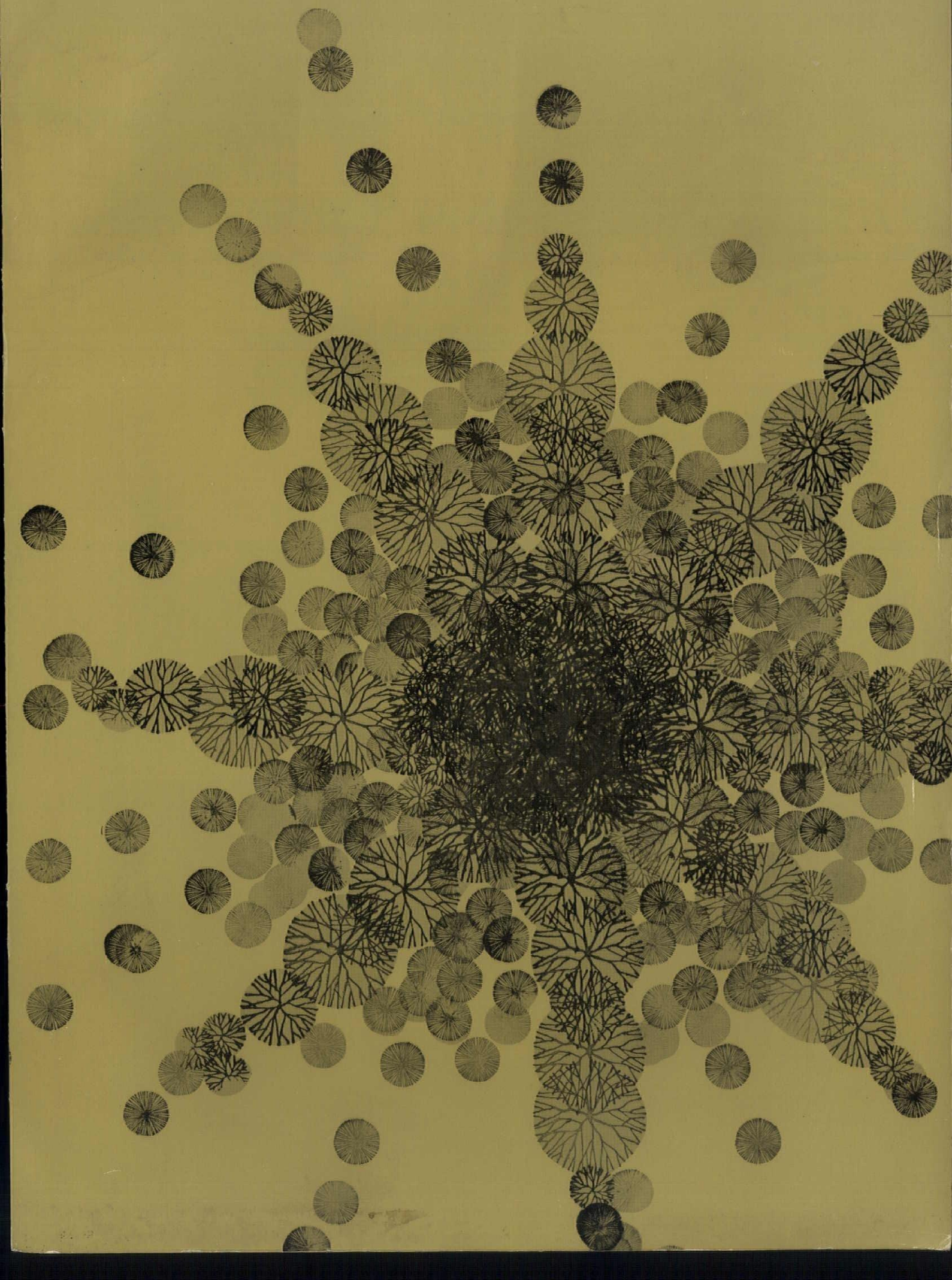
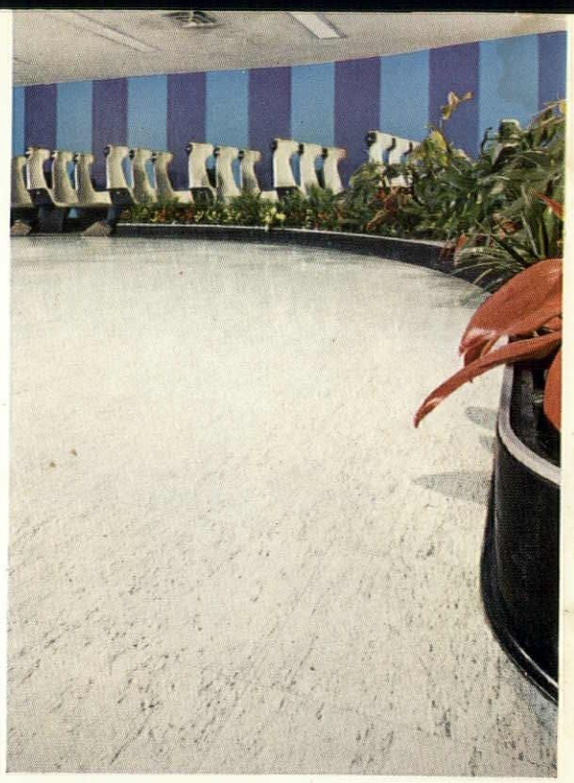
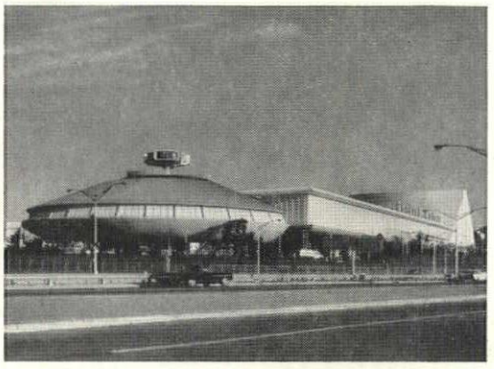
PROGRESSIVE ARCHITECTURE *December 1964*





Armstrong makes every kind of resilient floor. The best is the one that suits your design.

General Motors Futurama, New York World's Fair. Architect: Sol King, AIA, Albert Kahn Associates, Inc., Detroit. Interior design by General Motors Styling Staff.



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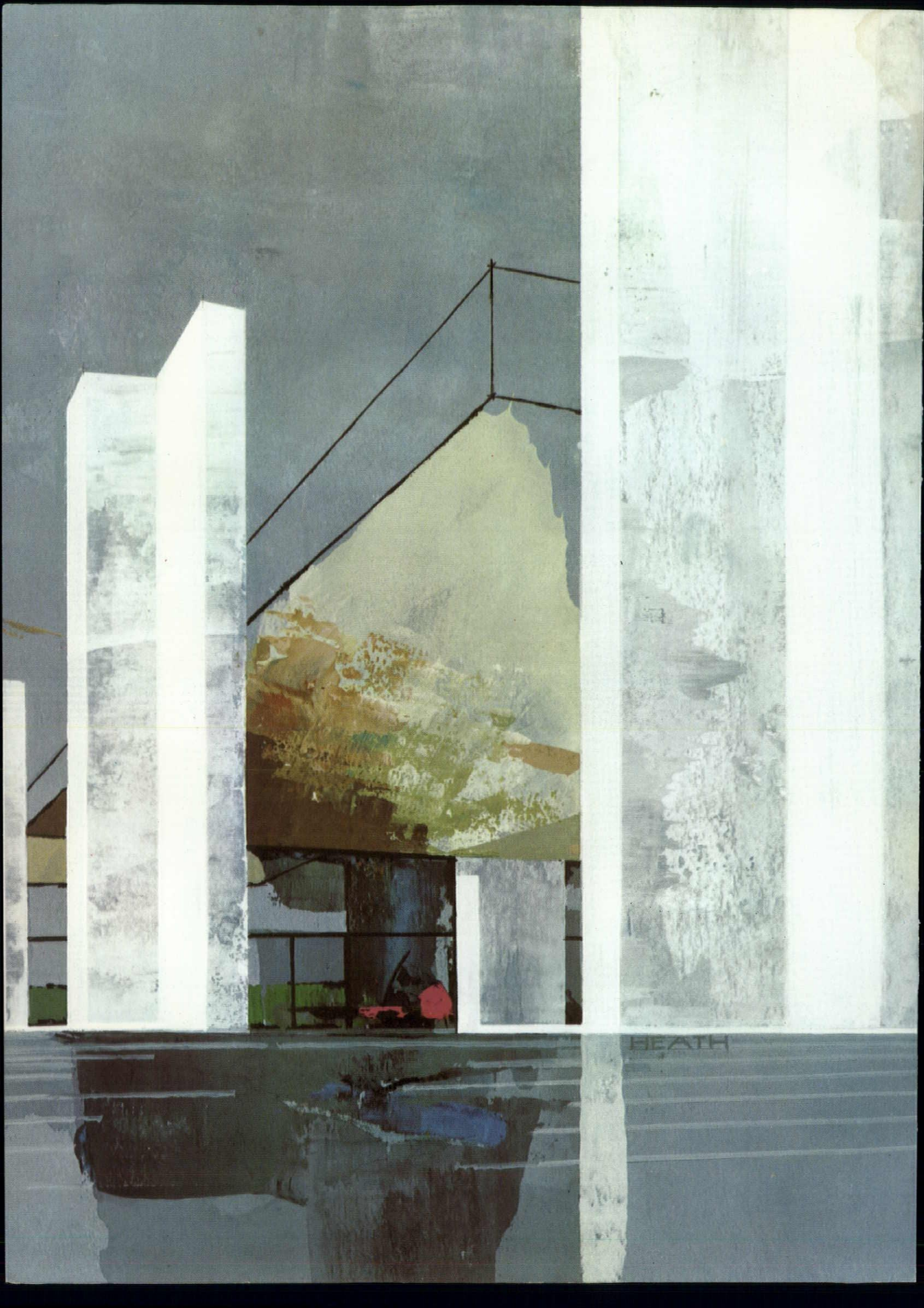
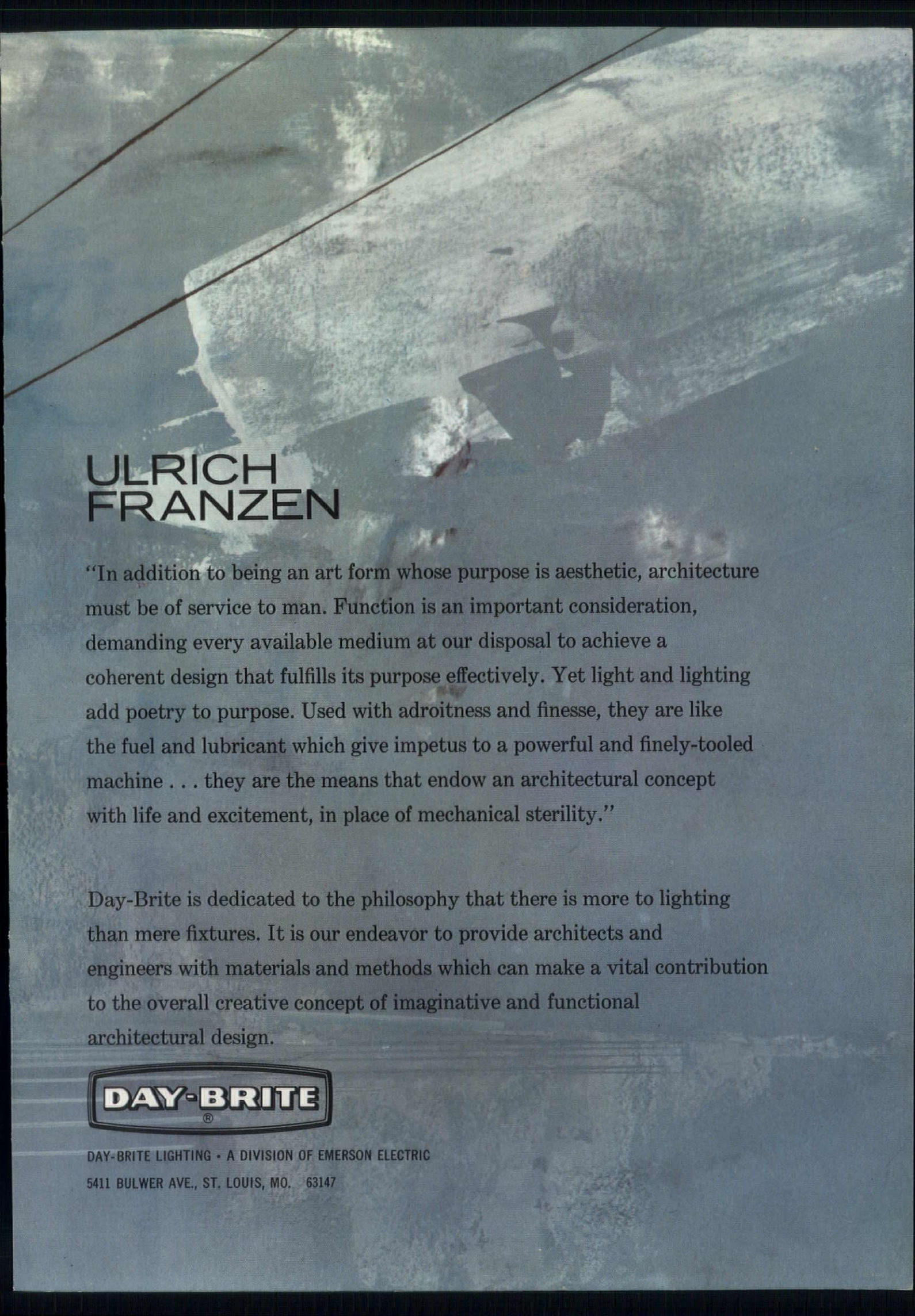
FLOORS BY Armstrong


HEATH



ULRICH FRANZEN

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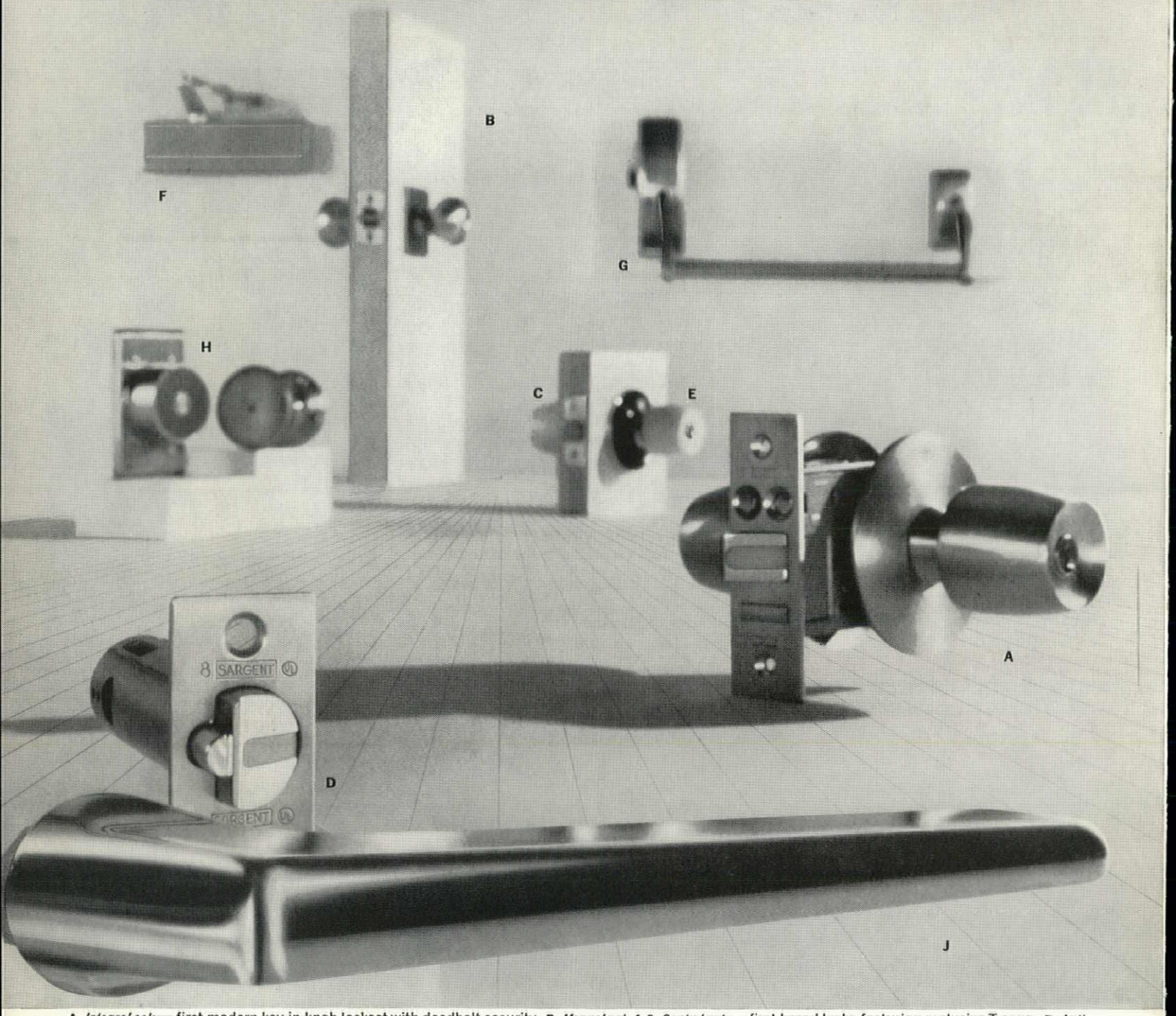

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THIS MONTH IN P/A

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VOLUME XLV, No. 12

Cover STAR DESIGN by P/A Art Department

Frontispiece HARVARD'S NEW MARRIED STUDENT HOUSING (page 122)
Photo: Phokian Karas

VIEWS

Reactions to P/A's Preassembly Issue

Dear Editor: I would like very much to congratulate you on the liveliness of P/A these days, especially on its scope and imagination.

The OCTOBER 1964 P/A, with its review of prefabrication around the world, the prophecies for future cities, and the scope of worldwide practices, is enough to make me want to pack up a suitcase.

Our lot, however, seems to be more modest projects, and we have been trying to bring these up to a higher and higher level of quality and competence.

This summer, after looking at Maybeck's church in Berkeley and other Bay Region buildings, I was reminded that all of the qualities of great architecture are inherent in modest commissions. Your annual House Issue tends to restate this. This is what I have to tell myself whenever a very exciting issue of P/A reaches our office.

JOHN J. DESMOND
Desmond-Miremont Associates, Inc.
Hammond and Baton Rouge, La.

Dear Editor: Congratulations on an extremely well written and well-illustrated article on Lord & Den Hartog and prestressed concrete prefabrication in the OCTOBER 1964 P/A.

We at PCI are aware of the work the Hartogs have been doing, and feel that their designs have not only indicated the feasibility of prestressed concrete as an ideal material for prefabrication, but have also shown that such building shells need not be lacking in excellent design.

BETTY J. RITTER
Publication Director
Prestressed Concrete Institute
Chicago, Ill.

Dear Editor: Edward T. Shiffer's article on Industrialized Building (OCTOBER 1964 P/A) is an excellent article on our industry, and we would like to congratulate him wholeheartedly.

H. L. STEWART-BROWN
President
Camus Concrete Corp. Ltd.
Montreal, Can.

Dear Editor: Shall we accept the obvious fact of technological change as a force of such compelling and pervasive power that we must of dire necessity conform to its demands? Indeed, may we still have a choice in the matter? If we do not, we are, to a great extent, slaves to a kind of mechanistic predestination.

For those who incline to such a view, the way is clear. We do our best as architects and planners when we identify the demands of technological change and adapt to them as quickly as possible. Since the visionary is more adept at this than others, he will be honored. So adept is he, in fact, that he is able to solve problems that don't even exist yet. If we can all be visionaries, so much the better.

What is accomplished by encouraging the architect to abandon his customary work to become a kind of professional visionary? One result, among others, seems certain. Consciousness of the past comes to be regarded as an encumbrance, particularly as it is transmitted through tradition and custom, or through style. For these aspects of culture do not, by their nature, lend themselves to speedy adaption to changing circumstances. While this will strike some as an excellent reason for abandoning the past as quickly as possible, let it be said that for many the past has been a lesson and a foundation. Let the visionaries ponder Santayana's warning: "Those who cannot remember the past are condemned to repeat it."

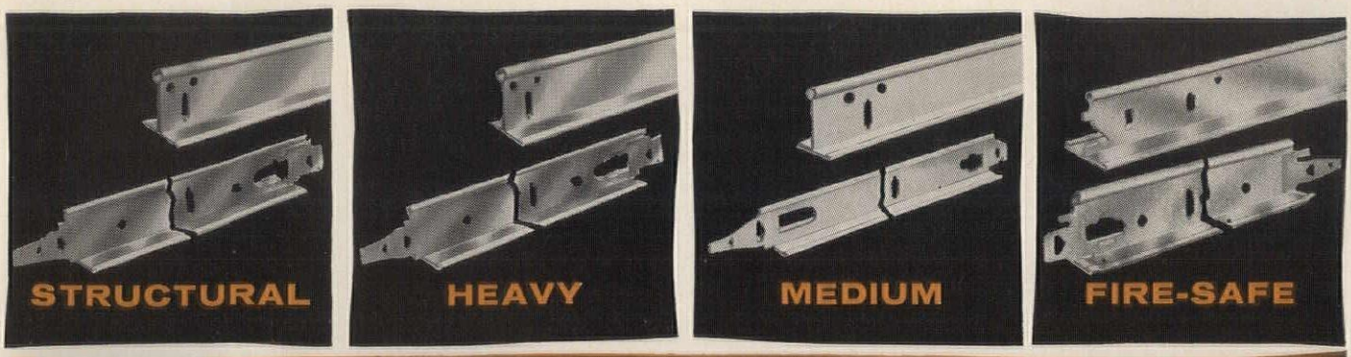
Architects of the great ages felt it no affront to their individuality to study diligently the works of their heritage. And they were also keenly aware, as we are not, that the true substance of culture has a life that far exceeds that of either men or buildings, with sublime indifference to changing times and changing technology. In fact, it may well be true that the persistence of culture may be every bit as inexorable as its propensity to chance.

MARK UELAND
Philadelphia, Pa.

Dear Editor: P/A is to be commended for the bold presentation of conceptual and theoretical architectural projects in its October issue. This service has too long been denied the architectural profession in this country by the architecture magazines; in order to keep abreast of the important new conceptual developments in environmental design, one has had to scan continually the foreign periodicals and cope with undecipherable texts.

I hope that you will continue to publish from time to time a review of the significant new thinking concerning the development of architecture and urban

Continued on page 10



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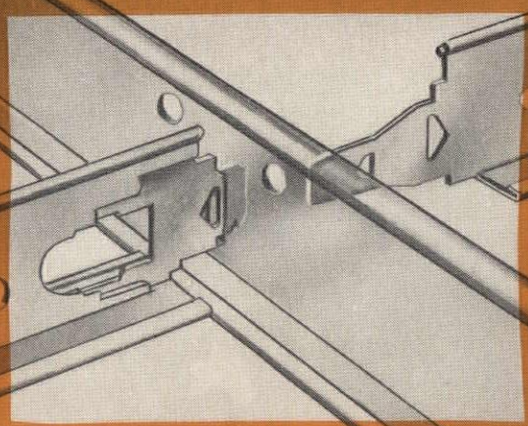

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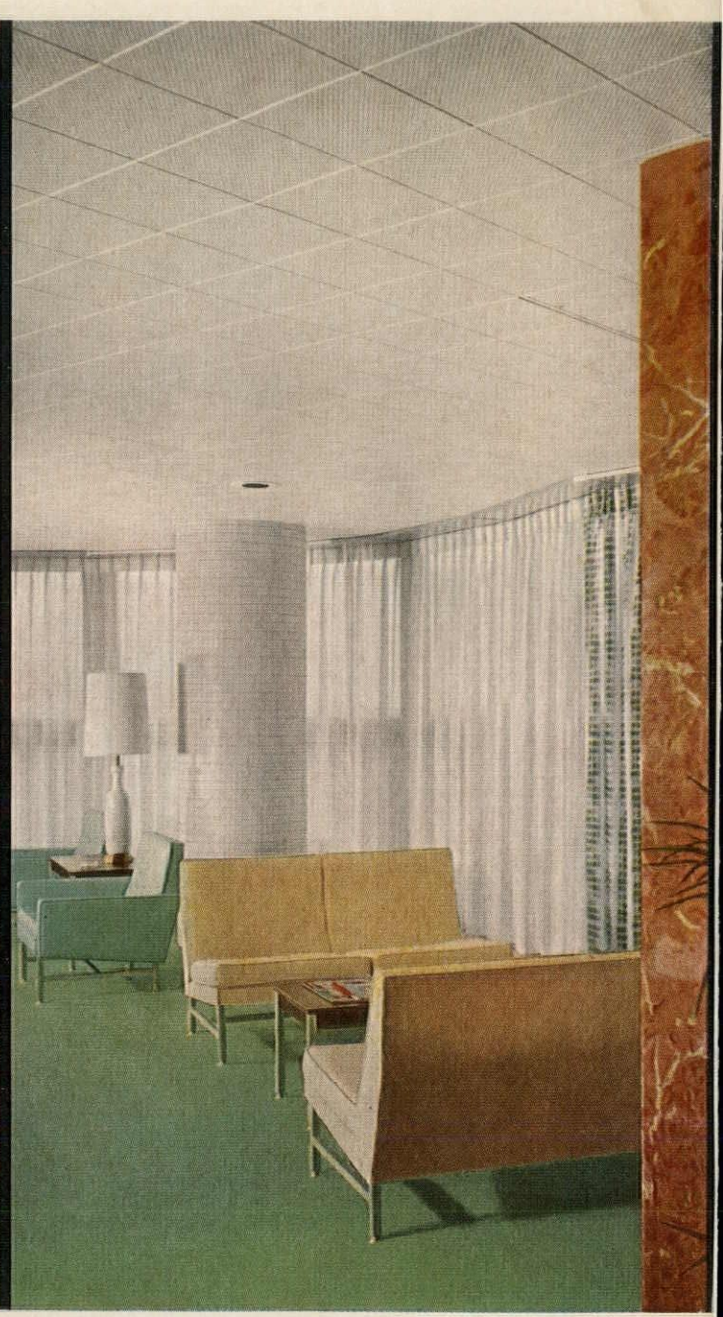
ACOUSTI-SHELL* CRAWFORD SAVINGS AND LOAN, CHICAGO. PHOTO BY HEDRICH-BLESSING.



ACOUSTI-CLAD* ST. JOSEPHS HOSPITAL, CHICAGO. PHOTO BY HEDRICH-BLESSING.

Silence makes a big noise

See for yourself what all the shouting's about. Pictured above (and described at the right) are four beautiful ways to hush room noise to a whisper . . . ceilings of Johns-Manville acoustical tiles and panels. They're part of the most extensive line in the industry . . . a line that solves every acoustical need, every aesthetic taste. For full details, send for our free, illustrated brochure. Write to Johns-Manville, Box 111, New York, New York 10016. In Canada: Port Credit, Ontario. Cable address: Johnmanvil.

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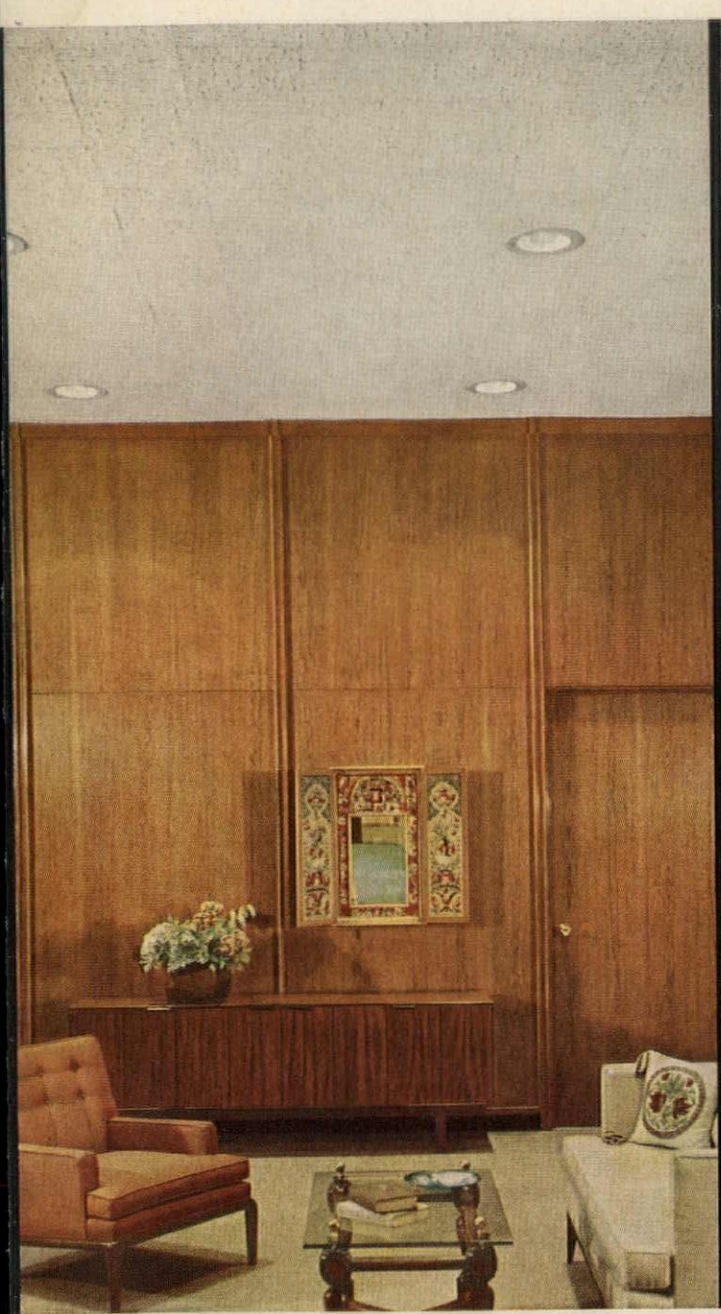
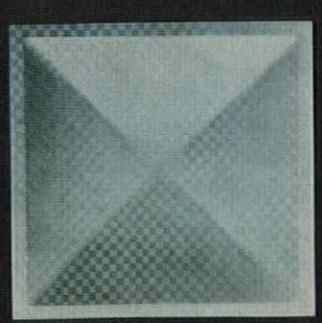
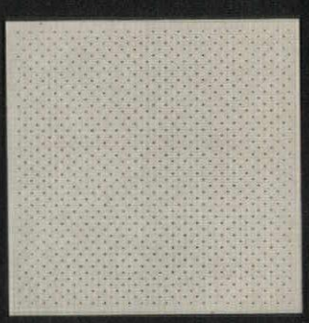
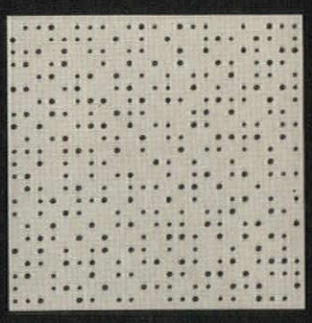


PERMACOUSTIC® DESIGNERS AND DECORATORS BUILDING, NEW YORK. PHOTO BY ERNEST SILVA.

SPINTONE® RAHWAY HIGH SCHOOL, RAHWAY, NEW JERSEY. PHOTO BY EDWARD MORRISON.







ACOUSTI-SHELL The 3-dimensional, fiber glass, acoustical ceiling panel. This vault design adds height and interest to any room or area. Acousti-Shell is available in 24" x 24" and 48" x 48" units. Finished with fiber glass fabrics (as shown) or with painted finish.

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Continued from page 6

design. Until the profession can awaken to the need for establishing basic research programs covering all scales of environmental design problems, these diverse gestures must be considered the stimulants that will keep the profession a live and growing thing.

Sincere compliments to you on the quality you are bringing to P/A.

EUGENE LEW
San Francisco, Calif.

P/A Item Proves Source of Poetic Inspiration

Dear Editor: The item entitled "What's Going on Here?" on page 98 of the OCTOBER 1964 P/A inspired me to compose the following, which I dedicate to you and the Grand Prix Feline.

THE GRAND PRIX FELINE

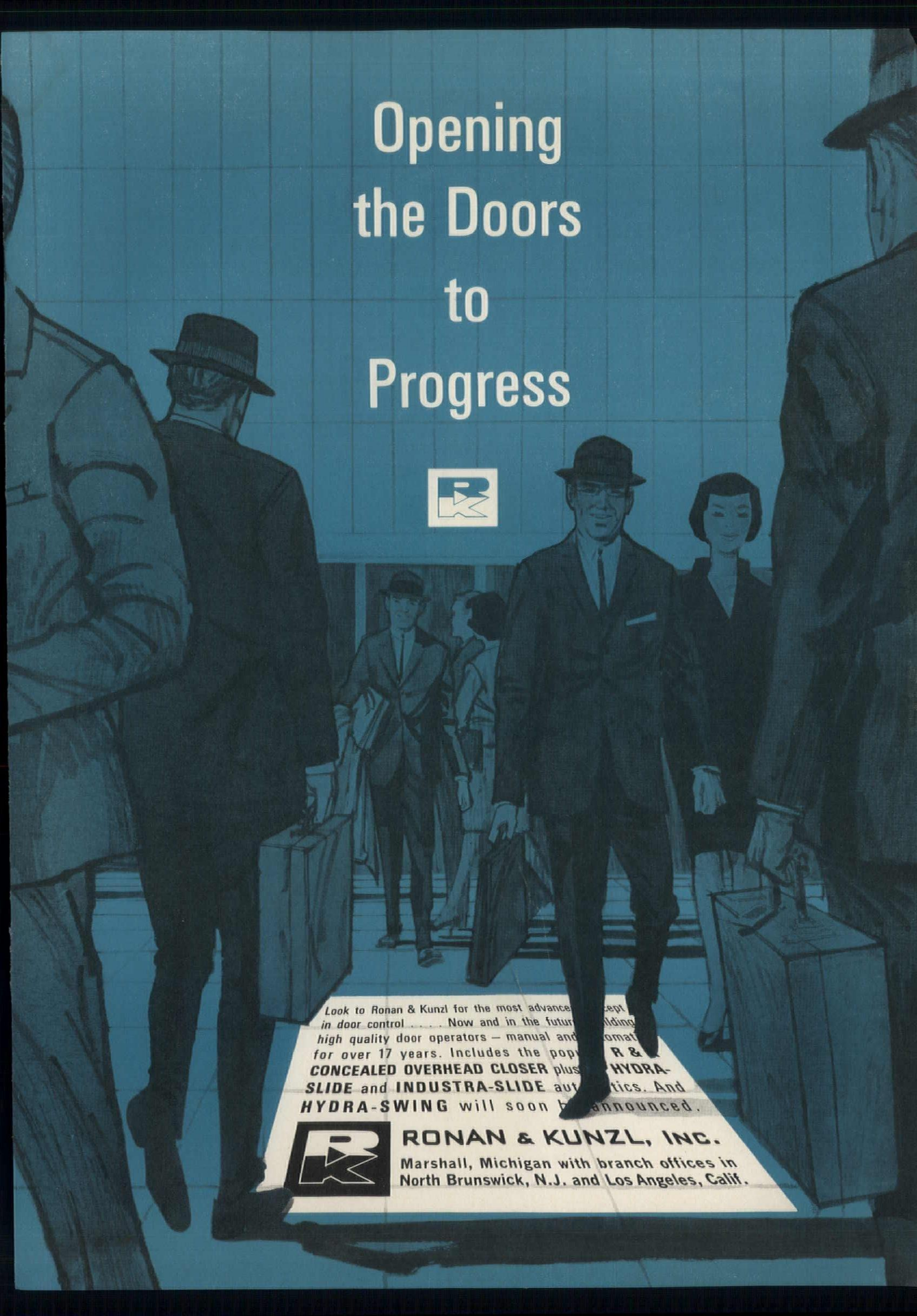
As I was a-wasting my day,
gaily dreaming
of P/A Design Awards, Citations
and such
I idly flipped through P/A's latest
issue so smugly
Fat, filled with goodies a-clutch
When suddenly, like thru a glass
darkly
A bright shiny note struck my red
bloodshot eyes.
Yes it is! By George, I've done it, what
a surprise!
Good old P/A! They award me a prize!
Now I read on with fervor divine,
The great names that were listed right
next to mine:
Ed Stone, Marquis, Bob Kitchen—Oh
fine!
Hallelujah, I have won the Grand Prix
De Feline!
My heart all a-glow, my eyes all
a-glimmer
My tux is all set for the day of the dinner
When Jan goes to the mike and in a soft
voice benign
Calls to Sydney L. Katz, Le Grand Prix
Feline!

SYDNEY L. KATZ
New York, N.Y.

Aalto and the New Finnish Cities

Dear Editor: I just read the review, "The Work of a Master Architect," by Leonard K. Eaton in the OCTOBER 1964 P/A. The article was particularly interesting to me as my wife and I visited Finland last summer and stayed in the cities of Oulu and Rovaniemi, as well as in Helsinki. The reason that Oulu and especially Rovianiemi are referred to as "new cities" is because the retreating German armies put the torch to the latter and burned down every building.

Continued on page 20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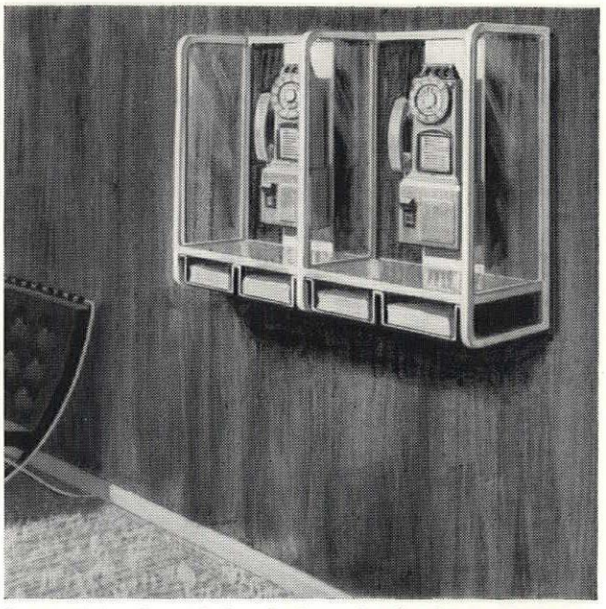
HOW MANY? WHICH? ...AND WHERE?



For general information on telephone planning, see Sweet's Architectural File, 33a/Be.

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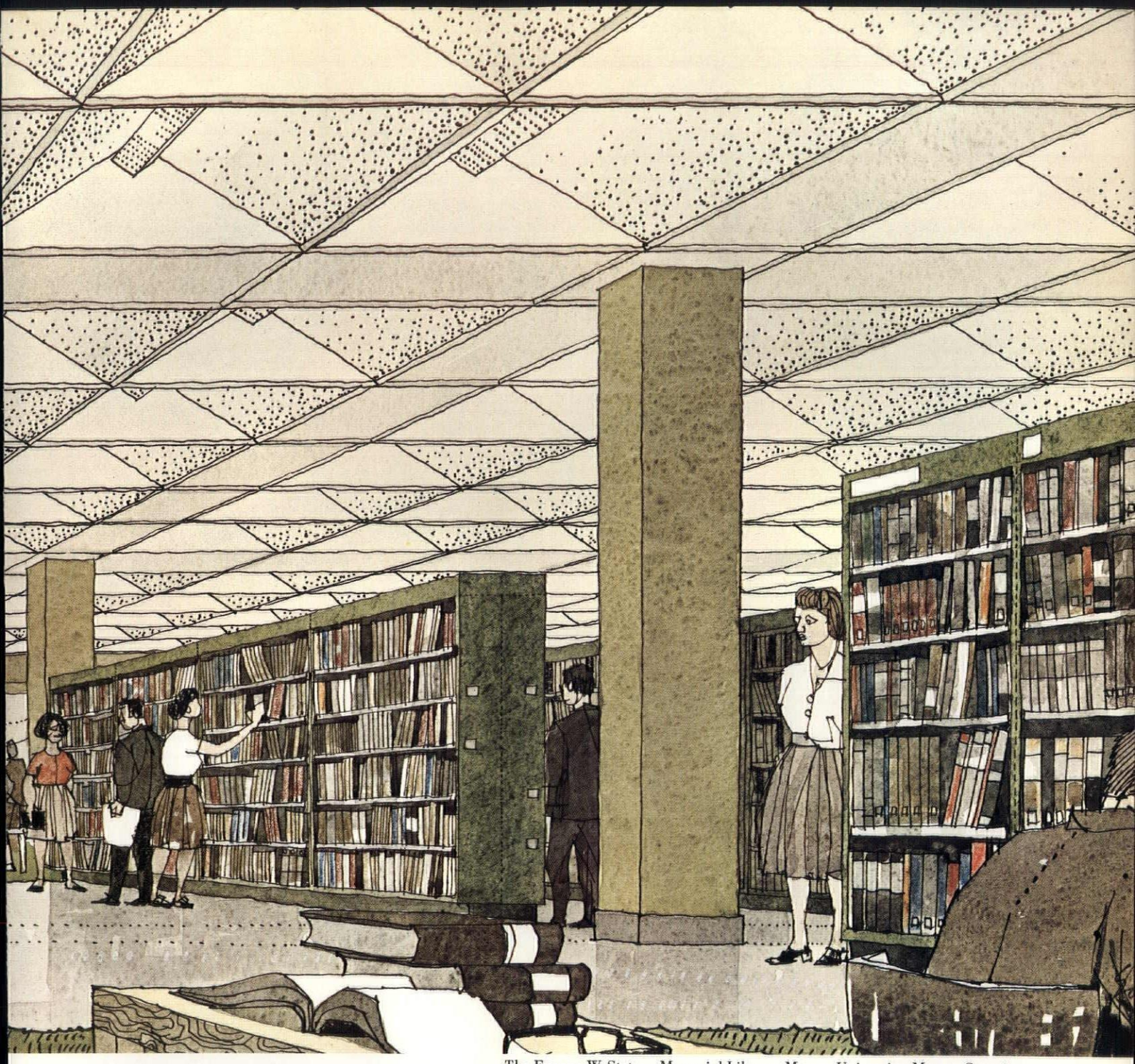
RENDERING BY GORDON CULLEN

A Georgia university chooses
THE ARMSTRONG LUMINAIRE CEILING SYSTEM



The Eugene W. Stetson Memorial Library, Mercer University, Macon, Georgia

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Architect: W. Elliott Dunwoody, Jr., F.A.I.A., Macon, Georgia
Associate Architect: J. Russell Bailey, A.I.A., Orange, Va.
Mechanical Engineer: George Nottingham, Jr., Macon, Georgia
Ceiling Systems Contractor: The Bob Ginn Co., Macon, Georgia
Lighting Engineer: Bush-May & Williams, Atlanta, Georgia
General Contractor: Perdue & Williams, Macon, Georgia

Ceiling Systems by Armstrong

For more information, turn to Reader Service Card, circle No. 300

Continued from page 10

The city was rebuilt, and it was rather strange, after seeing the centuries' old buildings and structures in all parts of Europe, to see this city, located at the Arctic Circle, with every building new and of the most modern design and construction.

Our hotel had terrazzo floors, marble columns, huge plate-glass windows, indirect lighting, and was fully air conditioned. The apartment buildings with their multicolored, staggered balconies were very much in evidence.

My judgment may not be well received by architects, since I am a professional engineer with nearly 40 years of experience in the structural field, but here goes anyway. Alvar Aalto and the other architects missed the boat with their concept of what is fitting for a setting in the rugged North. At the Arctic Circle of all places, these architects conceived and designed these fine buildings, which are just dandy for the French Riviera or Hollywood. The townspeople expressed this same viewpoint and felt that had native stone and timber been used in place of terrazzo, marble, and suspended plaster ceilings, the results would have been more in keeping with the character of the country and its people.

In Helsinki, Aalto's home was pointed out to us. It is the custom in Finland always to mention the architect's name whenever a building or other structure is pointed out to the tourist. This is also true in regard to the designers of furniture, glassware, and fabrics. Architects and the artists of the related arts are very much appreciated in Finland, even though they may err in judgment.

ALAN PALO
Los Angeles, Calif.

A Disclaimer

Dear Editor: I should like to amend one statement contained in your otherwise excellent reportage of our firm's activities—"U.S. Firm Radiates from Rome," in the OCTOBER 1964 P/A.

The statement, ". . . McMillan considers his office the only foreign-based U.S. firm with work in Africa that emphasizes design as a primary consideration," relates to an important aspect of our professional approach, but the blanket criticism of others implicit in this statement does not correctly describe our attitude. There are several U.S. firms doing excellent work abroad. We do not claim to be so final an authority on the work of others as your statement suggests, nor do we claim infallibility for our own efforts.

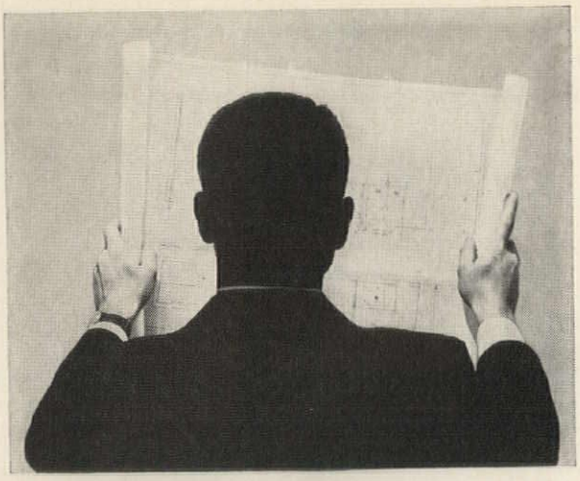
ROBERT S. McMILLAN
Lucerne, Switzerland

Reviving Our Modern Cities

Dear Editor: If Lawrence Halprin's book, *Cities* (SEPTEMBER 1964 P/A), is as juicy as Mr. Von Eckhardt tells us, we can welcome another sensitive addition to the "interesting spaces and exciting sequences" approach to urban design. Which is very nice and all that, unless we ask our historical nostalgia to provide answers to present-day problems. If it is true that "we do not . . . have any clear picture or concept of what the ideal city of our time ought to be," perhaps we have not thought about it enough.

No one will deny the need for a more sympathetic approach to "amenities" in the city, and the author's concern, at least, is praiseworthy. But must they really "have priority over the automobile at whatever the cost to mobility?" Such romantic nonsense is the privilege

Continued on page 28



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Because A.W.Faber Locktite Tel-A-Grade is a man-size holder for a man-size job

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These are the features which make professionals happy to pay $2 for LOCKTITE: ■ a gun-rifled clutch that grips the lead like a bull dog, prevents lead slipping when you draw, prevents lead turning when you sharpen ■ Featherlight balance that takes the irk out of work. If your lead holder feels like a lead pipe after 8 hours—you need LOCKTITE ■ Long tapered serrated no slip grip that comforts tired fingers ■ Window that reveals degree in use at a glance.

PERFECT TEAMMATE —If you use the world's finest holder, doesn't it make sense to use the world's finest refill leads? CASTELL #9030 leads are identical in uniform grading, in blackness and strength as world renowned CASTELL #9000 wood pencil. For perfect teamwork between your brain and your fingers, get LOCKTITE TEL-A-GRADE. Dial your dealer.

FREE SAMPLES of CASTELL #9030 Refill leads in the degrees you use most. (Sorry, we're not rich enough to give away samples of LOCKTITE.) Please fill out the coupon, attach to your company letterhead and mail to A.W.FABER-CASTELL, Pencil Co., Inc., 41 Dickerson Street, Newark 3, N. J.

A.W.FABER 9800SG
LOCKTITE

Please send me a sample each of CASTELL #9030 Drawing Refill Leads in____ ____ ____ ____degrees, which I want to test in my holder.

NAME_____ TITLE_____
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CASTELL 9030
LEADS

Continued from page 20

and pleasure of us all; however, it will take a bit more than fountains, fixtures, and "fun" to revive our modern cities. Even if the big questions are depressingly complex, let's at least keep them in view. And really, now, what has attracting pigeons to do with *anything*?

DAVID G. EISENHAUER
Stockholm, Sweden

P/A at the New York World's Fair

Dear Editor: I think it is great that you did such a good job of covering the New York World's Fair in the OCTOBER 1964 P/A. It would be unfortunate if the generally snide attitude toward the Fair prevented architects from studying it as a means of taking stock of where we are going.

I was surprised that there was no recognition of the central hall and spiral ramp in the General Electric exhibit. It seemed to me that this was a truly remarkable experience in space, in which the people themselves became the actors in the setting and that it adumbrated some really important possibilities for the future.

The one overwhelming important point you didn't mention at all seemed to me to be the power of the old 1939 plan. I went to the Fair expecting to be disgusted by the chaos, and came away feeling astonished at the unity. Of course, the unity did not result from the individual architecture, which was totally unrelated to its surroundings. The unity resulted in the simple power of the strong 1939 plan. Granted that the design of the plan was greatly strengthened by sensitive and thoughtful use of consistent lighting along the various axes and good distribution of flags, water elements, and landscaping, the World's Fair proves that a powerful plan can become a dominating and unifying force. This is in violent contrast to the Seattle Fair, which had no plan whatsoever, and which, to my mind at least, produced nothing but chaotic frustration, the sole exception being the internally consistent environment of Yamasaki's Federal Building.

It is time we got back to thinking about the underlying plan and spatial organization, along with the design of individual buildings. We should also remind ourselves that the New York World's Fair plan was designed in 1939, and raise the question whether anyone today would be capable of devising an over-all plan that is as good.

EDMUND N. BACON
Executive Director
City Planning Commission
Philadelphia, Pa.

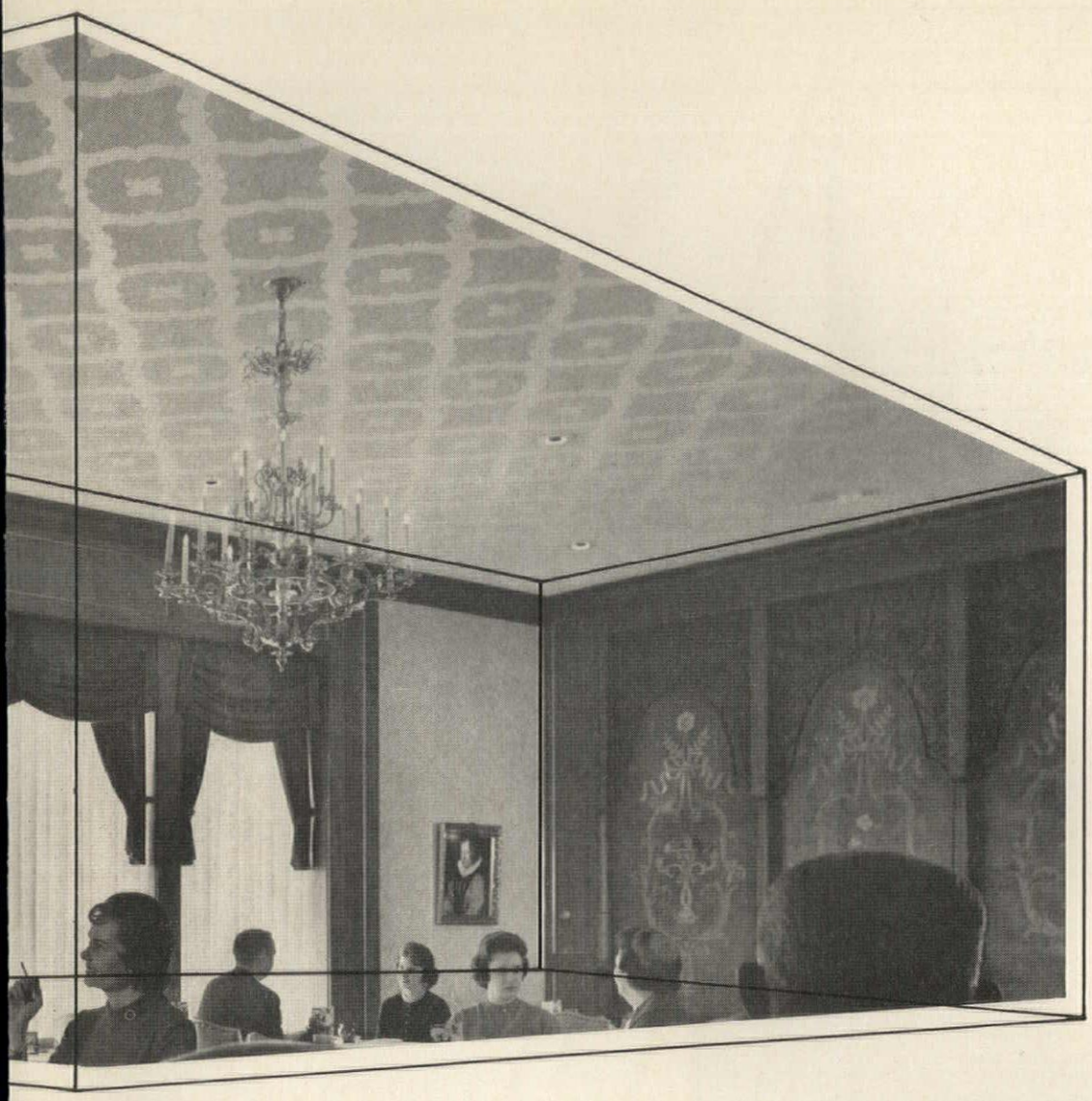
Dear Editor: The New Mexico buildings for the World's Fair were "designed," to use the term loosely, by an agronomist at Holloman Air Force Base, not an architect, as stated in your article (p. 232, OCTOBER 1964 P/A). Your comment—"simulated adobe pueblo"—is well suited and sufficient.

TERENCE W. ROSS
Santa Fe, N.M.

CORRECTIONS:

• The Designer of the Moroccan Pavilion at the New York World's Fair (p. 230, OCTOBER 1964 P/A) should have been listed as Ugŭr Bengisu.

• The Pratt Institute Resarch Project (p. 204, OCTOBER 1964 P/A) had, as additional consultant on its low-income housing demonstration project, the firm of Whittlesey & Conklin, which has been selected by the Navy Department as architects for the actual project to be built at Newport, R.I.



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†"Room comfort requires control of three elements: temperature, humidity, and air motion."
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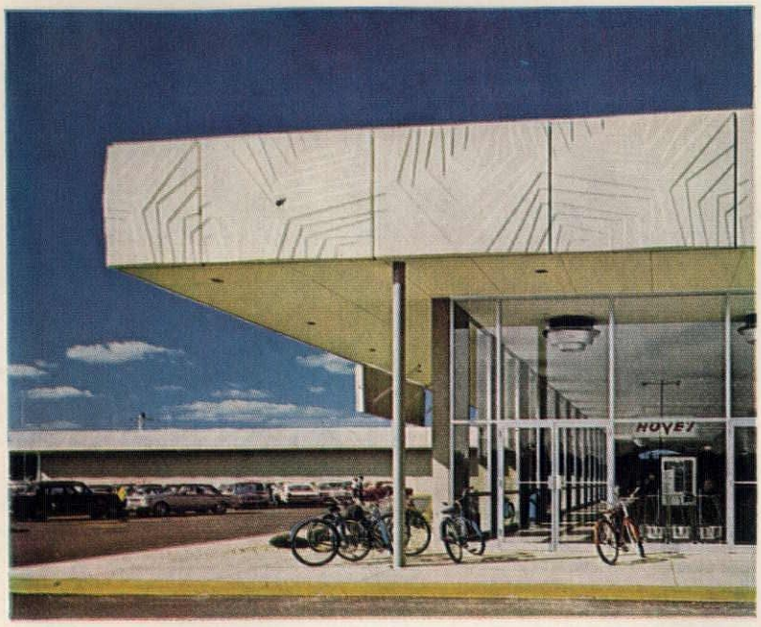
Architects: Thorsen & Thorshov, Inc., Minneapolis, Minn.



Montgomery Ward store, Apache Plaza Shopping Center, St. Anthony Village, Minn.
Architects: Thorsen & Thorshov, Inc., Minneapolis, Minn.

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Parke-Davis & Company building, Cherry Hill, N.J.
Architects: Alexander Ewing & Associates, Philadelphia, Pa.

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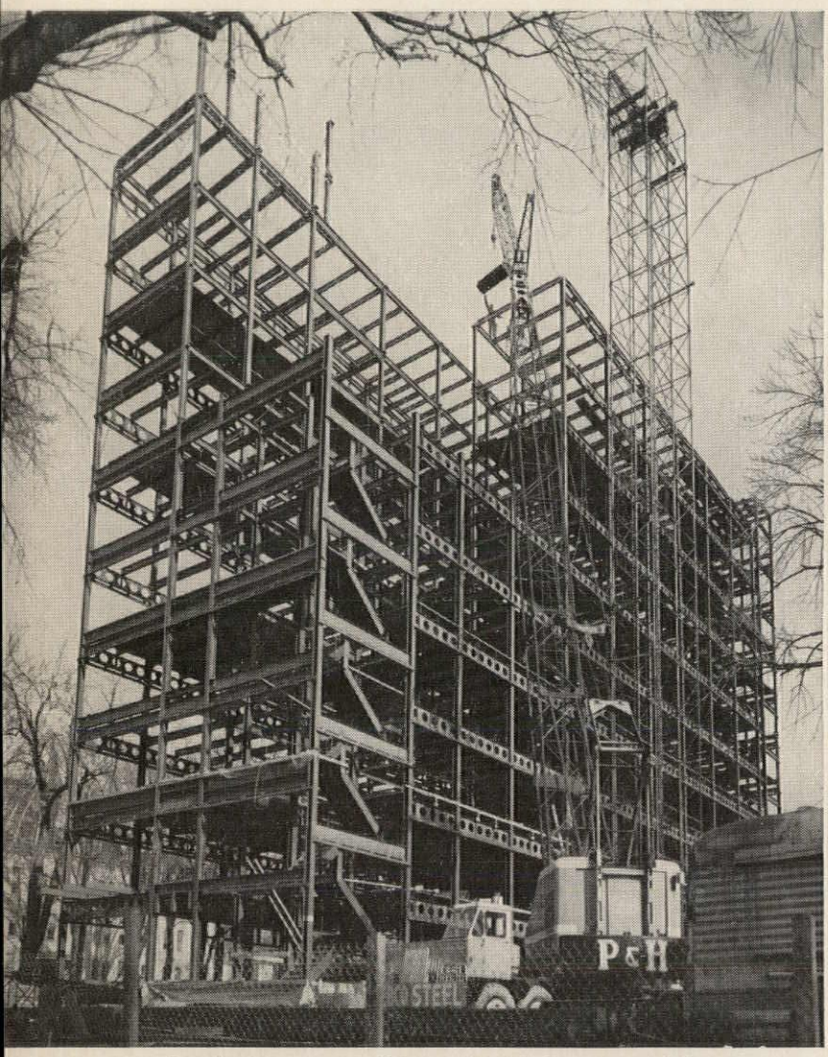
Steel framing chosen for all six new buildings at D'Youville College

Architects: Foit & Baschnagel, Buffalo



Castellated beams are Bethlehem 16-in. wide-flange "expanded" to 21 in. to save weight and provide additional strength for wind bracing. Bethlehem supplied 183 tons of H-piles, as well as 600 tons of structurals. General Contractor: J. Migliore Construction Co., Buffalo. Steel Fabricator and Erector: Rebco Steel Corp., Niagara Falls, N. Y.

81,189 sq ft residence hall houses 265 students, mostly in two-student rooms. Exterior is buff-colored brick, with piers of grey stacked Norman brick. Continuous strip windows of the corner study lounges provide a panoramic view of parks, the Buffalo harbor, and the Peace Bridge. Basement contains student laundry, recreation room, and canteen.

D'Youville College's 10-story residence hall, to be occupied in September, is the first of six new buildings in a $10 million expansion program which will permit an increase in the student body from 850 to 1,500. All six buildings for this private Buffalo college will be steel framed.

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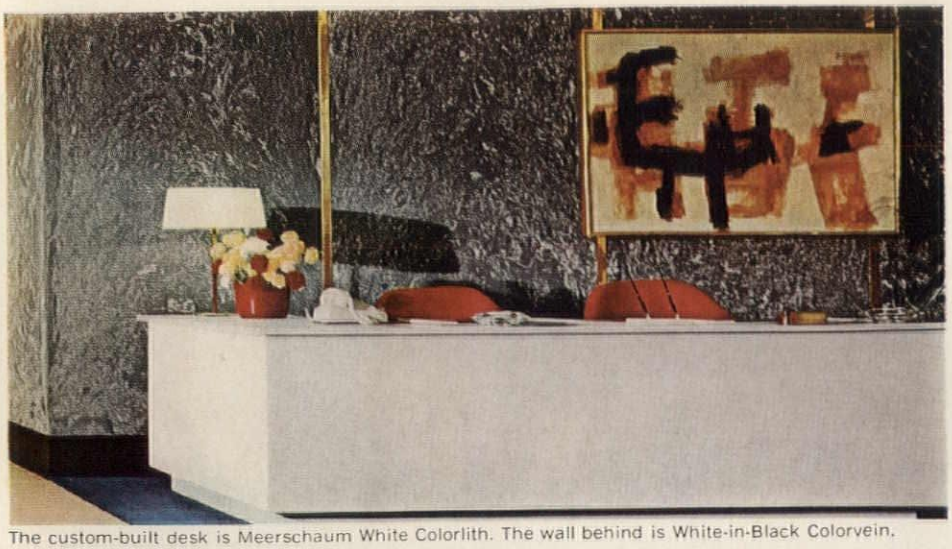
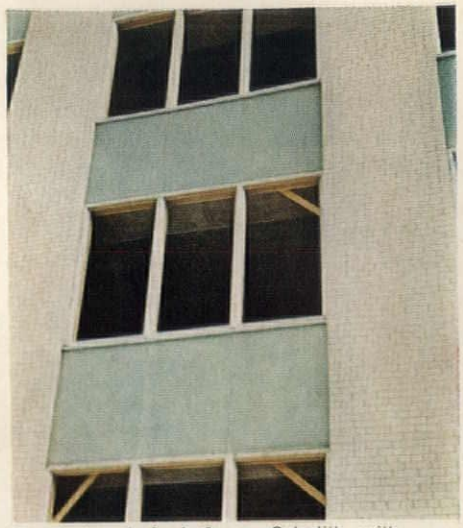
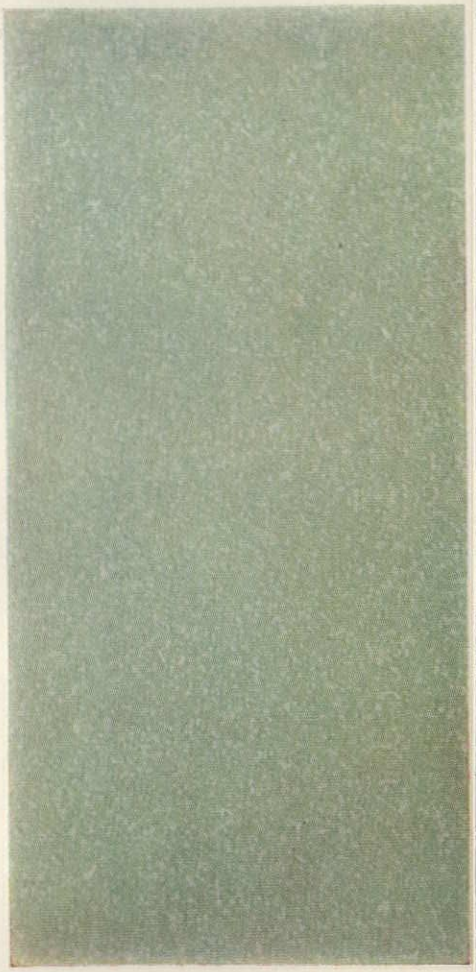


The custom-built desk is Meerschaum White Colorlith. The wall behind is White-in-Black Colorvein.



Spandrels of Surf Green Colorlith with masonry back-up.

COLORVEIN® WHITE-IN-BLACK



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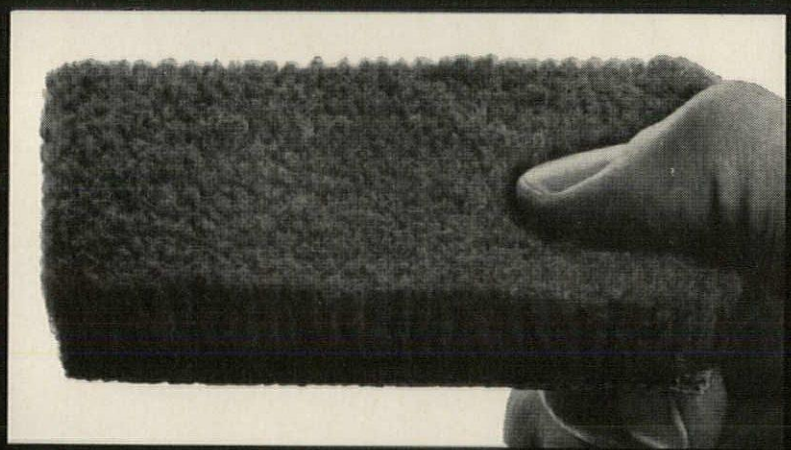

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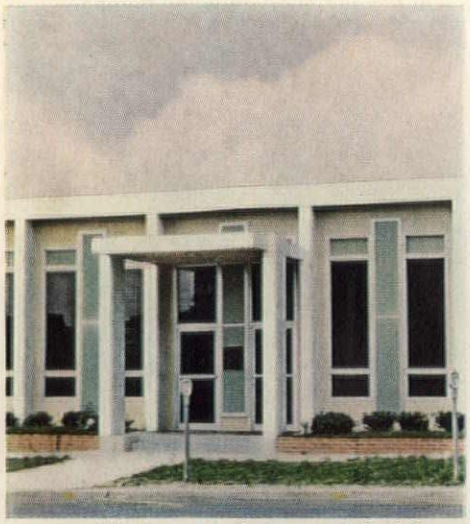
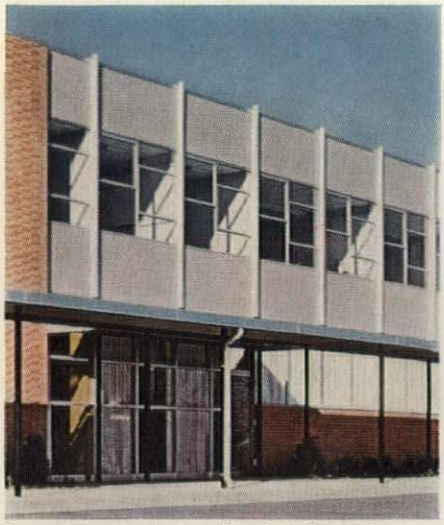
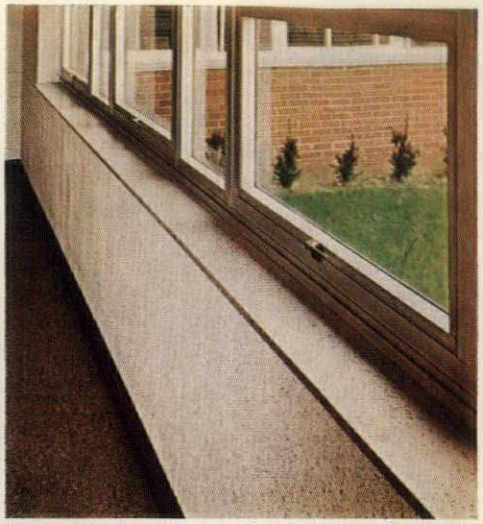


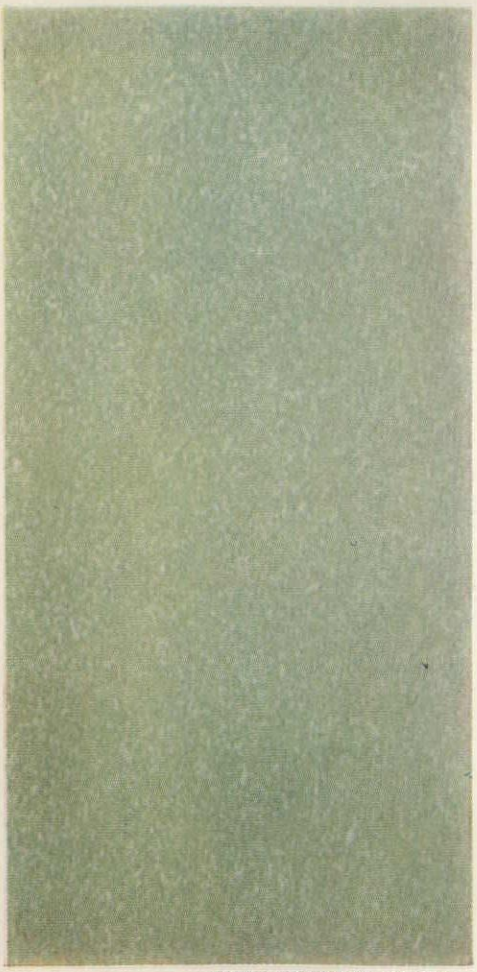
Window wall of glass and Surf Green Colorlith.



Second-story wall uses Carnival Colorchip above and below windows.



Window stool and wainscoting below are Carnival Colorchip.



