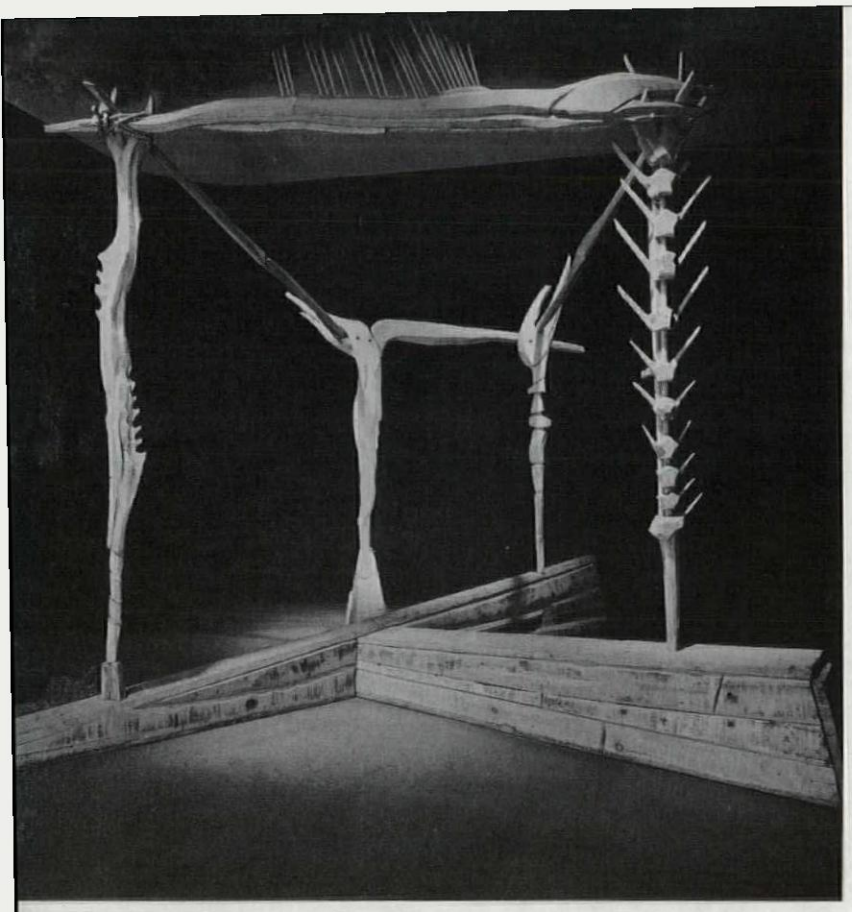
You see, Tom, if one's calculations get mixed up and one's beliefs break down, you turn to your own security source, which is Instinct. Animals know pretty well what to do in moments of danger; they run for their lives, hide, or curl up and play dead. They seek connection with the earth and the sun and the sky. This is somewhat the condition we are in now as far as art and architecture are concerned. We start to be aware of all the paraphernalia, social and technological, that we are living with, and wonder if it is necessary. It's not our brain that can give us the answer any more. Isn't meditation the state where answers are given to your most important questions because your mind has achieved a standstill? Emotion engulfs us like the turbulence of outer space and it creates its counterpart—the peace within. You see, Tom—there you have the best description of the Endless House, and I didn't expect it to be as easy as that.

T.H.C.: What do you think would happen if architects generally became interested in what you have done and in your approach? Isn't it a terribly dangerous, undisciplined sort of architecture for most people?

Kiesler: I can assure you, it will be like giving them marijuana, architecturally speaking. It is an easy way to get entranced, but I am positive that it will be much easier to discover immediately the fallacy of an imitation—much more so than in rectangular functional designs and products. Adaptation, imitation, swiping ideas to the point of highway robbery is the order of the day, and that applies to art and architecture, film scripts, literature. . . . Of course, the constant professional competition is made easier by some magazines that photograph, print, and describe a new painting or a project as fast as it is off the board. No idea seems to have time any more to take root, to grow in its own soil.

T.H.C.: What can be done about the multiplicity of ideas today, the chaos in design forms?

Kiesler: A clue to it is continuity and the multiplicity *of an idea.* The central idea is in you, but you don't know when, and if, it will break through into the open. But one can learn to recognize it by corollary happenings; in my case, for example, in the *mobile* interior of *The Emperor Jones;* in the endless *continuity* of the exhibition-method of the L. & T. in my *galaxial* mural consisting of manifold units of paintings in the year 1918 and continued in 1950; in the "Space-House" of 1936; in the



Galaxy: construction in wood by Kiesler, 1947–1948 (left); *in private collection, New York City. Shown acrosspage and on two following pages is Kiesler's 1959 Endless House, as exhibited in 1960 in New York at the Museum of Modern Art's Visionary Architecture exhibition.*

galaxy or "*environmental sculpture*" of 1947 or the one owned by Philip Johnson (both sculptures "*to live in and with*"); in the eighteen functions of the one chair of the Peggy Guggenheim gallery, certainly an extension and variability of a simple core—these and other projects, some only planned, some executed, quite different in function and form, yet all in the same vein and of the same spirit.

T.H.C.: I don't think many people remember the Peggy Guggenheim gallery. What did you do there?

Kiesler: After having waited for my chance to build for so many years, Peggy Guggenheim engaged me in 1942. She got a load of goods—design and constructions—from me for her four galleries of "Art of this Century": new walls, ceilings, equipment, lighting, furniture, all in all for about $6000 in cost. The chairs of many functions I constructed myself with the help of a German carpenter in a garage in the Bronx; they were of oak, covered with linoleum, for seven dollars apiece, delivered. Oh! foolish youth whose payment is enthusiasm and post-mortem gossip! I also created for her a "kinetic gallery" consisting of a built-in push-button system for viewing paintings by Paul Klee; I constructed a spiral wheel which, when turned by hand, set into motion a paternoster with reproductions of Marcel Duchamp's life work from his Valise. I also designed a gallery for her for abstract paintings, with a sinuously inclined canvas wall where the paintings and sculptures were exhibited freely in space. And in addition, there was the large surrealist gallery whose curved wooden walls I also helped to construct in that garage, because we couldn't find enough labor during the war. It is here that outstretched arms (to save costs we used baseball bats) held the paintings out from the walls, an idea adapted for the Guggenheim Museum. These galleries all promoted contacts between inanimate objects and people searching for the contact.

T.H.C.: Since you have been interested in continuity rather than rectangularity, do you think that rectangular space is necessarily confining, and prevents a free spirit?

Kiesler: It does and it doesn't. We actually live with associations, and a rectangular space is by association and experience a space of confinement; but there is nothing wrong with that, because we *want* to live in a confined space, we want to be protected, so to say, from the outer world. What is important is the necessity of *temporary* confinement—but not necessarily

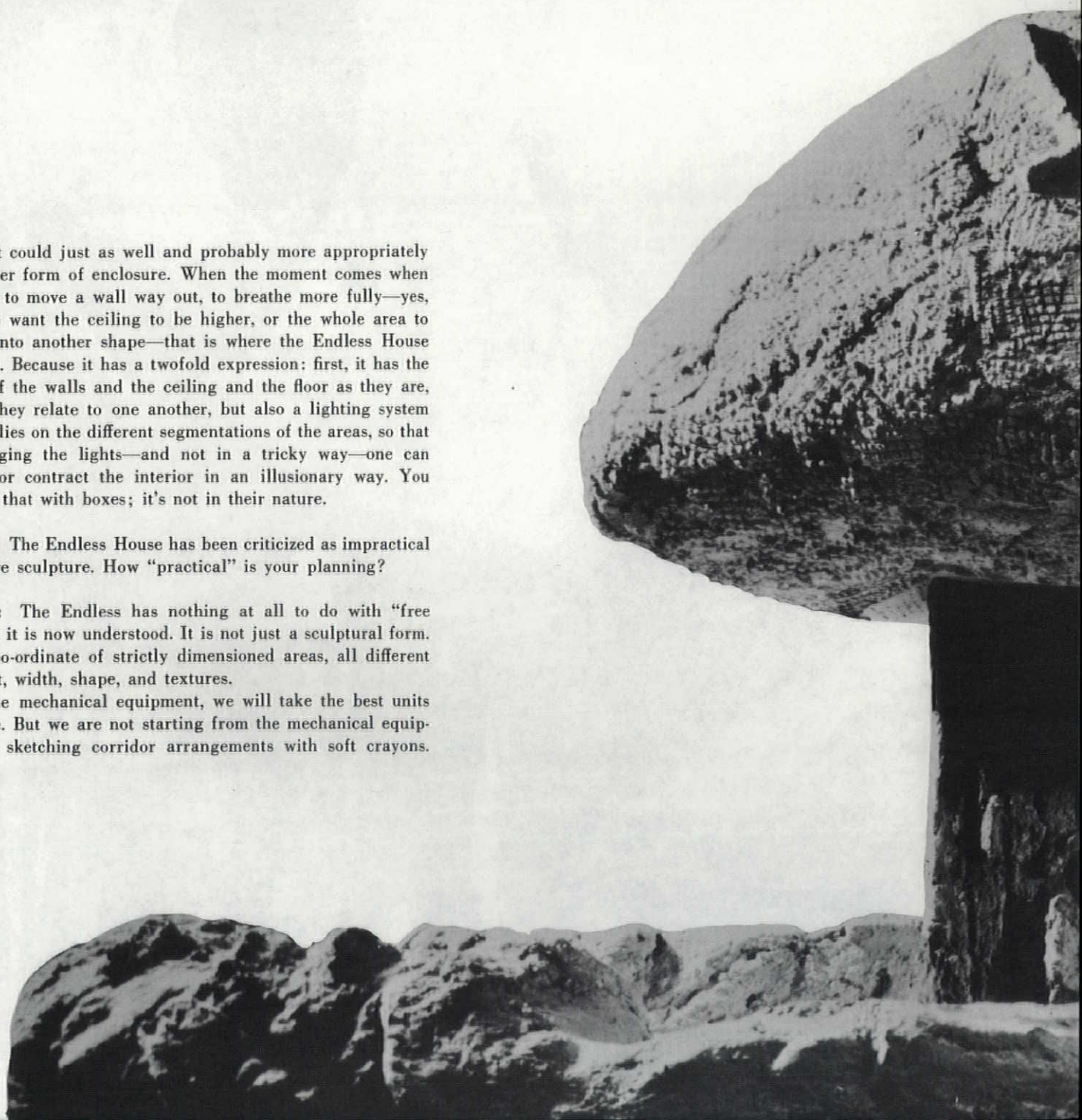
It is called the Endless House, because

a box; it could just as well and probably more appropriately be another form of enclosure. When the moment comes when we want to move a wall way out, to breathe more fully—yes, when we want the ceiling to be higher, or the whole area to change into another shape—that is where the Endless House comes in. Because it has a twofold expression: first, it has the reality of the walls and the ceiling and the floor as they are, and as they relate to one another, but also a lighting system which relies on the different segmentations of the areas, so that by changing the lights—and not in a tricky way—one can expand or contract the interior in an illusionary way. You can't do that with boxes; it's not in their nature.

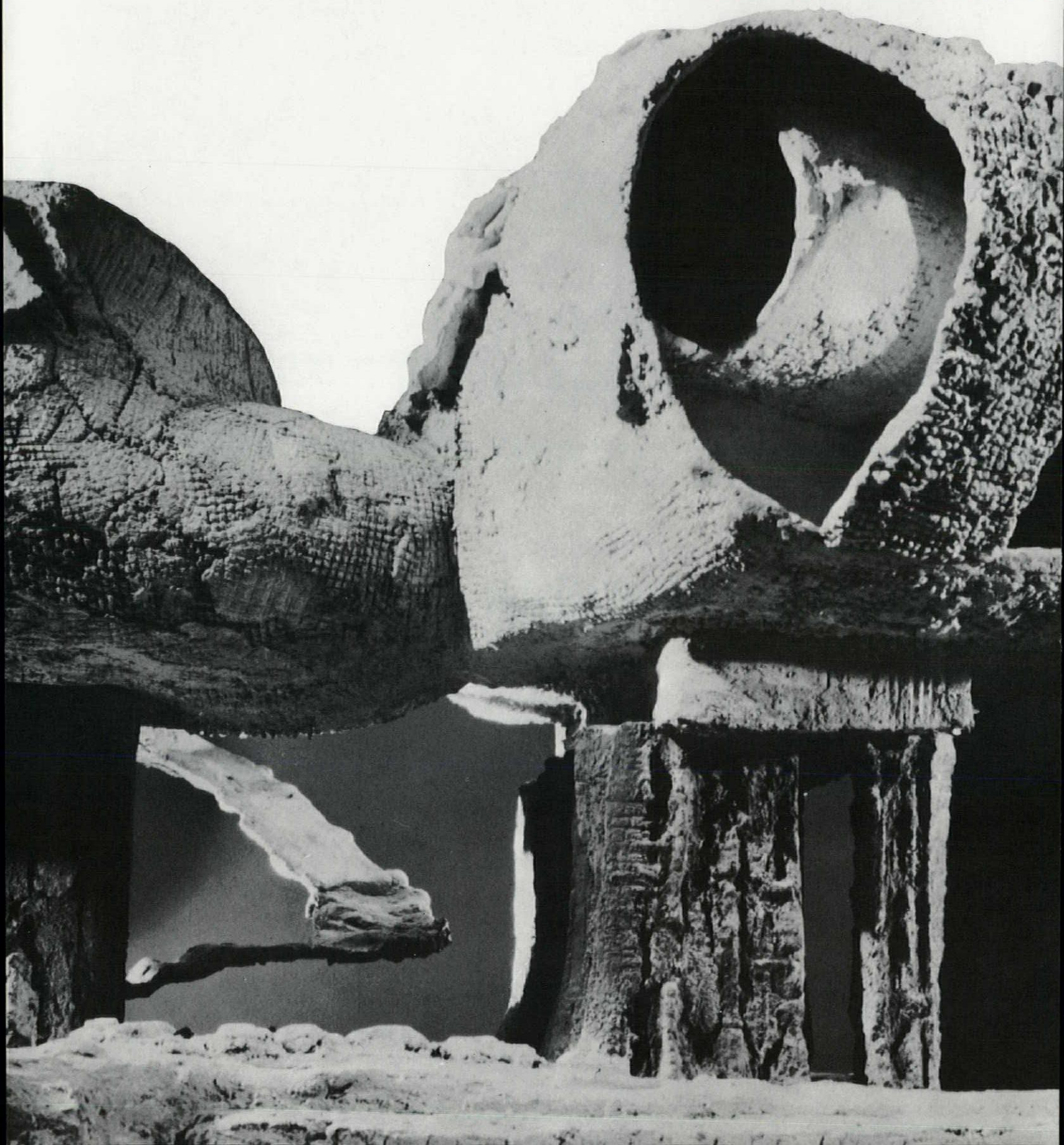
T.H.C.: The Endless House has been criticized as impractical —as pure sculpture. How "practical" is your planning?

Kiesler: The Endless has nothing at all to do with "free form" as it is now understood. It is not just a sculptural form. It is a co-ordinate of strictly dimensioned areas, all different in height, width, shape, and textures.

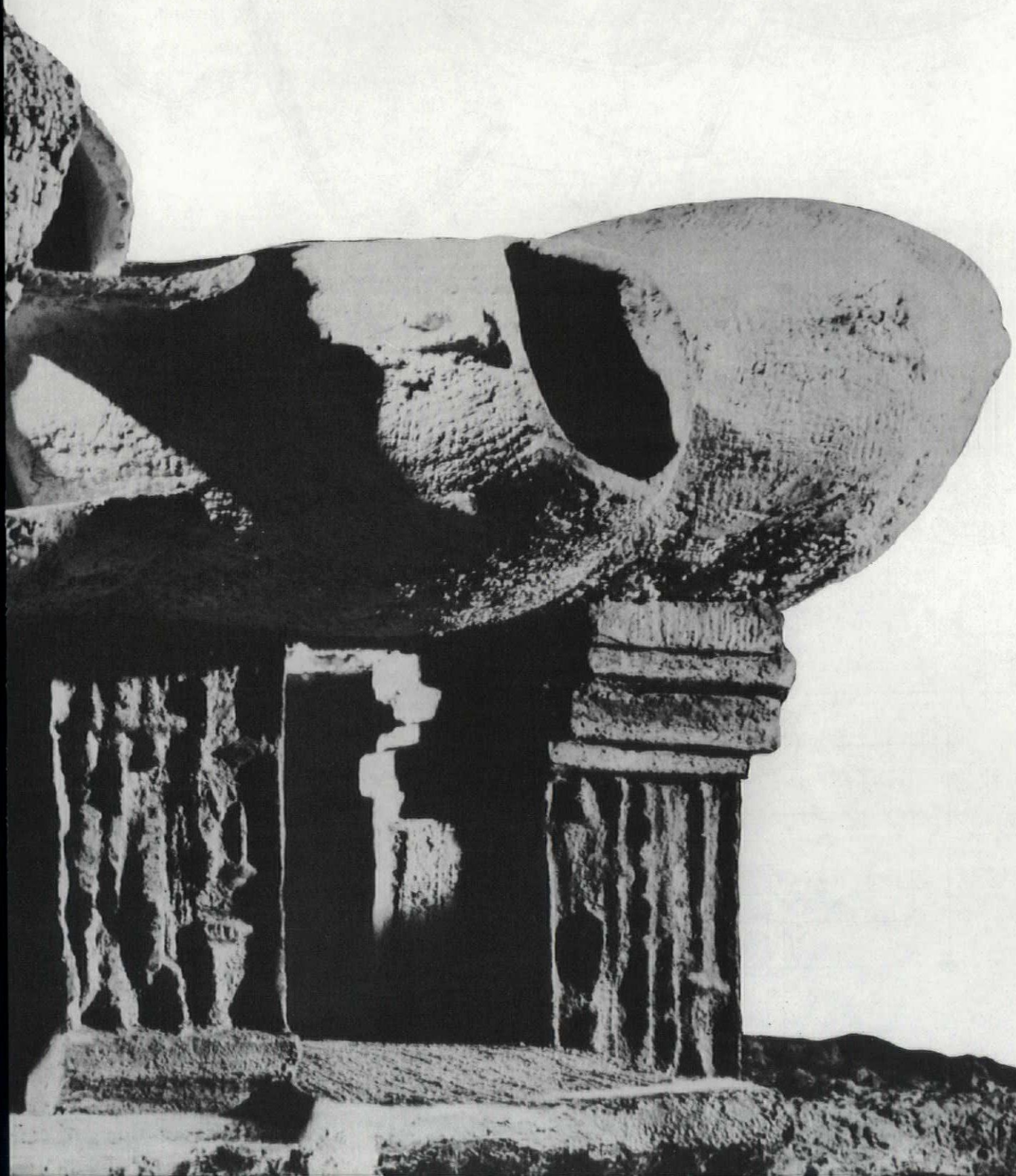
For the mechanical equipment, we will take the best units available. But we are not starting from the mechanical equipment or sketching corridor arrangements with soft crayons.

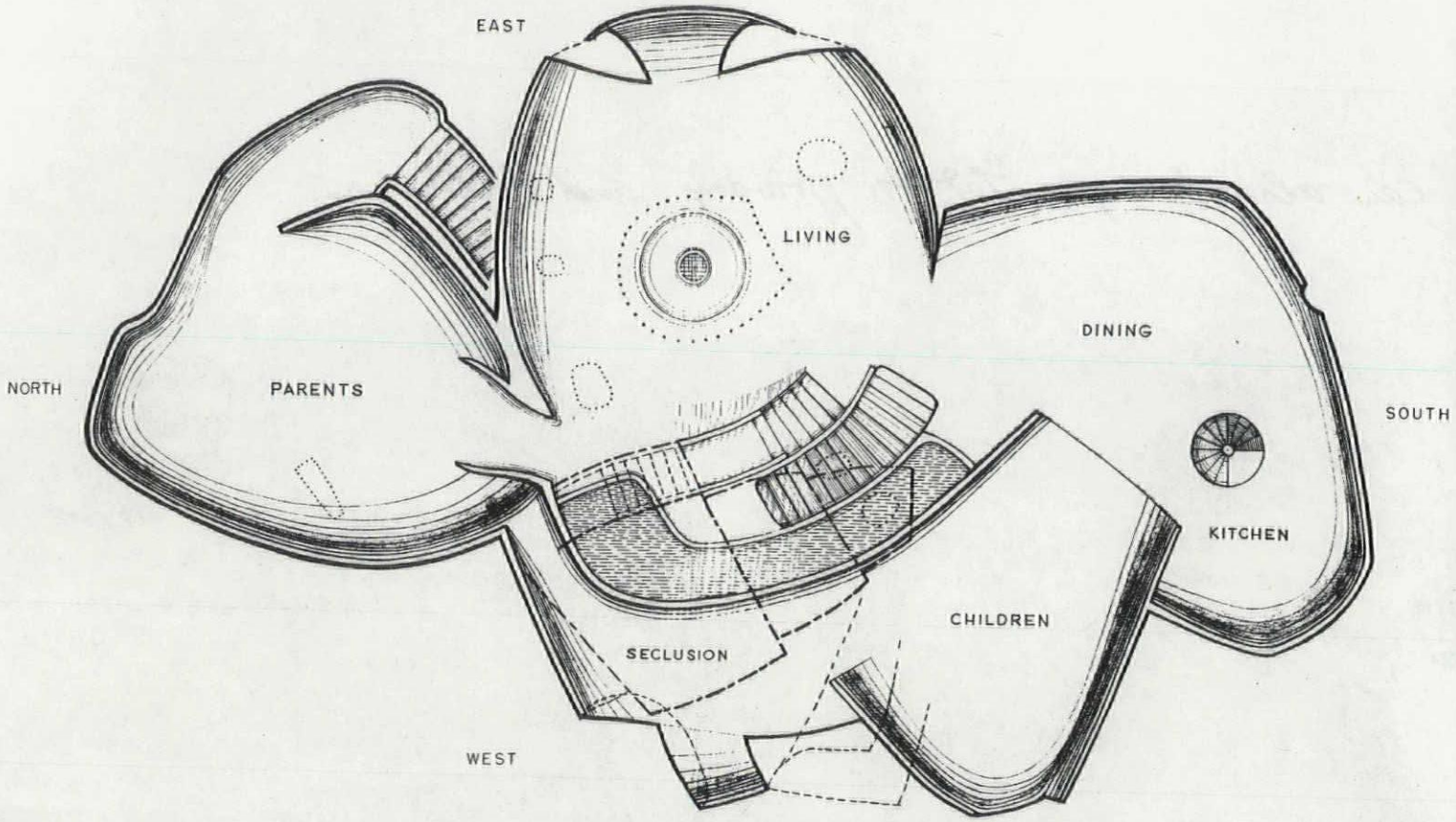


all areas can be opened up into one continuous flow of space, and they

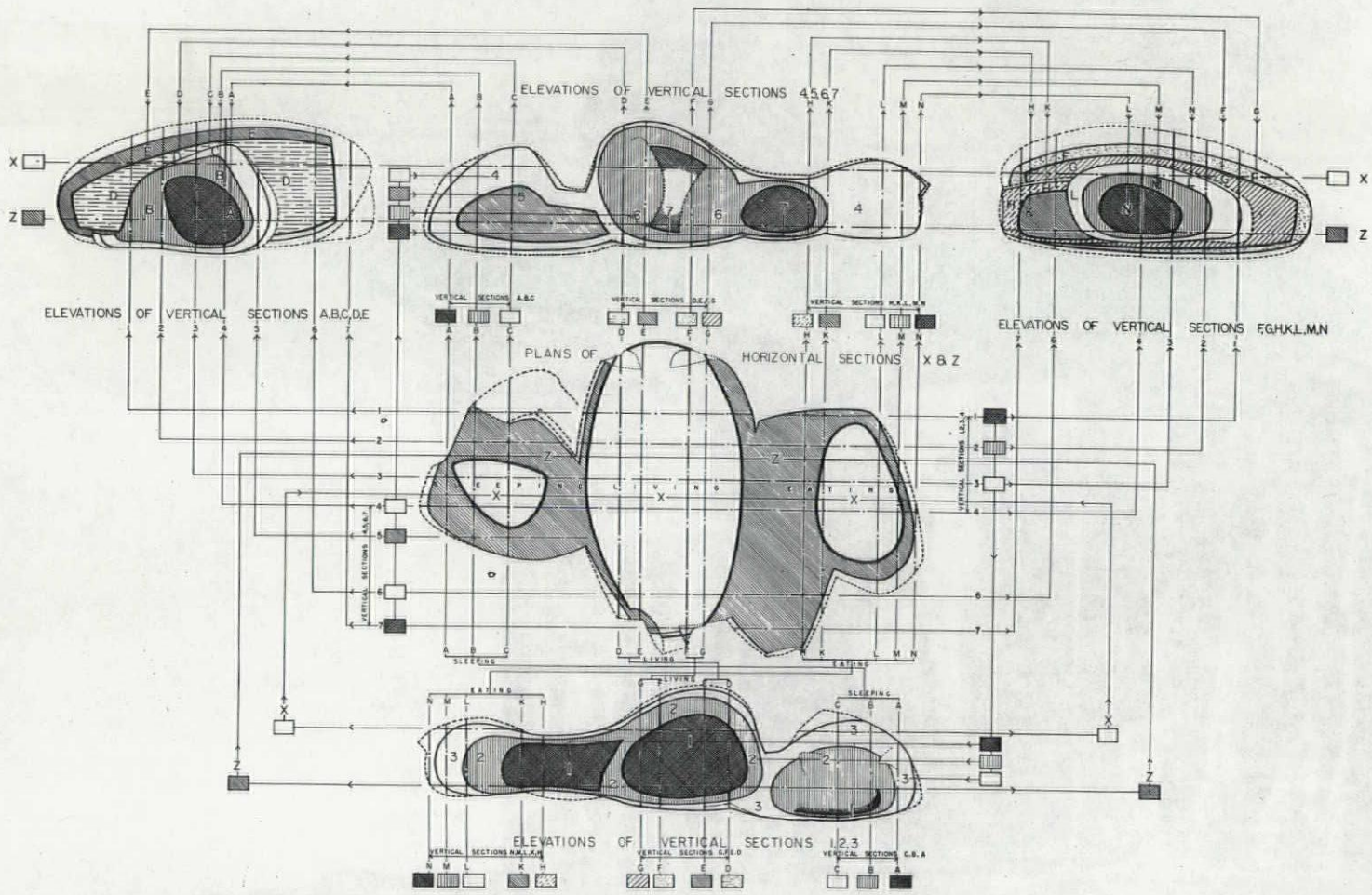


can also be separated for privacy and seclusion.





The 1959 Endless House: plan (above); *horizontal and vertical sections* (below). *Geometric slices are related to one another by variously* pochéd *areas. A project for the Museum of Modern Art, New York City.*



The Endless House is the result of a different type of planning, based on our inner needs and processes rather than on the dictates of mechanics. I think that today we can take for granted the fact that we have many technological possibilities, at different price levels. Take the bathroom: I find the bathroom a relic; in spite of its valuable plumbing and bright décor, it is not really related to the functional needs of bathing. We have not yet developed a culture in bathing; we clean ourselves all right, but bathing is something else. Bathing in the East is highly cultivated. We cannot afford that; we have neither time, nor the appropriate equipment, nor the courage for it.

T.H.C.: Can I take you back again to the time when you conceived the Endless House. Was anyone else thinking in as free concepts as yours at that time?

Kiesler: Not that I know. The names of Mendelsohn and Poelzig are often thrown in. I have never seen their buildings. I heard of Poelzig only as a teacher and a friend of Mies van der Rohe. I try to think back: Loos, Le Corbusier, and others were all still doing the rectangle, honestly square.

T.H.C.: How do you relate Maillart and his bridges to the work you were doing at that time?

Kiesler: Not at all—neither to the Endless nor to shell-construction. I knew Maillart much later. However, there was another person who impressed me deeply: Freysinnet. He was, in my opinion, the most modern designer among the engineers. When I went to Paris in 1925 for the World's Fair, I saw Orly airport for the first time, and looking out of the aeroplane, I saw the hangars by Freysinnet, the beautiful parabolic hangars. However, this was long after I had designed the Endless. When I went to Paris in 1947 and landed at Orly, I looked out of the window of the plane to see once more the hangars of Freysinnet —they were gone.

T.H.C.: I wasn't thinking of direct relationships between you and these other people. I was wondering about other independent creators.

Kiesler: Of course, there were other people—independent ones, nonconformists who influenced architecture—but they were not necessarily architects. This was the great period of Impressionism, Cubism, Expressionism, and not only were the plastic arts reborn, but also literature, music. . . . Fernand Léger stayed with me in Vienna for two weeks in 1924; Italy's poet Marinetti came with Prampolini. I never met Sant' Elia, the Italian architect who impressed us greatly at that time with his multi-elevated street levels, but I knew the German dramatist Frank Wedekind, and of course, the other powerful German dramatist Georg Kaiser who wrote *Gas I*, done by the Theater Guild here, and then *Gas II*, which he wrote for my "space-stage." The Austrian painter and teacher Gustav Klimt, artistic father of Kokoschka and Schiele, was still a powerful figure. A poet, Paul Scheerbart, even sketched out his "glass cities," and he was a great inspiration. (The Museum of Modern Art showed his ideas in its recent exhibition of "Visionary Architecture.") Everyone of us drew inspiration from various fields other than our own.

There was active criticism of all the work. I remember a world-famous columnist in Berlin named Alfred Kerr who wrote the first criticism of the new production of *The Emperor Jones*. In his criticism of the play he attacked my term of "space-stage." He said: "I don't understand why this stage is called space-stage, because every stage is space. It is a pleonasm." Another critic who wrote in a literary supplement called the *Boersen Courier*, named Herbert Ihering, contacted me, and asked me to answer Kerr. The main point I made was that the stage *is* space, but to an observer (the audience) it appears by necessity as merely a relief. Only to the actor who walks across the stage is it spatial. Here you have the kernel of the situation of space in reality and space as illusion.

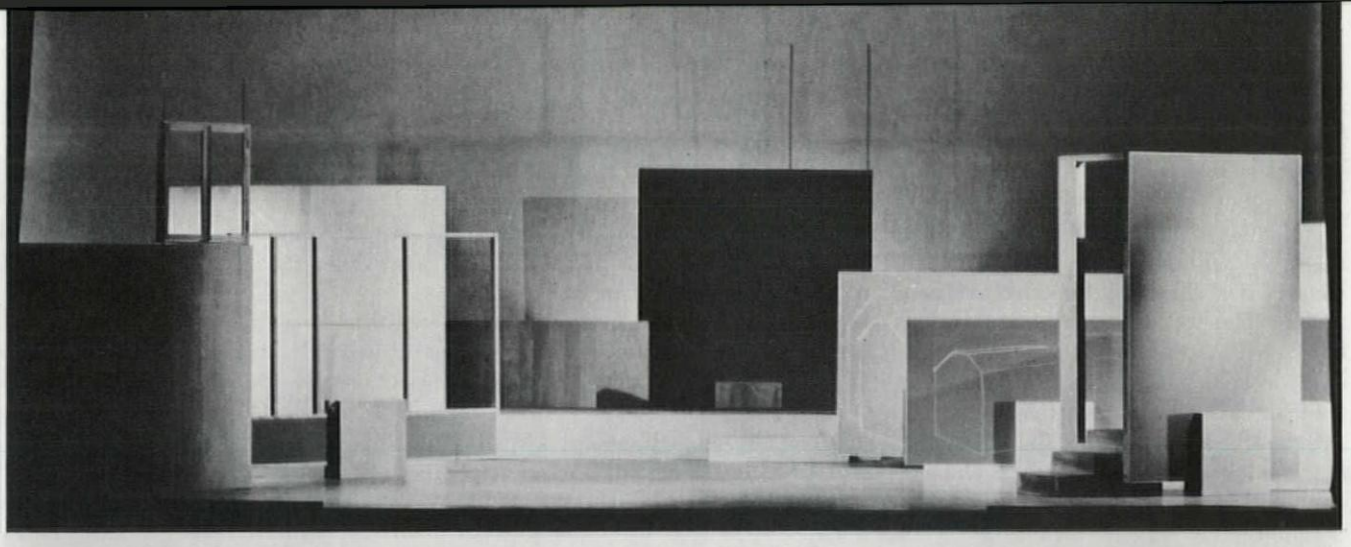
T.H.C.: The creation of illusion and functional reality seems to occupy you a great deal.

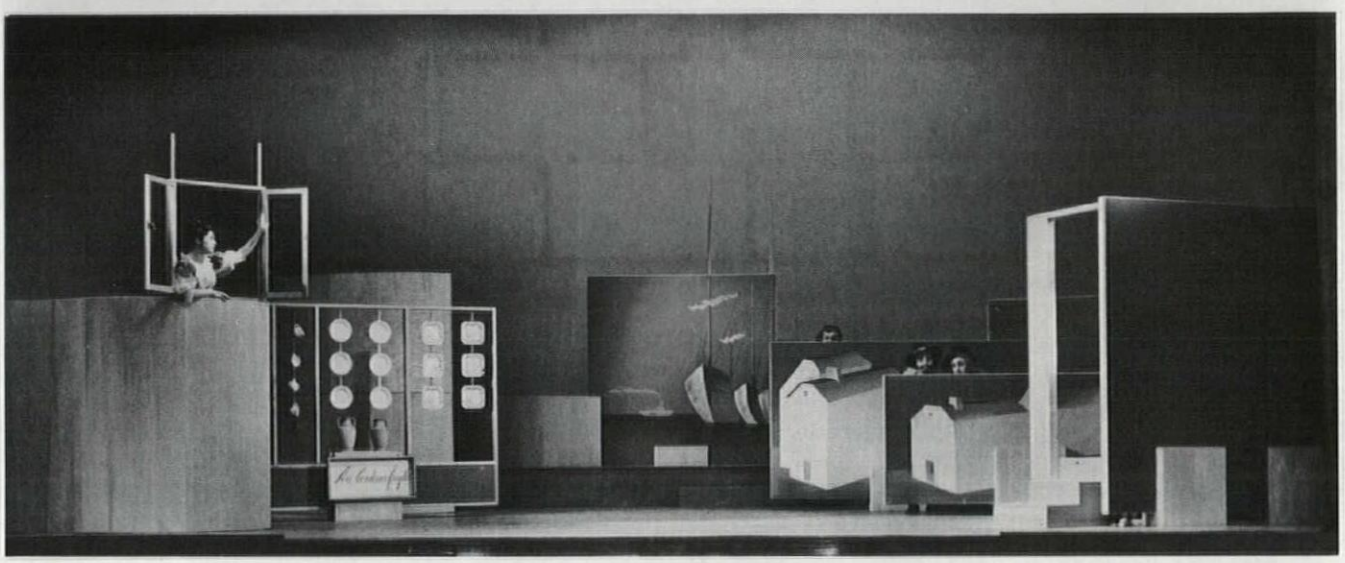
Kiesler: Yes, it does. When I came to America in 1926 with the International Theater Exhibition, a little man by the name of Simon Gould became wide-eyed and talkative: "Won't you design me a cinema just as you feel it should be? I'm an importer of foreign films and have created with Irvin Shapiro the little cinema movement—just last year. I haven't much money but we'll find enough to build it." We did build it in 1927–28, and it's still there, the 8th Street Cinema, and unchanged except for its proscenium. The 8th Street Cinema still has four screens and on the center screen you can expand the film in width and height, and extend the image over the two sides and over the ceiling, because the projection booth runs three-quarters of the way around the interior of the auditorium. The center screen started from a one-inch square into any size and shape: a magna-screen of automatically controlled extension. It was called the Screen-o-scope. Thus it had *continuous projection*, but naturally they couldn't execute it because Mr. Gould never had the money to provide the machinery. But the architecture was and is ready for it. Do you think it did me any good? Not at all. I never got another job for a cinema in thirty-six years.

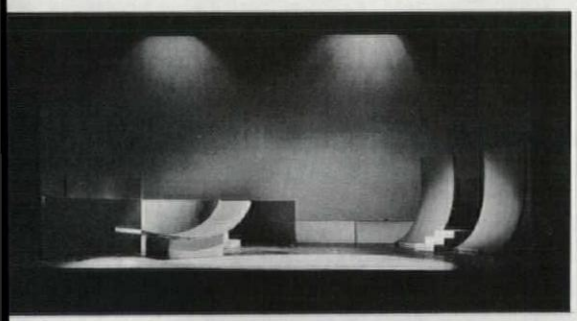
I did, however, do a transformative theater in 1932 in Woodstock, N. Y., for J. P. McEvoy. It could be converted from a proscenium theater into an arena, and back. It has been widely reproduced, and became a prototype for theaters with one stage flanked by two auditoriums.

T.H.C.: You spoke of Le Corbusier and his earlier rectangular work. What do you think of Ronchamp?

