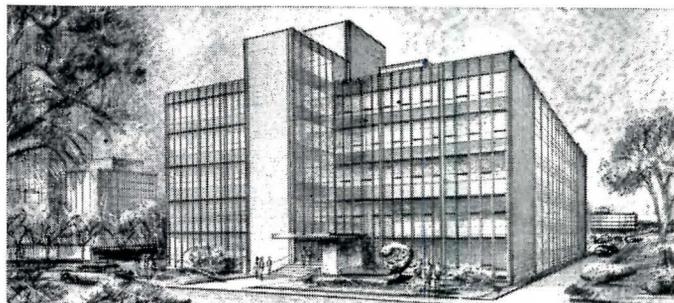
An architectural floor plan of a building, overlaid with several bright red and yellow rectangular blocks. The plan shows various rooms, corridors, and structural elements. A blue rectangular area is visible in the lower right quadrant. The background of the plan is filled with intricate line drawings of trees and circular patterns. The text 'August 1962 PROGRESSIVE ARCHITECTURE' is centered horizontally across the middle of the plan.

August 1962 **PROGRESSIVE ARCHITECTURE**



# W S, | A ; DOWNGARDS, AN AIR DIFFUSER: ARMSTRONG VENTILATING FIRE GUARD CEILING IN THE NATIONAL CASH REGISTER BUILDING



All five stories and penthouse of the two-million-dollar National Cash Register Building at Hartford, Conn., will be air conditioned—with Armstrong Ventilating Fire Guard Ceilings distributing the air. This new system uses a pressurized plenum instead of supply ductwork and a through-perforated ceiling instead of unit diffusers. The engineers varied the proportion of Ventilating to non-ventilating Fire Guard (patterns are virtually identical), thereby controlling the amount of conditioned air delivered to each room. This is the kind of versatility allowed by Armstrong's exclusive Plenum Engineering Procedures; scientific calculations, made *before* the ceiling goes up, permit the use of a common plenum to supply several conditioned spaces, each with different air-flow requirements. Both regular and Ventilating Fire Guard units easily satisfy the 1½-hour fire-protection rating required for this building. And Ventilating Fire Guard Ceilings (instead of the combination of a duct-and-diffuser system and intermediate fire protection) saved at least \$40,000.

National Cash Register Building, Hartford, Conn. ARCHITECTS: P. J. di Corcia Associates, Manchester, Conn. AIR SYSTEM CONSULTANT-CONTRACTOR: The Horton Company, Hartford, Conn. CONSTRUCTION CONSULTANT-GENERAL CONTRACTOR: Horn Construction, Inc., Hartford, Conn. ACOUSTICAL CONTRACTOR: Conn Acoustics, Newington, Conn.

**TECHNICAL INFORMATION:** *Armstrong Ventilating Ceilings* have been thoroughly lab- and job-tested to assure proper performance; are available in five materials (both tile and lay-in units), including Fire Guard, with three different patterns; and are compatible with all conventional supply-air systems. They offer considerable savings by cutting supply ductwork and eliminating conventional diffusers. *Ventilating Fire Guard* offers up to four-hour rated fire protection, saves up to 30¢ per sq. ft. by eliminating intermediate fire protection, up to two months' construction time through dry installation; often earns lower insurance rates. *Special plenum engineering data* is available, giving all factors and formulae for the correct design of this ventilating system, ensuring that it delivers the required cfm of conditioned air in the manner and quantity designated by the ventilating engineer; contact your Armstrong Acoustical Contractor or Armstrong District Office. For general information, write Armstrong, 4208 Watson Street, Lancaster, Pennsylvania.

**Armstrong ACOUSTICAL CEILINGS**

*First in fire-retardant acoustical ceilings*

RENDERINGS BY ARA DERDERIAN



# WHEN YOU DESIGN UNUSUAL ELEVATORS

The experience of Rotary Oildraulic® Elevator engineers can be valuable to you

Two features make the elevator in this building unusual: hoistway and cab are round, and both are walled with transparent plastic. Elevator passengers are treated to an unusual view, and the design effect from inside the building or out is exciting.

The opportunity to make elevators beautiful as well as functional—to make them an element that contributes to building design rather than obtrudes on it—is getting deserved attention. Rotary Oildraulic Elevators have been chosen for many distinctive installations and our files of such jobs may be helpful in your planning.

These creative designs are further proof of the versatility of the Rotary Oildraulic Elevator. Because it is pushed up from below by an oil-hydraulic plunger, no machinery penthouse is needed and the elevator is self-supporting. Dependability and economy of operation are unmatched throughout the entire range of vertical transportation from the smallest passenger elevator to freight-carrying giants with capacities of 100,000 lbs. or more.

Field engineers and franchised distributors throughout the United States and Canada are available to help you plan elevators that interpret your designs faithfully and serve the traffic needs of any building to six stories. Look under "Elevators" in your phone book, see Sweet's Files or mail coupon.

*Title Insurance and Trust Company, Redwood City, Cal.*

*Architect: James P. Lockett, Visalia, Cal.*

*Contractor: Haas & Haynie Corporation, San Francisco*

*Rotary Oildraulic Passenger Elevator  
installed by Moody & Rowe, Oakland*

## ROTARY OILDRAULIC® ELEVATORS



passenger  
and freight

DOVER CORPORATION, ELEVATOR DIVISION  
MEMPHIS, TENN.—CHATHAM, ONTARIO

For more information, circle No. 331

Dover Corporation, Elevator Division  
1110 Kentucky, Memphis 2, Tenn.

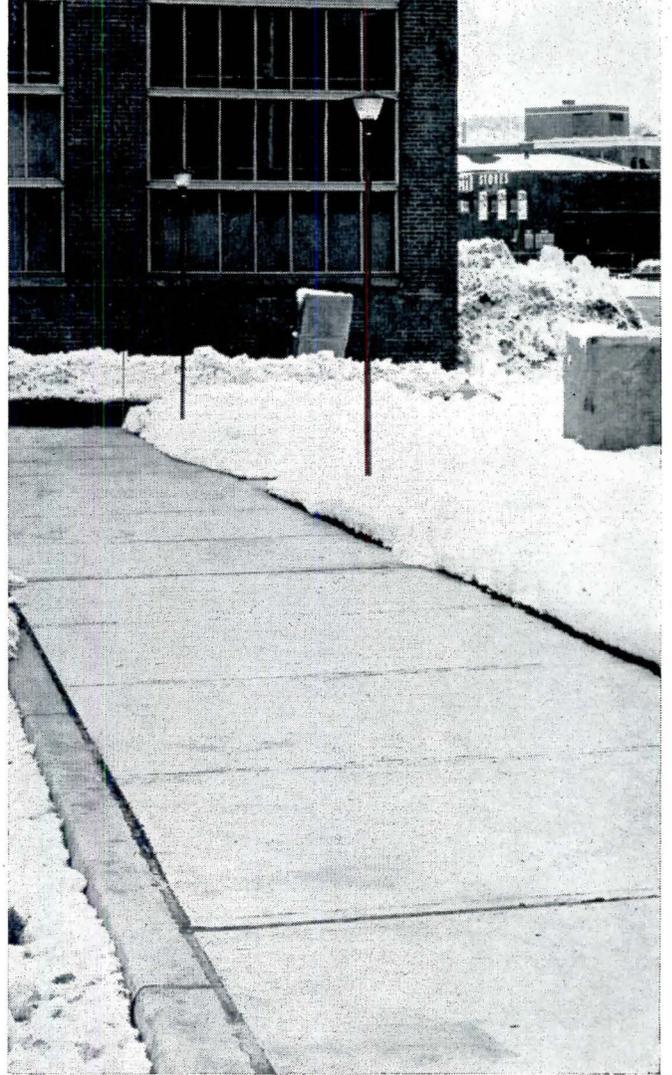
Please send information on Rotary Oildraulic  
Elevators to:

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

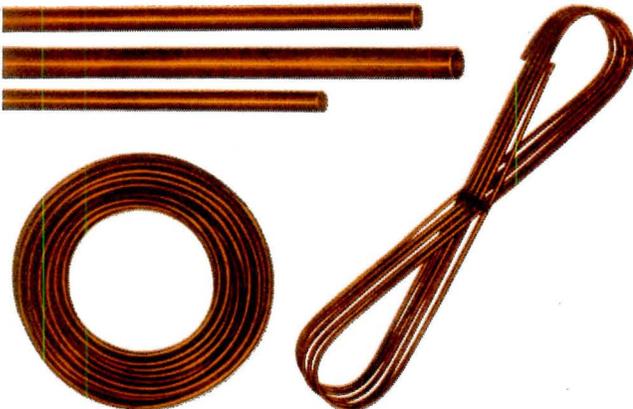
\_\_\_\_\_



Anaconda Preformed Copper Tube Grids installed in sidewalk . . . and 6 months later a 10" snowfall is quickly melted.

## Anaconda Copper Tube for Snow Melting

**IN COILS  
IN STRAIGHT LENGTHS  
IN PREFORMED GRIDS**



More and more building owners are using copper tube piping systems to get rid of snow, quickly and economically. And more often than not the specified tube is Anaconda.

The reason: Anaconda makes it easy to take advantage of this demand. Anaconda makes copper tube for snow melting installations in convenient 60' and 100' coils, 20' straight lengths, and also in practical, preformed grids. The latter, an exclusive Anaconda development known as PG's, offers designing and layout advantages plus the savings achieved by using a "ready-to-install," machine-made product.

For complete information on Anaconda copper tube and PG's for snow-melting systems, write Anaconda American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario.

Leading wholesalers stock Anaconda Copper Tube, Fittings and Valves.

61-2003

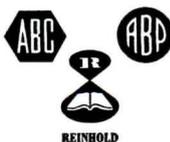
**ANACONDA<sup>®</sup>**  
AMERICAN BRASS COMPANY

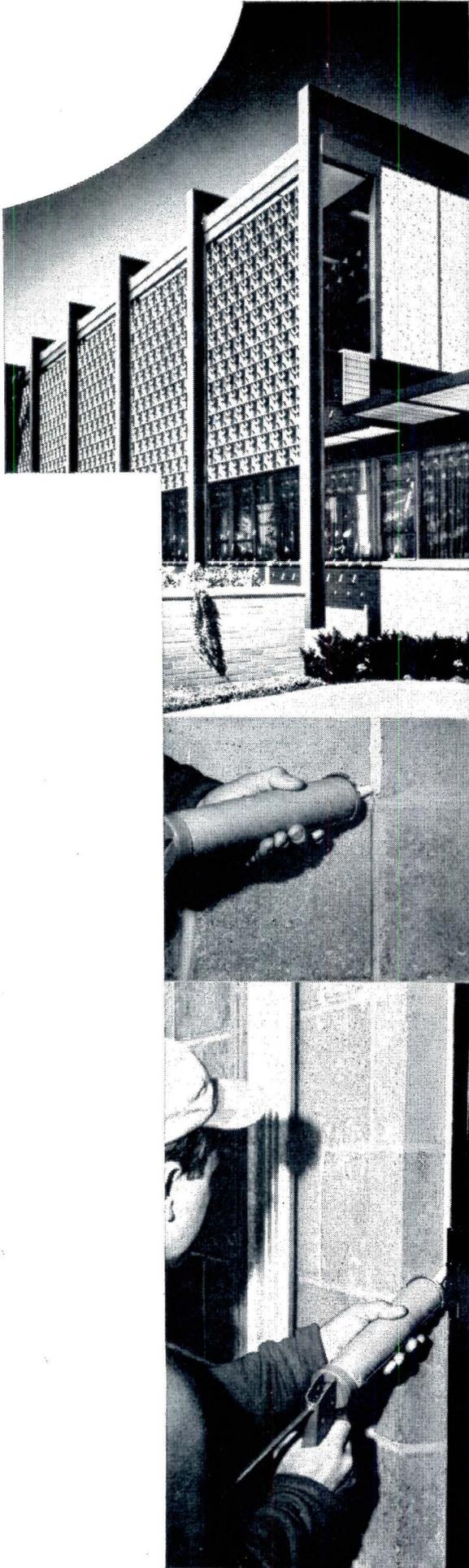
# THIS MONTH IN P/A

*The World's Largest Architectural Circulation*

- 49 NEWS REPORT (*For Full Contents, See Page 49*)  
Saarinen's air terminal for Athens . . . Raymond & Rado design a Midwest resort . . . Coventry is dedicated . . . Peugeot competition: regulation winner, imaginative runners-up . . . Multipurpose medical project for Lake Success.
- 98 EDITORIAL FEATURES (*For Full Contents, See Page 97*)  
Exclusive report on Harvard Conference on Urban Design—subject: "Inter-City Connections"—includes excerpts of talks by Frederick Gutheim and Catherine B. Wurster. The four panel reports on methods of planning such areas are summarized and illustrated; three professional and three student projects are presented . . . The second house as a challenging area for design experiment: six houses are discussed . . . The validity of using aesthetics in judging the competence of a candidate for architectural registration . . . Presentation of made-land expansion for Northwestern University by SOM includes architectural and engineering studies, plan of new campus, and discussion of campus planning in general by Walter Netsch . . . IDD presents two chapels for meditation . . . M&M articles include report on new method of joining lightweight-concrete units with plastic discs; discussion of register placement; the characteristics and uses of vinyl/metal laminates.
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**ONE** or

**TWO** part

sealing systems based  
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polymer produce

**THE MOST SATISFYING  
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**Satisfying for the architect.** Polysulfide base sealant has been field proven since 1952. History of its successful weatherproofing ability corresponds to the success of the modern curtain wall. It includes application in both dynamic and static joints and service in all kinds of structures and all weather conditions. Quality of the material can be measured against American Standard Specification A116.1. You can specify polysulfide base sealant with an extra measure of certainty.

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**CHEMICAL CORPORATION**

**THIOKOL CHEMICAL CORPORATION** PA  
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Gentlemen: Please send complete data regarding polysulfide base sealant, including "Where to Buy" information.

One part systems     Two part systems

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City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



Shelby High School Library, Shelby, N. C.; Architect: Holland and Riviere.

## DECADE . . .

the complete new line of library furniture! A panel of librarians and architects helped Southern Desk designers create Decade. It combines the maximum in functional efficiency, yet offers enduring visual beauty. Though contemporary in feeling, Decade reflects such superb simplicity that it will blend with virtually any architectural style. And for Decade, only the most serviceable materials are

acceptable . . . rich wood paneling, stain-proof plastic tops, scuff-resistant anodized aluminum legs. To help you plan the most effective use of space and equipment for your library, the experienced planning staff at Southern Desk is available to provide layouts, engineering and advisory service without cost or obligation to you. To get a clearer picture . . . write for catalog today.



### Southern Desk Company

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

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

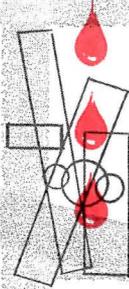
### steel

we don't skimp on steel—  
all major parts are made  
of 20 U.S. gauge steel.  
Our cost: 64c more per 2x4  
troffer—including freight!



### zinc plating

every piece of steel is  
zinc-coated on both sides.  
Guth fixtures should  
never rust. Our cost:  
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# the guth creed

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- we aim to produce better lighting fixtures — not cheaper ones
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- we are lighting engineers — not scrap-pile suppliers
- we build to a standard — not to a price
- we believe in this formula for fixture evaluation:

*Price divided by Service Years*

### bonderizing

costly precision  
equipment prepares  
the surface for better  
paint adherence —  
plus zinc phosphatizing  
treatment AFTER  
forming!



### acrylic paint

stays sparkling white  
longer—easier to clean  
—finish 175% harder—  
resists to chipping,  
scratching, fumes and  
discoloration. Full 1 1/4  
mil thickness. Our  
cost: From 28c to 96c  
more per 2x4 based on  
same paint thickness.



### engineering

We are lighting  
engineers—not just  
manufacturers. Every  
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production starts.



### structural integrity

our fixtures are designed  
and assembled for strength.  
Heaviest cold-rolled and  
die-forming equipment.  
Riveting for strength. Made  
stronger to last longer.



### quality control

every luminaire is lighted and  
must pass several thorough tests  
before found worthy of our  
customers. We periodically heat  
and sound test our ballasts,  
check paint quality, test individual  
luminaires for light output  
and mechanical soundness.



### we bend over backwards

to satisfy every customer and  
expedite every order. We offer  
complete lines—not just a few  
mass-produced units. There's a Guth  
fixture for every requirement.



**GUTH** means: more fixture — better light —  
more footcandles — longer life . . . Convince yourself.  
*write to us or ask our customers*

**THE EDWIN F. GUTH CO.**

2615 Washington Ave. Box 7079 St. Louis 77, Missouri

Architect:  
*Kenneth Franzheim*  
Contractor:  
*W. S. Bellows  
Construction Corp.*

Bank of the Southwest.  
4-hour Zonolite gypsum  
suspended fireproofing  
below floors and beam,  
and 4-hour Zonolite gyp-  
sum column fireproof-  
ing. Approximate floor  
area 825,000 sq. ft.

Architect:  
*Wirtz, Calhoun,  
Tungate & Jackson*  
Contractor:  
*Manhattan  
Construction Company*

Memorial and Profes-  
sional Building. 4-hour  
Zonolite gypsum sus-  
pended fireproofing be-  
low floor and beams, 4-  
hour Zonolite gypsum  
column fireproofing, and  
4-hour Zonolite concrete  
exterior spandrel wall.  
Approximate floor area  
250,000 sq. ft.

Architect:  
*Skidmore, Owings & Merrill*  
Contractor:  
*W. S. Bellows  
Construction Corp.*

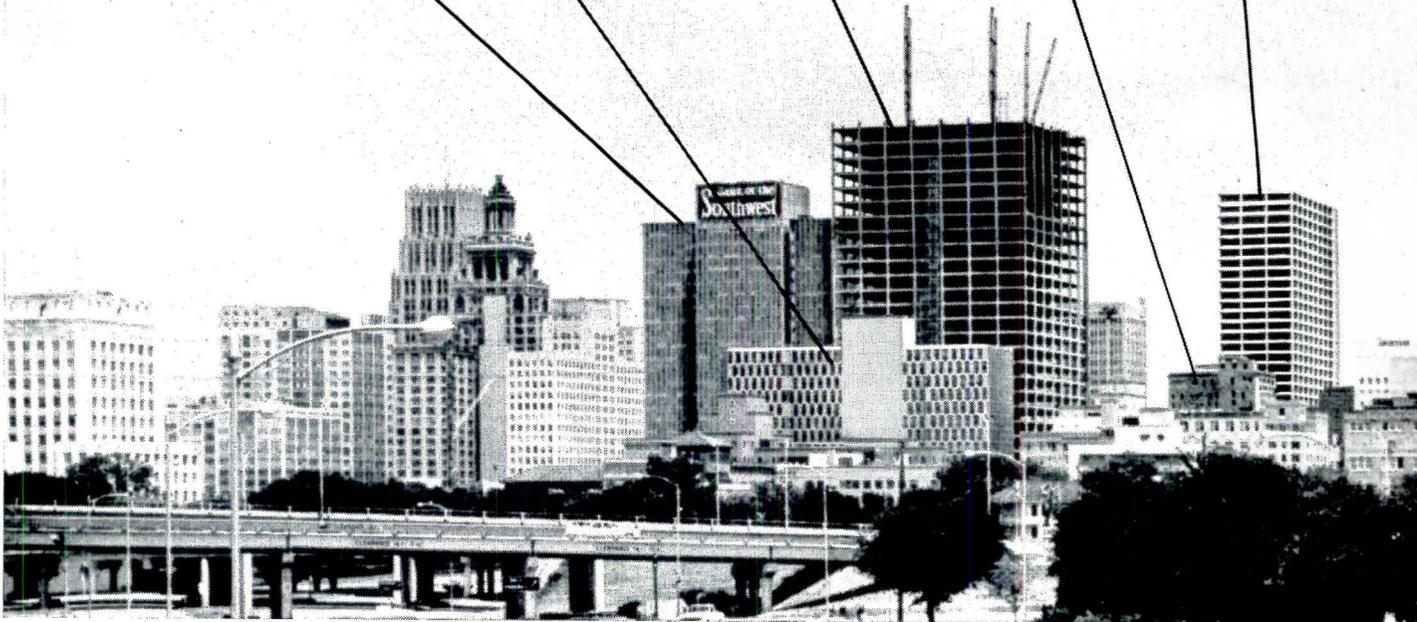
New Tennessee Gas Of-  
fice Building. It has  
3-hour Mono-Kote floor  
fireproofing with 4-hour  
beam Mono-Kote fire-  
proofing. Floor area  
1,300,000 sq. ft.

Architect:  
*A. C. Finn*  
Contractor:  
*W. S. Bellows  
Construction Corp.*

Old First City National  
Bank. 4-hour Zonolite  
gypsum suspended floor  
and beam fireproofing  
and 4-hour Zonolite gyp-  
sum column fireproof-  
ing. Approximate floor  
area 500,000 sq. ft.

Architect:  
*Skidmore, Owings & Merrill*  
Contractor:  
*W. S. Bellows  
Construction Corp.*

New First City National  
Bank. 4-hour Zonolite  
direct to steel acoustic  
fireproofing, 4-hour  
Zonolite gypsum col-  
umns, 4-hour Zonolite  
gypsum beams. Approx-  
imate floor area 751,000  
sq. ft.



## Newest product appearing in Houston

Architect:  
*Quinn & Christiansen,  
Chicago  
Kenneth E. Bentsen,  
Houston*

Contractor:  
*Manhattan  
Construction Company*  
New Lincoln-Sheraton  
Hotel and Office Bldg.  
Office area fireproofed  
with Zonolite acoustic  
direct to steel floor, with  
Zonolite gypsum beam  
fireproofing. Hotel area  
4-hour suspended Zono-  
lite ceiling below floor  
and beams. All columns  
in structure fireproofed  
with Zonolite gypsum 4-  
hour construction. Ap-  
proximate floor area  
500,000 sq. ft.

Architect:  
*Kenneth Franzheim  
Manhattan  
Construction Company*

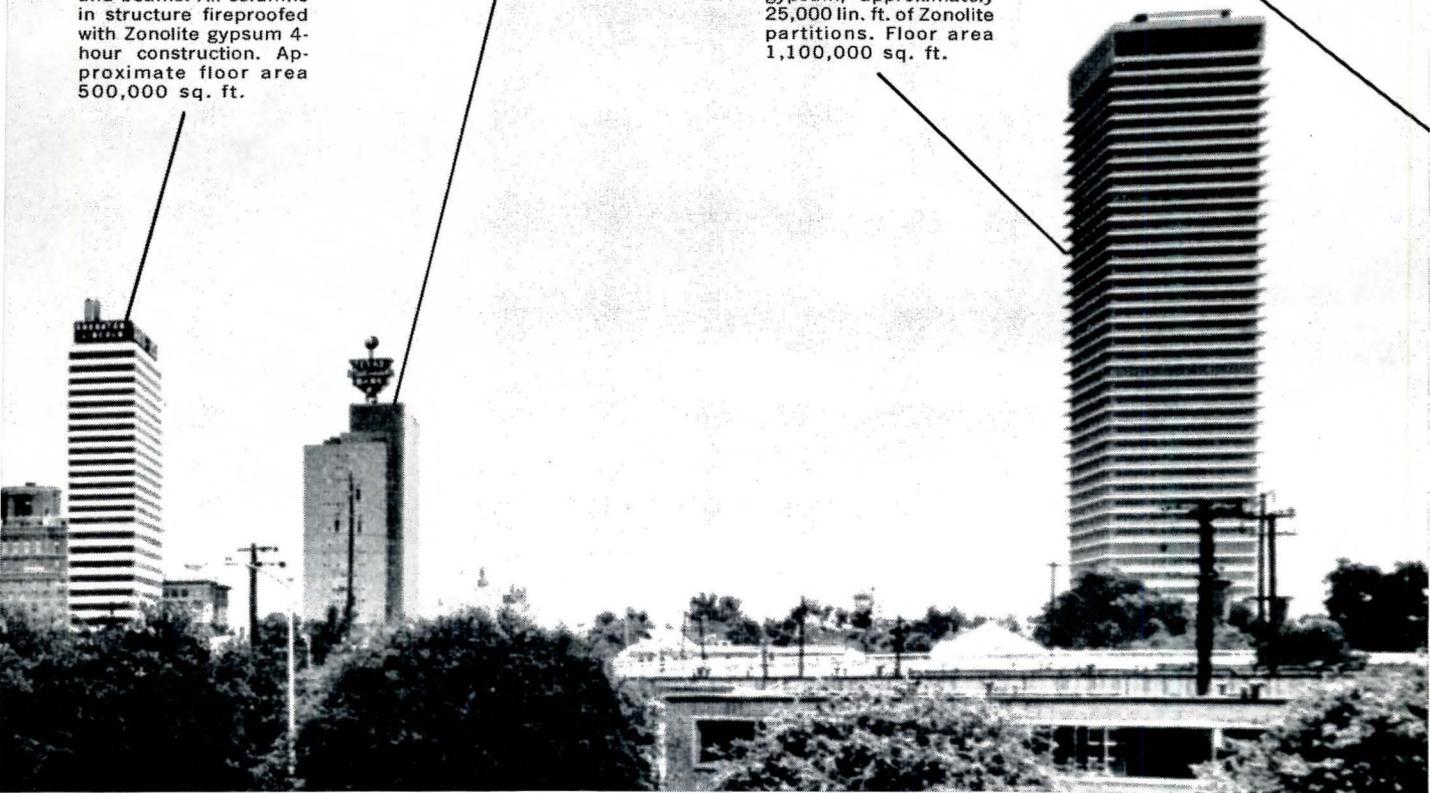
Texas National Bank  
Bldg. 4-hour Zonolite  
gypsum suspended floor  
and beam fireproofing,  
4-hour Zonolite gypsum  
column fireproofing. Ap-  
proximate area 450,000  
sq. ft.

Architect:  
*Welton Becket & Assoc.  
Contractor:  
W. S. Bellows  
Construction Corp.*

New Humble Oil & Refin-  
ing Office Bldg. 3-hour  
Zonolite Mono-Kote di-  
rect to steel fireproofing.  
Half of building beams  
fireproofed with Zonolite  
gypsum on lath and half  
of the beams fireproofed  
with Mono-Kote direct to  
steel beams, 4-hour  
beam fireproofing. Col-  
umns 4-hour Zonolite  
gypsum, approximately  
25,000 lin. ft. of Zonolite  
partitions. Floor area  
1,100,000 sq. ft.

Architect:  
*Welton Becket & Assoc.  
Contractor:  
W. S. Bellows  
Construction Corp.*

First unit in the new 5-  
building complex for  
Culler Center, Inc. is the  
500 Jefferson Building.  
3-hour Mono-Kote direct  
to steel fireproofing on  
floor and 4-hour Mono-  
Kote direct to steel fire-  
proofing on beams. Ap-  
proximate floor area  
400,000 sq. ft.



## "Zonolite Row:" Mono-Kote fireproofing

A few of the older buildings of Houston's skyline do not have Zonolite products built into them. However, it is doubtful whether many of the future structures will exclude new Mono-Kote, the direct-to-steel, spray-on fireproofing for floors and beams.

Mono-Kote just makes good sense.

To begin with, the material cost is low. And you need less of it than comparable materials to get the same fire ratings. For example, to get a 3 hour fire rating on beams with other materials, they must be built up

from 1 $\frac{1}{16}$ " to 1 $\frac{3}{4}$ " thick. But Zonolite Mono-Kote need be only 1" thick to get the same rating.

Application is faster, too. Mono-Kote builds up thick on the first pass, without drop outs or slides. In minutes it's dry enough for the second pass. And when the job is finished, you'll find that Mono-Kote has dried hard, not punky.

Specifying Mono-Kote just makes sense.

For complete information write us for Bulletin PA-53. *Zonolite® Company, 135 S. LaSalle Street, Chicago 3, Illinois.*

# ZONOLITE

Tiffany

Striated

Fashion-Fissured Lay-in Panels



***MOST  
COMPLETE RANGE OF  
FIRE-RATED CEILINGS!***

Natural Fissured

Plaid

Random Perforated

**PROTECTONE® MINERAL FIBER TILE & LAY-IN PANELS  
FOR UL FIRE-RATED ASSEMBLIES**

PRODUCTS	EDGE DETAILS	SIZES	TIME RATINGS	FLOOR & CEILING ASSEMBLIES
Natural Fissured	Square edge, kerfed for concealed suspension system	12" x 12" x 3/4"	1 Hour	Wood deck over wood joists
Plaid† Striated		*12" x 12" x 3/4" to 24" x 24" x 3/4"	2 Hour	Concrete deck over steel bar joists
Natural Fissured	Tongue & grooved and kerfed for concealed suspension system	*12" x 12" x 3/4"	4 Hour	Concrete slab over cellular steel deck, steel beams
Tiffany‡ Random Perforated	Beveled, kerfed for concealed suspension system	12" x 12" x 5/8"	1 Hour	Wood deck over wood joists
		*12" x 12" x 5/8" to 24" x 24" x 5/8"	2 Hour	Concrete deck over steel bar joists
	Tongue & grooved and kerfed for concealed suspension system	*12" x 12" x 5/8"	4 Hour	Concrete slab over cellular steel deck, steel beams
Tiffany Panels Fashion-Fissured Panels	Trimmed edge for exposed suspension system	*24" x 24" x 5/8" and *24" x 48" x 5/8"	2 Hour	Concrete deck over steel bar joists

\*Includes penetrations (recessed light fixtures and air diffusers)  
†U.S. Pat. No. D 191,744 ‡U.S. Pat. No. D 191,203

All patterns also available in non-rated incombustible products.

*The Acousti-Celotex family of PROTECTONE® fire-retardant mineral fiber tile and lay-in panels offers you the widest choice of patterns and textures for UL time-rated ceiling assemblies. Celotex Protectone products meet every design challenge, the most demanding building codes. No spray or membrane fire protection required. Dry installation speeds construction. Building owners save money ... benefit from earlier occupancy, reduced insurance premiums. Your Acousti-Celotex Distributor, listed in the Yellow Pages, is a member of the world's most experienced acoustical organization. He offers valuable Ceiling Consultation Service, without obligation.*



THE CELOTEX CORPORATION, 120 S. LA SALLE ST., CHICAGO 3, ILLINOIS  
IN CANADA: DOMINION SOUND EQUIPMENTS, LIMITED, MONTREAL, QUEBEC

For more information, turn to Reader Service card, circle No. 398

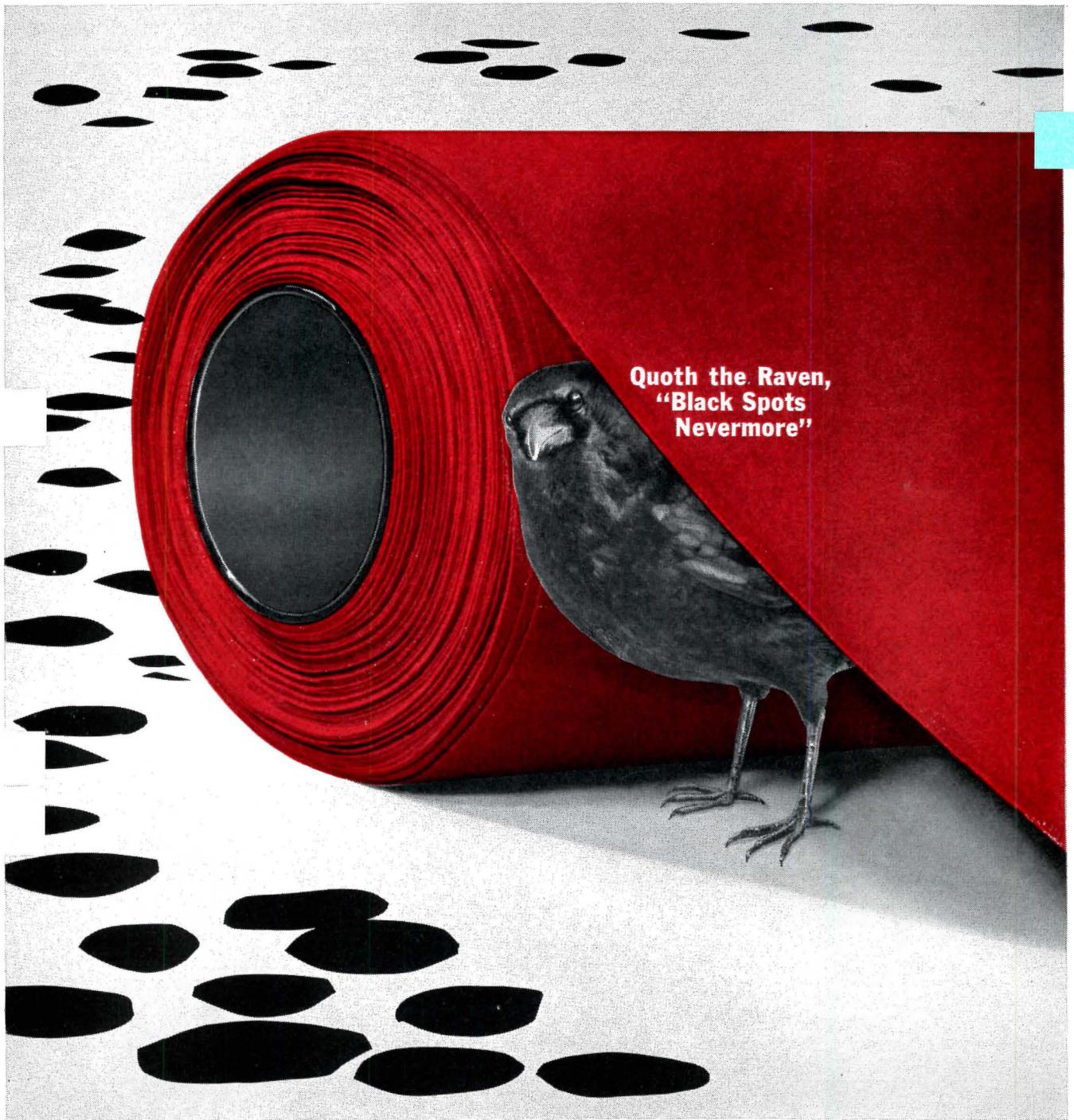


*Interior stair well, office and residence  
Architect: Daniel M. Streissguth*

## The rich, strong accents of Red Cedar Shingles

Inside or out, this classic material lends itself to the bold and daring application. And, as an exterior material, Red Cedar Shingles give superior wind and weather-resistance, insulation and durability. (A roof of Red Cedar Shingles, for example, easily outlasts a 20-year mortgage, and gains

beauty and character while doing it.) For complete information about applications or specifications: write, wire or call: Red Cedar Shingle Bureau, 5510 White Building, Seattle 1, Washington. (In Canada: 550 Burrard Street, Vancouver 1, B.C.) **RED CEDAR SHINGLES**



**GLEN RAVEN  
SUNBRELLA  
Awning Fabrics  
IMMUNE TO  
MILDEW,  
FUNGUS**

Even under the worst humid conditions, SUNBRELLA awning fabrics, woven of 100% Acrilan\* acrylic fiber, never, never develop black spots. They're guaranteed immune to mildew or fungus growth of any kind.

Actual laboratory tests, including U. S. Government Specification burial tests, proved bacteria cannot form or live on amazing SUNBRELLA . . . therefore, positively no weakening or unsightly discoloration.

SUNBRELLA fabrics are the finest, most dependable under the sun. Write for your personal copy of the SUNBRELLA information brochure.

GLEN RAVEN COTTON MILLS, INC., Glen Raven, N. C.



\*Reg. TM of Chemstrand

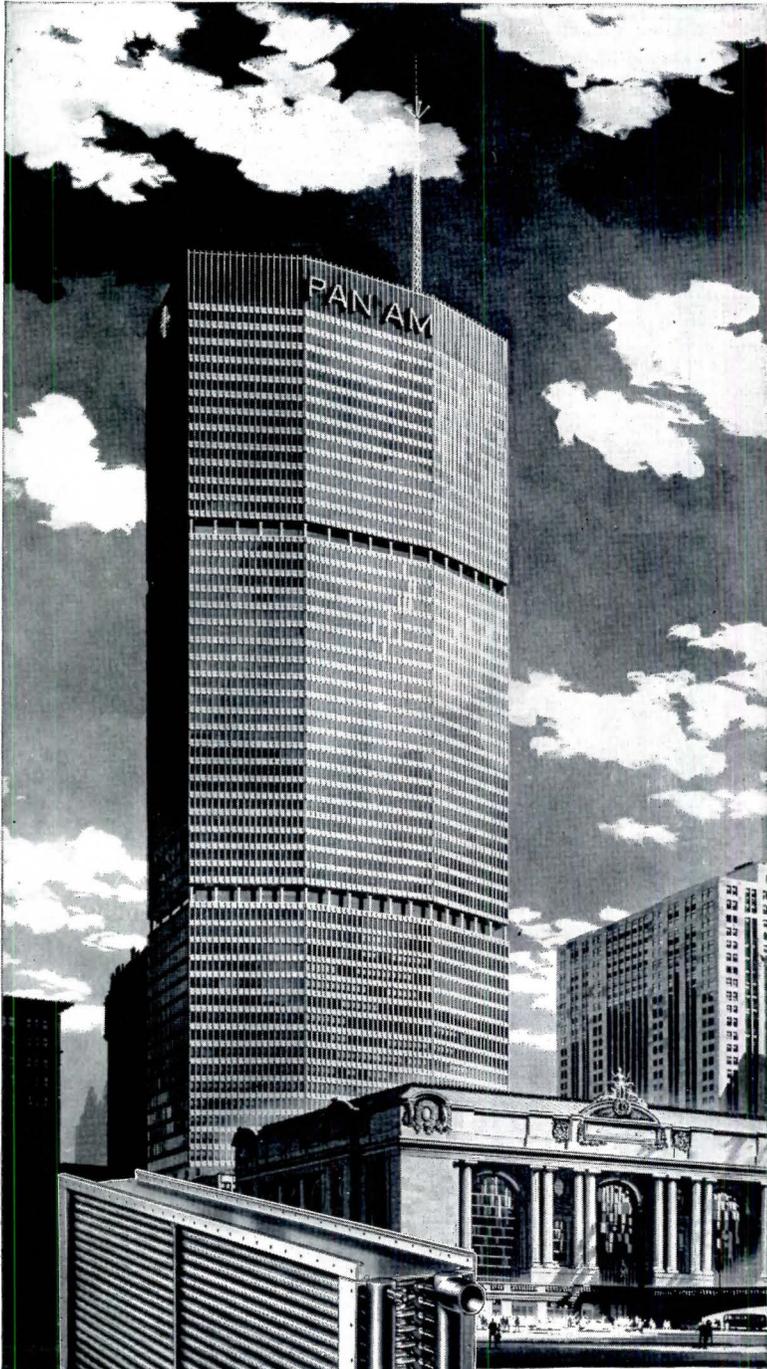
APPLICATIONS		PRODUCT NO.	54	120	140	155.8	162	162.3	163	164	165	168	168.3	210	215	215.1	232.1	375	412.9	
		COLOR	Black	Light Amber	Black	Dark Grey	Black	Black	Black	Black	Off White	Black	Alum Grey	Alum Grey	Straw	Black	Straw	Buff	Black	Light Grey
GLAZING	Wood Windows (Fixed or Operating)																			
	With Glazing Clips																			
	With Applied Stops																			
	Groove Glazed																			
	Steel or Aluminum (Fixed or Operating)																			
	With Glazing Clips																			
CAULKING	Interior Glass Partitions																			
	Joint Filler (Backup Material)																			
	Wood to Masonry																			
	Metal to Masonry																			
	Joints in Granite																			
	Joints in Marble																			
SEALING	Setting Metal & Marble Thresholds																			
	Building Expansion & Contraction Joints																			
	Vertical																			
	Horizontal																			
	Swimming Pool, Expansion Joints																			
	Precast Concrete, Construction Joints																			
CONCRETE REPAIRING	Curtain Wall																			
	Panels																			
	Fixed Sash																			
	Mullion Joints																			
	Bonding Concrete to Concrete																			
	Repairing Precast Concrete																			
CONCRETE SURFACING	Cementing Traffic Markers to P.C.C. or Asphaltic Surfaces																			
	Epoxy Concrete																			
	Epoxy Mortar																			
VAPOR BARRIERS	Non-Skid Surfacing																			
	Insulating Pipe & Tubing																			
INSULATION																				
PRODUCT CLASSIFICATION		PRODUCT NO.	54	120	140	155.8	162	162.3	163	164	165	168	168.3	210	215	215.1	232.1	375	412.9	
		COLOR	Black	Light Amber	Black	Dark Grey	Black	Black	Black	Black	Off White	Black	Alum Grey	Alum Grey	Straw	Black	Straw	Buff	Black	Light Grey
POLYSULFIDE BASE COMPOUNDS (Thiokol*)																				
PRIMERS																				
PUMPABLE SEALERS	Polybutene																			
	Modified Vegetable Oils																			
SEALING TAPES	Polybutene																			
	Polysobutylene																			
	Modified Butyl																			
	Vinyl Polymer																			
GLAZING COMPOUNDS (Modified Vegetable Oil Base)																				
GUN GRADE COMPOUNDS (Modified Veg. Oil Base)																				
PROTECTIVE COATINGS																				
EPOXY COMPOUNDS																				
JOINT FILLERS	Butyl Rubber (Closed Cell)																			
	Neoprene Rubber (Closed Cell)																			
WATERSTOP (Rubber)																				
VAPOR BARRIER BOARD (Asphaltic Board)																				
SPONGE RUBBER INSULATION (Closed Cell)																				

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# SEALANT SHOPPING CENTER



O N N D...



# PAN AM BUILDING

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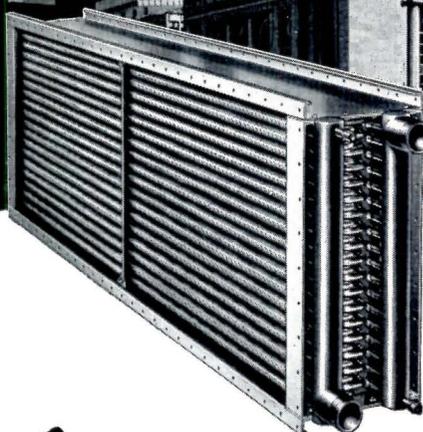
Architect  
**Emery Roth & Sons**

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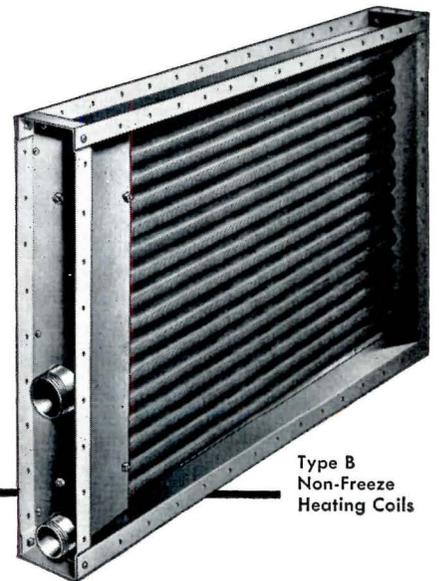
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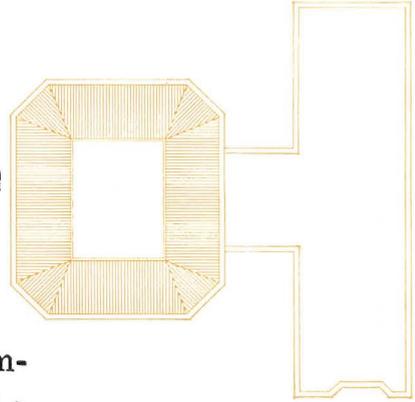
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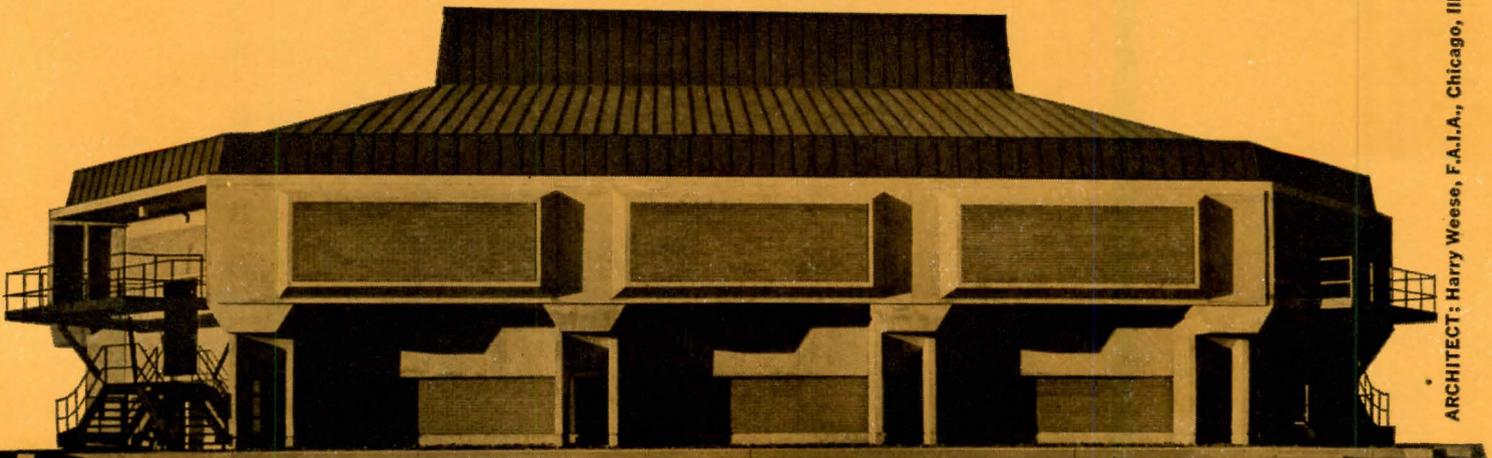
**AND IN IT**



In his Arena Stage, as one critic commented, Harry Weese "has produced a handsome structure, both simple and spare, creating an ambiance which suggests . . . that magic is made, after all, in a working place." We wholeheartedly agree, and are indeed proud that this distinguished architect should have chosen terne roofing for so notably distinguished a building, merely adding (however diffidently) our not unselfish belief that there is also some slight element of magic in a material which can provide so much—form, color, function—at such relatively modest cost. Whether architect or prospective builder, we will be very happy to

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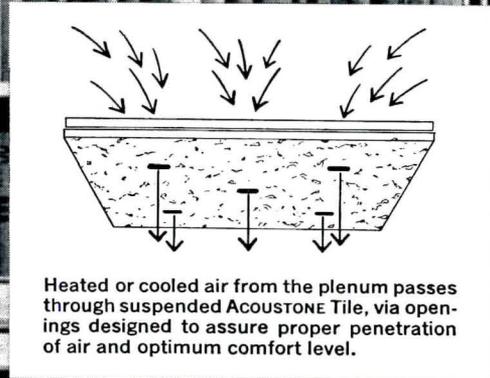
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**Concrete design and performance report:**

# SEATTLE WORLD'S FAIR FEDERAL SCIENCE PAVILION

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

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

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

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

**Precast concrete throughout**—All of the buildings and the 100-foot arches are built of precast, prestressed concrete units. The T-type wall panels are 52' long and up to 4" thick. On two sides of all buildings are S-type

load bearing stud wall panels, designed to repeat the Gothic motif of the open-ribbed arches. These S-type panels are 32' and 52' long, 3" thick, with a main section 18" deep and 10" wide. The largest components supplied were the single-T roof beams, 60' to 112' long, 5' wide, 2½" to 4½" thick, and weighing up to 28 tons.

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

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

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

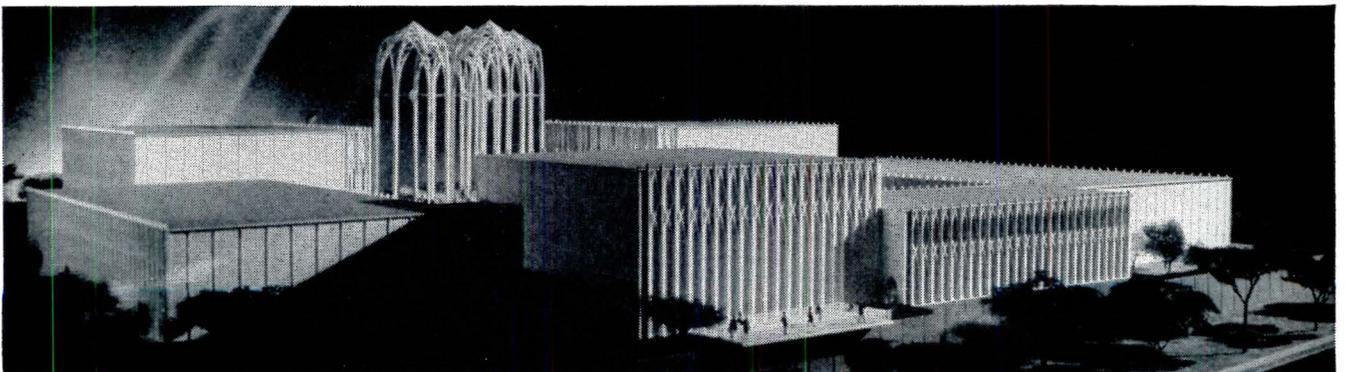
**The local Master Builders Field Man**, working closely with Associated Sand & Gravel Company, producers of the precast, prestressed components, helped them develop the ideal mix formulations for fast production, specified strengths and superb finished appearance.

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

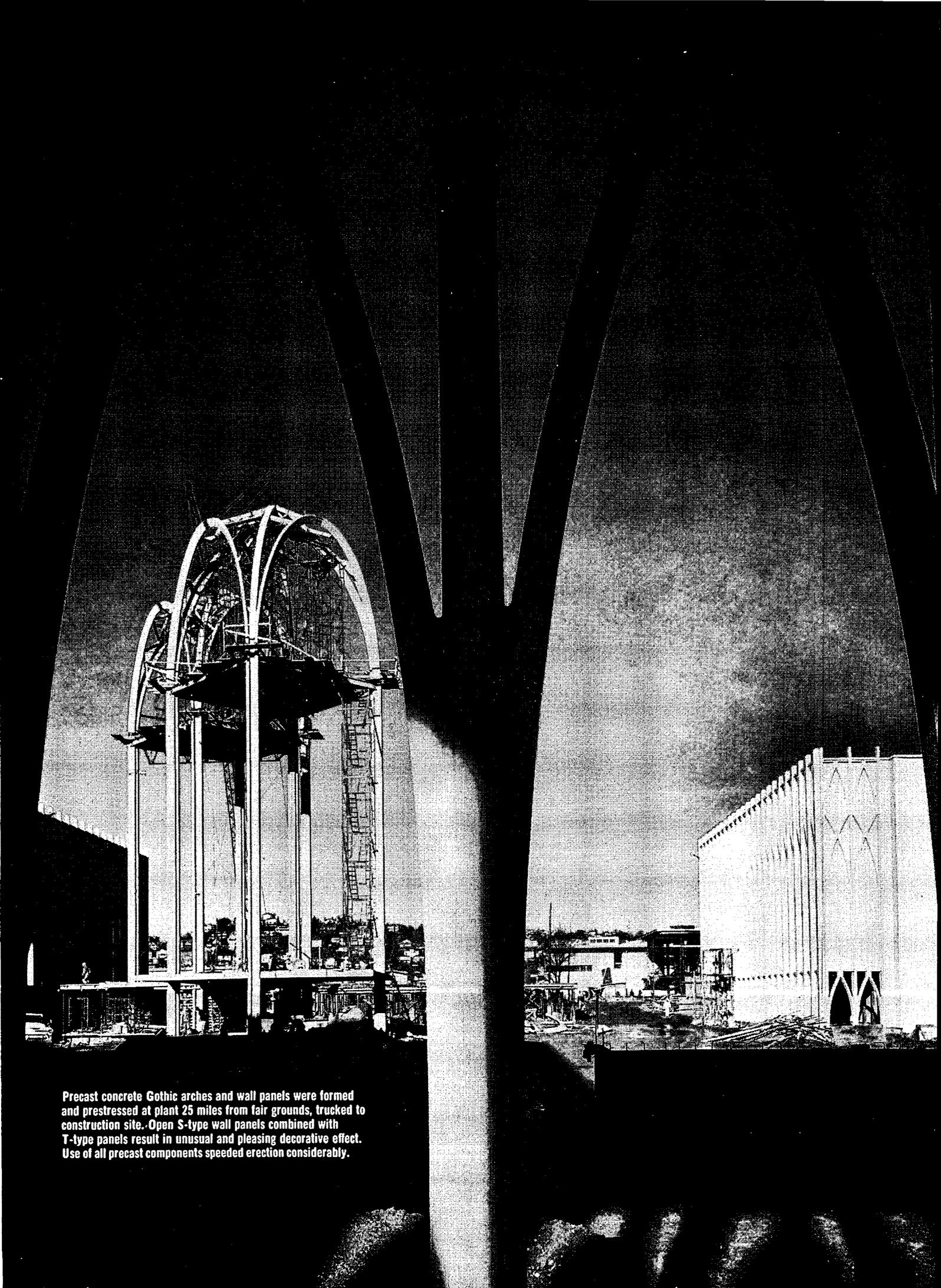
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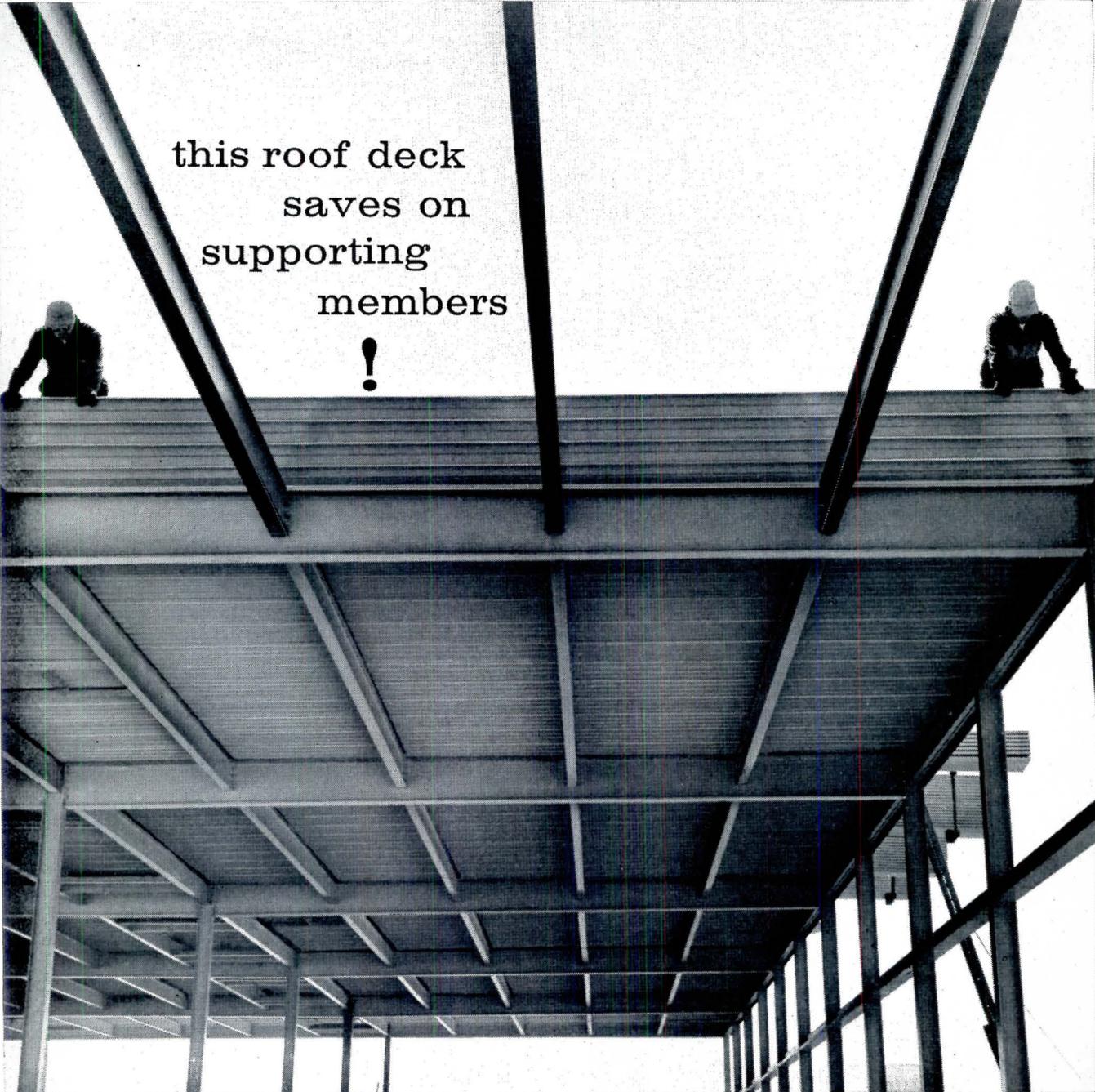
POZZOLITH® is The Master Builders Co. ingredient for concrete which provides maximum water reduction, controls rate of hardening and increases durability.



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



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



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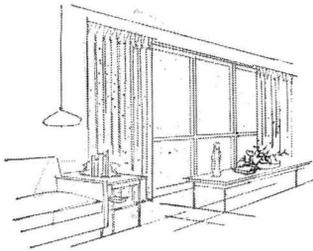
steel roof deck is usually far less than for comparable types of construction.