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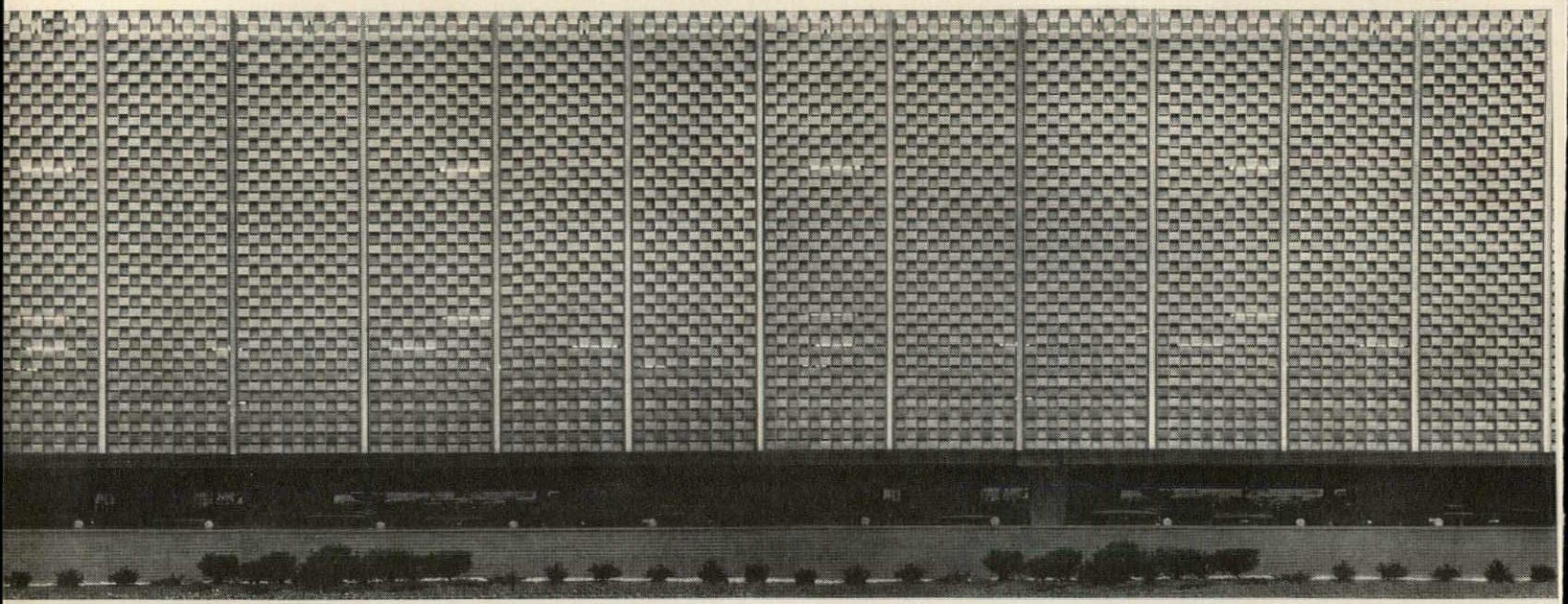

The White Plains Parking Authority had two choices of architectural metals for its parking garage facade.

One would screen headlight glare, admit natural daylight, provide ventilation for auto exhaust.

The other metal would screen headlight glare, admit natural daylight, provide ventilation for auto exhaust—*and have greater strength, have greater corrosion resistance, provide minimum maintenance, last longer, stay attractive, and cost only 5% more.* It's nickel stainless steel.

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NEWS REPORT

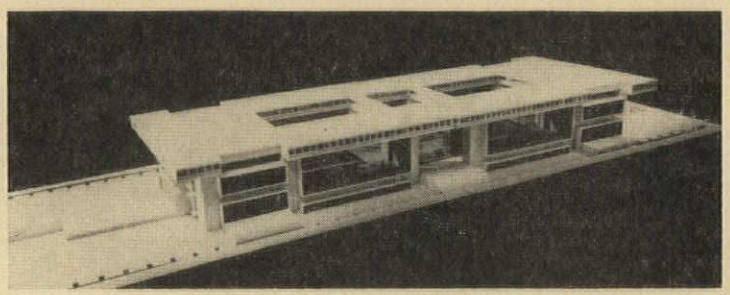
Architecture's Monthly News Digest of Buildings and Projects, Personalities, New Products

Dudley to UCLA

LOS ANGELES, CALIF. George A. Dudley, presently Dean of the School of Architecture at Rensselaer Polytechnic Institute, Troy, New York, has been named as the first Dean of the new School of Architecture and Urban Planning at the University of California at Los Angeles. The appointment ends long speculation over who would get this plum, and frequent noncampaigning of the "I do not seek the post, but will take it given a mandate by my professional peers" variety among a number of California architects. The position is an architectural educator's dream, offering a virtual *carte blanche* in setting up what will undoubtedly be a major new school. Opening of the school is hopefully set for the fall of 1966.

Besides the deanship at RPI, Dudley's past associations have been with the Rockefellers (Director of the Directive Council when Nelson Rockefeller was Coordinator of Inter-American Affairs; and president of Ibec Housing Corporation under the presidency of Winthrop Rockefeller, 1948–1950), and with the New York firm of Harrison & Abramovitz. In 1960, Dudley was appointed Director of the Office of Regional Development for New York by Governor Rockefeller, and two years later was made a trustee of the New York State University Construction Fund and named Planning Coordinator of the state capitol complex in Albany. P/A has learned that he is expected to continue to function in the latter two positions for at least another year, making frequent flying trips from the West Coast.

OBATA GIVES AIR AND SPACE TO AIR AND SPACE MUSEUM



WASHINGTON, D.C. Unlike the addition to the Smithsonian Institution of the 1950's, the National Air and Space Museum by Gyo Obata of Hellmuth, Obata & Kassabaum will create a piece of truly modern architecture along the Mall in Washington. This departure from standardized Washington styles is particularly apropos, since the museum will not house stuffed animals and assorted artifacts in unnatural, museum-like attitudes; instead, it will provide vast areas for the display of machines that have lifted us into the air since the early 1900's. The Air and Space Museum will be featured in a future issue of P/A.

Noted Planner Disappears

STINSON BEACH, CALIF. As of this writing (November 23), searchers from the Marin County sheriff's office, the University of California at Berkeley, and Hamilton Air Force Base are combing the woods and ravines in, around, and above Stinson Beach, Calif., for Mrs. Catherine Bauer Wurster, noted teacher and authority on urban planning, and wife of William Wilson Wurster, former Dean of the School of Environmental Sciences at the university. Alarm over Mrs. Wurster's disappearance began on Saturday, November 21, when members of the sheriff's staff found her rain-soaked, open convertible parked at the end of a dead-end lane overlooking a precipice, near Stinson Beach, small vacation town where the Wursters have a dwelling. A Marin County under-sheriff told P/A early this morning that an all-out search had been conducted unsuccessfully for Mrs. Wurster on Saturday and Sunday and another was in progress again on Monday, bolstered by the presence of volunteers from the university student body. Despite the many hours of extensive searching, he said, there is still no clue as to Mrs. Wurster's whereabouts or fate. Heavy rains had washed away any trail, and bloodhounds were unable to pick up a scent.

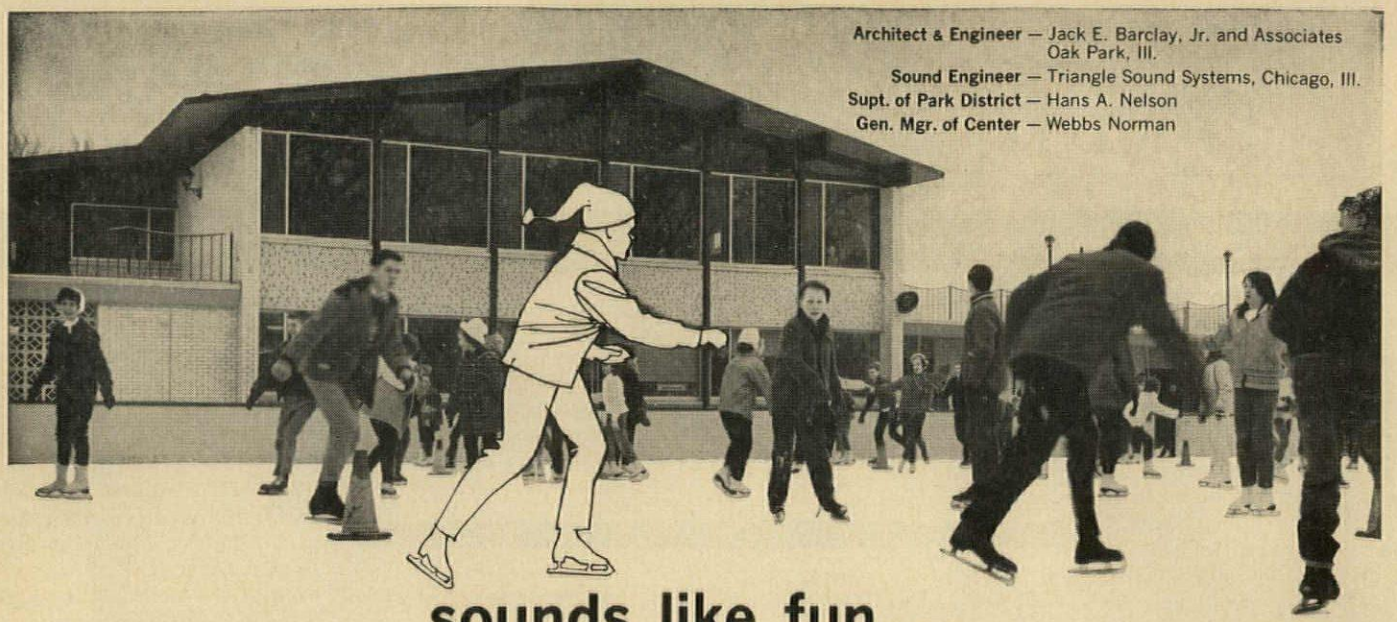
P/A just learned (Nov. 24) that Mrs. Wurster's body was found later yesterday on Mount Tamalpais five miles from her car, apparently the victim of a brain concussion and exposure. Authorities were of the opinion that she fell while hiking.

Kennedy Grave, Culture Center Move Ahead

In the same week that the design of the late President John F. Kennedy's grave was unveiled (for a detailed coverage, see p. 185 of this month's P/A OBSERVER), it was announced that ground-breaking for the John F. Kennedy Center for the Performing Arts by Edward D. Stone is scheduled for December 2, with President Johnson participating.

MOMA Continues Attack on Architects

An exhibition of vernacular or anonymous buildings, towns, burial mounds and grounds, and religious places opened at the Museum of Modern Art last month under the title of "Architecture Without Architects." Assembled by Bernard Rudofsky, who claims that its intent is to "help us to free ourselves from our narrow world of official and commercial architecture," the exhibit is really kind of a Rousseauean tribute to the "noble savage," who, the exhibit implies, built beautifully and simply, unlike the crass oafs today who practice architecture wholly for praise and profit. "The untutored builders do not subordi-



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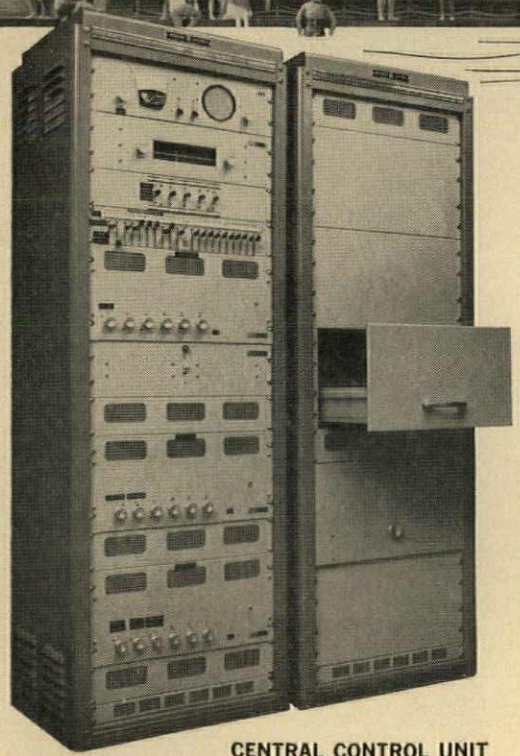
Oak Park's Winter-Summer Recreation Center



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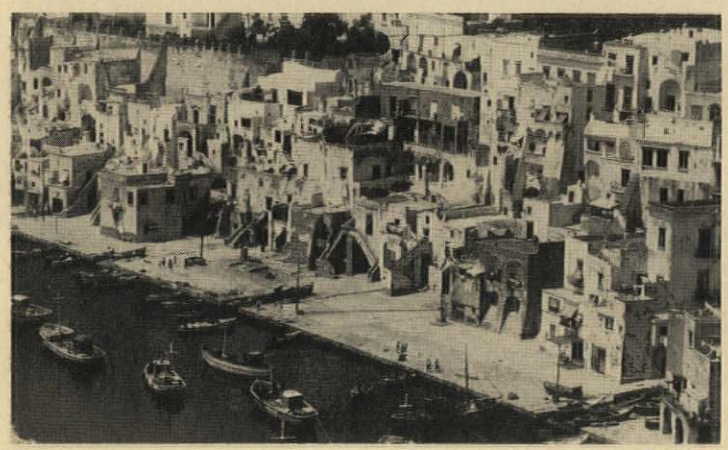
1 Photo: Wenner-Gren Foundation for Anthropological Research



2 Photo: Myron Goldfinger

nate the general welfare to the pursuit of profit and progress, for they know that progress that takes no account of human needs is self-defeating," Rudofsky says. This point of view is not only incorrect—we doubt that "untutored builders" have such a 53rd Street view of progress—but is also capriciously malignant toward thousands of responsible architects who have precisely the humanistic approach to their profession that Rudofsky and his Museum of Modern Art sponsors deny them.

Nevertheless, the show itself is a visual success and a good refresher course for architects and the general public on the wellsprings of architecture and planning. The strait-laced or unimaginative designer can learn a lot here, it is true, and we hope that many attend to brush up on the lessons of such esoterica as the amphitheaters near Cuzco, Peru (1), and such relatively familiar places as Procida, Italy (2). We hope also that Rudofsky and his employer, Arthur Drexler, head of the museum's Department of Architecture and Design, learn that things in architecture are not really that bad today. They would realize it if they would only take the trouble to separate the wheat from the chaff. As we said in writing about the museum's last show of structures ("20th Century Engineering," p. 61, AUGUST 1964 P/A), a showcase like the Museum of Modern Art has a responsibility to be a true mirror of architecture, and not simply a platform for the prejudices of a few opinionated bystanders. As Jan C. Rowan states in his editorial on this subject on page 121, "Today, the uneducated spontaneous design leads to over-abundance and chaos; only the highly educated, disciplined design can achieve simplicity and order."

Consummate Calder Collection

NEW YORK, N.Y. When Wright's Guggenheim Museum opened five years ago, many critics (including P/A) feared that the grandeur and boldness of the architecture would overpower any art works displayed in it. Although the fears were not entirely justified, too often, art displayed in the Guggenheim, in the early years, might have been overpowered by a simple brick warehouse. But the shows in the circular, ramped building have improved, and visitors have become accustomed to the easy slope of the ramps, which at first give one a feeling of viewing paintings while slightly off balance.

Now, in what is probably the best show the Guggenheim has ever had, 300 works of Alexander Calder are on display there through January 10. Calder's liquidly-moving mobiles and swoopingly curved stabiles look as if they were designed specifically for display in the Guggenheim, so perfectly do they fit the niches under the ramps and fill the open central area. Indeed, one piece was designed especially for the building, for this show. It is a 30′ x 35′ giant mobile which, hanging from the ceiling, fills the great central well of the museum.

The exhibit includes works from all phases of Calder's remarkably varied career: drawings, toys, wire sculpture, jewelry, wood carvings, bronze figures, mechanized objects, tapestries, and paintings.

The museum staff is to be congratulated for its delightfully arranged display of Calder's work.

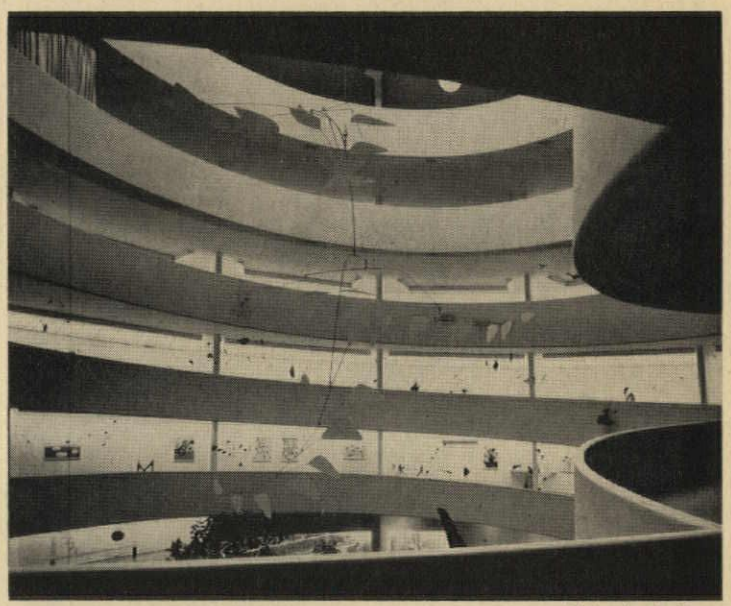


Photo: Louis Reens

Missing Link Designed

CAMBRIDGE, MASS. Described as the "linking element" between the existing dormitory quadrangle and proposed new housing on the Radcliffe College campus, this Library Center, unlike most links, has an architectural identity of its own. Designed by Harrison & Abramovitz, the building, on which construction has just begun, is designed with an open central court. Study areas formed by book stacks line the perimeter of the second and third floors. Structured of reinforced concrete, with limestone infill panels and bronze-tinted windows, the library is scheduled for completion in 1966 at a cost of $4 million.

Builder's Dorms

ATHENS, OHIO The fast growing campus communities,

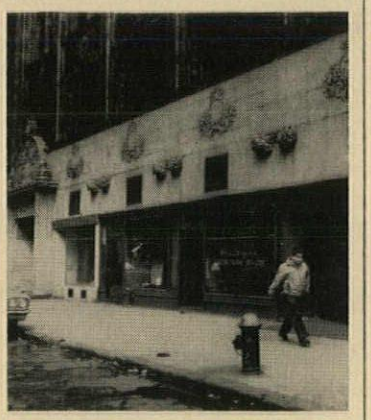
flooded by war babies and increased college enrollments,

are not being overlooked by the builders of our high-rise office buildings and apartments. Always with an eye on the main chance, as successful businesmen should behave, the builders have now turned their attention to the dormitory market. Here, consequently, is the first builder's dorm we know of—Bromley Hall, on the campus of Ohio University—to be built, privately managed, and privately owned by Tishman Realty and Construction Co., Inc. The encroachment increases.

Sullying Sullivan

NEW YORK, N.Y. Louis Sullivan was the architect of only one building in New York City. He designed it in 1897 and with it brought to New York the first example of the Chicago-style skyscraper, which he pioneered. The building was, in fact, executed directly from a portion of plans Sullivan had once prepared but never used for a much larger building, a trust and savings bank in the Midwest. Now, 66 years later, Sullivan's 13-story skyscraper, spry but tarnished, is undergoing its seventh alteration. In its last face-lifting, in 1947, the tops of the original ground floor storefronts were covered with cinder block and plaster to "solve weatherproofing problems."

Although the problems were solved, the architecture, at least at ground level, was destroyed, for the blocks masked Sullivan's traditional storefront treatment: glass panels filling the space between structural columns, with the tops of these glass windows slanted and stepped back to leave room for the luxurious foliated capitals that capped the columns. During the current remoding (under the guidance of architect Gustave W. Iser), these capitals are being removed, along with the cinder block and the ground-floor stores given contemporary-looking façades of glass and stainless steel with granite pilasters between them. Sullivan's building ornamentation is highly prized; bits of it can be found in the Chicago Art Institute and in a collection at Yale University. As workmen began prying off the capital decoration of this Greenwich Village building, a group called the Anonymous Arts Recovery Society appeared and spirited off the prizes to the Brooklyn Museum.



When Silas Alden Condict approached Sullivan in 1897 to design an office building, he told Sullivan he wanted under the cornices "six angels with outspread pinions." Sullivan was opposed to angels on office buildings and said so. But Condict, who later left business to become an ordained minister at age 82, told him: "I want every tenant and every visitor to the Condict Building to realize that the true spirit of fair dealing among men can and should prevail during the six business days of the week, as well as on the Sabbath." He got his angels.

The building was an innovation structurally as well as decoratively. The original plans specified 12-in. walls, on an iron and steel frame, for all 13 stories. Although Sullivan tried to prove that buildings with similar walls had been successful in Buffalo (Guaranty Building) and in St. Louis (Wainwright Building, which had withstood the Great Tornado of 1896), the New York City building code, lagging behind reality then as now, stood in the way of using such thin walls. To conform with the code, walls were made 20 in. thick to the fifth floor, 16 in. thick to the ninth floor, and 12 in. thick from there to the top. On the basis of this building's performance, the code was eventually changed to conform with metal construction. Contruction cost was $400,000.

CHICAGO, ILL. The building at 30 North La Salle St., Chicago, designed by Louis H. Sullivan in 1893, will soon have a remodeled entrance and a refurbished lobby. Under the direction of architect Daniel Brenner of Brenner, Danforth & Rockwell, a statuary bronze grill will replace the partial ornamental panel and the black-painted glass that now fill the top of the entrance arch. Inside, the barrel-shaped mosaic lobby ceiling will be restored and lighted by spotlights. Metal-framed, glass, revolving and fixed doors will replace existing doors in the entrance arch. To be completed at the relatively modest cost of $109,000, the remodeling is under fire from those who think it impossible to improve on the original Sullivan plans. Thomas Stauffer of the Institute for Philosophical Research and the Chicago Heritage Committee told P/A that "the $109,000 should go for soap and water."

Salt Lake City to Lose Sullivan Building

SALT LAKE CITY, UTAH. Louis I. Sullivan's Dooly Building (1892), said by *Salt Lake Tribune* writer Robert H. Woody to be the "last example of Sullivan's architecture in the West," is to be torn down because the owner, R. Verne McCullough, considers it too expensive to leave standing. No new structure is scheduled to replace it.

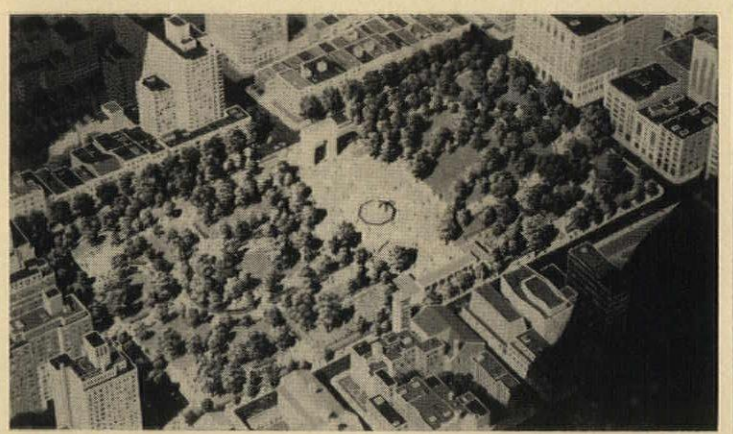
David Hayes, architect and member of the faculty at the University of Utah, writes P/A that the local AIA chapter ". . . decided not to take a position opposing demolition of the building, but moved to request that all drawings, renderings, etc. (currently owned by the present owner and the Dooly family) be given to the Architectural Department of U. of U. for preservation, along with whatever building embellishments of interest might be worth saving. The only justification for campaigning for survival of the Dooly block would be its having the stature of being a really significant historical 'monument.' Most observers question this. It has lost nearly all utility value (rentability and/or adaptability to renovation) and would seem to be

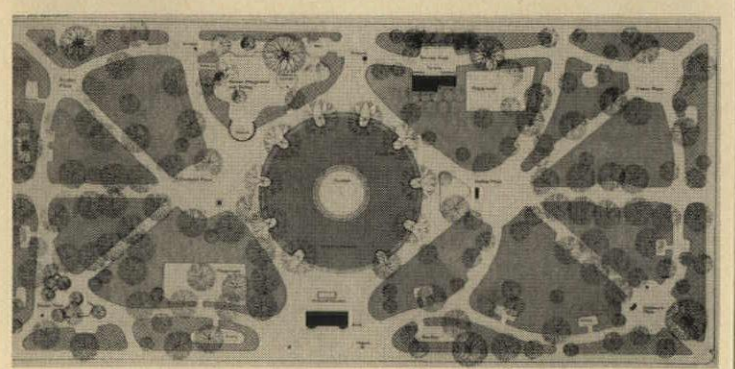
merely another victim of the economic laws."

The Dooly block is admittedly not one of Sullivan's major works—few people even know of it—but it would seem that its authorship combined with its geographic location might entitle it to a little preservation enthusiasm among the citizens of Salt Lake City.

This photograph was sent in by writer Woody, who says he snapped the building "at sunset in the sunset of its life."

Virtue Triumphs in Design of Washington Square





NEW YORK, N. Y. Washington Square in Greenwich Village, one of the most successful outdoor public places in the country, narrowly missed having a face-lifting recently that would have killed its ebullient character. The Square has been in pretty sad shape for a number of years, and Village residents finally begged Parks Commissioner Newbold Morris to have it spruced up. Instead, he came up with a completely new plan (*top*), which would Beaux Arts the whole square up, move the central fountain into axis with the arch, and provide a neoclassic pavilion housing public toilets. These facilities, incidentally, would have framed the new Catholic Chapel at New York University. When Morris presented the plan to the community, it was roundly denounced as being pretentious, inappropriate, and unacceptable. Thereupon, a group of nine Village architects were named to prepare a plan for Local Planning Board #2 that would be more acceptable to residents of the area. One of the architects, Robert Nichols, prepared a new plan (*below*) that respects the character of the park and adds only a few elements (such as a platform for performances or speeches and new sitting alcoves) to enhance its usefulness. The other architects, who, with Planning Board #2, acted in a way as Nichols's "clients," were Martin L. Beck, Harold Edelman, Robert Jacobs, Albino Manca, Joseph Roberto, Norman Rosenfield, Edgar Tafel, and Robert Weinberg. The board liked what Nichols had done; Greenwich Village liked it; Borough President Edward Dudley liked it; and finally Mayor Wagner liked it. We like it, too. Now Commissioner Morris has to save the Square the way the people want it saved, whether he likes it or not. Have another helping of crow, Commissioner.

Designer of the Morris plan, incidentally, was landscape architect Gilmore Clark, pet landscape architect of Robert Moses, mentor of Morris. Thus are the mighty fallen.

HANDLING HARLEM

NEW YORK, N. Y. The New York Chapter AIA performed a civic service in late October when it sponsored a panel discusion on "Housing in Harlem" for an audience of city officials, architects, and interested lay citizens. Chapter president William D. Wilson introduced the event, and the program was moderated by architect Norval White. Panel members were Jesse Gray, chairman of the Community Council on Housing, who was the moving force behind Harlem's recent rent strikes against slumlords; Dr. Charles T. Leber, Director of Urban Missions of the Presbyterian Church of New York; James Farmer, national director of the Congress of Racial Equality; and Albert Mayer, architect noted for his views and accomplishments in the field of planning.

Aside from the obvious indignation over deplorable living conditions in Harlem (it is difficult to take the long view of redevelopment, claimed Gray, when children are daily being attacked by rats), the most important point made was that the residents of a downgraded area such as Harlem must themselves be an important part of the redevelopment program. Officials should listen to their needs and seek their active participation, rather than hand them a preconceived master plan from a "big daddy" government downtown. This view was shared by Farmer, Gray, and Rev. Leber (who has participated with his church in aiding just such cooperative programs). Unfortunately, when the panel ended and White called for questions, particularly from the city representatives, they had all departed. Of such dedication the municipal bureaucracy is made.

Tropical Skyscraper

SAN JUAN, P.R. What will be Puerto Rico's tallest and largest office building is rising in the Hato Rey section of San Juan. Designed by Toro-Ferrer of San Juan, with Kahn & Jacobs of New York as Associated Architects, the 19-story building will total approximately 380,000 sq ft of unobstructed office space. Post-tensioned concrete columns, 54 ft o.c., are load-bearing, offer exterior visual interest,

and serve as conduction tubes for air conditioning. Banco Popular Center, as it will be known, rests on a mat foundation that in turn is supported by a total of 10 miles of concrete pilings. Its most prominent feature—the name in story-high letters, capping the building—is like an admission that the design is bland enough to make a label obligatory. Engineers for the project are Lev Zetlin & Associates of New York and Dinos & Vafi of San Juan.

Chagall Window For the UN

UNITED NATIONS, N.Y. On the third anniversary of the death of UN Secretary General Dag Hammarskjold, who was killed with 15 members of his staff in a plane crash at Ndola, Northern Rhodesia, the UN Staff dedicated a commemorative stained-glass window by Marc Chagall. The window panel (15 ft wide and 12 ft high), which is in the lobby of the Secretariat building, faces the East River. Chagall, whose design was executed by Charles Marq in France, said of his creation: "These colors and these forms must show, in the end, our dreams of human happiness as we conceive it today. On the right-hand side of this panel you will see mankind, with its yearning for peace, its prophets and its victims. In the center is the symbol of peace itself. On the left, motherhood and the people who are struggling for peace. . . . The main thing is not to see it but to feel it."

Chagall Ceiling Adds to Paris Uplift

PARIS, FRANCE. The ornately baroque Paris Opéra (Charles Garnier, 1861–74) has a new ceiling painting, supposedly suggestive of musical symbols, created by Marc Chagall, who did the original sketches over a two-year period while listening to Mozart on a record player. Last January, a team of artisans started enlarging these sketches on 12 canvases (total diameter: about 50 ft). These in turn were mounted on a plastic shell and installed in the ceiling dome of the Opéra, covering but not harming the original ceiling painting by Jules-Eugene Lenepveu. Chagall considers his work a "mirror" reflecting "in a bouquet of dreams the creations of the performers and composers." Like most creations, Chagall's is but part of a larger scheme: in this case the refurbishing of Paris. Two years ago, Parisian municipal authorities decided to reactivate an old decree providing for extensive maintenance of buildings and ornaments within the city. The cost of this program is borne by the city government when public buildings are involved, but when privately owned buildings are designated for cleaning, their owners must foot the bill. So far, the program has touched, and made dazzling white, as if with a cleanser "stronger than dirt," such well-

known buildings as the Ministère de la Marine, the Hotel Crillon, the Hotel Matignon, the Quai d'Orsay and the Palais Mazarin. Scheduled for restoration are the fountains and statues of Paris, the Arc de Triomphe, the Obelisque de la Concorde, the Jeu de Paume, and the Ecole Militaire. The Louvre and the Madeleine are under treatment. Paris recognized the need for extensive and continuing maintenance of its historic buildings as long ago as 1852, when the decree under which the current work is being done was made.

Stones Split

One of architecture's most famous marriages appears headed for the rocks with the news that Edward D. Stone is being sued for divorce by his wife, Maria. The 37-year-old beauty from Toledo (Ohio) has initiated a suit for separation on the basis of abandonment, non-support, and cruelty, asking $6500 a month tax-free alimony, custody of their two children, nine-year-old Benjamin and two-year-old Maria, and the return of art works she alleges Stone removed from their Manhattan town house. Through his lawyer, Stone has denied the charges.

The estrangement brings to an end a renowned romance that began aboard a flight from New York to Paris, followed by marriage in Beirut, Lebanon, in 1954. In his 1962 book, *The Evolution of an Architect*, Stone credited Maria with being his goad and inspiration.

"Happy Piece"

NEW YORK, N. Y. After a two-year wait, the west foyer of Philharmonic Hall at Lincoln Center has a 1600-lb piece of sculpture. It was done by Dimitri Hadzi, who named it "K. 458, The Hunt" after Mozart's String Quartet in B flat major, which inspired it. "The quartet is gay and lively, and I think that my piece is, too," says Hadzi, who call it the first "happy" piece he has done since 1958. Commissioned by Lincoln Center for Philharmonic Hall with finances from a fund set up by Mr. and Mrs. David Rockefeller for the acquisition of works of art by Philharmonic Hall, the sculpture was designed after consultation with Max Abramo-

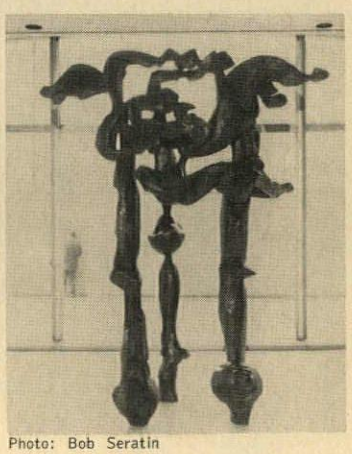


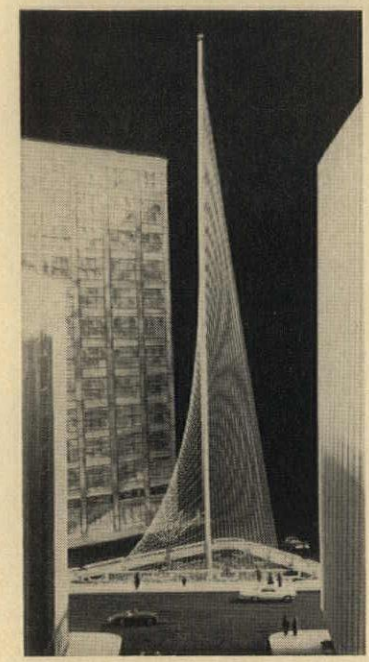
Photo: Bob Seratin

vitz, the building's architect.

The sculpture was cast in bronze in Rome. It is 10½ ft tall, high enough to tower over theatergoers and open enough

for them to walk under and through it. Other Hadzi works appear in buildings owned by the Chase Manhattan Bank and the Union Carbide Corporation.

Symbolism in Rochester



ROCHESTER, N. Y. The Department of Urban Renewal in Rochester is removing four old structures from a triangular site (once called Liberty Pole Green) in the center of the city to make way for a symbolic flagpole. Designed by James H. Johnson, a 32-year old Rochester architect, the pole won first prize in a statewide competition for the design of a small park area. In making the selection, the five-man jury called it "an exciting, moving composition, a transparent and yet a subtle statement of space." Jurors were: designer John C. Menihan; architect J. Roy Carroll Jr; Burnham Kelly, Dean of Cornell's College of Architecture; Olindo Grossi, dean of the School of Architecture at Pratt; and Leslie Cheek Jr., director of the Virginia Museum of Fine Arts.

World's Fair Buildings Honored

NEW YORK, N. Y. Readers of P/A's October issue (pp. 223–238) will remember our evaluation of the buildings at the New York World's Fair. The New York Chapter AIA has since given awards to buildings at the Fair, and most of them (in our opinion) were deserved. Winners were:

Awards: the Danish, IBM, New Jersey, and Spanish Pavilions.

Honorable Mentions: Chrysler, Ireland, Maryland, New York State, Scott Paper, Venezuela, and Westinghouse.

No disagreement, but where is one of the most delightful contributions to the Fair: the New England Pavilion? Certainly deserving of an award or citation. Maybe New Yorkers are not accustomed to this personal kind of scale. The Chapter also commented that, "While the over-all planning of the Fair failed to produce the uniformity and harmony that we had hoped for, the design and planning of the individual pavilions illustrate creativeness and originality which deserve recognition." A rather broad statement in view of the anti-architecture position of the Fair president, and the subsequent carelessness of many of the designers.

Manila Extract

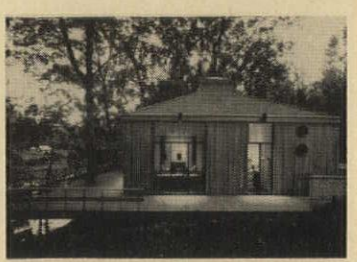
MANILA, PHILIPPINES There are a total of 61 Hilton hotels now accommodating conventioneers and other travellers throughout the world. Two of these, the Nile Hilton and the Beverley Hilton, were designed by Welton Becket & Associates of Los Angeles. Now Becket and Hilton are joining forces on yet another hotel, the Manila Hilton, scheduled to open in June 1967. Except for its size and semitropical setting, little will distinguish the Manila version from the one Hilton opened in New York last fall. It will have a 16-story reinforced concrete tower rising from a 4-story base, and the base will house executive offices, shops, ballroom, restaurants, and rental space. Although the exterior form of the two structures is essentially the same, there are differences in interior planning and detailing. For one thing, the roof of the 4-story base in Manila will have a swimming pool, snack bar and cabanas, as well as lanais for the rooms opening onto it. For another thing, the

base will be enclosed in a bronze-colored sunscreen. When completed, the 415-room Manila Hilton is expected to be the tallest building in the Philippines. It will cost about $8 million, which is a lot of poi in any man's language.

New York AIA Awards

NEW YORK, N. Y. The New York Chapter of the AIA recently announced winners of its fourth annual House Competition, which was open to all U. S. architects. Six New York AIA members served as jurors: Frederick J. Woodbridge, Edgar Tafel, Jan Hird Pokorny, Stanley Salzman, Lewis Davis, and John M. Dixon, Associate Editor of P/A. Although judging was done in three categories, awards were granted in only two. In the New Single

House category, a first award citation went to William Rupp for a studio house in Sarasota, Florida (see p. 116-119, AUGUST 1962 P/A), and a



mention award citation to Hugh Newell Jacobsen for a vacation house in Annapolis, Maryland. No first award was presented in the alterations and additions category, but the jury cited two projects for mention

awards: Hugh Newell Jacobsen's renovation of a house in Washington, D.C. (see p. 158–159, MARCH 1964 P/A), and Ulrich Franzen and Associates'

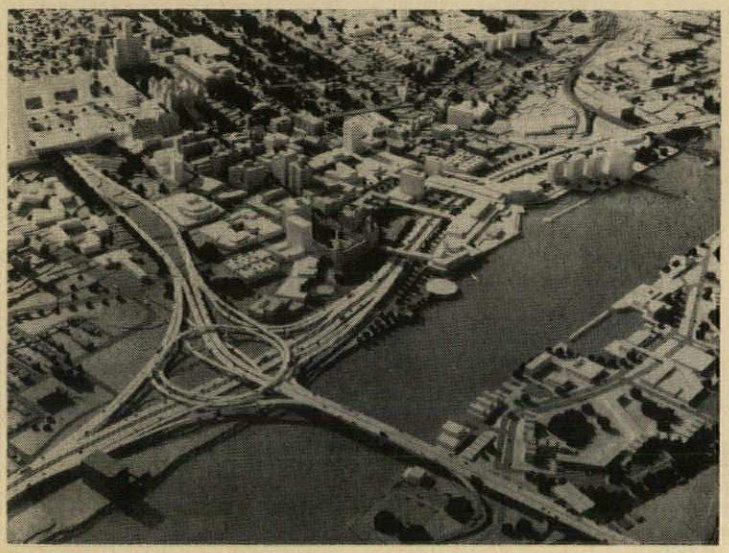
renovation of a house in New York City. In the third category—Groups of Houses—no awards were made.

Urban Design Boost

WASHINGTON, D.C. In remarks on the U.S. Senate floor on October 3, solon Abraham A.

Ribicoff of Connecticut praised the urban design accomplishments of New Haven under the guidance of Mayor Richard C. Lee, singling out for particular praise the Chapel Square redevelopment project by New York architect Lathrop Douglass (p. 65, AUGUST 1964 P/A). In his speech, printed in the *Congressional Record* of October 23, the Senator remarked: "To the critics of urban renewal, I suggest a visit to New Haven for visual proof of what has been termed 'an almost classic example of successful urban development.'"

River-Crossing Redevelopment in Albany

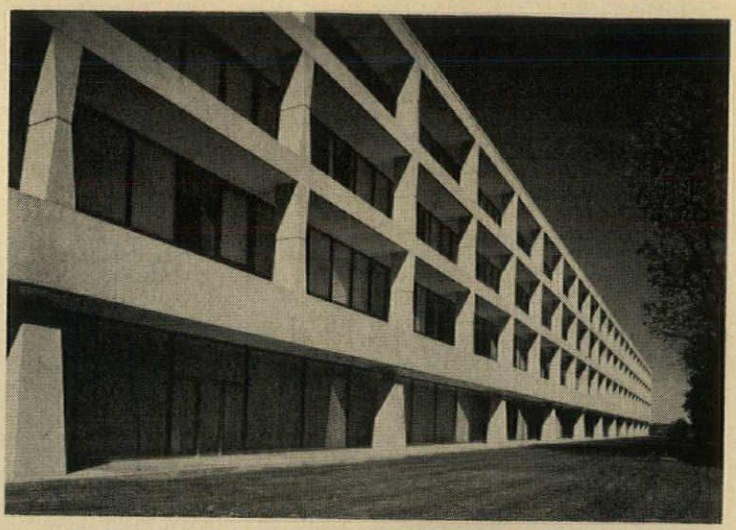


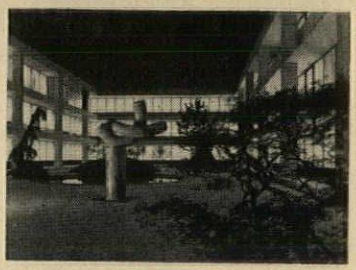
ALBANY, N. Y. As part of the Comprehensive Plan for the Capital City, Albany, and its across-the-river neighbor, Rensselaer, are making joint plans to revitalize and beautify a strategic area on the banks of the Hudson River. Albany's development, like that of most riparian cities, has been closely linked to the river, and, like most cities, its riverfront areas have deteriorated into soot-filled backways crowded with factories, bars, trucks, and railway yards. Now 125 acres on the east side of the river and 25 acres on the west will be turned into areas of diversified use—parks, housing, community and shopping centers, marinas and tourist accommodations—according to a plan proposed by Rogers, Taliaferro, Kostritsky & Lamb of Baltimore. A roadway extension now being built into the area, from the Interstate Highway System, will provide direct automobile access. Pedestrian malls will pass over the waterfront highway, leading to other redeveloped areas of downtown Albany. (For one proposal for another area of Albany, see p. 70, SEPTEMBER 1963 P/A). To make the project feasible, existing railroad sidings will have to be moved. The city believes, however, that the loss of these facilities will be more than offset by an estimated 200 per cent increase in city revenues from the improved area.

IBM Opens Headquarters on East Coast and Space Building in West

ARMONK, N.Y. International Business Machines Corporation has completed a long-planned move that may have repercussions for other U.S. corporations. IBM's world headquarters opened recently in this rural community, 35 miles from New York City. If the move—away from the hectic pace of the city, freeing executives from time- and energy-consuming commuting schedules—is successful, other companies can be expected to make similar moves. Many already have.

In designing the headquarters, the New York office of Skidmore, Owings & Merrill placed it on the brow of a hill overlooking the wooded hills of this eastern New York region. The building, which has three main floors containing 417,000 sq ft, is 575 ft long and 260 ft wide, built around two interior courtyards. Exposed precast concrete columns provide structural support on the east and west; the other two sides are cantilevered. Set back 6 ft from the columnar frame are continuous glass curtain walls. Exterior surfaces are white quartz aggregate, acid-etched to bring out the natural texture. Two interior courtyard gardens, each measuring 70′ x 165′,





were designed by Isamu Noguchi. Looking a little uncertain, these spaces contain shapes described as "a black dome representing man's emergence from the earth to explore the universe"; "a granite-covered pyramid representing an atomic fuel pile"; and a strange twisted Noguchi sculpture symbolizing heredity — whose heredity is not made clear.

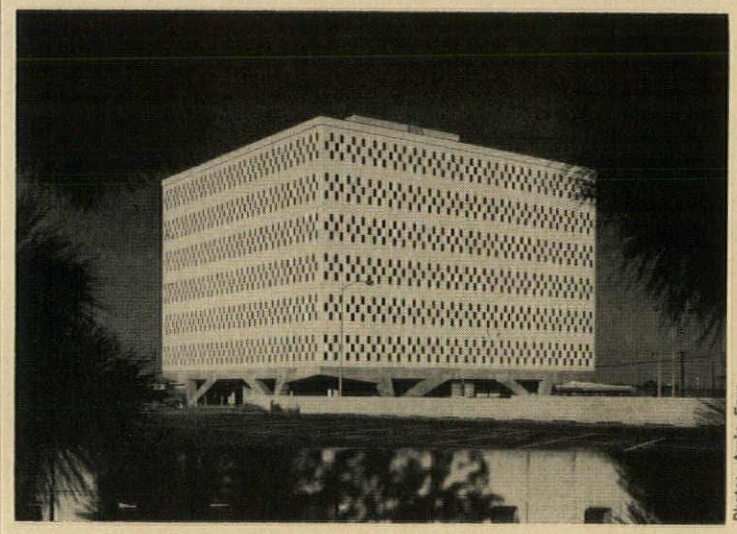
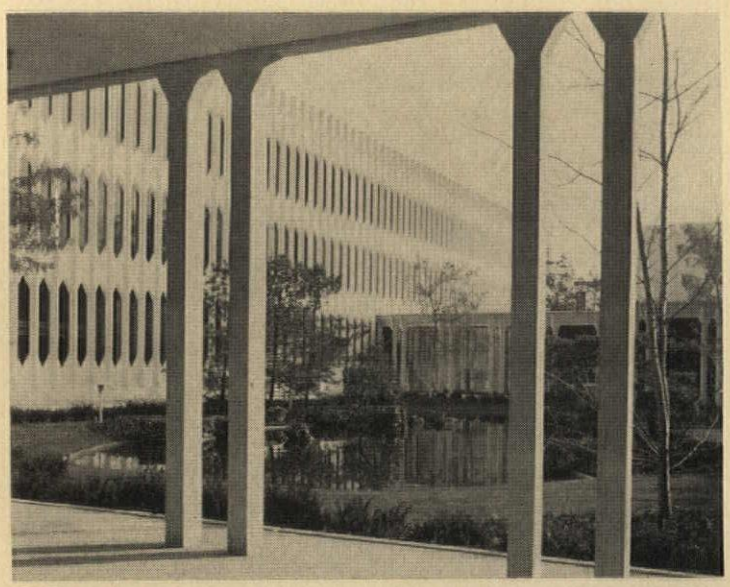


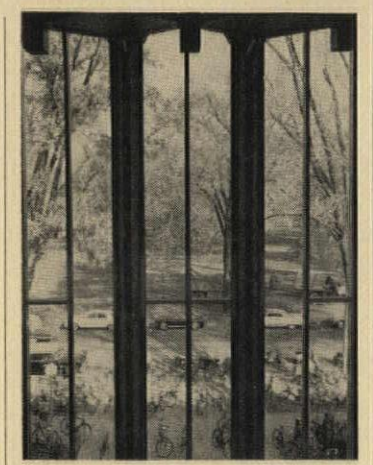
Photo: Amir Farr

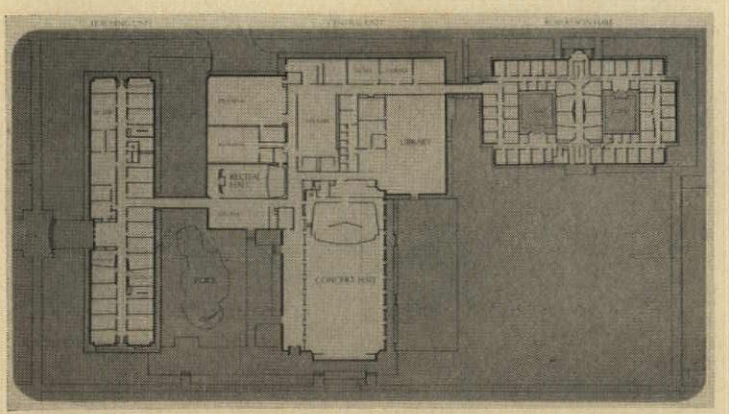
LOS ANGELES, CALIF. What may be the ultimate in punch-card architecture distinguishes, fittingly enough, the International Business Machines Corporation Aerospace Building. Designed by Eliot Noyes & Associates, with A. Quincy Jones & Frederick E. Emmons as Associate Architects, the building has 2160 formally arranged windows, six in each 8′ x 12′ precast concrete panel. The seven-story, 116,300-sq-ft building was opened for occupancy this summer. It must not be folded, stapled, spindled, torn, or mutilated.

Yamasaki's Contemporary Gothic Invades Ohio



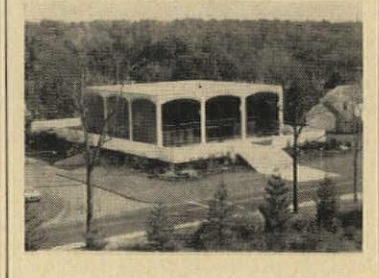
OBERLIN, OHIO Like many college towns, this one is becoming a museum of assorted architectural styles. Most recent addition to the collection at Oberlin College — which includes a 130-year-old red-brick meeting house, several Italian Renaissance buildings built by Cass Gilbert in the early part of the century, and an auditorium by Harrison & Abramovitz—is the Conservatory of Music Complex, designed by Minoru Yamasaki. Dedicated this fall, the Conservatory is the second Yamasaki building





at Oberlin (he did the Henry Churchill King Building here three years ago), and it is obviously vintage Yamasaki. Its teaching unit (one of three distinct sections of the building) looks a little like a three-story slice of his proposal for New York's World Trade Center. Yet if its jewel-like looks, with the stylized lattice-work, concrete-quartz aggregate façade, are overly familiar, if not trite, the building complex itself is highly functional, perhaps even inspiring for the students who use it. For instance, almost all of the 182 sound-treated practice rooms have windows, some overlooking quiet, beautifully landscaped gardens. Audiences in the concert hall are only a glass wall away from a garden, and adequate separate space is provided for all the conservatory functions. Teaching and administrative areas are in one building; a central building houses the 667-seat recital hall

and rehearsal rooms, a library, and an audio center; and the third unit contains the practice rooms. All buildings are connected by enclosed passageways that, unfortunately, form awkward joints with the buildings. Built at a cost of $4,350,000, the conservatory replaces an 80-year old building inadequate technically and spatially for today's 472 students. Acoustic engineers for the complex were Bolt, Beranek & Newman.

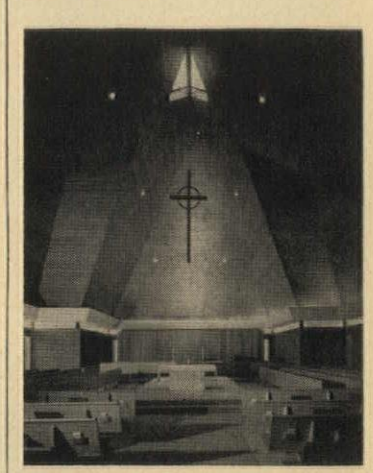


Municipal Betterment

In a laudable move similar to one reported last month in Manchester, N. H., an Association for Better Community Design has been established in Norwalk, Conn., plus an awards program to go with it. The first winner is the Burndy Library by Sherwood, Mills & Smith, which was published in the SEPTEMBER 1964 P/A. Jury was composed of architects Charles DuBose and Richard Sharpe, and Norwalk publisher William W. Atkin.

Detroit AIA Honor Awards

DETROIT, MICH. Meeting in Philadelphia recently, jurors J. Roy Carroll, Jr., Vincent Kling, and Robert Geddes selected winners in the 1964 Honor Awards Program of the Detroit chapter of the AIA. The First Honor Award, selected from among 40 entries, went to Linn Smith & Associates, Inc., Birmingham, for the chapel designed for the University Presbyterian Church in Rochester, Michigan (interior shown here).

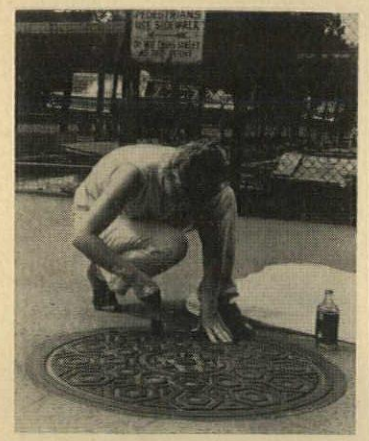


In addition, the jury made three Awards of Merit. These went to Tarapata-McMahon Associates, Inc., for the residence of Mr. and Mrs. William B. Bachman, Jr.; to Louis G. Redstone Architects, Inc., for the Bloomfield Hills Branch of the Manufacturer's National Bank; and to Minoru Yamasaki & Associates and Smith, Hinchman & Grylls Associates, Inc., for the Michigan Consolidated Gas Company building.

Sewer Art

NEW YORK, N.Y. Although New York City has 683,000 manholes, the only persons who pay much attention to them are the 20,000 technicians and laborers who are responsible for their upkeep—plus an artist, Gillian Jagger. Miss Jagger makes plaster impressions of manholes, and several of her efforts hung recently in a New York gallery. She sees them as art, conveying the same feeling of timelessness as Egyptian wall coverings. Interestingly enough, her inspiration was Corbusier. "I like the way Le Corbusier pressed wood grains into his cement blocks in the Fine Arts Building at Harvard," she recalls. Before turning to manholes, she made impressions of stray bits of metal, then worked on Phoenician grave-stones on an island off the Spanish coast.

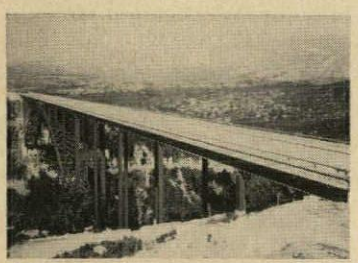
On-the-spot reactions to her



work are varied. A workman from Con Edison, seeing her kneeling by a manhole, exclaimed, "It's a great idea. That's the real New York." And a passing woman answered: "A great idea for what? Next thing you know, one of them things'll hang in the Museum of Modern Art like Pop Art."

AISC Bridge Awards

NEW YORK, N.Y. The annual awards of the American Institute of Steel Construction for the most beautiful new bridges in the U.S. have been announced. Top winners this



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year are: **(1)** Cold Spring Canyon Bridge, Santa Barbara, California, by the state's engineers, in the Long Span Bridge category; **(2)** White River Bridge, Rogers, Arkansas, by

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Howard, Needles, Tammen & Bergendorf, in the Medium Span Bridge category; **(3)** Devil's Canyon Bridge No. 2, California, by the state's engineers, in the Short Span Bridge category; and **(4)** North Dearborn Street Bridge, Chicago, Illinois, designed by Division of Chicago's Bridges and Viaducts, Department of Public Works and A. J. Boynton & Co., in the Movable Span Bridge category. Awards of Merit went to 16 more bridges. Jury consisted of Waldo Bowman, publisher of *Engineering News-Record;* architect Charles M. Nes of Baltimore; Eric Erickson, chief, Bridge Division, Office of Engineering, Bureau of Public Roads, Washington; Alfred C. Ingersoll, dean of the University of California School of Engineering; and Eugene Kingman, director of Omaha's Joslyn Memorial Art Museum.

Funds Down the Nile

CAIRO, EGYPT Fund raising for the salvation of Abu Simbel seems to be as perpetual an enterprise as that for the salvation of souls. Abu Simbel's temples and monuments, long threatened by flood waters of the Aswan High Dam, are to be moved or elevated at a reported cost of $36 million. Of this amount, the United Arab Republic is putting up $15.5 million. Last month came two reports. One from UNESCO stated that a U.S. contribution of $12 million—on top of an earlier pledge of $5 million—assured the monument's survival. The other from New York averred that Huntington Hartford, A&P heir, had been named to head a committee to save these ancient temples. Hartford's salvation record is notoriously poor. He is currently negotiating the sale of his money-losing resort venture, Paradise Island in the Bahamas, and his magazine of the arts, *Show,* is deeply and noticeably in the red. Just what Hartford will do with Abu Simbel is not clear. Perhaps he will move it to Central Park.

Promising Progress for Public Parks

Three cities have recently come forth with plans for open areas, in a laudable resurgence of interest in providing parks and plazas for citizens. Two of the proposals are by private institutions—banks—and the third is part of Baltimore's Charles Center redevelopment project.

In New York, the Franklin National Bank decided, when planning its proposed Millinery Park Branch in the teeming garment district, to create an oasis of quiet shade **(1)** where workers can "schmooz" (the area's favorite occupation: standing around talking business and settling the world's problems). The small park, by Landscape Architects Robert Zion and Harold Breen, who have been encouraging this kind of open space for New York for several years, will feature a dense canopy of shade trees, a burbling sheet of water along the rear wall to cover up traffic noise, and, instead of the usual concrete benches, individual chairs and "sitting walls." The unobtrusive bank structure will be designed by Eggers & Higgins.

In Atlanta, what will be a temporary park **(2)** has taken shape where the Trust Company of Georgia, which is stretching at the seams a stately granite building by Daniel Burnham, has acquired the property next door for future expansion. In the meantime,

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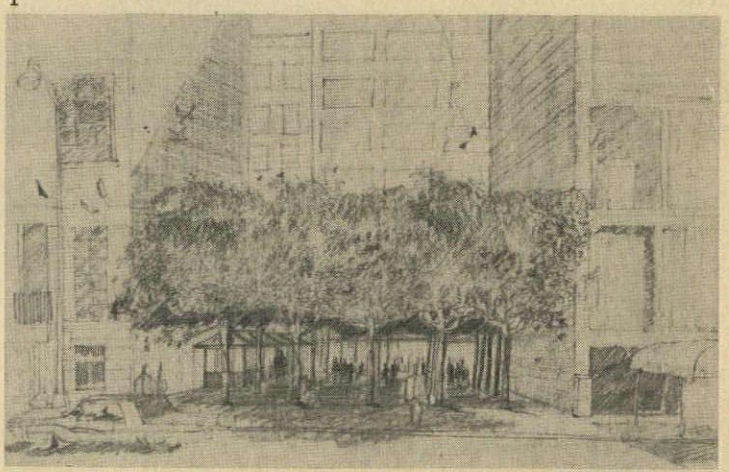

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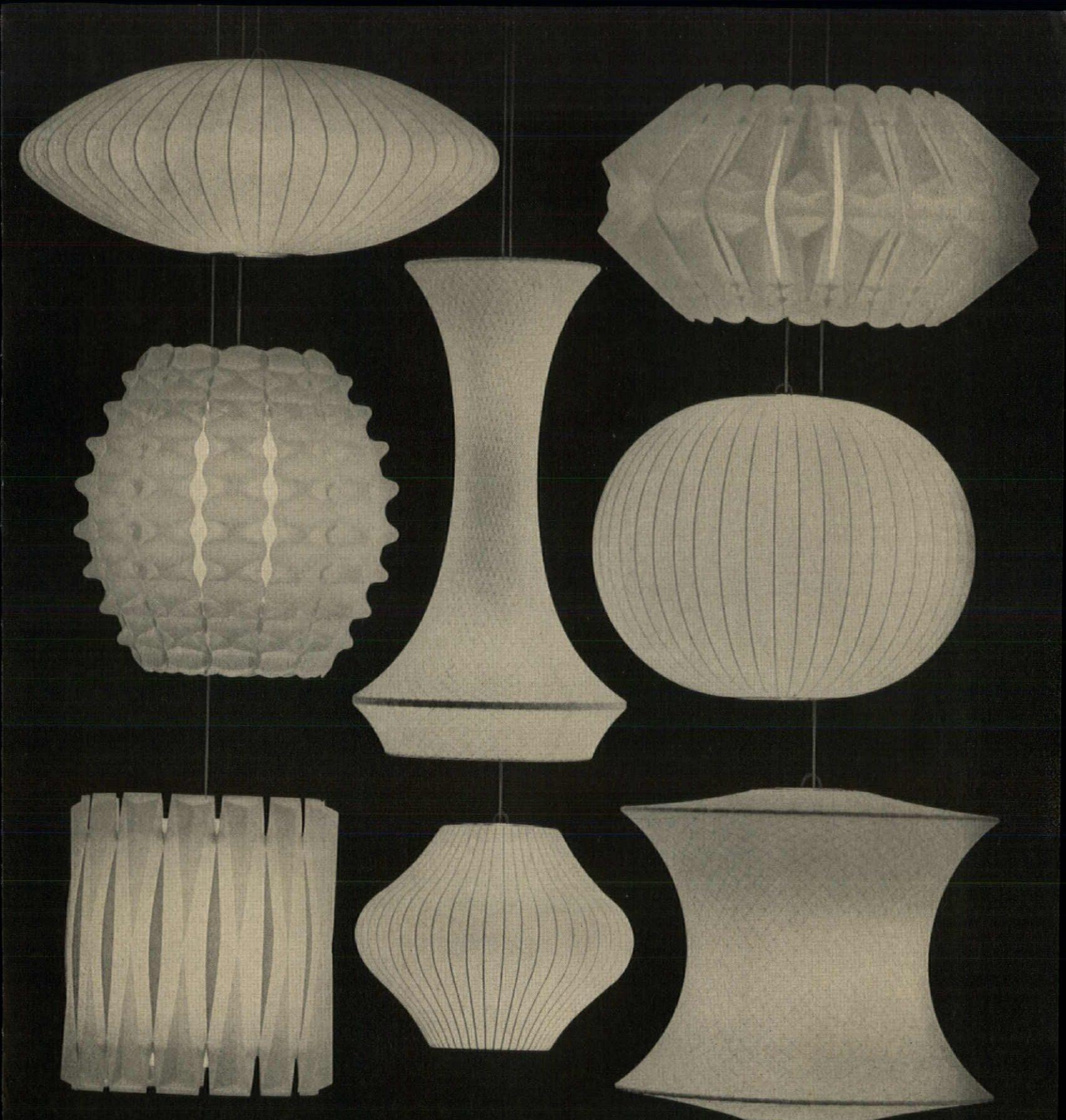


These are lighting fixtures designed by George Nelson for Howard Miller ✕ For complete information, write Howard Miller Clock Co., Zeeland, Michigan... National Distributor: Richards Morgenthau, 225 Fifth Ave., New York, Merchandise Mart, Chicago, Illinois; Fehlbaum, Berne, Switzerland; Pelotas, Sao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

3

however, Architects Abreu & Robeson were able to convince bank officials that the creation of a small park on the site rather than the usual parking lot would generate good will and upgrade the quality of the area. Because of its temporary nature, the square was not given extensive landscaping, but treated, rather, as a paved open space with benches, planting in precast planters, and, as focal note, a welded steel sculpture, "Pylon," by George Garner. As the architects rightly forecast, the civic responsibility exercised by the bank in providing this little park has brought more favorable comment than could be gained through a great public relations and advertising campaign.

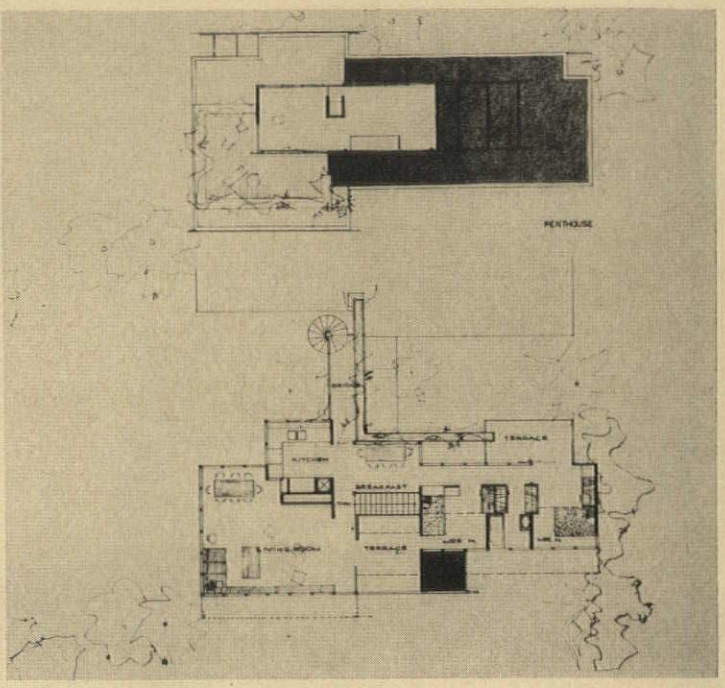
In Baltimore, the Charles Center redevelopment program, which has so far seen the erection or announcement of plans of a number of large office buildings (including the famous one by Mies), will have three public parks to relieve the austerity of the surrounding office structures. First of these, (3) by Rogers, Taliaferro, Kostritsky & Lamb, will be placed over an 800-automobile, privately-financed parking garage now being built. The design of the square will be rather formal, complementing the new architecture of the neighborhood. The plaza will be paved with natural stone and exposed aggregate concrete. At the western end will be a sunken court with a central fountain. An avenue of willow trees and azaleas will end in a grove of trees for pedestrian relaxation. The grove will be the site for a hoped-for donation of a large sculpture by a private citizen.

A Phoenix Too Infrequent

LOS ANGELES, CALIF. When Richard Neutra's home and irreplaceable architectural library were destroyed by fire over a year ago, plans went forward to restore the house as an atelier for architectural training and as a showpiece in the imaginative use of materials, products, and systems. The house, under construction since March, is scheduled for completion this winter. Although limited in scope by the location—it is in a residential neighborhood in Los Angeles—and by the size and strength of the existing foundation, which could not be overloaded, the project shows signs of providing a highly liveable residence for the Neutras and a valuable display ground for the participating manufacturers.

The Neutras live on the second floor of the house; on the first floor are a seminar room and living quarters for a caretaker. Upstairs (*see plan*), the kitchen

is being enlarged and a deck added to Mr. Neutra's bedroom. Located over the entrance walk, off Mrs. Neutra's room, is a terrace with small pool. A major materials decision was to use pressure-treated plywood and framing lumber throughout for fire protection. Another hoped-for use of materials—plastic roofing and plastic drainage and water piping—was disallowed by the Los Angeles building code.



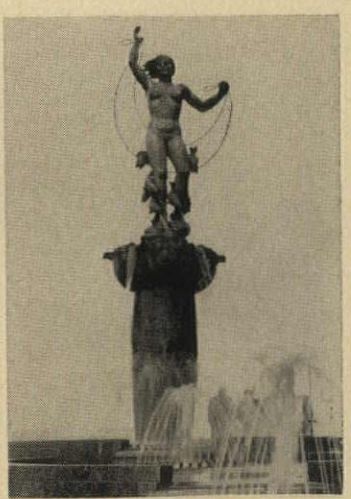
Electricity plays a big role in the Research House, as Neutra calls it. Low and line voltage lighting are mixed throughout the house, and appliances include low voltage switchup, dimming, an intercom, paging, stereo music system, a fire alarm system, and an FM-TV antenna distribution system. Lighting—interior and exterior—will be fully controllable, from four isolated locations on different ends of the building.

To minimize the views of undesirable neighborhood blemishes, the height and location of every window was decided on by site study.

Architectural Sculpture

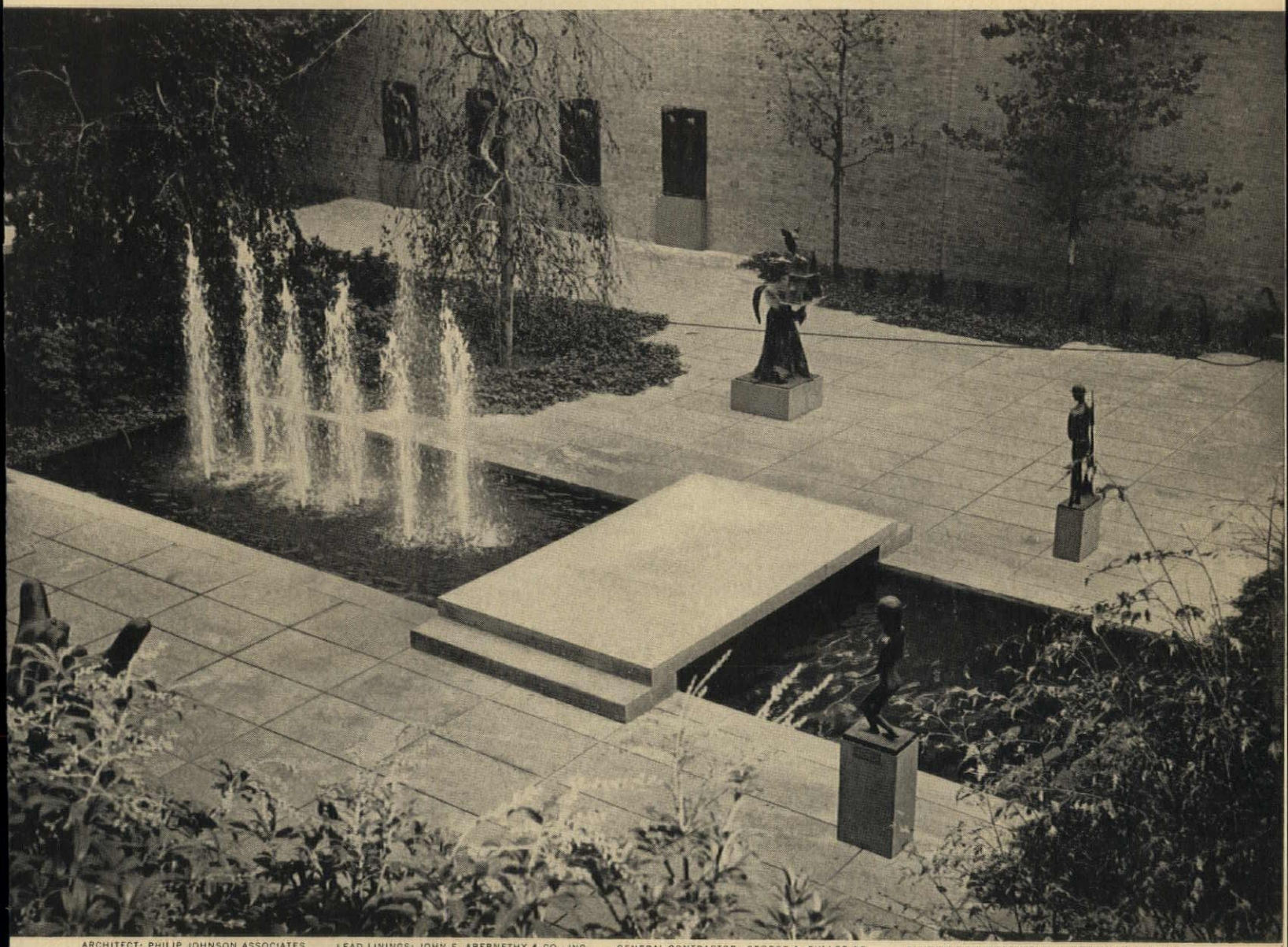
SAN ANTONIO, TEXAS What may be the world's largest mobile now hangs in the Rhodes store in San Antonio's Wonderland Shopping Center. Designed by Robert McClain of Los Angeles, it consists of 3000 pieces of color-anodized aluminum, weighs about 1000 pounds, and is 60 ft high and 9 ft wide. It was commissioned by Chaix & Johnson, the store's architects.

