64 PROGRESSIVE ARCHITECTURE

Installation: Tennessee Building, Houston, Texas
Architect: Skidmore, Owings & Merrill, San Francisco
Floor shown: V-417 Tennessee Tan

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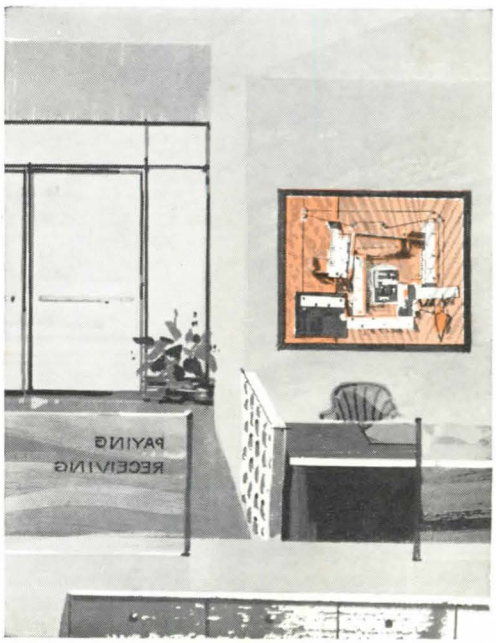

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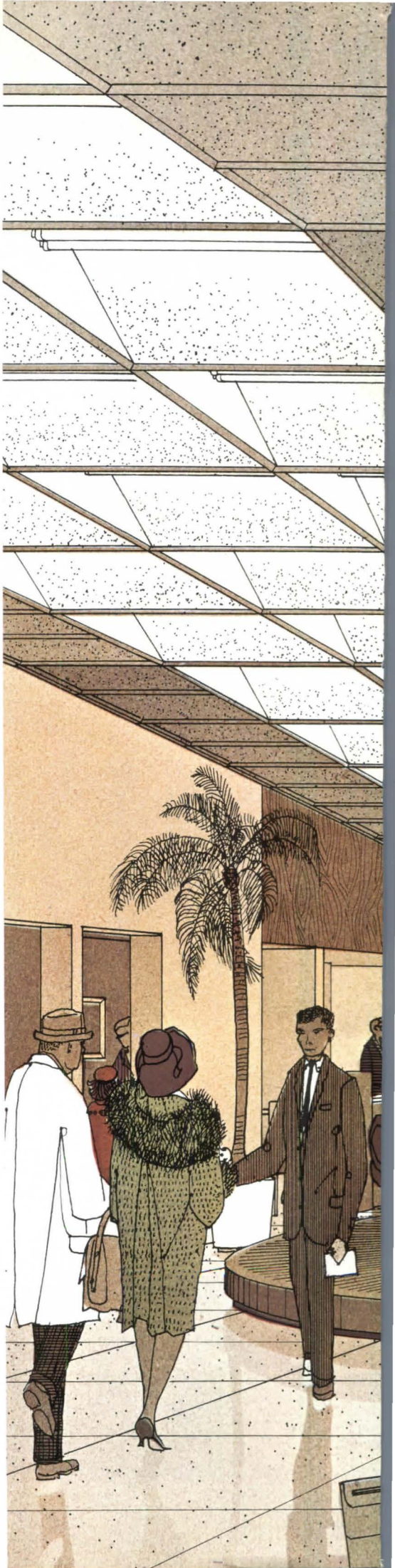
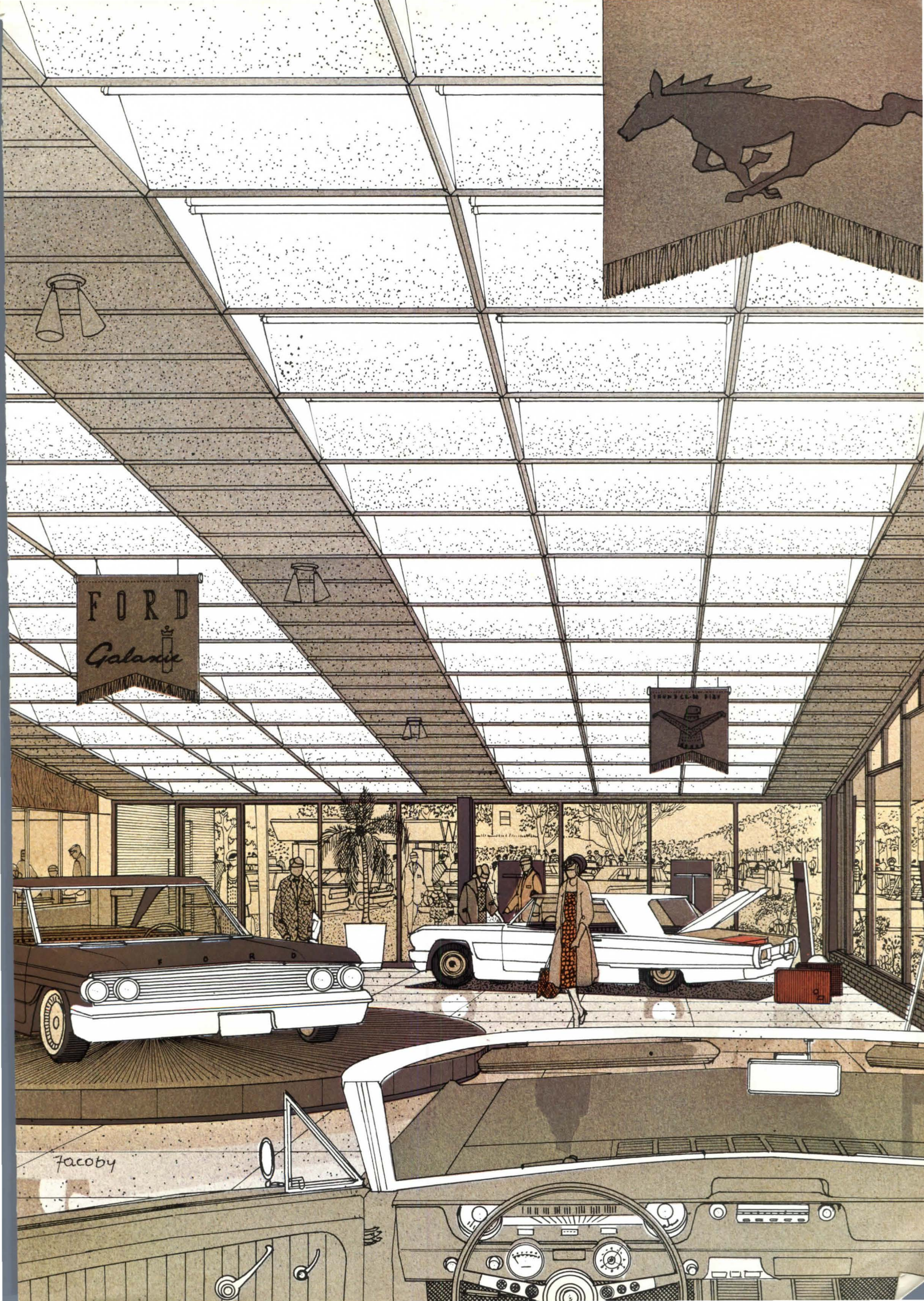
Magic City Ford Corporation, Roanoke, Virginia.
President: Mr. Harry G. Johnson, Roanoke, Virginia.
Architect: J. Garry Clay, A.I.A., Roanoke, Virginia.
General Contractor: J. M. Turner & Co., Inc., Roanoke, Virginia.
Ceiling Systems Contractor: Shields, Inc., Roanoke, Virginia.

Armstrong CEILING SYSTEMS

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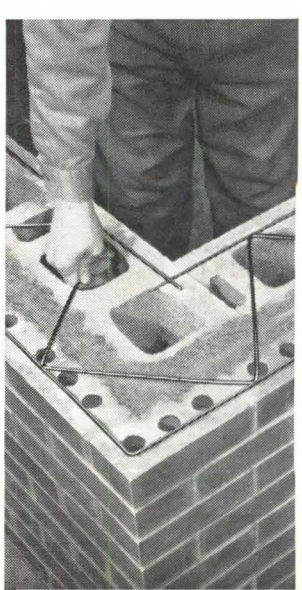

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THIS MONTH IN P/A

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VOLUME XLV, No. 7

Cover ARCHITECT'S OWN OFFICE (page 156) Photo: Morley Baer

Frontispiece DRAWING by Forrest Wilson

ABC ABP R REINHOLD

VIEWS

Finest Presentation

Dear Editor: The Carmel Valley Manor article (APRIL 1964 P/A) is the finest presentation we have had of one of our jobs in a long time. This is not just because you were kind to us, but because you really explained the project in a way few magazines seem to care to do any more.

JOHN WOODBRIDGE
Skidmore, Owings & Merrill
San Francisco, Calif.

Comments on the House Issue

Dear Editor: Regarding the House issue (MAY 1964 P/A): This is a lively collection. P/A continues to provide documentation of greater breadth than that offered by its competitors.

The work of Joseph Esherick is, to me, the most substantial. His crusty aphorisms on the house invoke support, but his remarks on aesthetics strike me as voices friendly to the presuppositions of mechanism and aesthetic neutrality that dominate much of our contemporary thought. This suggests an architecture based on good grammar and a decent knowledge of the subject, and seems reasonable, particularly after a drive through the suburbs. But is that enough? If we are ever to determine "what is vital and alive in our culture and approach the problem with that in mind," we must take care that our determinations do not overlook facts simply because they fall outside the boundaries of favored habits and techniques.

These boundaries are the limits from which the realities of one man seem as fancies to another. One such boundary is just exactly how, in what way, and to what extent, the site and the client should influence the form of architecture. Borrowing concepts from science and philosophy of the past several decades, I would think that vital subject matter for architecture lies in our being able to individualize conditions in space and in time that are derived from the site and the client. This might be partly envisioned as a projection or a spatialization of aspects arising out of our considerations of site and client. The architect's molding power should be directed toward the creation of form in contemporary space and time that preserves a selection of relevant conditions from former space and time. This preservation is somewhat analagous to that of any organism maintaining its identity as it undergoes evolution. With this in view, the importance of site and client takes on a scientific bias and an outlook wider than afforded by a successful technology. This is the quest to understand what things are, but understanding always presupposes metaphysical assumptions. Even though "no-nonsense" moderns prefer to avoid metaphysics, aesthetic theory is as inseparable to form as "what it is and what it does."

HERB GREENE
Lexington, Ky.

Dear Editor: Your May issue is superb, and the houses are most outstanding and distinguished. I think it very interesting that in today's world we have designers dealing more with space than the intricacy at the end of space. This is particularly true of Charles Moore, whose meanings are somehow conveyed by photographs, which would seldom happen when sheer space is a criterion.

We are pleased that so many of the houses published are designed by teachers in the Department of Architecture in the College of Environmental Design at the University of California—Joseph Esherick, Charles Moore, Claude Stoller, Dick Whitaker, Don Lyndon, Pete Dodge, and Dick Peters.

WILLIAM W. WURSTER
San Francisco, Calif.

Dear Editor: I confess myself disappointed that you didn't see fit to publish our house, especially after looking at the houses in your May issue. In general, you are doing the best job of architectural publication in the United States, but most of those houses are sheer exhibitionism of one kind or another. Oh well, maybe my taste is too severe.

LEONARD EATON
Ann Arbor, Mich.

Dear Editor: Over the past 15 years, it has been my lot to design and build many, many lousy buildings—enough of them, in fact, to qualify me as an expert on the subject of ugliness in architecture. I know pretty well now how to create it, and how to avoid it. Stated simply, my experience has shown me this: *all* of Nature is beautiful; *only* Nature is beautiful; and, Nature *is* beauty.

It was against this background, then, that I studied the houses in your May issue, and found to my dismay that far too many of them suffered from the very ailments so many unsuccessful jobs of mine have had. Among those ills were such things as effeminate design: nervous, precise boxes—all of the stick-style houses, the ones that never had the guts to be proper mates for Mother Nature. Buildings, to be successful, *must* have a masculinity about them. They need not be bulky or massive—they can even be light and airy—but they *must* be logical and appropriate partners for their earth.

Another ill thrives on the practice of torturing materials—forcing them to be something they're not. Every time we treat them wrong we regret it. All planes *want* to cantilever. All materials *want* to lie on different planes. All materials *want* to keep their natural colors. All sites *want* to reclaim themselves. So why fight them? Why do we build our unnatural, boxy, stilt-structures and brutal Man-walls? Why build so falsely? And why, above all, try to call such work architecture?

May I offer the following?

—That Esherick, who has never read "anything about architecture that has been of any use at all," get a copy of Wright's *Architecture: Man in Possession of this Earth*, which begins, "Building is a circumstance man shares with animals, birds . . ." and see if beauty is not of prime importance in architecture. And see if "becoming a part of the land" is nonsense, as Esherick maintains, or if it's not just about all there is to architecture. The Man-centered approach leaves me cold, as do barren, boxy interiors.

—That Mrs. Autumn, who, along with Wojciechowski, owes such a debt to Wright, let herself go toward a serene, less boxy containment more consistent with her beautiful, sensitive detailing.

—That Moore stop "having fun" in our redwood forests. Life to them is serious business in the face of constant threats from man. The engineering profession could use someone of Mr. Moore's talents.

—That Urbanowicz think twice before building again with such utter disregard for Nature, for beauty, and for architecture.

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—That Wojciechowski get someone else to design his partitioning and his furniture (those interior doors with their skimpy frames across *the top!*). The concrety concreteness of his honeycombed piers—even the powerful cracks in his patio slab—prove that this man, only 30 years old, is in control of the situation. He knows what architecture is all about.

—That Marquis and Stoller be commended in their selection of landscape architects. Their planting and outdoor spaces are the best in the issue. I wish I could say the same for the California-New England house with its 1938 European interiors.

—That Williams, who so modestly calls his house "non-architecture," be roundly praised. If this is non-architecture, I'd like to see his architecture! (Hope it wouldn't be just more insistently Miesian.)

—That Crites and McConnell reconsider the use of wood *cum* concrete *cum* steel-type framing in such a lovely spot. Man has never built more appropriately than have the birds and the bees. To me, then, we should try to learn from them: The best woodland house is *always* the one least visible among the trees.

—That Couelle be a little more earthy and less stuccoed. I love the lumpy lead and the earthy forms, but I sure would like to see him go all the way. Your article mentioned the forced rectangularity of his doors. I find the forced horizontality of his floors jarring, too. When you go *that* far, you can't let anything unnatural creep in. *My* underground house will be as up-and-down as a fox's lair; it may do my oversized ego a bit of good to bend low occasionally for some 4-foot door head.

Each building must call forth its own geometry—circle, square, or angle—even if it be no more than the careful and consistent non-geometry of Couelle. We cannot merely combine things at random. Esherick's domed fireplaces should be in domed houses, square ones should be in square houses. Amen.

MALCOLM B. WELLS
Cherry Hill, N. J.

Dear Editor: I confess my confusion and lack of sophistication in reading your May issue.

It seems to me there is a complete lack of contact between your editorial staff and the country as a whole. You appear to be ignoring some of the basic concepts that motivate the people who buy, and live in, houses. The designs you publicize are so alien to what most persons, including the custom client, would be satisfied with, that I wonder

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why these are singled out. I acknowledge that you have the responsibility of presenting new and stimulating ideas, and I respect the architects who have attempted to express individuality in these designs. My criticism is not directed at them, since they have obviously designed what both they and their clients are happy with. My criticism is aimed at an editorial policy that glamorizes unique designs without analyzing them with a critical eye.

People like to live in homes that are comfortable, and comfort includes the general appearance of their environment. Most people, regardless of affluence, are not comfortable in futuristic stage settings.

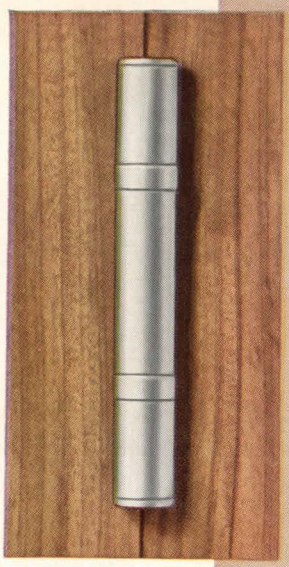
Your criteria may rate the house in your cover picture [Esherick's Oakland house] as the pinnacle of aesthetics, but New York City has many factory buildings with similarly exposed flues that are considered eyesores; the same façade photographed from below looks like so much exposed scaffolding. I recognize that this elevated structure is the result of site conditions, but why glorify it?

Proceeding to Violeta Autumn's house, the wisdom of angled rooms (which are reminiscent of some of Wright's) cannot be questioned, because the architect was fortunate in getting furniture, including beds, to fit. I can only judge by what I see, so I may be in error, but, looking at the plan, I gather the occupant does not suffer from obesity and can easily stand between the bed and the furniture and walk without skinning his or her shins against the protruding corners. A builder couldn't sell a $12,000 house that has such tiny bedrooms. From the interior views, one gets the feeling of clutter and twist. The exposed copper hood, which is really a flue, is a fire hazard through the wood ceiling, and, in most building departments, would not be approved.

The Moore cabin looks as if it's trying to puff itself up. The color-photo interior is magnificent, but I question the comfort of sitting against a window wall that tilts in. Industrial steel sash should not be boasted of; it is definitely *not* recommended, as many homeowners who bought earlier development houses can well attest.

As I jump to the Wojciechowski house, I miss the sight of traffic atop the apparent highway bridge and wonder why anyone would want to relax in such a stark atrium. Interior shots reveal a door behind the couch, obviously because this room is so narrow as to preclude putting

Continued on page 16



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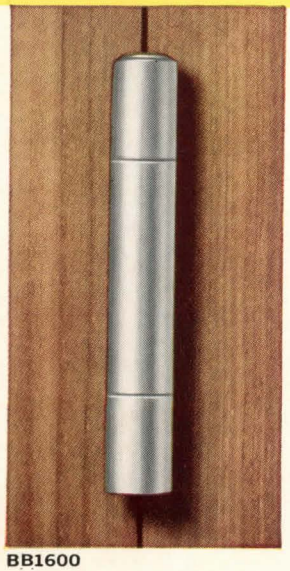

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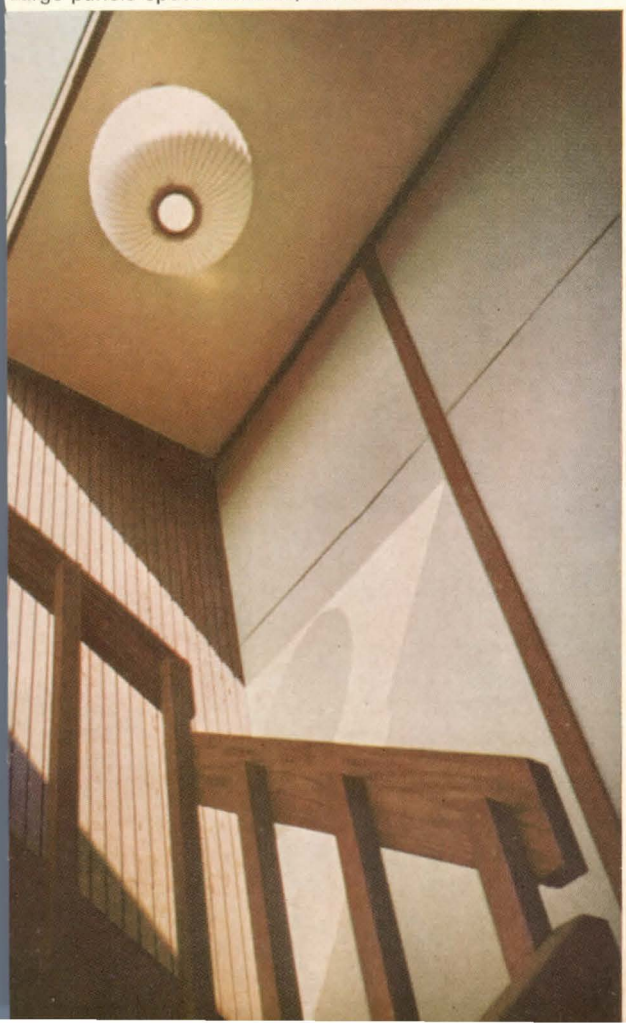

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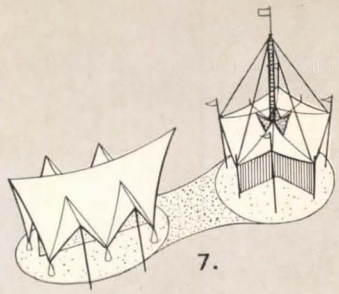

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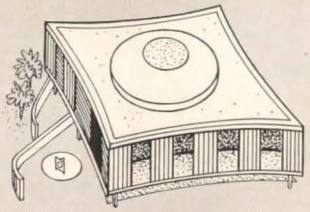

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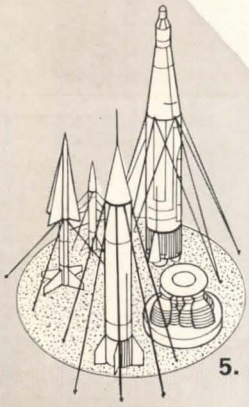

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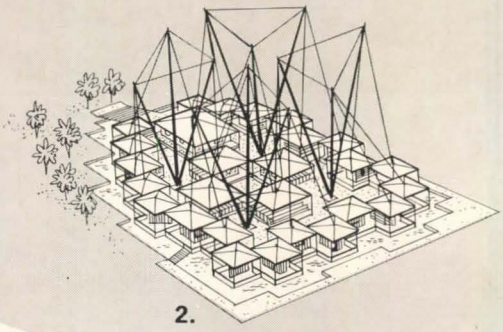

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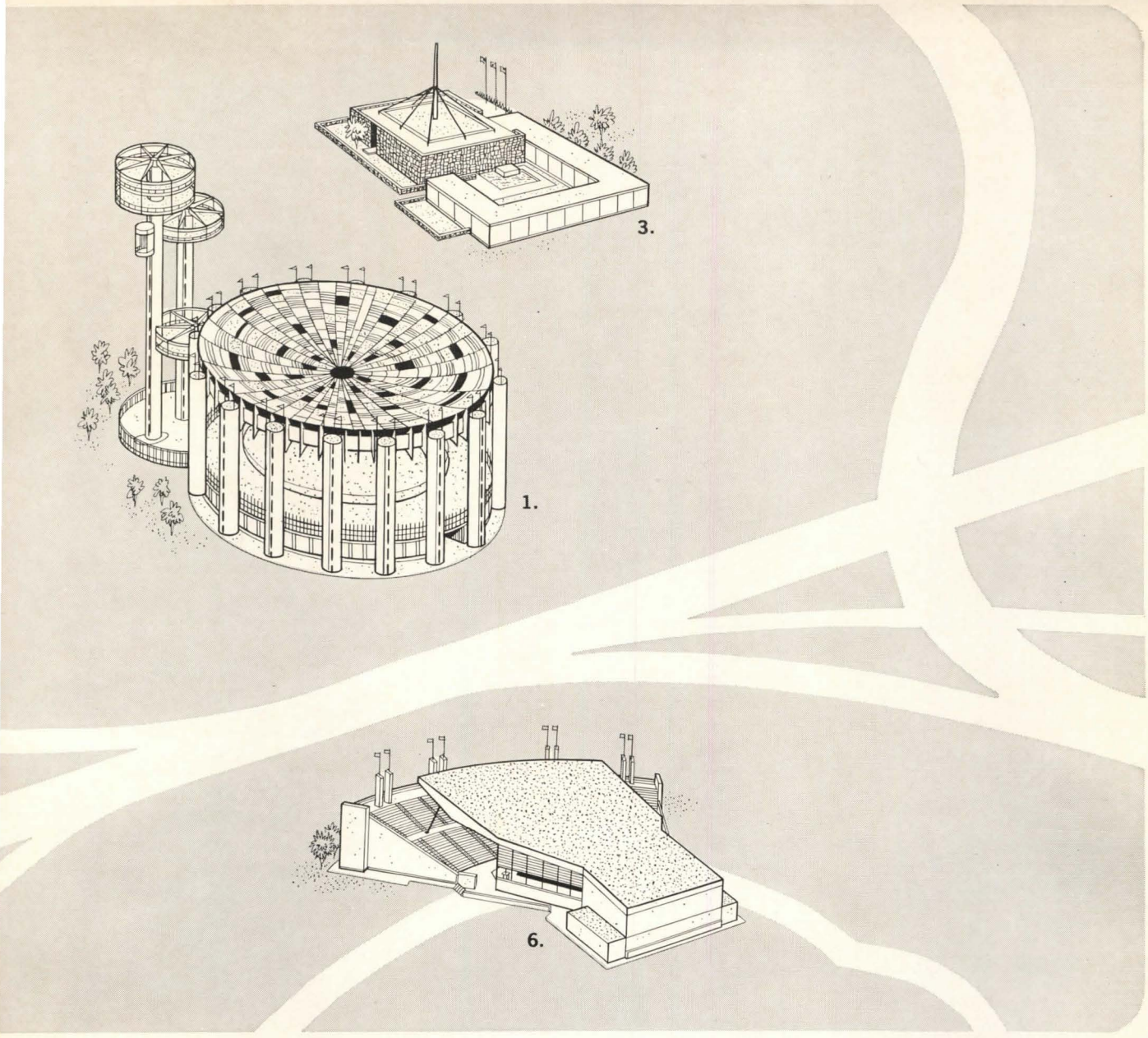


1. NEW YORK STATE PAVILION 96 CF&I-Roebling cables support world's largest suspended roof which is elliptical in shape; 350 ft. x 250 ft. and is attached to sixteen 100-ft. high periphery columns. Cables are also used to suspend displays and lights. *Architect:* Philip Johnson Associates; *Structural Engineer:* Lev Zetlin & Associates; *General Contractor:* Thompson-Starrett Construction Co., Inc.; *Steel Fabricator & Erector:* The Ingalls Iron Works Company.

2. NEW JERSEY PAVILION 21 canopies suspended by CF&I-Roebling cables from twelve 80-ft. guyed booms. *Architects:* Collins, Uhl & Hoistington; *Structural Engineer:* Norman J. Sollenberger; *Structural Contractors:* North American Iron & Steel Co.

3. JAPANESE GOVERNMENT PAVILION Roof is suspended by CF&I-Roebling cables from an 80-ft. high steel mast rising out of a central garden court. *Architect:* Kunio Mayekawa Associates; *Associate Architects:* Oppenheimer, Brady & Lehrecke Associates; *Structural Engineer:* Fugaku Yokoyama Associates; *Associate Structural Engineers:* Crinnion Associates; *General Contractor:* William L. Crow Construction Co.; *Steel Contractor:* Simon Holland & Son, Inc.

4. MEXICAN PAVILION Cables used here to permit column-free interior. *Architect:* Pedro Raminez Vazguez and Rafael Mijares; *Structural Engineers:* Lev Zetlin & Associates; *Structural Steel Contractor:* A. J. Frtischy Corp.

5. U.S. SPACE PARK CF&I-Roebling cables guy missiles to resist heavy winds. *Architects & Engineers:* Clarke & Rapuano, Inc.; *Contractor:* W. J. Barney Corp.

6. AMPHITHEATRE Cables brace canvas curtains and stabilize the roof by acting as lateral wind ties. *Consulting Engineers:* Ammann & Whitney; *Contractor:* George A. Fuller Company; *Structural Steel Fabricators & Erectors:* Elizabeth Iron Works.

7. LONG ISLAND RAIL ROAD EXHIBIT Roof frames supported by CF&I-Roebling cables. *Architect:* Daniel Chait; *Consulting Engineer:* Juster & Gugliotta; *General Contractor:* Horn Construction; *Pipe Framework Fabricators & Erectors:* Hallen Welding Service, Inc.

CF&I STEEL **ROEBLING**
CABLE-SUPPORTED STRUCTURES

Continued from page 10

the couch anywhere else. There seems to be a discrepancy between the photographs and the plan, for, in the latter, the living room appears larger and the furniture is arranged differently. However, how can you justify a bedroom that opens directly into a living room, or, as an alternative, that is entered through a bathroom? This would be blasphemy in the disdained development house.

The Couelle house completes the cycle for, lo!, we are back again to the caves of Turkey! Designs such as these (and I have in mind work designed by much more famous masters) must have been created by designers who had difficulty getting proper form-work. The whole structure appears to be a concrete slump, which, like the aforementioned caves, was just carved out.

I do not wish to appear iconoclastic or cynical. I am not taking sides between traditional and contemporary design, for I appreciate beautiful work in both. I avoided statements about the other houses, for I did not find them objectionable. I am not criticizing the architects, since I would steadfastly defend their right to design what they think is best. I am criticizing an editorial policy that presents designs without objective criticism. All of this, I trust, is accepted in the spirit of free expression, which is one of the cornerstones of our democracy.

LEON ROSENTHAL
Babylon, N. Y.

Dear Editor: We were very pleased to see the Bermak House on the cover of the May issue and the fine coverage inside. But a great deal of the success of the Bermak House was due to the great skill and cooperation of the contractor, Mr. Carl Joseph of Oakland, whose name was somehow omitted from the credits.

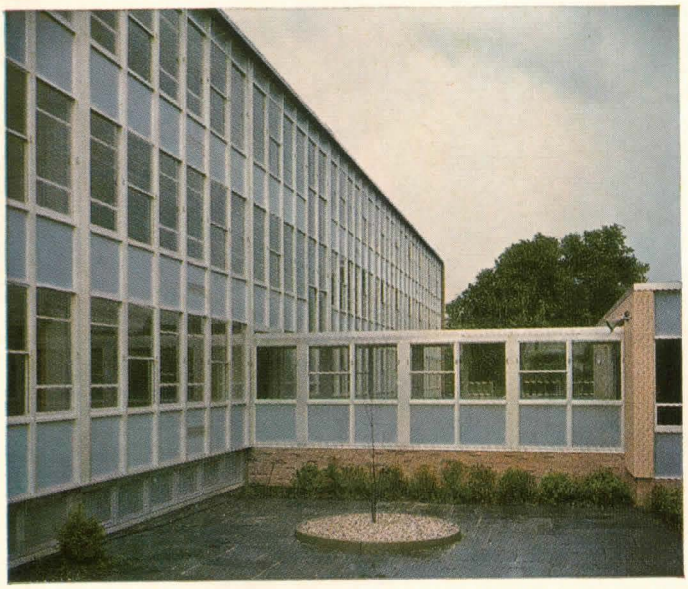
Similarly, the Cary House in Mill Valley was beautifully constructed by Bachus and Damon of San Rafael and we think they should be mentioned with the others.

JOSEPH ESHERICK
San Francisco, Calif.

Dear Editor: I congratulate you on the Bohdan Urbanowicz house. There is something of primary architectural essence in it that restates the validity of wall and opening to the light. What is deliberate in it is substantial at the same time, and this is precisely what makes looking at the house a refreshing experience. It simply says that architecture can exist without "spatial gymnastics."

ADAM MILCZYNSKI KAAS
New Haven, Conn.

Office Building, Baltimore, Md. Thomas R. Silcox, architect. Lawrence Construction Co., builder. CV Durathin Insulated Panels in mottled cinnamon were specified in several sizes up to 4'6" x 4'. All panels are 1⅞" thick with Foamglas insulation.



Public School No. 40, Jersey City, N. J. Valdemar H. Paulsen, architect. B. J. Builders, Inc., builders. CV Durathin Insulated Panels are a bright mottled blue. Specified widths vary from 4'4" to 5', while specified heights vary from 1'5⅜" to 6'10⅝16."

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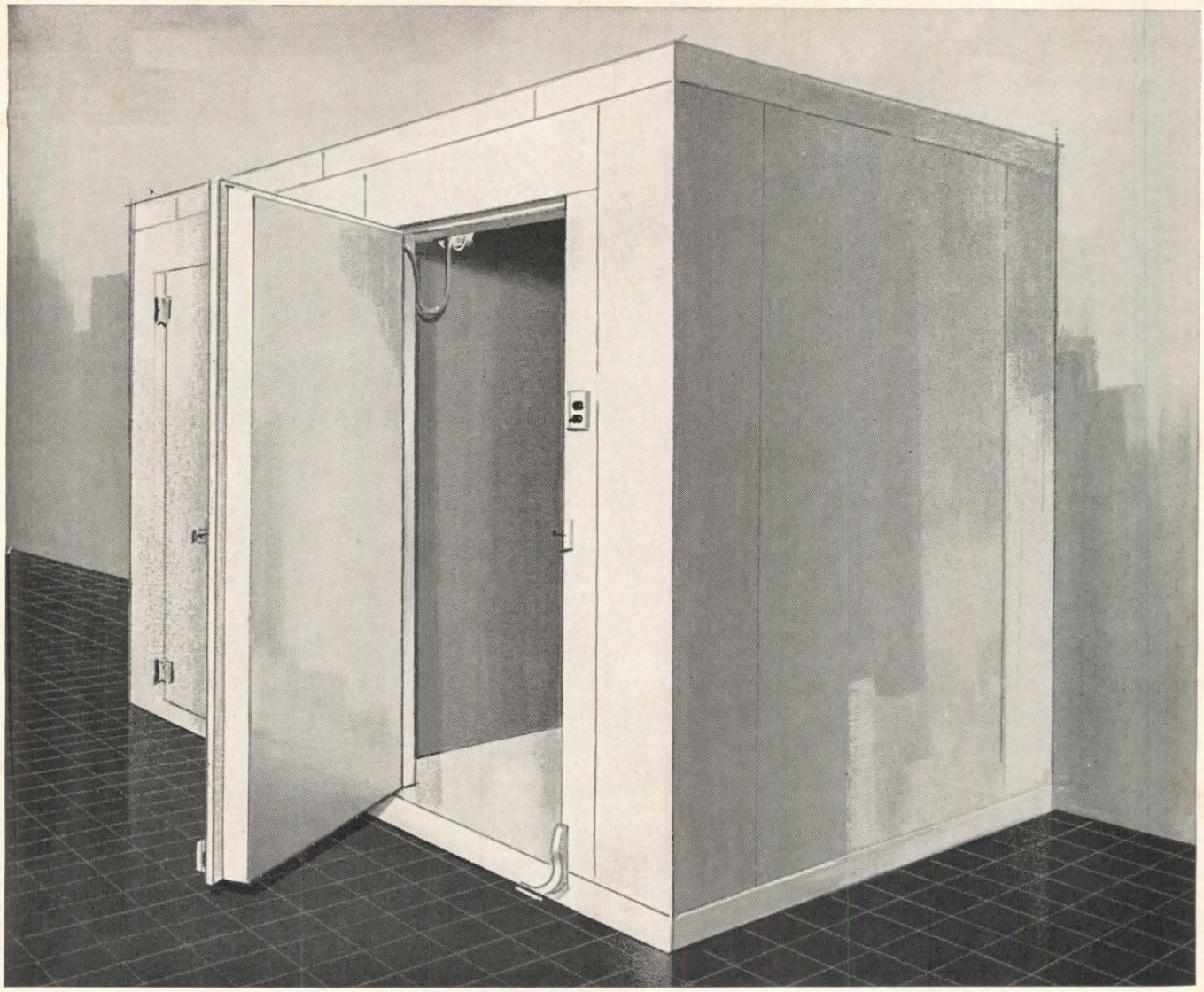

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How to Create an Open World of Recreation

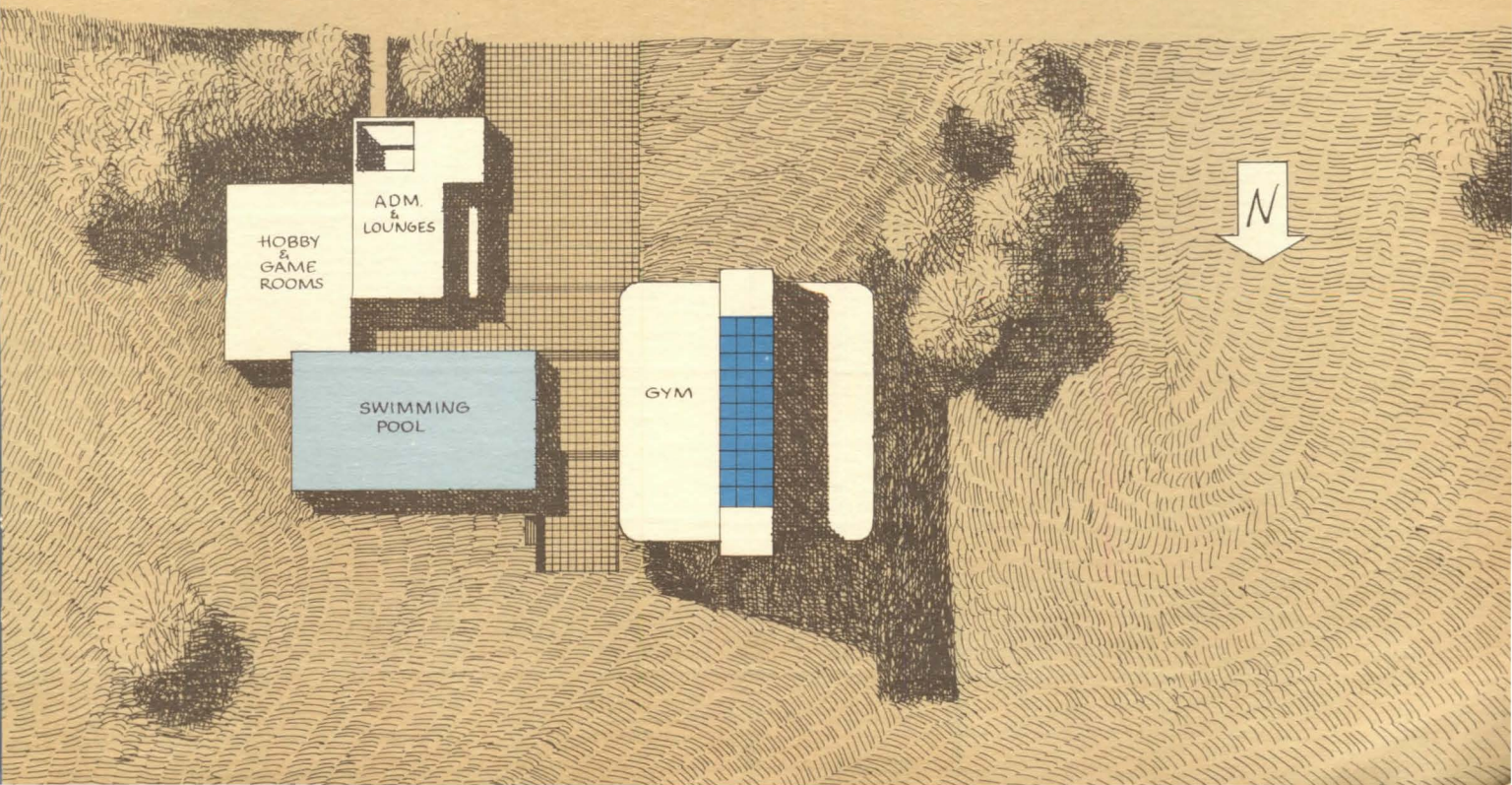
Design proposed by the Office of Walk C. Jones, Jr., Architects, Memphis, Tenn.

"Is it practical to use glass extensively in a sports and recreation center?" we asked the architects.

"With the kinds of glass now available, it is not only practical, but very desirable," was their answer. And to demonstrate *where* and *why* they would use glass, the Office of Walk C. Jones, Jr., made the sketches shown on these four pages.

The imagined site is on rolling terrain in rural Tennessee. The proposed Center can be easily adapted for private club, school, YMCA, public or commercial uses.

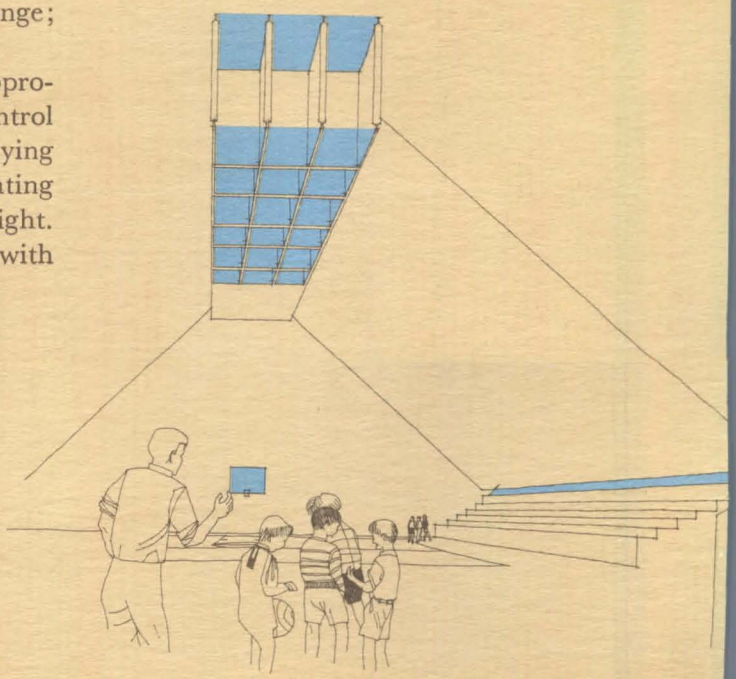
(*Continued*)



The Recreation Center is designed to provide, at minimum cost, the following facilities: (1) gymnasium with stage and dressing rooms, lockers, and seating for 350; (2) an all-weather swimming pool with dressing rooms; (3) lounge with game rooms, snack bar, book store, crafts store; (4) administrative offices and staff lounge; (5) storage and service areas.

The strong, simple form of the gymnasium, appropriate in a rural setting, has a roof shaped to control diffused sunlight to evenly illuminate the playing court without "hot spots". Heating and ventilating equipment are contained at each end of the skylight.

The 90-foot skylight would be constructed with



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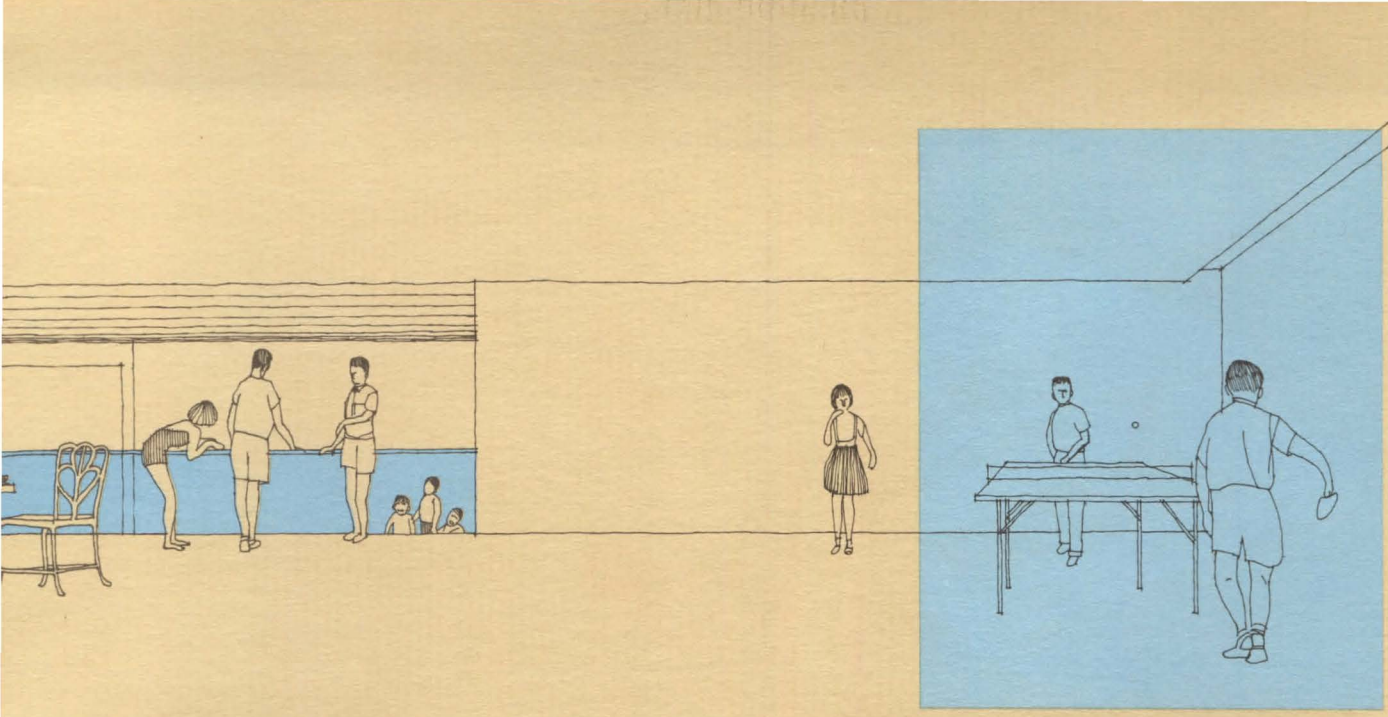
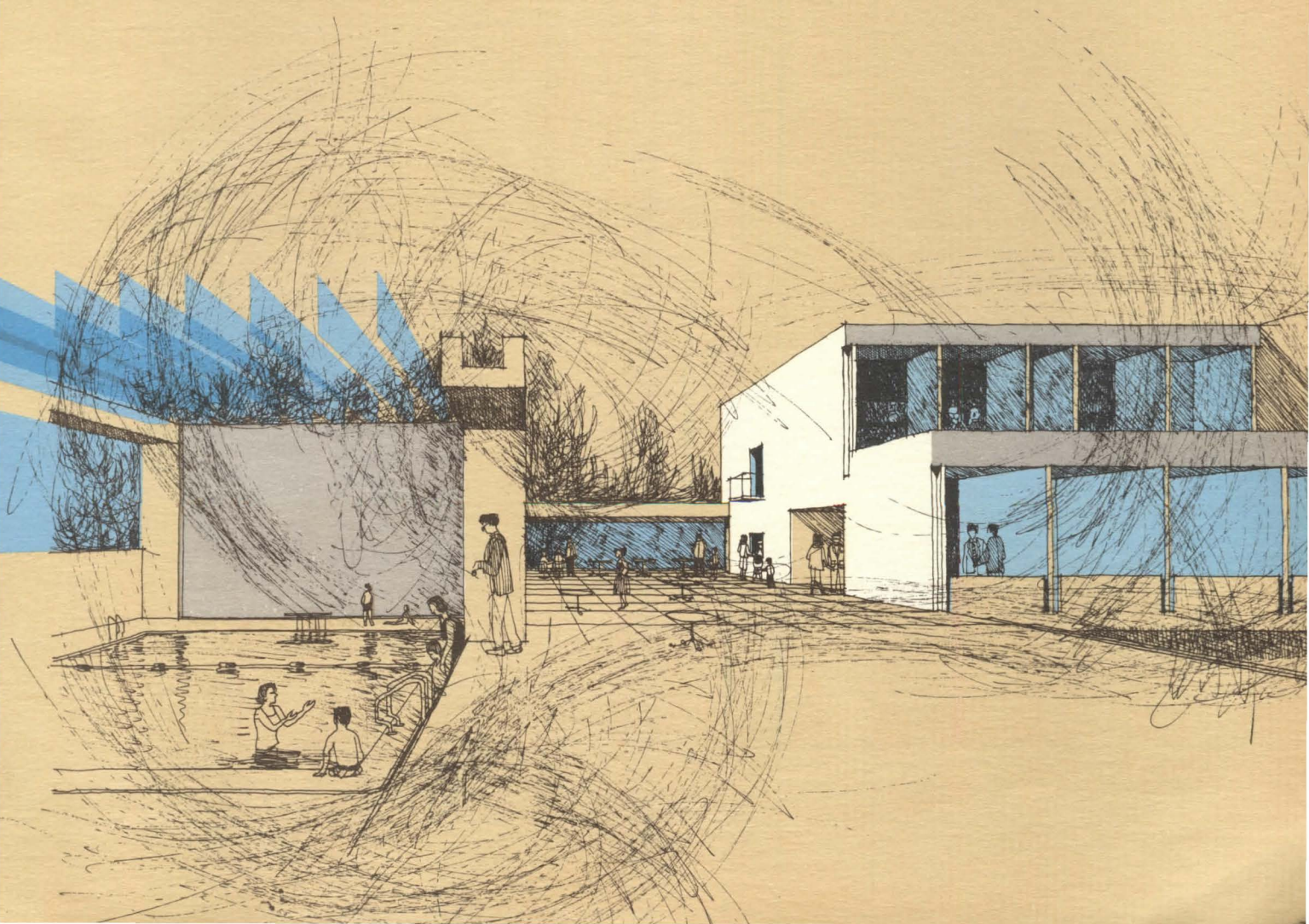
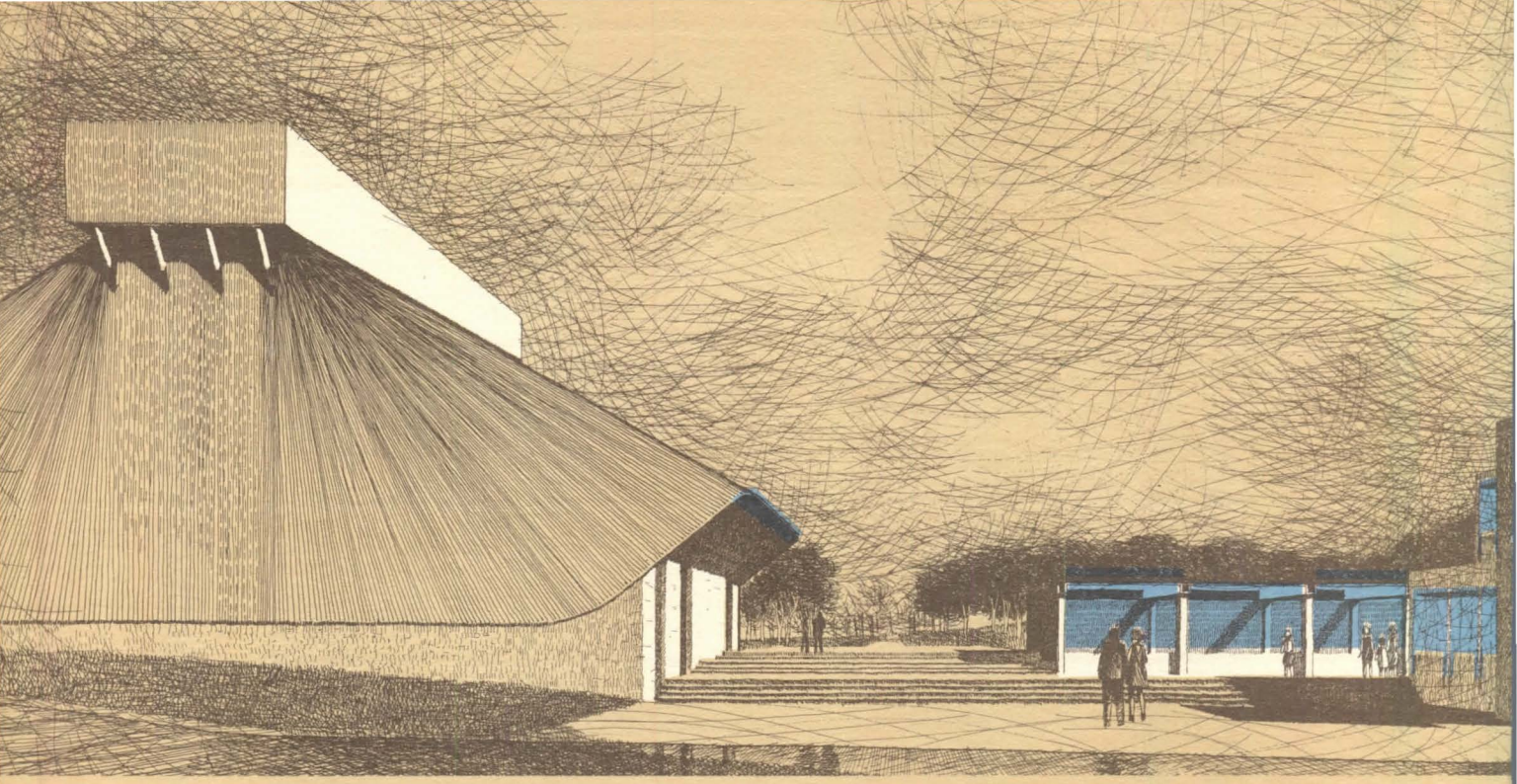
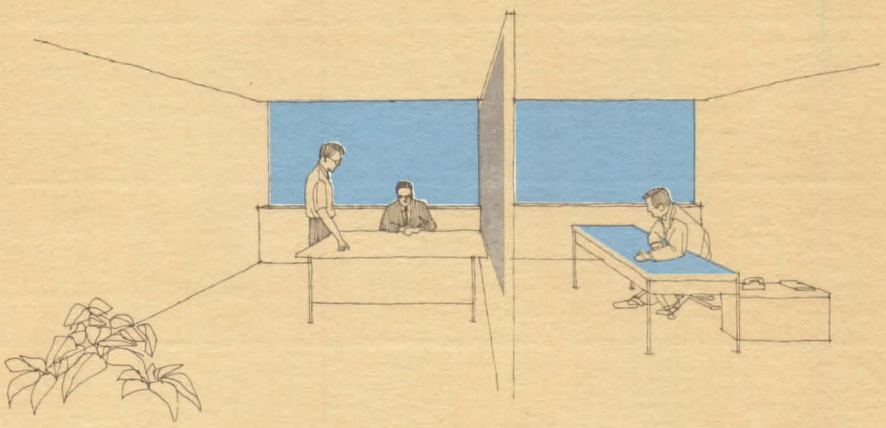


ue-green heat-absorbing *Tuf-flex*® tempered plate ass in the top surface. Below it, at the ceiling peak 0 feet above the playing court) is clear wire glass. upplementary daylighting is introduced with a vision rip immediately above the bleachers. For this the noice is glare- and heat-absorbing *Parallel-O-Bronze*® ate glass to harmonize with the rustic color of the dar-shake roof.

Game and hobby rooms have floor-to-ceiling safety partitions of *Tuf-flex* tempered plate glass. These not only make supervision easier, but also let youngsters observe and thus aspire to participate in more activities. And to keep all aware of changing weather conditions, the outside walls are exposed to the "Open World" with L·O·F glass — either *Parallel-O-Grey*® or Heat Absorbing plate glass.







Since swimming is a natural outdoor sport, the pool is located outdoors, and is provided with protective devices so it can be used year 'round. Outside walls would be equipped with windbreaks of L·O·F Heavy-Duty Plate Glass, and folding roof panels of wire glass which can be opened and closed mechanically. (In more northerly areas, walls of *Thermopane*® insulating glass are recommended to reduce fogging and condensation caused by inside-outside temperature differentials.)

Because this is a complex designed not only for recreation but for the total development of partic pants, staff consultation rooms are partitioned off wi glass for two reasons: (1) no one need feel that summons to an instructor's office is for punitive pu poses, and (2) qualified supervisors can evaluate t instructor's techniques by watching him through *Mirropane*® "see-thru" divider.

This, then, although a hypothetical exercise, poin out that glass can and should be considered for ma more reasons than just for vision — and this applies whatever kind of building you are planning.

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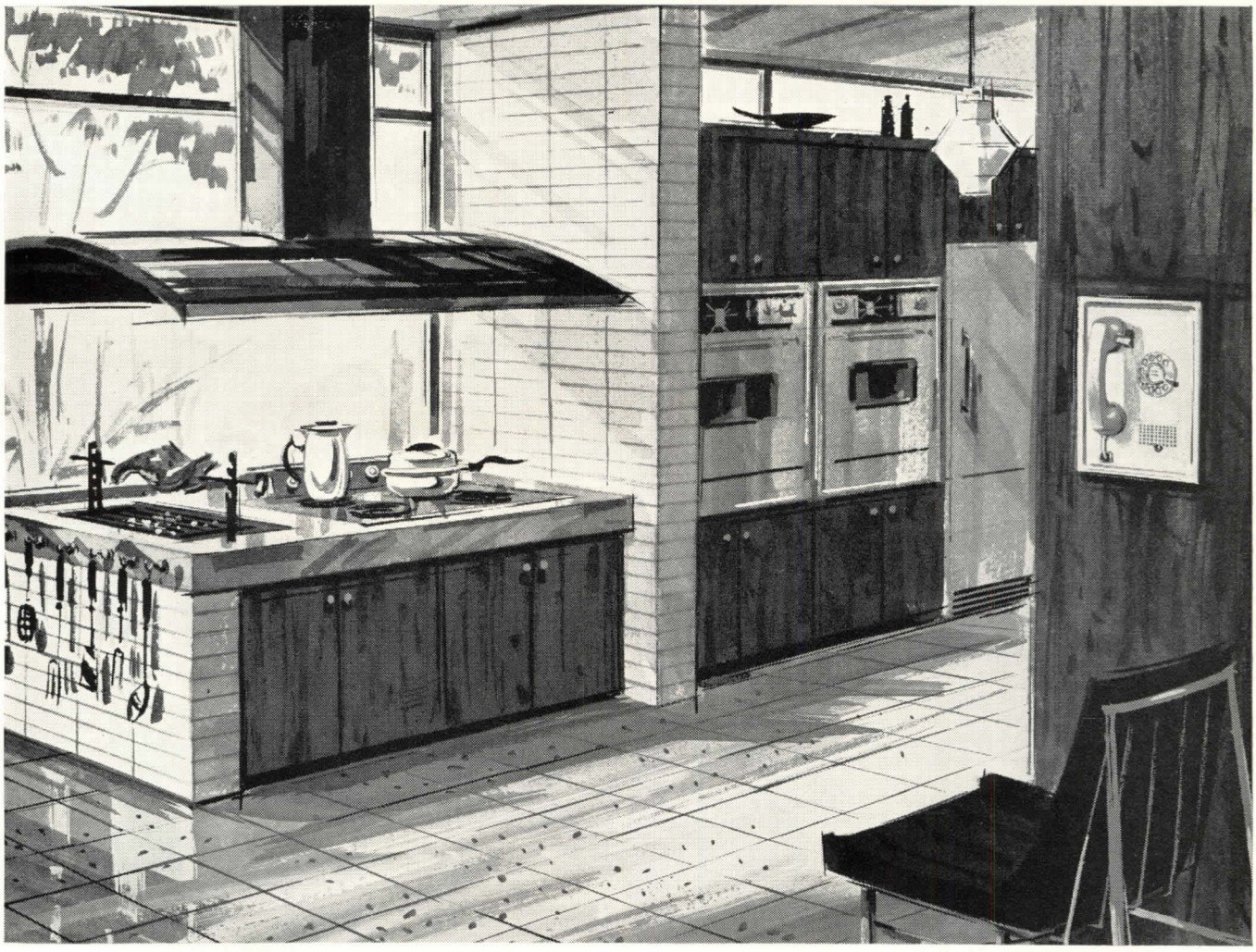

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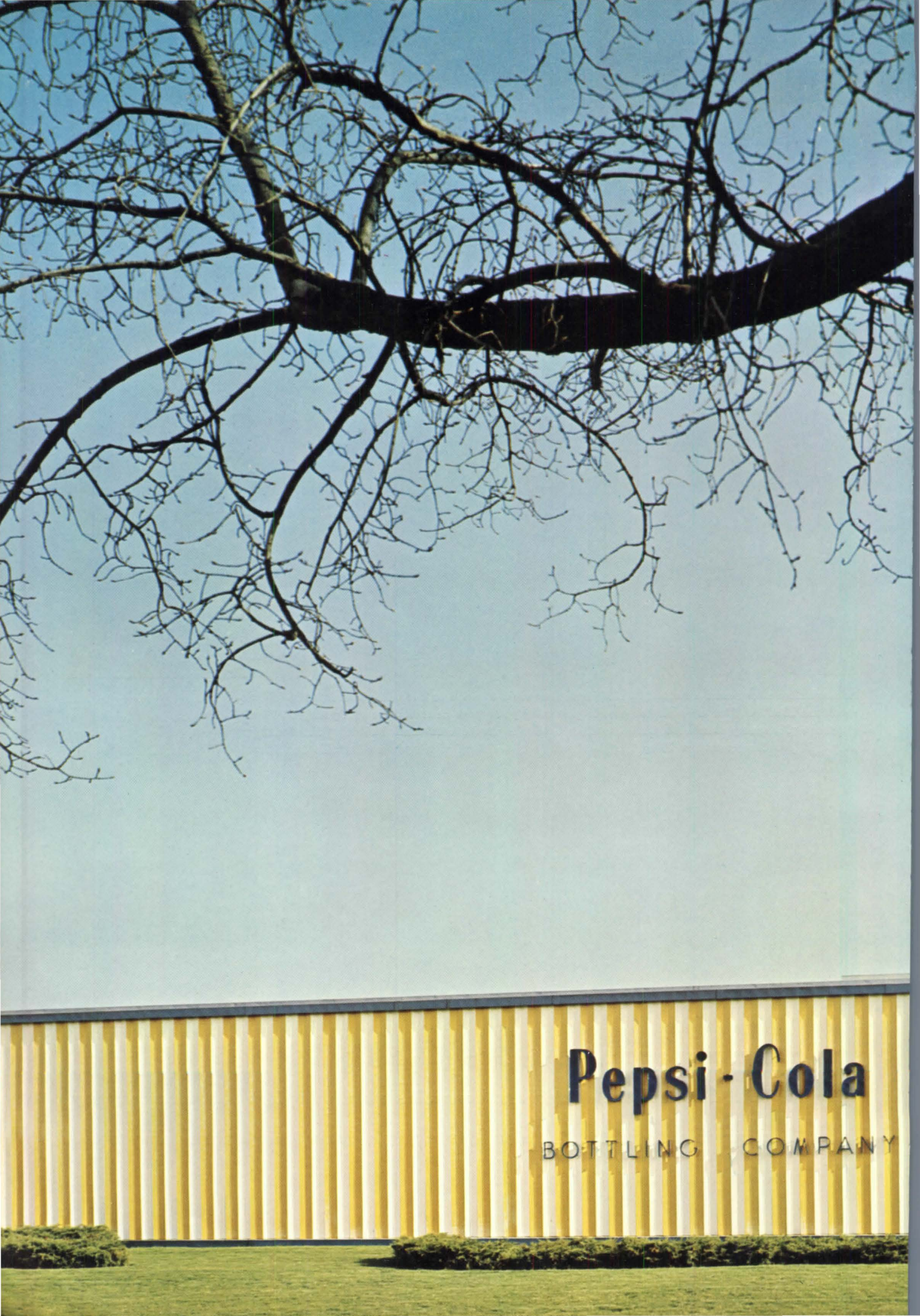
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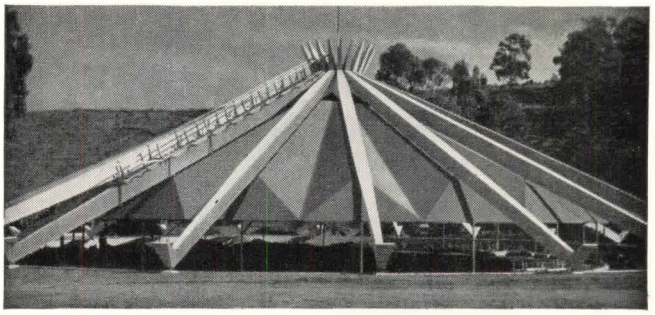

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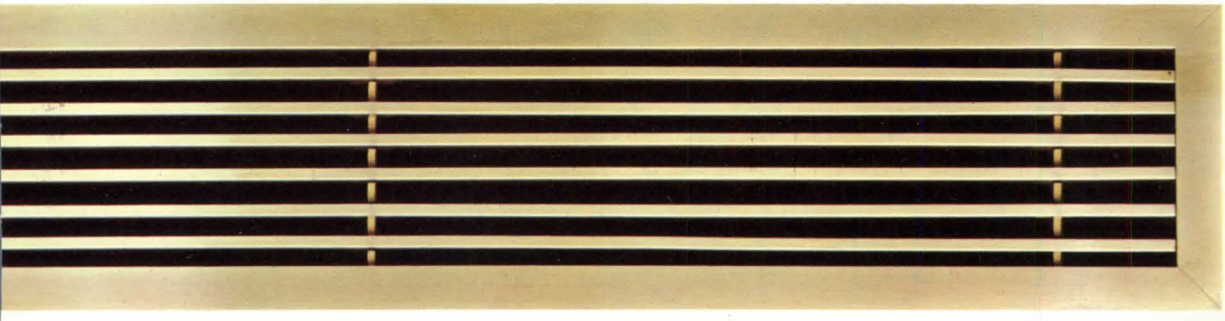

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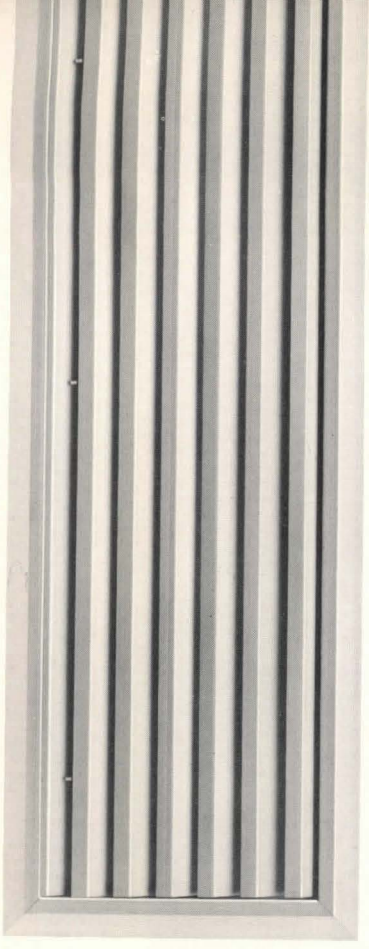

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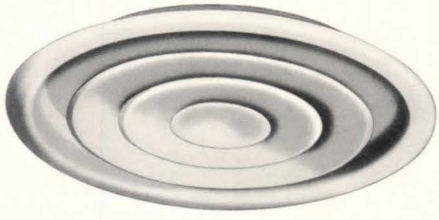

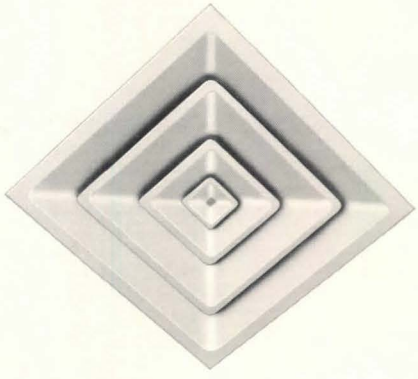

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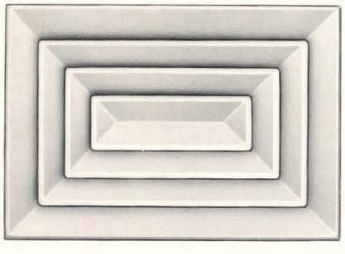

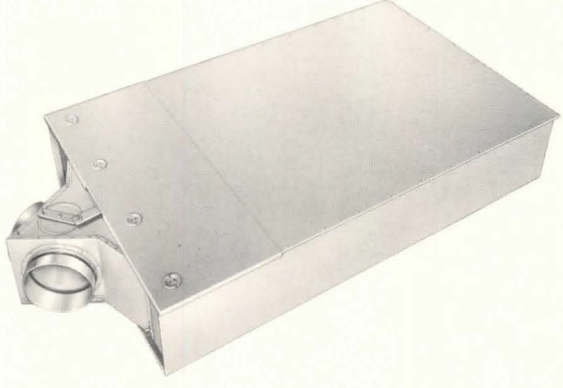

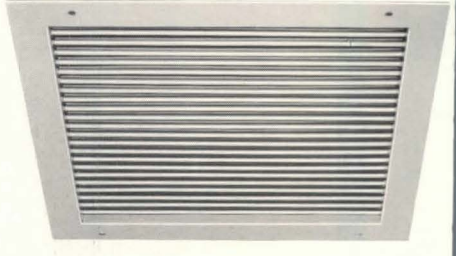

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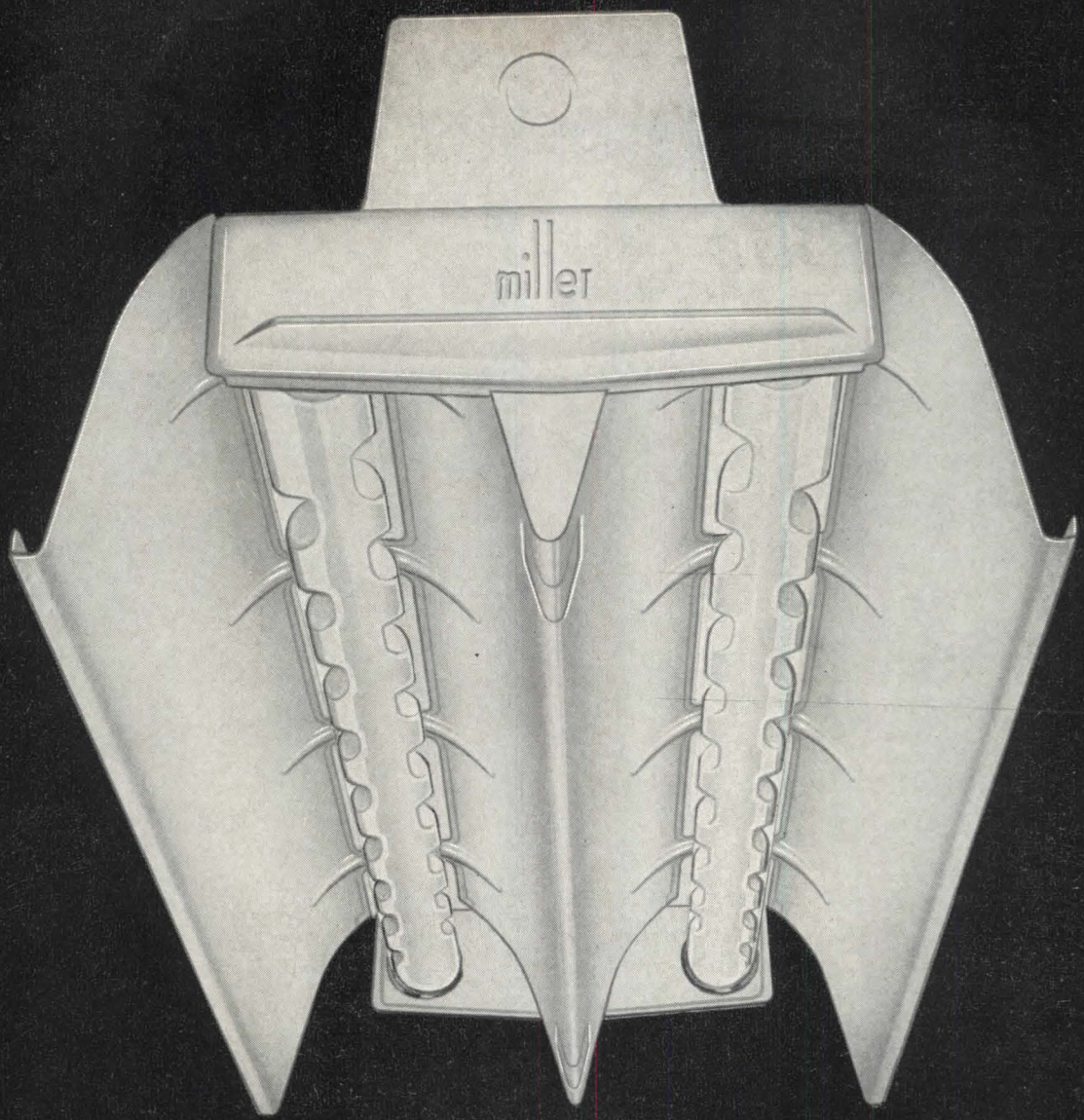

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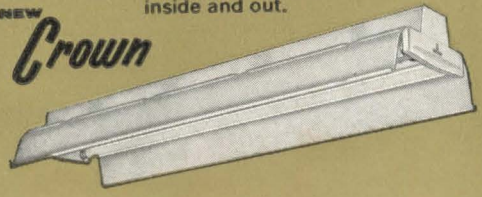

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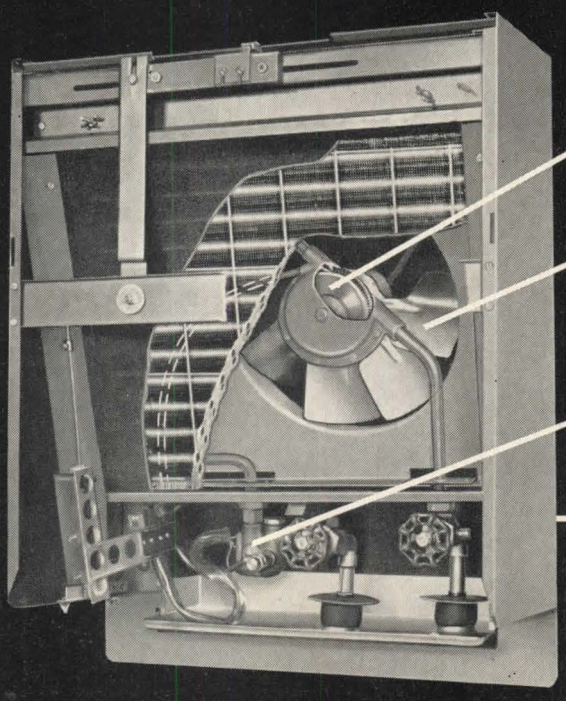

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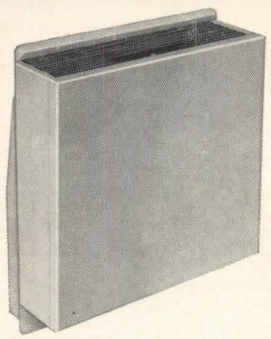

- Cooling capacity: up to 11,700 BTUH (3,000 kcal/h)
- Heating capacity: up to 32,000 BTUH (8,000 kcal/h)
- Dimensions: 21″ high, 19″ wide

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For more information, turn to Reader Service card, circle No. 355

■ Architects utilized all of the superior design and construction advantages of monolithic reinforced concrete to create these new residence towers for the University of Pittsburgh. Through the use of monolithic reinforced concrete, they were able to reduce costs and minimize construction time to assure early student occupancy.

The three dormitory towers are set on a common three story pedestal and each tower is 88 feet in diameter. To give all students outside rooms, all of the mechanical functions of each tower are confined to a center shielded shaft which houses utilities, ducts, elevators, and toilet facilities.

On your next project, be sure that you investigate the many superior design and construction advantages of this highly flexible structural material.

New residence towers for men at University of Pittsburgh
Architect: Deeter & Ritchey, Pittsburgh, Pa.
General Contractor: Dick Corporation, Pittsburgh, Pa.

flexibility and lower COST win for monolithic reinforced concrete in Pitt Residence Towers

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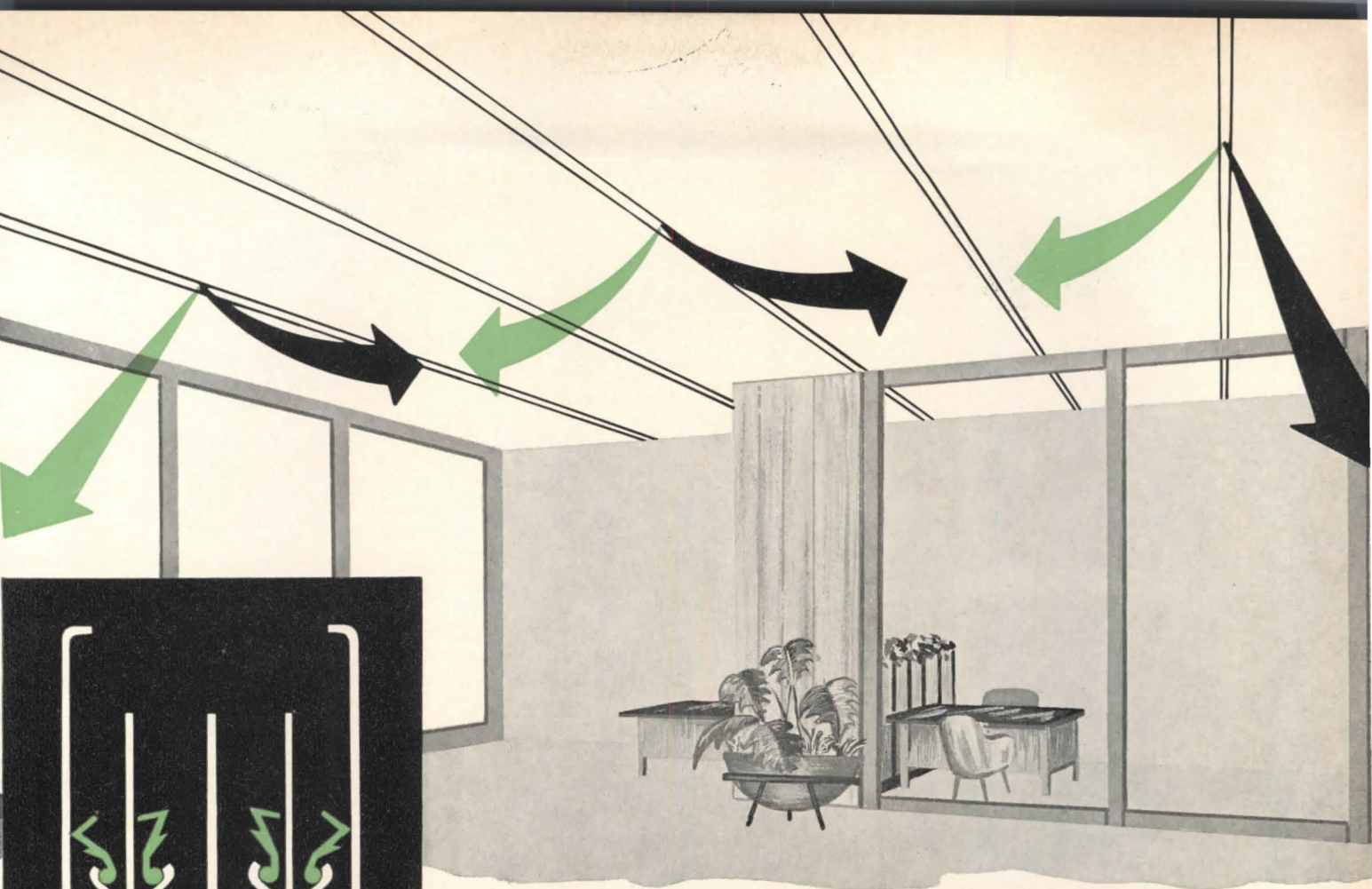

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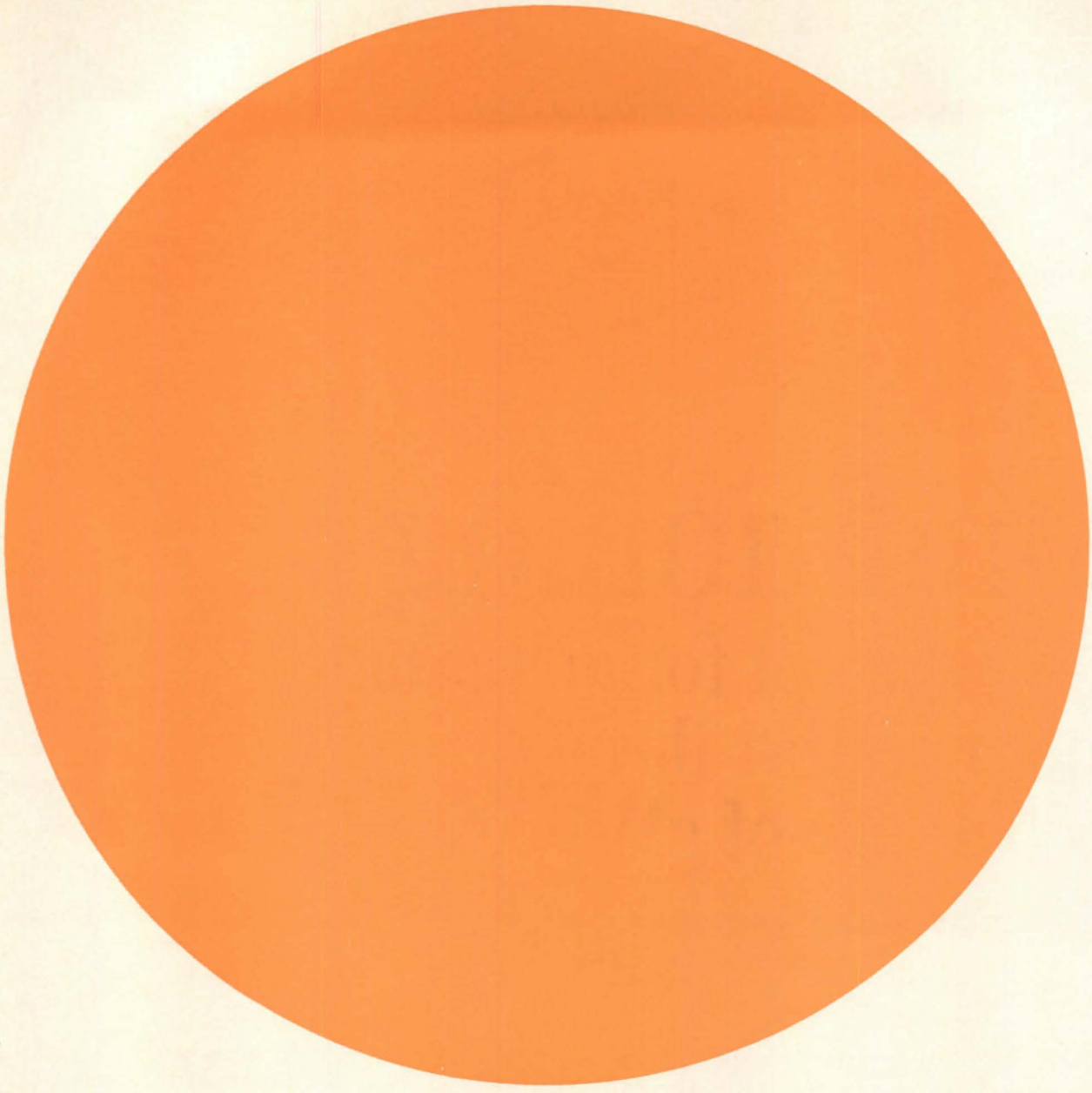
DECORAIRE, the ultimate in adjustable straight line diffusers, has been completely researched and tested in the ANEMOSTAT AIR DISTRIBUTION LABORATORY. Before you write that next specification, write for a copy of ANEMOSTAT Catalog 64S. Get complete performance and specification data on **DECORAIRE**... the new ANEMOSTAT Straight Line Adjustable Diffuser (SLAD).

ANEMOSTAT® PRODUCTS DIVISION
DYNAMICS CORPORATION OF AMERICA

Scranton, Pennsylvania

For more information, turn to Reader Service card, circle No. 322



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Only PPG offers you a selection of 25 vision area glass products, each with individual performance characteristics to meet a given situation. Considerations of site, climate and orientation will determine which combination of glass products offers the most suitable properties to effectively control solar glare and heat. For further information on PPG products for Glass Conditioning, consult the PPG Architectural Representative nearest you. Pittsburgh Plate Glass Company, 632 Fort Duquesne Boulevard, Pittsburgh, Penna. 15222.

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a new concept for increasing indoor comfort through selective use of glass

PPG PRODUCTS FOR GLASS CONDITIONING

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HEAT AND GLARE REDUCING				
Regular Plate Glass	1/4"	200	88	.93
(For Comparison)	3/8"	190	87	.87
	1/2"	180	85	.83
Solargray®	1/4"	150	42	.67
	3/8"	130	28	.58
	1/2"	115	19	.50
Solarbronze®	1/4"	150	51	.67
	3/8"	130	38	.58
	1/2"	115	29	.50
Solex®	1/4"	150	75	.67
	3/8"	130	64	.58
GLARE REDUCING				
Clear Sheet Glass	7/32"		89	.96
Graylite™ 31	1/8"		31	.78
Graylite 61	3/16"		61	.91
Graylite 56	7/32"		56	.88
Graylite 14	7/32"		14	.67
Graylite 52	1/4"		52	.85
HIGH PERFORMANCE (Insulating, Heat and Glare Reducing) All Twindow products have a U factor of .6				
Clear Twindow®		170	77	.80
LHR™ Clear Twindow		120	43	.55
LHR Solargray Twindow		90	22	.40
LHR Solarbronze Twindow		90	25	.40
LHR Solex Twindow		90	32	.40
Solargray Twindow		115	37	.54
Solarbronze Twindow		115	45	.54
Solex Twindow		115	65	.54

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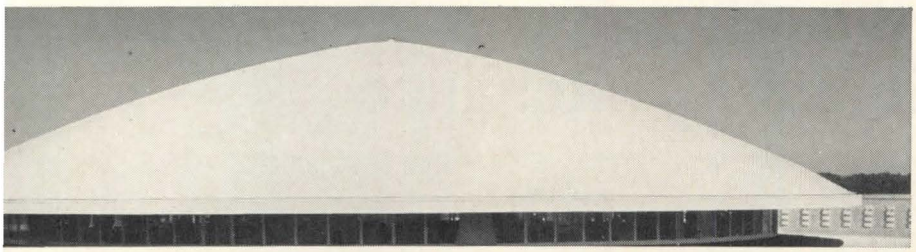
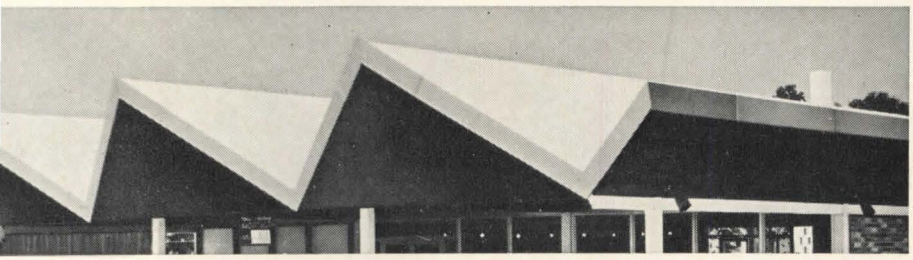
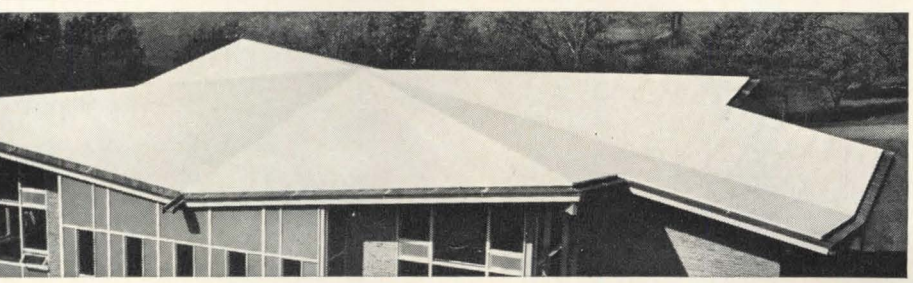
For more information, turn to Reader Service card, circle No. 343

No matter how your roof shapes up...







...RUBEROID T/NA 200 roofing (with DuPont TEDLAR*) will fit its shape!

From folded plate to compound curve—Ruberoid T/NA 200 fits them all. A combination of DuPont Tedlar and Ruberoid Asbestos Felt makes it chemical and weather resistant...provides longer life, trouble-free protection.

Lightweight and gleaming white, T/NA 200 is easy to apply with conventional roofing techniques. Also available in green or gray pastels. Makes any shape roof look shipshape for years.

Get complete facts on Ruberoid T/NA 200 roofing for industrial, commercial, and institutional designs. Write to:

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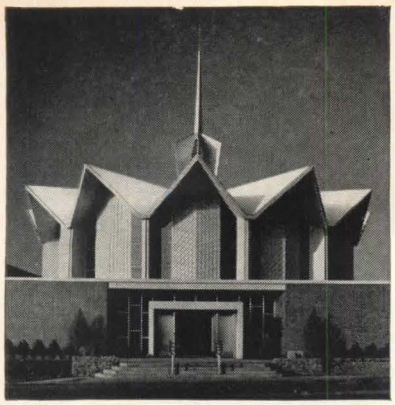
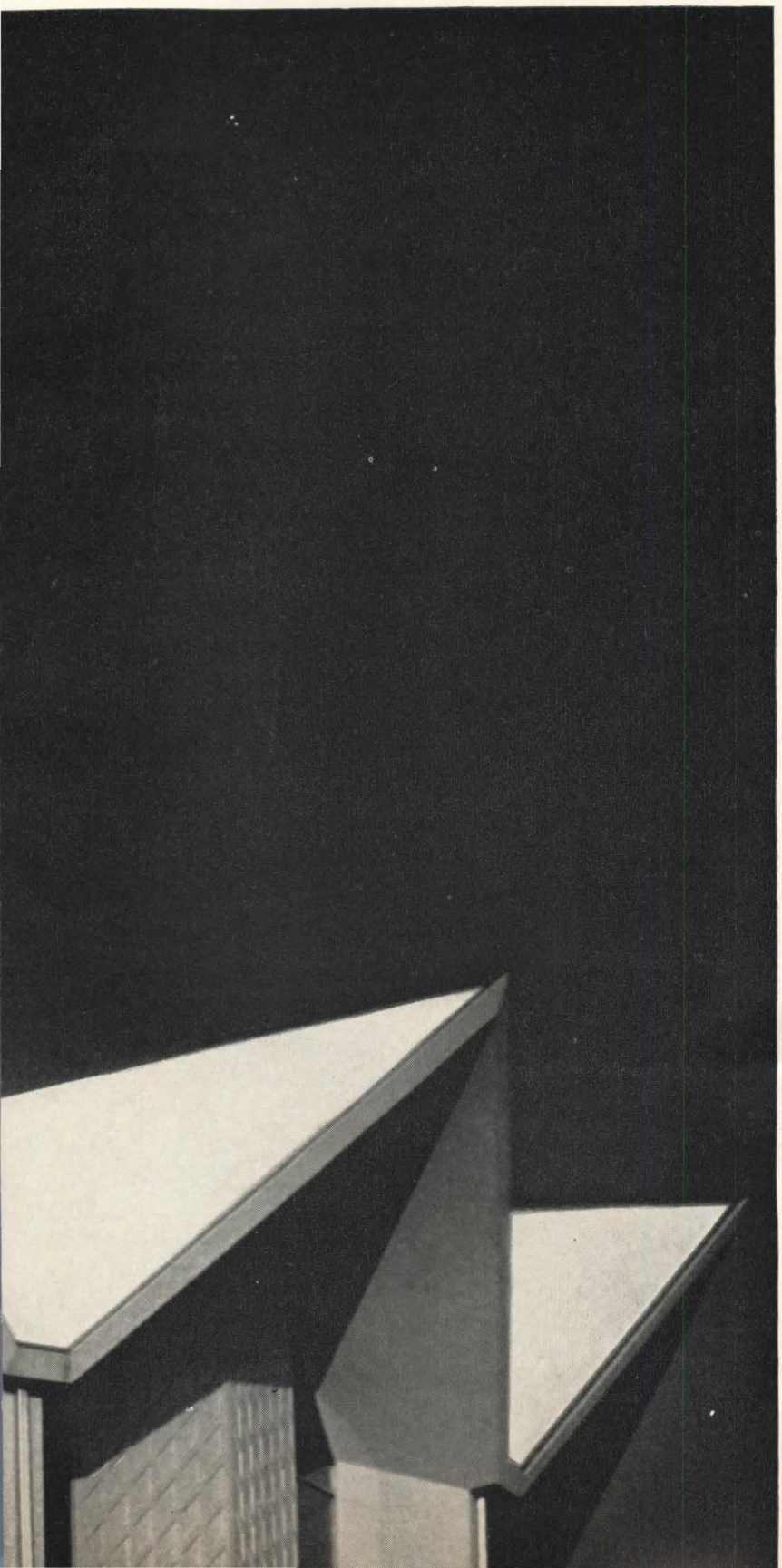


Roofing surfaced with Du Pont TEDLAR® keeps this church roof brilliantly and enduringly white—without maintenance



A SINGLE PLY OF ROOFING SOLVED THE PROBLEM of making this church stand out and be seen from afar. The design called for a brilliant, lastingly white roof, but conventional roofing materials were unsatisfactory.