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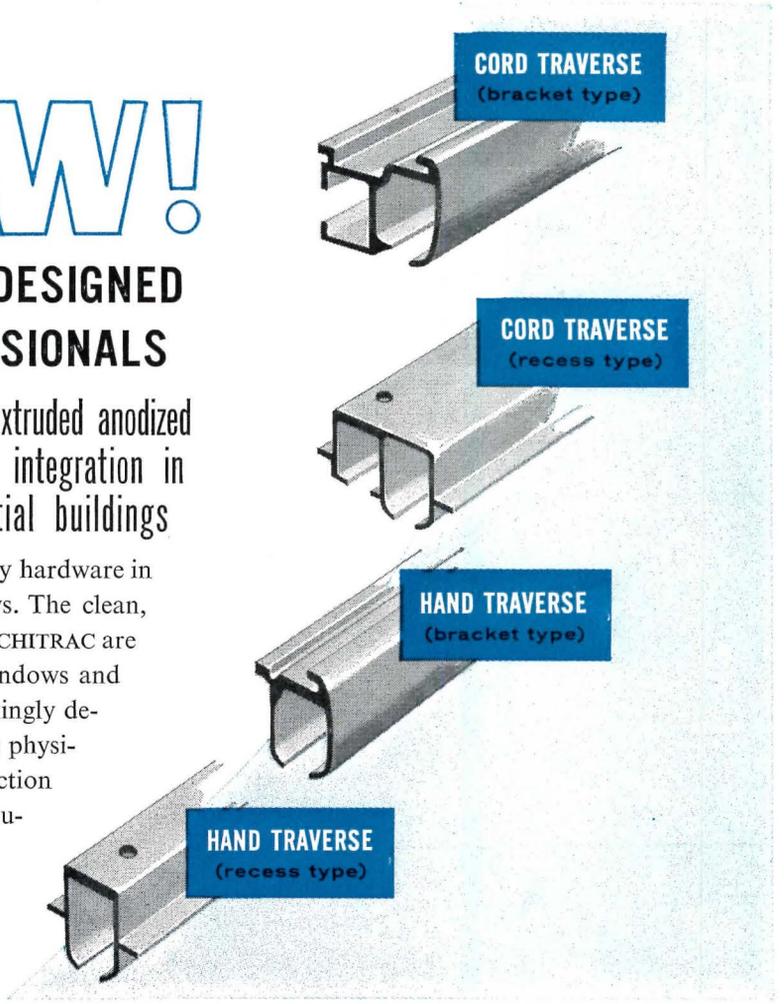


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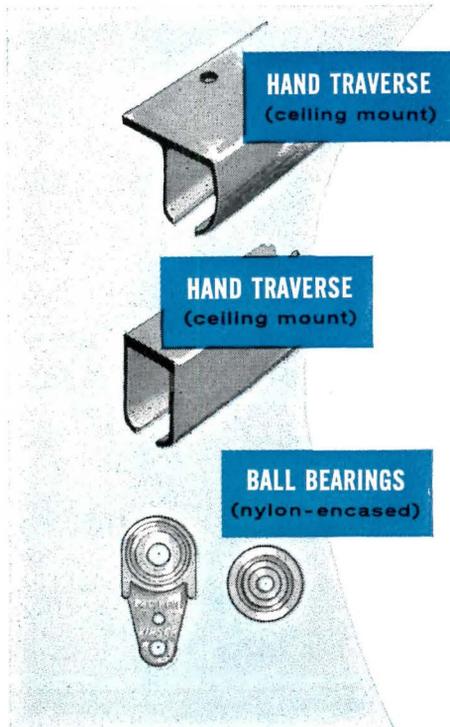
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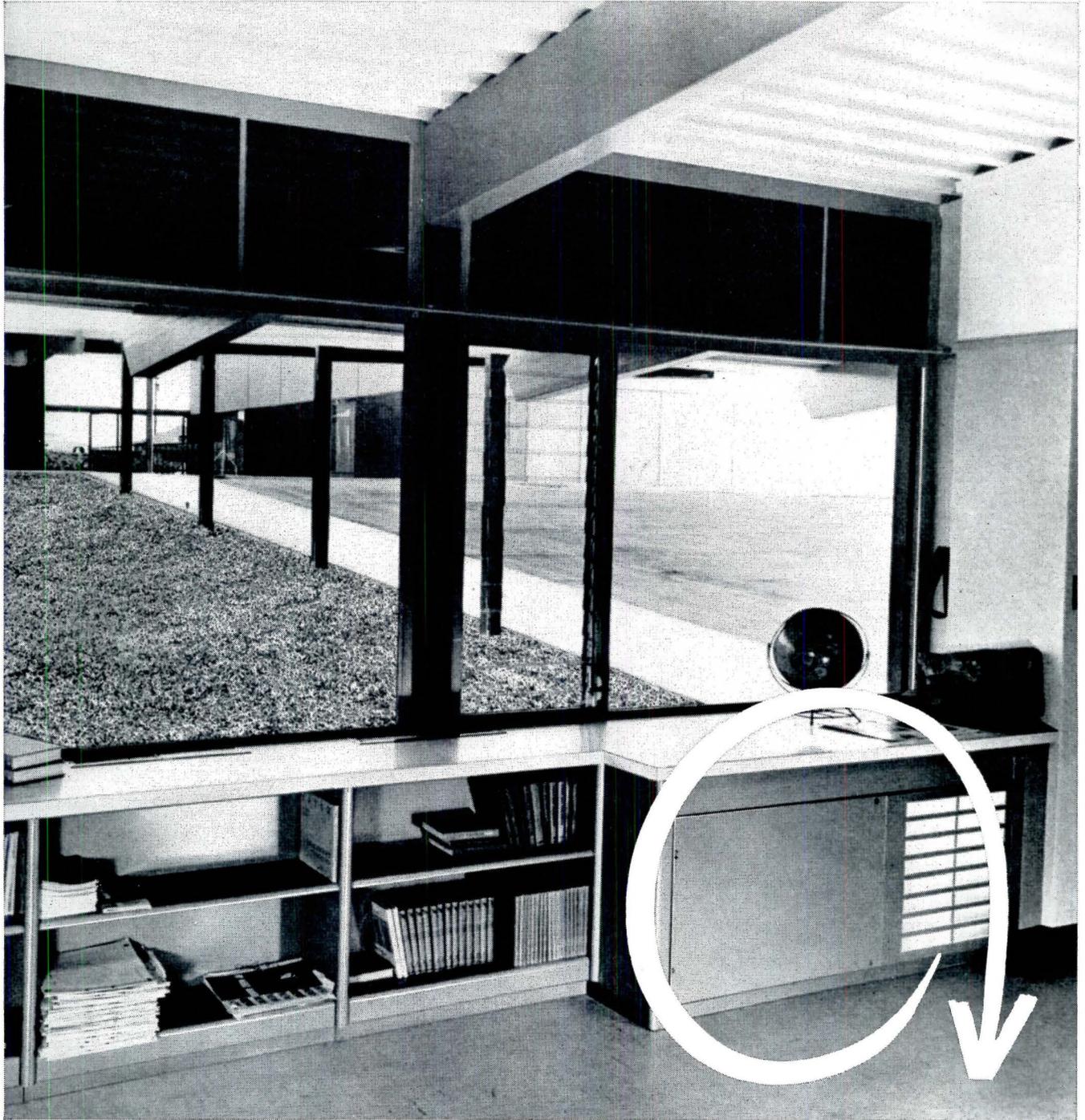
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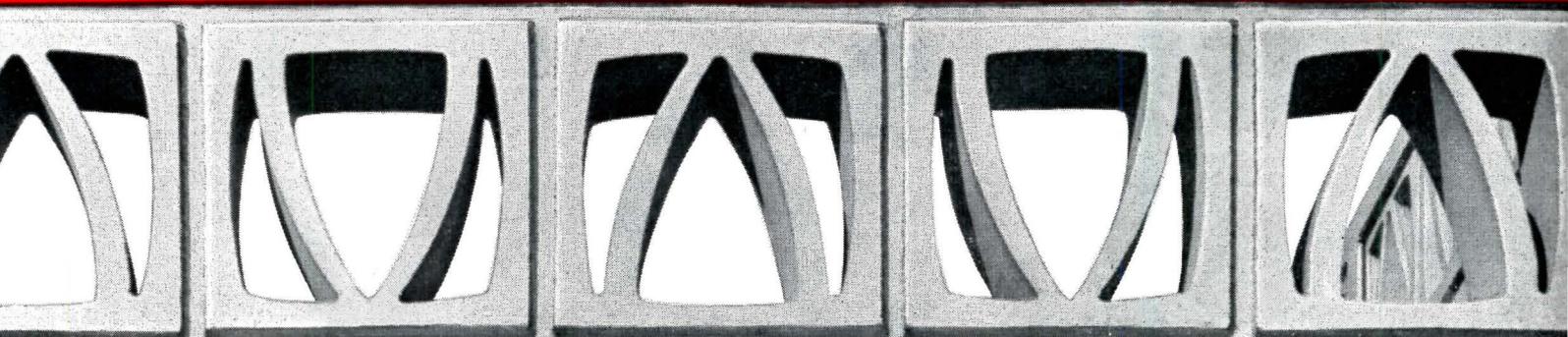
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Seating installation by B. F. Shearer Company;  
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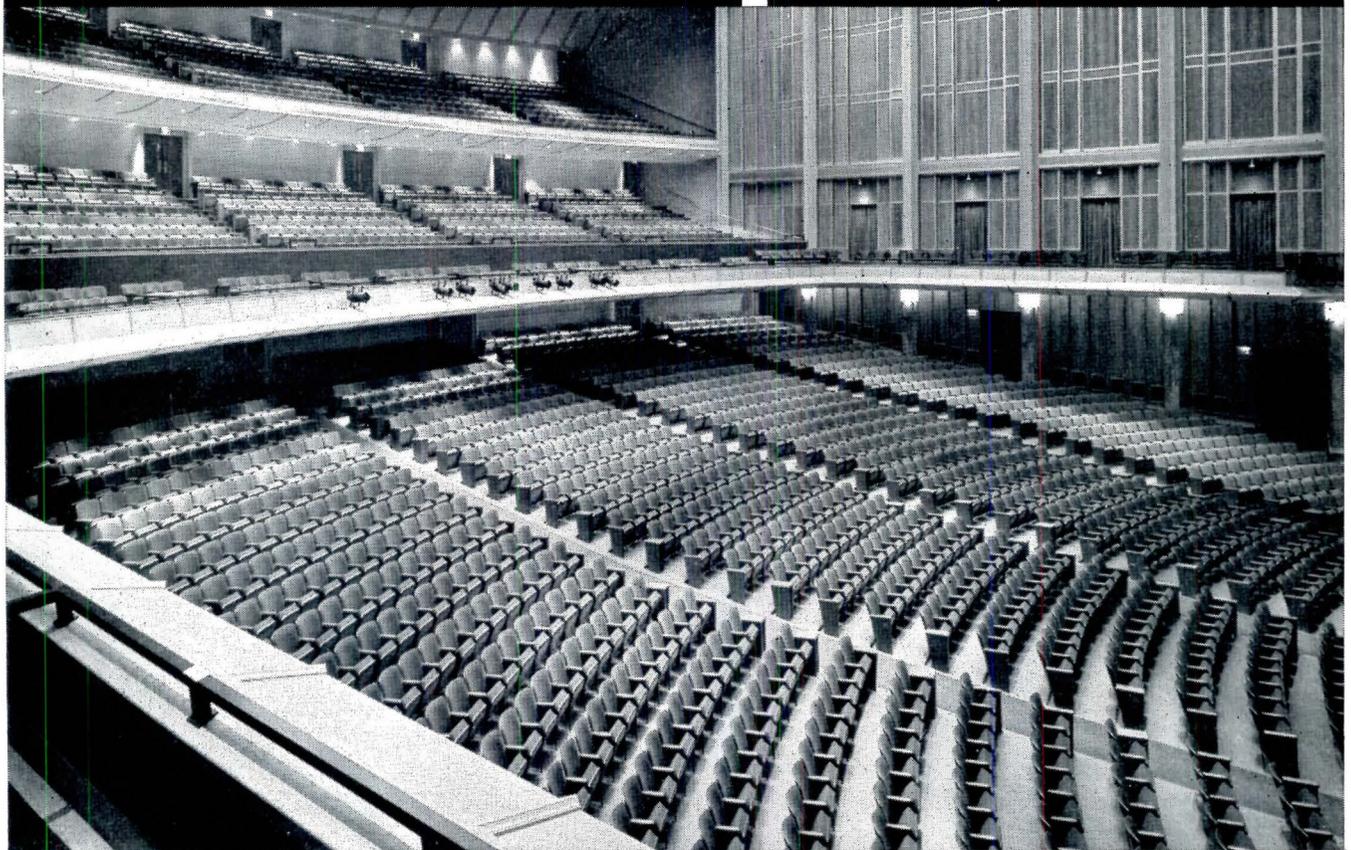


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## SEATTLE OPERA HOUSE

## HEYWOOD-WAKEFIELD



Among the many "musts" for visitors to the world's fair will be a trip to the new Seattle opera house. A perfect example of modern architectural excellence, the opera house comfortably seats an audience of 3049—in chairs by Heywood-Wakefield.

In perfect pace with the over-all efficiency, modernity, and practicality of the building itself, the Heywood-Wakefield chairs produce the ultimate in high-style, high-comfort, and low-maintenance mass seating; provide good use of floor space without sacrificing privacy.

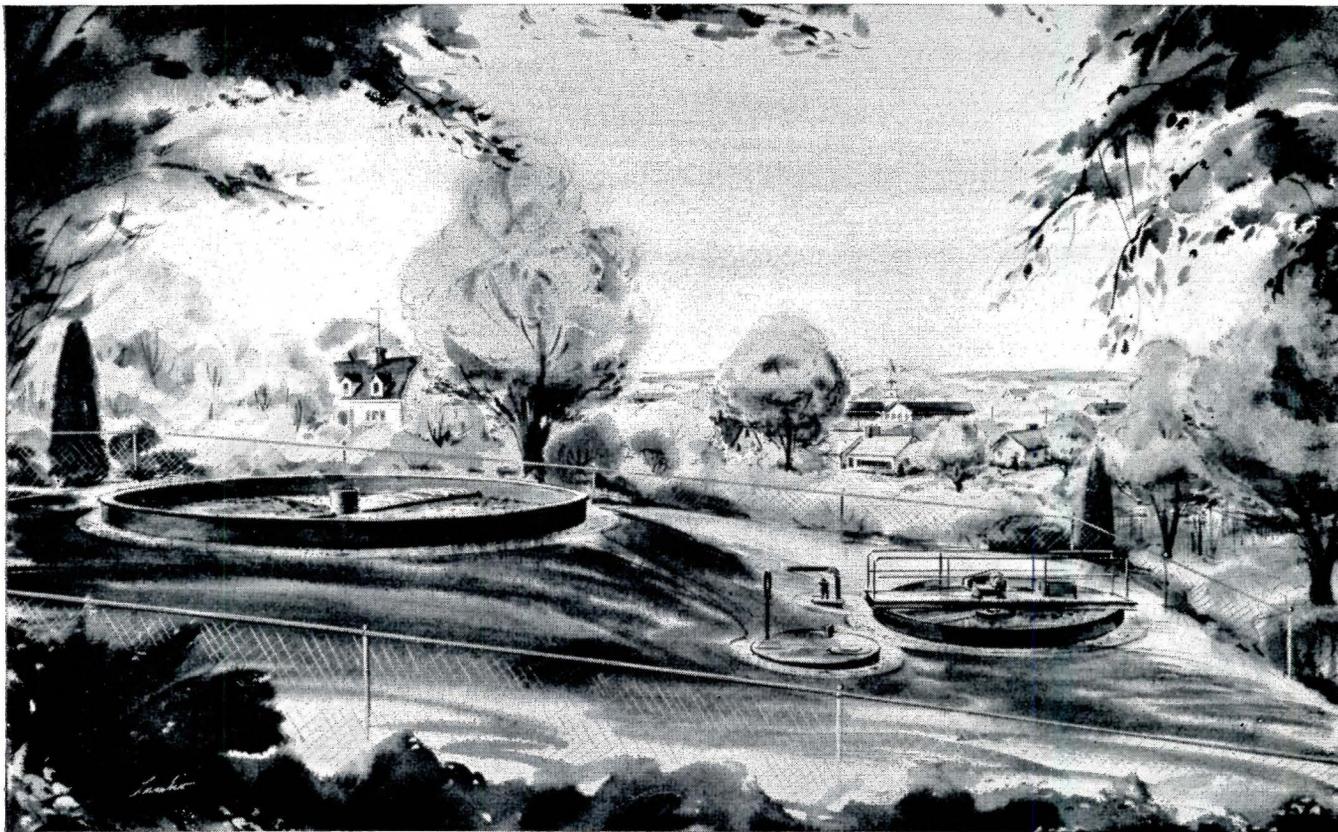
The chairs feature deep-cushion, multiple-coil springs in seats. Steel backs protect the seats in either raised or lowered positions. All-steel rolled edges guard the top and sides of the back upholstery fabric, extending its life.

This is just one of many installations on a growing list of the country's most notable buildings with mass-seating by Heywood-Wakefield. Other installations include: Chicago's McCormick Place, Detroit's new Fisher Theater and Cobo Hall, and Kaiser Center in Oakland, Calif.

For complete information, see Section <sup>36d</sup> He in Sweet's Catalog; or write now for our complete portfolio.



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Architects: Sidney W. Campbell and Reginald E. Davies.

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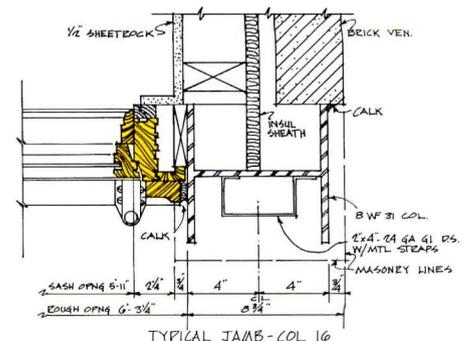
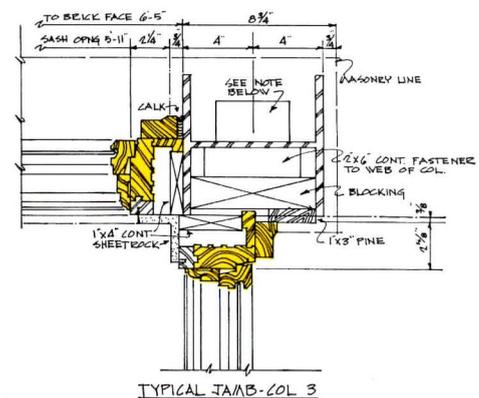
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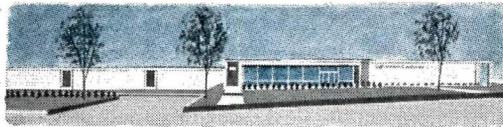
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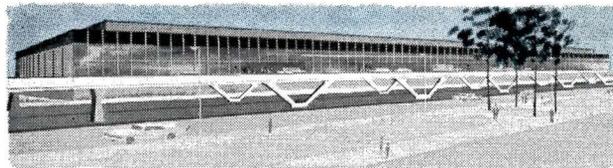
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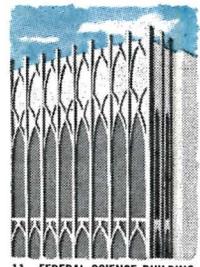
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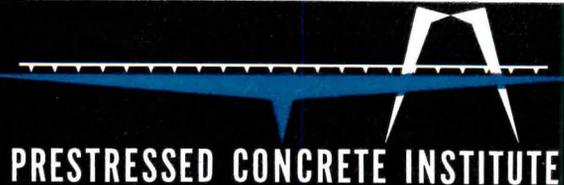
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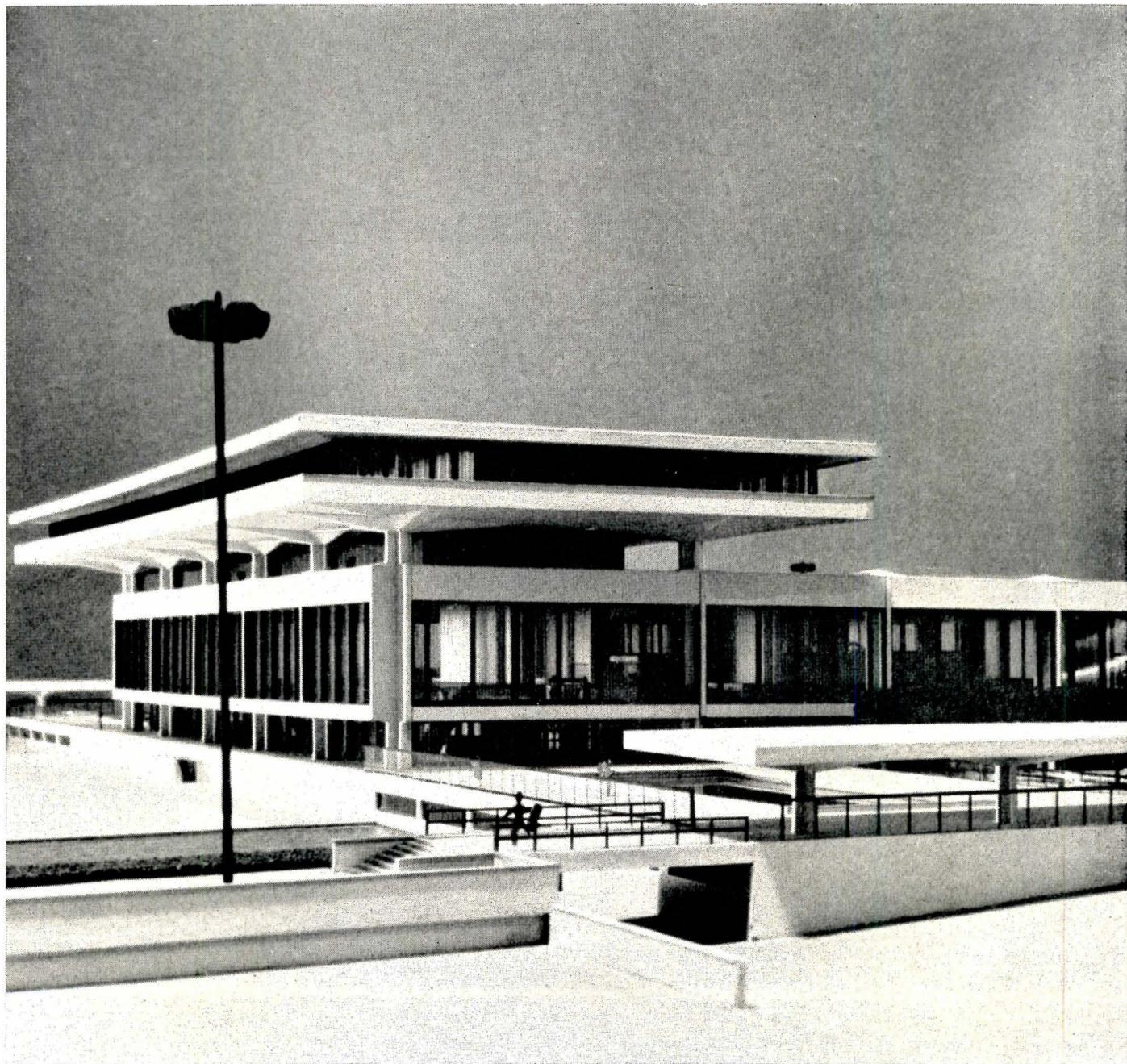
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# PROGRESSIVE ARCHITECTURE AUGUST 1962

# NEWS REPORT

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



*Design by the late Eero Saarinen for the air terminal in Athens, Greece, will be white structure of classic lines.*

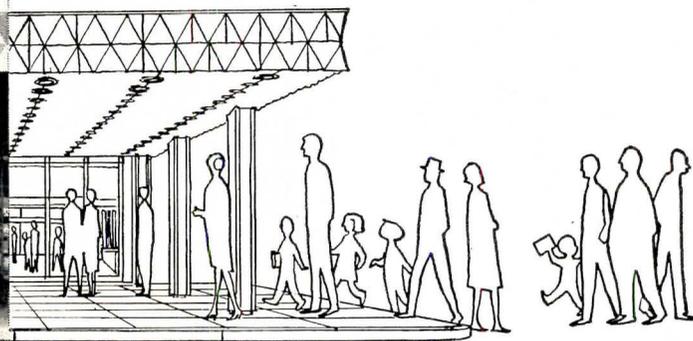
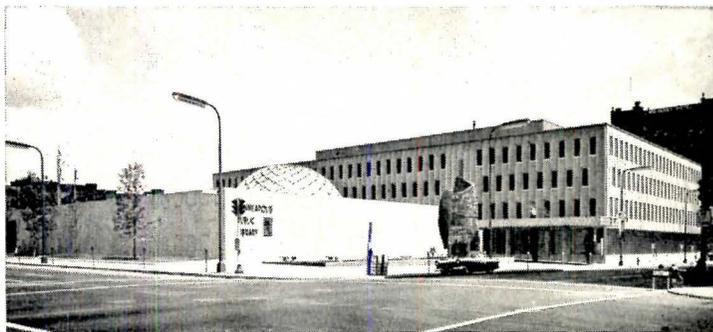
- 51 SAARINEN'S AIRPORT FOR ATHENS
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**Architects:**  
Lang & Raugland; McEnery & Krafft — Minneapolis

**Sound Engineer:**  
Sound & Television Systems, Inc. — Minneapolis



*New Minneapolis public library . . .*

*sound planned with*

WEBSTER ELECTRIC  
**Telecom**

A towering 13-ton copper replica of an ancient scroll dominates the entrance to the \$8,000,000 Minneapolis Public Library. It is referred to locally as a "gold-plated bargain" — exterior granite facing is trimmed with gold anodized aluminum. A planetarium, lecture hall, drive-in ordering and pick-up window, belt book conveyors and air conditioning are also a part of this advanced facility.

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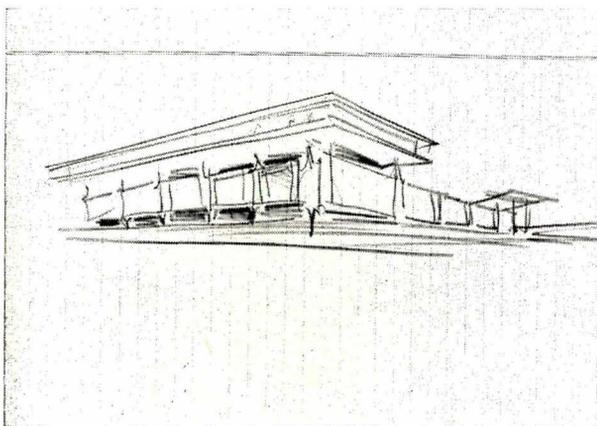
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Saarinen's quick sketch of the original concept on yellow legal pad.

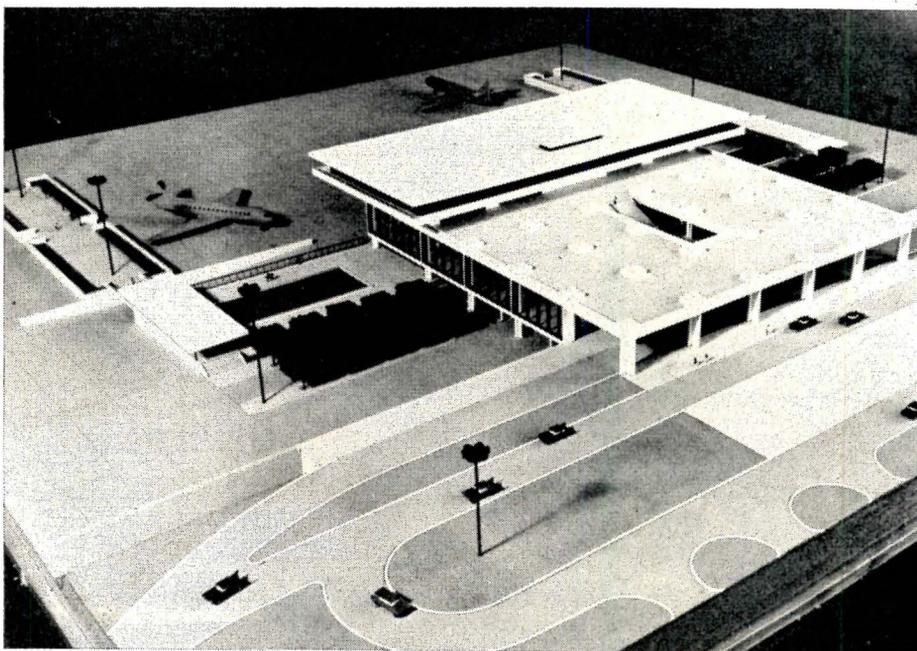
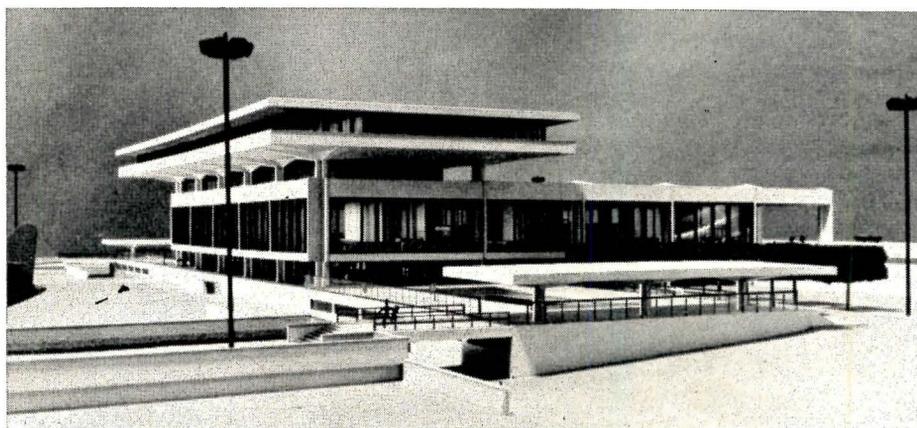
ATHENS, GREECE A third dramatic air terminal will be added to the late Eero Saarinen's collection, which already includes TWA Terminal in New York and Dulles Terminal in Washington. At the time he died, Saarinen was working on a new airport for Athens, which, he said, gave him "the challenge of creating a building which would belong proudly to the 20th Century, but would simultaneously respect and reflect the glorious tradition of Greek architecture."

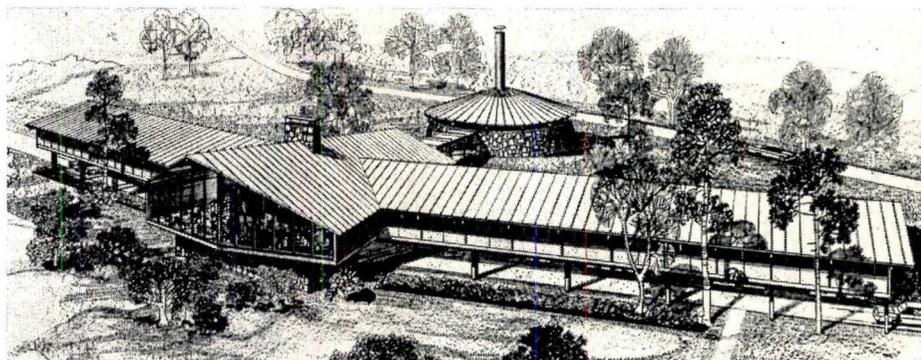
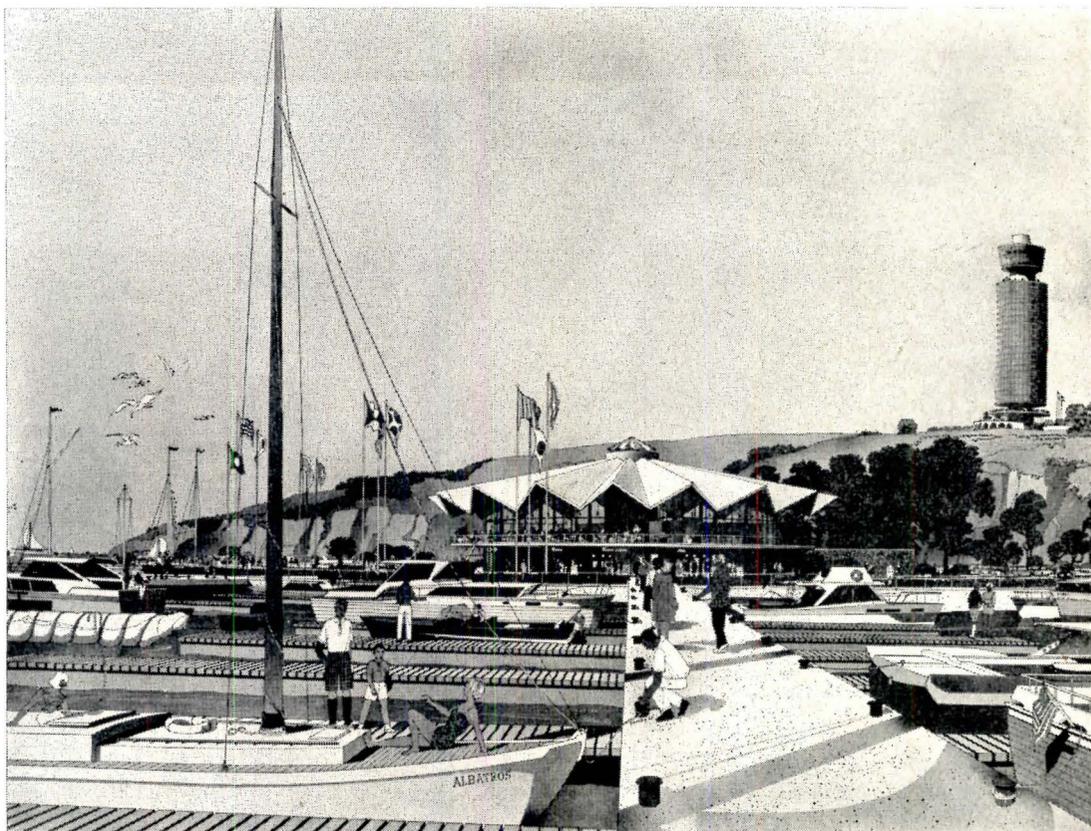
The terminal will be a stately building of concrete with pantellic marble aggregate, recalling the white buildings of an earlier Greece. It will be a low structure with a cantilevered restaurant and office floor on the field side. A generous balcony overlooking the baggage and ticketing spaces will serve to separate passengers from onlookers. From the transit area, passengers will exit onto fingers, which will be developed as terraces with fountains and plants. At either end of the building, on the field side, there will be pools. A monumental staircase on the city side of the building will lead visitors up to the public restaurant and bar in the cantilevered upper level.

Structurally, hollow beams will hang from cruciform-shaped columns. They will also serve for air circulation. The columns will penetrate the slab and their capitals will return to pick up the beam. The columns on the field side extend up and branch out to carry the cantilevered section.

Final site development will provide 44 terminal gate positions: 28 for foreign and 16 for domestic use. The lower section of the building will be 260 ft long by 240 ft wide by 20 ft high. The upper area will be 250 ft long by 120 ft wide by 10 ft high. Saarinen presented the building design to the Greek government in May 1961. Contracts will be signed this fall, and the terminal will open in 1964.

## Saarinen's Athens Airport A Classic Pavilion



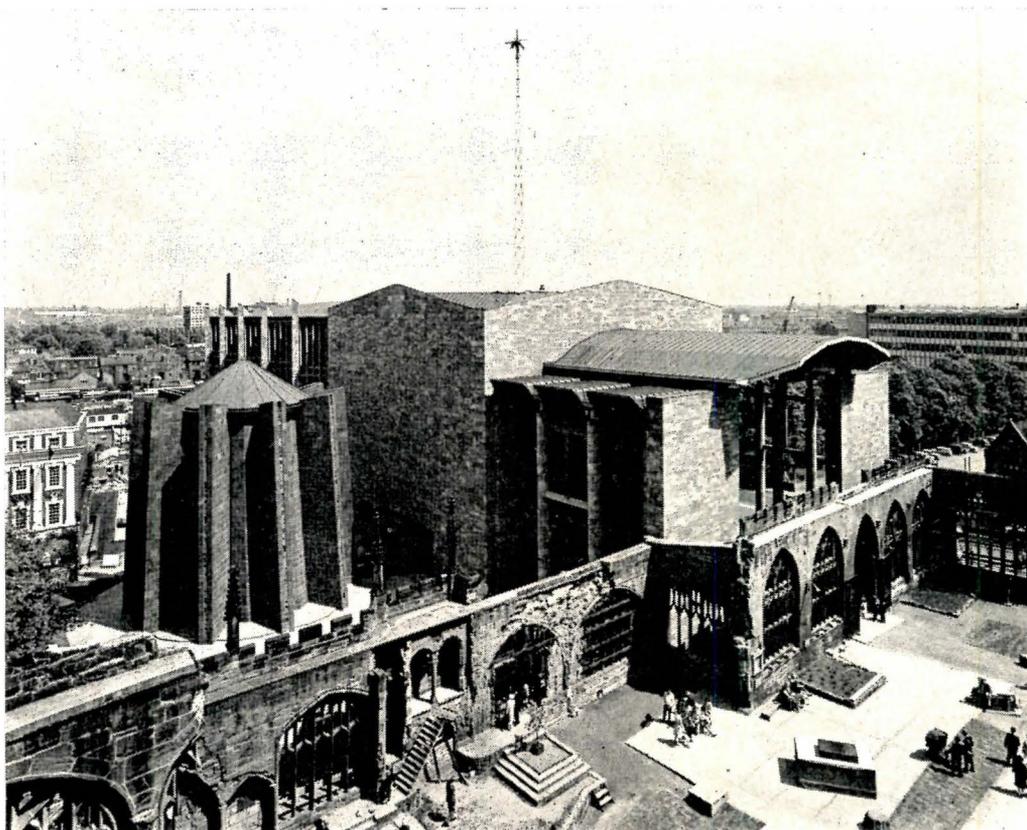


## *Resort for Nebraska-South Dakota Border*

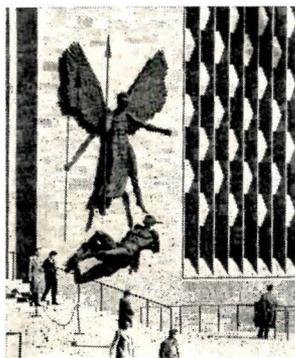
NEW YORK, N. Y. A resort with a variety of facilities—"dress-up" hotel, hunting-skiing lodge, trailer camp, marina, golf course—has been announced for the southeast corner of the South Dakota-Nebraska border. Here, where a new dam is creating a huge lake, the New York-Japan based firm of Raymond & Rado has designed Devil's Nest Resort, which is intended to attract tourist money to an area where such nefarious citizens as the James brothers, "Doc" Middleton, and "Kid" Wade formerly operated.

To be constructed on 1500 acres of practically virgin land, with two miles of shoreline on the newly created lake, Devil's Nest Resort (named after the alleged haunt of the aforementioned desperadoes) will afford facilities for many vacationing tastes. A 20-story

hotel, topped by a 2-story cocktail lounge and restaurant, will furnish amenities for those who like to play it big. For more informal travelers, there will be a lodge (*above*, mainly meant for winter sports) and a smaller hotel attached to a Devil's Nest community center. On the extensive, hilly site, there will be conveniences for outdoor campers and trailer trailers. Among the recreational facilities will be a marina accommodating more than 200 boats, a marina clubhouse (*top*) including restaurant and bar, an 18-hole golf course, a 9-hole golf course, a golf club house, a bride trail, a winter sport area, a children's "Fantasy Land," an outdoor theater, and, in the village center, stores, dormitories, cinema, town hall, fire station, post office, chapel, and a doctors' clinic.



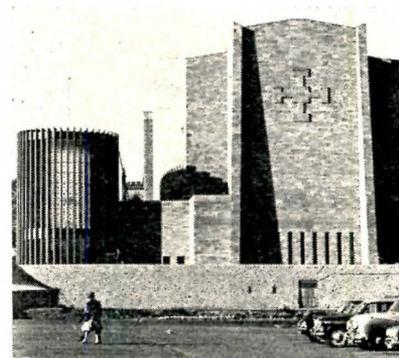
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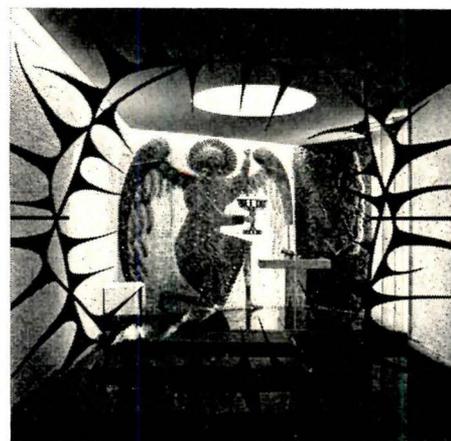
Photos: Rondal Partridge

## After 22 Years—a New Coventry

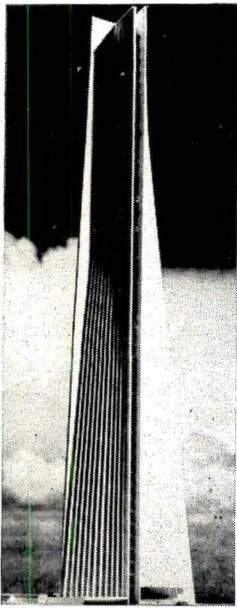
COVENTRY, ENGLAND The recent dedication of Coventry Cathedral marked the termination of a labor of love for its architect, Sir Basil Spence. He has been quoted in the British press as feeling that this work is the pinnacle of his career. To help him attain it, he enlisted the support of much of the artistic talent of his country: the late Sir Jacob Epstein, Graham Sutherland, John Piper, plus half a dozen more.

Those who have visited the cathedral report that it comes off much better face to face than in photographs. In a special section of the *Sunday Times*, the design was referred to as "the inspired conservatism of Sir Basil Spence." The structure does have that air of dignity and serenity requisite for a major religious edifice.

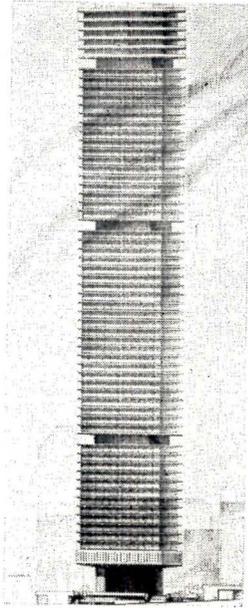
The sense of transition from the ruins of the old church, via which one approaches the new one, is smooth, mainly because of a nobly-proportioned entrance porch (1) leading to a ceiling-high façade of sculptured windows. At the front entrance, next to the baptistry window, is Epstein's sculpture of St. Michael and the Devil (2). Graham Sutherland's immense altar tapestry (3) presents a strangely effeminate Christ, one not in keeping with the strong feeling of the cathedral, which is shown in its rear perspective (4). There are four chapels in the cathedral, the two largest projecting from the east and west fronts, respectively. The small Chapel of the Gethemane has a screen by Sir Basil representing the crown of thorns (5).



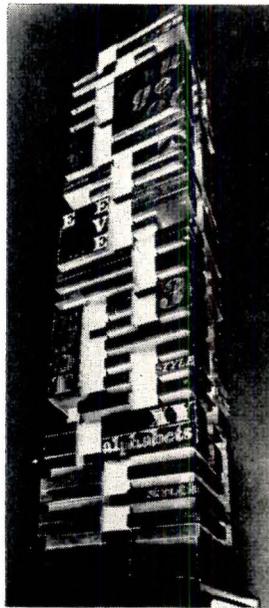
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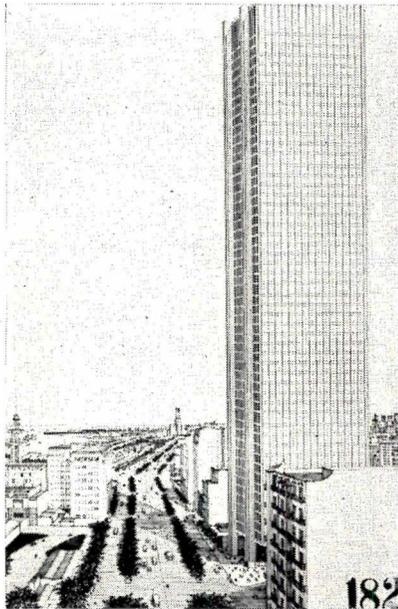
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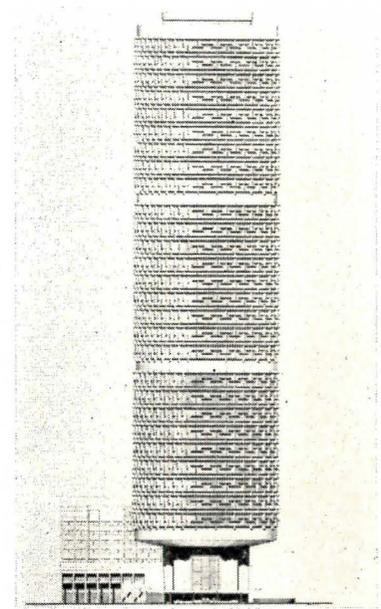
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## BROTH OF BUILDINGS IN BUENOS AIRES

BUENOS AIRES, ARGENTINA Architects from many countries got to display their ideas of what a high-rise office building should look like in the competition for the design of the Peugeot Building scheduled to rise here. Above are some of the entries to give an indication of the range of designs judged by a jury which included, among others, Marcel Breuer and Affonso E. Reidy. Which one won?

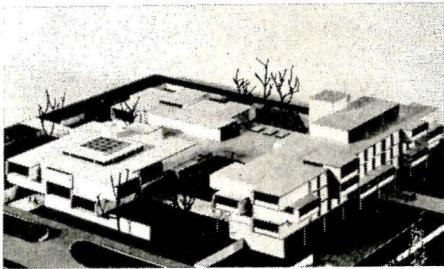
Second prize went to an entry from France (1) by Architects J. Boinoux and M. Follianson. Their design features a warped façade. A U.S. entry (2), although not one of the winners, was among the more interesting sub-

missions. The design—by Architects Giorgio Cavaglieri with William God-sall, Michael Koepfel and Herman Sands, and Engineers A. D. Ateshoflou (structural) and Nicola Ginzburg (mechanical)—called for floors cantilevered from a central concrete core. Third honorable mention (3) went to Italian Maurizio Sacripanti, who evidently is enamoured of billboards. The first-prize winner (4) seems to be the blandest of the lot. It is by Brazilians Roberto Claudio Aflalo, Plinio Croce, and Gian Carlo Gasperini, and Argentinian Eduardo Patricio Suárez. A circular solution (5) copped first mention for a local team composed of

José Luis Bacigalupo. Alfredo Luis Guidali, Jorge Osvaldo Riopedre, Héctor Ugarte, Juan María Cáceres Monie, Fernando Ferrero, Alicia Mabel Mainero, and Engineer Isaac Denon. A somewhat more sculptural, round design (6) took fourth mention for Argentinians Carlos F. Lange and Luis A. Rébora.

In addition to Breuer and Reidy, the jury consisted of Eugene Beaudoin of France, and Martín Noel, Francisco García Vázquez, Francisco Rossi, and Alberto Prebisch of Argentina. Professional Advisor was Frederico A. Ugarte; contest was run by Central Society of Architects of Argentina.

# Medical Center with Hotel Rooms

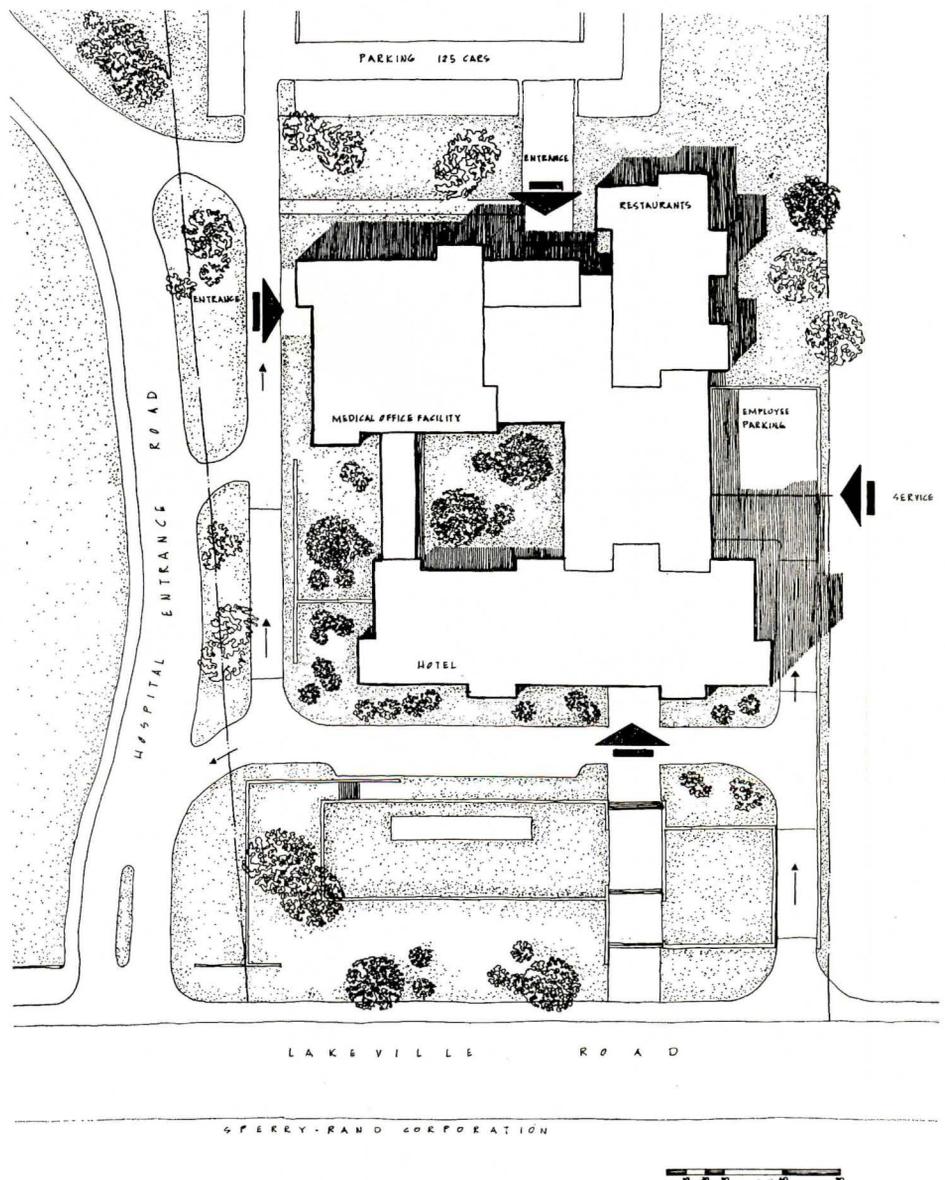
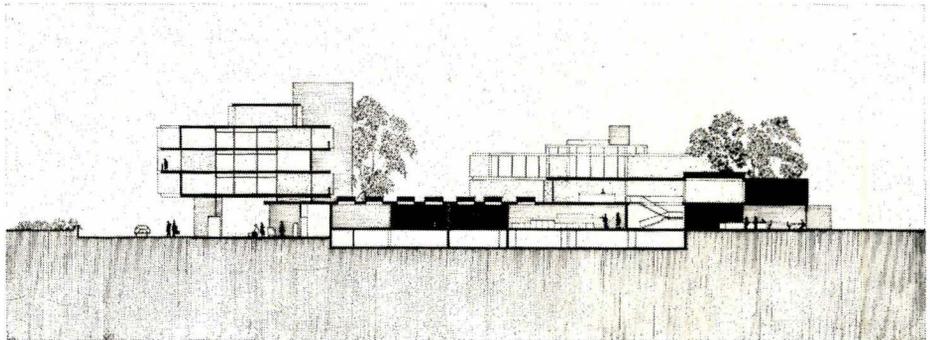
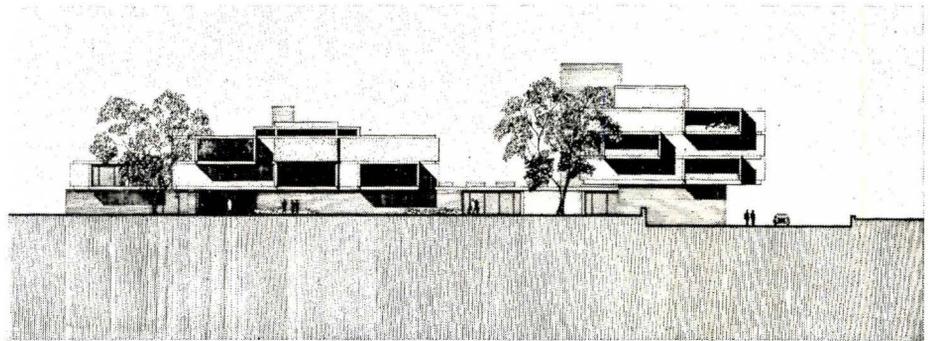


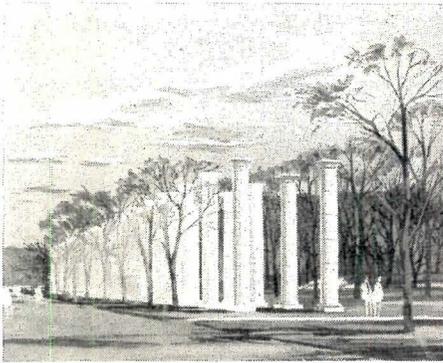
LAKE SUCCESS, L.I., N.Y. An unusual combination—medical center and hotel—is proposed for an area that is already spiced with the variety of a major hospital, a large defense plant, a golf course and clubhouse, private homes, and an historic 200-year-old farmhouse.

Objectives of the Lake Success Medical Center are twofold, says Lee Harris Pomeroy, Architect. (1) To provide medical offices and limited laboratory facilities for doctors affiliated with adjacent Long Island Jewish Hospital. (2) To provide hotel accommodations and dining facilities for visiting doctors, guests of hospital patients, visitors to the Sperry Rand plant across the highway, and for "limited-care" patients who must be near the center for treatment yet do not need full hospital services.

The program, however, has two factors in common: each part shares restaurants, meeting rooms, and shops, and each is essentially a service adjunct to the hospital. Expressing the separate but co-ordinated functions is the single structural idea throughout—a precast-concrete wall-bearing system with the walls acting as beams at points where the direction of span reverses. Walls will be formed on the ground, then lifted into place; roof and floor slabs will be poured in place. The 25-ft module adapts both to medical suites and hotel units. Common facilities are contained in a ground-floor (and mezzanine) base of concrete-filled brick bearing walls.

The hotel faces the highway; medical offices (in pin-wheel plan around a light well) are reached by the private hospital road; restaurants look out on the old farmhouse. Client is N. I. Willis & Co., of Corona, L. I.





## New Group to Fight for Better Architecture

A new group of young architects and architectural writers — the Action Group for Better Architecture in New York—has been formed to act as a fighting front for better architectural and planning standards in New York. First target of the organization is the preservation of Pennsylvania Station, threatened with destruction to make way for the new Madison Square Garden mishmash (p. 63 ff., SEPTEMBER 1961 P/A). A few days ago, AGBANY held a protest demonstration in front of the station by which it hoped to alert New Yorkers, a notoriously phlegmatic bunch when it comes to preser-

vation, to the doom facing this architectural monument.

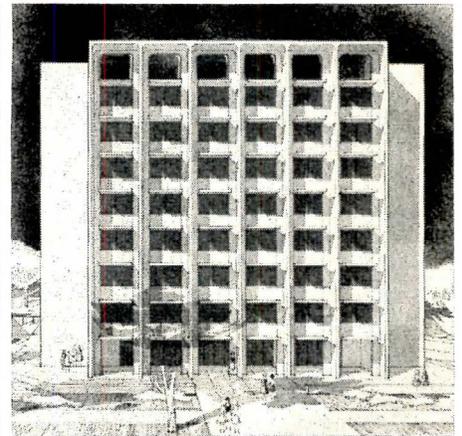
Following the decision on the fate of the station, the group plans to stay mobilized to counter other affronts to architecture and planning (cf., the Veterans Memorial Building in Union Square Park).

Meanwhile, the New York Chapter AIA, while acknowledging that “The approaching demolition of the Pennsylvania Station is . . . a major tragedy for the city,” was content to approve a half-baked plan to remove the 84 exterior columns of the station (surely the least of that building’s attributes) to be set up as a classical “folly” in some park (*see picture*).

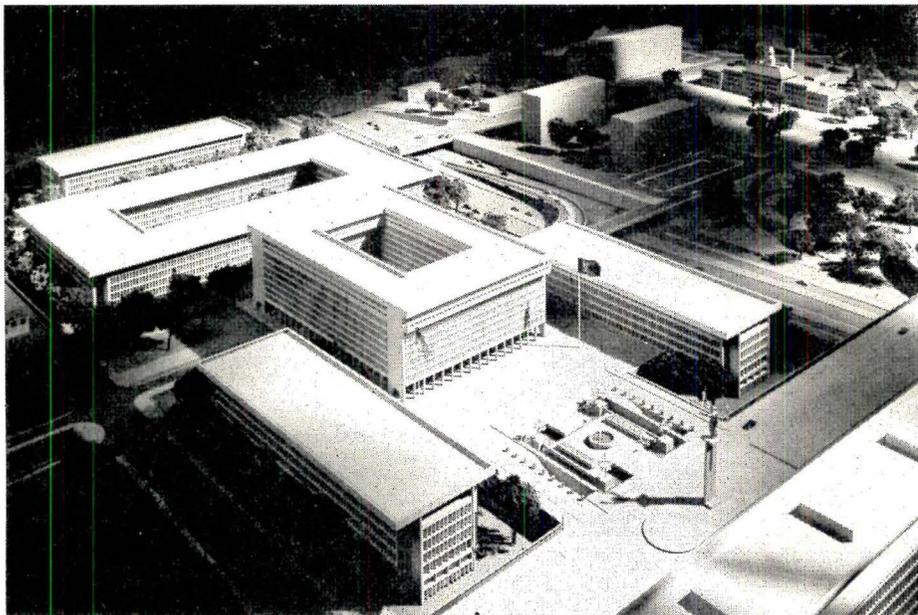
Supporters of the preservation of Pennsylvania Station in toto should write Action Group for Better Architecture in New York, 33 E. 61 St., New York 21, N.Y., and give their views—but hurry!

## Distinguished Dormitory

New women’s dormitory at Sophie Newcomb College of Tulane University in New Orleans will be a sophisticated structure of reinforced concrete. The eight-story building will have lounge and recreation areas on the bottom



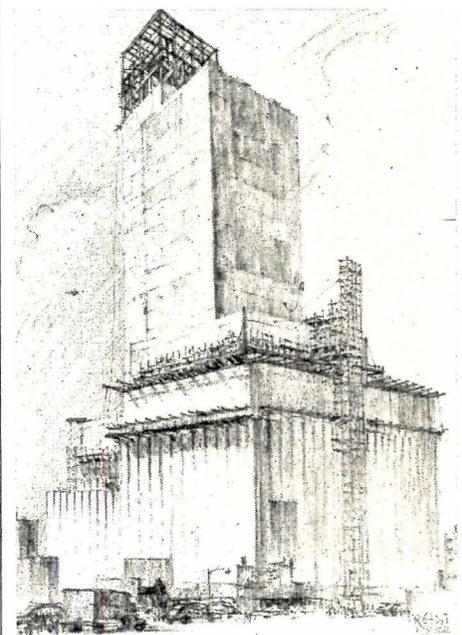
level, and 134 double rooms and three apartment suites on the remaining seven floors. Each of these floors will have a common room. James R. Lamantia, Jr. (of Burk, Le Breton & Lamantia, architects of the building), sends word that the dormitory “is now under construction and will cost an even million dollars when completed.”



## Pei Plans New Washington Complex

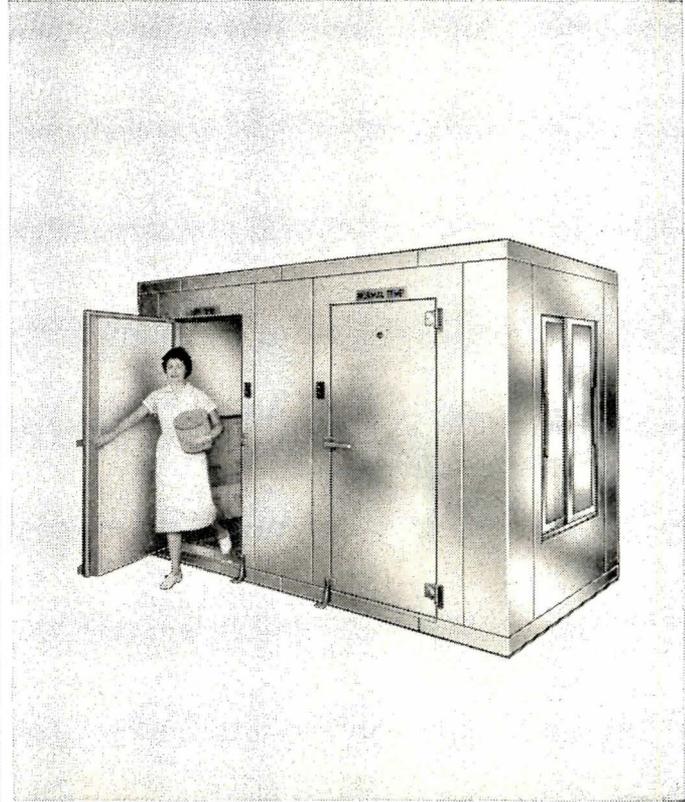
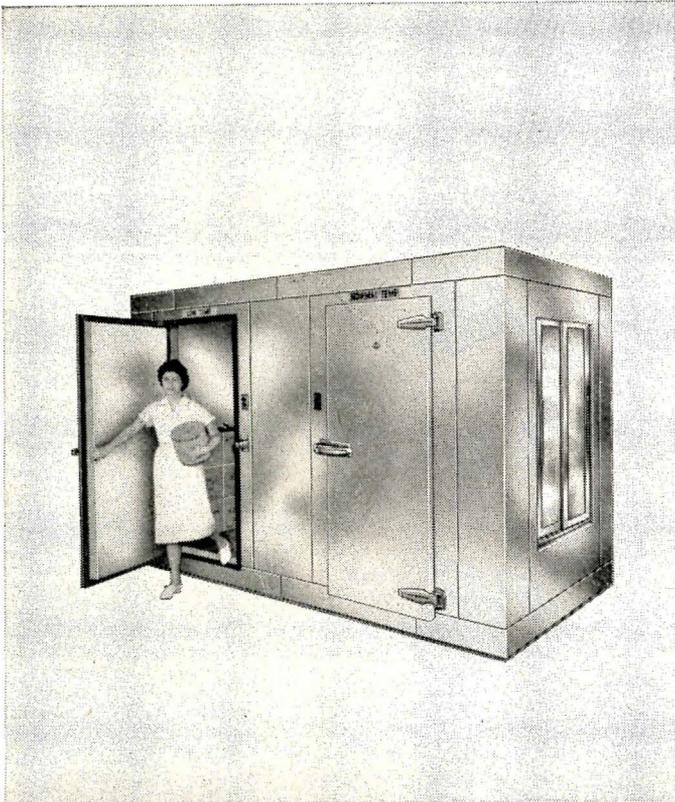
An immense new complex in the Southwest Washington redevelopment area has been announced by Webb & Knapp. Designed by I.M. Pei & Associates, the group has as its latest additions two 250,000-sq-ft office buildings for an Aviation and Space Industry Center. Two other major elements of the group are a new 1000-room hotel and a 500,000-sq-ft World Communications

Center building for press, radio, and television organizations. Beneath the complex will be an underground parking garage for almost 2500 cars. The Aviation and Space Buildings will feature “secure” conference rooms for use by tenants making presentations of classified or secret material. Vault space will also be provided for the short-term storage of such material.



## Windowless 'Phone Building

Telephone equipment building of the New York Telephone Company now being completed on Manhattan’s West Side is totally windowless, to protect employees and equipment from fallout. Lack of windows will also keep the delicate equipment free of dust, and reduce air-conditioning loads. The tallest tower contains microwave antennas. Offices in the building will be brightly lighted and colored to compensate for the solid walls. At its most dramatic point, when the walls of 12-ft double-reinforced concrete had not yet been covered with a bland brick



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vener (to make it, in the view of some, one of the plainest buildings around), P/A commissioned Lili Rethi, FRSA, to create this drawing. Architect: Voorhees, Walker, Smith, Smith & Haines; Associate Architect: Kahn & Jacobs.

