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BUILDING TYPES STUDY: OFFICE BUILDINGS—COST VS. QUALITY

SEMI-ANNUAL INDEX

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ARCHITECTURAL RECORD

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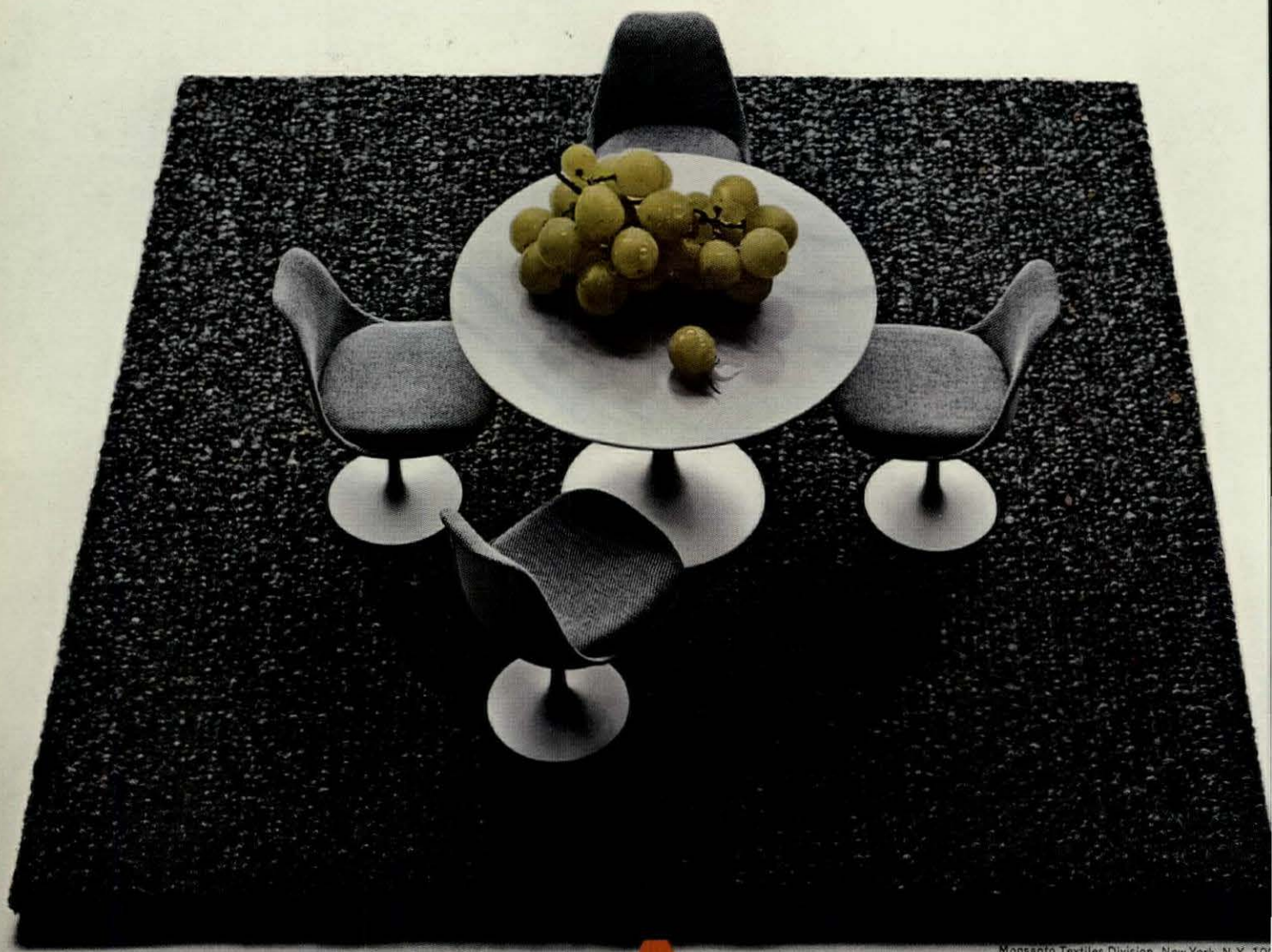

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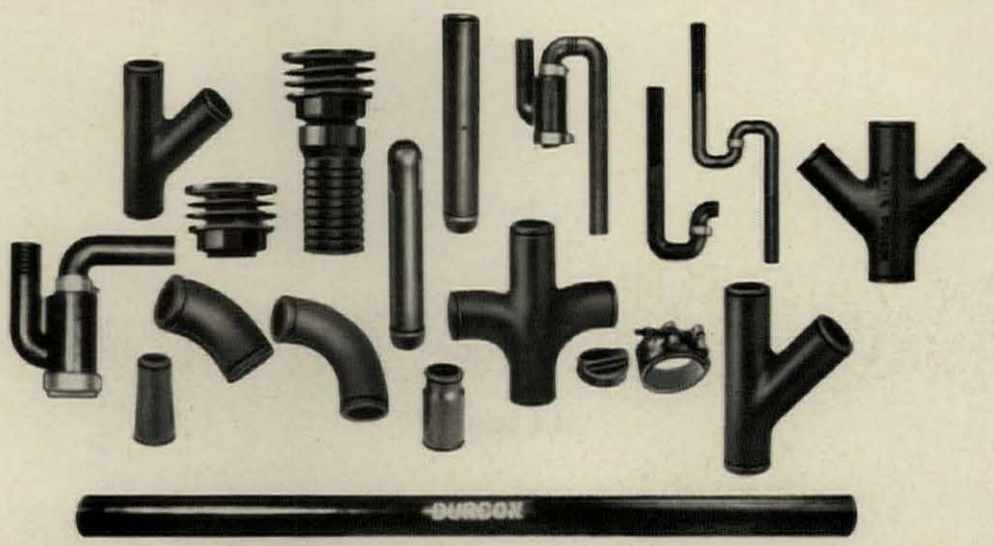

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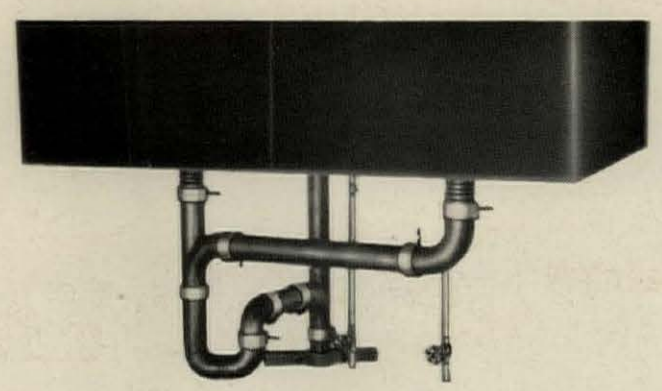

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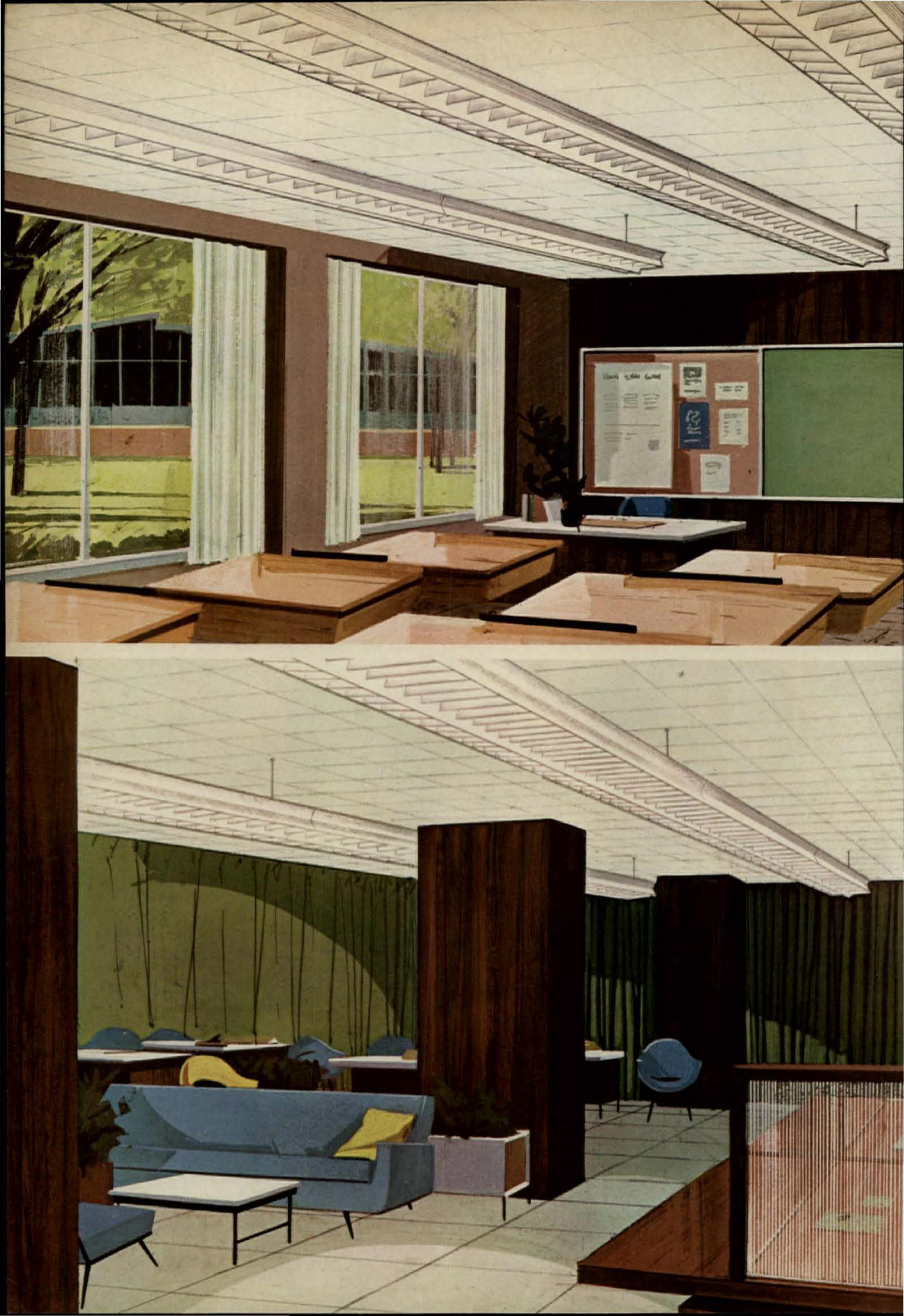

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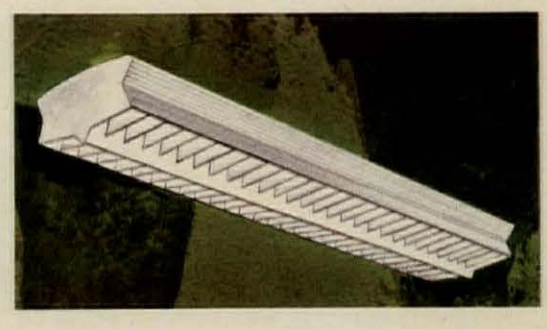

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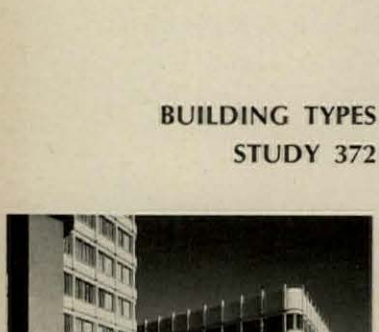
BUILDING TYPES STUDY 372



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ARCHITECTURAL RECORD

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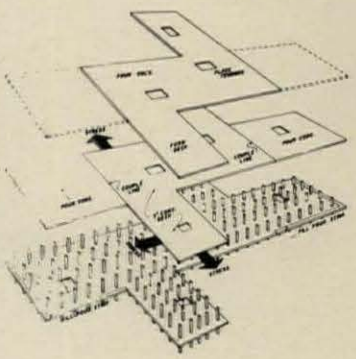

THE RECORD REPORTS

Bert Brandt

COMING IN THE RECORD

BUILDING NEW TOWNS AND REHABILITATING OLD NEIGHBORHOODS

Next month's Building Types Study on Urban Housing will show one of the best of the new towns which are currently being planned and constructed. Designed to house 30,000 people, it is located on a 2,000-acre tract of open farmland near Washington, D.C. It will also show some current approaches to the rehabilitation of slum housing—emphasizing the replanning of entire neighborhoods. Two such studies will appear—one for the Hough district in Cleveland, and the other for Park Slope in Brooklyn.

EXPO '67: A DESIGN SUCCESS

The spirit of architecture shapes this fair, and creates its overwhelming public appeal. Architects and planners will learn much from a visit to Montreal this summer, as next month's issue will prove.

McGraw-Hill

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The Fresno Civic Center is "painting" itself

Fresno Civic Center, Fresno, California. Architects: Robert Stevens Associates and Adrian Wilson and Associates. General Contractor: Huber, Hunt & Nichols. Structural Engineers: Brandow and Johnston Associates. Fabricated Wall Panels: H. H. Robertson Co.

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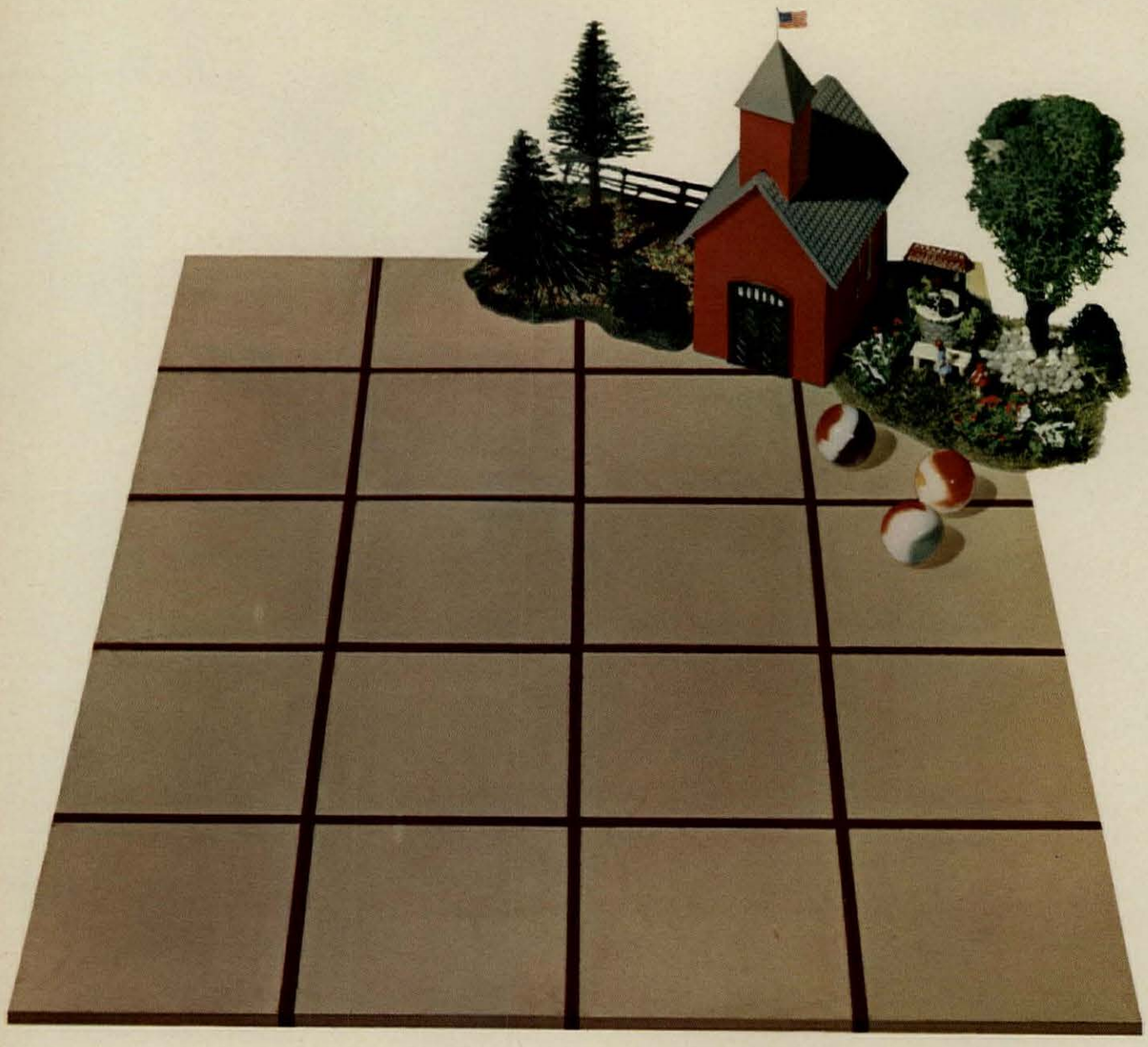

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CURRENT ARCHITECTURE DRAWS A NEW PICTURE

It has occurred to me that my recent outbursts (February, April) about how the architect speaks—or does not speak—to his public, omitted at least one very important point. Maybe it's several points, but it can be focused simply as: the communication is going on, whether "the architect" is doing the talking or the listening.

What many people think of as "the architect"—a sort of Medici version of an artist in masonry—has been the subject of a good deal of wondering and worrying of late. The fact is that architects, taken altogether, never had it so good. They are rebuilding America—as we have been hearing for years—and also rebuilding the rest of the world. A building boom (this building boom) is speaking in strong tones about architects. My little essays on communication would be inadequate if I did not remind you that the architectural world is taking on a new "image," whether or not you yourself like the picture drawn by this world-wide activity.

I am afraid I myself am guilty of the phrase "architectural tycoon." But there are a great many of them, and you know them as well as I. And they are having a mass effect on the very prolific generation that is following mine, and on the very prolific generation that is following that one. What they are doing with architecture is what architecture is going to mean. It is already what "American" means in foreign places.

George Nelson (architect-product designer, and one-time editor on Architectural Forum) wrote recently in a travel series in Saturday Review: "The universal architectural response to mass travel is mass modern. One could do an article about a quick trip around the globe and use only two photos, one showing a glass air terminal and the other a glass and concrete hotel stuffed with cells.

While the story would not be entirely true, it wouldn't be completely false, either. He didn't seem to have the two pictures handy, but you know what he means. George explains that there is sorrowful moaning about it among some groups of travelers, but he adds that there is an entirely new group of world travelers, nervous about old-world mannerisms of a hundred kinds, and happy to see a great Hilton Hotel to steady them.

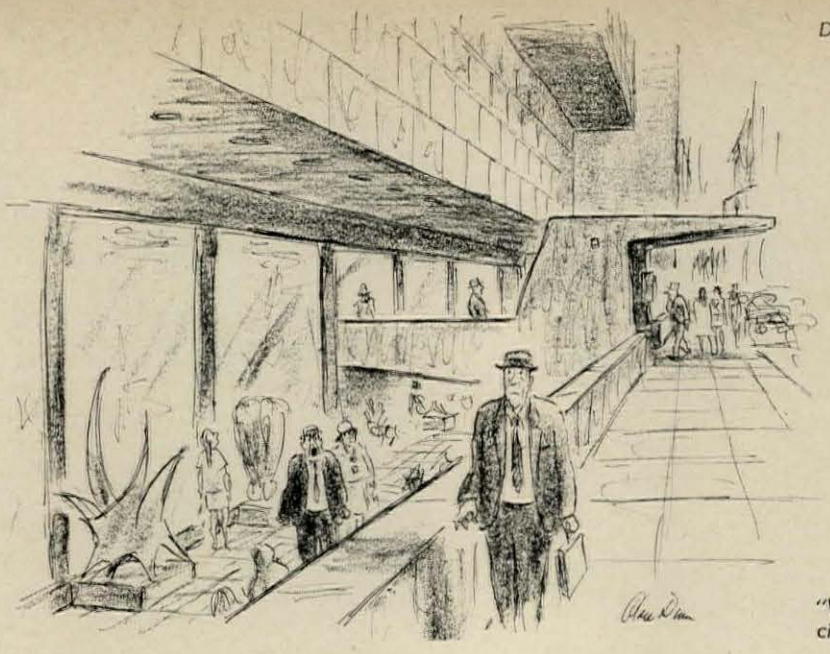
These buildings he speaks of have been strewn about by American architects, copied by foreign architects, diluted, proliferated, and so on. Good or bad, what George called "mass modern" is communicating to the world about architecture. It speaks of America, materialism, affluence, influence, and a lot of other things. Perhaps, as Bucky Fuller has always insisted, spreading prosperity will eventually bring world peace, and these high-rise symbols are constructive; my point here is merely that they are defining American architecture not only abroad but here at home.

Architectural education is suffering a good deal of finger-pointing right now; let me just relate it to this matter of mass communication. Charles Graves, Dean of the School of Architecture at the University of Kentucky, put it very nicely, I thought, when I asked him once what architectural students were excited about. "Well, I think," he said, "that it's difficult to consider an architectural student as a separate entity. He absorbs so much from so many different sources, on so many different topics, that over-simplification is a danger." What does that mean? It might mean that "the image of the architect" is a badly worn cliche which better be summarily dropped. Certainly it means that an architectural school today is no cloistered monastery.

We in the field of publishing, particularly in periodicals, are well aware that everybody today—*everybody*—absorbs vast quantities of information of all sorts, from many sources. Images or catchwords or personalities spring up, catch the public fancy, and pass on under relentless exposure. This observer would be the last to suggest that we throw ourselves into the mob scene—or the mod scene—and forget our true standards. But it would be plain silly not to be aware of these waves of thought or fancy or childish stupidity or whatever they may be, and to relate them to our own interests as seems appropriate.

This rambling is intended just to remind you that communication is in a boom, a really terrific boom. And that massive forces—or massive acceptances—are setting architects' standards for them. Let's don't say "standards," let's say "parameters," and make it a matter of application. —*Emerson Goble*

Drawn for the RECORD by Alan Du



"Watch where you toss your cigarette butt, Mac!"

Circling the world with American building designs

The mention of the worldwide spread of "mass modern" architecture (preceding page) reminds me of a letter from my sister-in-law. She is starting a new stint with the State Department, this time in Tehran, and as usual her first letters deal with the housing troubles of Americans abroad. Not hotels, but housing.

She related her dismal findings until she came to a brand new American type apartment house. She had been so pleased to find modern accommodations, well equipped kitchens, etc. etc. There was just one trouble: the vacant apartment was on the fifth floor, and the building had no elevators. Seems that electricity is just simply too expensive to waste on pushing people and things up and down. Legs can do that.

Massive mid-city muddle; the message of Mumford

A massive mid-city muddle is a well known fact, and most of you will remember, if you don't mind it, the messages of Lewis Mumford about the present mess. We have in the RECORD office a new manuscript by Lewis, in which he charges again against the forces which are becoming synonymous with our current affluence, and which are helping to push this mass modern architecture (preceding page) around the whole world. We are now in correspondence with him about publishing it. I am going to get my neck out (with Lewis) by lifting out a quotation in advance of the usual arrangements, just because I can't resist it:

"Many people . . . have tried to take comfort in the thought that the present disordered and disintegrating urban mass . . . is in fact the modern form of the city, new, dynamic, and inevitable, whether we like it or not. That is a slushy idea, worthy only of a Marshall McLuhan or a Timothy Leary. You might say of this sprawling megalopolitan non-entity, the anti-city in McLuhan's terminology, that the *mess is the message*. And the more massive the mess, the more muddled the message."

A neo-eclectic melange in the orthodox manner

While speaking, as I have been hereabouts, of the rapid spreading of the modern melange of architecture, I shall quote (just for fun)—and I'm not sure that the fun isn't too subtle—from a recent story in New York (World Journal Tribune).

It was entitled "Towards a Drive-in Museum," and written by Barbara Rose. I skimmed it quickly, wondering what in _____ a drive-in museum might be, and noticed that the architect's name was not mentioned. I thought this was the usual inattention, until I came to this tongue-in-cheek paragraph, then it was obvious that the architect had insisted that he *not* be named.

"Taking its cue from Hollywood, the Drive-in Museum has chosen glamour as its keynote. Designed by a noted International Style architect, the Drive-in Museum will combine the best features of Radio City Music Hall, the Roman amphitheater and Disneyland. The architect, who was Gropius' first assistant during the time the Bauhaus moved from Weimar to Dessau, describes his style as orthodox neo-eclectic melange. According to his original plan, the Drive-in Museum was to have been patterned directly on the public lavatory of the Bauhaus, but local art patrons objected that the scheme was too cold and impersonal. Under this pressure, the architect finally adopted the present compromise solution."

Needle Los Angeles again; to keep the fight alive

It might seem that Los Angeles has had enough abuse about its devotion to the automobile, and about the "ruination" of downtown realty values. But until urban problems can find some more constructive programs than have yet appeared, they had better be argued about. And transportation is, of course, basic to the whole unhappy mess.

Latest dope on Los Angeles comes from Dr. William J. Roman, chairman of the Metropolitan Commuter Transportation Authority, speaking to the American Insurance Association:

"We have passed the time when we can afford to think about highways separately from air, rail or water transportation—not just one mode of transportation. As a nation, we have overemphasized the automobile as an answer to our urban needs to the neglect of other forms of travel.

"Los Angeles, the classic 'automobile age' city, now devotes some 70 per cent of its downtown area to streets, highways and parking facilities. As a result, highways and parking have almost obliterated the downtown they sought to serve. The assessed valuation of Los Angeles downtown land has dropped 63 per cent since 1931 and department store and other retail sales have tumbled."

I suppose there are some who feel that a drop of downtown values of 63 per cent during a boom time is something less than a tragedy, but it is certainly a definition of a problem. —*E.C.*

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For assistance with selection or specifications, call Jamison, or write for food service door catalog to Jamison Door Co., Box 70, Hagerstown, Md. 21740.

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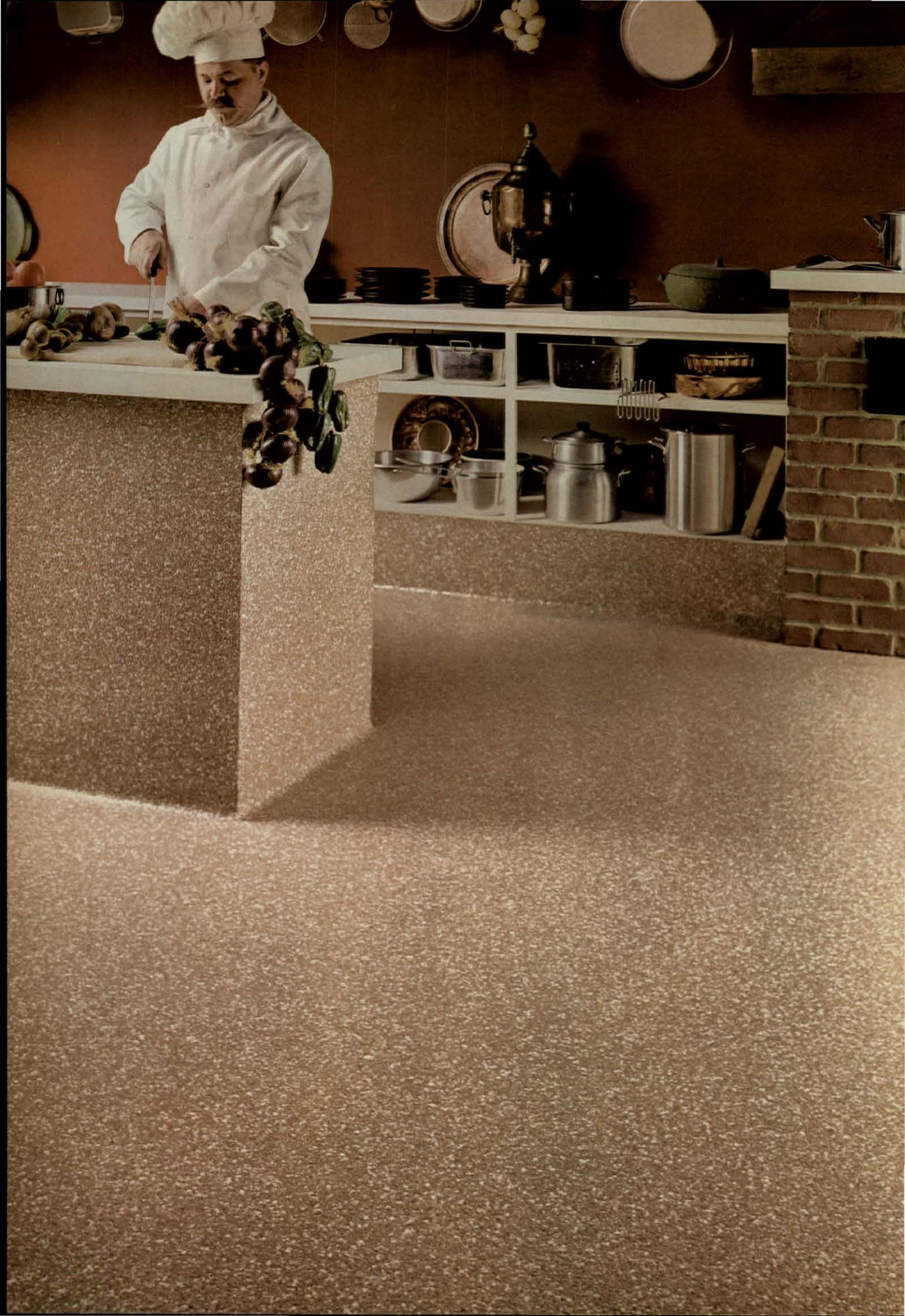

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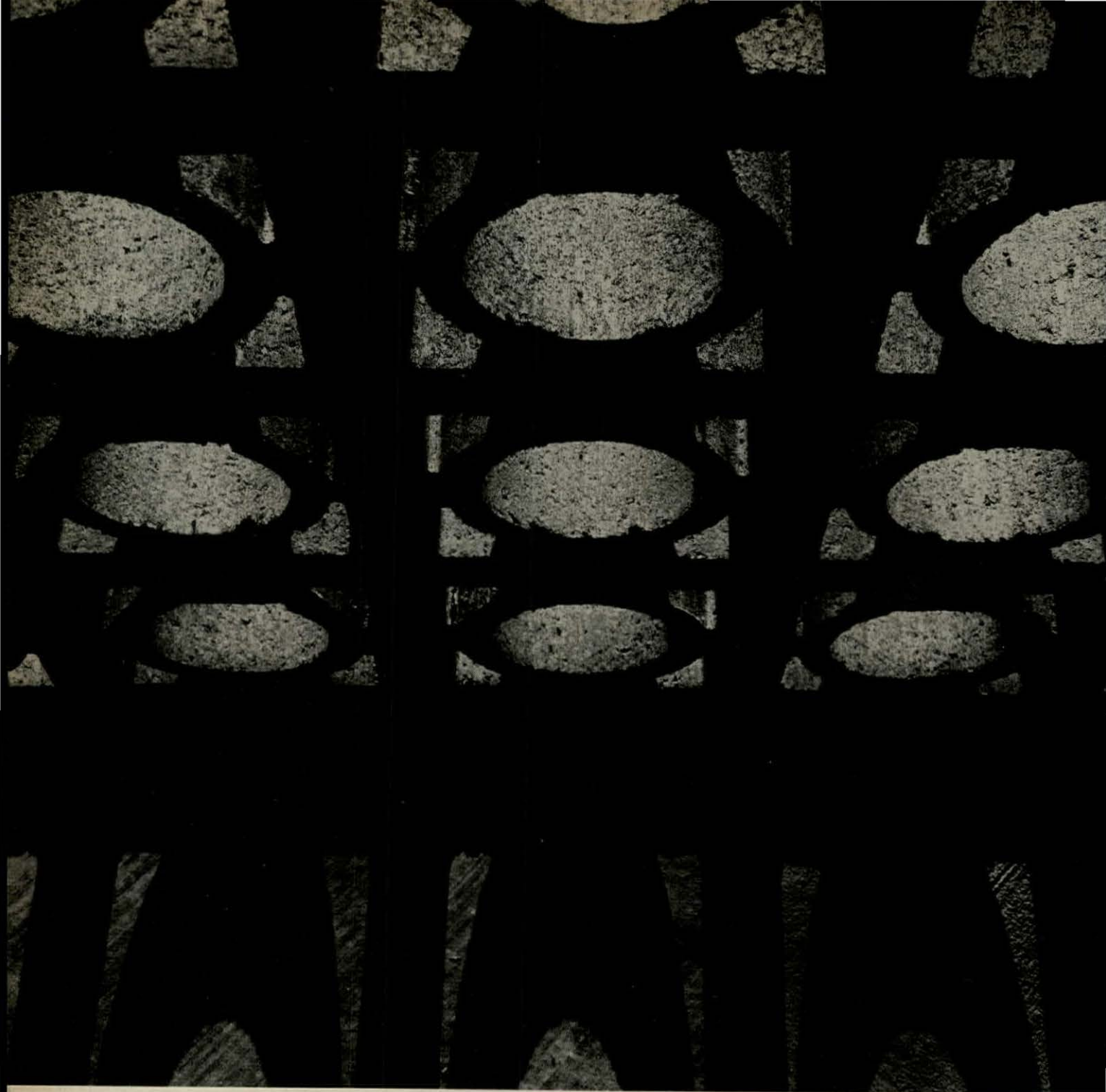
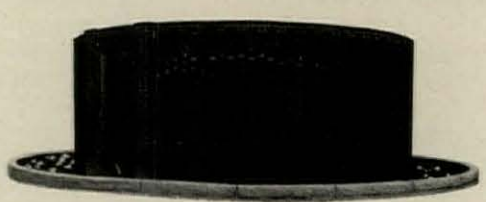




Cooling tower hide-away

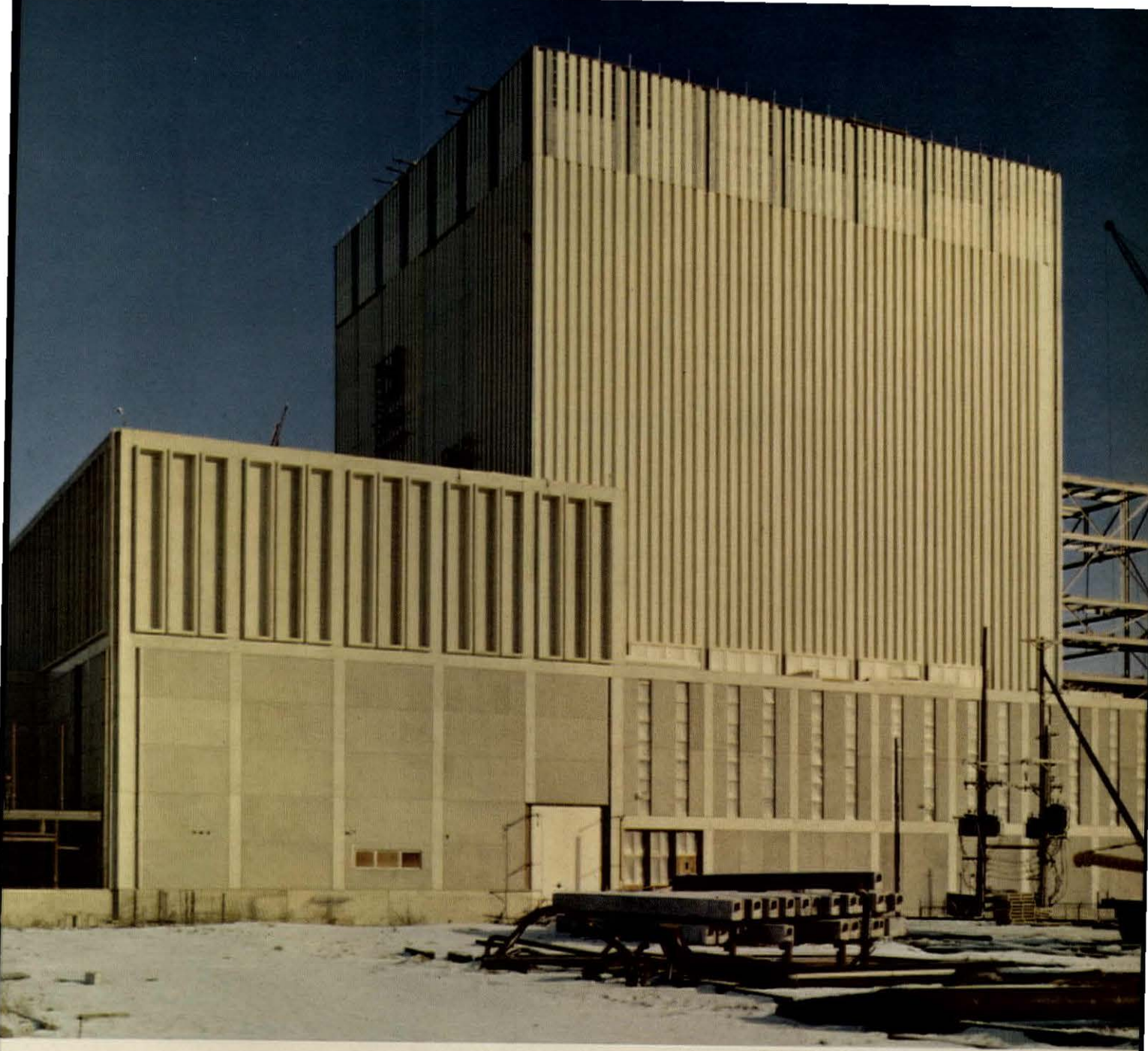
Free to architects: ideas for concealing various shapes and sizes of cooling towers behind attractive, technically sound enclosures. Special booklet contains photos that show how leading architects and contractors have screened Marley cross-flow, counter-flow and under-flow cooling towers. Illustrations demonstrate varied air inlet, discharge and louver arrangements.

Marley's Cooling Tower Enclosures brochure also includes technical information and valuable guides for selecting the best cooling tower locations. (For help with unique tower location problems, architects are invited to call their nearby Marley representative, who is backed by the world's most experienced and knowledgeable cooling tower manufacturer.)

For your free copy of Marley's informative "Cooling Tower Enclosures," write The Marley Co., 222 W. Gregory, Kansas City, Missouri 64114.

MARLEY

For more data, circle 9 on inquiry card



Northern States Power Company, Oak Park Heights, Minnesota

FLUROPON® By DeSoto

The Long-Life Architectural Metal Finish... a breakthrough in exterior metal surface protection with colorful fluorocarbon coatings.

DeSoto Chemical Coatings, Inc.
1700 S. Mt. Prospect Road, Des Plaines, Illinois 60018

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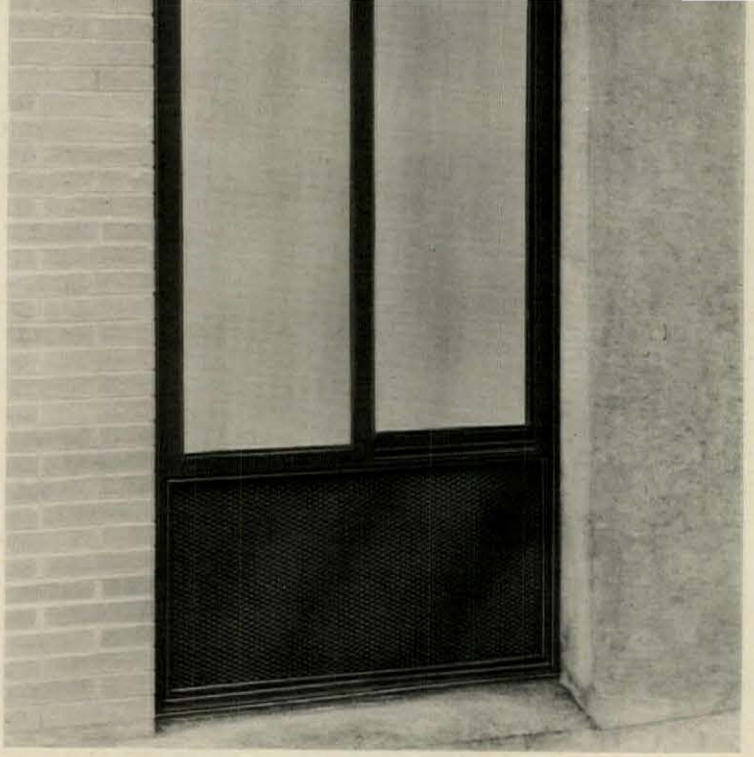
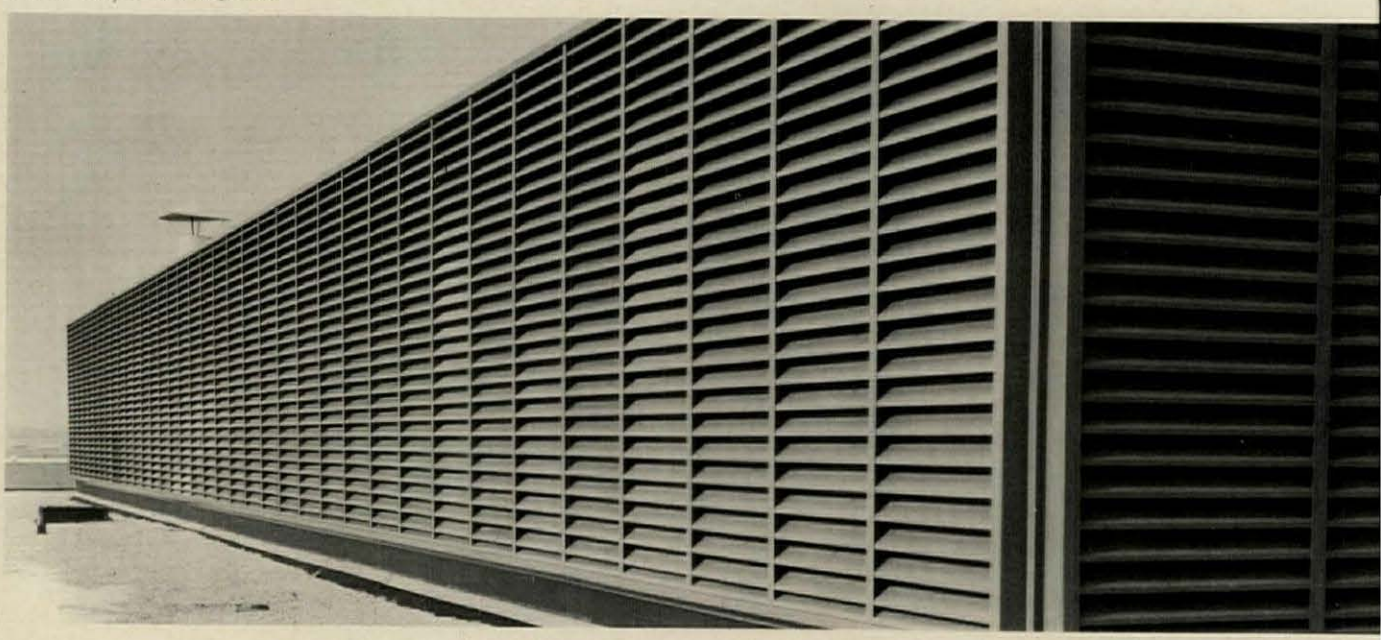


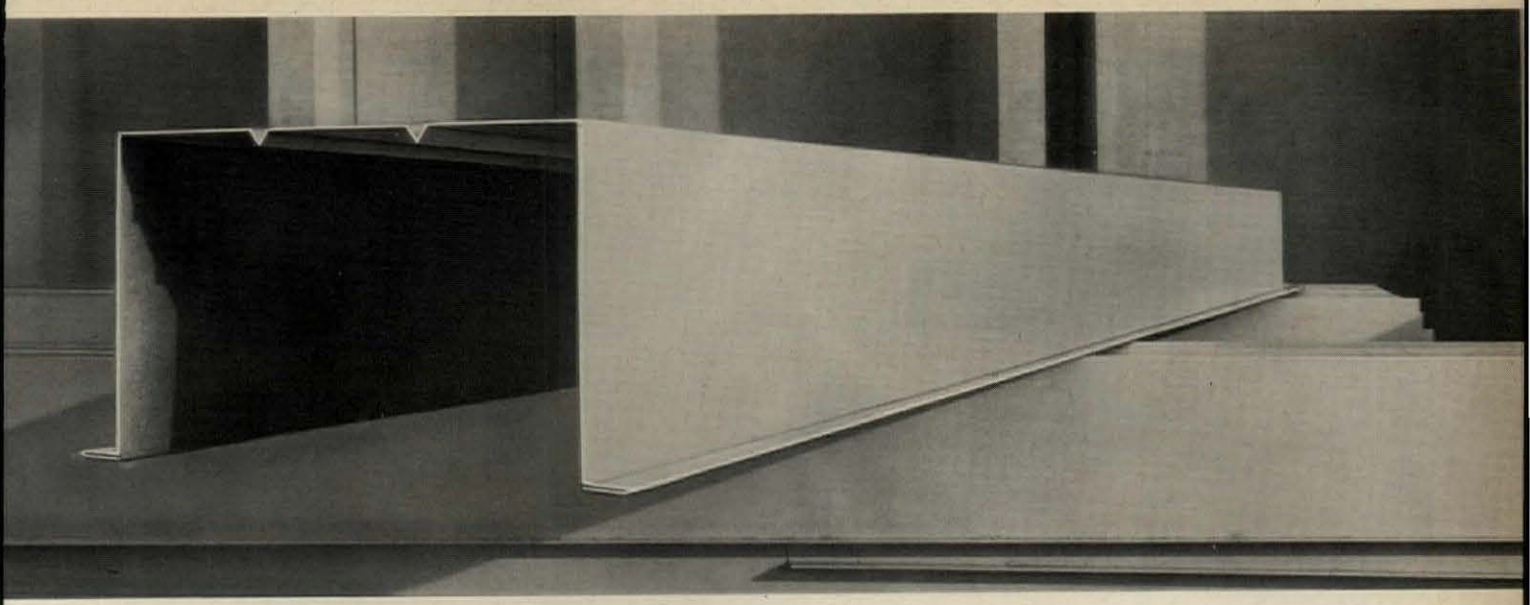
Window wall for an apartment or commercial building. Fluropon adds the dimension of long-lasting color to exterior designs. Roll coated or sprayed onto metal, Fluropon won't chip, shatter or delaminate.

Widen your design horizon with FLUROPON

Now . . . a wider scope of design flexibility in long-life colors is available with Fluropon. Create aesthetically imposing structures and protect their beauty for 20 years—and longer—with Fluropon. Only Fluropon provides a unique combination of beauty, durability and economy.

Louvers on air conditioning cooling tower stay beautiful.
Fluropon offers excellent chemical and solvent resistance, cleans like china, is impervious to detergents.





Unusual panel designs are possible with Fluropon. This newly developed fluorocarbon fusion system eliminates most problems of previous metal finishes. Has excellent resistance to most chemically corrosive atmospheres. Fluropon—for exterior metal beauty.

SPECIFICATIONS:

All exposed exterior metal (aluminum and/or HDG steel)—including panels, spandrels, columns, supports, mullions, leaders, facias, copings, louvers, battens, screens, flashing, jambs, sills, fenestration and hardware as applicable and as detailed—shall be chemically cleaned, pre-treated (primed in the case of HDG steel) and coated with Fluropon as manufactured by DeSoto Chemical Coatings, Inc. Fluropon must be applied by an experienced processor in accordance with Fluropon fusion process instructions printed by the manufacturer. Colors as selected by the architect. (Long-form specifications available on request).

Fluropon coated aluminum or hot dipped galvanized steel panels, louvers and window wall components are commercially available from:

BUILDINGS & BUILDING PANELS

Aluminum Company of America
Alply Products Division
1501 Alcoa Building
Pittsburgh, Pennsylvania 15219

Aluminum Company of Canada, Limited
P. O. Box 6090, Montreal 3, Quebec, Canada

The Binkley Company
Building Products Division
P. O. Box 70, Warrenton, Missouri

Inland Steel Products Co.
P. O. Box 393, Milwaukee, Wisconsin 53201

Kaiser Aluminum & Chemical Sales, Inc.
300 Lakeside Drive, Oakland, California

The R. C. Mahon Co.
Building Products Division
6565 East Eight Mile Road, Warren, Michigan 48091

Pasco Steel
1301 Lexington Avenue, Pomona, California 91766

Plasteel Products Corporation
McAdams Avenue, Washington, Pennsylvania

Rheem Dudley Buildings
A Division of Rheem Manufacturing Co.
14001 South Garfield Avenue, Paramount, California

H. H. Robertson Company
Architectural Products Division
Pittsburgh, Pennsylvania

Elwin G. Smith & Company, Inc.
100 Walls Street, Pittsburgh, Pennsylvania 15202

Soulé Steel Company
1750 Army Street, San Francisco, California 94119

Stran-Steel Corporation
P. O. Box 14205, Houston, Texas 77021

Walcon Corporation
4375 2nd Street, Ecorse 29, Detroit, Michigan

George D. Widman, Inc.
17823 Evelyn Avenue, Gardena, California 90247

WINDOWS, LOUVERS AND ACCESSORIES

The William Bayley Company
1200 Warder Street, Springfield, Ohio

Blomberg Building Materials
1453 Blair Avenue, Sacramento, California

Construction Specialties
55 Winans Avenue, Cranford, New Jersey
725 Twin Oaks Valley Road, San Marcos, California
895 Thermal Road, Port Credit, Toronto, Canada

O. O. McKinley Company, Inc.
P. O. Box 55265, Indianapolis, Indiana 46205

Metal Trim, Inc.
Box 632, Jackson, Mississippi

Porce-Len Incorporated
31 Haig Street, Hamden, Connecticut 06514

CONTACT YOUR FLUROPON REPRESENTATIVE AT DESOTO CHEMICAL COATINGS, INC., OFFICES:

8600 River Road, Pennsauken, New Jersey 08110
Area Code: 609-665-6700

1034 S. Kostner Avenue, Chicago, Illinois 60624
Area Code: 312-632-3700

Fourth & Cedar Streets, Berkeley, California 94710
Area Code: 415-526-1525

DeSoto Chemical Coatings, Inc.
1700 S. Mt. Prospect Road, Des Plaines, Illinois 60018

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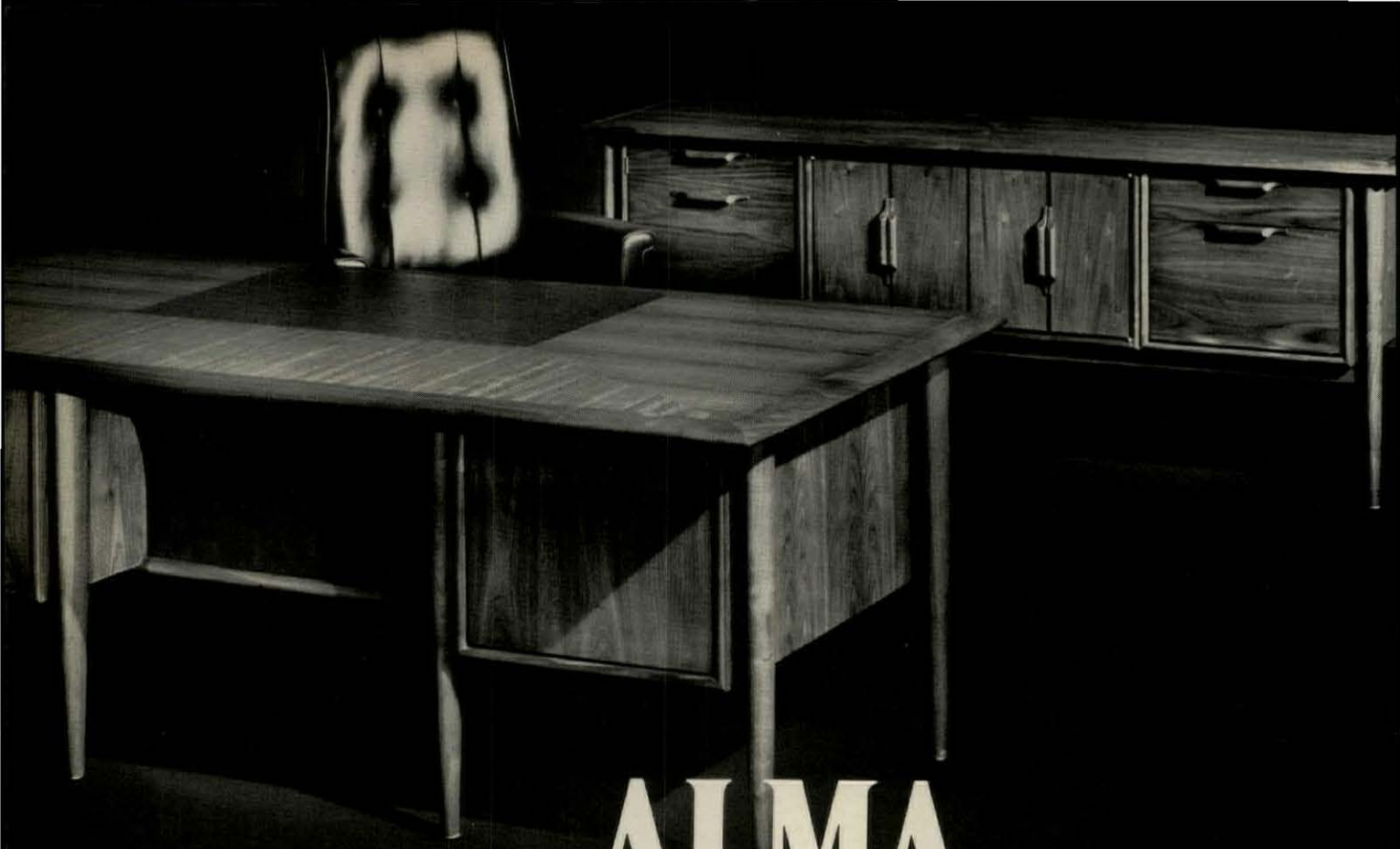
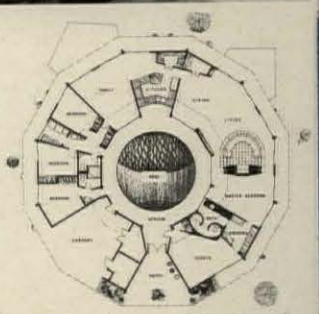


ALMA.

Alma?

Of course. Remember, we are the world's leading manufacturer of wood office furniture. This is the Castilian 500 Series — another design from our Trend Program. For catalogs showing this and other Trend lines, write Alma Desk Company, Box 271, High Point, N. C. 27261.

Ceramic tile lends carefree warmth to an unusual circular home by John Nyberg.



Located in Pasadena, California, this circular home has an atrium as its focal point. All rooms of the masonry and tile structure open off the atrium with its circular pool.

Designed by the firm of Nyberg and Bissner as Mr. Nyberg's home, ceramic tile is used both decoratively and functionally. Quarry tile floors are found in the living room dining, area, kitchen and den. It is also used for kitchen counter tops and back splashes.

Scored glazed tile is used for bathroom counter tops and walls including a unique circular treatment of the walls of the master bath.

In keeping with the contemporary Spanish feeling sought for, extensive use of tile is made throughout other areas of this five bedroom home. Tile contractor for the home was C&D Tile Company of San Gabriel.

If you're looking for a material with limitless possibilities in combined decorative and functional use, look for ceramic tile made in the U.S.A. and Quality Certified by the Tile Council of America. The triangular seal at right is your assurance of glazed wall tile, ceramic mosaic tile and quarry tile that is tested to meet the most rigid government specifications. For more information about Certified Quality Tile, a material that can be used with confidence indoors and out, write: Tile Council of America, Inc., 800 Second Avenue, New York, N.Y. 10017. Or, see the current Sweets Architectural File.

MEMBER COMPANIES: American Olean Tile Co., Inc. • Cambridge Tile Manufacturing Co. • Continental Ceramic Corporation • Florida Tile Industries, Inc. • Gulf States Ceramic Tile Co. • Hoffman Tile Mfg. Co., Inc. • Huntington Tile, Inc. • Keystone Ridgeway Company, Inc. • Lone Star Ceramics Co. Ludowici-Celadon Company • Marshall Tiles, Inc. • Mid-State Tile Company • Monarch Tile Manufacturing, Inc. • Pomona Tile Manufacturing Co. • Sparta Ceramic Company • Summitville Tiles, Inc. • Texeramics Inc. • United States Ceramic Tile Co. • Wenczel Tile Company • Western States Ceramic Corp.

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NORTON SERIES 7000 CLOSERS

NORTON SERIES CC-900 CLOSERS

Again, in Commercial Buildings

NORTON SERIES 6100 CONTROLS

NORTON SERIES 1600 CLOSERS

NORTON SERIES 750 CLOSERS

NORTON REGULAR SURFACE CLOSERS

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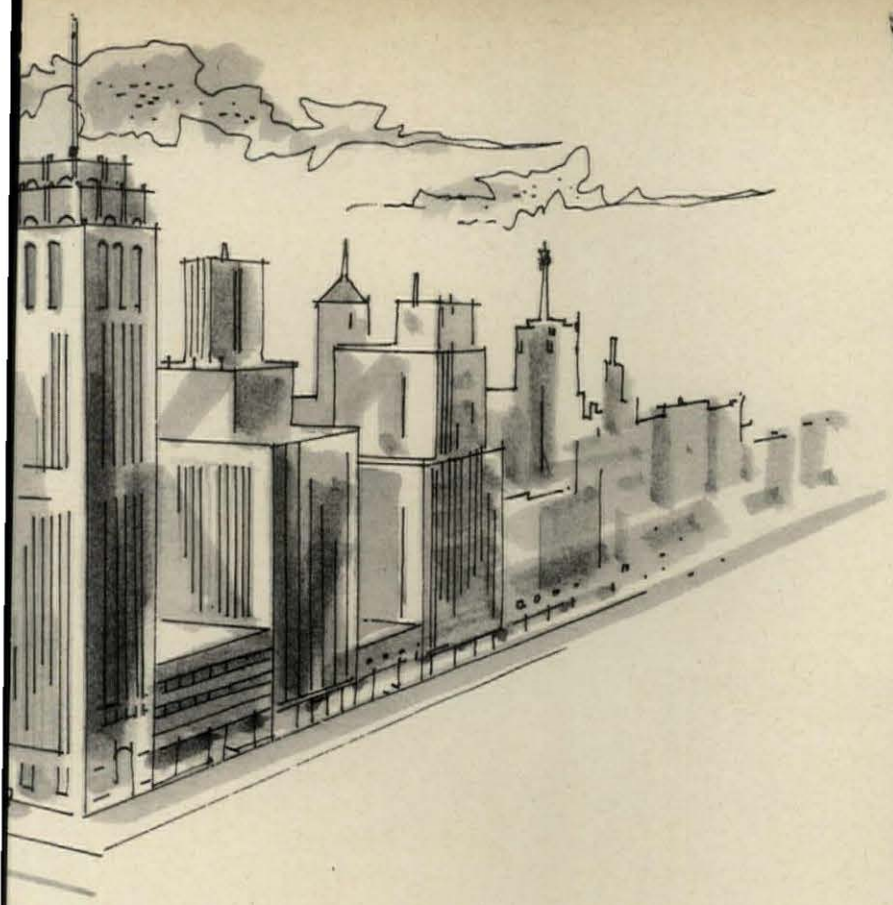
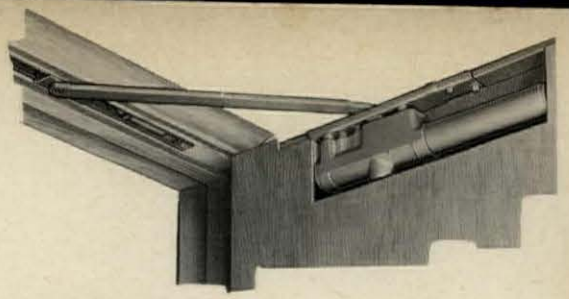


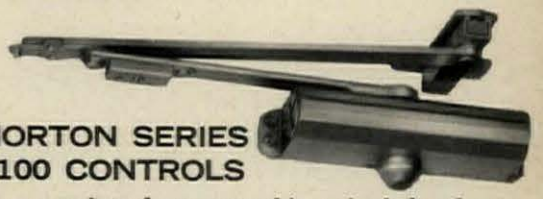


NORTON SERIES CC-900 CLOSERS

For the beauty of complete invisibility, Series CC-900 closers mortise completely into the top rail of the door. The arms are visible only when the door is open. Units can be installed in the most esthetic indoor locations, wherever complete concealment of closer is desired.

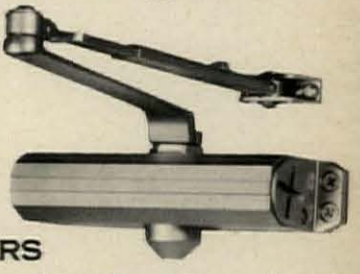
NORTON SERIES 7000 CLOSERS

For matching or contrasting with room decor. Series 7000 closers are available with covers of 67 woodgrains to perfectly match room and door woods. Covers also available in clear aluminum, bright brass, or dull bronze to match other hardware for a contrast to wooden doors.



NORTON SERIES 6100 CONTROLS

For complete door control in a single hardware installation. Series 6100 controller is a combined door closer and door holder. All five door control functions: cushions the opening of the door, stops the door, holds the door open, closes the door, and regulates door closing and latch speeds. Simplifies hardware installation for less cluttered appearance.



NORTON SERIES 1600 CLOSERS

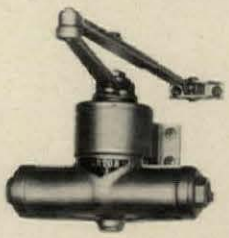
For versatility and styling for wood and metal doors. Series 1600 closers can be installed anywhere. Features three types of mounting: Invisible mounting, no screws visible; Back mounting, screws visible on back of door only; Regular mounting. Natural slim lines of Series 1600 ideal for styling of narrow aluminum doors.

... where appearance is so important

NORTON® CLOSERS CONTROL DOORS—NOT DESIGN

Possibly, no other type of building demands styling with as much taste as commercial structures. And, where beauty is so important, the styled Norton line lets you select door control to achieve the design and decor you desire.

Your choice may range from complete invisibility to the selection of Norton closers to exactly match woodgrains or hardware finishes. Selection of a Norton closer means years of dependable control for your doors and you can choose from a wide range of door controls engineered to your specific requirements. Apartments, restaurants, offices, stores, and athletic arenas all present special door control requirements. You can fill these needs without inhibiting your design when you choose Norton Door Closers and Unitized Door Controls.



NORTON REGULAR SURFACE CLOSERS

For dependability in any location. Regular Surface closers, the workhorse of the door closer industry. Even when appearance is not paramount, these closers can be attractive in appearance and they are built to withstand extremely heavy traffic.

NORTON SERIES 750 CLOSERS

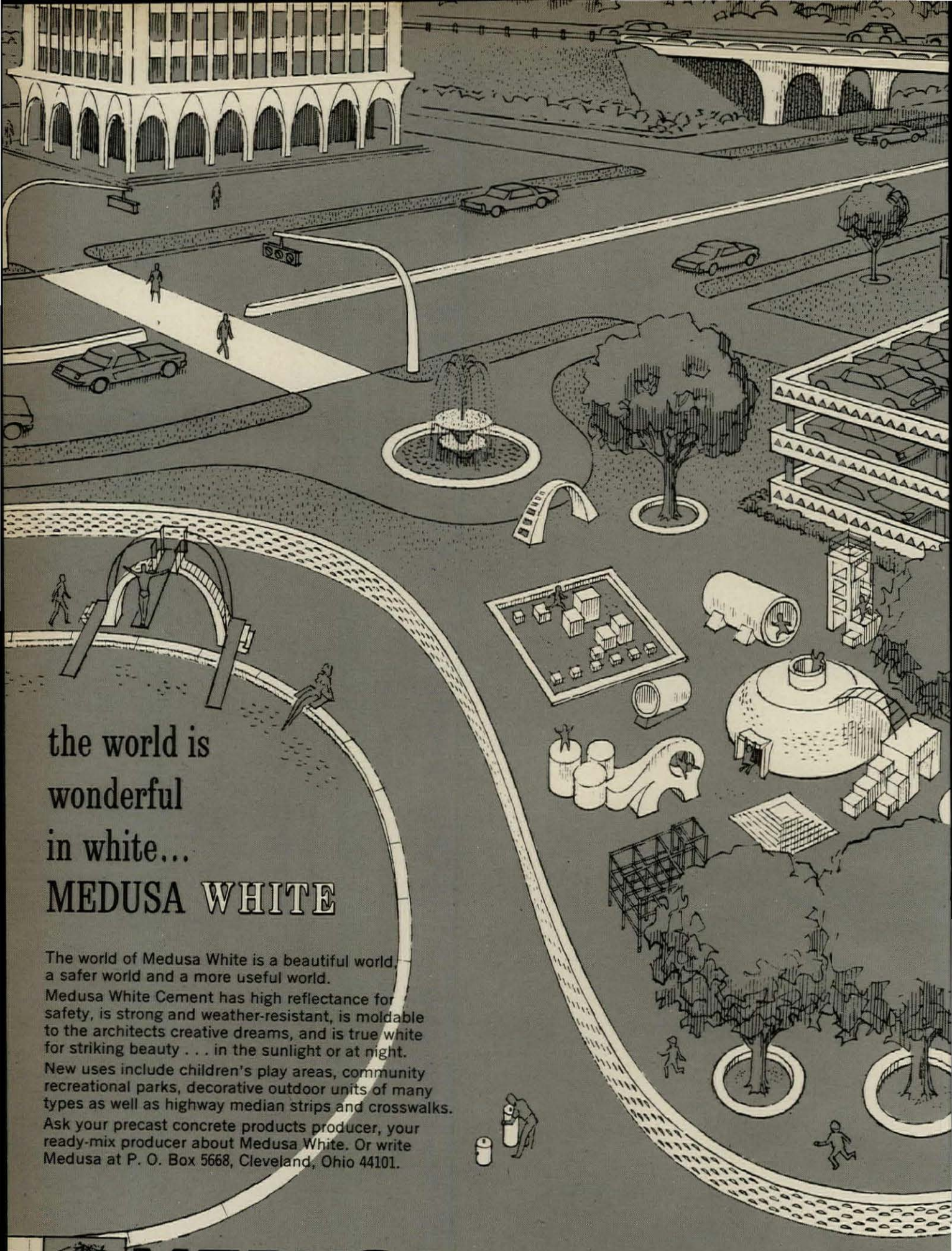
For unobtrusive beauty, Series 750 closers mount into the top head jamb. These closers present an indiscernible projection when the door is open and become almost invisible when the door is closed.

EATON YALE & TOWNE INC.

NORTON® DOOR CLOSER DIVISION

372 Meyer Road, Bensenville, Illinois, 60106

77 Carlingview Drive, Etobicoke, Ontario, Canada



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Ask your precast concrete products producer, your ready-mix producer about Medusa White. Or write Medusa at P. O. Box 5668, Cleveland, Ohio 44101.

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Norseman Automatic Ice Maker
Capacity ranges from 50 to 250 lbs. per 24 hours.

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Complete Flexibility

Ice Making Capacities from 100 to 600 lbs. per 24 hours, of either cubes or nugget ice.

Flavor Combinations. You have choice of either three flavors plus carbonated and plain water, or four flavors plus carbonated and plain water.

Dispensing Methods. Choice of under-counter dispensing station, tower unit, or flexible hand dispenser.

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☐ Send full details and prices on entire line of 20 models.
☐ Have representative call.

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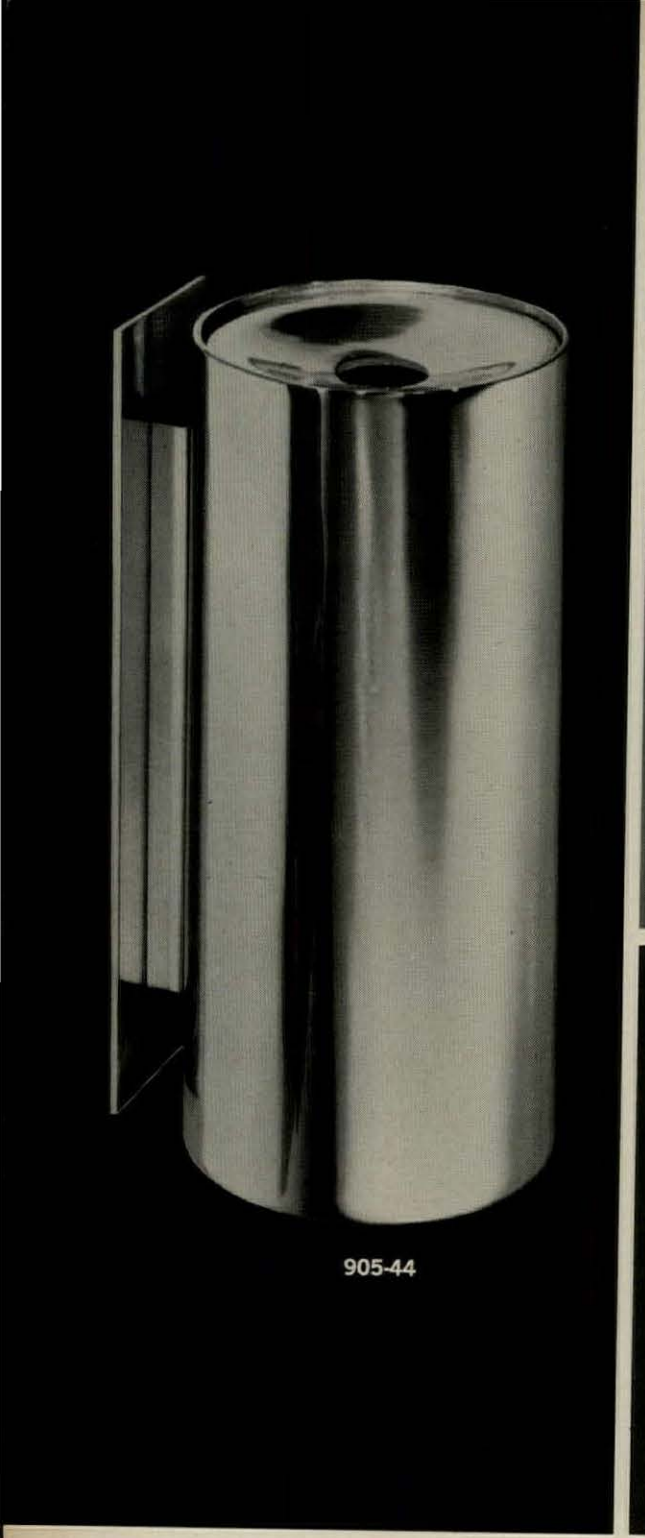

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whatever the finish, you'll find your requirements in Wall Urns by Duk-It. Superb quality, designed and built into every product.

See our complete line of urns, trash/ash receptacles by contacting your Duk-It representative . . . or write for full-color brochure.

DUK-IT

McDonald Products Corp.

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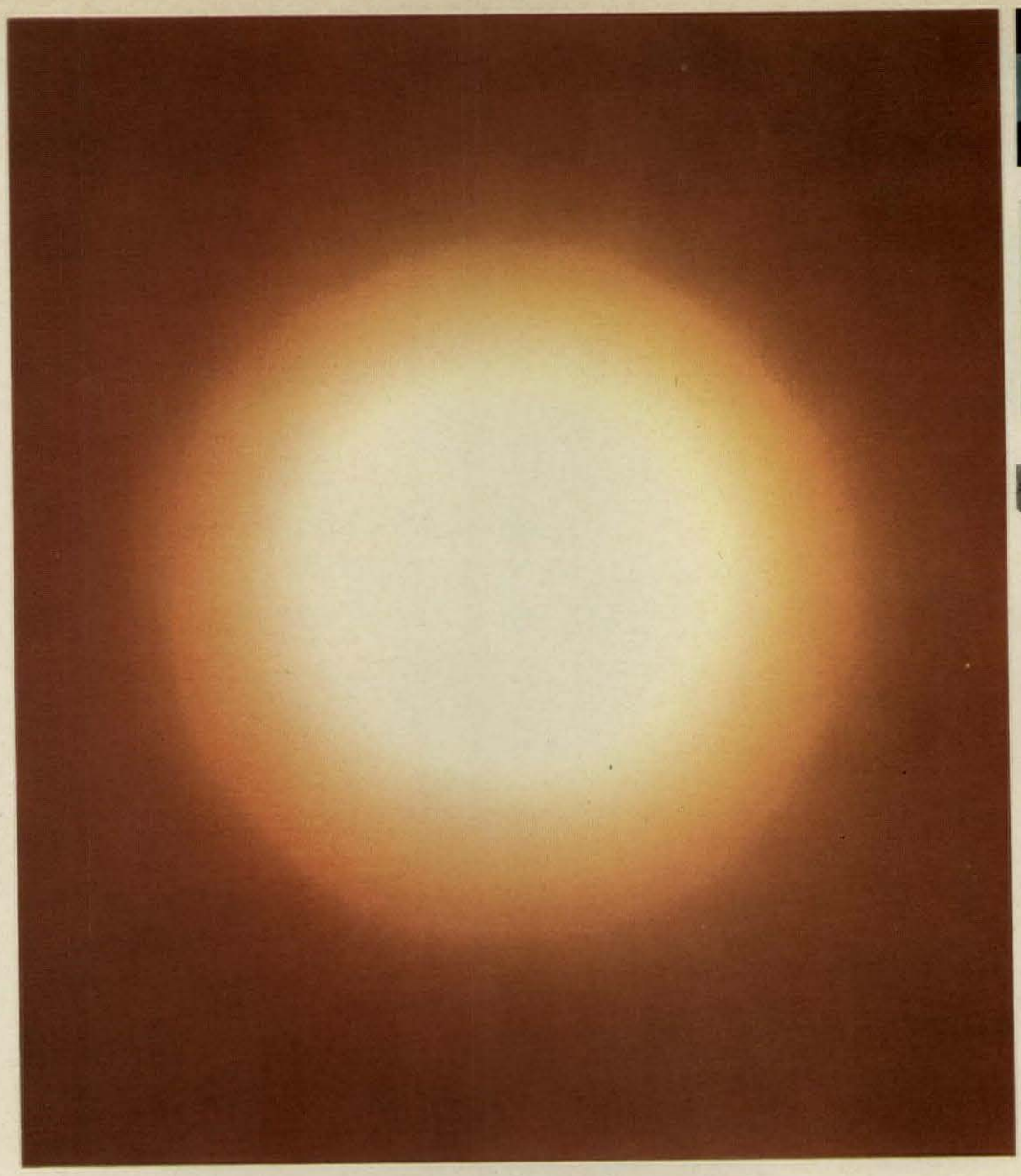

CURTAIN WALL

SCULPTURED METAL

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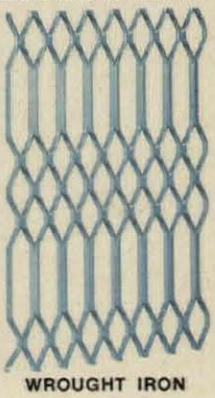
SCULPTURED CEMENT



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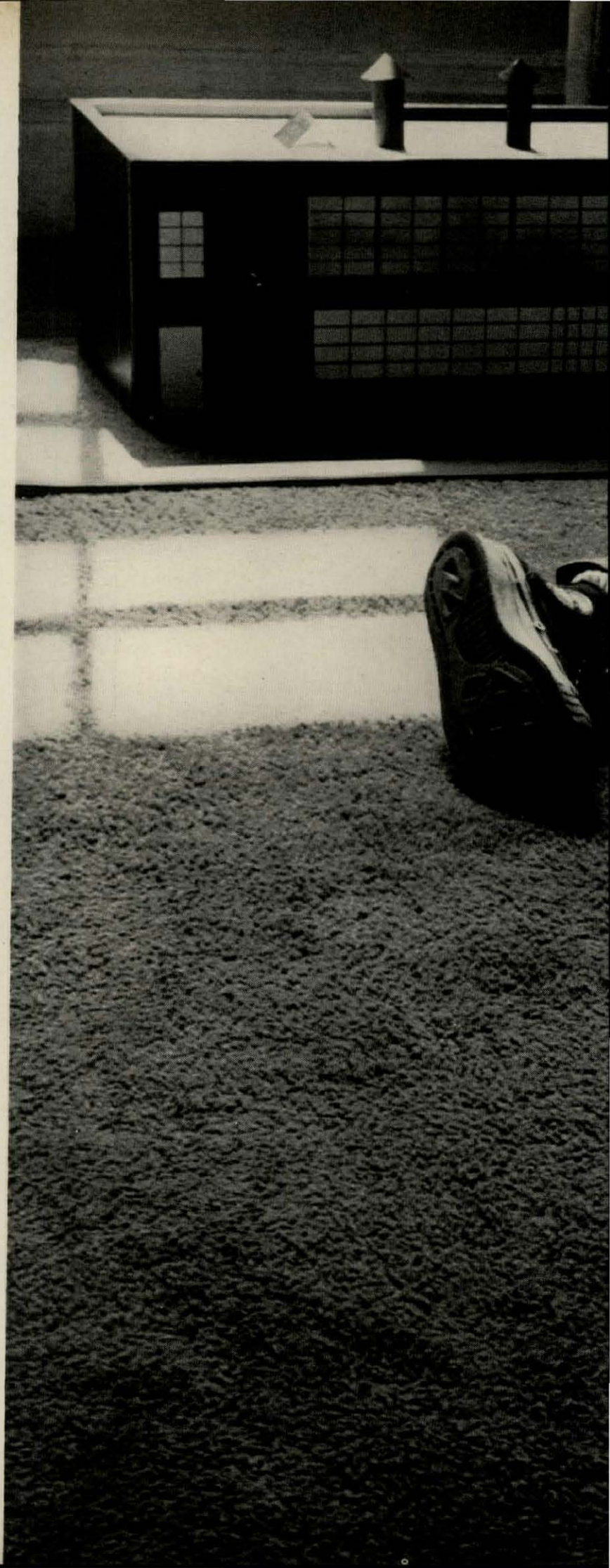

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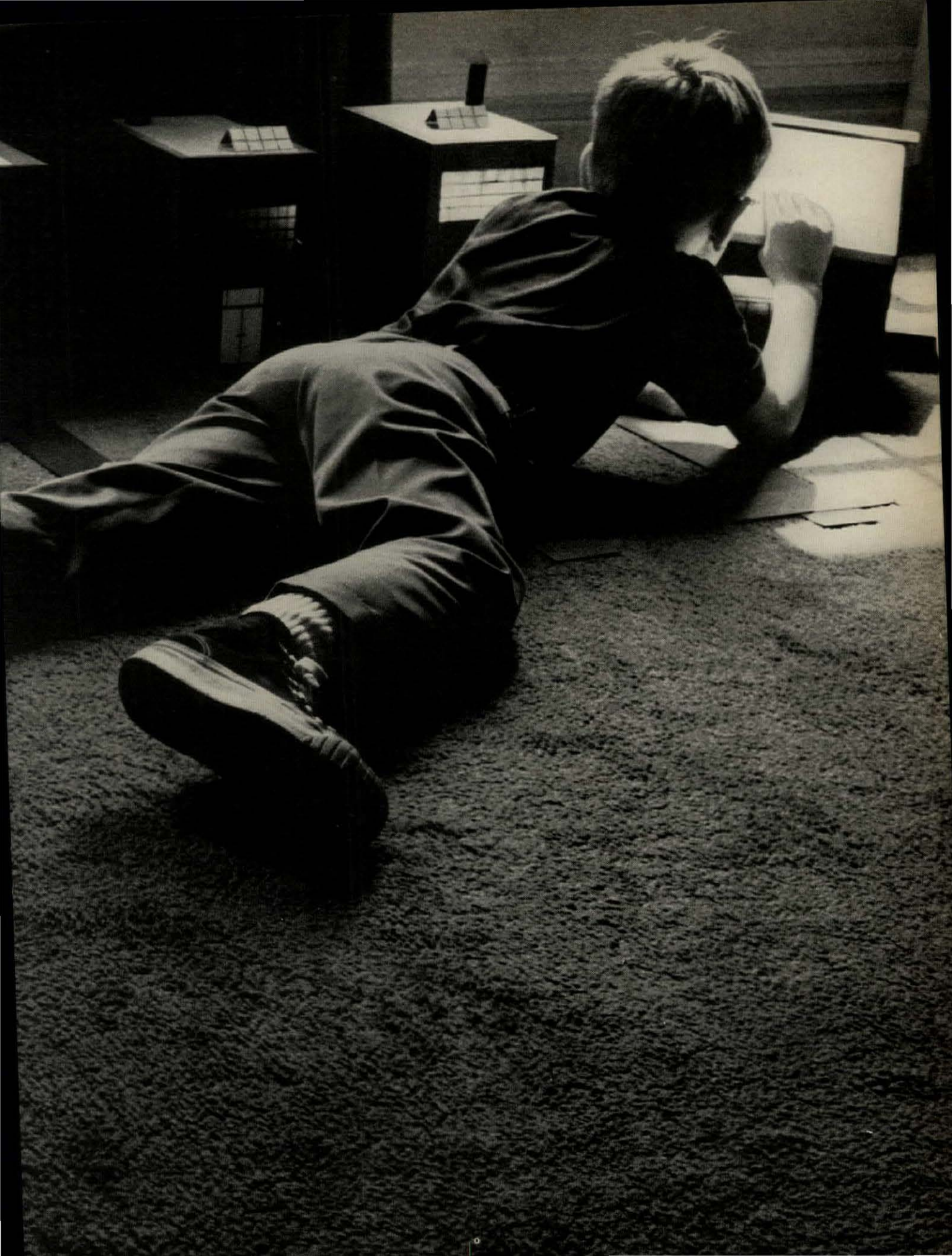

The men in front of The "OVERHEAD DOOR" also stand behind it.