Either they were not white enough, or their whiteness deteriorated over a period of years, or they could not be installed on the steeply pitched and intricately shaped roof.

A single ply of Ruberoid T/NA-200† solved all these problems. Its surface of Du Pont TEDLAR* PVF film has whiteness that remains brilliant, even after years of exposure. T/NA-200 was easily installed with conventional roofing techniques. It will fit any roof, no matter what its shape or angle.

The lasting whiteness of the surface of TEDLAR insures high reflectivity, which lowers the roof temperature and the air-conditioning load. And because TEDLAR is a tough, inert, flexible film with a surface that's too smooth to trap dirt, maintenance is negligible.

More and more architects are specifying TEDLAR as the finish on roofing and siding for their new designs. Du Pont Film Dept., Box 703-C Wilmington, Delaware 19898.

St. Aloysius Gonzaga Church, Cincinnati, Ohio.
Architects-Engineers: L. P. Cotter & Associates, Cincinnati, Ohio.
Roofing Contractor: Imbus Roofing Co., Cincinnati, Ohio.
General Contractor: Edward T. Honnert & Sons Construction Co.

†Ruberoid's registered trademark.
*Du Pont registered trademark.

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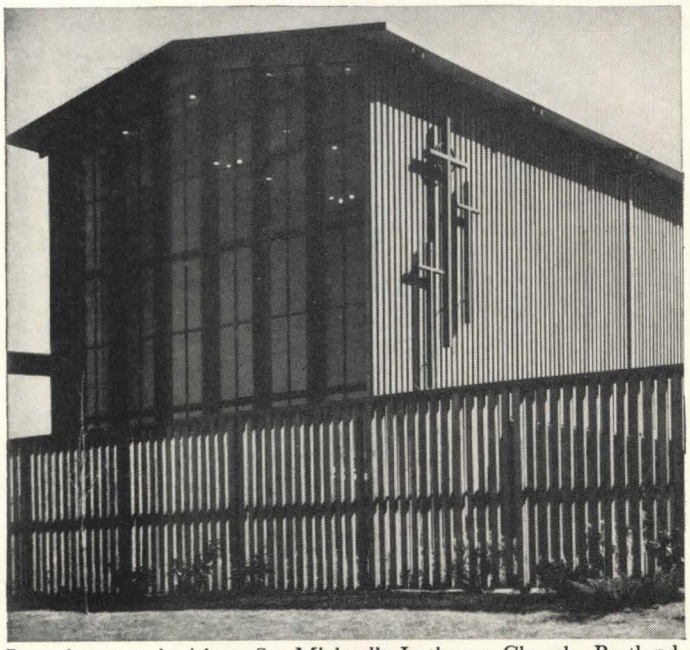
BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*

For more information, turn to Reader Service card, circle No. 338

The Calvary Lutheran Church, San Diego, features three species of wood in beautiful combination with a rough-hewn stone wall. Architect: Des Lauriers-Sigurdson, A.I.A., La Mesa, California.

For citadels of religious freedom
design with the freedom of WOOD



Imposing, yet inviting, St. Michael's Lutheran Church, Portland, Oregon, displays the working-togetherness of wood and windows. Architect: Oliver W. Olson & Associates, A.I.A., Seattle, Wash.

UNICOM MANUALS 1 & 2: "Design Principles" (122 pages) and "Fabrication of Components" (248 pages), graphically detailing the UNICOM method of house construction, are available at nominal cost to those associated with or supplying the home building industry. For free booklet describing UNICOM, write to: National Lumber Manufacturers Association, 1619 Massachusetts Avenue, N.W., Washington, D.C. 20036.

Whatever their beliefs or budgets . . . congregations, lay leaders, and clergy respond warmly to places of worship planned with wood. When atmosphere is important, the use of wood is imperative. Wood's wonderfully wide versatility lets you design with the freedom that fulfills the demands of any set of circumstances, beautifully, enduringly.

Consider the acoustical qualities of wood; it keeps outside noise to a minimum . . . sets the mood for meditation. Consider the insulation qualities of wood . . . it comforts the congregation from outside heat or cold. Consider the inspirational qualities of wood . . . its many species, tones and textures show the wondrous hand of its Creator. And, consider wood's remarkable, rapid remodelability . . . it lets a church grow with its congregation. For more information on designing with the freedom of wood, write:

NATIONAL LUMBER MANUFACTURERS ASSOCIATION
Wood Information Center, 1619 Massachusetts Ave., N.W., Washington, D.C. 20036

nlma

find the better way with **wood**

In the Ladera Community Church, near Palo Alto, young and old alike find comfort and companionship amid the wonders of wood. Architects: Thompson and Peterson, Palo Alto, California.

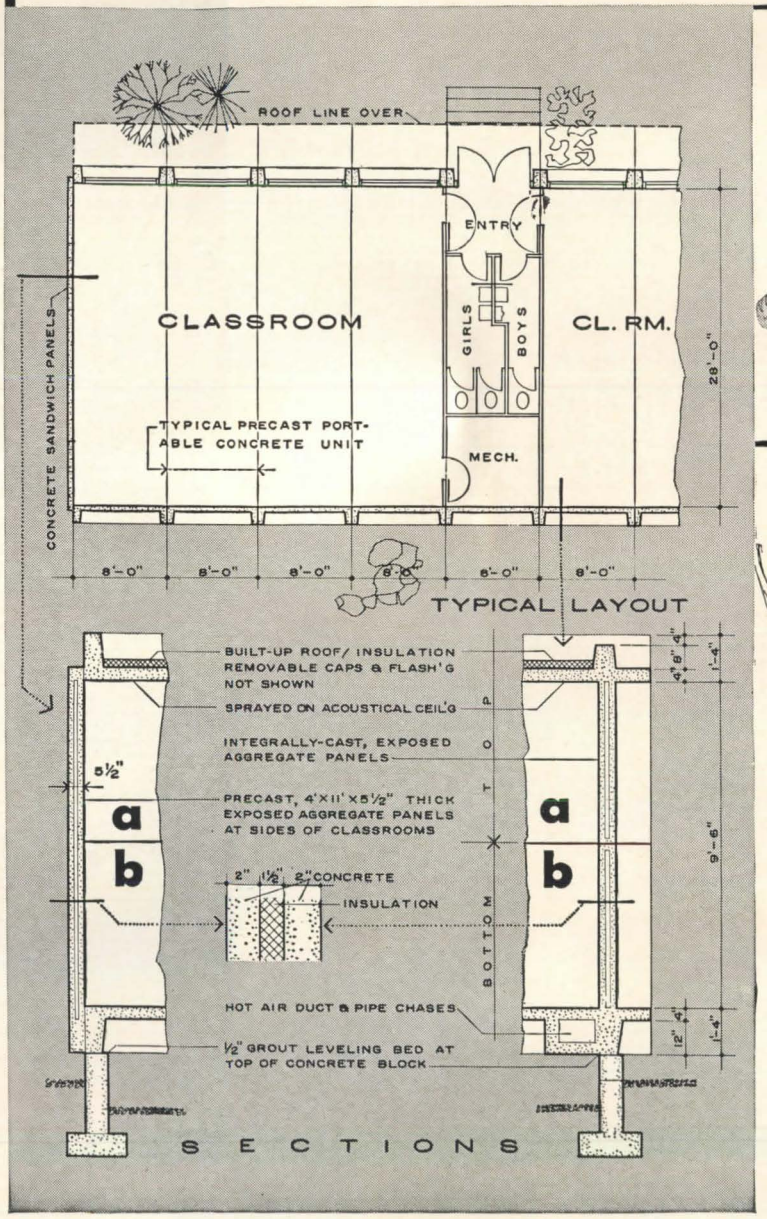
For more information, turn to Reader Service card, circle No. 372

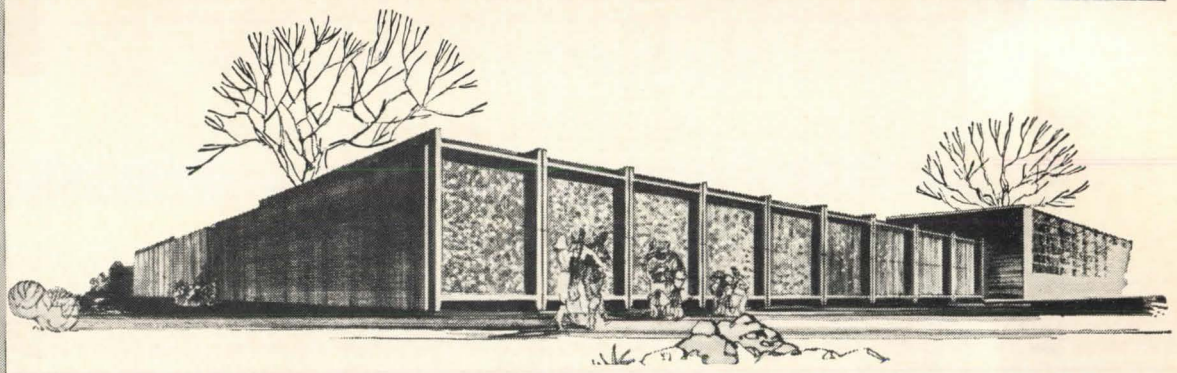
demountable classroom

a.i.a. file: 4-a

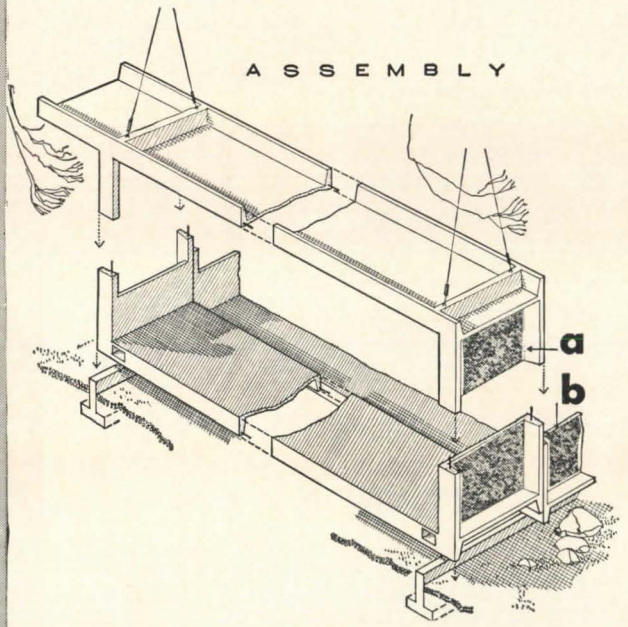
Prepared as a service to architects by Portland Cement Association

Clip along dotted line





Pittsburgh Architects: John Pekruhn, A.I.A., Deeter and Ritchey, A.I.A., and Lawrence & Anthony Wolfe, A.I.A.
Consulting Structural Engineer: R. A. Zern, Pittsburgh



Entire classrooms precast in concrete make up the new addition to the Homewood Elementary School, Pittsburgh, Pa. The design brings beauty, extra utility and easy upkeep to what is usually a "temporary" type of construction. Moreover, a degree of portability is achieved which allows future transportation to another site at very nominal cost.

The concrete segments—each 8′ wide by 28′ long—include a roof or floor section combined with half of each side wall. The precast units were designed for mass production and contain all the essentials of classroom planning. Air ducts, concealed conduits and pipe chases provide a finished room without unsightly exposed utilities.

Oriented to enclosed, planted playgrounds, the structure is completed by a street facade of integrally cast exposed aggregate panels that enhance aesthetic values . . . keep out dust and noise . . . discourage vandalism.

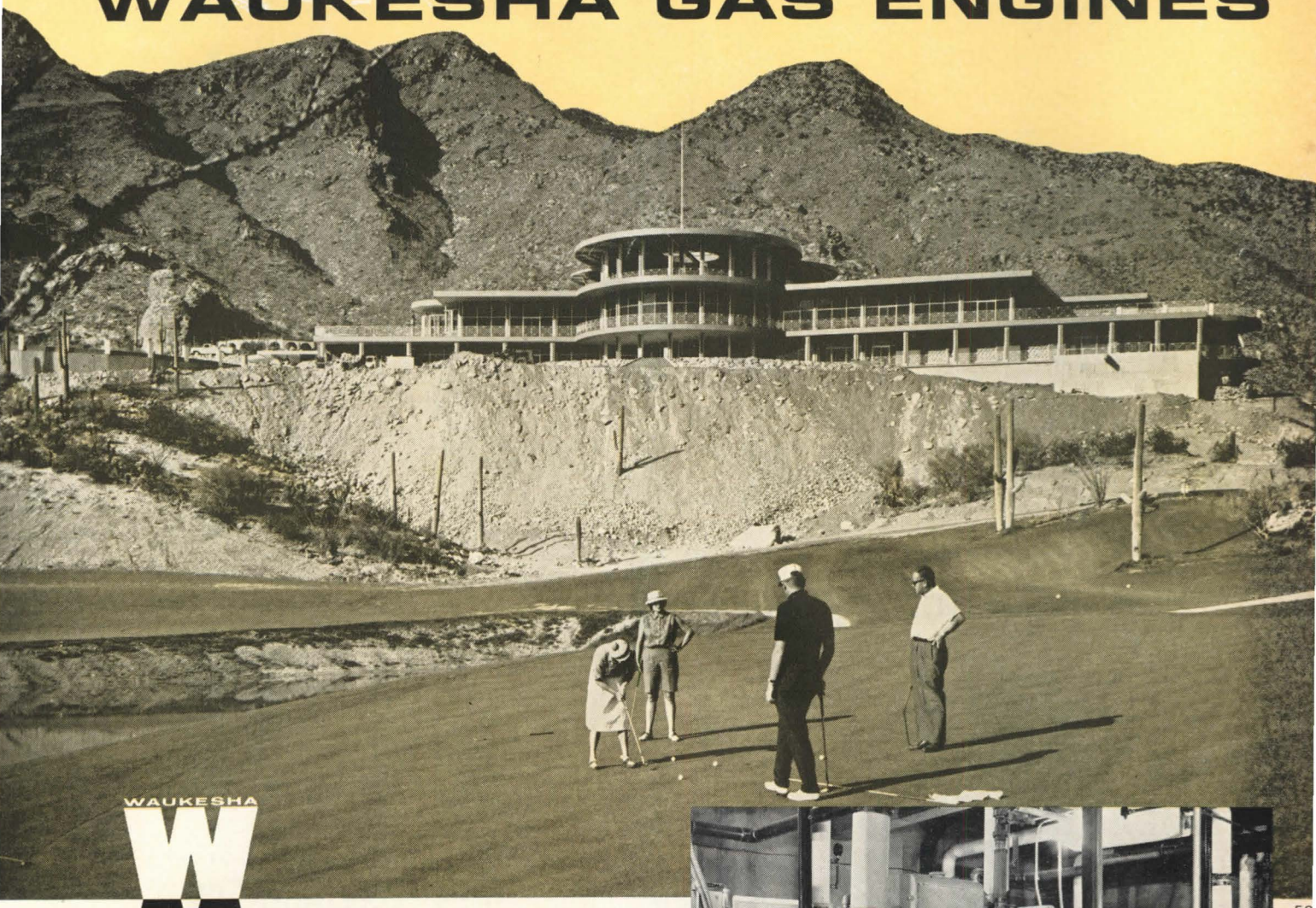
PORTLAND CEMENT ASSOCIATION
33 West Grand Avenue, Chicago, Illinois 60610
A national organization to improve and extend the uses of concrete

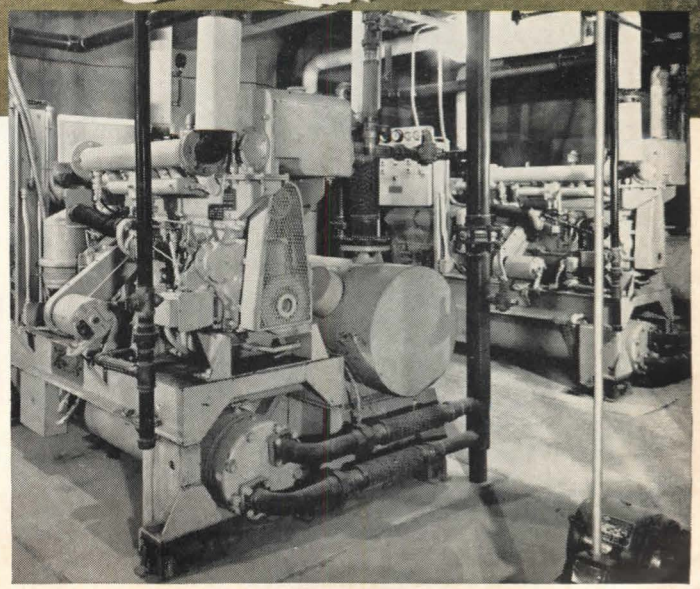
PLAYING IT COOL IN ARIZONA WITH

The Skyline Country Club is the West's newest showplace. Keeping its luxurious clubhouse cool calls for a team of two Waukesha Natural Gas Engines that drive the air conditioning compressors.

And you'll find four more of these brawny Waukesha Gas Engines at work here. Two for powering pumps that move water some five miles, where part of it is used for sprinkling the lower one-half of the eighteen-hole golf course, and part goes to an artificial lake for storage. Another drives the pump that forces water up a steep hill to the clubhouse and storage tank, for domestic purposes. And still another Waukesha draws water from the lake to sprinkle the upper nine holes of the course. Six great Waukesha Gas Engines for six tough jobs!

WAUKESHA GAS ENGINES





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New York • Tulsa • Huntington Park, Calif.

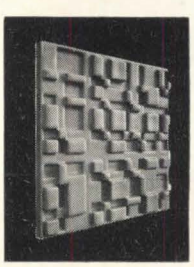
Waukesha Gas Engines, Model 135 GZ, installed in clubhouse to drive Carrier 80-ton air conditioning compressors. Engines are 6-cylinder units with high ratio pistons. Bore and stroke of 4⅜" x 5" for 451 cu. in. displacement. Four similar engines are used to power water pumps required to serve the Club. Engines were sold by Waukesha Southwestern, Phoenix. Southern Arizona Machinery Co., Tucson, installed engines. Fuel gas is supplied by Tucson Gas and Electric Co.

For more information, turn to Reader Service card, circle No. 392

Going places fast—Contours CV

The increasing popularity of this high-fired ceramic wall facing offers multiple advantages. Raised or incised patterns, with matching flat-surfaced pieces, afford the designer unique opportunities to achieve unusual textural interest and decorative effects. A variety of standard patterns currently are available, in nineteen colors ranging from rich tones to pale pastels. And your own designs and colors can be custom produced at low cost.

Contours CV is lightweight, easily applied like glazed wall tile or adhesion-CV, and withstands freezing climate. Yet it is priced to fit the budgets of most jobs. Our counsel, based on experience with widely varied applications, is yours without obligation. Write for technical data, or see your Gladding, McBean Building Products Representative. Better, visit one of our salesrooms, where you can see and feel the beauty of Contours CV itself.



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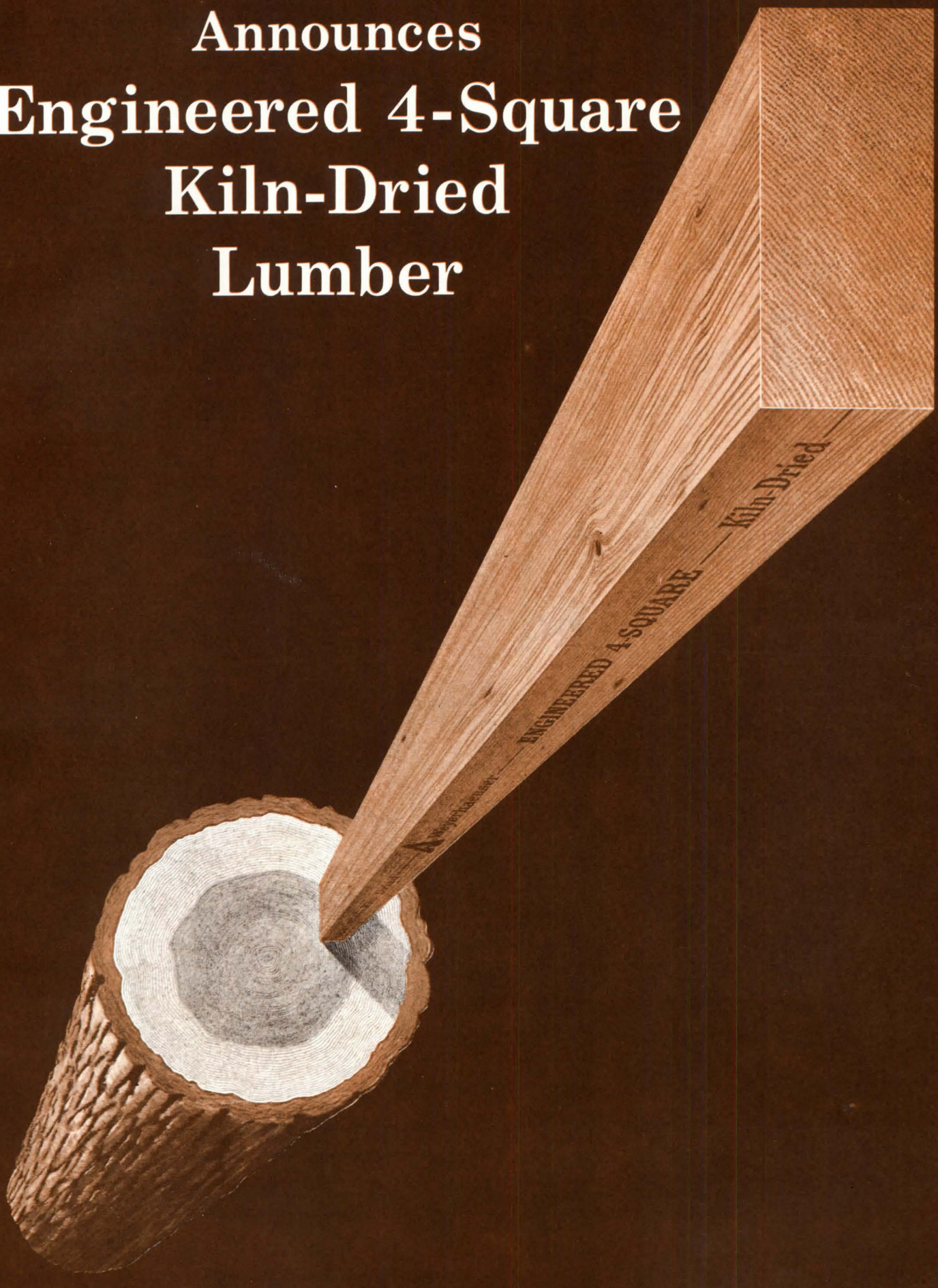
For more information, circle No. 402 ➤

Weyerhaeuser Announces Engineered 4-Square Kiln-Dried Lumber



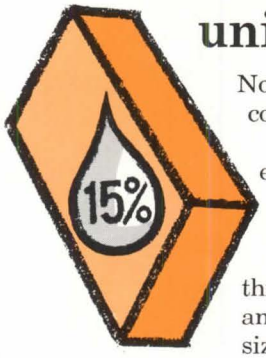
The first real breakthrough in lumber in 36 years

Weyerhaeuser Engineered 4-Square Kiln-Dried Lumber

For 36 years Weyerhaeuser has made the finest Kiln-Dried lumber you can buy. It is known as 4-Square.

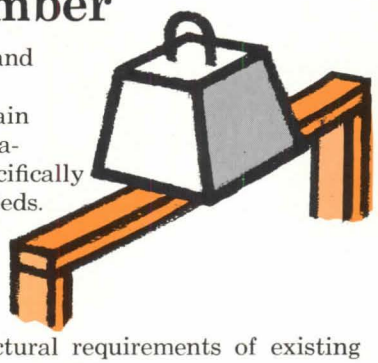
Now, a new improvement in electronically controlled kiln-drying enables us to literally throw the book away. *Engineered* 4-Square Kiln-Dried lumber is the result.

Extra-dry and more uniform lumber



Not one piece of Engineered 4-Square lumber contains more than 19% moisture. The average is 15%. These are the narrowest limits ever established for framing lumber and are made possible by new electronic moisture controls. This uniformly dried Engineered framing can be reduced to slightly smaller thickness (1½") with no sacrifice in strength and stiffness. This is approximately the same size unseasoned lumber will attain in service.

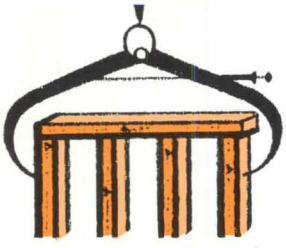
Extra-strong lumber



Uniform low moisture content and lighter weight insure the best performance builders have yet to obtain from framing lumber. Strength, stability and stiffness factors are specifically engineered for today's building needs.

Recognized technical groups throughout the industry have confirmed that the new 1½" thickness at 19% maximum moisture content meets the structural requirements of existing Federal Housing Administration span tables.

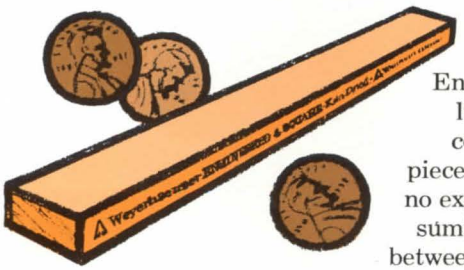
An improvement that means better, more economical construction



Engineered 4-Square lumber is manufactured to meet today's needs for precisely engineered building materials. It will cut the cost of quality construction and do a lot to eliminate wasteful over-building. It also lends itself to more efficient component construction where exacting size and uniform performance is essential.

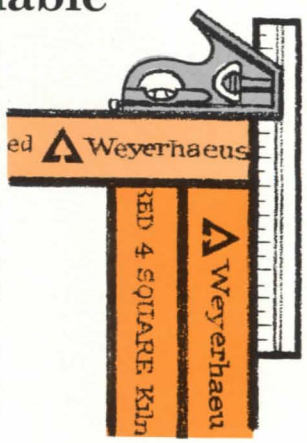
6 important reasons why Engineered 4-Square Kiln-Dried Lumber is your best buy

1. Lower in-place cost



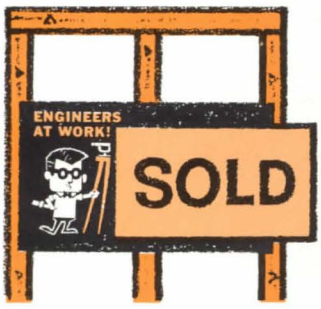
You're money ahead with Engineered 4-Square lumber on in-place costs because every piece is usable. There's no expensive, time consuming dry out period between framing and finish. There's no fall down on grade, no trim waste, no lost time due to twisting, cupping or warping.

2. More dependable performance



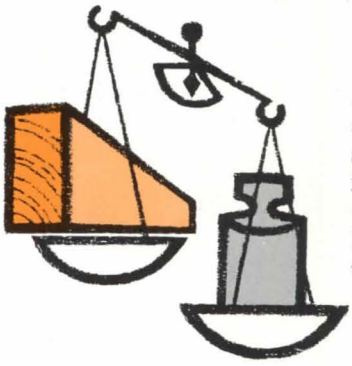
Because of its uniformly low moisture content, Engineered 4-Square lumber stays square and true after it goes into place in a building. And its extra nail-holding power makes joints and other connections strong and solid. This helps eliminate costly call-backs to correct sticky doors and windows, squeaks in floors and cracks in walls and ceilings.

3. Gives you a strong "selling plus"



Most home buyers are very concerned about the quality of construction in the home they may be considering. They will be impressed to see you are using Weyerhaeuser 4-Square lumber, and even more impressed by the fact it is *even better performing* Engineered lumber. This point strongly reinforces your sales story.

4. Lighter and easier to handle



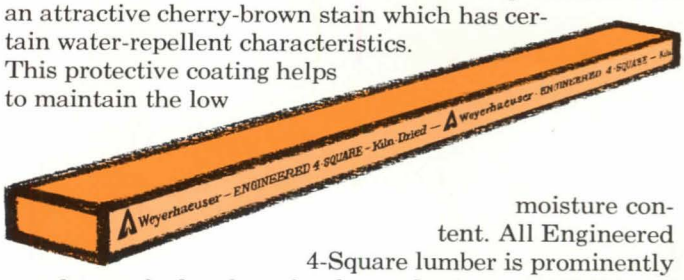
An Engineered 4-Square stud is lighter than an unseasoned 2x4. This savings in weight makes Engineered 4-Square lumber easier to handle and easier to use without sacrificing strength.

5. Field-tested and widely accepted

More than fifty million board feet of Engineered 4-Square lumber has been used in construction over the nation. It was selected as the framing lumber for all three homes at the New York World's Fair House of Good Taste exhibit. The new size and improved moisture content have been endorsed by the American Institute of Architects, the American Lumber Standards Committee, the National Association of Home Builders, the West Coast Lumbermen's Association, the Western Pine Association and the United States Savings and Loan League.

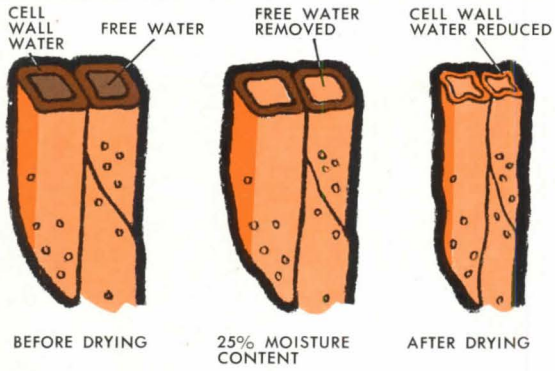
6. Quick, easy identification of quality

Engineered 4-Square lumber is distinctively colored with an attractive cherry-brown stain which has certain water-repellent characteristics. This protective coating helps to maintain the low



moisture content. All Engineered 4-Square lumber is prominently edge-marked and carries the grade stamp "1½" DRY."

The technical story of why Engineered 4-Square Kiln-Dried lumber is your best buy



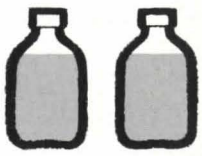
Allowing lumber that has not been Kiln-Dried to "dry-out" within the framework of a house only invites trouble. The wood cell diagrams at the left will explain our point.

As lumber dries out the "free water" between the cells leaves first, then the water in the cell wall. As the cell water evaporates the lumber begins to shrink (at about 25% moisture content). Now if you build a wall with green studs containing various percentages of water you are bound to get uneven shrinkage. The result can be warping, twisting and checking of the lumber. This is what causes uneven walls, sticking doors and windows, plaster cracks and other defects.

With Engineered 4-Square lumber the water that can cause trouble is removed at the mill. Every piece is preshrunk to a narrow margin of moisture uniformity. Nothing is over 19% moisture and the average is 15%.

Green

When it is first cut, a green 8-foot stud may contain as much as three gallons of water. There are about three pints of water in the same stud (at 30% moisture content) when it gets to market.

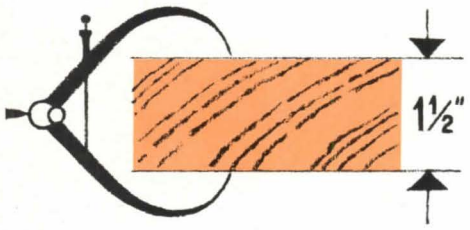


Kiln-Dried

When the same stud is Kiln-Dried to the prevailing 19 per cent average moisture content (no maximum limit) it will contain about two pints of water. This makes for good lumber, but it no longer fits today's needs in engineered-type building.

Engineered 4-Square

A Weyerhaeuser Engineered 4-Square Kiln-Dried stud will contain about one pint of water. This is close to the moisture content the wood will attain in service and it's ideal for all types of precisely engineered wood construction.



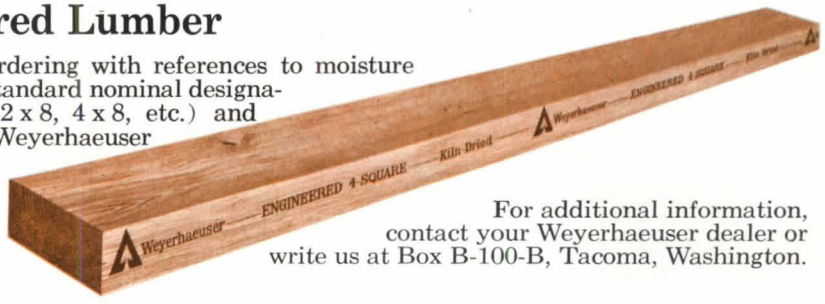
Why the smaller size?

There's a place for green lumber. Weyerhaeuser has always made it and probably always will. However, the size of a lumber framing member should be directly related to the moisture content the lumber will attain in use.

Green lumber dressed to 1⅝" will shrink down to about 1½" when it finally dries out. Since new Engineered 4-Square Kiln-Dried lumber is pre-shrunk at the mill it doesn't make sense to use the larger size when the 1½" thickness will meet the requirements of all existing span tables.

How to order Engineered Lumber

You don't have to complicate your ordering with references to moisture content or dressed sizes. Just use the standard nominal designations for structural members (2 x 4, 2 x 8, 4 x 8, etc.) and specify "all framing lumber to be Weyerhaeuser Engineered 4-Square Kiln-Dried."



For additional information, contact your Weyerhaeuser dealer or write us at Box B-100-B, Tacoma, Washington.

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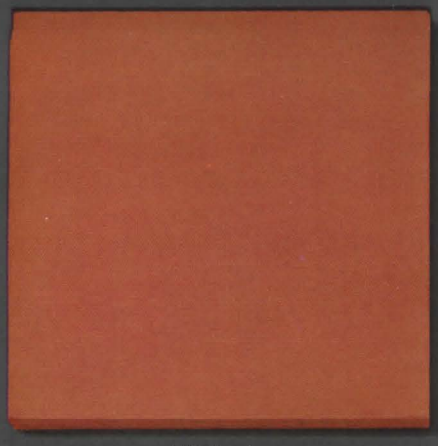
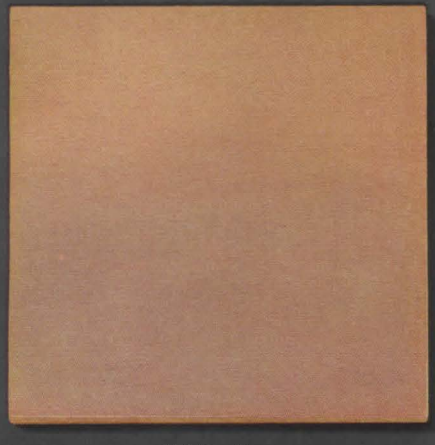


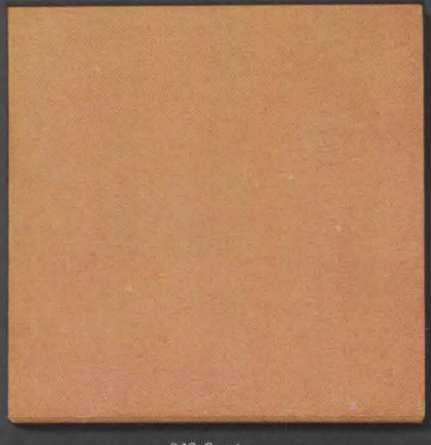
110 Navajo

160 Oriental

170 Russet

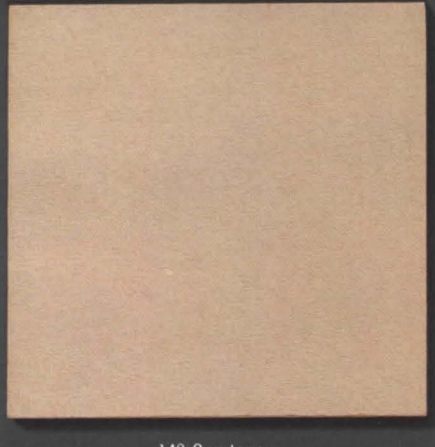


150 Egyptian

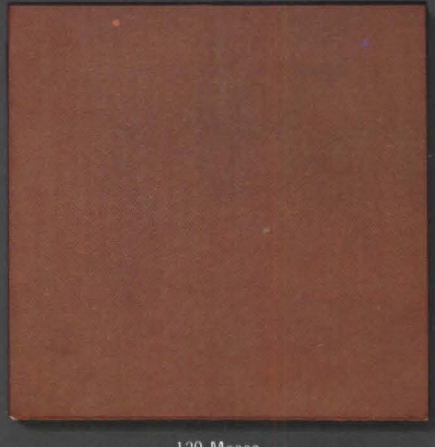


240 Suntan

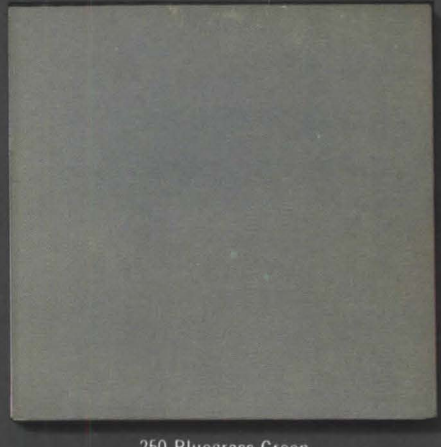
130 Cinnamon



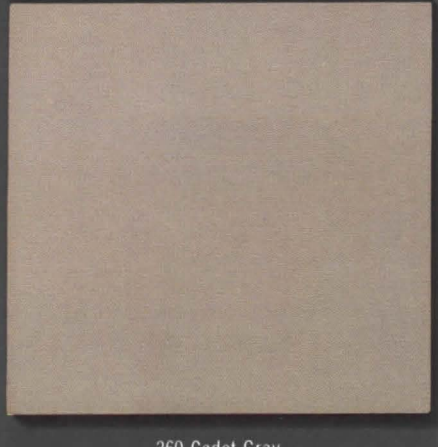
140 Greytone



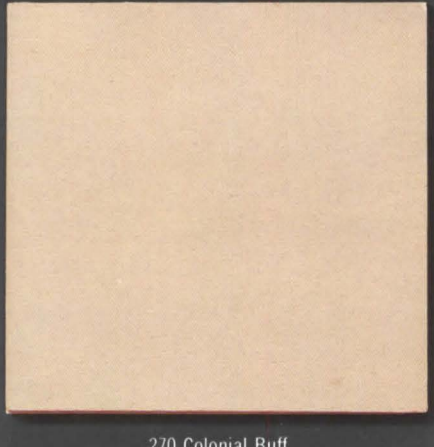
120 Mecca



250 Bluegrass Green



260 Cadet Gray



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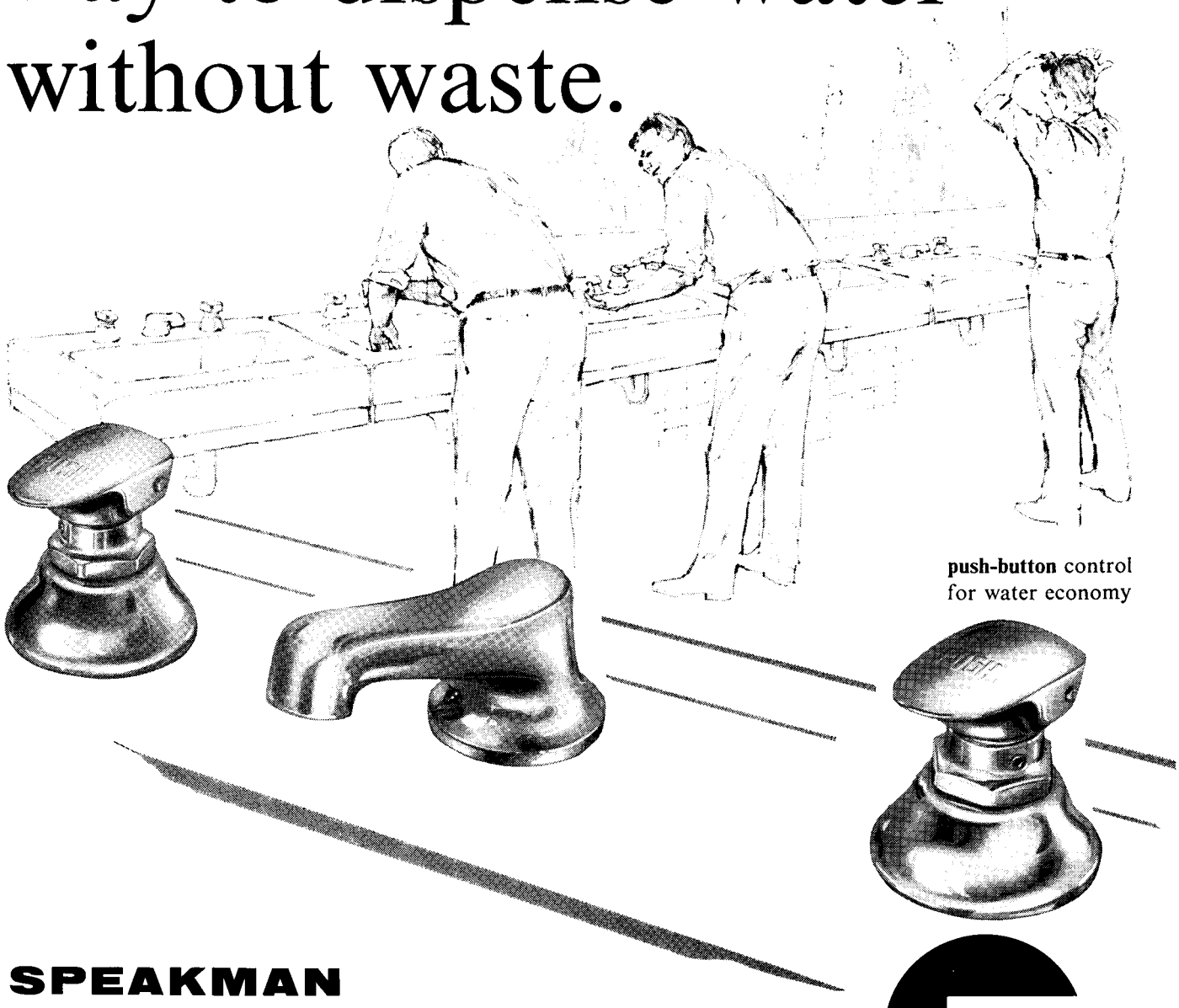

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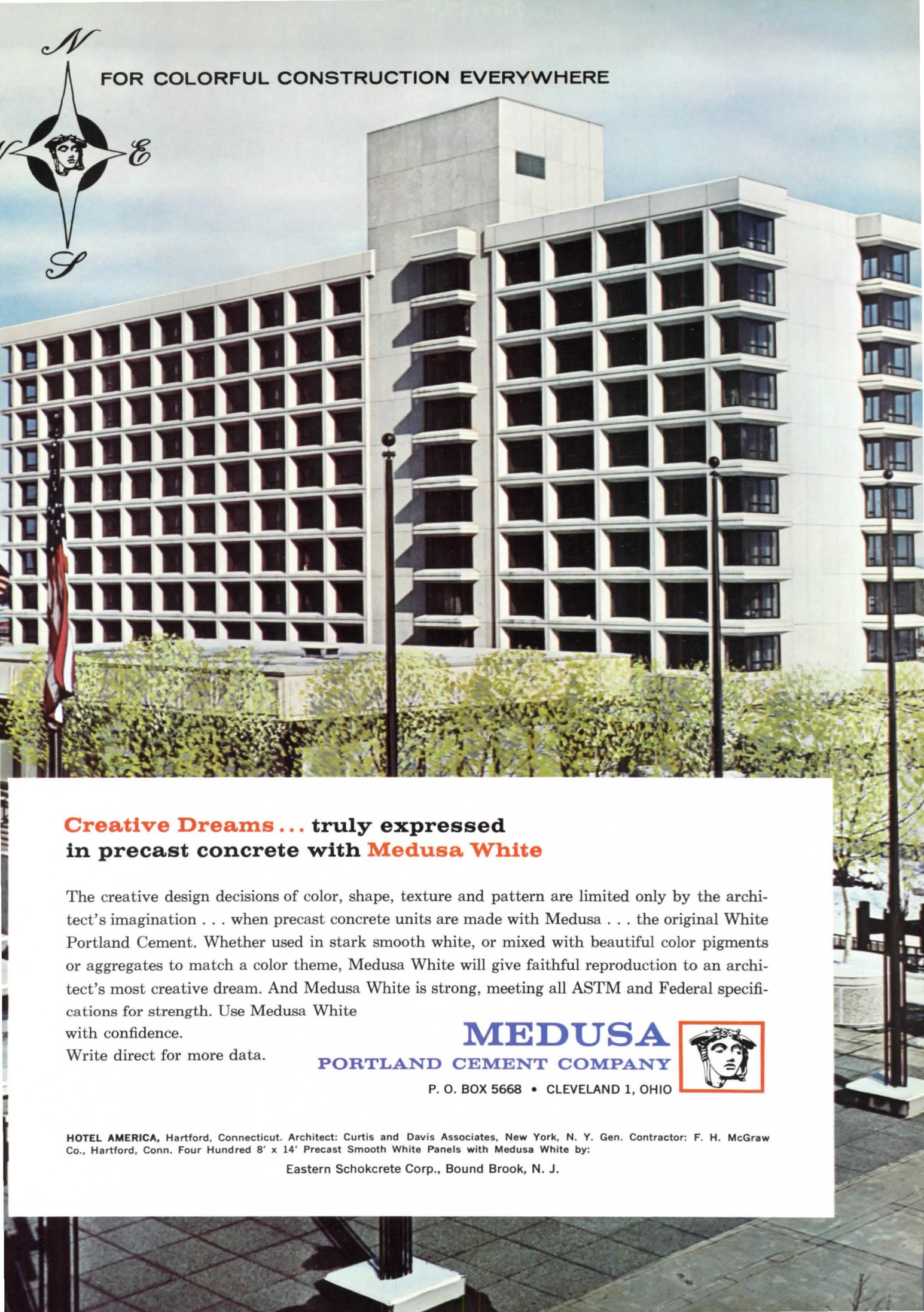

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STRUCTURAL DESIGN **NEWS**

FROM BETHLEHEM STEEL NO. 7

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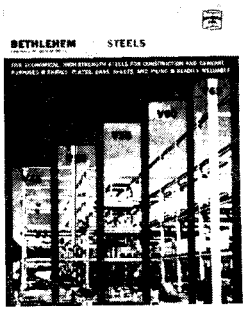

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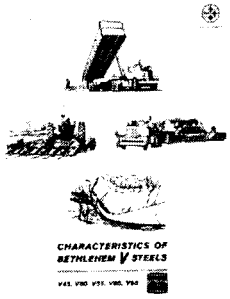

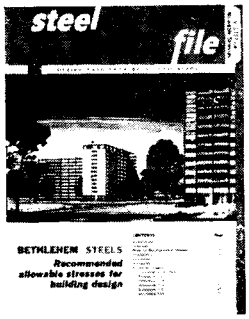

No. 1961.

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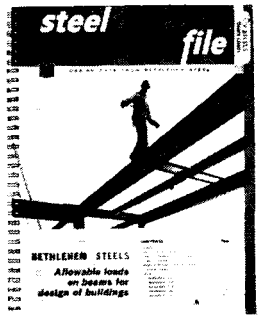
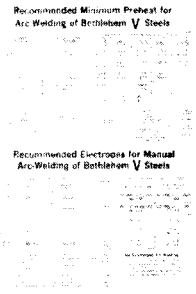
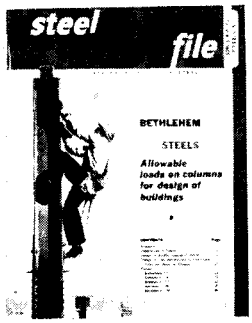


No. 2004.



No. 1944-A.



No. 1996.

No. 1997. Engineering data on new high-strength, low-cost vanadium-nitrogen steels (V Steels) available in structural shapes, plates, sheets, bars, and piling. Yield points 45,000 to 65,000 psi.

No. 1957-A. Properties of Bethlehem V Steels, including strength, notch toughness, weldability, aging, cold-forming, fatigue, and elevated temperature.

No. 1961. Values of allowable stresses for building design are shown for all five V Steels. Presentation follows that used in the Appendix to the AISC Specification.

No. 1944-A. Easy-to-read tables give recommended minimum preheat for arc-welding Bethlehem V Steels and recommended electrodes for manual arc-welding of V Steels.

No. 1996. Lists allowable axial loads for rolled column sections available in V Steels. Contains data on columns subjected to axial stresses or to combined axial and bending stresses.

No. 2004. Lists allowable uniformly distributed loads for rolled sections, available in V Steels, used as simply supported beams with adequate lateral supports.

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No. 2030. Hollow Structural Sections. Engineering data, plus dimensions and properties for all 146 sizes and gages of squares and rectangles.

No. 1902. Steel Strand Specifications and Standards. Enables engineers responsible for suspension systems to choose the correct wire rope or strand, and prepare specifications.

BETHLEHEM STEEL

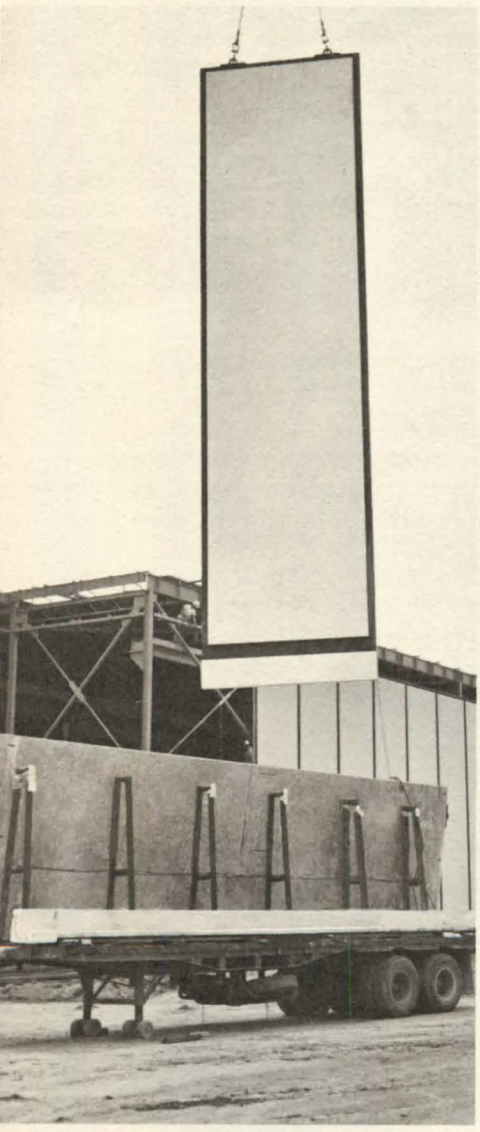
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. Export Sales: Bethlehem Steel Export Corporation

For more information, circle No. 366

DESIGN IDEAS 1964

On the following five pages you'll see specific examples of how Koppers building products have helped architects and engineers obtain greater latitude of design and save money for clients. These Koppers products are either permanent in themselves or they give permanence to other materials.

DYLITE-insulated concrete panels speed erection at NASA's Manned Spacecraft Center

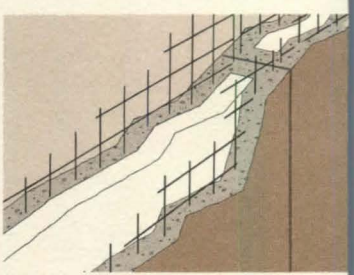


6½-ton precast panel—36'long x 9'4" wide —is lifted onto NASA building by crane.

Over 267,000 sq. ft. of insulated precast architectural concrete panels, in sizes up to approximately 40′ long, 9′4″ wide, and 6″ thick, have been erected in 14 National Aeronautics and Space Administration buildings at the Manned Spacecraft Center in Houston, Texas.

Panel construction was selected mainly for the time savings possible; NASA required that initial buildings had to be completed in a short twelve to fifteen months. Started in March, 1963, the project was completed in March, 1964. A total of 900,000 square feet of air-conditioned office buildings, laboratories, and an auditorium displaying space-age hardware are included in the initial construction.

Insulation is important in Houston; the average yearly temperature is 69°F and the average humidity (at 6 a.m.) is 92%. DYLITE® expandable polystyrene was chosen because of its high insulating value, resistance to moisture penetration, and excellent bondability with concrete. Although panel thickness varied, most were 6″ thick MO-SAI® panels, with 1″ of exposed quartz aggregate concrete and 1″ of lightweight concrete reinforced with steel mesh, 2″ of DYLITE board, and 2″ of reinforced lightweight concrete. The "U" factor was 0.15 through the insulated portion of the panels.



Cross section shows how DYLITE and reinforcing wire are embedded within concrete panels.

Because DYLITE has a closed cell structure, concrete was poured right against it; no vapor barrier was required. After the panels were cast and cured for the specified time, they were trucked to the job site, then quickly lifted into place by crane and bolted to the steel frame superstructure.

DYLITE board provides permanent insulation; won't rot or decompose. It has one of the lowest "K" factors of all insulating materials available: 0.24 at 40°F mean temperature. DYLITE has shown excellent results in commercial buildings, refrigerated warehouses, and many environmental control applications. Check the coupon for more information about DYLITE insulation.

Supervision of Design & Construction-U.S. Corps of Engrs.
Architect/Engineer of Record: Brown & Root, Inc., Houston, Texas
Manufacturer of panels: The Rackle Company, Houston, Texas
Molder of DYLITE boards: Deberin Company, Houston, Texas

TURN PAGE →

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PROGRESSIVE ARCHITECTURE JULY 1964

NEWS REPORT

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

Photo: Alexandre Georges

Art lovers take in the air at the Sculpture Garden of Philip Johnson's enlarged Museum of Modern Art

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

Photo: David Hirsch

Museum of Modern Art: A Study in Elegance by Johnson

Photo: David Hirsch

NEW YORK, N. Y. Recently, New Yorkers were treated to the fascinating spectacle of three important buildings by the same outstanding architect opening within weeks of each other when Philip Johnson's ebullient New York State Pavilion became one of the hits of the New York World's Fair, then when his New York State Theater at Lincoln Center opened to a mixed reception, and finally when his sophisticated expansion of the Museum of Modern Art gave New York what it had been lacking (despite attempts by Wright and Stone): a really top-flight contemporary art museum.

For quite a few years, the older museum building, designed in 1939 by Philip L. Goodwin and Edward D. Stone, has proved inadequate to house the constantly burgeoning collections. Johnson added a wing for the Art Center and the museum offices in 1951, but this did not satisfy the need for more exhibit space. Consequently, the museum announced plans in late 1959 for a new wing on the Sculpture Garden side of the existing building. When additional property became available next door to the Goodwin-Stone structure, Johnson redesigned the expansion in its present form. When the neighboring Whitney Museum of American Art moves into its new quarters, designed by Marcel Breuer (pp. 47–49, JANUARY 1964 P/A), the Museum of Modern Art will take over those facilities also.

In expanding the museum, Johnson has taken the cramped spaces of the older structure, renovated them, and added to them the spacious areas of the new wing to provide galleries with a sense of flowing space and room for leisurely contemplation of the works on view. His interiors are appropriately subdued and never obtrude on

Photo: Alexandre Georges

the consciousness of the art viewer. Occasionally, there is a view to the outside that helps relieve the feeling of enclosure. Of particular interest to architects and designers is a special gallery for the architecture and design collections, named after the late Philip L. Goodwin. A parochial complaint could be made here that the furniture and industrial design exhibits have been overemphasized at the expense of architecture.

The main entrance to the museum has been centered on the façade of the old building (*top, preceding page*), and a generous lobby, check room, and bookstore space provided, the last separated by handsome metal mesh draperies. Behind this is a spacious main hall (*top right*).

Outside, the Abby Aldrich Rockefeller Sculpture Garden has been enlarged by adding an overlook terrace on the roof of the Art Center at the east end of the garden (*center photo, preceding page*). The ramp, wall, and floor of the expansion are surfaced with Vermont marble to give a delightful sun-dappled appearance even on dull days. Consulting landscape architect for the Sculpture Garden was Zion & Breen.

A particularly elegant curtain wall of dark matte-finished metal and bronze-tinted glass has been designed by Johnson for the addition. The subtle detailing of the curved window frames provides a note of serene grace visible from both inside and outside the building.

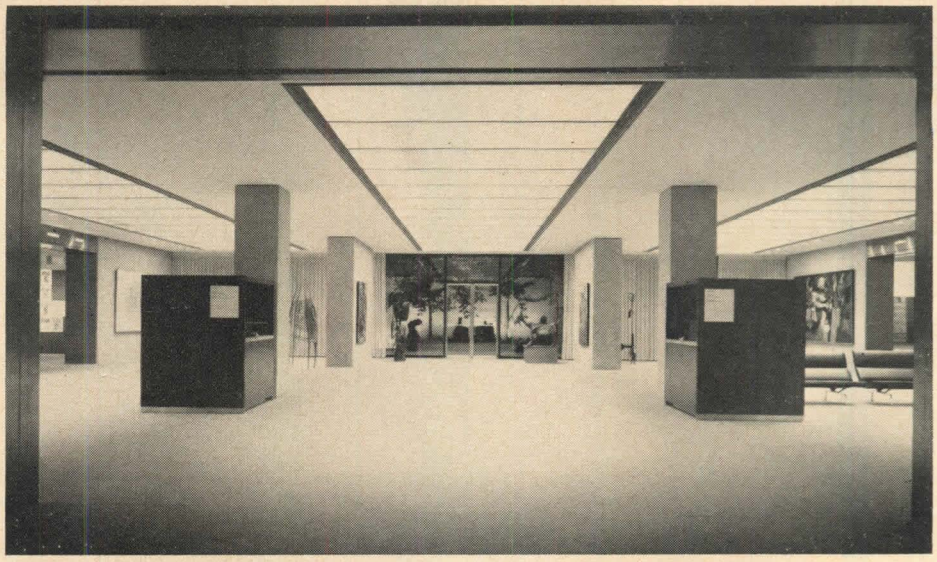


Photo: Alexandre Georges

The Main Hall from the lobby; Sculpture Garden at the rear.

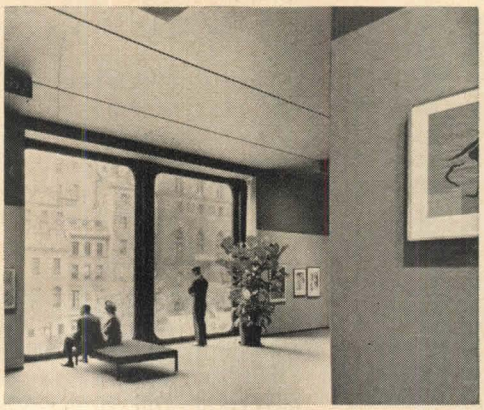


Photo: David Hirsch

Overlooking the Sculpture Garden.

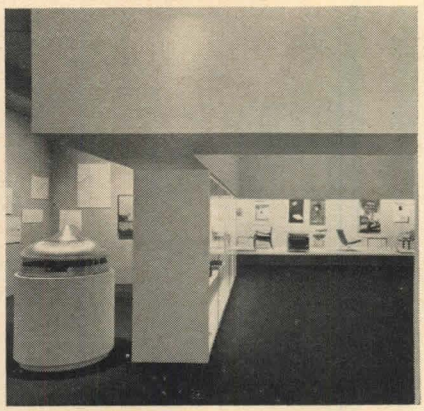
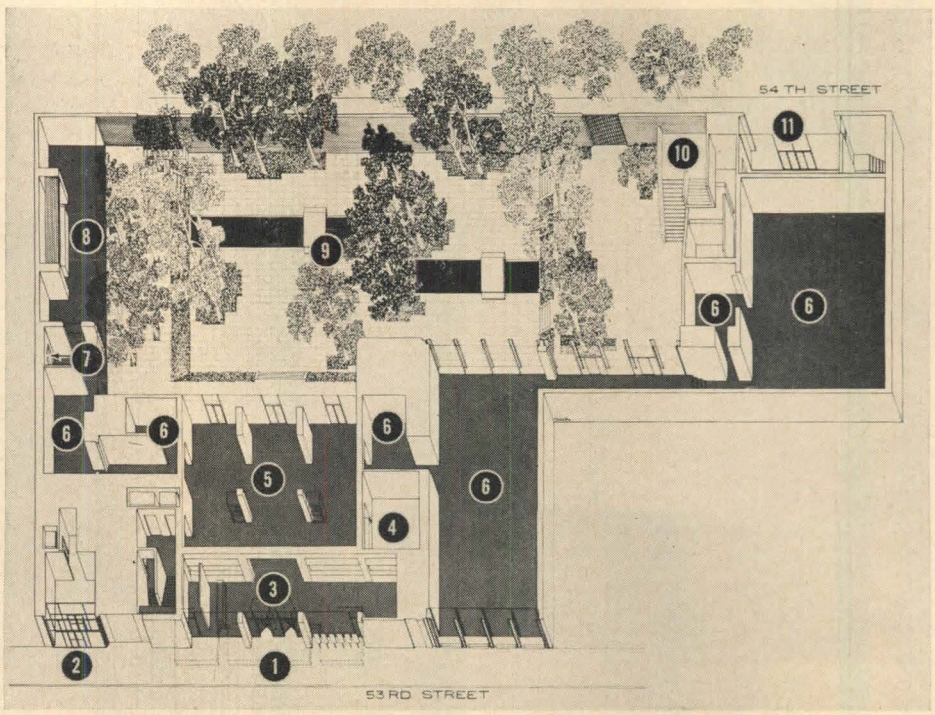


Photo: David Hirsch

The Architecture and Design Gallery.

Photo: Alexandre Georges

Curtain wall of addition seen from the Sculpture Garden.



(1) main entrance; (2) office entrance; (3) lobby; (4) check room; (5) main hall; (6) galleries; (7) to Whitney Museum; (8) garden restaurant; (9) Sculpture Garden; (10) to upper Sculpture Garden; (11) entrance to Art Center.

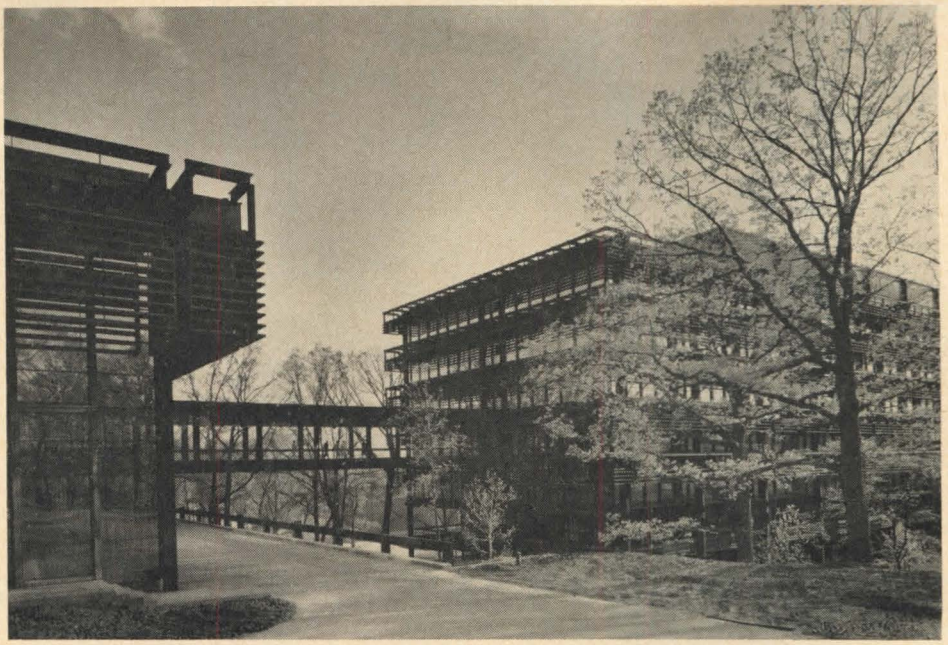
Saarinen's Deere Building Opens

MOLINE, ILL. One of Eero Saarinen's last creations—he died just four days after the contracts were let in 1961—has opened on a 680-acre farmland site seven miles southeast of downtown Moline.

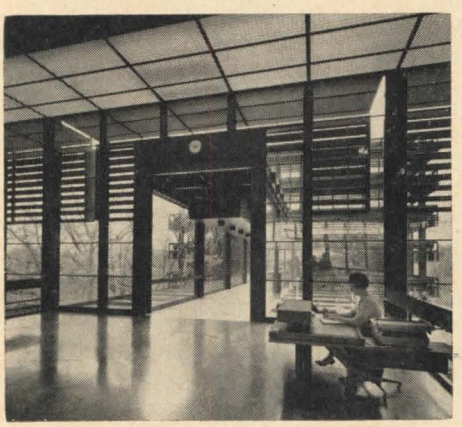
The Deere & Company Administrative Center comprises two elements: the ravine-straddling general office building, and the display building and auditorium. They are connected by an aerial bridge 50 feet above the ravine. Two lakes covering four acres front the main building; the larger one acts as "cooling tower" for the central air-conditioning system. Parking for 718 cars is provided in a lot near the display and auditorium building. An entrance plaza leads to the display building's main entrance. From there, a visitor crosses the steel-and-glass bridge into the fourth floor of the office building, where elevators are located.

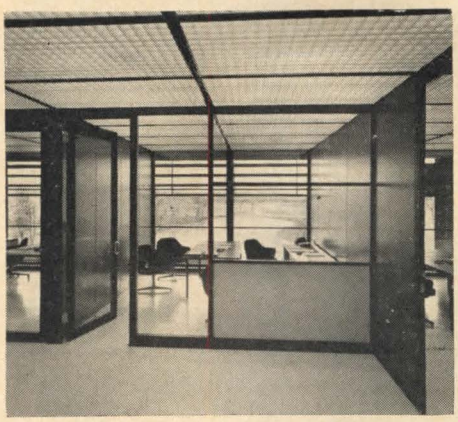
Saarinen's imaginative selection of U.S. Steel's "Cor-Ten" steel for the Deere project is famous by now. It only remains for the steel to weather to its ultimate rich hue for the full visual effect to be realized. Use of the same steel for the grillwork of sun louvers was ingenious and helps give the center much of its design unity.

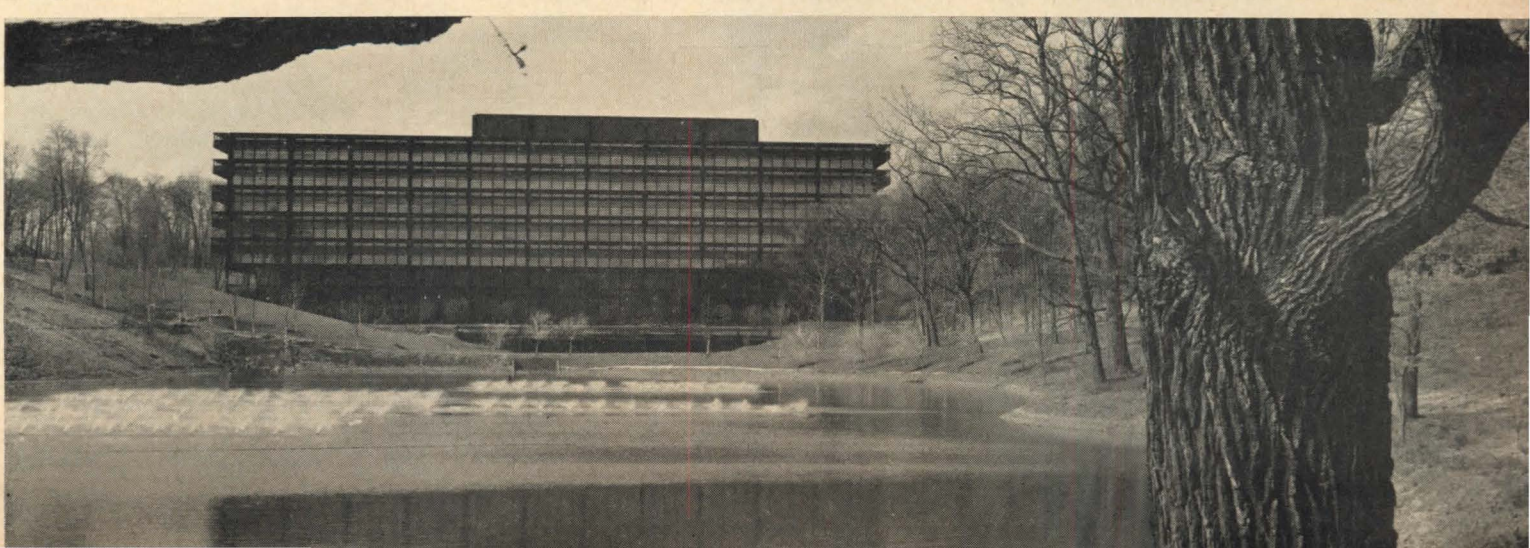
The upper five floors of the office building contain all of Deere's various departments and related offices. Here, to provide views for the staff, most general working areas ring the outer perimeter, with private offices on the inner core. This arrangement is reversed on the second floor, which is the executive floor. The first floor contains employee and visitors' dining rooms, kitchen and service areas, and two generous terraces, front and back, overlooking the woodland views. Executive dining room, a lounge and gallery, and various departments used by all of the company employees occupy the ground floor.

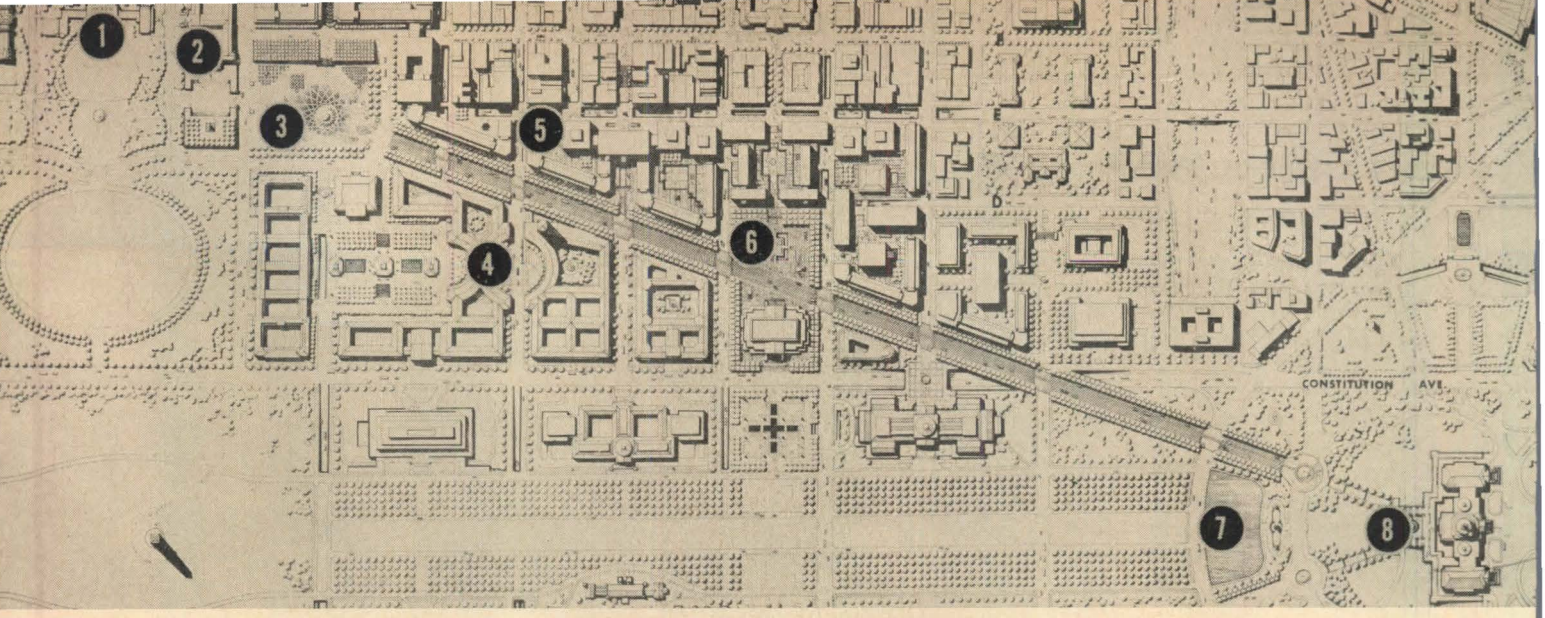


Photos: Roger Sturtevant









(1) White House; (2) Treasury Building; (3) National Square; (4) Federal Triangle; (5) Northern Triangle; (6) Market Square; (7) the reflecting pool; (8) the Capitol

Master Plan Proposed for Pennsylvania Avenue

WASHINGTON, D.C. Shortly after the inaugural parade of 1961, Secretary of Labor (now Associate Supreme Court Justice) Arthur J. Goldberg discussed with President Kennedy the deplorably run-down condition of much of the nation's most important processional thoroughfare, Pennsylvania Avenue. The President agreed that something must be done to give the avenue visually and physically the importance it has held since Thomas Jefferson rode up it to his inauguration more than a century and a half ago. To study this situation and propose a cure, the President in 1962 appointed The President's Council on Pennsylvania Avenue, consisting of Chairman Nathaniel A. Owings, with Frederick Gutheim, Douglas Haskell, Frederick L. Holborn, Dan Kiley, Daniel Patrick Moynihan, Chloethiel W. Smith, Paul Thiry, Ralph Walker, and William Walton. (Minoru Yamasaki was also originally a Council member, but left it when "a strong difference of judgment that he held on one aspect of the Council's work did not make it possible for him to continue his association with the Council when it crystallized its final conclusions," according to the report submitted to the President.)

After two years of study, the council has presented its recommendations to President Johnson and proposed that an administrator, authority, or agency be established to see the project through to its conclusion. It has been estimated that realization of the proposal will take 40 years and cost $500 million.

Beginning at the White House end of Pennsylvania Avenue, the Council proposes the creation of a great National Square almost as large as the Place de la Concorde in Paris. Connecting this monumental space with the White House would be an imposing White House Gate "for which a great design would be sought." The square would, of course, be prohibited to automobiles (tunnels would move traffic beneath it and there would be underground parking for 600 cars), and it would be overlooked by the Treasury Building with a new belvedere, private commercial buildings, a civic auditorium, and other Government buildings. The avenue would lead from National Square toward the Capitol between two "triangles": Northern Triangle, a vastly renewed and redeveloped complex of private commercial and Government buildings; and Federal Triangle, a group of Government buildings now virtually intact, which would require only some additions to create a cohesive whole. Midway between the White House and the Capitol would lie Market Square, a large, open, urban space tying the Federal side of the avenue to the more commercial north side. An interesting sequence of plazas and malls would lead from the Archives Building past newly constructed commercial buildings to the National Portrait Gallery at this point. Continuing on to the Capitol, the avenue would terminate in a vast turn-around near a large new reflecting pool between the Capitol grounds and the Great Mall leading to the Washington Monument.

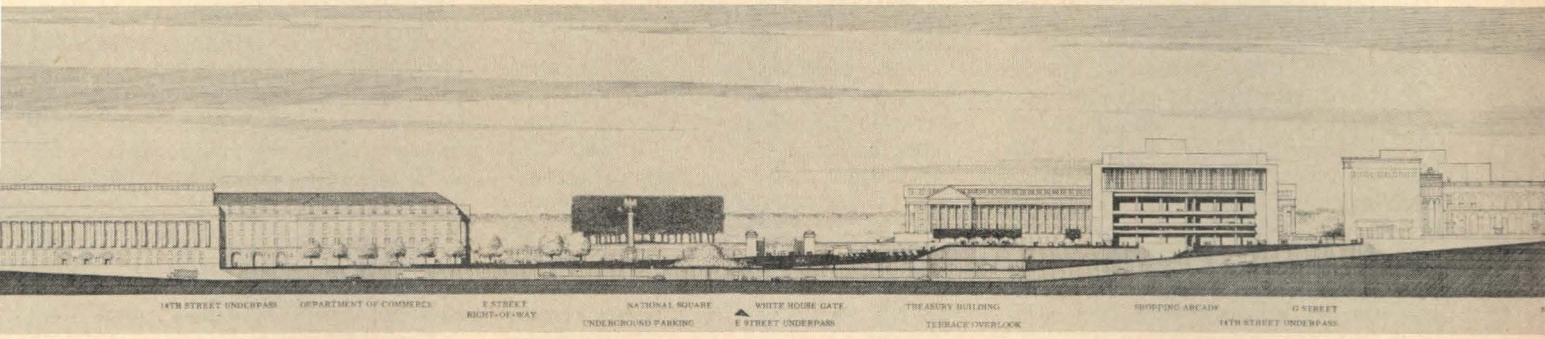
The Council's plan would eliminate many crossings that now exist on the avenue and would simplify the traffic pattern considerably, in addition to providing a total of 9780 subsurface parking areas. Trees would line the avenue, and the sidewalks at curbside would be stepped in three tiers to help people the better to see the historic processions and events that will take place along the thoroughfare.

Planning and design features of the council's proposal were executed by Architects John M. Woodbridge, John F. Kirkpatrick, William Turnbull, Jr., Rolf H. Ohlhausen, Arnold C. Savrann, Robert G. Becker, and Peter Walker.

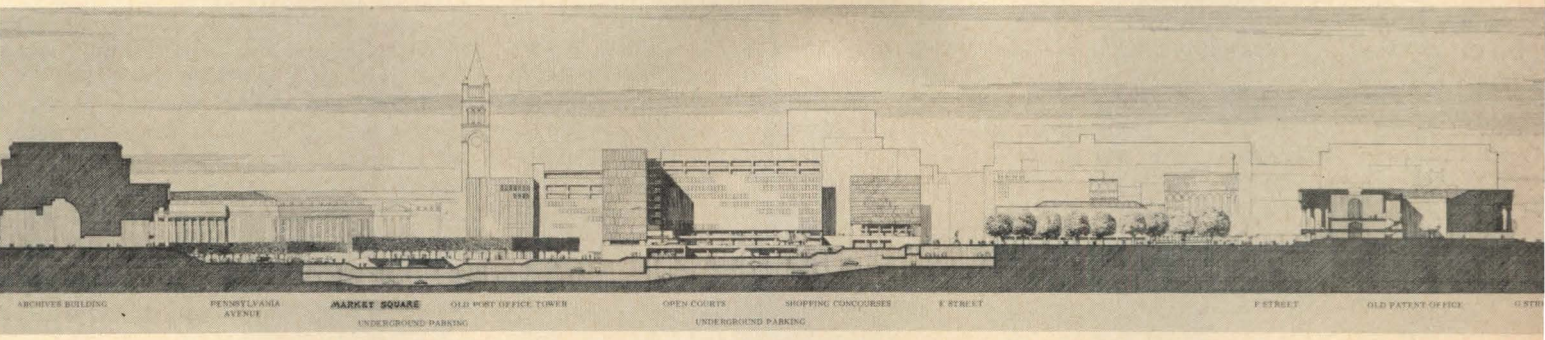
New Pennsylvania Avenue looking from White House and National Square toward the Capitol.

National Square looking toward the Treasury and White House Gate.

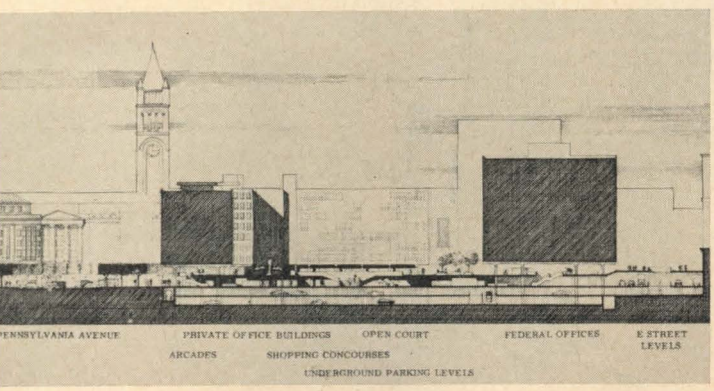
View from Treasury belvedere to the Capitol in the distance.



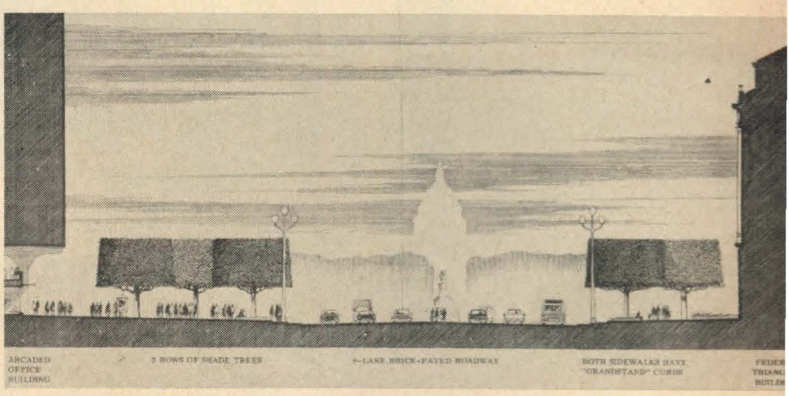
Cross-section through National Square.



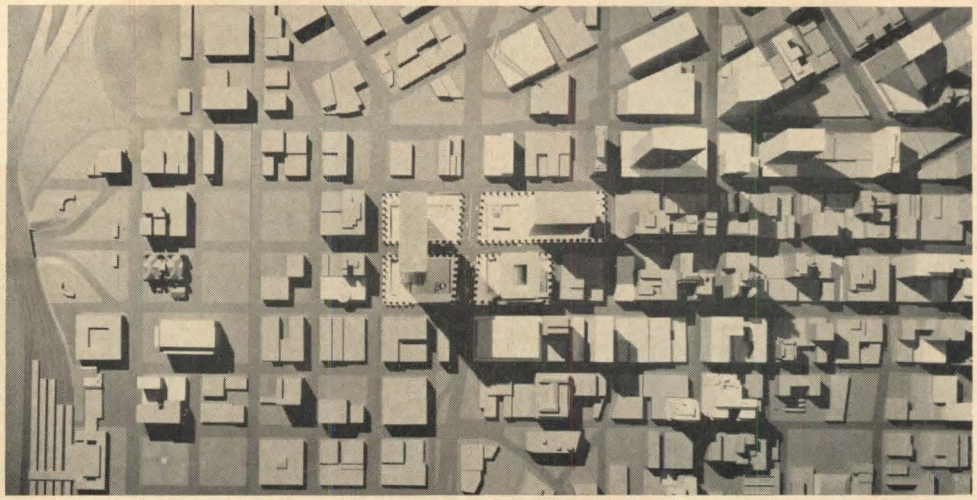
Section through the Archives Building and Market Square cross-axis.



Cross-section through Northern Triangle.



Typical Pennsylvania Avenue cross-section.



Photos: Ezra Stoller Associates.

DALLAS DOWNTOWN PROJECT APPROACHES REALITY

DALLAS, TEX. The Overton-Murchison interests of Dallas have long been interested in the revitalization of that city's downtown, and in 1961 sponsored a study by the School of Architecture at Columbia University to investigate what could be done with the heart of the central business district. Following that study, a prominent West Coast architect made a proposal based largely on the Columbia plan, but subsequently did not get the job.

Recently, plans for the section by Skidmore, Owings & Merrill, New York, were unveiled, and it looks as though this design will be the one built. Harwood K. Smith & Partners of Dallas is associated with SOM on the job.

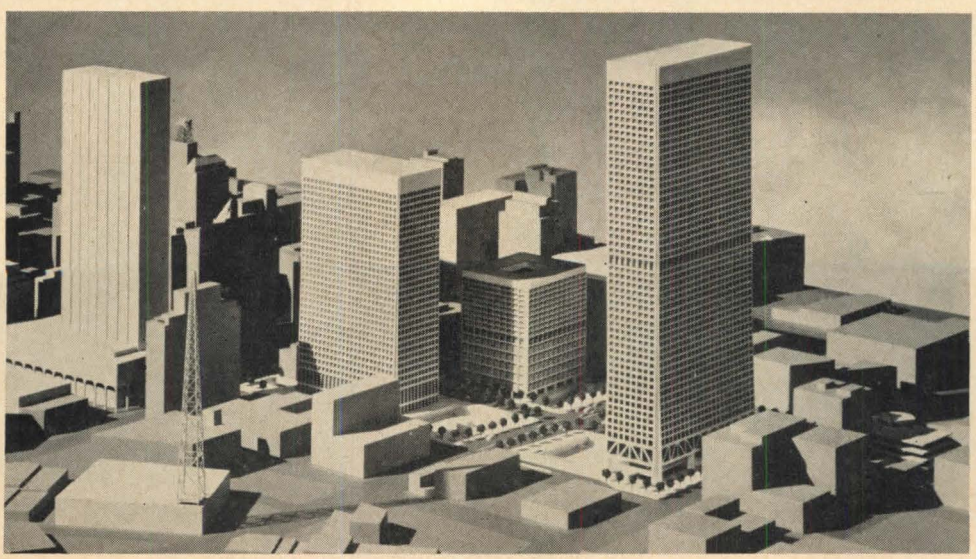
"Main Place," as the project is called, is a 10-acre redevelopment scheme to include 2,400,000 sq ft of office space in two buildings, a 400-room hotel, a 300,000-sq-ft department store, parking for 3500 automobiles, and 225,000 sq ft devoted to plazas, shops, and recreational and cultural facilities.

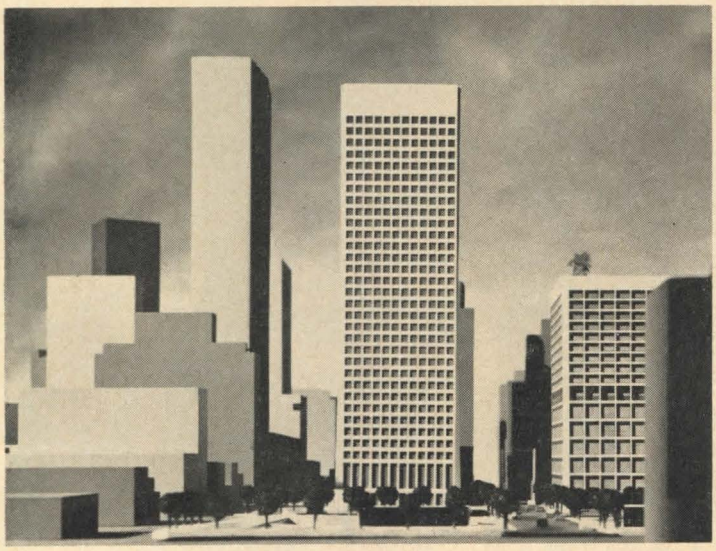
The project will be built in three phases. Phase one will see the construction of One Main Place, a 34-story office building containing 1,000,000 sq ft of office space and costing approximately $41,000,000. It will occupy only 25 per cent of its three-acre site, the rest to be taken by a 25,000 sq ft outdoor plaza 15 ft below street level and 60,000 sq ft of retail shops in surrounding concourses. Underground parking for 800 cars will be provided in this phase.

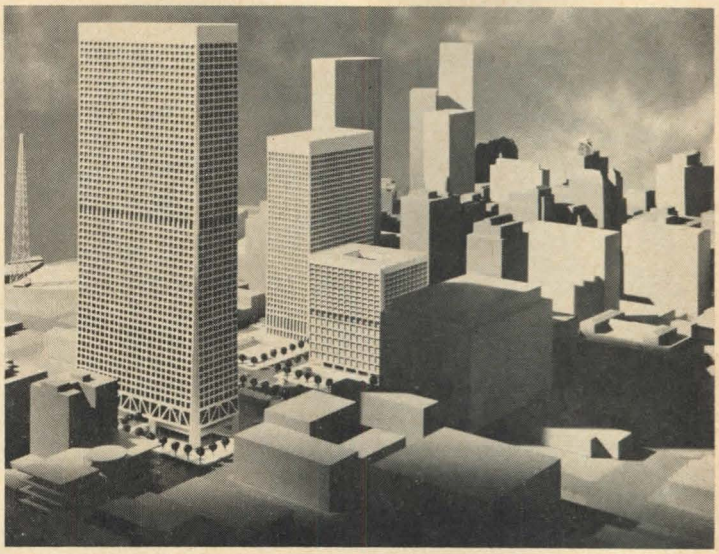
Second and third phases will produce a 1,400,000-sq-ft office building (which will span Main Street) and a department store topped by the hotel. Retailing, recreational, and cultural amenities will receive an additional 165,000 sq ft in this phase, and subsurface parking for 2700 cars will be added.

