PROGRESSIVE ARCHITECTURE December 1963

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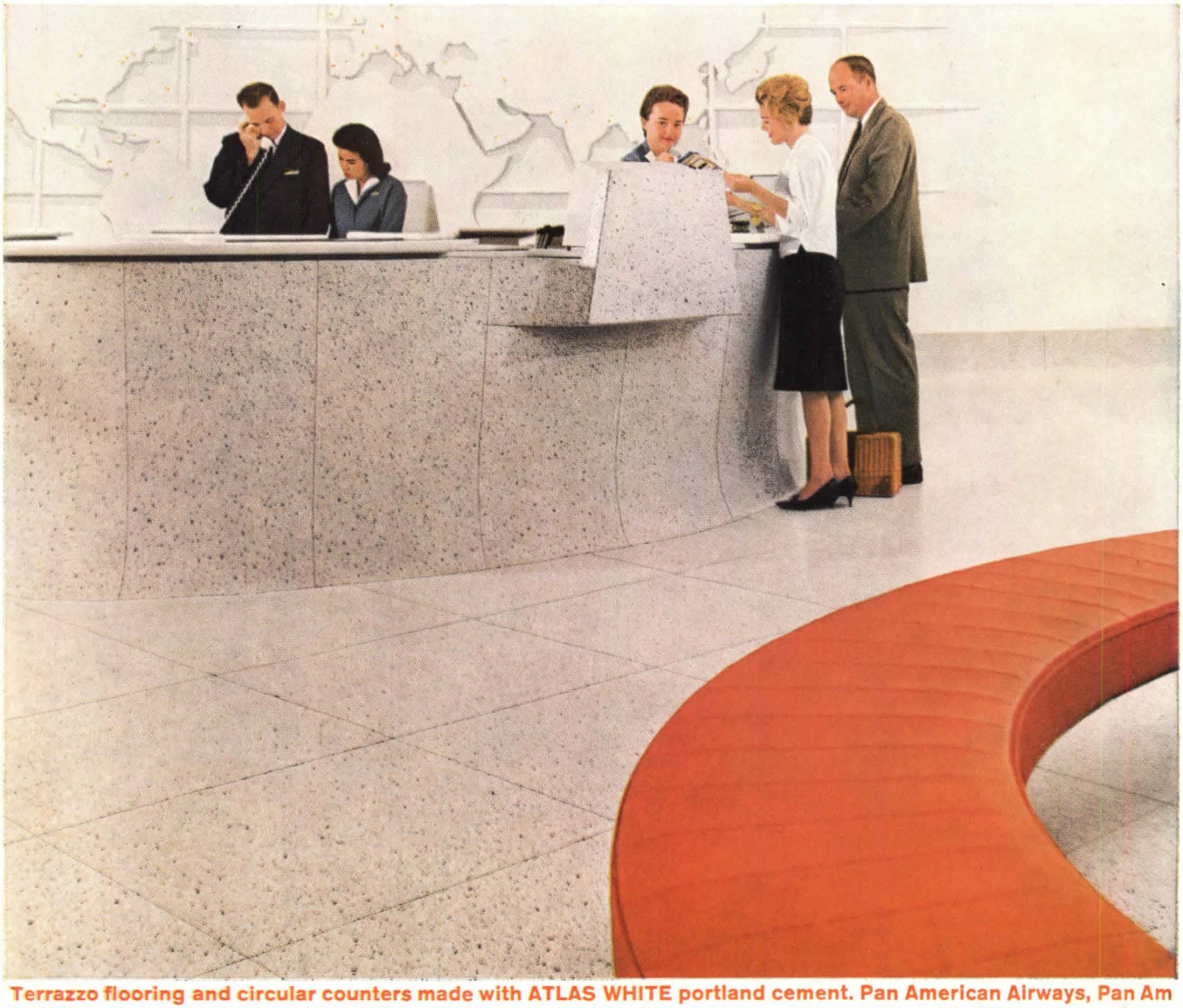
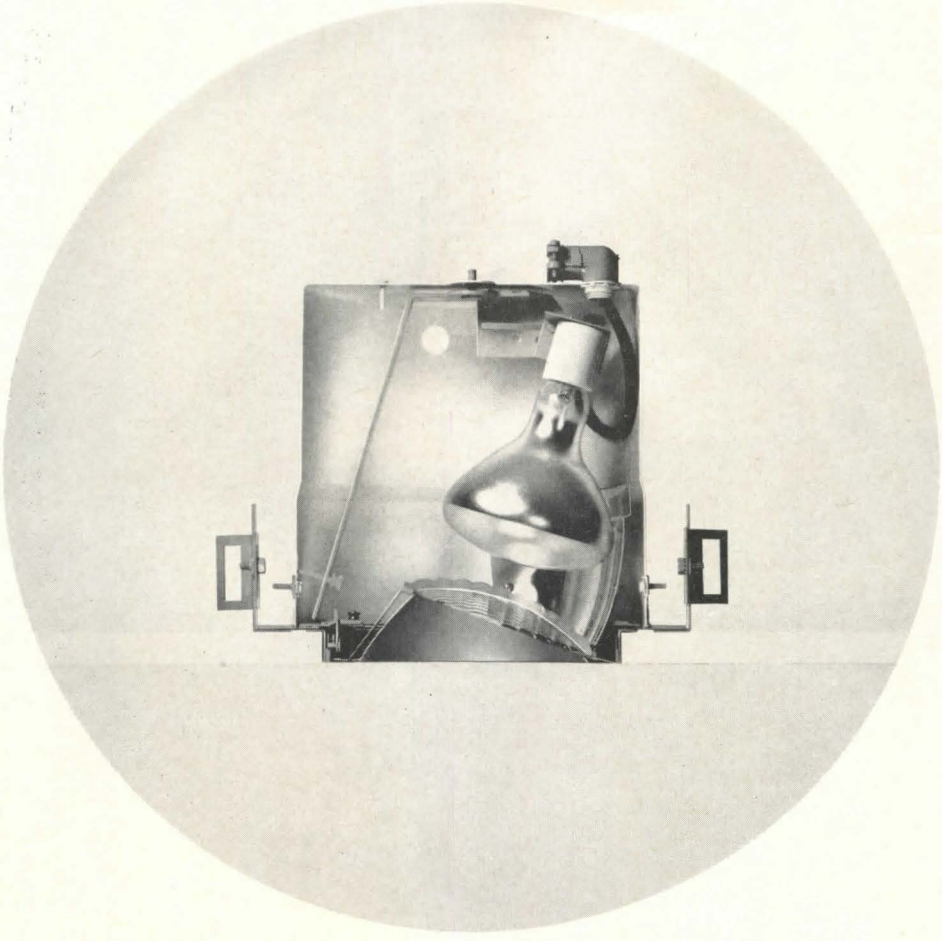


Terrazzo flooring and circular counters made with ATLAS WHITE portland cement. Pan American Airways, Pan Am Building, New York. Designer: Charles Forberg Associates. Associated Architect: Edward L. Barnes Associates. General Contractor: Diesel Construction Co., Inc. Terrazzo Contractor: Port Morris Tile & Terrazzo Co., New York.

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



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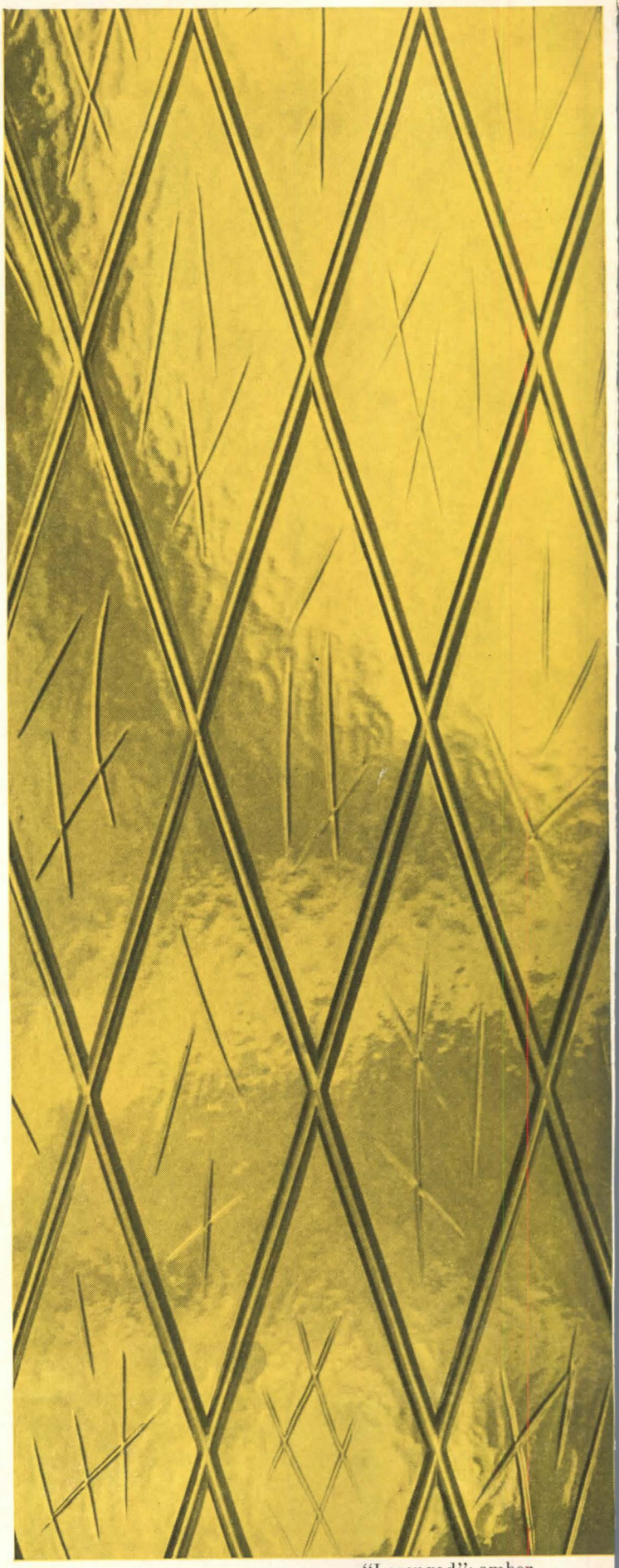

"Lozenged": amber

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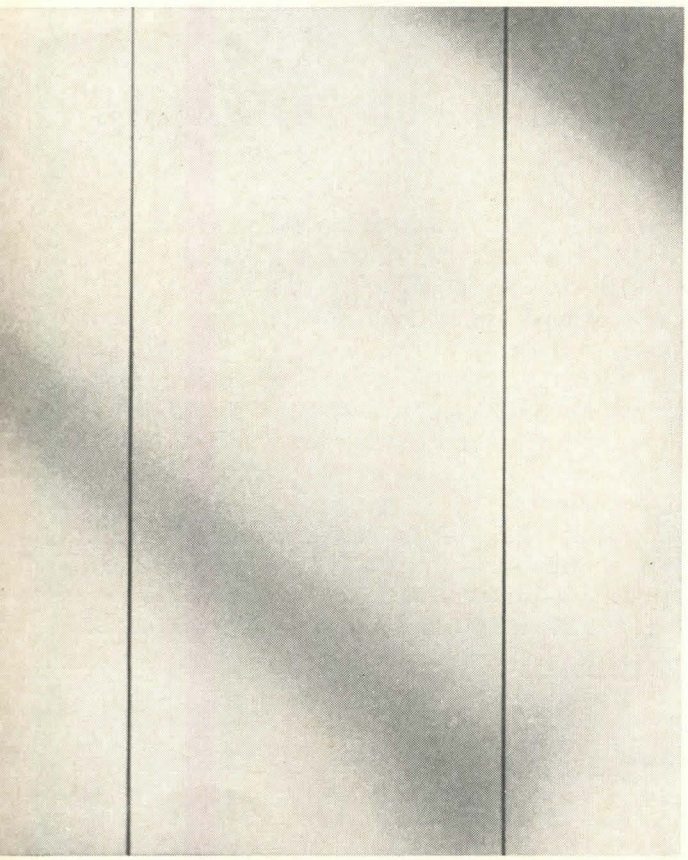

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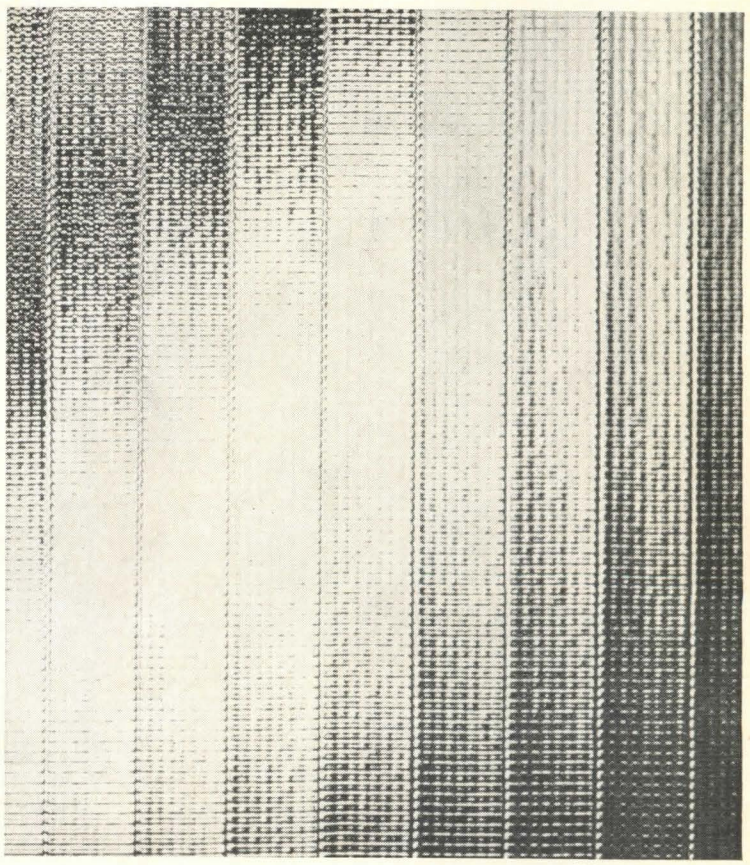

"Screenweave"

PRESTRESSED PRODUCER: **Prestress Concrete of Iowa, Inc., Iowa Falls, Iowa**
ENGINEERS: De Leuw, Cather & Co., Chicago, Illinois
CONTRACTOR: Priester Construction Company, Davenport, Iowa
OWNER: City of Davenport, Iowa

Giant Prestressed T's span 60 feet in new 460-car garage

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ARMCO Sheffield Division

THIS MONTH IN P/A

Cover INTERIOR, TYRONE GUTHRIE THEATER (page 98) Photo: Bob Jacobson

Frontispiece HIDDEN VALLEY, CHILDREN'S CAMP (page 111) Photo: David Hirsch

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VIEWS

The Seagram Building and Our Tax Laws

Dear Editor: The importance of the action of the Tax Commission in the Seagram Building case [*see last month's* IT'S THE LAW] is not in this specific building, but in the far-reaching consequences to the City of a policy that penalizes quality in architecture. The action of the Tax Commission is, in effect, a directive to build poorly and to avoid anything that will distinguish a new structure from the standardized, curtain-wall nonentities that are marching along the avenues, lest this add to the prestige of the owner and call forth an additional tax.

Perhaps now is the time for New York City to show the way in revising unenlightened methods of taxation. A commission should be established to study assessment and taxation and their effect on the growth of the City. This study should include representation from all City commissions concerned with physical planning and the arts with which planning is associated. The charge to the study commission should be not only to determine the effects of present taxation methods, but also to recommend changes that will encourage vital and distinctive architecture and recognize in a material way those who contribute value to their surroundings. For instance, the parklike plaza that surrounds the Seagram Building is a setting for the building, but it also provides a value to the surrounding buildings and to the City—a value that is as real as tax dollars and could be considered a partial substitute for taxes. It provides the sense of open space the City needs and attempts to achieve by a City-owned park, but in this case the City is freed of the cost of upkeep.

It is absurd for the City, in turn, to tax the owner for a prestige that is in part due to the setting of the plaza. It is contrary to common sense that the City should, through zoning laws, attempt to preserve light and air and a sense of space at the street level, then levy a penalty against a structure that accomplishes the intent of zoning in a manner beyond the capability of any law.

Tax assessment is a sensitive area, and it would not be easy to find ways of evaluating in an objective manner the characteristics of a design that should be recognized as beneficial to the City—but it should not be impossible. The problem is difficult, but the results of an effective study could be revolutionary. Zoning laws and occasional rehabilitation projects are essentially negative approaches and play around the edges of the problem. Only when the individual building owner is drawn into the process, and given financial encouragement to do those things that are best for the City, will the City become all of which it is capable.

HARRY E. RODMAN
Profesor of Architecture
Rensselaer Polytechnic Institute
Troy, N. Y.

Air Conditioning and Architecture

Dear Editor: In your October issue, you presented a very interesting and valuable series of articles on "Air Conditioning and Architecture" [OCTOBER 1963 P/A]. I was particularly interested in Sydney J. Greenleaf's article entitled, "Design Parameters."

Since I teach a class in this field to architectural students at Yale University, I appreciate the lack of information that students and graduate architects have to contend with, and therefore wish to commend your efforts.

RICHARD J. SHADFORD
West Hartford, Conn.

Dear Editor: Congratulations are certainly in order for the uniformly excellent issue on "Air Conditioning and Architecture."

As secretary of NEMA's Room Air-Conditioner Section and Executive Secretary of its Certifications Program, I was, of course, particularly interested in the article on through-wall applications. As the article stated, room unit installations in apartment and commercial buildings are a relatively new development. But I think I express the general industry view when I say that the trend is certain to develop swiftly in the next decade. It is most gratifying, therefore, to see room air-conditioning systems included in the general discussion and, in the article, described in such comprehensive and informative fashion.

JOHN PAGE
National Electrical Manufacturers Association
New York, N. Y.

Albany Plan Criticized

Dear Editor: My initial reaction to the rape of Albany [NEWS REPORT, SEPTEMBER 1963 P/A] is twofold: first, one of trying to reconstruct how such a thing can come out of a usually responsible

Continued on page 8

Continued from page 7

office; and second, how best to handle such a proposal in terms of criticism.

Concerning the first point: This looks to me like a first parti that the office might have come up with before the proper staff can be assigned to the project. This is not said facetiously. I have very often seen a situation in which a client will request preliminary material for publicity purposes, before a job is really started—and I mean started in the sense of beginning any responsible design thinking. I am not familiar with any of the architects involved, except for Mr. Harrison, whose office seems capable of a remarkable variety of work in qualitative terms, but this is beyond the pale.

Concerning the second point—how such a project is best criticized—I would like to see this kind of approach get the flogging it deserves, but I would prefer to see it done in a much more analytical and cold-blooded manner. We in the field of architecture tend to become irate about people who compare modern houses with chicken coops, for example, and I think that to compare some of the elements in this scheme to cantaloupes and oranges and Freudian symbolism falls somewhat into this category. There is too much material in this for sound criticism—in terms of elementary composition, scale, and circulation, for example, not to mention the questionable taste involved in ridiculing the old Capitol building by putting it at the end of a Versailles-type axis—that it is unnecessary and less effective to base the criticisms on comparisons to familiar objects, although there are certainly resemblances as you point them out.

PAUL FELONEY
Cambridge, Mass.

Dear Editor: I agree in general with your analysis of the Albany South Mall proposal, and I particularly like your "cubistic coition," which is an alliterative onomatopoeia I would not have thought of myself.

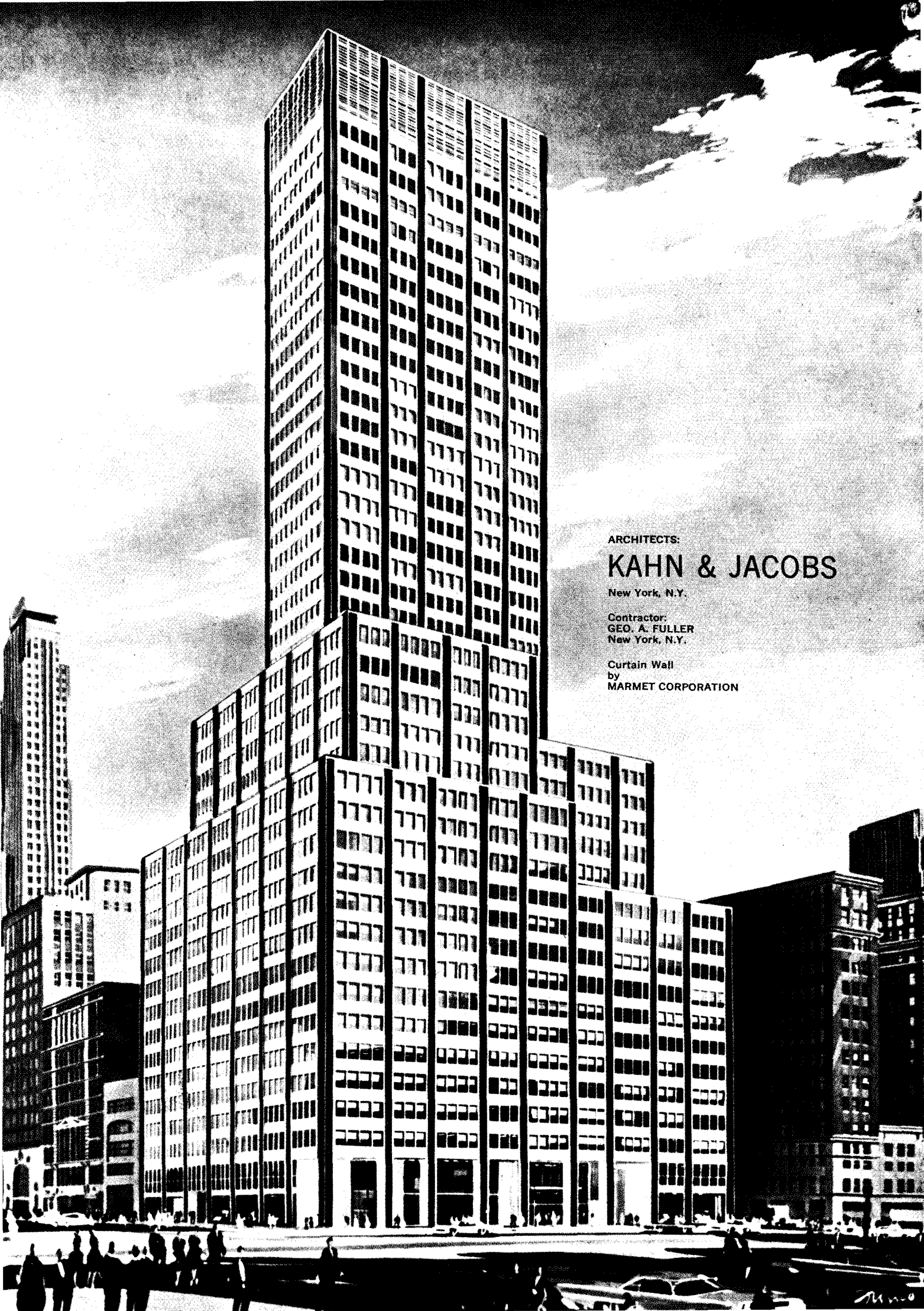
Without serious analysis, I do not think I should go further, except to refer you to my upcoming book, which is an exposé of what I think, in fact, cities ought to look like.

LAWRENCE HALPRIN
San Francisco, Calif.

More on Louis Curtiss

Dear Editor: The article on Louis Curtiss [AUGUST 1963 P/A] is a lively profile and an original piece of research that would do credit to any architectural his-

Continued on page 10



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Curtain Wall
by
MARMET CORPORATION

Continued from page 8

torian. The only other reference to Curtiss that I know of is in Burchard and Bush-Brown's *Architecture in America*—a single-line comment on the curtain-wall construction of the Boley Building.

I think Curtiss' work deserves a full-length study, at least on the scale of a doctoral dissertation. His eclectic work is highly untraditional and even wild, especially the Progress Club. On the other hand, the Joplin station, the Corrigan house, and the later houses, as well as the curtain-wall buildings, are original works in the modern spirit, personal expressions that reveal qualities of the Prairie School in Chicago.

In his use of novel technical means, Curtiss was certainly a pioneer, but not in the front rank. While the suspension of floors from girders may be original with him, the principle of suspension from the underside of trusses was used on a large scale by Adler and Sullivan in the Auditorium and Garrick Theater buildings. By 1908, concrete construction was well advanced, chiefly through the pioneer work of Ransome, Kahn, Schmidt, and Turner, so that in this respect Curtiss was part of a new technical development but hardly on the ground floor.

I was a little perplexed by Mr. Comee's reference to Curtiss' interest in graphical statics (p. 134). The theory and the term have a long history going back to the mid-19th Century. What may have been unusual in Curtiss' interest was his use of models. Did he carry out any experiments on deflection and elasticity with them?

Congratuations for publishing this useful addition to the history of American building.

CARL W. CONDIT
Northwestern University
Evanston, Ill.

Dear Editor: Your article on the Kansas City architect, Louis Curtiss, was excellent, and did much to interest the Chamber of Commerce in the possibility of pointing out some of these landmarks to visitors to Kansas City. As a matter of fact, the story contained information unknown to most of us in the profession.

CLARENCE KIVETT
Kansas City, Mo.

Dear Editor: Fred Comee has produced a well-written article that has certainly helped to expand our understanding of the American architectural scene at the turn of the century.

I, for one, have known very little about this architect; in fact, my only encounter with him was through his wonderful hotel at Lamy, New Mexico, a building that I briefly discussed in an article entitled "Architecture and the Fred Harvey Houses," which was published in the July–August 1962 issue of the *New Mexico Architect*.

Just as an off-hand observation, there is a certain similarity of approach between Curtiss's approach to architectural design and that of Bernard Maybeck. I would certainly agree with Mr. Comee that the Boley Clothing Company building of 1908 was indeed a strong statement for its time, and that it does deserve recognition, along with such works as Polk's Hallidie building in San Francisco.

DAVID GEBHARD
Director, The Art Gallery
University of California
Santa Barbara, Calif.

CORRECTION—The Frontispiece photo of a return-air grille at Idlewild in the OCTOBER 1963 P/A was incorrectly attributed. The photo was actually taken by GERT BERLINER.

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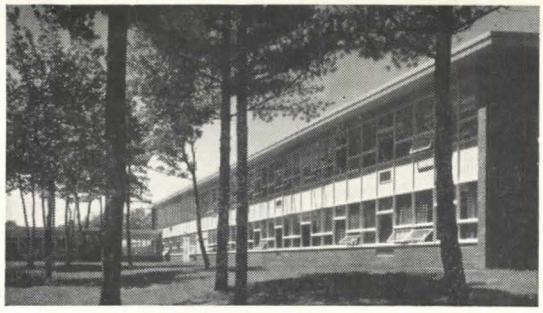

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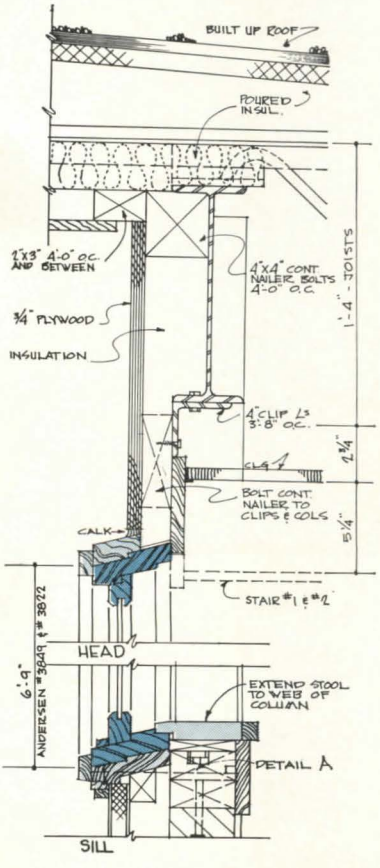

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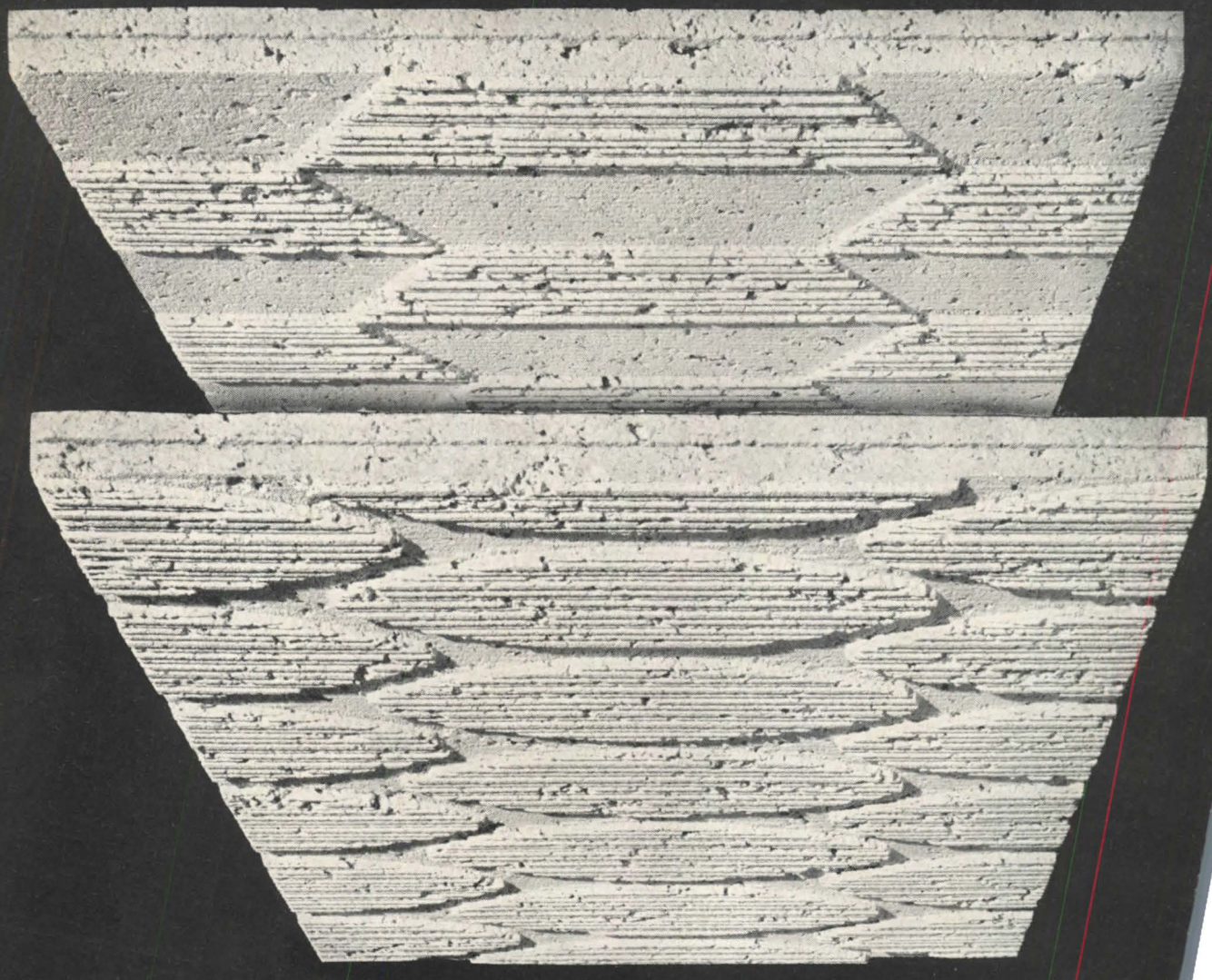

FLOTILLA

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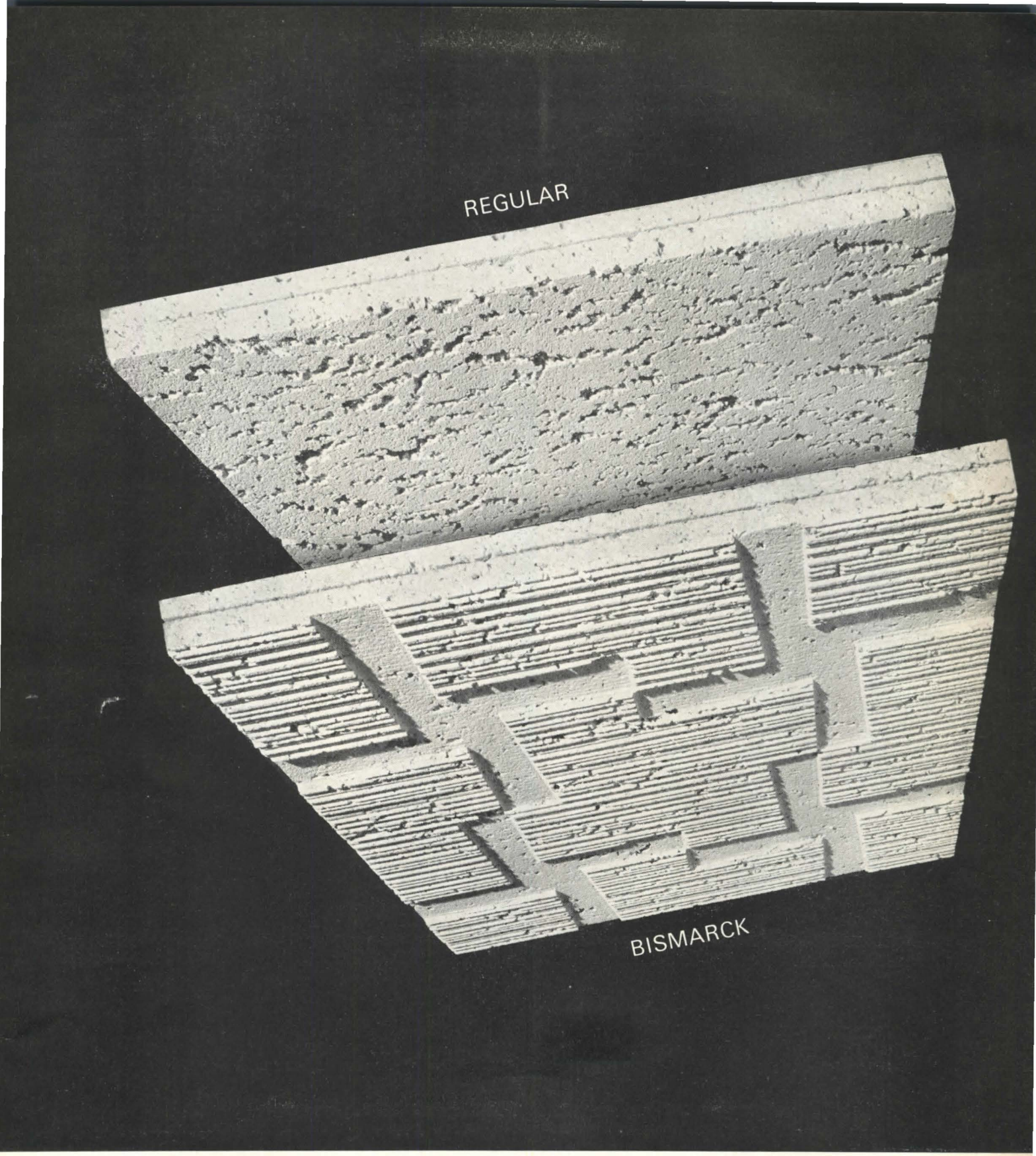

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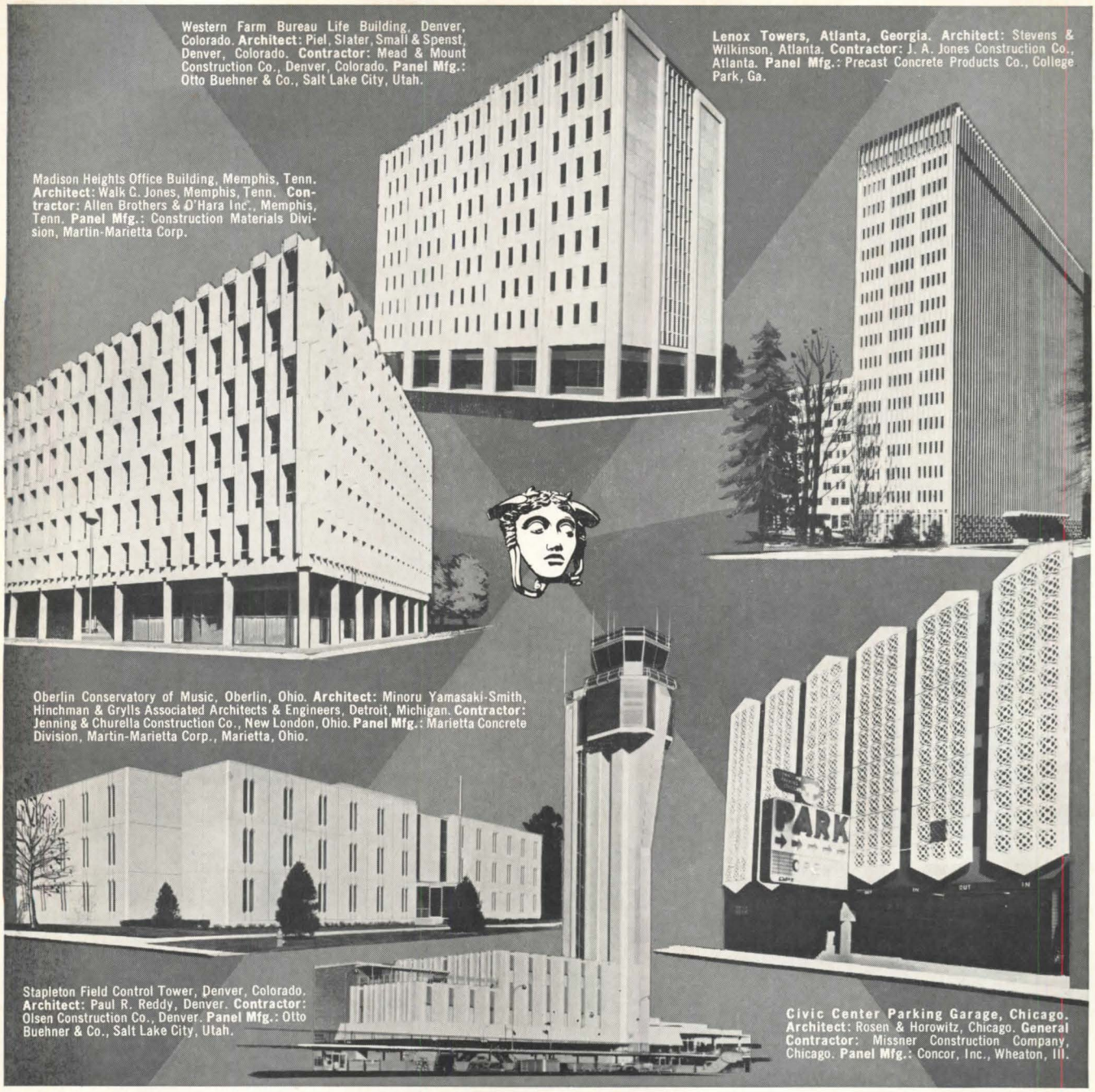

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A PORTFOLIO OF ARCHITECTURAL INTERIORS

Illustrating the many ways in which architects and designers are exploring the spectrum of modern floors.

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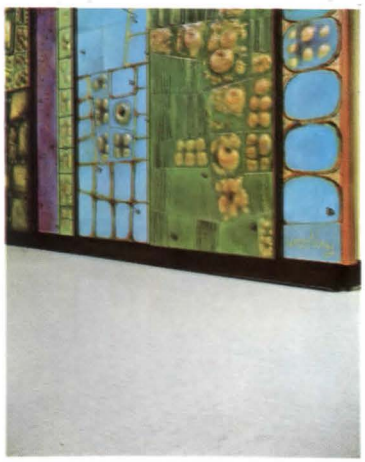
1-2 Albright-Knox Art Gallery, Buffalo, N. Y. Architects: Skidmore, Owings & Merrill.



3 Pacific Employers Group Insurance Companies, Los Angeles. Architects: Charles Luckman Associates, Los Angeles.

POWER OF UNDERSTATEMENT. The light, soft colors and restrained patterns of these floors help provide a unifying background for contrasting furniture, art works, and architectural details. 1 Sculpture and painting against a calm background of Armstrong Imperial Rubber Tile. 2 The stillness of this disciplined interior is heightened by the activity of sculpture, architecture and foliage outside the room-high window; again, the floor is Imperial Rubber Tile. 3 A restrained Armstrong Custom Corlon Tile Floor enhances the beauty of the sculptured wall. 4 Bold furniture appears bolder against the discreet design and beige tones of a sheet vinyl floor, Armstrong Tessera Vinyl Corlon. 5 Armstrong Rubber Tile underscores the purity and elegance of this setting.

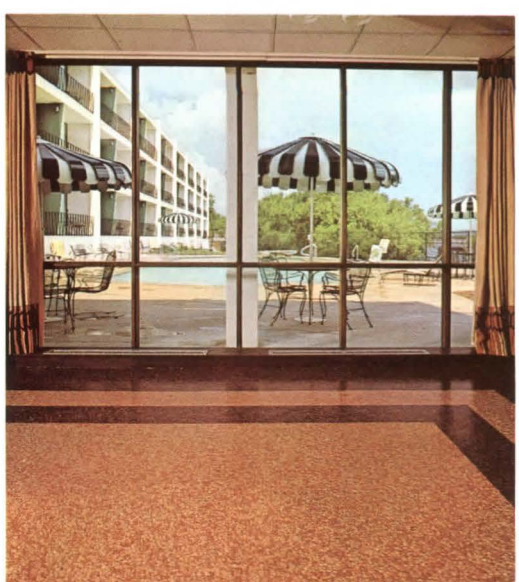
4 Montreal Trust Company, Royal Bank Building, Place Ville Marie, Montreal. Architects: I. M. Pei & Associates, New York City; Associate Architects: Affleck, Desbarats, Dimokopoulos, Lebensold, Michaud & Sise, Montreal. Interior Designers: J. Gordon Carr & Associates, New York City.

5 Michigan Consolidated Gas Company, Detroit. Associated Architects & Engineers, Minoru Yamasaki—Smith, Hinchman & Grylls, Detroit.

FREEDOM OF DESIGN. These custom designs exploit the scope of sheet vinyl floors: their colors, patterns and textures, their ability to fit any shape, any module, any area. 1 One color of Armstrong Tessera Vinyl Corlon defines the waiting area: Tessera feature strips in a contrasting color lead into perimeter offices. 2 The floor design, an image of the ceiling, complements the geometric furniture and the vertical design of the drapes. 3 Sunburst rays of Armstrong Tessera Vinyl Corlon in alternate colors echo the shape and structure of this circular bank. 4 Two colorings of Montina Vinyl Corlon–teak and chestnut–add drama to this simple interior.

2 United Parcel Service Building, New York City. Architects: David and Earl J. Levy. Consulting Architects-Engineers: ott, Merkt & Company. Interior Architect: Edwin Harris, Jr., A., New York City.

3 American Security Bank, Waipahu, Hawaii. Architects: Edwin L. Bauer, A.I.A., Frederic S. Liang, A.I.A., Honolulu.



TINA FLOOR DESIGN
RIGHTED BY ARMSTRONG.

4 Gondolier Motor Hotel, Austin, Texas. Architects: Lundgren & Maurer, Austin.

MONTINA FLOOR DESIGN
COPYRIGHTED BY ARMSTRONG.

1 Furst & Furst Corporation, Chicago. Architects: Rosen & Horwitz, Chicago.

CHARACTER: The colors, patterns and textures of these floors underscore the character of the rooms themselves: casual or formal, active or relaxed. 1 With its random-chip pattern, a sheet vinyl floor of Armstrong Montina Vinyl Corlon lends added interest to this large, irregular space. 2 A custom design of several colors of Armstrong Rubber Tile conveys the action and vigor of this modern office. 3 The pure, light colors of Armstrong Custom Corlon Tile blend exactly with this clean, airy lobby. 4 Armstrong Custom Vinyl Cork Tile forms a rich, confident base for the boardroom. 5 Armstrong Castilian Vinyl Corlon Tile creates a rich, distinguished feeling.

2 Canada Iron Foundries Ltd., Royal Bank Building, Place Ville Marie, Montreal. Architects: I. M. Pei & Associates, New York City. Associate Architects: Affleck, Desbarats, Dimokopoulos, Lebensold, Michaud & Sise, Montreal. Interior Architects: Durnford, Bolton, Chadwick & Ellwood, Montreal.

3 Administration Building, Brigham Young University, Provo, Utah. Architects: Fetzer & Fetzer, Salt Lake City.

4 Trustees' Room, Power Authority of New York, Lewiston, N. Y. Architects: Daniel Chait Associates, New York City. Consulting Architect: John B. Peterkin, A.I.A., New York City.

5 Gondolier Motor Hotel, Austin, Texas. Architects: Lundgren & Maurer, Austin.

1 Albright-Knox Art Gallery, Buffalo, N. Y. Architects: Skidmore, Owings & Merrill.

2 *Santa Fe Springs City Library*, California. Architects: William L. Pereira & Associates, Los Angeles.

3 Union Carbide Building, New York City. Architects: Skidmore, Owings & Merrill.

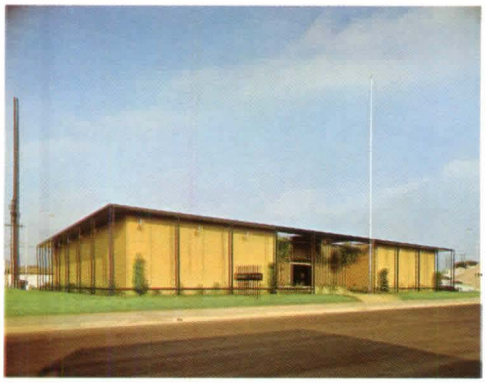
4 College of Mount St. Joseph on the Ohio, Cincinnati. Architects: L. P. Cotter & Associates, Cincinnati.

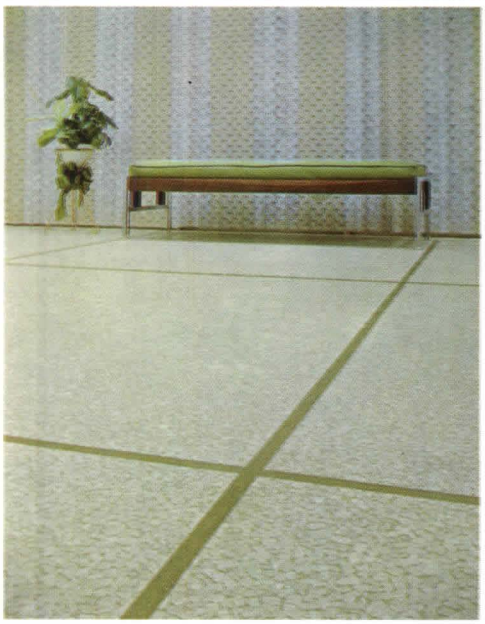
5 British Overseas Airways Corporation, Royal Bank Building, Place Ville Marie, Montreal. Architects: I. M. Pei & Associates, New York City. Associate Architects: Affleck, Desbarats, Dimokopoulos, Lebensold, Michaud & Sise, Montreal.

VERSATILITY. Armstrong makes every kind of resilient floor—sheet and tile, vinyl and non-vinyl—and within each kind, can be found the floor that best meets specific design ideas, limits of cost, and levels of performance. Here are a few. 1 Imperial Rubber Tile in an art gallery, remarkably quiet and comfortable, pure in color. 2 A library with Tessera Sheet Vinyl Corlon: a minimum of seams, a nubbled texture that helps conceal heel and scuff marks. 3 For this cafeteria, Custom Corlon Tile—good looking, highly resistant to grease and spilled food. 4 Armstrong Imperial Rubber Tile muffles footsteps in this library, stays fresh with little maintenance. 5 An office building corridor with Armstrong Travertex Excelon Tile, a low-cost vinyl-asbestos floor whose clear colors resist heavy wear and tracked-in dirt. 6 A hairdressing salon with Vistelle Corlon Tile—extraordinarily resistant to staining and stiletto heels, yet very comfortable underfoot.

6 Carson Pirie Scott & Company, Evergreen Plaza, Chicago.

MANY BUILDINGS, MANY FLOORS / ARMSTRONG





Paramount City Hall, Paramount, California. Architect: Ken Beideman, A.I.A., Paramount. Engineers: Siegrist & Associates, Paramount. Floor: Armstrong Montina Vinyl Corlon; sheet vinyl. Gauge: .090″. Textured surface, wide range of colors. Can be used above, on or below grade. Shown here with vinyl feature strips. Montina: $1.05 - $1.15 sq. ft. installed.

Carson Pirie Scott & Company, Evergreen Park, Chicago. Floor: Armstrong Vistelle Corlon Tile. Gauge: ⅛″. Made with Du Pont Hypalon®. Combines extraordinary resilience with superior resistance to indentation, fading, staining, provides long wear under traffic. Ten colorings in five color-coordinated pairs. $1.50 - $2.00 sq. ft. installed.

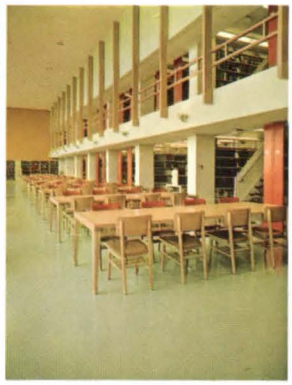
Pacific Employers Group Insurance Companies, Los Angeles. Architects: Charles Luckman Associates, Los Angeles. Floor: Armstrong Custom Corlon Tile, homogeneous vinyl. Gauges: 3/32″ and ⅛″. Very suitable for severe commercial and laboratory use. Dimensional stability and static load resistance up to 200 psi guaranteed in writing. Burgrained and terrazzo patterns; also solid black and solid white. 80¢ - $1.10 sq. ft. installed

nta Fe Springs City Library, California. chitects: William L. Pereira & Associates, s Angeles. Floor: Armstrong Tessera Corlon; eet vinyl; .090″ gauge; textured surface; onochromatic and multi-colored patterns. n be used at any grade level. 85¢ - 90¢ ft. installed.

Michigan Consolidated Gas Company, Detroit. Associated Architects & Engineers: Minoru Yamasaki–Smith, Hinchman & Grylls, Detroit. Floor: Armstrong Imperial Excelon Tile. Gauge: 3/32″ or ⅛″ vinyl-asbestos. Economical and long wearing. Terrazzo graining is uniform throughout thickness of tile. Wide color range. 25¢ - 45¢ sq. ft. installed.

Albright-Knox Art Gallery, Buffalo, N. Y. Architects: Skidmore, Owings & Merrill. Floor: Armstrong Rubber Tile. Gauge: ⅛″. Especially suited for places where comfort or quiet is important. Clear colors; through-grained marble and terrazzo designs. 60¢ - 70¢ sq. ft. installed.



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Twenty-one Armstrong District Offices and 200 Wholesale Distributor locations assure prompt delivery to any site, anywhere in the U. S., Canada and Puerto Rico. For data, samples, technical advice, contact your flooring contractor, or the Armstrong Architect-Builder Consultant at your nearest Armstrong District Office. He can also get you special assistance from Armstrong research, installation and design advisors. For reprints of this portfolio, write Armstrong, Lancaster, Pa. Ask for F-1710.

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For heating... Gas is good business

For more information, turn to Reader Service card, circle No. 309

For transparent domes . . . Plexiglas

Swimming pool enclosure of PLEXIGLAS® at International Inn, Washington, D.C. Architects: Morris Lapidus • Liebman & Associates, New York, N.Y.

® Trademark Reg. U. S. Pat. Off., Canada, and principal Western Hemisphere countries. Sold as Oroglas® in other countries.

An outstanding feature of the new International Inn of Washington, D.C., is its enclosed outdoor swimming pool. The enclosure is a dome, 38 feet high and 102 feet in diameter. The dome's steel framework holds more than 300 pre-assembled light-transmitting units—double glazed in aluminum frames and mounted in structural gaskets. The glazing material is PLEXIGLAS acrylic plastic. Over 600 sheets of PLEXIGLAS were cut into more than 400 different trapezoidal shapes for the double glazed units. Why was PLEXIGLAS used? **Resistance to breakage. Ease of fabrication. Outstanding weather resistance. Light weight. Crystal clarity.** We will be pleased to provide you with design assistance on specific projects which involve the use of PLEXIGLAS for glazing dome structures.

ROHM & HAAS
PHILADELPHIA 5, PA.

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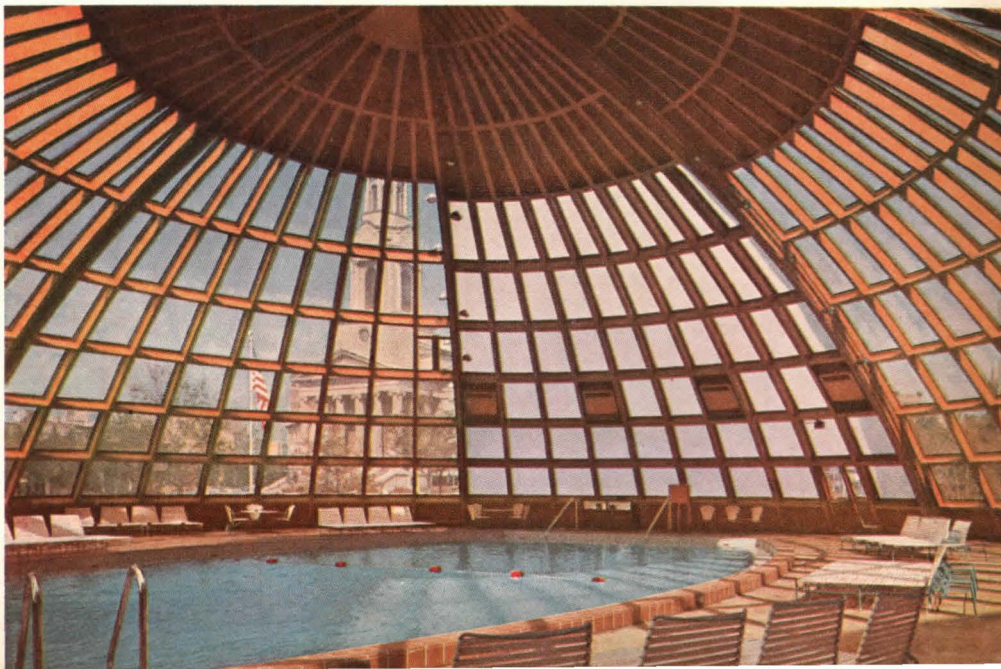
PLEXIGLAS *details:*
Thickness: .250".
Types: Colorless transparent and white translucent No. W-2447. White translucent used for inner glazing of two main triangular sections of dome.




WESTINGHOUSE

Republic Type 304 ENDURO Stainless Steel was used for escalator interior panels, deck and skirt boards at the new Pan Am Building in New York. *Architects: Emery Roth & Sons. General contractors: Diesel Construction Company. Stainless fabricated by Flour City Architectural Iron Company, Minneapolis, Minnesota.*

LASTING BEAUTY WITH MINIMUM MAINTENANCE

Rely on time-proven stainless steel to guard the beauty and elegance of your designs year after year.

With excellent resistance to impact, abrasion, scratching, discoloration, and chemical attack, stainless steel delivers lowest possible maintenance costs. Stainless eliminates the need for paint or special finishes. Costly scouring is never required because dirt won't cling. Stainless steel is exceptionally smooth and nonporous, washes bright as new with simple soap and water cleaning.

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Republic produces continuous rolled ENDURO Stainless Steel Sheet in widths to 60 inches, special wide sheets in widths to 72 inches. Mill rolled finishes 1, 2B, and 2D are available in coils and cut lengths; mill polished finishes 3, 4, 6, 7, and 8 in cut lengths.

There is also exclusive new TEXTURE•STAINLESS* Steel—with a three-dimensional, nonrepetitive texture. Supplied in the natural color of the stainless or with depressed pattern areas colored. Sheets to 36 inches in width, 10 feet in length.

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- ☐ ENDURO Stainless Steel Sheets—Adv. 1085
- ☐ New TEXTURE•STAINLESS Steel—Adv. 1428
- ☐ High Strength Re-Bars—Adv. 1247
- ☐ Heavy Head High Strength Structural Bolt Assemblies—Adv. 962-R
- ☐ Republic ELECTRUNITE Structural Steel Tubing.

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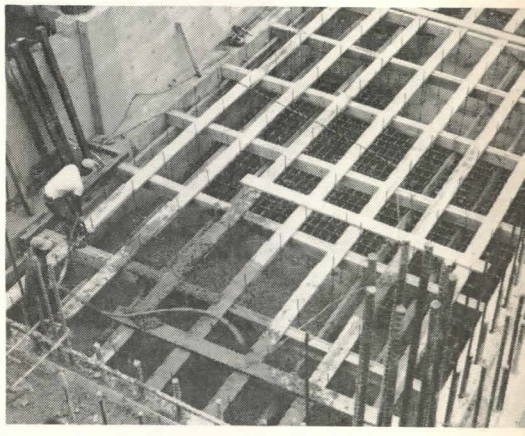
Company_____

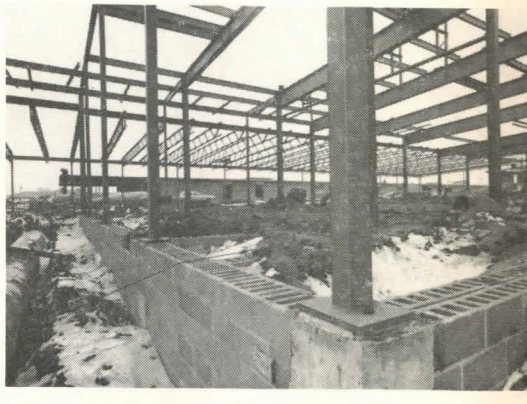
Address_____

City_____ State_____ Zip_____

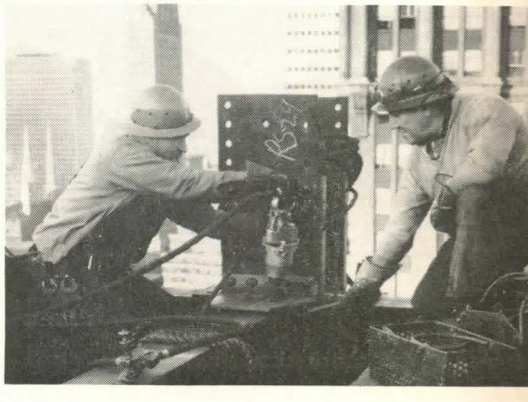
STRENGTH WITH MINIMUM COST



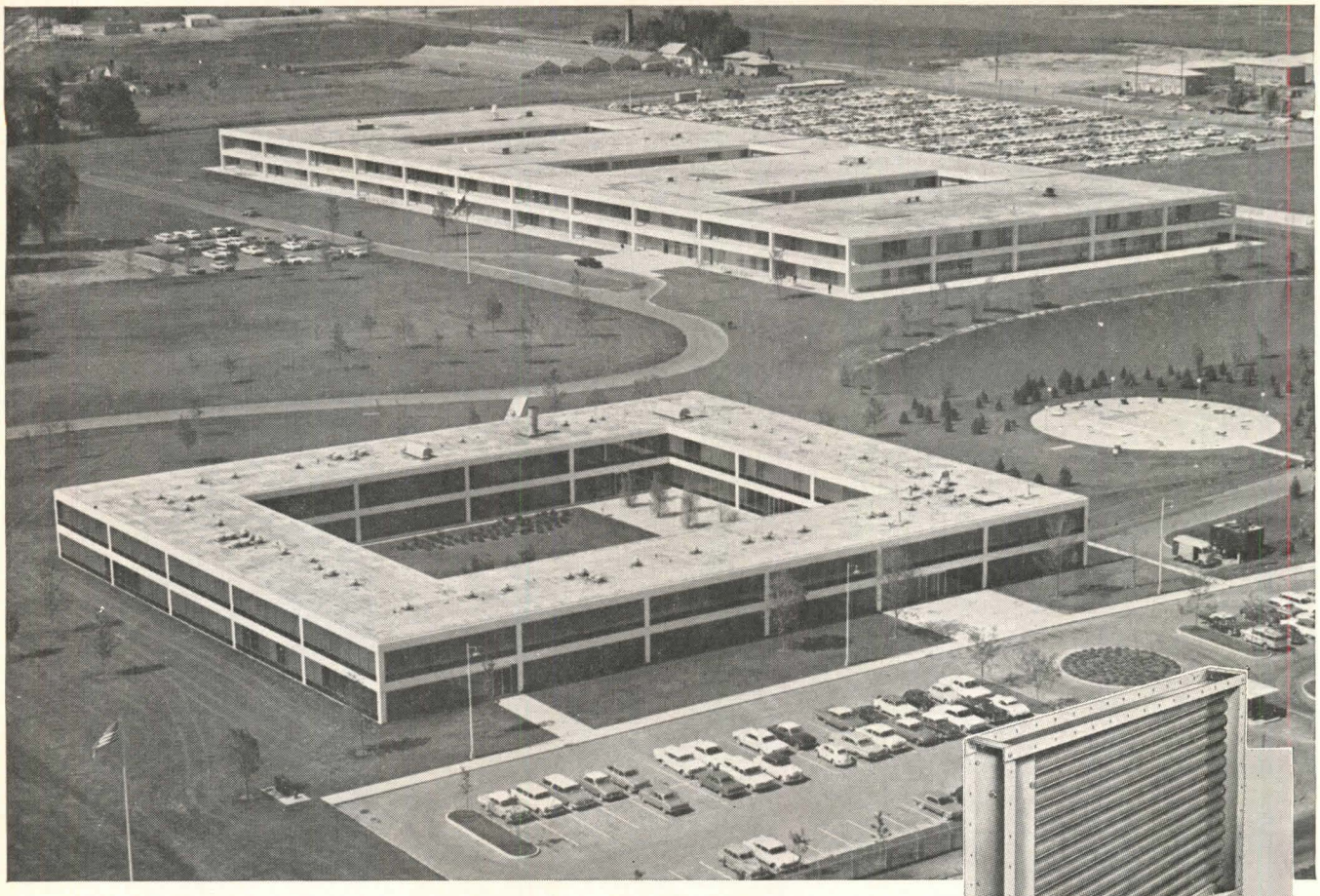
SAVED 100 TONS OF STEEL. Republic High Strength Re-Bars reduced steel requirements by an estimated 30% at Case Institute's new Olin Laboratory for Materials. Produced from new billet steel, these bars meet ASTM Specifications A-432 and A-431. All standard sizes including 14S and 18S are available. Send the coupon below for complete information.



SAVED 1/16 ALL AROUND. ¼-inch wall Republic ELECTRUNITE® High Strength Structural Steel Tubing replaced conventional 5/16-inch wall tubing originally specified for this school in Utica, Michigan. ELECTRUNITE costs no more, yet provides guaranteed minimum yield strength 36% over ASTM Specifications A-7 or A-36. Send for 52-page booklet.



SAVED 40% IN ERECTION COST. Six hundred thousand Republic High Strength Bolts were used for structural fastening at the new Pan Am Building. Installation was fast. And bolting delivers up to 40% more strength than riveting. Costs can be cut by as much as 40%. Send for brochure on Republic's new Heavy Head High Strength Structural Bolt Assemblies.



Skidmore, Owings & Merrill
Architects — Engineers

G. K. Newberg Construction Co.
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Executive Headquarters and Training Center

Striking example of modern architecture befitting the airline's move into the jet age

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Modern smooth-fin design of Aerofin coils permits ample heat-exchange capacity in limited space – permits the use of high air velocities without turbulence or excessive resistance.

Aerofin performance data are laboratory and field proved. You can specify Aerofin Coils at full published ratings.