Specify The "OVERHEAD DOOR" and get much more than just a door.
Get the industry's widest choice of materials, styles, sizes and designs.
Get the dependability of the finest electric operator, matched to each individual door.
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Get the number of your minutes-near distributor listed under "OVERHEAD DOOR" in the white pages of your phone book.
Give him a call and get an expert. For more of what's behind The "OVERHEAD DOOR", turn the page.

Fully transistorized, portable transmitter with color-coded selector, controls up to 8 doors individually by radio control.

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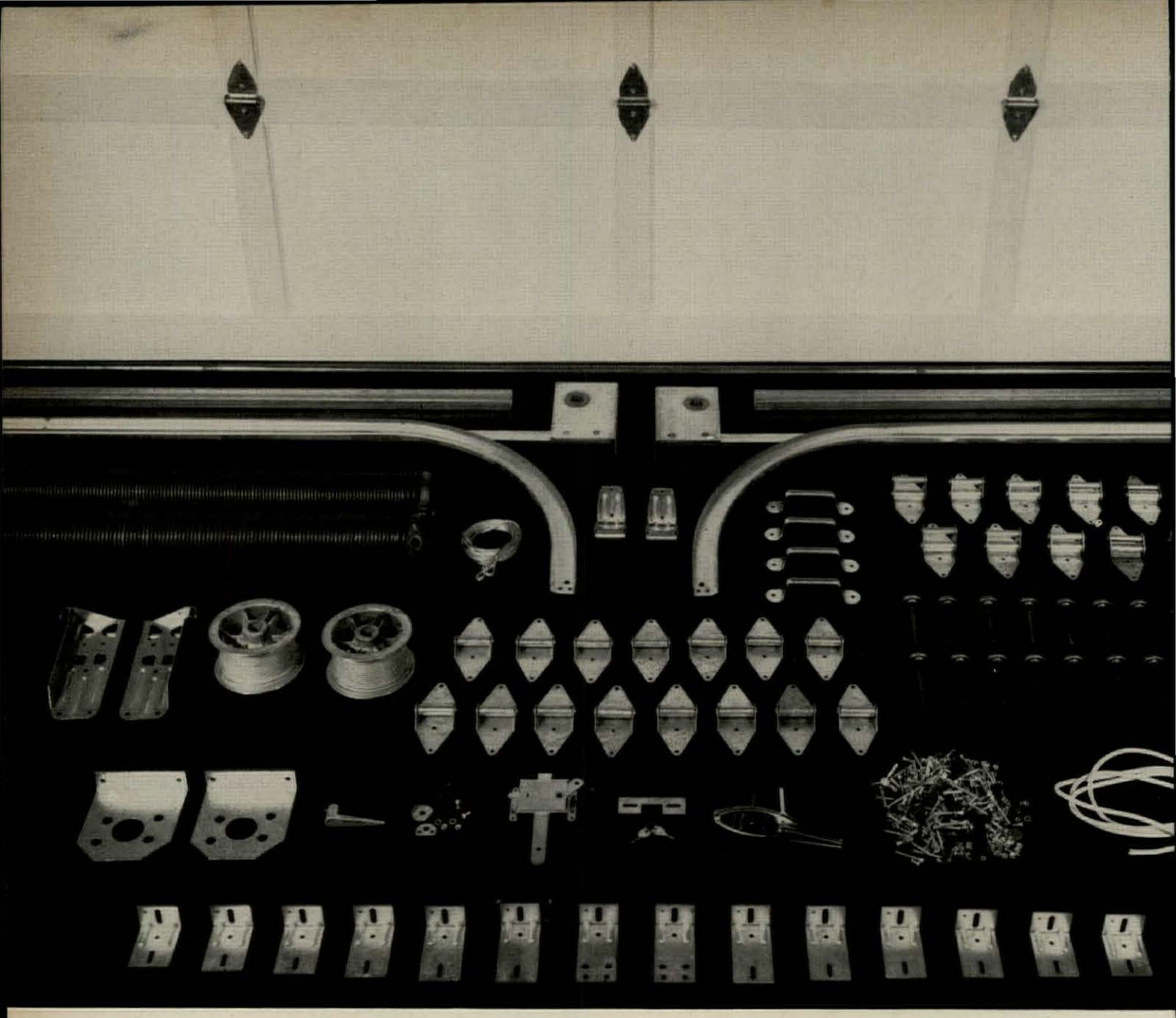

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This Distribution Center is also a local landmark... with BASALT precast, prestressed Single Tees.

The architectural appeal of this distribution center, office and cafeteria complex was achieved simply and economically—with a roof of Basalt precast, prestressed single tees.

The 116 tees had cantilevers varying in length from 2½ to 15 feet. The resulting irregular eave line gives the building its unique appeal, and serves to screen direct sunlight from the full-length windows below. Achieve greater design freedom for your next project — specify Basalt for precision plantcast components and on-the-job know-how. Consult with a Basalt engineer today. *Basalt Rock Company, Concrete Products Divison, Napa, California... Telephone 707/226-7411.*

DISTRIBUTION CENTER AND OFFICES
McGRAW-HILL BOOK COMPANY, Novato, California

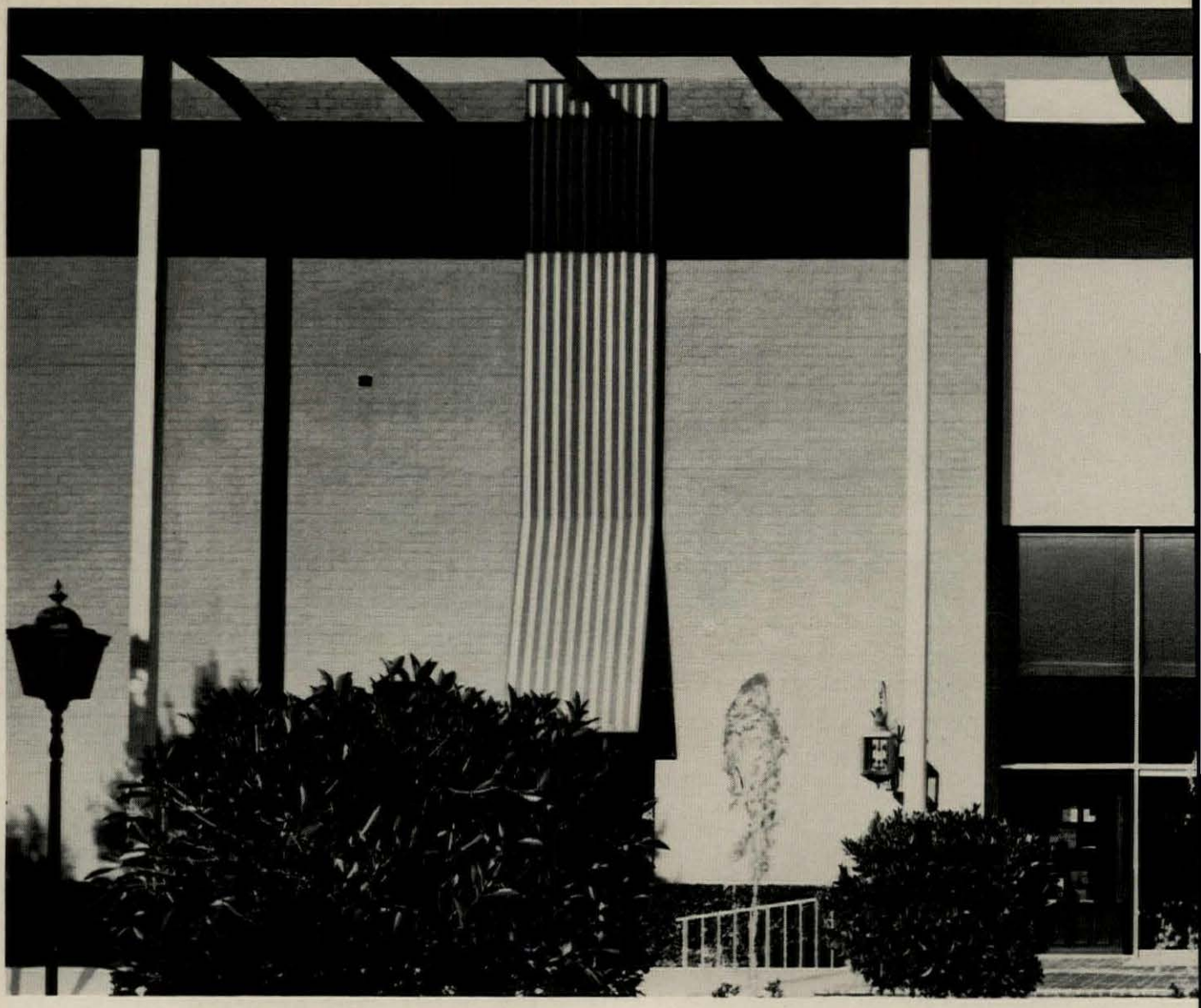
Achitect: John S. Bolles Associates, A.I.A., San Francisco
Structural Engineer: R. T. Desai, San Francisco
General Contractor: MacDonald and Nelson, Inc., Oakland

SINGLE TEE UNITS BY BASALT
102 units — 44'11" to 90'0" long
14 units — 65'0" to 77'6" long

Concrete—Basalite lightweight expanded shale aggregate
Strength—3,500 psi at transfer, 5,000 psi at 28 days
Pretensioned with up to 10⅞" diameter 270 grade strands
Unusual details: Cantilever varied from 2'6" to 15'0" changing overall length of members, presenting an irregular eave line.

Basalt
QUALITY through Research and Control

Marketed only in Northern and Central California



Lower total annual cost in All-Electric buildings?

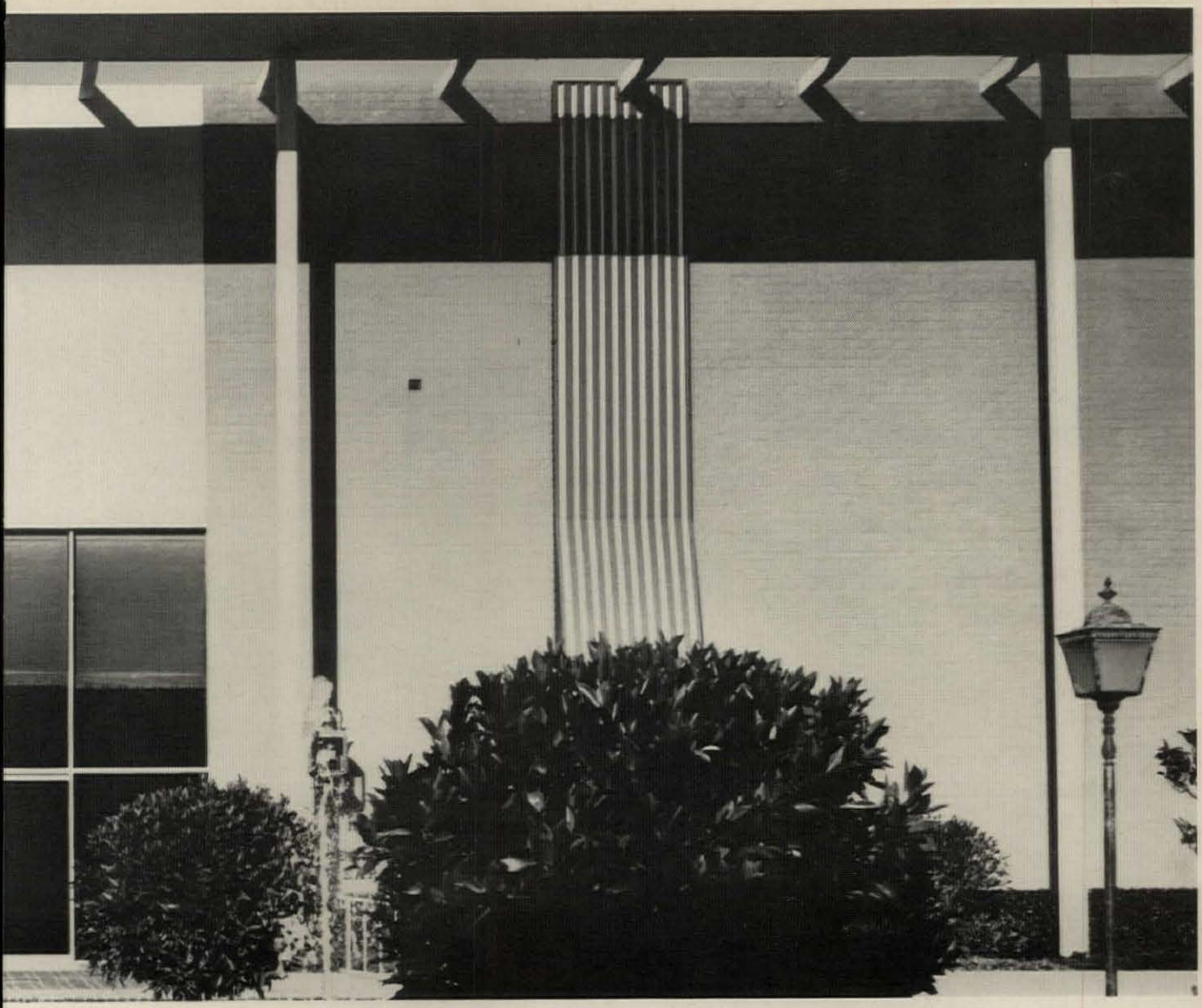
Ask Buffums'...

Buffums' Palos Verdes is the fourth All-Electr department store in the Buffums' chain. It another example of the remarkable economy the All-Electric building concept.

By going All-Electric, Buffums' was able make more efficient use of their money in sever ways.

The lower first cost of electric heating and a conditioning equipment accounted for big initi savings. Because electric air conditioning is 30% to 50% less, Buffums' greatly reduced costs o that one item alone. Electric heating eliminate the need for boilers, stacks, vents, flues and th space required to house them. Just the savings i piping materials and installation was considerabl Space saving was another factor. In this case, was the equivalent of a complete shoe departmen

Buffums' lighting was designed in accordanc with the nationally recognized standards of th Illuminating Engineers Society. It not only ligh without glare and highlights Buffums' qualit merchandise but, most importantly, is the princ



al source of heat for the entire store.

Flameless, quick-recovery, water heating serves uffums' beauty shop and washroom areas.

Another important benefit of the All-Electric oncept is the architectural freedom of design. All-lectric systems are flexible, and can be incorpo-ated in a great variety of building designs, rather han forcing the architect to design the building round traditional systems.

The All-Electric Building Award for Buffums' alos Verdes testifies that this building has met ecognized engineering standards for lighting, eating, and air conditioning.

Buffums', like so many other companies, has ound that lower first cost, lower maintenance xpense and competitive operating costs add up o lower total annual cost in All-Electric buildings. Ve can give you all the money-ahead facts and gures on All-Electric building, including hun-reds of case histories. Write Marketing Engi-eering, P.O. Box 62, Terminal Annex, Los Angeles 90051.

BUFFUMS' PALOS VERDES

Architect: Killingsworth, Brady and Associate, A. I. A.

BUILDING PROFILE

GENERAL DESCRIPTION
- Two-story building
- 43,000 square feet department store
- Reinforced brick masonry construction

ELECTRIC LOAD
- Connected Lighting and Miscellaneous Load—600 KW
- Electric Air Conditioning (125 Tons—3 Units)—160 KW
- Electric Supplementary Heating—92 KW
- Electric Water Heating—40 KW

INSTALLED COSTS
- Air Conditioning System—$1.25 sq. ft.
- Electrical System—$1.90 sq. ft.

OPERATING COSTS
- Total Electrical Operating Cost for a Six Day Schedule—$.38 per sq. ft. per year

SPACE CONDITIONING
- Direct expansion, refrigerated, air cooled cooling system. Heat supplied by lights supplemented by electric heating coils as needed.

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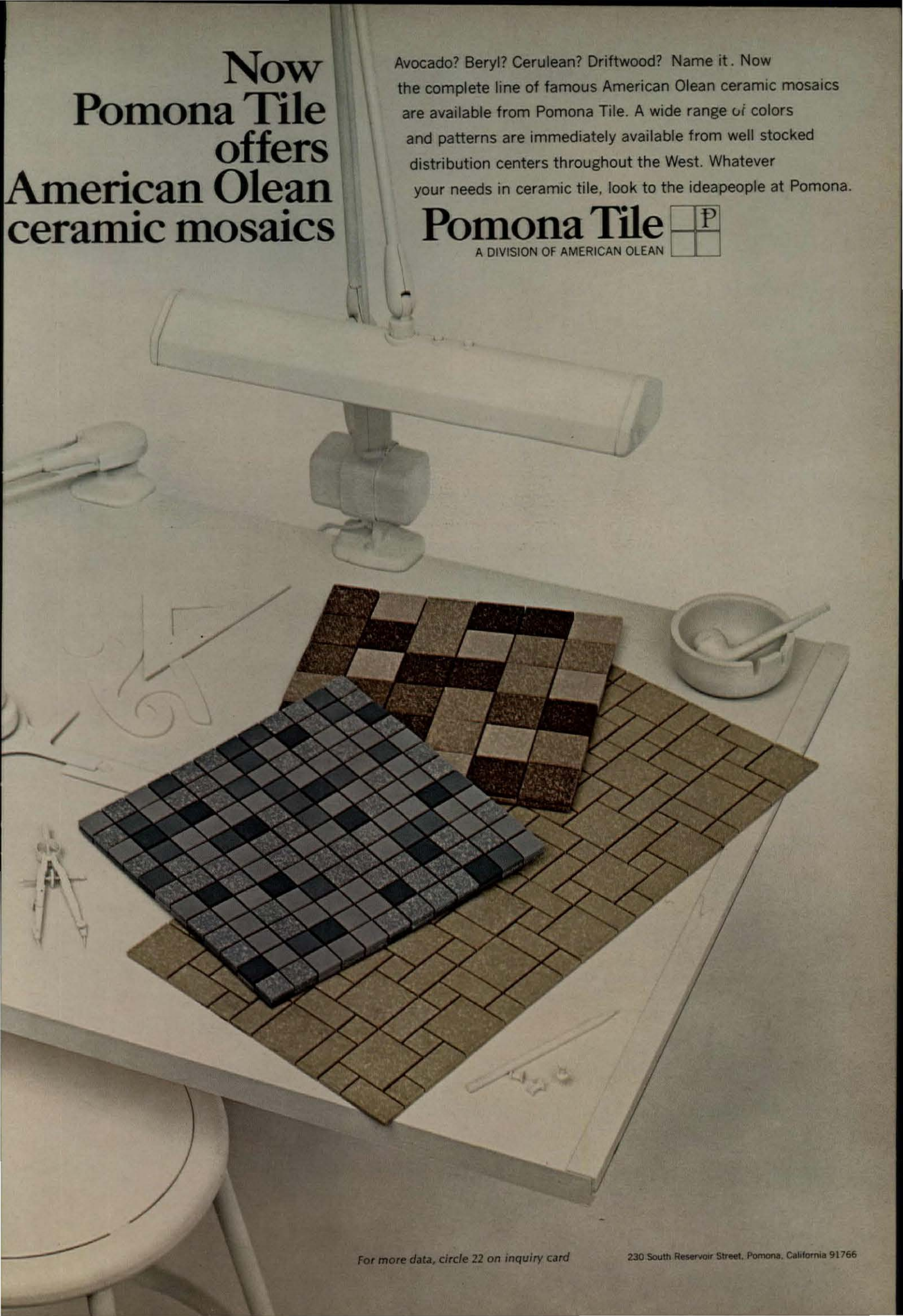

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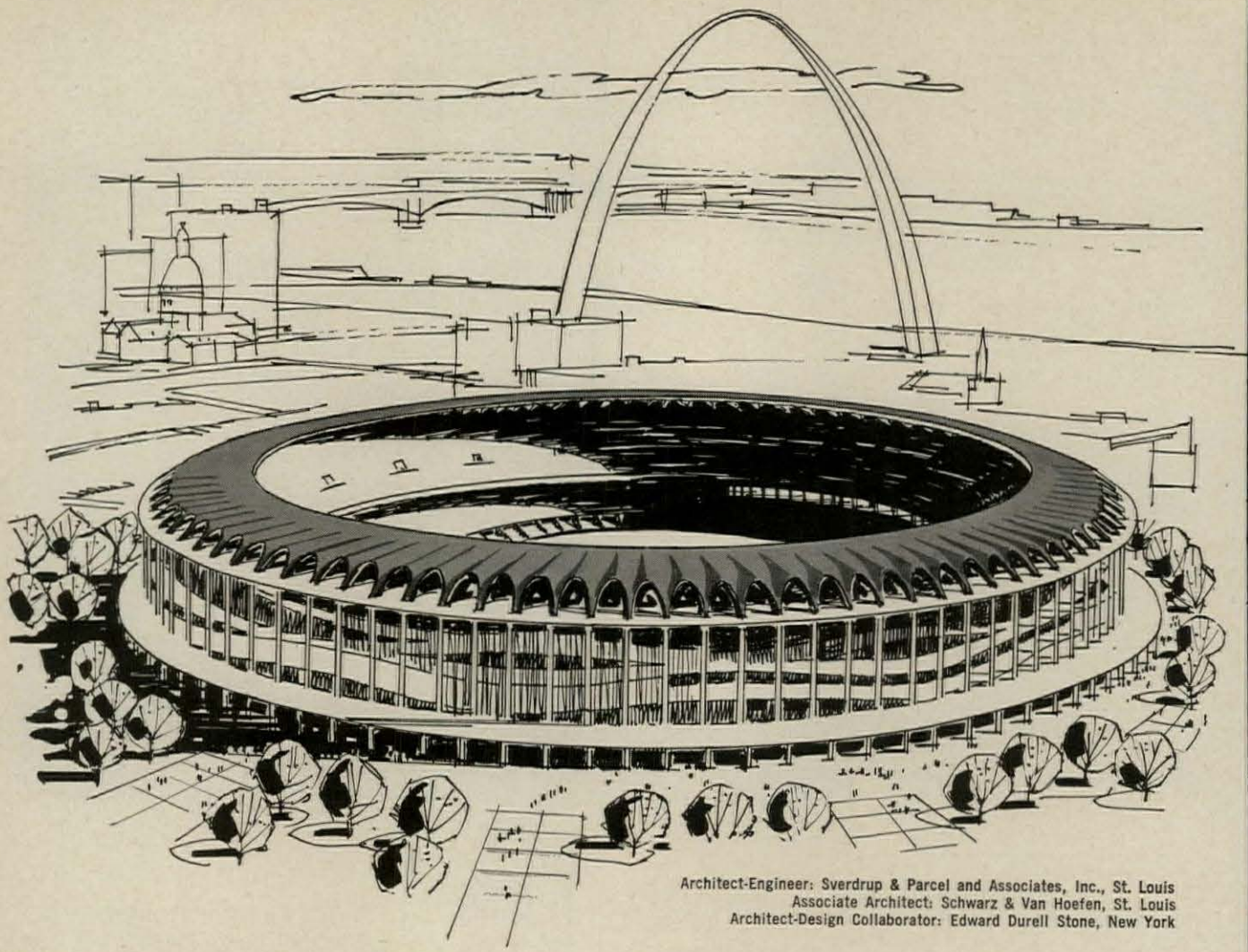

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old Medalist: Wallace K. Harrison of New York ceives the Institute's highest accolade, the old Medal, and a citation from President harles M. Nes Jr.—the highlight of the annual nner and ball. The citation read: "To Wallace Harrison, F.A.I.A., architect, who has shown e highest order of architectural statesmanship. e has led a team in producing significant archi-ctural works of high quality over a period of ore than 30 years. He has worked with the ncept of urbanism, creating architecture as rt of the fabric of the city, with great dedica-on and loyalty to the best interest of his own y, New York." Also invested at this gala occa-on were 82 fellows and five honorary fellows.

New A.I.A. Board (at post-convention meeting). Front row (from left) Vice President Robert F. Hastings, First Vice President and President-elect George E. Kassabaum, President Robert L. Durham, and Vice Presidents Harold T. Spitznagel and Samuel E. Homsey. Second row: George F. Harrell, *Texas*, Dan C. Cowling Jr, *Gulf States*, Jules Gregory, *New Jersey*, Philip W. Bourne, *New England*, Secretary Rex Whitaker Allen, Treasurer Dean F. Hilfinger, A. Bailey Ryan, *East Central States*, Max O. Urbahn, *New York*, Executive Director William H. Scheick, and G. Harold W. Haag, *Pennsylvania*. Third row: Joseph Tuchman, *Ohio*, H. Samuel Kruse, *Florida*, Rex L. Becker, *Central States*, Joseph H. Flad, *North Central States*, Bernard B. Rothschild, *South Atlantic*, Robert B. Martin, *Northwest*, Philip J. Meathe, *Michigan*, Jack D. Train, *Illinois*, Cabell Gwathmey, *California*, and David N. Yerkes, *Middle Atlantic*. Not pictured: Sidney W. Little, *Western Mountain*.

ew president: Outgoing President Charles M. es Jr. congratulates his successor, Robert L. urham of Seattle, as Mrs. Nes secures the resident's medal, in ceremonies at annual ball. t right: newly elected First Vice President and resident-elect George E. Kassabaum of St. Louis, nd Mrs. Kassabaum. Far right: Mr. and Mrs. urham lead off the dancing after ceremonies.

ARCHITECTS ANALYZE NEW MEANS OF INFLUENCE

Largest A.I.A. convention ever meets in New York City . . . stresses the practice and politics of the architect at community and state levels

The theme of the 99th annual convention of the American Institute of Architects—"The New Architect—Serving A New Society"—was well documented and persuasively presented as 5,120 registrants, the largest number ever, convened in New York City from May 14-18. New A.I.A. President Robert L. Durham clarified his concept of "the new architect" and the aims of the profession in his inaugural speech on the last night of the convention. Mr. Durham stressed that the profession must unify and strengthen itself in order to be more effective in "serving a new society." While recognizing the continuing importance of the Institute's liaison with the Federal government, Mr. Durham called for new efforts at the community and regional levels to make innovations in the practice of architecture available to the smallest firms and to make the small architect a more potent force in influencing the environment of his community.

Mr. Durham outlined four areas in which he "will strive for improvement": (1) a more effective system of two-way communication between chapter and Institute to prevent duplication of efforts; (2) a better public relations effort aimed toward supplying the membership with tools for chapter implementation; (3) exceeding of the fund raising goal for the new headquarters building (see page 46); and (4) "a new quality of liaison with the public from the smallest village to the capital of our country. . . . We must now give equal attention to the state and local level down to the small school board."

"We follow lofty motives," said Mr. Durham, "but we must not forget the nurture needed by the individual member, whether employee, teacher or practitioner. I feel a special responsibility to-

Tommy Weber

Speakers, at left, addressing themselves to the theme of the convention—"The New Architect—Serving A New Society"—included: (top, from left) Charles Luckman, who spoke on "Practice"; and Dr. Arthur Clarke, who spoke on "Technology"; and (center, from left) Dr. Marshall McLuhan, who delivered the Third Annual Purves Memorial Lecture, and Dr. Harold Taylor, who spoke on "Education." At bottom left, from left, are workshop speaker, architect Philip Johnson of New York City, Mayor John V. Lindsay of New York City, who delivered a theme speech on "Design and Politics", New York Regional Director Max O. Urbahn, New York City, and A.I.A. President Charles M. Nes, Jr. of Baltimore. At right, Mayor Lindsay delivers his speech before a throng at the New York Hilton.

Tommy We

A boat tour half-way around the Island of Manhattan and back proved to be a popular event for 550 architects and their wives. Organized by Eugene Raskin of the New York Chapter, the tour included beer, franks and rock-and-roll music.

Canadian products exhibit won a special award as "the best product exhibit the exhibit awards jury had ever viewed." The Canadian exhibit, a composite by 14 producers, was Canada's first participation in an A.I.A. convention.

Princeton graduates honor Professor Jean batut on his retirement by presenting his portrait bust to the school. From left: Charles Stade, Mr. Labatut, Dean Robert Geddes, and Professor Joseph Brown (sculptor of bust).

Stanley W. Gold

"Blueprints in Fashion", a brunch and fashion show held at the Hotel Pierre on May 18, was attended by 700 architect's wives and guests. The event, organized by the Woman's Committee of the 1967 convention—Mrs. P. Whitney Webb, chairman—presented fashions by Lord & Taylor and Larry Aldrich, Bill Blass, and Donald Brooks. Guests, at right, included, (from left) Mrs. Max O. Urbahn, Mrs. John V. Lindsay, wife of the Mayor, and Mrs. L. Rado, all from New York, and Mrs. Charles M. Nes Jr. of Baltimore. Other women's events included tours of the Pan-Am Building, the Seagram Building and Lincoln Center, and a breakfast forum at the Museum of Modern Art at which Mrs. John Noble Richards gave a dramatic monologue.

Stanley W. Go

ward the one- or two-man office. But whether large or small, by pooling our resources, by exchanging information, by establishing reasonable limits on our professional liability, we can bring renewed vigor to our profession."

Kassabaum becomes president-elect

In one of two contested elections, George E. Kassabaum of St. Louis defeated George Vernon Russell of Los Angeles for the office of first vice president and president-elect. Also Dean F. Hilfinger of Bloomington, Illinois was elected for a two-year term as treasurer, defeating Charles J. Marr of New Philadelphia, Ohio. The three vice presidents elected for the following year are Robert F. Hastings, Detroit; Samuel E. Homsey, Wilmington, Delaware; and Harold Spitznagel, Sioux Falls, South Dakota. Rex Whitaker Allen of San Francisco continues as secretary. Six new regional directors were unanimously elected: Philip W. Bourne of Boston—New England; Joseph H. Flad of Madison, Wisconsin—North Central States; Sidney W. Little of Tucson, Arizona—Western Mountain; A. Bailey Ryan of Louisville, Kentucky—East Central States; Joseph Tuchman of Akron—Ohio; and Max O. Urbahn, New York City—New York.

Twenty honor awards were presented at a luncheon on May 15 (see pages 50-55). Other awards and hono presented during the course of the co vention (and previously reported in t RECORD) included: the Gold Medal Wallace K. Harrison of New York; 82 fe lowships; five honorary fellowships; s honorary memberships; five medals practitioners in the allied arts; the Stuart Fitzpatrick Award; the Edward Kemper Award; the Citation of an O ganization; and the Architectural Fir Award.

Business sessions

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The President's Reception became a splendid happening in the grandly monumental spaces of the Metropolitan Museum of Art, whose new director, the inventor of happenings in New York City parks, Thomas P. F. Hoving, made available for the occasion the entire first floor of the museum. Chartered buses transported what seemed like the entire convention from the New York Hilton to the Museum. Above right: A.I.A. President Charles M. Nes Jr. and Mrs. Nes, of Baltimore, welcome guests on the receiving line. Below right: Architect Charles Correa and Mrs. Correa of Bombay, India, sample one of several bountiful spreads of *hors d'oeuvres*.

Stanley W. Gold

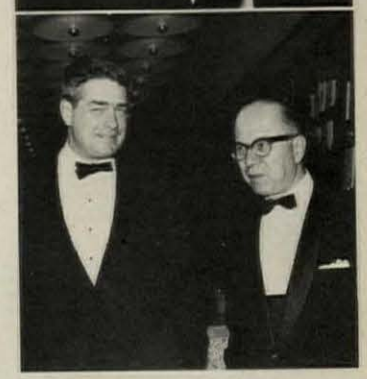
Host Chapter Party started for some at private pre-ballet parties such as the buffet given by Mr. and Mrs. Robert W. Cutler of New York. Pictured above (from left) are Daniel Boone, Abilene, Texas; Mrs. Cutler, Miss Carol Bjorkman, New York; Reginald Roberts, San Antonio; and Mr. Cutler. Then on to a special performance of the Royal Ballet (including a performance of "Paradise Lost" by Roland Petit, danced by Margot Fonteyn and Rudolf Nureyev [center left]) at The Metropolitan Opera at Lincoln Center, designed by Gold Medalist Wallace K. Harrison (the convention occupied the entire house). And on to a reception-dance in the New York State Theater at Lincoln Center (right) designed by Philip Johnson. At the reception, President Nes cited the New York Chapter, A.I.A., on its 100th anniversary, with Max O. Urbahn accepting the citation, as William Tabler and E. Allen Dennison look on. A citation was also presented to Dr. Frank Stanton, president, the Columbia Broadcasting System, for advancing the cause of "environment, architecture and the applied arts."

ating special interest, A resolution calling for permission to admit a new class of "professional affiliate (including engineers, planners, landscape architects, sculptors, muralists, and other artists allied to architecture)" to chapters was vociferously debated pro and con before a substitute measure calling for further study of the proposal by the A.I.A. Board of Directors was passed.

Another resolution, passed after a floor fight and roll call vote of 410 to 213, changed the A.I.A.'s Standards of Professional Practice by eliminating a prohibition against architects working for non-architects who offer architectural services to the public, and substituting a requirement that no A.I.A. member should be employed by an individual or firm whose practices are "inconsistent with" the A.I.A. Standards.

The third resolution of particular interest—and essential to the development of the headquarters expansion project—was the unanimous approval of the sale of the Octagon headquarters in Washington, D.C. to the A.I.A. Foundation, which will restore it and maintain it as a historic and architectural landmark. This is the second such approving vote on this issue, due to bylaws, the first vote being taken at last year's convention in Denver to "free needed capital of the Institute for its activities in advancing the interests of the profession." A new design by Mitchell & Giurgola for a vastly expanded headquarters building, which would also allow a larger garden area for the Octagon, was unveiled at the second business session (see page 46).

Other resolutions passed called for regional directors to establish revolving funds for planning, so as to encourage the elimination of performance of architectural services for government agencies on a contingent basis, and for the Board of Directors to undertake a study of the nature and extent of services rendered on a contingent basis; commendation of architects and entrepreneurs who are "demonstrating the feasibility of creating



The traditional F. W. Dodge Party for the architectural profession on the eve of the opening of the convention this year honored The Whitney Museum of American Art and its architects Marcel Breuer and Hamilton Smith. The party brought 2,400 architects and their wives to the gala cocktail reception at the museum. Three upper floors of the museum were stocked with a variety of refreshments and a variety of musical groups, including Jeremy & The Satyrs, a rock-and-roll group which featured an electric flute (top left) and jazz by the Billy Taylor Trio (left). Also featured were folk music by the Simon Sisters, Helen & Harley and Bill Elliot, ragtime by Willie "The Lion" Smith, jazz by the Buddy Weed All Stars, and Dixieland by the Dick Raymond Five. Exhibitions installed at the Whitney included a retrospective devoted to Jules Pascin (1885-1930), works by William Glackens (1870-1938), and the latest additions to the museum's permanent collection. At the head of the reception line (top right) were F. W. Dodge President Wallace F. Traendly, Flora Whitney Miller, chairman of the Board of Trustees of the Whitney Museum, and Shelton Fisher, president of McGraw-Hill, Inc. At center right are Robert S. Muller, vice president-Marketing, F. W. Dodge Company, Marcel Breuer and RECORD Editor Emerson Goble. At bottom right are Hamilton Smith and Leon Levine of the Whitney Museum staff.

right: Victor C. Gilbertson, Minapolis, former A.I.A. Secretary swald Thorson, Waterloo, Iowa, d new A.I.A. President Robert L. urham, Seattle; RECORD Associate ublisher Blake Hughes and Mrs. ughes; and Sam T. Hurst, dean of e School of Architecture and Fine rts at the University of Southern alifornia, Mrs. Hurst, and A. Quin- Jones, Los Angeles. Below right: n Pokorny, New York City and ECORD Senior Editor Mildred F. hmertz; A.I.A. Secretary Rex Whitker Allen, San Francisco, and Nichlas Satterlee and Thomas W. D. Wright of Washington, D.C.; and oward H. Mackey, head of the Dertment of Architecture at Howard niversity, and Mrs. Mackey.

n orderly environment and 'sense of lace' for suburban citizens through the esign of cohesive and meaningful comunities"; Congress to establish new tandards for sign controls to eliminate oadside blight.

Also for the Federal government to mploy multi-professional design teams n the selection of routes and design of ederally-aided highways and transportaion systems; endorsing and supporting a 'Program for Building Code Improvement" by the A.I.A. Committee on Building Regulations; the Board to undertake a study of the proper areas of professional concern in the exploitation of the natural environment; and preservation of the Redwood Forests in California and the Imperial Hotel in Tokyo.

Theme topics developed

The theme of the convention, "The New Architect—Serving a New Society," was developed in four sessions devoted to education, practice, design and politics, and technology, each session being followed by a related workshop. The Third Annual Purves Memorial Lecture was delivered at the opening session by Dr. Marshall McLuhan, director of the Center for Culture and Technology at the University of Toronto. Architect Charles Luckman addressed the theme session on "Practice" (full text begins on page 93).

Auditory and visual space

Dr. McLuhan in his address "Knowledge and the Future of Man" set about to clarify the current state of society in terms of the new electronic age. His clarification seemed to some of his fascinated hearers to *need* clarification, and his delivery to have some of the qualities of the "auditory space" that he says is characteristic of our electronic culture—discontinuous, not uniform, not connected, tactile, kinetic, "all-at-once-ness," and emphasis on effect.

Dr. McLuhan distinguishes this auditory space—characteristic of spaces generated by other senses than vision—from "pictorial space" or visual space, a 2,500-

Tommy Weber

(Clockwise from left) RECORD Senior Editor James Hornbeck, Executive Editor Walter Wagner, Jr., Assistant Editor John Margolies, Wilbur Riddle, Cleveland, Managing Editor Jeanne Davern, James Scheeler and Ambrose Richardson, Champaign, Illinois, and Thomas Wright, Washington, D.C.

(1) Worley K. Wong, San Francisco, Felix Candela, Mexico City, and Victor Drumm, vice president-operations, F. W. Dodge Company. (2) M and Mrs. Leonard J. Currie, Chicago. (3) RECORD Associate Editor W liam B. Foxhall and J. S. Baker, Champaign, Illinois.

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(1) George Nemeny and Milton Glass, New York City. (2) M. Ellio Carroll, Muriel Campaglia and J. Winfield Rankin of A.I.A. staff, Washin ton, D. C. (3) Charles P. Graves, dean, College of Architecture, Universit of Kentucky, Lexington, and RECORD Publisher Eugene E. Weyeneth.

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(1) RECORD Assistant Editor John Margolies and A. Quincy Jones, Los Angeles. (2) Mr. and Mrs. J. Rowland Snyder, Washington, D.C. (3) Emil C. Fisher, dean and Henry Wright, professor, College of Architecture and Design, Kansas State University, Manhattan. (4) Mr. and Mrs. P. Whitne Webb, New York City. (5) Grant Curry, Pittsburgh, RECORD Editor Emerso Goble, and Thomas W. D. Wright, Washington, D.C.

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(1) Stephen C. Little and John E. Sweet, Coral Gables, Florida. (2) Max O. Urbahn, and convention chairman E. Allen Dennison, New York, His Eminence Francis Cardinal Spellman and Governor Nelson A. Rockefeller, of New York. (3) RECORD Managing Editor Jeanne Davern and Thoma Sedgewick, Flint, Michigan. (4) Constance Eiseman and H. Dickson Mc Kenna, New York. (5) Samuel Ratensky and Lewis Davis, New York.

year-old Western concept in which there is a fixed point of view, uniformity, continuity and connectedness and in which there can be detachment and objectivity. "Electric technology," says Dr. McLuhan, "simply because it is all at once, is also discontinuous. . . . To the rational observer who seeks to find connectedness and uniformity in the spaces of his world, the new situation presents an extreme form of the irrational." The result of this new method of perception, in Dr. McLuhan's view, is consciously or unconsciously, a conception of our environment as an infinite series of unrelated parts which make up the cosmic whole. Dr. McLuhan's message seemed to be to perceive and comprehend where we are in a total sense before didactically plodding forward.

Teach the young to see

Educator Dr. Harold Taylor, in his address "Education and the Human Environment" characterized the education of the young as "a process of slow attrition of the sensibility and the substitution of categories of fact-gathering, conceptualizing and memorizing in place of the development of the creative facilities."

Formal educational subjects should, said Dr. Taylor, be geared to real and immediate world situations to make people aware of their surroundings. "The practice of the art of creating and the practic of the art of seeing, listening, moving an feeling, are essential ingredients of a education in judging the environment."

To combat the mediocrity of our cul ture and environment, Dr. Taylor calle for two steps: "to take the measure of th artists and writers and to assess the na ture of the truth they are telling (abou the mediocrity of our psychological an physical environment); . . . and to find a way to teach the young to look at th world as it really exists, to look at it wit the eye of an artist, the warmth of a hu manist, and the concern of a citizen. Fo it is literally true that the young are th architects of the future."

Tommy Weber

RECORD Senior Editor Herbert L. Smith, Jr. and Hugh N. Jacobsen, ashington, D.C. (2) A.I.A. First Vice President and President-elect George ssabaum, St. Louis, and Willis N. Mills, Stamford, Connecticut. (3) John ansen, New Canaan, Connecticut, and Marshall McLuhan, Toronto. (4) Charles Luckman, Los Angeles, A.I.A. Vice President Samuel E. Homsey and his wife Victorine (a new Fellow of the Institute), Wilmington, Delaware, and Mrs. Luckman. (5) William J. Ward Jr. of Sigman-Ward, New York City, and RECORD Editor Emerson Goble.

Tommy Weber

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Design quality as political goal

ohn V. Lindsay, Mayor of New York City, truck a positive note in citing the design ccomplishments and policy of his administration. "We in New York's city government are committed to the concept of excellence in design," said Mayor Lindsay. "That commitment transcends the design of a few richly conspicuous buildngs by some of the most celebrated members of your profession. It mandates a design quality that will carry through all the actions of government, and, as far as possible, through the private sector . . .

"In the end, however, the quality of the results will depend in large measure on how your professions respond to the opportunities the cities can offer. I have every confidence that you will rise to those opportunities, that you possess a readiness to undertake on a large scale the kind of public works that are truly public—in the sense that they serve the highest interests of the citizenry—and truly works—in the sense that they endure to be judged by future generations."

The not-too-distant year 2000

Astronomer and science fiction writer Arthur C. Clarke, addressing the convention on "technology," predicted some possibilities of what our environment will be like by the year 2000 and beyond. Advances in transportation and communication will make it possible for man to live anywhere and work anywhere. The acceleration of communications will change us from "a producing society to an information-processing society." The new freedom to live anywhere, and the historical functions of the cities ceasing to exist as they spill out over the countryside portend, said Dr. Clarke, that "the cities are growing like the dinosaurs and for much the same reason, they will become extinct."

Dr. Clarke foresees "self-contained households" that will produce their own food and process their own wastes, and mobile towns that could "just take off and fly you anywhere you like."

A.C.S.A. meeting

At the 53rd annual meeting of the Association of Collegiate Schools of Architecture in New York, held immediately prior to the A.I.A. convention, the organization continued to strengthen its activities on the regional level, a move first implemented at last year's meeting in Denver, Colorado.

The new president of A.C.S.A. is Robert Bliss, head of the department of architecture at the University of Utah, who succeeds Walter Sanders of the University of Michigan. Charles Burchard, dean of the College of Architecture at Virginia Polytechnic Institute, is the new treasurer, succeeding Henry Jandl of Princeton. Continuing officers include Dean Thomas Howarth, University of Toronto, vice president, and Dean John Lawrence of the School of Architecture at Tulane University, secretary.

New regional directors include: Charles Kahn, North Carolina State—Southeastern; Richard Wheeler, University of Cincinnati—East-Central; Henry Wright, Kansas State—West-Central; and Welsey Harper, Texas A & M—South-Western. Continuing regional directors are Dean D. K. Sargent, Syracuse—North-Eastern, and Marcus Whiffen, Arizona State—Western.

Highlights of the annual banquet included the presentation of certificates of appreciation to: Joseph Hudnut, former dean of the Graduate School of Design at Harvard; Douglas Haskell, former editor of Architectural Forum; Kenneth Smith, dean of the School of Architecture at Columbia; and John D. Entenza *(in absentia)*, executive director of the Graham Foundation for Advanced Studies in the Fine Arts, Chicago. Also at the banquet, a new fellowship sponsored by American Metal Climax, Inc. of New York and administered by the A.C.S.A. was presented to architect Donald Watson of New Haven for a two-year study of "indeterminant architecture." The fellowship, made possible by a grant of $25,000, is planned "for architectural study devoted to the perception of new opportunities offered by industry for improvements in the construction or planning and designing of buildings."

N.A.A.B. meeting

In another pre-A.I.A.-convention meeting, the National Architectural Accrediting Board, after studying its evolving role in the past few years, and after an analysis of its past activities and procedures by Sam T. Hurst, dean of the School of Architecture and Fine Arts at the University of Southern California, who is outgoing secretary and new president of the organization, announced administrative changes intended to improve the service of the Board.

On advice of counsel, the Board has incorporated under the laws of the District of Columbia, with the articles of incorporation reflecting basic constitutional changes. The purpose of incorporating, according to outgoing president Frederick Hobbs of Columbus, Ohio, is that "the Board will be on firm ground in its tax immunity and Board members will henceforth enjoy certain legal safeguards conferred by corporate status."

The new documents shorten the terms of Board members from six to four years, and increase the six-man board (composed of two representatives each from the A.I.A., A.C.S.A. and N.C.A.R.B.) to not less than eight members with provision for further expansion. The two new members will be from the field of education—one a "generalist" and the other a representative from one of the design professions or specialties other than architecture.

N.C.A.R.B. convention

Significant progress towards the realization of three long-term aims—uniformity of registration requirements, upgrading of professional standards and the establishment of reciprocal registration between different countries as well as different states—was made at the 46th annual convention of the National Council of Architectural Registration Boards held in New York May 12-14.

Of the various resolutions and reports adopted, probably the most significant was the Council's ratification of a Memorandum of Agreement drawn up by the Foreign Evaluations Committee of N.C.A.R.B. and the Architects Registration Council of the United Kingdom to establish reciprocal registration between the two countries, making it possible for architects to practice freely in either country. The committee has now been empowered to develop appropriate machinery to give effect to this agreement.

In presenting its report, the Committee on Policies and Procedures put forward a resolution—accepted by the Convention after heated discussion and a close vote—to make graduation from an accredited school of architecture a mandatory prerequisite for Council certification after January 1, 1973. This resolution is intended to have the dual function of promoting consistency in preparation for registration while at the same time ultimately upgrading professional standards. Ample advance notice and consideration of equivalent qualifications in particular cases would assure the minimum of hardship to individuals.

As a result of the work of the Committee on Examinations, whose report was approved at the convention, for the first time in the Council's history all of the 54 member boards are now using the same examination in five areas: history and theory; building construction; structural design; professional administration and building equipment. Continued work on the subjects of site planning and design may lead—before too long—to a national system of consistent examining procedures.

Eli Aaron

Eli Aaron

Tommy Weber

(Left) **N.C.A.R.B. Officers and Directors:** (front row, from left) Second Vice President Dean L. Gustavson, Salt Lake City; President George F. Schatz, Cincinnati; First Vice President Howard T. Blanchard, Garden City, Kansas; and Immediate Past President Earl L. Mathes, New Orleans. Back row, from left: Directors Worley K. Wong, San Francisco, and Charles P. Graves, Lexington, Kentucky; Secretary Harry E. Rodman, Troy, New York; Treasurer Daniel Boone, Abilene, Texas; and Director William J. Geddis, Brookline, Massachusetts. (Center) **A.C.S.A. Officers and Directors:** (from left) Vice President Thomas Howarth, University of Toronto; Director D. Kenneth Sargent, Syracuse University; Secretary John W. Lawrence, Tulane University; Director Marcus Whiffen, Arizona State; President Walter B Sanders, University of Michigan; Treasurer Henry Jandl, Princeton University; and Director Henry L. Kamphoefner, North Carolina State. (Right) **Pratt student demonstrators** caused quite a commotion on the first day of the convention as they protested against the lack of architect involvement in the design of cities.

"People can work without plumbing. And they can work without air conditioning. But they just can't work without telephones."

Fairchild Hiller Corporation's facilities manager, A. S. Damiani, knows what he's talking about.

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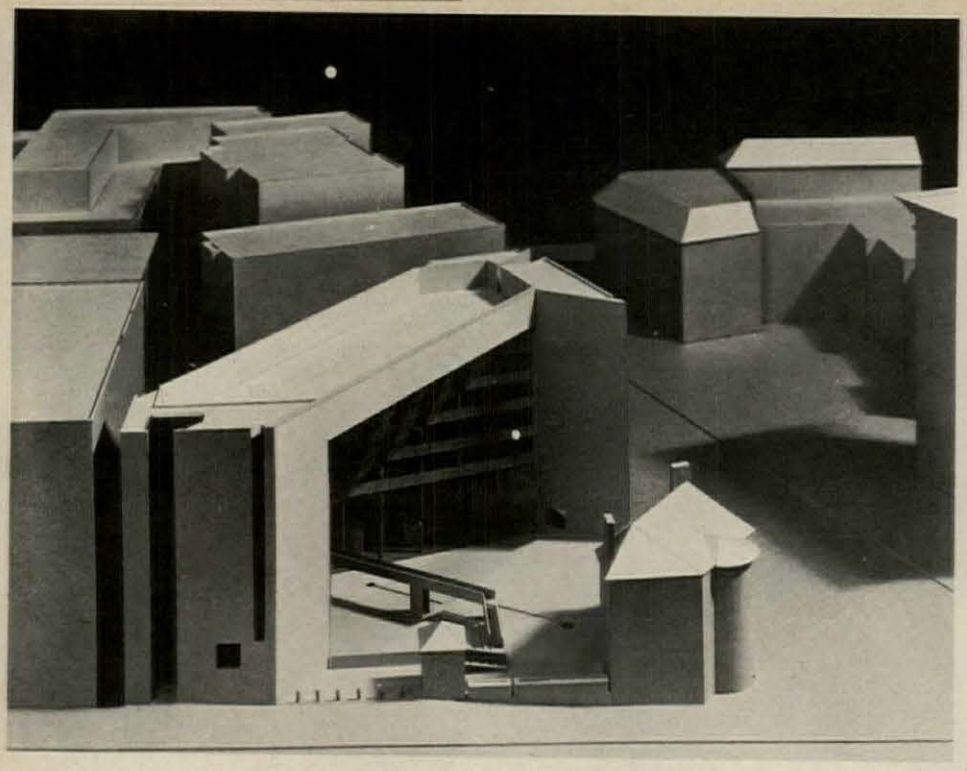
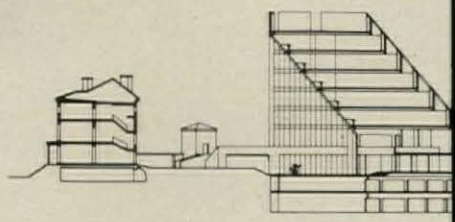
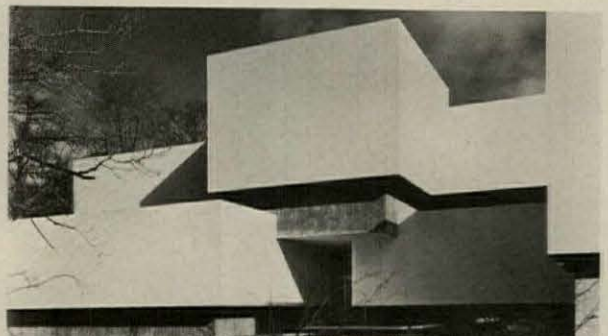


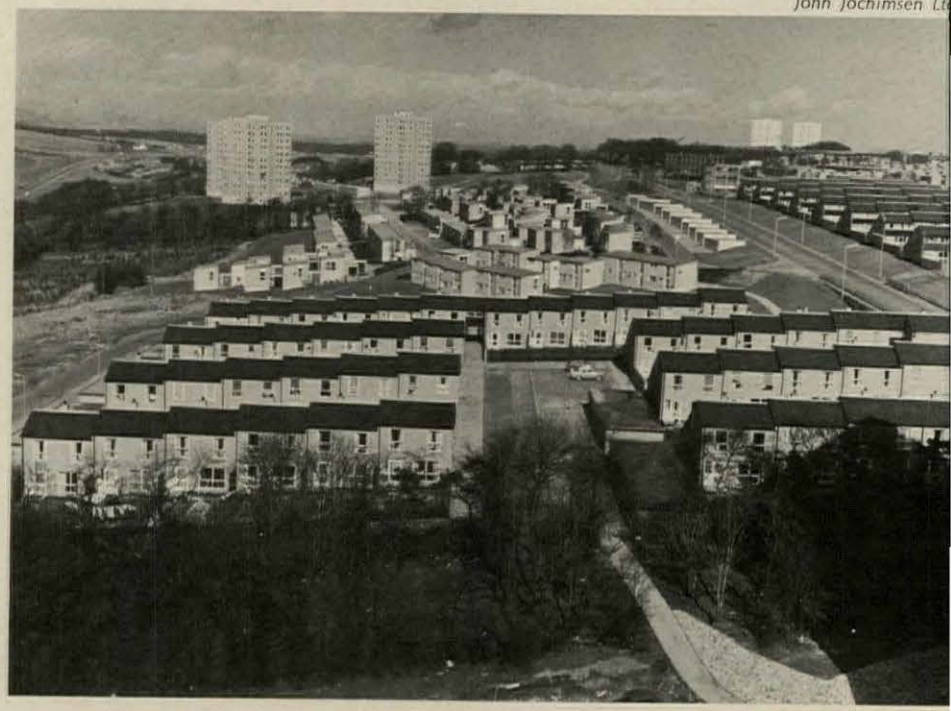
The new design for the national headquart building of the American Institute of Arc tects in Washington, D.C., designed Mitchell/Giurgola Associates, winners of t national design competition (February 19 page 10), will provide almost twice as mu usable space as the original solution on enlarged site made possible by the purcha of adjoining property. The new design w have the five office floors, located above two-story exhibit and conference area, su cessively step forward over the space of t Octagon garden. "The projecting configu tion of the building," say the architects, ". shields each floor from the direct rays of t sun to the southwest and allows for the intr duction of natural light onto each floor fro the northeast." The $4-million building w be of reinforced concrete faced with brick.





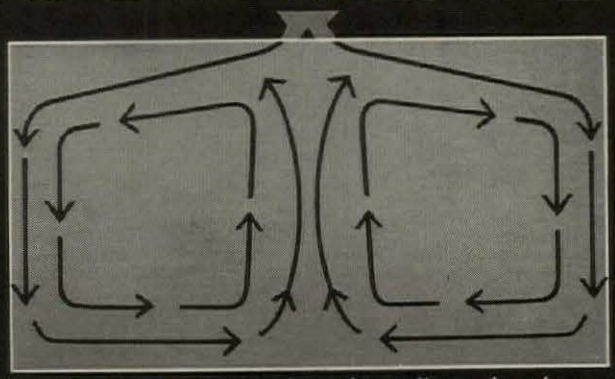
Architect Victor F. Christ-Janer has been pr sented the 11th annual $25,000 R. S. Reynol Memorial Award for "distinguished architec ture using aluminum" for his design of th James F. Lincoln Library of Lake Erie Colleg Painesville, Ohio. The jury (consisting of Jos Luis Sert, chairman, John E. Burchard, Har Hollein, William Morgan and William Ke sler) praised the library for "the merits of th use of light aluminum panels for exteri walls suspended from the roof structure c spandrels in the different floors." Light is a lowed into the interior of the building b glass strips framing the bottom of its ove hanging cubed shapes.

John Jochimsen Lt



Cumbernauld New Town in Scotland, 14 miles from Glasgow, will be honored by the first $25,000 R. S. Reynolds Memorial Award for Community Architecture (January, page 36). Chief architect and planning officer since 1962 for the new town is Dudley R. Leaker, successor to L. Hugh Wilson, who held the post from the beginning of the project 11 years ago. The awards jury (consisting of Morris Ketchum Jr., Archibald C. Rogers, and John Fisher-Smith) cited Cumbernauld as "the most comprehensive project of community architecture to date." Key features of the town cited by the jury are: complete separation of pedestrian and vehicular traffic in a system of walkways and roads; a unique multi-level town center to extend a half-mile in length when completed; design as a single community without subdivision into neighborhoods; a high level of amenities for daily living; and exceptional economy in development. Eventual population will be 70,000.

OUR MOVE



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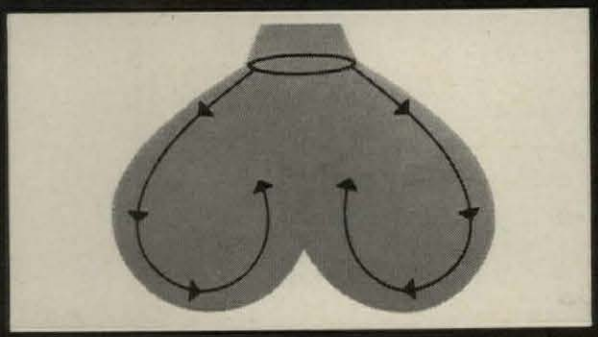

This drawing shows how a diffuser moves air unevenly. The air shoots out, much like through the nozzle of a garden hose. Sit under one of the blasts, and you'll know what we mean. Air can stagnate in one area of the room, and drafts build up in the other.

YOUR MOVE

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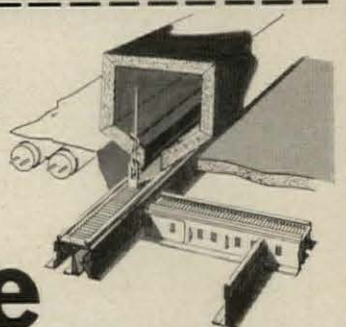

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A dramatic showcase for prestressed concrete

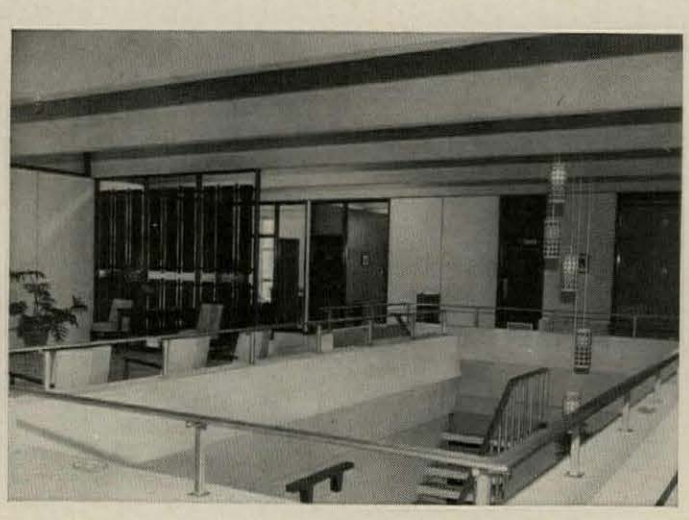
This new building by a Florida prestresser is both headquarters for his operation and a showcase for his product. Every prospective customer who visits the office sees a demonstration of what precast concrete can do for the building he has in mind. The special textured cast-in-place corner walls provide architectural contrast for the variety of smooth surface prestressed and precast components. Dura-Stress Inc. uses Lehigh Early Strength Cement to obtain both early and ultimate high strengths for their units. Lehigh Portland Cement Company, Allentown, Pa.

Owner:
Dura-Stress, Inc., Leesburg, Fla.

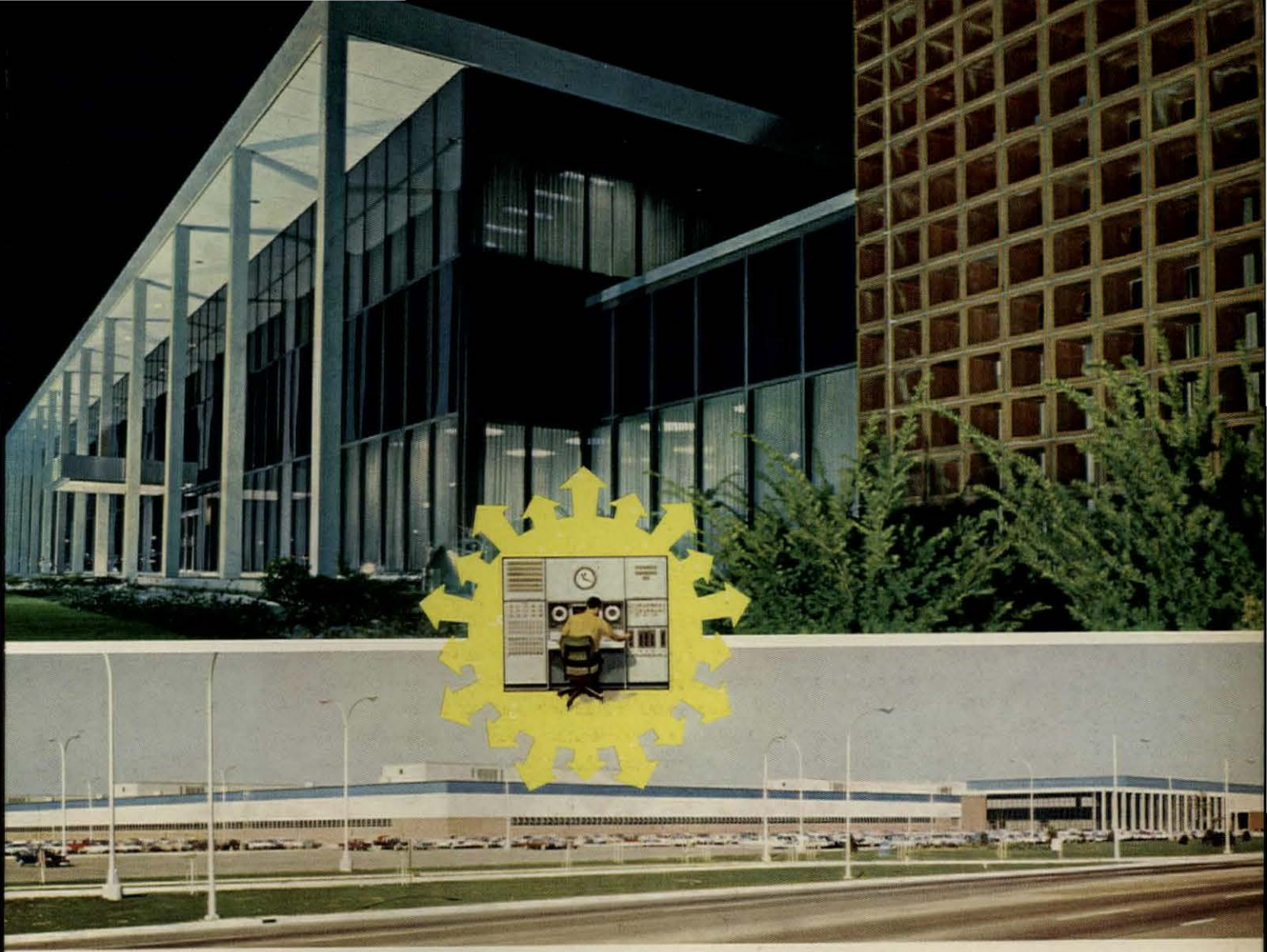
Architect:
Robert V. Ford, Leesburg, Fla.

Prestressed and Precast Concrete:
Dura-Stress, Inc., Leesburg, Fla.

LEHIGH CEMENTS



Second floor ceiling features 8′ x 36″ lin tee beams. Each 86′ prestressed lin tee is supported by two-story high precast columns. This permits use of non-load bearing interior partitions on second floor, which consists of 14″ prestressed double tee beams. Floor tees cantilever to support second story precast panels. Corner walls have an exposed aggregate "corduroy" surface. The building provides 10,000 sq. ft. of floor space.



One man operates the Honeywell Control Center that starts, stops, adjusts, reveals, alarms, monitors, analyzes, and checks almost everything in an industrial plant. Shown here: Two views of 57-acre Chrysler Corporation Sterling Stamping Plant, Detroit, Michigan. Architects and Engineers: Giffels and Rossetti, Inc., Detroit.

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A.I.A. HONORS 20 BUILDINGS IN NATIONAL AWARDS PROGRAM

Twenty honor awards, to projects shown here, were presented at the New York convention in the 19th annual Honor Awards Program of the American Institute of Architects. For the first time, all 20 winning projects received honor awards, instead of the distinction between honor awards and awards of merit in past programs. The winning projects were selected from a field of 317 submissions by a jury consisting of: James M. Hunter, Boulder, Colorado, chairman; R. Max Brooks, Austin, Texas; Vladimir Ossipoff, Honolulu; Joseph N. Smith, Atlanta; and Philip Will Jr., Chicago.

The jury report, in part, read:

". . . The perennial problem of judging small, low-budget buildings against large prestige-budget efforts was a worrisome problem in this year's competition—and much debate was concentrated in defense of the low-budget try, against the affluent competitor.

"There was a marked definition of architectural philosophies motivating buildings, and we found ourselves continual adjusting our individual thinking to the competitor's objectiv and architecturally—what he wanted to do, and why he wante to do it.

"The results of our efforts can only be, at best, opinion and impressions of five architects representing Hawaii, Texa Illinois, Georgia and Colorado, regarding submissions from 3 states, territories and seven foreign countries. It can only b hoped that we have, as we intended, recognized each build ing's appropriateness to its function, its clarity of structure, i use of materials and their thoughtful detailing, and that th building was appropriate to its time and its place.

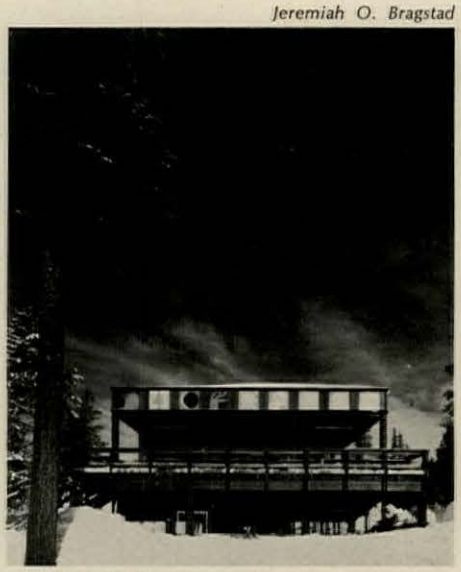
"We were delighted with the recognition of the needs o 'people' in the majority of the projects, and we premiated on which made only a humble architectural statement, but whic was so full of the spirit of gaiety, goodwill and wholesomenes that its recognition became mandatory."

Alessandro Macone, Inc.

"This highly disciplined, well proportioned building expresses its utilitarian function and technical occupancy. The professional competency of its author is evident. This building is an expression of modest architectural good manners in a classic setting."

VANNEVAR BUSH CENTER FOR MATERIALS, Science and Engineering, Massachusetts Institute of Technology, Cambridge. Architect and structural, mechanical and electrical engineers: *Skidmore, Owings & Merrill, Chicago;* general contractor: *George A. Fuller Company, Inc.*

Jeremiah O. Bragstad



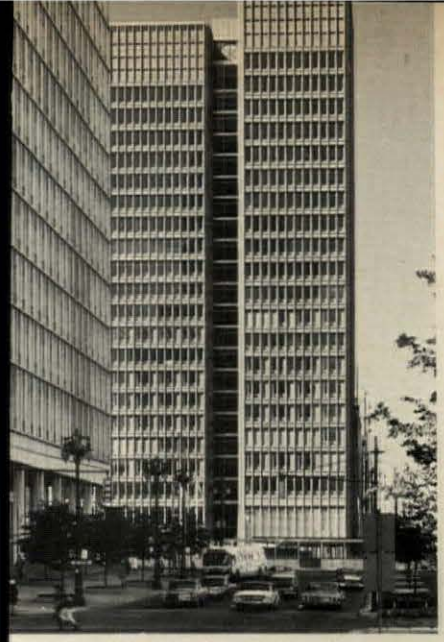
"A delightful statement of a ski lodge without resorting to the vernacular of the Swiss chalet. In its sturdy detailing and by the use of good graphic devices, it imparts an appropriate aura of gaiety within the discipline of a direct and simple solution."

BOREAL RIDGE (Recreational Development), Truckee, California. Architect and landscape architect: *Ian MacKinlay A.I.A. & Associates;* owner: *Boreal Ridge Corporation;* structural engineer: *Pregnoff & Matheu;* mechanical and electrical engineers: *William M. Brobeck & Associates;* fascia design: *Michael Bull, graphic designer;* general contractor: *Robert C. Gebhardt.*

Lawrence S. Willian

"A forthright statement of its municipal func tion. The lower levels handle the city's busi ness. It is sympathetic to its surrounding and is sensitively detailed with its traditiona neighbors. This is the proud and dignifie building."

MUNICIPAL SERVICES BUILDING, Philadel phia. Architect and landscape architect: *Vin cent G. Kling and Associates;* owner: *Cit of Philadelphia;* structural engineer: *McCor mick-Taylor Associates;* mechanical and elec trical engineer: *Charles S. Leopold, Inc.;* gen eral contractor: *John McShain, Inc.*



A highly disciplined and dignified expression of the tall office building, the First Federal is well tailored to the needs of a bank and suited to a difficult site in downtown Detroit."

FIRST FEDERAL OFFICE BUILDING, Detroit. Architect and structural, mechanical and electrical engineers: *Smith, Hinchman & Grylls Associates, Inc.;* landscape architect: *Johnson, Johnson & Roy, Inc.;* general contractors: *George A. Fuller Company and Walter L. Rouse & Company.*

Morley Baer

"A warm, humble and humane solution to the college dormitory problem, the complex nests easily and informally on the landscape. In this atmosphere the student becomes an individual and not a computer card number."

RIDGEWAY MEN'S DORMITORIES/PHASE III, Western Washington State College, Bellingham, Washington. Architect: *Fred Bassetti & Company/Architects;* structural engineer: *Norman Jacobson & Associates;* mechanical engineer: *Richard M. Stern;* electrical engineer: *Beverly A. Travis & Associates;* landscape architect: *Richard Haag Associates;* interiors: *Douglas Bennett;* general contractor: *Cawdrey & Vemo, Inc.*

"Humble and respectful of its site, the project utilizes a limited palette of materials well. It is beautifully planned, thoughtfully detailed and well executed."

DORMITORY AND COMMONS BUILDING QUADRANGLE, Clark University, Worcester, Massachusetts. Architect and landscape architect: *The Architects Collaborative, Inc.* (principal in charge: *Norman Fletcher;* job captain: *Herbert Vise);* structural engineer; *Le Messurier Associates, Inc.;* mechanical engineer: *Fitzmeyer and Tocci;* electrical engineer: *Maguire Engineering;* general contractor: *The Granger Contracting Company, Inc.*

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"The highly disciplined elegance and sophisticated detail make this a truly great office building. A fresh and accurate structural expression containing dignified spaces appropriate to a great banking house."

BANQUE LAMBERT, Office Building and Residence, Brussels, Belgium. Architect and landscape architect: *Skidmore, Owings & Merrill, New York;* structural engineer: *Paul Weidlinger;* mechanical engineer: *Syska & Hennessy, Inc.;* general contractor: *Entreprises Blaton-Aubert.*

Karl H. Riek

"Warm yet dignified interiors. Competent wooden detailing gives it a sincerely regional flavor providing a happy relief from the sleek approach. Good scale and use of materials—the 'Greene Brothers' in a contemporary idiom."

REDWOOD NATIONAL BANK, Napa, California. Architect and interiors: *Neill Smith and Associates;* structural engineer: *Gilbert, Forsberg, Diekmann & Schmidt;* mechanical and electrical engineer: *O'Kelly and Schoenlank;* general contractor: *D. M. Christensen Construction Company.*

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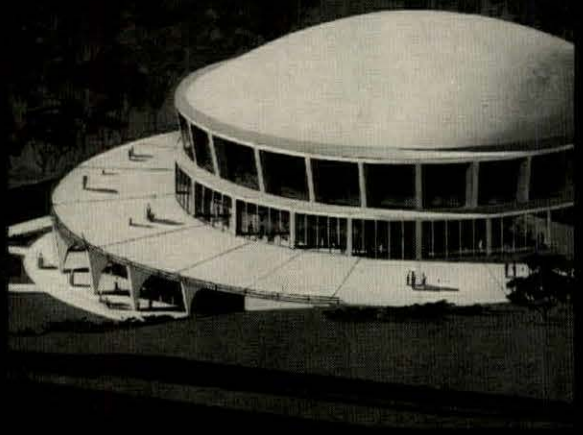
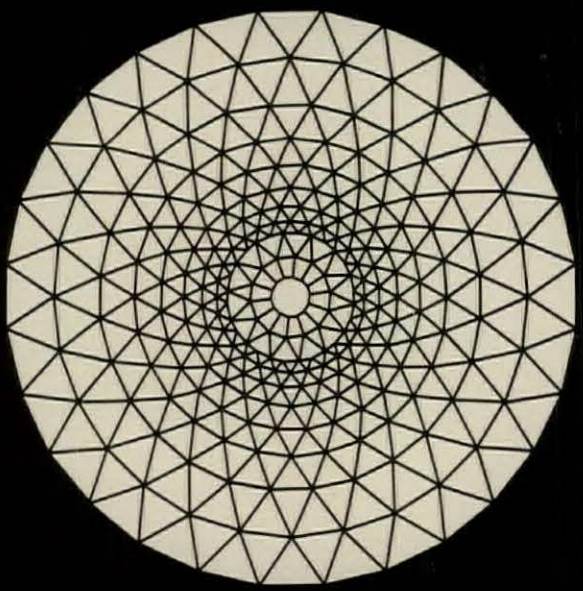
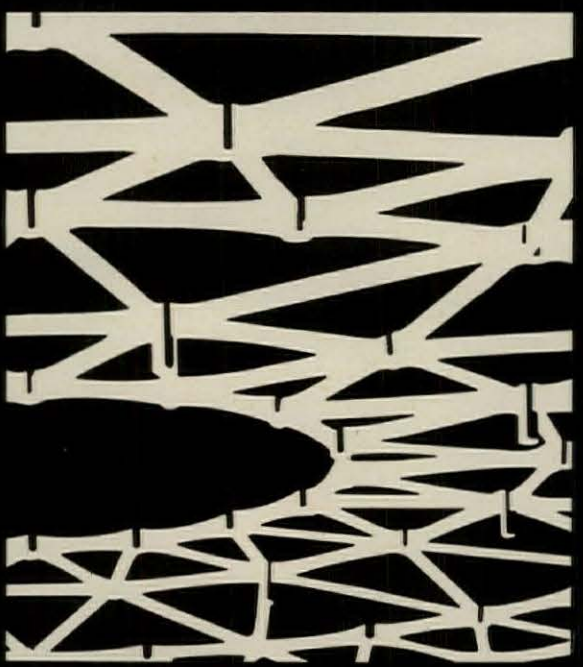
"A powerful integration of utility, structure and mechanical systems. There is a delightful sequence of scale and space as one enters the court; it is unique to this size building in an urban setting."

THE AMERICAN REPUBLIC INSURANCE COMPANY NATIONAL HEADQUARTERS BUILDING, Des Moines, Iowa. Architect and landscape architect: *Skidmore, Owings & Merrill, New York;* structural engineer: *Paul Weidlinger;* mechanical engineer: *Syska & Hennessy, Inc.;* general contractor: *Arthur H. Neumann & Bros., Inc.*







All of a sudden domes are the easy solutions.

Soon, America will shelter two hundred million people—focused mostly in cities and towns. Every gathering then becomes two—three—four times the humanity of 1950! And in theory at least, the dome should come into its own as the ideal, space-enclosing form. Practically, dome structures present forbidding difficulties on most budgets.