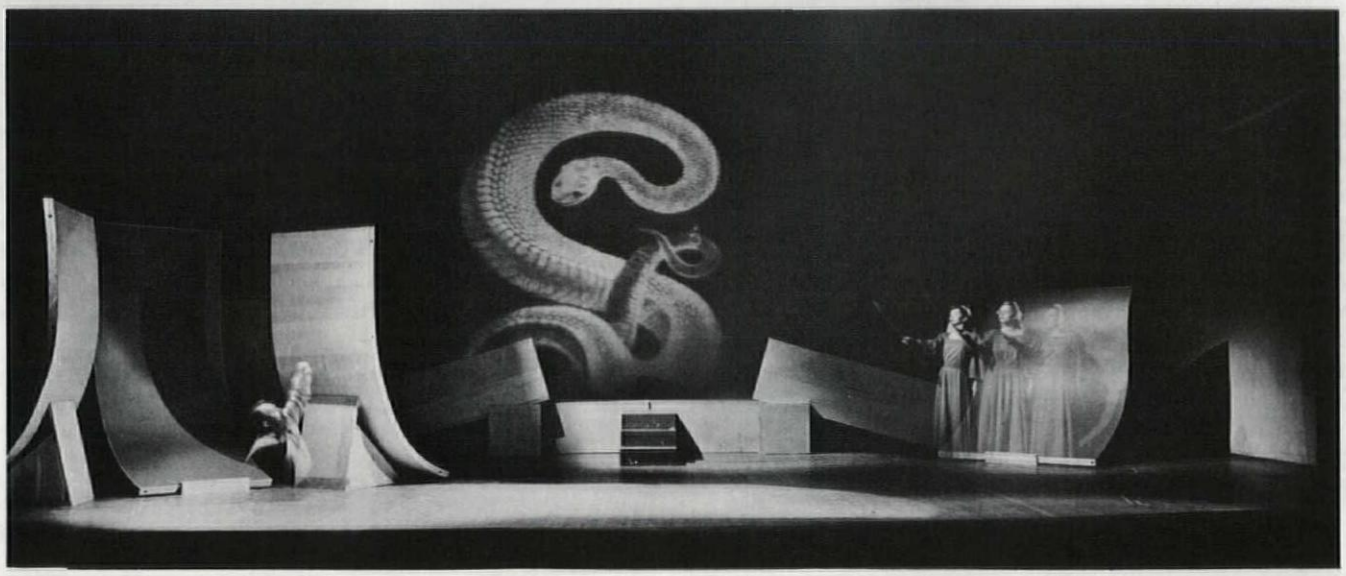
Kiesler: I have often been asked this question. Le Corbusier, in contrast to Mies, is not primarily a structural man. He is a poet and artist. I think his great contribution was The Plan Voisin: the planning of a town, where you demolished vast dilapidated areas and built instead a high-rise skyscraper, with the rest gardens. This principle has been adopted by town planners the world over. His buildings were always shafts—

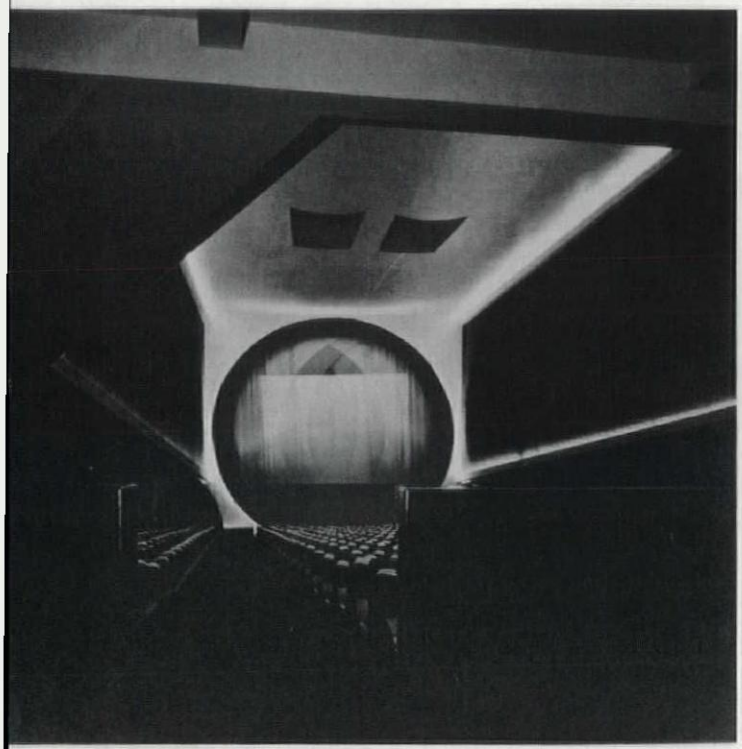




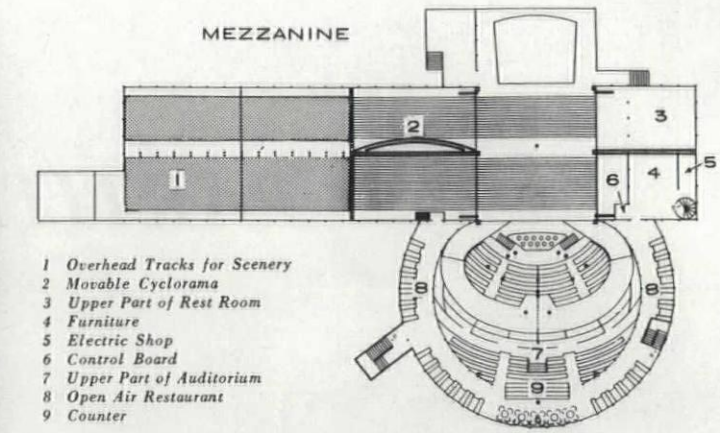


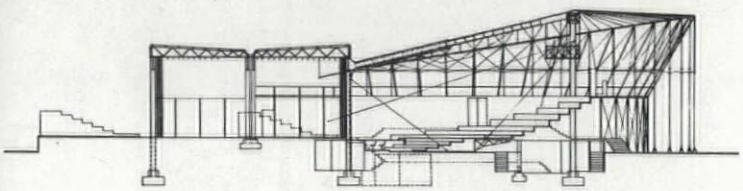
Standard space-set design by Kiesler for Juilliard School of Music, New York City, 1948–1949, to economize on cost of opera production. Two photos (above) *show units of space-set unpainted and painted for Iberts'* Angélique. *Same units* (left *and* below) *making up various settings for Mozart's* The Magic Flute.





Eighth Street Cinema, New York, 1927–1928, designed with four screens (center, sides and ceiling) for continuous projection.





The Universal: theater designed for Woodstock, N. Y., in 1932. Auditorium and stage were planned for maximum flexibility; first use of a now common concept.

high-rise or low. Only now, at a late age, has he fallen in love with space, seduced by its eternal youth. But that baby is fickle. You can never tell if she is yours—or nobody's. I knew Le Corbusier fairly well. We met through Léger, who was his friend and also mine. When I explained to Le Corbusier the "City in Space" in 1925 in Paris (he came with Léger to the Grand Palais), he asked me, "Do you intend to hang the houses from Zeppelins?" I said: "No." "Well, how then are you going to suspend the City in Space?" "By suspension in tension," I answered. His pilotis came later.

My manifesto on the "City in Space" and on continuous tension construction printed in 1925 contained these principles:

Compulsion directs the new form of the city:

The Country-City: the division of city from country will be abolished.

The Time-City: time is the measure of the organization of its space.

The Space-City: it floats freely in space in a decentralized federation dictated by the ground-formation.

The Automatic-City: the processes of daily life are mechanized.

We want:

1. Transformation of the surrounding area of space into cities.
2. Liberation from the ground, abolition of the static axis.
3. No walls, no foundations.
4. A system of spans (tension) in free SPACE.
5. Creation of new kinds of living, and, through them, the demands which will remold society.

Those buildings of the "City in Space" were all elevated to different heights. The ground was to be parks and fields and canals. One would land on the roofs of the houses. That was Paris, 1925. We are not too far from similar solutions now. It might take another 10 or 15 years or even less. Corbusier's feeling now is right: the rectangle has exhausted its possibilities and has become an architectural straightjacket. He has made an attempt at sculpted architecture now. I have not visited Ronchamp. I cannot tell you about the inner space; I have not been inside. As far as I can judge, seeing the photographs and the plans of it, it is an aesthetic mixture of the East and the West; it is, as I said, a deliberate attempt at rejuvenation of his old work. It is different design-wise, structurally, from what he has done before Ronchamp. I believe that everybody has only one basic creative idea and no matter how he is driven off, you will find that he will always come back to it until he has a chance to prove it in purity, or die with the idea unrealized.

Whatever you might think about the Seagram Building, there is the straightforward expression of Mies' continuous style and credo.

Every old or new piece of architecture is inevitably also a sculpture; but a monumental sculpture is not inevitably architecture. I have compassion for an artist like Corbusier who tries to get away from his past by a detour, to come then even closer to himself.

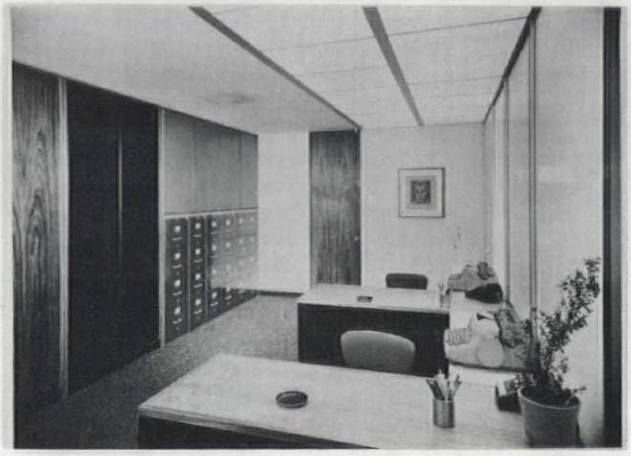
But, I suppose, as far as I am concerned, I shall stick to my travel along my old lifeline to seek continuity.

All illustrations courtesy of Frederick J. Kiesler, except as listed on page 199.

PARTITIONING SYSTEMS

Photos: Ben Schnall

The executive secretarial area (below) *uses milk-glass panels to admit light to an interior office; files are recessed the depth of an adjacent closet and have storage cabinets above them.*



OFFICES, DESIGNS FOR BUSINESS, INC. • NEW YORK, NEW YORK • GERALD LUSS, DESIGNER

The new Designs For Business offices on Manhattan's Fifth Avenue function both as the production headquarters of that active organization and as a laboratory of office planning, where techniques in space utilization can be demonstrated to prospective clients. The offices also serve as a showroom for the products and equipment now on the market that DFB has custom-designed for previous clients. The Design and Decorating Department combines these three functions by utilizing DFB's highly flexible partitioning system (*acrosspage*).

This system, originally executed for the offices of Time, Inc., represents the most recent refinement of DFB's partitions, which have been developed over the years for nearly a dozen custom installations. The object of the system is to achieve maximum "flexibility through inflexibility" for changing organizations. Luss's new design provides a complete range of fixed, ready-to-use facilities within every modular division; only the partitions themselves are movable components. This "plenum system" incorporates into a grid ceiling the post supports as well as lighting, acoustical, and ventilation facilities, and duplicates electrical wiring at the grid junctures in both ceiling and floor.

By concentrating expense in the initial installation of these facilities, Luss's new system reduces to a minimum the time and expense required to change partitions. Inexperienced men, with no equipment other than a dolly to raise the panel, can install a new partition in seconds. Neither floor nor ceiling finish need be disturbed. Since no technicians are required after the initial installation, subsequent changes in partitioning layout are accomplished with a proportionate saving in cost.

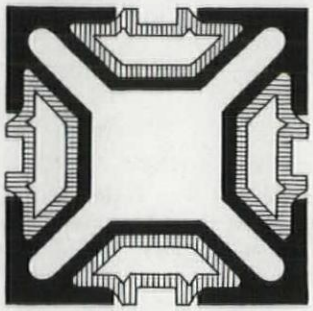
The posts consist of aluminum extrusions with a continuous neoprene gasket on each face that secures a panel evenly along its side. The same post is used for the connection of one, two, three, or four panels, which can be easily installed or removed while the posts are in position.

In the DFB design offices (*acrosspage* and *above left*), the partitions flanking and parallel to the hallway have clear glass panels. From some angles, these offices have the appearance of a house of mirrors where space is reflected to infinity. This effect counterbalances the low height of the suspended ceiling.

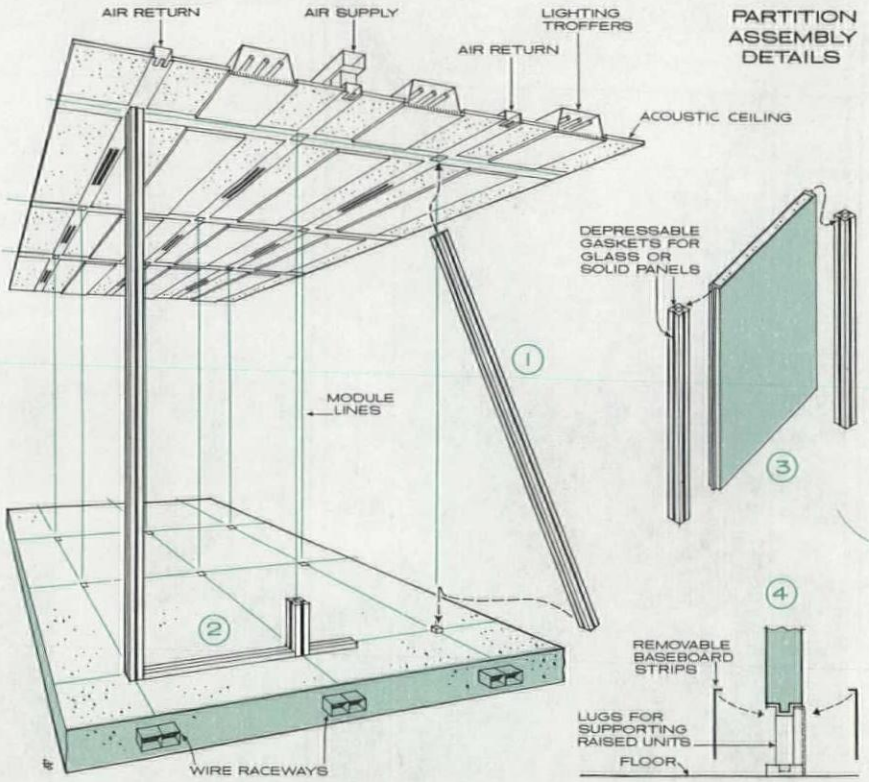
Solid panels of self-healing vinyl, used as pin-up boards, run perpendicular to the hallway. They subdivide the department, preventing it from becoming one huge goldfish bowl, and brighten it with a variety of colors that DFB recommends to clients.

Two to four designers share an office, which provides 95 sq ft per person (as opposed to the customary 125). However, this minimal work space seems to be larger because of the use of clear glass panels, and the partitions tend to reduce distracting sounds from other offices.

The carefully detailed partitioning system that defines these spaces is a concise expression of machine art, within which DFB's highly personal furniture, bright colors, and living plants count as significant ornaments.



Drawings (right) *show schematic installation procedure: (1) post is inserted at grid juncture into ceiling socket and over removable floor plug; (2) floor strip for panel is laid; (3) panel is inserted between posts into depressable gaskets; (4) baseboard strips are placed on each side of panel. Section of an aluminum post* (above) *shows a channel on each face filled with a neoprene gasket that secures a panel without screws. Reception room* (below) *has a glass panel flanked by two doors.*



DATA: descriptions and sources of the major materials and furnishings shown.

CEILING AND PARTITIONS
Ceiling: "Plenum System" grid/National Acoustics Co.; Sonoface/white/Fiberglas Corp. **Lighting:** troughs/diffusers/fluorescent/incandescent/Lightolier, Inc. **Posts:** aluminum extrusions/neoprene gaskets/Aetna Steel Corp. **Glass:** clear/rough plate/ Pittsburgh Plate Glass Co.; Huewhite/American-St. Gobain Corp.

DESIGN AND DECORATING DEPARTMENT
Flooring: gray rubber/Armstrong Cork Co.; carpet/gray and beige/Loma Loom Carpet. **Desks:** steel/black metal/ Peerless Steel Equipment Corp.; tops white textolite/ General Electric Co. **Chairs:** Cramer Posture Chair Co., Inc. **Upholstery:** purple/Isabel Scott Fabrics Corp. **Plants:** Ficus Nitita/Dracena Gracillius/The Greenhouse.

EXECUTIVE SECRETARIAL AREA
Flooring: carpet/dark blue-green, black/V'Soske Inc. **Ceiling:** grid/Neo-Ray Products Inc.; diffusers/Lightolier, Inc. **Doors:** teak. **File cabinets:** metallic blue finish/Peerless Steel Equipment Corp. **Overfile, Closets:** metallic blue-black/teak/Formica/custom-designed/Ezra Blank Associates. **Desks:** stainless steel/ teak/black, white Formica/custom-designed/Ezra Blank Associates. **Chairs:** Domore Chair Co., Inc. **Upholstery:** wool/magenta/Anton Maix Inc. **Desk accessories:** aluminum/Smith Metalcraft Co.

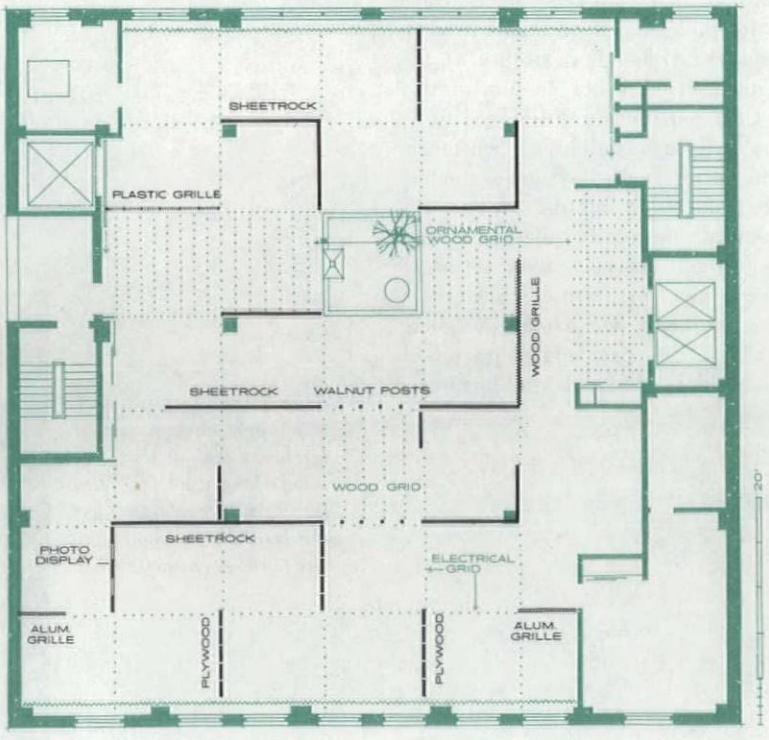
RECEPTION AREA
Flooring: Blue Belgian marble/Port Morris; carpet/ blue-green swirl/V'Soske Inc. **Ceiling:** oak/oiled/Midhattan Woodworking Corp. **Walls:** plaster/painted white. **Doors:** Macassar ebony/custom-designed/Ezra Blank Associates; partition/Aetna Steel Corp. **Drapery:** wool casement/Renee Steiner Fabrics. **Lighting:** recessed cone lights/Century Lighting Co.; pendant fixture/ Venini glass/Koch & Lowy Mfg. Co. **Desk-Table:** rosewood/chrome/exposed Soss hinges/Luss design/Ezra Blank Associates. **Desk chair:** Domore Chair Co. **Chair upholstery:** silk/blue-green/Thaibok. **Plant:** Schefflera/The Greenhouse.

Photos, except as noted: Louis Reens

SHOWROOM, JENS RISOM DESIGN INC. • NEW YORK, NEW YORK • BECKER & BECKER, ASSOCIATES, INTERIOR DESIGNERS

Risom's New York showroom appeals immediately to the eye and intrigues the imagination. An openwork screen, which defines the reception area, only partly conceals the view: the showroom beyond is faintly revealed and seems to move, like a kaleidoscope, with a variety of colors, patterns, textures, and materials. A cool garden area (*above*) with a lightly spraying fountain and a suspended firehood is a central ornament of the showroom.

In the display area, partitions divide the space into vignettes of room types; by this means the monotony of a maze of furniture is eliminated. The layout encourages investigation of the entire showroom by a controlled serpentine traffic pattern that weaves behind successive partitions. In perspective, partitions mesh together so that two complete furniture groupings are seldom visible from the same point.



Of the several types of panels, the one most consistently used is a slim vertical panel, 2 ft in width, separated from the adjacent panel by a 2-in. space (*across-page, top* and *center*). With these panels, the isolation of furniture settings is maintained, but the 2-in. spaces between the panels pierce the enclosures and give an idea of the spaces beyond. The displays are left to be imagined: one catches only glimpses of bright colors—emerald, pumpkin, cerise—and a variety of textures. This concealment stimulates anticipation and repeats, on a smaller scale, the basic design concept of the showroom.

The panels are edged with walnut or aluminum strips and are faced with a range of materials used as contemporary wall treatments—paints, felt, vinyl, leather over plywood—or are made of open grilles of plastic or metal. In one area there is a reverse of this theme: the 2-in. spaces between panels are filled by walnut posts, and the panel areas are openings through which one passes, as if through the looking-glass.

All of these partitions are erected under a ceiling grid that functions as the top support of the panels. This grid lowers sight lines and shifts attention away from the beams, sprinklers, and ducts in the ceiling. One advantage of this system is the incorporation into the grid of an electrical raceway for flexible lighting arrangements. The raceway has conveniently spaced outlets for clamp-on spotlights, which can be moved along the grid; wiring also runs in floor channels to baseboard outlets for table and floor lamps used in the displays. Although flexibility of the panels themselves is not an aim of this system—the partitions are designed to be used as a fixed installation—constantly changing furniture displays are accommodated by changes in lighting effects.

Displays within totally isolated cubicles require full and expensive room settings; this arrangement of partitions achieves a semblance of rooms, which helps designers in visualizing the scale and character of Risom's business and residential furniture.

DATA: descriptions and sources of the major materials and furnishings shown.

PARTITIONS AND GRID LIGHTING: Lighting: ceiling grid-electrical raceway/Unistrut Eastern Service Co.; spotlights/pendant fixtures/General Lighting Co., Inc. **Partition uprights:** walnut, birch/plastic/aluminum strips. **Panels:** sheetrock/painted; Infinilite, Lightolier, Inc.; metal grilles/black/Klemp Metal Grating Corp.; felt/curry-colored/Wool-suede/Katzenbach & Warren Inc. **CEILING:** painted/white; lowered birch beams; birch grid/architect-designed. **FLOORING:** vinyl tile/off-white with splatter/Robbins Floor Products Inc.; carpet/gold texture/Roxbury Carpet Co.; area rugs/blue, greens, pumpkin, rust, gold/Bittan Valberg. **WALLS:** painted white; felt/curry, pumpkin/Katzenbach & Warren Inc. **FURNITURE:** all/Jens Risom Design Inc. **UPHOLSTERY FABRICS:** Jens Risom Design Inc.; Boris Kroll Fabrics; Jack Lenor Larsen Inc. **DRAPERIES:** textured wool/yellows, greens, pumpkin, off-white/Anton Maix Inc. **LEATHER:** pumpkin/Jens Risom Design Inc. **LIGHT FIXTURES:** pendants/standard lamp/Nessen Studio, Inc. **ACCESSORIES:** America House; Bonniers, Inc.; Georg Jensen, Inc.; Karl Mann Associates. **FOUNTAIN:** Florentine Craftsmen Inc. **FIREHOOD:** ornamental/black metal/custom-designed/custom-made. **PLANTING:** C. Kind & Son.

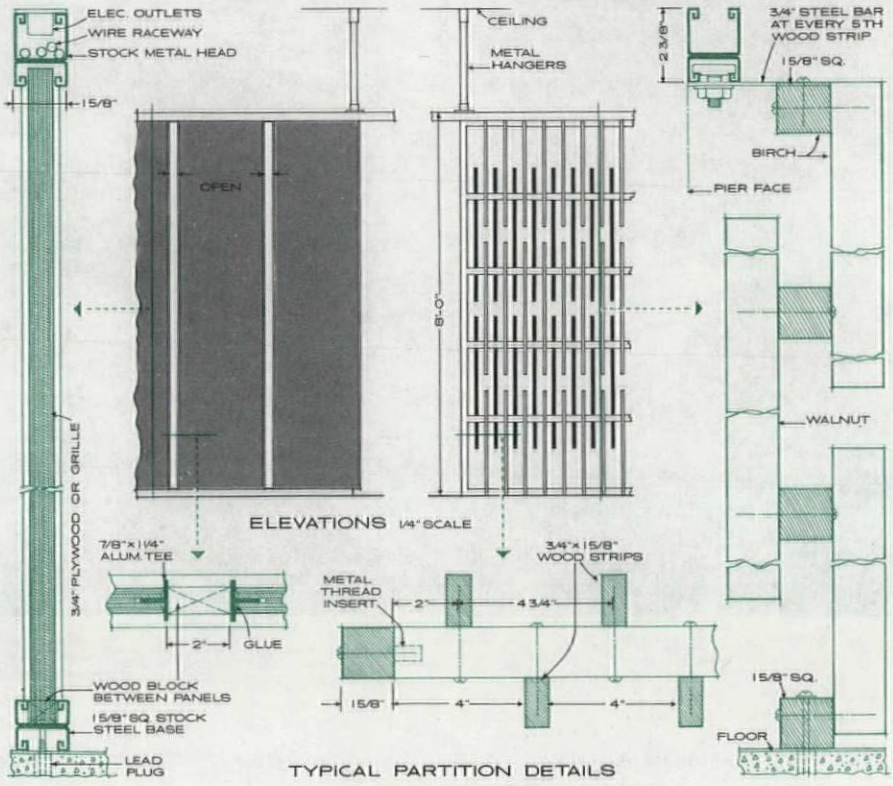
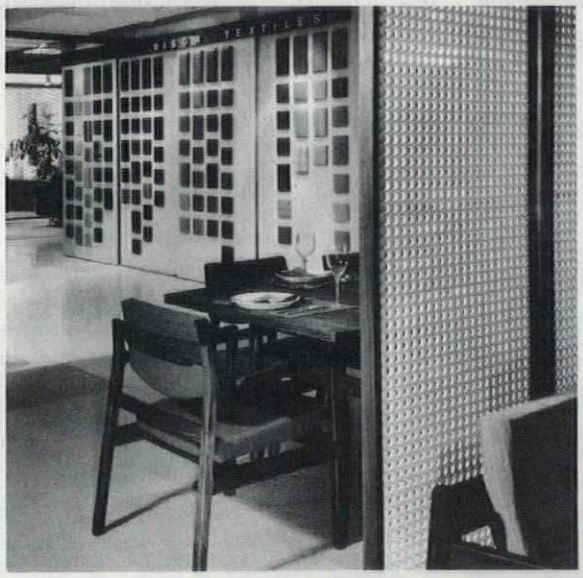
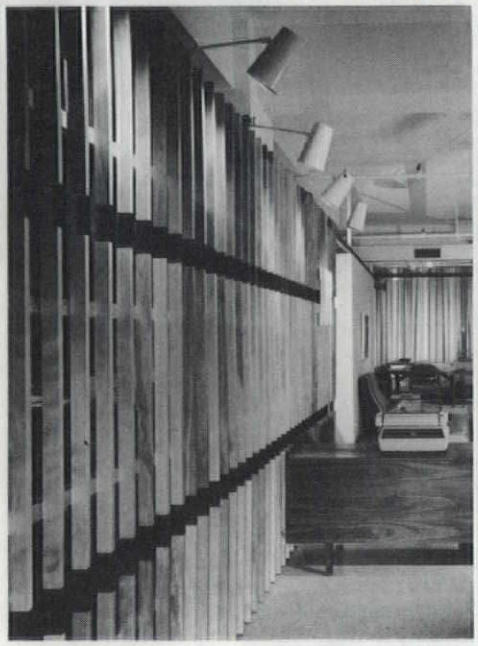


Photo: Courtesy of Jens Risom Design Inc.

Behind the reception desk is an openwork screen of birch and walnut slats, two woods long used in Risom furniture. Intense lighting of the screen gives more density to the openwork design.



Panels covered in copper felt and edged in aluminum partly conceal three typical display areas (above). *The walnut conference chairs are upholstered in pumpkin leather, the swivel desk chair at rear in gold fabric. Walnut-edged panels* (left) *are made of plastic light diffusers. At rear, beyond the textile display, is a grille partition of black metal. The dining chairs are upholstered in purple. The reception area screen* (below) *is shown in close-up.*



SHOWROOM, ODI • NEW YORK, NEW YORK • ODI, DESIGNERS

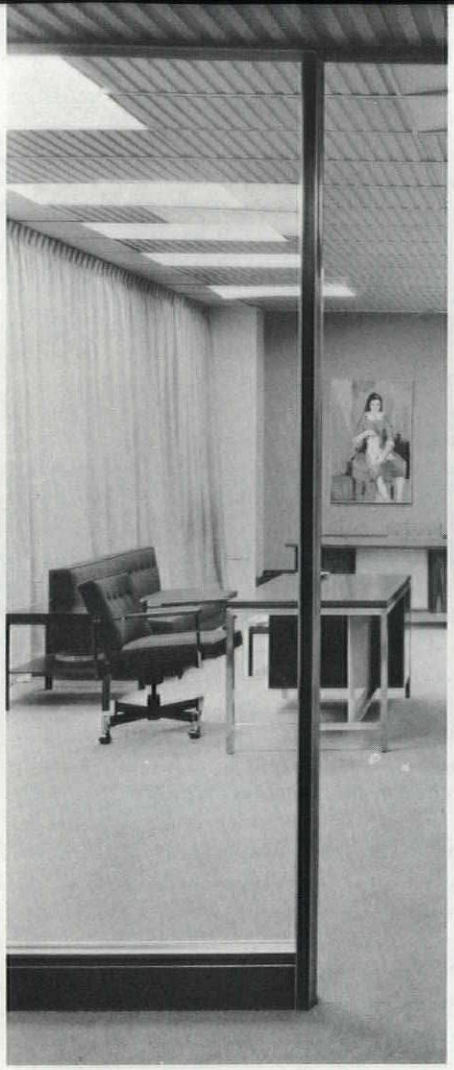
When the young New York furniture firm ODI expanded beyond a downtown factory headquarters into a mid-Manhattan showroom, its new partitioning system was put to use as a screen that separates the reception and office areas from the main showroom. The partition is composed of alternating panels of clear and smoked glass, an opaque center panel covered in black vinyl, and two openings for passageways; without visually diminishing the over-all space, it forms a hallway leading to a smaller showroom *(acrosspage, right)*.

On entering the reception foyer *(left)*, one first notices patterns of light: three white spheroid pendants and a luminous ceiling strip that suggests a directive hallway into the main showroom. One's attention, however, is soon drawn to the sleek aluminum and walnut reception desk and its floating front panel of smoke-gray transparent plastic. The partition is a large-scale demonstration of the interplay of light and texture exemplified in the desk and characteristic of ODI's most original furniture.

Due to the varying degrees of transparency in its panels, which veil spaces that advance and recede through openings and through clear and smoked glass, the screen acts as a teaser that half-conceals both light and space and temptingly motivates a tour of the entire area.

The system's design permits electrical wiring to run concealed within the aluminum posts and baseboard raceways. This screen utilizes this advantage by carrying wiring down from the ceiling to outlets for the typewriter and telephone.

The slim uprights are made in two unequal parts that fit together to form a symmetrical unit *(acrosspage, below)* and are screwed together for rigidity. Installation requires complex hand assembly. Black vinyl strip inserts conceal all screws



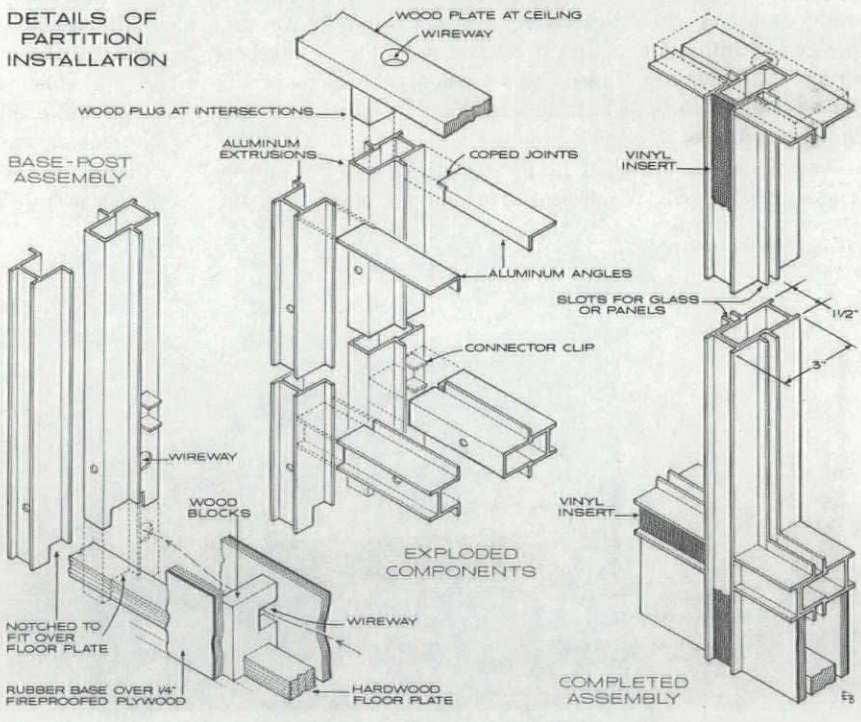
The screen stands between the showroom and the hallway it partitions off (above). *Vinyl inserts can be of different colors.*

on the uprights and further define their verticality.

The showroom has an off-white background, which includes a lowered ceiling of white light diffusers. Troughs can be moved to provide illumination over changing furniture arrangements. Several display areas are defined by walls of black and bright orange. This setting provides a suitable atmosphere for ODI's light furniture.

DATA: descriptions and sources of the major materials and furnishings shown.

PARTITIONS: Posts: aluminum/vinyl inserts/custom-designed/ODI. **Panels:** glass/clear, smoked/Libbey-Owens-Ford Glass Co.; black vinyl/Gilford Leather Co. **FLOORING:** vinyl tile/white/Robbins Floor Products, Inc.; carpet/beige/The Magee Carpet Co. **CEILING:** "Strialux" diffusers/white/Lightolier, Inc.; set in "Z" Bars/Johns-Manville Corp. **WALLS:** vinyl/white/Gilford Leather Co.; paint/orange, black. **LIGHTING:** fluorescent/Eye Ball down-lights/Lightolier, Inc.; over reception desk/spheroid pendants/Habitat. **DRAPERIES:** white casement/Fiberglas Corp./Drapery Associates. **FURNITURE, FABRICS:** all/ODI.



P/A DESIGN AWARDS

Two of this year's P/A Design Awards Program winners were studied at a seminar held in January at the University of Minnesota's School of Architecture. Each project was presented by the architect, analyzed by a critic, and discussed from the floor. Below is the discussion of one of the projects, edited from tape recordings. For a fuller documentation and for Jury comments, which include Dean Colbert's remarks referred to in the seminar, see pp. 150–156, JANUARY 1961 P/A.

CENTRAL FIRE STATION

CITY OF NEW HAVEN, CONNECTICUT • DEPARTMENT OF FIRE SERVICE, CLIENT • EARL P. CARLIN, ARCHITECT; PETER MILLARD, DESIGN ASSOCIATE; PAUL E. POZZI, ASSOCIATE

PRESENTATION: **Earl P. Carlin**

The site was the strongest element affecting the plan. An existing building, the old fire station, limited expansion to the rear, because it could not be torn down until the new one is occupied. The angle of the main intersection is the key to the shape of the building. It gave us a discipline within which to work. The magic number here is 18½ degrees. The discipline of the 90-degree angle has its problems, and 30-60 has its, but 18½ has a few more. Actually, in spite of the pinwheel shape, the main part of the building is a rectangle.

We also had dimensional limitations. There had to be an apron at least at one end of the project, so that ladder trucks could stand out without extending over the sidewalk. Another problem was that the angled street had to be the main access street, yet feeder streets also had to be accessible. That is why we created the little pedestrian island and a tight turnaround to allow vehicles to come around.

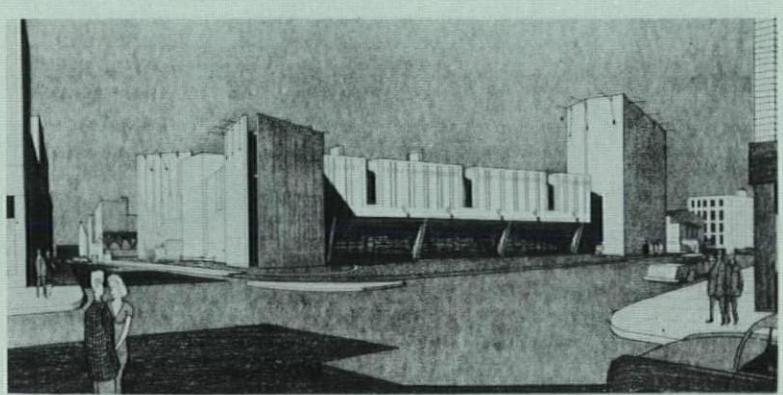
New Haven is proud of its present urban renewal efforts. The site is in a redevelopment area and the mayor and the redevelopment people were anxious to establish a symbol for this part of town. They called it a gateway. This definitely was in the program. The hose tower, which is the dominating feature, would not have existed without this attitude. Normal procedure has been to dry hoses on a rack in the basement. But we were in need of a strong vertical element, and therefore proposed the traditional hose-drying tower. So we have a 60-ft tower, and this is one of the reasons why there is no basement in the building. The tower also enabled us to introduce a strong feature on axis with the major street.