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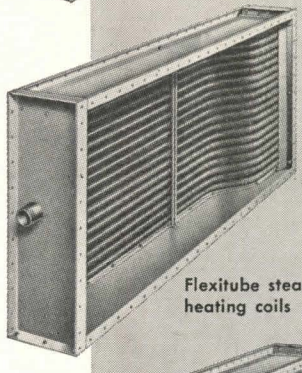
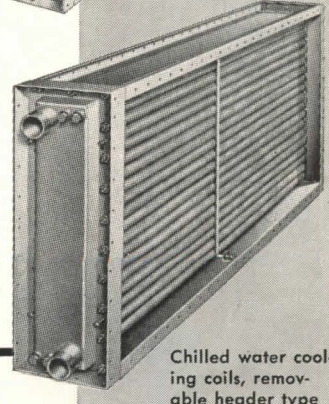


Flexitube steam heating coils



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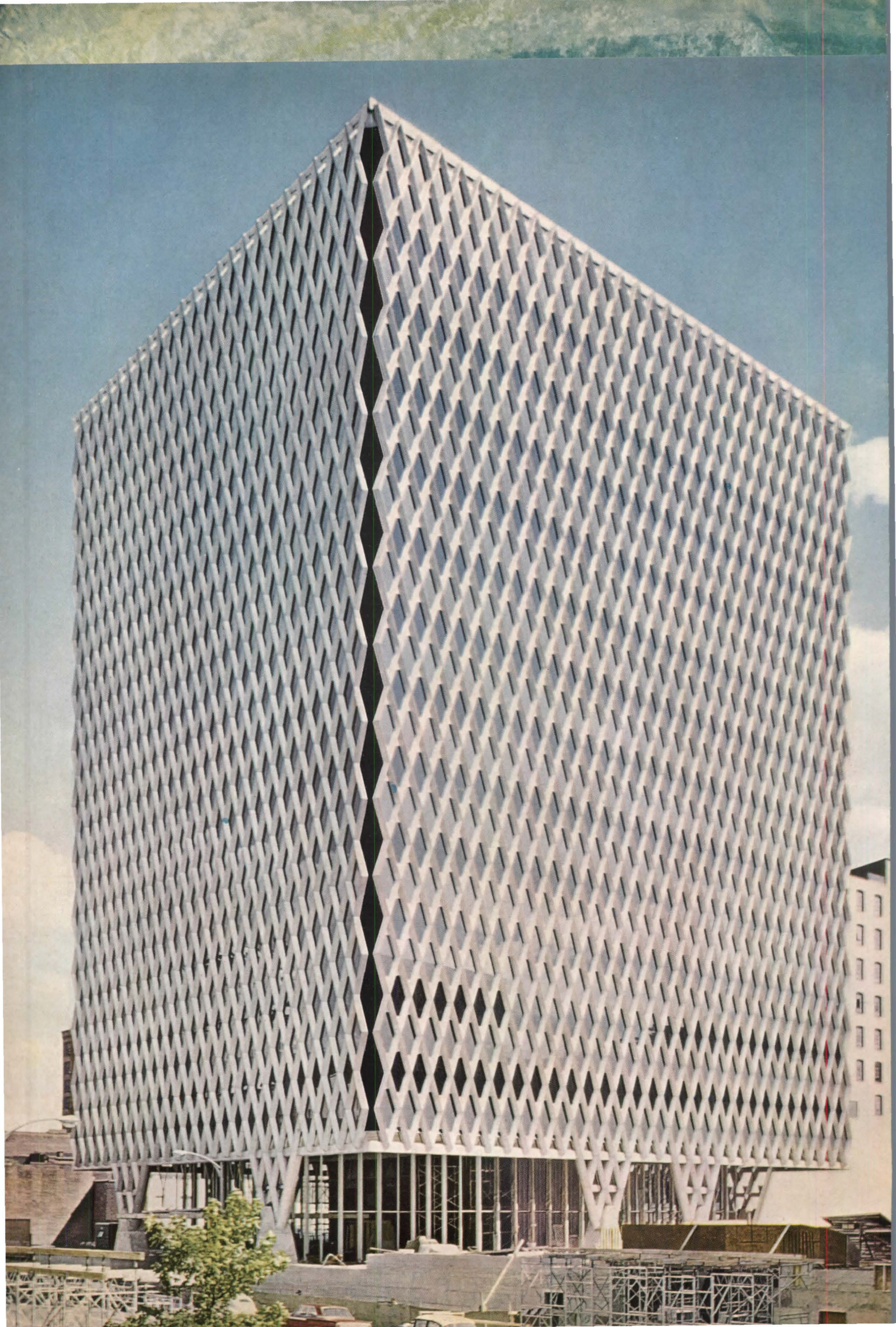


Every facet has a function

The many facets of Pittsburgh's new IBM Building reflect the changing light of day, as well as a dramatic change in the concept of structure for high-rise buildings.

Rejecting traditional post and beam concepts, the IBM Building's designers made full and creative use of the strength levels of USS Structural Steels by placing the building's strength, structural support, and beauty in its walls. These steel-truss walls, supported at only eight ground points, share the loads of the long-spanned floor framing with the central service core—providing spacious and column-free interiors.

New, higher yield strength steels made this design practical. It is the world's first building to combine three strength levels of steel in its structure—USS "T-1" and "T-1" type A Steels (100,000 psi minimum yield strength) for the heavily stressed piers and lower wall elements, USS TRI-TEN Steel (A441) (50,000 psi minimum yield point) for less heavily stressed elements, and A36 steel (36,000 psi minimum yield point) where stresses were still lower and more uniformly distributed. This concept required 250 tons less steel than traditional skeleton frame construction.

The symmetrical, diamond grid exterior is sheathed with lustrous, textured USS Type 302 Stainless Steel, which contrasts with gray glass spandrels and tinted windows to provide an intriguing over-all texture and interplay of light and shadow on each facade.

Used imaginatively, steel has unlimited aesthetic potential. For full details, write United States Steel, Room 6932, 525 William Penn Place, Pittsburgh, Pennsylvania 15230.

USS, "T-1" and TRI-TEN are registered trademarks.

Architects: Curtis & Davis, New Orleans, Louisiana • Structural Engineers: Worthington, Skilling, Helle & Jackson, Seattle, Washington • General Contractor: George A. Fuller Company, Pittsburgh, Pennsylvania • Steel Fabricator and Erector: American Bridge Division of United States Steel • Stainless Exterior Wall Fabricator: Limbach Company, Pittsburgh, Pennsylvania • Rigidized Stainless: Rigidized Metals Corporation, Buffalo, New York • Owner: Equitable Life Assurance Society of the United States, New York, New York • Principal Tenant: I. B. M. Corporation

USS **United States Steel**

After 23 years of wear, these hospital windows with Schlegel weatherstripping still operate perfectly

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

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

LONG-LASTING. Schlegel weatherstripping is made to last as long as your windows and doors. For extra durability, each pile fiber is interwoven through a strong fabric backing to insure permanent trouble-free operation.

For *tight, waterproof sealing*, the pile is dense and silicone treated.

For *ease of operation*, only resilient natural fibers are used.

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

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

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

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

Schlegel 

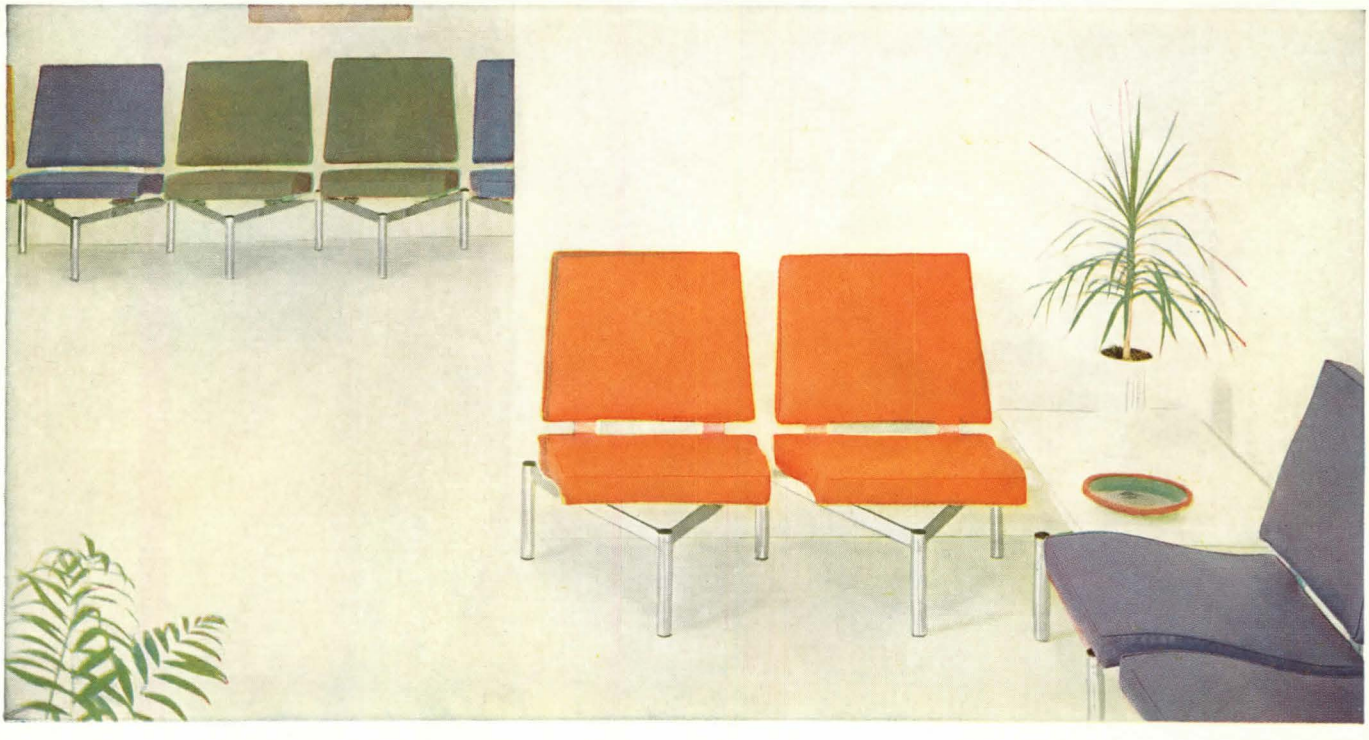
WOVEN PILE WEATHERSTRIPPING

SCHLEGEL MANUFACTURING COMPANY

P. O. Box 197, Rochester 1, N. Y. In Canada: Oakville, Ontario

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

it twists...it bends...it curves...



or play it straight...Viscount 65

Royalmetal's freeform lounge and reception seating. Multiple seating arrangement in both convex and concave lines. Or straight as an arrow. Add-a-chair. Add-a-table. Add-a-happy-client. Royalmetal makes spacesaving almost opulent. Find your Royalmetal dealer in the Yellow Pages. Or write Royalmetal Corporation, Dept. 11-L, One Park Ave., New York 16.

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BRILLIANT RED WALL IS **GLASAL**...LANDING AND STAIRS ARE COLORLITH IN MEERSCHAUM WHITE.

Warm reception

(How an architect can give one...and get one.)

It's really quite simple with Johns-Manville's Glasal and Colorlith products.

You can create a warm welcoming atmosphere with color and pattern... in startling or subtle variations... that will surely please your clients (and *their* clients). And that won't do *your reputation* a bit of harm.

GLASAL is an asbestos-cement facing sheet, with a ceramic-like finish in a wide range of colors—from basic black and white to pastels to intense shades. Used as paneling or as sheathing over an insulating core, Glasal enhances the beauty of any building and offers architects a new medium for creative design.

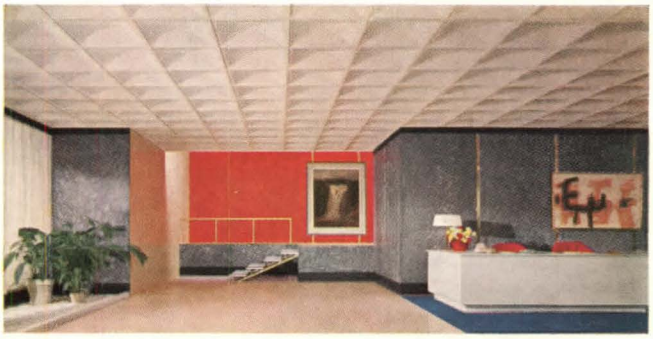
COLORLITH products are monolithic, integrally col-

THE **COLORLITH** WALL IS THUNDERCLOUD COLORVEIN... DESK IS MEERSCHAUM COLORLITH.

ored, asbestos-cement panels created by water, pressure and heat... to be stronger and more durable than stone without being obvious about it. And, thanks to controlled-condition production, the color and design are consistent from panel to panel, which is something that can't be said for quarry stone.

For more information on Johns-Manville's Glasal and Colorlith, see your local J-M Man (he's pretty good in the warm reception department, too!)

Johns-Manville JOHNS-MANVILLE JM PRODUCTS



Here's how Glasal and Colorlith help bring out the beauty of an entire room. Incidentally, the ceiling is also made of a J-M product... Acousti-Shell, the world's first truly 3-dimensional acoustical ceiling panel.

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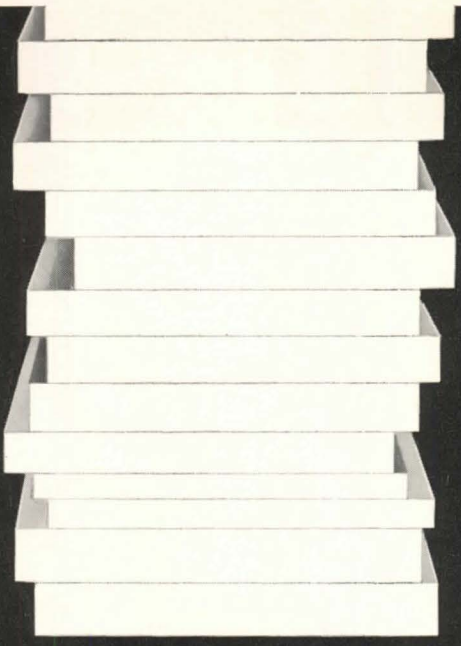

UNI-CREST is only a board of foamed polystyrene . . .

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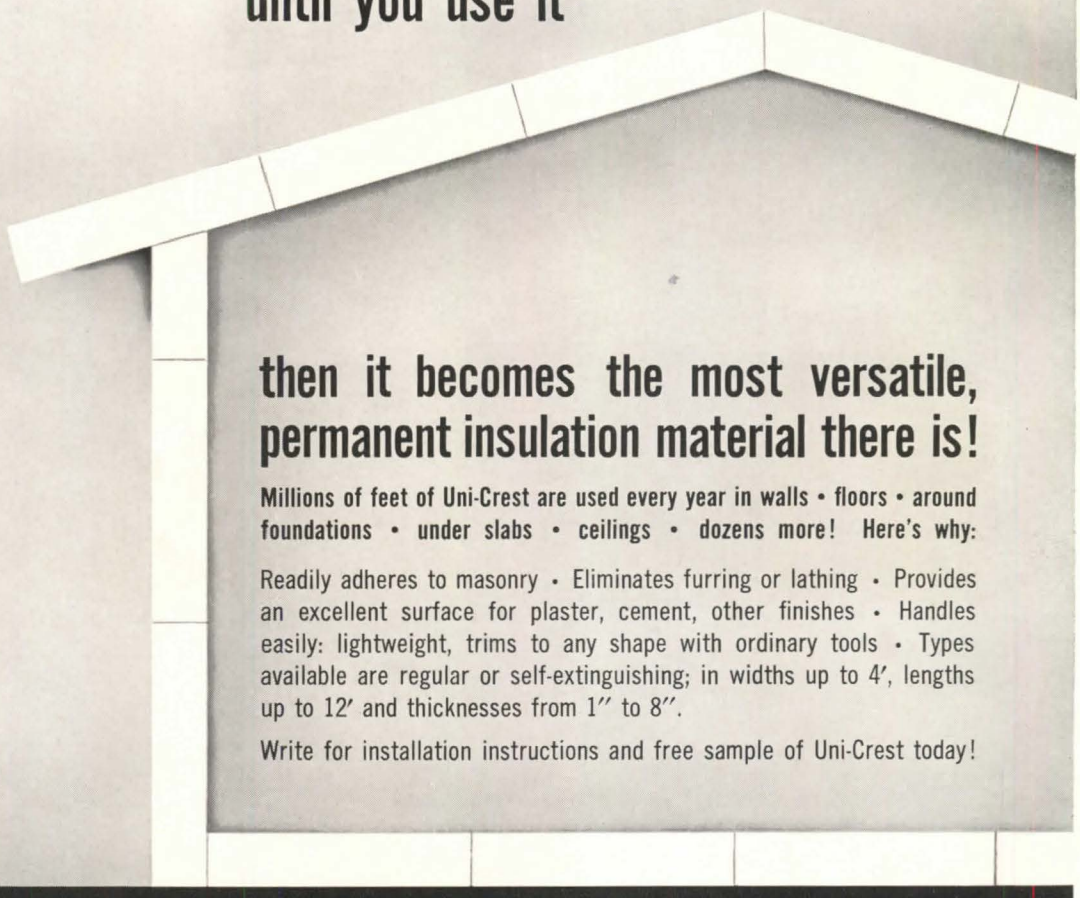

then it becomes the most versatile, permanent insulation material there is!

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Readily adheres to masonry • Eliminates furring or lathing • Provides an excellent surface for plaster, cement, other finishes • Handles easily: lightweight, trims to any shape with ordinary tools • Types available are regular or self-extinguishing; in widths up to 4′, lengths up to 12′ and thicknesses from 1″ to 8″.

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THE DAY RAPHAEL FINISHED HIS MADONNA DI TEMPI

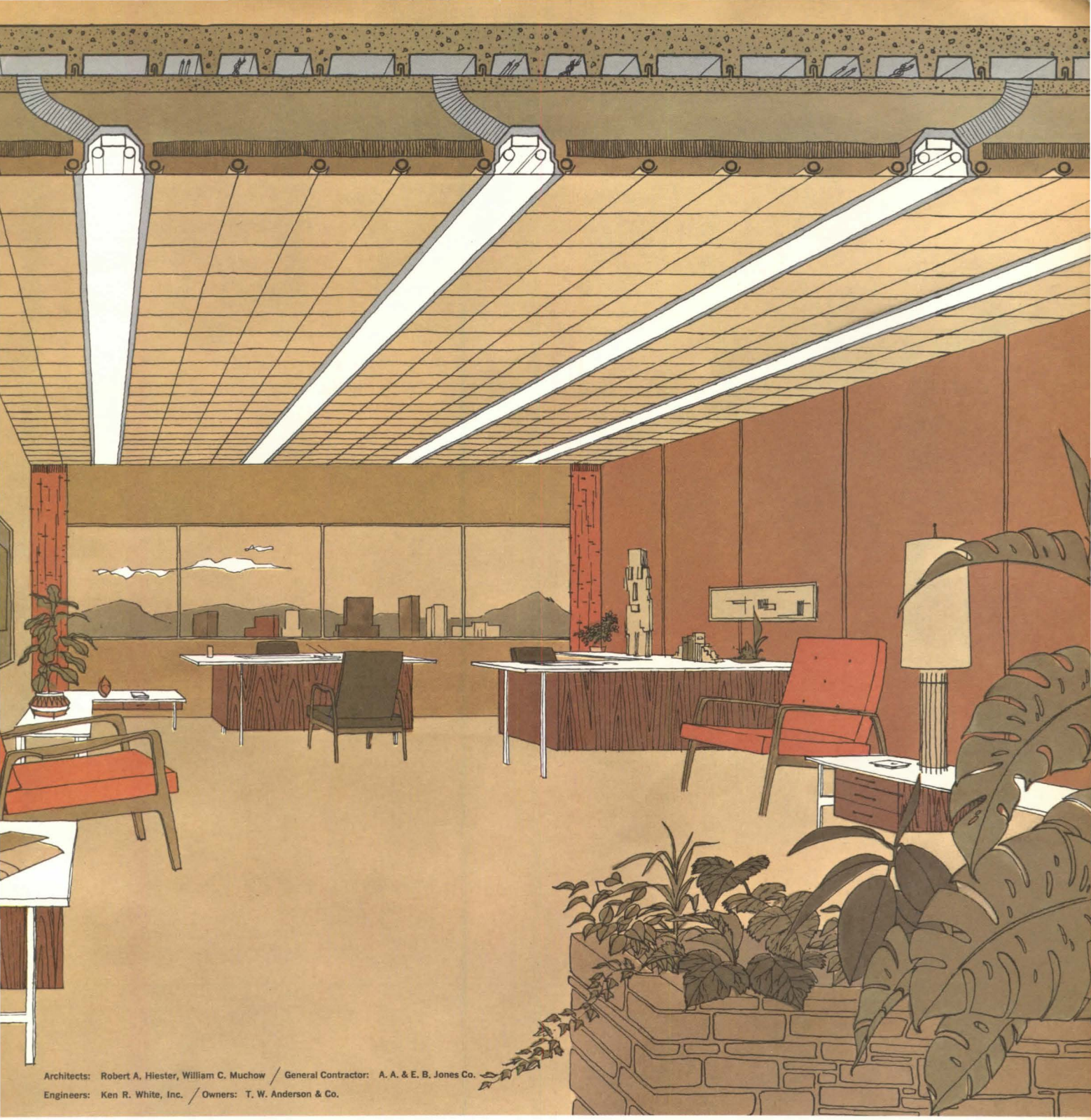
The day Raphael finished the Madonna Di Tempi
–was a day of splendor.
For it was of a rare and wondrous
splendor that Raphael painted.

A splendor that through the years has
remained undimmed, untarnished, unparalleled.

On the day of the last brushstroke,
Raphael must have known such would be so.

ONAN Division, Studebaker Corporation,
2515 University Avenue S.E., Minneapolis 14, Minnesota

COLLECTION DE ALTE PINAKOTHEK, MUNICH, WEST GERMANY.



Architects: Robert A. Hiester, William C. Muchow / General Contractor: A. A. & E. B. Jones Co.
Engineers: Ken R. White, Inc. / Owners: T. W. Anderson & Co.

DENVER ADOPTS NEW IDEA FOR CONTROLLING INDOOR CLIMATE...

Inland Radiant Comfort System **is an integral part of Denver's new Lincoln Tower Building now being erected. This highly advanced concept separates ventilating from heating and cooling — and eliminates the need for moving large amounts of air by forced circulation. ■ Uniform, draft-free heating and cooling (acoustical control, as well) are provided by radiant ceiling panels. Ventilating air is carried through raceways in the cellular steel floor, as are electrical wiring circuits. Air is chemically treated — and humidity brought to the optimum comfort point. ■ Other advantages of the Inland Radiant Comfort System — such as savings of rentable floor space and ductwork — are too numerous to mention here. More information is available in the booklet, "Breakthrough in Office Comfort Control". *Write for it today.***

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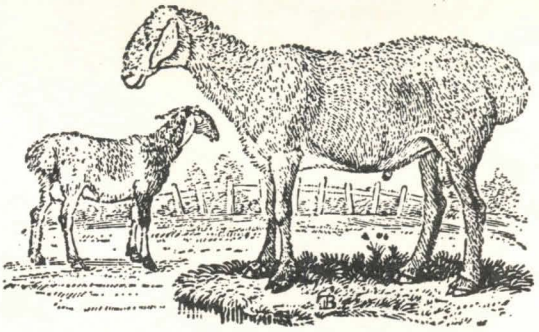
EP-37

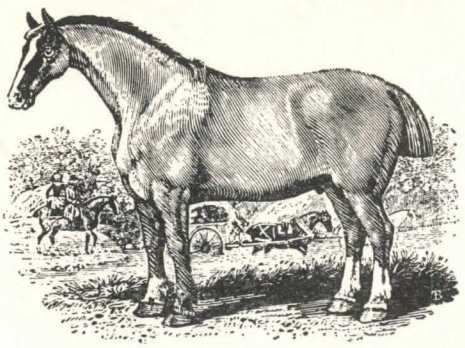
STRONG AS A LION



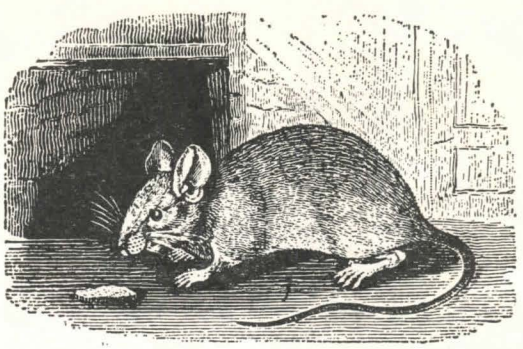
SOFT AS A LAMB

ELEGANT AS A CAT

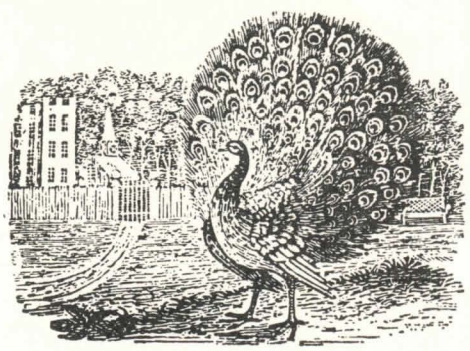
SPRINGY AS A DEER



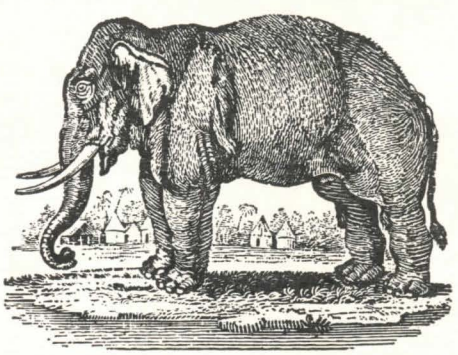
DEPENDABLE AS A HORSE



QUIET AS A MOUSE



COLORFUL AS A PEACOCK



LONG-LIVED AS AN ELEPHANT (almost)

Commercial Carpeting by Callaway

FOR INFORMATION, WRITE OR PHONE WAYNE ARIOLA, SALES MANAGER, COMMERCIAL CARPET DIVISION, CALLAWAY MILLS, INC., 295 FIFTH AVE., NEW YORK, MURRAY HILL 9-7800

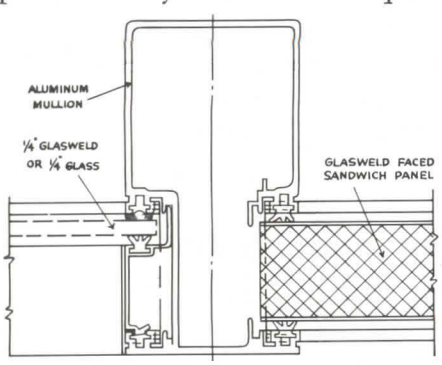
For more information, turn to Reader Service card, circle No. 318

Chief Francisco Solano Junior High School, Vallejo, Calif., has an attractive facing of Glasweld in two colors—Grey Green 54A1, and Yellow Beige 62QA. **Architect:** Beland, Gianelli and Associates, AIA, Vallejo. **System:** Pacific Curtainwall Inc.

Here's a face with no complexion problems

(Just wash permanently colored Glasweld to keep it young looking)

Glasweld® colors are nonfading. The surface is a permanent all-mineral enamel. The panels form a smooth surface that remains optically flat in appearance. Glasweld is strong and dimensionally stable; will not buckle, bow, "oil can," "pillow" or "orange peel." The only care Glasweld requires is the attention you give windows—an occasional washing.



Typical detail of Pacific Curtainwall 500 Series aluminum system in which Glasweld insulated panels were installed. Single thickness facing panels are ¼" Glasweld.

IDEAL FOR CURTAIN WALLS. The attractiveness of Glasweld is more than skin deep. Glasweld is particularly well suited as a facing for sandwich panels, giving quality and durability to low-cost insulated components. It is also eminently practical as a single thickness facing panel with or without masonry back-up.

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Weldwood Algoma Architectural-Grade Custom-Made plain sliced cherry paneling in lobby of Union Tank Bldg., Chicago, Ill. Top panels are 16' 3" high. The 7' panels below are end-matched with top panels. All panels are 5-ply with lumber core, were completely premachined and prefinished at our Algoma plant. **Bldg. owner:** National Properties, Inc. **Architect:** A. Epstein and Sons, Inc., Chicago, Ill. **General Contractor:** George A. Fuller Co. **Installer:** Peterson Co., Chicago.

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PROGRESSIVE ARCHITECTURE DECEMBER 1963

NEWS REPORT

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

Litho City-United World Center project on Manhattan's West Side could be keystone of far-ranging development.

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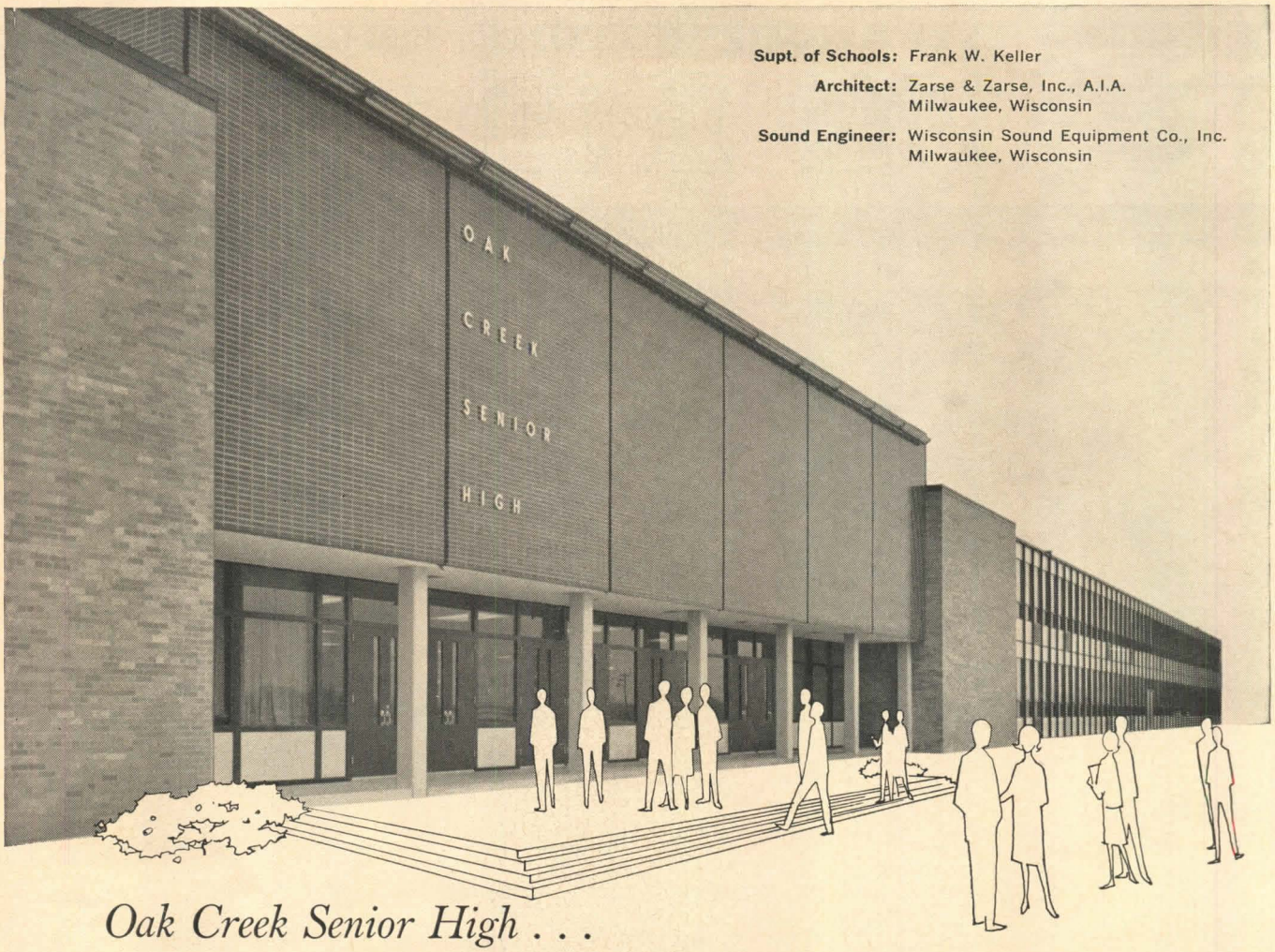

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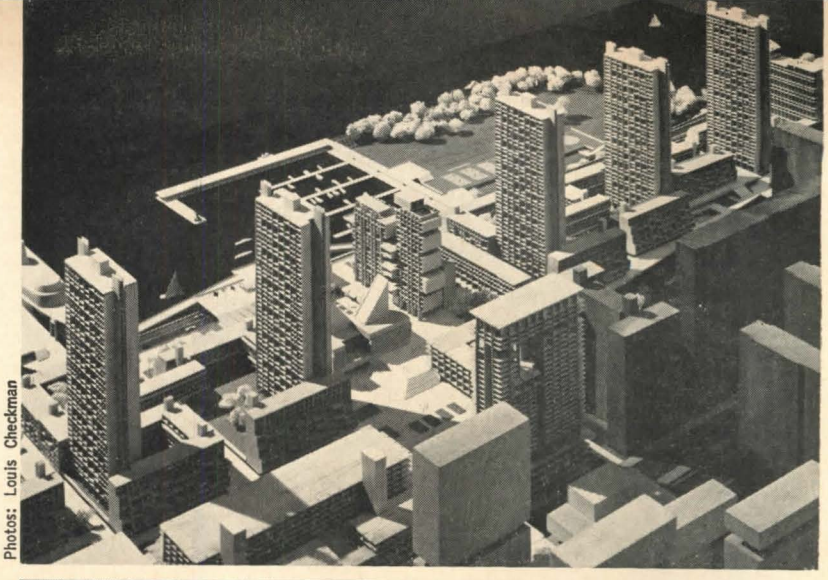
LITHO CITY: A CIVIC CONTRIBUTION

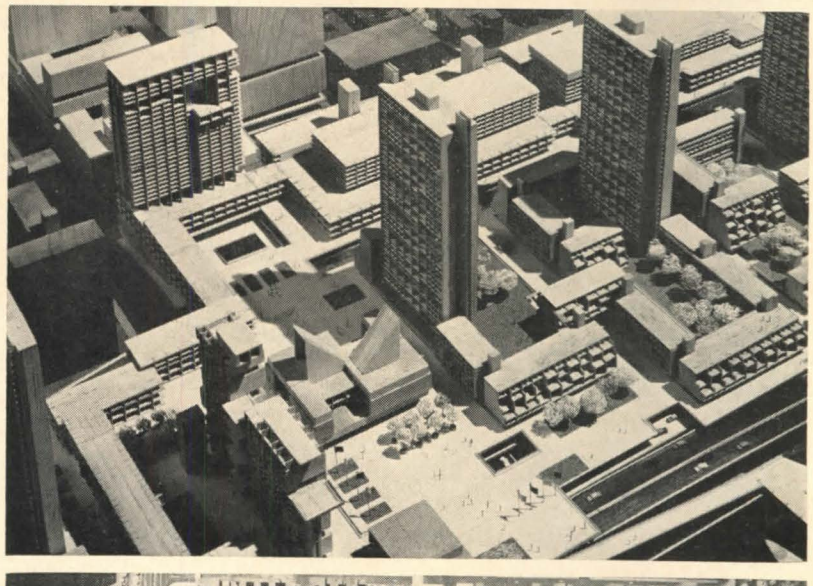
NEW YORK, N.Y. It is discouragingly seldom that a private client permits and even encourages his architect to use a project as the basis for improved city planning, but this has happened in the case of New York's Litho City-United World Center project.

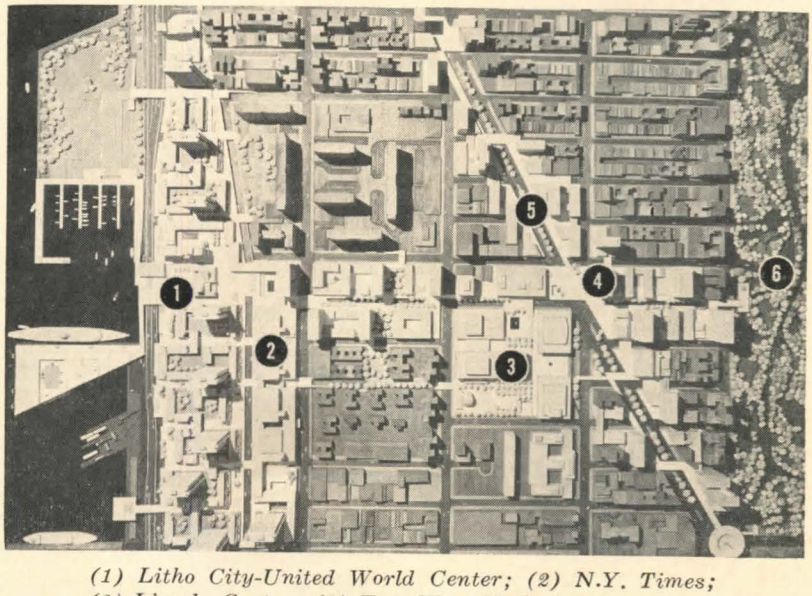
Jordan Gruzen, Peter Samton, and Mario J. Romanach, project designers of Kelly & Gruzen (George G. Shimamoto is project associate), conceived of Litho City as being a regenerative, integrating force on the West Side between Columbus Circle and 72nd Street. In recent years, this area has produced Lincoln Center and some rather dismal high-rise housing, but these elements have not combined to produce a really vital new face for the area. The Litho City proposal, however, envisions Broadway as a handsome shopping boulevard with a raised pedestrian mall, rebuilt commercial buildings, and combination of odd-shaped parcels of land into super blocks. "Lincoln Plaza" would be created at Broadway between 65th and 66th Streets, providing safe pedestrian access to Lincoln Center and tying the Center to Broadway's activities. A raised mall would extend east and west to link Central Park with Litho City and the river (which would have a revitalized waterfront area including a 21-acre park, a marina, and a new Italian Lines pier with rooftop heliport). The entire area would benefit from a new traffic plan extending the crosstown transverse to the waterfront through Litho City.

Litho City itself is a project of the Amalgamated Lithographers of America, Local 1, headed by Edgar Swayduck. It will include housing for 15,000 people in high-rise apartments and low-rise units, plus the new headquarters building and printing plant of *The New York Times*, and, at the heart of the project, United World Center, a social, academic, and living center for 1000 students from many parts of the world. Other amenities, in addition to the marina and park, will include a large motel, residential and commercial plazas, and a dining pavilion over the water.

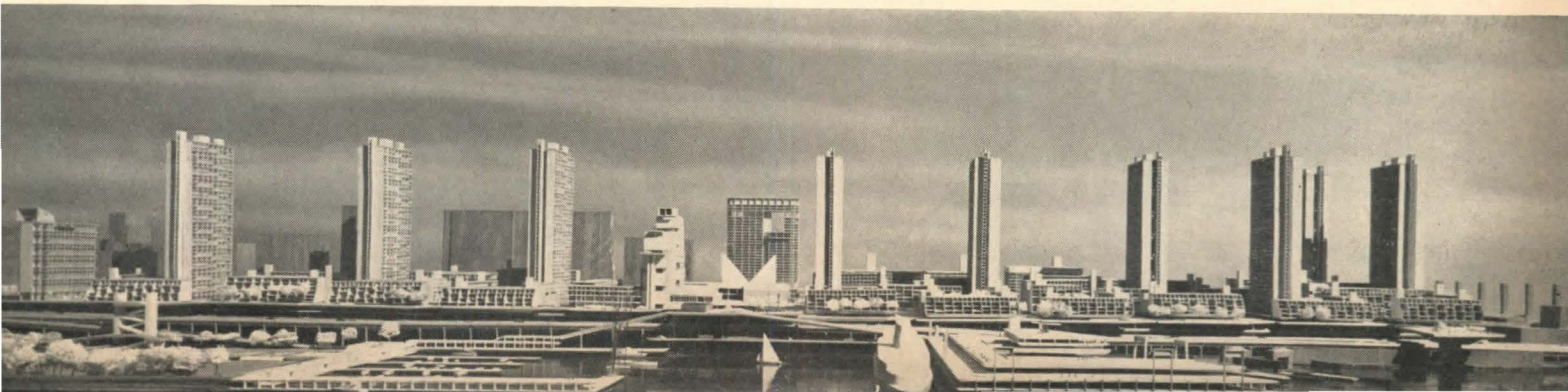


Photos: Louis Checkman





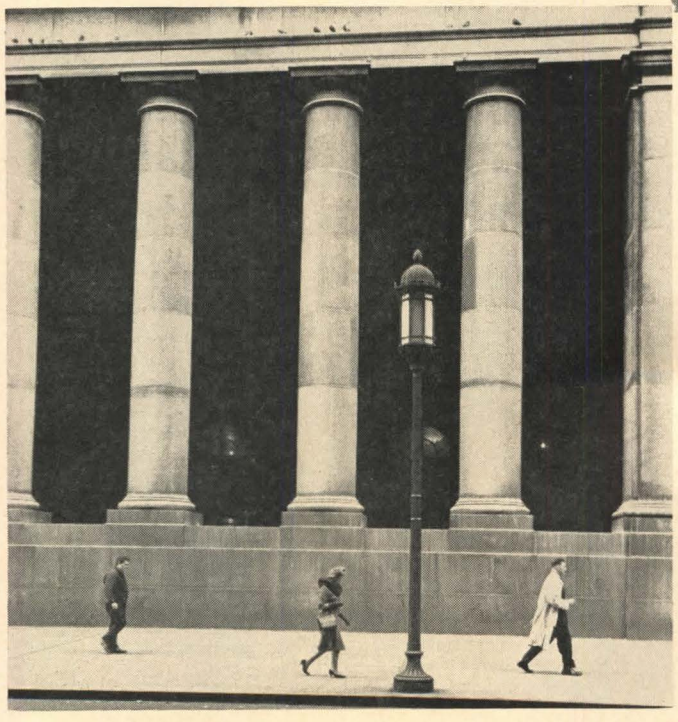
(1) Litho City-United World Center; (2) N.Y. Times; (3) Lincoln Center; (4) East-West Mall; (5) Broadway; (6) Central Park. Light areas represent proposed changes.



Photos: Fred McDarrah

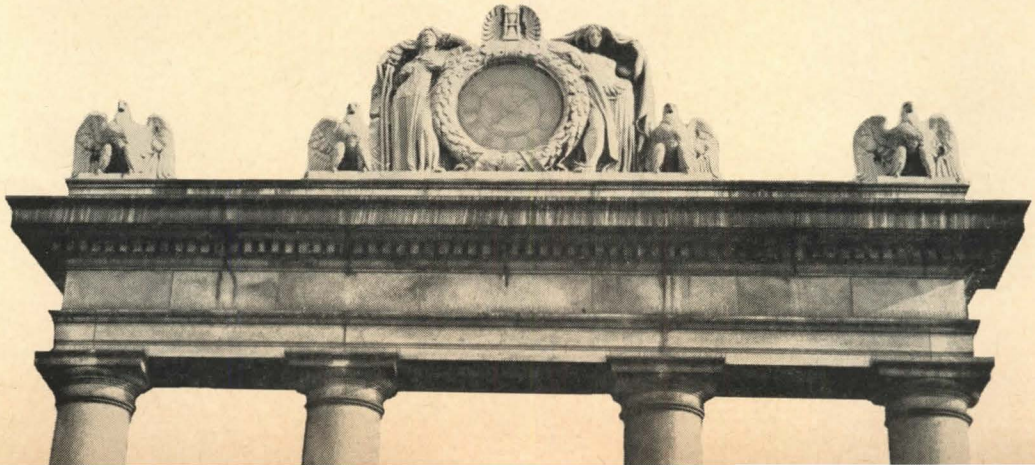
PENNSYLVANIA STATION: FINIS

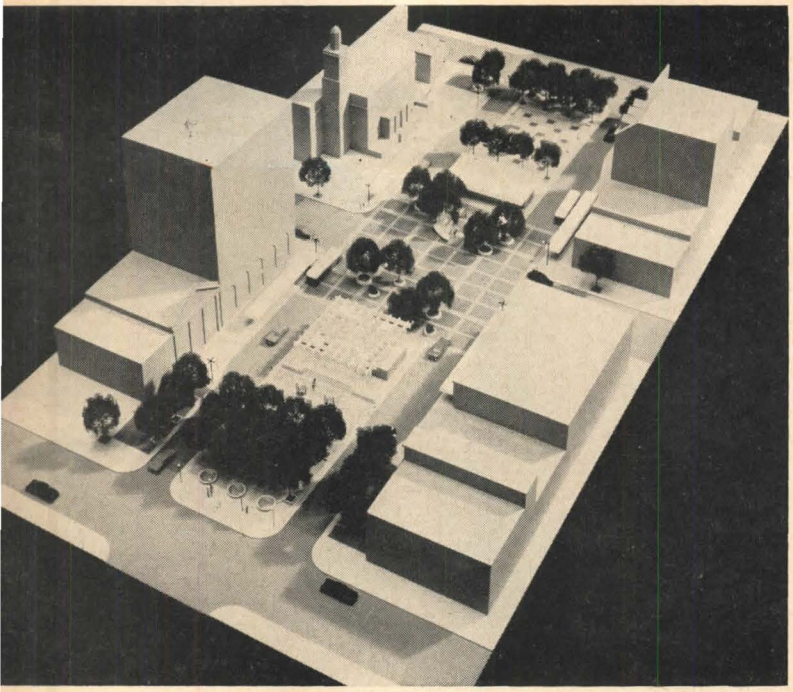
They assembled at the 33rd Street entrance to the grand old building on October 29, a rather furtive trio bent on malignant mischief. The victim: Charles Follen McKim's famous Pennsylvania Station; the culprits: Irving M. Felt, chairman and president of Madison Square Garden Corporation, whose sports arena will replace the great terminal; J. Benton Jones, vice-president of the Pennsylvania Railroad; and Thomas M. Goodfellow, president of the Long Island Railroad. After the long campaign to save the station on the part of almost every prominent civic organization concerned with culture in New York, as well as many leading architects from this country and abroad, theirs was the victory of seeing the huge stone eagles lowered from the pediment and hearing the demolisher's jackhammers begin to rip into the granite of the station. Later in the day, representa-



tives of AGBANY, the young organization which had done most to try and save the structure, sadly picketed in a light rain, making a last protest against what Lewis Mumford called "an act of irresponsible public vandalism."

The next day, the wreckers moved back into the bowels of the station and proceeded to continue wrecking there. The whole thing had been a press relations gimmick; the station would stand another few months! But its fate is sealed. The great hall will go, the great concourse will fall, the traveler will be mashed into subterranean passageways like ancient Christians while the wrestler and the fight promoter will be elevated to the vast arena. The Decline and Fall of the American Empire—*sic transit gloria mundi.*



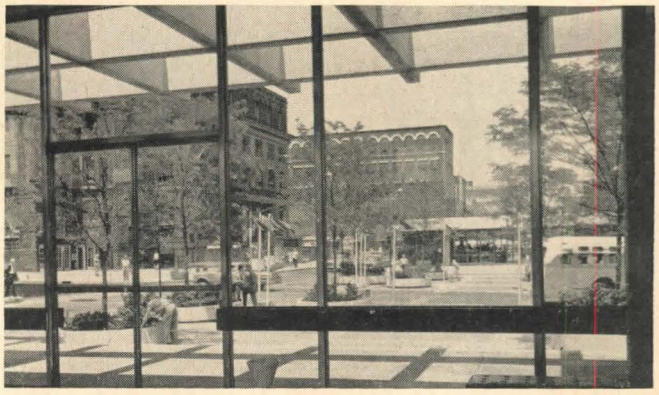


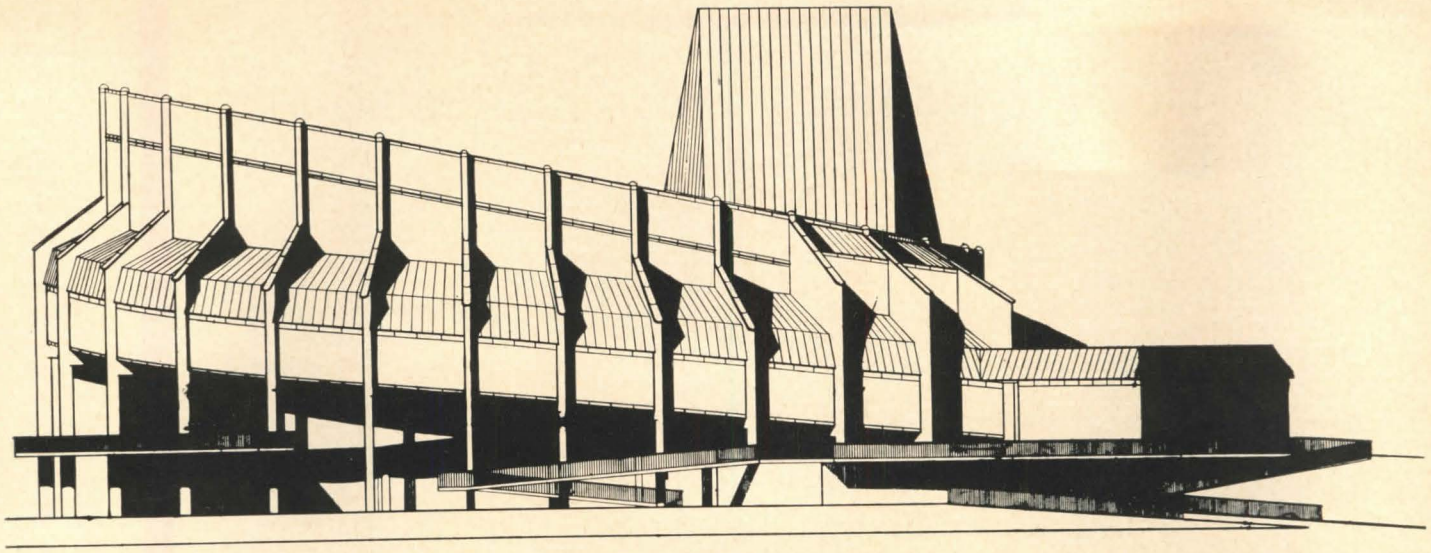
Canton Redevelopment Combines Traffic, People

CANTON, OHIO The plan to revitalize this Midwest city, instead of depending on the bulldozer, utilizes existing public rights-of-way and open spaces to create a new environment for downtown.

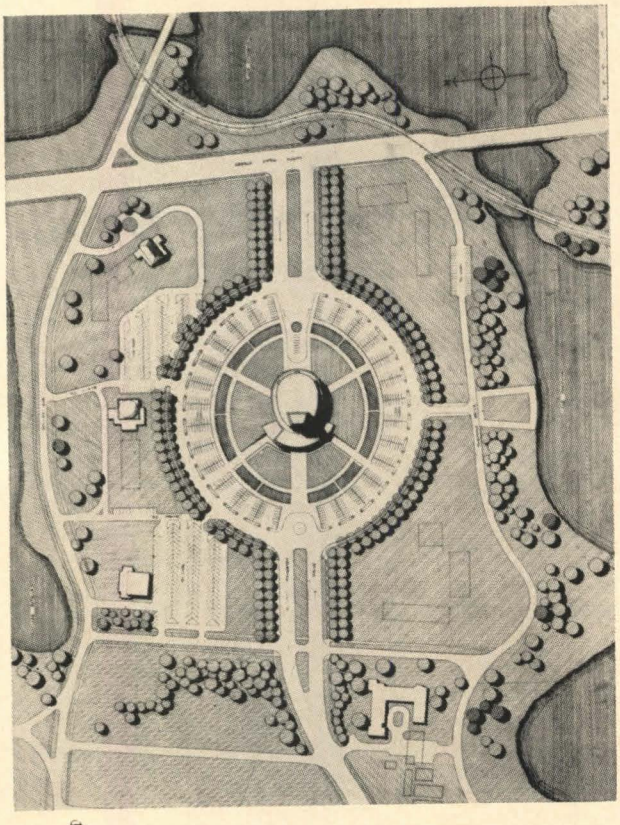
First completed element of the program is Central Plaza, two-block public space at the center of the city. The section is distinguished from the usual mall plan by being primarily designed for extensive use. A display and exhibition building, an indoor-outdoor café, a winter skating rink, and a ceremonial plaza ensure more extensive participation by city residents in downtown activities. To encourage pedestrian traffic, emphasis has been put on durable surfaces rather than on grass and planting. Sufficient greenery is included, however, to lend softness and charm to the surrounding group of business and civic buildings (*below*). Central Plaza was created from what used to be a widening of the main street, bristling with parking meters.

The project, which has won awards from the American Society of Landscape Architects and the Detroit Chapter AIA, is by Tarapata, MacMahon Associates, Inc., of Bloomfield Hills, Mich., in collaboration with Johnson, Johnson & Roy, Inc., landscape architects and planners of Ann Arbor, Mich.





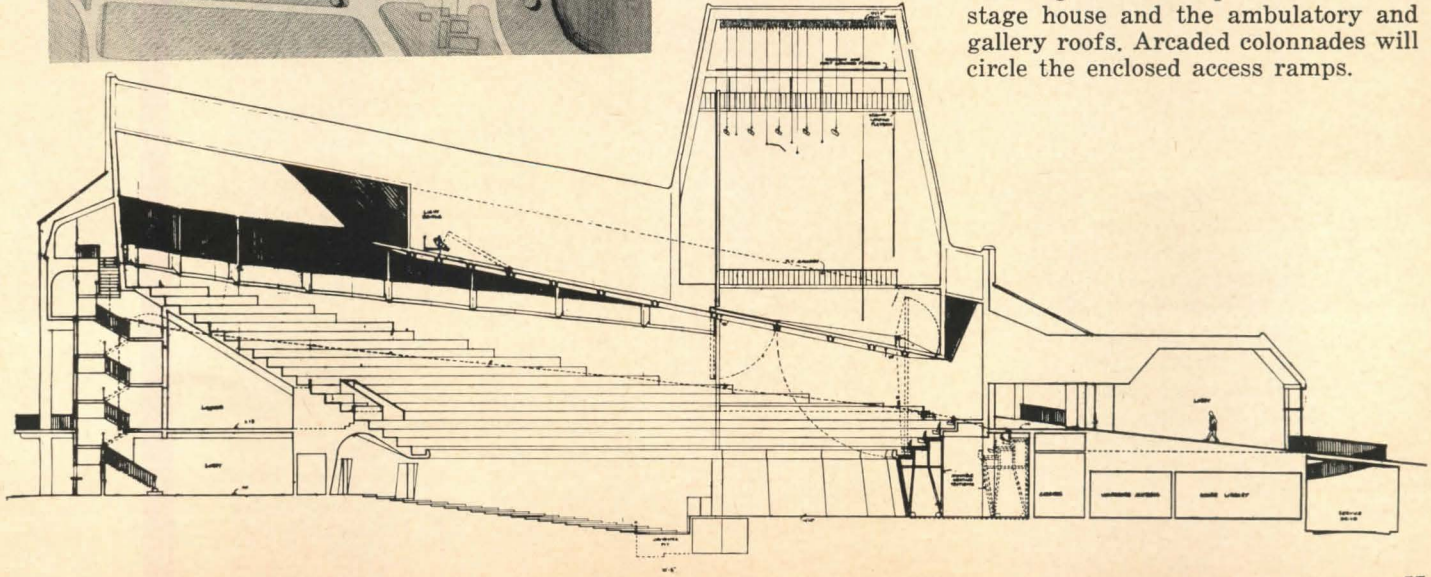
Theater Without a Back Door



ORLANDO, FLA. An oval concert hall and theater has been designed for Orlando by Harry Weese & Associates of Chicago. Intended for the production of drama, music, and ballet, the building will have a circular form proclaiming the functions which occur inside.

The moat-surrounded building will be entered on one side by a ramp to the ambulatory, which will lead to the balcony, and on the other side through the main lobby and ticket office entrance leading to the orchestra. The 360-seat gallery, to be screened by natural wood slats, will follow the slope of the ambulatory and be directly above it. With a total capacity of 3034, the hall will be flexible enough to provide 2761 seats for a wide proscenium presentation and 2205 seats for a 65-ft proscenium production. There will be 293 seats located above and behind the stage that disappear on tracks into the wall. A fireproof wall will separate the auditorium from backstage when it is arranged for drama. Stage rigging will allow handling of productions up to and including grand opera.

Structure will be white cement, stucco, and sand-finished plaster, with standing seam terne plate to cover the stage house and the ambulatory and gallery roofs. Arcaded colonnades will circle the enclosed access ramps.



Doing Business With Professionals

by E. E. Halmos, Jr.

All professionals have an interest in a bill now before Congress, aimed at taking the Federal Government out of competition with consulting engineers and other private professional services.

The bill is S. 2268, authored by California's Senator Tom Kuchel. It has to be rated as having very little chance of enactment—but it might at least force a re-examination of policy by many a Government office.

In effect, it would prohibit any Federal agency from hiring any other Federal agency arm to do engineering, architectural, or other professional work, unless a comparison is first made with costs of private services, and the agency chief is prepared to certify in writing that Government-agency work is cheaper or shows other advantages over private consultants.

Prompting Kuchel's action is a whole series of events he detailed in a long Senate speech — instance after instance, according to the Senator, where Government agencies have either "hired" another agency to do work that private sources could do, or forced their services on citizens at higher costs.

Specifically, Kuchel referred to surveys of silt deposits in Lake Mead (Hoover Dam), where the Bureau of Reclamation "hired" the U.S. Coast and Geodetic Survey to do the work, at a cost "many times higher" than the $135,000 fee proposed by a consultant; an aerial mapping project for Ethiopia, which the Army Map Service will conduct—at a cost of about $11 per square mile, as compared to a similar survey in 1959, carried out by a private firm, for about $2.93 per square mile.

Another instance, according to the Senator, was that of an irrigation district (in Nebraska) which wanted to hire a consultant at a fee of 6 per cent of project costs, but was, he said, "forced" into "hiring" the Bureau of Reclamation as its engineer, at 23⅔ per cent fee, as a condition for obtaining a loan. The Republican Senate Whip cited other cases of what he called "outright solicitation" by Government technical services actually seeking work in competition with private firms.

"We have the unhappy picture," commented Kuchel, "of one member of a profession paying another to take his livelihood away from him."

AIA on Capitol

Fearing that the proposed changes (extension) for the west front of the U.S. Capitol would "bury the last of those walls that date from the early years . . . [and might] seriously endanger the historic and architectural significance" of the building, the American Institute of Architects has protested proposed changes—at least, unless "absolutely necessary" and with the concurrence of nationally known architectural experts.

A resolution to that effect got a friendly reception from the Senate—no admirer of Capitol Architect J. George Stewart, who wants to extend the west front because of what he has called serious structural deficiencies, and to provide added and much needed space within the building.

On another aspect of Capitol Hill architecture—the much criticized Rayburn (New-New) House Office Building—questioning by members of the Senate Labor Committee brought forth a neat bit of sidestepping by J. Roy Carroll, Jr., president of the AIA.

"What style of architecture would you call the new . . . building?" queried Texas' Senator Ralph Yarborough. Carroll considered carefully, finally replied: "I prefer not to name it." "After I look at the building," rejoined Yarborough, "I think we ought to do something about the arts in this country."

Illinois Landscape

Landscape architects have been much concerned by action of Illinois' Governor Otto Kerner, who vetoed a bill that would have set up in the state registration procedures for such professionals.

Kerner's principal reason, according to an accompanying message, was that ". . . . Landscape architects, as defined in this act, deal with a fairly limited market. . . . The purchases of services are . . . primarily [by] park systems, schools, public or private agencies . . . and even among these agencies, the primary emphasis would seem to be on governmental agencies. It seems to me that these groups may be in the best position to protect themselves. . . . I cannot see a sufficient threat to the public health, safety, or welfare . . . to justify invoking the state's police powers."

At least one Chicago newspaper, expressing agreement with the governor, commented on the "tendency of groups in service occupations to seek licensing power as a means of limiting competition."

FINANCIAL

Although the construction industry seemed to be rocking along on a comfortable path, as still another month went onto the books, economists were beginning to note some odd signs.

One concerned the apparently ever-proliferating shopping centers, which are going up rapidly wherever a belt road is under construction or has been built—as around Washington and Baltimore. Close studies by the Urban Land Institute indicate that many of these centers are beginning to feel an economic pinch: they are now competing with each other as well as the downtown business core. In order to attract trade and attention, builders have been forced into ever larger areas, ever more elaborate facilities, which, in some cases, has brought investment too close to break-even points.

Another spot for scrutiny was housing, in which the number of "starts" (private) was 141,700 in September, as compared to 142,800 in August—but well above the 114,300 recorded in September of 1962. The slight drop in actual starts from August to September, of course, isn't significant. But there have been indications for some months past that housing is hitting some sort of a plateau, where it will either simply maintain a level, or show a slight downturn. A rise of one-tenth of a point in the prices of FHA-insured, 5¼ per cent new-home mortgages (to an average of $98.5) after a two-month period with no change, may also be a hint of tightening in availability of money.

Obviously, one holdback on greater construction spending is the Congress' almost ridiculous delay in approving appropriations for the Fiscal Year (1964), which started July 1. Federal agencies have been held to last year's spending levels, unable to initiate any new programs, and have even had to shut down some operations. Yet, as of mid-November, while the President was already at work on next year's budget, more than two-thirds of all appropriation bills still remained on Congress "unfinished business" files.

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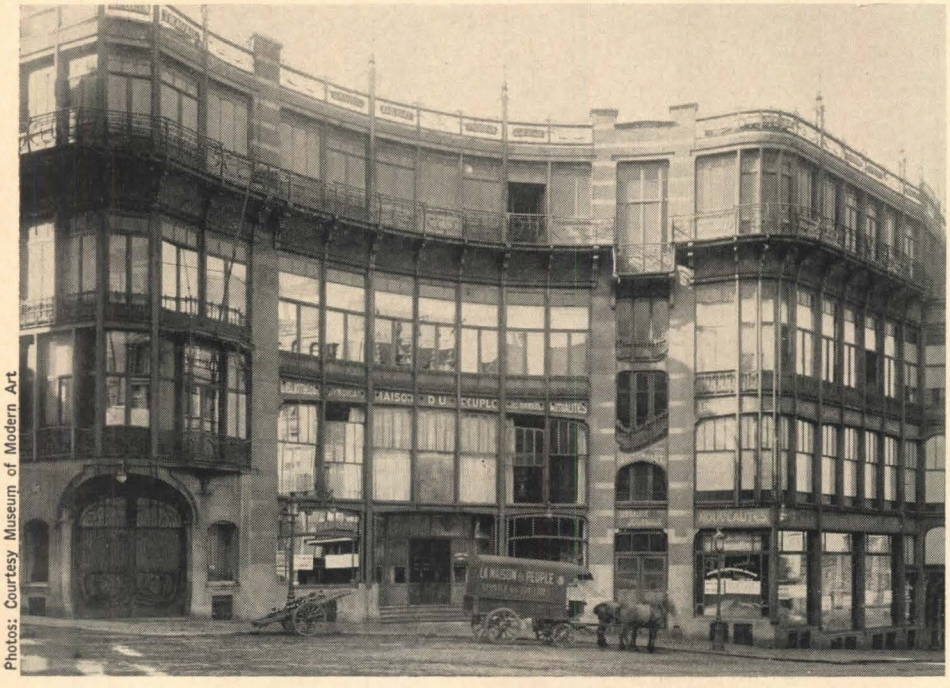
Architects' Business vs Better Cities

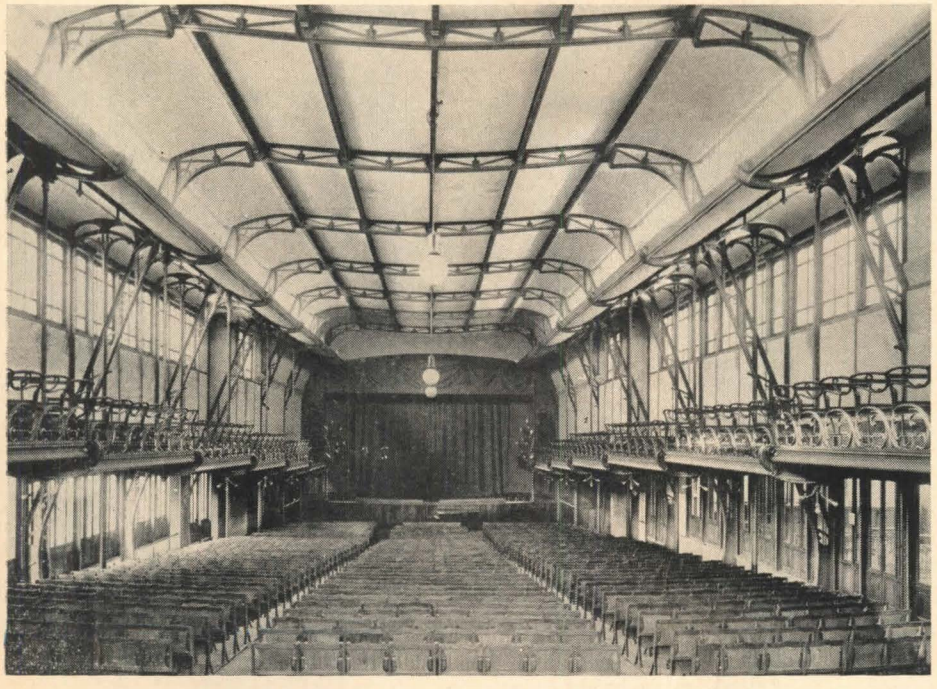
A bitter *reflection* of P/A's October and November editorials, dealing with the architect's responsibility to the community rather than to a narrow professional group, was furnished by a heated meeting of the New York Chapter AIA recently.

Topic of the special meeting was the New York Civic Center (p. 41, JANUARY 1963 P/A). A number of architects think that the area should be the subject of a competition to insure that New York will get a truly great civic center. An organization of professionals and laymen has even been formed with this aim in mind—New Yorkers for a Civic Center of Excellence—and has been assured by a New York philanthropist of a considerable sum to underwrite the competition.

The chapter meeting was notable for exchanges between Chapter President Geoffrey Noel Lawford and Architect Norval White, the latter pleading for a Civic Center competition that will encompass a large enough area (but one in which all architects presently having contracts would be appropriately recompensed). Lawford, backed by the legal counsels of the chapter and the national body, both of whom were present, continually had White rephrase the amendment to prevent any alleged transgression of both the AIA's mandatory standards and the laws of the state (several architects are presently contracted for work in the civic center area). Tempers grew short as the amendment was rephrased approximately eight times, never to the satisfaction of the president. Finally, a compromise resolution proposed by past-president Frederick J. Woodbridge was passed by the weary gathering. A press release written by Lawford and sent to the three architectural magazines states, in part, "As a result of the meeting, the Chapter adopted a resolution calling for an Architectural Competition for the unassigned portions of Area 3 (which is that area of the plan bounded by Worth, Baxter, Broadway, and Canal Streets) of the Civic Center Master Plan adopted last April by the City Planning Commission. Also included are any other appropriate areas in the neighborhood that might be part of the future Civic Center that do not in any way interfere with any existing contracts, commitments or other legal rights."

Many observers were disappointed by what they considered an inadequate compromise and a chance lost for the profession to prove itself truly civic minded.