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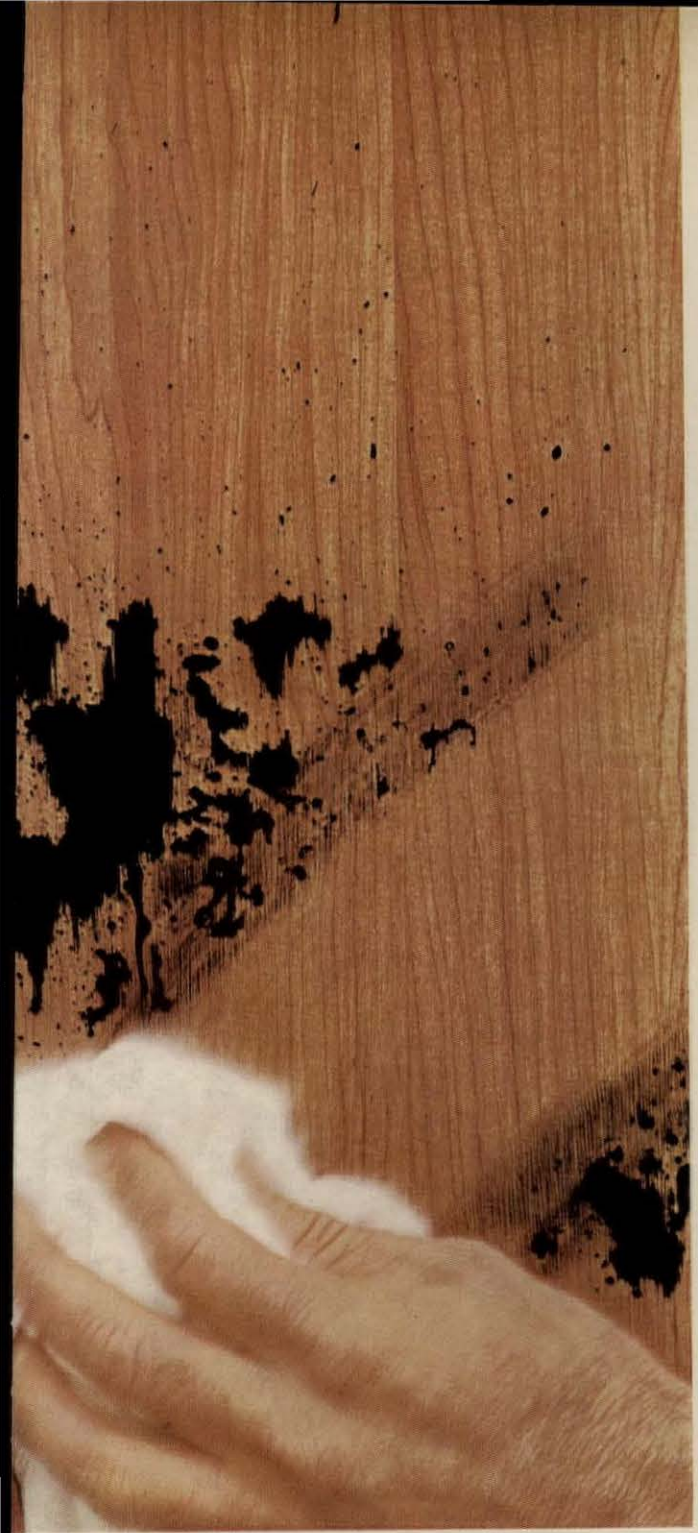

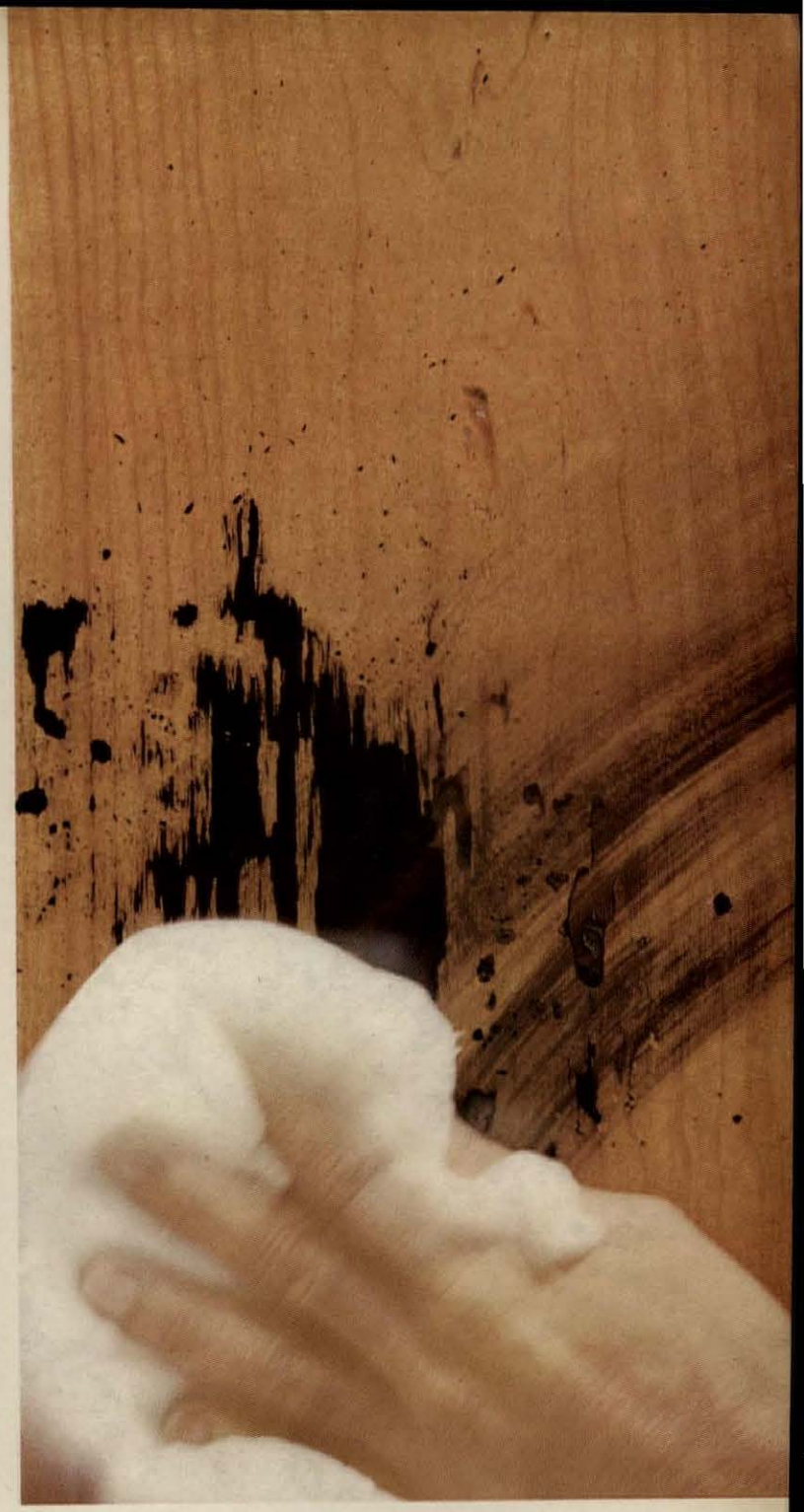

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dene—T.M. for panels, doors, molding, film, The Goodyear Tire & Rubber Company, Akron, Ohio

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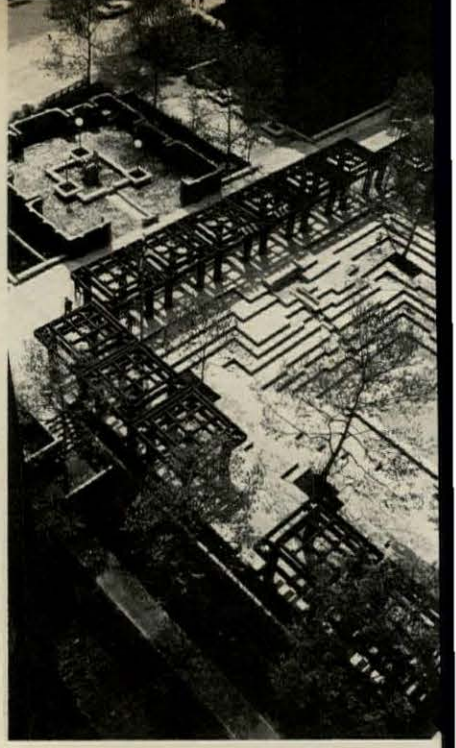
Louis Reens

"This project is intimate, understated and gracious, thoroughly appropriate to the age group served. It fits its site and is especially suitable to its purpose. Sensitively detailed."
C. THURSTON CHASE LEARNING CENTER, Eaglebrook School, Deerfield, Massachusetts. Architect: *The Architects Collaborative, Inc.* (principals in charge: *Sarah P. Harkness and Herbert K. Gallagher;* job captain: *Sherry Proctor);* associate architects: *Campbell, Aldrich & Nulty;* (principal in charge: *Walter Campbell);* structural engineer: *Souza and True;* mechanical and electrical engineer: *Jackson and Moreland;* lighting design: *William M. C. Lam;* educational consultants: *Donald Mitchell and Robert Anderson;* contractor: *George B. H. Macomber Company.*



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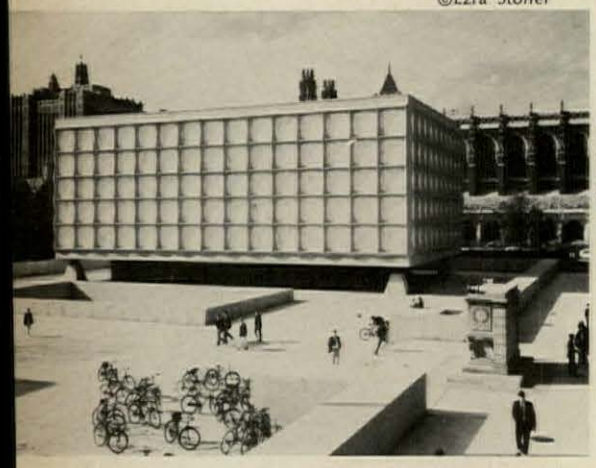


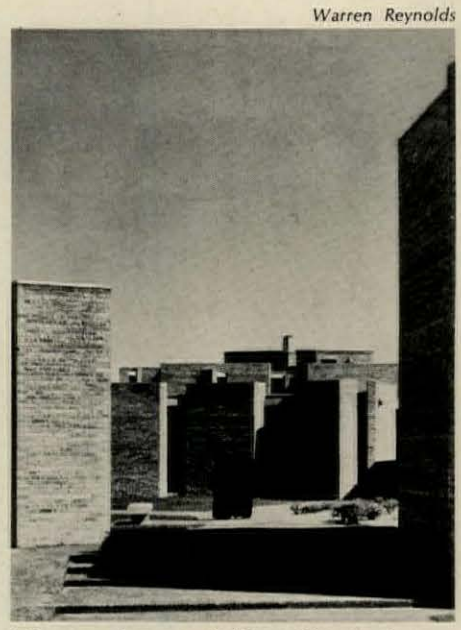
"This is a significant effort of classic discipline, exquisite in concept and execution. A jewel box dramatizing the importance of its rare contents."
BEINECKE RARE BOOK AND MANUSCRIPT LIBRARY, Yale University, New Haven. Architect and landscape architect: *Skidmore, Owings & Merrill, New York;* structural engineer: *Paul Weidlinger;* mechanical and electrical engineers: *Jaros, Baum & Bolles;* sculptural marble court: *Isamu Noguchi;* lighting consultant: *Edison Price;* general contractor: *George A. Fuller Company.*

"This humane, gay and exuberant effor makes no great architectural statement. It orientation is not toward its author, but to ward people of all ages. What this effor accomplishes in correcting the urban scar and meeting the living needs of the neigh borhood and its people cannot be easily measured."
AMPHITHEATRE & PLAZA, Jacob Riis Houses New York City. Architect: *Pomerance & Breines;* owner: *New York City Housing Authority;* landscape architect: *M. Paul Friedberg & Associates;* donor: *Vincent Astor Foundation.*

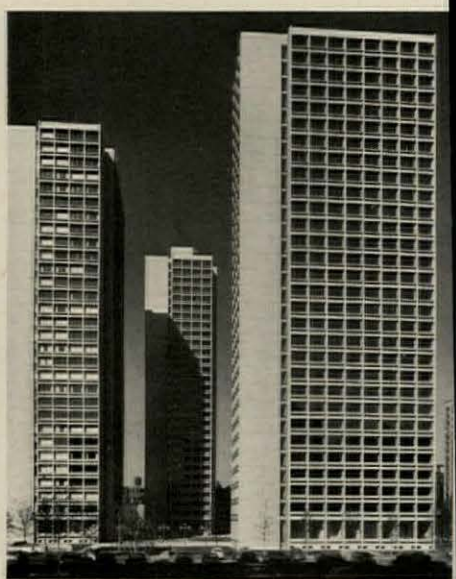
Clyde May

"Here is a simple, forthright and unpretentious statement of the small parish church. Its thoughtful craftsmanship contributes significantly to its quality."
JOHN KNOX PRESBYTERIAN CHURCH, Marietta, Georgia. Architect: *Toombs, Amisano & Wells;* structural engineer: *Chastain & Tindel;* mechanical engineer: *McLendon & Holbrook;* electrical engineer: *Bush-May & Williams;* general contractor: *Wesley Moran & Company.*

Warren Reynolds



"The stern impact of this architectural statement clearly defines its religious purpose. Its authority and formidable posture is not without warmth; it is sincere and spiritual. Assisi, The Mount, Palermo—it captures the spirit of them. . . ."
ST. BEDE'S PRIORY, Eau Claire, Wisconsin. Architect and mechanical and electrical engineers: *Hammel Green & Abrahamson, Inc.;* owner: *Sisters of the Order of St. Benedict;* structural engineer: *Johnston and Sahlman;* general contractor: *L. G. Arnold Construction, Inc.*



"Nicely sited with its underground parking concealing its urban necessities. An elegant plan—sensitive and simple. A thoroughly functional and handsomely proportioned curtain wall. The arrangement of three towers is well handled both for itself and its urban neighborhood."
UNIVERSITY PLAZA, New York University, New York City. Architect: *I. M. Pei & Partners; James I. Freed,* architect in charge; structural engineer: *Farkas & Barron;* mechanical and electrical engineers: *Caretsky & Associates;* general contractor: *Tishman Construction Company.*

his theater combines dignity and gaeity and under a classically disciplined structure . . . the performing arts have no alibi ere—they have been challenged. The generous and imaginative design of the public aces recognizes that the audience is part the show."

SSE H. JONES HALL FOR THE PERFORMING RTS, Houston. Architect: *Caudill Rowlett cott, Architects (Charles E. Lawrence, design partner; James B. Gatton, technology artner; Thomas A. Bullock, managing partner);* owner: *City of Houston;* structural engineer: *Walter P. Moore;* mechanical and electrical engineers: *Bernard Johnson Engineers, nc.;* landscape architect: *Robert H. Reed & Michael L. Isle, A.S.L.A.;* acoustical consultants: *Bolt Beranek and Newman;* theater esign-engineering consultants: *George Izeour;* contractor: *George A. Fuller Company.*

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"Cool, white, and tropical, the dignified and mannered statement of this building fits it well to the climate and cultural needs of its location."

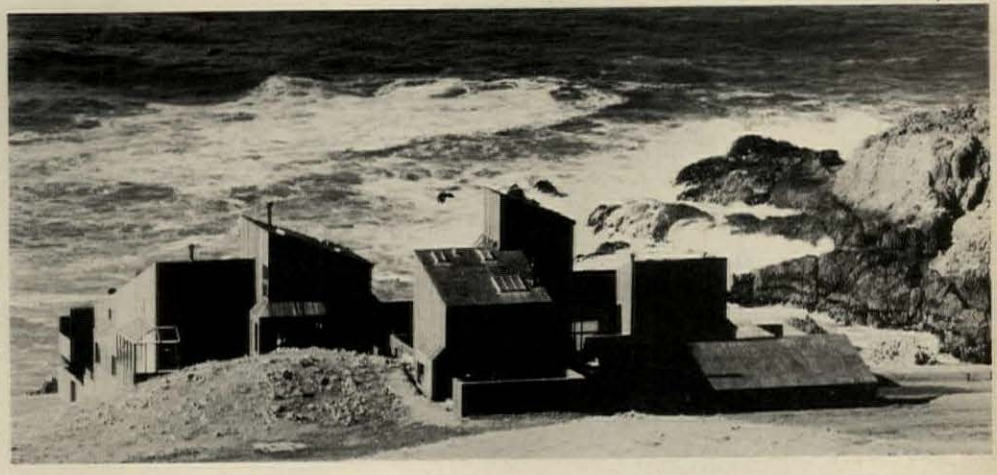
MUSEO DE ARTE DE PONCE, Ponce, Puerto Rico. Architect: *Edward Durell Stone;* owner: *Luis Ferre Foundation, Inc.;* structural engineer: *Paul Weidlinger Associates;* mechanical-electrical engineer: *Consentini Associates;* landscape architect: *Edward Durell Stone Jr.;* construction supervision architect: *Carlos Sanz, A.I.A.;* general contractor: *Edward J. Gerrits de Puerto Rico, Inc.*

R. Wenkam

"The gracious interiors, the gardens and green spaces capture the flavor of a resort hotel. It is completely suitable for a subtropical climate with its restrained detailing and fine special sequences in a completely contemporary idiom."

MAUNA KEA BEACH HOTEL, Kamuela, Island of Hawaii; Architect and structural, mechanical and electrical engineers: *Skidmore, Owings & Merrill, San Francisco;* owner: *Laurence S. Rockefeller;* landscape architect: *Eckbo, Dean, Austin & Williams;* general contractor: *Haas & Haynie.*

Morley Baer



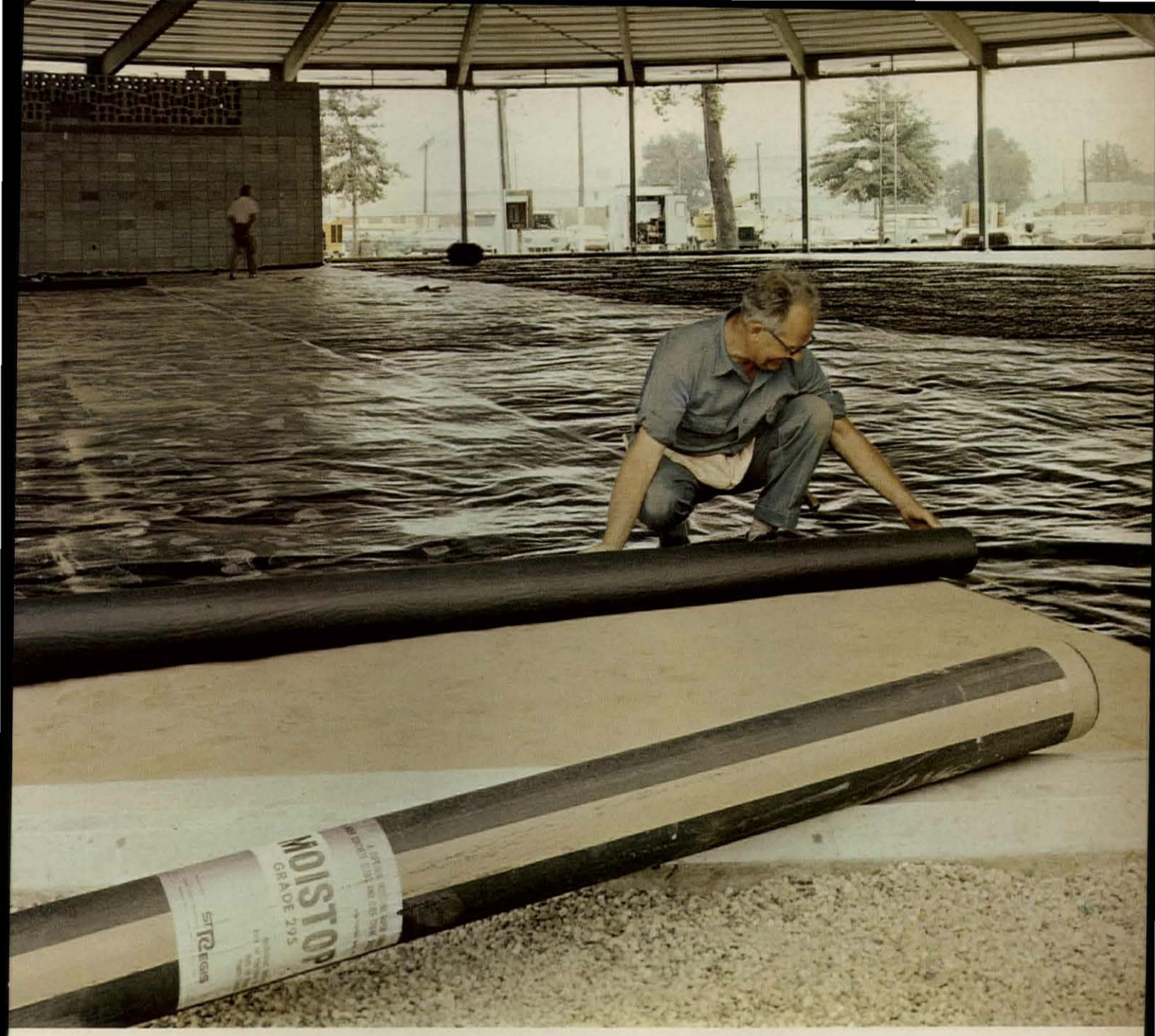
An exuberant and frolicsome solution to the art time vacation apartment. Good fun, resh and wholesome—a place for congenial eople intent on a few hours, or a day or wo, of escape from the city and its problems."

EA RANCH CONDOMINIUM I, The Sea Ranch, California. Architect: *Moore, Lyndon, Turnbull, Whitaker;* owner: *Oceanic Properties, Inc.;* structural engineers: *Davis and Morreau, Associated;* landscape architect: *Lawrence Halprin & Associates;* graphics: *Barbara Stauffacher;* general contractor: *Matthew D. Sylvia.*

Morley Baer

"This modest building nestles gracefully into a site of relaxed natural beauty. The civic function lends importance and dignity without awesome overtones. The center plaza unites its three governmental functions and provides for the future."

LOS GATOS CIVIC CENTER, Los Gatos, California. Architect: *Stickney & Hull;* structural engineer: *McClure & Messinger;* mechanical engineer: *Chamberlain & Painter;* landscape architect: *Sasaki Walker & Associates, Inc.;* contractor: *E. A. Hathaway & Company.*



New, Superstrong Moistop-2 Makes Sure Moisture Migration Never Damages The Floor

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SISALKRAFT DIVISION

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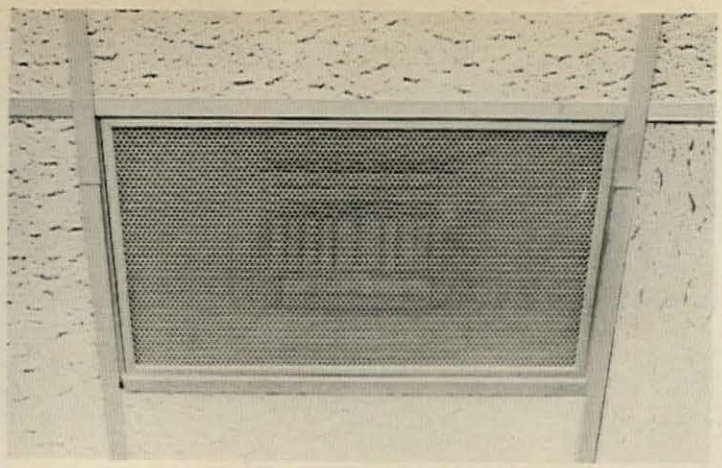

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rrection in credits

"Campus architecture shaped by mas- plans," April, there was a great deal information in the article and the orga- zation within each project made for a ry clear understanding of the nature of e projects. We are pleased.

We have noted a problem, however, nd I am mentioning it now so that a suit- le correction can be made. The prob- m is that the architectural credits for e Rochester Science Complex are in ror. The proper architectural credits e:

> Kenneth DeMay (of Sasaki, Dawson, DeMay Associates)—Anderson Beckwith and Haible—Associated Architects.

s you can see, Kenneth DeMay and An- erson Beckwith and Haible are *both* ssociated architects. This is the way the roject has been thought of since the eginning and how, in fact, the work has een carried out—two architectural firms ssociating together. Unfortunately, the esignation in the article lists me as the rchitect and Anderson Beckwith and laible as the associated architects. In a ery real way this misnomer is extremely mbarrassing to us as well as to our cli- nt, the University of Rochester. We vould all appreciate it, and I especially, f a correction could be made in the next ssue. I realize the difference is a subtle ne, but the implication of the two titles s entirely different.

Kenneth DeMay
Watertown, Mass.

ARCHITECTURAL RECORD deeply regrets the incorrect credits, and realizes that the difference is, indeed, a very important one. We are surely the most embarrassed of all.

Seven deadly sins

The article on office management by D'Orsey Hurst in the April publication is one of the finest and most concisely stated pieces of writing for practice we have ever seen. Its publication is unfortunately two years too late for us, because all seven errors have turned up in our own office in recent months. Only with much pain and considerable cost have we been able to define the problems listed on the two pages of the article. We recommend it to offices large and small.

Henry J. Wald
Wald & Zigas
New York City

When deadly errors eight, nine, and ten show up, please let us know so we can do a follow-up article.

Rudolph? or $11 million?

Your March editorial naturally was of unusual interest to me, since I live in New Canaan, Connecticut.

Tempers were flaring, and there were a number of self-appointed spokesmen making some pretty silly comments to the New York Times and apparently to you.

The issues seem quite clear to the voters. They rejected not Mr. Rudolph but the proposal of the local school building committee that the town spend something over $11 million for a new high school when that committee had been earlier instructed by a vote of the townspeople to spend $5 million.

There was considerable interest among the voters in discovering how much the building cost was inflated by the decision to hire three firms of architects instead of just one. There never was any satisfactory answer given to this question, so I would guess that many who voted against the $11-million building did so with the thought that the inflated figure would drop if the town hired a single architectural firm.

more letters on page 61

continued from page 59

There certainly is no opposition to contemporary design. Take a look at the schools that have been built in New Canaan. And do you know of any community of comparable size that has as much good contemporary architecture among its homes?

Joseph E. Howland
Men's Garden Clubs of America
New Canaan, Connecticut

Do-it-yourself communication

Since my field is business communication, I write to commend your April editorial, "Current Architecture and Its Communication," as a lucid and forthright analysis of a perplexing problem.

In counseling corporate clients who seek to improve the public's understanding of their services, I often advise a do-it-yourself approach:

Each architectural firm has its own potential public relations spokesmen in its employees. If they have been properly informed and motivated, they can do much to improve the public's understanding of architecture via the surprisingly broad range of social and business contacts the average employee has.

Harold Knoll
Public Relations Counsel
Winona, Minnesota

Return to Sanity

We consider the rejection of Breuer's Design for the F.D.R. Memorial by the Fine Arts Commission of Washington a Return to Sanity.

The commission members should be commended for good judgment and courage.

Michal Kunic, Architect
Edward A. Alexander
Frank Ramella
Charles A. Miller
David Dart
Helen Halsim
Carol Watson
James R. Sweer
Francis J. Zokaites

Kind words department . . .

I am writing to say how pleased I am at the article on the three IBM office buildings in the April issue. I think that the handling of the photography and the text is very well done, and that you have made extremely clear the evolution and development of the architectural ideas that I was exploring. Incidentally, this is sure to be of very great and specific help in enabling me to carry out further studies along these lines.

Eliot Noyes
New Canaan, Connecticut

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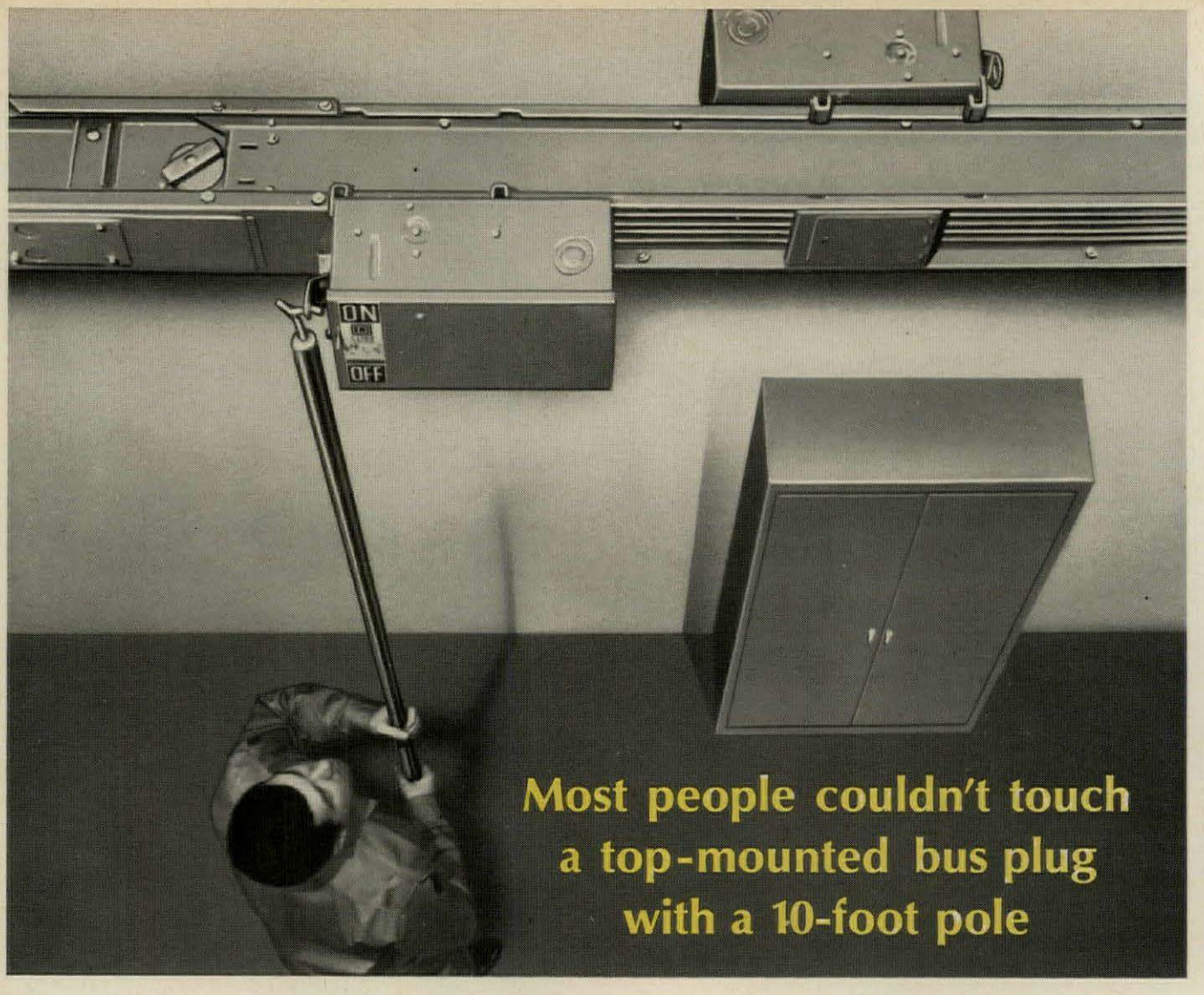

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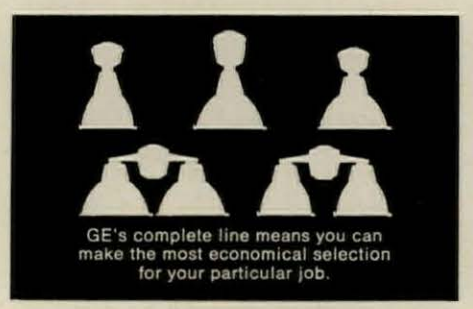
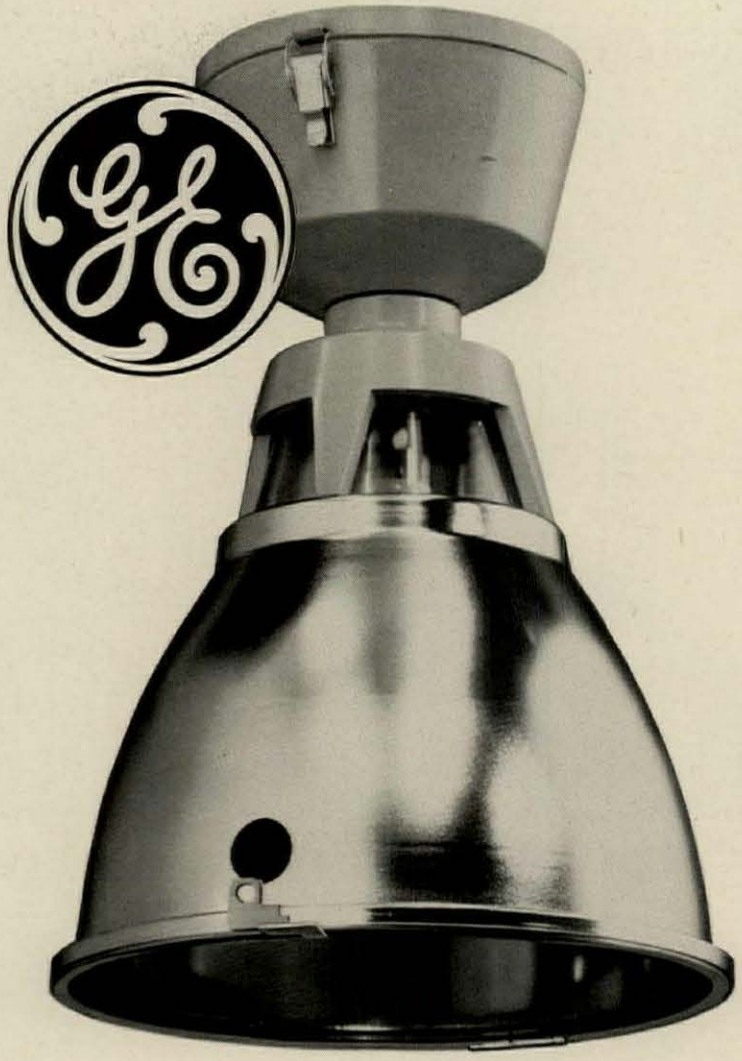
The 48 Filterglow™ models go them one better.

All in all, you can choose from 96 new industrial lighting units for Lucalox™, mercury-vapor or Multi-Vapor™ lamps that keep lighting costs low under almost every plant condition.



GE's complete line means you can make the most economical selection for your particular job.



Filterglow luminaires give you more of the light you pay for. The only air that enters this unit is cleaned first by an activated charcoal filter. Light levels stay high even in locations where dirt concentrations are high.

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Our new 24-page Bulletin GEA-8364 sheds a lot of light on the subject. Write for a copy to General Electric Company, Section 460-97F, Hendersonville, N.C. 28739.

GENERAL ELECTRIC

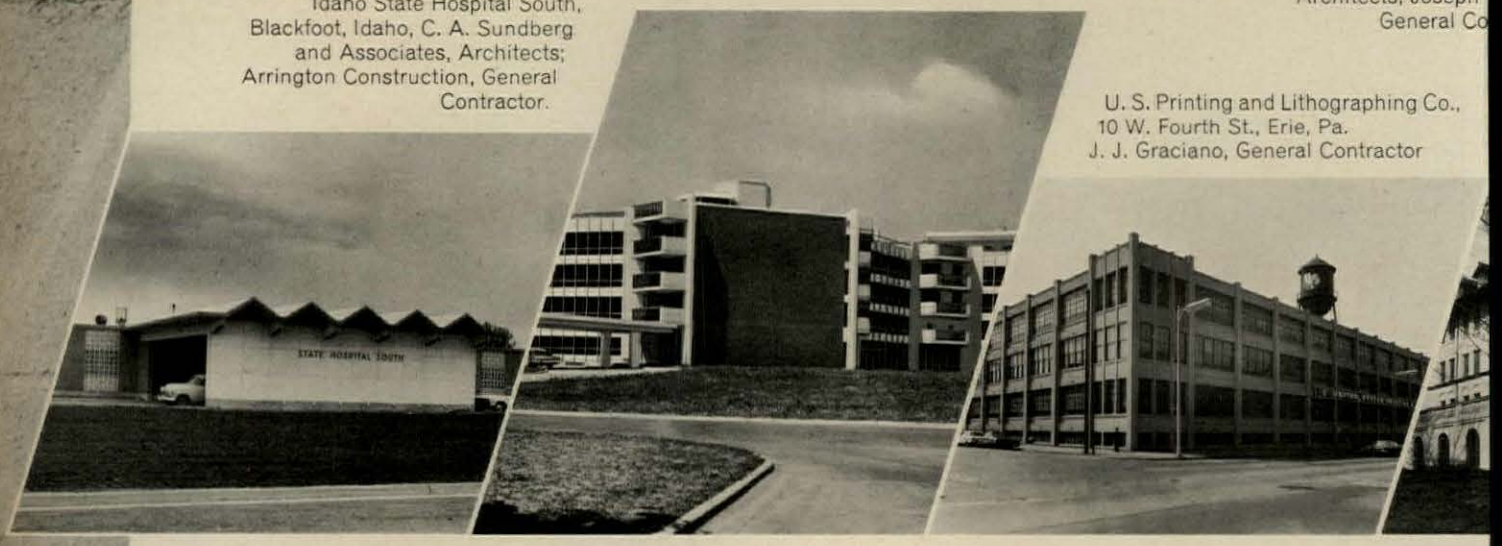
For more data, circle 40 on inquiry card

Idaho State Hospital South, Blackfoot, Idaho, C. A. Sundberg and Associates, Architects; Arrington Construction, General Contractor.

Westminster Manor Apartments, 1400 Jackson Blvd., Austin, Texas. Eugene Wukash, Architect; George A. Fuller Co., General Contractor; Clay Newton, Painting Contractor.

Montclair State Teach Chapin Hall Building, New Jersey, Guilbert Architects; Joseph General Co

U. S. Printing and Lithographing Co., 10 W. Fourth St., Erie, Pa. J. J. Graciano, General Contractor



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colorcoat and super colorcoat

brought long-lasting beauty to these buildings!

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General Electric
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J. F. Kennedy Airport
CBS-TV Center
Niagara-Mohawk Power Corp.
Western Electric
Mohawk Airlines
American Machine & Foundry
Bayer Aspirin
Sun Oil Co.
N. CAROLINA
Southern Bell Telephone
Burlington Mills
OHIO
Standard Oil of Ohio
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Goodyear Tire & Rubber Co.
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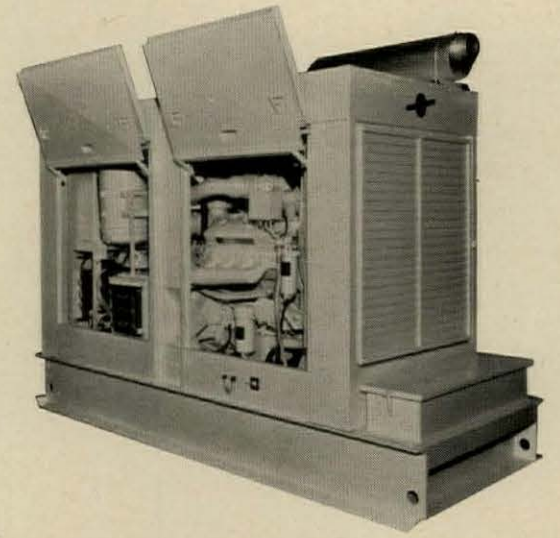
This Unit is capable of being operated on the Purchaser's load; developing the needed, steady, and reliable power suitable for the successful operation of Purchaser's machinery, up to the full rating of the Unit. Should the Unit fail to operate as specified, and after reasonable time, we cannot make it perform as specified, we are agreeable to removing it at our expense and refunding any money paid.



Why should you buy any emergency power unit that provides you with less protection than the Stewart & Stevenson GUARANTEE OF DUTY?

Of course, Stewart & Stevenson also provides the standard factory warranty against defective parts, workmanship or materials . . . as well as certified testing under realistic load conditions.

But, why should you risk the gamble of what happens *if* your unit does not perform as specified *after* installation? *We don't think you should.*

We would like to tell you all the other advantages of Stewart & Stevenson Diesel, Gas or Turbine Powered Generator Sets. We have made more Diesel installations in more varied industries than any other engine distributor in the world. Write or call. A free booklet and catalog are available.

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Branches: Beaumont, Corpus Christi, Dallas, Freeport, Lubbock, Odessa, San Antonio, San Juan/**Representatives:** Abilene, Amarillo, Austin, Brownsville, Hobbs, Longview, Waco, Wichita Falls. Service Dealers Located in Principal Cities/**Export Oil Field:** P. O. Box 360, Floral Park, New York 11001/**In France:** Ets. R. Penven et Cie.; Stewart & Stevenson.

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. . . custom-blends efficiency with lasting beauty

To create an air of spaciousness and beauty, yet utilize every foot of space efficiently in your new hospital construction or remodeling project, call on the experience and talent of St. Charles. Our technical staff and versatile productive resources can solve every space and storage problem. St. Charles casework is *custom-designed* to fulfill *your* hospital's specific requirements for convenience, economy and easy maintenance—and equally important, to coordinate with your decorative theme. The excellence of design, craftsmanship and quality of materials assure the ultimate in lifelong satisfaction when you call on St. Charles.

Hospital pharmacy with custom storage space includes working island unit.

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St. Charles Manufacturing Company, St. Charles, Illinois

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Write Dept. 200 for our "St. Charles Hospital Casework" Catalog.

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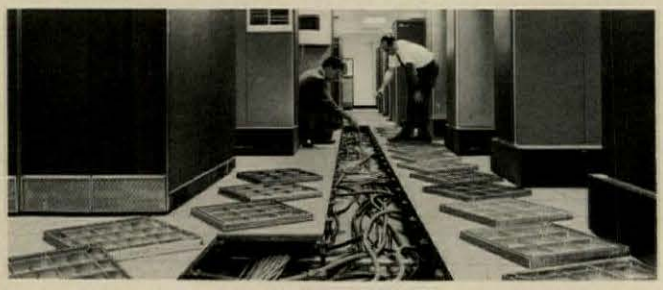

and these 14 other advantages for computer rooms.

1. Greater strength—.080" deflection under 1,000 lb. load.
2. Unique design eliminates stringer interference.
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14. Available throughout the world.

Floating Floors, Inc. is part of the world-wide National Lead Company, a leader in metals and metal products for the past 75 years.

We invite you to compare Floating Floors raised flooring with all others. For further information on Floating Floors write today for detailed brochure.

FLOATING FLOORS is a trademark of Floating Floors, Inc., 111 Broadway, New York, N.Y. 10006, for raised flooring systems.

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Guardian Engineering & Development Co.
Hammond & Gregg Sts., Carnegie, Pennsylvania 15106

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SAVE ON HANDLING, RIGGING and SCHEDULIN
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VESSELS & SHAPES
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This shower head has extra spray channels in non-corrosive, non-stick plungers. Beautifully by Speakman.

From needle spray to flood pattern, showering under **Anystream** provides more pleasure than ever before.

Important new improvements include up to 33% more spray channels. This means a fuller and more even spray pattern. Just a flick of the lever handle and the channeled plungers move in or out . . . to give you *any* stream . . . invigorating needle . . . soothing gentle . . . normal rain . . . or full flood.

Another improvement. **Anystream** plungers are now made of black Lexan, General Electric's high temperature plastic. Lexan has extraordinary resistance to lime and other hard water deposits. Non-corrosive, non-stick plungers mean that **Anystream** will give better performance the day it's installed and throughout the years.

The difference in shower enjoyment is all in the head. And with **Anystream** what a difference. Beautifully designed and exceptionally engineered by Speakman. Why not let Speakman quality speak for you.

Anystream shower heads available with water-saving Autoflo as option.

Send for complete descriptive literature without obligation.

Anystream® costs less really than you think/by **SPEAKMAN**

SPEAKMAN® COMPANY • Wilmington, Delaware 19899 • In Canada write Cuthbert-Speakman • 47 Duke Street, Montreal 3, Quebec

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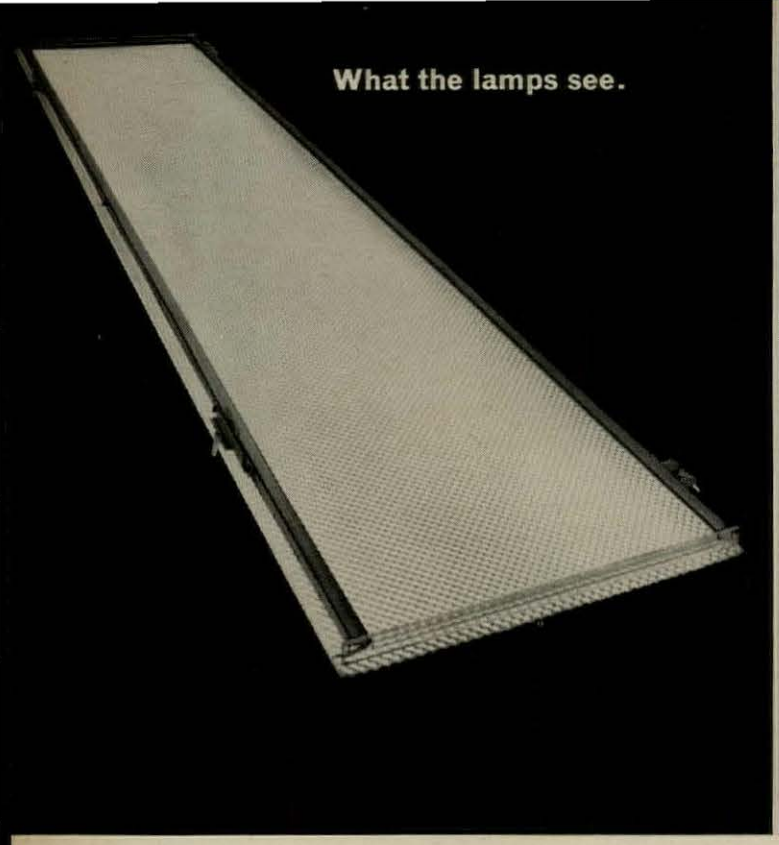
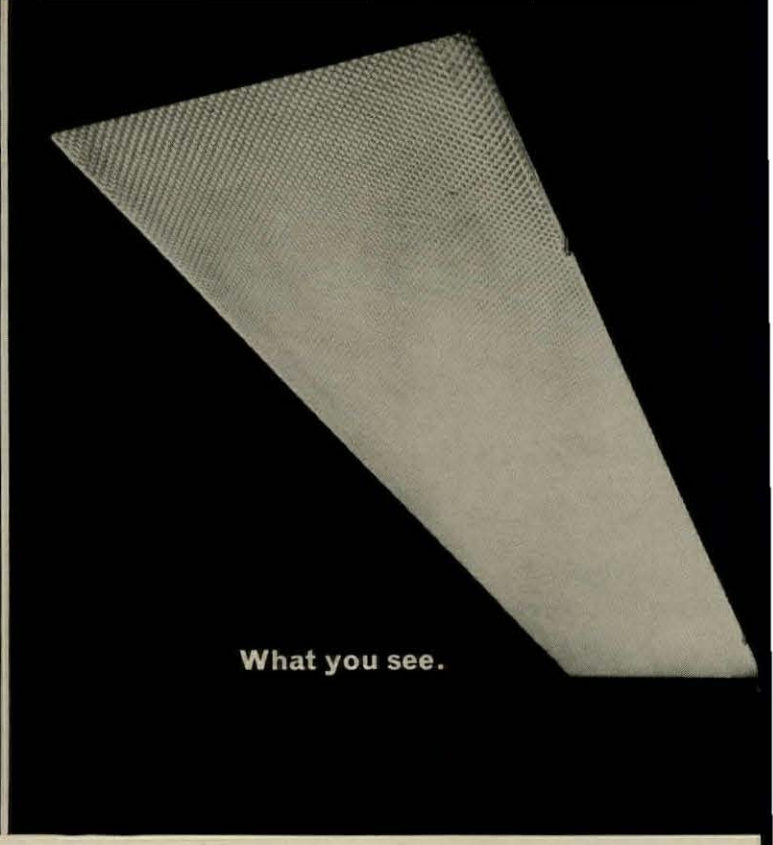




LPI's frameless diffuser has a frame. You can't see it, but it's there to provide the strength, safety, and convenience that no other frameless diffuser has.

You wouldn't know that the LPI frameless diffuser has a frame unless the diffuser door was open. Only then could you see the full-length metal frame that provides the positive hinging, latching, and seating that you just can't get from any all-plastic frameless diffuser.

Thanks to this hidden metal frame, an LPI frameless diffuser can never sag and cause unsightly light leaks. Nor is there any possibility of a plastic pin breaking and making it necessary to replace an entire diffuser door.

Maintenance is easier too. LPI frameless diffusers open and close easily and quickly and can be installed to work from either side. There's never any awkward maneuvering. And once the metal latch is locked, LPI frameless diffusers stay in place without any shifting; they can't fall out.

No metal mullions are visible when LPI frameless diffusers are installed in continuous rows. You can illuminate a hallway, a corridor, or any room with an unbroken path of light. You also get the exclusive LPI feature of metal light traps at each end of the luminaire.

LPI frameless diffusers are available to fit the entire line of LPI recessed troffers and surface units. In fact, they can be interchanged instantly with any LPI frame-style diffuser of the same type. No tools or adapters are required.

You can get LPI frameless diffusers with prismatic lenses in clear virgin polystyrene or acrylic. Write us or ask your LPI representative for a brochure which describes our frameless diffusers in detail.

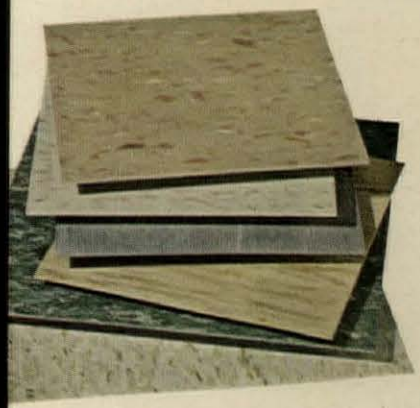
He can also provide information on any of the many other lighting products from LPI.

LPI FLUORESCENT LIGHTING

Lighting Products Inc., Highland Park, Illinois 60035

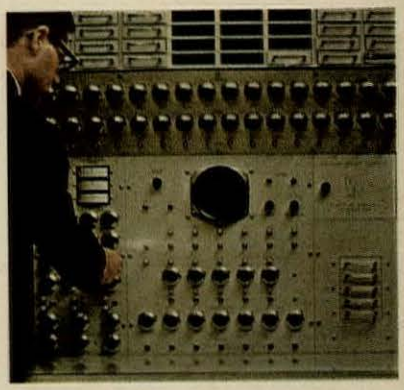
For more data, circle 47 on inquiry card

9 reasons why Ruberoid vinyl asbestos meets all the floor requirements of your clients



1. HIGH STYLE COLORS in stone, chip, marble patterns. 12" x 12" tiles, ⅛" and 3/32" gauges.

2. PATTERNS go all the way through. Milled down sample shows pattern at .025", .050", .075".



3. STANDARDS meet, often exceed Federal specifications. Rigidly quality-controlled.

4. RESISTS grease, stains, fading, fire, commercial hazards. Stands up under heavy traffic.

5. EASILY MAINTAINED at low cost. Tight, hard surface is easy to clean, keep clean.

6. LOW INITIAL COST. Long service life makes annual cost per sq. foot unusually low.

7. PROMPT DELIVERY anywhere in U.S.A. through local distributors. Plants coast to coast.

8. STREAMLINED, modern plants carry on Ruberoid's 80-year reputation for responsibility.

9. SAMPLERS show the complete line of architectural tiles. Ask your Ruberoid representative.

For more information write

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FINE FLOORING

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For more data, circle 48 on inquiry card

The number of extra people who can fit on an elevator with Otispace-Saver doors depends on the people.

Otis has found a way to save space between car and hoistway. This exclusive Otis engineering development gives you the option of extra car capacity—or extra rentable space in your building. It's standard with a VIP elevator installation. At no extra cost.

Otis®

So many extras are standard with VIP

Over 500,000 sq. ft. of wall coatings based on Shell Epon® resin simplify maintenance at A&P food processing plant

High-gloss, seamless Ply-Tile coating, based on Epon resin, prevents penetration of contaminants, cleans easily and quickly. A&P chose these coatings in yellow, blue, green and ivory for this food processing facility.

Durable, high-gloss coatings resist stains, clean easily in A&P's huge new Ann Page Division plant.

When A&P needed wall coatings for its new Horseheads, N.Y. food processing center, it chose M.A.B. Ply-Tile* based on Shell Epon resin. Reason: the stain resistance, impermeability, toughness and attractive appearance of these coatings. Applied a year ago over cinder block and poured concrete, A&P finds them easy to maintain and remarkably resistant to tough service conditions.

Cost-saving durability

A&P packages and processes mustard, relishes, jelly, vinegar and ammonia and many other products at this plant. Ply-Tile coatings withstand exposure to oils and chemicals from these products, without discoloration or failure. They also stand up to high temperatures and moisture without softening or cracking.

Maintenance is easy

Ply-Tile coatings form a seamless, glossy surface that is impervious to contamination. Thus, the walls can be cleaned easily and quickly.

Coatings applied in 3 steps

1. First, an acrylic block filler was squeegeed onto base surfaces.
2. An Epon resin-based primer was applied.
3. A high-solids coating based on Epon resin (12 mils thick) formed the outer surface.

Is there an idea here for you?

Almost any building can benefit from the durability, easy maintenance and good looks of coatings based on Shell Epon resin.

Mail the coupon if you would like to have a supplier of these cost-saving materials contact you. Please state the use you have in mind.

*M.A.B. Ply-Tile is a product of M. A. Bruder & Sons, Inc., Philadelphia, Pa.

A&P food processing plant at Horseheads, N. Y., is the world's largest prestressed concrete building. Building perimeter is 1½ miles, and area under roof exceeds 1,500,000 square feet.

Shell Chemical Company
Plastics and Resins Division

Shell Chemical Company, Plastics & Resins Division
113 West 52nd Street, N.Y., N.Y. 10019

Please have a supplier of tough, high-gloss Epon resin-based coatings get in touch with me. I am interested in coating _____

Name _____

Company _____

Address _____

City _____ State _____ Zip _____

AR-6

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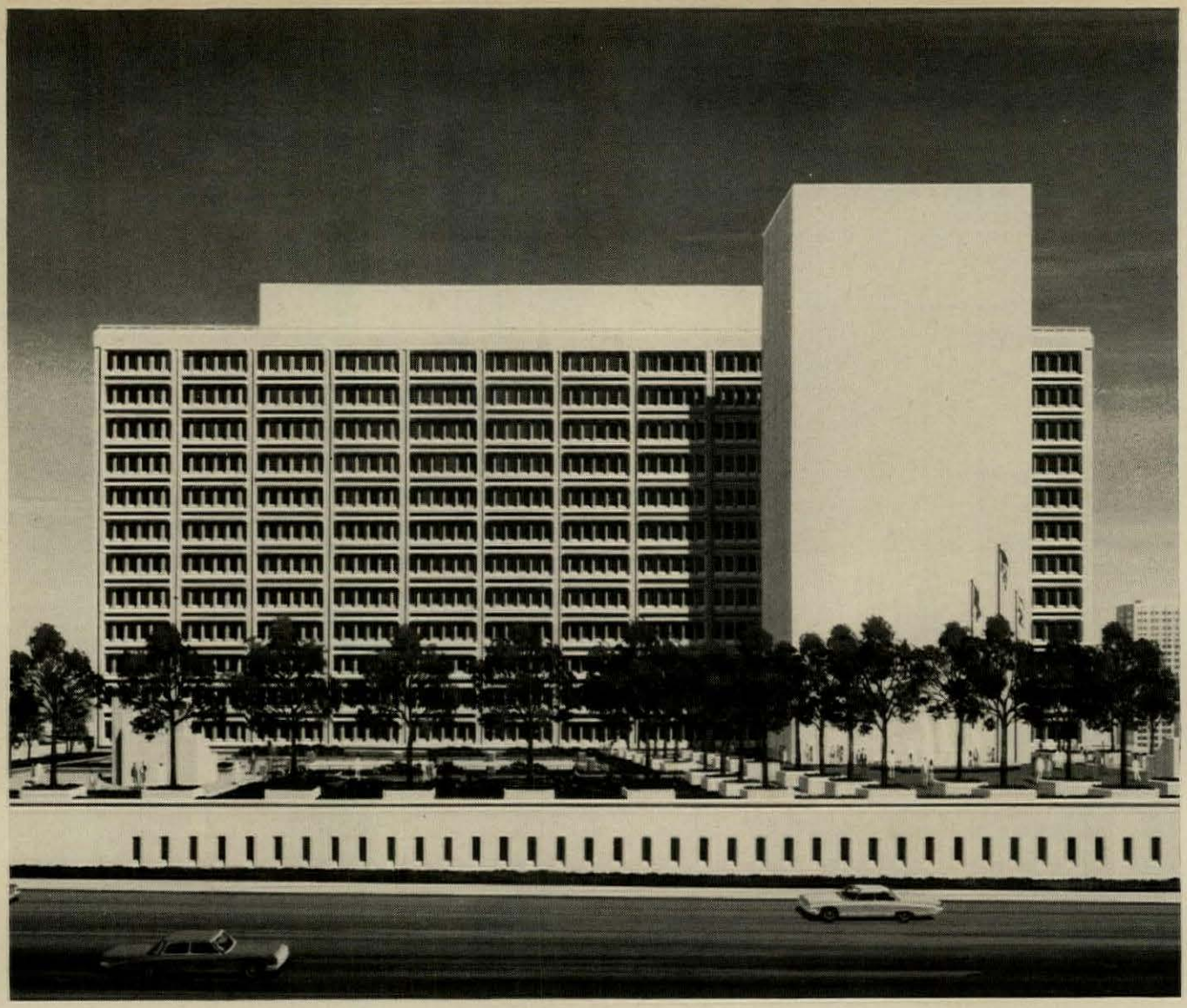

Time-defying Eljer plumbingware chosen for new state office building in Pennsylvania

Decades from now, the plumbing fixtures inside this recently completed building in Harrisburg, Pennsylvania, will look and perform like they did the day they were installed.

That's because they bear the name Eljer, whose Master Crafting builds quality plumbingware. And whose design refuses to be outdated by the calendar.

No wonder more and more architects think Eljer when they think plumbingware. Too, they know that Eljer's full-line availability assures their client on-schedule delivery.

For all the facts, call your Eljer representative. Or write:
Eljer, Dept. AR 7, P.O. Box 836,
Pittsburgh, Pa. 15230.

Recently completed, this magnificient, 16-million-dollar, high-rise office building will provide offices for 4,500 employees of eight state departments. *Owner:* General State Authority. *General Contractor:* Consolidated Engineering Co., Inc. *Collaborating Architects and Engineers:* Altenhof & Bown; Eshbach, Pullinger, Stevens & Bruder; Jordan, McNee, Parnum & Yule. *Consulting Engineers:* Urban Engineers, Inc.; H. F. Lenz Company. *Plumbing Contractor:* Herre Bros., Harrisburg.

MASTER CRAFTED ELJER®
SINCE 1904 FINE PLUMBING FIXTURES

Eljer Plumbingware Division, Wallace-Murray Corporation

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Five ways to add the Marlite touch.

Start with any room — in any building. Then select a Marlite Decorator Paneling with the touch that brings your interior plan to life. Wide choice? No one offers more than Marlite. Select from rich new textures, bold or muted colors, exciting patterns and designs.

Maintenance? Hardly worth mentioning. Marlite plastic-finished hardboard is the original wash-and-wear paneling. Its durable baked finish shrugs off heat, moisture, stains and dents — wipes clean with a damp cloth.

If you haven't seen Marlite's 1967 Decorator Paneling line, look in Sweet's File or write Marlite Division of Masonite Corporation, Dover, Ohio 44622.

1. TEXTURED WORMY CHESTNUT reproduces every surface detail of a rare, costly wood. You can feel the texture!
2. TEXTURED TAPESTRY captures the look and feel of hand-woven fabric.
3. TEXTURED TRAVERTINE duplicates the characteristic texture of Italian limestone.
4. TEXTURED LEATHER has all the masculine good looks of real cowhide.
5. RIVIERA TILE features a classic pattern in gold, set apart by score lines.

Marlite®

PLASTIC-FINISHED
DECORATOR PANELING

ANOTHER QUALITY PRODUCT OF MASONITE® RESEARCH

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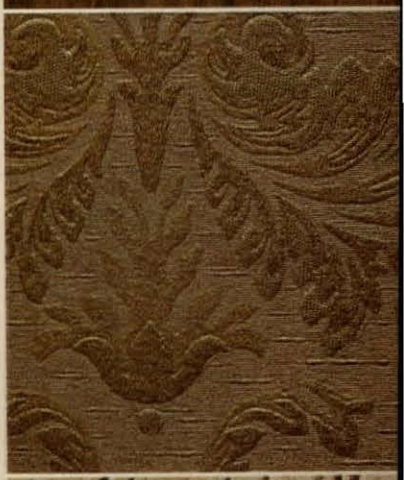
6720R



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Give me a room with some guts

Give him PACE by Simmons— it'll handle the pre-game calisthenics

"Horse" Fitzgibbons doesn't know much about interior design. But he knows what he needs in his room —tough furniture—the kind that can hold its own day after bruising day.

So give him new Simmons PACE, the dormitory furniture designed to take on the "Horses" for years to come, while providing all the comfort, room and practical working area a student needs.

PACE systems capitalize on every inch of floor space, often freeing up enough for additional rooms. The Wall-a-Bed® is a real space saver and features the famous Beautyrest mattress for full comfort and long-term durability.

Seven standard wardrobes can be used individually or in a variety of combinations. They can be assembled by unskilled laborers in minutes for a considerable savings in labor costs.

Available in Contemporary, Traditional or Elite styles, PACE cabinets, dressers, desks, bookcases and chairs are both functional and comfortable for the student. They're tough, built to take abuse for years.

Simmons PACE represents true value for the school and freedom for the architect/designer.

Call your Simmons representative for full information, or write directly to us.

SIMMONS

CONTRACT DIVISION • MERCHANDISE MART • CHICAGO, ILL. 60654

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A complete line of advanced architectural hardware, including the Sargent Maximum Security Syste

New Haven, Connecticut • Peterborough, Ontario

HA speeds up processing, revises some standards

rchitects working on multi-family proj-
ts to be insured by the Federal Hous-
g Administration will soon be able to
t day-by-day advice from the Federal
ousing Administration's district offices.

To speed up the paperwork and cut
d tape, FHA has devised the "Acceler-
ed Multifamily Processing" (AMP)
stem, now being tested in four FHA
istrict Offices.

One element of the AMP system is
new method of working out final ar-
itectural approval. It is hoped that the
MP system will generate personal and
equent communication between FHA's
ersonnel and the architect, cutting
own the waiting period now imposed
hile the architect prepares his plans,
nly to have FHA question details be-
re granting approval.

"We hope to avoid shuttling plans
ack and forth between our local of-
ces and the architect," says Charles
ieman, assistant FHA commissioner for
echnical standards.

Minimum property standards
lso revised to speed processing

mproved liaison with the architect
hroughout the design stage is only one
f several steps proposed by the AMP
ystem. Other steps include:

- FHA's Minimum Property Stand-
rds (MPS) will now have the new status
f "official guides," to be used as flexibly
s possible.
- Architects will be encouraged to
nention alternatives in product specifi-
ations. Intent is to do away with change
rders. "At least we want to hold them
o a minimum," says Dieman.
- FHA will begin estimating costs
n a square-foot basis rather than by de-
ailed quantity survey.

This permits the sponsor and FHA to gather information needed to assess a project's feasibility before the architect is commissioned.

MPS relaxation spreads to multi-family projects

The Federal Housing Administration will soon relax its Minimum Property Standards for multi-family projects financed through the partially-subsidized programs of 221d3 and 221d4.

Objective of the new standards is lower cost, since many "d3" sponsors and architects have had a problem in bringing the design in under the maximum mortgage amounts permitted for the subsidized housing.

FHA will not be distributing the new standards to its field offices until June or July, however. (Printing the new regulations will take at least that long, FHA anticipates).

Here's a quick rundown of some of the more significant changes: up to a 50 per cent reduction in the ratio of auto parking spaces to units; the allowable distance from parking space to unit entrance lengthened from 100 feet to 250 feet; deletion of the 8-foot planting strip between parallel parking bays; widths of parking spaces reduced; somewhat smaller room sizes—for instance, in one-bedroom units: living rooms may be reduced from 160 to 140 square feet; dining from 100 to 80 square feet; kitchen from 60 to 50 square feet; combined living-dining-kitchen, from 270 to 230 square feet.

Elevator requirements have been relaxed a bit. For instance, one elevator instead of two is permitted in a seven- or eight-story project if there are only five units per floor. Required elevator speeds have been reduced somewhat according to a new formula worked out with elevator representatives.

Perhaps the most controversial, from an engineering standpoint, is the change in heating plant requirements. For projects with 60 units or more, each of the two cross-connected boilers must carry only 50 per cent of design load rather than 70 per cent.

These changes resulted from a study undertaken by Arnold Kronstadt, Washington consulting engineer, for the National Association of Home Builders. Kronstadt felt, for instance, that the change in boiler systems represents a major cost savings, although FHA and some of its consultants disagree.

In the process of reviewing its multi-family MPS with NAHB, FHA discovered certain changes could be made for all multifamily programs, not just the subsidized ones.

Thus, FHA is also going to make these changes in its MPS in the next few months:

- Revision of the yard set-back formula to account for varying weights and depths of the building.
- Open risers on public stairways for two- and three-story buildings.
- Travel distance from unit to stairs has been increased to 100 feet for all types of buildings.

ARCHITECTURAL BUSINESS THIS MONTH

GAO urges Congress to change A-E contract fees

After months of study and consultation with all parties concerned, the General Accounting Office, reporting to Congress in April, expressed the opinion that the procurement of the services of architect and engineering firms is and should be subject to competitive negotiation (instead of by negotiation with a single company) in order to procure the most acceptable technical or design proposals.

GAO also expressed the view that statutory requirements for the submission of cost or pricing data prior to the award of negotiated contracts apply to architect-engineer contracts.

GAO's report recommended that: 1) the present statutory 6 per cent limitations imposed on architect-engineer fees be repealed; 2) Congress clarify its intent as to whether the competitive negotiation requirements of the Federal Public Law 87-653 are to apply to the procurement of architect-engineer services; 3) in the absence of clarification of Congressional interest, the Department of Defense should appropriately revise the Armed Services Procurement Regulations to reflect a proper implementation of Public Law 87-653; and 4) the General Services Administration also should similarly revise the Federal Procurement Regulations.

The views and comments of architectural and engineering societies were incorporated into the report.

Professional committee formed to study GAO report

A committee was formed by six architectural and engineering professional societies to consider their position relative to the recent General Accounting Office Report to the Congress on statutory and regulatory requirements relating to architect-engineer fees and contracting procedures.

The new group, to be known as the Committee on Federal Procurement of A-E Services, includes representatives of the American Institute of Architects, American Institute of Consulting Engineers, American Road Builders Association, American Society of Civil Engineers, Consulting Engineers Council, and National Society of Professional Engineers.

Richard H. Tatlow, III, president-elect of ASCE, was elected chairman of the group. Samuel A. Bogen, president-elect of CEC, and Philip A. Hutchinson, Jr., AIA's director of governmental affairs, were elected vice chairman and secretary, respectively. Other committee members are: David N. Yerkes, FAIA; Richard Walker, AICE; A. W. Banister, NSPE; and Gerald T. McCarthy, ARBA.

GAO report on Rayburn Building may offer clues to review

GAO also in April completed its examination of construction and related costs of the Rayburn House Office Building, as required by the Legislative Branch Appropriation Act of 1965.

Its review centered around change orders, architect-engineering fees, and conformance with plans and specifications. Contract changes to June 30, 1965 on this $98-million building totaled $8 million, covering about 1,450 change orders (including $70,000 in clocks!).

GAO found that many of t changes could have been incorporat in the basic contracts, thus avoidi the disadvantages inherent in contr changes; and it was pointed out in t report that many of the changes result from the piecemeal mode of appropr tion and the multiple, assertive occ pancy which also maintained some co trol of appropriations.

Fees paid to the construction arc tects (Harbeson Hough Livingston & L son) were significantly more than wou have been allowed by GSA, according GAO. It was pointed out, however, th GSA fees, while lower in nominal p cent, make separate appropriations cover program and schematic develo ment, separate contracts and biddi documents for various stages of t work, travel expenses, and other iter of expense to the architect which we expected to be absorbed by the 5½ p cent Rayburn fee.

It was further maintained by GA that the lump-sum contract for landsca architectural services was not the a propriate type of contract in the circur stances existing at the time, and m have been more costly than was nece sary under standard procedures.

The unusual circumstances of th Rayburn Building contract and those certain atypical NASA contracts wi A-E firms may have brought the who problem of inconsistency in governmen A-E relations to the attention of GA which, after all, has only the proble of approving bills for payment with context of the intent of the Congress.

Architect-manufacturer communications advanced

The perennial search for improved communication between architects and manufacturers has been stimulating activity from both the architects' and the producers' side of the business. Two architectural firms recently announced a professional advisory service to manufacturers in the design and development of product lines, and the promotion of new material. Robert Martin Engelbrecht and Associates of Princeton, New Jersey have established such a service for manufacturers of basic building materials and equipment, while in New York the new firm of Morris, Salisbury and Cather—combining the talents of E. B. (Ted) Morris, A.I.A., Salisbury Associates, an architectural firm which has made something of a specialty of manufacturers' product literature, and Michel-Cather, industrial advertising consultant—is setting out to provide "an architect-oriented approach to the marketing of architectural building products." A recently completed brochure on the architectural uses of copper is a notable example of the work of the Salisbury firm for the Copper Development Association, Inc., of New York.

Architects support product literature and sales training developments

The second Construction Industry Advertising and Product Literature Conference will be held at the Drake Hotel, Chicago, from October 23-24. Sponsored jointly by the American Institute of Architects, the Consulting Engineers Council, the National Association of Home Builders, the National Lumber and Building Materials Dealers Association, th Producers Council and Sweet's Construc tion Catalog Services, the Conferenc will concentrate on raising the standar of trade literature for the building in dustry. With this in mind, the compet tion for trade literature will be hel biennially in future to give manufac turers more time to produce literatur "that is new, timely, and in keeping wit the needs of the design professionals."

The Producers Council's first Arch tectural Sales Representatives Institute c 1967, held at the University of Colorad in March, was such a success that tw additional meetings have been schedule during 1967—one at Pratt Institute, Ne York from June 13-16, and another a the University of Cincinnati, Ohio i October of this year.

URRENT TRENDS IN CONSTRUCTION

orge A. Christie, Chief Economist
W. Dodge Company,
Division of McGraw-Hill

actors shaping the future for architects

onsider how the market for the services the architect has expanded during the ast two decades. The total value of conruction work done annually has grown eadily from about $20 billion in 1947 the present $75 billion. And within is growth market, some of the hottest mponents have been the building pes which are traditionally the architct's bread and butter; commercial and dustrial buildings, schools, hospitals, nd apartments. Within these areas, the *roportion* of architect-engineer planned ructures has increased.

It's a pretty safe bet that we can ly on the basic growth of the economy provide a continuously expanding tal construction market. But just beause the total construction market will e expanding, it doesn't follow that the olume of architectural work, *as we now it today*, will increase in direct roportion. Some of the important facrs in shaping future demand are:

usiness capital formation: One of the reas of fastest architectural expansion uring the Sixties has been business-reted construction. Since 1961, the conact value of industrial and commercial building projects has grown half-again as fast as that of other architectural building types, and twice as fast as total construction work.

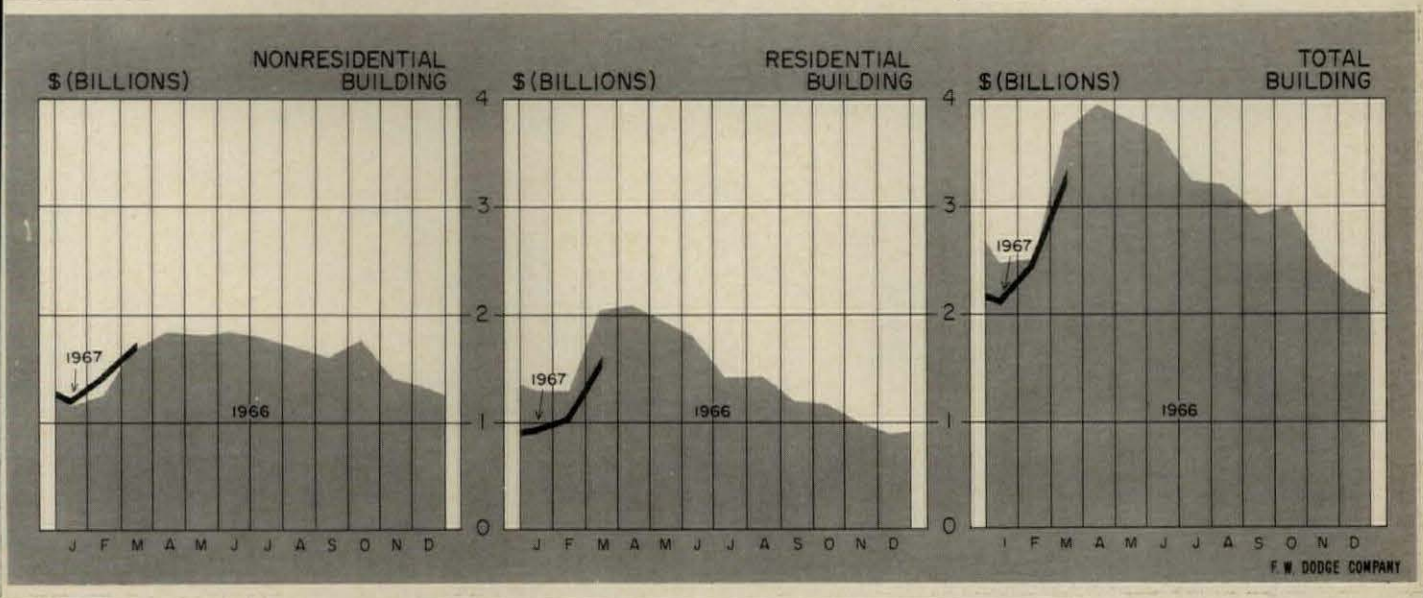
It must be recognized, though, that this surge of business-related building was one aspect of the strongest capital spending boom in our history, spanning the cyclical swing from the '61 recession low to what now may well be the peak, or close to it. We cannot, therefore, expect sustained long-term growth in industrial and commercial building at anything like the 11% average yearly expansion that has taken place in the extraordinary Sixties.

Institutional shift: For the first time in about twenty years, we are catching up with the backlog of needs for elementary and secondary school facilities, and will soon be in balance as far as higher educational needs are concerned. In the Seventies, then, educational building will be a less rapidly growing market for architectural services than it was in the Fifties and early Sixties. However, some of the slack here is likely to be taken up by further expansion in hospital and health facilities, and greater emphasis on various kinds of recreational projects.

Urbanization: Some of the important ways in which coming urban squeeze will alter the architectural market are: (1) The proportion of apartments to single family homes will increase further. (2) More emphasis will be put on rehabilitating existing structures of all kinds. (3) The planning function itself has already become much more highly developed, and will get more so, involving not just projects but whole communities and even regions; not just structures, but all facilities. (4) More resources will go into *nonbuilding* construction as the problems of water supply, air and water pollution, and mass transit become more acute with population density. (5) Government will become more and more involved with the planning and financing of construction.

During the '50's and '60's, a 'designer of buildings' had no difficulty finding all the work he could handle. But unfolding trends suggest that this may not always be the case. To make the most of the markets of the '70's and '80's, the architect will have to redefine his role in much broader terms.

Building activity: monthly contract tabulations

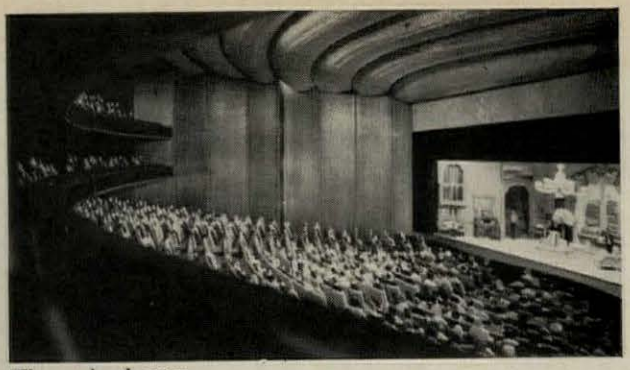


Masterpiece in All-Electric Design

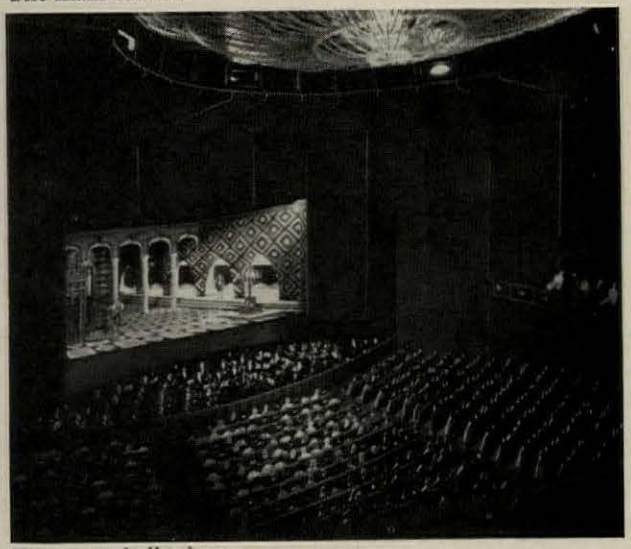
THE JOHN F. KENNEDY CENTER FOR THE PERFORMING ARTS, WASHINGTON, D.C.

to be completed in 1969

Architect:	Edward Durell Stone
Structural engineers:	Severud-Perrone-Fischer, Sturm-Conlin-Bandel Associates
Mechanical and electrical engineers:	Syska and Hennessy, Inc.