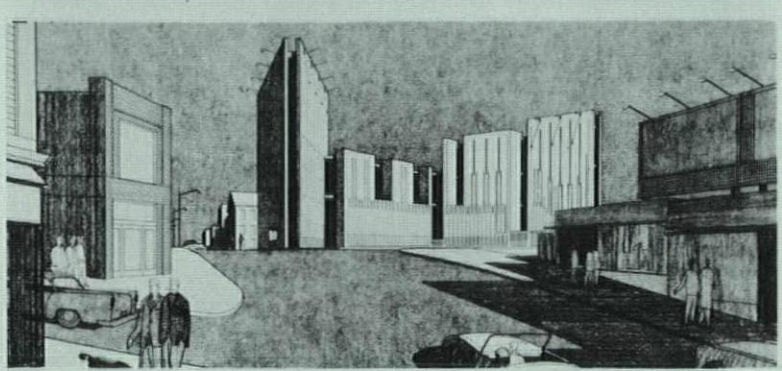
There was a need for privacy on the second floor, which explains the blank walls with the narrow slit windows. The slits are repeated in the towers; they are all glazed, except for one that collects combustion air for the furnace.

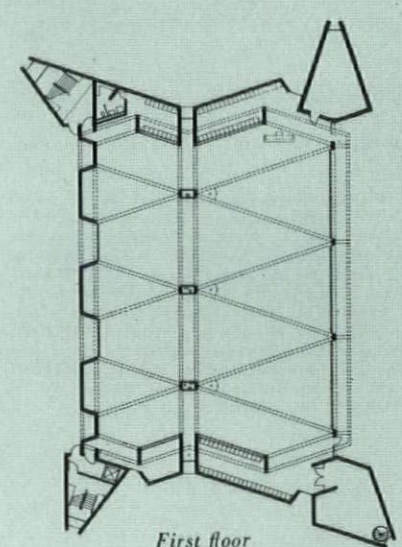
Mechanical distribution is very much part of the building. For instance: the furnace room is on the second floor of the northeast tower; from the tower, hot-water distribution starts along an exposed ceiling "trench," which is a space between two structural elements, and then continues around the perimeter of the building and down and up the spaces in the double columns. The third floor is air conditioned and has its own mechanical equipment.

On the two lower levels, we shall use large bents with cross-arches; small bents will be used on the third floor. The building is all poured-in-place concrete and, except for bents, a wall-bearing structure.

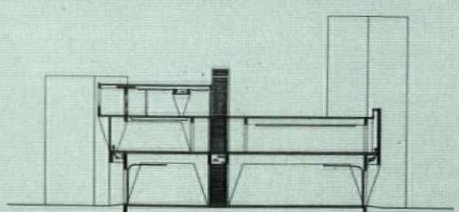
Apparently we are now brutalists, so the building is of raw, hairy concrete. We intend no interior finishing, except that which is built in: hardpressed bricks for partitions, terrazzo floors, aluminum door and window frames, and doors faced with white, plastic laminate. We think we have achieved a low-maintenance building. Ceilings in the living quarters and the office spaces will be suspended—aluminum-mesh with batts—because we were conscious of the acoustical problem on the







First floor



Cross-section

SEMINAR 1961

living-quarter and the office levels, and have not worried too much about noise on the apparatus-room floor.

These are some of the reasons why the building is what it is. But, whether we admit it or not, origins of most designs are subjective. And the true origin of this design is mostly subjective.

CRITIQUE: **Walter A. Netsch, Jr.**

I am probably the only man in this room who has had actual experience in the fire department. Somehow the army thought that my architectural education and my urban living entitled me to be a caterpillar-tractor operator; but they found out that I wasn't very good at that, so then they put me in the fire house. And so I have been on the backs of fire trucks and also in the control station. It was there that I read *War and Peace*. So I bring to the problem something that is personal and subjective. And I would like to talk about this, because I do know something about people who live in a fire house. Although Carlin has not mentioned this, the total sensitivity of this solution relates to the human occupancy of the building. Firemen are—even in the military—very proud men. They are proud of getting to the fire as quickly as possible; there is a great amount of honor involved in not being the last man on the truck; and there is a great amount of honor and pride in their equipment. I think you have to add to the drawings that you see the character of the equipment: the wonderful bronze connections between the hoses and all the sundry elements. They will become a total part of this environment, and they will play their magnificent part in creating a total piece of architecture.

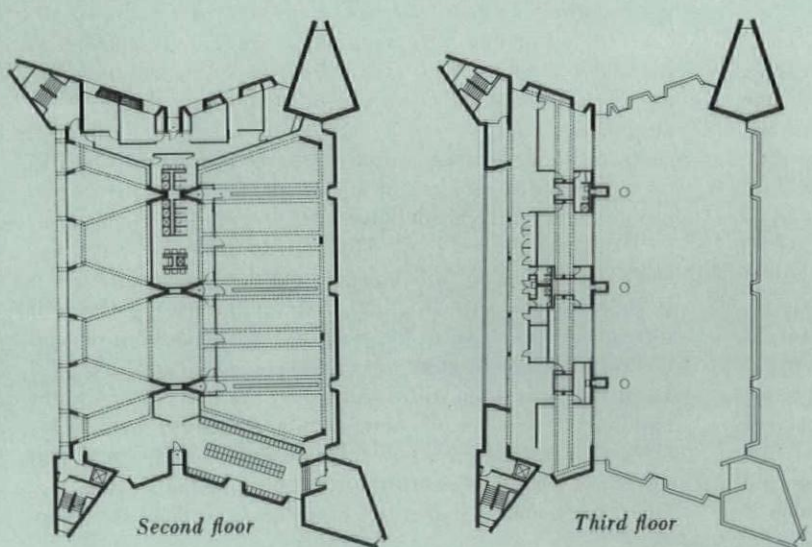
About two years ago, a small group of us in Chicago tried to establish a technique for criticism in architecture: what are the qualities in a building that make it either good or bad? We arrived at nine points. The order is arbitrary; they are all important and necessary. I shall try now to analyze Carlin's fire station using this nine-point system.

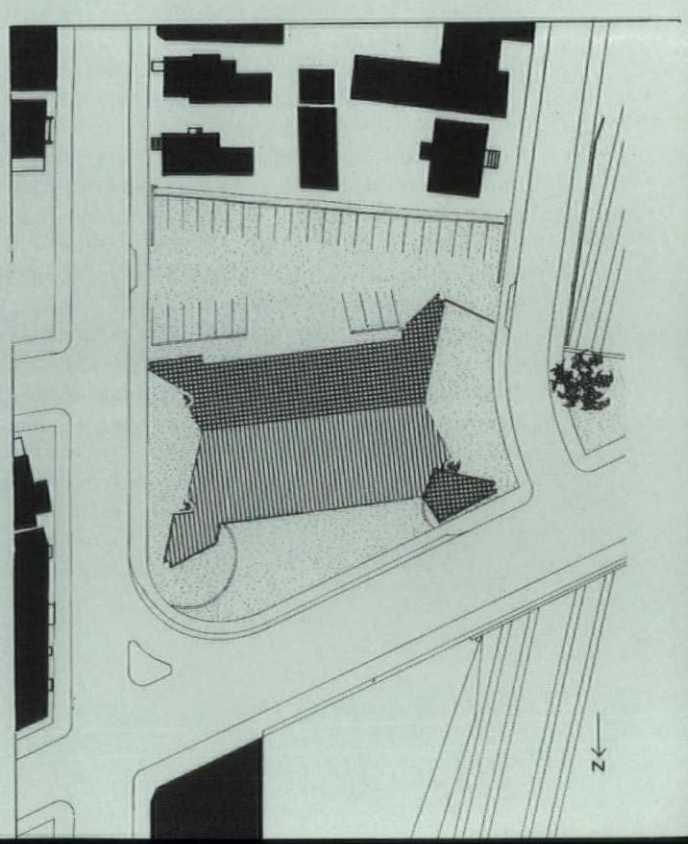
Hierarchy of Building Type and Structure: The relationship of the pinwheel form to the streets and the surroundings is important: the form actually complements the community, and it will continue doing so even if the community changes in the future. In spite of Dean Colbert's contrary opinion, I believe that this building represents a modest solution. It is essentially horizontal in character: we are not talking about a medieval landscape, and sixty feet is not the highest thing in a modern town. The drawings convey a strong yet not overpowering grouping of forms, which will become an important but not overdominating aspect of the community. Fire fighting is as important today as it has been in the past, and, because one can tell what it is and see what is in it, this building has something to say. Hierarchy relates also to the way people work and use a building. Having worked only in "ranch-style" fire houses, I have never had the opportunity of using a fire pole. But I do know that all firemen, except as they get older, seem to consider this a first movement in time as they rush to the fire. It gives them the sense of immediacy, and any action that emphasizes this sense of immediacy is important psychologically to a fireman.

Expression of a Significant Idea, Concept, or Theme: Carlin already has documented that there was a strong and individual idea, yet the program and the problems were not ignored; they were solved with intelligence and imagination.

Positive Relationship to the Environment: It is one of the good points of this building that it performs well in relation to the views from the new or the old parts of town, and in the way it fits in the redevelopment program.

Clear Expression of Function: Certainly this building expresses clearly its function. The open side, composed of six doors, shows how the vehicles will come out; there is strength





The site lies at an entrance to a redevelopment area. Fire-fighting equipment and the control center are on the first floor, living quarters on the second, and administrative offices on the third. Besides staircases and an elevator, five poles connect the second and first floors. Major material used will be exposed reinforced concrete.

and character in that opening. And contrasting with that is the hose tower and other powerful forms of concrete. All this will be helpful in giving expression to the building.

Clarity of Structure: This does not mean that there has to be an exposed frame: there are many methods of construction. Here, the manner in which the mechanical system is played up gives the structure a dominant character. Yet the hierarchy between the various elements that are used in the making of the interior spaces is recognized.

Sensitive Selection and Use of Materials: The rough textures of the architecture and the smoothly machined parts of the fire-fighting equipment will make a handsome counterpoint.

Quality of Space: This is something that cannot be judged by drawings or models only; I am firmly in favor of visiting buildings and participating in architecture to form a real evaluation. But I hope that the quality of the spaces in this building will be as handsome as the drawings indicate.

Totality of Design: I don't get any impression of an attempt at inconsistencies, at working off from one point to another. I think this building has a totality.

Expression of the Time: This concept has been demolished by a philosopher at Yale, I understand, who said that, although architects are always talking about being contemporaneous, he cannot see how they can be anything else: we all work in our environment; therefore, we are an expression of its time, good or bad. So, since Yale has already demolished this ninth point, I shall only say that this building, like all others, is an expression of its time.

This, then, is a brief summary of my reactions. I believe that this building makes a firm and sound statement in this year's P/A Design Awards Program.

DISCUSSION

Ralph Rapson: Dean Colbert said that this building "refutes the industrial process that architecture has attempted to become part of." I'm somewhat confused by that comment of his. It seems to me that there was an analysis of the use of materials and structures, and that we have here an honest and straightforward solution in terms of concrete technology.

Dean Colbert also said that this building represents "preconceived disorder." When I first looked at the project, I had the same reaction. But after a more careful study, this building shows considerable order. When one considers the 18½-degree angle, everything is well ordered in relation to the plan and to the expression desired. I think it is a brilliant solution. One of the things that strikes me is the interesting way the third floor was designed. The composition builds up and cuts away and builds up again to the third-floor penthouse. It is a masterful handling of what could have been a difficult shape sitting on top the two lower stories.

I feel strongly that there is no such thing as a hierarchy of "building types." I think there is only a hierarchy of "buildings" within a community. I think of the church as an element that can and often does become of great importance in the total environment; but the church does not *always* rate a strong emphasis. It all depends on the existing and future architectural character of the community in which it will be placed. Therefore, what one of the jurors said seems to me quite irrelevant: that fire fighting is a fabulous thing, that people love fires, and that consequently fire stations should be emphasized. It is the total environment that is important. If the client wanted a gateway to an area, then this building is going to do just that in a rather spectacular and handsome way, and therefore the solution is sound.

Plasticity in architectural expression also preoccupied the jury. The De Stijl group in Holland was doing things that were almost cubistic in nature—the pulling apart of the elements of a building. This building does have the same quality. So are we back in the 20's? I wonder if we are not going around in circles, like the fashion or automobile people: a little above the knee, a little below the knee. Perhaps it is healthy that we are all searching for new forms and looking for a new expression, but it does seem as though it were a great cycle that we go around in.

Robert G. Cerny: The order of the structural system and the plasticity of the structure is wonderful. But, as we are moving inevitably down this sculptural path, there will always be problems when sculptural expression collides with functional requirements. I am a little disturbed by the north elevation, where the six doors puncture the sculptural form. The doors are not satisfactorily integrated. There is always a problem of how to absorb into sculptural forms elements that cannot be changed because of their rigid shape—a large garage door, or elements of that kind.

I am also worried about the entrance. I assume that people will come here—those to be interviewed for a job, insurance appraisers, and others. The forms are so impressive that the entrance doors I saw on the various drawings are almost lost.

Carlin: The section explains the handling of the apparatus-room doors. The whole façade of the living quarters overhangs by about five feet and provides a canopy for the overhead doors. We felt this gave an added emphasis to the opening. We also attempted a further emphasis. Actually, we'd just as soon have no doors at all. But New Haven is not in Florida and doors are needed. So we designed them of the thinnest possible aluminum sections and with the maximum amount of glass. We tried to "eliminate" the doors and to create archways. In our first fire station, this treatment worked quite effectively, especially at night. With strong lighting inside the building, one is unaware of the doors except for the very thin network of mullions.

As for the pedestrian entrance, I agree that on the first trip there may be a problem of identification; but most of the people who visit the headquarters are "regulars"—contractors, insurance people, and so on. They will go there as to any other office building; they will know where they're going. Also, it is impossible to park in front of the building, and this will force people to drive to the rear, where the parking lot and the entrance are located.

John Rauma: I am still disturbed by the front façade of the building. The faces of columns are chamfered back. This tends to make the form hover. There are also other cuts and serrations which break up the continuity of the vertical surfaces. I'm wondering whether the columns, without the cham-

fer, might not have given better continuity to the form concept.

Carlin: The rear elevation recalls the front elevation. The overhang appears there again, and there are also two service doors. So there is a continuity between the front and rear façades. The whole second floor hovers—both on the north and on south elevations.

Rauma: Also the same hovering idea on the third floor of the rear elevation?

Carlin: Yes.

Roy Harrover: Probably because of its plastic, expressive possibilities, it seems that we're having a real surge toward the use of concrete. In the South, where labor is cheap and materials relatively expensive, we were able to justify the use of concrete economically. Do you have to pay a premium for this type of expression in New Haven?

Carlin: I asked Henry Pfisterer, our engineer, this very question. Last year he was responsible for about fifty-million-dollar's worth of work. He said that about three or four years ago he had given up doing comparative analyses, unless the client wants to pay him for the trouble, because time and time again, in our area, concrete for buildings under ten stories or so has proved to be the more economical construction system.

Rauma: A typical way of controlling the surface of concrete would be to introduce some sort of rustications or reveals between pours. Do you intend to pour the vertical surfaces, even where they are continuous over more than one story, in one pour? If not, how will you resolve the inevitable joints between subsequent pours?

Carlin: This is perhaps why Philip Johnson called us brutal. We were aware of this problem. In the past, we have used strong horizontal joints at each pour line, trying to relate them with the scale of the building. But in this case we've gone in the opposite direction. We are completely denying the pouring method: we're going to butt form to form. We know we're going to get fins and an expression of that pour. However, we feel that strong rustications in the vertical direction will overpower the many imperfections we are going to get in the surface. These imperfections will be more than the pour lines: there will be honeycombs, pits, discoloration, and all of the usual concrete problems. But we are hoping that the strong vertical texture will overpower this; it's like the tweed-jacket solution—you try to take advantage of the imperfections.

Robert L. Bliss: To me, this building is quite poetic. But I'd like to go back to the question of hierarchy. We spoke of hierarchy of buildings, and I wonder if the problem isn't a question of hierarchy of human ideas. In other words, should we use poetry for a fire house, or should we save it for a church, or a shrine, or something of similar quality?

Carlin: Initially we tried to be prosaic. The first sketches were the inevitable box. But the box wouldn't work on this site. Also, we had a client who was insisting on much more than a sonnet. He wanted a major work, and since no one had ever asked this of us before, we didn't argue that point too much. Perhaps we did overdo it.

Rauma: Shouldn't everything that contributes to our environment be stated in a poetic fashion? I don't like the idea of an environment made up of ledger sheets; I'd rather see an environment made up of poetically organized ledger sheets. I think that there has to be a poetic attitude toward everything we do, no matter what its use is. And since everything is relative, I assume that, even with such a poetic fire station, it might still be possible to have a hierarchy—a hierarchy of poetic values.

Bliss: It is not a question of relativity. We waste our energies in always trying to make jewels. And one does not wear jewels all the time. If you take this far enough, then we would be surrounded by a jewel-like atmosphere. We should give importance only to ideas that are really important to human beings.

Donald C. Heath: As another man in the room who has lived and served in fire stations, I am perhaps biased in saying that there is romance and a long, glorious tradition in fire fighting. I feel that a certain expression of that is not at all out of the way. I dislike this idea that a fire station is purely utilitarian. A fire station should express the dignity of the city government and the proud tradition of the fire service.

Jan C. Rowan: The plan, or rather the silhouette of the plan, is almost an exact replica of a late Renaissance fortress. We have some of them in the States—for instance, the San Marco in Florida. One could almost mistake the plan of San Marco for the plan of this building. Is it a coincidence?

Carlin: It is very much that. It's the result of considering the main corner and of a further evolution from this intersection. This gave birth to the points.

Rowan: How did you arrive at the shape of the towers? The fortress towers had that shape in order to control all the walls. And you have an identical shape.

Carlin: If one draws a line down any of the towers, the axis of each tower relates to the over-all grid; the slant is twice the 18½-degree angle.

Voice: There are projecting light fixtures on the building. Is it influenced by the billboard seen on the drawings?

Carlin: It is a plain, old-fashioned billboard light, which will be up on the roof. The crenelations along the top are there to allow light fixtures to come out and floodlight the walls. We also have fixtures around the building on the ground, but we did not think we could get enough light up from the ground.

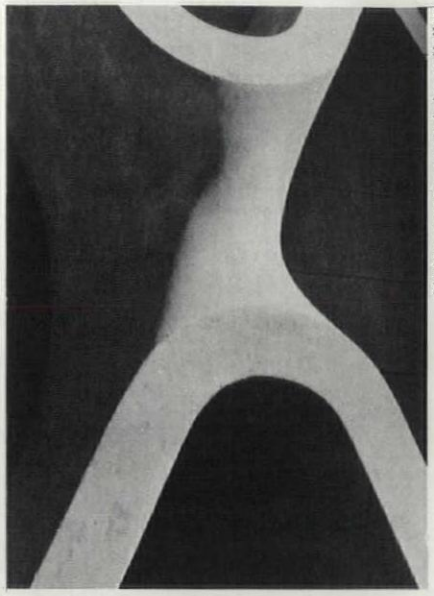
Voice: Is it a requirement then to light this building? You have a billboard appearance on your wonderful elevations.

Carlin: This was not a requirement. Louis Kahn used to say that a building should be allowed to go to sleep. But we felt that this building should have the possibility of being lighted from the exterior. We also felt that if we didn't do it now, somebody else might do it later, and we didn't want to lose control of the design.

Cerny: I'd like to applaud the guts required not only to create this great departure from the conventional, but also to carry it down to City Hall. People around here are such that I would need four or five martinis, plus my courage, to take this design down to a typical city government office.

Carlin: I'd like to emphasize that a lot of this courage came from my partner, Peter Millard, who is largely responsible for the design and who is even more than courageous—he's foolhardy at times.

BEARING GRILLES FOR CONCRETE TOWER



Photos, except as noted: Jason Hailey

Nearing completion at a MacArthur Park corner site in Los Angeles is a high-rise office building demonstrating the ability of concrete to compete aesthetically and economically with other monumental structures characterizing that area. A structural analysis of the building's sculptured bearing-grille tower, transition and base structures, foundations, and lateral loads—with a statement of its costs—is presented here.

A preliminary study of the new Headquarters Office Building for the American Cement Corporation, on Wilshire Boulevard in Los Angeles, might suggest that structural considerations were the primary motivation in its design. The architects and engineers, Daniel, Mann, Johnson & Mendenhall, however, stress that the design concept was developed deliberately "to establish the potential of concrete as a building material capable of creating building monuments as significant, as economic, and with as much style and importance as was done for steel-frame buildings in the past, for porcelain-enamel curtain-wall buildings in the immediate postwar years, and more recently for buildings of aluminum, stainless steel, and bronze." Other design criteria were: the desire to utilize reinforced-concrete construction to its full potential, thus allowing it to exceed, where possible, the limitations of other types of construction, and achieving, as a result, greater flexibility of planning and space arrangement with its consequent efficiency; the obligation to comply with all existing codes and ordinances, with regard to earthquake resistance, fire protection, exit requirements, setbacks, and basic structural considerations.

The final form of the building forcefully reflects its functional divisions: (1) The four parking levels extend over the entire site, with one of them situated underground. (The water-level of a lake in an adjoining park discouraged a deeper basement.) Also at ground level are the lobby, restaurant, and coffee shop. Open to natural ventilation, the upper two levels of parking are surrounded by a sculptured, precast-concrete grille. (2) The fourth level above ground, over the parking structure, contains an executive suite set in a "hanging garden" overlooking the park. (3) The fifth level, not an occupied floor, serves a dual function: structurally it provides a transition from the framing system of the office tower above to the parking levels beneath; mechanically it contains the principal air-moving equipment required for the building. (4) The tower consists of nine office floors, without columns, of approximately 12,000 sq ft each.

To fulfill these design criteria, the firm's architectural and engineering talents were pooled, their aim being a search for multiple-use elements. Many architectural solutions with engineering advantages were carefully considered.

Base Structure

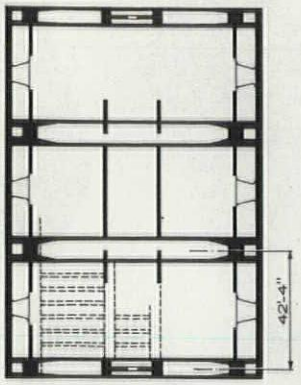
This element of the building was planned essentially with a view to making parking convenient. Bay sizes and column locations were established to best suit the requirements of parking stalls and aisles. Although the concrete beams generally span a length of 42 ft, the structure itself is a conventional system of poured-in-place concrete beams and girders. Lateral rigidity is provided by means of concrete shear walls, which were designed to resist, in addition, the lateral loads imposed by the tower. Since the building adjoins private property on two sides, solid walls were chosen for these locations. These are of precast-concrete panels, installed with slip joints at their tops to prevent resistance to lateral loads and thereby avoid eccentricity between the center mass of the base and its center of rigidity. The precast-concrete grille, which encloses the remaining two sides, is nonstructural.

Foundations

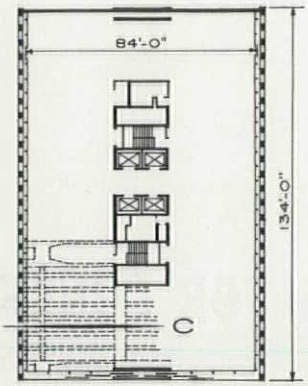
Foundations for the base structure and tower are drilled and belled caissons. Soils underlying the site are unusually firm and impermeable, and even though ground water was present after the excavation was "de-watered," the rate of infiltration was found to be so slow that no further ground water problems were encountered. Although the belled caissons under the main columns supporting the tower are unusually large, with a 23-ft maximum diameter, they presented no particular problem in construction. Under the central core of the tower structure, where heavy loads are imposed on an area of relatively small size, a deep-mat foundation was poured, since there was insufficient space to install belled caissons economically.

Tower

As the purpose of the tower is to furnish flexible office space, the present trend toward column-free interior space was adopted. This was achieved in part by the use of exposed bearing grilles on the north and south sides of the structure. Essentially replacing the normal beam and column system, the use of the grilles has the advantages of: (1) providing an extremely rigid wall for the resistance of lateral loads; (2) becoming a distinctive architectural feature of the building. The grille is used, therefore, as a principal

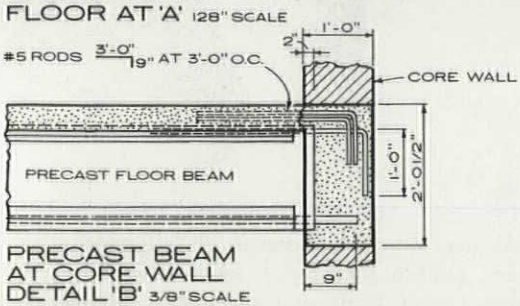


TRANSITION FLOOR AT 'A' 1/28" SCALE

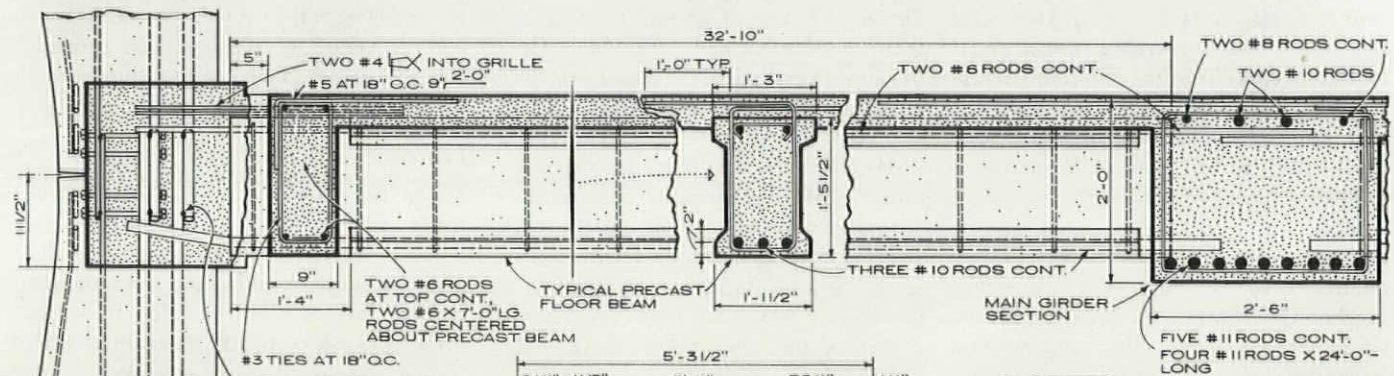


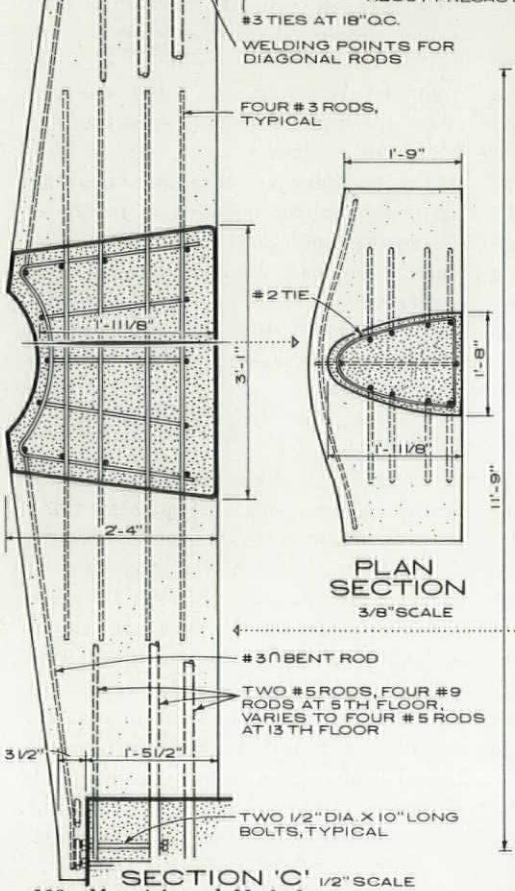
TYPICAL FLOOR
1/28" SCALE

LONGITUDINAL SECTION 64" SCALE



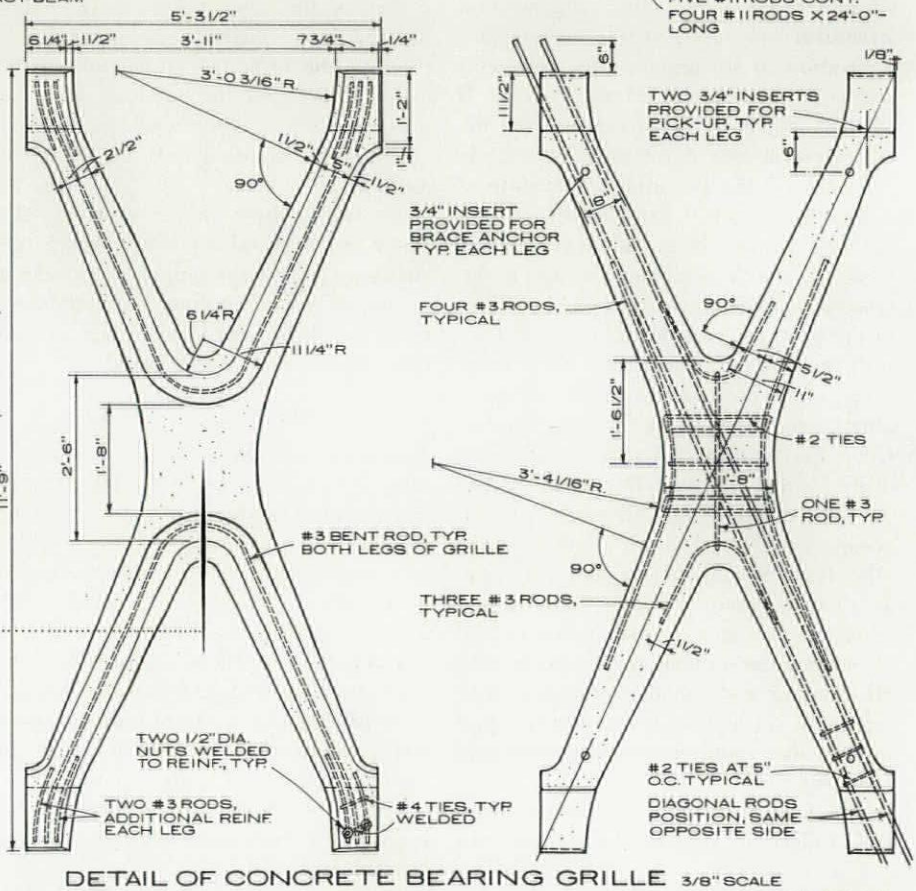
PRECAST BEAM AT CORE WALL DETAIL 'B' 3/8" SCALE





PLAN SECTION
3/8" SCALE

SECTION 'C' 1/2" SCALE



DETAIL OF CONCRETE BEARING GRILLE 3/8" SCALE

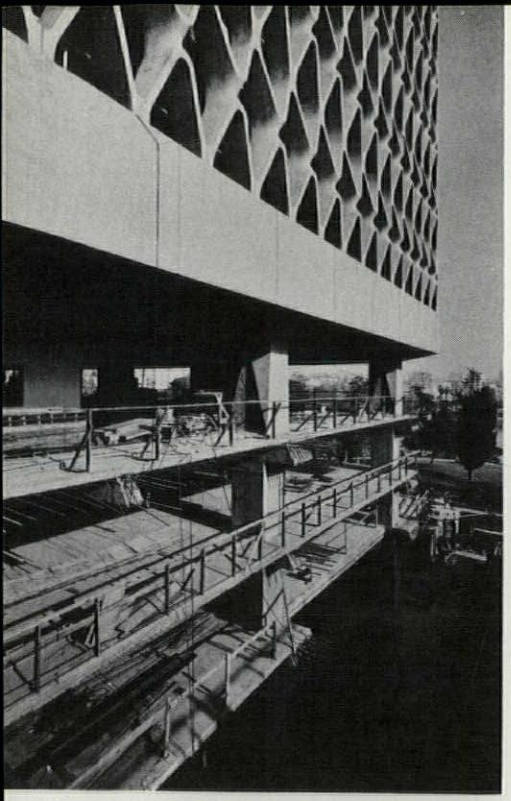
load-bearing and shear-resisting element on the two exterior faces of the tower. Grille members act in conjunction with precast floor beams, which span the 33′-6″ distance from the exterior faces of the building to the central core. Since it is constructed of concrete, the core is also a load-bearing and shear-resisting element. In the transverse direction of the building, lateral resistance is provided by six short concrete shear walls extending to the base of the tower at the fifth floor.

The central core was constructed separately by slip-form methods and was erected entirely within a period of four weeks. Precast-grille members and precast floor beams were subsequently installed floor-by-floor, and all elements were tied together by means of poured-in-place floor slabs. In this manner, the slabs were poured without the need of shoring.

Transition Structure

To allow optimum design considerations, the tower and base structures were thought of individually. To mate these structural

Precast grille members are placed in conjunction with precast floor beams spanning to central core; all elements are tied together by poured-in-place floor slabs.



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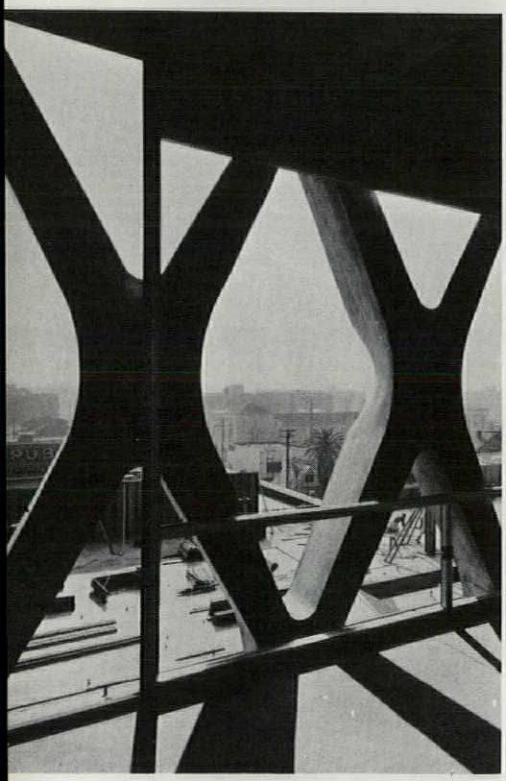

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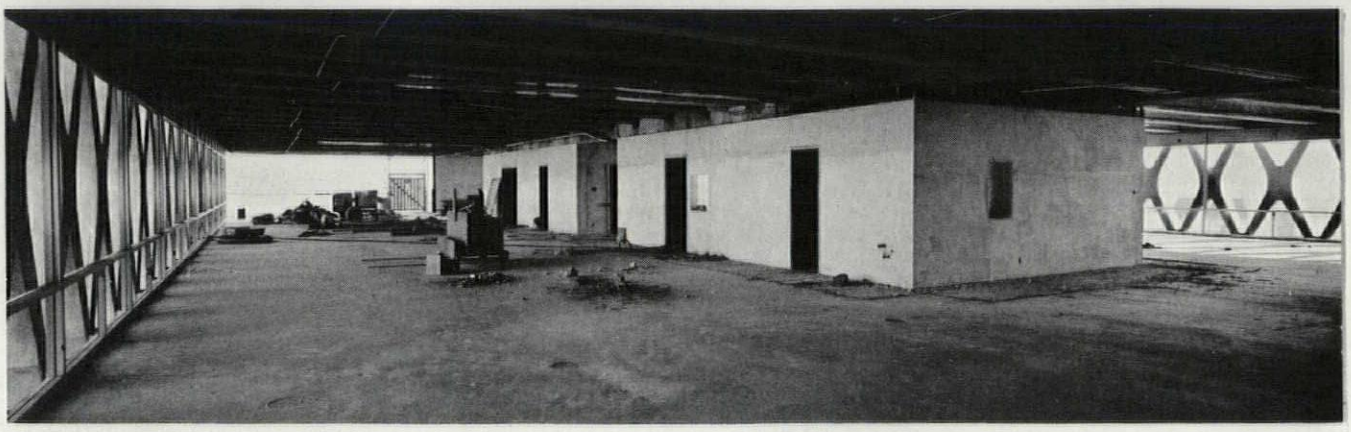


3

(1) Longitudinal girder at transition floor supports bearing grille. (2) Sash being installed on inner face of bearing grille. (3) Central core at typical floor receives reactions of precast beams. (4) View of tower, transition floor, and base structure. (5, 6) Progress photos show slip-form construction followed by floor-to-floor erection of grilles and precast beams.

5

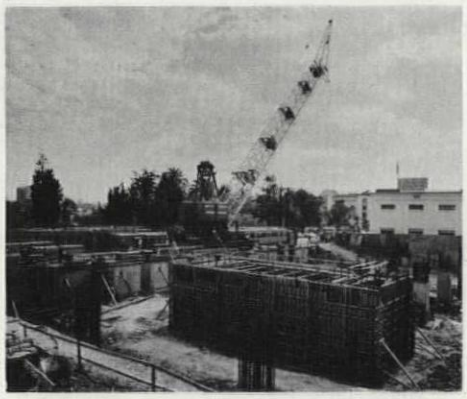


Photo: Gene Daniels

6

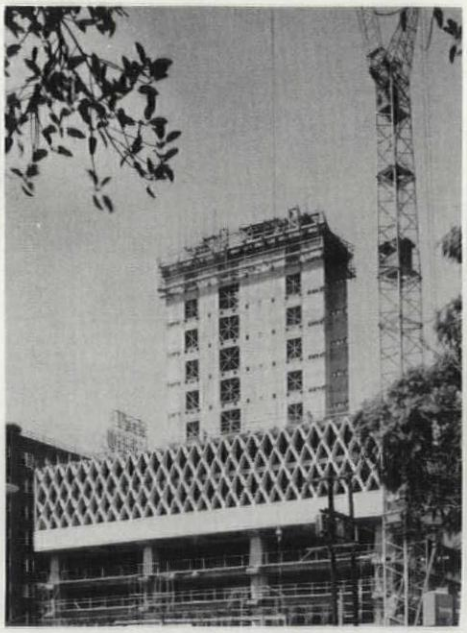


Photo: "Dick" Whittington

elements required a workable transition between the two. This was accomplished by means of a mechanical floor between the fourth and fifth levels of the building. The entire depth of this floor is used for concrete girders. Two main longitudinal girders directly support the bearing grilles, and these, in turn, are supported by six transverse girders that transmit vertical loads to the eight major columns of the building. The transverse girders also provide an anchoring base for the six short transverse shear walls. In conjunction with its girder, the shear wall then forms a large inverted T, which is supported at its extremities by two heavy concrete columns. The overturning forces on these shear walls are thereby distributed to as large a base as possible, and the lateral shear itself is taken by the reinforcing in the large concrete columns. (These columns extend all the way to the foundation and are further stiffened by additional walls below the fourth-floor level.) By this technique, effective use was made of concrete shear walls that were considered too narrow to extend satisfactorily from the ground to the top of the building.