Photos: Courtesy Museum of Modern Art

ANOTHER MONUMENT THREATENED

Belgian Architect Jean Delhaye has written to Edgar Kauffman, Jr., that there is a possibility that Victor Horta's *Maison du Peuple* in Brussels may be destroyed. The building, one of the most famous examples of Art Nouveau architecture, was built in 1897. Delhaye asks American architects to write the Belgian government (with a carbon to the U.S. Ambassador in Brussels) protesting the demolition of a great *chef d'oeuvre*.

Tomb for Kennedy

Mrs. John F. Kennedy has asked Architect John Carl Warnecke to design the tomb of the late President in Arlington National Cemetery. Warnecke, who was appointed to the Fine Arts Commission by President Kennedy and who redesigned Lafayette Square, also will design the library for the papers of the Kennedy administration at Harvard University.

Moses, by Michelangelo. Marble, height about 7 1/2 feet. (San Pietro in Vincoli, Rome.)

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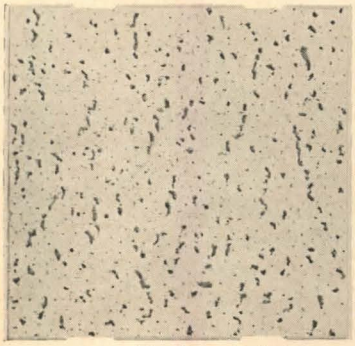
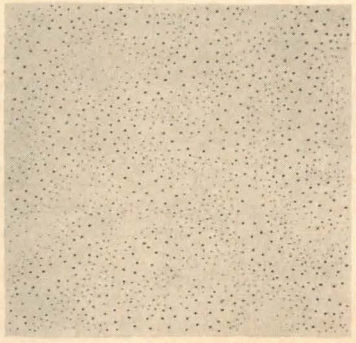
LO-TONE®
ACOUSTICAL CEILING TILE AND BOARD


Acoustical Ventilating Products


Vinyl-Coated Acoustical Products


Fire-Rated Acoustical Products


Design Tiles

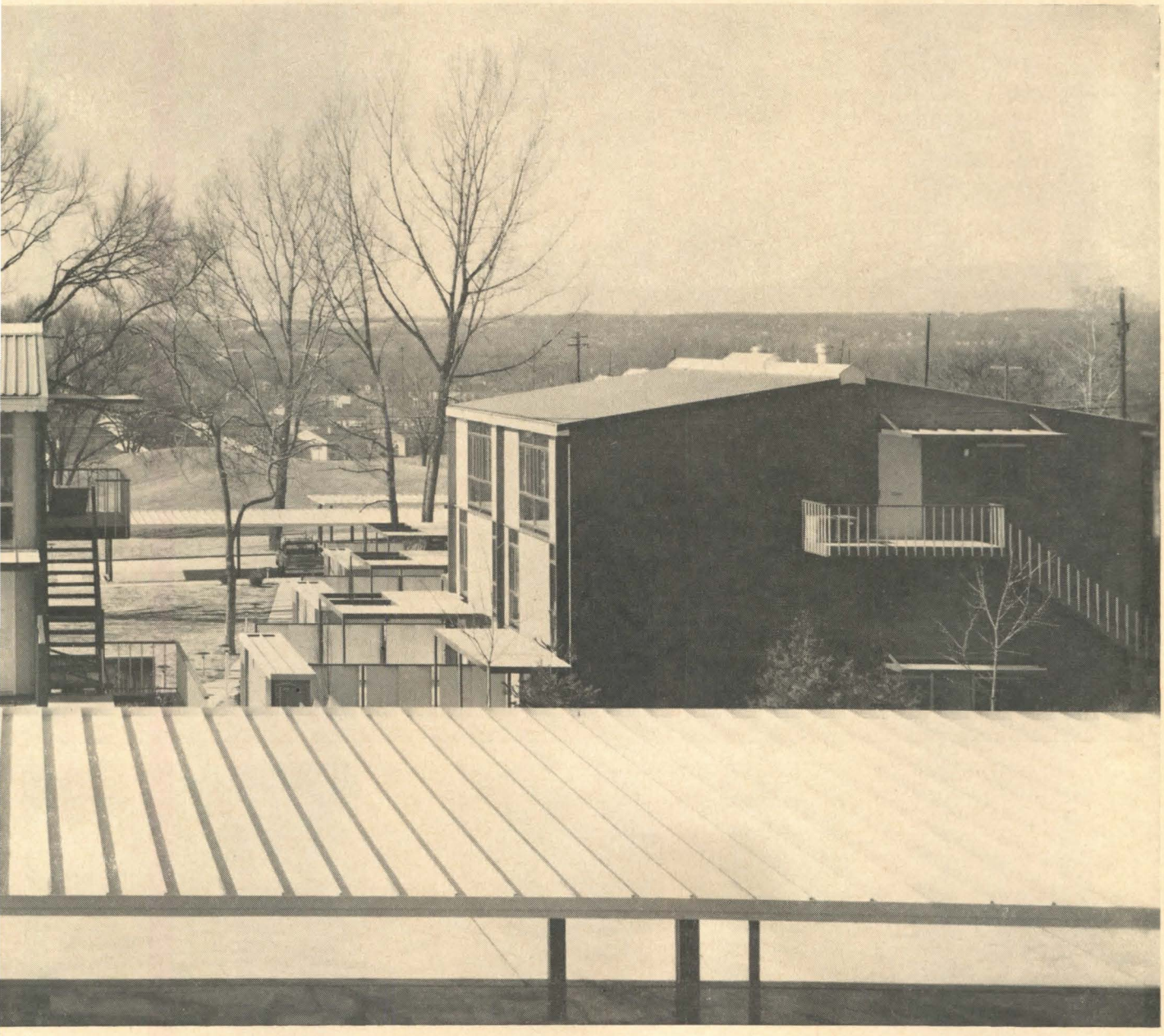
All structures in this new garden apartment complex are roofed with Armco ALUMINIZED STEEL Type 2.

Armco ALUMINIZED STEEL offers

Tight budgets are a real limitation in designing many residential and industrial structures. But Armco ALUMINIZED STEEL Type 2, hot-dip coated with commercially pure aluminum, gives you more design freedom. The reason is this special architectural metal combines the low cost of steel with proved durability for applications such as siding, roofing, panels, roof decking.

For 24 years, test panels of this coated steel have been exposed to the elements in an industrial atmosphere. Today, the base metal is still thoroughly protected by the coating. No rust has appeared.

To verify the durability of Armco ALUMINIZED STEEL Type 2 in actual service, a research survey was conducted last year. In 7 industrial areas, 55 structures were carefully checked. Evaluating the inspection, it was determined that the unpainted aluminum coating on Armco ALUMINIZED STEEL Type 2 *outlasts the coating on unpainted*



proved durability at LOW COST

commercial galvanized sheets by at least 4 to 1!

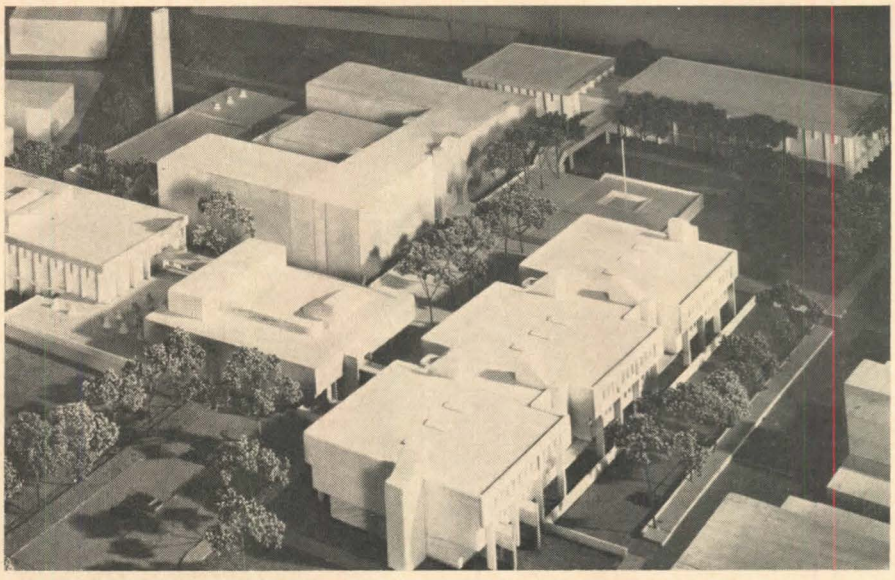
For a copy of this serviceability report and factual data on this low-cost metallic-coated steel, write us. It helps you evaluate the advantages. **Armco Division, Armco Steel Corporation, Dept. A-1573, P. O. Box 600, Middletown, Ohio.**

ARMCO **Armco Division**

TWO-SCHOOL COMPLEX FOR PROVIDENCE

PROVIDENCE, R.I. This city's flourishing redevelopment program has been carried a step further with the selection of Albert Harkness and Peter Geddes and The Architects Collaborative, Associated Architects, as winners of the recent competition for the design of the Central Classical High School project. This project, in the words of Walter F. Bogner, Professional Advisor for the program, "carries development from the heart of the city into its west side by extending urban renewal from...Weybosset Hill Redevelopment Project...into the Classical Central Redevelopment Project Area."

Use of the site was considered of prime importance by the jury, which consisted of Providence educational and civic leaders and Architects Henry L. Wright, Pietro Belluschi, William Caudill, and Alonzo J. Harriman. The winning design surrounds existing Central High with three building complexes: the Classical High academic building; its auditorium, cafeteria and gymnasium building; and the Central High gymnasium and cafeteria building. All four buildings are grouped around a plaza.



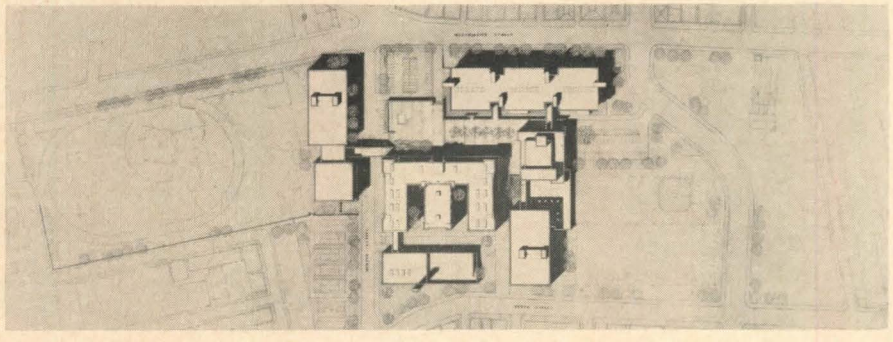
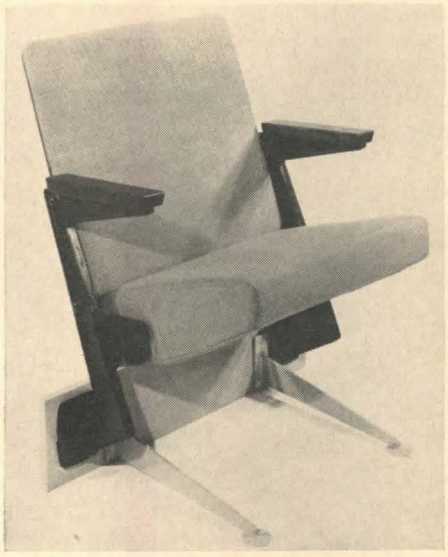
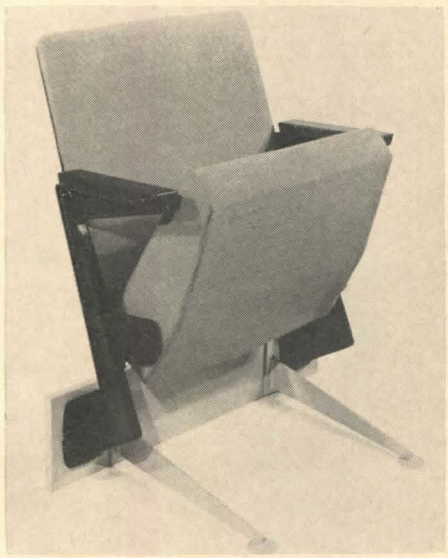


Photo: Phokion Karas

For more information, turn to Reader Service card, circle No. 315

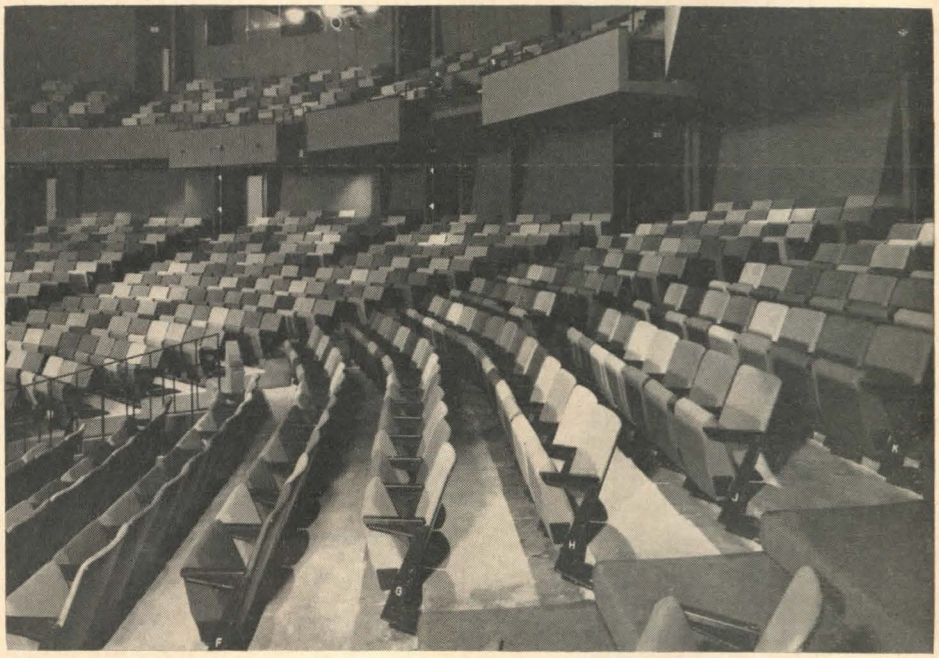
Products for Tyrone Guthrie Theatre





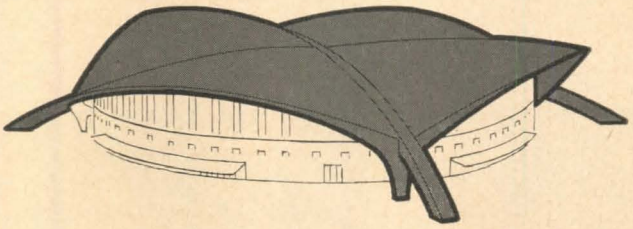
Theater chairs for Tyrone Guthrie Theater have been specially designed. Open and hanging chair conceals itself against riser. Z-shaped structural member supports seat and back. Square back consists of outer wood panel with upholstered front panel. Seat pans have large acoustical holes under seat cover to improve acoustics. American Seating Co., Grand Rapids 2, Mich.

On Free Data Card, Circle **100**

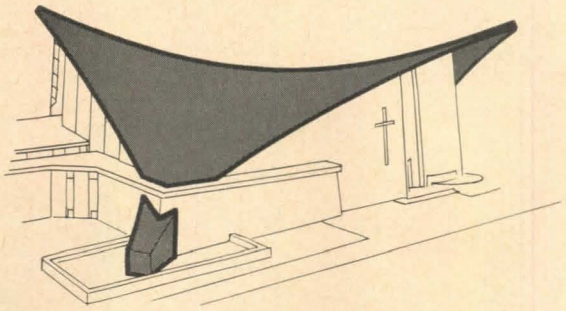


Exterior screen for Ralph Rapson's Tyrone Guthrie Theater in Minneapolis, Minn., (pp. 98-105) is about 40,000 sq ft in area. Screen structure consists of exterior grade plywood sections, securely glued and bolted to eliminate differential movement. To the screen is added a marble aggregate surfacing material called "Granolux Trowelled Marble." It is a mixture of natural marble with special water emulsion binder. Mixture is applied by trowel in two-coat application. Granolux can be applied to concrete, brick, block, plaster, and gypsum board. It follows any angle, any curve, and any contour that architect may choose. Granolux is available in 20 standard colors. Cement Enamel Development, Inc., 18656 Fitzpatrick St., Detroit, Mich.

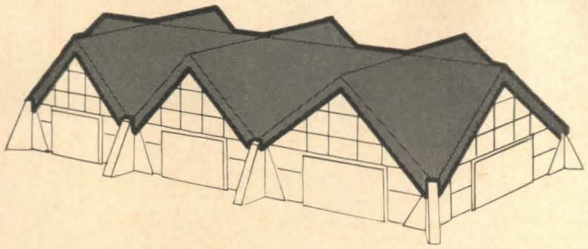
On Free Data Card, Circle **101**



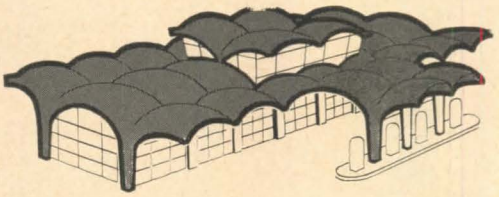
Athens Coliseum
Athens, Georgia
Arch.: Cooper, Barrett, Skinner,
Woodbury & Cooper



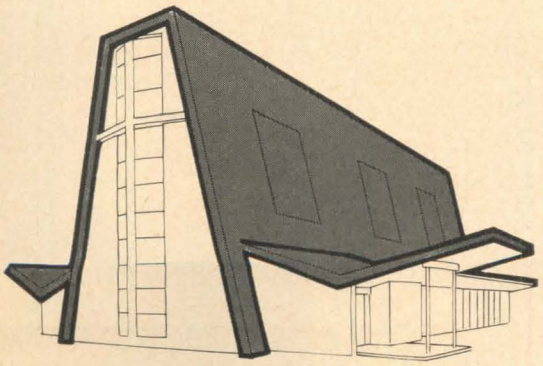
St. Charles Parish
Spokane, Washington
Arch.: Funk, Murray & Johnson



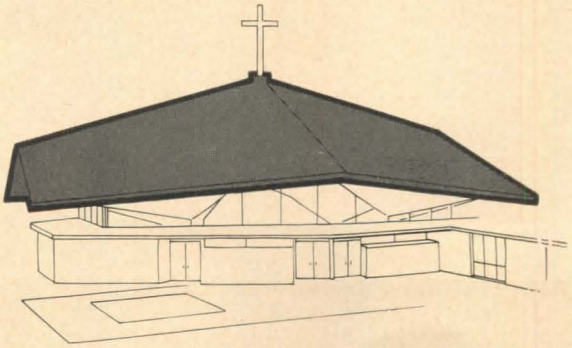
Minisa Park Shelter
Wichita, Kansas
Arch.: Claude Van Doren



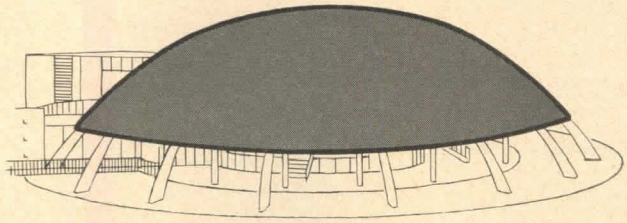
Gulf Service Station
Atlanta, Georgia
Arch.: Tomberlin-Sheetz



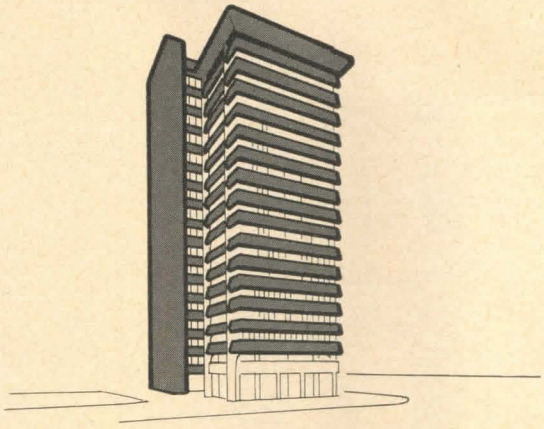
Church of Christ the King
Sioux Falls, South Dakota
Arch.: Howard Parezo



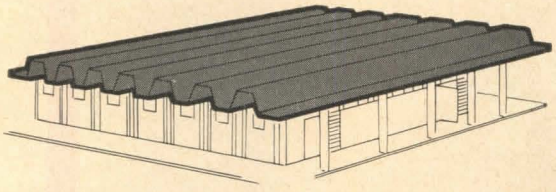
Presbyterian Church
Mercer Island, Washington
Arch.: Paul Thiry



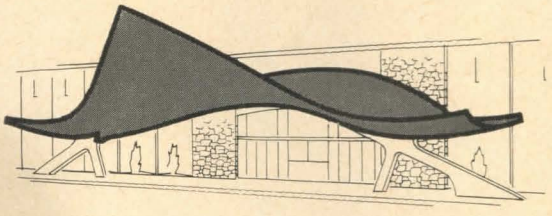
Elks Lodge No. 888
Long Beach, California
Arch.: Francis J. Heusel



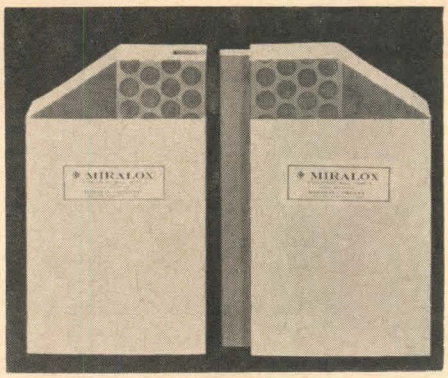
First Federal Savings and Loan
Atlanta, Georgia
Arch.: Tomberlin-Sheetz



Avocado School
Dade County, Florida
Arch.: Robert B. Browne



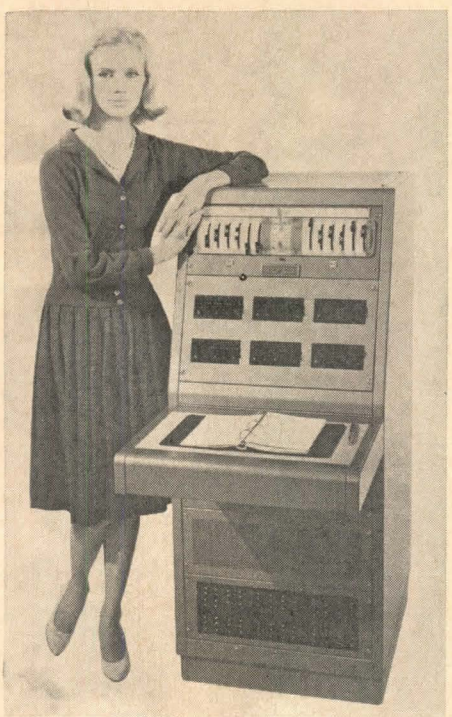
Arro Department Store
Newark, Ohio
Arch.: Frank, Lindberg and Maki



Plastic Core Panel

"Miralox" lightweight building panel consists of foamed plastic core in 3" or 4" thicknesses. Tongue-and-grooved joint permits sound and temperature insulation, expansion and contraction, and elimination of heavy battens. Standardized thickness is $1\frac{9}{16}$". Simple extrusion for erection as interior divider wall is available. Mirawal Co., Port Carbon, Pa.

On Free Data Card, Circle **102**



Lights On!

Recently developed solid state lighting control is packaged in single enclosure. "Solitrol Controlette" handles 36 kw in compact package measuring 50" high x 26" deep x 22" wide. It contains six silicon controlled rectifier dimmers, each 6 kw; control panel consisting of fadar and two presets in six control channels; circuit breaker panel; and panel area for mounting accessory load plug panels. Six types of load connections are available including terminal strips, pin plugs, twist locks, parallel blades, patch jacks, and stage plugs. Control system is ideal for use in small theaters, schools, TV studio, and similar applications. Ward Leonard Electric Co., Control and Dimmer Div., 34 South St., Mount Vernon, N.Y.

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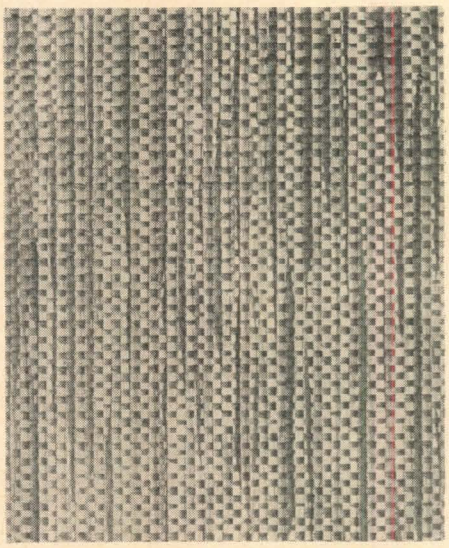


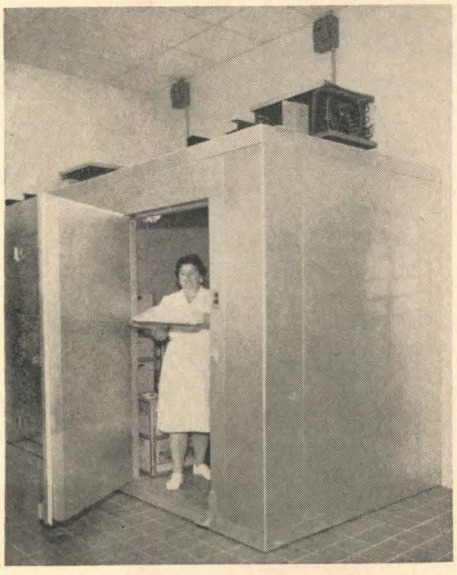
Paper Carpets

Architects who have finished new houses but have little funds left for interior furnishings will find that a "Hearthweave" paper rug will help to make the house photogenic with an expenditure of only $30 for a 9 x 12 rug. Designed by John Van Koert, the rugs are of vinyl-impregnated paper fiber that is laminated to a ¼" foam-rubber backing. Available in handsomely vivid colors, which are fade-resistant, the rugs are said to be durable for at least 6 years. Also available are other fiber rugs in plaid and twill patterns, and a variety of wall coverings resembling grass cloth. Deltox Inc., Oskosh, Wis.

On Free Data Card, Circle **104**

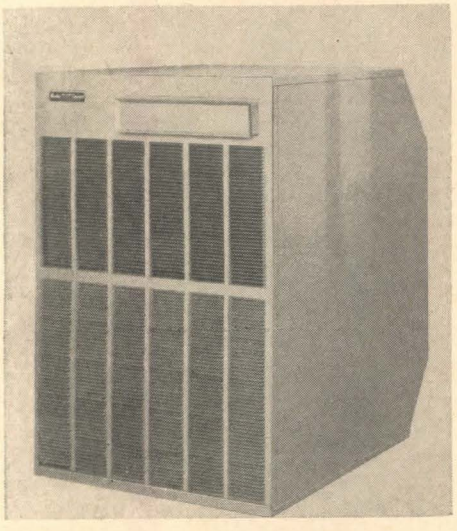
Urethane Insulation for Refrigerator Freezer

In Bloomsburg (Pennsylvania) Area Joint High School, architects Wolf & Hahn employed Bally Case & Cooler's prefab combination walk-in refrigerator freezer. Unit is insulated with "Hetrofoam," a closed-cell foamed-in-place urethane. Prefab components reduce installation costs, while urethane insulating properties practically eliminate condensation problems. Only 4" of urethane as compared to conventional 8" of insulation is employed.



Unit also features lightweight door, hermetically sealed cooling system and controls, and complete metal-clad enclosure for maximum sanitation. Hooker Chemical Corp., Niagara Falls, N. Y.

On Free Data Card, Circle **105**



Heating/Cooling for Apartments

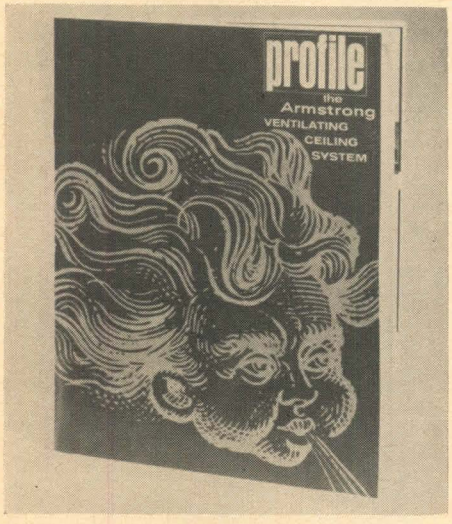
Gas heating/electric cooling apartment unit is completely self-contained, forced air unit. "Climatrol 70" is designed to fit flush with exterior wall of building. Measuring 2′ wide, 2′ deep, and less than 5′ high, unit is available in variety of heating and air-conditioning capacities. Gas heating inputs range from 37,500 to 75,000 Btuh and are AGA-approved for all gases and closet installations. ARI-rated electric cooling capacities range from 16,000 to 22,000 Btuh. Mueller Climatrol, Div. of Worthington, 2005 West Oklahoma Ave., Milwaukee 1, Wis.

On Free Data Card, Circle **106**

AIR/TEMPERATURE

Ventilating Ceiling System

Booklet, 24-pages, describes recently developed ventilating ceiling system. Conditioned air from main supply duct is fed through single stub-duct



opening into plenum above suspended ventilating ceiling. Low, even pressure develops in plenum, forcing air down through perforated ventilating ceiling tiles. Topics include selection of ventilating materials, concept of system, engineering technology, analysis of performance, mechanical design considerations, and specs. Illustrations and details are given. Armstrong Cork Co., Lancaster, Pa.

On Free Data Card, Circle **200**

CONSTRUCTION

Modular Storage Units

Manual describes modular storage wall units. They vary in height, width, and depth by modules of 6″. Rib and channel principle of construction ably protects units from effects of temperature and moisture changes as well as outside physical forces. Units are fixed or movable, placed against or partially enclosed by a wall, or left completely free-standing. When storage problems occur, architect merely specifies equipment or materials he wants placed within the cabinet unit such as shelves, partitions, drawers, trays, species of wood, door pulls, etc. Manual provides suggested unit arrangements which include classroom; arts, crafts, and music rooms; homemaking and kitchen units; laboratory; institutional; dormitory; commercial

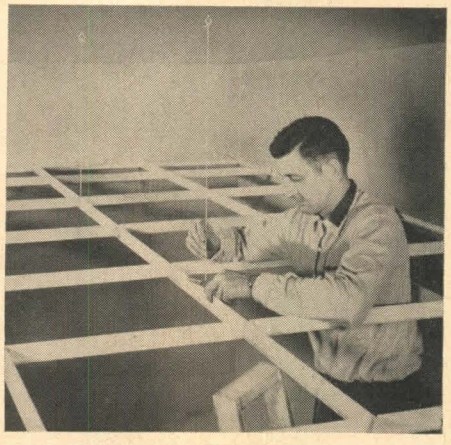
and library; and residential. Specs, illustrations, and details are given. Storagewall, Boyd-Britton Assoc., 1406 No. Sandburg Terrace, Chicago 10, Ill.

On Free Data Card, Circle **201**

Glass Architecture

Film, entitled "Point of View," illustrates practical and aesthetic importance of glass in architecture. All types of installations are depicted, including the use of glass in homes, schools, churches, offices, factories, and shopping centers. Film is available for free-loan use to architects for meetings. American Saint Gobain Corp., P.O. Box 929, Kingsport, Tenn.

On Free Data Card, Circle **202**



Suspended Ceiling System

Folder, 4-pages, presents suspended ceiling system. Grid system consists of roll-formed aluminum wall angles, main tees, and cross tees with baked-enamel finish. Entire grid system is wire-hung from existing ceiling or joists. Ceiling panels and lighting panels of glass fiber or polystyrene are available in variety of colors and designs in both 2′ x 2′ and 2′ x 4′ sizes. Folder gives illustrations and specs. Hastings Aluminum Products, Inc., Hastings, Mich.

On Free Data Card, Circle **203**

Insulated Wall Panels

Brochure, 4-pages, shows insulated curtain-wall panels. Panels utilize "Mutane," a foamed-in-place urethane core which adheres with welded strength to both faces and completely fills all voids. Insulation prevents oil-canning and gives panel high structural strength and protection from internal corrosion, moisture, fungus, and temperature extremes. Panels are available in facing materials of porcelain, ceramic, primed galvanized steel, satin finish aluminum, patterned aluminum and rigidized stainless steel. Brochure gives details, typical applications, U-factor comparison chart, installation recommendations, and specifications. Mesker, Curtain Wall Div., 6002 N. Lindberg, Hazelwood, Mo.

On Free Data Card, Circle **204**

Designing with Plywood

Booklet, 14-pages, presents structural plywood components. Stressed-skin panels, curved panels, folded-plate roofs, box beams, and straight laminated beams are described. Long span tables, design procedure charts, illustrations, details, specs, as well as references for wood design, are included. The Champlin Co., 45 Bartholomew Ave., Hartford 6, Conn.

On Free Data Card, Circle **205**

DOORS/WINDOWS

Door-Closers

Two booklets furnish information on door-closers. First booklet includes door-closer selector charts for both exterior and interior doors as well as specs. Second booklet illustrates and describes various door-closers and their accessories for both exterior and interior doors. Covers for door-closers are available in wood grains and aluminum to match paneling. Norton Door Closer Co., 372 Meyer Rd., Bensenville, Ill.

On Free Data Card, Circle **206**

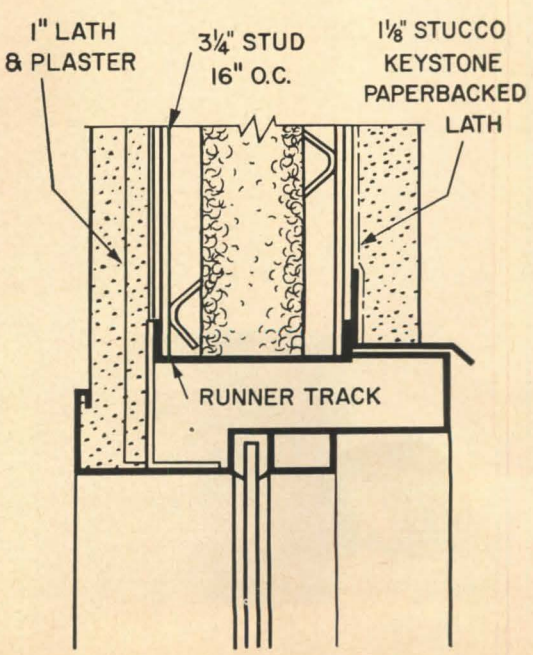
Automatic Sliding Doors

Brochure, 4-pages, describes automatic sliding doors that are unlike conventional swinging doors. They allow unrestricted two-way traffic and save

Continued on page 78

These are lighting fixtures designed by George Nelson for Howard Miller ✕ For complete information, write Howard Miller Clock Co., Zeeland, Michigan... National Distributor: Richards Morgenthau, 225 Fifth Ave., New York, Merchandise Mart, Chicago, Illinois; Fehlbaum, Berne, Switzerland; Pelotas, Sao Paulo, Brazil; Excello, Mexico City, Mexico; Weston, Bogota, Colombia.

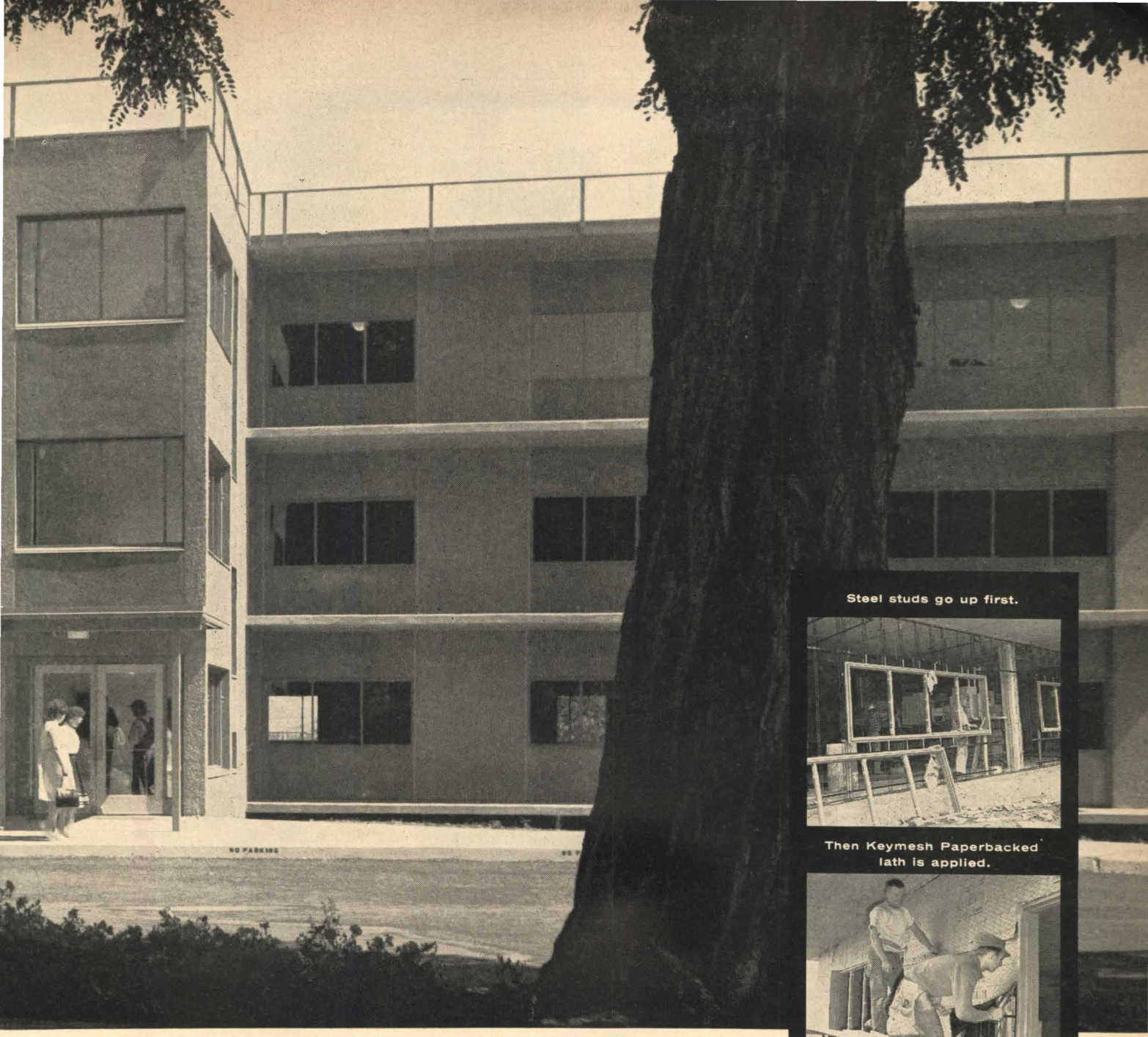
Columbia Park State Home, The Dalles, Oregon ARCHITECTS: *Mockford & Rudd, Oregon City, Ore.*



$2.00

PER SQUARE FOOT

Cost of hospital wall system of new Keystone Spraywall



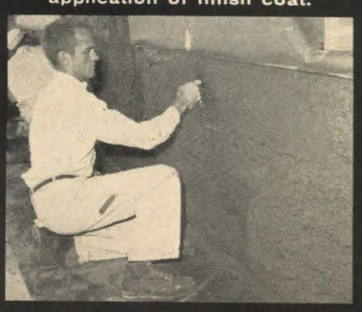
GENERAL CONTRACTOR: *Paul B. Emerick Co., Portland, Ore.* PLASTERING CONTRACTOR: *Ivan Sletta, Portland, Ore.*

Steel studs go up first.

Then Keymesh Paperbacked lath is applied.

Portland Cement is sprayed on.

Cement trowelled prior to application of finish coat.



This new construction method utilizes a simple system of metal studs, Keymesh® Paperbacked Lath and spray-on exterior wall.

It is the most meaningful breakthrough in curtain wall construction since glass and metal.

Keystone Spraywall is low cost, of course. (This hospital addition was done for $2.00 a square foot, from the plastering on the inside to the Botticini Marblecrete finish on the outside.)

Its hourly fire ratings are excellent. (The rating on this building is 2 hours.)

But more than that, Spraywall's design possibilities are endless, because of its plasticity. Using Keystone Spraywall, you can *sculpt* the walls; curve them, create hyperbolic paraboloids, shape them in any way you can imagine. Then finish them to meet your design requirement in any color, any texture, with or without embedding stones.

Keystone's new Keymesh Paperbacked Lath is the product that makes Spraywall possible.

For complete information about applying this simple system to your next job, call your Keystone Representative, or write us.

KEYSTONE STEEL & WIRE COMPANY, Peoria, Illinois

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

For more information, turn to Reader Service card, circle No. 332

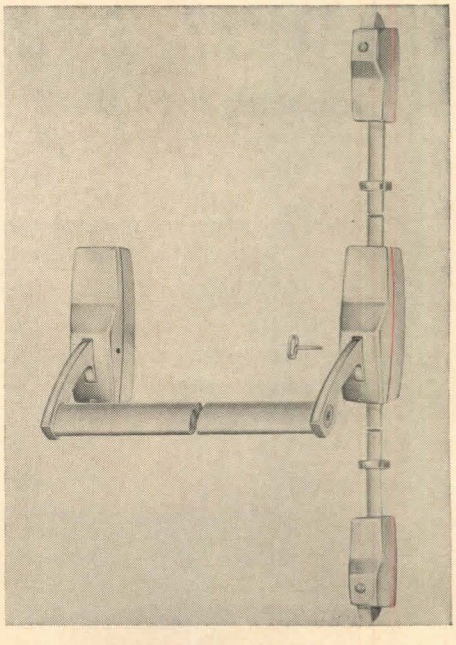
Continued from page 74

valuable display space that is lost behind swinging doors. Rails and barriers are eliminated. "Auto-Slide" is not affected by strong winds or internal pressures of heating and air-conditioning systems. Smooth sliding action eliminates turbulence caused by suction of swinging doors, thereby reducing heating and cooling costs. When power fails, doors may be pushed open to full 90°. Construction details, illustrations, and specs are given. Dor-West, Inc., 1718 Broadway, Seattle, Wash.

On Free Data Card, Circle **207**

Exit Fixtures

Brochure, 4-pages, presents recently designed exit fixtures. Reversible mortise, vertical rod, and rim-type



are shown. Fixtures are available in brass, bronze, aluminum, and stainless steel. Details and illustrations are included. Seven-page booklet that contains general specifications information is also available. P. & F. Corbin

Div., The American Hardware Corp., New Britain, Conn.
On Free Data Card, Circle **208**

Aluminum Windows

Booklet, 40-pages, covers complete line of aluminum windows for commercial, industrial, monumental, and residential use. Included are aluminum casement and combination casement types available with solid-section or extruded-tubular ventilators with metal-to-metal contact or vinyl weatherstripping. Booklet gives illustrations, sections, installation details, and specifications. Ceco Steel Products Corp., 5601 West 26 St., Chicago 50, Ill.
On Free Data Card, Circle **209**

ELECTRICAL EQUIPMENT

Glass-Fiber Lighting

Catalog, 2-pages, illustrates glass-fiber lighting fixtures. Units have inherent tensile strength, are nonshatterable, and are available in flexible sheets and rigid molded forms. Line drawings depict the various shapes offered. Voigt Co., 1634–38 No. Carlisle St., Philadelphia 21, Pa.
On Free Data Card, Circle **210**

Wiring in Electrical Raceways

Brochure, 16-pages, describes electrical wiring in hollow-core, precast-concrete floor and roof slabs. Contents include "Ways to Set In and Out of Cells," "How to Feed Fixtures from Cells," "Wiring Buildings with Center Corridors," "Other Methods Com-

monly Used for Electrical Wiring," and "High Capacity Underfloor Distribution." Detailed sketches are given. The Flexicore Co., Inc., 1932 E. Monument Ave., Dayton 1, Ohio.
On Free Data Card, Circle **211**

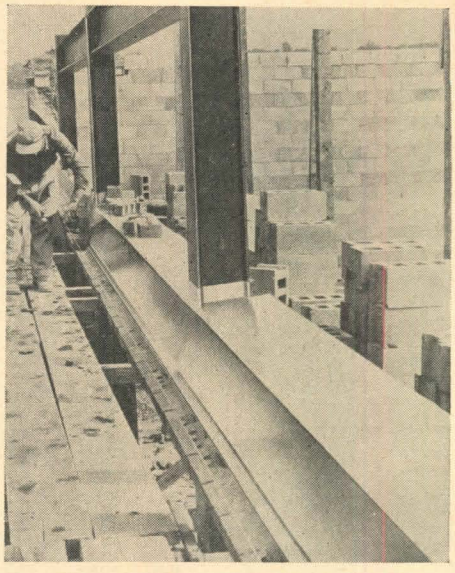
INSULATION

Fire Ratings For Plaster Insulation

Booklet, 14-pages, gives latest fire ratings for plaster insulation employed in columns, beams, girders, trusses, floors, roof decks, walls, partitions, and wood construction. Over 50 detailed drawings—together with descriptions, fire ratings, and authorities—are given. Vermiculite Institute, 208 South La Salle St., Chicago 4, Ill.
On Free Data Card, Circle **212**

Polyethylene/Copper Flashing

Pamphlet, 4-pages, introduces 2- and 3-oz. solid wrought copper flashing suitable for all concealed flashing applications. Wrought copper sheet is laminated on both sides with film of dense polyethylene. This combination provides nonstaining, alkali- and acid-resistant moisture barrier that is unaffected by temperature extremes. It is about one-third the weight of asphalt-coated metal flashing. Details, illustrations, and specs are given. Revere Copper and Brass Inc., 230 Park Ave., New York 17, N. Y.
On Free Data Card, Circle **213**



SPECIAL EQUIPMENT

Steel/Concrete Swimming Pools

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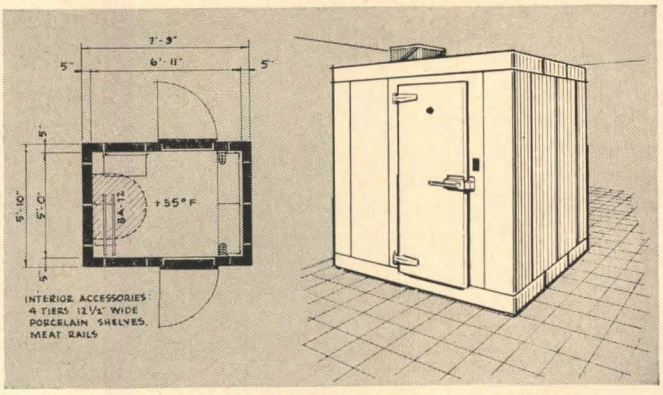

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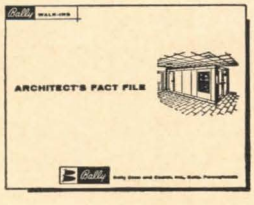

See Sweet's File, Section 25a/Ba

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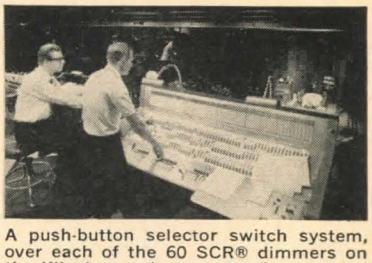

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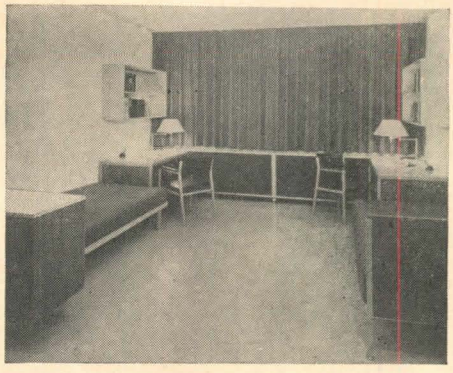

discusses maintenance of both vinyl asbestos and asphalt tile floors. Uvalde Rock Asphalt Co., Azrock Floor Products Div., P.O. Box 531, San Antonio 6, Tex.

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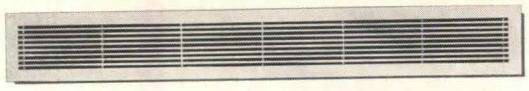

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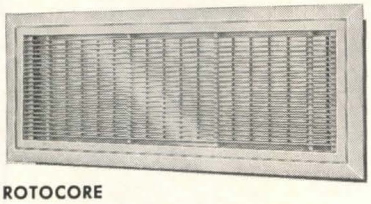

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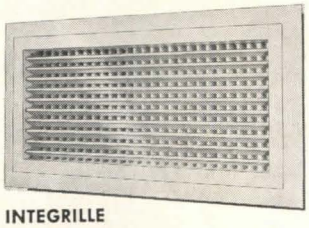

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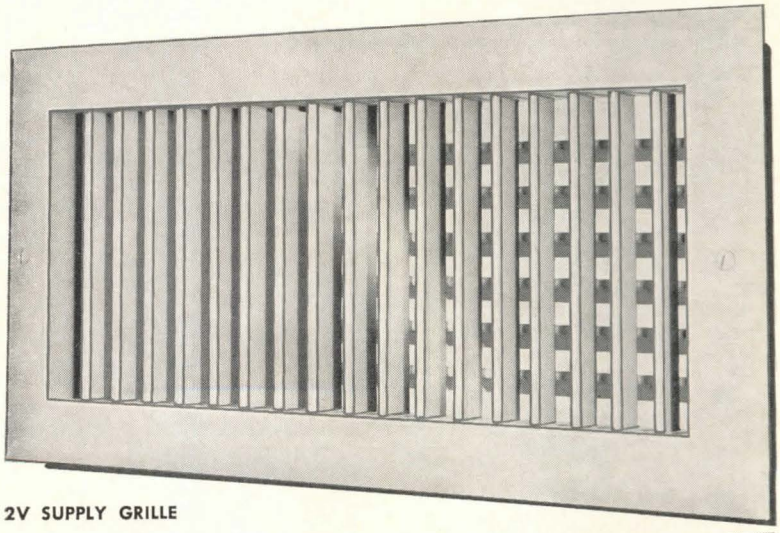

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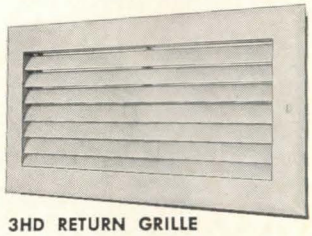

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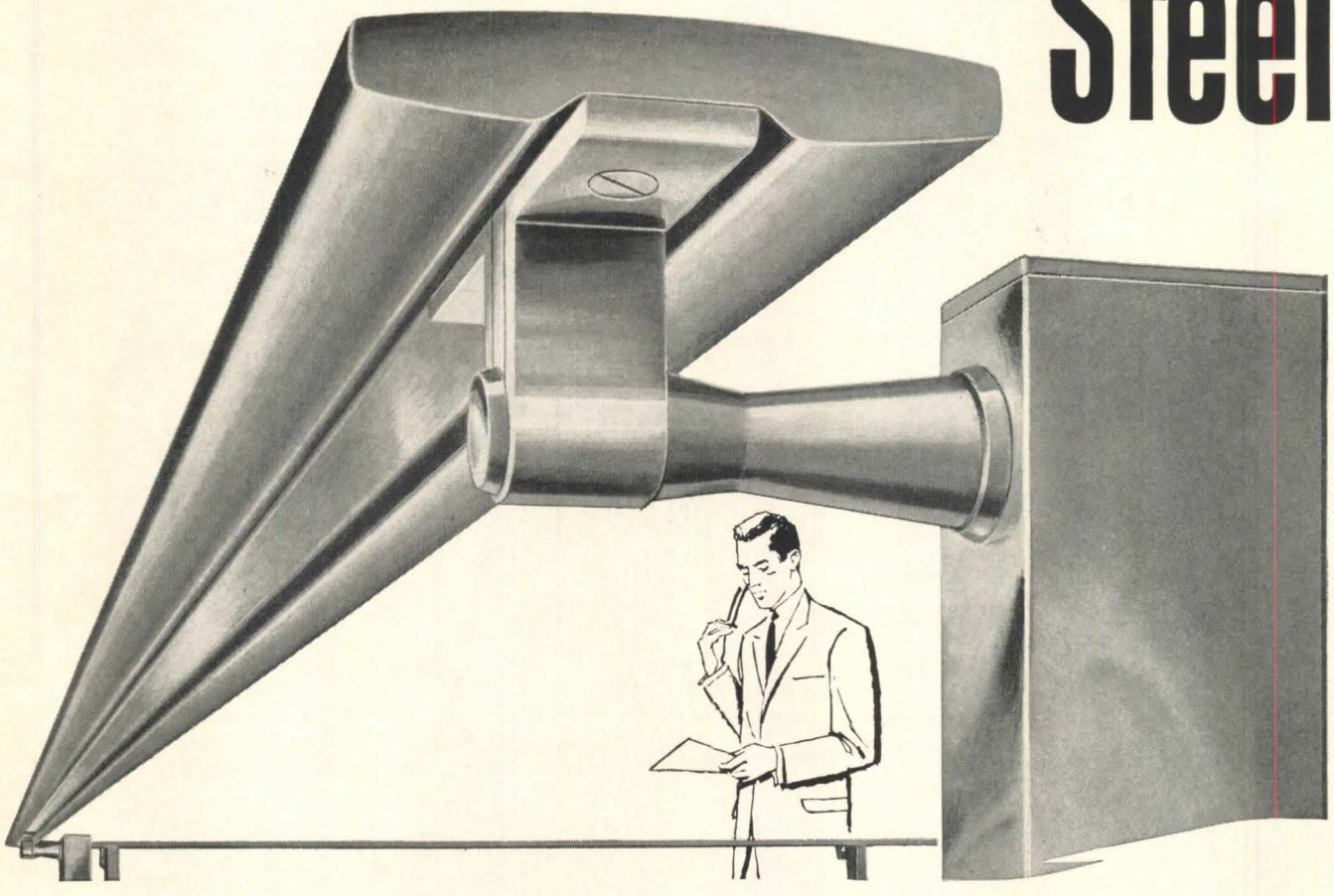

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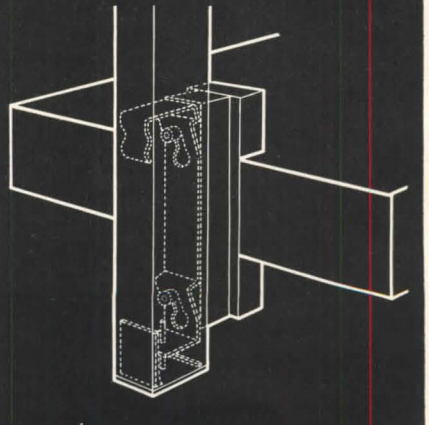

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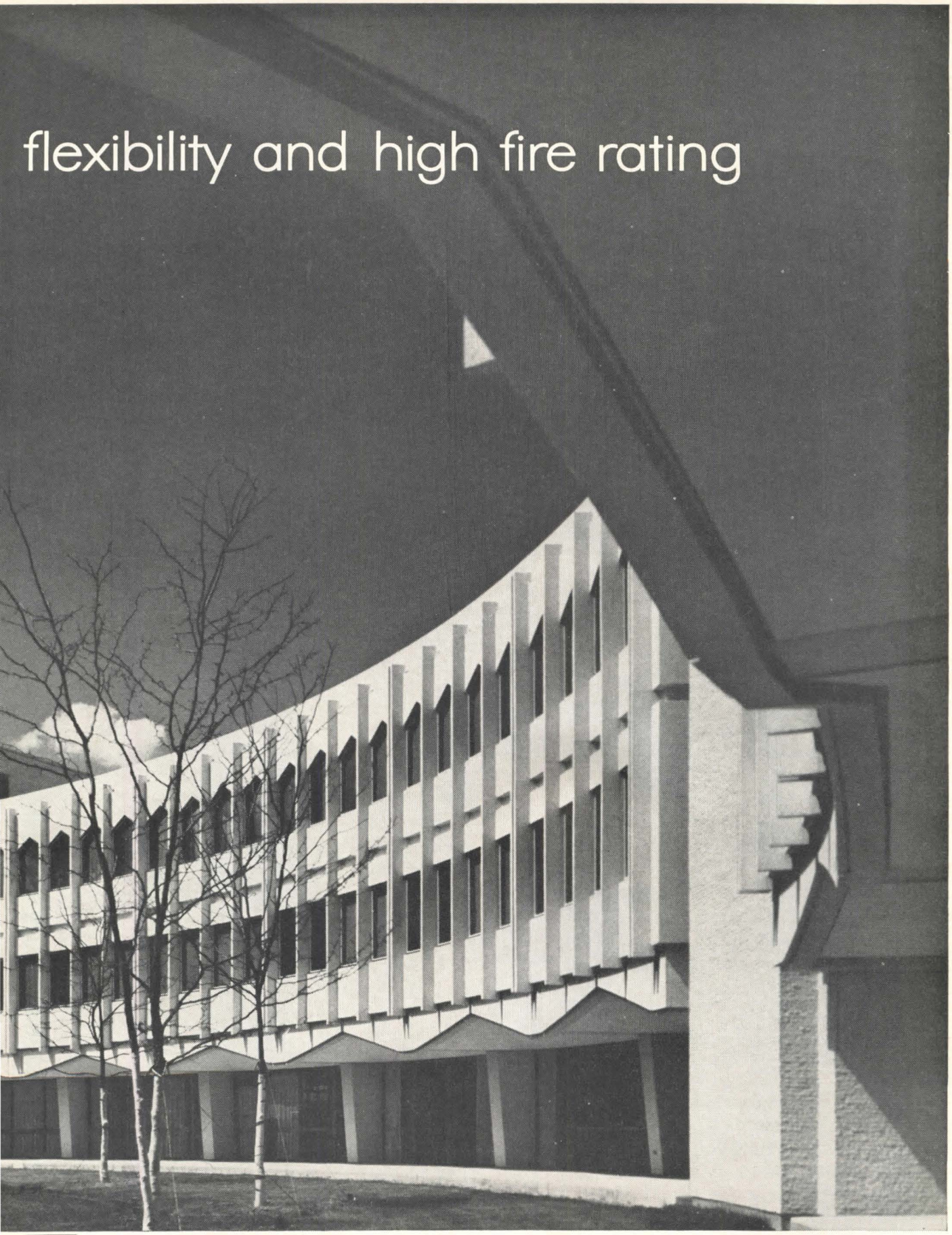

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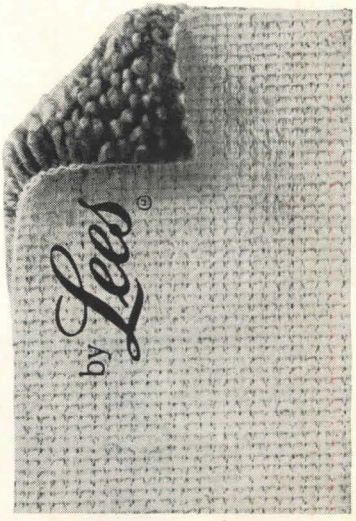

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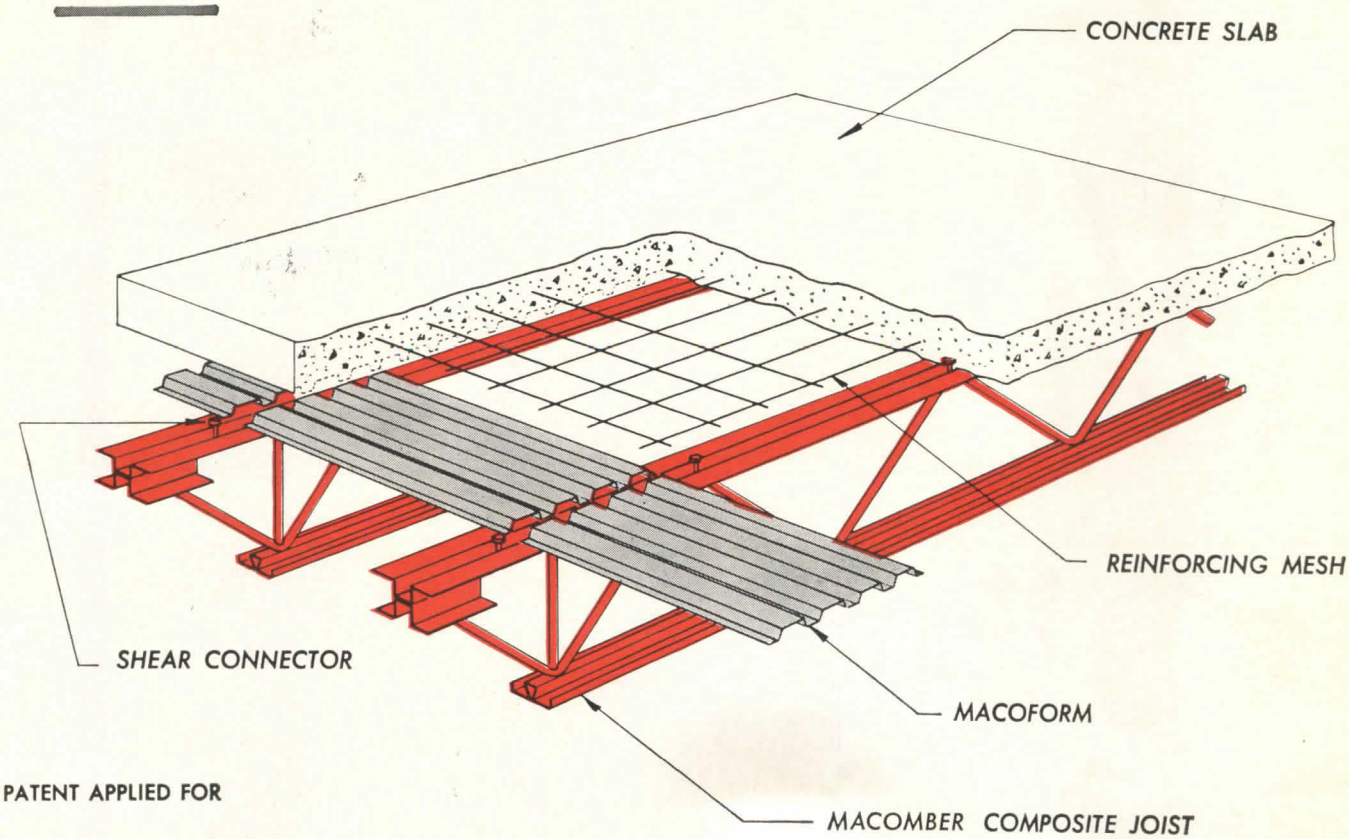

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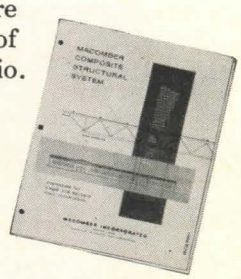

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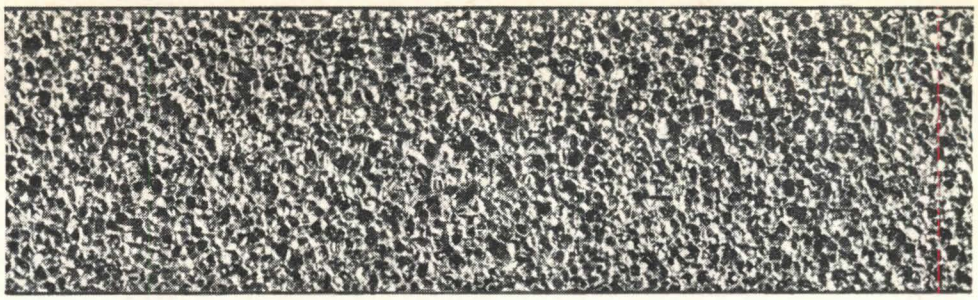

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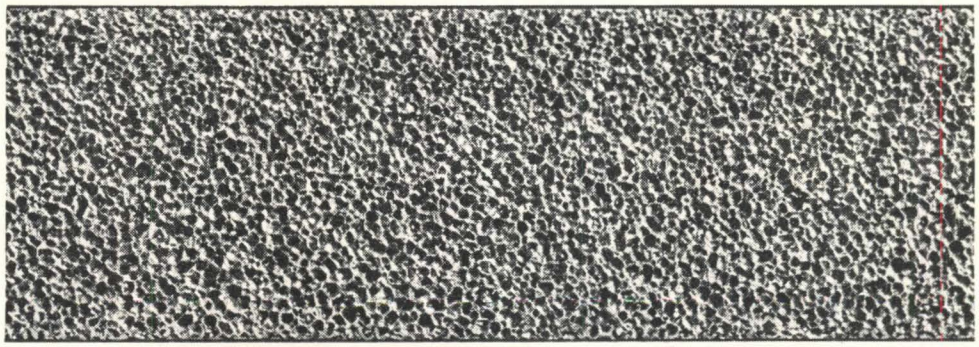

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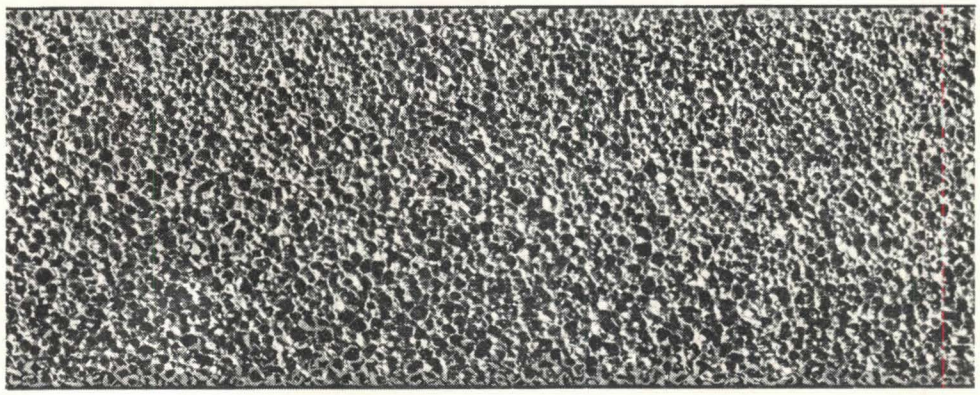
2"



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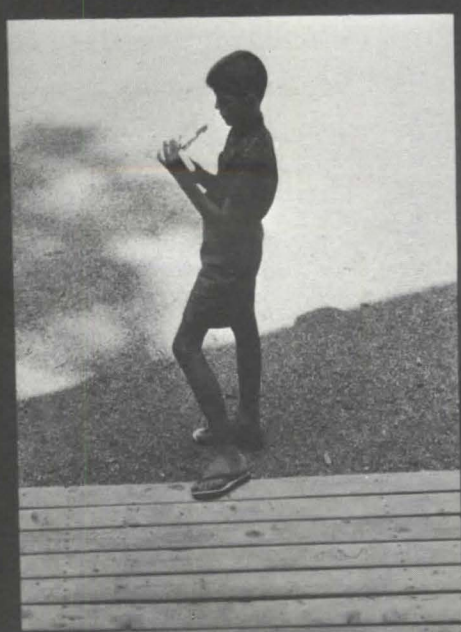


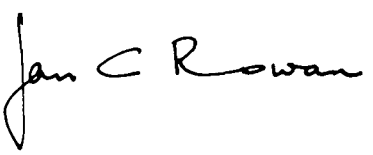
EDITORIAL

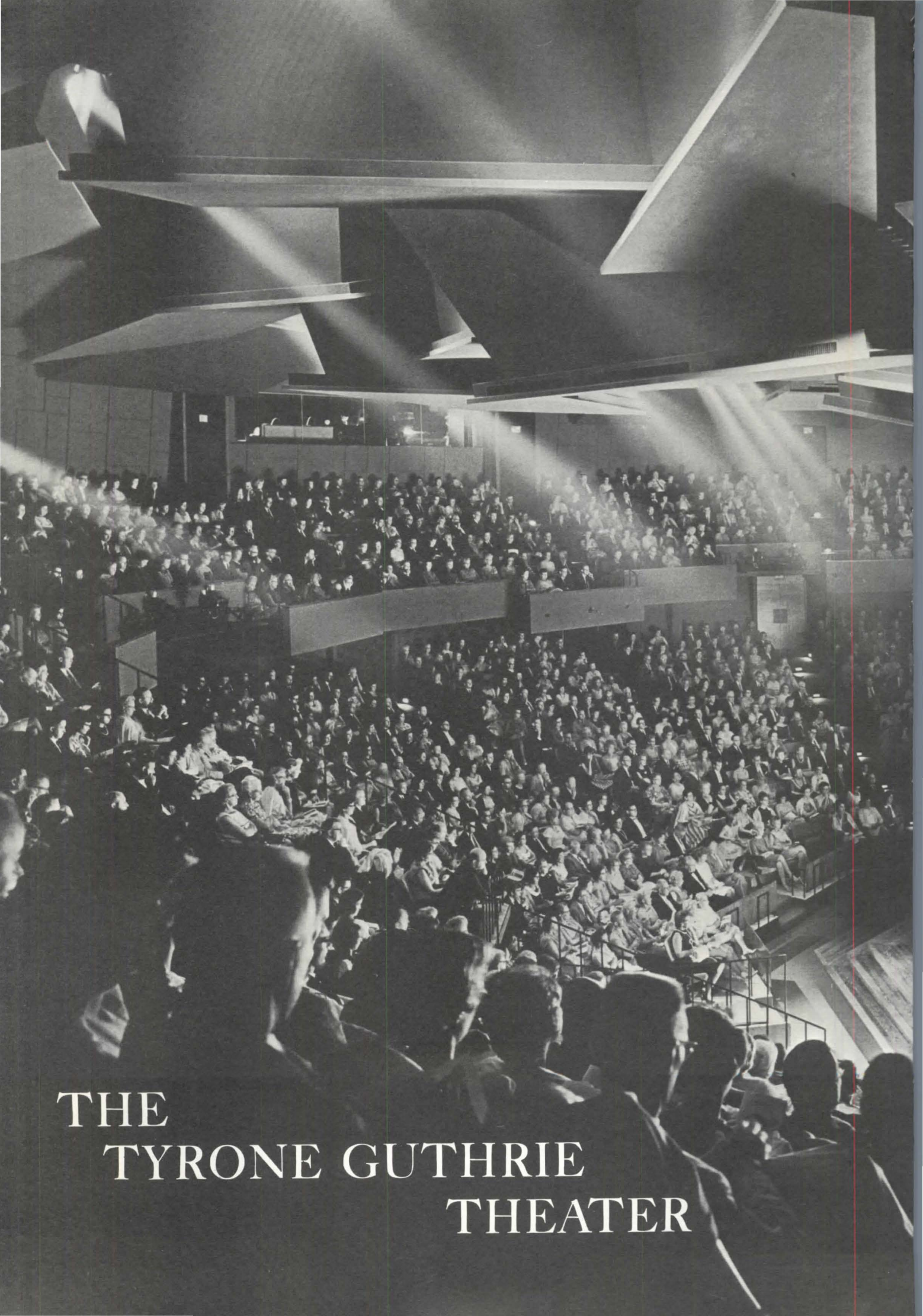
The passing of a leader is always a profoundly poignant occasion. When the passing is unspeakably unexpected, it is doubly so. We in the field of the arts have sustained a loss that must be even more sorrowful than that of the average man in the death of John Fitzgerald Kennedy.