### Prototype Houses for Hillside Sites

Designs that the University of Pittsburgh feels could become prototypes for residential construction in hilly and mountainous areas have been pre-



pared for two initial units of faculty housing at the university. If these two are successful, the school may erect about 68 more over the next five years. Although one is rectangular and one circular, the basic idea is the same in both houses. Each has a three-story central tower core from which a wider, one-floor living area is cantilevered at midpoint. Design and construction of



the first house has been underwritten by Alcoa. Architects: Deeter & Ritchey; Architectural Consultant: Max Abramovitz.



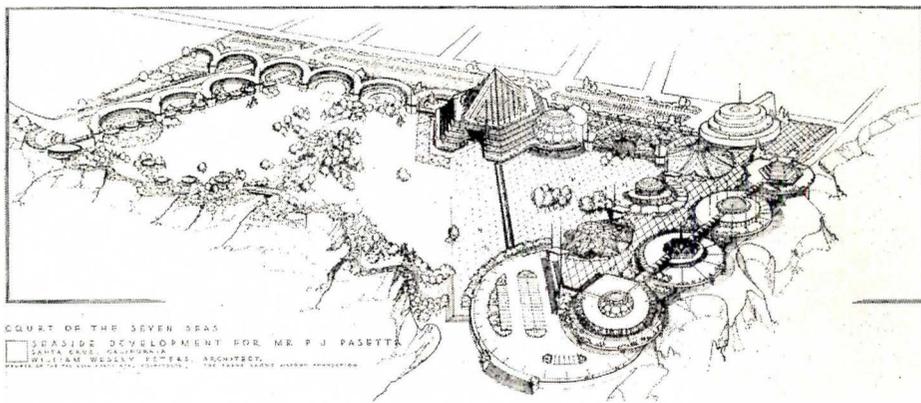
### “Monster” for Union Square?

A structure described by one observer as resembling two U.N. Assembly Buildings bisected by one Marina City tower has been proposed as a Veterans Memorial Building for New York’s

Union Square Park. The two “wings” would contain a chapel, auditorium, and a convention hall. The tower would contain offices of such veterans organizations as the American Legion, Army and Navy Union, Catholic War Veterans, Jewish War Veterans, Disabled American Veterans, Marine Corps League, Military Order of Purple Heart, and Veterans of Foreign Wars. Although proposed for public land worth about \$4 million, the project, designed by Maurice W. Bacon, would be financed by privately raised funds. Announcement of the proposal brought an immediate, wrathful editorial in *The New York Times*. The *Times* complained bitterly that Union Square Park would become nothing but a forecourt for the massive structure, and called on the city to keep the “monster” out of the park.

### “Fuehrer” R. Moses

Robert Moses, 74, who is always there ready with the concrete and asphalt when he hears of a yet-undisturbed bit of sand, grass, or surf, recently has been plumping—when he was not messing around with his main, full-time job at the New York World’s Fair—for the erection of a 20-mile-long highway to slash down the center of Fire Island, an offshore strip of sand dunes admired by many New Yorkers as a place to get away from automobiles and similar irritations of urban living. Moses incurred the wrath of Fire Island summer residents at a recent public hearing on the road, and acted in the petulant manner that has characterized some of his other recent public appearances (p. 45, FEBRUARY 1962 P/A). When the noted CBS correspondent Charles Collingwood, chairman of the Fire Island Voters Association, read portions of a letter that the late Elmer Davis had sent to *The New York Times* in 1938—it said, in part, that Moses “would save Fire Island the way Hitler is saving the Sudetenland”—Moses rose in a dudgeon and walked out to the accompaniment of boos and catcalls for himself and applause for Collingwood.



### 7 Courts for 7 Seas from Taliesin

The biggest Wright-type pleasure dome since FLW did Midway Gardens in 1914 is planned as a Taliesin Associated Architects project for Santa Cruz, California. This is the “Court of the Seven Seas,” a trade and cultural center featuring international shops, a hotel and motel, restaurants, beaches, and a convention and theater facility. The 40-acre project will be located on a headland overlooking the Pacific Ocean, and will be planned on a module system of 60-degree parallelo-

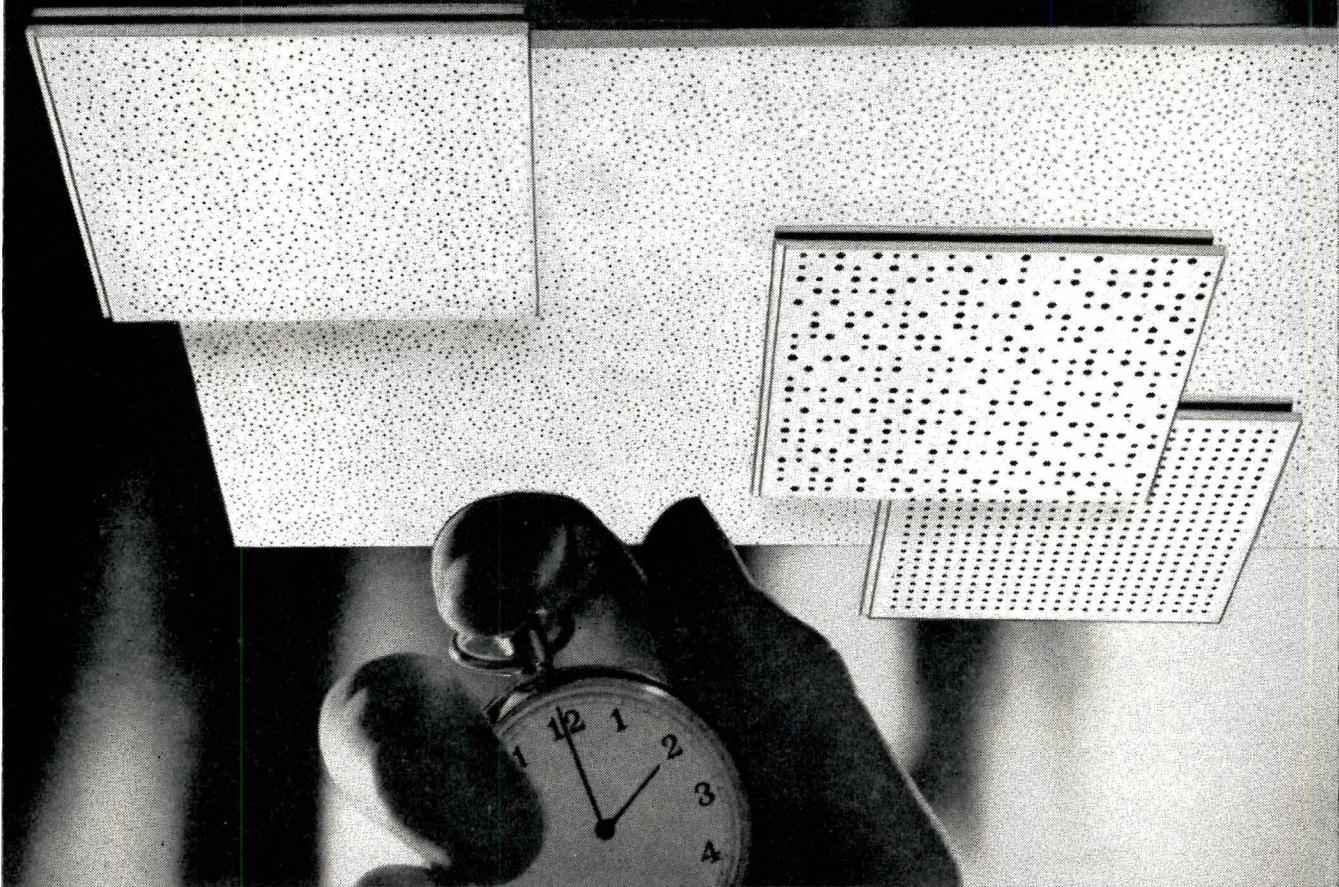
grams, 20 ft to a side. Within this system, various buildings and pavilions of different shapes will occur. From left to right in the rendering: the motel area, a swimming pool, a restaurant, the pyramidal-shaped hotel, the attached, dome-shaped convention hall, seven pavilions housing shops from all over the world, a restaurant pavilion, and, at top right, the “Tower of the Americas,” showing produce and culture from North, Central, and South America.

### OBITUARIES

Erwin S. Wolfson, prominent investment builder (New York’s PanAm Building) and head of Diesel Construction Company, died of cancer June 26. He will be succeeded by real estate man James D. Landauer, on leave of absence from his own firm. Architect Chester B. Price, of FAIA, noted for his architectural illustrations and etchings, died in Bronxville, N.Y., on July 2.

*Johns-Manville introduces*

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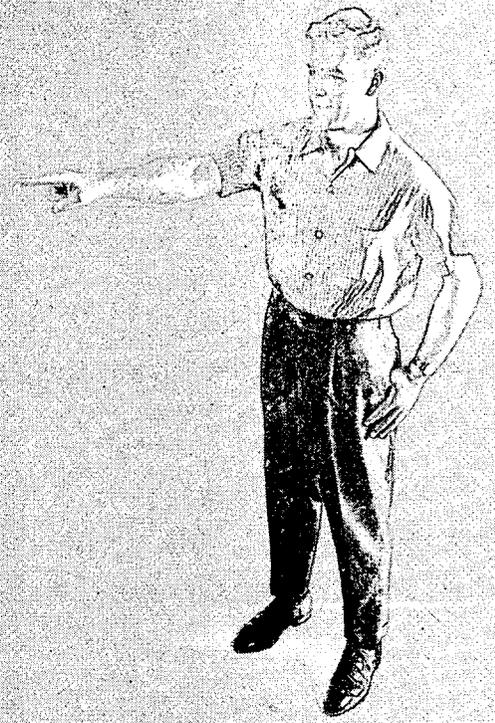
**FIREDIKE SAVES YOU MONEY!** Suspended firestops of metal lath and plaster are not needed with Firedike. No intermediate fireproofing for steel structural members... no protective insulating materials for bar joists, steel beams or metal decks. You save the cost of such materials and also eliminate the expense of installing them!

**FIREDIKE SAVES YOU TIME!** Whether you are planning a new building or bringing an existing building up to date, Firedike can speed interior installation schedules. It is a completely dry installation: no lathing and plastering, no waiting for the interior to dry, no need to paint Firedike's white, factory-applied finish. Firedike

is fire protection and sound control in one easily installed material!

**FIREDIKE IS DURABLE AND DEPENDABLE!** Made of incombustible mineral wool fibers, Firedike is fabricated in monolithic construction to produce rigid, durable panels and tiles. It is unusually resistant to "breathing," or up-and-down passage of dust-laden air... can be easily cleaned by conventional methods. The big panels, in random pierced pattern, are 24" x 48" or 24" x 24" (nominal). The tiles are 12" x 12". For more information, write for Brochure AC-58A. Address Johns-Manville, Box 158, Dept. PA-862, New York 16, N. Y. In Canada: Port Credit, Ont. Cable: Johnmanvil.

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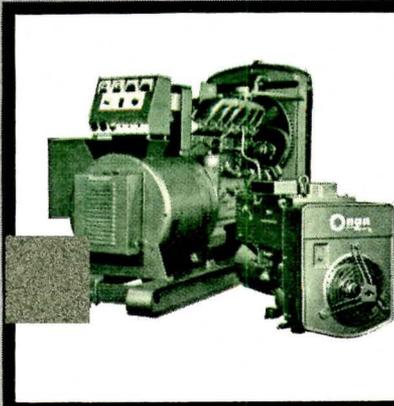
distributor will *always* be only a phone call away, *whenever* your installation needs service. And there'll be no evasion, no question of whose job it is, regardless of what part of the completed installation needs service.

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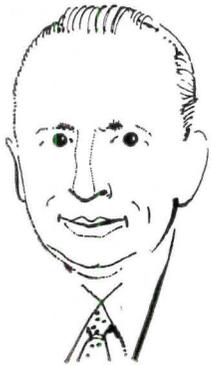
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# Washington and the Economy



By E. E. Halmos, Jr.

With Congress tied up in one of its own peculiar knots—in session six months, a new fiscal year started July 1, and not a single major bill passed—the big item in Washington as July began was worry about the nation's financial situation, and what to do (or what not to do) about it.

There are plenty of questions about the cause for the present business slowdown and indecision, but there's no question about some of its effects.

The Administration is scared, because it knows it will be blamed in November if the situation persists. It doesn't seem scared enough, right now, to do much that is rash, but scared enough to be casting about somewhat desperately for some short-term remedy.

There's a good deal of powerful shouting for a tax cut. The only debate among supporters of this idea concerns: (a) whether a cut in Government spending should accompany such a tax reduction; (b) whether a thorough overhaul of the patchwork tax structure should accompany any cut.

Architects haven't as yet been affected, apparently, except for hints of what might happen as a result of all this running around.

As a matter of fact, the construction industry has held up well enough, despite a few small cracks in its façade lately. This alone is one of the strongest supports for expressions of confidence in the economy's future: Construction was a bellwether that started downward well before the crash in 1929—but this year it has held up, despite stock-market antics.

Many economists think that construction will actually shore up a slow improvement in the economy for the rest of 1962—supported by a surprising showing in housing (a rate of about 1.6 million units is indicated),

and by slowly increasing public spending on highways, sewers, and buildings.

For architects, however, the soft area to watch is private industrial building, which has been making a disappointing showing so far this year. A tax cut could help here, but its effects would not be felt for some time after it is made.

## New Home Aids

The market for home construction—both mass and individual housing—may be aided by two developments in Washington:

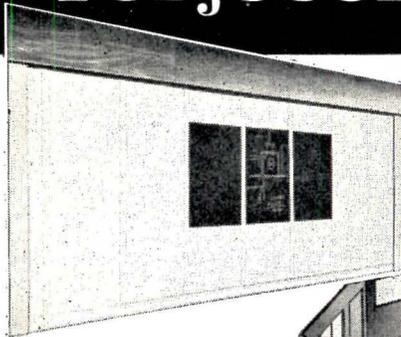
1. A new bill (S 3443) that would authorize chartering of corporations to insure conventional mortgages and the buying and selling of such mortgages in the secondary market (thus acting as "Fannie Mae"—the Federal National Mortgage Association—does on Government-insured mortgage loans).

2. Growing interest in "condominium" methods of owning co-operative

*Continued on page 68*

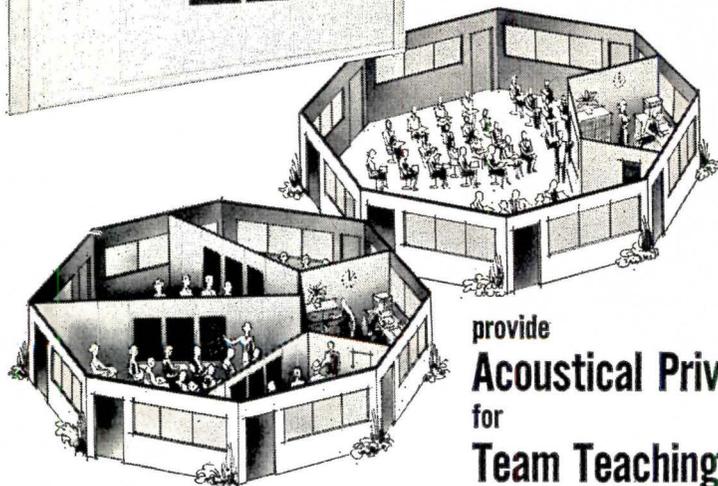
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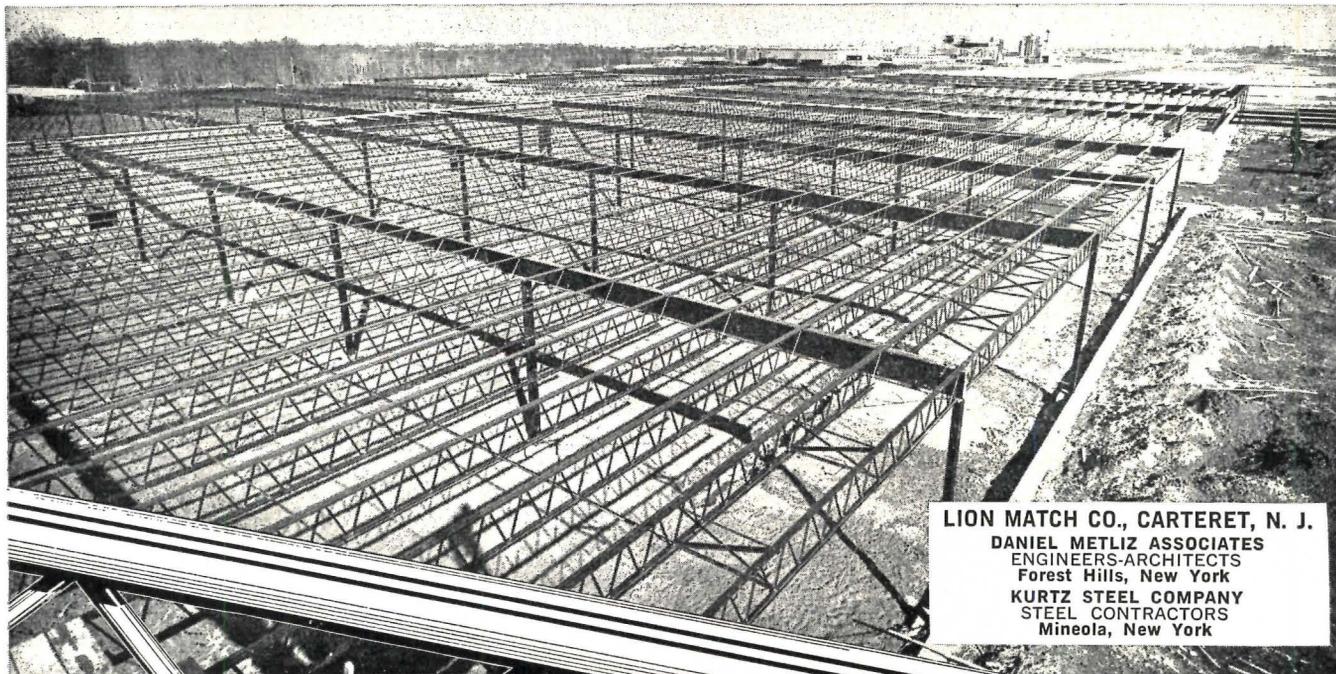
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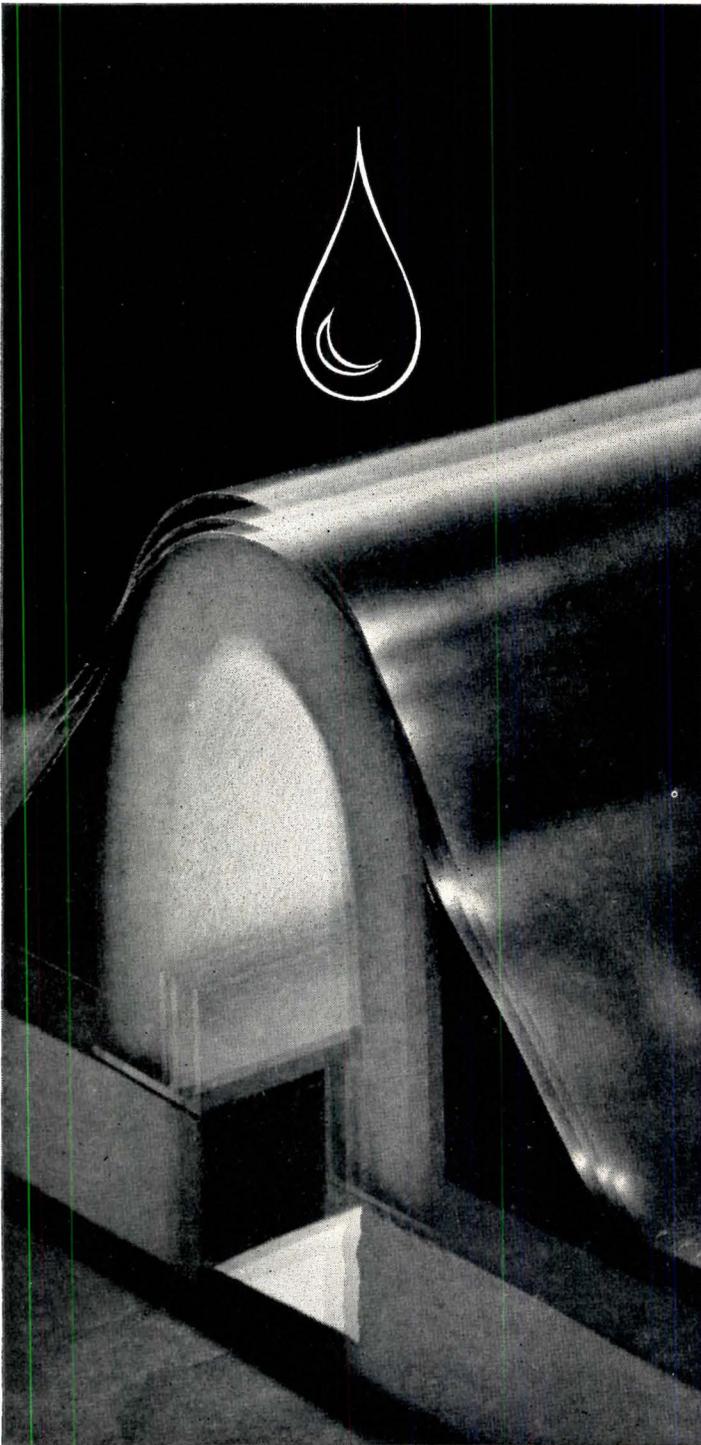


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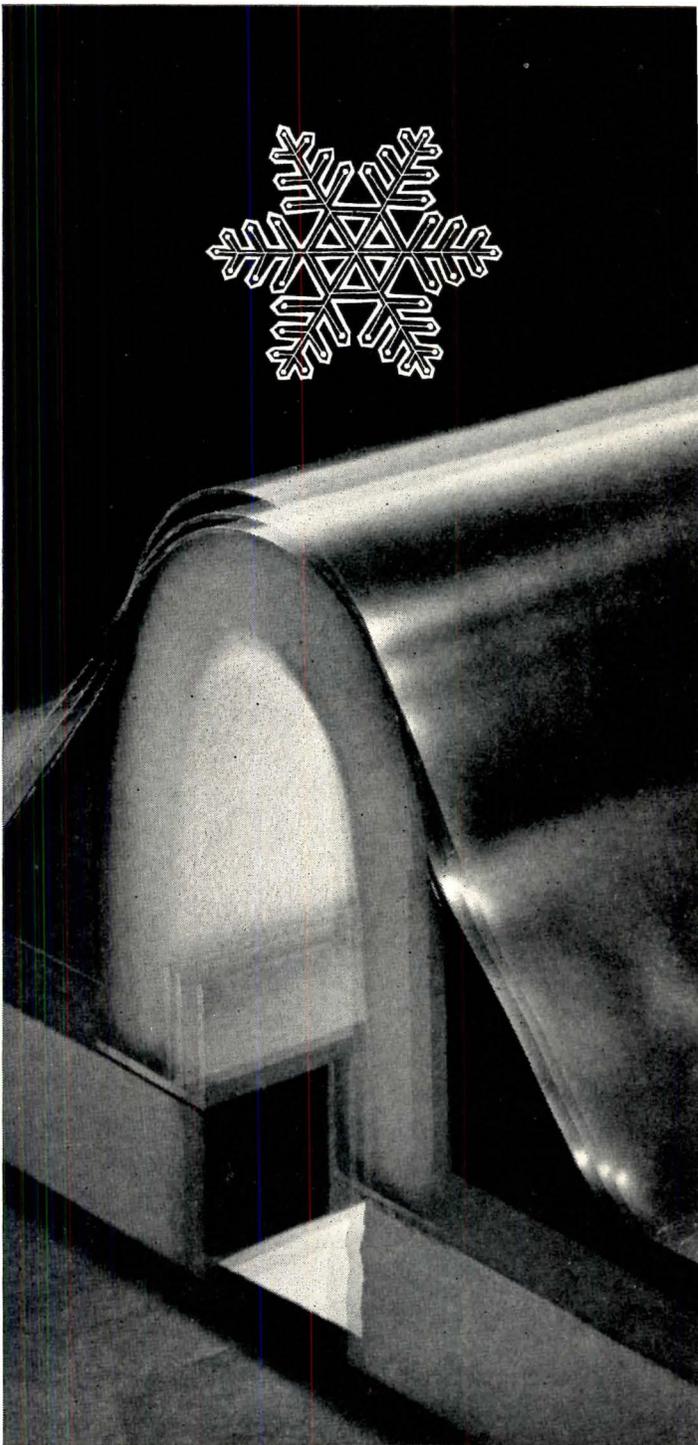
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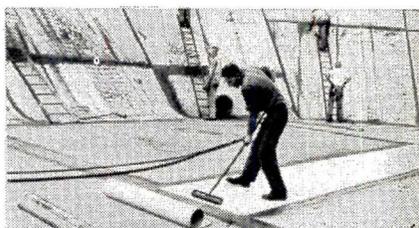
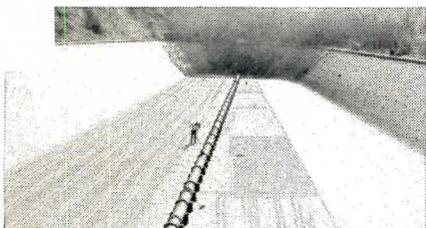


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The Nervastral installation in Centralia, Washington, Water Dept., Reservoir No. 4, shown here, employed a certain grade of Nervastral sheeting that has been specifically recommended to cope with existing problems. Consult our engineering specialists on waterproofing problems to determine the type of material and installation that will provide the best performance.

"NERVASTRAL", "NERVA-PLAST" and "NERVA-KOTE" are proprietary names for a variety of waterproofing products that are favorably known and specified by many architects, engineers and builders. Literature on request.



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For more information, turn to Reader Service card, circle No. 373

*Continued from page 64*

apartments. Under a "condominium," the owner actually owns his own apartment and any undivided interest in land and structure in common with all other owners of units; he can arrange his own financing; and he can sell or otherwise dispose of it (within limits) as he chooses. The method, which is popular in Europe and, according to the Urban Land Institute, was recently tried in Puerto Rico, can also be applied to office and commercial buildings.

## More Knocks for "Federal" Architecture

After spending two days at a conference to look over Washington's architecture, the National Capital Committee of AIA decided it didn't much like what it had seen.

Without mentioning anything specific, the committee said that a "consistently low standard of quality" in both public and private buildings is "endangering the character" of the area. Remedy, said the group, is closer co-ordination of planning and design activities, and a broader look at regional problems.

However, the architects had words of praise for the recent report of the Goldberg committee on architecture [JULY 1962 P/A] and for the National Capital Planning Commission for its vigorous attack on the city's regional problems.

One important statement: "We consider viaducts and elevated roadways to be inherently negative. . . . Superficial embellishment of bridges and other structures is ineffective."

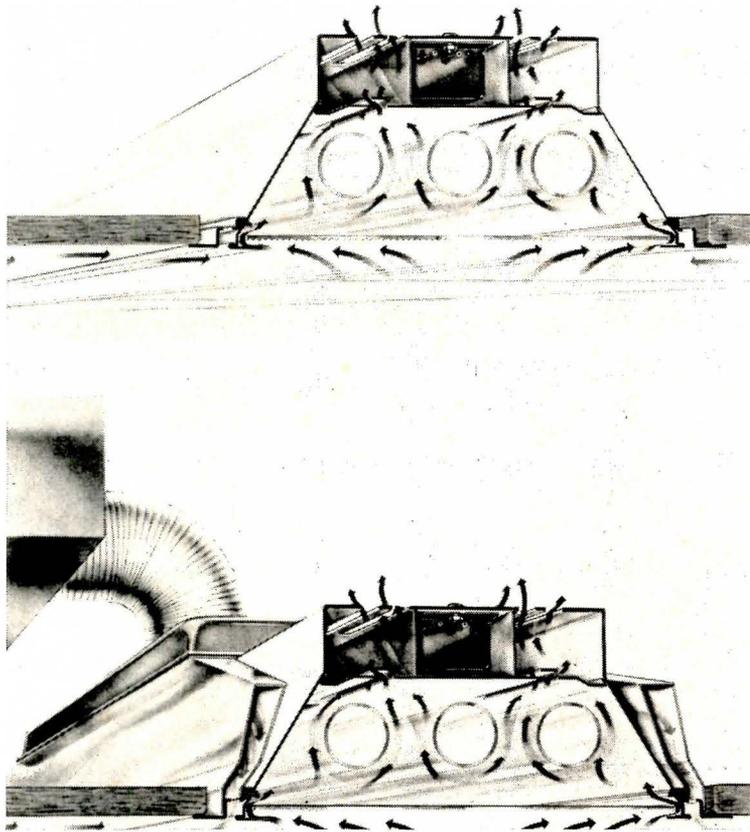
## Negotiated Contracts

Incidentally, you can depend on it that some Congressman is going to discover that *all* architect-engineer contracts awarded by Government agencies are awarded on a negotiated basis.

Chances are that the "discoverer" will be a member of an investigating subcommittee looking into military procurement—and he will know little if anything about construction-industry practice. Congress has been very rough on the military services lately for negotiating—rather than advertising—military procurement contract awards (almost entirely for hardware items for missiles, troop supplies, and the like), and this may strike an investigator as political pay dirt.

Fact is that there has been no hint of dissatisfaction either by Government agencies or private practitioners in this area: after years of patient negotiations, the present, rather stable procedures have worked out well.

# Lighting Fixtures Remove Heat They Generate



LOUISVILLE, KY. Fluorescent lighting troffers that eliminate the heat generated by the lamps have been introduced in two models. The fixtures remove the heat into the plenum area above the ceiling, from which it is exhausted or recirculated through the cooling system. In addition to greater comfort for room occupants, an advantage of the system is lower costs for air conditioning.

In the "Shallow Line" heat removal troffer (top), the simpler of the two systems, air from the room is drawn into the fixture around the edges of the diffuser and goes out through air slots in the top of the troffer.

Light-generated heat is handled in the same manner by the "Lumi-Flo" system (bottom), which also provides air conditioning or heating through a separate air-handling chamber (indicated by downward arrows signifying in-coming air).

Manufacturer states that, because of variables attending different projects, heat removal installations should always be reviewed. Benjamin Div., Thomas Industries, Inc., 207 E. Broadway, Louisville 2, Ky.

*On Free Data Card, Circle 100*

NEW YORK, N.Y. Union Carbide has unveiled room designs by prominent interior designers to indicate the range of urethane foam.

A bright and airy attic bedroom designed by Emily Malino (1) features two thick urethane foam pads in the floor in an alcove on either side of a fireplace. Equipped with foam-filled throw pillows, the pads become comfortable lounging spots, and replace chairs and couches.

A room functioning as a workroom and part-time guest "dormitory" (2) was designed by Paul Krauss. Unique feature of the room is three urethane foam mattresses hung on the wall in a "Mondrian" pattern, to be taken down and used when the relatives show up.

A seaside cottage designed by Staniford Squire (3) emphasizes the imperviousness of the foam material to rot and mildew. It is used on walls, window blinds, and furniture.

Urethane foam's properties as a sound-absorber are recognized by Virginia Whitmore Kelly in her design of a hi-fi listening room (4). Walls, doors, and ceiling are covered with fabric laminated to the foam.

Union Carbide Chemical Co., Division of Union Carbide Corp., 270 Park Ave., New York 17, N.Y.

*On Free Data Card, Circle 101*

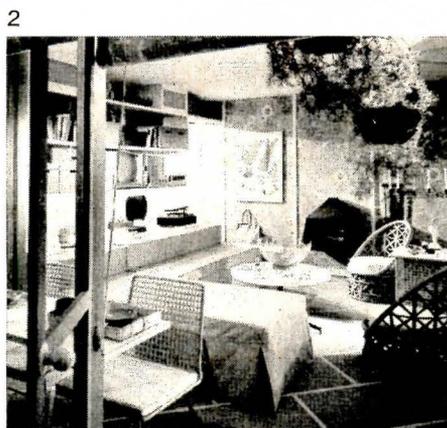
## DESIGNS IN URETHANE FOAM



1



3



2



4

## New Patterns and Sizes in Plexiglas

Rohm & Haas announces two new patterns in "Plexiglas" acrylic sheet—"Moire DP-28" and "Stipple DP-30"—for added decorative possibilities in partitions, lighting, window walls, shower, doors, etc. The Moire pattern is available in sheets as large as 72" x 102"; Stipple's maximum sheet size is 48" x 72". They are each produced in colorless form and in five colors (gold, aqua, gray, and two whites). Other news from Rohm & Haas is the availability of regular Plexiglas sheet in two larger sizes: 10' x 10' and 10' x 12'. Plastics Dept., Rohm & Haas Co., 222 W. Washington Square, Philadelphia 5, Pa.

*On Free Data Card, Circle 102*

## Gutter Paint Stops Rotting and Corrosion

Cabot's new "Rotproof Gutter Paint" puts an end to the rotting of wooden gutters and the corrosion of metal gutters. Paint will brush easily into the interior of the gutter, forming a black protective coating that is completely impervious to moisture. It will not crack, peel, or ooze. Treatment lasts indefinitely and requires little or no maintenance. Samuel Cabot Inc., 246 Summer St., Boston 10, Mass.

*On Free Data Card, Circle 103*

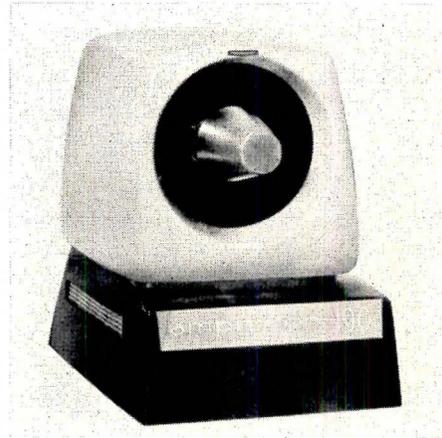


### Pushbutton Lock

"You might lose your keys, but you'll never lose your buttons," says the company that developed this new pushbutton lock. Called the "Combo Lock," the device is operated by pushing one or more of the five buttons in a preset

order. The combination can be changed (by owner only), in seconds, to any of more than 1000 variations. The lock is tamperproof, jamproof, weatherproof. Combo Lock is available with or without key (which can be used as a master in apartments and office buildings or for emergencies when the door must be opened without using the combination.) Emerson Electric Co., 8100 Florissant Ave., St. Louis 36, Mo.

*On Free Data Card, Circle 104*



## Low-Cost, Low-Weight TV Projector

New large-screen TV projector weighs only 70 lb and is priced at less than half the cost of other big-picture equipment. "Amphicon 190," designed for classroom, club, office, and home, provides images up to 12' in width, from a unit 20" high and 21 $\frac{5}{8}$ " deep. Operating ease is comparable to a home TV set, with external controls for focus, contrast, on/off, and brightness. A reversing switch for rear-screen projection is standard. The projector may be operated from a miniaturized remote-control panel. TelePrompTer Corp., 50 W. 44 St., New York 36, N.Y.

*On Free Data Card, Circle 105*

## Temperature See-Saws Are Controlled

An electronic modulation system for gas furnaces is being featured at the Century 21 display of new developments in the gas industry. Called "Selectra," the system uses printed circuits and space-age electronics to adjust the flame and compensate for changing heat losses. Result is that temperature see-saws in the home are smoothed out; the furnace delivers a gentle flow of continuously circulated warm air at the correct temperature.

(A conventionally controlled gas furnace intermittently turns on and off in an attempt to match heat loss, thus causing a cycling of temperatures around the desired setting.) Sensitivity of the Selectra is such that it responds to a 1/10-degree change in one second. Maxitrol Co., 23555 Telegraph Rd., Southfield, Mich.

*On Free Data Card, Circle 106*

## Surfacing Reflects Light into All Colors

Visitors to the Seattle fair will see a fascinating adaptation of an 18th-Century scientific discovery that breaks light into all colors of the spectrum. The material, known as "Diffraction Grating," is a paper-thin sheet of plastic (either transparent or with aluminum coating). Some 13,000 grooves per inch give the ability to reflect all colors of the rainbow; varying patterns are produced by the phenomena of overlap, reinforcement, and neutralization. At the Seattle exhibit, a number of interior and exterior applications are of architectural interest, among them walls, spandrel panels, lighting fixtures. Edmund Scientific Co., 101 E. Gloucester Pike, Barrington, N.J.

*On Free Data Card, Circle 107*

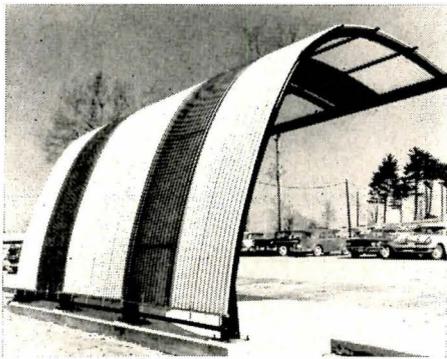


## Wide Variety in Videne Surfacing

Goodyear's "Videne" polyester film, recently introduced in transparent form, is now available in a dazzling variety of colors and patterns—tints, opaque colors, and reverse prints of any wood grain or design a camera can capture. All are produced in

finishes ranging from high gloss to muted satin. The material is a tough yet flexible surfacing, highly resistant to abrasion, cracking or crazing, yellowing, and staining; it wipes clean with a damp cloth. It is heat-laminated to a variety of substrate materials including hardboard, plywood, particle board, and wood. (Videne is sold only to the fabricator, who applies it to substrates that are then manufactured into cabinets, paneling, doors, etc.) Videne-finished panels cost no more than most prefinished panels, since the one-step process of application eliminates multiple coatings and sanding operations. Panels are easily sawed, drilled, or routed with regular woodworking equipment. Films & Flooring Div., Goodyear Tire & Rubber Co., 1144 E. Market St., Akron 16, Ohio.

*On Free Data Card, Circle 108*



## Vinyl Building Panels

A major facility for the production of unplasticized vinyl building panels was recently opened in Edgewater, N. J. The panels, manufactured from polyvinyl chloride resins, are the first extruded as large diameter tubing which is then slit and rolled into flat sheets and subsequently formed into either "S" curve of angular "Greca" corrugations. The sheets are 56" wide and are available in lengths up to 300', in a variety of opaque and translucent colors. The Morristown, N. J., bus-stop shelter shown here indicates the flexibility of the material. The company also recently opened what is said to be the world's largest continuous production line for rigid urethane foam insulation. Barrett Div., Allied Chemical Corp., 40 Rector St., New York 6, N.Y.

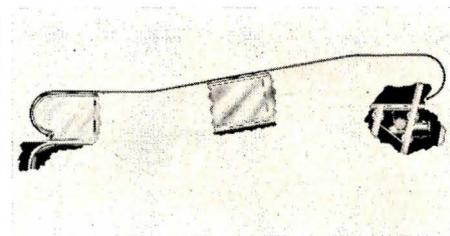
*On Free Data Card, Circle 109*

## Urethane Floor Finishes Give Unusual Wear

Outstanding new finishes for floors and other wood surfaces are based on urethane resins made with du Pont's

"Hylene" organic isocyanates. Manufacturers of the various coatings claim that the clear urethane finishes offer twice the conventional durability and resistance to cracking, checking, or discoloration, giving as much as 30 months service. Unlike varnishes, they retain gloss, show no sign of wear, and will not darken light floors. In addition, they offer a nonskid surface, wet or dry. Finishes are delivered ready for use, with no mixing of components required. Elastomer Chemicals Dept., E. I. du Pont de Nemours & Co., Inc., 350 Fifth Ave., New York 1, N.Y.

*On Free Data Card, Circle 110*



## Flat On and Off Areas for Moving Walkway

Improvements continue to be made on moving ramps. One of the latest is the introduction of flat entrance and exit areas on Westinghouse's "Electric Walk." This ramp is designed to carry pedestrians horizontally or on inclines up to 15 degrees, ascending or descending, at speeds up to 180 ft per minute. Other features of Electric Walk are a treadway surface composed of narrow grooved treads of diecast aluminum providing secure, smooth footing, and a stationary combplate at the ends that meshes with the tread grooves to afford a safe "combing" action at these points. Westinghouse Elevator Div., 150 Pacific Ave., Jersey City 4, N.J.

*On Free Data Card, Circle 111*

## Flexible System for Multiple Seating

Operating on a similar principle to the old expandable wall hatrack, a new multiple seating system affords a wide range of versatility in planning for various shapes and areas. "Viscount 65" line consists of tripod legs that work on a principle of a hinged joint with a positive locking action. Stretchers interconnect the legs and permit them to be opened to a wide angle; the legs can be locked and rigidly set in positions ranging from an S-curve to a straight line. System also includes arm rests, table tops,



smokers, and free-standing occasional tables. Seating and/or table units can be repeated for any length needed. Flexibility of line also permits ease in setting-up and storing. Royal Metal Manufacturing Co., 1 Park Ave., New York 16, N.Y.

*On Free Data Card, Circle 112*

## Five New Steels

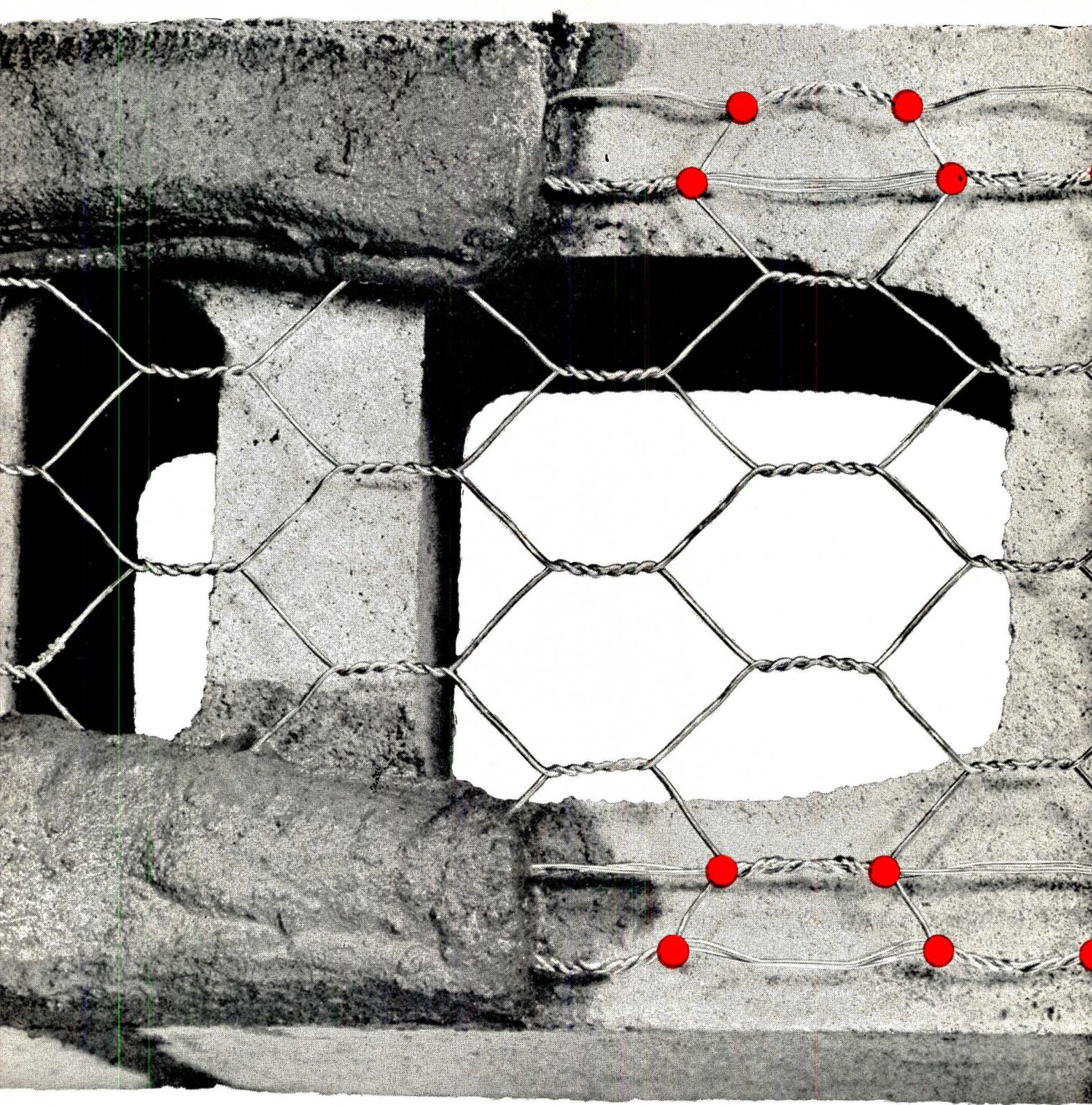
"A number of significant industry firsts" have been achieved by Bethlehem's new series of five low-priced, high-strength steels. Available in a wide range of structural shapes and plates, the new steels are tailored to provide increasing strength levels at lower cost, and to permit designers to select more precisely the proper grade of high-strength steel for specific requirements. For the first time, the "V" steels offer even higher strengths than formerly available in as-rolled structural shapes, up to 65,000 psi minimum yield point for light sections. This, in many cases, will eliminate the need for specifying costlier premium grades of high-strength steel produced to special order or treatment. The steels have been designated V45, V50, V55, V60, and V65, and are produced in thicknesses up to 1½" for plate and 1⅞" for shapes. Bethlehem Steel Co., 703 E. Third St., Bethlehem, Pa.

*On Free Data Card, Circle 113*

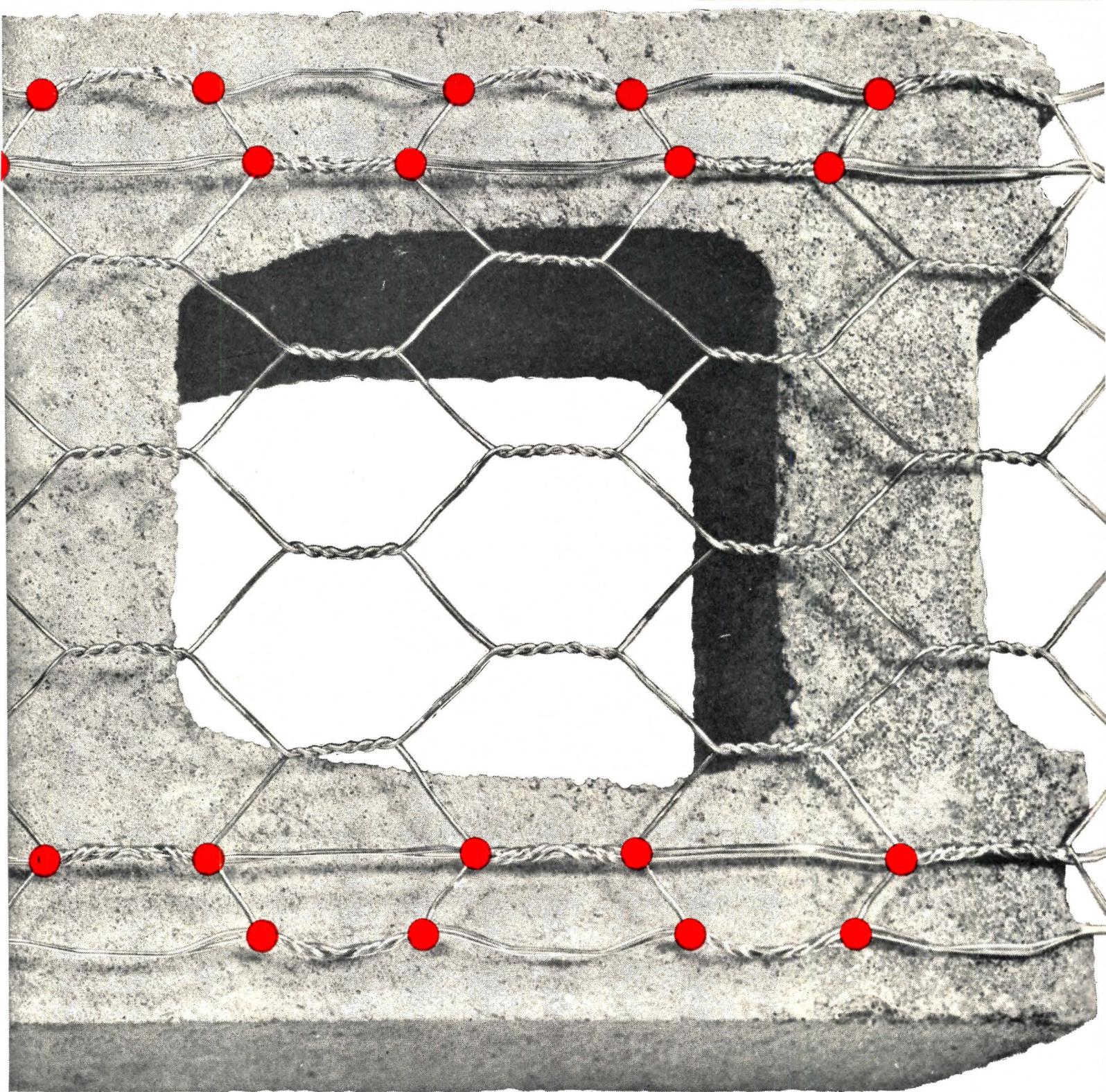
## 20-Year Guarantee on Plastic Panels

The only 20-year written guarantee in the plastic-panel industry has been announced by Alsynite. Their translucent panels are shatterproof, and will not warp, chip, or peel. An exclusive process, which sandwiches a glass-fiber reinforcing mat between two surfacing mats, insures two to three times the weather resistance of other panels, states the manufacturer. Alsynite Div., Reichhold Chemicals Inc., 4654 De Soto St., San Diego 9, Calif.

*On Free Data Card, Circle 114*



KEYSTONE STEEL & RECC COMPANY Peoria, Illinois



**28** mortar locks to the block foot with Keywall reinforcement. The more locks, the more resistance to cracks resulting from shrinkage. Movement is restrained at each of Keywall's mortar locks. No one lock has to restrain more than the movement in  $\frac{3}{4}$ " of block. That's the kind of reinforcement that works.

**MORE LOCKS TO THE BLOCK WITH KEYWALL**



## Lead . . . the toughest sound barrier of them all

In sound studio and machine shop alike, the problem of sound and sound attenuation is getting increasing attention. Personnel fatigue and higher accident rates have been positively correlated to high noise levels. Today the application of lead as a noise attenuator deserves the investigation of all concerned with worker productivity and company profits.

Often, noise is effectively damped, isolated, by literal curtains of lead—flexible, roll-up partitions impregnated with lead in powdered form.

In other applications, sheets, coatings, or castings of lead have tamed down clatter and roar to a decorous

hush. Lead pads under heavy machines soak up vibration at its very source.

In whatever form it's used, lead has proved more effective in reducing sound transmission than any other building material commonly used today. Surprisingly—but logical on reflection—this means that lead is *lighter*, packs more sound-proofing talent pound-for-pound, is much more economical of space.

If you have a sound-control problem—any kind—by all means look into lead. For facts, figures, and technical help, write Lead Industries Association, Inc., Dept. N-8, 292 Madison Avenue, New York 17, New York.

3208



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

*Look Ahead with Lead*

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

## AIR/TEMPERATURE

### Analysis and Control of Cooling-Tower Noise

The first engineering manual devoted specifically to the analysis and control of cooling-tower noise levels is now available. The 24-page document was prepared jointly by Bolt, Beranek & Newman, Inc., Acoustical Consultants, and Baltimore Aircoil Company. Supported with charts and tables, the manual outlines procedures for establishing noise criteria, measuring sound levels of equipment, and determining noise-reduction needs. Methods of noise control include acoustical treatment for practically any situation. Procedures outlined are applicable to cooling towers of any manufacturer. Baltimore Aircoil Co., Inc., P.O. Box 7322, Baltimore 27, Md.

On Free Data Card, Circle 200

### Humidification Manual

Manual entitled *Technical Data on Humidification* has been reissued by Walton Laboratories, manufacturers of humidification equipment for residential, hospital, and industrial use. The 16-page manual covers every area in which humidification equipment is used. Different sections tell how to compute humidity load, apply spacing and zoning formulas to particular situations and select proper equipment for specific jobs. Sample survey sheets and installation suggestions are included. Walton Laboratories, Inc., 1186 Grove St., Irvington 11, N.J.

On Free Data Card, Circle 201

### Louvers and Penthouses

Comprehensive line of extruded-aluminum louvers, dampers, and penthouses is presented in new 24-page bulletin. Detailed product information includes technical data, engineering specifications, scale drawings, and photographs. Among the items described are stationary louvers, adjustable louvers, vertical louvers, air-foil directional louvers, air-control dampers, back-draft dampers and fire dampers. Air Balance, Inc., 8933 Krewstown Rd., Philadelphia 15, Pa.

On Free Data Card, Circle 202

### Forced-Air Units

New line of Marlo heating and ventilating units for auditoriums, industrial plants, and commercial establishments

is documented in new 36-page *Bulletin 40*. The new units are available in 6 basic styles, and in 34 air-moving capacities. A complete line of accessories permits adaptation of units to any heating and ventilating application using forced-air circulation. Complete performance data on the new units is provided. Marlo Coil Co., 7100 S. Grand Blvd., St. Louis 11, Mo.

On Free Data Card, Circle 203

## CONSTRUCTION

### Plywood Rigid Frames

*Plywood Rigid-Frame Design Manual*, 72 pages, has been published by the Douglas Fir Plywood Association. The manual gives comprehensive information on this type of construction, in-



cluding basic data on the advantages of plywood rigid frames, preliminary planning data for selection of members, design details and load tables, and construction procedures. Examples illustrate step-by-step development of a typical design. Altogether some 770 practical rigid-frame design combinations are outlined. Technical Dept., Douglas Fir Plywood Assn., 1119 A St., Tacoma 2, Wash.

On Free Data Card, Circle 204

### Five New Steels from Bethlehem

New 16-page engineering and design booklet describes the new Bethlehem "V" steels—a wide range of low-cost, high-strength steel shapes and plates for construction and general purposes. The five grades of "V" steels provide minimum yield points from 45,000 psi to 65,000 psi. Booklet covers their

strength, corrosion resistance, workability, weldability, abrasion resistance, notch toughness, mechanical properties, chemical composition, and cost. Publications Dept., Bethlehem Steel Co., Bethlehem, Pa.

On Free Data Card, Circle 205

### Roofing Specs

1962 edition of *Built-Up Roofing Specifications*, 28 pages, gives data, details, and specifications on all Carey bonded built-up roofs. A roof-selector guide opens the catalog, serving as table of contents. Then follow general requirements for built-up roofing on nailable and non-nailable decks. Application information includes details on steep deck and dead-level roofs, spray-pond roofs, promenade-tile roofs, roofing over existing roofs, and insulation. Construction details cover ventilators, flashing, pitch pockets, concrete curbs with ventilators, gravel stops and gutters, etc. The Philip Carey Manufacturing Co., 320 S. Wayne Ave., Cincinnati 15, Ohio.

On Free Data Card, Circle 206

### Winners in Ruberoid's Hospital Competition

Winning entries in last year's design competition sponsored by The Ruberoid Company have been published in a 52-page book. The program—third annual competition sponsored by Ruberoid—called for the development of comprehensive medical-care facilities in a hypothetical community. Seventeen outstanding hospital designs are presented in the book, with site plan, elevations of principal buildings, and details of various types of nursing units. Each facility is designed to be expanded from 200-bed to 500-bed capacity. Write (enclosing \$1.00) to: The Ruberoid Co., 733 Third Ave., New York 17, N. Y.

### Concrete Compounds

Booklet, 12 pages, gives full product information on 34 Sika concrete and masonry compounds. Products are presented under five headings: admixtures; joint sealers; surface treatments (retardants and metallics); surface treatments (coatings, impregnations, and two-component systems); and quick-setting materials. Brief paragraphs list composition, use, advantages, and proportion or coverage. Sika Chemical Corp., 29-53 Gregory Ave., Passaic, N. J.

On Free Data Card, Circle 207

**ARCHITECTS!  
YOU CAN HAVE  
MORE BEAUTIFUL,  
STRONGER,  
MASONRY WALLS  
with  
WAL-LOK**

**MORTAR JOINT REINFORCING**

**BECAUSE:**

THE EFFECTIVENESS OF REINFORCING IN MASONRY WALLS DEPENDS ON THE AMOUNT AND TENSILE STRENGTH OF THE STEEL IN THE MORTAR AND THE BOND OF THIS STEEL TO THE MORTAR.

**WAL-LOK** puts 19.2% more steel in the mortar where it counts.

**WAL-LOK** is double deformed for maximum bond.

**TENSILE STRENGTH** of steel is retained.

**PROJECTING CROSSRODS** give 4 mortar locks at each weld.

**CROSSRODS** hold **WAL-LOK** up for complete embedment.

**WAL-LOK**, in all grades, complies with or exceeds Government specifications.



Write for New Descriptive Brochure and Name of Distributor nearest you.



**WAL-LOK**

DIV. of LENAWEE PEERLESS, Inc.

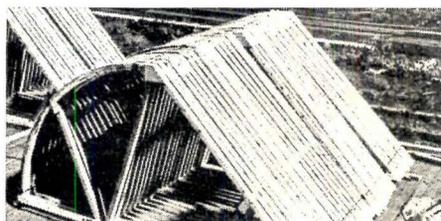
P. O. BOX 516  
ADRIAN, MICHIGAN

For more information, circle No. 353

**Lightweight Concrete  
for Roofs and Floors**

New 8-page catalog describes properties and applications of "Permalite" concrete aggregate for roof decks and floor fills. Booklet points out advantages — insulating efficiency, light weight, and fire safety. Detail drawings show the product's use as insulation in roof-deck systems, and also in flooring systems with radiant heat or cellular steel floors. Specifications, plus information on mixing and curing, are provided. Perma Products Dept., Great Lakes Carbon Corp., 612 S. Flower St., Los Angeles 17, Calif.

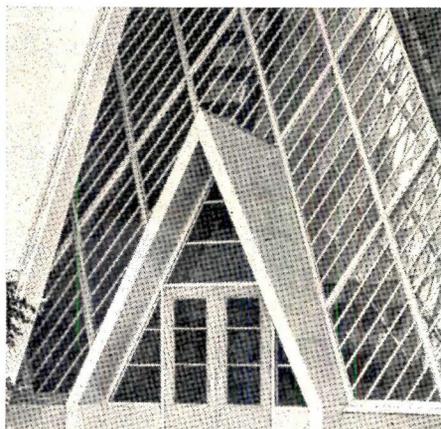
On Free Data Card, Circle 208



**Laminated Wood**

Catalog, 8 pages, presents glue-laminated beams and arches formed of Eastern spruce, Douglas fir, and Southern yellow pine. Specifications and typical load tables are provided, and photographs show several installations. Brochure also states the particular advantages offered by structural wood—greater pound-for-pound strength, design freedom, fire safety, and economy. Wood Fabricators, Inc., 400 Portland St., Cambridge, Mass.

On Free Data Card, Circle 209



**Curtain-Wall Systems**

1962 catalog on curtain-wall systems, 12 pages, presents examples of the various Albro curtain walls and their structural applications. Features are

Continued on page 82



**Aluminum  
EXPANSION  
JOINT  
COVERS**



This is the new E-L Expansion Joint Cover—available in a range to answer all requirements for floors, ceilings, and interior or exterior walls.

E-L covers, of fine quality extruded aluminum, are exceptionally sturdy, strong, and efficient. They are well-made. And they give a trim look to interiors and exteriors.

At the same time, they afford the particular economies synonymous with modern aluminum extrusions. A low first cost, a long range savings in long life and little upkeep.

E-L covers are supplied for 1", 1½", and 2" expansion or contraction. Their efficiency is underscored by the design concepts hinted at in the cut-away above. But consider these features too

**PATTERNS:** Plain plate shown; four different patterned plates and special abrasive plates also available.

**MATERIALS:** All members extruded aluminum. Abrasive plates have aluminum oxide particles embedded in surface. Filler strips of abrasive-resistant extruded vinyl. Aluminum anchors self-locking and adjustable for desired centers.