Using the full 8-ft depth of the transition floor, the heavy loads involved in the transition could be reasonably handled. As mentioned previously, air-conditioning equipment at a central location on this floor allows air distribution to be split vertically.

Design for Lateral Loads

It is evident that lateral stability throughout the building is provided by means of concrete shear walls, or by the bracing action of the bearing grilles. Lateral loads are resisted by shear or direct stresses in the various members, and the usual design for bending members is avoided. The one exception is the fourth-floor level, where all transverse lateral loads of the tower are resisted by the eight main columns. As a result, there is a rigid tower coupled to a rigid base by means of a relatively flexible frame, which thereby acts like an inverted pendulum. As a precaution against difficulties that could arise during severe earthquakes, the coupling frame at the fourth floor was designed for considerably greater seismic loads than is customary. In addition, all of these shear loads were resisted by the reinforcing steel to improve the energy-absorbing and ductile characteristics of the frame.

Cost

Construction costs amounted to approximately $3¼ million for a total gross area of about 250,000 sq ft—or an average cost of approximately $13 per sq ft, which the architects consider favorable for a first-class multistory building. An examination of the bearing grilles is an indication of how this favorable cost was achieved. First of all, the grille is a direct-stress member (no bending), and, as such, resists loads with a minimum of material. It also furnishes the architectural treatment for the exterior of the building using concrete, a relatively inexpensive and maintenance-free material. The grilles also provide a large amount of sun control to minimize air-conditioning loads.

Quality of Concrete

The entire superstructure was built with only two basic strengths of concrete: 3750 psi and 5000 psi, with lightweight or hard-rock aggregates, and no unusual procedures were required. The use of existing precasting and joining techniques, present-day uses of No. 14 and No. 18 bars, and reliable welding techniques provided the architectural and engineering designers with more than adequate means with which they could achieve their design goals.

In order that the external skin of concrete might attain the greatest refinement of form, a sculptor was consulted. After clay studies were approved by the architects, full-size plaster models were constructed. From these, glass-fiber molds were made and full-scale precasting became a production-line performance. This architectural interest in sculptural form indicates an area in which the sculptor has a tremendous opportunity to integrate his work with architecture and to contribute refinement of scale to buildings.

LOGICAL PATTERN OF GROWTH

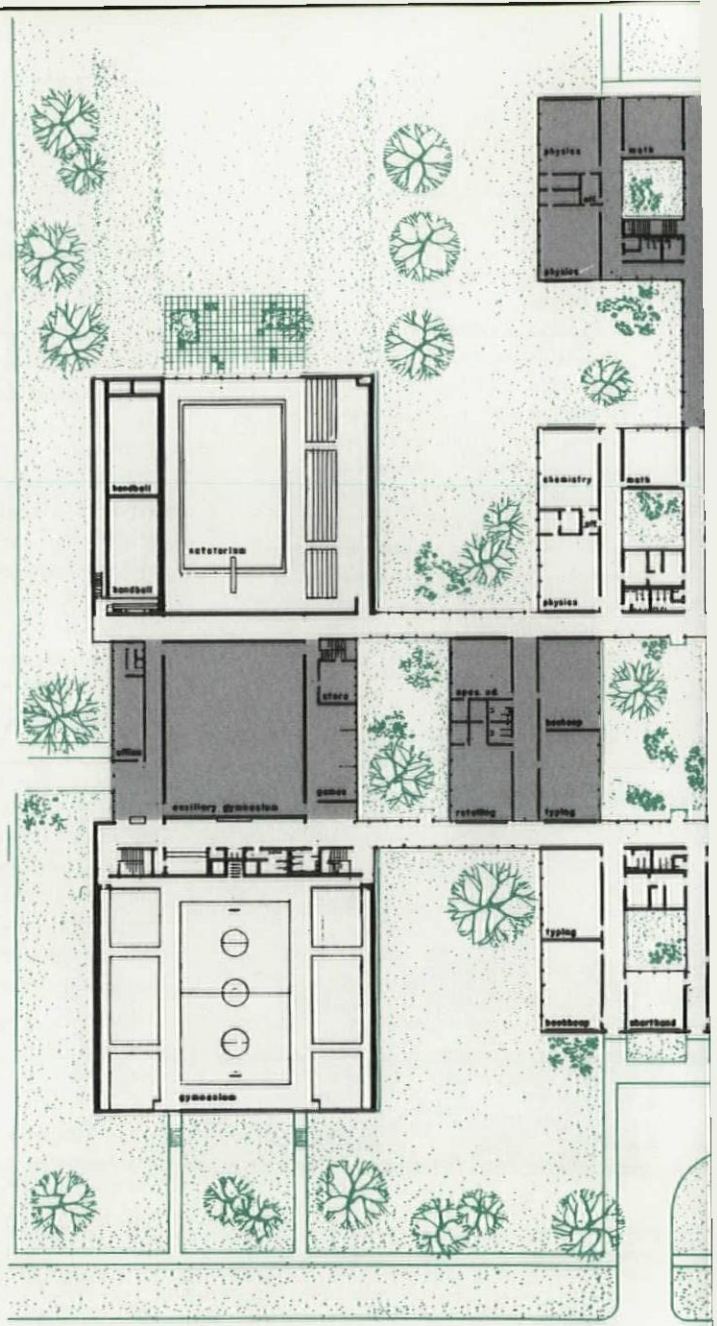
PONTIAC NORTHERN SENIOR HIGH SCHOOL • PONTIAC, MICHIGAN • EBERLE M. SMITH ASSOCIATES, ARCHITECTS

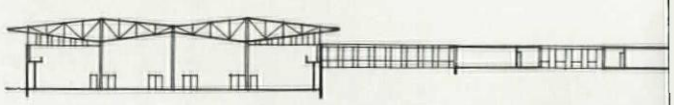
Planning for the future was a major consideration in the development of this design. Since the original student population of 900 is expected to grow to 1600 by 1965, it was necessary to establish a rational pattern for future expansion. A second problem involved the co-ordination of the new building with the existing junior high school adjacent to it, which will share the parking and athletic facilities of the 125-acre site and use the auditorium of the new building.

The plan of the school is divided into three distinct sections. The auditorium, cafeteria, and the departments of music, art, homemaking, and industrial arts comprise one section. The athletic facilities form another. These two groups are located at the ends of the complex, adjacent to parking areas and service drives. The third section, the academic, is in the center, and is therefore effectively isolated from noisier activities; it can be closed while the other sections remain open for community activities.

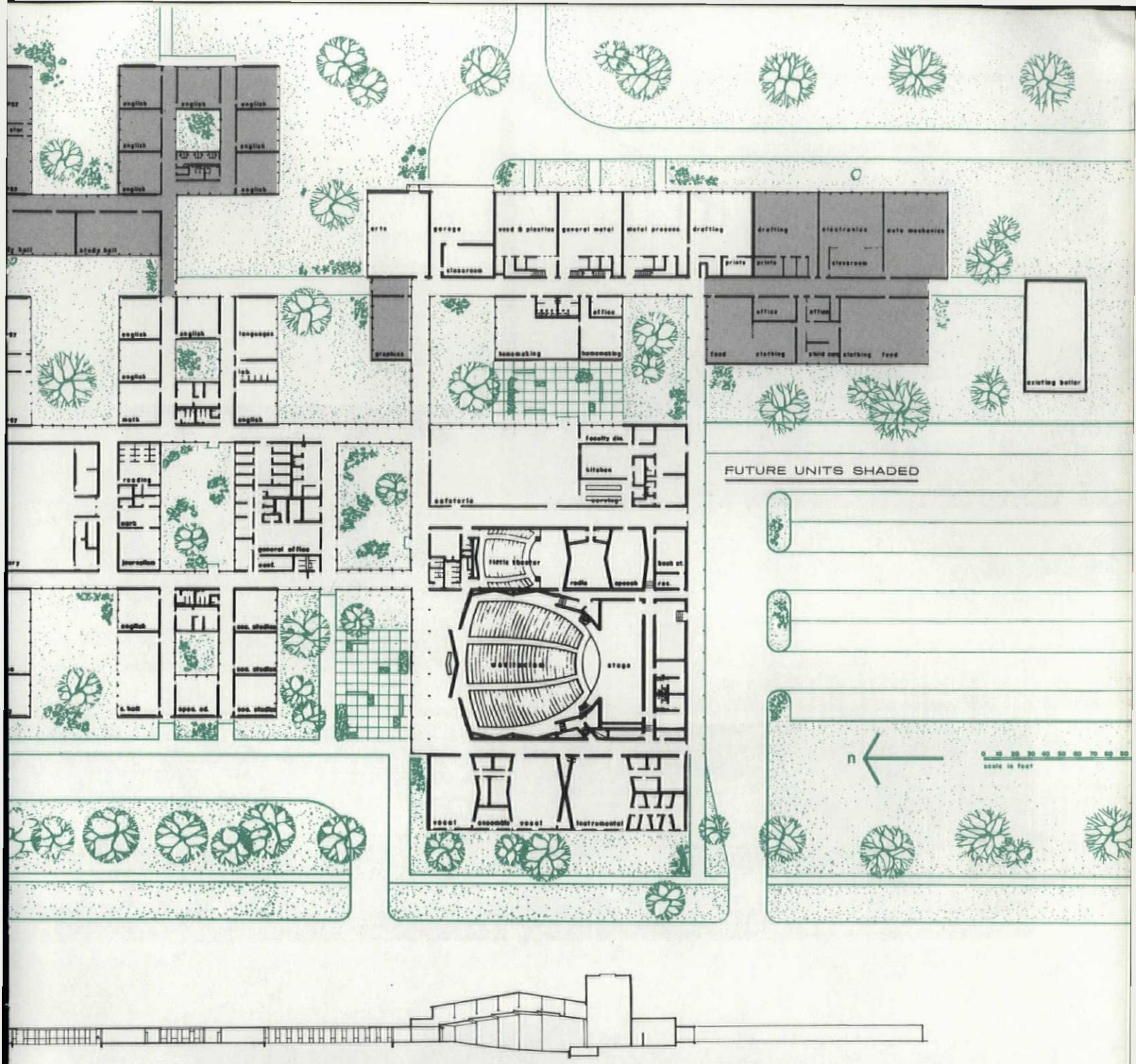
The academic area is divided into departmental blocks of classrooms and offices, each one laid out around an interior court. As space requirements increase, departments can be expanded individually by building new blocks adjacent to them. The basic arrangement of each department, and of the over-all plan, will remain unchanged.

The slight incline of the site downward to the north was used to advantage in the physical education wing by locating the





Photos: Baltazar Korab



gymnasium, locker rooms, and swimming pool on a lower level, with all spectator circulation on the main level. The locker rooms are in the center of the lower floor; on the platform above them, an auxiliary gymnasium will be constructed in the future.

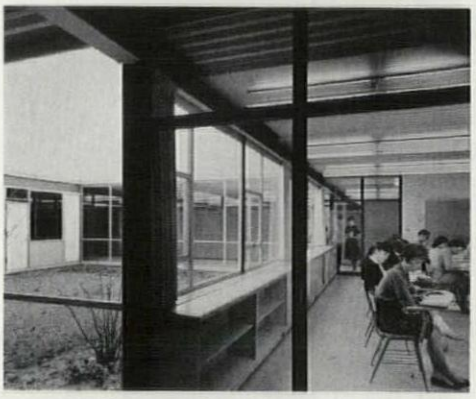
The diamond-shaped, cantilevered, steel trusses of the gymnasium provide an appropriate interior space, with the greatest height over the seating areas and the main play court. When the seats are folded, the room may be divided along the intersection of the trusses to form two symmetrically roofed spaces. The modular steel framing system of the rest of the building permits maximum flexibility in future relocation of walls and expansion.

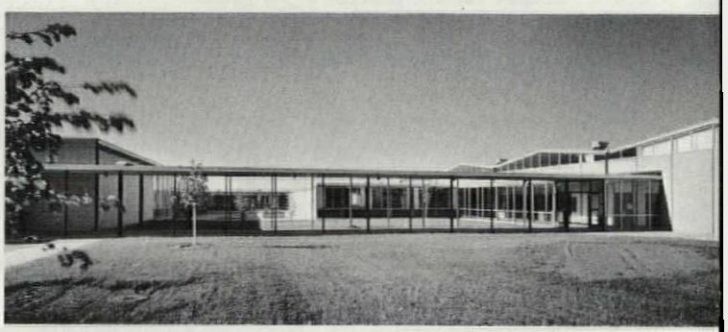
The exterior materials are warm gray brick interspersed with panels of charcoal-gray brick, with black steel trim and white fascias and doors painted in bright primary colors. The same materials are used in the corridors and a similar color scheme extends into the classrooms, which have off-white cinder block walls and gray chalkboards. Tinted plastic sunshades in aluminum frames are suspended from the overhangs to protect all classrooms facing south from direct sunlight.

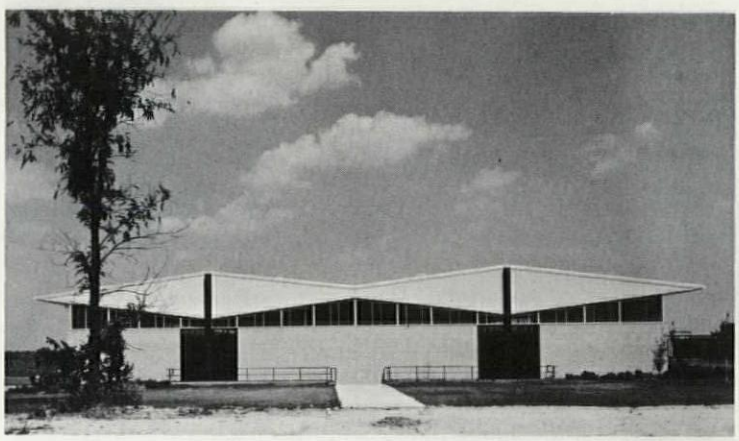
The interior courts are planted with evergreen ground cover, flowering shrubs and trees, and annual flowers, and have areas paved with concrete squares. Plant materials were selected largely on the basis of their educational value to students.

The cost of the school, exclusive of site and landscaping, was $2,847,000, or $14.32 per sq ft.

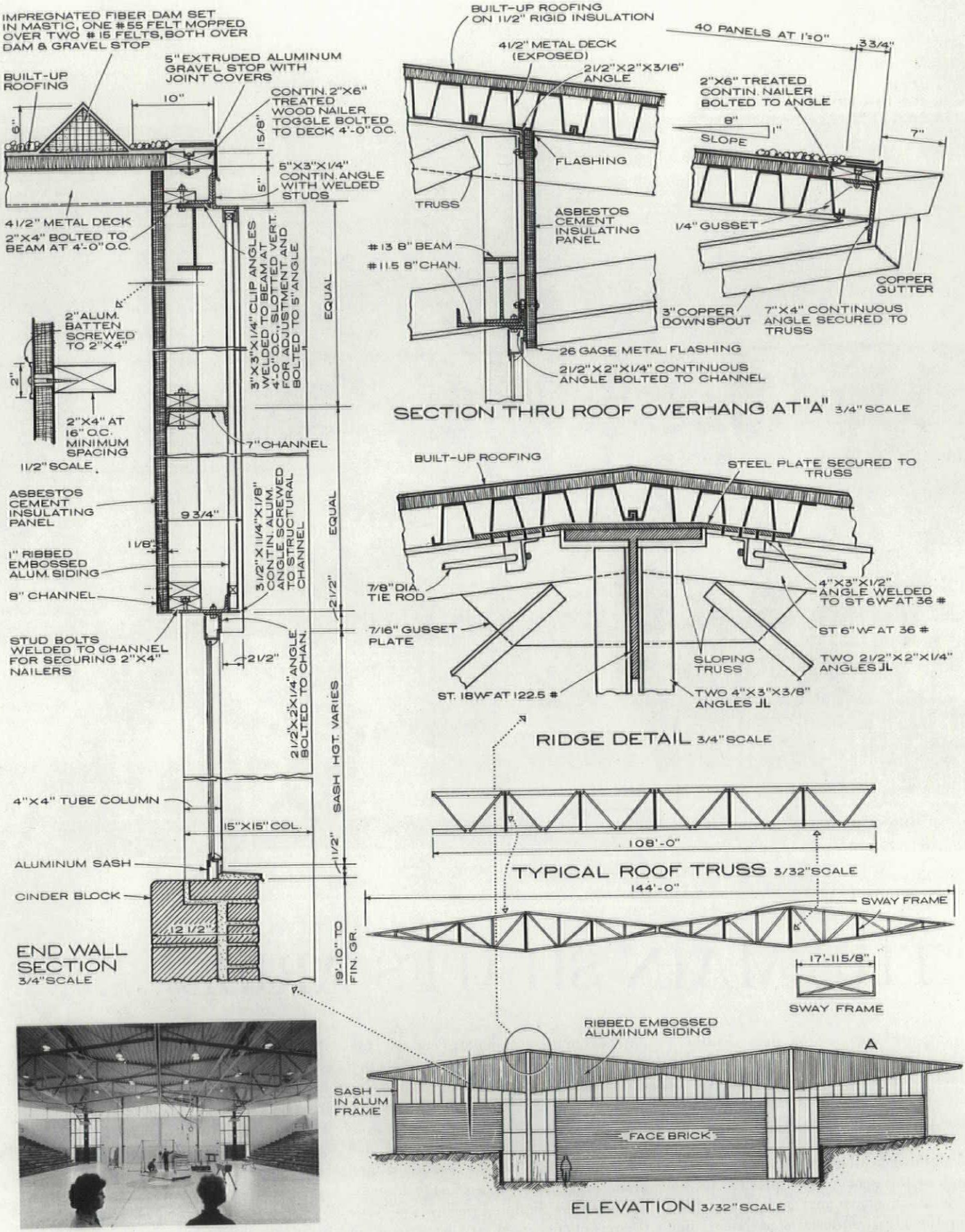
Gray brick panels relieve some areas of the otherwise all-glass corridor walls (left). *Metal acoustical material is applied to areas of the exposed metal deck ceilings. Each cluster of classrooms has a landscaped court at its center* (below).





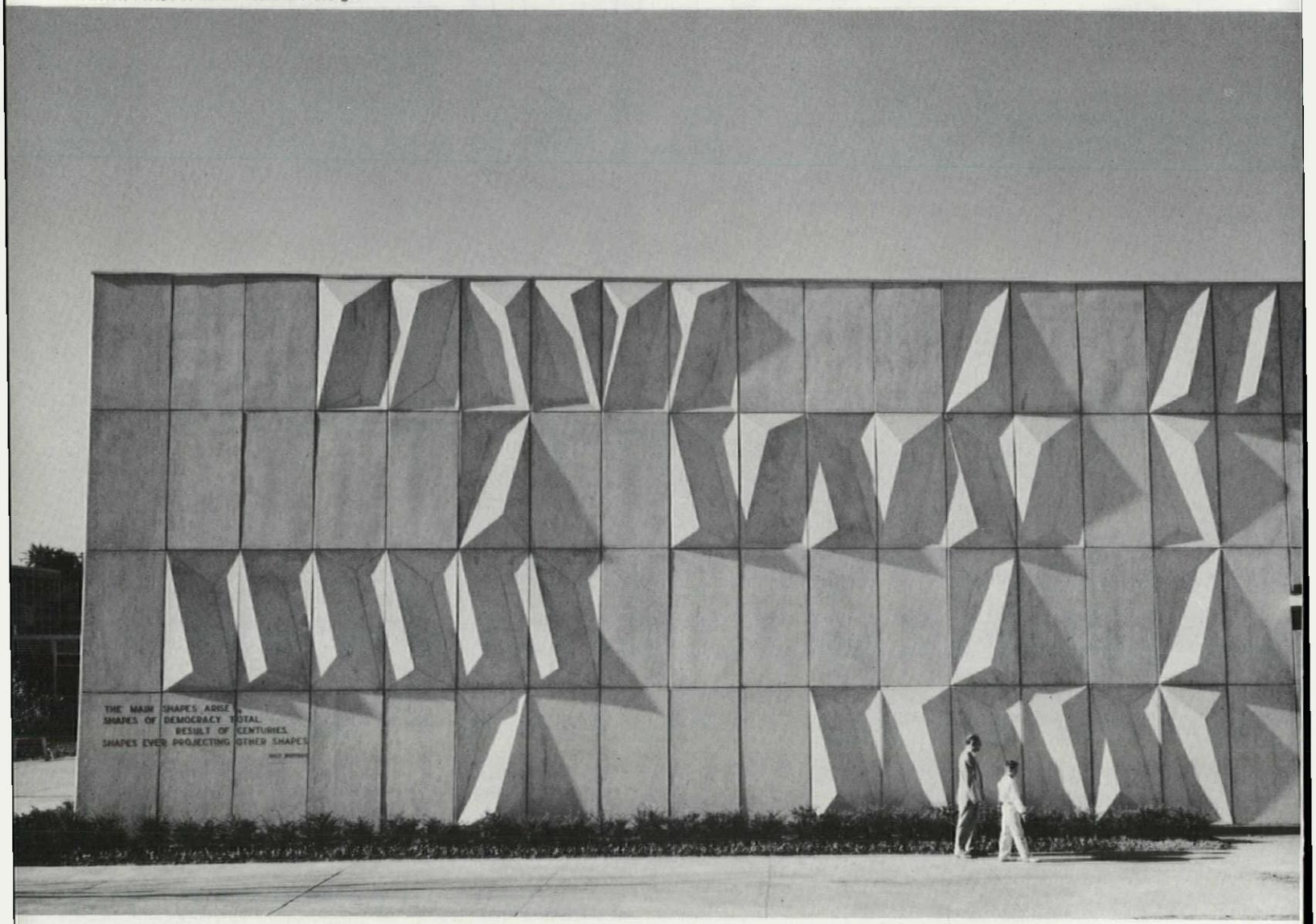


Diamond-shaped trusses over the gymnasium (right; *and* SELECTED DETAIL, acrosspage) *produce a striking silhouette that is recalled in the roofs of the library* (above left) *and industrial arts wing* (above right).



PONTIAC NORTHERN SENIOR HIGH SCHOOL: Pontiac, Michigan EBERLE M. SMITH ASSOCIATES, INC., Architect	SELECTED DETAIL GYMNASIUM ROOF DETAILS

Photos, except as noted: Alexandre Georges



"THE MAIN SHAPES ARISE . . ."

WALT WHITMAN JUNIOR HIGH SCHOOL • YONKERS, NEW YORK • ELI RABINEAU, ARCHITECT • H. H. LINN, EDUCATIONAL CONSULTANT • FRAIOLI-BLUM-YESSELMAN, STRUCTURAL ENGINEERS

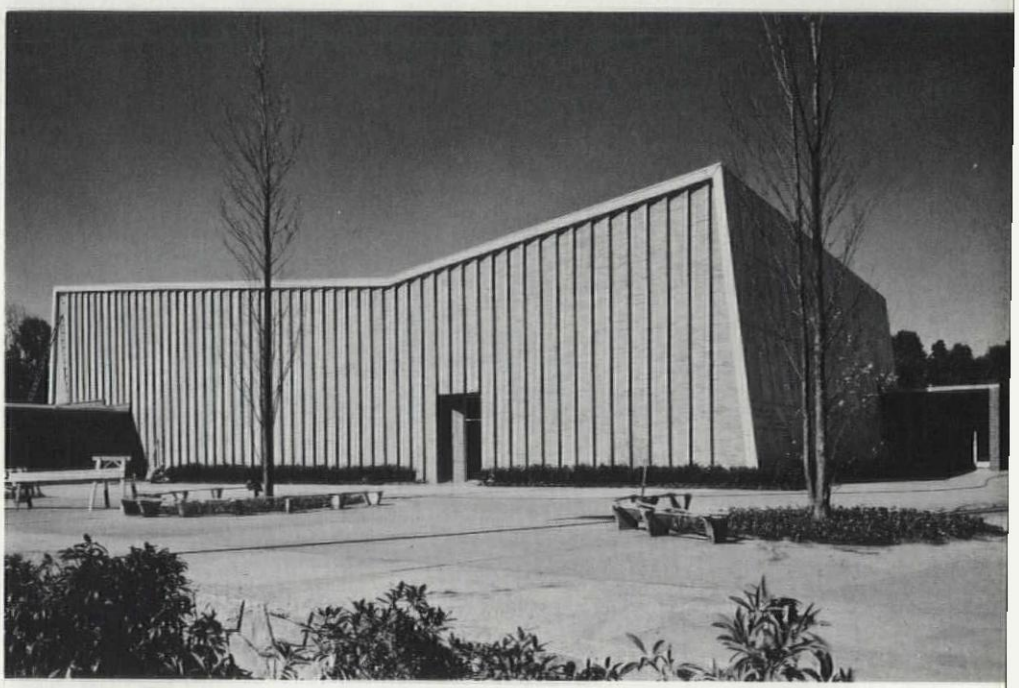
Both the educational program and the design of this school were intended to provide broad educational and social outlets for the great enthusiasm of junior high school children. In order to accommodate 1000 pupils on the rolling, 12-acre site, after allocating sufficient area for playing fields, a multistory scheme was evolved.

The compact social and athletic wing, adjacent to the parking area and the playing fields, houses all of the facilities that the school will share with the community. The cafeteria in this wing has been so located and designed that it provides overflow lobby space for the gymnasium and the auditorium. Since the educational program emphasizes music and dramatic training, the building includes a little theater, chorus room, and band room, in addition to the auditorium. These rooms have been acoustically isolated from one another by corridors and storage spaces, wherever possible, and in other cases by double walls of different heights and leaf thicknesses to prevent harmonic vibration.

The classrooms, which are insulated from the more active areas by the administration area, are arranged on three levels. The lowest level is a half-story below the main floor, to take advantage of the natural change in grade. The center of each classroom floor is within a few steps up or down from the administration area. In the opinion of the school administration, this three-level scheme is more convenient than the typical one-level plan, which involves long horizontal distances.

The most striking characteristic of the school is the unusual use of color and pat-

Photo: Cortlandt V. D. Hubbard

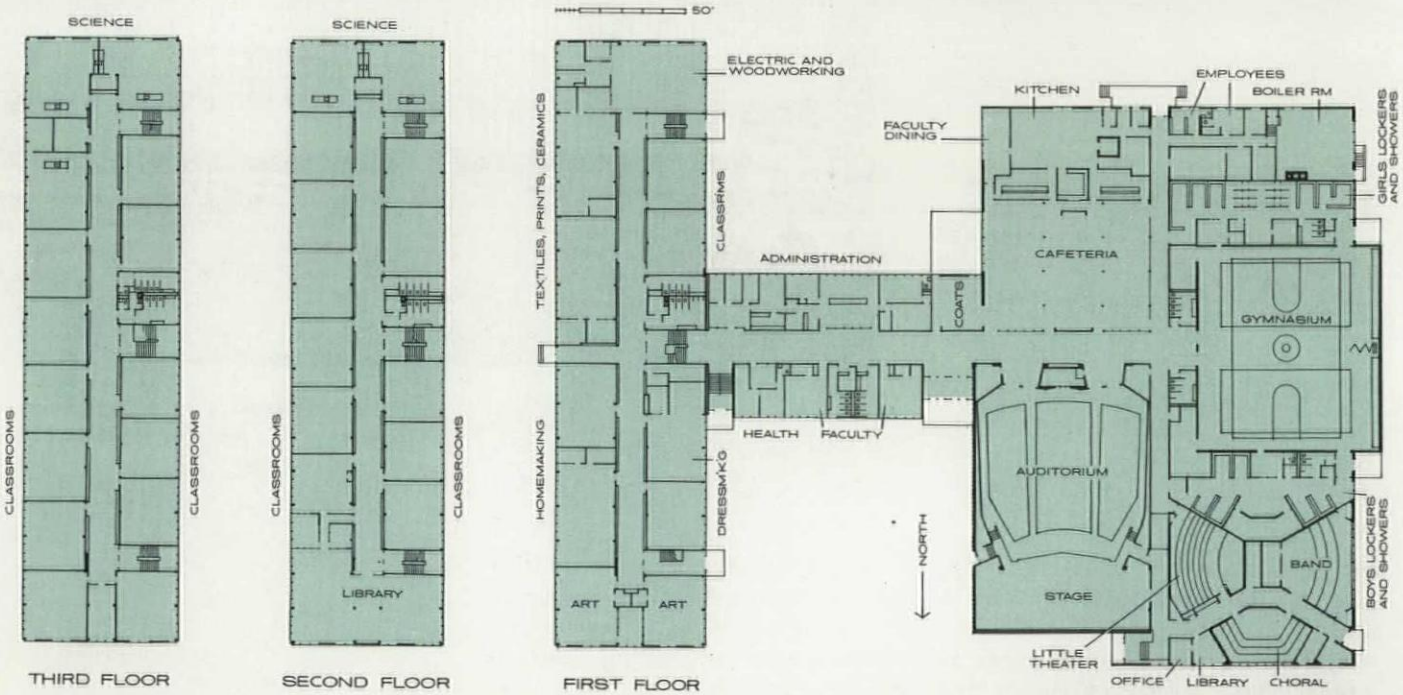


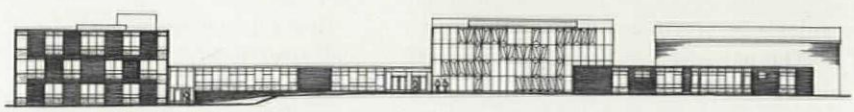
Sculptural shapes and striking surface patterns form a backdrop for the activities of lively junior high school pupils.

tern in surfaces and furnishings. Approaching the school, one faces a wall of precast concrete panels in a faceted pattern. Sculptor Sidney Simon designed it as a visual interpretation of a quotation from Walt Whitman's "Song of the Broad Axe," which is inscribed on it. The composition of similar, but varied, forms, changing under different lighting conditions, is intended to express the co-operation of individuals in creating a democratic society.

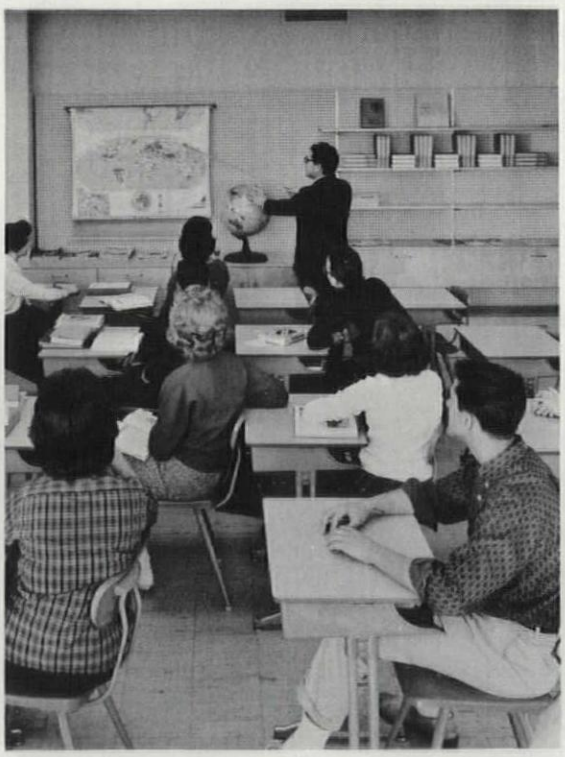
The patterns that appear on other surfaces throughout the building are generally made up of brightly colored elements limited in size to the modular dimensions of the neutral background materials. Occasional panels of yellow, blue, and purple are introduced in the predominantly gray porcelain-enamel curtain walls. The brick walls of the classroom wing include patterns of glazed brick in several colors: those of the auditorium are laid up in a ribbed texture.

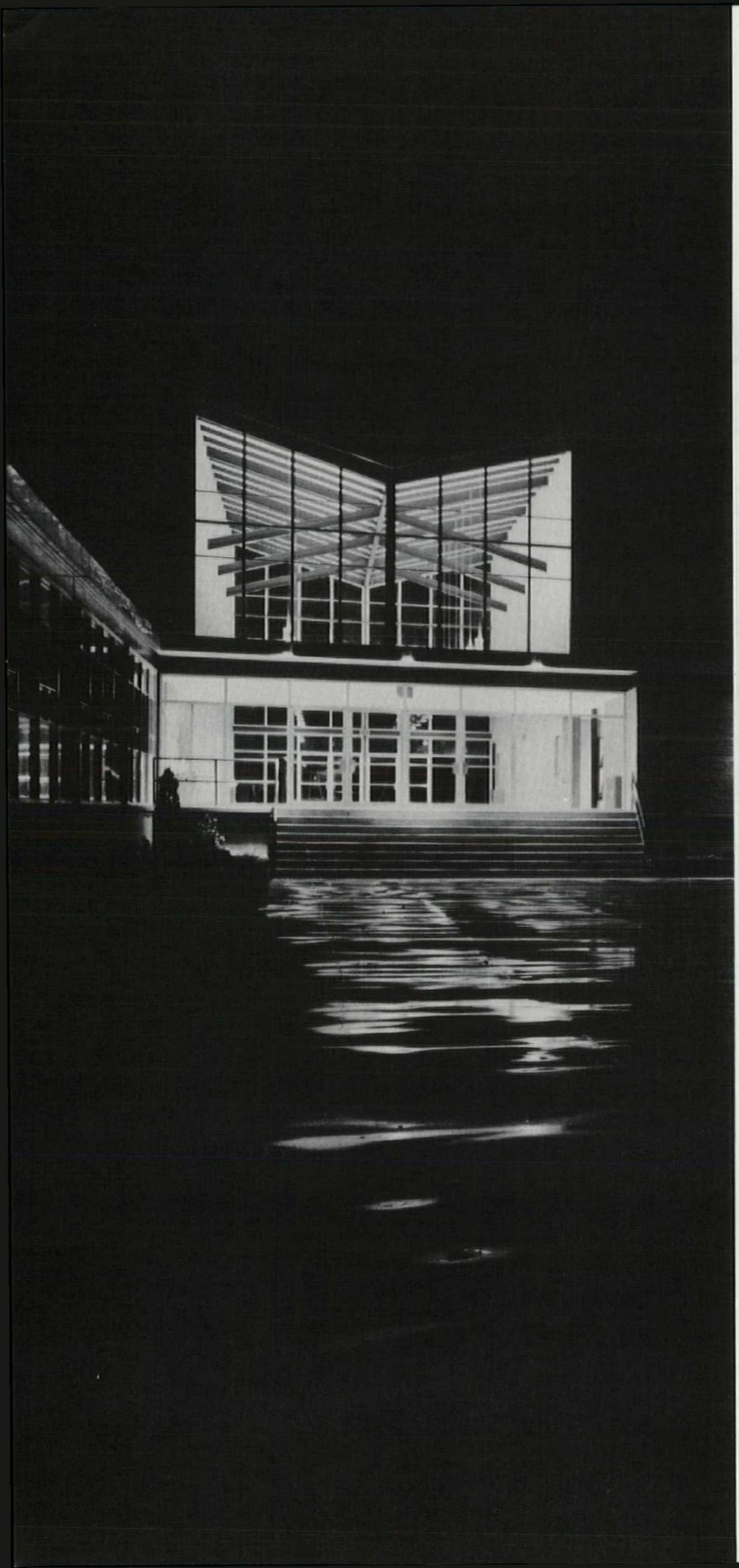
The structural frame is of steel, with open-web steel floor and roof joists supporting concrete slabs poured on permanent steel forms. All interior partitions are non-bearing to allow for future alterations. Building costs were $2,305,000, or $19.50 per sq ft.


SCIENCE
CLASSROOMS
CLASSROOMS
THIRD FLOOR
SCIENCE
CLASSROOMS
CLASSROOMS
LIBRARY
SECOND FLOOR
50'
TEXTILES, PRINTS, CERAMICS
CLASSRMS
HOMEMAKING
DRESSM'KG
ART
ART
FIRST FLOOR
ELECTRIC AND WOODWORKING
KITCHEN
EMPLOYEES
BOILER RM
FACULTY DINING
GIRLS LOCKERS AND SHOWERS
ADMINISTRATION
CAFETERIA
COATS
GYMNASIUM
HEALTH
FACULTY
AUDITORIUM
NORTH
BAND
STAGE
BOYS LOCKERS AND SHOWERS
LITTLE THEATER
OFFICE
LIBRARY
CHORAL



The patterns of red, white, and blue glazed brick in the walls of the cafeteria (acrosspage, lower photo) *are similar to those that appear on the exterior. The auditorium walls* (above) *have raised panels irregularly arranged on the integrally colored concrete block walls. The rectangular design of the curtain is executed in gold, red, and brown to harmonize with the colors applied in a "random" scheme to the seat-backs. Each classroom is fitted with a variety of removable cabinets and shelves attached to a pegboard panel* (right). *Most of the classrooms share a peaceful outlook into the woods* (acrosspage, top).





NATURAL LIGHTING

CARBON HIGH SCHOOL • PRICE, UTAH • EDWARDS & DANIELS, ARCHITECTS • JOSEPH PATRICK, STRUCTURAL ENGINEER

In the design of this senior high school for 900 students in the semiarid country of eastern Utah, the architects undertook a re-evaluation of the function of daylight. As a result, they adopted a one-story scheme, with skylights as the primary light source for all classrooms.