It has often been noted that we must hark back to Thomas Jefferson, our third President, to find a chief executive who was comparably interested in the advance of all the arts. However, President Kennedy's contribution, coming at a much more complex time, can really be called incomparable. The role in this field of his widow, Jacqueline Kennedy, and her benign influence on the President, is a matter of cultural history.

The rehabilitation of Pennsylvania Avenue, the redesign of Lafayette Square, the appointing of outstanding talent to the Fine Arts Commission, the desire for a cabinet rank for Urban Affairs, the consultation with August Heckscher on fine arts, the establishment of the White House Library, and the encouragement and friendship given to countless artists in all fields, were all hallmarks of the Kennedy Administration. As any practicing politician can tell you, culture does not win votes, yet President Kennedy approached his program of a revitalized national culture with the same interest and energy he brought to other foreign and domestic programs. His interest in the arts reflected his attitude toward America's role in the world and the President's role in America—a deep sense of history and continuity combined with a bright and optimistic view of the future.

Architects and other artists seldom have such a friend in high estate. For us to fail to advance the ideals and aspirations of President Kennedy now and in the future would be to betray one who placed so much confidence in us. ■





THE TYRONE GUTHRIE THEATER

TYRONE GUTHRIE THEATER • MINNEAPOLIS, MINNESOTA • RALPH RAPSON, ARCHITECT

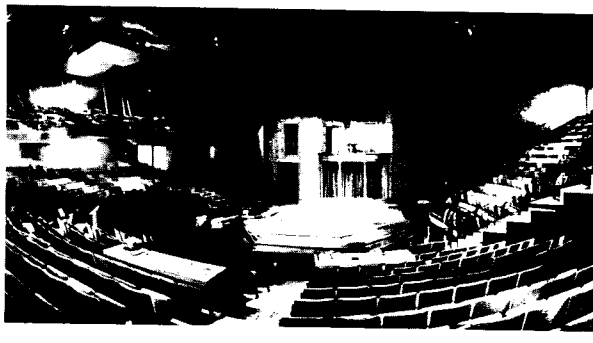
Heralded as a dream "that may liberate the professional American theater," the home of the Minnesota Theater Company —a new permanent, professional repertory company far from Broadway—is notable not only as an exemplar of civic pride and as a major step in the decentralization of professional stagecraft; it also makes a significant advance in stage and auditorium design.

"I had long been dissatisfied with the static formality of seating arrangements in most theaters," Ralph Rapson has said, "and wanted to loosen the whole space up." He consequently developed a distinctive character for the auditorium, using asymmetry consistently for the first time in the history of the drama theater.

The Guthrie Theater is a single form theater that has an asymmetrical open stage surrounded by seating on three sides in an arc of over 200°. This arrangement —a composite of Elizabethan stage and Greek seating plan—is based on the auditorium at Stratford, Ontario (*see* p. 103, FEBRUARY 1962 P/A), the basic design idea of which was the work of Tyrone Guthrie and Tanya Moiseiwitsch. But the Minneapolis theater goes beyond its predecessor: Behind the open stage is a shallow fly loft that permits the director to present his actors against a pictorial background; sliding panels can close off this rear stage. Further, the seating plan is asymmetrical.

Of the 1437 seats, none is more than 15 rows (or 54 ft.) from the stage, so that the auditorium seems intimate. Above the orchestra seating is a balcony that extends two-thirds the length of the 200° arc; in the other third, the seating is arranged in a continuous bank from the front row of the orchestra to the top of the balcony (*right side of photographs, these pages*). "Since balcony seats are often considered second class," Rapson says, "an attempt was made to eliminate this distinction by fusing the orchestra and balcony on one side."

Drama critic Walter Kerr found "this occult balance . . . lively and strangely satisfying," and he suspected that it pro-



vided a refreshing variety for actors.

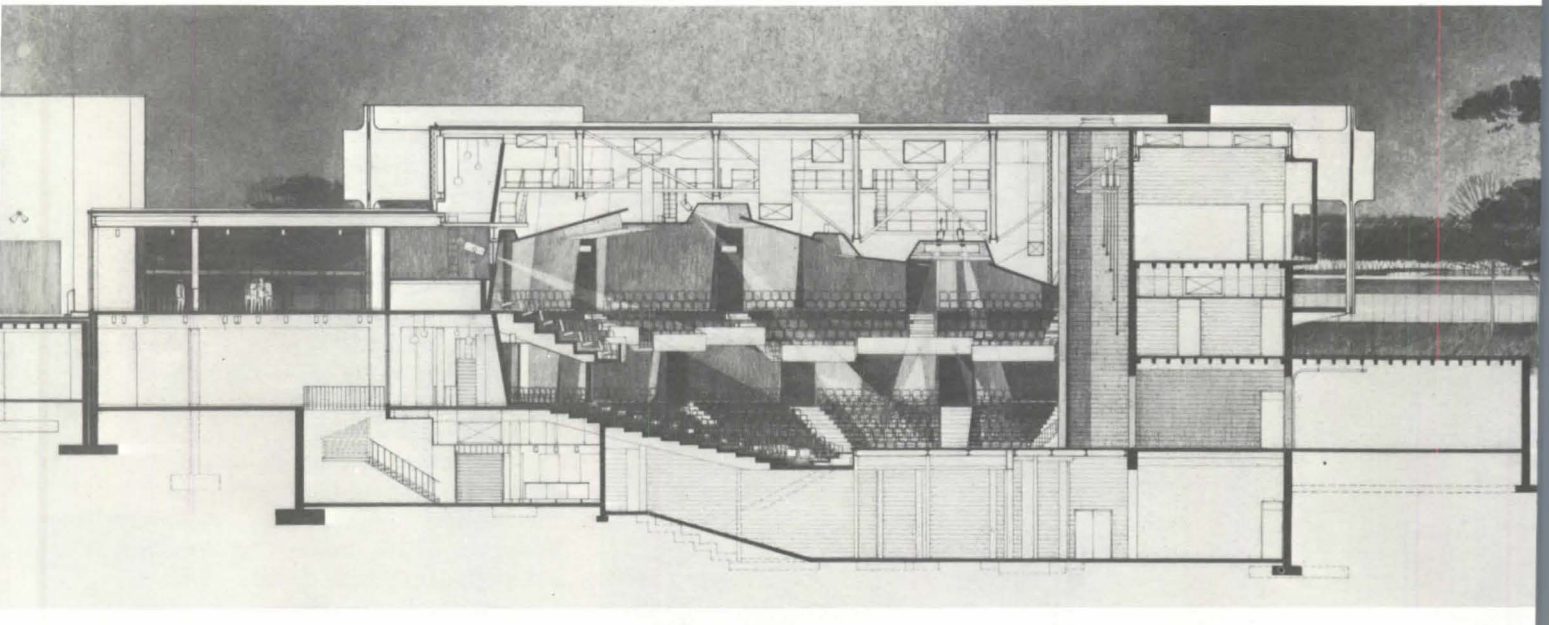
Further, the balcony is irregular in plan, as well as in section: groups of seats seem arranged as boxes—some deep, some shallow. The balcony face is correspondingly multifaceted.

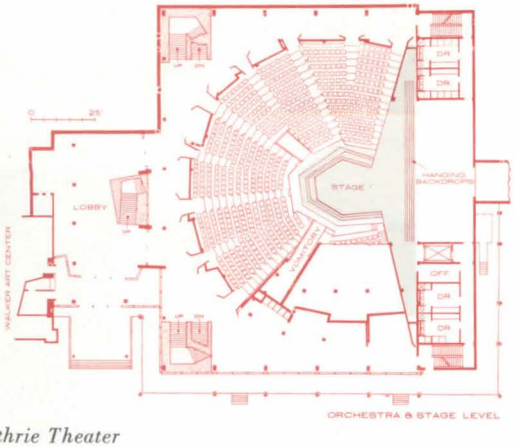
Asymmetry could be made an integral part of the Guthrie Theater since it was designed for a specific purpose and in close collaboration with the man who was actually to use it—director Tyrone Guthrie, an articulate man of strong ideas; such consultation should please architects as well as theater technicians. Rapson has noted that the design would have been far different had it not been for this stimulating collaboration.

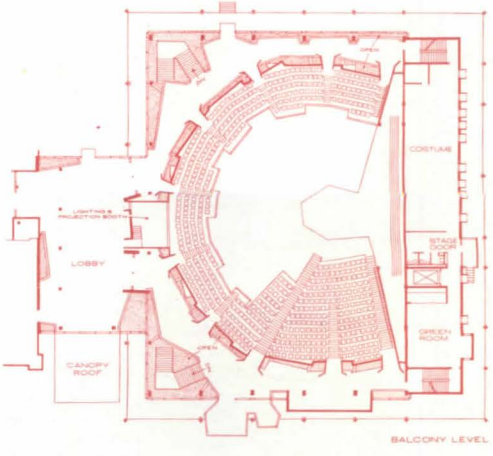
"In spirit," Rapson says, "I felt that the interior character of the house should dramatically set the scene for the performance, anticipating and enhancing a lively and stimulating event. The balanced yet dynamically unsymmetrical seating plan, the confetti-like color pattern of the seating (which is upholstered in 10 different colors), and the acoustical ceiling 'clouds' are an outgrowth of this philosophy."

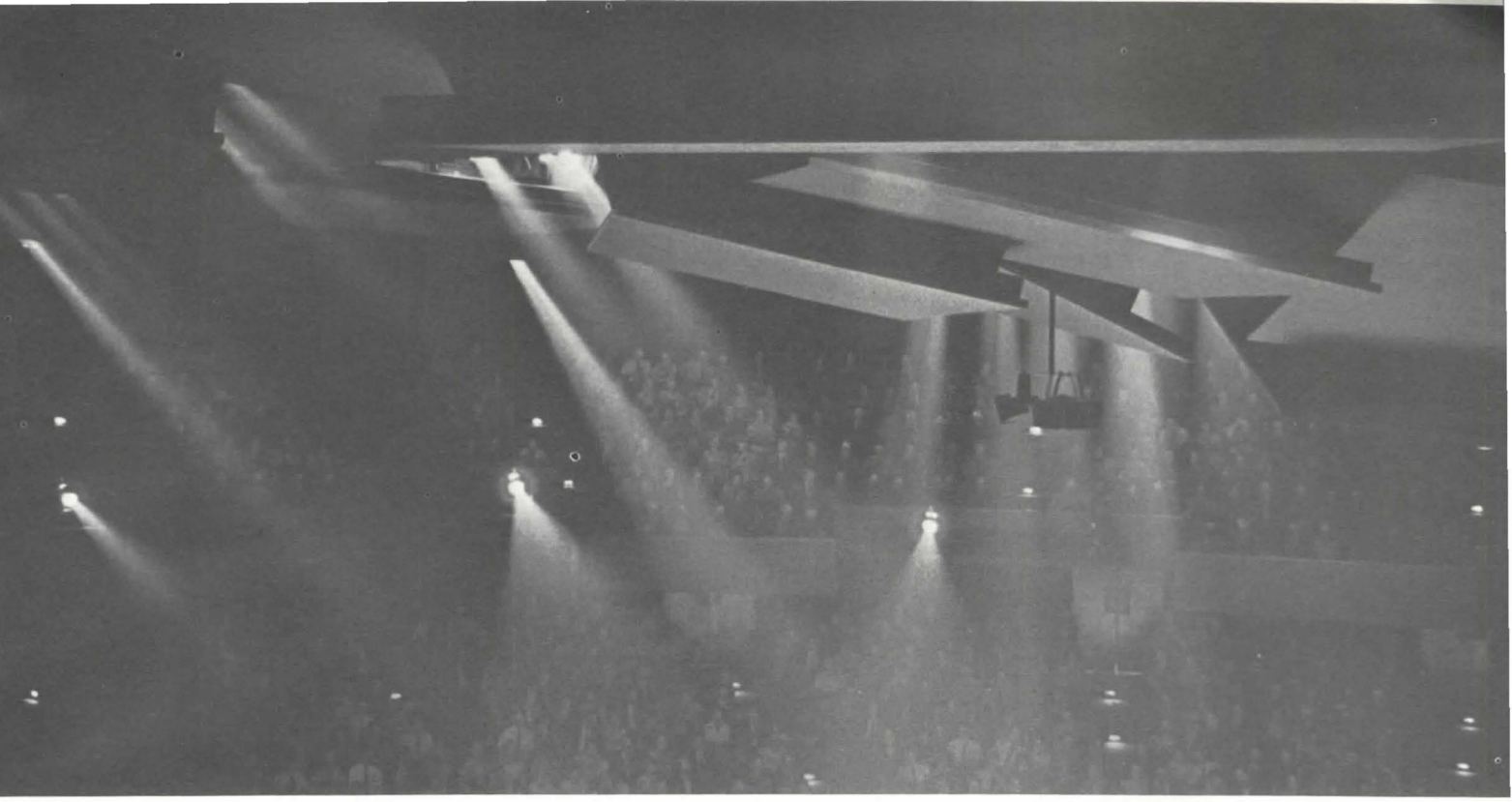
Drama critic Henry Hewes found the clouds "oppressive." Rapson, too, would have preferred to lighten the dark-gray tone of the house, but Guthrie did not want anything to distract the attention of a "congregation taking part in a ritual of delight." Still, the auditorium appropriately provides a carnival of confetti for the festival of classics on the stage.

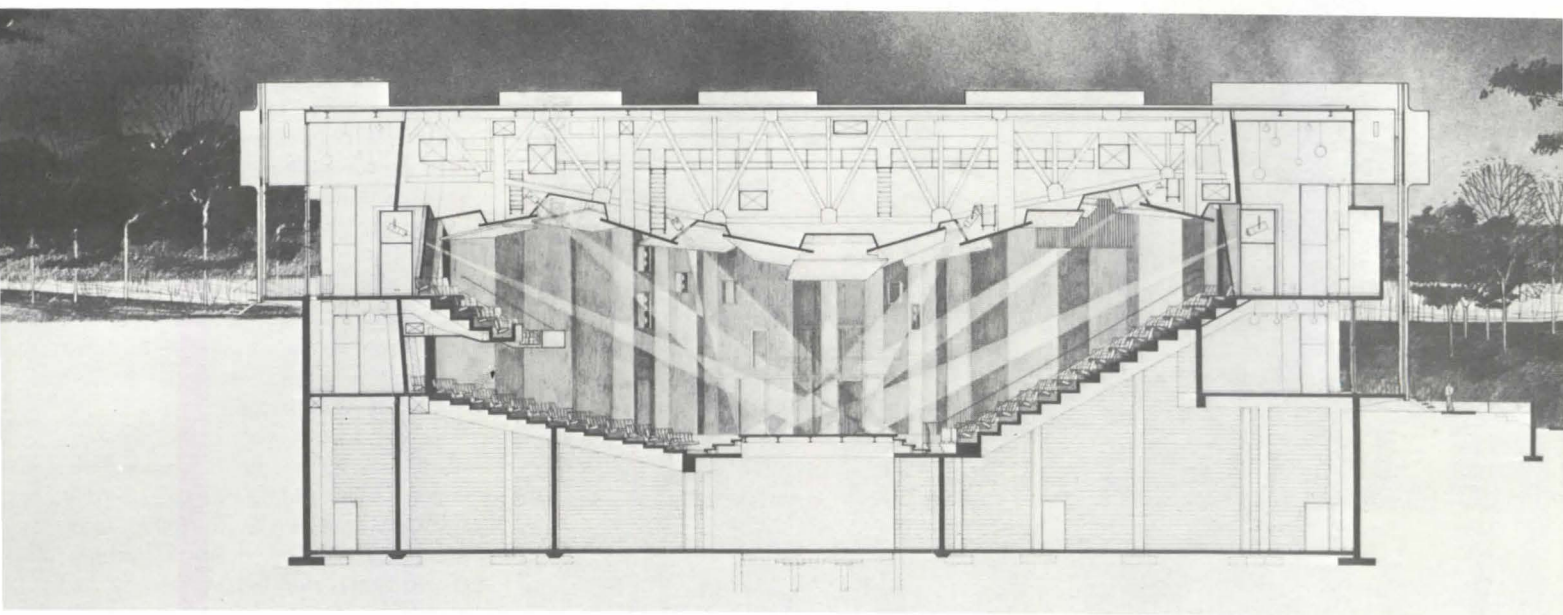
Since the Guthrie Theater was designed from the inside out, so far as function was concerned, the architect also made every effort to carry the spirit of the theater—its "interior character"—from the auditorium outward. This was expressed both in color and in form. White, unpainted lobbies—with bright red and orange doors and with charcoal carpeting—are designed as "transitional spaces" between the gray and variegated auditorium and the glass and light gray-white exterior. The asymmetry is reflected in the lobbies, first of all, by the slope of the auditorium

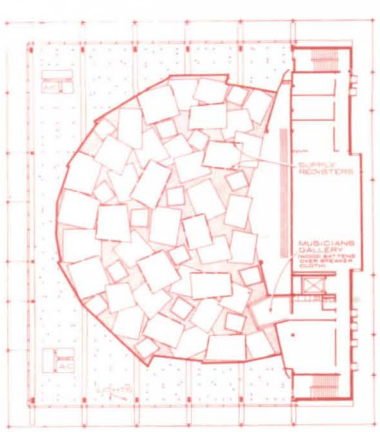




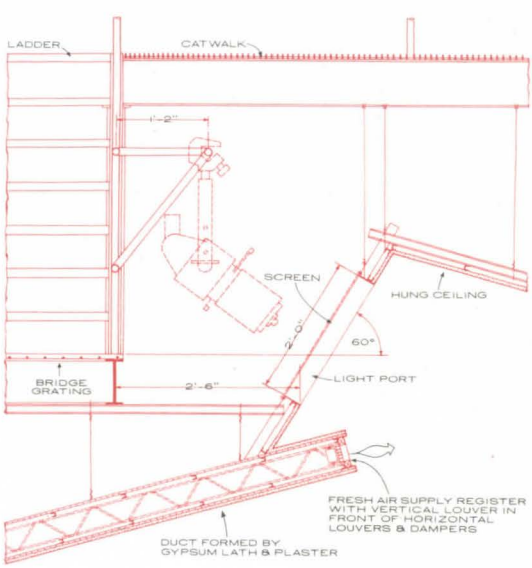


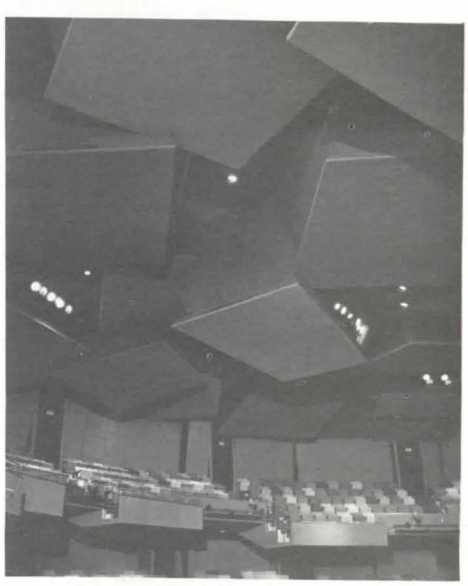


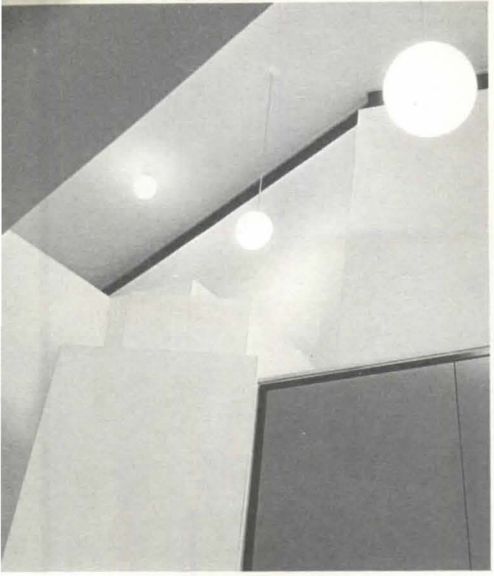




REFLECTED CEILING PLAN







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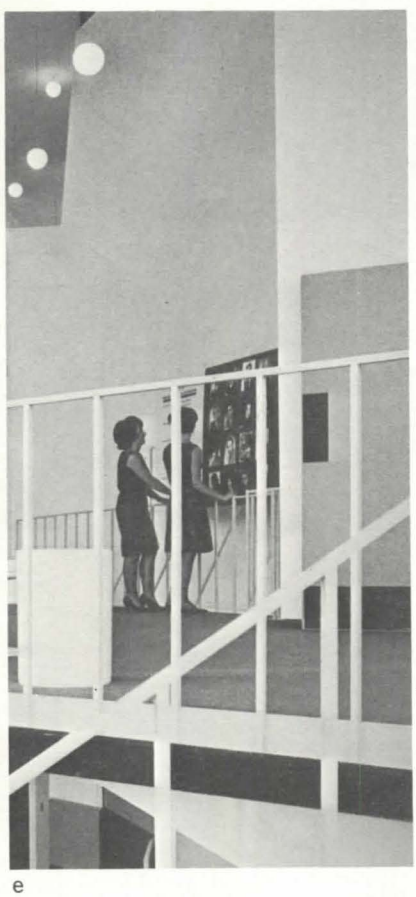

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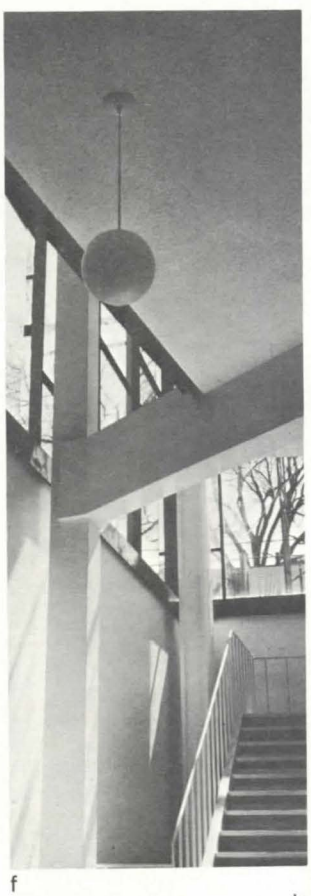

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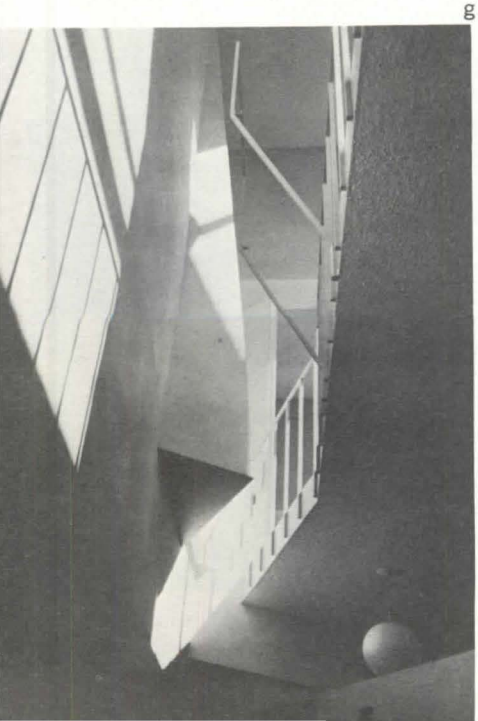


walls, which are raked on both sides—sloping outward from the first floor to the balcony level and inward from the balcony to the ceiling **(b, d,** and **h)**. The doors are designed as sound and light locks, with angled fins that also function as door stops; here the polygonal irregularity is most apparent **(a)**.

The lobby promenade on the balcony level is, as the architect sees it, "a floating concourse integrated with the lobby below." The floor of the balcony-level lobby is cut away—between the auditorium doors **(b, c, e, g)** and on the perimeter **(c, f, h)**—to permit an interpenetration of the two levels of space. Easels are installed in some of these polygonal openings to provide additional exhibition space for the adjoining Walker Art Center **(b, c, e, g)**.

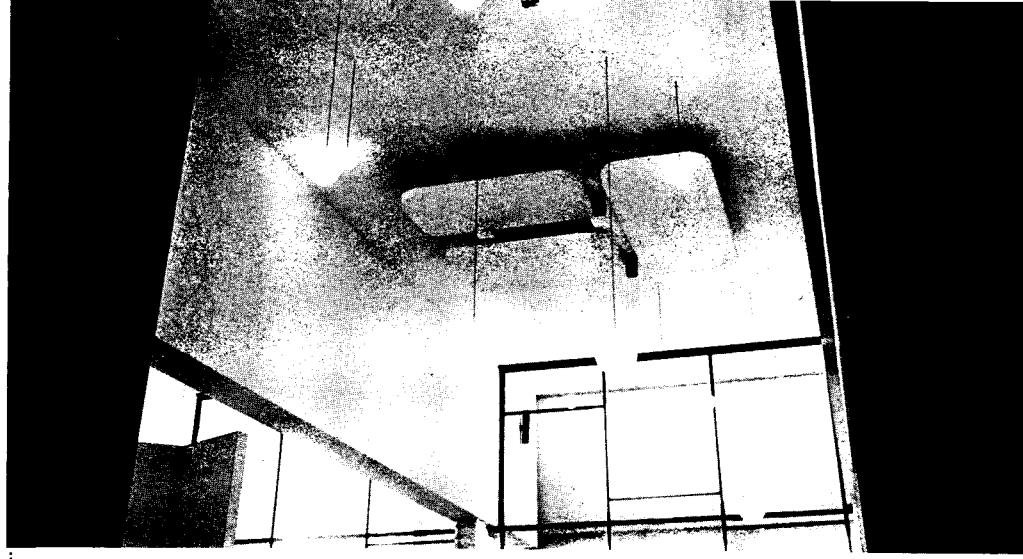
A galaxy of white lighting bubbles—what a news magazine has called "a child's army of upside-down lollipops"—is hung from the lobby ceilings at different heights in reiteration of the dappled motif of the auditorium.

"The exterior character of a theater," Rapson says, "is a highly controversial thing, and this building was no exception. In general, we hoped to provide an exciting and provocative over-all character that anticipates the delight, fantasy, and stimulation of the theater itself. The Guthrie approach to theater production is anything but conventional, and the architecture acclimates the theatergoer to this point of view."

The exterior is a composite of a free-standing screen and a glass wall behind it **(i, k, l, m)**. The screen has been thought "indefensible" by several observers. Drama critic Alan Pryce-Jones called it "in the Gruyère Contemporary style," and Walter Kerr quipped that it was designed by "an architect with holes in his façade." Arthur Drexler of the Museum of Modern Art thought it "extraneous."

However, when the Guthrie Theater won a Citation in the Eighth Annual P/A Design Awards Program (JANUARY 1961 P/A), the jury regretted that the exterior form of the building as originally de-

i



j

signed did not express enough of the excitement of the building's function. And afterwards, when, for structural and budgetary reasons (the budget was reduced by one fourth) the exterior was redesigned, the architect may have taken this to heart.

The exterior of the final design is an abstract frame of asymmetrically placed polygons and pennant-like fins **(o, p)** that reiterates the fantasia of the auditorium. Certainly a case can be made for the continuity of the spirit of the theater: it is carried by color effects such as have been described, and it is carried by forms from the polygonal, asymmetrical auditorium—where all angles are staggered and sharp—to the round-cornered abstract screen by means of the lobby spaces, where both irregularly placed round shapes and jagged forms are combined to make a transition.

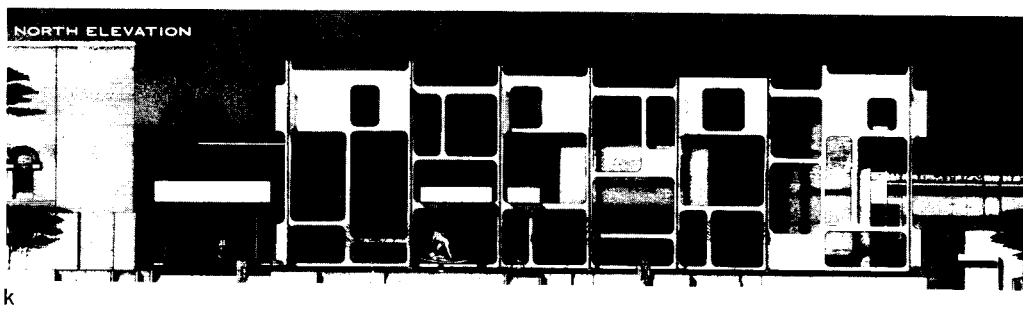
Curiously enough, the structure also makes a statement about the spirit of theater: it is multilayered, with several walls that may be comparable to the different levels of illusion and reality of theater. The audience seems to pass through the double exterior wall **(i)**, past the free-standing structural frame within **(f, h)**, and finally into the auditorium itself.

Light steel framing was employed to reduce weight and for economy. The screen is anchored to the roof trusses, which extend beyond the glass wall and which are expressed in the screen by the fins.

With pennants and banners flying and with a flurry of colorful confetti, the Tyrone Guthrie Theater is this country's most serious circus tent. And it is hoped that this distinguished effort "in the Midlands of America" may inspire "the incurable invalid of Broadway."

The Project Coordinator for the architect's office was Gene Stuart Peterson. Structural Engineers were Meyer & Borgman, the Mechanical Engineers, Oftedal, Locke & Broadston. The Acoustical Consultant was Robert F. Lambert. The cost of the theater was $1215 per seat.

For sources of illustrations, see page 178.



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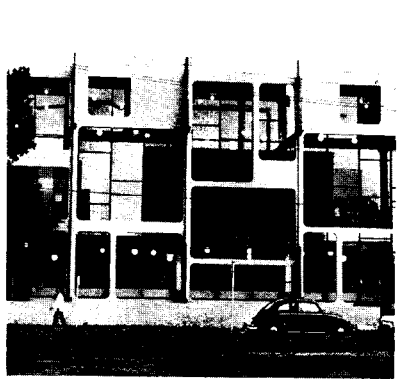

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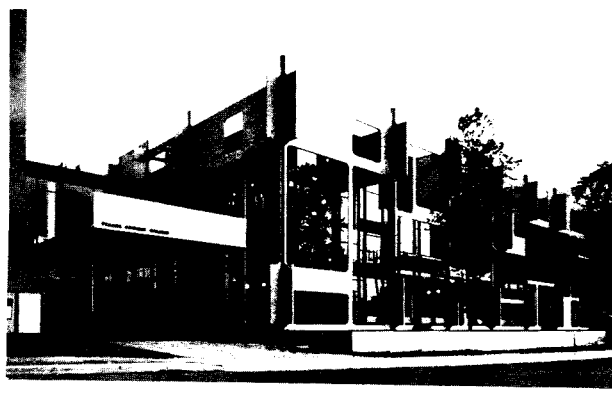

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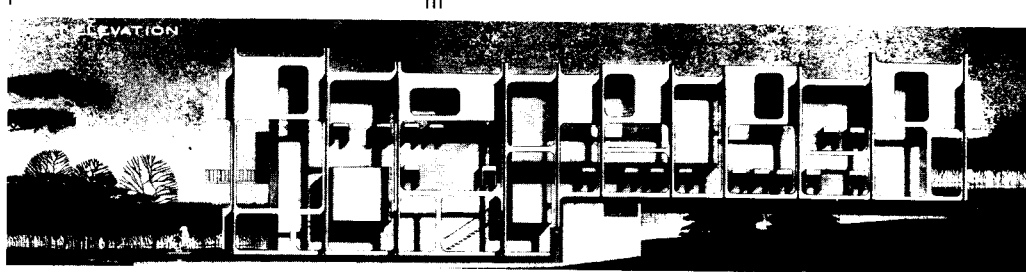

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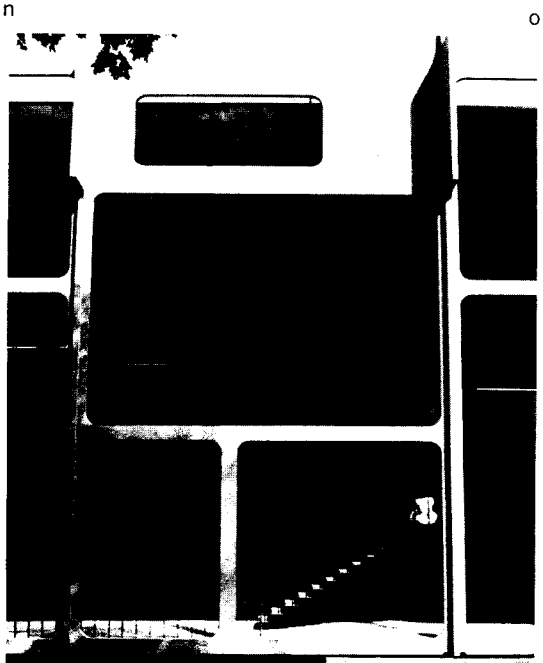
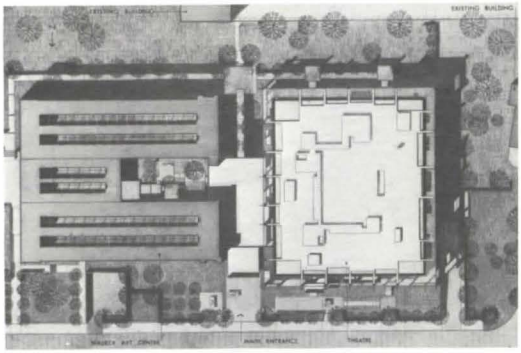
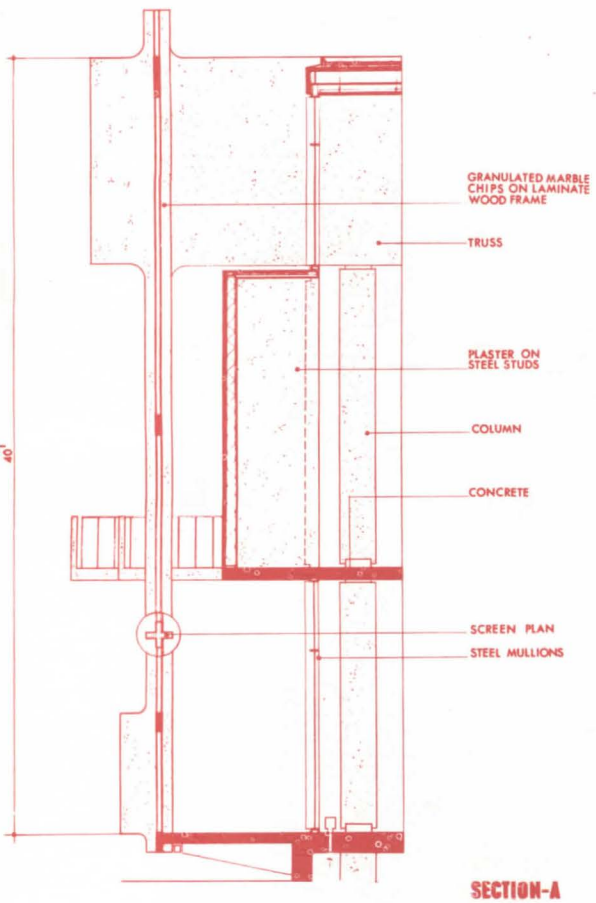




Because of the extremely unstable nature of the subsoil, and because of possible damage to the adjacent Walker Arts Center (left of plan, above), *it was imperative to use lightweight materials, thus ruling out construction of the screen in precast concrete as intended. It was finally built of marble and granite aggregate with a plastic binder on a laminated wood and plywood frame, its appearance similar to concrete. Rapson felt "that if the shape of the house could be seen through a glass wall and framed by a screen, this would be superior to an obvious theater shape." He finds that the festive and gala effect at night, with people promenading, is exciting from within and without.*

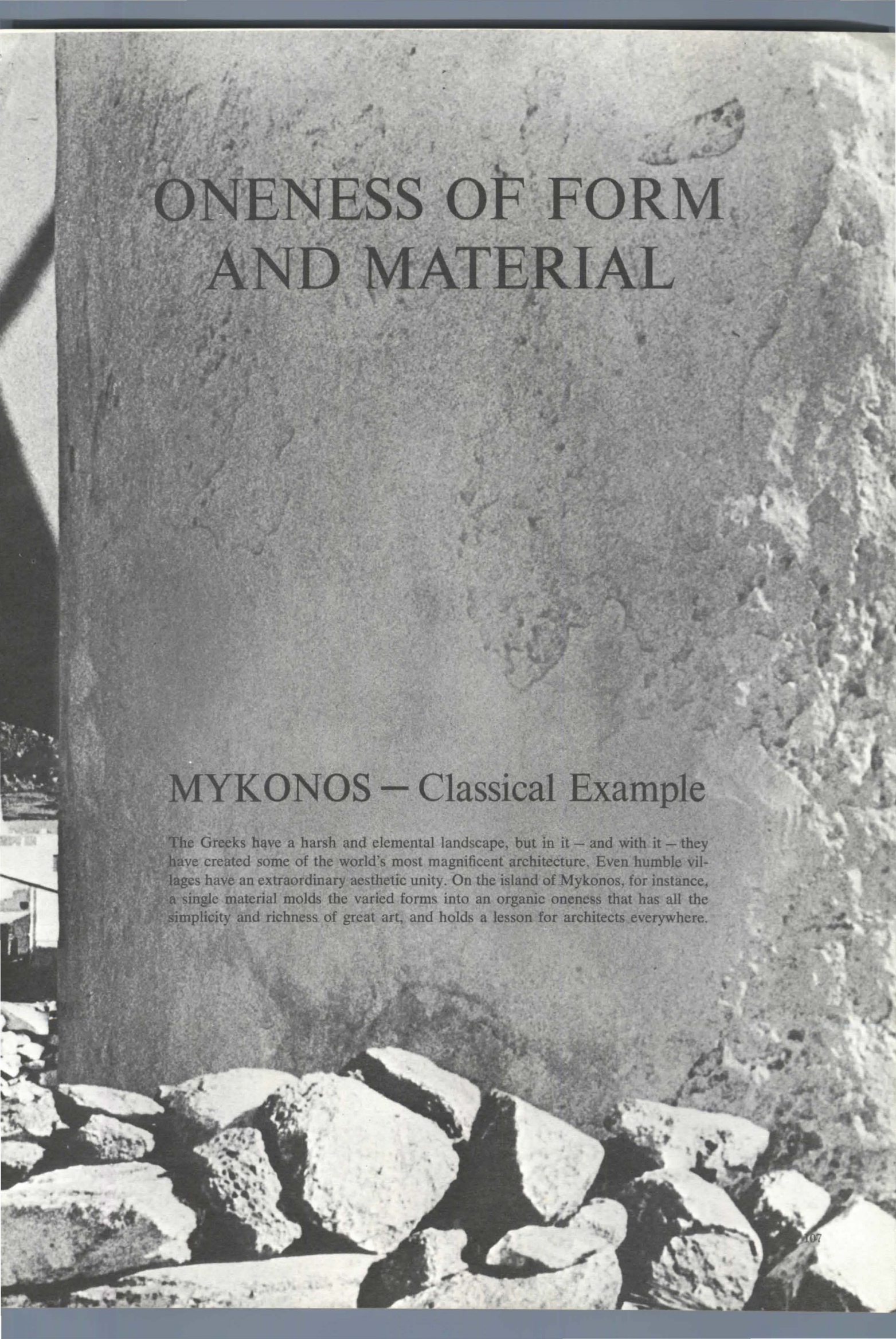


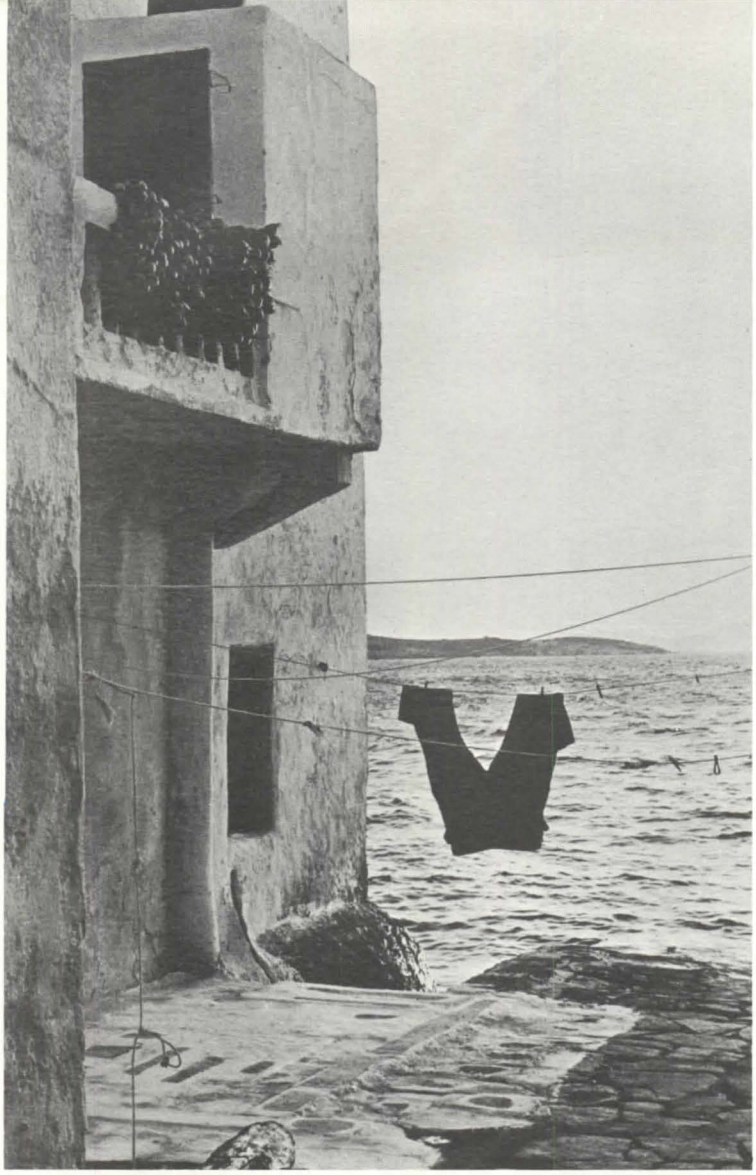
SECTION-A

ONENESS OF FORM AND MATERIAL

MYKONOS – Classical Example

The Greeks have a harsh and elemental landscape, but in it – and with it – they have created some of the world's most magnificent architecture. Even humble villages have an extraordinary aesthetic unity. On the island of Mykonos, for instance, a single material molds the varied forms into an organic oneness that has all the simplicity and richness of great art, and holds a lesson for architects everywhere.

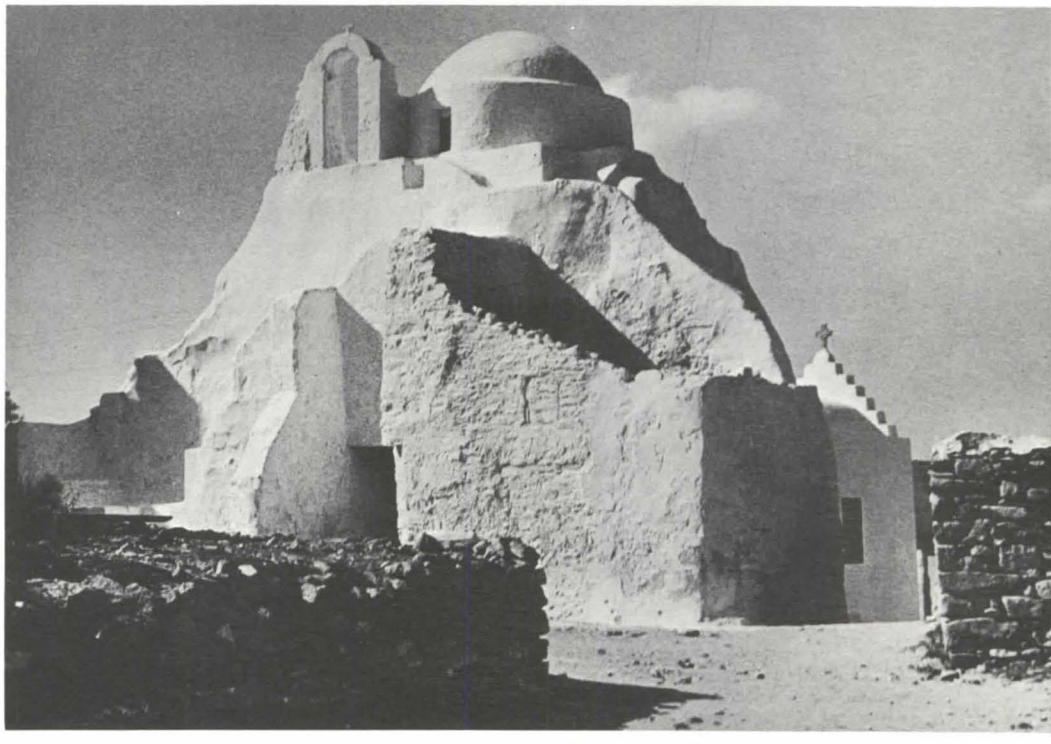


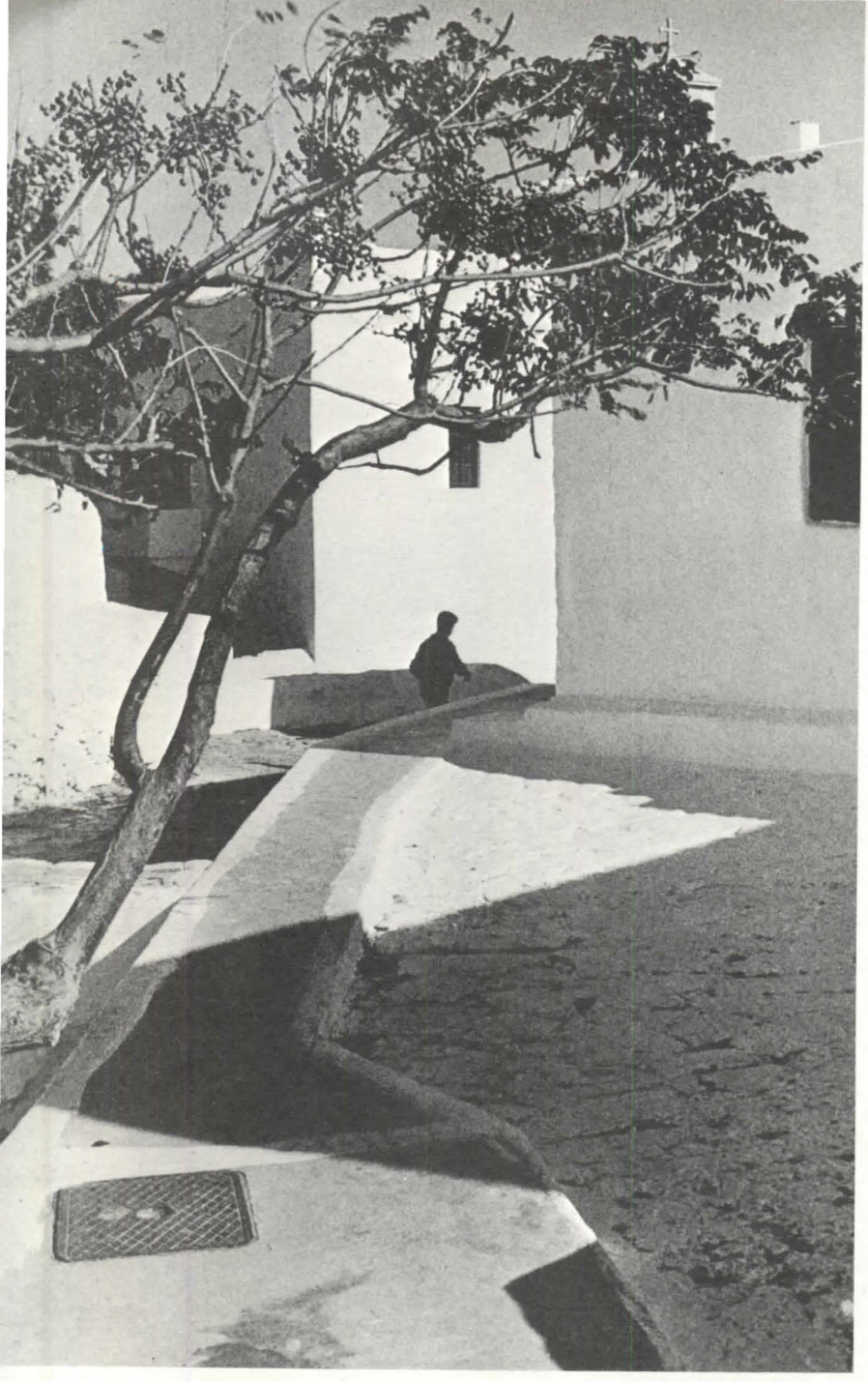


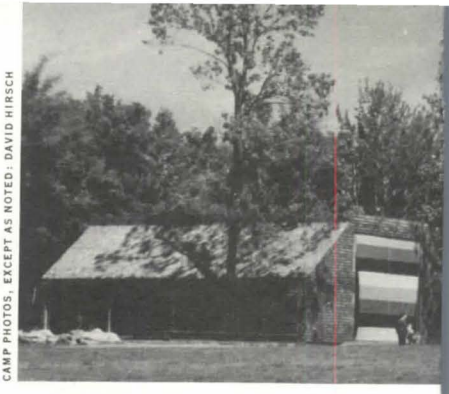
PHOTOS: ALFRED J. HADDAD

Le Corbusier was deeply influenced by Mykonos, with its "cubes, cones, spheres, cylinders, pyramids . . . the great primary forms" of the new architecture. The affinity between his Villa Savoie and the geometry of Mykonos is obvious,

and in the spreading forms of the island's largest church can be seen the later sculpture of Ronchamp. Le Corbusier also marveled at the bright whitewash with which houses and pavement alike were continually and proudly renewed. "A true culture," he wrote in 1936, "manifests itself in fresh color, white linen, and clean art." The brilliant white not only unifies a variety of forms; it also distinguishes this artifact, the city, from the rugged granite of the surrounding landscape. The island is rocky and treeless, swept by winds whose force is felt even in their names— a "chair wind" or "table wind" will overturn furniture, a "bell wind" will set bells to ringing. It is the winds that are responsible for the existence of more than 350 small churches; many were built as votive offerings by sailors and fisherfolk who survived the violent storms of the sea. But if religion is thus a family matter, and domestic in scale, there is nevertheless a hierarchy by which the chapels are set apart from other buildings. In a town of rectangles and cubes, the chapels are domed, vaulted. In a community of gleaming white, they alone have colorful roofs of red and blue. And in streets where a line of row houses meanders along, a church will suddenly stand free and announce its separateness— functional and physical. These distinctions, however, are subordinate to the over-all unity— a harmony of simple forms and a single material.

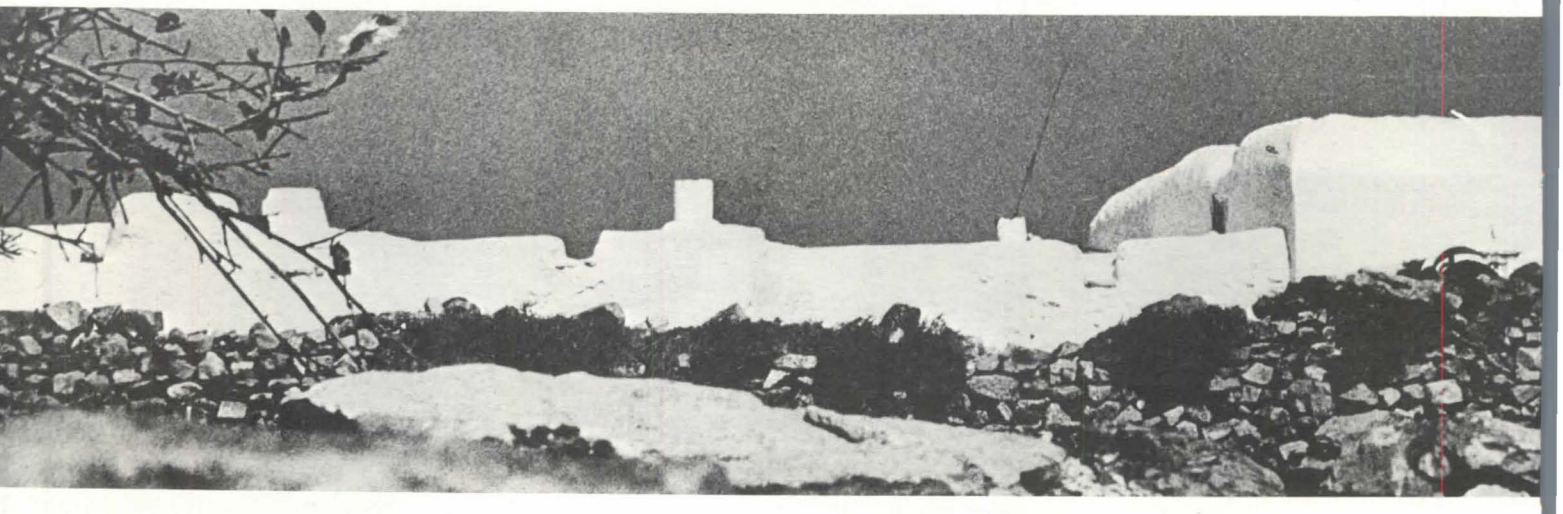






CAMP PHOTOS, EXCEPT AS NOTED: DAVID HIRSCH

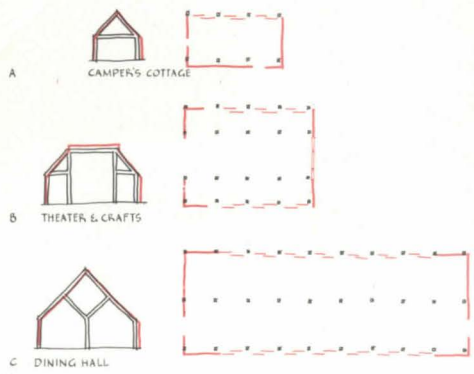
It is difficult to trace
the derivation of the architecture
of Mykonos.
Its winding alleys were an attempt
to confuse pirates;
its buildings are an evolution
over several thousand years—
an instinctive response
with local materials and methods
to local climate and conditions.
To transplant an architecture
so totally derived from
and responsive to its environment
is, of course, impossible.
But there is a more universal
meaning to Mykonos.
Without using the same forms
and materials, it is still
possible to capture its spirit.
And it is this spirit—
the fluidity of space,
purity of form, simplicity
of construction, and above all
the individuality of the parts
within a larger harmony—
that Barnes has brought
to a children's camp
in New York State,
shown on the following pages.



HIDDEN VALLEY
— Contemporary Interpretation

Edward Larrabee Barnes, a recent visitor to the Greek islands, believes that Mykonos, in particular, has vitally influenced his architectural thinking. He has consciously attempted to apply the lesson of Mykonos in the design for Hidden Valley, where forms and spaces of his campers' village (*below*) are clearly reminiscent of the Mykonos square (*facing page*), and comparable distant views reveal the same unity between the natural and man-made environment.

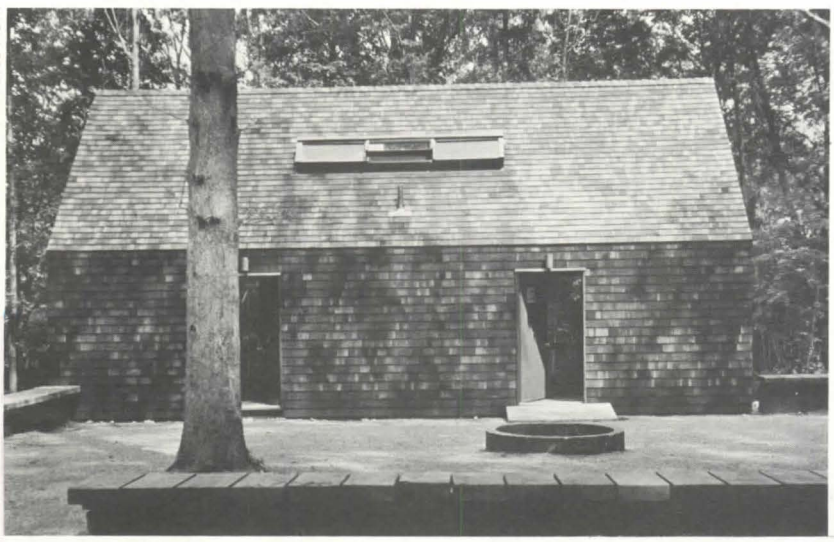
PHOTO: NOEL YAUCH



A large wooded mountain tract near Fishkill, New York, is the site of this summer camp for physically handicapped children run by the New York Herald Tribune Fresh Air Fund. Several other camps, located on the same tract, and also designed by Barnes, have been invaluable in providing the architect with the opportunity to experiment with structures of various kinds, and particularly with the grouping of structures. The latest in this series, however, is undoubtedly the most significant.

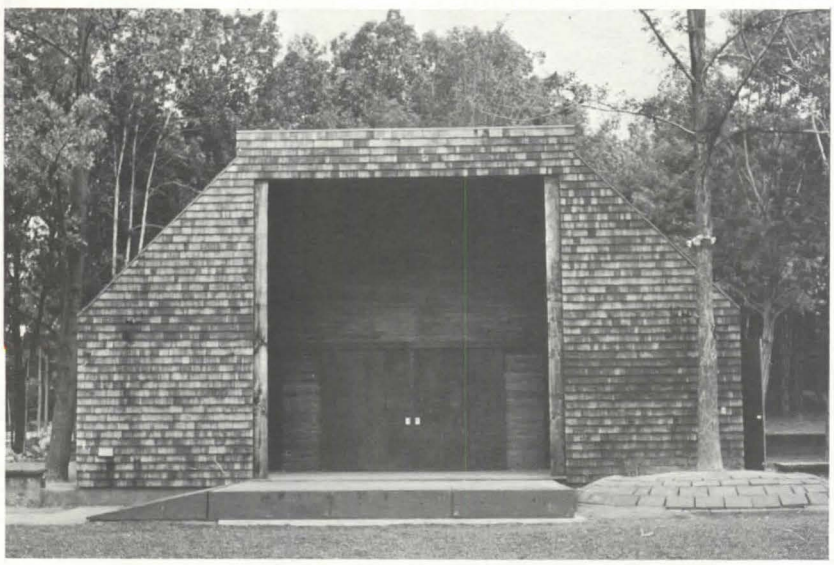
On close analysis, the influence of Mykonos becomes apparent—in Barnes's conscious establishment of a vocabulary of forms; in the severe simplicity of these forms; in his determination to use only one material and one structural idea; and in his skillful combining of forms, both in the dormitory village, as well as in the central village.