KANSAS CITY, MO. Looking only a little like Steve Canyon's Miss Mizzou, a sculpture by Wheeler Williams called "The Muse of the Missouri" tops a Williams'-designed fountain here. It is located in the heart of the Commerce Tower Center and rises about three stor-



ies above street level. According to one spokesman, the fountain depicts "a goddess who presides over song, poetry

Lead-lined pools reflect sophisticated planning



ARCHITECT: PHILIP JOHNSON ASSOCIATES LEAD LININGS: JOHN F. ABERNETHY & CO., INC. GENERAL CONTRACTOR: GEORGE A. FULLER CO. PLUMBING CONTRACTOR: C. H. CRONIN OF N.Y., INC.

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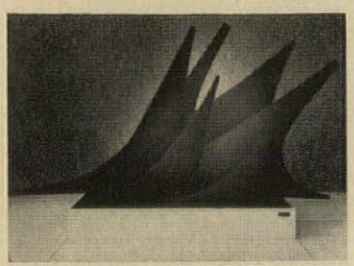
and many fields of the arts and sciences." Other Williams sculptures appear in the Reader's Digest Tower, Chappaqua, N.Y., in the U.S. Naval Academy, in West Point, and in the Prudential Building, Houston, Tex.

WASHINGTON, D.C. In what may be a misguided effort to bring culture to Washington, sculptures by Alexander Calder and David Smith were purchased



for the Universal Building North on Connecticut Avenue. But if the cultural implications are not clear, the design considerations are, for the sculpture complements the architecture handsomely. Calder's piece ("The Fountain") is a stabile of painted black steel. Smith calls his 9-ft-high piece of raw stainless steel "Cubi XI."

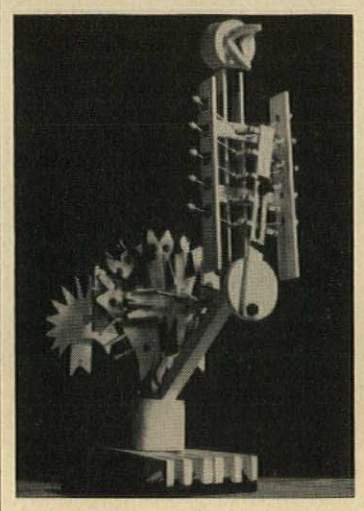
NEW YORK, N.Y. Galleries in New York, in the usual rush of fall showings, had several sculpture exhibits of interest to architects.

Peter Chinni displayed several of his large bronze sculptures at the Royal Marks Gallery. Shown at top of next column is "Awakening Mountain II," which stands almost 9 ft high, weighs a ton-and-a-half, and has a price tag of $11,000.

David Smith's large cubistic gatherings of welded stainless and painted steel in the style of "Cubi XI" (see above) ap-

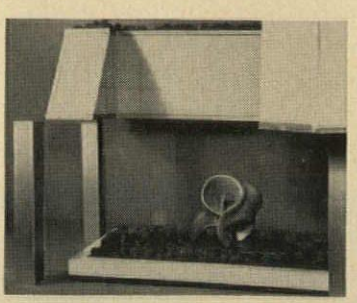
peared at the Marlborough-Gerson Gallery. Although Smith's sculpture shows up well inside, he designed most of his pieces to be displayed outdoors. He points out, somewhat enigmatically, "I like outdoor sculpture, and the most practical thing for outdoor sculpture is stainless steel, and I made them and I polished them in such a way that on a dull, dull day, they take on the dull blue, or the color of the sky in the late afternoon sun, the glow, golden like the rays, the colors of nature. And in a particular sense, I have used atmosphere in a reflective way on the surfaces."

Audrey Skaling, a charming and remarkably painstaking sculptress, displayed her wooden "Anti-Machines" at the Ruth White Gallery. Anti-



Machines, according to Miss Skaling, are parodies of real machines. She began worrying about machines with the advent of automation and computers, and, to set her mind at ease, has created anti-machines that "can never wrest the leadership of the world from mankind." Her broody hen, shown here, does not lay eggs.

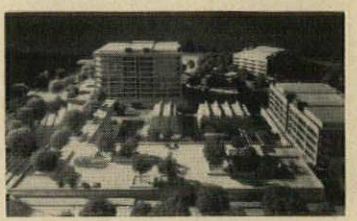
Lilly Landis does large, flowingly abstract sculptures in various materials. Unlike many sculptors, she sculpts while thinking of her piece in connection with a particular building, even though she may have no commission for it. One of her pieces appeared this fall in a Sculptor's Guild exhibit in the lobby of Lever House. The model shown here was designed with the Lever House garden in mind.



PRIVATE URBAN RENEWAL PROJECTS

CLEVELAND, OHIO The University Circle Research Center Corporation (UCRCO) of Cleveland plans to build an industrial research park near Western Reserve University and the Case Institute of Technology in Cleveland. Sponsored by both these institutions, the facilities, which will eventually cover 65 acres, will, hopefully, draw industry to Cleveland and provide jobs for many Western Reserve and Case graduates who might otherwise leave for greener pastures.

Plans for the initial stage of the development are being reviewed by Cleveland's urban renewal agency. Designed by William A. Gould & Associates, this first phase will provide about 350,000 sq ft of laboratory space, at an estimated cost of $14 million. Gould plans three buildings of



four-to-eight stories, connected by a plaza-pedestrian walk 16 ft above the existing grade. The architect hopes to provide garden courts at the entrance of each major building.

Landfill for Northwestern

EVANSTON, ILL. Northwestern University's newly created Lake Campus (see pp. 130–135, AUGUST 1962 P/A) was dedicated recently. Under construction for more than two years, the 74-acre addition to the present university campus was formed at a cost of $6.5 million by filling in part of Lake Michigan. The new campus, with its nine-acre, free-form lagoon, will eventually hold buildings slated for construction under Northwestern's expansion plans. There will be a Fine and Performing Arts complex, a conference area and space for student activities, all centering around a new library (see p. 73, JULY 1964 P/A). One building has already been built on the new land: the Vogelback Computing Center. Overall architect of the new campus is the Chicago office of SOM.

PERSONALITIES

RICHARD J. NEUTRA will serve on the Advisory Board of the Los Angeles International Design Center . . . The AIA announced the appointment of five architects to serve as the jury for its 1965 Honor Awards. They are: WILLIS MILLS, NATHANIEL OWINGS, DONALD LUTES, ROBERT CERNY. Chairman of the 1964 jury, CHARLES NES, JR., will serve as adviser . . . DR. JOHN E. BURCHARD has been retained as architectural consultant to

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directors of the San Francisco Bay Area Rapid Transit District . . . The Kaufmann International Design Awards for 1964 went to L. BRUCE ARCHER for the development of systematic methods of problem solving applicable to design; to KENNETH BAYES for research on the effects of environment in the treatment of emotionally disturbed and mentally handicapped children; to JAY DOBLIN for research in the development of an educational system for visual communication; to G.K. INDUSTRIAL DESIGN ASSOCIATION for research into existing forms of living space and the development of new forms more suitable to contemporary society; and to FRANK TYSEN for research into the process of private and governmental decisions affecting the design of urban areas . . . EMANUEL TURANO has received a citation for distinguished professional achievement in the Advancement of Science and Art from the Cooper Union, of which he is a graduate . . . HARRIS ARMSTRONG, MORRIS KETCHUM, RALPH MYERS, and PHILIP WILL have been appointed to The Porcelain Enamel Institute's newly established advisory council . . . Four noted sculptors have accepted invitations to submit design concepts for a "Steel Century Two" symbol to be commissioned by American Iron and Steel Institute. The work of JOSE DE RIVERA, SEYMOUR LIPTON, THEODORE ROSZAK and DAVID SMITH will be judged by a group of art collectors and museum directors: LEIGH BLOCK, DAVID ROCKEFELLER, JOHN BAUR, RENE D'HARNONCOURT, ANDREW RICHIE . . . The J. Lloyd Kimbrough Medal was awarded by the American Institute of Steel Construction to OTHMAR AMMANN "for distinguished service in the advancement of bridge engineering" and for his "design and construction of bridges of record dimensions and outstanding beauty." . . . Honored at a testimonial luncheon of the Architects, Engineers and Designers Division of the Federation of Jewish Philanthropies was RICHARD ROTH, of Emery Roth and Sons, New York architects . . . JENS RISOM, JEPTHA WADE, LOUIS BEAL, and ROBERT SOFORENKO were elected to the Board of Trustees of Rhode Island School of Design . . . F. DONALD CLARK, dean of the University of Oklahoma College of Fine Arts, has been elected chairman of the National Council of Fine Arts Deans . . . Director of Israel Association of Engineers and Architects, ELHANAN PELLES, arrived in the United States recently to promote and strengthen relations between engineers and architects in the two countries . . . DR. T. WILLIAM LAMBE, head of the division of soil mechanics in the Department of Civil Engineering at MIT, has received the 1964 Norman Medal of the American Society of Civil Engineers . . . Recipient of the Brotherhood Award of the National Conference of Christians and Jews was CARL A. MORSE, president of Diesel Construction Co., Inc. . . . DR. JOYCE BROTHERS, the TV headscraper, has been appointed Consulting Psychologist to the Magee Carpet Company; as admirers of Magee's products, we are surprised to learn that their rugs are so nervous . . . Two-time P/A Design Award-winning client and real estate developer JAMES H. SCHEUER was successful in his bid for the seat in the 21st Congressional District of the Bronx, N.Y.; he ran as the Democratic-Liberal candidate . . . Jury for the 1965 R. S. Reynolds Memorial Award was announced by the AIA: WALTER NETSCH, JR., WILLIAM ALLEN, MARCEL BREUER, VERNON DEMARS, and MARIO PANI.

Competitions

Pittsburgh Plate Glass Company is sponsoring two competitions. Solutions for the redevelopment of San Francisco's Hunters Point Area should be submitted between Nov. 1, 1964 and April 15, 1965. Three other awards will be made for presentations dealing with glass and/or plastics. The categories for this second competition are History, Structure, and Materials and Methods. Applications for these two programs accompanied by a registration fee of $2.50 should be made to NIAE, 115 E. 40 St., New York, N.Y. . . Applications for and information about the Arnold W. Brunner Scholarship and the 1965 James Stewardson Travelling Scholarship may be obtained from the New York Chapter, AIA, 115 E. 40 St., New York, N.Y. . . *Christian Life Magazine* and the N.A.E. will sponsor the sixth annual Church Architectural Competition open to any architects or engineers designing churches for evangelical congregations. Information is available from Church Architectural Competition, *Christian Life Magazine*, Gundersen Drive & Schmale Rd., Wheaton, Ill. . . . A design competition for new Fiberglas fabric weaves sponsored by Owens-Corning Fiberglas Corporation will be open to Senior Weaving classes at Cranbrook Academy of Art, Rhode Island School of Design, California College of Arts and Crafts, and Berea College. Information may be obtained from Susan Jonas, Owens-Corning Fiberglas Corporation, 717 Fifth Ave., New York, N.Y.

Calendar

A short course for architects, consulting engineers, and contractors will be sponsored by the Chicago Chapter of the Construction Specifications Institute and the Architectural and Engineering Department of the Calumet Campus of Purdue University. Part I—Architectural Materials—will start January 15; Part II—Mechanical and Electrical Equipment and Materials—starts March 12. Information may be obtained from Prof. Charles R. Hutton, Purdue University, Hammond, Ind. . . The 17th International Heating and Air-Conditioning Exposition will be held January 25–28 at McCormick Place, Chicago, Ill. Sponsoring the event in conjunction with its national meeting at Chicago is the American Society of Heating, Refrigerating and Air-Conditioning Engineers. Of particular interest will be the exhibits of improved boilers, of heating accessories and auxiliary equipment for large heating plants, and of warm air and hydronic heating . . . The Second National Convention of the Consulting Engineers Council will be held May 19–21 at the Chase-Park Plaza Hotel in St. Louis, Mo.

Obituaries

Viljo Revell, one of Finland's best-known architects, died November 8 in Helsinki at the age of 54. Mr. Revell submitted the winning design for the new City Hall of Toronto, now under construction. (p. 34, NOVEMBER 1958 P/A, and pp. 148-153, MARCH 1963 P/A.)

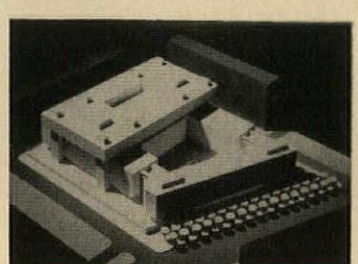
WASHINGTON/FINANCIAL NEWS

BY E. E. HALMOS, JR.

Something new seems to be evolving in Washington as 1964 draws to a close—a style for Federal structures that is a far cry from either traditional Federal monumentality or the "punch-card" design of huge flat walls, monotonously interrupted by rows of windows.

Now that Washington is catching up with the rest of the country, it is getting a few bold, even slightly "brutal," buildings. The city's often-criticized Fine Arts Commission likes it, and most architects think it will fit well with existing structures, despite departures from previous style.

Notable examples are two approved designs: Gyo Obata's National Space and Air Museum for the City's Mall (p. 45); and C. F. Murphy & Associates' strong design for a massive, block-long headquarters for the Federal Bureau of Investigation on Pennsylvania Avenue (*above*).



There are other examples of the "new" style, too: plans for a new headquarters for the Housing & Home Finance Agency and its numerous

Three Cleveland architectural firms have organized Cleveland Federal Building Architects to design the new Cleveland Federal Office Building. They are: Outcalt, Guenther, Rode, Toguchi & Bonebrake; Shafer, Flynn & Associates and Dalton-Dalton Associates. The contractors (joint venture) are Frank Briscoe Company, Newark, N.J., and Huber, Hunt and Nichols, Inc., Indianapolis, Ind.

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branches and divisions by Marcel Breuer envision a gull-winged, masonry structure, 10 stories high, based on a bearing wall design. Appearance is suggestive of the gull-winged new Washington Hilton hotel, now nearing completion.

Still another—though it could hardly be called a building—was the winning design by Peter M. Hasselmann for a review pavilion to be erected for reviewing the inaugural parade this coming January (see p. 47, NOVEMBER 1964 P/A).

A further piece of news is a plan for development of a new school area in Washington's downtown slum residential district, to take advantage of a site split by one of the city's widest streets (Rhode Island Avenue).

As presented to the city's Board of Education and the National Capital Planning Commission, the new complex would replace a sadly dilapidated old school building (Shaw School) with a new school, an office tower for educational activities, a gymnasium, a library, a swimming pool, and a 1¾-acre playground mounted on a structure bridging the heavily travelled street. Architect Chloethiel W. Smith, who hasn't placed an exact price-tag on the proposal, said it was designed (with the aid of a Ford Foundation grant) as a model for an urban community school that will double as a community center.

Of course, everything isn't looking up in the capital. Karel H. Yasko, Assistant Commissioner for Design and Construction for the Federal Buildings Service, warned architects that there has been "too much hurry" to get buildings up and occupied — and that independent design has bowed to the need for speed, resulting in boxlike, too uniform (or garishly different) structures in and around Washington.

Group Therapy

If you want to entertain any Department of Defense employee (or close members of his family), you'll probably find him very reluctant, from now on. New DD directives, in effect, limit employees' acceptance of favors from anyone dealing with the department to "entertainment at certain public ceremonies—or widely-attended lunches, dinners and similar gatherings sponsored by industrial, technical and professional associations . . . . where the host is the association, not the individual contractor . . . ."

Busy Hill

And a final note, if you wonder what Congressmen do, and why it is often so hard to get attention for matters of particular interest to you or your profession:

During the two-year life of the 88th Congress, a total of 38,472 bills of all kinds were introduced—of which 990 were enacted into law. The lawgivers consumed a total of 60,788 closely printed pages of the *Congressional Record* in their debates, discussions, and other activities.

The 88th Congress

In the legislative hiatus that will exist until a new Congress convenes in Washington early in January, there is time to examine the record of the 88th Congress as it may affect the construction industry in general and architects in particular.

One point not generally clear is the amount of money made available outside the normal appropriations bills—much of it for education and health.

Objective of this sort of legislation is to produce more trained graduates (though very few, specifically, in the fields of architecture or engineering). But the means seem always to be through additional spending for construction of facilities at institutions of learning.

For example, the "Higher Education Facilities Act"

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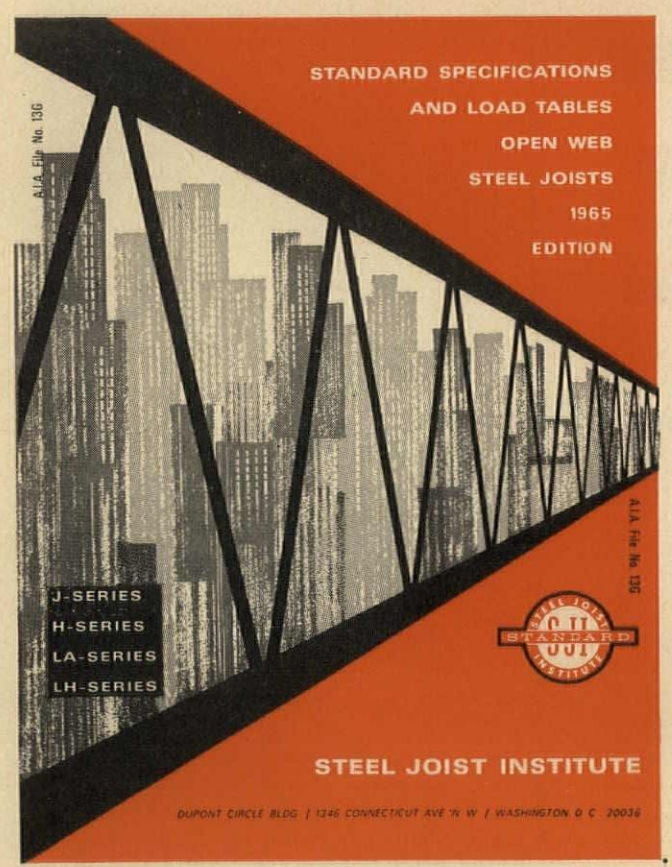

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(Public Law 88-204), okayed a five-year, $1.2 billion program of Federal grants and loans for construction and improvement of "public and private college facilities," including classrooms, libraries and laboratories; the "Vocational Education Act" (PL 88-210) authorizes $921 million in Federal aid for expanding and modernizing state and local vocational educational programs, including construction and equipment of vocational high schools.

The "Public Library Services Act" (PL 88-269) jumps matching grant authorizations for libraries from $7.5 to $25 million annually, for construction of library buildings as well as for improving services.

The "Mental Retardation Facilities and Community Health Centers Construction Act" (PL 88-164) sets up a four-year, $329-million program of grants to states and public and private institutions for construction of centers connected with universities and affiliated hospitals for research; and $67.5 million, over three years, to pay a large share of costs of community mental health centers.

Financial

Along with Congress, the financial news seemed to be marking time too, as year-end holidays approached. However, all indicators seemed to show health for the construction industry, and a close approach to predicted volume of business for the year, of around $63 billion (not counting maintenance and repair).

Even the housing field, which has been a source of some worry to economists, seemed to have revived a little in late summer, with housing-start figures for September indicating a 4 per cent rise over August. Significantly, however, the September rate (of 1.484 million units) was down 15 per cent below that of a year ago. It began to appear that early forecasts of housing having reached some sort of a plateau would come true, but that there'd be enough in the field to bolster the over-all construction total.

Cost indicators slowed down in early winter too, with nearly imperceptible gains or losses.

New Products

Furnishings

The Action Office

Two things are significant about Herman Miller's "Action Office."

First, it is a philosophic concept of office planning based on a behavioral approach to office work and the functional requirements of the individual's work tasks. With the aim of increasing productivity, the Action Office system states, through clearly defined equipment, the different tasks a man

must perform; it provides multiple work positions to eliminate physical sluggishness and thus promote mental alertness; it also tries to make work materials more readily available. Many of the elements and devices of the furniture are familiar—the roll-top desk, desk-top files, built-in pin-up boards. What Herman Miller, Inc., has done, they feel, is to put all this into a system that will provoke the worker to think about his *total* job activity and will help him choose the right tool for the job, thereby boosting his productitvity.

Second, the furniture itself is significant. Designed by George Nelson & Company, it

illustrates the Nelson office's urge to strip away nonessentials and to utilize machine technology: boxes-within-boxes of the standard case of drawers are eliminated; extrusions of both plastic and metal are widely used; molded parts have multiple uses; wooden strips of the newly developed tambour are connected by internal nylon tapes.

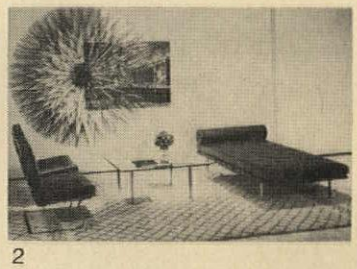
This major new line includes sit-down desks, a stand-up desk, perching seats, conference tables, communications centers, shelves, storage units, and accessories. The accessories include handy file folders that can be indexed, carrying cases, labels, and bookend-dividers to keep information in sight, and therefore in mind. Typical desk unit is on polished aluminum legs that support its end panels; neutral plastic laminate desk surface is covered by walnut or ash tambour top. Herman Miller, Inc., 305 E. 63 St., New York, N.Y.

On Free Data Card, Circle 100

Mehr Mies Möbel

Knoll Associates, whilom pioneer in modern furniture design, seems to have settled into being the most respected manufacturer of reproductions. The pieces are, of course, early modern "antiques" with a special cachet, and warmly loved by both the new and the now-older guard. True, Mies has reproportioned the 1931 couch to twin-bed size and has allowed Knoll to use Pirelli webbing for support under the leather straps, which are now purely visual décor. But Knoll is not pushing those technical advances. The appeal is by means of Mies' name and his long-admired designs. But where is the Bertoia or Saarinen furniture of the 60's—the excitement of a decade ago? Where is "brutal" furni-

1



2

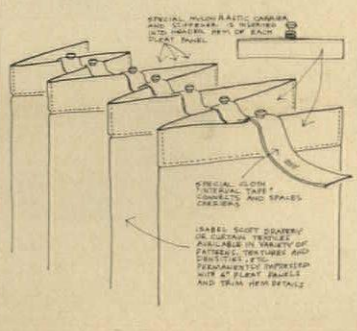
ture? Where is a Pop chair by Philip Johnson? One wonders, because it is painful to discover that one's idol can nod.

Four early Mies designs have now been added to the Knoll collection: the Tugendhat chair (1; 1930), the couch and bolster (2; 1931), and the MR chair in two sizes (2; 1927). This brings the Mies collection up to 10 pieces. The Tugendhat chair is surprisingly comfortable owing to its springiness and upright back. The cantilevered, tubular MR chairs are additions to Knoll's remarkable store of highly elegant yet inexpensive chairs. Knoll Associates Inc., 320 Park Ave., New York, N.Y.

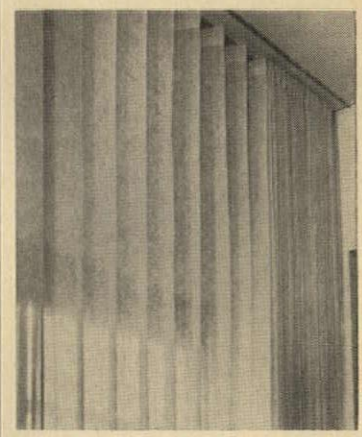
On Free Data Card, Circle 101

Architectural Drapery

The most significant development in window coverings in



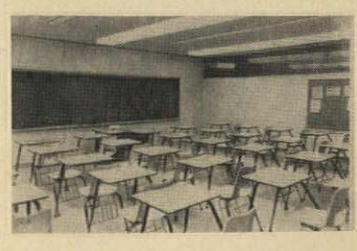
several years combines the traverse drapery and the vertical blind. The effect is that of a vertical blind made of a soft fabric or a traverse drapery that opens to stack in a small area like a vertical blind. A permanent pleat system of alternating accordian folds, developed by Isabel Scott Fabrics Corp. from a design by Carl Benkert of Ford & Earl Design Associates, is called "Permaneat"; it makes the fabric hang in controlled straight 4″ panels, and is said to last through cleanings for the life of the material. The system also solves the recurring problem of making headings presentable on both sides of the fabric, since unsightly tapes and pins are eliminated. Special "interval" tape and



stiffening are part of the system. "Permaneat" is available on custom order in many of the firm's natural fiber fabrics. Isabel Scott Fabrics Corp., 979 Third Ave., New York, N. Y.

On Free Data Card, Circle 102

Air/Temperature



Distributing Air

Air-distributing device is used with variable volume systems for interior spaces. "Moduline

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Turn to Sweets 8h/Am Page 4

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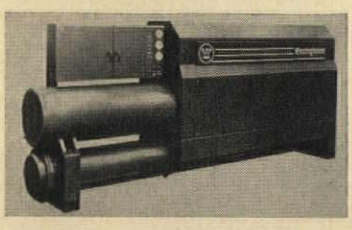
Weathermaster" is self-controlling terminal unit that can be mounted flush with ceiling in variety of patterns. Unit aids variable volume systems in reducing initial and operating costs, providing precise control of cooling in individual areas, and permitting shift-cooling capacity to follow moving heat sources. It contains plenum, double continuous slot outlets, and self-contained automatic control powered by air it delivers. Moduline provides modular control, floor by floor and room by room, independent of adjacent areas. Calibrated control eliminates separate controls, thermostats, and control wiring. Carrier Corp., Syracuse, N.Y.

On Free Data Card, Circle 103

Prefab Vent

Prefab glass-fiber curbs provide ventilator for maximum corrosion resistance with low silhouette that is consistant with weather protection. One piece molded construction is installed with molded-in cant strip. Williams-Bermuda Corp., P.O. Box 2053, Pasadena, Cal.

On Free Data Card, Circle 104



Liquid Chilling

Completely packaged, direct expansion, hermetic type centrifugal liquid chilling system has been introduced. Sizes presently range from 100 to 140 tons with larger units to follow in future. Unit is shipped completely assembled and requires no special concrete base because system is vibration free. Package includes hermetic motor-compressor unit, condenser, insulated cooler, lubrication system, water and refrigerant piping, and completely prewired control system. It measures 29″ wide, 152″ long, and 63″ high. Westinghouse Electric Corp., Air Conditioning Div., P.O. Box 510, Staunton, Va.

On Free Data Card, Circle 105

Construction

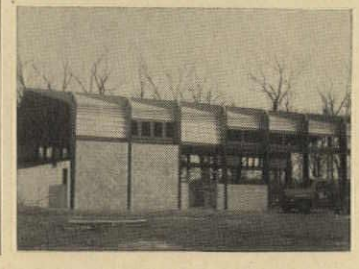
Vertical Laminated Wood Beams

Kiln-dried, vertically laminated wood beams and roof decking have uniform moisture content of 12–15 per cent and waterproof glue-lines. They meet structural load requirements of light construction and cost less than previous similar products of this type. Douglas Fir beams are treated with water-repellent sealer toned to lessen contrast between sapwood and heartwood. Lengths of 12′ to 60′ and sizes of 4″ x 10″, 6″ x 10″, and 6″ x 12″ are available. Laminated decking of light-colored hemlock is machine-sanded on face for finest finish and is available in 3″ x 6″, 3½″ x 6″, and 4″ x 6″ sizes. Each section of decking is end- and center-matched and has edges beveled to form V-grooved joint. Weyerhaeuser Co., Wood Products Div., Box B 239, Tacoma, Wash.

On Free Data Card, Circle 106

Snap-In Panel Buildings

Snap-in panel construction is employed for pre-engineered buildings. Clear-span widths from 20′ to 80′ and lengths from 20′ up are possible. Exposed beam design has bolt-free decking and walls that provide leak-resistant construction. Beams designed with box sections include built-in raceways. Structures can expand to 60′, 100′, or 1000′ by adding neccessary footings and installing required beams and panels for expansion lengths. Buildings also provide standardized panels and windows and steel foundation flashing placed on concrete foundations for protection against moisture. Also featured is built-in ventilation of 14 gage galvanized louvered or screened steel panels. They permit natural or forced air movement up sidewalls and across roof. Ventilation system can also be operated in hot summer to expell hot air, thereby reducing heat radiation into interior of building. Ventilation panels are furnished when insulation is to be installed. In larger buildings, powered ventilation may be roof-mounted if additional ventilation is desired. Lundell Mfg. Co., Inc., Cherokee, Iowa.



On Free Data Card, Circle 107

Aluminum Siding

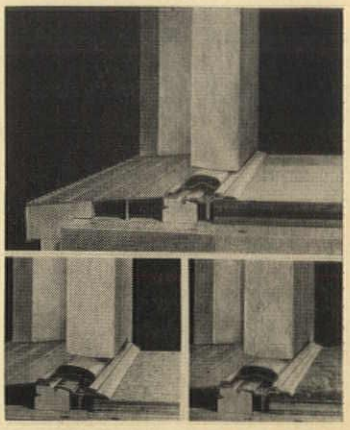
Siding panel, called "Super 32," is made of .032 aluminum and coated with vinyl enamel. Back of each panel is coated with butoxy resin for protection against hidden corrosion. It is easily applied over any surface including wood, brick, shingles, or stucco. Hastings Aluminum Products, Inc., 429 South Michigan, Hastings, Mich.

On Free Data Card, Circle 108

Doors/Windows

Adjustable Door Sill

Exterior door frame sets directly on rough flooring and adjusts automatically to any finished floor from ⅜″ to ¾″ thick. "Adjust-A-Sill" door frame consists of two heavy gage, skid-proof aluminum members separated by wooden preservative-treated thermal barrier. Large tubular, flexible vinyl seal makes weathertight fit against bottom of door. Thermal barrier eliminates frost creep through and moisture condensation. Jambs are available in three widths for 1-¾″ doors. Snap-on aluminum weatherstripping is provided for jambs. Backing and chopping of subfloor is eliminated. Rock Island Millwork Co., Rock Island, Ill.



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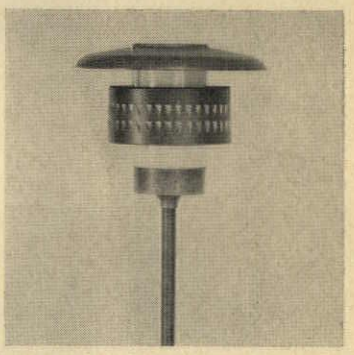
Electrical Equipment



Landscape Lights

Series of landscape lights withstand wear and corrosion. They are adjustable to any height, are available as conduit or spike mounts, and may also be used as post and pier lights. Fixture is made of hand-blown, heat-resistant white glass, combined with aluminum construction. EJS Lighting Corp., 921 East Pico Blvd., Los Angeles, Cal.

On Free Data Card, Circle 110

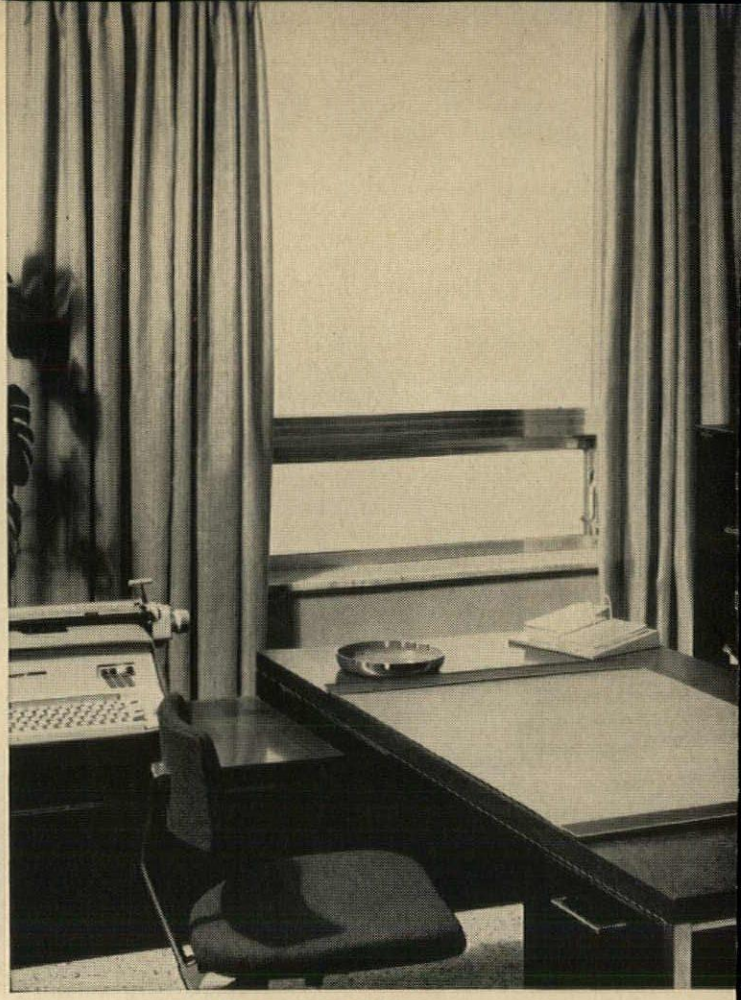
Finishes/Protectors

Plastic Floor Resurfacing

Plastic floor resurfacing and patching called "Monotop" is

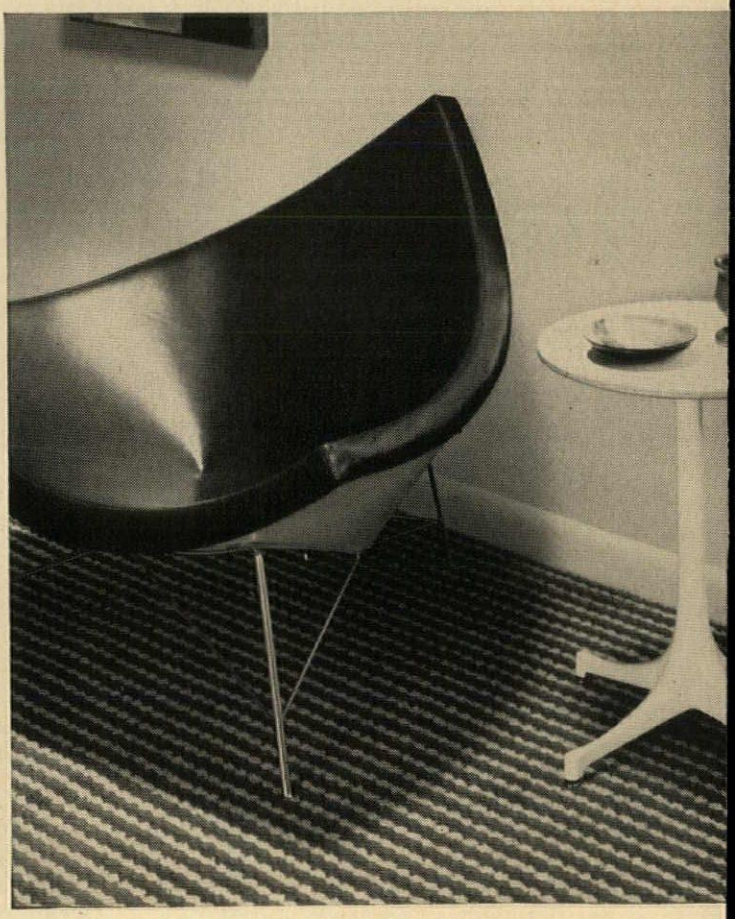
Continued on page 72

Remember Styrofoam for masonry walls.



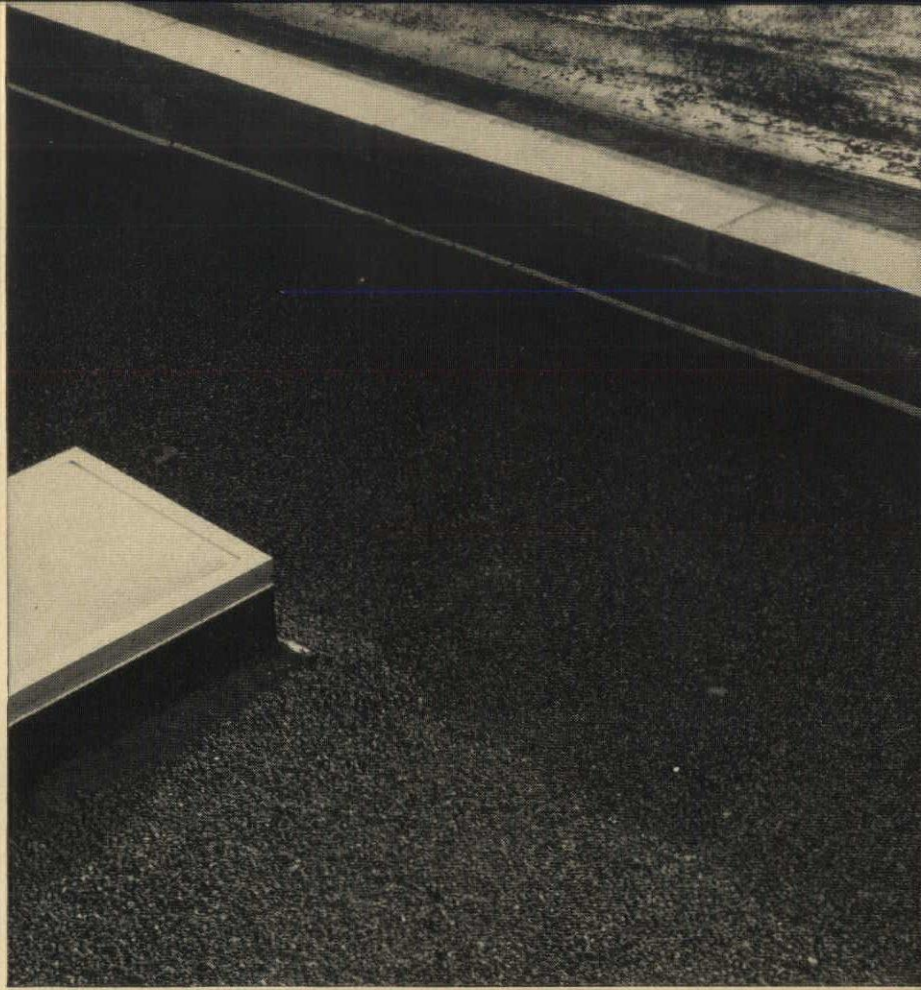
Then forget it.

Remember Styrofoam for slabs and foundations.

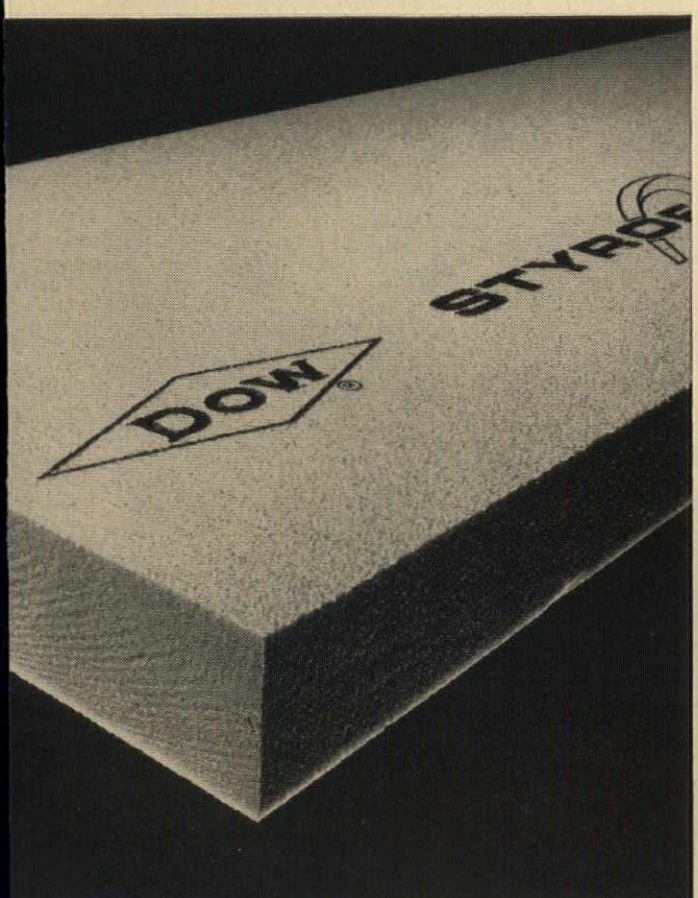


Then forget it.

Remember Styrofoam for built-up roofs.



Then forget it.



Remember Styrofoam® brand insulation board when you want an insulation with a permanent low "k" factor, that serves as its own vapor barrier, that can't absorb water, that you can install and forget—forever.

Then remember it (on your next job). See Sweet's Architectural File 10a/Do. The Dow Chemical Company, Midland, Michigan.

DOW

Continued from page 69

composed of blended liquid plastic and specially formulated dry powder mix. Flooring does not contain epoxy, asphalt, latex, pitch, or gypsum cements. It is nonvolatile during or after applications and resists mold, oils, alkalis, water, salt, and many other chemicals. Monotop is used on concrete, wood, or masonry floors, and on interior or exterior walls over rough or porous surfaces. Rock-Tred Corp., 7440 N. St. Louis Ave., Skokie, Ill.

On Free Data Card, Circle 111

Floor Protector

"HARTCO" paste floor wax protects floors of hardwood, vinyl, cork, terrazzo, slate, or flagstone. Paste prevents slipping and resists scuffing, stains, heat, and humidity. Tibbals Flooring Co., Oneida, Tenn.

On Free Data Card, Circle 112

Insulation

Urethane Insulation for High Rise

Silicone surfactant, called "L-5310," provides uniform cell structure and full rise in rigid foamed-in-place urethane that is used as insulation in New York's CBS building. This is the first large-scale use of urethane in high-rise buildings. Urethane, composed of two components and preformed in special mixing head, is distributed throughout insulating cavities. L-5310 improves insulating properties of the foam by giving higher percentage of closed cells, thus reducing air penetration and heat transfer by convection. By increasing foaming efficiency and improving flow-out, silicone surfactant provides complete fill of complicated cavities. Rigid foamed-in-place urethane cures in about 5 minutes, depending on temperature conditions. For on-site production in building operations, less scaffolding is required than for installation of rigid-board insulation. Urethane foam has a smaller K-factor than other standard insulators such as cork, foamed glass, foamed styrene, glass fiber, and rock wool. Union Carbide Corp., Silicone Div., 270 Park Ave., New York, N.Y.

On Free Data Card, Circle 113

Surfacing

Ceramic Tiles

Ceramic tile guide has recently been published. Featured "TT" series of ceramic face tile is available in 14 shades and two surfaces. Clear glaze is combined with chamotte particles added to blend. Specs, test-results, prefab panel advantages, suggested panel construction, and structural details are given. Product is distributed in Eastern region. Hoeganaes Ceramic Co., Taylors Land, Riverton, N.J.

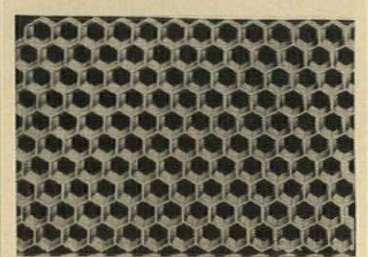
On Free Data Card, Circle 114

"Top Rated"

"Top Rated," an all-"Acrilan" tufted carpet with a nubby textured appearance, is available in 5 tweed combinations and 11 solid tones. Downs Carpet Company, 295 Fifth Ave., New York, N.Y.

On Free Data Card, Circle 115

Special Equipment



Louvers for Electronics

"Parahex" louver eliminates Radio Frequency Interference from fluorescent lamps, yet gives highest levels of illumination. Parahex allows for lighting design using IES recommended illumination and brightness levels in critical electronic areas such as hospitals, medical and dental clinics, and similar areas. Sinko Mfg. & Tool Co., 7310 West Wilson Ave., Chicago, Ill.

On Free Data Card, Circle 116

Planter Bowls

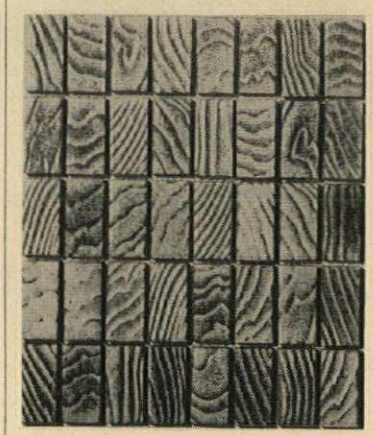
Spherical planters are offered in three sizes: 16″, 20″, and 24″ diameters. Each satin-finished aluminum bowl has oil-finished black walnut base with aluminum feet. McDonald Products Corp., 252 Duk-It Bldg., Buffalo, N.Y.

On Free Data Card, Circle 117

Movies of Architectural Models

NEW YORK, N.Y. Several architects have experimented with making motion pictures of architectural models. Now one firm has a workable apparatus that will do just that. Using a gargantuan complex of mirrors, prisms, and lenses, coupled to a motion picture camera and a closed circuit TV system, an ex-Walt Disney designer and a New York TV and industrial film firm are making surprisingly realistic films of architectural models. The equipment, which weighs close to a ton, was originally developed last year at the request of Vincent Kling, who wanted to photograph a model of his redevelopment plans for a section of Philadelphia. Photographed with this equipment, a 1-to-50 scale model appears as the finished structures would look to a 6-ft man moving around them. Paul Kennworthy, the process's creator, (it is now owned and operated by Kennworthy's firm, Archtype Films, in association with On Film, the New York film company) believes it can help architects get a feeling of the scale of a building before it is built. Ancillary advantages might be that it could aid in convincing a client of the merits of a particular design, or sell tenants on the advantages of a speculative building. One big problem with the apparatus is lighting. Its complicated optical system demands a lot of light, and the light must be kept fairly even on changing angles and surfaces of a model. Kennworthy claims they can handle this problem and others. Prices for a film start at about $800 for one of an uncomplicated model. On Film, 625 W. 42nd St., New York, N.Y.

On Free Data Card, Circle 118



Wood Grain Tile

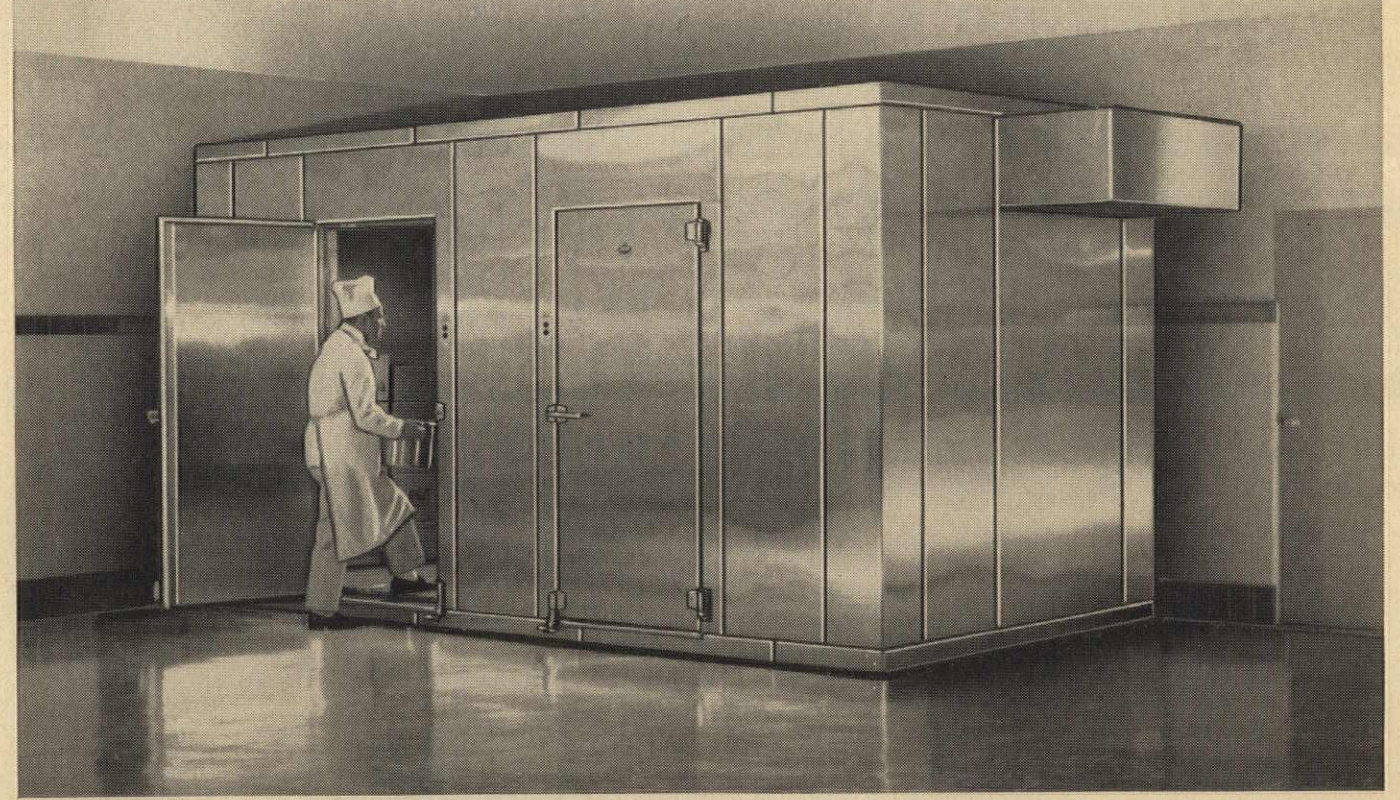
"Tex-Tile," wood grain, textured mosaic tile, is easy to install and is suitable for interior or exterior application. Vitreous glazed mosaic in rectangular shape (¾″ x 2½″) is mounted on mesh in 12″ squares. Tile is impervious to moisture and frost. Surface bullnose trimmers and special custom colors are available on request. Latco Products, 3371 Glendale Blvd., Los Angeles, Cal.

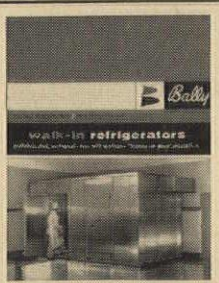
On Free Data Card, Circle 119

Specify the Walk-In Refrigerator you might have designed yourself.

(If we hadn't done it for you)

Bally all-metal sectional Walk-Ins provide the ultimate in efficiency and long range planning. Made with features you can't get in "built-ins" and at lower cubic-foot cost than "reach-ins" ● Bally Walk-Ins for normal or low temperature can be assembled in any size or shape from prefabricated sections. Easy to increase size for growth requirements by adding sections. Easy to disassemble for relocation ● Insulated with urethane "foamed-in-place". 4" thickness equals 8½" of fibreglass. Galvanized or aluminum interior and exterior for maximum sanitation. Stainless steel available ● Lightweight door is self-closing and easy to open with improved hand lock (inside safety release) and foot treadle ● Self-contained refrigeration systems are factory tested, hermetically sealed.





See our brochure in Sweet's Architectural File 25a/Ba or write for details about Bally engineering service and sample of urethane wall.

Bally

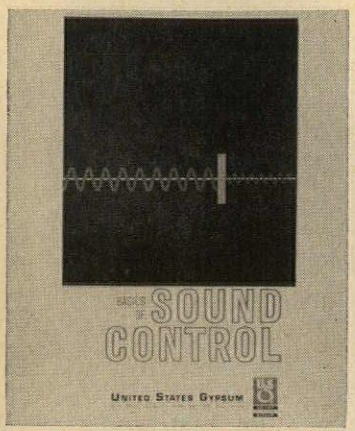
Address correspondence to Dept. PA

Bally Case and Cooler, Inc., Bally, Pennsylvania

For more information, turn to Reader Service card, circle No. 329

Manufacturers Data

Acoustics



Sound Control

"Basics of Sound Control," a 50-page booklet, has recently been published. It is divided into six chapters, which include "The Nature of Sound," "Sound Control in Architecture and Building," "Tests and Ratings of Materials and Systems," "Choice of Sound Control Materials," "Choosing Partitions, Ceilings, and Floors," and "Types of Occupancies." Charts and details are given. United States Gypsum Co., Dept. 122, 101 South Wacker Drive, Chicago, Ill.
On Free Data Card, Circle 200

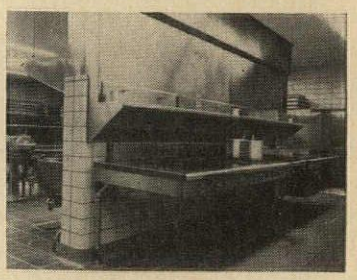
Air/Temperature

Air Troffers

Series of three booklets present different and recently designed air handling fluorescent troffers. All types feature air feed, air return, variety of frameless and framed light diffusers, unitized wiring assembly for energizing electrical components, and adaption to variety of ceiling systems. "Series R-NAD" is 15″ x 55″ in size, "Series R-SAR" 14″ x 55″ in size, and "Series R-AD" 1′ x 4′ or 2′ x 4′ in size. Air and light performance data charts, photos of various models of each type, and details are given. Luminous Ceilings Inc., 3701 N. Ravenswood Ave., Chicago, Ill.
On Free Data Card, Circle 201

Selecting Fan Coil Units

Fan-coil manual, 55 pages, gives information needed for proper selection of any unit in five sizes ranging from 200 to 600 cfm. Fan coil line includes six models (four vertical and two horizontal). Cabinet for all models is 8½″ deep and less than 25″ high. Photos, cooling and heating capacities, and schematic dimensional charts are given. Worthington Air Conditioning Co., Ampere Station, East Orange, N.J.
On Free Data Card, Circle 202



Ventilating Kitchens

Kitchen ventilation and types of ventilators are discussed. Air movement section deals with air flow between kitchen and surrounding areas; within kitchen; through ventilator, transition, and ducts; and over cooking equipment and into

640 moments of truth

The January issue of PROGRESSIVE ARCHITECTURE does, in fact, represent a moment of truth for the 640 architectural firms who entered the P/A Design Awards Program. For it is in January that the editors reveal the winning designs in fourteen catagories, selected by a jury of prominent architects, along with the reasons for the jury's decisions. For years, this issue of P/A has been one of the best read issues of any architectural magazine published during the year.

To the profession at large, the Design Awards issue of P/A is a provocative, often startling statement of the current state of the architectural art. Reactions from readers are seldom unanimous or restrained. The jury's selections will be the subject of controversy for months to come. This capsulates the role of PROGRESSIVE ARCHITECTURE throughout the year—providing information, stimulation and responsible commentary to its subscribers.

You can share in architecture's moment of truth by sending your $5 check immediately. In return, you'll receive the exciting January issue plus eleven more during 1965. Address: Circulation Department, PROGRESSIVE ARCHITECTURE, Reinhold Publishing Corporation, 430 Park Avenue, New York, N. Y. 10022.

ventilator. Ventilator selection section discusses grease, dust, and lint removal from conveying air stream; cleaning-accumulated grease from ventilator; fire protection; construction; standard equipment; functional design; and approvals. Gaylord Industries, P.O. Box 7334, Portland, Ore.
On Free Data Card, Circle 203

Humidifier

Two catalogs describe duct and space humidifiers for industrial and commercial use. Included in both catalogs are physical data, charts, details, uses, and specs. Walton Laboratories Inc., 1186 Grove St., Irvington, N.J.
On Free Data Card, Circle 204

Construction

Masonry Reinforcement

Technical bulletin "No. 64-1," 18 fold-out pages, gives installation details of wire masonry wall reinforcement used with truss design. Covered are wall placement, splices, spacing in walls; uses at corners, in cavity and composite walls, returns and offsets; and application at wall intersections with control joints at chases, jambs, piping enclosures, buttresses, counterforts and parapets. Dur-O-Wal National, Inc., P.O. Box 150, Cedar Rapids, Iowa.
On Free Data Card, Circle 205

Enameled Glass

An American outlet for French Saint-Gobain glass offers a

series of booklets on glass-block, wire-glass, and thick plate glass panels. Among special products is "Emalit," a toughened glass cladding colored by high temperature enameling on one of its surfaces. It has thermal and mechanical resistant qualities. Emalit, used in curtain-wall construction as well as in interior decoration, is available in 17 colors. It is obtainable in two types: enameling polished plate glass ("Emalit") and enameling figured rolled glass ("Emalit 77"). Color and black and white photos as well as properties of all types of glasses are given. Euroglass Corp., Suite 5312, 200 Park Ave., New York, N. Y.
On Free Data Card, Circle 206

Electrical Equipment

Aluminum Fixtures

Catalog, 32 pages, describes recently designed line of all-aluminum fixtures. Types of fixtures include low bright downlights, reflector lamp downlights, surface cylinder series, regressed lens unit, adjustable wall washers, and exit sign series. Details, photos, dimensions, and specs are given. Marvin Electric Mfg. Co., 6100 S. Wilmington Ave.. Los Angeles, Cal.
On Free Data Card, Circle 207

Finishes/Protectors

Rubber Sealant Joint Design

"Bulletin CDS-487" concerns an article by Wayne F. Koppes —noted architectural consultant—on proper design of construction joints to take advantage of elastometric sealing compounds without exceeding their capabilities. Guide includes sections on properties of elastomeric sealing compounds, joint movement due to temperature changes, descriptions of conditions in various common joints, and action of various elastomeric sealants in dynamics of these joints. General Electric, Silicone Products Dept., Waterford, N.Y.
On Free Data Card, Circle 208

Joint Sealer

Joint sealer, "No. 54(404)", is described in 4-page brochure. It is a two-component elastomeric compound for sealing construction joints in portland cement concrete structures of all types; military and commercial landing strips and parking apron; bridges and highways; commercial and industrial parking areas; and heavy-duty slab floors of industrial buildings and garages. It can be poured from any suitable container, is self-leveling, and cures to firm, rubbery consistency. Sealer features high bonding properties and good resistance to water, salt, fuel, oil, and other similar substances. Presstite Div., Interchemical Corp., 39 and Chouteau, St. Louis, Mo.
On Free Data Card, Circle 209

Colored Joint Sealants

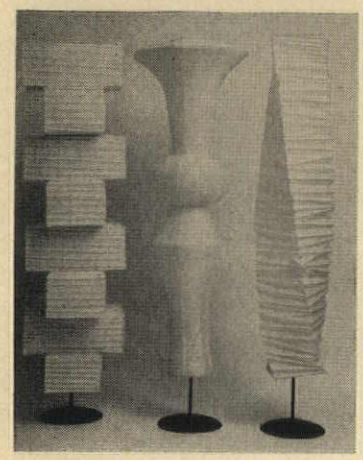
Five colors (buff, brick red, brown, redwood/tan, off-white) have been added to four standard colors (black, white, aluminum, neutral stone) of "Mono-Lasto-Meric" construction joint sealant. One part acrylic terpolymer sealant eliminates hazards in high cost of job site mixing; does not require primer or surface conditioner; is nonstaining; has high resistance to ultraviolet ray, oxygen, and moisture; elongates in excess of 225 per cent of 20 F without adhesive or cohesive failure; and withstands temperature extremes of —20 F to +200 F. Sealant will reseal or readhere on contact should moisture or dust interfere with its initial adhesion. All colors are fast, noncalking, and resistant to weather or chemical attack. Tremco Mfg. Co., 10701 Shaker Blvd., Cleveland, Ohio.
On Free Data Card, Circle 210

Concrete Joints

Spec manual, 8 pages, describes premolded joint filler materials in concrete construction. It contains information on make-up of premolded joint fillers (both asphalt and fiber), how to choose correct joint fillers, data on applications and uses,

and installation procedures. Also given is recommended formula for computing anticipated expansion of concrete and for computing desired joint thickness to be used on any given job. ASTM specs on both asphalt and fiber types of premolded joint fillers are included. Concrete Joint Institute, Room 1604, 228 N. La Salle St., Chicago, Ill.
On Free Data Card, Circle 211

Furnishings



Akari Lamps by Noguchi

Floor, table, and hanging lamps in the Japanese tradition are illustrated in 6-page booklet. Sculptor Isamu Noguchi has used Mino paper over bamboo frames for 13 collapsible shade styles. Bonniers, 605 Madison Ave., New York, N.Y.
On Free Data Card, Circle 212

Insulation

Polystyrene Insulation

Brochure, 4 pages, presents polystyrene "Foam Board" for use as insulation of roofs, walls, ceilings, and floors. It can be used in curtain wall panels as a perimeter or wall cavity insulator, in pipe and equipment covering and other applications. Foam Board has good thermal properties, is effective moisture barrier, bonds to other surfaces easily, provides good surface for plaster cement, and can be laminated with wide range of materials.

It is resistant to passage of heat, water, and water vapor. It is available in regular or self-extinguishing types, in lengths up to 12′, widths up to 4′ and in thicknesses up to 9″. Details and U-value chart are given. Monsanto Co., Dept. 804, 800 N. Lindbergh Blvd., St. Louis, Mo.

On Free Data Card, Circle 213

Wood Frame Insulation

"Insulation on Wood Frame Structures" outlines thermal characteristics of walls, floors, ceilings, and roofs. Illustrations depict proper methods of installing insulation. Also included are U-values for wood frame walls, masonry walls, wood-joisted floor over unheated crawl spaces, wood-joisted ceilings under unheated attics, sloping roofs with rigid insulation on top of rafters, sloping roofs with flexible insulation between rafters, and flat or low-slope roofs with rigid insulation on decking. National Lumber Manufacturers Assn., 1619 Massachusetts Ave., N.W., Washington, D.C.

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Special Equipment

Carpet of Vinyl Beads

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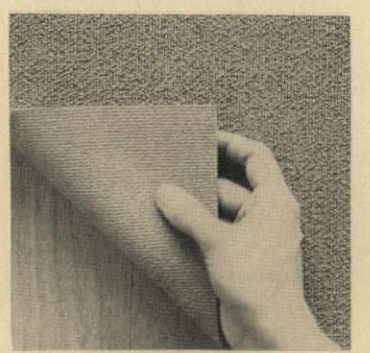

in fact, it is molded in a pattern of many vinyl beads. It can be installed over practically any surface, either indoors or out. Eight solid colors—gold,

brown, white, beige, green, gray, black, and apricot—are also available as tweed patterns, which combine lighter and darker tones. Brochure gives one sample of each pattern as well as photos of other colors. United States Rubber, Floor Covering Products, 1230 Avenue of the Americas, New York, N.Y.

On Free Data Card, Circle 215

Ceramic Tiles

"Brickplate" ceramic tile is described in series of three separate sheets. Tiles are hard and dense. They have less than 3 per cent absorption, which makes them completely frostproof and immune to deteriorating effects of migrating salts from setting mortar. Tiles have dovetail keys formed on back that allow for secure attachment to vertical surfaces as well as floors. Material, manufactured in West Germany, is available in U.S. modular sizes. Substantial stocks of tile are maintained in U.S. Each sheet contains colors of tile, details, and specs. Gail International, 582 Market St., San Francisco, Cal.