Laboratories and other spaces for active tasks were placed in the center of the classroom block. Academic rooms were located around the perimeter, with "vision strips" large enough to provide an outlook for the students, but not large enough to disturb the balance of the lighting. The compactness of the resulting plan yields economies by minimizing the length of exterior walls, corridors, and mechanical and electrical lines.

The skylights are incorporated in a roofing system that also includes provisions for artificial lighting and acoustical control. The structural metal panels of which it is composed have perforations backed up with glass fiber for acoustical absorption. Daylight and artificial lighting are introduced through 2-ft-wide louvered troffers. The typical classroom has three troffers extending throughout its entire length. The skylights themselves are made of prismatic glass, which is oriented so as to exclude direct sunlight from the south, while admitting cool, diffused light from the north.

The uniform steel framing of the classroom block permits economy through the repetition of members and connections. Identical steel trusses span the auditorium and gymnasium. The roof follows the lines of the diagonal bracing between the trusses, taking on a serrated profile reminiscent of the surrounding mountains.

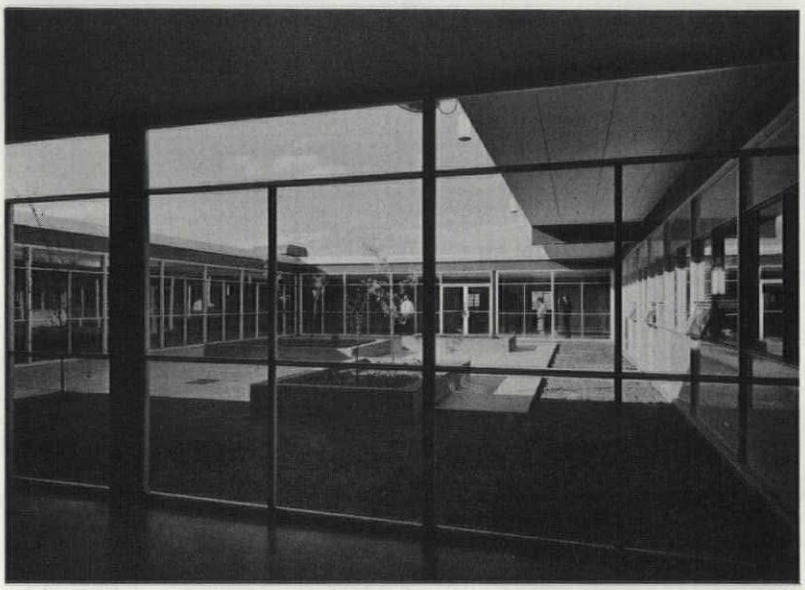
Brick of a local reddish buff variety has been widely used for walls and partitions.

RECONSIDERED

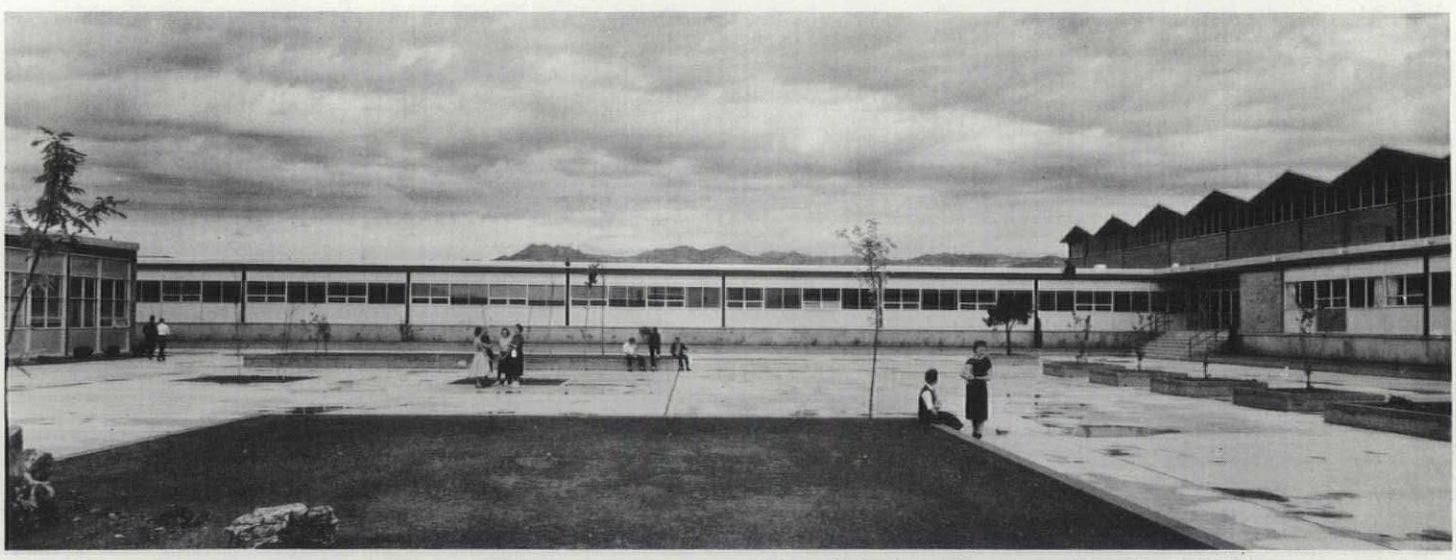
Its mass creates effective acoustical barriers between major spaces. Other partitions were surfaced with integrally colored cement plaster. The exposed steel frame has been painted a very dark blue; the porcelain-enamel panels of the window-walls are of a lighter blue, with occasional accent panels of orange.

The entire complex is organized around a paved "Great Court," which is shielded on all sides from the prevalent breezes. The trees that will shade it have been set in raised planters, the sides of which provide seating. A second, smaller court offers visual interest for the library and the main corridors, which overlook it from three sides.

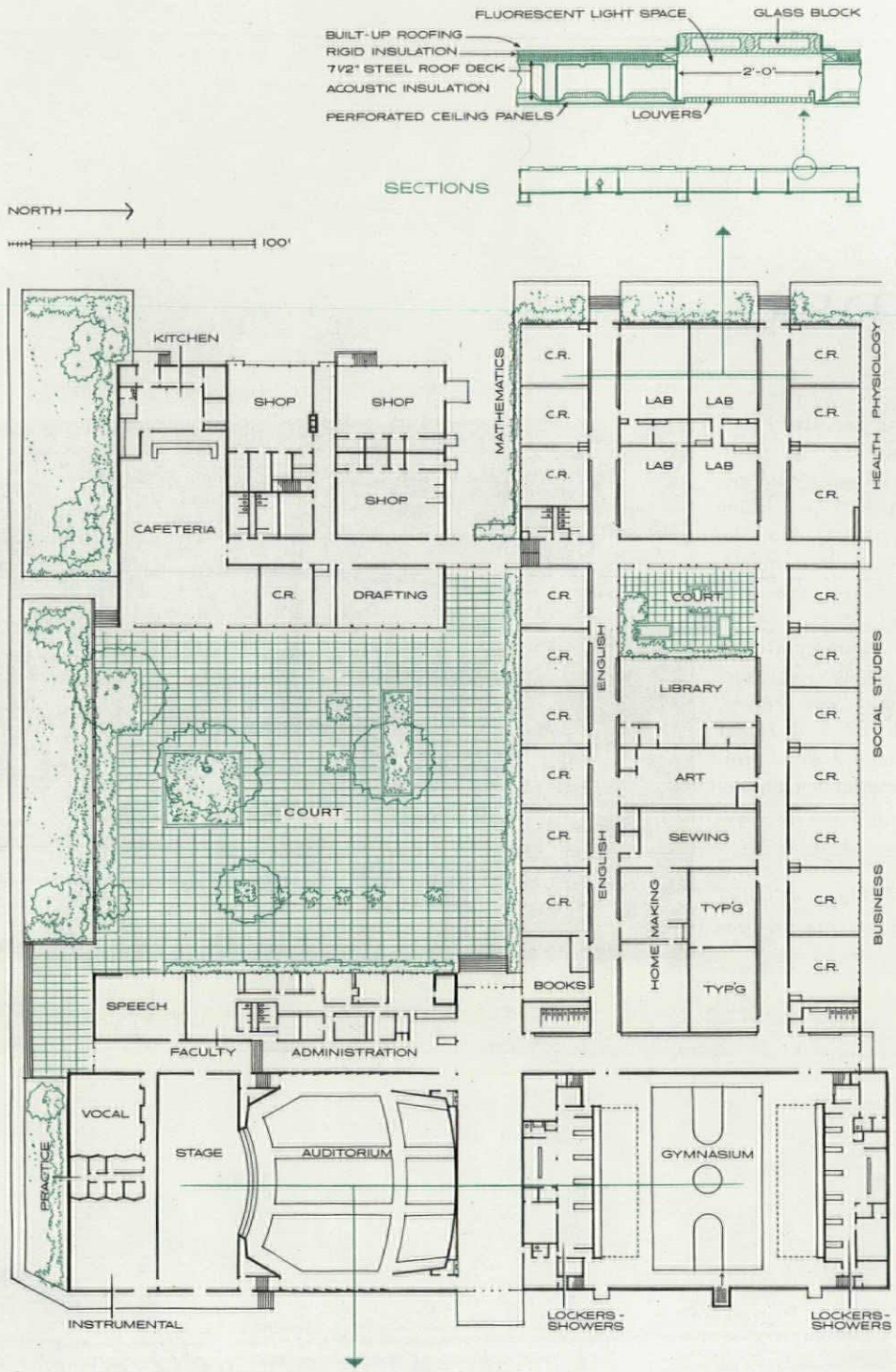
The final cost of the building, excluding furnishings and site development, was $12.46 per sq ft.



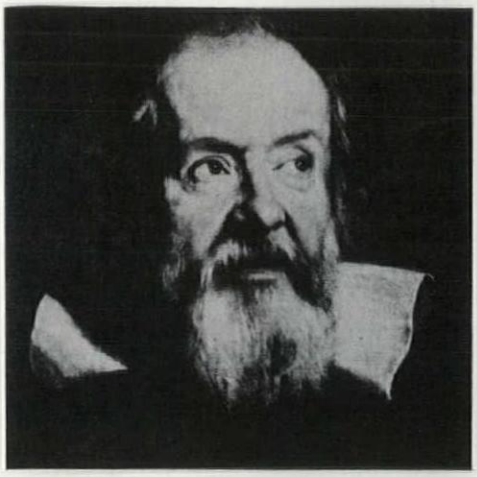
Photos: Hal Rumel



A small landscaped court in the midst of the classroom block (upper photo) *provides refreshing views. The larger court at the center of the entire school* (lower photo) *serves as an informal gathering place. Night lighting of the lobby* (acrosspage) *illuminates one bay of the continuous steel roof structure.*


FLUORESCENT LIGHT SPACE
GLASS BLOCK
BUILT-UP ROOFING
RIGID INSULATION
7 1/2" STEEL ROOF DECK
ACOUSTIC INSULATION
PERFORATED CEILING PANELS
2'-0"
LOUVERS
SECTIONS
NORTH
100'
KITCHEN
SHOP
SHOP
SHOP
CAFETERIA
C.R.
DRAFTING
COURT
SPEECH
FACULTY
ADMINISTRATION
MATHEMATICS
ENGLISH
ENGLISH
LAB
LAB
LAB
LAB
COURT
LIBRARY
ART
SEWING
HOME MAKING
TYP'G
TYP'G
BOOKS
HEALTH PHYSIOLOGY
SOCIAL STUDIES
BUSINESS
VOCAL
STAGE
AUDITORIUM
PRACTICE
INSTRUMENTAL
GYMNASIUM
LOCKERS - SHOWERS
LOCKERS - SHOWERS
SECTION
30'-0"
BUILT-UP ROOFING
1 1/2" RIGID INSULATION
1 1/2" STEEL ROOF DECK
12 WF 27, 25' O.C.
12 WF 27
6 I 6'-3" O.C.
ST 12 WF 38
L STRUTS
ST 12 WF 38
ROOF FRAMING

The steel roof framing is exposed in both the lobby (top) *and the gymnasium* (above). *The suspended ceiling of the auditorium* (left) *recalls the same shapes at a different scale. In a typical classroom* (below) *2-ft-wide louvered troffers, set in a metal acoustical ceiling, provide both natural and artificial illumination.*



Galileo

ORIGINS OF STRUCTURAL LAWS

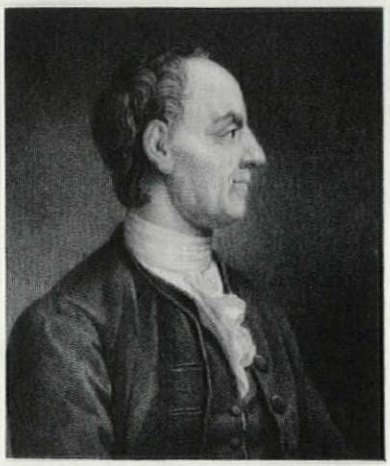
BY WILLIAM ZUK

Scientific inquiry into the behavior of structural elements goes back to the time of Leonardo da Vinci. This article, tracing the fascinating development of our structural laws, and cautioning us as to the relativity of our present knowledge, is by a Professor of Civil Engineering at the University of Virginia.

da Vinci

Coulomb

Bernoulli (Jean)



Euler

Illustrations: The Bettman Archive

All of us who have ever studied structural theory or structural mechanics have shared the common experience of being dazzled (or perhaps frazzled) by our first exposure to the collage of neatly derived equations on a score of subjects—beam stresses, column buckling loads, shearing stresses, lateral stability, principal stresses, deflections, truss stresses, carryover factors, etc., etc. These equations often loom as ruthless, infallible, inflexible monsters in textbooks created by an equally inhuman author.

In point of fact, the opposite is true. The equations are sometimes oversimplified, undersimplified, inaccurate, and sometimes just plain wrong. The equations were not deduced spontaneously by any one infallible author, but evolved only after many years of conceptions and misconceptions by many brilliant minds laboring toward a more complete understanding of the laws of nature. These impersonal equations do indeed have a very human origin, and their benefits are reflected in more functional, economic, and aesthetic structures for the safe shelter of mankind. The early investigators of the subject called themselves not scientists, engineers, or architects, but natural philosophers, since they studied structures in relation to nature.

The Italian Galileo (1564–1642) was one such early natural philosopher who, with Leonardo da Vinci (1452–1519), laid the cornerstone of modern scientific inquiry. In addition to dropping rocks off the leaning tower of Pisa, Galileo spent much time studying the strengths of materials: stone columns, obelisks, and heavy timbers as used in early shipbuilding. He stated that for geometrically similar structures, the larger the structures, the weaker they are! In his book *Discorsi e Dimonstrazioni Mathematiche*, he writes: "You can plainly see the impossibility of increasing the size of structures to vast dimensions either in art or nature; likewise the impossibility of building ships, palaces, or temples of enormous size in such a way that their oars, yards, beams, iron bolts, and in short all their other parts will hold together; nor can nature produce trees of extraordinary size because the branches would break down under their own weight; similarly, it would be impossible to build up the bony structures of men, horses, or other animals so as to hold together and perform their normal functions, if these animals were to be increased enormously in height; for this increase in height can be accomplished only by employing a material which is harder and stronger than usual, or by enlarging the size of the bones, thus changing their shape until the form and appearance of the animals suggest a monstrosity."

Thus, dealing with natural objects, he not only displayed his liking for long sentences, but he also explains to our own age why buildings a mile high, a roof to span a city, and a bridge from New York to London, cannot be built with present-day materials. It also helps us to explain to our children why little mice cannot grow up to be big elephants. It may be noted that the 20th-Century bridge builder, Robert Maillart, also strongly advocated this principle of "size makes weakness," and by doing the opposite he created some of the most exquisite bridges ever built.

Even as late as the mid-19th Century, the title of "natural philosopher" was held by some university professors until specialization destroyed this eminent position —the same specialization that took from architects the position of "master builder."

Origins of Beam Theory

Although the early Egyptians, Greeks, and Romans must have had empirical "rules of thumb" regarding the sizes of horizontal

members of stone and wood, Galileo, as "philosopher and mathematician extraordinary to the grand duke of Tuscany," is generally credited as being the first to put forth a rational (although incorrect) theory of flexural behavior in the early 17th Century. His predecessor, Leonardo da Vinci, had experimented some years before with the breaking strengths of iron wires in tension, as well as performing a few tests of beams and columns; however, da Vinci's conclusions were too sketchy to be of general value.

One experiment of Galileo's, described in his famous book of *Discourses*, gives a very interesting insight into the creative mind probing a new frontier.

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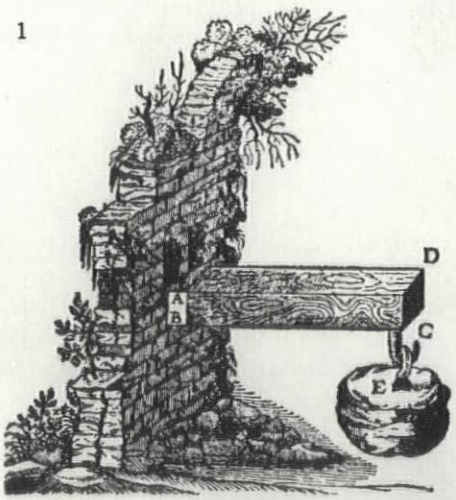


As shown in Galileo's own drawing (1), he fastened a wood beam into a heavy wall and loaded the free end with a large stone. It must be remembered that his only measuring instruments then were his own two eyes. Thus he observed that at the instant of failure, the beam fibers ruptured at A and quickly propagated down to B. He concluded from this: "It is clear that fracture will occur at the point B, where the edge of the mortise acts as a fulcrum for the lever BC, to which the force is applied; the thickness of the solid BA is the other arm of the lever along which is located the resistance." (He borrowed the concept of moment arm from da Vinci.)

From this he inferred that the force or stress distribution through the section BA was in a state of uniform tension. Before we chuckle at Galileo's mistaken deduction, we should perhaps think of our own scientific blunders when we see a multimillion-dollar rocket explode in flames on its launching pad. Although Galileo's conclusions were in part wrong, his theory provoked much subsequent study, with this beam problem becoming known historically as Galileo's problem.

The list of distinguished scholars who challenged this problem in the succeeding decades is most impressive, each in turn shedding a little new light, yet each also beclouding it a little with other errors. In the latter half of the 17th Century, Mariotte of France, finding that Galileo's theories gave exaggerated results, modified Galileo's hypothesis of uniform tension by assuming the stress in the cross section to vary about some neutral axis, the position of which he assumed to be immaterial. Both of these incorrect theories were used for almost a century before another Frenchman, Parent, deduced that the neutral axis in a rectangular beam has to be at the midsection. However, due to his obscure manner of writing, Parent's work was not widely disseminated, and the erroneous theories still continued to be used. Later, another Frenchman, Coulomb (1736–1806), independently concluded the same thing, and as he was more widely known, the error was finally rectified.

But what of a nonrectangular beam? Where is its neutral axis? After many years of incorrect thinking, it was finally proved by Navier in 1820 that the neutral axis of any shape must be at the centroid, and he presented the complete theory of flexure as we know it today

$$M = \frac{SI}{c}$$

to the French Academy of Sciences.

Paralleling this struggle with stresses, which lasted for two hundred years, there were similar labors regarding the deflections of beams. Credit for the development of the basic relaxation of flexure

$$\frac{d^2y}{dx^2} \sim M$$

goes to the collective efforts of the brothers Jacob and Jean Bernoulli and the blind mathematician of Switzerland, Leonard Euler, of the 17th and 18th Centuries respectively.

As an aside, it is interesting to note that Galileo's original problem dealt with ultimate or collapse strength. It was Robert Hooke of England (1635–1703) who observed the classic relationship of elasticity —"Ut tensio sic vis"—that precipitated the interest in pure elastic behavior. (Incidentally, Hooke was very jealous of his discovery, wishing to be credited with it without having it stolen; he published it as an anagram, ceiiinosssttuv, leaving it to the reader to figure out.) Elasticity had such an impact that it is only in the last decade that a serious return has been made to the more absolute concept of failure or collapse behavior.

The story, however, does not end here, as the subject of shear stresses in beams remained to be clarified. Although Coulomb and Navier toyed with the subject in regard to short beams, the approximate equation in use today

$$s = \frac{VQ}{It}$$

was derived by Jourawski and presented to the Russian Academy of Sciences in 1854, which awarded him a prize for it. The Frenchman Saint-Venant, using more rigorous equations of elasticity, derived the exact equations for beam shear in 1856. However, because of the complexity of Saint-Venant's analysis, plus the fact that Jourawski's equation is only a few percent in error, Jourawski's equation has stuck.

Thus it is apparent that the development of these few basic laws of beam behavior had a long and agonizing history, having been resolved only about a hundred years ago. Scientific construction, as compared

with the millenia of empirical construction, is still in its birth. Technical literature continues to swell with an annual explosion of new theories. To present all the latest theories, one would risk certain obsolescence even as one writes.

Column Theory

As with beams, da Vinci and Galileo also sought rules governing the strength of columns. In experimenting with the relatively stocky sections of stone and timber, they formulated some very elementary and incorrect rules of behavior, to the effect that column strengths vary inversely as their lengths and directly as their cross sections. These relations provided no insight into actual column behavior at all, and in all likelihood were no better than rules developed by the Egyptians thousands of years before that.

It was not until Euler's time—that is, in the 18th Century—that correct concepts of column or buckling action yielded themselves. As mentioned before in connection with beams, Euler was very interested in the deformation or "elastic line" of flexural members, and so he saw that, except for short stocky columns, columns actually deform by bending.

But if the column is initially straight, why should it bend? To explain this paradox, he developed a new and powerful method of mechanics, known as variational calculus, based on minimizing the energies in the structural system. In his own words: "Since the fabric of the universe is most perfect, and is the work of a most wise creator, nothing whatsoever takes place in the universe in which some relation of maximum and minimum does not appear." For the first time, there thus evolved the concept of minimum buckling load for elastic instability. At this critical buckling load, an initially straight column suddenly snaps into a bent position, explaining the paradox. Euler thus developed the equation that bears his name

$$P = C\frac{\pi^2}{4L^2}$$

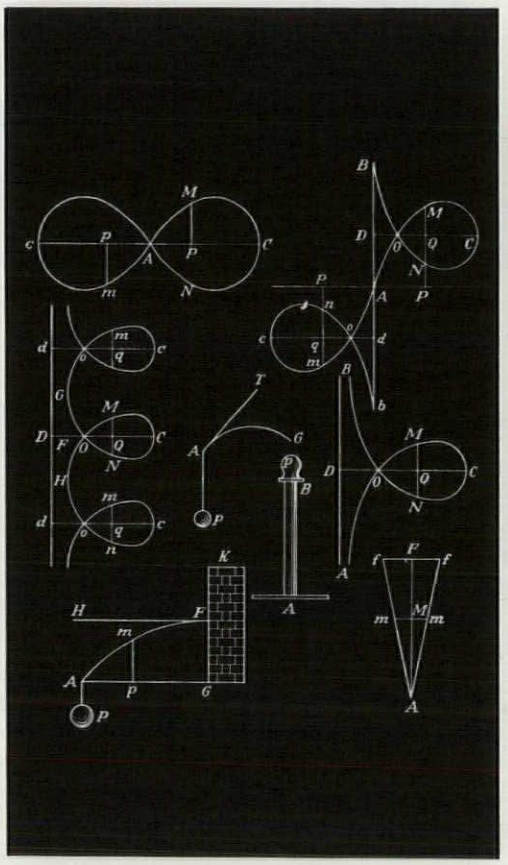
in which he allowed C to be some unspecified elastic constant.

Carried away by his discovery, Euler proceeded to investigate many other fascinating curves, as shown in his work on "elastica." **(2)**

Later on, in the 19th Century, after Navier cleared up the matter of neutral axes and moments of inertia, the constant C was replaced by EI. It is only fair to add at this point that E, the modulus of elasticity, is still an experimental constant (much as C was), which in no way provides a basic explanation of why it varies in different materials. It is predicted that in years to come, E will also pass into oblivion and will instead be expressed in terms of more fundamental interatomic constants. Indeed, all of structural analysis may be in for a shake-up, so it is well to perceive of existing equations only as approximations to the truth.

Lagrange (1736–1813), following Euler, refined the latter's instability theories to some extent, but still confined his studies to pure elastic action.

Unfortunately, Euler's and Lagrange's equations showed very poor correlation with experiments, despite the apparently rigorous proofs; as a result, their equations lay dormant for many years, and reliance was put instead on strictly empirical



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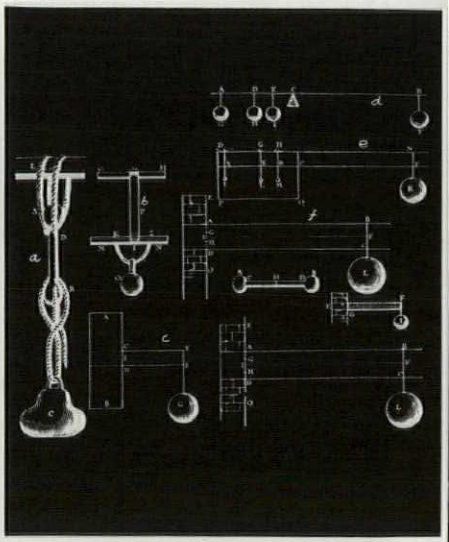

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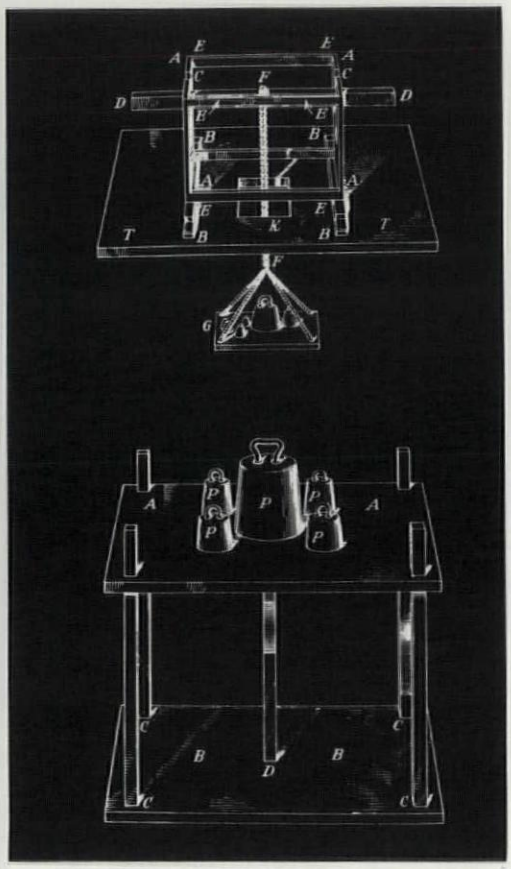
(2) Deflection curves investigated by Euler. (3) Tensile and bending experiments made by Mariotte. (4) Musschenbroek's apparatus for bending tests (above) and compression (below). (Illustrations from S. Timoshenko's History of Strength of Materials, *McGraw-Hill, 1953.)*



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equations developed purely from testing data. Having no reliable underlying theory, each organization needing column formulas—railroad companies, column manufacturers, and city building officials—developed their own equations (each one different), many of which still linger on today.

The discrepancy between Euler's theory and test results, not clearly understood at the time, was simply that actual columns are neither ideally straight nor concentrically loaded, coupled with the fact that columns of normal structural proportions yield before they collapse by buckling.

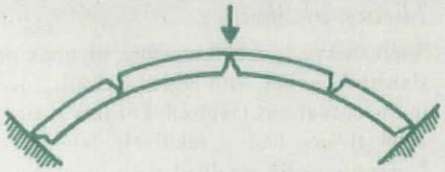
After some catastrophic buckling failures at the end of the 19th Century, several bridge engineers—Jasinky of Russia and Engesser of Germany—actively sought a more theoretical understanding of actual column behavior. Engesser intuitively proposed a so-called "tangent modulus" theory in 1889. Jasinky attacked this theory as being full of error. Several years later, yielding to Jasinky's attack, Engesser revised it to a "reduced modulus" theory. In 1908, the distinguished contemporary scholar Von Karman presumably verified the "reduced modulus" theory with tests. Then, after it was believed that harmony was established, an American, Shanley, upset the apple cart in 1947 and produced evidence that Engesser's original "tangent modulus" theory was correct after all. Although most informed persons have now re-embraced Engesser's original theory, a few skeptics no doubt remain.

It is to be hoped that one's faith in textbooks will not be too severely shaken by these exposures of error; for the most part, the information they contain is sound.

Concepts of Arches

Here again, although magnificent arches were built by the Romans before the time of Christ, mathematical concepts of arch theory did not originate until 1695. Lahire of the French Academy, by considering each wedge in the arch as a separate segment, developed a funicular polygon of forces based on concepts of static equilibrium and vector composition of forces that can be traced back to da Vinci's notes. He thus correctly found the thrust for masonry arches and the relative sliding forces acting between the wedges.

Aided by numerous model studies, Coulomb, in his memoir of 1773, explored the more involved case of arch failure by bending instability or rupture.

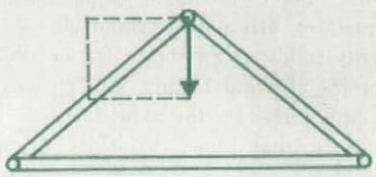


Once on the right track, refinements and additions to arch theory were thereafter made, in the 19th Century, by such men as Bresse, Gerstner, Moseley, Poncelet, Culmann, Villarceau, Winkler, and Mohr.

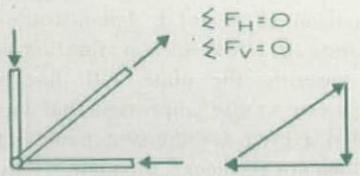
However, even though two-dimensional arch theory proceeded smoothly and is quite well understood today, much clarification is still needed on three-dimensional arch behavior. (This subject encroaches on that of shells, described later in this article.)

Truss Analysis

It seems impossible to escape the genius of da Vinci, for once again one discovers in his notes a sketch of an elementary truss indicating the rudimentary nature of truss analysis by components of force.



Despite the innumerable trusses built both before and after da Vinci's time, it was not until 1847 that a comprehensible book on the analysis of trusses was published by an American named Whipple. His procedure was essentially a "method of joints," where each truss joint was isolated and solved by static equilibrium concepts both analytic and graphic.



Jourawski, mentioned previously in connection with his work on shear stresses in beams, also became involved in truss analysis. He constructed a unique truss model in which the tension members were strings; by plucking the strings and observing the pitch, he verified the theoretical tensile stresses.

The German engineer Culmann (1821–1881) developed more refined graphical procedures and conceived of the so-called "method of sections" for truss analysis. For what it is worth, Culmann, on the occasion of his visit to America, said of American engineers: "Each practical engineer considers himself as the highest authority, looks down on the others and pays no attention to them."

Analysis of Rigid Frames

The theoretical basis for the analysis of rigid frames lies in the solution of statically indeterminate systems. Navier, in 1825, was the first to grapple with statically indeterminate analyses in his studies of continuous beams. Clapeyron (1799–1864) furthered the analysis by developing general relations between end moments and end slopes as well as outlining the "theorem of three moments." In 1860, Professor Otto Mohr, (widely known for his circle), extended and generalized the moment-slope relations to include deflections, whereby the name "slope-deflection" equations originated. Manderla of Germany followed up this work in 1880 by studies of rigid frames and trusses, accounting also for the axial forces.

Since that time, handfuls of other methods have been concocted to assist and confuse the designers of rigid frames, although the iterative method of moment distribution proposed in 1929 by the late Professor Hardy Cross of Yale seems to have captured the hearts of designers for its comprehensible directness and simplicity.

Plate or Slab Theory

In 1809, the French Academy invited Napoleon to attend a demonstration on locating the nodal lines in vibrating plates by covering the plate with fine sand. Napoleon was so impressed that he suggested a prize for the best paper on the mathematical theory of plate vibration. This was a subject of immense challenge, since even two-dimensional beam theory was not yet fully understood.

Some initial attempts, however, had been made by others prior to this time. Euler considered the vibration of a system of crossed strings in tension, and Jean Bernoulli in 1789 derived an approximate equation for the bending of plates in the general form of a fourth-order partial differential equation,

$$D\left(\frac{\partial^4 w}{\partial x^4} + \frac{\partial^4 w}{\partial y^4}\right) = q$$

where w is the deflection under the load q. Bernoulli's assumption was to consider the plate as a system of crossed strips, a rational but approximate supposition.

In 1811, at the closing date for the French Academy's prize entries, only one candidate showed up, a Frenchwoman named Sophie Germain. Mlle. Germain employed Euler's theory of variational calculus, but made a mistake in calculation. The Academy mercifully offered the prize a second time. Again, in 1813, only Sophie Germain showed up—but this time with the error corrected. The judges, however, were not satisfied with one of Sophie's basic assumptions and turned her away again. Finally, in 1816, after offering the prize for the third time, they allowed Mlle. Germain to win it, even though they were still not completely satisfied. As it turned out, Sophie Germain's assumption was not correct, and Poisson (of Poisson's ratio fame) set the record straight later by explaining the error. Then, in 1820, Navier, by considering the plate as a system of molecules, presented the correct theory of plates to the French Academy.

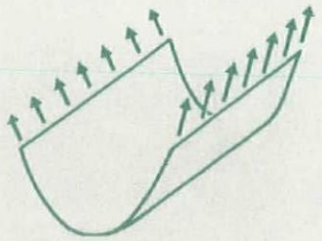
$$D\left(\frac{\partial^4 w}{\partial x^4} + 2\frac{\partial^4 w}{\partial x^2 \partial y^2} + \frac{\partial^4 w}{\partial y^4}\right) = q$$

Note that this equation is similar to Bernoulli's earlier equation except for the middle term, which represents the twisting or warping action of the plate. Navier also supplied a number of solutions to this differential equation for plates loaded with both uniform and concentrated loads. His theoretical solutions are still in use today.

In case the reader does not recognize Navier's equation, it must be said that only a few engineers ever use the basic equation as given in this form. For convenience, the results are generally put in tabular or coefficient form.

Theory of Shells

Shell theory is a consequence of plate or slab theory, but with added difficulty due to the curvatures involved. For this reason, shell theory had a relatively late start. Navier is again credited with presenting, in 1826, the first equations on this subject. His shell, however, was really a thin membrane with curvature in only one direction, somewhat like a slung sheet of canvas.



A joint paper by Lamé and Clapeyron followed in 1828, which also considered only direct membrane stresses, with no shears or moments. In 1892, the eminent English elastician Love, using rather high-powered calculus, developed more complete equations of cylindrical shell behavior, including both membrane and moment forces. As Love's equations were in frightening mathematical form, they were not conveniently usable by engineers or architects. Only as recently as the 1930's did several Germans, among them Finsterwalder and Dischinger, reduce the theory to more meaningful form. Schorer, an American, simplified the theory even further.

One may wonder why such theoreticians were apparently going backward by developing less exact theories rather than more exact ones. To the uninitiated, it must be pointed out that even the approximate equations are horrible eight-order partial differential equations, much too long even to write here. Just as slab theory had to be reduced to tabular and coefficient form for convenience, much shell theory had to be also. However, the general subject of shell theory is still so new as to be on the frontiers of knowledge, with new concepts coming to light in almost every technical publication.

Conclusion

If a summary of all this human effort is possible, it may perhaps be said that scientific construction is still just in its infancy, with immense possibilities ahead. Pencils must be sharpened; for even now practice lags behind theory, and buildings are structurally designed with far less elegance and refinements than airplanes and missiles. Who is ready with theories for roofing New York City to keep out the rain and snow, encompassing all the complexities of aerodynamic, thermal, and vibration behavior?

Lighting a Pedestrian Mall

Lincoln Road Mall, in the Miami Beach downtown shopping area, was created by closing off eight city blocks from vehicular traffic. The distinctive lighting techniques and effects designed for the new uses of the space are reported here.

The trend toward creating pedestrian malls in shopping districts in the heart of cities has taken on further reality with the recent opening of the Lincoln Road Mall in Miami Beach, Florida. Architects for the project were Morris Lapidus, Kornblath, Harle & Liebman; Lighting Designer, Lighting by Feder. Eight city blocks (about 4000 ft) were cut off from vehicular traffic, and were relandscaped and relighted to make a public promenade and exhibit area. All parking is outside the area, and pedestrians wander as they please between the two rows of stores that border the mall.

The mall has an unusual architectural and lighting design. Each block has its own distinctive features, but the entire mall is drawn together into one related design. Variously shaped concrete forms dot the landscape, each form being little more than a roof, completely open at the sides. The spaces they cover are to be used for exhibitions and displays, or simply as shelters. There are benches throughout the mall.

Each block is further enhanced by a water feature — a fountain, a weir, a lagoon, etc. The water forms are closely related in design to their adjacent concrete forms. Landscaping has been widely used; trees and plantings are, of course, tropical varieties.

It is obvious that the people living in Miami Beach welcome the mall as much as store owners; no sooner were the benches installed than they were filled, long before the mall was completed. Every city needs its recreation places that are not specifically for entertainment or sports: places where people do not have to do anything except *be*. Such places are particularly needed at night, when most people are free.

A Blanket of Light

The lighting of the Lincoln Road Mall had to underscore the architectural design without intruding on it. This meant, for example, that the parade of street lights was removed. For one thing, street lighting, as we know it, is too uneven, starts too low, and requires too many poles. Instead, the general lighting was designed as a blanket of light with accent points, starting as high above the ground as possible, but reaching to the ground. This idea of projecting is more important than it may sound; much of current street lighting utilizes fluorescent lamps that cannot project light very far. Most of their light is lost in space, and the light that remains tends to hover around the lamp itself, some 30 to 35 ft above the ground. At the Lincoln Road Mall, however, the volume of space between the lamp and the ground is solidly filled with light.