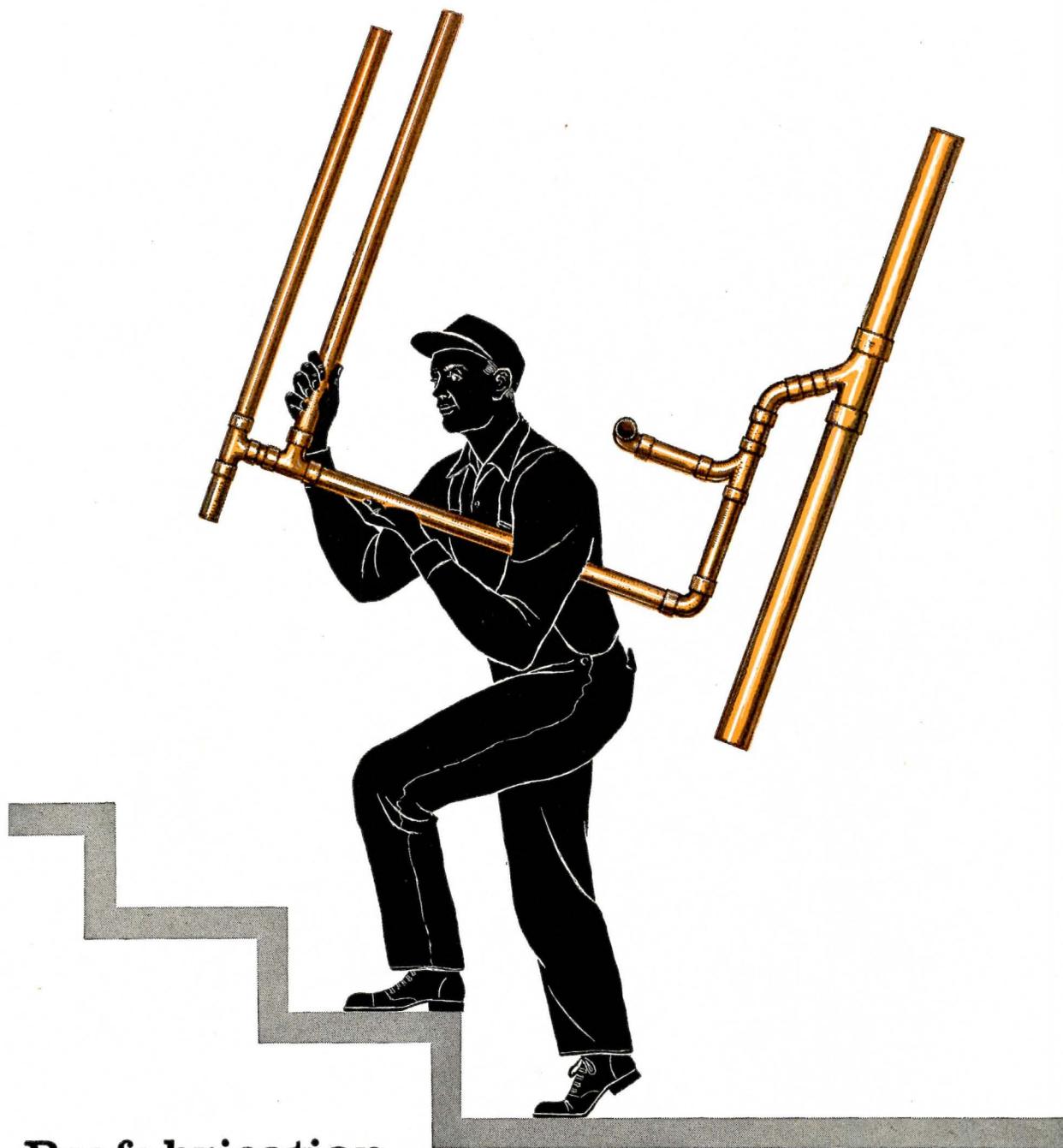
**FINISHES:** Mill or beautiful satin finish. An array of color finishes too, selected to harmonize pleasingly with tile or terrazzo.

Our NEW CATALOG gives complete data—write for it! Samples also supplied on request.



**EXTRUDED LOUVER CORP.**  
Williamsport, Pennsylvania  
Architectural Specialties in Aluminum

For more information, circle No. 394



**Prefabrication**

... another big advantage—when you install *Streamline*® copper tube and fittings for drainage plumbing

When you use Streamline tube and fittings on a job, even complex plumbing trees can be easily handled by one man. A 20' length of corrosion-resistant type DWV tube weighs only 34 lbs., 1/5th the weight of old-fashioned rustable material. Pre-assembling copper is easy in the shop or at the site—and requires only a few on-the-job connections to complete the installation.

Joints aren't affected by vibration in transit, either. Work is easier, too, because there's no caulking, threading or heavy wrench work to do when you use Streamline solder-type fittings and tube that fit together perfectly because they're *made for each other*.

Next time—install Streamline copper tube and fittings—the modern material for both supply and drainage.



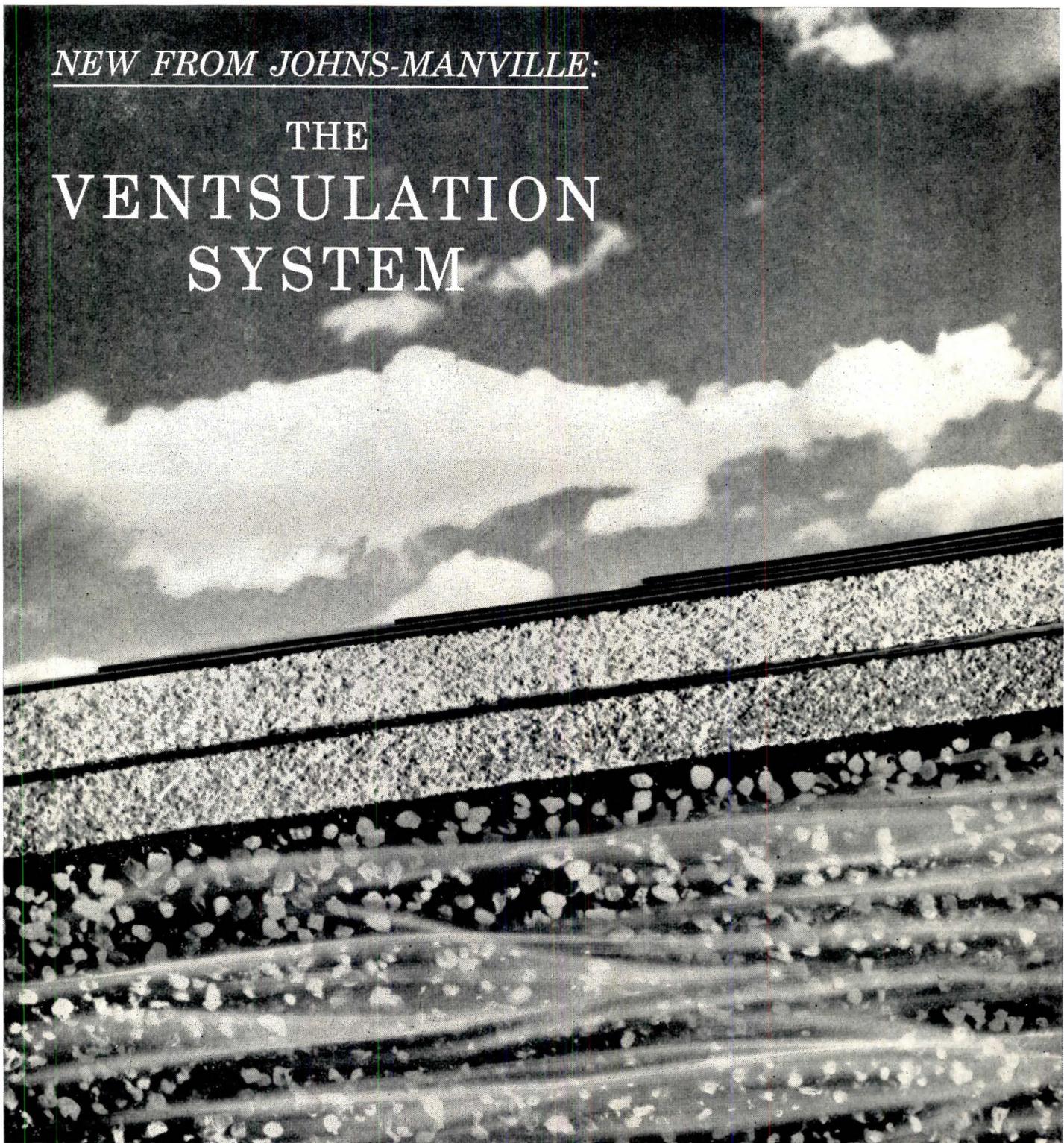
Write today for new Catalog S-361



**MULLER BRASS CO. PORT HURON 27, MICHIGAN**

NEW FROM JOHNS-MANVILLE:

THE  
VENTSULATION  
SYSTEM



...A built-up roof  
that "breathes"

*The new J-M Ventsulation Roof System is an exciting major development in built-up roofing. As the model roof section shown above clearly demonstrates, it is now possible for air and moisture to "ventilate out" of the roof assembly, both during construction and throughout*

the life of the roof. Now—for the first time—it is possible to eliminate the blistering, cracking and premature failure once caused by sealed-in air and moisture that had no way to escape!

Here's how this unique new Johns-Manville system allows a built-up roof to "breathe." The Ventsulation Felts are of heavy asbestos, asphalt-saturated and coated, with large mineral granules embedded in the underside. The felts are applied to the deck granule side down, thus providing millions of tiny passages between felt and deck for free outward passage of air and moisture.

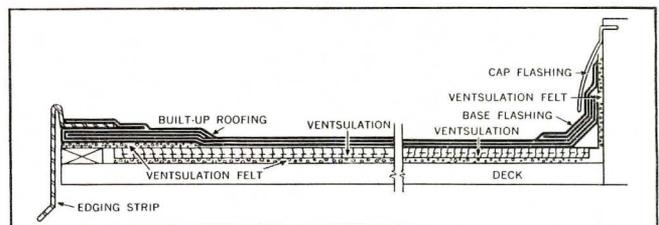
Each unit of the roof insulation itself—either J-M



Roofinsul or J-M Fesco Board—is kerfed on all four edges. This provides still another avenue for air and moisture to travel out of the roof assembly through vent spaces at the edges of the roof.

The new Ventsulation System can be applied over any type of roof deck . . . requires no special application techniques. The finished built-up roof and flashings are applied in the usual way.

You can get complete details about this unique and important new breakthrough in roofing by writing for Booklet BU-125A. Address Johns-Manville, Box 158, Dept. PA862, New York 16, N. Y. In Canada: Port Credit, Ont. Cable: Johnmanvil.



**JOHNS-MANVILLE**   
 BUILT-UP ROOFING PRODUCTS

Continued from page 78 described and the units are detailed. Of special interest is a general discussion of specifications, in which the architect is advised as to responsibilities of bidders, precise extent of work, quality of performance expected, description of all materials, and requirements of workmanship. Albro Metal Products Corp., 944 Longfellow Ave., New York 59, N. Y.

On Free Data Card, Circle 210

## DOORS/WINDOWS

### Weatherstrip Manual

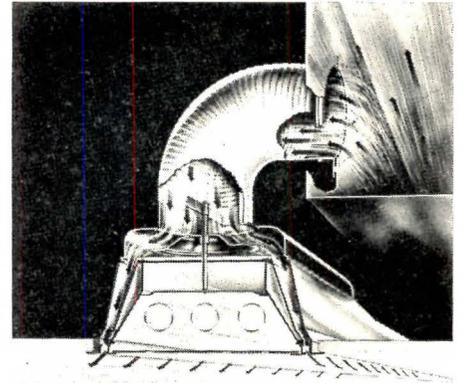
A 24-page weatherstrip catalog has been prepared for architects and specifications writers by Pemko Manufacturing Company. Many ways of soundproofing, lightproofing, and weatherstripping of doors are illustrated, with most details drawn at full scale. Items include complete lines of thresholds, saddles, and both roll-formed and extruded weatherstrip for doors and windows. Pemko Manufacturing Co., 5755 Landregan St., Emeryville, Calif.

On Free Data Card, Circle 211

## Prefinished Doors

Formica Corporation's line of prefinished "Lifeseal" doors for commercial and institutional interiors is detailed in new 8-page folder. Specifications are outlined for the complete Lifeseal line, which includes standard wood-core doors, fire doors, and lead-lined X-ray doors. Doors are completely finished in any of the 83 Formica patterns, colors, or wood grains; they are pre-mortised for hardware, also sealed against moisture with wood preservatives. Formica Corp., 4614 Spring Grove Ave., Cincinnati 32, Ohio.

On Free Data Card, Circle 212



## ELECTRICAL EQUIPMENT

### New Lighting Troffer Also Heats, Cools

A complete manual for specifying air-handling troffers is available from the Benjamin Division of Thomas Industries, who recently introduced "Lumi-Flo Triple Shell" combination light-

ing, heating, and air-conditioning troffers. The new troffer meets requirements of any installation, whether of modular or open construction. Complete design freedom is possible with three air-handling capacities. One of Lumi-Flo's most important features is that the air passageway is completely isolated from the troffer housing by an insulating air space, thus removing the possibility of temperature variations affecting the light output of the unit. Other exclusive features include increased air capacity, no lamp flickering, longer ballast life. The 40-page bulletin gives installation recommen-

**VOGEL-PETERSON**

**CUSTOM-LINE**  
Aluminum COAT and HAT RACKS

Tailored to fit any given open or closetted wall area. Smart in design and modern in "clear", "gold" deep etched anodized finishes and combinations. Quality built — closed-end aluminum tubing, rigidly held in cast aluminum brackets that are adjustable for height in dovetailed mounting extrusions. Brackets also adjustable to any desired centers.

Write for Bulletin CL-510

Detail shows how dovetail extrusions (which mount on any centers) hold brackets at any desired height.

**VOGEL-PETERSON COMPANY**  
ROUTE 83 & MADISON STREET • ELMHURST, ILLINOIS

For more information, turn to Reader Service card, circle No. 395

## CUT LOADING COSTS!



**DOCK MATE** Efficiency

Affords smooth, efficient handling of loading or unloading at your dock. Many exclusive features available only in Dock Mate such as the ability to position lip into truck at any position desired.

**DOCK MATE** Safety

Safety for operator as well as equipment. Several positive and exclusive safety features available only in Dock Mate.

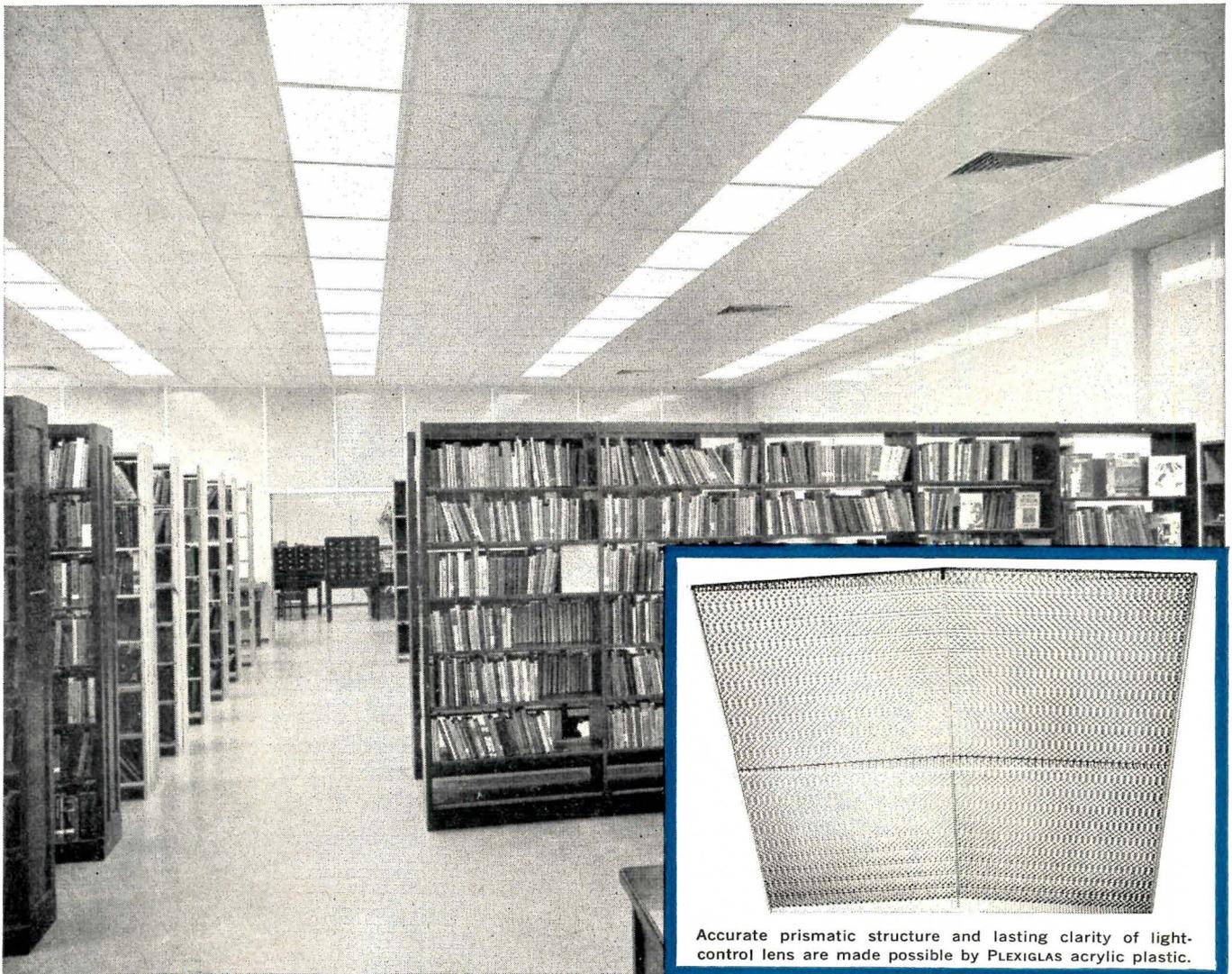
**DOCK MATE** Economy

Two basic models, the Dock Mate leveler and the Dock Mate Retractable leveler. Users report up to 50% savings in loading costs over manually handled dock plates. Installation can be made on your existing dock, built into new installations or custom built installations.

Write, wire or 'phone today for full information and name of your nearest distributor.

**T S EQUIPMENT COMPANY**  
968 AUSTIN AVENUE • ALBION, MICHIGAN • NA-9-3908

For more information, turn to Reader Service card, circle No. 384



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.

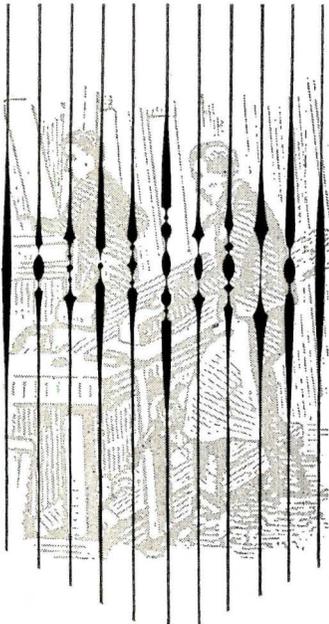
**ROHM  
&  
HAAS**  
PHILADELPHIA 5, PA.



In Canada: Rohm & Haas Co. of Canada, Ltd., West Hill, Ontario

# PLEXIGLAS

**IS PRE-FINISHING  
A VENEER  
COVER-UP?**



**NOT  
AT  
EGGERS  
OF  
TWO RIVERS  
WISCONSIN**

Since 1884, Eggers has cut and matched veneers into the warm beauty of Architectural Plywood Panels and Solid Core Doors. Eggers' appreciation of this beauty of fine veneers is expressed in each pre-finished panel and door. Only the finest custom-matched veneers are chosen by Eggers, whether or not the job calls for pre-finishing. Where the art of toning and filling is called for, Eggers fine craftsmen do this operation **ONLY** by hand. Then the fully automated finishing line insures smooth, even application of a special hot airless spray of catalyzed synthetic material. With this finish, fading is practically eliminated — abrasion and marring are minimized. The latest production equipment combines with Eggers' hand-craftsmanship to preserve and enhance the beauty of every Eggers Architectural Plywood Panel and Solid Core Door.

Choose standard finish or custom finish. Eggers offers the architect both, to his exact specifications.

Let us bid on your next project. Your inquiries will be answered promptly and fully.

Quality Manufacturers since 1884



**EGGERS PLYWOOD COMPANY**  
Two Rivers, Wisconsin  
Telephone 793-1351

See Sweet's File No.  $\frac{16c}{EG}$

For more information, circle No. 333

dations, air-distributing data, illumination data, and ceiling-application drawings. Benjamin Div., Thomas Industries Inc., 207 E. Broadway, Louisville 2, Ky.

On Free Data Card, Circle 213

**Circuit Breakers**

New 8-page bulletin discusses circuit breaker and enclosure types for specific needs. The bulletin opens with 11 reasons for choosing breakers, then reviews I-T-E's complete line of molded-case breakers for industrial, commercial, and service-equipment applications. Items covered are 4 basic types of breakers, 9 standard enclosures, and 4 accessories for special applications. Enclosure types are wall-mounted, flush-mounted, outdoor rain-tight, dust-resistant, and hazardous atmosphere. I-T-E Circuit Breaker Co., 1900 Hamilton St., Philadelphia 30, Pa.

On Free Data Card, Circle 214

**FINISHERS/PROTECTORS**

**Sprayed Fireproofing**

New "Albi-Clad" lightweight sprayed fireproofing for 1-hour rating on light-frame steel structures is described in

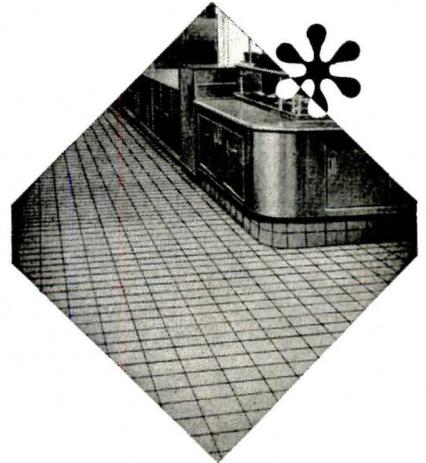


4-page technical bulletin. The bulletin outlines the application of Albi-Clad for 1-hour protection on residential, school, institutional, and assembly buildings, and as a general fireproofing directly on exposed steel in industrial and commercial structures. Among the product's features are its low weight (less than 8 oz/sq ft), high abrasion resistance, no flaking or dusting, high sound absorbency, ease of application, and low cost. Albi-Clad Div., Albi Manufacturing Co., Inc., 98 E. Main St., Rockville, Conn.

On Free Data Card, Circle 215

wherever there's...

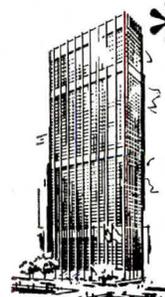
**DRIPPING  
SPILLING  
SPLASHING**



men who know tile floors  
best, specify and install

**HYDROMENT  
JOINT FILLER**

Wherever there's food handling, there's sure to be spilling, dripping and dropping. Ordinary grouts can't withstand the corrosive attack of food acids and alkalies. That's why Hydroment Joint Filler was specified for the quarry tile kitchens and cafeterias of No. 1 Chase Manhattan Plaza. It forms a permanently tight, dense, joint — non-toxic, odorless, highly resistant to wear and corrosion. It inhibits bacteria growth; very easily maintained. Widely used with brick or tile for over 20 years in cafeterias, restaurants, hotels, motels, hospitals, schools, etc. . . . wherever there is mass feeding and mass housing. Seven colors, plus black and white.



**NO. 1 CHASE  
MANHATTAN PLAZA**

Architect:  
Skidmore, Owings & Merrill  
General Contractor:  
Turner Construction Co.  
Tile Contractor:  
Peter Bratti Associates, Inc.

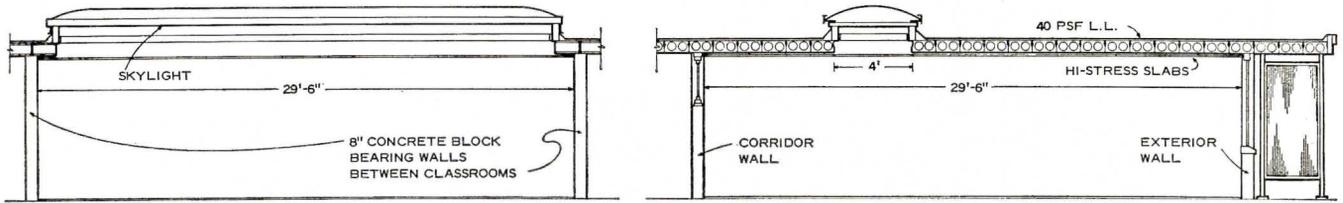
Pioneers in Industrial Research Since 1881

**THE UPCO CO.**

4805 LEXINGTON AVE. • CLEVELAND 3, OHIO

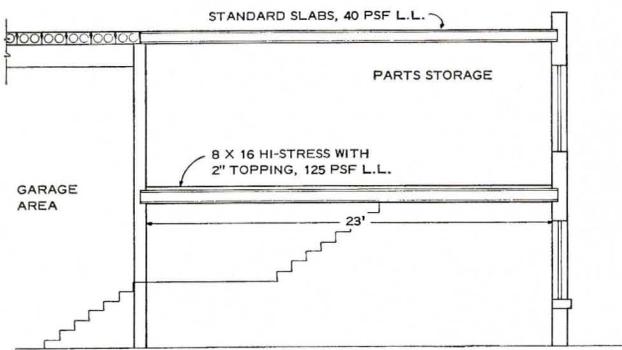
In the West: HYDROMENT, INC.  
829 N. Coffman Drive • Montebello, Calif.

For more information, circle No. 390

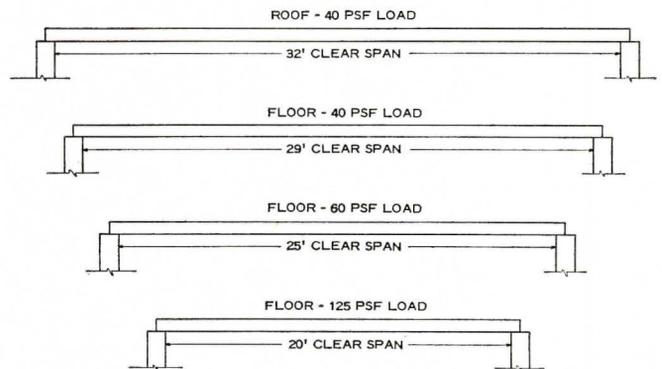


**SCHOOL WITH CLASSROOM SKYLIGHTS.** Flexicore Hi-Stress slabs with two  $\frac{3}{16}$ " stress-relieved strands clear span the 29'-6" width of the rooms, are designed to carry 40 psf roof load. Four slabs, two on each side of skylight, have three  $\frac{3}{8}$ " strands to carry the extra load of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

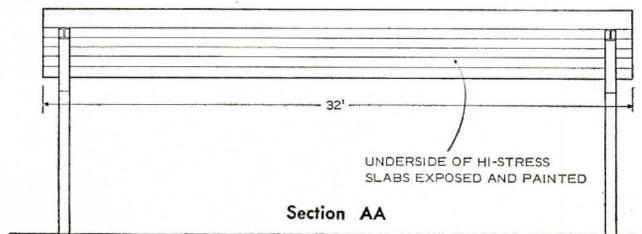
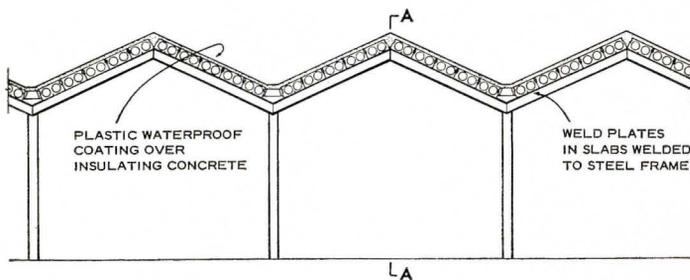
## New Hi-Stress Flexicore Slabs Combine Longer Spans, Greater Loads, Improved Structural Performance



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



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



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

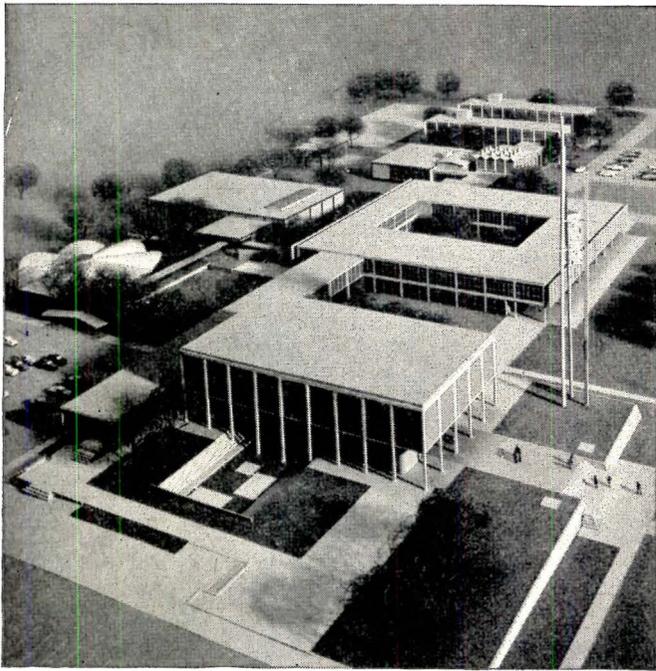
Floor or roof slabs erected quickly



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

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





# P&S ROCKER-GLO HEAD OF THE CLASS AT HOCKADAY SCHOOL

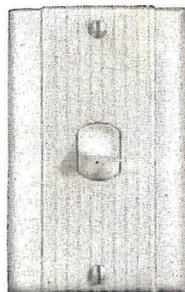
In modern, spacious Hockaday School in Dallas, Texas, 20 ampere Rocker-Glo switches control the lighting in all areas.

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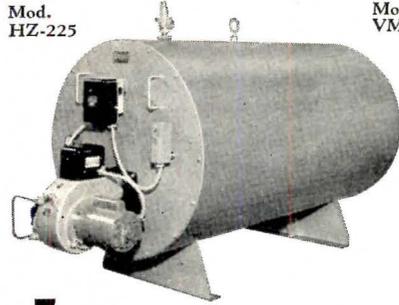
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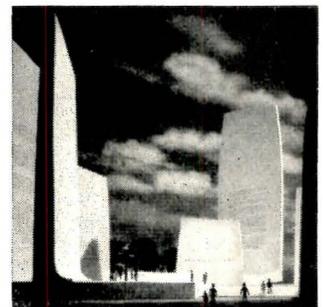


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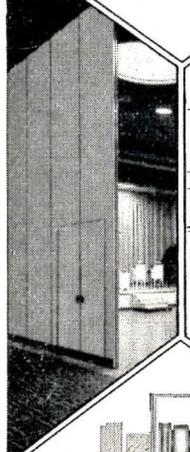
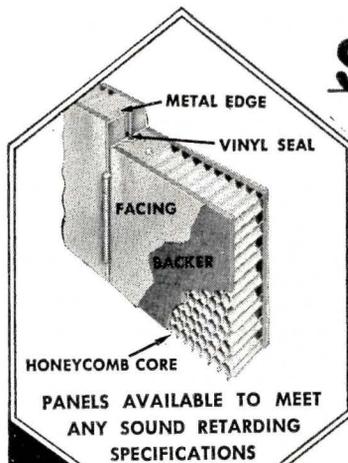
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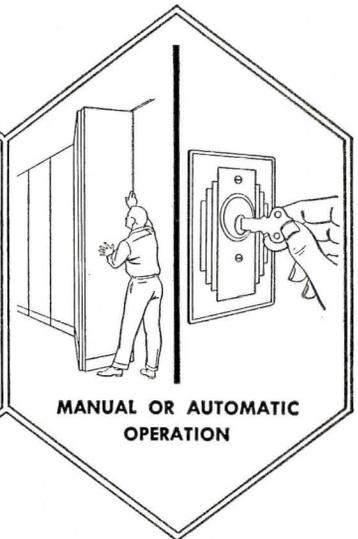
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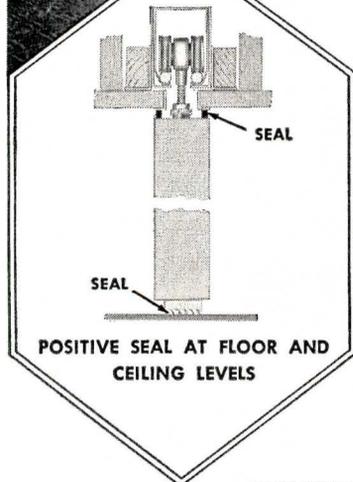
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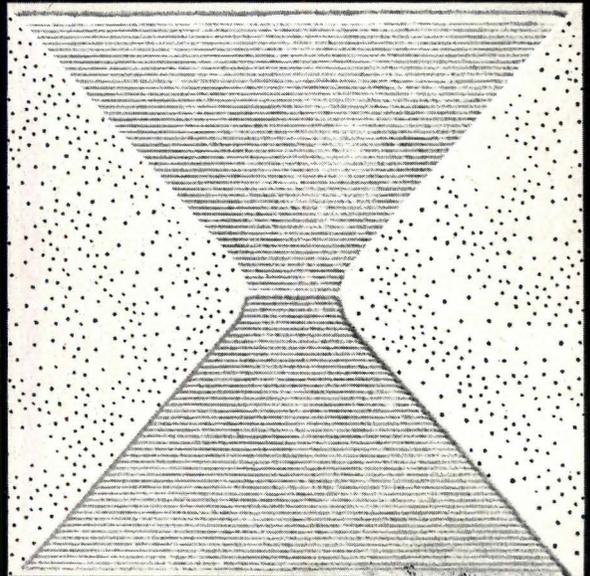


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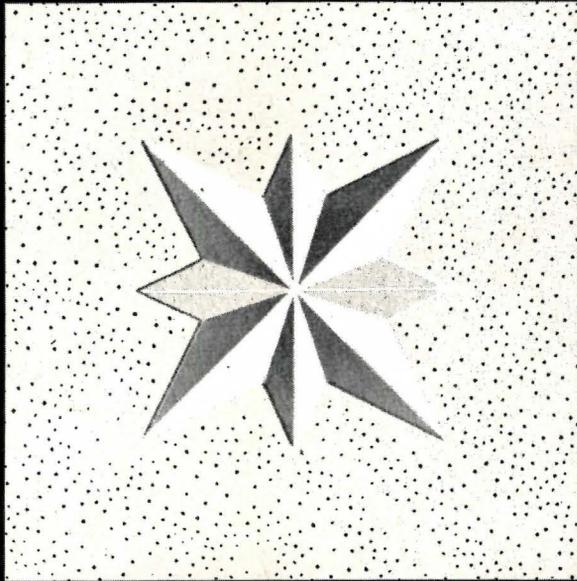


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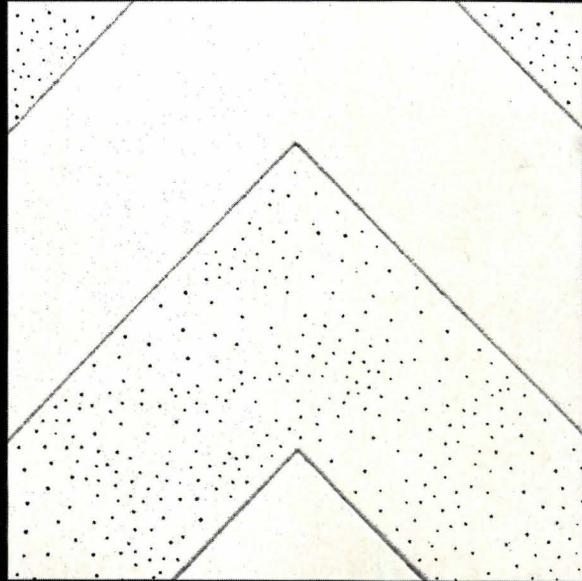
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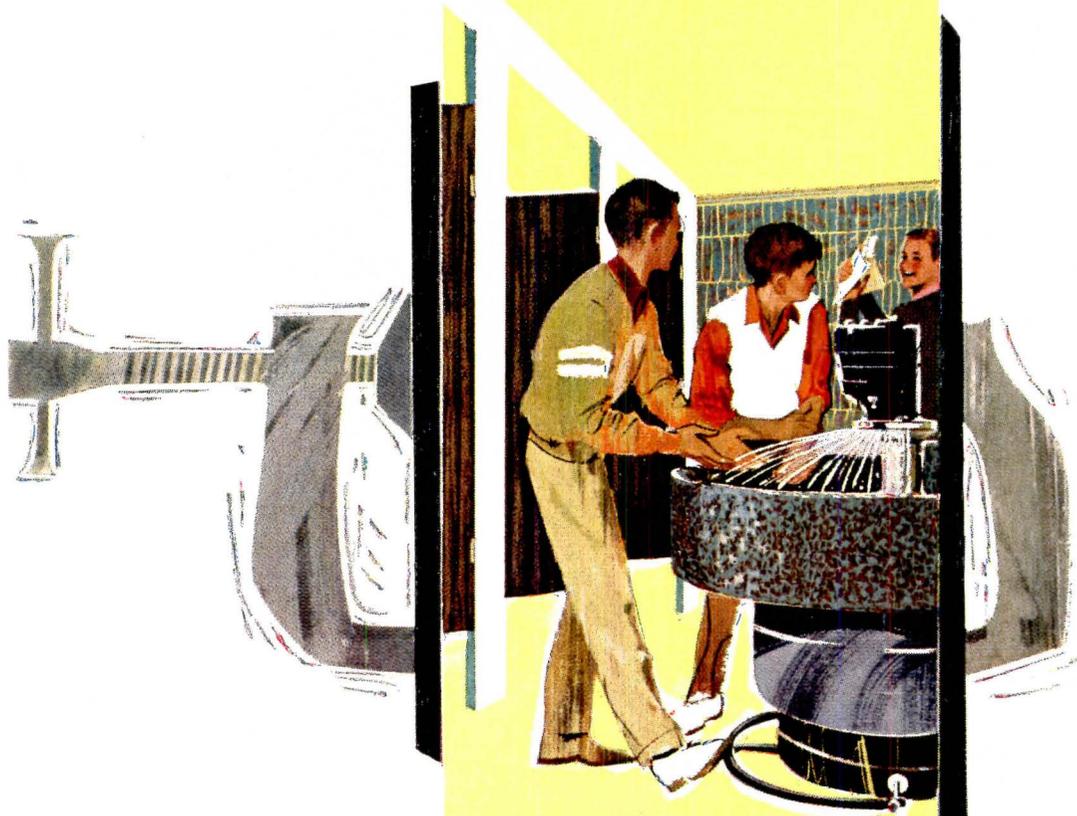
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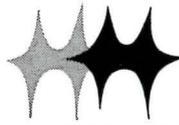
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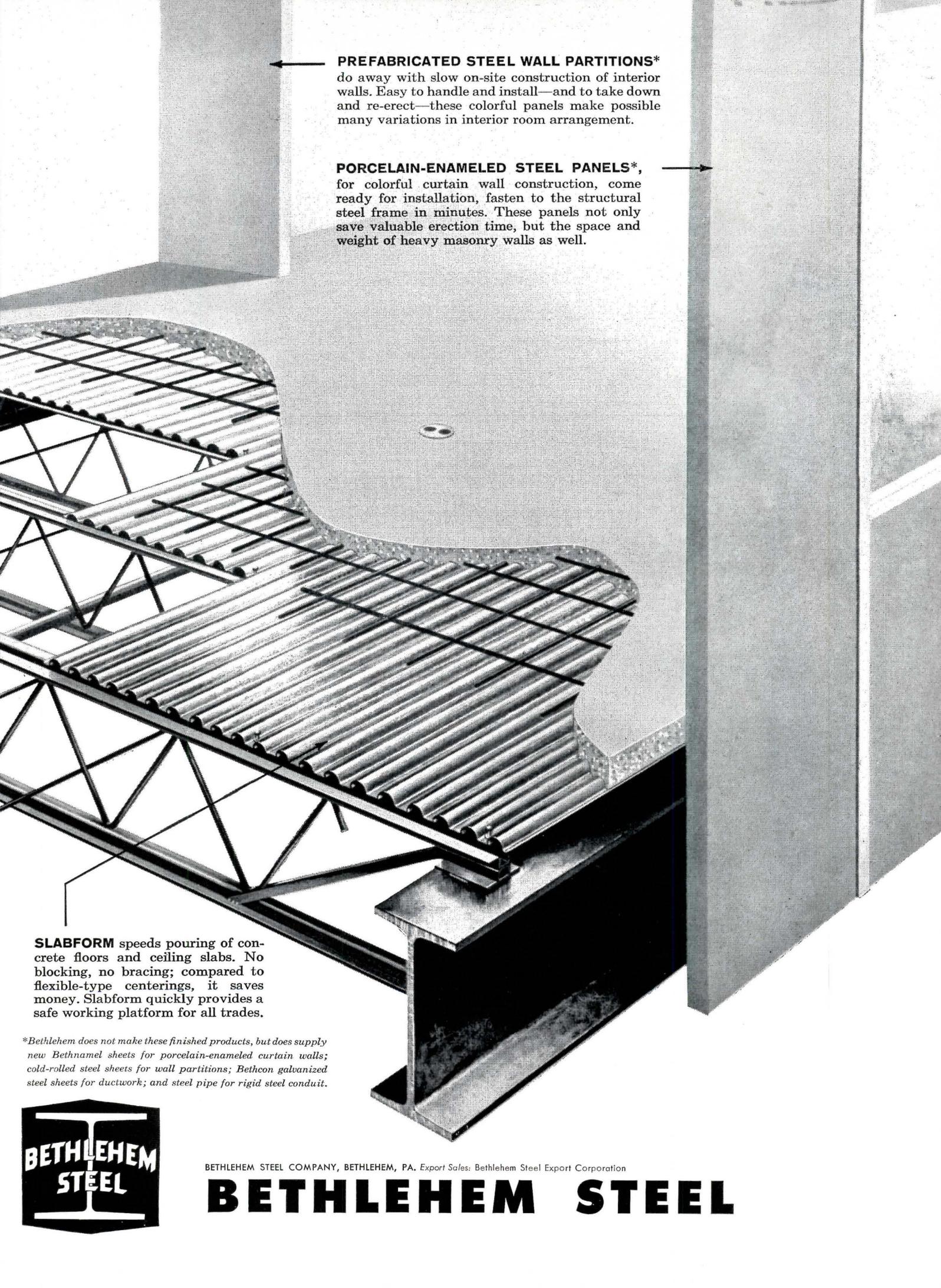
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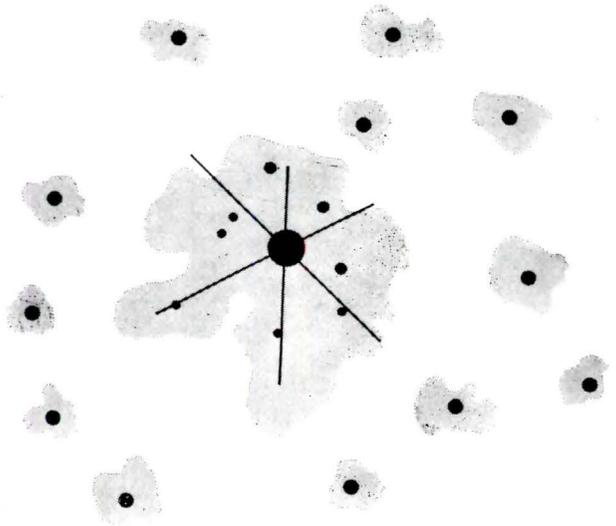
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# DESIGN INTER-CITY GROWTH

*Harvard's Sixth Urban Design Conference*

In 1956, PROGRESSIVE ARCHITECTURE reported the First Urban Design Conference conducted by the Graduate School of Design at Harvard University, co-sponsored by the School's Alumni Association. This year, in April, the sixth in this important annual series was held. In opening the conference, Dean Jose Luis Sert pointed to the manner in which these discussions have followed the increasingly wide scope of urban design itself, from generalized considerations of the shape of the city, and specific analysis of individual elements such as large-scale residential improvements, the urban school, and the influence of the urban institution, public or private, to this year's study of the ever-increasing areas of inter-city growth between the defined city centers.

The procedure that has developed at Harvard's Urban Design Conference is for several panels to meet separately, after a common opening session, to consider different aspects of the same problem, and then report back in a closing session. This year there were four panels, each discussing a possible method of inter-city growth. The topics were New Towns (characterized as *dots* in the inter-city area); Inter-City Corridors (*lines* radiating out from the center); Concentrated Peripheral Growth (considered as *rings* growing around the city); and Rationalized Sprawl. On succeeding pages are condensations of the reports from the four panels. The introduction to the conference was given by Frederick Gutheim; excerpts from his talk are reported below.



## THE NEXT 50 MILLION AMERICANS— WHERE WILL THEY LIVE? By Frederick Gutheim\*

It has become ritualistic to remind ourselves that during the next 40 years the population of the United States will grow by some 50 million, substantially all of which will increase that two-thirds of the present population that lives in the 212 standard metropolitan areas defined by the census. Without quibbling about statistics, let us estimate that the next 50 million people will actually settle in the inter-urban belts that substantially connect today such 500-mile "cities" as Portland, Maine, to Hampton Roads, Va.; New York - Chicago - St. Louis; or San Francisco to San Diego. Sixteen such inter-urban belts may well embrace the future growth of the United States.

The design of inter-urban areas—what happens between cities, and as large metropolitan areas grow—thus becomes a cardinal problem of urban design, an art and a profession that is barely five-years old. Recent advances in aesthetics have made the principles of architectural design applicable to large urban areas as our definitions of perception have

changed. Now the earlier preoccupation with microdesign must be supplemented by an interest more wholly new and less derived from it than our recent concern with the design of central business districts and urban redevelopment projects—the macrodesign of large metropolitan areas.

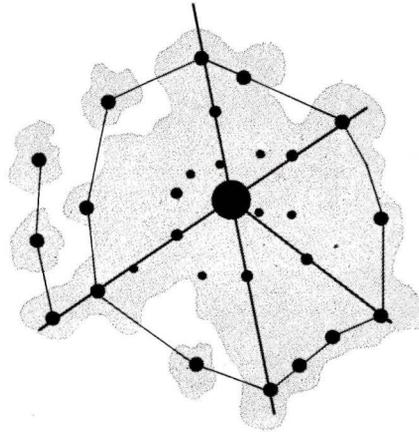
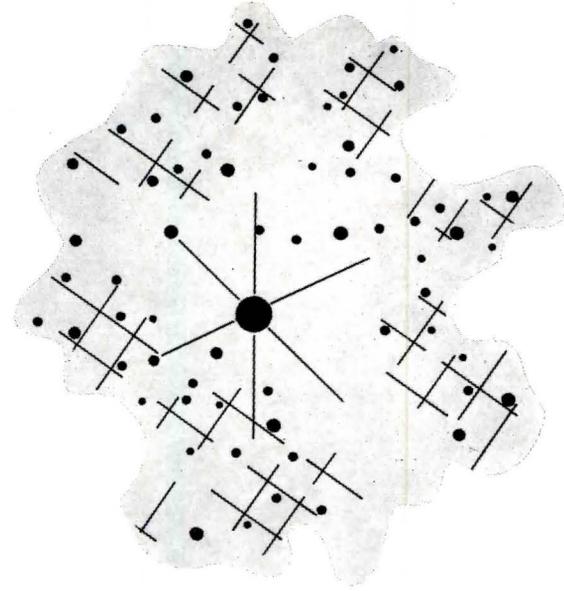
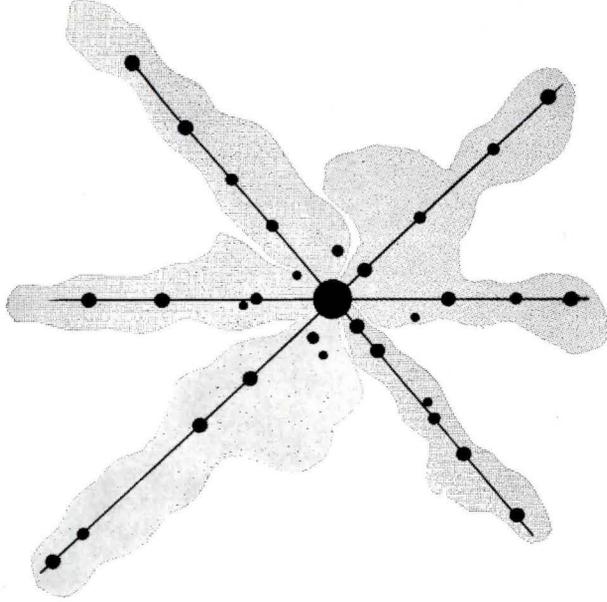
As the pattern of metropolitan areas presents itself as a problem in physical design, a number of well-defined alternatives emerge. Regional planning has been obliged to consider these alternatives, compare them, and make deliberate choices. For the purpose of this conference, four major alternatives were selected for examination. The four alternatives considered by the panels are: New Towns, Inter-City Corridors, Peripheral Growth, and Rationalized Sprawl. We do not approach these alternatives in a spirit of dogmatism, but rather in an experimental mood.

**New Towns** The first alternative is a planetary system of new towns and greenbelts. The experience of the greenbelt towns of the prewar decade and the orientation of our most distinguished urban philosophers, such as Lewis Mumford, have strongly predisposed us toward this plan, and the scale of present-day home building has produced many variations of the so-called garden cities. But

it is the new towns in Britain that have greater relevance. The 15 new towns there have now established themselves as commercial successes, but this limited program has not provided an effective means of coping with the growth of metropolitan London, and it has now been abandoned as an official policy. One of the reasons for its abandonment was a failure—in which design has at least a partial responsibility—to create satisfactory living requirements of urban scale in the new towns. How much of this is due to the earlier ideas of the appropriate size of new towns (from 50,000 to 80,000 population), how much to their character as industrial suburbs, and how much to physical and socio-economic design still needs analysis and explanation. The new towns are, as Mrs. Jacobs has surmised, irresistible to the planner because they offer a fresh beginning, free from social messiness and the complexities of existing structures, utilities, and sites. But, given these opportunities, it cannot be said planners have justified them by developing their design potential.

**Inter-City Corridors** The possibility of reconstructing new urban areas by the expectation that transportation facilities will dominate their form is a dubious contention that smacks of the once-held

\* Washington Center for Metropolitan Studies.



belief that control of industrial development and location would similarly control urban growth and form. In an age of universal personal transportation, the strong structuring influence, which transportation had in 1905 when the New York subways were being built, is unlikely. Nor, from their present position on the sidelines, will planners be able to force new urban masses into uneconomic locations at extra cost, or to run new lines into open lands where it is hoped development of the required densities will occur, while simultaneously existing congested areas demand improved transit.

Corridor growth also invites some skepticism with respect to control over open spaces between the spokes. This has been an Achilles heel of planning in the past, whether it took the form of insufficient public land acquisitions or a breakdown in public controls in the form of large-lot and agriculture zoning.

While the influence of transportation has been the dominant factor in the thinking of design theorists, their expectations have seldom been fulfilled. The finger plan for Copenhagen has not succeeded in giving effective control to growth. One may add that it is far from clear that the transportation-oriented towns of the Stockholm region (Vällingby, Forsta, Arsta) are a satisfactory

answer to the problem of structuring metropolitan growth. Rather they seem, like the Helsinki satellite, Topiola, expressions of housing policy rather than important advances in regional planning.

**Concentrated Growth** The idea of concentrated peripheral growth demands consideration just as much as building on fresh land in the form of new towns or corridors. This pattern keeps the town together as a single unit, with all the practical advantages from the social, economic, and managerial points of view. It is the traditional way in which towns grow, and all that appears necessary is to improve the process rather than to start something radically new, although one may have serious misgivings that the natural growth of modern cities is a healthy process.

Today, we are dealing with an urban revolution that has been expressed chiefly in low-density residential areas, large-lot industries, schools, and shopping centers. This suburban development is in striking contrast to the older cities. A spatial revolution has obstructed any organic relation between new development and the redevelopment of older cities. If design can resolve this conflict, it may be one of the principal recommendations of concentrated peripheral growth as a method of metropolitan development.

**Rationalized Sprawl** Finally we come to the idea of making the best of the new forces abroad in the world—the inherently decentralized influence of the automobile, vacuum tube, and the rest of modern technology. If we put aside the cultural apparatus of conventional urban design, the older image of the city, pedestrian scale and the rest of it, perhaps we can tackle freshly the job of harnessing these new forces and of creating a new urban form. It may have no more connection with the conventional urban image than a painting by Jackson Pollock has with one by Vermeer, but it might be more nearly of our own time. Accepting low densities and transportation difficulties that are inseparable from them, is it possible that the large public costs involved in the patterns of development we find in New Jersey and California may be overbalanced by lower private costs and greater living satisfactions in the eyes of their citizens?

Finally, it is possible that no closer parallel to the topic of this conference, Inter-City Growth, can be found than the laissez-faire city with its complex and interlocking relationships. Perhaps it is here that we can best illustrate the nature of the inter-urban belt as an area allowing access to several urban centers.

FREDERICK GUTHEIM

## New Towns

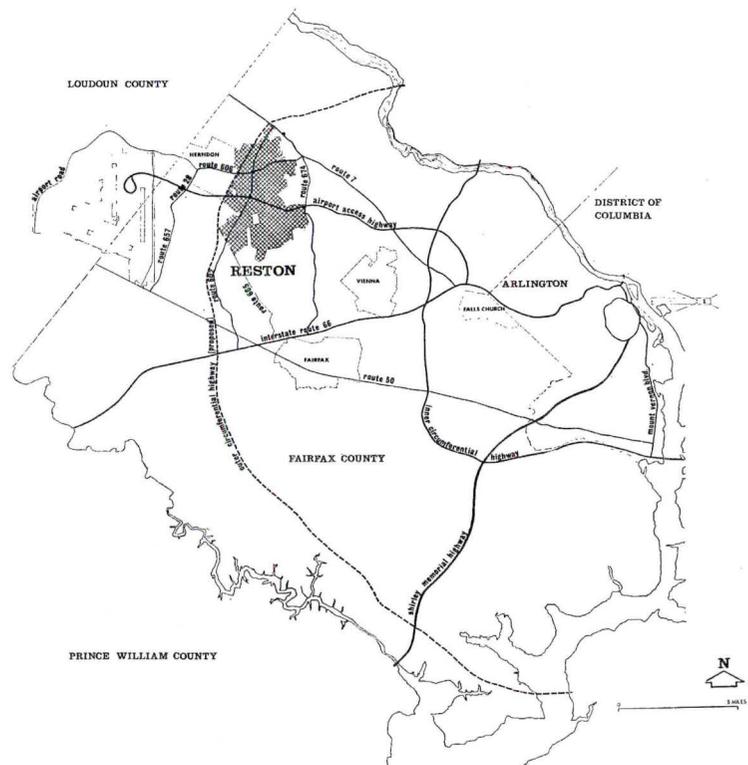
Planned, organized, designed new settlements, but with the recognition of flexibility, are necessary elements in any program for coping with urban growth and sprawl. Whether this is the most suitable answer . . . the fact remains that new towns are springing up currently, and the true issue is whether they are planned . . . or left to fortuitous decision.

There is common agreement that one cannot isolate design of the new settlement as such, and that relation to the surroundings may be determinative of the internal arrangement of the town. This also involves careful consideration of drainage problems, water supply, and natural topography. . . . Decisions about character of the new town take place on an earlier level, and design reflects it.

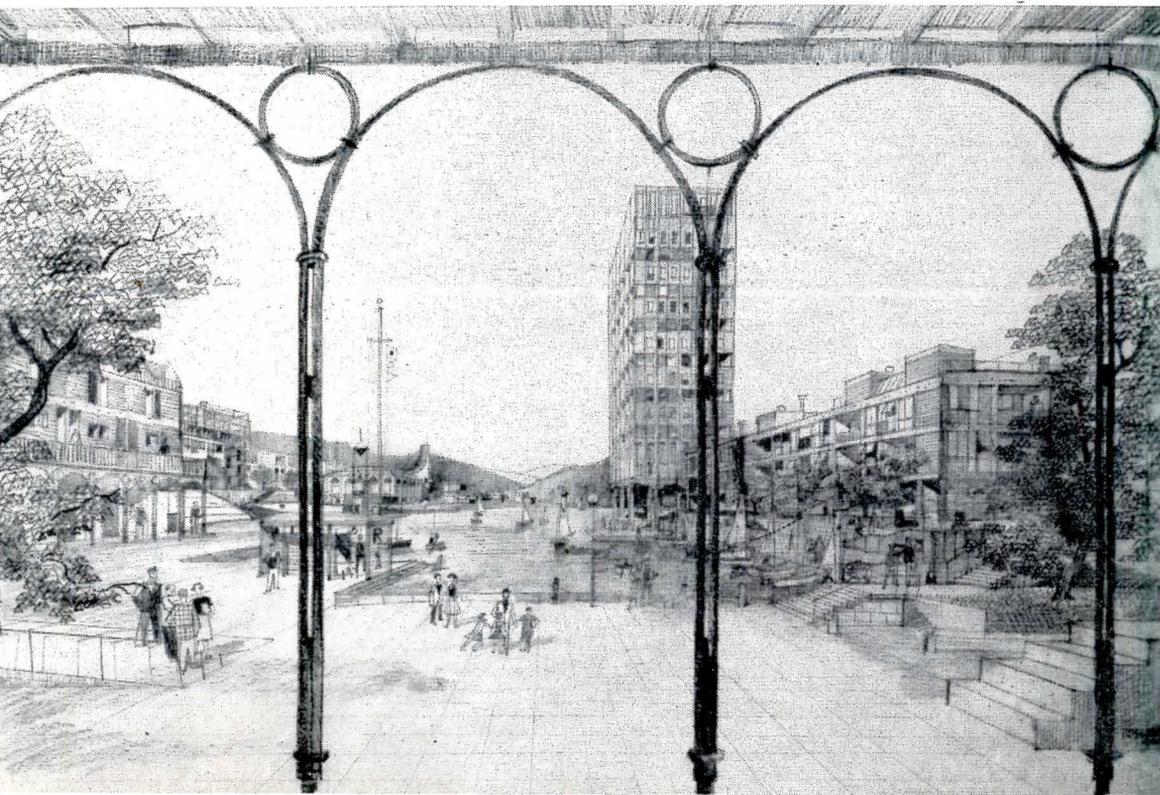
There was agreement that a unique aspect is that buildings and facilities are created at one point of time on a large scale. This may result in monotonous architecture and lack of variety. Hence the special problem of obtaining exciting differences in architectural expression. There was also a feeling that the tendency to regard the new town as prairie planning surrounded by an inert greenbelt was not an answer to contemporary needs.

In attempting some principles of general applicability, it was suggested that a minimum population of 100,000 and a minimum acreage varying from 4000 to a much higher figure should be formulated. Grasping the function and character of the individual settlement is the essential problem. . . . It must, however, still provide sufficient flexibility for individual interpretation by a number of designers. . . . Appropriate but limited possibilities for growth and change should be provided, but no attempt to fix form forever at the outset. . . . The boundary of the new town need not be very wide, so long as it is demarcated from other aspects of the physical environment.

There is a sharp division as to how well-trained the design profession is today and how capable of coping with the challenges of designing new towns. To some . . . the question is somehow to stimulate the developers, the Government, or a new client . . . to others, new towns are inevitable. . . . The focus should be on learning more of the special design potentials of macro-planning and to expand and make use of the thin intellectual capital that now exists.



*Reston, Virginia, is to be one of the new satellite towns in the Washington, D.C., area recommended in The Year 2000 Plan prepared by the National Capitol Planning Commission. It will be a self-contained community, accommodating population growth in Fairfax County and decentralization of Washington's population. The town of Reston is planned for an ultimate 75,000 people, and will be integrated with the structure of the entire region. The 10 square miles of land, in single ownership, is pleasantly rolling terrain about 18 miles west of Washington. Reston will be a complete, balanced town, with various kinds of houses, arranged so that there are "sinews" of higher density housing types, with town houses located along central walkways and activity areas, leading to local shopping centers and schools. Individual houses will be grouped in compact clusters, with wooded recreational areas immediately adjacent. There will be seven shopping and social centers forming the hearts of "villages" with distinct topographical character. Local employment will be provided by light industry, planned in industrial parks, some business, and decentralized Government agencies. The plans show: relationship to environs (above); Reston's master plan (facing page right); a "village" development (facing page left); a rendering of a village center (facing page below). Architects and planners are Whittlesey & Conklin; developer is Simon Enterprises.*



## Corridors

The discussion was approached with the possibility that corridors may be of three types: more or less continuous development between metropolitan centers . . . inter-city corridors between major cities relatively near to one another; metropolitan corridors as spokes of urban development spreading from metropolitan centers into the countryside.