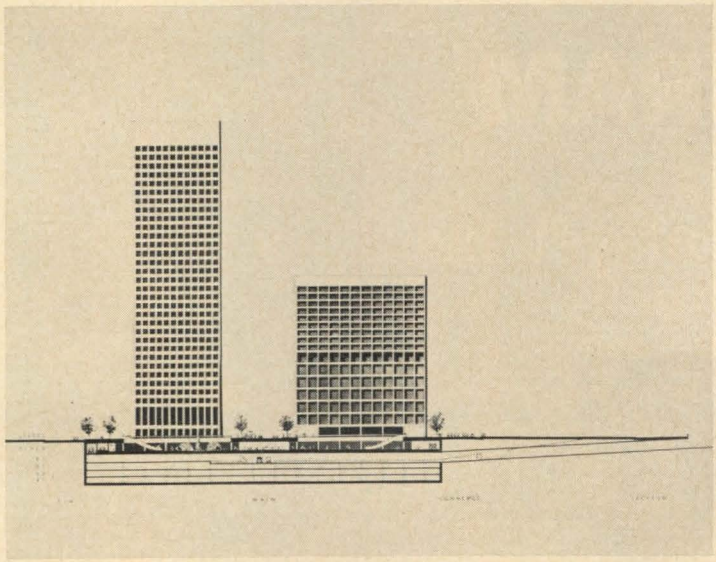
A significant aspect of the Main Place plan is that it will create a "super" pedestrian block 15 ft below street level, permitting the development of large open spaces without interference from automotive traffic. (The Columbia plan elevated the pedestrian about a story above the street, thereby creating monolithic blank walls of buildings when viewed at street level.) Parking garages and service access tunnels will be below plaza level. The introduction of restaurants, theaters, and other evening entertainments into the plaza areas will give Main Place a life beyond the usual nine-to-five office day. To make the project a catalyst for the development of the entire area, buildings on the periphery of the site will be invited to connect to the Main Place plazas via tunnels under the street.

Main Place will be centrally located at the axis of an expressway system being built to loop around downtown Dallas. Griffin Street, which bisects the site, will connect with freeways both north and south of the site.

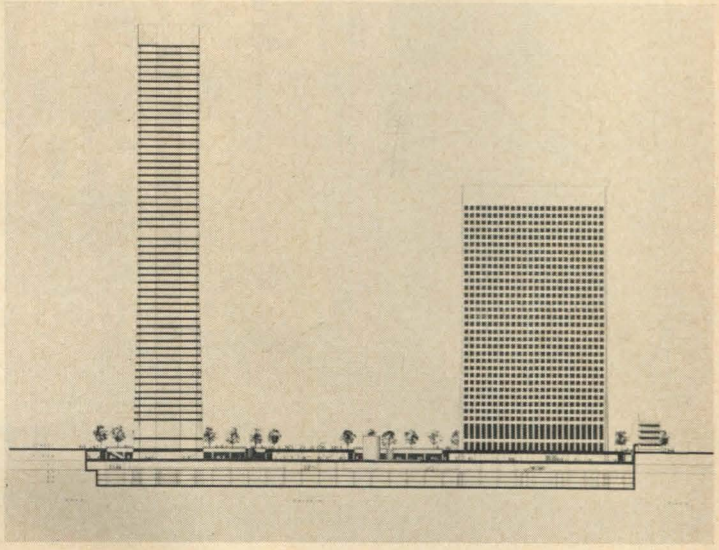




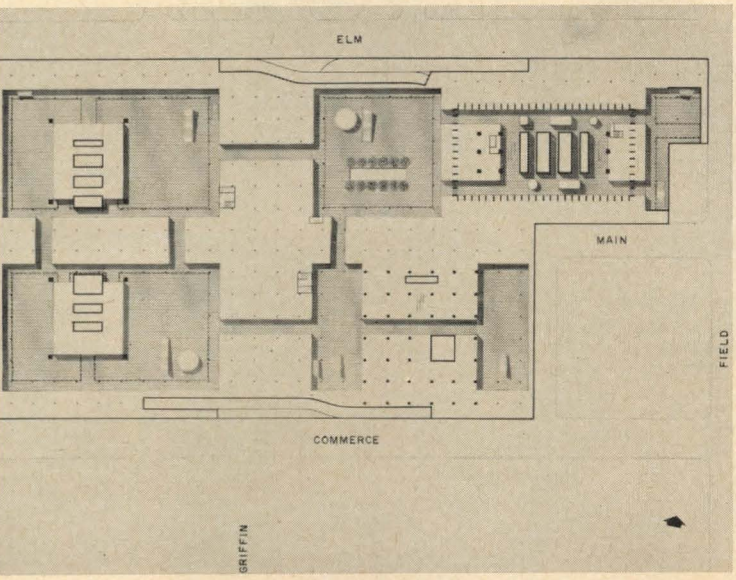




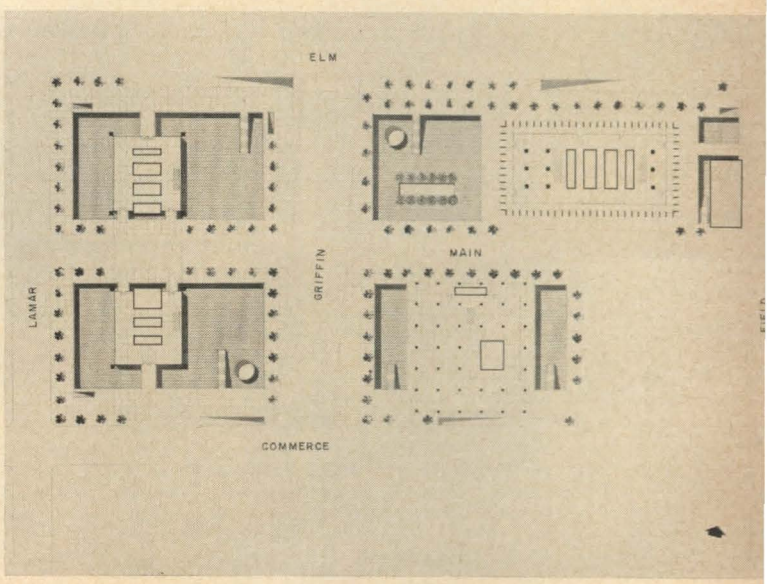
Model photo and section looking east.



Model photo and section looking north.



Master plan of Main Place: plaza level.



Master plan of Main Place: street level.

Reinhold Publishing Corporation's

ANNUAL P/A DESIGN AWARDS PROGRAM

for projects not yet built

PROGRESSIVE ARCHITECTURE announces the twelfth annual Design Awards Program. Awards will be made to architects and their clients for projects now in the design stage to be built in 1965 in the United States.

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

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

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

FIRST DESIGN AWARD may be given to the one best building submitted.

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

JURY will be composed of: SERGE CHERMAYEFF, Architect and Professor of Architecture, Yale University; EDGAR KAUFMANN, JR., Architectural Critic and Author, New York; PAUL HAYDEN KIRK, Architect, Kirk, Wallace & McKinley, Seattle; GYO OBATA, Architect, Hellmuth, Obata & Kassabaum, St. Louis; LEV ZETLIN, Consulting Engineer, New York.

JUDGMENT will take place in New York during September 1964. Winners of Awards and Citations will be notified (confidentially) immediately after the judgment.

ANNOUNCEMENT of the winning projects will be made at a presentation in the home town (if practicable) of the recipient of the First Design Award. Winning projects will be featured in January 1965 P/A. As in the past, P/A will arrange coverage of winning projects in news media, particularly those in the localities of all the Award and Citation winners.

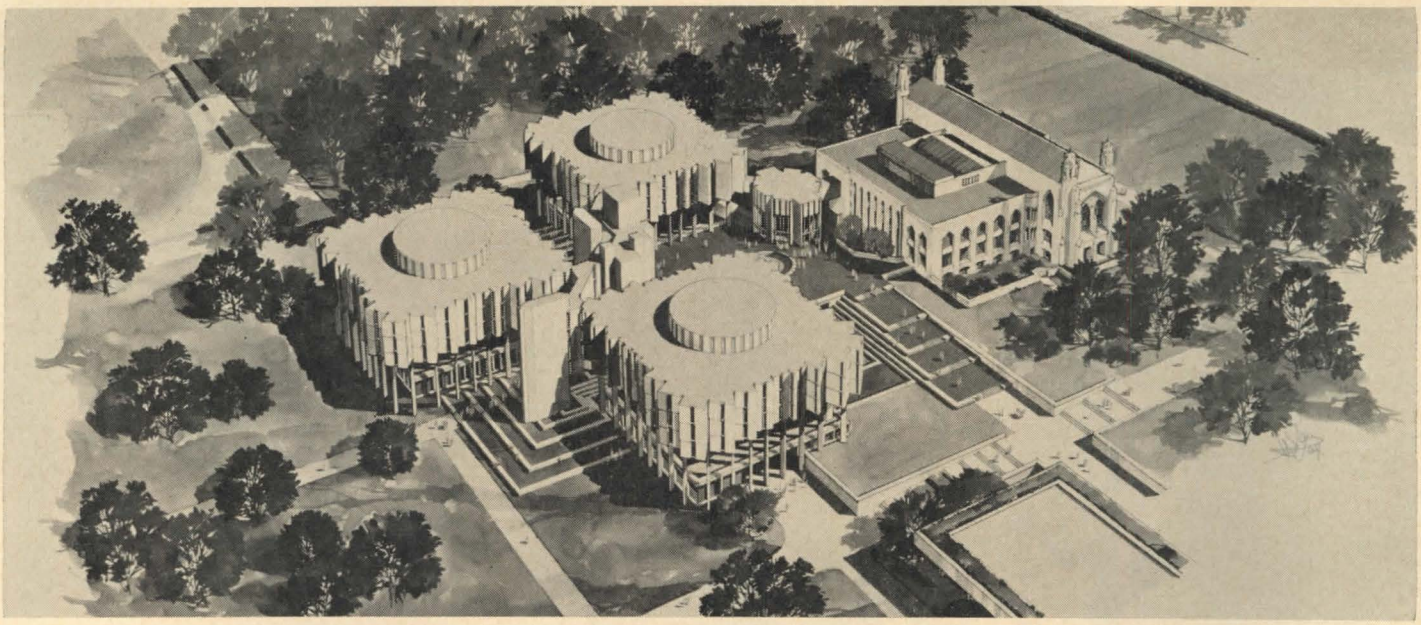
SUBMISSIONS do not require filing of an application blank. For each project you submit, simply send:

1. Client's name, location, and proper name for project.
2. Brief explanation of the program and your solution.
3. Description of materials and construction methods used, and the reasons for their use.
4. Site plans; basic building plans; pertinent sections and details.
5. Perspective or model photographs.
6. A statement that (a) the project is now in the design stage and that construction is anticipated in 1965, and (b) that submission of a project for judgment gives PROGRESSIVE ARCHITECTURE first rights in the architectural field to publish both the project and the finished building if it receives an Award or Citation.

It is preferred that you submit 8" x 10" prints, photostats, or photographs. **Original drawings, actual models, or mounted exhibit panels will not be accepted.** No material is to exceed 11" x 17" in size; if drawings cannot be reduced to this size, they must be folded to a size within this limit. Each project is to be submitted under separate cover.

DEADLINE FOR MAILING is August 31, 1964. Address entries to Awards Editor, PROGRESSIVE ARCHITECTURE, 430 Park Avenue, New York, N. Y. 10022.

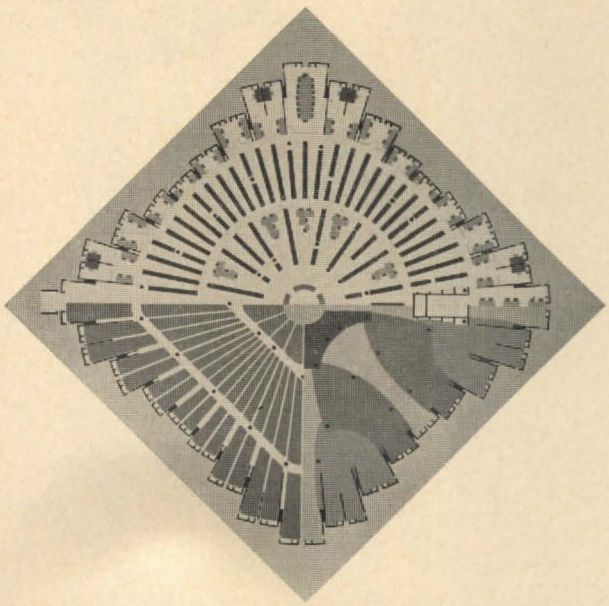
P/A will guard and return all submitted material.



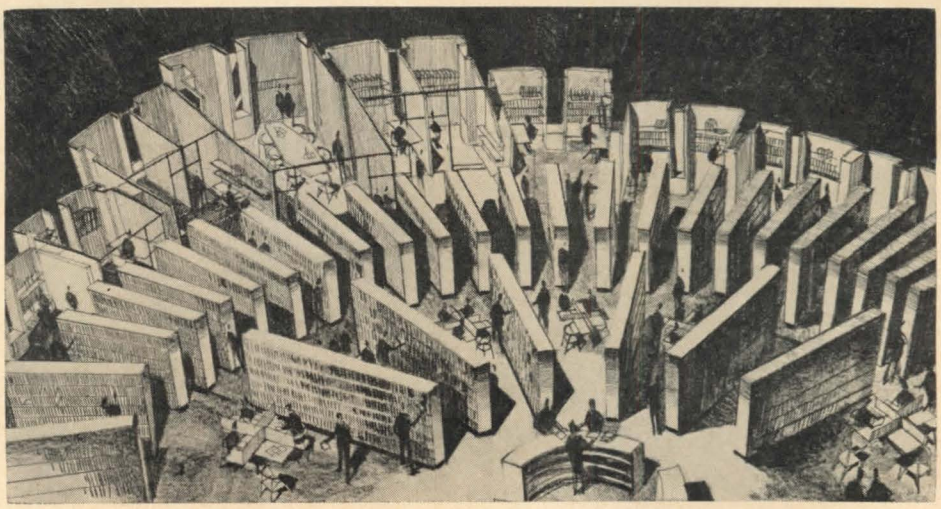
"Research Pavilions" to Be Center of Northwestern Campus

EVANSTON, ILL. Northwestern University's multi-million dollar expansion program, which is taking it out into Lake Michigan on made land, will have as its focal building a tri-nucleated main library by Walter Netsch, Jr., partner in charge of design for the Chicago office of Skidmore, Owings & Merrill.

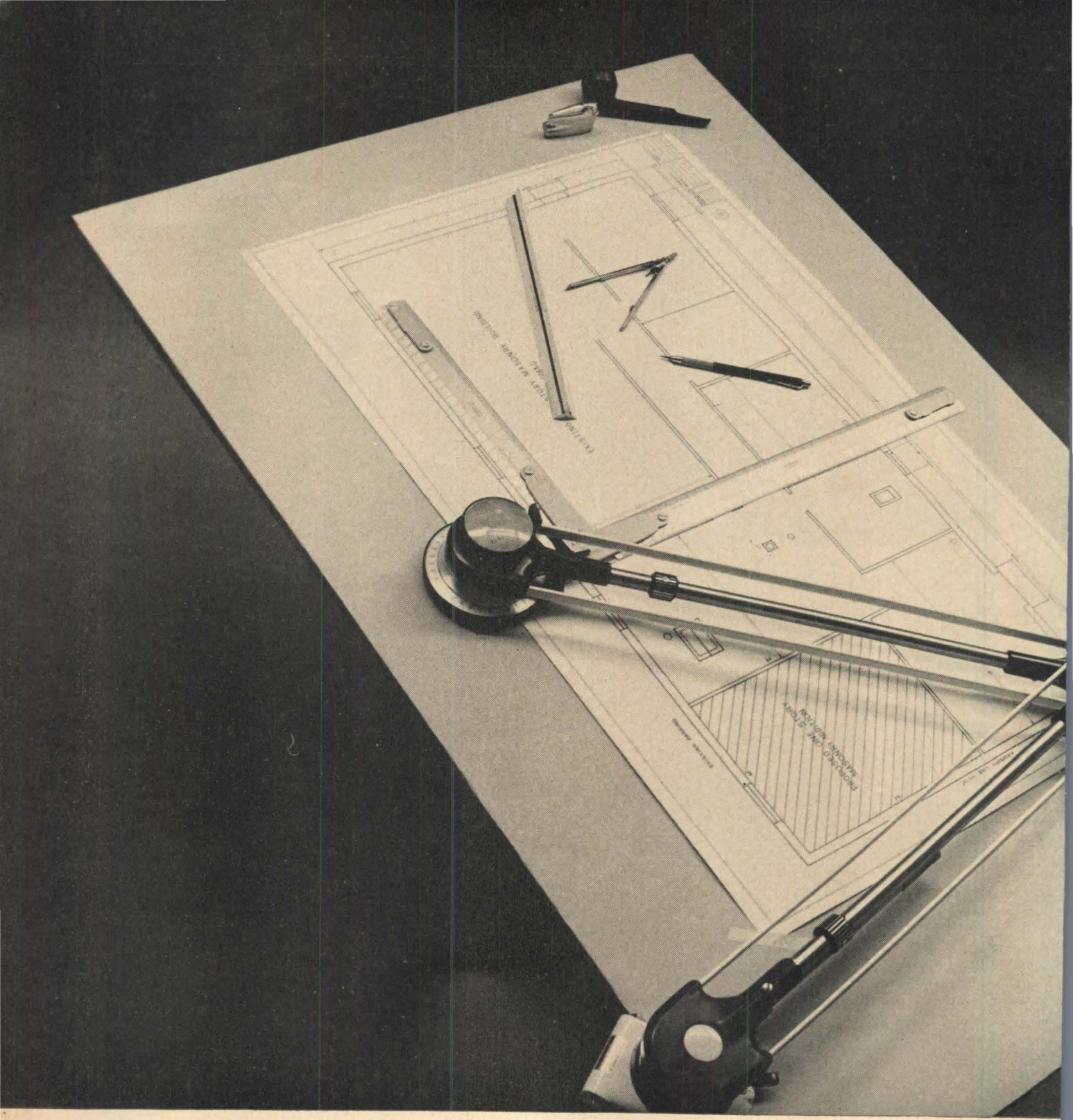
Emphasis will be on integration of undergraduate, graduate, and faculty needs into one library, so that students and faculty may benefit from working, researching, and learning together. The collections will not be hidden in inaccessible stacks or placed on endless corridors of shelves, but will be made available in radial arrangements spreading from central information centers (right). Reference and study areas will be located close by the books themselves. Tables will sit no more than four readers, and the carrel system will insure privacy for researchers. About 40 per cent of the undergraduates, 80 per cent of the social sciences/humanities graduate students, and more than one-third of the social sciences/humanities faculty will be able to use the library at the same time, a number unheard of until this project. The library will be in the form of three "research pavilions"—one for works on the social sciences and human behavior; one for the humanities; and one for history. The upper three floors will contain the radial reading and references areas, the second floor a "forum" for meetings and discussions, the plaza level the main entrance and control points, and the first floor periodical reading areas and the card catalog. An elevator and service core will connect the three nuclei. There will be basement storage for not-in-use volumes.



Two research pavilion floor plans and reflective ceiling plans (upper left/lower left and upper right/lower right).



Interior of typical floor showing radial treatment of books and spaces.



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DOW

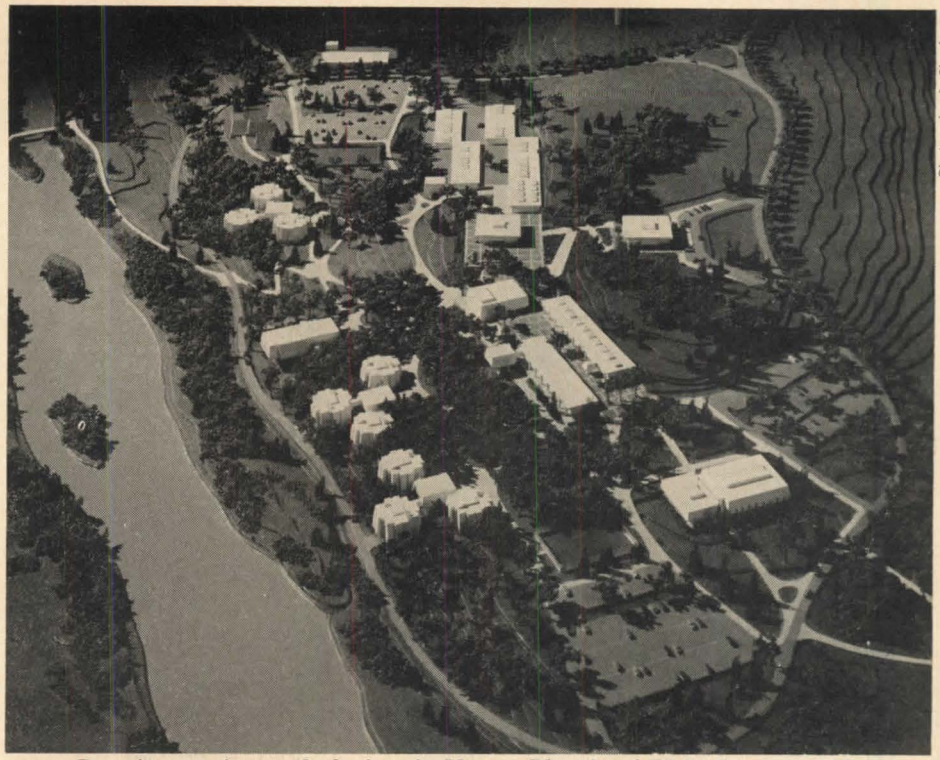
Hillside Institute to Make Most of Site

CANTON, N. Y. One of the latest and most interesting products of New York State's notable University Construction Fund, which can boast projects in the works by Barnes, Franzen, Stone, and others, is the Agricultural and Technical Institute at Canton by Carson, Lundin & Shaw (Goldstone & Dearborn, Associate Architects). ATI is a two-year technical and agricultural institution.

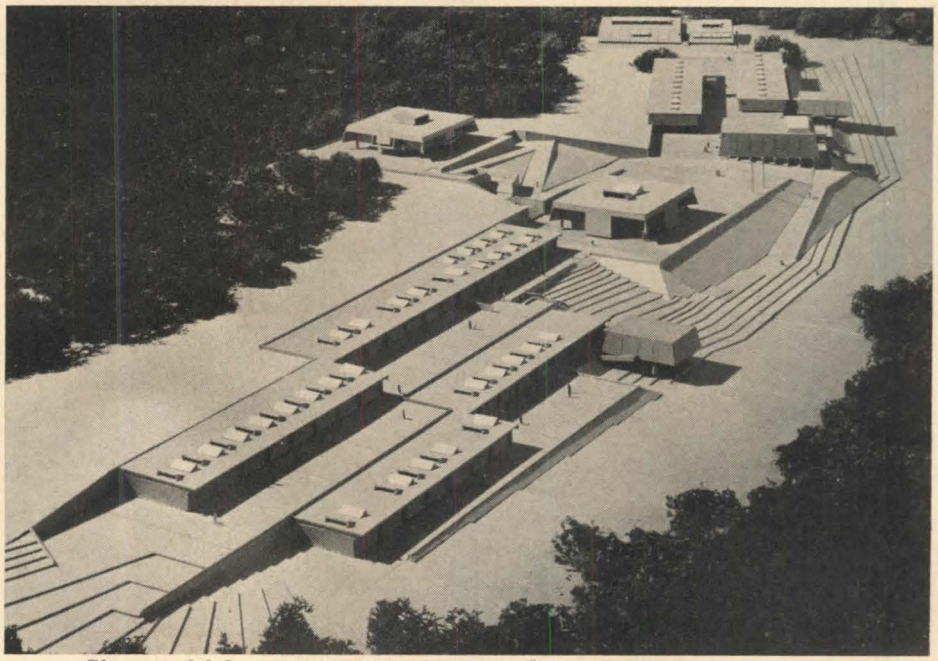
The institute will occupy a naturally wooded site on a hill above the Grass River across from Canton. All means will be taken to blend in the school with its natural surroundings: use of topography as the determining element on landscaping and siting, and use of natural exterior materials on all buildings. The sloping form of the landscape will be repeated in the slightly inclined slate walls of many of the buildings. Copper-covered lead roofs and rubble stone walls will complement the natural feeling of the complex.

Vehicular access to the campus will be via a ring road leading from a nearby highway. Within this ring road, all traffic will be pedestrian. Parking lots at either end of the campus will separate automobiles and pedestrians at those points. The administration building (*right, center*) will occupy the highest point of the site, with ramps leading to a large plaza containing the library and theater. From one side of this plaza will branch the academic element (*right in site photo*), and to the left will extend the industrial, technical, and agricultural facilities. The student union will be below the academic plaza, accessible to the theater and plaza areas above. Down the hill will be the dormitory units and dining hall, to be reached by woodland paths. The dormitories, rather than occupying massive structures, will be composed of three-story units connected on varying levels to a central common building.

Photos: Louis Checkman

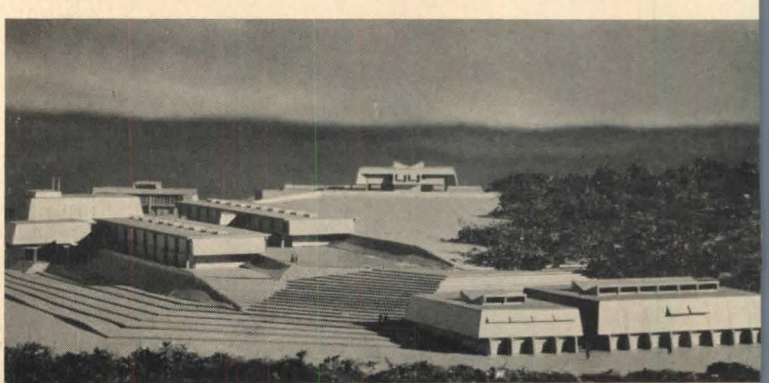


Dormitory units overlook river in Master Plan for ATI in Canton, N. Y.



Shops and laboratory units in foreground; academic elements at rear.

Left to right: library, administration building, theater.



Gym, foreground; academic buildings, left; administration, top.

Lead pans beneath kitchen flooring of restaurant above New York Central tracks prevent seepage into station below.

PAN AM "PAN"

leaks only the word that lead is wonderful stuff

No moisture is getting through to the New York Central platforms beneath the Pan Am Building from the three new lobby restaurants directly overhead—despite their use of water in prodigious quantities for cooking and sanitation. The Trattoria, the Zum Zum and Charlie Brown's Ale and Chop House each have a pan of sheet lead under their floors and a few inches up the walls to give the railroad the leakage protection it insisted upon before permitting the restaurants to move in.

The only thing leaking out is this good word: Lead pans such as these, and lead pans for pools and planters, are helping to utilize space more profitably in many of the newest, smartest buildings. Waterproofing with lead has made possible income-producing garages, offices, stores, exhibit halls in some rather improbable places.

Lead is unequalled at this kind of job because nothing else combines lead's corrosion-free watertightness with easy workability that keeps costs down. And lead needs no maintenance. It will outlast the building itself.

Detailed technical information on lead for waterproofing is yours for the asking. So is help in applying lead in all architectural ways, such as vibration-taming and noise control. Write Lead Industries Association, Inc., Dept. N-7, 292 Madison Avenue, New York, New York 10017. 1050

LEAD INDUSTRIES ASSOCIATION, INC.

Look Ahead with Lead

Tour of Italy, Portugal, and Spain

Continuing a program initiated in 1963 with a tour of France, England, and Italy, Alitalia Airlines is this year conducting a 16-day architectural tour of Portugal, Spain, and Italy. Tour, to leave New York on September 29, will visit historic, native and contemporary architecture in Lisbon, Madrid, Toledo, Milan, Pisa, Florence, and Rome. In each city, informal receptions are planned with leading local architects as guests. Jan C. Rowan, AIA, Editor of PROGRESSIVE ARCHITECTURE, will accompany the group. Among buildings to be visited are the Hotel Guincho (a restored 16th-Century fortress), Infante Santo and Sao Joao de Deus housing developments, Spanish Pavilion from the Brussel's World's Fair (Caso de Campo), Pirelli skyscraper, Palladio plant, and Nervi's Palazzo dello Sport.

Tour members have an option of returning at the end of the 16 days, spending an additional 6 days in Italy, or taking a 6-day extension tour by private yacht to Greece, Delos, Mykonos, and Crete. Included in the extension tour will be TAC's U.S. Embassy in Athens, Dioxiades Associates Building, and housing by Aris Konstantinidis.

Complete cost of tour is $799, including DC-8 transportation, first-class hotel reservations, and two meals daily. Extension tour costs an additional $350. Information and reservations may be made through James Branciforti, Professional Programs, Alitalia Airlines, 666 Fifth Avenue, New York, New York 10019.

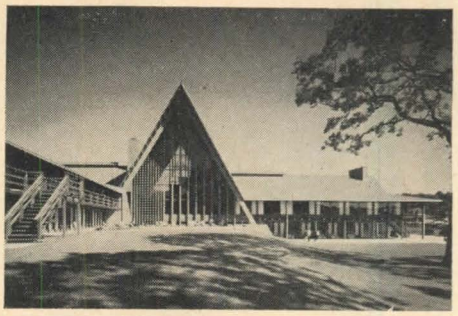
THE FORUM FOLDS

Time, Inc., publisher of the *Architectural Forum,* has announced that the magazine will cease publication with next month's issue. It will be "absorbed" by *Fortune,* with a few of the *Forum* editors switching over to the company's slick business magazine. In a related announcement, Time, Inc., said that *Forum*'s sister publication, *House & Home,* has been sold to McGraw-Hill, Inc.

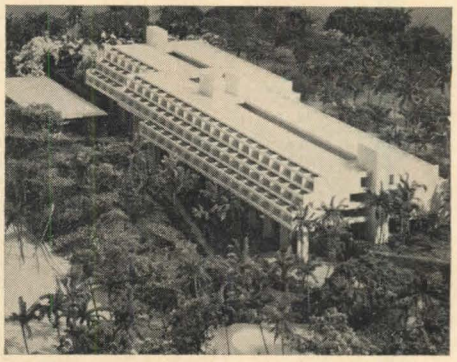
Architectural Forum, founded in 1892, in recent years emphasized the business aspects of construction just as prominently as other aspects of architecture. Its contributions to contemporary architecture that probably will be longest remembered are those made during the late 1930's and early 1940's, when *Forum* Editor Howard Myers encouraged many architects who are well-known figures today.

Forum's demise is discussed in this month's Editorial (p. 119).

A for Abbey

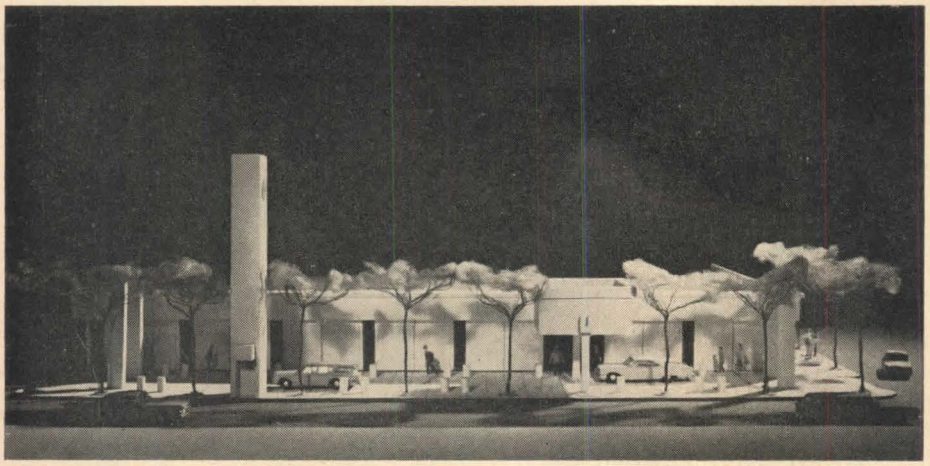


Chosen by the National Lumber Manufacturers Association for its 1963 Award for Wood Structure Design is the Abbey, a 225-room resort on Lake Geneva. Design, featuring an A-frame unit, is executed in wood, stone, and glass. Resort facilities include a 225-slip marina, indoor and outdoor swimming pools, and a health club. The resort, named for the hospitable abbeys of medieval times, was designed by A. Epstein & Sons.



Hawaiian Back-Step

Guestrooms at the Mauna Kea Beach Hotel in Hawaii will open on one side to private *lanais* affording beach or mountain views, and, on the other side, to a landscaped interior court. Design by Skidmore, Owings & Merrill's San Francisco office for the new Laurence Rockefeller 154-room resort has three levels stepped-back to provide lanais and a cut-out interior corridor to provide galleried courts. Beneath guest rooms will be a broad terrace containing shops, cocktail lounges, auditorium-meeting room, refreshment terrace, and dining room. Open dining room will be constructed on three levels to give diners an uninterrupted view of the beach. Consultants: Belt, Collins & Associates of Honolulu; Hotel Design Consultant: David Williams.



From Drugs to Dollars

The redesign of a shopping-center drugstore into a branch bank has been executed by Architect Don M. Hisaka. Site of the Ohio Savings Association is located at one end of an L-shaped shopping center in Cleveland. A drive-in plaza with trees, entry pylons and exposed aggregate paving offsets surrounding commercialism and provides a dignified setting for the bank. Autos enter the plaza from an existing parking lot and drive through, dropping passengers at the entrance to the main bank or stopping at the 45-ft tower that houses a deposit station. Original masonry bearing wall has been retained; exterior surfaces have been covered with troweled-on white marble chips. Plaza and bank are illuminated at night.

A Bit of Color for Miami

Startling façades of new Bacardi Imports Headquarters in Miami, Fla., are hand-painted, glazed ceramic tiles by Brazilian artist Francisco Bren-

IN 1923 WEIS COMPARTMENTS

Recent photograph of Weis Compartments installed more than forty years ago in the Trinity Methodist Church, Springfield, Massachusetts. This church was awarded first prize in the National Church Building Contest held in conjunction with the Conference on Church Architecture at Cleveland, Ohio, in 1930. Allens and Collens of Boston were the architects. Later improvements were supervised by the firm of Collens, Willis and Beckonert.

AND 1963 WEIS COMPARTMENTS

The choice of color and the clean design of the Weis floor braced compartments chosen for the Pan-Am Building blend attractively with the interior decorating plan selected for the restroom area in this world's largest office building. Here, too, the service promise of a Weis Compartment will be proven in years to come. Architects, Emery Roth & Sons; Contractor, Diesel Construction Co.; Compartment installation by Henry Weis Mfg. Co., 112 East 31st Street, New York City.

being seen in more and more places...old and new

HENRY WEIS MFG. CO., ELKHART, INDIANA

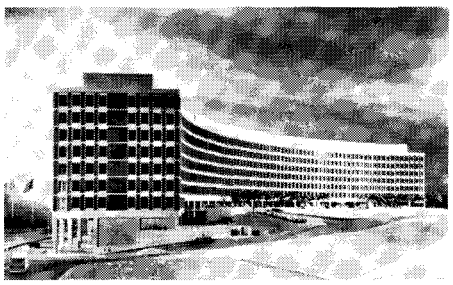
WEIS

See Weis in Sweet's. Write for *current* catalog No. 35

nand. White-veined marble has been used as a border for these murals and on the building's four supporting columns. Columns—placed about one-third of the way into the building—utilize a horizontal truss at the roof and post-tensioned cables to support the north and south façades and 24-ft overhangs. East and west curtain walls are of smoke-tinted glass with anodized aluminum mullions. Service shaft, a separate structure connected to the rear of the tower, also has ceramic tiles on north and south walls. Architect: Enrique Gutierrez of Sagmac International of Puerto Rico.

More Boston Center Curves

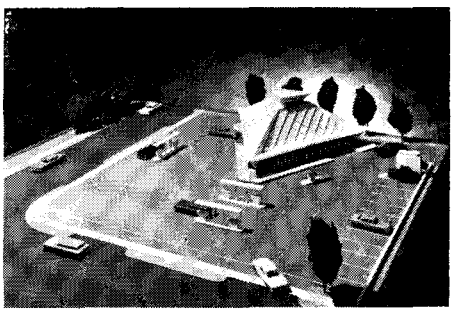
Construction of One Center Plaza, part of the Boston Government Center which also includes the projected City



Hall (see pp. 129-147, APRIL 1963 P/A and the Boston Government Service Center (see pp. 62-64, FEBRUARY 1964 P/A) is underway. Design for the eight-story arc-shaped structure is by Welton Becket & Associates; interior planning is by Saphier, Lerner, Schindler, Inc.

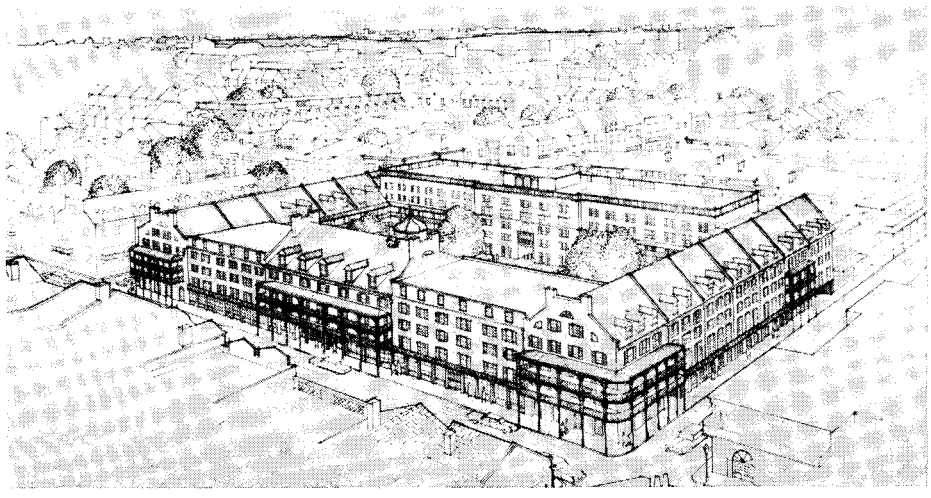
NBS Adopts International System

The National Bureau of Standards has adopted the International System of Unités (named SI for Systeme International d'Unités) for use by its staff. From now on, all bureau communications and publications will use the system except in cases where understanding would obviously be impaired. SI, which was defined and given official status in a resolution of the 11th General Conference on Weights and Measures in Paris, October, 1960, is based on the following units: the meter (m) as the unit of length; the kilogram (kg) for mass; the second (s) for time; the ampere (A) for electric current; the degree Kelvin (°K) for temperature; and the candela (cd) for luminous intensity. The units for mass, length, time, and temperature are independent; the ampere and candela involve other units in their definition.



Triangular Gas Station

Glass-and-steel-pyramidal service station for a busy intersection on City Line Avenue, Philadelphia, is designed and sited so as to minimize the massiveness of the building and open a major portion of the site for an approach plaza. Design by Vincent Kling is based on a 93'9" equilateral triangle of steel frame and glass façades. Pyramidal 36-ft roof—white porcelain-enamel steel panels set in a diamond grid pattern—contains storage space and mechanical service equipment. Roof will be indirectly illuminated at its base. Kling has also designed a small electrical substation on the northern edge of the property and the pump stations. Glazed red brick interior walls will separate sales, lounge, rest room areas and the service area located in the rear.



Hilton Conforms in New Orleans

It seems that even Hilton can't resist the atmosphere of New Orleans' French Quarter. This design for a hotel on Bourbon Street (present tenant of site is an old brewery) by Curtis & Davis with Koch & Wilson departs from the usual Hilton tradition and attempts to harmonize with local provincial architecture. The hotel, consisting of four sections bordering an interior landscaped patio, will be of brick masonry and stucco decorated with ornamental iron galleries. Three sections facing streets will have five stories; the fourth, rear section will have eight. Swimming pool will be on a third-story terrace within the patio-court. In addition to usual hotel facilities, the 500-room "Bourbon" Hilton (not to be confused with the Hilton inn at the New Orleans Airport) will have a "bistro" with music and dancing. Underground parking will be provided.

Personalities

MRS. LYNDON B. JOHNSON has accepted the Honorary Chairmanship of the American Landmarks Celebration. The celebration is made in honor of UNESCO's International Monuments Year and is sponsored by the National Trust for Historic Preservation; aim of the celebration through 1964 will be to inform the American public of the need for "militant

Continued on page 84

Section of wood inlay wainscoting, Chapel of the Chateau De La D'Urfe — 1545-1550. Metropolitan Museum of Art, New York City.

BEAUTY THAT ENDURES

Aesthetical, economical answer to room-to-room noise transfer

Lo-Tone AF (high attenuation factor) tile and board solve the growing problem of controlling. sound transmission over movable or other ceiling-height partitions.

Here, with Lo-Tone's traditional *enduring beauty*, is sound attenuation equal to or superior to most standard full-height room partitions.

The special sound barrier built into Lo-Tone AF tile and board retards sound waves that normally pass through the absorption material. The result is greater sound-privacy at very low cost.

Lo-Tone AF ceiling tile and board patterns (see below) match standard Lo-Tone patterns. This enables you to specify AF ceilings only for areas where sound transmission is a special problem.

A new feature on the Fissura tile pattern (both AF and Standard) is the tongue and groove joint which eliminates the need for a breather spline and assures a more level ceiling.

For samples, literature or technical information on Lo-Tone tile or board — AF or Standard, or Fire-Rated — look for your local Lo-Tone Acoustical Contractor in the Yellow Pages, or write us: Wood Conversion Co., St. Paul 1, Minnesota.

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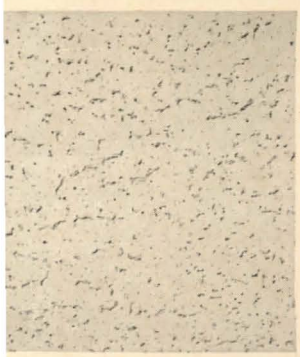
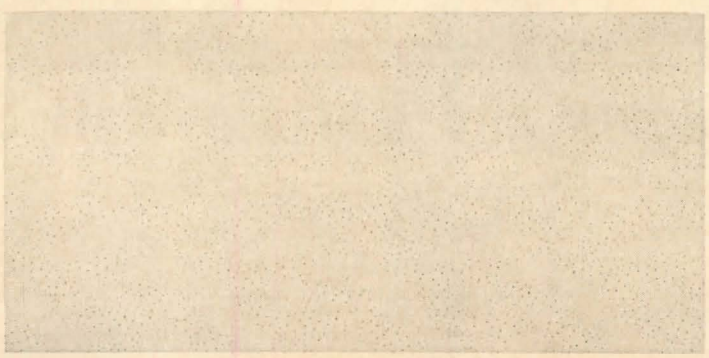
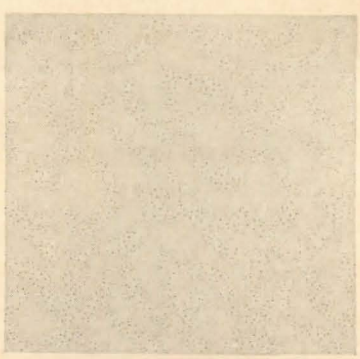


Fissura AF Tile



Constellation AF Ceiling Board



Constellation AF tile

Continued from page 80
action" to safeguard America's architectural, historical, and natural heritage. . .New chairman of the Department of Architecture at U. of Illinois' Chicago campus will be DONALD D. HANSON; Hanson was previously Associate Professor of Architecture at the University's Urbana campus . . . PHILIP JOHNSON and *The New York Times* will receive the 1964 Illuminated Scroll of Honor of New York's Municipal Art Society. Johnson is being honored for his architectural contributions to the city, and the *Times* as the first of the nation's newspapers to appoint a full-time staff critic of architecture (ADA LOUISE HUXTABLE) . . . R. BUCKMINSTER FULLER received an honorary Doctor of Letters degree at the commencement of Clemson College, S.C.

New Civic Center Design Improvements Noted

New York's proposed Civic Center, a bone of contention in architectural and planning circles for many months (*see* p. 60, DECEMBER 1963 P/A and pp. 74, 76 FEBRUARY 1964 P/A) has been redesigned by the office of Edward Durell Stone. The group of 12 architects and planners which condemned the previous plan had good words for the Stone version. The group, after being asked for a critique of the previous "A-B-C" (for designers Max Abramovitz, Simon Brienes, and Robert W. Cutler), plan by the J. M. Kaplan Fund, a philanthropic organization, was requested by Mayor Robert F. Wagner to give an opinion on the redesign for the Civic Center. Members of the group are: Edward L. Barnes, Peter Blake, Marcel Breuer, Walter Gropius, Douglas Haskell, Burnham Kelly, Ieoh Ming Pei, G. Holmes Perkins, P/A Editor Jan C. Rowan, Paul Rudolph, Hideo Sasaki, and Jose Luis Sert.

Of particular significance, the group felt, is the deft way the new design handles the traffic approaches to the Brooklyn Bridge, creating a formal plaza in front of the bridge and eliminating the "spaghetti" of roads and approaches from the vicinity of the Municipal Building. Also receiving praise was the proposal of a sunken mall extending northward from City Hall in place of the raised mall of the A-B-C- plan, which would have created a "Chinese wall" in the area.

On the negative side, the group felt that a proposed 50-story tower for city offices would dominate the area too much and should be redesigned into lower structures to surround and define the urban spaces. Further study of the cross-island automotive traffic was also recommended, particularly in view of the proposal to build the World Trade Center on the West Side. The dozen architects and planners urged that the City Planning Commission take immediate steps to reserve for Governmental use all lands in the area necessary for the success of the plan.

AIA Awards

Selected from 439 submissions were four AIA Honor Awards and 12 Awards of Merit for architecture of recently completed buildings. First Honor Awards went to the Arts and Communication Center and the Thomas M. Evans Science Building at the Phillips Academy, Andover, Mass., by The Architects Collaborative; Emhart Manufacturing Company Headquarters, Bloomfield, Conn., by Skidmore, Owings & Merrill, New York; School of Art and Architecture, Yale University, by Paul Rudolph; and the

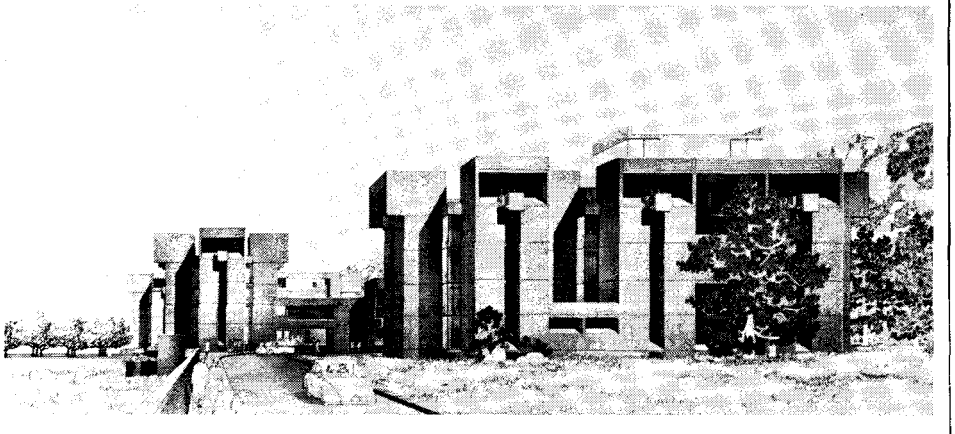
BMA Tower, Kansas City, Mo., by Skidmore, Owings & Merrill, Chicago. Awards of Merit went to the Memphis Metropolitan Airport, Memphis, Tenn., by Mann & Harrover; Temple Street Parking Garage, New Haven, Conn., by Paul Rudolph; Headquarters, Research and Production Laboratory for Molecular Electronics Division, Westinghouse Electric Corp., Anne Arundel County, Md., by Vincent G. Kling; Horizon House, Fort Lee, N.J., by Kelly & Gruzen; St. Francis Square, San Francisco, Calif., by Marquis & Stoller; Constitution Plaza, Hartford, Conn., by Charles Dubose (site planning and basic design coordination) and Sasaki, Walker & Associates Landscape Architects; Carmel Valley Manor, Carmel Valley, Calif., by Skidmore, Owings & Merrill; Assembly Hall, U. of Illinois by Harrison & Abramovitz; Case Study House # 25 for Arts and Architecture Magazine, Long Beach, Calif., by Killingsworth, Brady, Smith & Associates; Residence, Dobbs Ferry, N.Y., by George Nemeny; Plant for Helen Whiting, Inc., Pleasantville, N.Y., by Ulrich Franzen; and Central Plaza Development, Canton, Ohio, by Tarapata-McMahon Associates, Inc.

Schools

The U. of Detroit is currently reshaping its engineering program through two major changes: the establishment of a separate six-year curriculum School of Architecture with Bruno Leon (presently chairman of the architecture department) as dean; and the consolidation of numerous specialized engineering courses...Six graduate fellowships for study leading to a Ph.D. in Architectural Psychology have been announced by the University of Utah. The program, to begin in September 1964, will be open to graduates in either architecture or psychology, and will be directed toward research in psychological effects of environmental factors.

Calendar

American Institute of Planners will have its annual conference at the Robert Treat Hotel, Newark, New Jersey, August 16–20...1964 Engineering Foundation Research Conference, entitled "The Building Construction System—A Challenge to Innovation," is scheduled for August 17–21 at Proctor Academy, Andover, N.H. Gordon P. Fisher, Associate Dean of Engineering and Professor of Structural Engineering, Cornell University, will be conference chairman; program topics and chairmen are as follows: "Building Construction Viewed as a System," Gordon P. Fisher; "Changing Patterns of Professional Education," Burnham Kelly, Dean, College of Architecture, Cornell U., and Nathan M. Newmark, Professor and Head of Civil Engineering, U. of Illinois; "Structural Form and Design," William J. LeMessurier & Associates, Inc., Boston, Mass.; "Internal Environment," Bernard P. Spring, Professor of Architecture, Cooper Union; "The Assembly Process—Getting the Building in Place," Burr Tupper, Manager, Systems Engineering and Development, Construction Group, Westinghouse Corp., Pittsburgh, Pa.; "Division of Responsibility in Construction," Herbert L. Swinburne, of Nolen, Swinburne & Associates, Philadelphia, and Chairman of Research Committee, AIA; "Management Aspects of the Construction System," Louis R. Shaffer, Assistant Professor of Civil Engineering, U. of Illinois; "Strategy of Bidding," William R. Park, Midwest Research Institute, Kansas City, Mo.; "The Challenge of the Systems Approach to the Building Industry," John P. Eberhard, The National Bureau of Standards. Further information on this and other conferences planned by the foundation may be obtained from Dr. Harold K. Work, Director, Engineering Foundation, United Engineering Center, 345 E. 47 St., New York, N.Y. 10017...Next year's AIA Convention will be held in conjunction with the XI Pan American Congress of Architects in Washington, D.C. Conference, to be held June 14–18, 1965, will focus on "Cities of the New World"...The national meeting of the American Welding Society will be held in San Francisco, October 5–8, 1964. Details are available from the Society, 345 E. 47 St., New York, N.Y., 10017.



Pei Designs for Atmospheric Research

Laboratory for National Center for Atmospheric Research by I. M. Pei will be erected on a 500-acre site southwest of Boulder, Colo. Five-story towers containing offices and laboratories will enclose a two-story central unit. Two-story unit will contain a large computer, library, shops, meeting rooms, and cafeteria. One basement level will serve all units. Exterior concrete surfaces, to be bush-hammered, exposing reddish brown stone aggregate, are expected to blend with nearby flat-iron ridges.

Obituary

San Francisco architectural circles were shocked by the unexpected death of S. Robert Anshen of Anshen & Allen, who was discovered dead in his office on May 25. He was 54.

Notable work by Anshen's firm includes Visitors Center at Dinosaur National Park, Utah; Chapel of the Holy Cross, Sedona, Arizona (winner of a P/A Design Award in 1954 and an AIA Honor Award in 1957); San Francisco's International Building (a 1963 AIA Honor Award winner); the Lawrence Hall of Science at the University of California at Berkeley; and the Bank of California Building in San Francisco (the last two still in the design stage). The firm participated as consulting architects in the design of the master plan for the new Santa Cruz campus of the University of California.

Anshen was a popular lecturer at architectural schools, and last year served as panelist at the national convention of the American Institute of Architects. He was made a Fellow of AIA in 1962.

Handsome steel parking garage

. . . for strength . . . low cost

The Citizens National Bank Parking Garage, Decatur, Illinois, is a fine example of how to stretch space and cut costs without sacrificing good design.

The design called for four levels of parking, three drive-in teller stations for banking service, and access for pedestrian traffic to the adjoining bank from ground and second parking levels and to an adjoining office building from the third and fourth levels—all in a space that challenged the architects' skills.

Architects Spangler, Beall, Salogga & Bradley began by securing air rights over adjoining city sidewalks and vacating a little-used one-block-long street. Designing the frame to take full and economic advantage of available space, they chose steel for columns, girders and beams. Main girders of USS TRI-TEN (A441) Steel were cantilevered ten feet over the sidewalks and were tied in compositely with reinforced concrete decks. The balance of steel framing was A36. Both footings and columns were designed to carry six future levels over a portion of the structure.

The high strength steels and composite design provided greater headroom. Exposed steel columns, consistent with good fire protection practices, further increased usable space.

The entire design was kept as simple as possible, not only for economy, but to avoid confusion with a variety of adjoining structures. The spandrels match the color of the office and bank buildings. The exposed structural steel was painted black, and the slab and galvanized decking was left unpainted.

Total area is 79,260 square feet. Capacity—152 cars. Cost—$4.73 per square foot. Conclusion: A steel framed structure can park more cars in less space, for fewer dollars. And it's easy to add more floors to a steel structure. United States Steel, 525 William Penn Place, Pittsburgh, Pa. 15230. USS and TRI-TEN are trademarks.

costs only $4.73 per square foot

Citizens National Bank Parking Garage, Decatur, Illinois • Architect Engineer: Spangler, Beall, Salogga & Bradley, Decatur, Illinois
Contractor: Fisher-Stoune, Inc., Decatur, Illinois • Steel Fabricator: Mississippi Valley Structural Steel Company, Chicago, Illinois

USS United States Steel

Calling James Bond

BY E. E. HALMOS, JR.

Architects, engineers, and construction men were provided a number of things to worry about by recent actions of various Federal agencies:

1. The Justice Department indicated it would consider consultants who work under contract for foreign governments as "foreign agents," under a legalistic interpretation of the 1958 Foreign Agents Registration Act, on the grounds that organizations that "gather information for a foreign principal" must be included. That would mean that A-E firms would have to register as agents. A "coordinating Committee on Relations of Engineers in Private Practice with Government" (AICE, ASCE, NSPE, and American Road Builders) took up the cudgels in an attempt to get the Senate's Foreign Relations Committee to amend the law to exclude such services.

2. The Commerce Department promulgated (then temporarily suspended) a new ruling which, said the National Constructors Association, would virtually cut off foreign work for U.S. contractors who go abroad on "package" deals to build steel mills, refineries, and the like. Commerce said it would insist that such firms—because they are "exporting technical data and knowledge"—must get a declaration from their clients that products of the factories they build won't be shipped to communist countries (previously, the guarantee had to be that the factory itself wouldn't be shipped to a communist nation), as a condition for obtaining a U.S. license to operate abroad.

3. As expected (see JUNE 1964 P/A), the Small Business Administration paid little heed to arguments of private consultants and architectural firms, and included everyone under its "set aside" program. In a small concession, it raised minimums for consideration as "small business" to $5 million annual gross for engineers and naval architects, held other architects to $1 million. Fear of professionals is an obvious one: If architect-engineer contracts are "set aside" like purchases of hardware, the next step would seem to be bidding.

FINANCIAL

The construction industry seemed to be maintaining the predicted modest rise in volume—but there was a disturbing overtone.

Over-all, the Census Bureau said that, during April, value of new construction put in place was about $5.2 billion—up 11 per cent over March, and 12 per cent over April 1963.

The disturbing factor was this: While total new private construction expenditures were $3.7 billion in April 1964 (up 10 per cent over a year ago), and spending for residential building, at $2.2 billion, was also up 10 per cent over a year ago, the rate of construction of housing actually dropped 4 per cent below that of a year ago.

Census offered no reasons: it simply reported that the number of private housing units started in April was at a seasonally adjusted rate of 1.588 million units—down from the March rate of 1.665 million, and 4 per cent below the year-ago rate of 1.618 million units.

WORLD'S FAIR PRODUCTS

New building products or new uses of established products characterize the construction of many pavilions at the New York World's Fair. In this special report of P/A's New Products section, a number of these uses are examined.

Waterproof Sealant

"Epoxite," a two-component epoxy-type waterproof sealant was applied to the floor and walls of the moat sur-

rounding the Philippine pavilion, designed by Otilio A. Arellano and Jeffrey Ellis Aronin. Sealant can withstand hydrostatic pressure of more than 2 tons per sq ft, dries in 8 to 12 hours to tile-like finish, and is unaffected by chemicals, temperature, age, and most acids. Blue pigment was added to 110 gal of Epoxite needed to coat entire moat, which contains 53,000 gal of water. American Home Products, Boyle-Midway Div., 685 Third Ave., New York, N. Y.

On Free Data Card, Circle **100**

Hanging Glass

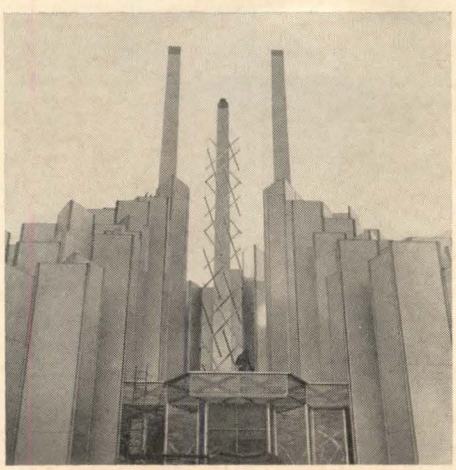
Hanging glass system is utilized at Festival of Gas pavilion's restaurant and industry club. In this glazing system, 8½′ x 10′ pieces of glass (specially ground on both sides) hang from metal clamps concealed along the edges of the restaurant's roof. Vertical suspended glass stabilizers, which are perpendicular to the glass wall, hold wall rigid at each joint. Dow Corning's "780" building sealant joins the sec-

tions together and runs along the floor line to keep out moisture. If hanging glass breaks, glass above the break does not fall. Glass is free of distortion. Walter Dorwin Teague Associates designed the pavilion. American Saint Gobain Corp., Box 925, Kingsport, Tenn.

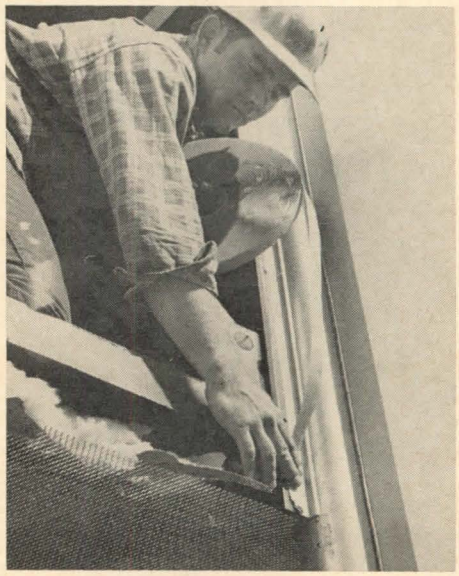
On Free Data Card, Circle **101**

Butyl Tape Sealant

Over 1000 Alcoa "Aply" insulated aluminum panels on structural framework are employed to form Tower of Light pavilion, designed by Synergetics, Inc. To seal the panels together, a self-adhering, 100 per cent solids, vulcanized butyl tape sealant called "Duribon 1072" was utilized. No mixing of components or priming is required, no masking or clean-up is necessary, and no calking guns or other special equipment are needed. Sealant is easily applied on vertical or overhead surfaces. Tape thickness compensates for any irregularity in



joint tolerance. Duribon 1072 adheres and becomes functional immediately, since there is no solvent to be evaporated and no curing involved. Application of Duribon 1072 consists of pressing tape onto clean, dry surface with finger pressure. Splices are made



simply by overlapping tape ends ⅛″ to ¼″. Liner paper is snapped back with quick 180 deg stripping motion, thereby leaving sealant tape exposed. Seal is completed as tape compresses when panels are put in place. Pittsburgh Plate Glass Co., 225 Belleville Ave., Bloomfield, N. J.

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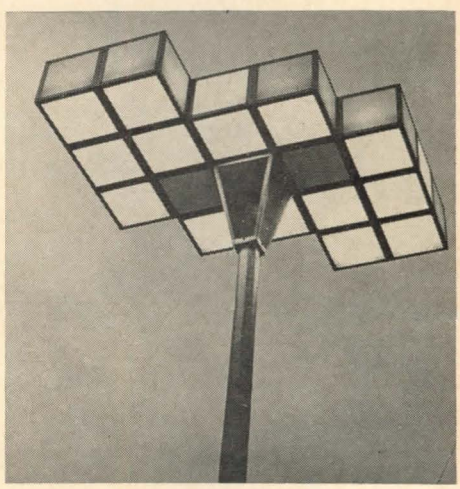

Street Lighting

Street lighting along 40 miles of avenues of the World's Fair utilizes 13,000 fluorescent lamps. Square fluorescent lamps are mounted in 1400 dec-

orative luminaires designed by World's Fair Lighting consultants Hamel & Langer. They are composed of a variety of groupings of multicolored plastic cubes mounted atop a standard. Each cube houses a fluorescent panel that faces downward and directs concentrated white light to streets and walks below. A portion of this light is emitted upward, illuminating the colored sides of the translucent cubes. Luminaires present various combinations of cubes of light, employing from 4 to 14 lamps each. General Electric, Nela Park, Cleveland, Ohio.

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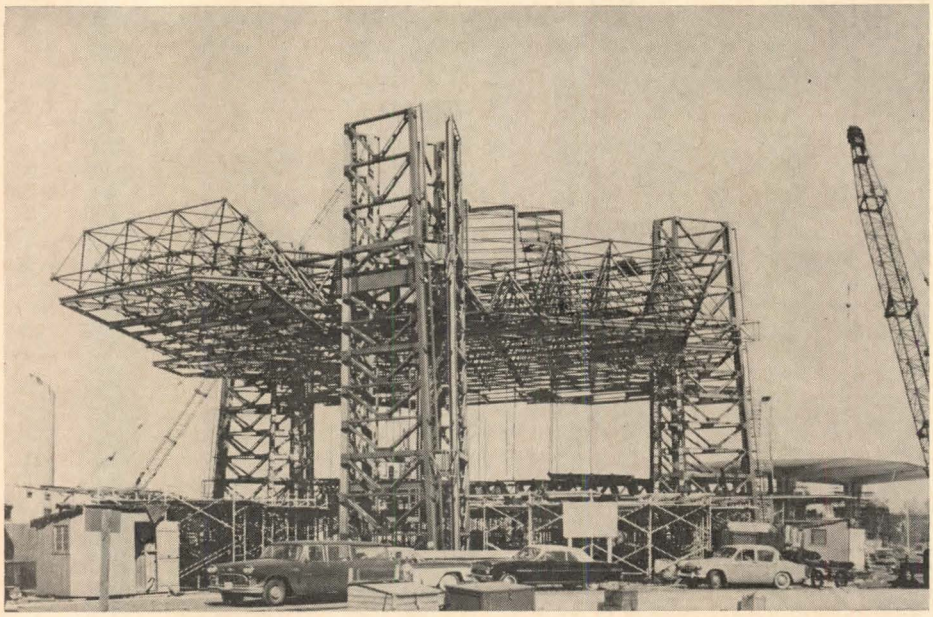
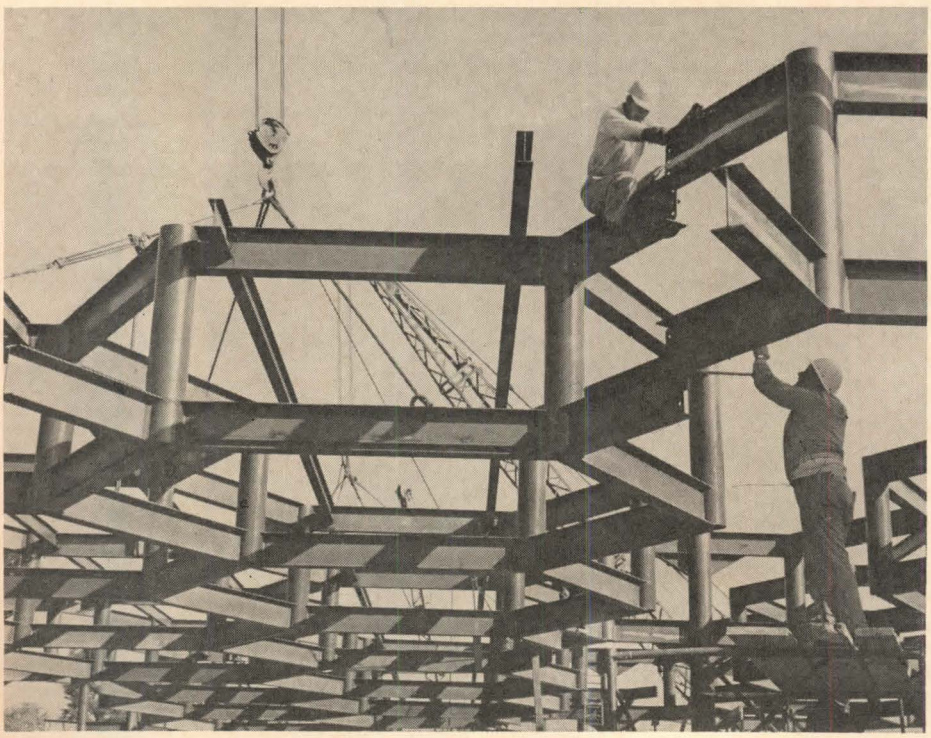




Space Frames

Roof space frames are utilized for National Cash Register pavilion. Construction consists of three 62′ pylons made of medium heavy structural steel. Space frames, comprised of various lengths of steel piping terminated and joined by steel spheres, rest on three triangular pylons. Pipes and spheres range in size from 2½″ to 8″ and from 8″ to 16″ in diameter, respectively. False ceiling is suspended from space frame. Floor and lower space frames underlie entire pavilion. Lower space frame is constructed in same way as roof frame, but is supported laterally only to help keep the pavilion from "swinging." Deeter & Ritchey are the architects. Elizabeth Iron Works, Inc., Green Lane, Union, N.J.

On Free Data Card, Circle **106**

Vinyl Laminate

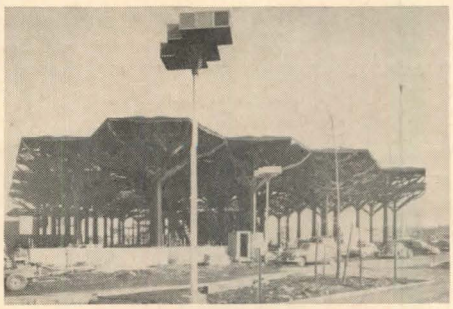
AMF's monorail exhibit employs "Lifetex" vinyl laminate for interior of their cars. Lifetex is decorative, heavy-duty vinyl bonded to metal or alloy. It is highly resistant to staining, scuffing, and corrosion. Laminate is fully prefinished construction material requiring no spraying, baking, or other decorating after fabrication. Lifetex is available in sizes up to 50″ wide by 240′ long and in thicknesses from .014 to .250. It comes in unlimited color choice and in simulated wood and leather textures. Poloron Products, Inc., 173 Huguenot St., New Rochelle, N.Y.

On Free Data Card, Circle **104**

Vinyl-Coated Fabric

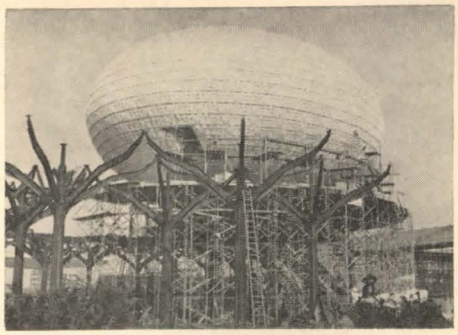
Outdoor amphitheater at Florida pavilion (designed by Pancoast, Ferendino, Grafton, Skeels & Burnham), includes circular canopy of vinyl-coated nylon suspended by cables. Alternating panels of orange and white consist of 37,500 sq ft of fabric manufactured by U.S. Rubber Co., Chemstrand, 350 Fifth Ave., New York, N.Y.

On Free Data Card, Circle **105**



Steel Trees

IBM pavilion, designed by Eero Saarinen & Assoc., and Charles

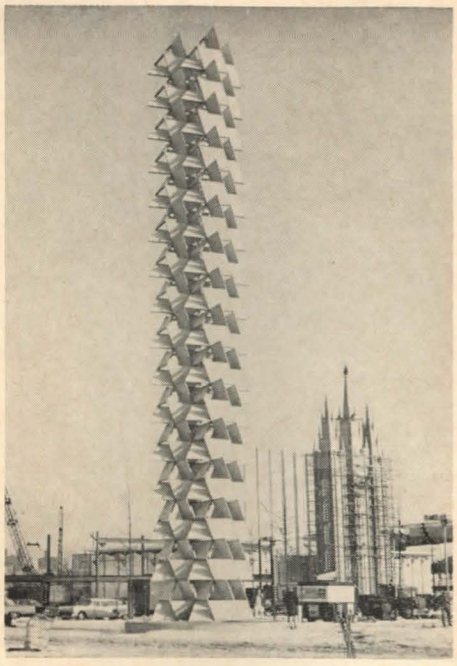


Eames, features 45 "trees" of structural steel supporting a canopy of 1435 triangular sections of gray and green "Plexiglas." Trees are 32′ tall, branch out to spans up to 35′, and have trunks 20″ in diameter. For natural color, they have been left to rust. Five trees contain drains from the canopy into the ground. Canopy and ovoid auditorium together cover an area of 38,000 sq. ft. Ingalls Iron Works Co., 30 East 42nd St., New York, N.Y.

On Free Data Card, Circle **107**

Entrance Towers

A steel and porcelain enamel tower stands at each of five entrances to the Fair. Four of the towers, weighing 16 tons each, are 60′ high. At the main entrance, a 10′ sq tower stretches 80′ skyward. Towers incorporate series of welded steel grids of basic parallelogram shape, covered with rigidized steel panels of porcelain enamel. Two panels fit back-to-back over frame, and are held in place with a bead of polysulfide sealant and cadmium-plated fasteners. Davidson Enamel Products, 1104 East Kibby St., Lima, Ohio.



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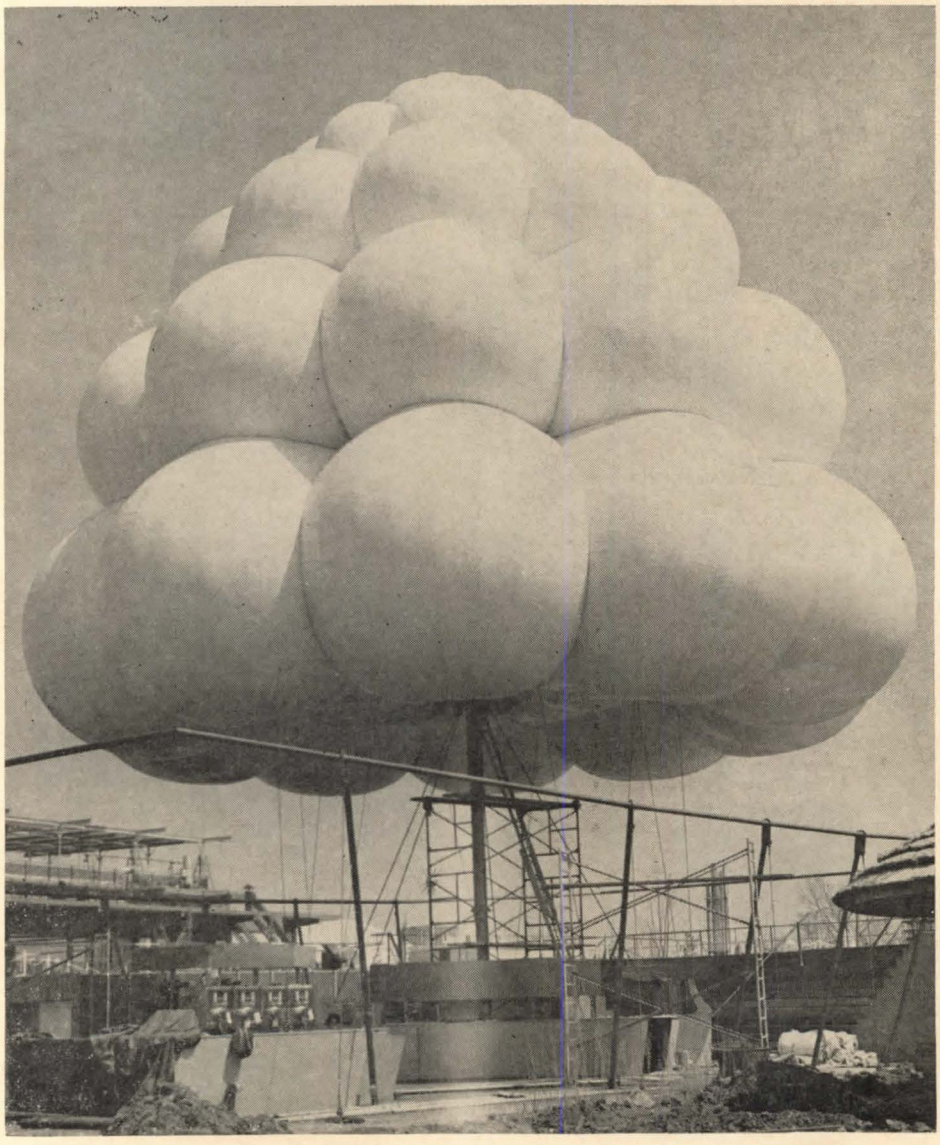

Air Structure

Each of 10 Brass Rail food centers are highlighted by 60′ x 100′, flat, tent-like canopy surrounding a central mast-supported inflated "air flower," designed by Victor A. Lundy. Spherical shape is supported by an internal inflation pressure of about .175 psi. J.P. Stevens & Co., Inc., wove special glass fabric using Owens-Corning Fiberglas yarns and a vinyl coating by Cordo Div. of Ferro Corp. Birdair Structures, Inc. 1800 Broadway, Buffalo, N.Y.

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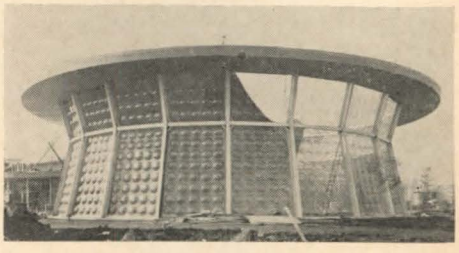

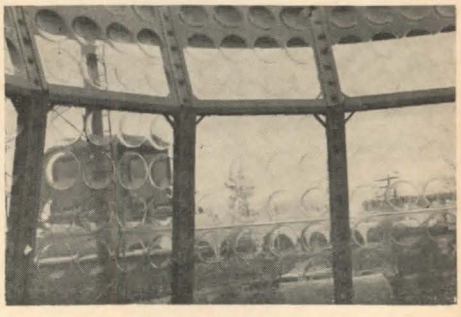

Acrylic Plastic Walls

Exterior walls of two connected circular buildings of the Schaefer Center are constructed of "Plexiglas" acrylic plastic. Major design objective of Eggers & Higgins and Walter Dorwin Teague Associates was development of light-transmitting trans-

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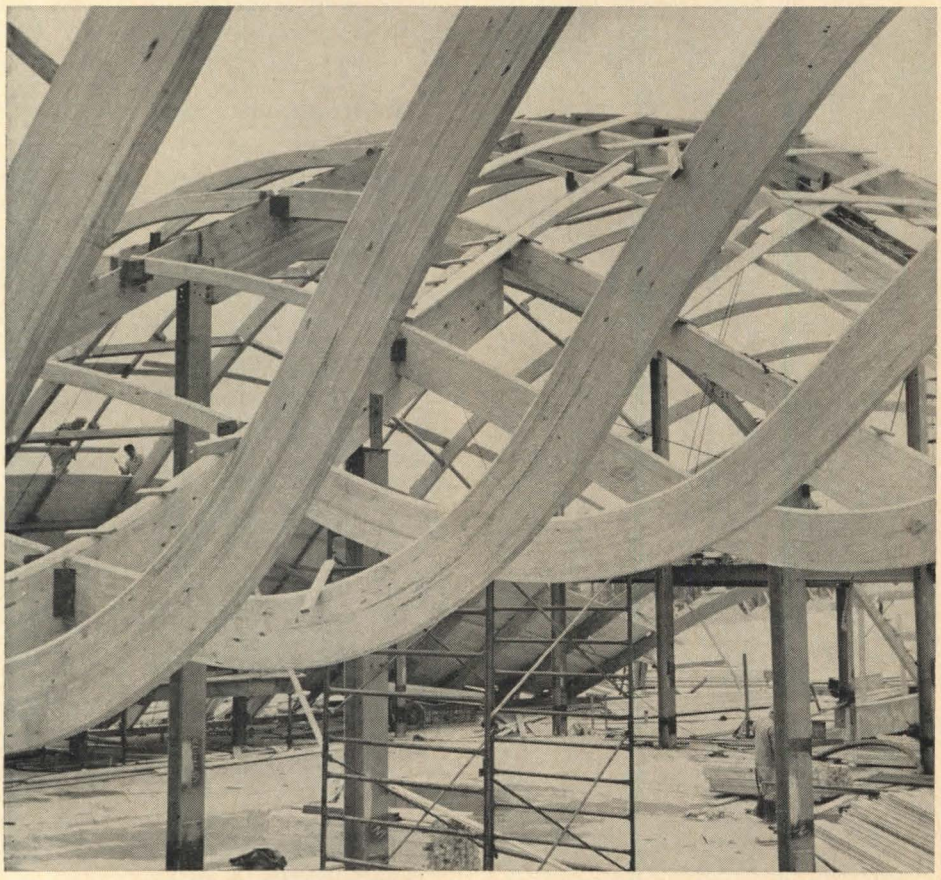
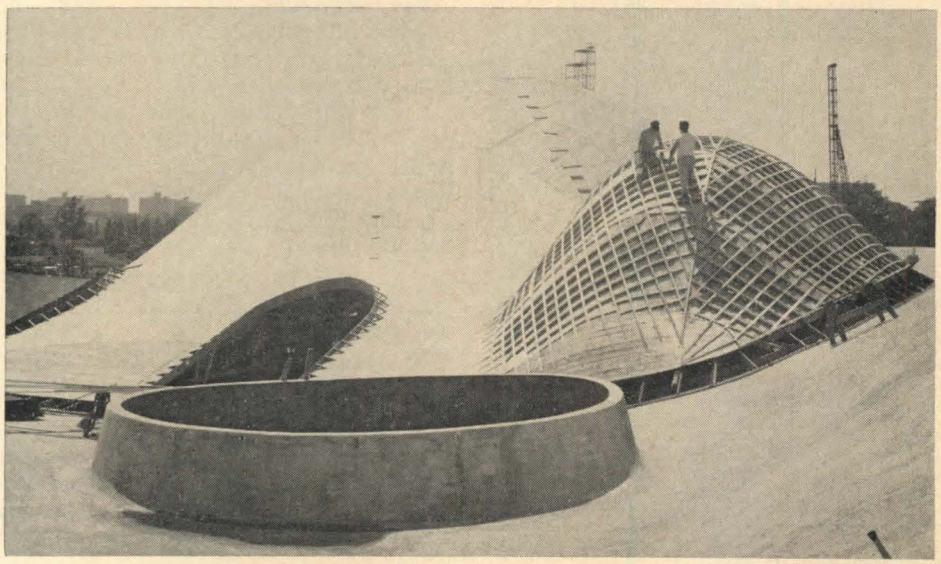
parent exterior walls, which simulated appearance of sparkling beer. Therefore, pattern of bubbles was created that imparted built-in rigidity to large Plexiglas sheets comprising the transparent wall. Pattern was produced by vacuum forming three-dimensional domes in ½″ thick, light-gray, transparent Plexiglas sheet. First sheet is oven-heated to forming temperature and then clamped in an upright mold. Plugs of mold frame push heated sheet slightly into cavities of the mold where, under pressure, bubbles are formed to desired size. Largest panels (used in lower sections of larger building) are about 18′ x 12′ and were prepared by chemically welding two smaller sheets of formed acrylic plastic into one solid panel. Rohm & Haas, Washington Square, Philadelphia 5, Pa.

On Free Data Card, Circle **110**





Undulating Frames

Undulating wood frames are employed in construction of Kahn & Jacobs' Kodak pavilion. Exterior is primarily of reinforced concrete, but double-radius "Rilco" laminated wood arches support the roof over one of the two theaters. Some 200 undulating laminated wood arches and curved purlins, in sizes as large as 9″ x 29″ in section and as much as 53′ in span, are used. Arches are sprayed with light coating of concrete. Weyerhaeuser Co., Wood Products Div., Tacoma 1, Wash.

On Free Data Card, Circle **112**

Concrete Additive

After pouring foundation slab of Medo pavilion (John A. Walquist, Designer), steel reinforcement was laid flat on the slab and anchored to five peripheral points to buried buttresses. Portland cement masonry with ⅛″ aggregate and plasticizer "X-59" were mixed at site and sprayed on inside and outside of lattice to precalculated thicknesses ranging from 3½″ to 11″. X-59 added to strength of concrete, ease of maintenance, and crack resistance. Finish coat of sand, cement, and again X-59 were applied to both sides and painted with waterproof coating. Cabot Corp., Oxides Div., 125 High St., Boston, Mass.

On Free Data Card, Circle **111**

Plastic Fabric Roof

Festival of Gas pavilion features 30,000 sq ft of PVC fabric roofing. Hexagonal roof, measuring 240′ long by 112′ wide, is divided into 14 pie-shaped wedges by steel trusses anchored to two steel posts that support it. Below each truss and fastened to it are lengths of 2″ pipe. Lengths of 54″ fabric, sewn together with a nylon thread and cut to the size of each pie-shaped truss, are fitted with brass grommets at their outer edges 6″ apart. Nylon webbing is inserted

under the outer seams as reinforcement for the grommets. These grommets are then hand-laced to the pipes with ¼" heat set Dacron rope. No additional supports are needed over spans up to 120'. Fabric is high in tensile strength, lightweight, and fire resistant. System saved up to 75 per cent in cost in comparison with conventional ceiling materials. Design concept was by Walter Dorwin Teague Associates. J.P. Stevens supplied nylon scrim to Toscony Inc., who laminated "Super-Filmtex" vinyl film to the fabric. J. P. Stevens & Co., Inc., 1460 Broadway, New York, N.Y.

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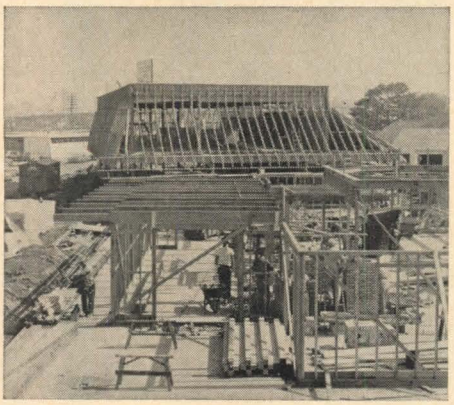


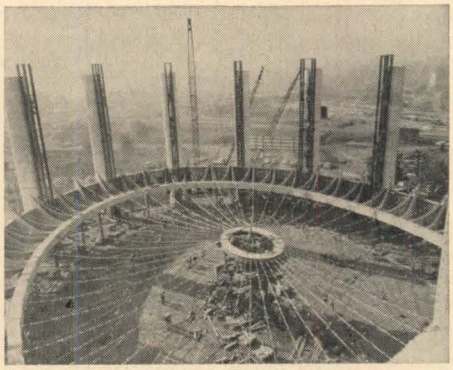
Stable Wood Framing

Edward Durell Stone's House of Good Taste (*foreground*) is framed with recently developed dry-engineered lumber. Framing lumber is lighter, drier, slightly smaller than conventional standard kiln-dried construction lumber but is actually stronger and more stable by helping to avoid plaster cracks and nail-pops. Weyerhaeuser Co., Tacoma, Wash.

On Free Data Card, Circle **114**

Glass-Fiber Roof Panels

Over 1400 translucent plastic panels of varied colors are fastened to prestressed cables of the roof of the New York State pavilion, designed by Philip Johnson. Panels are attached to upper cables in suspension system with weather-tight batten system joining each panel to the next. Battens also provide for expansion and contraction of panels as well as of cable system itself. Translucent panels are a sandwich made of two glass-fiber reinforced plastic sheets permanently bonded to an aluminum I-beam grid work. Kalwall Corp., 88 Pine St., Manchester, N.H.



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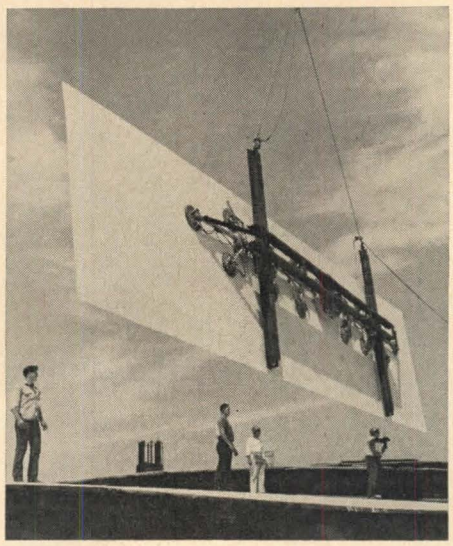

Large Glass Fiber Panels

White "Fiberglas" panels sheath roof, wall, and underside of 400' long elevated Bell Telephone pavilion, designed by Harrison & Abramovitz and Henry Dreyfuss. Lightweight panels, measuring 40' long by 12' wide, are handled by suction-cup lifting device similar to that utilized in lifting large lights of plate glass. Panels, ⅛" thick, are so large that they reduce number of joints and therefore leakage problems. Nearly 500 Fiberglas panels are employed to make up about 180,000 sq ft of skin. Owens-Corning Fiberglas Corp., 717 Fifth Avenue., New York, N.Y.

On Free Data Card, Circle **116**

Cocoon Seating

Cocoon-like, glass-fiber seating has been developed for Bell Telephone pavilion. Interior of seat is covered with nylon upholstery and full foam seat and back. Interior also includes thin, acoustical absorbent urethane foam underneath cotton jersey fabric. Seats numbering 1000 are mounted on conveyor belts that take people through Bell's exhibit. They have green exterior and blue interior. American Seating Co., 901 Broadway, Grand Rapids, Mich.

On Free Data Card, Circle **117**

Glu-Lam Wood Beams

Austrian pavilion is constructed of glued-laminated wood components. Connections are by simple bolts and easily disconnected. Main supporting elements are formed by three A-shaped frames. Height measured from floor to apex is 84'. At floor and roof levels, frames are braced by ties acting as main girders. Wood components are of spruce, Grade I, metal parts and connections are galvanized and all wood elements are fireproof and weatherproof. Floor beams have cross section of 6½" x 24½", whereas roof beams measure 6½" x 22½". Secondary floor beams rest on main girders, while

Continued on page 100

Here is the biography of Candela, master-builder and construction poet, famous throughout the world of architecture and engineering as developer of the hyperbolic form. The book tells in chronological sequence the story of Candela, the man – his background and work. Contained within this fascinating story is paradoxically *the most comprehensive information on shell structures ever presented.* The technical text which covers construction procedures parallels the general text which expounds aesthetically Candela's mastery of the abstract in structure.

Candela: The Shell Builder

Along with complete tables on comprehensive stresses of concrete cylindrical vaults and lateral vaults, thorough discussions of load analyses, calculation of columns and footings, is complete analysis of the basic structures: the conoid shell, the short and long shell, the elliptical and spherical dome, the prismatic slab, the simple umbrella hyperbolic shell, the oblique paraboloid and a curved free-edge shell. The exposition demonstrates technically the procedures and methods involved in the design and construction of shell structures without an overwhelmingly mathematical approach. Showing simply Candela's method of statistical reasoning, differential equations are not introduced – but the logic of his approach provides an insight into the amazing number of these structures he has constructed in a relatively short period of time.

From simple explanation and description to technical analysis and detail, there is a complete integration of photographs and drawings with the text. The reader can either admire the beauty of these structures through the photographs, or study carefully the material related to his own course of study.

Candela's architectural philosophy implied in his constructions should appeal to layman and student alike, and all readers will enjoy the personal level on which anecdotes are told. The drama implicit in his sculptural forms will prove equally valuable to architects, engineers, draftsmen, sculptors, artists, and building contractors.