On Free Data Card, Circle 216

Surfacing

Vinyl Flooring Samples

Portfolio, three 14"x14" pages of paper board bound together with two plastic bindings, displays vinyl floor tiles. It con-

tains samples of "Travertina" tile in 11 base styles, varying in size up to full 12"x12". Samples are also given of complete range of 25 custom lines and cavity grout colors. Five typical combinations using special cavity grout pigments, accent colors, and feature lines

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of vinyl flooring are included. Portfolio also contains descriptive information. National Floor Products Co., Inc., Florence, Ala.
On Free Data Card, Circle 217

Woven Wall Fabrics

Sample folder exhibits various styles of woven plastic fabrics that are acoustically transparent. "Acousticloth," woven of "Saran," is moisture- and dust-resistant and meets all fire regulations. Fabric is used in concert halls and auditoriums as well as coverings for speaker baffles. Blue Acousticloth is used on walls of Philharmonic Hall in Lincoln Center and red-orange is on walls of auditorium at Temple Emanu-El in New York. It is available in 36″, 60″, and 72″ widths. It is installed by employing staples or tacks. Merlang Mfg. Corp., 19 West 34 St., New York, N.Y.
On Free Data Card, Circle 218

Protective Shielding

Catalog "No. 641," 8 pages, covers equipment and services for radio frequency shielding, gamma ray shielding, and X-ray protection for research, medical, scientific, and industrial installations. Basic technical data is given on prefab and custom-built shielded rooms and structures, lighting fixtures, building materials, lab components, and accessory equipment. Photos and data charts are given. Ray Proof Corp., 843 Canal St., Stamford, Conn.
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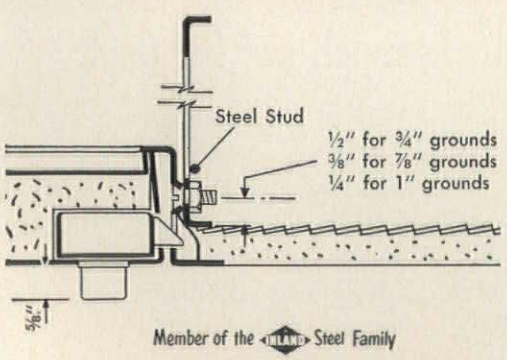

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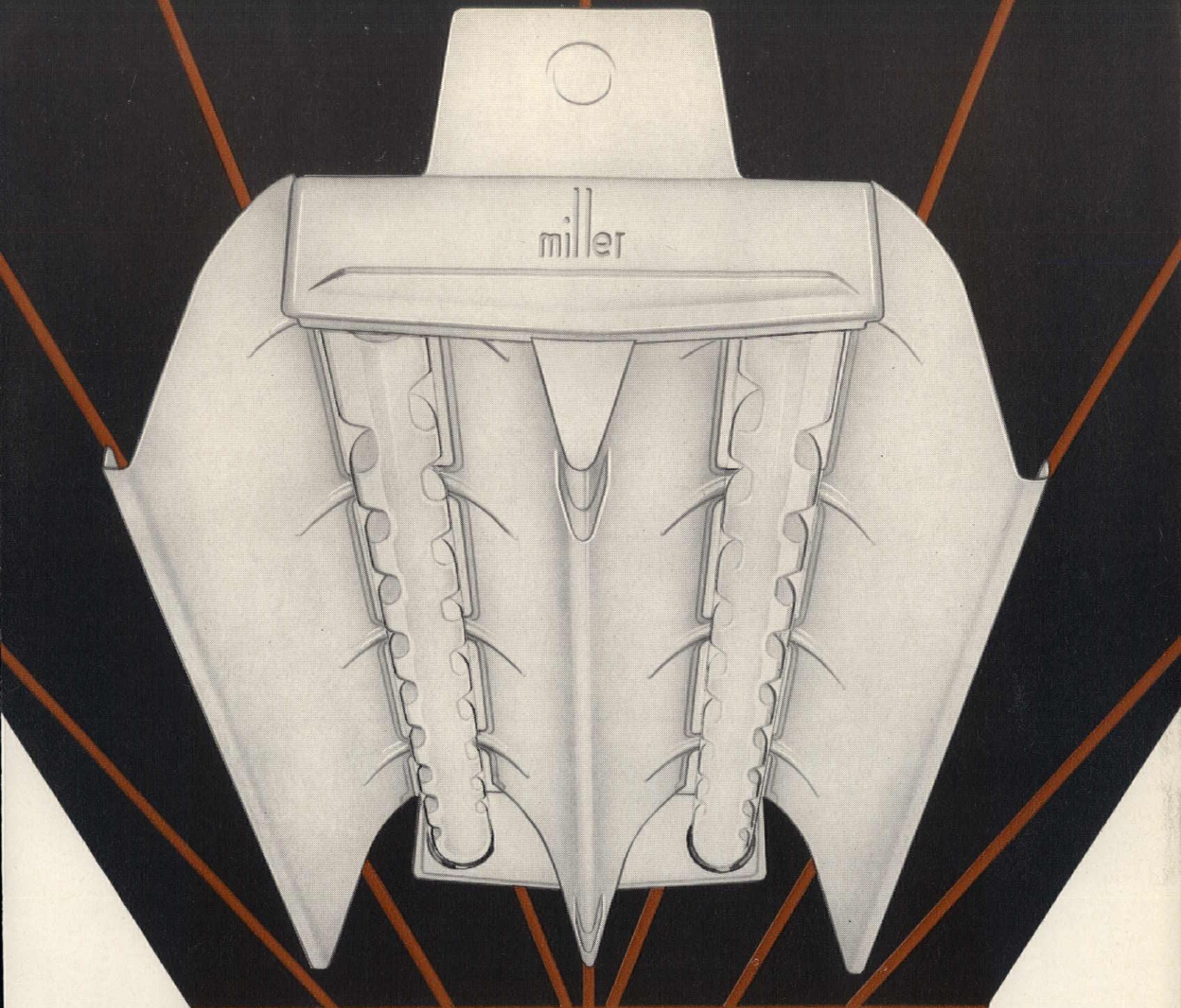

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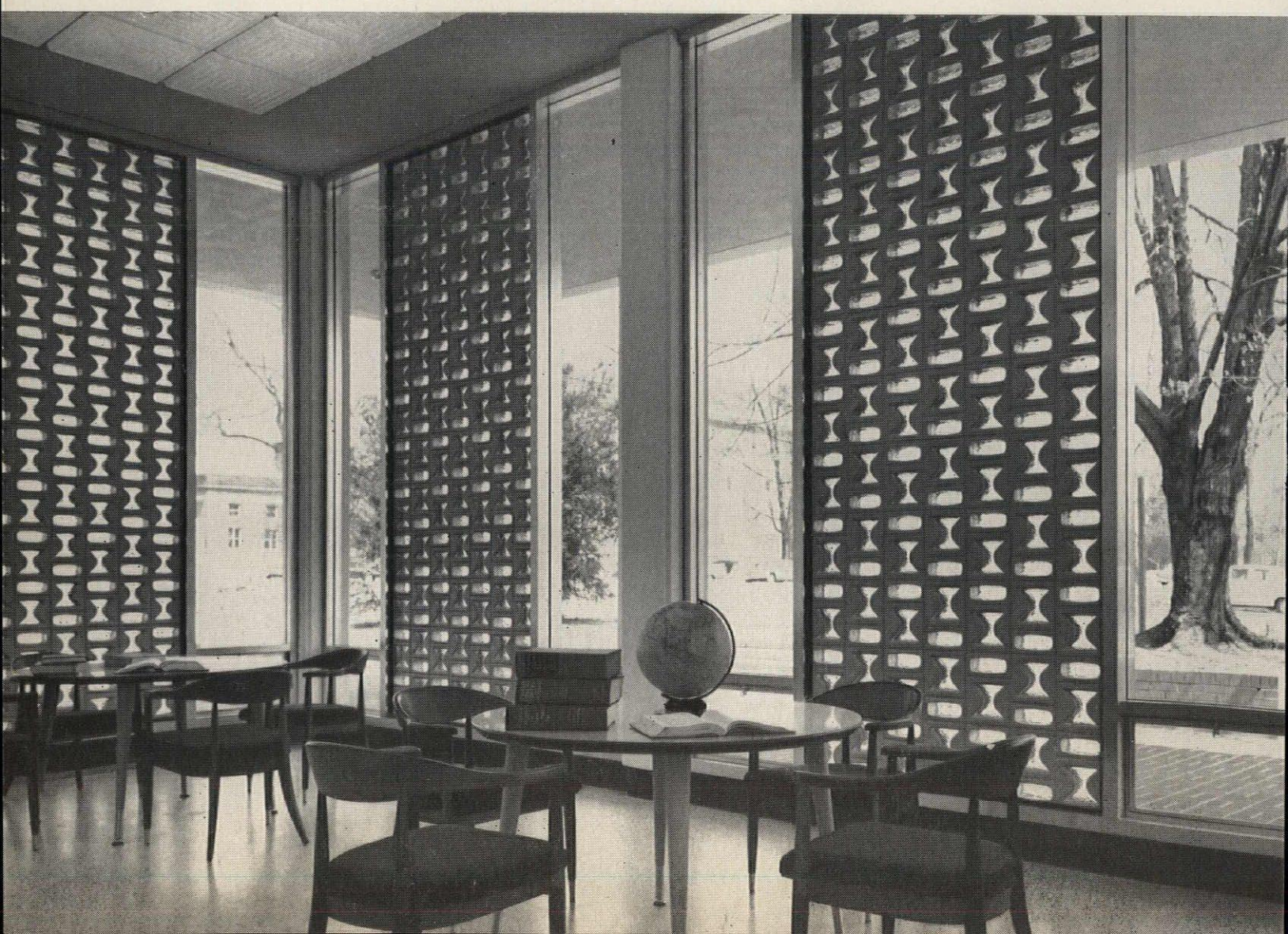

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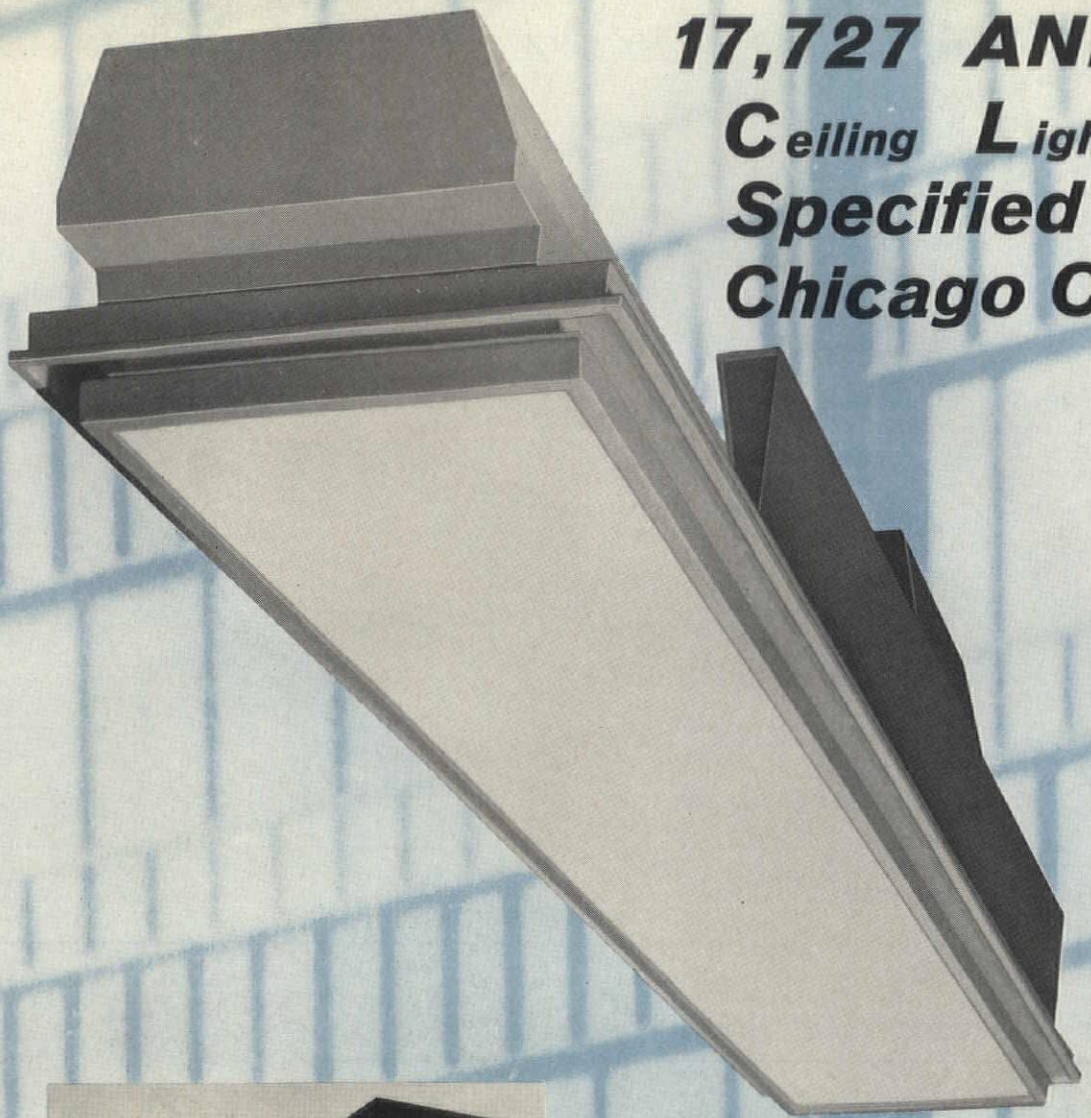

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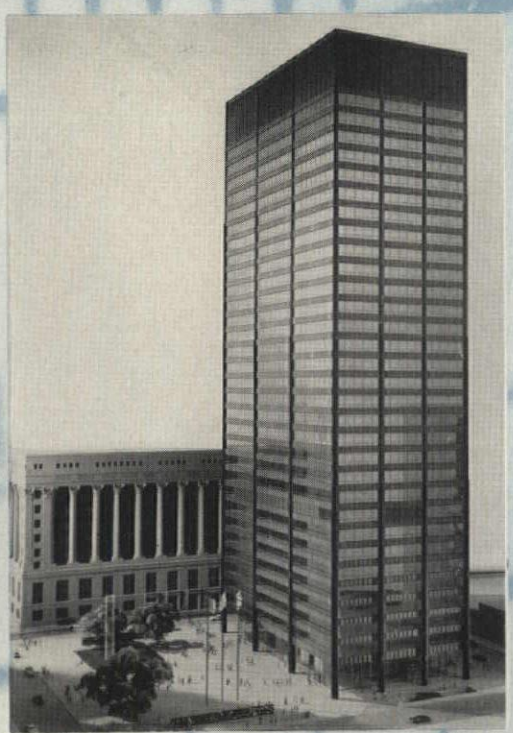

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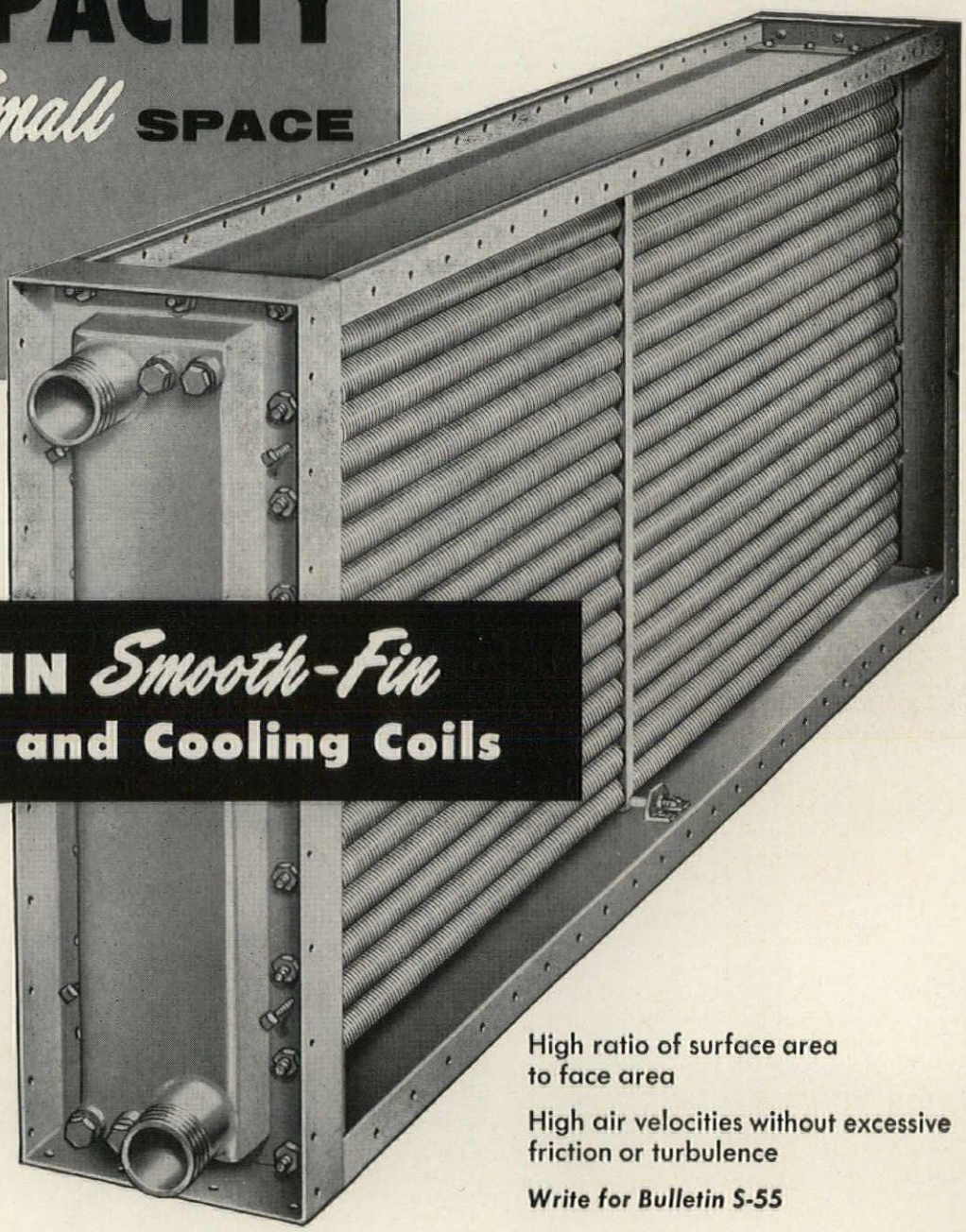

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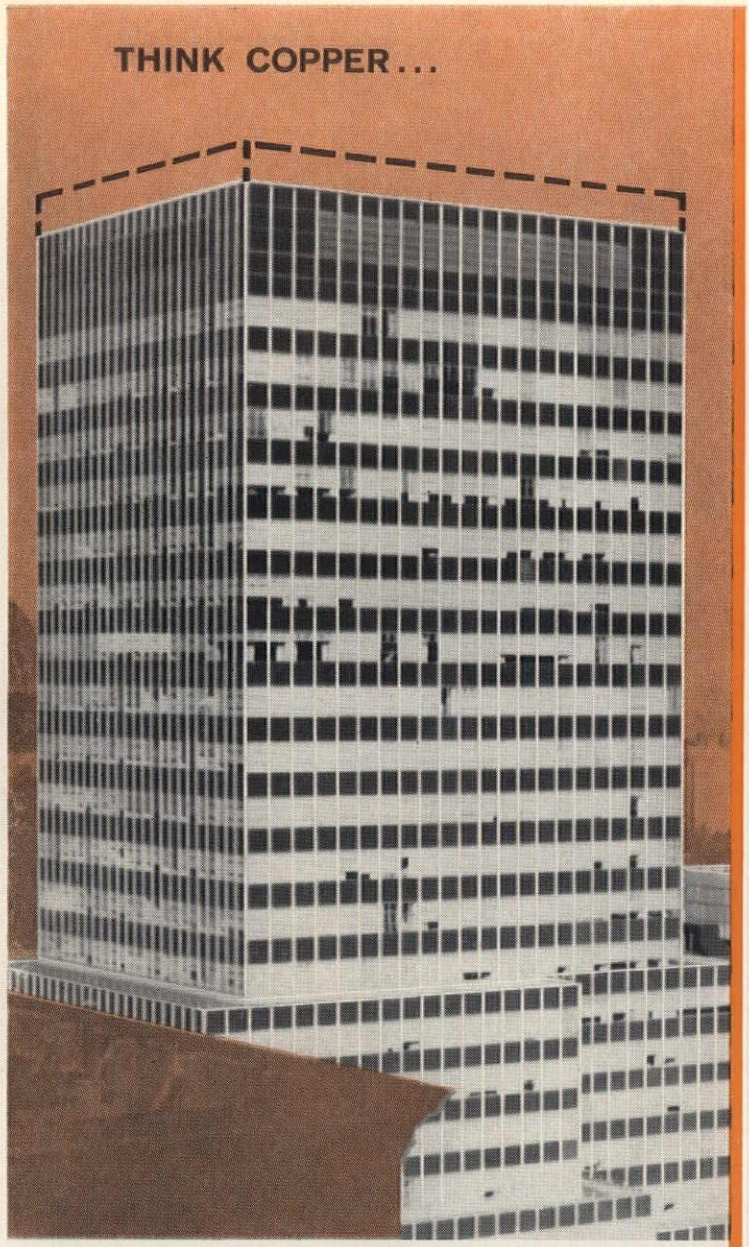

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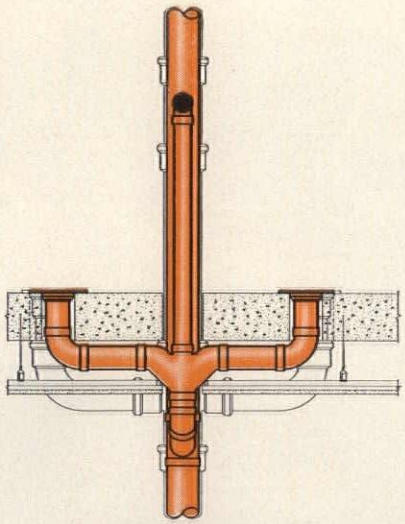

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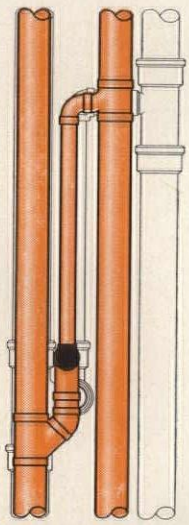

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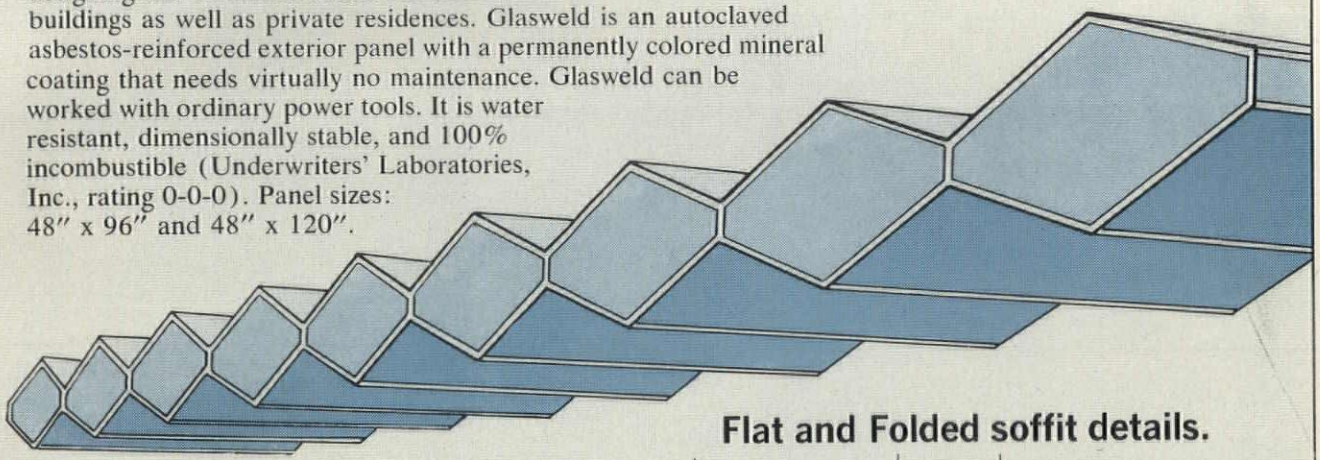

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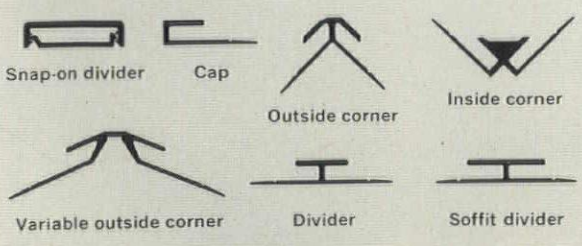
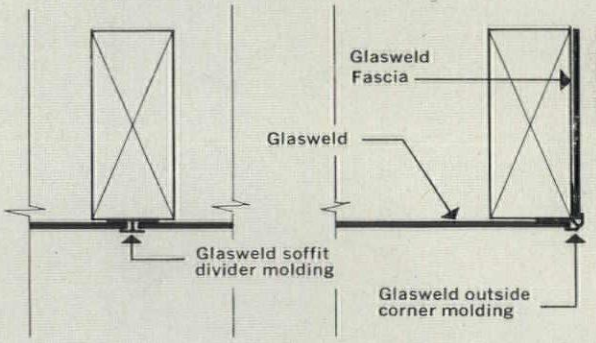


Flat and Folded soffit details.



Intermediate joint.
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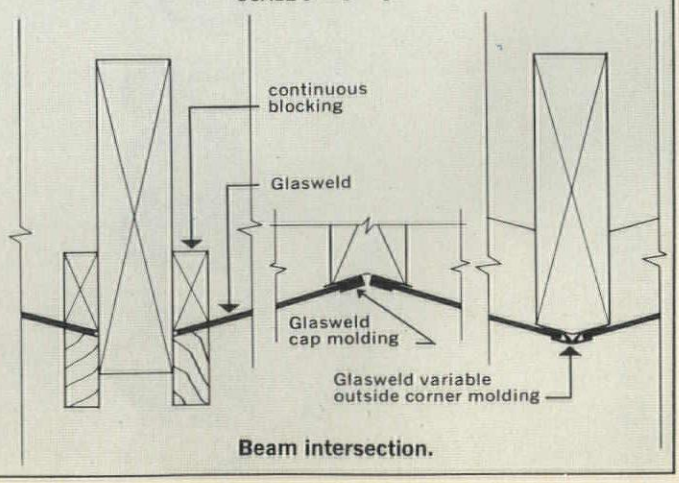

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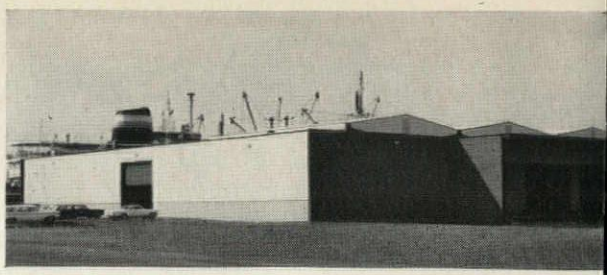

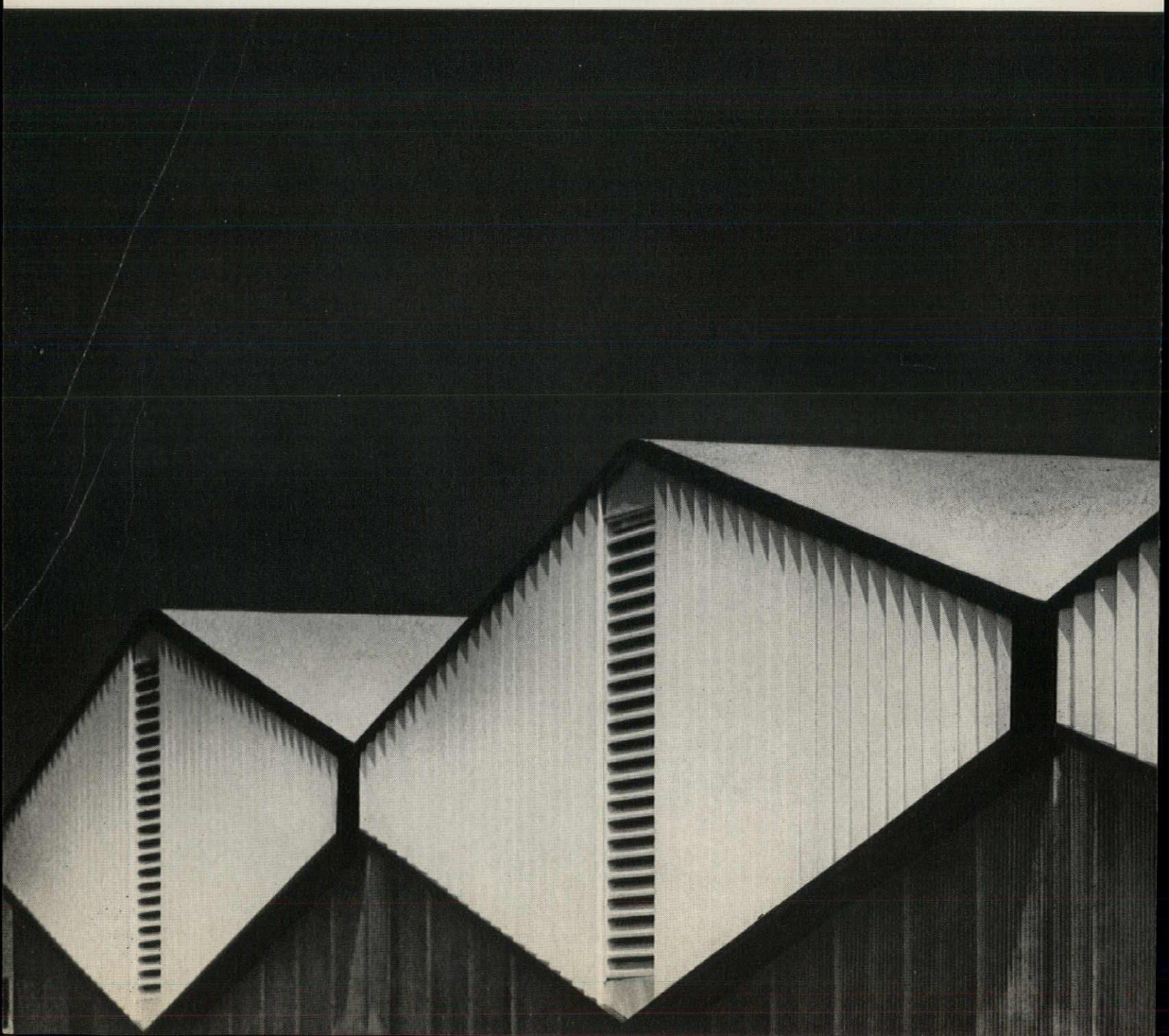

Despite its location on the shore of Lake Erie, exposed to extremes of weather, the siding on this new Transit Building will stay fresh and new-looking for many years. It's surfaced with a new and amazingly tough finish: TEDLAR* PVF film.

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TEDLAR proved itself during construction of this building when strong winds spilled a bucket of tar over panels surfaced with TEDLAR as well as some painted parts stacked on the site. Workmen were unable to remove the tar from the painted surfaces, yet the TEDLAR was easily cleaned and restored to original appearance.

The metal building panels, surfaced with TEDLAR, are made and erected by Elwin G. Smith Co. More and more architects are specifying TEDLAR as the finish on roofing and siding. Du Pont Film Dept., Box 125C, Wilmington, Delaware 19898.

Transit Building, Department of Port Authority, Cleveland, Ohio
Architect: Alexander A. Papesh, Cleveland, Ohio
Engineer: Osborn Engineering Co., Cleveland, Ohio
Contractor: Geo. A. Rutherford, Inc., Cleveland, Ohio

*Du Pont registered trademark for its polyvinyl fluoride film.

For more information, circle No. 342

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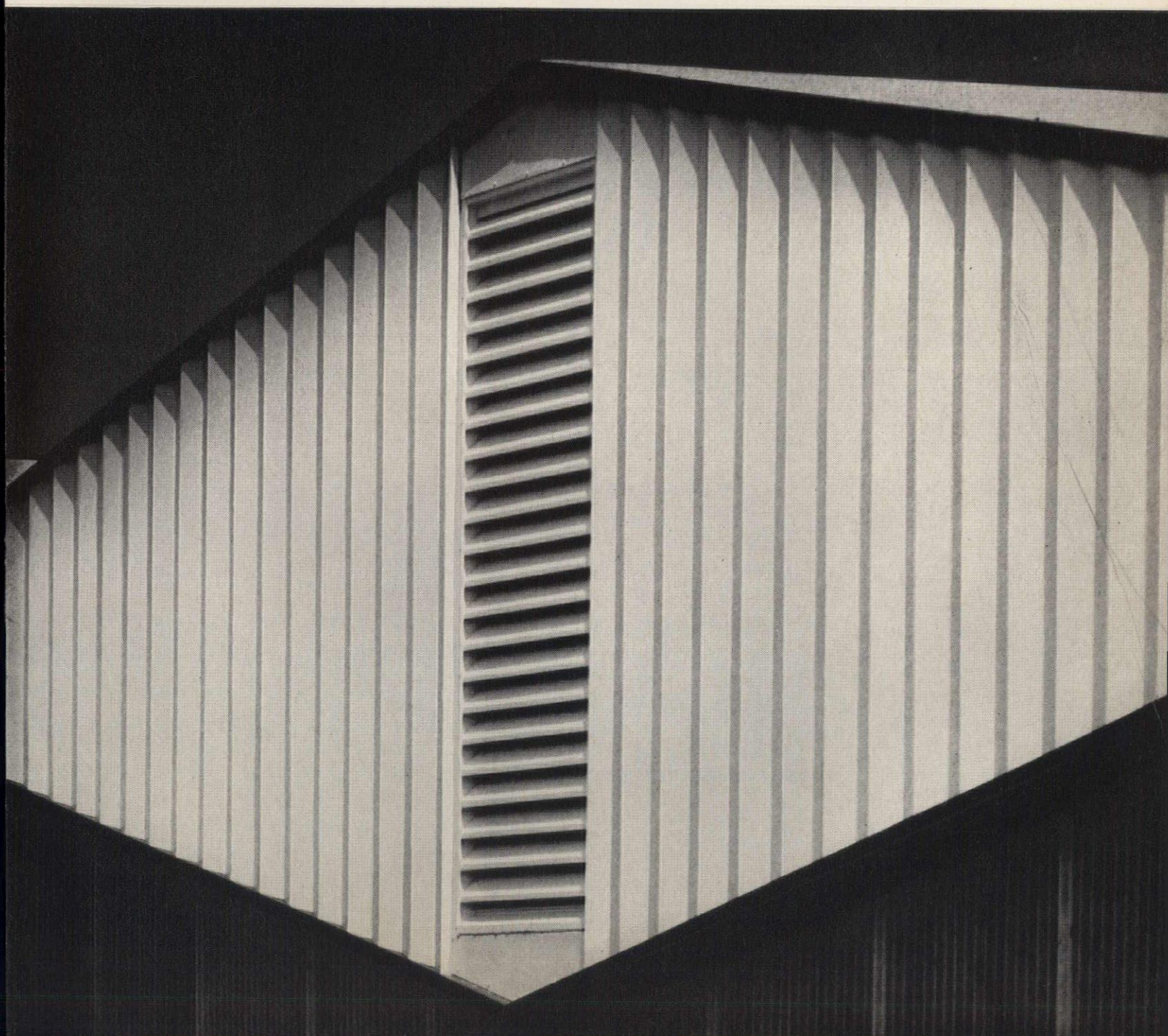

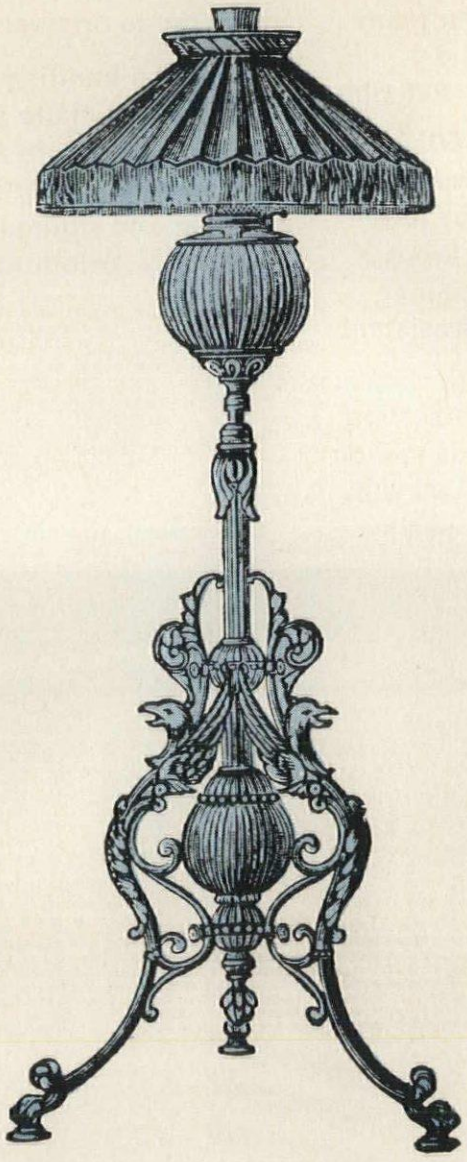

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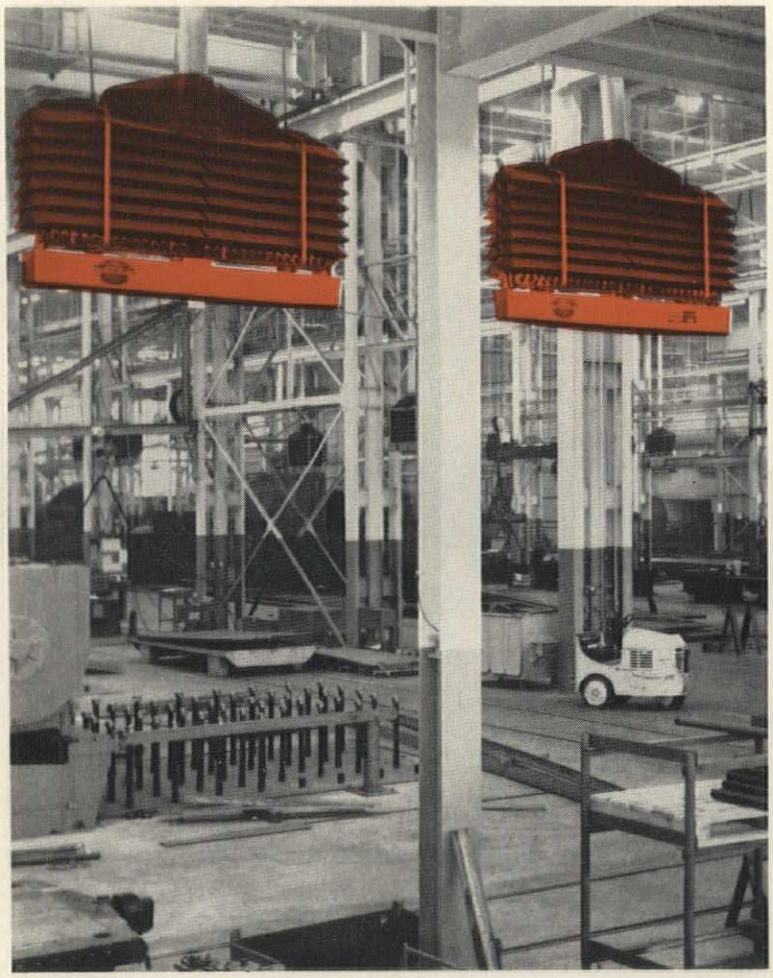

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General Contractor: A. L. Jackson Co., Chicago
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December 1964 **PROGRESSIVE ARCHITECTURE**®

REINHOLD PUBLISHING CORPORATION
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Architecture without architects is the name of an exhibit that opened recently at the Museum of Modern Art in New York. Prepared and designed by Bernard Rudofsky, consultant to the museum's Department of Architecture and Design, it consists of photographs showing the "unfamiliar world of non-pedigreed architecture—we shall call it vernacular, anonymous, spontaneous, indigeneous, rural, as the case may be."

What I want to do in this Editorial is to take up Mr. Rudofsky on his statement that the exhibition "is frankly polemic" and to point out what seems to me to be its basic flaw.

Disregarding some obvious non-architecture, such as little piles of funereal dirt, and some architecture by architects (or whatever building designers were called in the past), there is no doubt that much of what Mr. Rudofsky is showing are great examples of the building art produced by primitive cultures. There is also no doubt that these examples provide a wonderful lesson in the use of materials, relationship of masses, application of decoration, and all the other basic tools of architectural design.

Unfortunately, Mr. Rudofsky does not stop here. Instead, in a series of inuendos and sometimes even open sarcasm, he proceeds to deliver a liberal swat at the architectural profession: "Part of our troubles results from the tendency to ascribe to architects exceptional insight into problems of living when, in truth, most of them are concerned with problems of business and prestige."

Strong words and strange words. Especially when written by a consultant—and obviously approved by the curator—of the Department of Architecture and Design of the Museum of Modern Art.

It is also strange that after attacking "split-level houses" and calling them "our architecture," Mr. Rudofsky does not make clear that they were not dreamed up by architects. Typical subdivisions, he should have noted, are the product of native, anonymous "talent"—they are expressions of our social values and mores, and our technological and aesthetic tastes. They represent *our* contemporary, indigenous architecture—they are *today's* non-pedigreed architecture.

We have other examples of contemporary vernacular art. Parking lots, for instance, and trailer camps, which, by the way, are as photogenic when taken from the air as the Shanghai houseboats that are in the exhibit. Or junkyards with all those cute sculptural forms. Or neon signs that flash on and off. We hate them all, for they blight our landscape, yet they *are* today's "architecture without architects."

The problem, of course, is that in simpler days simplicity was easy to achieve because only simple means were available. When merely local materials can be used for construction and building techniques are limited, a cohesiveness of design develops automatically. In today's complex civilization of unlimited choices, the selective reduction of the design vocabulary can come only from a highly trained and intellectualized mind. The paradox, which is the key to the problem of our age, is that today the uneducated, spontaneous design leads to over-abundance and chaos; only the highly educated, disciplined design can achieve simplicity and order.

There is always a hope that some day we will achieve an environment with qualities similar to those that were inherent in less prosperous and less technologically advanced civilizations. Presumably those who will design such an environment are the architects—because if the architects do not, who will? The truth is that many architects are already attempting this, sometimes even successfully.

The Museum of Modern Art has generated and supported enough freak ideas that permeate the world of art today. It seems to me that in this exhibition it could have either limited itself to a factual reportage, or tried to point out a constructive path for the future. Both courses would have been commendable. But peevish sarcasm directed at architects serves no purpose except to confuse the already confused public to an even larger extent. ■

James C. Rowan

HARVARD'S NEW MARRIED STUDENT HOUSIN

PHOTOS, EXCEPT AS NOTED: PHOKION KARAS

The new Married Student Housing contrasts strikingly with most current residential construction of similar size and scope. The usual method—that of I. M. Pei (1) and Mies van der Rohe (2), for example—has been to fit apartments into a massive structural frame. Sert, Jackson, & Gourley have used quite an opposite approach in pyramiding a repetitive basic unit. By skillfully massing and manipulating these units, they have realized not only an efficiently workable interior arrangement, but, more importantly, a lively sequence of exterior spaces, and a fluent continuity from low to high, and from old to new structures.

1

PHOTO: LAWRENCE S. WILLIAMS, INC.

2

PHOTO: BALTHAZAR

GENERAL DATA:

name of project: Francis Greenwood Peabody Terrace
location: Cambridge, Massachusetts
number of rental apartments: 497
number of superintendent's apartments: 2
community facilities: playground, paved roof terraces, three nurseries, drug store, two laundromats and sitting rooms at tower roofs, coin-operated dry cleaning and laundry, large meeting room with kitchen, two seminar rooms, basement and ground floor storage facilities, garage for 352 cars.

DENSITY:

total number of tenants: 1464
acreage: 5.9 including service drives and garage
families per acre: 85
persons per acre: 248

BUILDING AREAS:

gross area of apartment buildings: 468,675 sq ft
gross area of garage: 100,619 sq ft
typical apartment sizes (net rentable area):
efficiency (15%): 415 sq ft
one-bedroom (40%): 487 sq ft
two-bedroom (40%): 766 sq ft
three-bedroom (5%): 960 sq ft

BUILDING COST

total construction cost of apartment buildings, excluding cost of demolition, piles, paving, roads, and planting, but including cost of ranges, refrigerators, built-in desks, and drawer storage units: $8,064,952 or $17.20 per sq ft
total construction cost of garage including foundations: $406,628 or $4.04 per sq ft
total project cost: $8,471,580 or $14.89 per sq ft

CREDITS

architects: Sert, Jackson & Gourley
associate: Joseph Zalewski
job captains: William Lindemulder and Robert Kramer
landscape architects: Sasaki, Walker & Associates
structural engineers: Nichols, Norton, & Zaldastani
mechanical and electrical engineers: Sidney J. Greenleaf & Associates
acoustical consultants: Bolt, Beranek & Newman
soil mechanics consultant: Arthur Casagrande
general contractor: Vappi & Company, Inc.

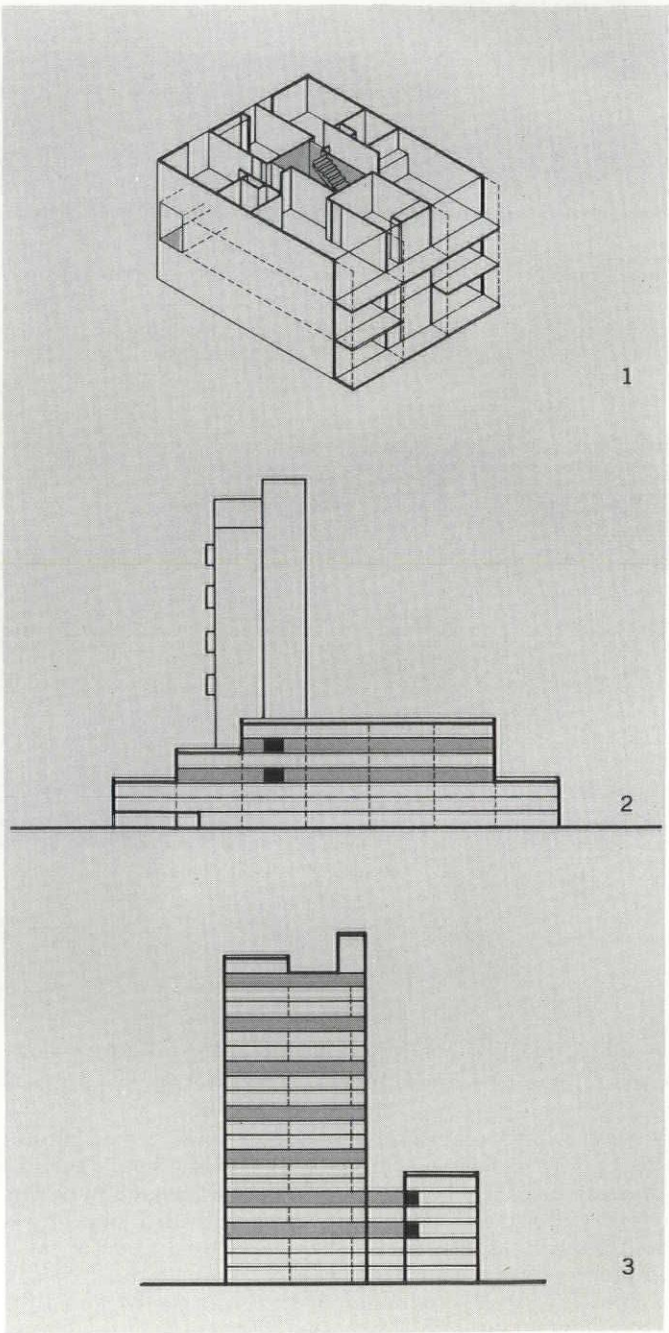
THE BASIC UNIT

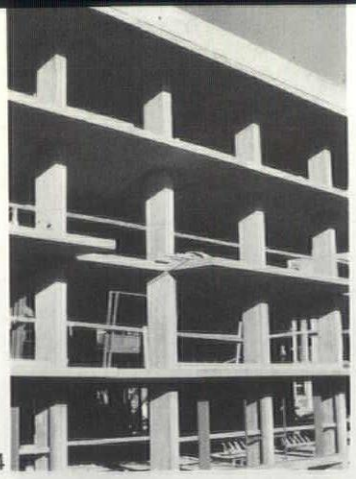
The underlying organizing element of the entire scheme is a structural unit three bays wide, three stories high, with a stair in its center bay **(1)**. High and low buildings alike are multiple assemblies of this repetitive unit **(2)**. While the first three floors are designed as walk-ups, ingenious linking of the towers to the lower structures at the fourth and sixth corridor levels **(3)** made it possible to offer elevator service not only to the tower tenants, but also those living in the 5- and 7-story buildings. This system of sharing the elevators has avoided forcing the architects to resort to a bulky slab scheme with many apartments per floor, usually demanded to justify the economics of elevator installation.

Consistent repetition of the basic unit considerably simplified the framing of the concrete buildings, the formwork and installation of reinforcing steel, and the placement of conduits, sleeves, reglets, and precast inserts. Short spans made it possible to use flat slabs, which also provide the finished ceilings. The comparatively low clearance of 7'-6" between floor and underside of slab eliminated the need for complicated scaffolding, and standardization of such building elements as steel pan stairs, bathrooms, and kitchens resulted in further savings. Columns are consistently 12 in. wide, but vary in depth according to load conditions. Into this regular grid **(4)** are fitted the precast concrete panels and window frames **(5, 6, 7)**. These are of a constant height, reaching from floor to ceiling, varying only in width according to differing exposures and apartment layouts. Only the shear walls are cast-in-place **(8)**, and these serve in many cases as the finished interior partitions.

Mechanically, the structures are relatively uncomplicated because of the vertical aligning of plumbing elements. Heat is provided by hot water in the low buildings, and by steam in the towers. Air-conditioning was not deemed necessary, since most apartments have through-ventilation. Tenants, however, may install their own water-cooled units if desired.

A system of service tunnels connects all the buildings and a make-up air system balances the shaft effect of the stair wells in the towers.





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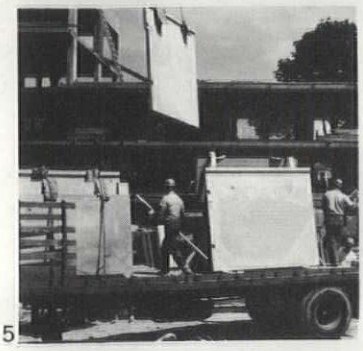

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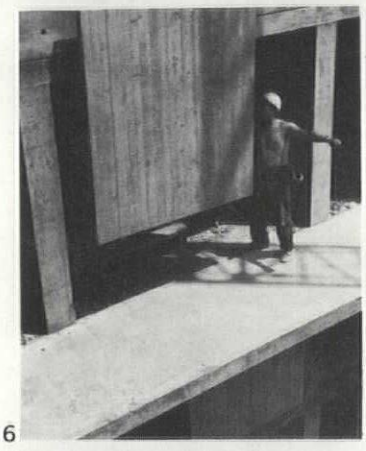

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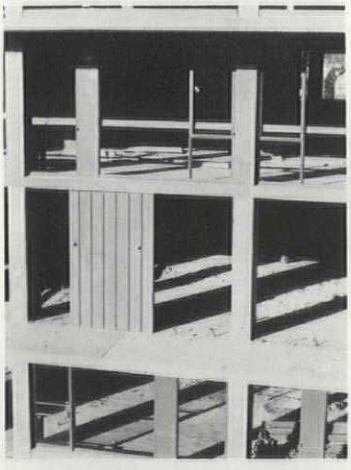

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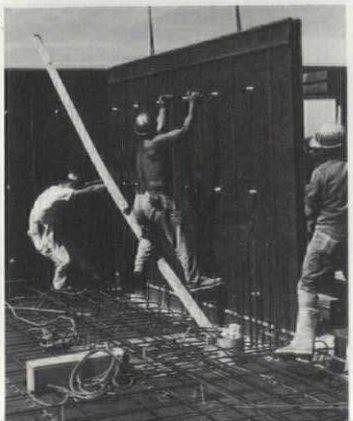

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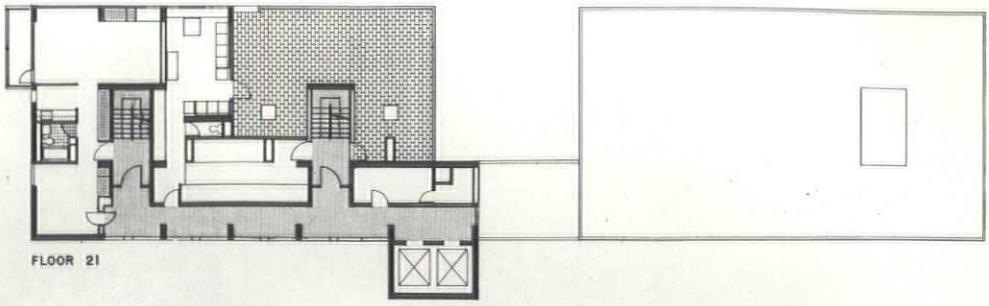
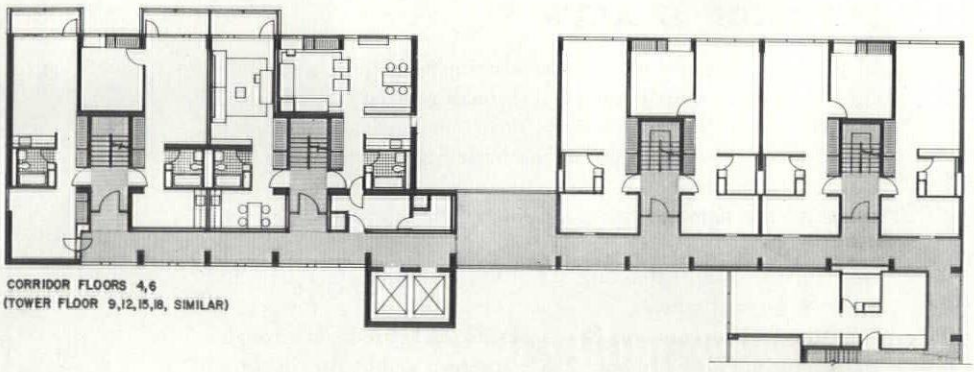
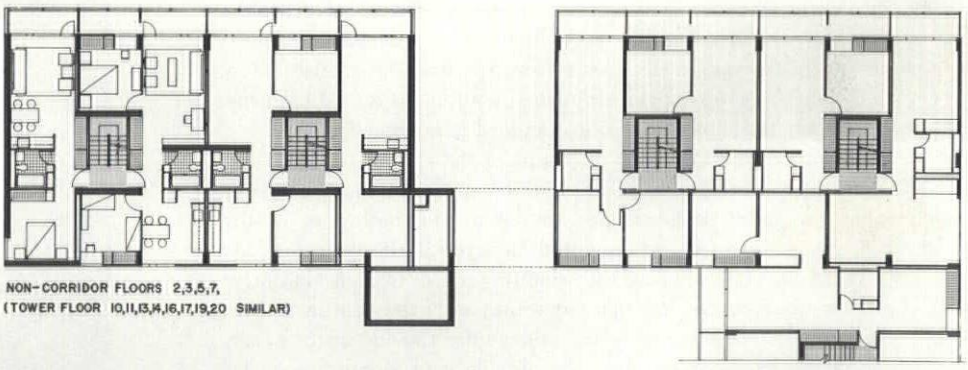
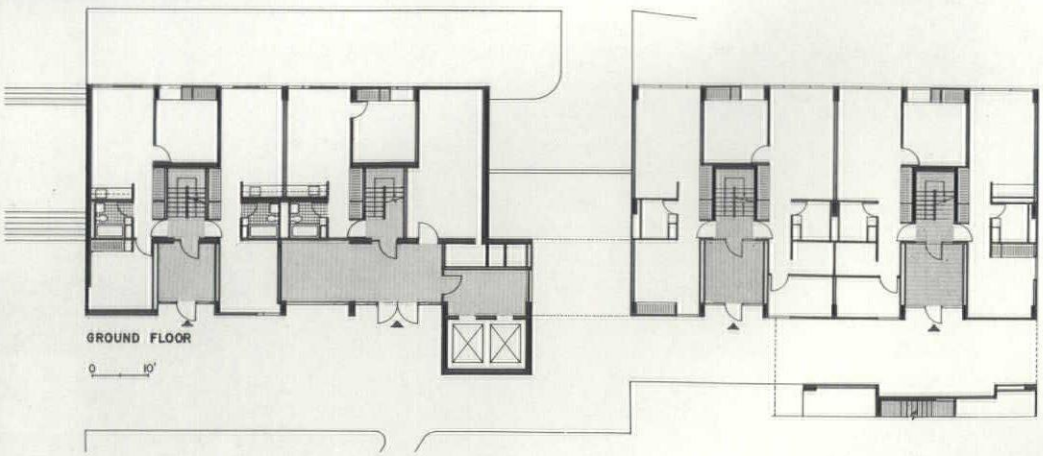
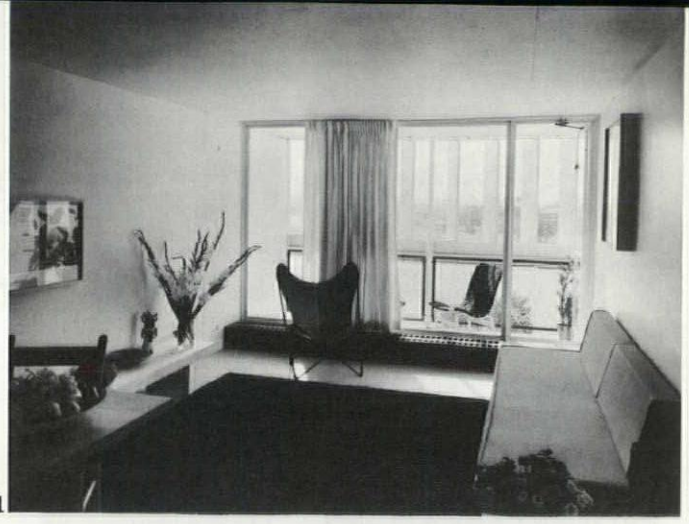

FLOOR 21


CORRIDOR FLOORS 4,6
(TOWER FLOOR 9,12,15,18, SIMILAR)


NON-CORRIDOR FLOORS 2,3,5,7,
(TOWER FLOOR 10,11,13,14,16,17,19,20 SIMILAR)


GROUND FLOOR
0 10'



1

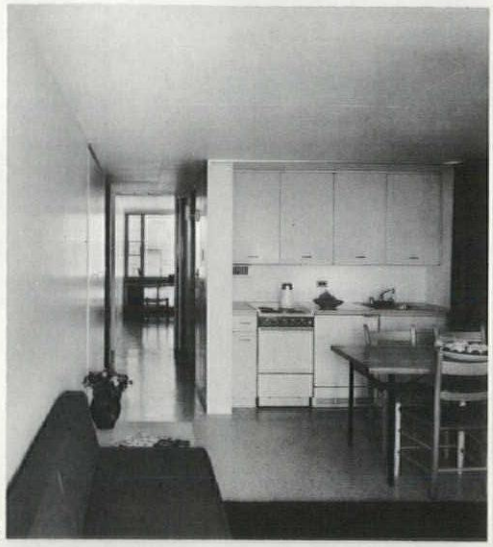
INTERIOR SPACES

In planning the apartments, the architects made a conscious effort to obtain through-views and through ventilation. All units, with the exception of the majority of efficiencies on corridor floors, occupy the full width of the building. To emphasize this space between two cross-walls, the partitions separating the balconies are painted white, continuing the white walls of the living room **(1)**; similarly, the underside of the balcony slabs are painted white, extending the white ceiling surface beyond the exterior wall line.

In the one-bedroom unit **(2)**, access to the bedroom is through a generous opening of about 3'-8"; where possible, the opening is provided with a frameless folding door or curtain to emphasize the continuity of space. In the two-bedroom units, the living room space extends freely into the kitchen/dining space; the kitchen equipment, however, is screened from view by the projection of the bathroom. The living room, or even the kitchen/dining room **(3)**, may often serve as a means of access to the bedrooms—a departure from the usual apartment plan.

There are two basic assemblies of equipment for all kitchens, and all bathrooms follow one standard arrangement.

Color is used internally to augment the spatial concept. The total through-space is painted white and only those elements that protrude, such as the volume of the bathroom in the efficiency unit **(4)**, are painted in strong, simple colors. At either end of the space, the window wall is treated similarly: the window frames are painted white; only the ventilator is in a strong color. Where a bedroom occupies the end of the space, as in the one-bedroom unit, the outside wall is composed of a storage and window unit with a built-in desk **(5)**, and the entire wall is covered by a curtain that screens either window, closet, or both.



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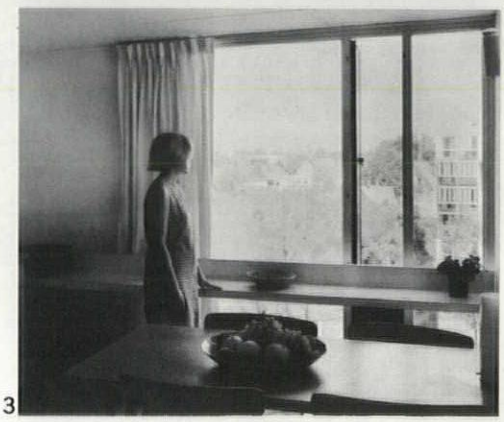

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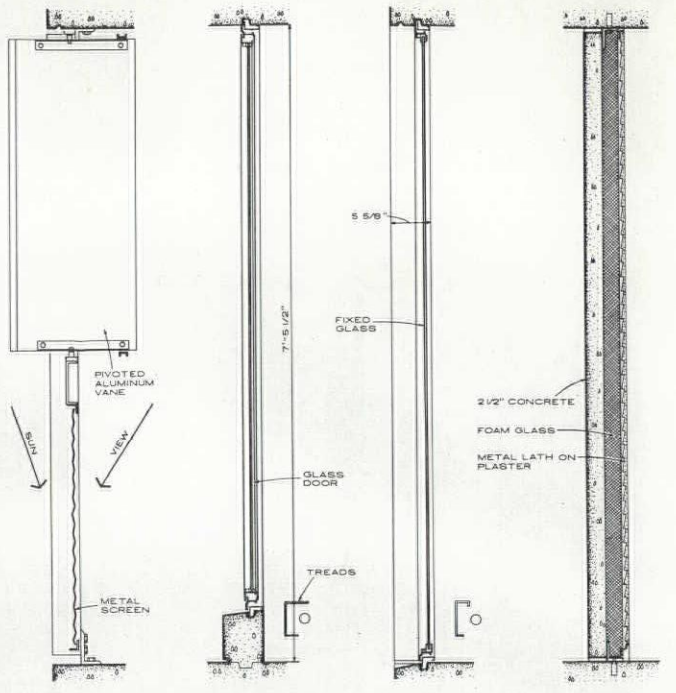
MODULATION OF FAÇADES

In contrast to current apartment house architecture with its anonymous façade and monotonously repetitive plan for the "average" family, the architects of this residential complex believed strongly that families vary greatly, that their needs differ, and that maximum choice of interior space, of amounts of light, of indoor versus outdoor space must be provided. This variety is most strongly expressed on the exterior walls **(1)**, where balconies are projected or suppressed, window and wall panels adjusted in size and placement. Taking into further consideration the various exposures and views, each façade differs from the next. For example, living rooms facing west toward the Charles River have balconies protected by pivoting sunscreens **(2)**. Facing south, the window areas are reduced, the louvers eliminated, but balcony overhangs provide the necessary shade to the floor below. All of the buildings are entered either from the east or north, and it is along these comparatively flat façades **(3)** that the skip-floor corridor pattern becomes evident.

Use of color reinforces the differing planes. The natural gray of the reinforced concrete predominates on the bedroom/corridor sides on the north and east while white-painted balconies on the living-room sides and green metal ventilators provide touches of brilliance on the south and west façades.



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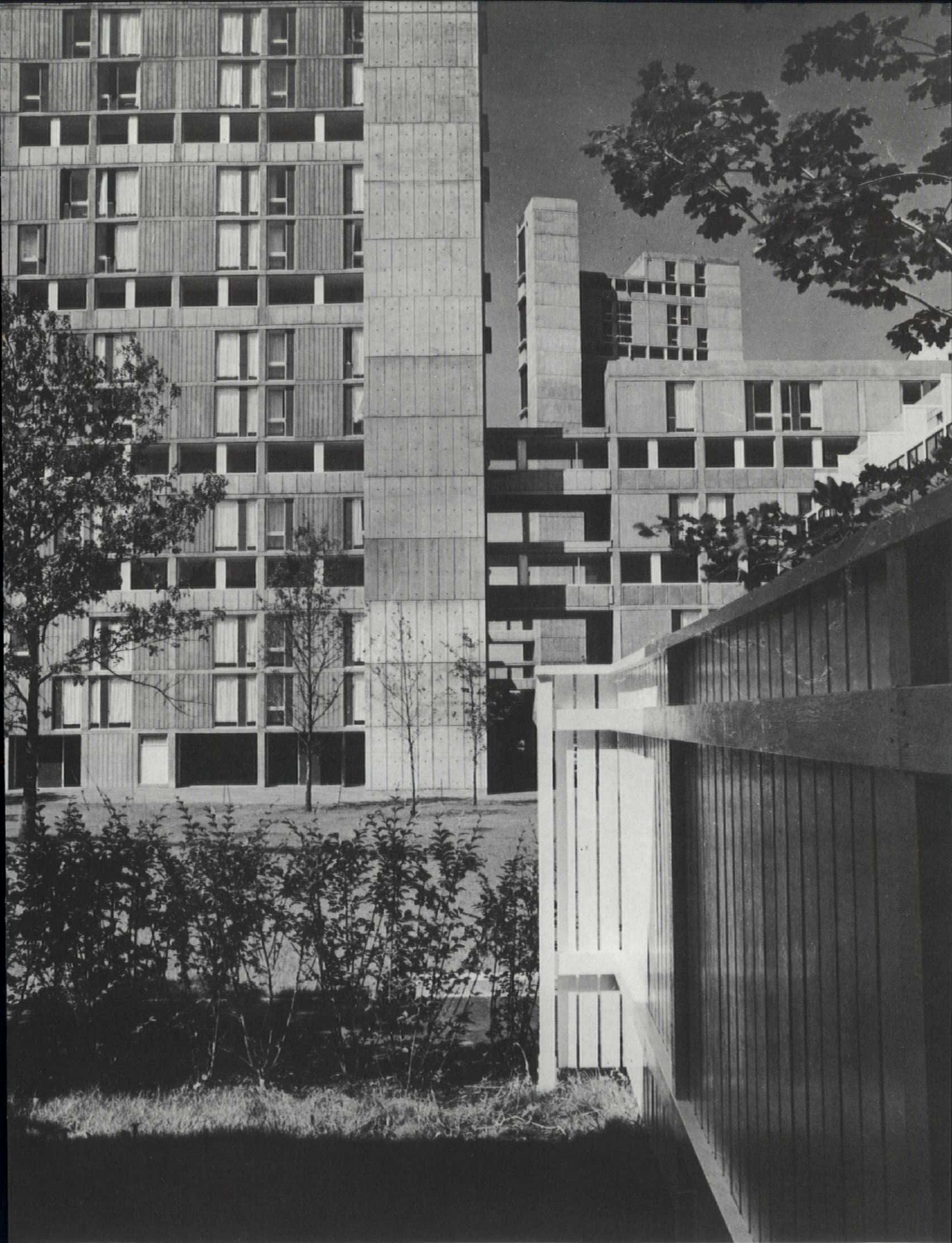


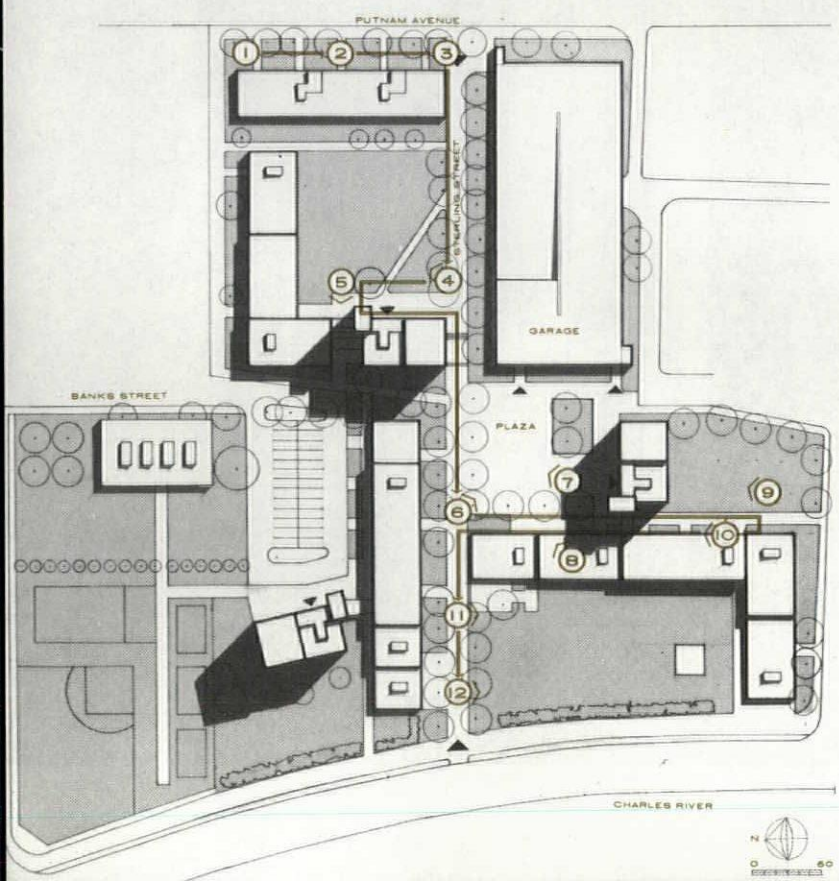
MASSING OF THE UNITS

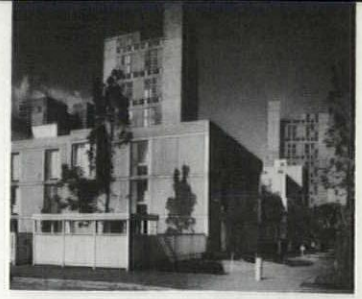
Establishment of a standard unit was extremely important in promoting economy, speed, and orderliness of construction. But even more significant is the massing of these units, both vertically and horizontally, to gain exterior spaces that, together, would create a total environment.

This design process was carried out almost entirely with the help of study models. Preceeding this design stage, however, the architects considered it essential to consolidate the site by eliminating all vehicular through-traffic. This was accomplished by negotiating with the city for the closing of Sterling Street and portions of Banks Street.

Putnam Avenue is the major approach road **(1, 2)** to the project. At its intersection with Sterling Street, a gate is formed by the low, three-story building along Putnam Avenue and the 352-car garage. The now brick-paved and tree-lined Sterling Street **(3)** forms the spine of the project, connecting the city with the Charles River.

The spatial sequence begins with the first of the three main spaces—a green common **(4)** (170′ x 170′), enclosed along its east and north sides by the stepped and balconied façades of low buildings. To the south, the common is walled in by the garage, to the west by one of the 22-story towers. White wood fences—the private yards of ground-floor apartments—reach into the common to enforce the tie between buildings and ground. A surprise opening between the tower and the adjoining structure **(5)** affords a glimpse into a small guest parking court. The brick-paved spine continues past the end of the garage **(6)** to open unexpectedly into the main central square **(7)**—a brick-paved plaza ringed on all sides by public facilities. This major space is formed primarily by low buildings, but is carried dramatically upward by the three towers **(8)**. One of the openings of this court terminates in a children's playground, also designed by the architects **(9)**. From the central square **(10)**, Sterling Street leads past one of the seminar rooms and its terrace **(11)** into the third major space **(12)** bordering the public promenade along Memorial Drive and the Charles River.

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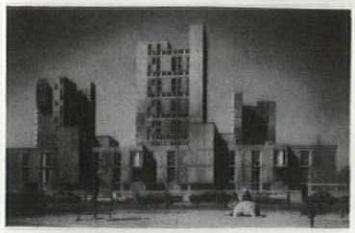
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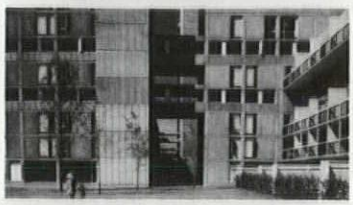
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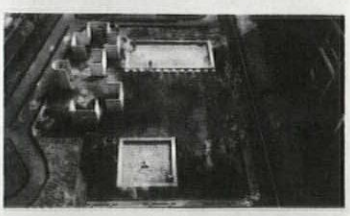
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NEIGHBORHOOD AND UNIVERSITY

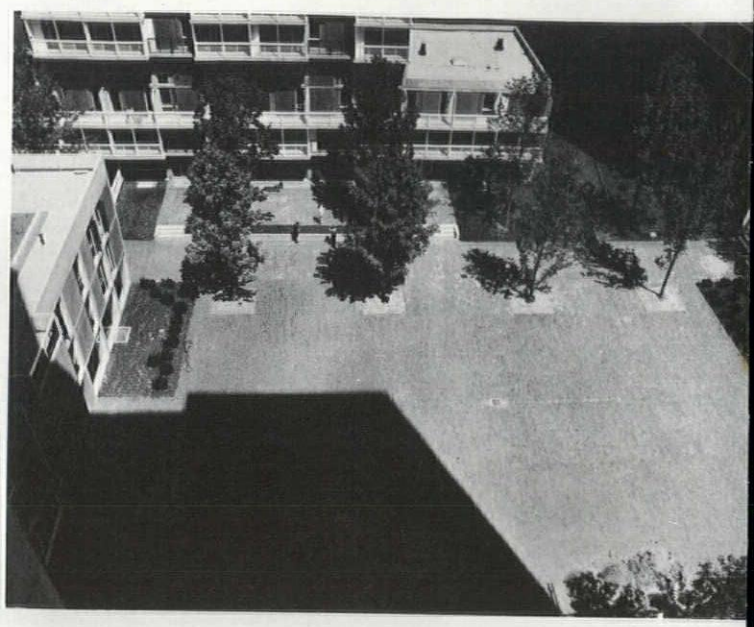
In bonding the new building complex to the larger neighborhood—a goal desired by architects and university alike—the designers faced challenging and in some ways contradictory tasks. On the one hand, the architects were asked to tie the project into the comparatively low scale of the neighborhood, but at the same time to supply the much higher density required by the university; to open the new spaces to the neighborhood, while still shielding the views from the often dilapidated environment; to open a sequence of spaces and pedestrian walks to the riverfront recreation areas not only for the tenants but also for the townspeople, but to effect this without encroaching on the privacy of those living in the apartments; and finally, to place the high-rise units so as not to "obscure the sky," while still establishing their spatial relationship to each other.