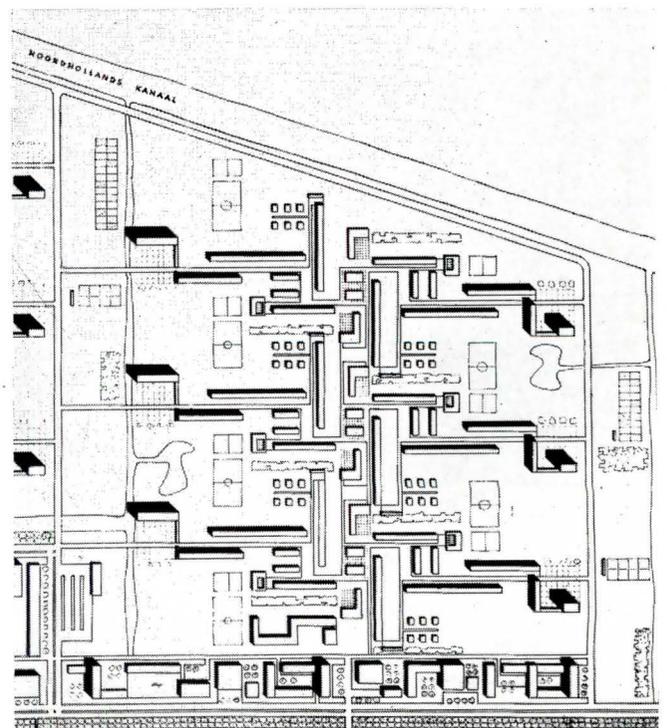
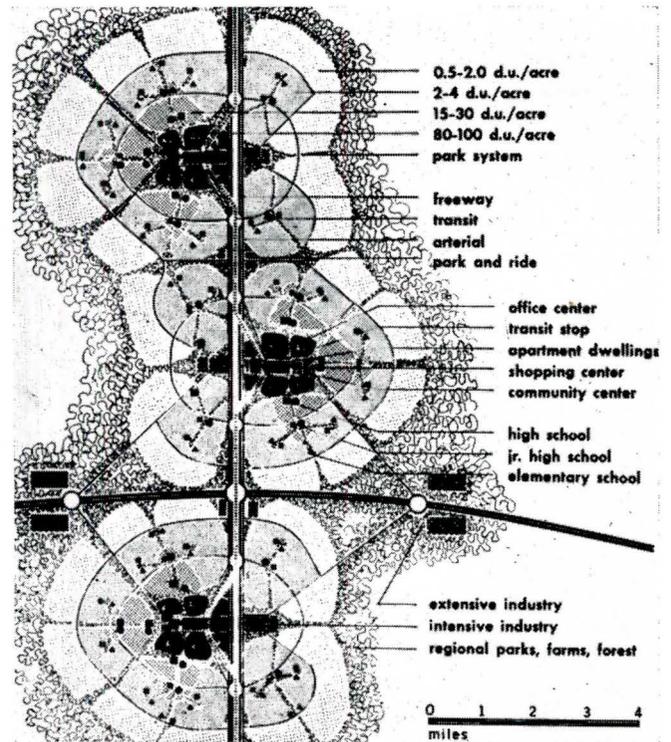
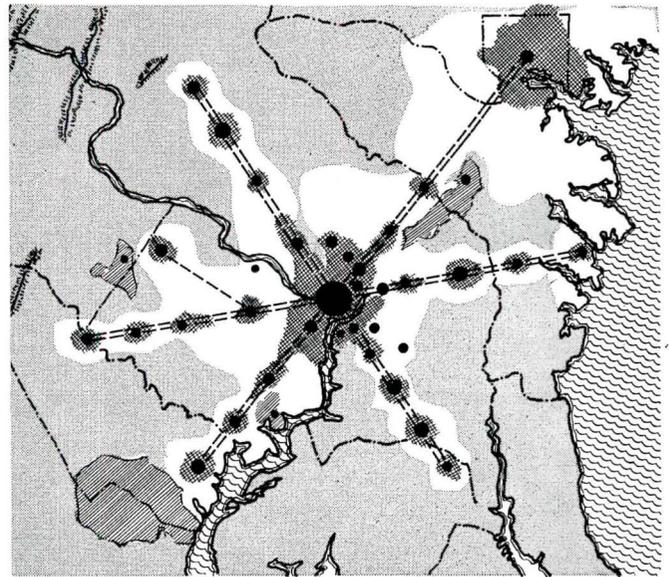
The plan for the year 2000 for the nation's capital [provided] a common basis for discussion. It calls for an inter-city corridor between Washington and Baltimore and metropolitan spoke corridors reaching out to link up new suburban cities . . . Washington, with the Government as a major employer, allows a special solution. . . The individual suburban centers house 30,000 to 50,000 people and may be four to five miles in circumference. The individual suburban cities would still have a peripheral growth of their own.

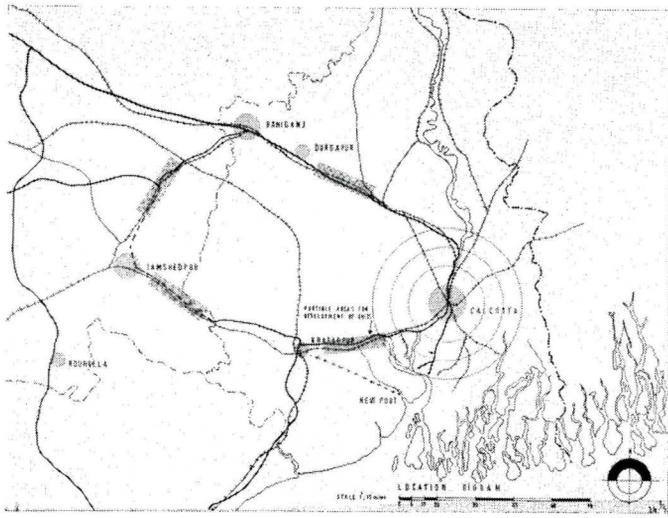
Regarding these points, the panel found a similarity to satellite cities of clusters of garden cities. The corridors, with transit lines and highways, bisect the nuclear suburban cities, which some found objectionable as dividing the communities, even though in design they may be depressed.

Bakema attacked the suburban cities for what he called their medieval town concepts; he felt that they were no different from fortified towns after the walls had been eliminated. Submitting a minority report, he and Woods objected to concentration of high density in the corridor towns, asked for contact with the soil, and argued that the transportation corridor divides the city.

The following criteria were recognized in the design of corridor cities:

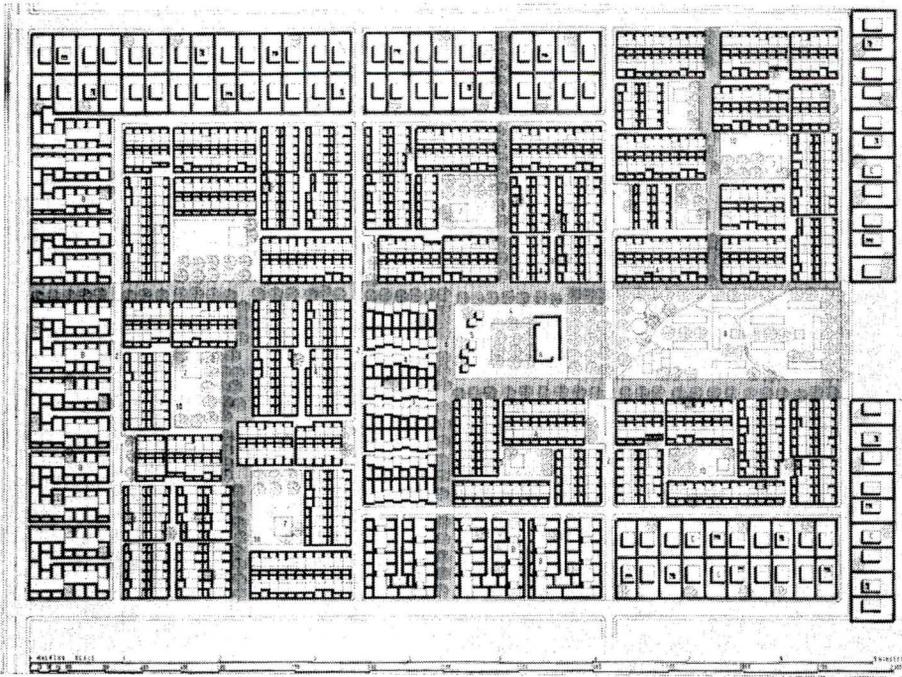
- (1) Easy access to recreational space.
- (2) Easy access to the central city.
- (3) Provision for group life in town centers.
- (4) Maximum choice for individual life patterns.
- (5) Cross circulation between corridors





The Year 2000 Plan for the Washington, D.C., area is shown in the two top illustrations on the facing page. Freeways form corridors along which new towns will be developed. By contrast, Bakema's plan for Amsterdam's growth (bottom, facing page) develops a ribbon without centers of high concentration but with the higher densities, near the highway, in touch with the countryside.

The Harvard student project on this page, by D. Malik, D. Pamir, and I. Erginsav, is planned for India in a rapidly developing area west of Calcutta where population is growing fantastically, and where transportation is by railroad and bus. The system shown is a series of belt towns along major travel routes, linking Calcutta with centers of heavy industry (along the railroad) and light industry (along the parallel highway). Behind these bands of industry lie housing districts, each composed of four housing units about one-quarter of a mile square on either side of a central 500-ft strip of public land for schools and community facilities. Such a district is shown in the central plan. Below is a detail of housing, indicating the mixture of house types, with rural (each family with its own cow) and urban-minded people living together. Housing is mainly self-help, with public services and a utility core provided by the government; but row houses, walk-ups, and custom-built family houses also occur. It is hoped that placing the schools and other community facilities between the housing units will help to loosen the traditional isolationism of caste and income groups. Statistics: 300 acres for a residential district of 3600 households with 16,500 people. Forty-five per cent of acreage in housing; 25 per cent in community facilities; 23 per cent in roads and footpaths; 7 per cent open space for use by the public.



without encouraging intense inter-corridor development.

- (6) Full consideration to uses of open space between corridors by designation as recreation, conservation, farm, institutional and other uses.

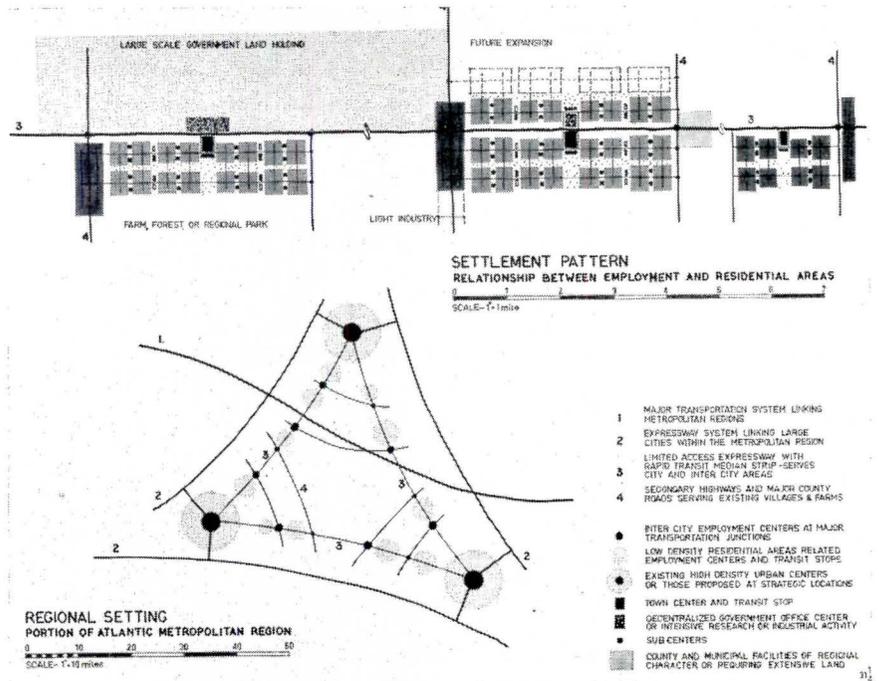
Part of the detailed discussion of corridor connections follows:

*Hans Blumenfeld:* Does the mega-design—the very large metropolitan form which simply means the relation between the total of developed land to the total of undeveloped land over hundreds of square miles—really have any relation to design of the scale of mansions on the ground? I think it is very questionable whether it has.

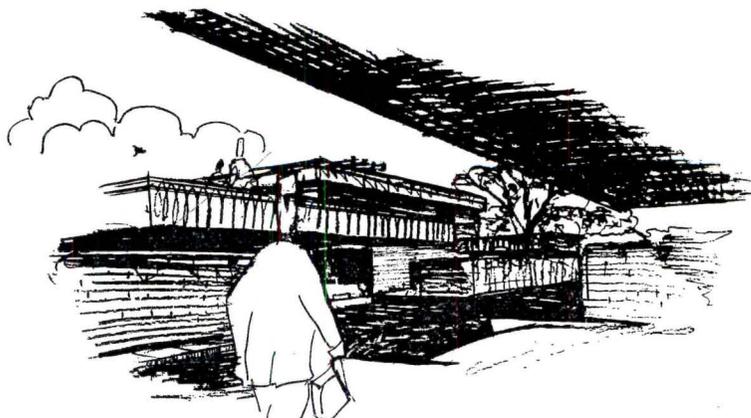
*Roger Creighton:* But does the big problem have any significant difference in terms of *design* from the small-scale one? There must be a different approach, of course, from that between an architect and an individual client. We have to deal with masses of people, and the people have to understand what we are trying to obtain. The search for a new urban form, whether it's lineal or any other restructuring of the metropolitan area, may be chasing a will-o'-the-wisp because we have not been able to attack more fundamental design problems.

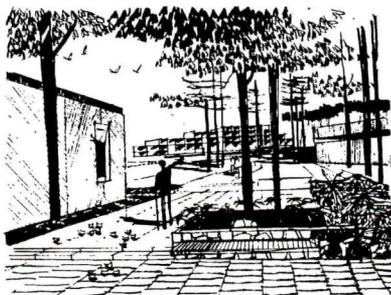
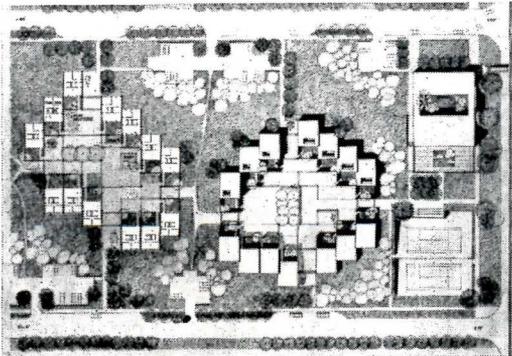
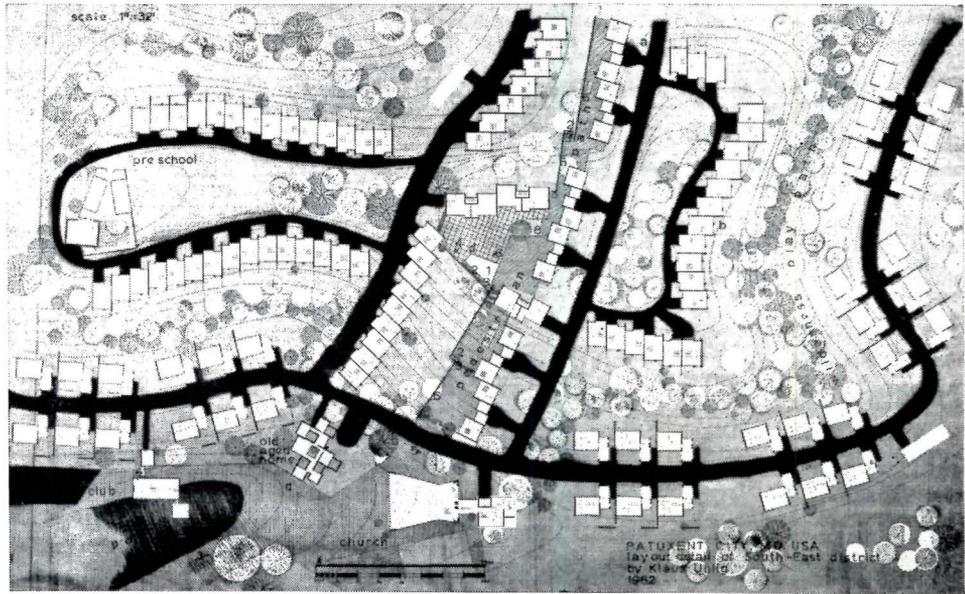
*William E. Finlay:* The alternative to a search for form is the current pattern of complete formlessness. There are values in urban living that can be brought to the people living in cities of 100,000 or 150,000 along a transportation corridor, with the countryside two miles away.

*R. B. Bakema:* We have lost the image of a totalness that existed in the small city. I come from the land of Erasmus and Mondrian (who was very near Erasmus). When Mondrian made a composition, he said: "I am thinking about this part in relation to this and to this," and he was thinking about an additive space. Reitveld said the same thing about



The student project shown on these pages is an inter-city solution for the Atlantic seaboard metropolitan region (a location on the corridor between Washington and Annapolis was studied), where transportation is by automobile and express bus. This is the work of students L. Fry, A. Inodomi, K. Uhlig, and T. van Housen. The aim was to create a system of development, to be carried out by various developers, that would combine household privacy with immediate opening onto "wilderness" landscape, with easy accessibility for the two-car, middle-income family. Inter-city employment and shopping centers are located on access points to the expressway, and the residential developments are approached solely from county roads crossing the expressway (diagrammatic plan above). Only elementary schools, churches, social clubs, and some minimum shopping are provided within the residential areas for about 9000 people (model photo, top of facing page). The basic residential structure is composed of clusters of attached single-family houses grouped around motor courts, but allowance is also made for detached houses as well as garden and high-rise apartments for families without young children. The higher densities about a pedestrian spine, thus making a safe and relatively lively place to walk to the community facilities that are grouped together along a lineal axis. Variations possible are indicated by the three students' individual schemes for segments of the development, on the facing page. Statistics: 424 acres developed for 2400 households comprising 9000 people. Sixty per cent of the acreage in housing; 13 per cent in community facilities; 16 per cent in roads and public parking; 11 per cent open space for public use.





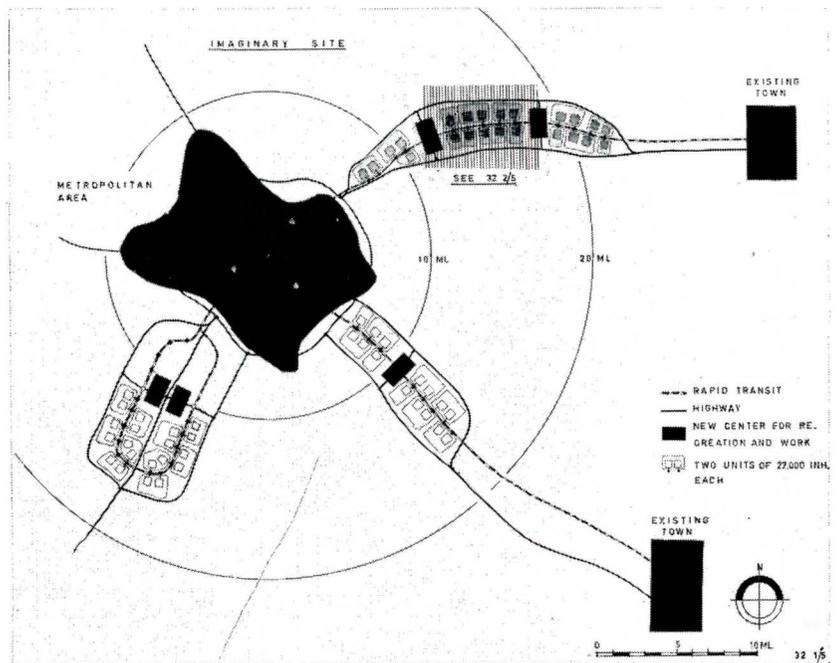
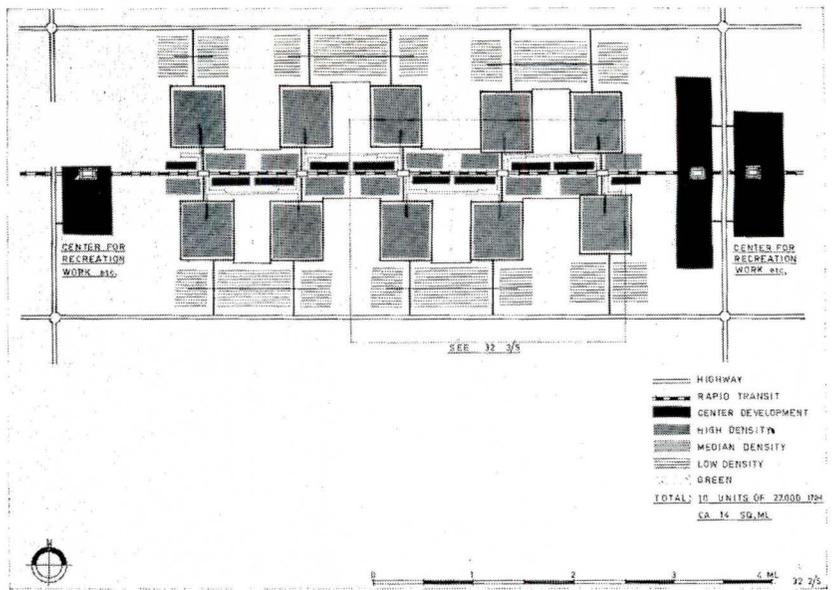
architecture. What was happening then was that we were moving into a society that gave the right to anyone to have, from his own window, a personal relationship to totalness. This meant gardens, the house and the garden. But it also meant traffic. If we don't now try to solve this relationship on the same level as was operating in the medieval city, so that an image of the totalness can be expressed as we move through it, then we are operating at too low a level. I believe that what really relates things is the personal relationship to total space. The only law is that, from any place where you are, you should be able to have a personal relationship to the totality. The new scale for making architecture is no longer the house. It doesn't matter to me if they are bad individual houses if in every house there is a relation to total space on the scale that that family chose as its way of living.

*Robert Geddes:* I think Bakema's plan is a brilliant approach, and if we were able to accept the fact that there are several strongly felt needs—the desire for privacy is certainly a need—we would begin to adopt the same rational approach for each one. But other functional needs do not seem to be as clearly expressed as the way Bakema has expressed the need of the individual and the family for a relationship to open space.

*Finlay:* The Washington plan permits you to live at the outer terminal and work in the center in about a 30- or 40-minute high-speed journey. We want people to live within a certain distance of both interchanges and transportation. We do not think of the road as a divider; architects and engineers can solve that.

*Blumenfeld:* Bakema's project is really a more consistent kind of corridor or ribbon than the Washington plan, because it doesn't even try to get the centers, each for 45,000 people, that Finlay wants. Bakema's ribbon could go on forever. Also, the Washington plan gets the higher densities and the highway at the center of the spine, and Bakema gets his at the edges, where he has wide open spaces, which, in effect, means he gets an almost even density over his land and he disassociates his focus from a high-density district.

*Bakema:* We can control the big-scale elements, like our road systems, only by using the permanent-scale elements as basic planning conditions. Planning, starting always with man and his permanent scale, must be open-minded and based on continuous change (which is life) and continuous—as opposed to contained—space, which is the reflection of our society. Transportation is an adjunct or tool, not a generator of plans.



The third student project, by T. Hazewinkel, P. Heyer, T. Peverley, and R. Weisse, is a solution to an inter-city growth problem in western Europe. Rapid transit and automobile transportation was assumed, and the scheme proposes to create a system of lively settlements with varied house types at different prices which would stimulate rather than detract from the life of the main urban centers. These corridor settlements (shown diagrammatically at top of page) are strips about three miles wide, extending some eight miles between new and existing major centers of work and culture. The strip is bounded by two high-speed roads and has a rapid-transit line (but no road) as its spine. The transit stations act as pivotal points of this commuter corridor, and shopping, high school, and community services cluster alongside them. Just beyond the station area, a pedestrian way runs at right angles to the transit line. This is bordered by schools and churches, behind which are housing units. Beyond this quarter-mile band is a parallel strip of less densely developed housing units, and, still further out, a wider strip of loosely organized automobile-oriented houses with immediate access to the bounding highways. Four adjoining segments of the settlement, by the four individual students, are shown on the facing page, with the over-all plan at top of page. Statistics: 890 acres for a settlement of 8393 households comprising 27,000 people. Fifty-eight per cent of the area is in housing; 9 per cent in community facilities; 3 per cent in public parking; 7 per cent in roads; 23 per cent in public open spaces including parks, pedestrian ways, and highway buffer strip.



**• ADDRESS**

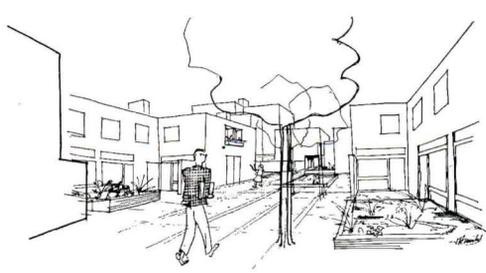
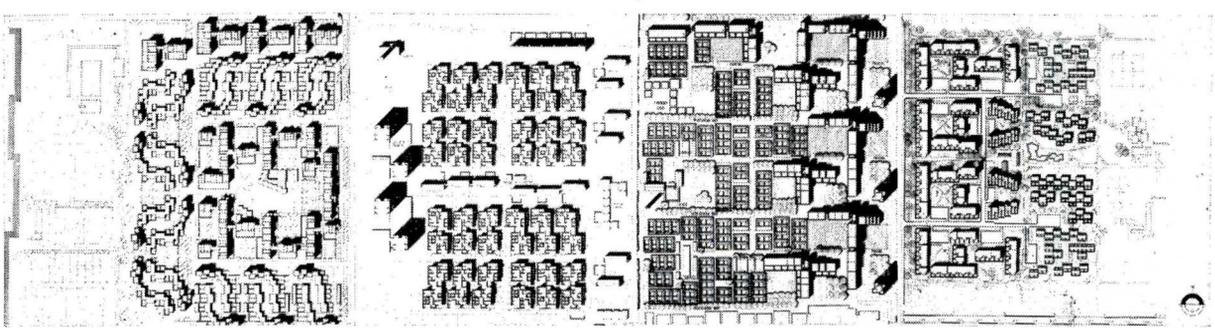
• CENTER AREA	43
• FEEDER ROADS	35
• BUILT-UP AREA	514
• LOCAL ROADS	32
• PUBLIC PARKING	23
• ELEMENTARY SCHOOLS	24
• SEC. SCHOOLS	13
• OPEN SPACE	236
Includes: sports fields, playgrounds, parks, squares, boulevards	
<b>TOTAL</b>	<b>880</b>

**• TYPES OF DWELLINGS**

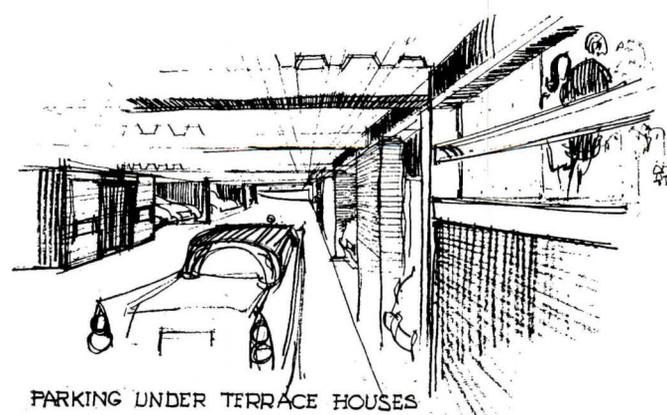
	Units	one family	two family	three family	four family
• CENTER	100	430	100	100	100
• HIGH DENSITY	1000	200	100	100	200
• MEDIAN	100	400	100	100	100
• LOW	100	100	100	100	100
<b>TOTAL</b>	<b>1300</b>	<b>1030</b>	<b>400</b>	<b>400</b>	<b>500</b>
<b>TOTAL DW.</b>		<b>833</b>			
<b>TOTAL INH. (ratio 3.75)</b>		<b>3120</b>			

- LEGEND**
- RAPID TRANSIT
  - HIGHWAY
  - PRINCIPAL FEEDER ROAD
  - LOCAL ROAD
  - PEDESTRIAN AREA
  - PUBLIC PARKING AREA
  - GREENAREA + SPORTSFIELDS
  - CENTER DEVELOPMENT
  - MEDIAN DENSITY (see family housing)
  - LOW DENSITY (car oriented one family housing)

1. RAILROAD STATION
2. SUPERMARKET etc.
3. PUBLIC FACILITIES
4. SPORTING FACILITIES
5. SWIMMING POOL
6. GOLF LINK
7. SEWERAGE STATION
8. HOSPITAL
9. JUNIOR COLLEGE
10. HIGH SCHOOL
11. ELEMENTARY SCHOOL
12. NURSERY SCHOOL
13. CHURCH



PEDESTRIAN WALK LOOKING TO TOT LOT



PARKING UNDER TERRACE HOUSES

## Peripheral Growth

The organic growth of cities is a circular, radial, peripheral pattern as the forces of circulation and other physical realities generate the total form. As this model is closer to an urban reality, it is more easily controlled. . . . It does not have the vagueness of the in-between or gray areas that are inherent in some of the other systems. It was thought a questionable aim . . . to try to achieve green wedges coming into the city itself. The peripheral growth system, due to its proximity of internal relationships, can provide the greatest choice; rapid access should facilitate movement to choice sources.

The suburbs are often an attraction to the status-seekers, but we should start to develop status notions relative to concentration and dispersal. . . . We must state not necessarily what we would like but where we believe development should and will go.

The creation of new peripheral centers or nodes in the growing urban fabric

must not weaken the central focus, but rather complement and reinforce it. The problem is how to foreclose the destructive competition to the central focus and establish complementary relationships. It was felt that after a certain urban size had been reached, some of the centering forces could then be disseminated, creating new functions in new centers but still keeping the philosophy of support rather than a draining off of the lifeblood of the central focus.

Part of the detailed discussion of this panel follows.

*David A. Crane:* One interpretation of the terms of this panel is a ringed city with zones of concentration at the edge. Another might be points of concentration at certain well-selected places around the circumference. Both of these are concepts of placement and location in the shaping of the metropolitan environment and against the notion of flat-density zoning.

*James Murray:* If the scale of relation-

ship between a man living on the periphery and the central business district is phony, one of the main arguments for the peripheral system vanishes.

*Edmund Bacon:* If, as you grow, you make a policy that is firm for the whole land use, and support it rigorously by public control and public ownership, you will have a better long-term development than if you move out along a corridor and say, "This land between we will leave alone." These become areas that are not alive.

*Sigfried Giedion:* The architect and planner, like the doctor, must judge from symptoms but then must have trust in himself. We have to invent a dignified way of life to meet the conditions of our period.

*Kevin Lynch:* Both doctor and patient have the same values: they want health. But there may be basic disagreements when we are developing the city environment. It's risky to consider that people don't really realize what they want.

## Rationalized Sprawl

This panel confronted the fact that emerging land use and settlement patterns in the United States are not necessarily marked by clear boundaries, by segregation of similar establishments, or by clear density gradients. No predetermined form can rationally be imposed upon either the settlement pattern or upon the internal land-use distribution.

Declining relative costs of transportation and communications are equivalent to a melting of the most powerful glue that has held urban populations within high-density agglomerations. Now, for the first time in human history, we face the possibility that urban settlement need not be agglomerated at high density around very-high-density centers.

Unlike the centralized controls that attach to project design, most locational decisions within a region are made by individual establishments operating within a market framework. Some things that governments do can influence the market conditions in fundamental ways, and, hence, can effectively influence the locational decisions that individuals make. Our understandings of the urban growth processes are very limited, however; and

. . . regional plans cannot be prepared in detail. At best we can set desired directions for change.

The spatial patterns most consistent with the life-styles of middle-class, industrial America will surely be disparate, and pluralistic. In a complex society, order, including the order of urban design, lies in diversity. . . . We conceive urban design as a continuing, never-ending, unfolding process that is minimally committing and that does not inhibit the next evolving step.

Part of the detailed discussion of this panel follows:

*Melvin Webber:* We are seeking to deal with a problem whose solution is not predetermined, and we are willing to accept people's preferences as expressed in the market on the presumption that on some points they know better than we do. This is not to abrogate our responsibilities as planners, [but] we cannot seek to design to a cartoon lineal, radial, or new town pattern.

*Hideo Sasaki:* It seems to me that one can have a certain over-all design control and still permit people to exercise freedom of choice within this. We have to

have a constitution within which there are many freedoms of choice, but there has to be the over-all framework of a design order.

*Morton Hoppensfeld:* A loose pattern of development is consistent with our technology and a great number of physical and nonphysical phenomena, and there are, in other areas, systems of ordering that correspond to what we call sprawl.

*Joseph R. Passonneau:* The "free market" is a highly artificial game played by a set of rules designed by a favored few to insure their own winning. As the cost of transportation goes down, it is no longer a parameter in the urban equation. But the question I am interested in is: "What forces will now dictate location?" I answer: "Urban design." And the forces that will guide the urban designer are the increasing frictions of competition for space and place—a valley of Sasaki's trees, or ranch houses smeared all over the landscape; an old neighborhood preserved, or new porcelain enamel towers. Stated perhaps too emotionally, I think we have to decide whether we want to make a garbage dump out of a lovely planet.

## FOUR TRENDS

*By Catherine Bauer Wurster*

If what I have to say raises some different issues and even confuses the discussion, it is because I intend it to. I am not sure that the most fruitful approach is to focus on physical patterns rather than the inter-city structure, including the communications systems, government structure, and social organizations: the reason for city agglomerations.

Structure doesn't necessarily follow the pattern, and the same pattern can have many different meanings. There is, for instance, the standard urban diagram, assuming that the center is a high-density area and that there is scatteration outside. Traditionally, for thousands of years, that would have meant farmers outside and traders inside. At certain periods, it would have meant a citadel in the center and the enemy encamped outside. It could also mean a division between the rich and the poor, which has reversed itself historically. It could mean, ideally, that the people who like to live in high-density accommodation live in the center, and those who like to live in low-density accommodation live outside, but I feel that this is very rare.

I want to deal with two rough but basic kinds of measurement—a loose pair of co-ordinates, with hundreds of variables providing a system useful up to a point.

The first dimension is obvious: it ranges from dispersion at one end to concentration at the other. This is oversimplification, but in general American terms it is represented by exurbia at one extreme and Madison Avenue and Wall Street at the other.

The other dimension is more difficult to define. It is based on an axiom: that centralization implies integration with some sort of coherent organization at some urban level, just as it does in industrial production. Between the neighborhood and the region or the state, there are still what might be called urban functions—various activities carried on by inherently variegated people, but requiring some kind of government to resolve their differences and to provide the necessary services. So the question is: At what level is there a significant degree of integration within a big regional agglomeration? This variable can

range from the metropolitan super-city through several mutations to a group of smaller urban communities.

There are visible trends and forces pushing in four directions today. The dominant push certainly seems to be centrifugal, toward dispersal, low density, and scatteration. The simplest way to state this force is as a demand for private space: maximum freedom on the site for industrial production, shopping centers, schools, and above all for middle- and upper-class family life, including the desire for second homes. This escape from the complexities of the big city represents private values. It is made possible by another kind of private value: automobility, moving from one place to another in a piece of your own private property, in your own way, at your own time.

However, choice is possible only for limited groups, and there are, of course, modifying factors: we need a wider range of dwelling types, even in suburbia; there are limits to the acceptability of long journeys to work; it has not yet been proved that a house with a smaller yard in a more urban community would not be preferable to the present suburbias.

What are the forces pushing for concentration: the centripetal forces that indicate a preference for propinquity and certain kinds of diversity of contact at the expense of private space values? We have the revival of skyscraper office buildings since the war: obviously the choice of certain kinds of business. But there is no evidence that face-to-face contacts within walking precincts is an absolute economic need for business.

The other major concentrating force is largely involuntary: most lower income families are forced to concentrate in urban centers simply because there is the only source of cheap and unrestricted housing. There are new efforts to revive central cities, which are already having a concentrating effect. Urban renewal and redevelopment programs almost invariably tear down at one density and rebuild at a higher one. The present push for mass transit is mainly to save the central city and to make higher densities more feasible. Many questions have to be answered before we can say definitely that these programs will be successful in a big way.

These questions lead us into the other

dimension. The widespread dispersal of certain functions, while others remain highly concentrated, reflects a trend toward region-wide specialization; a pattern that can have no significant degree of social, economic, or functional integration below the metropolitan level. The central city has more and more predominantly low-income minority families who require very expensive services and with no larger tax base than it had before; the outlying middle- and upper-class communities vie with each other to get an industrial base, in order to provide superior services which have no benefit for the great majority of the employees of the industry. This is obviously a highly specialized pattern which could be integrated only at the level of Federal taxation—and of course that won't happen until the emergency situation is considerably worse.

There are some signs of an interest in the other direction: toward a degree of subregional integration. Some urban-renewal efforts are trying to provide for upper and middle income families on the grounds that their employment would be near by. Also, there are proposals every now and then for satellite communities within a metropolitan plan. But there is no use talking about a relatively self-sufficient community in a new area if you can build housing on new land only for the top third or top 40 per cent of the population.

My original pair of variables poses a wide range of choices of form and structure. In practical terms, I can settle on four possible directions.

One would be present trends projected: toward more dispersal on the one hand and more concentration on the other. ("There is nothing serious that cannot be solved by better transportation and central renewal.")

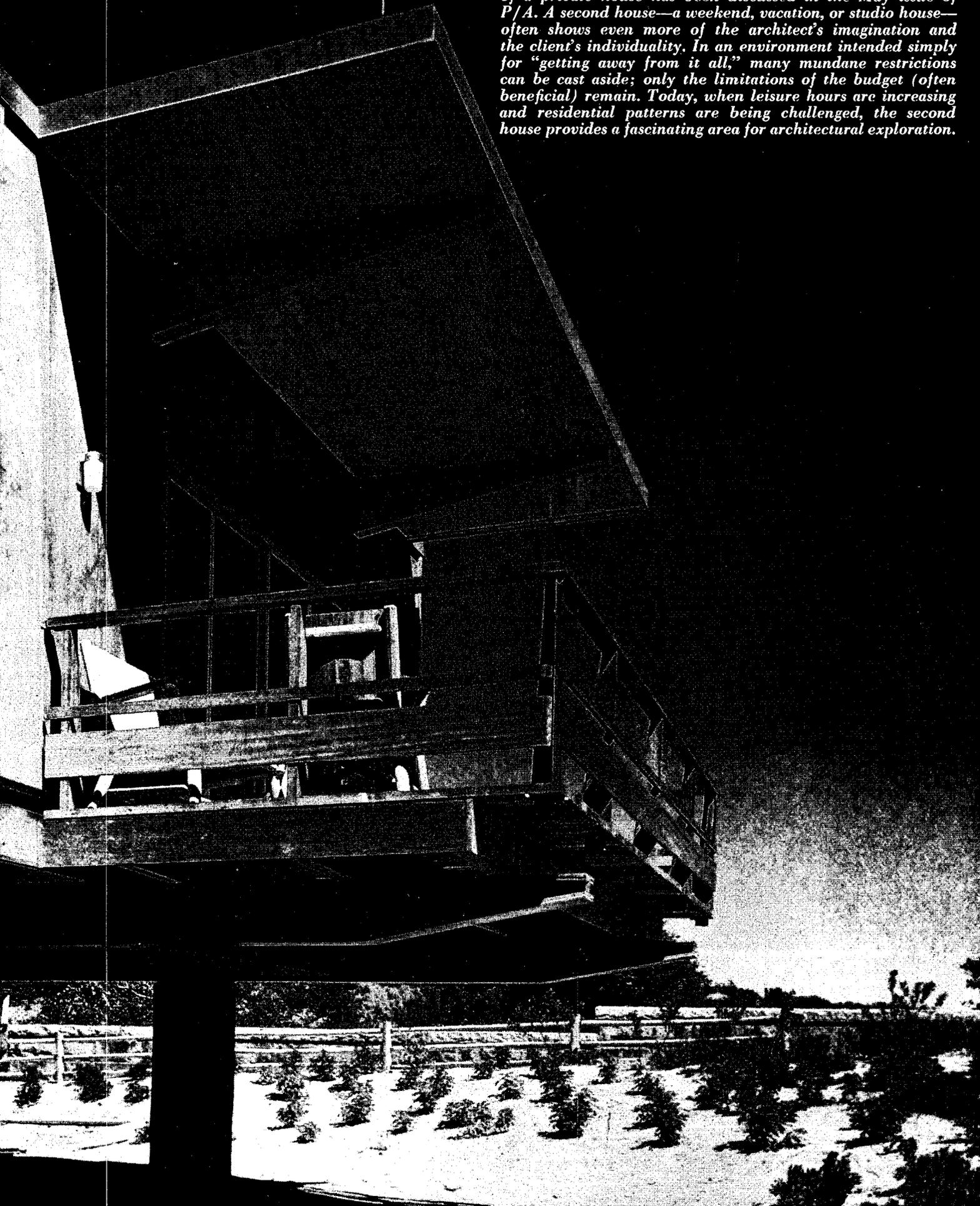
The second would be toward general dispersal. ("Let people have what they want: space and mobility.")

The third would be toward a concentrated super-city. ("The metropolis is a single great city. Pull it together and urbanize it.")

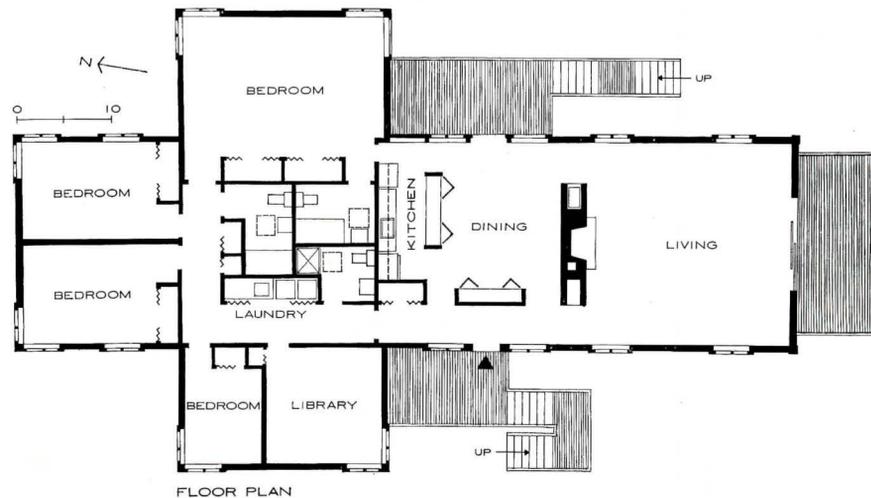
The fourth would be toward a constellation of relatively balanced and relatively compact cities. ("The Behemoth is too big for a single city. Guide growth at least into relatively independent communities.") My own bias is toward this last direction.

# SECOND HOUSES

*The intense personal involvement that goes into the creation of a private house has been discussed in the May issue of P/A. A second house—a weekend, vacation, or studio house—often shows even more of the architect's imagination and the client's individuality. In an environment intended simply for "getting away from it all," many mundane restrictions can be cast aside; only the limitations of the budget (often beneficial) remain. Today, when leisure hours are increasing and residential patterns are being challenged, the second house provides a fascinating area for architectural exploration.*



## Seaside House



HOUSE AT PRIDE'S CROSSING, MASSACHUSETTS • LAWRENCE, SHANNON & UNDERWOOD, ARCHITECTS AND ENGINEERS

This house on the sedate North Shore was intended mainly for summer use, but is also open for occasional weekends and vacations throughout the year. Plan requirements included four bedrooms, three baths, a library, and a dining area partially separated from the main living space. The kitchen was to be a control center, in touch with all parts of the house and the outdoor living areas.

The site is an irregular sliver of land extending several hundred feet inland from the sea, but narrows to a width of only 80 ft near the water. Allowing for required setbacks, the "buildable" area was only 40 ft wide.

The unusual contours of the site presented a problem. Instead of rising steadily from the sea, the grade climbs sharply to a sandy bluff about 30 ft

inland from the high waterline and then drops 8 ft to a meadow. Except for a few trees located well back from the shore, there is little vegetation. On the crest of the ridge, however, wild roses and sweet fern grow in profusion.

Although the owner wanted the house to be close to the sea, it could not safely be sited less than 100 ft from high water. It was decided at the outset that the major rooms would have to be on the second floor to obtain a view over the bluff. As the design proceeded, it was clear that the entire house should be raised 8 ft above grade.

The principal design problem was to create a form that would compose well with concrete piers. A flat-roofed structure of cruciform plan was chosen and divided into panels by an exposed wood frame. Because of the severe exposure to salt spray, solid mahogany members were used to frame panels of marine-grade mahogany plywood. The stock

panel size of 4' x 10' established a design module for the entire house.

Because there is no natural shade, window areas had to be kept relatively small. Only on the south end of the house, facing the sea, were larger areas of glass used, and these are shaded by a deep overhang. Corner windows were used in the bedroom wings to lighten the structure visually, to provide the best possible views, and to facilitate furniture arrangement.

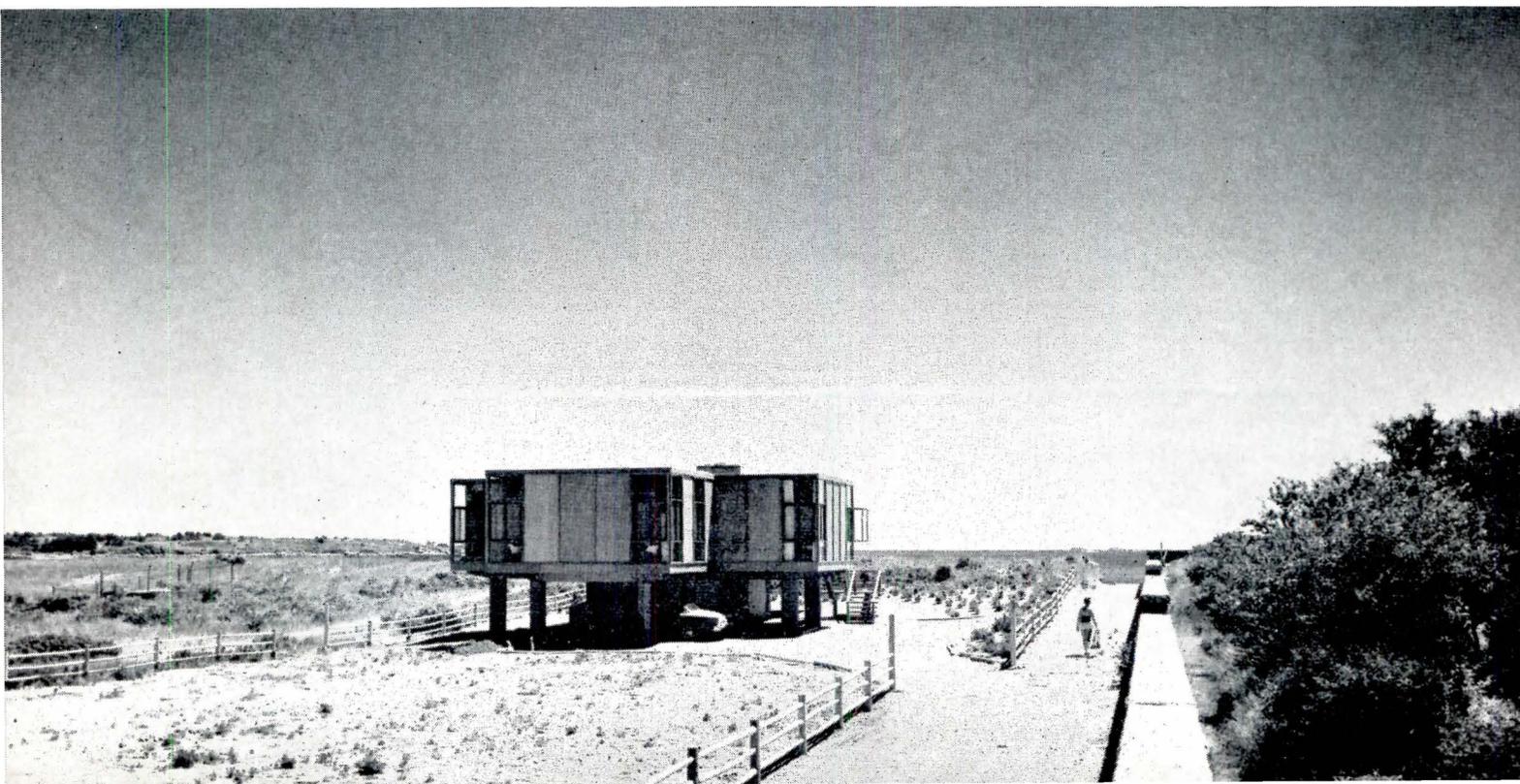
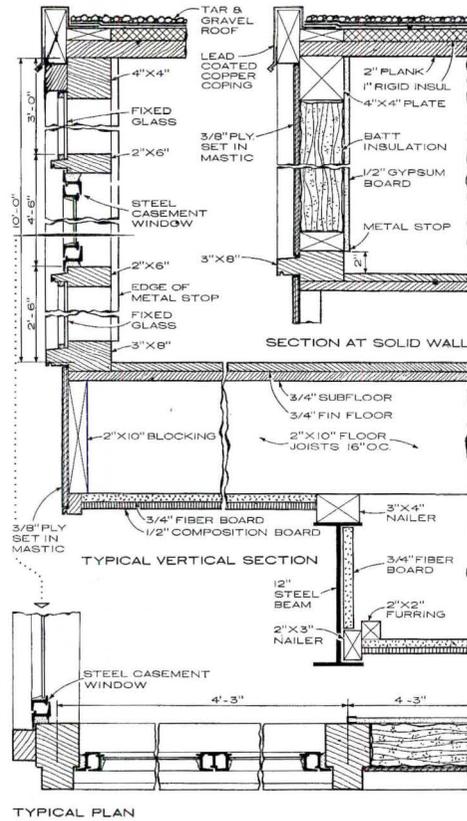
There are two enclosed spaces on the ground-floor level, a heater room, and a storage room. The high heat loss from all surfaces of the house was partially offset by using the entire upper floor structure as a return air plenum.

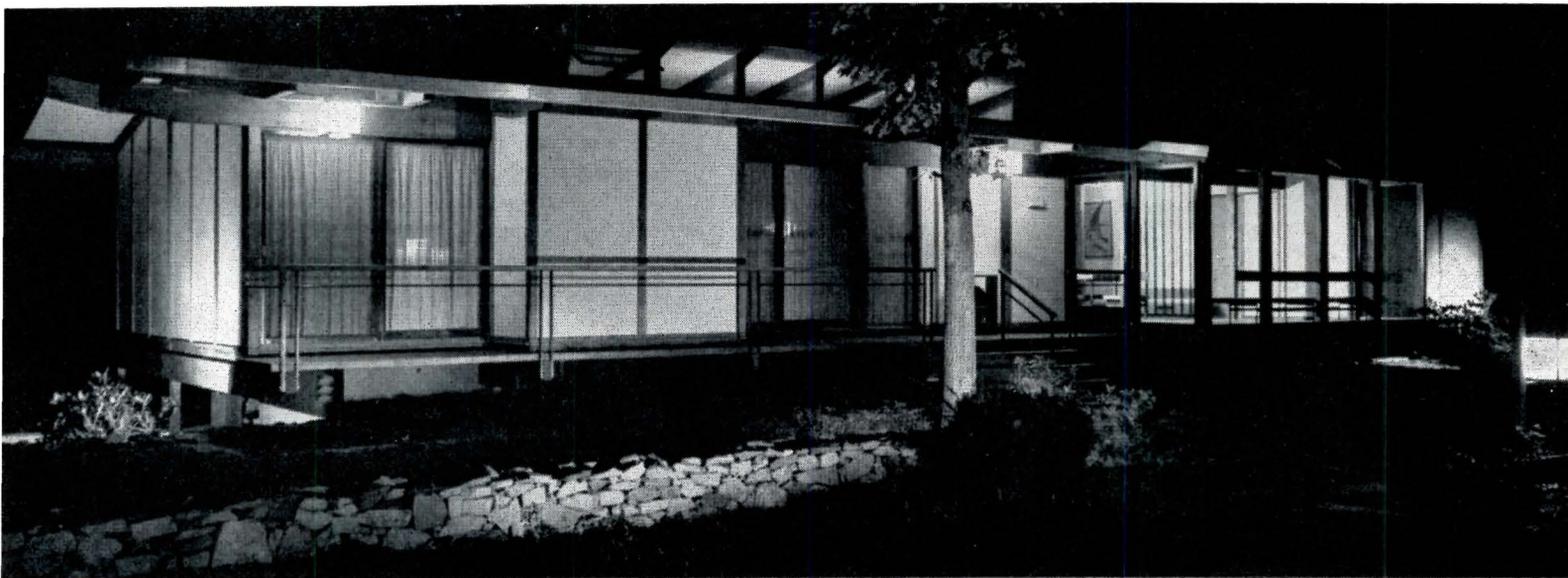
There was no earth-moving whatsoever. Each column footing had to be individually tailored to the variable subsurface conditions. The final cost of construction was about \$61,500, or \$19.84 per sq ft.



PHOTO: COURTESY OF ARCHITECTS

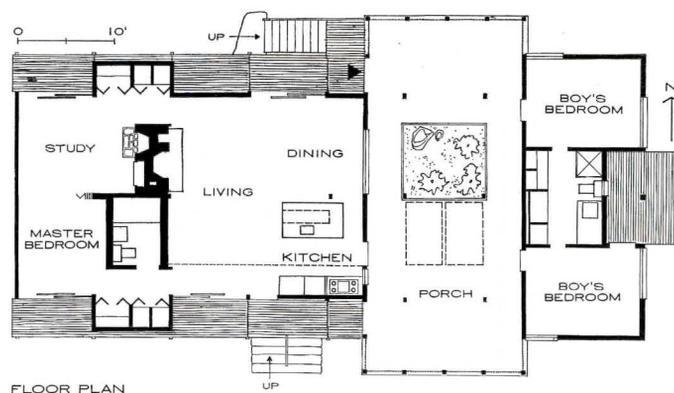
Corner windows high above grade (above) ensure a good view of the sea from all rooms. The concrete columns and tapered steel beams support the wood structure. The panels of marine-grade mahogany plywood set between framing members of solid mahogany (detail at right) provide a weather-resistant enclosure and establish a module on which the entire design is based. The sparsely planted site (below) was left almost completely untouched.





PHOTOS: ULF FREDRIK WAHLSTROM

## Vacation House



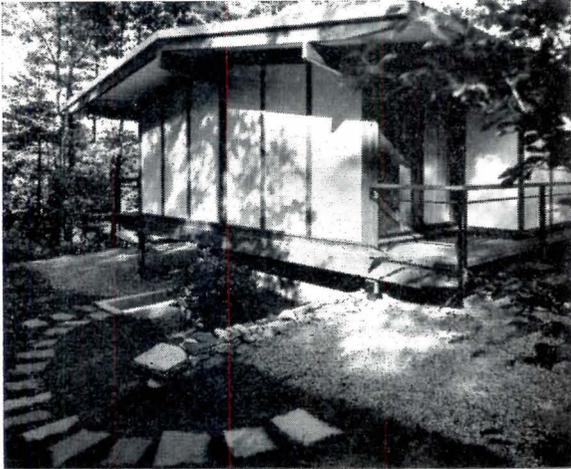
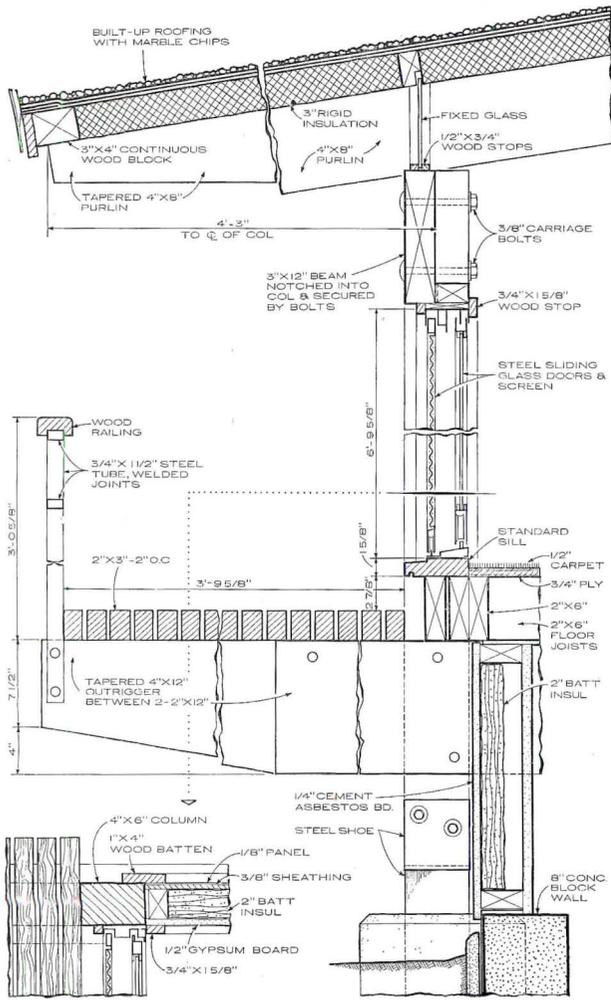
HOUSE AT FOXBORO, MASSACHUSETTS • ROLLAND D. THOMPSON, ARCHITECT

The architect wanted a year-round vacation house for his own family. Principal requirements were: a large outdoor living area, screened against insects from the adjacent lake; two isolated bedrooms (each large enough for two beds) for the two teen-age boys; a kitchen integrated with the major living space; a mechanical system that would make it easy to open and close the house for weekend use, even in the coldest weather. The possibility of converting the house to year-round use, either for

retirement or for sale to others, had to be considered.

The one-acre wooded plot is on the south side of an 11-acre lake and is surrounded by 165 acres of land owned by a family corporation. Although the house is in a heavily populated part of the state, only uninterrupted woods are visible around the lake.

The structure has been raised above grade to increase the apparent size of the clearing and thus mitigate the feeling of being hemmed in by trees. The exposed post-and-beam redwood structure gives a rhythmic order to the entire house. Large areas of glass provide un-



PLAN SECTION AT CORNER

WALL SECTION

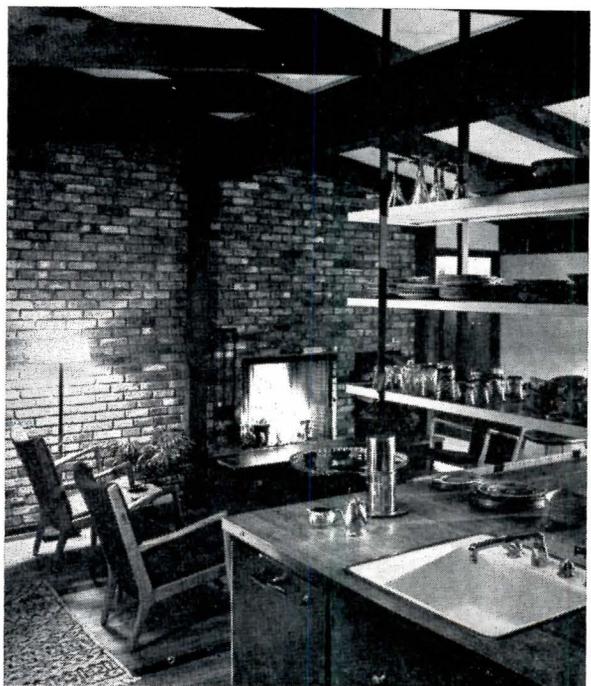


obstructed views of the woods. Balconies give each of the major rooms a definite relationship to the outdoors, without bringing them into contact with the ground.

The pitched roof with wide overhangs gives a sense of shelter to balance the openness of the walls. Panels of glass between the purlins over the eave beams lighten the roof structure visually. A clerestory over the main living space lets in filtered sunlight and gives a view of the treetops.

Most of the materials chosen require no refinishing. Walls are finished with enameled asbestos-reinforced panels on the exterior and covered with plastic wall covering on the interior. Floors are of redwood and quarry tile. The sliding door frames and balcony railing supports are of black-painted steel; although the steel will require repainting, it was chosen for its thinness of section and appropriate color. Dark purplish marble chips have been used on the roof to make it less obtrusive among the trees.

A graveled area immediately surrounding the house keeps out dirt and simplifies landscape maintenance. The small existing clearing to the south has been planted with grass, but will eventually have a maintenance-free ground cover. Plant materials that thrive in the shade—such as dogwood, rhododendron, pachysandra, ferns, narcissus, and myrtle—are being planted according to a plan by Landscape Architects Robert Zion and Harold Breen.



*The activities of the house focus on the central screened porch (top). The hanging lamps were designed originally by Steinhart & Thompson for a restaurant. The living-dining-kitchen area (above) and the parents' suite (left) have back-to-back fireplaces in a massive brick chimney.*



PHOTOS: ALEXANDRE GEORGES

## Studio House

HOUSE AT SARASOTA, FLORIDA • WM. RUPP, ARCHITECT • JOSEPH FARRELL, ASSOCIATE

The clients, a young couple both of whom are artists, requested an "exhilarating environment for the lowest possible cost" for themselves and their three small boys. They were willing to tolerate minor inconveniences in planning and equipment and to accept rough finishes for the sake of spatial drama.

Although the family is now living in the house year-round, it will ultimately serve as a guest house and studio for a larger house on the same site. Planning requirements could therefore be very simple.

The site is in an old, built-up section of the town, but it is well screened by lush vegetation. The flatness of the terrain makes even small differences in elevation seem quite significant.

The house is made up of two distinct parts: a ground-floor sleeping area that is isolated visually and acoustically both from the outside and from the floor above, and an upper-floor living space that is high, open, and transparent. The upward and outward thrust of the upper space culminates in a crow's nest 19 ft above

grade, from which there is a striking view in all directions.

A barnlike system of construction was employed for the upper floor. Five massive bents of 2-in. cypress members support a roof of solid pine decking. The rough-sawn cypress boards of the side walls will become even coarser as they weather. To keep the wood structure from looking too heavy, several devices were employed. A continuous strip of glass was introduced below the roof, and strips of translucent white plastic were inserted between the vertical cypress boards to provide diffused natural light for the interior.