PHOTO: NOEL YAUCH



A

PHOTO: NOEL YAUCH



B

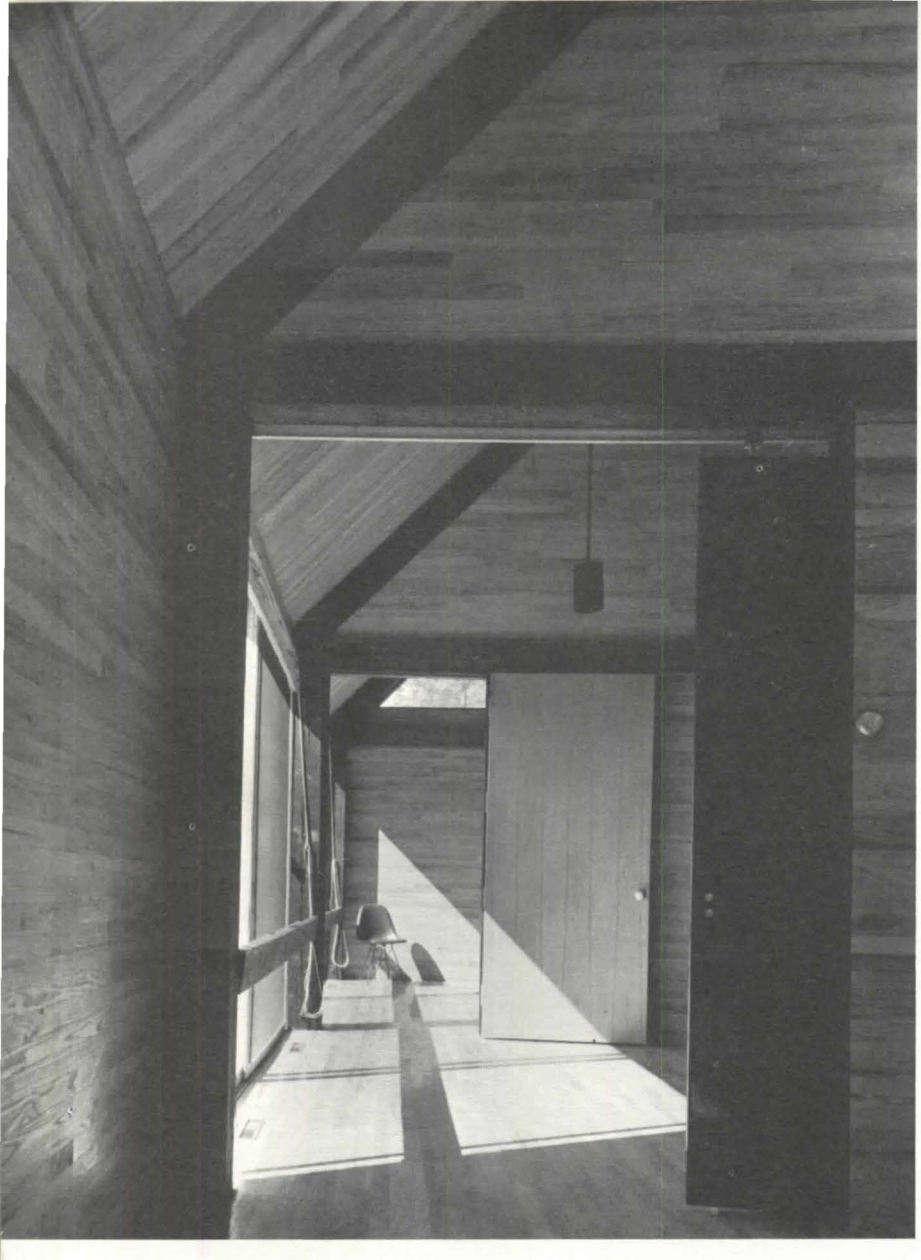
C

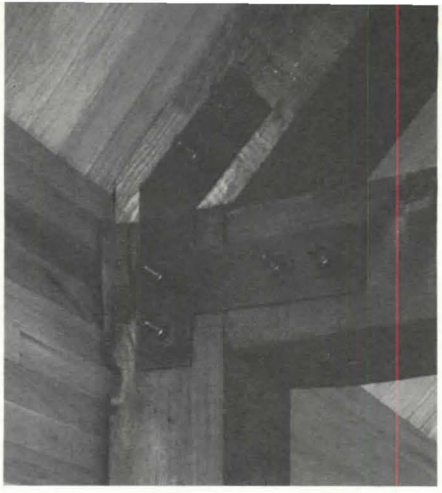
Vocabulary of Form

Since the program stipulated both large and small units, it was Barnes's special concern to attempt to achieve a continuity between the diverse building elements —that is, between the relatively small camper's cottage and the much larger and more impressive central facilities. To this end, he established a vocabulary of form, based on a repeated structural bay of a constant width and depth, a consistent floor-to-eave dimension, and a uniform roof slope. The small gable-roofed camper's cottage **(A)**, which consists of three of the 12′ x 18′ structural bays, is the three-dimensional module on which all other structures are based. The same form recurs—though elongated by additional structural bays—in the commissary, the administration building, the clinic, and the director's house. The theater/crafts building **(B)** is twice the width of the cottage, but here the architect has placed his columns in such a way as to gain an unobstructed center space, with a stage on one end and alcoves with mezzanines for crafts projects along the sides. In front elevation, the relationship of this building to the cottage is clearly apparent, as it is in the dining hall **(C)**, where the basic form has been pyramided to give prominence to this other important building on the camp site.

Plain Exterior, Lively Interior

While extreme simplicity of form characterizes all of the exteriors, the interiors are conversely rich in terms of light and space. This contrast is particularly evident in the dining hall, with its plain, shingled exterior shell (*left, bottom*) and the unexpectedly dramatic interior (*facing page*). In all of the interiors, enclosing and sheltering spaces are counter-





posed with bright areas of sunlight, and outdoor views admitted through window walls (*left, top*), glazed gable ends (*left, below*), and skylights.

One Material, One Structural Idea

As in Mykonos, one material has been used consistently. Instead of masonry, however, Camp Hidden Valley is appropriately of wood. Wood shingles, left to weather in order to harmonize with the landscape, envelop the roof planes as well as the side walls. Inside, 3/8-in. oak flooring provides a rich and warm surfacing material for floors, walls, and ceilings. The construction method, also, remains consistently the same, whether the building is large or small. Heavy timbers in post and beam arrangement are expressed with unusual clarity so that they serve not only their functional purpose but an aesthetic one as well.

Village Forms and Spaces

Barnes's skill in composing forms is well demonstrated in the clusters of campers' cottages. He uses three of the basic units to create a tiny village, and, in taking advantage of the terrain and special site conditions, has been able to give each of the clusters a remarkable degree of individuality. However, his opportunity to capitalize on his total vocabulary of form

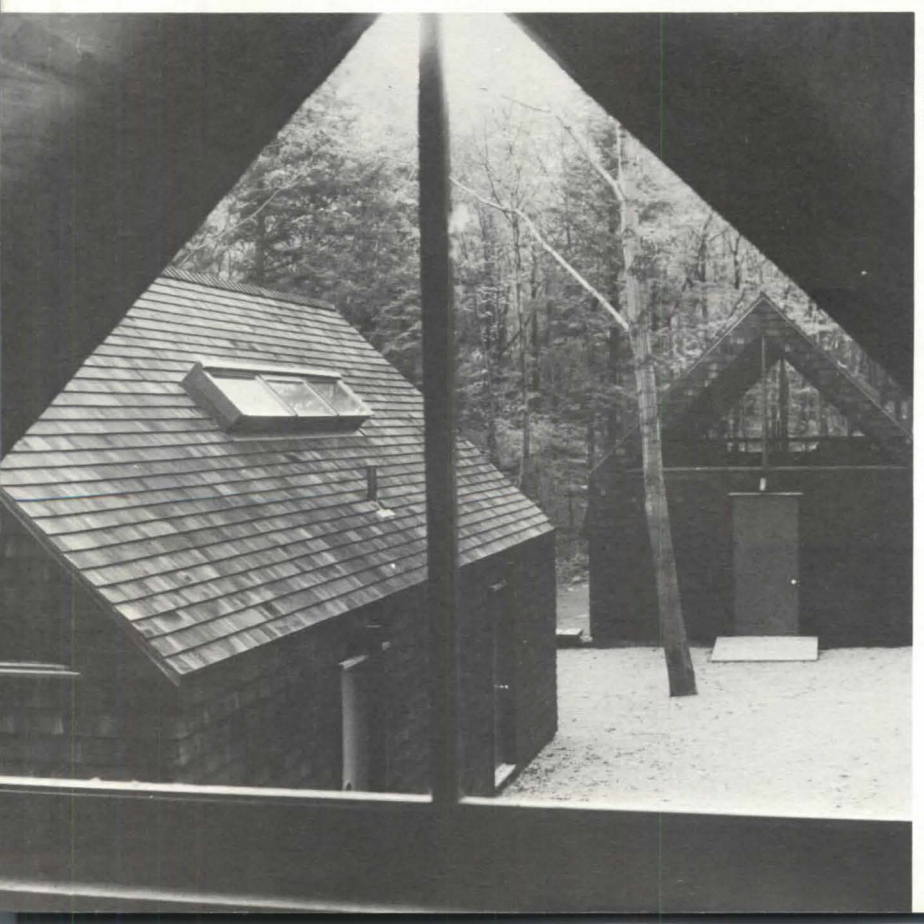
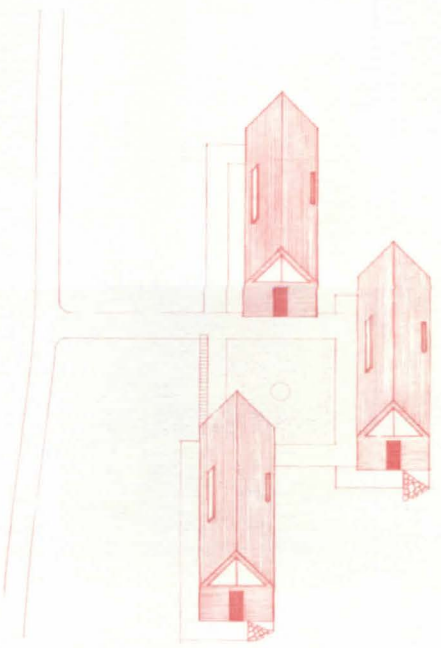
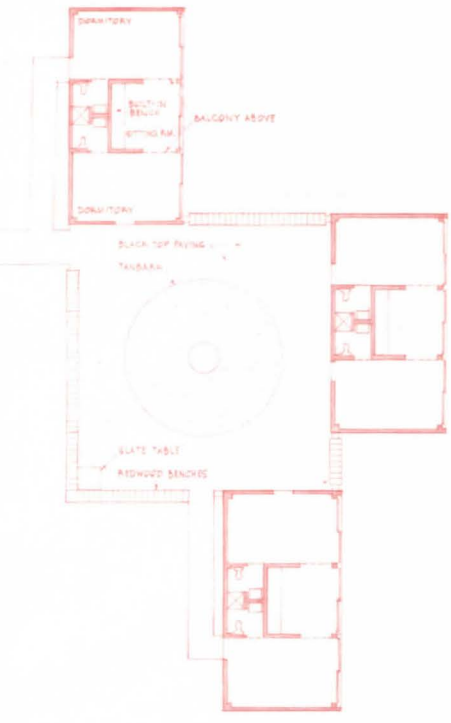
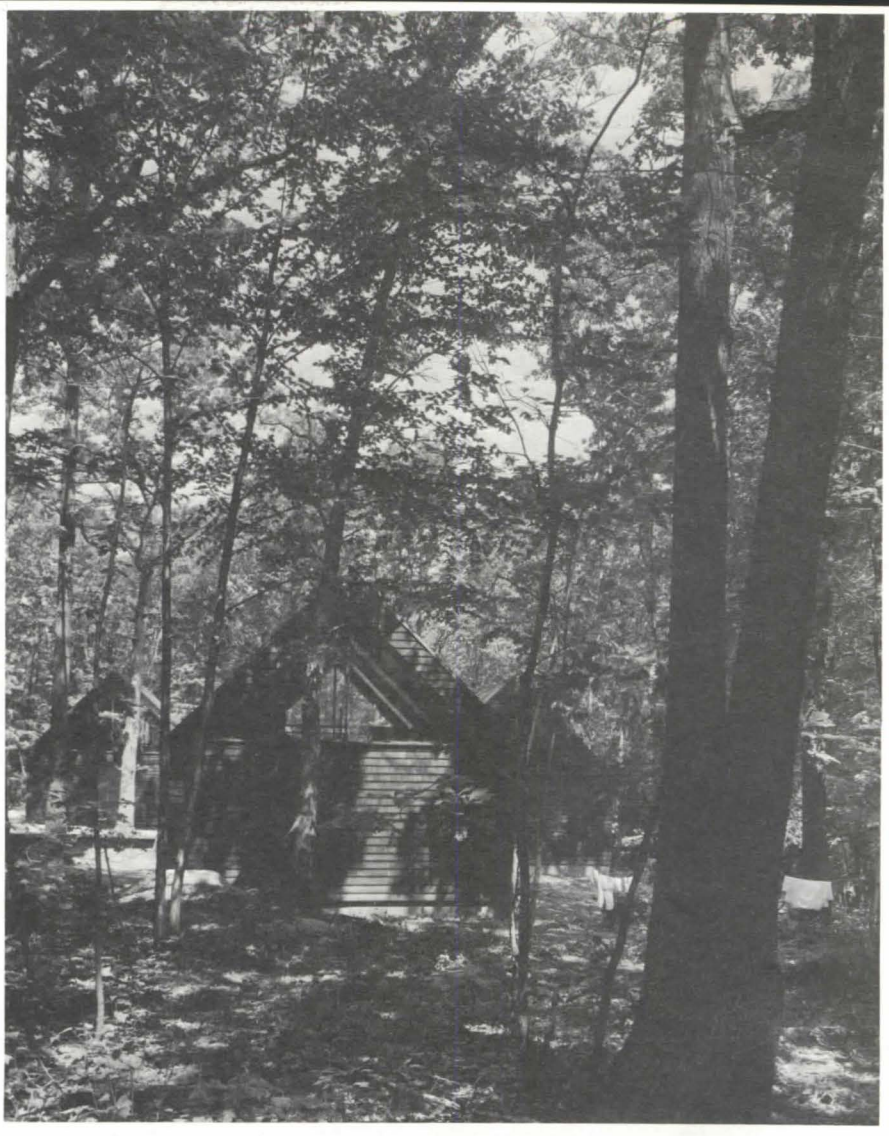


PHOTO: UELI ROTH

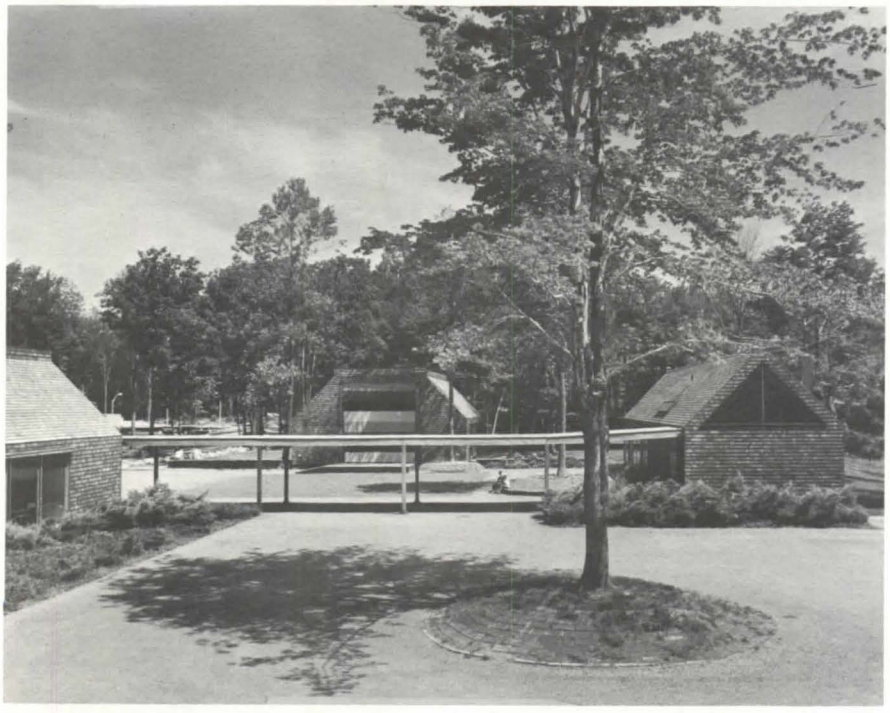


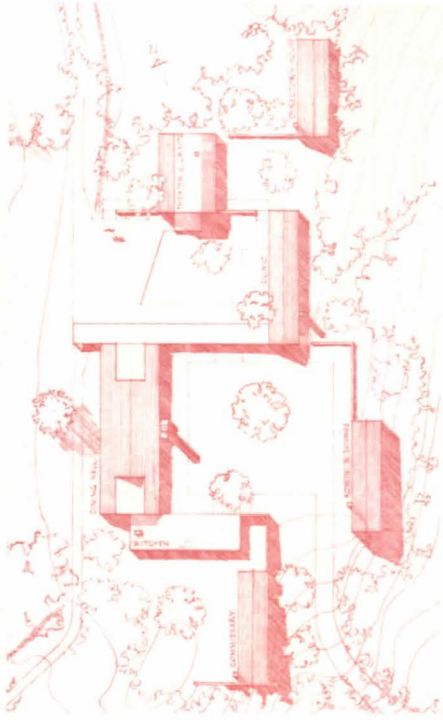
VIEW OF TYPICAL VILLAGE





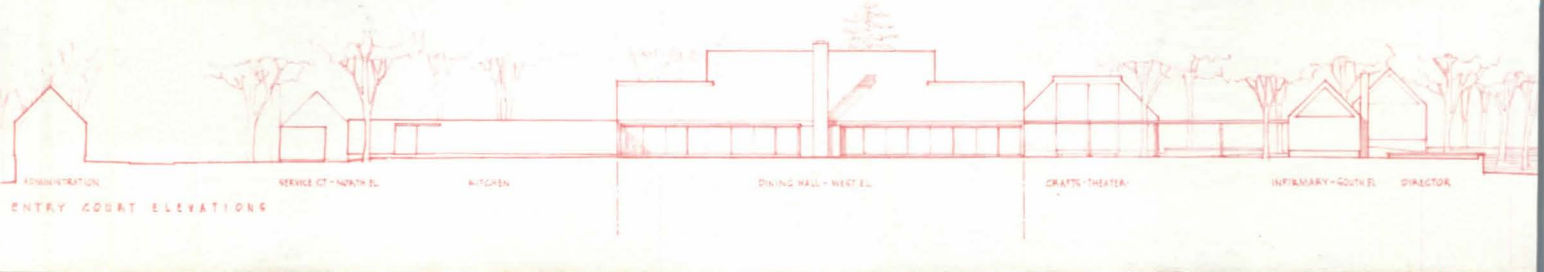
Two camper's villages have been completed: one adjacent to a woodland road (below, and isometric, facing page); *the other a more isolated cluster in the forest* (right, and plan above). *Plans call for additional villages in various locations.*
Though the cottages remain constant in size and form, unusual site conditions affect their respective placement and give them their identity. Benches, tables, retaining walls, and paved areas unite the groups.





comes with the design of the central village (*plan above*)—the point of entry to the camp and also the focus of all community and administrative functions. A strict framework underlies the composition of this central area. Not only are the various buildings closely related in form and material, as outlined previously, but their placement is regulated by the same 12′ x 18′ module to which all of the structures adhere. Furthermore, all gable roofs follow the same north-south direction, while flat-roofed connective structures run east-west. As in the dormitory clusters, nature provides the softening counterpoint, so that the composition is far from regimented. A sequence of three highly individual courts has been formed by carefully juxtaposing buildings of various sizes, and by tying them together with paving, benches, and covered passages. Though it is obvious that this central complex cannot be compared to the classical example in scope, variety, or density of architecture, Barnes has nevertheless succeeded in creating a sense of a village with a very limited number of buildings. And although the architecture of Mykonos is clearly intuitive, there is evident in this reasoned design for Hidden Valley the same fluidity of architecture and its surrounding space, the same consistency and integrity of structure and material, and particularly the same accord between nature and architecture that is manifest in the classical prototype.

Severud, Elstad, Krueger were the Structural Engineers; and John Baffa Associates, the Mechanical Engineers.



ENTRY COURT ELEVATIONS

TWO SOLUTIONS FOR THE TROPICAL HOUSE

Two contrasting approaches to residential design for warm climates are represented in the two houses shown here. One of them is an enclosure with thick walls and small openings, designed for economical air conditioning; the other is a pavilion without walls, open to the breezes and the view. Both of these houses were built for the architects' own use; both are notable for their effective use of common local building materials and techniques.

PHOTOS, EXCEPT AS NOTED: ALEXANDRE GEORGES

PHOTO: HANK KOCH

Solid Enclosure

ARCHITECT'S HOUSE • MIAMI, FLORIDA • JORGE ARANGO, ARCHITECT

Although technically two degrees above the Tropic of Cancer, low-lying Miami has summers that seem truly tropical. In the Coconut Grove neighborhood, the moderating sea breezes are obstructed by dense foliage—the product of 40 years of cultivation. This luxuriant growth also harbors great numbers of insects. Even this foliage is not sufficient to insure privacy in an area where—as in most older urban neighborhoods—building lots are small.

The architect's answer to the problems of heat, insects, and close neighbors is a tightly enclosed house that can be air conditioned economically. For outdoor living, when weather permits, he has added a patio (*facing page*) that is treated architecturally like a room, with screened openings in the walls and ceiling.

Arango has strong convictions about house building. "It is misleading," he asserts, "to design residences portraying sleek industrial concepts, when they are in fact made by hand as they would have been 100, or even 1000, years ago. Some of the components are industrialized, but the high cost of skilled labor has made the final product more primitive, if anything, than its ancestors."

Here he has applied conventional concrete block construction, which is used almost universally in the Miami area, in a design that expresses its essential primitivism. The exterior stucco and interior plaster—applied by hand as they usually are—look like the products of hand labor; rounded corners and rough textures—both inside and outside—have replaced the ostensibly vertical planes and right-angle corners of conventional work. Arango reports that the workers—at first bewildered by this novel, seemingly capricious, approach—eventually accepted and enjoyed the challenge of modeling surfaces with pleasing irregularity.

The other structural elements are also variations on typical local practice. The beams of the flat wood-framed roof have been left exposed on the interior; the steel projecting windows have been set within deep precast concrete frames, which keep out direct sunlight and eliminate the fluttering appearance of protruding sash. The deep fascia has been covered with wood shingles, chosen because their appearance improves with exposure to the weather. Free-standing columns are of poured concrete, which was meant to be left exposed; when they were stuccoed to conceal their unsatisfactory surface quality, some of the clarity of the design was lost.

Landscaping was designed by the architect, with the advice of a Miamian, Lester Pancoast, and a visiting Brazilian, Roberto Burle-Marx. In the patio and around the periphery of the house, concrete paving of consistent pattern has been used, interspersed with planting. There is a small, open terrace at the east side of the house (*bottom, right*) surrounding the barbecue pit, which is built into the chimney of the living room fireplace.

Dense planting at the sides and rear of the property provides visual screening; "more difficult decorative planting" has been used only in the protected patio.

PHOTO BY ARCHITECT

The dining area (right) *and the living room* (below, right) *have large floor-to-ceiling openings facing the partially enclosed patio. Small windows in the other walls are treated as "sculptural incidents" and frame specific views. The curved plaster reveals and dark-tinted window glass soften glare. The exposed stained ceiling beams act visually as "louvers," revealing varying proportions of the white plaster as one moves about the interior. Lighting fixtures are "sculptured" into the plaster of the walls and ceiling.*

The plan (below) *shows the division of the interior into distinct zones for parents and children, as well as for privacy and entertaining guests.*

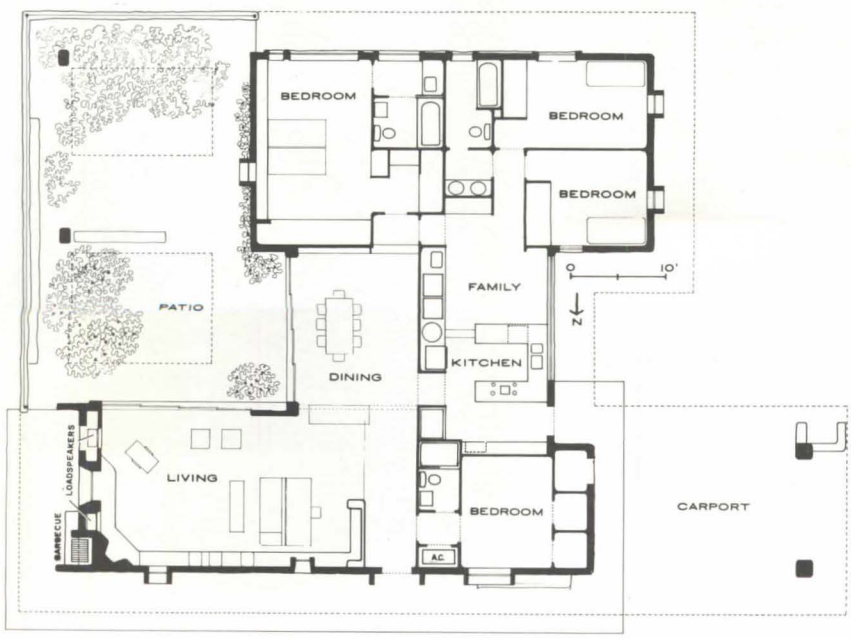


PHOTO: HANK KOCH

The kitchen and family room have been combined to simplify supervision of the children. Materials and finishes are consistent with those of the house as a whole.

The master bedroom has four windows of different types: a glass-backed book niche and a small awning window (right); *a narrow opening for ventilation and a wide one for light* (below). *The headboard, bookshelves, and reading lamps are all integrated with the plaster wall. The pattern of the beams was determined by structural needs, but their exposed depth has been reduced by furring down the ceiling, to keep them in scale with the room. Beams, blinds, louvered doors, and bedspreads establish a theme of stripes.*

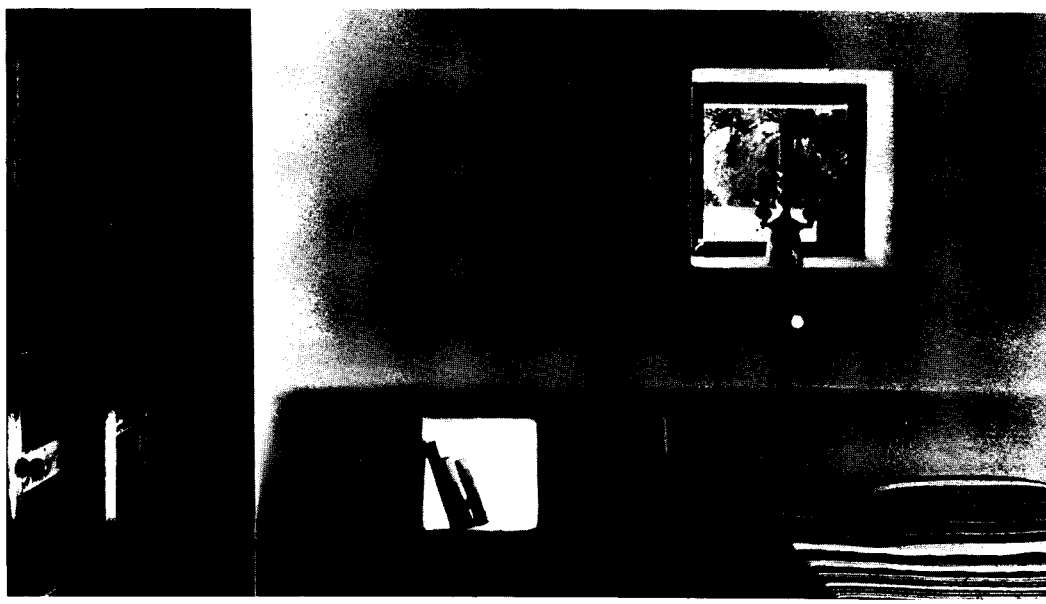
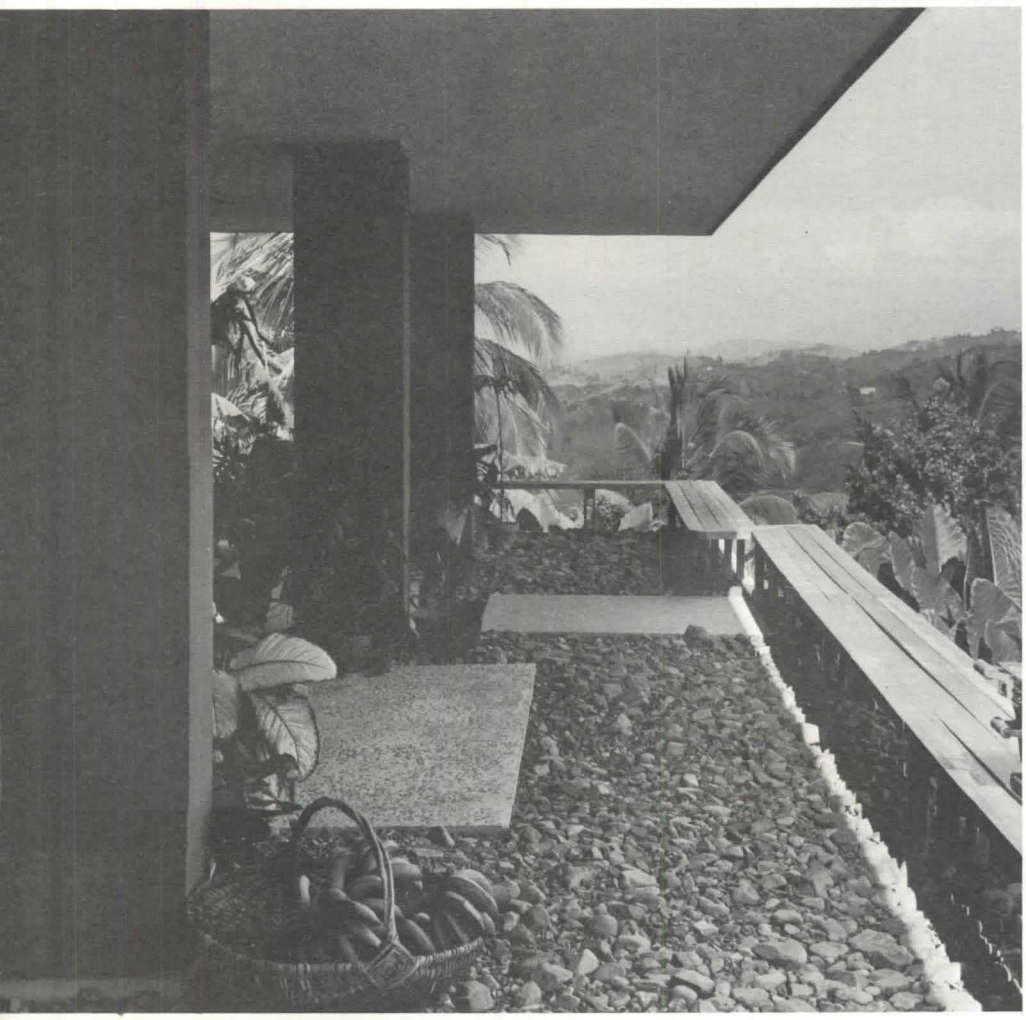


PHOTO BY ARCHITECT

PHOTO: HANK KOCH

PHOTOS EXCEPT AS NOTED: FRANCISCO E. VANDO

PHOTO: ALEXANDRE GEORGES



Open Pavilion

ARCHITECT'S RESIDENCE • RIO PIEDRAS, PUERTO RICO • WILLIAM F. SIGAL, ARCHITECT

Although an architect's own house may give him more freedom to explore and test his hypotheses, there remain the usual restrictions of site and budget. In Sigal's case, the site offered more potentialities than limitations—a hilltop with a 360-degree view overlooking metropolitan San Juan, the sea, and the green hills of the coastal range. A tight budget of $20,000 challenged him to make greatest use of unskilled labor and readily obtainable materials. There is, for instance, no millwork in the house.

The main, and startling, concept of the Sigal house is an open pavilion for living, dining, and food preparation—sheltered from sun and rain, but completely open to breeze and views. (Bedrooms and a study-workshop are in two low wings perpendicular to the pavilion; security and privacy are provided here by sliding glass doors and jalousie windows; and an air conditioner in the study protects books, hi-fi equipment, etc.)

Structural system of the two enclosed wings is a conventional one for Latin America—concrete-block walls and concrete-slab roof. In the pavilion, the cantilevered overhang is not typical, although its reinforced concrete is very common. The most unconventional feature, according to Sigal, is the pavilion roof of wood and galvanized steel, designed to utilize familiar materials and require minimal carpentry.

The architect has also used his plant materials with ingenuity. Bamboo, considered a "trash" plant in Puerto Rico, is being extensively cultivated by Sigal for shade and screen. Passion-vine, which is being trained to grow over the concrete-slab roofs, will eventually provide an excellent insulation for these wings (and also camouflage them, drawing full attention to the open pavilion).

Since the pavilion is large, Sigal divided it into "usable sizes" with pads of textured or colored concrete. Between these areas, the floor is set with loose stones and boulders. Plants, too, are clustered here, giving definition and intimacy to the spaces.

A frequent reaction to the house, and one that Sigal says "we enjoy most," is the surprise of "people who have lived in Puerto Rico all their lives and have never thought of opening their houses and enjoying the climate and the views of an island as beautiful at this one."

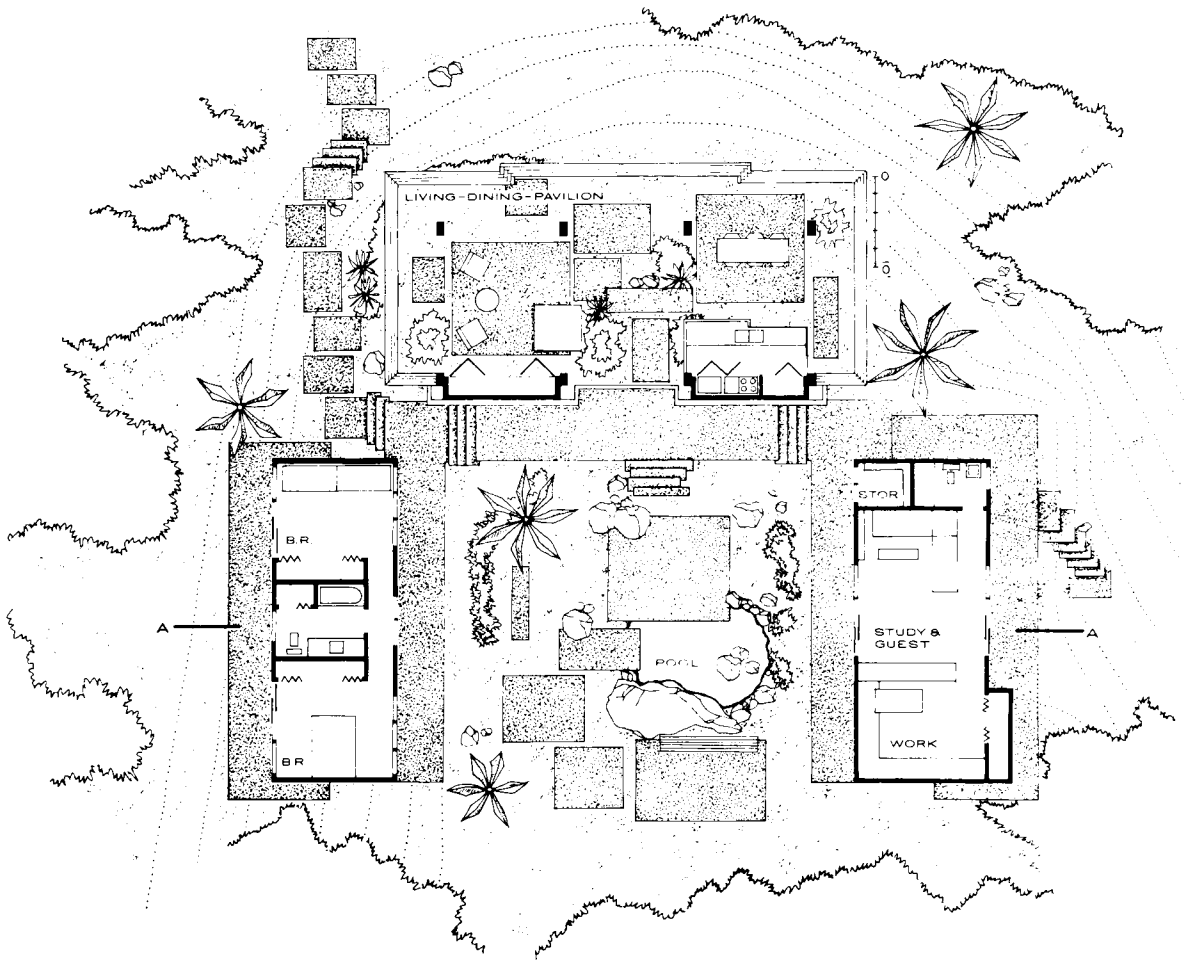
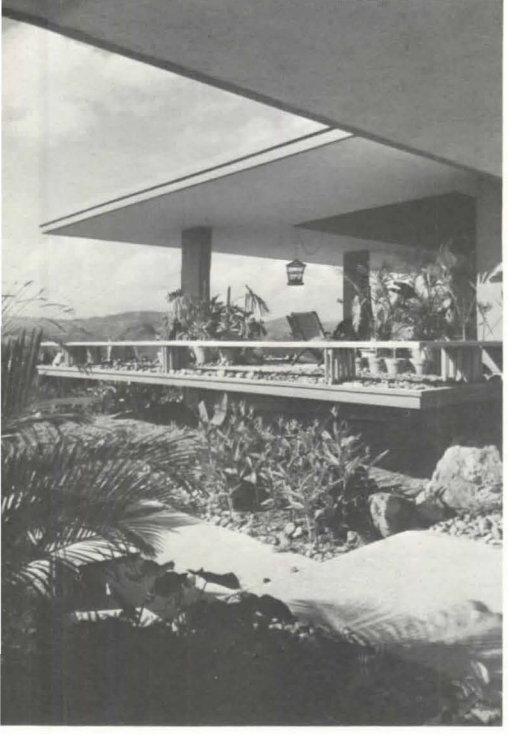
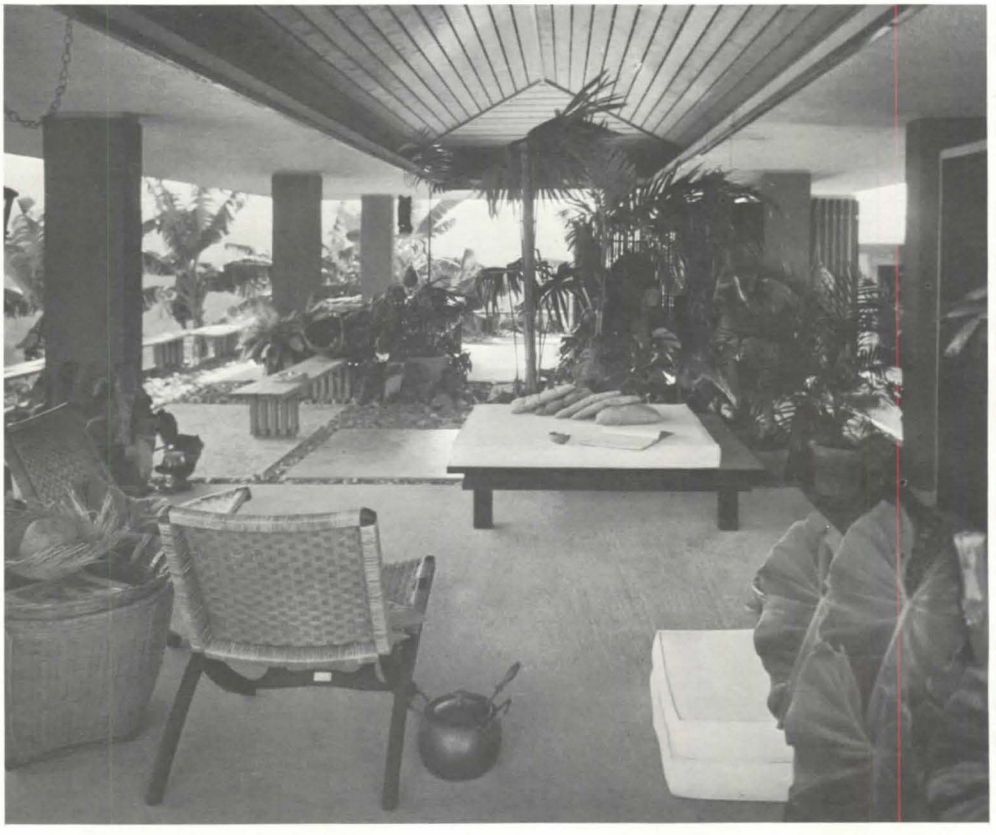


PHOTO: CONRAD EIGER



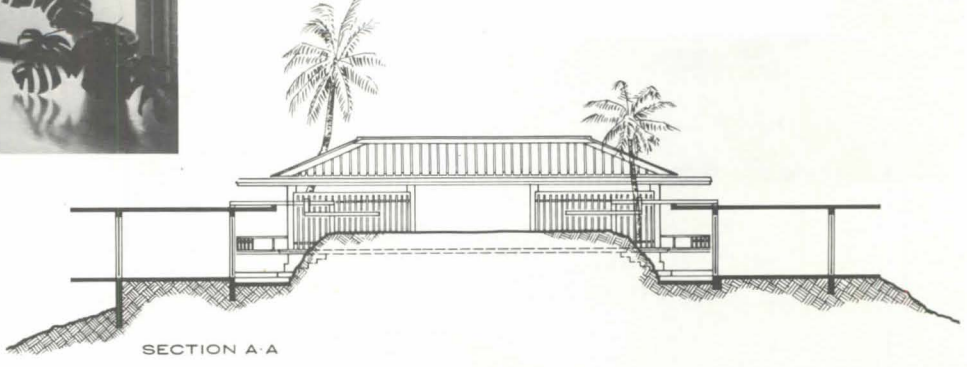
The single, large living-dining-kitchen area, unified by the roof form, is subdivided by discrete slabs of concrete at the floor and by movable screens of potted plants between the pads of concrete. This interior-exterior room, in its full acceptance of the setting, is an unusual response to the tropical climate of Puerto Rico.



Entrance to the pavilion (right) *is framed by two storage units, one shielding the kitchen. Each wing, although fully enclosed, is nevertheless strongly linked to the exterior. On one side of the bedrooms, a balcony overlooks luxuriant planting* (below); *on the other side* (facing page), *a steep, landscaped bank borders the walkway to the pavilion.*

PHOTO: WILLIAM F. SIGAL

PHOTO: ALEXANDRE GEORGES



SECTION A-A

BENEATH THE VISITING MOON — *Part II*

BY JOHN E. BURCHARD

In the first installment of his observations on modern architecture, the M.I.T. Dean of Humanities discussed the quality of individual buildings in many parts of the world. In this second and final part, he considers the effect of new construction on existing cities and comments on a few "new towns."

1. Penn Center, Philadelphia, 1952–1962; Vincent G. Kling, Co-ordinating Architect.

Not every traveler cares for architecture, and there is nothing wrong with costumes and eating and drinking and shopping, though it may be a pity to spend more time at the postcard counters of the Prado than in its salons. But even those who squander thousands of dollars of travel money to effect $50 Hong Kong bargains cannot spend all their time shopping, or in Harry's Bar. President Kennedy's small import allowances may in fact do more to improve American observation than to save American exchange.

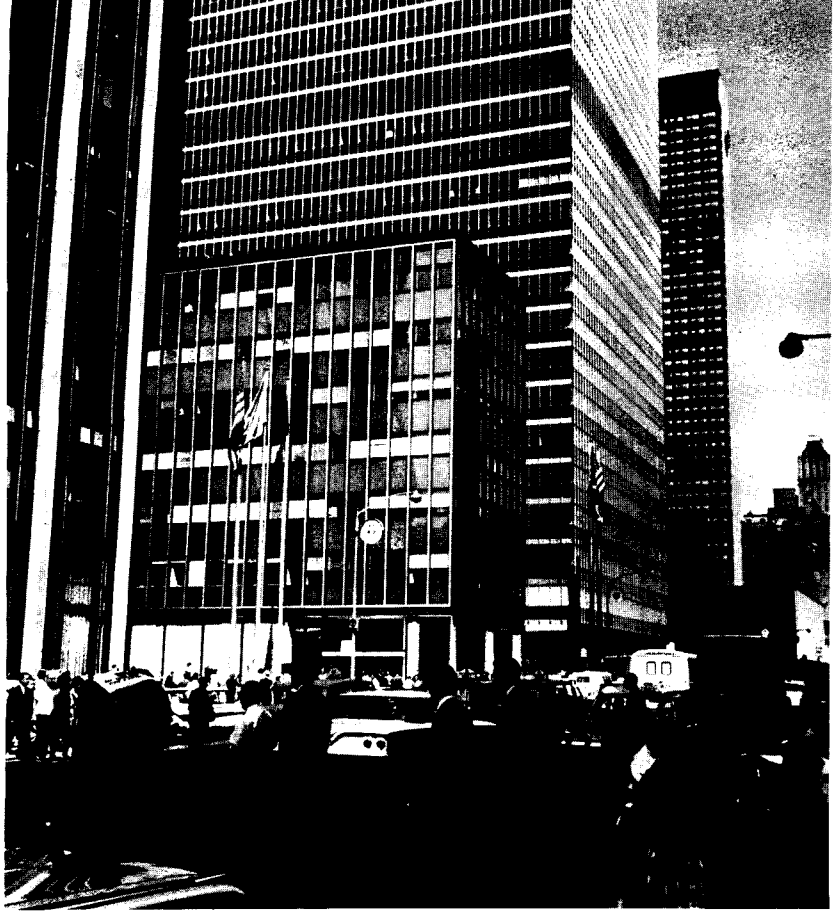
No doubt, more and more people are seeing; those who like to travel abroad so that they may find things as much as possible like the town they left are doing better all the time; others are not. Indigenous buildings do not persist even when new forms are quite unsuitable; the International Style is unhappily all too international. Cities are less and less personal and personable. And all this is happening at a time when the world abounds in talented architects, in generous clients, in almost a fever of building and rebuilding, and as the culmination of a great and glorious revolution.

New Architecture—Old Cities

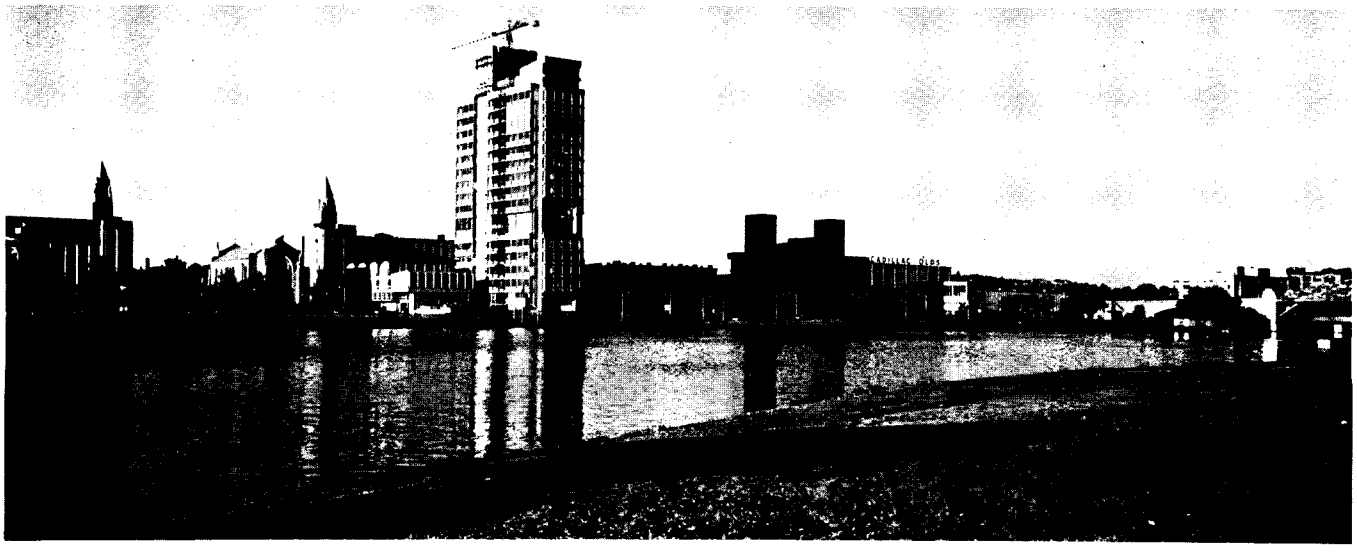
If contemporary architecture is brought to the bar, it can be found far more guilty in its positively bad effect on cities that were once beautiful than for its failure to produce enough interesting monuments. I am well aware that architects have not often been given cities to do in these days; and on the evidence of Chandigarh and Brasilia, I am not altogether unhappy that this is so. I know that when a big and ugly building rises to mar some once seemly urban skyline, commercial forces, and not the architect, ruled it so. I know we should not expect much taste or generously sacrificial consideration of urbanity from such effective building entrepreneurs as the Uris Brothers or the Tishmans, who are in other respects not without merit. I know that no architect seems to have been able to convince leading insurance company builders that it adds nothing to their prestige or even their sales to post their names at large scale at the top of a high building, or persuade them to invest in high-grade instead of low-grade architecture. These are clearly hard things to sell, since it is probable that good taste in architecture has no relation whatever to honest and enterprising management of insurance funds. Morever, it is fascinating, if depressing, to note how often developers of great good will seem drawn, as by a magnet, to employ architects who, whatever their other merits, are inferior artists.

I am not looking for culprits here. But it must be reported that Philadelphia's brave new plazas **(1)** are dreary, inurbane places; that New York's Avenue of the America's north of the Time-Life Building **(2)** is an unholy mess and a cynical denial of the high standards of the early Rockefeller Center, though the Rockefeller Center Corporation is playing a major role in the financing of many of the buildings; that Park Avenue north of Grand Central **(3)** is becoming a dismal array of glass, too reflective, and (with the exception of Lever House, Seagram's, Pepsi-Cola and Union Carbide) too downright bad—each building, though disagreeably unneighborly, nonetheless contributing to the general monotony; that the hyperthyroidal new Pan American tower, which effected a fairly good closure to the Avenue, at least as viewed from the south **(4)**, has become a disaster from both ends now that its top is littered with lettering; that the Cambridge shore of the Charles has been marred and is even more threatened, while the Boston side, already blighted by the two old and bad insurance company buildings, and harmlessly nudged by Stubbins' modestly high luxury flats, is compromised further by Sert's addition of two pinnacles to the already silly pseudo-Gothic ones of Boston University **(5)**, and the crowning blow is to be delivered—perhaps even the *coup de grace* —by the overweening and graceless new insurance tower already scraping the low Boston sky **(6)**. Despite the generally admirable effort to use first-class architects and despite the fact that these men have often designed attractive—even brilliant —individual showpieces, the campuses of progressive Harvard, M.I.T., and Yale are collectively chaotic.

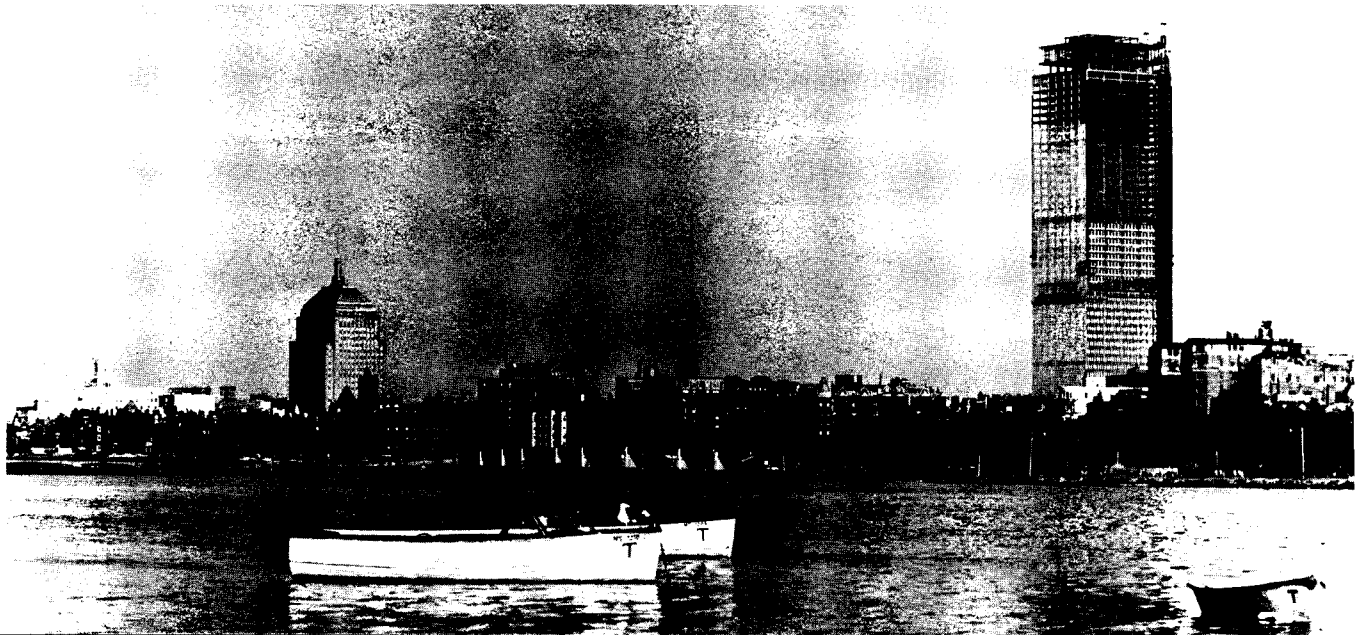
The new things on the market square at Cambridge, England, fit uneasily into that lovely place, and there are similar troubles all over the University wherever new construction has to be provided; the Thames-side of London has been diminished, though not as greatly as Mumford

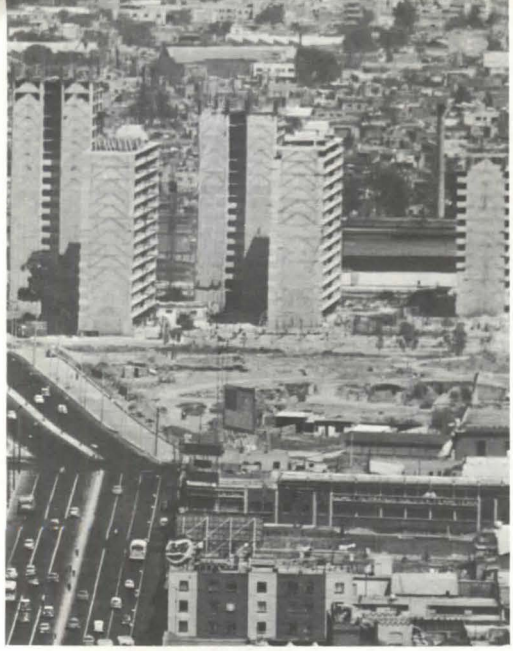


NEW YORK *2.* (left) *new buildings on Avenue of the Americas, left to right: Time-Life (1960, Harrison & Abramovitz); Equitable (1961, S.O.M.); and the New York Hilton (1963, William Tabler). 3.* (upper right) *Park Avenue, looking south toward the Pan Am Building (1963, Emery Roth). 4.* (lower right) *the Pan Am Building, from the south.*

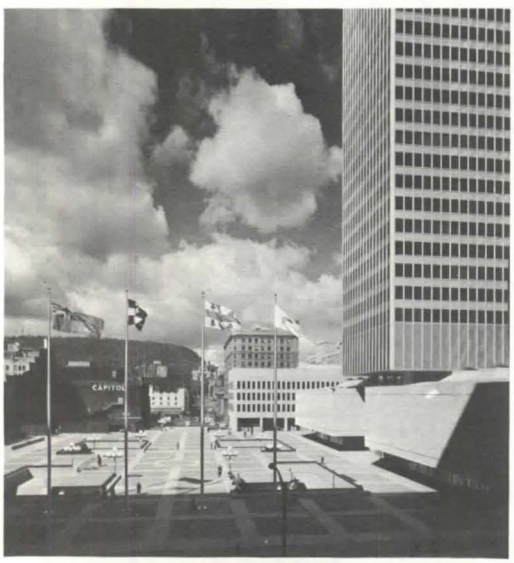


BOSTON *5.* (above) *Boston University, with Sert's Law Education tower and his twin-stacked Student Union. 6.* (below) *Back Bay, with Luckman's Prudential Building at right.*





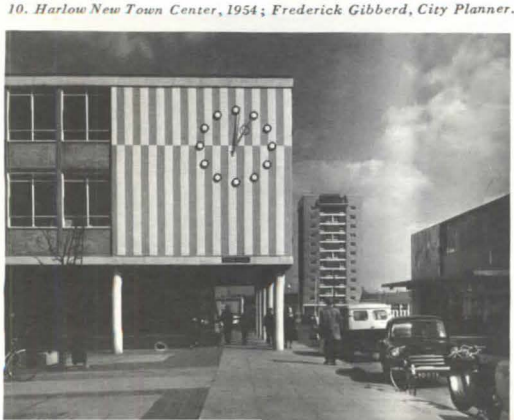
7. High-density housing, Nonoalco development, near Mexico City.



8. Place Ville Marie, Montreal, 1962, by I. M. Pei & Associates.

9. Shopping mall, Town Center, Coventry, 1950's, by Donald Gibson.

10. Harlow New Town Center, 1954; Frederick Gibberd, City Planner.



has asserted; the big housing projects north of Mexico City **(7)** are plain frightening; the English New Towns, however socially desirable they are (and I doubt they are), are architecturally dreary, expressing truthfully, no doubt, the general life that is probably lived in them.

To be sure, there are exceptions: Le Corbusier's new Arts Center at Harvard is going to bring life to the area even if it is quite out of context and disturbs the gentlemen of the Faculty Club by its possessive ramp; Gropius' Chancellery at Athens, though less Greek in feeling than pictures suggest, fits commodiously into the Athenian pattern even if it does complicate the problems of security officers; Rudolph's Blue Cross building has adjusted itself well to Boston's downtown; Pei's Place Ville Marie **(8)** has really lifted Montreal, and so on; but on the question of the adaptation of new buildings to their immediate urban environment, more bad examples than good can be cited.

The rebuilding of Coventry is on the whole genuinely effective, even moving. In the face of some bad detail, the motorless center **(9)** nonetheless has something that transcends the second-class shopping center atmosphere of Harlow **(10)**, Stevenage, and all the other New Towns. (There is always an as-yet-unbuilt one which seems to be promising, such as Hook in Hampshire, whose future is now, however, bleak.) Sir Basil Spence's Cambridge lecture halls are far enough from the Cam so that their sober if dour efficiency adds something to the aesthetic of the University.

In London, Denys Lasdun has wedged in some luxury flats **(11)**, very chi-chi, very Mayfair, but nonetheless offering no affront to the neighboring Spencer and Bridgewater Houses, nor destroying the view from Green Park—perhaps even enhancing it. Spence's Thorn House **(12)** is an improvement in lowly Seven Dials, which is coming up as Belgrave Square declines. The Vickers Building **(13)**, up the Thames from Westminster, seemed to me an asset, not a disaster. Despite some regret over the loss of what one was used to, I had to work hard to find a viewpoint from which it was obnoxious. Between Big Ben and Vickers there is a long stretch of dull and massive things like Thames House, which badly needed a terminus such as Vickers provides. The upper Thames-side is a logical place for the development of a high-rise area. Vickers is thus not too unhappily sited and as a piece of architecture it is at least good enough not to be offensive.

As much cannot be said for the enormous and stifling Shell complex **(14)** which has appropriated the space between the Royal Festival Hall and the London County Buildings, once intended as a pleasure area. (The Hall, by the way, stands up very well.) And this is exceeded by the Hilton Hotel **(15)**, rising on Hyde Park Corner. Here there is no question of eating up good London space, since there is so much fine green area around it. But the design is so unhappy, so noisy, that it does damage Hyde Park and the Mall in a way that slicing the feet off the Park in the widening of Park Lane does not. Here was a fine opportunity for good urbanism, but unhappily the best sites do not often fall into the hands of the most sensitive designers, as the Prudential Buildings of Chicago and Boston **(6)** also attest.

The great schemes for the area around St. Paul's have largely been reduced to dull architecture, or worse, since public policy did not move with the speed of private avarice, thus repeating in different terms the London experience of 1666. There is still some hope, however, in the designs going up around London Wall; and it is too early to forecast what will happen if London architects get fond of using the air space above streets as they have in Knightsbridge **(17)**, thus producing a new and somewhat mediaeval effect of many gates through which the automobiles continue to pour.

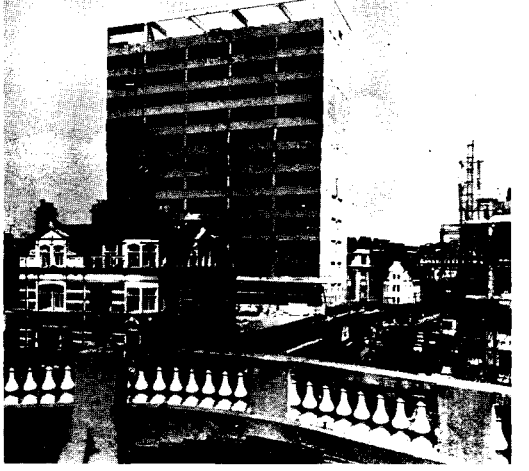
Yet London prevails as a beautiful city despite these new scars, all the way from London Bridge to Westminster and in the narrow strip between Piccadilly or Regent Street and the river. Here the magnificent array of parks, malls, palaces, aristocratic houses, clubs, government establishments seems to say that the Hilton cannot conquer the West End. Eero Saarinen's Chancellery **(16)**, despite the early shouting, is, when veiled by trees, absorbed quietly into this serenity—or could be, if only the obnoxious eagle were taken down.

This is the fine part of London, used by many Londoners besides royalty and members of Boodle's Club; but it is of course not enough for London, nor is the band of greenery that stretches near the Thames for a good many miles—out to Hampton Court, Richmond, Kew, and the London County Council development of Roehampton **(18)**.

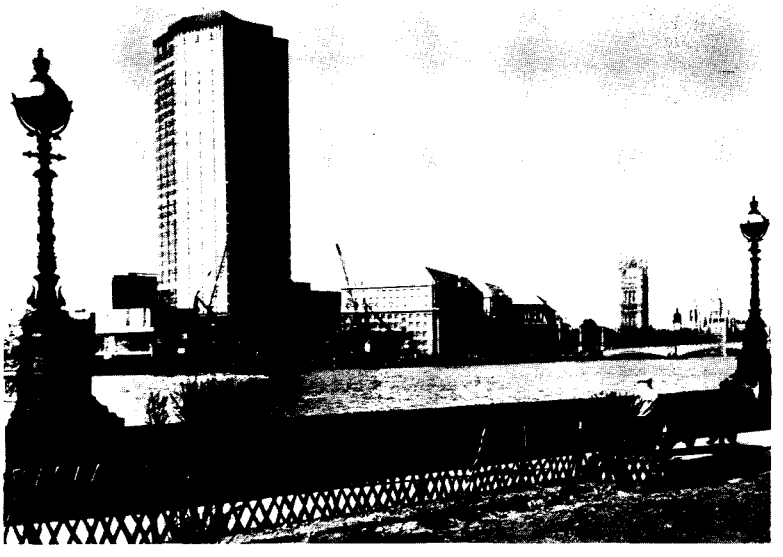
Failure of Modern Urbanism

All the old cities have beautiful areas

LONDON (this entire page) *11. Luxury Flats, St. James Place, 1961, by Denys Lasdun & Partners.*



12. Thorn House, St. Martin's Lane, 1959, by Sir Basil Spence.



13. Vickers Building, Millbank, 1963, by Ronald Ward & Partners; Parliament tower in background.

14. Shell Centre, South Bank, 1960, by Sir Howard Robertson.

15. London Hilton, Park Lane, 1963, by Solomon, Kaye & Partners.

16. United States Embassy, west side of Grosvenor Square, 1960, by Eero Saarinen & Associates.

17. Bowater House, Knightsbridge, 1959, by Guy Morgan & Partners.

18. Housing at Roehampton, London, 1955–59, by London County Council Architect's Department.

such as the brilliant one in London. They are mentioned here less to offer a note of relief than to make the point that they are *not* the product of contemporary design. Indeed, since most of them have aspects of The Grand Plan, it was fashionable—at least until recently—to berate them, if not as immoral or antisocial, at any rate as unrelated to the needs of the day. In point of fact, these aspects are about all that saves the great cities.

As I have said, architects are perhaps not directly to blame for this outcome, but it offers at least an ironic glance at their pretensions to be great and effective manipulators of urban design. It is as though a baseball player who had struck out most of the time in the bushes were to say that all he needed was a chance to be a regular on the Yanks.

What it shows, I guess, is that architects, whatever their talents as designers and writers, are simply not master men in our day and that in the battles with Robert Moses and his kind they lose most of the time, even when they try to win, which is probably not often enough.

Of course, this is ill-tempered and perhaps exaggerated, though not deliberately so. It is just clear to me that the failures of modern urbanism are too extensive to let us feel good about its state. I know very well that, in time, enough other towers may mute Prudential's on the Boston skyline and produce a new unity which my grandchildren may admire, if not love; but, alas, I will not live that long. I know that cities cannot stay as they are. On this count, C. E. Montague said, I think, the right words. He was writing of an earlier, pre-Blitz London and talking of change, including the disappearance of landmarks he knew and loved:

"Yet it is all perfectly right. Let everything —almost everything—change with a will, in any city that you love. People gush and moan too much about the loss of ancient buildings of no special note—'landmarks' and 'links with the past.' In towns, as in human bodies, the only state of health is one of rapid wasting and repair. Wych Street, Clare Market, New Inn—they matter about as much as so many hairs or the tip of so many nails of some beloved person. The time for misgiving would come if the architectural tissues of London ever ceased to be swiftly dissolved and renewed. Woe unto her only when, like Ravenna or Venice, she buries no longer her architectural dead but keeps their bodies about her till they and she all mortify together into one great curio of petrifaction, like some antique mummy, a prodigy of embalmment. . . . In the great ages of art, buildings have not been regarded as if immortality were their due. It is but an invalidish modern notion that any house which is handsome or has had an illustrious tenant ought to be coddled into the preternatural old age which the Struldbrugs of Gulliver found to be so disappointing. Cities whose health is robust are never content to live, as it were, on their funded capital of achievement in building or anything else; they push on; they think more of building well now than of not pulling down. And no cities are so excitingly beautiful as those in which architecture is still alive and at work, as it is in London today. Their faces are both ancient and young, without disharmony, for all good work, of any time or kind, can live at peace with the rest. The old looks and the young looks play a chequer-work over such faces; it may be as pleasant as any that patches of light and shadow make on the side of a hill on days of sunshine and blown cloud."[1]

The key words, of course, are "building well."