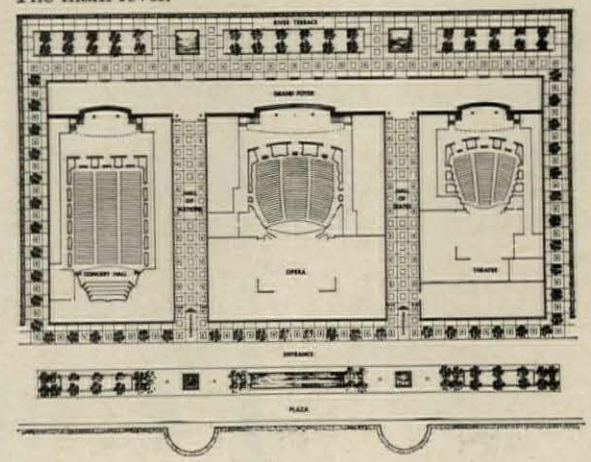
The main theater.



The opera-ballet house.

The concert hall.

The main level.



This theater complex for the performing arts—which will house two theaters, an opera-ballet house and a concert hall—will be served by a single source of energy, electricity. For heating and cooling. And for all other functions requiring power. As a result of this All-Electric design, planners anticipate a substantial reduction in owning and operating costs.

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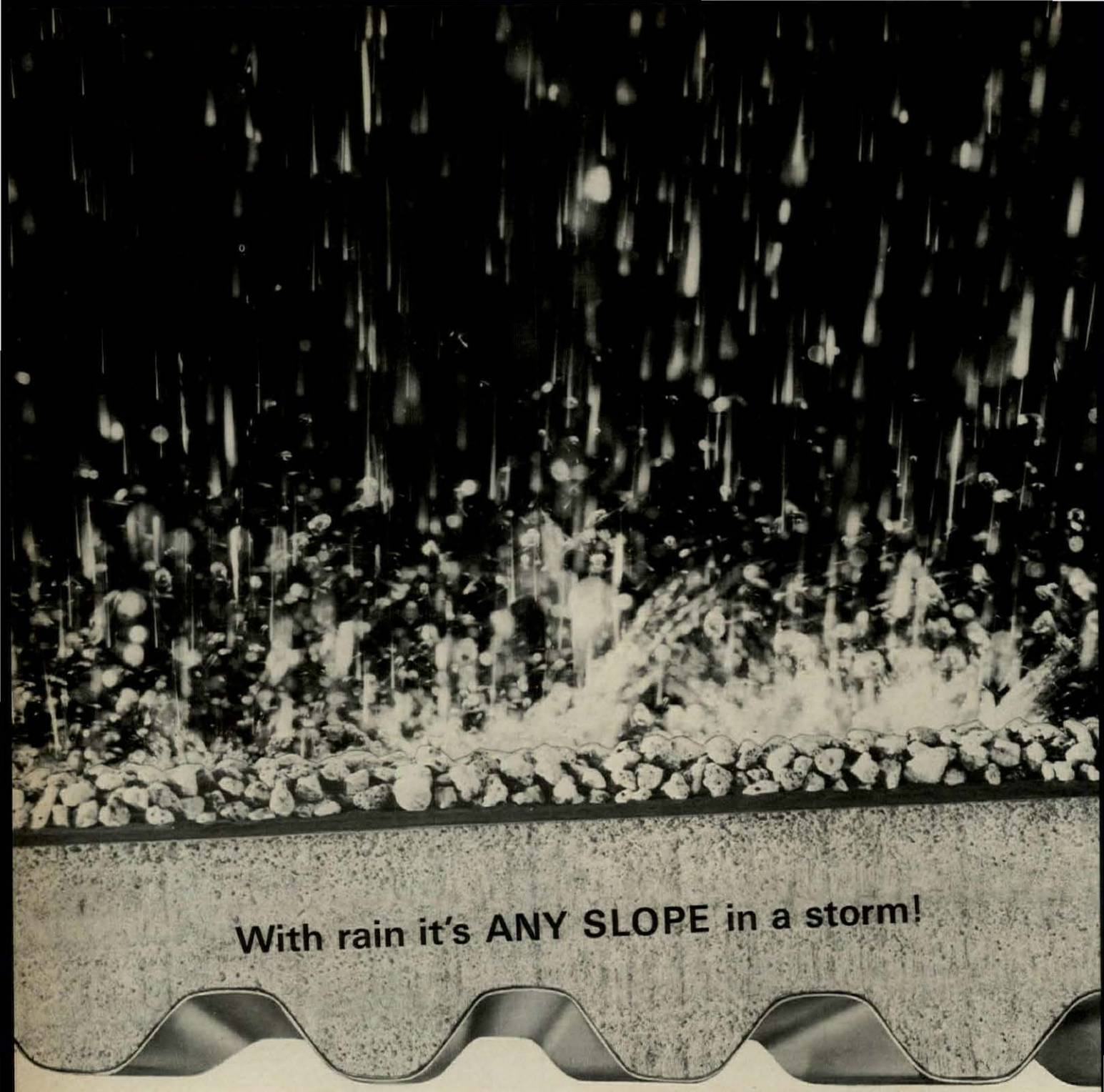

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RENDS AND ANALYSIS

wrence C. Jaquith, Economist
cKee-Berger-Mansueto Inc.
nstruction Consultants

id alternates: gain or loss for architects?

e architect frequently utilizes bid al-rnates to provide flexibility in achiev-g a total contract cost. Yet he generally ceives less value for his building dollar achieving this flexibility. In other ords, a contract involving alternates ill cost more than a contract for the me features packaged in an all-inclu-ve base bid.

lternates give flexibility
ut not equivalent values

onetheless, the use of alternates is a rategy frequently employed when:

The architect wishes to evaluate an un-sual design feature, a new product, or n extraordinary technique in the local onstruction market without committing firmly to the project.

Confidence in the architect's estimate r in the stability of the bidding market s weak, and the value of the basic project cope is not accurately established.

The architect fears that his basic proj-ct scope will cost more than the funds vailable, and hopes to reduce its cost vithout redesign.

A project scope other than that repre-ented by the contract documents is de-ired, and the architect chooses not to e-draw the documents.

The penalties of re-bid are onerous, s when project completion time is es-ential, funding considerations demand n immediate award, etc.

Alternate construction elements must e provided because the corresponding lements in the base bid are proprietary.

lternates can be rationalized—
ut they can be overdone

On the surface the foregoing seem to be easonable motives for employing bid lternates. And, insofar as the intended goals can be achieved without causing off-setting difficulties, the use of bid al-ernates is justified. Unfortunately, al-ernates are used far too widely. In many gencies they become the rule rather han the exception, and are frequently sed where few advantages accrue.

Contractors resent extra pricing,
nistrust motives behind alternates

Potential difficulties arise initially be-cause contractors dislike the use of alternates. They resent the additional estimating expense involved in pricing. This burden would be unnecessary, they believe, if the architect did his job properly —i.e., designed a building within the project budget.

An even more important and far-reaching concern of contractors is that an array of bid alternates may provide the means for the owner or architect to select a favored bidder from a competitive group.

For example, consider the following language from typical specifications:

"The contract will be awarded to the lowest responsible and reliable bidder for the base bid, plus or minus the cost differences of such alternate material as may be selected by the State Architect."

Or: "The Government reserves the right to make award to the bidder whose aggregate bid on any combination of aggregate bid schedules is low."

It is clear that if competition is stiff for a project bid under either of these specifications, and if a number of alternates is indicated, there may be several low bidders, one each for different combinations of base bid and alternates. The temptation to choose a combination which favors the low bid of a "cooperative" contractor will surely arise if other conditions permit such a choice.

When contractors get cagey
competitive bidding is impaired

In a sense, the very idea of more than one low bidder for a given project is slightly absurd. Competitive bidding is essentially an exercise of strategy. The contractor must give serious consideration to the probable behavior of his competitors. This becomes most difficult for a contractor faced with the possibility of being low for the base bid but not for the "chosen" package of alternates. One might reply that the solution lies in computing the alternates in precisely the manner used in figuring the base bid. In such a case, the low contractor for one would be low for all.

But this argument does not hold up for two reasons: It ignores the strategic aspects of bidding. Contractors, to be successful, simply must consider what their competition will do. With a long list of alternates, a new element is added. They must now ask, "What will the architect do?" and "What alternates represent work most desired by the owner?"

Furthermore, alternates are not estimated or priced by a contractor in the same manner as a base bid package. The usual routine of pulling together prices from subcontractors and suppliers for a single lump sum bid doesn't work for bids which include multiple alternates.

Eliminating alternates at bid time
is not the real answer

Some architects and some public agencies, recognizing the inequities in the practice outlined above, use alternates as means to adjust a bid price, but not to assist in the selection of a low bidder. The specification requirements then call for award to be made to the low responsible bidder for the base bid alone. The architect may then select such alternates as he wishes to contract for from the proposal of the low bidder. Unfortunately this remedy is often as painful as the disease it is meant to cure.

Value of building dollar
for alternates is too low

If a contractor is chosen on the basis of his low bid for the base package alone, without regard to the prices proposed for the alternates, he is not compelled to quote reasonably for the alternates.

In the absence of these strategic considerations, contractors tend to price additive alternates somewhat higher, and deductive alternates somewhat lower than fair value for the work to be performed, for several reasons.

First of all, it would be foolish to do otherwise. Since strategic considerations always lead to trimming bids rather than expanding them, the additive alternate bid in the absence of competitive pressures will be higher.

Secondly, the burdens of pricing multiple alternates are such that many suppliers or subcontractors cannot or will not quote accurately and responsively to the general contractor. Thus while the general contractor may have an excellent firm quote from a subcontractor for the base bid, he may not have reliable in-

formation from that supplier for the work involved in an alternate. In such cases he must guess at the value of that work, and to protect himself, he will guess high (or low in the case of deducts).

Thirdly, it is common practice among contractor's estimators to price "add" alternates at cost plus markups for overhead and profit (as for a change order), and to price "deduct" alternates at direct cost alone.

Finally, some contractors so resent the use of multiple alternates that they may price them punitively, to discourage such use on future projects.

Too many alternates may discourage competitive effort

Perhaps the most destructive effect of bids which involve alternates is that they often discourage keen competitive effort among contractors even for the work involved in the base bid. Faced with more projects than he can find time to estimate, a contractor will often pass up those with burdensome alternate provisions. If he does bid, it may be a "courtesy" gesture which does not in any way reflect his best efforts.

Some contractors view multiple alternate contracts as an admission that the architect doesn't know his busine At best the presence of alternates refle the architect's doubts about the rel tionship between expected bids and t project budget.

And yet, minimizing risk on a pr ect where there is an element of unce tainty about the outcome may sometim be necessary. At the race track this known as "hedging a bet" and, as gambling, it must be recognized th lessening the odds against failure in th way is accomplished only by compr mising the possible gains. In other word don't load the specs with alternates.

European methods for controlling the construction cycle

Anyone, from the architect to the unskilled laborer, whose livelihood is dependent on the rate of construction activity, is quite aware of the economic fluctuations that characterize this unique industry. These cyclical and seasonal swings may be inevitable but the experience of other advanced nations suggests that remedies do exist.

Government policies a major force in shaping industry growth

The extent to which this policy can affect the rate of construction either directly or indirectly is quite evident. For construction, as for the rest of the economy, the goal of fiscal and monetary policy is the achievement of economic growth with full employment and stable prices. Yet it often seems that policies undertaken in the interests of the general economy are not always in the best interests of the construction industry.

Tight money policy restricts construction excessively

For example, a restrictive monetary policy may help limit inflation but—as has been well demonstrated may—disproportionately effect residential and commercial construction. Direct government action through increased public building programs may coincide with increased private construction that has been indirectly stimulated by government policy. The result can be an inflated construction market with cost excesses, labor and material shortages.

Many European countries, on the other hand, have found that measures designed to dampen severe fluctuations in construction activity are compatible with over-all economic policy.

Construction permits or licenses restrict inflation, spread work

One widely used method is the system of issuing *construction licenses*, which are simply permits to build. If the government feels that construction is progressing at too rapid a pace so as to create inflationary cost increases, labor shortages, and materials scarcities, then they simply restrict the amount of building permits issued. This method is practiced in England, Sweden, the Netherlands, and Switzerland. It is by no means a complete answer. For while it is effective in slowing down the rate of construction activity, it does not effectively work to stimulate it. Merely issuing more permits does not guarantee a greater rate of building without some other incentive.

Tax rebates promote building when it is needed

Because of this, these countries employ various means to stimulate construction. To increase private building, various forms of *tax rebates* are offered. There is, however, an essential difference between this method and incentives offered in the United States. For example, the United States will influence construction activity by such means as the re-establishment of the 7 per cent investment credit, and accelerated rates of depreciation. This policy, however, is directed toward influencing the level of *general* economic activity and not specifically toward construction. The short- and long-run impact on the rate of construction activity is not the sole consideration.

The method of tax rebates, on the other hand, is designed to stimulate private investment *specifically* in construction, when there is a lag. And as another method of restraint, Sweden assesses *tax penalties* on those companies that undertake construction during periods of excess activity.

Having public building plans in reserve cuts lead time

Public construction in the European countries is increased through government policies similar to those employe by the United States. But it is mor than a mere increase in the amount c public projects. Both Sweden and th Netherlands maintain a reserve of plan for various public projects. As a resul construction can be started almost a once if the situation demands. This elim inates the long lead time that occurs o most projects.

Northern countries focus on winter slumps

Some countries have developed uniqu schemes to soften seasonal fluctuations As might be suspected, they are pri marily northern countries: Canada, Den mark, Germany, and Sweden. As in the northern part of the United States, con struction tends to drop off sharply dur ing the winter months. This situation a perennial problem in the U.S., create severe unemployment problems. Sweden encourages winter construction with its system of licensing. In preference to this method, Canada subsidizes buyers whose homes are completed during the four winter months.

Germany, on the other hand, offers subsidies to builders during the winter months. This has had a remarkable effect on seasonal unemployment, which has been reduced from over 300,000 to under 50,000 in six years.

All of these systems encourage mechanization, the use of pre-fabricated and new materials, and have encouraged technical improvements and research to make winter operations more profitable, U.S. constructors please note.

Government programs are a major force in determining the trends of future construction activity—in both the public and private sectors. The goal of over-all economic policy is stable growth and toward this end the unique problems of the construction industry cannot be ignored.

NDEXES AND INDICATORS

illiam H. Edgerton
anager-Editor, Dow Building Cost Calculator,
F. W. Dodge service

UNE 1967 BUILDING COST INDEXES

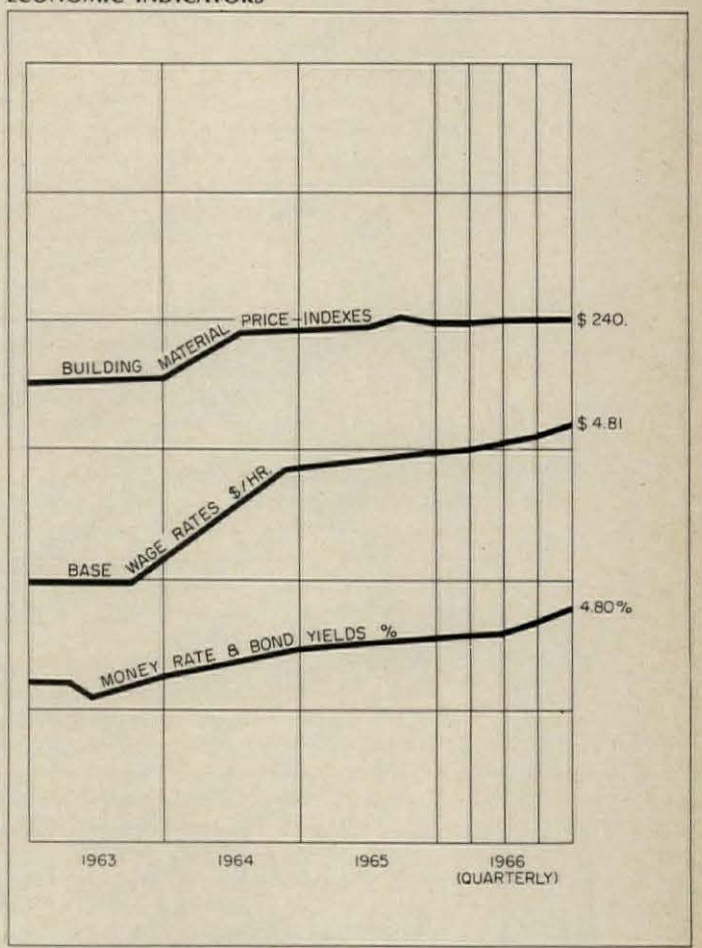
1941 averages for each city = 100.0

Metropolitan area	Cost differential	Current Dow Index residential	Current Dow Index non-res.	% change year ago res. & non-res.
U.S. Average	8.5	279.7	298.0	+2.26
Atlanta	7.2	318.1	337.4	+3.19
Baltimore	7.7	278.6	296.3	+0.62
Birmingham	7.5	258.1	277.5	+2.20
Boston	8.5	252.5	267.3	+1.74
Chicago	8.9	309.8	325.8	+2.46
Cincinnati	8.8	266.4	283.2	+1.45
Cleveland	9.2	287.3	305.4	+2.45
Dallas	7.7	262.3	270.9	+2.25
Denver	8.3	283.9	301.8	+1.02
Detroit	8.9	288.0	302.4	+4.47
Kansas City	8.3	250.6	265.3	+1.47
Los Angeles	8.3	284.5	311.3	+2.01
Miami	8.4	274.1	287.7	+1.83
Minneapolis	8.8	278.6	296.2	+2.27
New Orleans	7.8	251.7	266.7	+2.06
New York	10.0	295.3	317.6	+3.99
Philadelphia	8.7	277.4	291.2	+1.95
Pittsburgh	9.1	259.7	276.1	+1.11
St. Louis	9.1	278.4	295.0	+2.83
San Francisco	8.5	363.5	397.7	+3.05
Seattle	8.4	254.7	284.7	+1.99

Differences in costs between two cities may be compared by dividing the cost differential figure of one city by that of a second; if the cost differential of one city (10.0) divided by that of a second (8.0) equals 125%, then costs in the first city are 25% higher than costs in the second. Also, costs in the second city are 80% of those in the first (8.0÷10.00=80%) or they are 20% lower in the second city.

The information presented here indicates trends of building construction costs in 21 leading cities and their suburban areas (within a 25-mile radius). Information is included on past and present costs, and future costs can be projected by analysis of cost trends.

ECONOMIC INDICATORS

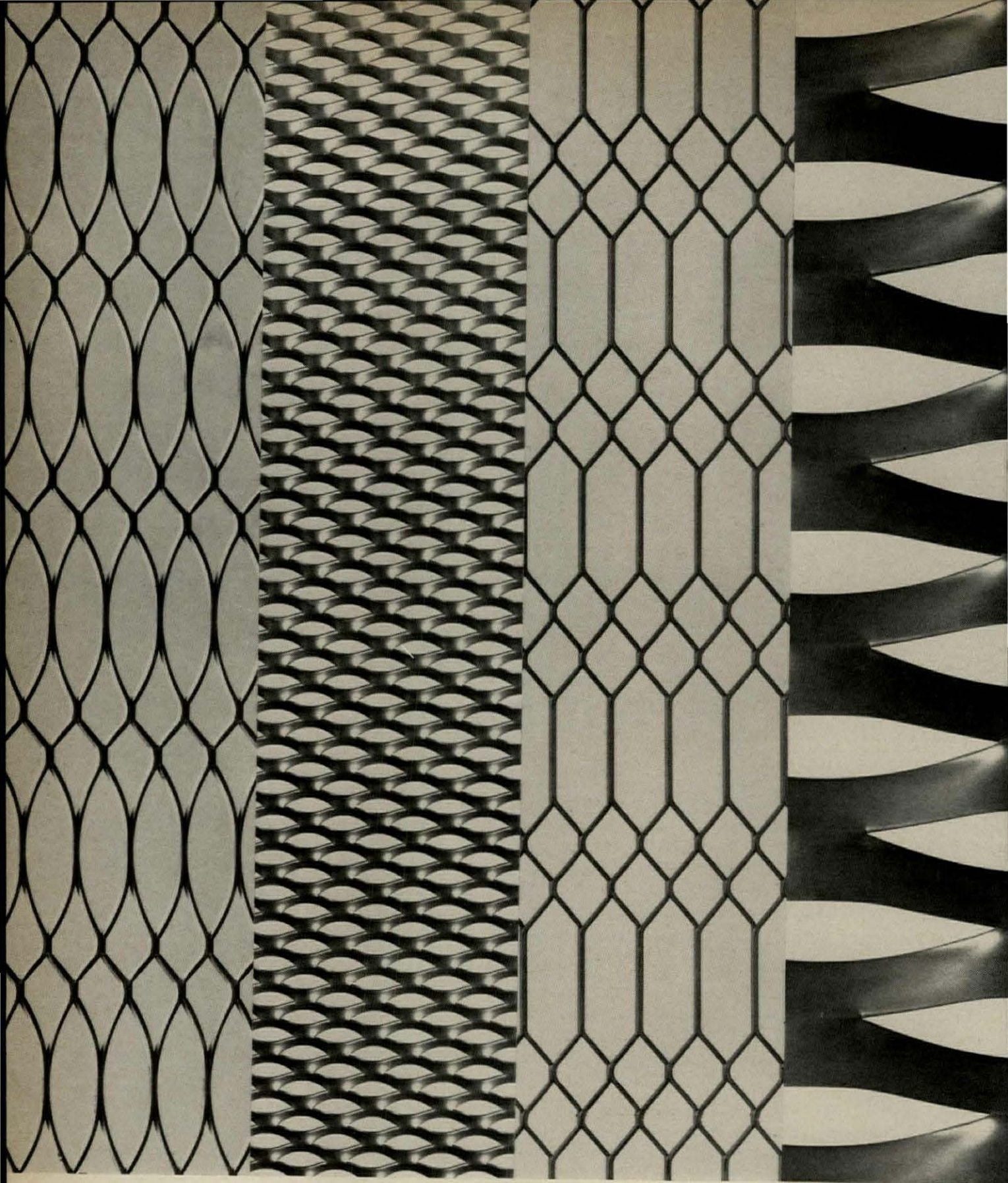


HISTORICAL BUILDING COST INDEXES—AVERAGE OF ALL BUILDING TYPES, 21 CITIES

1941 average for each city = 100.00

Metropolitan area	1952	1960	1961	1962	1963	1964	1965	1966 (Quarterly) 1st	2nd	3rd	4th	1967 (Quarterly) 1st	2nd	3rd	4th
U.S. Average	213.5	259.2	264.6	266.8	273.4	279.3	284.9	286.3	287.3	290.4	286.6	292.7	—	—	—
Atlanta	223.5	289.0	294.7	298.2	305.7	313.7	321.5	322.2	323.3	328.5	329.8	332.4	—	—	—
Baltimore	213.3	272.6	269.9	271.8	275.5	280.6	285.7	288.6	289.6	289.4	290.9	290.4	—	—	—
Birmingham	208.1	240.2	249.9	250.0	256.3	260.9	265.6	267.1	268.1	269.7	270.7	272.9	—	—	—
Boston	199.0	232.8	237.5	239.8	244.1	252.1	257.8	258.5	259.6	260.9	262.0	262.9	—	—	—
Chicago	231.2	284.2	289.9	292.0	301.0	306.6	311.7	312.6	313.7	318.9	320.4	320.4	—	—	—
Cincinnati	207.7	255.0	257.6	258.8	263.9	269.5	274.0	274.7	275.7	277.2	278.3	278.7	—	—	—
Cleveland	220.7	263.1	265.7	268.5	275.8	283.0	292.3	293.0	294.1	299.2	300.7	300.0	—	—	—
Dallas	221.9	239.9	244.7	246.9	253.0	256.4	260.8	261.7	262.6	265.8	266.9	267.6	—	—	—
Denver	211.8	257.9	270.9	274.9	282.5	287.3	294.0	294.6	295.5	296.6	297.5	297.6	—	—	—
Detroit	197.8	259.5	264.7	265.9	272.2	277.7	284.7	285.5	286.5	295.7	296.9	298.0	—	—	—
Kansas City	213.3	237.1	237.1	240.1	247.8	250.5	256.4	257.3	258.2	260.0	261.0	260.8	—	—	—
Los Angeles	210.3	263.6	274.3	276.3	282.5	288.2	297.1	298.0	298.6	301.6	302.7	303.6	—	—	—
Miami	199.4	256.5	259.1	260.3	269.3	274.4	277.5	278.4	279.2	282.9	284.0	283.4	—	—	—
Minneapolis	213.5	260.0	267.9	269.0	275.3	282.4	285.0	285.7	286.6	288.3	289.4	292.0	—	—	—
New Orleans	207.1	242.3	244.7	245.1	248.3	249.9	256.3	257.1	258.0	258.8	259.8	262.3	—	—	—
New York	207.4	265.4	270.8	276.0	282.3	289.4	297.1	297.8	298.7	302.8	304.0	309.4	—	—	—
Philadelphia	228.3	262.8	265.4	265.2	271.2	275.2	280.8	281.7	282.6	285.3	286.6	287.1	—	—	—
Pittsburgh	204.0	243.5	250.9	251.8	258.2	263.8	267.0	268.9	270.1	270.7	271.7	272.2	—	—	—
St. Louis	213.1	251.9	256.9	255.4	263.4	272.1	280.9	282.2	283.2	287.0	288.3	290.3	—	—	—
San Francisco	266.4	327.5	337.4	343.3	352.4	365.4	368.6	376.2	377.7	384.7	386.0	388.1	—	—	—
Seattle	191.8	237.4	247.0	252.5	260.6	266.6	268.9	271.1	272.1	273.9	275.0	276.5	—	—	—

Costs in a given city for a certain period may be compared with costs in another period by dividing one index into the other; if the index for a city for one period (200.0) divided by the index for a second period (150.0) equals 133%, the costs in the one period are 33% higher than the costs in the other. Also, second period costs are 75% of those in the first period (150.0÷200.0=75%) or they are 25% lower in the second period.



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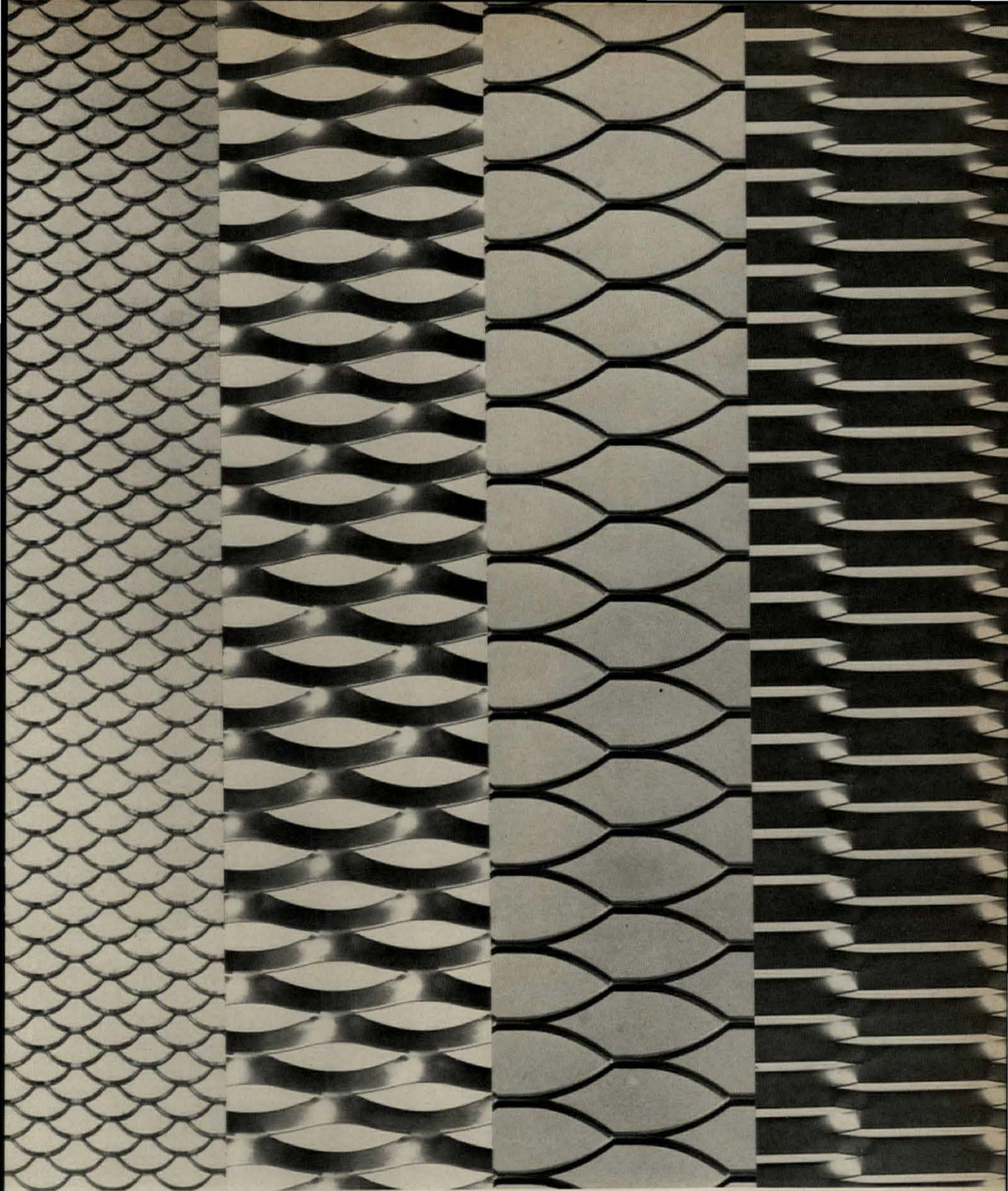

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N ADDRESS

harles Luckman, F.A.I.A.
he American Institute of Architects Convention
ay 16, 1967

. . . our uncommon profession"

Part one of two parts

n preparation for this talk today, I wrote 2 architectural firms, of varying size and uccess, and asked each the same ques- on, "What is the single most important roblem facing architects today?" Forty- ne replied. That, in itself, is an electrify- g return; but equally stimulating was he wide range and diversification of heir replies. The "single, most important roblem" turned out to be many most mportant problems: The architect as eader of the team, design, lack of trained nd educated people, getting new busi- ess, urban renewal, the changing forces f society, storage and retrieval of in- ormation, effect of court cases on liabil- y, fee scales of public agencies, the ercentage fee system, lack of commu- ication with clients, quality control, cost ontrol, complexity of projects, lack of usiness acumen, a decent profit.

When I realized how important their eplies were, and how limited my time vas today, I inveigled IBM into letting ne run a test on their newest, super- luper computer. Into its gaping jaw I fed he 41 replies, together with my request f the machine for an analysis and a brief ummary of their views. Motors whirred, ears meshed; memory drums rotated; inally, into its hot little mechanical hand, loated a small piece of paper with the ryptic message, "Are you kidding?"

Perhaps I am kidding myself with he belief that I can partially answer a few f the problems posed. I know that I ave neither the time nor the sagacity o answer them all, but in the time avail- ble, I will touch on those most fre- uently nominated as of first importance.

Statement: "The single most important problem is design."

am glad this was stated, because it al- ows me the the opportunity of express- ng my earnest conviction, *that we ar- chitects will be set back 100 years unless we integrate the word "design" into ar- chitecture* in a real way.

I must say immediately that if "ar- chitecture" may be said to be a precise profession, "design" must be designated as nearly the opposite. Design is a field in which a man may wander and gather as many nosegays of ideas as his fancy dictates. *Architecture is the field in which the design concept must be trans- lated into reality.*

Actually architects today are sharply divided by two schools of thought. One believes design is all-important, an over- riding influence, with construction costs and engineering function secondary. I cannot, and do not, subscribe to this.

The second school believes that *while design is of great importance, it must be a partner in the total concept.* It must be brought into focus with the total process architecture which includes design, fine arts, engineering, construc- tion, and the economic elements of a project. To this I must, and do, subscribe.

My theme today is simply that we must never permit ourselves to be boxed in by the narrow viewpoint of the what- does-it-look-like school to whom the dictum of design is the beginning and end of all architectural wisdom. Archi- tecture is too big for such smallness. To- day's world is too dynamic for such de- meanor. It is one thing to indulge your- self in so-called "brutal design." It is quite another to have this brutality rub off onto the profession.

In the total team effort which the architect must lead—composed of de- signers, engineers, sculptors, painters, contractors, suppliers, real estate men, economists, and financiers—there is no room for prima donnas, for dilettante daydreamers, for eccentric ego maniacs. *We are builders. We want to build. We want both the beautiful and the best.*

How far the architect as a designer concept has failed in this total concept might be measured by the fact that *in 1966, architects took part in only one- third of the $72-billion-worth of con- struction in the United States.* The re- maining two-thirds, or $48 billion, was done by package dealers, contractors, engineers, and by designers who possess poetic license, but not an architectural license. It is not difficult to pin down the responsibility for this, but, like a hot poker, nobody wants to grab it. What is the fundamental reason for this shock- ing lack of participation? *I suspect it is because we have tended to forget our relatively humble beginnings.*

The word architect, like many words derived from the Greek, is made up of two parts: archi—chief, and tekton—a builder. Thus, the original meaning of the word embraces a union of design- ing and building activities, a union which the architect maintained up to the mid- dle of the 19th century. From that time on, he was thought of more as a de- signer than as a builder. Architecture became a fine art, and transferred form the outdoors to an inside *atelier,* where it has remained for nearly 100 years. Perhaps now it is time to go back out- side for some fresh air.

Statement: "The single most important problem is the influence of recent court decisions on the practice of architecture."

There is, of course, no doubt that the judicial courts are having a profound effect on architecture, just as they are on our civilization. In the early days of the thirteen colonies, during the uncom- plicated life of that day and age, the courts found it easy to say, "The law is clear, and therefore our 'decision' is . . . ." In the infinitely more complicated fabric of our life today, the courts find it in- creasingly more difficult to ferret out what must be called the "meaning of the law," and therefore say, "It is the 'opin- ion' of this court that . . . ." But of great significance to us here today, are the ef- fects of those recent court opinions with respect to the professional responsibility and liability of the architect.

Twelve years ago, I gave a talk be- fore the California Council of Architects on "Cost Control." I said, in part, that the term *"cost estimating" was as an- tiquated and unrealistic as the age-old phrase in our contracts, "the architect is not legally responsible for the accuracy of his cost estimates."* I observed at that time that, while I recognized an architect was not legally responsible, he did, in my view, have a *moral* responsibility as great as or greater than a *legal* one.

In the intervening years, the courts have proved that I—and our time- honored phrase disclaiming legal respon- sibility—were wrong; that we, in fact, do have a legal position to fulfill. The most

recent, and most far-reaching court opinion, held that the drawings, as instruments of service, were worthless to the owner because the bids were so substantially above the agreed-upon budget that the owner could not make use of the drawings, and therefore, the owner was not obligated to pay the architect.

I think it is clear, therefore, that *what we desperately need to do today is to embrace the concept of creative cost control.* I use the word creative in connection with cost control because we should make the budget work for us, not against us. It is easy to be creative without a budget; it is infinitely more difficult, but equally rewarding, to be creative within the budget.

Once the creative concept is achieved within the framework of the budget, all the development work thereafter must be "controlled" as to cost. This means that both the architect and the client must be controlled. "Breathes there a client, with soul so dead, who has not unto an architect said, 'Well, as long as we are going this far, we may as well add . . .' " Our obligation is to say more than, "Yes;" we are professionally bound to say, "Yes, and it will add this specific amount to the budget." It is not our responsibility to determine policy, but it is our responsibility to give the client accurate cost information on which he can base policy determination. *The client is entitled to make his decision based on fact, not fancy—either his, or our own.*

It follows that each time the architect accepts a commission, he puts the reputation of the profession on the line along with his own. Any embarrassment he causes himself through careless or incapable cost control rubs off on all architects. Conversely, credit reflects on us all. In our uncommon profession, this is our common bond!

Statement: "The single most important problem is getting the architect to assume leadership of a team."

First, I cannot stress too strongly my conviction that in all of our activities, we are learning—to an ever-increasing extent—that *the architect cannot be regarded solely as a "specialist." He must have, rather, a combination of special abilities which make him a "generalist,"* capable of coordinating the work of many specialists. Since architecture is a *total* process, the architect must accept total responsibility for this totality.

This does not suggest that the architect must be a universal genius, equally at home in all fields of knowledge. But this does mean that the word architect must be accepted as a parent word. The architect therefore, must be sympathetic to, and understand, the vast variety of disciplines and activities that go into the development of a total building concept. Otherwise, he is not entitled to be leader of the team.

If the architect is to face toward the future, he must be such a leader. And we do face a fantastic future. Witness these predictions by our CLA Research Division:

- By 1985, more than half of the people will live in cities not yet built. So for better or for worse, our nation's future will be decided in our cities.
- By the year 2,000, less than half a lifetime away, the U. S. population will be 350 million.
- By the middle of the 21st century, some of our present cities will be 100 times as large as they are now.
- By the middle of the 21st century, there will be a 20-hour work week—and the trend toward this will be the most influential factor in our lives.

We have to stretch our minds even to grasp remotely the momentous, the incredible impact of such changes upon our civilization, and therefore upon our architecture. Imagine what all this vast added income, and added leisure, will mean to the design of the future. Imagine what new concepts, products and procedures, must be created to meet the demands of such drastic variations in our industrial and commercial patterns—and in the total environment for the family.

There can be no hope of fulfilling this responsibility, except as the architect develops a cooperative meshing of the multi-faceted talents of his "team," and thereby proves his right to leadership.

It isn't easy! Witness the fact that Walter Gropius, one of the great masters, has, for most of his life, been a staunch supporter of the collaborative approach. He recently, and rather sadly, said: ". . . I have tried to give more incentive by developing a spirit of voluntary teamwork among groups of architects. But my idea has become almost suspect since so many of my colleagues are still wedded to the 19th-century idea that individual genius can only work in splendid isolation."

Dr. Gropius' determined concept of welding a collaborative team is not only applicable today, but research proves that it is rooted in the archives of history. About 425, Pope Paul III granted the following commission—"Master Michelangelo shall be authorized to direct the development of the Tomb of Julius II . . . he shall be authorized to entrust three of the six statues designed for this Tomb to good, esteemed and well selected masters . . . and the other three, among them the Moses, shall be by his own hand. . . ."

The history of that day records that the Pope's Tomb was, in fact, the result of complete collaboration:

- lower story of architecture—by Antonio del Pontasieve
- upper story of architecture—by Urbino
- four Hermes—by Jacomo del Duca
- coat of arms of the Pope—by Donato Benti
- Sibyl and Prophet—by Montelupo
- Madonna—by Fancelli and Montelupo
- Pope's figure—by Boscoli

The guiding hand of this combin effort was that of the talented Mich angelo. Thus do the past and prese converge and merge on the basic ne for the combining of talen.

Statement: "The single most importa problem is client communications."

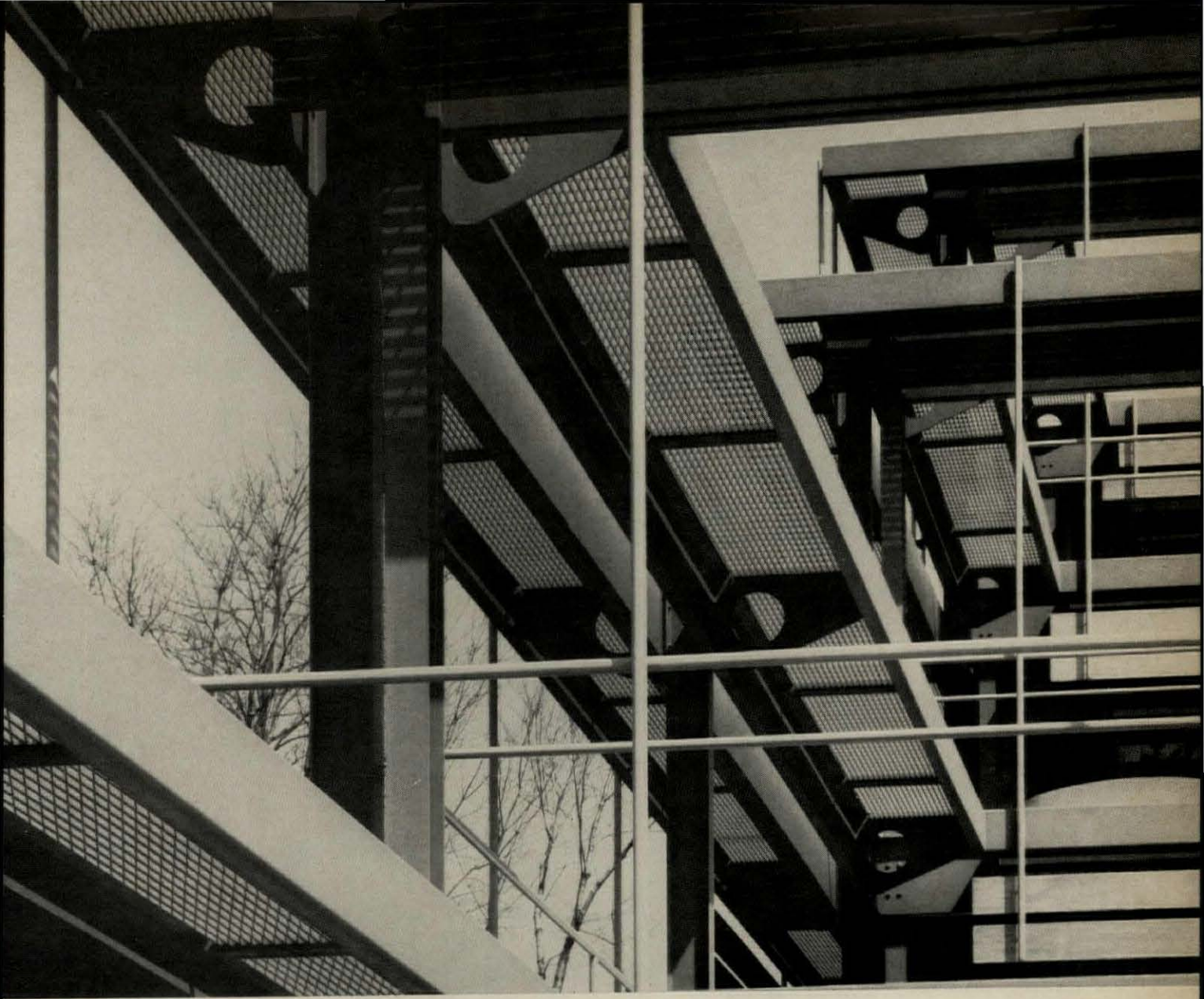
Perhaps one of the reasons we have much trouble communicating with o clients, lies in the fact that we architec have so much trouble communicati with each other! Not too long ago, I re an A.I.A. report on a symposium in whi fifty practicing architects participate The transcript makes strange readin containing as it does an inspired imba ance; a weird combination of gobbled gook and intellectual incest.

Here are some of the pearls of wi dom emanating from that architectur seminar at Cranbrook:

First architect: "A great piece of architectu need not be an equally good solution of t client's problem, and the great architect's clie should tolerate some structural defects." (No by CL: Let us pray for clients who can't read!)
Second architect: "This matter of the incomplet dynamic. I think this is a very important poi that was made, and it is something which I didn report this morning, but we have many tes which show quite clearly that the creative ind vidual is attracted to the incomplete, that whic is in imbalance, that which is complexedly asym metrical, just because it does not create tensio It isn't that he likes disorder, but the disord challenges him to do something about it, an without this kind of incompleteness, one doesn have the kind of enduring motivations which ar so characteristic of the highly creative indivi ual." (Note by CL: Reminds me of a sign on th window of a Miami delicatessen, which rea "Kosher, Hungarian goulash, Dixie style.")
Third architect: "It's true not only of creativ architects, but true of all highly creative groups that they come to sexual expression much late than some of the other groups we have studied Architects, for example, we find quite retarde in comparison to Air Force officers. But the dis tinction should be made between the age of firs intercourse and the kind of sexual vitality, if yo will, that overlaps with a kind of psychologica vitality; and I think that there is a great deal o this kind of vitality in these creative individuals But I think there is a sense in which a great dea of their sexuality, or pregenital sexuality, to us a Freudian term, gets sublimated into their work I think one may say that highly creative archi tects seem to be wedded to architecture. . . ." (Note by CL: As for me, I am queer for girls!)

If our clients, present or prospective, rea this kind of double talk, this kind of clap trap, this kind of hodge podge—they must indeed pale at the prospect of hav ing us spend their hard-earned dollars Our world today is nervous enough without this kind of thoughtless thinking adding to its sense of instability.

(continued next month)



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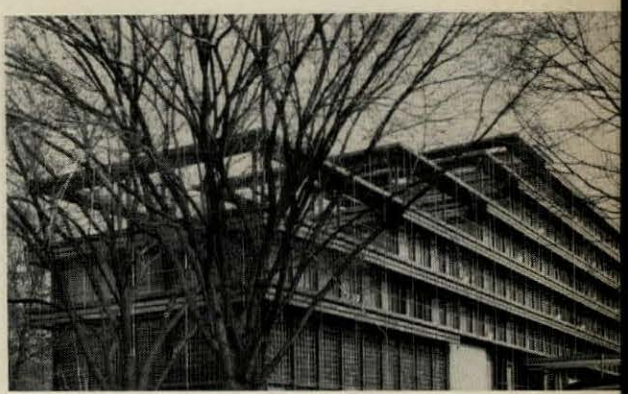
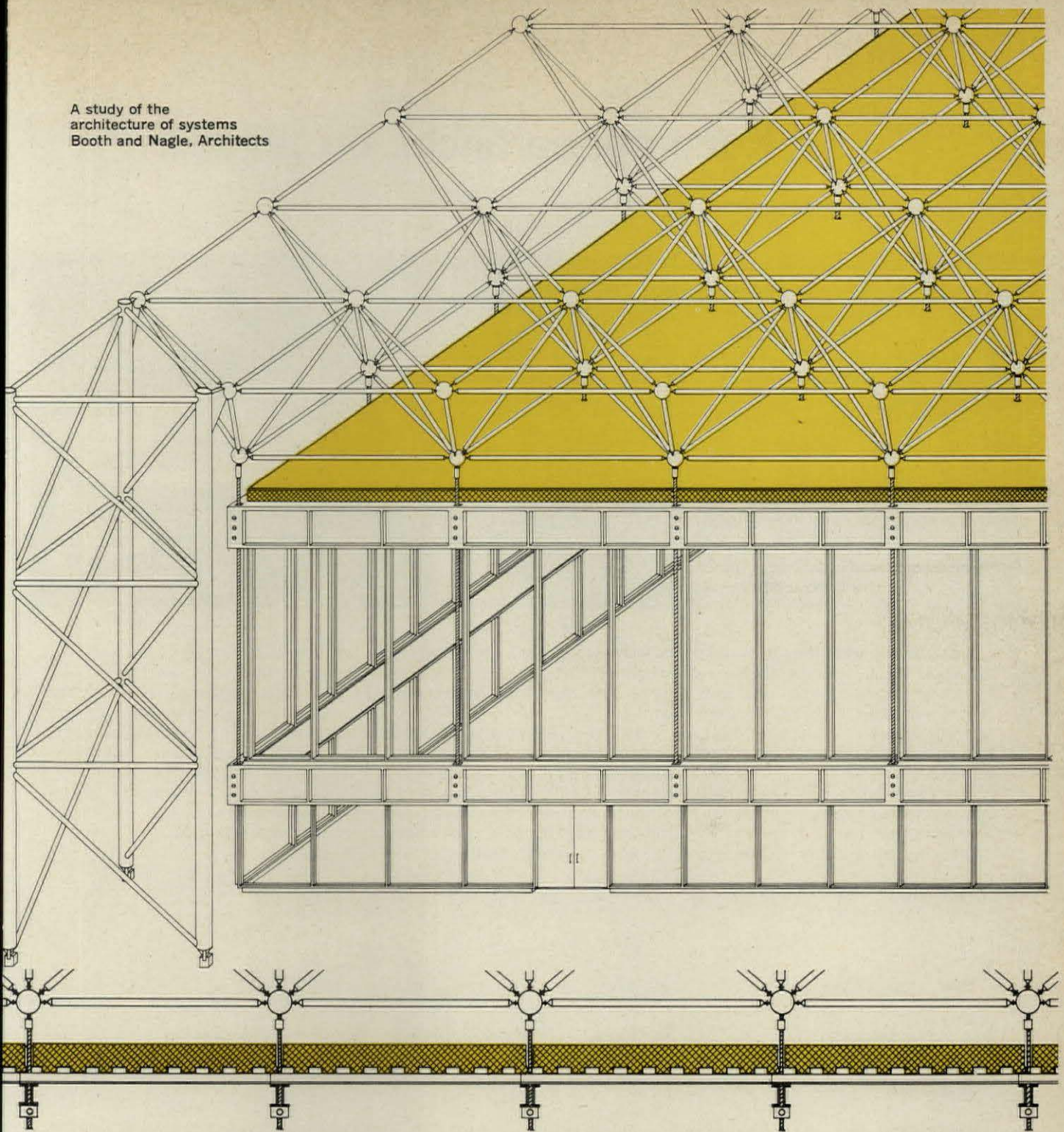


For more data, circle 58 on inquiry card

A study of the
architecture of systems
Booth and Nagle, Architects



Instead of using structural steel like wood, as is customarily done, this design takes advantage of the tensile strength inherent in the material. A triangular lightweight-steel spaceframe spanning 250 feet is assembled on the ground and raised into position by hoists that are supported by tripods located at the three corners. The roof, constructed of typical steel channels and steel centering covered with lightweight insulating Zonolite concrete, is hung from the spaceframe. The glass and steel perimeter walls are suspended from and supported by cables.

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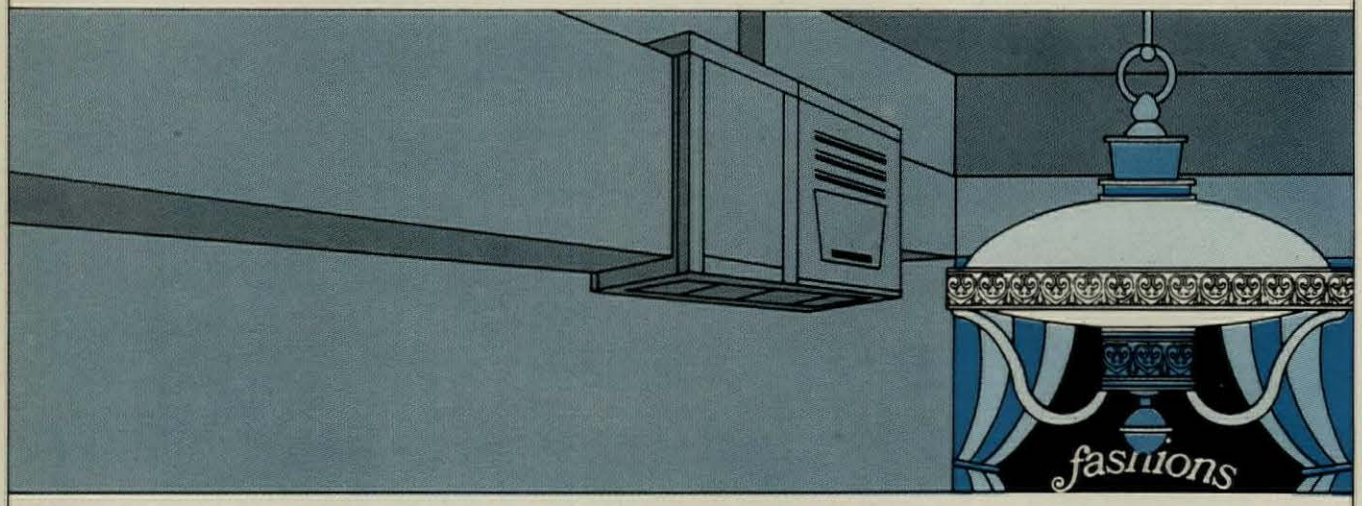

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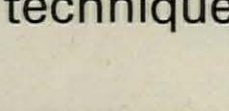

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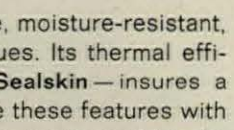

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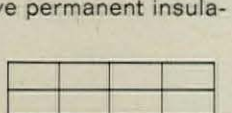

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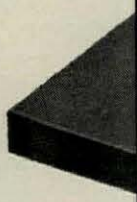

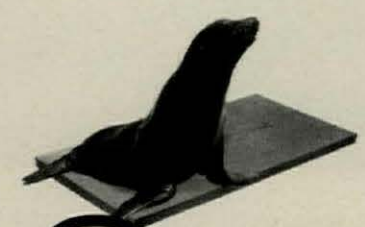

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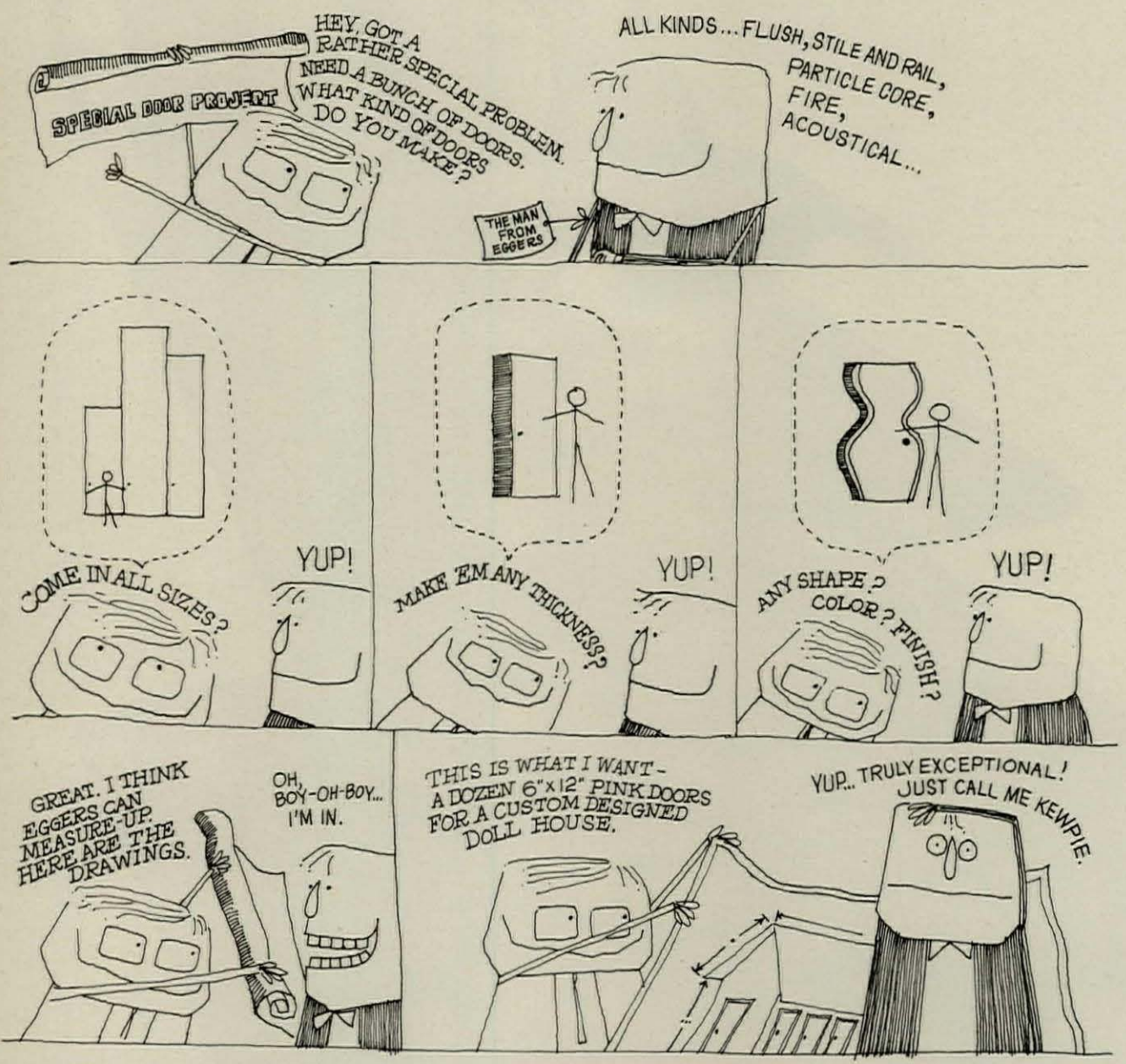

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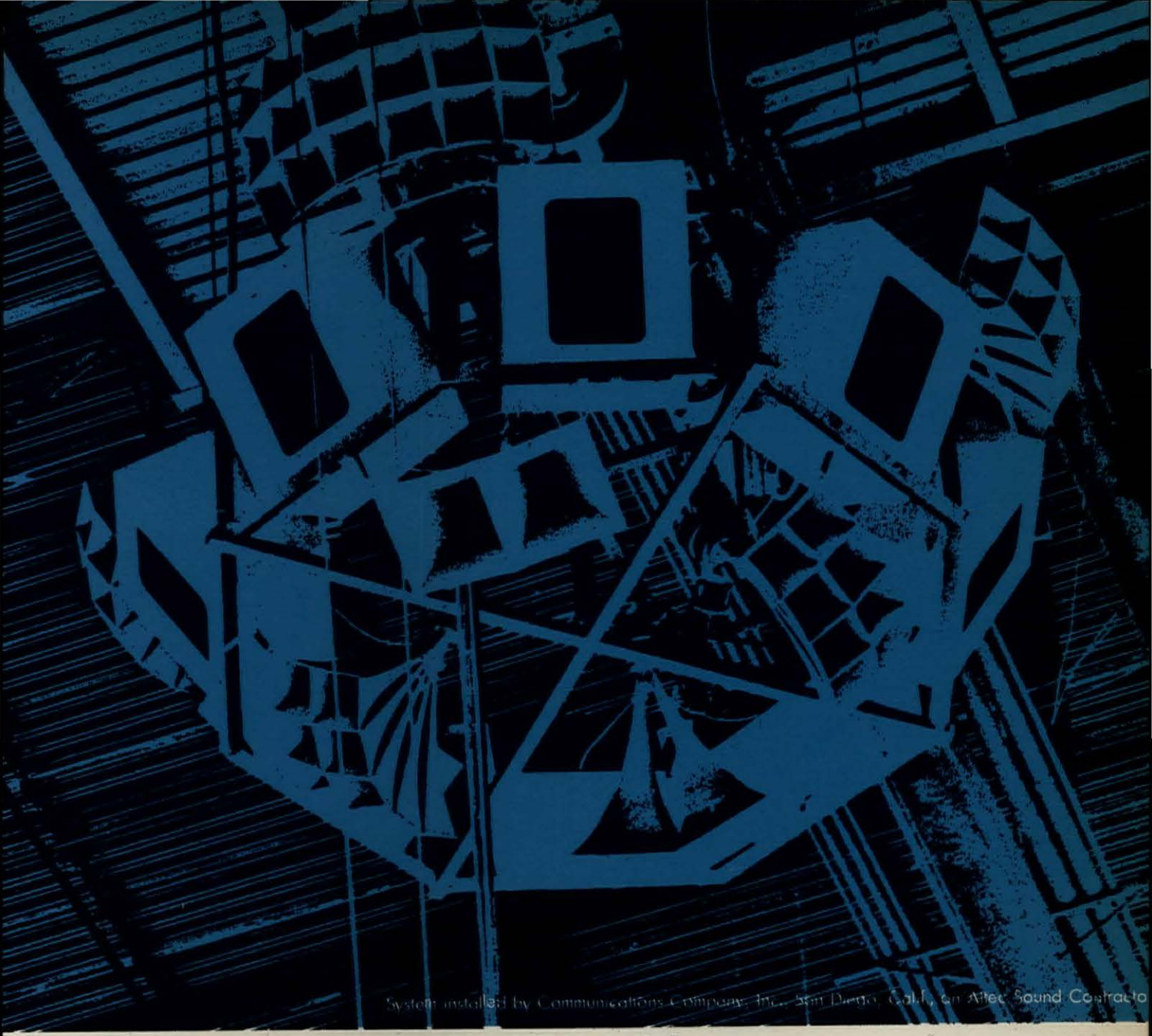

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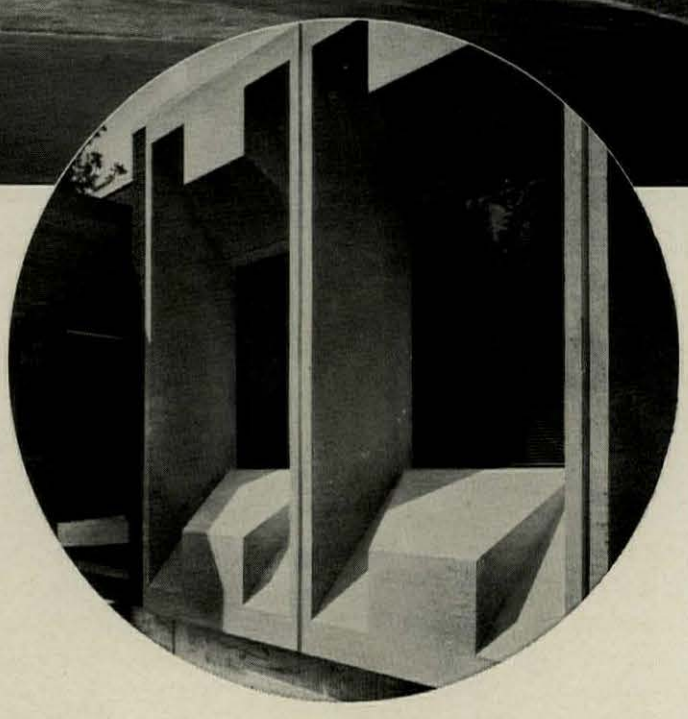

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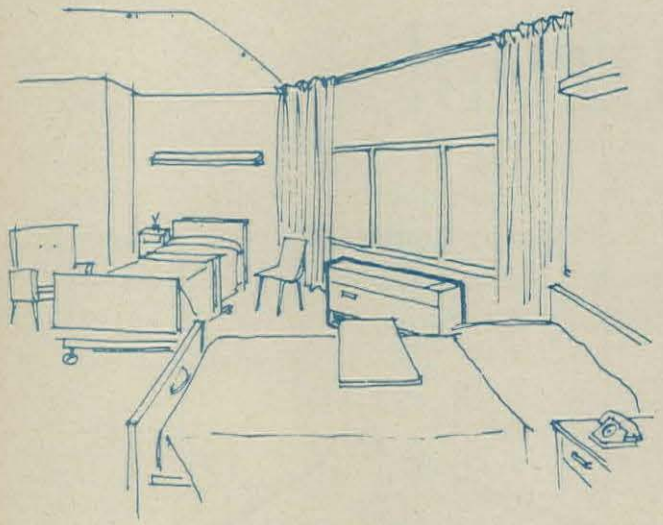

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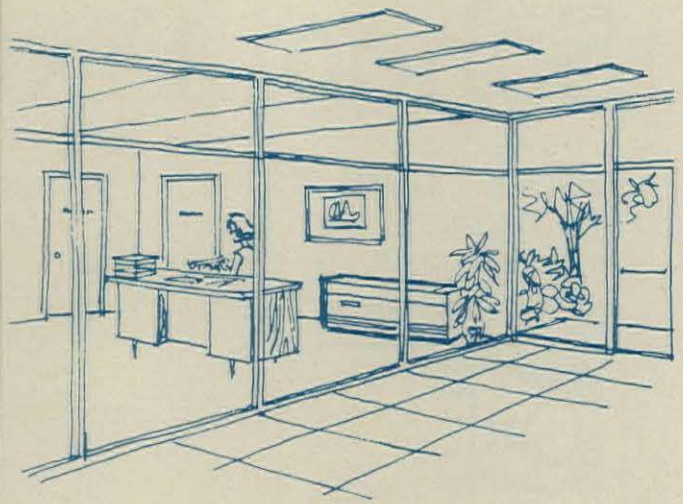
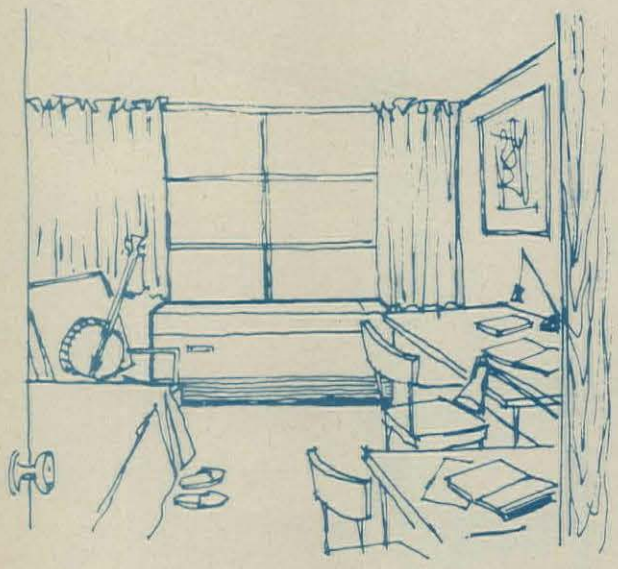


OFFICES



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OFFICE NOTES

NEW FIRMS, FIRM CHANGES

Robinson Neil Bass, A.I.A. has been joined by **William Jackson Elliston, Jr., P.E.** in a partnership to be called **Bass, Elliston & Associates, Architects & Engineers** to be located at 321 7th Avenue North, Nashville.

Julian Weldon Jenkins has joined the firm of **S. David Boozer, Architect** to form the new firm of **Boozer, Jenkins, Architects, Inc.** at 210 E. 12th St., Anniston, Alabama.

Burke Kober & Nicolais, a Los Angeles-San Francisco based architectural and engineering firm, has changed its name to **Burke, Kober, Nicolais & Archuleta. Millard J. Archuleta** has been a partner in the firm since 1961. The new firm has named five associates: **E. A. Allen, Raymond L. Gamble, Marcia Kober, David W. Picard and Dan Powell.**

Celli-Flynn announces the expansion of the partnership to include as associates **Paul P. Rona, A.I.A., John R. Maue, P.E. and Mary E. Noel.** The architectural, engineering and planning firm is located at 335 Shaw Ave., McKeesport, Pa.

Cushing Terrell Associates, architects, engineers and planners have named **James H. LeBar, R. Wayne Berry and James A. Orr** associates of the firm which is located at 1333 Airport Rd., in Billings, Montana.

Farnham, Peck Associates/Architects announces the association of **James A. Grady, A.I.A.** They are located at 124 Southwest Yamhill St., Portland, Ore.

John D. Tapking has joined the Los Angeles architectural, engineering and planning firm of **Victor Gruen Associates** as project director of their planning division.

Carl Luckenbach, A.I.A. announces the appointment as associates of **Frank E. Arens, A.I.A.** and **Kenneth W. Gunn, A.I.A.** and the reorganization of the firm as **Carl Luckenbach and Associates, Architects** at 287 East Maple Rd., Birmingham, Mich.

The Perkins & Will Partnership, architects with offices in Chicago, New York and Washington, D. C. has announced the election of four new partners: **Harry F. Anderson, A.I.A., George A. Darrell, Edward H. Matthei, A.I.A. and Robert L. Palmer** all of whom will continue to work from the Chicago office.

Robert Billsbrough Price, F.A.I.A., has named **Gordon N. Johnston, A.I.A.** and **Donald C. VanVolkenburg, A.I.A.** as partners in his firm which will now be known as **Robert Billsbrough Price, F.A.I.A., and Partners,** in Tacoma, Wash.

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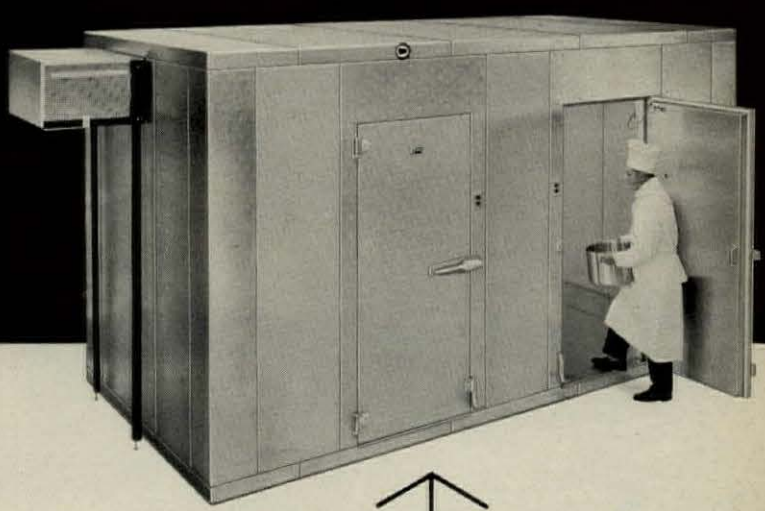

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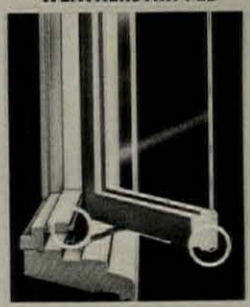

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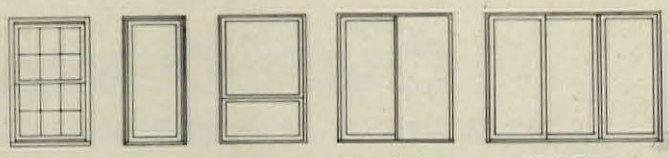

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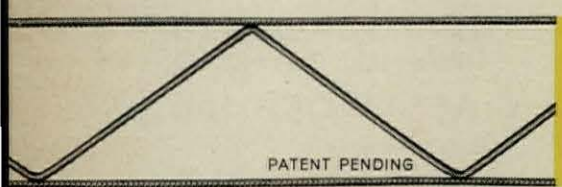

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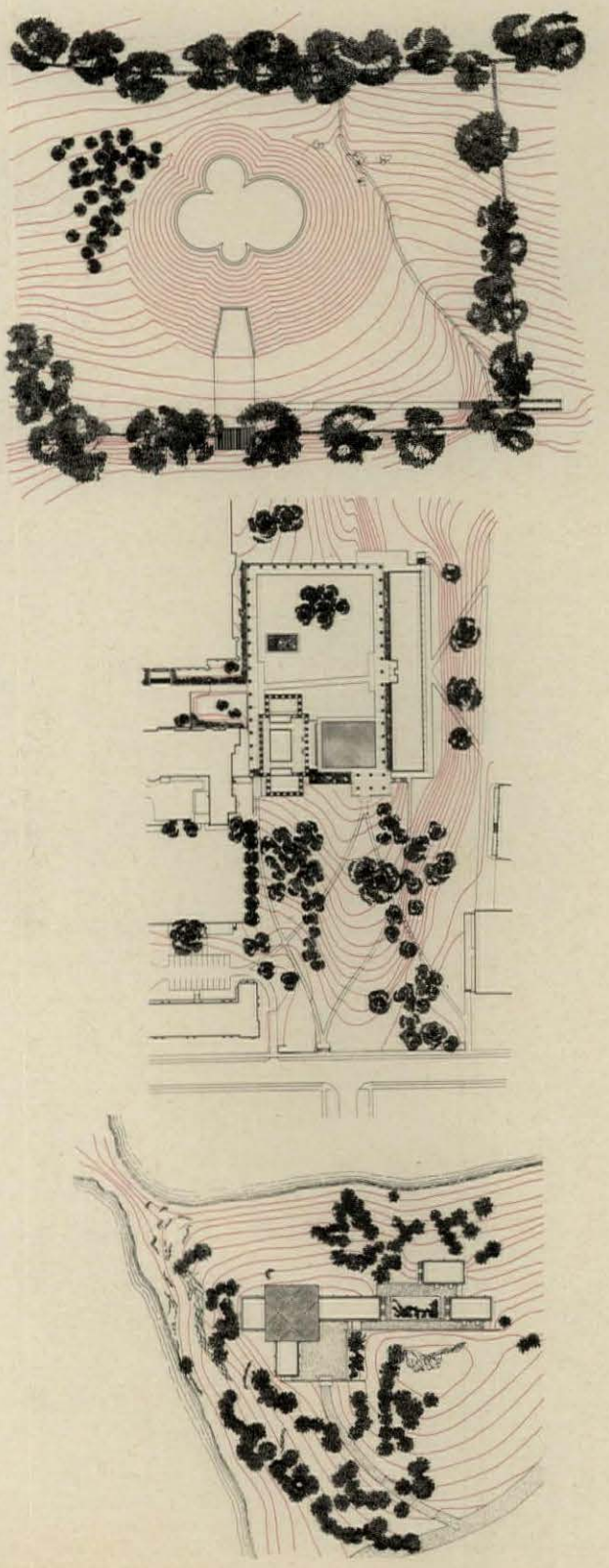


Three projects by Philip Johnson, each designed for a hill

Architect Johnson states that he would never place a building at the top of a hill—"the Parthenon is not at the highest point of the Acropolis, you know." He explains that placing a structure on top of a hill destroys the hill by denying its culmination, and that—in addition—a static and pompous composition results. He avers that the building should be placed on a shelf or platform near the apex—on the brow of the hill—"you need a platform to build upon anyway, and this is where it should be." These and further principles dealing with hillside design are set forth in more specific and detailed form in these 12 pages.

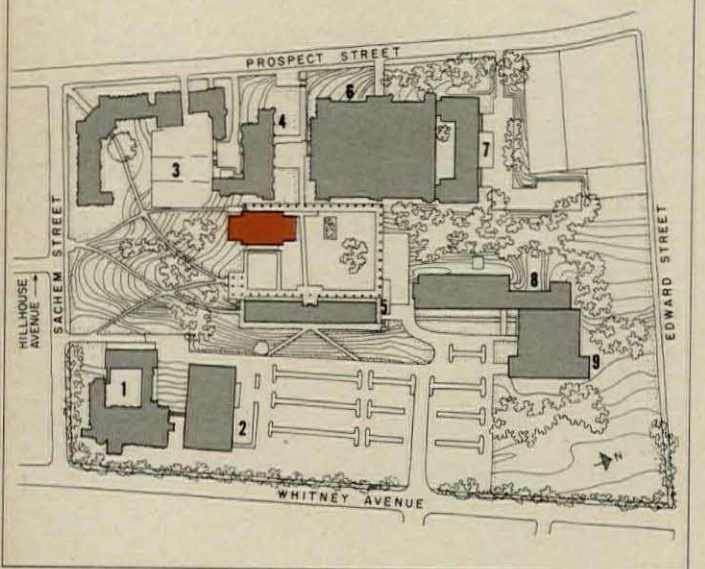
—James S. Hornbeck

THE KLINE TOWER AT YALE

The siting of the Kline biology tower was handled with great skill, so that its tall, strong form sets up a pleasing and effective relationship with the city, the bounding streets, and the hill it crowns. The purplish-red shaft makes a bold and handsome mark in the New Haven skyline, and seems to possess the right scale for its urban role. Placing the tower on a shelf just short of the crest of the hill, and off-center, creates a more than satisfactory termination for Hillhouse Avenue—as the large photo at right shows. Its placing has the further great virtue of maintaining the integrity of the crest of the hill by allowing it to remain unobstructed. The similar siting of Gibbs on the opposite brow of the hill made such a tower location possible.

The approaches from other directions offer a variety of experiences, of which the one from Whitney Avenue alongside Johnson's geology building and on up the steep slope past the end of Gibbs is the most compelling—it is pictured in the small photo at far right. From the north, the shaft rises interestingly above the earth berm forms of the tandem accelerator structure, emphasizing the way in which the tower serves to bring the entire center into visual focus. The latter prospect can be seen in the lower middle photo, which was taken before the early morning haze had burned off, with the result that the tower takes on a bluish cast. The color of the iron-spotted, glazed brick changes intriguingly through the day and with the seasons—an effect brought about, in large part, by the action of its reflective glazing.