By Colin Faber
Assistant Professor of Design,
Escuela Nacional de Arquitectura,
University of Mexico

9¾ x 10¼, 224 pages;
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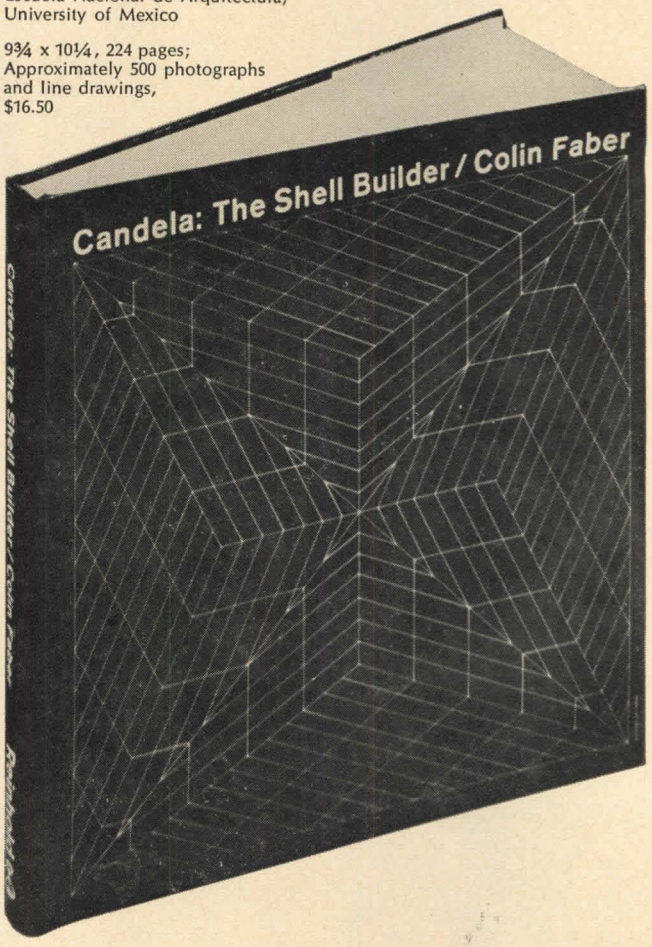

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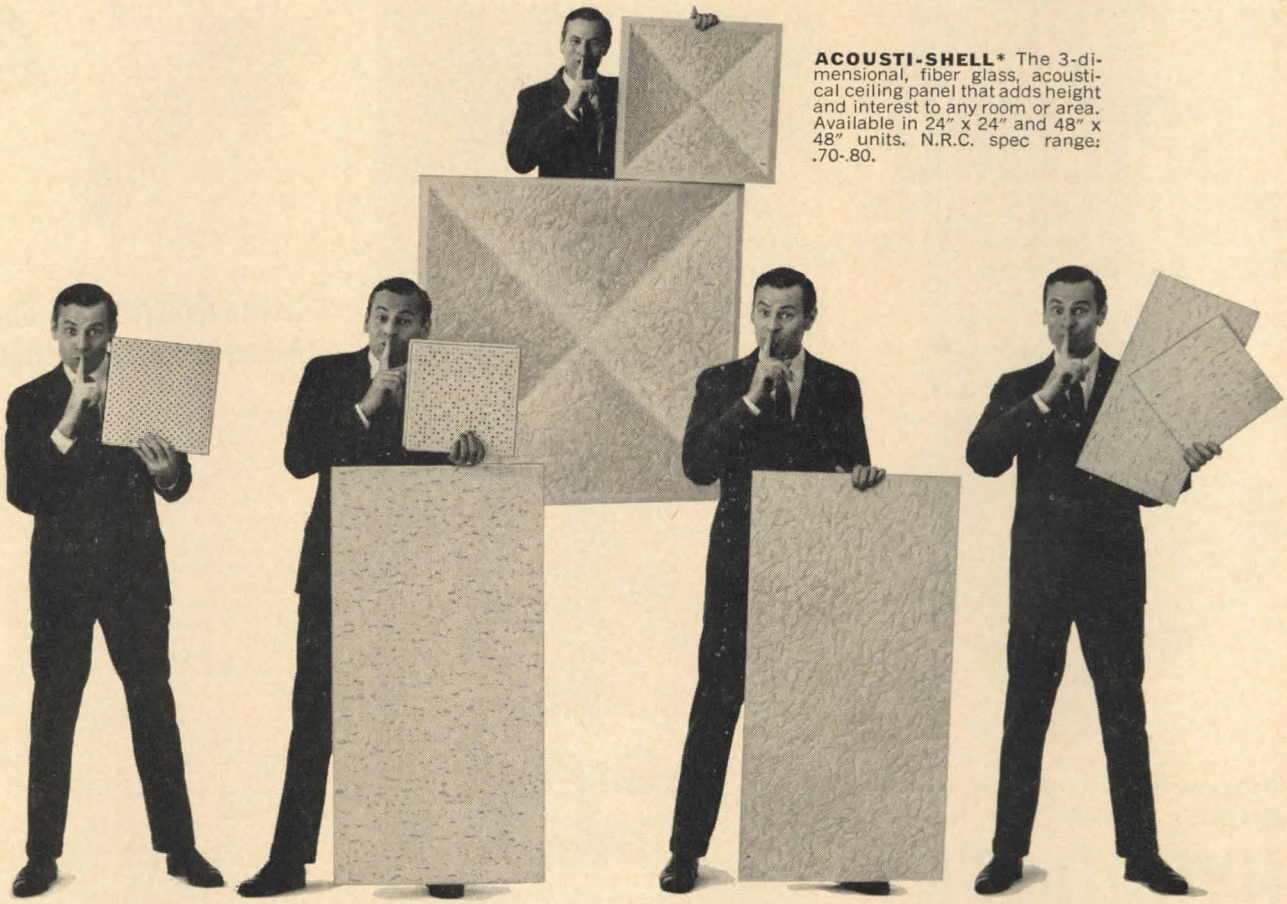

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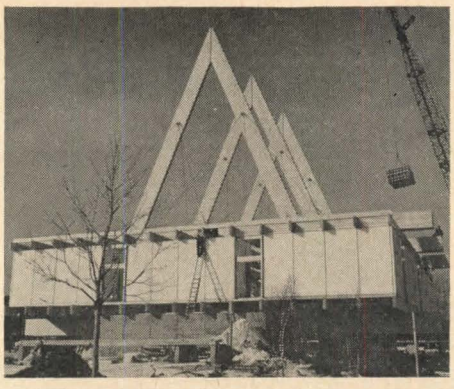

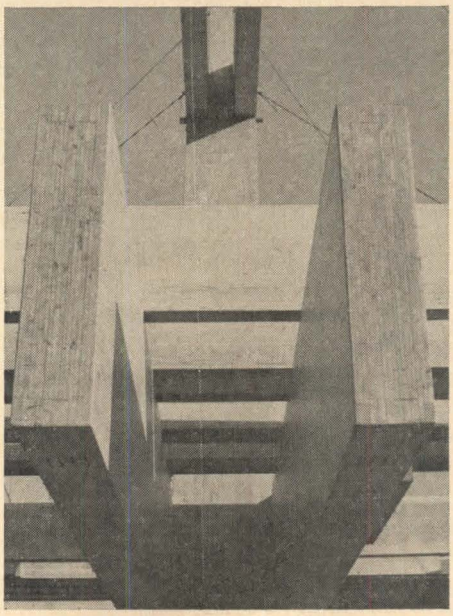

those of roof level are suspended from and bolted to upper ties. Main ties measure 10" x 47½" and 12" x 47½" respectively, and rest on the A-frames. Gustav Peichl is the architect. Austrian Trade Delegate, 31 East 69th St., New York, N.Y.

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(End of World's Fair product listing)

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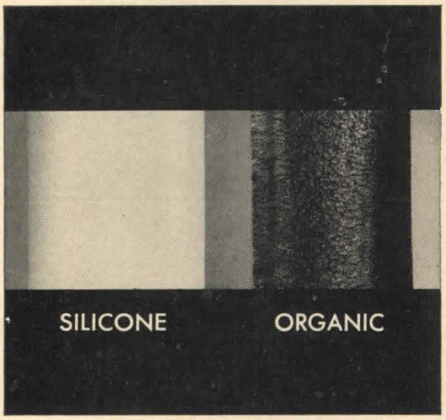
proved most resistant of all sealants to weather, time and joint movement



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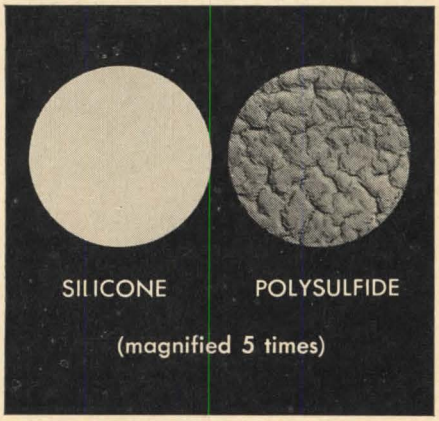
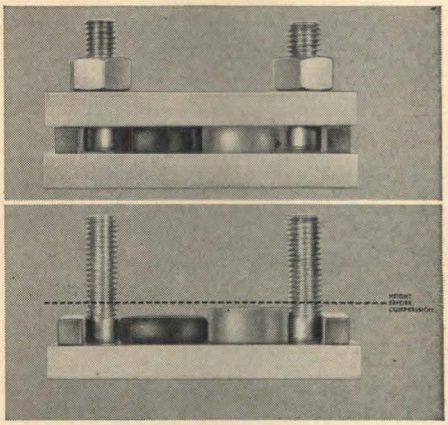
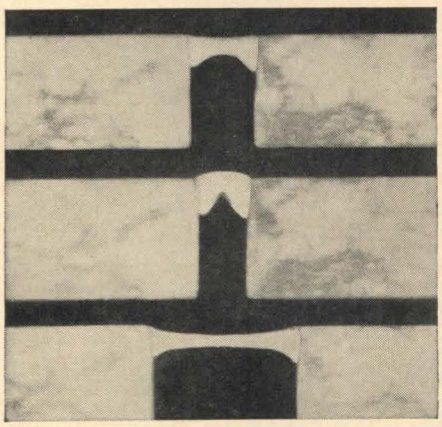


DOESN'T "WEATHER" Samples of silicone rubber have been exposed outdoors for as long as 15 years with no significant deterioration. Severe weathering tests, in which silicone and polysulfide sealants were exposed to Florida sunlight and salt spray, proved silicone's superiority after only one year. Note "checking" in polysulfide.



GREATEST LONG-TERM RESILIENCE The recovery or "comeback" of silicone sealant after compression is far better than any other type of sealant, particularly at extreme temperatures. In this standard ASTM test, cured samples were compressed 40% for 22 hours at 160°F. Silicone recovered 92%, polysulfide only 20-40%.



COMPRESSION-EXTENSION CYCLE This is a major cause of sealant failure. Because other elastomeric sealants take a set during *compression* (see above), they put a severe strain on the bond during *extension*. Silicone sealant, with almost 100% recovery after compression, withstands repeated cycling, while maintaining an effective seal.

STABLE COLORS, NON-STAINING G-E Silicone Sealant comes in five non-fading stock colors: translucent, white, black, aluminum, neutral. Unlimited colors can be ordered. No chance of staining, since nothing in the pigments or the rubber itself will stain building materials. Accelerated weathering test above demonstrates color permanence, lack of staining.

STRONG BOND AT ANY TEMPERATURE G-E Silicone Sealant can be applied year-round from —35°F to +140°F. Flows easily at low temperatures. Bonds well to hot or cold surfaces. When cured, it will not stiffen in cold or soften with heat. Adheres to all common building materials. A one-part material, it needs no mixing or catalyst.

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For more information contact your G-E Silicone Construction Sealant Distributor shown on the opposite page. Or write Sect. Q7109-R1 Silicone Products Department, General Electric Company, Waterford, New York.

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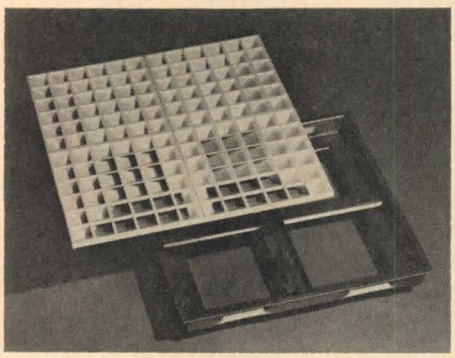

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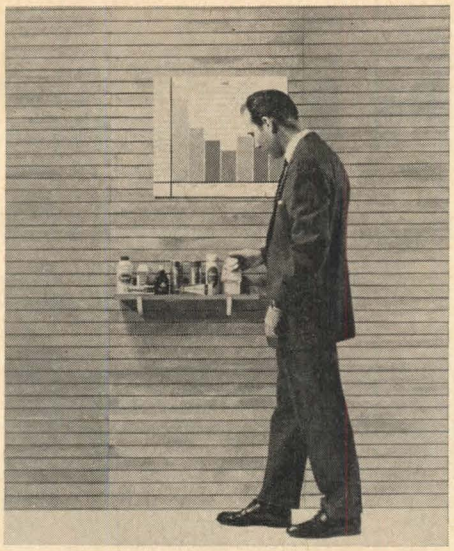

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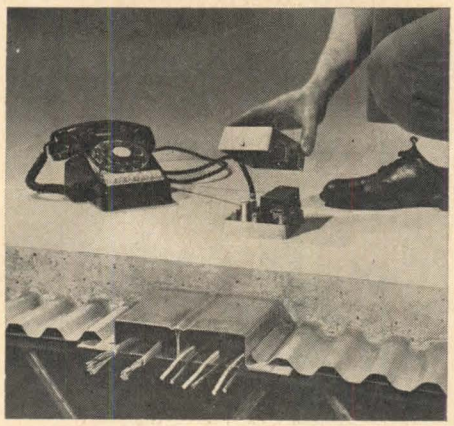


In-Floor Electrification for Structural Slabs

Recently developed "Cel-Way" floor system places power and telephone outlets in one floor fixture. And for the first time, according to the manufacturer, it fully electrifies thin, structural slabs employed with steel joist construction. Cables and wiring can be spaced to serve desks and office equipment regardless of location. Cel-Way units are available in single, double, or wide types. Steel cells fit between permanent steel forms giving continuous form for wet concrete and providing large capacity raceways for in-floor electrification. Inserts are available for single or double type cells and may be spaced to fit desired module. Details, sketches, and specs are given. Granco Steel Products Co., 6505 N. Broadway, St. Louis.

On Free Data Card, Circle **204**

Prefab Components

Booklet, 24 pages, stresses quality control through prefabrication of building components. Various designs shown include pre-engineered buildings for business, industry, and institutions. Features are "Tedlar" clad panels and urethane-core panels. Butler Mfg. Co., 7400 E. 13 St., Kansas City, Mo.

On Free Data Card, Circle **205**

Expansion Joint

"Expand-O-Flash" is recently developed insulated, snap-on expansion joint cover. Flexible bellows is placed between two metal waterstops and has ½" neoprene closed-cell foam insulation to prevent heat loss and condensation. Joint need not disturb or tie into built-up roof when installing, thereby eliminating failures or leaks. According to manufacturer, costs of installing expansion joints utilizing this cover are lower than other methods. Lamont & Riley, Inc., 300 Southwest Cutoff, Worcester, Mass.

On Free Data Card, Circle **206**

Glu-Lam Wood Trusses

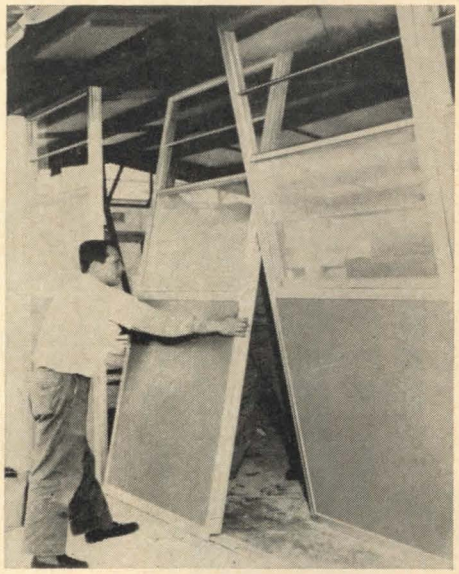
"Rilco" glued laminated wood construction is described in 4-page brochure. Dimensions of flat and pitched beams, bowstring trusses, and tied arches are given. Uses, spans, advantages, and details are also included. Weyerhaeuser Co., Box 1645, Tacoma, Wash.

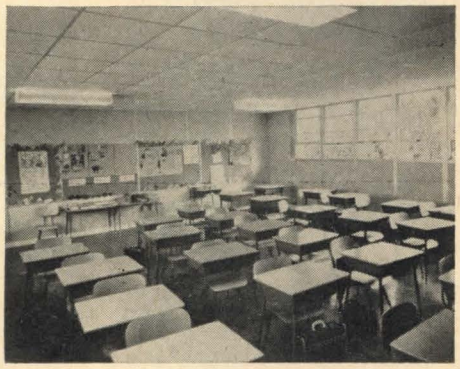
On Free Data Card, Circle **207**

Free-Form Wall Surface

Paperbacked wire lath and drycast concrete create "Spraywall" free-form wall system. Drycast method consists of air entrained in concrete to allow flow, but separates from mix at nozzle. This results in low water content, low slump, uniform voidless consistency, minimum shrinkage, and maximum strength. Solid concrete Spraywalls are constructed without formwork by applying drycast portland cement concrete to wire studs, thus producing finished interior surface. It bends to any shape or form, is lightweight, and offers many textural and color possibilities. Exterior and interior panel

finishes include wood, metal, plaster, plasterboard, etc. Three Spraywall designs, sketches of exterior and interior finishes applied to wire studs, typical details, and specs are included. Keystone Steel and Wire Co., Peoria, Ill.
On Free Data Card, Circle **208**

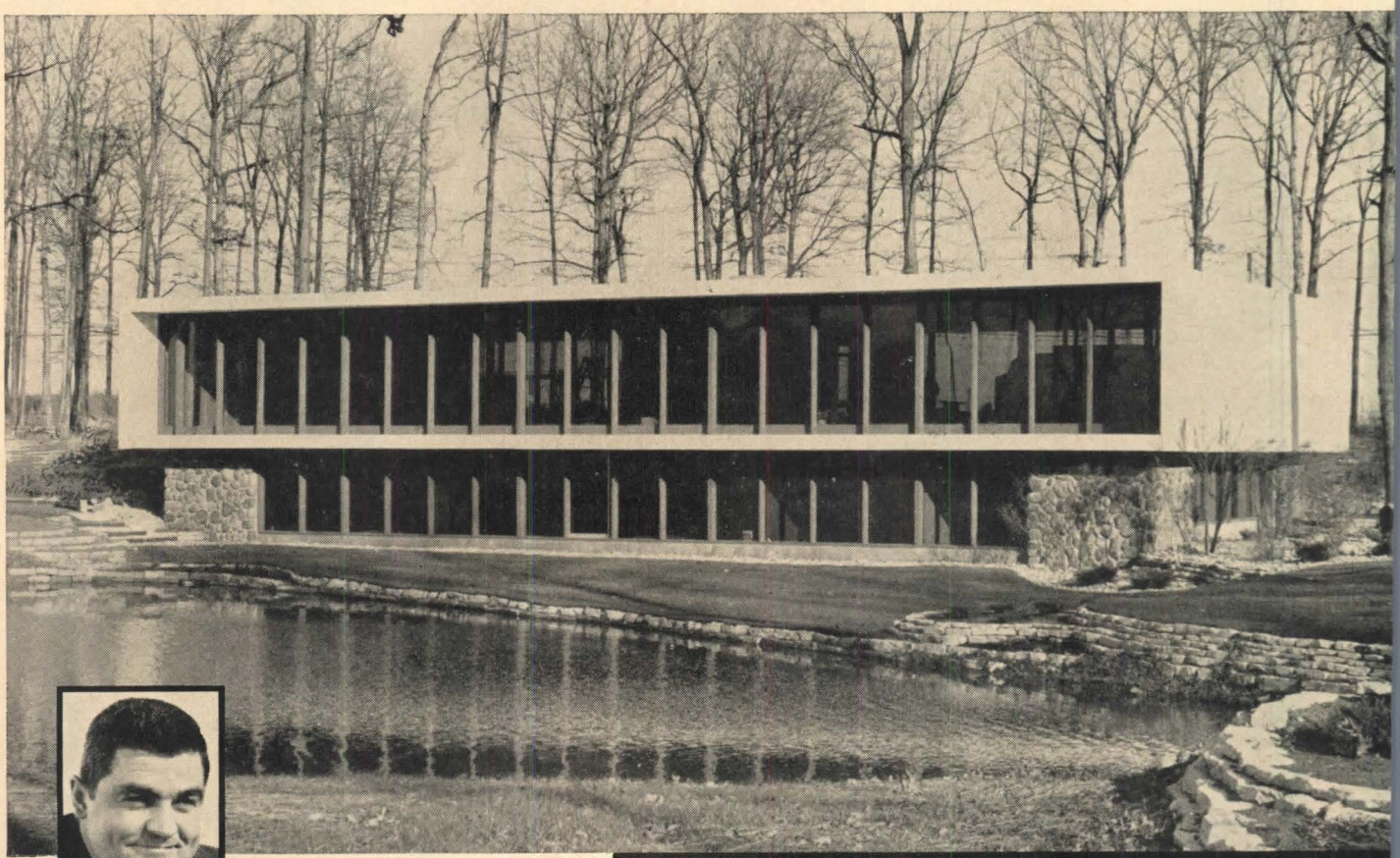




Prefab Building System

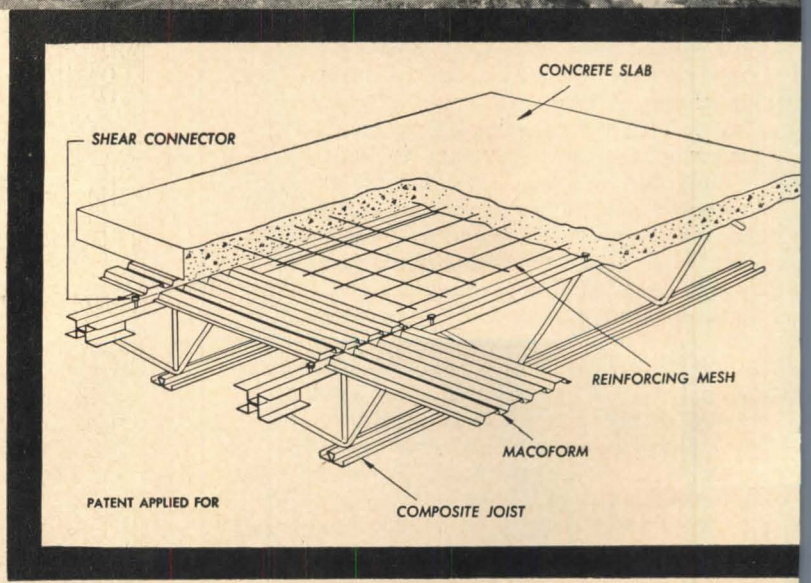
"Stran-Westwal" is complete system of building components used primarily for school construction. It consists of roof system including wall columns in choice of sizes made specially for, but not limited to, school components; exterior wall panel system including panels for windows and doors; and versatile partition system that can be moved to divide rooms to suit changing space requirements. Modular wall panels are available in many colors and materials, including steel, glass, particle board, wood fiber, and plastic laminates. Standard exterior panel surface is galvanized color-coated steel laminated to one side of 2″-thick polystyrene core. Laminated to other side of core is interior material. Anodized aluminum frame forms perimeter of panel. Panels require no exterior fasteners because they interlock. Vinyl seal forms vapor-tight barrier when wall panels snap together. Walls and
Continued on page 106

When an architect designs his own building..



OFFICE BUILDING

Location: Fort Wayne, Indiana
Owner: Arch Development, Inc.
Architect: J. Douglas Lawrence
Schenkel & Lawrence
Contractor: Irmscher & Son



..or a realtor looks to the future

APARTMENT BUILDING

Location: Madison, Wisconsin
Owner: Hilldale Towers, Inc., Norman Nadler, President
Architect: Donald Allen Davis, A.I.A.

Low profile or high rise – Macomber's new composite system is considered a major architectural breakthrough

Since its introduction, only a few short months ago, Macomber's exciting new Composite System, which utilizes the strength and flexibility of open-web joists with the capacity of the concrete slab, has captured the imagination of leading architects and engineers and builders the nation over.

Those responsible for some of America's finest buildings feel that the Composite System is a major breakthrough. The inter-action of the joists and slab provides a more rigid unit than steel and concrete acting independently. Developed around a special Macomber open-web joist, the system permits longer spans with shallower depths, reducing height per floor. More efficient use of materials with a reduction in total dead weight and labor cost, results in decreased building costs.

Why not get all the facts on this revolutionary new system before you determine the framing for your next assignment or job? They are set down in a new brochure now available from Macomber Incorporated, Subsidiary of Sharon Steel Corporation, Canton 1, Ohio.

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MACOMBER INCORPORATED

CANTON 1, OHIO

SUBSIDIARY OF SHARON STEEL CORPORATION

Continued from page 103
structures meet wide range of load conditions. For schools, provisions are made for adequate lighting, ventilation, and acoustical values. Westwal has U value of .17. Stran-Steel Corp., 1202 Fannin Bank Bldg., Houston, Tex.
On Free Data Card, Circle **209**

ELECTRICAL EQUIPMENT

Finnish Lighting

Recently introduced "Grand Prix Lumiere" line of Finnish lighting fixtures and incandescent bulbs are shown in 24-page booklet. Described are 39 different hand-blown glass shades, six chandeliers and pendants, and five styles in three colors of Airam bulbs designed by Tapio Wirrkala. Tradco/Detroit, Inc., 1616 Ford Bldg., Detroit, Mich.
On Free Data Card, Circle **210**

Roadway Lighting Manual

"American Standard Practice for Roadway Lighting," a 52-page manual, is first comprehensive study of this subject in 10 years. Among topics discussed are revised and improved descriptions of types of lighting distribution of roadway luminaires in several categories, now directly related to street proportions in multiples of mounting heights. Classifications of various types of roadways have been revised to be more functional with relation to traffic and pedestrian use and critical areas of seeing for safety. New recommended lighting levels are related to new roadway conditions, and foot-candle levels for urban areas are graduated in proportion to traffic volume and parking needs. Levels have been similarly proportioned with respect to utilization of various segments of expressways. Copies are available at $1 each. Illumination Engineering Society, 345 E. 47 St., New York, N.Y.

FINISHERS/PROTECTORS

Colors for School

Interrelated functions of paint, color, and light utilized in classrooms are discussed in 24-page booklet. Paint, color, and lighting principles are applied to new and existing school construction. Topics include color functions; illumination levels; how to select colors for classrooms, corridors, auditorium, and libraries; suggested color schemes for classrooms, corri-

dors, auditorium, rest rooms—used with southern and western exposures and northern and western exposures; and specs covering painting of interior and exterior surfaces of wood, metal, and masonry. Sherwin-Williams Co., Professional Coatings Div., 101 Prospect Ave., N.W., Cleveland, Ohio.
On Free Data Card, Circle 211

Sealant Color Chart

Chart shows standard and special colors of "Strucsureseal" polysulfide sealants. Standard colors include black, gray, aluminum, medium gray, neutral stone, off-white, white, and tan. Special colors include bright aluminum, light bronze, medium bronze, bronze, brick red, peach, palomino, and sand. Presstite Div., Interchemical Corp., 39 and Chouteau, St. Louis, Mo.
On Free Data Card, Circle 212

Hard Color Finishes

Aluminum anodic hard color finishes are described in four-page brochure. "Permanodic" finishes resist abrasion, corrosion, and dulling effects of weather. They can be used with entrances, railings, push bars, wall systems, windows, or for outside surfaces that cannot be maintained. Kawneer Co., 1105 N. Front St., Niles, Mich.
On Free Data Card, Circle 213

FURNITURE

Drafting Furniture

Catalog, 35 pages, describes more than 200 different drafting-room furniture and accessory items. Topics covered include automatic drafting tables, drawing tables, files, and reference tables. Photos and specs are given. Stacor Corp., 285 Emmet St., Newark, N. J.
On Free Data Card, Circle 214

Wood Laminates for Vertical Cabinetry

One page sheet includes samples of "Cabinet 35" wood laminates for vertical cabinetry. They have a .035" thickness and are available in six finishes: Honey Walnut, Burma Teak, Albina Teak, Chamois Teak, Pewter Chestnut, and Washington Cherry. Laminates are in sizes of 36"x96", 48"x96", and 48"x120". Parkwood Laminates Inc., 134 Water St., Wakefield, Mass.
On Free Data Card, Circle 215

SPECIAL EQUIPMENT

School Reading Lab Planning

"Reading 300 Planning Guide" is used in designing a lab for instruction in developmental reading in schools. Fifteen different plans are offered with designs that allow labs to serve up to 900 students per semester. "Reading 300 Lab Layout Kit" offers visual means of planning best room arrangements for any Reading 300 Lab. Floor plan sheets and cutouts are included in kit. Educational Development Laboratories, Huntington, N.Y.

On Free Data Card, Circle 216

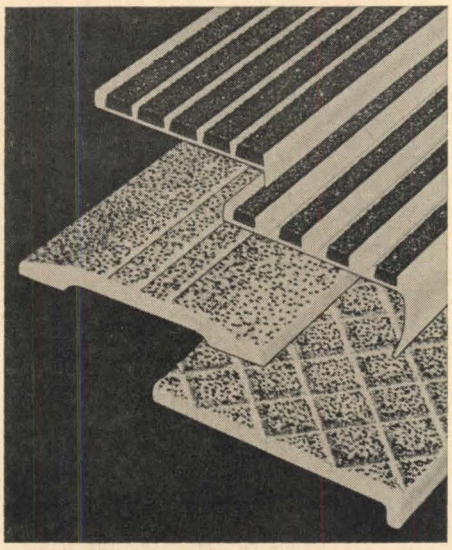
Railing Catalog

Catalog, 158 pages, illustrates balusters, handrails, panels, posts, and wall brackets. Detail sketches, photos, and specs are given. Manufacturer has instituted "Techni-Phone" service by which architect's preliminary drawings are reviewed within 48 hours. Immediately following review, telephone recommendations are made as to mounting construction and unusual problems. Blumcraft, 460 Melwood St., Pittsburgh, Pa.

On Free Data Card, Circle 217

Colored Safety Treads

"Super-Grit" line of aluminum, abrasive safety treads are presented in



20-page catalog. Base of safety tread is heat-treated heavy-duty extruded aluminum. Inverted V-shape ribs are filled with colored abrasive matrix in waterproof binder. Treads can be built directly into new steps or superimposed on existing steps. Wooster Products Inc., Spruce St., Wooster, Ohio.

On Free Data Card, Circle 218

Products for Protection

Catalog describes line of building products. Included are calks and sealants, floor materials, admixtures, waterproofing and roofing materials, adhesive and bonding agents, coatings, and specialty products. A. C. Horn Products, 62 Whittemore Ave., Cambridge, Mass.

On Free Data Card, Circle 219

PROGRESSIVE ARCHITECTURE
NEWS REPORT

REINHOLD PUBLISHING CORPORATION
430 PARK AVENUE, NEW YORK, N.Y. 10022

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NEW YORK

PEOPLE AND PLACES

Photographs by Victor Laredo **Text by Percy Seitlin**

The illustrations are meticulously printed by sheet-fed gravure, the text is set in Monotype Perpetua and printed on antique paper. Carefully bound by interleaving the picture pages with the text pages, it all makes for a handsome piece of bookmaking.

For most people the enduring image of New York – derived from quick visits, picture post cards, and movies – is an imposing but coldly aloof city of towering skyscrapers and anonymous rush hour crowds. It is an image obviously not designed with the human scale in mind – one best observed from a comfortable distance.

This book is a quest through pictures and text for that other, more intimate New York found in its old neighborhoods and buildings – the city in which the human scale is still evident.

192 pages with over 200 photos, 8¼ x 10¼. $12.50t

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After 24 years of wear, these hospital windows with Schlegel weatherstripping still operate perfectly

Let the wind blow, the rain spatter, the snow freeze. The Schlegel weatherstripping in these Adlake windows keeps the weather outside . . . where it belongs.

The windows were installed in a wing of one of the leading hospitals in Rochester, New York, in 1940, and they still operate smoothly and efficiently. They continue to seal out weather effectively despite the wing's exposure to prevailing northwesterly winds, rain and snow.

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For *choice*, a wide variety of pile heights and types is available.

Schlegel's unique weatherstripping experience and engineering facilities are at your disposal. For more information on Schlegel Woven Pile Weatherstripping, send us your specifications, or ask for our catalog.

This hospital wing in Rochester, N. Y., was constructed in 1940.

for protection that's *silent, smooth* and *sure*

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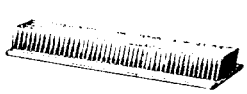

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For more information, turn to Reader Service card, circle No. 381

For more information, circle No. 331

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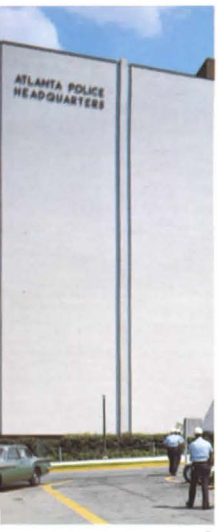

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new ideas in ageless structural clay—brick by Natco

New imaginative uses of brick—one of man's oldest building materials—are now made possible because of the many new colors . . . new ceramic glazes . . . new textures and sizes. ■ Photos above show some of the dynamic buildings with Natco Face Brick facades. **1.** Charlottetown Mall, Charlotte, N.C. **2.** Dr. E. R. Thomas residence, Poland, Ohio **3.** Municipal Building, Oak Ridge, Tenn. **4.** Atlanta Police Headquarters, Atlanta, Ga. **5.** Joseph Horne Co., Pittsburgh, Pa. **6.** 225 Barrone Building, New Orleans, La. **7.** Cornhusker Motor Club, Omaha, Neb. **8.** WOW Television Studio and Kiewit Plaza Office Building, Omaha, Neb. ■ Natco Face Brick is available in all standard, norman, roman, jumbo and norwegian sizes . . . modular and conventional dimensions . . . plain and textured finishes . . . various unglazed shades, and a multitude of ceramic glazed colors are available to meet every design requirement. For complete information, write for catalog #B-163.

Natco corporation

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Office building and garage of Automobile Club of Southern California, Los Angeles, California.
Architects and engineers: Welton Becket and Associates, Los Angeles, California.
Contractor: Oltmans Construction Co., Monterey Park, California.
Prestressed Concrete Fabricator: Rockwin Prestressed Concrete Corporation, Santa Fe Springs, California.

Handsome new Auto Club office and garage features prestressed double tees

Exposed prestressed concrete sections provide interesting shadows and highlights on the new office building of the Automobile Club of Southern California, Los Angeles. Prestressed double tees were used in the floor and roof structure of the new facility. Garage structure, shown behind the office, is also made with prestressed double tees. Inset photo shows how metal ducts were run directly through the legs of the tees thus decreasing required ceiling height.

In all, 88 double tees were used for the office building. These have a 65′ span, 8′ width and 32½″ depth. Garage tees are 61′ long, 8′ wide and 26″ deep. Union TUFWIRE Strand was used throughout by the prestressed concrete manufacturer.

TUFWIRE Strand and other Union Wire Rope products are made by **Sheffield Division, Armco Steel Corporation, Department S-1584, 7000 Roberts Street, Kansas City, Missouri 64125.** Write us for helpful data.

Note ductwork passing through web of tees. This method used to conserve overhead space.

ARMCO Sheffield Division

NEW STRUCTURE HOUSING ELECTRONICS FIRM

Highlights Skylights

COMBINES PERFECT WORKING DAYLIGHT WITH SAFETY

The objective of Granger Associates, Palo Alto, California and their architects to produce a high level of overhead light, as uniform and diffuse as possible at the working level, was effectively achieved by utilizing daylight admitted through skylights of Mississippi Wire Glass. The enterprise includes design, assembly and testing of highly technical electronic equipment and related engineering activities. The installation of 13,000 sq. ft. of translucent Smooth Rough Misco (wire) is responsible for an interior light intensity of 180 foot candles with only 5-10 foot candle variations across the daylighted area. Both the company and the architects are entirely satisfied with the results.

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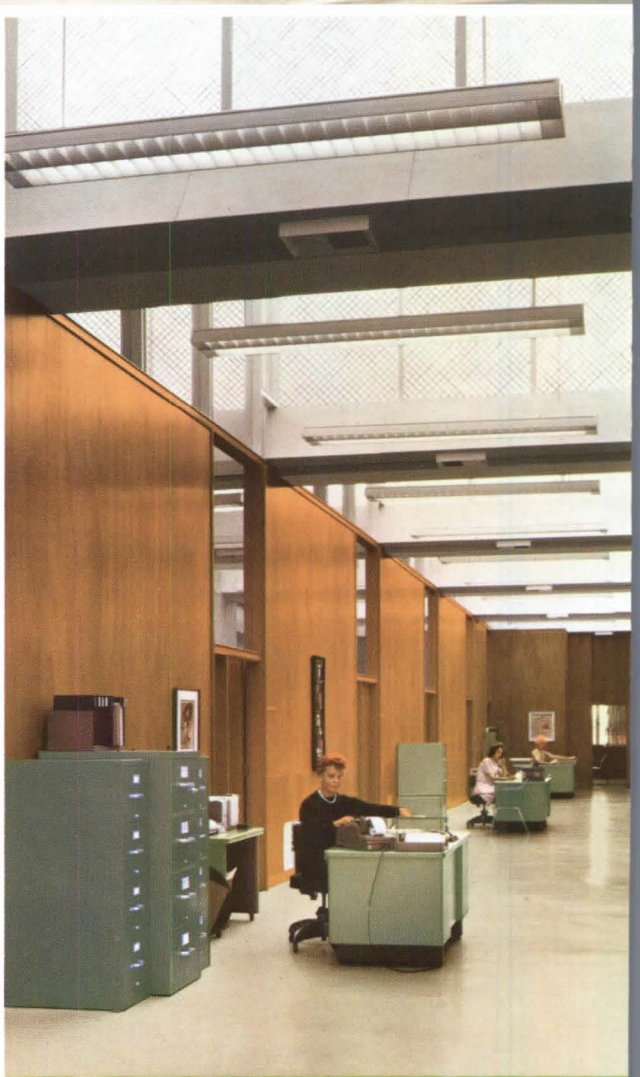

BUILT TO BE BRIGHTER — INSIDE AND OUT

Extensive glazing of translucent light diffusing Smooth Rough Misco floods working areas in this modern environment with great quantities of natural illumination . . . provides shadowless daylight that makes seeing tasks easier and accomplishes a feeling of spaciousness. And MISCO, the diamond-shaped welded wire netting in the pattern, capably performs its function as an approved fire retardant. Specify glass by Mississippi. Available in a wide variety of patterns, wired and unwired, at better distributors of quality glass.

Architect: Clark, Stromquist, Potter & Ehrlich, Palo Alto, California

Contractor: Barrett Construction Company

Glazing: Ful-Trim Division of Texas Aluminum Company

NEW CATALOG

Contains pattern descriptions, light distribution charts, transmission data. Send for your free copy today.

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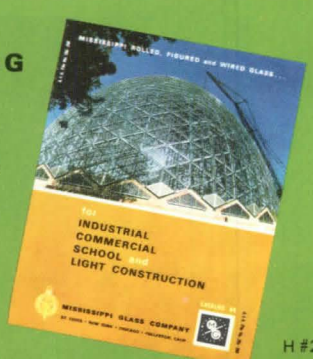

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July 1964 **PROGRESSIVE ARCHITECTURE®**

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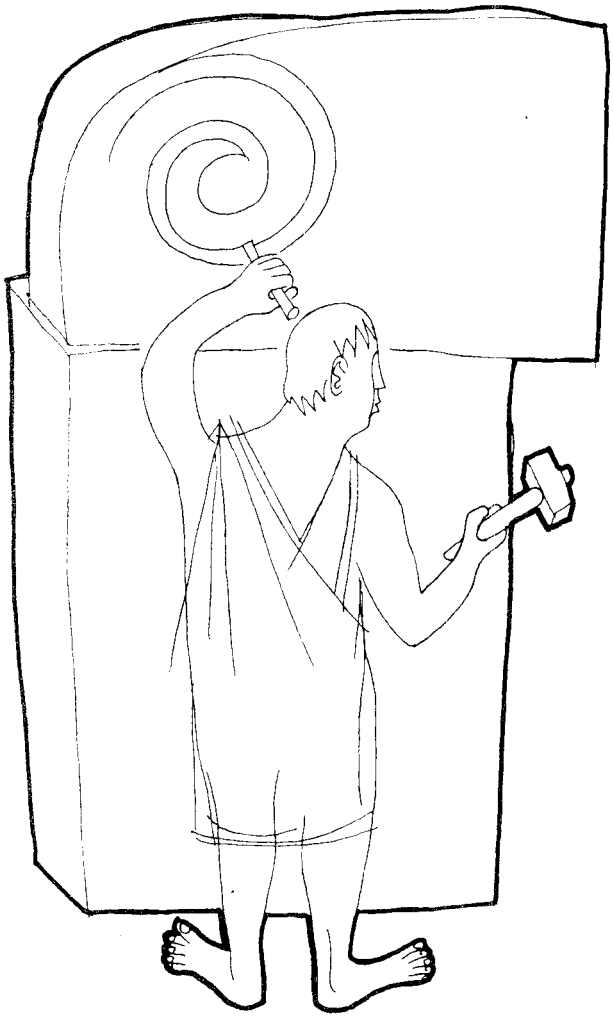
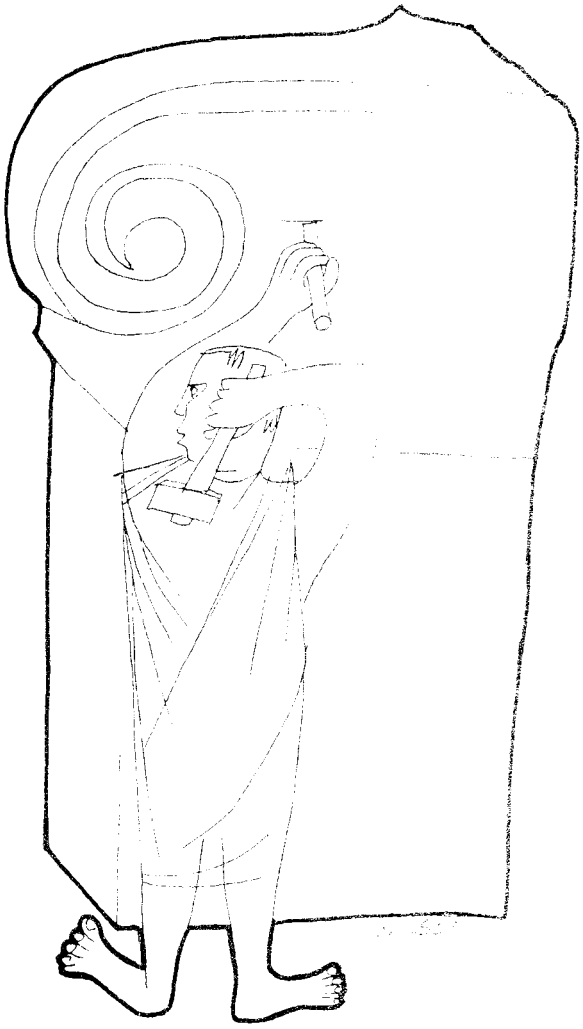




Architectural Forum will soon roll off the presses for the last time. Its death comes as a shock to the profession. Even for us in the architectural publishing field who suspected that Forum has been on its deathbed for some years now and that the end was near and inevitable, the actual moment of death was, as it always is, a deeply felt experience. Yet the filicidal *coup de grâce* delivered by Time-Life's management on May 26, when it announced Forum's merger with Fortune, was only an aftermath of a death sentence imposed much earlier by others. Who, then, imposed the death sentence, and why?

Forum's demise began when it decided that the simple, traditional relationship between the three parties to the building contract (client commissions, architect designs, contractor builds) was no longer valid and adopted a policy that stressed the "building team" concept. Under this theory, all three parties have an interest and also an influence in the design of buildings—in how they will work, how they will look, and of what materials they will be constructed. Having made this decision, Forum began to aim its editorial content not only at architects, but also at clients and contractors—and even those involved in real estate, financing, and other activities inherent to the building industry. Thus it became a semiprofessional magazine.

Unfortunately, this idyllic concept that everybody connected in any way with the building activity has similar interests is not true. If it were, our environment would be quite different today. The sad truth is that most clients are interested primarily in a return on their investments, bankers in the safety of their loans, and contractors in profits from construction. Their interest in architecture, if any, is quite marginal.

It is therefore open to question whether one can edit successfully a magazine aimed at such divergent groups. Forum's *over-all* circulation was large, but only when compared with purely professional magazines; it was small in relation to the total market it tried to reach. And its *professional* circulation, the smallest of all architectural magazines, was gradually slipping still further down.

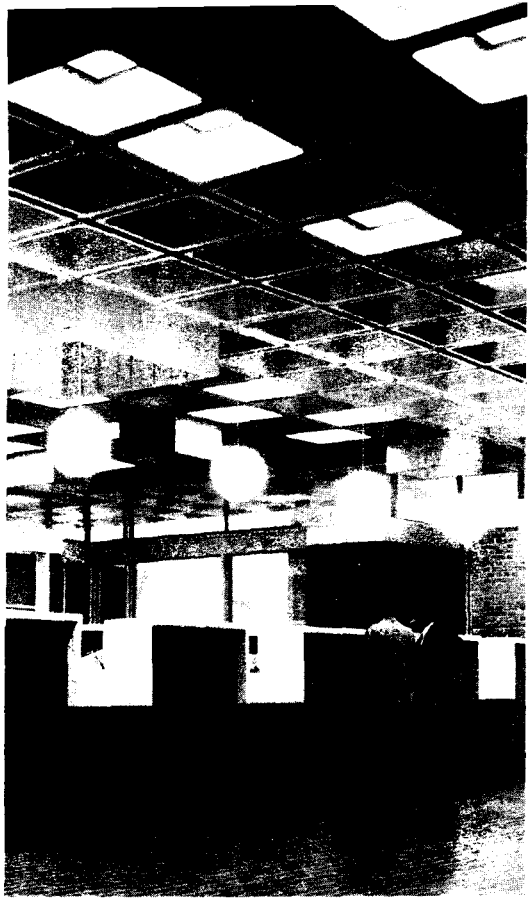
There is no escaping the fact that, in the long run, the lifeblood of a magazine is its subscribers. The volume of advertising usually follows closely the quantity and quality of readers a magazine has, and, like it or not, advertising is the economic base of a magazine such as P/A or Forum. Without adequate income from advertising, neither could survive unless it were subsidized. And what advertisers watch is not only the number of subscribers, but also their willingness to be long-time readers through resubscription. Subscriptions and resubscriptions, therefore, usually make or break magazines. They are votes of confidence that make a magazine's life possible. The lack of them is a vote of non-confidence and an imposition of a death sentence.

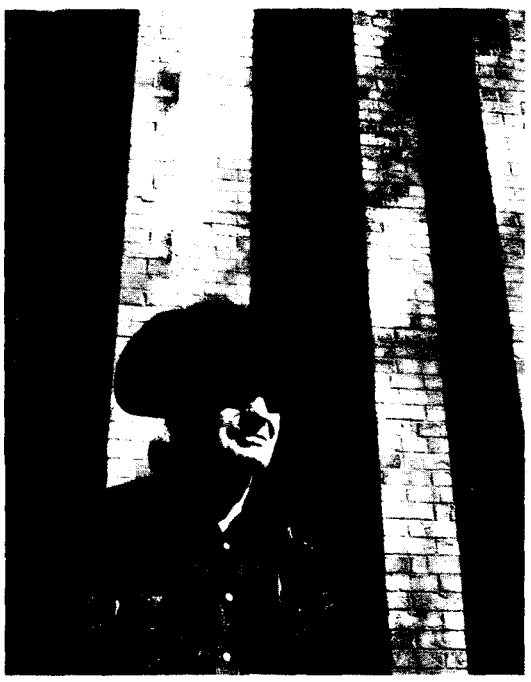
So it could be said it is the architectural profession that, through its indifference, declared the death sentence on Architectural Forum, or at least that it was co-signer to the verdict.

It is a credit to Forum's publishers and editors that in spite of constantly worsening economic conditions they never deviated from their adopted policy, never abandoned their ship. And now they will sink with it, all flags unfurled. Such devotion to an idea is rare in today's publishing world and deserves recognition.

We, on P/A, enjoyed our editorial competition with Forum. A good challenge is always beneficial. However annoyed we may occasionally have been by Forum's supercilious attitude, we had to respect its lively editorial contents. We always disagreed with Forum's approach, but we never accused it of editorial mediocrity.

With the passing of this worthy competitor, the challenge it created dies with it. This makes P/A's task greater and more difficult. We realize that our responsibility to the profession has been magnified. ■





SMALL BANKS:

If the dollar inspires a certain reverence in our affluent society, it is nevertheless proper (in our Puritan society) to conduct the worship in very carefully prescribed ways. For any institution built solely on money, the proprieties are even stricter. A bank is thus highly concerned with its "image"—more so than most commercial institutions. A bank has other problems; it must lead and follow the Great American Public's attitude toward Money (how to get it, keep it, spend it), when that attitude is not a single one, but a composite of changing and conflicting ideas. It is surprising, then, that from different parts of the country have come three small banks whose "images" have definite points of similarity.

In mood, these three were after the same effect—an effect which is itself a composite of attitudes. It may be called "monumentality with friendliness" in one instance, "dignity with excitement" in another, "restraint with progress" in a third; but however the duality is phrased, it is universally present.

Although two of these buildings are private banks in small Western towns, and one is a cooperative lending association in a major Midwestern city, their program requirements were essentially similar. Inside: a large open area for routine transactions, a few offices for consultation and management, and a vault. Outside: parking and drive-in facilities. Each of these buildings arose from the need for larger space for expanding operations; and each has built-in possibilities for further expansion, two into quarters that are presently leased to tenants, the third into a tower not yet built. At present, they are roughly the same size. In appearance, they each seem to be one-story volumes, but they function at several levels inside.

For reasons deriving probably as much from site as from anything inherent to the banking program, each has solved its planning problems within a square layout. Each is set on a podium and is surrounded or punctuated by free-standing columns. Perhaps we haven't moved very far from the time when it was appropriate to worship the dollar only in a Greek temple; there is a certain Greek classicism in these banks—in their general proportions, in their columnar or colonnaded construction, in the sense of space within.

Inside the classical envelopes, though, there are significant variations. At one end of the continuum is the bank by Kenneth Bentsen for the border town of Edinburg, Texas. The encircling arcade answers the need for protection against a severe sun and is an attempt to revive the indigenous architectural character in an area where more than half the population is of

A Credit to their Communities

Mexican origin. The interior of the bank is symmetrical around its four central "cores" and four massive piers. The bank by W. C. Muchow, in the small town of Loveland, Colorado, also has four central columns, and also has a load-bearing system at the periphery. But the sunscreen that is integrated with the exterior brick piers has a vibrating irregular rhythm; and behind the screen wall, the interior space is formal but asymmetric. The ultimate freeing-up of plan occurs in the Credit Union that Ralph Rapson has designed for the University of Minnesota. There is complete flexibility of plan here, with offices and other areas jutting out where they must, and being contained only by the over-all outline of the roof.

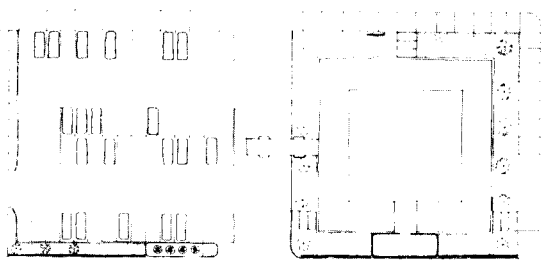
In all three, the quality of design is high, possibly reflecting the nature of the client. Banks have a position of responsibility in the community—as builders of its past and as guardians of its future. Even the materials used in these three buildings are keyed to this image: each building has a reinforced-concrete structure, each has walls of brick. Each building, therefore, has monumentality, strength, permanence, with nothing too exotic or expensive, nothing too gaudy or newfangled.

These are not inexpensive buildings. They have avoided the common commercial practice of trying to be an eyecatcher at all costs—or at *least* cost. Banks *are* commercial ventures, of course, and there is keen competition among them for the available patrons and their available funds. But good taste will not permit a bank to use many of the techniques open to other commercial ventures. We only hope that these particular banks do not feel it necessary to offer free kitchenware, folding suitcases, and the like, to all comers. They are already giving their patrons the gift of a better environment.

And the prospect of a better environment for the community at large is possibly their greatest service. The bank in Texas, Bentsen reports, has already spurred other building and remodeling in the community, and perhaps will be responsible for reviving a genuine regional flavor. In the Colorado town, the new bank was a deliberate departure from the norm, and reaction to it was understandably mixed, but its excellence (even its existence) will hopefully prod others to continue along this road. And in Minnesota, the Credit Union office is an important early building in the redevelopment of the area surrounding the university. Its high standard is expected to have a significant impact on all future construction in the area.

The local bank, in caring about its own image, is compelling at least these three communities to become more aware of theirs.

Edinburg



FIRST NATIONAL BANK OF EDINBURG • EDINBURG, TEXAS • KENNETH BENTSEN ASSOCIATES, ARCHITECTS

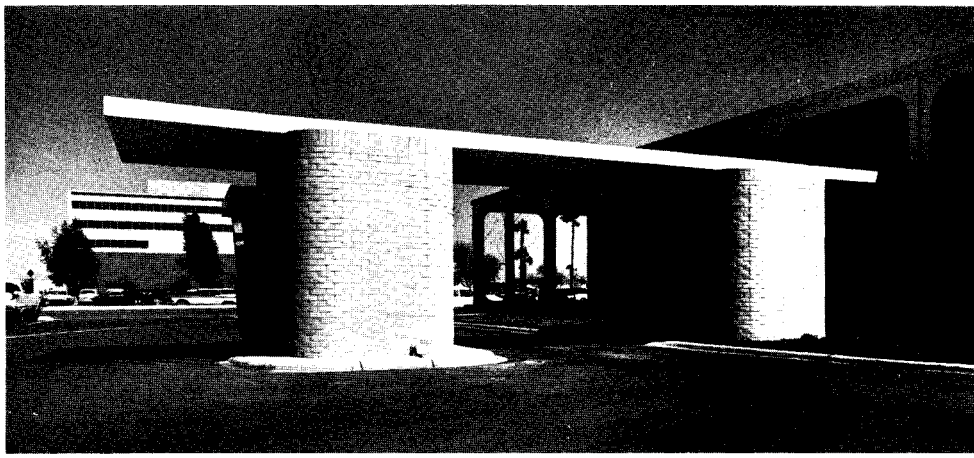
In answer to the client's requirements, this project is designed for two phases of construction. The first phase provides for the present needs of the bank, and, in addition, will serve as a base for a rentable five-floor office tower above the bank, which will be executed as phase two of the program. The design permits the construction of phase two without interrupting banking operations.

The square plan has four masonry masses housing vaults and functions re-

PHOTOS, EXCEPT AS NOTED: BALTHAZAR

quiring privacy. The remaining interior space, which contains bookkeeping area, officers' platform, and the central banking room, is glazed to the outside. The ceiling of the main space rises to the underside of the first floor of the future tower, thus giving it an imposing height. Between this higher ceiling and the lower perimeter ceiling is a clerestory that provides additional natural illumination to the interior. It will also visually separate the future tower from its base.

The banking room is penetrated by four concrete columns, which now support the raised concrete central roof and eventually will support the tower. The lower roof



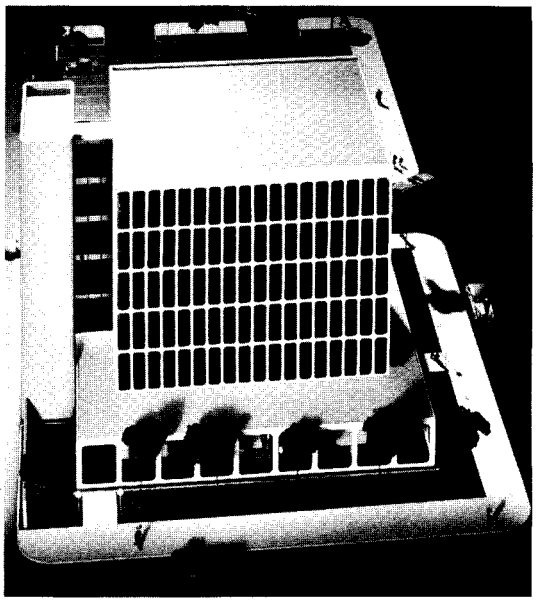


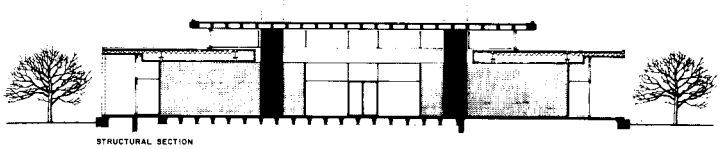
PHOTO: F. WILBUR SEIDERS

is of steel construction, supported by steel pipe columns within the masonry walls.

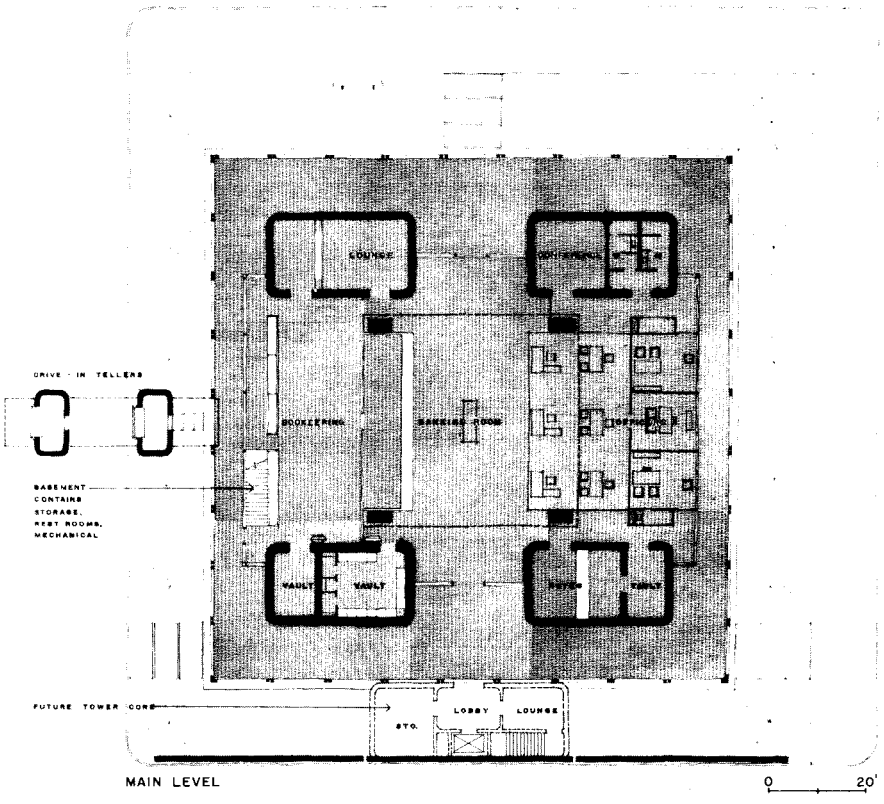
The architects found that few buildings in Edinburg had captured the architectural character of the surrounding region, which contains several good examples of Mexican Colonial architectural. They therefore decided to incorporate some of the traditional elements in their design. They developed a deep overhang for the building, supported on a colonnade, to control the semitropical sun.

The structural support of the colonnade is composed of tubular steel members; precast concrete frames are inserted between them. The ¼-in. spaces between the precast elements and the steel columns have been left open to allow light to filter through. The shape of these concrete frames, with their rounded corners, echoes the shape of the four masonry enclosures and of the drive-in teller windows.

The details of the interior are also refined. Dark black-brown brick pavers, used for the flooring on both interior and exterior, are also used for the facing of the tellers' counter and for the base of the check-writing stand. These pavers complement the light gray-beige brick, white plaster, and walnut paneling. Natural lighting provided by the clerestory is supplemented on dull days by hidden fluorescent strips, as well as incandescent downlights and fluorescent lighting recessed behind circular openings. Classic modern furnishings have been mixed with Mexican antiques and art objects by the interior design coordinator, Sally Sherwin Walsh, in a way that carries out, the architects say, the basic concept of the building.



STRUCTURAL SECTION



MAIN LEVEL

0 20'

The base of the check-writing stand (below, left) *is of the same brick pavers used for the floor and tellers' counter in the banking room* (above). *The conference room* (below, right) *shows a mixture of classic modern and antique Mexican furnishings. An 18th-Century Mexican table is surrounded by Brno chairs covered in natural leather. An antique wooden "Santo" is used as a wall sculpture.*

PHOTO: F. WILBUR SEIDERS

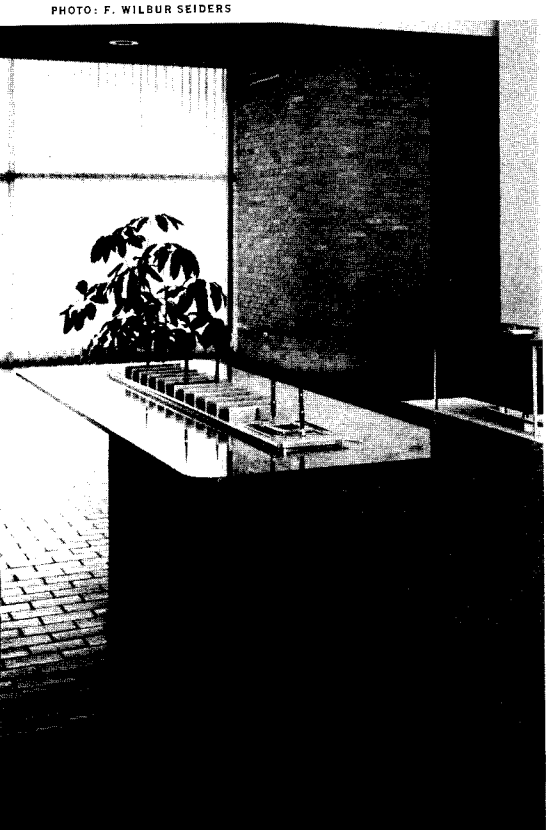
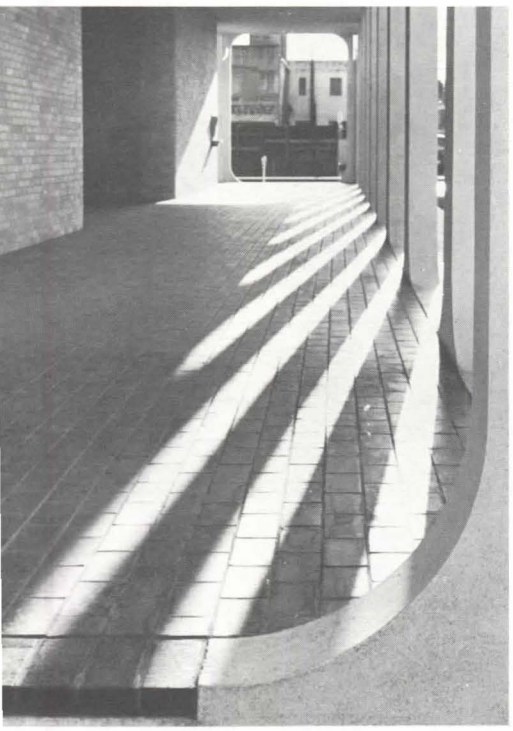
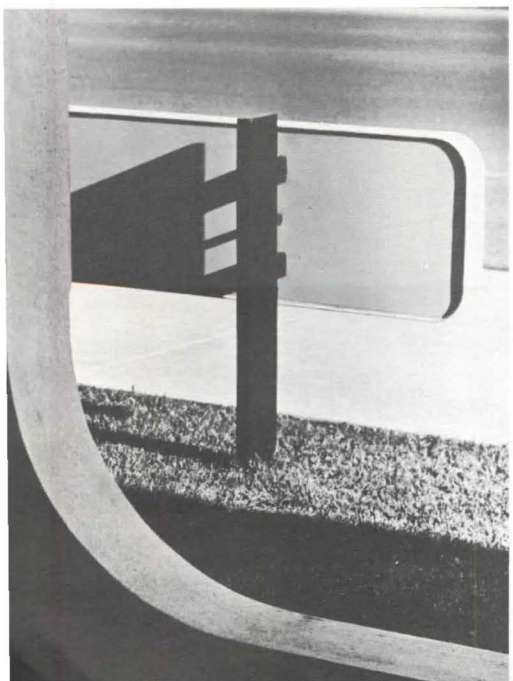


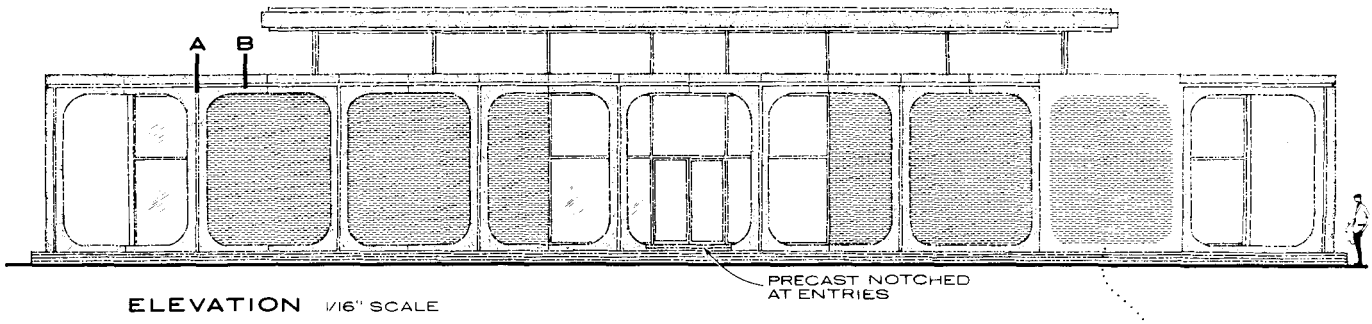
PHOTO: F. WILBUR SEIDERS

PHOTO: F. WILBUR SEIDERS

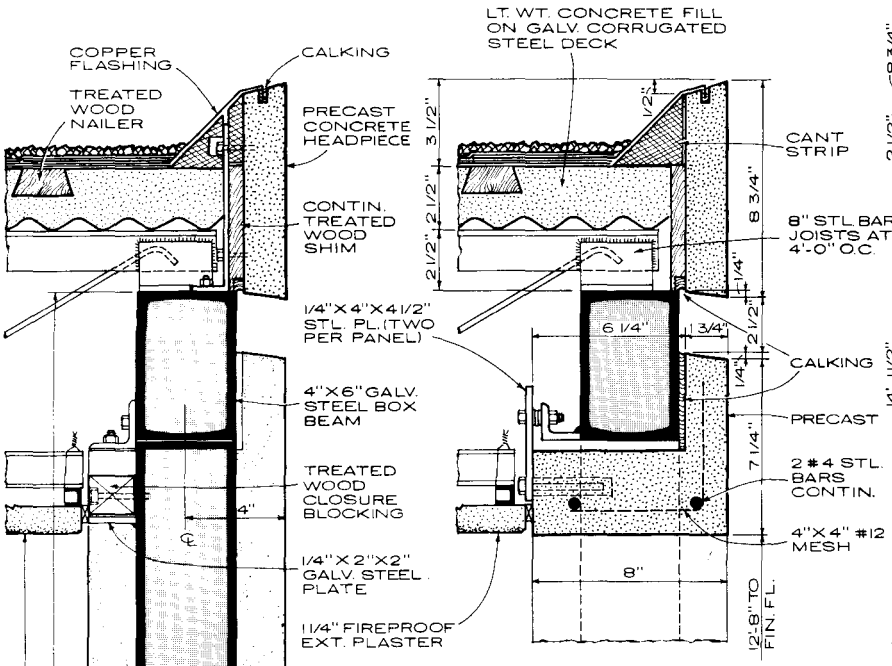




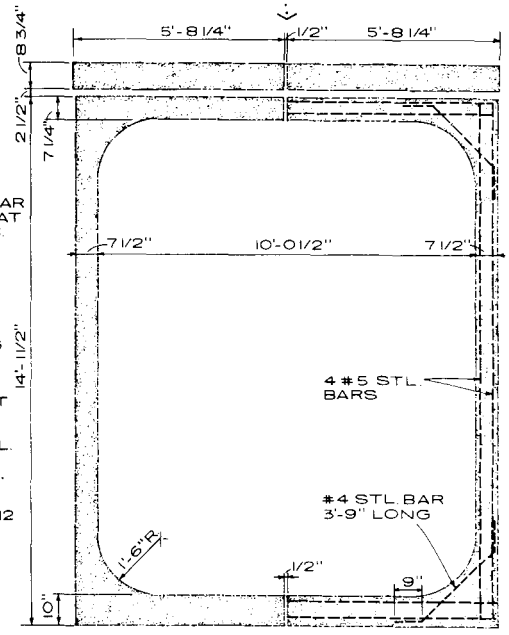
The glass walls are of ¼-in. gray glass set in black-painted, tubular-steel frames with aluminum stops (left, top). *At entrances to the colonnade, the bases of the precast elements are cut away to receive a tread of black-brown pavers* (left, middle). *A space is left between the steel columns and the precast concrete frames* (facing page). *The design of the translucent plastic sign on the front of the bank* (left, below) *visually restates the shape of the four masonry enclosures and the drive-in tellers' booths.*



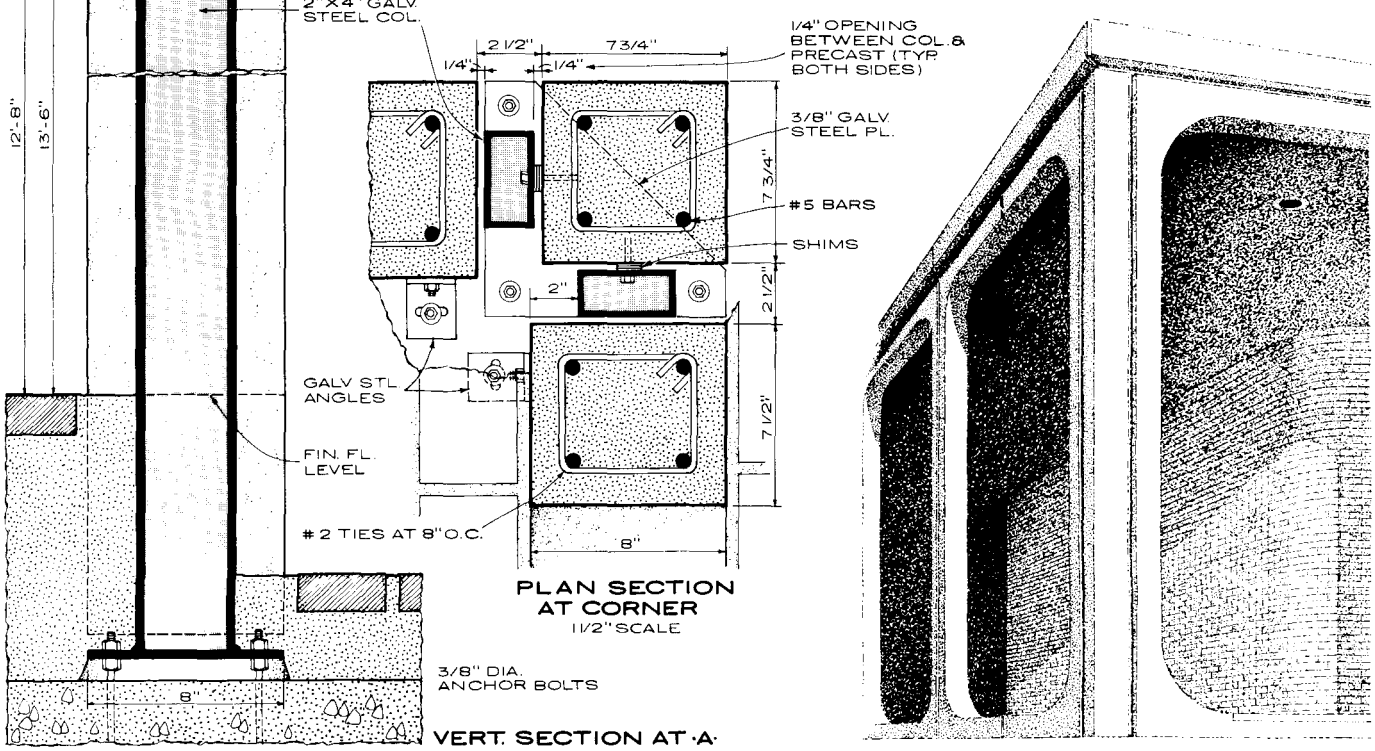
ELEVATION 1/16" SCALE



VERT. SECTION AT ·B·



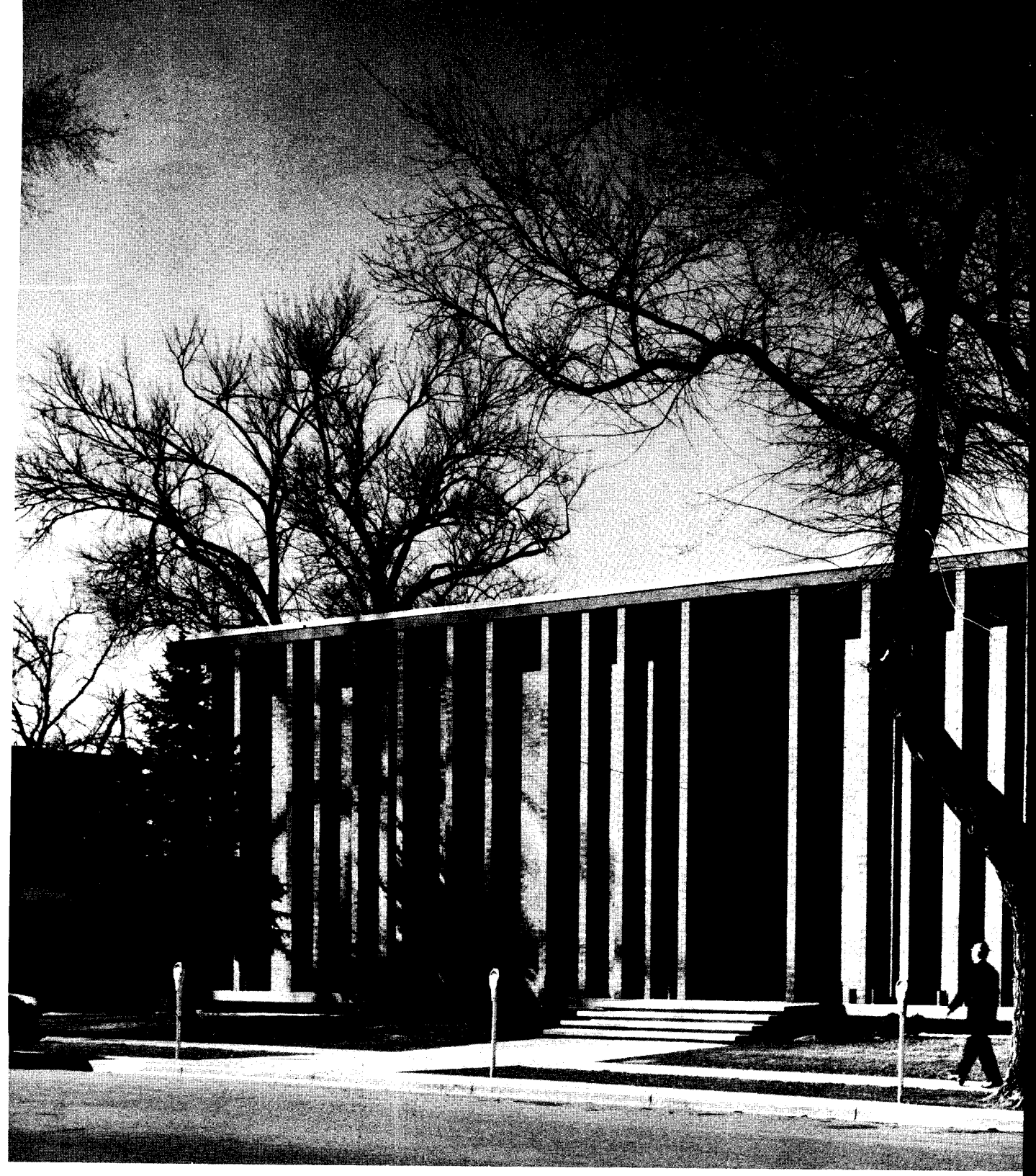
TYP. PRECAST CONCRETE UNITS
3/16" SCALE

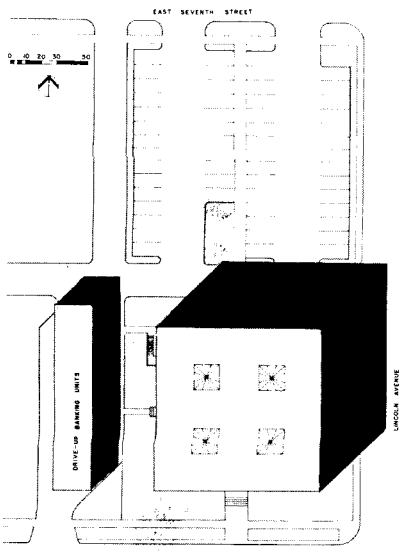


PLAN SECTION AT CORNER
1 1/2" SCALE

VERT. SECTION AT ·A·

FIRST NATIONAL BANK OF EDINBURG: Edinburg, Texas KENNETH E. BENTSEN, Architect	SELECTED DETAIL COLONNADE





Loveland

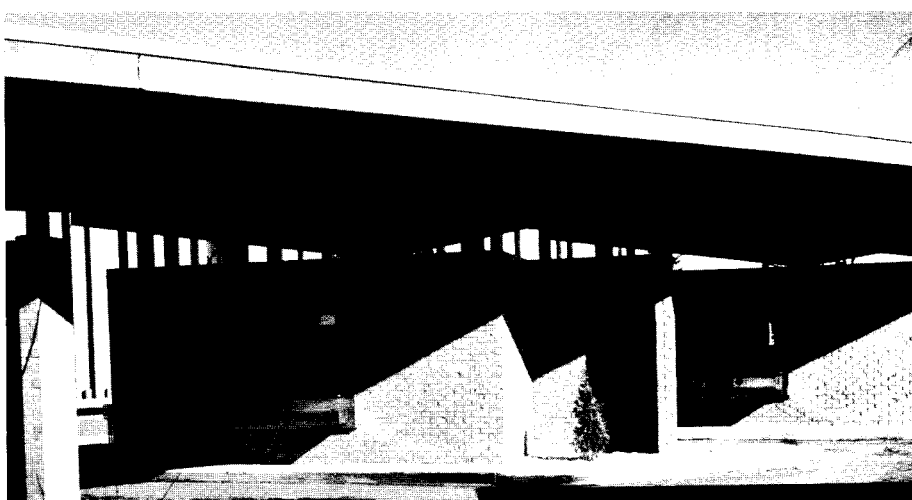
FIRST NATIONAL BANK IN LOVELAND • LOVELAND, COLORADO • W. C. MUCHOW ASSOCIATES, ARCHITECTS

The exterior wall of this bank, suggesting a strong fortification, is appropriate to the program, which called for a building having "a certain monumentality" and giving the appearance of a "financial institution rather than any other type of commercial building." At the same time, the clients wanted the bank to convey "a feeling of warmth and friendliness," qualities the architects have provided by using richly toned brick, the predominant building material in the area, and by fragmenting the structural elements into numerous smaller members.

The load-bearing wall on the exterior, for example, is broken up into a series of

reinforced brick piers with fins. This discontinuous wall, which was also intended to serve as a screen against the brilliant Colorado sun, gives a strong third dimension to the design of the façade. The play of light and shade on the façade makes it an architecturally meaningful sunscreen.

Except for variations to accommodate doorways, the screen is identical on all four elevations. Piers placed every 8 ft

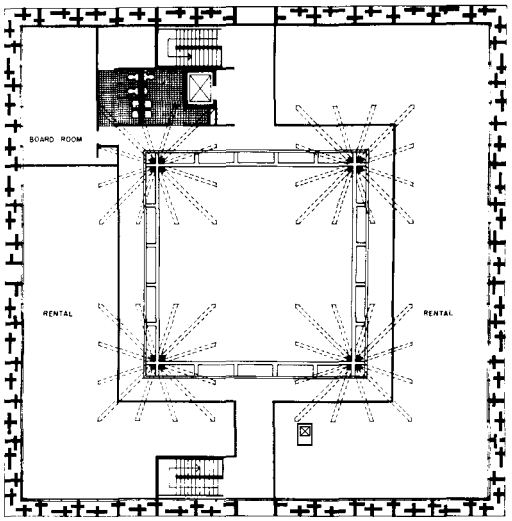


extend the depth of the space between the roof overhang and the glass wall, which is set back; intermediate piers, less deep, are placed irregularly between them. Both sets of piers have lateral fins perpendicular to them, which vary in width and in placement on the piers. But in height, the fins stop uniformly short of the roof, leaving a continuous strip window for the mezzanine floor. From a distance, this quasi clerestory reads as a heavy shadow cast by the roof.

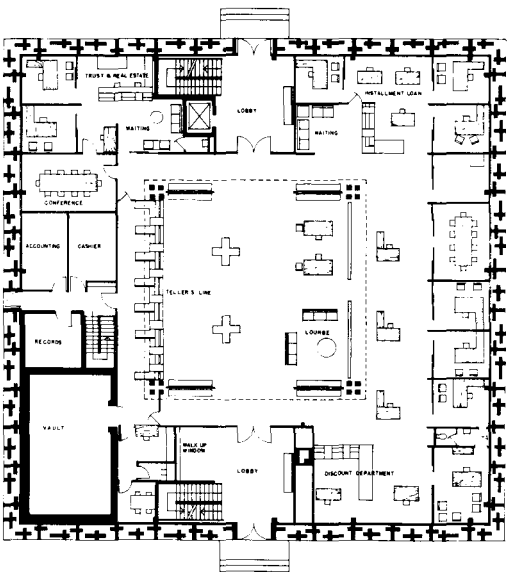
On the interior also, the theme of fragmenting the structural elements is reiterated with consistency. In the central banking hall, four columns that support the roof, along with the load-bearing brick piers, are each broken up into a cluster of four smaller columns. Each cluster is gathered together again at the top, where it fans out into a star-form cap.

The star-form caps make 15-ft-square skylights above the columns possible; these not only admit natural light to the interior but also dramatize the structure. In addition, the breaking up of the columns into four members makes it possible to articulate the girder that supports the mezzanine beams by running it through each cluster of columns. The mezzanine is set back from the girder and rests on exposed, prestressed haunch beams; the space between the girder and the beams, where heating grilles are concealed, is emphasized with fluorescent lights. The outer perimeter of the mezzanine rests on concrete columns placed inside the glass line. The firm responsible for the structural engineering was Ketchum, Konkel, Ryan & Fleming.

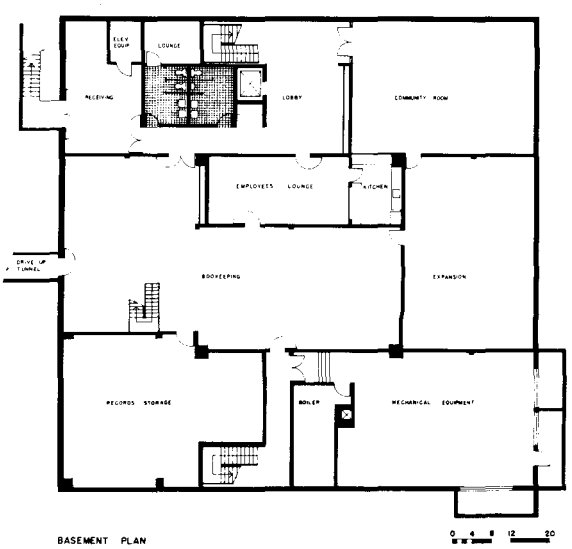
The structural themes are reiterated in the drive-in teller's windows. The motif of the offset fins of the exterior piers is also carried out in the tellers' counter, which is also of brick, and is reiterated in the random stripe carpet, which, like the earth colors of the brick, is in orange-brown, ochre tones. Walnut check-writing stands with integral lighting repeat the cruciform plan of the piers.