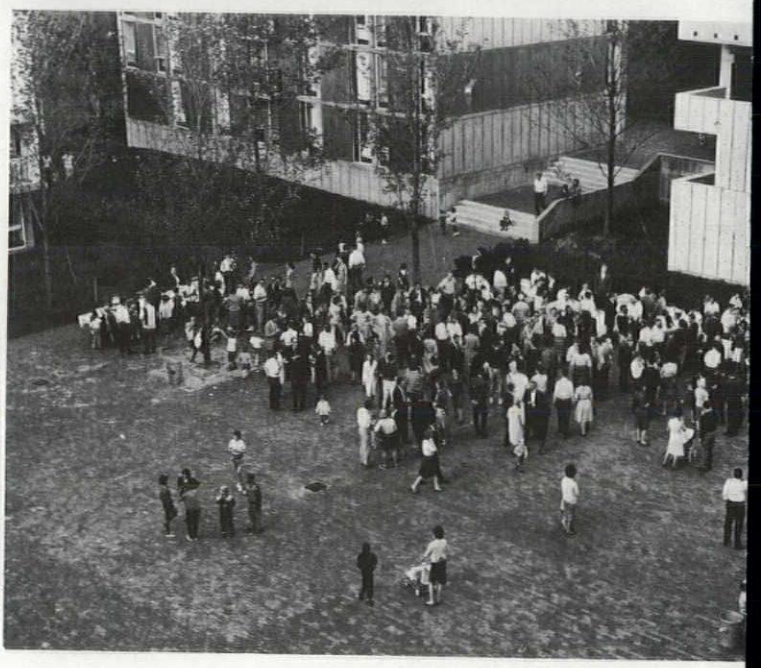
The site is a 10-minute walk away from Harvard Yard and is surrounded by three-story dwellings, a grammar school, and a public housing development.

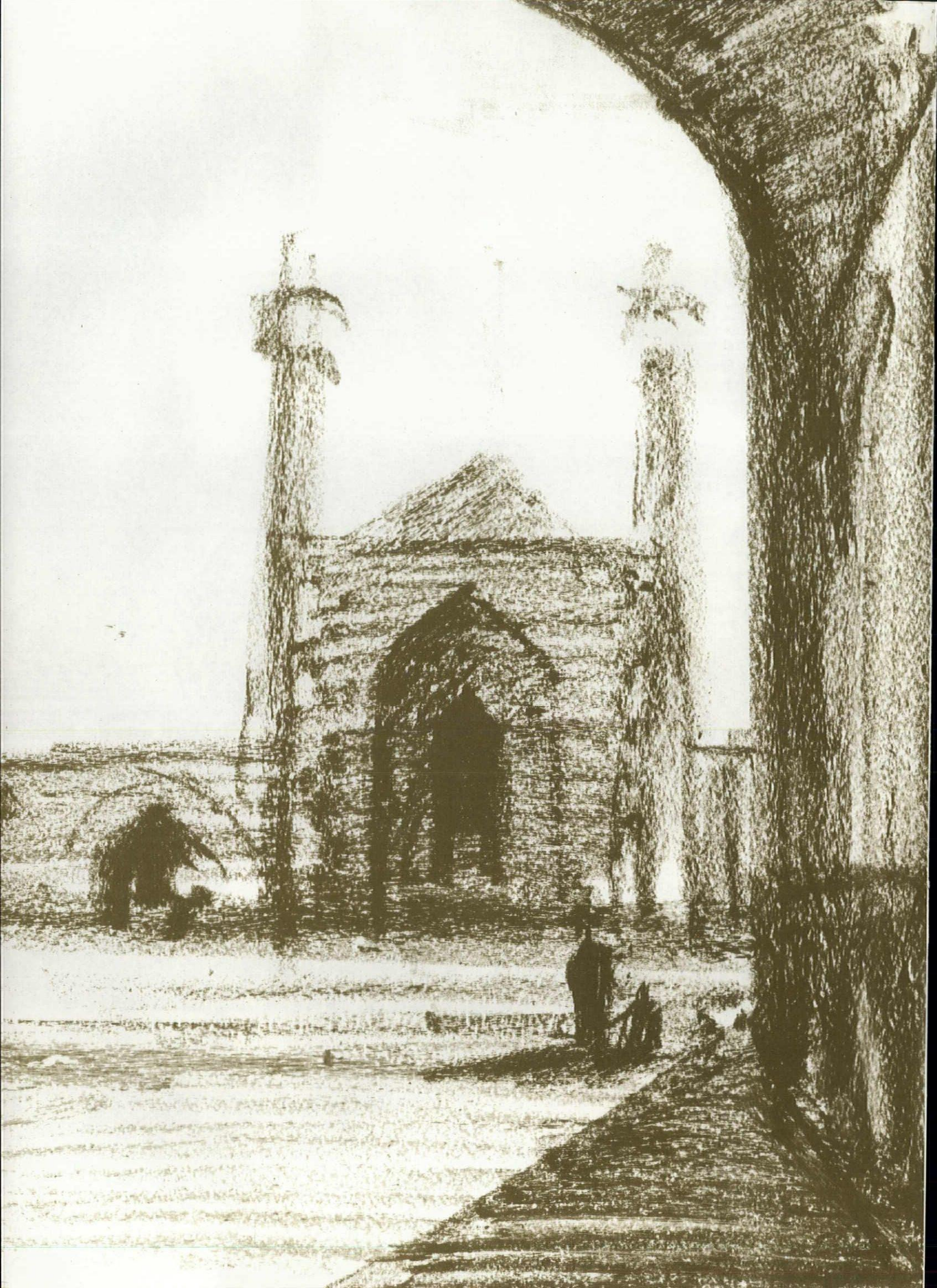
Contrary to today's often introverted residential planning, the existing neighborhood is in this instance allowed to penetrate into the new complex; the brick-paved walkway (*facing page*) to the river is intended for the students and their families as well as local residents. Further, it is hoped that the central brick-paved square (*right*), with its public meeting rooms, its drugstore and outdoor terrace, its dry cleaner and laundry, and nurseries will attract both town and gown to make it a lively and animated community center.

To effect the transition from the low neighboring dwellings as smoothly as possible, the new building complex rises gradually from the edges to the center, stepping from three to five to seven stories, while bridges attach the lower buildings to the markedly vertical volumes of the 22-story towers. In deference to the older buildings, the concrete of the precast panels along the balcony sides has been integrally colored a reddish-brown.

For the university, the new Married Student Houses—the latest link in the chain of Harvard development on the Cambridge side of the Charles River—maintain the tradition of the existing houses facing the river, while recalling at the same time the court schemes of the earlier buildings. And for motorists driving along the sweeping river roads are unfolded the ever-changing volumes of a fascinating composition in the round ■







JOURNEY TO THE EAST

Sketches and Comments by Victor Lundy

When Victor Lundy was commissioned to design the American Embassy in Ceylon, he made a trip to Colombo to inspect the site. (Although construction of the embassy has been delayed indefinitely, Lundy is still refining his design.) On the way to Colombo, he made a brief tour of Iran and India, which has had a strong influence on his architectural thinking since that time. He recorded his impressions of the trip in words, on film, and in the traditional repository of architectural observations—the sketchbook.

Reproduced here are a few selections from the roughly 100 pages of 14"x17" sketch paper that Lundy transformed, through the medium of oil pastels, into vivid images of the East. His notes on the individual sketches can be found at the end of this portfolio.

"To observe the remnants of other great times—to see the mighty sculpture at Persepolis against the sunset sky, to sit in the warm sunshine of an Isfahan courtyard and see the sun wash over the brilliant color of the tile, to hear the gentle wind through a fragile garden, to be taken over by the serenity—is to question one's own time.

"The creativity of Persia is not intellectual, vague, abstract, or accidental; it is purposeful, complete, intense, and disciplined. A craftsman sets himself the task of decorating a box with tiny ivory ornament, and he finishes the job beautifully and relentlessly; another craftsman takes on the job of surfacing an entire dome and pursues it just as relentlessly to the end. It is a lesson in discipline, and one feels that they are doing it to celebrate being what they are—alive and Persian.

"I had been warned to expect a gloominess, a blackness, a sadness in India. I had expected to be terribly depressed by the Indian scene, but—quite the reverse—I had a continual sense of great joy. I shall never forget walking out after the formalities of customs into the music of India—the thousands of birds, the honking of taxis, the ringing of bicycle bells. There is the movement of people all the time—movement on foot, on bicycles, by car, by ox-drawn cart; an impression always of humanity moving somewhere relentlessly... a constant stream of color... the *saris,* shockingly strong and bright and happy in endless combinations of choice, brilliant against the earth-colored background and blue sky. I felt a great sense of richness about India. Despite its great size, there is a feeling that every square foot has been trod on by history.

"Ceylon has a different feeling from India—little sense of history, little sense of joy. Apparently what had been developing as true Ceylonese culture was arrested by centuries of colonial rule. Everyone—native and foreigner alike—shows the debilitating effect of a hot, humid jungle climate all year 'round.

"The lessons of the past are there for all of us to use; they are there in spite of our efforts to disregard them or avoid them under the guise of originality. Man learns from man. Depending on our culture or time, we draw different lessons from the same things, but that is only proof of the endless variety and expression there is in man's inevitable movement toward survival.

"When I see a thing of beauty, I worry it over, experience it, and extract out of it all that I can. When the process is over, the experience is part of my being forever, limited only by the stage of development I was in at the time. This is the process that ensures the never-ending continuum of life."

—VICTOR LUNDY

◀ *1. Isfahan*

◀ *2. Polonnaruwa*

3. Polonnaruwa

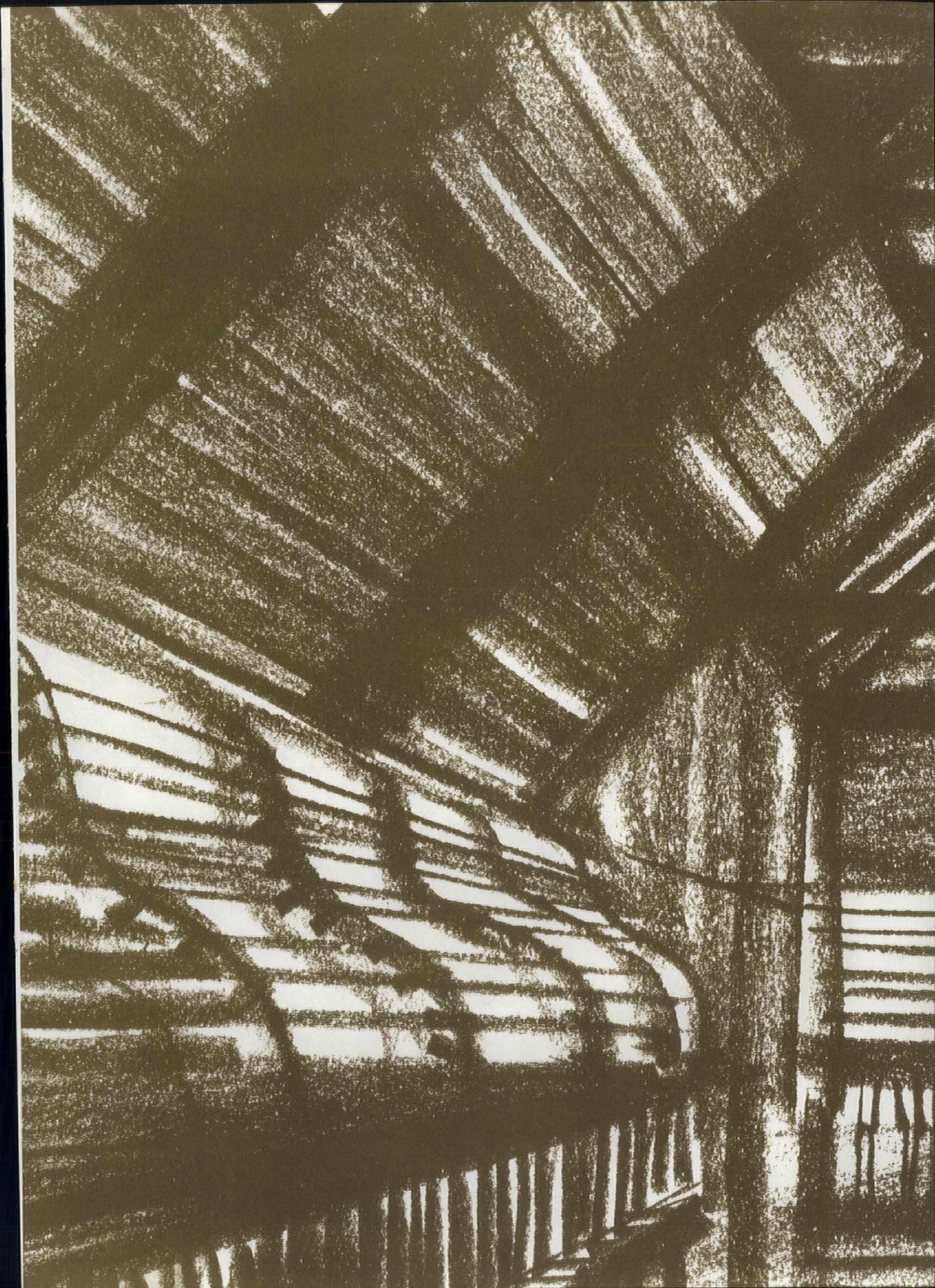
4. Polonnaruwa

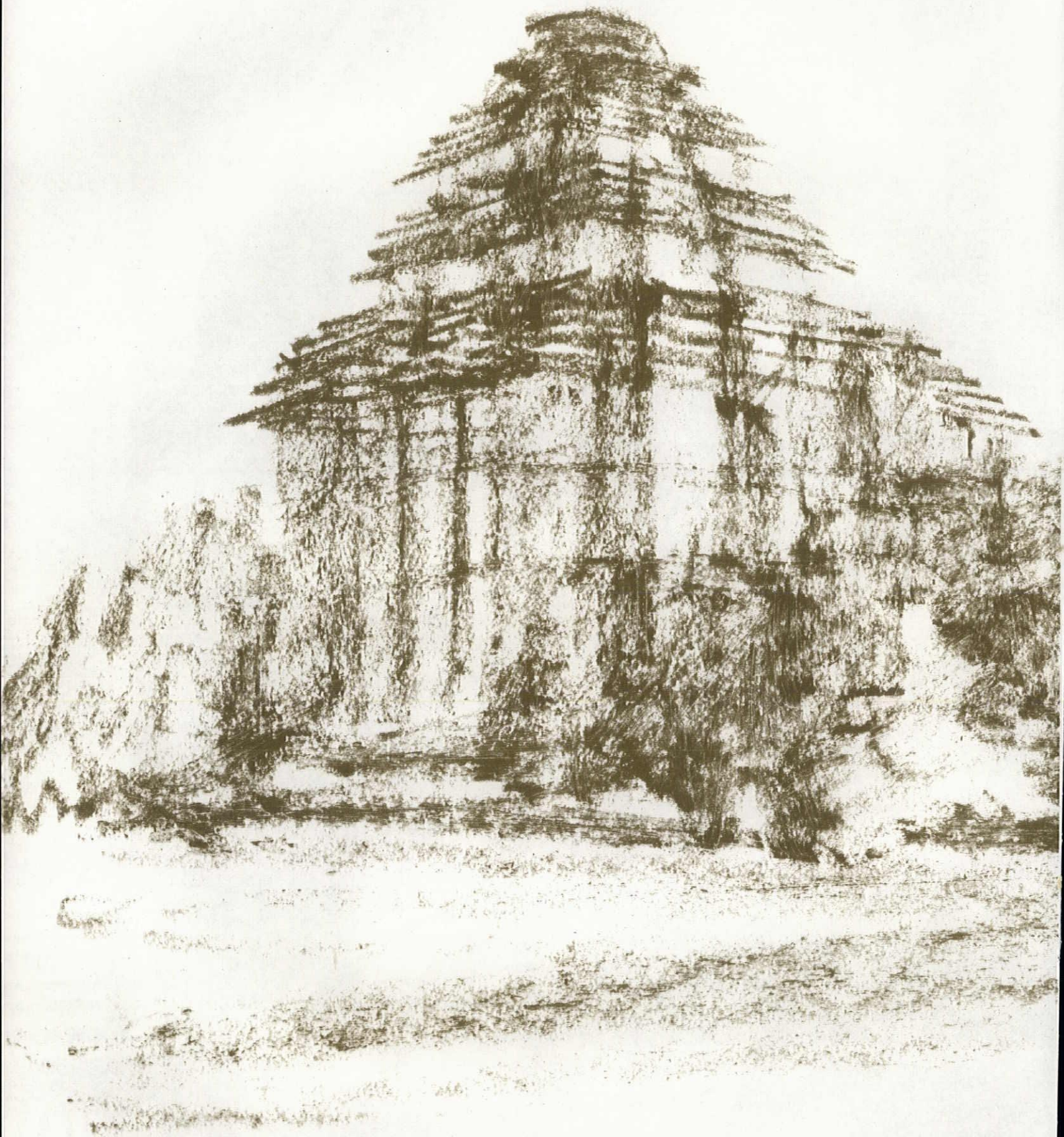
5. Agra

6. Padmanabhapuram

7. Padmanabhapuram

8. Padmanabhapuram ▸





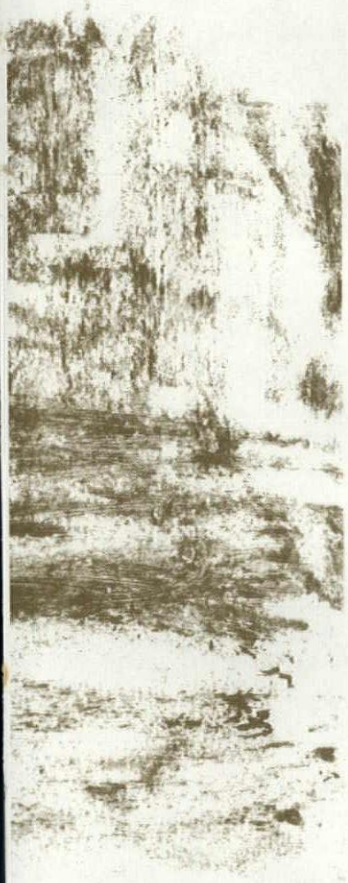
9. Konarak

Notes on the Sketches

1. ISFAHAN, IRAN: "There is an over-all visual harmony in Isfahan—a monotone of earth colors running through the lower parts of most buildings, with the surprise here and there of vivid tile-encrusted jade and turquoise colored domes, minarets, and fronts in powerful relief against the sky. The people are part of it—women in black and men in dark clothes etched sharply against the earth-colored background."

2. POLONNARUWA, CEYLON: "In a jungle clearing near this deserted ancient capital one finds the shrine of Galvihara, three figures carved out of a single huge boulder. The central figure, the head of which is shown here, is a Sleeping Buddha 46 ft long; it is flanked by a Standing Buddha and a figure of Ananda, the Buddha's favorite disciple."
3. "The ruins at Polonnaruwa are typical of ancient Ceylonese architecture. Among them is the Watadage, a circular relic-house on a raised mound."
4. "The entry stair at the Lankatilaka, largest shrine at Polonnaruwa, exhibits motifs that recur in ancient Ceylonese stairs—volutes terminating in slabs with bas-relief figures."

5. AGRA, INDIA: "Walking across the white marble platform of the Taj Mahal, looking into the dark red arches of one of the flanking buildings, I was reminded of the space and color of the Piazza di San Marco in Venice. The apparent whiteness of the Taj Mahal is due in part to the blue of the Indian sky, the sepia of the Jumna River, and the red of these side buildings."

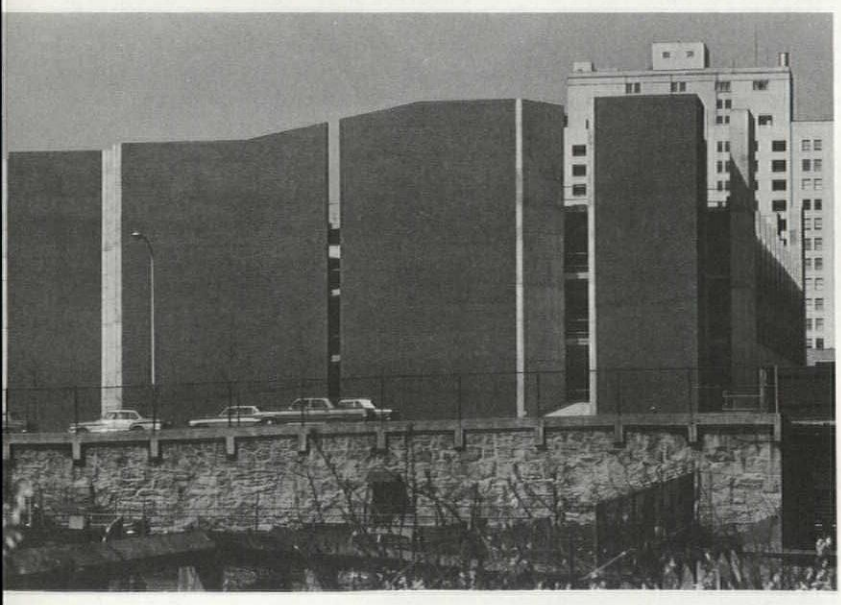


6. PADMANABHAPURAM, INDIA: "The palace compound at Padmanabhapuram, near Trivandrum at the southern tip of India, is an accretion of many buildings, the earliest dating from the 14th Century. Its perfection is obviously a cumulative labor of love and craftsmanship—unprecious, unstudied—achieved by countless master craftsmen doing the very best possible with each problem as it occurred, giving all of their time and effort to this one thing. The exterior is forbidding and fortlike, but inside are courts such as this one, where a stone pavilion is surrounded by a wooden arcade, with only a narrow strip of light between them. The scale is small; the eaves come down almost to eye-level, fending off the glare of the equatorial sky."
7. "A view through one of the stone-columned pavilions of the palace."
8. "Sculptured teak brackets carry teak slats that make a beautiful lacework of light in the narrow galleries that run along the upper floors of the palace. Their projecting cross-section serves many purposes: protection from the sun, privacy, ventilation, ease of observing the courts below. . . . To have savored the experience of this palace makes me a wiser man."

9. KONARAK, INDIA: "Of the many temples on the coast of Orissa, the 13th-Century Temple of the Sun at Konarak is the greatest. Time has been the great simplifier at Konarak, releasing the best part of the temple from the cumbersome tower that once adjoined it. What remains is a mighty square pile of masonry on a 'chariot' base, with 12 pairs of wheels pulled by straining stone horses. I had lately seen many structures where sculptural adornment ran away with itself and became a separate end, detached from its architectural base. Seeing this temple from a distance, one was aware only of a surface richness that distinguished some parts of the building; as one approached, the relief came to life—really exquisite and perfectly adjusted to the Indian sun. Here was a fully integrated work of art in which sculpture and architecture were one, and it gave me real joy to see it."

UNIVERSITY PARKING GARAGE

PARKING GARAGE FOR UNIVERSITY OF PENNSYLVANIA • PHILADELPHIA, PA. • MITCHELL/GIURGOLA, ASSOCIATES, ARCHITECT



The simplest and most economical container was required by the University of Pennsylvania for the automobiles of its staff and students. Moreover, the parking system had to be uncomplicated, with service and supervision at a minimum. The garage was to be easily expandable from 360 cars to an eventual 600, and adaptable to a later change in street elevation. Most importantly, the new building was to be an appropriate addition to the university complex and the existing neighborhood.

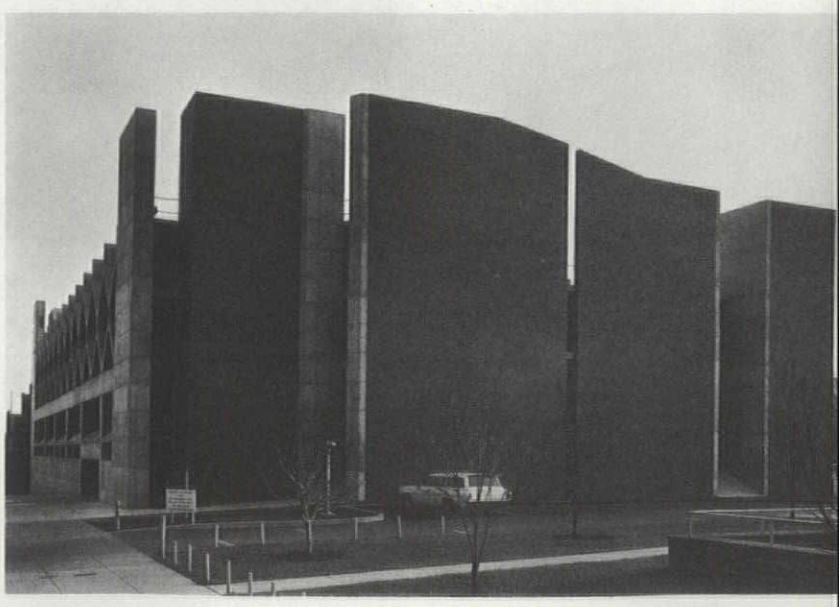
Since the garage was to serve primarily the half-day or day-long parking needs of the faculty and students, rather than the usual short-term needs of shoppers, capacity rather than rate of turnover was the prime consideration. To this end, split-

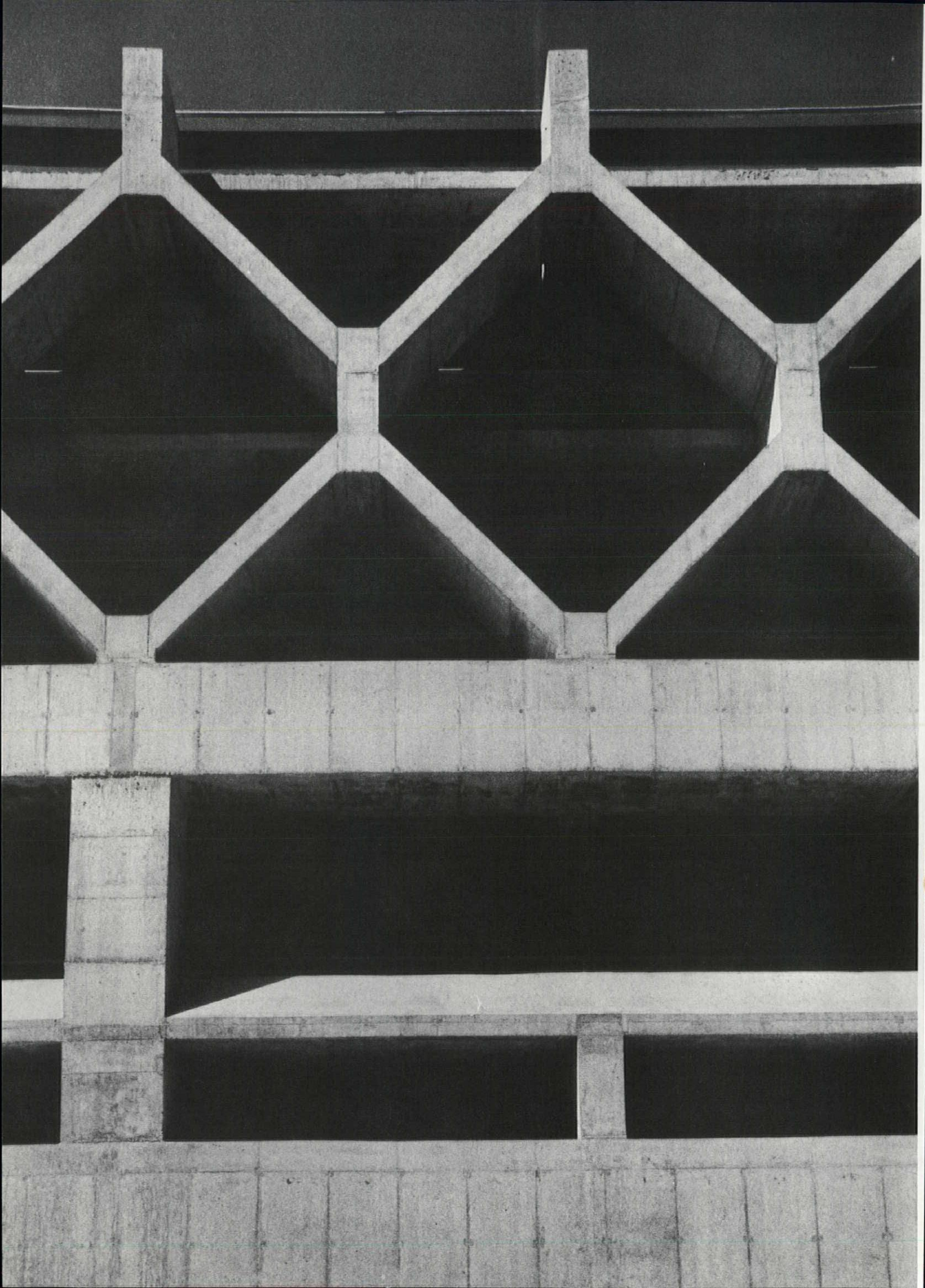
PHOTOS: ROLLIN R. LA FRANCE

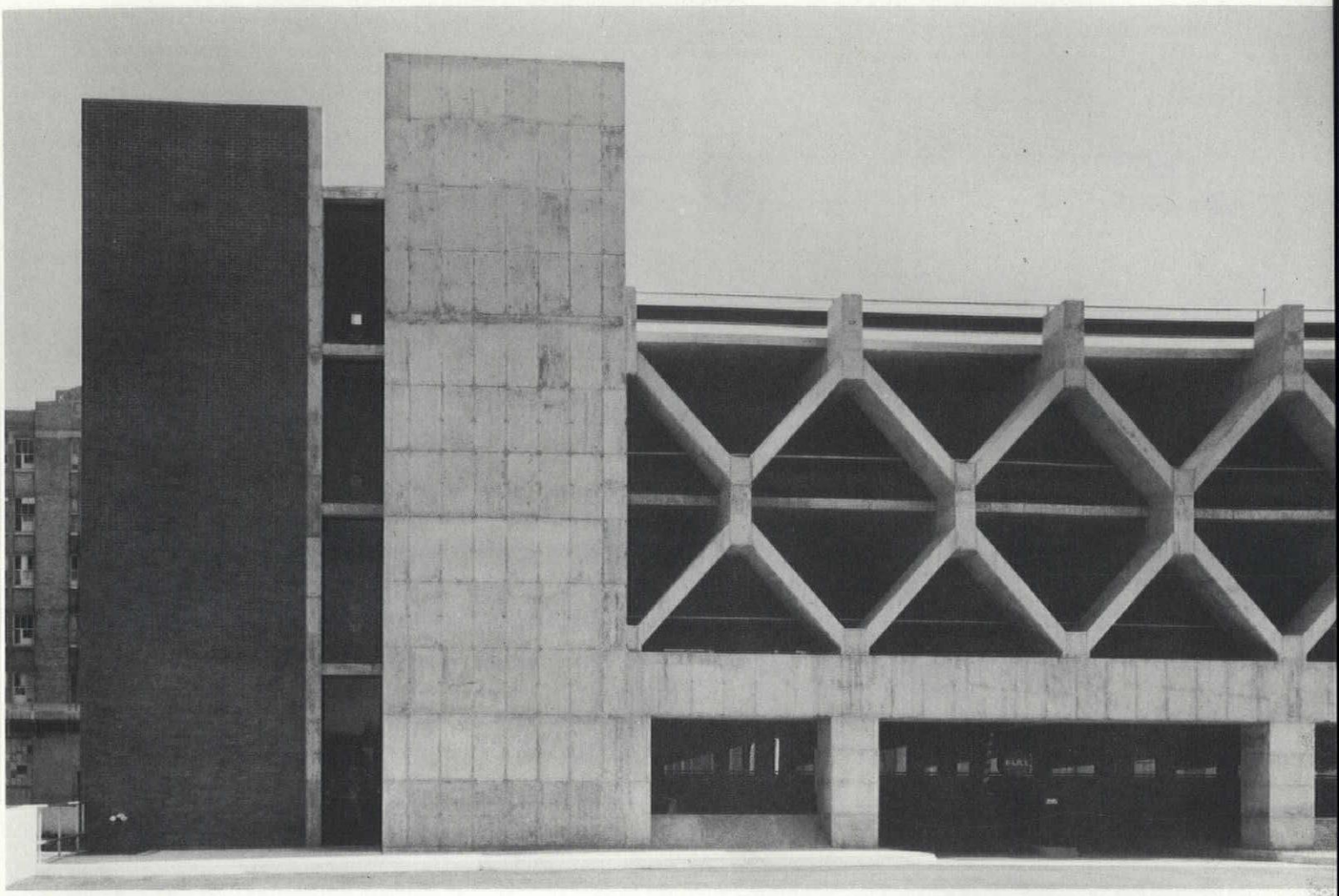
level parking platforms, with ramps at both ends, were deemed the most efficient solution within the limits of the site. Circulation is one-way, counterclockwise, along separate up-and-down ramps. For ease of maneuvering, for safety, and for general flexibility, the parking platforms have clear spans of 60 ft, accommodating two rows of cars parked at right angles.

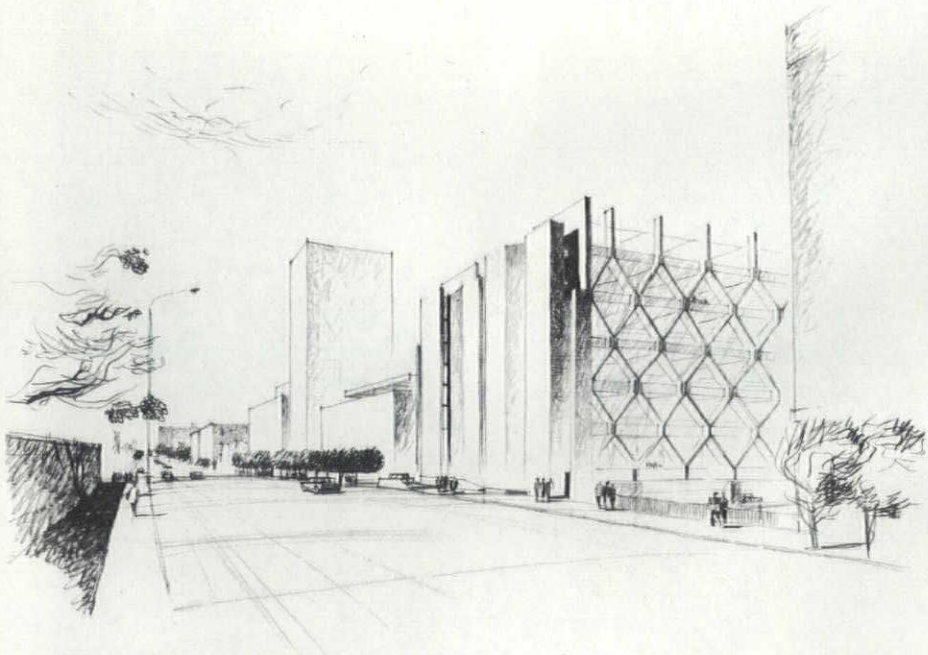
The structural frame is entirely of poured concrete. Slabs of 5 in. thickness are supported on concrete beams (14'-4" o.c.). These are tied into the center columns and longitudinal outer beams, or, at the typical upper floors, into the juncture points of the concrete grid.

Expansion of the building from the present 9 parking platforms to an eventual 13 will be easily effected, since over-sized footings have been installed and keys for the interlocking of additional stories have been provided in the concrete work. The expanded structure is to be equipped with









elevators—one serving each parking platform. Future raising of 32nd Street to the level of Walnut Street has been anticipated by maintaining the 28′-8″ column-spacing on the floor above the present grade level, assuring an easy change-over to a new entry and exit point at the higher elevation.

Facing Walnut Street (*see sketch, showing structure in final stage*) and Drexel Institute, the ramp-ends of the garage have been enclosed to afford protection from the weather, and the exterior facing of these walls with dark iron-spot brick is an attempt to establish a relationship of color and texture between the new garage and the existing university buildings.

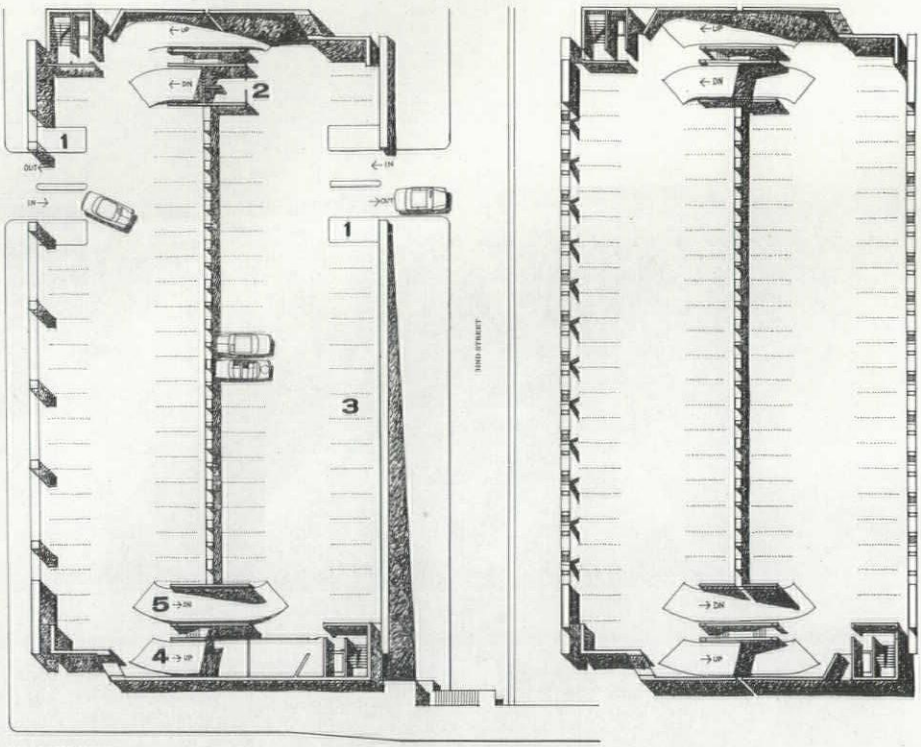
Schulcz & Padlasky were the Structural Engineers; Albert C. Wood Associates, the Mechanical Engineers. Haverstick-Borthwick Company was the General Contractor; Economy Forms Corporation, the Steel Form Contractor ■

Original design for precast concrete assembly was later adapted to poured-concrete construction, using 2' x 4' steel forms. Placed carefully, according to the architect's direction, the joint patterns have become an important design element. Use of the steel forms insured precise form alignment and resulted in a smooth finish that required no further treatment.

Parking platforms slope toward center, where rain water is collected and drained.

Artificial illumination is fluorescent. Natural light has been admitted at strategic points of the ramp enclosures. But to shield drivers from the glare of direct light, the openings have been designed to admit light across the path of travel.

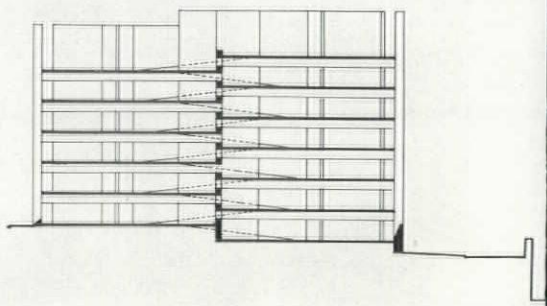
The resolution of the disparate scales of long-span concrete structures, automobiles, and human beings is revealed in the juxtaposition of concrete grid, steel channel bumper, and galvanized steel pipe handrail on the east and west fronts.



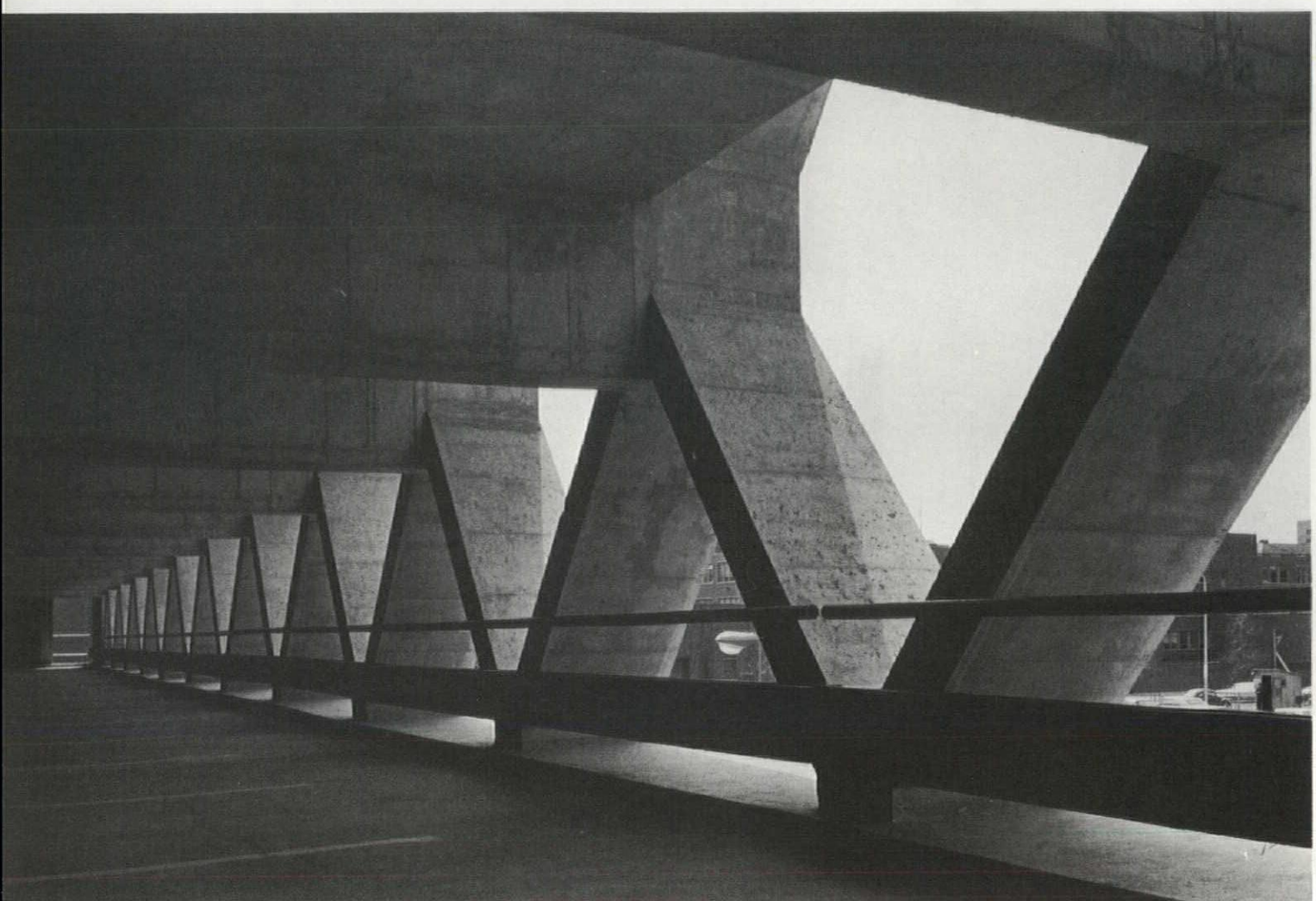
1. WAITING PLATFORM
2. OFFICE
3. PARKING
4. RAMP UP (IN)
5. RAMP DOWN (OUT)

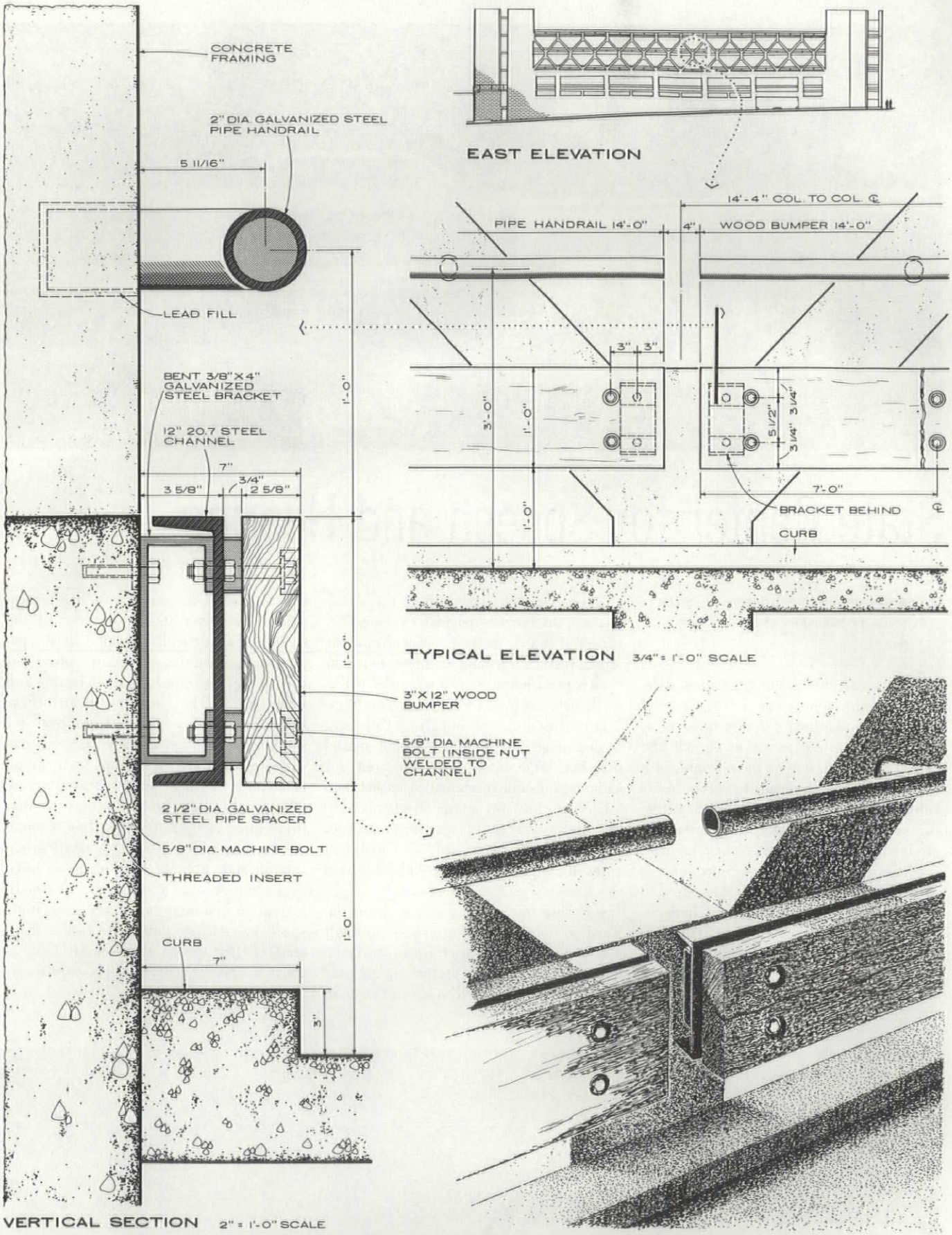
WALNUT STREET

GROUND FLOOR

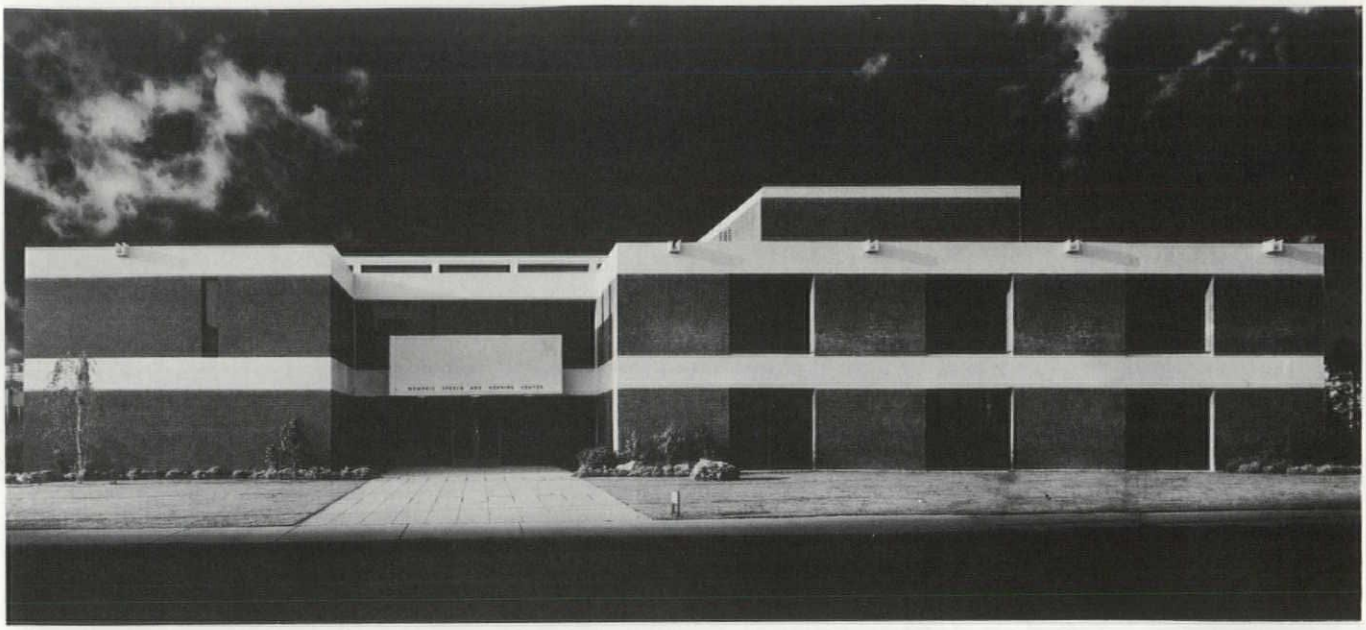


SECTION





GARAGE, UNIVERSITY OF PENNSYLVANIA: Philadelphia, Pa. MITCHELL/GIURGOLA ASSOCIATES, Architect	SELECTED DETAIL GUARD RAIL



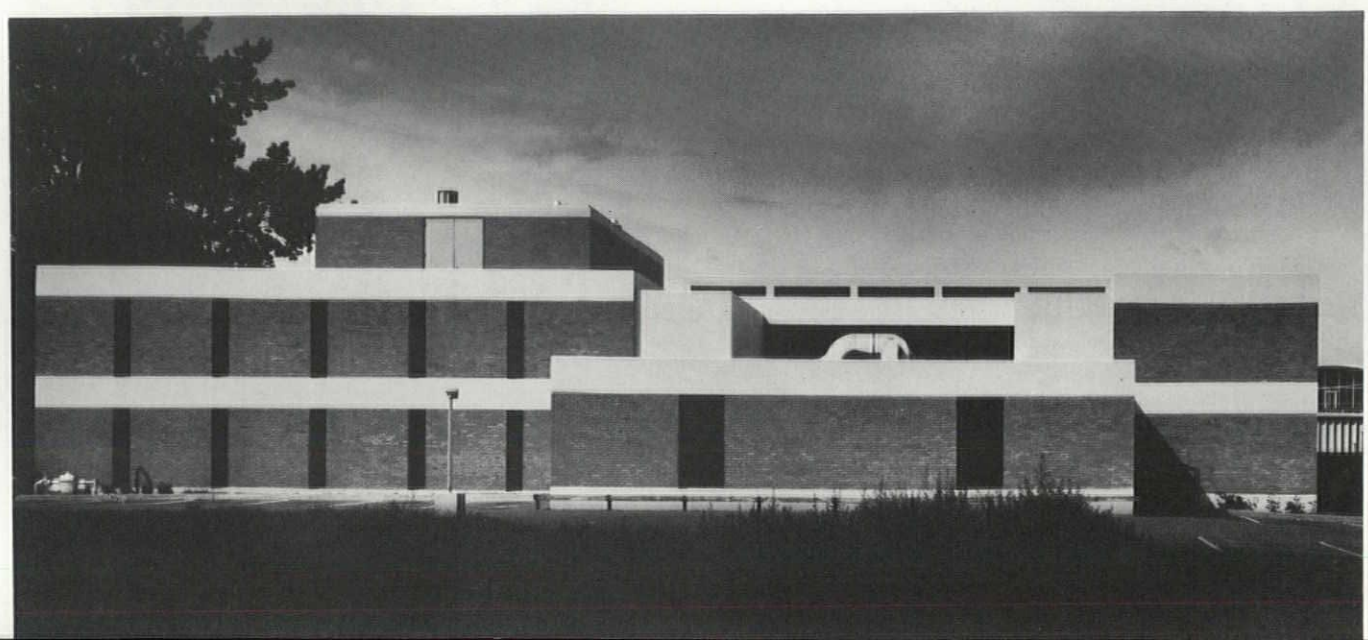
State Center for Speech and Hearing

MEMPHIS SPEECH & HEARING CENTER • MEMPHIS, TENNESSEE • MANN & HARROVER, ARCHITECTS

Working with a low budget and a strict necessity for sound control (the State of Tennessee was client for this facility for the testing and correction of speech and hearing), the architects have produced a building that is noteworthy even in its subdued way. It is a quiet departure from the quality of antiseptic mediocrity that all too frequently results when medical facilities are built under government sponsorship. This design, however, has engaged interest since its inception; it was honored with a P/A Design Awards Citation in 1961, and the building "as built" is substantially the same as the design that won the award in project stage.

The architects conceived of the building as "an introverted masonry mass"—turned inward against noise from the street. It is background architecture rather than a focal point, its soft irregular brickwork harmonizing with its surroundings. The intention also was to give it "strength of character and small visual and spatial delights." Facilities were required for examination and treatment in speech and audiology, also for administration, teaching, and assembly. (The square urban lot is adjacent to a state medical school, and a teaching program for technicians from the school is part of the center.)

Entering the building, one is drawn inward to a large waiting area—the adult section looks out onto an open courtyard below; the children's section opens onto a supervised play yard. Also on the main floor are some therapy rooms and offices. Audiology test cells at the rear of the entry are acoustically isolated in a separate unit. Upstairs are more rooms for speech therapy, and for speech testing and interviewing. The hope was to give these areas an open residential quality, for soothing psychological effect. On this second floor, too, are classrooms for training and group therapy; large rooms alternate with smaller observation rooms so that (depending on the balance of light through the one-way vision panels) a small group can observe a large session, or a large group can observe a small one. The auditorium on this floor can be left as a single space, or can be divided into two or three sections—for use as an assembly hall, as a social hall for patients, or as additional training classrooms.



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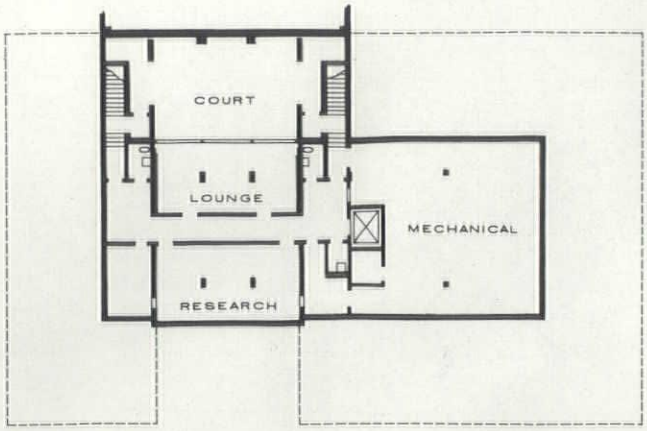
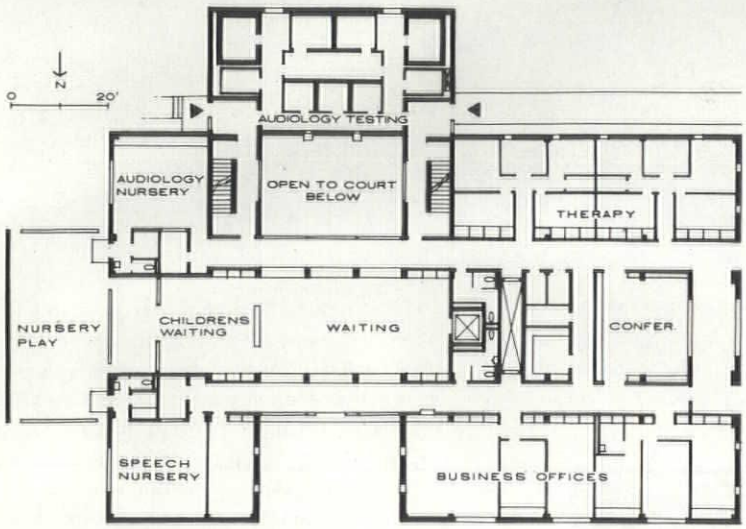
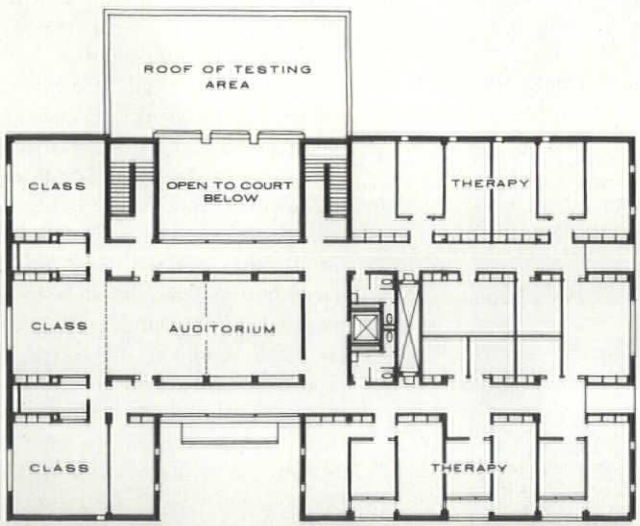


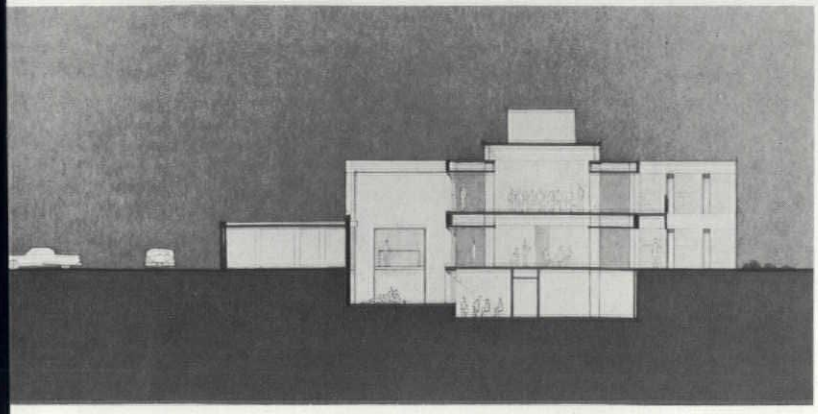
BASEMENT



FIRST FLOOR



SECOND FLOOR



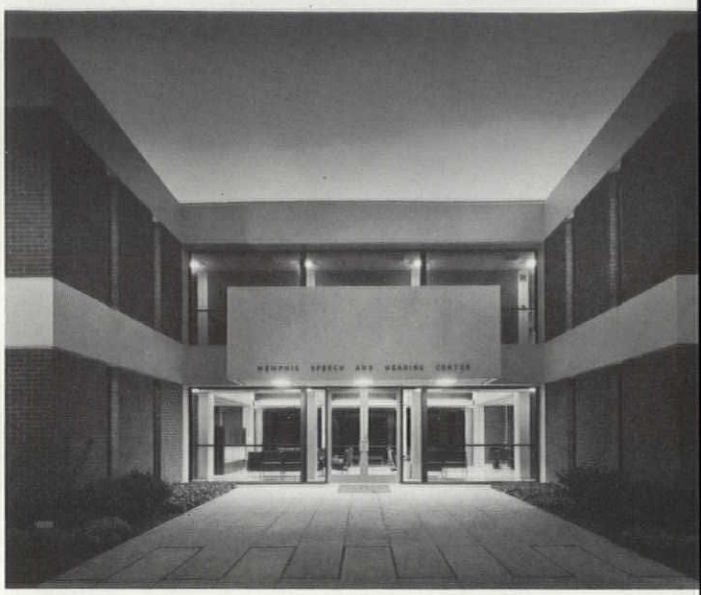


PHOTO: ALEXANDRE GEORGES

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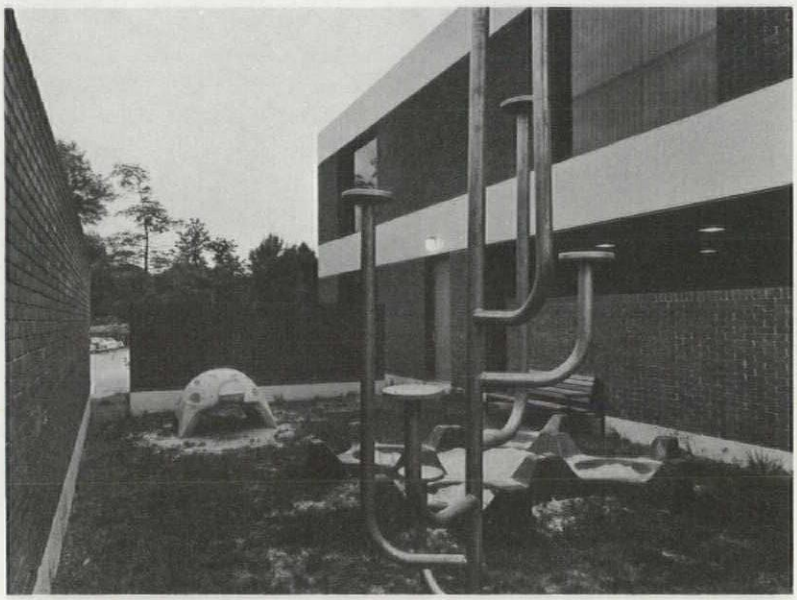
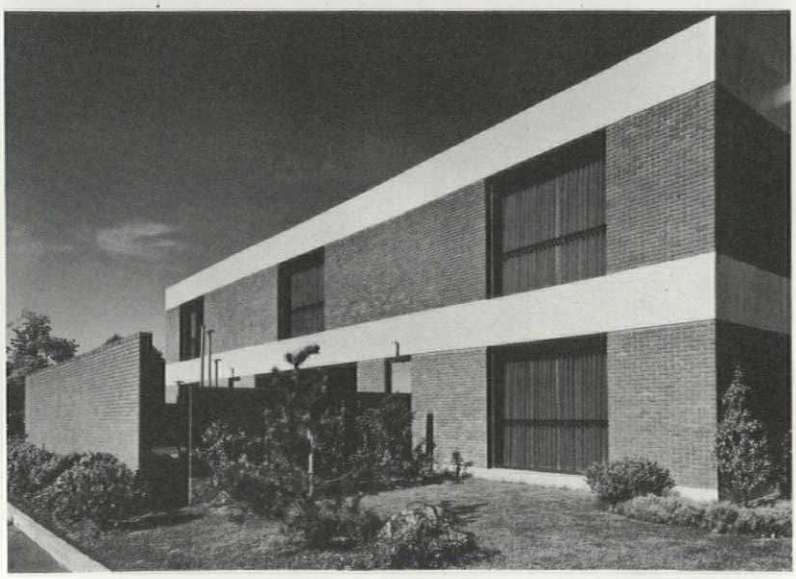
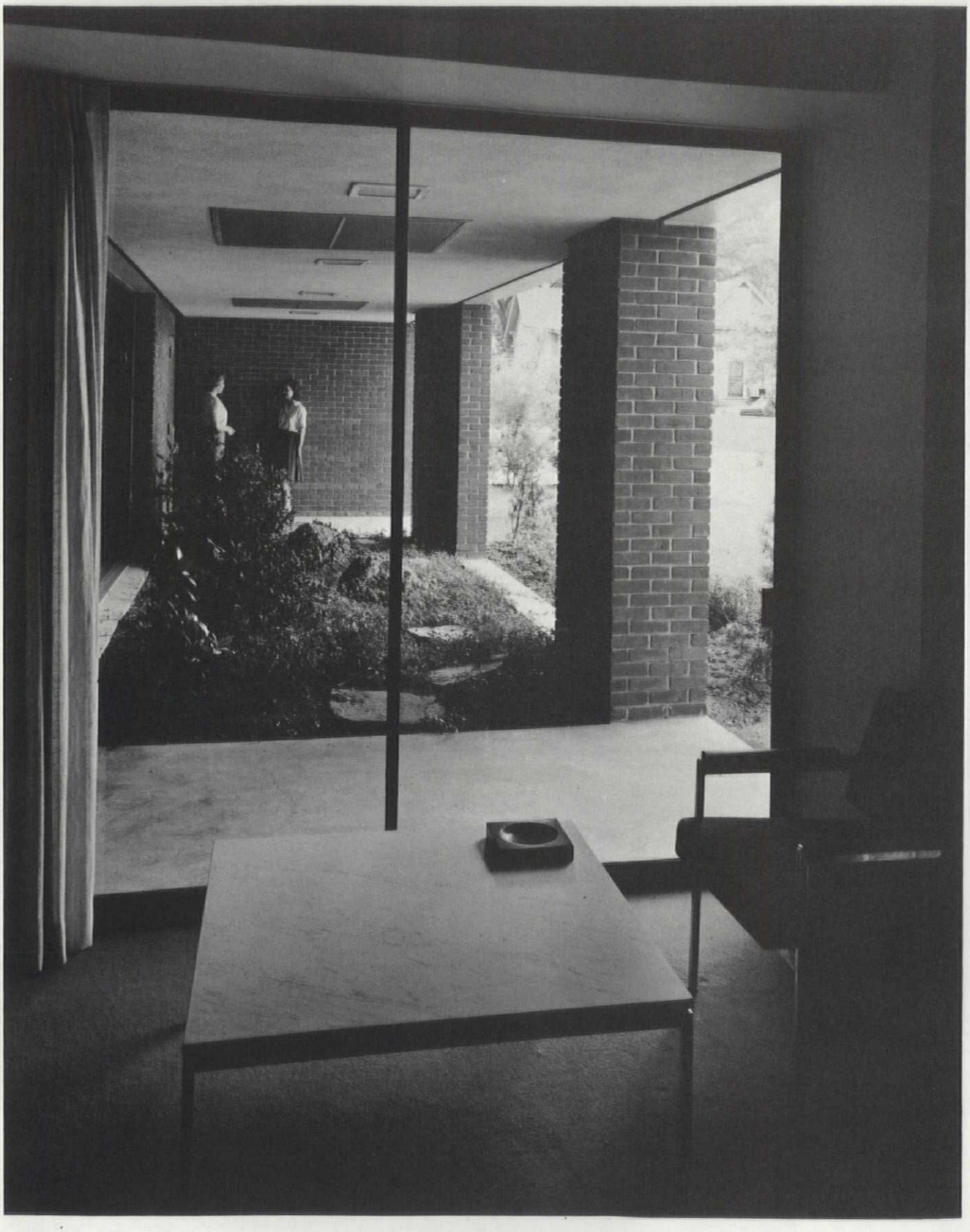




The structure is of reinforced concrete, chosen for economy and for its low sound transmission. Pan-joist floor slabs represent another economy measure. The architects have said that "the only mature and responsible way to approach architecture" is to assume that economic and other practical considerations are part of the requirements.

Acoustical considerations were given top priority. After much research, structural clay tile—plastered on both sides—was selected for all interior partitions. Ceilings throughout are acoustical plaster; there is carpeting in all offices and testing areas. Even the windows defer to the acoustical problem; since the weak point in the design of such a building is usually the windows, they have been reduced here to "view slits" in rooms where the control of sound is important. The architects comment: "The study given the acoustic problems has resulted in one of the quietest buildings we have ever experienced. The building is so quiet that when in full use it becomes a trifle lonely." Décor and colors of the interior are neutral, to avoid overstimulating the children. Their speech and hearing defects are often the result of brain damage that also leaves them with a very short attention span.

Total cost of the construction is approximately $437,000; cost per square foot, $17.23. Robert Ernest was Designer; Edward A. Keyes, Project Manager. Consultants were S. S. Kenworthy & Associates, Structural Engineer; Henry C. Donnelly, Mechanical Engineer; and Gordon N. Stowe & Associates, Acoustical Consultant ■



A Study in Wood

HUGO WINKENWERDER FOREST SCIENCES LABORATORY • UNIVERSITY OF WASHINGTON, SEATTLE, WASHINGTON • GRANT, COPELAND, CHERVENAK & ASSOCIATES, ARCHITECTS

The last major wooden building on the University of Washington campus was built in 1909, for the Alaska-Yukon-Pacific Exposition. Wood, in any case, is not a common material for halls of learning. But it was inconceivable that this laboratory be of anything but wood: the building must serve the many-branched but single-stemmed purpose of providing facilities for a graduate research program in the College of Forestry; offices and meeting rooms for the Institute of Forest Products; and a suitable image for the major industry of the Northwest—forestry. Only wood would do.

Appropriately enough, this Forest Products Science Building seems to be almost in the woods itself. The site—along Rainier Vista, the main axis of the campus—is endowed with a fine stand of trees; a particularly beautiful Colter pine, to be saved at all costs, now graces the main entrance. From the outside, the abundant fir trees all but obscure parts of the building; from the inside, they brush softly against the glass.