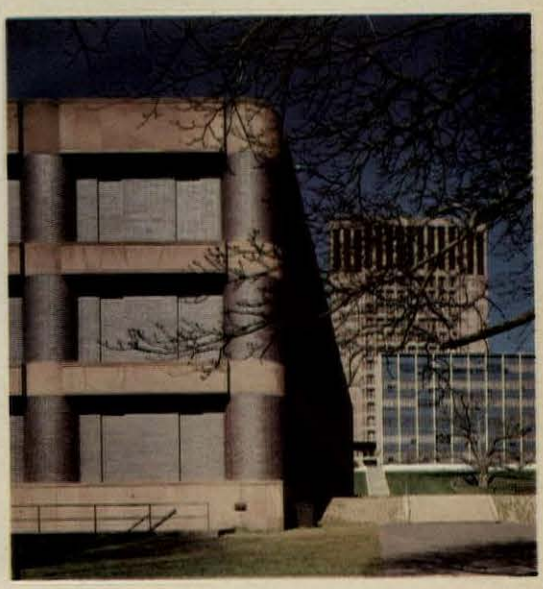
KLINE BIOLOGY TOWER, Yale University, New Haven, Connecticut. Architects: *Philip Johnson and Richard Foster;* structural engineers: *Lev Zetlin & Associates;* mechanical engineers: *Meyer, Strong & Jones;* landscape architects: *Zion and Breen;* general contractor: *E & P Construction Company.*

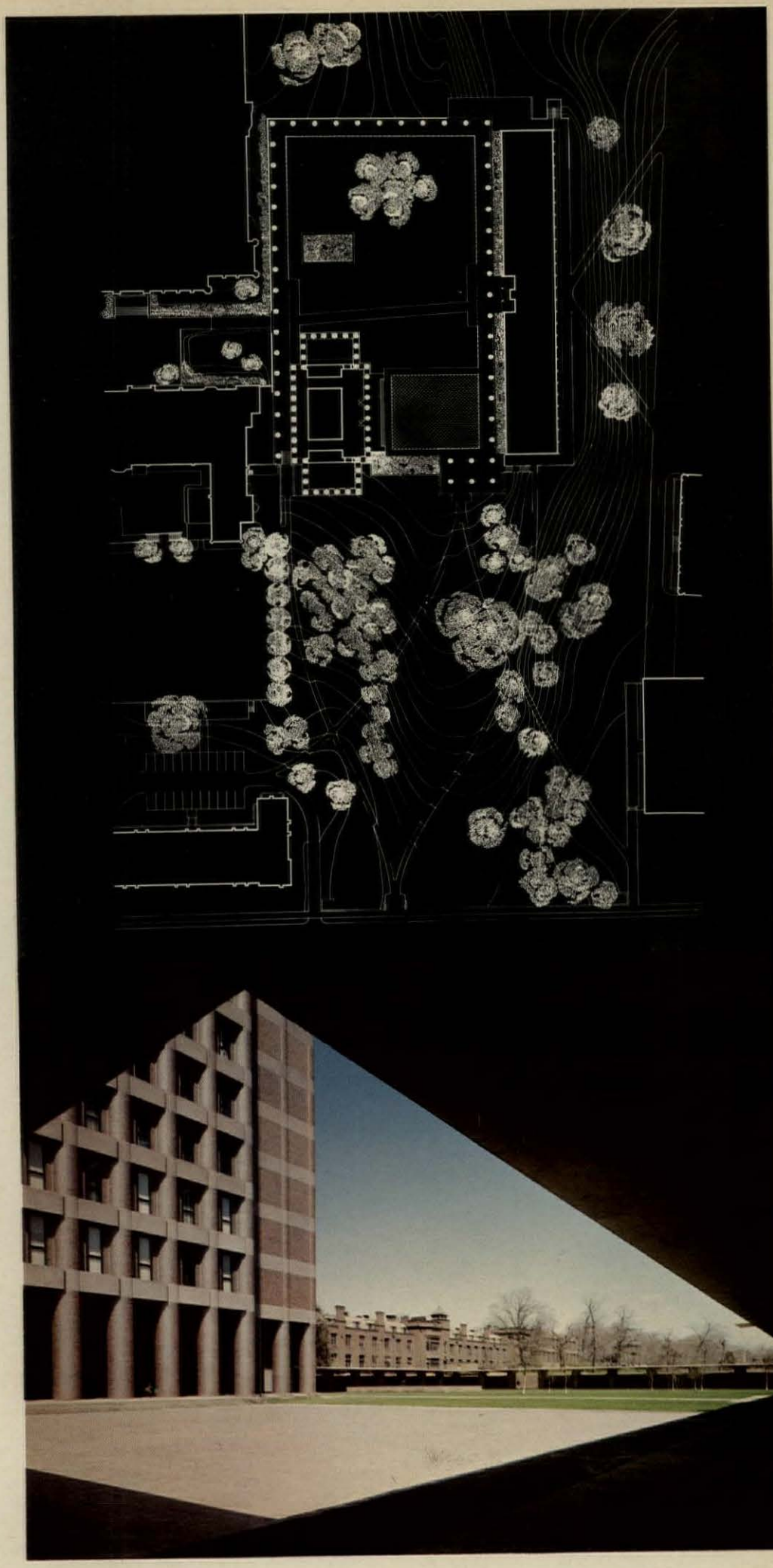


Joseph W. Molitor photos

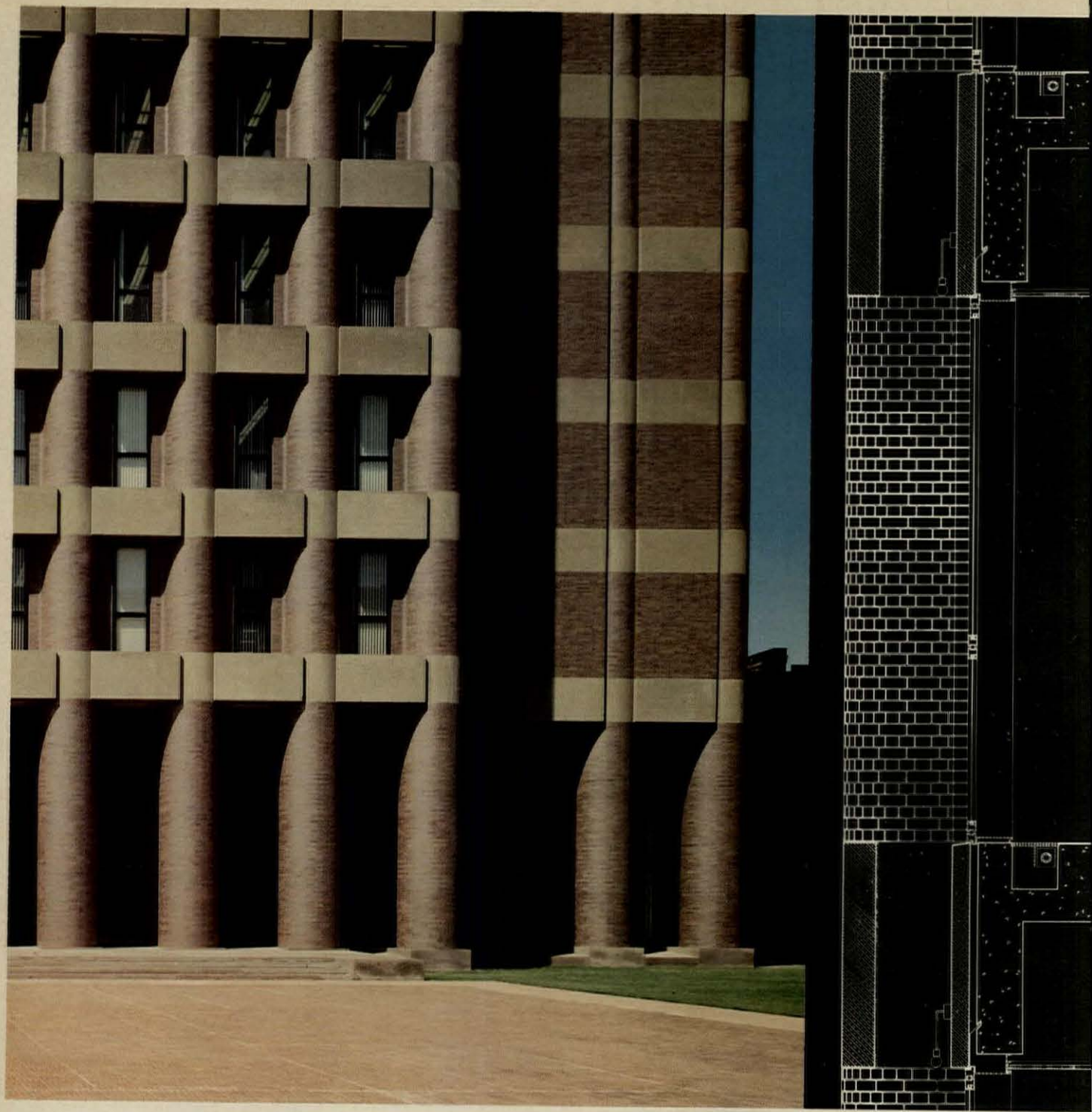
PLAN LEGEND

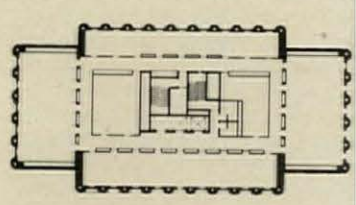
1. PEABODY
2. GEOLOGY
3. UNDERGROUND POWER PLANT
4. SLOANE
5. GIBBS
6. STERLING
7. CHEMISTRY
8. ACCELERATOR
9. TANDEM ACCELERATOR

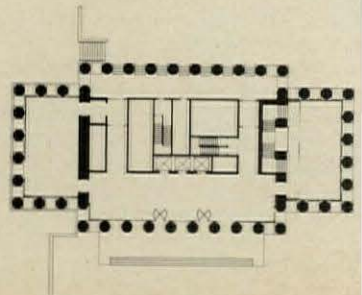


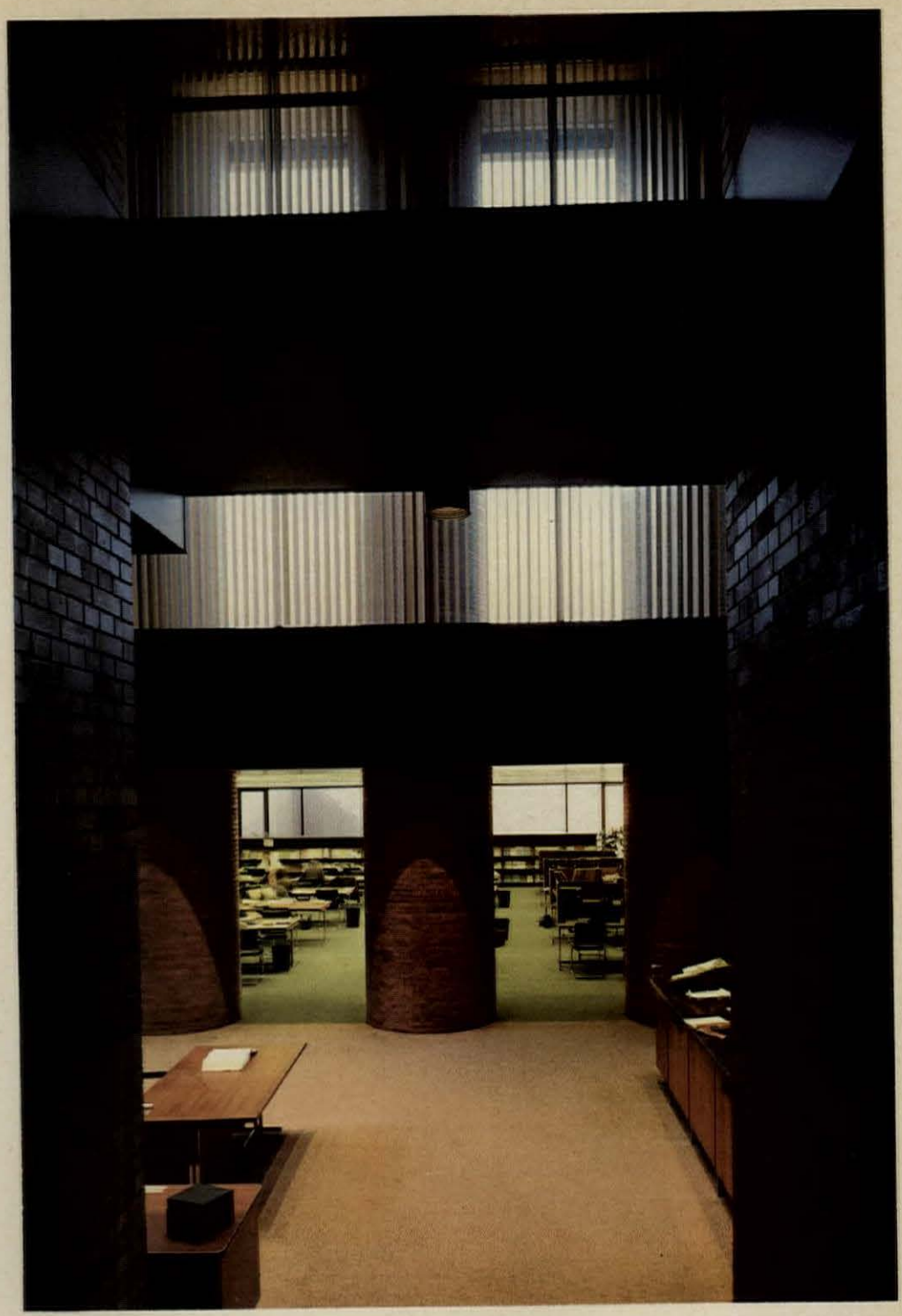


The 17-story tower reaches upward from the corner of an open-to-the-sky but enclosed courtyard at the crown of the hill, shown at right. The length of the courtyard runs north and south, to parallel the long dimensions of the Kline tower and nearby Gibbs, yet a strong counter-movement is set up by the 100-foot-wide brick platform leading to the tower entrance. There is access to and from this cloistered space at several points, so its pedestrians in motion will have different objectives, changing directions. The tower rising from a courtyard is characteristic of Yale, and in such purely symbolic terms the Kline acropolis seems appropriate to its *milieu*. The architect's intention was to create a very special kind of place at the top of the hill, and it is indeed that, although so strongly defined it tends, perhaps, to become a place apart.









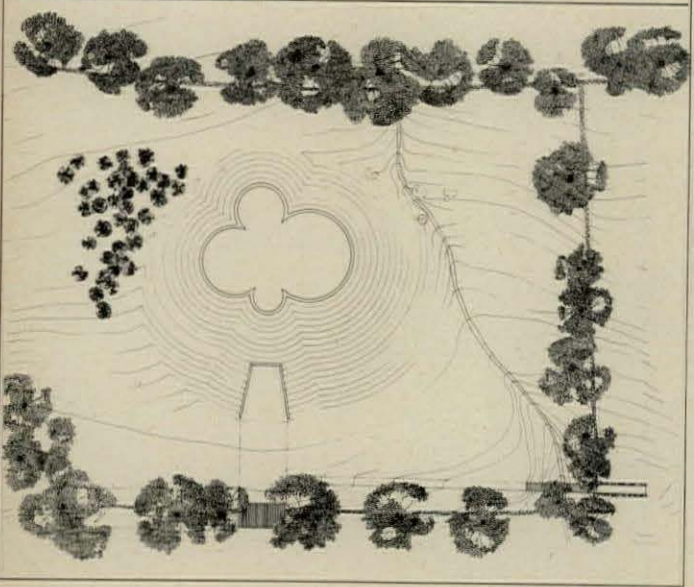
A close-up and detail of the tower's exterior can be seen at left; exhaust ducts for the lab hoods are housed within the drum-like columns. These bold uprights and the deep reveals set up a strong, three-dimensional pattern which is further enlivened by the extended, token-like spandrels. This is architect Johnson's boldest building, and a very elegant one. The decision to use brick and Longmeadow stone was influenced by the surrounding buildings—except in the case of Gibbs, which appears uncomfortable among its suave neighbours. The palette of the tower is completely convincing in this context.

The biology library was placed underground so it could be expanded to meet future needs. Its entrance hall and stair extend through two stories; a reading lounge opens to a sunken court.

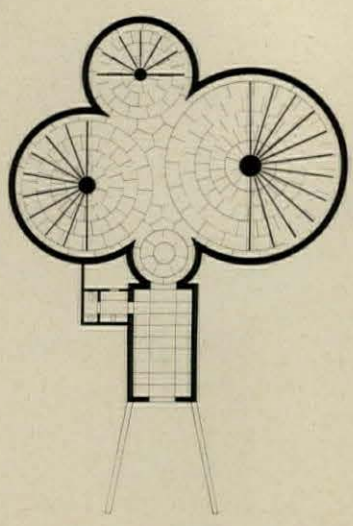
SUNKEN HILLSIDE GALLERY

Reminiscent of an old-fashioned root cellar, architect Philip Johnson's art gallery is seemingly burrowed into a grassy slope, although in reality it is built upon a hillside shelf and buried by berms. This came about because Johnson is interested in the esthetics of earth mounds, because he did not want any outside distractions to interfere with the study of his collection, and because it is easy to maintain optimum temperature and humidity control in an underground space. Furthermore, the architect did not want another building within the carefully studied outdoor space of his New Canaan estate, the gallery's location. The interior space comprises three tangential circular areas, each containing a set of swinging panels for the display and storage of paintings. Sculpture and furniture are on casters, so the arrangement can readily be changed.

PHILIP JOHNSON GALLERY, New Canaan, Connecticut. Architect: *Philip Johnson;* structural engineers: *Lev Zetlin & Associates;* mechanical engineers: *Jaros, Baum & Bolles;* general contractor: *E. W. Howell Company.*



Ezra Stoller photos



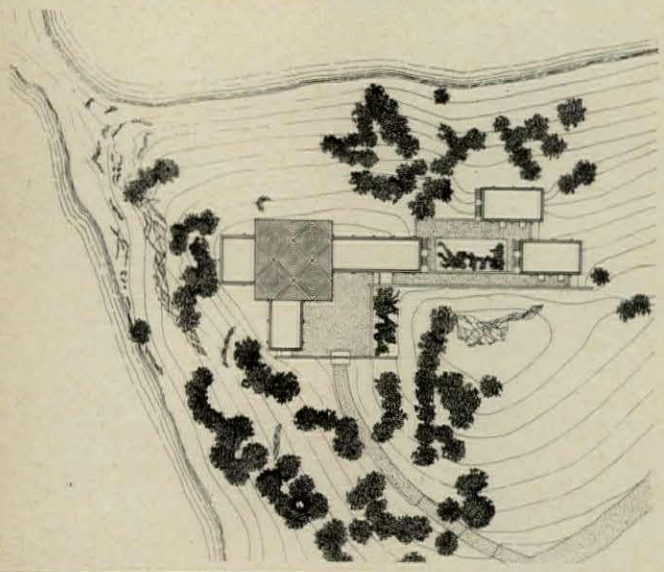
Philip Johnson explains that this gallery was constructed as a demonstration of one way in which the very real problem of storage and viewing space for art can be handled. Many large museums can show only 10 per cent of their permanent collections, and store the remainder in racks difficult of access. Johnson is glad his gallery makes it possible to show educators and collectors a new way in which paintings can be studied and enjoyed.

RIVIERA HOUSE ON A HILLTOP

In designing this vacation and weekend villa for a hilltop overlooking the *cote d'azur,* architect Johnson's intention was not so much to build a house as to create a place—a place to dramatize to the utmost the spectacular and beautiful site. This was accomplished by arranging five separate buildings upon a two-level shelf cut into the brow of the hill, then joining them by courtyards and outdoor stairs. All circulation is in the open; there are no corridors. This makes for a constant sense of identity with the place, which has the appealing character of a miniature village on a hillside.

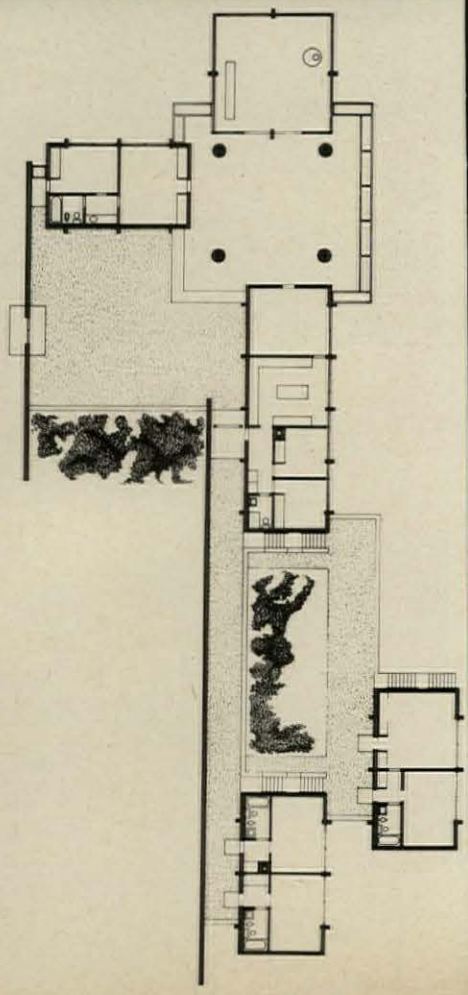
The entire scheme comes to focus on a black slate podium, 42 feet square, which is protected from the Riviera sun by an undulating concrete parasol floating lightly overhead on four columns. The large photo shows the podium and the square, glass-enclosed living room beyond; the forecourt of tan gravel is pictured below.

THE ERIC BOISSONNAS HOUSE, Cap Benat, France. Architect: *Philip Johnson;* structural engineers: *Lev Zetlin & Associates.*



Ezra Stoller photos

The buildings are backed against concrete retaining walls that extend above the hill's slope to offer protection from the spring *mistral;* fenestration in this direction—and towards the courts—consists of high strip windows. Otherwise, the buildings have large glass areas opening over the slope to the view. The lower, more protected courtyard is shown below; the photo above looks up the precipitous hill to the podium and its floating parasol.



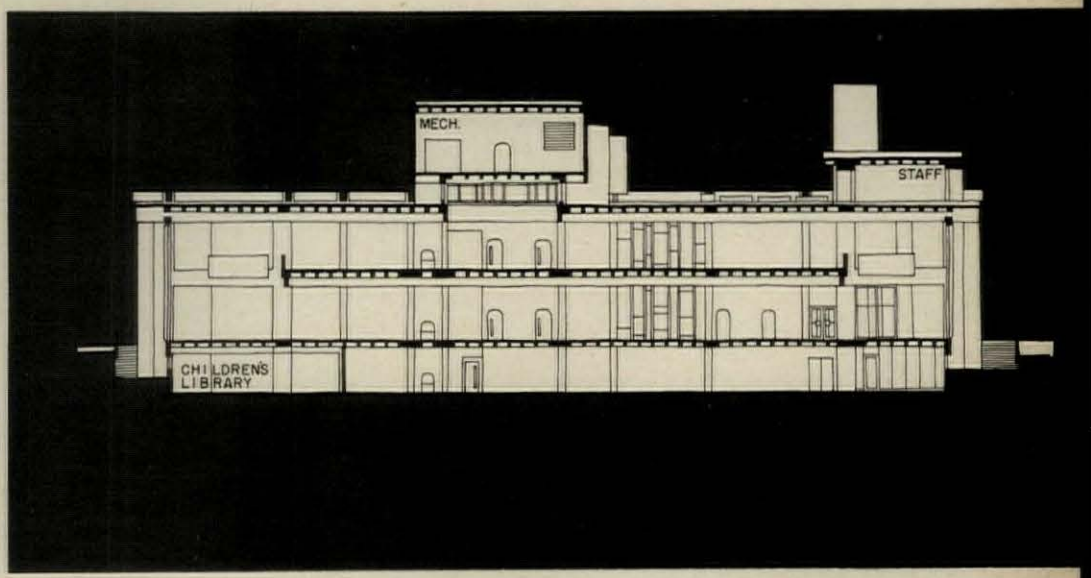
Johansen's Orlando library: compatible colony of varied forms

Although each of the diverse elements of this strongly stated building has been clearly emphasized, a handsome over-all unity has been achieved by framing the loose assembly of enclosed spaces with a dominant, overhanging cornice supported by bold service towers. In John Johansen's words, "the library, a composition in monolithic concrete, may be called an accretion of forms, as colonies of shelled animals assemble or grow together. It suggests the continuing process of growth, a most valid concept and expression, since ex pansion is so important a part of th program."

In view of the program requirement that the building be capable of expansio to three times its present size, in severa future stages of construction, the desig concept of gathering a variety of expres sive forms into a compatible colon seems a very valid one. And at this initia stage, at least, it has resulted in a quit harmonious building. The general use o rough concrete surfaces, with carefull

G. Wade Swicord photos

For all of its concept as a series of towers and boxes held up in position at various heights by strong expressive piers, the library design has been nevertheless given the general visual effect of base, colonnade and cornice, and an over-all air of unity and quietness. Future additions can easily be made in this same spirit.



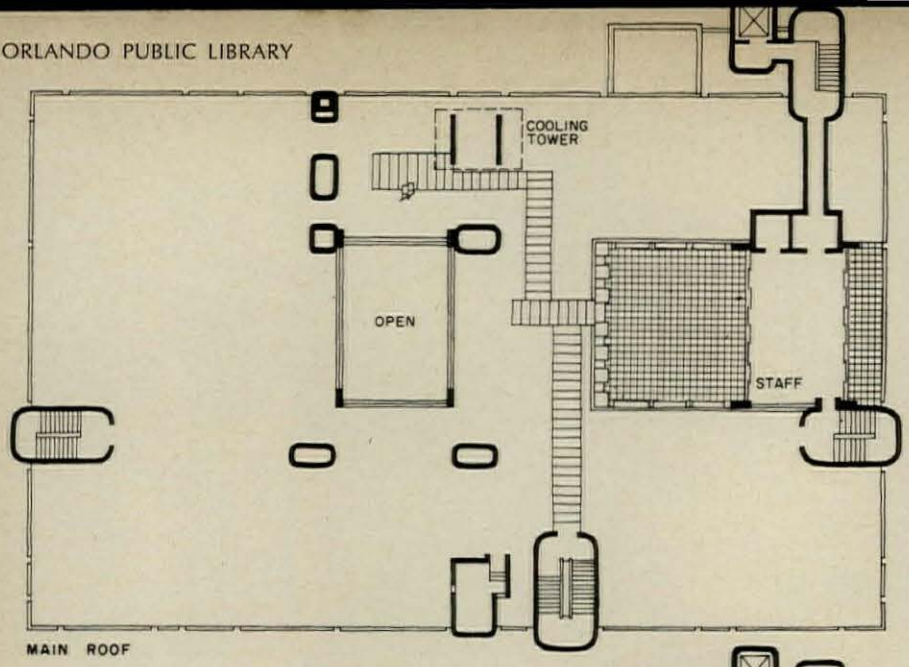
ontrolled textures left by removal of vooden formwork, is, of course, another major unifying factor. The other visible materials (glass areas, bronzed aluminum rim, interior carpeting for sound control) are treated in a quiet, subsidiary manner.

This first unit of the library provides two main floors for public use, with open stack areas and reading rooms closely related. The basement is devoted to closed stacks, processing and bookmobile service. The top or third floor is given to the auditorium and staff offices. While most of the plan is open and unobstructed, all service elements, such as workrooms, toilets, stairs, elevators, and the like are arranged as closed elements on the periphery. A central open well is three stories in height to serve as a unifying space, topped by a clerestory and the huge air-conditioning housing; light filters in on all sides from the bands of windows at the top of the well.

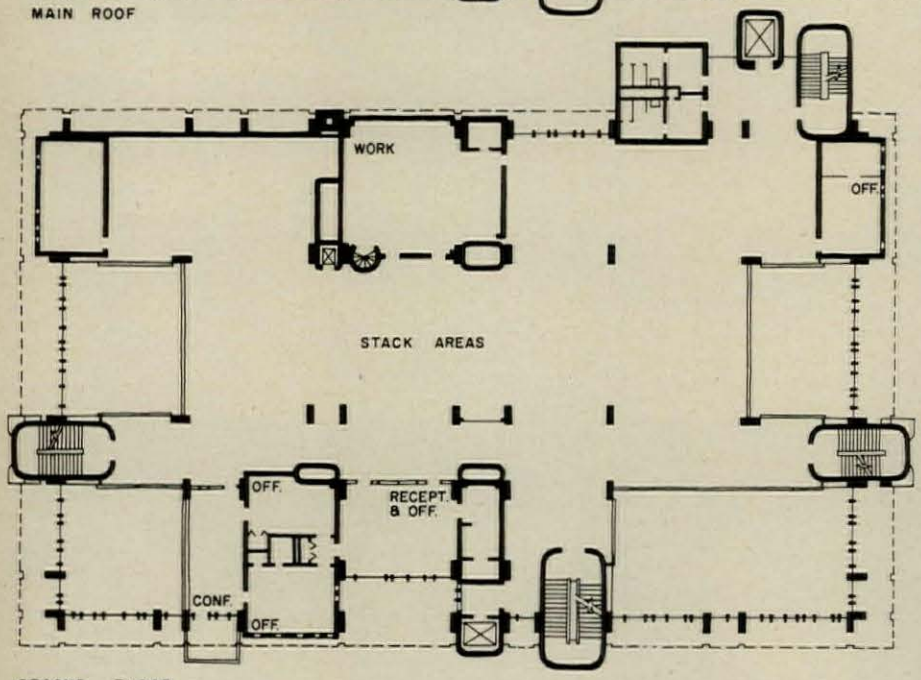
The building occupies one-third of a city block, with set-backs for planting and quiet. The remainder of the block is being purchased by the city in stages for future expansion.

ORLANDO PUBLIC LIBRARY, Orlando, Florida. Architects: *John M. Johansen & Associates;* associate architect: *Robert B. Murphy;* structural engineers: *Milo S. Ketchum & Partners—Rudolph Bessier, partner-in-charge;* mechanical and electrical engineer: *John L. Alphieri;* landscape architects: *Wallis-Stresau & Associates;* furnishings consultant: *Martin Van Buren;* lighting consultant: *Sylvan R. Shemitz;* contractor: *H. L. Coble Construction Company—Hugh Medlin, superintendent.*

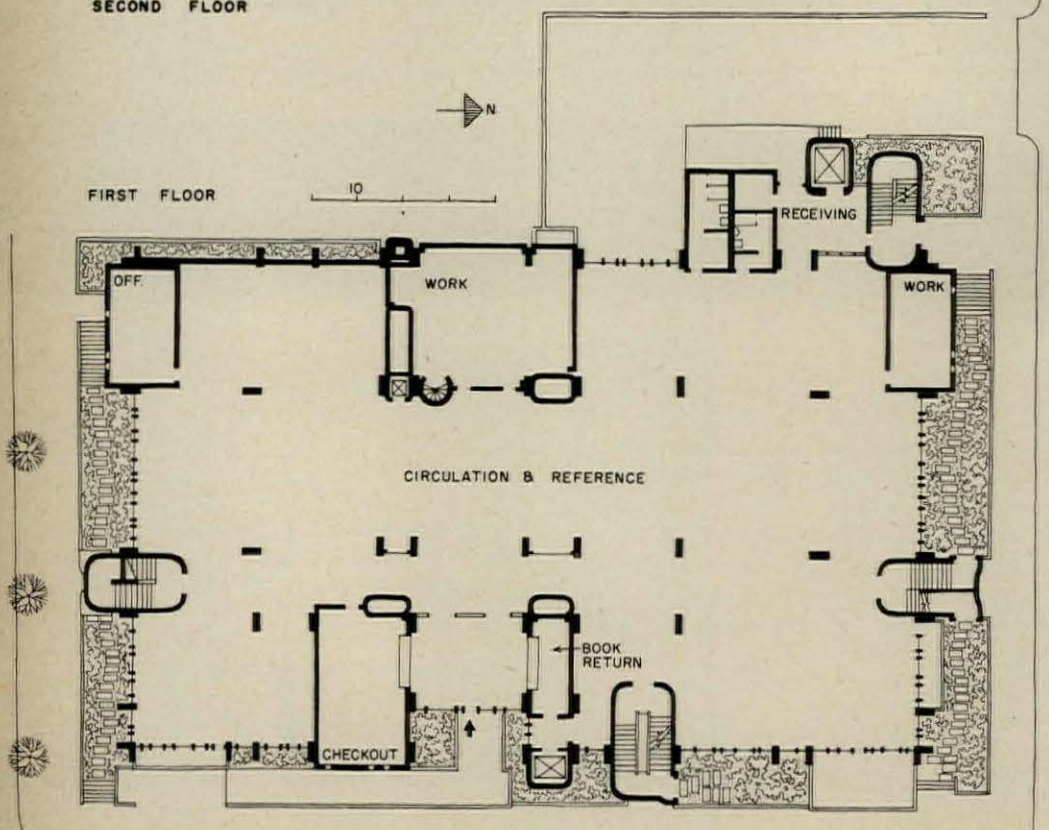
ORLANDO PUBLIC LIBRARY

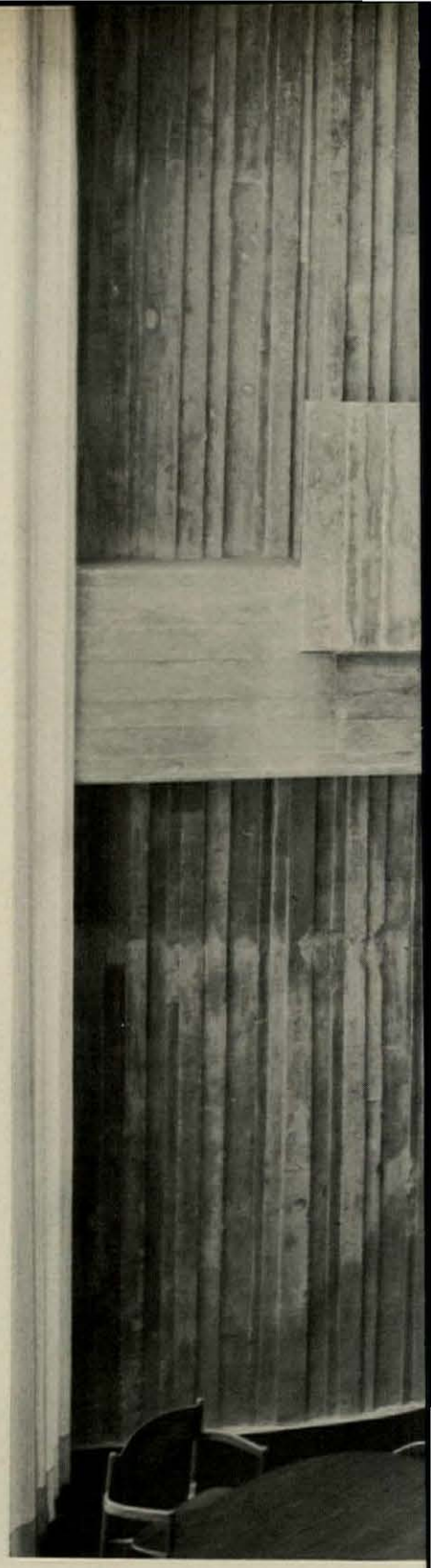


MAIN ROOF



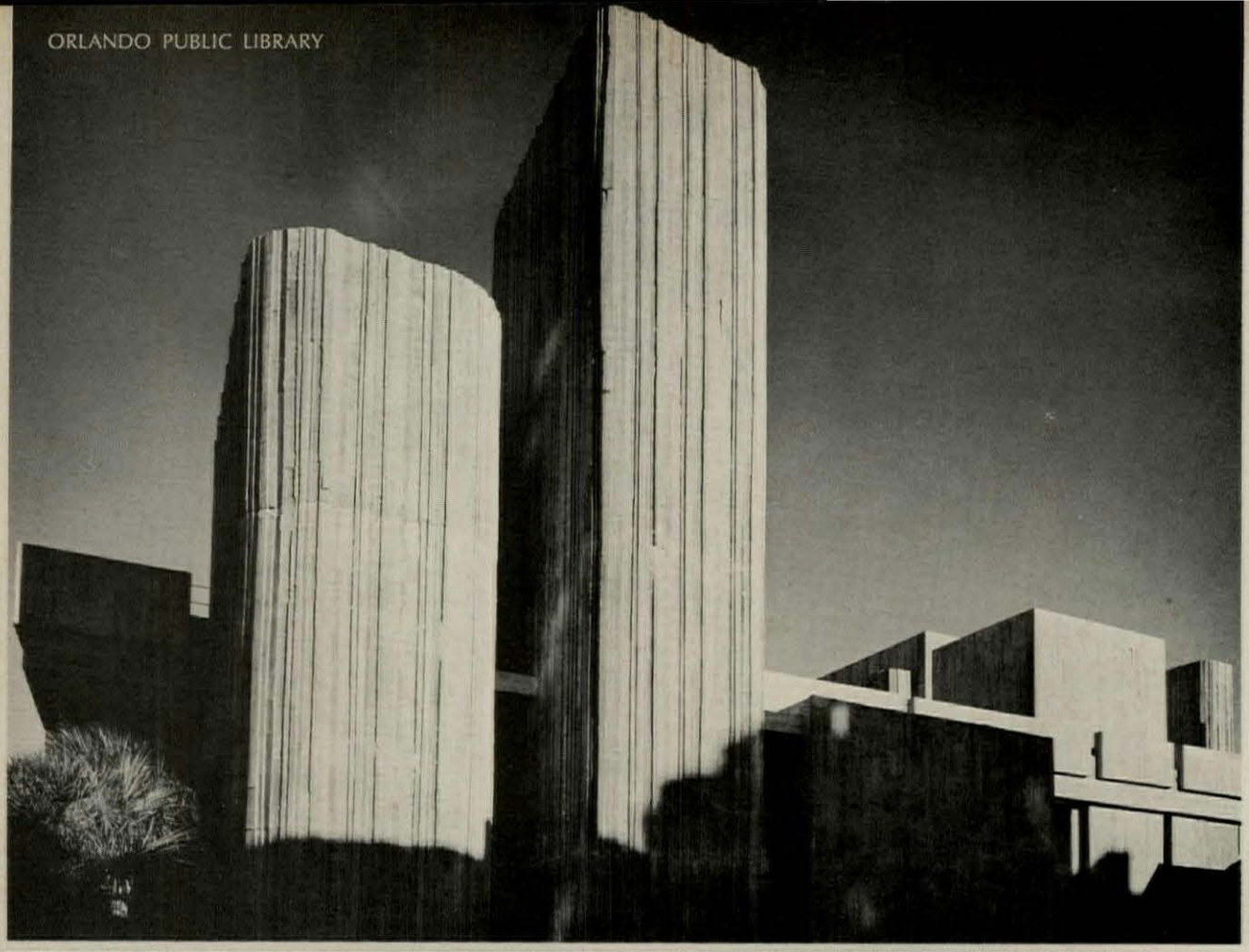
SECOND FLOOR





The program for the new Orlando Public Library was written by a library specialist, Dr. Frank Sessa, director of the Miami Library, and established the following departments for the new building: children, young adults, adult circulation and reference, browsing and popular reading, history and genealogy, fine arts, business and technology, stack areas, a small auditorium, and staff offices.

Downlighting is used by consultant Shemitz to define such use areas as central desk and lounge. Stacks are lighted by direct-indirect troffers.



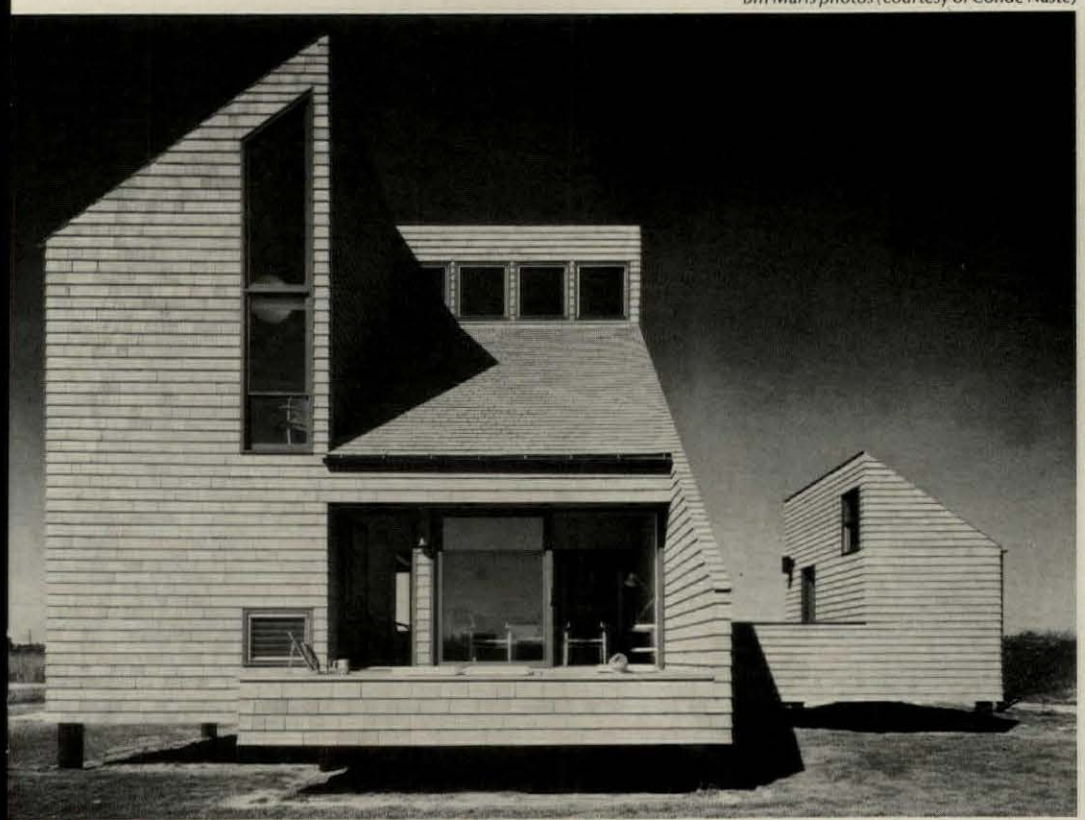
Even the smaller details of the Orlando Public Library have been designed with the same gusto as the major parts of the building: the "roofscape" (top), which is a disastrous happening in all too many buildings; the service stairs (center, left); the sidewalk book drop; and the roof terrace, with its built-in benches and planters (left).

As can be noticed in many of the preceding photos, provision for good lighting (note downlights to exit stair and wall washers), quiet, and comfort is well-thought-out all through the building.

eight vacation houses

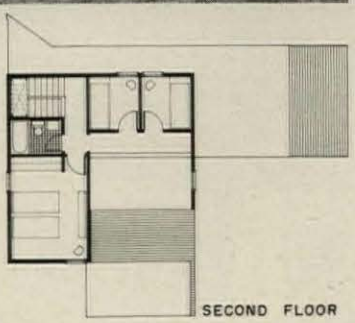
whose design strength, functional efficiency and very reasonable cost demonstrate the architectural potential in the current upsurge of interest in the second house.

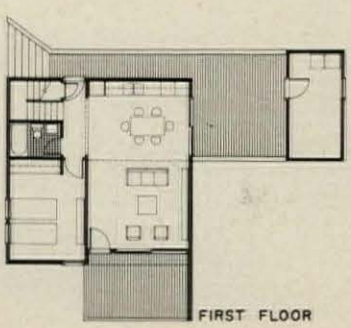
Bill Maris photos (courtesy of Conde Naste)



VARIETY AND ECONOMY IN CANAL-SIDE HOUSE

A low-lying site near an elevated drawbridge over the Shinnecock canal was chosen for this attractive cedar-shingle summer house —winner of the 1966 A.I.A. New York Chapter annual house competition. Private sleeping areas were required for a family of five, but the rest of the house is free-flowing, angular and exciting, with strategically placed windows and skylights giving good cross ventilation and unusual extension of visual space. Because of the possibility of flooding, the house is raised on piles, and a two-story solution was adopted to create a "positive visual relationship" with the dominant bridge structure. Decking around the house provides pleasant sunbathing areas and connects the main building with a detached storage house.



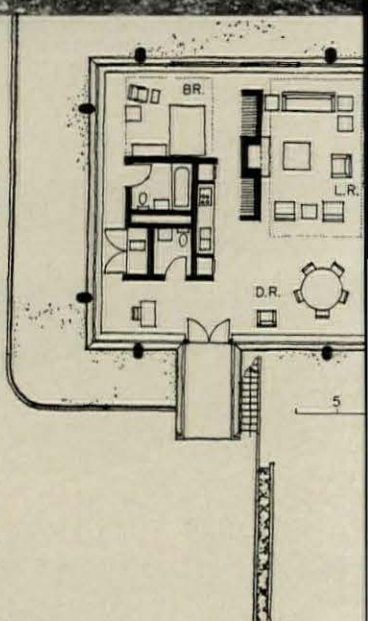


Residence for Mr. and Mrs. Hobart D. Betts, Quogue, Long Island, New York. Architect: *Hobart D. Betts;* structural engineer: *Charles L. Sauer;* interiors: *Glynne R. Betts.*

Norman R. C. McGrath phot

CONCRETE AND GLASS HOUSE COMPLEMENTS AN IRISH HILLSIDE

Perched on reinforced concrete stilts on a hillside overlooking the river Brandon in southwest Ireland, with a distant view of the Irish Sea, this little concrete and glass weekend house combines strength and elegance to a remarkable degree for so small a structure. Although the house is only a 36-foot square, extensive use of glass on all sides and open planning give an unusually spacious effect. The fireplace and storage wall separates the bedroom from the living area—providing privacy without total enclosure. Even though the house is used only for weekends and vacations, it contains a collection of classic modern furniture which admirably complements the uncluttered interiors.

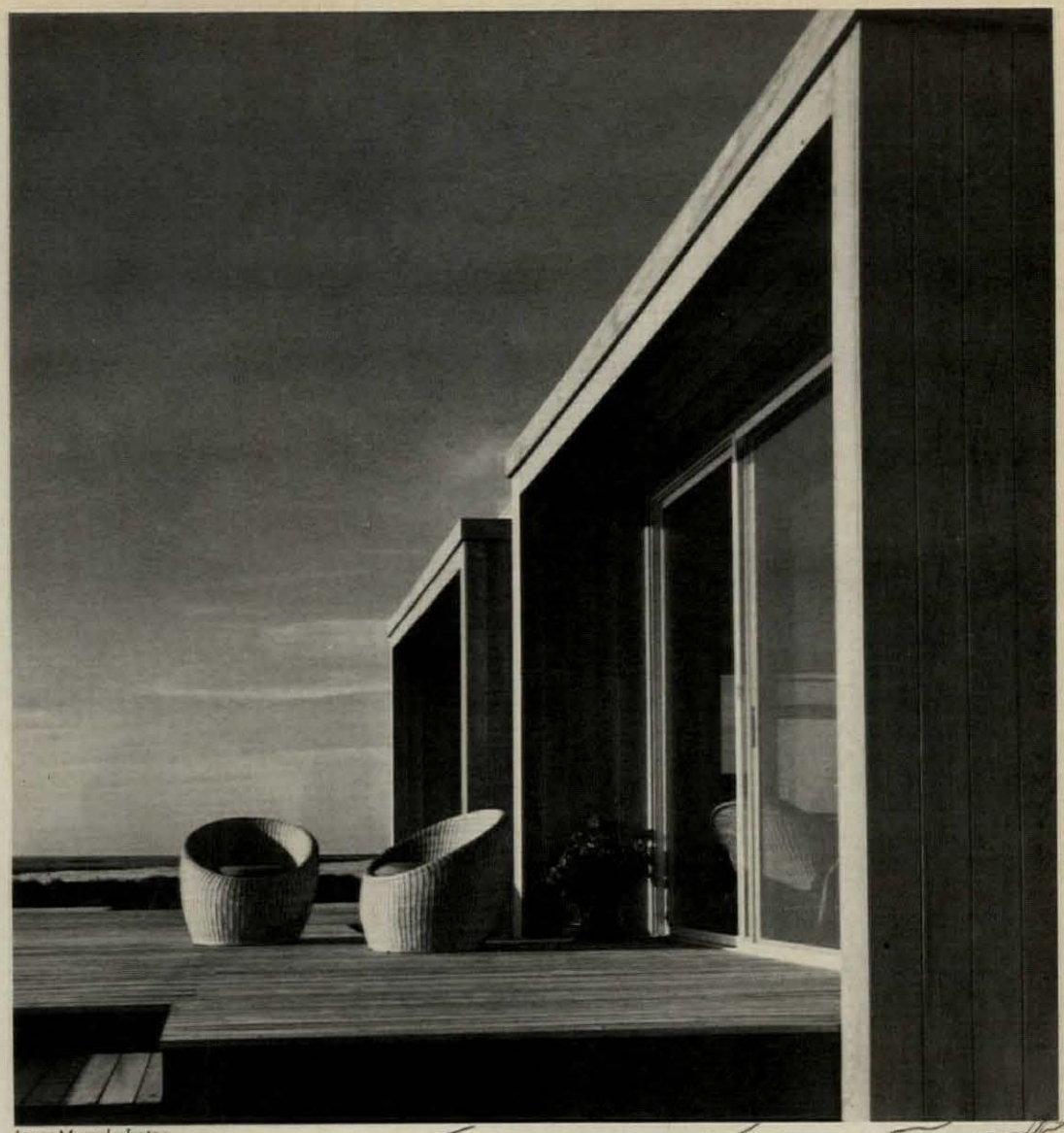


Residence for Mr. Michael P. O'Flaherty, County Cork, Ireland. Architect: *Robin Walker of Michael Scott & Partners;* interior designer: *Patrick Scott.*

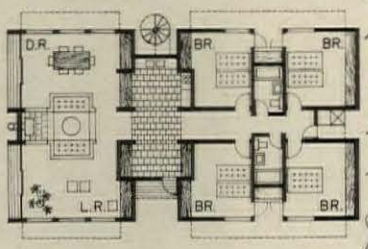
-SHAPED HOUSE WELL ZONED, VELL DETAILED

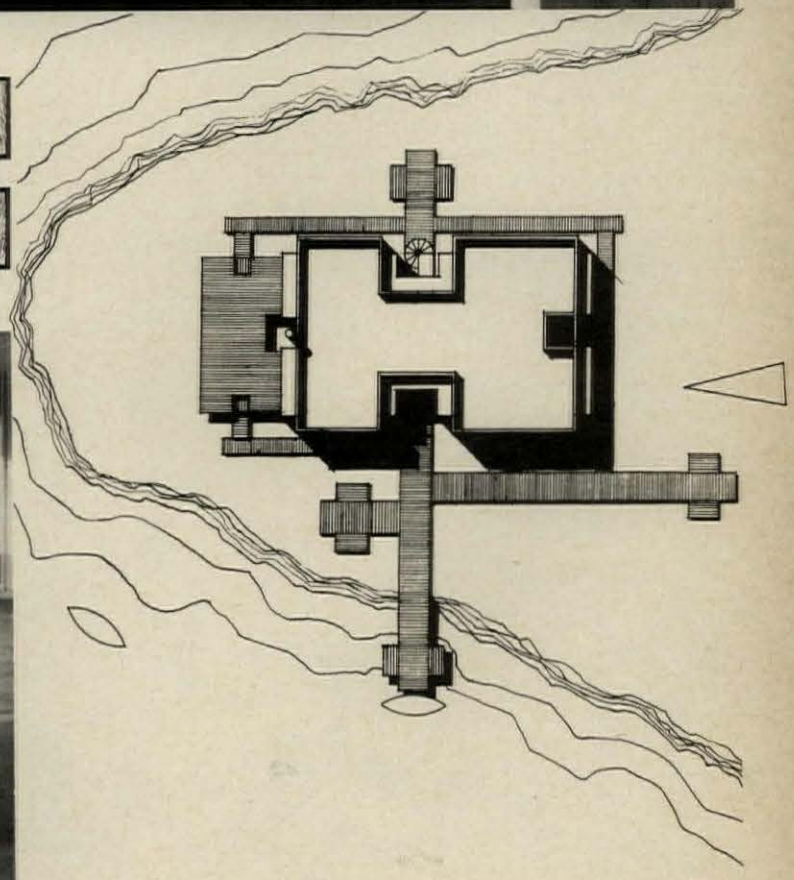
well-worked-out, compact plan nd sensitive detailing make this comfortable, efficient house for family of five. Four bedrooms, vo baths, a large living-dining oom, adequate kitchen, an out-oor shower, extensive decks and n electric heating system are all rovided within a $30,000 budget. he neat kitchen-entry area pro-ides good zoning separation be-ween the bedroom wing and the ving room. The strong articula-on of the H-shaped plan—with he extended floor and ceiling oists forming balanced but op-osing cantilevers—is described y the architect as "a logical de-elopment of the basic function nd structure of the house which ffectively liberates the design rom the standard H-box pattern." he roof cantilevers give protec-on to the large glass areas.

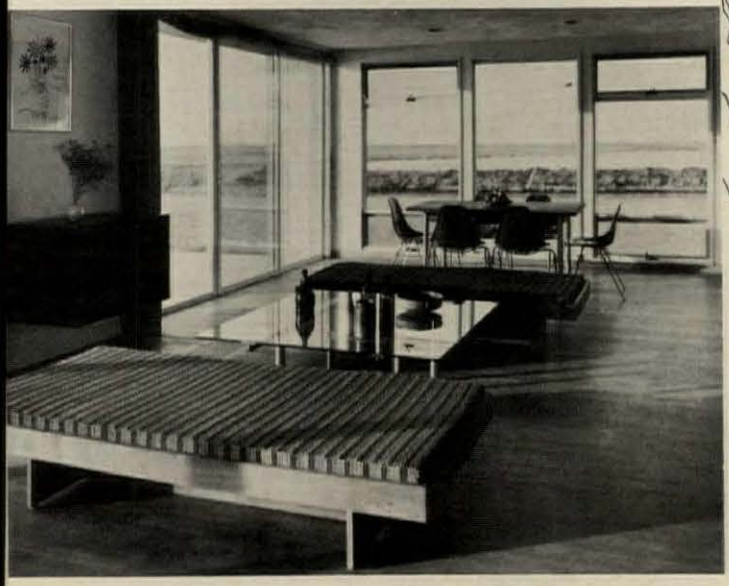
esidence for Mr. and Mrs. Alex erskovitz, Harvey Cedars, New ersey. Architect: *Myron Henry Goldfinger;* contractors: *Ullman nd Silvermaster.*



Larry Mersel photos





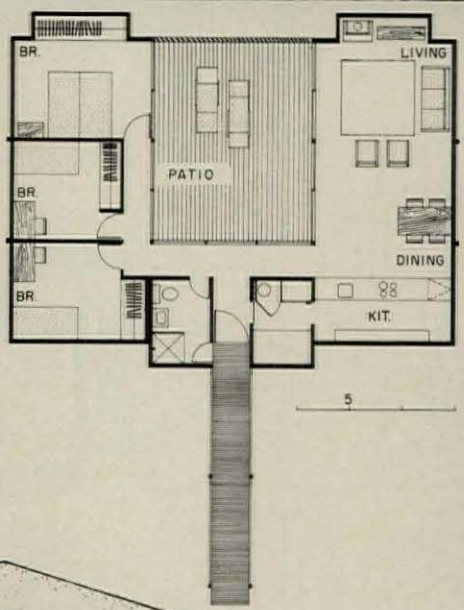


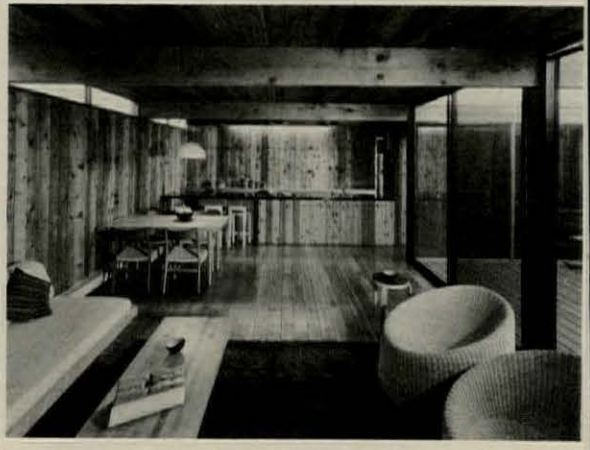
Louis Reens phot

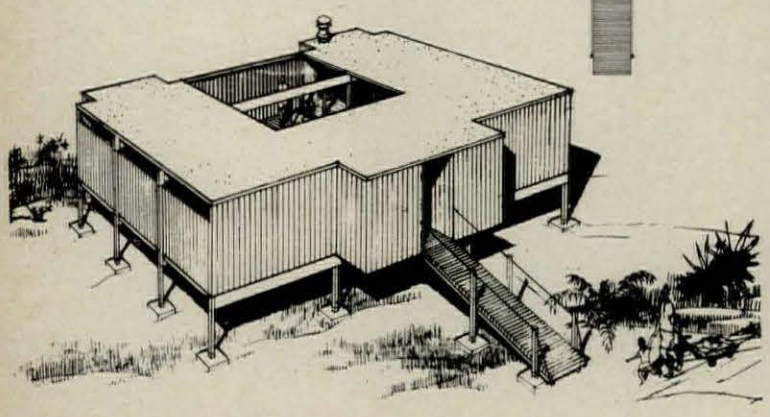
ENCLOSED PATIO COMBINES PRIVACY WITH OUTDOOR LIVING

One of the results of the second-house boom is that desirable beach areas within range of big cities are becoming increasingly crowded, raising the problem of providing for outdoor living and privacy on tiny, hemmed-in lots. Architect Bernard Marson has solved this problem on a restricted Fire Island site by constructing the house around three sides of an enclosed wood patio, with sliding and fixed glass panels connecting the indoor and outdoor spaces. A louvered wall on the fourth side of the patio completes the privacy but allows pleasant breezes to flow through the court. The blank exterior facades are broken only by the front door and by small sliding glass windows introduced beneath the roof line on the two side elevations for cross ventilation. A simple exposed wood-frame structure with tongue-and-groove cedar plank interior and exterior walls facilitated construction and kept the cost—including electric heating—to $12,500.

Residence for Mr. and Mrs. Norman Diamond, Fire Island, New York. Architect: *Bernard A. Marson;* contractor: *John Hill.*



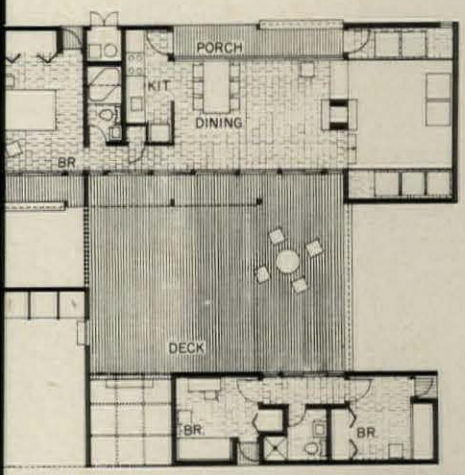




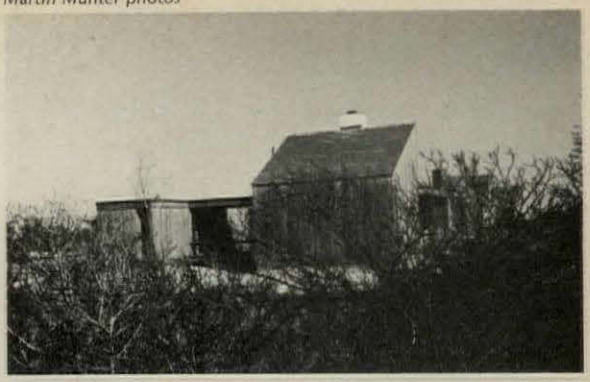
STRONGLY DEFINED COURTYARD HOUSE RESPECTS ITS SETTING

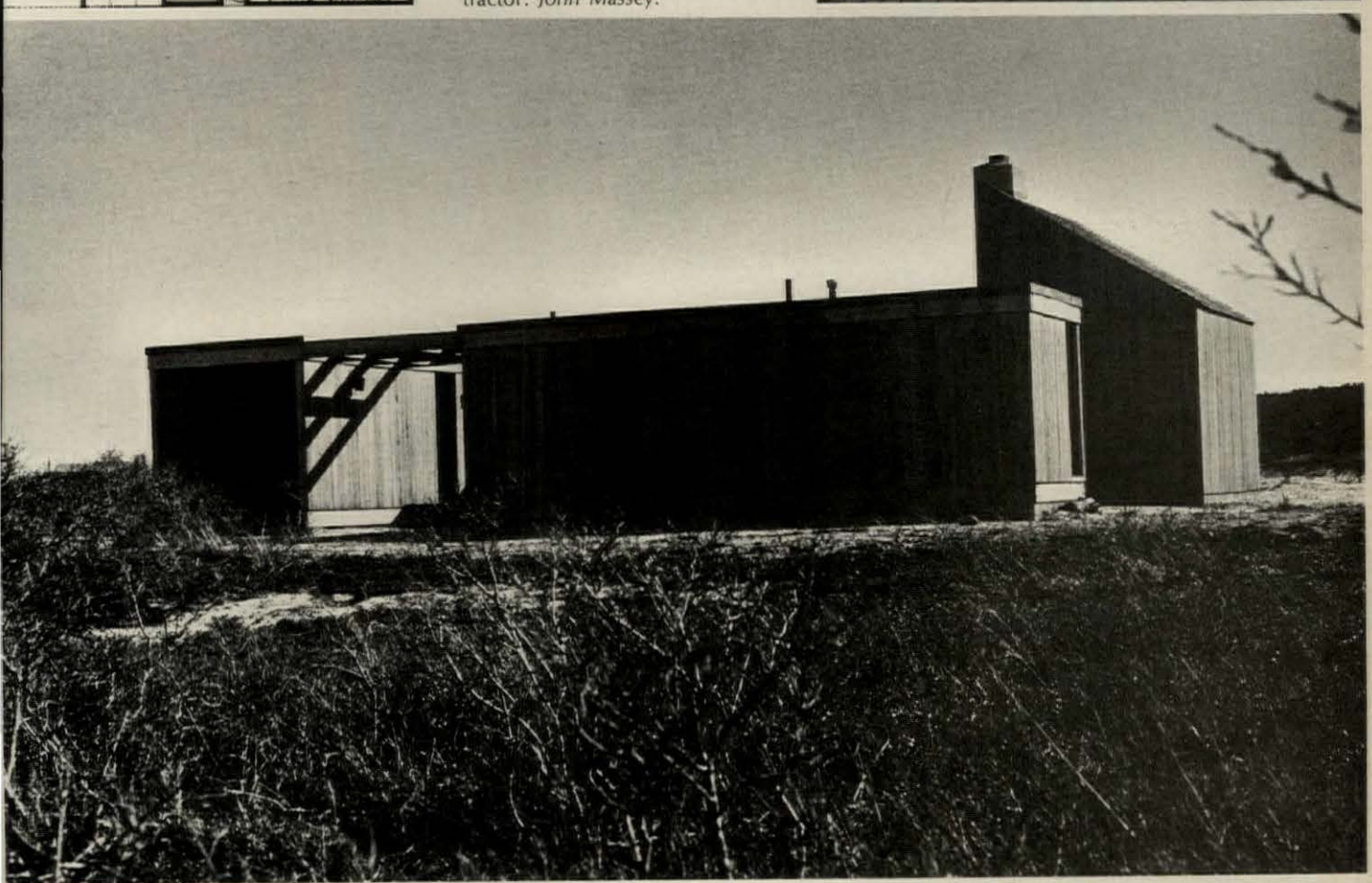
The beautiful, but now heavily developed dune land at the tip of Long Island posed similar problems for the architects of this handsome house, who also conceived of the solution in terms of a central court. In this case, however, one side of the deck was left open to take advantage of the only relatively unspoiled view. While making a strong architectural statement, the house is sympathetic to its surroundings and seems to be very much part of the dunes. Since no ocean view was possible, a one-story scheme was adopted—with complete separation of the guest or children's wing from the main pavilion fulfilling an important program requirement. Glass panels on both sides of the main living-dining area include the courtyard in the visual space and take advantage of sun and sky effects on the western exposure. The peaked roof allows double-story height for the sunken living den. Rough-sawn southern yellow pine is used on exterior and interior walls. The $25,000 cost includes gas-fired heating.

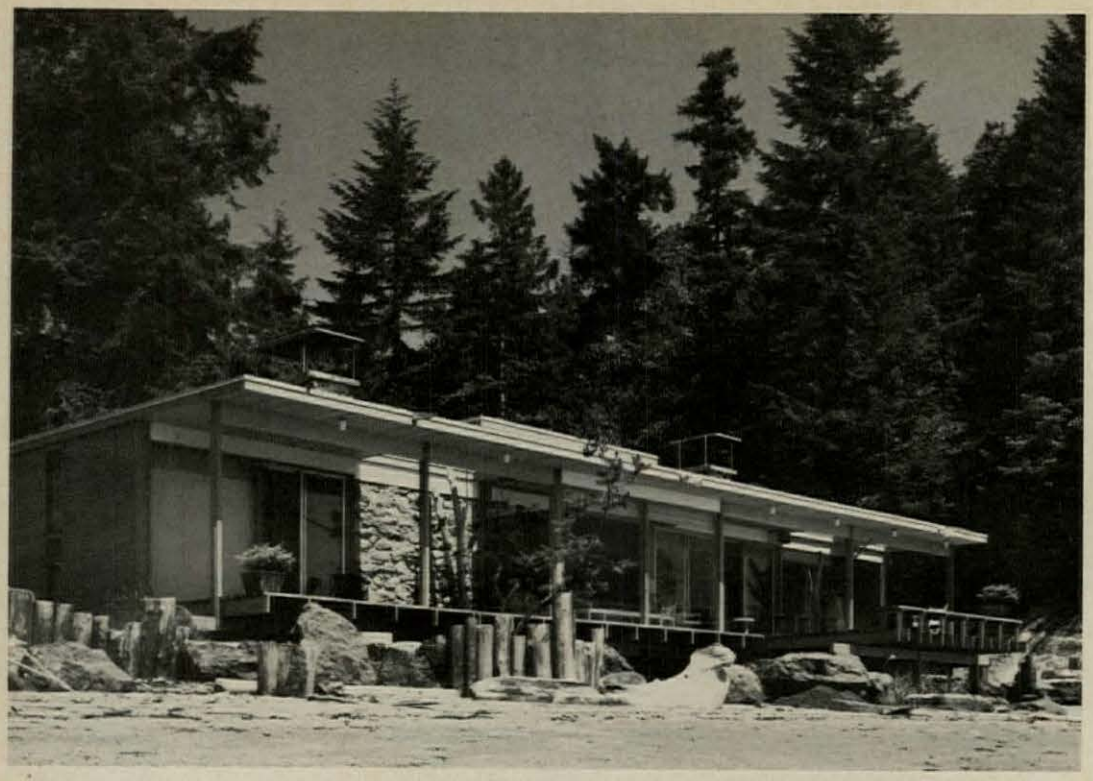
Residence for Dr. E. Arnold Jones, Amagansett, Long Island, New York. Architect: *Melvin H. Smith –associate Martin Munter;* contractor: *John Massey.*



Martin Munter photos





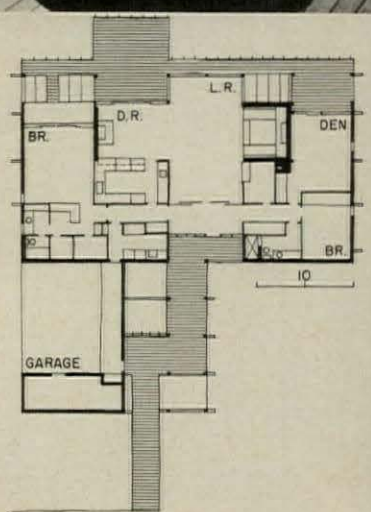


QUIETLY STATED HOUSE TAKES ADVANTAGE OF A WATERFRONT SITE

A year-round beach house beautifully situated at the southern end of Puget Sound takes full advantage of an impressive site while avoiding any conflict with the scenery. A broad, sheltered deck extends the house to the water's edge. As soon as you enter the house across the wooden bridge you are aware of the view right through the living room to the water. The restrained, horizontal building form, well-organized rectangular plan and imaginative details—such as the clerestory windows and the stone fireplace alcove—resulted in an Honor Award from the Seattle Chapter of the AIA.

Residence for Mr. and Mrs. William L. Dafoe, Longbranch, Washington. Architects: *Kirk, Wallace, McKinley Associates;* structural consultants: *Worthington, Skilling, Helle & Jackson;* mechanical consultants: *James B. Notkin & Associates;* contractor: *Leo Heather;* landscape architect: *Richard Yamasaki.*

Hugh N. Stratford photos

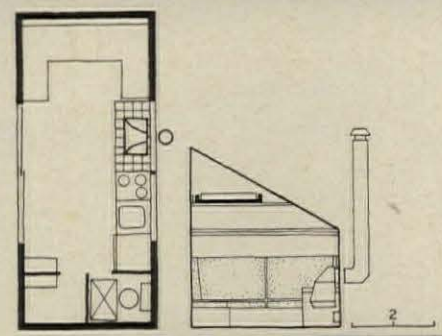


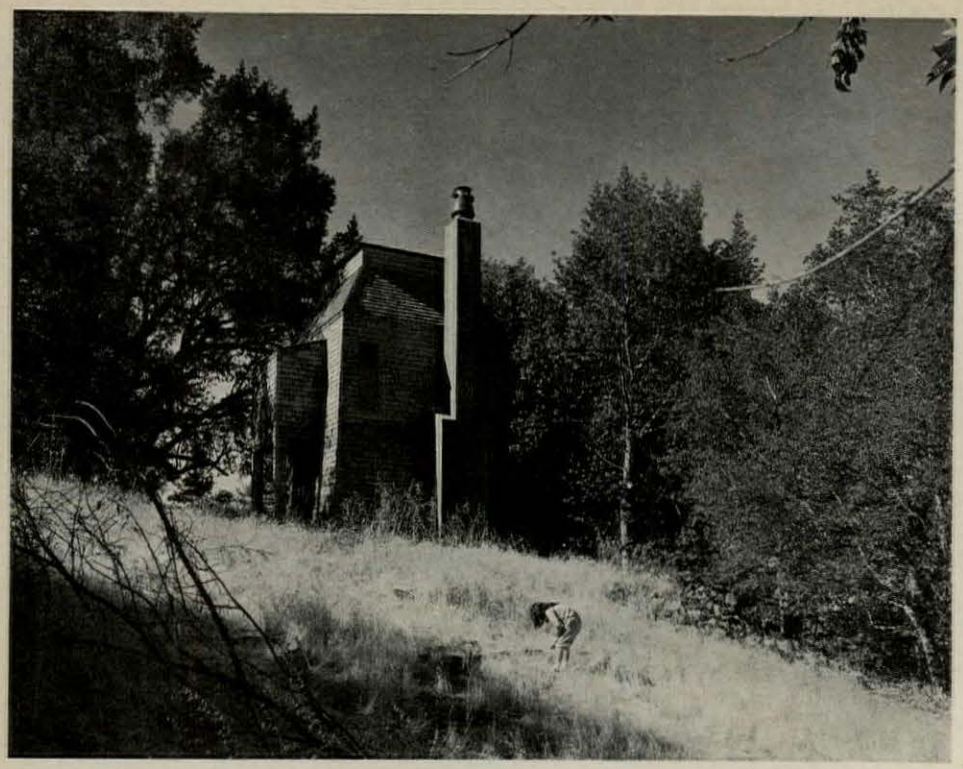
Louis Reens photos

THOUGHTFUL DESIGN IN TINY PACKAGE FOR VERSATILE VACATIONS

Earl Flansburgh's ingenious use of the shed roof to provide ceiling height and bunk space for this vacation cabin turns what might have been just another weekend shack into an attractive and compact vacation home. The prefabricated "Nutshell" house, which can be delivered complete to the site ready for immediate connection to sewage, power and water supplies, costs $3,995—exclusive of shipping, foundations and utility connection costs. Inside, the sofa folds down into a double bed, while two bunks fold down from the ceiling and can be hooked neatly back in place when not in use. Kitchen facilities, shower, toilet, a baseboard electric heater and a wood-burning stove are all included in the basic cost of this summer or winter cottage. Structure is wood frame with plywood walls.

Prefabricated house for Acorn Structures, Inc. Architect: *Earl R. Flansburgh.*



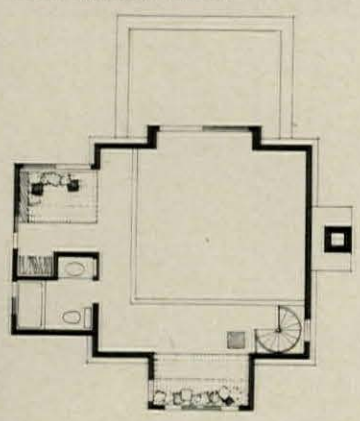


Joshua Freiwald photos

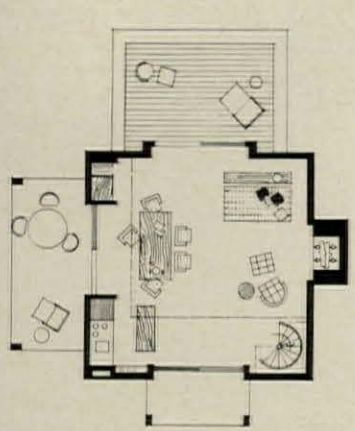
SHINGLE TURRET USES SPATIAL POTENTIAL

An exciting environment for weekend and vacation living has been provided in this 20-foot-square, 32-foot-high "tower house" situated in beautiful scenery just an hour away from the center of San Francisco. The interior forms one continuous space, broken only by the sleeping balcony and culminating in a dramatic 12-foot-square roof-skylight. Generous decks, unusual fenestration and a recessed fireplace add to the spatial interest and livability of the house, whose construction cost was $16,000. Dominant materials are cedar shingle and redwood.

Residence for Mr. Lon R. Driggers, Penngrove, California. Architects: *Kosovitz, Knox and Nairn;* engineer: *Ephraim Hirsch.*



LOFT FLOOR

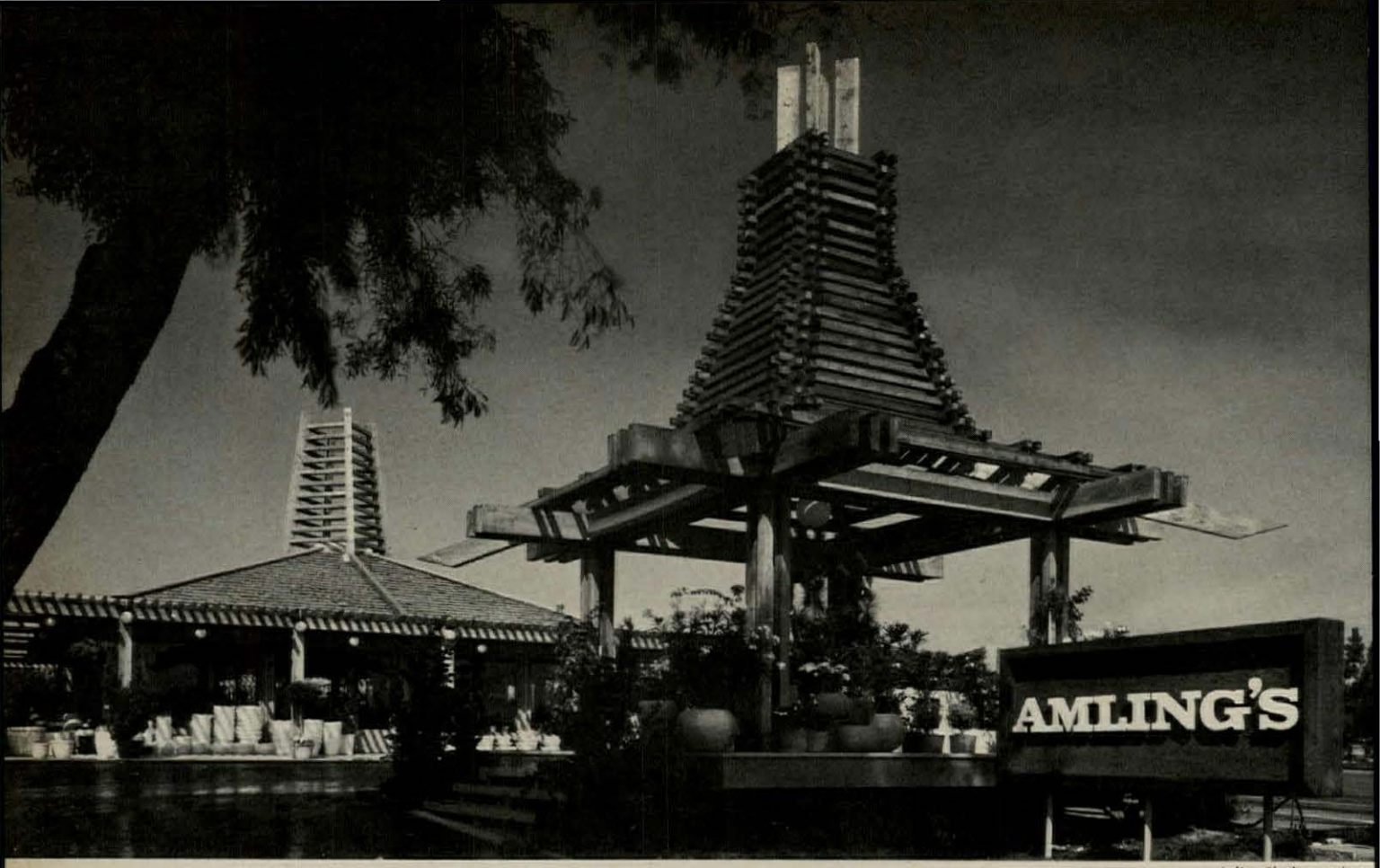


MAIN FLOOR

FOUR BUILDINGS FOR BUSINESS

These four buildings, each designed for the special needs of a business, are as varied architecturally as the commercial enterprises they house, but each contributes, through its distinctive—and appropriate—architectural solution, to the success of the business of merchandising products and commodities, proving again the interdependence of design and function.

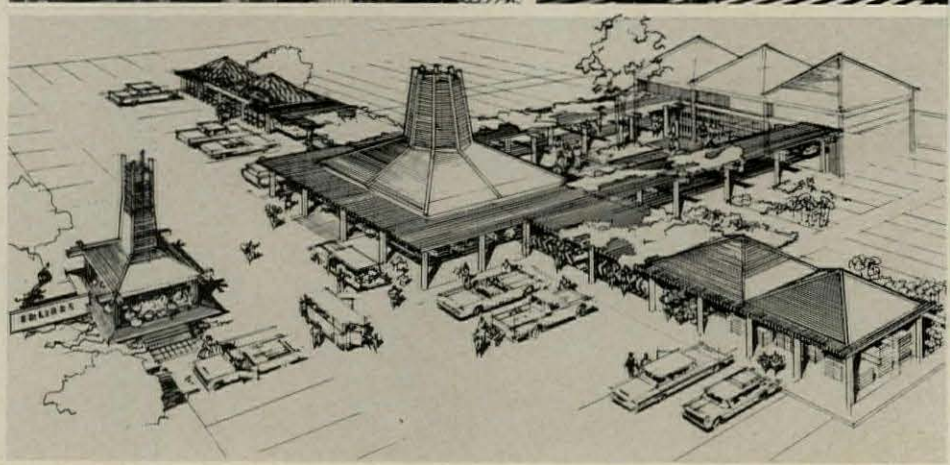
Julius Shulman



Julius Shulman photo

BUILDING DESIGN AS ADVERTISEMENT FOR BUSINESS

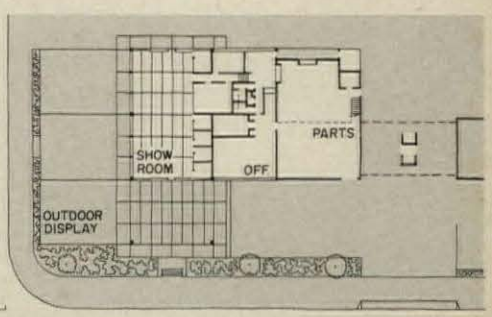
■ This garden materials sales center was designed as both a place for business and a life-sized advertisement for the business. Its location on the Coast Highway, one mile south of Newport Bay on the southern California coast, is in daily full view of some 100,000 persons who pass the site in 34,000 cars. The unusual and delightful character of the open wood pavilions and lath houses, and the display of plants and flowers, have proved more effective eye-catchers than any other means of attracting attention. The buildings are designed in units 20 feet square so that they can be moved easily when the freeway, scheduled to cut through the site, is built. The main sales pavilion, 40 feet square, is detachable into four 20-foot squares. All materials are used in their natural state—douglas fir, resawn redwood, cedar shakes—and were chosen to convey the "feeling of the barn, the open field, the exhilarating breath of air, and space." Cost of construction and site development was $50,000, exclusive of fees.