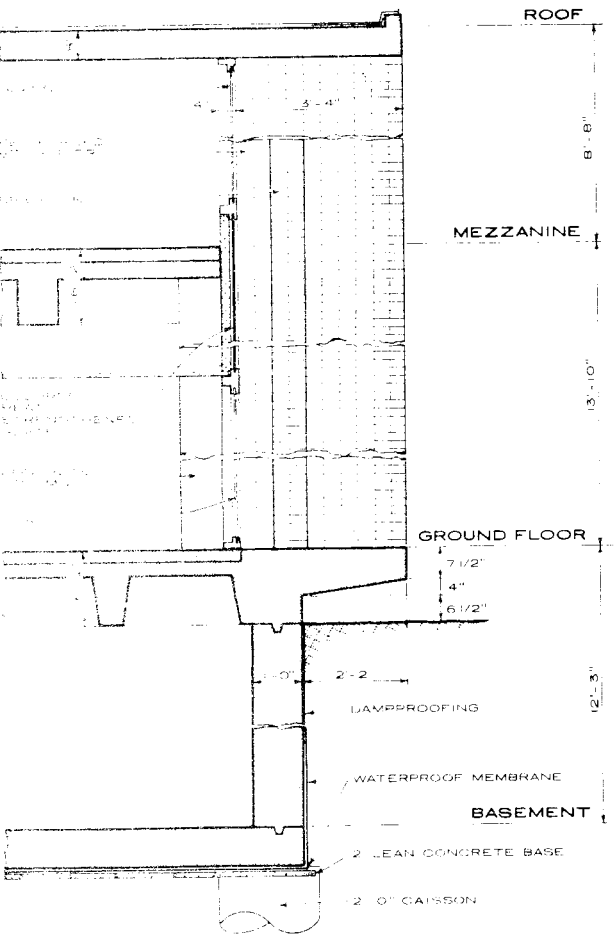
MEZZANINE PLAN

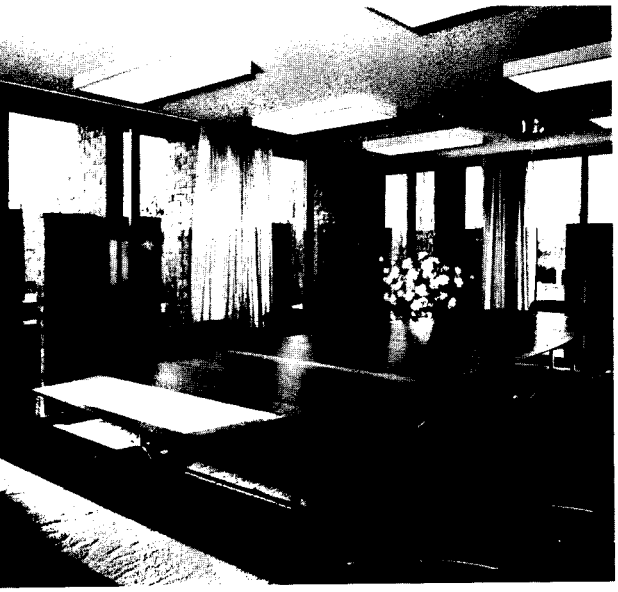


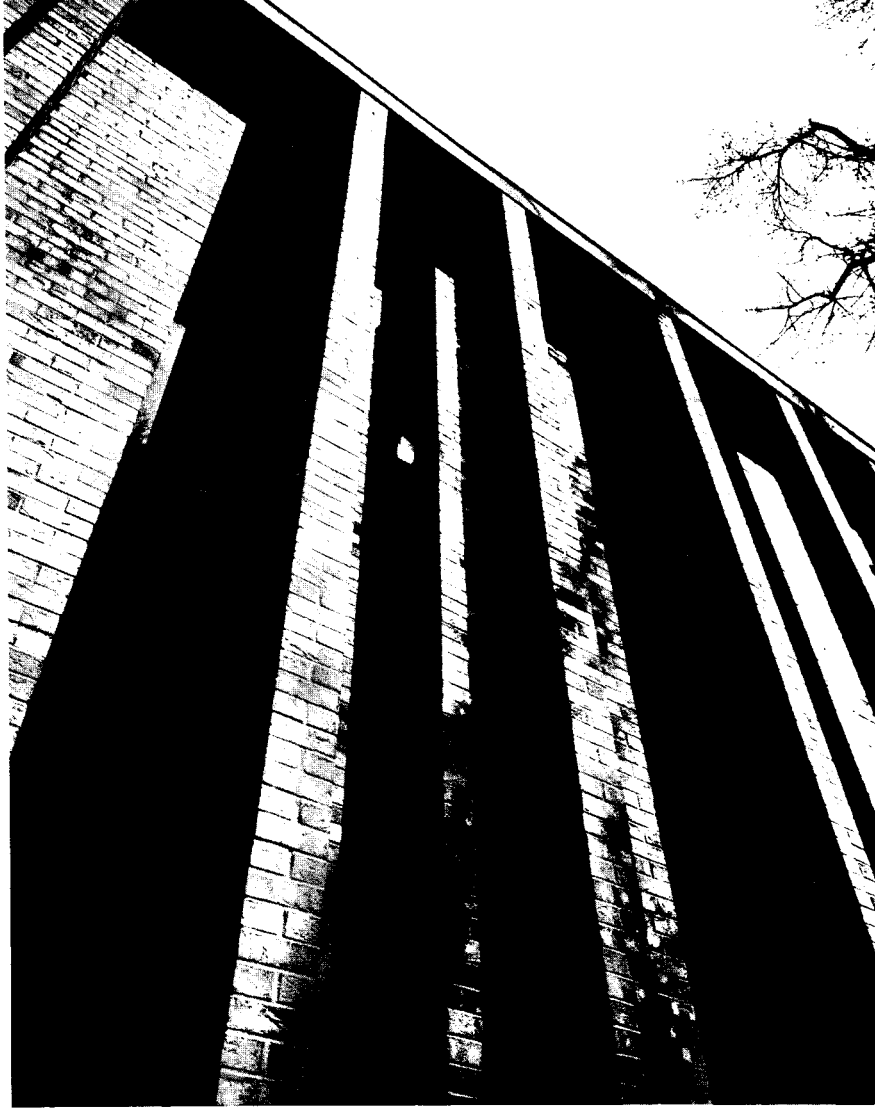
MAIN FLOOR PLAN



BASEMENT PLAN

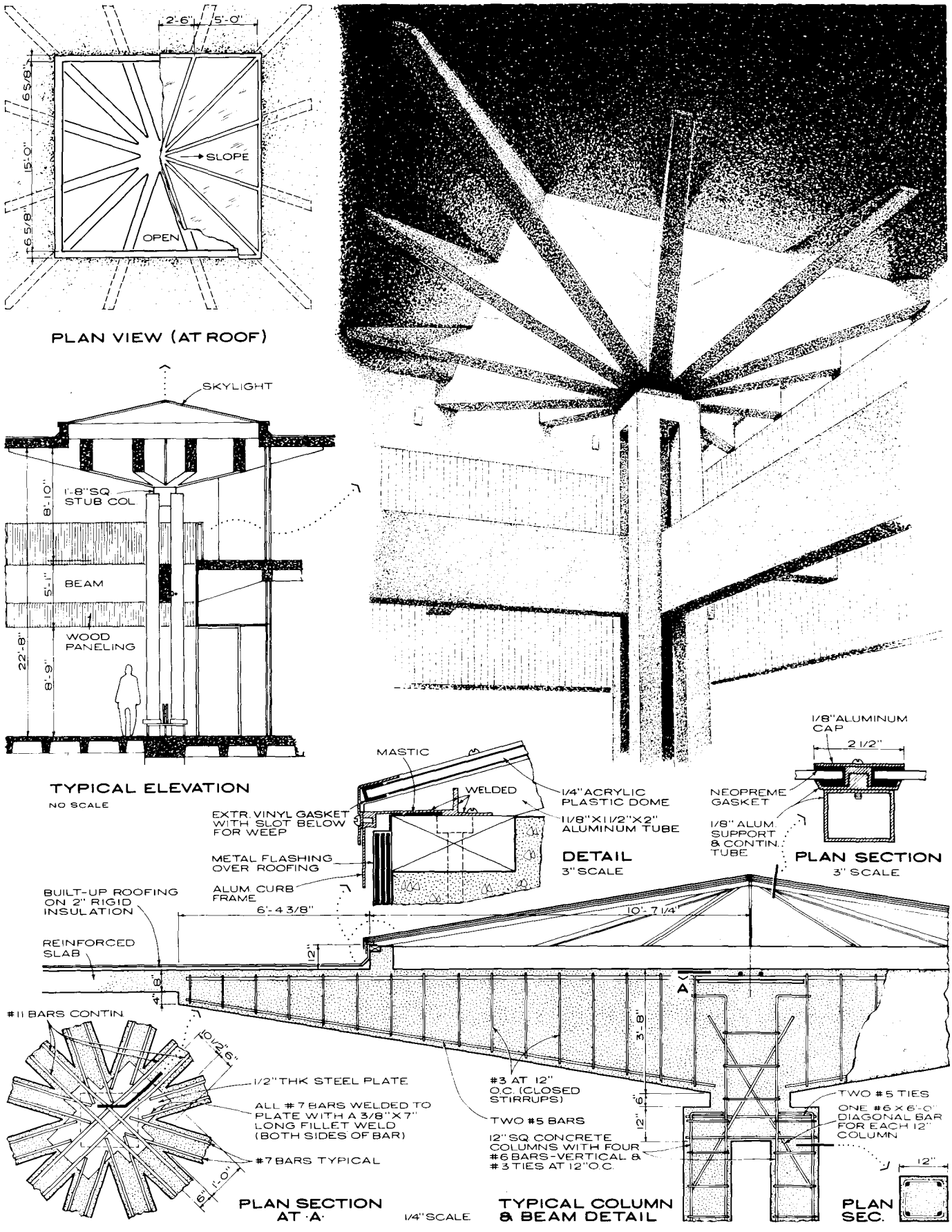




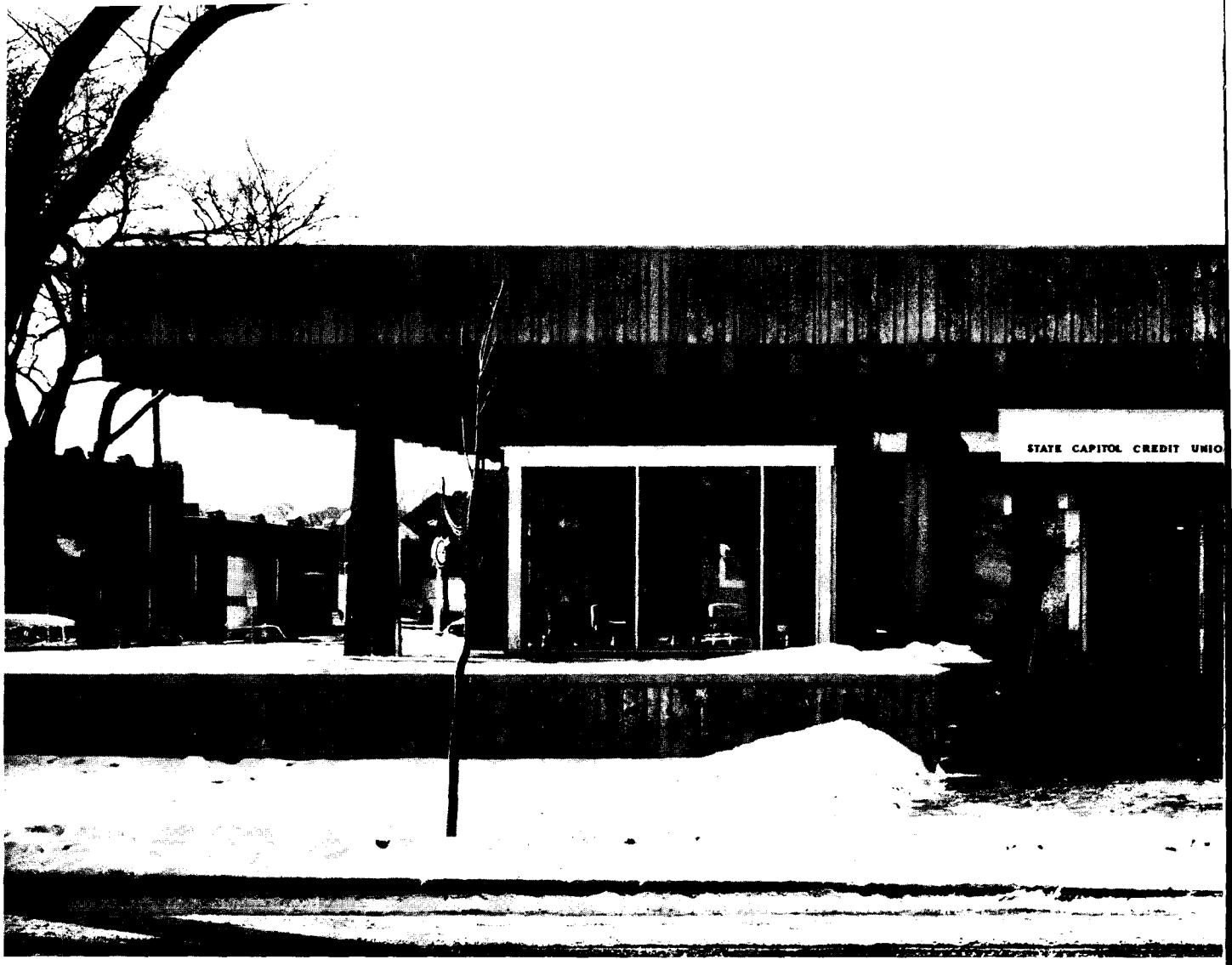


The main floor of the building is cantilevered over a strip of white pebbles, which emphasizes its detachment from the ground. The fins on piers that are set on the 8-ft module are uniformly recessed; those on intermediate piers are irregularly placed. The fins stop short of the roof, leaving a clerestory-like window for the rooms on the mezzanine, such as the Board Room (above). *Since the offices under the mezzanine get less natural light, supplementary lighting was provided in the form of a continuous luminous ceiling with a gold grid. At night, the exterior is lighted by uplights at the bases of alternate piers.*

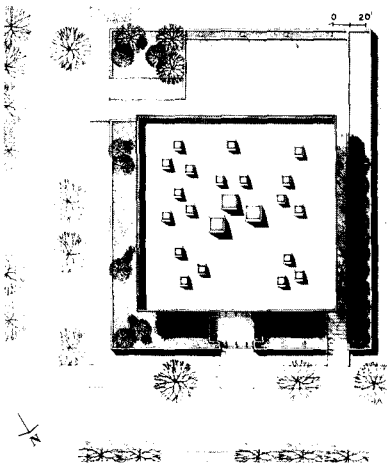
Four central column clusters in the banking room (left and below) *have star-form caps with skylights above them. The girder that supports the mezzanine beams runs through the clustered columns. The space between the girder and the mezzanine, where heating grilles are lolated, is emphasized by lighting.*



FIRST NATIONAL BANK IN LOVELAND: Loveland, Colorado W. C. MUCHOW, Architect	SELECTED DETAIL SKYLIGHTED COLUMN



Minneapolis



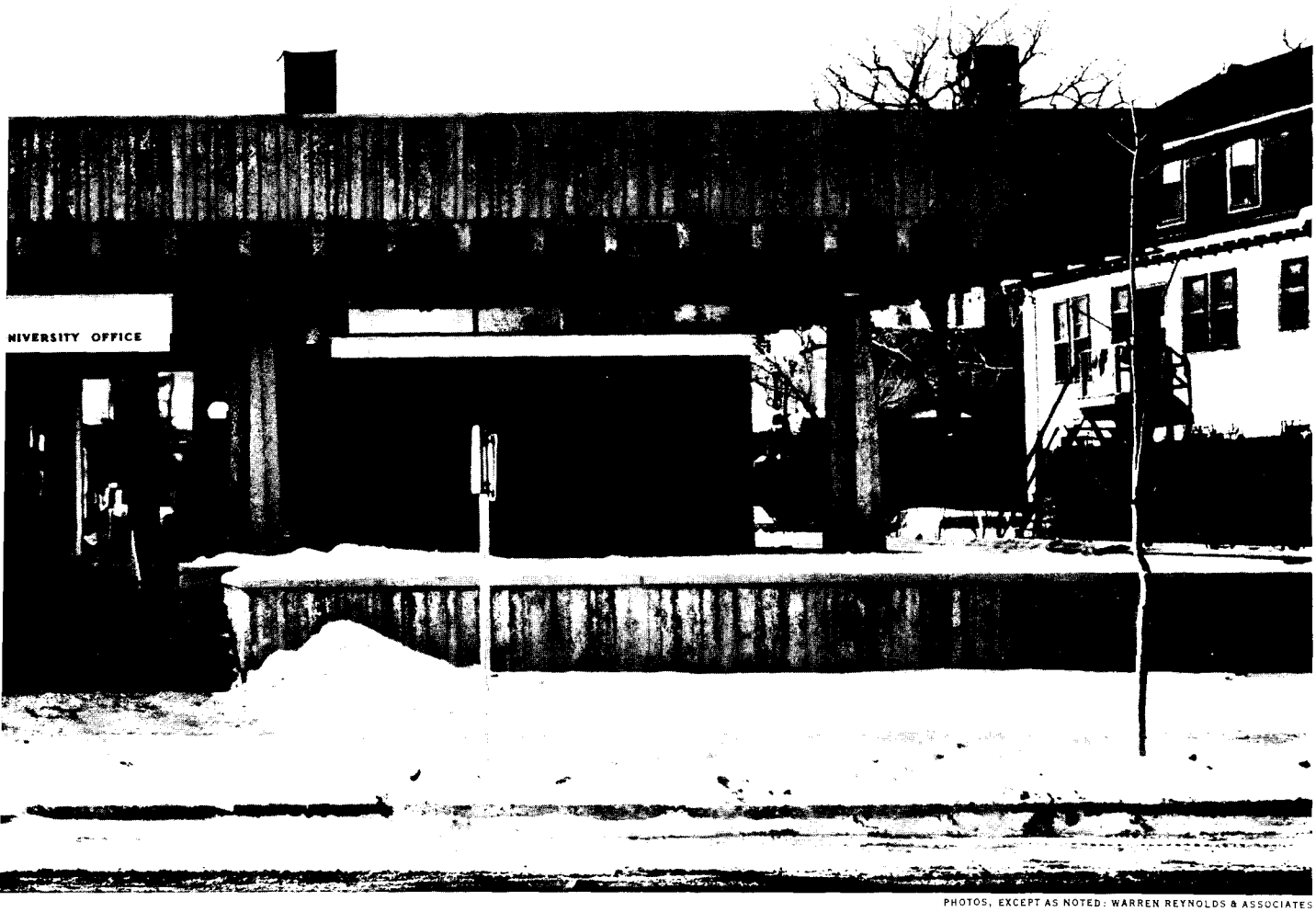
UNIVERSITY OFFICE • STATE CAPITOL CREDIT UNION • MINNEAPOLIS, MINNESOTA • RALPH RAPSON, ARCHITECT

The duality of this building—a single concrete canopy covering an interior where each banking activity has been fragmented into its own articulated space—suggests the dual aspirations of the client. The State Credit Union, which is a cooperative membership organization that provides banking and loan facilities for State and University of Minnesota employees, desired "a restrained and dignified physical expression that would create the image of a progressive and dynamic institution."

The strong roof form, described by the architect as possessing a "quiet, monumental discipline," is supported on 16 tapered cruciform, concrete columns. By separating the roof structure from the enclosing walls, the architect has provided "maximum plan flexibility *and* over-all discipline."

The dark brick walls and the glass walls that enclose this complex of articulated spaces, such as the drive-in teller window (*facing page, right*), extend 9 ft to a white-painted wood cap. From this point to the underside of the waffle slab is a clerestory, which runs the length of the irregular perimeter of the interior space.

As is to be expected from Rapson's recent work, the irregularity and complexity of the plan is reiterated in the section. The coffers in the exposed waffle slab, for example, vary in depth from 14 in. to 4 in. at the column heads to provide adequate



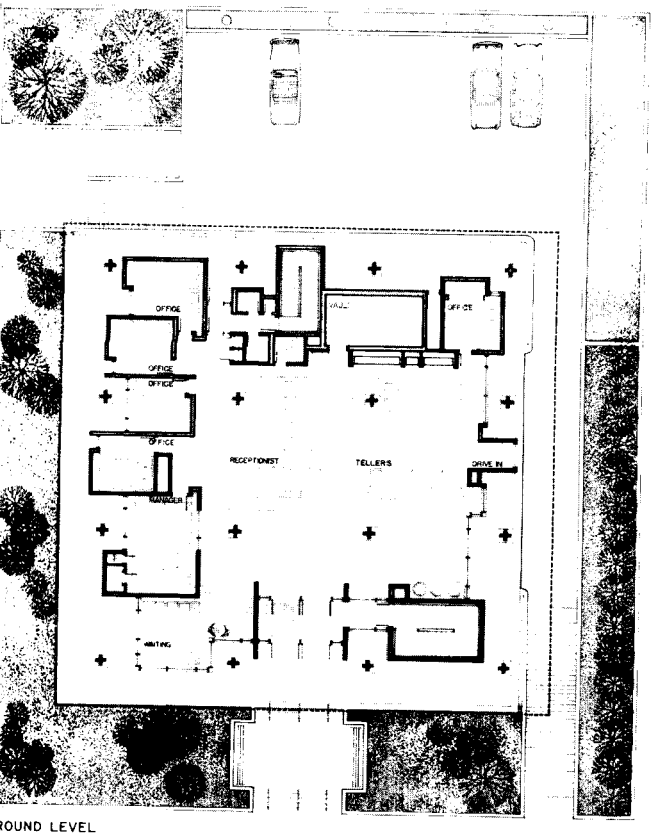
PHOTOS, EXCEPT AS NOTED: WARREN REYNOLDS & ASSOCIATES

shear and moment section. Indeed, the design of the entire waffle slab serves to reiterate the asymmetrical plan—having skylights project below the level of the ceiling, placing these skylights over the major interior spaces so that they further define them, incorporating artificial lighting into the skylights and coffers to further vary their depth. The result is a ceiling composed of projections and setbacks that reinforces the spatial variety of the building.

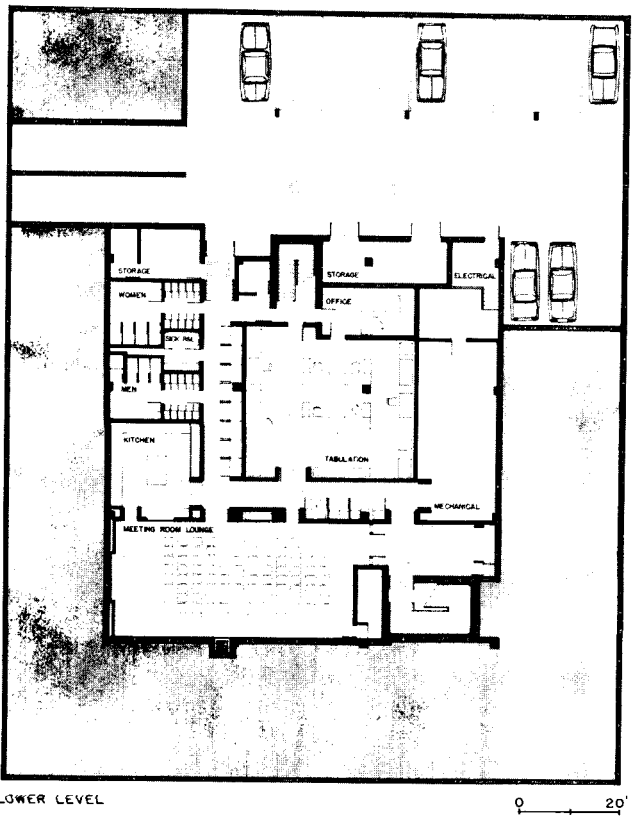
Besides the usual program requirements of a small bank, which generally includes "room for expansion," the Credit Union also required an all-purpose room for lectures, movies, dinners, and the like, which was to be available to outside groups as well as to its own members. This lower-level space has lighting and air-conditioning incorporated in molded ceiling forms similar to those in the entry of the architect's Tyrone Guthrie Theater.

Zoning restrictions limited both the building height and coverage of the site, and made mandatory large parking facilities. The latter was also necessary since the building is near the principal University shopping area. Parking is therefore located both on the main floor and basement levels. To facilitate ease of access to the lower-level garage, and also to give added dignity, the building was set on a grass-planted concrete podium, which defines the property limits. The major pedestrian access is from Fourth Street, which has a bus connection to the University shopping area.

PHOTO: RALPH RAPSON



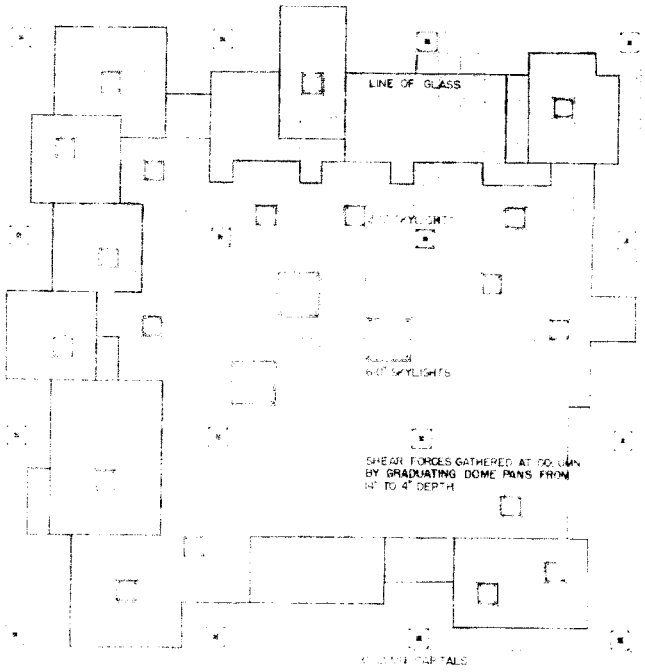
ROUND LEVEL

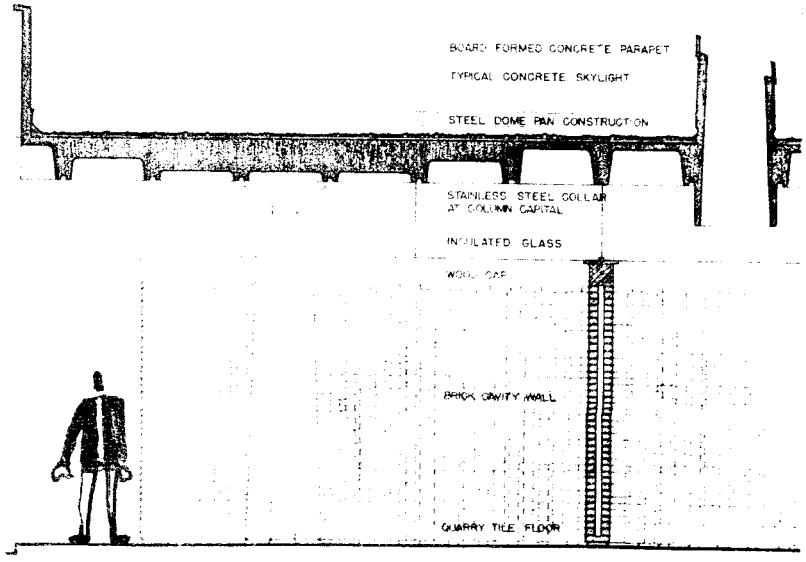


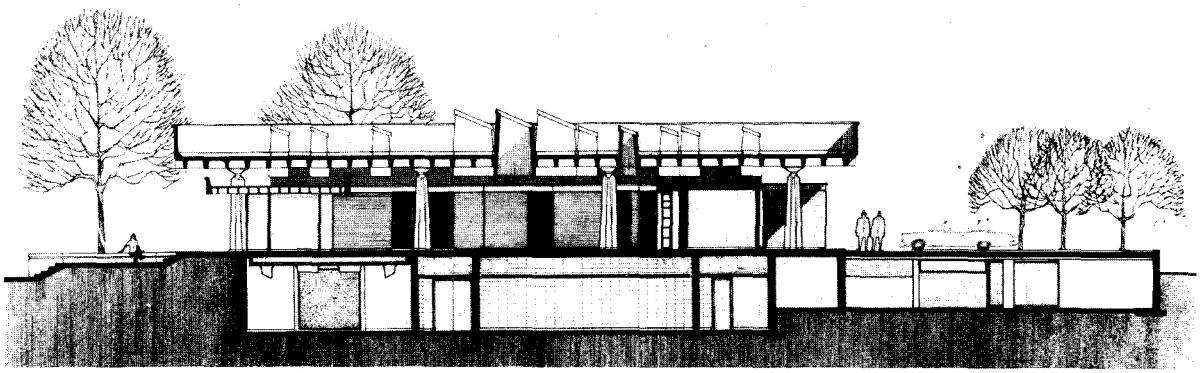
LOWER LEVEL

0 20'

Skylights and artificial lighting are incorporated into the coffers of the exposed waffle slab (facing page, top). *These coffers were graduated from 14 in. to 4 in. at the column heads to provide adequate section for moment and shear. D. Olsen was the structural engineer.*







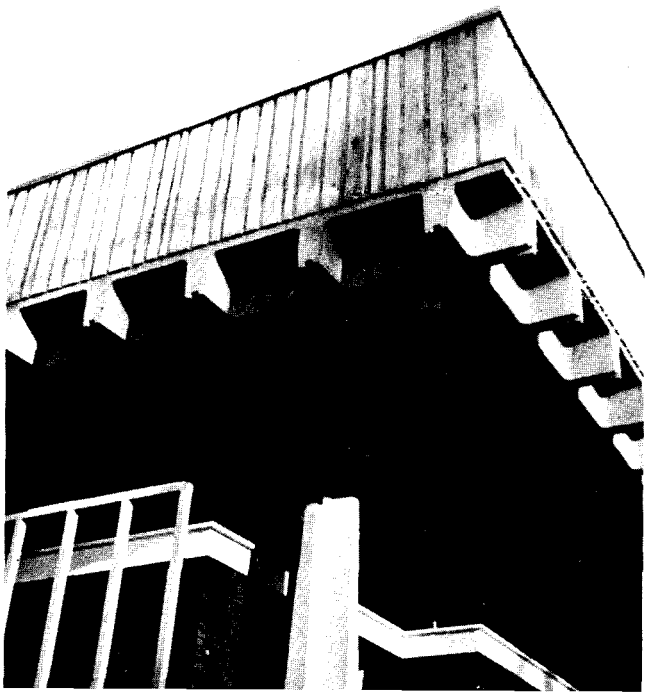
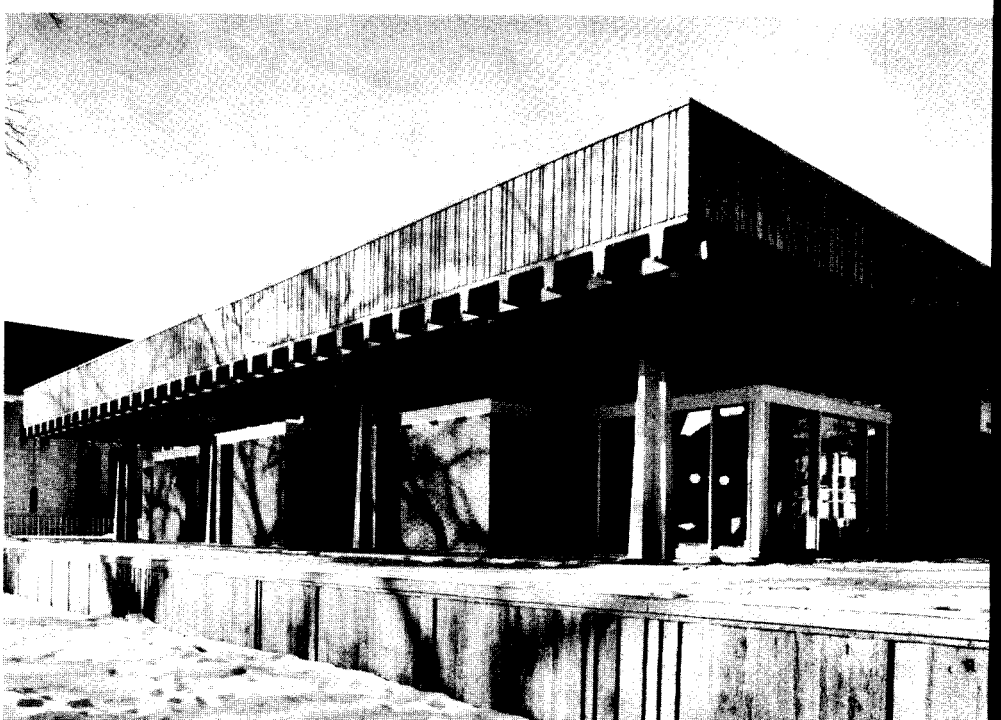


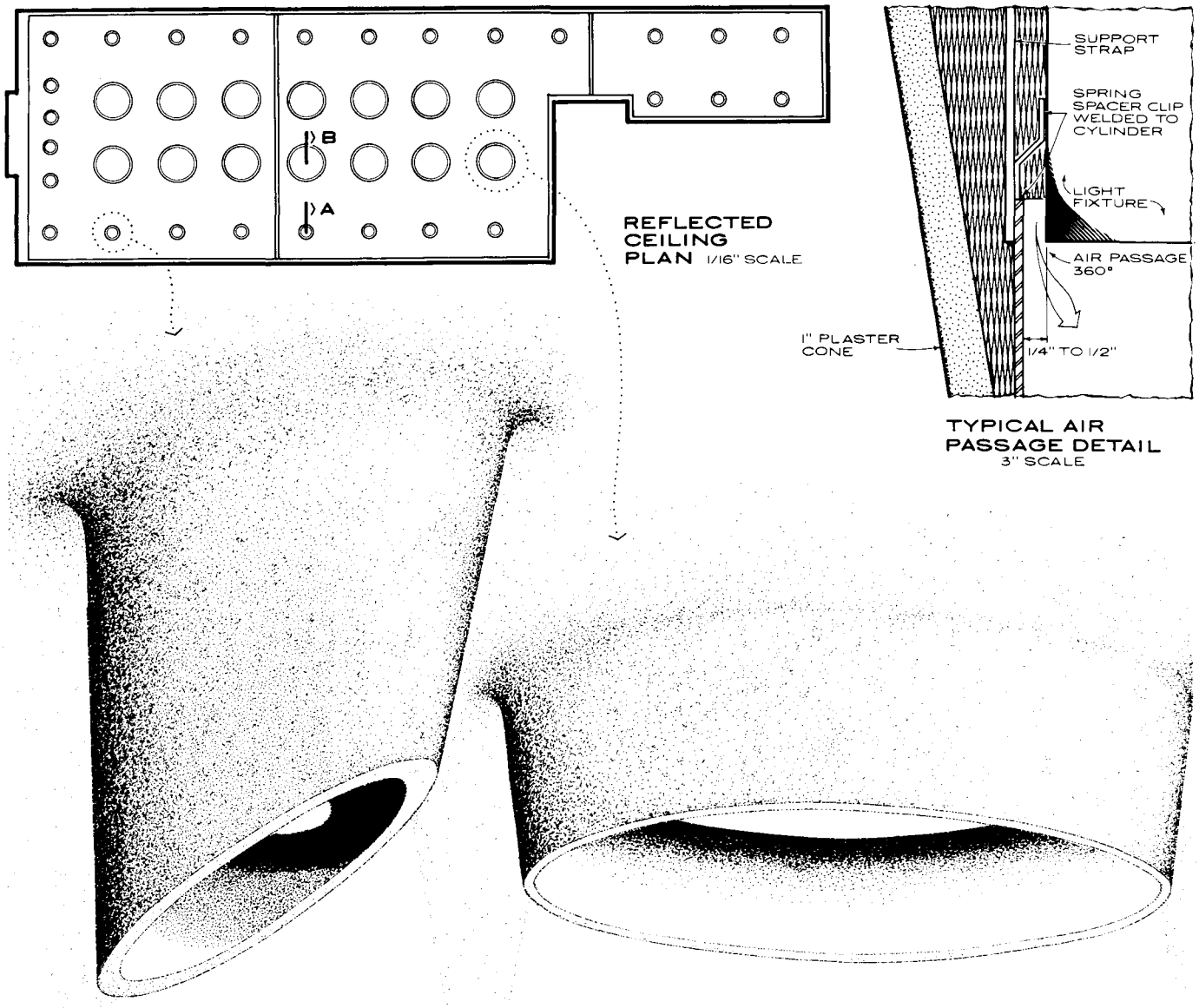
PHOTO: RALPH RAPSON

Random, board formwork marks on the roof parapet (left) *and on the sides of the podium reiterate the spirit of the plan and elevations. The concrete of the roof and columns has a sandblasted finish. Wood frames of windows and doors are painted white. The natural-colored dark brick is exposed inside and out. A clerestory runs around the entire perimeter of the enclosed space.*

Forced-air heating and cooling is run through the brick cavity walls on the main floor, with grilles either at the floor or top of walls. Gausman & Moore were the mechanical and electrical engineers.

The wood front of the tellers' counter (above) *repeats the random pattern of formwork used on the roof parapet and the podium* (below). *The floors are quarry tile; doors are oak-stained almost black. The meeting room on the basement level* (left) *has dark-stained vertical oak boards on the walls. The ceiling track across the center of the room is for a folding door. Molded cylindrical ceiling forms contain air-conditioning supply and lighting.*



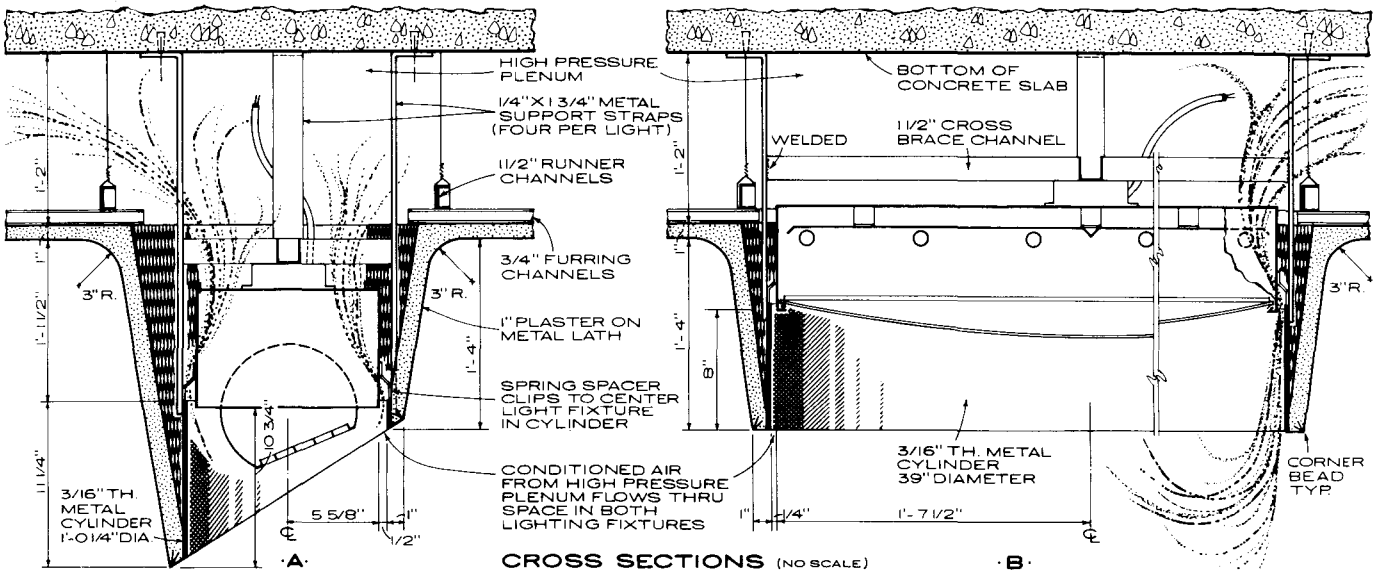


REFLECTED CEILING PLAN 1/16" SCALE

TYPICAL AIR PASSAGE DETAIL
3" SCALE

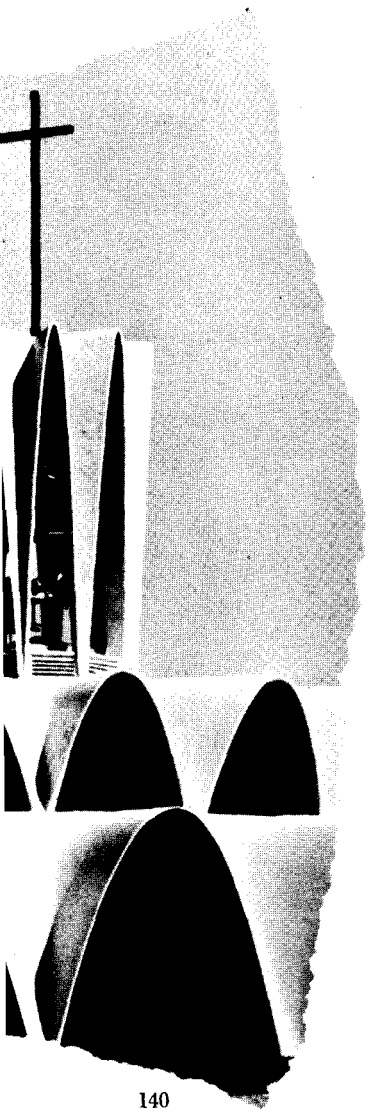
INCANDESCENT

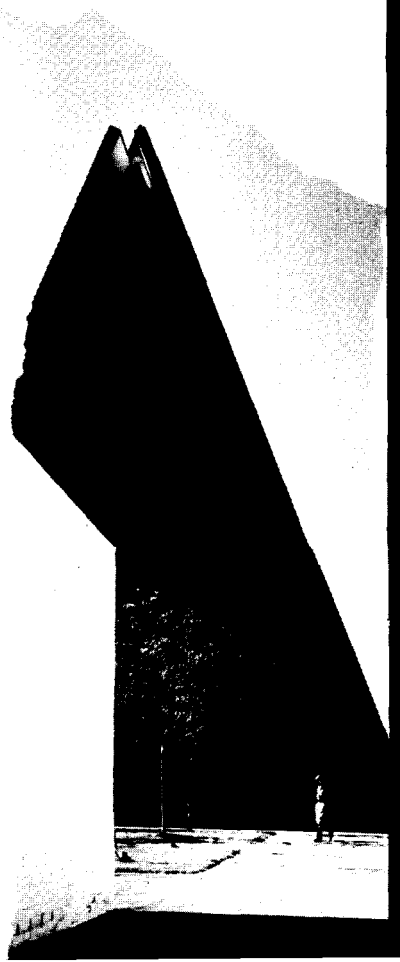
FLUORESCENT



CROSS SECTIONS (NO SCALE)

STATE CAPITOL CREDIT UNION: Minneapolis, Minnesota RALPH RAPSON, Architect	SELECTED DETAIL CEILING FIXTURES

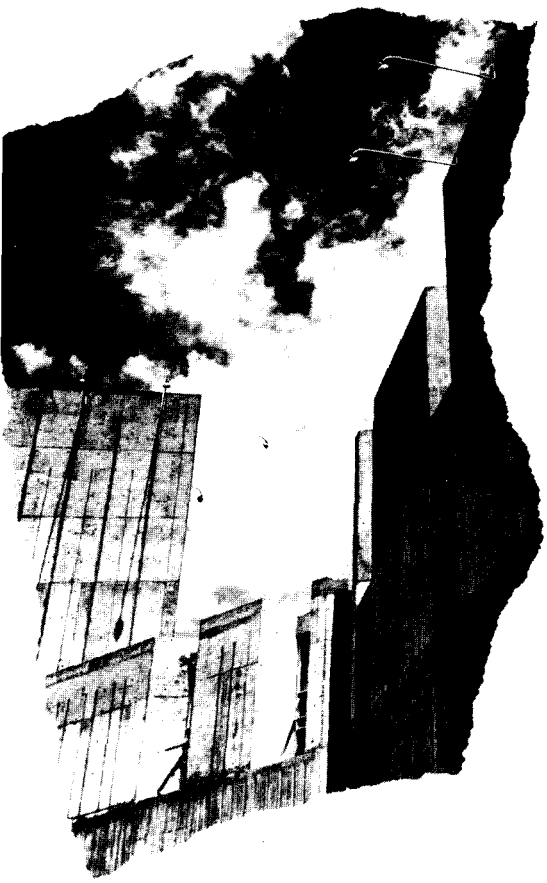


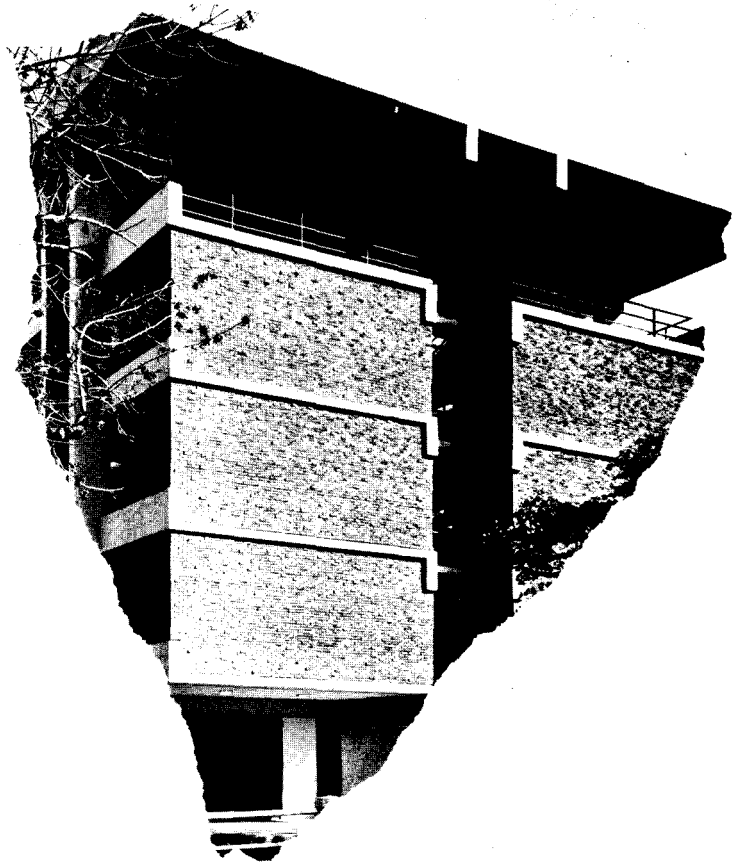


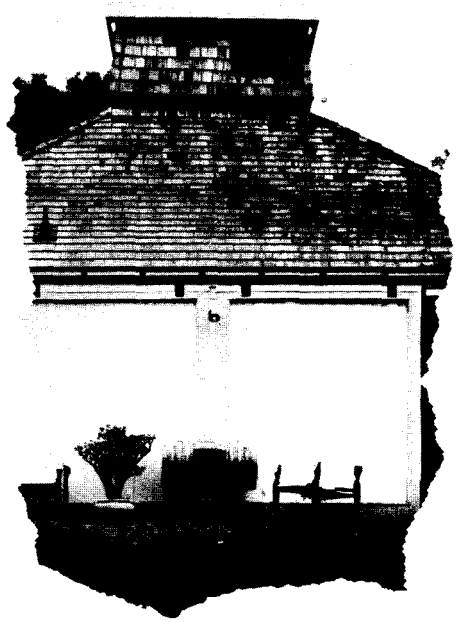
TURNOVER ON OLYMPUS:

The P/A Design Awards Program, 1954—1964

The announcement on page 72 of this issue of the 12th Annual P/A Design Awards brings us well into the second decade of the Program—a time to take stock of it and see whether it has fulfilled its avowed aims of honoring superior designs during the most perilous period of their lives—i.e., between conception and construction; and of helping, through Awards and Citations and their concomitant publicity, the realization of imaginative projects. Further, it gives us the chance to see whether the Program has been successful in spotting new design ideas at an early stage and anticipating architectural trends. The following pages, therefore, examine the premiated architecture of 1954–1964, and the success of the Programs in holding "as 'twere, the mirror up to nature"—namely, the nature of architectural design.







DESIGN DIRECTIONS

The 1954–1964 period saw the emergence of a new generation of architects. The generation immediately preceding—the one that had been successful in creating general acceptance of "modern architecture" in America—was well on the way to refinement of contemporary architecture (best exemplified by that taught by Gropius at Harvard) into a kind of contemporary classicism. The new generation, some of its leading members products of the Gropius pedagogy, sought—and seek today—to pierce beyond previous restrictions of style, often on quite individual terms, and using a complexity of disciplines to aid in their search: the resources of technology, sociology, planning, history, etc.

This "turnover on Olympus," as it has been termed by Serge Chermayeff, has taken place in the brief period of the decade covered by the Design Awards Program. The past 11 Programs, then, have been notable for two reasons: (1) they have provided, year by year, a forecast of design trends, and (2) they have reflected, over more than a decade, the changes in the mainstream of American architecture. Thus, in 1954, the winning designs showed the preoccupation of architects with a relatively unified functionalist architecture. The jury that year based its judgments on the search for "rational design which broke out beyond dignified, tasteful competence." This was to be the strongest design trend until 1956, when roofs and wall surfaces began to take on varying forms and embellishments. This trend toward a more individualistic architecture of plasticity continued over the next five years, coupled in a number of significant winning projects with an increasing awareness of the architect in his role as a creator of urban spaces. This awareness has continued and heightened since then, as has the search for individual form, for a more "expressionistic" architecture devoted to explorations of form and space rather than the mere facile use of vaults, folded plates, and grilles. Thus, in the 1964 Program, we saw the most recent culminations of this search coupled with an emerging "romanticism" and the continuing contributions of some of the older firms.

The trend of American architecture from a generally uni-directional approach in 1954 to greater individuality of styles in 1964 is seen by practitioners as either a blessing or a curse. John M. Johansen sums up its causes this way: "Rapid and effective communication within the profession to the point where new concepts are reported, absorbed, have their influence, and become dated before the building is finished; keen interest in and investigation of architecture of other remote cultures of the world; new interest in historic monuments, following a feeling of guilt for the Bauhaus austerity; continuing development of building methods and techniques; individualistic tendencies of an aesthetic invention by certain influential architects; continually new functional requirements." Comparing a Miesian 1954 winner, Skidmore, Owings & Merrill's Manufacturers' Trust Company, to the more individualistic architecture of Saarinen, Yamasaki, Obata, Carlin, Dart, and Moore (*see preceding pages*), one may paraphrase what Jury Chairman Paul Rudolph said in 1963: "It can probably be said that many architects are not very sympathetic to universal-space type of buildings, where everything is finally shoved into a package and none of the various parts of the complex comes through."

The Design Awards Programs have traced this transition clearly: from an architecture of simple, compact geometric form; to an elaboration using decorative surface treatments; to a realignment of solid forms into smaller, integrated parts; to a challenging spectrum of design approaches.

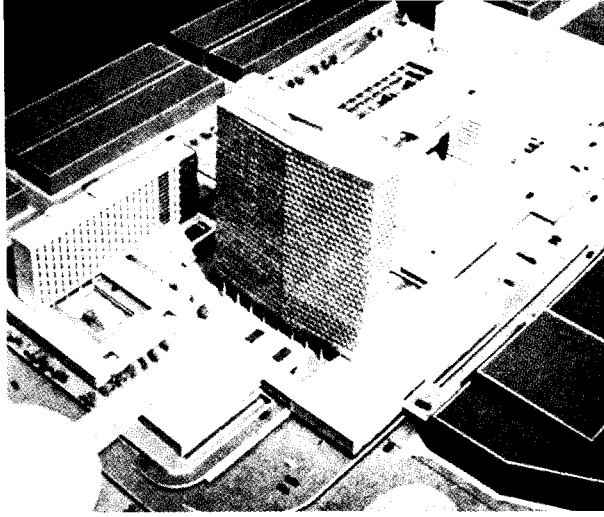
All architecture has lasting significance only if designed with imagination, power, taste, and professional expertise. These are the characteristics possessed in common by virtually all past winners of the P/A Design Awards Program—and, we feel certain, they will characterize all future winners.

The "turnover on Olympus" is vividly demonstrated in the following year-by-year analysis of trends, illustrated by representative Awards and Citations reproduced directly from Design Award issues.

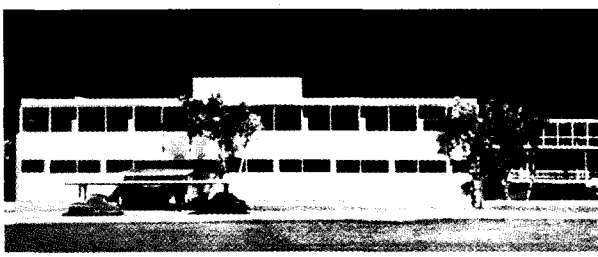
1954

Jury: Victor Gruen, George Howe, Eero Saarinen, Fred N. Severud

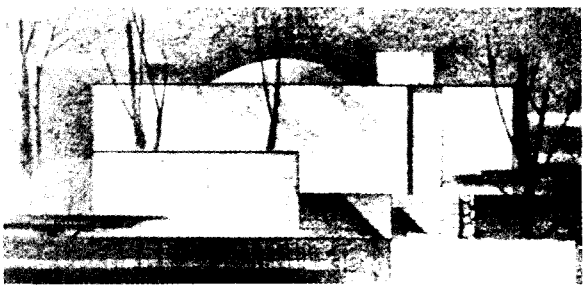
The approach to architectural design evident in the first year of the Design Awards Program was unusually unified, so much so that most observers believed that this marked the beginning of a stable, even classic period—a time marked by further refinement rather than by transition or experimentation. Emphasis was on simplicity of form and modular construction, using steel, for the most part, as the framing medium. Skidmore, Owings & Merrill's Fifth Avenue Office of the Manufacturer's Trust Company—though not the First Design Award winner—was the epitome of the principles of that period, as was the proposal for Boston's Back Bay Center Development, the top award. Vincent Kling's Cherry Hill Project was typical of the many modular or orderly plans in evidence that year, and the play of simple volumes was well demonstrated in two houses, both built around central courtyards—Schweikher and Elting's formal, square plan topped by a copper screen dome and Eliot Noyes' own patio house, which has already become a modern classic. That a small, prophetic minority of rugged individualists, including Rudolph and Anshen & Allen, was already at work to change the future course of architecture went largely unnoticed.



Back Bay Center, Boston, by Belluschi, Bogner, Koch, Stubbins, TAC

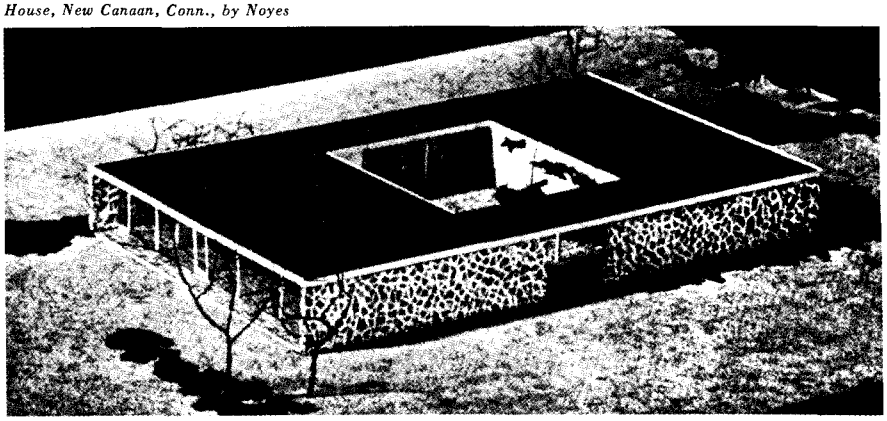


Cherry Hill Project, Camden, N. J., by Kling

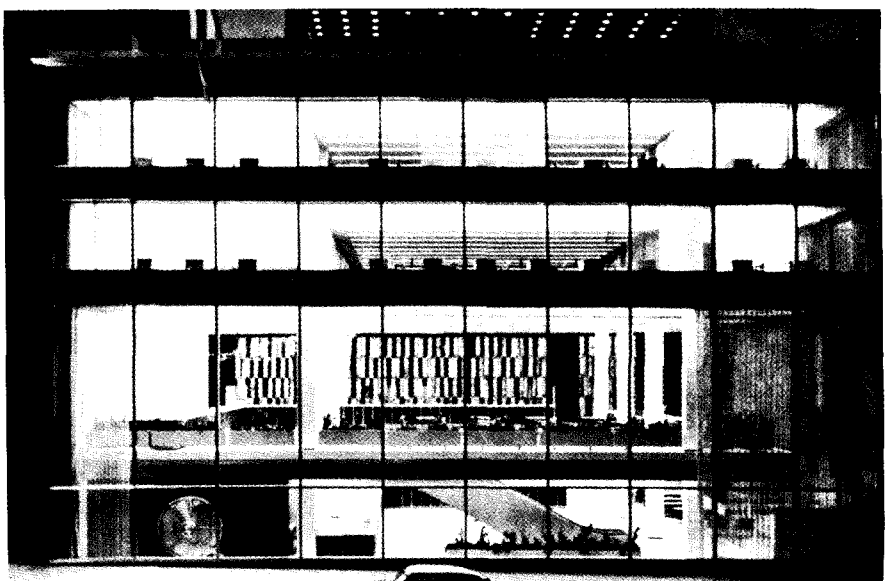


House, Glen Ellyn, Ill., by Schweikher & Elting

House, New Canaan, Conn., by Noyes



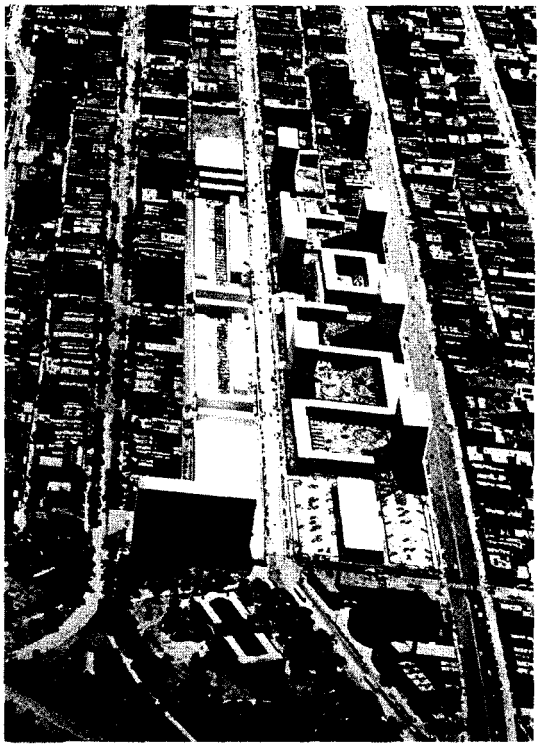
Office of the Manufacturers Trust Company, N.Y., by SOM



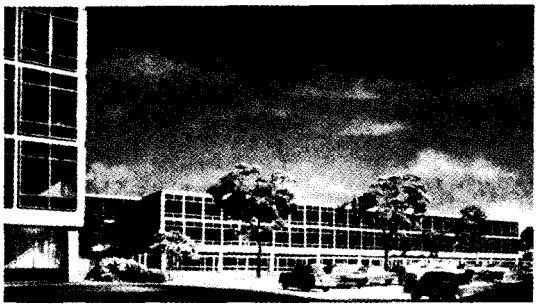
1955

Jury: Edgardo Contini, Charles M. Goodman, Walter Gropius, Morris Ketchum, Paul Schweikher

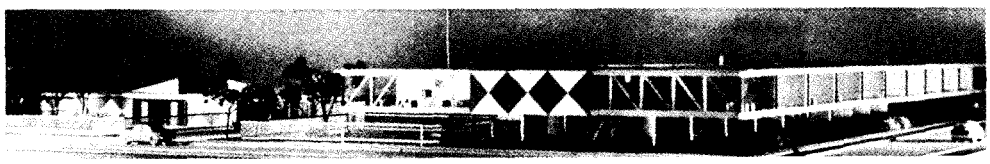
Simplicity of form was still the guiding principle and steel still the predominant structural material. But where the structural frame was formerly unassuming, there was now a tendency to expose the framing and to use it decoratively, exploiting, for example, the exposed trusses in the school by Colbert, the free-standing columns in the house by Dart. Paul Rudolph, who won the top award in 1955 for a house, analyzed the year's awards and citations in the following way: "Thirty of the 34 projects utilize regularly spaced structural systems, thereby freeing the interior arrangement. The linear qualities inherent in such cage-like construction are usually emphasized and are largely the means of organizing and disciplining the designs. Cantilevers played an important role . . . the whole emphasis on lightness and elegance is evident . . . and represents a complete reversal of the accepted traditional idea that a building must look strong before everything else." It is interesting that this statement should have been made by the architect who, only eight years later, was to build Yale's School of Arts and Architecture—a structure that marks the occasion of another "complete reversal, this time" from the principles of 1955, and one that is indeed "strong before everything else."



Chicago Redevelopment Project by Weese

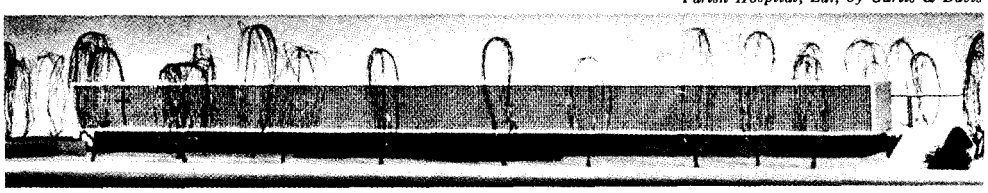


Connecticut General Life Insurance Company Headquarters by SOM

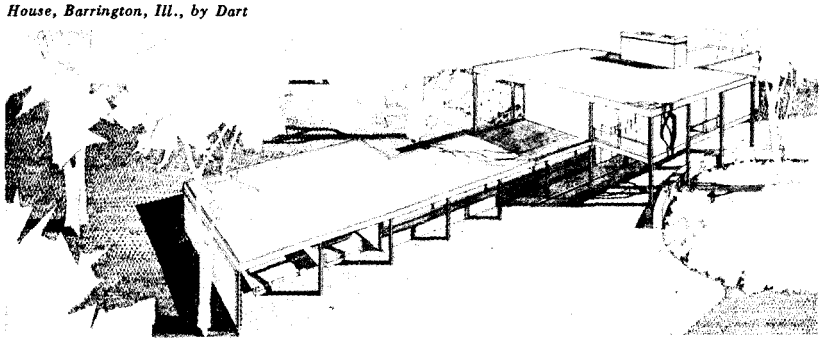


Elementary School, New Orleans, La., by Colbert

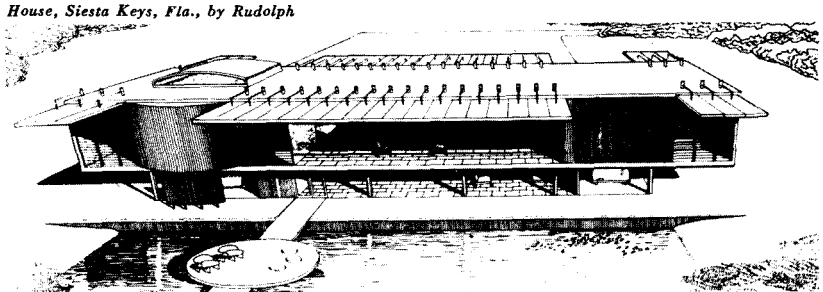
Parish Hospital, La., by Curtis & Davis



House, Barrington, Ill., by Dart



House, Siesta Keys, Fla., by Rudolph

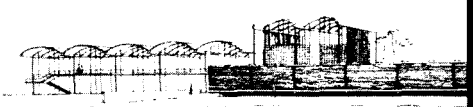


1956

Jury: Robert E. Alexander, Alfred L. Aydelott, Pietro Belluschi, William Lescaze, Paul Weidlinger

Functionalist approach to architecture still predominated, although the tendency to use structure in a decorative way had become more pronounced than in 1955; roofs were no longer universally flat, but sloped, domed, and corrugated; wall surfaces were softened by textural means and by color. While these were, on the whole, surface attempts at softening the edges of a strictly prescribed functionalism, Eero Saarinen's Concordia College was the first really convincing departure from the rules. Instead of the expected monumental building complex, Saarinen revived the medieval village concept, with the dominant chapel at the highest point of the site, the lesser buildings clustered around it, and the student residences radiating outward. As in the medieval village, all of the forms are interrelated, roof slopes are constant, and materials consistent so as to achieve an architectural continuity throughout the complex. More typical of the period were two other large-scale residential developments: the Gratiot Development by Stonorov, Gruen, and Yamasaki, and a housing project by Weese, van der Meulen, and Adams. Although these did not achieve the level of excellence of Saarinen's Concordia, they were both admirable attempts to come to terms with environmental planning for contemporary life.

Concordia College, Ind., by Saarinen

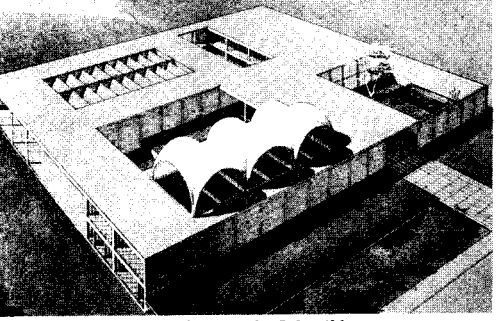


St. Joseph's Academy, Brownsville, Tex.,

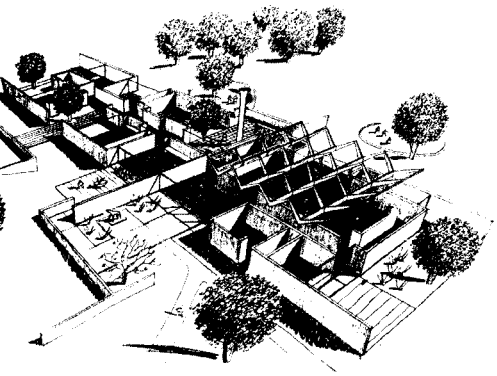
Housing Project, Skokie, Ill.,

1957

Jury: Marcel Breuer, Gordon Bunshaft, Huson Jackson, Emil Praeger, Harry Weese

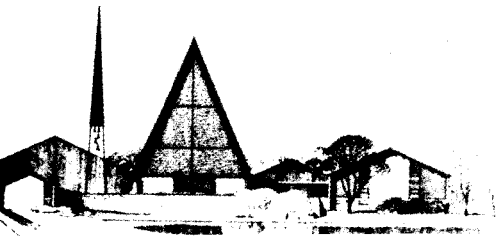


Church, Teaneck, N. J., by Schweikher

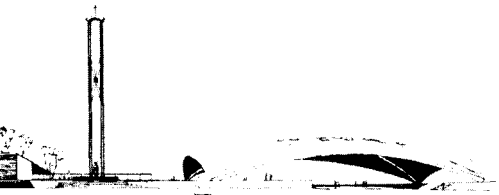


Elementary School, L. I., by Kling

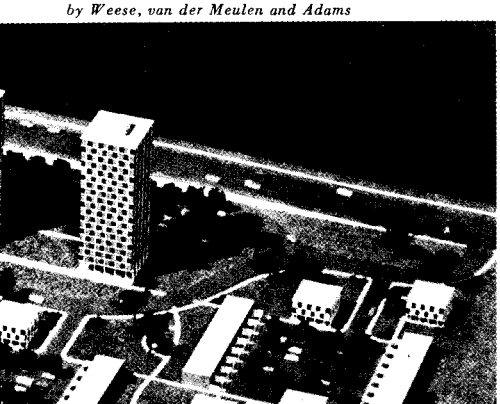
Concordia College, Ind., by Saarinen



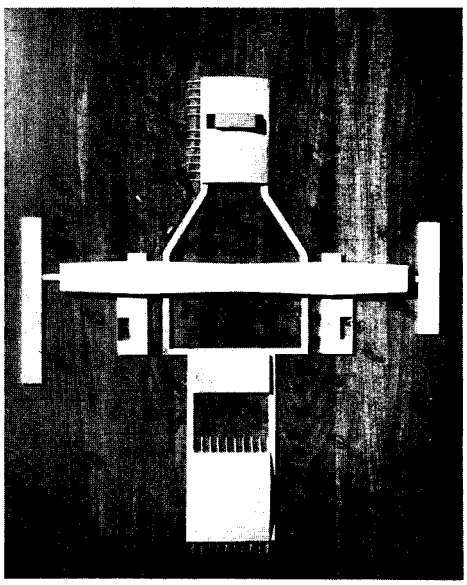
by Caudill, Rowlett, Scott & Associates



by Weese, van der Meulen and Adams

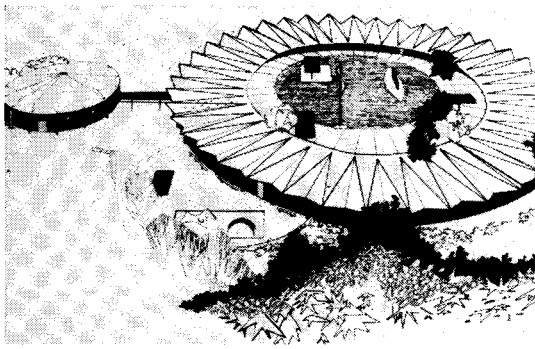


By 1957, the previously noted interest in textured and molded surfaces had become accentuated to such a degree that the folded plate roofs—as in the school by Ciampi and the office building by Yamasaki—were now the dominant design elements in the buildings. Although the prologue to the Program stated that the jury found merit in projects falling roughly into two categories differentiated by basic design attitudes—pure, simple, almost mathematical formalism; and an increasingly important plasticity having a strong, sensuous appeal—it was definitely the latter category that exerted the greater influence on the future course of architectural design. Yamasaki's building, in particular, was a persuasive piece of architecture that achieved what it set out to do—to demonstrate the architectural possibilities of concrete. Unquestionably, it marks the beginning of a renewed interest in this ancient material and a period of experimentation with more plastic forms. In contrast to all the other winning projects, the First Design Award—a school by Curtis & Davis—had, according to one observer, "both the formal simplicity of arrangement which has become characteristic of our time, and a sensuousity in the forms of the individual units that has much of the appeal of the new 'emotional' expression."

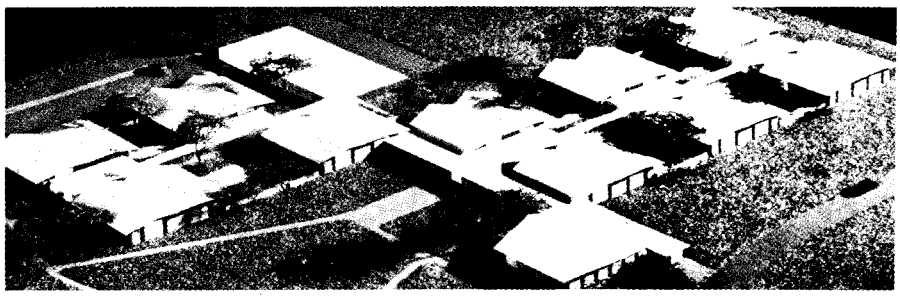


High School, New Orleans, La., by Curtis & Davis

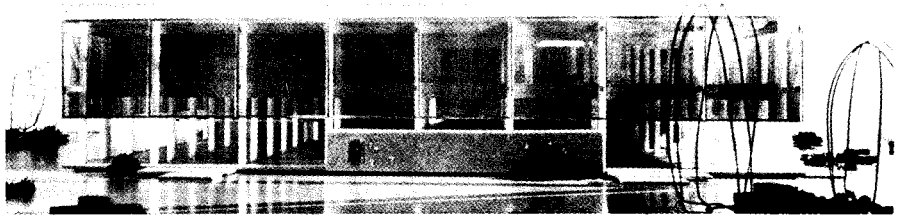
Elementary School, Daly City, Cal., by Ciampi



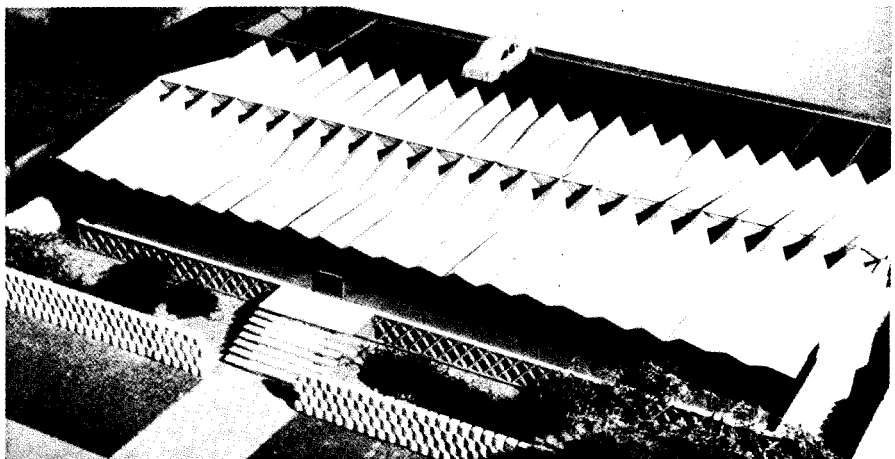
Nursery Building, Lapeer, Mich., by Smith, Tarapata, MacMahon, Inc.



Library, New Orleans, La., by Curtis & Davis



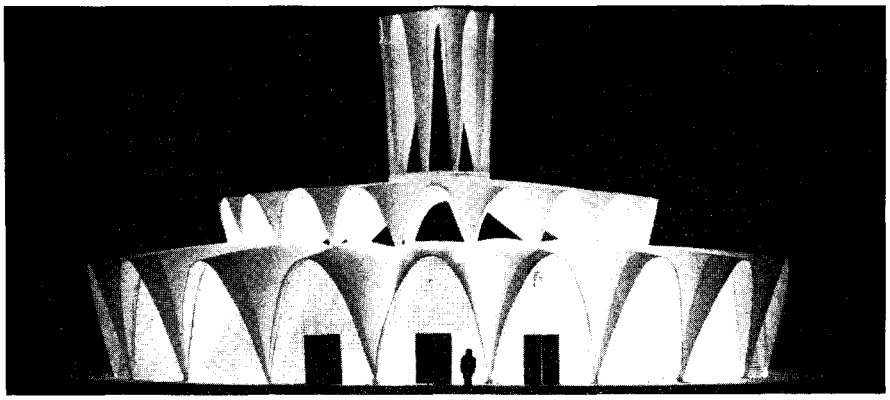
Office Building for ACI, Detroit, Mich., by Yamasaki



1958

Jury: Felix Candela, Arthur S. Davis, Carl Koch, Henry Kamphoefner, I. M. Pei

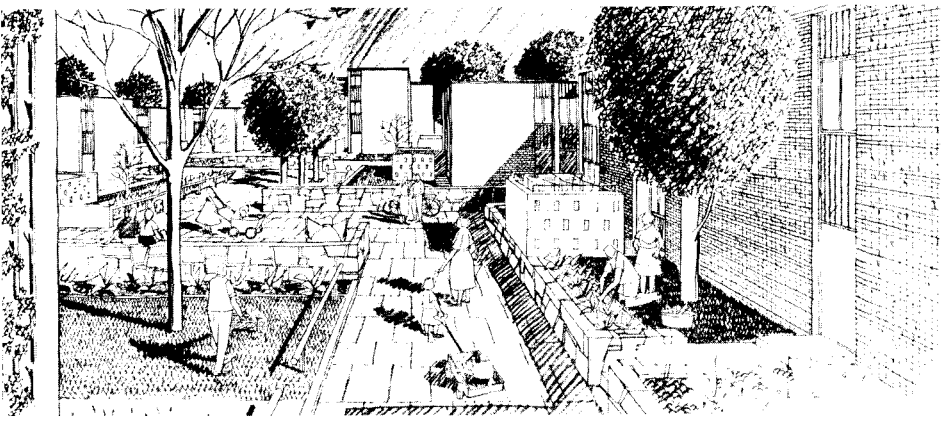
The duality of approach to architectural design was still strikingly evident in 1958 and was particularly well illustrated by the two buildings shown below: Rado's exhibition building, an elegant, light, steel-framed structure, and, at the other extreme, Obata's Priory church, a piece of sculpture of folded sheets of concrete. In a similar vein, Stubbins' straightforward administration building contrasted with Lundy's inn, which consisted of an assembly of precast concrete umbrellas. The top award, however, went to an architectural complex in which the design effort was concentrated on the spaces enclosed by the buildings, rather than upon the structures themselves. With their housing project for Chester, Pennsylvania, Geddes-Brecher-Qualls went beyond the typical row house solution by emphasizing the variety of space and the visual experience of moving from one space to the other. The awarding of the highest honor to this architecturally unassuming but highly imaginative design, focused attention on the up-to-then neglected area of planning the residential environment, and also recognized the need for some quiet background architecture against which monuments, such as the Priory church, could be placed.



Priory, St. Louis, Mo., by Hellmuth, Obata & Kassabaum, Inc.

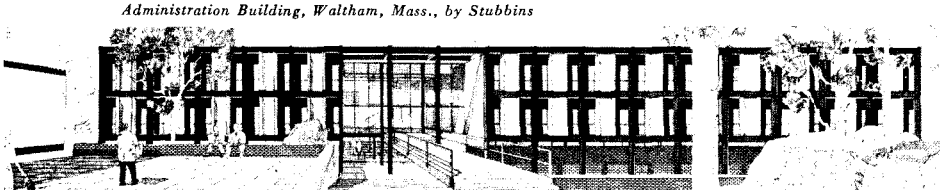
Exhibition House, N. Y., by Raymond & Rado

Public Housing Project by Geddes-Brecher-Qualls



Warm Mineral Springs Inn, Venice, Fla., by Lundy

Administration Building, Waltham, Mass., by Stubbins



1959

Jury: Milo Ketchum, Hugh Stubbins, Ladislav Rado, Philip Will, Minoru Yamasaki

While the search for stylistic identity continued, the importance of Capitol Towers, the top award winner, (as with the highest award in 1958) did not lie in the aesthetics of the buildings, but rather in the way in which the architects had approached the design of a contemporary residential environment—the solution of private and public spaces, the circulation of pedestrians and automobiles, the resolution of high and low buildings. The architecture was quietly unassuming, an encouraging trend in an arena of conflicting search and fluctuation. Otherwise, the year's awards and citations reflected Yamasaki's theme of "delight in architecture," a quality which, he explained at the Awards dinner, could be attained through exploration of past architectures. "These are being rediscovered again today by many of us," he commented. "In addition to the basic requirements of space, proportion, and refinement are the more obvious means of contrasting textures or ornament, modeling of buildings to reflect the play of sun and shadow, and use of the drama and interest of silhouette against the sky. More subtle, perhaps, are the interweaving of surprise to break the monotony of regimented plans, and the age-old utilization of overhead daylight to give variety to indoor spaces." His speech did not go unheeded.

Airport, Austin, Tex., by Fehr & Granger

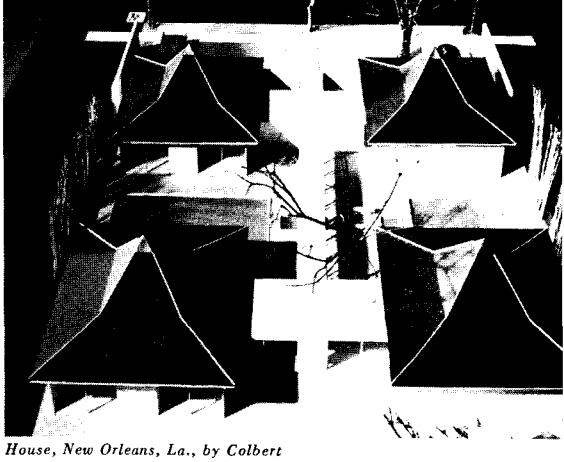
Forestry Camp, Minn., by Parker & Johnson

Furniture Showroom, Sarasota, Fla., by Lundy

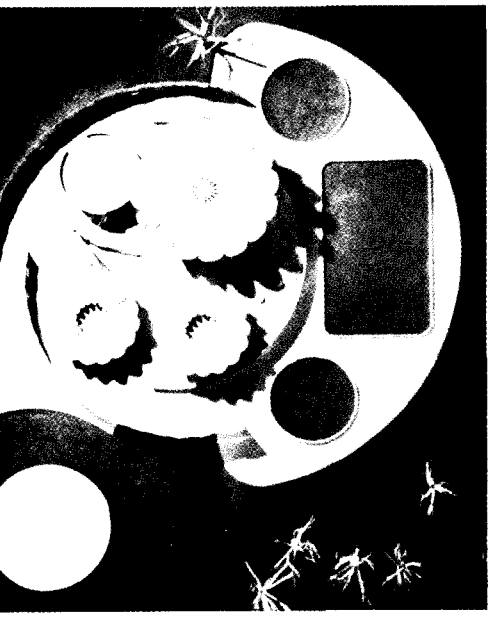
1960

Jury: William Caudill, Louis I. Kahn, Ralph Rapson, Jose Luis Sert, Lyndon Welch

For the third year in a row, residential planning was again in the forefront, indicating a lively sponsorship on the part of the government and an even more enthusiastic response from architects. Among these schemes, Geddes, Brecher & Qualls' Eastwick plan was the most creative and stands in interesting contrast to their earlier project of 1958. Again the emphasis was less on the architectural detail than on the total design. Single row houses were placed to define exterior spaces, although, in the later project, these were formal, grand spaces. A four-part house by Colbert also gave evidence of a new formal approach, as did parts of Kump's Foothill College Campus, though paradoxically, the over-all scheme leaned strongly toward romanticism rather than formalism. In other areas of architectural design, where single buildings were required, some strong new forms emerged. Lundy's church, for instance, and Obata's planetarium were powerful sculptural statements. "But not everyone can do a sculptural building," said one of the jurors in reviewing the entries of the year, adding that it would be a great mistake to have too many of these. "Great cities have always had one or two cathedrals, a few monumental and symbolic buildings, and a background of quiet, well-proportioned architecture; we can't overlook these smaller problems."

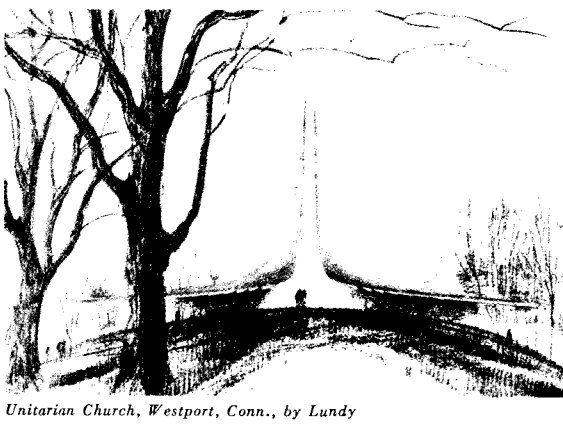


House, New Orleans, La., by Colbert

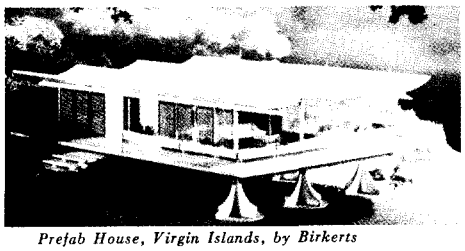


Club, Bucks County, Pa., by Geddes-Brecher-Qualls

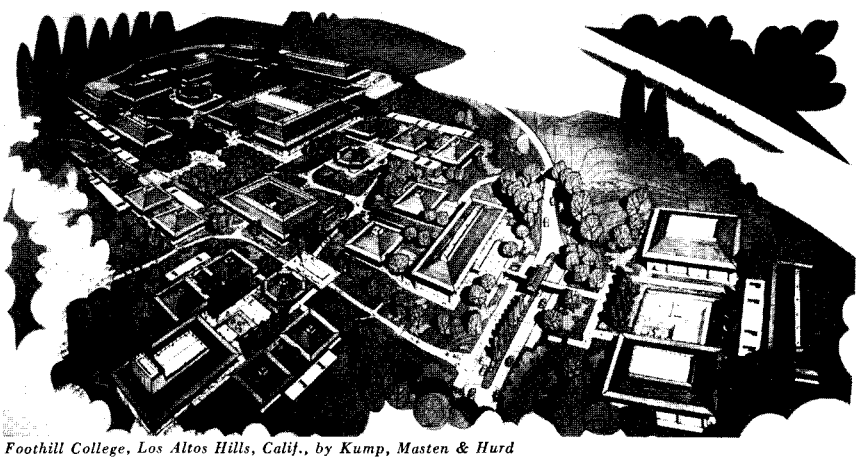
Planetarium, St. Louis, Mo., by Hellmuth, Obata & Kassabaum, Inc.



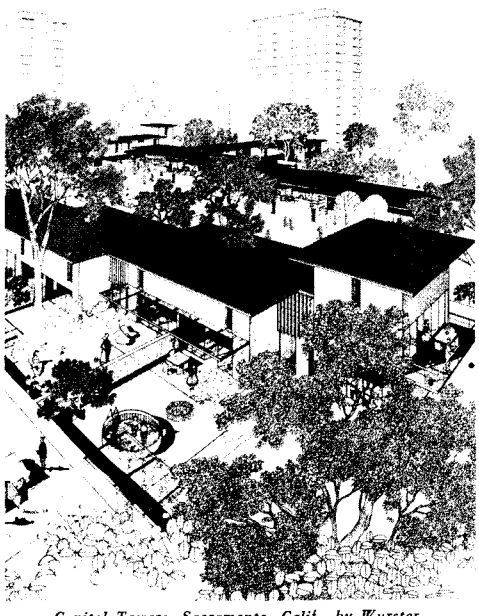
Unitarian Church, Westport, Conn., by Lundy



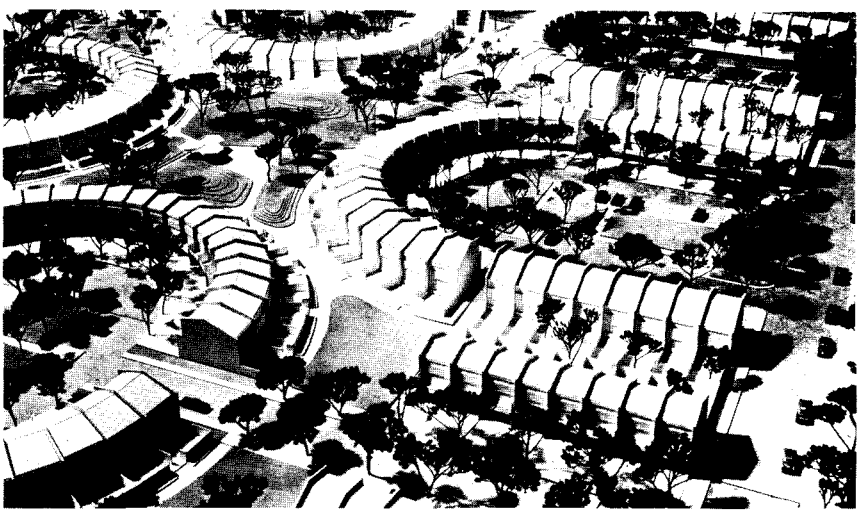
Prefab House, Virgin Islands, by Birkerts



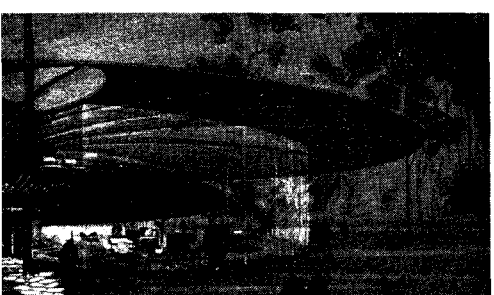
Foothill College, Los Altos Hills, Calif., by Kump, Masten & Hurd



Capitol Towers, Sacramento, Calif., by Wurster, Bernardi & Emmons; Barnes; DeMars & Reay



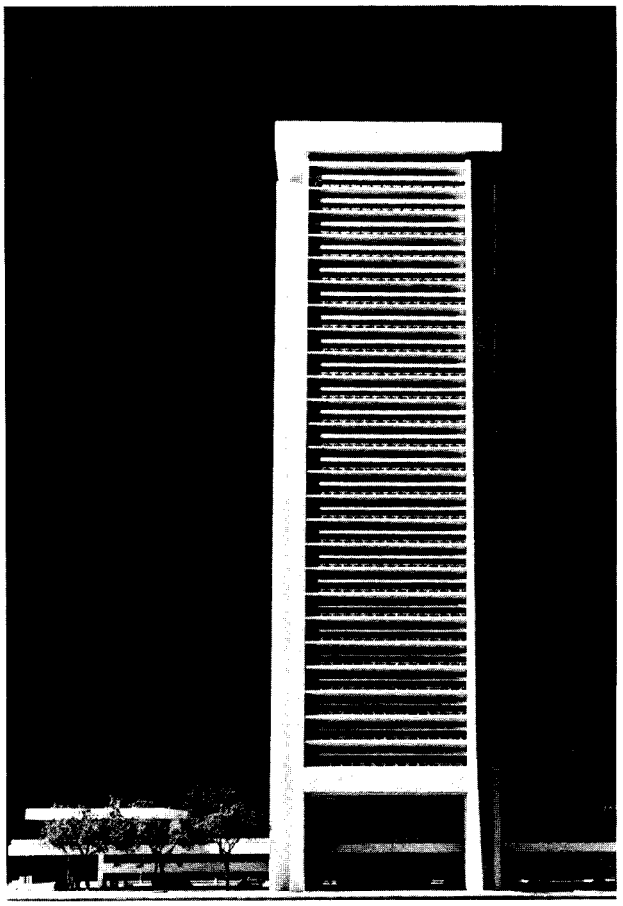
Eastwick Redevelopment Area, Philadelphia, Pa., by Geddes-Brecher-Qualls



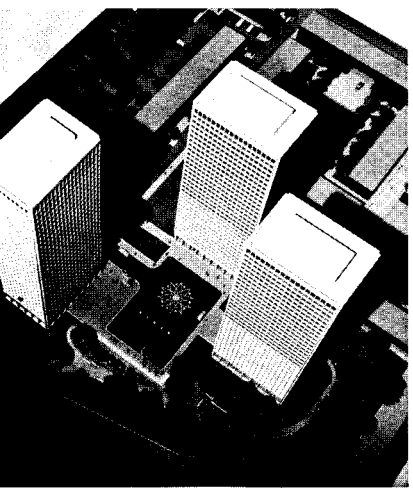
1961

Jury: Charles Colbert, O'Neil Ford, Philip Johnson, Cloethiel Smith, Walter Netsch

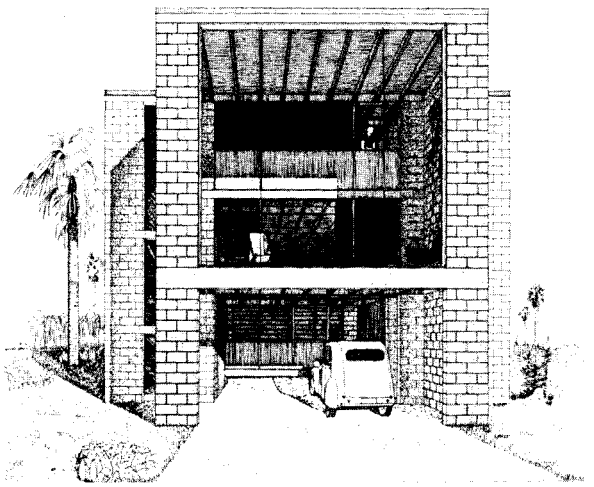
Several powerful, imaginative, and for that time unorthodox solutions formed the bulk of the 1961 awards. Mere surface decoration, "delight in architecture," or form for the sake of novelty appeared to be no longer the important concerns. Instead, there was evidence of a more serious approach to architectural problems and a strengthening of independent architectural convictions. Pei's office tower for Honolulu, the outstanding example of this trend, was an unusually powerful concept of structure consolidating all loads in the four massive corner columns supporting 80-ft-long post-tensioned spandrel girders. So elemental was the expression of these structural parts that one juror likened the building to "a sort of a monument, sort of a mountain." Pei's other winning project—Washington Square East—also had some of this strength and simplicity, as did most of the other winning projects of that year. There was no disagreement about the choice of Pei's tower as the First Design Award. However, a lengthy and heated debate developed over Carlin and Millard's Fire House, which assumed the role of symbol of the "expressionist" movement. Though it was voted an award as a "highly imaginative and forceful scheme," the question of its appropriateness within the hierarchy of the community was never resolved.



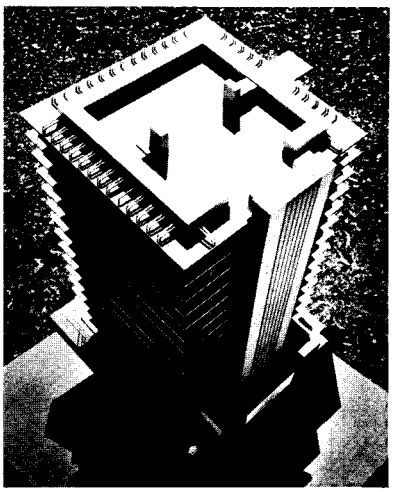
Metropolitan Tower, Honolulu, Hawaii, by Pei



Washington Square East, Philadelphia, Pa., by Pei



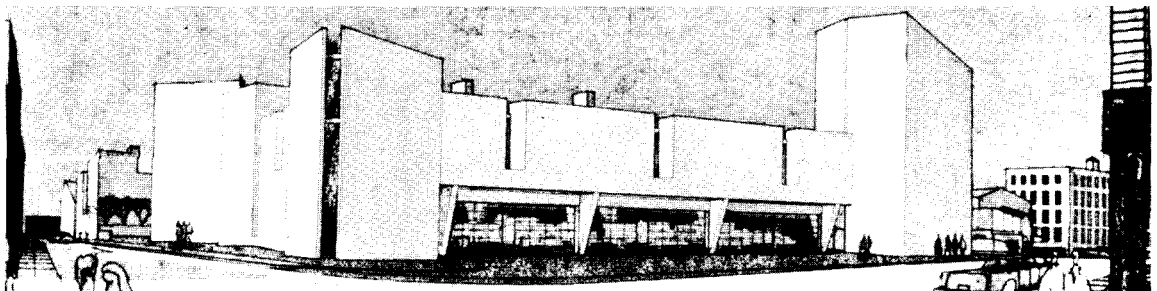
House, Atlantic Beach, Fla., by Ernest



Health Sciences Bldg., by Reid

Office Building, Pittsburgh, Pa., by Katselas

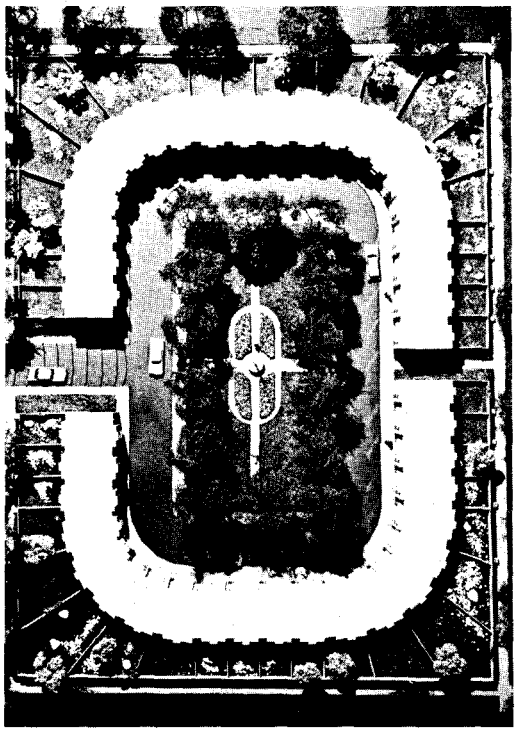
Fire Station, New Haven, Conn., by Carlin and Millard



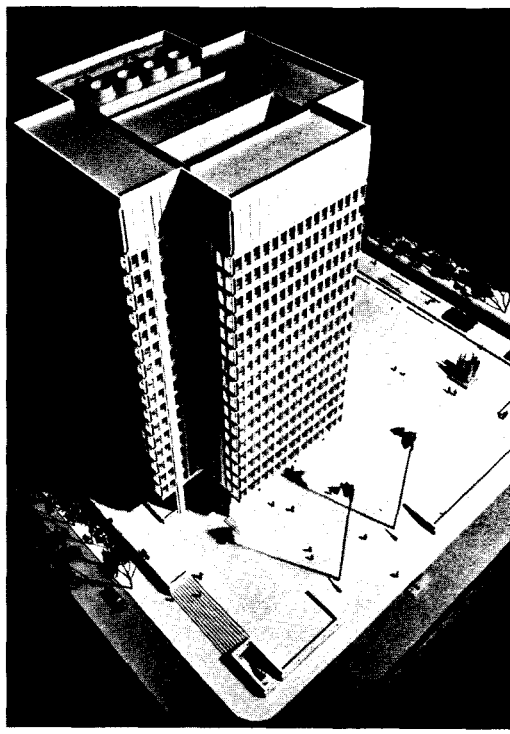
1962

Jury: Fred Bassetti, Gordon Bunshaft, Arthur Drexler, G. Holmes Perkins, Henry A. Pfisterer

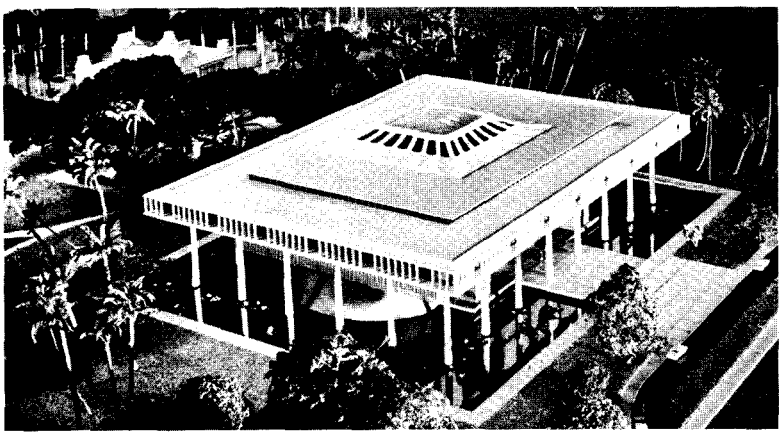
Many schools of thought were represented in 1962: Kling's Municipal Building, based on a symmetrical plan, contained some fine interior spaces and related handsomely to its larger setting in downtown Philadelphia; Hisaka's rather formal row housing scheme, recalling the earlier Eastwick plan and the even earlier prototype of the Crescents at Bath; Warnecke's elegant neo-classic State Capitol Building; Davis, Brody & Wisniewski's brutalist structure of precast concrete parts; Moore's own house, an extremely personal exercise in space and light, also incorporating eight Tuscan columns; and Woodward's nursing home, which only too obviously showed the Kahn influence. Entirely lacking, however, were examples of the simple steel-framed container of the early 50's. Instead, forms varied widely, roofshapes in particular tended to be pronounced and more elaborate than previously, and tended, as Arthur Drexler said, "to make buildings look less like industrial artifacts than they have looked for a very long time." He felt strongly, as did the other jurors, that this diversification of architectural forms was a natural reaction to a period of standardization, that this counter-movement was not a sudden occurrence but had been in the making for a very long time.