Ideally, the blanket of light should be brought up as high as possible, so that people can see light everywhere and move with a daylight security. This part of the country, however, is within the hurricane belt, and the pole height had to be kept to 60 ft. But even at this height, only 11 tapered aluminum poles are used, located down the middle of the mall at a spacing of approximately 250 ft. Had they been higher, the poles could have been still further apart, and even fewer poles would have been employed.

Three of the poles have six luminaires each, and the eight others have four each. The luminaire consists of an R-80, 1000-w, mercury-vapor bulb set in a specular alzak aluminum reflector housing, designed by the lighting consultant. This powerful mercury-vapor bulb, with its own built-in metal reflector, projects a controlled and intense beam of light, and produces 53,500 initial lumens, comparatively little of which is lost during the life of the lamp. When set in the special reflector housing, the beam of light is still further controlled, with less light spill, and further intensified. This control is what makes it possible to target light at will. The curve for the reflector housing took more than a year of tests and experiments to be developed.

Dramatic Highlighting

The pole lighting is designed as much for dramatic impact as for general area lighting. The plantings themselves are striking: various types of palms from all over the tropics; the tall "Weeping Podocarpus" evergreen from South Africa; shrubbery

from Polynesia, Ceylon, Malaya, Mexico, and Abyssinia; and exotic flowers again from the tropics. (John Poulos and R. C. Kunditz, the Park Commissioner and City Horticulturist, respectively, designed the landscaping.) Such trees and shrubs were natural accent points for highlighting. By shooting a beam of light through a tall palm tree and down onto a bed of white flowers below, the tree and flowers become unusually brilliant and effective. The light accents the tops of trees, so that the height of the blanket of light is always emphasized as well.

Points of interest, like the onyx stone around one of the water-forms, which are targeted by the pole lighting, might have an illumination level of as much as 60 to 90 ft-c. The general lighting, as such, is most intense at the center of the mall, running lengthwise, drawing attention as a stage does. The lighting bleeds off at the sides, deliberately separating the mall from surrounding areas. It is an interesting point that the total power required for this intensely bright general lighting of the eight-block expanse is considerably less than the power that had been required by the previous street lighting, consisting of many more poles and luminaires. The illumination level along the sides of the mall, at the walks in front of the stores, is raised by the glow from the lighted façades of the stores.

Night lighting of the outdoors is moving slowly toward the ideal of a daytime feeling. Slowly the light sources are mounted further from the ground. From the norm of 20 to 28 ft, light poles today are more frequently 35 to 45 ft. What has prevented still greater heights has been the limitations of the light sources themselves—few lamps could project onto the ground enough of the light they were actually producing from any height greater than 28 ft. Now the reverse is true; a powerful and efficient light source is available. The R-80 mercury-vapor lamp, with a rated life of 6000 hrs, can project light onto a target from a great distance—over 600 ft. Were the demand at hand, more powerful light sources, eminently practical, could be designed.

But the designing of light poles that can stand up under all weather conditions keeps the mounting heights lower than they should be. Perhaps it is necessary to stop thinking in terms of narrow, tapered poles, which, beyond a certain height, become a menace due to windage, and start thinking in terms of actual architectural forms on which light sources would be mounted. These architectural forms could be as high as skyscrapers if necessary, and become a positive element of design, integrated into a given landscape. Fewer and fewer of these forms would be required proportionate to their height.

Underwater Innovations

Altogether, there are 10 different water-forms throughout the eight-block length of Lincoln Road Mall. Two of these are jet fountains of different sizes; two are ponds on which lilies float; two are mushroom fountains. There are also two columns of water shooting into the air, a waterfall, and a weir. All are lighted with PAR-64 incandescent underwater fixtures, originally designed by the lighting consultant, which have special horizontal and vertical adjustments for targeting. After units are targeted at the site, they are permanently locked into place. They are designed for easy relamping.

Something new has been done here in the way of color. Gelatin, which can be dyed to an infinite number of tints, is an impractical source for underwater color filters. Feder was the first to use cinemoid color filters underwater with great success; cinemoid, like gelatin, can also be dyed in a variety of subtle tints. At the Lincoln Road Mall, however, Plexiglas is being used for the first time. A comparatively cheap material, it will last six times as long as cinemoid without fading, and tests have shown no shrinkage.

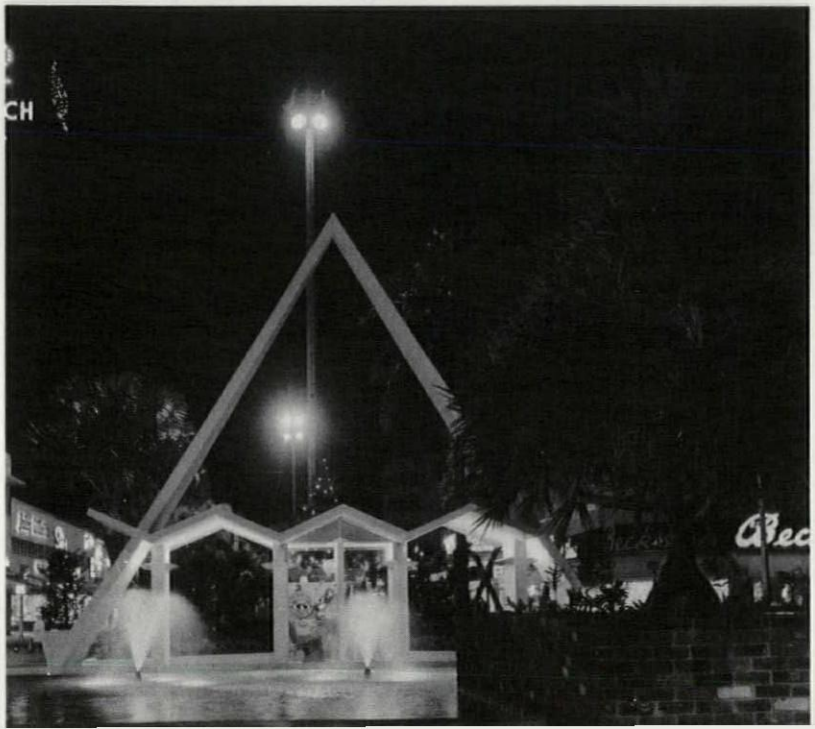
Because of budget limitations, no dimming facilities are provided for water lighting. Color contrasts are nevertheless used. Three tints of color are employed—one in the blue family, one in the blue-green family, and one in the orange family—with each water-form lighted in one of the tints. As the eye travels down the mall, it notes the contrast in water-forms not only architecturally, but also in color. The effect is exciting.

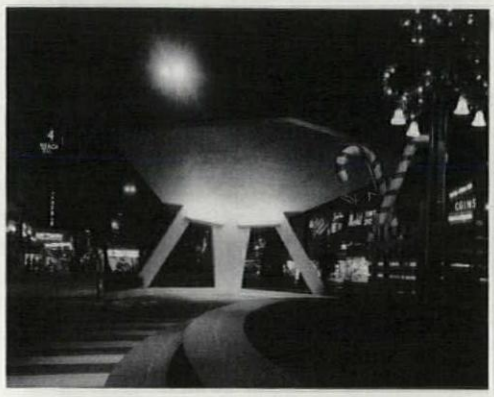
Altogether, 65 underwater units are used. Two long nights were spent in focusing these units alone.

Spotlighting the Central Oval

Toward the middle of the mall, a grass oval, approximately 60′ x 20′ and entirely raised by three wide, low steps, is set aside as the "Lawn Display" area. Toward the narrower extreme at each end of the oval, there is a 30-ft aluminum pole on which are mounted two aluminum ring designs. Within each ring are four PAR-64 units. Altogether, therefore, there are 16 such units, eight on each pole. At one end of the oval, but outside it, provision is made for a portable bandstand. For the opening night, two of the PAR-64 units were focused on the bandstand for spotlighting. The other 14 units were focused along the oval line of the steps, where a fashion show was held. For other types of shows or exhibits requiring the use of the grass area within the oval itself, the PAR-64 units can be refocused.

These PAR-64 units are most effective





spotlights, providing an accurate beam pattern and an intense brilliance. They give a theatrical touch to Lincoln Road Mall, but without the headache of the usual, short-lived stage lamps. The PAR-64 units have provision for color filters; the colors used will vary with the type of exhibit being shown.

"Natural" Fluorescent Lamps

There are nine low concrete forms, known as shelters, six of which have fluorescent lighting. Their interiors are completely open, separated from the exterior by roofs only. The problem here was that when an outdoor area is covered with the cool value of mercury-vapor light, any other light not in this color family appears dirty, no matter how ideal the color, unless it is concentrated in a large and very bright area of its own. The effect of cool light on warm light can be seen again and again in factories where a row of cool white or daylight fluorescent tubes is broken by one warm-white lamp. The warm-white lamp may produce a better light, but set among the cool lamps it is an eyesore. This was the situation at the Lincoln Road Mall. The lighting of these six shelters can be seen in its entirety from the outside. Since the shelters are to be used mainly for display and exhibit purposes, warm-white deluxe fluorescent lighting would have been the automatic choice because of its minimum color distortion. What was actually chosen was the new Sylvania color, "natural," which will be on the market shortly. The color of this natural fluorescent lamp is cool to the eye, blending well with the exterior lighting, but in reality it has considerable red in it. The actual effect on the colors of objects (and, not incidentally, on skin tones) compares favorably with warm-white deluxe fluorescent lighting. While strengthening the red within the "natural" tube, the green is also strengthened and the blue depressed. The effect has been tested by the lighting consultant for some months on paintings, and the results have been excellent. The choice of this fluorescent lighting for six of the shelters thus solved two problems at the same time: the provision of good color rendition for exhibits and displays, and the blending of the interior lighting with that of the exterior.

The fluorescent lamps, used in 3′, 4′, 6′, and 8′ lengths, are of the VHO family (the 3′ lamp is available only in the HO type), producing an intense light. They are housed in extruded-aluminum, indirect reflector troffers, mounted from the walls like spokes. The light bathes the entire ceiling of the shelters, and washes downward. Where two lamps are used in tandem, the troffer is continuous, without a break.

Two of the shelters, which are more enclosed by plantings, with the light more or less cupped off from the exterior, have incandescent lighting. One of these shelters has wall-mounted, cone-shaped, indirect units. The second is lighted with ceiling-mounted, metal-shaded downlights. The perforations in the shades create an interesting pattern on the ceiling.

The last shelter is lighted with nine R-60, 400-w, mercury-vapor lamps, again set into special reflector housing. There are three "pots" in the floor of this shelter, with three R-60 units sitting in a group within each pot. The light is directed at the ceiling and bounces back in an effective burst. Each unit has a tinted Hexcel louver, so that even when looking directly into the source of light, there is no glare. The depth of the louver and the cut-off angle of the blades were designed expressly for this purpose. Without the louver, it would have been impossible to mount the units on the floor in this fashion.

Other Features, Over-all Effect

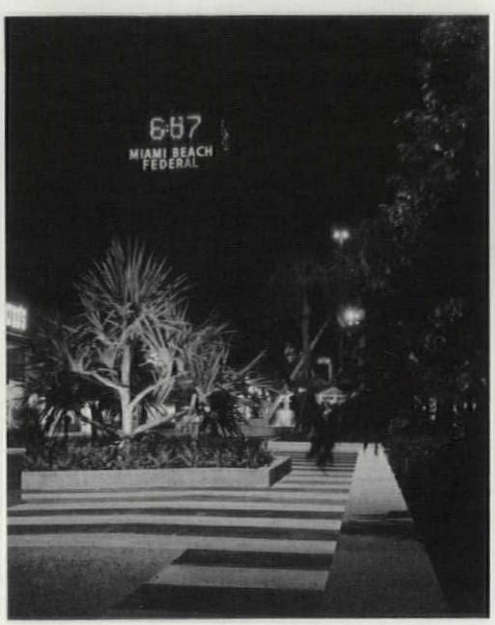
At either end of the mall are 13 flag poles, each lighted by a grade-mounted, PAR-56, 300-w, ball-shaped weatherproof unit.

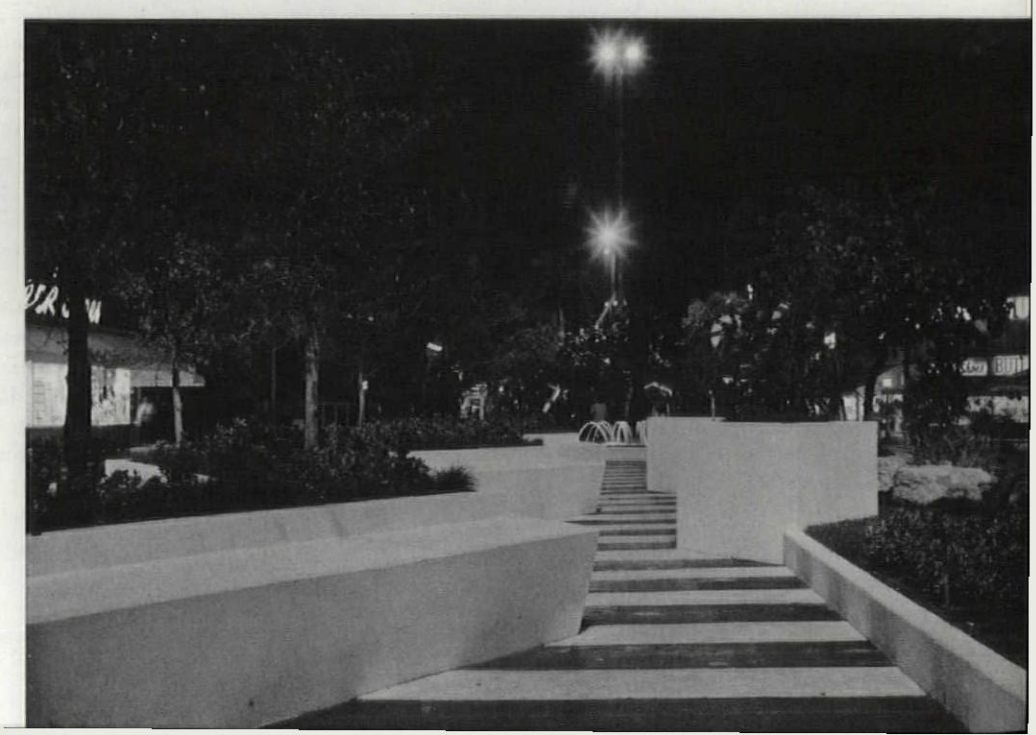
A standard grade-mounted PAR-38, mercury-vapor unit is spotted throughout the mall for undertree lighting. Mercury-vapor sources are ideal for tree lighting, emphasizing the blue-green feeling of foliage at night. Incandescent lighting, by contrast, turns leaves to a muddy brown.

The over-all effect at Lincoln Road Mall is striking. The cascading colors of the water, and of the pole lighting playing on the tops of the trees and the flower beds below, are visually exciting. The effective blend of the shelter and exterior lighting turns the concrete forms into dark silhouettes in a field of light.

The most important accomplishment of the Lincoln Road Mall, however, is the creation of a place where people can gather without having to do something to get in. Our cities are badly in need of such places. The current building boom of offices and apartment houses in our cities often seems more centered on building itself than on people. But the mall at Miami Beach is literally for people, and there are no strings attached. It is a place that is good to see, to go to, and to be in. It is already the star attraction of the city; 85,000 people attended on opening night.

Perhaps the most unusual fact about the mall was its budget. From excavation to the final blade of grass, the cost stayed within the original $600,000 bond issue, and all construction and installation was completed within a three-month schedule. But despite these limitations of time and money, the eight-block stretch presents a pleasant view and is a meaningful addition to the Lincoln Road shopping area.





Quantity Surveying in U. S. A. ?

BY TERENCE J. A. ASH

A few months ago, P/A published an article explaining the English system of Quantity Surveying ("The Quantity Surveyor," AUGUST 1960 P/A). This month, the same author suggests a possible way of adapting such a system to existing U.S.A. bidding and construction procedures. Technical data and tables used here by the author are by courtesy of the G. A. Hanscomb Partnership of Toronto, Canada.

The difficulty of introducing into this country a modified form of the English system of Quantity Surveying has been questioned. In Canada, recent moves to introduce such a system have been made easier due to the use of English-trained personnel, who have adapted tried-and-tested procedures to local conditions. In this country, the potential number of Quantity Surveyors who are already in practice, or who are working in architects' offices in a different capacity, make a workable solution possible without too much difficulty—depending, of course, on their willingness to shoulder the same responsibilities as their colleagues in England.

There appear at the moment to be two major obstacles to the successful adoption of this system: the natural reluctance of contractors to accept any new form of control, and the lack of standardization in the method of measurement of quantities. At the present time, the Canadian Institute of Quantity Surveyors is preparing a Standard Method of Measurement similar to that used in England, yet which is adapted to conditions prevailing in North America. If the services offered by the Quantity Surveyor are found to be in demand, then this document will eventually enable all Bill of Quantities to be measured on a similar basis, and will undoubtedly be far-reaching in its influence.

Many architects today feel that incorporation of Bills of Quantities into present contract forms is desirable, providing they fit in with existing procedures. An interesting parallel can be drawn between Australia in 1945 and the United States and Canada today. Through agreements with contractors' organizations and other interested bodies, quantity surveying has now become accepted to a considerable extent, with contracts available that include a Bill of Quantities. If use of a Bill of Quantities were adopted in this country, contract procedures would require no more radical change than that the contractor's priced copy be incorporated as part of the contract documents. The Bill of Quantities would then complement the specifications and drawings. The specifications would of course retain their present form, with the Bill of Quantities (the breakdown of quantities involved in performing any specific phase or operating of the work) being read in conjunction with them. This would enable unit prices for any operation to be obtained. The contractor would thus still be bound, as he is at present, to the requirements of the specifications, but he would also be bound to the unit prices he has submitted for a particular task. The Bill of Quantities, instead of describing in detail each phase of the work, would provide only as much information as necessary to allow the contractor to arrive at a fair unit price. For example, the painting specifications would fully describe, as they do at present, the material and workmanship, but the Bill of Quantities would itemize the quantities of painting on plaster, woodwork, steel, etc., so that individual rates could be obtained.

Due to the amount of subcontracting employed in this country, the Bill of Quantities would have to be drawn up in such a way that it could easily be taken apart. These portions would then be sent to the bidding subcontractors, along with the appropriate parts of the specifications and drawings. Since the Bill of Quantities would be written in the same trade order as the specifications, this would not involve any major change in the existing format.

In order to allow the contractor to compile his bid, it would be desirable that he be supplied with two copies of the Bill of Quantities. The first—or draft—copy would be arranged so that the contractor could compute both his labor and material prices separately. The second copy would provide only one column, thus protecting the contractor, since it would be detrimental to his interests to submit the breakdown for his final prices. In this column, he would insert his combined unit price (calculated on the basis of cost of labor, materials, overhead, and profits) against the quantity and description. Suggested format is shown.

Quite understandably, contractors are generally wary about disclosing breakdown prices. No doubt they are suspicious of the use to which their figures will be put in a highly competitive market. This attitude should be respected in the interest of mutual understanding, as long as it is consistent with the fair and equitable running of the contract and satisfactory control. The Quantity Surveyor should strive to be perfectly impartial in this respect, so that an atmosphere of mutual trust and co-operation can be achieved. For this reason, the bids should be kept in the strictest confidence and opened only in the presence of all the bidding contractors.

The suggested procedure for the opening of bids would vary only slightly from the present system. As is the case now, the bid forms would be received at a certain date and locked away. To allow the general contractor time to assemble sub-trade sections, it would be required that the priced Bill of Quantities be received in sealed envelopes 48 hours after closing time for the bids. At the bid opening, the contractor submitting the lowest bid would have his Bill of Quantities opened for checking; the remaining bids would be returned with the seal on their Bill of Quantities unbroken. This would prevent abuse of the procedure and protect the unsuccessful bidders against disclosure of the breakdown on their prices.

There would be little need to change the accepted practice as far as operation of the contract is concerned. The standard AIA Form of Contract would have to be amended to accommodate the Bill of Quantities as a contract document. Changes in the work, payment certificates, and settlement of final figures at the end of a contract would all be based on prices the contractor has entered in his priced Bill of Quantities and settled on an adjustment basis.

There is little reason, therefore, why Quantity Surveying as it is practiced in England, with its attendant advantages, could not be made to work within the framework of existing procedure in the United States. And if the industry as a whole seriously desires such a system, there is no reason it should not succeed.

ITEM NO.	DESCRIPTION	QUANTITY	LABOR		MATERIAL		TOTAL
			UNIT PRICE	COST	UNIT PRICE	COST	
A.	Paint on exposed pipe or covering	9,352 L.F.					
B.	Paint on plastered ceiling	7,794 S.Y.					
C.	Paint on plastered walls	14,152 S.Y.					
D.	Vinyl-plastic wall covering	9,793 S.Y.					

Suggested format of contractor's draft copy before pricing.

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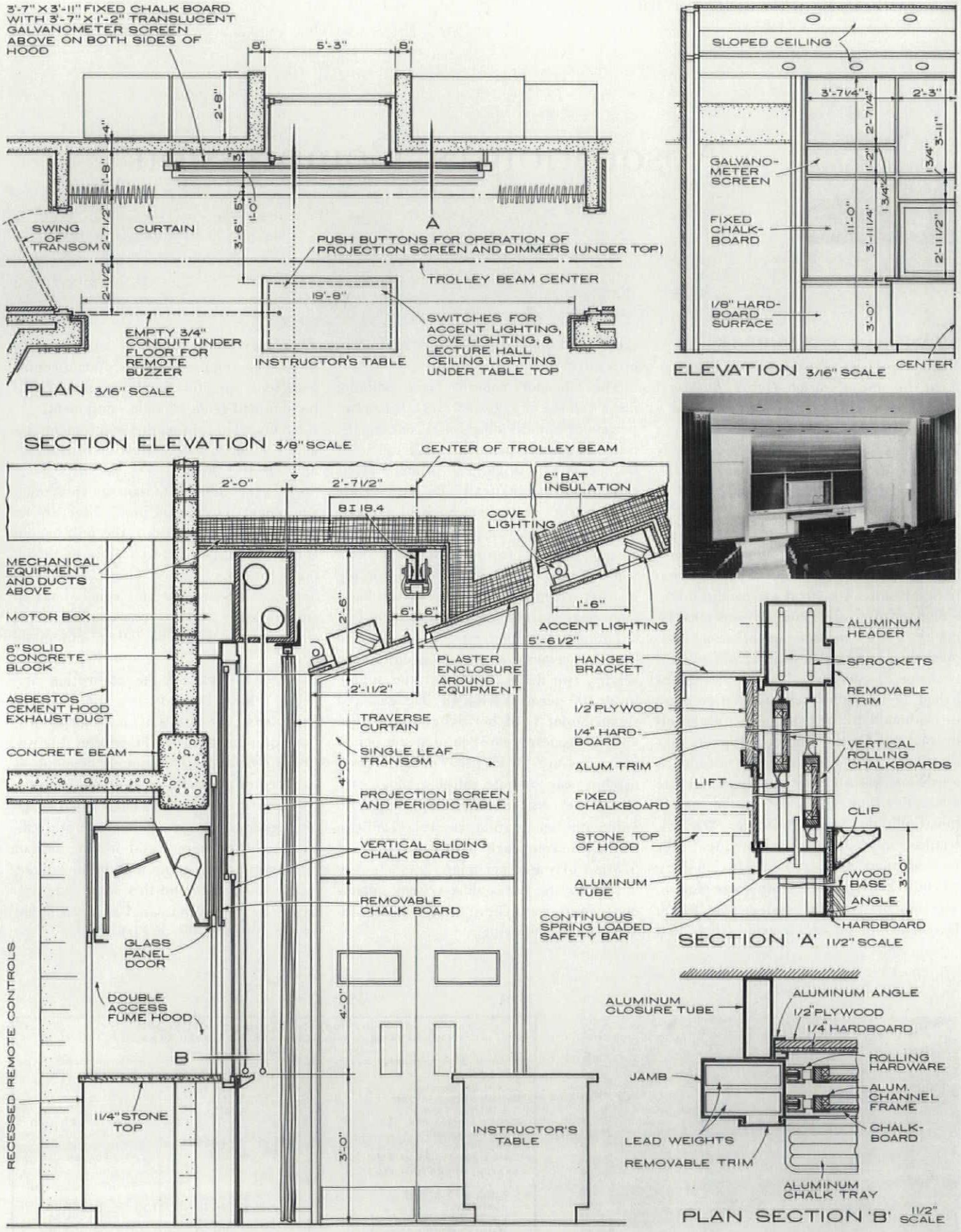


* PIERRE duPONT SCIENCE BLDG., SWARTHMORE COLLEGE: Swarthmore, Pa.
VINCENT G. KLING, Architect

SELECTED DETAIL
LECTURE HALL DEMONSTRATION AREA

° See JUNE 1961 P/A

Absorption vs. Compression

BY WILLIAM J. McGUINNESS

Selection of central air-conditioning equipment for the Colorado-Derby Building, owned by Wichita University, required a number of detailed comparisons. Why a gas-fired absorption machine was finally chosen is described by the Chairman, Department of Structural Design, School of Architecture, Pratt Institute.

In choosing between an absorption cooling unit and an electrically-operated centrifugal unit for central air conditioning, a number of detailed comparisons must be made. These include installation cost, operating cost, and a comparison of convenience of operation. There is no established answer, and each installation must be evaluated on the basis of its own specific analysis. On the record, it appears that there may be more electric-drive units in operation, yet all nuclear submarines use absorption-type equipment. In the case of the Colorado-Derby Building, Wichita, Kansas, an electric-drive centrifugal unit was planned, but after careful study a gas-fired absorption machine was chosen. The first cost of the system was $4000 less than that for an electric system, and the annual operating cost, $1369 less (*see appendix*).

This nine-story concrete frame building has a volume of 1,300,000 cu ft. It has two perimeter conditioning zones, one on the north and the other combining the west-south-east exposures. The primary air is controlled automatically by an outside temperature controller. Each of the two zones is further controlled by individual steam coils to furnish additional heat when required. The perimeter air supply is from a central apparatus in the basement next to the absorption machine. Distribution is high velocity. There are also four low-velocity air-handling units each serving two floors. Each unit can supply up to 100 per cent fresh air. The gas-fired steam boiler is of horizontal-tube design and can generate 8624 lb of steam per hr at a pressure of 15 psi. The absorption machine can operate within a range of 0 to 100 per cent of design capacity with automatic modulating control. The two cooling towers each have a capacity of 575 gal of water per min.

In selecting the cooling system, numerous comparisons were made, which included the following:

Flexibility: The range of operation (0 to 100 per cent) of the absorption machine represents greater flexibility than could be obtained from electric equipment.

Controls: The absorption equipment has only six controls as against 14 of comparable electric units.

Safety: It is difficult to damage absorption equipment by mishandling. There are no large motors to burn out, the unit cannot freeze, and it is unlikely to lose its refrigerant charge.

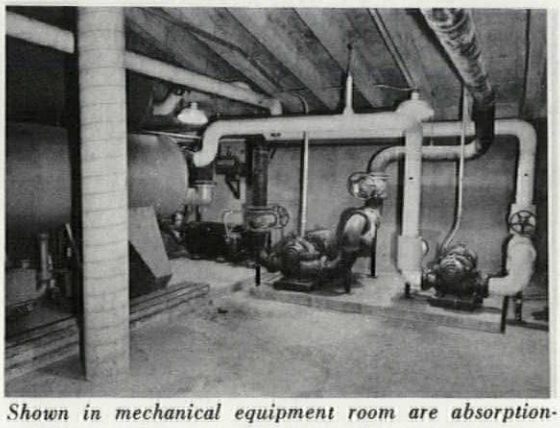
Starting: Absorption unit can be started automatically by a push-button, time clock, thermostat, or other automatic device.

Danger: Content of the absorption machine, lithium bromide, is a nontoxic salt.

Overloads: These will not damage absorption equipment, nor will they shut it down.

Boiler Efficiency: The summer demands of the absorption machine for steam from the boiler raises the boiler's output to a range of greater efficiency. It then operates efficiently, both summer and winter, instead of carrying a minimum load in the winter.

The final report on this study was prepared for the American Gas Association by the architect, W. J. Fisher.



Shown in mechanical equipment room are absorption-refrigeration machine (left), condenser water pump (center), and chilled-water pump (right).

APPENDIX: Summary of Comparative Cost Analysis
Steam-Absorption Versus Electric-Drive Air-Conditioning Systems
Colorado-Derby Building, Wichita, Kansas

DATA	STEAM ABSORPTION	ELECTRIC DRIVE
Tons of Refrigeration	320	320
Operating Hours per Year	2,100	2,100
Gas Required—mcf	8,931.6	
Electric Requirements		
(a) Energy kwh	163,800	389,310
(b) Demand	78	298.5
Cooling Tower Make-up Water (gal)	1,900,000	1,064,000
ANNUAL OPERATING COSTS		
(1) Variable costs		
Gas @ $.31/mcf	$2,768.80	
Electricity	$2,248.79	$6,647.94
Cooling Tower Water	253.00	141.80
Water Treatment	300.00	150.00
(2) Overhead Costs		
Maintenance	$1,500.00	$1,500.00
ANNUAL TOTAL OPERATING COSTS	$7,070.59	$8,439.74
Direct Annual Saving with Gas-Steam Absorption	$1,369.15	

Electric cost was compiled as follows: 78 kw demand, 163,800 kwh; $1.80/mo. × 78 kw + $.007 × 163,800 kwh −5% + $.06 for fuel adjustments = $2,248.79.

The "Or Equal" Clause — Again

BY HAROLD J. ROSEN

Eight specific reasons are given for the elimination of the "or equal" clause in specifications by the Chief Specifications Writer of Kelly & Gruzen, Architects-Engineers. He also reviews alternate proposals, finds none completely satisfactory, and calls for fresh solutions.

The author of this column is the chairman of a subcommittee of the Construction Specifications Institute, which is seeking a solution to the perennial problem of the use of the term "or equal" in specifications. It has become quite apparent that the use of the term "or equal" is not satisfactory in controlling the selection of materials and equipment specified by architects.

Countless seminars, programs, and meetings have been held by many people over the years in attempting to arrive at an equitable solution to the problem. The very fact that the term "or equal" is not the answer is attested to by the controversies that have arisen as a result of its use.

The following reasons have been given for the need for its elimination from specifications:

(1) When the "or equal" phrase is used, a bidder attempts to secure a lower price on a material other than that specified, and he will be in doubt as to whether the architect will approve it. If the bidder takes a chance on this lower price material, he risks being forced to buy the higher priced material specified. If the bidder did not take this chance, he would lose the advantage of the lower price, which might make the difference between winning or losing the contract.

(2) The "or equal" clause increases the amount of office work the architect must perform in order to investigate all of the "or equal" substitutions that are submitted by the contractor for approval.

(3) It permits contractors more opportunity for last-minute substitutions requiring too hasty consideration by the architect.

(4) Where a continuing project is developed in two or more phases of construction, the "or equal" clause may allow different materials to be used in the same project, and the maintenance problems of the owner are multiplied.

(5) It may permit the use of a product that is equally good, but where the job may suffer because of poor delivery or servicing records or both.

(6) It may allow inferior substitution, since it is sometimes impossible to disprove claims of equality.

(7) Although the substitution may be equal to that specified, its use in conjunction with assemblies of other materials may be unproven and faulty.

(8) It takes the control of the job away from the architect who is responsible for its execution.

Numerous proposals have been advanced as substitutions for the use of the term "or equal." However, no single solution has gained such prominence and recognition as a result of its use that it has been adopted nationally as a recommended practice. It may very well be that one hard and fast rule, or method, is incapable of dealing with the literally hundreds of materials and equipment that are included in specifications for a complex building or structure. It is conceivable that several methods may properly be made a part of the specifications to cover completely differing requirements.

It has been suggested that the term "or equal" be so modified that, when the substitution is offered, the burden of proof be placed on the contractor rather than on the architect. This method does not resolve some of the problems inherent in the use of the term "or equal" as enumerated above.

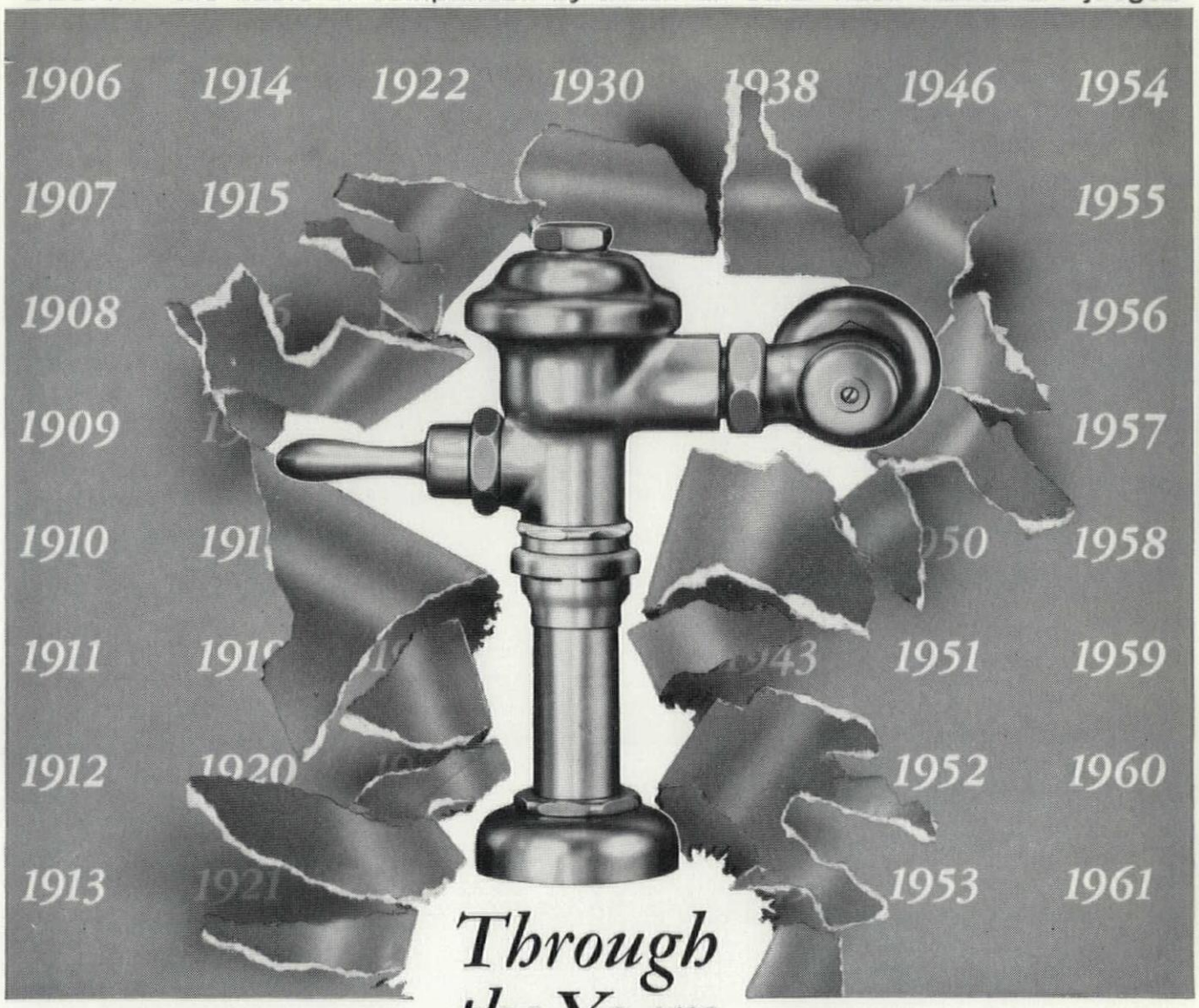
Another method, the so-called "Base Bid" method, requires that the bidder submit prices only on the articles specifically named; if other brands of equipment or materials are to be offered, this must be done as an alternate proposal. The main drawback of this method is its cumbersome method of execution. In a large project, this might require an evaluation of literally hundreds of items by an architect from the several bidders in the relatively short period before an award can be made. Not only the quality, but the cost must be evaluated, and the time interval is so small that a fair evaluation cannot be made.

Another suggested method is the "Modified 'Or Equal' Clause." In this method, a material is specified on the basis of its important qualities, characteristics, and criteria—including costs. This method entails extensive research. A substitution that is offered after award of the contract must prove compliance with the stated criteria. This method requires considerable research on the part of an architect in private practice, which can be far and above the fee for services that he receives as his commission. A method such as this can be undertaken by architects employed by Federal, state, and municipal agencies. However, the time spent in this exhaustive evaluation would, if performed by an architect in private practice, turn his commission into a loss rather than a profit.

The reason most frequently offered for the use of the term "or equal" is that it will increase competition and thereby reduce the owner's cost. This has proved fallacious, inasmuch as after the architect has attempted to establish a plane of reference in his specifications, and the bids are received predicated on certain standards set forth therein, the owner is given substitutions with no savings on materials and equipment he would have been entitled to had not the term "or equal" been employed.

A solution to this vexing problem is in order. It is time that the architect, who is responsible for the design of a project, remain in control of it during construction. The author requests that those of his readers who may have found the solution in their own practice, submit their *modus operandi* to him so that his subcommmittee can evaluate it and offer it as a recommendation to others plagued with this problem.