AMLING'S NEWPORT NURSERY & GARDEN CENTER, Newport Beach, California. Architect: *Thomas N. Echternach*, associate: *Ron Pollendine;* contractor: *C. Ed Soule.*

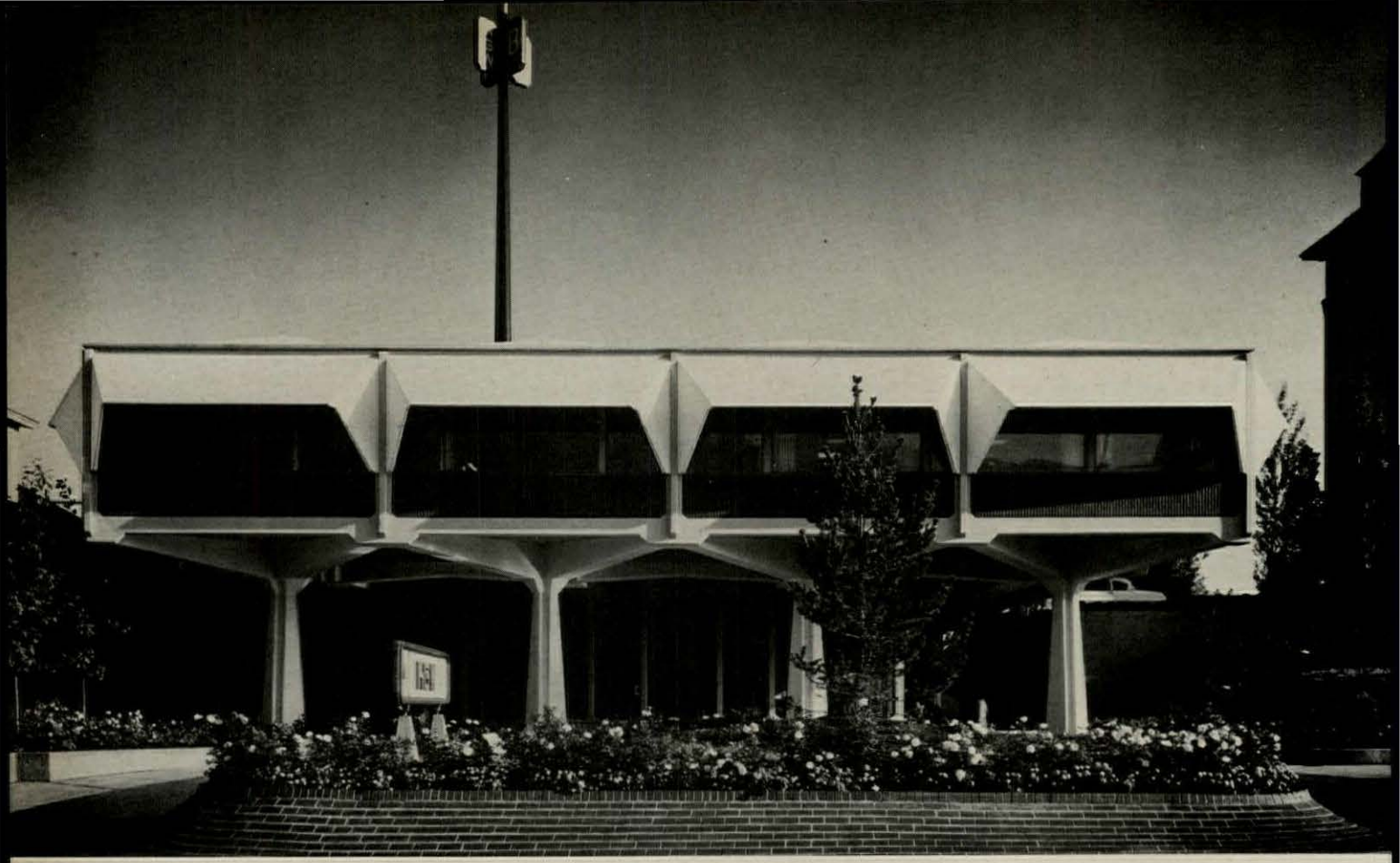
DIGNITY AND RESTRAINT FOR AN AUTOMOBILE SALES AGENCY

Strong simple forms, boldly used, give isual impact to this automobile agency n Southern California, and a sophisti- ated handling of materials and color dds to its handsome design. In a field of nerchandising not noted for restraint, his building effectively attracts attention vithout garishness or tricks. Red brick iller walls dominate the exterior appear- nce, but the building form is established y the dark plaster and concrete bands. The site is on a corner, and its slight slope rom front to rear is advantageously used o provide an elevated location for the lisplay areas inside and outside. Inside he building, the floor levels follow the rade, descending toward the rear. This hange in grade, and the change in use f the interior spaces, is expressed on the xterior. The building received an Honor Award in the recent Triennial Awards Program of the Southern California chap- er of the A.I.A.



Photography by Jordon

BILL HOPKINS LINCOLN-MERCURY AGENCY, Torrance, California. Architects: *Daniel L. Dworsky & Associates;* structural engineers: *Erkel Greenfield & Associates;* mechanical engineers: *Takahashi & Tobian;* electrical engineers: *Norman Levenson & Associates;* contractors: *Millie & Severson.*

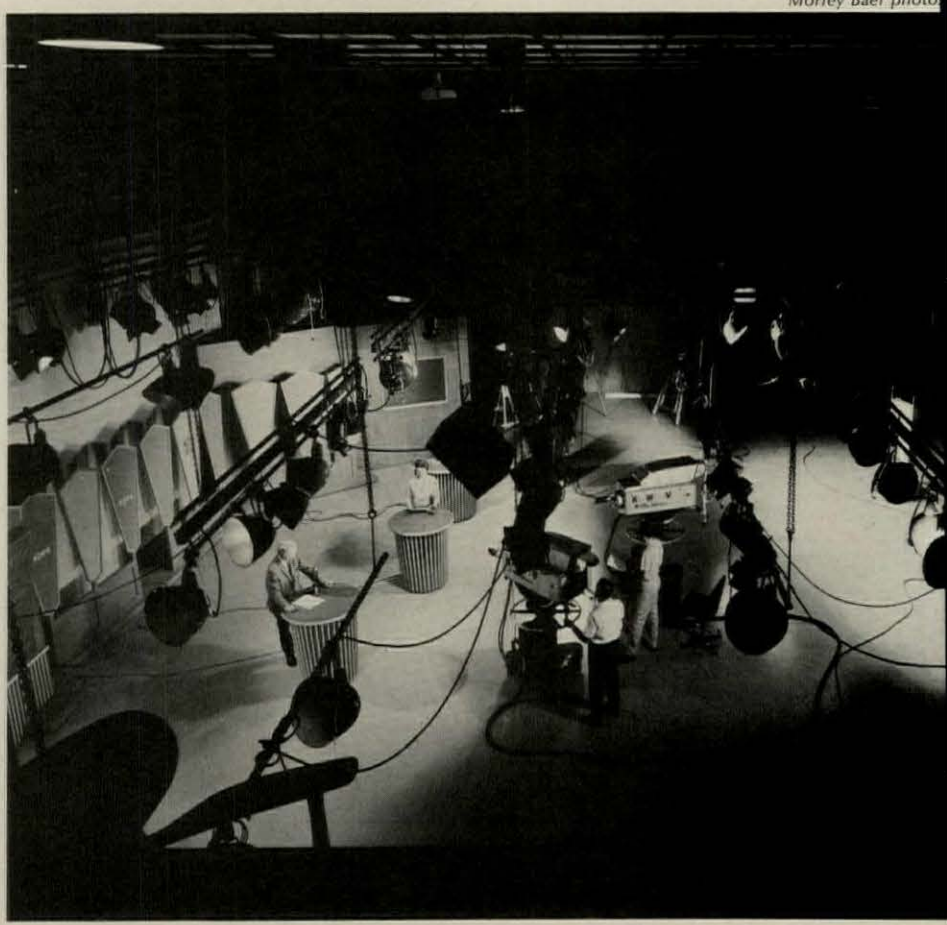


DESIGNED TO ENHANCE A BROADCAST COMPANY'S PUBLIC IMAGE

■ Besides meeting the complicated needs of an up-to-date broadcasting center, this building reflects the company's desire to present a handsome and distinctive face to the community as a means of retaining—and building—public acceptance. The architectural design is a direct response to these requirements. The building is of reinforced concrete and has a folded plate roof which makes possible an economical solution to the requirements for long-span space for studios and for flexibility in use of spaces. The concrete sunshades and the sculptured concrete columns, the pools on either side of the entrance walk, the brick paving which extends from the building to the street, and the pleasant landscaping which enhances the building are all means of attracting a pleasant public response.

Brick tile (¾ inch thick) laid vertically to distinguish it from standard brick, is used for its warm color, low maintenance and light weight.

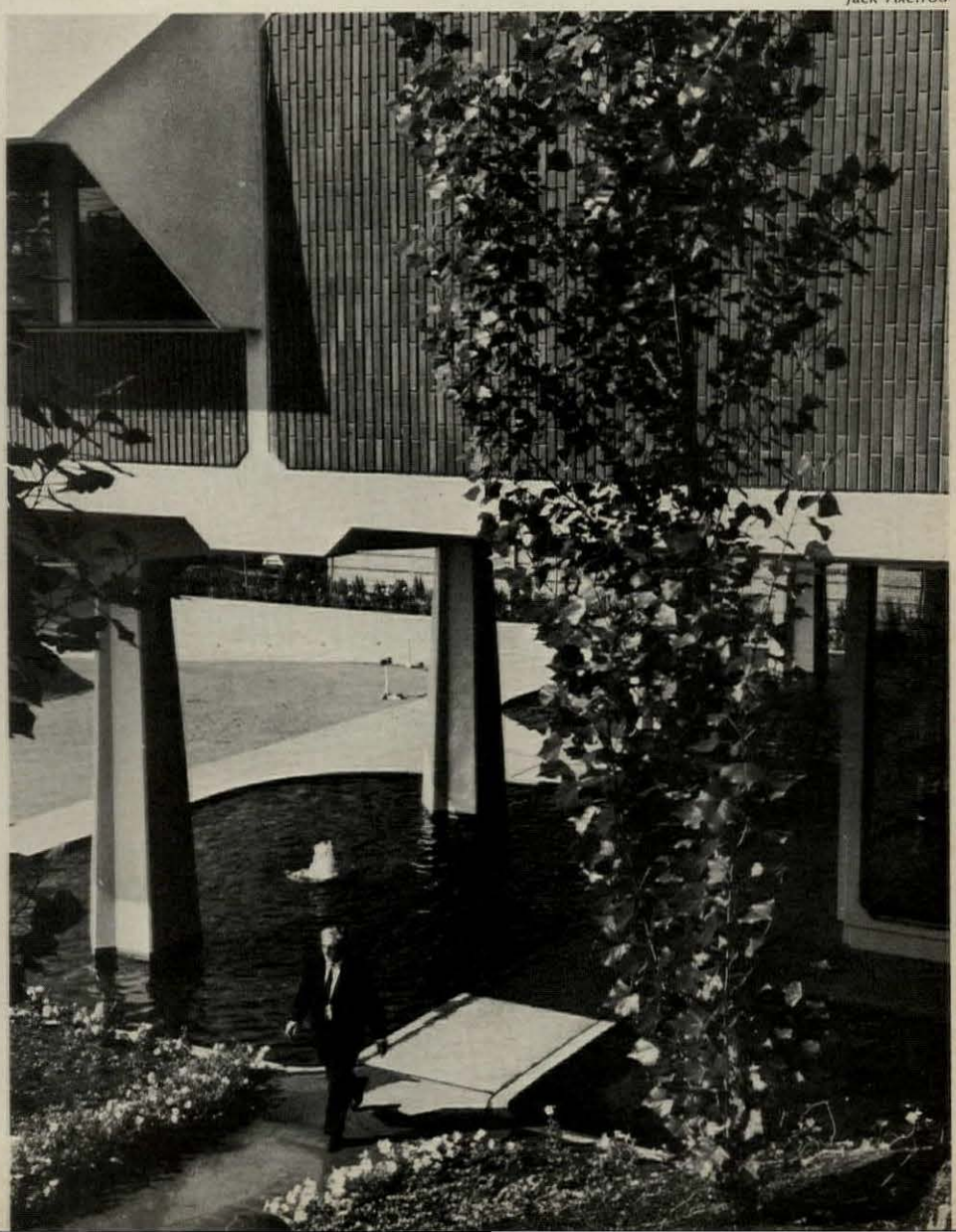
Morley Baer photo

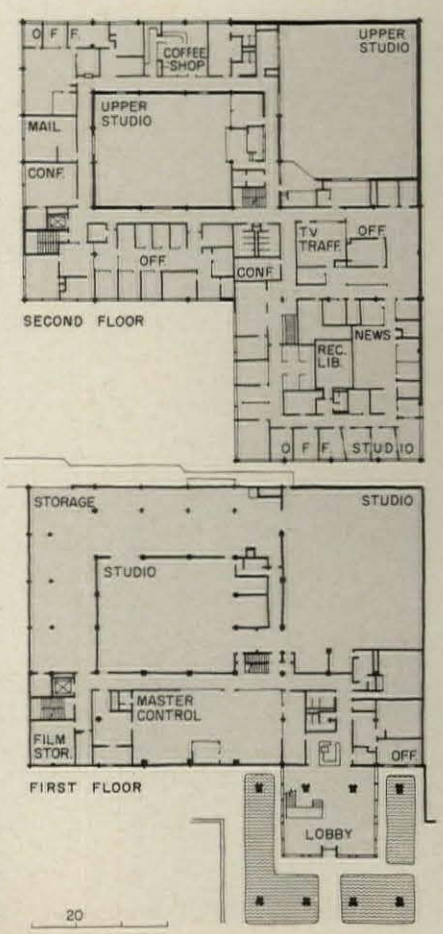


KGW BROADCAST CENTER, Portland, Oregon. Architects: *Fred Bassetti and Company;* mechanical engineer: *Omer T. Jacobson;* electrical engineer: *Grant Kelly and Associates;* landscape architects: *Richard Haag & Associates;* contractor: *Howard S. Wright.*

The concrete sunshades which cut the air-conditioning load, and the pools on either side of the entrance in which the columns stand along the front of the building are distinctive features of the design. The building won a design award from the Seattle Chapter of the A.I.A.

Jack Axelrod

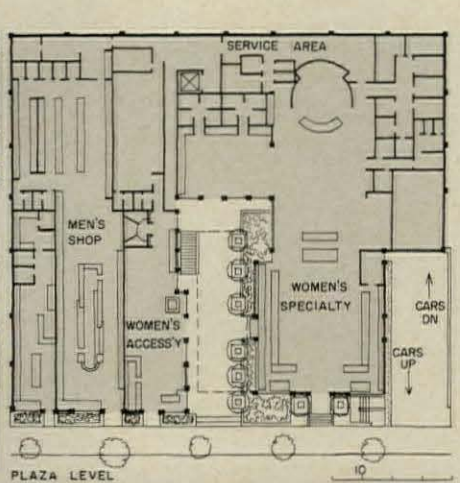


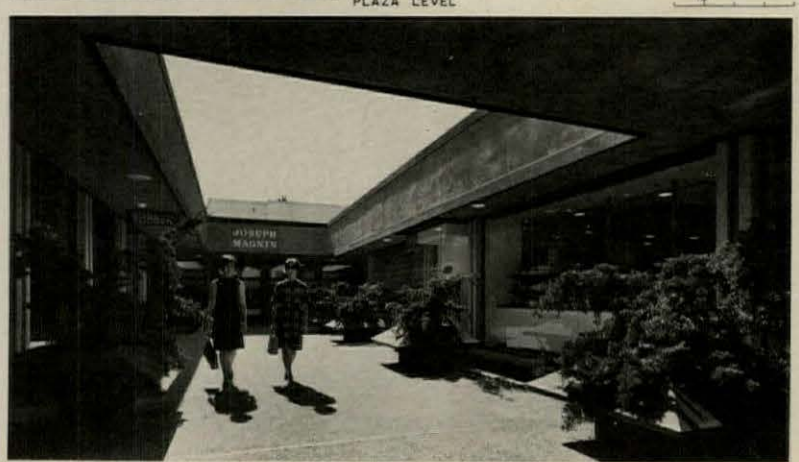


Karl H. Riek photos

AN URBAN COMPLEX OF SHOPS ON A SMALL INTERIOR LOT

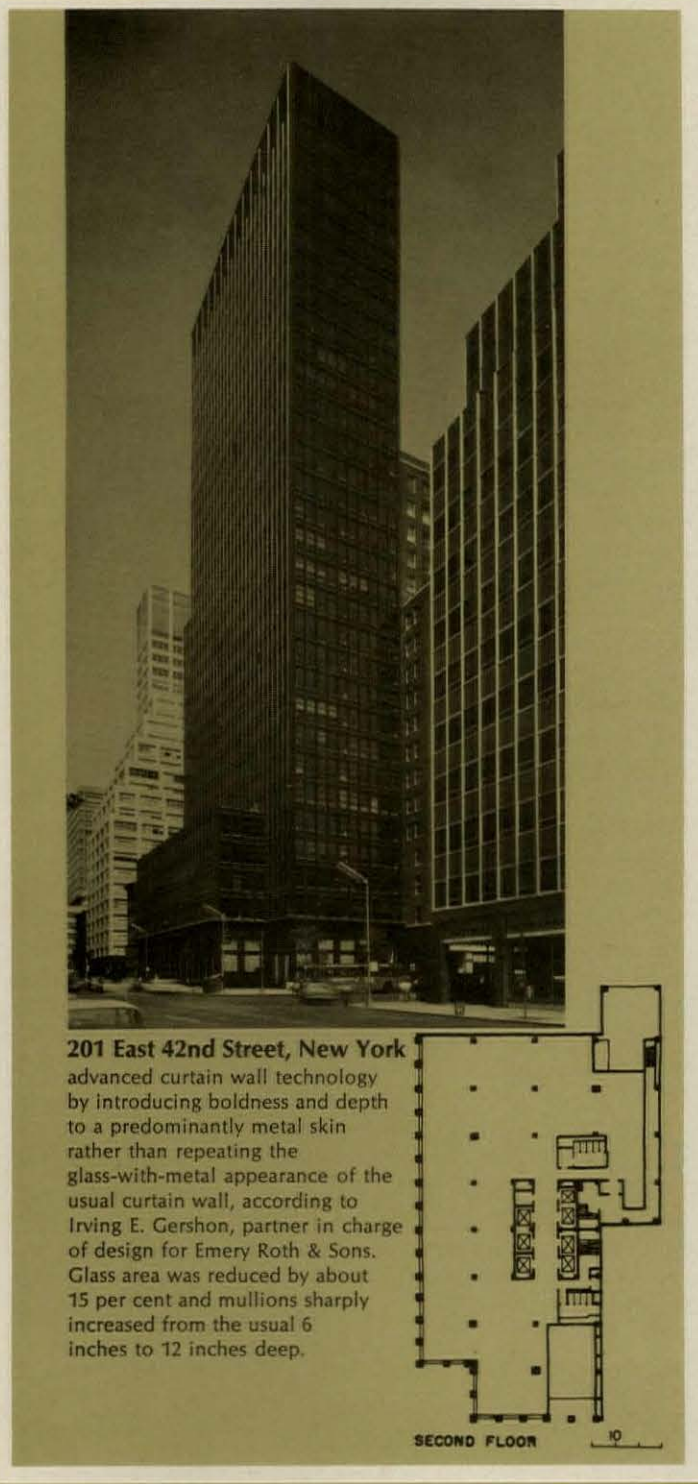
■ Bancroft Center has a fortunate location across from the campus of the University of California in Berkeley, which provides it with a ready clientele, but its pleasant arrangement of shops and the amenity of its parking is a design solution applicable in any other urban location. The site, an interior lot 150 feet square, is small for what it contains: four shops and a large central court, with parking underneath, for which a two-way driveway from the street had to be provided. The owner's original intent had been to build four shops fronting directly on the street. The architect's solution using the open court offered so unusual an environment, however, that it became the final design. The court is not only the focal point for the center but a source of daylight for the large women's specialty shop and for one of the three accessory shops. Its slight elevation above grade permitted shallower excavation for the garage. Graphics and store interiors were also designed by the architect.





BANCROFT CENTER, Berkeley, California. Architect: *John Hans Ostwald;* structural engineer: *Stefan Medwadowski;* mechanical and electrical engineers: *G. L. Gendler & Associates;* contractor: *Williams & Burrows, Inc.*

OFFICE BUILDINGS



201 East 42nd Street, New York advanced curtain wall technology by introducing boldness and depth to a predominantly metal skin rather than repeating the glass-with-metal appearance of the usual curtain wall, according to Irving E. Gershon, partner in charge of design for Emery Roth & Sons. Glass area was reduced by about 15 per cent and mullions sharply increased from the usual 6 inches to 12 inches deep.

The Cost-Quality Paradox

The two most important influences favoring an upgrading of quality in the design of today's office buildings have to do with economics. This is not to deny the all-pervasive influences of public taste, architectural education, and talent. These, for better or for worse, we have always with us in all kinds of construction. But the architect of commercial buildings, other than those lavishly underwritten as corporate status symbols, is only now finding relief from a sorry several decades when the constraints of cheapness and standardization were synonymous with economy.

Quality gets less paring as mechanical costs increase

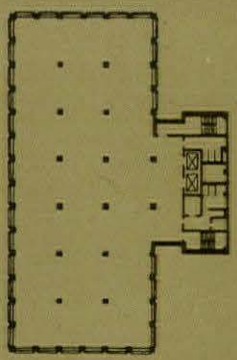
The increasing relative cost of mechanical and electrical components of office buildings has resulted in a corresponding decrease in the portion of the budget dollar allocated to the so-called architectural components. Hence, less impressive savings can be shown by paring the quality of materials and finishes. For example, if the exterior walls of a building represent only 10 per cent of its cost, a fractional saving in wall materials will not represent a very significant percentage of the over-all budget.

It is true that a very small fraction of a very large budget can represent several hundred thousand dollars. But where millions of investment are at stake, a sacrifice of quality for relatively small savings is not likely to be undertaken as a matter of course in a market where quality is increasingly regarded as an important adjunct of the investment.

Lenders want tenants who want quality buildings

The second fundamental economic change bearing upon architectural quality of office buildings has to do with the changing attitudes of money sources.

Cunningham © Werdnigg



New Britain Bank and Trust Company Building,
New Britain, Connecticut.
Architects: Emery Roth & Sons; sponsor: First Hartford Realty Corp. This first building in a central urban renewal project is set back 30 feet on its 114- by 230-foot corner site. Mechanical core and stairwell are in offset, precast paneled tower. Landscaped plaza of black brick and concrete fronts the glass-enclosed first floor.

Both the investment builder, who intends to own and operate the building as income-producing rented space, and the so-called speculative builder, who intends to sell the building soon after its completion, find that mortgage lenders want to know who the major tenants of the building are going to be before a commitment to finance is made.

Here the builder is likely to encounter a changing attitude on the part of prospective tenants with regard to the quality of space they may agree in advance to occupy. The effectiveness of high-quality structure in reflecting corporate image has been amply demonstrated by many examples in many cities.

Now many other corporations, not necessarily giants in the national economy, are insisting on the same kind of quality when they are approached as prospects for major leases in new buildings. In fact, even the branch offices of larger corporations tend to locate in buildings which support an image that may have been built into a high-quality home office building.

The simplified envelope improves in quality

Both of the influences so far described are underscored and ramified by many side effects. As Richard Roth Sr. pointed out in a recent interview, the rising costs of mechanical and electrical components had something to do years ago with accelerating simplification of the building envelope. While this simplification, manifested in curtain walls and various precast shell devices, has been through phases wherein its primary objective of economy was all too apparent, curtain wall manufacturers have come up with many new assemblies of high-quality materials and have developed a capability for custom work.

In reviewing the New York scene, with which his firm, Emery Roth and Sons, is eminently familiar, Mr. Roth recalls that former code stipulations c setback heights placed serious co straints upon design; and program r quirements calling for maximum env lope under those conditions left litt or no opportunity for architectural d velopment. Nowadays, with new zonin encouraging plazas and concourses, a chitects can exercise considerably greate design ingenuity.

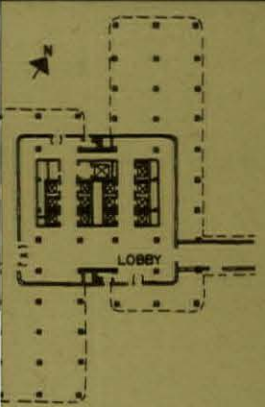
Design in smaller cities is more status-motivated

Office building design outside of Ne York and a few other major cities, M Roth observes, encounters quite a di ferent set of design criteria. In smalle cities, the newest commission is likel to be for the tallest or most importan looking building in town, whether o not it is to sustain a corporate image Considering that the prospective ten ants for such buildings are likely to b drawn from extremely low-rent existin structures, the problem of "selling" qual ity to tenants confronts resistance whic sometimes puts an impractically lo ceiling on chargeable rents. Architect should be prepared to offer clients soun financial analysis in such situations s that the true price of status building (o over-building) is clearly understood.

A notable example of conservativel directed enthusiasm in smaller-city com mercial building is the New Britain (Con necticut) Bank and Trust Company Build ing illustrated at left. The company ha played a leading role in a 90-acre, $26 million renewal program for the city' central business district; in which thi $2.3-million, seven-story building is th first construction. The bank occupie the first 2½ floors. The rest of the 70,000 square-foot structure is leased.

The bank wanted a strong, modern statement consistent with its leadership in the renewal project and the commer cial life of the city. The building wa to be moderate in size, scaled to the

© Ezra Stoller



ohn F. Kennedy Federal Building
n Boston's Government Center is a
lemonstration by The Architects Collaborative,
vith Walter Gropius and Norman Fletcher
s partners in charge, of the skilled
andling of a relatively inflexible program
nd stringent budget in a dignified
nd impressive solution. The building is
lescribed in some detail beginning page 184.

town of about 84,000 people. Design architect Richard Roth Jr. selected a combination of precast white concrete panels with strongly expressed bronzed aluminum window frames and tinted glass. Far from the embellished luxury of the high-budget corporate image, this building is intended and succeeds as a dignified and thoughtful solution to an investor's program in context with upgrading the business center of a city.

External materials selection can affect framing costs as well

It seems almost too elementary but is an often-overlooked fact that you may not simply add a factor for each square foot of exterior wall as you progress through alternates of increasing cost. Assuming that a light-weight curtain wall is at the low end of the scale of overall cost, the architect and his estimator must remember that as materials are added in a search for a higher expression of quality, the weight of the skin increases. Most such additions simply mean an increase in the weight or strength of steel in the structural frame —which is, of course, an added cost.

If an alternate of heavy precast or limestone members is considered, the total increase of cost, including supporting steel, can be on the order of 30 per cent in some locations. While this may still be a small percentage of total budget, it should be realistically considered, since square-foot cost of the materials themselves may be low.

Similarly, if even heavier stone materials, such as granite or travertine, are considered, the framing itself may have to be converted to concrete for proper application. Here again, the square-foot cost of surfacing materials is affected by internal factors. And of course, to labor the well-known once more, the choice between concrete and steel framing itself on a cost basis can go one way or the other in different regions.

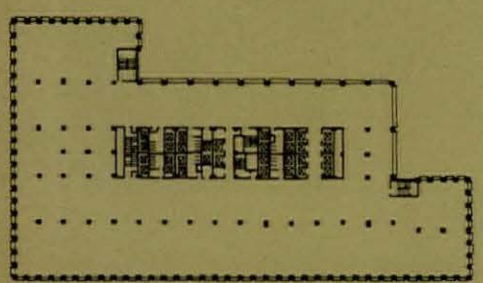
An investor's program lays the groundwork for quality

A document at hand is a proposed program for a new office building to be built and owned as an investment by a large insurance company. It is in general a "performance"-type program based on an architects' conceptual scheme showing the site (28,000 square feet, including 7,900 square feet of plaza area in a southern city) and translating an objective of some 567,000 square feet of gross rentable area into 29 office floors and two mechanical floors.

Of interest in the cost-quality context of this discussion are the opening general remarks of the document: "Because of the relatively low rentals obtainable in this city and relatively high land values, there is a burden placed upon the building itself as to cost and efficiency. The building must be designed to give the greatest efficiency of rentable space versus gross, and must be designed also so that time-tested materials and design features are used extensively. It is expected that because of the high caliber and ingenuity of the architects that this can be done and at the same time [we can] have a building produced which will be distinguished and different from the run of office buildings in this city."

Further suggestions of interest are: "If test borings show that clay extends down to, say, 40 feet below grade, then we can have two or possibly three basements. . . . This will be purely an economic consideration—i.e., rental obtainable versus cost of construction." And again: "If it is possible (with specified elevators) to add an additional story, this should be seriously considered." This is a sampling, admittedly scanty, of the trend of thought of one large office building client who demands an above-average but not the highest cost-quality range in all his investment buildings.

In 345 Park Avenue, New York,
programed for almost 2 million square feet, gross in 44 stories, Emery Roth and Sons confront the problem of designing a commercial building situated between two disparate landmarks of architecture—the Seagram building and St. Bartholomew's Church.
To reduce tower height, six-story buildings were annexed at three sides and scaled to match Seagram's low side and plaza.



"The push for quality must come from the people"

So stated Walter Gropius in recent reflections about what he observes as emerging opportunities for design. In different countries, the rank order of the different professions varies markedly. For instance, some European and Asiatic countries put the teacher, the scholar and the artist in the top rank; whereas in the United States, which had to build from nothing, the business man was, and still is today, most highly regarded.

Changes in these rank orders are very slow, Dr. Gropius observes, but it is noticeable that the modern businessman in the United States has recognized the need to promote cultural progress. There is sufficient evidence today that big business feels responsible for good architecture in new buildings.

The key to improvement, says Gropius, seems to be ever-better education, which would start with the need to pay the teacher more in order to continue to attract good people into the profession. Some progress in this direction is noticeable, but it is not enough. Says Gropius: "Any hope for raising the general level of quality of architecture starts in schooling of all people at all ages. We can not do anything without the response of the people. All of these influences are tied up with raising the level of quality in whatever economic climate may exist. The push must come from the people."

Design quality has two aspects, says Gropius. First and uppermost in the mind of the designer must be the wish to create buildings which become the image of the desired human and social aspects of life. Second is the material problem of sufficient money to translate these spiritual ideas into high-quality work. To reach this goal, the designer needs the understanding of the people; the creator needs the response of the user.

—William B. Foxhall

Morley Baer photos

Store-office-apartment on a tight urban site

Fox Plaza in San Francisco is the first multi-use building on the West Coast to combine a two-level shopping center with a high-rise consisting of 12 stories of office space separated by one floor of mechanical services from a top 16 floors of residential apartments. There is also a two-level underground garage.

The shopping complex is clustered around a covered and skylighted central plaza. The building replaces the old Fox Theater on a small triangular plot of 64,000 square feet facing Market Street in a first hopeful step toward revitalization of a run-down section of the city. In spite of the restricted site, the vertical arrangement of offices and apartments made it possible to maintain a generous set-back creating a landscaped plaza.

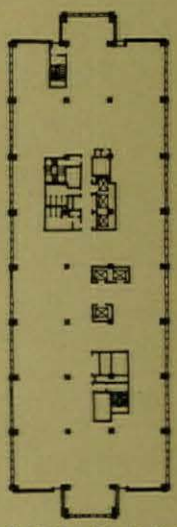
This combination of vital downtown elements into a single complex was awarded the State of California Governor's Design Award for excellence in the category of urban buildings. The chief designer was Rudy Baumfeld and chief engineer was Edgardo Contini—both of Victor Gruen Associates.

Structural problems presented by the unique combination of facilities were complicated by a requirement for ultimate column spacing for parking structure, office building and apartment building which required study of many alternates to reconcile a sound structural system with code requirements covering seismic and wind forces. The diverse framing requirements were accomplished in part by transfer of a 14-foot typical bay of the upper apartment levels to a 28-foot bay in offices and garages.

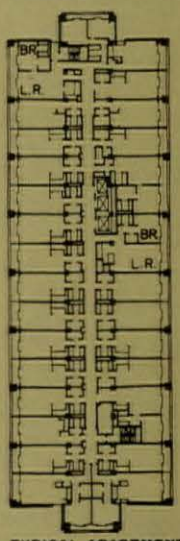
FOX PLAZA, San Francisco, California. Owner: National General Corporation. Architects and engineers: *Victor Gruen Associates;* foundation consultant: *B. L. Nishkian;* general contractor: *Cahill Construction Co.*


HOTEL

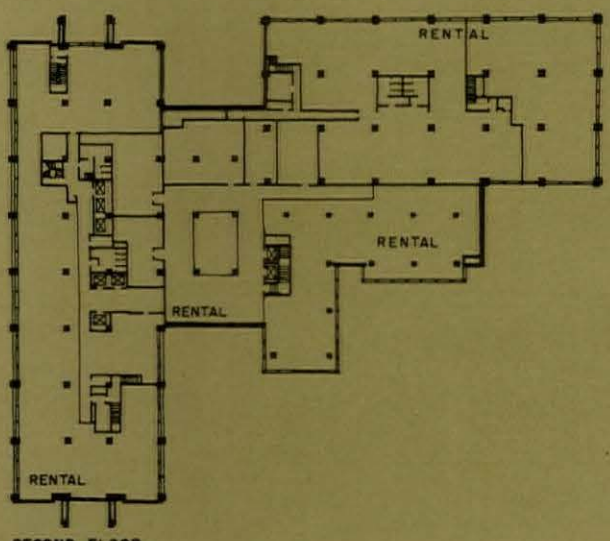

FOX PLAZA



TYPICAL OFFICE FLOOR



TYPICAL APARTMENT FLOOR

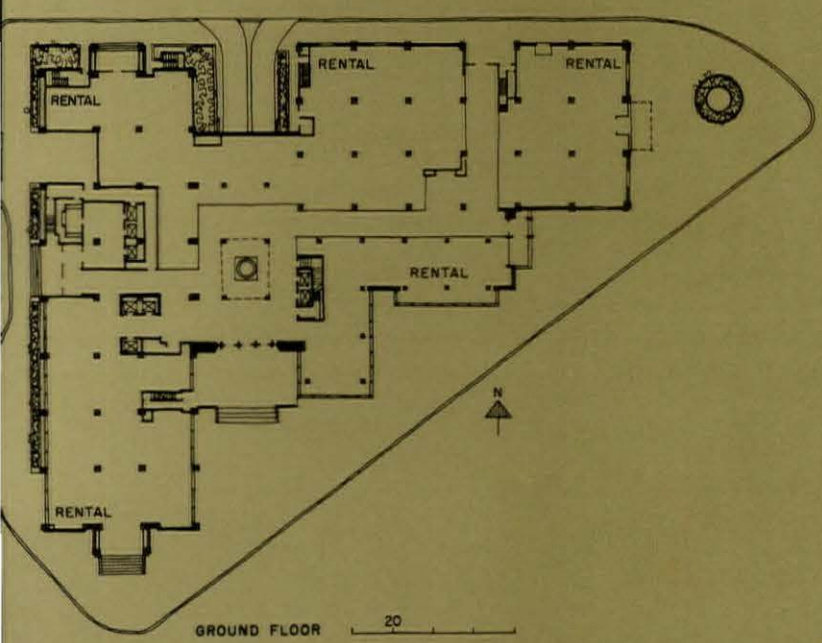


SECOND FLOOR

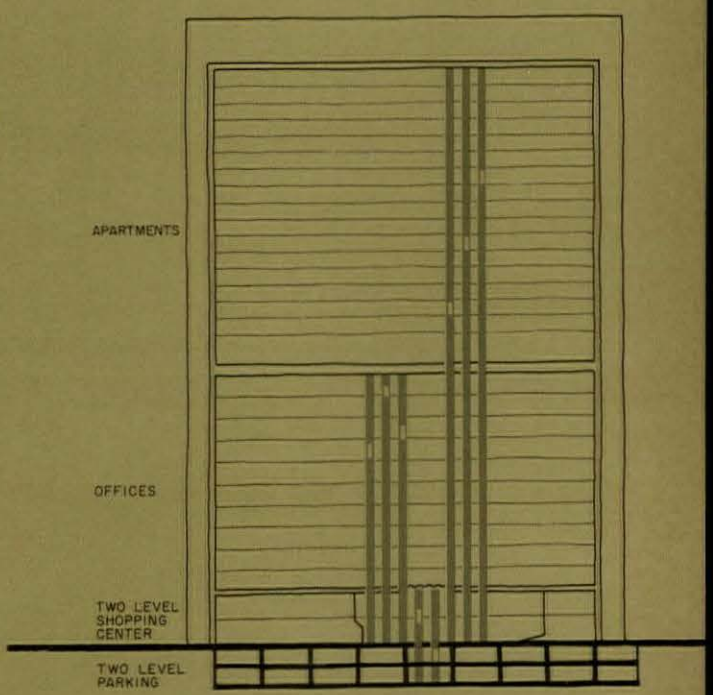
The framing arrangement devised for apartment floors made it possible to limit floor-to-floor height to 9 feet 3 inches while maintaining room ceiling height at 8 feet 9 inches.

Separation of traffic to the various components of the complex is accomplished by separate entrances and elevators serving separate but adjoining lobbies for offices and apartments. Entrance to the shopping plaza is separate and served by a large lobby with a fountain in the center.

Air conditioning is supplied to the shops and offices from an absorption system on the mechanical floor. Apartments are not air conditioned but are heated by fan-coil units in small closets. The lack of air-conditioning ducts in apartment areas was one of the reasons for the high ceilings in relatively small floor-to-floor height. This height for the office section is 12 feet 4 inches with an 8.5-foot ceiling height.



GROUND FLOOR



Gordon H. Schenck Jr. photos

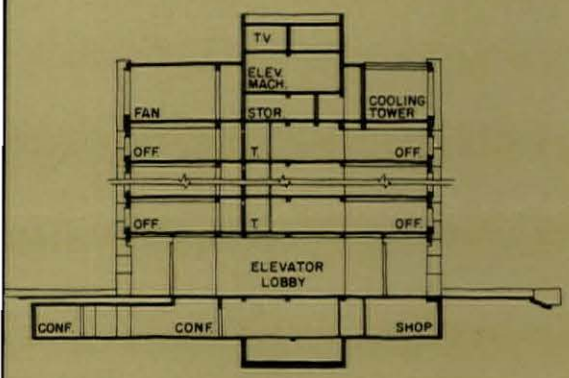
Strong marble verticals for a state office building

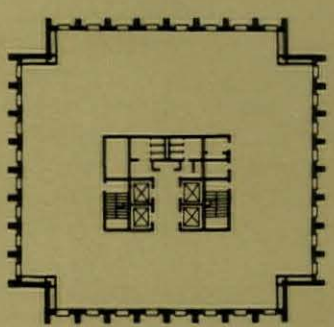
Since the Rutledge building is the firs state office building to be erected i South Carolina since 1938, the progran required the architects to erect a build ing with sufficient monumentality t symbolize the dignity of State Govern ment, but which would also be func tional, contemporary and easy to main tain. The use of white marble in th dominant vertical fin structure blend well with traditional neo-classic southern architecture, is easy to maintain and pro vides the simple elegance demanded b the program. The plan is functional and well organized, with office spaces sur rounding a central core of elevators mechanical equipment, toilets and stor age facilities.

The landscaped podium from which the 13-story building rises has severa functions. In addition to providing at tractive open space around the build ing, it also serves to compensate for an awkward grade change on the site, and is used to provide fall-out shelter fo civil defense facilities.

The glass-walled lobby floor is se back behind the marble columns which are complemented by the marble-faced interior. The distinctive treatment o the entrance floor sets it off appropri ately from the bronze-finished aluminum window-walls of the upper office floors. Change of function is thus clearly ar ticulated in the exterior form of the building, but is not in any way disrup tive of the unity of the total scheme. The building has received design awards from the South Carolina Chapter of A.I.A. and Marble Institute of America.

RUTLEDGE OFFICE BUILDING FOR THE STATE OF SOUTH CAROLINA. Architects: *Lyles, Bissett, Carlisle & Wolff;* general contractor: *Congaree Construction Co.*





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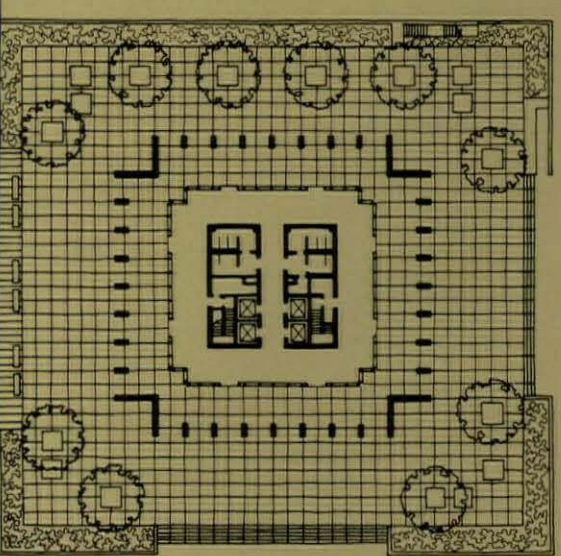
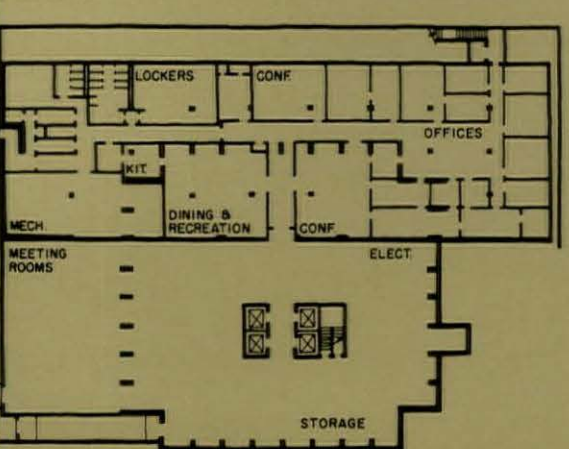
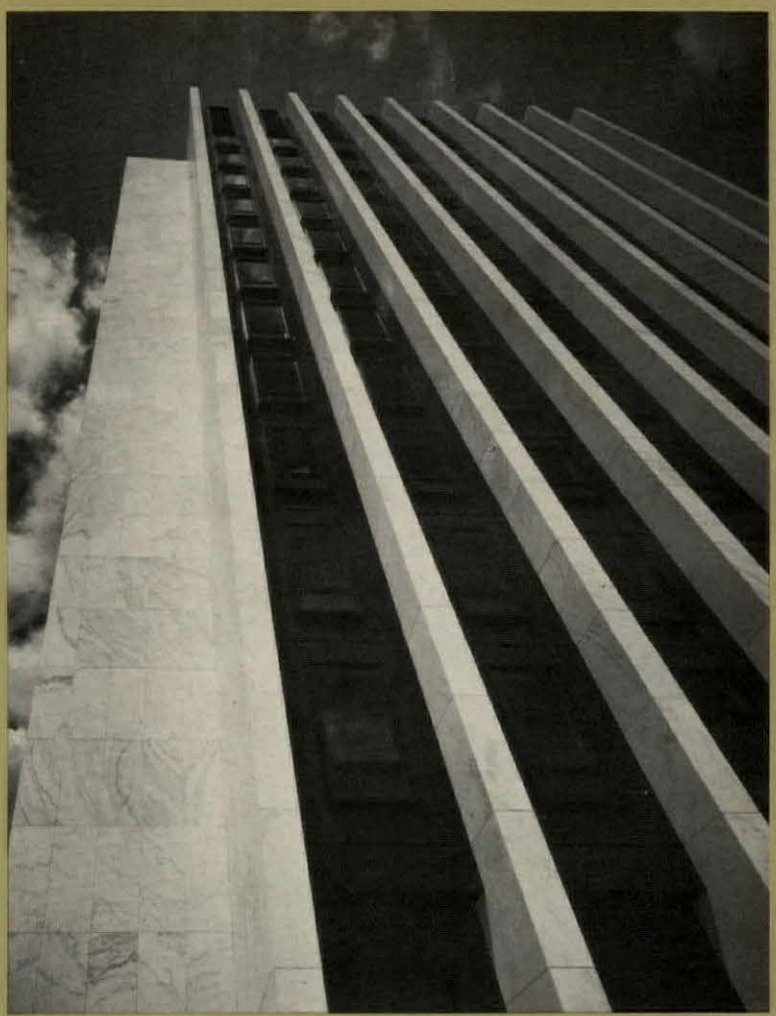


GROUND FLOOR

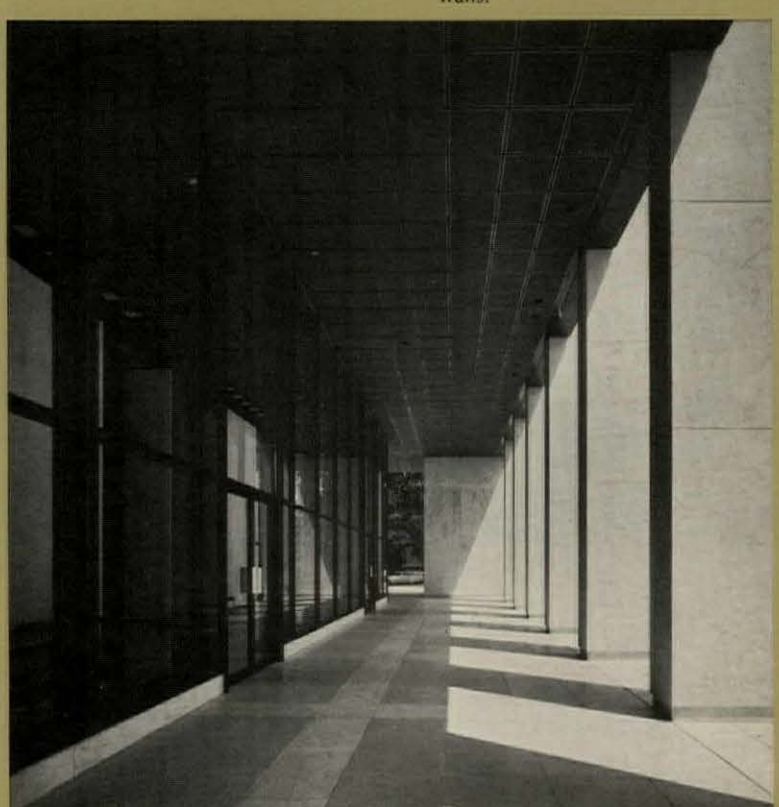


BASEMENT

10



Structure of the building—which cost approximately $2.9 million—is reinforced concrete columns, beams and pan-slabs designed on a 4-foot module. Light troffers provide air-conditioning outlets and return from a dual-duct system. Exterior cladding is marble with aluminum window-walls.



Morley Baer photos

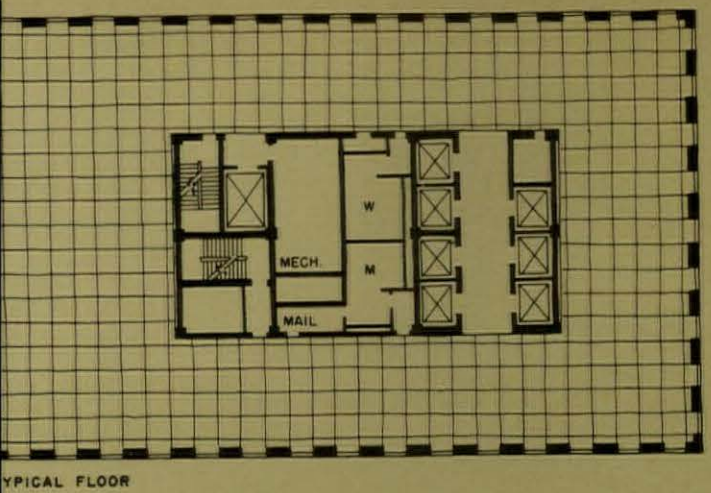
Early consultation works for unity of arts

Architects, landscape architects and artists joined forces in conceptual phases of this building. Although it was programed to house the supporting activities of a headquarters building diagonally across the street, it is in no sense minor. Development of the main entrance plaza and pool, for example, enlisted the talents of landscape architect Theodore Osmundson & Associates in a scheme for changing flowers every month, mosaic artist Alfonso Pardinas in a colorful reflecting pool, and architect-sculptor Stefan Novak for striking welded-metal wall mountings in the glass-enclosed main lobby area. The result does not pretend to be an architectural monument, but conveys some of the joy and seasonal variety of New York's Rockefeller Plaza in a public meeting place and approach to a dignified office building.

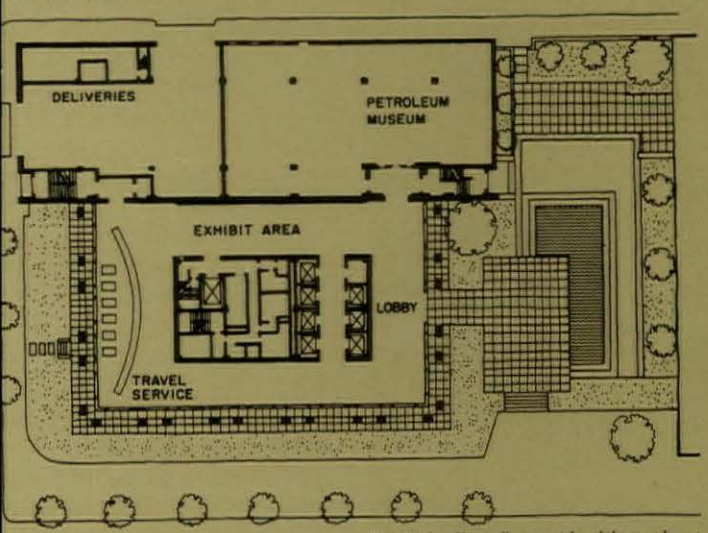
Of the 165,000 square feet, Standard Oil occupies five lower floors, which include three floors of about 19,000 square feet each, providing the large open spaces needed by departments like engineering and marketing. Other features of the company's floors are: an employee cafeteria and kitchen to serve 400, a lounge and a floor devoted to rooms for training programs.

Present site coverage is about 50 per cent, but Standard Oil will build additional headquarters (present headquarters is a block away) west of the plaza.

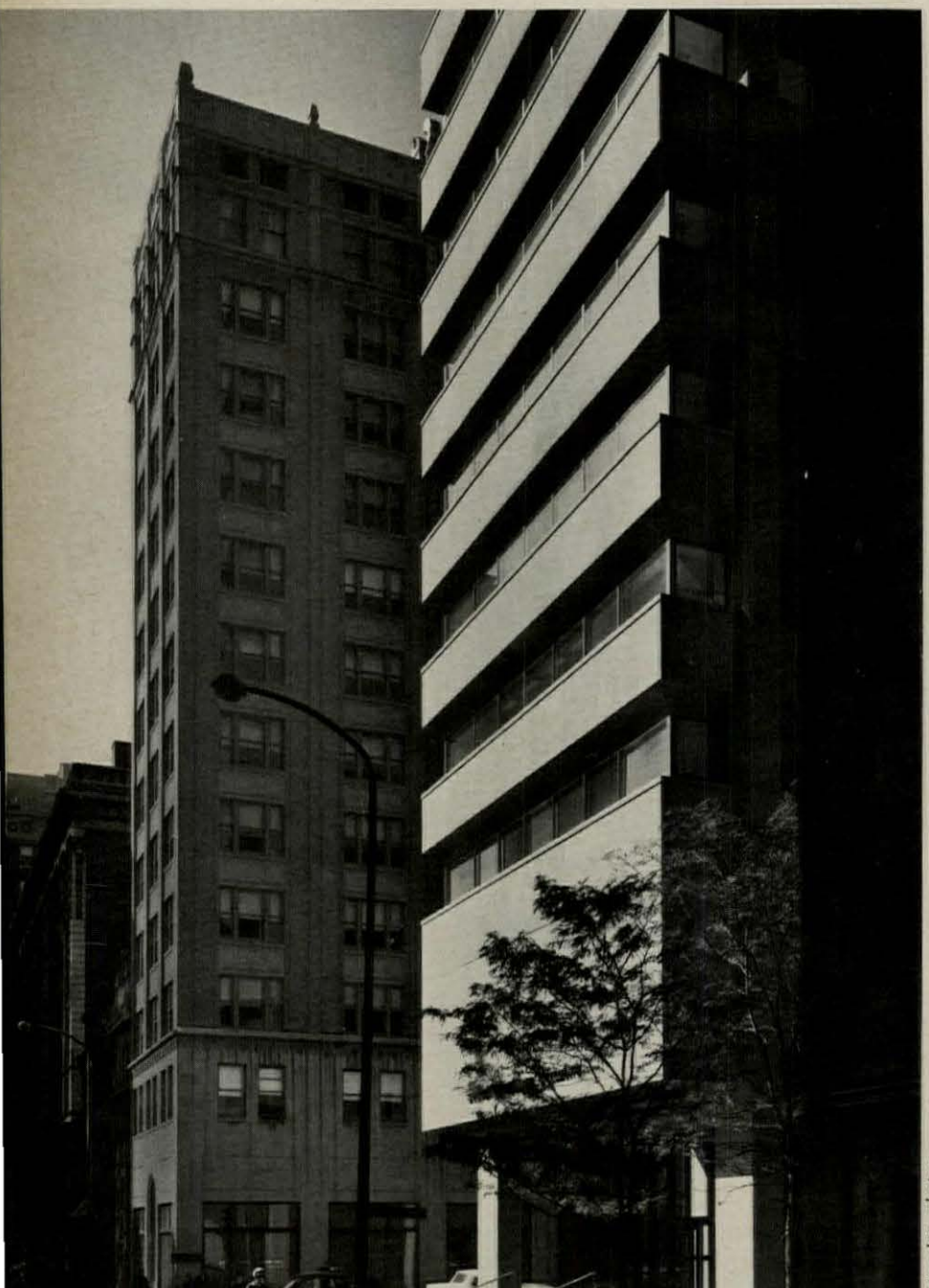
555 MARKET STREET, San Francisco. Owner: *Standard Oil Company of California;* architect: *Hertzka & Knowles;* structural engineers: *H. J. Brunnier & Assoc.;* mechanical and electrical engineers: *Buonaccorsi & Assoc.;* landscape architect: *Theodore Osmundson & Assoc.;* general contractor: *Dinwiddie Construction Co.;* decorator: *Eleanor Forbes of Gumps Inc.;* artists: *Stefan Novak, sculpture, Edith Hamlin, cafeteria mural, Alfonso Pardinas, plaza pool.*



YPICAL FLOOR



Typical office floors (double scale at top) are planned on a 4.5-foot module with mechanical and electrical services also modular. Framing is steel. Tower roof will be a heliport. Exterior walls are ceramic veneer with bronzed aluminum window frames. Relief map, right, is by Jack Hoag.



Lawrence Williams Inc. photos

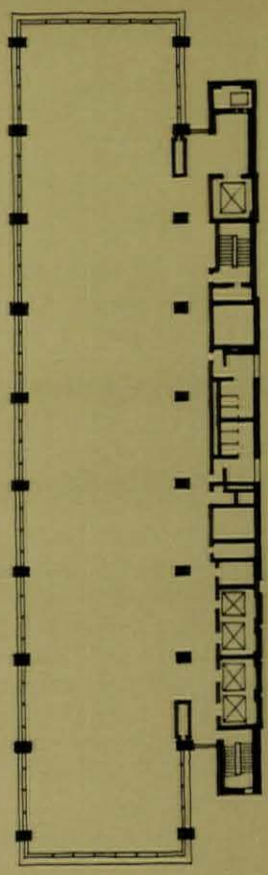
Progressive-traditional style for bank operations

Vincent Kling's $7-million Stock Exchange Building in Philadelphia applies good design and sophisticated mechanical-electrical systems to support facilities for a bank's operations. Provident National Bank, the owner-client, uses the first six floors, including a computer installation on the first floor. The remaining six floors, 60,000 square feet, are rentable. The 257-member Philadelphia-Washington-Baltimore Stock Exchange is principal tenant.

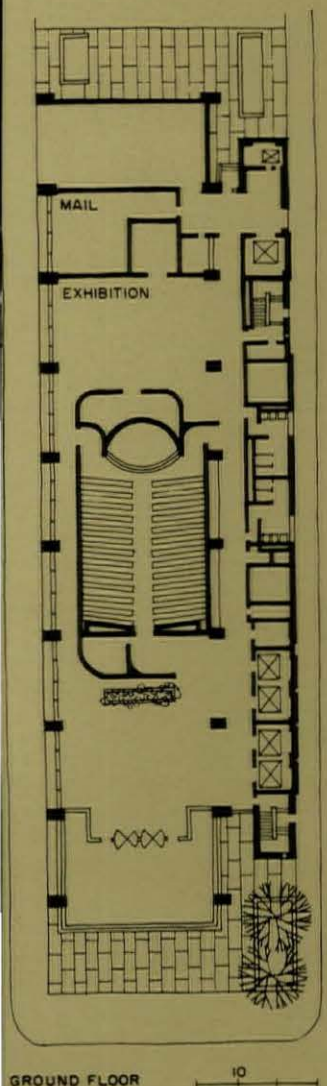
The 246- by 65-foot site is a well-known location in the banking and financial district. Architect Kling avoided any tendency to allow a weaker facade and less-impressive approach on the narrow (east) end of the site by adding a 20-foot setback to his ground-floor design vocabulary of strongly expressed columns and deeply splayed spandrels (photo at left). The resulting space becomes a small court. On both east and south facades exterior space is let into the building via a portico made by setting the all-glass lobby wall back one bay.

The 42-foot-wide, 218-foot-long clear-span floors have a 5-foot 9-inch by 5-foot 6-inch modular electrical and air-conditioning grid. Two air-conditioning systems can circulate either cold air or cool or warm water as required. A two-channel underfloor raceway duct system adds flexibility in placing telephone and electrical outlets. An automatic vertical mail conveyor system uses lock covers sanctioned by the post office—and carries bank receipts as well as mail.

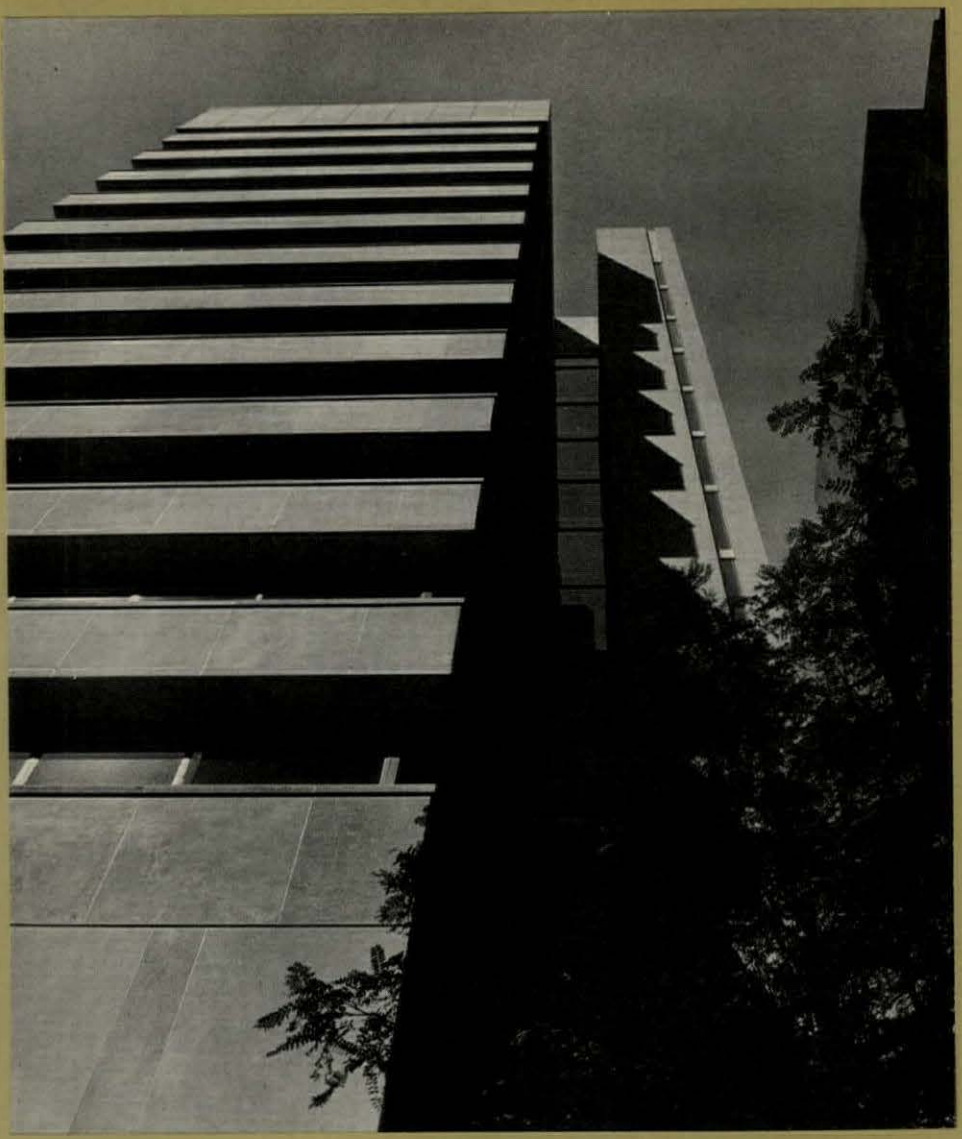
STOCK EXCHANGE BUILDING, Philadelphia. Owner: *Provident National Bank*. Architect: *Vincent C. Kling and Assoc.—John Rutkowski and Joseph Marzella co-ordinating architects;* structural engineers: *Allabach and Rennis;* mechanical-electrical engineers: *Charles S. Leopold Inc.;* general contractor: *Turner Construction Co.*



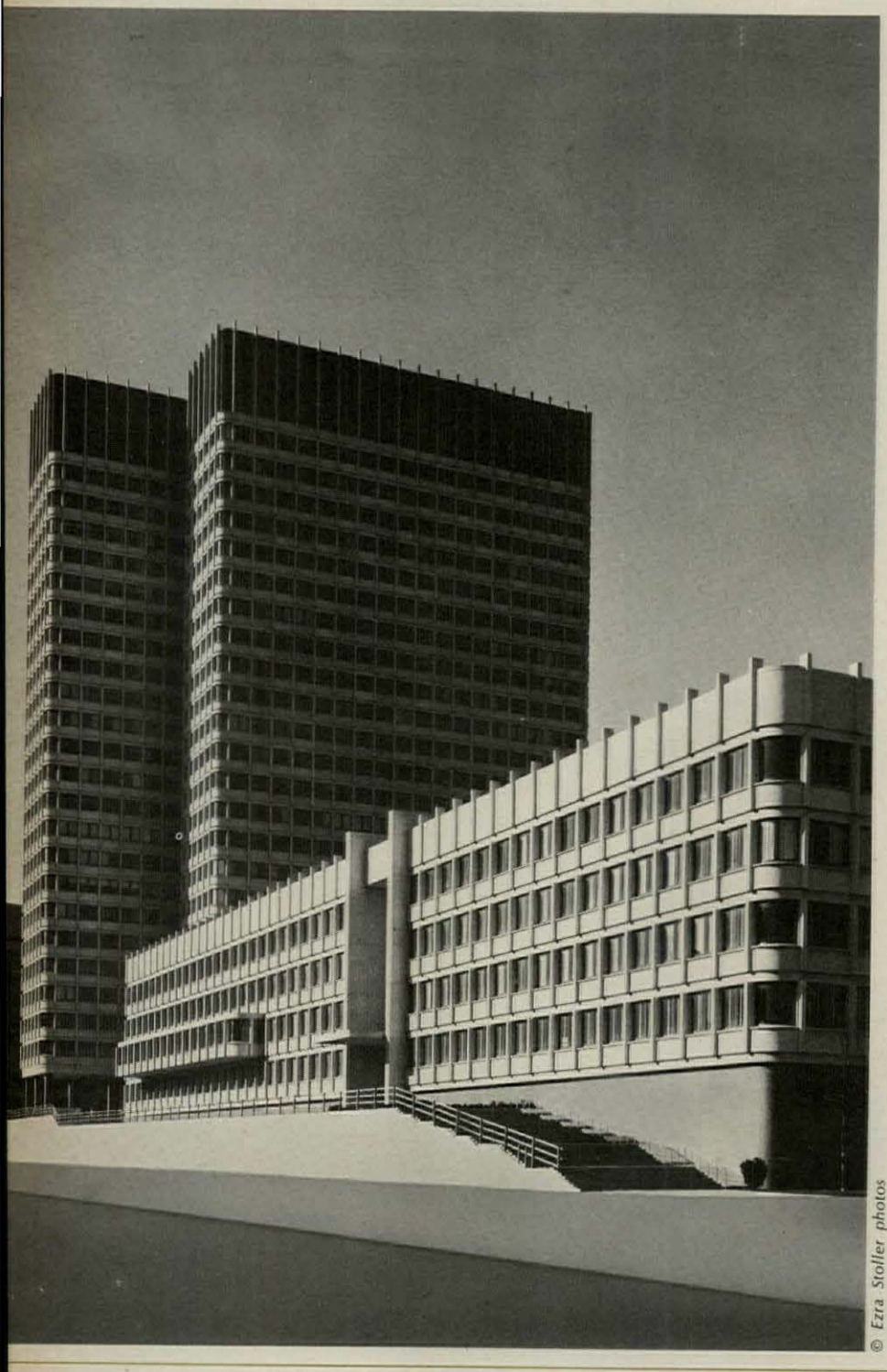
TYPICAL FLOOR



GROUND FLOOR 10



In the photo above and the plans at left one can see the three strips that make up the building: 42-foot-wide, clear-span office space; corridor with windows at both ends; service core with stairway—together affording quiet, continuous space with windows around the perimeter. Interior is modular, with flexibility and integration of services and partitions. Shown below is the 92-dealer stock exchange room.



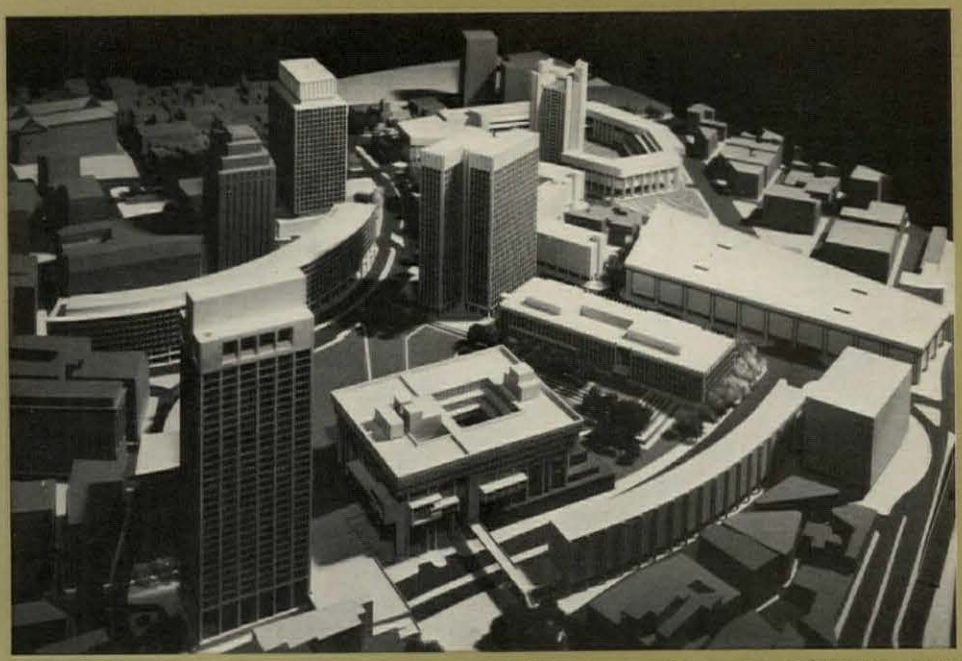
© Ezra Stoller photos

Gropius' split tower is hub of Boston Center

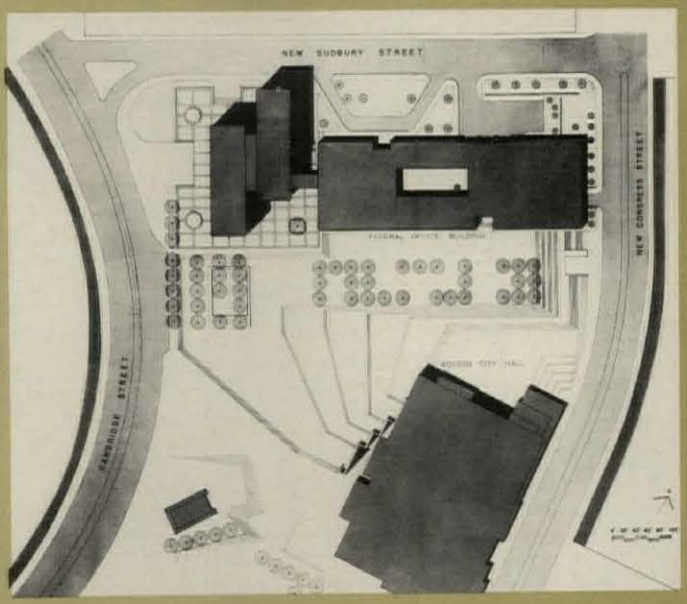
From the beginning, the client—GSA for the United States Government—wanted to separate "regional" office functions from central government offices. The designers suggested putting the latter in a long, rectangular low-rise building conforming to a 4.5-acre site 275 by 723 feet. On the other hand, they put the "regional" offices in a 26-story tower providing 24 office floors and two mechanical equipment floors at the top. Walter Gropius, partner in charge of design for TAC, felt that a simple square tower accommodating the required usable area (672,000 square feet for both buildings) would have been stubby and fat—so a double tower of offset rectangles joined by a common mechanical core was planned and joined to the lowrise at the two lower levels. In that way, Gropius points out, there is more daylight for each tower office, a more slender massing and more varied shadow effect.

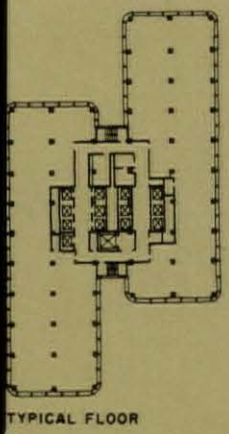
"I try to start any design from studying requirements of the human being who will be using the space," says Dr. Gropius. "How can we enliven that space for workers in order to increase efficiency? Here, we have used large, strongly colored walls offering points of interest that 'give a little kick' to the passerby." Such a point is the Motherwell mural in the passageway between buildings.

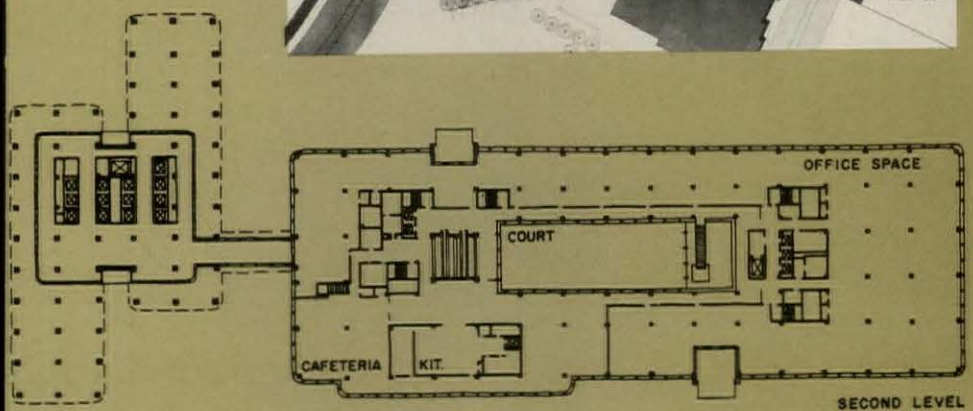
JOHN F. KENNEDY FEDERAL OFFICE BUILDING, Boston, Massachusetts. Architects (joint venture): *The Architects Collaborative* and *Samuel Glaser Associates;* for TAC: *Walter Gropius, Norman Fletcher* and *Roland Kluver;* for SGA: *Samuel Glaser* and *Clifford H. Towne;* structural engineers: *LeMessurier Associates, Inc.;* mechanical and electrical engineers (joint venture): *Joseph R. Loring Associates* and *Guy B. Panero Engineers;* landscaping: *Homer K. Dodge;* kitchen and laboratory: *Crabtree, Dawson & Michaels;* specifications: *Philip Todisco Associates;* general contractor: *J. W. Bateson Co.*

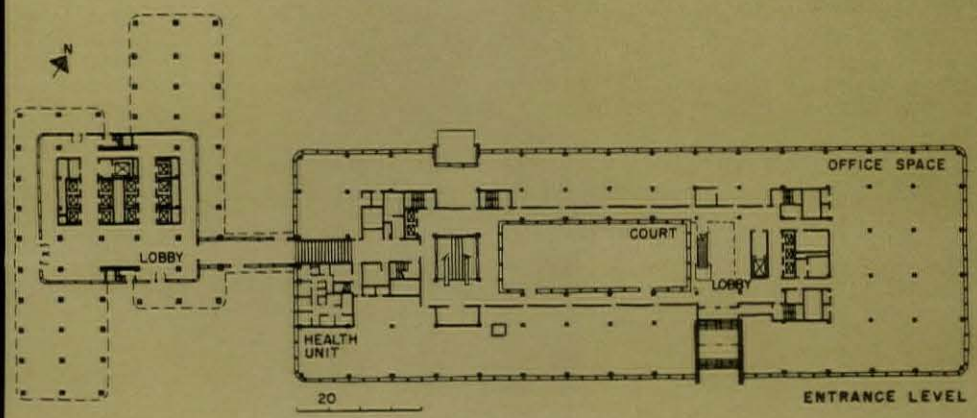


"We cannot make a new architecture every month, so we are not always in the vanguard with something new. The design process should begin by getting rid of all preconceived ideas at the start of each job—like the man who said: 'I empty my soul so that God may enter.'—Then we can achieve a kind of second innocence at the start of our thinking about man in a functioning environment. A building then must function both practically and psychologically. This beginning is implicit in this building."—*Walter Gropius*









Flexible office space is achieved by modular planning based on a 4-foot-10-inch square grid co-ordinating windows (which pivot for inside cleaning), lighting, air conditioning, partitions and cellular under-floor for electric and telephone distribution. Low portions of the building are faced with polished granite, the exterior walls are precast panels with exposed quartz aggregate. A basement garage parks 130 cars. Plaza will have sculpture by Hadzi and a large tree. Sculpture by Ferber will be in the courtyard.

TOWARD A NATIONAL DESIGN POLICY

. . . a thoughtful and thought-evoking analysis of the present state of design in our environment, and what could be accomplished through more effective dialogue between decision-makers in design and decision-makers in government policy. It was presented by Archibald C. Rogers, on behalf of the American Institute of Architects, to Senator Abraham Ribicoff's Senate Subcommittee on Executive Reorganization of the Government. Mr. Rogers is a founder of the Baltimore firm of Rogers, Taliaferro, Kostritsky, Lamb; and chairman of the A.I.A. Committee on Urban Design.

Urban design policy

Ends are shaped by means and process shapes its product.

The end product of the physical design process is our physical environment.

Today, this end product is clearly chaos—a chaos developed during our present century, explosively expanded during its three middle decades and promising continued acceleration in the decades ahead.

The process which produces chaos is itself chaotic. Our failure to create an orderly physical environment is due first to the absence of a co-ordinated series of goals to be accomplished by the design process and secondly to the absence of a mechanism for depicting such goals.

The failure of the end product of physical environment is clearly recognized. The failure of process is not yet recognized.

Expensive environmental programs have been sponsored by government since the 30's—ranging from public housing to highway beautification. Each program is aimed at a sore spot in our physical fabric. Most programs are well administered and indeed have created occasional islands of environmental order. (Constitution Plaza and the Washington-Baltimore Parkway are examples.) Yet, the total impact of these corrective programs has thus far been negligible.

Their failure is due to their discreteness and their discreteness is due to the absence of co-ordinated national goals.

A program having as its aim the provision of new single-family housing quickly and at a massive scale may most expediently achieve its purpose at the sacrifice of open space surrounding the city. The creation of a national highway system having as its single purpose the movement of vehicles will, quite properly within the limits of its mission, ignore the goals of other programs. It counters the national purpose of housing the poor by de-housing the poor and the objective of creating new neighborhoods through urban renewal by disrupting such neighborhoods.

The attempt to co-ordinate these discrete programs through the creation of new departments (HUD and DOT) is a belated recognition of this programatic defect.

Yet, this approach to co-ordination, while certainly justified, will not of itself correct the basic defect which is that these programs, even so co-ordinated, remain product- rather than process-oriented.

So long as our environmental programs deal with the physical end product without evolving a co-ordinating design process, we are unlikely to create a form for our physical environment that will come close to matching in quality the high level of our national aspirations and resources.

Environmental form

Environmental form is the result of the total decision making process that ends with the "putting in place" of each component of our national physical fabric.

Its embryo is found in the very beginning of the process—in goal setting; in economic feasibility decisions; and in site selection decisions.

Its final form is forecast in the words of a program statement and in the dollars of a capital program budget.

When "designing" starts—when the planner, architect or engineer begins his sketches—all that remains is to test alternative design concepts against the previously recorded decisions (generally only one foreordained concept is found to fit) and the minor decisions as to the decor that will clothe this concept.

It is no surprise that the design professionals are today regarded as cosmeticians—decorators called in at the last moment to embellish concepts developed prior to their involvement.

Nor, should it be a surprise that each new product of such process makes its contribution to chaos; that the users of this product often react to it adversely despite the obvious intention of most sponsors to benefit these users and that the sponsor himself is so often disappointed by the final result of what may have been years of costly effort on his part.

Design is inherent at every stage of the decision making ladder, whether it is recognized or not.

But, if it is not recognized by the decision makers, if it is left latent until the topmost rung of the ladder is reached, its potential for creative physical synthesis is lost.

Design

Design is the conscious synthesis of each family of alternatives posed for evaluation and decision at each stage of the decision making process.

It is the depiction of the formal image that is inherent in each family of alternative decisions.