We have to accept the fact that cities will change unless we believe they will not grow. It is possible that some of them have already become too big. Certainly vast portions of their new population are suffering the disadvantages of overgrowth without enjoying the potential pleasures possible only in the metropolis. There is surely no rationale for a larger Tokyo, London, New York, or the ultimate City of California. On such a view, Kenzo Tange's proposal for bridging and settling Tokyo Bay was more reckless than interesting, and the scale of Brasilia less attractive when one thinks of oneself as an individual with wife and baby perched high in one of the anonymous housing units, however conscientiously and pedantically the designers may have sought to make it neighborly.

But this is all pretty academic. Behind much of our trouble lies population growth and the determination, even the unreasoning determination, of most of the population, to live in what is called a city —and preferably not a brand new city either, which correctly seems to them raw and unfinished. So we have to deal with the consequences as best we can and until the day when present rates of population growth bring us to genuine disaster.

Before we are overcome by the disaster of Malthusian famine, disease, and war, we may suffer the disaster of urban suffocation, and this probability is more palpably visible on the northern outskirts of Mexico City **(7)**, for example, than it is in teeming India, for there is something psychologically more oppressive in the large frowning jails of houses that may be safe and warm than there is in actual death met in the streets of Delhi, whose streets are never safe and whose every winter is frigid.

New Towns and New Cities

So some people like Doxiadis try to rationalize a new capital like Islamabad on the grounds that it helps to cope with the population explosion, and others hope for New Towns. But if the life of Islamabad is to begin, as Doxiadis plans, with the drab minimal needs of modest civil servants, it is hard to see how anyone would want to go there who did not have to, and therefore how such a city would quickly, or indeed ever, materialize into a place that was pleasurable as well as convenient and safe to inhabit. And on the evidence of the nature of enjoyment now available in New Towns like Harlow or Stevenage, much the same has to be said of them. Assignment to living quarters is possible only in totalitarian states; otherwise people have to want rational life more than they now do. The occasional Vällingby **(19)**, of course, is suggestive here, but how many Vällingbys are there in the whole world?

We seem to learn little from either success or failure. Under these circumstances, it is ridiculous to pretend that demolition will not occur in older cities, that new buildings will not rise higher than old, or that most of this will not occur under quite inadequate political and aesthetic controls, which in turn will rest on the fact that most people do not care any more than they did in Athens or Florence, while no man any longer has the combined power, influence, and taste of a Pericles or a Medici.

But it might still not be necessary to grit our teeth and await the worst if only contemporary architecture would live up to its professed purposes, and contemporary architects had courage and determination to match their talents. Samuel Johnson did not like much of anybody or anything, and his dislikes made some of his best remarks possible. One is appropriate here. He said it of a contemporary:

"Sherry is dull, naturally dull; but it must have taken him a great deal of pains to become what we now see him. Such an access of stupidity, sir, *is not in Nature.*"[2]

The dullest of all these great pains, it seems to me, is manifest by the urgency with which so many nations and states are trying to create new capital cities. Canberra and Ottawa are clear examples of how hard it is to make a created capital

into a leading city. Washington, after more than a century and a half of languor, remains only a political capital and can by no means be said to be a first city in any other respect, having still almost no industrial, intellectual, or cultural significance. Because of the greater concentration of power, Delhi has moved farther, but in most respects it is still inferior to Bombay. Chandigarh made some sense because the Punjab had lost its great city, Lahore, in the partition, but even then there was Amritsar. Chandigarh can be called a limited success, but only in the parts which have been touched by the magic hand of Le Corbusier, and these parts are few. Brasilia was an arrogant tour de force, attempting to open a wilderness for Brazilians who declined the discomforts of the pioneers and the covered wagon and hoped to accomplish the same results by jet aircraft, which cannot be done.

Despite the fine arguments of Doxiadis and the embellishment of his ideas of city planning by the noble-sounding title of Ekistics, there is really no good reason for Islamabad; and his apparent determination to make a practical civil servants' city first and defer beauty and monuments until later seems to me to consign it to mediocrity for long to come, while at the same time beautiful Lahore will not be refurbished and reclaimed. The latest entrant is in the new state of Gujarati. Split off from Bombay state by their own desires, the Gujarati want to pass over both Baroda and Ahmedabad and create their own Shangri-La, preferably designed by Lou Kahn—another foolish idea.

In all this hope for instant glamor, there seems to me but a confession of failure at conserving and enlarging the enormous resources of the present genuinely great cities of the world. It is a little like the old flight to the suburbs, and certainly a flight from reality. The new capital city competes with the unneeded steel mill or premature nuclear reactor as a status symbol for a new nation or province; and although a scientist might have the integrity to advise against the reactor, few architects asked to provide a new city will recognize their own limitations or the silly nature of the whole proposition and thus decline. One needs nothing more as an example than the ease with which many of our most talented people accepted the nonexistent challenge of the old capital Baghdad. Xanadu is naturally a still more bedizened Lorelei.

19. Shopping area in Vällingby, a new suburb of Stockholm, completed 1957.

Time for Self-Examination

So with regret I have to report that, granted its great start, contemporary architecture is losing its solid momentum in a display of unfocused pyrotechnics. Its men have scorned or failed to learn how to use decoration and the work of painters and sculptors; they have not been willing to provide good performance when this has conflicted with their aesthetic innovations or *a prioris*. They have not managed to accommodate their individual new buildings to adjacent old and noble ones. Even the best practitioners have not often shown the strength of their professed convictions when fully tempted by huckster realtors or architects. In one breath they claim to be great co-ordinators and in the next apologize that they could not keep a sign off a building; or argue that if they had not taken an undesirable job, someone else would have; such logic would surely not be a very good defense against abortion. They have not often been able to convince decision-makers that they should be entrusted with new urban groupings. Their urban theories have either gone untested or have been found wanting. In the end, too many of them seem to be seeking escape in flights of fancy.

Yet there are still all these talents and resources and needs and opportunities. Perhaps it is time for a little less self-satisfaction and a little more reflection. This reflection might include another comment by my old friend, C. E. Montague. He is talking about country houses of people who had only a "man's iron will and versatile power to give himself a good time." But the same final comment he might have made about many other ancient architectures:

> "That any one should ever have done that particular thing so shrewdly well enlarges your vision of human accomplishment."[3]

Would it not be comforting if we could say as much of our own time?

For photo credits, see page 178.

REFERENCES

1. C. E. Montague, *The Right Place*. New York: Doubleday Page & Co., 1924, pp. 185–86.
2. James Boswell, *Life of Johnson*, Vol. II, Chapter IX.
3. C. E. Montague, *Op. cit.*, p. 171.

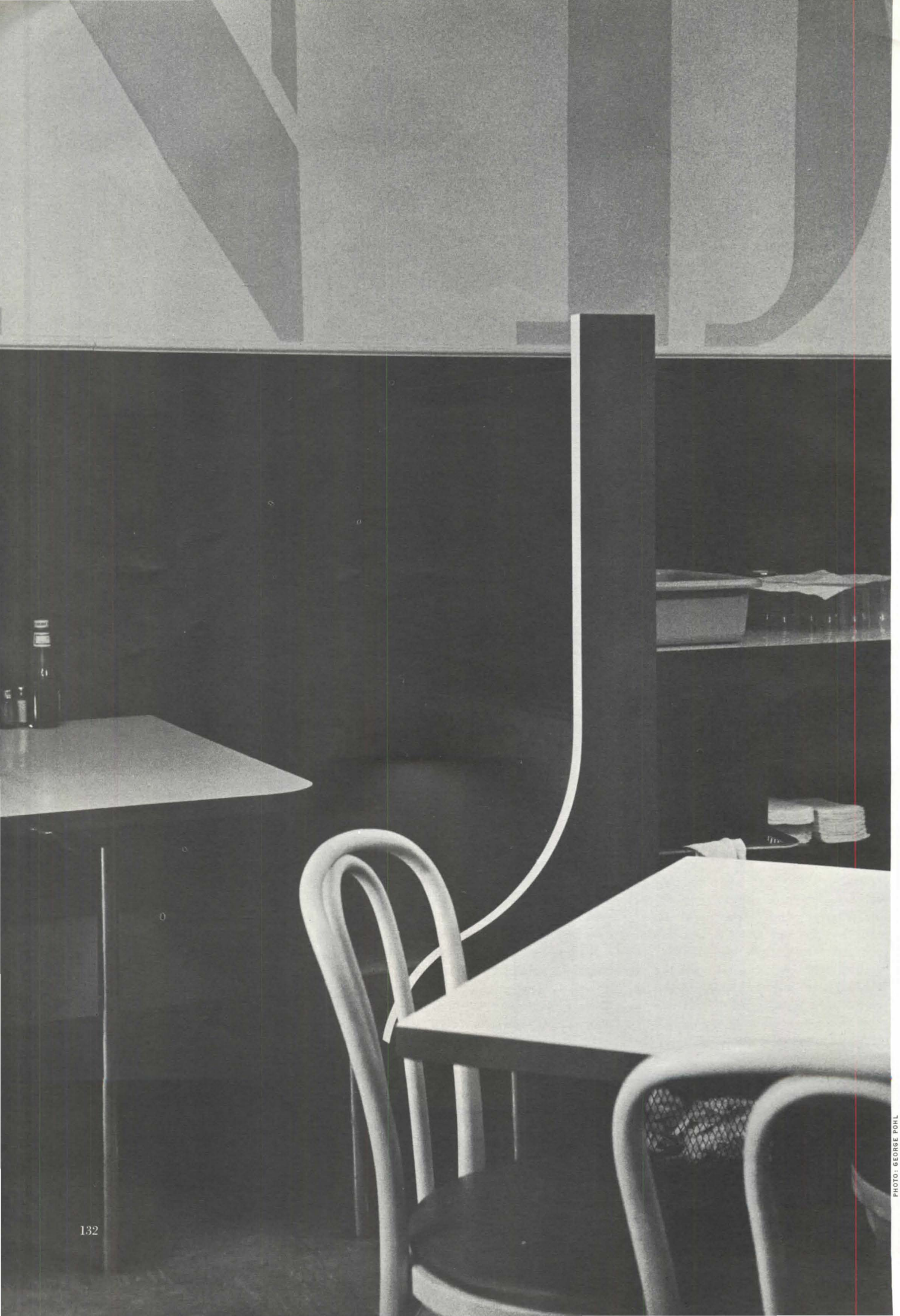


PHOTO: GEORGE POHL

HIGH STYLE FOR A CAMPUS EATERY

PHOTO: ROBERT VENTURI

GRAND'S RESTAURANT • PHILADELPHIA, PENNSYLVANIA • INTERIOR DESIGN BY VENTURI & SHORT, ARCHITECTS

Designers are often heard to lament that they do not get commissions with large enough budgets to permit them to do work of distinction. The design of Grand's Restaurant should quash that complaint. This highly distinctive design has been realized with standard restaurant furnishings within a modest budget allotment. Around this equipment, the architects have spun out a design concept—principally with a single repeated shape and with imaginative use of color—that achieves the effect of recent Italian restaurants.

The design of Grand's Restaurant involved the renovation of two dilapidated row houses. The restaurant was to be a neighborhood place that catered to students. The owners stipulated that it was to retain the simple atmosphere of the former establishment a block away (which had been known as "Mom's") where students "would feel comfortable in their tee-shirts." The modest budget was to match the character of the place.

"In the interior as well as in the façade," explain the architects, "we acknowledged the duality of the existing buildings with their bearing party-wall in the middle. The west side accommodates the dining room with booths and tables; the east is devoted to the kitchen, serving areas, toilets, counter, and entry.

"We decided to exploit rather than disguise the budget. In keeping with it and with the character of the place, we tended to use conventional means and elements throughout in a spirited way, so that the common things took on a new meaning. This was also a reaction to the over-designed 'modern' fixtures typically available today.

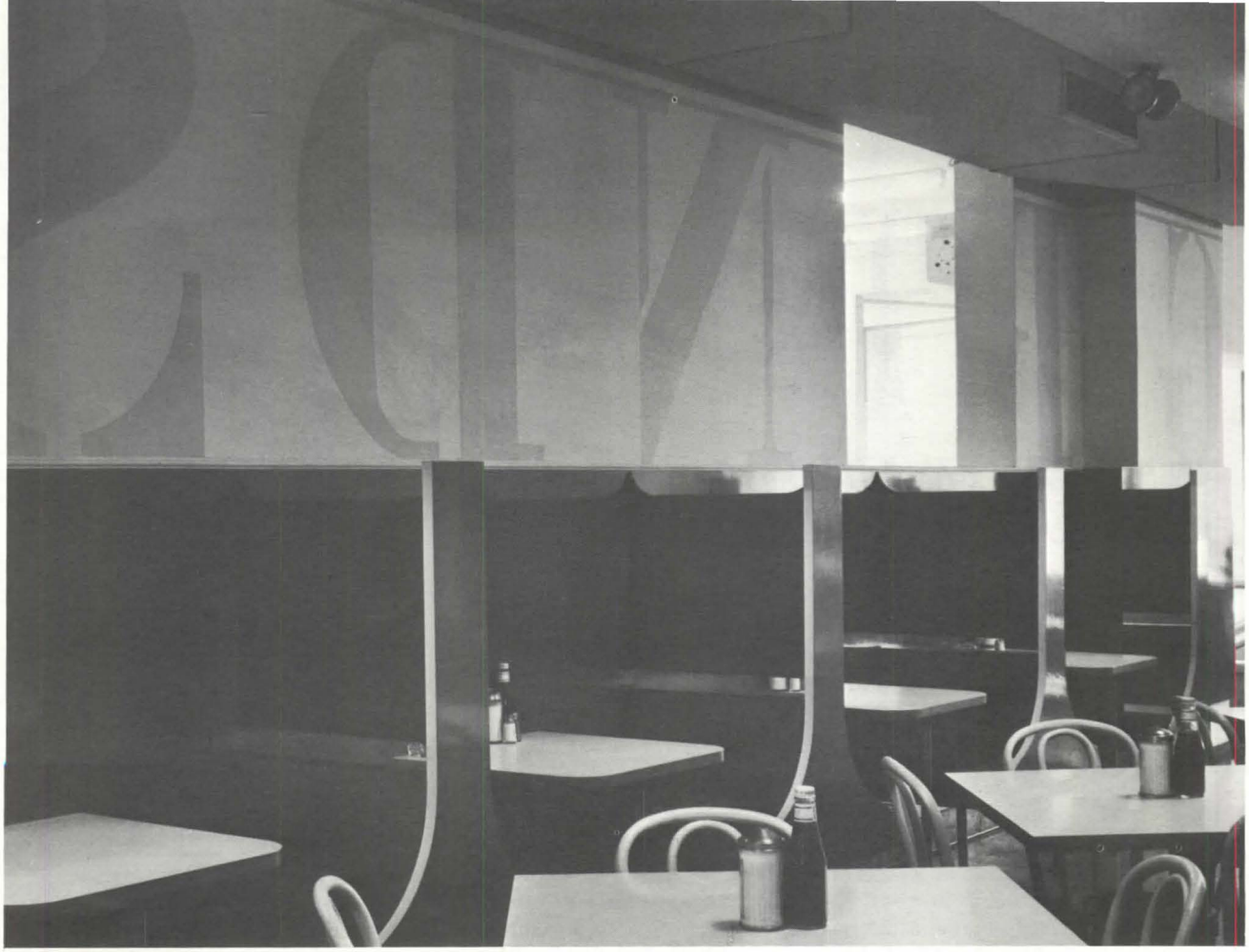
"For the main lighting fixtures, we used an old-fashioned industrial fixture that is solid but cheap, and elegant in the context we gave it. The chairs chosen were bentwood—again almost anonymously designed, although perhaps now becoming chi-chi. The booths were designed not as the exaggeratedly low, pseudo-luxurious upholstered creations that expose the sitter, but as the more traditional high kind—with comfortable but modest padding and with an appropriate sense of privacy. The place is popular because people are able to seclude themselves in the booths.

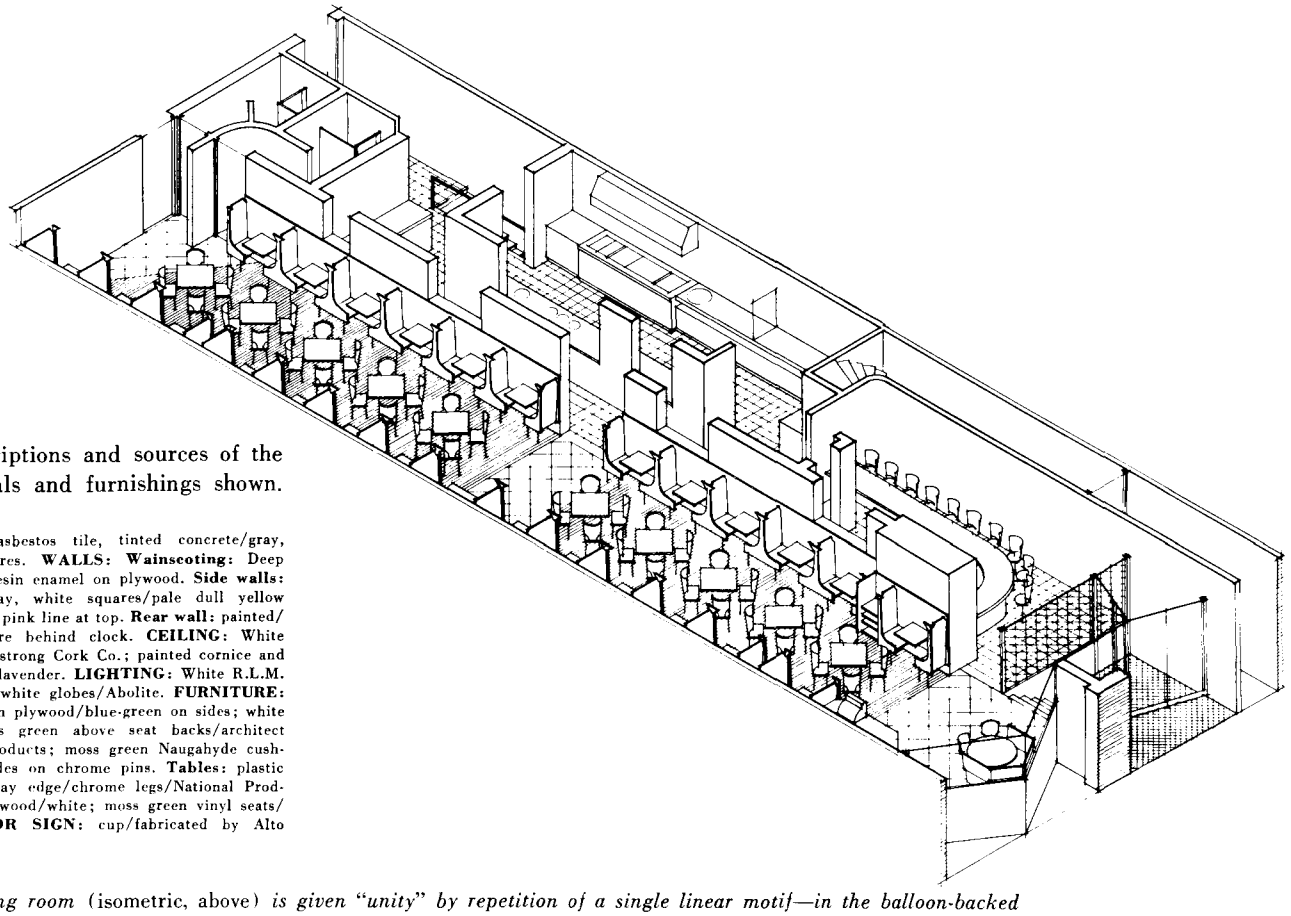
"Air-conditioning ducts are exposed for economy and to create the same kind of incidental functional ornament that developed from the exposed mechanical fans of the past.

"The wall ornamentation consists of the surprisingly cheap method of painting patterns above the wainscoating of the booths. The patterns—letters spelling 'Grand's Restaurant'—extend almost the whole length of the room and have the character of conventional stencils. On the facing wall is a direct reflection of the letters juxtaposed against the 'windows' to the open kitchen. These illogicalities emphasize the more ornamental function of the typography. The enormous letters also create a scale and unity appropriate to a public place in contrast to the inevitable individual scale of the multiple tables and booths. Besides the letters, stripes make old-fashioned borders which both distinguish and camouflage the junction of wall and ceiling."

The architects' explanation of the aesthetic of design—"a simultaneous play of duality yet unity"—is an abstract exercise that should appeal to students of the adjacent University of Pennsylvania as they eat their "Grandburgers." And in an age of mass production, interior designers might well give heed to their economical use of common things in uncommon ways.

PHOTOS, EXCEPT AS NOTED: LAWRENCE S. WILLIAMS

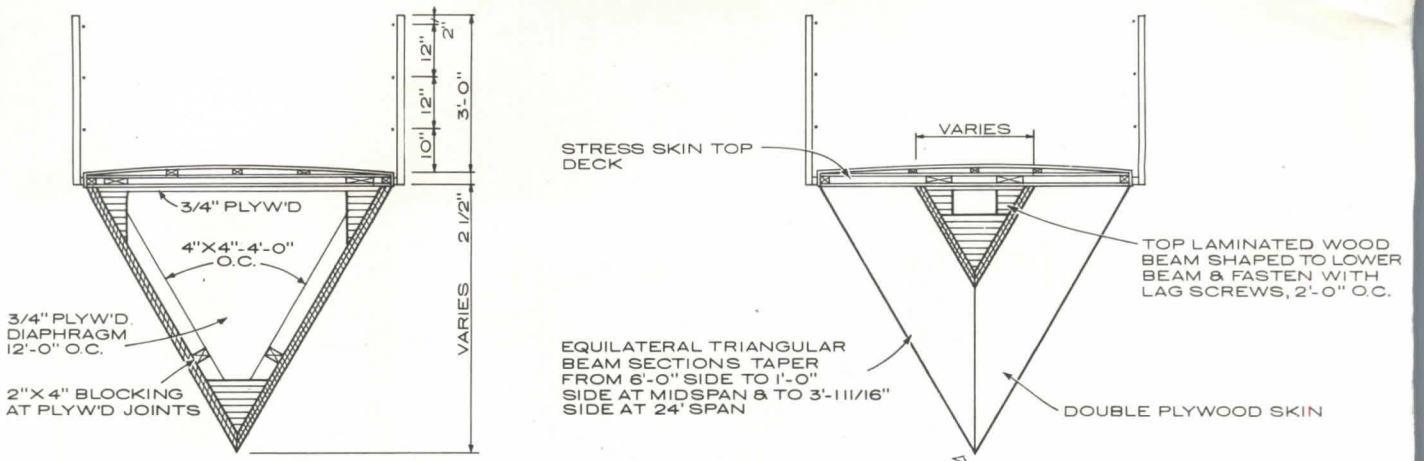




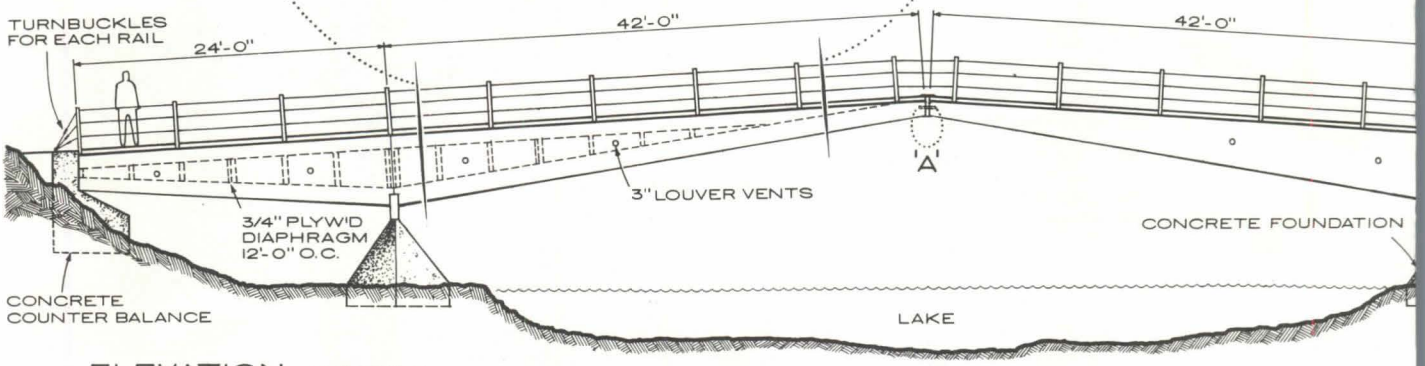
DATA: Descriptions and sources of the major materials and furnishings shown.

FLOOR: Vinyl asbestos tile, tinted concrete/gray, white, black squares. **WALLS: Wainscoting:** Deep blue-green epoxy-resin enamel on plywood. **Side walls:** painted plaster/gray, white squares/pale dull yellow letters/tied by thin pink line at top. **Rear wall:** painted/pink, yellow square behind clock. **CEILING:** White acoustical tile/Armstrong Cork Co.; painted cornice and exposed ductwork/lavender. **LIGHTING:** White R.L.M. metal shades/over white globes/Abolite. **FURNITURE: Booths:** Enamel on plywood/blue-green on sides; white Formica edge/moss green above seat backs/architect design/National Products; moss green Naugahyde cushions hung from sides on chrome pins. **Tables:** plastic tops/white with gray edge/chrome legs/National Products. **Chairs:** bentwood/white; moss green vinyl seats/Thonet. **OUTDOOR SIGN:** cup/fabricated by Alto Sign Co.

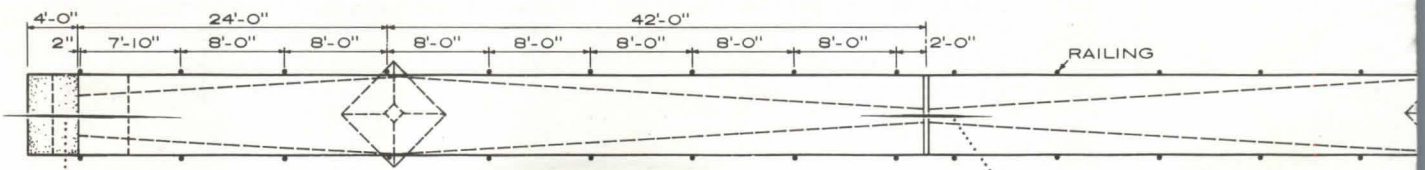
The main dining room (isometric, above) *is given "unity" by repetition of a single linear motif—in the balloon-backed bentwood chairs and in the sides of the booths. The motif is reiterated in the lighting fixtures. The walls express the "duality" of the design with a darker value at the bottom and a lighter value above. "The colors* [see DATA] *are intended to be secondary and cheerful but masculine in character," the architects note. Reflected lettering shows at top of facing page.*



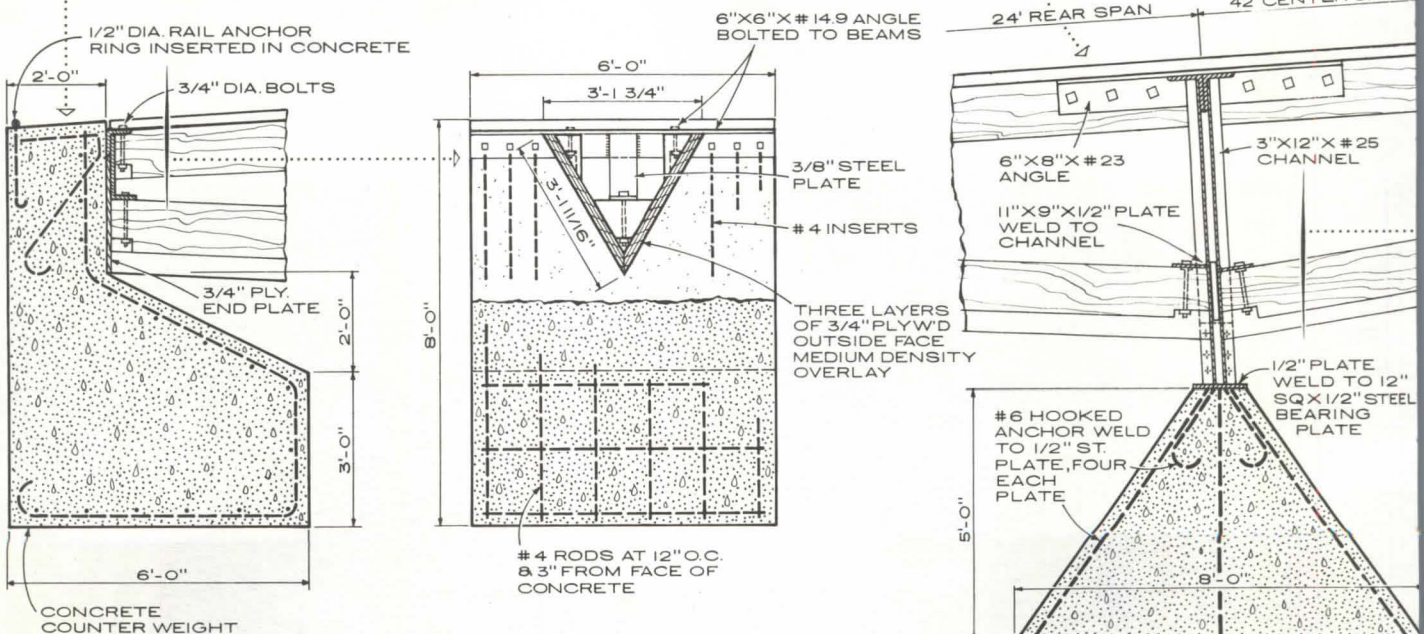
CROSS SECTIONS OF BEAM & DECK
1/4" SCALE



ELEVATION 1/16" SCALE



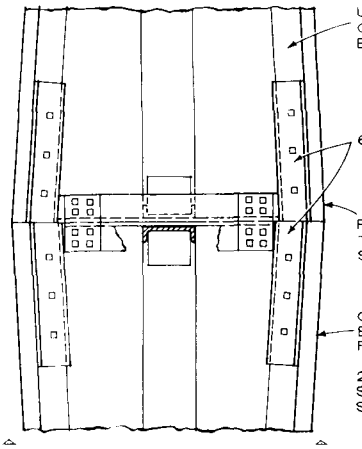
PLAN 1/16" SCALE



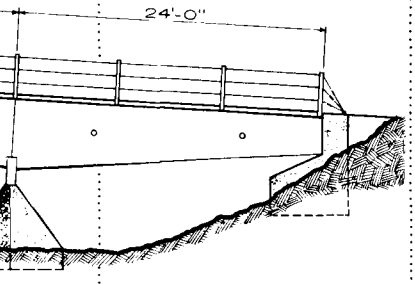
BEAM CONNECTION AT COUNTERWEIGHT

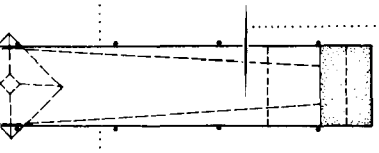
BEAM CONNECTION AT SUPPORT

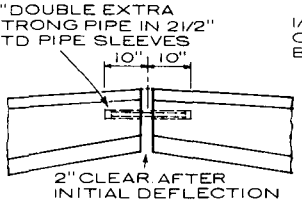
DETAILS AT 1/4" SCALE



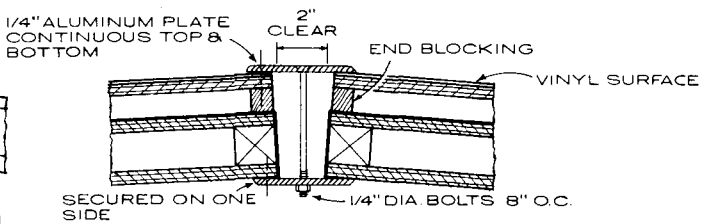
PLAN DETAIL



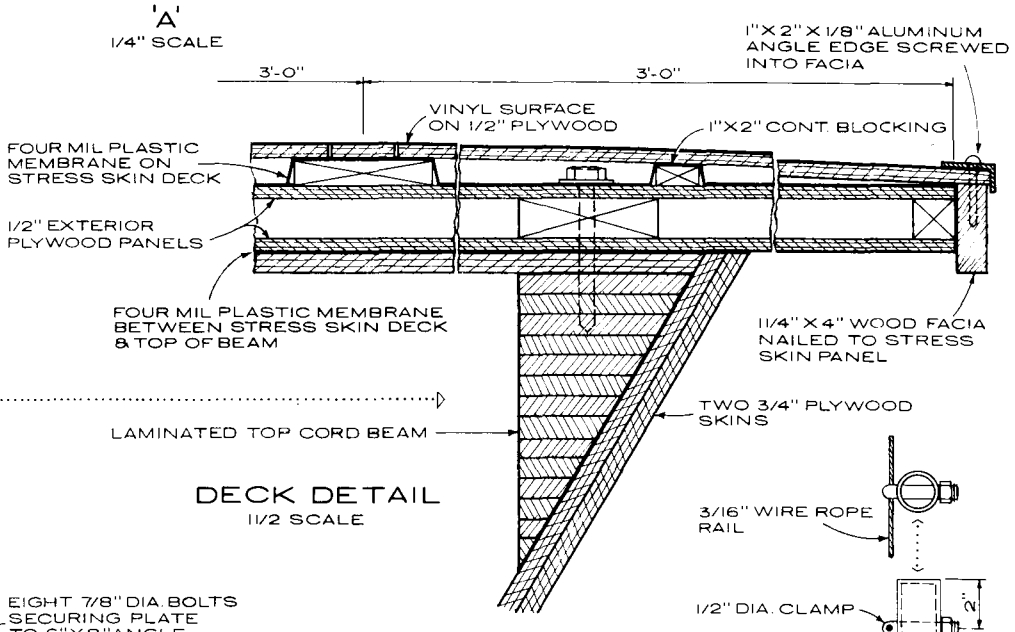




BEAM CONNECTION AT CENTER 'A'
1/4" SCALE

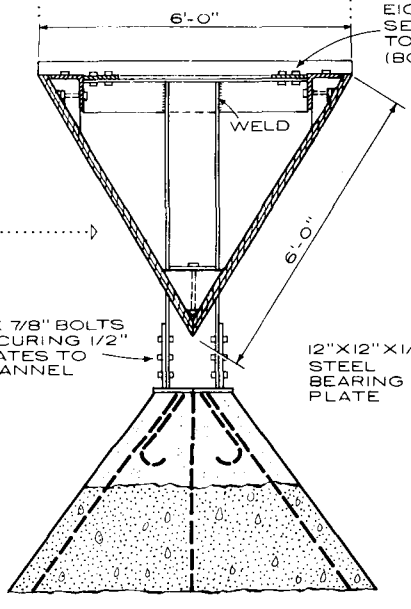


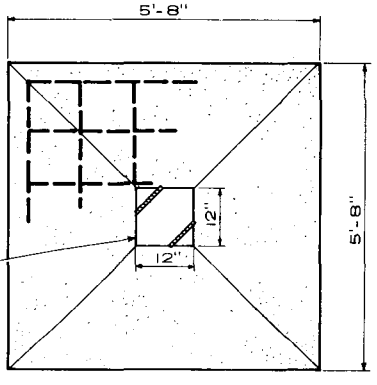
DECK JOINT AT CENTER 11/2" SCALE



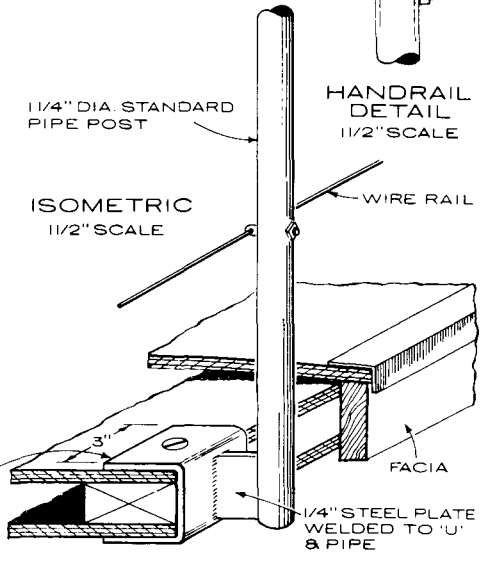
DECK DETAIL
11/2 SCALE

HANDRAIL DETAIL
11/2"SCALE





FOOTING PLAN



ISOMETRIC
11/2"SCALE

REED COLLEGE: Portland, Oregon
NEIL FARNHAM and SHELL & HOYT, Associated Architects

SELECTED DETAIL
PLYWOOD FOOTBRIDGE

Thin Shells for Free-Form Plans

BY KOLBJORN SAETHER

Architectural aspects of the "structural membrane theory," which demonstrate the applicability of thin-shell designs to random column planning schemes, are discussed by the head of Kolbjorn Saether & Associates, Consulting Structural Engineers, Chicago. This report has been adapted from a talk originally prepared by the author.

A somewhat less sophisticated, but equally correct title for this report might have been: The solution of one structural problem that took 10 years to solve, and one that might take another 10 years to fully evaluate. The problem: to determine the shape that will carry a uniformly distributed load from column to column through pure compression, the column arrangement being selected at random.

This discussion is not intended to develop simply one more shape, or one more clever system, in a field that is already flooded with innovations. More than that, it will present a complete theory that the designer will be able to expand and translate into a range of economical, aesthetical structures. Furthermore, application of this theory will permit one to erect roofs over any type of architectural free-form layout. All of these shapes, however, have typical characteristics in common and thereby reflect a style of their own, one that in the opinion of the author is almost classical in its appearance.

Free-form architecture differs from sculptural architecture in that the floor plan is determined by planning considerations only **(1)**. The dimensions given (without going into a discussion of optimum spans) are quite feasible for the type of thin shells to be discussed, assuming normal loads and reinforced concrete as the building material. For heavier loads (blast-resistant design) or the application of other materials, this might not hold true. With a conventional type of framing, these given spans, combined with the irregular layout, would be almost impossible to erect. It will be shown, however, that we are not only able to design this structure, but also are able to build it within a budget imposed by our present tight, competitive market. It is also more than a coincidence that we will obtain, as a by-product, a beautiful structure.

In designing thin-shells, it is currently fashionable to apply advanced calculus to an excessive degree. As a result, it is often mathematicians and not engineers who are hired to design the thin shell. Although this writer has great respect for mathematical tools, he still is not in favor of resorting to differential equations where simpler methods are feasible.

There are two basic differential equations for a flat plate: $\triangle\triangle F = 0$ and $\triangle\triangle W = p/D$. These two equations tell us that plates may be loaded basically in two different ways: one loading being parallel to the plate surface, and the other normal to the surface **(2)**. The first condition will set up stresses within the plate, but will have no reaction normal to its surface (diaphragm). The other loading will deflect the plate and create reactions within and normal to the surface (flat plate). If we ignore the curvature, the element shown may be used to illustrate these two conditions **(2)**.

If we consider the curvature, however, the unit is part of a thin shell and the conditions become much more complicated. If it were possible to write the general equation for this element, we would find it to be a complex combination of the two equations shown for the plate. However, the general equation is not known, much less the general solution to it.

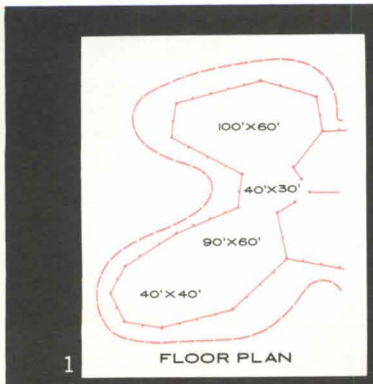
A study shows that this thin-shell element may carry exterior loads normal to its surface in a number of ways. Similar to the plate, it may support the load through shears and moments normal to the surface. These factors have been represented by dotted circular lines **(2)**. These are the "weaklings," as far as the shell is concerned, and we will rely on these to carry permanent loads only on rare occasions.

Secondly, this element may carry loads through one set of forces parallel to its surface, shown as solid lines **(2)**. Examples of these forces are the tensional hoop forces found in cylindrical tanks carrying tremendous liquid pressures. Two sets of hoop forces are available in all doubly-curved shells and each one is capable of carrying the full load. It is commonly found, however, that both sets will participate and each will reinforce the other. In some cases, the reactions from one set of hoop forces may even act in the same direction as the load, so that the other set of forces not only must carry the entire load, but also must resist the reactions from the other set of hoop forces.

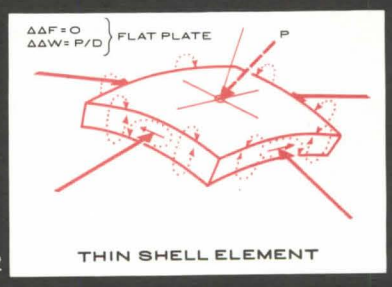
These hoop forces are the giants in thin-shell design. Without having to change in magnitude, provided that the shell is shaped correctly, they will traverse the shell from one end to the other while supporting loads of great intensity. If only stresses of this type occur throughout the shell surface, we may readily conclude that we have a condition that will permit an ultimate usage of materials.

A third method of carrying normal load is the combination of normal forces (hoop forces) and tangential shears. In effectiveness, these shears fall somewhere between the hoop forces and the radial shears. Since these belong to what we often refer to as membrane stresses (along with hoop forces), they have been shown also in solid lines **(2)**. Normally, they act as regulators or modifiers upon the hoop forces, and as such are important and useful in carrying concentrated or unsymmetrical uniformly distributed loads. If, however, they have to be relied upon to carry the total loads, they are less efficient. For example, when the hoop stress is undercut by an open edge of the shell, it is readily established that these shear stresses will soon build up tremendous peak stresses along the undercut edge, as the shear stress must skip from one strip or arch over to the adjacent one. A typical example of this is found in cylindrical shells. In these, high-peak stresses parallel to the lower edge result from these shears, and, where the shears cannot possibly exist, as near the bottom edge of the shell, radial shears and moments build up.

From the preceding discussion, we may arrive at the criteria for an ideal shell. These are: Under total load, only hoop stresses will develop throughout the shell surface. These stresses will be nearly uniform and, for concrete work, they must



1 FLOOR PLAN



2 THIN SHELL ELEMENT

3

be compressive. Tangential shears may be relied upon for unsymmetrical loadings and load concentration. Radial shears and moments will be permitted as secondary effects or temporary stresses only.

These criteria eliminate almost all elaborate shapes and leave us with less than a handful of shapes. Actually, only three shapes fulfill these terms, if we consider uniformly distributed vertical loads as our typical loadings. These are: the elliptical dome, the hyperbolic paraboloid, and the conoid **(3)**.

The dome, which dates back at least to Roman times, is by far the most commonly found. Although the hyperbolic paraboloid and the conoid may be considered to be about 100 years old, their development as structural shapes has taken place primarily within the last decade. In thin-shell design today, these three shapes are our principal working units, and each has seen a number of uses. These forms are quite rigid in their geometry, since, in order to maintain ideal stress conditions, they require definite outlines and support conditions. The dome, for example, must be supported by a circular ring capable of introducing stress in the direction of the dome. The hyperbolic paraboloid invariably requires edge beams for proper transfer of shear loads from the shell to its abutments. The conoid is the only one that does not require any specific arrangement as long as it is planned symmetrically and properly supported at its central point.

In recent years, the initial lack of flexibility in outline has not prevented architects and engineers from providing variations in their shell design. Generally, this is accomplished by slicing off segments of the dome or conoid, and by tilting the hyperbolic paraboloids or varying them in other ways to accommodate specific layouts. Each one of the operations, however, invariably results in a distortion of the original ideal stress conditions, resulting in secondary moments and often accompanied by large deflections. This approach, coupled with the lack of a full understanding of the corresponding stresses developing within the shell, is largely to blame for the "growing pains" in thin-shell development.

A review of these three shapes causes one to speculate. Why is it that these are singled out from among all of the possible shell forms? With proper application, why are the stress patterns in these shapes so simple? And, conversely, why are they so complicated for other shapes—or even for these three shapes under other loading conditions?

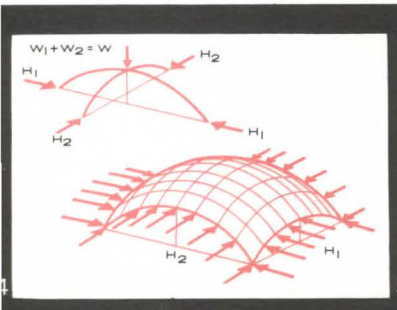
It will be demonstrated below that these forms, and their simple load patterns, come together in one surface—this surface being the ideal shape for the support of uniformly distributed loads from column to column. Furthermore, it will be shown that this resulting shape, rather than furnishing just one more singular answer to a specific case, may be made to fit practically every layout just by changing the parameters in the three basic shapes. Thus, these three forms combine into one ideal shape. Other shells, therefore, are deviations from this ideal shape, the less ideal conditions occurring in the form of a complicated stress pattern and a correspondingly complex structural analysis. By comparison, then, one might say that we have been working with the toe, heel, and midsection of a shoe, trying to make each of them into a complete unit.

To prove these statements, it is necessary to observe the structural conditions existing within the three basic shapes. First, consider the parabolic dome **(4)**. This is a form created by translating one parabola along another parabola. (Note the two parabolas in the upper left of **(4)**; the thrusts acting on each of these parabolas have been indicated.) It will be agreed that parabolic arches such as these, when subjected to a horizontal thrust, will be capable of carrying uniformly distributed live load, indicated by W_1 and W_2 respectively. At the point of intersection between these two parabolas, the load-carrying capacity consequently is: $W = W_1 + W_2$.

The parabolic dome is composed of a series of arches, each series conforming to one of the arches above. Assuming that these arches are spaced one unit apart in each direction and subjected to a horizontal thrust constant for each set, the intersection points on this surface have a load-carrying capacity equal to $W = W_1 + W_2$. In plan projection, the parabolic dome has a rectangular shape and is subjected to uniform horizontal thrusts H_1 and H_2 along its four edges. In elevation, these edges are parabolic and the slope of the surface normal to the edge is constant.

The surface of a hyperbolic paraboloid may be similarly created by the translation of one parabola along the other; however, in this case the second parabola is tipped in the opposite direction, or, in other words, forms a convex arch **(5)**. The two describing parabolic arches shown at upper left **(5)** are being subjected to horizontal thrusts H_1 and H_2 respectively. These parabolic arches also develop reactions due to these thrusts; the second parabola, however, has vertical reactions that act downward. The point of intersection between these two parabolas has, therefore, a load-bearing capacity $W = W_1 - W_2$. In the final hyperbolic surface **(5, *below*)**, there are indicated two sets of arches spaced one unit apart and furnished with horizontal thrusts H_1 and H_2. Consequently, one may conclude that the load-bearing capacity of this surface is equal to $W = W_1 - W_2$. It may be further inferred that in order to make W positive, the horizontal thrust H_2 must be smaller than H_1 if the parabolas have the same amount of curvature, or if the thrusts are of equal magnitude the curvature of the first parabola must be considerably steeper than that of the second. The plan outline of this unit is again rectangular and subjected to a uniform horizontal thrust along its four edges. The elevations of these edges are parabolically shaped and the slope of the shell formed with each edge is constant. The two upper edges may readily be made to match those of the parabolic dome previously described. The two lower edges will be discussed in conjunction with the following shape.

The circular conoid **(6)** is described by rotating a curve around a vertical axis. If the curve is convex and subjected to a constant radial thrust, it will have a uniform upward-acting load-bearing capacity. Since the width of these segments decreases toward the center, it is necessary to introduce a constant tangential thrust in order to maintain the constant unit radial thrust. (Proof of this statement was developed in a paper, "The Structural Membrane," which was prepared by the author.) In the lower left corner **(6)**, the basic stresses prevailing on this type



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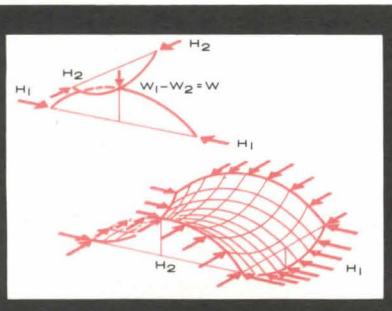

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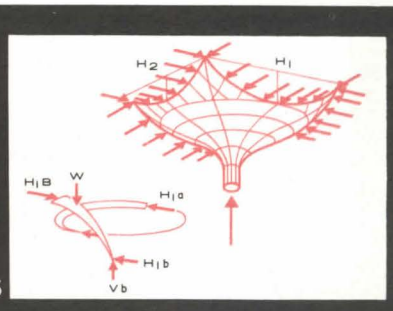

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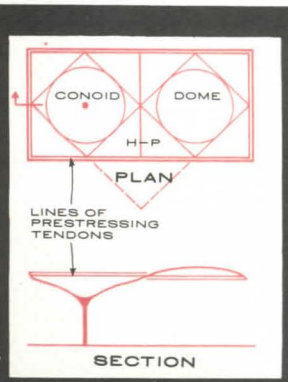

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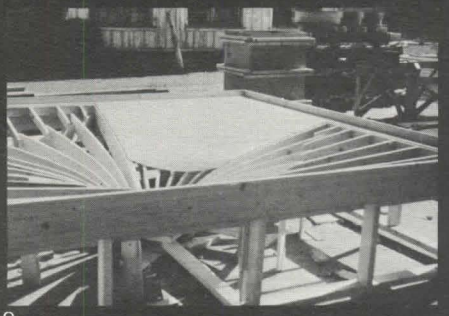

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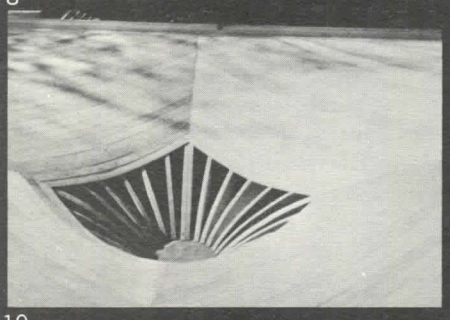

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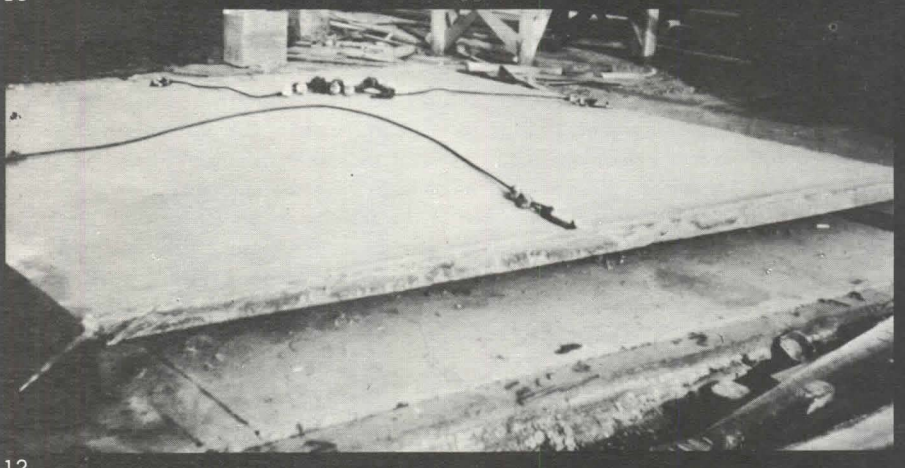

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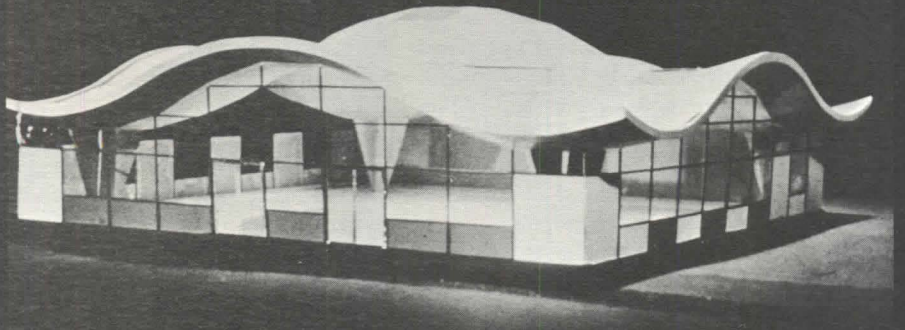

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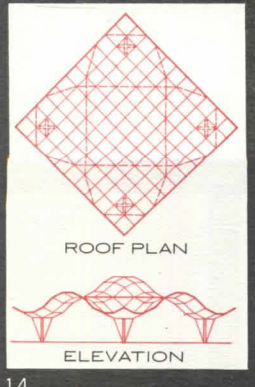

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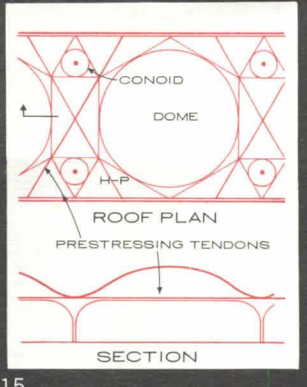

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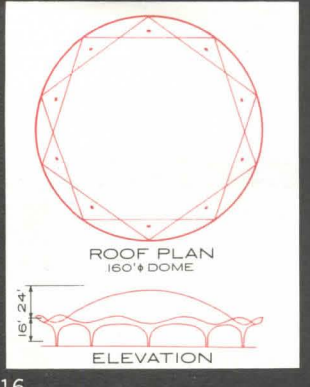

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of surface are shown.

The outline of the conoid is circular; the slope along this outline is constant. If we now assume a shape similar to the previously described parabolic dome, but inverted and with the bottom part cut away, we will obtain a shape that may be fitted onto the top of the conoid. The bottom edge of this added shape will be circular and the slope of its surface along this edge will be constant. A perfect transition between these two shapes is a matter of properly selected parameters. With this conoid so bordered with four inverted dome segments, it is readily proven that these edges will fit the lower edges of the hyperbolic paraboloid in the same manner that the regular dome can be joined to the upper edges. Assuming the edges are subjected to a constant horizontal thrust, the edge loads on the resulting shape are shown **(6)**. The transitions from thrusts normal to the edges that are prevailing within the dome, to those horizontal thrusts directed toward the center of the conoid, take place within the four dome segments.

By proper selection of our parameters, we have now shown that it is possible to make the slope of our composite conoid match those of the lower edges of the hyperbolic paraboloid. It is further possible to make the horizontal thrust of the conoid match the horizontal thrust along the lower edges of the hyperbolic paraboloid. This resulting shape, however, is a continuous surface from one column to the next, and all of its stresses are compressive and nearly constant throughout.

Although the foregoing is an approximate analysis of the validity of the structural membrane, a corroborating mathematical approach has also been undertaken by the author. Assuming that the preceding statements are correct, a next question might be: What will such a structure look like? It has been observed by both architects and engineers that a structure that is structurally right, will also be aesthetically right. In his work with the structural membrane, the author finds this statement to be constantly born out. In his opinion, each structure developed along the lines of this theory has resulted in lines and forms unsurpassed in beauty by any other type of structural shape.

In the following illustration **(7)**, the layout of what might be referred to as square schematics is shown. It combines the three basic units: the dome, hyperbolic paraboloid, and the funnel—each having a square outline. The resulting shape is a smooth-flowing surface stretching upward and outward from the column support. The shape entails two sets of straight horizontal lines, typical for all

structural membranes, which in this case are equally spaced across the surface and intersect at angles under 90 degrees. These are used to locate the prestressing tendons. With this prestressing, the required horizontal thrust is furnished to the entire shell. A model built from this same square layout is shown **(8)**. It represents a precast roof with about 30′ x 30′ column spacing. Note that each unit is approximately 20′ x 20′, the 30′ dimension being the diagonal length of the unit. The shape is divided by the straight lines into column units and dome units. Two stages of the construction of a half-scale column unit are shown: partially covered unit **(9)**, and view looking down into column itself **(10)**. Dome units are shown with partial covering and final unit ready for testing **(11, 12)**. The following is a description of the applied prestressing method with its square-hooped prestressing wire and its wire splice. In this instance, the wire is pulled against the corners of the prestressing frame built up of tubular steel. Corners are loose and made of angles and plates with short pipe stubs that fit into the main part of the stress frame. In this test unit, one jack in one of the corners was enough to stress the wire. Remaining corners were held back by anchor devices that were covered after the unit was poured. There are various layout possibilities for these anchor devices. Mainly, they consist of the eye bolts and nuts—the bolt being threaded through the corner unit and fastened by means of a nut. The fact that this hoop may be completely stressed by one jack may seem somewhat surprising. However, when one studies the mechanics and the related possibility of lateral shifting of each eyebolt, it is readily understood that by pulling at one corner and letting the adjacent corners shift slightly in the direction of the pulling jack, it is possible to stress all four sides of the hoop. A plan, elevation, and model, illustrating the use of prefab units, are shown **(13, 14)**. In this design, the conoid has been slightly distorted; however, an inverted dome shape has been used in combination with a flared-out column. This detail was dictated by a basic desire to keep the number of various types of precast or prefab panels to a minimum. In this design, a total of six different shapes was required. The unit is completely stressed and its entire thrust is supplied through prestressing cables that are stretched across the top of the surface and bent down only at the corners. Having only one bay and only four corner columns, the prestressing cables consequently bend down toward each column. If a multiple-bay layout had been chosen, the cable would run horizontally across all interior bays and then bend downward at each corner column.

Several kinds of prefab panels have been considered. Among these were stressed-skin panels of lumber and plywood laminations, metal sandwich panels having expanded-plastic cores, and precast-concrete panels utilizing the Shockbeton method in combination with cast-in-place joints. Even the possibility of using expanded polystyrene as the only material for these panels has been contemplated. With no stretch of the imagination, an arrangement similar to that of the folded dome, but assembled of tubular steel, appears feasible. In prefabrication, it should be recalled that if plant fabrication is anticipated, no unit should be more than 8 ft across at its shorter dimension. This measurement has been established by the maximum width limitation that exists on the U.S. highways.

So far, in this discussion, we have not created much variation, although we have established one new shape: the basic square schematic. This square schematic may appear to be more rigid than even our three basic shapes. In the following, however, we will begin to elaborate on the variations with the structural membrane.

By presenting the square schematic as a contour map, and subjecting this map to various inclined projections, it becomes immediately apparent that the basic square shapes might be modified into rectangles or into diamond forms.

Mathematically speaking, this is established by modifying the parameters of our domes, hyperbolic paraboloids, and conoids. Since the dome and the conoid basically consist of circular-horizontal contour lines, these will change into ellipses for both the rectangular and diamond-shape outlines. The hyperbolic paraboloid automatically changes into uneven paraboloids as soon as the outline is changed into rectangles or diamond shapes.

Of greater interest is the fact that the structural membrane may be created from base units having triangular-shaped outlines. In this case, it is possible to make dome and column units with triangular outlines and consequently make our column layout follow this pattern. Further, one can combine triangular column units and hexagonal dome units **(15)**. An interesting alternate to this scheme, and one that indicates a direction toward the free form or general solution, is one having a dome supported by 10 columns **(16)**. In this instance, the number of columns is of no real importance and any number of them may be used to support the dome. Note that the straight outline of the prestressing tendons is still maintained. There is a complete omission of beams, and the sweeping, continuously-curved surface is uninterrupted from one column


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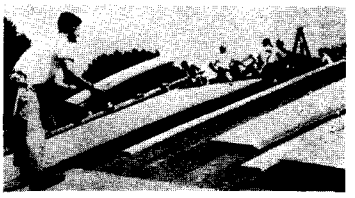
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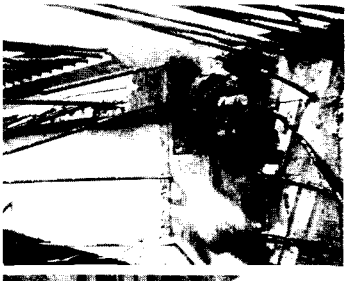
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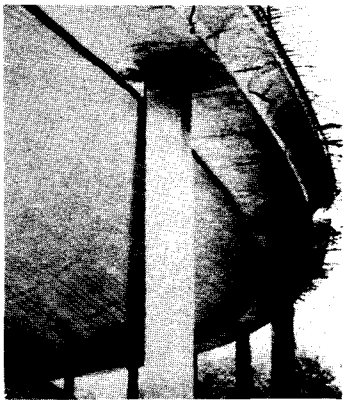
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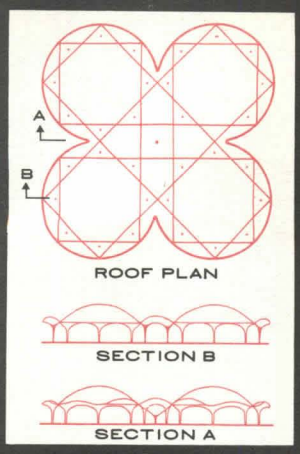

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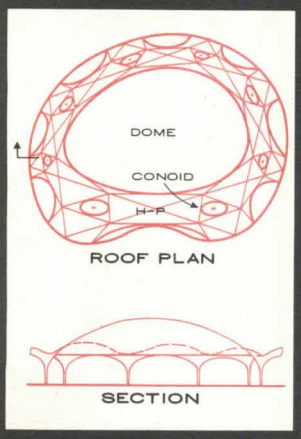

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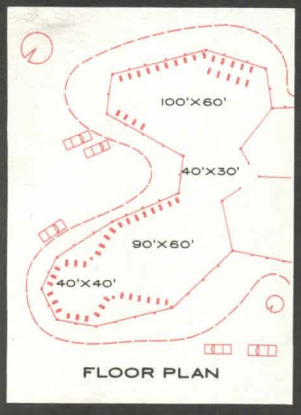

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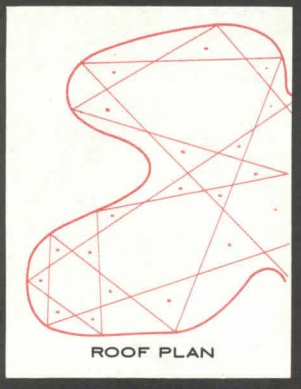

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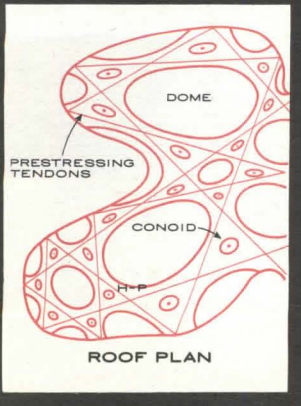

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to the next. Edge overhangs consist of partial domes that leave an undulated edge around the structure. Domes of this character might easily be considered for spans of 300 ft or more.

A recommended construction method for such a dome is explained by the erection sequence of a somewhat simplified structure of this type: a regular dome with a standard circular prestressed ring beam. This dome, for the Warner Auditorium in Anderson, Indiana, (for which the author served as a special structural consultant) is supported on 36 columns **(17** through **25)**. The first construction stage consisted of trucking a pile of gravel to the erection site. This gravel was rented from a neighboring gravel pit and returned to the pit after use. A layer of sand was spread on top of the mound of gravel and smoothed out. The sand in turn was covered with expanded polystyrene **(18)**. Next in sequence was the placement of reinforcing and concrete **(19)**. After the concrete had reached sufficient strength, the prestressing tendons were pulled to full prestress load **(20)**. This dome was then ready for lifting **(21, 22)**. Although this lifting process might normally require some four or five hours, this particular operation required a longer period of time due to problems associated with the operational equipment. After being raised to proper elevation, wedges were driven over the prewelded shear plates on the column, and the shell was secured **(23, 24)**. Having been placed prior to lifting, the roofing posed no problem **(25)**.

Advantages of structural membrane over this particular structure would be: a simplification of forming and casting would result, since there would be no ring beam to contend with. Further, there would be no curved prestressing wires and friction loss due to curvature of the wire would be eliminated. Therefore, a higher effective stress in the prestressing tendons would result. There would be longer spans and fewer columns, allowing a thin-shell surface to flow from one column to the next. Additional benefits would be smaller foundation cost, less expense for columns and connectors, and a greater freedom in architectural design.

Although the feeling may persist that various architectural layouts and differing structural shapes are still limited, the following example **(26)**, in which more sophisticated possibilities are demonstrated, should indicate otherwise. Combined here are four eight-column supported domes flowing from the dome edge to a center column. An almost unlimited variety of this type of regimented structural membrane may be developed. Perhaps the basic significance of the presented theory is indicated by the example shown **(27)**. In this example, the shape has been selected completely ad libitum. Afterwards, the preferred column arrangement was selected through trial and error and the corresponding locations of the prestressing cables were determined. The following rules were observed:

(1) Intersecting tendon lines subdivide the shell into various polygonal areas.

(2) Adjacent areas alternate in shape. If one contains the dome, the adjacent area must include the column.

(3) The column is located at the center of gravity of its respective area.

(4) By connecting the midpoints of each polygon side with straight lines, all hyperbolic paraboloids are outlined.

(5) The dome on one side, and the conoids on the other side, border these areas.