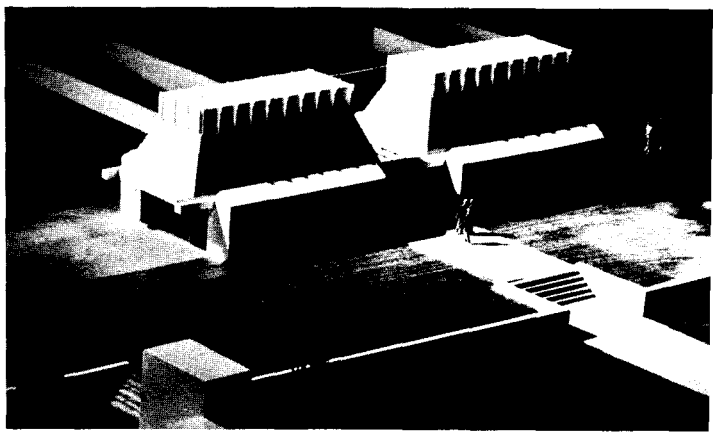
Housing Project, Milwaukee, Wis., by Hisaka



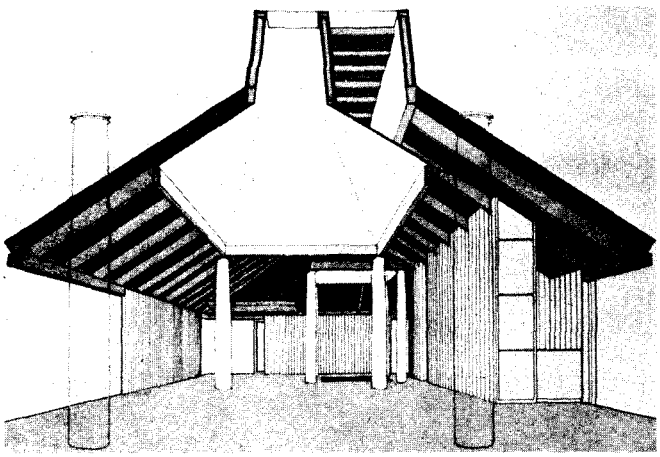
Municipal Services Building, Philadelphia, Pa., by Kling



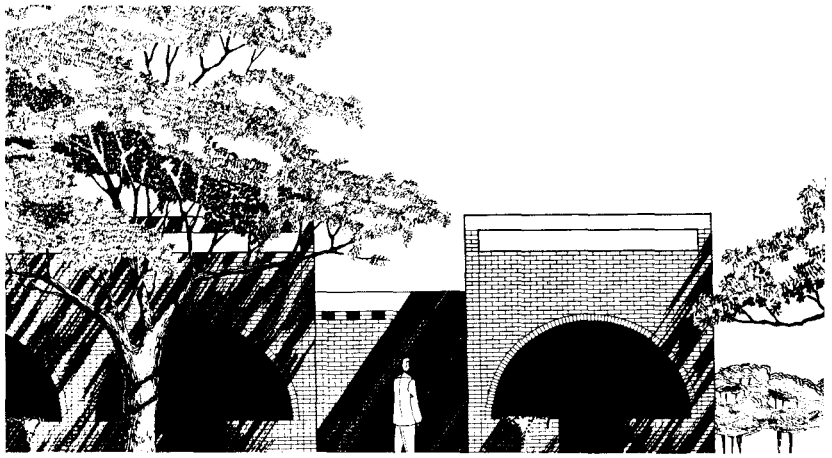
State Capitol, Hawaii, by Warnecke and Lemmon



Memorial Center, Woodbridge, N. J., by Davis, Brody & Wisniewski



House, Orinda, Calif., by Moore

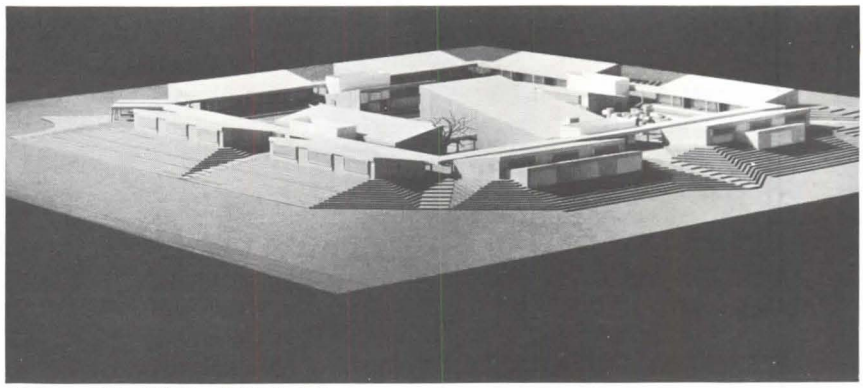


Nursing Home, Dallas, Tex., by Lane, Gamble, Woodward

1963

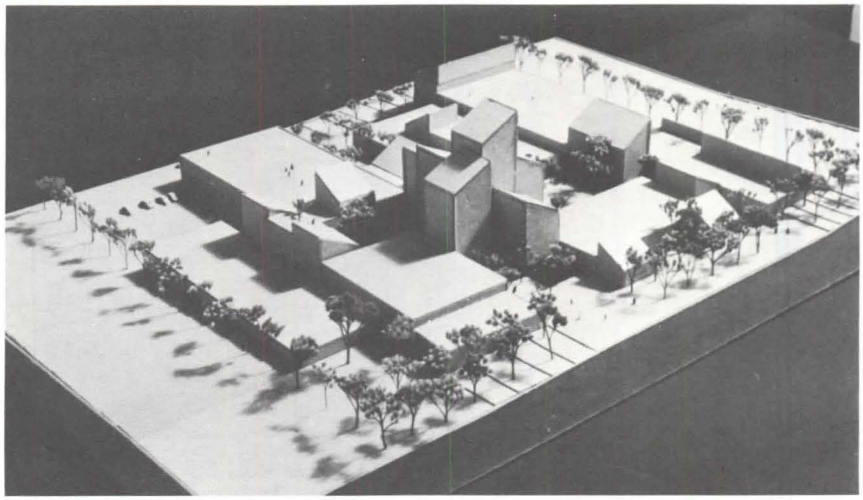
Jury: Robert Geddes, John Skilling, Aline Saarinen, Paul Rudolph, John MacL. Johansen

"It was clear," stated the editorial conclusions to the 1963 Awards issue, "that architects were consciously moving away from modern teachings—from the simple, all-purpose envelope epitomized by Mies van der Rohe—to an architecture that would leave room for the expression of individual functions, an architecture of manifold yet related parts." Juror Rudolph put it this way: "We are against putting things in packages—things need to be manifest: that they have various parts, and sizes, and shapes." Within this line of architectural reasoning, four projects were particularly pertinent: Moore and Lyndon's apartment house (which Rudolph called the most eloquent single example among the Awards submissions), in which the architects attempted to express the individual apartment unit within the larger complex; the Engineering Sciences Center for the University of Colorado, in which the individual departments of the school would be recognized; Sauer's house for a landscape architect who would be able to add or subtract whatever portion of the house he wished, without destroying the unity of the scheme at any point; and a house by Dart, in which the architect achieved dramatic spatial plays that would not have been possible within the confines of "package" architecture.

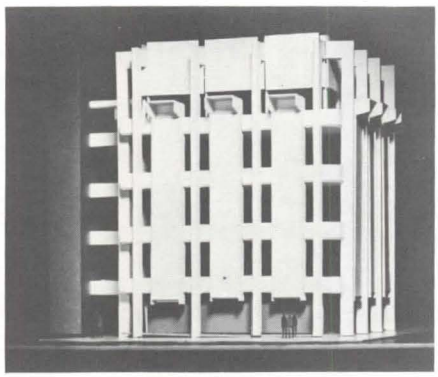


Elementary School, Marina, Calif., by Holm

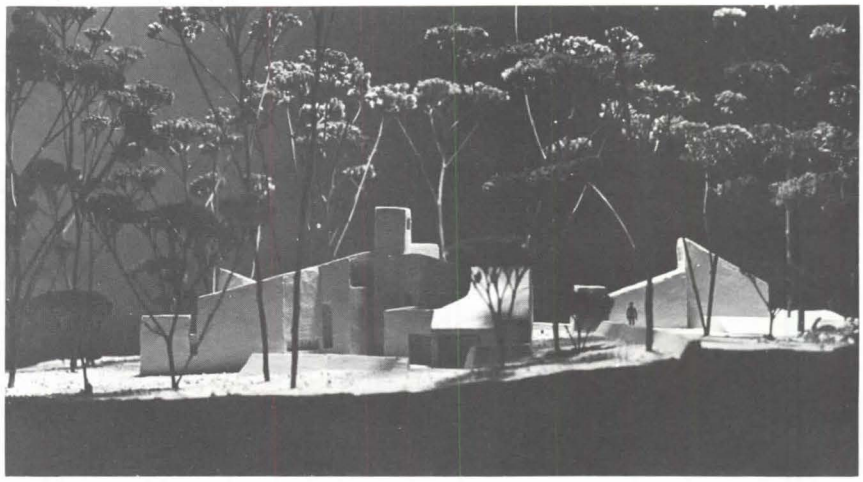
Engineering Sciences Center, Boulder, Col., by Muchow, Belluschi, Sasaki



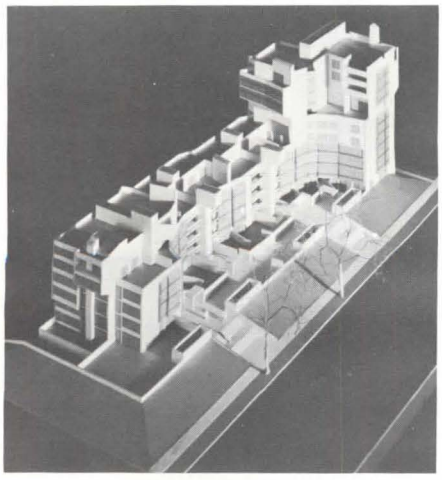
Chemical Research Building, Medford, Mass., by TAC



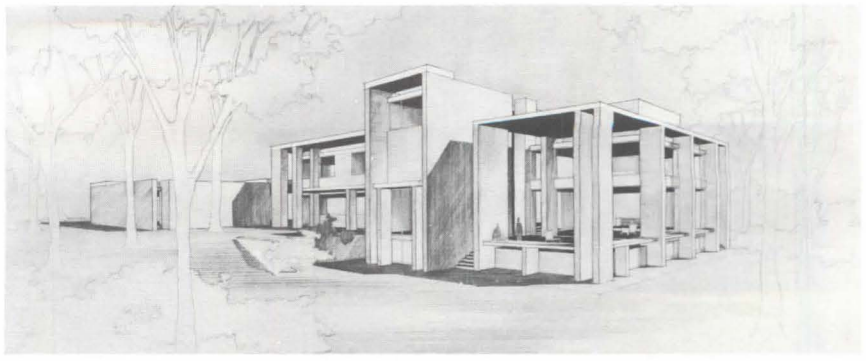
House, Lambertville, N. J., by Winchell & Sauer



Apartments, Coronado, Calif., by Moore and Lyndon



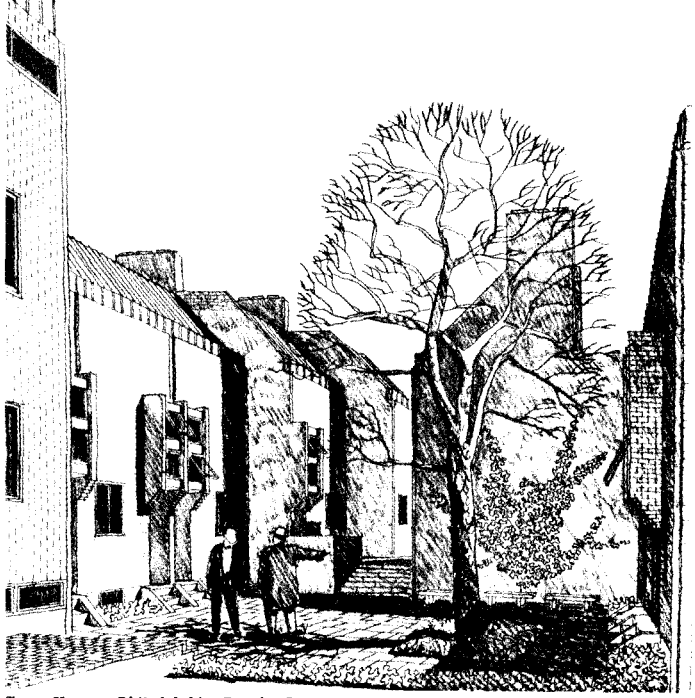
House, Barrington, Ill., by Dart



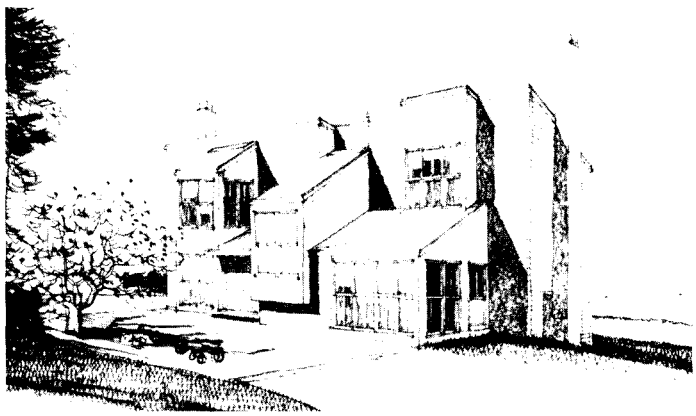
1964

Jury: Peter Collins, Vincent G. Kling, Ernest Kump, William J. LeMessurier, Harry Weese

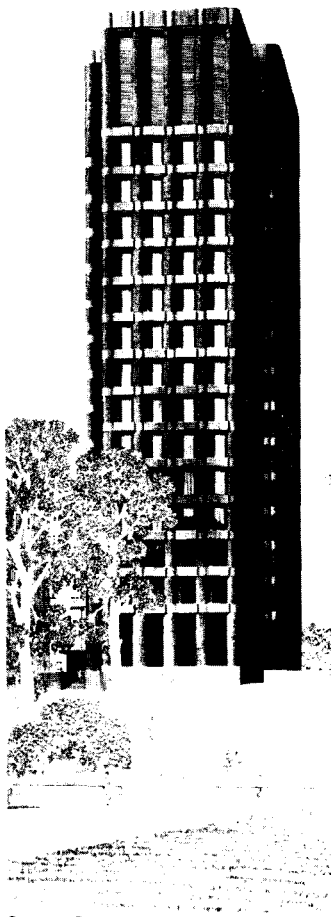
The change in design direction that has occurred in the last decade becomes particularly evident in the contrast between the 1954 and the 1964 award-winning projects. The stylistic range in 1964 covers the entire spectrum of architectural expression: at one end is a project that is the nearest thing to "package" architecture, a research center by TAC, which indeed required the all-purpose envelope because of its requirements of absolute flexibility; at the opposite end are Sauer's schemes, which merge old and new structures into an ambience of Old Philadelphia. Philip Johnson's Kline Science Center (an interesting counterpart to Pei's Honolulu office tower) is an attempt at three-dimensionality in skyscraper design and at tying new structures to existing ones; Wurster, Bernardi & Emmons' design for Cowell College—a romantic exercise in Bay-area regionalism. And Hobart's unpretentious piece of carpentry for a livestock pavilion contrasts sharply with Moore's studied interior spaces and exterior forms. No one, at this close perspective, can discern a dominant direction. However, the sheer diversity of design directions evident in 1964 appears to be symptomatic of a dynamic striving that seeks to pass beyond previous limitations of style and to establish an aesthetic expressive of the post-war revolution in living modes and technology.



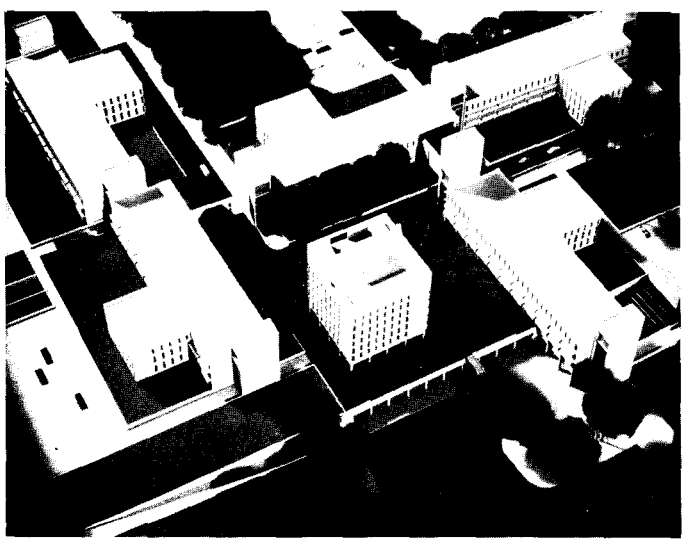
Town Houses, Philadelphia, Pa., by Sauer



House, Orinda, Calif., by Moore, Lyndon, Turnbull, Whitacker

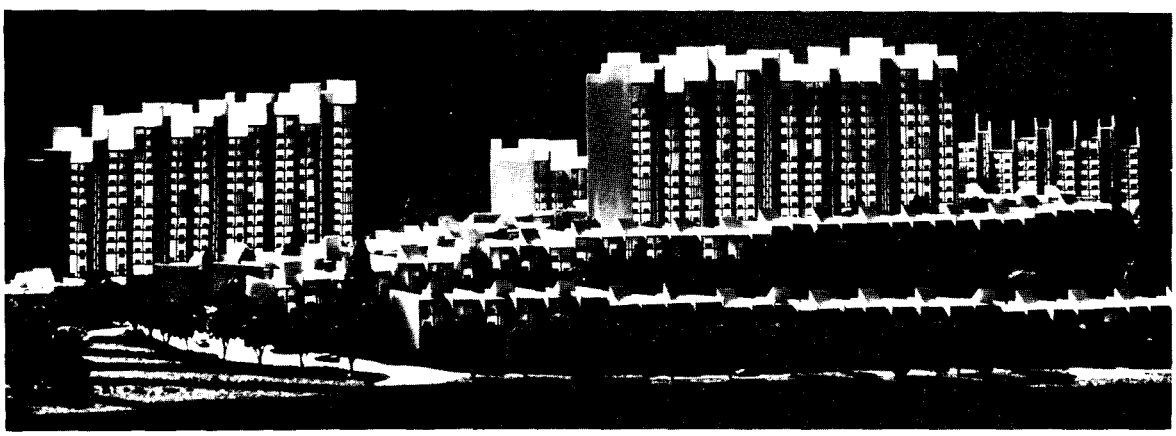


Science Center, New Haven, by Johnson



Research Center, by TAC

Cowell College, Calif., by Wurster, Bernardi & Emmons



Diamond Heights, San Francisco, Calif., by Levorsen & Cohen

IMPACT

The effect of the Program on the profession is revealed by findings of a P/A questionnaire addressed to past Design Awards winners.

Since its inception in 1954, the Progressive Architecture Design Awards Program has honored 309 projects with awards or citations. The total number of submissions to the program, approximately 6600, is an indication of how much importance American architects have attached to the Program.

Over these 11 years, the number of submissions has varied between 500 and 800, the most recent Program having had 692 entries. The number of projects premiated, however, has dropped sharply since the early years of the Program. In the first year, 57 projects were honored—more than the total of the last three years combined.

This reduction in the number of awards and citations, with no corresponding decrease in submissions, does not reflect a decline in the quality of submissions, but rather a change in attitude toward design among the leading professionals serving as jurors. The stated criterion for selection has remained the same over the 11 years—"over-all design excellence." In the first year, *awards* were differentiated from *citations* by their demonstration of a "markedly advanced concept" in addition to their "excellence." As early as 1955, however, juries began looking for "more than mere competence" in all premiated projects, seeking "points of departure," rather than "points of arrival." The number of projects honored dropped to 36.

This second jury, it was said, was "cool to work . . . that seemed less contributory to its category than well-known work that had previously appeared." All subsequent juries seem to have agreed with this standard. Since the accumulation of well-known previous work has grown, the search for the "points of departure" has necessarily narrowed, and the points have been located even farther from the orthodox territory of 1954.

The Jury System

P/A has recently tried to contact previous Design Award Program winners to determine the subsequent history of award and citation winning projects and the opinions of the winners with respect to the Program. Of the 157 architects contacted, 113 have responded. Among the many favorable observations on the Program were some comments on the jury system. Robert Melik Finkle writes that the Program "gives young architects a chance to compete along with the acknowledged masters in an atmosphere where only the significance of the design is considered." Thomas Vreeland notes: "Most encouraging is the tendency of recent juries to turn away from 'ideal' solutions in favor of real solutions set in real surroundings." Gunnar Birkerts compares the jury to a sieve "that catches most of the best work done in design. The holes in this sieve are readjusted in different shapes every year, but what stays in is good regardless."

Others raised questions about the jury deliberation. William Corlett of Corlett & Spackman was one of several past winners who questioned whether recent juries had not been overlooking "worthy small projects done by deserving young firms." "We would like to believe," he says, "that nationally there is enough distinguished work to warrant a larger number of awards." Francis Paul Gassner likes the Program but thinks it "places undue emphasis on fadism." Denis Schmiedeke says, "It is tending to produce predominantly capricious work in general, with an accent on the new, novel, and nifty." Robert Hausner comments that "too many entries are not realistic . . . The engineering is not solved." Sidney Katz believes that "the juries have been too narrow-minded and precious."

William Corlett also expresses a fear that the winning projects are "those that are presented in the grand manner, with models and extensive lush renderings." Fred Bassetti is concerned that the juries are influenced by "fancy renderings." John van der Meulen, however, sees a brighter side to the matter of presentation: "One by-product of the Program is, I think, that it has been not a little responsible for the general rise in quality of architectural delineation."

We at P/A have observed that the juries *do* respond to rendering that is good, but by no means necessarily in the "grand manner," and often honor work presented with merely acceptable visual material. (Such material often turns out to look better in the magazine than it did on the jury table.)

Fate of Winners

Of the 295 projects honored during the years 1954–1963 (many in the 1964 Program are still in project stage), P/A has been able to ascertain the subsequent history of 246. Of these, 150 have been completed according to the premiated design; 18 are under construction; 15 have been postponed; 7 have been completed by the same architect, but in radically different form; and 56 have been abandoned. This record of only 23 per cent of projects abandoned, many of these due to failure of public bond issues, should effectively counter the frequent criticism—heard most often from across the Atlantic—that the entries are mere competition drawings, rather than real commissions.

Many of the premiated projects have been honored after completion with other coveted awards. Among those that have won AIA First Honor Awards are SOM's Manufacturers Trust Office and Connecticut General Building, Eliot Noyes's own house, Anshen & Allen's Chapel of the Holy Cross, Eero Saarinen's Concordia College, Corlett & Spackman's Squaw Valley Olympic Arena, and Ernest Kump's Foothill College. Other premiated works by Lundy, Maston, Muchow, and Colbert have won AIA Awards of Merit.

To Aid Design Concepts

One of the major objectives of the Program is to aid projects in the design stage when design ideas are in greatest danger of being overruled by outside considerations. A large number of architects contacted testified to the positive effect of the award on their projects.

The awards have often been useful in swaying opinion on public projects. Writing about an urban renewal project, Thomas Vreeland tells us, "The award helped a great deal. The project acquired an awe and respect that kept people's hands off it. My other work for the city has not fared nearly so well by comparison." In this case, as in others, the influence went beyond the individual project. "The jury's encouragement triggered similar treatments of other areas of the city." Charles Burchard also mentions that "shock waves" from one of his awards "helped good design in the area." Kelly & Gruzen report that their award for a school was "used to some advantage by the Board of Education and the AIA Chapter" in fighting criticism of school design and economy.

Private projects have also been promoted by receipt of an award: John Kruse, for instance, reports that the award made the owner "determined to proceed."

In some cases, premiation in the Program influenced the outcome of internal

struggles. Paul Schweikher describes the reactions of a religious congregation, a type of client that often abandons a design because of internal friction. "Opposing factions," he says, "were impressed and resistance diminished."

In some cases, premiation in the Pro- helped with financing. Caudill, Rowlett and Scott tell us that it "helped maintain confidence during the long fund-raising campaign" for a religious school. Wittenberg, Delony & Davidson say that although the award came after the design was accepted, "additional funds (for furnishings, equipment, etc.) have been more easily obtained due to the understandable pride coming from this recognition."

Sometimes, the awards merely enhanced the pride of the client. Hellmuth, Obata & Kassabaum report, "We have found in every case that our owners are both delighted and impressed by the awards and display them with great pride."

An unusually striking instance of the impact of a design award is described by Louis Sauer, speaking of a house designed for a client who was also the builder: "Prior to the publication of the Awards issue, while certain basic construction was underway, the client-builder had made changes in various heights of roofs, slopes, and placement of windows without consulting me. This led to a severance of my relationship with him (i.e., I walked off the job). However, within a week of the publication of the magazine, the client-builder appeared in my office and, after a few weeks of cooling off, I returned to the site and to my great surprise found him willing to tear down those parts of the building varying from the original design and to reconstruct it according to my original plans."

Influence on Design

Since almost all design award entries have been approved by the client before submission, there is usually little chance for jury comments to influence the design except in giving it greater status and helping the architect to preserve it. There is sometimes a chance, however, that changes will have to be made and observations by the jury will be taken into account.

Paul Schweikher says of a project that is being built in stages, "If the project ever goes ahead, criticism of the location of the library will be remembered."

Ralph Rapson's Tyrone Guthrie Theater drew criticism from the jury because "the exterior form did not express enough the excitement of the building's function." His subsequent changes to the design, whatever their other merits, are certainly more expressive of excitement.

There have been a few cases (only four reported) where premiation in this Program has contributed to the actual abandonment of the design, generally because of suspicion that good design would be either expensive or controversial. A bond issue for a premiated school was voted down, apparently because the public seemed to feel that "if it received an award it must be expensive." Kelly & Gruzen received an award for a prison design for the State of New Jersey amid considerable official publicity. The architects have told us: "The award and the attendant publicity were used on the part of the opposing political party to criticize the state administration and the economics of the project."

Even private projects may be defeated by this same kind of suspicion of any design worthy of an award. Marvin Hatami reports that his citation for his own house was "an obstacle to obtaining a conventional construction loan." (The project has been postponed for lack of funds.) Tasso Katselas reports that one client for a commercial building backed out after having received the award because of the fear of building something controversial.

Career Builders

Design Awards have played a critical role in many architects' careers. Thomas Woodward, a young Texas architect, writes, "I don't know that the award has been directly responsible for my getting work. It has definitely, however, enabled me to establish the quality of work my firm can do without a lot of conversation on my part. It has attracted to us, therefore, a large percentage of work that involves an opportunity to do something worthwhile." Robert Geddes recalls, "The P/A Design Awards Program was a great help to us as a young firm."

Louis Sauer, winner of the most recent First Design Award, has something interesting to say on this subject, too: "I cannot overstate the impact the award has had upon my office. I had had my own office for only 2½ years and found it most difficult to find clients. On all the jobs I had in this period, I ignored the particular fee and simply did the best work that I could do, regardless of time. I had achieved a certain reputation within a limited circle.

"On receiving the award, however, I was projected into a totally new relationship with various key municipal agencies and the profession itself. Other reactions awaited publication within the local press. Within a period of a month, I can point to five new jobs that I might not have gotten were it not for the local publicity. To put it bluntly, winning the award has made the difference of having an office or not having an office."

The Program as a Whole

There were many comments on the overall effect of the Program. Most architects contacted said that they liked the Program and they hoped it would continue. Earl Carlin cited its positive effect on the client: "An award or citation can reassure a doubtful but interested client." Moreland Smith of Sherlock, Smith & Adams said the Program "has unquestionably stimulated a higher degree of owner interest in the value of design quality."

And then there is the public. Of it, Carlin says, "The public can be brought to a closer understanding of what makes architectural quality, especially when it is cited as an example in a community. By contrast, they may also realize what is not good."

Several of them mention the healthy effect of the awards on the architect's thinking. Earl Carlin notes that "awards can save good preliminary designs; more important, sometimes they can inspire greater efforts." Edward Dart considers them a "stimulus to better work from the profession as a whole." Clarence Mayhew notes that the Program "catches the concept in early stages, is a good inspiration to continue."

Murdo D. Morrison says that: "One of the greatest benefits derived each summer when we receive the announcement from you is that it becomes *soul-searching time*—wondering what we are designing at the moment that might be worthy of submission."

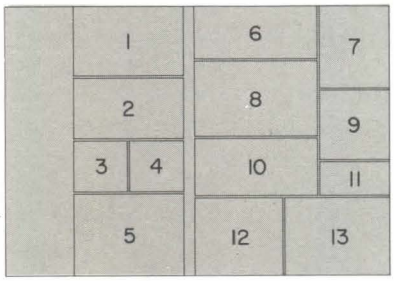
Harry Weese praises the Program rather equivocally by saying it "has the value of keeping the profession at least a year ahead of itself."

A somewhat less obscure comment by Vernon DeMars is probably more typical of reactions, even among the Editors of P/A: "The Design Awards Program is an excellent idea, even though the awards are sometimes puzzling. I hope it continues."

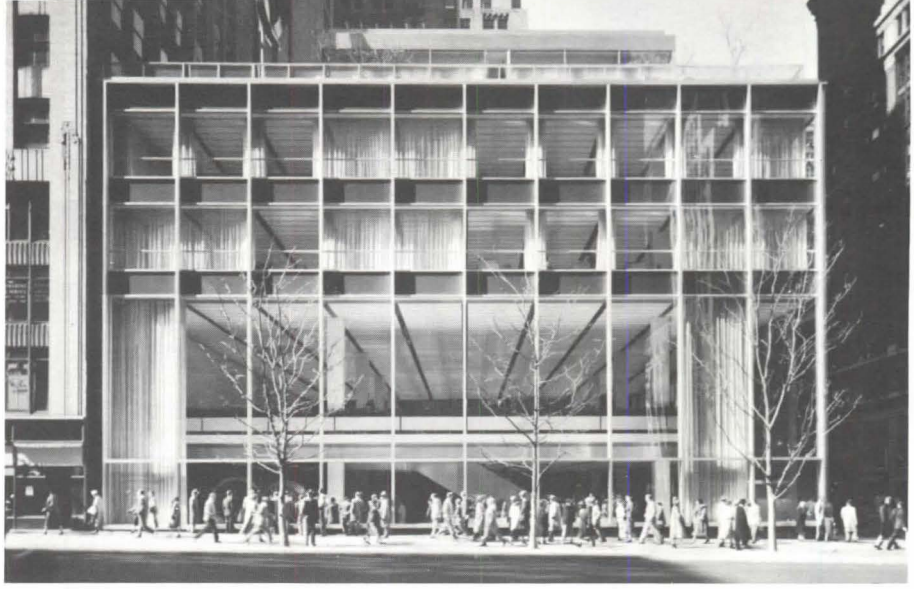
The P/A Design Awards Program *will* continue, as you can see by the announcement for the 12th annual competition on page 72. Hopefully, the quality and quantity of future submissions will continue to make this what Vincent G. Kling has called "the most authoritative presentation of the state of the art in American Architecture at this instant in history."

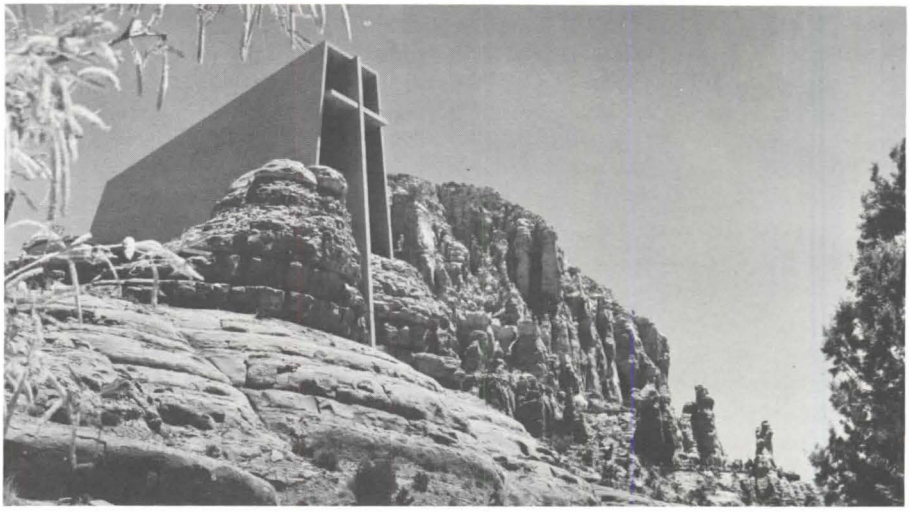
LANDMARKS

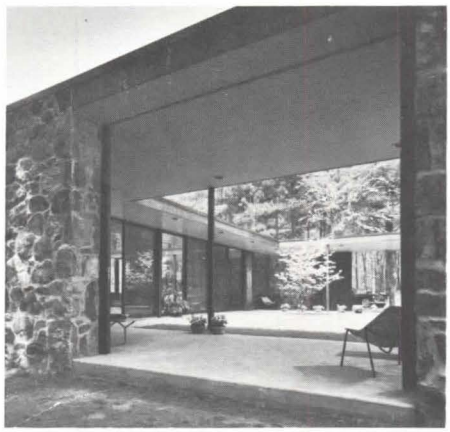
Many award-winning projects, upon completion, have attained unusual stature in U.S. architecture. A few of these trend-setting projects are shown here.

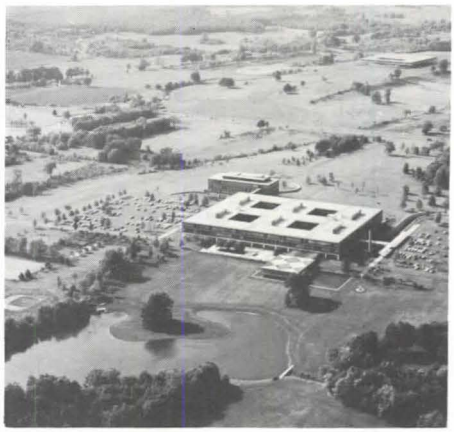


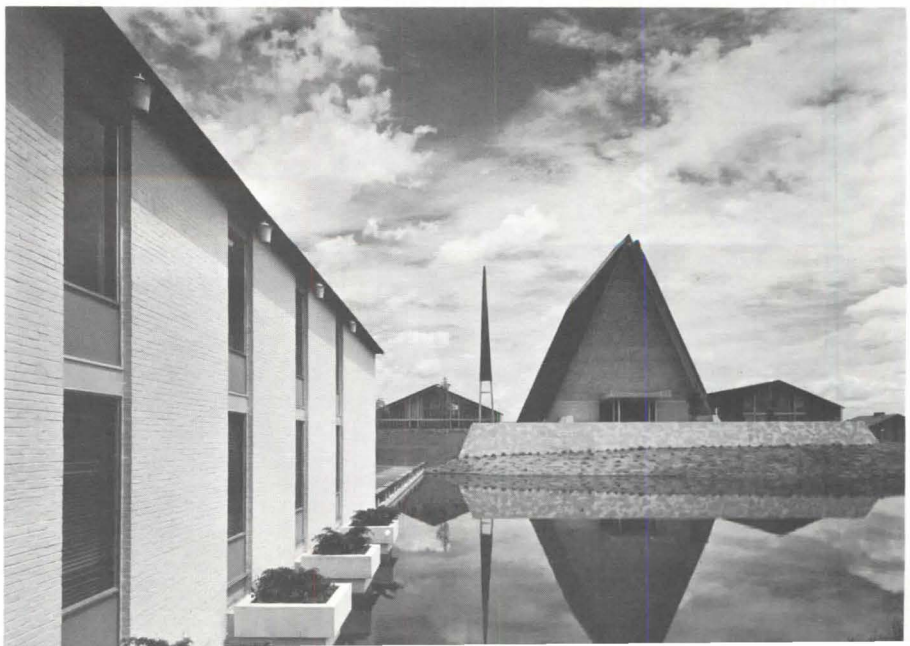
(1) Fifth Avenue Office, Manufacturers Trust Company; New York, N. Y.; Skidmore, Owings & Merrill; Citation 1954; completed 1954. ***(2)*** *Chapel of the Holy Cross; Sedona, Ariz.; Anshen & Allen; Citation 1954; completed 1956.* ***(3)*** *Architect's residence; New Canaan, Conn.; Eliot Noyes; Award 1954; completed 1956.* ***(4)*** *Connecticut General Life Insurance Company; Bloomfield, Conn.; Skidmore, Owings & Merrill; Citation 1955; completed 1957.* ***(5)*** *Concordia Senior College; Fort Wayne, Ind.; Eero Saarinen & Associates; Award 1956; completed 1958.* ***(6)*** *American Concrete Institute Building; Detroit, Mich.; Yamasaki, Leinweber & Associates; Award 1957; completed 1958.* ***(7)*** *Vista Mar Elementary School; Daly City, Calif.; Mario J. Ciampi; Citation 1957; completed 1958.* ***(8)*** *Priory of St. Louis and St. Mary; St. Louis, Mo.; Hellmuth, Obata & Kassabaum; Award 1958; completed 1962.* ***(9)*** *Foothill College; Los Altos Hills, Calif.; Ernest J. Kump and Masten & Hurd; Citation 1960; completed 1961.* ***(10)*** *First Unitarian Church; Westport, Conn.; Victor A. Lundy; Award 1960; completed 1961.* ***(11)*** *St. Louis Planetarium; St. Louis, Mo.; Hellmuth, Obata & Kassabaum; Citation 1960; completed 1963.* ***(12)*** *Washington Square East; Philadelphia, Pa.; I.M. Pei & Associates; Award 1961; under construction.* ***(13)*** *Central Fire Station; New Haven, Conn.; Earl P. Carlin; Award 1961; completed 1962. (For photo credits, see page 216.)*

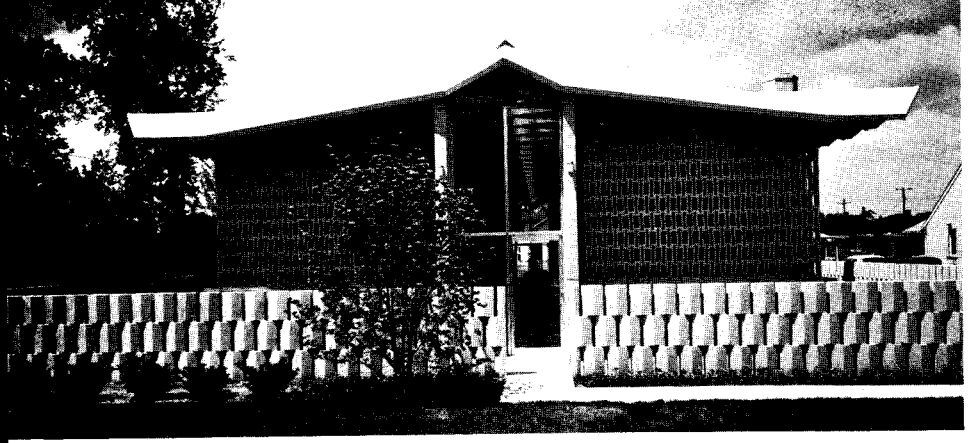


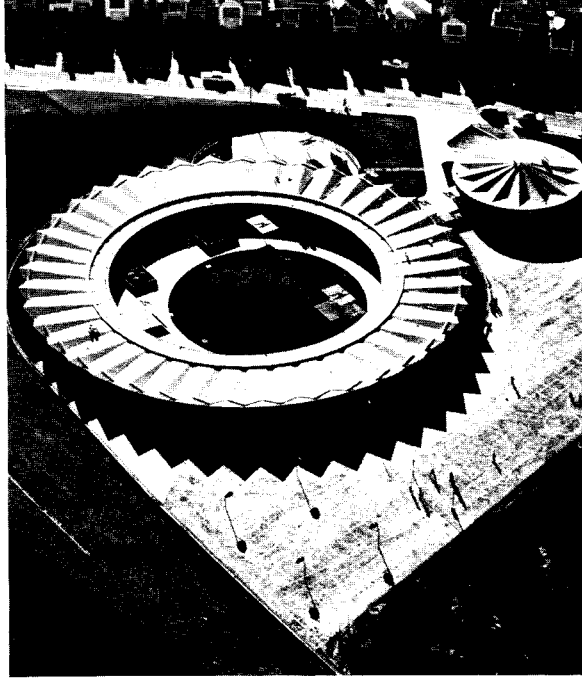


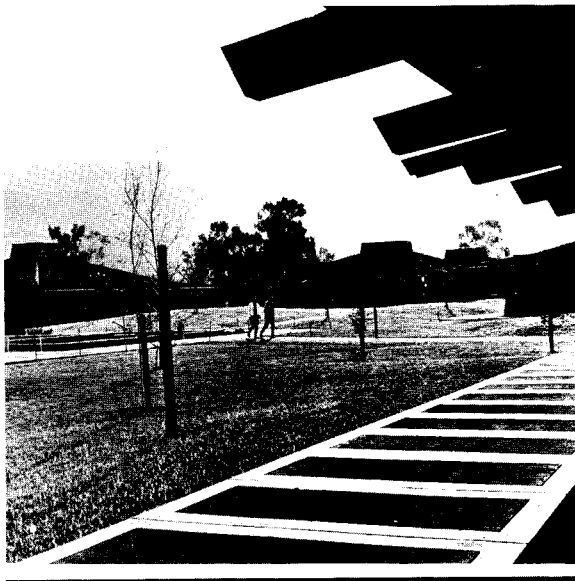


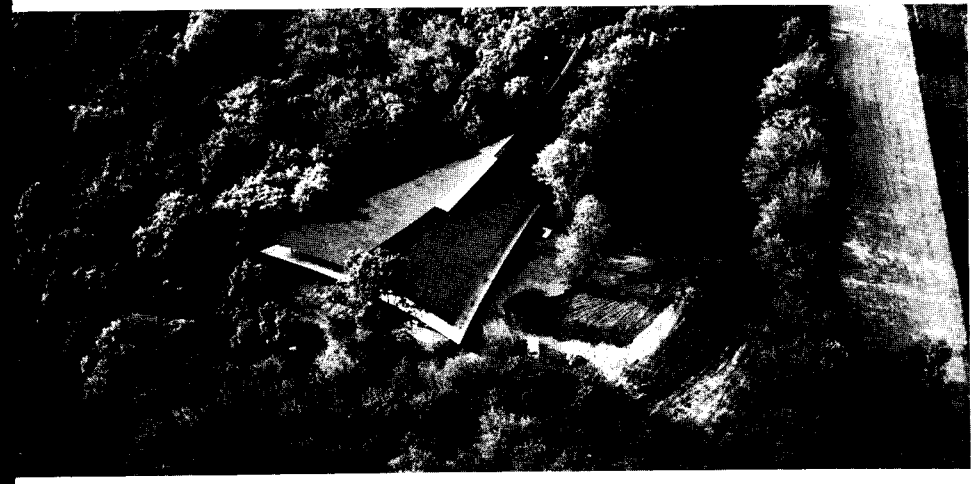


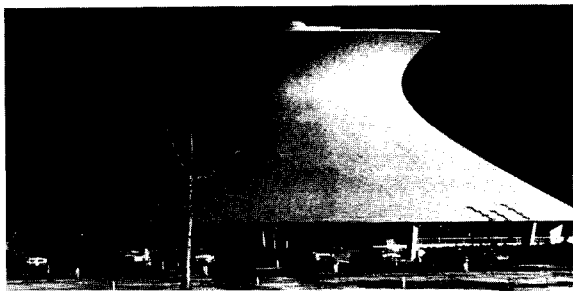


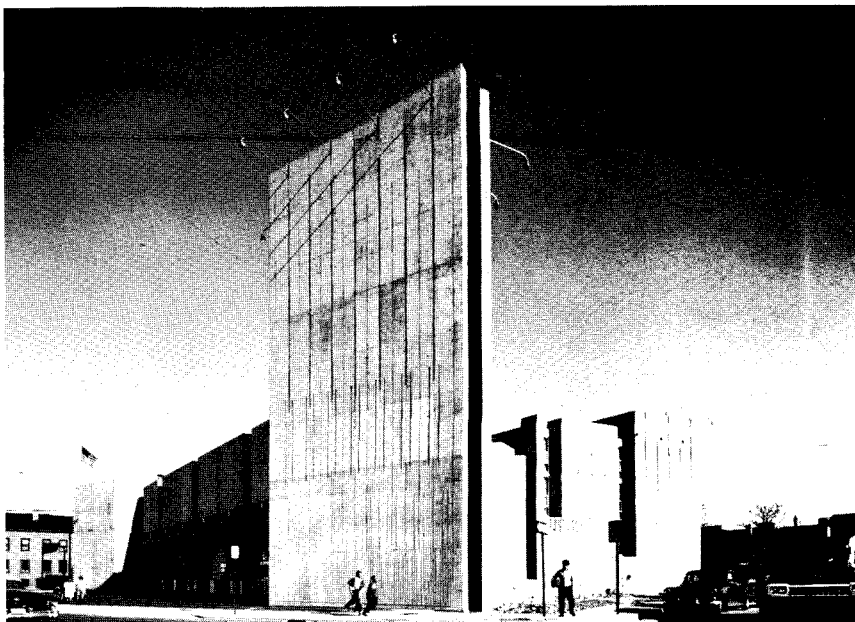


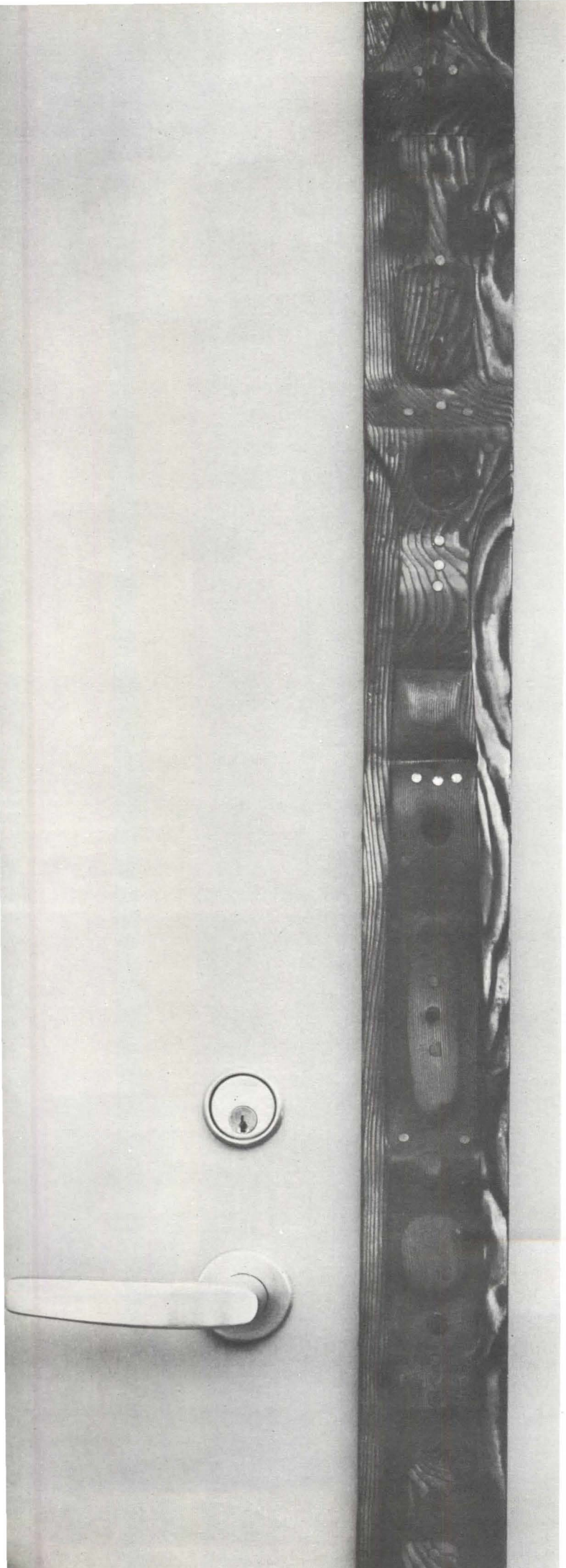












PHOTOS: MORLEY BAER

Draftsmen's Wharf

ARCHITECTS' OWN OFFICE • TACOMA, WASHINGTON • ROBERT BILLSBROUGH PRICE & ASSOCIATES, ARCHITECTS

Ever since it was organized in 1949, Price's office had been housed in makeshift quarters. "No matter how hard we tried," he says, "the architectural image we were seeking for our office never came off. Fate played into our hands when the state condemned our old office for the right-of-way for a new highway. We had to either build, buy, or rent.

"I think it is every architect's dream to have an office of his own design, for which he alone can assume the credit (or blame). Once we had decided to build for ourselves, the next decision was whether to build only for ourselves or include additional tenant space. I finally decided to build for our office alone, since I did not want to become a landlord.

"Having lived virtually all my life on or near the water helped me to choose the site. There were those who questioned my sanity in buying tidelands. Now that we have built, however, there are others talking to us about the development of property along the Tacoma waterfront."

The property is very well oriented for an architect's office. The view is to the north-northeast; glass walls on that side get sun for a few hours in the morning, but for the balance of the day the light is ideal for drafting.

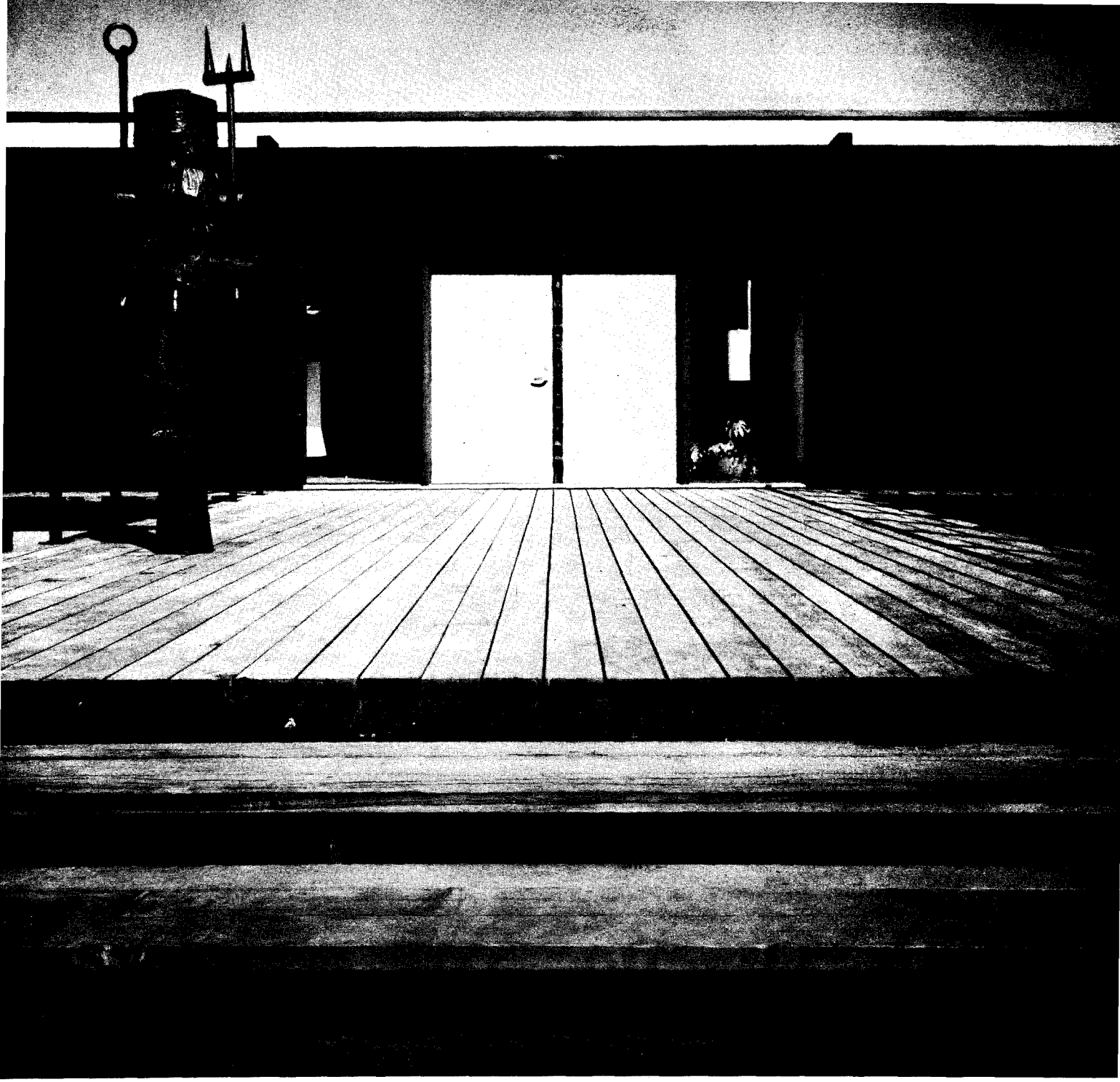
Price's space requirements were modest. His practice is limited to architectural design, all engineering work being "farmed out." His staff has averaged between eight and twelve employees for the past several years, and he prefers to maintain it at that size.

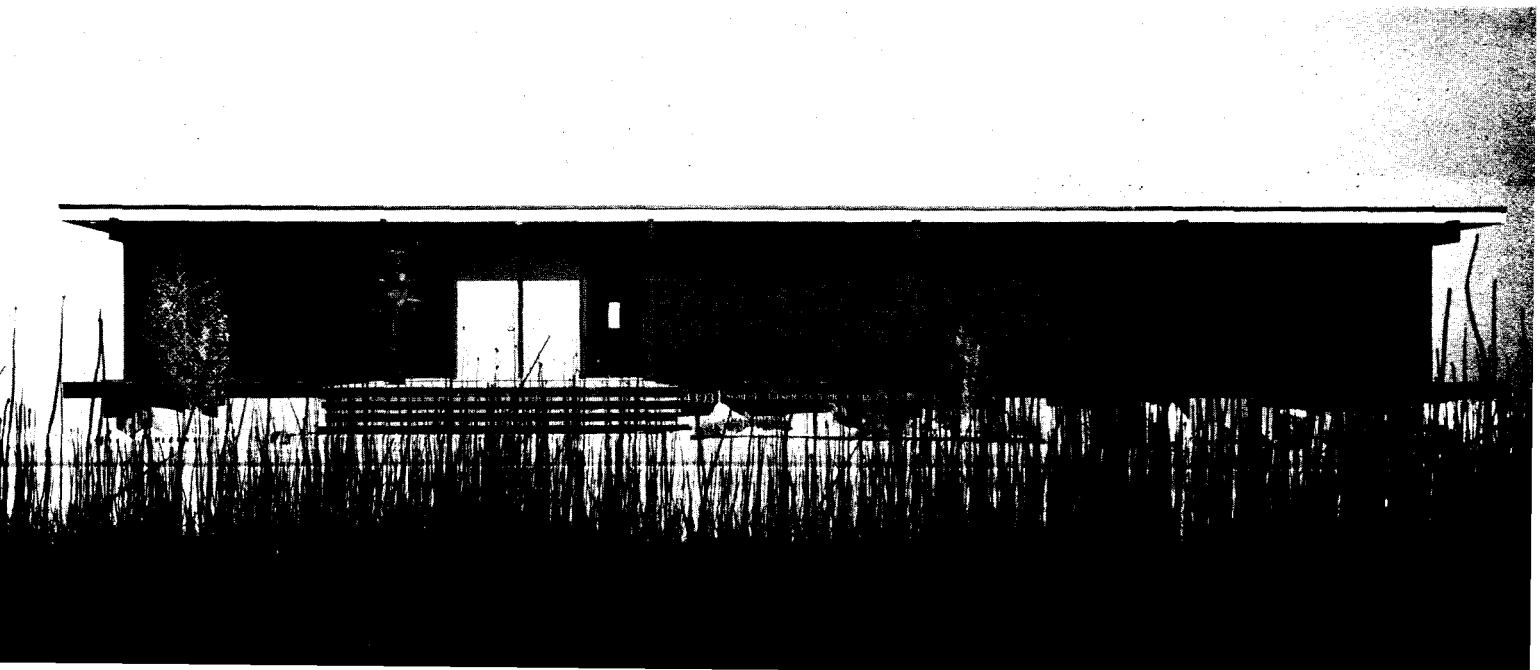
He tried several different schemes in sketch and model form, only to conclude that he was "trying too hard." "I finally decided," he recalls, "that the building had to be the simplest and most straightforward statement of my architectural beliefs —simple yet rich; it had to use simple local materials in an elegant way; it had to incorporate art and the site; above all, it had to suit its intended purpose as an office for an architect."

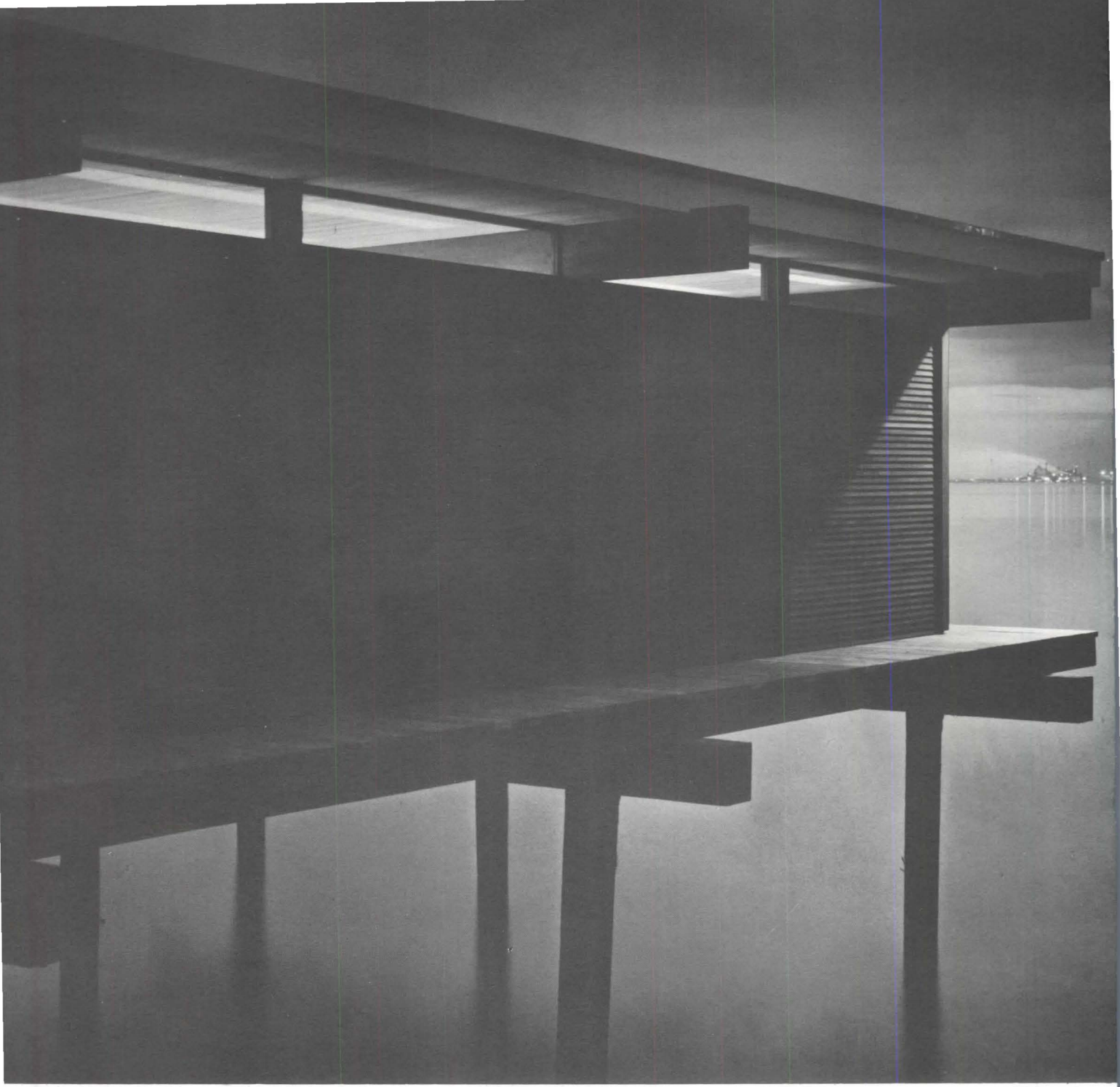
"The framing," says Price, "is as simple as could be conceived." The bay spacing of 15′-0″ is ideal for 2 x 12 floor beams and 2 x 8 roof beams. Walls are either of glass or of 2 x 4's and plywood, with cedar siding—rough side out—on the exterior and white plaster in the interior. The plywood-sheathed roof and floor serve as seismic diaphragms.

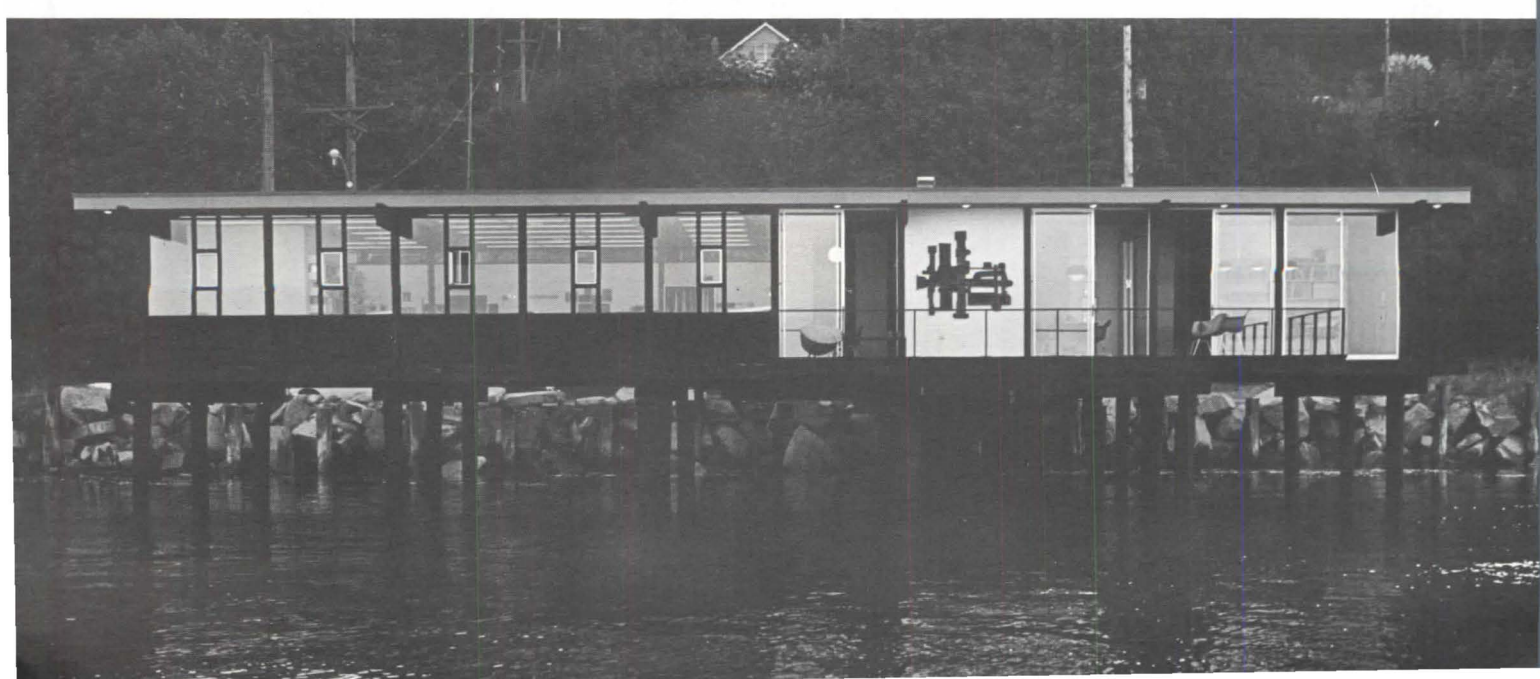
The building is supported on pressure treated piling, spaced to conform to the structural frame of the building. (Price notes that poured concrete piling would have been preferable, if enough money had been available, since wood piles could not be driven accurately enough to line up precisely with the building frame.) The pilings are capped at 6 ft above high water by rough-sawn, pressure-treated beams that follow the same plan as the laminated roof girders. The only major danger to the structure is from boats and large logs set adrift by storms. Some precautions will be taken this summer to protect the building from these threats.

"I hope," Price concludes, "that this building helps me prove to my clients that a simple building—with art and color and a good setting—may be inexpensive and nevertheless rich."









Winter, summer, spring, and fall—night and day—at no two times is the view the same. There are winter storms and moonlit summer nights to be enjoyed.

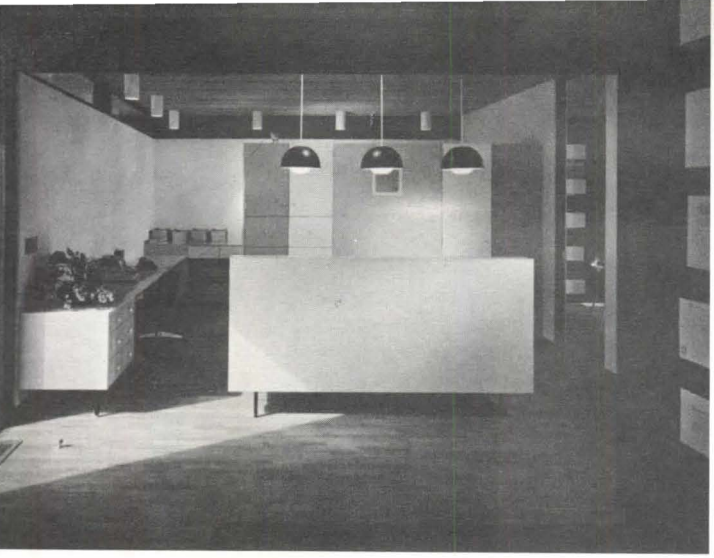
The ocean-going freighters, the tugs, the fishermen (who wave as they return and report their catches to the drafting room), the ducks, the sea gulls—all add to the setting. The sound of waves is both invigorating and soothing.

During the summer—at lunch hour and after work—many of us fish from the deck. Office champ for the summer of '63 was our secretary, whose record was 10 sole, 6 perch, 1 trout, and 5 bullheads.

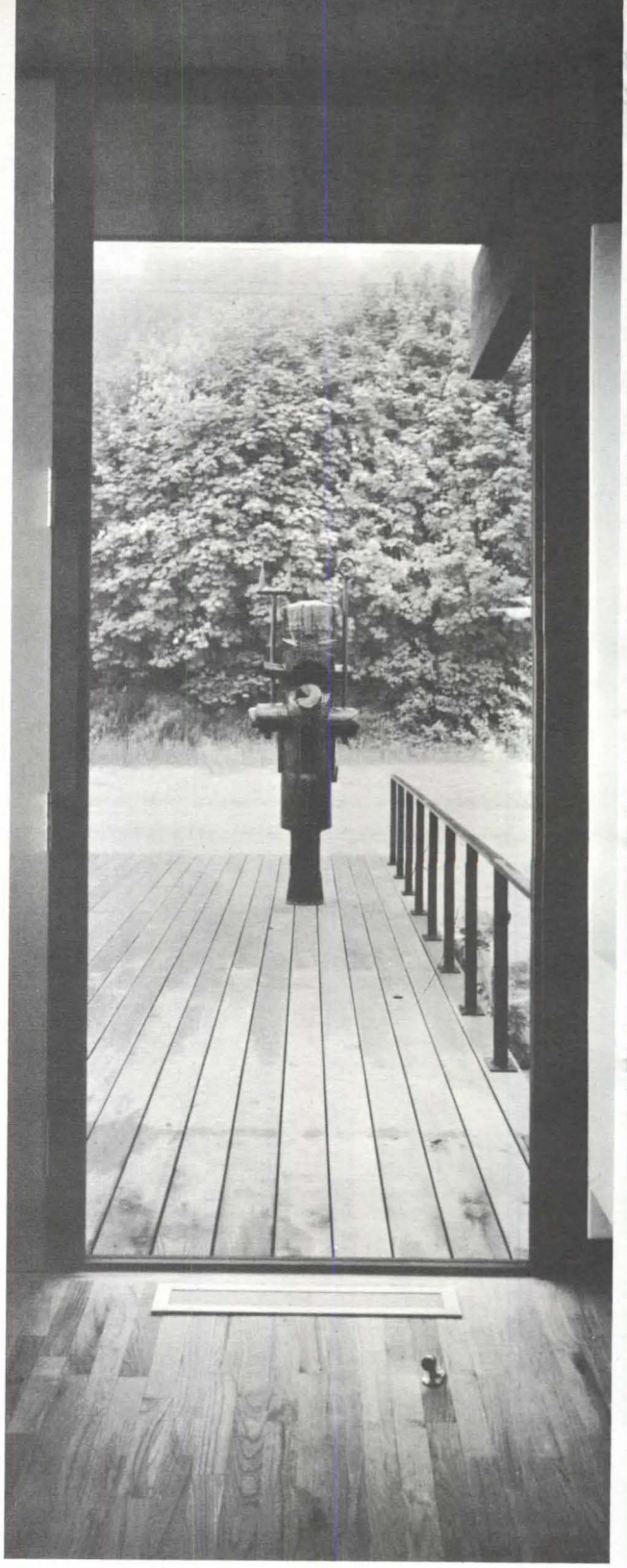
One real problem is that our yachtsmen friends keep stopping by to have that "one for the road."

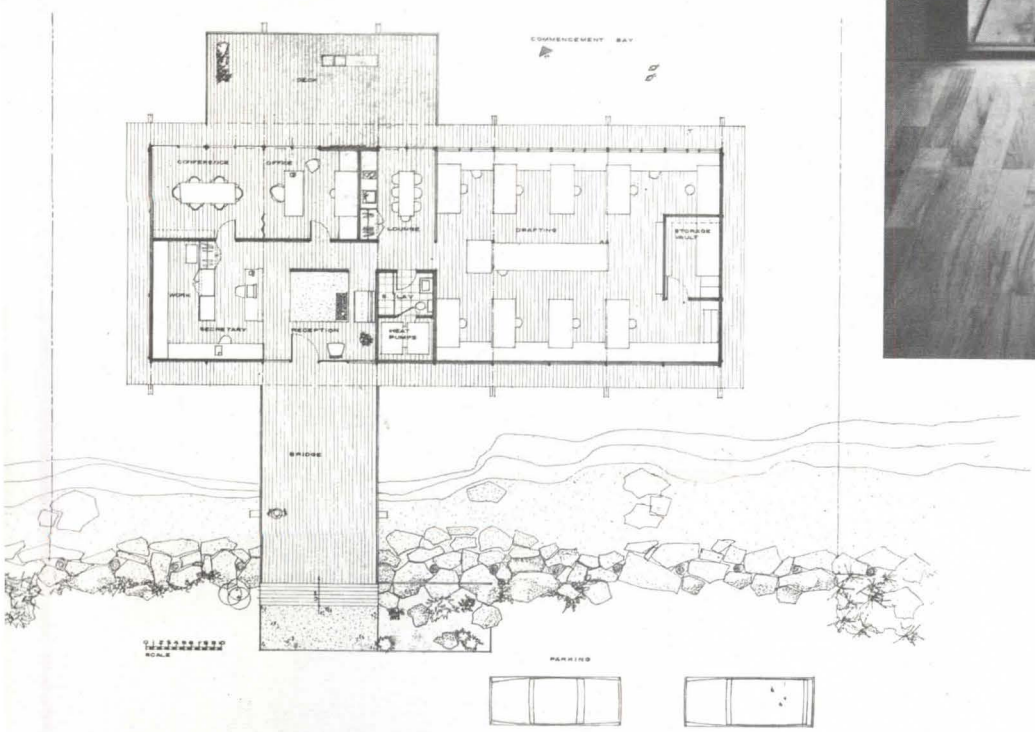
ROBERT BILLSBROUGH PRICE

The exterior is almost entirely wood and glass. All the wood is stained black-brown, except for the gold-painted fascias and red-orange front door. Decking is of untreated redwood, now weathering to silver gray. Iron railings were chosen for their fine lines. The relief by Harold Balazs, on the white plaster wall above the deck, is made of cedar—sawn, burned, and waxed—as is the astragal on the front door by the same artist.



Wood is also the dominant material on the interior. Floors are of oak, treated with resin and oil; ceilings are of rough-sawn cedar; cork walls in several locations help control acoustics. Interior design was by Joan Price, the architect's wife and a member of the firm. Colors are limited to white and wood tones, except for the use of gold and putty color, with white, in the plastic laminate surfaces of the cabinetwork. The statue by Harold Balazs on the entrance deck is of "Screwtape," an agent of the devil, who originally stood guard over a banking exhibit at the Seattle World's Fair.





Spaces for Art Exhibitions

The opening in New York recently of a number of new museums and galleries—among them Philip Johnson's remodeling and additions to the Museum of Modern Art, Edward Durell Stone's Gallery of Modern Art for Huntington Hartford—make it timely to enumerate the specialized thinking that is currently developing the museum, gallery, and exhibition space into a technically complex interior. For the increasing number of exhibition spaces being built for colleges and universities across the country makes this pertinent to more and more architects.

Architect Wilder Green, who is a member of the Department of Architecture at the Museum of Modern Art, discusses the broad outlines of current thinking on the design of gallery spaces:

"Museology—or the attitudes taken on the installation and presentation of works of art—has become something that people in museums and galleries are more concerned with, and this interest is responsible for the developing complexity of designing spaces for exhibitions. Originally, museums had big galleries with large, central skylights, and the walls were simply lined with paintings. Today, there is an attempt to emphasize the visual impact of a work of art and to present it to the viewer—even to interpret it. Increasingly, exhibitions are designed to serve as interpretations of the art that is displayed, as well as to house it. Certainly it is true that one can light a painting so as to give it a completely different interpretation—at the simplest level, by using a blue light, for example, rather than a warm yellow light.

"Several elements of exhibition space have therefore received rather detailed consideration so as to make them useful tools toward achieving this goal of interpretation. The most significant of these are: the character of the actual spaces, the type of partitioning, and the quality of lighting.

Character of the Space

"Most museum people think they want fairly anonymous spaces; the architect, on the other hand, wants to build strong architectural statements. Yet the purpose of the space is to show works of art, so this is a real conflict in a museum. Actually, of course, it is a conflict in all architecture, and each museum presents a different balance between these seeming contradictions.

"An architect should also be aware of one other aspect of the character of museum spaces that is currently under discussion. Many museum people champion the idea that, as you come into a gallery, you should see a work of art and not the exit to the next room. Furthermore, the offsetting of doors, if not of galleries themselves, provides psychological and visual relief for the visitor. It permits a visual change in the appearance of each room, and removes the burden of a seemingly endless chain of rooms ahead.

"Anterooms and views to the outside are other devices frequently used to provide relief for the eye so that it can focus on what must be seen next.

Flexibility

"Directors of galleries and museums that have a program of constantly changing exhibitions want to be able to change the scale, the size, and even the character of their spaces in keeping with the scale of the works they are showing.

"If a museum or a gallery had a permanent collection that never changed, then to build fixed rooms would be more logical and in harmony with the actual function of the organization. However, few institutions have even permanent collections that never change. So it would seem desirable in all cases that there be a certain flexibility, but it will depend on the program of the museum or gallery how flexible it need be.

Lighting

"A completely fixed space will not require much flexibility in lighting. If you have a fixed room and you build in a system that will light all the walls, this will take care of the flexibility required to move pictures along the walls. If you have a museum in which you are going to be moving partitions, then you will need flexible lighting—a lighting system that will be as flexible as the partitioning system. Flexible lighting is also needed for the display of sculpture, or of objects in the center of the room. And it must be noted that if you can use a completely fixed system, it can be much less obtrusive.

Fluorescent vs. Incandescent

"There are several schools of thought on the subject of fluorescent vs. incandescent lighting in museums, as elsewhere. Some people feel that fluorescent light is ideal because it is evenly distributed. In certain instances, as in showcases or vitrines, an even, diffuse light is usually desirable. Certain people also prefer the even, cold light for paintings, but some feel that fluorescent lighting is so even that it takes the life out of the painting. Others feel that incandescent light is best. And still others believe that a combination of the two is ideal.

"Fluorescent lighting has definite limitations for gallery use—it is difficult to direct it and to make it flexible in the way that incandescent lighting can be made flexible. But more critical is the inability to focus it.

Natural Light

"Many museum and gallery people do not want natural light; some want a combination of natural and artificial. For sculpture, natural light is very desirable, since it tends to mold the sculpture and is ever-changing. However, natural light cannot be controlled, so it is permanently excluded by many people.

Windows and Skylights

"Skylighting is preferable to side-lighting from windows, it is generally agreed, because it is more diffuse and permits a greater quantity of light without loss of wall space.

The Exhibition

"One other aspect of gallery work that is being widely discussed today is the manner of hanging paintings—that is, whether they should be hung as single, isolated objects on a wall or whether they should be paired, grouped, or massed on a wall.

"In part, this is a question of how much space is available for hanging a painting, and, in part, of the scale of the work of art. A massed arrangement can be handsome and decorative. However, it can also effect a pattern that makes it difficult to see the work of art for itself; it becomes part of an over-all pattern. Or, two paintings can be put next to each other so that, because of their strengths, they cancel each other, or produce color clashes. Conversely, they can reinforce each other and make a stimulating juxtaposition.

"Actually, this is a matter of who is doing it and of how well he is doing it. Generally, this task is undertaken by exhibition designers and not by the architect of the building. So far as the architect is concerned, he must insure that he has provided sufficient wall space and equipment—proper backgrounds and flexible or fixed partitions and flexible or permanent lighting—so that all situations of the projected program for the galleries, as the architect sees it, can be met."

PHOTOS: ALEXANDRE GEORGES

Views from the same position show the Long Gallery arranged for a sculpture exhibition, for which windows are left accessible to admit

MARLBOROUGH-GERSON GALLERY INC. • NEW YORK, N.Y. • INTERIOR DESIGN BY WILDER GREEN, ARCHITECT • JUSTIN HENSHELL, ASSOCIATE ARCHITECT

The opening of the Marlborough-Gerson Gallery in New York marks the first transatlantic venture of the owners of England's Marlborough Gallery—those *wunderkinder* of art entrepreneurs, whose rapid rise to fame and fortune has been described in the art world almost unanimously as phenomenal. What these determined clients have obtained from their architect, Wilder Green, is one of the largest commercial art galleries in the world, a gallery that combines many of the alternative methods of contemporary museum craft and that has a subtle yet distinct atmosphere of style.

The Marlborough Gallery has most of the facilities of a small museum within its 12,000 sq ft in an office building: exhibition and office space, two private viewing rooms, and large work and storage areas.

The clients wanted the galleries to be extremely flexible so that they could use them to show large-scale exhibitions of one artist's paintings or sculpture or subdivide them to have two or more simultaneous exhibitions. As designed, the exhibition space is a combination of permanent. fixed spaces and flexible, partitioned spaces.

The principal room is a large hall, reminiscent of a 16th-Century Long Gallery. It has columns that have been exaggerated in scale so that they can serve as backgrounds for sculptures. The lintel beams over windows and between columns have also been enlarged in order to give a consistent line to the perimeter. The floor is dark-gray slate. The effect is solid and heavy, a bit of a combination of Egypt and the 30's, and it establishes a calm and classical character for the space simply and unobtrusively.

Parallel to this Long Gallery and separated only by free-standing columns are lower-ceilinged Alcove Galleries that can either be incorporated with it or partitioned off from it so as to be used for different exhibitions.

At the ends of the Long Gallery are fixed spaces that have no columnar articulation. They are treated as small salons—with carpeted floors and fabric-covered walls.

The architect was anxious for the galleries to have "a sense of place." "I wanted visitors to remember the galleries as well as the works of art," Wilder Green says. "It was therefore important that the galleries be architectonic." The exaggerated columns and lintels and the slate floor that binds the large spaces together help to create this "sense of place." Yet this personality is not dominating. "The attempt was to design a space that would have a distinct architectural character but would also be an excellent background," the architect explains. "In the Marlborough Galleries I was attempting to balance the two."

The architect wanted the movable partitions to appear substantial, rather than have them suspended in space on poles with open areas above or below the panels. Yet he wanted to express the fact that they are not permanent but movable partitions, which can be changed to alter the size and scale of the rooms.

Two kinds of partitions are used. The first set is designed to close off the windows of the Long Gallery so that natural light will not interfere with the controlled artificial lighting when paintings are on exhibition. They are also used between the free-standing columns on the opposite side of the Long Gallery to close off the Alcove Galleries, and in both uses they provide more wall space for hanging. The

natural light, and as arranged for an exhibition of Adolph Gottlieb's paintings, for which partitions have been installed to provide more wall space.

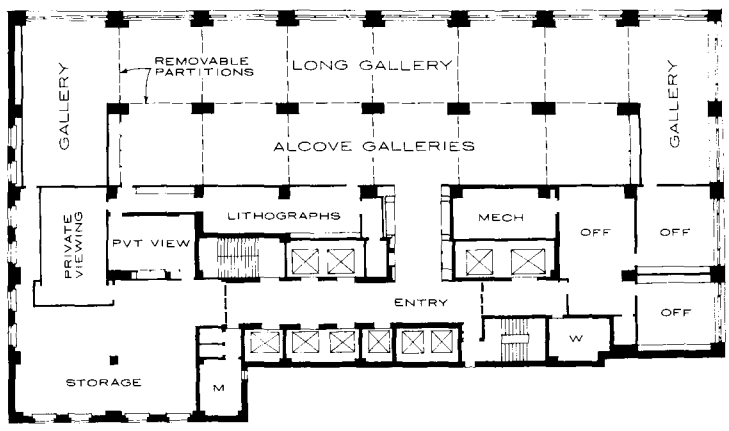
panels are approximately 10′ x 14′ and weigh 200 lbs.; they have an aluminum skin and are cloth covered. The fabric is a natural Belgian linen that is generally used by artists for canvasses. The 10-ft width to which it is woven was sufficient to cover the height of the panels; therefore, it is run lenghtwise, avoiding seams in the material. "We tried to avoid vertical joints so that nothing would affect the possibility of hanging paintings either singly or massed," says the architect. However, a space is left between the panels and the adjacent columns both to express their impermanency and to permit them to be hinged at one side for access to the windows.

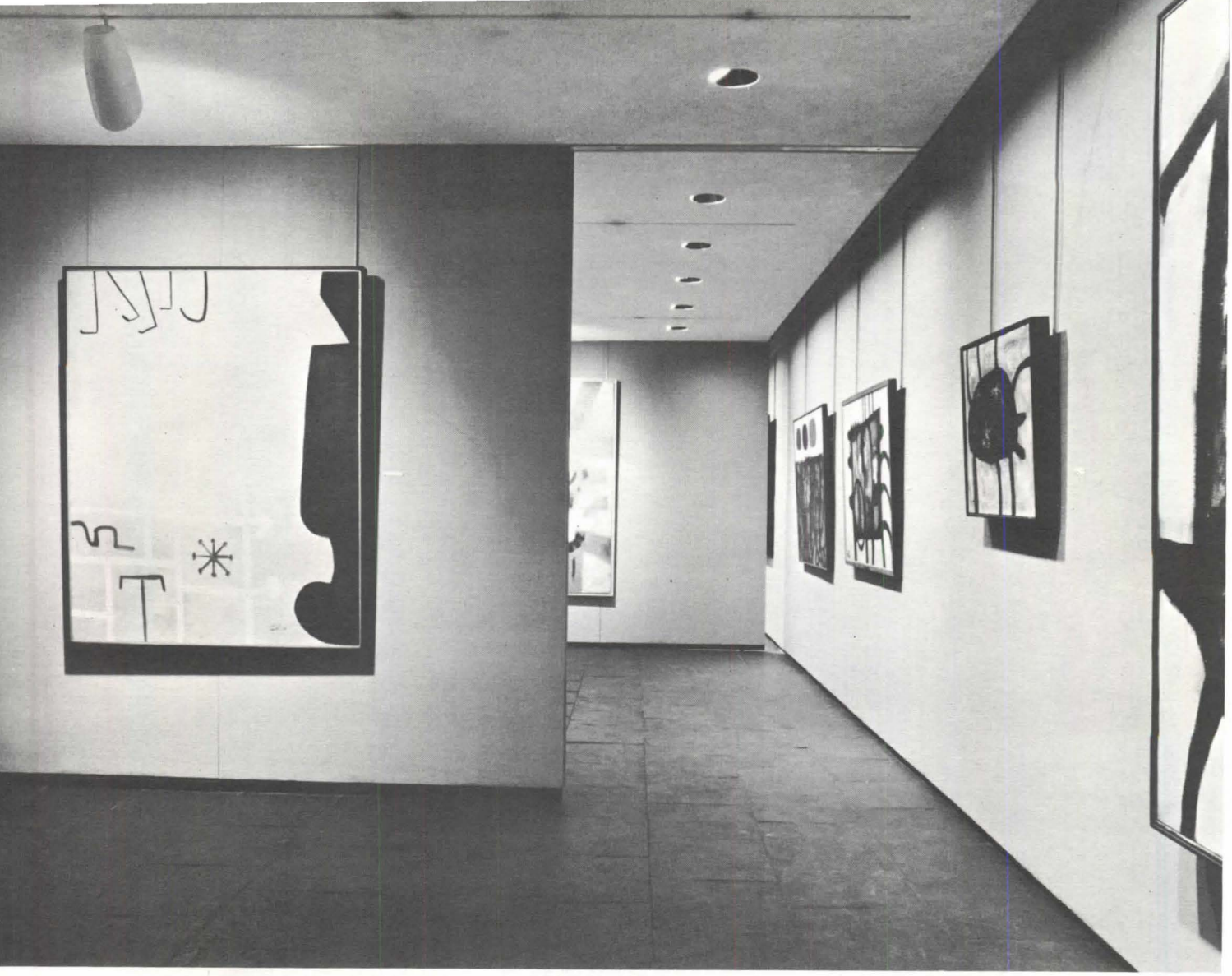
The second set of partitions is designed with smaller panels—three to a bay. This permits the subdividing of the Long Gallery and of the Alcove Galleries in a variety of ways—with one, two, or three panels—for free-flowing or self-contained rooms. These panels are also cloth covered and have a tongue and groove connection that leaves a hairline joint. Since the panels are used to create smaller spaces for small-scale displays, the joint is thought not to be disturbing. The panels are flush with the floor and ceiling, yet are held slightly away from the permanent structure to express themselves as partitions.