Robert A. Chervenak, the architect, describes his early thinking: "I wanted the student to feel that he was working within the very material he was studying. Secondly, I wanted this building to exemplify to the industry and to others that it truly represented what the inner functions were, and that wood can be used both structurally and as a skin material very beautifully and reasonably." (Total construction cost: $21.51/sq ft, including all laboratory equipment.) Chervenak reports that a special problem of using wood was to give this building "at least a nodding acquaintance" with the surrounding Collegiate Gothic buildings of brick and stone.

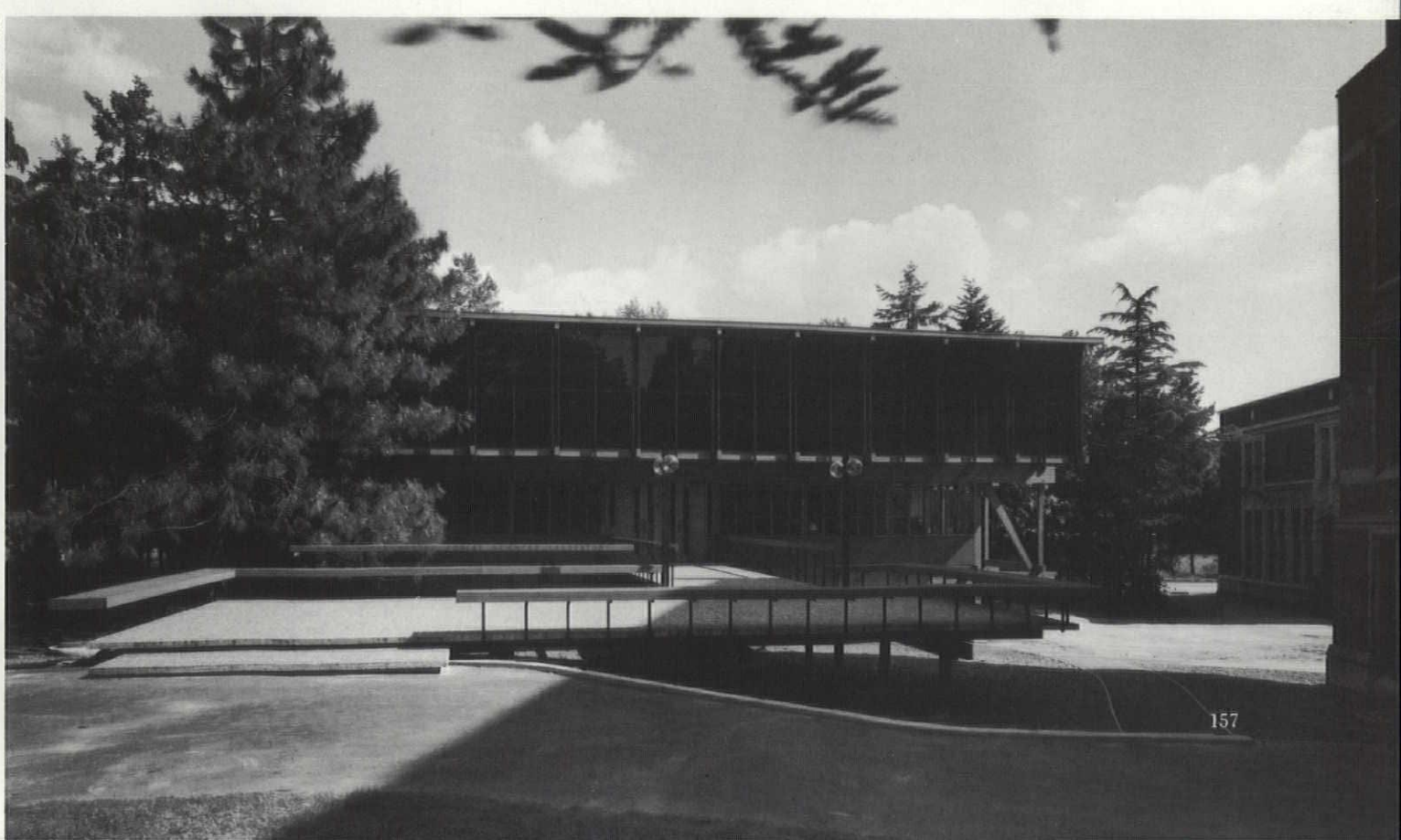
Among the required facilities were labs and offices for graduate students. By placing offices on outside walls, and giving them a pleasant outlook, interior space for research was kept free of direct sunlight. The solar screen of gray glass maintains a controlled environment for instrumentation in the offices; experimentation, however, is carried out in the lab areas. Labs are set up for chemical, electronic, and general explorations, with all partitions between them removable, to provide the flexibility demanded by changing techniques of research. (Another possibility for adapting to the future: extending the facilities to the south with "a nearly identical type of building.")

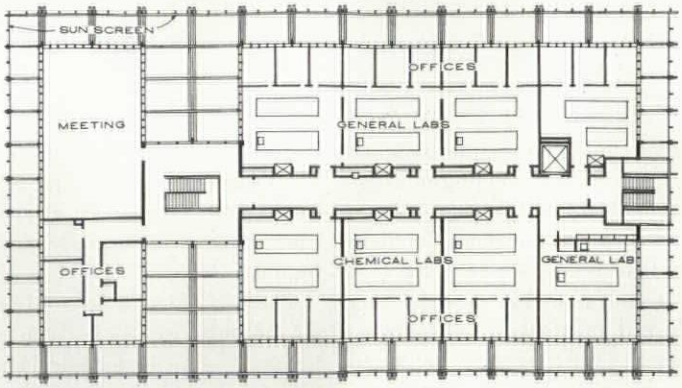
Also required were seminar rooms and offices for the Institute of Forest Products, which was constituted, in part, to operate as liaison between the college and industry. From time to time, industry and university representatives meet to discuss problems that concern forestry and forest products.

One of Chervenak's problems with forest products resulted from establishing the long block of flexible interior space. Chervenak explains that the corridor walls become pipe chases and are permanent shear walls in the longitudinal direction, but some method had to be devised to withstand horizontal stresses in the transverse direction. The boomerang arches on the exterior of the building replace the shear walls normally required. "Another interesting fact," says the architect, "is that a double-beam system was used at each module point. Double beams are bolted to a continuous column. This feature, along with the use of glue-laminated beams and columns, prevents settlement due to compounded shrinkage. The beams, therefore, shrink from the top and the bottom, but only half of this shrinkage affects the floor and wall system."

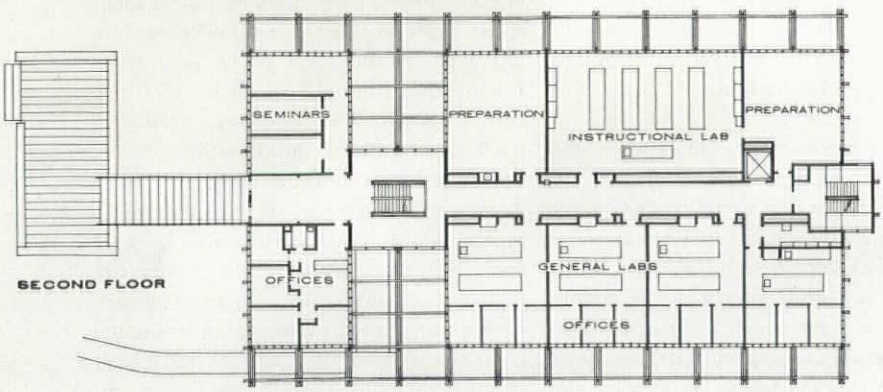
Consulting Engineers were Harvey R. Dodd & Associates, Structural; Howard E. Johnson & Associates, Electrical; and Kane & Ervin, Mechanical. Sculptor of the three door panels was Dudley C. Carter, who was also designer of the two outer panels; center panel was designed by Chervenak ■

PHOTOS: HUGH N. STRATFORD

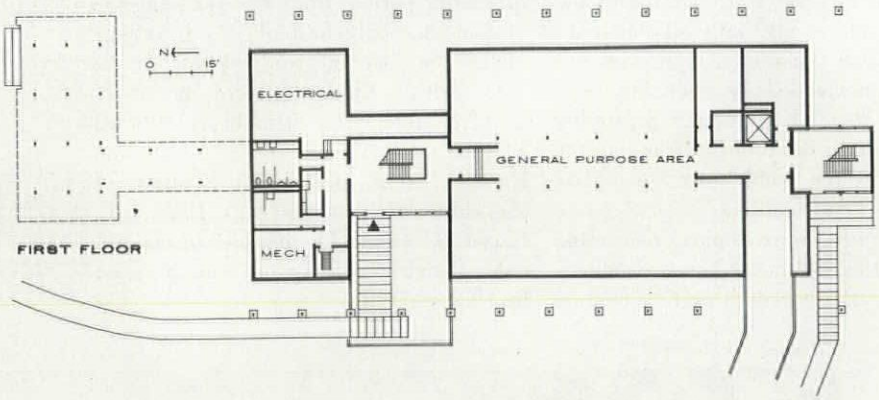




THIRD FLOOR

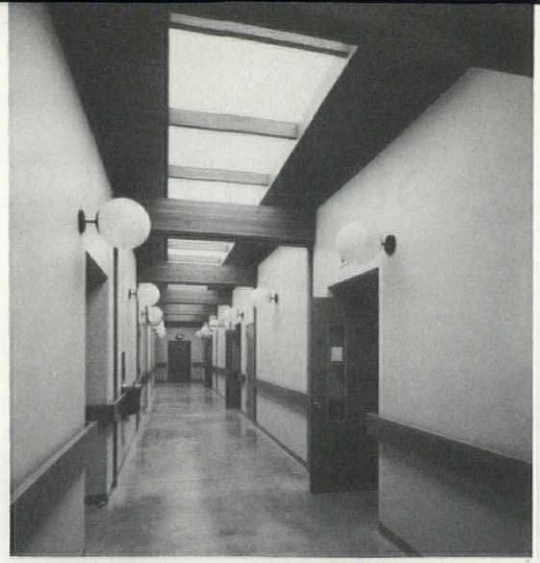


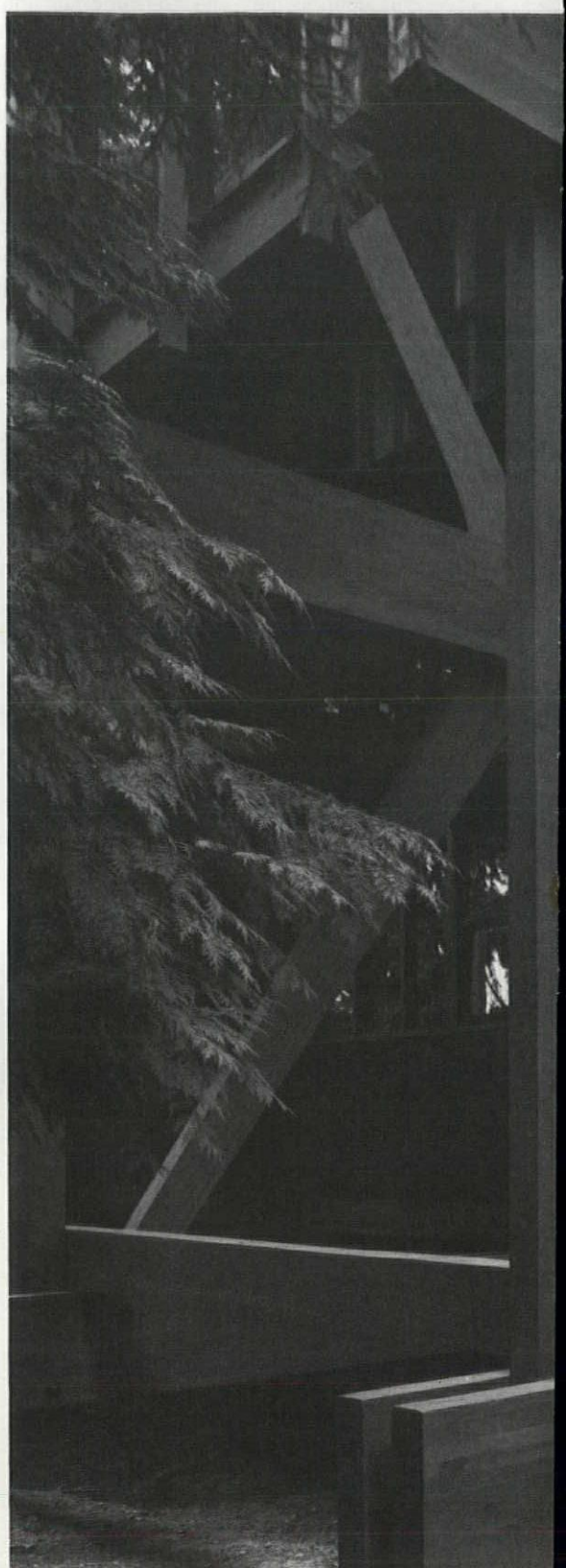
SECOND FLOOR



FIRST FLOOR

The building is of wood, in the woods, for the study of wood. In a grand understatement, the architect says, "There is absolutely no question in anyone's mind that wood is most evident throughout the building." The rich use of wood, and the excellent craftsmanship, show most strikingly in the views into the interior roofed courtyard.





Queen of the Fair

INTERIOR DESIGN DATA: PAVILION OF SPAIN • NEW YORK WORLD'S FAIR, 1964-65 • JAVIER CARVAJAL, ARCHITECT (MADRID) • KELLY & GRUZEN, ARCHITECTS (NEW YORK)

A golden crown of pomegranates in a plexiglass case at the Spanish Pavilion is labeled as having belonged to "Isabella the Catholic—Queen of America."

That startling title is displayed not without forethought. What the Spanish government wanted to demonstrate in New York was the vital relationship between Spain and this country—both the historical and, it was hoped, the contemporary commercial and tourist ones. As critical acclaim and public attendance have indicated, this has been forcefully achieved—not only in the displays and activities, but also in the building itself.

This largest of the official international pavilions at the Fair houses a broad program of activities comparable to those of a resort hotel. Six hundred persons are employed to operate three restaurants—acclaimed as the gastronomic highlights of the Fair—to guard the museum, to act as hostesses, guides, and translators, and to perform in the courtyard and in a 768-seat-auditorium—flamenco dancers, musical groups, fashion shows, and so on. The goal was to depict "all facets of Spanish cultural and commercial life."

The facilities that serve these operations are arranged on various levels in a free-flowing plan, meandering around sequestered patios of brilliant flowers.

The exterior of the Pavilion, surrounded by the frivolous honky-tonk of the Fair, stands with handsome refinement and unfestive serenity, aptly exemplifying Spanish pride and dignity. Neither wildly avant-garde nor flimsily historical, it appears discreetly real and matter-of-factly permanent.

Part of the appearance of solidity and permanence is due to the building's being virtually windowless, like a Spanish house that faces inward to shield itself from the blazing sun and the heat outside. This is not to say, however, that the exterior is plain. Two components with considerable visual interest comprise the exterior wall: at the base, low walls of white-painted, rough stuccoed concrete that seem to enclose irregular, peripheral patios, and second, rising above this base, a superstructure of more regular order, faced with precast concrete panels in a waffle pattern. Analogously, perhaps, the vertical organization of materials depicts the growth from the old to the new Spain.

Similarly, the interior is composed of two principal elements that are monochromatic but different in texture: the first, a rich floor of deep terra cotta tiles of a Moorish design; the second, a strong, dark brown ceiling of suspended wood blocks. The vertical organization, like that of the exterior, also has the old at the base, the new above.

Considerably different, however, is the degree of articulation of elements on the interior. For architect Carvajal sees the building as an architectural analogy of Queen Isabella's symbol—the pomegranate—which has a strong, hard, and smoothly plain skin and is broken into myriad lush fragments on the inside. That rich and fertile fruit appears throughout the Pavilion in many forms, both graphically and thematically.

With admirable inventiveness, a multitude of variations has been rung on this theme of fragmentation. The block units of the ceiling are extended downward, in the form of aluminum tubes, to produce lighting columns that spotlight exhibits raised on similar looking bases. The variations in display cases alone are numerous, some curving and twisting in a fascinating interrelationship with the ceiling. At other points, the ceiling modules are extended to the floor, forming screens and posts for partitions. The over-all effect of the interior scheme is one of being contained within two dark and strongly patterned horizontal planes that are joined by irregularly placed, sometimes disconnected columns.

Special furniture, as well as graphics, carry out the motif. So integrated is the design approach that every antique lace mantilla and every Spanish wrought-iron gate that is displayed, every grid diffuser and air door that is installed works with the theme of the ceiling in an uncommonly consistent and sophisticated way.

Lighting in the exhibit areas is subdued and dim, coming principally from the suspended shafts of spotlights that bring out pools of gleaming colors in the displays. However, some of these areas look out onto bright patios, and others that have a view are shielded by wood jalousies that filter the sunlight with a lacey effect. In these instances, the surrounding walls of white plaster are washed by cold cathode lamps with the result that they seem to vanish in the distance, as the dark, rich planes above and below reiterate their various patterns on to an indistinguishable expanse. The ultimate effect is that these spaces, too, seem to open onto patios. The variety of these effects with darkness and light gives the Pavilion some of its strong appeal.

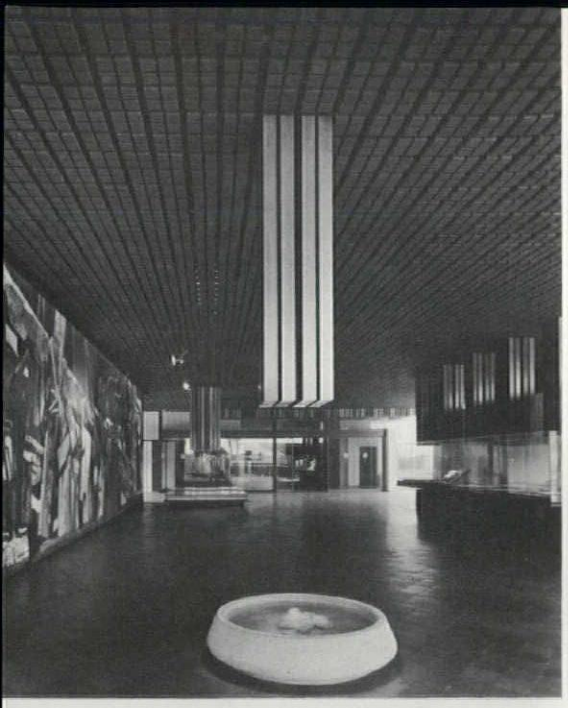
Like the aesthetic of the design, the history of the building also shows the interrelationship between the old country and the new. It was commissioned after an invitational competition had selected as its architect Javier Carvajal, a young professor at Madrid's Escuela Technica Superior de Arquitectura. To translate Carvajal's designs into American construction terms—from instructions for craftsmen builders to working drawings for standardized technology, even from the metric system to inches—the New York architectural firm of Kelly & Gruzen was engaged.

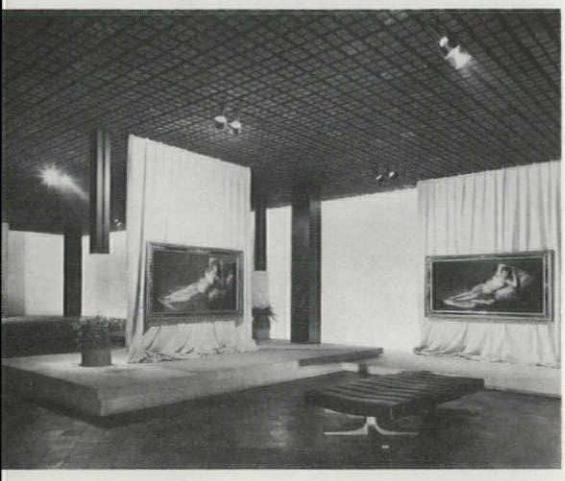
Constructing the building in the minimal nine-month period available was, as the contractor says, "anything but a siesta"; the task was complicated by the distances involved, the unfamiliarity with national materials, procedures, and techniques, and the fundamental problem of language. Credit is due the collaboration of the Spanish and American teams for demonstrating, architecturally, the relationships between the two countries, which is Spain's message at the Fair.

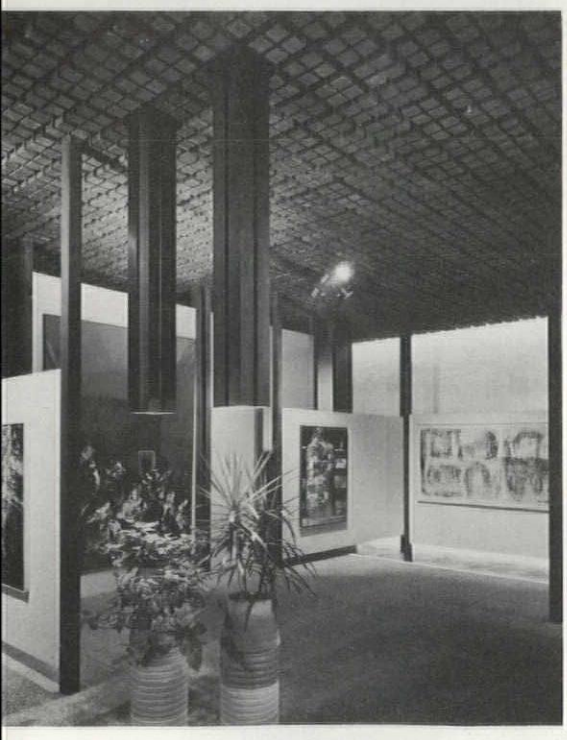
The teams involved in the Pavilion were as follows: for Kelly & Gruzen, Architects: Lloyd H. Siegel, Associate-in-Charge, Rolland D. Thompson, Project Architect. Engineers were Heredia & Moreno, structural and mechanical (Madrid); Lev Zetlin, structural (New York); Joseph Loring Associates, mechanical (New York). The landscape architects were Ramon Ortiz Farrer (Madrid) and M. Paul Friedberg (New York). Paul Tishman Co., Inc., was the general contractor, Lightolier the lighting fabricator, and Display Studios did the exhibit fabrication ■

PHOTOS: LOUIS REENS

In the main patio (above), *where troupes of flamenco dancers twirl in flashing costumes, the garden is a peaceful miniature of the Iberian landscape. Riverwashed yellow stones, cypress-like cedars, and bright red geraniums are set off by precast concrete panels. A statue of Fra Junipero Serra by Pablo Serrano commemorates the 400th anniversary of the birth of that Franciscan missionary, who founded the cities of Los Angeles, San Francisco, San Diego, and San Antonio. A statue of Queen Isabella by Jose Luis Sanchez presides over another patio* (below). *"Isabella Catholica," as she is known in Spanish history, holds a pomegranate in her hands like an orb. This "granada," open to reveal its fertile interior, is the symbol of the queen and of the rich province that bears its name.*

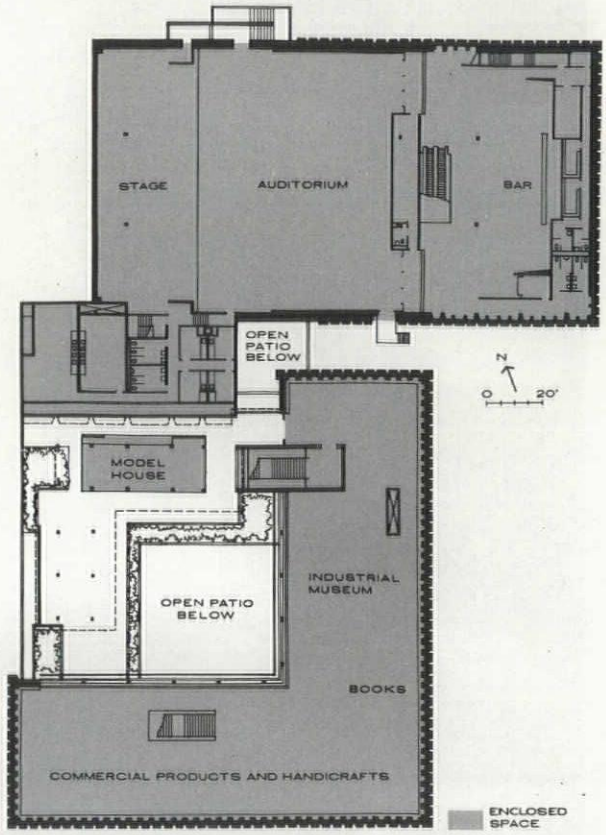




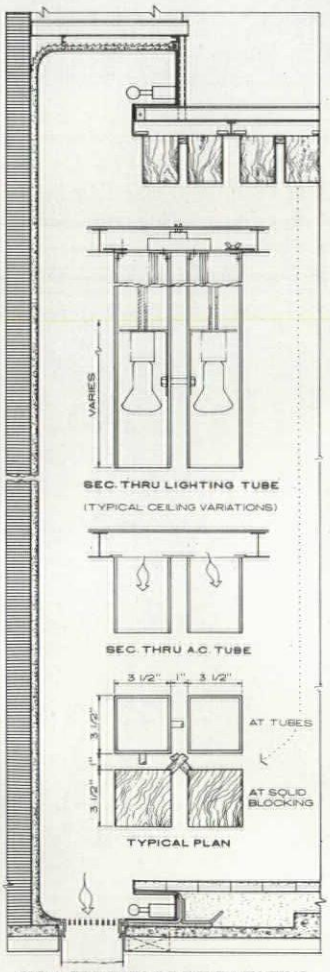


The main entrance hall (left, top) *is a semi-enclosed space that has all the principal elements of the pavilion's interior: the dark Moorish floor tiles, the strong, dark ceiling of wood blocks, the free-flowing plan opening onto bright courtyards beyond, and the fragmented light columns and display cases. A small fountain gurgles peacefully under a suspended lighting column. To the left is a mural by Joaquin Vaguero Turcios depicting the Spanish colonization of America.*

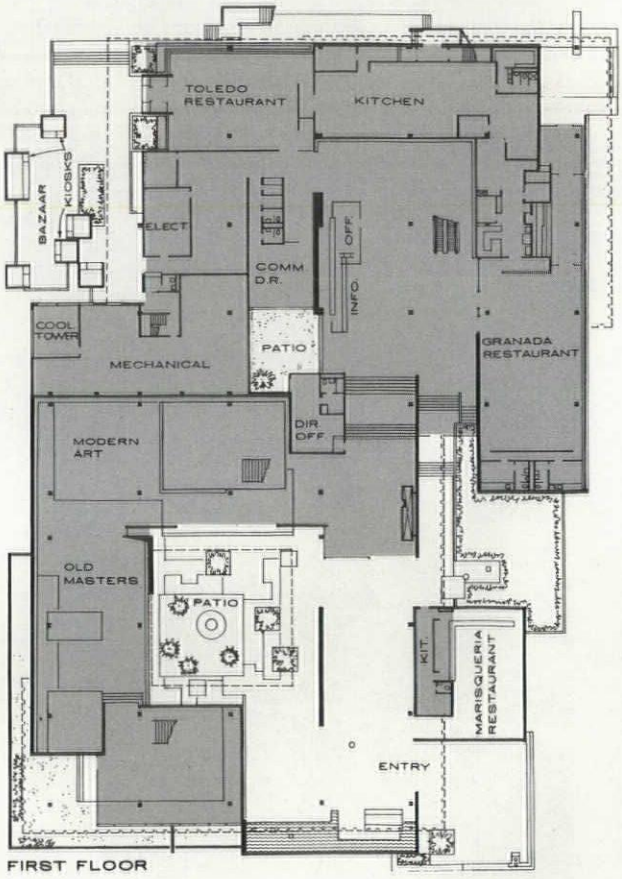
Art works displayed in the pavilion range from a collection of Old Masters to works specially commissioned. On loan from the Prado are paintings by El Greco, Velasquez, and Ribera, two celebrated majas *by Goya* (left, center), *and two splendid Zurbareas. Also, the Spanish Government purchased three Picassos and obtained three Dalis and a Miró.*



SECOND FLOOR



WALL SECTION AT COVE LIGHTING

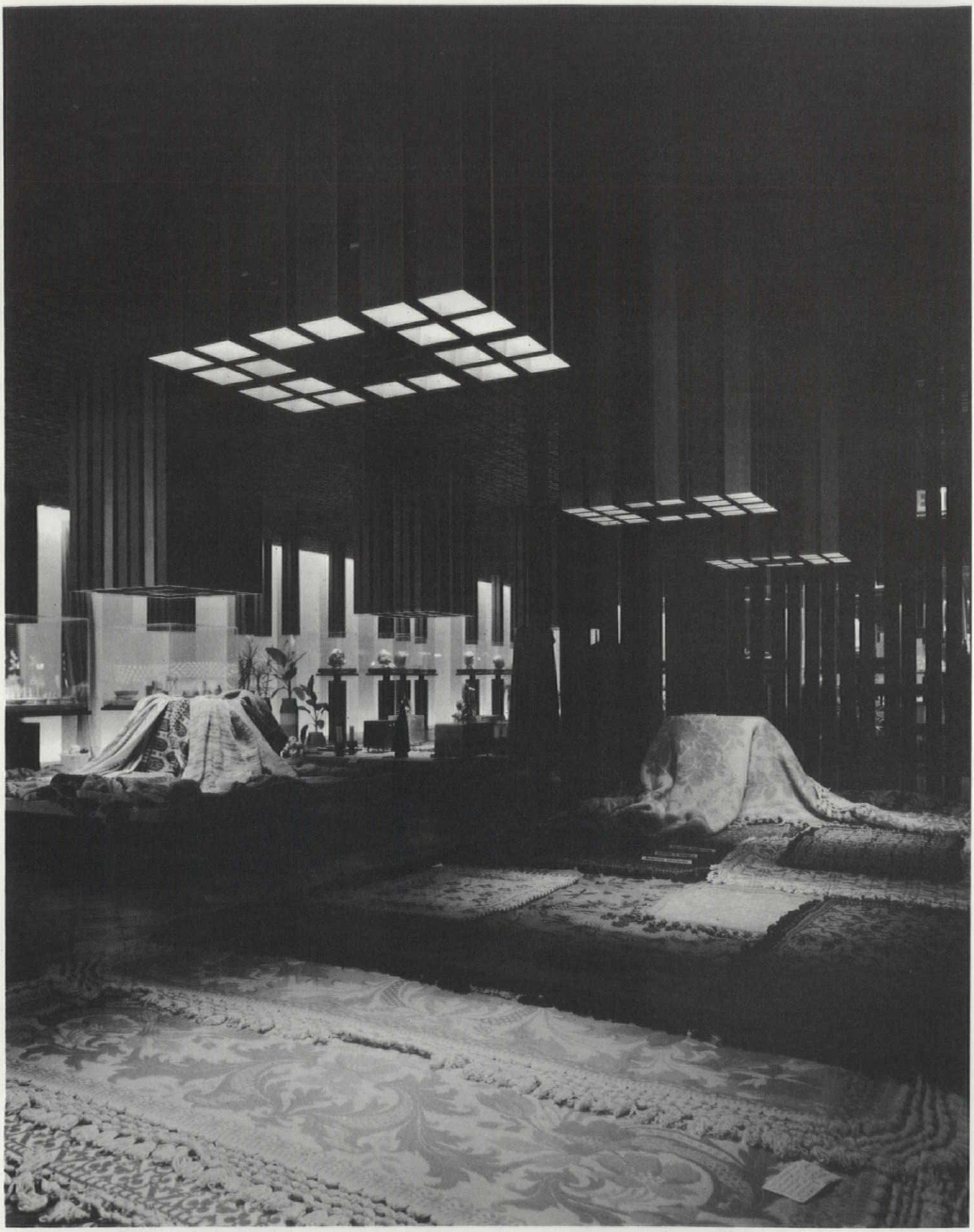


FIRST FLOOR

The gallery of contemporary painting (left, bottom) *contains works by Tapies, Maposo, Feito, Viola, Canogar, Uranga, Serrano, and Oteiza. Ceiling units are extended downward, not only in the form of lighting fixtures, but also as floor-to-ceiling posts for partitions.*

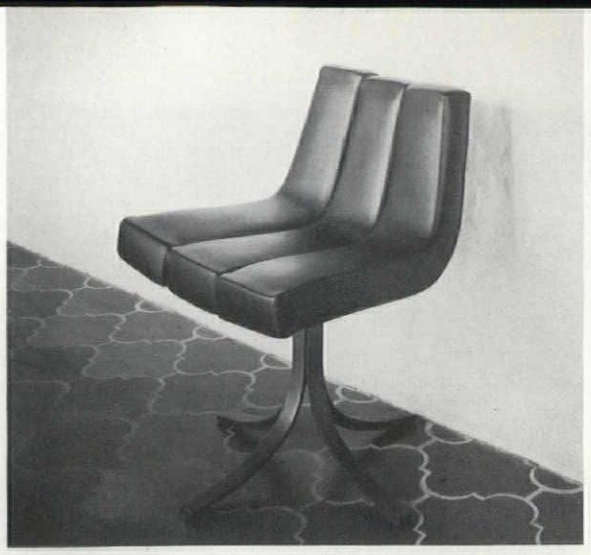
The ceiling is composed of blocks of Spanish Flemish pine that were acid-stained in Spain to rich, dark brown hues and assembled in clusters of four before shipping. Opaque spacers, which emphasize the cluster pattern, also function as adjustable vents to produce a ventilating ceiling; returns are in the floor cove, and normally out of vision.

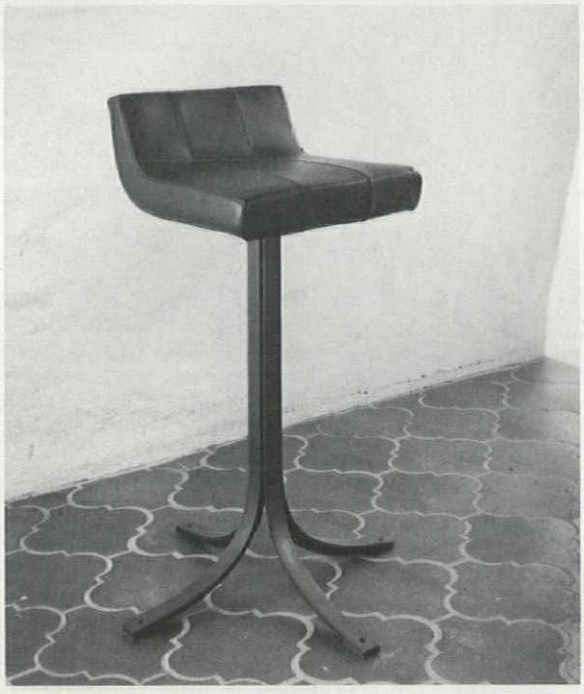
The lighting columns suspended from the ceiling are constructed of bronze-anodized aluminum extrusions, grouped in clusters of four; 30-w spotlights are recessed in the tubes. Four-tube clusters are also used in groups of 16, 24, 32, and 64. Variations in the bronze anodizing make the aluminum comparable in

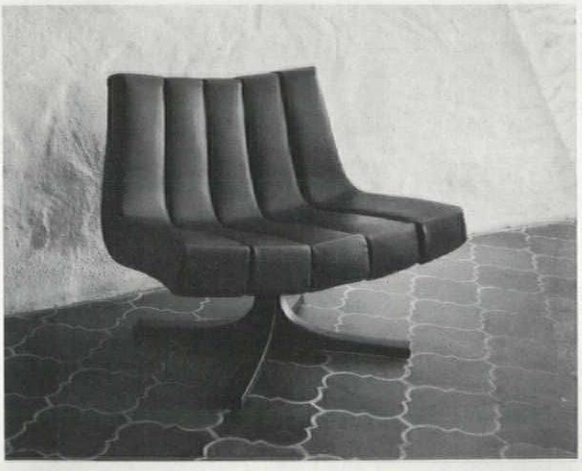


color to the variations in the wood block ceiling and in the floor tiles. Aluminum tubes also function as air-door grilles and as air-conditioning supply vents.

Like a Spanish home that is shielded from the sun outside, the interiors of the display galleries are dark, rich halls surrounded by light-washed walls and punctuated by gleaming bursts of color from the individually spotlighted displays. The exhibits themselves, which have been arranged by a display team from Spain, include ancient and modern handicrafts, industrial products, jewelry, fashions, home furnishings, and travel teasers as well as exhibits of the topography and the birds and beasts of the peninsula. Besides a model home with provincial-type furniture, the architecture of Spain is represented by photographs of new buildings and of student projects. These are arranged as an outdoor display overlooking the main patio.



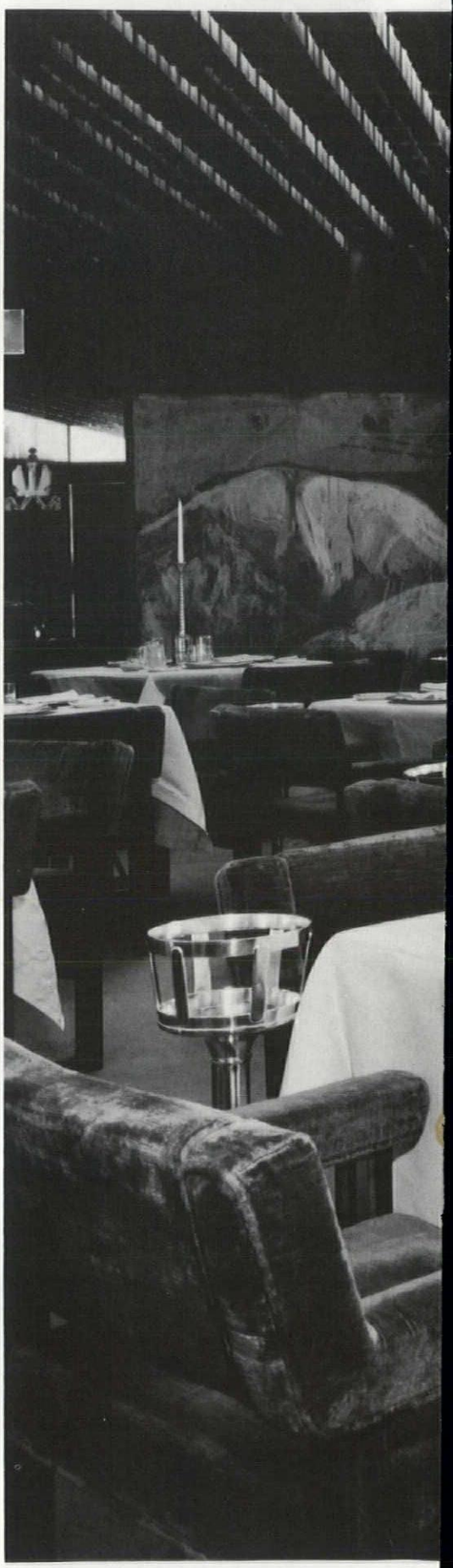




Each element of the pavilion has been integrated in some manner with the over-all design motif. Of the furniture, a lounge chair, a desk chair, a bar stool (illustrated), *a low bench, which is used in the museum, and auditorium seating are designed as a series with articulated seat-and-back cushions in black leather and with a corresponding base of bronze. The table appointments in the restaurants display various interpretations of the pomegranate symbol; these graphics are also used as pins on uniforms and as markers for glass doors.*

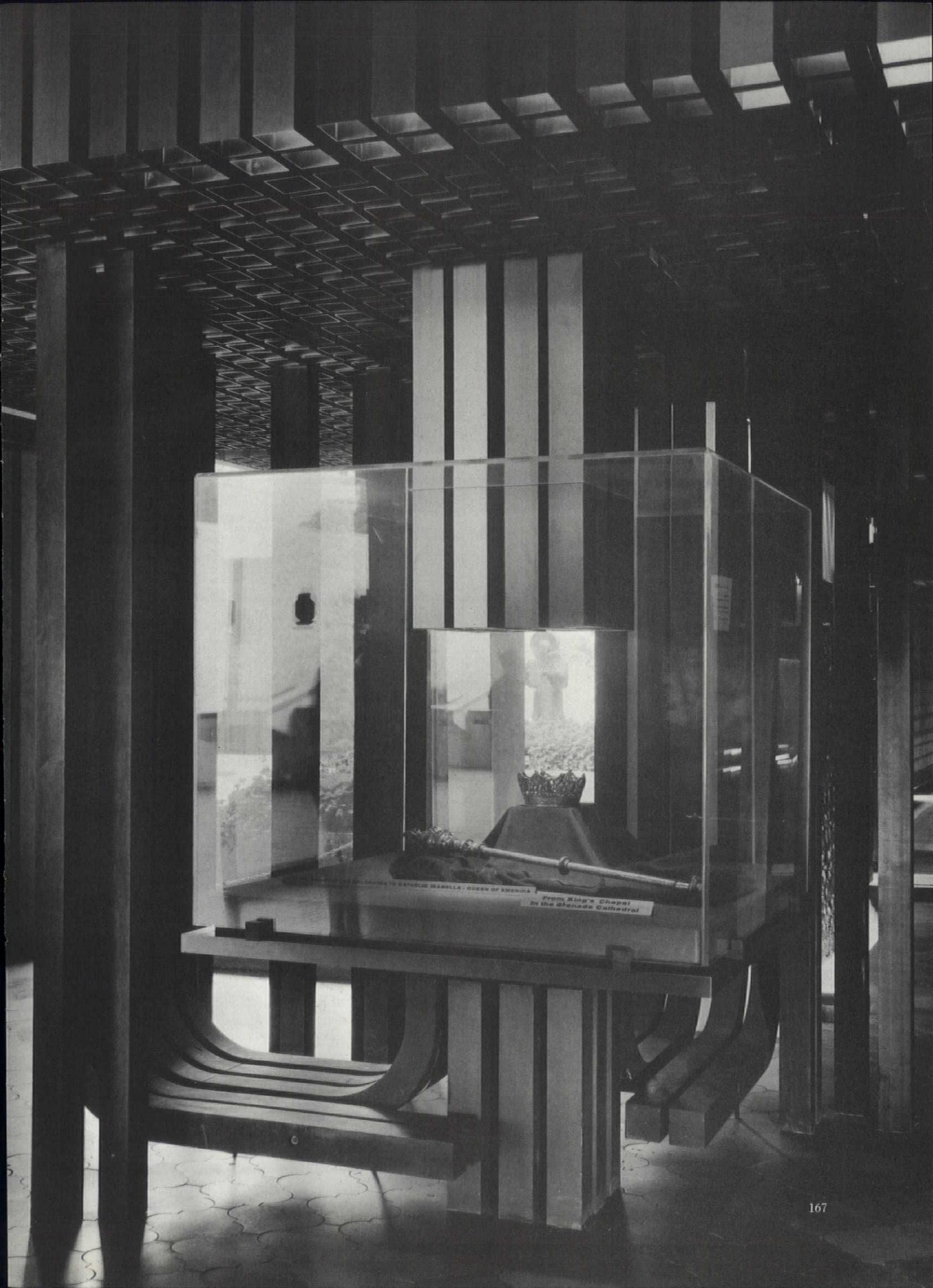
The Toledo Restaurant (right), *which has been acclaimed the gourmet achievement of the Fair (and of its chef, Francisco Gonzales of Madrid's Jockey Club), is luxurious in atmosphere. The ceiling here is of the same wood blocks as elsewhere in the building, but in the restaurants and theater, white plastic has been substituted for opaque spacers so as to make the ceilings luminous. Chairs are covered in antique blue velvet; on the far wall is a collage by Francisco Farreras.*

Floor tiles in dark terra cotta tones are laid without grout between them when used on interior, grouted on exterior (left, above). *Tiles are curious in that, although they are 10 in. maximum in both directions, they are not modular: owing to Moorish shape, ends are butted, but sides do not touch.*



The greatest burst of flamboyant invention is revealed in the display cases and tables, where the fragmented ceiling, the lighting columns, and the bases of the exhibits have ingeniously complex interrelationships. In the travel section (left, top), *a desk is joined with the ceiling elements. Relief maps here, as elsewhere, are made of wood strips with narrow plastic spacers through which light radiates from underneath* (left, bottom); *even in the displays, then, the visual motif is carried forward.*

The crown and sceptor of "Isabella Catholica," brought from the Capilla Real *in Granada, are exhibited on red felt in the most elaborate of the variations on the cases* (facing page).


From King's Chapel
in the Granada Cathedral

Insulation for Flat Roofs

BY WERNER H. GUMPERTZ, P.E.

This discussion attempts to help the designer increase his knowledge about the potential of various insulation materials and how they may be employed in trouble-free building structures. The opinions expressed here are based on the author's experience in this field, in combination with information obtained from manufacturers or from published sources. The author is a principal of Simpson, Gumpertz & Heger, Inc., Consulting Engineers, Cambridge, Mass.

Use of insulated decks has increased and probably will continue to increase, not only for the comfort of the occupants in hot and cold weather, but also to improve the usefulness of the building. Adequate insulation reduces the initial investment and the operating cost of both the heating and cooling systems in any building, but particularly in one-story structures. Insulation not only reduces undesired heat flow in either direction, but, if properly installed, it can also prevent condensation in temperate or cold climates, particularly in buildings with a high humidity occupancy. The dew point of the vapor can be shifted effectively by the use of insulation to keep the roof from dripping in cold weather. Insulation also provides an important and often overlooked function, as the base for the built-up roof.

Proper Use of Insulation

Development of new types of building design and materials has also brought with it new types and methods of insulation, as well as some new roof skin systems. Architects and engineers have been faced with increasing difficulties in keeping properly informed about these new developments. The relation of design and se-

TABLE I: PROPERTIES OF INSULATION BOARDS

	Fiberboard	Fibrous Glass	Foamed Cell. Glass	Extr. Foamed Polystyrene	Foamed Polyurethane	Perlite Aggregate
1. Price, on thermal basis (assume cost of fiberboard = 1.00)	1.00	1.00	1.90	1.00	1.05	1.05
2. Installation cost (assume cost of fiberboard = 1.00)	1.00	.98	1.95	1.00	.98	1.00
3. Thermal conductivity, k(Btu/sq ft/hr/°F/in.) (ASTM C177)	.36	.27	.40	.26	.15	.36
4. Thickness, inches	.5 to 3	.44-2.25	1.5-4	.63-2	.8-2	.5-3.5
5. Oversizes available	no?	if ordered	no	no	no	no?
6. Thermal coeff. of expansion, 10^{-6}/F (ASTM D696)	3?	?	4.6	40	60	?
7. General dimensional stability 1" and over	OK if asph. impreg.	good horizontally	good	?	?	good
8. Compressive strength, psi (ASTM C165)	350-425	10 (estimate)	100	30	20	150-175
9. Closed cell content, %	none	none	near 100	85	90-95	low?
10. Flute spanning over steel decks	good	good	fair	good	good	poor
11. Capillarity	yes	yes	no	no	no	?
12. Size of sheets, standard (ft) (1.5 x 2 for compos. cell. glass)	2 x 4	3, 4 x 4	1 x 1.5	2 x 4	3 x 4	2 x 3
13. Solvent resistance	good? fair?	good	good	poor	fair	varies
14. Weight in lbs/sq ft for obtaining C = .36:	1.3	.6	.8	.2	.1	.9
15. Thickness in inches for obtaining C = .36:	1.0	.75	1.1	.7	.4	1.0
16. Density, lbs/cu ft; without cover membrane, if any	16	9	9	2.5	1.8	11
17. Vapor permeability, perm—inches ASTM E96, proc. E	20-25	75	0	< 1.5	2	20-25
18. Water absorption % by vol. 2 hrs submersion (C209 or C272)	to 10	high, drains easily	.2	< .25	low	< 2
19. Water absorption psf surface	will absorb	—	.008	0.1	< 1	will absorb
20. Linear expansion, 50 to 97% RH (ASTM D1037)	to .5%	< .05%	none	none?	?	.26%
21. Damage from water, thermal cycling, if repeated	up to total	considerable	up to total	yes?	very likely	yes?
22. Damage from heat, starts at F	160-180	400	800	165	230	160-180
23. Damage from rot, vermin, deterioration	significant	slow, if wet	no	no?	no?	slow
24. Attachment by mopping, by adhesive, or by:	nailing	flex. headnails	—	special adhesive	—	—
25. Need vapor barrier (except high hum.) called for by m'f'r	if req'd	if req'd	no	high humid.	no	if req'd
26. Resiliency in handling, etc.	fair	good	poor	fair to good	fair to good	poor
27. Absorption of mopping asphalt	yes	no	no	no	no	yes
28. Slippage plane for equalization of deck movement	no	yes	no	no	no	no
29. Potential for joint reinforcement	yes	yes	with kraft	yes	yes	no
30. Basic material	wood fiber	glass fiber	cell. glass	foam plastic	foam plastic	perlite[3]
31. Binder	plastic	plastic	none	none	none	asphalt
32. Wrapping or coating (for cell. glass, used only on compos. blocks)	bituminous	kraft	kraft	none	coat. base sheet	emulsion
33. Max. bitumen (lbs/100 sq ft) below insulation for fire class 1[1]	0[2]	15	25	0	0	25
34. Insulation acceptable for fire class 1[1]	yes	yes	yes	no	no	yes

[1] Applies to Factory Mutual ratings, over steel decks. No restrictions on other types of deck.
[2] Special commercial asphalt emulsion may be used to limited extent—see FM pamphlet 1-28 S.
[3] And wood fibers.

lection, on basis of performance of built-up roofing, insulation, and vapor-barrier performance has not always been recognized, resulting sometimes in serious damage to the building and the reputation of the designer. It may be absurd to expect a designer to personally check the many thousands of different components that form part of a building, but he will be required in self-defense to increase his knowledge about the potential of the various materials and how they may be combined into a trouble-free building structure. This paper will attempt to do this in the field of roof insulation applied above the deck. Comments also will be made on the properties of structural insulating decks, compared to insulation applied separately.

In addition to needing to maintain his professional integrity by providing his client with buildings that perform properly, the designer faces the fact that the professional judgment of architects and engineers has been increasingly subject to review by judicial authority. Malpractice and damage suits have increased in the past several years. The recent case of Bloomsburg Mills (Supreme Court of Pennsylvania, January Term 1959, No. 356) has awakened many architects to the realization that they are no longer free agents in selecting a building material in accordance with their best judgment. The court found that the architect was liable for damages, partly because he failed to perform a series of tests on the roof insulation used; that he submitted plans for a roof that the court felt contained an improper vapor seal, faulty drain flashings, and insulation materials that became saturated and lost insulating value. However, the failure may in fact have been caused by leaks in the built-up roof, regardless of the type of insulation used. Any insulation can be expected to fail when subjected to leakage through the cracked built-up roofing. Regardless of the merits of the case, the architect suffered a significant financial loss and damage to his reputation.

This roof was eventually replaced by a new roof with a different type of insulation, but with essentially the same type of built-up roof. It is of little help to the architect that, in a relatively short period of time, water penetrated between the vapor barrier and the built-up roof, in and around the insulation, causing damage and deterioration to the insulation. The new built-up roof blistered and wrinkle-cracked, requiring major repairs and possible replacement. In this court case, the incorrect application of the roofing materials on the original roof, the lack of proper investigation and maintenance when problems occurred, and the subsequent problems with the replacement materials, indicate the difficulties in making a rational choice of insulation materials and in designing the built-up roof to keep water away from the insulation.

Properties of Popular Insulation Boards

Test programs on all materials on all jobs are obviously impractical. To assist the architect and engineer, a table of six representative types of roof insulation (applied above the deck) indicates some of the important physical properties of insulation (*Table I*). The actual performance of these types of insulation must be considered in conjunction with the type of structural roof deck and built-up roofing to be used. The following discussion of the various types of insulation should also be considered.

Performance of Insulation Boards

Fiberboard is composed of wood or vegetable fibers and is held together with a plastic binder. It is strong, rigid, easily handled and easily cut.

The fibers and the air space between the fibers can absorb water or moisture vapor. Fiberboard can be impregnated, wrapped, or asphalt-coated, and these processes can reduce to some degree the tendency to absorb moisture without, however, preventing damage altogether. Complete enclosure of the boards is not practical because of the potential expansion of the entrapped air; and field cuts would nullify this protection. If this type of board is exposed to moisture for an extended period, it will deteriorate by buckling, warping, and eventually putrefying. Dimensional changes in the boards have been observed to cause serious damage to the built-up roof above.

Fibrous glass insulation is composed of inorganic, nonabsorbent fibers formed into boards by use of a phenolic binder, and covered on the top and sides by a paper-covered, glass-fiber reinforced asphalt membrane. It is light, easily handled, has a good mopping surface, and its large size reduces cost of placing and the number of joints. Its low shear modulus provides some help in attenuating the effect of roof deck movement on the roofing membrane.

If the built-up roofing develops a leak, water could enter the insulation and would penetrate the air spaces between the fibers thereby reducing the insulation value of the material and eventually causing dissolution of the binder. However, water vapor alone will not harm the insulation and will not be absorbed by capillarity unless it condenses. Stack vents have been reported to be effective in some cases by allowing the vapor to escape. If there is actual water penetration of the insulation, it could still be saved if the water is effectively removed before the binder is affected; however, such removal is not easy to accomplish. A number of successful pumping operations have been reported, but the author has had no experience with this method.

Foamed cellular glass is composed of closed unconnected cells. Due to its unicellular structure and its inorganic nature, the material will not absorb water in the slab or allow passage of vapor in the slab under laboratory conditions or in actual use. If water or vapor enters through a roof leak or by vapor barrier failure (from condensation), it can spread horizontally or through improperly filled joints between insulation boards. Recent investigations have revealed that when moisture is trapped in the space between the built-up roof and the top of the insulation, the water will accumulate in the open surface cells of the material. In the presence of thermal cycling involving below-freezing temperatures, this water will expand as it freezes and will thereby break down the membrane between the open cell and the adjoining closed cell. A subsequent thawing will cause water penetration into the second layer of cells. A repeat of this cycle will eventually result in the progressive destruction of the insulation, leaving a water saturated gray-black dust. Laboratory tests have indicated that complete breakdown can occur in as few as 20 freeze-thaw cycles. This phenomenon is more likely to occur in cold climates, but it has also been observed in the warm climates of the southeast United

States (ref. J. R. Allen, Monograph #1, Building Research Institute, A Study to Improve Bituminous Built-up Roofings, 1960). This insulation is not only completely incombustible, but it is strong in compression. However, it is brittle, causing multiple breaks before and during installation, due to handling, to foot and equipment traffic, or because of flexible, uneven deck surfaces. This problem of friability and higher handling cost of small individual units has led to the introduction of two blocks sandwiched between layers of heavy kraft paper. A problem has been encountered of adhesion of the paper to the boards, with some delamination and a reduction in the bond between the deck and the built-up roof. At least one manufacturer of built-up roofing material has refused to bond his roofs applied over the sandwich-type blocks.

Foamed polystyrene is the oldest type of foamed plastic, and now is usually used without wrapping. It is light, easily handled, and has good resistance to vapor migration. Its large size reduces installation labor and number of joints. It has been advertised as retaining all of its qualities even if it is directly exposed to rain during storage.

It is combustible and contributes fuel in case of fire. In such a case, there is the additional danger that, after damage to the insulation, the bitumen in the built-up roof may become ignited, adding considerable fuel to the fire. Its structure starts to collapse when subject to temperatures exceeding 170 F; since hot bitumens are usually mopped to the surface of the insulation at temperatures between 350 F and 400 F, this can be a serious problem. It has been solved, at some increased labor cost, by the rather cumbersome procedure of mopping the underside of the first ply of roofing felt and then turning it over for placement onto the insulation. Recently developed procedures call for use of a heavy coated base sheet laid dry over the insulation. When the top of the sheet is not mopped, the coating at the bottom becomes soft and is said to produce the required bond to the top of the insulation.

Performance under traffic has not been extensively analyzed. Because of its cell structure, the long-term on-the-roof performance of this insulation under freezing-thawing cycles in the presence of moisture should be carefully observed to determine whether the cell structure will break down progessively. Despite claims to the contrary, the insulation should be kept dry during storage and installation. Manufacturer's information indicates that the surface of the insulation can hold 1.5 oz of water/sq ft. If this quantity is enclosed under a built-up roof, the trapped moisture is significant enough to cause blistering of the roofing, and there is the possibility of breakdown of closed cells due to freezing of free water. The coefficient of thermal expansion of foamed polystyrene is high.

Foamed polyurethane insulation has been a more recent development. It shares many properties with foamed polystyrene, but it is lighter, has better insulating value, and is more resistant to heat. Its cell structure will not collapse until subjected to a temperature in excess of 250 F. Short time exposure to hot bitumen may not cause any trouble, especially if the surface of the material is protected by an impregnated kraft paper. Lightness and large unit sizes make handling easy and relatively lower in cost.

There are a number of unresolved questions due to the relatively short time this insulation has been used for roofing purposes. Among these are a possible loss of thermal efficiency with time; incompatibility with certain organic adhesives used with fire-resistant vapor barriers; sustained uniformity of the published insulating value; high coefficient of thermal expansion; and long-term dimensional instability. Combustibility is similar to that of expanded polystyrene.

Perlite aggregate insulation board is made with expanded mineral pellets, wood fibers, and asphaltic binders. Its maximum short-term moisture absorption under total immersion is significant, but lower than that of fiberboard and fibrous glass insulation. Resistance to deterioration under high humidity conditions is about average, due to the use of a water-repellent binder; but since the material is fairly permeable to water vapor, condensation can occur in the interstices when the dew-point is within the insulation. Fire resistance is better than that of many other insulations.

This insulation is quite friable. The boards, though standard size, must be handled carefully to prevent loss of corners, breakage, and disintegration. The surfaces absorb some part of hot mopping bitumen from bottom as well as top, thereby reducing the thermal insulation value to some extent. Long-term resistance to freezing and thawing cycles in the presence of free water has not been definitely established. The long-term immersion of perlite aggregate insulation apears to lead to very substantial water absorption. Some types of this insulation have been advertised as unaffected by heavy exposure to water before installation. Despite such claims, this insulation, as any other, should always be installed and covered while dry.

Poured and Structural Deck Insulation

Insulated decking materials that are poured-in-place or that combine insulating value and deck structure fall into three broad classifications: insulating fills, insulating structural precast planks, and poured-in-place insulating decks. Some of these systems are designed to serve at the same time as an exposed ceiling for the space underneath the roof, especially in cases where economy of construction is important. To provide a satisfactory base for the built-up roof, all of these systems require special attention and consideration to reduce the effect of the inevitable and often severe expansion and contraction problems inherent in the design of the building. Many difficulties have been encountered because of thermal movement, especially in buildings of large roof area uninterrupted by control joints. Additional critical joint movement almost invariably occurs where the direction of the roof structure changes.

Examples of structural planks are lightweight precast concrete, metal bound reinforced gypsum planks, and cement-coated wood-fiber planks (with a surface appearance of shredded fibers). All plank-type decks have a potential problem in proper fastening of the planks to prevent movement, and of vapor penetrating upward between the planks to condense on the underside of the built-up roof.

Thermal cycling not only causes linear expansion and contraction, but can also cause cumulative longitudinal movements extending over the full length of the building. Such movements can eventually cause the closing of all but a few joints, with the remaining gaps increasing to considerable size.

Coated wood-fiber structural planks have been found, in some instances, to be dimensionally unstable when subject to moisture penetration. Edges of this type of board have been distorted, causing damage to the built-up roof. Long-term dimensional stability under severe moisture conditions, produced by a leaky roof or by condensation of vapor from below, is not clearly established, but not all planks of this type are sufficiently coated to protect their basic organic structure against eventual deterioration. Some boards of this type are reported to have deflected (bowed) seriously after accidentally becoming wet.

Precast concrete planks generally provide greater dimensional stability in themselves, but they are also subject to the problem of attachment and lateral migration. Reported dimensional changes and known cumulative lateral movement have adversely affected the base for the built-up roof.

Poured-in-place gypsum roof decks are reinforced with a light steel mesh, and are supported during placement by various types of insulation that became a permanent component of the deck. This deck is continuous and therefore does not migrate, as the plank types of insulation do. However, under thermal cycling, these decks have sometimes cracked to form involuntary control joints, particularly in larger roof areas. These joints can undergo significant size changes in short periods of time. While gypsum is reasonably strong in compression, it is weak in tension and will reflect, in cracks, any movement of the building structure. In addition, poured gypsum will not only erode quickly under water drippage, but will distort and deflect downward when exposed to significant amounts of moisture from above or below. Splits in built-up roofing have sometimes been traced to involuntary control joints where discontinuities in subpurlins coincide with those in side laps of reinforcing mesh. Cracks caused by movement due to change in the direction of the roof structure have frequently been severe enough to cause rupture of the built-up roofing.

Poured-in-place lightweight concretes and foam cements have a relatively high original water content and are difficult to dry out, especially in winter. Continued presence of excess mixing water frequently keeps the thermal insulation value below published figures. Generally, poured decks must be allowed to dry out from below, to avoid an adverse effect of the moisture on the built-up roof. Occasionally, unstable aggregates are used in the mix that will contribute to cracking and structural deterioration. Insulating fills must be applied over a structurally sound deck, free from movement. To avoid unnecessary roofing problems in the use of structural deck materials, extreme care must be exercised in the design stage to control and eliminate thermal movement in the deck and to isolate such movement from the base of the built-up roof. Published recommendations of one manufacturer of lightweight aggregate call for a minimum control joint of 1 in. for each 100 ft. Use of additional insulation, with high potential shear deflection under load, will help to reduce the effect of deck movement and crack openings, and will thereby protect the built-up roofing from tensile failures and formation of compression ridges.

Insulation As a Suitable Base for Built-Up Roofing

Since the roof insulation, or insulated deck, is the base for the built-up roof that is applied as a waterproofing membrane, the selection and application of all materials in the roof should be carefully considered in regard to their suitability and interaction. Obviously, the top surfaces of the insulation should provide a satisfactory mopping surface for the roofing bitumen, and should have as few joints as possible. The joints should be tight and filled solidly to avoid vapor migration, unless a vapor-resistant joint tape is applied to all insulation joints.

The first course of the felts in the built-up roof made with organic felts should be a heavily coated base sheet to avoid exposure of the underside of the first roofing ply over the joints in the insulation. An uncoated paper felt would be exposed to vapor from the underside, since there is no mopping in the joints. The absorption of moisture by the felt would cause expansion of felts, causing wrinkles in the built-up roof that would eventually cause splits. Inorganic based felts are less likely to be subject to this type of ridging and splitting. The lack of firm adhesion of the insulation to the deck will prevent accumulation of movement at the joints. Since wrinkle-cracking over insulation joints has been reported as a major source of built-up roofing failures, the proper application of insulation will go far to prevent this type of difficulty.

While the deck surface to which the insulation is applied should be flat, smooth, dry, firm, and free from unusual movement, any insulation should be able to conform to any deck irregularities without tilting and rocking. It should be designed to offer a smooth base to the built-up roof, since discontinuities in elevation tend to cause cracking of the built-up roof. To retain the mopping asphalt as part of the waterproofing membrane in the built-up roof, there should be little or no asphalt absorption in the surface of the insulation; and the joints in the insulation should have been taped or filled with bitumen during their installation.

Moisture Control Between Roof Deck and Built-Up Roofing

The water absorption of insulation is an often misunderstood phenomenon. Organic fibers themselves will absorb moisture. Inorganic materials in insulation will not usually, in themselves, absorb moisture; however, the insulating value of a material is dependent on the air spaces between the fibers or in the cells of the insulating material. Water obviously can enter wherever air can flow between the fibers of a fibrous insulation. It can also enter the cells of a cellular insulation when its structure is open, or if it is destroyed for any reason. Water vapor will not affect any insulation until condensation occurs. Free water will sooner or later affect any organic material whether in fiber form or only a plas-

tic binder. The damage is both biological (causing deterioration, collapse, or dimensional changes) and physical (reduction of the thermal insulating value through the presence of free water). The latter problem can affect an inorganic insulation as well. Regardless of the type of insulation, it must be kept free of water penetration if it is to serve its function and if the built-up roof is to be protected against destruction by the effects of water in the insulation.

Calculations can and should be made to determine where the dew point will fall: a computation based on occupancy and relative humidity inside the building and the outdoor temperatures in the various seasons. If the potential dew point occurs in or above the insulation, a vapor barrier is usually required unless it can be shown that the insulation (including the joints) has enough vapor resistance to prevent penetration of vapor and condensation. An insulation that permits the free passage of vapor is better only if there is a clear path of escape for the vapor. The usual venting provisions around roofing perimeters may be helpful, but their general effectiveness has not been proven. This means that the omission of a vapor barrier should be justified specifically in each case. Where calculations indicate a vapor barrier is necessary to avoid condensation, water cut-offs should be provided at regular intervals throughout the roof to localize the spread of the almost inevitable free water resulting from potential roofing failures. In addition, water cut-offs should be installed around all drains, vents, perimeter flashings and other roof penetrations, since these areas are frequently involved in water leakages, and the insulation must be protected by all means from being subject to water penetration.

As discussed earlier, the presence of free water or moisture vapor in and around any type of insulation is detrimental in any event and can result in microbiotic action or dissolution of organic matter, mechanical deterioration due to freezing or loss of dimensional stability, reduction in insulating value, dimensional changes causing damage to the built-up roof, and finally premature deterioration of the built-up roof. The entry or retention of water in the insulation area must therefore be avoided.

Moisture can be entrapped in the building during construction and must be eliminated by enforcing proper ventilation. It can be entrapped in the insulation during construction through improper storing or handling. All insulation on the job site should be set dry and should be completely covered. Job conditions often require that the building be put in the dry so that other trades can work both above and below the deck. This results in the possibility of damage by the trades working on the job. Built-up roofing components used to produce temporary weather protection should be capable of the exposure to the elements without the necessity for a final gravel cover or other mineral surface. The membrane should be built in a way that water cannot penetrate to the insulation by capillary migration through exposure to the top or the edges of the shingled paper felts. When there is no further construction traffic on the roof, the surface should be capable of being carefully examined for any mechanical damage and water penetration; and the final stages of the built-up roof should be installed after all damaged and wet materials (including insulation) have been removed and replaced. Finally, the completed roof should form an integral system that has not been reduced in its effectiveness for having been installed in stages. No edges of roofing felts should be allowed to curl up through the flood coat for exposure to weathering, although inorganic felts are somewhat more resistant to the rays of the sun.

The effect of defective flashings, discussed above, can be prevented by proper design. Failures can result from insufficient nailing, insufficient weather laps, wrong location of the transition point between flashing and built-up roof, flashing in the wrong location, metal movement, or improper restraint of movement. Flashings should be designed with provisions for independent movement at the wall or edge of the building. All transition points between roofing and flashing should be well above any potential water level. Parapets, if any, should have full through-wall flashing to prevent water penetration through the masonry. The vapor barriers should be properly turned up and be bedded back over the insulation along all flashings, interruptions, and particularly along the perimeter of the roof. It also should be integrated with a water cut-off system.

Moisture can also enter the insulated area as a result of a rupture in the built-up roof, caused either by improper installation, traffic, or building movement. To prevent damage from traffic, a walkway must be provided wherever traffic patterns on the completed structure are indicated, particularly when equipment requiring servicing is located above the deck. Rupture due to building movement must be prevented in the design stage by providing control joints whenever large areas are involved. Engineers feel that control joints should be provided in the deck at 100 to 120 ft in any direction. Additional control joints should be used in critical areas where movement of the building can be expected. This can occur in buildings of unusual shape, such as plans with reentrant corners, and wherever a change of direction occurs in the roof framing or decking. Modern built-up roofs frequently do not perform too well on dead levels, especially when roof drains are located at the high points of the roof. (This occurs when drains are located near columns, since the centers of the spans tend to form ponds due to structural deflection.) It would be best, wherever possible, to incorporate a definite pitch in the roofing surface to allow prompt drainage of rain and melting snow, and to locate drains in all the low points of a roof. Many roofing material supplier's specifications now recommend a minimum slope of $\frac{1}{8}$ in. to 1 ft, or more.

Good workmanship in the application of the built-up roof is important to prevent moisture from entering the insulated area. This requires the use of the best (not necessarily the lowest-cost) roofing contractor. The roofing materials manufacturer should have a record of successful roofing installations and of competence and willingness in working with the contractor and in enforcing his recommended application specifications. Availability of competent technical advisors in this connection is essential.

Adequate specified quantities of bitumen must be applied without irregularities, skips, and voids. The bitumen must not be heated above the specified temperature, and must be mopped and covered before it has cooled off. The issuance of a bond for a built-up roof does not protect the owner against building or deck movement; and it is vital that the architect and engineer do not substitute the bond for a careful design of all roofing components and an uncompromising and informed supervision of construction. During the winter months, construction of the roof is particularly difficult to perform properly, and neither the owner nor the contractor should insist on installation of the insulation and the built-up roof when there is danger that rain, snow, or ice may be enclosed somewhere in the insulation space or between the plies of the roofing.

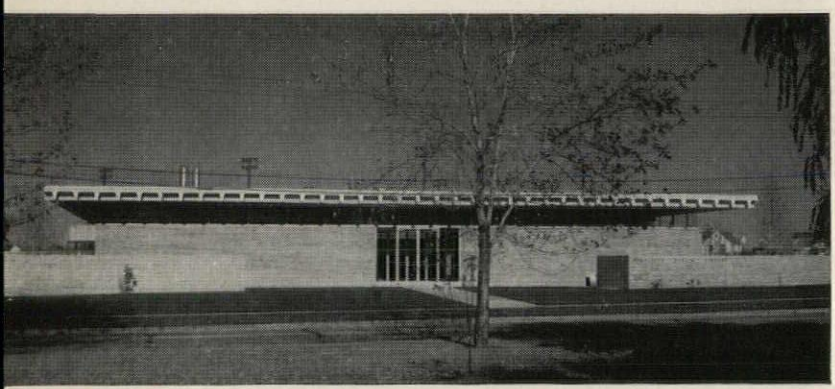
Conclusions

To secure the benefits of insulations available today, the designer must take into account the performance potential of the material he selects. There are certain basic characteristics of all insulations that must be recognized. Water in the insulated space cannot be tolerated. Factors in the building design that would permit water to enter, either through the built-up roof or a vapor barrier, must be considered in advance and eliminated. An intimate knowledge of materials and their physical properties is essential. The designer must be conscious of the consequences of insulation selection in combination with the structural features of his building, and he must be a pessimist in thinking ahead to the potentialities of incompatibility and possible failure. These problems cannot be avoided, since the use of insulation in modern buildings is imperative to improve process control and to increase human comfort on an economical basis through the use of modern air-conditioning, both cold and hot.