SLOAN—the basis of comparison by which all other flush valves are judged



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Supervising Architect Sued by Subcontractor's Employee

BY JUDGE BERNARD TOMSON AND NORMAN COPLAN

Nassau County District Court Judge and a New York attorney discuss a recent decision of the Louisiana Supreme Court that defines the extent of an architect's responsibility in supervising construction work resulting in injury to employees of the contractor or subcontractor.

Injuries sustained by an employee of a contractor or subcontractor while engaged in construction are often followed by claims or legal actions against the architect for negligent supervision. There are differing rules of liability in our various states. A recent decision of the Supreme Court of Louisiana indicates, at least in that state, that an architect is responsible for injuries sustained by a contractor's or subcontractor's employee if they were occasioned by the architect's negligent acts, or failure to act properly in discharge of the function of supervision. However, the Louisiana court also significantly ruled that an architect is not responsible for the manner in which the contractor's or subcontractor's work is performed. *(Day v. National U. S. Radiator Corporation, et al.)*

In this case, a building was designed by an architect for the Louisiana State Building Authority. In addition to furnishing plans and specifications, the architect contracted to furnish supervision, which included, among other things, the checking of shop drawings. In the course of construction, the plumbing subcontractor installed a hot water system, and during preliminary testing, the hot water boiler exploded, resulting in the death of one of his employees. This preliminary testing was made without any notice to the architect or without any request that he make an inspection of the boiler.

The architect's specifications clearly provided for a thermostat on the hot water boiler, and provided that the contractor was to "equip hot water heaters with temperature and pressure relief valves." The plumbing subcontractor furnished the architect a brochure (which the court deemed a shop drawing) for his approval of certain equipment, including the hot water boiler. This brochure did not specify or designate a pressure relief valve for the boiler. The subcontractor, after receiving approval of the brochure, ordered the equipment and proceeded with its installation. However, he failed to follow the requirements of the specifications and did not provide the hot water heater with a thermostat and with a pressure relief valve.

The Workmen's Compensation Law of Louisiana would not permit heirs of the deceased employee to institute suit against the subcontractor; but the architect could be and was sued for negligence on the ground that the architect should have inspected the hot water system during the course of its installation and should not have approved the equipment brochure. A verdict was rendered against the architect and upon appeal this verdict was sustained. Upon further appeal to the Supreme Court of Louisiana, the judgment was reversed. In its opinion, the Supreme Court rejected the determination of the lower courts that the architect was required, in exercising supervision of the project, to inspect the hot water system during the period of its installation. The Court said:

"The narrow question here presented is whether the architect's contract with the owner imposed upon them the duty to be aware that the boiler was being installed by Vince, the plumbing subcontractor, and whether they were required by their contract to inspect the hot water system of which the boiler was a part, during installation and before the boiler was tested by the subcontractor Vince.

"In their contract with the owner, the architects bound themselves to exercise 'adequate supervision of the execution of the work to reasonably insure strict conformity with the working drawings, specifications and other contract documents'. . . .

"As we view the matter, the primary object of this provision was to impose the duty or obligation on the architects to insure to the owner that before final acceptance of the work, the building would be completed in accordance with the plans and specifications. . . .

"Thus we do not think that under the contract in the instant case the architects were charged with the duty or obligation to inspect the methods employed by the contractor or the subcontractor in fulfilling the contract or the subcontract. Consequently, we do not agree with the Court of Appeal that the architects had a duty to the deceased Day, an employee of Vince, to inspect the hot water system during its installation, or that they were charged with the duty of knowing that the boiler was being installed."

The Supreme Court also rejected the lower courts' finding that the approval of the brochure constituted a negligent act. The Court said:

"The plans and specifications required many items to be incorporated in the domestic hot water system and listed them in detail, whereas the brochure prepared by Amstan listed only a few of the items required by the specifications to be installed in the system. A comparison of the items of equipment listed in the brochure with those called for in the specifications shows beyond doubt that the brochure was not intended to include all of the equipment required for the installation of the boiler, a part of the domestic hot water system.

"As we view the matter, the architect's approval of the brochure was only an approval for Vince to place the order with Amstan for the purchase of the items listed in it, and the brochure was not intended as a shop plan for fabrication or a plan showing construction details."

The American Institute of Architects and the Louisiana Architects' Association intervened in this litigation as *amici curiae*. The success of the defense in limiting, to some degree, the potential area of an architect's liability was, no doubt, assisted greatly by this interest and concern of the profession. Education of our courts and the public as to the architect's true function and role is a continuing necessity.

Fannin Street looking north from Gray Street

HOUSTON DISCOVERS that traffic congestion either ends at curbside or extends into building lobbies—*depending upon the kind of elevatoring used.* Why? *Because there is more to completely automatic elevatoring than simply leaving the operator out of the car!* Any elevator installation that fails to provide complete automation for all of the constantly changing, widely varying traffic patterns that occur throughout the day and night—*invites curtailed service, long waits and traffic congestion.* This applies in a like degree to the greatest skyscraper and the smallest commercial or institutional building. How do tenants and visitors react? After all, they are people. They react in a like manner to elevator service. And a building's reputation soon reflects their reactions. The mark of a CLASS "A" building—*large or small*—is completely automatic AUTOTRONIC® elevatoring. It accurately predicts and delivers a magnificent performance. Since 1950, more than 1,100 new and modernized buildings across the United States and Canada have contracted for AUTOTRONIC elevatoring by OTIS—the world's finest!

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Reactions to P/A Symposium

Dear Editor: Your P/A Symposium on the "current chaos" [MARCH 1961 P/A] is, to me, the most valuable contribution made by a professional journal in years. Inconclusive though it inevitably is, it turns the searching sun of analysis on the basic thinking of each of us.

TALBOTT WILSON
Houston, Tex.

Dear Editor: I read the P/A Symposium on the State of Architecture in the MARCH 1961 P/A. The scene reminds me of "Honni soit qui mal y pense."

Fortunately for our civilization, the architectural expressions of most of the participants at this symposium are of greater value than their verbal expressions.

GUY G. ROTHENSTEIN
Valley Stream, N.Y.

Dear Editor: Part II of the Symposium on the State of Architecture [APRIL 1961 P/A] seemed wholesome, harmless fun until I encountered one thought that was, to say the least, startling. This was the plaintive cry of several respondents that the world is not wholly suitable for the proper practice of architecture.

A doctor might say, with equal justice, that the practice of medicine is seriously hampered by the deficiencies of the human body. He might say that, but no one would take it seriously. The medical profession has to cope with human beings as they are, and architecture has to cope with society as it is.

Peter Millard covered the ground well in saying, "The art of architecture is not a basic cause of culture but rather an expression of it." I don't know the gentleman but he seems to be an intelligent adult, a type that is never overabundant.

An architect has as much right as any human being to complain about society and change it if he can. He doesn't have more rights than anyone else, however, and it remains a fact that life is not dedicated to architecture; architecture is part of life.

C.M. DEASY
Los Angeles, Calif.

The Urban School: An Exception

Dear Editor: While we do not quarrel with your statement that schools "benefit little from recent urban renewal efforts," the Doolittle School pictured at the top of page 145 in the MAY 1961 P/A is one that will. It is situated in the Chicago Land Clearance Redevelopment Project 37th—Cottage Grove site, and will grow from a 3.2 acre site to more than 8.5 acres, the additional land to be used for playgrounds and building extensions.

HOWARD ROSENWINKEL
Chicago, Ill.

Choice of Words

Dear Editor: As a long-time subscriber to your magazine, I resent the terminology you used in describing the area in which I reside. I am referring to the article titled "Penny-Farthing School," in the MARCH 1961 P/A. You state that the site was "amid acres of mediocre suburban housing." Certainly a more tactful word than "mediocre" could have been used to describe what is one of northern California's most well-kept subdivisions. I agree that it is not an area of custom-built homes, but it still affords better than average housing for thousands of residents. The people of this area take pride in their property and the community as a whole.

It is also my belief that architectural awards should be based on construction costs as well as on design. Any architect of merit should be able to design monumental schools, but credit should be given to the architect and engineer who can design low-cost functional schools that are of more worth to the taxpayer than the types that have appeared in recent issues of P/A.

CARL M. JENSEN
Daly City, Calif.

More Comments on Louis Kahn

Dear Editor: It was inspiring to read the wise words of a great doer. There are not many great men today who can preach and also do architecture. How many of our leading architects of the last five years, say, have been able to utter more than a few words of slogans, annoucing their philosophies, which did not even reach beyond the façades of their buildings.

The greatest contribution of Jan Rowan's article to the profession, I think, is that it made quite clear that Louis Kahn's work is not free for all to copy or mimic. In a way he copyrighted the form-language of Kahn, at the same time indicating that, using the ideology Mr. Kahn has formulated, one should be able to arrive at a different form or expression *true to oneself*. Unless this kind of variation is allowed to exist, a fine and strong movement like "The Philadelphia School" will suffer, as has happened in similar cases before, from the dogma of one man's architecture.

GUNNAR BIRKERTS
Bloomfield Hills, Mich.

Dear Editor: I liked "The Philadelphia Story" much better when Jimmy Stewart and Katherine Hepburn were romping through Barry's comedy of manners. Seriously, I did enjoy the explication of Kahn's mystique, and the issue continues the wonderful impetus started by your new editorial policy. P/A's concern for the state of architecture and architects is beginning to reach the profession, and my impression (after just returning from a long trip) is that people are reading the magazine, not just scanning a pattern book.

RICHARD P. DOBER
Watertown, Mass.

Dear Editor: Somehow I feel that truth, love, and perhaps even transcendence, are not peculiar to Philadelphia.

Louis Kahn's buildings bring stimulus, vigor, and a true sense of discipline to a confused architectural scene. I believe, however, his "unmeasurable Form" and his "Design measurable" initiate a play on words that expresses a personal, passionate art. His "Form holds" because it is his form; his design evokes emotion because it is designed to do so.

"Existing Will" of his buildings is not spelled with a small "i," but with a big "K"—and rightly so.

TASSO KATSELAS
Pittsburgh, Pa.

Dear Editor: There is a *mystique* growing up around Louis Kahn which, I feel sure, has less to do with his works than with his words. The man is a real spellbinder, and it is just because of this that we must take another good, hard look at his buildings. The words, after all, are only a sort of invocation; it is the buildings themselves which are to be environment for generations of Americans.

R.M. TITUS
Boston, Mass.

Dear Editor: I would like to say that I believe the APRIL 1961 P/A is firmly rooted in basic architecture. The root of good architecture is to have a concept. Up to this point, few people have been worried about printing concepts, but rather worry about having pretty pictures for their magazine. Pictures are an end product, and they tend to stunt, not stimulate, architectural thinking. I

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hope that your last issue about Louis Kahn is the beginning of a new trend in publishing.

RAYMOND LUKAS
Champaign, Ill.

Dear Editor: I've read the article about the Philadelphia School—congratulations! It is a beautiful and comprehensive study. To laymen like myself, it opens all kinds of doors.

DOROTHY ADELSON
New York, N. Y.

Dear Editor: Louis Kahn is that rare person in whom is combined a creative intelligence, great personal force, and genuine modesty. His work and that of his colleagues is also easy for an architect to like because it is a personal expression. He does not deal in clichés. His buildings are not slick and curtain-walled or loaded with fluorescent fixtures in acoustical-panel hung ceilings.

But my respect for him as an individual and for some of his work does not mean that I understand all he is quoted as saying. Much of it seems to me to be word play. On rare occasions a new word does need to be coined or an old one given new meaning, but usually the accepted dictionary meanings are adequately precise. To abandon them frequently decreases clarity. Kahn's writings in this article are often unclear to me, as are also some of the quotes of his followers. When Mies said "less is more," it had meaning (even though, in the opinion of many of the users of his buildings, his work merely demonstrates that "less *is* less"); but when Kahn says "the future is today," or Venturi says "buildings often are things in things," this dense fellow is left at the post.

There is one Philadelphian referred to, though, who demonstrates exactly those qualities of precision and clarity that I find missing in most of the architects quoted in Jan Rowan's comprehensive article. He is Robert Le Ricolais. Quoted were only three short paragraphs, but every word is used effectively: none is wasted, none is unclear. I found more meaning in this quarter page than in the other thirty-three.

It is carping to pick on words though. What counts is a man's work, and here a comment can be made on what I see as a trend—and a dangerous one. It is the seeking of beauty directly through the manipulation of forms and spaces. History has shown time after time that those who pant heavily after beauty fail, while those who seek to serve a purpose succeed indirectly in creating beauty.

It would seem to me that to the extent that members of the Philadelphia School—or any other group—emphasize the creation of spaces as the aim of architecture, their efforts will end in formalism; whereas, if they seek to serve man by fulfilling his building needs in the most direct and imaginatively logical way, they will end in creating beauty. *Modern* architecture is dead; long live *architecture!*

FRED BASSETTI
Seattle, Wash.

Dear Editor: By stating in usable and understandable terms the meaning of Kahn's architecture, Jan Rowan has rendered a valuable service to those of us who are not in continuous contact with Kahn and can only appreciate his accomplishments and creative philosophy from afar. Particularly in the conclusion, which defines and codifies a matured approach to architecture that has eluded many of us, the specific directions and inspirational motivations have been clarified to a degree that permits practical application. It is heartening that Kahn's carefully chosen words like "form" and "design" are still meaningful to an architectural philosophy and need not be the crippled, useless terms that have of late victimized us. I believe responsible reporting of this nature is to be encouraged at the expense of the journalistic tour de force with its wretched architectural labeling.

EDWARD L. FRIEDMAN
New York, N. Y.

Dear Editor: I must congratulate Jan Rowan on the wonderful article on the Philadelphia School of Architecture. The philosophy of Louis I. Kahn rings loud and clear to those of us fortunate enough to have studied under him, and the article so well conveys this philosophy. It is to be hoped that this issue of yours is simply the beginning of a report to the profession on the strength of this new movement.

MARVIN VERMAN
Philadelphia, Pa.

Dear Editor: My most lasting reaction to the article on The Philadelphia School is the apparent and almost exclusive search for FORM. This quest for personal expression and external Form at the expense of social function concerns me greatly. It seems to me that the article presents an almost mystical and certainly very intricate verbal philosophy. I do not believe that such polemics should be allowed to blur the issues facing architecture today. Such idiosyncratic approaches are contrary to the mainstream of 20th-Century architecture. What the article purports to be, "primarily architecture," can therefore never *really BE* ARCHITECTURE.

It is strange that we architects are reacting in ostrich-like fashion to the dynamics of social and scientific change. Why, may I ask, do we have no deeper searches into the use of and reason for our buildings and cities? Why this report on "The Philadelphia School" but not on the group work of postwar architects who might ban together and call themselves "the hospital school," "the school" school, or, if you please, "the motel" school of architecture? It seems to me that it is from these evolving and dedicated (if apparently overspecialized) *groups of professional effort* that we may pin our hopes for the future. Architectural progress, and the very reason for architects themselves, does not lie in new personalized Forms but in the realm of defining the future function of our bodies, our minds, our people, our institutions, and our society.

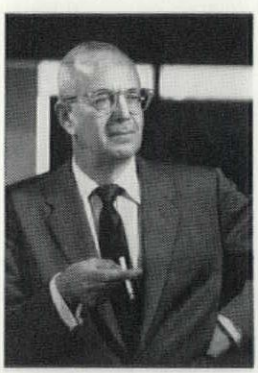
In the United States, we have usually ignored our greatest architectural contributions to social growth and evolution. In my mind, two major symbols of architectural progress in recent years are Rockefeller Center and the Acalanes schoolhouse in California. These architectural conceptions have in fact changed the mores and attitudes of the world regarding centers of communication and public education.

With the above in mind, it is obvious that I could never agree with the prime thesis of the article on Louis Kahn's work. I could never agree, for instance, with the quotation: "If I were to try to define architecture in a word, I would say that architecture is a thoughtful making of spaces."

Spaces and their cumulative end-result, Form, have never been and will never be architecture of themselves. They must evolve naturally to suit the changing needs of human function. The chief responsibility of an architect is not to interpret social condition *but to give it direction.*

I shall never believe that emotional response should come to symbolize a destructive sort of personalized nihilism. In this belief I cannot, to myself, justify the continuation of a tortured, war-scarred aesthetic of pain founded in the bomb-gutted profiles of tiered brick. A search for such an emotional response seems to parallel the worst aspects of Manhattan's evolving skyline.

CHARLES R. COLBERT
School of Architecture,
Columbia University, N.Y.C.



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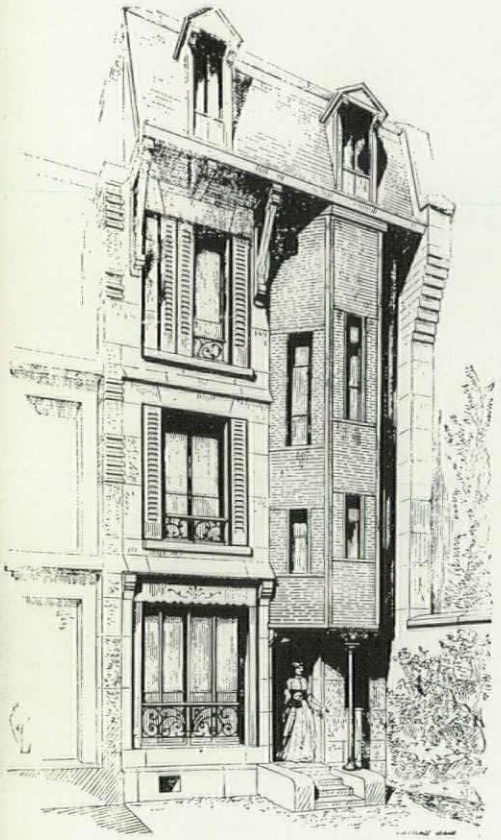

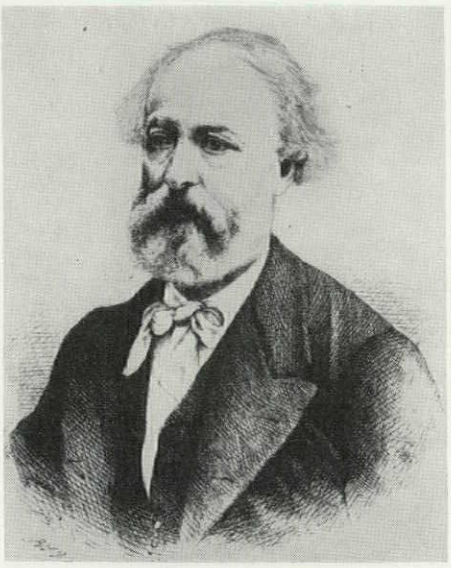

Drawing courtesy of The Bettmann Archive

Viollet-le-Duc (1814-1879)
and one of his designs for a street villa

Fresh and Appropriate After 100 Years

BY JEFFREY ELLIS ARONIN

Architect-author of New York, N.Y., points to the timeliness of century-old Discourses on Architecture. *Eugene Emmanuel Viollet-le-Duc. Translated by Benjamin Bucknall. Grove Press, 64 University Place, New York 3, N.Y., 1959. 955 pp., 2 vols., illus. $25 (boxed)*

Having glimpsed through these volumes during my years at school, I thought it would be easy to dash off some generalities about this beautiful recent edition. Yet on delving into the volumes it soon became apparent that here are books that should not merely be "on every architect's bookshelf" but should be read intensely by everyone in our profession. They bubble over with quotations that were not only true a century ago (the books were written in 1860) but are particularly timely in our present era.

Viollet-le-Duc has a word for everything and everybody—and very often a chuckle too. What architect would not agree with his contention that it is an architect's duty to "argue for, and urge the adoption of, what he considers right; in a word, to maintain his independence. I am aware that the Commissioners of Public Works are inclined to regard such independence of spirit as annoying, and would rather employ men who are more pliant." And would not many of us agree that "when an architect is called upon to erect a building a confused scheme is probably laid before him—for written programmes are generally such."

Had Viollet-le-Duc lived to today he undoubtedly woud have been a frustrated man. His advice is as true today as it was a century ago; and yet this advice has had little effect on society and civilization. On the mess of construction techniques, he writes: "Each contractor acts merely within the precise limits of his department, and considers that he has no interest in adopting means advantageous to the common interest of the work. The consequence is that in buildings of architectural pretension which require the concurrence of several trades, each adopts its own special means of raising or fixing the materials or work."

Big-city dwellers who get bogged down in construction-boomed thoroughfares will find solace in Viollet-le-Duc's observation: "It would seem as if in our day, when machinery and manufactures supply every want, town buildings ought to be erected without occasioning any inconvenience, without hindrance to traffic or annoyance to the neighborhood . . . The fact is that there is an utter discordance between the practice of architecture and modern machinery." It makes one think of labor unions, too.

Lillian Gish recently reiterated to me a remark that she made several years ago on my radio program, *Architecture for the Good Life*. "What this nation needs," she said, "is a Secretary of Arts in the President's Cabinet, to promote, advance, and protect the artist, architect, and others in similar disciplines." In view of President Kennedy's avowed support of creative, artistic, and scientific human resources of our country, her remarks are indeed timely. One can weigh this philosophy with that of Viollet-le-Duc, written 100 years ago: "Art is, then, in no way influenced by what we term the form of government. On the contrary, the Arts develop themselves with vigor when they are, so to speak, riveted to the manners and customs of a people, and are their truthful expression. They decline when their connection with the habits of the nation is severed: when they become, as it were, a separate State or Institution, a kind of special study or culture."

Viollet-le-Duc analyzes in most skillful terms the development of the arts throughout the main periods of civilization. There are four main arts, he wrote: music, architecture, sculpture, and painting. "Music and architecture are twins, for it will be observed that they do not originate in the imitation of natural objects as do sculpture and painting."

In his chapter on Greek art, Viollet-le-Duc cited the Greeks' quality of clearness. The Greeks were, above everything,

Continued on page 180

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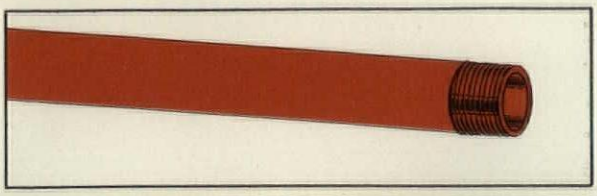

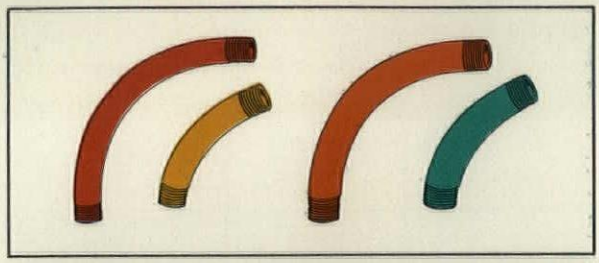

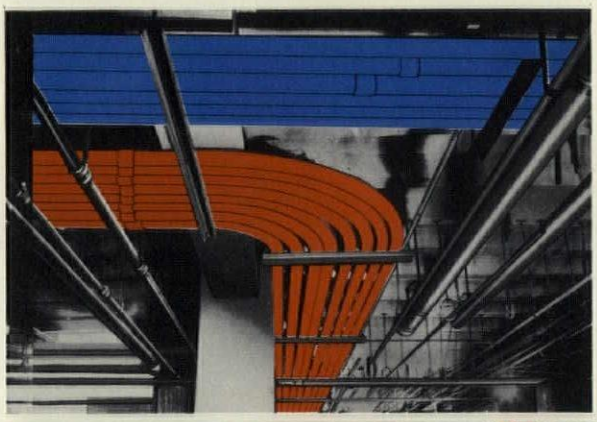

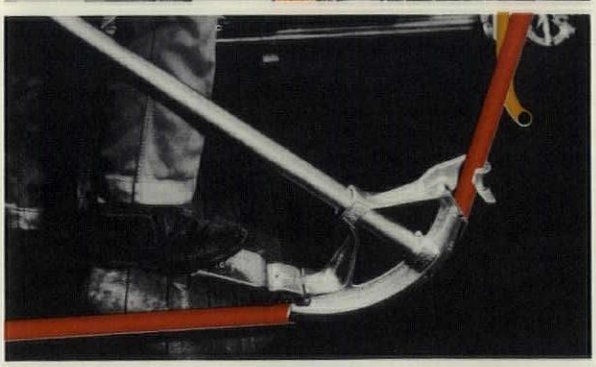

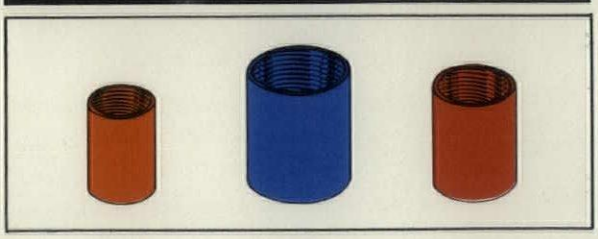

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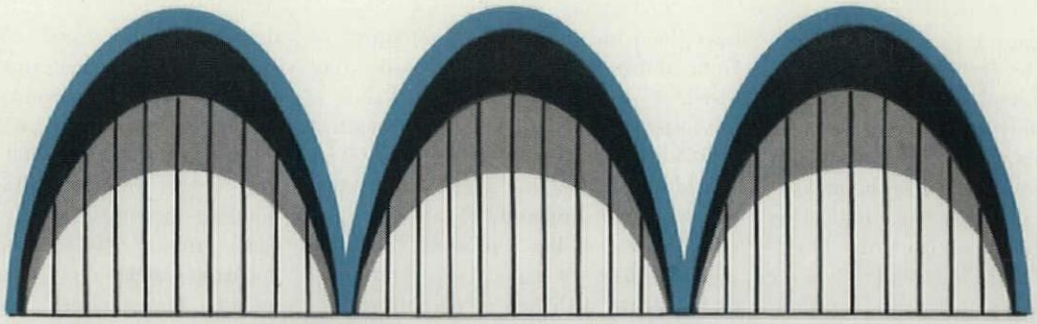

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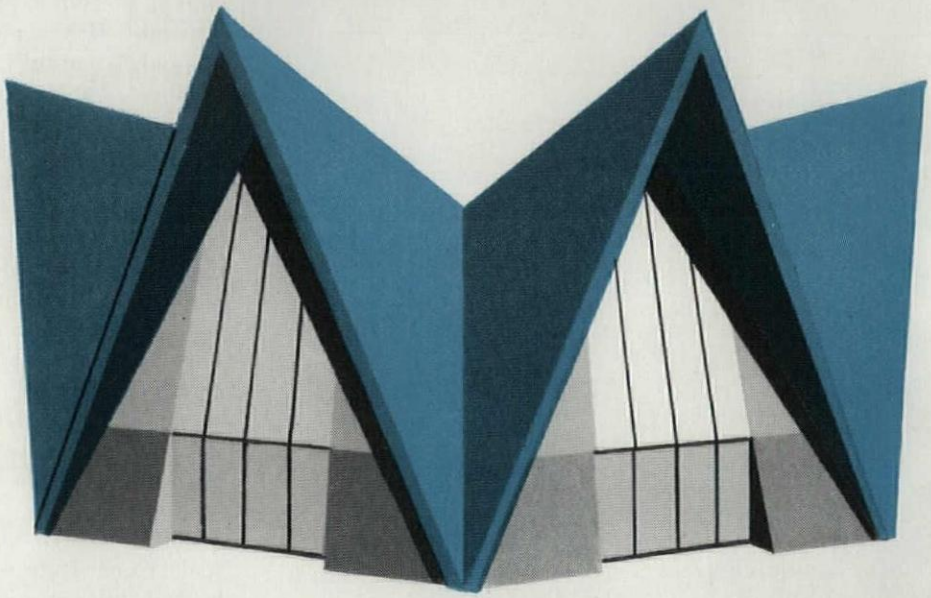

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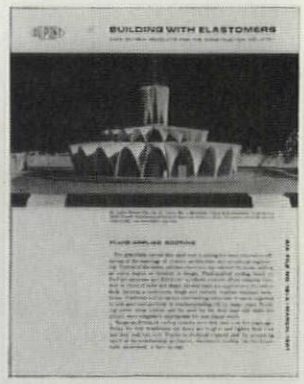

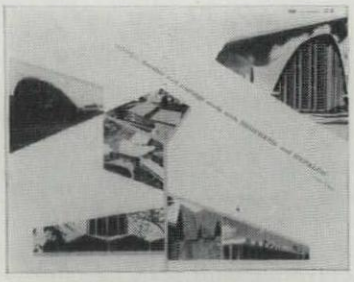

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Continued from page 174

lovers of form, he stressed, and they rejected whatever tended in any degree to impair its harmony and unity. "What we as architects should most particularly observe in the Greek cities is the manner in which they are laid out, indicating that their builders had from the beginning an idea of Art. It is only when we remember how very little considerations of this nature are appreciated in the present day—how little they influence the decisions of our modern city authorities—that we begin to realize with sadness the wide abyss which separates us from those ages when the arts were loved."

Viollet-le-Duc then turned to America in 1860. "What are the cities of the New World? and what the great manufacturing towns of England? That which we call civilization has led us in the nineteenth century to make wide streets, and to line them with houses of uniform appearance. Our towns and cities have thus become deserts for thought; they have the wearisome solitude of monotony without its grandeur. What is there throughout these vast chess boards of streets to suggest historical associations? Where is there a center of repose for the distracted mind of the spectator? On what point shall his attention be fixed? Where does he find the indication that a hundred generations have trodden the same ground before him?"

He stressed that the ancients, when erecting fine structures, considered their surroundings and were careful about selecting their position. It is important to provide a *mise en scène* for all works of art. His allusions are gems: "Art requires a breadth of atmosphere to enable it to exist. If it is reared in a hot-house it is only a curiosity, an amusement, or an object of study for the priviliged few. Imagine a landlord building a magnificent conservatory, and devoting all his means and employing all the labor at his disposal in raising the rarest plants in that conservatory, but letting thistles and briers cover his fields; should we not rather see the conservatory destroyed and the land producing fine woods, harvests, and vintages? Our position as regards architecture is in this country something like that of such a landlord; we have a magnificent conservatory, but too many thistles in its neigborhood."

There are indeed many lessons for the student and many refresher courses for the practitioner within these volumes. Viollet-le-Duc shows how the great periods of architecture rose, how their development was in large part due to rigorous applications of novel methods of construction, and how faulty it is to have the notion of reviving periods. He said: "I think it above all things desirable that young students of Architecture should be taught to reason, that their minds should be habituated to analysis and examination. The contrary is the case at present." Have we advanced in the last century?

In some spheres we do not put enough to test. On my pet subject of Climate and Architecture, Viollet-le-Duc illustrates the historical background of man building to suit his climate. He quotes Vitruvius on the climatic aspects of town planning, notes the use of stone in keeping buildings cool in summer, discusses design of moldings in different sunlit environments, relates how the Baths of Caracalla were oriented to the sun, and tells us of the year-round climate inside St. Peter's in Rome!

He touches on the social climate, too. What young architect (or older one), anxious to obtain a project of a type

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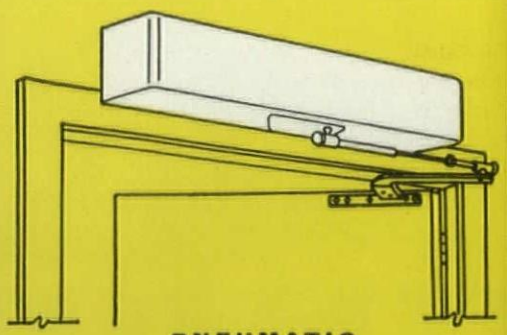

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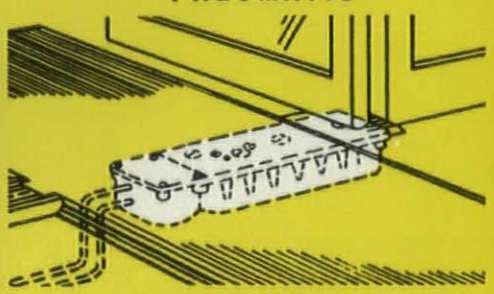

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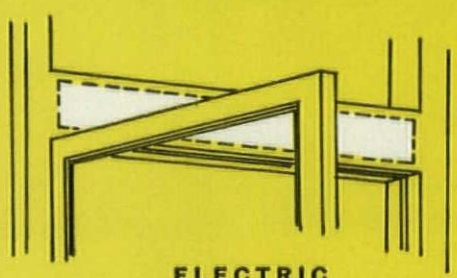

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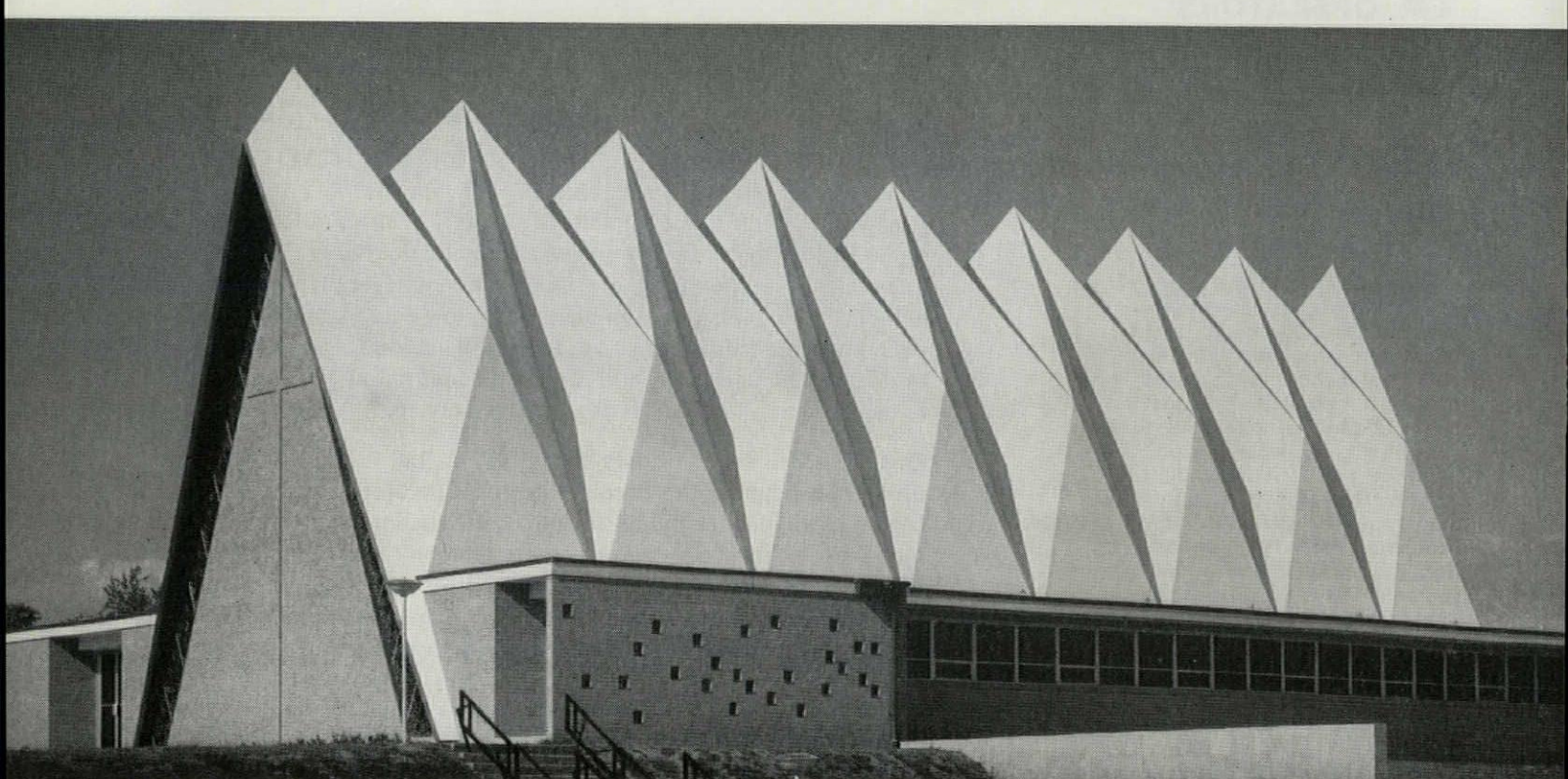
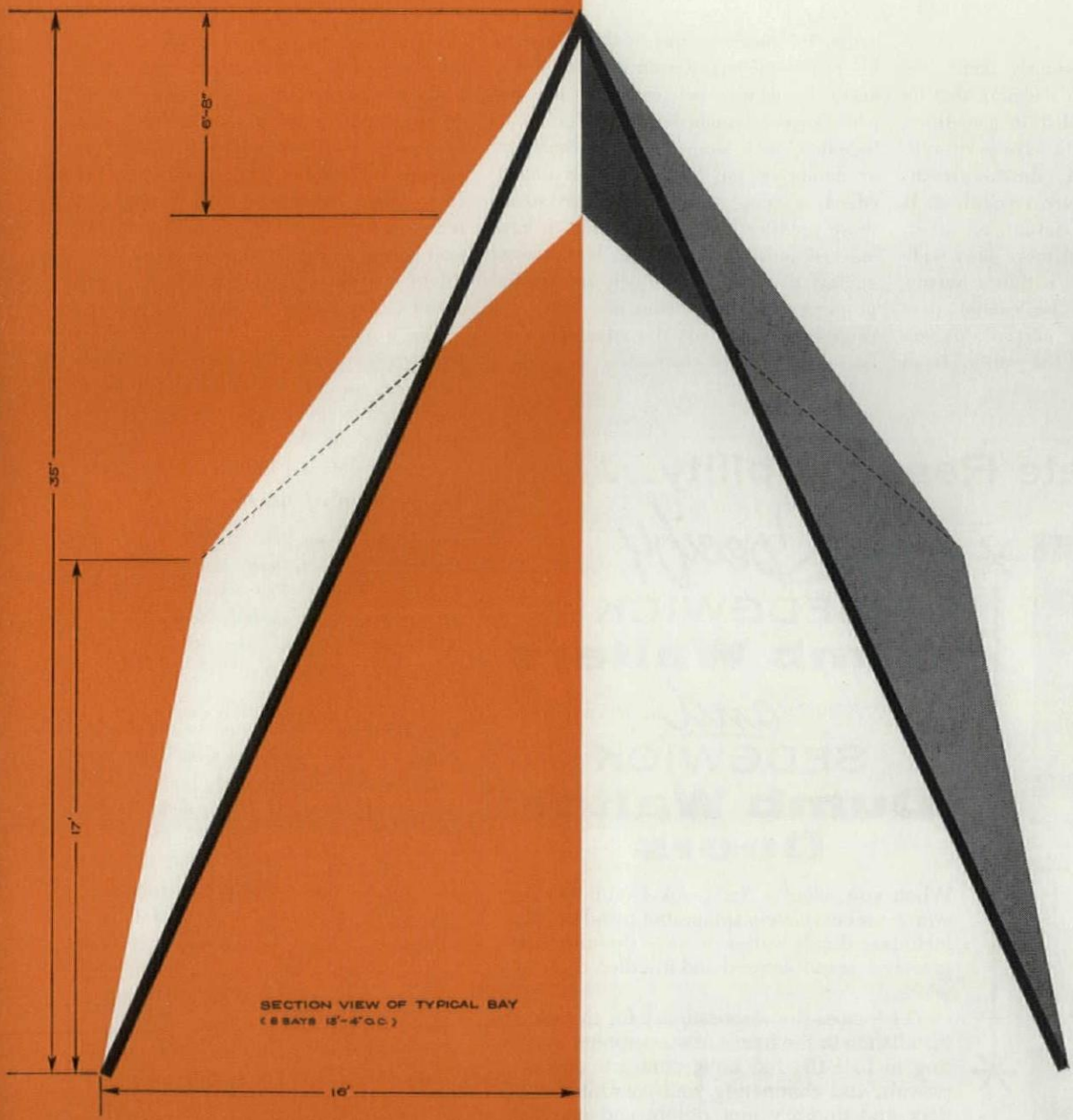
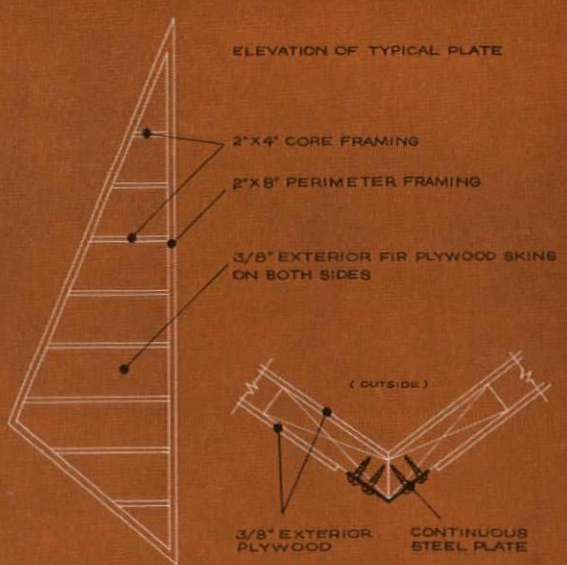
For more information, turn to Reader Service card, circle No. 367

the most exciting ideas take shape in fir plywood





SECTION VIEW OF TYPICAL BAY
(8 BAYS 15'-4" O.C.)