It is the fitting together of the separate pieces of our physical environment at each stage of decision making:

1. Relating man-made to natural elements of our environment.
2. Ranging from the microscale of a single building to the broadest scale of a metropolis or region.
3. Co-ordinating the tangible program requirements, such as functions and costs, with the less visible but more important intangibles—the social and

psychological needs of those who will use and experience the final product.
4. Co-ordinating these requirements not only horizontally as a two-dimensional plan but vertically as a three-dimensional architectural concept from the smallest to the largest scale of development.

Design is finally the creation, through each such concept at any scale, of that enduring architectural art which should properly be the final purpose of each segment of our physical environment.

Lesson of the past

The design process of past ages produced a certain order and beauty as seen in the historic buildings and cities that are our heritage. Our respect for this heritage is reflected in our tourist tradition and in our efforts at historic preservation.

And, this respect is as much a condemnation of our contemporary achievements as it is a tribute to the achievements of the past.

But, the scale of past undertakings was so much simpler than those of today that the earlier design process is not really applicable to our own circumstances.

In the simpler past, the sponsor was normally an individual—a monarch, magnate, or minister who acted as patron of the art of architecture.

The designer was also an individual whether he was titled architect, military engineer or simply "artist." He conceived and executed for his patron the full range of physical elements—palaces, parks, bridges, boulevards and cities.

We are faced today with the urgent need to evolve a new design process fitting our complex circumstances as that of the past fitted the simplicity of prior circumstances.

Circumstances of today

Despite the overwhelming complexity of our age, there is concrete evidence that a new design process fitting this complexity can be articulated and can achieve significant results.

Two examples illustrate this point.

The first example is the utilization of this process in planning for the renewal of downtown Cincinnati in 1963 ("Process for Action" by Jonathan Barnett, May 1966, ARCHITECTURAL RECORD reports on this example).

The second example is the organization in 1966 of a concept team to design the interstate freeway system in Baltimore City (John Schmidt's report on this example is in the January 1967 issue of Baltimore Magazine).

These two examples point the way toward the evolution of a design process that fits the circumstances of our time and that can be applied to every element at every scale in the building and rebuilding of our physical environment.

The circumstances that must be satisfied by this process are:

1. The new scales of complexity, geography and time that typify most of today's projects.
2. The fact that the individual sponsor has now become the exception rather than the rule for such projects. Today's sponsor is generally impersonal—a school board, a governmental agency, a corporation—and behind this impersonal sponsor, whether private or public, there is the direct or indirect involvement of government through its regulatory function as an anonymous co-sponsor.
3. The fact that the individual designer of such projects has also become the exception. As the complexity of our social and economic organization has increased and as the multiplication of knowledge has accelerated, the singular design profession of the past has spawned its specialties and sub-specialties in order to manage its facet of social organization and of accumulated knowledge.

Given these circumstances, the new design process requires:

1. An articulation of the process to fit the project complexities and the adaptability of the process so articulated to fit the full range of scales and project types.
2. A new form of sponsor that will reintroduce the personal commitment of the past into the design process as well as a new concern for, and involvement of, the user in the decision making process.
3. A new form of designer that will reintegrate today's specialties into a design team or group capable of developing a creative conceptual synthesis.

Articulated design process

The design process is articulated to match the several levels of decision making. For clarity, these levels are labeled in accordance with military planning custom. Decisions are customarily rendered by the sponsor upon proposals offered by the designer. Decisions are customarily rendered at an increasing level of detail and decreasing scale of compass:

1. Vertically, starting with basic objectives and ending with detailed design.
2. Horizontally, starting with a broad geographic frame of reference (the environment) and ending with intensive study of the project area itself (the focus).

The sequence of decision making steps will normally involve the following stages in the design process, stages that presuppose the initial and all-important establishment of goals:

Stage I—Reconnaissance

A generalized appraisal by the designer to define the environment and the focus and, within these definitions, to draw their profiles—their salient features and trends both physical and functional. The objectives of the reconnaissance are to distinguish factors that cannot be changed from those that can; to identify, for factors capable of change, those that constitute problems to be corrected and opportunities to be capitalized in the design synthesis; to forecast the near term and long term future of these factors; to prepare a co-ordinated depiction of the environment and its focus and to conclude with a generalized functional, so-

cial and physical program for the focus within the limitations imposed by the resources inherent in the environment.

Decisions by the sponsor at the conclusion of the reconnaissance are essentially judgments as to the validity of the findings submitted by the designer.

Stage II—Strategic objectives

The designer translates the reconnaissance findings, in their approved form, into a range of attainable alternative objectives. Each alternative objective is technically analyzed to confirm its compatibility with the reconnaissance findings. Each alternative found to be compatible is subjected to a comparative evaluation of its costs and benefits. The family of subordinate objectives which relate to each major strategic objective are identified and similarly evaluated.

The designer, in order to give image to the latent physical form, diagrams the design implications of each alternative family of objectives for both the focus and the environment. He compares the relative costs and benefits, recommends as to which alternative is judged technically best from the viewpoint of design implications, the ability to solve the problems and to capitalize the opportunities identified in the reconnaissance.

Decisions by the sponsor at the conclusion of this stage involve his selection of the strategic design objective from among the alternatives posed. This selection may not conform to the technical recommendation of the designer as there are considerations of a non-technical nature that may override. Moreover, the selected objective may not precisely conform to any of the alternatives but may rather represent a compromise decision. *The important thing is that a decision be made to which the sponsor is fully committed; that he clearly understand the design implications of this decision; that it not be changed by the sponsor later in the design process; and that it be completely accepted also by the designer, whether or not it conforms to his technical recommendation and whether or not it involves a compromise.*

Stage III—Alternative strategies

The author prepares sketch diagrams of alternative design concepts covering the geographic area of the frame and the focus. These diagrams are normally two-dimensional where large areas are being studied. Each alternative concept incorporates the program agreed to at the conclusion of the reconnaissance, as amended to fit the strategic objective selected. Each is evaluated as in Stage II to judge its ability to attain the strategic objective selected. A technical recommendation is prepared for the sponsor and decisions rendered as in the case of the strategic objectives.

Stage IV—Alternative tactics (design)

The selected concept is developed in the third-dimension. The design incorporates the final space and use program detailed on the basis of the Stage III decisions. The design is normally limited to the area of the focus—the development project itself.

The alternatives in this stage are more limited and are posed to the sponsor for decision at check points throughout the evolution of the final three-dimensional design. The costs and benefits of these tactical alternatives are, as in previous stages, presented to the sponsor for guidance in decision making. *During this design stage the sponsor becomes directly involved in architectural decisions. This involvement must be accepted and encouraged by the designer.*

Stage V—Implementation

The sponsor and designer must continue their involvement during this phase. At the smallest scale of focus this may be the preparation of construction documents and construction supervision of a single building over a time period of a few months. At the larger scale, decades may be required to implement the design. *The important point is that implementation is the culmination of the entire design process and it must be carried through to this stage once it is started. If the decision making process is interrupted, momentum may be lost and the entire design process aborted.*

New sponsor

For small-scale design, an individual representing the sponsor is normal. For large-scale projects affecting diverse areas of interest, a team or committee is often required. In any case, the sponsor must be constituted so that he can function effectively within the urban design process as articulated above.

The key attributes of the new sponsor must be:

1. The ability to make decisions when they are posed and to make them well:
   a. As a group or an individual he must have sufficient knowledge (or have it available through staff) to act intelligently upon the technical proposals of the designer and to relate these to the original goals established for the process.
   b. He must, at the point of decision, receive the designer's proposals in their totality and be capable of responding totally through his decisions as a synthesizer of all the sponsor's requirements.
2. The power to make binding decisions, regardless of employment or contractural relationships with the designer, as power is the key attribute of the sponsor.
3. The time to devote to the design process and to prompt decision making.
4. The willingness to participate as an individual (or as a group of individuals) in personal involvement with, and commitment to, the design process.
5. Continuity throughout the process. To change the individual or individuals, constituting the sponsor, during the design process can be just as damaging as changing the designer.

"Process for Action" illustrates one form of this new sponsor in Cincinnati's Working Review Committee for its downtown redevelopment—a committee

that, by virtue of its membership and staff, has all of the above attributes even though it has no employment or contractural relationship to the designer.

The new sponsor contrasts with the situation as it often exists today—particularly within a public agency but often including private sponsors also.

In this situation, the designer may submit his proposals for decision to an agent not vested with decision making power. His proposals are often reviewed, not by that agent, but by others—committees or bureau employees. The reviewers are normally concerned with separate segments of the proposal with no one responsible for review of the whole. The designer often is not permitted to discuss his proposals directly with those who review them. In the end he receives his decision in the form of a consensus report ratified by the individual in the hierarchy of the sponsor who does have decision making power but who often has not even seen the proposals upon which he is rendering his decisions.

New designer

As in the case of the sponsor, the designer too must reorganize if he is to function effectively within the design process. He is the technical master of this process and must be able to administer it and to adapt it to fit the particularities of each project.

Regardless of the scale of project the designer today is generally a team. Each team is made up of differing specialties tailored particularly to the requirements of each project. This team may be for a small project no more than an architect, mechanical-electrical engineer and landscape architect. For a large urban design project 15 or 20 different specialists may be required (traffic engineering, sociology, political science, systems engineers, etc.).

While such a team of specialists requires a co-ordinator, it functions best as a co-equal group of peers when developing or testing concepts. It is this group which, in fact, is the designer in the sense that the designer is the generalist who synthesizes all the specialties.

If the chief attribute of the sponsor is power, that of the designer is creative conceptualization and imagination—the ability to forecast the image of decisions. Although each individual member of the team may have an isolated area of expertise, he must be capable of contributing toward this attribute which must be inherent in the team as a whole.

The architect is often best qualified as team co-ordinator as he is by experience an individual generalist rather than a specialist. Yet, in this role he should not take upon himself the sole responsibility for synthesis, which is rightly the role of the team itself.

National design policy

Given the results of the absence of process—or at least from an incoherence of process—as we see these today in our physical environment; given the initial demonstration that the process proposed above, with its new sponsor and designer, can achieve far better results where offered the chance, as in Cincinnati and Baltimore City; given the involvement of government in the public and private decision making process that shapes our environment today; and given the leadership role inherited by the federal establishment in this governmental influence on decision making, it is today feasible to consider the adoption of the recommended process as a national design policy.

This process is adaptable to all types of physical design projects and to all scales—including the scale of the nation.

By modifying the process and carefully structuring the sponsor's team and the designer's team to fit each situation, it can be applied to the model cities program; to the development of new towns; to public planning programs from the neighborhood to the regional scale; to community renewal programs; to urban renewal and rehabilitation projects; to area economic development activities; and to highway planning. It can and should be applied to the development of individual structures and facilities—to private and public buildings, parks and systems.

This process holds out the hope of producing order to replace our present chaos, of creating a framework for the art of architecture in place of our present artistic impoverishment.

This, as a national goal, is attainable if the process is correctly understood and applied; if the sponsor and designer are concerned with the social realities of the citizenry who must live within the end product and if the citizenry is involved in the process by making public the decision making and the image of its design that is today normally withheld from public view.

Beyond these conditions is the fundamental precondition that there be developed a set of co-ordinated national objectives, and strategies to achieve same, as these relate to our physical environment.

The Federal government can apply the recommended design process to establish these national objectives and strategies. It can adapt the process to its current public programs. It can encourage the use of this process in all areas of activity outside of its direct jurisdiction.

The goal of constructing a national physical environment matching the quality of our national aspirations and resources is clearly attainable. The complexities of programing and planning for this goal are no greater than those faced in our exploration of space or in our successful prosecution of a world war. It has been achieved by less resourceful nations in the past.

The first step toward such a goal is to reintegrate design into the decision making process and to apply the enlightened process at every scale of endeavor consistently and creatively as we add to and rebuild our national physical fabric.

ARCHITECTURAL ENGINEERING

New York Times photo *New York Times photo*

Balloon-formed concrete dome was erected at Columbia University last month by first laying reinforcement (spring-like coils plus bars) over an inflatable membrane which was tied to a perimeter ring. After concrete was placed, a different membrane was laid on top to help maintain evenness of the concrete as the balloon form was inflated. Photos left and right are of structure in Italy, illustrating openings cut out of the dome after construction.

New thin-shell forming technique uses a balloon to both lift and mold concrete

Potential economies of thin shell construction often are not fully realized because of the cost of formwork. The construction process is sometimes characterized as, "building a wood roof to form a concrete roof." Thus the reason for the continual search for new forming techniques.

The newest of these, which was first demonstrated in the U.S. at Columbia University during the A.I.A. convention last month, uses a balloon form to lift concrete and its reinforcement into the air to yield an "instant" thin shell.

So far, new approaches to forming thin shells have consisted mainly of multiuse of forms, prefabbed shells, or, for very large domes, use of mounds of earth.

While this new method, invented by a 34-year-old Italian architect, Dante Bini, resembles somewhat the Airform system conceived in 1942 by architect Wallace Neff, the big differences are that the Binishell system requires no scaffolding at all, and the construction process itself gives the concrete a uniform thickness. Neff employed a neoprene balloon, which, after inflation, had the reinforcement placed on top and concrete sprayed on pneumatically. Uniformity of thickness depended on the skill of workmen and care in supervision; scaffolding was required for the placement of steel and concrete.

Bini uses a plastic membrane over which are laid a flexible steel mesh and a fairly free-flowing concrete mix. The airtight membrane, anchored to a ring at the base of the shell, is inflated by means of two blowers powered by 5- to 10-hp motors. The pressure needed to lift the concrete and reinforcement varies from 0.15 to 0.75 psi, depending on the size and shape of the dome. Pressure is maintained constant by means of pneumatic regulators and air valves.

The reinforcing steel varies with the characteristics of the dome. Usually, it consists of a mesh and additional rein-

THIS MONTH'S AE SECTION

forcing elements (bars or cables) in the direction of the maximum tensile stresses and in the area of large cuts in the dome.

Additives are used in the concrete to modify its flow and setting time. The additives give plasticity to the concrete and allow it to adhere to the steel mesh while acquiring a curved shape. The concrete has a predominance of fine aggregates, with the largest being ½ in.

The concrete is vibrated after the membrane has been inflated by means of a vibrating plate in contact with the top of the shell. The concrete may be smoothed out mechanically or by hand, after inflation of the membrane. This operation may be eliminated (as was done at Columbia) by use of a thin stretchable membrane superimposed on the concrete and lifted during inflation.

Although the Columbia structure is circular in plan, square-, rectangular-, or polygonal-shaped bases are also possible. The inventor states that even high-rise structures would be possible with the method.

Openings may be provided in the domes either by means of pre-set templates, or by cutting them out with a rotary saw after the concrete has hardened.

The inventor says that the compactness of the concrete and shape of the domes guarantees water tightness without requiring the addition of sealants, but they may be used as a precautionary measure.

Thermal insulation may be provided by sprayed-on asbestos or by sprayed or board types of urethane or polystyrene.

The experimental structure on the Columbia campus was inflated in an hour and a half, is 2 in. thick, and weighs 33 tons. It will be test loaded and strain measurements will be taken at different locations to determine shell stresses. Sponsors of the demonstration were Dr. Kenneth A. Smith, dean of Columbia School of Architecture, and Dr. Mario G. Salvadori, professor of civil engineering and architecture and chairman of Columbia division of architectural technology.

Bini, who has his firm in Bologna, has already built 20 shells in Italy by his technique. Cost there is less than $1 per square foot of floor space. The Binishell company, incorporated in Switzerland, hopes soon to license construction firms in the U.S.

B.R.I. to vote once more on merger with B.R.A.B.

Membership of the Building Research Institute is voting on June 9 as to whether their organization should join with the Building Research Advisory Board to form a new organization—known as the Building Research Board—within the National Academy of Sciences. A vote last February—298 for, 224 against—failed to produce the two-thirds majority necessary to permit the merger to take place. The board of directors again unanimously approved the merger proposal on May 3; and so are again asking for the membership vote in the hope that a favorable response will permit the merger to take place on the July 1 target date.

The merger is being opposed by a dissident group of members headed by Robert P. Darlington, Washington architect and former technical director of B.R.I. and assistant director of B.R.A.B. Darlington has stated that if the proposal is defeated once more, he will demand the resignation of the current board.

Peter B. Gorden, president of B.R.I., wrote the membership that an immediate decision is necessary with three possible alternatives: 1) to dissolve and combine forces with B.R.A.B., 2) to dissolve and let the pieces fall where they will, and 3) to remain separate with a drastic cutback in operating costs, staff, and services.

Gordon pointed out in his letter that reserves were deliberately pumped into the operation in the years 1963-1965 to make up for the falling off of membership dues and conference income, in the hope of attracting new members and better conference attendance, thus generating new income. Since this failed to happen, he said that B.R.I. has no alternative but to cut back activities after July 1 to maintain solvency.

Lumber size standards: back to the old drawing board

Late in April, the Commerce Department rejected the current proposal to establish "green" and "dry" standard widths for softwood timbers. This would seem to stall the American Lumber Standards Committee's attempt to replace the 1953 softwood lumber standards with a set of technically-based rules agreeable to a majority of the industry and providing a more consistent set of lumber sizes to work with for the lumber consumer. Known as the 1½-in. lumber standard (the width for "dry" 2x4s) this latest proposal was put to a popularity contest within various segments of the lumber industry. Although most of the producers (80 per cent by number, 69 per cent by volume) agreed with the 1½-in. width, Commerce Department lawyers ruled this insufficient for "general consensus." Of the producers of "green" lumber, 44 per cent were against the proposal.

In rejecting the 1½-in. proposal, Department lawyers raised various technical and legal objections that will mean a rocky road in the courts should advocates of the new proposal seek to challenge the government's ruling.

Crux of the five-year-long saga has been competitive fights among softwood lumber producers. Oversimplified, the problem has been the unwillingness of the Western "green" producers to let go of their present competitive advantage over "dry" producers.

Meanwhile, to prevent even greater confusion within the lumber-grade-marking business, the Department decided to retain the 1953 standard "pending further study." In doing so, the Department's lawyers reversed the ultimatum of former Secretary John T. Connor that a new standard be devised.

Commerce's decision to turn down the latest A.L.S.C. compromise stemmed from two factors:

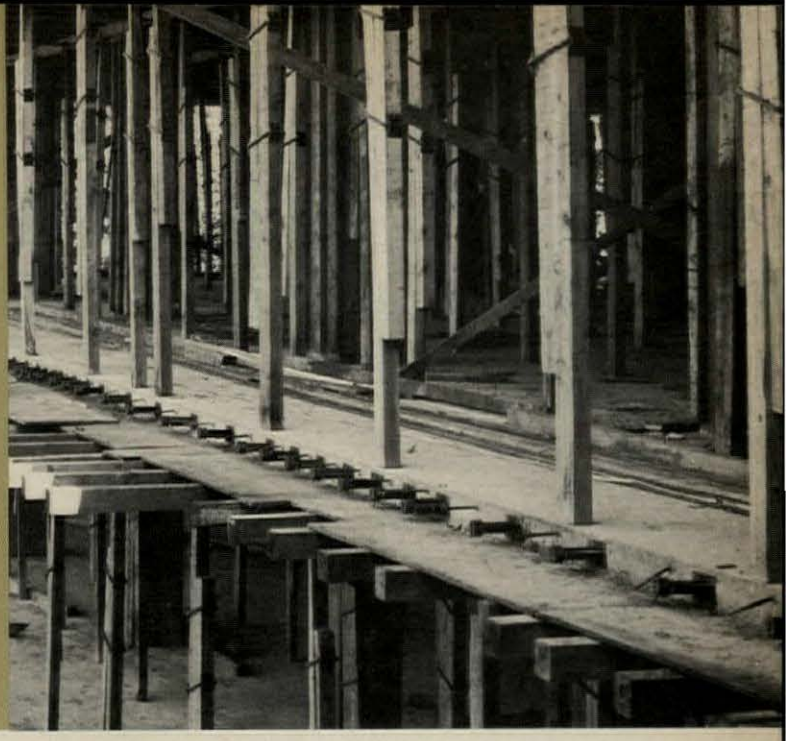
First, the poll, conducted by the Census Bureau, did not show a "general consensus" in the industry for the proposal, according to the Department's lawyers. Prior to the pool, Commerce's legal staff never firmly defined just what would constitute a "general consensus." Everyone agreed concensus was more than 50 per cent and less than 100 per cent—but no one would say where to draw the line. Now the Department's lawyers have ruled that 75 per cent support "would not, as a legal matter, be general concurrence."

Second, although experts at the Bureau of Standards and the Agriculture Department's Wood laboratories declared the 1½-in. proposal technically sound, the Commerce lawyers disagree. The proposal delegated authority to the A.L.S.C.'s Board of Review to determine stress values—which, said Commerce, is not proper. Further, the proposal did not include "performance criteria", as it should have in the lawyers' view, although construction industries have debated the "performance concept" for years.

Just what will happen next is not apparent. Advocates of 1½-in. could seek relief in Congress, but they do not appear to have the political leverage. There has been some talk of seeking a new standard from the U.S.A. Standards Institute, but this idea has been rejected in the past. A court battle against the Department's ruling is possible but time-consuming.

Another possibility, often mentioned, is to have regional grade-marking groups begin to proceed on their own to approve 1½-in. lumber.

Engineers achieve surprising savings by post-tensioning apartment flat plate slabs



More often than not, the post-tensioning technique is employed for long spans and special structures. Thus even the designing engineers were surprised when a post-tensioned flat plate apartment building in the Washington, D.C. area showed a structural savings of over 20 per cent attributable to the technique. In addition to achieving these savings by post-tensioning, the engineers, Horatio Allison Associates, had the assurance that the slabs would not deflect excessively, as has sometimes happened when conventional flat plates are designed to too close a margin. The $6-million 13-story Dolly Madison Apartment project in Arlington, Virginia, designed by Sheridan, Behm & Associates, has a 5-in. flat plate, typically spanning 15 ft by 18 ft. Following is a discussion of the design and construction by the engineering firm:

Consideration was narrowed to two materials and methods highly competitive in this area—continuous welded steel frame and concrete flat plate. The fact that our client had the capability to perform as his own general contractor with concrete flat plate, but not with a steel frame, proved to be the deciding economic factor. Savings in general contractor profit, overhead, concrete placing and reinforcement, overcame the slight edge that the steel frame has normally enjoyed over concrete in the Washington area.

Once the mild-steel reinforced flat plate had been selected for economy, we then attempted to optimize the potential of the basic structure. Our responsibility to make the most of a given material and a method led us to a comparison of a mild steel flat plate to post-tensioned flat plate. The flat plate's simplicity and economy permitted the architect to expose the 4-ft 4-in. leading edge of the structure which has a continuous 5-ft 8-in. cantilever.

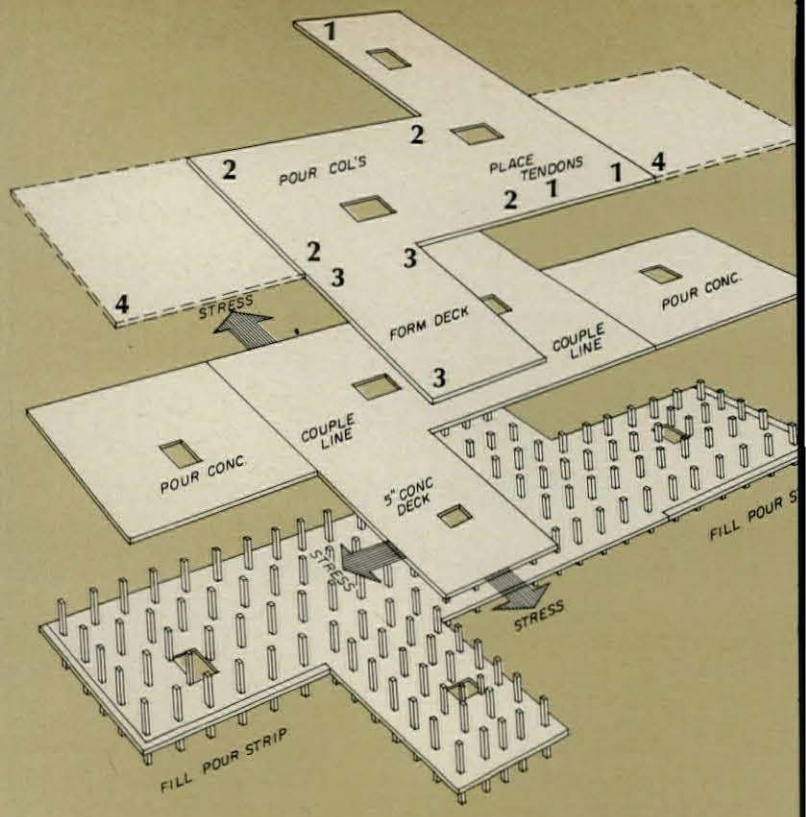
The continuous cantilever afforded several design and construction advantages. For example, exterior walls were projected on the cantilever within 2 ft 8 in. of the edge where an increased apartment size was desired. The cantilever provided an ample balcony elsewhere. Also, the exposed cantilever eliminated the use of scaffolding except at projections, gaining savings of 80 per cent of scaffolding costs. The continuous cantilever allowed the use of a brick veneer wall in lieu of the normal 8-in. masonry wall found on the conventional apartment project. Not only is the wall lighter, but it is more economical to construct from a labor standpoint. This wall allowed the owner to enclose faster, and also, it decreased the U factor from the conventional 8-in. masonry value of 0.26 to the veneer wall value of 0.10.

Preliminary structural considerations

Once the basic structural shape, structural system and number of apartment units were established, we worked to maximize the economy of the flat plate. The architect laid out the apartments based upon the use of a mild steel flat plate with spans of 15 ft 4 in. by 18 ft. We felt that a mild steel flat plate, designed according to ultimate strength methods, would not give our client any particular advantage over competitive builders, since this design is common practice in the Washington, D.C. area. Any further reduction in reinforcement steel or thinning of the concrete slab would only cause excessive deflections, creep and perhaps future maintenance problems. Attempts to over-economize with this method has caused excessive deflections and creep in some area buildings. Perhaps the stimulating effect the flat plate has had on the engineers as

FIVE DAY TIME SEQUENCE					
DAY / SECTION	MON.	TUE.	WED.	THUR.	FRI.
1.	PLACE TENDONS	POUR CONC. DECK	FORM DECK ABOVE	FORM DECK ABOVE	STRESS TENDONS POUR COL'S. ABOVE
2.	STRESS TENDONS POUR COL'S. ABOVE	STRESS TENDONS PLACE TENDONS ABOVE	POUR CONC. DECK		FORM DECK ABOVE
3.	FORM DECK ABOVE	STRESS TENDONS POUR COL'S. ABOVE	PLACE TENDONS ABOVE	POUR CONC. DECK	
4.	POUR CONC. DECK	FORM DECK ABOVE	FORM DECK POUR COL'S ABOVE	STRESS TENDONS ABOVE	PLACE TENDONS ABOVE

NOTE: The key to the pour sequence is the filling of the pour strip directly below the main pour of the day so that form stripping may be achieved shortly thereafter.



TYPICAL MONDAY IN TIME SEQUENC

A FLOOR A WEEK

The construction sequence was carefully worked out so as to maintain continuity of work, but also to allow proper post-tensioning operations. To minimize effects of creep and elastic shortening, the central 209-ft portion was tensioned, followed by the 47-ft end sections.

well as architects—for its efficiency, economy and structural ability to withstand forces far above its design capacity—has caused the engineer to refine this design to the point where it infringes upon the economy of other building components (e.g., exterior walls, window and door fits, interior partitioning and door frame fits, etc.).

Because of this deflection and creep of the mild steel flat plate, we began investigating a method that would at least relieve the deflection problem. Once we began considering a post-tensioned flat plate, we were urged by some to take advantage of the method by increasing the spans to a minimum of 20 ft. An initial cost study showed that this was not feasible economically and could not compete with the ultimate strength design flat plate of a smaller span. The required steel in the mild steel version of 3.3 lbs per sq ft versus 0.8 lbs per sq ft of tendons in the post-tensioned version indicated that there might not be any advantage for the latter system.

Initially our only hope for the post-tensioned system was to equate the cost of the tendons to the mild steel on the identical span. The savings would then be 1 in. of concrete thickness valued at approximately $0.10 per sq ft. (The post-tensioned method yielded a 5-in. slab versus a 6-in. slab for mild steel design.)

We were somewhat concerned by the common use of the post-tension method for long spans (20-ft minimum) and heavy loading. We were also concerned by post-tensioning's heritage of high labor costs, derived from need for more labor and skilled workmen, and the high level of quality control needed for concrete. We doubted the proper use of this method for the short spans of the building and our doubts were reinforced by several cable manufacturers. While these manufacturers were more than willing to bid on the post-tensioning material, they were politely skeptical of the application. Up to this point, the Washington area contained only a handful of post-tensioned structures, mostly unique or long-span structures.

However, one company guaranteed a price of $0.28 per sq. ft in place for 0.65 lbs per sq ft of tendons based on our preliminary plans. This price indicated that there might be savings greater than that from the 1-in. concrete. Next we had to convince the owner of the economy of this method, relatively new in our area. We also had to convince ourselves that we could simplify the design to a point where expensive labor and skilled workmen would not be required, as there are no workmen qualified for post-tension work in Washington.

The structural design

Basically there are three methods for the design of a post-tensioned flat plate:

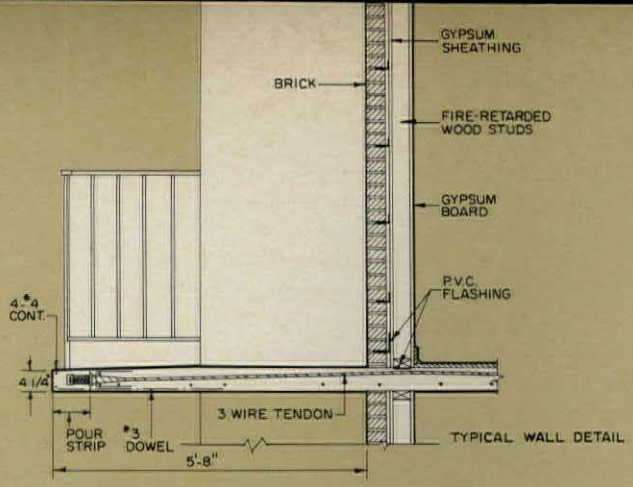
1. Balanced-load method—this method attempts to balance an assumed portion of the total load on the structure by the prestress force.

2. Ultimate-strength method—this method is based upon the same principles used in reinforced concrete design.

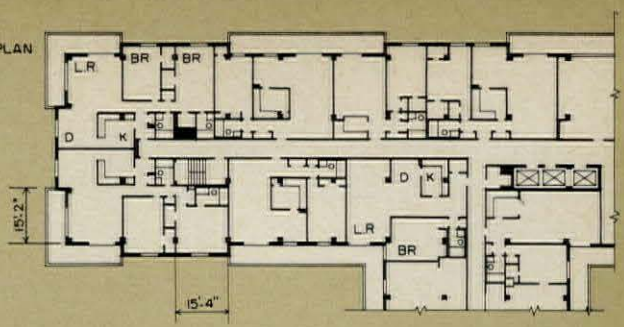
3. Elastic-stress or allowable-stress method—the first theory used in analysis of prestressed structures which is based upon the theory that under working loads and stresses, concrete will be an elastic material.

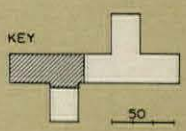
The balanced-load method was used on the preliminary design an as extremely brief and effective method of determining the prestress forces required.

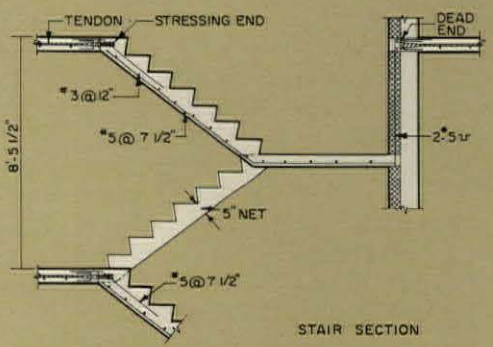
The load-balancing method is increasing its popularity due to the idea that gravity load or a portion thereof is balanced by the drape of a tendon. However, once this method applies resistance to a portion of the load, then the engineer must apply either the ultimate-strength method or the elastic-stress method to complete the analysis. This method also assumes that the structural engineer can arbitrarily select the correct portion of the dead and live loads to be balanced (e.g. total dead load and 50 per cent live load) for the achievement of zero deflection. We felt that this arbitrary point of zero deflection lacked analytical meaning, and also felt that we could not base the selection of this point upon experience. Our final reasons for the rejection of this method were: 1) the varying live load on the balcony (100 psf) and the apartment load (40 psf); 2) the fact that in apartments the exterior bay is generally load-free



TYPICAL WALL DETAIL



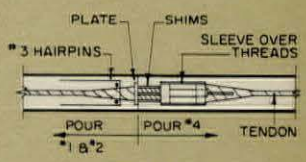




STAIR SECTION

ENGINEERED SAVINGS

Cantilevered balcony will not deflect above desired limits because it is prestressed. Balcony permitted wall construction without scaffolding. Costly beams around stair openings were avoided by adding extra prestressing strands. A coupler connection permitted continuity of prestressing forces.



COUPLE DETAIL

and the central bay contains the majority of the partitions (e.g. corridors, kitchens, etc.), and 3) the varying bay sizes.

Our final design was accomplished using the elastic-stress method and checked by the ultimate-strength method. For a practicing engineer, the use of these more analytical methods is somewhat more familiar. These methods are used in other structures such as reinforced concrete and structural steel frames, and perhaps this influenced our method selection as well as any other considerations. We had also set up an office design procedure for a post-tensioned flat plate similar to the procedures used on other frame buildings.

Briefly, our design procedure is as follows:

1) Select slab thickness in relation to amount of prestress required.

2) Establish the loading conditions.

3) Calculate the section properties of the columns and slabs.

4) Find the maximum eccentricity of the tendon and determine the maximum tendon spacing.

5) Use the moment distribution method to determine the moments from varying loading and span conditions. Assume some moment resistance by the column when slab deflection is not zero.

6) Using the maximum moment, set the tendon at its greatest eccentricity and establish the prestress force required producing a stress condition suitable to the concrete material selected and conditions of use.

7) Check the concrete slab stress under various conditions of load.

a) initial prestress

b) prestress at dead load

c) prestress at live load

d) check all unusual

loading conditions for stress.

8) Solve for the cable profile using the two foregoing steps in repetition.

9) Check the deflection of positive moment areas and cantilever.

10) Select the number of tendons required and space in the middle and column strips. Also select the smallest number of cables for economy.

11) Select the required concrete strength considering the need for high early strength, modules of elasticity, creep strain and loss of prestress.

12) Check the end-anchorage design for the concrete bearing stress. Design bearing plates.

13) Check ultimate moment everywhere.

14) Check column shear.

15) Check friction losses, elastic shortening and creep.

This brief procedure summarizes our approach to the flat plate structure. We are presently attempting to program a method similar to this for computer application. The computer as a design tool will allow us to check stresses at every point for various load conditions. It will also allow us to investigate more concrete versus prestressing steel costs to balance the economy of each material more critically.

Lightweight concrete (112 p.c.f.) was used in the design to reduce the dead load by 25 per cent. Expanded shale and Potomac River sand were the aggregates. The expanded-shale aggregate exhibits good creep characteristics, an important factor in the selection of concrete for a post-tensioned slab. The reduction in dead load due to lightweight concrete reduced the prestress force to allow a net savings above our original $0.10 per sq ft figure.

An expansion joint was also eliminated in the 393-ft 4-in.-long building due to the use of post-tensioning; adding savings to our preliminary figure. Another cost savings occurred when all beams were eliminated on the floors. The additional load imposed by the stair opening was resisted by adding a few extra cables, the cost of which was far below the framing costs for openings with beams. A similar solution was used at the elevator shafts.

Because of the building's length—393 ft 4 in.—it was necessary in the design stage to impose a few limitations on the sequence of stressing and pouring. Since these limitations are not imposed on a mild steel flat plate, we discussed them with the builder, Mr. Syd Albrittain of the Dittmar Co., to assure ourselves that this would not affect labor costs or cause delays. We worked out a preliminary pouring sequence that would be somewhat flexible for the builder and would provide a suitable solution to structural problems.

Specifically, the structural problem was the elastic shortening of concrete when the prestress force is applied to the slab. If the elastic shortening of concrete had an additive force on the columns from one end of the building to the other, the column design would become burdensome. The solution to this problem was quite simple: we post-tensioned the central 209 ft 4 in. by using a jacking force at each end and co-ordinating the pulls via walkie-talkies. A minimum of three days passed before the two end portions were even poured, after the elastic shortening and a good percentage of creep had taken place in the long 209-ft 4-in. pour. Therefore the only elastic shortening effect on the end columns was due to the thin slab and the tendon's comparatively small drape. Friction losses were negligible elsewhere in the short spans.

We also considered the inducement of moment into the relatively stiff columns under extreme loading conditions. The columns were designed by the ultimate strength method to resist gravity loads and moments due to unbalanced loading of the slab and the subsequent deflection.

POST TENSIONING LABOR REQUIREMENTS TO POUR 574 CUBIC YARDS PER WEEK

	No. of men	Duties
Steel	3	Stressing Crew
	4	Tendon Placers
	6	Rodmen
Concrete	4	Finishers
	2	Straight edgers
	2	Rakers
	7	Buggy men
	3	Dumpers
	1	Hopper man
	2	Platform men
	1	Ground man
	1	Elevator hoist man

DOLLY MADISON COST BREAKDOWN—Garage Not Included

Flat plate area	Plate area sq ft	Plate yardage cu yds
12 typical floors @ 37,724 sq ft	452,688	6,960
First floor	39,304	660
(15 ft-4 in. x 18 ft-0 in. typical bay)	491,992	7,620 in plate only

QUANTITIES AND COSTS OF MATERIAL AND LABOR

Item	Amount	Cost	Per sq ft
1. Concrete—slabs, stairs and columns—not slab on ground or foundation	8450 cu yds	$145,800	$0.296
2. Tendons	324,000 lbs.	121,000	.246
3. Support chairs		10,500	.021
4. Column and Stair mild steel		28,000	.057
5. Miscellaneous slab steel		9,200	.019
6. Form material—slabs, columns, stairs, shores		48,500	.099
7. Labor (non-union)—concrete, steel carpentry, superintendent		195,000	.396
8. Crane and Hoist rentals		22,000	.045
9. General supplies and misc.		30,000	.061
		$610,000	$1.23

DOLLY MADISON APARTMENT		WILDWOOD APARTMENT	
Constructed in 1967		Constructed in 1963	
Bays—15 ft-4 in. x 18 ft-0 in.		Bays—15 ft-4 in. x 17 ft-1 in.	
Structure—5 in. post-tensioned flat plate		Structure—5½ in. mild steel flat plate	
		Ultimate strength design	
No. of plates—13		No. of plates—11	
Area—491,992 sq ft		Area—519,928 sq ft	
Total structural cost—$610,000		Total structural cost—$717,000	
		Cost per sq ft	$1.38
		(Add 12% for 4 year time adjustment)	.17
Adjusted cost per sq ft.....	$1.23	Adjusted cost per sq ft	$1.55

Post-tensioned savings:	$1.55	Wildwood 5½-in. plate
	− 1.23	Dolly Madison 5-in. plate
	.32	
	+ .04	From 5½ in. to 5 in. slab (reduce ½ in. concrete)
	$ .36	per sq ft actual savings 1967

Note: A concrete contractor issued a low bid of $2.00 per sq ft on Wildwood Apartment before the owner built it himself.
Total savings of post-tensioned 5-in. flat plate over mild steel 6-in. flat plate on Dolly Madison was $177,000.00.

Construction

One of the most interesting aspects o the construction was the ease with whic it was built. The builder constructed 1 floors in 13 weeks and one day. H poured 37,724 sq ft of floor area ever five working days, a total of 574 cubi yards (not including columns). This wa accomplished by holding to his construc tion sequence, a schedule rigid in th establishment of pours but flexible i various other operations. Surprisingly he also was able to accomplish con structing the building with a minimum of (skilled and unskilled) labor. He ra only a three-man stressing crew and 10-man tendon placing crew, containing six rodmen. The reduction of the thick ness of the slab also minimized the num ber of men required on the concrete crews.

Bulkheads were prefabricated or the ground for forming pour strips and anchoring cables. Once hoisted onto the deck, the deck was clearly marked by the bulkhead as to the type of tendon and its placing sequence. The builde devised index cards that contained the same information for each bulkhead One card was a tendon layout card and the other was a sequence card. These cards eliminated time lost hunting for the proper tendons for a specific bulkhead.

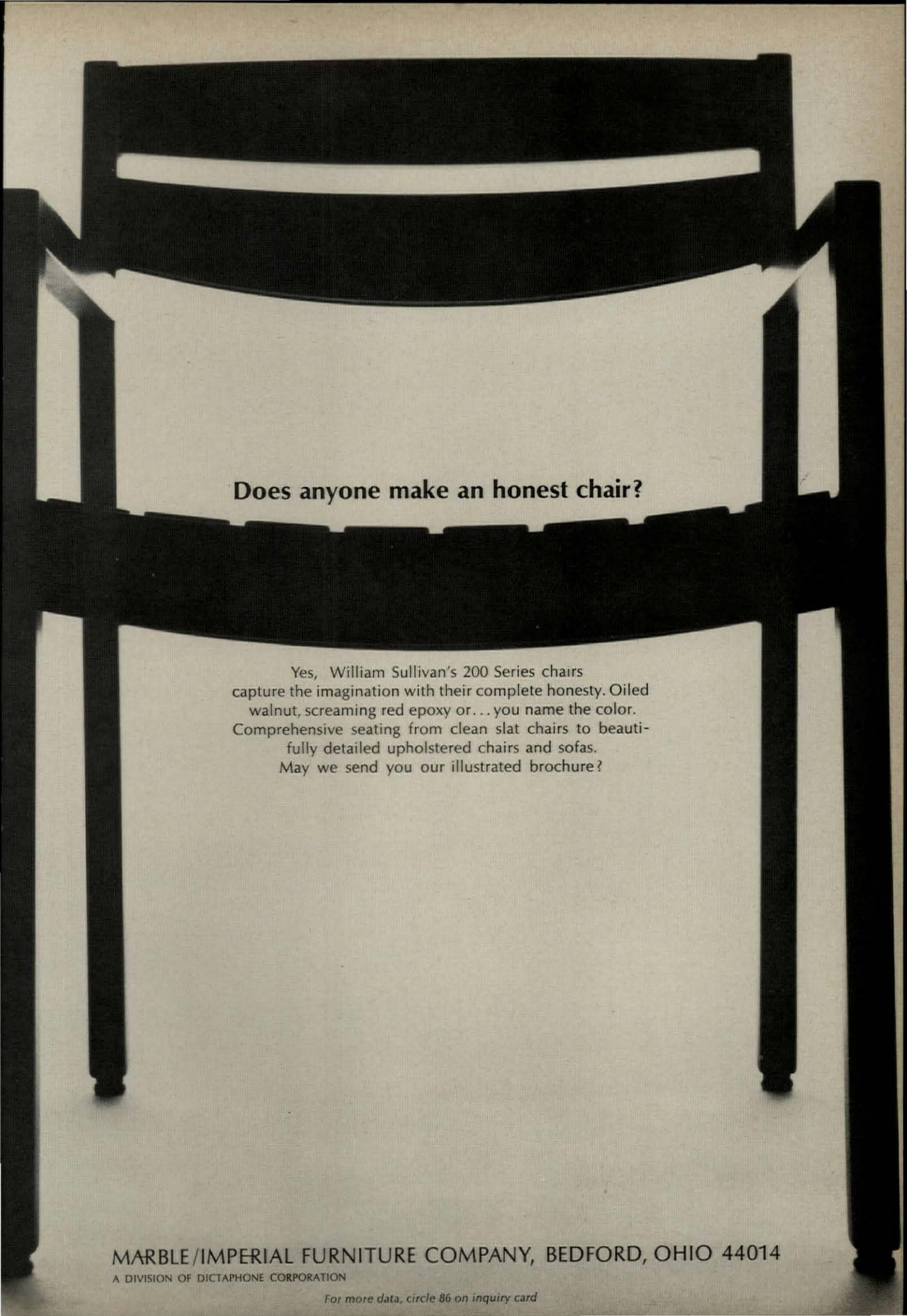
The builder also made another index card on the shims that would be applied to the tendons after the prestress force had jacked the tendons to the correct pressure. This card co-ordinated the proper shim (all marked) to the correct tendon (also marked).

Final cost breakdown

The reduction in dead load achieved—a saving in columns and caissons; a 790-ft expansion joint and its double column were eliminated; all beams were eliminated at openings; concrete thickness was reduced by 1 in., and the quantity (and cost) of steel was also reduced.

We have computed an accurate record of job costs, and have tabulated them here. These prices do not include profit or taxes. All labor is non-union, and more important, the building was owner-built.

The almost unbelievable figure (profitless) of $1.24 per sq ft for the complete structure, almost 40 to 45 per cent lower than most simple flat plates (mild steel) in this area, causes one to speculate whether post-tensioning is capable of achieving savings of $0.75 per sq ft or whether there is merely a lot of profit in the concrete business. The former is highly unbelievable. The chart indicates a savings of $0.36 per sq ft for the post-tensioned method.



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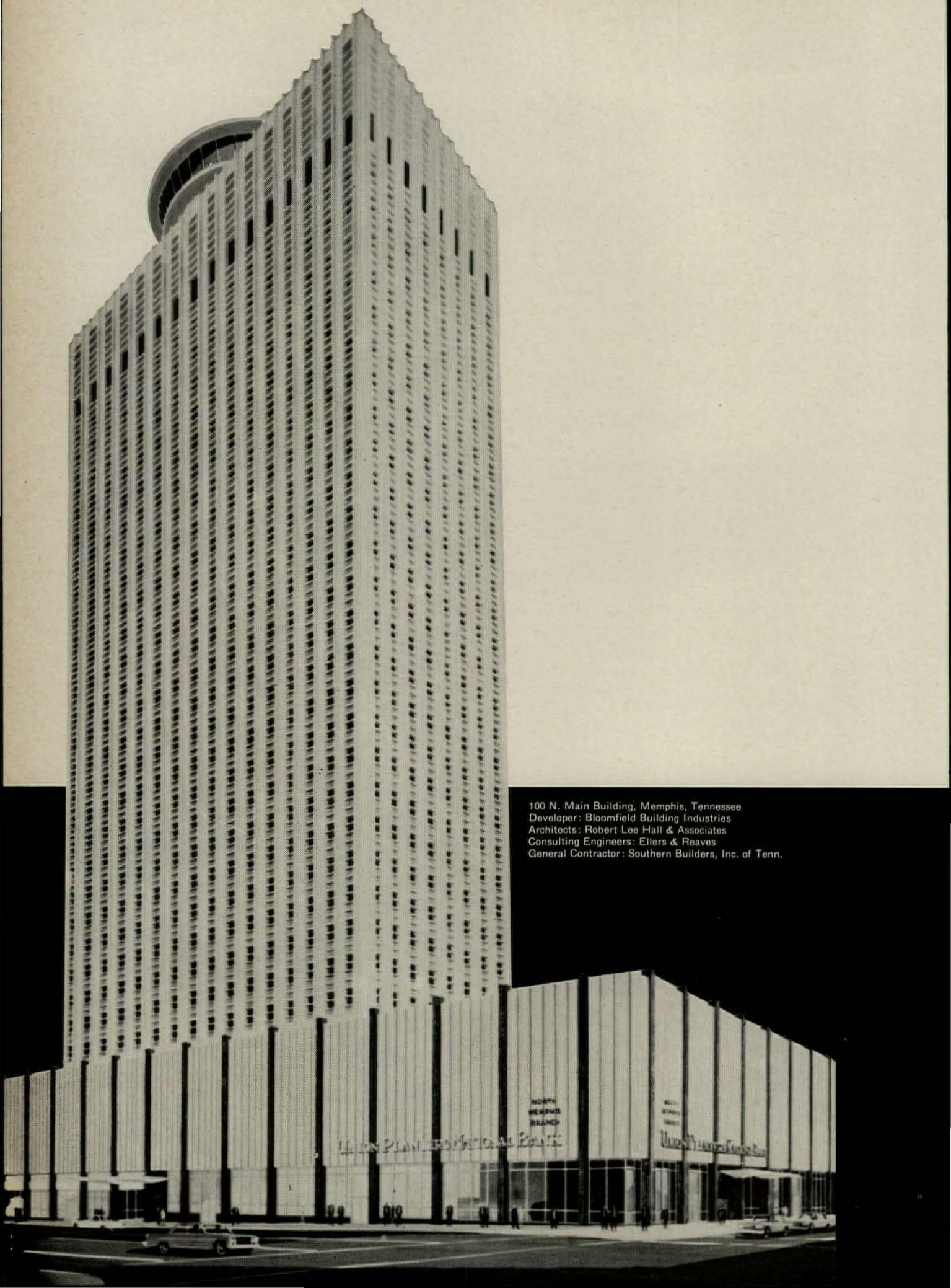
MARBLE/IMPERIAL FURNITURE COMPANY, BEDFORD, OHIO 44014

A DIVISION OF DICTAPHONE CORPORATION

For more data, circle 86 on inquiry card



100 N. Main Building, Memphis, Tennessee
Developer: Bloomfield Building Industries
Architects: Robert Lee Hall & Associates
Consulting Engineers: Ellers & Reaves
General Contractor: Southern Builders, Inc. of Tenn.

the interesting ones are reinforced concrete

The design restrictions of other construction methods are eliminated.
With reinforced concrete you work freely.
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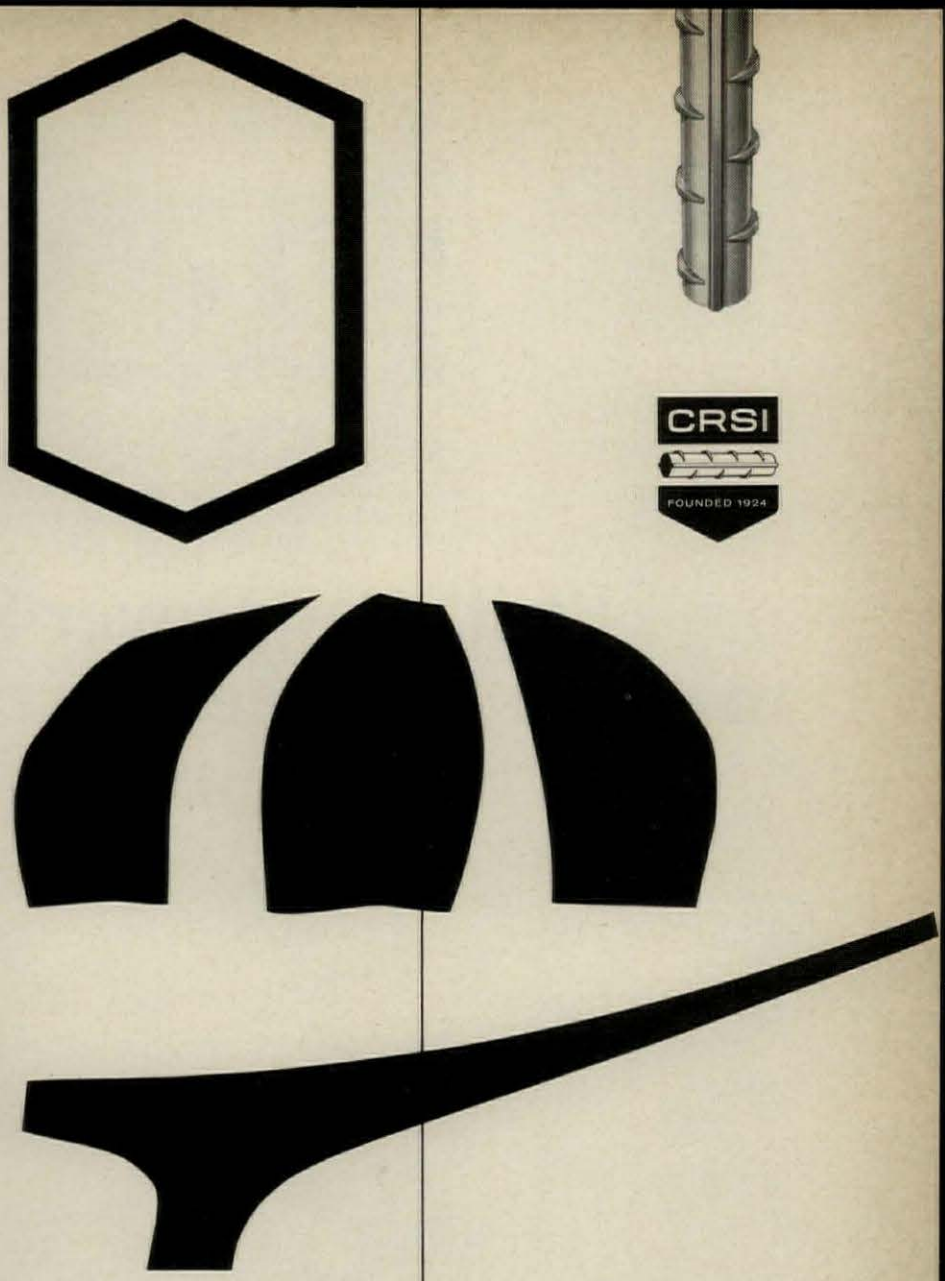

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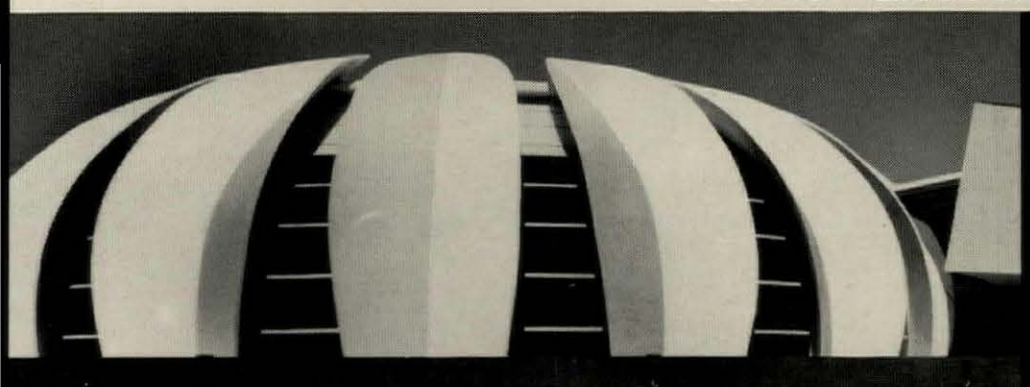

Wyoming National Bank Building,
Casper, Wyoming
Architect: Charles Deaton
Structural Engineers:
Ketchum, Konkel, Ryan & Fleming
General Contractor:
The B. H. Baker Company

Chicago Teachers College, Chicago, Illinois
Architects: Perkins & Will
Structural Engineers: Perkins & Will
General Contractor: Chell & Anderson

Edens Theatre, Northbrook, Illinois
Architects: Perkins & Will
Engineers: The Engineers Collaborative
General Contractor: Chell & Anderson

METROPOLITAN OPERA, Lincoln Center, New York City — Seven 8′ x 60′ stage lifts, two orchestra pit lifts, other equipment for handling sets and scenery.

Last year Dover Stage Lifts met the engineering challenge of the Metropolitan Opera

ROSARIAN ACADEMY, West Palm Beach, Fla. — Single stage lift 46′-4″ x 9′-0″, rise 5′.

and the budget of the Rosarian Academy Auditorium

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DOVER CORPORATION / ELEVATOR DIVISION

Dept. T-3, P. O. Box 2177, Memphis, Tenn.

For more data, circle 87 on inquiry card

Prefab walk-in coolers and freezers meet changing demands for food storage

An architect designing any large building or complex should recognize the new standards for mass-feeding facilities, and the resulting increase in frozen food storage.

By George M. Prince
Bally Case and Cooler, Inc.

Buildings which are occupied by large numbers of people, whether in a center city area or an outlying district, can no longer be served adequately by "the little restaurant around the corner." In the design of schools, hospitals, dormitories, nursing homes, motels and hotels, industrial plants, public buildings and office buildings, there must be high-quality facilities for feeding the many people working, relaxing, and/or living there.

The architect designing the building with its mass-feeding facilities must consider the most practical and efficient food preparation and serving equipment to incorporate into his design. One of the most important of these considerations is the type of equipment for food storage. More and more buildings today need walk-in refrigerated storage space that will be efficient, have a long life, utilize space and, very important, be flexible. A good solution to all these requirements is the prefabricated walk-in.

Space needs are growing and changing

In the days before frozen foods, walk-in refrigerated storage space meant 35 deg F storage space for fresh meat, vegetables and dairy products. Today, −10 deg freezer space is needed at a ratio of about 1 cubic foot of freezer space to 2 cubic feet of 35 deg space.

Mass-feeding experts feel this proportion will change further, as the trends toward pre-cooking and freezing continues to increase. Improvements in flavor, taste, quick service and variety will be possible. Much of the pre-cooking will be done by suppliers using fast-freezing cryogenic techniques to maintain high flavor levels in vegetables, oven-freshness in baked goods, and fresh-from-the-water taste in seafoods. Other freezing will be done in the restaurant or institution kitchen. This will make possible large-batch cooking, will take advantage of low prices, and will make efficient use of surplus quantities of cooked foods.

Further, during the life of many structures being built today, the need for cooler-freezer space will change considerably. A school cafeteria that now serves a limited number of students may sometime in the not-too-distant future have to serve a much larger number. Or it might even become the preparation and freezing center for food for a school group.

Prefabs are movable and expandable

Prefab walk-ins of any needed size or shape, for any use where refrigerated space is needed, can be assembled from standard parts. Whether or not future changes are expected when the prefab is originally installed, it can later be expanded, divided, or disassembled and reassembled on a new site. New panels and new refrigeration capacity can be added.

Sometimes the change is in over-all size; sometimes the interior is redivided to change proportions of cooler and freezer space, or the cooling system is changed to convert cooler temperatures to freezer temperatures.

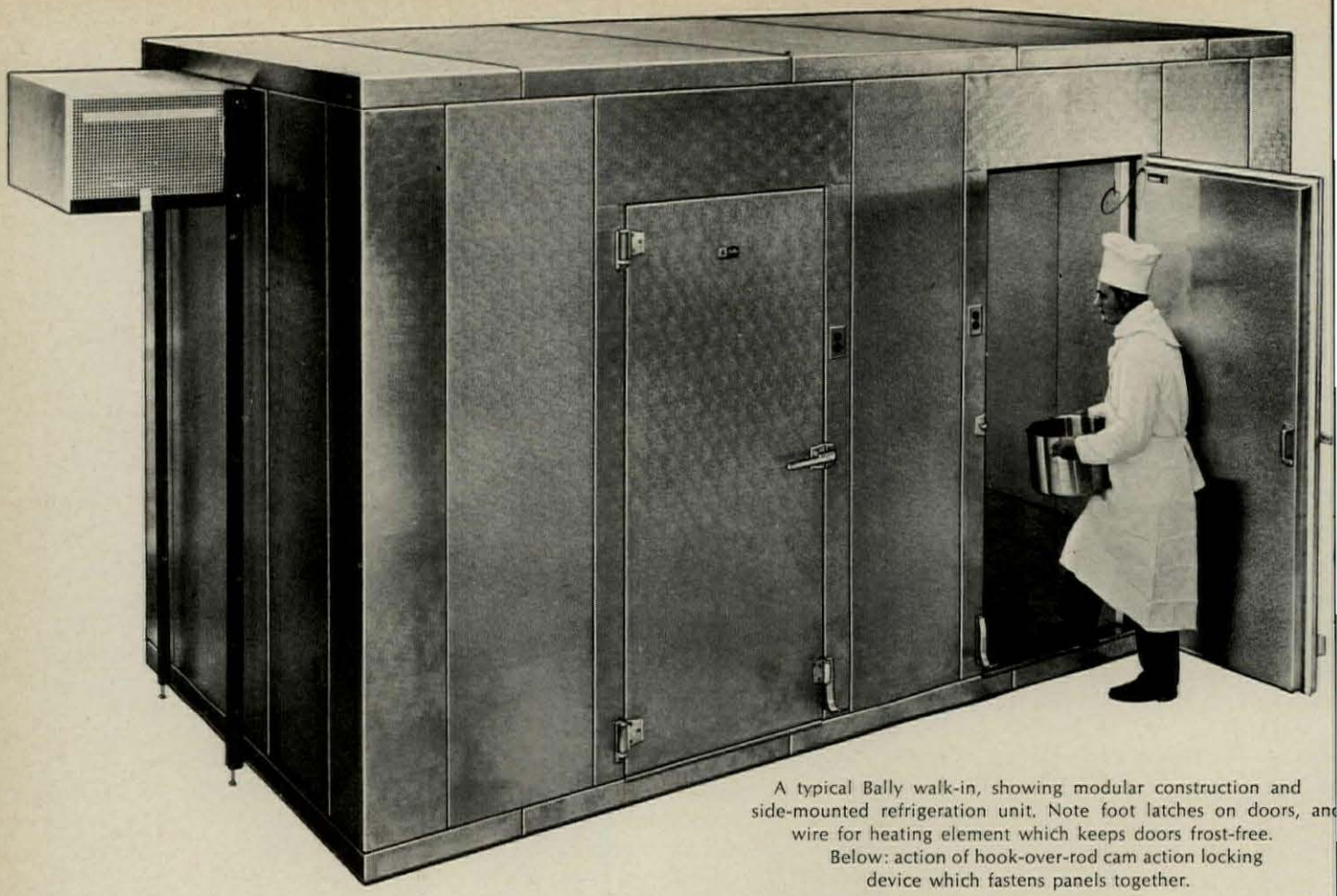
Most new units use urethane

Prefab walk-ins that we manufacture are assembled from prefabricated standard parts and cooled by factory-assembled hermetically sealed refrigeration units. The key structural units are standard sized panels that are manufactured by foaming 4 in. of urethane between two skins of aluminum, galvanized steel, or stainless steel in a heated molding jig. Urethane, a plastic resin which is expanded with Freon and then heat cured, is a highly efficient insulator. It is a 97 per cent closed-cell material that will not absorb moisture. A 4-in. panel has a U factor of .029. Freezers with this material can operate at −40 deg F.

Structurally, the foamed urethane panel is strong and rigid enough to be self-supporting and load-bearing. Because no framing is needed for strength, every square inch of the panel insulates equally with no heat transmitting members.

Construction is simple, flexible

Tongues and grooves molded into the edges of the panel assure tight joints. A hook-over-rod cam action locking device



A typical Bally walk-in, showing modular construction and side-mounted refrigeration unit. Note foot latches on doors, and wire for heating element which keeps doors frost-free. Below: action of hook-over-rod cam action locking device which fastens panels together.

(small drawing turned by hex wrench as the walk-in is assembled, fastens panels together under constant tension. The tension is maintained because locks are mounted on a strip of steel imbedded in the urethane foam. With a rod on one end of each strip and a hook on the other, the strips lock to form a continuous ribbon of steel binding all panels together.

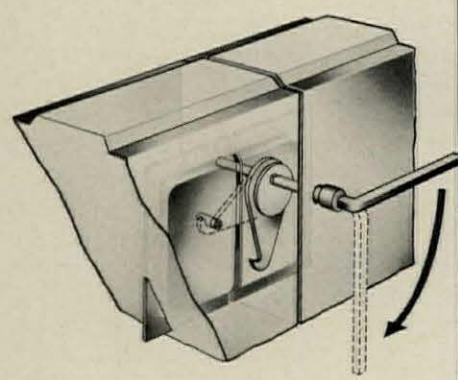
Because the panels align accurately and lock tightly together, metal edge to metal edge, and the oversized foamed-in-place tongue compresses into the undersized groove to form a weather-tight, vermin-proof, sanitary joint, the prefab walk-ins may be erected outdoors as well as indoors. Food particles and juices cannot seep into the insulation to reduce efficiency or contaminate. Metal surfaces are readily scrubbed and disinfected indoors, and are impervious to rain and snow. Additional insulating value, especially in direct sunshine, is gained from the patterned aluminum, galvanized steel, or stainless steel reflective surfaces.

Specialized panels form walls, floors and ceilings. Lightweight doors with automatic closers are mounted in their own panels.

Additional structural support from either interior or exterior steel members is required on ceilings of walk-ins where the smallest dimension is longer than 12 ft. A hung ceiling is supported by special non-conducting nylon bolts through the panels. Floors for fork-lift truck or other heavy use can be protected with concrete and epoxy wearing surfaces.

Shelving, racks, bump panels and other equipment designed to co-ordinate with the structure can be specified also.

In the case of outdoor installation, wood or steel sloped roof structures may be specified by the architect and built on site. Most economical and efficient, however, is a flat built-up roof with 2 x 4 spacers to allow air space between ceiling panels and roof.

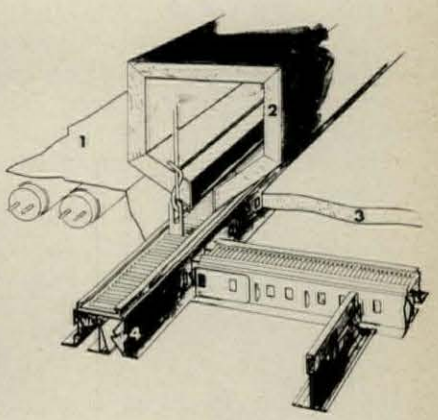


Careful assembly assures balance

Refrigeration systems for prefabricated walk-ins are assembled in many sizes, then hermetically sealed and tested, ready for immediate use. They are assembled from a variety of components so that compressors and coils are always completely balanced in capacity. Thermostats, switches, time clocks, and all other needed controls are co-ordinated into the refrigeration system. The complete assembly is made in a white room under controlled dry air conditions.

The compatibility of components delivers the exact temperature needed to cool the walk-in. Because the system is supplied by the manufacturer, there is no division of responsibility for performance, service and guarantee, which should result in reduced field service problems and lower service costs.

For more information circle selected item numbers on Reader Service Inquiry Card, pages 325-326



Integrated ceiling system pre-engineered for acoustics, light, and wall-to-wall air delivery

The *Dimensionaire Ceiling System* (DCS) delivers conditioned air through a patented linear air bar and air tube assembly. The assembly functions as a wall-to-wall diffuser interlocking with cross tees to form grids that support a variety of lighting units and acoustical materials. The air bar is a continuous narrow metal channel, vaned on the top and slotted on the bottom. A center diverter in the bar directs the flow of conditioned air across the ceiling, setting up a natural air-flow pattern that draws air up from the room's comfort zone. Conditioned air is forced through the tube into the air bar. Spacing of air bars across the ceiling determines air flow patterns. Depending on the size and ceiling height of the room, the bar delivers air at rates as low as 10 CFM/lf or as high as 70 CFM/lf. Noise produced at the higher delivery rates is reported extremely low. In the 60 to 70 CFM/lf. range, for example, the bar generates 40 to 50 decibels.

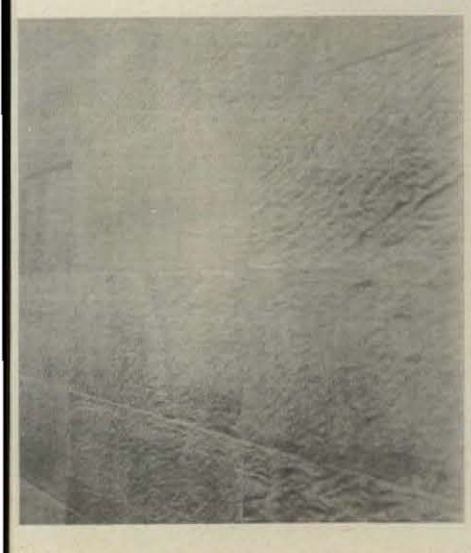
The rigid Fiberglas air tube, suspended by hangers and fabricated in a pentagonal shape, is said to absorb equipment noise and insulate against heat loss and gain. The pentagonal contours of the air tube permit installation in restricted plenum areas as shallow as 12 in. Where required, the air tube can be fabricated in other shapes.

The grid system is formed by interlocking cross tees to the air bar. Main tees intersect the cross tees at right angles and are parallel to the air bar. The resulting grid pattern can be adjusted to accept the largest Fiberglas acoustical boards of standard-sized tiles which lift out of the suspension system for access to the above area.

Isometric drawing (right, above) shows the pre-engineered components for the system:

1) lighting units that meet illumination requirements from 20 to 200 footcandles; 2) pentagonal-shaped air tube that absorbs equipment noise and insulates against heat loss and gain; 3) Fiberglas Dimensional Ceiling boards or tiles that control sound; and 4) linear air bar that functions as a wall-to-wall air diffuser, interlocking with cross tees and return air bar to form grids that support lighting units and acoustical materials. ▪ Owens-Corning Fiberglas Corp., Toledo, Ohio.

Circle 300 on inquiry card



Glass-ceramic wall panels limited only by imagination

An architectural wall panel of *Pyroceram* glass-ceramic material offers new direction to building design. Among the applications are curtain wall systems, window walls, veneer for masonry walls, interior partitions, accent walls, counters, and low-intensity lighted ceilings. Panels may be opaque or translucent, smooth or textured. The basic color is gray—this may be backlighted—either in matte or glossy finish. Panels may also be white, solid blue, or solid brown, and since the color is an integral part of the material, it will not change.

Characteristics: the material is non-porous; when used externally rain will wash it clean. It is indifferent to industrial atmospheres, salt air or other corroding influences. It resists thermal shock with an expansion coefficient of zero, and is reported to be literally as hard as steel. In nominal 0.200-in. thickness, the panels are approximately 2.5 lbs per sq ft with a modulus of rupture of more than 50,000 psi. Panels are available in 4-ft widths and up to 12-ft lengths. ▪ Corning Glass Works, Corning, N.Y.

Circle 301 on inquiry card

more products on page 214

OFFICE LITERATURE

For more information circle selected item numbers on Reader Service Inquiry Card, pages 325-326

HEATING & PLUMBING / Publication of a 1967 Heating Comparison-Selection Manual coincides with the publication of the updated 1967 Plumbing Comparison-Selection Manual. The latter includes a listing of 9,664 plumbing components of 84 manufacturers. The heating manual includes 6,519 listings representing 83 manufacturers. Single copies of each are $13. ▪ Index Creations, Inc., P.O. Box 110, Madison, Wisc.

CONTROLS / A 1967-68 heating, air-conditioning and refrigeration controls catalog includes illustrated descriptions in 64 pages. ▪ Emerson Electric, St. Louis.

Circle 400 on inquiry card

MASONRY REINFORCING / A 12-page guide features a line of masonry wall reinforcing for all types of masonry walls. ▪ Wire Products Company, Chicago.

Circle 401 on inquiry card

AIR MOVING DEVICES / "Test Code for Sound Rating Air Moving Devices" incorporates the latest revisions of the code. This third edition contains 24 pages covering the history and authority of the code; sound power reference level; field testing; test setup and equipment; and observations and calculations. ▪ Air Moving and Conditioning Association, Park Ridge, Ill.

Circle 402 on inquiry card

TEXTURED CEILINGS / The "1967 Catalog of Acoustical Metal Ceilings" describes textured metal that minimizes the visibility of joints and perforations. There are illustrated ceiling installations. Also included is test data on noise reduction and coefficients and sound transmission class. ▪ E. F. Hauserman Company, Cleveland.*

Circle 403 on inquiry card

TRAFFIC DOORS / Several models of double acting, shock-absorbing rubber doors are described in a 4-page brochure. Doors have shatterproof glass vision panels, safety-cushion nosing, and gravity cam rise for self-closing. ▪ Rubbair Door Div., Stic-Klip Mfg. Co., Inc., Cambridge, Mass.*

Circle 404 on inquiry card

INSTITUTIONAL FURNITURE / A 1967 catalog is divided into two sections: function-room furniture and institutional furniture. The 54-page catalog presents a total line of over 1,000 items for hotels, motels, restaurants and institutions requiring flexible equipment for social, professional, business or industrial functions. ▪ Institutional Products, Inc., Philadelphia.

Circle 405 on inquiry card

INDUSTRIAL DOORS / A 12-page catalog includes illustrations and information on a variety of industrial and cold storage doors. ▪ Clark Door Company, Cranford, N.J.*

Circle 406 on inquiry card

GLAZING / A 12-page brochure describes where and how to use *Lexan* polycarbonate glazing. The brochure explains that initial uses have been in educational, institutional and commercial buildings. It is particularly recommended in areas subject to vandalism or hard use. ▪ Chemical Materials Dept., General Electric, Pittsfield, Mass.

Circle 407 on inquiry card

PLASTICIZED VINYL SHEET / A 14-page booklet describes how this adhesive-surfaced material is applied to the surface of fine metals where luster and smoothness are of the first importance. The Japanese-made material is said to be impervious to weather and water and is chemical resistant. ▪ Nitto Electric Industrial Co., Ltd., New York City.

Circle 408 on inquiry card

DECORATIVE LIGHTING / A 32-page illustrated booklet describes the versatility of the *Lytespan* system for accent lighting, wall washing, and decorative lighting. ▪ Lightolier, Jersey City, N.J.

Circle 409 on inquiry card

REFRIGERATION, DISPLAY EQUIPMENT / A 32-page illustrated catalog describes the 1967 line of commercial food refrigeration and display fixtures for retail stores, hotels, restaurants and institutions. ▪ Clark Equipment Company, Niles, Mich.

Circle 410 on inquiry card

SPACE-FRAME SYSTEM / A 12-page brochure describes and illustrates a system with three-dimensional integrated modular frame work made up of five standardized parts. Illustrations show the spaceframe used for roofs, floors, ceiling gridwork, mezzanines and display areas. ▪ Unistrut Corp., Wayne, Mich.

Circle 411 on inquiry card

COLUMNS / "Columns by Ultimate Strength Design—Including Square Footings" is a 220-page book containing time- and labor-saving tables that present finished design calculations for loading, based on the ultimate strength design method as presented in the 1963 ACI Code. All tables are based on high-strength reinforcing steels of 60,000 and 75,000 psi yield point, and concrete in strengths from 3,550 to 7,500 psi. Cost is $6. ▪ The Concrete Reinforcing Steel Institute, 228 N. LaSalle St., Chicago.

PLASTIC PANELS / A brochure contains complete product data and technical specifications on translucent fiber glass-reinforced plastic panels. ▪ Technical and Field Services Department, Filon Corporation, Hawthorne, Calif.*

Circle 412 on inquiry card

MOISTURE BARRIERS / An 8-page brochure provides information on various uses of *Volclay* bentonite-based products for positive seepage prevention in subsurface building and tunnel construction. ▪ American Colloid Company, Skokie, Ill.

Circle 413 on inquiry card

COUNTERS AND SHOWCASES / A 28-page full-color catalog lists over 222 items. ▪ Reflector Hardware Corporation, Melrose Park, Ill.

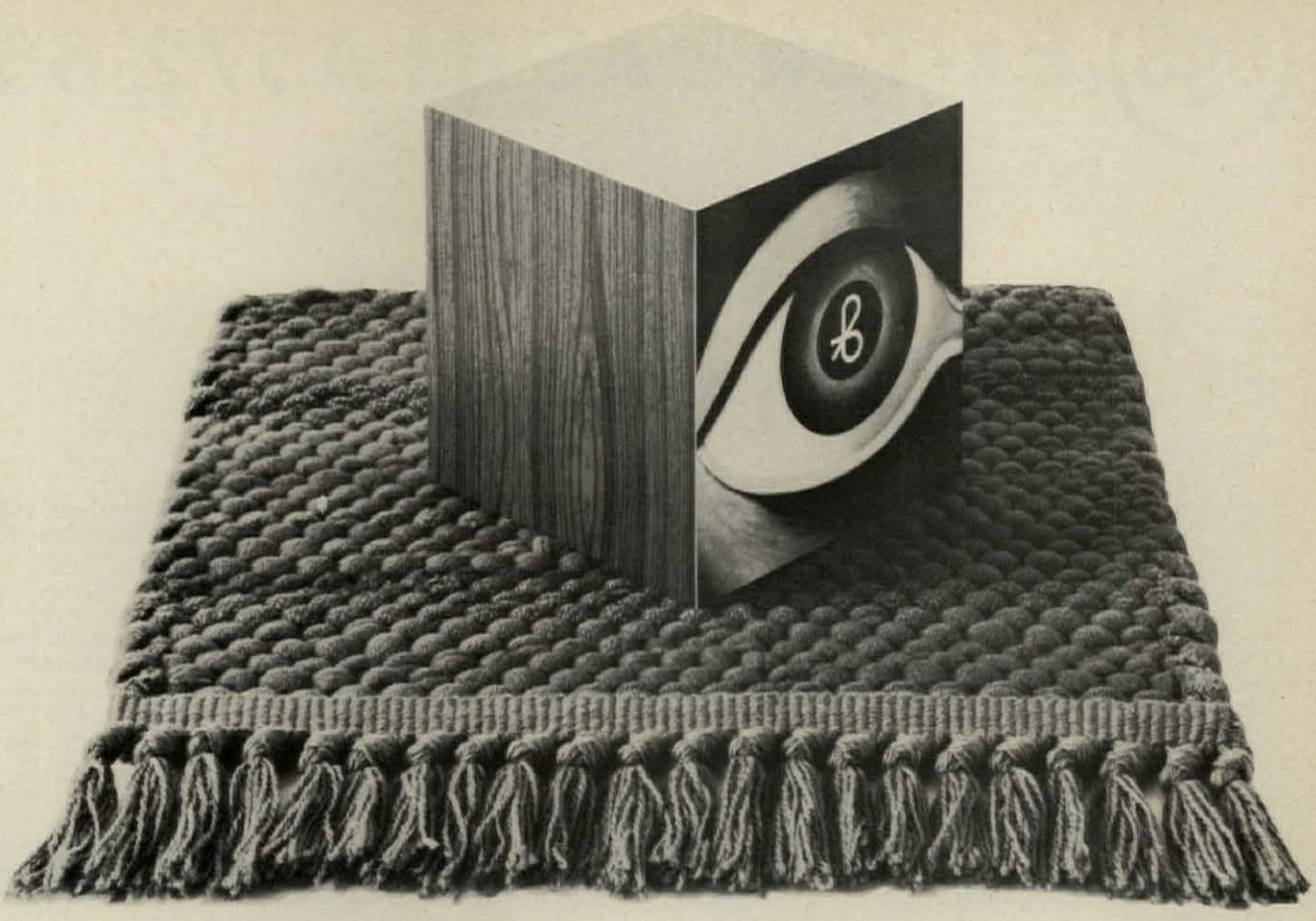
Circle 414 on inquiry card

JOISTS / A 52-page booklet on long-span steel joists and open web steel joists gives standard specifications and load tables. ▪ American Institute of Steel Construction, New York City.