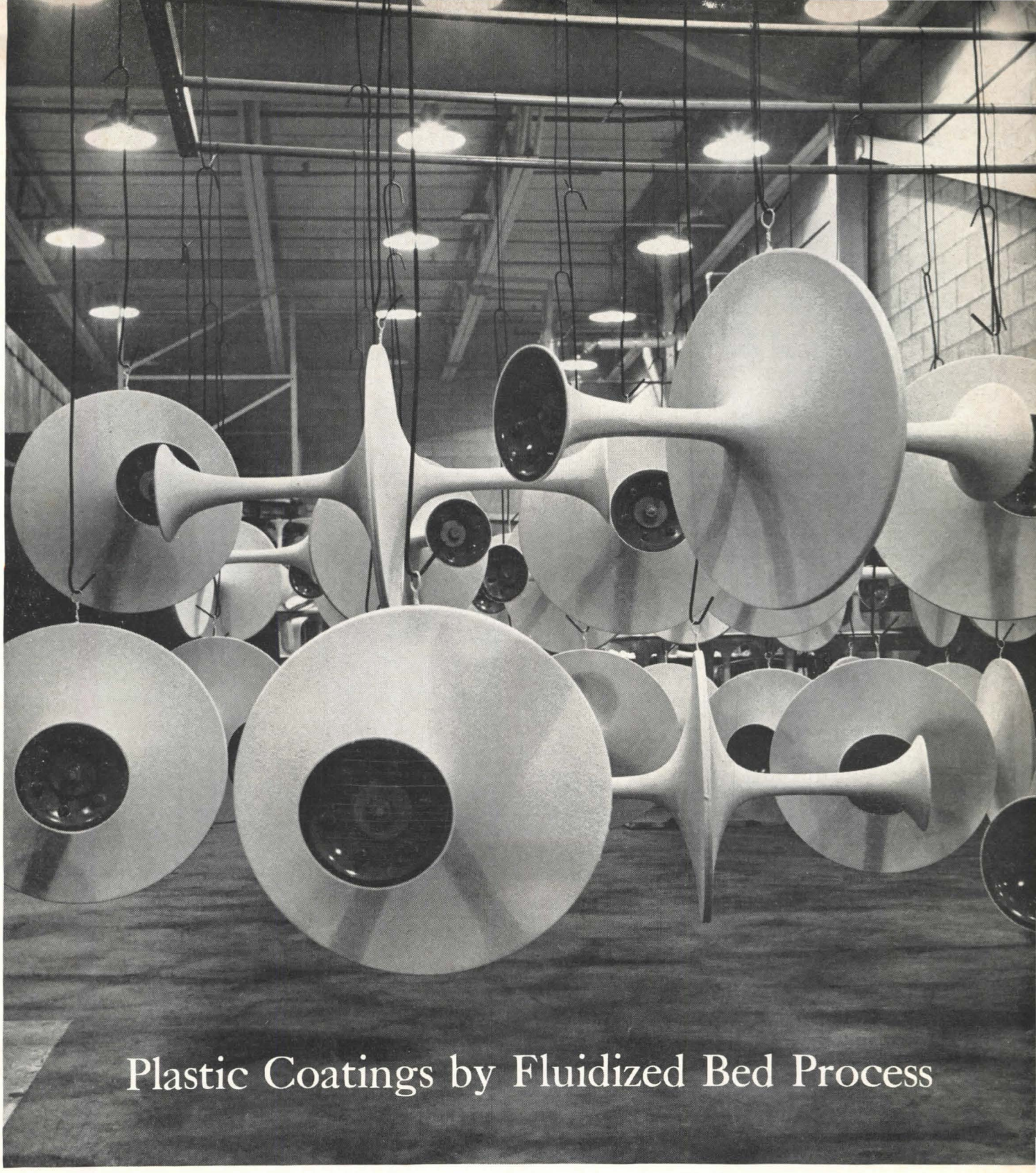
(6) The inscribed ellipse within the conoidal area determines the junction between the true conoid and the segmental dome transition areas.

With the different areas outlined, it is a simple matter to determine the various parameters for each area so that complete continuity from one area to the next is obtained.

Column reactions, internal stresses, and thrusts are now determined in a manner similar to that of a roof drainage "run-off" chart. Ridge lines determine drainage areas. Assuming that the loads within the dome are distributed in two directions inversely proportional to the radius of curvature of the corresponding parabolic arch, the corresponding horizontal thrusts may be expressed in writing. From these values, both the tension in the tendons as well as the actual stresses may be written as: $T = \Sigma H \times b$; and $f = H \cos \alpha / \cos \beta$.

We are now prepared to solve the problem posed at the beginning of this discussion. The results are shown **(28)**. From the given outline and column locations, the prestressing lines are determined **(29)**. Some "cut and try" in our approach is required. After these lines are fixed, the various areas are outlined by connecting midpoints of each side of each polygon. The resulting contour lines are illustrated **(30)**. From this point on, stresses and prestressing requirements are determined as explained above.

This structural membrane theory, the combination of the three basic shapes—the dome, the hyperbolic paraboloid, and the conoid—allows us to tackle the problem of free-form architectural layouts with relative ease. The resulting shapes demonstrate an almost 100 per cent effective use of materials, a fundamental requirement in the solution of long-span structures.



Photos: William Stephens

Plastic Coatings by Fluidized Bed Process

This article describes a recent development in coatings for furniture components that has great potential for building product application.

Since its founding 25 years ago, the firm of Knoll Associates has been dedicated to the use of materials that assure longevity for its timeless designs. Its search for enduring materials has resulted in a striking line of furniture, familiar throughout the world, which makes use of marble, teak, wire, plastic, chrome, hand-tufted leather, and bentwood, to name a few. With this background of manufacturing, it is characteristic that Knoll would be the first furniture producer to research and install its own fluidized bed production coating line. Coatings resulting from this process provide tightly-bonded surfaces having a remarkable ability to withstand impact as well as the effects of corrosion.

In the mid-1950's, Knoll began to experiment with various coatings and finishes for application to legs, bases, and large metal masses of furniture at floor level. All of these components are normally subjected to severe service: scuffing from shoes; chipping from vacuum cleaners; impact, abrasion, and other hard-wear conditions. In 1957, this manufacturer learned of the fluidized

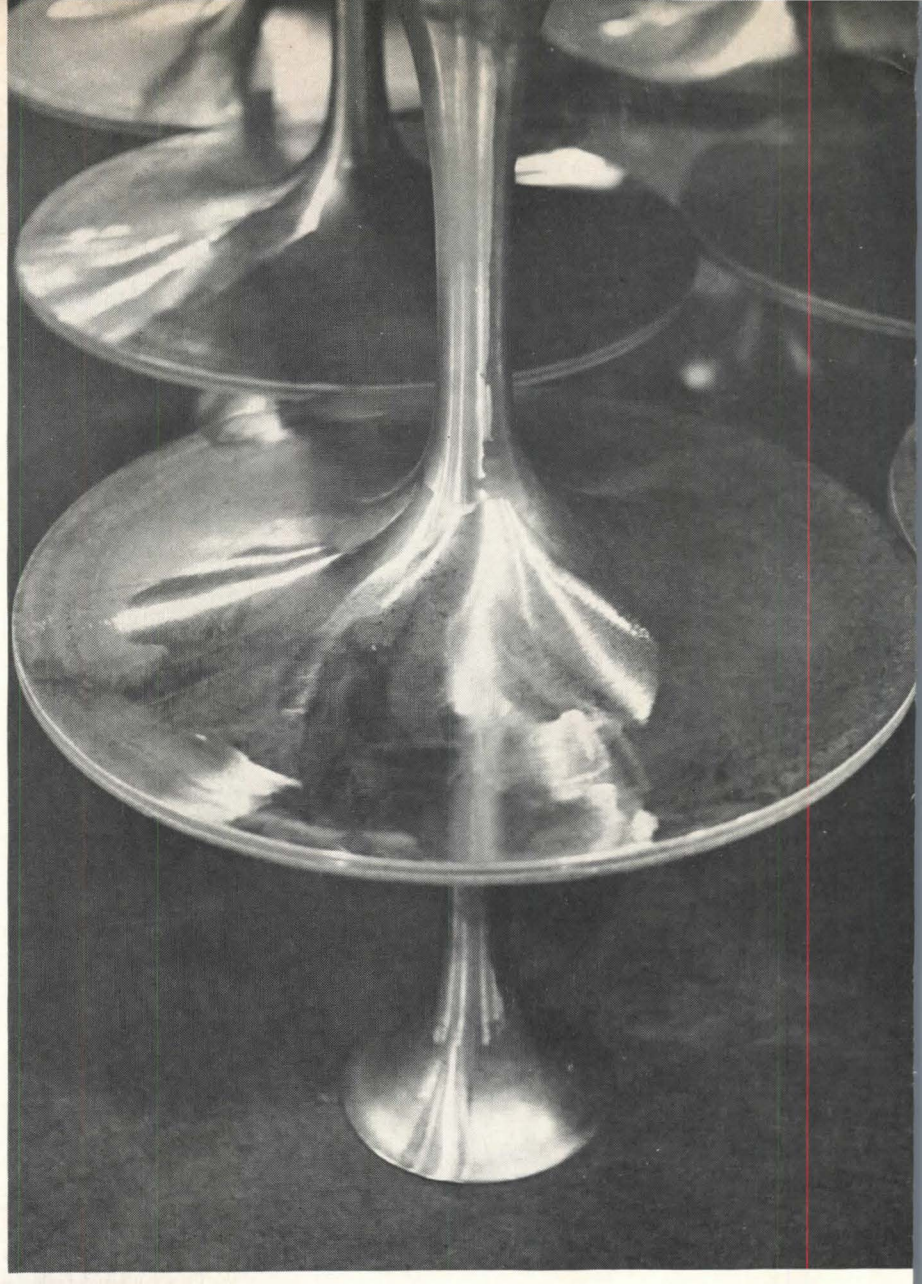
bed process for applying plastic coatings. Introduced to the United States only two years earlier, this new technology had already attracted other industries, since, in addition to the advantages cited above, this type of coating has better electrical insulation, longer life in outdoor service, and can be applied to many metal substrates.

Essentially, the process is a simple one. Substrates to be coated are preheated to a temperature above the melting point of the plastic to be applied. Components are then immersed in a fluidized bed or tank with an appropriate motion. Dry plastic powders are fluidized by a rising current of air, passing through a porous plate at the bottom of the specially designed tank. In this state, the powders appear and act much like a liquid. While immersed, the powder particles, which are at room temperature, come in contact with the heated components and are fused to their surfaces. In this manner, plastics can be fusion-bonded onto a substrate to a coating thickness ranging from 6 mils to as high as 60 mils in only one application. After removal from the bed, the components are postheated to completely fuse or coalesce the coating, or to cure the resin if a thermosetting compound type. This process was invented (for the use of plastic powders) in West Germany in 1953 and exclusive licensing rights in the United States are now the property of Polymer Processes, Inc.

Many furniture components are now coated by Knoll, using this process. These include pedestals for Saarinen chairs; the complete Bertoia chair; bases for Richard Schultz chairs, chaise longues, and tables; arms of the Pollack chair; and others. A satin, off-white, eggshell finish is applied as the standard color, but black may also be obtained.

Fluidized bed coatings offer advantages for other architectural products. In fact, metal window sashes, balustrades, and aluminum storm doors and windows have been so coated by custom coating firms.

Picture story of coating process for a base and seat (*right*): Die-cast aluminum bases degreased and bolted together in pairs (**1**). Wire seats immersed in tanks during cleaning process (**2**). Bases on conveyor moving into spray booth for electrostatic primer coat (**3**). Spraying bases with electrostatic gun (**4**). Small component is being hand-dipped in dry plastic powder to illustrate technique (**5**). Storage of coated seats and bases prior to postheating (**6, 7**). Fused pieces emerge from postheating ovens (**8**). Inspection and stacking of seats as they move from heating ovens (**9**). Other cellulosic coated bases (**10**).



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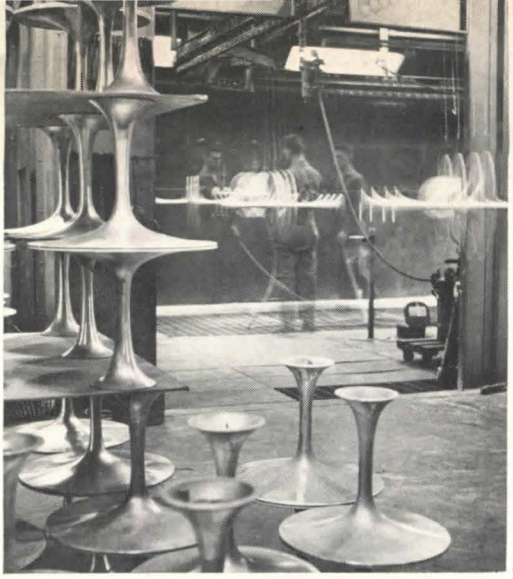

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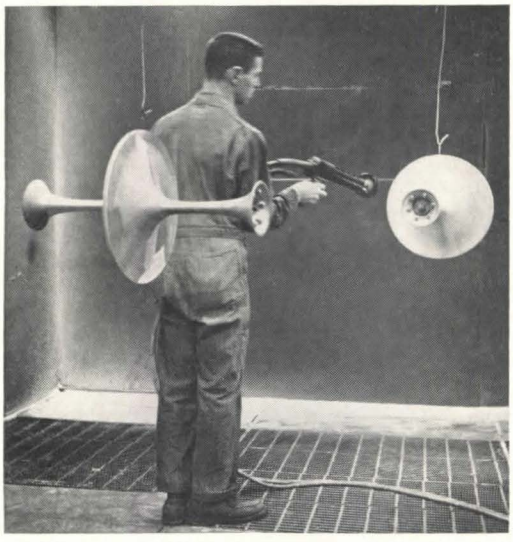

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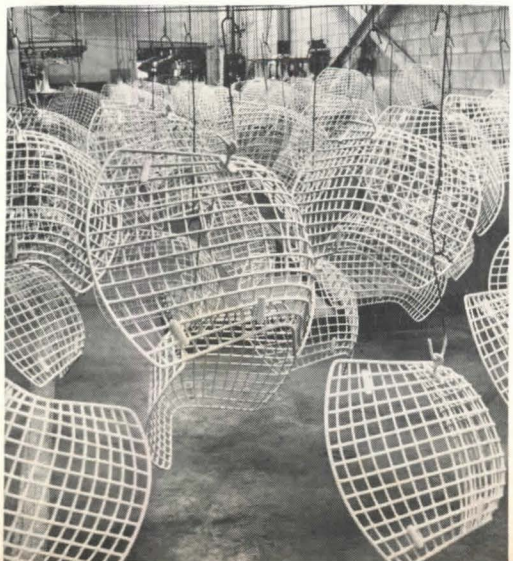

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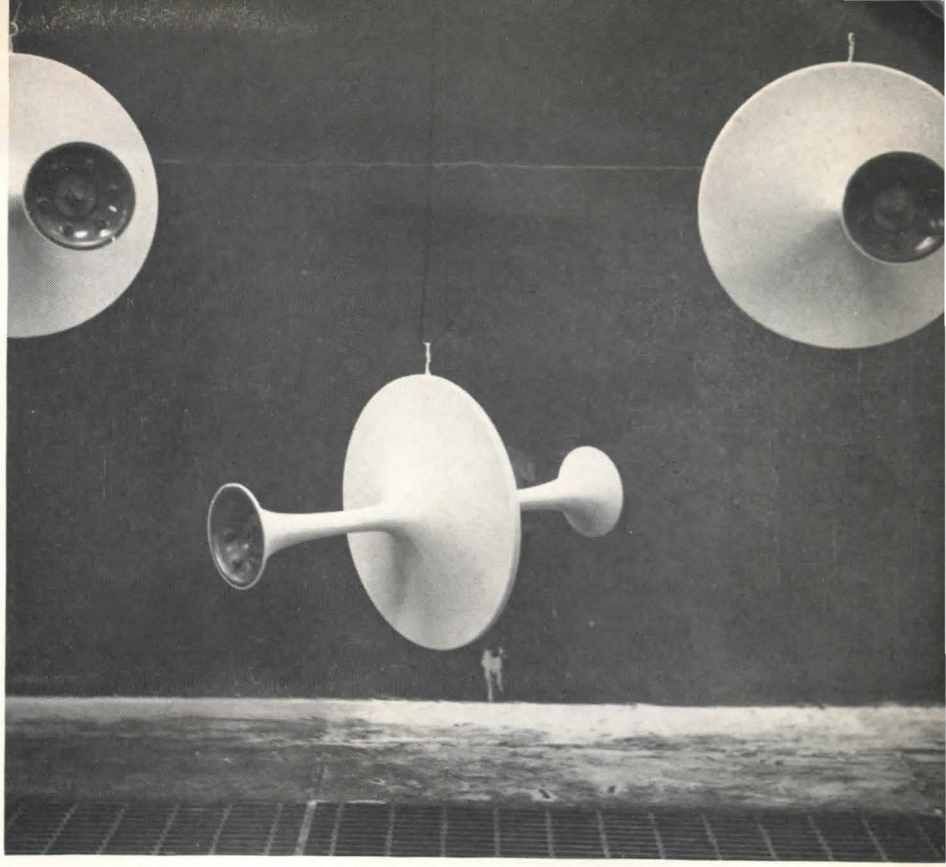

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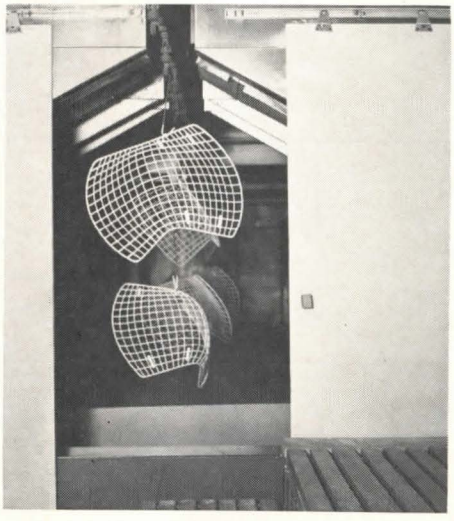

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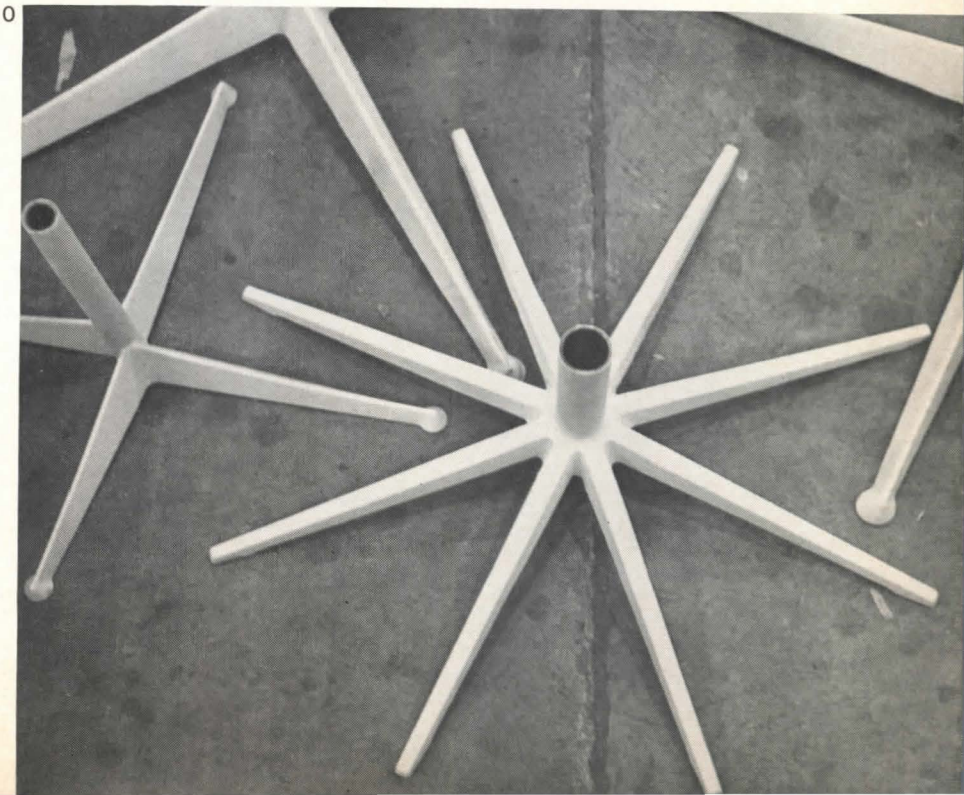


Selecting a Floor

Many considerations affect the selection of a flooring material, and the architect will make his own decision as to which type is most appropriate. The following arguments for two of the most widely used floor coverings have been developed by the Asphalt and Vinyl Tile Institute.

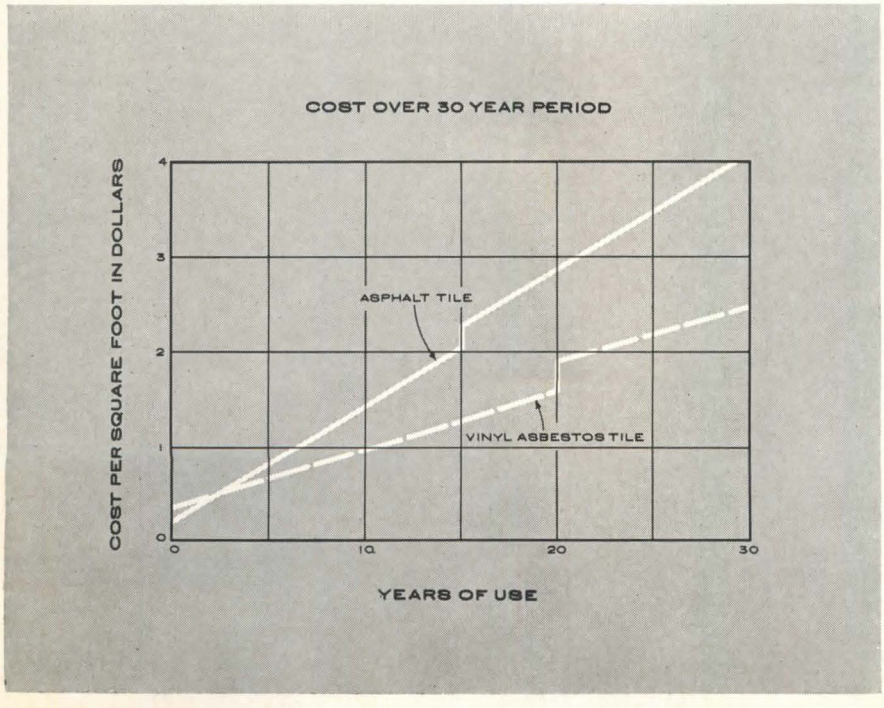
What are the cost factors involved in the selection of floors for schools, institutions, public buildings, commercial offices, stores, and similar areas? First cost certainly should not be the deciding point, for over a period of years one must maintain the floor, and then replace it when it is worn out. The three main factors that must be considered and added together to obtain the final true cost of the flooring are: (1) installed cost; (2) maintenance cost per year; (3) replacement cost at given periods.

Since the dollar value of each of the above items varies according to the quality of the material and the type of service, the figures used in this analysis are based on a good grade of flooring material, typical traffic conditions, and a reasonable degree of maintenance.

Although there are countless floor coverings on the market, the two selected to illustrate the problem are ones that are and have been most widely used for many years in the general areas mentioned: (1) vinyl-asbestos tile; and (2) asphalt tile. They represent relatively low-priced flooring materials.

Cost data from offices, banks, schools, and many other similar locations were used where it was felt that reliable information was available. Data from a number of published articles on flooring were also included. From these figures, the maximum average costs were determined for installations of 20,000 sq ft or more (*see table*); a chart was also prepared (*as shown*). The latter illustrates the total cost per sq ft for each type of flooring after any given length of time. Thus for vinyl asbestos tile, the curve starts at 34¢ per sq ft, the installed price. To this is added 6¢ maintenance cost per year. At the end of 20 years, the cost of the floor covering therefore amounts to $1.54 per sq ft. The tile is then replaced, so another 34¢ is added. To this $1.88 another 6¢ maintenance cost is added each year, so that at the end of 30 years the vinyl asbestos tile has cost a total of $2.48 per sq ft. Similarly, the cost of asphalt tile amounts to $4.06 per sq ft at the end of a 30-year period.

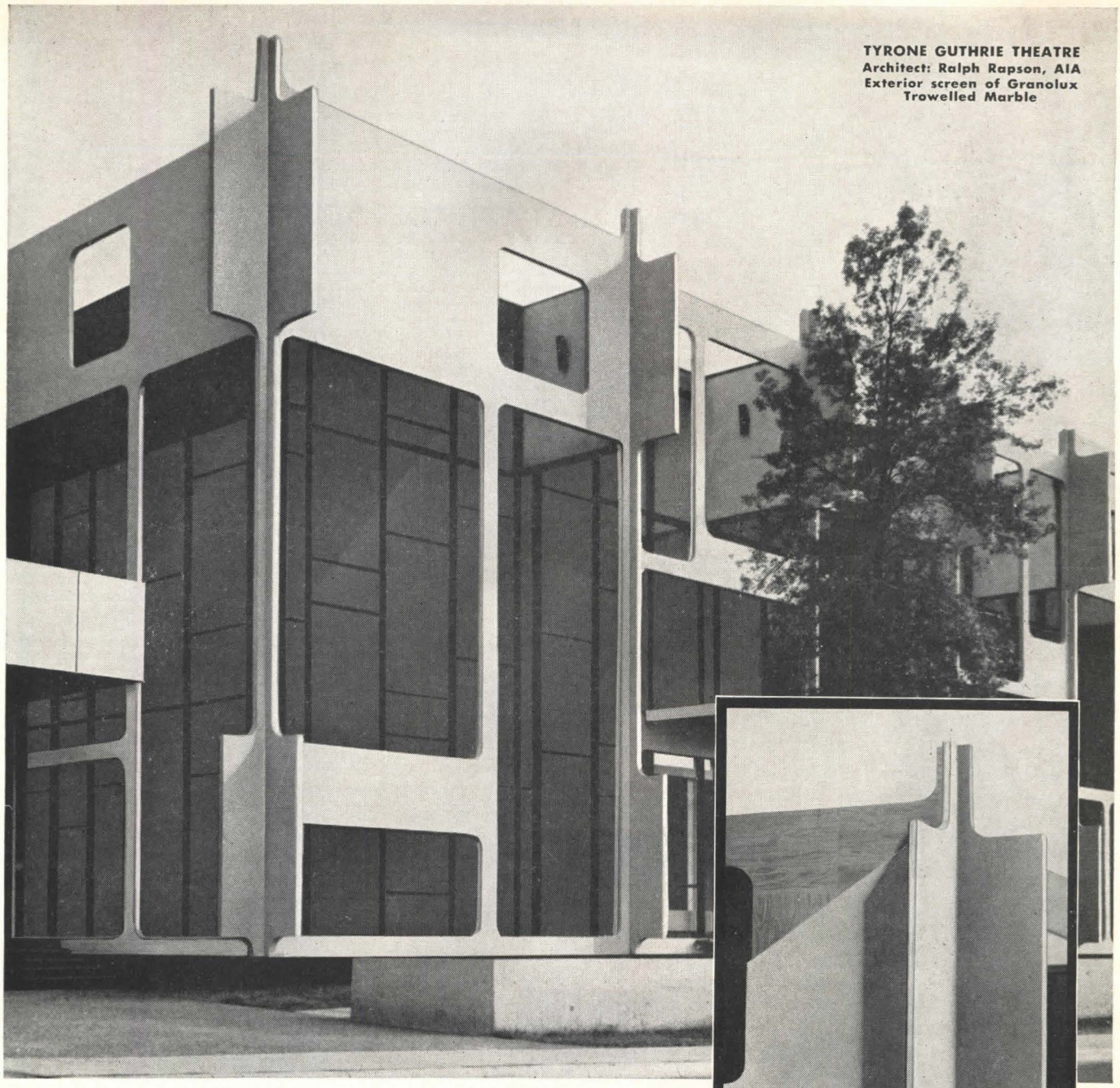
		Installed Cost per sq ft	Maintenance Cost per sq ft/year	Expected Years Life
Vinyl-Asbestos Tile	(⅛")	$.34	$.06	20
Asphalt Tile	(⅛")	.23	.12	15



These two smooth surface flooring materials have several advantages: (a) both types of tile may be used above, on, or below grade without special subfloor treatment; (b) being fire resistant, they greatly reduce any fire hazard; (c) the smooth surface of the tile prevents the harboring of germ life; and they are made from materials that do not provoke or aggravate allergies; (d) stains, spots, and chewing gum are easily removed; (e) repair of damaged or worn spots is accomplished simply by replacing the affected tiles; (f) the numerous colors and patterns that are available permit unusual decorative effects. Traffic lanes may be emphasized, and game courts and other patterns may be built in the floor; (g) both types of tile have a long and successful record.

REFERENCES

Data obtained from the following sources were used to derive the average costs in this article: *Saving Dollars in Building Schools*, by David A. Pierce, Reinhold Publishing Corp.; "The Cost of a School House," a report for Educational Facilities Laboratories, Inc., 1960; "Maintenance of Vinyl Asbestos Tile," *Skyscraper Management Magazine*, March, 1958; "Chains Discuss Their Store Flooring Problems," *Chain Store Age*, April, 1962; 40th Annual School Superintendents' Convention State Teachers' College, Bridgewater, Mass., 1955, speech by Edward Gilpatrick, Business Manager Massachusetts Department of Education; Aetna Life Insurance Company, Hartford, Connecticut; Chase Manhattan Bank, New York; Connecticut General Life Insurance Co., Hartford, Conn.; International Business Machine Corp., New York; R. H. Macy, New York; Western Electric Company, Inc., New York.



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BY WILLIAM J. McGUINNESS

Comparative costs for a conventional year-round air-conditioning system and a total-energy system for a high school are reviewed by a practicing mechanical engineer.

For some time there has been a distinct trend toward the centralization of power sources in the control of utility companies. Examples are: the distribution of electric power used not only for lighting, but also for resistance heating and for cooling; the ever-increasing use of district steam for heating and—through the use of absorption machines or steam-driven compressors—for cooling; the most recent advance in district services is at Hartford, Connecticut, where, for the first time, chilled water may be taken from street mains.

All of the foregoing changes have removed the process of combustion from the individual building. The private generation of electric power in buildings, so common early in this century, has all but disappeared.

Although it is likely that this movement will continue to grow stronger and expand where it is appropriate, we are now witnessing a most interesting exception.

"Total Energy Concept" identifies an independent system, now in successful use at the Bergan Catholic High School, Peoria, Illinois, which uses fuel oil as a single energy source. The method has been adopted for eight other projects, six of which are now under construction.

The design team responsible for the installation at the Bergan School included Drake-O'Meara Associates, Architects; Charles J. R. McClure & Associates and W. F. Rath, Engineers; and Brother Joel Damian, Construction Consultant.

The school is operated by the Brothers of the Christian Schools, an order which staffs many high schools and colleges in the United States. Brother Damian, their well-known Assistant Provincial of the St. Louis Province, was largely responsible for this technical advance by his encouragement of proposals by Drake and McClure.

Educators in this group had become convinced that, in view of the increasing numbers of people to be educated and the necessary all-year availability of the facilities, the limitation of the traditional school year was unrealistic. Looking ahead to the ultimate year-round use of the high school building, the Reverend B. Rank, President of the Board of Pastors where the school is located, gave his assent to decisions that favored an economical solution and included full air conditioning. An earlier proposal of a "court" scheme (windows in every room) was scrapped in favor of a compact, thermally-efficient arrangement; all rooms are windowless, though corridors give pleasant views of the countryside. The construction savings plus distinct savings in operational cost (including amortization of equipment) led Brother Damian to remark that "the air conditioning had been acquired for nothing."

The savings of the compact plan are, of course, familiar, but the efficiency and economic advantage of the "total energy" scheme are unique.

No electrical power is received from the utility company, with the minor exception of a small secondary system for emergency lighting. There are no boilers in the building. Water is obtained from private wells for domestic use and for a water-source heat pump, which is one, though not the most important, of the many components.

There is a single energy source in the form of No. 2 fuel oil, which is not burned but is used to power diesel engines that drive three electric generators—two at 250 kw rating and one at 150 kw.

Starting with this unusual item, the components of this fairly complex but flexible system need to be enumerated.

1. *Electric Generators.* These carry the load of lighting and power, and in addition supply electric resistance heating for the water in a high-temperature water system. They power an electrically-driven water-source heat pump.

2. *Waste Heat Recovery Silencer.* Heat from the diesel exhaust is recovered here.

3. *Heat Storage System.* A 10,000-gallon insulated reserve tank below grade stores high-temperature water.

4. *High-Temperature Water Circuit.* Pumps circulate the high-temperature water through the heat storage tank and the electric heater with connections that make it directly available to the heating system.

5. *Flash Tank.* Here the high-temperature water from the diesel engine and the waste heat recovery silencer is flashed to 2 psi steam.

6. *Low-Pressure Steam System.* Moving from the flash tank, low-pressure steam flows through a converter that is a heat source for a conventional circulated hot-water heating system. A second use for the steam is in an absorption chiller to make chilled water. A third path for the steam is through a heat rejector. Utilizing items Nos. 1 through 6, oil produces heat that can be adjusted, augmented, stored, used for heating or cooling, or rejected.

7. *Heat Pump.* Water from two wells provides a heat source for the heat pump that may supplement the waste heat salvage feature of the generators in very cold weather.

The annual cost of operation was calculated for a conventional system, including electrical energy purchased for light and power, fuel for heating, service and investment cost per year (for a 20-year period). The comparative cost for the total energy system was also estimated. It included fuel cost, service to heating, air conditioning and generators, and investment cost. The results were: Conventional System—$28,450 per yr; Total Energy System—$23,900 per yr.

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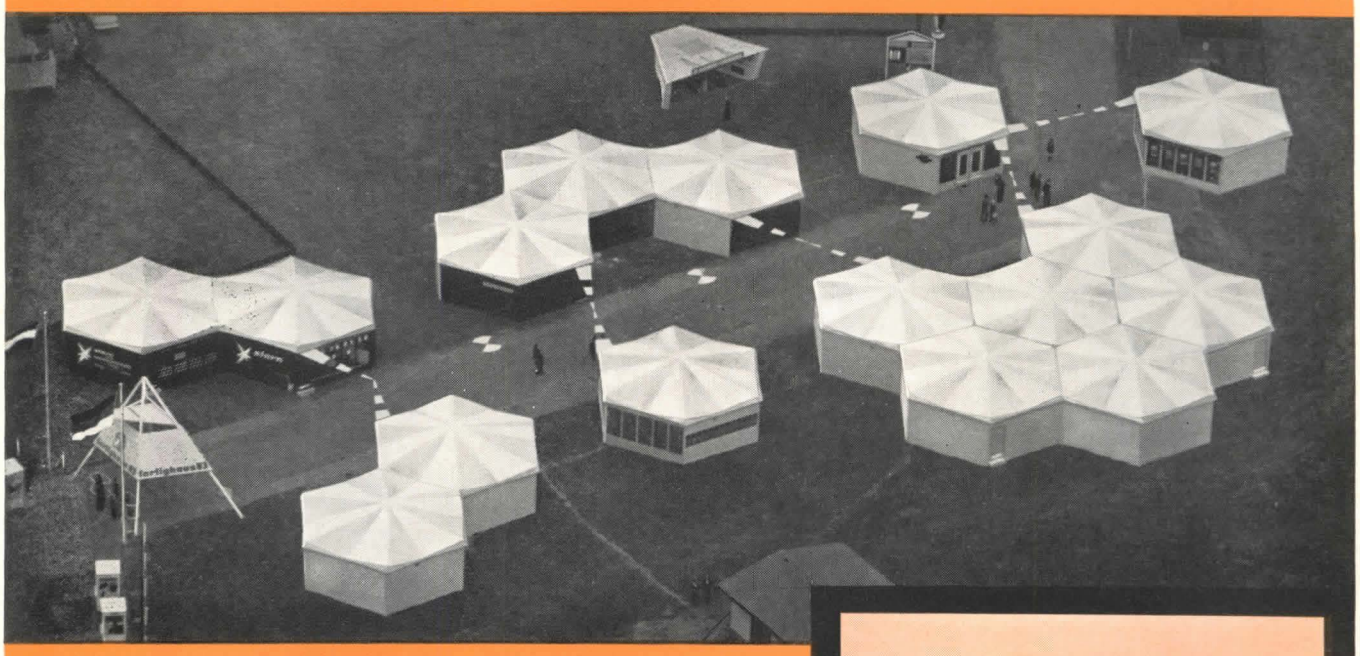

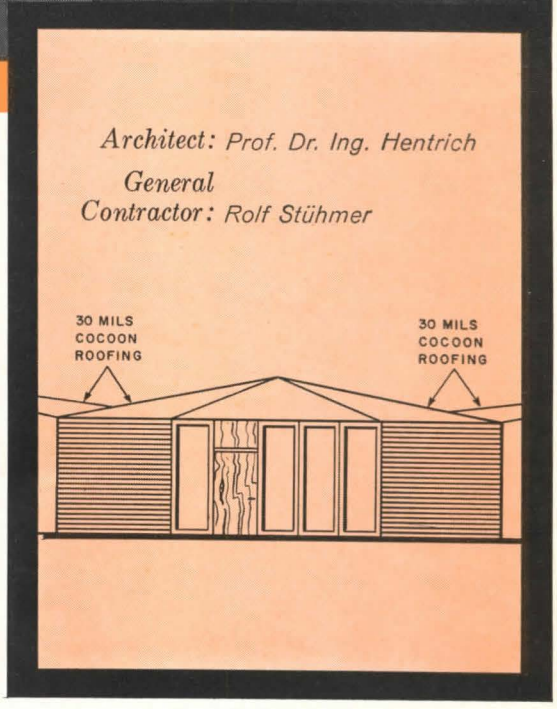

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Weathered Steel

BY HAROLD J. ROSEN

A building material that has been in existence since the 1930's, but that has been employed only recently as an architectural material, is discussed by the Chief Specifications Writer of Kelly & Gruzen, Architects-Engineers.

There are undoubtedly to be found in various industries many materials that have not as yet been adapted to architectural use. Manufacturers who supply materials to the auto, ship, airplane, and missile industries, for example, may not be aware that certain of their products, when modified, could suitably be used by the construction industry. Architects, on the other hand, have limited means available for investigating such materials. The problem of bridging the gap between the two is indeed considerable.

Recently, a material that has been used since the 1930's in the chemical, shipbuilding, and freight-car industries has been successfully employed as an architectural material. The material is a steel that is remarkably resistant to corrosion from normal atmospheric exposure and attains an oxide coating of its own, which may preclude the use of paint. This characteristic permits it to be used both as a structural and as an ornamental material, requiring no additional maintenance painting for the life of the building.

Bethlehem Steel Company's Mayari-Rand and U.S. Steel Corporation's Cor-Ten are steels that meet the requirements of A.S.T.M. Specification A242; they develop a tightly adherent russet-brown oxide coating when exposed to the atmosphere and weather. Weathered steel, as this product is known, has a hard, durable oxide coating, which, once formed, protects the steel from further corrosion. The color of weathered steel can generally be described as russet brown, with an intermixing of browns, reds, and blues. The use of exposed, unpainted steel of this type for architectural purposes was first conceived by the late Eero Saarinen, who used Cor-Ten in his unique design for the John Deere Company's administration building in Moline, Illinois. It has since been used in several major designs where the architect has desired a dark, naturally-textured appearance in a virtually maintenance-free metal.

In the John Deere building, the material has been used successfully for exposed exterior columns, beams and girders, and for exterior balcony framing and sunscreens. In other structures, it has been used for exposed spandrels and curtain-wall application.

Long-term exposure tests have indicated that weathered steel will withstand normal atmospheric exposure indefinitely —without protective maintenance—by developing its own protective coating.

The accompanying graph illustrates the corrosion rates of carbon steel, copper-bearing steel, and Mayari-R. Note that the initial rate of corrosion for all is approximately the same. However, once the stable protective oxide coating forms on the Mayari-R steel, it is no longer subject to further corrosion.

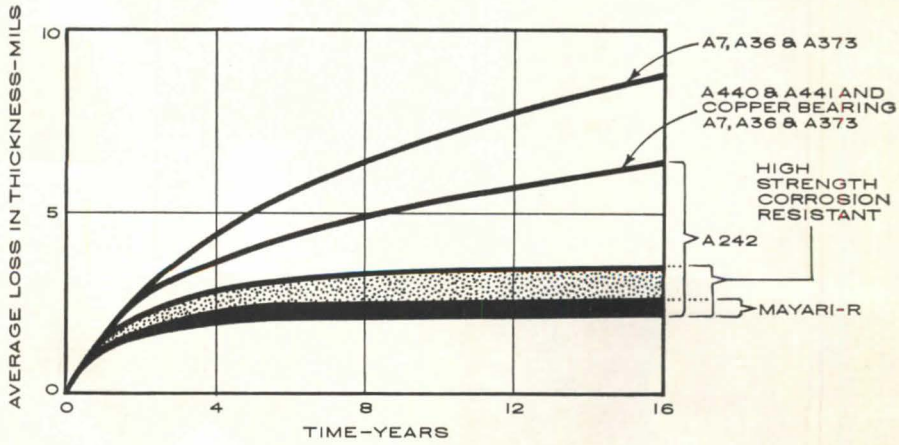
Corrosion is an oxidation process. With aluminum, this process can be hastened by electrolytic anodizing; once the aluminum oxide coating forms, further corrosion is inhibited. In ordinary carbon steel, rust begets rust. The corrosion resistance of Mayari-R depends upon the formation of a dense, stable layer of rust that prevents oxygen and other contaminants from continued reaction with the base metal.

During the initial period of exposure, Mayari-R steel rusts in a manner similar to that of carbon steel. To enhance the appearance of weathered steel, it is extremely important that the mill scale be removed by sand-blasting or pickling, so that the patina of russet brown oxide forms uniformly. This requirement must be strictly adhered to by the architect.

There are problems associated with the early corrosion of Mayari-R—essentially, they concern the oxide stain that forms. This is significant only during the early stages. Once the tight oxide patina is formed, the staining problem is no longer significant. However, in developing details, it is necessary to insure that water run-off is diverted, so that it does not stain adjacent surfaces; or a color blend should be used that will not be harmed by the color of the stain.

A test was performed to determine the length of the run-off period of loose corrosion. After six months, a section of concrete base containing a steel member was painted white. After three-and-a-half years of exposure, the test showed conclusively that the corrosion coating, after a comparatively short time, becomes tight and the run-off is at a minimum.

To insure weathering that is uniform and pleasing in appearance, mill scale *must* be removed by either pickling or blasting the steel. Oil, grease, cement, paint, or any other stain that may get on the steel during fabrication or construction, *should* be removed by field sand-blasting, steam cleaning, or solvents. Frequent hosing with plain water will also accelerate weathering.



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The Construction Contract

BY JUDGE BERNARD TOMSON AND NORMAN COPLAN
Nassau County District Judge and a New York attorney discuss a recent case that underscores the importance of having proposed construction contracts reviewed by competent legal counsel.

An ambiguous construction contract is an invitation to litigation. Such a contract can not only cause an unexpected loss to the owner or contractor, but can jeopardize the architect's position in issuing certificates of payment. Illustrative of the hazards implicit in the formulation of a construction contract that is subject to varying interpretations is the recent New York case of *Chinese Community Centre, Inc.* v. *Thompson-Brinkworth, Inc.*

In that case, bids were taken for the construction of a community center. One of the general conditions contained in the specifications provided, in substance, that the work for a gymnasium and an elevator might be let under a separate contract and required bidders to submit two proposals: one including the gymnasium and elevator, and one excluding this work.

The defendant, on a proposal form furnished by the owner, had offered to perform all of the work, including the gymnasium and the elevator, for the sum of $929,616. This proposal also contained an alternate for the gymnasium and elevator, as a separate contract, for the sum of $55,695.

After the bidding and the selection of the defendant as the low bidder, certain items of work were eliminated and the owner and the contractor entered into a contract providing for the sum of $791,900 for the work. This contract consisted of "The Standard Form of Agreement between Contractor and Owner for Construction of Buildings" of the AIA. This form, in defining the contract documents, did not include "Instructions to Bidders" or "The Bidder's Proposal." It did, however, contain a clause providing for an alternate contract price of $55,695 for the gymnasium and elevator in the event the owner authorized this work to be performed.

During construction, the plaintiff-owner authorized the defendant-contractor to proceed with the gymnasium, and during the course of construction the architect issued certificates of payment reflecting the contract price of $791,900 plus an additional sum for the gymnasium. The owner, however, took the position that the contract price of $791,900 was to include the gymnasium, and that any payment in excess of that sum was improper. This was the issue for the Court's determination.

It was the owner's contention that the bidder's proposal, by its express terms, indicated it was the intention of the parties that the proposed price therein contained (later reduced) was to include the gymnasium and elevator. The contractor, on the other hand, asserted that this document could not be considered by the Court, since it was not defined as part of the contract documents, and that the form contract that was executed was unambiguous and clearly indicated that the gymnasium and elevator were not included in the contract price.

The contractor further contended that the issuance of certificates by the architect, recognizing an additional contract price for the gymnasium, was a practical construction of the contract that must be recognized by the Court.

The owner, in response to this assertion, took the opposite position that the form contract, when read together with the "Instructions to Bidders" and the "Bidder's Proposal," was unambiguous and clearly established that the elevator was included in the contract price. The owner contended, therefore, that reliance by the Court on extrinsic evidence to interpret the contract was not permissible.

The Court concluded that both parties were incorrect in their respective positions as to what evidence the Court could consider in construing the contract. The Court held that the construction contract was ambiguous as to whether "Instructions to Bidders" and the "Bidder's Proposal" were included or excluded from consideration as part of the contract documents, and that the Court was therefore justified in considering all pertinent documents as well as the acts of the parties and architect in determining the meaning of the agreement and the intention of the parties. The Court said:

> ". . . . the Court, after . . . . study, cannot say whether the construction of the gymnasium and elevator was to be included or excluded from the stated contract price. Therefore, the contract is ambiguous and resort to the extrinsic evidence is necessary to explain away such ambiguity, without, of course, varying, contradicting or adding to the terms of the written contract . . . . For while the bidders' statement included the gymnasium and elevator in the original 'general work' contract price of $929,616, conflict is inherent in that the bidders' statement and article 9 of the subsequent agreement both mention and continue with 'a separate contract sum' and an 'alternate' contract which involves the gymnasium and elevator separately. Thusly, ambiguity persists within the four corners of the agreement."

The Court concluded that the price of the gymnasium was not included in the over-all contract price, resolving the ambiguity it found in the contract documents by relying upon the certificates of payment, issued by the architect, which had been honored by the owner. This course of events, stated the Court, must be recognized as reflecting "clear and telling light upon the parties' intention at the time the agreement. . . . was made."

The difficulties of architectural supervision should not be compounded by the risks to the architect inherent in the uncertainty engendered by an ambiguous construction contract. Review of the proposed construction documents for adequacy, inconsistency, and ambiguity by competent legal counsel of both owner and contractor should constitute the minimum precaution taken in the interests of all parties concerned.

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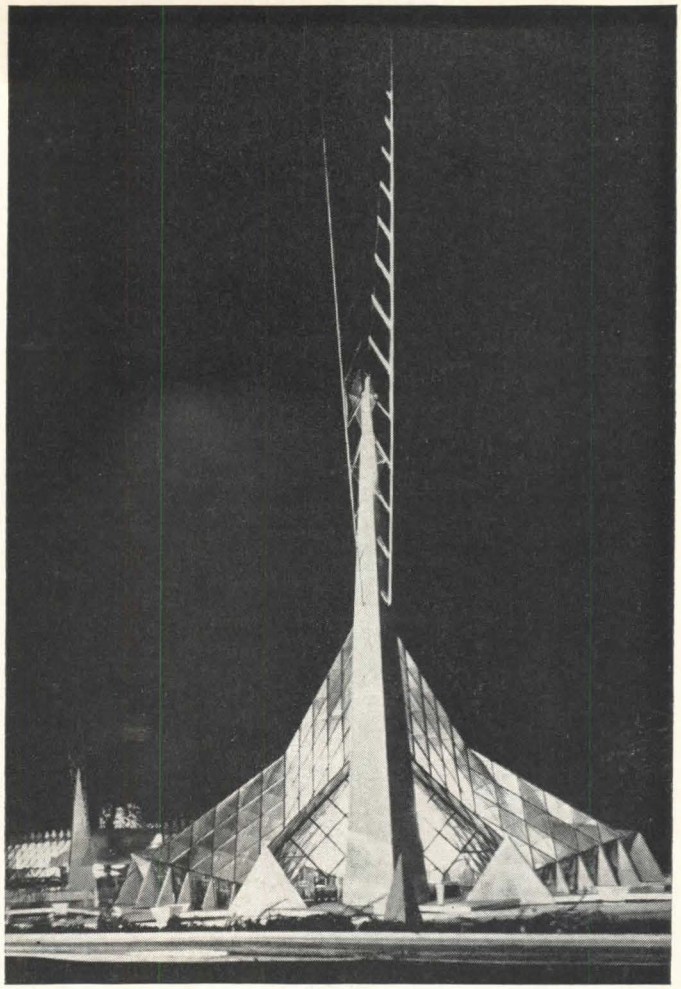

A Monument to Human Aberration

BY PETER COLLINS

THE ARCHITECTURE OF FANTASY: UTOPIAN BUILDING AND PLANNING IN MODERN TIMES *by Ulrich Conrads and Hans G. Sperlich. Translated, edited, and expanded by Christiane Crasemann Collins and George R. Collins. Published by Frederick A. Praeger, 64 University Place, New York 3, N.Y. (1963, 187 pp., illus. $16). Reviewer is Professor of Architecture at McGill University.*

The only real criticism one can make of this stimulating book is that, in the search for provocative illustrations, the terms "fantastic" and "utopian" have been given too wide a scope. The text makes clear that the authors' main concern is with the letters and pronouncements emitted by the group of avant-garde architects and artists (comprising Gropius, Taut, Feininger, and about 30 others) which set itself the task of creating a new architecture in Berlin during the months of revolution and unemployment that followed military defeat in 1918. Yet some of the illustrations seem to go beyond the element of fantasy and idealism expressed in these pronouncements, and are fantastic or utopian only in the sense of being unusually imaginative or large. What, for example, is so fantastic about the glass pavilion constructed by Bruno Taut for the 1914 Werkbund exhibition? Admittedly it was utopian in the sense that it was probably inspired by the visionary writings of a Jules-Verneian novelist called Scheerbart, but the result could hardly be more in keeping with the sober classical rationalist traditions of the 19th Century. Similarly, one may wonder why this building is accompanied by an illustration of Nervi's famous airplane hangar at Orvieto. It is true that both have interlacing ribs, but the motif goes back at least to Roman times, and there are no other similarities—of material, function, source of inspiration, or scale.

One suspects in fact that the authors, when selecting their illustrations, interpreted the word "fantasy" as meaning nothing more than "extremely unusual"; a suspicion corroborated by a 19-page introduction which classifies fantasy architecture under various quite mundane headings, such as "frameworks," "transparent structures," "cavelike structures," and so on. Now it would seem to me that a more useful classification would have been into two groups: firstly, fantasies which superficially resemble buildings but are impossible to construct or uncomfortable—if not impossible—to inhabit; and secondly, fantasies which, born perhaps of such visionary experiments, are practical solutions to real architectural programs.

It may of course be retorted that the aim of the book is not merely (as its main title suggests) to display examples of fantasy architecture, or (as its subtitle suggests) to discuss utopian build-

Continued on page 160

Steel for Strength

STRUCTURAL DESIGN **NEWS**

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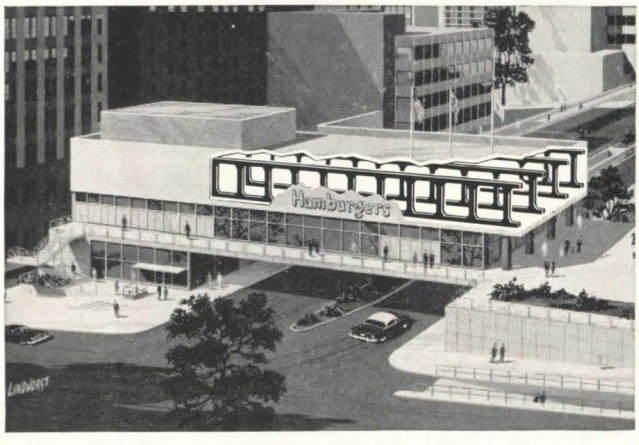
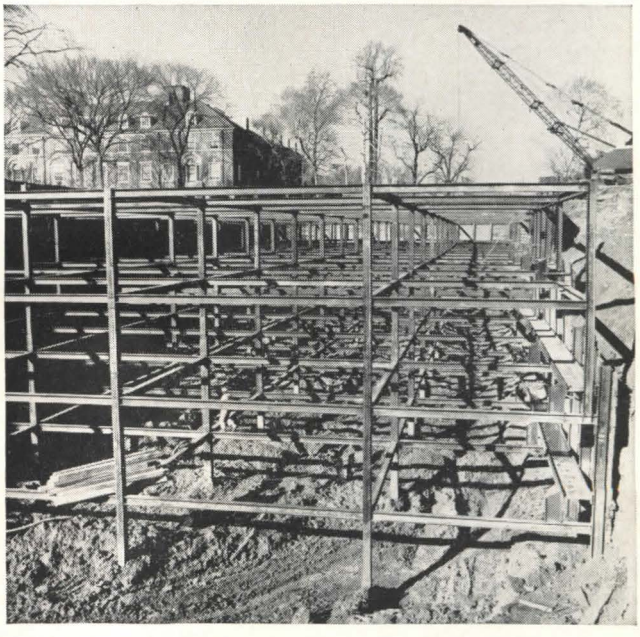


V50-V55 SHAPES REPLACE HEAT-TREATED ALLOY STEEL . . . SAVE $10,000! Four welded Vierendeel trusses spanning a street running under the second floor of Hamburgers Building in Baltimore (a men's clothing store) were redesigned in V50 and V55 (50,000 and 55,000 psi minimum yield). Savings: $10,000 in material costs, plus economies through availability of rolled shapes.

V60 ROOF GIRDERS IMPROVE AESTHETICS. Gymnasium in Paggets Corner High School, Md., features an exposed structural steel frame. Three 100-ft-long welded boxed roof girders of V60 were used in lieu of trusses to improve eye-appeal. Icing on cake: V60 (60,000 psi minimum yield) saved material and dollars.



V50 REPLACES CONCRETE . . . SAVES $100,000. Five of the six floors of the Johns Hopkins University Library are underground. They were originally designed in concrete, but the engineer switched to a welded continuous steel frame using V50 shapes to solve height problem. Higher-strength V50 allowed slimmer beams, made building possible as designed. Engineer estimates V50 steel frame cost $100,000 less than proposed concrete structure.

V50 9% CHEAPER THAN A7. One-story warehouse and office building for Decca Records, New York, was first designed in A7. V50 shapes resulted in a 19% reduction in the weight of the welded frame ...a 9% dollar savings.

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(Names of the architectural and engineering firms responsible for the projects named above will gladly be furnished on request.)

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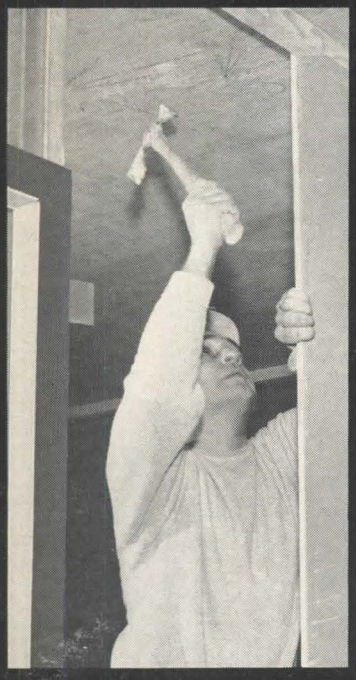
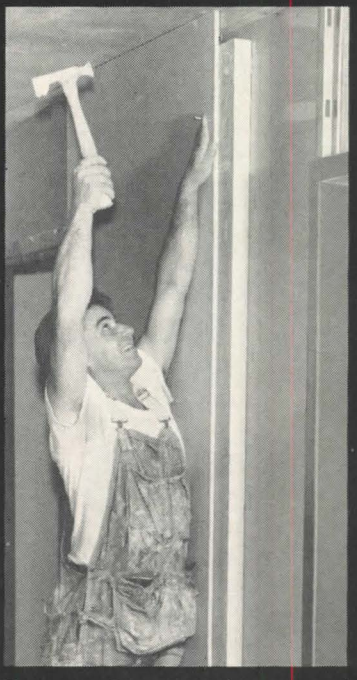
BETWEEN ROOMS—SEMI-SOLID PARTITIONS



1. Nail face layer to ceiling and floor runners

2. Apply adhesive-coated gypsum studs

3. Secure gypsum studs with nails or screws



4. Apply back face layer to runners and studs

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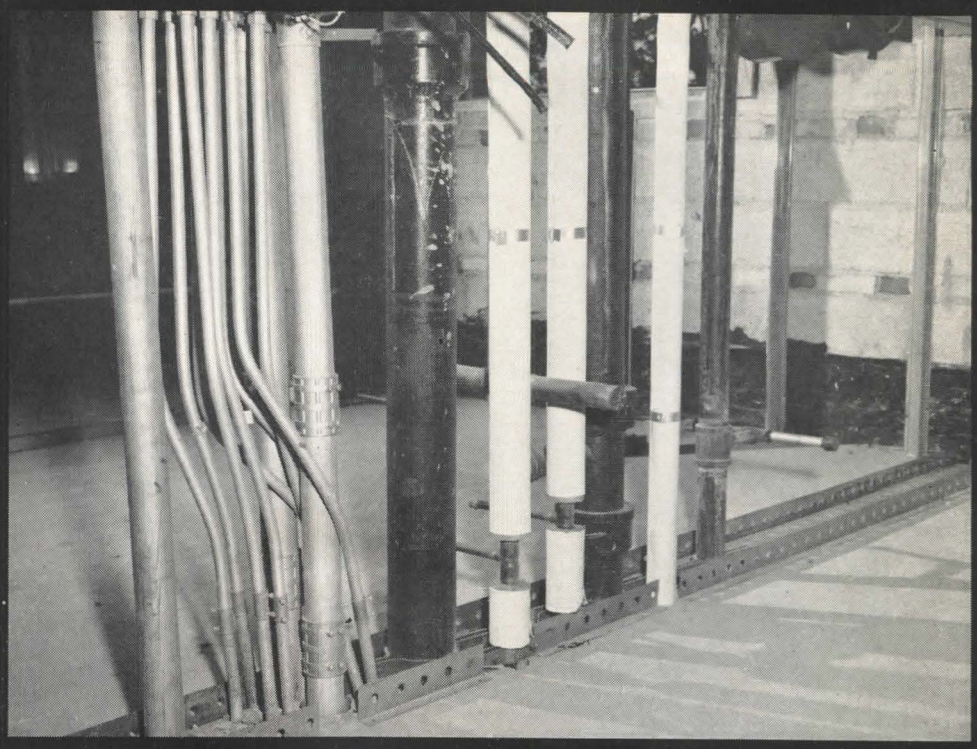
BETWEEN APARTMENTS—DOUBLE-WALL, SOLID-LAMINATED PARTITIONS

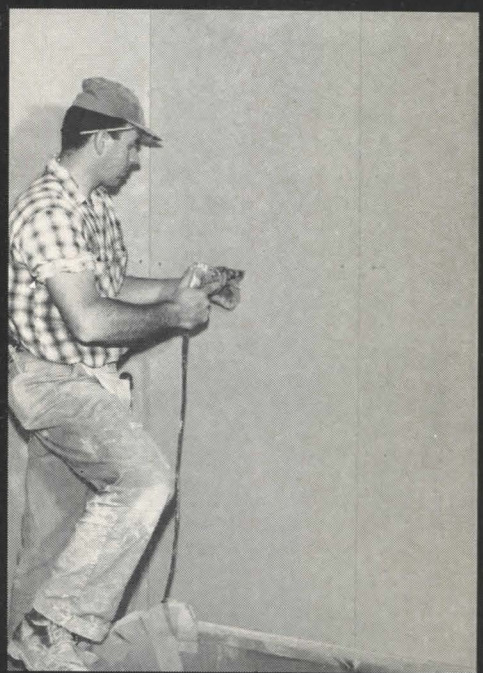
A. Install metal floor and ceiling runners



B. Space is left for utilities to pass through double walls

C. Attach 1"-thick gypsum coreboard to each side

D. Apply adhesive to back of gypsum face layer



E. Screw face panels to gypsum coreboard on each side of double-wall partitions

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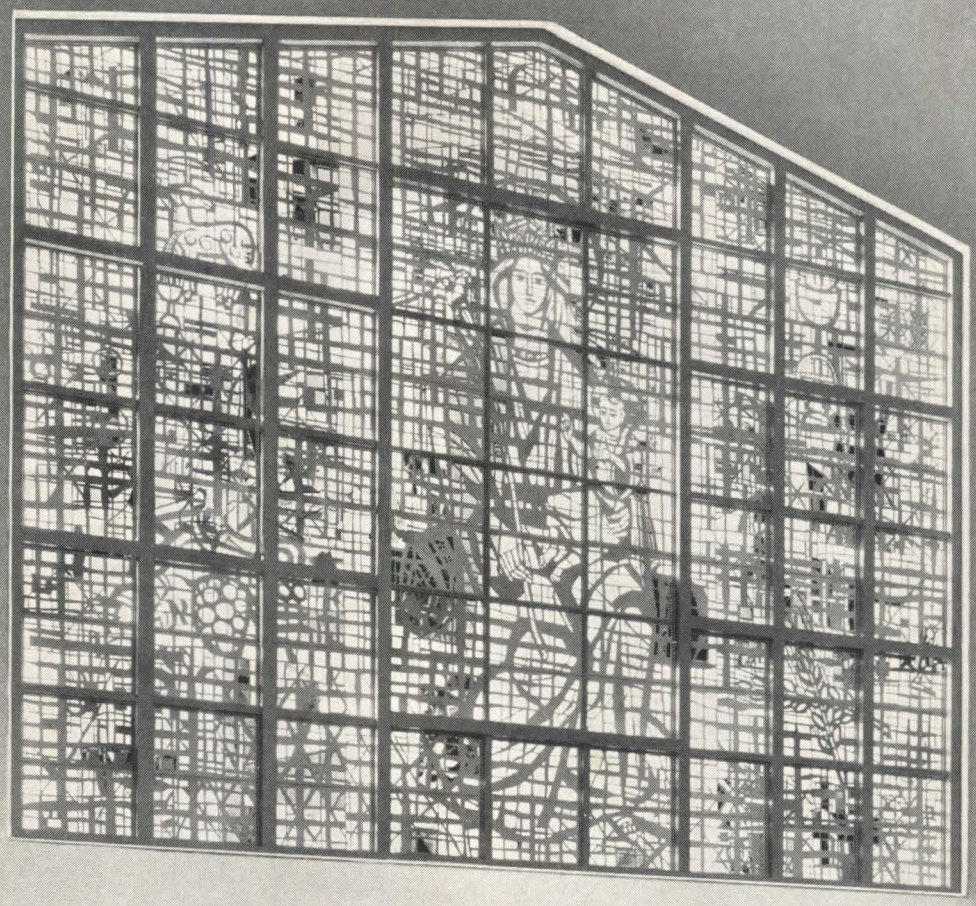

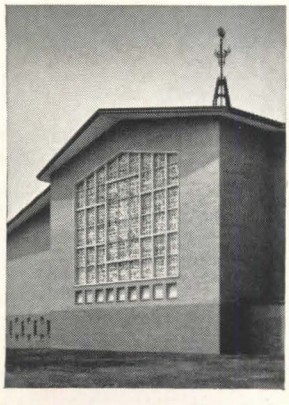

CHAPEL WINDOW

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Brother Cajetan J. B. Baumann, O.F.M., Architect
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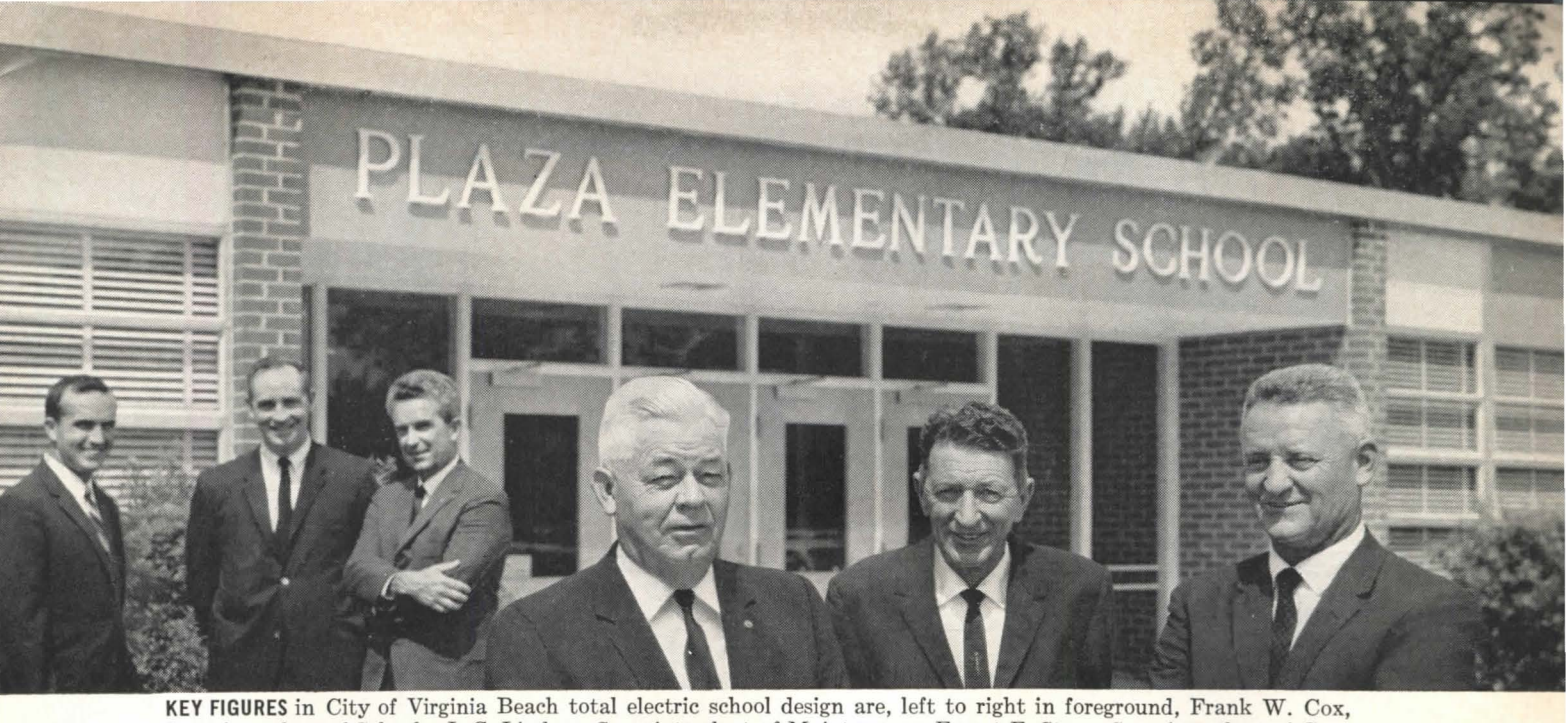
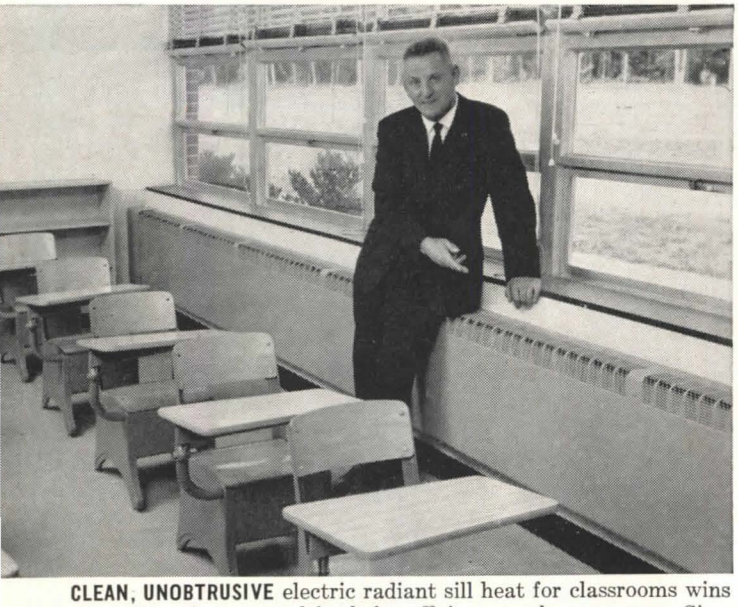
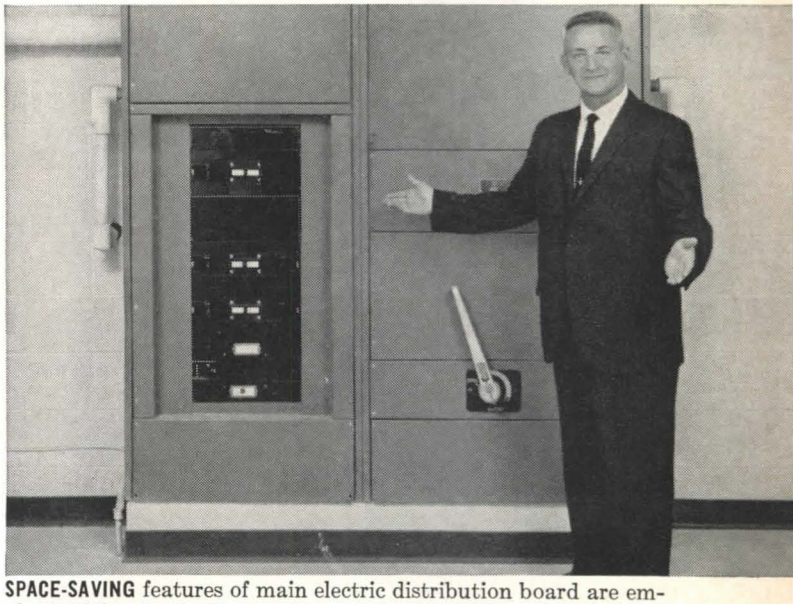


KEY FIGURES in City of Virginia Beach total electric school design are, left to right in foreground, Frank W. Cox, Superintendent of Schools; J. C. Lindsey, Superintendent of Maintenance; Ernest F. Stone, Superintendent of Construction. Trio left to right in background includes B. S. Martin, Virginia Electric & Power Company representative; John S. Waller of Waller & Britt, Architects; Denard L. Gusler, P.E., of Vansant & Gusler, Consulting Engineers.