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LOCATION:	St. Louis
ARCHITECTS:	Manske & Dieckmann, St. Louis
COMPONENTS:	Roof Structures, Inc., Webster Groves, Mo.
BUILDER:	A. H. Haessler, St. Louis

THE NINE SOARING PINNACLES of this church, recalling the boldness of Gothic arches, are a vigorous expression of advancing plywood technology. The roof is a space plane, a step beyond the folded plate with more versatility than any other clear-span technique using wood.

Like all folded plates, the space plane acquires strength and rigidity from interaction of inclined plywood diaphragms. But its components may take shapes other than rectangular, to create more complex designs. Here they are triangular stressed skin panels. Forces are transferred from one to another, and the entire multi-faceted roof becomes a lid-like shell, supported only at edges. Steel buttresses anchored to foundations absorb lateral thrusts. Clear-span area is 32' x 110'.

The absence of framework or posts is only one of several advantages this roof shares with space planes in general. It went up fast (15 days); huge plywood components were precisely fabricated to insure exact fit. Prefabrication also guaranteed close cost control and quality of workmanship and materials. In-place cost compared well with other means of obtaining a similar span.

For basic fir plywood design data, write (USA only) Douglas Fir Plywood Assn., Tacoma 2, Wash.

Continued from page 180

which he has not previously done, has not experienced a client's feeling that he is "typed" as a specialist in something else! Viollet-le-Duc could have been writing today when he said: "In the present day 'specialties' alone are recognized. It is not imagined that a savant, an artist, or a man of letters can move in a wide circle. Each is confined within a narrow sphere, beyond which he cannot pass without losing a great part of his importance in the eyes of the public. If an artist, for instance, has in the course of his profession manifested certain preferences (and who is there that has not preferences?), immediately he is classed, 'labelled,' as it were: he is not consulted or employed, or his capacity acknowledged, except within the range which those predilections are supposed to have marked out for him. If he protests against the limitation which opinion imposes upon his knowledge and tastes, his protest is unheeded. His adversaries, or those who regard themselves as such, if he endeavors to take a single step in their direction, are eager to thrust him back within the narrow circle traced around him; for every one thinks it his interest to make his neighbor's sphere as narrow as possible, and is ready to declare him a trespasser the moment he ventures beyond it. These sentiments appear to me perverse in themselves, hurtful to the interest of Science, Art, and Letters, and unjust to individuals."

The world goes on, but after reading *Discourses on Architecture*, a hundred years old, one might be inclined to move that there is in our life today nothing new under the sun.

Integration of All the Arts

The Rococo Age. *Arno Schönberger and Halldor Soehner, with collaboration of Theodor Müller. Translated by Daphne Woodward. McGraw-Hill Book Co., Inc., 330 W. 42 St., New York 36, N.Y., 1960. 392 pp., illus. $23.50*

In evaluating a book, one keeps in mind at least two criteria. The first is the book itself, as far as pictorial quality, printing, and binding are concerned. The second is content.

The Rococo Age fully lives up to its promises as far as the first is concerned. The only appropriate term for it is sumptuous. The reproductions (almost 400 of them, in black-and-white and color), are superb, and include a great many items, ranging from painting to *objets d'art* to buildings, that are not overly familiar to the beholder. In short, this is a book that even the most casual reader will enjoy leafing through.

If this were the total contribution of *The Rococo Age*, one could well write the volume off as still another expensive picture book designed to impress the visitor when left out on the appropriate side table, implying the owner's affluence, taste, and interest in the artistic. In many instances, this will be the fate of the book; but for the discerning, there is a great deal more.

The Rococo period is often disposed of as an age of curlicues, where the surface shimmered but where there was no depth. Nothing could be more wrong. The Rococo was the logical evolution from the Renaissance and the Baroque. It was the last brillance of the Old World before it became submerged intellectually in the French Revolution and artistically in the mechanical marvels of the Industrial Revolution. In the Rococo Age, among the populace that mattered (admittedly

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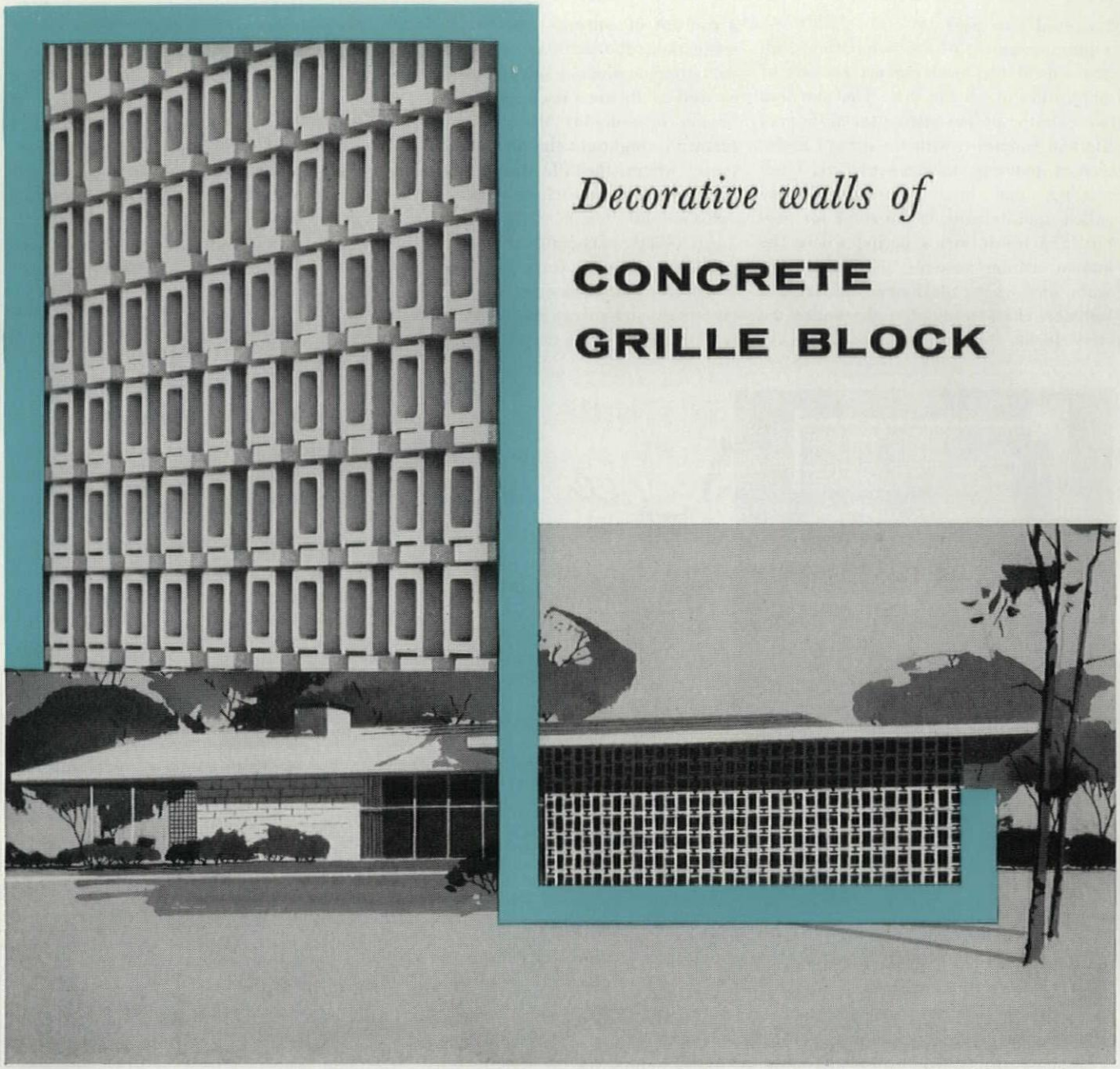

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Continued from page 184

a small fragment of the population), we had one of the most perfect periods of integration of all the arts. The aim was to create the proper setting for all human life and endeavor, with the arts of architecture, painting, music, sculpture, landscaping, and even fireworks display called upon to provide the stage for people. The result was a period where the human being became the measuring scale, and where the human imparted a common characteristic to the entire society. In the Rococo there was, above all, a concept of cultural unity. In their introduction, the authors show this all-pervading communal spirit of the Rococo as well as its very deep concern for the human in everyday life. They manage further to highlight this in their illustrations, where the illustrations of 18th Century art show various aspects of that culture.

Architects may find this book slim pickings, in some respects, since there is primary emphasis on paintings, china, tapestries, and silverware. Only relatively few illustrations are devoted to buildings per se. This is definitely not a book on the architecture of the Rococo. Nevertheless, there is much to fascinate the architect. More than anything else, the book points to the great truth that ultimately all the arts must operate in connection with the society in which they are created. Indirectly, this aims an accusation at the 20th Century, where the watchword, all too often, is art for art's sake, and where architecture is created without any real connection with the society at large.

DR. FREDERICK HERMAN
College of William and Mary
Norfolk, Va.

A Sparkling Presentation

Architectural Presentation in Opaque Watercolor: Theory and Technique. *Chris Choate. Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y., 1961. 158 pp., illus. $12*

Chris Choate is no mere renderer. He is an architect, architectural illustrator, and artist. Not only a master at painting, he also has a descriptive style that makes his ideas—on perspective, composition, lighting, color effects, and color mixing—stimulating and enjoyable to read.

His brilliant color reproductions are superb, although it is tragic there are so few of them. The scarcity, however, is partly compensated for by numerous zip-like brush-stroke line drawings that truly sparkle. A scattering of halftone reproductions of renderings and photos is also included.

Altogether, this book is tops—a must for anyone interested in a new technique for architectural presentation.

E.A.B.

Value for Money

A New Approach to School Building Cost Comparison. *Fred M. Fowler. Utah State Department of Public Instruction, Division of School Finance, Room 223, State Capitol, Salt Lake City, Utah, 1960. 44 pp., $.90 (paperbound)*

The chief value of this study, which was initiated by the author, who is Director of the Division of School Plant Planning for the Utah State Department of Public Instruction, is its laudable attempt to introduce the rating of values into cost-comparison procedures. It was carried out with the aid of several superintendents and architects, and additional consultants in the fields of engineering, lighting, and acoustics.

Fowler states his thesis in the first

Continued on page 188

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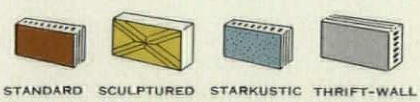

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"For information turn to reader service card-circle No. 301"

Continued from page 186

paragraph: "How much or how little is spent has meaning only with reference to what and how much is received for what is spent." He has made a worthwhile effort to establish objective methods of determining values, of which seven are identified. A separate jury of competent persons was established for each. These seven "values" are educational adequacy, safety, long-time cost economy, aesthetics, auditory comfort, thermal comfort, and visual comfort. Aesthetics is more fully described as "evaluation of the social, emotional, psychological environment."

In his summation, Fowler states that the procedures described for making school-building cost comparisons appear to be essentially sound. However, he warns: "It is not an easy procedure to use, and a special admonition should be stated. The results can be valid only to the degree to which the juries possess professional competence. Superficiality is the greatest potential pitfall." This is the shoal on which all such procedures founder. As Fowler admits, rather sadly, "It is not easy to get the co-operation of competent people for the amount of time which must be taken. Therefore, it is not too likely that the procedure will be used."

The methods outlined in the study have been applied to only seven elementary schools; consequently, no very valid conclusions can be drawn. Furthermore, some of the evaluative criteria developed are subject to argument. This study nevertheless has importance as a first step in developing a cost-comparison instrument in which value is recognized.

PHILIP H. HISS
Designer and Author
Chairman, Board of Public Instruction
Sarasota County, Fla.

Unsurpassed and Unrestored

English Abbeys and Priories. *Text by Olive Cook. Photos by Edwin Smith. The Viking Press, Inc., 625 Madison Ave., New York 22, N.Y., 1960. 62 pp. and 136 plates, $12*

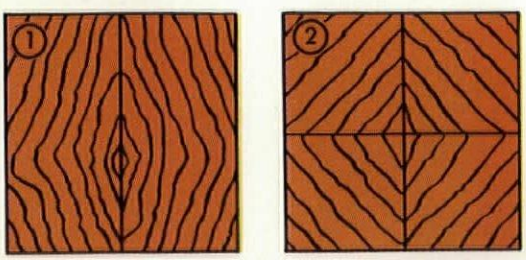
England's great cathedrals have often been documented, but this is the first time, to my knowledge, that a publisher has concentrated on the lesser known ecclesiastical building: the abbeys and priories of Britain. Few of these survived unharmed the dissolution of the monastic orders, and the cruel destruction of Henry VIII's and Cromwell's times. The monastic buildings that have survived,

Continued on page 191

Weldwood Architectural center matched paneling of crotch mahogany was chosen by architects Von Storch & Burkavage for the board room of International Salt Company, Clarks Summit, Pennsylvania.

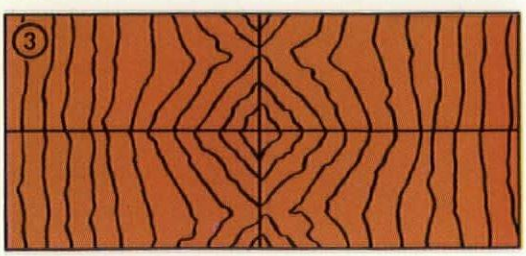
Each wall a work of art—when it's wood paneling by Weldwood

THREE EXAMPLES OF THE VENEER MATCHER'S ART



1. CENTER MATCH. Two consecutive pieces of veneer, one of which is turned over, are arranged side-by-side so the joint falls in the panel's center.

2. DIAMOND MATCH. Another popular arrangement especially suitable for crotch veneers.



3. FOUR-WAY CENTER AND BUTT. This type of match is frequently applied to butt, crotch, or stump veneers, since it effectively reveals the beauty of their configurations.

Log, cut, match, and finish all contribute to the "one-of-a-kind" beauty of a Weldwood® paneling interior

Wood cut from the trunk of a tree presents an entirely different appearance from wood cut from the stump, a burl, or a crotch of the same tree. Similarly, cutting across the grain, slicing with the annular growth rings, rotary peeling, or any of many other cutting possibilities, each affects the patterns and figures of the veneer.

Yet only after the veneers have been cut and registered in sequence at Weldwood's Algoma mill does an even finer art come into play. The fine art of matching these veneers into panels literally compounds the infinite. There is no limit to the variety of beautiful wood paneled interiors architects and decorators can achieve with Algoma-made wood paneling by Weldwood.

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Continued from page 188

however—as parish churches, as ruins, or as country mansions and farm buildings in private ownership — are well worth study. They exemplify the scale and grandeur of this architecture and are living proof of the remarkable talents of medieval designers. The monastic churches and domestic buildings that were vindictively destroyed, not to speak of their libraries and great works of art, are an irreplaceable loss.

Nevertheless, writes Olive Cook in her introduction, the dissolution helped to preserve important aspects of monastic life. If monastic life had survived intact, suggests the author, many of the structures would undoubtedly have been altered to suit new tastes for a more "contemporary" architecture, as the monks were always quick to do. The dissolution in England froze architectural design at a stage prior to Renaissance influence, so that extant medieval monasteries can be studied with more profit in England than in most Catholic countries. Those buildings not completely destroyed were simply left to fall into ruin. No restorer touched these ancient buildings, as was unfortunately the case with Westminster Abbey. Only time and weather left their mark.

A fine collection of photogravure plates by Edwin Smith focuses on the proud and picturesque ruins, and on the buildings still in use today. Olive Cook's excellent introduction precedes the illustrations and their highly informative captions. Her introductory text outlines the history and development of the monastic orders in England, the daily life in a monastery, the basic floor plans recurring in monastic buildings, and methods of construction.

For those who admire pre-Renaissance architecture in particular, and for all architects imbued with the history of their field, this handsome book is a necessity. The purity of the early constructions of the Benedictines and Cistercians is unsurpassed.

ILSE MEISSNER REESE, AIA
Forest Hills, N.Y.

B: Baroque, Bernini, Borromini

Encyclopedia of World Art. Vol. II: Asiatic Protohistory to Byzantine Art. *Institute for Cultural Collaboration, Venice and Rome; McGraw-Hill Book Company, Inc., 330 W. 42 St., New York, N.Y., 1960. 420 pp., 490 plates. $38 ($570 per set)*

The second volume of this important encyclopedia—which I termed a "prodigious work" in a review of Volume I, and which I still regard in those extravagant terms—offers to its architectural subscribers a different sort of fare, but one equally satisfying. The alphabetical arrangement, by coincidence, again provides that certain subjects group themselves for comparative reference. The first volume produced an introduction to the series by furnishing us with essays on Architecture, Art, and America. The second concentrates our attention (at least for a time) on the Baroque period, with supplementary biographies of Bernini and Borromini. (One must admit that this rationalization breaks down; Bramante and Brunelleschi are also here, separated by a number of volumes from their Renaissance period).

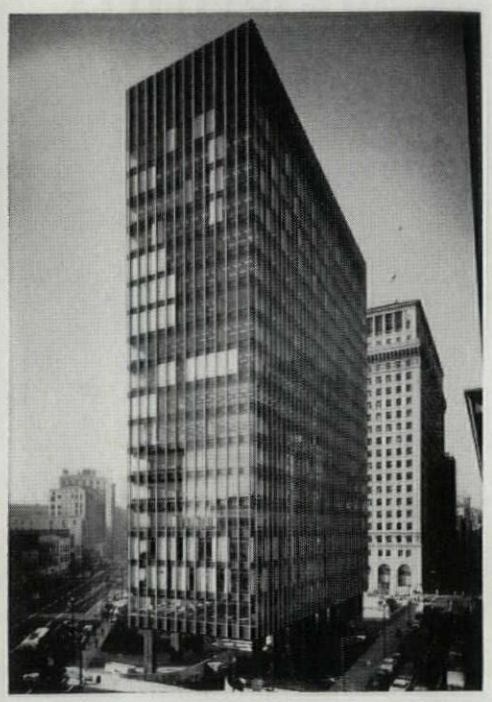
It is interesting to read now—enjoying the authority that the Italian scholars give to their commentaries and critiques—of that period in architecture, the Baroque, that has had so many ins and outs in critical standing. Of course

Continued on page 196

Crown Zellerbach's new building makes a striking addition

Exterior wall showing installation detail of PPG SOLEX and SPANDRELITE Glass.

clad in PPG GLASS to San Francisco's skyline



The Crown Zellerbach Building is one of the first major projects using an all-glass facing to be constructed in San Francisco. The building is 20 stories high and opens up a crowded area on Market Street.

This light and airy building brings a new look to San Francisco's lower Market Street. The 20-story tower is sheathed completely in glass.

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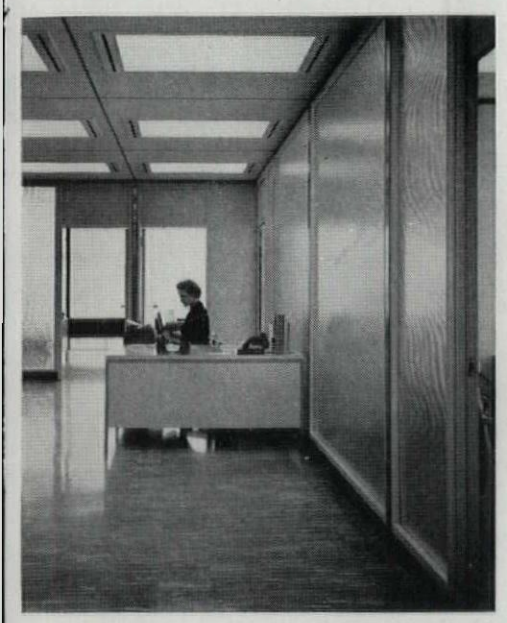

PPG Rough Plate Glass partitions with a knurled finish provide light, airy privacy.

The board room is a bright and cheerful place to work because of the wide expanse of window area. SOLEX heat-absorbing glass used here absorbs about 50% of direct solar radiation and reduces glare.

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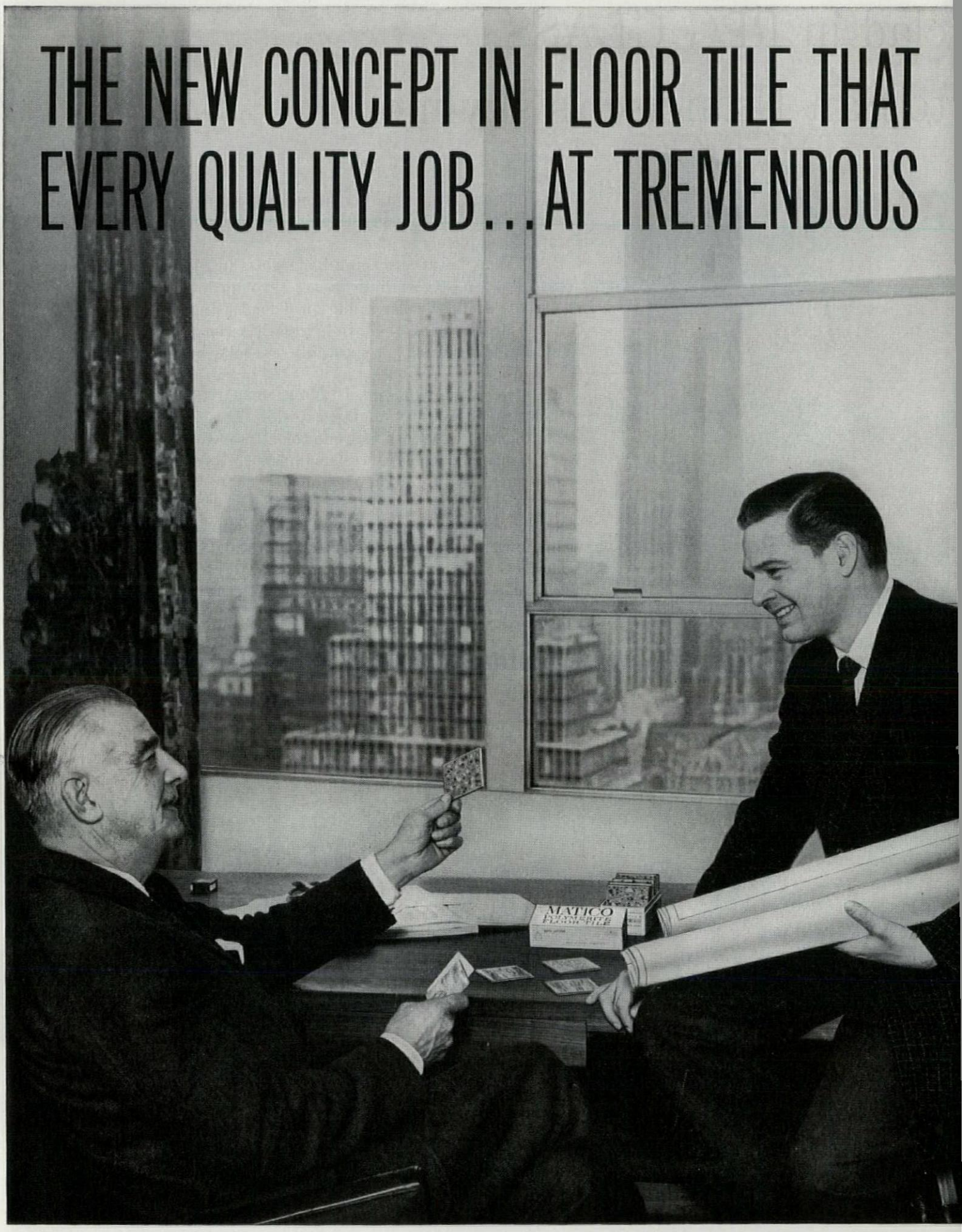
Contractor: Haas & Haynie Corporation, San Francisco, California
Glazed by: W. P. Fuller & Co., San Francisco, California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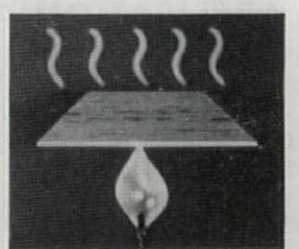

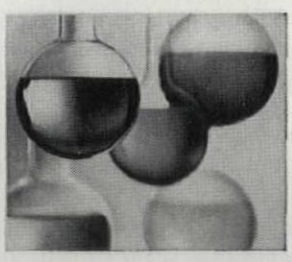

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Continued from page 191

it is now *in*, not only because of the richer evaluation given its works and its artists by critics from Burkhardt to Fiedler and Woelfflin (and even Giedion); but also because the plasticity of the surface of Baroque work is particularly appealing to a group of contemporary architects. Methods of evaluating it are various: as a phase of late Renaissance work, as a strong style in its own right, as a recurring phenomenon in the cycles of artistic-cultural development.

In whatever way the Baroque and its practitioners may be considered historically, however, there is enough detailed descriptive documentation here to satisfy all wants. The scholarship of the Italian architectural historians makes one jealous; and the interplay of commentary, disagreement, and mutual admiration is intriguing. One can spend an evening at least as interesting as Ellery Queen can provide, chasing down through three essays the disputed credits to Bernini, Borromini, and Maderno in the design of the Palazzo Barberini.

One other aspect of this triple-study analysis is particularly interesting: the unanimity with which Bernini's creative originality is now deprecated, and at the same time the more appreciative attention being given to Borromini. "Although there is no denying Bernini's inventiveness and imagination," writes Mario Labo, "it is also true that he worked within a traditional vocabulary." Says Paolo Portoghesi: ". . . his role in the creation of a new architectural idiom is relatively limited." And Bruno Zevi is quoted as commenting: "When he uses an ellipse he seems to be afraid of being too original. . . . When he uses a traditional structure, he is afraid of not seeming to be up to date and he enlivens it with tumultuous decoration." The comparatively great strength, originality, and sureness of Borromini, on the other hand, is well documented with a number of direct and telling photographs of his work.

U.S. architects of importance do not run to names that begin with B, apparently. Bulfinch is here, covered in a rather inadequate, brief biography by George R. Collins, of Columbia University. So is Breuer, equally briefly described—noted as an "architect and furniture designer." Again, the time taken in a publication of this scope becomes a handicap; none of Breuer's recent work is mentioned, and his place in current architecture seems to become unfairly dated. Peter Behrens, described by Henry-Russell Hitchcock, and Berlage, again authored by Collins, fare better.

Once more I found myself wandering from architectural subjects to others, and reading the brilliant pieces on Asiatic protohistory, Bantu cultures, and those fascinating pre-Kafka absurd-realists, Breughel and Bosch. And again one cannot praise too highly the quality of the photographs (which occupy more than half the book) and their reproduction. Many are in full color, many are new pictures, all are reproduced at a good scale and with great care.

T.H.C.

OTHER BOOKS TO BE NOTED

Norwegian Design: From Viking Age to Industrial Revolution. Carsten Hopstock. Dreyers Forlag, Olso, 1961. Distributed by Taplinger Publishing Co., Inc., 119 W. 57 St., New York 19, N.Y. 212 pp., illus. $15

Prospects for Rehabilitation: A Demonstration Study of Housing in Morningside Heights, New York City. Temporary State Housing Rent Commission, 280 Broadway, New York 7, N.Y., 1960. 114 pp., illus. (paperbound)

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Continued from page 196

The Architectural Index for 1960. Edited by Ervin J. Bell. The Architectural Index, 517 Bridgeway, Sausalito, Calif., 1961. 61 pp. $5 (paperbound)

Eleventh annual edition of the comprehensive index to seven national magazines. Editorial material is indexed under three headings: type of project, location, and architect's name; technical articles are listed by subject matter. Useful for office research, writing, teaching, and travel.

Planning the Surgical Suite. Warwick Smith. F. W. Dodge Corp., 119 W. 40 St., New York 18, N.Y., 1961. 456 pp., illus. $12.75

A carefully detailed approach to planning the highly critical operating room and its adjacent areas. Text explores the functions of a surgical suite as they affect its organization, and translates these needs into the proper facilities. All factors—traffic, equipment, materials, and mechanical services—are presented with a view toward preparing a specific architectural program. Further aids are a comprehensive checklist for the program writer, and line drawings depicting a variety of layouts.

Strength and Related Properties of Wood Poles (STP 295). American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa., 1961. 182 pp., illus. $5 (paperbound)

Report on the Wood Pole Research Program, one of the most comprehensive projects undertaken by ASTM, with detailed data from numerous tests, plus extensive interpretation of the data.

Painting in the 20th Century. Werner Haftmann. Frederick A. Praeger, Inc., 64 University Pl., New York 3, N.Y., 1960. 924 pp., illus. 2 vols. $42.50 (boxed)

A monumental work on the complex history of ideas that helped shape painting in the last 60 years. The two volumes are roughly divided into text and reproductions, respectively.

African Design. Margaret Trowell. Frederick A. Praeger, Inc., 64 University Pl., New York 3, N.Y., 1960. 74 pp., illus. $7.50

Comprehensive study of African art and material culture, showing the African artist's inventive and original approach to materials and techniques, and his individuality even within tribal uniformity.

The Spanish Arts of Latin America. François Cali. Photographs by Claude Arthaud and François Hébert-Stevens. The Viking Press, 625 Madison Ave., New York 22, N.Y., 1961. 300 pp., illus. $12.50

Documentation of the unique style that resulted from the imposition of a Baroque style upon the primitive Indian tribes and the more advanced civilizations of the Incas, Aztecs, and Mayas.

Elementary Statics of Shells. Alf Pflüger. F. W. Dodge Corp., 119 W. 40 St., New York 18, N.Y., 1961. 122 pp., illus. $8.75

Compilation of ASTM Standards on Gypsum Products and Plaster Aggregates. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa., 1961. 152 pp. $2.75

Series of 16 specifications, 11 methods of test, and 4 sets of definitions, many revised or added since previous publication in 1957.

Guidelines for Business Leaders and City Officials to a New Central Business District. Edited by Ruth L. Mace. Institute of Government, University of North Carolina, Chapel Hill, N.C., 1961. 150 pp., illus. $3 (paperbound)

Seminar papers that were originally presented to civic leaders and officials by various experts in the revitalization of downtown areas. Seminar series was supported by the Ford Foundation.

Student Reactions to Study Facilities: With Implications for Architects and College Administrators. Stuart M. Stoke, Robert F. Grose, David W. Lewit, Michael S. Olmsted, Bulkeley Smith, Jr. A Report to the Presidents of Amherst College, Mt. Holyoke College, Smith College, and The University of Massachusetts, 1960. 60 pp. (paperbound)

An intensive investigation of student attitudes toward various study spaces—library reading rooms, study halls, open carrels, etc. Findings of importance to space planners are discussed and summarized. One of the primary findings: "There is a strong preference for studying in small places where one may study alone or with one or two others."

Project was under the auspices of The Committee for New College, with the assistance of a grant from The Fund for the Advancement of Education. Copies may be obtained from Professor Stoke, Department of Psychology and Education, Mt. Holyoke College, South Hadley, Mass.

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JOHN S. BOLLES, San Francisco, announces formation of a New York office and art gallery, 17 E. 84 St., New York 28, N. Y. JOHN J. CARLOS is Facilities Co-ordinator for the new office.

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been named General Manager.

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P.S.

The New York World's Fair of 1964–65, it becomes increasingly apparent, will not only be an opportunity missed for a demonstration of progress in design and technology, but will actually be the most horrendous hodgepodge of juke-box architecture that has yet been assembled. Each new project announced is a bit more tasteless and inept than the ones we have already seen. The proposed theme structure, of course, set a new high in ugliness, by any standard of judgment that might be applied, and the other designs we have seen are conscientiously pursuing the theme.

I say *by any standard of judgment,* and that is important in evaluating the great harm that this demonstration will do. Mr. Moses, who has persisted all through his long career in relating over-all planning to radicalism, and equating the use of contemporary techniques with irresponsibility, is now confusing the present issue by similar syllogisms. Last month, in P/A's NEWS REPORT, we quoted his comments in a talk at Brandeis University: "The Fair administration belongs to no architectural clique. . . . There will be no predominating architectural concept." The argument here is that a unity of *concept* (which might well allow great variety of individual design) necessarily indicates adherence to a *clique.* And: "I get a little weary of the avant-garde critics who see in a World's Fair only an opportunity to advance their latest ideas, to establish a new school of American planning, architecture and art. . . ." The point here is that the hope of using a World's Fair as a means of marking a nation's position in architecture and the arts is avant-garde. And again: ". . . we don't care whether you are a traditionalist, modernist, or eclectic. . . . Fair officials . . . have no position at all except as benign spectators." This is at least a frank statement of the belief that officialdom has no responsibility to assist or encourage mature cultural development, and in fact no concern with the nature of work done under its aegis.

The point that Mr. Moses ignores is that bad design—design that would be placed at the bottom of the pile by any professional jury in any sort of objective judgment—has nothing to do with avant-gardism, traditionalism, modernism, eclecticism, or any other "ism." It is simply the result of a lack of a concept, a "we don't care" attitude on the part of the client, and a lack of creative ability on the part of the designers. This is true of any design program, and a World's Fair is no exception.

There is not room here to discuss the important role fairs have played in the development of the arts and cultures—not only in documenting certain periods, but even in influencing work to come. The effect of this one, even long before the fact, seems to be simply to distress and infuriate the design professions. Several petitions have been sent to the Fair authorities asking for a re-examination of the design premises, and suggesting a competition for the theme statement. A round-robin letter has been circulating among architects (sponsored by a group calling themselves Anti-uglies) and has acquired a host of good signatures. The architectural advisory board resigned. Individual architects have tried to exert some influence. But Mr. Moses is a stubborn man, who persists in believing—or pretending to believe—that it would be radical and wrong to approach the design of a World's Fair as an exciting and important problem which deserves the best possible solution.

Will bad design in this case actually do any harm? Several conscientious architects feel that it might harm *them* to be connected with the hodgepodge, and have turned down commissions from concessionaires. The fact that it promises to be a collection of works from engineers and industrial designers will probably not interfere with the commercial success of the enterprise. But it may seriously harm public understanding of present architectural developments. There have been arguments that the chaotic state of design, described so fully by the profession in these pages recently, is actually a happy time of exploding talents and techniques, with a legitimate design basis. The Fair promises to document the opposite point of view—that it is a period of no discipline, making it difficult to distinguish between creative imagination and foolish exhibitionism, between talent and ineptness. Moses certainly believes, and he is sponsoring architecture to prove it, that orderliness is nonsense, and that the proper gesture in the direction of 20th-Century architecture is a Last Guffaw.

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