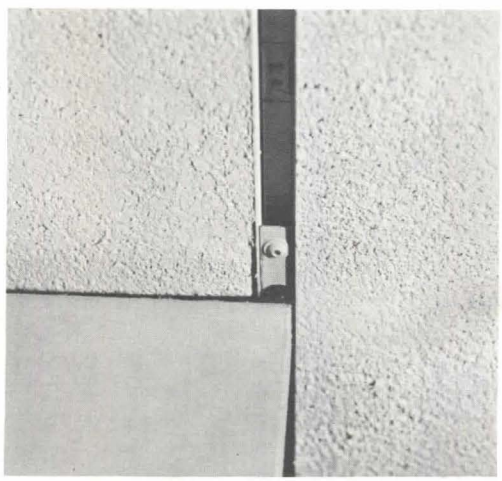
The intention was to be able to use or not use natural light at will. In the Long Gallery, the windows make it possible to take advantage of natural light for sculpture and to provide psychological relief by giving the feeling of being able to look out. The office building structure could not accommodate skylights though the architect would have liked them.

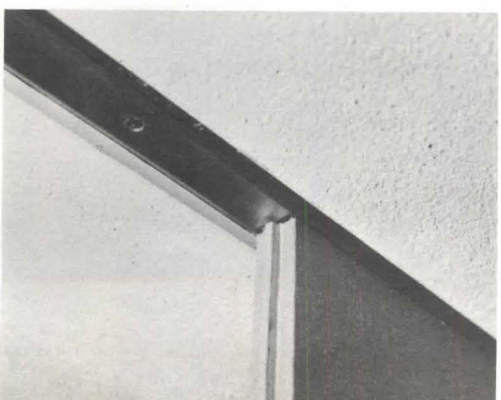
All artificial lighting in the gallery is incandescent. The system is a combination of both flexible and fixed lighting: Fixed, recessed wall washers light both the permanent walls and each bay of the Long Gallery, so that when the panels are put in, between the columns or at the windows, they can be lighted as permanent walls.

Besides this, there are two lighting strips recessed in the ceiling of each gallery space to which flexible lighting can be attached at 6 in. on centers so as to accentuate sculpture or paintings on panels. The details of this system were worked out in collaboration with Edison Price. The mechanical engineer for the project was Edwin Weed, and the general contractor was H. L. Lazar, Inc.

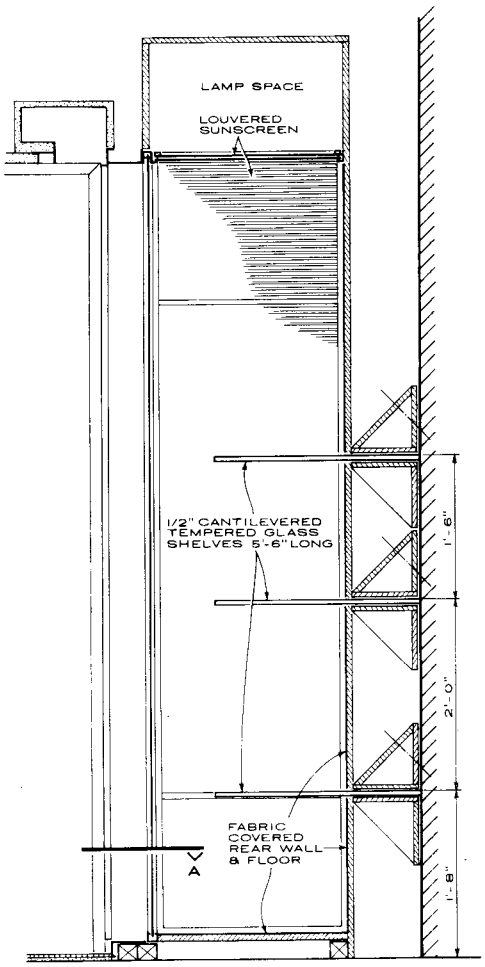




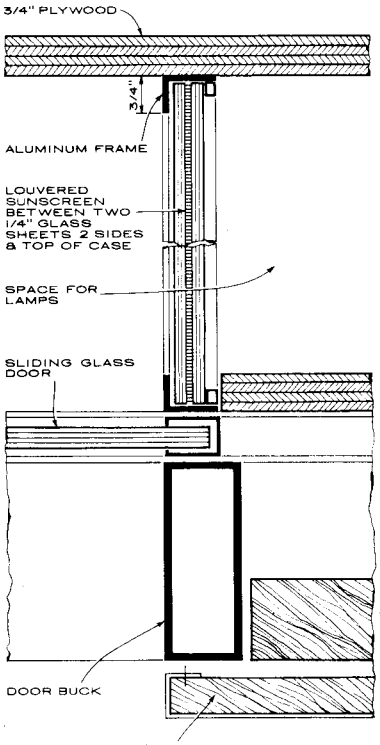




For a painting exhibition, the Alcove Galleries (above) *were partitioned with two panels in each bay; panels were offset to create a free-flowing space. Note the space in the right rear corner, which is left open to express the difference between movable partition and permanent wall. The partitions separating the Alcove Galleries are held by a pin connection in a special ceiling track* (bottom); *the partitions that subdivide the Long Gallery connect into the recessed lighting tracks* (middle). *Lighting tracks allow for flexible illumination of works on the movable panels; recessed downlights wash the permanent walls.*



VERTICAL SECTION SCALE: 1/2" = 1'-0"



PLAN SECTION AT A SCALE: 3" = 1'-0"

Elegantly detailed showcases for small sculptures flank the entryway (below). *Tempered glass shelves are cantilevered through the fabric covered wall, and are lighted from above and both sides through black sun screening, which conceals the light source.*

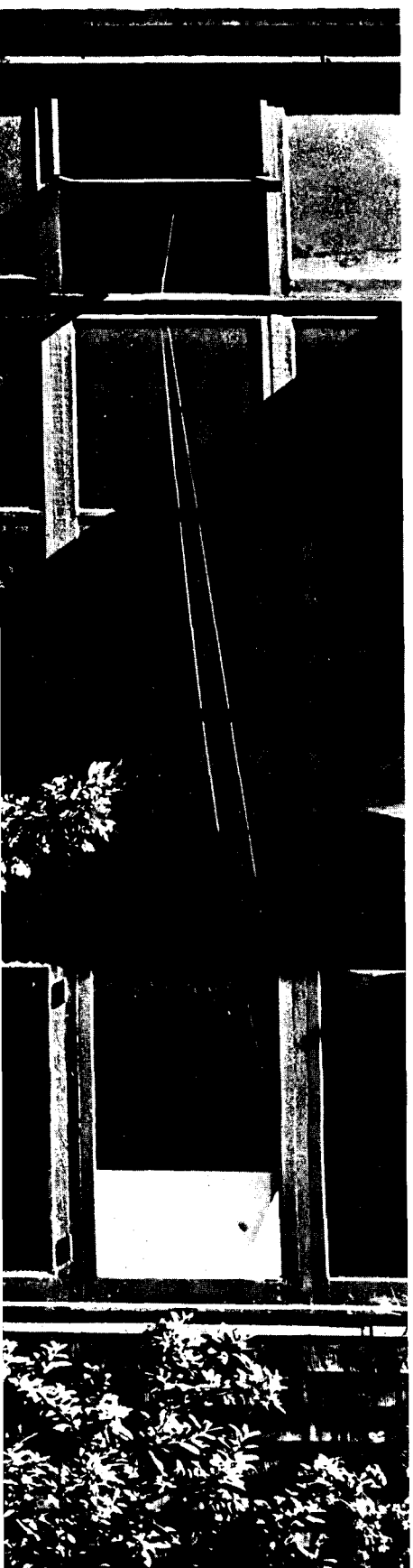
DATA: descriptions and sources of the major materials and furnishings shown.

WALLS: paint/white; Belgian linen/natural and white/Marie Nichols Inc. **FLOOR:** Buckingham slate/dark gray/Domestic Stone & Marble Supply Co. **CARPET:** dark gray/Magee Carpet Co./through Ardee Floor Coverings Inc. **CEILINGS:** acoustical plaster/white. **DRAPERIES:** white/Isabel Scott. **PARTITIONS:** aluminum skin/custom; fabric covered/white linen/Marie Nichols Inc. **LIGHTING:** recessed downlights, wall washers, custom flexible strip lights/Edison Price Inc. **SHOWCASE:** tempered glass shelves; white linen wall fabric/Marie Nichols; sunscreen baffles/Koolshade/in custom panels/Edison Price; lighting/Edison Price. **FURNITURE:** Brno chairs/black leather/Knoll Associates. Steel and glass tables/architect design/custom/Treitel-Gratz Inc. Stools/steel, black leather/Kjaerholm design/Frederick Lunning

The Passing of the "Ark"

The "Ark," a cherished landmark on the Berkeley campus of the University of California, and the home of the school of architecture (now the College of Environmental Design) for 58 years, is soon to be replaced by a high-rise structure, in accordance with the University's expansion plans for a 27,500-student campus. Since only 100 students can at present be accommodated in the "Ark," the departments of architecture, landscape design, and city planning are scattered throughout the campus. All of these are to be consolidated within one large new building for 1000 now under construction on another site. "All of us leave the 'Ark' with regret," says Dean Wurster. "On the other hand, the new building, designed by three members of our faculty—DeMars, Esherick, and Olsen—is strong and handsome."

Let us hope that the new building will hold as many poignant lessons for the student of architecture as did the "Ark." We are grateful to the class of '63 for having recognized its importance and for having commissioned the documentation of the building on the occasion of Dean Wurster's retirement; to Morley Baer, who captured the rare atmosphere of the school in a set of splendid photographs, a few of which are shown here; and to Dean Wurster, whose fond recollections of the building with which he has been so long associated are printed below.



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"The first formal architectural curriculum on the Berkeley campus of the University of California was started in 1903, when Architect John Galen Howard of New York was appointed supervising architect and Professor of Architecture. At first, classses were held in his office in downtown Berkeley.

"As student enrollment increased, and there was need for more space, the original, rectangular, shingled building was built in 1906 on the campus at the corner of Euclid and Hearst. More space was soon added, and by 1913, when I was a freshman, the stepped glass corridor (**3**), the lecture room (**6**), and the exhibit hall (**5**) were completed. The library was built in the WPA days of the 30's; the book stack, the seminar room under the library, and faculty offices were done in the early 50's. The Dean's offices were installed in the old entrance hall, with its fireplace for gloomy days.

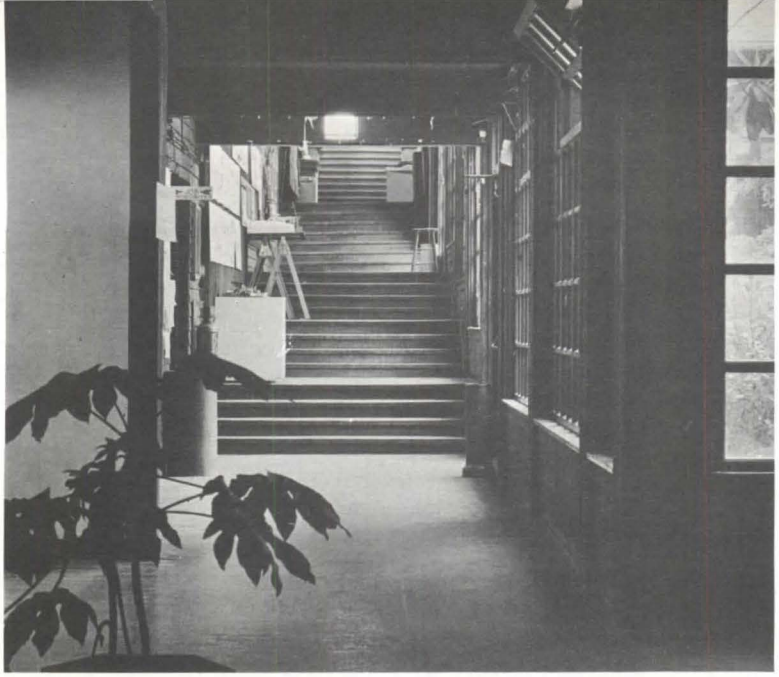
"Many architects collaborated in the design of this distinguished building. The first unit, and the earlier additions, came from Mr. Howard's office, in which William C. Hays played a prominent part. The fireproof library was designed by Warren C. Perry when he was Dean, with Walter Steilberg as the engineer. The remodeling of the 50's was the work of Professor Howard Moise.

"Mr. Howard worked in the office of H. H. Richardson, so I like to think that the 'Ark' (**2**) might be a cousin of the fine shingled house on Brattle Street in Cambridge. The continuous windows (**1**), with their uncased wood posts, come close in essence to Sever Hall at Harvard, even though the brick between windows is necessarily heavier than the wood.

"The lovely court with the cherry trees (**7, 8, 9**) was added after the library was built, and has been the heart of student life ever since. Many classes have been conducted here on mild days. But we cannot give undue credit to our later architects for this out-of-doors living, since clearly the stepped glass corridor of earlier days hinted at what was to come.

"Generations of students have come under the spell of this timeless, simple structure. It is part of the rich Berkeley heritage, and its continuous windows and exposed interior framing (**4**) have pointed the way for modern directions in architecture."

—William Wilson Wurster



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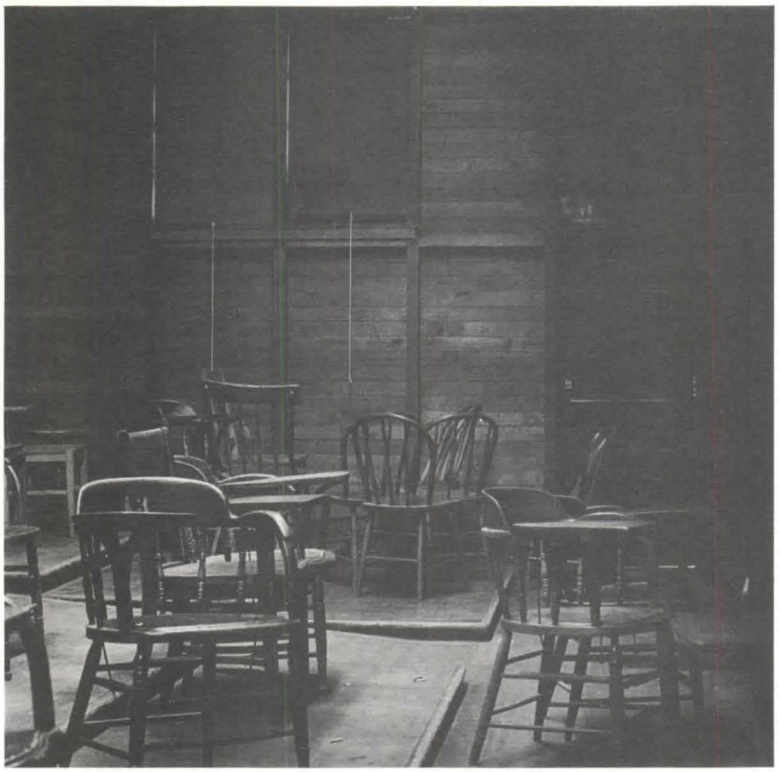

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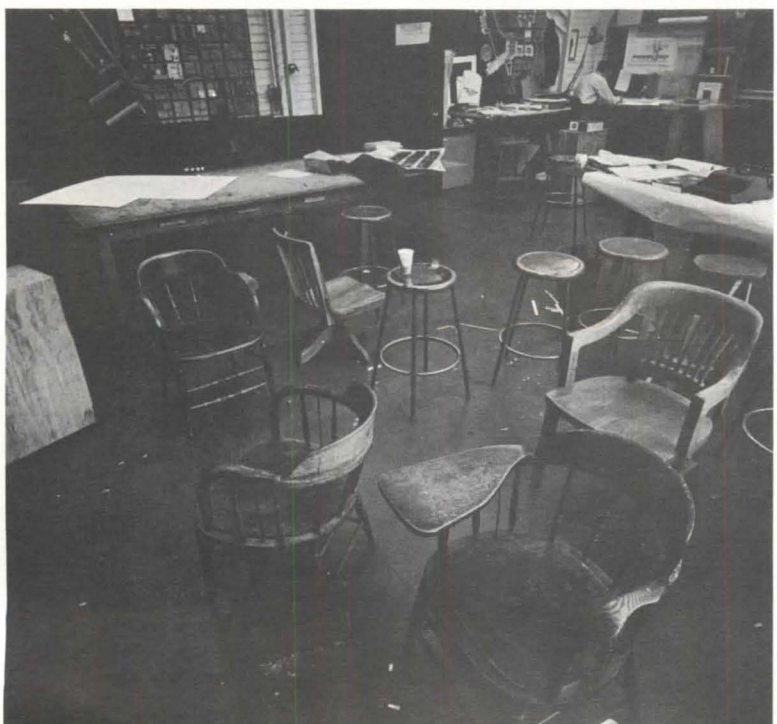

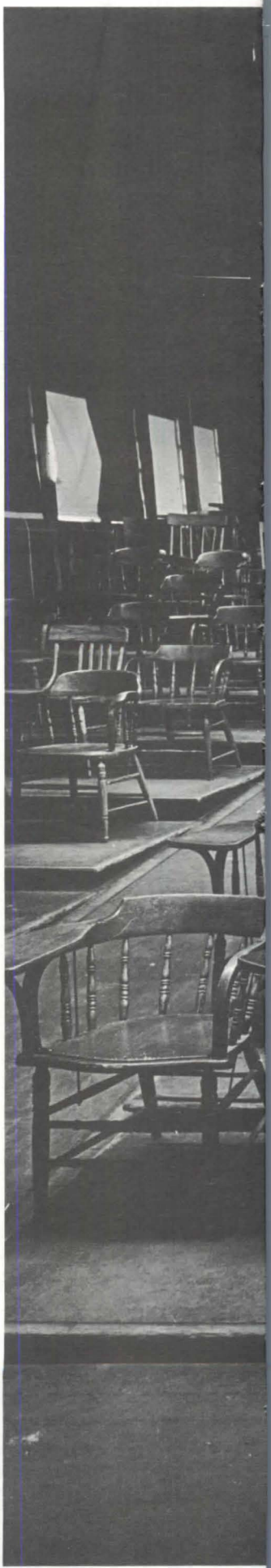

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Gas Cooling at the Fair

Largest assortment of gas-powered equipment ever assembled is now in operation at the New York World's Fair. Practically every type of gas-cooling equipment has been specified to furnish approximately 80 per cent of the entire Fair cooling load. The mechanical installations of five different exhibitions are analyzed to illustrate the five basic systems that are meeting these air-conditioning demands.

BY JAMES WYRTZEN

Generic principles of the primary gas-cooling systems found at the Fair are reviewed by the Supervisor, World's Fair Activities, The Brooklyn Union Gas Company.

Although much of the design thinking for the current New York World's Fair was guided by the temporary nature of the exposition, many new engineering concepts of a permanent nature have evolved. Among these is the ability to integrate gas-powered air-conditioning systems in practically any building design. The Fair represents the largest showcase for gas-powered equipment ever assembled. Almost every type of a gas-cooling equipment is installed, in one form or another, and it will handle about 80 per cent of the Fair's cooling load—approximately 14,000 tons of gas cooling.

Only within recent years has gas cooling become a factor in the air-conditioning market. By the start of 1964, over 1,500,000 tons of gas cooling was in operation; in 1957, the first year for which figures are available, there were only 300,000 tons. While this represents a small segment of the total amount of air conditioning in the country, the wide application of gas cooling at the Fair is expected by the gas industry to be the impetus which will make gas a major factor in air conditioning.

To handle the full range of air-conditioning requirements at the Fair, from the smallest (3 tons) to the largest (1600 tons), five basic gas systems are used: (1) large tonnage steam absorption; (2) small tonnage direct-fired absorption; (3) large tonnage gas-engine driven centrifugal compression; (4) small tonnage gas-engine driven reciprocating compression; (5) gas total-energy system for electricity, heating, and cooling.

Large Tonnage Steam Absorption

In large tonnage steam absorption equipment, the gas-fired boiler is the prime energy source. Equipment is available in capacities up to 1000 tons. In the absorption cycle, an absorbent, usually lithium bromide, absorbs vapors given off by water. The continual evaporation of the water, which acts as the refrigerant, provides the cooling. Heat from steam fed to the machine is used to regenerate the absorbent liquid by boiling off the excess water vapor to complete the cycle.

Absorption units have no major moving parts, are quiet, and are easy to maintain. They operate with maximum flexibility, modulating from zero to full load. Since the same boiler used for heating a building is also used to power the absorption machine, more efficient boiler use is attained.

Absorption systems are finding wide use in large apartment projects, shopping centers, commercial buildings, hotels, and industrial plants.

Exhibitors at the Fair using this type of system include the Port Authority Heliport—600 tons (a permanent installation); Ford Motor Company—1600 tons; General Motors—1200 tons; Federal Pavilion—1000 tons; and Bell Telephone—600 tons.

Direct-Fired Absorption

In direct-fired absorption equipment, the heat from a gas flame is used directly to regenerate the absorbent. These units are available in capacities up to 25 tons, and many are designed to provide both heating and cooling. The smallest of these units, down to 2.5 tons, are finding wide acceptance in central residential heating and cooling applications. Multiple installation of the direct-fired units are also applied in small commercial buildings.

Direct-fired absorption units, providing both heating and cooling, are installed in the Billy Graham Pavilion—50 tons; Travelers Insurance Company Exhibit—125 tons; West Virginia Pavilion—50 tons; and the control building for the Fountain of the Planets—3 tons.

Large Tonnage Gas-Engine Driven Centrifugal Compression

Considerable interest has developed in the use of gas-fueled engines to drive centrifugal refrigeration compressors in the 90-to-1000 ton range. In part, the interest stems from the potential of long-term operating economy. The gas-engine centrifugal system, with engine speed controls, provides extremely economical operation.

By far the largest application of this type of system lies in comfort cooling for office buildings, manufacturing plants, textile mills, and hospitals, to mention a few.

Added to the over-all economy of this equipment is the value of the heat that can be recovered from the engine's cooling water and exhaust. Reclaimed as steam or hot water, it can be used for domestic hot-water needs or for process heat. The engine can also be used as a drive for emergency power generators during power failures.

The Transportation and Travel Pavilion uses an 870-ton, gas-engine driven centrifugal machine for its cooling. It was chosen, according to the consulting engineer, because of its economies in first cost.

Gas-Engine Driven Reciprocating-Compression

The equipment that probably holds the greatest promise for gas cooling is the gas-engine driven reciprocating-compressor system. This is especially adaptable for roof mounting, a solution so many space-conscious building owners are seeking. At the Fair, space also was an economic problem, with land costs ranging from $6 to $8 a sq ft. Rooftop installations are designed for operation in all kinds of weather.

In recent years, manufacturers have been producing packaged gas-engine

driven air-conditioning units in sizes up to 100 tons. Both air-cooled direct-expansion and chilled-water units are available. Many of these packages also include heating equipment.

A popular size is a 30-ton unit with a 560,000 Btu per hour heating section. It is slightly larger in size than a comparable electric drive of the same tonnage; however, when installed on the roof, this does not usually present any difficulty.

The most common question when gas-engine drive is discussed is: "How about the noise?" The best answer is: "Listen to several in operation." Many engineers have done this and have come away satisfied that the compressor makes as much noise, if not more, than the engine. That they believe this is borne out by the fact that some 80 gas-engine units have been specified for installation at the Fair. This represents approximately 6000 tons of cooling.

A number of chain stores, which formerly used electric air conditioning, have installed gas-engine units. The cost of gas air conditioning has proven to be so favorable that they are now specifying gas engines for many new installations.

A cost study of a gas unit vs. electric unit based on 1000 hours full load and rates applicable at the Fair has been made (*see Table*). The gas and electric units studied were both produced by the same manufacturers. The study concludes that, in operating costs, the gas unit will run $714 less per year. This means that the approximately 10 per cent higher first cost for the gas engine can be amortized in less than two years, and even less than that in areas that have longer cooling seasons.

Buildings using gas engine units include Better Living Pavilion—1000 tons; Hawaii—220 tons; Hollywood—103 tons; International Plaza—200 tons; Protestant Center—250 tons; Texas Pavilion and Music Hall—460 tons; and Wax Museum and Puppet Theater—140 tons.

Total-Energy System

A new concept in meeting a building's energy requirements, the gas total-energy concept, has developed rapidly throughout this country during the past three years. Simply stated, the concept makes use of every bit of energy possible from a given fuel by combining an engine's shaft power and normally wasted exhaust heat in a single energy package.

Applying this concept, a gas or steam turbine, or a gas reciprocating engine, drives a generator for a building's electric power, or perhaps industrial rotary machinery. Normally wasted exhaust heat is recovered and used for building heating, or plant processing, or converted to steam for use in an absorption cooling machine.

This system is now being applied in over 100 industrial and commercial installations such as shopping centers, office buildings, schools, apartment projects, motels, and a wide assortment of industrial plants.

The savings in utility costs can be substantial and will pay for the cost of the system in a relatively short time. The clean-burning characteristics of natural gas as a fuel add to the reliability of the engine systems. And with total-energy utilization, the packages are considered by many engineers to be the most efficient energy systems available today.

The concept is not only in use but is also on display at the Festival of Gas Pavilion.

Gas is also supplying 90 per cent of the Fair's heating and hot-water requirements, and 99 per cent of its cooking needs.

COST STUDY BASED ON 1000 HOURS FULL LOAD

The following operating cost study compares a 30-ton engine-driven unit and an electric-driven unit, using rates applicable at the World's Fair. Both electric and gas units in this study were manufactured by the same company.

30-TON GAS

Input 360,000 Btu/hr

$$\frac{360{,}000 \text{ (Btu/hr)}}{1040 \text{ (Btu/cu ft of gas)} \times 30 \text{ (tons)}} = 11.6 \text{ cu ft/ton hr}$$

$$11.6 \times \frac{\$0.85}{1000} = \$0.00986/\text{ton hr}$$

(Gas rate for air conditioning = $0.85/mcf)

30 (tons) × 1000 (hrs) × $0.00986 = $295.00

AUXILIARY POWER

7 hp = 20 amps = 3 phase

(Amp × volts × 1.73 × p.f. = watts)

20 × 214 × 1.73 × .8 = 5820w = 6kw

6kw × $0.025 = $0.15/ton hr

$0.15 × 1000 = $150

Total = $295 + $150 = $445.00

MAINTENANCE

Oil change annually (6 gal)	$ 6.00
Spark plugs	5.00
Engine overhaul—$400 every five years	80.00
	$91.00

$445.00 + $91.00 = $536.00

30-TON ELECTRIC

Total amps.....169

(amps × volts × 1.73 × p.f. = watts)

169 × 214 × 1.73 × .8 = 50,000w

$$\frac{50{,}000\text{w}}{1000} = 50\text{kw}$$

$$\frac{50\text{kw}}{30 \text{ tons}} = 1.67\text{kw/ton hr}$$

1.67 × $0.025/kw = $0.0418/ton hr

(Electric rate = $0.025/kwh)

30 tons × 1000 hrs × $0.0418 = $1250.00

Savings using gas-engine drive units = $714.00 per year. The first cost is approximately 10 per cent higher for a gas-engine drive unit. This, however, can be amortized in less than two years.

Large Tonnage Absorption

A permanent structure, containing a heliport, restaurant, cocktail lounge, theater, and exhibit area makes use of large tonnage steam absorption as its prime energy source.

One of the permanent structures at the Fair will be the Port Authority Heliport and Exhibit Building. Placed on four supporting towers, 120 ft above grade, is a 30,000 sq ft heliport serving the Fair with air transportation from the airports and the center of the city. The "Top of the Fair Restaurant," with a seating capacity of 1100, and a cocktail lounge, with a capacity of 450, are located immediately below the heliport roof. The cocktail lounge level includes the kitchen for the restaurant and an operating mechanical machine room.

At grade are a circular theater and a static exhibit area, depicting transportation activities in the port of New York. The basement is occupied by the restaurant offices, employees, cafeteria, and service areas for the restaurant, as well as boiler room and Port Authority offices.

The basic energy for heating and cooling of the entire structure is furnished through two 200-hp natural gas-fired low-pressure (15 psi) steam boilers. Each boiler is rated at 6,696,000 Btu/hr and is capable of generating 6900 lb of steam per hour at 212 F. The steam is used for heating the building during the winter season and to operate a 317-ton absorption refrigeration machine to provide cooling during the summer months, as well as during other portions of the year when cooling is necessary. Steam is also used to provide all domestic hot water and for all kitchen and restaurant needs in all sections of the building. Natural gas is also furnished to the kitchen areas for cooking and baking equipment.

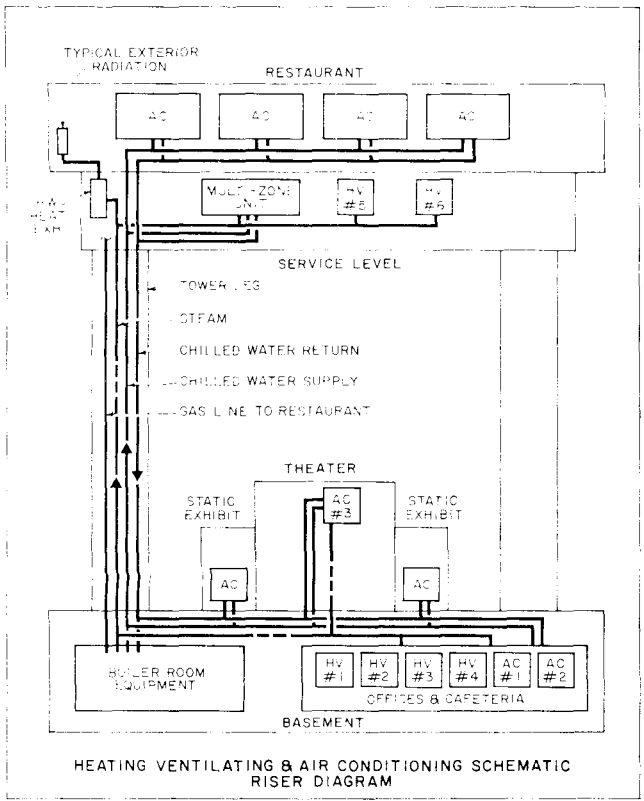
Ease of installation and the economics of construction and operation was a primary reason for the choice of gas-fired equipment for heating and cooling requirements. The absorption machine, with a minimum of moving parts, contributes toward lower operating and maintenance costs.

Design temperatures for over-all operation are 72 F within the building, when the ambient temperature is 0 F during the winter months. During the summer cooling season, indoor design temperature is 76 F, when ambient temperature is 95 F. The maximum steam requirements, including domestic hot water and restaurant needs, were calculated to be about 11,000 lb per hr during the summer months and about 12,000 lb per hr during the winter months. This balance between the two seasonal extremes permits efficient use of the mechanical equipment year round. The operation of the absorption machine during the cooling season requires about 6300 lb of steam per hour to provide chilled water at 45 F.

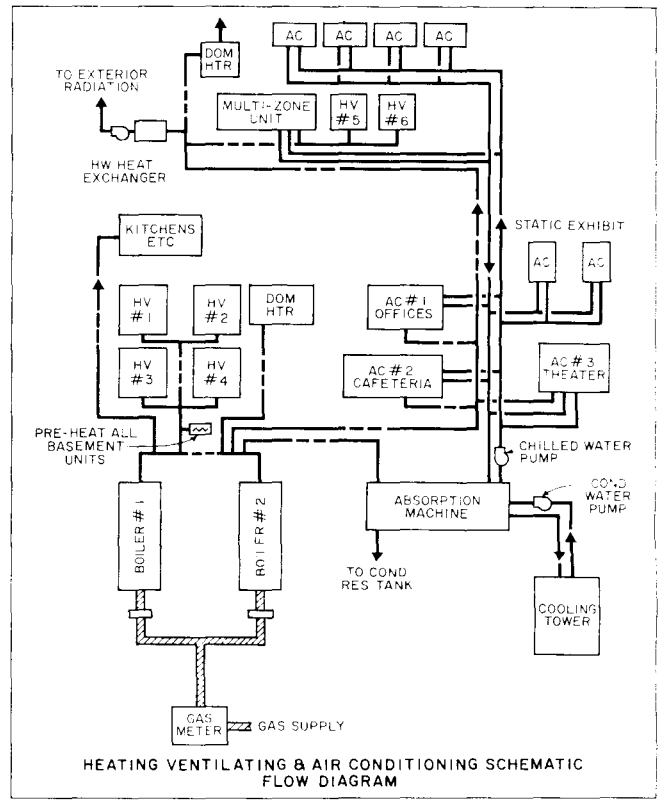
The basement machine room contains the boilers, the absorption machine, all the air-handling units for basement areas, a 25-hp chilled water pump with a capacity of 755 gal per minute, a 30-hp condenser water pump with a capacity of 1132 gal per minute, air compressors, and other mechanical equipment. The structural and architectural problems relating to the towers and heliport required that the cooling tower and the boiler stack be placed 125 ft away from the main building. The condenser water piping was run underground to the cooling tower, while an underground terracotta-lined, insulated, reinforced-concrete flue exhausts the products of combustion to the stack.

Five air-handling units, with steam and chilled-water coils, provide the conditioning for the theater and exhibit areas at grade and for the basement offices and cafeteria. A one-pipe steam system with convector radiators supplies heat to the towers.

A multizone air-conditioning unit provides the necessary heating and cooling for the cocktail lounge. At the cocktail lounge level, there are four different zones, each individually controlled thermostatically. To combat cold-radiation and window condensation during cold weather,



HEATING VENTILATING & AIR CONDITIONING SCHEMATIC RISER DIAGRAM



HEATING VENTILATING & AIR CONDITIONING SCHEMATIC FLOW DIAGRAM

perimeter hot-water convector radiation has been installed. The kitchen at this level is also provided with air-handling units and an exhaust system for heating and ventilation requirements.

The restaurant has four air-handling units suspended in the hung ceiling. The primary air for this unit is supplied from an air handling unit located in the machine room at the cocktail lounge level on the floor below. Flexibility is provided in each unit through steam reheat coils to take care of changes in the number of patrons at any time in the restaurant area. Perimeter radiation is again furnished to combat adverse window conditions.

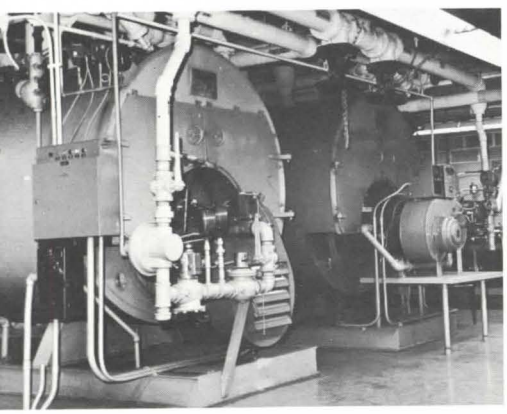
A hot-water convertor located in the machine room at the cocktail lounge level supplies heating energy for the perimeter radiation through eight hot-water circulating pumps.

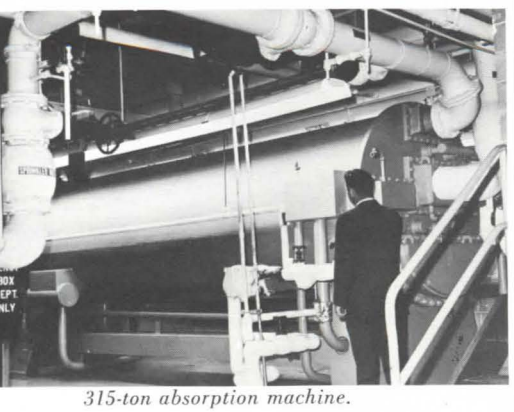
Extreme flexibility is built into the systems to provide for anticipated fluctuation of the number of patrons and service people that may be occupying the various areas in the building during all seasons of the year.

The schematic flow and riser diagrams indicate the functions and flexibility designed into the mechanical equipment of this building.

The mechanical designs for this building were executed by the Port of New York Authority.

Low-pressure steam boilers.





315-ton absorption machine.

Small Tonnage Absorption

This pavilion's 400-seat theater, as well as its counseling room, lounge, and administrative offices, are cooled by direct-fired absorption equipment.

The Billy Graham Pavilion, an octagonal-shaped building designed by Architect Edward Durell Stone, contains a theater, counseling room, a large lounge, and several administrative offices.

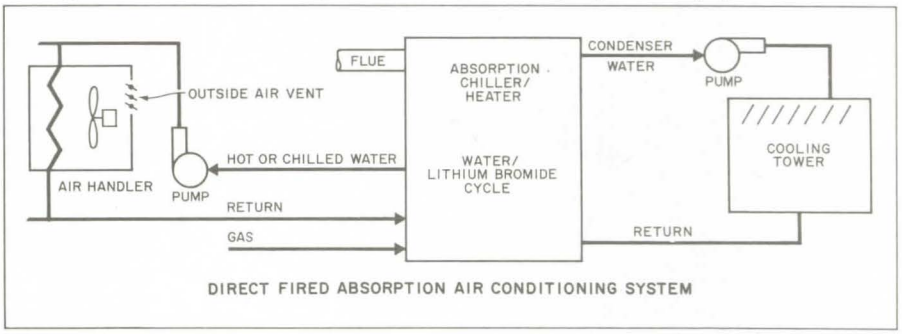
Of primary importance in the mechanical design by Harold Hecht, Consulting Engineers, was the selection of reliable, economical equipment that would perform in a noiseless, vibration-free manner. Since the Fair will run through the months of April through October, it was necessary to provide a flexible system that would provide comfort temperatures throughout the building during cool as well as warm days, with means for rapid changeover.

The advantages of a favorable gas rate and dependable service over the high electrical connection and energy charges were important considerations in the selection of gas equipment. The owner's cost was substantially reduced by this solution. Two natural-gas-operated absorption type chiller-heaters were selected to provide the primary source of chilled or hot water for the pavilion. These machines receive their energy directly from a gas-burner, which delivers the heat necessary to set in motion the combination water-lithium bromide cycle. At the rated gas input, each machine can produce 25 tons of refrigeration for cooling, or 440,000 Btu per hr for heating. As the mechanical space available for the equipment is in close proximity to the theater, the important feature of the absorption equipment, that of no moving parts, assisted in the design of a quiet system. Since the equipment was prewired and prepiped at the factory, installation was relatively simple with space requirements kept to a minimum.

An additional economy of the system is the use of the same piping and pump for the hot and chilled water. This arrangement is feasible, as the absorption equipment selected utilizes the same equipment connections and flow quantities for hot and chilled water.

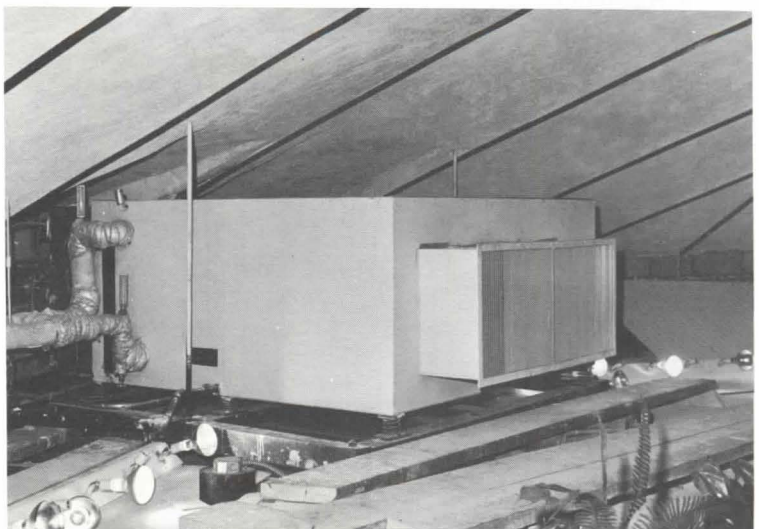
Five fan-coil air-handling units are placed throughout the building to supply cool or warm air through ducts, as required, to provide zoned comfort. Each unit is placed in a hung ceiling or behind a platform concealed from view. This obviated the need for additional floor space. Piping, concealed within the construction, extends from the absorption units to each fan-coil unit to provide either chilled water or hot water. Space thermostats located in each zone control three-way motorized valves to modulate water temperatures at the coils. Each fan-coil unit is provided with an automatic fresh air damper control plus safety controls.

Condenser water requirements for the absorption equipment are met by providing a cooling tower in a location remote from the main building in a decorative enclosure. Condenser water is pumped from the cooling tower through underground piping to the equipment room.



DIRECT FIRED ABSORPTION AIR CONDITIONING SYSTEM

Air-handling unit.



Gas Engine Centrifugal

Large tonnage gas engine-driven centrifugal compression system in this pavilion is the only one of its kind at the Fair.

Clive Entwistle Associates's Transportation and Travel Pavilion is a three-level structure housing a variety of exhibits. The pavilion features a 96-ft dome whose surface represents the moon. The craters, valleys, seas, and other features of the moon's surface are fabricated of glass-fiber reinforced plastic. The entire dome is coated with hypalon, a waterproof plastic material that will give the surface an appearance approximating that revealed by telescopic photographs of the moon.

There are two other smaller theater areas in the Transportation and Travel building, both on the first floor.

The remaining first- and second-floor areas are open and are divided among a number of the nation's largest airlines, trucking services, and other transportation companies.

In the basement, an office concourse contains suites rented to commercial enterprises that do not have buildings at the Fair.

The pavilion is air conditioned by a central heating and cooling plant located in the basement. Cooling is provided by an 870-ton capacity centrifugal chiller driven by a 12-cylinder natural gas engine. This is the only system of its type installed at the Fair.

The chiller package produces up to 1680 gpm of 45 F chilled water that is piped to 11 fan-coil air-handling units located in three separate fan rooms in the basement. Condensor and engine heat is dissipated through a cooling tower located on the roof of the building.

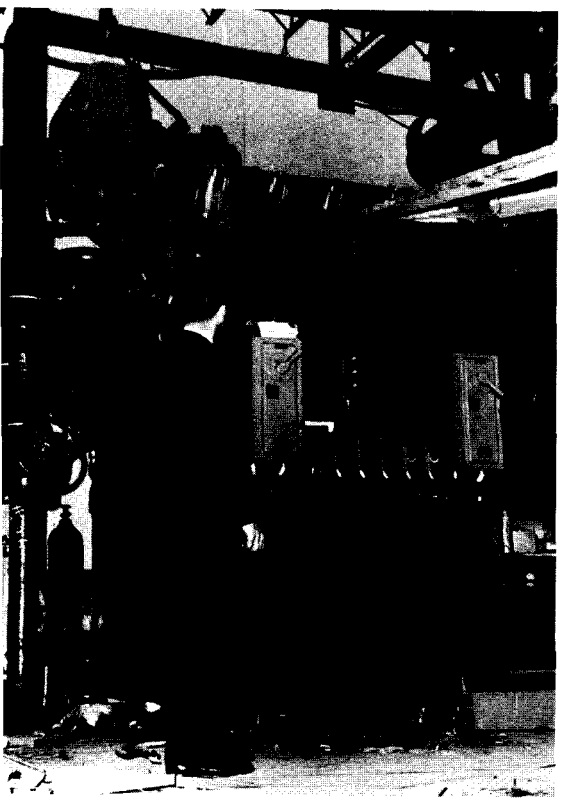
Gas-fired duct heaters with a total input of about 6,500,000 Btu are located in the air-handling duct systems for building heating. Comfort heating is required only in early spring and late fall. Only building protection heat is needed during the winter when the Fair is closed.

The building's vertical support columns house all of the major air-conditioning ducts. For the open exhibit areas on the first and second floor, diffusers 16 to 17 ft above the floor direct the conditioned air in all directions.

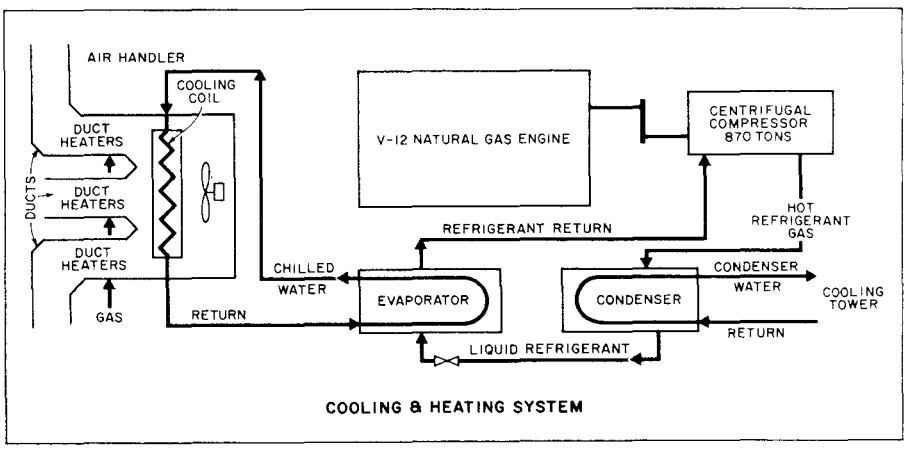
The two smaller theater areas and a restaurant are conditioned from ceiling diffusers fed from a main column duct. In the domed theater and a surrounding circular exhibit area, air conditioning is accomplished through perimeter ducts with diffusers. These also are fed from a main column duct.

Since the building will be in use for only two years, equipment costs were the prime criteria in designing the air conditioning system according to Caretsky & Associates, New York, Consulting Engineers. First cost was the basis for the selection of a single gas engine driven centrifugal cooling machine.

Space was also a factor in deciding in favor of the gas engine system. Since the basement was to include rented office space, the mechanical equipment had to be accommodated in as small an area as possible. Steam-absorption equipment would have required up to three to four times the space set aside for the gas engine mechanical system.



12-cylinder gas engine.



COOLING & HEATING SYSTEM

Gas Engine Reciprocating

Rooftop-mounted gas-engine cooling and heating units are particularly appropriate for the numerous one-story flat-roofed buildings of this exhibit.

International Plaza, designed by Ira Kessler & Associates, consists of a number of small one-story, flat-roofed exhibit buildings. The buildings and walkways between them occupy most of the plot; smaller structures house toilet facilities as well as central electric and gas-metering equipment. One area of the plaza is devoted to small open-air snack bars. This space has no air-conditioning or heating requirements.

The exhibit buildings require summer cooling and ventilation, and limited winter heating to protect the exhibits. According to Pavane & Zuckerman, Consulting Engineers for the Plaza, the air-conditioning problems peculiar to these buildings and to the Fair in general are as follows: (1) There are no utility rooms in the individual exhibit buildings for toilets or metering equipment, and since exhibit space was at a premium, air-conditioning equipment could not be housed inside the buildings. (2) The Fair will run for only two years. A type of equipment had to be selected that could be easily removed and resold. (3) Since the equipment has to be mounted outside the buildings, it had to blend architecturally with the project as a whole. (4) Since there would be no experienced operating personnel in the exhibit buildings, the equipment had to be simple in operation and completely automatic in character. (5) The cooling load consists of heavy exhibit lighting, a heavy transient people load, and a minor solar-glass load because of considerable shading and fairly small glass areas. The heating load is for building protection and not primarily for comfort. This type of loading pointed to an all-air overhead distribution system with no radiation. (6) The system had to be economical in both first and operating cost.

Because of the six reasons outlined above, it was decided to use eight low-silhouette packaged rooftop gas engine cooling and heating units with a simple overhead duct distribution system. These units consist of a natural-gas engine driving a refrigeration compressor, an air-cooled condenser section, a gas-fired duct heater, a supply fan, filters, and a packaged control system. The cooling capacity totals 200 tons.

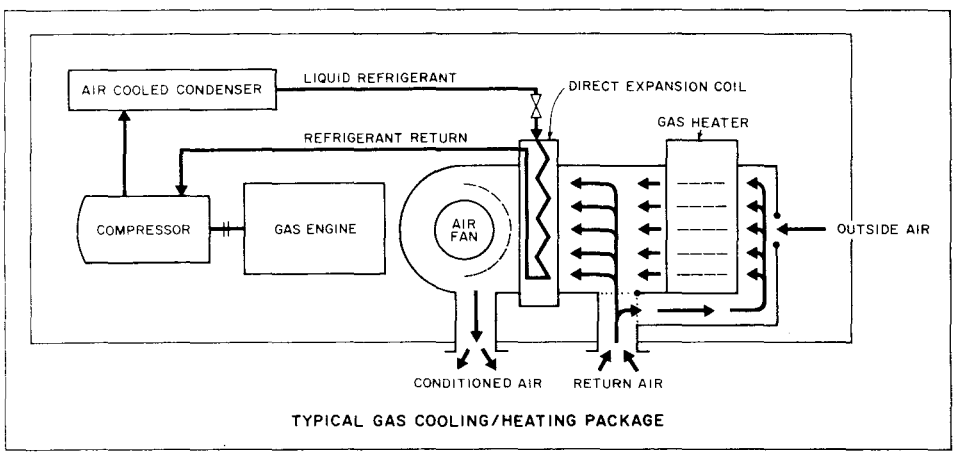
There is an electrical connection charge of $88 per kw at the Fair, and a relatively high electrical demand and consumption charge. There is no gas connection charge and a special air-conditioning gas operating rate is offered by the gas utility. Because of these charges and the inherent operating economies of a gas engine, it was decided to use a gas engine as the prime mover for cooling. Since a gas-distribution system is required for heating, this same distribution system is utilized for cooling. The gas-distribution pipe sizes were minimized in the design stage by running a medium-pressure underground piping system from the utility building meter room to the exhibit buildings, with pressure-reducing valves in each building.

The system is completely automatic, with cooling and heating thermostats located in the exhibit space, and time clocks to start the units each morning and stop them each night. In winter, a space thermostat starts the unit fan and the gas heater simultaneously to maintain 50 F in the space.

The horizontal arrangement of the components of these packaged units lends them a low silhouette, which is essential for the low buildings in this project. Since the buildings are so close together, the units are not visible when walking within the plaza; when viewed from a distance, they are visible, though unobtrusive.

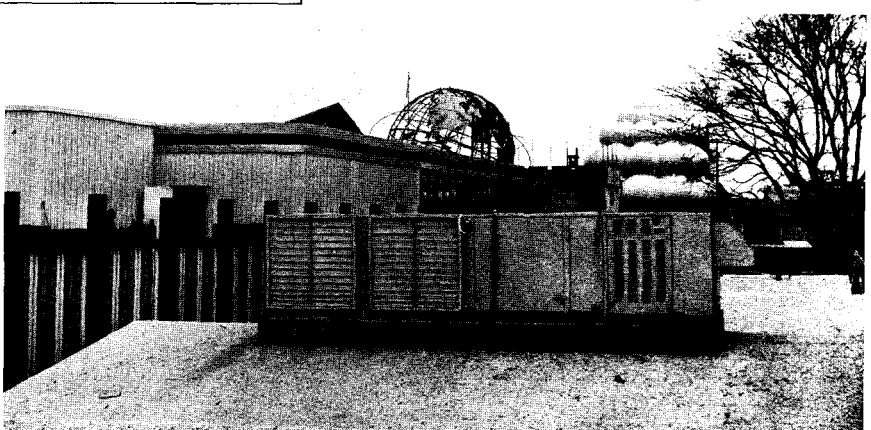
The air-distribution system consists of a short supply duct with square ceiling diffusers and an acoustical hung ceiling used as a return plenum. Because of the minimum amount of ductwork and piping involved in this system, the salvage value at the end of the two-year period should be fairly good. The small packaged units used should be easier to re-use in another job than large central equipment would have been.

The introduction of packaged gas-engine cooling equipment into this project and others at the Fair may well start a significant trend toward the use of this equipment in many future buildings.



TYPICAL GAS COOLING/HEATING PACKAGE

Roof-mounted cooling-heating package.



Total Energy System

In this pavilion, a total-energy system is not only on display, but also is in operation to supply all cooling and heating requirements for this major exhibit.

For the Festival of Gas Pavilion, Walter Dorwin Teague Associates have designed an all-white building complex that is housed under a steel, gypsum, and fabric roof covering of more than 30,000 sq ft. The roof, five stories above the ground, is supported by two slim, sculptured steel columns.

The Pavilion includes a 250-seat glass-walled public restaurant and a 75-seat gas industry club.

The building will receive a major portion of its electrical needs and all of its heating and cooling from a gas total-energy system on display in the building.

The system consists of a small natural-gas fueled gas turbine that drives a generator to produce high-frequency electrical power. The high frequency, 420-cycle power is directly used for the mercury vapor lighting, and a portion of this power is converted by the means of a motor-generator set to 60-cycle power for convenience outlets and motors. The turbine exhaust gases are passed through a waste-heat recovery system whereby steam is generated and used in an absorption-type water chiller.

The heart of the waste heat recovery system is a boiler that can deliver up to 2600 lbs of low-pressure steam per hr while utilizing the exhaust gases; however, this boiler is also arranged for auxiliary firing for an additional 2400 lbs of steam per hr. The maximum of 5000 lbs of steam per hr from the boiler is the peak steam requirement for the 250-ton absorption chiller.

The chilled water from the absorption unit is piped underground to a series of fan-coil units in five areas of the Pavilion. Steam is also piped to these fan coil units for space heating.

The total-energy system includes the following major items of equipment:

Two natural-gas fueled gas turbine-generator sets, each one of which is capable of providing the system's electrical requirements.

One waste heat recovery boiler and exhaust by-pass system capable of providing the steam required for the absorption-type water chiller.

One 250-ton absorption chiller for air conditioning.

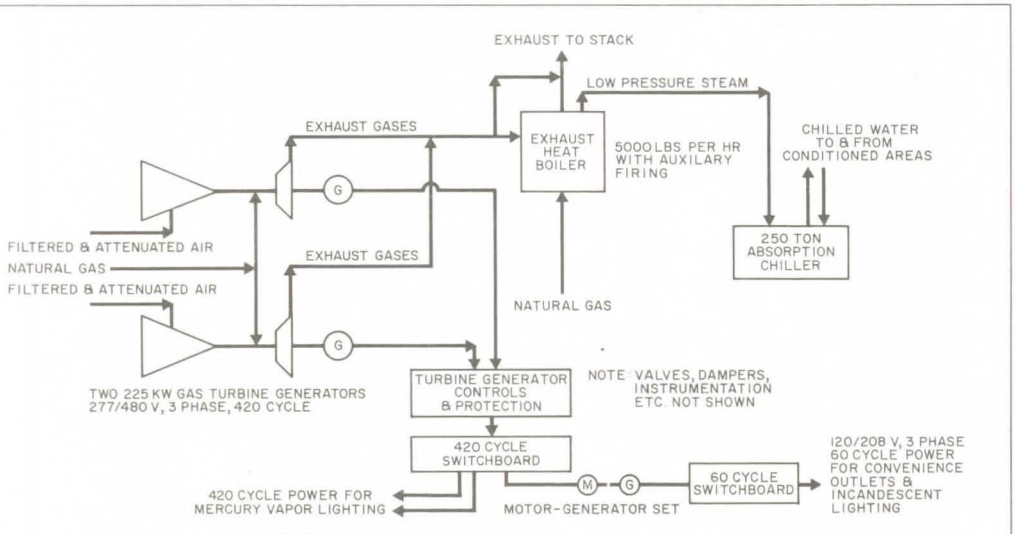
One motor-generator set capable of providing 60-cycle power from the high frequency system.

In this system, the one operating gas turbine drives a high-frequency generator to produce 420-cycle electrical power. The generator operates at 8400 rpm and is rated at 310 kw. The electrical system is broken down into peak demands of 180 kw for high-frequency lighting and 35 kw of conventional 60-cycle services making a peak demand of 215 kw. One turbine generator set can readily carry the peak demand and the other set provides 100 per cent standby. Automatic starting of the standby turbine generator set and the motor-generator set is provided, in the event of loss of 420-cycle power. The system as installed does not incorporate any controls for load-sharing or parallel operation of the two turbine-generator sets. These controls have been developed, but are not presently installed.

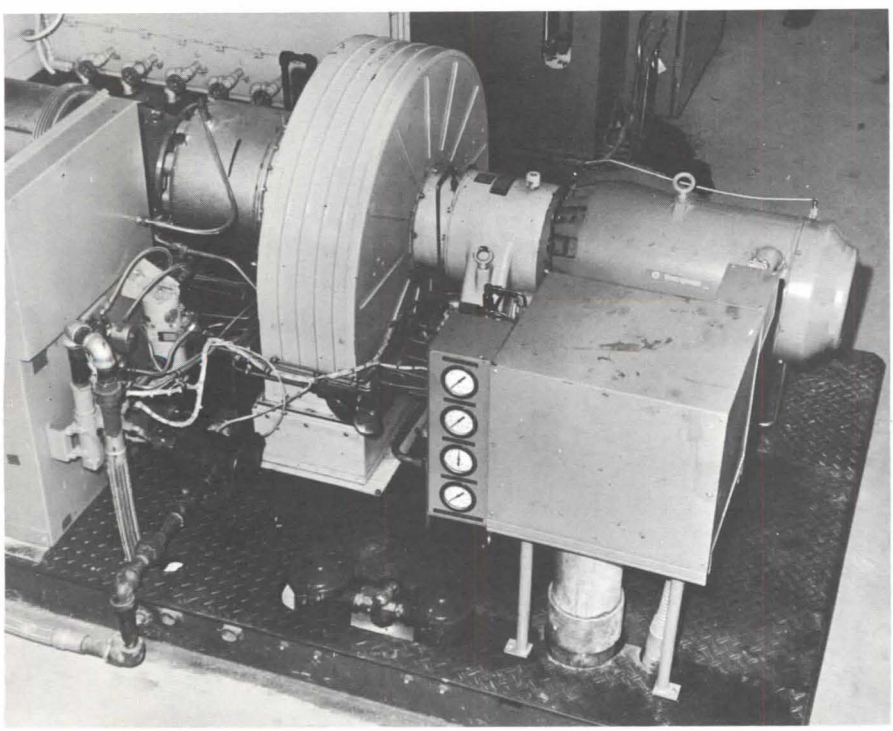
Matching of the system steam output to the building demand is accomplished by regulating the boiler heat input, through separate but interrelated control functions. The controls provide a perfect balance between the steam demand and the steam output for any specific electrical load and ambient temperature condition

The entire total-energy system is installed in a separate glass-enclosed room so as to make the total-energy system a showplace that can be viewed by the people who will visit the Festival of Gas Building.

The Energy Corporation of America was the special consultant for the gas turbine-generator. Mechanical and electrical engineers for the pavilion were J. S. Hamel Engineers, Inc.



SCHEMATIC DIAGRAM OF TOTAL ENERGY SYSTEM



Gas turbine-generator package.

a&a

Postscript to the Arts and Architecture Building

As was to be expected, the opening of Paul Rudolph's Arts and Architecture building at Yale University created considerable controversy within the profession. The two following opinions, recently received by the Editor and both written by practicing architects, indicate how widely divergent the points of view are toward the building's aesthetic in this continuing debate.

BY JOSHUA D. LOWENFISH

If I understand your Editorial (FEBRUARY 1964 P/A) correctly, you consider Rudolph's latest opus "a great work of art." Of course, you are entitled to such an opinion—but is it?

I presume that the word "art" in this instance was intended to mean an architectural masterpiece and/or a work of a genius. Louis H. Sullivan, for whose work Paul Rudolph has seemingly great admiration, said that "the function of a building must predetermine and organize its form." To the prerequisites of function and form, I would add structural adequacy and a salutary relation to and an improvement of the surrounding community. These four are necessarily interdependent, and the success of a given building would consequently depend on the extent of compliance with these fundamental tenets. Unfortunately, some architects of recent vintage, instead of planning sound and aesthetically satisfying structures, are intent on calling attention to themselves by a method of shocking rather than pleasing, by brutalizing rather than enhancing. To my mind, Rudolph's Arts and Architecture building falls within the brutalizing and shocking category. Specifically, let us examine the four architectural tenets and Rudolph's solution of them.

(1) The bewildering circulation, the labyrinth of spaces and levels, the wrong exposure of vast glass areas, all signify either a contempt or ignorance of *function.* To the complaints of the graphic artists, painters, and sculptors that their brand new quarters are badly designed, Paul Rudolph said: "After all, did anybody expect that my primary interest would *not* be in the School of Architecture?" My question is: Why not resolve the problem so that all participants are well served? Is this contempt or incompetence?

(2) As to *form,* and for the sake of being factual, let us admit (those who saw the building in the flesh) that the colored photos of the School as shown in P/A are not truly representative. The rough-textured exterior concrete does not have a warm tan hue or a greenish tan—it is cold gray. The protusions of windows and unstructural "structural" forms of the upper level, are meaningless and ugly. Several interior areas have dramatic beauty, and this, I submit, was the reason for the outpouring of enthusiasm on the part of so many scribes and critics. Yes, the Sullivan gates and frieze, the other round and bas-relief sculpture, the bronze candlesticks and candelabra and the plantings are superb, but would it not be possible to produce equally noble contemporary decoration? The theatre is extremely effective, but was it necessary to build lateral cantilevered balconies with three seats in each? Good looking? Yes, but how utterly extravagant. The upper part of the library has a long flight of stairs leading up to a dead-end platform accommodating four readers. Why was that necessary, in view of the 150 seats below? Theatrically effective? Yes, but what affectation. And the splendid orange carpets—how lovely they looked on the day of the opening. One would not recognize them now, after one winter's wear. Were they beautiful then? Yes, but how impractical.

(3) And what about the *structural* characteristics? Was the huge tonnage of concrete necessary? Most of it, I will venture to guess, was poured and chiseled to create the brutal effect. Is the School leak-proof? According to newspaper reports, it was nearly inundated after the first good-size rain. And why all the hair cracks and chipping of the cement-finished floors and steps? If this is a characteristic of cement finishes, why not use a surfacing that does not crack?

(4) The School's aesthetic *integration* with the neighborhood leaves much to be desired. It has no affinity, nor dies it harmonize, with Yale's architecture or that of the city's adjacent structures. It is crowded on a small piece of land and surely does not contribute to the enhancement of the surrounding area.

If Rudolph's Arts and Architecture building was intended to jar and arouse architects, it most assuredly has done that to me. With those who consider it a masterpiece, I respectfully disagree.

BY ROBERT H. MUTRUX

The tumult and the shouting over the new Art and Architecture building at Yale University may not die for a long time. This intriguing structure has already inspired many scholarly articles, and this brief critique is an attempt—probably not the last—to explain why it is continually stimulating, difficult to evaluate, and impossible to ignore.

No one will deny that the building is categorically an architectural succès d'estime. However, after viewing the unparalleled parade of encomiums with which it has been honored, I feel that it

has been reviewed, reviled, and extolled for all the wrong reasons. Set aside, first of all, the accomplishment of its purpose. Considered as a combined atelier, exhibition hall, library, and office, all of which, by its title, it claims to be, it is one of many possible solutions. But no building stands or falls on the basis of its day-to-day function. Ignore, for the moment, the repeated references to the multiplicity of levels. If this is a measure of merit, it is far outstripped by the Guggenheim Museum, which has an infinite number of levels. This is ingenuity of high quality, but it is still not architecture. Put away a statement in *The New York Times*, that ". . . it cost less than $25 a square foot." This kind of information is not only not germane to the evaluation of a work of art; it borders, through lack of strict substantiation, on irresponsible journalism.

And finally, set aside, for good, all the things that Paul Rudolph, its architect, has said, or is supposed to have said, about it. The creator who expatiates gratuitously on "what he originally intended" and what he "planned to do" and did or did not do, opens the door to the possibility that he may, through lack of objective judgment, have deprived us of an even superior work. The world, as Murray Kempton and Albert Camus have both pointed out, demands an image, and is vicariously moved by the lonesome agony of conception and the private ecstasy of birth in works of art, but there is no real need for program notes for a work that speaks for itself.

Consider only one revealing statement that Rudolph made in one of the architectural journals: "I think the Louis Kahn building (the Fine Arts building, across the street) is a perfect transition from one kind of architecture to another. If it were not for the understatement of this building, my own would never have been possible; that blank wall, with those great lines on it, leading, leading, leading, to what?" Rudolph has here, perhaps unconsciously, given us a perfect definition of a great building. Kahn's Fine Arts building is a great building simply because it "leads," not merely by its exterior lines, (and, God forbid, not merely because it *leads to another building*) but by the total vision and dynamism of its creator. The Art and Architecture building is also a great building, because it too "leads" for the same reasons and in the same direction. The answer to the inevitable question "to what?" lies in its inherent message.

There is an unspoken challenge to both these buildings, and to the Art and Architecture building in particular, because it was conceived as a training-ground for designers of future "leading" buildings. In this respect, the A & A may be placed, with no false modesty, side by side with the cathedrals.

I do not propose, for a moment, to compare this scabrous complexity of restless rectangles with the serene magnificence of Amiens, Chartres, or Rheims. However, today's university, as the center of learning, has pre-empted the role of the church. And like the church, its *raison d'être* as a symbol alone parallels its day-to-day function. The Gothic cathedral was the product not of a society, but of individually creative men, according to Will Durant, and according to Henry Daniel-Rops, "not necessarily religious." Yet it remains as a perpetual symbol of religious faith, though it is notoriously badly heated, acoustically unsound, lacking in the elementary facilities, and, in its rigid plan, the antithesis of liturgical expression as we see it today. But apart and beyond these mundane deficiencies, it "leads," and always will, as all truly great work should. And yet no one demands to know where it leads, no more than he may demand where great music or great sculpture should lead, unless it leads to fulfillment of Goethe's death-bed prayer, "More light!"

More light, more knowledge, more daring, more discovery, and the expression of their search by the free mind—this is what Kahn's building leads to, and Rudolph's as well. The only difference is in the form of expression. The same may be said of their craggy counterpart by Le Corbusier, which strides through the prim conventionality of Cambridge challenging the students, in paraphrase of the nameless Marine Sergeant, "C'mon you b——! Don't you want to live forever?"

It is interesting at this point to note that we automatically credit the artist not only with the integrity of his purpose, the intensity of his drive, but a reward, at the end, in an acknowledged ownership of his product. We refer to Giotto's Campanile, Michelangelo's Piéta, Beethoven's Ninth Symphony, and Corbu's Chapel at Ronchamp, while the origin of all inspiration and the true owner smiles benignly. And so Rudolph may be pardoned for presuming to refer to this creation as "my own." This introduces a final point. It is doubtful whether Winston Churchill ever dreamed how often he would be quoted as saying, "We shape our buildings, and then they shape us." I doubt, too, whether he realized that this statement is open to question. Unless I am greatly mistaken, "we" do not shape our buildings at all, no matter how strongly they may influence us. Our creative minds alone shape our great buildings, and public participation begins only with the finished product.

The A & A building is the sole product of a completely individual and highly gifted mind, working independently of his client, and with equal freedom from the details that might detract from his purpose. And in so doing, he created another signboard along a continually fascinating road. It is another venture into the vast world of art for its own sake, and proof, for the benfit of those who study there, that creativity is its own greatest reward.

It is a process in which every one seems to gain, in which no one loses. The legion of visitors who may enter its doors only once, like those who may see the new Beinecke Library without once opening a rare book, are nevertheless richer for the experience. Joseph Wood Krutch put it beautifully: "It is from the artist that society gains its loftier images of itself." Rudolph's colleagues are honored with the evidence that the standards of the profession have achieved a new altitude. The reactions of the students who pause for a few years within its walls are, in this context, unimportant. Those who study here will achieve greatness, if it is within them, as much in spite of their surroundings as because of them. The fact that the art students are apoplectic with their relatively meager accommodations speaks as eloquently for them as individuals as it does for the building. The artist is, historically, dissatisfied with his environment, and, from this point of view, the most productive atelier should be the most uncomfortable, on the theory of aggression through frustration. This building may make history, but it will never make great architects or artists. Genius does not rub off walls, no matter what their texture. If it were so, just think what Corbusier, or Mies van der Rohe, or Yamasaki might do if only they could attend, say, a few seminars in the latest monument on Chapel Street!

Architects: Shepley, Bulfinch, Richardson & Abbott, Boston, Mass.; Engineers: Richard D. Kimball Co., Boston, Mass.; Gen. Contractor: John A. Volpe Construction Co., Malden, Mass.; Radiant Ceiling Dist.: Pitcher & Co., Cambridge, Mass.

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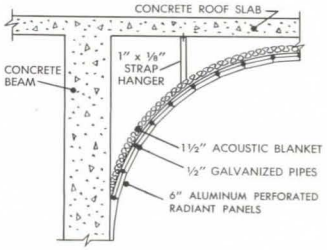

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EP-42

Residential Noise Control

BY WILLIAM J. McGUINNESS
Residential acoustical problems and their solutions are discussed by the Chairman, Department of Structural Design, School of Architecture, Pratt Institute.

Noise is unwanted sound. This generally accepted definition has various implications: unpleasant sounds should either be minimized or eliminated entirely; pleasant or acceptable sounds become noise when the hearer prefers silence or when it interferes with his hearing sounds of his own choosing.

In public places such as music halls, auditoriums, and business offices, sound control is in the hands of experts and is based on what is considered best for the group.

In living spaces created for the individual, however, as in residences, apartments, motels, and hotels, decisions on sound control must necessarily cater to individual preferences. When one recognizes the ever-increasing sources of noise in the modern city—mechanical devices, traffic, proximity of living quarters—the scope of the problem of noise control becomes more evident. In addition, Government studies predict that, by the end of the century, 80 per cent of the population will be city dwellers, as against 40 per cent in 1900.

Planning for sound control is clearly the responsibility of the architect. He needs the assistance, however, of the acoustical specialist. All involved parties —acoustical consultant, architect, owner, builder, and occupant—need to have an increasing knowledge of the principles of sound control.

A liberal contributor to this fund of knowledge has been the Owens Corning Fiberglas Corporation. Its Sound Laboratory at Granville, Ohio, has issued a number of compilations of test results and recommendations for the analysis and solution of sound problems. A current publication that is an important aid in the correct application of acoustic principles is, "Solutions to Noise Control Problems in the Construction of Houses, Apartments, Motels, and Hotels" ($1 per copy). Although OCF aims to promote the use of Fiberglas for many appropriate uses, this 59-page manual covers many aspects of acoustics far removed from the use of their product. It embraces such topics as the effects of mass, limpness, cushioning, and spring-type pipe supports. It deals with the control of noise: through walls; structure-borne and impact at floors; at juncture of walls and floors; by doors; at windows; caused or transmitted by plumbing; transmitted by electrical components; originating in equipment; conveyed through air ducts; and by curtailing reflection.

Noises passing through walls need to be reduced to an intensity less than that in the space to be controlled. Quiet space adjacent to high-level noise often requires a reduction of 40 db or more. A stud partition with plasterboards on both sides provides a 32 db reduction. A 2-in. solid plaster partition is rated at 24 db. Of the 20 or more other constructions evaluated, most afford more than 40 db reduction. Insulating blankets within the hollow space of these walls usually increase these ratings by an additional 3 to 10 db.

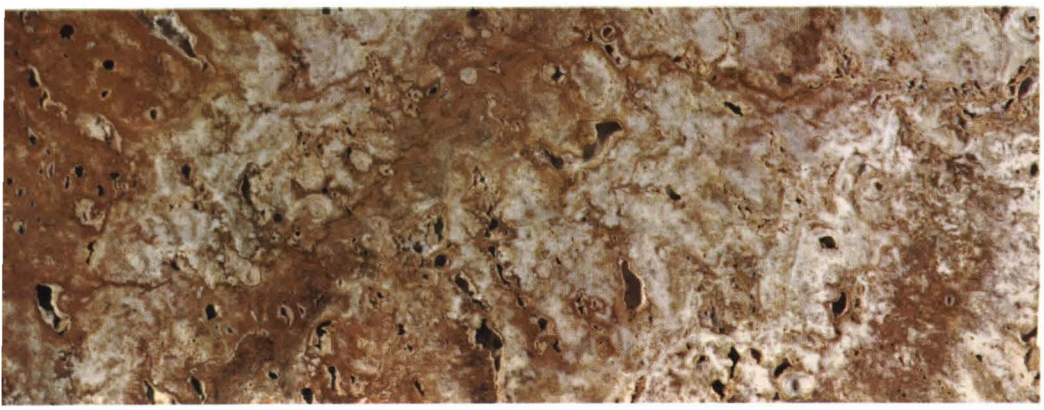
Floors were tested by a standard "tapping machine" and scaled against an FHA performance curve for floors. Wood joists with a double wood floor above and no ceiling below miss the sound reduction requirements of FHA by 28 db. Tests on 30 or more floors show them to be a bigger problem than walls. Standard wood joist construction with a double wood floor covered by a carpet, felt pad, and with a plaster ceiling below, still misses by 6 db. Similar construction with carpet and pad proved better than the FHA standard by 6 db when the ceiling below was suspended on spring clips and glass-fiber blankets placed between the joists. Double wood floors (no carpet or pad) on wood joists, with a ceiling on resilient suspension, are 6 db better than the FHA standard, but only when there is a thin insulative underlayment *and* insulation blankets between the joists.

Wall-floor connections transmit sounds to adjacent spaces through the connecting parts. Western framing is better than balloon framing. Lateral floor transmission is impeded by structural discontinuity of beams, joists, and slabs.

Solid-core gasketted doors provide good sound privacy, but obviously preclude the use of louvers or undercutting for the passage of conditioned air. Windows improve in performance with the addition of storm sash not closer than 4 in. If they need to be left open, a sound lock, cumbersome and not too effective, may be considered.

Electrical and plumbing systems perforate walls and floors. The openings need insulative packing to reduce vibration, as well as to prevent airborne transmission. The isolation of equipment is improved by adding mass, cushioning or glass-fiber pads, and suspending pipes and nearby ceilings on sound-isolating hangers. Glass-fiber ducts provide the limpness to reduce sound transmission, by comparison with hard sheet metal, and to absorb airborne sounds that might be conveyed to registers.

Finally, the provision for sound-absorbing wall and ceiling surfacing reminds us that this item (sometimes the only one considered) is merely one of 10 or more major considerations for residential privacy.



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Concrete Admixtures—Part 2

BY HAROLD J. ROSEN

The two-part investigation of concrete admixtures and their properties is concluded by the Chief Specifications Writer of Kelley & Gruzen, Architects-Engineers.

Admixtures that delay the setting time of concrete are termed retarders. They are used principally to overcome the accelerating effect of high temperatures during the summer and to delay the initial set of concrete when difficult or unusual conditions of placement are required.

In exposed architectural concrete, set retarders can be used to keep concrete plastic for a sufficiently long period of time so that succeeding lifts can be placed without development of cold joints. Retarders are also used to expose the aggregate in the surface of concrete. This can be achieved by applying a retarder to the forms or to the surface of horizontal planes, thereby inhibiting the setting of the surface layer of the mortar. Upon removal of the forms, the surface mortar is removed by wire brushing or sand blasting, thus exposing the aggregate to produce unusual surface texture effects.

Retarders generally used as admixtures are lignosulfonic acids and their salts, and hydroxylated carboxylic acids and their salts. These should meet the applicable requirements of ASTM Spec. C-494.

Accelerating Admixtures

Accelerating admixtures are used to achieve high early strength and to shorten the time of set. High early strength results in earlier removal of forms, reduction of required time for curing and protection, earlier use of a structure, and partial compensation for the retarding effect of cold weather.

Chemicals used as accelerators are organic compounds of triethanolamine and calcium chloride. Accelerators should conform to ASTM Spec. C-494 and calcium chloride should conform to ASTM Spec. D-98.

Calcium chloride can generally be used safely in amounts up to 2 per cent by weight of the cement.

Calcium chloride is not recommended under the following conditions: (1) it should not be used in prestressed concrete because it may cause corrosion of the steel; (2) it should not be used where aluminum and steel are embedded in concrete because corrosion will take place in a humid environment; and (3) it should not be used in lightweight insulating concrete on metal decks.

Workability Agents

Workability, or the ease with which concrete can be placed, is more often desired by the contractor than by the architect or engineer. However, fresh concrete is sometimes harsh and improved workability may be desired for trowel finishing, for placing in heavily reinforced sections, or for placing by pumping or tremie methods.

One of the better workability agents is an air-entraining admixture. The minute air bubbles act as a lubricant and are especially effective in improving workability.

Other workability agents are mineral powders such as bentonite, clay, diatomaceous earth, fly ash, fine silica, or talc. Fly ash and natural pozzolans used as workability agents should conform to ASTM Spec. C-350 and C-402.

Dampproofing and Permeability Reducing Admixtures

The terms "dampproofing" and "waterproofing" imply prevention of water penetration of dry concrete or stoppage of transmission of water through unsaturated concrete. However, admixtures have not been found to produce such results. The terms, therefore, have come to mean a reduction in the rate of penetration of water into dry concrete or in the rate of transmission of water through unsaturated concrete from the damp side to the dry side.

Admixtures for dampproofing include soaps, butyl steate, and certain petroleum products.

Both the ACI report and the PCA publication on admixtures for concrete put little credence on the effect of admixtures on the reduction of permeability. The watertightness of concrete depends primarily upon obtaining a well-cured paste having a water-cement ratio not over 0.6 by weight. Concrete made with less than 5½ gal of water per bag and well cured, produces a good watertight concrete that is not improved with the use of dampproofing agents.

Bonding Agents

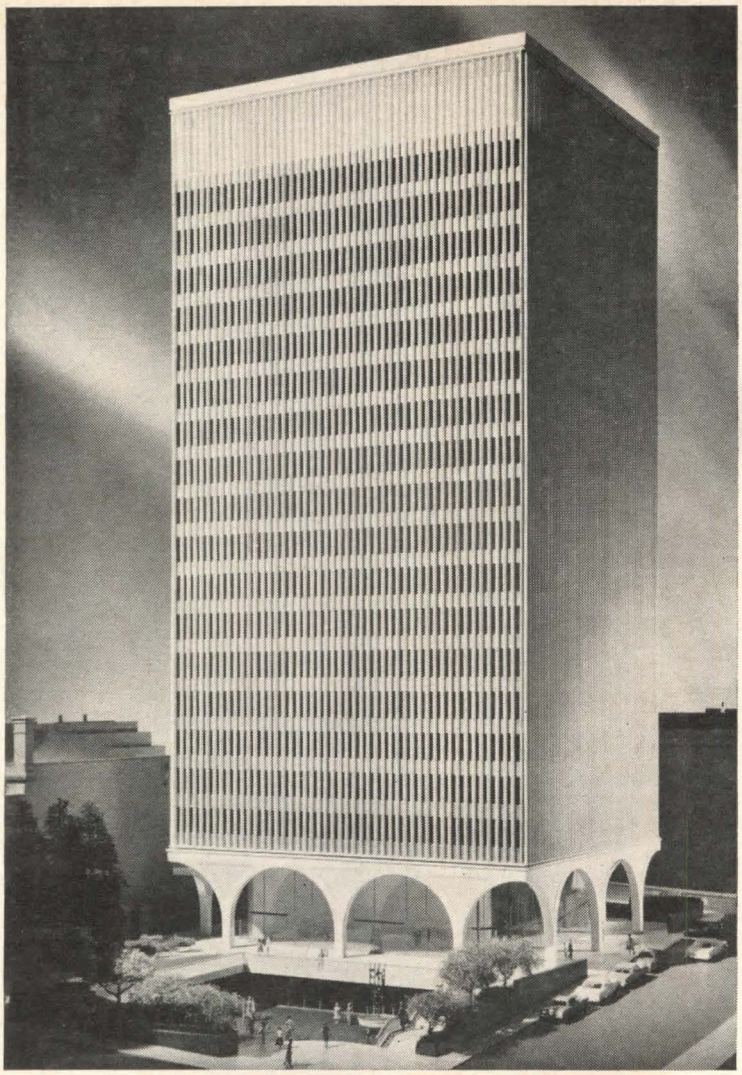
These admixtures are used to increase the bond strength between new and old concrete, and for bonding gypsum and portland-cement plaster to concrete. The admixtures are polymers of polyvinyl chloride, polyvinyl acetates, and acrylics. There are two categories of bonding admixtures: the re-emulsifiable types and the nonre-emulsifiable types—the latter being water-resistant and therefore better suited for exterior application or in areas where moisture is prevalent.

Fungicidal, Germicidal, and Insecticidal Agents

Antibacterial cements are usually those having an admixture ground into the cement to impart fungicidal, germicidal, or insecticidal properties to the cement. These materials include phenols, dieldrin, and copper compounds, which are useful in tile joints in school locker rooms, food plants, dairy plants, etc.

Coloring Agents

Pigments added to concrete to produce color are termed coloring admixtures. They should be color-fast, chemically stable, and have no adverse effect on the concrete. These pigments are generally inorganic oxides of the synthetic type.



The IBM Building, reaching skyward, is adjoined by downtown Seattle's "sunken living room," the lower level of the building's open air plaza. The plaza houses its own restaurant bathed by natural daylight and beautified by a fountain and attractive plantings.

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architects & engineers

BOUILLON, CHRISTOFFERSON & SCHAIRER
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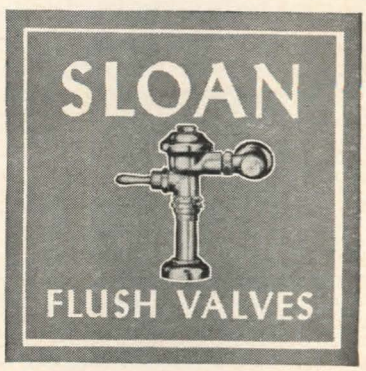

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Alternates and the Base Bid

BY BERNARD TOMSON AND NORMAN COPLAN

P/A's legal experts discuss a recent case that emphasizes the importance, for an administrative agency, of having a reasonable basis for choosing alternates, where these may affect the selection of the successful bidder.

In most states, competitive bids must be secured for the awarding of a contract for the construction of public work and the contract must be granted to the lowest responsible bidder. When, in addition to the base bid, contractors must bid upon alternates, the actual lowest bidder may be determined by the alternates the owner selects after the bids are opened. A contractor who submits the low base bid, but who loses the contract as a consequence of the selection of certain alternates by the owner, may challenge the propriety of such selection. Typical of such a challenge is the recent New York case of *S.S. Silberblatt, Inc.* v. *Phalen*, 247 N.Y.S. 2d 89.

The Silberblatt case arose out of the obtaining of bids by the State University Construction Fund of New York for the construction of certain academic buildings and dormitories for the State University of New York. The Fund is a corporate governmental agency charged with the duty of administering a "crash" construction program for the State University. Included in the Fund's powers and duties is the function to make and execute contracts for the fulfillment of its corporate purposes. The law of New York applicable to the Fund requires that "the letting agency shall not award any contract after public bidding except to the lowest bidder who in its opinion is qualified to perform the work required and is responsible and reliable."

The information for bidders prepared by the New York State University Construction Fund in connection with the letting of the contract for the construction of the buildings in question provided that the Fund would "determine the lowest bid by adding to or deducting from the lump sum bid of the bidders the additives or deductive alternates, if any, the Fund elects to accept after the opening of the proposals." In addition to submitting a base bid, each bidder was required to submit bids on 26 alternates and to indicate how much would be added or deducted from the base bid for the addition, deletion, or substitution of certain materials.

When the sealed bids were opened, it was found that the lowest lump sum, or base bid, was $25,740,000, and that the next lowest bid was in the amount of $25,800,000, a difference of $60,000. However, the selection of certain alternates by the owner resulted in a total bid for the lowest base bidder in the amount of $25,649,700 and a total bid for the second lowest base bidder in the amount of $25,645,000, making the second lowest base bidder the low bidder by $4,700. Based, therefore, on the selection of particular alternates, the owner entered into a contract with the second lowest base bidder. The contractor who lost the contract petitioned the Court for a temporary injunction restraining the owner from proceeding with the construction of the project, and sought to have the contract that had been entered into with the second lowest base bidder annulled. The petition was based upon the allegation that the owner had been arbitrary and capricious in selecting the alternates.

The petitioner contended that, as between it and the contractor to whom the contract had been awarded, it was low bidder on 14 of the 26 alternates and the other contractor was low on 11, with one tie, but that the Fund made its selection of alternates in such a manner that the total bid of the second lowest base bidder would become lower than the petitioner's. The petitioner put special emphasis on one of the 26 alternates that had been selected by the owner, for, if this particular alternate had not been selected, it would have been the over-all low bidder. In this connection, the petitioner submitted an affidavit of an expert who, according to the Court, "expressed the opinion that the selection of that particular alternate could not be justified and was not reasonable from an architectural or engineering standpoint."

The Court, in rejecting the application of the petitioner and dismissing the petition, pointed out that, unless there were facts presented clearly demonstrating that the action of the owner in selecting certain alternates was arbitrary or capricious, the Court could not and would not substitute its judgment for that of the administrative body.

The Court said:

". . . to furnish a basis for judicial intervention, it must be demonstrated that the method used was without authority of law and, therefore, arbitrary and capricious. This the petitioner has not done . . .

"It is not the function of judicial review in an Article 78 proceeding to weigh the facts de novo and substitute the court's judgment for that of the body reviewed, but only to determine if the action sought to be reviewed was authorized and can be supported on any reasonable basis. . . . Moreover, it has been held repeatedly that a presumption of regularity attends the action of the letting agency in such matters, and it is incumbent upon the petitioner to overcome that presumption and establish the action to have been without reasonable foundation. The issue is not whether the determination of the Town Board was wise, but whether there was a reasonable and plausible basis for such determination.' "

Although the Court, in the foregoing case, stated that there is a presumption of regularity in the action of an administrative body, it is important to note that, in the choice of alternates that may affect the selection of the successful bidder, the administrative agency in question, to be safe from challenge, must have a reasonable basis for such choice.

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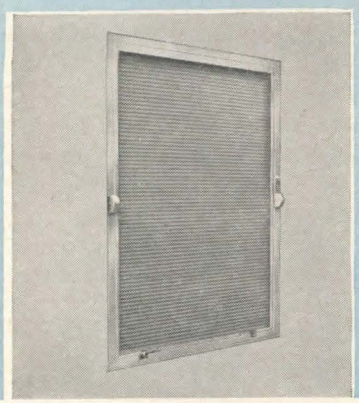

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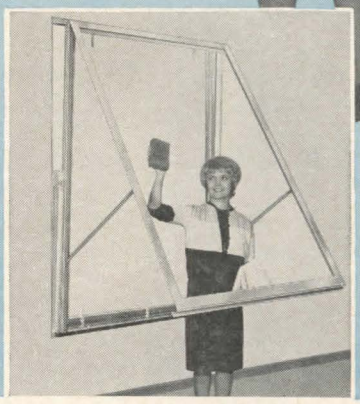

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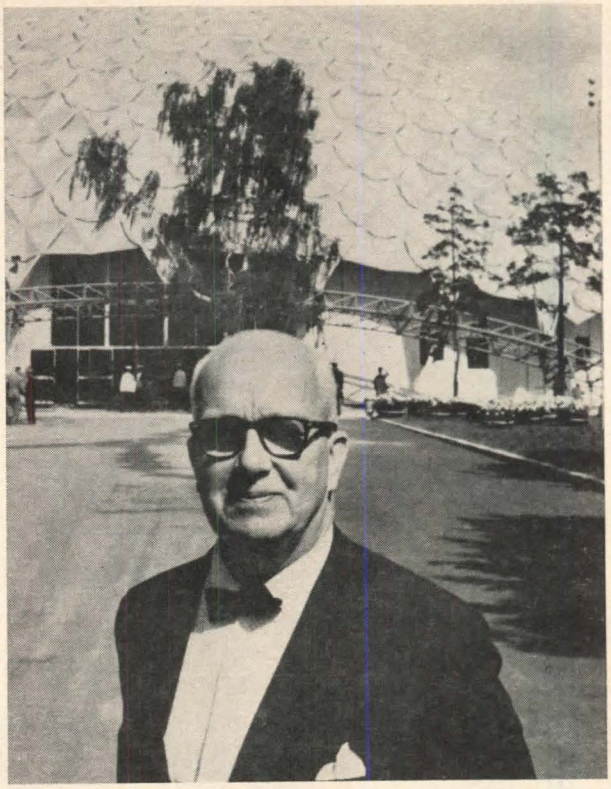

Essays of an Evangelist

BY CARL W. CONDIT

IDEAS AND INTEGRITIES *by Buckminster Fuller. Published by Prentice-Hall, Inc., Englewood Cliffs, N.J. (1963, 318 pp., illus., $6.95). The reviewer, Professor of the History of Science at Northwestern University, is author of the two-volume* American Building Art: 19th and 20th Centuries *(1960 Oxford), and of a new book on the Chicago School, which has just been published by the University of Chicago Press.*

The latest of Bucky Fuller's books offers no easy task to the reader who hopes to gain some insight into the author's ideas and their development. Little of the book is autobiographical: only the first 2 of 19 chapters have to do with his life and work, and these only in a sporadic way. The bulk of the text is made up of unrelated pieces ranging in subject from cosmology, through social and technological philosophy, to the structural action of the geodesic dome. Many of the essays are repetitious, confused in theme and organization, and suggest an inchoate quality that confirms the spontaneity indicated in the title. Finally, there are long passages of Fuller's peculiarly tortured and hermetic prose, deliberately calculated, one would suppose, to alienate the most patient reader. In the face of these difficulties, I think the most useful thing a reviewer can do is to provide as best he can a systematic description of the author's ideas with some critical interpretation of them.

Buckminster Fuller is an inventor whose mind has been trained chiefly by technical processes and direct experience, but, like many inventors, he has an evangelical drive, a passion for speaking on ultimate matters concerning the universe and the destiny of man. A vague cosmological theory appears in an irregular and fragmentary form in many of the essays. As nearly as I can tell, it is a kind of idealism with a scientific-technical manifestation. The universe reveals *a priori* interconnected principles of order available to human understanding. The ground of this order is an "anticipatory intellectual wisdom" that Fuller regards as God. Man discovers these universal principles, gives them direct theoretical formulation in science, then recreates them in technology. The important point is that all technical process is discovery: man never invents but only discovers, because everything is preformed in nature.