The architect cannot insure keeping moisture out of the insulation by only providing the owner with a bonded roof. The bond excludes the results of problems that will permit the entry of moisture, and it can result only in ultimately passing on the problem to the owner. The architect and engineer can provide not only proper design, but also can insure proper workmanship by insisting on employment of qualified applicators, proper inspection of their work by the general contractor, and securing an applicator's performance guarantee, backed up with proper insurance. The designer also can avoid problems by properly advising the owner that he must provide his own inspection and maintenance program for the roof, as well as for other parts of the building, to detect and correct troubles before they become serious. No roof can be ignored, not even during the bonding period, without suffering from the effects of significant and needless damage ■

HOW TO AVOID DEFECTS

TO AVOID THESE DEFECTS:	DO THIS:
1. Accidental BUR leak spreads throughout insulation all over roof	Cut-offs to subdivide roof into areas of about 1000 sq ft
2. Flashing leak spreads throughout insulation all over roof	Cut-offs 2 ft inside perimeter flashings, and around all drains, pipes, roof openings
3. Insulation board movement over changes in direction of decking	Full expansion joint over board joints in these critical areas
4. Shear failure of roof due to irregular swelling of insulated boards	Use inorganic, dimensionally stable insulation
5. Fairly uniform ridging over all or many through-joints in insulation boards	First ply of BUR to be 40 lb coated base sheet or inorganic felt; if possible, use two layers of insulation board with staggered joints; fill joints with bitumen or tape all joints, if insulation makes this practicable
6. Adhesion failure between insulation and built-up roof, due to inadequate amount of available mopping bitumen	Do not use insulation with absorbent surface; heat bitumen to proper temperature
7. Irregular blisters; roofing plies soft and spongy, coated with a thin, oily substance	Investigate for compatibility between felts and mopping bitumen; use compatible materials
8. Predominantly parallel ridging spaced at some distance, over insulation joints	Provide structural control joints in deck, with appropriate roof flashing; separate roof decking of different orientation
9. Random roof blistering	Store, place, and keep insulation dry during construction; apply floor coat immediately after construction of the built-up roof
10. Roof splitting	Use dimensionally stable insulation sufficiently rigid to bridge steel decks; keep insulation dry to prevent raising of surfaces

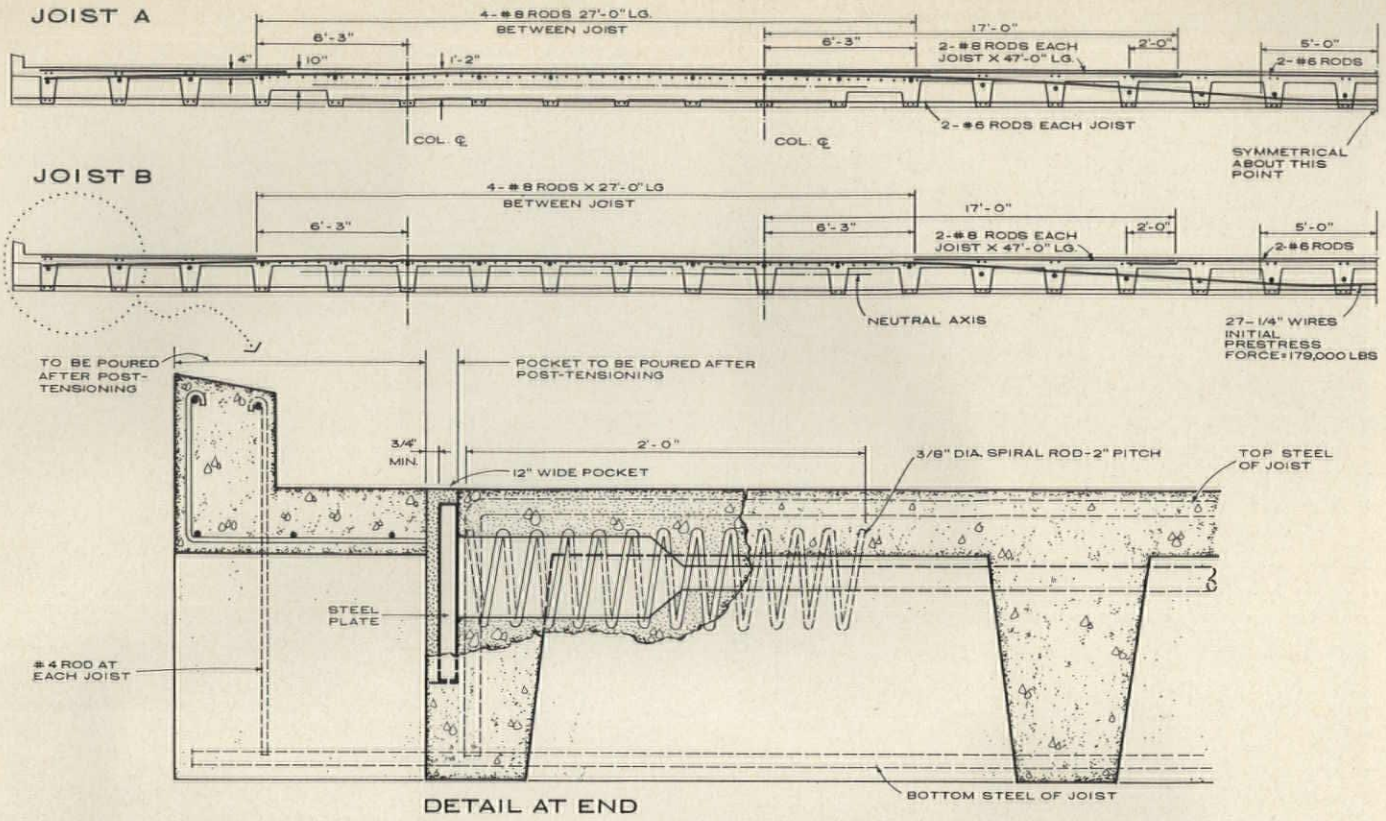


Prestressed Waffle Slab

A 114 ft sq, continuous pour, two-way coffer roof system is described.

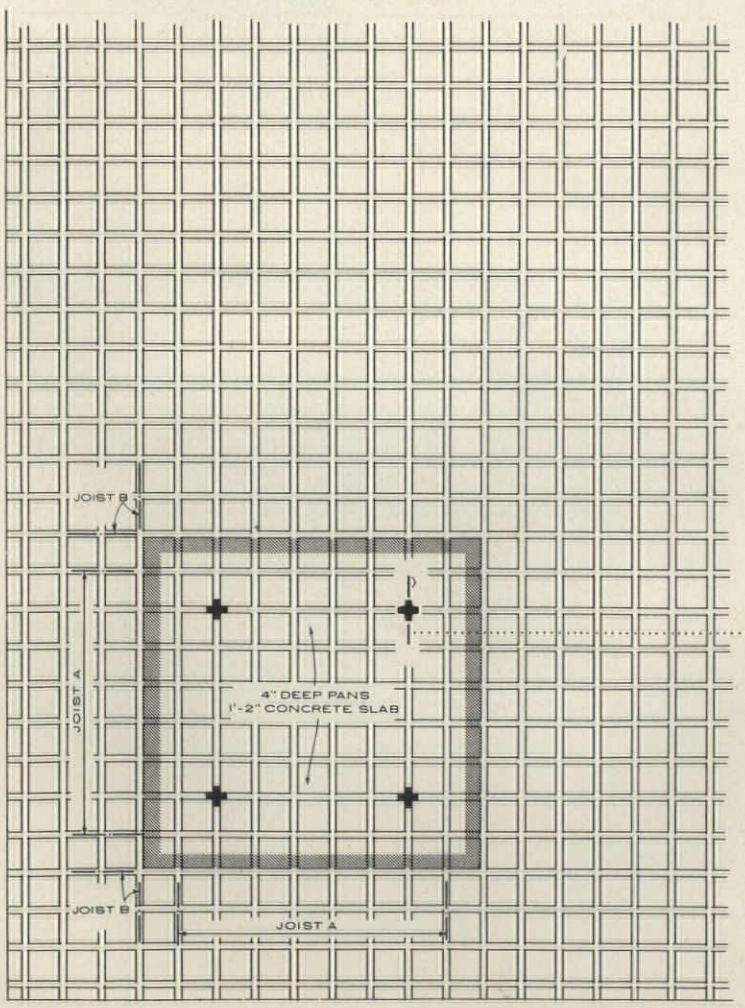
Organized as a strictly formal plan, the Wickliffe (Ohio) Public Library has brick enclosing walls measuring 100 ft sq. Since a large uninterrupted area was required within the building, Architects Visnapuu & Gaede placed the roof supports near the building's corners. An additional design requirement was the use of long roof overhangs to protect the interiors from direct sunlight.

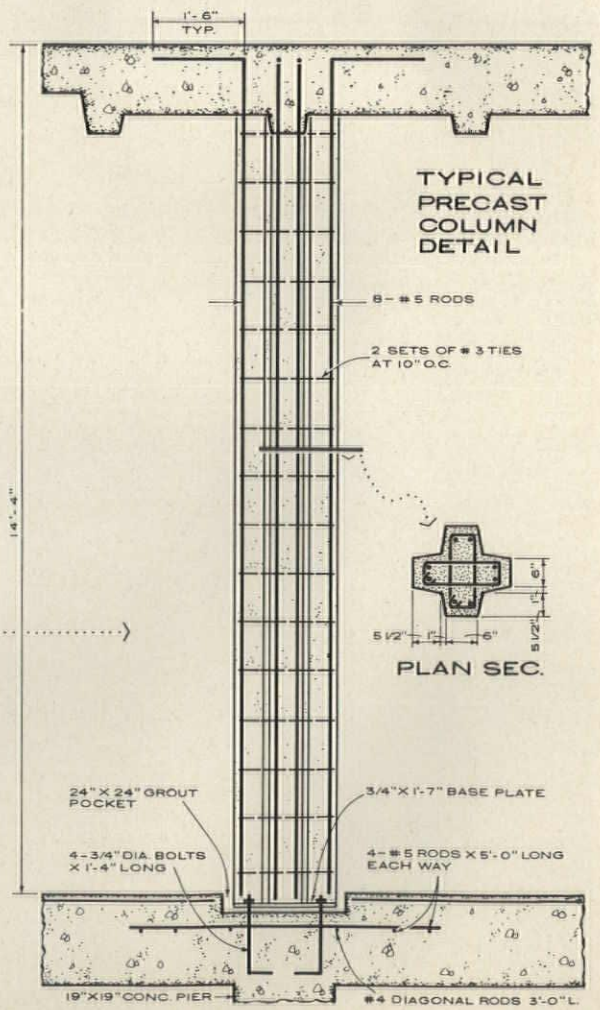
In collaboration with R. M. Gensert & Associates, Structural Engineers, an immense prestressed waffle-slab roof system was developed. This slab, resting on clusters of four columns near the four corners, spans approximately 50 ft between columns, parallel to the sides of the building, and 70 ft across the diagonal. It not only cantilevers 16 ft beyond the columns, but also extends 7 ft beyond the perimeter clerestory sash. Since the plan is symmetrical and non-directional, a 3′ x 3′ two-way coffered roof system was designed. The 6 in. joints were fitted with conduits housing cables made up of from 22 in. to 27¼ in. round wires capable of 240,000 lb yield stress. Due to the width of the joists, spiral connections were necessary at the joist ends. Concrete, designed for 4500 psi strength, was poured in one continuous 17 hr operation. Over the column clusters, the shallower coffers and thicker slabs were designed to provide for the large shear and negative bending stresses ■



DETAIL AT END

PARTIAL ROOF FRAMING PLAN



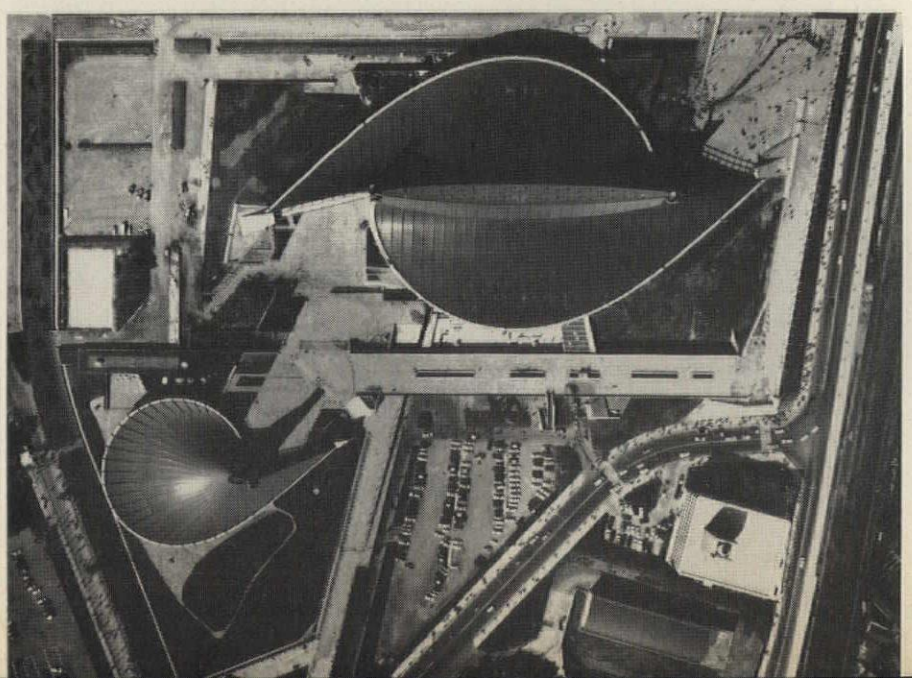


Photos: Yukio Futagawa

BIG TOPS BY TANGE AT TOKYO OLYMPICS

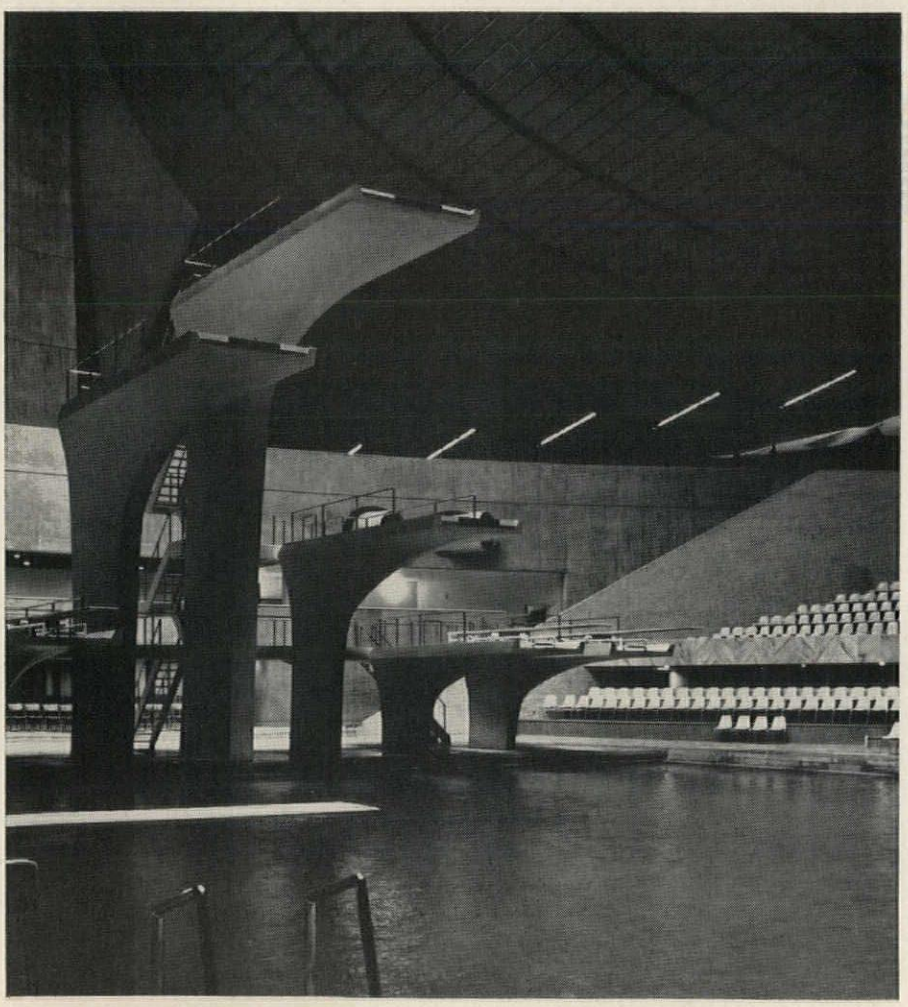
Participants and spectators at the recent Olympic Games in Tokyo experienced two of the most notable *sportspalasts* erected in recent years —the National Gymnasium and National Gymnasium Annex by Japan's modern master, Kenzo Tange. Now that the Olympics are over, these dramatic structures will serve as the permanent core of Tokyo's Yoyogi Sports Center. The main gymnasium was used for Olympic swimming and diving competitions; the swimming pool and diving tank are convertible into ice skating rinks. The smaller gymnasium, which featured basketball during the international games, is basically an arena suitable for various sports contests.

The main gymnasium's form, deriving from an immense cable-suspension roof strung between two towering concrete masts, is curiously evocative of traditional Japanese roof forms, despite its thoroughly up-to-date use of techniques and materials. The catenary curve of the roof line, terminating at the vertical pillars and then flowing to supportive stanchions in the ground, has a distinctly Oriental flavor. When seen from above or in plan, however, Tange's ingenious juxtaposition of the two "halves" of the roof becomes evident. Instead of being a single covering, as in a tent or dome, the two sides of the roof extend the one beyond the other at either end to create entrances from which ramps lead spectators to their seats. From either end, the main supporting tension cables strain upward from their concrete anchors to the tall masts. Thus, this becomes a cunningly engineered shelter that at the same time can be perceived as a totality by the observer because of its apparent simplicity. Within, the 15,000-seat gymnasium is one of the breathtaking public spaces of our day. Tange has wisely done little here to detract from the impressiveness of the great space. Those individual elements that do catch the eye—diving platforms, air conditioning and heating outlets, lighting



—are either so carefully designed or so unobtrusive as not to subtract from the experience. This might be labeled a big, latter-day Baths of Caracalla. In ancillary spaces, such as the foyer, the lobby, and the "VIP" room, a number of specially commissioned art works have been used, but these seem insignificant beside the soaring exterior and the voluminous interior of the gymnasiums—as, indeed, do the secondary spaces themselves.

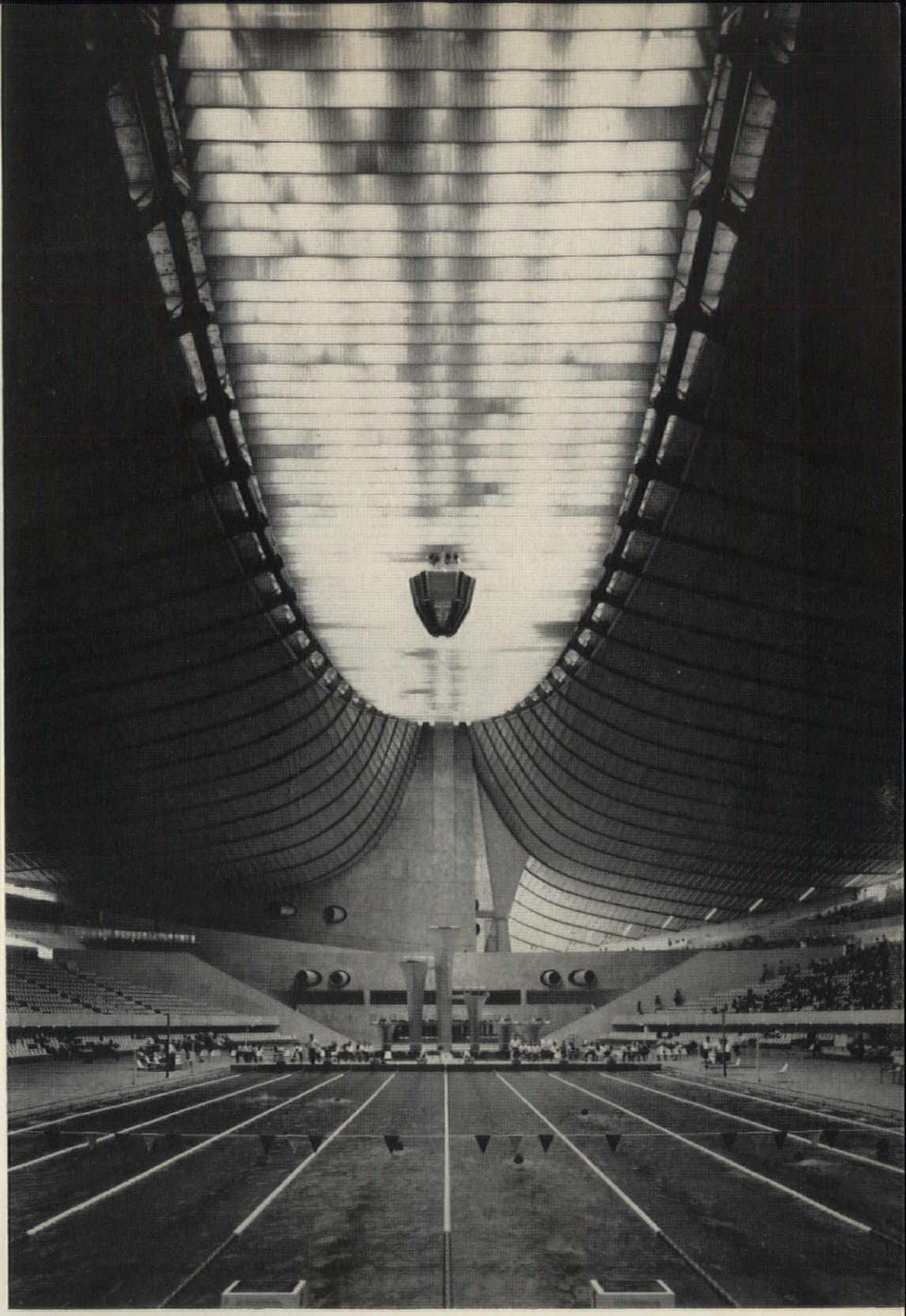
Jackson Smith, of the New York architectural firm of Eggers & Higgins, and the chief American diving referee during the Olympics, told P/A that the gymnasium and pools are "fabulous—the best I've seen in 12 years of judging national and Olympic competitions." Smith is so enthusiastic that he is trying to get the New York Chapter AIA or Architectural League to strike a medal for Tange when he visits this country in a few months, and is arranging an exhibit at the League of sports buildings, with the gymnasia as the central buildings.



A spokesman for the United States Olympic Association reported to P/A that the pool building may well be the finest swimming pool structure ever built for competitive swimming, and quoted one of the swimmers as saying it is the "type of place you would expect if you died and went to heaven."

The gymnasium annex, holding 400 spectators, while of course less overwhelming than its big brother, can hold its own very well as a unique creation. Its roof, once again a suspension structure, swoops in a dramatic swirl from a supporting mast. The visitor is pulled visually into the building, past the mast, in somewhat the same manner as in the larger structure. Given the smaller scale of this arena, the spectator is closer to the roof structure (p. 180, *bottom*); its ingenious system of slatted members and supporting steel bands, plus the upward sweep of the glazed area that punctuates the space between the roof edges, becomes perhaps a more personal experience than the feeling of exhilarated awe in the large gymnasuim.

The two buildings are connected

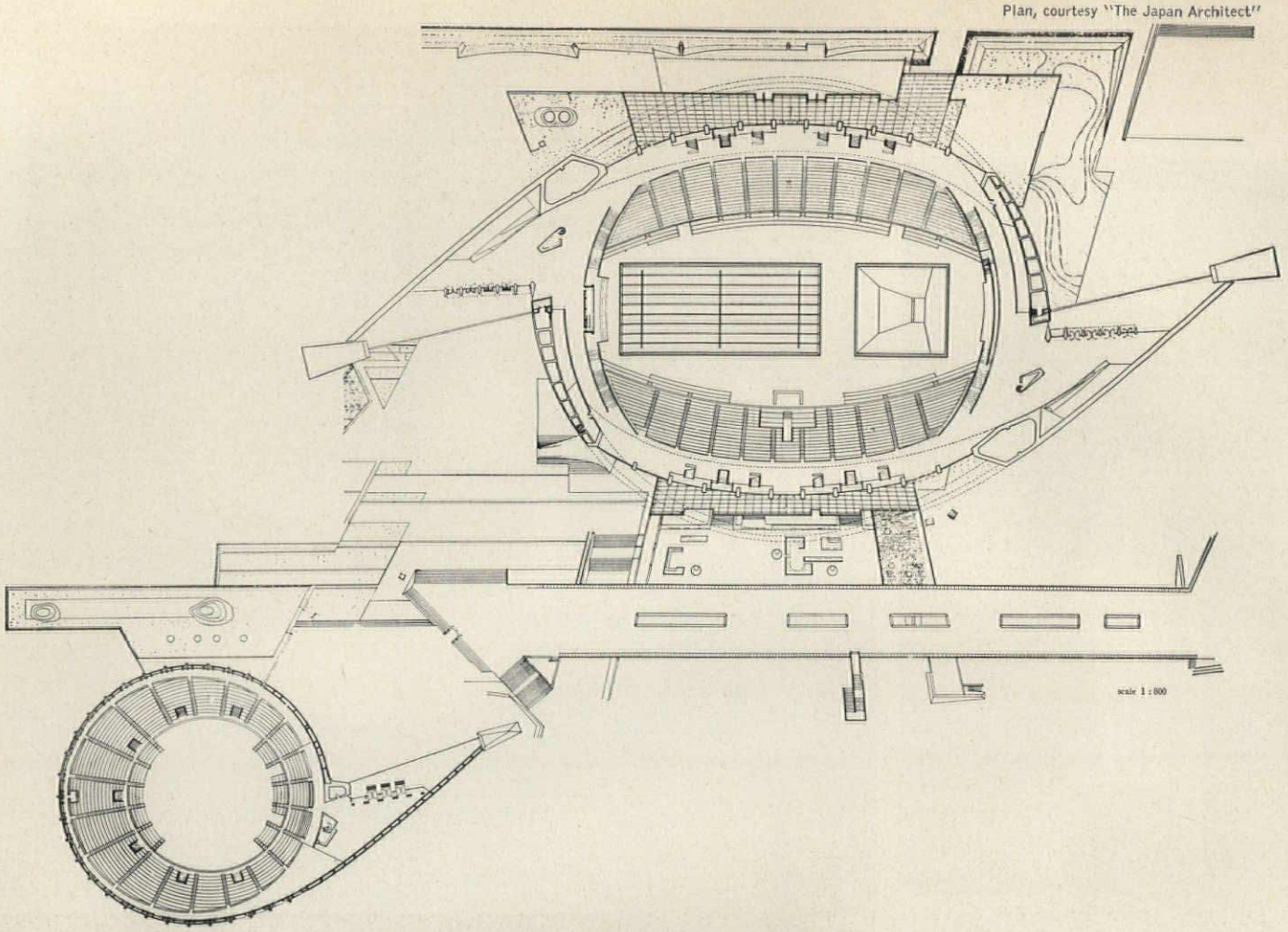


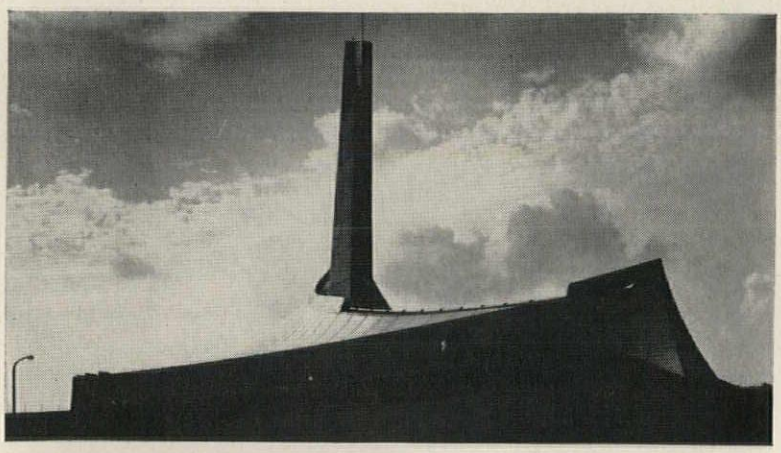
by a concrete structure that contains, on its lower floors, administrative offices, bar and dining rooms, and dressing and practice areas for players. The roof of this linking element acts as the pedestrian promenade between the buildings (p. 181).

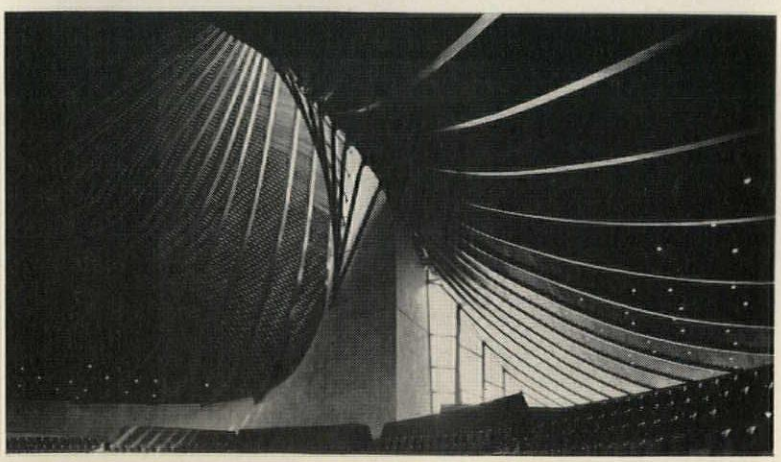
The visual transition from the soaring roof structures to the concrete base structures of the gymnasia probably could have been handled with more care (there was an element of rush, unfortunately, to have them ready for the Olympics). The lightness of the upper reaches is not matched by the somewhat heavier arch system of the concrete base. This is not to say that the buildings have feet of clay, for the base structures are rather interesting in themselves. Tange realizes this drawback, however, and was quoted in *The Japan Architect* as saying, "I also do not believe that our uniformity of form went far enough. In this case, the form feeling of the catenary, which comes from the suspension structure, is a keynote for the steel roof structure, but to make the tensile structure possible, the compression part of the base part is necessary. The arch then becomes a keynote for the concrete structure. In the details are many places in which the keynotes have not been carried out."

Another misfortune for the buildings, one of which Tange is also aware but could not control, is that the site is too small for the complex. Several of Tokyo's newer public buildings crowd it from the south side, and the undistinguished living quarters of the Olympic Village are on two other sides. Hopefully, the latter may not prove permanent and the National Gymnasium might have a clearer view of the park surrounding Meiji Jingu Shrine on the other side of the athletes' domitories. Within the site, grass-covered mounds have been created wherever possible to tie the winged structures

Plan, courtesy "The Japan Architect"







in with what landscape there is.

"My one disappointment," Tange says, "is connected with the relation between the site and the building exterior and the city spaces around it. From a visual standpoint, this site is too small for such a vast building, and even from the functional viewpoint, the smallness of the site means that there is not enough parking space to accommodate tens of thousands of spectators."

Nevertheless, the gymnasia are strong enough to overcome these drawbacks and make an exciting experience out of going to a sports event or even just passing them or seeing them from afar. And to build them, Tange did not tear down a fine old railroad station, as we are doing in New York. —JTB, Jr

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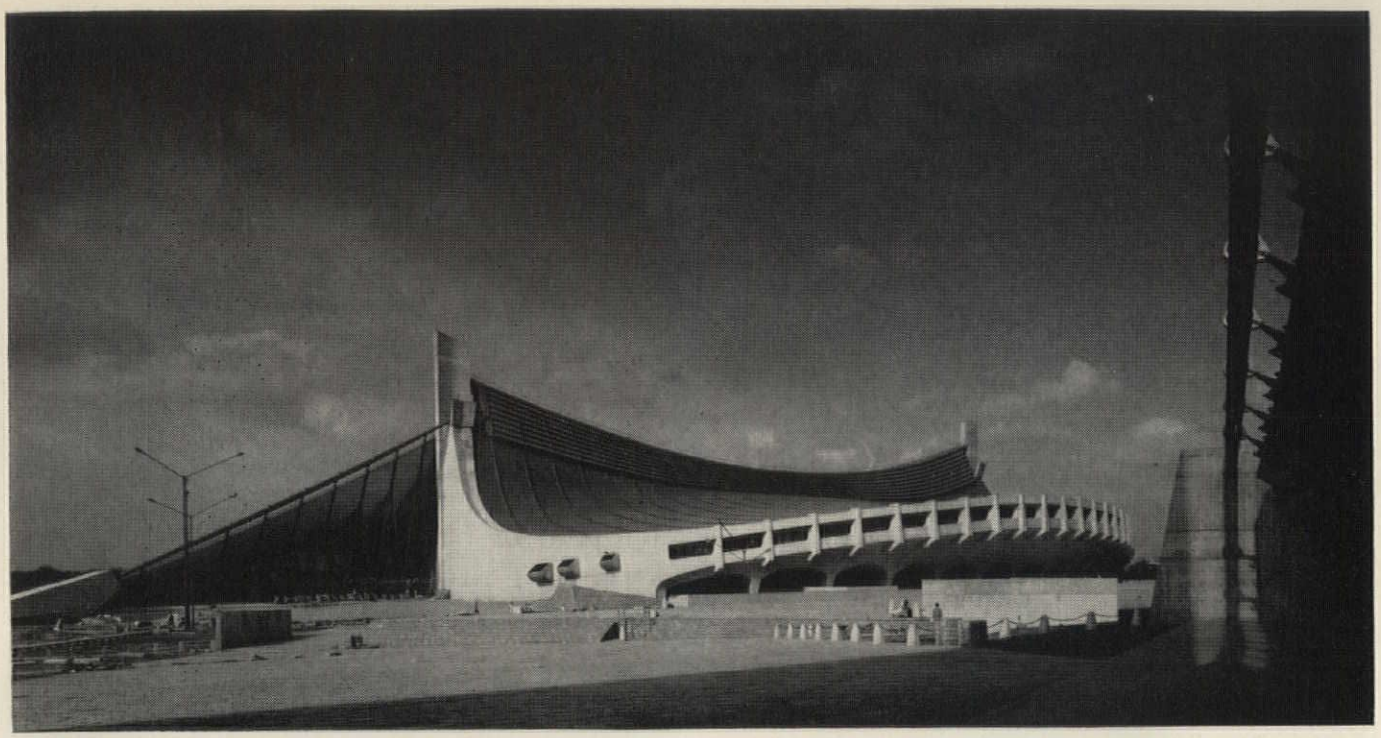
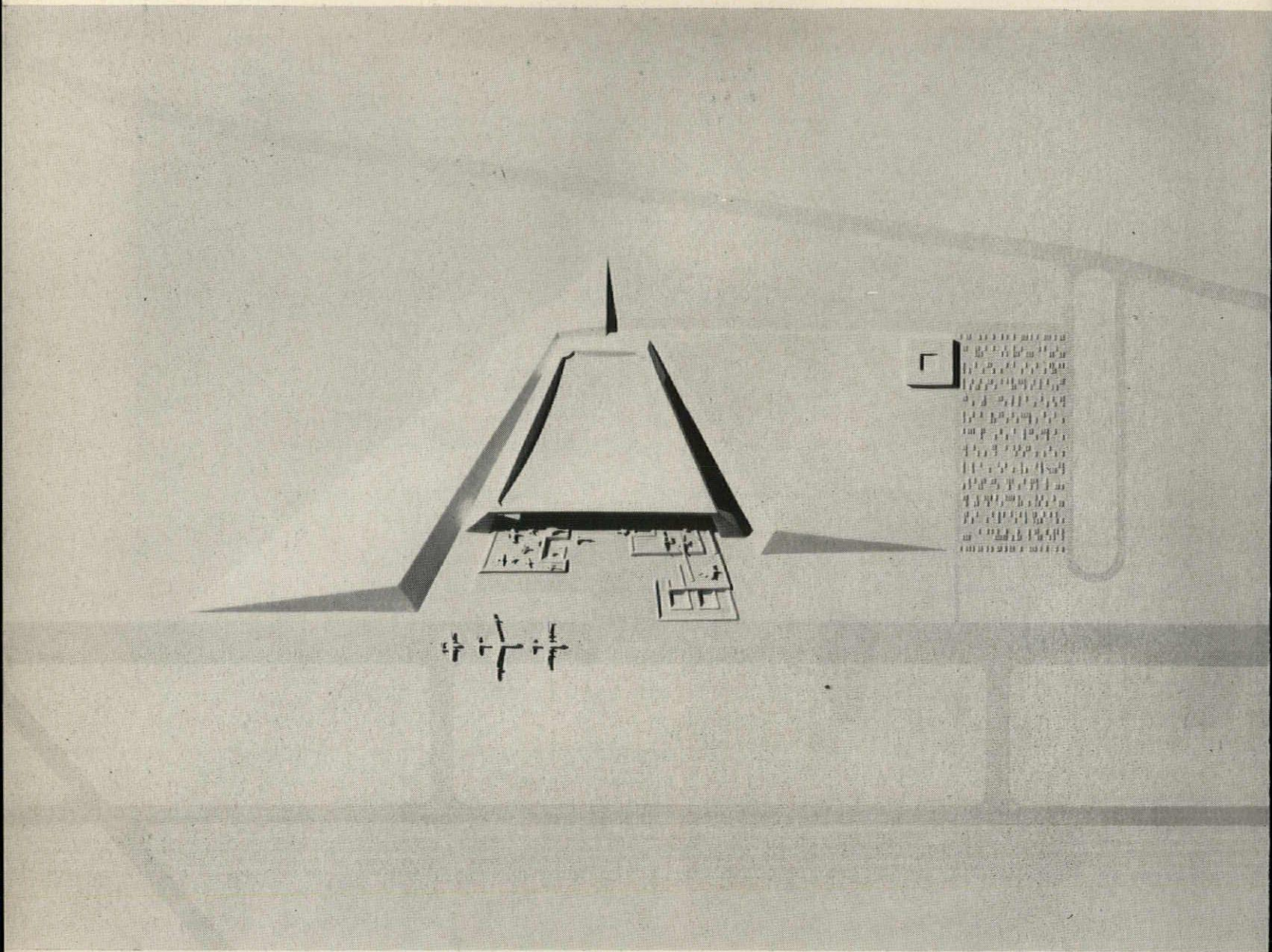
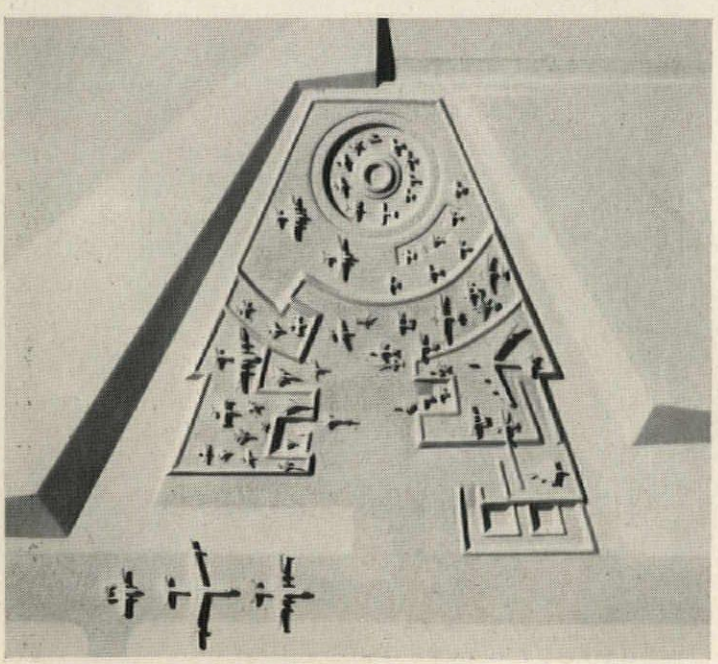
Architect: Kenzo Tange
Koji Kamiya, Masamitsu Nagashima, Miki Yoshioka Urbanists and Architects Team (Urtec)
Structural Engineer: Yoshikatsu Tsuboi
Mamoru Kawaguchi, Shigeru Kawamata
Mechanical Engineer: Uichi Inoue, Mitsuo Sato
Electrical Engineer:
Motoi Otaki, Morio Nakamura





Photos: Ezra Stoller Associates



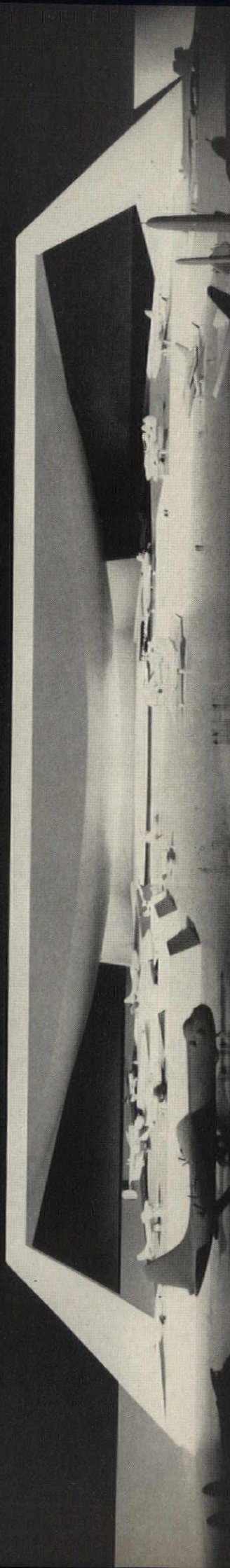
Winglike Canopy Will Shelter Air Force Museum

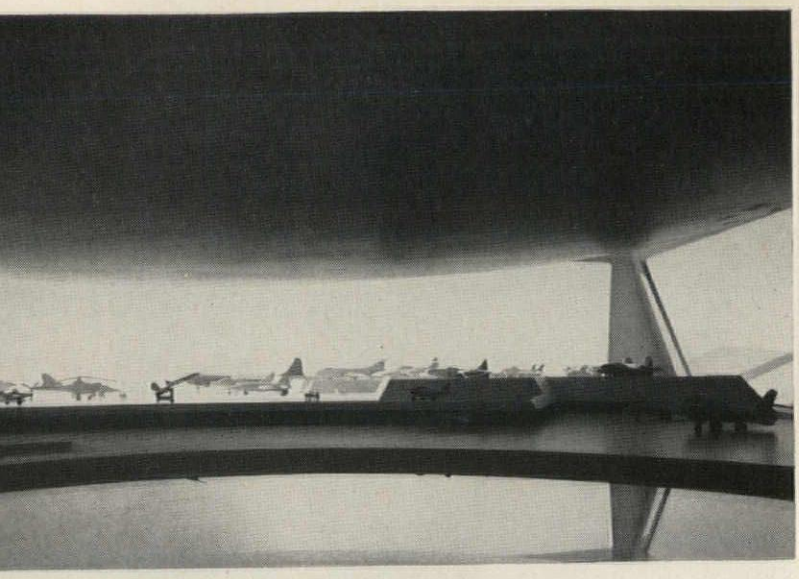
A huge structure calling to mind Pier Luigi Nervi's hangars for the Italian Air Force and their own firm's Dulles International Air Terminal has been designed by Kevin Roche of Eero Saarinen & Associates (Joseph Lacy, John Dinkeloo, Kevin Roche, Partners) to shelter the Air Force Museum at Wright-Patterson Air Force Base near Dayton, Ohio.

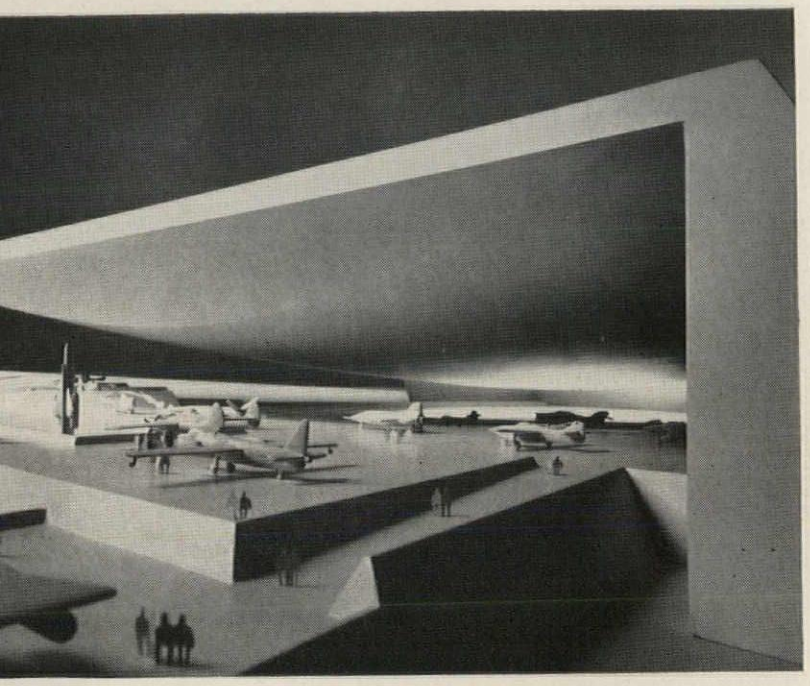
This is a space that may turn out to be most eloquent in its simplicity, for it will consist of little more than a roof of steel strands and plates supported at four corners over a multileveled series of ramps, plateaux, and platforms where aircraft from the Wright brothers on will be shown. The space will be so vast—eight acres under the canopy opening onto a forecourt occupying another twelve acres—that craft ranging from early balloons and lightweight, fabric-covered, single-engine planes to the latest in jet and rocket equipment will seem almost to be in their native element of air and sky. This feeling will be reinforced by the presence of two great, slanting mounds at either side of the museum that will direct the eye toward the empyrean.

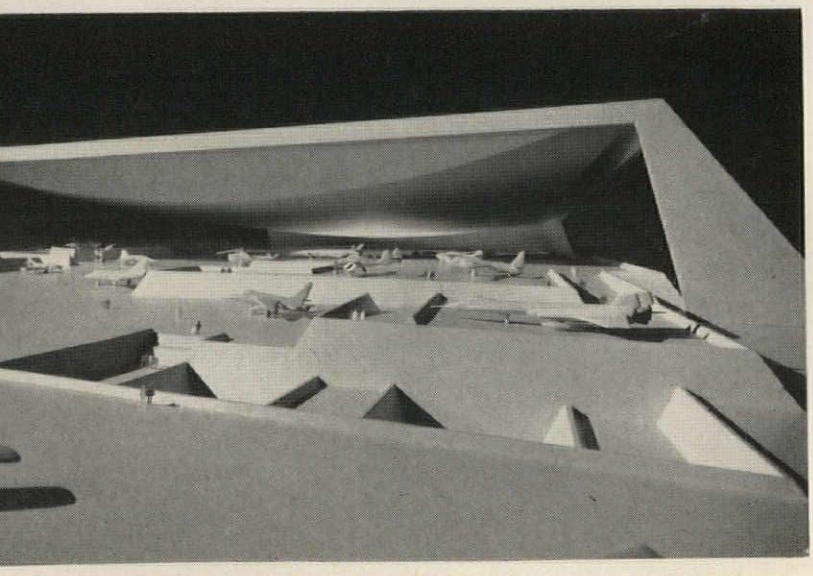
The spectator will enter the museum through a tunnel lined with exhibits referring to man's attempts to fly before Orville and Wilbur Wright became the first successfully to stay aloft in a power-driven aircraft in 1903. He emerges from the tunnel at this point in the development of powered flight at the lowest and most protected (because of the delicate fabric-covered machines) level of the museum. From here, his gaze can travel upward and outward, past exhibits unfolding developments in flight, to the immense 700-ft-wide, 130-ft-high opening facing the airfield.

Exhibits will not consist of simply









depositing a plane on a ramp or platform and saying, here it is; they will show planes in "Habitat Groups" evocative of the history and geographical areas connected with the craft—a P-51 Mustang in a China-Burma-India setting or a B-17 about to take off for a mission across the English Channel, for instance. Integrated with showing of actual planes will be "micro-museums" devoted to showing technological advances of the times. Events significant in themselves, such as the Berlin Airlift or the first atomic bomb, will be shown in smaller clusters called "Time Capsules." In special display areas in the forecourt of the museum will be the latest products in Air Force rocketry and misselry. Designer of the exhibits is Herb Rosenthal & Associates.

Kevin Roche describes the roof system as a network of steel cables interlaced and covered with steel deck and suspended from four points which are restrained by truss struts spanning the perimeter and themselves braced by steel cables. Opposing stresses thus created will make the huge canopy stable in itself. It will then be supported at the four points by massive pylons embedded in the ground.

Some 190 acres of Wright-Patterson Air Force Base have been set aside for the museum, presenting the opportunity for the use of runways on the site for actually taxiing the exhibit craft around on occasion. The museum is being endowed and built by a private group called the Air Force Museum Foundation, which will present the structure and its contents to the U.S. Air Force after completion (opening is set for early 1967).

It is safe to predict that the building, when completed, will be an uncommonly powerful one, evoking in its soaring shape the wings that have gone aloft to protect us and many others in the past 60 years.—JTB, Jr

THE JOHN F. KENNEDY GRAVE

A Discreet, Respectful Design

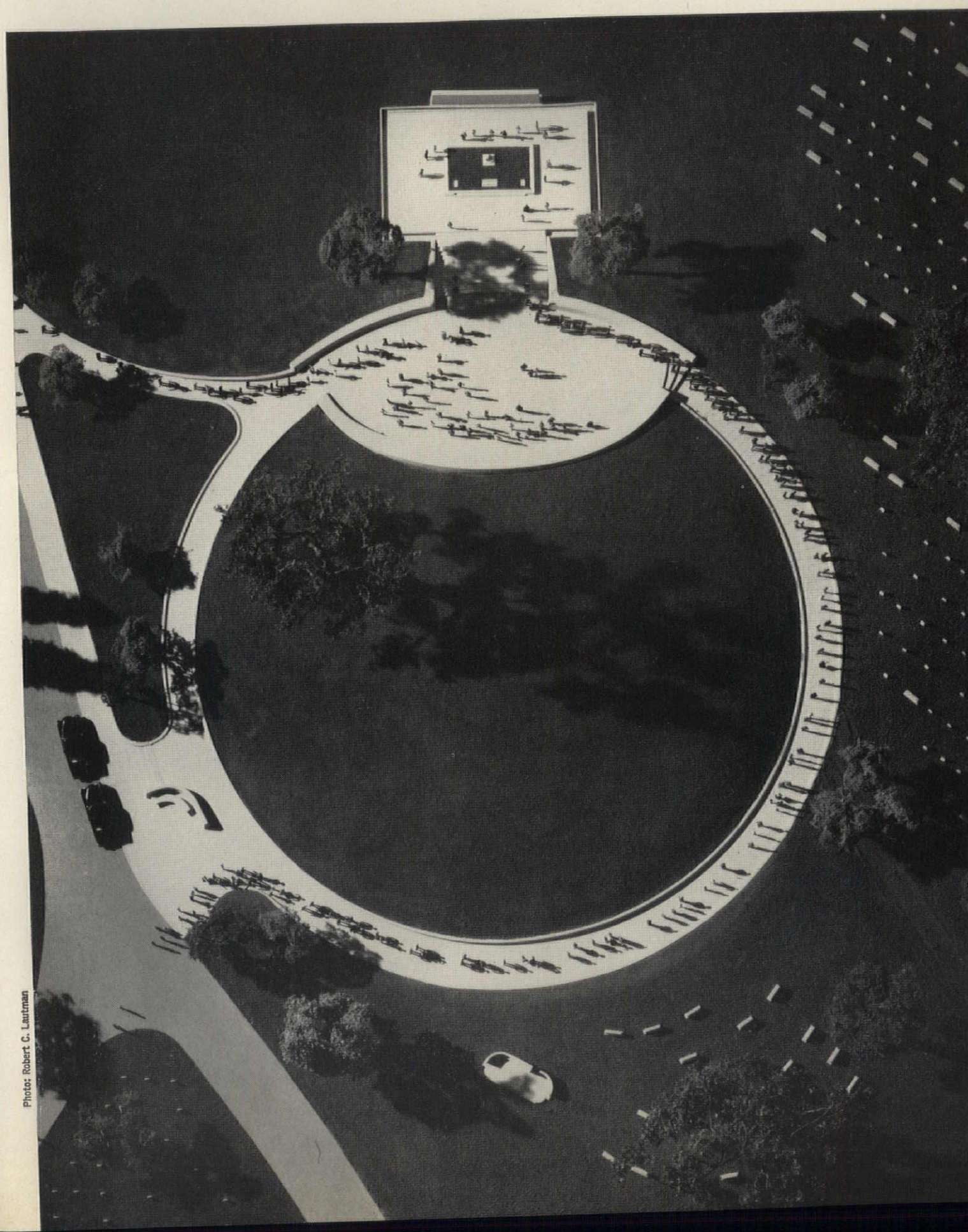
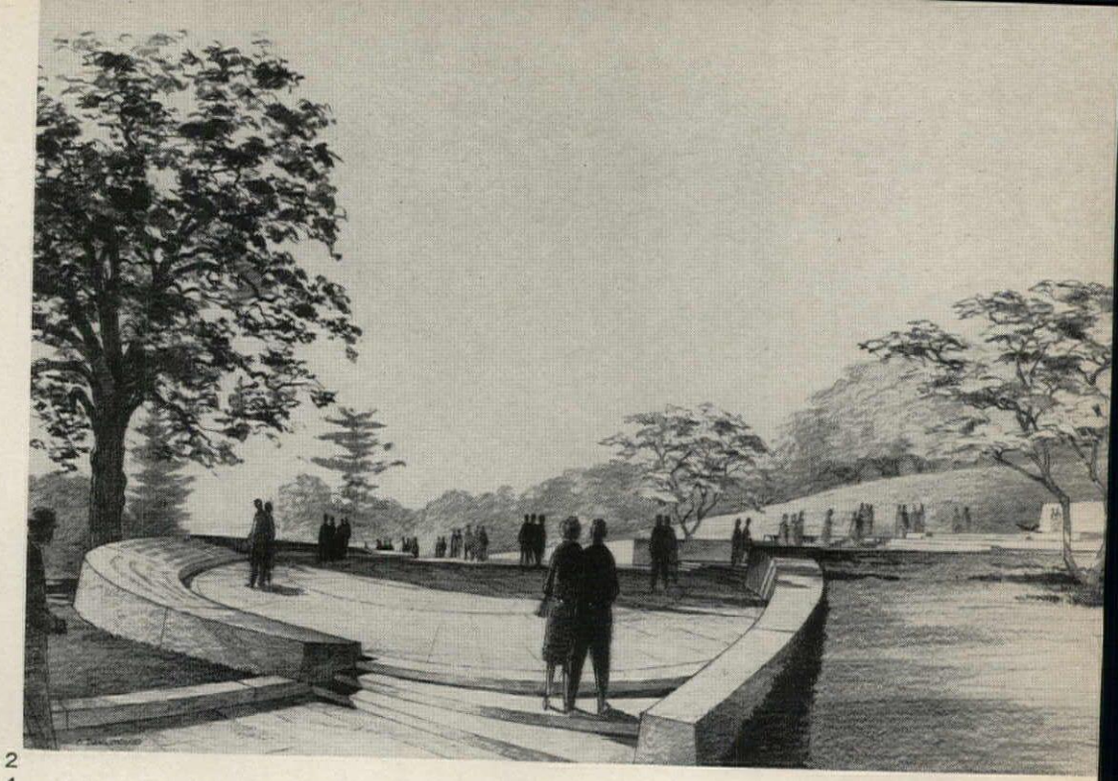


Photo: Robert C. Lautman



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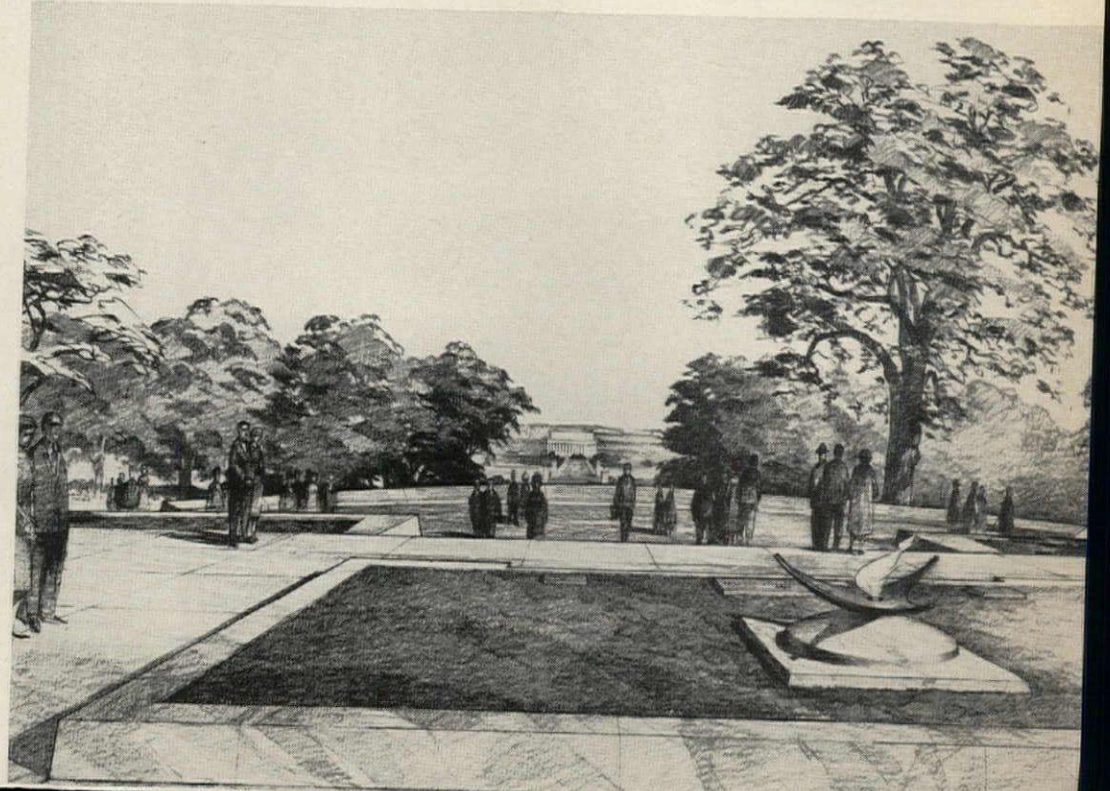


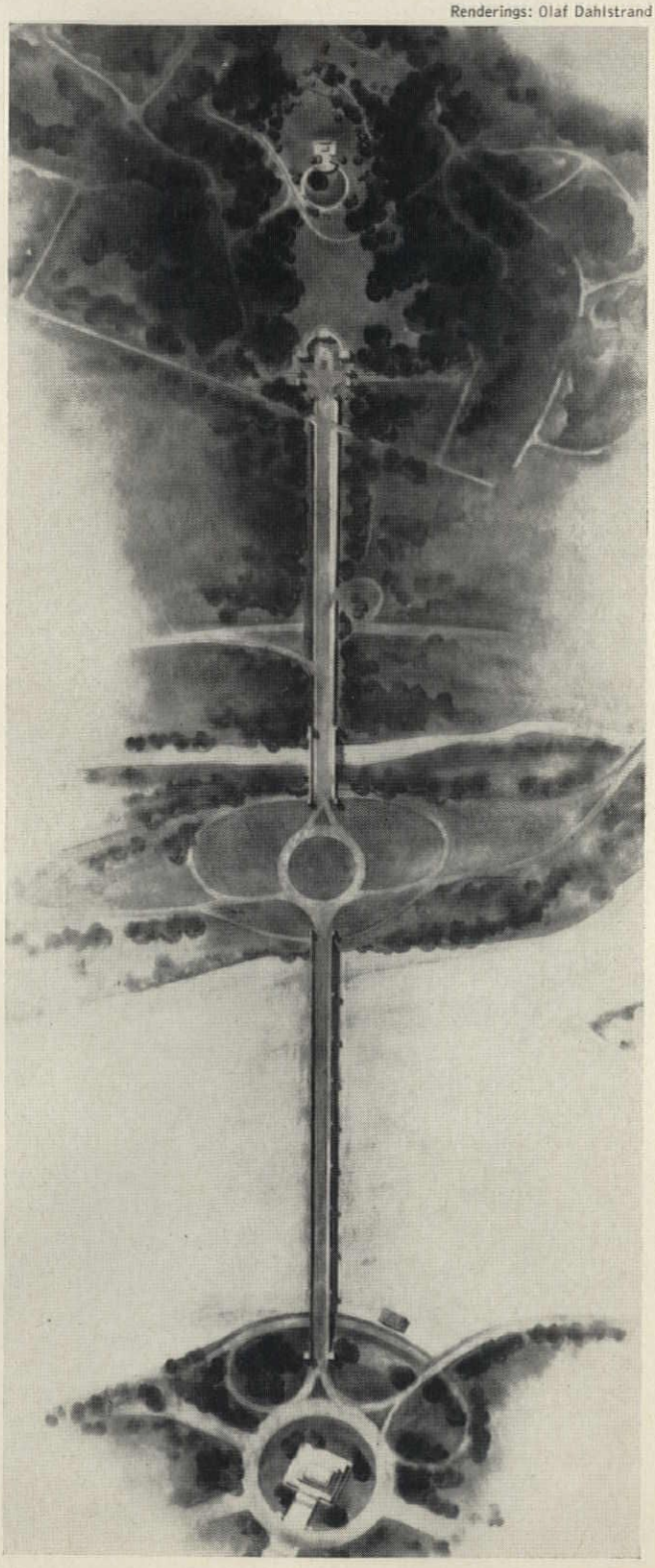
The long-awaited design of the late President John F. Kennedy's grave was unveiled on November 16 at the National Gallery of Art by Architect John Carl Warnecke, Secretary of Defense Robert S. McNamara, and Senator-elect Robert F. Kennedy. The subdued yet impressive scheme immediately stilled fears that the design would call for obtrusive elements such as towers or large pieces of statuary. In his letter of submission to Mrs. Kennedy of April 6, Warnecke stated that "we are dealing basically with a grave, a memorial grave. . . . It is neither a major monument nor a living memorial." In pursuit of the requisite simplicity and dignity, the architect spent four months in exhaustive research and consultation with Government officials, landscape architects, sculptors, and other designers on what the concept of a "memorial grave" should be. The findings were produced in an 80-page report to Mrs. Kennedy.

The grave will lie on axis between the Lincoln Memorial, Memorial Bridge, and the Custis-Lee Mansion (*right*). A circular grass forespace containing a pre-Revolutionary oak tree will be bounded by a walk 660 ft in circumference. A curved bench at the entrance will direct visitors to the right as they ascend to the grave **(1)**; the walk to the left will be used for ceremonial visits. At the end of the walkway, the visitor will arrive at an elliptical overlook capable of holding 1000 people **(2)**. A low, slanted wall at the outer edge of this plaza will bear incised words of the late President. Leaving this terrace, a short flight of stairs **(3)** will lead to the grave site, a marble plaza, on which the grassy grave plot **(4)** will rest. The only elements on the grave will be simple slate markers for the President and his two deceased children, and the three-pronged bronze font holding the eternal flame. Behind this plaza will rise a 7½ ft terminal wall bearing the Seal of the President of the United States.

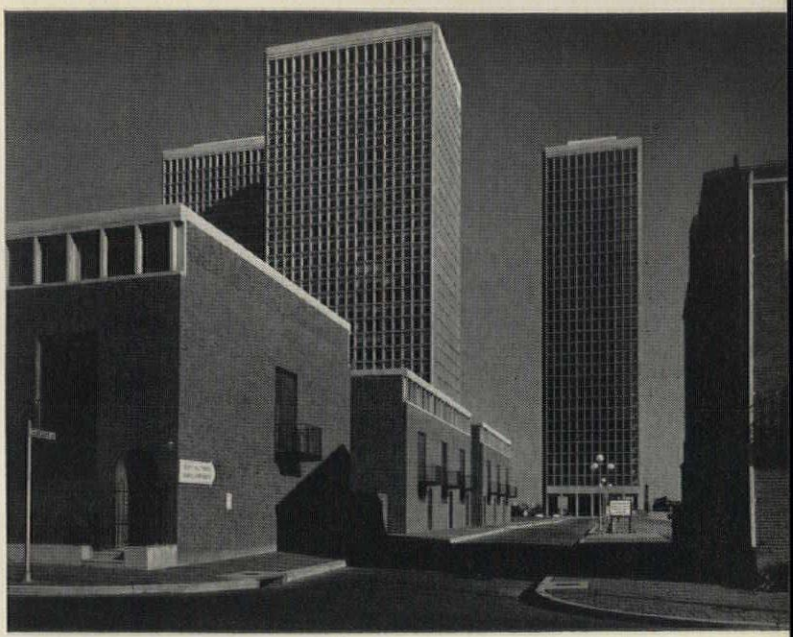
Color and texture of materials leading up to the grave will lighten symbolically as the visitor progresses, from dark granite on the approach walks to medium-light granite on the overlook terrace, to the white marble of the grave area itself. From the grave, the visitor will ascend a walk to the Custis-Lee Mansion, pausing at several platforms to look back at the grave and Washington in the distance.

Two minor questions occur in reviewing this design. One is whether the terminal wall at the back of the grave could not be restudied to make it more in feeling with the movement of the rest of the design. The second is whether the Presidential seal should not be larger. These are small matters, however, in a design which has solved an exceedingly difficult problem with consummate taste.—JTB, JR

Renderings: Olaf Dahlstrand



Photos: George Cserna



SOCIETY HILL: Elegance and Politesse

Philadelphians writing about their famous redevelopment program are fond of quoting John Adams, who, when he left that city after the first Continental Congress, said he was sorry to leave "the happy, the peaceful, the elegant, the hospitable and polite city of Philadelphia." Two of these adjectives can be appropriately applied to the latest completed complex in Philadelphia's redevelopment: I. M. Pei's Society Hill Towers and Town Houses. These are both elegant and polite. The recently opened towers (the town houses were opened in spring of 1963) furnish a graceful exclamation point to an area that is devoted largely to the rehabilitation of older buildings and the integration of low-rise new buildings with them. The three, 31-story buildings stand somewhat aloof and apart, as they should; their serene façades of deep concrete grids à la Kips Bay and their slim shapes make them sympathetic to the variety of other Society Hill buildings, new and old.

Philadelphia architects and redevelopment officials, when asked for their opinions of these buildings, are liable to comment instead on the whole plan of the area or on the generalities of achieving a good balance between superior contemporary design and the fine old architecture for which the city is celebrated. Robert L. Geddes, of Geddes, Brecher, Qualls & Cunningham, chairman of the Design Review Board for the city, told P/A that the "critical battle is to build contemporary architecture reflecting our own society; if we do not, we only design 'escapist' buildings, those trying to recollect the past." Few previous societies, he remarked, designed escapist architecture (Victorians being about the most recent exception); in redeveloping our cities, we should seek to achieve harmony of materials and scale in advancing architectural continuity. Modern architects, he commented, are frequently not accomplished enough to attain this end completely. William Robb, resident manager of the towers for the owner, Alcoa Residences, Inc., when asked for his evaluation of them, answered instead with praise for Philadelphia's preservation attempts. As a Scot, he had not appreciated the buildings of his native Glasgow until he returned there after some years abroad. When he came to Philadelphia to manage Alcoa's Society Hill complex, he became immediately excited about the importance of restoring and renovating the older buildings around the city. Philadelphia architect Thomas R. Vreeland, Jr., feels that, after the self-complimenting euphoria of the past few years, Philadelphians are beginning to take a harder look at their redevelopment programs. A series of articles is appearing in the *Philadelphia Inquirer* on the subject, and *Greater Philadelphia* magazine has been giving redevelopment a critical look. In addition, younger architects are becoming interested and involved in citizens' and professional groups. There is a watchdog group in the local AIA chapter, Vreeland told P/A, which now receives close at-

tention from Edmund Bacon, Executive Director of the Philadelphia City Planning Commission. Another group is concerned with what the proposed Delaware Expressway (which will slash between Society Hill and the projected Penn's Landing development on the riverfront), will do to the edge of Society Hill. Presumably, with this kind of aroused attitude on the part of the press and professionals, another Penn Center will not be allowed to happen.

Seen apart from the other developments in Society Hill, Pei's towers appear quite willowy, sitting on the visually spindly stilts which form the two-story, ground-floor arcade. The central space between the buildings has lost the "Campidoglio" effect it had in the design stage (p. 175, OCTOBER 1960 P/A, and p. 145, JANUARY 1961 P/A). There is a round, mosaic-bottomed fountain in place of the bollarded geometric circle of the original design, and a large sculpture (by Leonard Baskin) is still to be completed and installed.