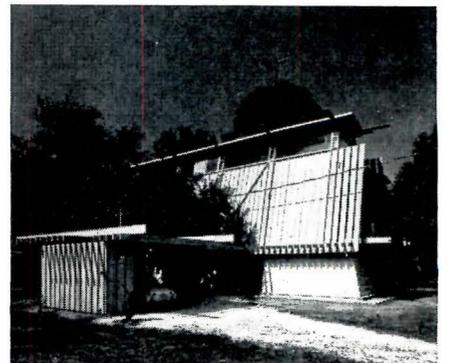
This vast wooden aerie rests on the masonry mass of the lower floor, which is smoother in finish, both inside and outside. The battered block walls have been treated with a concrete "wash" on the exterior to make them less rustic and to aid in shedding water. The walls are merely painted on the interior, but carpeted floors and plaster ceilings give a feeling of domestic comfort. A white marble lavatory counter strikes a note of luxury.

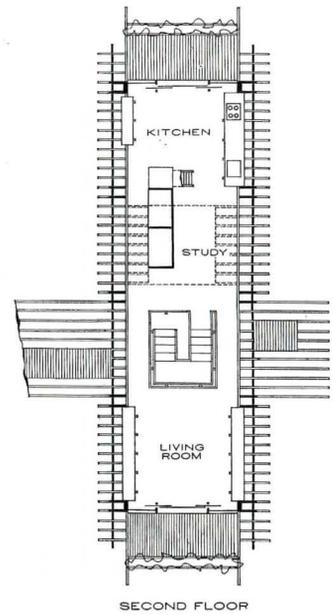
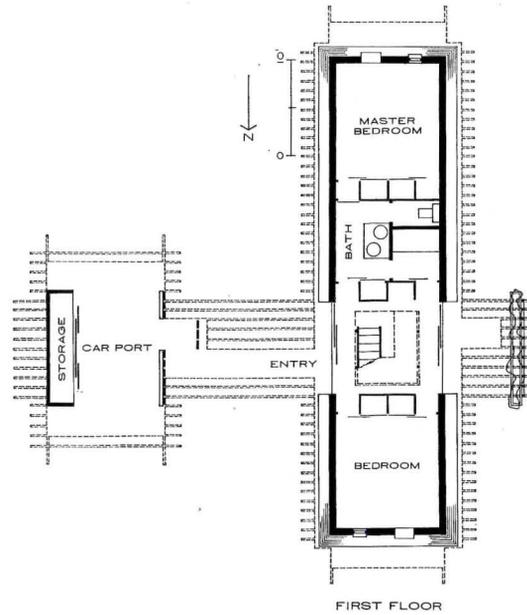
The bedrooms are heated and cooled by individual air-conditioning units. The up-

per floor has a gas unit heater and relies on natural ventilation for cooling; sliding glass panels near the floor and plexiglass vents under the roof can be opened to produce a chimney effect.

Color has been kept neutral throughout the house to give the owners the greatest freedom in furnishing the interior.

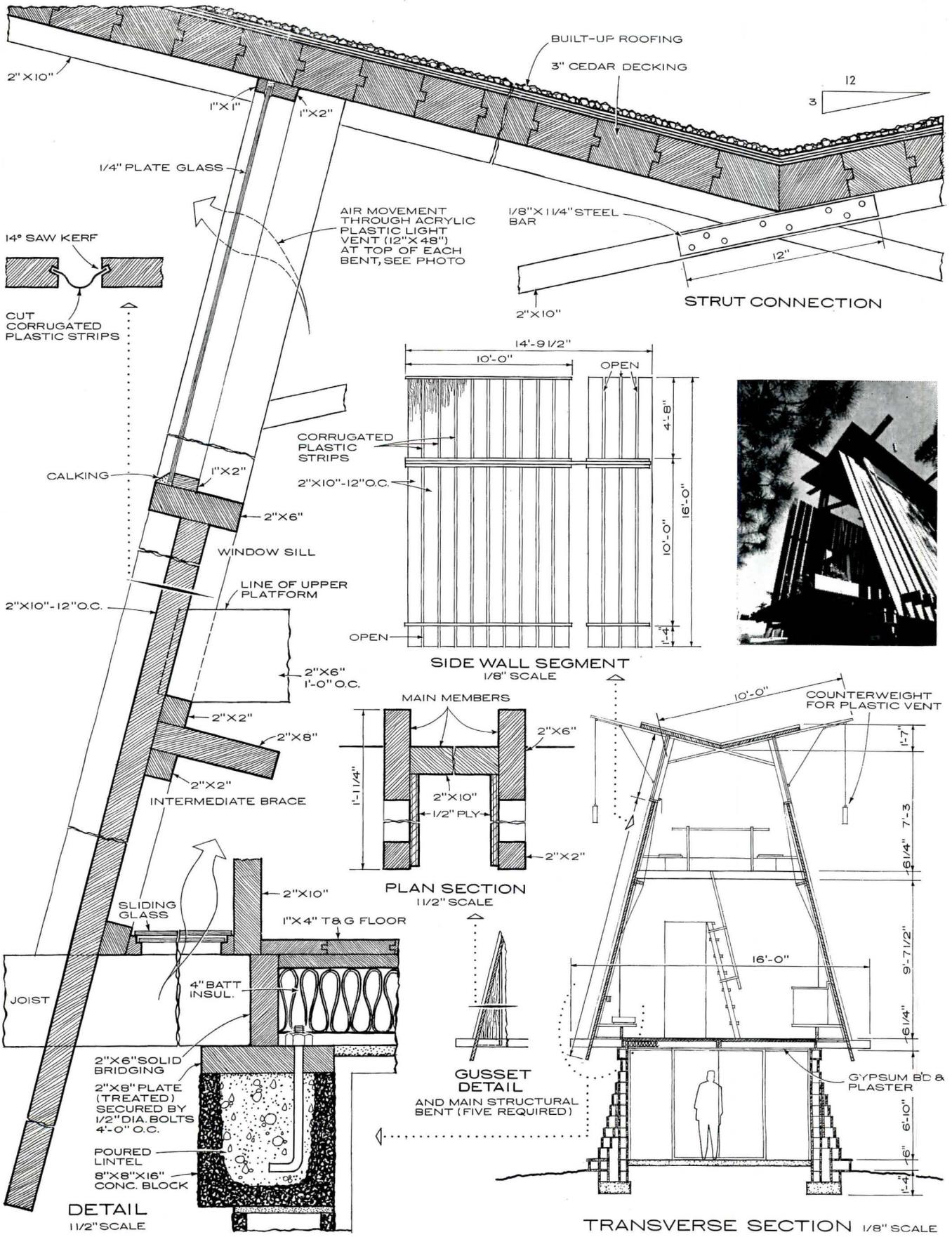
The general contract was approximately \$12,500, or about \$10 per sq ft, with no allowance for carport, covered walks, outdoor storage, or overhangs. The cubage, of course, is high for a house of only 1200 sq ft. The architect admits that the low budget is "something of a miracle," but sees the stringent economy as a "source of strength."





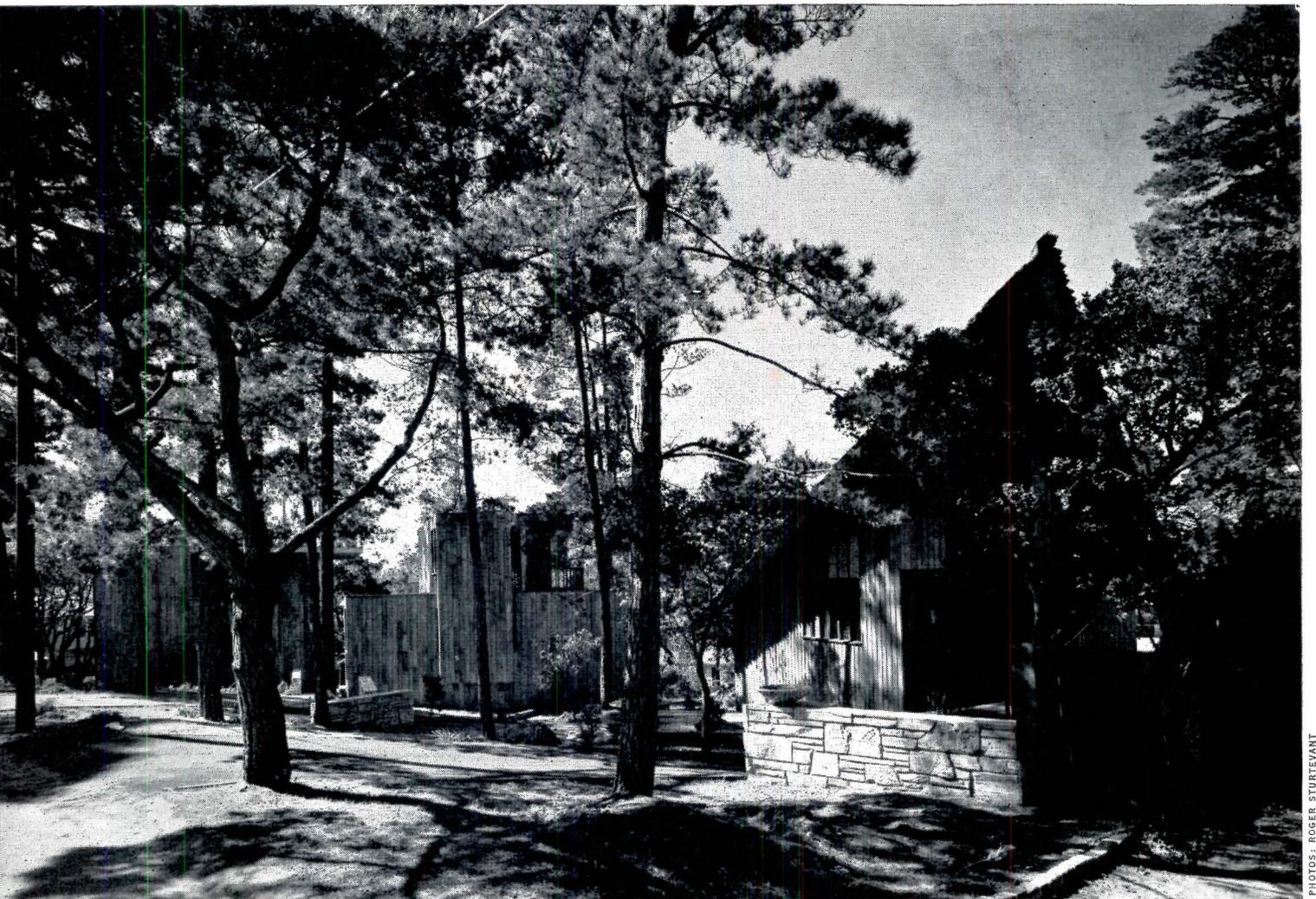
*An open stairwell separates the north-lighted studio (left) from the kitchen (above). Balconies at both ends of the house extend the space out into the trees. The top of the utility island serves as a landing on the way up to the "crow's nest" (above). Framing along sides of the room serves as a display shelf and supports seats and cabinets.*





**STUDIO HOUSE:** Sarasota, Florida  
**WILLIAM RUPP,** Architect

**SELECTED DETAIL**  
**CONSTRUCTION SYSTEM**



PHOTOS: ROGER STURTEVANT

## Three Weekend Houses

HOUSES AT CARMEL, CALIFORNIA • HENRY HILL, ARCHITECT • JOHN KRUSE, ASSOCIATE

It all began when the Hills—the architect, his wife, and their two daughters—decided to sell their 15-year-old weekend house at Carmel. Not the least among its faults was the lack of adequate accommodations for their three Siamese cats.

The old house followed the California tradition of integrating indoor spaces with gardens. Maintenance of the grounds had become a burden and, what with the dry summer climate and the porous soil, the garden would not flourish with only weekend attention. The Hills concluded that landscaping should be simple and native and that outdoor living space should be on raised decks.

They chose a 60-ft lot on a quiet street near the center of Carmel Village. The

lot sloped down to the west, away from the street. There was no view directly to the west, but from an elevation of 5 ft at the center of the lot, there was an excellent view of Carmel Point to the northwest; an elevation of 12 ft revealed an even better view of Point Lobos, six miles away to the southwest. Raising the house above the ground was essential in order to take advantage of these views and also met their desire to free the house from the landscape.

The old house had an area of about 1100 sq ft, but Hill figured that 800 sq ft would be sufficient. Planning requirements were simple, since the family has no adult house guests at Carmel. A large built-in couch in the living room is adequate for any friends that the daughters may invite. Experience indicated that a 5' x 8' kitchen was ideal and that a

dining table was unnecessary. Eating had generally taken place on a couch, on the hearth, or outside.

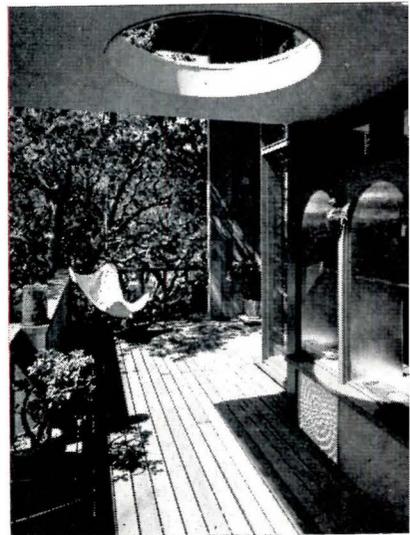
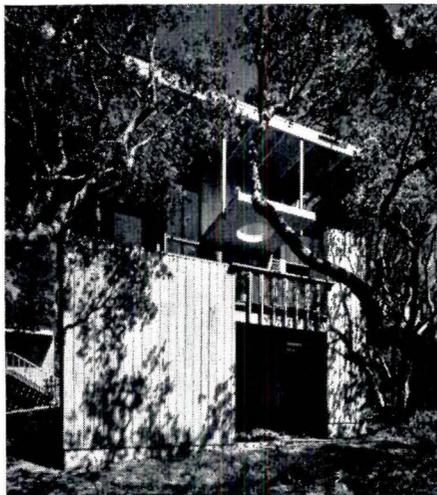
A balcony bedroom provides as much privacy as the parents require and allows them to enjoy a sense of vast space with only a minimal floor area. The children's room and bath have been placed three steps below the living room to shorten the climb to the balcony and reduce the height of the living room.

There is a wire-enclosed area under the house for the cats, which communicates with the house proper by a ladder and a trap door. An aerial walk leads from this cage to a cantilevered sunning platform.

After construction started on the Hill house, two other families became interested in the kind of weekend living it represented and bought the two lots



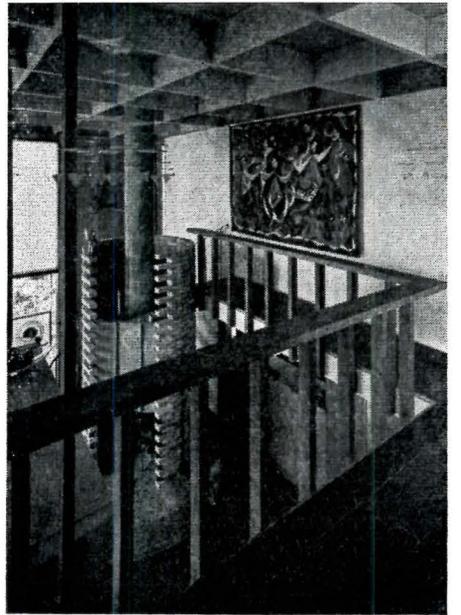
The vertical character of the Hill house is emphasized on the front (below) by vertical cedar siding and redwood uprights. The 2 x 3 redwood members are held free of the siding by copper tubing spacers. The panels of the tall, narrow projecting bay are made up of obscure and cross-reeced glass, clear and obscure jalousie units, and verdigris copper. The triangular verdigris copper lighting fixture has had irregular holes burned in it with an acetylene torch. All mullions have been painted deep purple, inside and out. The front door is painted lavender and the canopy above it is of purple plastic. A view of the downhill side of the house (right) shows the high deck. Under the suspended canopy (far right) are the arches of the living room bay window. The panels below the windows are decorated with sea shells.



# 1



The suspended canopy is repeated inside the living room (facing page, upper left). The arched windows are framed in Philippine mahogany and the reveals are covered with gold leaf. Gilded deer heads hang between the arches. The underside of the canopy (facing page, upper right) is papered with plans of the world's great buildings from *Building Footprints* (a student publication of the School of Design at Raleigh, N.C.). The serrate layout of the window-wall emphasizes the height of the room and increases the apparent size of both the living room and the deck. The fireplace is constructed of gray Roman brick and has verdigris copper face-panel and flue. The cantilevered stair is of steel, painted deep red. The bridge to the master bedroom is at the same height (6'-8") as the kitchen ceiling beyond it. A colorful tapestry by Sax Shaw of Edinburgh, which hangs over the bridge (facing page, middle right), is a prominent feature of the entire space. Ceiling panels painted alternately rose and lavender are framed by a grid of 2 x 10's painted off-white. The balcony bedroom (facing page, lower left) has four small panels of glass set in concrete. The morning sun shines directly through them to produce a rainbow of brilliant colors. The children's bedroom (facing page, lower right) is more subdued, with a natural cedar ceiling, white burlap walls, and Philippine mahogany shutters.





immediately to the north. It was agreed that the three houses would be designed as a group, with no recognition of lot lines. It was vital, however, that privacy between the houses be maintained, since the families "would not go to Carmel to entertain each other."

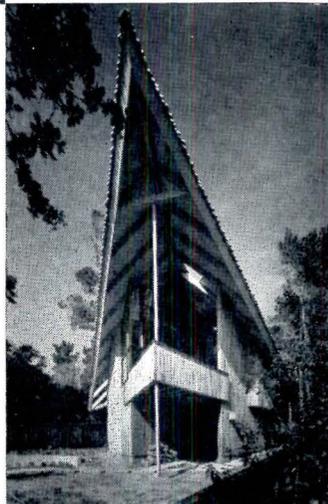
The second house to be undertaken was the one at the north end of the group. The client, whose permanent residence had been designed by Hill, imposed no design criteria except that the house have a sloping roof.

The family expected to entertain more guests than the Hills, hence needed more space. The three daughters and their visiting girl friends share a balcony bunk room, which can be closed off by a folding door if the children retire earlier than the adults. The guest room is beneath it, three steps down from the living room. Since the wife must avoid climbing stairs, the master bedroom has been placed on the first floor.

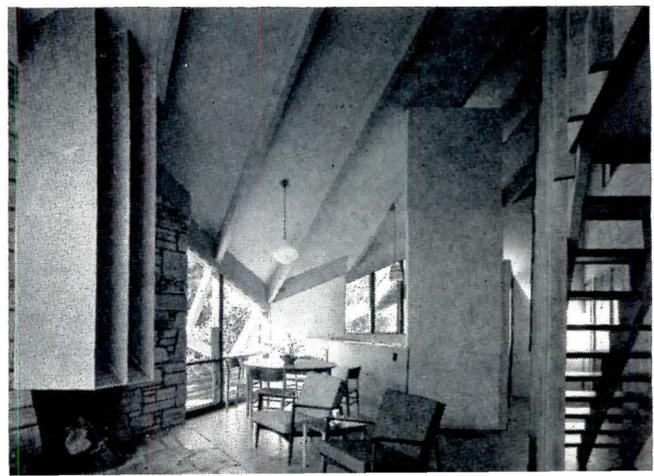
The house was designed to contrast sharply with the horizontal lines of their permanent house. To achieve this contrast and reduce the apparent volume of the house, the angular form was developed. The 30/60-degree grid on which the plan is based corresponds to the angles of the major views. The planes

2

The narrow ramp leading to the front door is sheltered by the overhang of the bunk room (above). The dominating roof planes are punctured above the deck (right) and at the northwest corner (below) to let light and air pass through. The ends of the master bedroom projection (right) have colored glass panels.



Ceiling height in the living-dining area varies from 58 in. to 22 ft. There is a view of the ocean from the living room and deck (below left). The glass mosaic fireplace hood is gold color on one set of facets (below left) and bright orange on the other (below). Mullions are painted deep blue-green. The ceiling is painted gray and "pumpkin." Wall coverings include bronze foil and natural grass cloth. "Honey gold" appears in the furnishings. Carmel Point can be seen from the bunk room through a skylight (facing page, bottom).





of the roof, which swoop almost to the ground, establish a form within which the entire house is contained.

The program for the third house reflects the fact that this family has younger children than the other two. Two separate children's bedrooms were included—one for the four-year-old boy and one for his older sisters—both opening from a relatively large kitchen-dining-play area. The adult living space was separated somewhat by a difference in floor level so that it became a stage in a spatial sequence that leads to the secluded balcony bedroom.

The design of this house was a delicate exercise in completing a triad, the other two members of which are highly individual. As the middle house, it could take a third divergent approach or act

as a bridge between the two extremes. The use of circular forms in opposition to the cubic and triangular motifs was considered, and circular elements are evident in the final design. The major forms, however, combine the tall, cubic volumes of the Hill house with the angular plan of the house to the north.

Certain devices appear in analogous applications in all three houses: the 18-in. bay projections; the 18-in. and 3-ft modules of the windows and spandrels; and the 3-step split in floor levels. Consistent uses of materials also serve to affirm the kinship between the buildings. The diverse forms of the exteriors are all related by the continuous surface of vertical cedar boards. All of the three interiors have cork floors throughout and ceilings of plywood panels between ex-

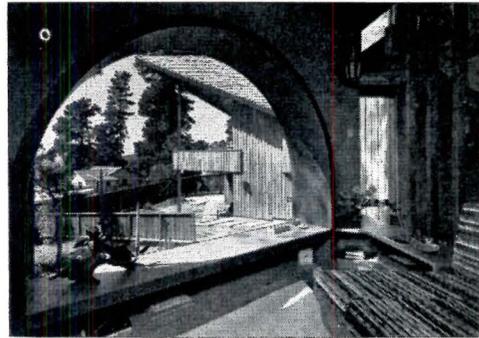
3



posed wood beams. Carmel stone, jalousie windows, interior shutters, colored glass set in concrete, wood-curl plastic sheet, and Venetian lighting globes appear in all of them.

The landscaping plan by Baronian & Danielson, which is being realized in stages, retains almost all of the existing pines and oaks. Circular beds of agapanthus, some white and some blue, are scattered across all three lots. Other plantings that will thrive without maintenance—such as rosemary, lavender, and rock rose—also appear. Freestanding walls of Carmel stone serve to unify the entire development.

The architect has little to say about costs, except that his ingenuity—and occasionally his physical labor—have kept them below the rather high levels prevailing in Carmel.



*The large living room window of the middle house (top of page) was devised as a way to recognize the Carmel Point view, yet maintain the feeling of a wall. The fireplace (above) has a polished copper hood. A panel of colored glass beyond it includes tones of yellow, orange, and apricot. Mullions throughout are painted wine red, ceiling panels are pale blue-gray and beams are dull pink; browns have been used for rugs and upholstery. The kitchen-dining-play area (left) is three steps below the living room. The exterior of the house (below) is related by form and detail to its disparate neighbors to the north and south.*



# AESTHETICS AND REGISTRATION

BY DON HAWLEY

*A question often debated by the profession is whether aesthetics should be a criterion when judging the competence of a candidate for architectural registration. In this article, the author, who is presently involved in a lawsuit against the New Mexico State Board of Examiners for Architects, argues strongly in the negative. P/A would be interested in the views of other readers on this subject.*

Ever since registration laws for architects were enacted, there has been a continuing controversy as to whether or not the laws should permit tests that judge aesthetic ability. Those who contend that aesthetics is a proper consideration under the law argue its legitimacy on two grounds: they point to the adverse social and psychological effects caused by the presence of ugly buildings in one's environment; and they contend that aesthetics provides the sole criterion distinguishing the profession of architecture from that of engineering. This latter point, in fact, has extended the controversy from one among architects themselves to one between architects and engineers. Although other arguments could doubtlessly be found, these two are the ones most frequently discussed.

These issues cannot, unfortunately, be resolved on the basis of purely technical considerations; they reach far beyond into the field of basic human rights and the very foundations of our democratic system. In other words, the issues are not, as some believe, confined to professional rivalry or to the architect's maintaining a separate professional identity. It involves, whether we like it or not, the fundamental question of freedom of artistic expression.

Most architects and engineers who debate this issue are unfortunately so involved with the special interests of their professions that they cannot detach themselves sufficiently to realize that before a man is an architect or an engineer he is a human being—an American living in a democracy that professes to believe in and uphold certain ideals of freedom. The possibility that the so-called standards of the architectural profession might be lowered, or that the separate legal identity of architects might be lost, is beside the point. True, these are of valid concern to any archi-

tect; yet when seen in context, as an issue pitted against our fundamental freedoms, these concerns must not be allowed to overbalance the value scales of reason and justice. Indeed, it would be better to have no profession of architecture at all, to have no architects designing buildings, than to naively set aside our basic human rights, piece by piece.

Since aesthetics is a matter of personal judgment, with perhaps widely accepted general rules of order, but no absolute—or even relatively absolute—demarcation line between right and wrong, good and bad, it follows that no control can be devised that is not arbitrary. The freedom to be “good” in art cannot be separated from the freedom to be “bad.” We may not like it, but in a democracy we must allow the bad to exist in order to allow the good to exist. We must, for instance, permit “bad” political parties in order to insure freedom for “good” political parties. In the Soviet Union, where no real political freedom exists, only the “good” (as interpreted by those in power) is sanctioned. Hitler was chosen by the German people to decide in all matters as to what constituted “the public welfare.” As a result, his decision as to what constituted “good” architecture resulted in the banning of all styles other than the classical, with the consequent closing of the Bauhaus and the emigration to the United States of such architectural talent as Mies van der Rohe. Such analogies may strike the reader as extreme; yet there is a direct relationship involved—in kind, if not in degree. It should be remembered that freedoms are seldom *taken away* at one time; they are, instead, *given away* slowly, as in Nazi Germany, by people who take the path of least resistance, or who rationalize each loss as insignificant or as being “for the good of the profession.”

Those individuals who argue that aesthetic decisions are properly subject to the political power of the state, do so on the alleged grounds that architecture affects “the public welfare.” Architects, for instance, frequently make this contention, claiming that because of this phrase, aesthetics is included in the intent of registration laws; that because we cannot escape living with ugly buildings, the public welfare is involved. Courts, also, have upheld as valid the

consideration of aesthetics as an element in zoning laws, since undesirable aesthetics “tend to cause an adverse effect on property values.”

I contend, however, that the phrase “for the public welfare” should be dropped from laws that give administrative boards police powers: it is open to such broad interpretation that it gives the boards practically unlimited powers.

For is it not clear that these arguments are little more than rationalizations, ignoring the primary considerations? For instance, it is undeniably true that when people of a “lower standard” race move into a district occupied by a “higher standard” race, the property values tend to depreciate. This is no excuse, however, to deny basic Constitutional and human rights simply because people allow themselves to be financially hurt through their own stupidity and lack of democratic principles. This type of thinking is suitable to a totalitarian state, but it is out of the question in a democracy. It is high time that, as citizens, we recognize our responsibility to live by the ideals we profess to uphold. We still fail to realize that freedom, once attained, can never be taken for granted. For there are always individuals who attempt to undermine them, piece by piece, through cleverly veiled rationalizations. In other words, to combat this regressive tide, this process of natural decay of our liberties, requires the dedication of individuals who are willing to hold firm against it.

Or, again, take the argument frequently made by architects—that aesthetics is a legitimate concern of boards of registration since it concerns the public welfare. This is simply a rationalization by which architects seek to induce the public to leave decisions of aesthetic preference to them. Since this assumes that the aesthetic standards of architects are superior to that of the public, it surely cannot be argued that the two standards coincide. It means, in short, that architects are assuming the role of an intellectual and artistic aristocracy—a Platonic rule of the “most able.” Though this may be a more desirable form of government than the one we now have, it is, nevertheless, not a democracy. It is particularly reprehensible when registration board members are politically appointed—a notion alien even to Plato's ideal state. If, therefore,

we are to believe in our present form of democracy, we must not allow any individuals or groups to set themselves up as god-like judges as to what is good or bad in art. To argue that the contrary is valid, simply because buildings are exposed to public view, is to argue for the suppression of a Wright, a Gaudí, a Corbusier. By the same logic, it would be possible for someone with a warped imagination to insist that church steeples be banned because they are, in reality, phallic symbols.

Some people may feel that passing aesthetic judgment on an architect's qualifications is not the same thing as suppressing the type of architecture he will produce once he is licensed. But this again avoids the real issue, for to suppress the producer is to suppress the product. At the same time, to insist that what is being judged is the man's basic design ability, not the style, is absurd and naïve. For one thing, through what phantom ability are the judges able to discern design talent from an architect's drawings, without at the same time passing judgment on the style of the architecture. For contrary to the belief of many architects, there is a difference between a rendering and a completed structure. A relationship undoubtedly exists between an architect's ability to express himself on paper and the creative effort invested in the completed building. Yet this is open to argument at best, and more the exception than the rule. There are many men, for instance, who are excellent delineators, but who lack the creative ability, the sculptural sense, and the intellectual capacity necessary to the complex task of creating a total structure. There is a world of difference between a "sharp-looking" tree drawn on an elevation and a total building design that goes beyond the dull application of architectural clichés. Besides, what architect will deny that in practice there is room for those with little design ability? After all, we all know that offices have their structural men, their specifications men, their draftsmen, and their cocktail holders—all of them contributing to success.

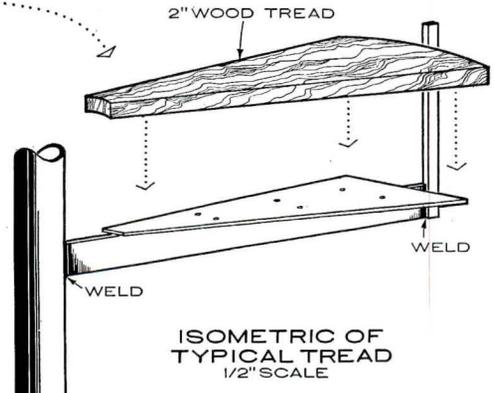
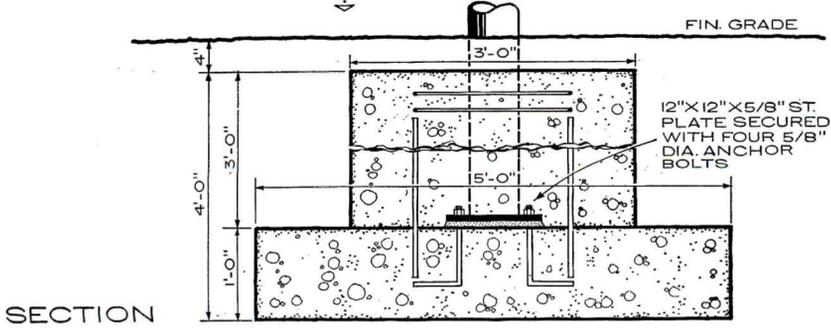
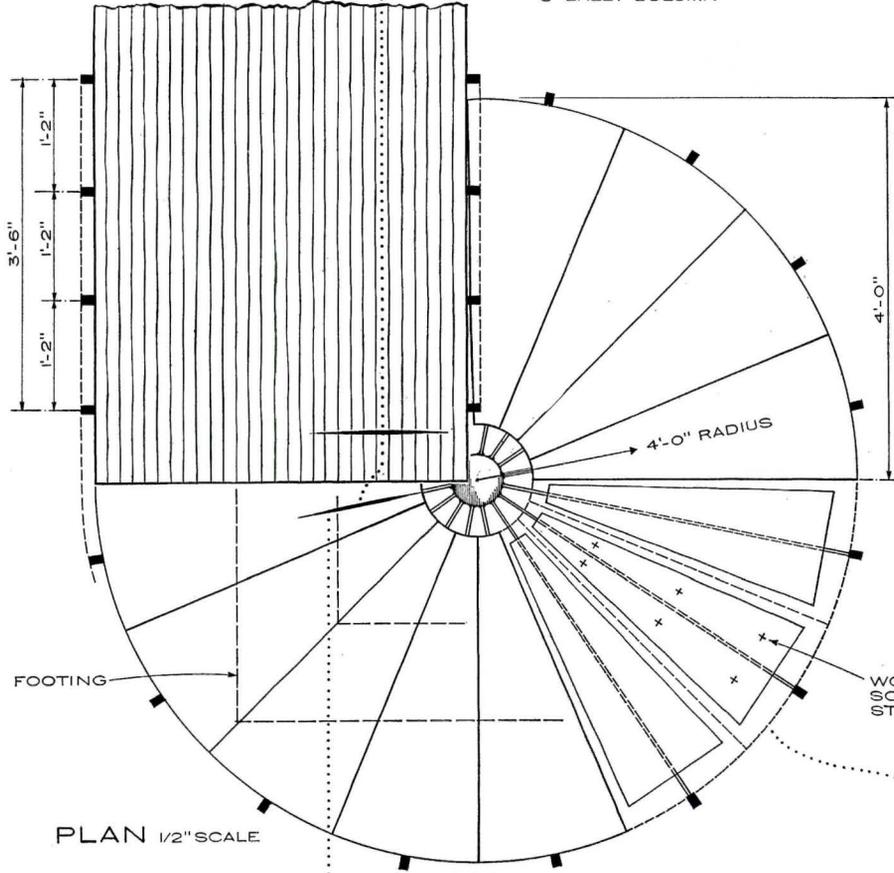
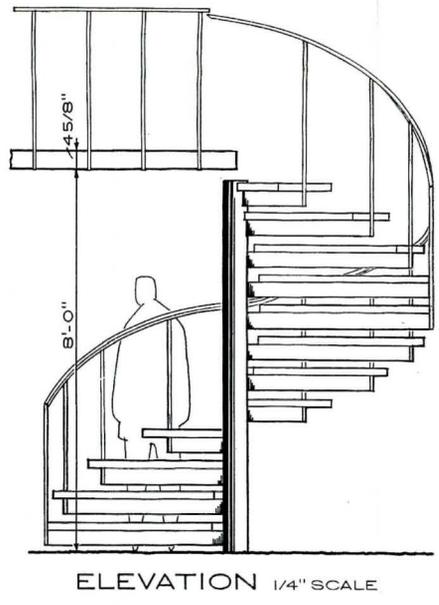
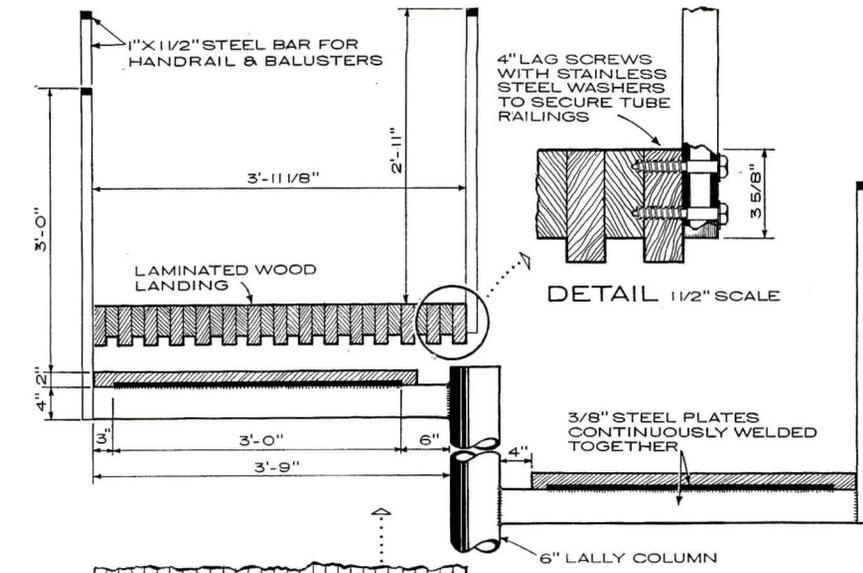
Architecture is more than a competitive, practical profession: it is a life of creative idealism, superior to considerations of mere technique. And by the same argument, architecture as a creative art cannot be separated from its cultural responsibilities. When architects try to regulate the artistic ideals of their profession, they prostitute the very values they allege to champion. It indicates how much they lack the true creative spirit,

whose essence is the freedom to express oneself according to the limitations and direction of one's individual talent. If architecture is losing prestige and importance, then it is because of such prostitution, not in spite of it. Architects should not concern themselves with using the law to keep certain qualified builders, such as general engineers, from using the title of architect.

The best solution to this entire problem may be to require no registration laws for architects at all. It is true that many states at present permit licensed engineers to design buildings: in some cases, an engineer is examined in one specialty only (such as mechanical or electrical engineering), yet is legally permitted to design an entire structure. Such a situation—in which the law permits two different tests for the same essential rights—is certainly wrong. But it will not be corrected by architects trying to dictate a solution by saying, in effect, that the main difference between their profession and that of engineering is primarily one of aesthetics, when, in truth, it is not.

Anyone who has the ability to design a building is an architect, and this ability, it is true, includes aesthetic sense and capacity. However, from a legal point of view and in a truly democratic sense, engineers who lack this aesthetic capacity should be allowed to design buildings. In other words, an owner should be permitted to buy and erect an "ugly" building such as the early works of Wright, or practically any revolutionary genius, even if it happens to offend the public.

If a man wishes to call himself an architect—or chief builder, as the name originally meant—then it is not, from an aesthetic point of view, the business of the state. This may lead to a lower standard of architecture, but even this is more desirable than to deprive individuals of their human rights. Besides, it is doubtful that relaxed controls will mean poorer architecture. After all, the general level of modern architecture is in any case so low that one may wonder whether it is because of these controls or in spite of them. In fact, it is not unreasonable to speculate that an architecture whose aesthetics is controlled by the state will, by its very nature, enforce mediocrity. With greater freedom, there may perhaps result some gloriously "horrid" buildings, built of sufficiently sturdy materials that they will outlive and outlast the demigods of aesthetic control, thus leading us out of the morass we are in at present. Let us hope so.



<p>*HOUSE: West Orange, N. J. DAVIS, BRODY &amp; WISNIEWSKI, Architects</p>	<p>SELECTED DETAIL CIRCULAR STAIR</p>
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\* See MAY 1962 P/A  
AUGUST 1962 P/A

# CAMPUS EXPANSION ON MADE LAND

When Northwestern University in Evanston, Illinois, faced the problem common to so many colleges and universities today—the need for expansion—the firm of Skidmore, Owings & Merrill was asked to investigate the feasibility of creating additional land in Lake Michigan, adjoining the present campus. As succeeding pages will indicate, the study proved not only the desirability of such expansion, from the point of view of over-all development and growth of the campus, but a definite economic advantage of this move over acquisition of new land on shore. The studies have proceeded in detail on methods of building such new land. However, the first step was to think in terms of environmental growth, and these basic aspects of campus planning are discussed by Walter Netsch, SOM partner who has particularly studied this problem, in excerpts from a paper he has written on the subject.

## MASTER PLANNING THE COLLEGE OR UNIVERSITY

A college or university today provides in its complexity most of the elements, frustrations, and confusion of an urban society. As a special segment of that society, many believe that directions in planning for the campus can lead to directions applicable to the urban planning problem. Although this is abstractly true, no evaluation of this particular problem or the opportunities has been undertaken.

In considering the educational environment and trends in higher education, four basic ideas predominate. First, new teaching techniques. The increasing use of audio-visual aids, closed circuit television, and films affect the design of buildings and their spatial relationships. Second, flexibility. Rapid change and growth will require building spaces that permit ready conversion and expansion. Building elements that serve similar functional uses should be similar in design. Third, variety in the environment. Each university activity should be in the type of structure that can be utilized most efficiently. Fourth, interdisciplinary opportunities. Higher education is moving toward closer interrelationship among the academic fields of study. To meet this development, a building should be designed to serve a function rather than a discipline.

The concept of planning must recognize the academic process as the special ingredient of campus character and bring

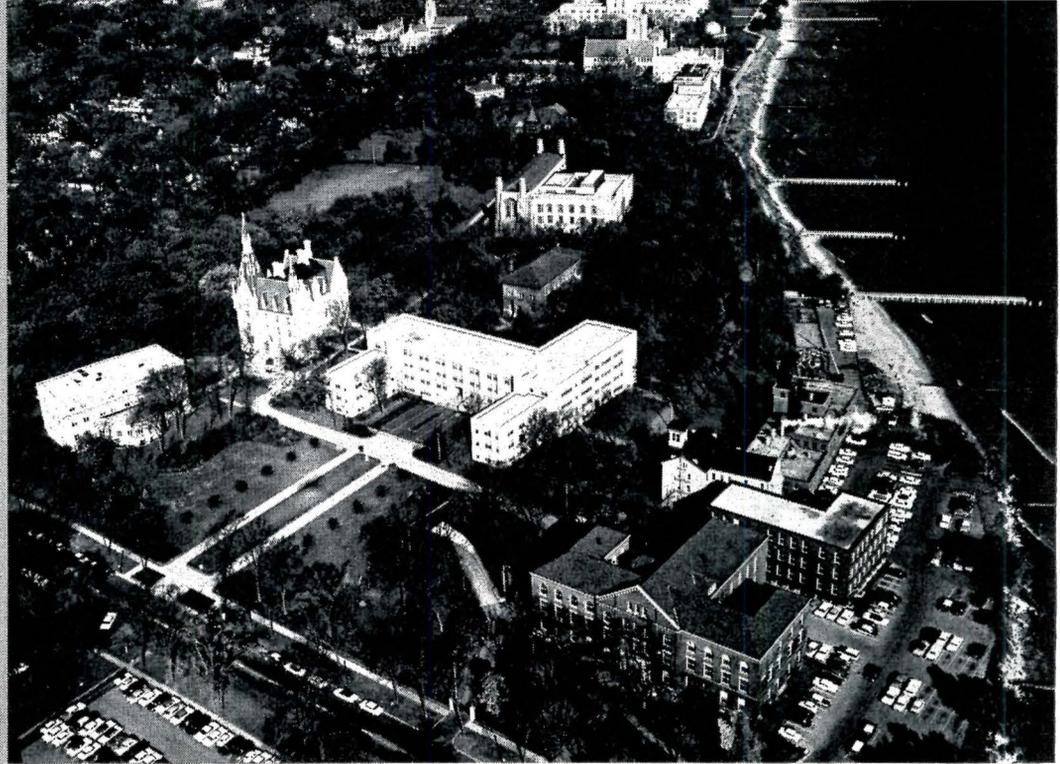
to this process the visual elements of environment. To grasp immediately these elements, we can visualize the two basic attributes—totality and urbanity. Both of these reflect known visual attributes but rely on specific use of the basic planning process. Listed, they appear prosaic, but if tested against actual environmental conditions, they reveal major failures in campus planning.

- (1) Are the constant factors in campus planning being utilized to self-generate the campus community—the library, lecture center, cultural areas, social areas, community areas?
- (2) Is the transposition and movement of students and faculty, as pedestrians, as bicyclists, as autoists, planned to reinforce the campus pattern or as deterrents and energy expenditures?
- (3) Is the use of the four social areas of space creatively developed—private, semiprivate, semipublic, and public?
- (4) Is the hierarchy of space consonant with the use of the space on the campus?
- (5) Is each building vying for attention, or is there a capacity to integrate visual environment toward a total concept?
- (6) Are the problems of flexibility, integration of technical services, and new teaching techniques being reconsidered in new orders of geometry, or new concepts in “surge” spaces?
- (7) Is the campus considered as a pedestrian community, or even as a com-

munity in any social sense?

- (8) Are individual structures still related to dream-fantasy architecture of bygone eras or business fantasy architecture for “middle majority” acceptance?
- (9) Is the administration and the faculty willing to attempt a reintegration of the teaching gestalt and the visual environment?
- (10) Does the college community accept the responsibility of visual environment?

The planning process subdivides into four major areas in campus planning—preparation, concept, resolution, and development. Within each of these areas, overlapping actions occur. In the preparation period, it is essential to synthesize within each category the aims of the institution, the statistical program for the institution, the visual and technical characteristics of the site and the surrounding environment, as well as special theoretical and practical research on educational theories, spatial orderings, aesthetics, and new materials and techniques. The second phase of the preparation requires the synthesis of the elements into two areas—the first, an objective resolution combining the basic program aims and site factors into an analysis through flow diagrams of the hierarchical relationship of the program, the interdemands of spaces and volumes, and the effectiveness of energizers for campus community life. Here, specific



opportunities in teaching techniques, concepts of growth, areas of community life, regional planning provide not one but a series of different diagrams available for review. Secondly, concurrent with this analysis, certain possibilities in concept will become apparent, and these concepts at this stage are abstract compositions explaining the visual potential that social theory, spatial theory, structural theory may inspire from the program diagrams. At this time, a program may appear diffuse and unresolvable. To emphasize the realism in programming, an assumption could be made on a campus plan that the automobile be omitted as policy from consideration. At this time, policy or no, the problem should be interjected to make certain what effects would occur. An equally effective challenge in assumptions can be made regarding the size of a library, its relation to undergraduate and graduate programs, the question of central library or separate libraries, or the scope of the materials considered as a library resource. In either of these examples, the physical effects of different decisions eliminate and determine whole areas of the preparation period. However, without broad searches at this time, cut-and-patch results will occur. For in the free interrelationship of aims and programs, the various influences and judgments (or, perhaps, dogmatic decisions) will indicate one most appropriate scheme.

In applying primary aims developed

during the conceptual period to resolution and development, three campus plans are interesting examples: one existing, Northwestern University; and two new, the University of Illinois at Congress Circle in Chicago, and The Air Force Academy at Colorado Springs, Colorado. Each has an entirely different academic program, site location, student size, and relation to the community.

The awesome scale of the broad plains and mountains, the problem of infinity, determined in part the plan of the Air Force Academy. The other determinant was perceptual in explaining to the visitor the activities of the campus. Since over one million people visit the Academy each year, watch a parade or tour the grounds, the campus must lead both a public and a private existence. Here, the natural environment touches and intrudes at specific points peripherally.

The Congress Circle campus develops a single center with intensive uses concentrated in that area with gradually diminishing uses as the intensity of total use diminishes. Here, 20,000 or more students will generate an urban atmosphere about a single focus—a university square or plaza. Lecture units join with outdoor theatre and plaza surrounded by classrooms, teaching laboratories, library and student center, and then peripherally with heavy laboratories, research and staff offices and administration.

At Northwestern, the expansion program developed along the Lake shore

reintegrates the lakefront into the campus, preserving a vista of water, and varying the character of the water and land forms, reflecting not only the characteristics of the natural environment, but their relation to the specific potential needs of the campus. The preliminary plan grows from the existing structures to new, separate patterns for Liberal Arts and Science and Engineering, which are linked by social and cultural activities. Again, the natural environment provides foci that contrast the urban character of the Liberal Arts Plaza and the urban and scientific character of Science and Technology with the informal open area of Deering Meadow and the water areas. Here scale, numbers, and circulation patterns form the internal net.

Each of these campus plans is obviously different in two-dimensional site drawings. As the final determinant is three dimensional, the eventual character is determined by the building design and the campus plan. Here the differences are revealed in scale and structure, the surrounding environment, and the interpretation by the architect of form and enclosure.

If we are to find solutions for planning in the urban environment, the college campus plan can be the catalyst. In no other segment of the environment exists a force with greater capacity to assist in establishing both the problem and the potential. WALTER N. NETSCH, JR.

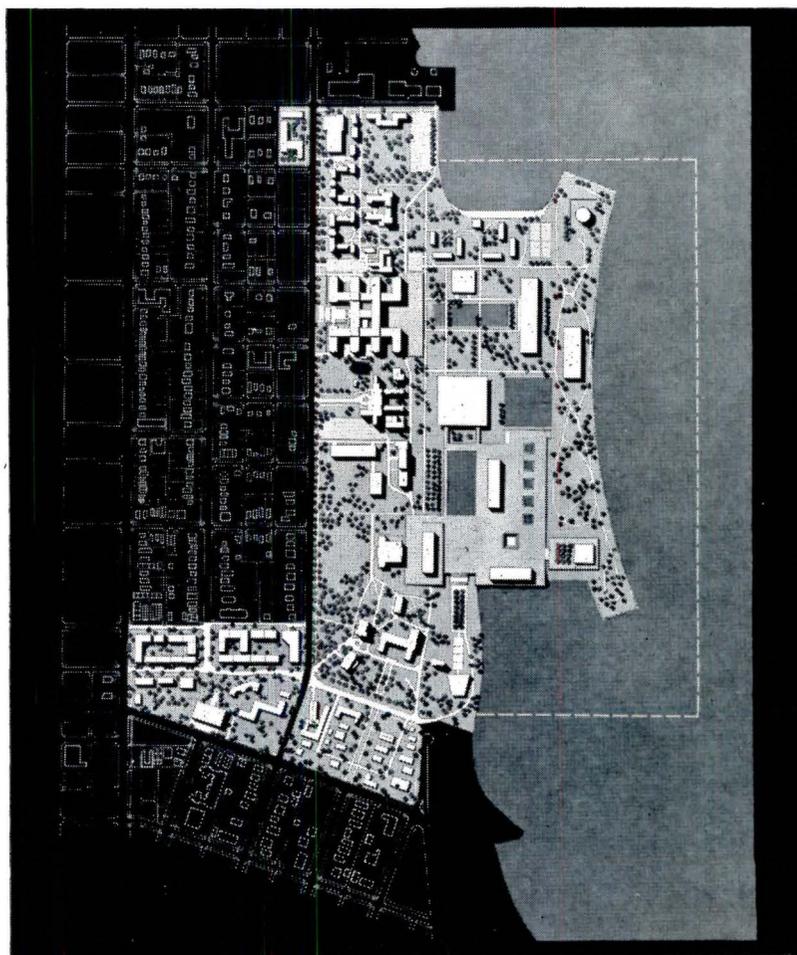
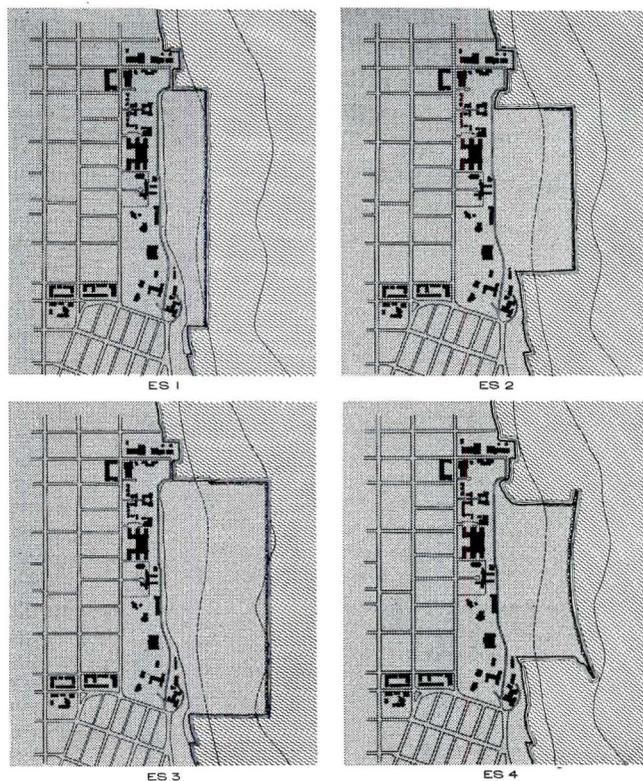
### Feasibility Studies of Made Land

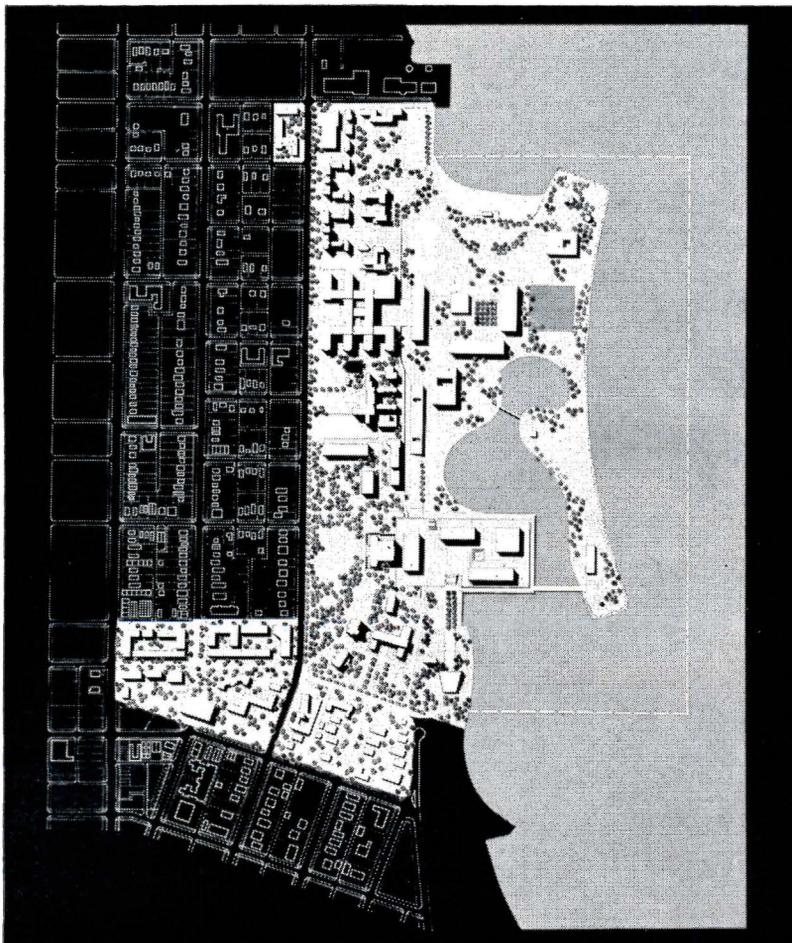
The studies made by Skidmore, Owings & Merrill as to feasibility of made-land expansion into Lake Michigan took three directions: inquiry into local planning considerations, to make sure that there were no conflicts and that approvals were likely; investigation of Government policies relating to use of lake land; and analysis of engineering problems, including design and cost. It was found that there were no insurmountable local difficulties, and that sufficient precedent existed for worth-while lake-land expansion, where health and public welfare were not affected, so that approvals would be likely—and indeed they have been received. Finally, the engineering studies indicated that filled land of the extent needed would be both feasible and less costly than the purchase of shore land. Four studies of various amounts and configurations of new land were made (*diagrams at right*). ES (Engineering Study) 1 was felt to be too limited in width, and to encroach too closely on an existing beach. ES 2 proved to be less costly per acre of land acquired, because of more equitable ratio of land area to bulkhead. The configuration was also considered attractive and most useable. ES 3, developing more land, would have cost more per acre because of increased bulkhead requirements in deep water. Since ES 2 was obviously the best scheme, ES 4 was developed in detail as a further study of this possibility. Recommendations were therefore made to the university that a master plan be prepared, that more detailed engineering analysis of methods of fill be authorized, and that moves be made to secure permits and approval from the state legislature. These steps were taken, and the project is now well underway.

The more careful later studies not only indicated that fill could be effected even more cheaply than was first thought (at about one fourth the cost of purchased shore land in Evanston) but also developed more interesting possible uses of the new land. Two proposals were placed before the university authorities: full, "total fill" development (*lower plan, this page*); and a more pliable as well as more attractive "land reserve" scheme, allowing lagoons to extend into the new campus to form a blended landscape and to become reflecting pools and recreational areas. This is the scheme adopted (*facing page*).

### Advantages of Lake-Land Expansion

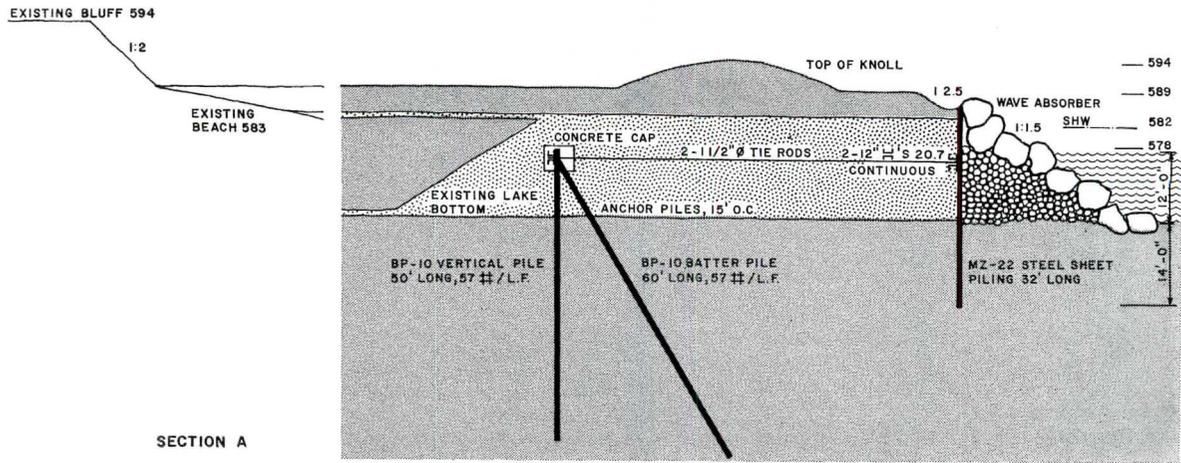
The architects point to several advantages, in addition to the economic



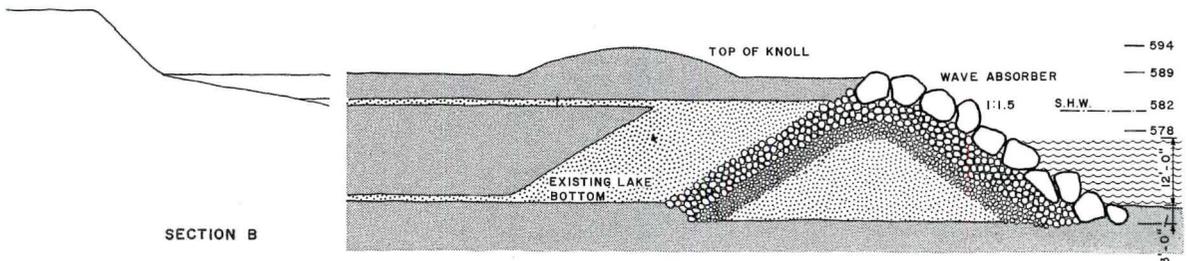


ones, in this method of expansion for this particular campus. There are, for instance, advantages to both the university and the community in the fact that pressures will be removed for use of property west of the present campus for university requirements. The city of Evanston can now go ahead confidently with co-ordinated planning for this residential area, and the university will be assured of a good neighboring environment. In addition to that, the development of the new land will provide expansion possibilities immediately adjacent to and in good relation to present buildings and departments, without the usual shifting necessitated by purchase of new land parcels. And finally, the eastward expansion into the lake will make it possible for the university to reorient its planning toward the lake rather than toward the town, and develop a visually outstanding campus. "We know of no other campus in the country that has such a cogent opportunity to use dramatically a natural feature such as the lake," said the architects' preliminary report.

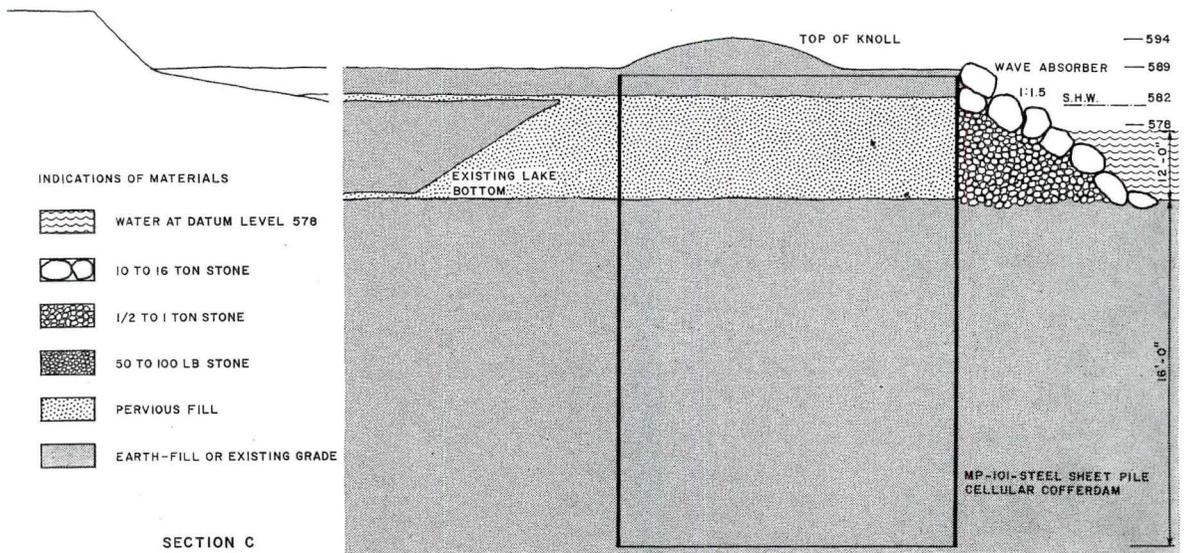
In general, the campus expansion provides men's housing at the north end, and women's at the south; extension of Engineering, Science, and Business Adminis-



SECTION A



SECTION B



SECTION C

tration in the center of the new area; and a Liberal Arts group in the southern part. A Fine Arts complex is on a plaza extending into the newly formed lagoon. The "totality and urbanity" that Netsch describes as criteria of campus planning are thus achieved in an unusual and particularly effective manner.