These principles of organization or patterning in the universe, reworked in appropriate forms through science, technology, and scientific industry, are ultimately translatable into building, and we have reached the stage where the translation can be carried out on a comprehensive scale. The dome most fully embodies cosmological principles: in its basic form it is part of a sphere, the archetypal and perfect figure, which may be regarded as a polyhedron with an infinite number of faces. Any polyhedron with a large number of faces thus approximates the ideal form. As a geodesic dome, such a structure acts ultimately through tension, which further unites it with the cosmos. "All [geodesic structures] represent closed systems in which compression is comprehensively encompassed by tension. In principle, this emulates the structuring of universe" (p. 219). A little earlier we learn that "universe is tensional integrity" (p. 213). (Fuller's religion requires that he refer to the universe without the definite article.) This strongly suggests a 20th-Century revival of Pythagorean and Platonic metaphysics in the pure mystical-geometric form.

There is a tenuous connection between this quasi-metaphysic and the ideal functioning of the social order. Technology properly conceived is the systematic application of scientific (i.e., cosmological) principles to industrial processes. True or ideal technology is "the integrated, teleologic objectivity of the exact sciences" (p. 25). This is the starting point for understanding the new possibilities of society. By thinking through the implications of scientific technology to their log-

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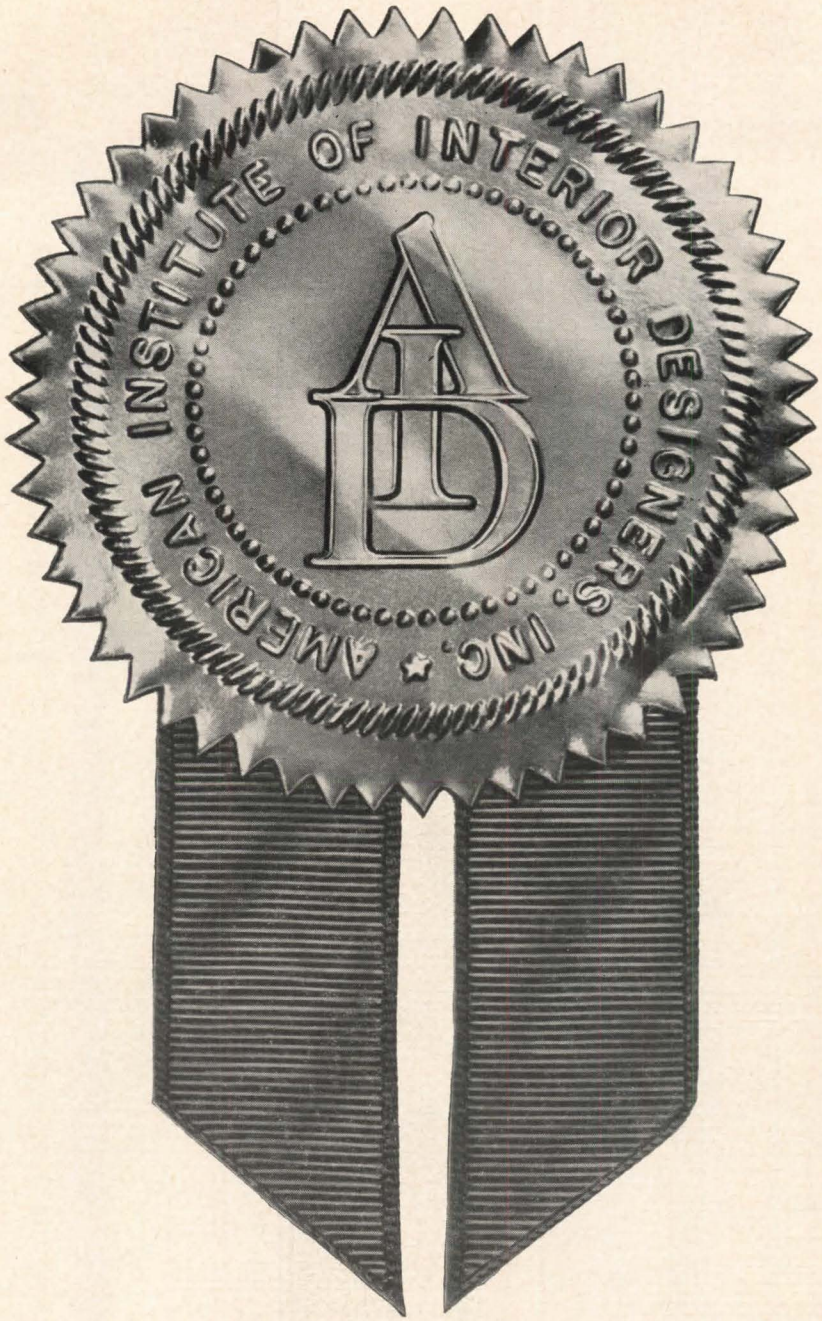

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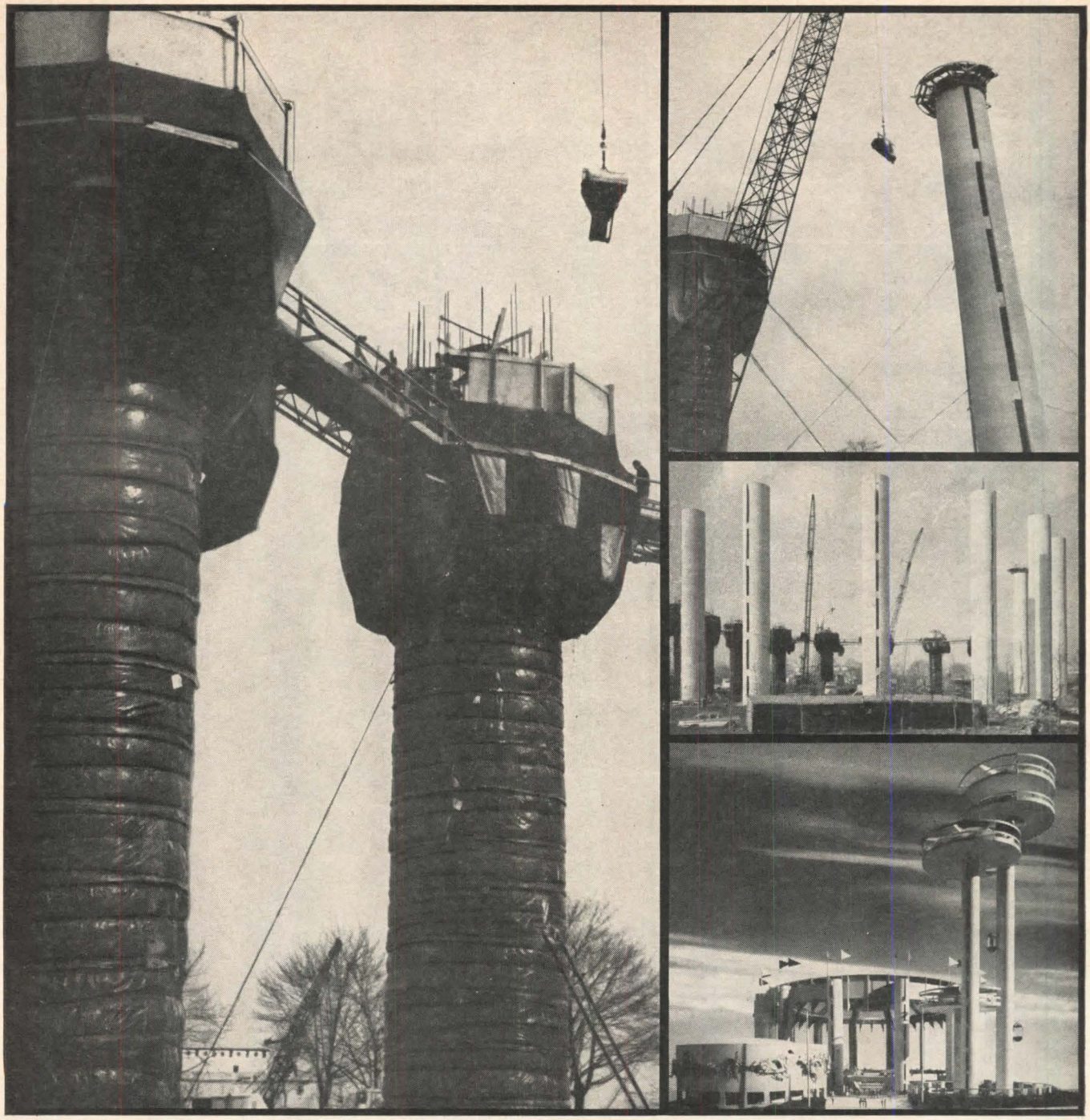

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Continued from page 188

ical ultimate, we see the solutions to the problems that challenge man today, and, by implementing them on an adequate scale, we recreate the human *order.*

The chief problems we face are these: a world population of 7 billion by the end of the century; a "one-town world" created by jet transport and the spread of urbanism; a social order predicated on constant change and mobility; continuing automation leading eventually to the elimination of man as worker. In the face of these demands, the old political forms are meaningless, and political or social reform ineffectual. The solution—or rather, the vision that embraces it—comes through implementation of the new technical potentialities.

The new industrial pattern aims at transforming the entire world community into satisfied consumers. The place of building in this scheme is the realization of total environmental control for all human beings. All resources for this achievement are available, for the cosmic basis of the new industry reveals that all necessary technical innovation is itself a preexisting natural resource. But this requires socio-technical thinking in terms of a total world pattern. The associated planning art is "comprehensive design" carried out by a "comprehensive man," its theoretical basis a "comprehensive anticipatory design science." The nearest technical-scientific equivalent to this concept is the theory and institutions of public health and preventive medicine.

Indeed, it is from medical science that Fuller draws his favorite key term, *synergy*. It refers essentially to the dynamic quality of a system whose action is greater than the sum of the actions of its constituent parts. Translated into industrial terms, this seems to mean some form of regenerative or self-enlarging technical action that spirals beyond the specific energies of its separate elements. The concept is associated with Fuller's preoccupation with pattern, structure, interrelation and interfusion of processes. It strikes me as strongly reminiscent of Whitehead, but I am unable to see what kinds of events enter into the patterns. At any rate, the creator and implementer of anticipatory design is to be the architect. His new role places heavy burdens upon him: he must master the biological, earth, and behavioral sciences, translate them into global social terms, and embody them in the planning and building arts. The worldwide human habitation that is to come out of this is a "mechanized container service" (p. 109),

Continued on page 200

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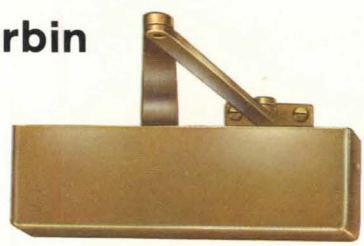

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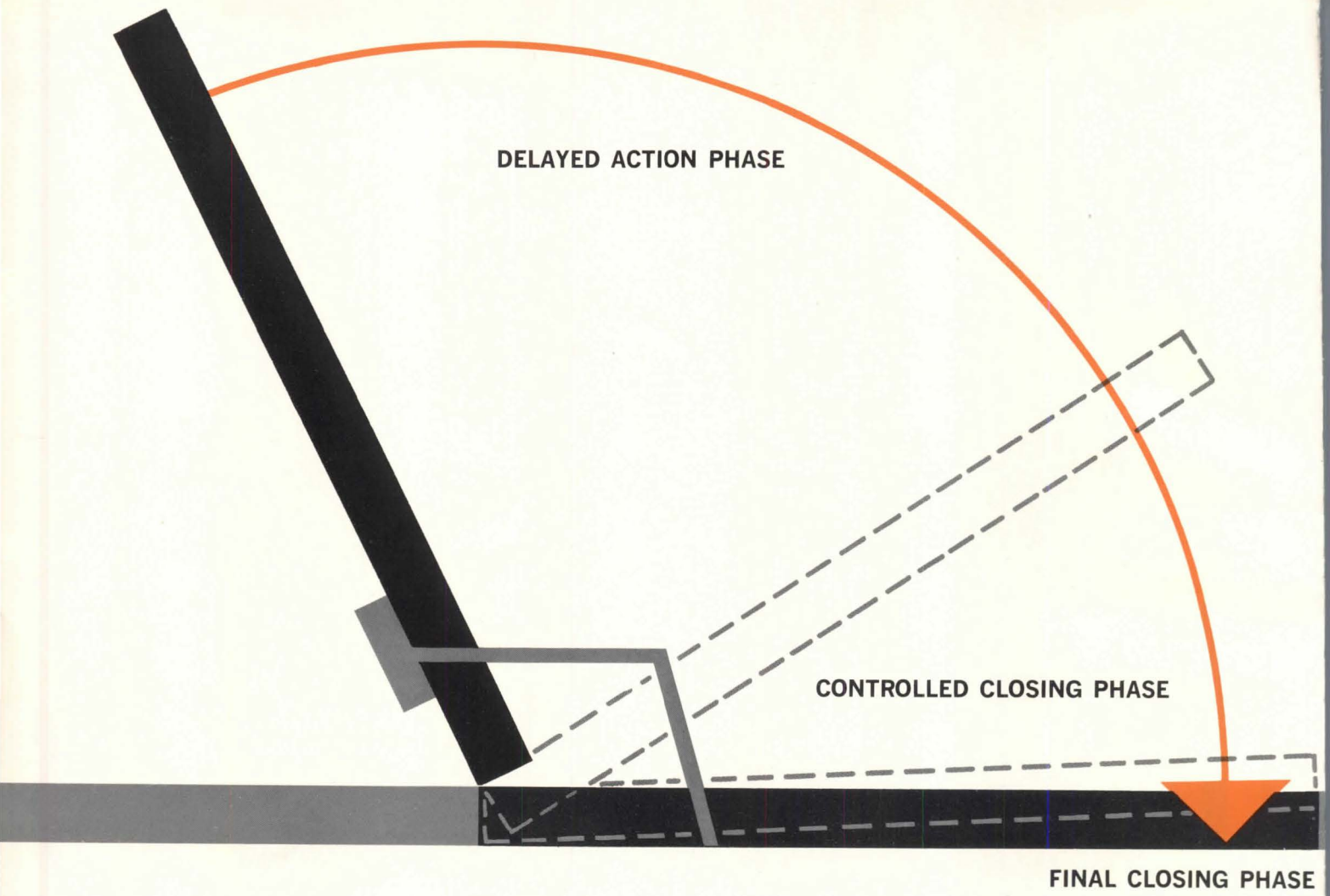

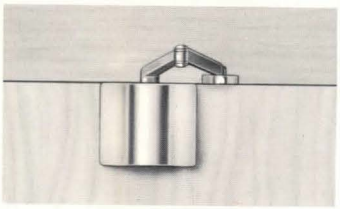

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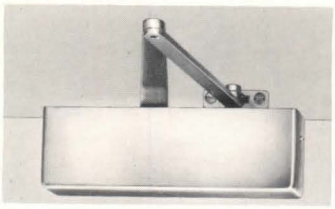

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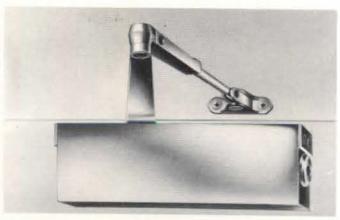

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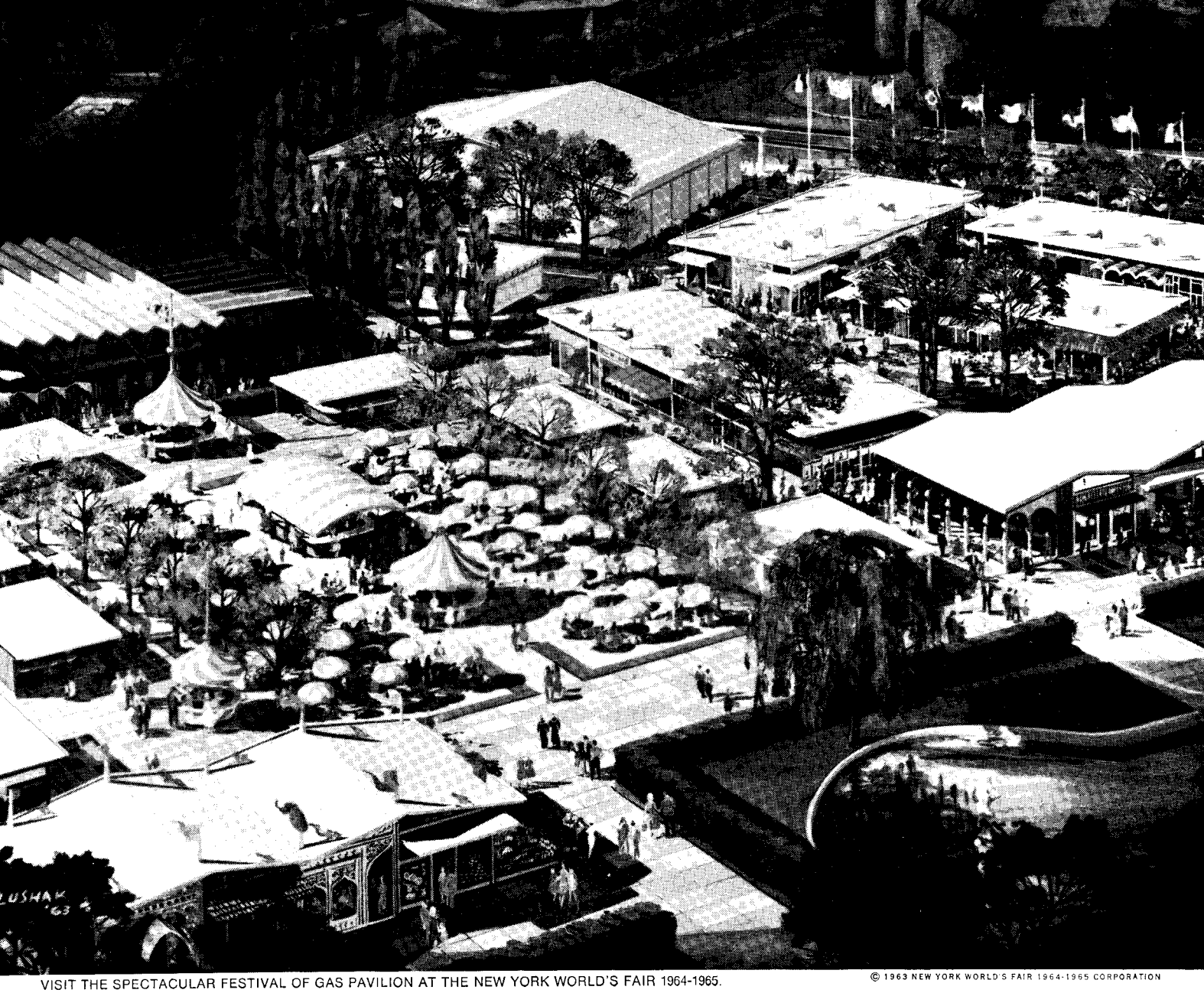

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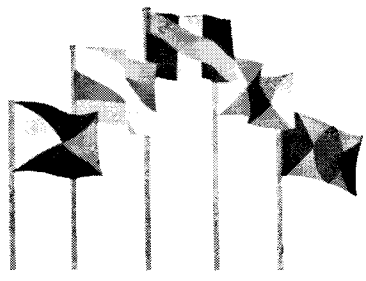

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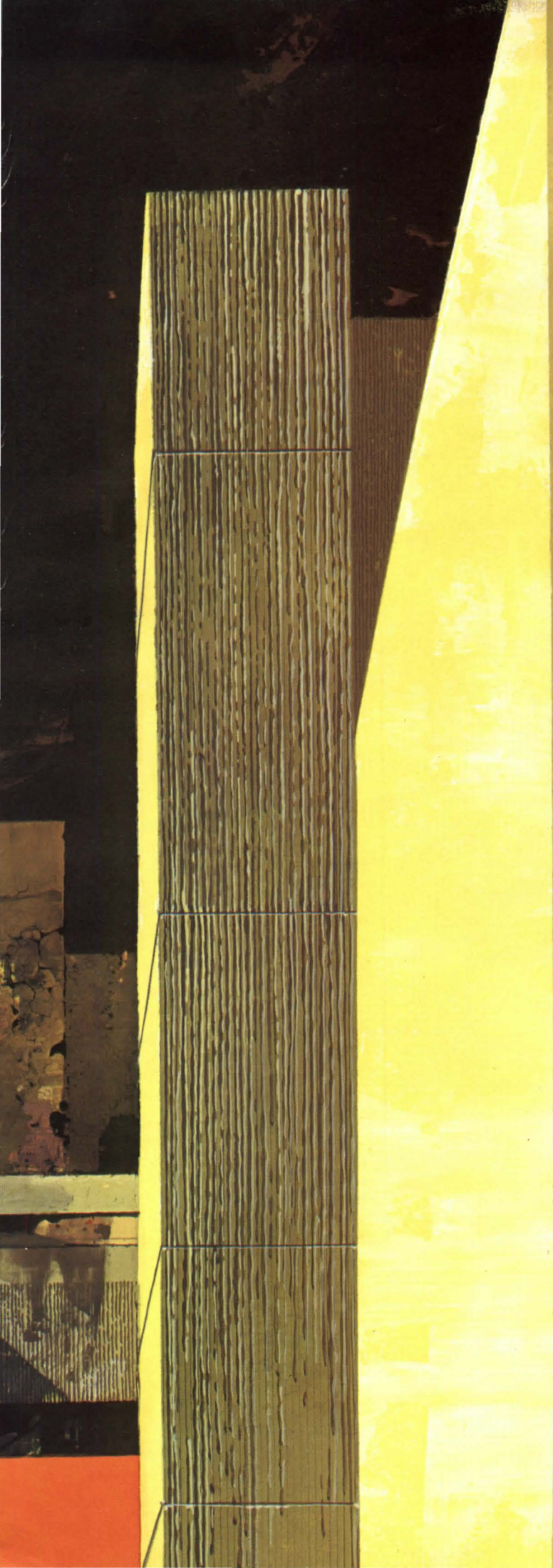

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Continued from page 194

a designation that may seem anticlimactic after so bold a vision.

The consequence of all this is the realization of the total productive potentiality of automated, mass-production industry, such realization to be supranational, democratic, and worldwide in scope. This is presented as at once an ethical ideal and the likely outcome of historical evolution. With the new industry arises a new man, a "continuous man," whose outlook is formed by total world experience, total world needs and resources. The basis of the new industrial accounting will not be money but the lifetime economic security of all individuals.

How the individual will fare under this new order is suggested by scattered passages. In a characteristically hopeful vein, Fuller writes that as man is "progressively disemployed . . . he becomes progressively re-employed in the rapidly increasing army of research and development—or production-inaugurating engineering—or of educational and recreational extension, as a plowed-back increment of industrialization" (p. 179). But another picture of man's new role seems more equivocal, suggesting that man exists to serve industry rather than the reverse. "Man having lost significance altogether as an automaton must now discover himself realistically as being essential to the success of industrialization only in the function of regenerative consumer. . . . Regenerative consumers continually become dissatisfied with each stage of technical improvement as experience teaches them where the inefficiencies lie" (p. 286).

We might have more confidence in Fuller as the theorist and prophet of a new order if it were not for the extensive confusions and weaknesses in his doctrine and the numerous errors in its empirical support. In the first place, his book is marked by a steady outpouring of historical assertions either unsupported or contradicted by the present state of our knowledge. I will consider a few of the more prominent in the order of their appearance.

The first so-called permanent buildings were not fortresses, as Fuller claims, but temples (in Sumer) and pyramids designed for grave protection (in Egypt). The oldest building still surviving is the stepped pyramid of Saqqara in Egypt (30th Century B.C.).

The long chapter entitled "Fluid Geography" contains a number of wild claims that can only be ascribed to the prejudices of the buff. The idea of the diurnal rotation of the earth has nothing to do with the experience of the navigator and was first proposed as a simpler explanation of the apparent daily movement of the celestial bodies. Its original author, as far as the record shows, was Herakleides of Pontos, a philosopher of the 4th Century B.C. and a student of Plato. As a matter of fact, celestial navigation and cartography have always been based, by practical necessity, on a geocentric and geostatic universe.

Whether the lever was derived from shipgear is unknown but highly unlikely, since a number of hand tools come closer to the basic form. It was probably in the form of the balance that the lever was first studied theoretically (in the anonymous *Mechanical Problems* and Archimedes' *Plane Equilibria*).

Fuller's Dymaxion map does have some of the virtues he claims for it, but we can appreciate these only because we know the configurations of land and water from the familiar global map. For this he has an absurd contempt, oblivious of the fact that the earth *is* very nearly a sphere. The Dymaxion map is inadequate for showing great circle routes and routes of constant bearing (loxodromic

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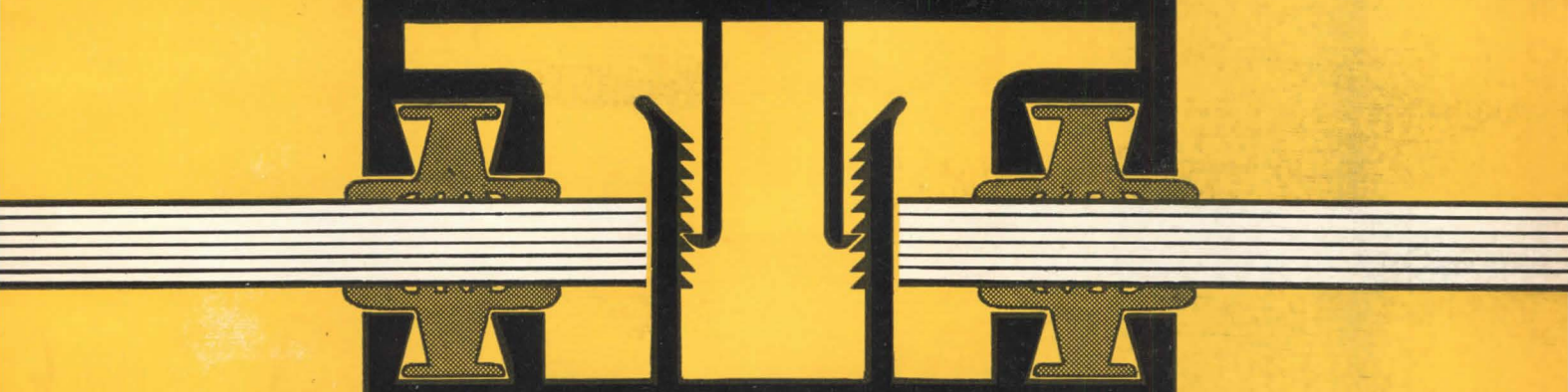

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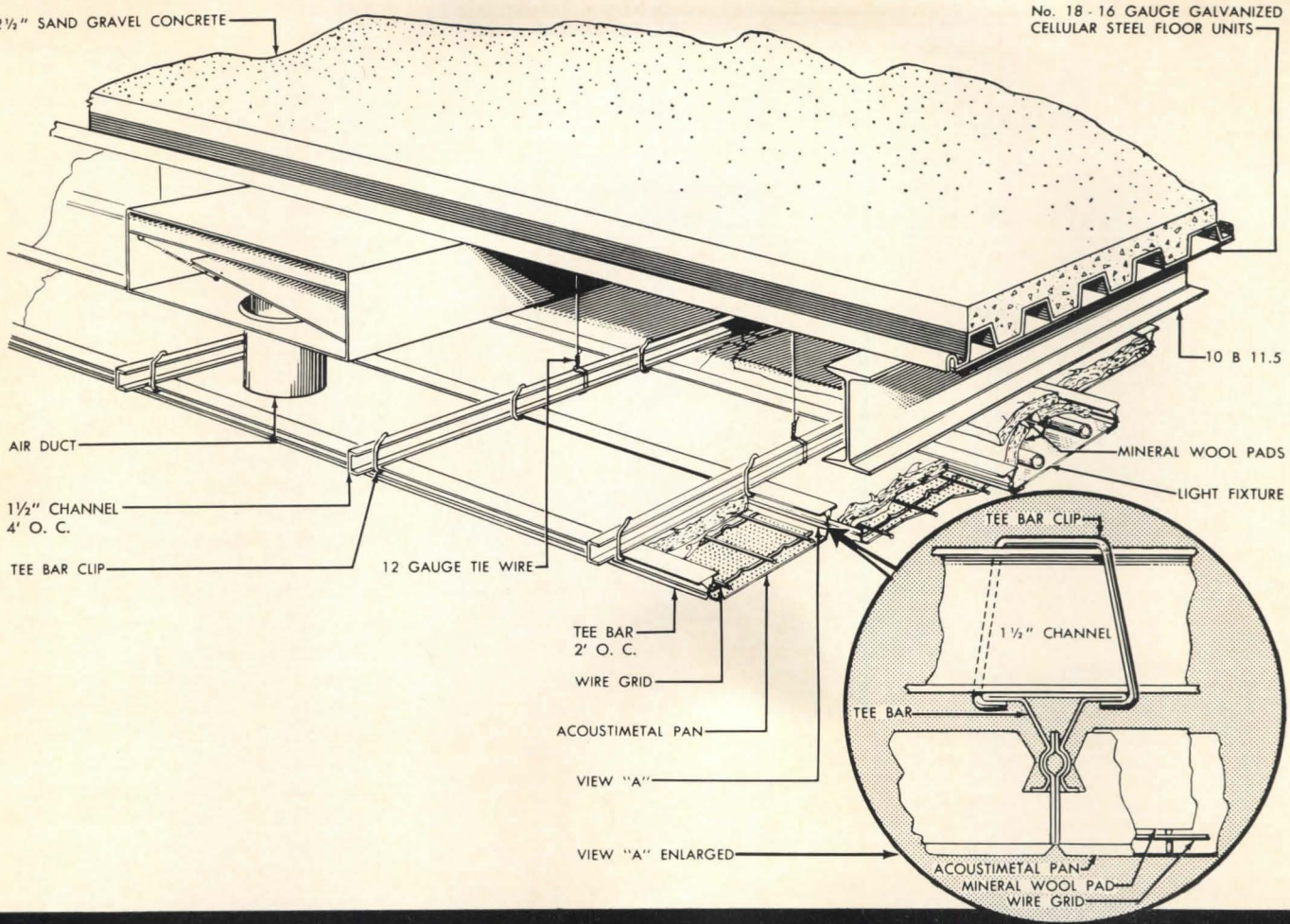

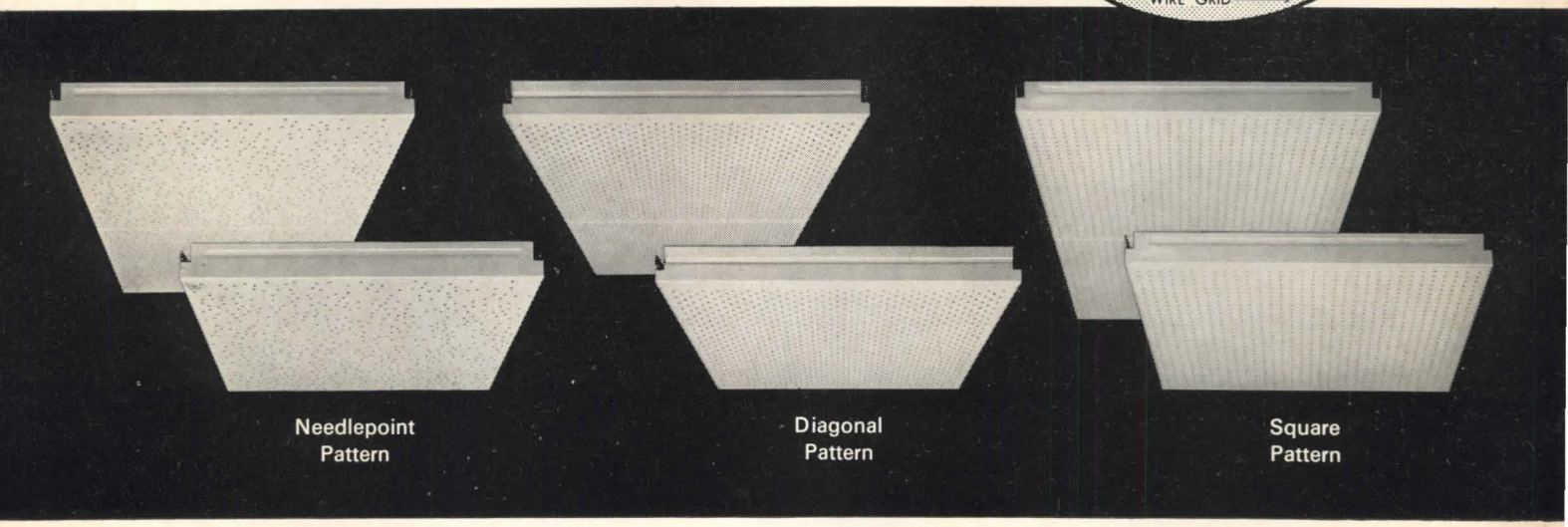

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Continued from page 200

curves). For the former, the globe is the best we have; for the latter, we can still use Mercator's projection, where the curves appear as straight lines.

There is no evidence that civilization began in Indo-China. As far as archaeological inquiry reveals, agriculture was introduced about 9000 years ago in the upper Tigris and Euphrates valleys, while the urban revolution came about three millennia later in their lower reaches.

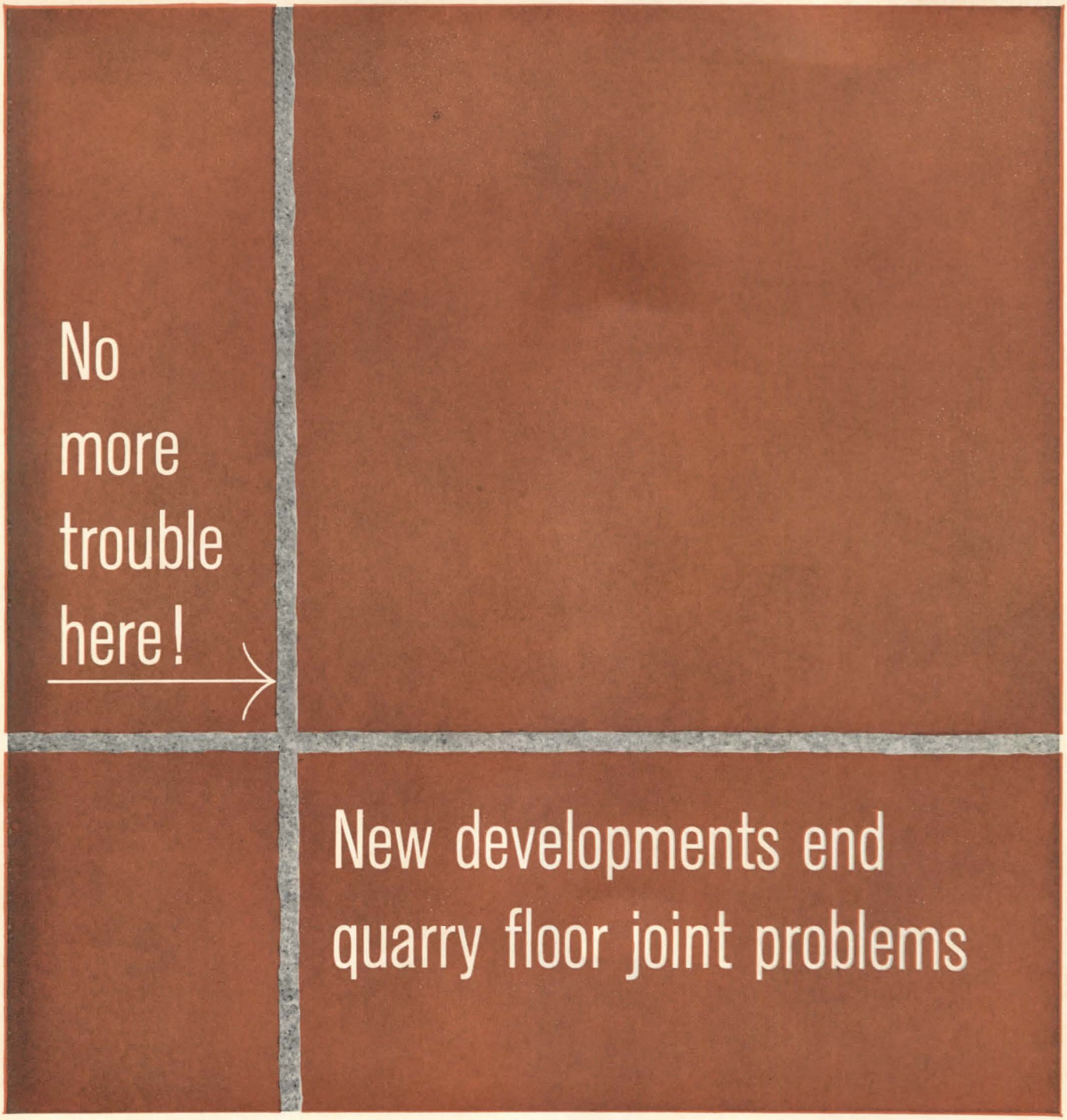
The railroad did not develop out of ocean-steamer technology. The first railroads were built for mine wagons in the late 16th Century, and the steam locomotive antedates the steamship.

Fuller is carried away by the contemplation of domes. In his zeal to demonstrate their cultural and cosmic importance, he resorts to his own brand of folk-etymology. He likes to think that the words *dome*, *tomb*, *woman*, and *womb* are cognates or in some way etymologically related; yet their roots are linguistically distinct, and no Indo-European consonant shift shows a cognate relation. Since his enthusiasm for ships matches that for domes, he feels that language ought to support him there as well. He equates the Greek *thólos* (dome or vault) with *thole*, meaning oar-pin; but the Greek word for thole is *skalmós*, while the English word is of Germanic origin. Neither the objects nor the words are related.

These baseless assertions might be overlooked in the total scheme of the book if there were not so many of them and if they were not an essential part of the narrow dogmatism that marks his philosophizing. Fuller's prescription for architecture is strictly scientific and makes no provision for the nourishment of man's spirit. Architecture is not merely total environmental control, and a house conceived as a "mechanized human container" might be the final expression of man's dehumanization. But the industrial criteria themselves are open to serious question, for all their alleged cosmic underpinnings. The greatest speed and mobility and the lowest weight per unit of power are not necessarily the marks of the most efficient machine. Indeed, it is possible to show that jet-propelled aircraft are the costliest and most inefficient form of transportation known, in themselves and in the enormous ground area necessary for their terminals. For the movement of goods, it is questionable whether we have improved on the waterway.

The truth is that Fuller is a romantic technophile of the mid-20th Century. He

Continued on page 210



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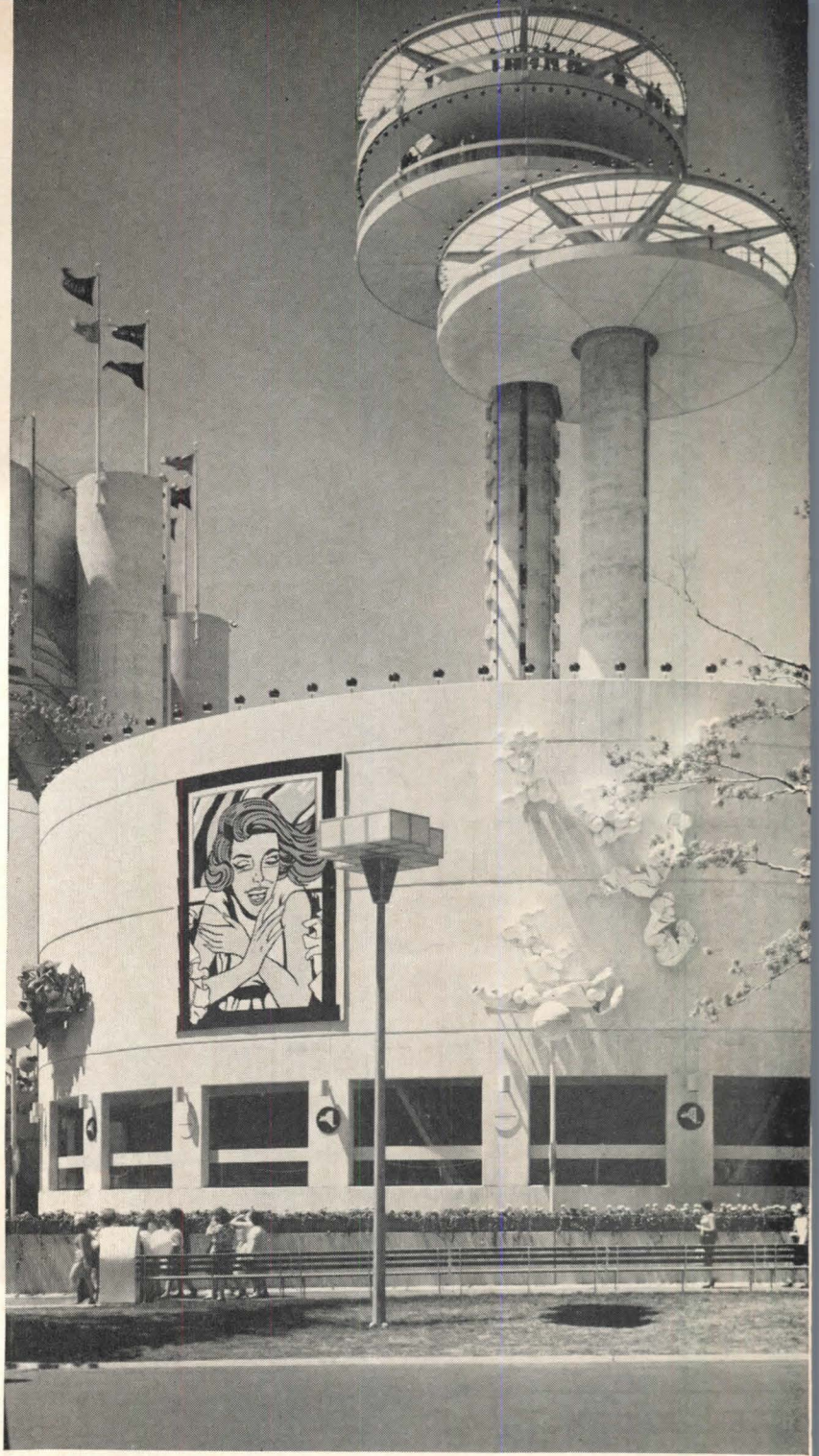
Alaska Pavilion. Architect: Mandeville & Berge, Seattle, Wash. • Engineer: Olsen & Sands, Juneau, Alaska • General Contractor: J. D. Rich, Stamford, Conn. • Concrete Contractor: Shell Construction Co., Inc., Greenwich, Conn. • Mix Testing: Haller Testing Laboratories, Inc., New York, N. Y. • POZZOLITH Ready-Mixed Concrete: Principe-Danna, New York, N. Y.



New York State Exhibit—left, Tent of Tomorrow; front, Theaterama; rear, Observation Towers. Architect: Philip Johnson Assoc. • Consulting Engineer: Lev Zetlin & Assoc. • Contractor: Thompson Starrett Construction Co., Inc. • Slipform Subcontractor: The Nicholson Co. • Design & Testing of Mixes: Pittsburgh Testing Laboratories, Inc. • POZZOLITH Ready-Mixed Concrete: Colonial Sand & Stone Co., Inc. — all of New York.

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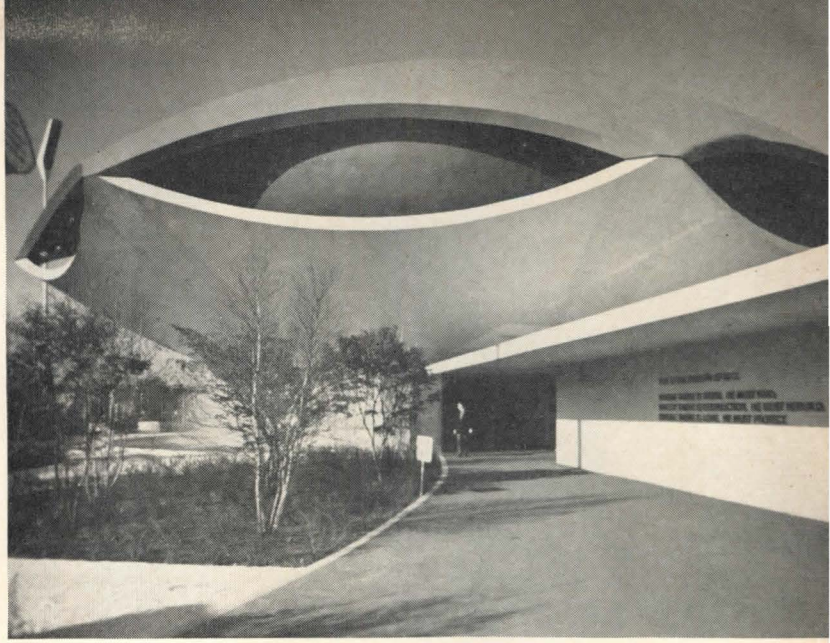
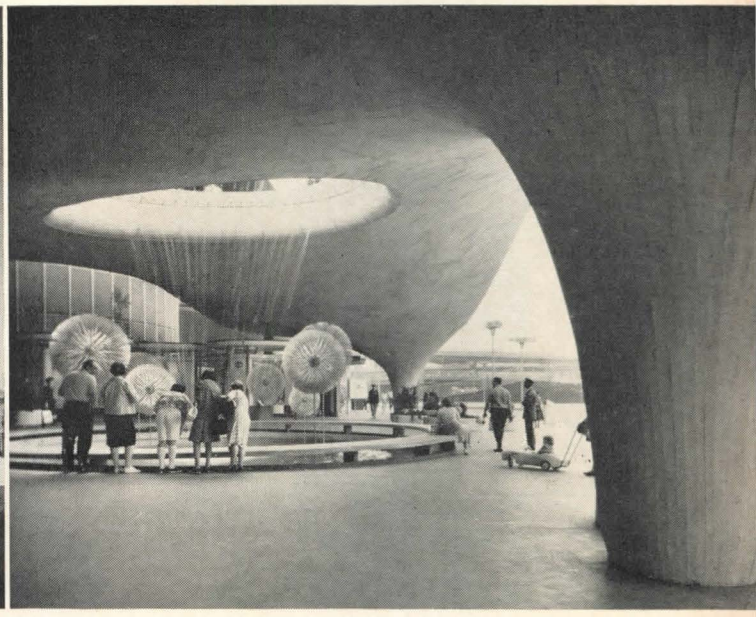


Travelers Insurance Company. Architect: Kahn & Jacobs • Engineer: Lev Zetlin & Associates • General Contractor: George A. Fuller Co. • Concrete Contractor: Brennan & Sloan. Mix Testing: Haller Testing Laboratories, Inc. • POZZOLITH Ready-Mixed Concrete: Colonial Sand & Stone Co., Inc.—all of New York.



Eastman Kodak Pavilion. Designer: Will Burtin • Architect: Kahn & Jacobs • Engineer: Lev Zetlin & Associates • General Contractor: George A. Fuller Co. • Concrete Subcontractors: Corbetta Construction Co., Inc. & Pavarini Construction Co., Inc. • POZZOLITH Ready-Mixed Concrete: Colonial Sand & Stone Co., Inc. — all of New York.

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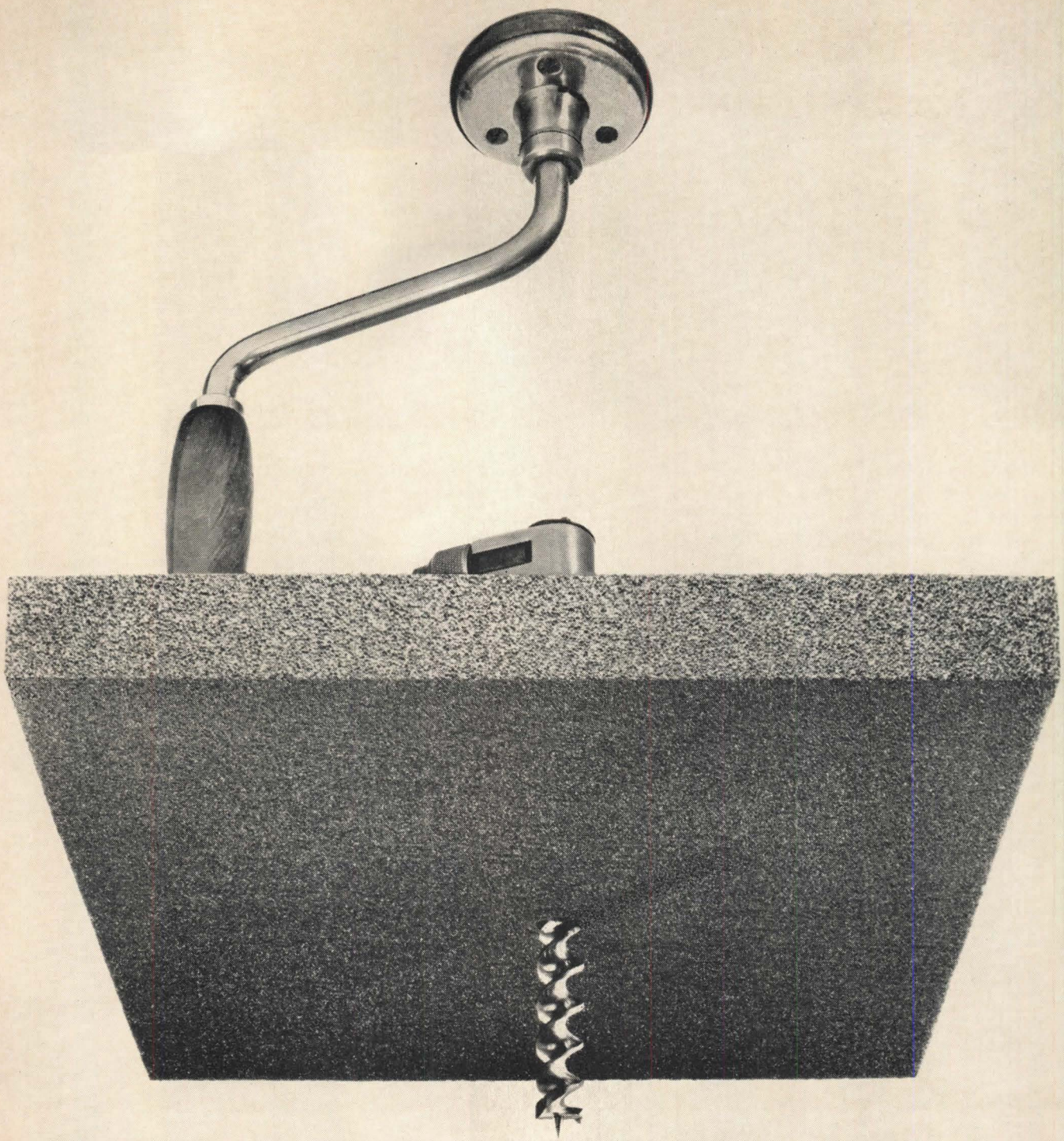

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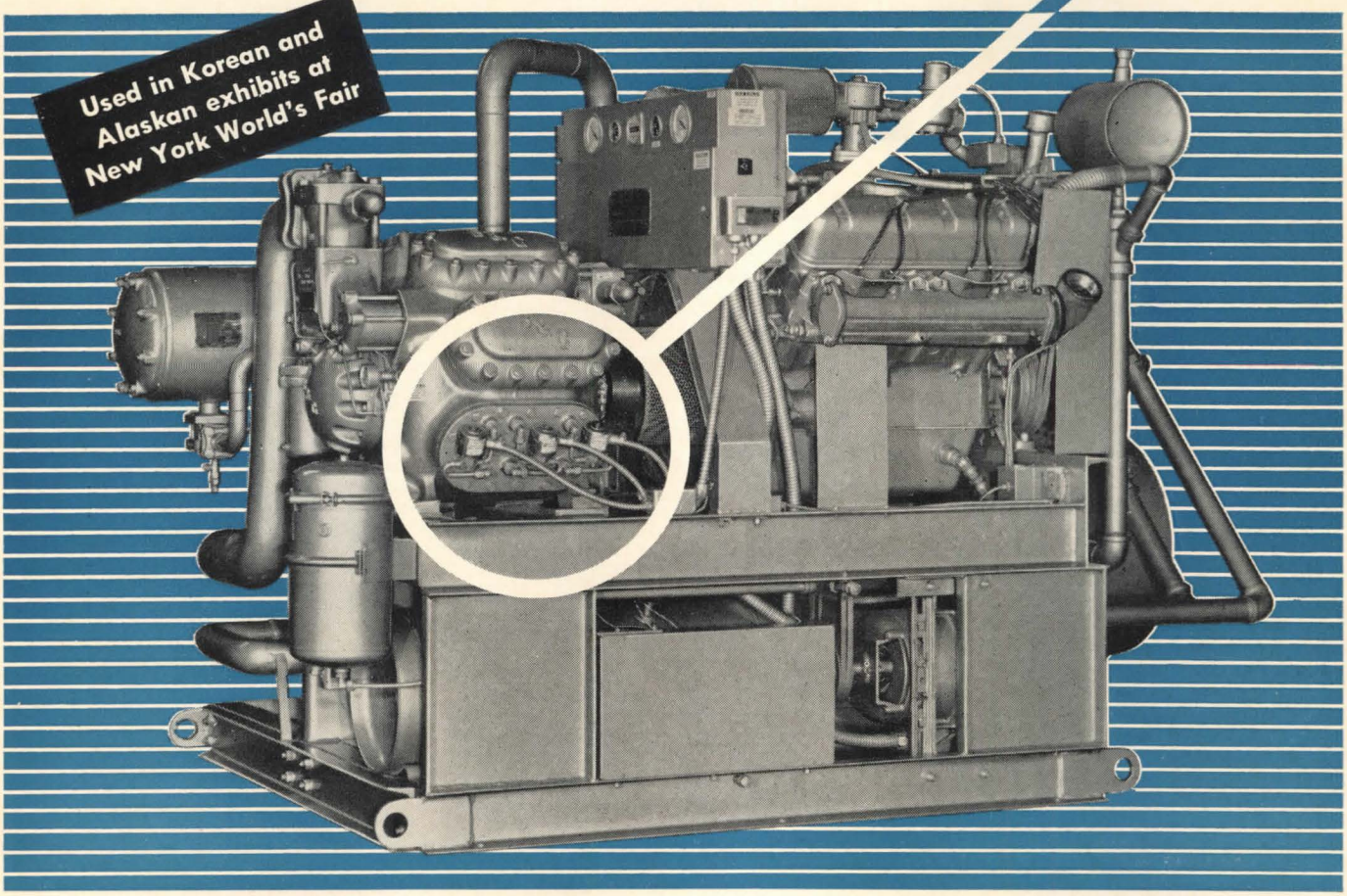

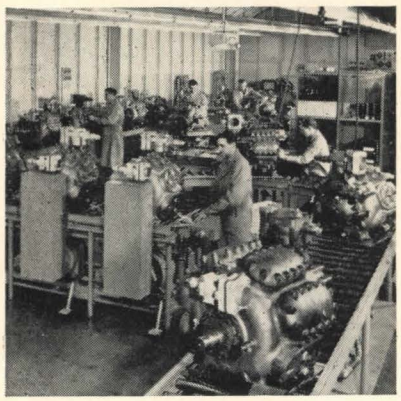

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Continued from page 204

is naïvely unconcerned with the enormous social and political problems attendant on the realization of material welfare for all mankind. He is indifferent to biology and unhistorical in viewpoint. His inflated cosmology leads him to gross confusions between science and technology, and between invention and discovery. He is fascinated by supersonic planes, radar, rockets, and satellites—the gimcracks of our tin-horn culture. He believes that man dwelt in ignorance before the advent of electronic technology and relativity physics. In short, he is a creative inventor with a messianic urge, but his defects as a thinker corrupt a vision that might otherwise have had a certain grandeur about it.

OTHER BOOKS TO BE NOTED

Art before Columbus. André Emmerich. Photos by Lee Boltin. Simon & Schuster, 630 Fifth Ave., New York 20, N.Y., 1963. 256 pp., illus. $10

The premise: that the word primitive is not synonymous with the word barbaric, that pre-Colombian art was not lesser, but different from the conception of our Western-Greek heritage. Text and many remarkable photographs create an understanding of the art forms which helps bring understanding of the people and their civilizations. The tribes, from those of the second millenium B.C. to the Mayans, Toltecs, and Aztecs, are clarified historically and geographically. Architecture comes in rather incidentally as part of the culture. The when and where of each building is sharply defined and, again, the photographs of pyramids, murals, etc. are excellent.

The Prairie School Review. W.R. Hasbrouck. Prairie School Press, 117 Fir St., Park Forest, Ill., 1964. Quarterly. Single copy: $1.50 annual subscription: $5

Each issue of this newly established quarterly will be devoted to an individual architect or a general area within the Prairie School of architecture. It will contain personality sketches, essays, and book reviews, with special attention to measured drawings. First issue was devoted to George W. Maher. Hasbrouck has also published facsimiles of Sullivan's A System of Architectural Ornament *and Wright's* The House Beautiful.

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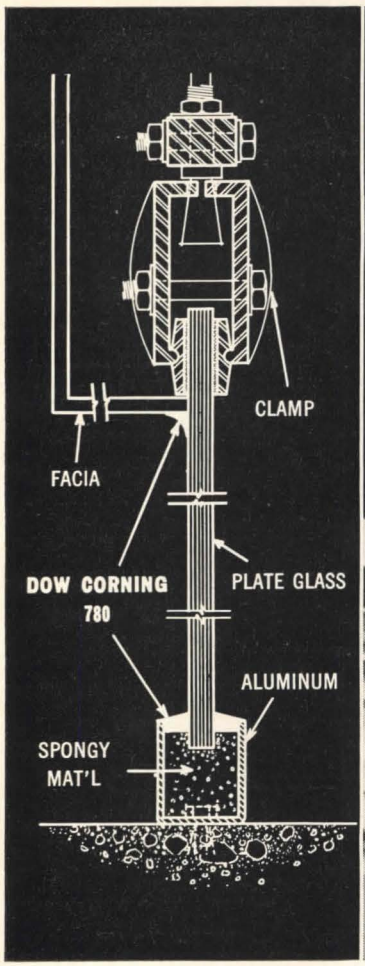

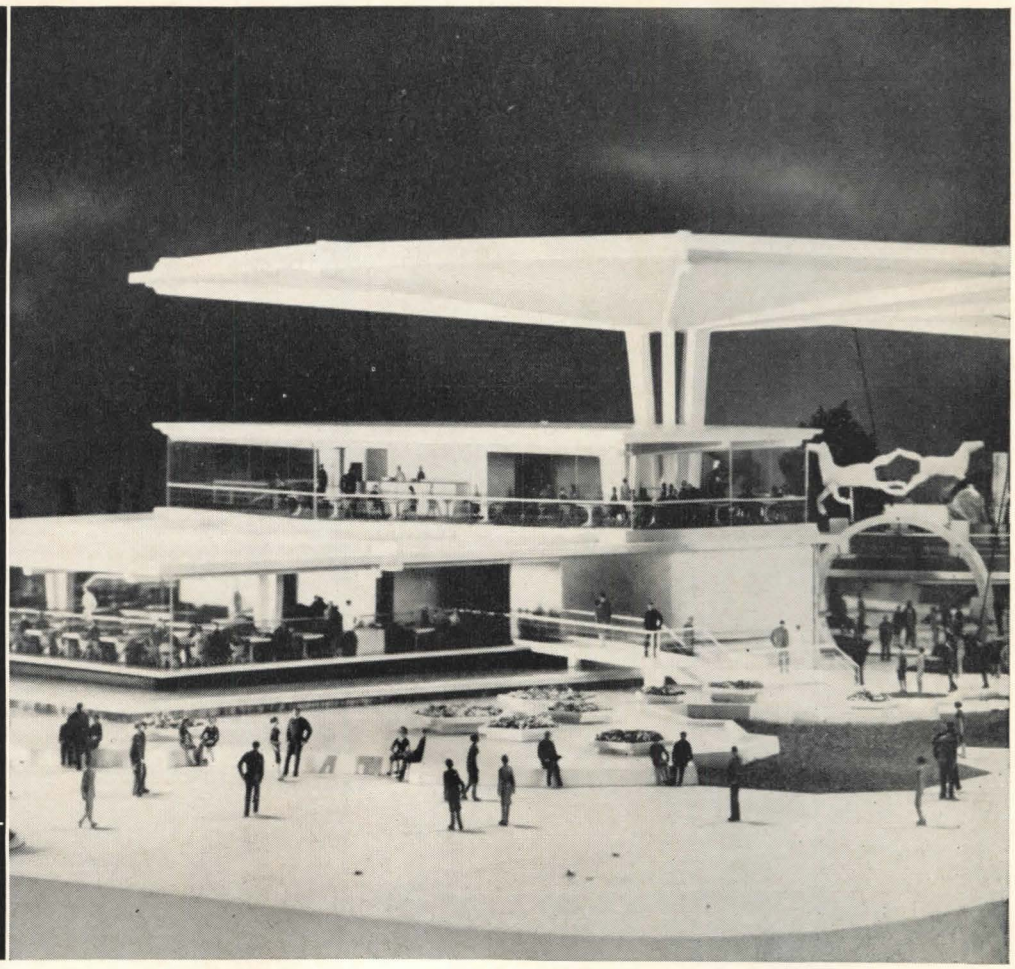

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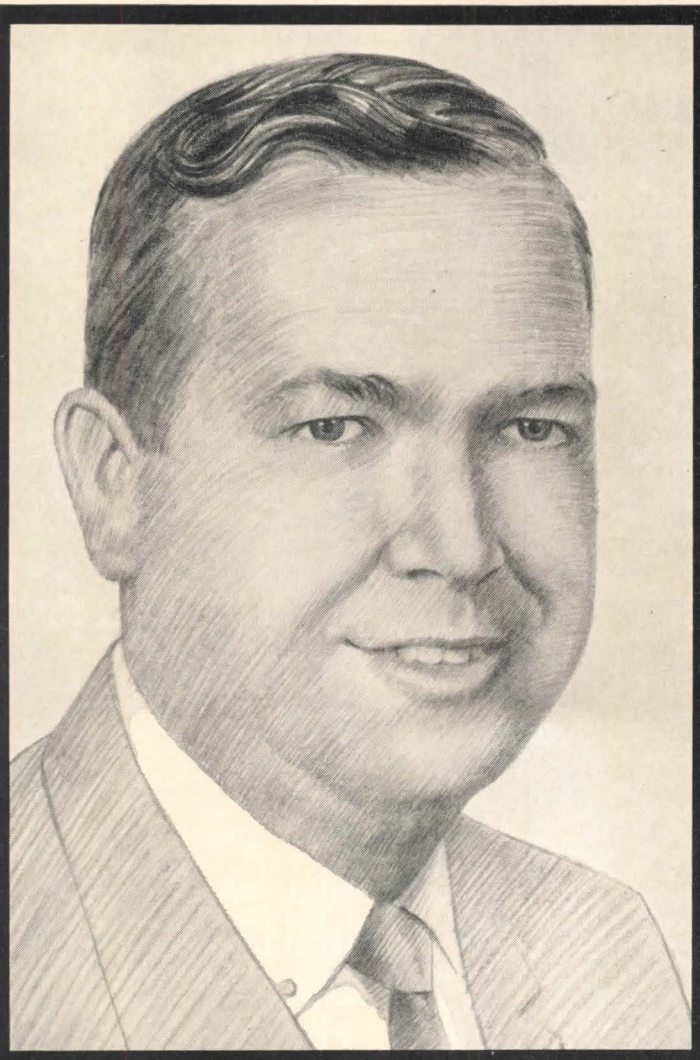

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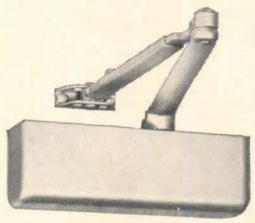

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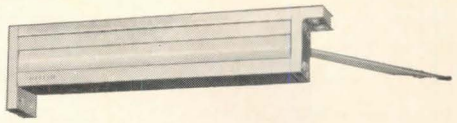

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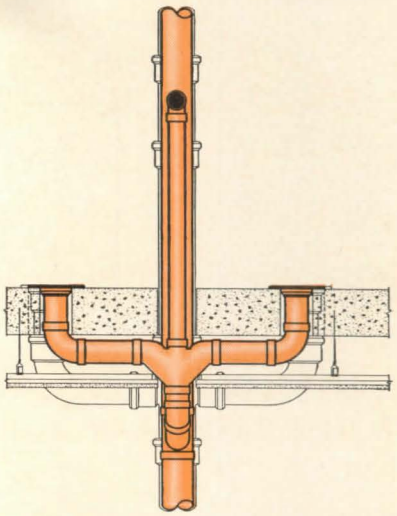

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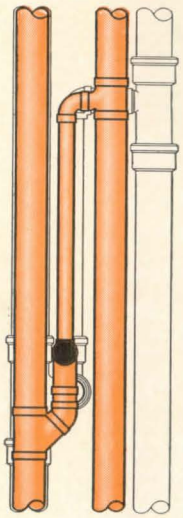

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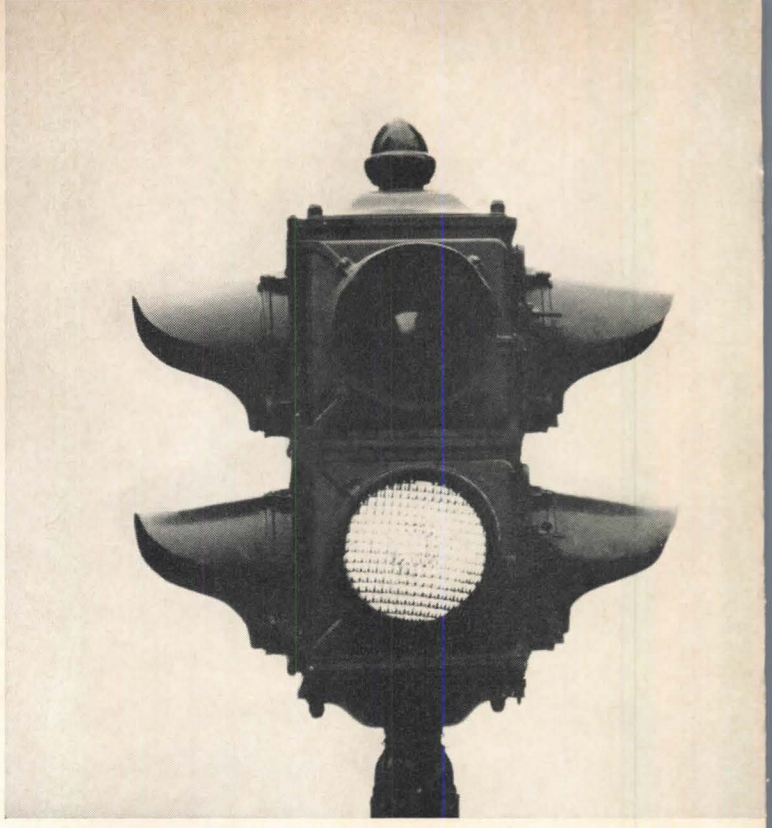

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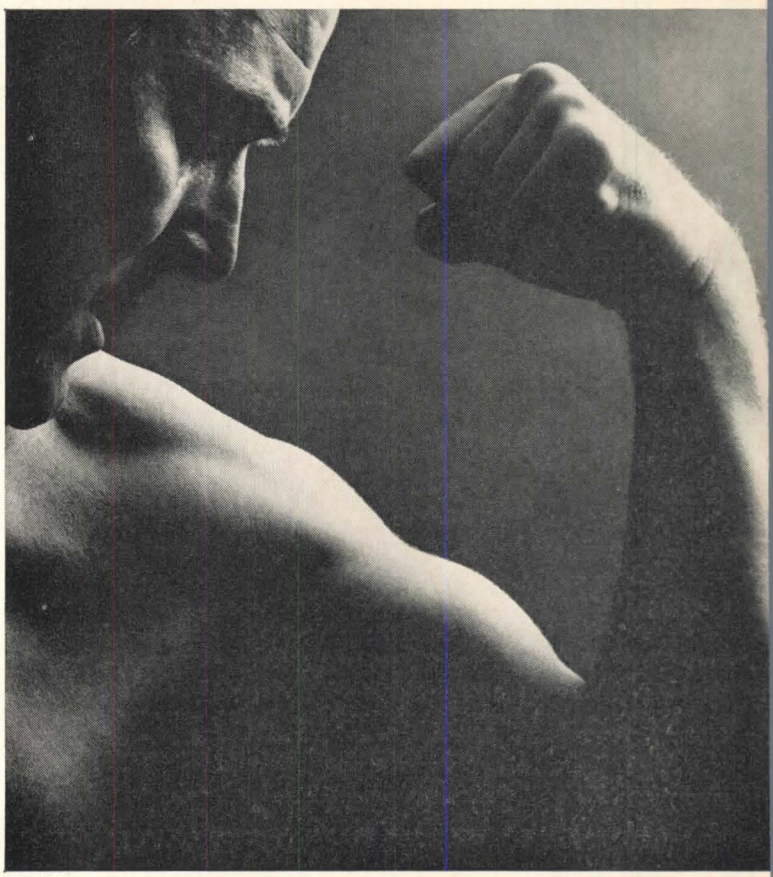

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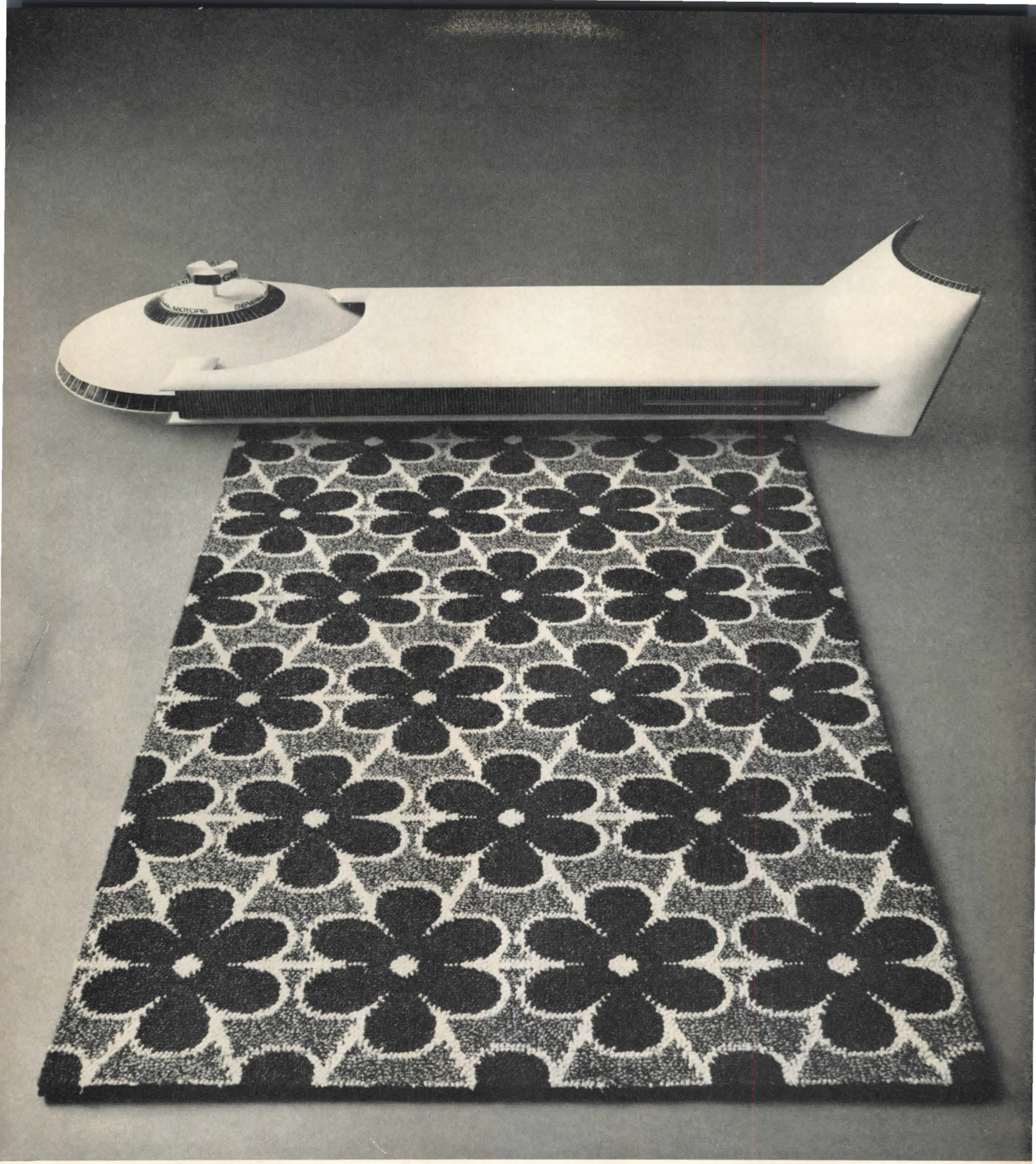

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New Firms

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EDMUND J. GLENNY, Architect, 533 Reymond Bldg., Baton Rouge, La.

GUY NORMAN, Design and Planning for Business and Industry, 101 Park Ave., New York, N.Y.

THE RESTAURANT DESIGN GROUP, Food Systems Designers and Consultants, 527 Madison Ave., New York, N.Y.

GERALD J. VALK, Architect, Robinwood Dr., Great Notch, N.J.

WANSLOW & SAXTON, Architects, 235 N. Greenwood, Fort Smith, Ark.

Elections, Appointments

AMERICAN GAS ASSOCIATION, New York, N.Y., has appointed Robert H. Combs director of sales and promotion.

KISSILOFF & WIMMERSHOFF INC., New York City design firm, has appointed Thomas P. Rock to their design staff.

HONEYWELL INC. (formerly Minneapolis-Honewell Regulator Co.) has appointed JAMES H. BINGER chief executive officer and HAROLD W. SWEATT honorary board chairman.

J. N. PEASE ASSOCIATES, Architects-Engineers, Charlotte, N.C., have appointed JOEL E. STEGALL an associate.

PHOTO CREDITS

Landmarks

PAGES 154-155

(1, 3, 4) Ezra Stoller Associates; *(2)* Julius Shulman; *(5, 6)* Alexandre Georges; *(7)* Karl H. Riek; *(8)* James K. Mellow; *(9)* Rondall Partridge; *(10)* George H. Cardozo; *(11)* T. Mike Fletcher; *(12)* George Cserna, courtesy of I. M. Pei & Associates; *(13)* David Hirsch.

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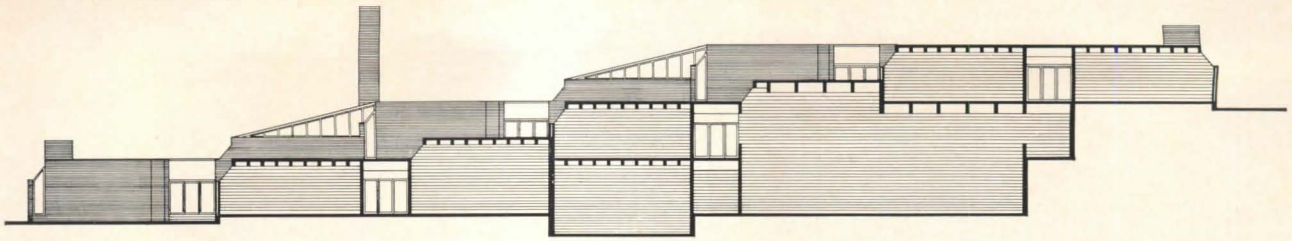

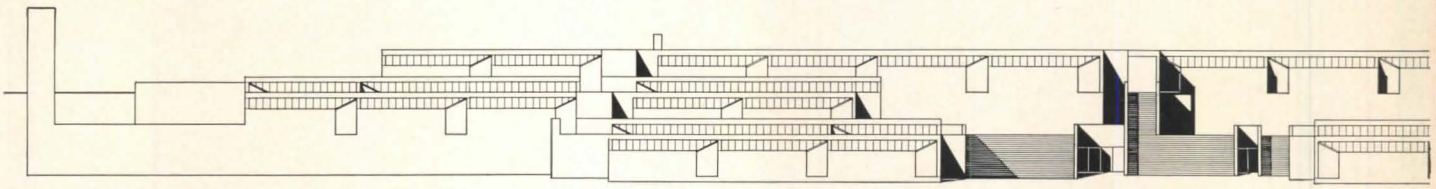

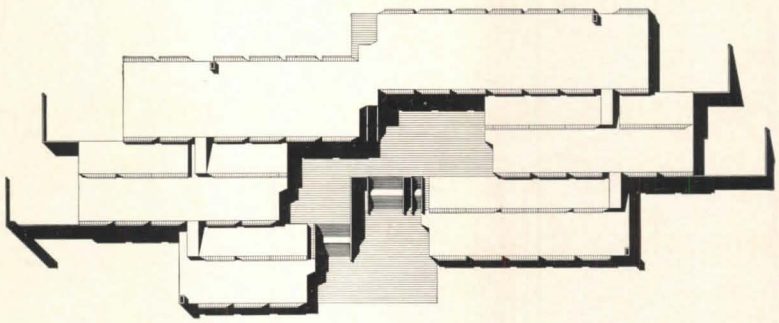

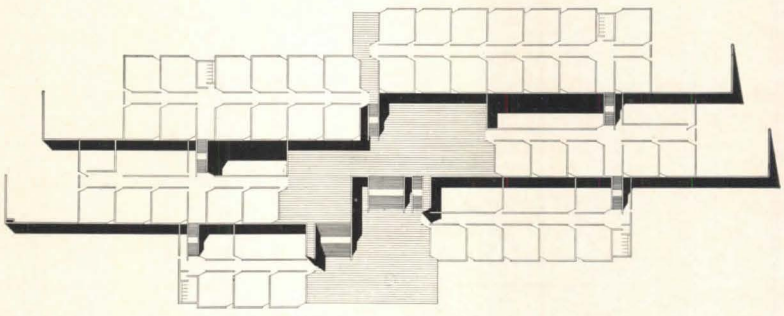

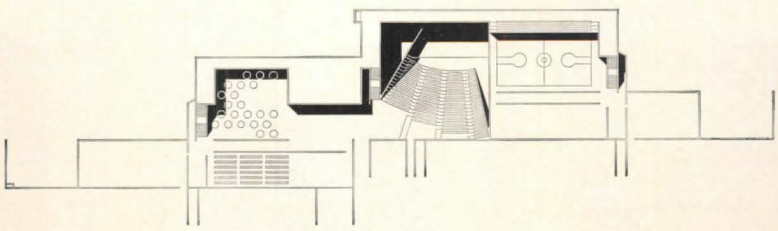

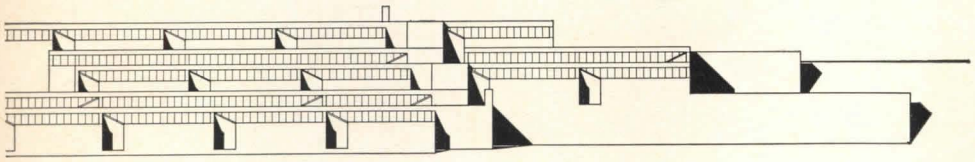

Martin Price designs a high school.

By installing Zonolite* Masonry Fill Insulation in the walls, fuel bills are cut $405 a year, returning 230% annually on the investment in insulation.

What your client actually pays for insulation is only remotely connected to the cost.

For example, Consulting Engineer Marvin M. Serot of New York City, who engineered this building, found that the installed cost of Zonolite Masonry Fill Insulation in this high school was $1,903.

But that is not what the client pays, because the insulation is financed as part of the building over a 20 year period at 6% interest.

So the true cost of the insulation to the client is about $170 annually for 20 years.

Compare this with the annual savings of $405 a year, and you will see that the client gets a 230% return on his yearly payment on Zonolite Masonry Fill Insulation.

One reason for this high return is the effectiveness of Zonolite Masonry Fill Insulation. Another is its low installed cost.

approx. installed costs per sq. ft. of wall	6" block or 2½" cavity	8" block	12" block
	10¢	13¢	21¢

Wall construction and finishing costs were also cut considerably by using Zonolite Masonry Fill Insulation. Because the insulation goes in the cavities, the interior wall surfaces were left unfinished, except for paint. Fewer materials and fewer trades were needed than with conventional wall systems.

There are other benefits, too. The cost of heating and cooling equipment is less because smaller units can be used. The building is much more comfortable. It is also quieter, because of the insulation's sound absorption characteristics.

Additional facts worth investigating are contained in our Bulletin MF-83. Write Dept. PA-74, Zonolite, 135 South LaSalle Street, Chicago 3, Illinois.

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Design Conditions			Winter Heat Loss in BTU/Hr Assuming 70°F DB Indoor 0°F DB Outdoor		Summer Heat Gain in BTU/Hr Assuming 95°F DB, 75°F WB Outdoors 78°F DB, 50°RH Indoors	
	Without Masonry Fill	**With Masonry Fill**	Without Masonry Fill	**With Masonry Fill**	Without Masonry Fill	**With Masonry Fill**
Walls (above grade)	4" Face Brick Air Space 8" Concrete Block	4" Face Brick 2½" Fill 8" Concrete Block	495,000	**187,000**	120,000	**45,000**
Walls (below grade)	8" Poured Concrete		39,000	**39,000**	—	—
Roof	Roofing, 4" Concrete, 2" Insulation		600,000	**600,000**	345,000	**345,000**
Floor	4" Concrete on Grade		369,000	**369,000**	—	—
Glass: Solar & Transmission	¼" Clear, Single Plate		650,000	**650,000**	1,225,000	**1,225,000**
Ventilation	23,000 Cubic Feet per Minute		2,389,000	**2,389,000**	810,000	**810,000**
Lights	340 Kilowatt		—	—	1,150,000	**1,150,000**
People	1750		—	—	780,000	**780,000**
Totals			4,542,000	**4,234,000**	4,430,500	**4,355,000**
% Savings with Masonry Fill			$\frac{4,542,000-4,234,000}{4,542,000} \times 100 =$ **6.8%**		$\frac{4,430,500-4,355,500}{4,430,500} \times 100 =$ **1.7%**	

NOTES: FUEL: No. 6 oil @ 7.5¢ per gallon. DEGREE DAYS: 4989 per year. Total Loads Based on Maximum Simultaneous Usage.

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Read the Herman Nelson warranty

Write for a copy of the Herman Nelson warranty (clearly marked "specimen only"). Compare its simple provisions with all the vague assurances you've ever heard.

Write School Products Department, American Air Filter Company, Inc., 215 Central Ave., Louisville, Ky.

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SCHOOL PRODUCTS DEPARTMENT

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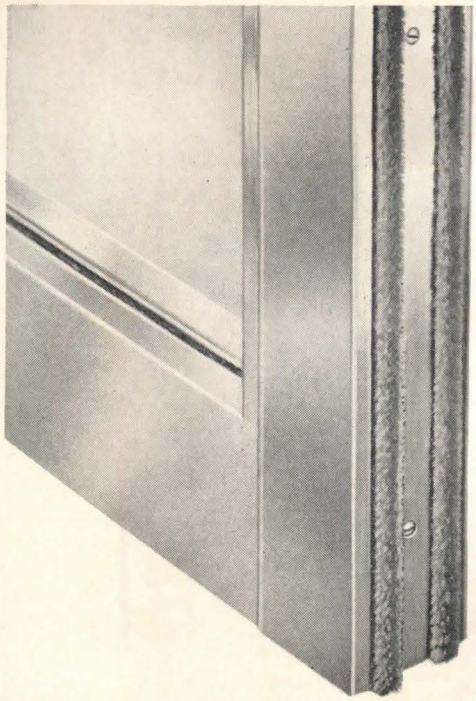

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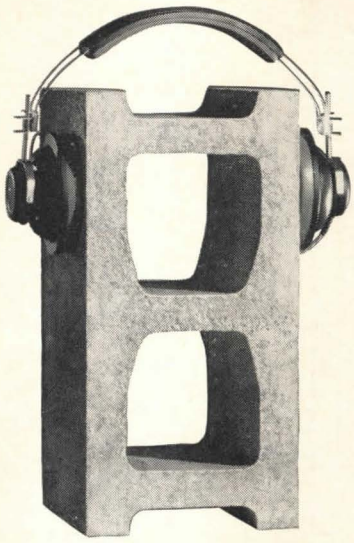
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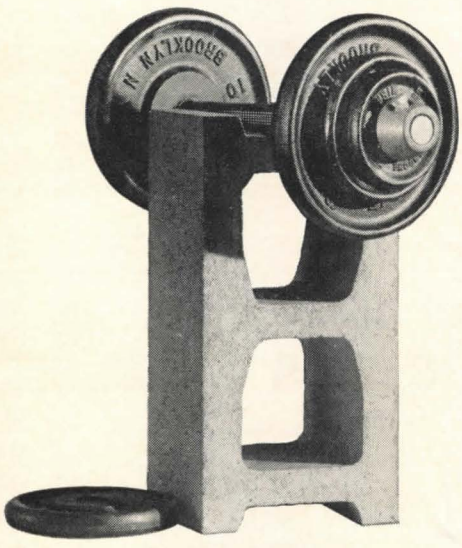
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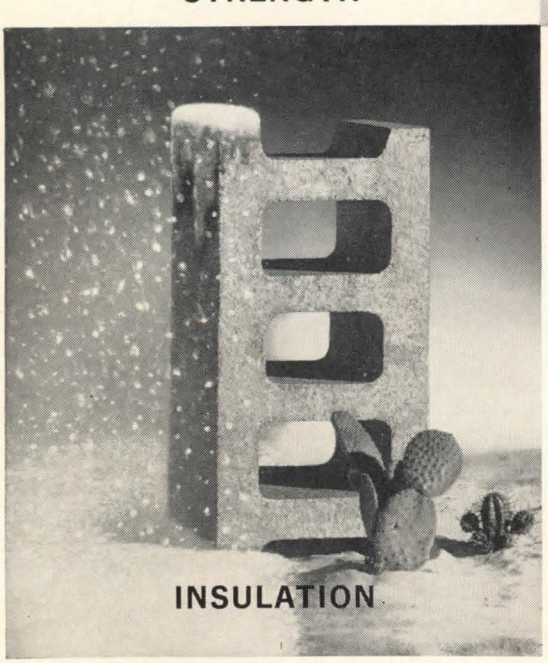
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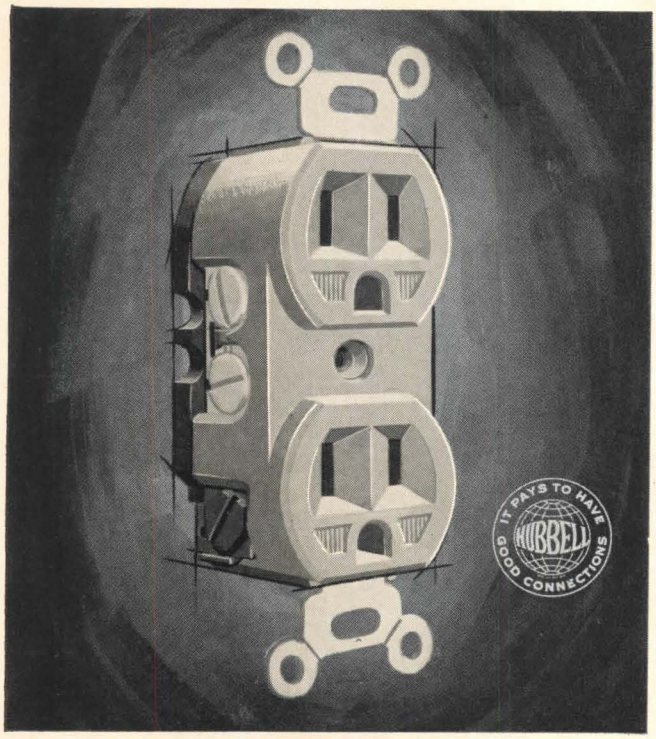

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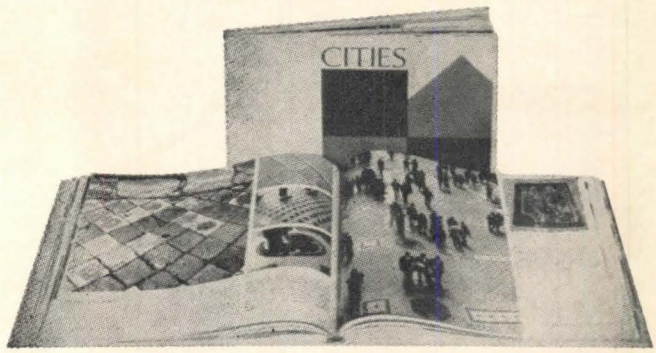

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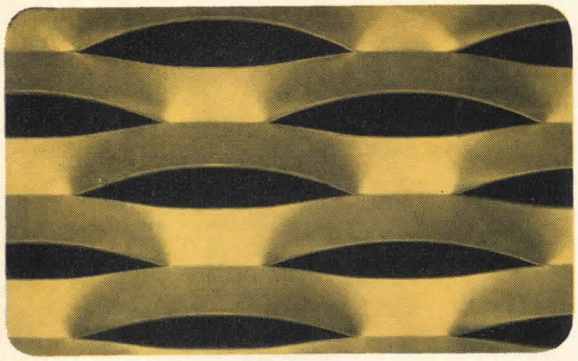

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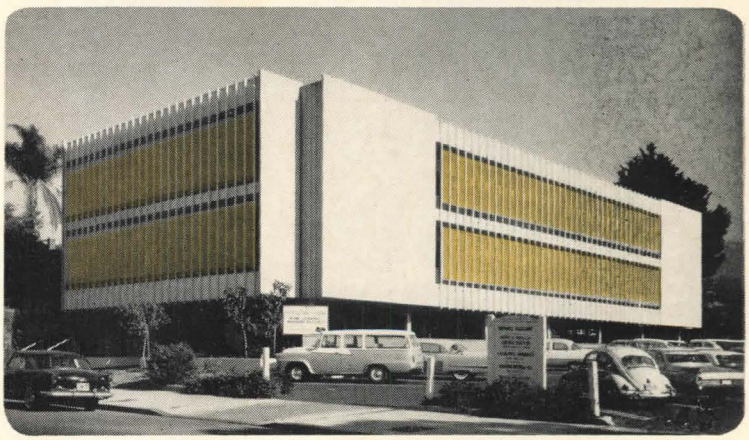

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