Circle 415 on inquiry card

**Additional product information in Sweet's Architectural File*

more literature on page 285



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Manufacturers of: Tufted Broadloom; Custom Tufted Rugs and Carpet; Stock Design and Custom Designed Handmade Rugs and Carpet; Hand-loomed Reversible Chenille; Custom-braided Rugs; Hand-loomed Reversible Broadloom.

*Distributors of: *Roxbury Broadloom (Axminster, Velvet, Knitted, Tufted); *Loma Loom Rubber-backed Carpet; Ozite Outdoor-Indoor Carpet, Carpet Tile, Rubber and Felted Lining.* *WESTERN STATES

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For more data, circle 88 on inquiry card

USS Ex-Ten ≥ ASTM A572-66

The American Society for Testing and Materials has issued a Standard Specification for HIGH-STRENGTH LOW-ALLOY COLUMBIUM-VANADIUM STEELS OF STRUCTURAL QUALITY—ASTM A572-66.

This specification covers six grades of high-strength low-alloy structural steel shapes, plates and bars. Grades 42, 45 and 50 are intended for riveted, bolted, or welded construction of bridges, buildings, and other structures. Grades 55, 60 and 65 are intended for riveted or bolted construction of bridges and for riveted, bolted, or welded construction in other applications.

USS Ex-Ten Steels meet all the requirements of this specification. In addition, USS Ex-Ten Steels are available in greater thicknesses in plates, and at a higher strength level (70,000 psi min.) in plates, shapes and bars than are covered by this new ASTM Specification.

The USS Ex-Ten Steel series of high-strength low-alloy columbium-vanadium steels was introduced by United States Steel several years ago. These steels won immediate acceptance because they deliver high strength per unit of cost and have excellent fabricating properties. USS Ex-Ten Steels have been used in truck trailers, construction equipment, farm machinery and railroad cars. They have also been used in construction projects such as bridges, piling structures, electrical transmission structures, and buildings including auditoriums. In fact, due to the great economy offered by the use of Ex-Ten Steels, they have become today's most widely used high-strength low-alloy steel. The scope of USS Ex-Ten series of steel grades exceeds the ASTM Specification in the areas shown below in red.

If you want a copy of our latest USS Ex-Ten Steel property card, call the USS Sales Office nearest you, or write United States Steel, Room 4572, 525 William Penn Place, Pittsburgh, Pa. 15230.

USS and Ex-Ten are registered trademarks.

ASTM A572-66

Grade	Yield Point, min. psi	MAXIMUM THICKNESS OR SIZE	
		Plates	Structural Shapes
42[a]	42,000	4	All shapes up to 426 lb/ft inclusive
45	45,000	1½	
50[a]	50,000	1½	
55	55,000	1½	
60[a]	60,000	1	Groups 1 and 2[b]
65	65,000	½	Group 1[b]

[a] In the above tabulation, Grades 42, 50, and 60 are the yield point strength levels most closely approximating a geometric progression pattern between 36,000 psi min. yield point steels covered by ASTM Specification A36, Structural Steel and 100,000 psi min. yield point steels covered by ASTM Specification A514, High-Yield Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding.

[b] See ASTM Specification A6.

USS EX-TEN STEELS

Grade	Yield Point, min. psi	MAXIMUM THICKNESS OR SIZE	
		Plates	Structural Shapes
42[a]	42,000	8	All shapes up to 426 lb/ft inclusive
45	45,000	2	
50[a]	50,000	2	
55	55,000	2	
60[a]	60,000	2	
65	65,000	¾	Groups 1 and 2[b]
70	70,000	⅜	Group 1[b]

USS United States Steel

If safety can place your reputation on the line...

Exit Fixture #3726 shown above.

go with the line with the reputation for safety

CORBIN

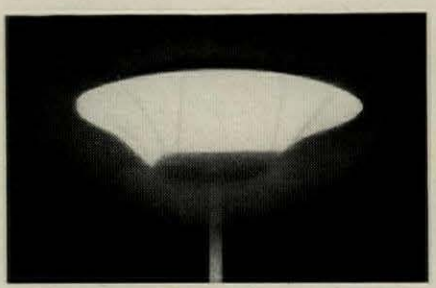
P. & F. CORBIN
DIVISION OF EMHART CORPORATION
NEW BRITAIN, CONNECTICUT 06050
In Canada—Corbin Lock Division, Belleville, Ontario

For more data, circle 90 on inquiry card


SUPER
FOODS

From Sylvania: where new ideas are brought to light

The whitest, brightest way to light up an acre. With one fixture.



The Acre-of-Lite by Sylvania. What's in it? Four 1000-watt Metalarc lamps. What comes out? 360,000 lumens. That's five footcandles average initial illumination over an acre of land. Controlled brightness.

Controlled to minimize glare. Yet so bright, you can cut down the number of poles you need in an area. Any area. Parking lots. Shopping centers. Malls. You'll save space and save money. And it's versatile, too. Takes Mercury as well as Metalarc lamps. For smaller jobs, there's a 1600-watt unit which uses four 400-watt lamps.

Photo-electric controls are available for automatic dusk-to-dawn illumination. Once the sun comes up, you'll see the Acre-of-Lite is space-age handsome. It comes in a wide choice of colors. And it's easy to maintain—without tools.

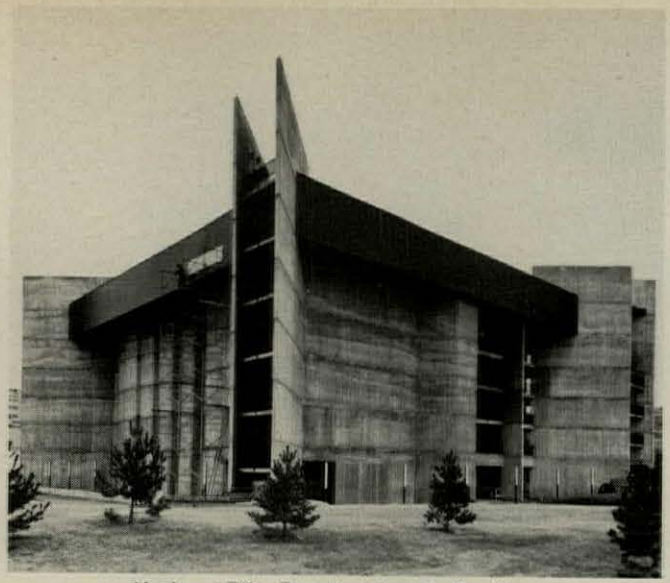
For any lighting need—outdoors or indoors—check the idea line first. Call your Sylvania distributor. Sylvania Electric Products Inc., Lighting Equipment Operation, 60 Boston Street, Salem, Mass.

SYLVANIA

SUBSIDIARY OF GENERAL TELEPHONE & ELECTRONICS GT&E

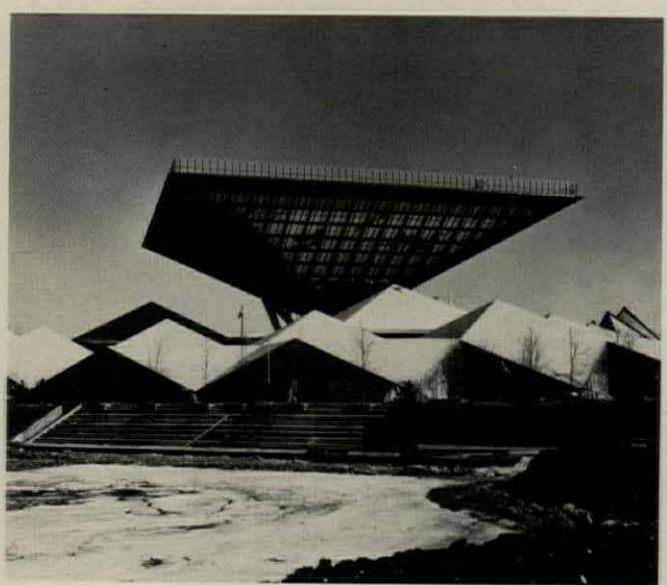
For more data, circle 91 on inquiry card

United States Pavilion

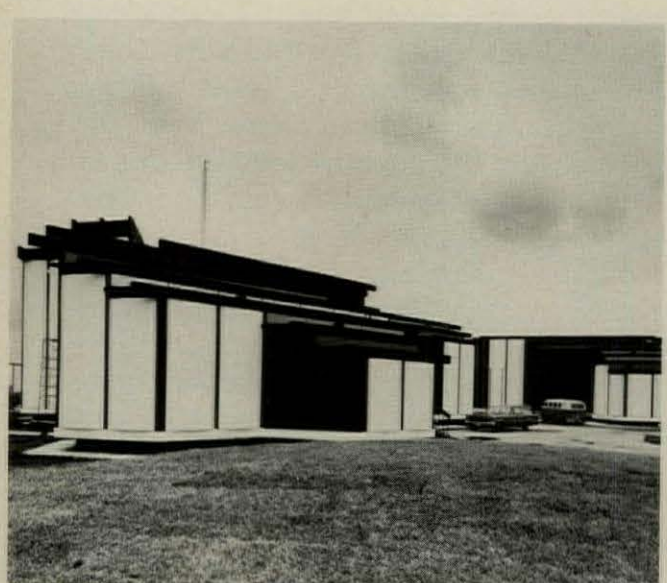


National Film Board of Canada Pavilion

"Man the Producer" Pavilion



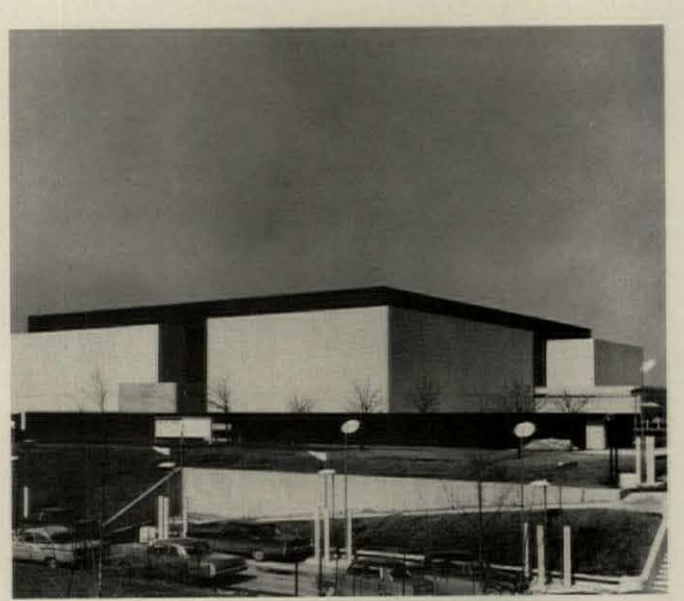
Canadian Pavilion—Katimavik



Quebec Industries Pavilion

CBC International Broadcasting Centre

Scandinavian Pavilion



Art Gallery

Canadian National Railway Pavilion

These expo67 buildings have one thing in common:

Better air by AAF!

But that's about all they have in common when it comes to clean or conditioned air. The particular requirements of each building call for different types of air filters, dust collectors or air handling units. But since AAF makes all types, no problem in providing exactly the right unit for each need.

You won't see our equipment at Expo '67. But it's there. Behind the scenes, working 'round the clock —moving air, filtering smoke, dust and other contaminants, and adding to your over-all comfort in the major pavilions at Expo '67. For more information, write: American Air Filter Company, Inc., 389 Central Avenue, Louisville, Kentucky. 40208

AAF American Air Filter
BETTER AIR IS OUR BUSINESS

For more data, circle 92 on inquiry card

Pittco® announces new two-tone door

Design freedom and striking beauty distinguish Pittco's new line of aluminum doors.

Specify a variety of two-color combinations for contrast between frame and surrounding members. Accent this with matching or contrasting hardware variations.

The slim clean lines of Pittco's new entrance doors eliminate unsightly screw heads for hinge attachments and lock faces.

Pittco doors feature standard hardware that includes nonrising stainless pin butts and nonhanded extruded offset pivot sets, both designed for beauty as well as strength. Available in three stile widths.

See *Sweet's Architectural Fi* for the full story, or write PPG Industries, Pittco Architectura Metals Department, 1500 Murden Street, Kokomo, Indiana 46901.

For more data, circle 93 on inquiry card

continued from page 20

LUMINOUS CEILING / Drop-in ceiling panels are reported to eliminate show-through of fluorescent tubes and ho spots and improve appearance of a structural beam to the supporting T-bar grid. The plastic panels need no clips for securing to standard T-bar suspended ceiling systems. Each panel is raised above the frame and lowered into position. ▪ Sonolux Company, San Francisco.

Circle 302 on inquiry card

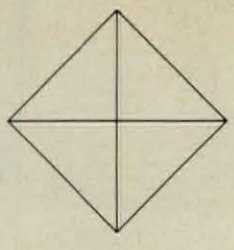
FLEXIBLE LIGHTING SYSTEM / The *Outrigger* system offers a unitized system that is completely adjustable in the field. Manufactured of heavy-wall anodized extruded aluminum, the system utilizes outrigger arms, or troffers, which vary in length up to 24 ft and encase the fluorescent lamps. These arms may be located at any point on the central ballast spline to fit any room size or shape, and accommodate wall partitions. The system is completely pre-wired and requires connectors only at the power source and where the arms fasten to the spline. Swivel joints allow the arms to join the central spline at various angles parallel to the ceiling. The system is also readily adaptable to wall mounting. ▪ Peerless Electric Company, San Francisco.

Circle 303 on inquiry card

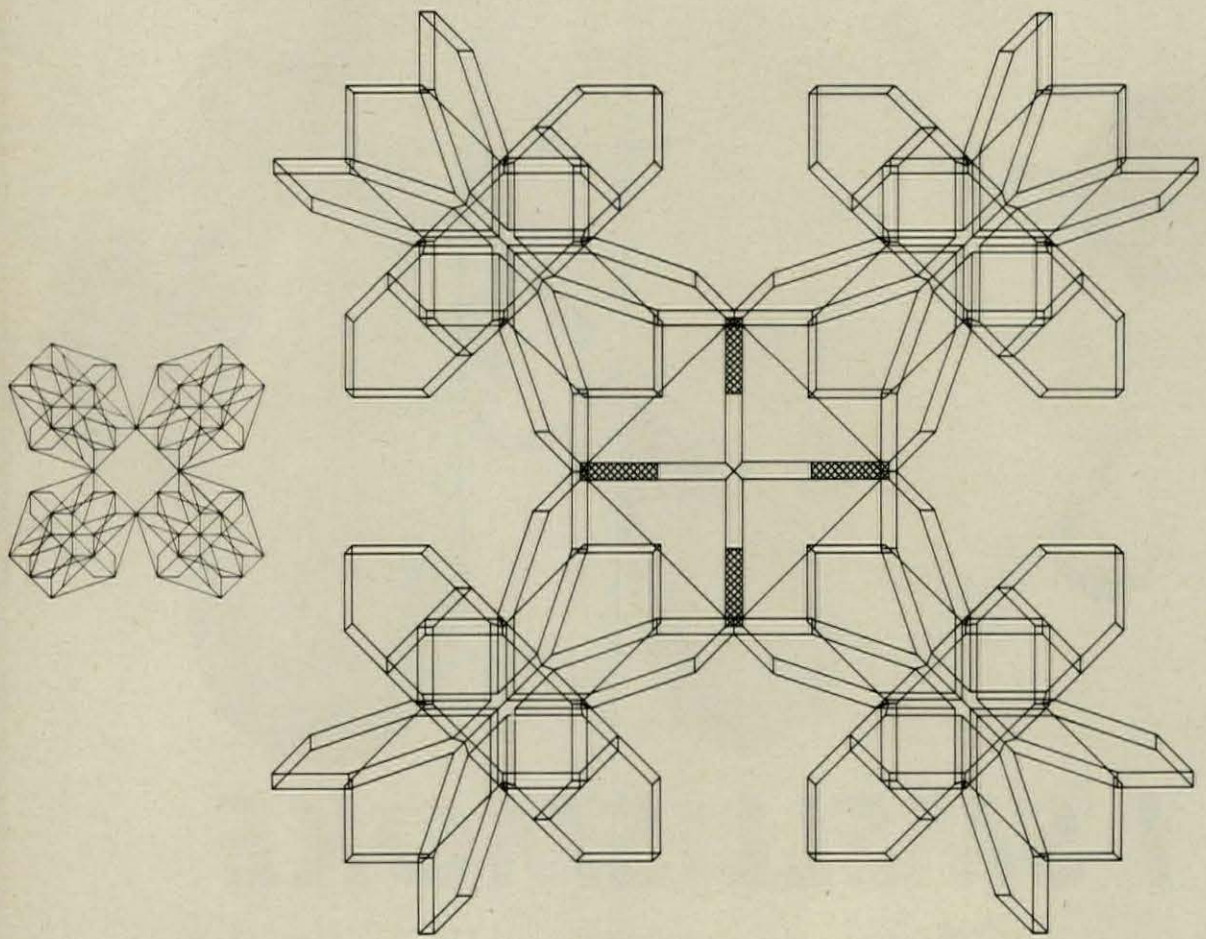
more products on page 226

The formal generators of masonry structure:

The lozenge

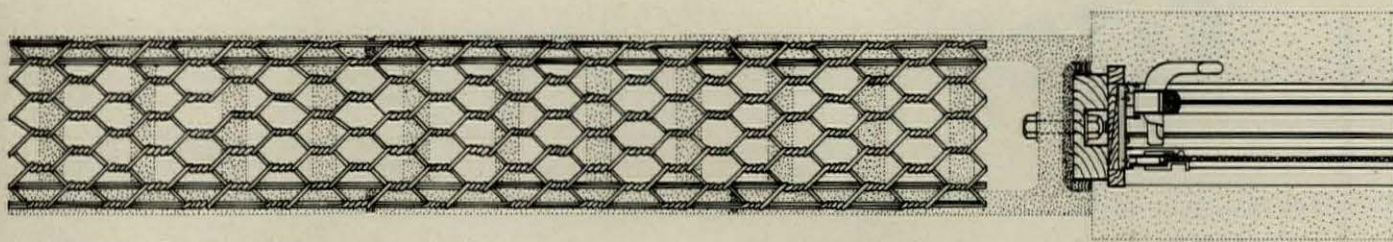


no. 6 of 36

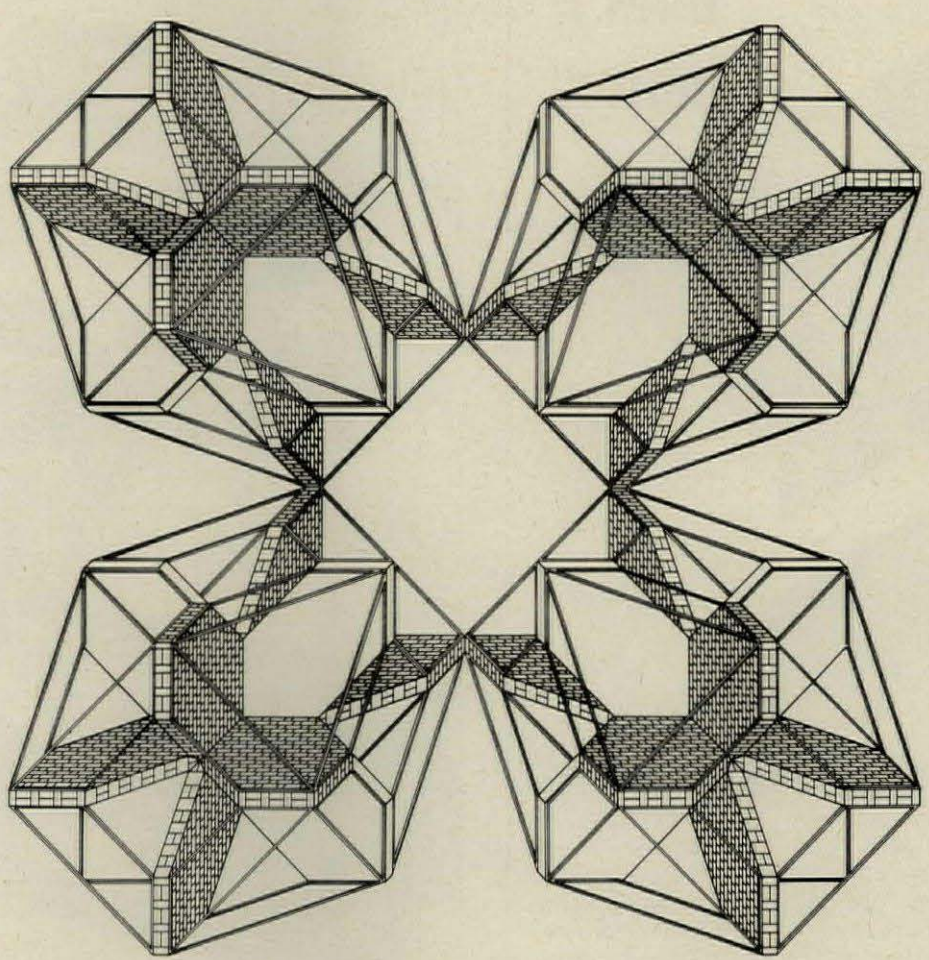


While this is not a true lozenge by dictionary definition, (a figure of four equal sides with two obtuse and two acute angles) it is the basic architectural form incorporating the use of the diagonal. Beginning with the two dimensional figure, architect Stanley Tigerman projects it from parti through floor plan to complete structure.

Throughout this series we shall continue to show how the basic orthogonal shapes of masonry construction — the square, lozenge, rectangle, pinwheel, cross and linked figure—can be developed and projected. We hope the drawings offered here will serve as both idea stimulators and time savers.



Jamb sections: 8" concrete block masonry wall with operating, sliding aluminum sash set in wood buck.

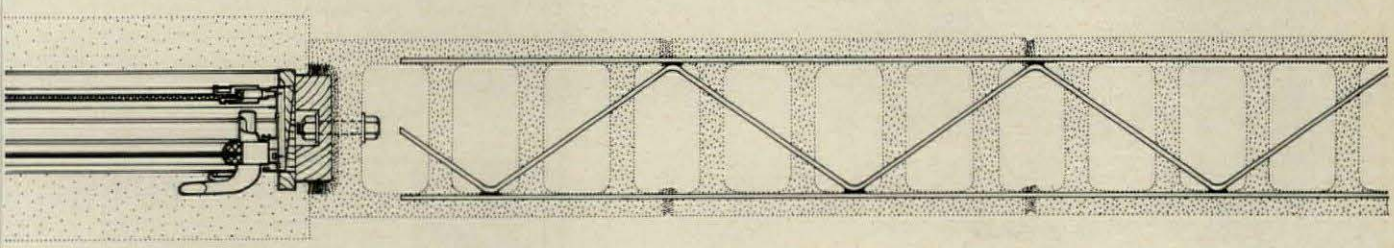


STANELY TIGERMAN, ARCHITECT

As you may have guessed, we have an ulterior motive. We make two products, roll-type and rod-type Keywall® masonry reinforcement, that can help you improve the usage and quality of masonry construction. We'd like you to use them, so we make it easy by including them in the details shown below.

This structure—with the details drawn to 3″ = 1′0″ for easy tracing—is reproduced on convenient 8½ x 11″ sheets. To receive the entire series, write:

Dept. AR-56
KEYSTONE STEEL & WIRE COMPANY
Peoria, Illinois 61607

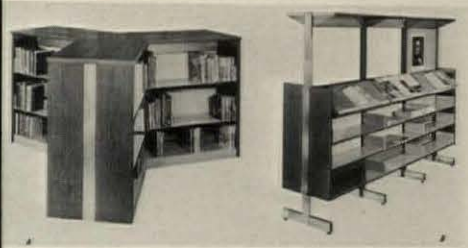


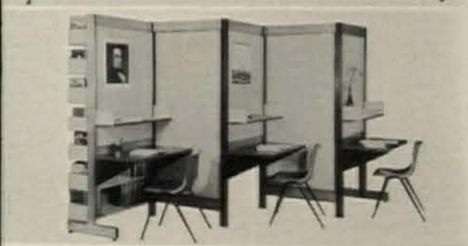
For more data, circle 96 on inquiry card

continued from page 234

PLASTIC WINDOWS / A tough, clear plastic called *Lexan* polycarbonate is said to help solve window breakage problems. *Lexan* does not shatter, and is said to conduct little heat. ▪ General Electric, Pittsfield, Mass.

Circle 308 on inquiry card





LIBRARY FURNITURE / A comprehensive line of furniture and equipment includes new shapes in shelving, exhibit/display equipment, and carrel system ▪ Brunswick Corp., Kalamazoo, Mich.

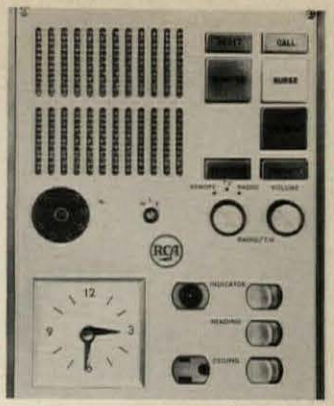
Circle 309 on inquiry card

FOAM INSULATION / The roof and ceiling of the Polyvinyl Chemicals Inc. plant and office building, Wilmington, Mass., which incorporates 16-ft sq, hyperbolic-form concrete squares, is insulated with *Nopcofoam* spray-on foam. *Nopcofoam* has a K factor of 0.13 Btu/hr/sq ft/deg F/in. and a controlled quality which permits fast, continuous spraying. The foam is protected from the weather by an elastomeric coating, sprayed on after the foam has set. *Nopcofoam* may also be used on doors, walls, and freezer compartments. ▪ Nopco Chemical Co., Newark, N.J.

Circle 310 on inquiry card

COMMUNICATIONS / An all-in-one bedside station gives patients full fingertip control of audio-visual nurse communications, room and reading lights, and entertainment functions. The unit is reported easily mounted in most types of furniture. Station includes color-keyed controls and indicators, receptacle for wired entertainment and nurse call remote control unit, 4-in. microphone-speaker combination, and optional electric clock. ▪ RCA Service Co., Camden, N.J.

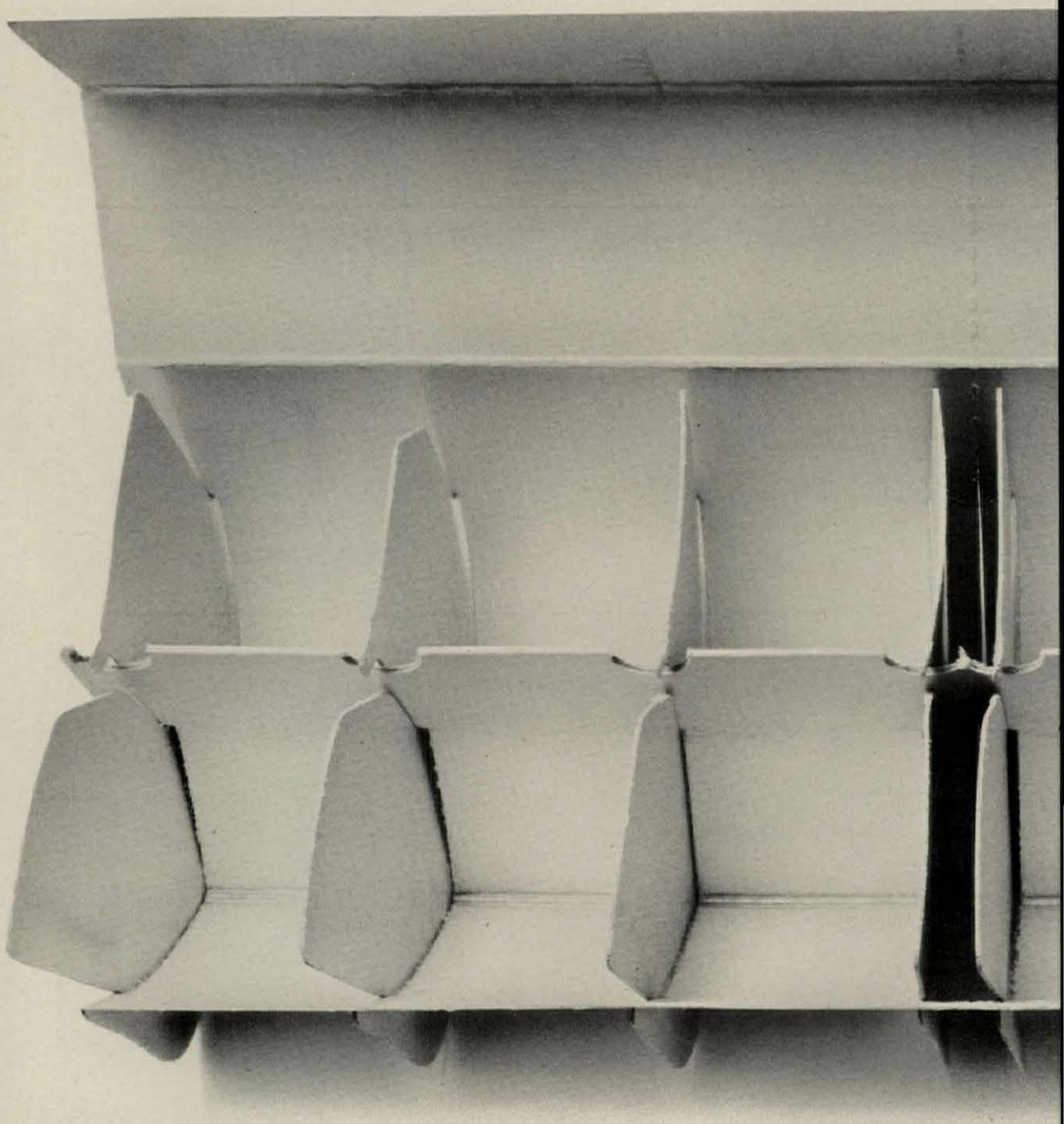
Circle 311 on inquiry card

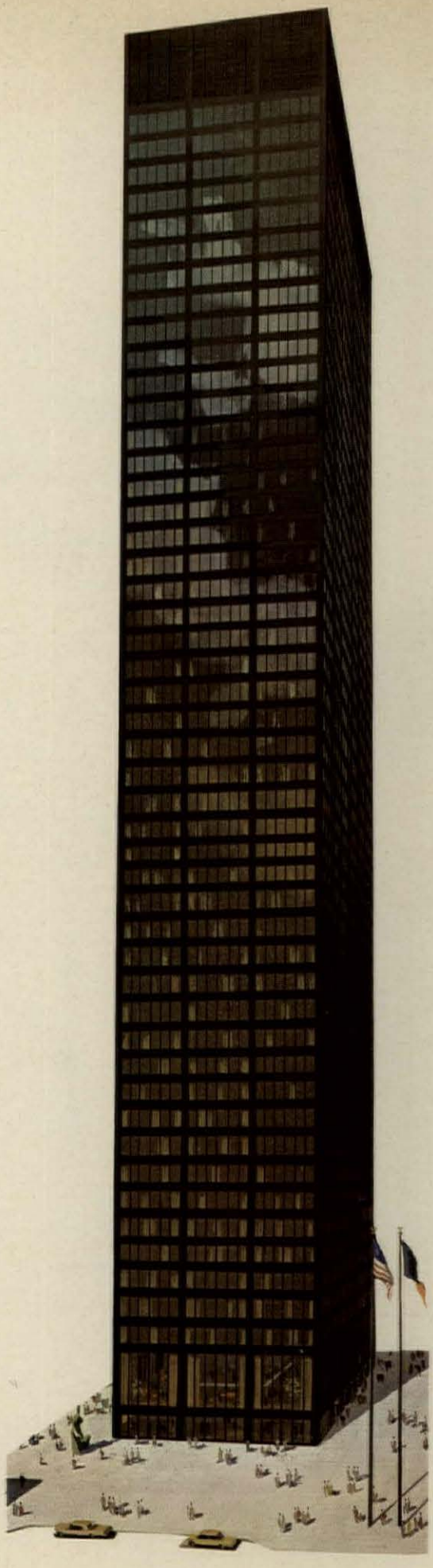


more products on page 249

For more data, circle 110 on inquiry card

A single climate conditioning system would be fir





Architect: Skidmore, Owings & Merrill
General Contractor: Carl A. Morse Inc.
Mechanical Engineer: Jaros, Baum & Bolles
Mechanical Contractor: Raisler Corp.

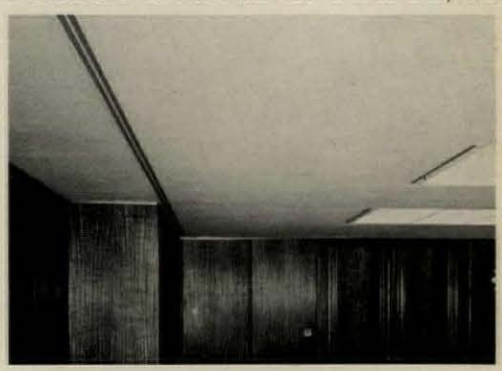
In Marine Midland's
slim new tower
by Skidmore, Owings & Merrill

Anemostat diffusers continue the clean, modular look—throughout

Two types of Anemostat® diffusers distribute a million-and-a-half cubic feet of air each minute through the 140 Broadway (Marine Midland) Building in New York City.

Building standard is Anemostat's E-1 diffuser. Though only its crisp square shape is visible, the E-1 has a circular neck that delivers air with a draftless horizontal diffusion pattern. More than 5,000 units are used throughout the building.

Anemostat SLAD straight line adjustable diffusers were selected for entrance, mezzanine and executive levels. Mounted end-to-end, the slim, fully adjustable units form clean, unbroken lines in keeping with the building's contemporary design.



Write for your copy of Anemostat's complete air distribution catalog. Anemostat Products Division, P.O. Box 1083, Scranton, Pa. 18501.

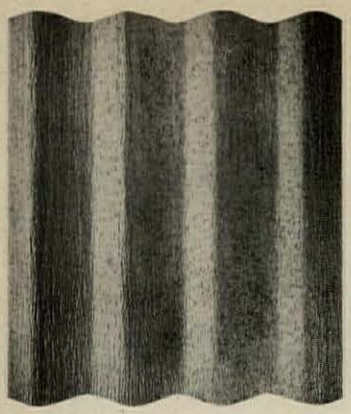
RCA

ANEMOSTAT PRODUCTS DIVISION
DYNAMICS CORPORATION OF AMERICA

For more data, circle 123 on inquiry card

For more data, circle 122 on inquiry card

continued from page 249



WEATHER-RESISTANT PANELS / *Weathershield* fiberglass panels are said to withstand severe climatic conditions while retaining their original finish. Available in a variety of colors, widths, lengths and finishes. ▪ Barclite Corp. of America, Inc., New York City.

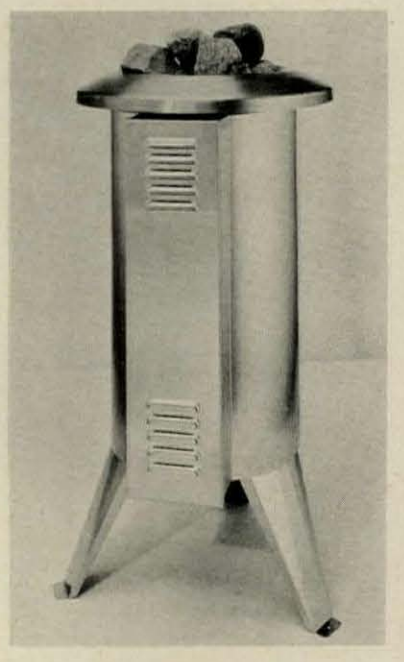
Circle 315 on inquiry card

AIR CLEANER / An electrostatic air cleaner with activated charcoal odor removal includes in the compact casing a mechanical pre-filter, high-voltage transformer, electrostatically charged ionizing section, collecting section and columns of activated charcoal. The air cleaner is said to remove 95 per cent of airborne dirt and pollen particles. Filters sprayed with hexachlorophene aid in killing bacteria. ▪ The Trane Company, La Crosse, Wisc.

Circle 316 on inquiry card

HARDWOOD PANELING / *Gold Crest Heirloom* cherry paneling with a planked effect accents the feature wall in the living room and the chimney breast in the dining room of this model home in Surrey, England. ▪ Georgia-Pacific, Portland, Ore.

Circle 317 on inquiry card



SAUNA / A stainless steel electric sauna bath heating unit develops approximately 29,000 BTUs which heats a sauna bath to bathing temperature in 20 minutes or less. Twin internal high-temperature limit switches are said to prevent overheating. The unit requires only a 24 in. by 24 in. floor space. ▪ Sauna Aire of America, Inc., Des Moines, Iowa.

Circle 318 on inquiry card

more products on page 272

For more data, circle 125 on inquiry card ▸

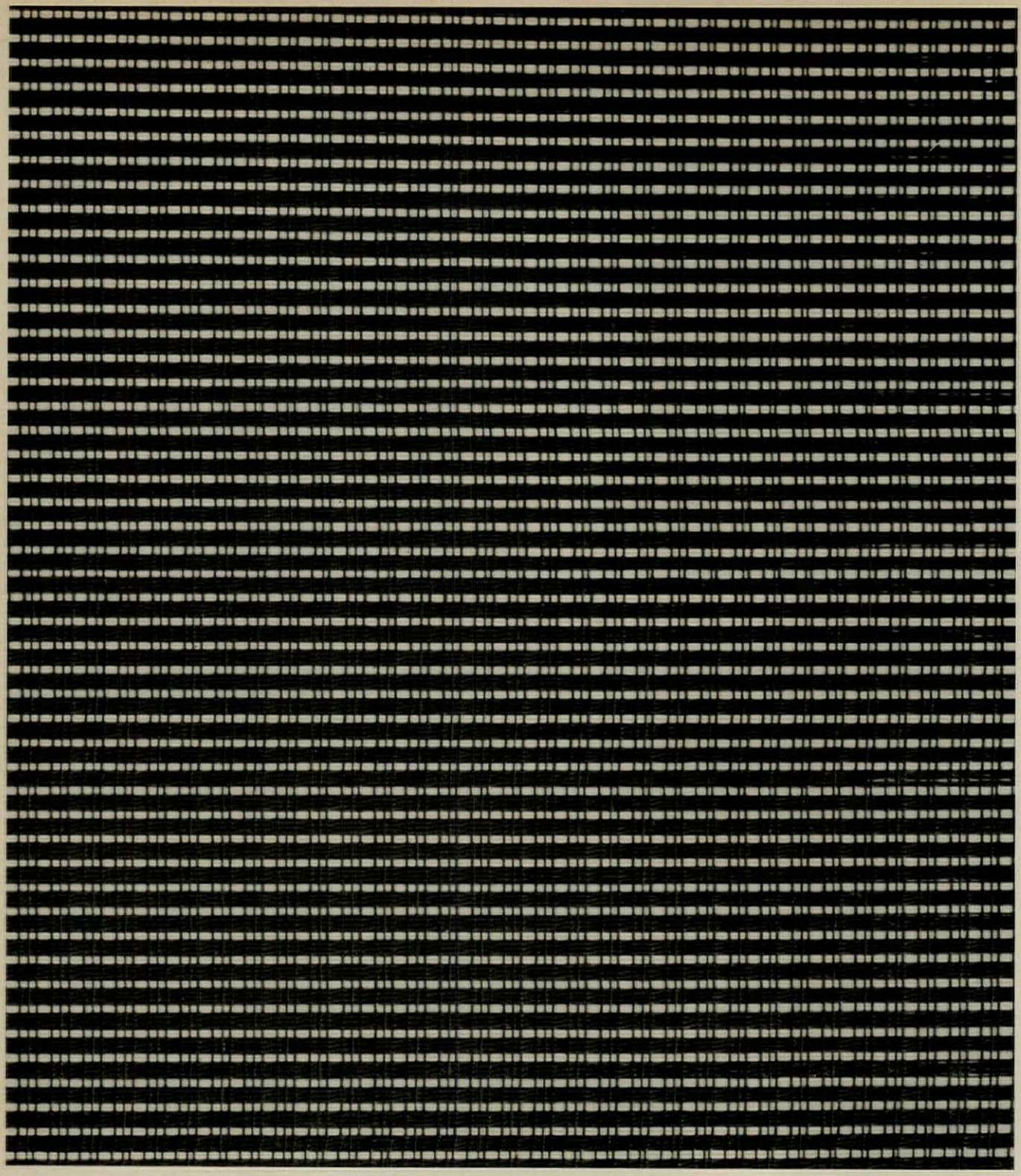
New angle from G.E.

Semi-recessed fountain or cooler.

Or fountain first and cooler later: refrigeration package is available separately. Choose either 8 or 12 gph cooler model (or the fountain). Logical—and good-looking design from the thoughtful engineers at General Electric.

For more information, see the Yellow Pages. Or write: G. E. Co., Dept. 761-37, 14th and Arnold Streets, Chicago Heights, Illinois 60411.

GENERAL ELECTRIC



When the sun gets too hot, cool off with Stevens COMFORT SCREEN.™

Comfort Screen is a woven fiberglass fabric made for the control of solar heat and shade.

(1) Easy to install in exterior fixed frames or on interior shade fixtures.

(2) Reduces interior temperatures by blocking or reflecting solar heat.

(3) Reduces air-conditioning costs both initial and operating.

(4) Permits see-through visibility and, incidentally controls insects when used in exterior applications.

(5) Very low maintenance costs —can be cleaned with soap and water or vacuumed.

(6) Available in cool white, leaf green, aqua and grey.

Stevens Comfort Screen Brochure 15e-St available in Sweets Catalogue. For other technical brochures on Comfort Screen and insect screening, write: Fiberglass Screening, J. P. Stevens & Co., Inc., 1460 Broadway, New York, N. Y. 10036.

Stevens

Burnt Pine by Robert Pierron—a sculptured wood relief from the private collection of WOODWORK CORPORATION OF AMERICA

FREEDOM TO CREATE IN WOOD...The promise of wood in the hands of a sensitive designer adds beauty to structure ...form to function...feeling to flexibility. For more than two generations our single-source custom service has enabled architects and designers to unleash their total creativity on the wonderful warmth of wood. We invite you to think of wood as the medium...freely...unconcerned with construction and installation. We can produce it.

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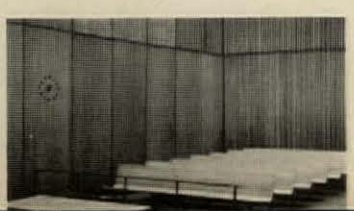
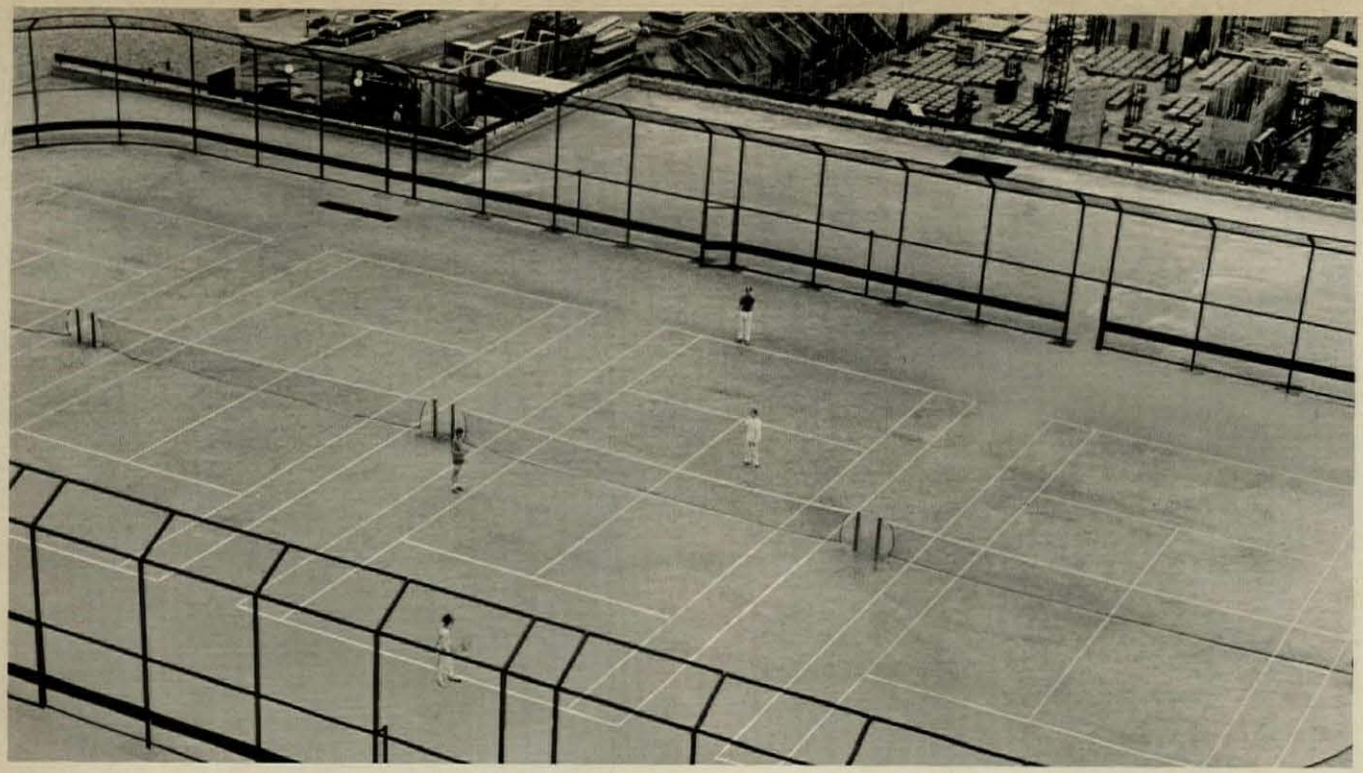
For more data, circle 127 on inquiry card



ARCHITECTURAL WOODWORK:
Panelling • Wainscoting • Partitions • Building Trim

Custom Furniture • Merchandising Equipment

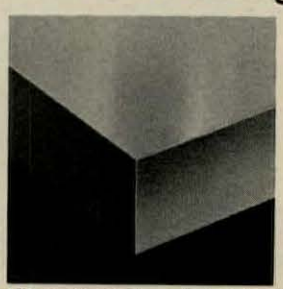
INDUSTRIAL WOODWORK:
Wood Components • Special Plywood



Why did Portland State College install all-weather Tartan® BRAND Surfacing for roof deck athletics?

Because there is no better surface for their needs than TARTAN Brand Surfacing. The surface had to be durable, resilient, all-weather and non-slip. TARTAN Surfacing is all of these. And when poured over the entire roof became a waterproof roofing material, as well.
Have you thought of using TARTAN Surfacing this way?
It's just one of its many uses.

Recreation & Athletic Products 3M COMPANY
367 Grove St., St. Paul, Minn. 55101 • Tel. No. 612-733-2452



See Sweets file numbers: Industrial Construction Catalog File—10d/Mi Architectural Catalog File—36c/Mi

For more data, circle 128 on inquiry card

Bright idea

Corridor-installed Bradley Washfountains make supervision a snap, save money in schools! They get students out of toilet rooms quickly. There's no reason for loitering and possible horseplay. And one teacher can supervise wash-up and monitor the corridor at the same time. What's more, Washfountains serve up to 8 people with one set of plumbing connections. So they reduce installation costs up to 80%. In 36 and 54-inch diameter circular and semi-circular models. Available in widest choice of colors and materials. Corridor-installed Washfountains. A bright idea you can use—from Bradley! For complete details, see your Bradley representative. And write for latest literature. Bradley Washfountain Co., 9109 Fountain Drive, Menomonee Falls, Wisconsin 53055.

from Bradley!

BRADLEY

For more data, circle 133 on inquiry card

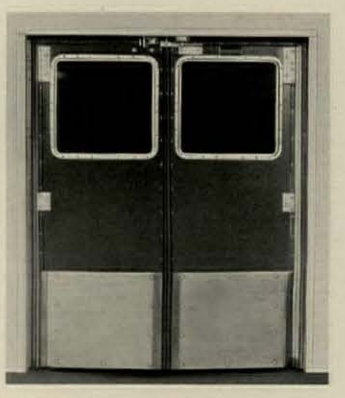
continued from page 262

OFFICE FURNITURE / This desk and storage cabinet designed by Kipp Steward are in imported English brown oak. The leather-topped desk, which measures 70 by 36, has files in both sides of top, with tambour closings which can be locked, and which offer ready accessibility and visibility to filed material. A concealed writing pull-out has a laminate surface. The drawer may hold a dictaphone and other service equipment. The top of the storage cabinet measures 70 by 20 inches, has a storage well with tambour tops and is divided into two sections to accommodate legal size filing. The other side has long, shallow drawers suitable for blueprints and charts. ▪ Directional Contract Furniture Corp., New York City.

Circle 319 on inquiry card

CHAIR / Both the seat and rounded back of this pedestal chair are foam padded. Upholstery is available in a wide color selection and the base, of polished aluminum, may be fitted with ball casters. ▪ B. Brody Seating Co., Chicago.

Circle 320 on inquiry card



SHOCK-ABSORBENT DOOR / Originally designed for high-traffic areas in industrial plants and warehouses, this lightweight door is now recommended for public areas of hospitals, retail stores, research plants and office buildings. The heavy-gage *Kayon* panels, which prevent dents and punctures, are available in nine colors. The door is said never to rust, fade or tarnish, and dirt and grease, are removed with soap and water. ▪ Clark Door Company, Inc., Cranford, N.J.

Circle 321 on inquiry card

FLASHINGS / A new soft stainless steel for flashings is reported to cost approximately 15 per cent less than the company's identical products of copper. This stainless is reported to have excellent workability without spring-back, and an attractive dull finish. ▪ Cheney Flashing Co., Trenton, N.J.

Circle 322 on inquiry card

continued from page 204

TINT BASES / A 6-page booklet contains data on the stability properties of universal tint bases formulated with *Rhoplex* AC-35 acrylic emulsion for exterior paints. The booklet explains that these bases offer superior resistance to chalking; reduced dirt pickup; and greater latitude in the use of pigments and extenders. ▪ Rohm and Haas Company, Philadelphia.*

Circle 416 on inquiry card

AIR CLEANER / A 4-page bulletin describes four *Mistkops*, or mist collectors, ranging in capacity from 614 CFM to 3,600 CFM. Industrial applications and types of mountings are shown. ▪ The Aget Manufacturing Co., Adrian, Mich.

Circle 417 on inquiry card

PLUMBING / An illustrated 12-page catalog lists an expanded line of cast aluminum unbreakable fixtures specifically designed for institutional use. Units include water closets, lavatories, drinking fountains, service sinks and one-piece showers. ▪ Aluminum Plumbing Fixture Corp., Burlingame, Calif.

Circle 418 on inquiry card

**Additional product information in Sweet's Architectural File*

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If you're moving, please let us know five weeks before changing your address. Use form below for new address and attach present mailing label in space provided.

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TYPE OF FIRM

TITLE OR OCCUPATION

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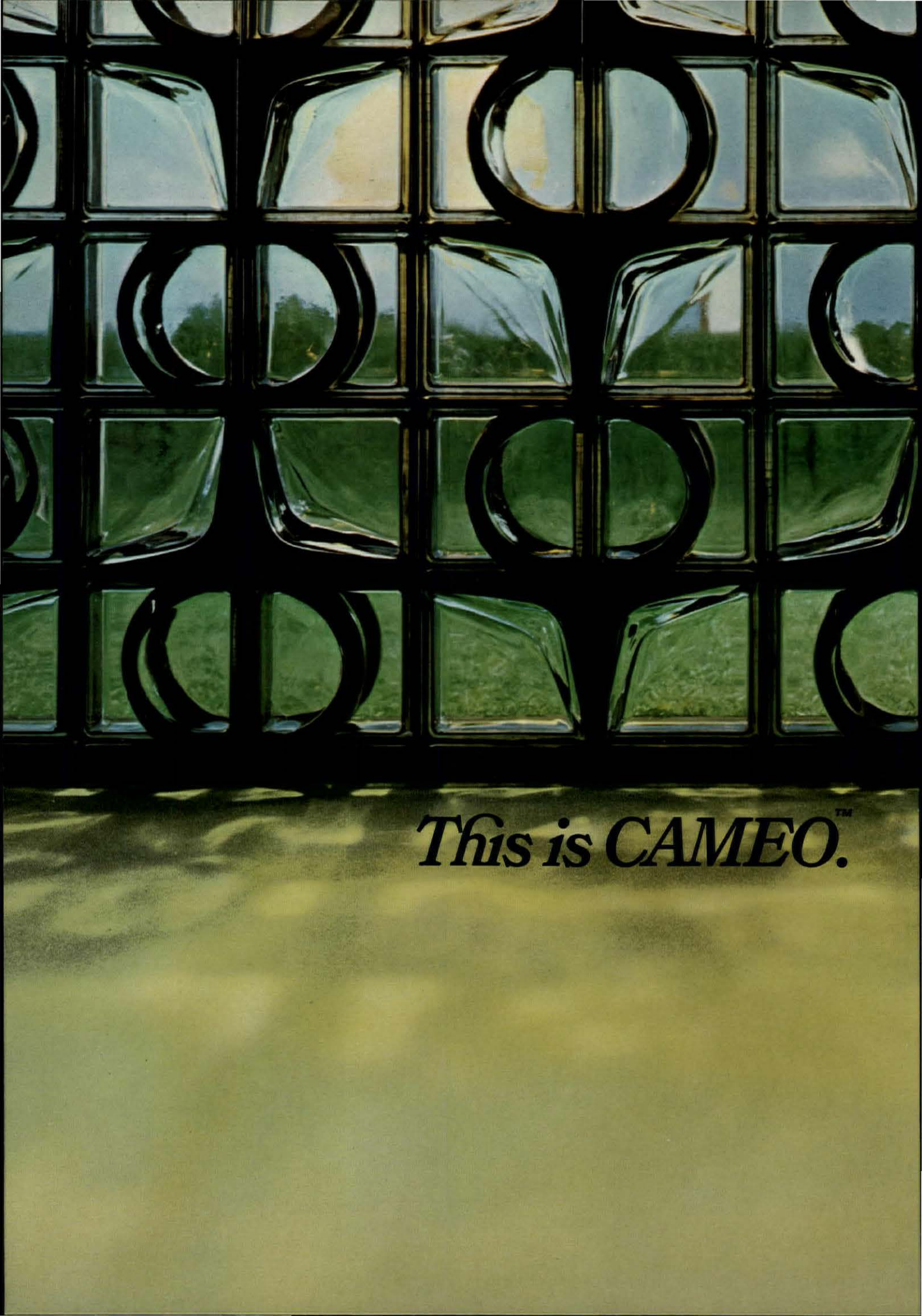
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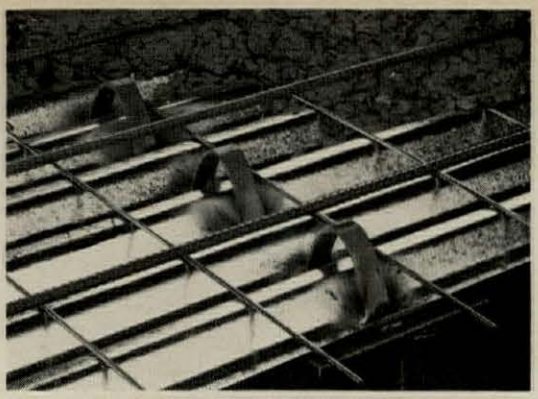

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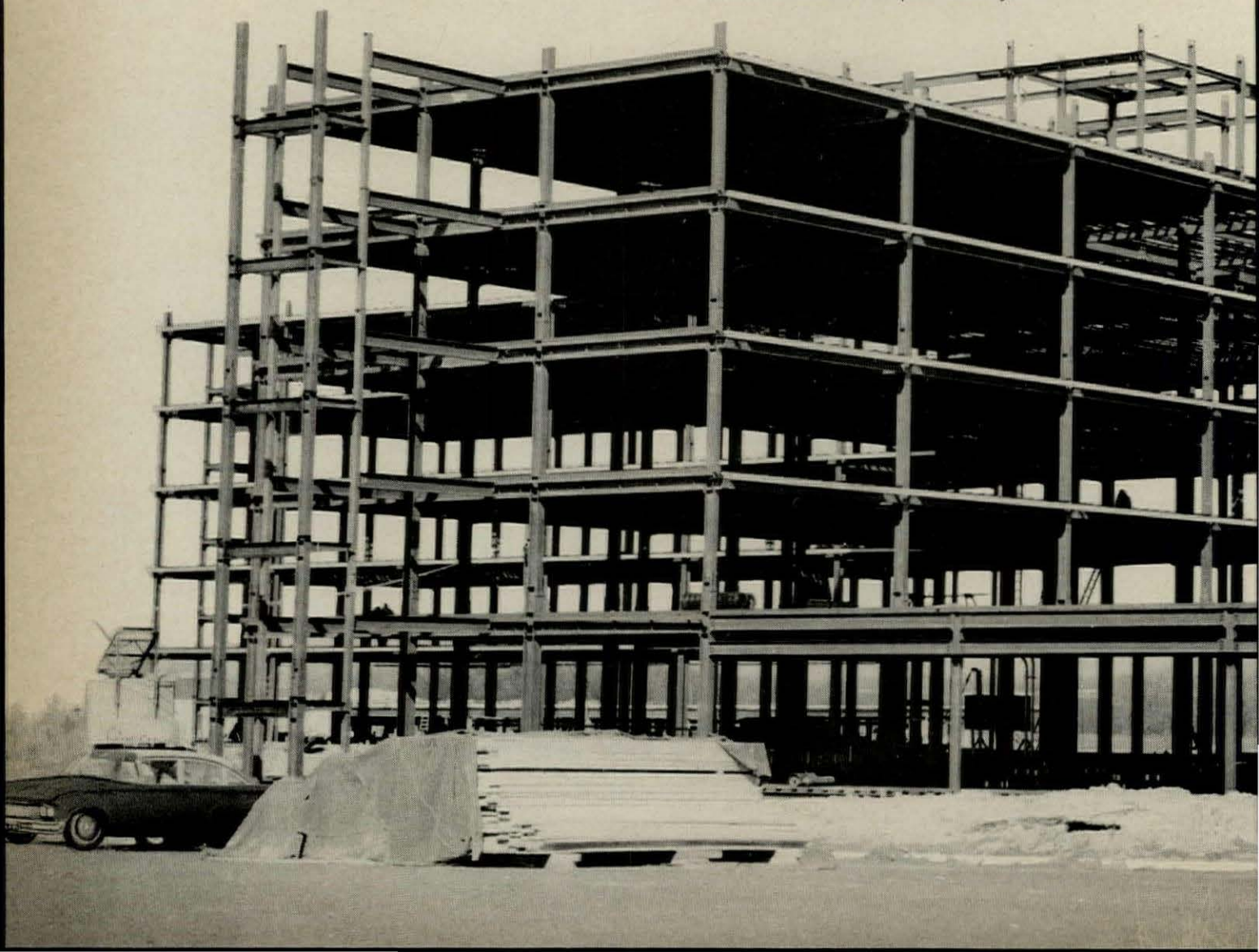

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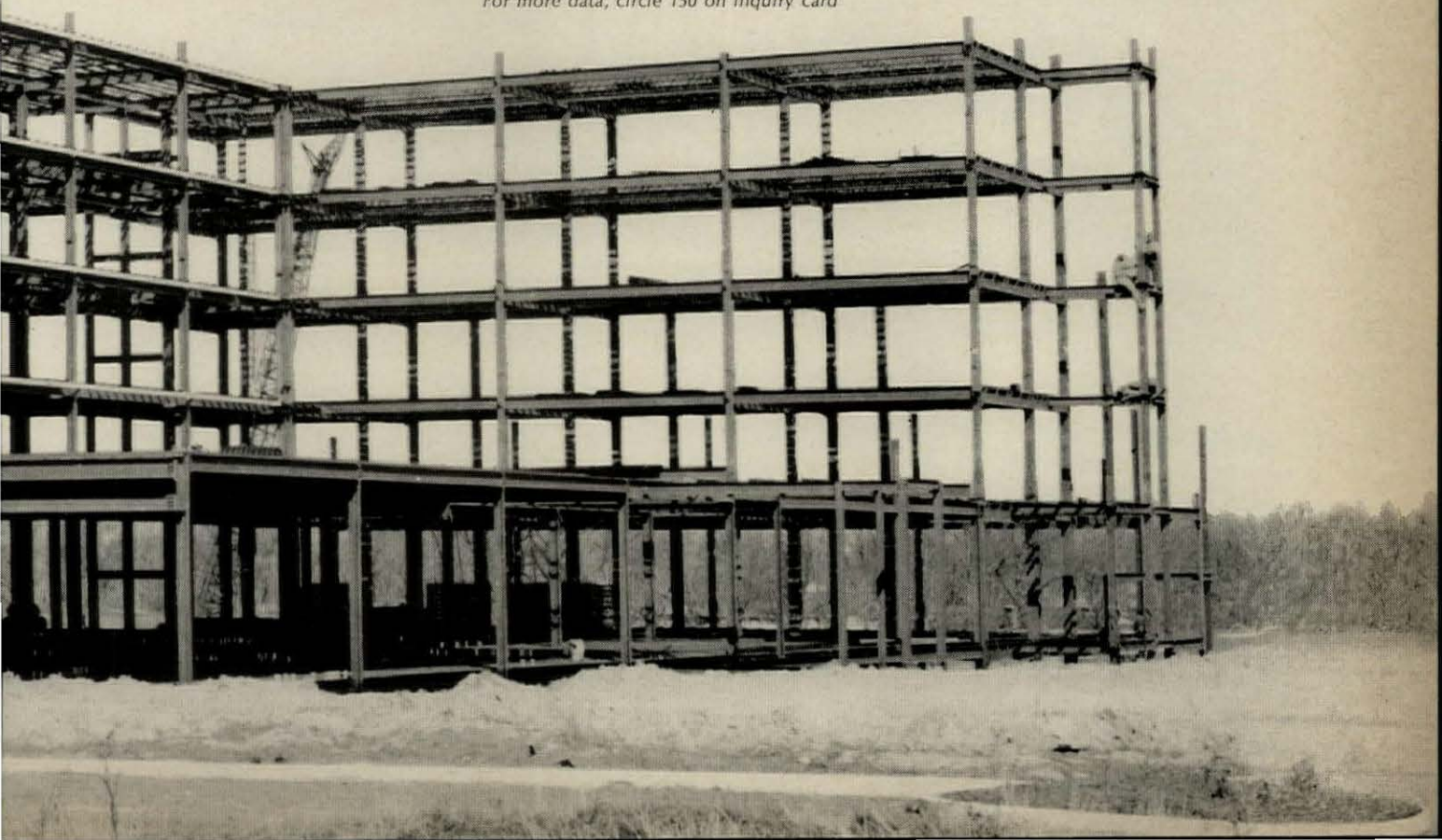

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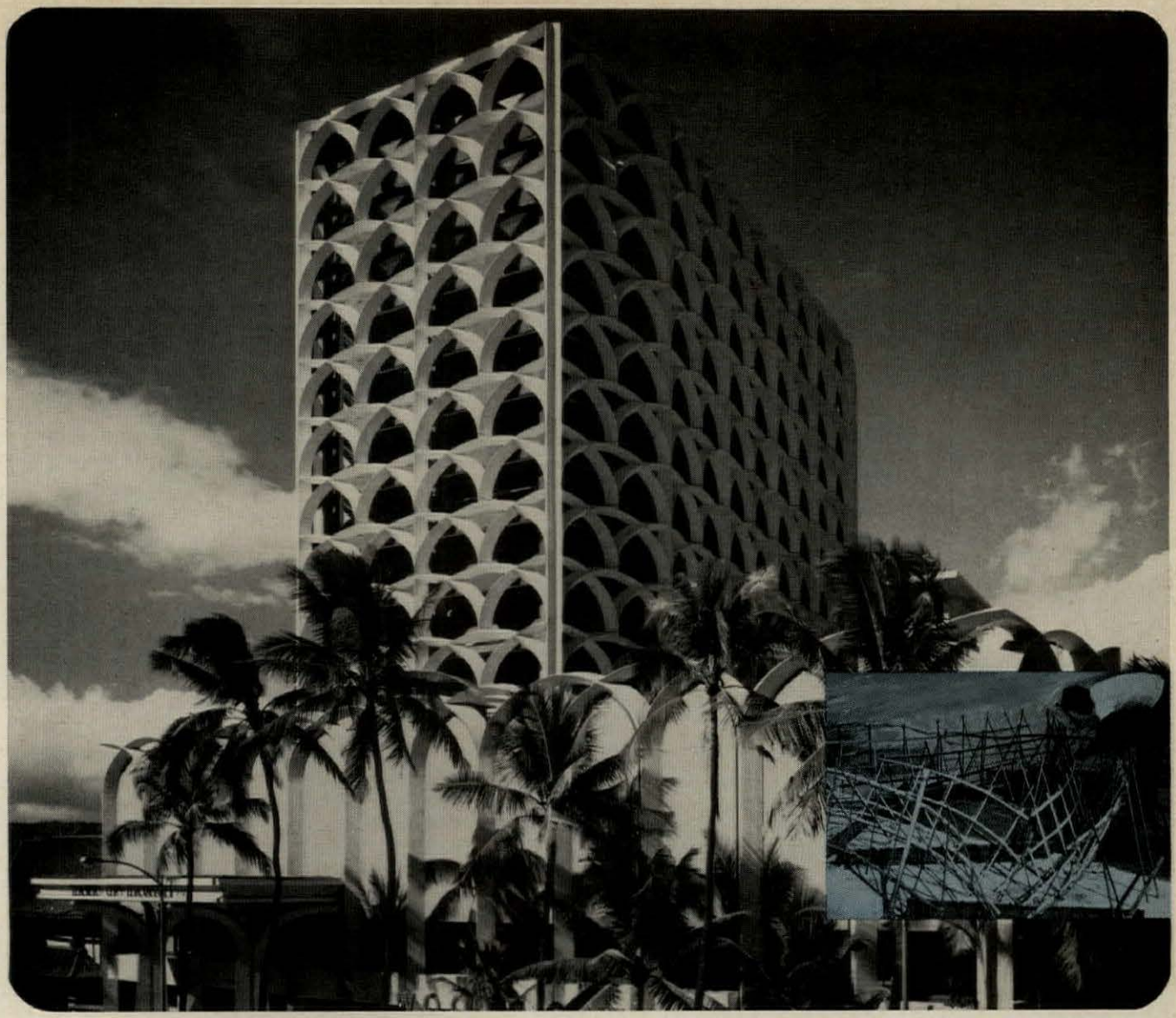

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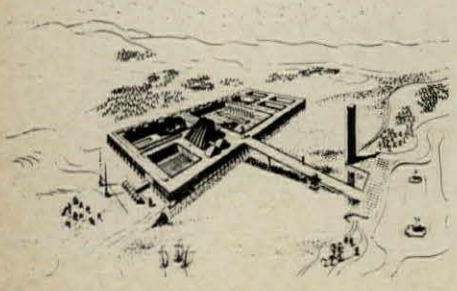
On November 1, 1966, Chandigarh became the joint capital of the states of Punjab and Hariana. The new use of the three main government buildings there is still uncertain. But the creation of that city is a permanent legacy in the history of planning and the subject of this month's book review.

Above: Sunbreaker of the high court chamber. Housing intended for the lowest governmental rank; each unit contains a living room, bedroom, kitchen, veranda, bath and court yard. Below: Preliminary scheme for the capitol complex by Nowicki. The secretariat block is designed as a horizontal platform carrying the parabolic arch of the legislative assembly hall on its roof. A pedestrian bridge leads to the secretariat roof from a waterside plaza.



Evolution of a city

CHANDIGARH. *By Norma Evenson. University of California Press, Berkeley, Calif. 94720. 113 pp., illus. $16.00.*

By Sandra Kocher

The evolution of any city is a complex process, whether drawn out over centuries or created within recent decades. Few new towns or cities born in this century have had such an impressive group of architect-planners as Chandigarh, now the joint capital city of the Punjab and Hariana in northern India. Few have been realized within such severe limitations of climate, technology and budget as those imposed on this Indian city. And few have received such a thoroughly studied and carefully evaluated portrayal as that set forth by Norma Evenson.

Against the background of earlier city planning efforts in India, Miss Evenson, an art historian, presents and assesses the steps by which Chandigarh came into being in the 1950's, was developed and is still expanding. Aided by Fulbright and American Philosophical Society grants she was able to carry out much of her research in Chandigarh in 1961-63. There she gathered information and reactions from architects and engineers responsible for the design and construction of the city and its buildings, as well as from government officials, residents, students at Chandigarh's University of Punjab and occasionally from visitors to the city. For example, her evaluation of the success to date of Chandigarh as a place in which to live draws upon two surveys, one conducted by the Economic and Statistical Organization of the Punjab Government and the other by sociology students of the University of Punjab.

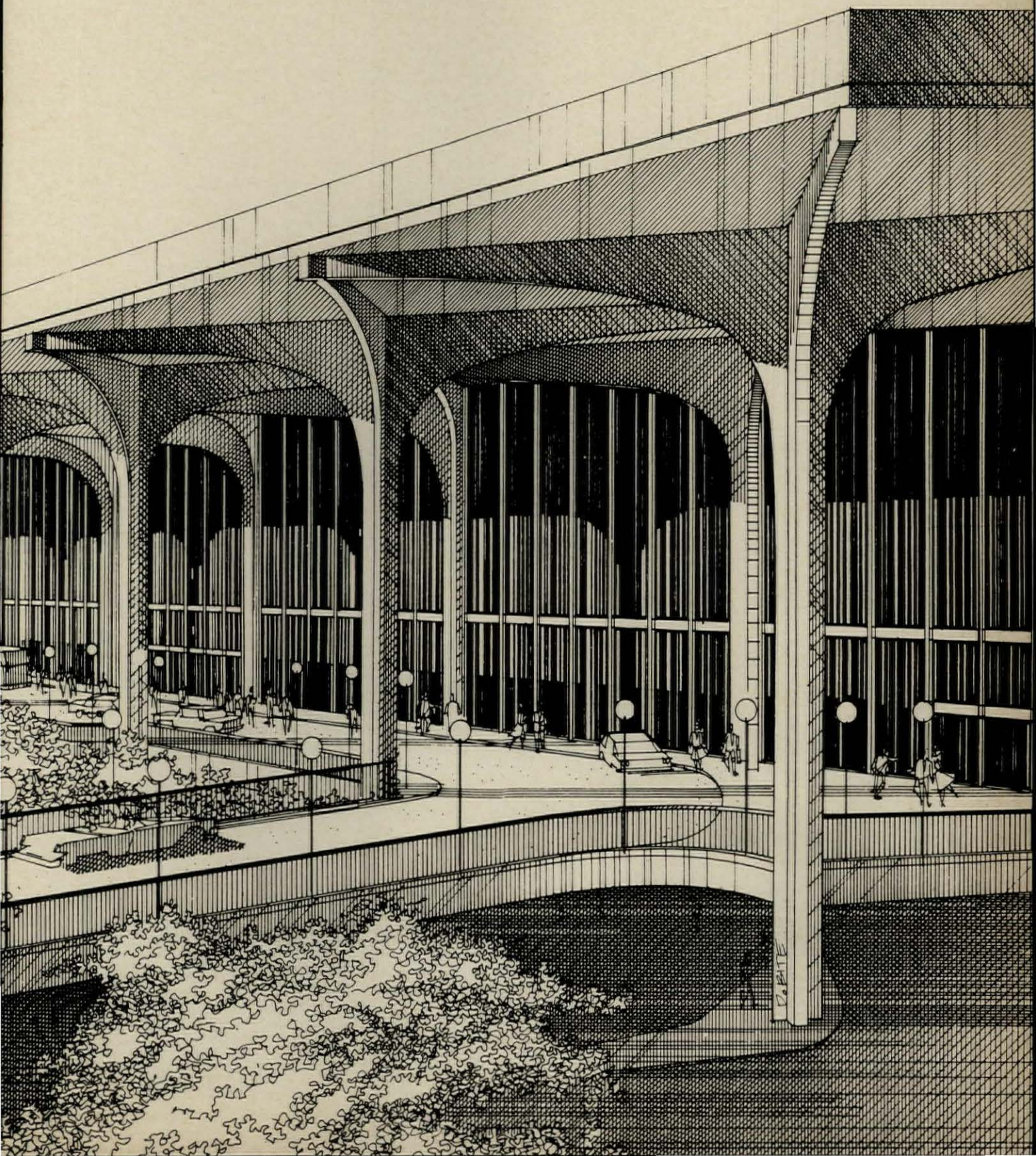
The author wisely places her discussion of the capitol complex in the latter portion of her well-written book, where it forms a crowning climax in the story of the evolving city. For, as every student of modern architecture is aware, Le Corbusier's high court, secretariat and assembly buildings—standing at the head of the city in dynamic relationship to one another and to the surrounding mountains—have become monuments of 20th-century architecture. The *capital* function of the city is, of course, Chandigarh's reason for being. One can only hope that the recent division of Chandigarh between the two rival states of Punjab and Hariana, and the possibility of a complete take-over by the Sikhs, will not mean the degradation of the city's architecture, original purpose and promise.

It is unfortunate that the illustrations massed at the back of the book do not measure up to the quality of the text. The photographs are numerous and by sheer quantity give the reader some idea of the extent of the Chandigarh construction. But too many of them are crowded on a single page, and the offset reproduction on highly bleached paper results in a gray tone. Le Corbusier, alert to the graphic potentialities of the printed page and concerned with the design of his own books, would, I fear, have been unhappy with such a presentation of photographs. The plans and drawings are more successfuly presented.

Nevertheless, *Chandigarh* should not be overlooked. Its excellent text rewards us with a first-class study of a particular modern city. There is also the underlying reminder that beyond the initial, albeit terribly important, act of the planner in creating a city, *people* make a city—over a period of *time*. Critics hurrying to assess the various new towns burgeoning of late might well keep this in mind. As the author states: "If Chandigarh is ever to become a true city . . . it will be only when it has become free of its planners to acquire a destiny of its own. Ultimately the people of Chandigarh must achieve the city they deserve."

Miss Kocher is presently working for a doctorate in art history at Columbia University. Her major field is modern architecture with special attention to the city planning of Le Corbusier.

rchitect-planned nonresidential building



ARCHITECTURAL RECORD

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VOLUME 141
JAN.-JUNE 1967

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ABBREVIATIONS: BTS—Building Types Study; AE—Architectural Engineering; TSS—Time-Saver Standards; BC—Building Components

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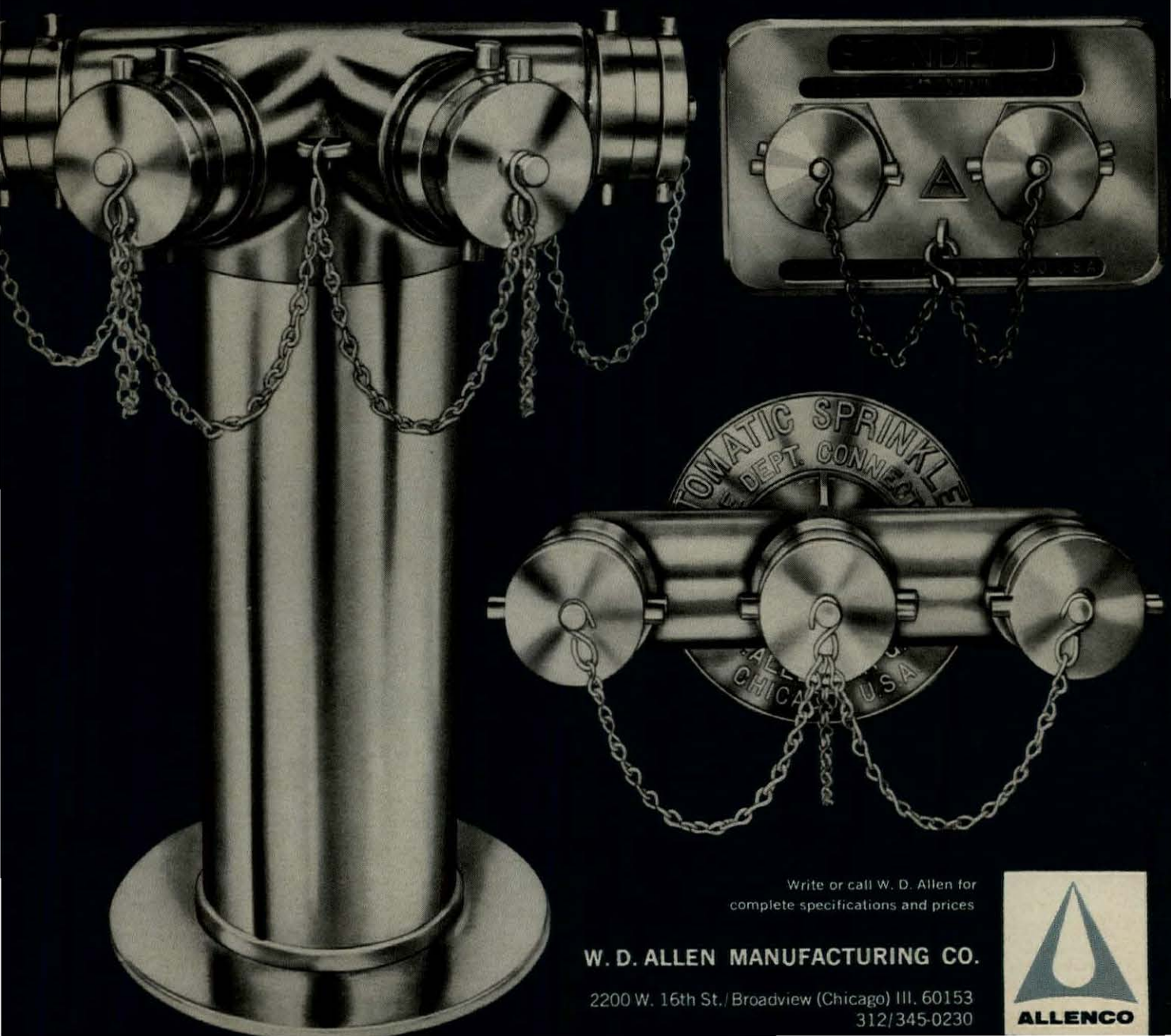

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