### Preliminary Engineering Evaluations

Engineering considerations involved in the creation of land in Lake Michigan include the basic means of establishing such land, type of material to be used for this purpose, methods of confining the material used, and practical and economic limitations of these procedures for the given or anticipated purposes.

The following discussion is a synopsis of SOM's initial analysis of the several alternate considerations for fills, break-water structures, and design methods used to arrive at preliminary estimates.

### Establishing Made Land

The acquisition of off-shore land is generally accomplished by two methods: accretion from water-transported material, or the placement of fill. The quantity of littoral (shore) drift along the western shores of Lake Michigan, in the Northwestern University area, is limited due to an abrupt change in shore configuration just to the north. This induces a lakeward diversion of the shore drift and increases the tendency toward erosion along the shoreline. An additional factor

which contributes to the scarcity of littoral drift in the area is the increased number of in-shore protection structures, updrift from this point. For the stretch of shore south of Wilmette (a mile or so to the northwest), all major projects involving made land in Lake Michigan have been accomplished by placement fill. Material for fill has been obtained by dredging from the bottom of the lake and from extensive highway construction projects. In addition to these types of fill material, extensive use has been made of sand taken from the Indiana shoals at the south end of Lake Michigan. In all instances, authorized formations of made land involving fill have required the construction of offshore bulkheads to contain the fill.

### *Type of Fill*

Two general classes of material were recognized in considering the formation of made land within the containing bulkhead. One class of material is defined as pervious fill, such as sand, bank or pit-run sand and gravel, slag, cinders, and similar waste products of industry, and selected debris such as broken pavement, building foundation, brick and similar material excluding trash, timber, and other organic substances.

A second class of material is defined as impervious fill, such as clay and silt, composed of fine-grained materials through which water is unable to move freely.

Pervious fills are superior material for fill of this nature, because of inherent physical properties which cause them to be more stable when placed in submerged fill. The larger particle size allows the water table within the fill to fluctuate with the lake level, and thereby eliminates the build-up of hydrostatic head against the inner face of the containing bulkhead.

Impervious fills are less desirable, because of inherent physical properties which in most cases are opposite to the ones discussed above. These materials exhibit capillary action to entrap water without relation to the surrounding water level. The small particle size allows escape of fill into the lake, increasing the possibility of contamination and loss of fill near the surrounding bulkhead. Also, the smaller particles contribute less internal friction to the soil mass, thereby increasing the loading against the surrounding bulkhead.

Pervious fill materials are not readily available at the site, but can be obtained in the Greater Chicago area. A feasible and economic method of delivering this fill to the site would involve the construction of a temporary pier and channel in the lake, which would permit boats to be unloaded in close proximity to the area within the bulkhead.

Impervious fill material may be obtained at the site through dredging of the lake bottom. The shallow depths immediately off-shore from the project area do not permit dredging equipment to approach the site directly, but for a contract of this magnitude a program might be developed utilizing pier and channel facilities, as mentioned above, to enable the lake-bottom material to be raised economically. In addition to dredged material, spoil from large excavation projects may become available and could be incorporated in the project. Although pervious material is considered prefer-

able for the entire project, due to the large quantities and cost involved, consideration has to be given to methods of using less expensive impervious fill whenever possible. Selection of the final design of the fill will depend upon considerations of cost, availability, and means of transportation.

### *Bulkhead Design*

In determining the recommended height of bulkhead, hydrographic records of water levels of the Great Lakes were studied. During the years between 1860 and 1956, it was found that the highest level recorded for Lake Michigan was 583.7 ft above mean tide at New York. This occurred in 1886. The most recent period of high lake level was in 1952, when the lake level rose to 582.7 ft. Present lake level, as of April 1960, is 578.9 ft.

For purposes of this study, an elevation of 582.0 was selected for still high water. This elevation is considered conservative, as the hydrographic records indicate that since 1888 the level of 582.0 has been exceeded only three times: in 1929 with a level of 582.3, in 1952 with a level of 582.7, and in 1953 with a level of 582.15. The average annual level since 1888 has been 580.5.

After determination of still high water, it is necessary to superimpose a design wave height. Design waves may be calculated from consideration of fetch distance, wind velocities and duration, and shoaling characteristics of the lake bottom. Significant wave height is defined as the average height of the highest one-third of the waves within a given wave group. The maximum individual wave height recorded was 10 ft. Consideration of the above data indicated that a design wave of 7.0 ft should be employed as the maximum significant wave in any wave group approaching the site under storm conditions.

On the basis of the above data, a 7.0 ft wave superimposed on a still high water elevation of 582.0 was used in the design of the containing bulkhead. To give further protection to the ground immediately behind the bulkhead, a freeboard of 2.5 ft above design wave height was recommended. To protect the campus grounds in-shore of the perimeter bulkhead, a land form 5.0 ft or more in height through the means of landscaping was felt desirable, to contain the wind-blown spray and occasional overtopping waves greater than the design wave. As shown (*Section A, facing page*), the top of bulkhead was established at elevation 589.0 ft.

### *Type of Bulkhead*

Steel sheet pile walls, tied back to battered piles or a restraining deadman, have been used extensively along the lake front as a shore protection measure, or for enclosing small areas of made land (*Section A*). However, bulkheads of this design have not proved too successful where exposed to the full forces of waves developed over the longer reaches of the lake.

In intermediate depths, 10 ft to 16 ft, and where stable foundation soils do not exist near the lake bottom, excessive pile costs can be avoided by placement of graded stone in a rubble mound. Stones used in rubble mounds are graded from 15-ton capstone to gravel or slag core. The larger stones are sized and placed to resist the wave energies developed by storm-generated waters and the smaller stones are sized and placed to prevent loss of fill through the containing bulkhead (*Section B*).

In deeper water—that is, 16 ft and deeper—present practice along the lake has been to construct cellular-steel sheet pile cofferdams filled with stone and capped with concrete. This construction, when founded on stable foundation soils, provides a bulkhead capable of withstanding storm-generated waves even without the placement of fill behind the bulkhead and thus avoids losses due to sudden storms during construction.

### *Conclusions and Recommendations*

As a result of the original engineering study, which contained, in part, a report of the preceding evaluation, a precise soils-engineering survey and analysis was made. This search substantiated the earlier report concerning the feasibility and economics of the creation of additional land in Lake Michigan adjoining Northwestern's shoreline. In addition, the supplemental study confirmed: (1) the cost and types of bulkhead design and construction recommended in the original study; (2) the feasibility of using hydraulically-dredged clay fill from adjacent subsurface lake areas in lieu of purchased fill material; (3) use of this type of fill to reduce substantially the estimated cost of the project.

It was finally recommended that rubble-mound dike construction should be used for the north and east walls of the proposed land fill area. Tied-sheet pile retaining wall construction should be used for the more protected south wall. Sand fill should be located immediately behind the sheeting and extend to the anchor piles placed a minimum distance of 70 ft from the piling.

# CHAPELS FOR MEDITATION

*Of all public spaces, none have maintained a closer integration of interior and exterior than the place of worship. Even when the art of the painter and sculptor was in the ascendancy, the integration of interior and exterior was preserved. The two chapels shown on the following pages exemplify this unity of architecture and interior design—they both seem to proclaim that religions, which stand for truth, want to be housed without deception.*



PHOTOS: FRANK LOTZ MILLER

At the heart of St. Joseph Seminary, a high-school/junior-college complex for the archdiocese of New Orleans, is a roofed and galleried courtyard through which seminarians pass on the way to and from classes. The Corpus Christi Chapel stands at this crossroad as a devotional reminder and as a constant symbol of purpose, where one may stop conveniently for prayer and meditation.

The chapel has a cylindrical form, 30 ft in diameter, composed of lozenge-shaped panels with steel framing; on the interior and exterior of the chapel, the panels are finished with white plaster. A parasol-shaped ceiling suspended below a flat roof is finished in white plaster, and the terrazzo flooring is also white.

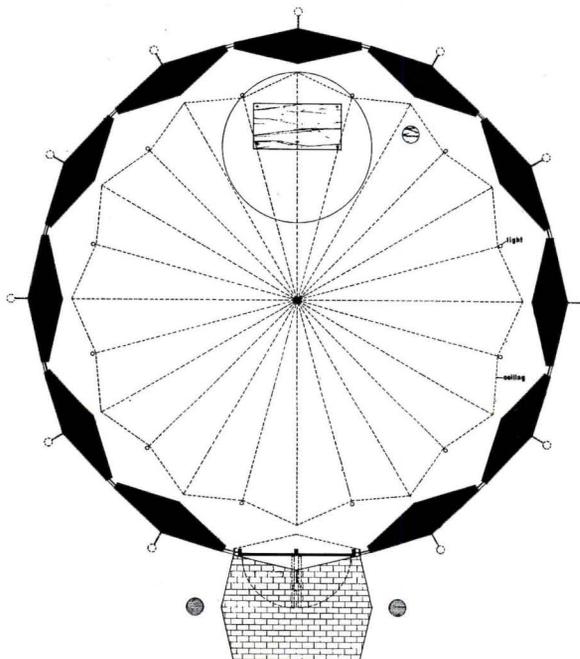
Strips of colored glass—red, gold, and blue tones—between the unadorned panels provide the main decorative element in the design. The strips are primarily red on one side of the entrance and blue on the other; successive strips have more and more gold until, near the altar, they are predominantly gold with only accents of red and blue. At different times of the day, sunlight slips into the courtyard and through these strips of glass, casting colored light onto the white walls and floor of the chapel.

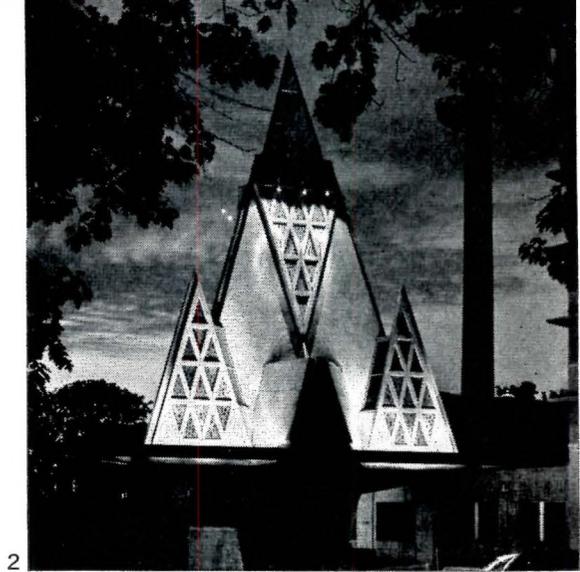
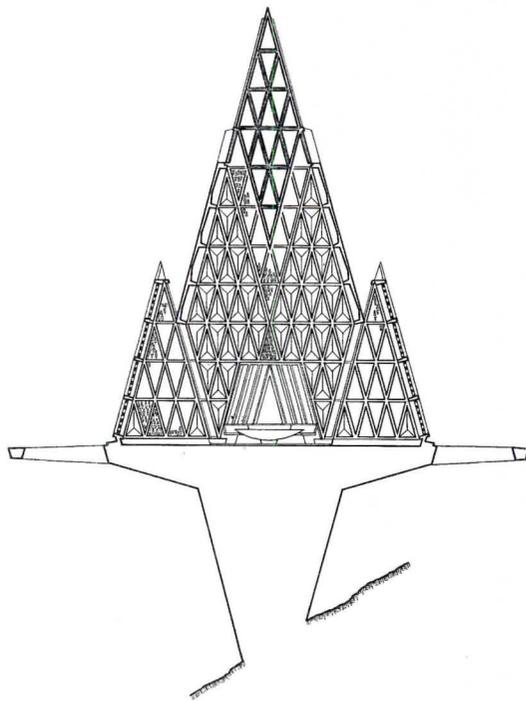
The chapel seems to have realized the requirement of the abbot for designs of “simple and sincere dignity which attain to beauty through essentials.”



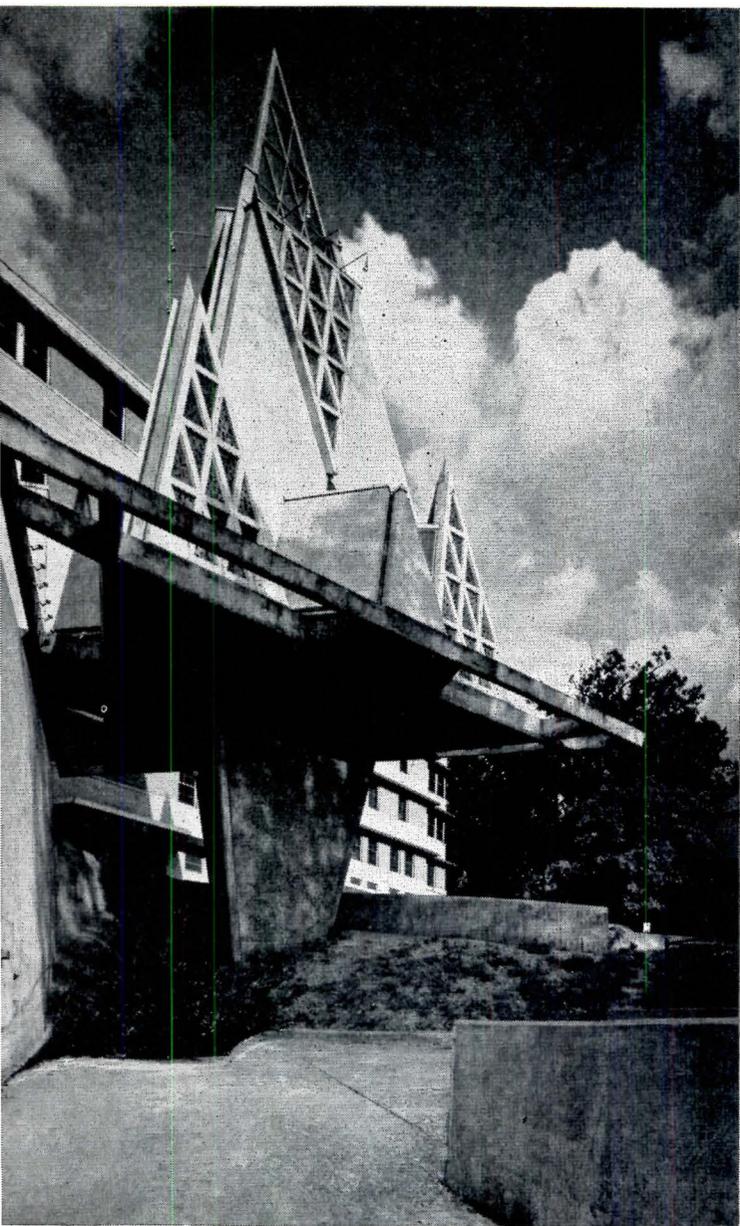
**DATA:** descriptions and sources of the major materials and furnishings shown.

**Walls:** sand finish plaster/white/U.S. Gypsum; over metal lath. **Glass strips:** leaded/red, gold, blue/handblown/Blenko. **Flooring:** white cement, white tesserae, 10% brass chips. **Lighting:** incandescent/suspended above ceiling; hanging fixtures/brass tubing/clear glass exposed filament bulbs/25 watts/architect-designa. **Altar:** Georgia white marble/natural ceramic tile by Hal Reigger/architect-designed. **Credence table:** 12" cylinder/Georgia white marble. **Kneelers:** foam rubber pads/Naugahyde upholstery/light beige/U.S. Rubber.





2



1

CHAPEL FOR MOLINE PUBLIC HOSPITAL •  
 MOLINE, ILLINOIS • HENRY HILL, ARCHITECT  
 • JOHN W. KRUSE, ASSOCIATE ARCHITECT  
 • I. THOMPSON, STRUCTURAL ENGINEER

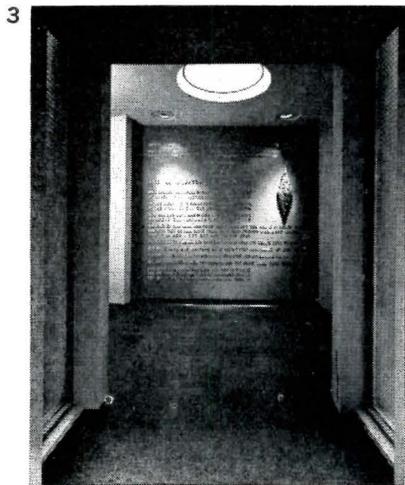
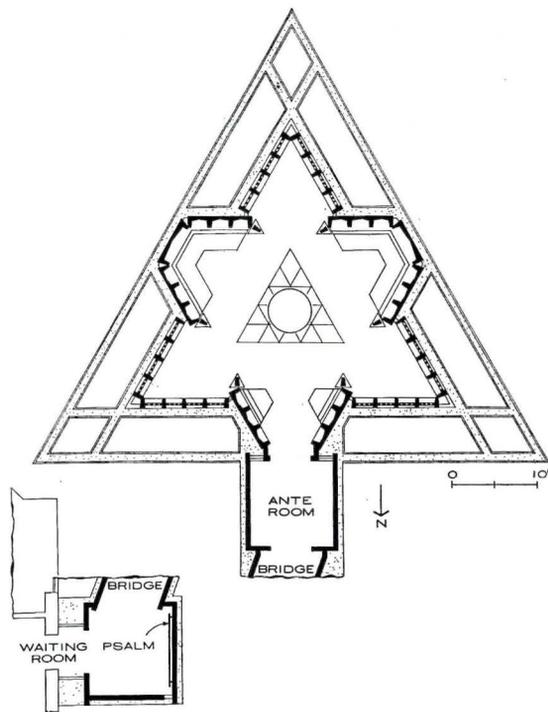
A gift to the Moline Public Hospital, this interdenominational chapel was planned to serve patients and visitors who might desire a more reverent place for meditation than the waiting room of the hospital. No formal religion or dogma is suggested, but the chapel can be closed off by a pair of walnut doors (4) for the administering of last rites.

The chapel stands free on a 30-ft concrete pedestal (1, 2) behind the hospital and is connected to the main waiting room by a 60-ft bridge, which is both the access to the chapel and also "paces" the change between the two interiors. The arrangement has been judged a good solution to "an almost impossibly difficult site."

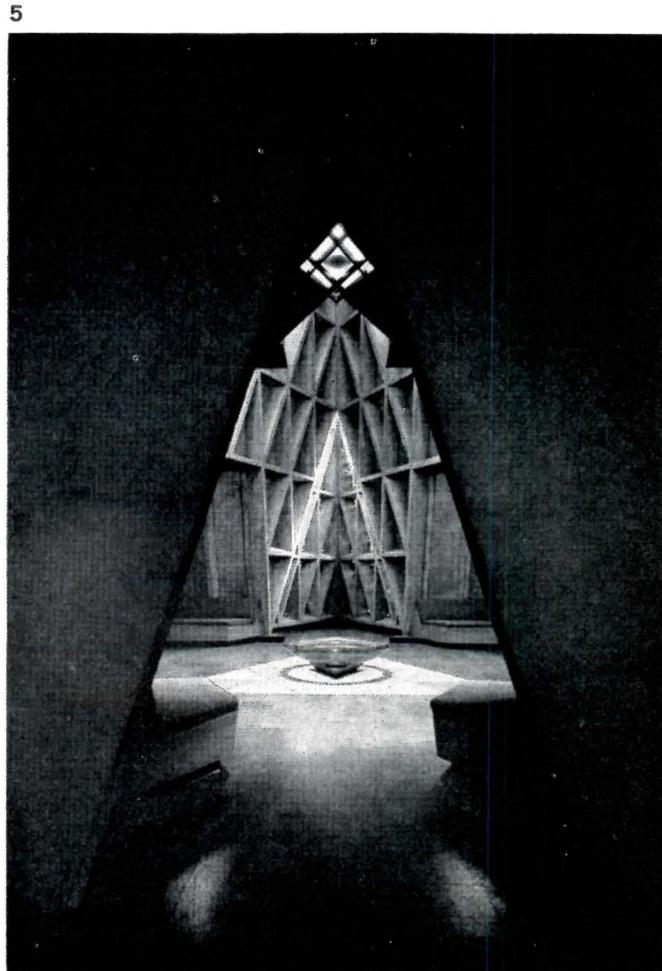
Facing the entrance to the bridge is a blue-gray wall on which the 90th Psalm is mounted in bronze letters (3). The architect was requested to express in his design the spirit of this psalm, which begins with a lament on the transitory nature of mortality. The phrase "as a watch in the night" was taken as a theme, from which the architectural symbol of a torch held aloft was developed.

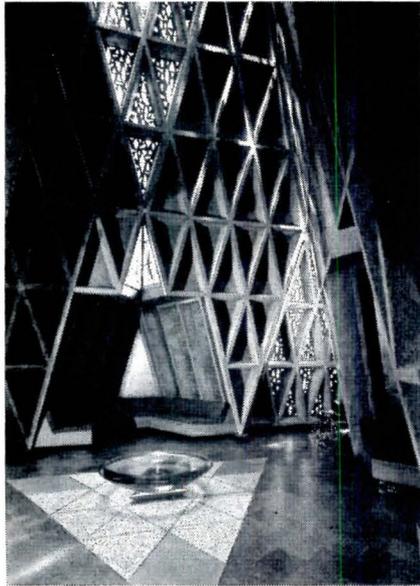
The view down the bridge does not look directly into the chapel but shows only the passageway of gray-rose walls divided by walnut strips, and a grayed-lavender ceiling with circular lighting recesses; a blue-gray glass panel in the anteroom to the chapel closes the view. The chapel is revealed from the anteroom

PHOTOS: ROGER STURVEYANT



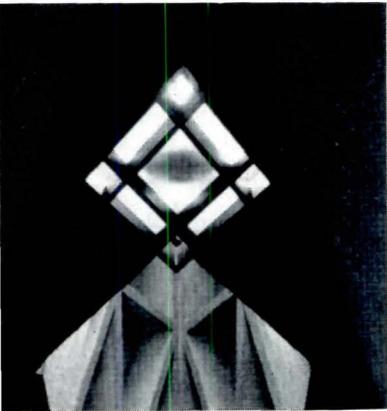
*A bridge set at an angle to the hospital connects the main waiting room—behind camera in (3)—with the chapel (5). Illumination of the exterior makes the architectural symbolism of a flickering watchlight as readable by night (2) as by day (1).*





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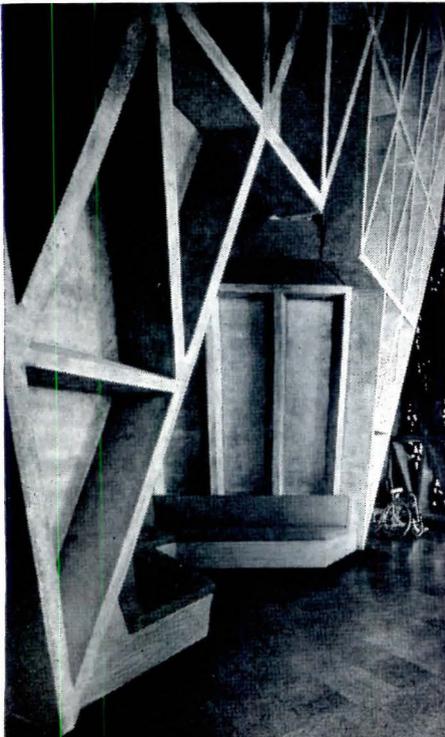
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8



9



through a triangular opening (5).

The cluster of pyramids that comprises the building is composed of precast, triangular, webbed concrete panels, which are left natural with a sandblasted finish.

Nearly half of the panels are set with precast panels embedded with colored glass. From the floor up to the 30-ft apex there is progressively more concrete and less glass, which is primarily deep blue, purple, and lavender and fades off to pale gold with occasional flecks of red. The color is distributed so that it is deep at the base of the chapel and becomes lighter as one looks up, until, at the lantern, the color "shatters" into smoke-gray and clear glass (10).

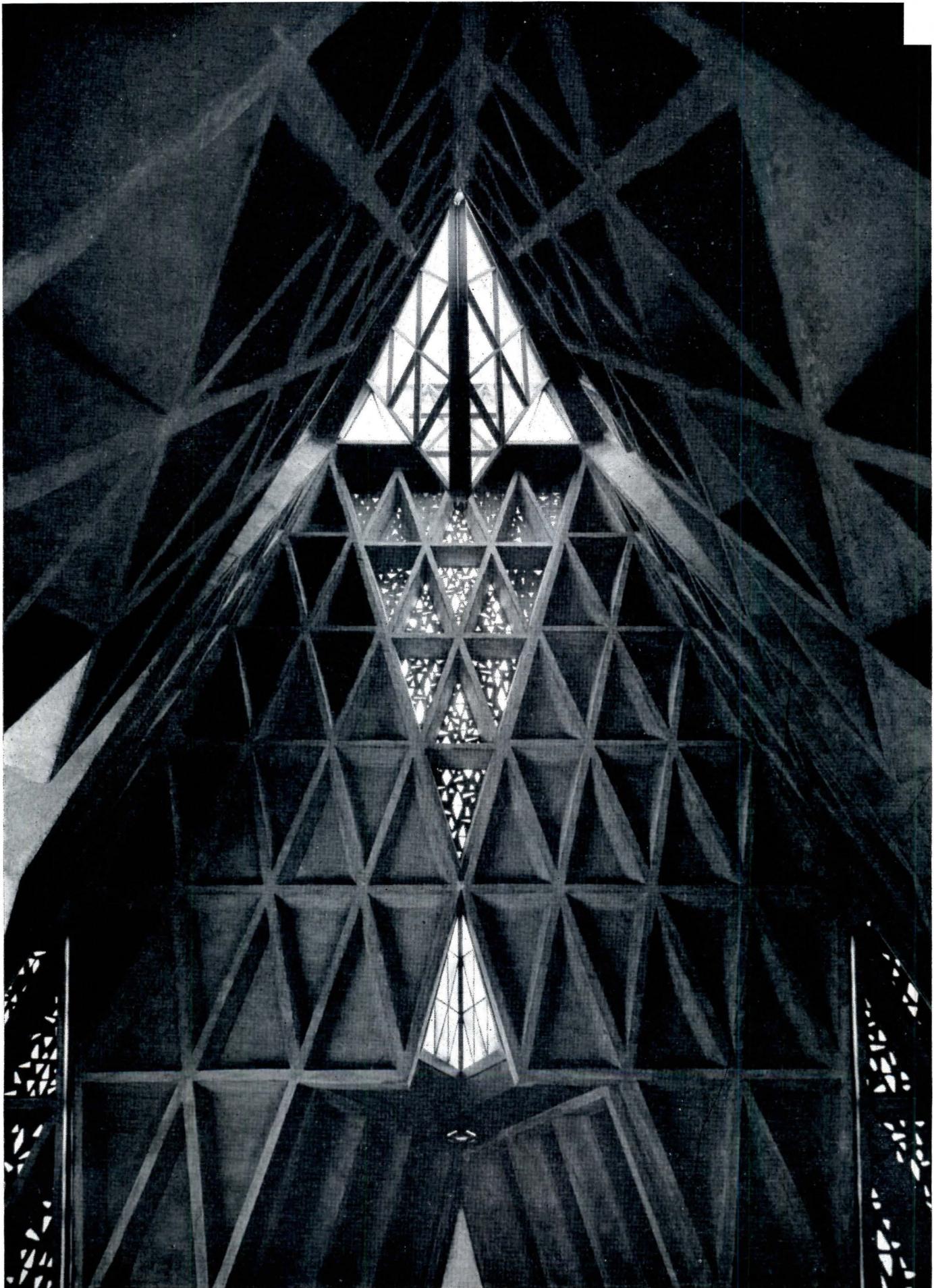
Directly below the lantern, and illuminated by a light from it, is a clear bowl with a small jet of water (8); the movement of the water casts reflections on the walls that carry the eye continuously upward to the lantern again. On the interior, then, as well as on the exterior, there is a symbolic expression of the lambent flame image of the 90th Psalm.

The chapel won an Award of Merit in the 1961 AIA Honor Awards program, when it was deemed to be "a distinguished interior with great religious feeling."

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

**Walls:** triangular concrete panels/precast/natural/sandblasted; triangular colored glass panels/1½" thick/deep blue, purple, lavender, pale gold, flame red/Glassart, Scottsdale, Arizona. **Lantern:** glass/smoke gray, clear; blue-purple, amber Cathedral Tropicglass/Russell Reinforced Plastics; aluminum frame. **Flooring:** cork tiles/Danish; beneath fountain/integral colored concrete/red; exposed aggregate/gray and bronze; bronze divider strips. **Seating alcoves:** concrete panels/gold; banquettes/walnut/architect-designed; upholstery/wool/red and bronze/Margery Hoffman Smith. **Fountain:** clear plastic bowl/5-ft diameter/pattern achieved electronically/bronze base/Tobermory, Berkeley, California.

*Three corner pyramids of the triangular plan, which are of glass and concrete, are intended as semiprivate areas and can be used by ambulatory or bed patients (6). Two sitting alcoves (9) are enclosed by concrete panels finished in oxidized gold. The red accents of the glass are picked up again in the inset beneath the fountain (8), in the alcove lighting fixtures (7), and in the banquette upholstery (9).*



## Discs Replace Mortar



*Report on a new method of joining lightweight-concrete building units, using plastic discs instead of mortar.*

For some years, Sweden has been working toward improved concrete-block construction—reducing joint thickness while at the same time providing a more precisely built wall. Early experiments in the 1940's led to the introduction of what are now known as Ytong units; these were designed to be simply glued together, a construction method made possible by the precise dimensional accuracy of the units. Latest development from the International Ytong Company is a unit that needs no mortar or glue, but that fastens with a unique plastic disc.

The new lock-joined units are Ytong blocks of standard dimensions—30 in. long, 8 in. high, and 8 in., 10 in., or 12 in. wide—with milled grooves in the upper and lower joining surfaces. Circular discs of polystyrene are fitted into these grooves during erection to lock units securely together. This method presupposes exact dimensions and angles, a requirement now met by special precision machinery. Quantity production has already begun, and all future production of Ytong stave units will be of this type.

### *Composition of Units*

The lightweight units are made from Ytong, which is produced from quicklime and siliceous materials. The raw materials vary in different countries and can, for example, be burnt shale, sand, sandstone, fly-ash, or blast-furnace slag. In the production process, the raw materials are ground to a fine consistency and mixed with water and aluminum powder to form a thick sludge. The mixture is then poured into steel molds. The aluminum powder acts as a leavening agent, building small bubbles in the mass, much as baking powder does in bread dough. When the mass has risen, it has a cheese-like consistency and is cut into the desired shapes. Finally, the material is steam-cured in autoclaves, where it hardens to a homogeneous product of high compressive strength.

In addition to the standard sizes, there are units 10 in. high and 4 in. thick for partition walls, and 4 in. high for leveling purposes. Door and window lintels are available in lengths up to 10 ft.

### *Joining Method*

Milled into upper and lower surfaces of each unit is a central longitudinal groove  $\frac{1}{8}$  in. wide and  $\frac{3}{4}$  in. deep. The polystyrene discs,  $1\frac{1}{2}$  in. in diameter, are the same thickness as the groove. In

erecting a wall, staves are laid in bond in the normal way, with discs placed over every vertical joint. As the discs take hold in both the overlying and underlying grooves, the position of the units is fixed laterally. Joints are made tight by a few light hammer blows.

Window and door frames are fixed with pointed plates of aluminum. Corners are reinforced with corner plates, plus an extra disc in a transverse groove.

It is essential that the first course be absolutely level. It can be set on a smooth bedding or in cement mortar.

### *Strength Properties*

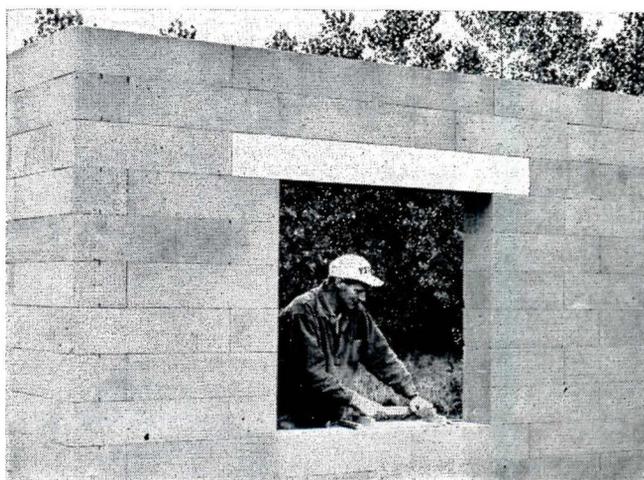
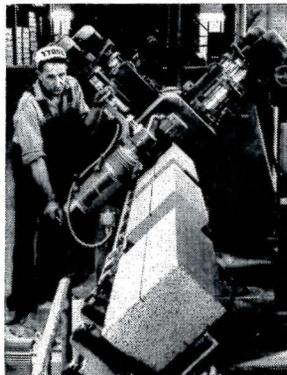
Since the units are mainly held together by frictional force in the contact surfaces, the wall lacks bending strength except as it is held in position by loads from above. Physical and deformation properties for the horizontal forces depend upon the wall's vertical thrust load. The wall's compressive strength with central loading generally corresponds to that of a wall composed of glued units. Thus the joining material has no effect on the wall's tensile strength. This seems to be a general phenomenon for walls of cellular concrete, since the compressive strength of masonry walls is also practically unaffected by the mortar's physical properties within normal limits.

On the other hand, formation of the joint has a noticeable effect on the wall's coefficient of elasticity with short-term loading. The coefficient of elasticity of lock-unit walls is about half that of glued walls. Eccentric loading is currently being investigated.

The even surfaces and lack of mortar joints give the wall better thermal insulation than a corresponding wall of masonry blocks. The U-value of a 10-in.-thick lock-unit wall with a density of 32 lb/cu ft is 1.35; with a density of 26 lb/cu ft, the U-value is 1.20.

Technical results have been excellent, International Ytong reports, with no unexpected or complicated problems. Assembly is simple and fast, and since it requires no glue or mortar, the method can be used in the coldest weather. Units adapt readily to the building module. The lack of tensile strength for vertical stress does not normally cause any problem for a loaded wall. With a partition, however, the stabilization problem must be considered; here, the longitudinal grooves provide a simple means of reinforcement. Waterproofing is achieved by a thin coat of stucco.

Ytong units are now being manufactured in 10 countries, including Norway, Germany, Canada, Israel, Belgium, Spain, and England.



# REGISTER PLACEMENT

BY ROBERT H. EMERICK

*Although the proper selection and placement of registers do not alone guarantee a successful heating-cooling installation, they are, nevertheless, important factors in environmental comfort with air systems. Considerations of the whys and hows of register placement are analyzed here by a Consulting Mechanical Engineer of North Charleston, South Carolina.*

Many discomfort complaints associated with environmental control systems dependent on air movement are the natural outcomes of: (a) putting the register in the wrong place; (b) installing the wrong kind of register; (c) a combination of both.

In designing a system, we have a choice of four locations for registers: the high wall, the ceiling, the baseboard, and the floor. We also have a choice of register forms, providing directional control and velocity ranges as desired. As a first step in making a choice, let us consider what effect the system environment has on suitable locations.

## *Air Movement vs.*

### *Building Interdictions*

The natural preference of the designer to introduce heating air at low points, and to supply cooling air at relatively high points, thus taking advantage of natural air movement, is often frustrated by the structural characteristics of the building. For example, when a structure is erected on a concrete slab, the difficulties and costs of providing a system of under-floor ducts are quite likely to involve an investment that is out of pro-

portion to the advantages obtained. So we think about alternate arrangements, such as high-wall registers or ceiling diffusers.

Of the two, high-wall registers are more commonly chosen for residential installations, primarily because the limited height of most ceilings presents an extra problem in trying to keep the ceiling diffuser from annoying persons directly beneath it. Occasionally, a designer may also object to the appearance of a ceiling unit, feeling that the wide expanse of clear ceiling makes it too prominent.

Since we must use high-wall registers under certain conditions as described, the performance of the registers becomes of prime importance. We are equally concerned with the directions of the air discharge, and the "throw" or distance the jet is projected. Engineers have different estimates of the most desirable throw, some recommending a projection that ends approximately three-quarters of the way to the opposite wall, while others maintain that  $1\frac{1}{2}$  times the room width is best, in order to secure a positive wiping action on the windows or exterior walls where maximum heat transfer is occurring.

The practice in this office is to match the throw with the full distance to the opposite wall, if possible. In those rooms that require excessive velocity to implement this policy (over 500 fpm), we sometimes settle for a throw of 80 per cent of the distance, or seek out another location for the register.

The direction of the discharge is determined by the shape of the room.

Manufacturers' standards permit various air patterns as illustrated (1), the vanes or blades of the registers being adjustable on the job. Since the physical dimensions of the register are quite small when related to the dimensions of the room being served, taking advantage of this directional control is essential for uniform air distribution.

"Drop" is another factor requiring attention, this being the distance below the horizontal that an air stream falls between the register and the end of the throw. Manufacturers' tables generally base their drop on a terminal velocity of 50 fpm, measured at the end of the throw. This must be considered, since an early or deep drop might cause a feeling of draftiness, and discomfort, in persons exposed to the air movement.

A 3-ft drop in a room having an 8'-2" ceiling, produces an air movement of 50 fpm just 3'-11" above the floor where the throw ends at the opposite wall (2). To effectively control this situation, a register designed for double deflection—i.e., equipped with blades that can be adjusted to discharge air above the horizontal as well as in lateral directions—is recommended as a regular specifications requirement.

### *Some Pros and Cons of High-Wall Registers*

On the heating cycle, high-wall registers are less than ideal. Here are some of the conditions that may be expected, subsequent to their installation, with suggestions for improvement.

(1) A substantial temperature differential is common between the floor and

ceiling. Ranges of temperatures compiled by this office on a three-bedroom, two-bath, one-level home are tabulated (shown). A simple method for bettering the condition is to turbulate the air by a conventional room fan.

ROOM TEMPERATURES AT VARIOUS ELEVATIONS\*

Room	Height above floor (ft)	Temperature (F)	Rel. humidity (percent, average)
Living	4	72	47
Kitchen	5	69	46
"	6	76½	42½
Dining	5	78	39
#1 Bedroom	5	75	40
#2 "	5	73	41
#3 "	5	74	41
Porch	4½	49	48
#1 Bath	4½ (in shower)	78	43
#2 Bath	7	79	42
"	½	70	44
Hall	8	78	45

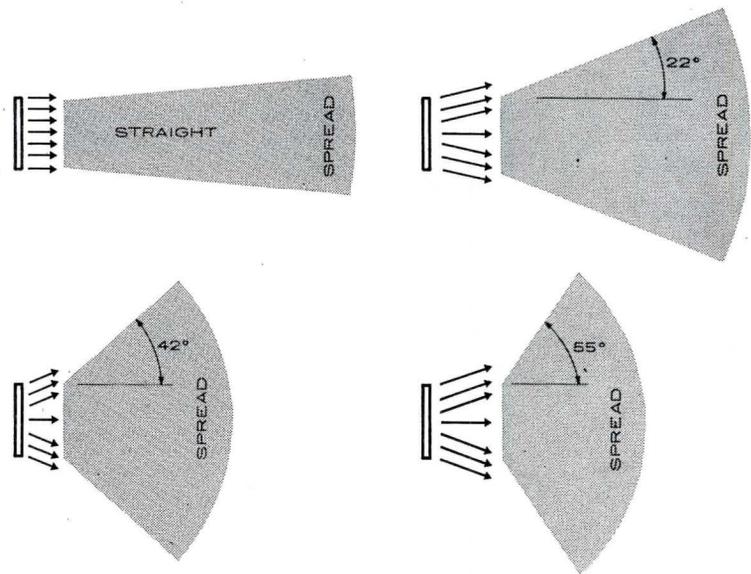
\*Outside temperature 46F

Relative humidity was noted because of the effect it has on the feeling of comfort experienced by room occupants.

Kitchen readings were affected both by cooking and by heat from the refrigerator condenser.

Floor temperature in all cases, 65 F.

Since all registers in this house are ceiling mounted, the proximity of the register to the thermometers, and variations in velocity in the supply ducts, accounts for the absence of uniformity in the data.



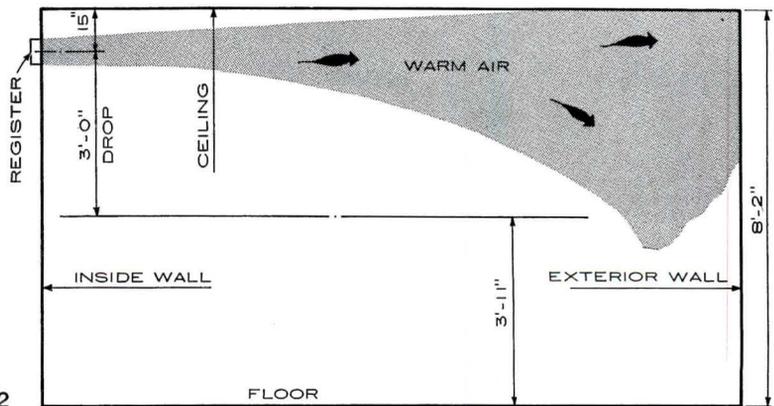
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PATTERNS OF DISCHARGE

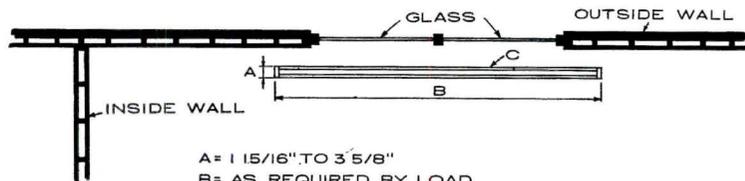
(2) Floors will range from cool to cold. This is particularly true of floors over a crawl space, since the ventilating air movement through the space steps up heat loss through the floor.

Treatment takes the form of 2 in. of insulation added under the floor, or wall-to-wall carpeting, or a combination of these if the owner can afford it.

(3) Smudges on the wall above the register, and on the ceiling directly over it, are the result of dust deposits, which are carried through the system until

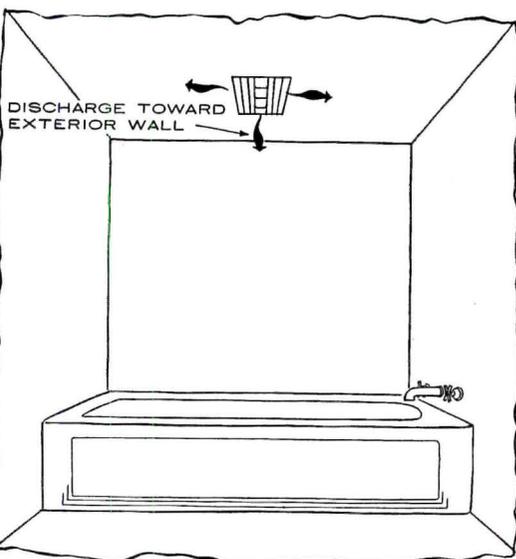


2



4

PLAN OF SLOT IN CEILING



3

they find suitable areas for settlement. To avoid these, householders should be instructed, when the system is first activated, to wipe the walls and ceilings around the register every 15 days. Laboratory tests indicate that deposits left undisturbed for 30 days or longer turn into permanent smears.

These contra-features of high-wall outlets are balanced, in many installations, by their excellent performance on the cooling cycle. Temperature uniformity is promoted by the natural tendency of the chilled air to sink floorward and diffuse throughout the warmer air of the room. Generally, we consider this to be the most satisfactory method of cooling residential rooms.

High-wall registers, in some instances, offer material savings in installation costs. For example, a common tendency to set the evaporator-blower of an air-conditioning system in the attics of small commercial and professional buildings naturally underscores the desirability of delivering the conditioned air to the various rooms by way of attic ducts. The drop to each high-wall outlet is then of brief length, seldom more than 2 ft.

In short, although the high-wall registers do not satisfy all our requirements, their frequent contribution to good cooling and investment savings may be important enough to decide to use them, despite the building's physical suitability for low-level service.

#### Ceiling Outlet Alternatives

In order to obtain a suitable air pattern at an acceptable sound level, the selection of a ceiling diffuser type of outlet

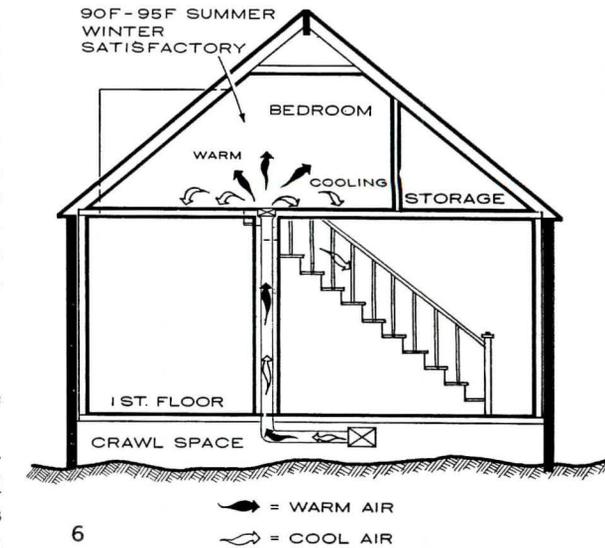
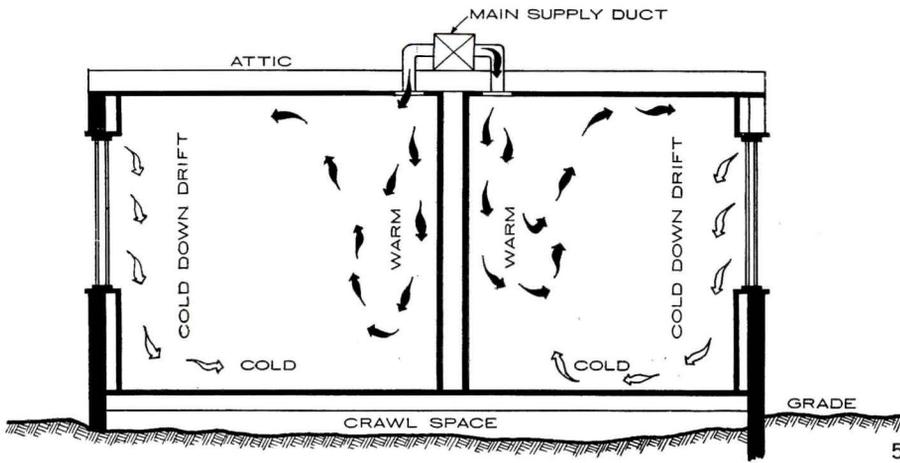
is a fairly complex procedure. However, because of this factor, we are less likely to place a wrong diffuser than a wrong register.

As mentioned previously, the combination of low ceilings and the difficulty of keeping house occupants from under the direct blow discourages the use of this equipment in residential work. We generally prefer it for commercial installations, auditoriums, and other higher-ceiling projects. Nevertheless, we often specify diffusers for kitchen service, since kitchen areas seldom have either wall or baseboard surface available for registers, and, moreover, air currents are set up anyway by the cooking activities.

Diffusers can be expected to provide distribution through 360 degrees of azimuth, and for this reason may be preferable, in some locations, to a ceiling register that deflects its discharge from one to four clearly defined directions.

We like to use directional registers in narrow areas, such as hallways, with the air discharge traveling in two opposite directions parallel to the containing walls. Experience indicates also that most ceiling installations must have directional control for satisfactory performance. To correct a faulty bathroom installation where a ceiling register discharges in one direction only, straight down, the location should be accorded a unit having a three-directional output. (3). As an original design, however, a register set in the wall above the bathroom door, and blowing straight toward the exterior wall, would be preferable.

An example of nonmultiple directional control that works satisfactorily none-



theless, is shown (4). This is a slot-type of register, available in various widths and standard lengths, and suitable for screening large glass areas with a blanket of warm or chilled air to suit the season. These have been found good for *specific jobs*, but because of their limited capacity, some auxiliary help from other registers may be needed to meet the maximum needs of a large room.

They are useful also in solving some peculiar problems. To illustrate, in the restoration of Thomas Jefferson's Monticello, slot outlets were built into the head trim of the doorways, and nestled behind wall moldings, always in positions invisible to visitors walking through the rooms. This placement permitted the restoration to provide both winter and summer comfort without committing the anachronism of betraying its modern source.

#### Rooms Feel Chilly—Why?

This complaint and question come from a family living in a \$25,000 development home, with the registers located generally as indicated (5). The ceiling registers provide two-way deflection, paralleling the middle partition, but nowhere blowing toward the outside wall. Air movement generally follows the pattern marked by the arrows, diffusion is poor, and the down-drafts from the windows and cold exterior walls are barely challenged.

This arrangement violates one of the basic axioms for uniformity in heating; the warmest air is not directed toward the coldest surface. No wonder these rooms are chilly.

For the builder, of course, such an

arrangement saves a few dollars in duct construction; whether it saves his reputation for building a good house seems open to question.

The warning for the designer is this: if and when ceiling registers are used, some part of their discharge *must* be directed toward the surface that is coldest in winter, warmest in summer, these surfaces usually being the same. Otherwise, complaints can be expected.

#### Status of Floor Registers

This office does not favor them for these reasons:

(1) Floor registers are effective dust-catchers. Consequently, after several years of service—or less in some houses—the accumulated debris can become a fire hazard. Any such installation should carry a directive stating: "Clean these registers, and the ducts beneath them, at least once every year."

(2) When placed close to an outside wall and under a window, which is probably their most effective position, they are likely to suffer interference from draperies. Such interference can depreciate their performance to an unsatisfactory level.

(3) They are not our best choice of location for summer cooling. The relatively greater density of the chilled air urges it to seek the lower levels; consequently, diffusion is comparatively slow and seldom as uniform as from high registers or ceiling outlets.

An example of the trouble that can follow a floor installation is shown (6). The second-floor room is served by a floor register, with a "heat lid" overhead

in the form of an extensive, sun-baked roof area. A few feet distant, and through a single open doorway, is the stairway to the lower floor, thus providing an air chute down which chilled air can plunge in summer, and warm air rise in winter.

This natural movement of the air in summer is the cause for complaint. It never rises enough to diffuse into the ceiling, thus creating a condition that could have been avoided if the register had been located in a high-wall position, or even in the ceiling.

As it is, short of relocating the register, an expensive and messy job, the simplest way to relieve the complaint is probably by the installation of an exhaust fan to pull out the hot air under the ceiling and then discharge it, either outside the building or into a return duct for recirculation. The former disposal scheme, of course, will increase the cost of the air-conditioning operation, since the lost air must be made up through the fresh air intake to the evaporator coils.

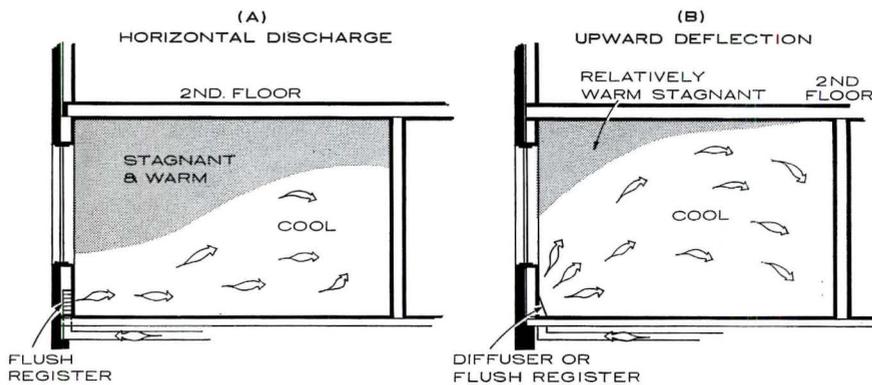
(4) We must also mark down floor registers for their skill in snagging feminine heels, and for their allure to children as depositories for marbles, beads, and other toys small enough to be pushed through.

We should observe, however, that despite this list of why we do not like floor registers, many engineers do. Tests made at the University of Illinois indicate a performance superior to baseboards under some conditions. The essential factor is to provide an exit velocity for the air sufficient to carry it vertically for a distance of 8 ft for residential installations, higher for buildings having higher ceilings.

### Registers in Baseboards

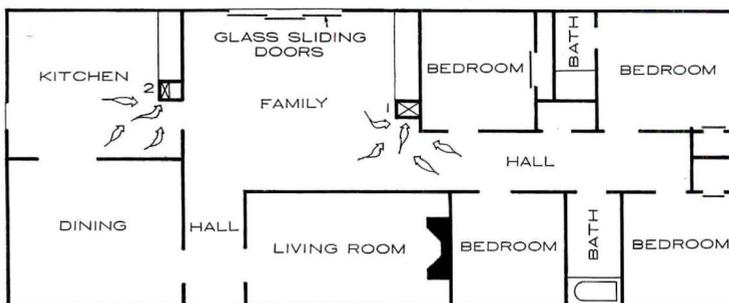
Halfway through their first summer in a new home, one family complained that the air-conditioning system was not satisfactory. The rooms felt warm and a little stuffy, except near the floor where the coolness was noticeable, and several rooms were rather drafty.

These people were experiencing the effects of baseboard registers without adequate directional control; the discharge was moving directly across the floor, and staying there. Heating was



NOTE:  
DIFFUSER IS SHOWN IN (B) TO EMPHASIZE UPWARD DISCHARGE ON COOLING CYCLE. ALTERNATIVELY A FLUSH REGISTER MAY BE USED WITH VANES SET TO DIRECT DISCHARGE ABOVE THE HORIZONTAL.

7



NOTE:  
1-ALL REGISTERS IN CEILING OR HIGH IN WALLS  
2-RETURN GRILLES AT FLOOR LEVEL  
3-ALL BEDROOMS CARPETED

8

better, of course, since the warm air turned its movement upward as soon as it could, thus diffusing into the room air as it rose.

This case illustrates why, when registers are placed in the baseboard, both lateral and above horizontal deflections are essential, especially for the cooling cycle. What happens to a horizontal discharge, and the improvement obtainable by a rising deflection is illustrated (7).

Several manufacturers offer baseboard or low-wall diffusers, with the directional guidance of the discharge readily adjustable to the season. Although these project somewhat into the room, they are considered to produce more effective spread and more uniform room conditions than the flush-front register.

We should note that under the "Silver Shield" standard of quality, recognized by associations and contractors in the warm-air heating industry, only baseboard or floor-set diffusers produce the low-temperature differential guaranteed under a "Silver Shield" installation. This differential is a remarkable 5 F, when measured between the floor and 6 ft above the floor, and with the thermostat set at 75 F.

No such uniformity is possible when warm air is introduced from either a high-wall register or a ceiling outlet. As previously cited (*see table*), a differential of 14 degrees maximum is indicated; other researchers have observed as much as 10 degrees higher than this.

This brings us back to a contemplation of the almost inevitable compromise that characterizes most of our register placements. When only one outlet serves both the heating and cooling cycles, shall we place it low for the most effective heating, or set it high for the best of summer comfort?

Perhaps, if this conflict of performance were explained to a client prior to making a decision, subsequent complaints might be avoided or at least reduced in vehemence.

### *Return Grille's Place in Scheme*

One ranch house (8), with more than 4000 sq ft of floor area, offers an interesting example of return-grille miscomprehension.

The original plans for this house called for a single return grille, marked #1 on the sketch. This one grille, in

that designer's opinion, would be enough to evacuate all rooms simultaneously, and allow the supply air to enter. All registers were either in the ceilings, or high in the walls; and none, incidentally, incorporated adequate directional control.

The first winter complaints were based on a lack of heat in the bedrooms. The family slept with the bedroom doors closed, and each morning the temperature in those rooms, even with all windows closed, was low enough to make everyone extremely uncomfortable.

The installing contractor replaced the furnace with a large one, but no improvement followed. Then he concluded the larger furnace was being air-starved by that single return. To eliminate this assumed situation, he installed a return in the kitchen, marked #2 on the sketch. The bedrooms stayed cold, yet immediate relief for those cold rooms could not have been simpler. All it required was for the family to leave its bedroom doors open just a few inches. That would allow room air to escape to the return grille in the family room by way of the hall, and consequently relieve the blower of trying to pump air into a bottle-tight room.

In this case, it was not recognized that new air cannot be blown into a room unless, simultaneously, an equal volume of old air moves out. Somehow, somewhere, we must provide enough return-grille area to serve every supply register in the house, and by an always open passage.

The location of each grille is actually of secondary importance. It is the unimpeded access to it that counts. For example, in Monticello, and in several restorations at Williamsburg, we have seen the return from a room escaping down the clean-out of a fireplace, or going up the flue to a neatly concealed duct. And in small modern houses, many a single, central return grille is used successfully, when the return air finds its way under doors that have been planed off  $\frac{1}{2}$  in. along the bottom.

The ranch house (8) also had other register complaints. The undirected downblow from ceiling units produced annoying hot spots on persons under them, and did very little to promote diffusion and uniformity of temperatures. Also annoying, the grille in the kitchen became the source of cooking odors

throughout the house. In short, that job required considerable revamping, all of which would have been unnecessary had the true functions of both the registers and returns been comprehended.

### *Summing Up*

This discussion of register placement is significant to the attainment of improved heating and cooling performance, particularly in residential installations. By comprehending the following truisms, a designer has the potential power to recognize errors and correct them while there is still time:

(1) For heating only, a low-level point of entry for the warm air is most effective in attaining uniformity of room temperatures.

(2) For cooling only, high-wall placements and ceiling outlets produce the most even cooling.

(3) For an all-year system employing common registers on both the cooling and heating cycles, some compromise must be accepted. In general, the decision should be guided by the family's comparative susceptibility to heat and cold, and the length of the seasons. Since more time is spent indoors in winter than in summer, efficient heating is probably preferable to a majority of families.

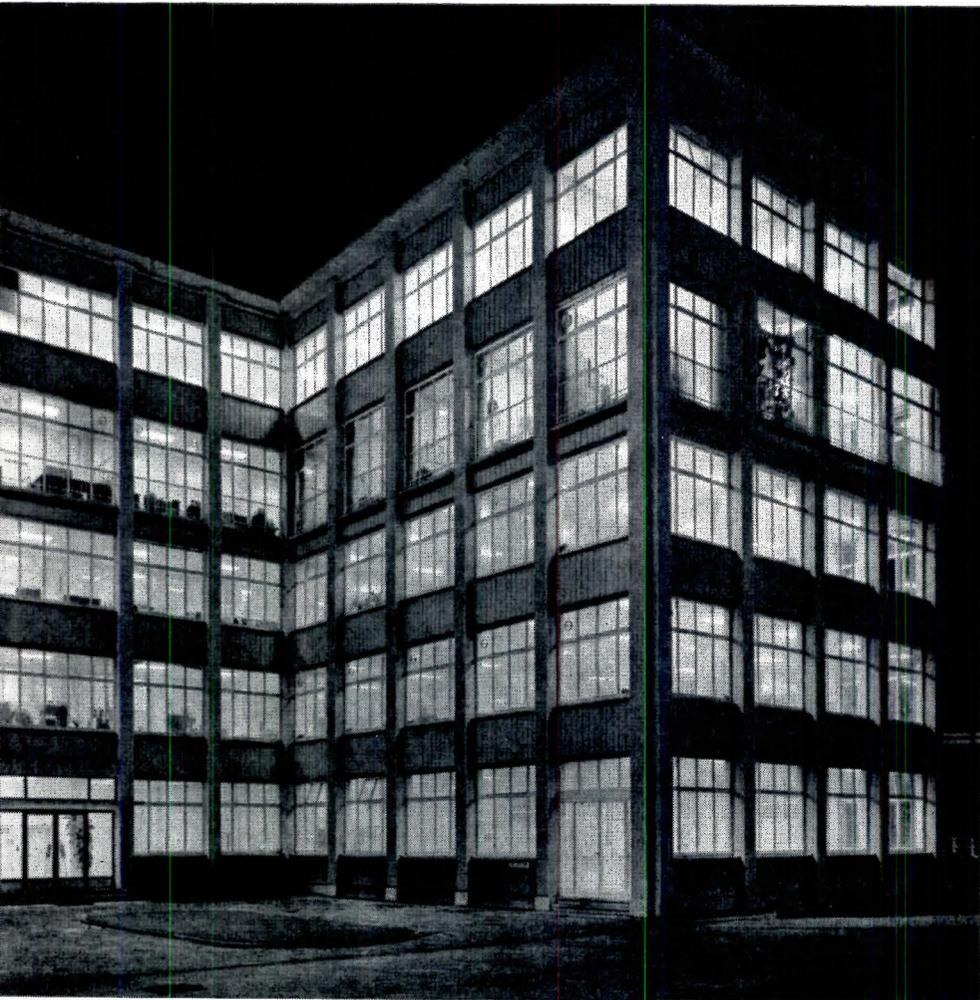
(4) Ceiling registers and diffusers should be used sparingly on residential projects, because of the relatively low ceilings.

(5) Good register performance requires units having at least two deflections, lateral and vertical. In many rooms, especially for high-wall installations, as many as three deflections will be needed for best results.

(6) For every register delivering either warmed or cooled air, provide a return of at least equal area. Several return inlets may be combined into a single return, provided this single grille is reached freely from all spaces that it serves.

The proper selection and placement of registers and grilles does not constitute the whole recipe for a successful heating-cooling installation. Legitimate complaints can arise from other errors of omission and commission. The obviousness of the registers and grilles, however, indicates that here, at least, our design should be guided by a practical understanding of what is best.