CLEAN, UNOBTRUSIVE electric radiant sill heat for classrooms wins Supt. Stone's approval both for efficiency and appearance. Simplicity of installation and operation help keep overall costs down.



SPACE-SAVING features of main electric distribution board are emphasized by Supt. Stone. All controls for entire school's total electric design are contained in this single unit.

TOTAL ELECTRIC DESIGN SIMPLIFIES VIRGINIA SCHOOL CONSTRUCTION AND KEEPS COSTS DOWN

Architect and engineer join City of Virginia Beach officials in praising the flexibility and space-saving features of total electric design for schools

According to Frank W. Cox, dynamic City of Virginia Beach Superintendent of Schools, total electric design is saving his community close to $100,000 per high school in initial construction and equipment costs, with proportionate savings on smaller elementary schools.

But the decision to go with total electric design in the City of Virginia Beach school system was not just snap judgment based on economy alone.

After considerable study of comparison figures, Ernest F. Stone, Superintendent of Construction, and J. C. Lindsey, Superintendent of Maintenance, recommended total electric design: electric heat, total electric kitchen operation, electric water heating, and lighting levels designed for specific task performance.

With the assistance of architects Waller & Britt, consulting engineers Vansant & Gusler, other architects and engineers, and Virginia Electric & Power Company, eleven total electric schools have been built in the City of Virginia Beach in the past four years, or are now under construction.

The results have been nothing short of spectacular. In addition to the original $100,000 saving on construction and equipment, maintenance costs have dropped 88% and custodial attention has been reduced to a routine minimum. Thus, the City of Virginia Beach is using total electric design to build better schools for less money.

Facts like these may be meaningful to you, too.

For architects and consulting engineers, total electric design offers the modern method of combining heating, cooling, water heating, and lighting into one efficient operation using a single source of energy. If you are interested in how it can help you with commercial and industrial buildings, contact your local electric utility company. They will welcome the opportunity to work with you.

BUILD BETTER ELECTRICALLY

Edison Electric Institute, 750 Third Avenue, New York 17

Continued from page 154

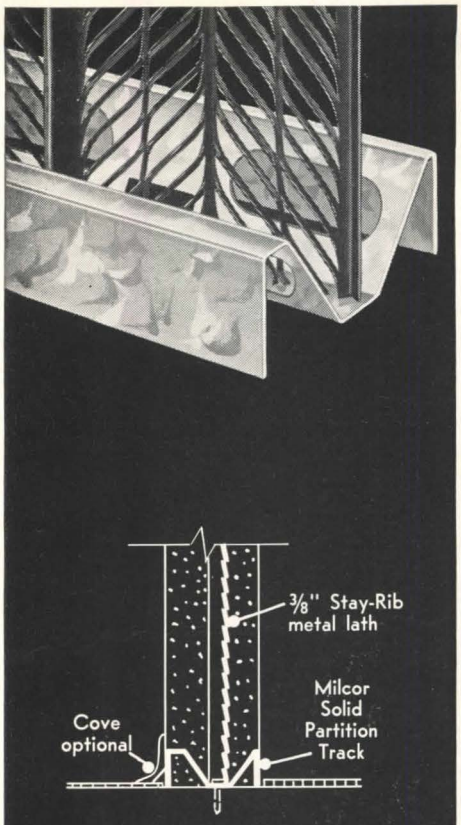
ings and planning, but to display the heuristic influence of fantastic and utopian ideas on even quite sober architecture. But even if we accept this argument as valid, we cannot help but be struck, when looking at the illustrations, by the paucity of buildings of this nature which ever got beyond the project stage. Perhaps Enrico Castiglioni's projects really deserved to be built, and only failed to win their respective competitions through bad luck. Perhaps Sanford Hohauser's egg-shaped project for a beach house (juxtaposed by the authors against an example of Brancusi's oviform sculpture), and his projected memorial for the victims of the Hungarian uprising, will one day be executed. But it seems probable that no sensible client would want to build either, that the implied derivation from Brancusi has nothing to do with the book, and that the title of the projected memorial has no more significance than Boullée's pathetically futile spherical "monument to Newton" (with which it has so much in common that the latter might well have been included in preference to the idiotic examples of 18th-Century plans based on initial letters, which occur on another page).

After carefully examining all these illustrations (which omit, incidentally, all reference to Le Corbusier), one cannot in fact help but come to the conclusion that the fantasies evolved by the Berlin avant-garde in 1918 have been relatively unproductive—a fact which will be a source of rejoicing to those who, like myself, are confirmed rationalists, and consider the works of the more Expressionist "Form-Givers" of today to be eccentric and sterile deviations from the real path of architectural evolution. It is no use trying to pad the illustrations, and confuse the issue, with pictures of geodesic domes, space frames, and intriguing villas by Bruce Goff. These have nothing to do with German postwar expressionism and constructivism, and demonstrate the opposite of what the *Novembergruppe* and *Arbeitsrat für Kunst* were trying to attain.

The most useful historical lesson in *The Architecture of Fantasy* is not to be found among the illustrations (which in any case are by no means complete, as a recent article by Pierre Restany, entitled "Les Visionnaires de l'Architecture" [*Bulletin de la S.A.D.G.*, No. 117] demonstrates); it is to be found within the selected texts printed at the back of the book. These texts consist of press cuttings and excerpts from letters circulated by the group of artists in question, and are of the utmost interest today, not only because they give added weight to the general thesis concerning the Berlin avant-garde's obsession with abstract aesthetics advanced by Reyner Banham in his well-documented *Theory and Design in the First Machine Age*, but because it emphasizes how little this group was concerned with structure, function, industrialization, or any of the other ideals associated with the Bauhaus. "What is architecture," asked Walter Gropius rhetorically in 1919:

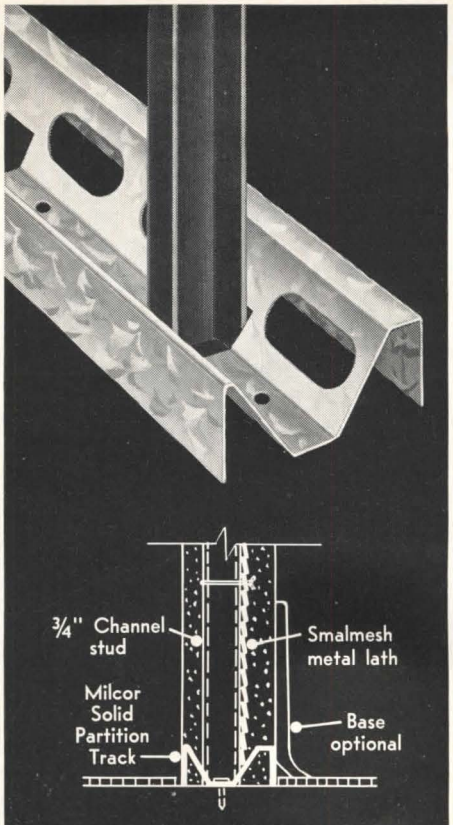
"Surely [it is] the crystallized expression of man's noblest thoughts, of his ardour, his human nature, his faith, his religion! That it once was, but who of those living at this time, cursed as it is with functionalism, does still understand the all-embracing and cheering character of architecture? . . . Something that is shaped only by expediency and need will not satisfy the yearning for a world of beauty rebuilt from the ground, the rebirth of that intellectual harmony which soared to perform the miracle of the Gothic cathedral. . . . Painters,

Continued on page 164



V-groove holds lath without need for ties. Track is galvanized steel, furnished in 2", 2¼" or 2½" widths.

Studless solid plaster partition



Retaining slots 4" o.c. hold channel studs. Track is galvanized steel, furnished 2", 2¼" or 2½" wide.

Channel stud solid partition

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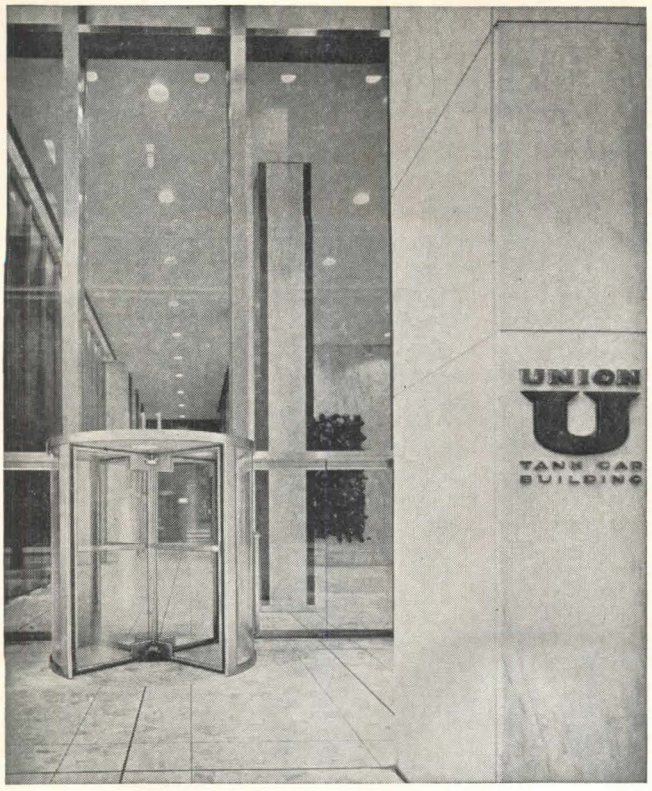

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PRECAST CONCRETE
for all-new community college

A variety of precast units play an important role in the buildings of new Big Bend Community College at Moses Lake, Wash. Huge, exposed aggregate panels with a cast-in diamond design form the gymnasium walls. Ribbed window panels form the walls of the administration and classroom buildings. And precast "Y" frames combine with a folded plate roof to cover the unusual inner courtyard.

LEHIGH EARLY STRENGTH CEMENT BENEFITS ALL MEMBERS OF THE TEAM

Columbia Sand and Gravel Inc. used Lehigh Early Strength Cement for all the precast units in the new college. Here, as in almost any concrete work, this cement provided important benefits for the precaster, contractor and architect alike. Quicker reuse of forms . . . with fewer forms required. Earlier availability of units. Assured on-time delivery for smoother planning.

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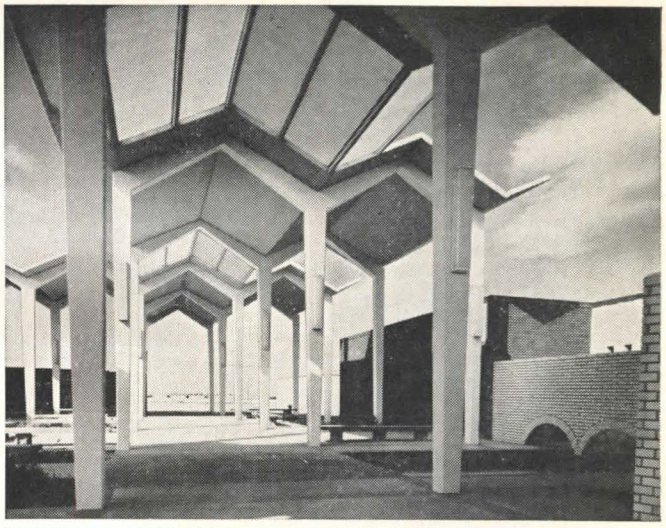
Structural Engineer: John P. Esvelt—Spokane, Wash.

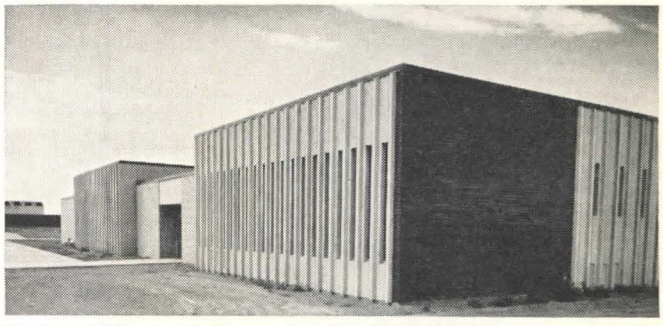
General Contractor: General Investment Co., C. Beedle—Longview, Wash.

Precasting Contractor: Columbia Sand & Gravel Inc.—Moses Lake, Wash.

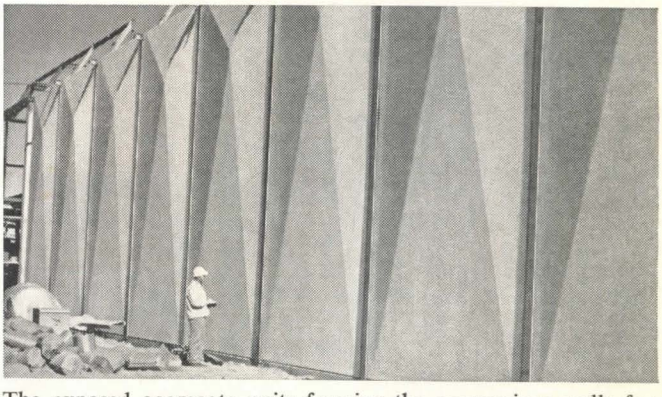
Ready Mix Supplier: Columbia Sand & Gravel Inc.—Moses Lake, Wash.



"Y" frames, 28′6″ high, support folded plate roof panels that are 30′ long, 8′ wide and 4″ thick. Together with inserted skylight sections, they form an interesting mall.

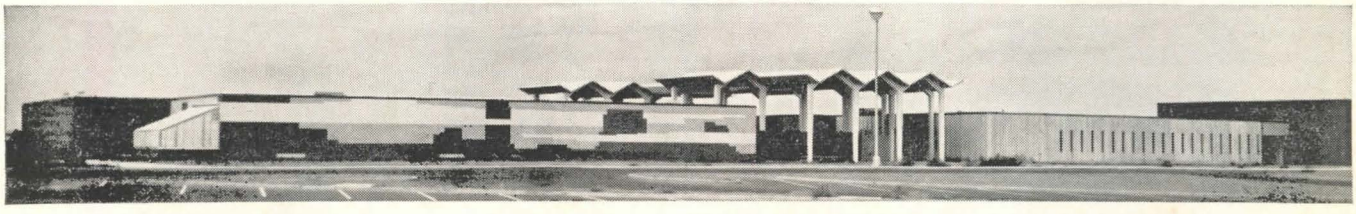


Walls of library-student union building (shown here) and the administration building are precast exposed aggregate ribbed panels. Panels are 13′ to 17′ high, 8″ thick including 4″ rib and are cast in 8′ sections. Note slots for windows and ventilation louvers.



The exposed aggregate units forming the gymnasium walls feature an unusual raised diamond design cast into each panel. Units are 6″ thick at the base; 8″ thick at highest point of design.

The central portion of the new campus. Mall connects administration and science buildings. Lehigh Early Strength Cement was used for all precast concrete and Lehigh Portland Cement for cast-in-place concrete.



Continued from page 160

sculptors, break down the barriers around architecture and become co-builders and comrades-in-arms towards art's ultimate goal: the creative idea of the Cathedral of the Future!"

Coupled with this sentimental and somewhat 19th-Century ideal of architecture as being most perfectly enshrined in cathedrals was the idea of a search for "pure form," and a puritanical rejection of anything suggestive of coziness, or any other kind of sensuous physical comfort. "Pure form is that form which, detached from all that is decorative, is freely fashioned out of the basic elements of straight line, curve, and free form, and will serve the purpose of any expression, be it a religious building or a factory," wrote Hans Luckhardt to fellow members of the group in 1920. Similarly, Kasimir Malewitsch wrote that "those monuments of architecture which are free of any purposes are held in great esteem. From this I draw the conclusion that architecture is basically a pure art form." Even Bruno Taut's list of the five greatest buildings of the past consisted only of Strasbourg cathedral, the Blue Mosque in Istanbul, the Angkor Wat temple, the Alhambra, and the Zwinger in Dresden. This was certainly not an era when a new architecture was envisaged as something based on "the plan as the generator," and few of these writers even suggested that the newly developed building materials could best construct their preconceived shapes.

Coziness was as violently attacked as functionalism, and Adolf Behne, in an essay entitled "Glass Architecture," published in 1919, insisted that "first of all the European must be wrenched from his coziness." Glass architecture, he insisted, would place mankind in rooms which would continually prevent it from "falling prey to dullness, to habit and to comfort," and would provide a great opportunity to create a complete communion between man and the natural world, at all hours of the day and night.

Glass architecture naturally implied at this time an architecture of angular facets (although some of Mies van der Rohe's skyscraper projects of this time were an exception to the rule), but it seems fair to say that in 1919 the architecture of fantasy usually implied sinuous curves, and that the most characteristic fantastic and utopian architecture of the early 1920's was Expressionist. From certain points of view, this concern with curves (which dated back to Art Nouveau) was a good influence, since it kept architects from too facile a dependence on T-square and set-square when free-hand ornament ceased to be fashionable. Moreover, since the time of Gaudí (who was a pioneer in this respect), it has helped architects to see that the most efficient structural forms are not always susceptible of simple orthogonal graphic projections. But it is probably fair to say that curves which do not obey some relatively simple geometric law are usually nontectonic and vicious, and when we reflect on the awkwardness with which such forms lend themselves to the requirements of human occupation, it is not surprising that *The Architecture of Fantasy* should be more a monument to human aberration and folly than an indication of the architectural paths which can be, and are being, most usefully pioneered.

In conclusion, one cannot help wondering what would have been the history of architecture if the existence of avant-garde coteries of unemployed architects had been anything more than a freak phenomenon of the 20th Century. And

Continued on page 172

In this Chicago 14 unit apartment, the owners are well pleased with a heating system which provides genuine comfort for tenants at minimum fuel expense.

From left to right: Mr. John J. Limperis, co-owner, Mr. Kenneth Bauer, contractor, Mr. Benjamin Daidone, co-owner.

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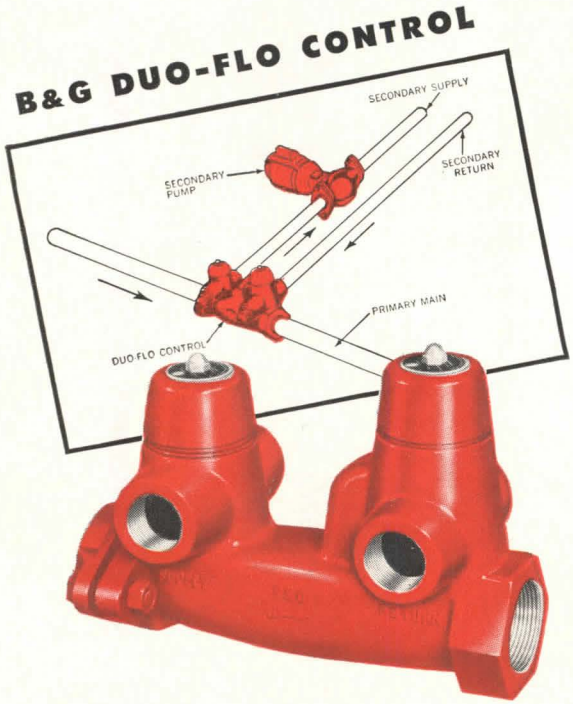

In primary-secondary systems equipped with Duo-Flo Controls, secondary zones are always controlled, even with high head pumps in the primary zone. Use of higher temperature drops permits sizable reduction in pump horsepower. Material saved includes 2 Flo-Control Valves, 2 shut-off valves, 2 or 3 tees and 6 nipples.

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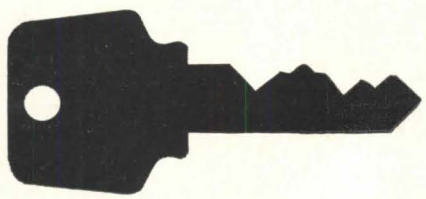

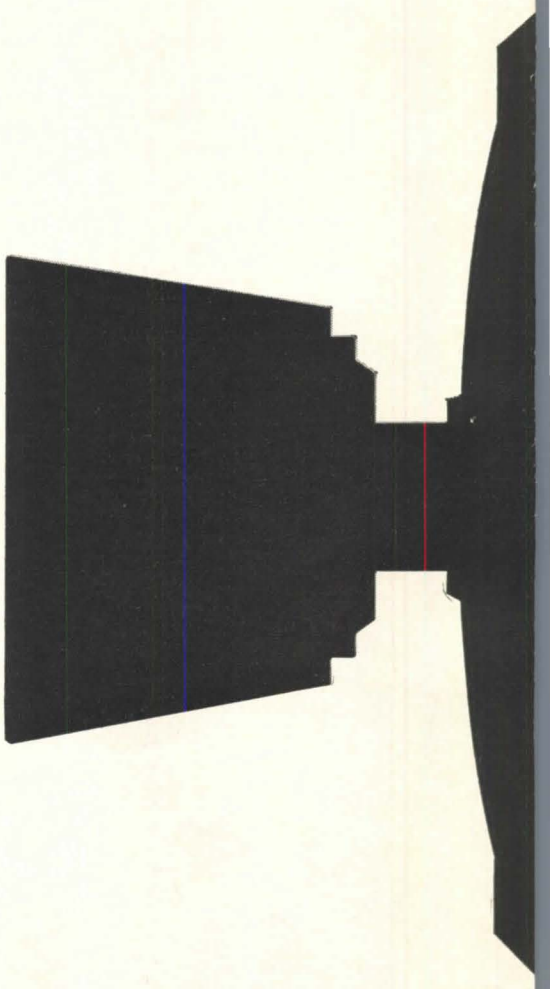

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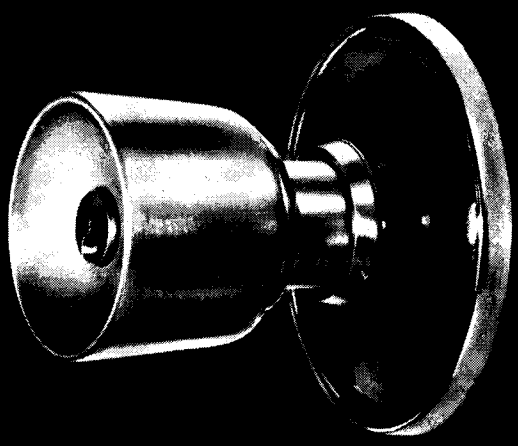

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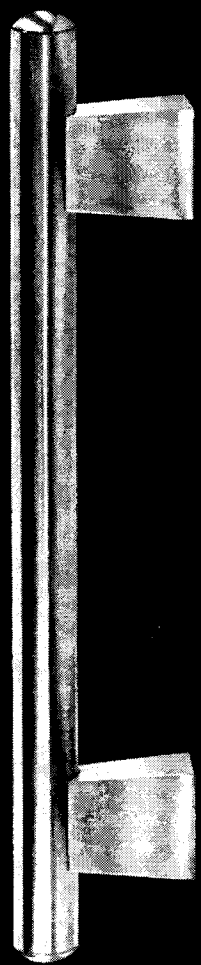

Extruded nickel stainless steel door pull —"3301"
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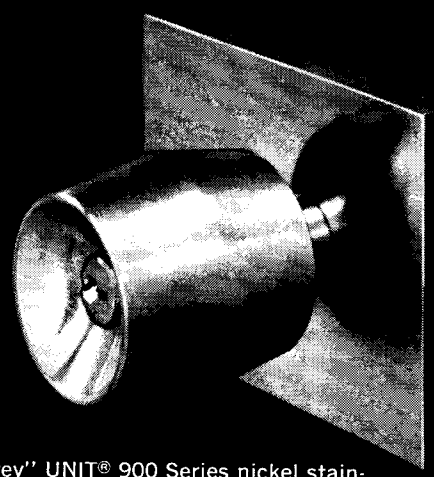

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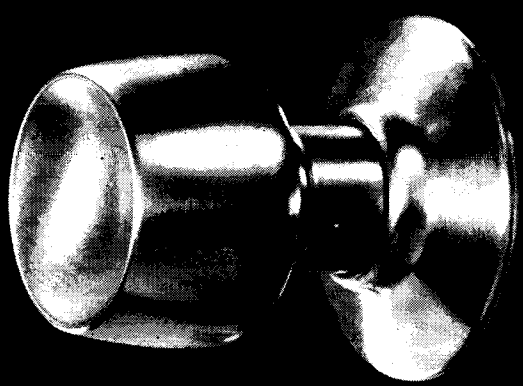

"Brandywine" heavy-duty cylindrical nickel stainless steel lockset
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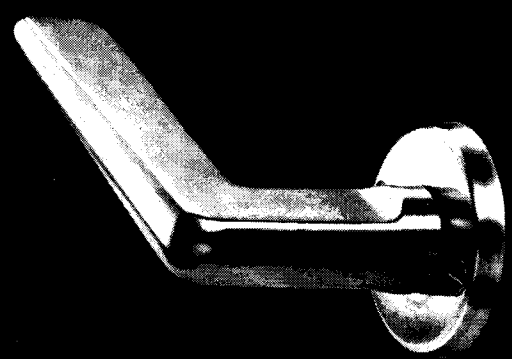

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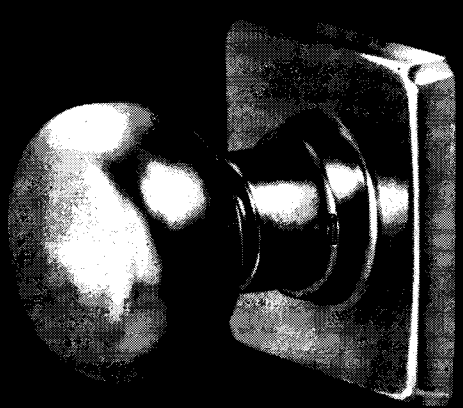

"Litchwood" heavy-duty cylindrical nickel stainless steel lockset
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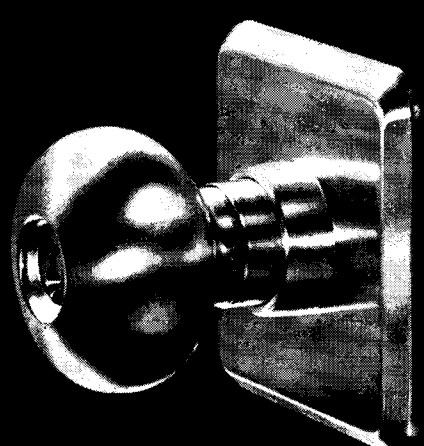

"Hanover" standard line "A" series nickel stainless steel lockset
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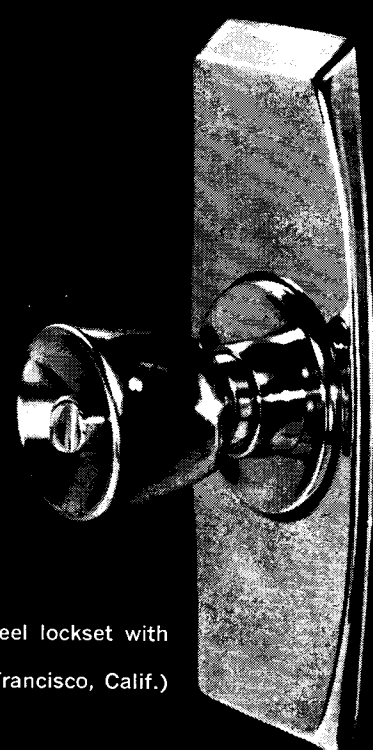

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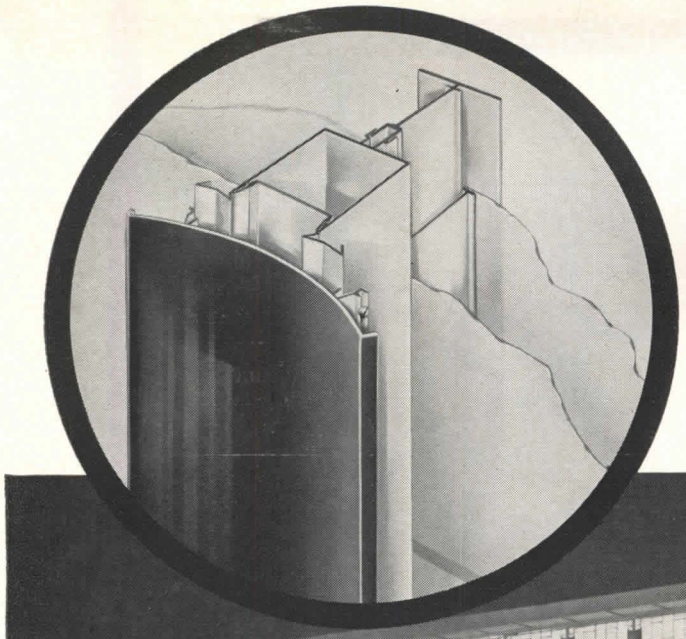

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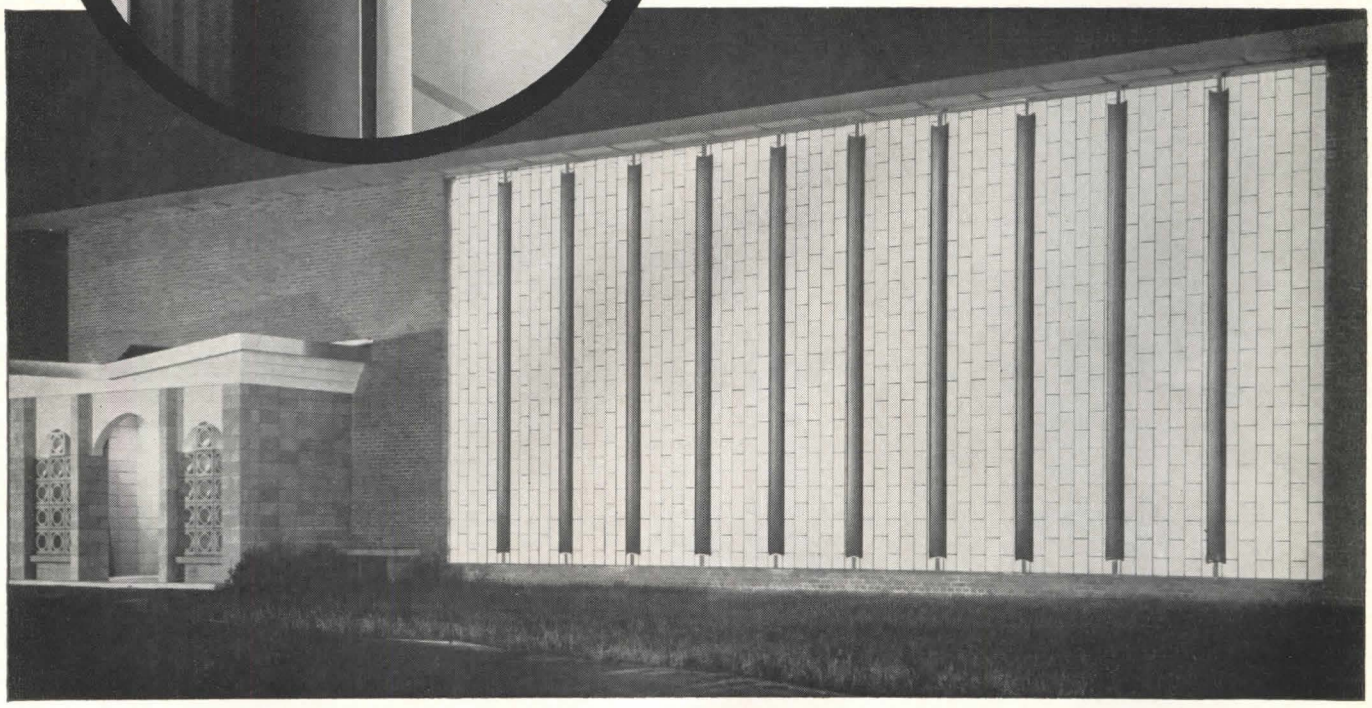

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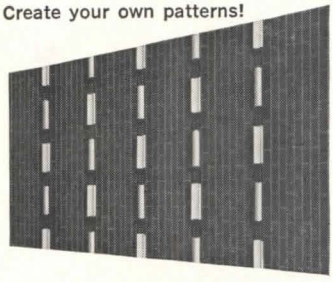

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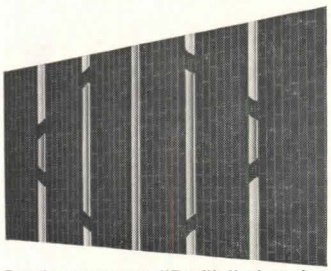

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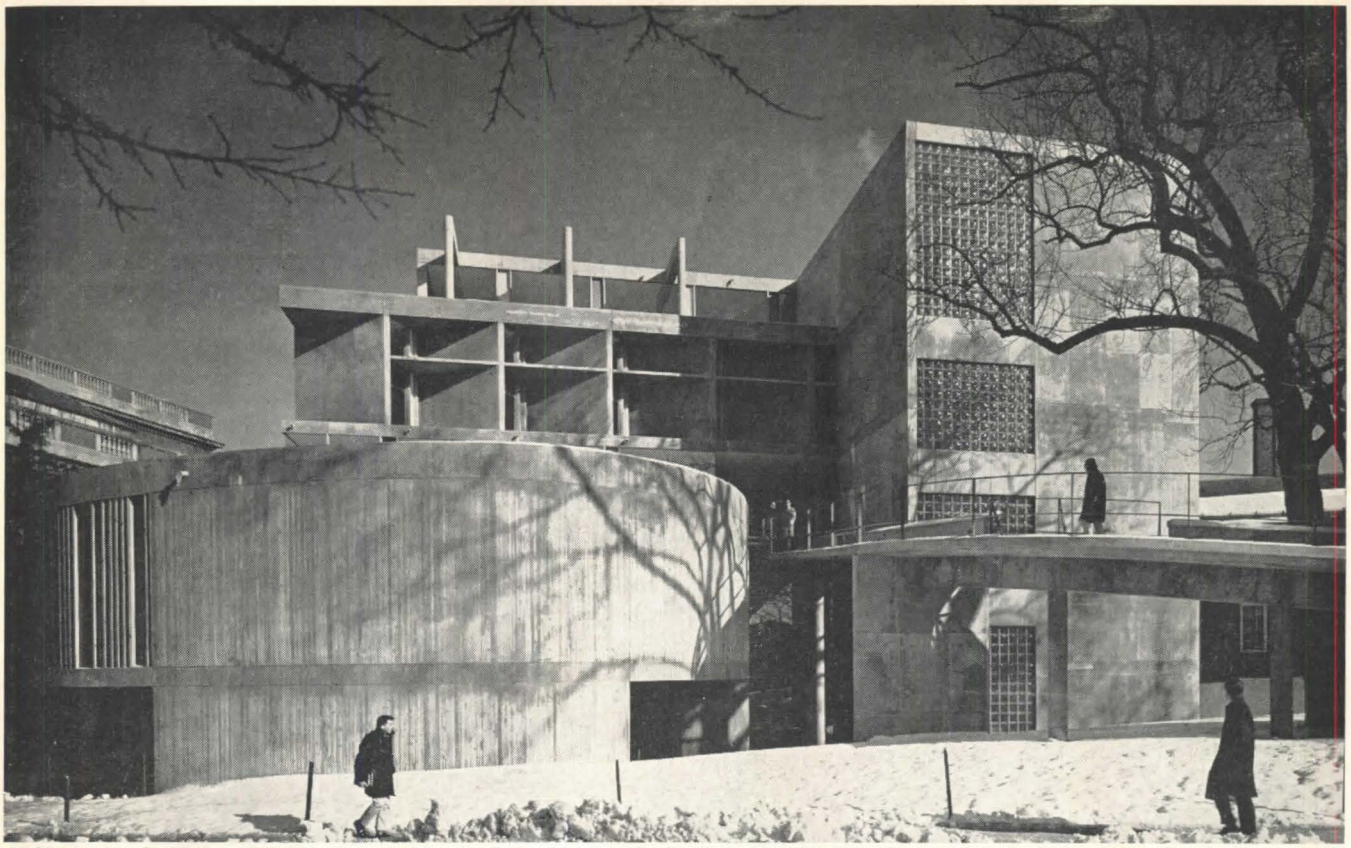

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Continued from page 164

as a corollary to this thought, one may wonder whether the long lucubrations so faithfully reported in this book were really as necessary or as fertile as is sometimes supposed. I suspect that in 200 years' time, the architecture of fantasy will be about as important in the history of architecture as the quinquepartite vault in Lincoln Cathedral—something archaeologists will puzzle over as an intriguing eccentricity to occupy their excess of speculative energy, but a phenomenon of little moment in the broad history of architectural ideals.

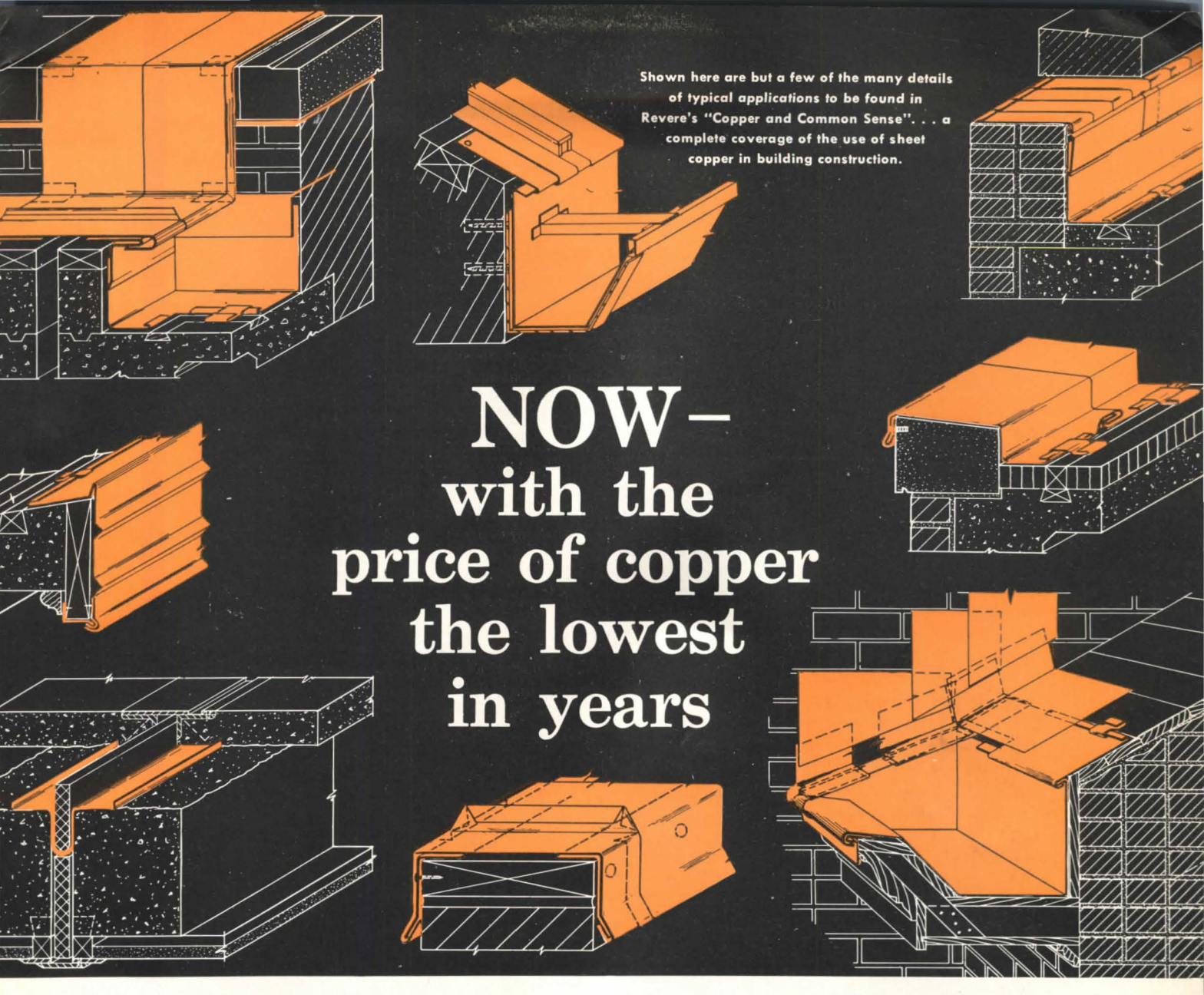
An Evocative Experience

THE HOUSE BEAUTIFUL *by William C. Gannett. Illustrated by Frank Lloyd Wright. Facsimile edition of the 1897 limited edition, hand-printed by William Herman Winslow and FLLW. Published by W. R. Hasbrouck, The Prairie School Press, 117 Fir St., Park Forest, Ill. (1963, 53 pp., illus. $22.50. Publisher is donating a "royalty" on each copy to the fund for preserving and restoring the Robie House.)*

A visually choice item of early Wrightiana has been made available again through facsimile and through the no doubt generous act of publication by W. R. Hasbrouck, AIA, and his wife, of Park Forest, Illinois. The item is William Gannett's *The House Beautiful*, designed by Frank Lloyd Wright and handprinted by Wright and William Winslow in 1897, at River Forest. The original edition, limited to 90 copies, has almost disappeared; to own one, along with the two elephant folios of Wright's work published by Wasmuth of Berlin in 1910, is to belong to the élite of the Wrightists.

To hold in hand a book which so engrossed Wright's creative interest two-thirds of a century ago, even though it is a facsimile, is an evocative experience. Its thin elegance, its characteristically square shape, its curious mixture of literary influence from Elbert Hubbard and design influence from Louis Sullivan overlaid by Wright's youthful personality bring the freshness of the early days at Oak Park powerfully to mind. With ease, we project ourselves into the magic circle of the W's: Waller, Williams, Winslow, Wright—the architect and his immortalized first patrons. We gather glacial boulders from the bed of the Desplaines River to place around the doorway (much too low for convenience, of course) of the Williams house. We walk with Waller along Auvergne Place, the quiet new street which he and Wright have just laid out, perhaps gathering a few dried teasles as we stroll, to place in a copper bowl on our plate-rail over the fireplace. We pass through the *porte-cochère* of William Winslow's new house and enter the wing of his stables which houses his hobby, the Auvergne Press. There we find Winslow and Wright bending over the shapely Albion, which is printing one of the pages of *The House Beautiful*. Winslow, the Englishman, is another William Morris at heart. Wright, the Welshman out of Wisconsin, is filled with visions that he will begin to verbalize six years later in his famous lecture, "The Art and Craft of the Machine." It is all so pregnant with promise!

This is all very well, but what do we say of *The House Beautiful* itself? It has all been said long ago. There is the sheaf of Japanese-looking photographs of leaves and bare branches, in the shape of *kakemono*, hand-sewn onto the fly-leaf of the book. There is the carefully formed lettering in black, red, and gold recall-



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ing somehow the Roycrofters' typeface and the vogue of the motto. And there are the line ornaments and page-enframements whose fragile calligraphy drive the historian wild in his attempt to discover the prototype—is it Beardsley? is it Jugendstil? is it the stick-and-bead-work of the Froebel textbooks? is it the illumination of the Irish manuscripts? or is it just another facet of the inexhaustible creativity of Frank Lloyd Wright? In any case, it is fascinating. Although Wright lived to become one of the four great moderns of 20th-Century architecture, his roots are thoroughly Victorian; and, questions of prototype aside, we catch him here in his *fin-de-siècle* mood —designing with an intricacy, yet with a lightness and grace, that are the culmination of that long, concerted drive of the 19th Century, after Morris, to rid itself of the suet of historicism.

William Gannett's text barely escapes classification as the forerunner of Edgar Guest. The theme is, "It takes a heap of living to make a house a home," with a reasonable amount of help from the Almighty. Way down underneath the saccharine surface, there is an entirely acceptable plea for simplicity in architecture; but it is hardly profound. One of the many paradoxes of Wright's life is that, despite his titanic power as an originator in the field of architecture, he quite readily accepted, and lent his energies to, a whole series of sophomoric enthusiasms. The venture of joining hands with Winslow to enshrine Gannett's essay in a jewel-like setting was one of them.

GRANT MANSON
Professor of Architecture and Fine Arts
University of Southern California
Los Angeles, Calif.

OTHER BOOKS TO BE NOTED

1964 Appointment Calendar. Museum of Modern Art, 11 W. 53 St., New York 19, N.Y. Distributed by Doubleday & Co., Inc., 575 Madison Ave., New York, N. Y., 1963 illus. $2.75 plus 20¢ postage

Calendar for 1964 is also a permanent album of poster art containing 27 reproductions from the Museum of Modern Art collection. Calendar pages can be removed from the 8 in. square spiral-bound collection. Reproductions —23 in color—represent 25 artists including Toulouse-Lautrec, Léger, Bonnarl, Matisse, and Miró.

Encyclopedic Guide to Planning and Establishing an Auditorium, Arena, Coliseum or Multi-Purpose Building. Herman J. Penn, Penn-Fleming Publications, Inc., 2117 Buncombe Rd., Greenville, S.C. 604 pp., illus. $45

Guide to help the architect anticipate at the planning stage problems of construction, maintenance, and operation of auditoriums, arenas, and similar buildings. First section covers all considerations from site selection to placement of telephones and clocks; second section is a photographic documentation of these considerations and of the diversified equipment germane to auditorium operation. The architect new to this field can utilize this guide to avoid costly errors or omissions in planning. Author's experience includes many years managing auditoriums as well as two years as Advance Representative for the Harlem Globetrotters.

Environmental Technologies in Architecture. Bertram Y. Kinzey, Jr. and Howard M. Sharp. Prentice-Hall, Inc., Englewood Cliffs, N.J., 1963. 788 pp., illus., tables. $16

To be reviewed.

Green Belts and Urban Growth: English Town and Country Planning in Action. Daniel R. Mandelker. The University of Wisconsin Press, 430 Sterling Court, Madison 6, Wisc., 1962. 176 pp. $5

To be reviewed.

Guide to Modern Architecture. Reyner Banham. D. Van Nostrand Co., Inc., 120 Alexander St., Princeton, N.J., 1963. 159 pp., illus. $6.75

To be reviewed.

Manual of Tilt Up Construction (5th Edition). F. Thomas Collins. Know How Publications, P.O. Box 488, Eugene, Ore., 1963. 126 pp., illus., tables. $10

Design of Tilt Up Buildings (2nd Edition). F. Thomas Collins. Know How Publications, 1963. 170 pp., illus., tables. $12.50 both paperbound

Two of a basic, lively series on Tilt Ups. All-inclusive Manual *gives the history of concrete plus procedures and costs of precasting and tilting-up. New in 5th edition is an appendix on point pick-up of panels.* Design *concentrates on considerations of designing precast buildings. Pages of both abound in construction photos, cartoons, drawings, charts, tables, and diagrams.*

NOTICES

New Addresses

GRANZOW, GUSS & HARDER, Architects, The Brinker Building, 1857 Northwest Blvd., Columbus 12, Ohio.

GREEN ASSOCIATES, INC., Consulting Engineers, 1130 N. Charles St., Baltimore, Md.

RALPH STOETZEL, INC., Architects-Engineers, 1 E. Wacker Dr., Chicago, Ill.

TRIGGS, MYERS, MCQUADE & ASSOCIATES, Architect-Engineers, 3400 Forbes Ave., Pittsburgh, Pa.

New Firms

R. O. BEAUCHAMP, Architect, 1072 Gayley Ave., Los Angeles, Calif.

PETER CHERMAYEFF, ALDEN CHRISTIE, PAUL DIETRICH AND TERRY RANKINE principals in firm of CAMBRIDGE SEVEN ASSOCIATES, INC., Architects and Designers, 41 Church St., Cambridge 38, Mass.

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DONALD C. EDSON, Architect, 228 Bachman Ave., Los Gatos, Calif.

SCOPE, Planners and Designers, Inc., 333 E. 46th St., New York, N. Y.

SYLVAN R. SHEMITZ, Lighting Consultant and Designer, 135 Orange Ave., West Haven, Conn.

New Partners, Associates

JOHN J. FODOR, JR., ASSOCIATE, has been named full partner in firm of GAYDOSH & FODOR, Architects, Norwalk Conn.

MICHAEL J. KRANYAK, JR. has been appointed Associate in the firm of BENTEL & BENTEL, New York.

FRANK G. LOPEZ is a new associate specializing in school and college building with the firm of BALLARD TODD ASSOCIATES.

RICHARD A. MILLER has been appointed Senior Associate of HELGE WESTERMANN, Architect, New York.

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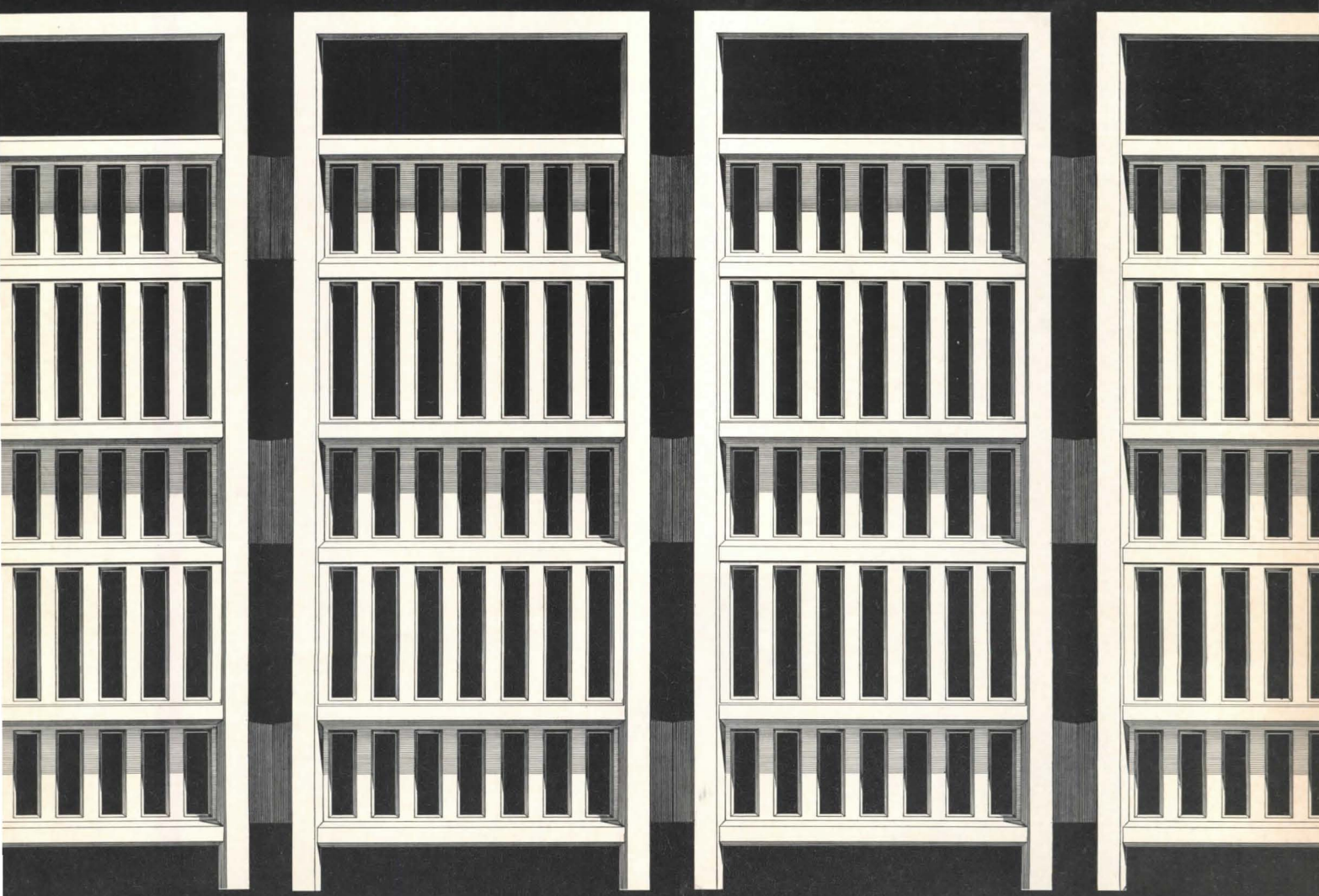

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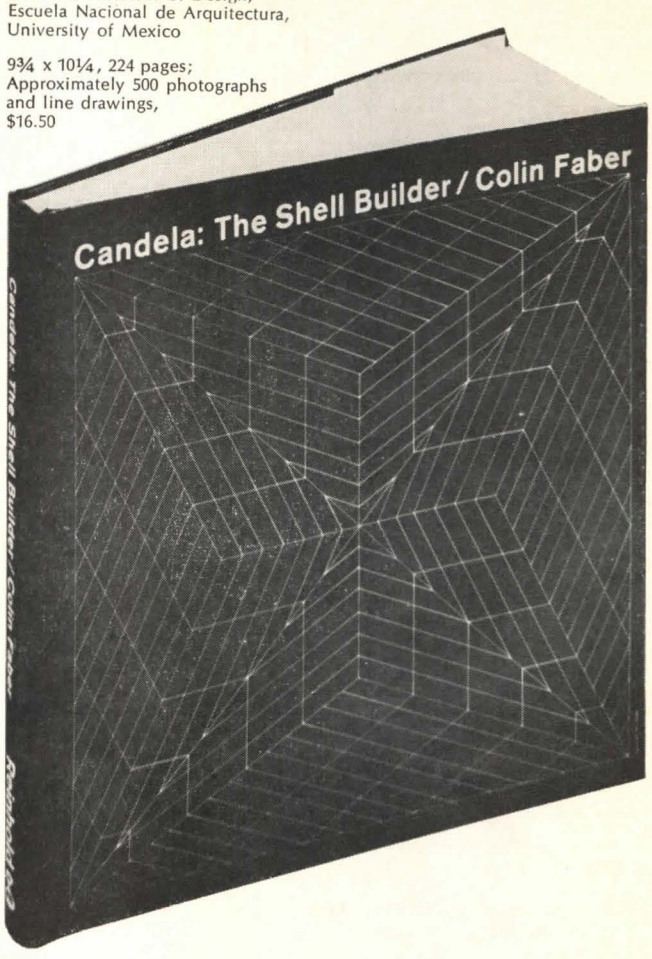

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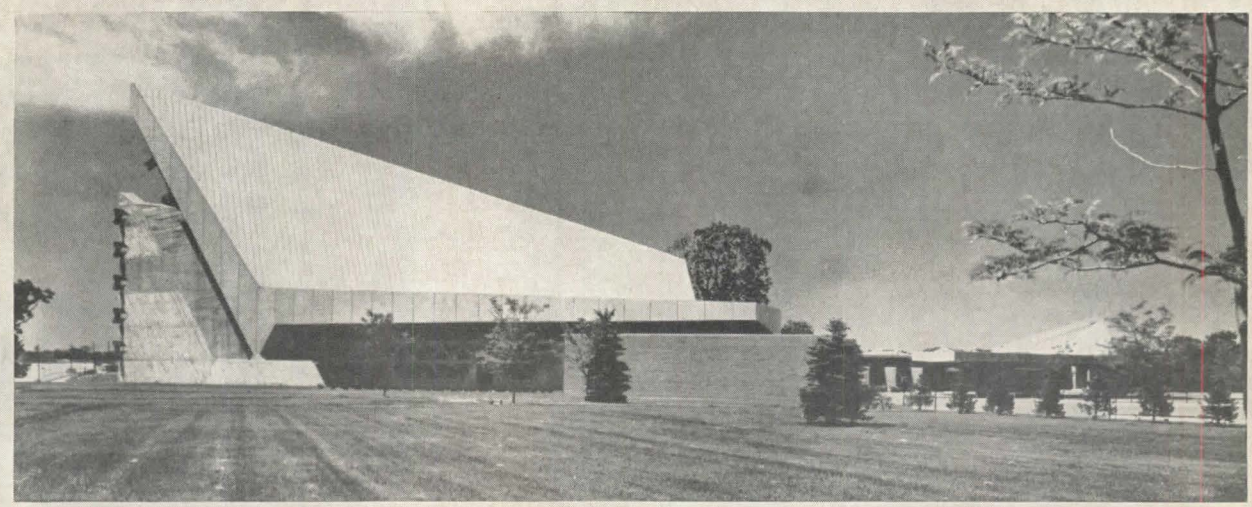

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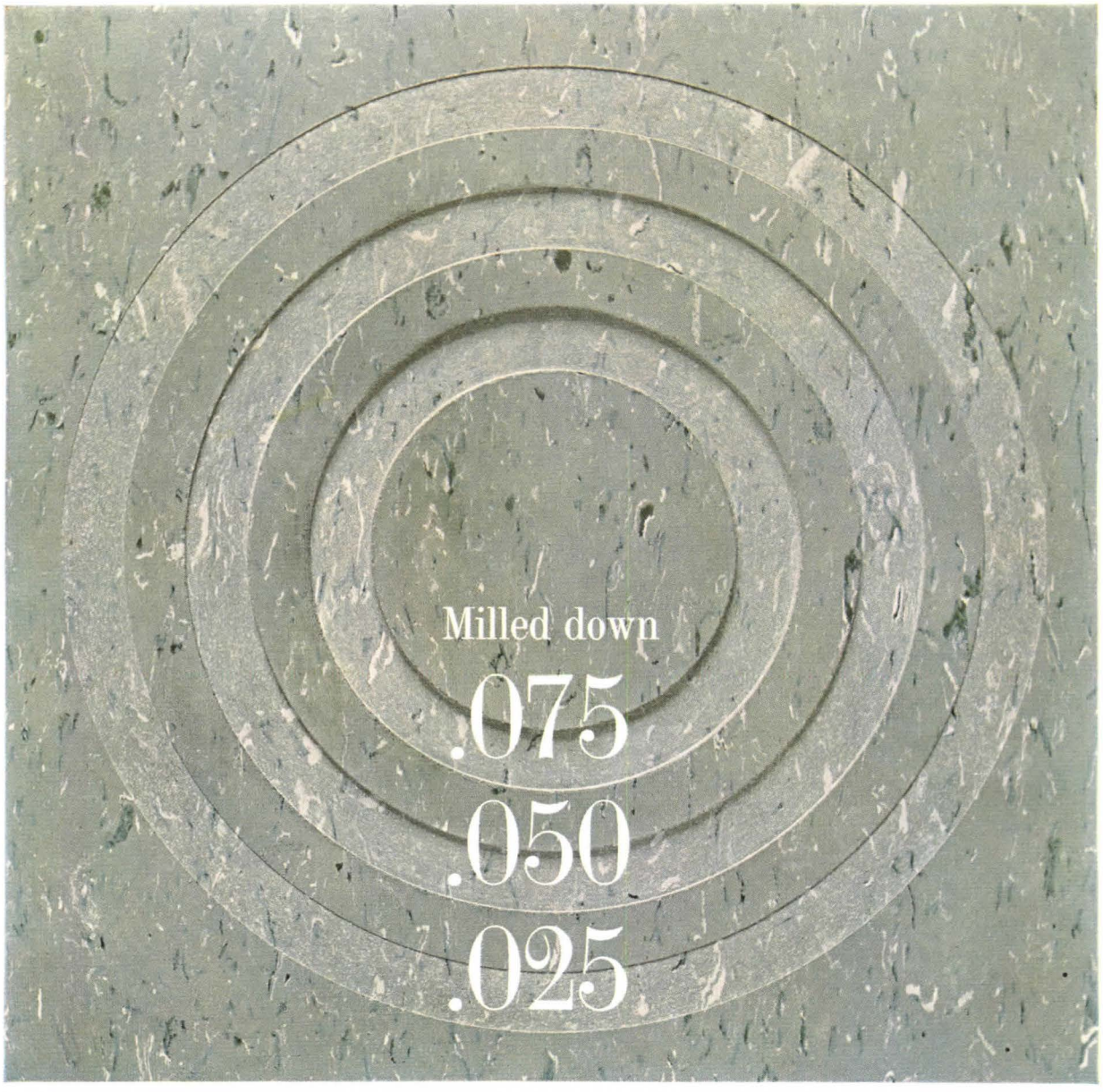

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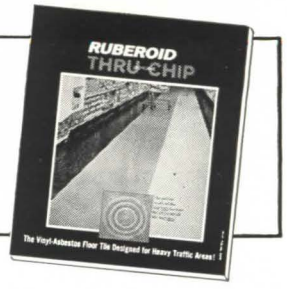


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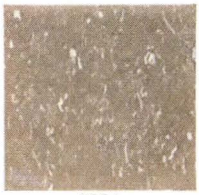
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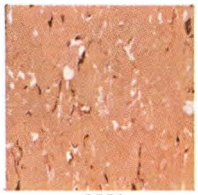
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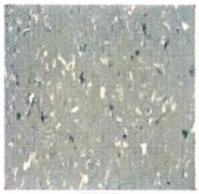
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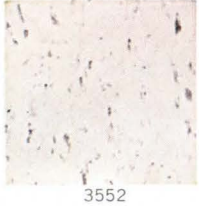
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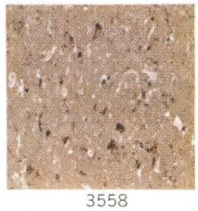
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