# VINYL/METAL COVERING



*Vinyl/metal laminate exterior. Phenix Works, Belgium.*

PHOTO: NELIS-FREROTTE

*There has been a growing acceptance of vinyl/metal laminates in the construction field by architects and designers. A report of recent developments related to this building component follows.*

Vinyl/metal laminates are among the newer surfacing materials now available to architects and designers. They combine permanent, maintenance-free design and color with structural efficiency for both interior and exterior applications.

Vinyl/metal laminates are formed by a permanently laminated bond of polyvinyl-chloride sheeting to steel or aluminum.

First introduced commercially in 1954, the material has found a rapidly expanding market for components of the transportation industry, radio and TV housings, appliances, outdoor furniture, etc. Only recently has it begun to gain acceptance and use in the construction field in this country, as designers and architects have become aware of its toughness, ease of forming, design possibilities, permanence of appearance, minimum maintenance, and resistance to abrasion, acids, alcohols, and weather. In addition to adding color, the vinyl-covered panels eliminate the necessity of frequent painting caused by the abuse of heavy traffic.

Vinyl/metal laminates in sheet or panel form, for use in buildings, are produced by Arvin Industries, Clad-Rex Corp., Enamel-Strip, Poloron Products, and Shwayder Brothers. The largest applications so far have been as protective and decorative interior-wall panelings in schools, hospitals, and office buildings. Presently under construction is a large multistory building in the South. All interior ceiling-height partitions will be vinyl/metal. This building, alone, will use 200,000 sq ft, or 10 carloads of this material.

Two companies recently have developed successful methods of welding studs, nails, screws, etc., to the reverse side of the metal without marring the coated side. Thus the sheets can be bolted or attached to any existing surface. In addition, they may easily be combined with an insulation material to produce sandwich panels for walls. Prior to these developments, it was difficult to weld to the laminate, because of the high temperatures required in spot welding, which burned through to the vinyl sheeting.

## *Exterior Application*

For exterior use, the reverse side of the metal is coated with a polyvinyl-chloride film that is weather-resistant and stands

up well under salt-spray and humidity tests. The film will not flake or chip during forming. Although the laminates used for outdoor applications in this country have so far been limited, tests have proven that its resistance to weathering and air pollution is outstanding. Poloron Products has had a test building at its Scranton plant for more than three years, and the vinyl on it shows no sign of fading. It is merely cleaned with soap and water when necessary. Boat manufacturers have used the laminates as decking for over four years, and there has been no fading or failing of the vinyl despite the constant exposure to direct sunlight and salt spray.

In Europe, there has been abundant use of vinyl/metal laminates on exterior applications. Particularly important is the fact that the vinyl used has not been specially pigmented, yet has proven entirely satisfactory. Examples of the uses to which the Europeans have put this new material are: exterior paneling on the Nestlé administrative building in Switzerland; curtain walls on the railroad station Guillemins in Liège, Belgium; at the Mougins Store in Marseilles, France; at the Phenix Works office building in Flemalle-Haute, Belgium (see photo); and as ceiling covering in an indoor public swimming pool in Seraing, Belgium. The latter use, where the laminate is subjected to severe and continuous humidity, is a tribute to the strength of the bond between the vinyl and the metal, which is actually stronger than the metal itself. Another outdoor application for these laminates in Europe is roofing for industrial buildings, where it is usually used in corrugated form.

Even though ordinary vinyl laminate has been used successfully for outdoor applications in Europe, for several years American manufacturers have been testing specially pigmented and formulated vinyl sheeting to further improve its resistance to weathering and fading. Co-

lumbus Coated Fabrics and Masland Duraleather are two of the companies active in the field. A description of some of the test methods and results of Columbus Coated's program will serve to show the permanence of the vinyls.

### Tests

Columbus Coated Fabrics has been conducting field tests for over two years on various colors in both Columbus, Ohio, and Phoenix, Arizona. Phoenix was selected because the area receives approximately 90 per cent of the possible available sunlight. Columbus was used because of its industrial fumes and air contamination; it receives approximately 50 to 60 per cent less sunlight annually than Phoenix. In addition to the field tests, laboratory weather tests on the same vinyls were tested. The test results are shown (see table). All colors held up well and have proven entirely satisfactory after the tests. No deterioration of the vinyl was observed during testing. The photos of the Phoenix test panels indicate the degree of variation over a two-year period. Compared to other outdoor finishes, the test results were extremely favorable.

A recent development has been a weatherable, clear finish for the vinyl, which extends color stability, prevents dirt migration into the vinyl, and allows better dirt release. The finish also gives a bright luster which may be desirable for outdoor applications. A completely successful method for laminating vinyl to galvanized steel has also been developed. This was not previously possible, because zinc is not too compatible with the vinyl. This new process should overcome the reluctance on the part of some customers to use the material on exteriors due to a fear of rust.

The industry, through the Technical Committee of the Vinyl/Metal Laminators Institute of The Society of the Plastics Industry, Inc., has drafted a set

of Proposed Commercial Standards and Test Methods for Vinyl/Metal Laminates. The requirements and methods of testing specify thickness of the vinyl, width, length, abrasion resistance, plasticizer loss, light stability, stain resistance, adhesion strength, and flammability. They also establish the standard testing methods and minimum standards of performance that the laminates must meet. These standards are expected to be approved by the Department of Commerce in the near future.

### Cost

Cost comparisons between vinyl/metal laminates and competitive products are favorable. Although it is more expensive initially than painted metal products, its color fastness and abrasion resistance eliminate the necessity of repetitive paint maintenance; and its ease of cleaning with any soap or detergent further reduces maintenance expenditures. As a general rule, it will be found to be less expensive than such other decorative materials as stainless steel or anodized aluminum. Prices naturally vary with the size of the sheets, the type and gage of the metal and the vinyl.

### Widths and Thicknesses

Metals used most frequently are steel or aluminum. Although facilities vary with the different laminators, a listing of Poloron's specifications will indicate what can be obtained. Laminated sheets are available in widths from about 3" to 52". The thickness in steel varies from .0149" to .075"; in aluminum from .010" to .125". Colors are unlimited in the vinyl, and hundreds of embossed patterns and designs are available. The thickness of the vinyl runs from .005" to .012", in increments of .001".

Vinyl manufacturers now offer some 30 different simulated wood finishes, ranging from light yellow pine to dark mahogany. This makes it possible to have complete wood-appearing interiors made of steel laminates, thus overcoming the problem of many building codes that will not allow the use of wood in modern steel and concrete structures.

The growth of the vinyl/metal laminate industry in the last few years, and the increased acceptance of its qualities by architects and designers, indicate a healthy future for the industry in the construction field. The laminators expect that eventually the construction industry will be their largest single market.

LABORATORY WEATHER TEST RESULTS

Color	Phoenix	Columbus	2001 Hrs	
			Weather-o-meter	Fade-o-meter
D-1 Black	Satisfactory	Satisfactory	Satisfactory	Satisfactory
D-3 Blue	Satisfactory	Satisfactory	Satisfactory	Slight fade
D-5 Green	Slight fade	Slight fade	Satisfactory	Yellowed
D-7 Aqua	Slight fade	Slight fade	Satisfactory	Slight fade
D-9 Green	Slight fade	Slight fade	Yellowed	Slight darkening
D-10 Green	Satisfactory	Slight fade	Slight darkening	Yellowed
D-11 Gray	Satisfactory	Satisfactory	Slight fade	Slight darkening
D-12 Gray	Satisfactory	Satisfactory	Satisfactory	Slight yellowing
B-8 White	Satisfactory	Satisfactory	Satisfactory	Slight yellowing



## A Proposal for Workmanship Specifications

BY HAROLD J. ROSEN

*A proposal governing reference workmanship specifications, which was developed by the Atlanta Chapter of CSI and presented at the national convention last spring, is discussed by the Chief Specifications Writer of Kelly & Gruzen, Architects-Engineers.*

The vibrant, hard-working Construction Specifications Institute, at its sixth annual convention in Atlanta last April, submitted a proposal for the study, development, and publication of reference specifications covering workmanship.

At its fifth convention, last year, the CSI submitted to its membership a tentative manual for specifications methods.

It appears that the segment of the building construction profession that comprises CSI, in its goal to further the cause of better specifications, has moved ahead boldly in far-reaching programs that were never envisioned by other groups. At this rate, and considering the scope and magnitude of the proposals, CSI will be a force to be reckoned with in the establishment of standards in the construction industry.

The proposal governing workmanship specifications is the result of a study made by the Atlanta Chapter of CSI. It is based on the premise that endless, repetitive descriptions of workmanship standards, contained in our everyday specifications, can be incorporated into a reference standard much like our material standards.

For example, portland cement need not be fully described in a specification for concrete work. By reference to A.S.T.M. Spec C-150, Type I, II, III, etc., the specifications writer has established the standard for the cement to be used. Similarly, the Atlanta proposal governing workmanship specifications in the area of concrete work has proposed

several tentative specifications as follows:

- (1) Forms for concrete. (Covers construction, use, and removal of forms.)
- (2) Fabricating and placing reinforcement steel.
- (3) Handling and placing concrete.
- (4) Curing and protection of concrete.

(This covers protection of concrete from mechanical injury, unfavorable effects of hot and cold weather, and from premature loss of moisture.)

By an appropriate reference in the concrete-work specifications, a specifications writer will be able to incorporate those provisions of the reference workmanship specifications that are pertinent, in the same way that he currently employs materials standards to describe materials.

Although this concept has many attributes, it has certain adverse implications that have to be overcome. Somewhat similar systems are in use today, especially in certain public-agency work where there is a good deal of repetitive work of the same class, which permits establishment of similar standards that are issued with modifying amendments. To attempt to establish reference workmanship specifications for diversified projects of varying quality will require a good deal of thought and agreement.

In its favor are the reduction in physical size of specifications by incorporation of material through standard references; reducing the possibility of typographical errors by using standards in lieu of writing endless volumes; making time available for other areas requiring study, since the chore of writing is reduced; using standard phraseology that gains acceptance and meaning without requiring interpretation from the courts.

Criticisms that can be leveled at this concept are: agreement on standards; description of quality of workmanship; and definition of terms. Manufacturers of proprietary products will find it a bit

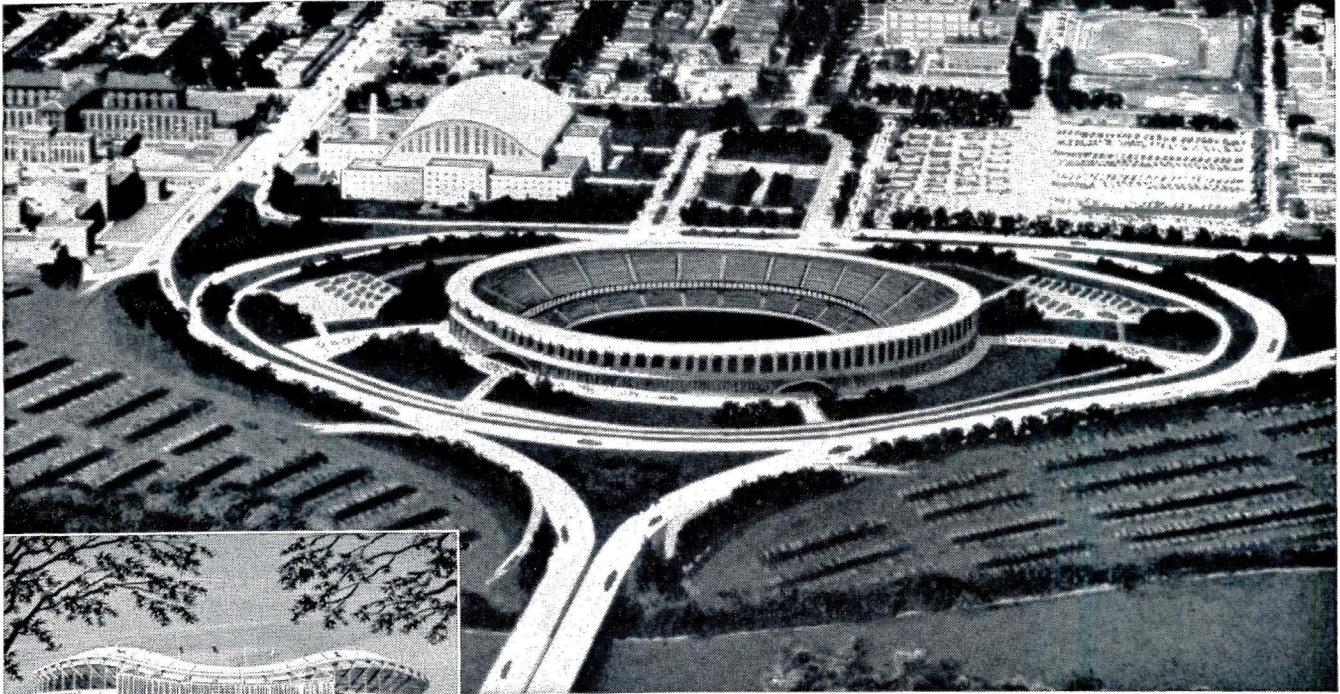
more difficult to obtain acceptance of their products, if their installation requirements are not in accordance with these reference workmanship specifications, because of the inertia to be overcome in getting specifications writers to rewrite their specifications.

Copies of the reference workmanship specifications will have to be available at the job site for ready reference by all concerned. This is not necessarily true of material standards, since materials are approved by sample or certification submission. However, installation procedures must be available where the work is under construction.

It is conceivable that these workmanship standards can be developed, and ideally a specifications writer can utilize them by tailoring them as required for his particular project. He can then incorporate the revised standards within his specifications, rather than not using them at all since they did not fulfill his requirements in every detail.

In effect, it appears that what we are all striving for are improved specifications, and standardization based on cooperative effort will produce this desired result. So-called "canned" specifications seem to have an odious connotation, but actually "guide," "model," or "master" specifications are invaluable tools, since they comprise in essence the sum total of our best experience. However, these "canned" specifications should be edited carefully for the project at hand, and workmanship standards, when developed, can likewise best serve the specifications writer's needs by being edited and tailored to a specific project.

For information relative to the proposed workmanship specifications, write to: Mr. Ronald S. Ryner, Executive Secretary, Construction Specifications Institute, 632 Du Pont Circle Bldg., Washington 6, D.C.



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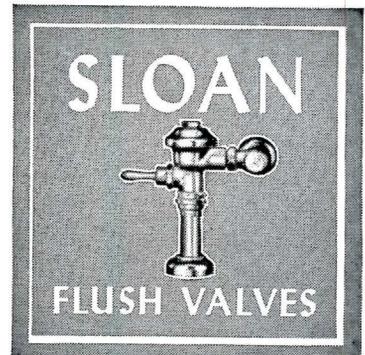
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## North Yard's New Heat Control

BY WILLIAM J. MCGUINNESS

*Heating control for 67 buildings in Harvard University's North Yard is now centralized. This mechanical improvement of a famous old campus is described by the Chairman, Department of Structural Design, School of Architecture, Pratt Institute.*

At Harvard, a subterranean steam-distribution system supplies steam for heating some 200 or so buildings. Almost all of the buildings are now interconnected by walk-through tunnels, approximately 10'x10', that carry steam pipes, control valves, pressure reducing valves, and other vital equipment.

As a basic method of heat distribution, this system is not at all outmoded, although high-temperature hot water may be considered for some new campuses. The steam is purchased by Harvard from a utility power plant several miles away. Both the utility and the college benefit by this arrangement; a by-product is exploited and Harvard's need for a central power plant is eliminated.

Outmoded, however, and expensive to operate, was the method of controlling this extensive distribution system. Attendants with no other duties made tours through the tunnels, often at 110 F, to open and close valves and to perform such duties as checking gages and temperatures (*see photo*). The tours began at 6 A.M. and continued through the day and night. The steam is used directly in radiators or in air-conditioning coils in some buildings, and in others its heat is transferred to circulated hot water. Heat had to be turned on early in classroom buildings, and reduced after classes. Dormitory heating needed to be continued during evenings. Periodic and infrequent supply of heat to other buildings, such as the theater and the chapel, contributed to the complexity of the patrolling schedule. The variety of equipment and the staggered schedule of operation were evidence of the need for easier methods of heating control.

About three years ago, plans were begun to centralize control of the entire network of pipes on the campus. To simplify the control problem, the campus was divided roughly into four parts. The first of these, serving 67 buildings of the North Yard, is now complete and in operation. A central station at Langdell Hall, a building still in service as a headquarters for maintenance crews, operates this division electronically and largely automatically. The heart of this system is a Honeywell Selectrographic Data Center, for remote control and check on the separate "electronic robots" that are now used where the regularity of scheduled operations permit the employment of clocks and thermostats.

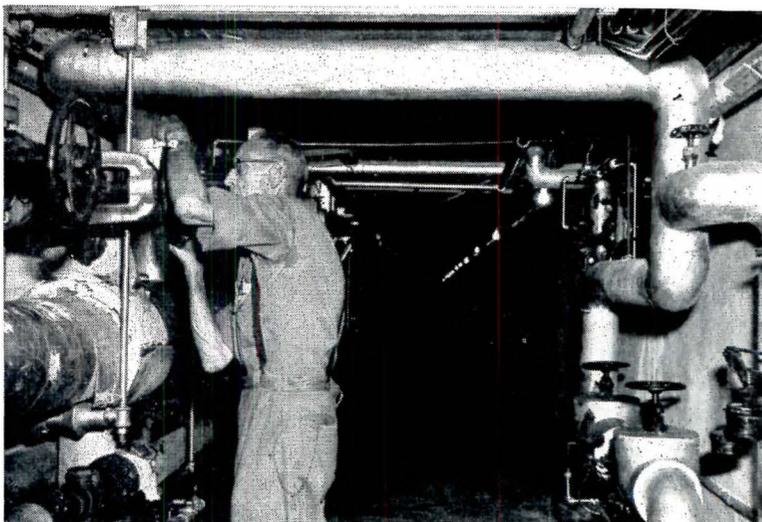
With only a handful of buttons, the center controls all 67 buildings. An interesting feature of the panel is its compactness. Schematic flow diagrams of equipment in all of the buildings are on 35-mm slides that may be dialed. By simplification and grouping of systems, only 39 slides are required. When a slide appears, buttons that control its pictured equipment are electronically linked into position and may be used for remote manipulation of such facilities as motors, valve controls, and temperature checks. The slide image is about the size of a home television screen and, when it ap-

pears, full concentration on it is possible without the confusion of a multitude of adjacent diagrams. Control at the Langdell Hall station makes it possible for one man to:

- (1) Start and stop 42 fans, some located one half-mile away.
- (2) Operate by push buttons 32 valves to control steam flow.
- (3) Read temperatures at 100 points in the system.
- (4) Operate a 10-station intercom system.
- (5) Get immediate warning of humidity changes in tunnels and critical library areas.

By means of miniaturization in the use of a multipurpose small panel, a single screen replaces an entire wall of diagrams that might be required in bulkier systems. A man is continually on duty at the panel to operate the 67 buildings of the North Yard. Operating engineers telephone him periodically. A much reduced staff still patrols the tunnels at a more leisurely pace, alert for malfunctions and ready for immediate response to emergency calls.

The changes, when complete, will be paid for by savings within a few years, after which this efficient system will operate at less cost than its more ponderous and slow-moving predecessor.





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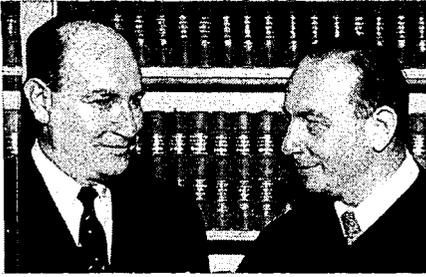
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## The Architect's Fee: Part 1

BY JUDGE BERNARD TOMSON AND  
NORMAN COPLAN

*In the first of two articles, P/A's legal team discusses disputes concerning the architect's fee when the structure he designs is not constructed by the owner.*

When the architect's fee is based upon a percentage of the cost of construction, disputes concerning the architect's compensation often arise when the work designed by the architect is not constructed by the owner. The problem arises in many different forms. The project may not be constructed because of lack of funds, or because the plans call for a cost in excess of budget allowance. The architectural contract may be terminated before the project is built because of the death of the architect or because of a default on the part of the owner. The architect may be discharged before the project is built, or he may have designed alternates which are not utilized by the owner.

Because the contract between the architect and the owner seldom covers this area with sufficient particularity, the courts are often faced with the issue of determining the basis of the architect's compensation where there is no actual cost of construction. Illustrative of this issue is the case of *Rowland v. Hudson County*, 80 Atl. 2d 433, which involved an architect's fee for the preparation of plans and specifications, and supervision of construction for a county hospital which was never erected. The contract before the Court in that case provided for the architect's fee to be calculated at 6 per cent of the cost of the work. However, the architect died when his plans and specifications for one building were 90 per cent complete, and for a second building 50 per cent complete. The architect's estate instituted action to recover the reasonable value of the architect's services based upon the contract rate as applied to an estimated cost.

It was the plaintiff's position that 6

per cent of the cost of construction for plans, specifications, and supervision, as provided in the contract, was a reasonable architectural fee, and that since the work of supervision was not rendered, 4 per cent of an estimated cost of construction would be reasonable fee for the deceased architect's plans and specifications, in proportion to the percentage of completion.

The defendant, on the other hand, contended that it had been an error for the trial court to admit evidence of the estimated cost of construction to establish a reasonable fee, and asserted that in determining a reasonable fee the Court was limited to a consideration of the time, labor, and expenditures made by the architect and should give no consideration to the cost of construction.

The New Jersey court stated the general rule that upon the death of an architect, or other professional, his estate is entitled to receive the reasonable value of services rendered under a professional contract, even though not completed. In applying this general rule, however, the Court was required to consider the appropriate specific formula under which reasonable value could be calculated. In considering whether a percentage of an estimated cost of construction could be the basis of such calculation, the Court reviewed decisions in other states involving related issues.

The New Jersey court pointed out that certain authorities have held that where a project was not built because bids were in excess of the owner's budget cost, an architect could not recover, as his fee, a percentage of the estimated cost of construction, as reflected in such bids. In such a situation, stated the Court, the fee depended upon the letting of the contract, and in the absence of establishing actual cost, the architect could not recover a percentage of the estimated cost.

On the other hand, the New Jersey Supreme Court referred to legal authorities that have held that if a building is

not constructed because the owner does not have the funds, and there was no specific budget cost within which the architect was required to furnish plans and specifications, the letting of a contract was not necessarily a prerequisite for an architect to recover the contract percentage of the estimated cost. In these cases, however, the architectural contract had expressly provided for payment of the architect's fee based upon an "estimated cost" in the event the project was not constructed. In some of these decisions, a subsidiary issue was raised as to whether the estimated cost was to be the architect's estimate or an agreed estimate, or an independently established estimate.

The Court, while rejecting the defendant's contention that the determination of reasonable value must be limited to a consideration of time, labor, and expense, asserted that the plaintiff's position was not tenable. It was the Court's conclusion that a fee based upon estimated cost would not be appropriate, stating:

"Much of the architect's work was done at the beginning, when construction costs were low, and payment for Rowland's services aggregating \$85,000 on account were paid in 1943; yet plaintiffs' theory of recovery calls for a calculation of the entire earnings on the basis of the higher rates. The assumption that the plans would sometime have been completed to the satisfaction of the board and that the award for construction would sometime have been made and construction actually had is built upon doubt and uncertainties. Added to the other factual fog is the uncertainty as to what the plans, now only partly completed, would have called for in their final form. They would have been subject to revision, perhaps radical revision at the demand of the client. Indeed, all of the plans, since none had been finally approved, were subject to the same potentiality involving additional service, and it may be much additional service, by the architect."

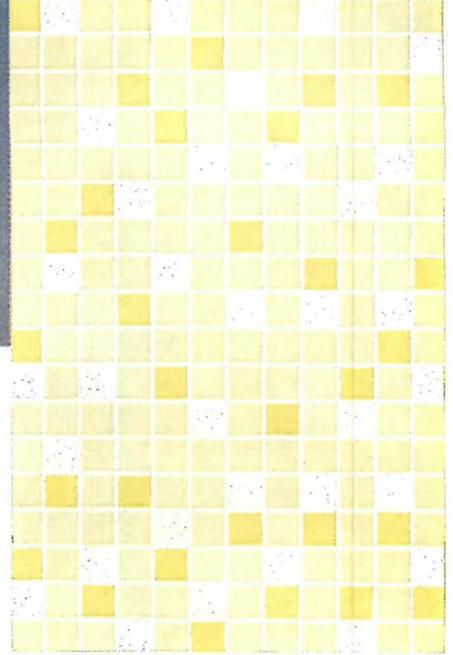
In next month's column, we will discuss the architect's fee in the context of alternates designed by the architect but not executed.



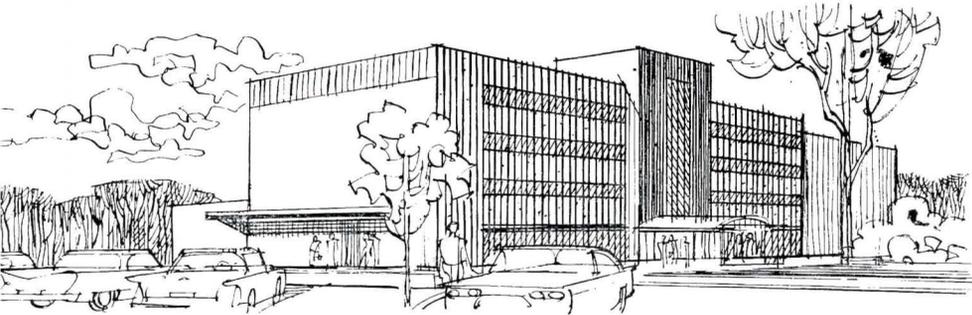
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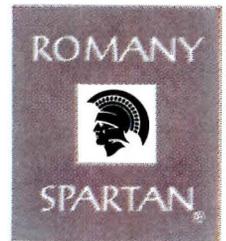


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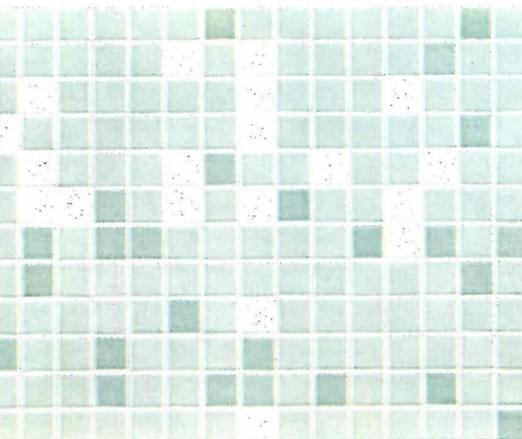
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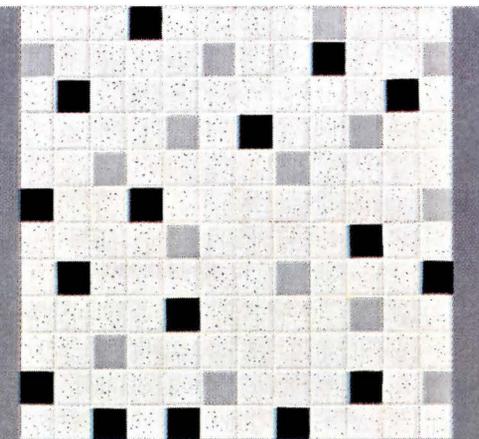
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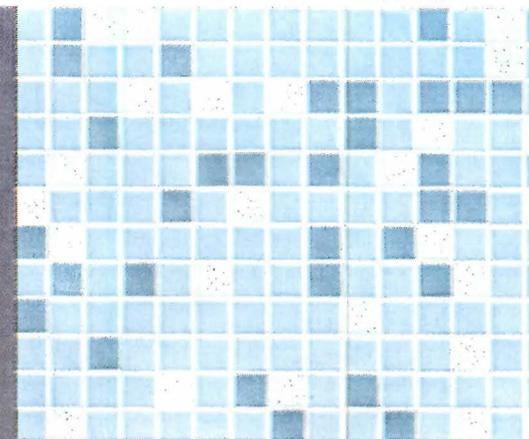
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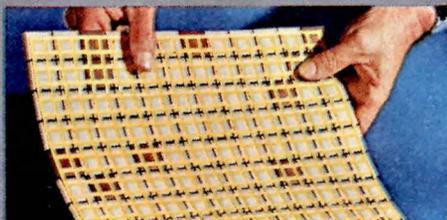
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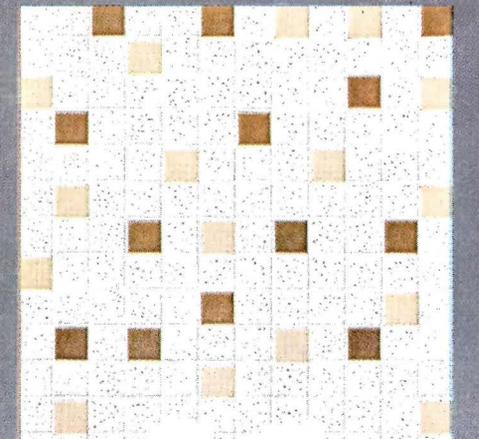


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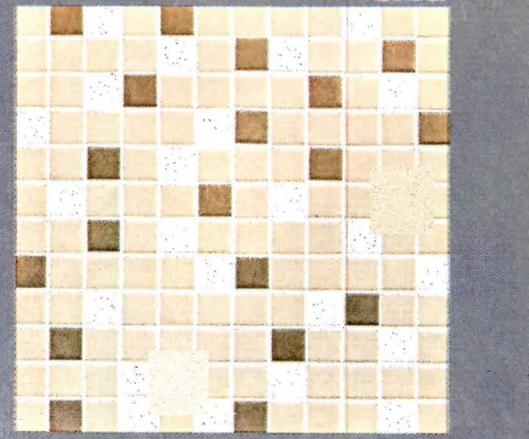


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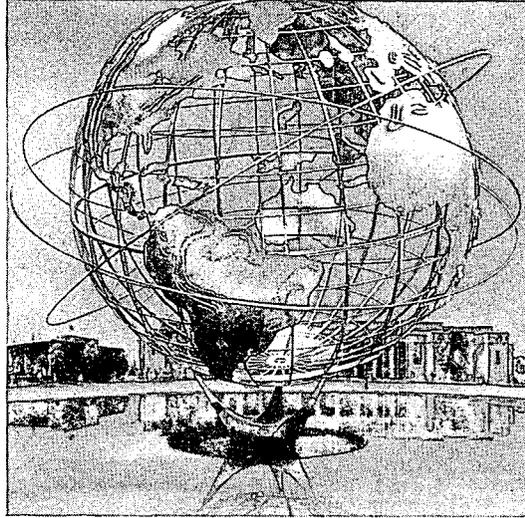
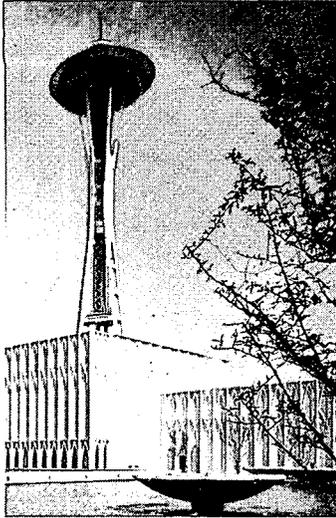
Tile Size: 1" x 1" x 1/4"  
Joint Width: 3/64"  
Sheet Size: 13 1/8" x 26 1/4"



Q-012-27



Q-012-21



*Space Needle or Unisphere? —  
A Fair Question*

Dear Editor: I have followed both your articles and those of other periodicals that have dealt with the New York's World's Fair and its proposals. Add to these the controversial correspondence you have published; and then the full background and future of the Seattle World's Fair; add also the proposals made by a few farsighted architects for the New York Fair; add finally the open mind of an individual who is not in the profession just for fame and fortune—and one reaches the position of being able to produce the "mature criticism" that is called for by Harold Horowitz's letter in the MAY 1962 P/A.

I feel that P/A's criticism of the New York World's Fair is both mature and well-founded, although it appears a little too sarcastic to suit some people. Fairs and expositions have reached the point, particularly in the United States, of becoming playgrounds for architectural gimmicks, experiments, and individual "jewels." Granted that an exposition or a fair can be expected to have a fanciful and festive mood, but not to the point of prostituting good architecture—or what could be good—in order to create a commercialized fairyland of shapes and forms.

My deepest compliments go to the shaping forces, talented architects, and the people of Seattle for their successful and constructive contribution, not only to their city, but to architecture as a whole. They have succeeded in proving that new forms and new construction techniques can be tastefully blended into a permanent and lasting complex of long-term use without killing the spirit

of the fair. It has not only provided a time and place for "architectural self-expression," but it has also produced a "plant" to be used by the city for years to come. (This would not have been possible without financial assistance derived through the fair.) This financial aid is the necessary "evil" that has caused the death or reduction in quality of other proposed or attempted civic centers or large-scale development programs.

Now let us consider the "immature" proposals for the New York World's Fair, one of which, to my mind, is of overriding importance: permitting "architectural self-expression" while planning and co-ordinating each "jewel" into a complex similar to that in Seattle; with the difference being that the New York development would be convertible to a self-sustaining suburban community—instead of a civic center—at the fair's end.

Now to shift to the more "mature" proposals: a multitude of different, awe-inspiring and uncoordinated buildings, designed to impress and overwhelm and eventually to be removed. Millions of dollars to be spent on buildings with a life-expectancy of nine months to one year maximum. It happened in Chicago; it happened in New York; and it appears as if it will happen again. Flushing Meadows will spring to life for a short, commercialized, and profitable period, only to die again at the end of the fair and revert to its present status as a quiet repose of grass, animals, and birds.

For the more "mature" supporters of the New York World's Fair, who blatantly reject the "immature" proposals, I have only a few questions:

Can the City of New York afford to

put all its efforts into a short-lived "fling" while they still lack decent housing—which they could obtain, as Seattle obtained its civic center, at tremendous financial savings—in many areas?

Do the powers that be in New York feel they have fulfilled their obligations and responsibilities to society by passing up this opportunity to provide housing superior to the towering, impersonal, monolithic brick piles that are being built under the guise of apartment buildings or public housing?

Has personal pride and satisfaction in a well-designed and accepted architectural endeavor been replaced by lower goals? Does the fame and fee derived from a fair building commission justify designing a "jewel" at the price of sacrificing it to the wrecking crews at the end of the fair? Personally, I would prefer my work to last and be used, instead of having it be a photographed and remembered "one-night stand."

That brings me to a final question directed at the sponsors of these "jewels." Are the millions you are spending on these buildings worth it? It is a pretty high price to pay for short-term advertising. Might not the money be better spent by not trying to "outclass" your competitors with architectural extravaganzas, but by co-ordinating your efforts to produce a more permanent and beneficial contribution to the living standards of the society you are trying to impress, while simultaneously developing your exhibition spaces? It is not a question of sacrificing your independence of "architectural self-expression": for proof, you need only look to Seattle.

The Eiffel Tower has long been a landmark and symbol of Paris; the Space Needle of Seattle will soon join it; but what will happen to the symbol of the New York fair, the Unisphere, that stainless-steel ball? Its shape suggests that, at the fair's end, it will be rolled away by the highest-bidding scrap dealer.

There is no excuse or reason for this huge waste of money, or, more important than the money, the utter disregard for and waste of human energies and inherent potentials that are crying out to be used.

Look to Seattle; look, New York, for it is not too late; it has proved that it can be done. The man is bigger who admits he is wrong and accepts the proven, than the one who ignores the proven and "has to have it his way."

DANIEL VICTOR BIENKO  
Cleveland, Ohio

Dear Editor: For the first time in many months, I had the chance to read through

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a magazine. Naturally, I chose P/A. I read the article on "The Architecture of Century 21" [NEWS REPORT, JUNE 1962 P/A] and enjoyed it very much. I was particularly pleased that you did not hesitate to speak critically of some of the things that you felt were not up to standards.

LESTER J. MILLMAN  
Providence, R.I.

Dear Editor: Thank you for printing the courageous and perceptive appraisal of Civil Defense and the Shelter Program. No one with a mature and rational approach to the problem can fail to agree with you. This is the nonconformist position and will be unpopular in the eyes of many, but how else can one live with one's self?

My beliefs and feelings on the subject are in complete accord with the article entitled "The Case Against Civil Defense," (Feb. 1962 *Progressive*), which I recommend to you as a most objective and complete analysis of the subject.

ROBERT C. WILLIAMS  
Berkeley, Calif.

### *The Architectural Absurdity of "Planning" for Atomic War: More Comments*

Dear Editor: In response to the "P.S." on the Shelter Program [MAY 1962 P/A], I have to take issue with your group statement on at least two counts: First, I must accuse you of not being properly patriotic in your attitude toward Civil Defense. For a good patriot, you have certainly accepted far too many alarming—one might say defeatist—facts in connection with atomic attack. The rest of us do not believe in building home shelters either, but at least we do not talk about our reasons as openly as you do.

Secondly, and your editorial makes this quite clear, you are obviously not a practicing architect. From your ivory tower, you do not even realize that architecture is just another business. And here you are worrying about a "program," the question of "how to design a fall-out shelter," and so on. Of course shelters will not work: modern weapons are developed at a much faster rate than shelters could ever be built; but a lot of good, easy fees will be paid by the Government. And why let the engineers take the cream off the milk if we architects can do the work after a week's course by the Department of Defense? Your idealism sounds fine, but I would rather be a patriot.

To get serious now: I have been aware of most of the negative aspects of this

deplorable "Shelter" Program, but it was up to the simple logic of the brilliant statement in the "P.S." to show me, from my own professional viewpoint, that "planning for atomic destruction is an architectural absurdity."

I hope your courage and clarity of thought will be contagious.

GOTTFRIED P. CSALA  
Wilkes-Barre, Pa.

Dear Editor: Although I have been a constant reader of your fine publication for many years, I have never before felt the urge to express myself on anything appearing there. Not so, however, after reading your latest "P.S."

Your comments on the bomb, shelters, and peace express beautifully and succinctly the sentiments held by me and many of my friends and acquaintances. It was refreshing and heartening to hear a voice such as yours speak out in courageous, uncompromising tones, incisive in its logic, for the unborn generations and for humanity. Keep up the good work and count me among your most ardent supporters.

I have noticed, too, that your editorial comments and criticism have become more pointed. This, I think, is most excellent. All too often, the fear of offending and the desire to avoid controversy results in criticism that does not criticize, but is instead an amorphous jelly of platitudes. As a consequence, the person whose work is criticized is bathed in a rosy hue of acceptance, or his work misses the mark and he never knows why. Without honest and meaningful criticism, mediocrity becomes the accepted standard of excellence. Although I may disagree with you on occasion, I feel that you are performing a real service in exhorting our profession to high levels of achievement and to self-criticism.

Thank you again for carrying the torch for us all.

PHILIP DWORKIN  
Kew Gardens, N.Y.

Dear Editor: I am sure that quite a number of architects, draftsmen, and specifications writers are grateful, as I am, for the statement on the Shelter Program. Some of us feel that we have been led by the nose in this shelter business.

An architect is supposed to be guided by the human arithmetic of a situation. Clearly, we have passed the point of diminishing returns in "protection" of people against blast and fall-out. "Practical" fellows are sketching hospitals with safe, active areas that may be used for "shelter" in an emergency. But does anybody have confidence in their thinking? One architect said to me, "I'd hate

to crawl out of such a place to find all my friends and relatives gone. What would there be to live for?" Stooges would say that this is a defeatist attitude: one should stay alive for one's country. Which country? As it is now? As it may become—a burnt-over wasteland? Let such stooges compete with camels, sidewinders, and tarantulas for their "patriotic" survival. Architects should continue to think for their country in the substantially human terms of your editorial.

ALAN MATHER  
Detroit, Mich.

Dear Editor: The "P.S." on the Shelter Program prompts me to disagree with your statements as quoted herewith: (1) That "no architect is interested in designing and building for destruction," thus concluding that no architect is interested in shelters for survival. (2) That "various assumptions would have to be made" and that "no architectural advice is possible." (3) You question "... why we should even seriously consider fall-out shelters on architectural terms," and go on to state that we, as architects, cannot endorse spending "for the hope of mere survival in an impossible world instead of the prospect of improving man's environment in a developing world."

I wish to go on record as subscribing totally to the idea of utilizing our best architectural resources on planning for survival as well as for improving man's environment in this so-called "impossible world." The architect is concerned with man's total environment, whether it be for his pleasures or his spiritual or physical needs. He plans for the rich and the needy, the sick and those confined to mental and penal institutions. Many architects are at present devoting their talents to helping solve the problem of providing public shelters, not for destruction as you have stated, but for the survival of tens of millions of people. The architect is working effectively in cooperation with the Government agencies without fanfare or extravagance, by utilizing spaces in existing structures and by planning economically feasible areas with dual uses in the new structures.

I trust that if you and your loved ones should by necessity be fortunate enough to avail yourselves of one of these shelters, that you will take time out for an editorial on the foresight of our fellow architects who are now planning the shelters, a project that may conceivably be the most important ever tackled by the architectural profession.

ARTHUR DEIMEL  
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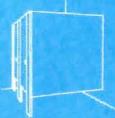
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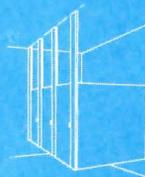
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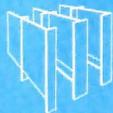
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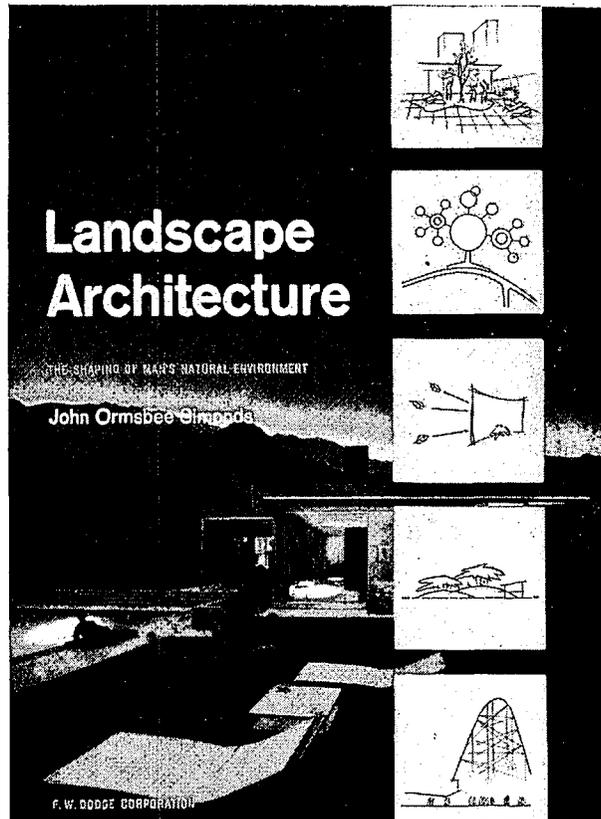


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## TWENTY YEARS AFTER THE FACT

BY JAMES C. ROSE

LANDSCAPE ARCHITECTURE: THE SHAPING OF MAN'S NATURAL ENVIRONMENT, by John Ormsbee Simonds. Published by F. W. Dodge Corp., 119 W. 40 St., New York 18, N. Y. (1961, 244 pp., illus., \$12.75). Reviewer is a pioneering landscape architect, part of the small group responsible for the revolution in landscape design discussed below.



With its many virtues, and even with its several faults, there is no question in my mind that, if *Landscape Architecture: The Shaping of Man's Natural Environment* had been written—as it might have been—in the early 1940's, while the landscape revolution at Harvard was still in progress, it would have been an act of faith, of insight, and of heroism. Even now, if it were presented as a digest of landscape theory since the revolution, it would be a valuable document, and, potentially, a scholarly one. But coming as it does—in the early 1960's in the form of a crusade—its virtues must be judged in the light of their "posture" after the lapse of twenty years.

Simonds points out over and over again—in so many words, and in so many other ways—how he slowly acquired his wisdom at the feet of philosophers and artists, and from his seeing eye, as he traveled twice around the world in search of truth. He has at long last come to the conclusion that the humanized landscape is designed, not of things, but for human experience; this is not as a climactic incident, or series of incidents, but as a process, like growth, within the immutable laws of nature; conflict and desecration come because most men go about it so badly that the lowly gopher puts them to shame when it comes to enlightened self-interest.

This pleases me (although I no longer

share his faith in gophers) because it has a pleasant echo. As here paraphrased, it is a clear statement of the landscape tradition that has been evolving in this country since the revolution at Harvard; and those of us who fought in the infantry of that revolution saw something new come into being—a very specific something—which could not have happened at any other time or in any other place: a new way of seeing the landscape was born. But Simonds, who at first resisted the revolution and now embraces it, takes it on a pilgrimage of his own to practically every other time and every other place. As with so many converts, he endows his new vision with a piety that is embarrassing to the founding order; he must find ancient sanction for his simplest theories and reach for inferences that may or may not be there. Somehow, it comes back to us looking very tired, indeed, and somewhat altered.

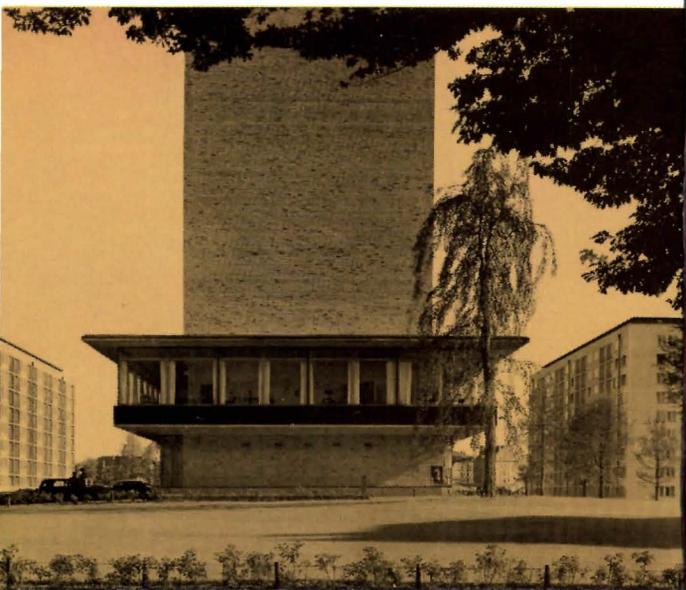
It seems to me that Simonds started off on the right foot when, as he tells us in his foreword, the book began to evolve from a course in landscape that he offered to architectural students at Carnegie Tech. In time, the lecture notes were amplified with drawings and diagrams sketched into the margins until a book almost came into being. "Almost," says Simonds, "but not quite . . . so the material has been carefully reworked—pruned,

grafted, and trained to a more attractive and useful form." In view of the results of this topiary work, it is possible that Simonds made an error in not letting the book just happen. For most of us who have offered landscape courses to architectural students against the backdrop of the 1940's and 1950's can easily sense the drama inherent in permitting the truth to reveal itself to receptive minds, rather than impounding doctrines—however impressive the source may seem.

But allowing the drama at his doorstep to unfold apparently did not satisfy the author. Instead, he literally "dramatizes" his material between a *prologue* (a parable about the wisdom of gophers and the stupidity of men), and an *epilogue* (a confession for having flowered so late in the field of planning). But flower he does in the "play" itself, which is composed of seven "acts" (chapters) and a "chorus" (marginal quotations) of no fewer than seventy voices, ranging from Aristotle to James Michener. All this is brought thoroughly up to date by the relatively recent device of atmospheric photography, ranging in subject from a bee pollinating a flower to the spiral nebula in Ursa Major of outer space.

It is easy to see how, in such a theater and such a setting, it would be difficult to present the ordinary drama of a class-

*Continued on page 168*



### **A Sense of Nature**

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Continued from page 162

room at Carnegie Tech. It is even easier to see how the chief protagonist could not be of less than heroic proportions and oracular in intonation, capable of slaying all the dragons—or at least frightening them away. “Conquer nature! [says Simonds] How can we conquer nature? We are—blood, bone, fibre, and soul—a very part of nature. We are spawned of nature, rooted in nature, nourished by nature. Our every heartbeat, every neutral impulse and every thought wave, our every act and effort is governed by nature’s all-pervading, all-embracing law. Conquer nature! We are but the fleeting traces of life in

nature’s eternal process of evolving life and growth. Conquer nature! Far better . . .” and so on.

Simonds quite wisely, I think, reserves this high-pitched rhetoric for the more menacing dragons, and in other places conspicuously suits the word to the action, passing easily from rollicking abandon in describing an amusement park to the hushed tones of the funeral parlor in discussing cemetery design. I do regret, however, that he finds it necessary to become quite so fundamental under “Fundamentals,” where he discusses the nature of man, the nature of nature, the nature of beauty (he is very sure what beauty is).

But he hits his stride when he reaches “Site,” and we are sailing smoothly between Japanese philosophers and a bevy of word-pictures. Simonds is great for word pictures: “. . . from ferny ledge to fallen tree,” and “. . . ablaze with high color or muted in pastel twilight,” and “. . . emerging from half light of lacy tunnel,” and more, much more. Norman Rockwell might be looking at Picasso.

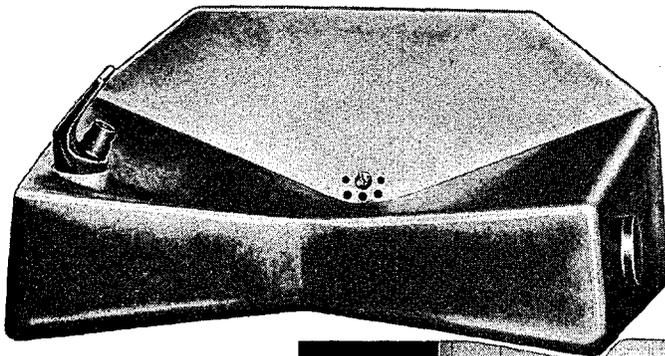
I do not particularly wish to dwell on points of style in a book with such an imposing title. But Simonds is a stylist, and, if I read the script correctly, the presentation is intended as an object lesson to illustrate the marriage of style and content—a ceremony that is accomplished with considerable dexterity. For instance, Simonds’ main design thesis is that the humanized landscape is best conceived as a volume of space, like a cube, having a ground surface, sides, and a top, which he calls the Base Plane, the Verticals, and the Overhead Plane. He does not claim to have gleaned this concept directly from Japanese philosophers, although he does say it is one “the orientals have long understood.” But in leading up to it, Simonds does something, which, I think, most creative workers try to avoid—that is, “finalizing” form meaning before it comes into being on its own specific conditions. Thus, he is very certain that high vaulted forms (reminiscent of Gothic, as drawn, with a cross inserted to make his point) intrinsically inspire “sublime spiritual awe,” that low ceilings are for “rock ’n roll” (and similar vulgarities), and that lofty peaks are for “contemplation.”

Along the same lines, Simonds has a great deal to say about “induced reactions.” Again, he starts with a thoroughly sound premise—that if you can drive people insane in a properly designed torture chamber (or an improperly designed city), the converse is also true—that environmental design can be of therapeutic value. He then proceeds to give his own formulae for inducing relaxation, gaiety, dynamic action, sensuous love, pleasure, and so on. The recipe for inducing sensuous love reads like this: “Complete privacy. Inward orientation of room. Subject the focal point. Intimate scale. Low ceilings. Horizontal planes. Fluid lines. Soft rounded forms. Juxtaposition of angles and curves. Delicate fabrics. Voluptuous and yielding surfaces. Exotic elements and scents. Soft rosy pink to golden light. Pulsating, titillating music.”

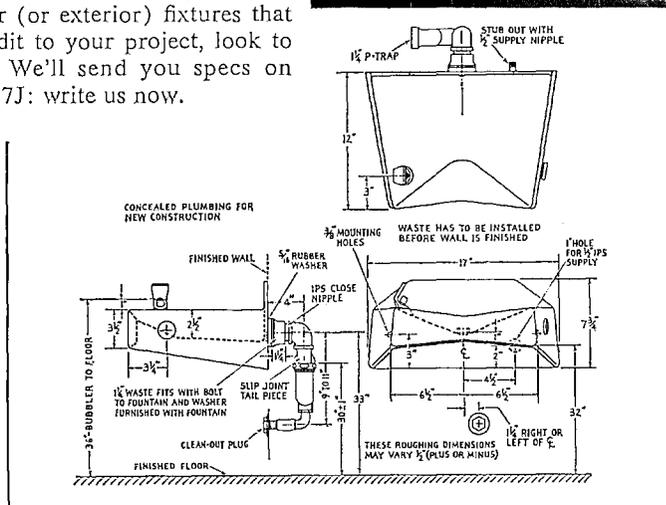
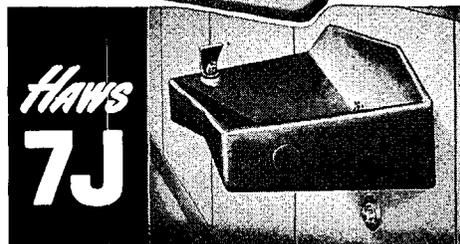
Obviously, we come from different villages (we like ours with a view, and not quite so pink, either); but with continu-

Continued on page 170

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**CORNING**

Continued from page 168

ing universality, to say nothing of versatility, Simonds guides us through the rest of his world. Each description—from Parisian white-aproned *garçons* to Kubla Kahn's march to the temple—illustrates a moral of some kind; but I liked best the tale of "The Court of the Concubine," back in West Peking, which Simonds uses to show how "the skilled planner, by spatial manipulation, can play upon the human emotions . . . as the musician does with harp, flute, and drum." It seems that the kindly prince had a favorite concubine, imported from Szechwan province (which

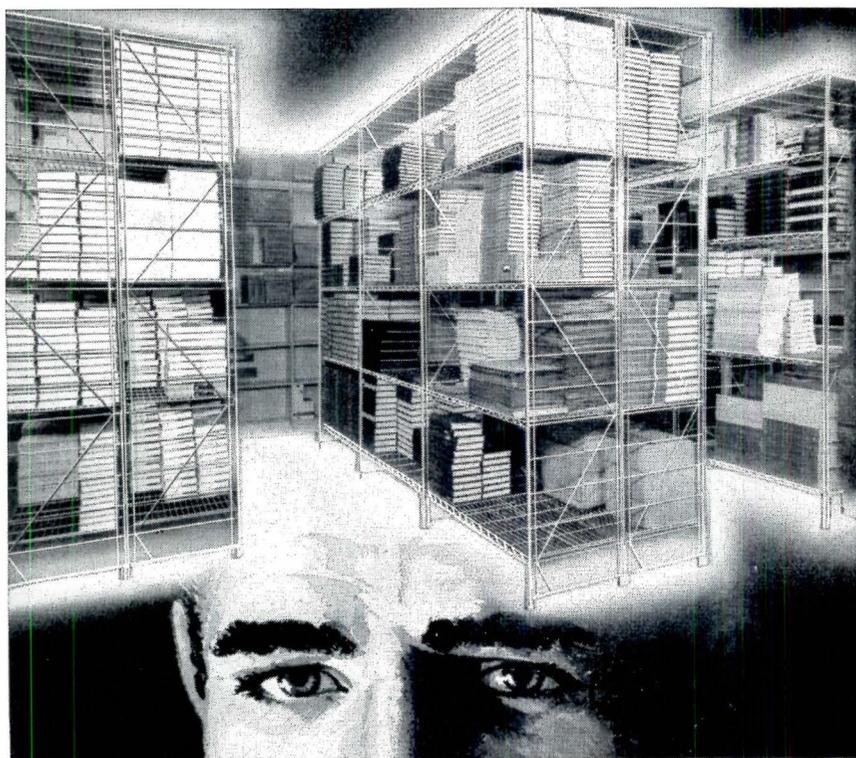
is as wide and open as Colorado), who became particularly recalcitrant when confined to a stuffy courtyard. The kindly prince, wishing to please her, set his space-manipulating planners to work. They employed every device for faking perspective known to man, but they did not stop there. They used suggestion ("the sound of trickling water . . . was meant to lead her eye to a cool and shadowy recess where a teakwood bench was placed"); symbolism ("a curiously contorted 'mountain stone' rose serenely from a bed of moss"); and even literature (by way of a slyly placed inscription which read, "Above

the green plains of Szechwan the clouds rest lightly on the lofty peaks"). In this way she could be among her mountains again, as Simonds points out, "in her thoughts."

On the surface, this seems to prove pretty conclusively that a concubine just can't be too careful of wily old princes, but I wonder if the deeper meaning that Simonds has in mind for us isn't that we, too, can be made to feel "at home" with the proper illusory manipulation of our environment and thinking. But at this point in the proceedings, I confess that I was not too sure of my own reactions—whether they were being "induced" or not—for I had lost all sense of time and place. I noticed that Pythagoras was sitting close by, and I began marshalling my thoughts about illusion and reality. I could tell that he was anxious to involve me in a long discussion about whether illusion or reality was the greater virtue or whether they were one and the same thing. From past experience, I know him to be an obtuse and long-winded fellow, and thinking to throw him off by changing the subject, I spoke first. "Pythagoras," I said, "whatever became of those students at Carnegie Tech?" His expression was one of consternation, but his answer escaped me because Simonds was shouting from center stage, "Space Modulation! We in America have yet to learn the meaning of the words. But we *will* learn it in the crowded years ahead, for indeed we *must*; and we will develop it, without a doubt, to new heights of artistry." This sudden mention of America brought me abruptly back to Madison Avenue during a clairvoyant moment in the 1930's when it briefly gave the illusion of reality by seeing through its own magic with the slogan, "It's fun to be fooled, but it's more fun to know." Before I knew it, I was right back at the Harvard scene where this all started, and I couldn't help noting, on the way, how difficult it is to sustain illusion for any length of time—whether in a book or in the environment or just in the innocent reverie of manipulating time and place in one's own thoughts.

But what difference does it make, really, which method we use in theorizing about the landscape? None will claim any but the highest motives; all are heir to the tricky distortions of illusion; any can claim that "experience" is being designed. Perhaps the real difference lies in what we mean by "experience." I had always fancied that "experience" meant the rediscovery of some basic truth in nature; that the "method" was simply a way of revealing that truth, especially from the point

Continued on page 174



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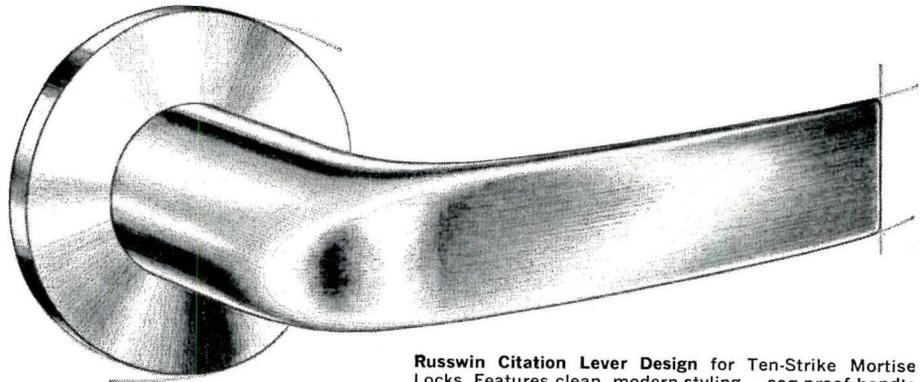
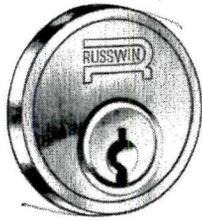
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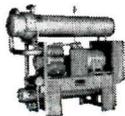
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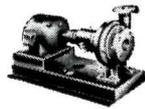
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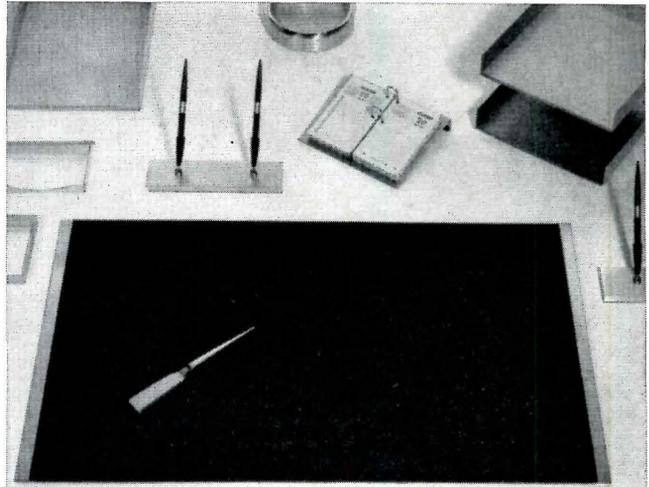
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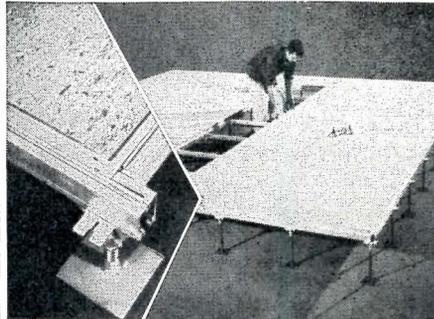
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