From within and without, the walls of the lobbies are opaque, sheathed in mica-aggregate concrete. This opacity is disturbing, diminishing the importance of the entrance and halting the feel of flowing, open space desirable at this level. Inside, the rough, sparkling texture of the aggregate surface contrasts most unhappily with the small, slick gray tiles that clad the central elevator, stair and mechanical core. An attempt has been made to brighten these rather institutional lobby spaces through use of elegant chandeliers. Within the lobby as without, more glass would have allowed tenants to enjoy the surrounding landscape and river views.

The apartments themselves surprise by being unexpectedly small and low-ceilinged. Although the view in almost any direction is practically panoramic in scope, the effect is more constrained than in Pei's Kips Bay Plaza apartments in New York, where the rooms are more generously proportioned and the windows more "king size." It will take quite a few years before

some portions of Society Hill and the riverfront will bear much gazing at (unless one has a predilection for parking lots and derelict wharves). But that day will inevitably come, and the tower residents could conceivably wish then that the designer had been a bit more expansive with his ceiling and window heights (there *are* higher windows on the top, or "penthouse," floor). Right now, it is surprisingly pleasant to look out at the neighboring towers (the window frames are deep enough to preserve privacy), or to see the city or the river framed between them. The sense of small scale in some of the apartments is underlined by what seems an unusual amount of space given to "pass-through" areas like foyers and halls.

Positively, Pei seems to have treated with greater refinement the structural-framing technique he used for Kips Bay. This technique, which embodies structure, exterior walls, and window openings in one system, has produced a façade that is distinctive in itself yet "lives" very well with its neighbors. The use of bronze-colored anodic aluminum for window framing in Society Hill Towers, rather than the standard color aluminum used in Kips Bay, is a decided improvement in an important detail. The buildings, as noted before, sit well on the site. They are important, but not aggressive; they make a good vertical statement, but do not shout it. The landscaping by Robert Zion & Harold Breen, though still in somewhat rough shape, will be gracious and sympathetic and not "touristy" as some of the U.S. Park Service work nearby. And the town houses (called "townehouses" by Alcoa, sad to say) successfully relate to the older buildings across the way. As G. Holmes Perkins, Dean of the School of Fine Arts at the University of Pennsylvania and Chairman of the Philadelphia City Planning Commission, told P/A, the exterior urbanity of these houses is very good. Commenting on Pei's entire complex, Perkins said that it is the best one he has seen so far in any city, and he has served on a number of planning juries throughout the country.

Dean Perkins thinks that the "spark" for individual development of houses in Society Hill probably stems more from sentimentality for the old area than from Pei's buildings, but that Pei's designs are much more appropriate to what should be done now than the pseudo-Williamsburg "recreations" that dot the area. Speaking of the City's Design Review Board, he thinks that "there should be more emphasis on encouraging those who can make creative and new solutions to filling in between older buildings in terms of scale and materials."

A new attitude is being nurtured in Philadelphia: the "step-up in designing by city scale rather than designing building by building," in Perkins's words. In the manner of scale, Pei's group might lie between the two; coming up are decidedly city-scaled concepts such as the University City development and the Penn's Landing area. When projects such as these are realized, Philadelphia will begin to achieve the cohesiveness that must inhere in a city planning program. —JTB, JR

Quieter Apartments

BY WILLIAM J. McGUINNESS

One of the most disturbing aspects of apartment living in the United States is the lack of sound privacy between adjoining apartments. A newly developed partition system that provides a superior sound-transmission loss is discussed by the Chairman, Department of Structural Design, School of Architecture, Pratt Institute.

Among the acoustical problems that beset apartment occupants, one of the most troublesome is sound transmission between apartments. Many tenants and cooperative owners face a sleepless night when there is a party next door. Even where ordinary conversation is concerned, they know that unless they speak in lower than normal tones, they can be overheard in the adjoining apartment.

Although the problem often applies to floors as well as walls, it is the purpose of this discussion to report an important breakthrough in the improvement of privacy by a recently developed wall system.

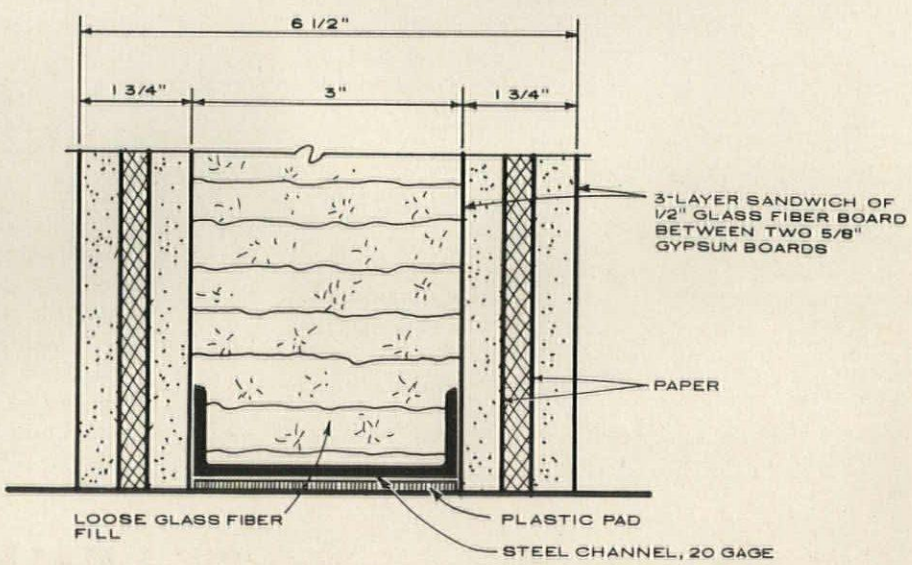
Team effort is often required to break through barriers that frustrate individual attempts to upgrade building components. Concurrent with the recent establishment of acoustical standards by Federal Housing Authority, a number of organizations found a common interest in perfecting the new residential partition. They include Tishman Research Corporation (pp. 191–192, JUNE 1964 P/A); The Research Department of the Pratt Institute School of Architecture; Bolt, Beranek & Newman, Consultants in Acoustics; Vaughan Walls, Inc., a joint venture of Vaughan Interior Walls, Inc., and The E. F. Hauserman Company; and Owens-Corning Fiberglas Corporation.

Prior to the FHA standards, there had been little Government action to establish criteria for residential acoustical privacy. This was in distinct contrast to civic regulations in some countries that required mandatory transmission losses of high value. Individual private builders in the United States had little incentive to produce a better wall than their competitors', who could save money by cheaper and poorer construction.

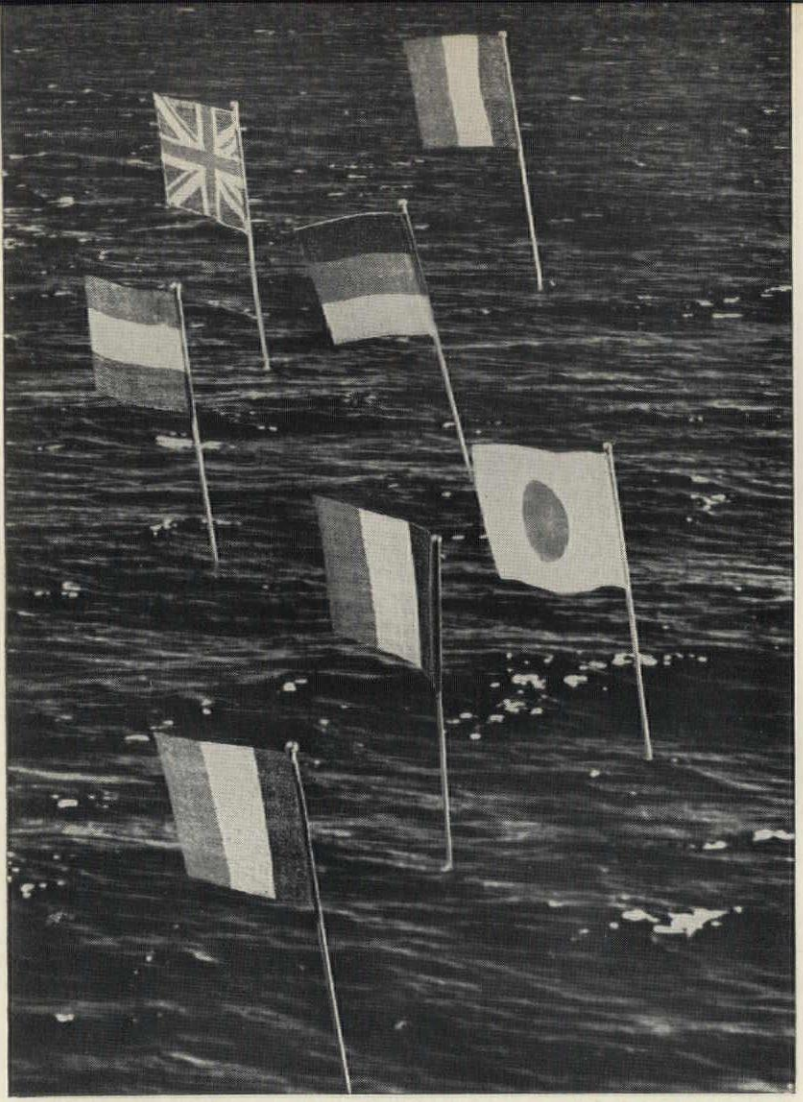
This barrier was broken by the efforts of the Tishman Research Corporation in helping to promote a wall (*shown*) recently exhibited in prototype mock-up form (as erected by Vaughan Interior Walls, Inc.) at one of the new Tishman apartment buildings. This development had been given impetus by the Research Department of the Pratt Institute School of Architecture, who retained the Tishman organization to explore, among other things, the possibility of better residential partitions. Pratt, in turn, had been motivated by a research commission given them by the Housing and Home Finance Agency to develop methods of reducing the cost of housing (pp. 204–208, OCTOBER 1964 P/A). The concerted work of all these parties, including tests by Bolt, Beranek & Newman, culminated in the new, noise-reducing assembly.

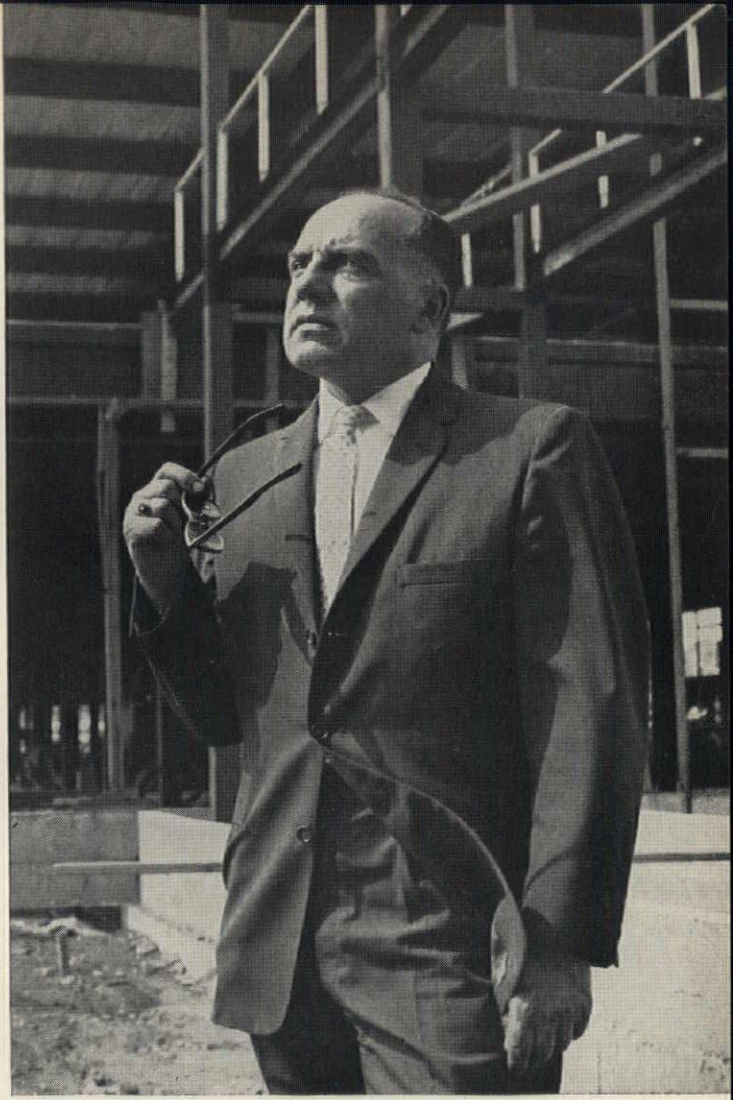
Tests showed a reduction of 61 db through the wall. This is expressed as a Sound Transmission Classification (ASTM: 90–61), which includes the effect of reductions at various sound frequencies. Although it is well known that low- and high-frequency sounds are difficult to absorb, the wall performed well in these areas.

These developments have been gradual. Transmission reductions of 40 and 50 db had frequently been accepted as the best to be expected. Two and three laminations have given way to the seven now proposed. Doors are, of course, a very weak link in acoustical containment. Since there are none between apartments, this problem does not apply. The other leakage possibility could be created by electrical systems. In general, switches can be kept off dividing walls. For the minimal convenience outlets required by the National Electric Code, staggered locations are planned. A 3-in. recess on one side of the wall does not impair its effectiveness. Rectangular rigid conduit can be routed into the three laminations on either surface. It is anticipated that tests will show the partition to have a 2-hr fire rating.



STC (SOUND TRANSMISSION CLASS) 61





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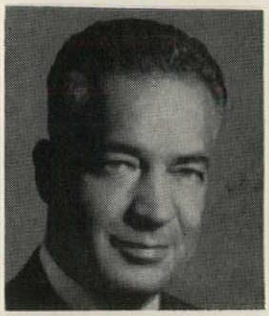
Steel for Strength

BETHLEHEM STEEL

BETHLEHEM STEEL



Teaching Specifications—Part II

BY HAROLD J. ROSEN

Problems inherent in specifications writing and ways to rectify them through education of the specifier are discussed by the Chief Specifications Writer of Kelly & Gruzen, Architects-Engineers.

Many of our present-day specifications writers with architectural or engineering backgrounds gained only a smattering of information on materials in their college programs. Until the end of World War II, the average specifications writer with the knowledge gleaned from his college curriculum could cope with his specifications problems. Since then, however, we find an upsurge in the number of synthetic and derived building products that are man-made and that are for the most part completely foreign, insofar as basic composition is concerned, to the average specifications writer.

Two major reasons explain this avalanche of new products: one is our country's booming population explosion, which is translated into an expanding volume of construction; and the second is Governmental and industry research. While most of the money expended on research is not related to buildings or building construction, a good deal of this research generates an application of these findings that result in building products. Aluminum and structural sandwiches were first developed from research on the missile program. New steel alloys owe their existence to research in shipbuilding as well as missile launching programs.

The sheer volume of new product information and the chemical and metallurgical complexity of the ingredients of these new products are beyond the basic comprehension of the average architect and specifications writer. The intricacies of our modern structures, with approximately 40 per cent of the construction costs allocated to mechanical and electrical services, has further complicated the arrangement and cross referencing of materials and trade relationships in our specifications. These have led to errors and omissions that have resulted in lawsuits against architects.

The speakers at the eighth annual convention of the Construction Specifications Institute offered several suggestions to update and upgrade the skills and knowledge of practitioners in the specifications field with respect to these new materials, and with respect to business law, trade practices, and legal considerations in the writing of specifications.

When one considers that, on an average day, between 5 and 10 new product announcements are made, one can begin to comprehend the problem facing the specifier. He has only a limited capacity to absorb all of this new information. One of the recommendations made was to consider the use of computers for storing and retrieving this information. Another suggestion was the use of a "Spec-Data Sheet" for uniform reporting of product information by manufacturers (SPECIFICATIONS CLINIC, FEBRUARY 1964 P/A). Another speaker outlined the development of a uniform filing system based on the 16 divisions of the CSI Format for Building Construction. A system for product manufacturers to have their wares brought to the attention of architects and filed in their offices through personal visits was also proposed. All of the foregoing are systems designed to store information properly so that it can be readily retrieved when required.

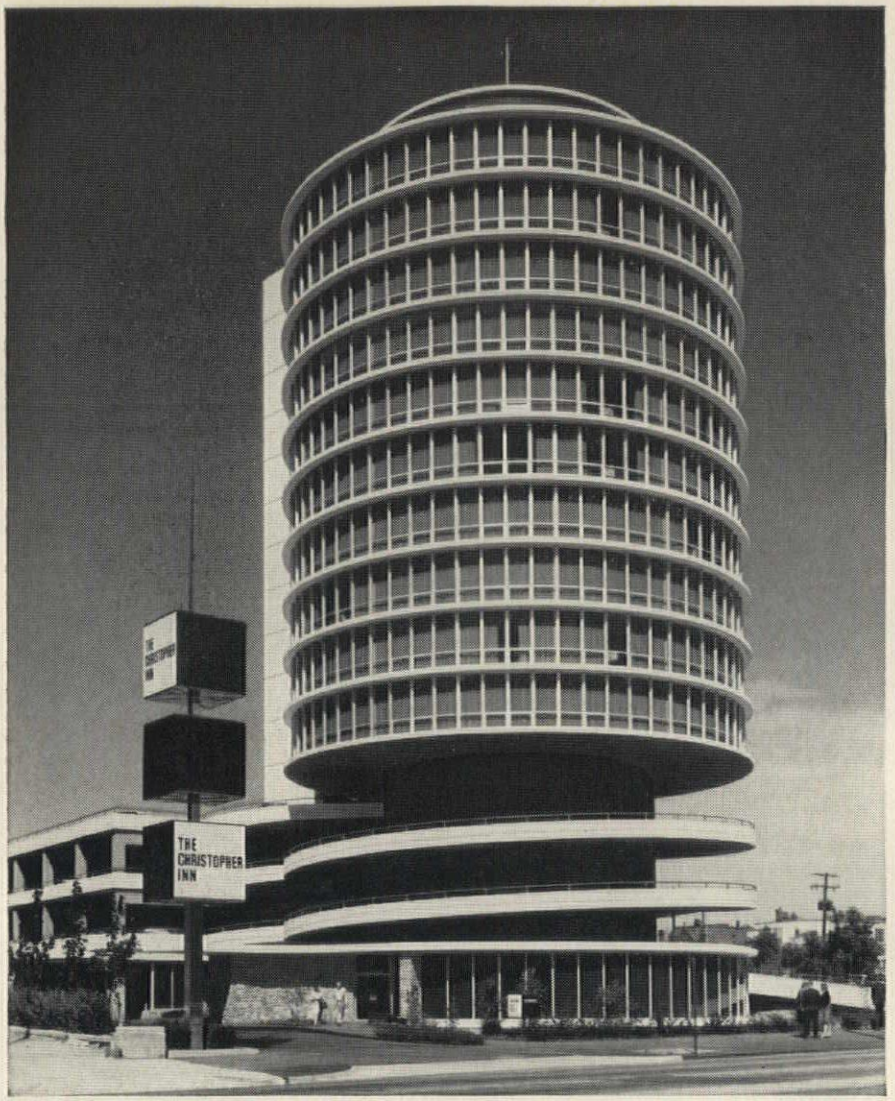
Significant as the above systems are to relieve the specifier of the burden of coping with the physical problems inherent in the mass of information that accumulates on products, of even greater importance is the need to educate the practicing specifications writer so that he does not become technically obsolescent because of these new developments.

Professional organizations such as the AIA and the CSI have a moral and practical obligation to raise the professional standing of its members, if not indeed a selfish one, which is to avoid lawsuits that result from professional negligence.

One recommendation spelled out the preparation of a series of textbooks by CSI on such subjects as legal matters, insurance, general conditions, and special conditions. Other recommendations for updating knowledge were more frequent CSI chapter and regional seminars, with guidelines established for such activities. The use of closed-circuit TV programs as a method of instruction was discussed.

By far the most important vehicle for the attainment of increased proficiency of specifiers is through the medium of extension courses at the university level. A good example is the work done at the University of Wisconsin through programs designed for adult education for architects, engineers, and technical personnel who desire to keep abreast of recent developments of fundamental theory and background information; it provides opportunities to recall to mind long forgotten training. It not only brings together representatives of various industrial companies and those seeking to obtain additional knowledge, but it also serves as a forum for the exchange of information, thereby providing answers to problems presented for discussion. This system can well be duplicated in all sections of the country.

There are those who yearn for the simple age of no new sealants, no new alloys, and no new mechanical equipment. But these new problems can become more manageable if properly organized through these recommended channels.



The Christopher Inn, Columbus, Ohio's first downtown motor hotel, is a striking 16-level circular cantilevered tower. The Inn has 140 rooms, beginning on the fifth level. Parking for 110 cars is provided on second, third and fourth levels. High speed elevators provide rapid service to all floors. Central core houses utility shafts and stairwell. To rear of tower is a 5-story rectangular building with meeting and dining room accommodations for up to 500 people.

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Arbitration Provisions of AIA "General Conditions"

BY BERNARD TOMSON AND NORMAN COPLAN

P/A's legal team discusses a recent case illustrating the limitations and need for clarification of the arbitration provisions of the AIA "General Conditions."

There is a prevailing misconception among architects, contractors, and owners that the arbitration provisions contained in "The General Conditions of the Contract for the Construction of Buildings" issued by the AIA provide for the arbitration of all disputes between owner and contractor. That this is not the case was illustrated by a recent decision in New York that involved a contractor's claim for the balance of his fee due under the contract. The New York court held that, under the wording of the arbitration clause contained in the "General Conditions," such a dispute was not subject to arbitration (*Application of Dana Realty Corp.*, 250 N.Y.S. 2d 784).

The contractor in this case claimed that he was owed by the owner approximately $97,000 for work, labor, and materials which the contractor had performed and furnished in connection with the alteration of a hotel, and demanded arbitration of such claim. The owner commenced a legal action to stay any arbitration, contending that the dispute was not arbitrable. The application was initially denied by the lower court, but on appeal the Appellate Division of the Supreme Court of New York granted the stay of arbitration, holding that the provisions contained in the "General Conditions of the Contract . . . do not embrace the respondent's claim for the balance due under the contract."

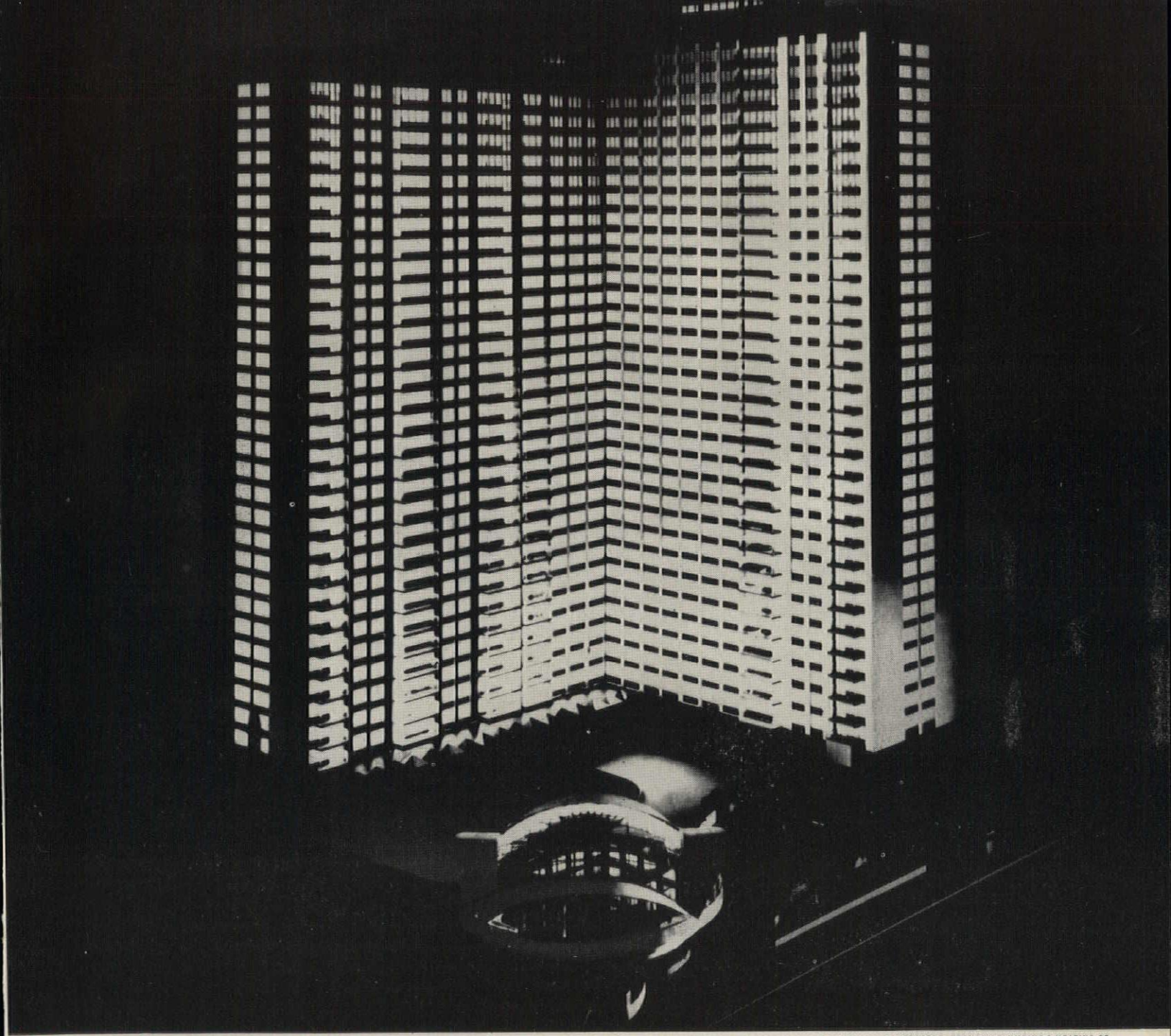
Article 40 of the "General Conditions" provides that "all disputes, claims or questions *subject to arbitration under the contract* shall be submitted to arbitration in accordance with the provisions then obtaining of the standard form of arbitration procedure of the American Institute of Architects. . . ." The Court stated that nowhere in the construction contract does it specifically provide that any claim for a balance of fee due shall be subject to arbitration, and that in the absence of such specific reference Article 40 was not applicable. The Court said:

"It is well settled that 'no one is under a duty to resort to arbitration unless by clear language he has so agreed' . . . . An agreement to arbitrate will not be extended 'by construction or implication' . . . . There are a number of provisions in the contract documents providing for the arbitration of particular matters or disputes, but there is no specific provision for the arbitration of the petitioner's claim for the 'balance due and owing . . . . for work, labor and materials . . . . performed and furnished . . . . under the written agreement' between the parties. Article 40 of the 'General Conditions,' referred to in the demand, is not in the nature of a general and independent clause providing for arbitration of all disputes between the parties. It provides merely for the submission in the Standard Form of Arbitration Procedure of the American Institute of Architects of 'all disputes, claims or questions subject to arbitration under the contract. . . .' Clearly, such clause is merely intended to establish the 'form of arbitration procedure' to be followed where disputes are arbitratable and where the right to arbitrate a particular type of dispute depends upon some other provision in the contract."

The petitioner contended that he was entitled to arbitration under Article 31 of the General Conditions. This article provides that, should any party suffer damages due to the wrongful act of the other, his claim shall be adjusted by agreement or arbitration. Since this article requires that claim be made not later than final payment, however, the Court concluded it had no application to a dispute concerning final payment.

If the arbitration article of the "General Conditions" applies only to disputes, claims, or questions between owner and contractor for which there is a specific and express provision in the contract documents authorizing arbitration, then the area of arbitration is indeed limited, and arbitration under this document as presently worded may be the exception rather than the rule. Although Articles 12, 20, and 38 of the "General Conditions" specifically refer to arbitration, these references pertain to only a small segment of possible subjects of dispute or claim between owner and contractor.

Article 39 of the "General Conditions" provides that "except as expressly provided in the contract documents, all the architect's decisions are subject to arbitration." The application of this provision is also unclear. The "General Conditions" call for the architect's decision in many different areas. In some instances, the "General Conditions" state that the architect's decision shall be subject to arbitration. In many more instances, the provision that requires the architect's decision or determination is silent in respect to arbitration. Do these provisions, read together, mean that there must be an express reference to arbitration in order to make the architect's decision subject to arbitration, or do they mean that even if there is no reference to arbitration the architect's decision is subject to arbitration? If the latter is the case, what is the status of the Architect's Certificate, which is a form of decision (or his withholding of the same)? Is it final and conclusive as indicated by many court decisions, or is it subject to arbitration? It would seem apparent that the AIA General Conditions require both anaylsis and clarification in order to provide the language for a system of arbitration which is readily understood by all who use the document, and which the courts will hold applies to the areas of arbitration intended.



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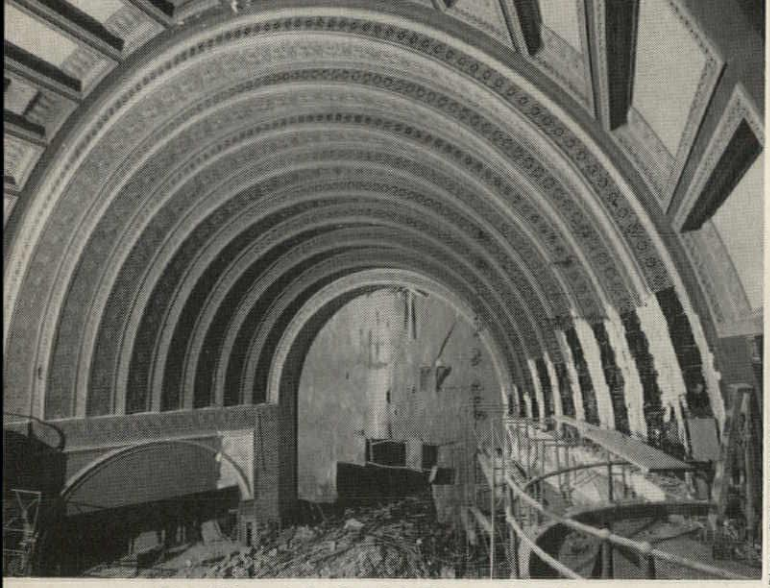

Photo: Richard Nickel

Demolition of the Garrick Theater (1961).

Photo: Courtesy Chicago Historical Society

The Reliance Building, as it looked in 1905.

A Pioneering Study

BY LEONARD K. EATON

THE CHICAGO SCHOOL OF ARCHITECTURE *by Carl W. Condit. Published by The University of Chicago Press, Chicago, Ill. (1964, 238 pp., illus. $8.50). Reviewer is Professor of Architecture at the University of Michigan.*

In 1952 Carl Condit, historian of technology and professor of general studies at Northwestern University, published *The Rise of the Skyscraper*, a study of the genesis and development of the great commercial architecture of Chicago. At that time, the book was greeted with cheers by most architectural historians interested in the field, although a few took exception to the author's emphasis on architecture as primarily a structural art. The present volume is an expansion of the earlier work, with the text approximately doubled in length and many more illustrations included.

A word should be said about the critical reception of the book thus far. It was the subject of an extremely unfortunate review in *The New York Times* of August 30, 1964. The reviewer, William Alex, essentially gave only an outline of the contents. He gave no hint of the character of Condit's interpretations or of the profound scholarship lying behind them. Condit approaches his material with the same high seriousness displayed by W. B. Dinsmoor in his treatment of Greek Architecture or Otto G. Von Simson in his book *The Gothic Cathedral*. His work may not unreasonably be compared with that of these two writers. To deal with it as Mr. Alex did is to deny its importance. In actuality, Condit's book is a pioneering study of one of the great American contributions to modern culture, and it should be so considered. It can, of course, be predicted that the exponents of the "New Formalism," or "Action Architecture," or "The New Sensualism," will not like it. It deals with a part of the American architectural heritage with which they are not much concerned. It can also be predicted that those historians who evaluate architecture purely in terms of formal excellence won't like it either. Architecture, for Condit, is always the structural art. On the other hand, it will probably be well received in Europe, as were his previous books (he has a large following in England and Germany). Only too often, a prophet is without honor in his own country.

We may best begin with an inquiry into the conditions which made the republication of Condit's earlier book desirable and necessary; and then proceed to an analysis of the new volume's distinctive qualities. In the first place, the 12 years since 1952 have witnessed a great deal of research on the careers of the leading members of the Chicago school. The canon of Sullivan scholarship has been enormously broadened by the books of Willard Connely, Albert Bush-Brown, and Sherman Paul, and there has been a veritable flood of material on Wright. The minor members of the school—such as Purcell and Elmslie, Hugh Drummond, and Walter Burley Griffin—have also received attention; although some of the work on these men is still in manuscript form, we may confidently expect to see most of it in print within a few years. There is now even a scholarly journal *(The Prairie School Review)* devoted exclusively to this period, so that the possibilities of magazine publication have been considerably increased. Hence there was every reason for Condit to revise his book, incorporating the results of the latest scholarship.

Secondly, the pace of new building in the Chicago loop has been such that many of the finest old structures have fallen victim to the wrecking ball. Despite objections from all over the world, Sullivan's Garrick Theatre was destroyed to make way for a parking structure, and, as this is written, the future of Burnham

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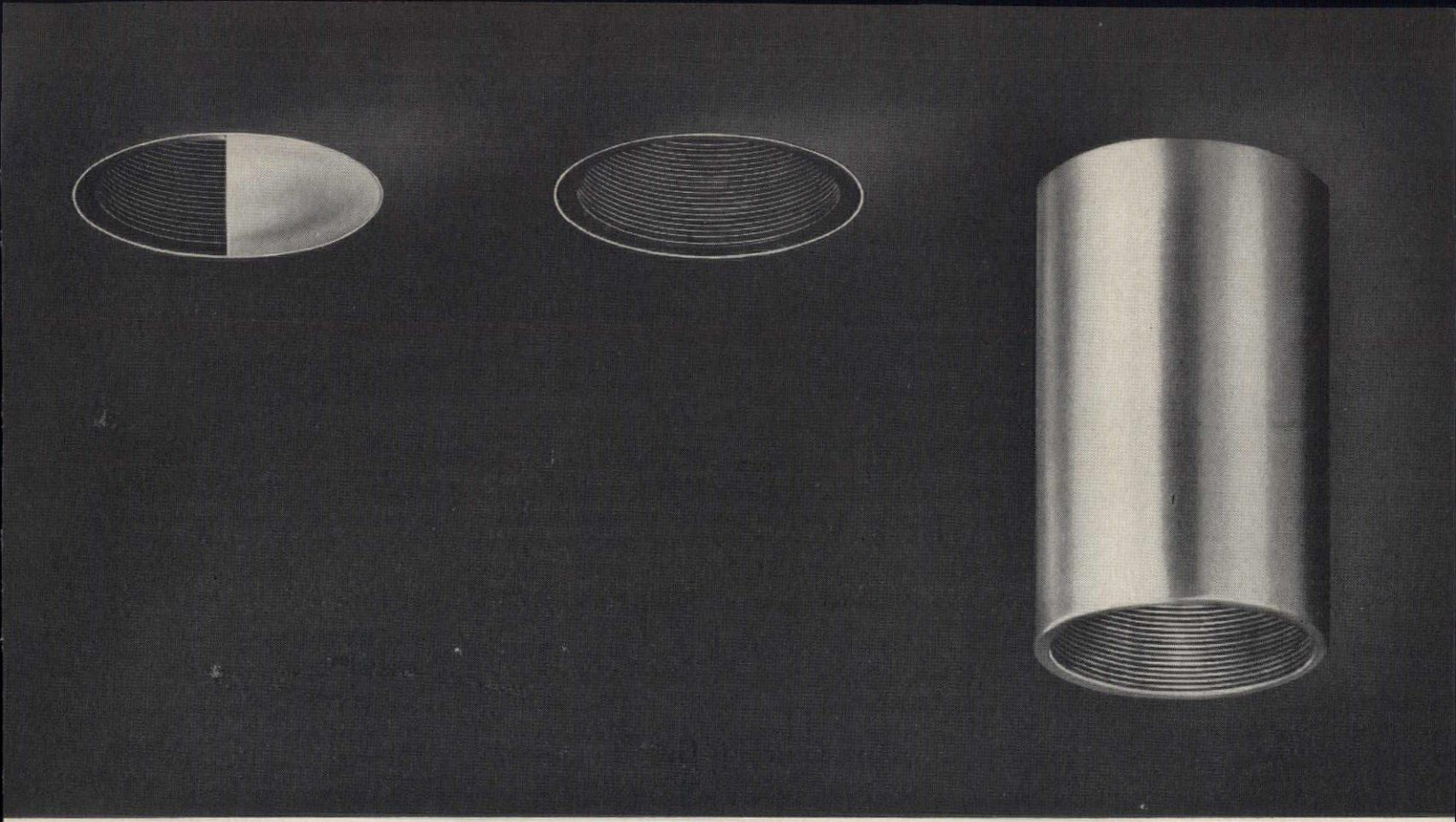

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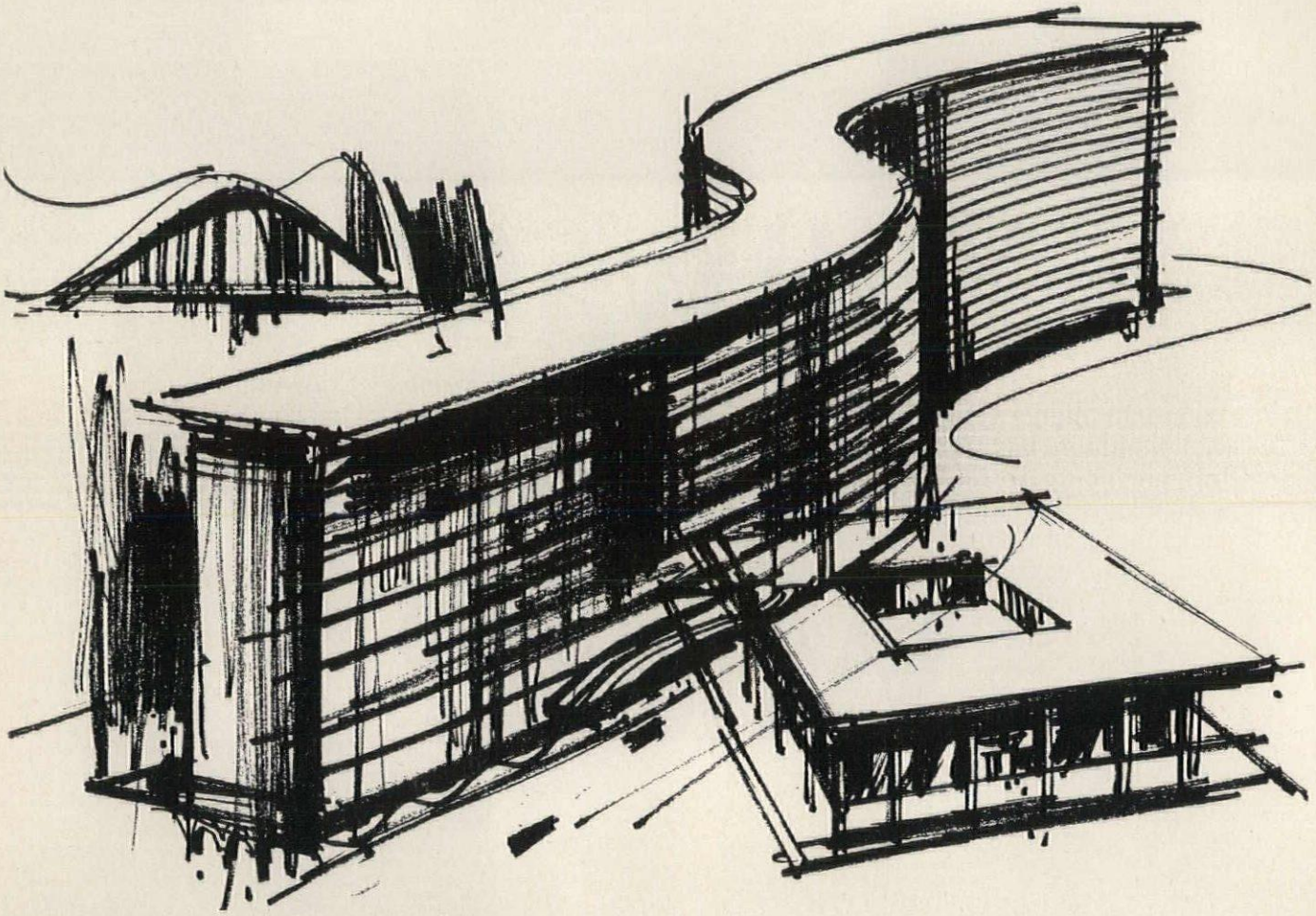

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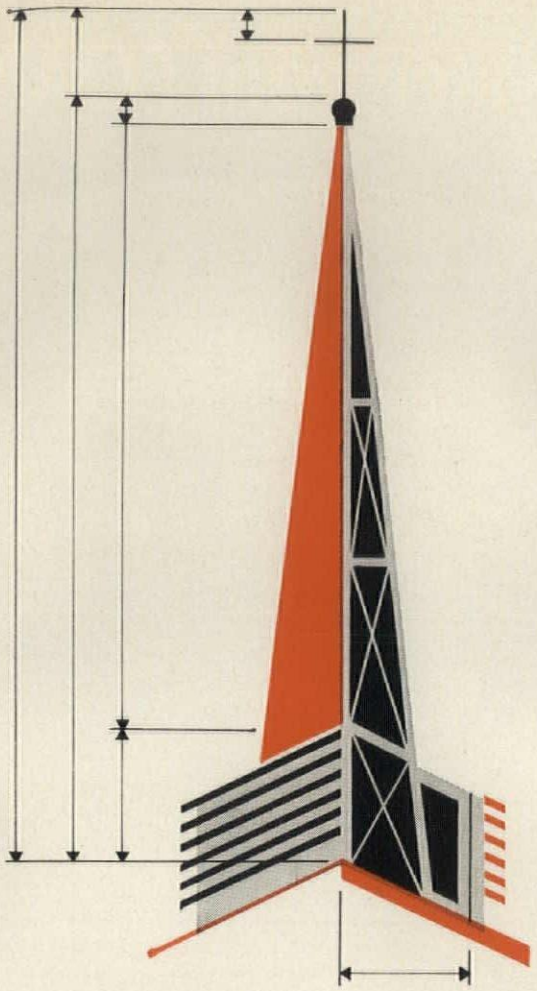
Continued from page 198

& Root's Reliance Building is in doubt. Of course, this vandalism has not been accomplished without protest. The Chicago Heritage Committee has made notable efforts to preserve the most important landmarks, the municipal government has been alerted to the problem, and in the case of the Garrick Theatre, a salvage operation possibly unique in the history of architecture was executed. It is important to note that Professor Condit has been at the center of these activities. Evidently a firm believer in the maxim that the historian should be personally involved with his material, he has participated actively in the struggles to save the city's important buildings, and in his book quite properly devotes a fair amount of attention to these battles. In part, then, this volume is a tract for the times. The problem of saving significant architectural monuments from the rapacity of the commercial entrepreneur is nationwide; but it is especially acute in Chicago, and the republication is therefore most timely.

Condit's previous work in the history of building technology (two volumes on *American Building Art*, 1960–61) would lead us to believe that he would be particularly strong on the technological side of architecture, and this is, in fact, the case. No better descriptions of the startling structural innovations that were the basis for the Chicago contribution can be found than exist in these pages. His evaluations of the engineering achievements of Burnham & Root in the Rookery and the Monadnock, and of Adler & Sullivan in the Auditorium and the Garrick, are especially good. In no case are these discussions excessively technical; they are to be construed simply as affirmations that technology is an important aspect of the building art. People who disagree with this fundamental postulate will be unhappy with the book, and may condemn the approach as narrowly technological. In this reviewer's mind, nothing could be more unfair. Condit's opening chapters make it perfectly clear that he is interested in architecture as "the structural art," and his thinking is always broadly humanistic. His work reveals a man well acquainted with the major literary and philosophical movements of the 19th Century.

What are the major differences between Condit's 1952 and 1964 treatments of his material? We can perhaps best answer this question by considering his key chapters on Jenney, Burnham & Root, and Louis Sullivan. With regard to

Continued on page 206



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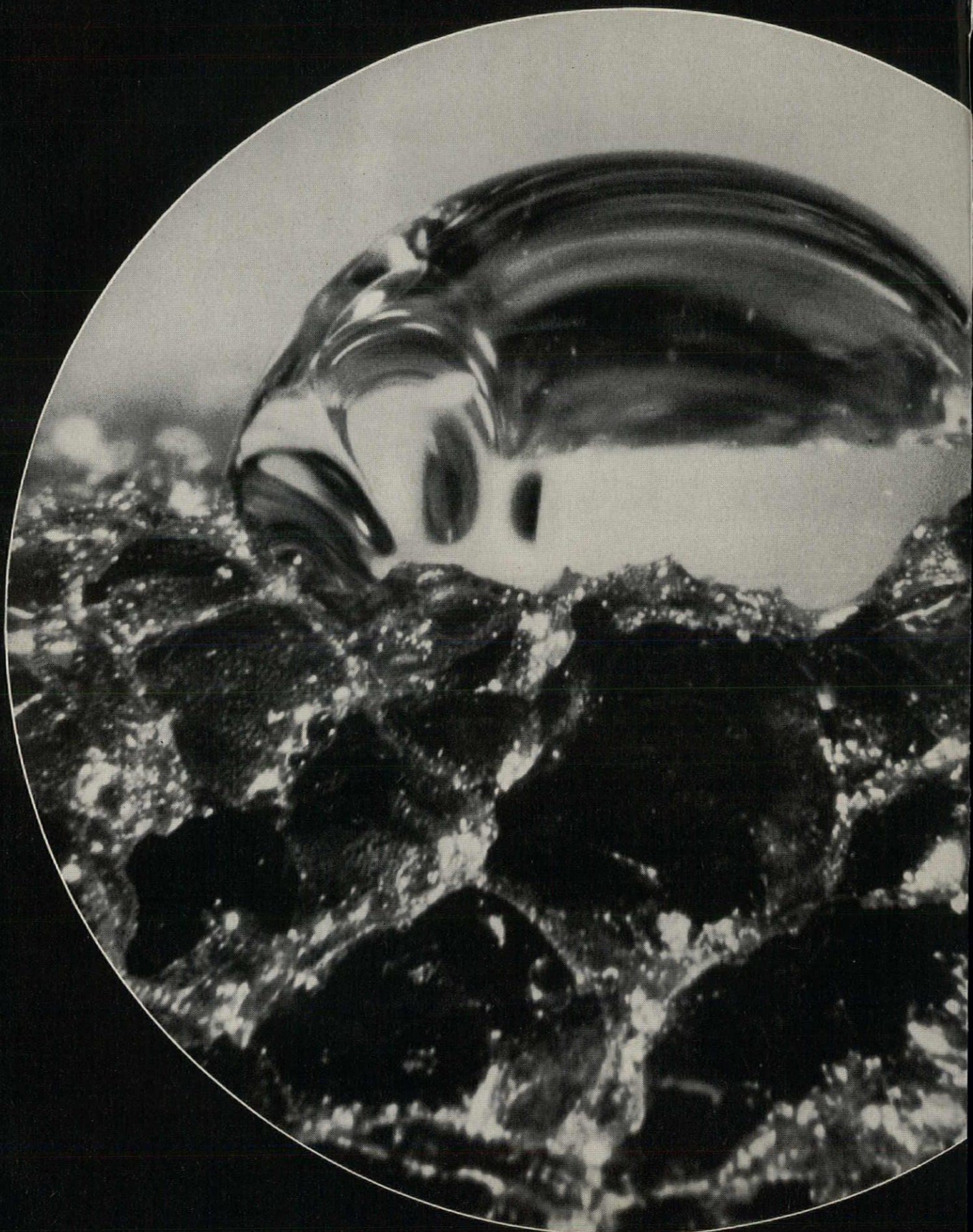

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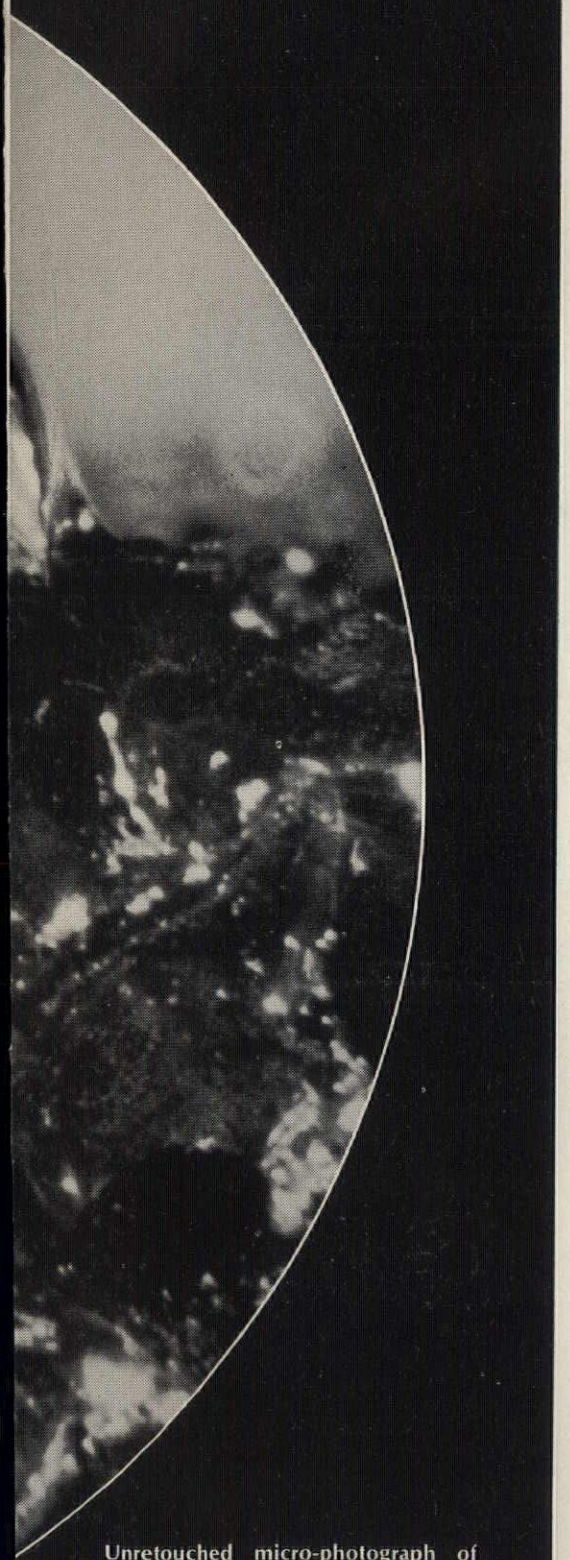

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Continued from page 206

tably the People's Savings and Loan Association at Sidney, Ohio (1917-18), testify to the contrary.

The greatest enlargement of Condit's earlier work occurs in the section devoted to the later Chicago School, a group of men now generally known as "prairie architects"—George Maher, Walter Burley Griffin, John Van Bergen, Hugh Drummond, Dwight Perkins, and of course, Purcell and Elmslie. Here his focus is necessarily circumscribed by his decision to deal only with buildings in the Chicago area. For example, most of the best buildings of Purcell and Elmslie are in the Twin Cities region, while Griffin's best work may have been in Australia. To deal with this body of material would, however, have made an unwieldly book. Although Condit is obviously happier in dealing with large office buildings than with residential commissions, his evaluations are in general extremely fair, and it is perfectly reasonable to treat these smaller buildings as manifestations of the basic Chicago impulse. The total effect of these chapters on this reviewer was to make him yearn for a more extended treatment of these architects, but that would be another break. Concerning his chapter on the Chicago School in the 20th Century, I would have only one minor quibble: is it not possible at least to attribute the excellent pavilions in the Rookery of Lincoln Park Zoo (1936) to Alfred Caldwell? Condit simply credits them to the landscape architect's staff.

For the cultural historian, Condit's book will throw much light on the baffling problem of the Chicago School's decline after World War I. He is, of course, correct in his contention that the World's Fair of 1893 was not the primary cause, and he is certainly right in his view of the unfortunate consequences of the rise of New York as the headquarters of the tastemakers. Moreover, he is wise enough to see that the new taste, formulated in the universities, theatres, and museums of the East, was sound in its evaluation of the graphic, literary, and dramatic arts. "It is understandable," he observes, "that what seemed to be the same view came to prevail in architecture." Other important causes were the unfortunate decline in the quality of municipal politics and the social changes of the 1920's, especially the increased mobility of the urban population. The net result was that genuinely creative work "simply ceased to exist."

Of particular interest to students of contemporary architecture in the United States will be Condit's analysis of the reappearance of the old Chicago principles in the newest work of such firms as Skidmore, Owings & Merrill, Harry Weese Associates, and C. F. Murphy Associates. In such buildings as the Hartford Fire Insurance Company (SOM) and the Brunswick and Civic Center (Murphy), he sees a return to the idea of the cellular curtain wall, which dominated the work of Holabird & Roche and of Louis Sullivan in the Carson, Pirie, Scott store. Placing himself squarely in the camp of those who are fighting the playboy architecture so current today, he writes: "The vigorous structural emphasis in the work of Holabird & Roche—the continuous piers and deep reveals, the vivid play of light and shadow, the strong and steady rhythm commensurate with the scale of the big office block, and the power that unambiguously asserts the strength of the steel or concrete frame—these elements are fitting to a technological age, and we welcome their return in the new technical refinements of skeletal construction." These are words of a man very sure of the ground on which he stands.

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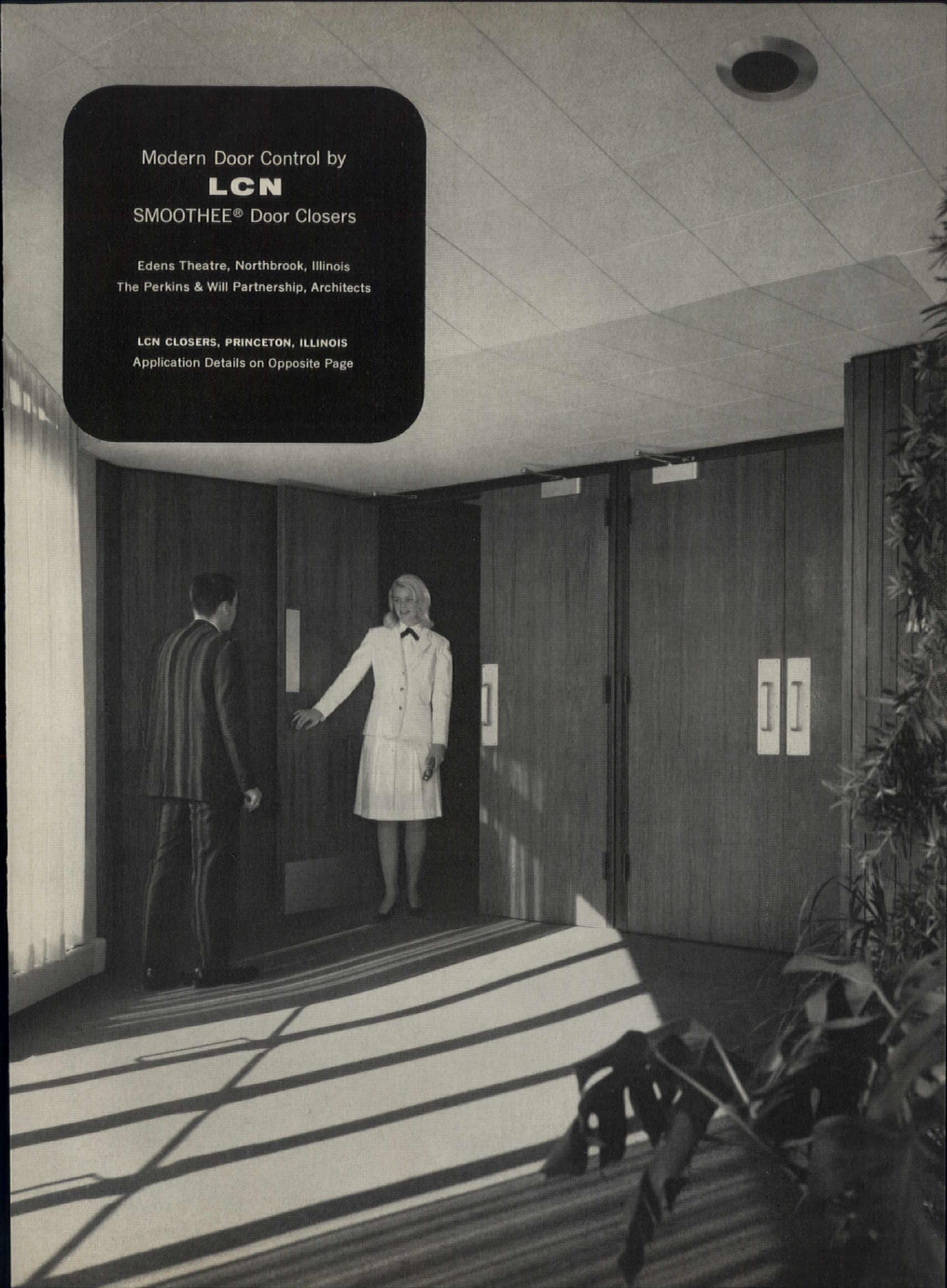
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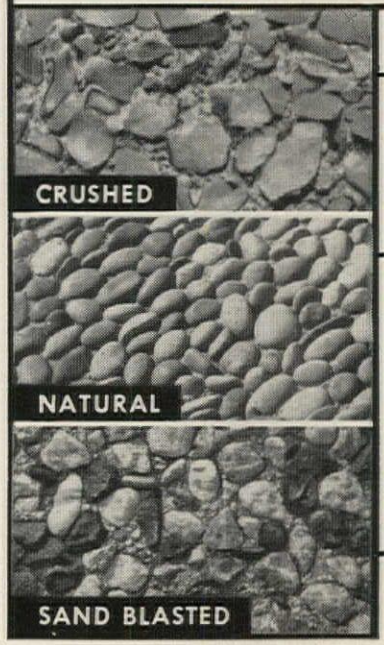

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GLASS*	ARTIFICIAL	¼"—1½"	stained glass, walls, panels	Mich., N.J., Texas	brilliant and almost unlimited ranges
CERAMIC	ARTIFICIAL	¼"—1½"	curtain wall panels, ornamental work	Ark., Ariz., Mich.	any color
SAND	MINERALS	fine to coarse	plain or sculptured panels	all areas	white-buff-yellow
PEBBLES	MINERALS	¼"—6"	tilt-up walls, panels, walkways	west & southeast	white-red-orange-buff-black
MARBLE	MINERALS	½"—2"	curtain wall panels	all areas	white-red-buff-yellow-black
GRANITE	MINERALS	¾"—2½"	tilt-up walls, panels, walkways	midwest & west	red-gray-buff-dark blue-black
QUARTZ	MINERALS	½"—2"	curtain wall panels	east, west, south & midwest	white-pink-gray-clear

*Reactivity: some glasses may react with alkalis in the cement to cause expansion. Consult glass manufacturer to determine if glass is reactive.

**List of manufacturers available.

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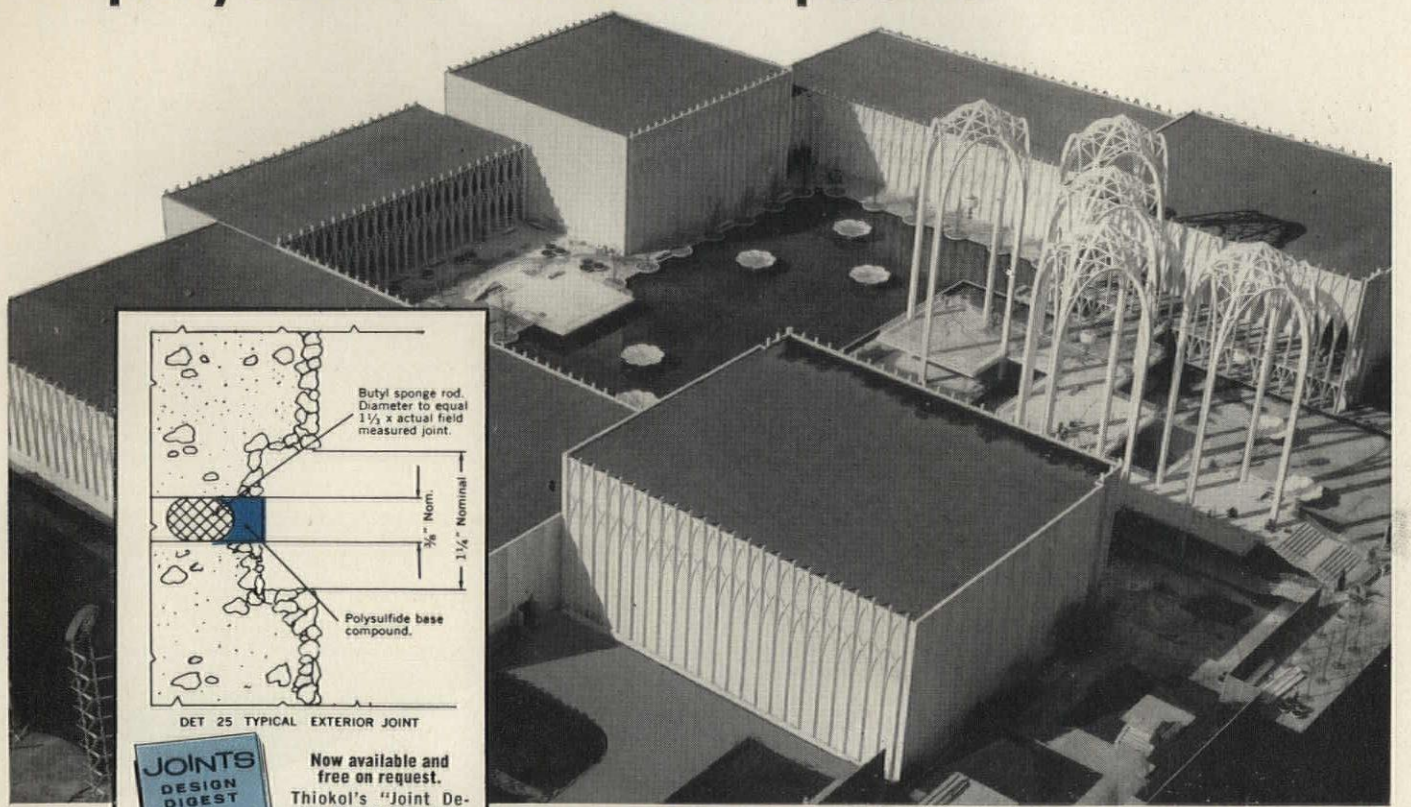

Pacific Science Center Foundation, Seattle, Washington
Associated Architects:
Minoru Yamasaki and Associates, Birmingham, Michigan
Naramore, Bain, Brady & Johanson, Seattle, Washington

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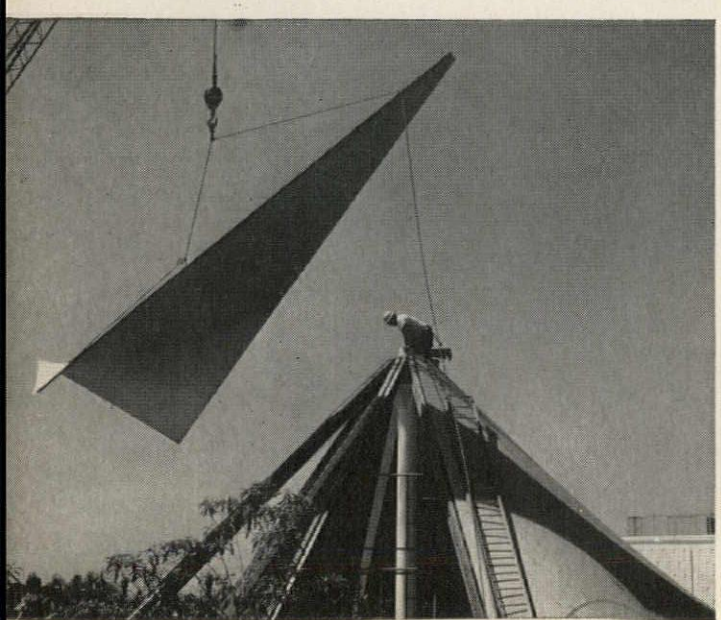
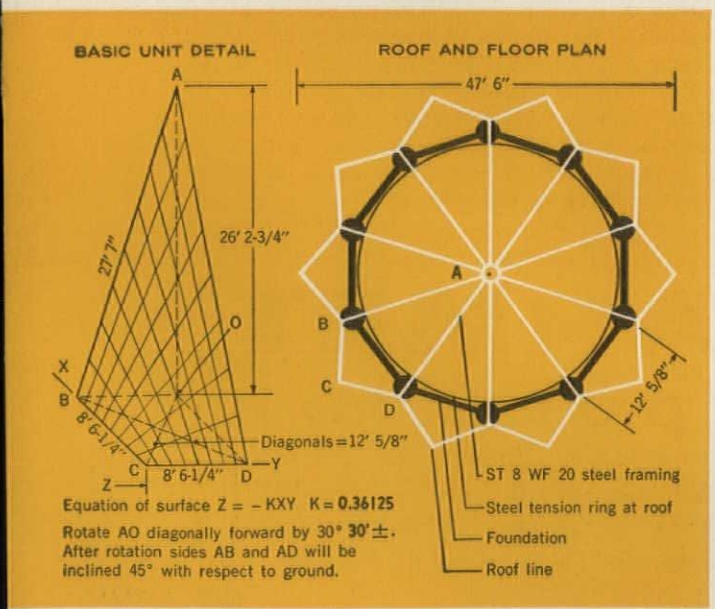


EDWARD D. STONE, ARCHITECT/HALL, PREGNOFF & MATHEU, ENGINEERS/WELDWOOD STRUCTURES DIVISION, UNITED STATES PLYWOOD, FABRICATOR



The sculptured curves of this pavilion look as though they could have been shaped only with a plastic material. Instead they were achieved with flat panels of plywood. ■ Each roof unit is a hyperbolic paraboloid, laminated from four layers of 1/4" plywood and bolted to steel "T" sections rising to 28' at the center. Despite the complex curvatures, in-place roof cost was only $3/sq. ft., one-fifth that of aluminum and well below steel or concrete. ■ For information on plywood building systems write (USA only) American Plywood Association, Tacoma, Washington 98401

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Continued from page 212

A Revelation and a Lesson

BY ROMALDO GIURGOLA

RUMANIA: PAINTED CHURCHES OF MOLDAVIA

(UNESCO World Art Series) *by Georges Oprescu. Published by the New York Graphic Society, Greenwich, Conn. (1963, 18 pp. plus 32 plates. $18.) Reviewer is in architectural practice in Philadelphia.*

The stupendous publications of the UNESCO World Art Series includes one on the churches of Moldavia, which constitute a unique chapter in the history of religious architecture. The churches of Moldavia, few in number, are concentrated in a relatively small region of modern Rumania. In fact, these churches were all built within a short period of time, starting at the beginning of the 16th Century; by the early 1600's, the height of this particular form of chromatic architecture had already passed, although they continued to be built until the end of the 18th Century.

Whether the reason for the development of such artistic form was the absence of stone cutters and sculptors, who were the instruments of the Romanesque carving on the cathedrals of the West and on the Armenian and Russian churches, or whether it was the search for a universal form of communication, the results are extraordinary in purely aesthetic terms.

The compositions cover the entire exterior walls of the buildings. Most of the time they assume a stratified organization, with figures oriented in processional sequence; often, however, this order is interrupted by dramatic groups expressing the climax of a situation. This calls for an absolute simplicity and economy of architectural elements: a strong plinth as transition from the ground, a wall straight to the roof eave with no interruption, a magnificent roof unified in form and with a generous overhang to protect the painted wall itself.

What is impressive here is the great coherence of the architectural solutions taken to their fullest extent: the wall is completely painted, the roof is one, the base develops with the same section all around the church, which stands clearly isolated, with its pure stereometry and its brilliant colors, on the green background of the Moldavian forest.

The colors have a limited range: blue, red, green, with one dominating color—a fact that invites comparison with the precious carpets of Asia Minor. The

Continued on page 222

ARCHITECT:
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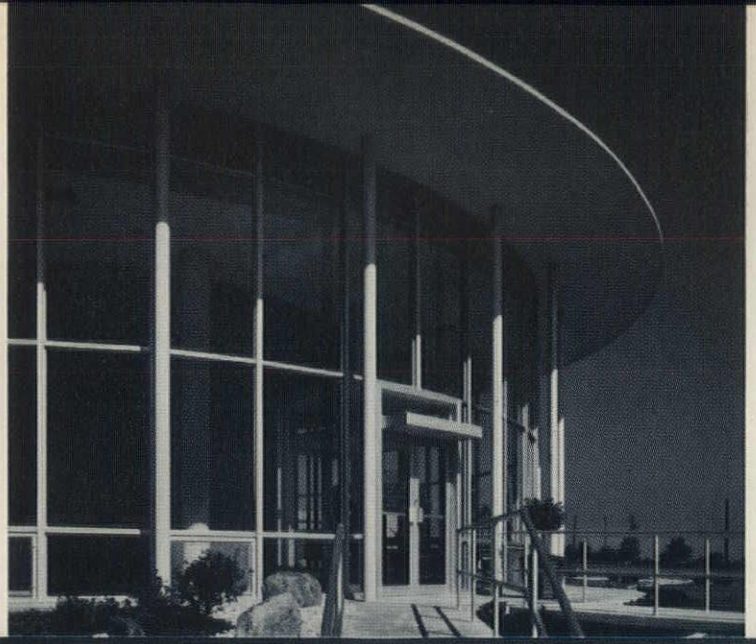

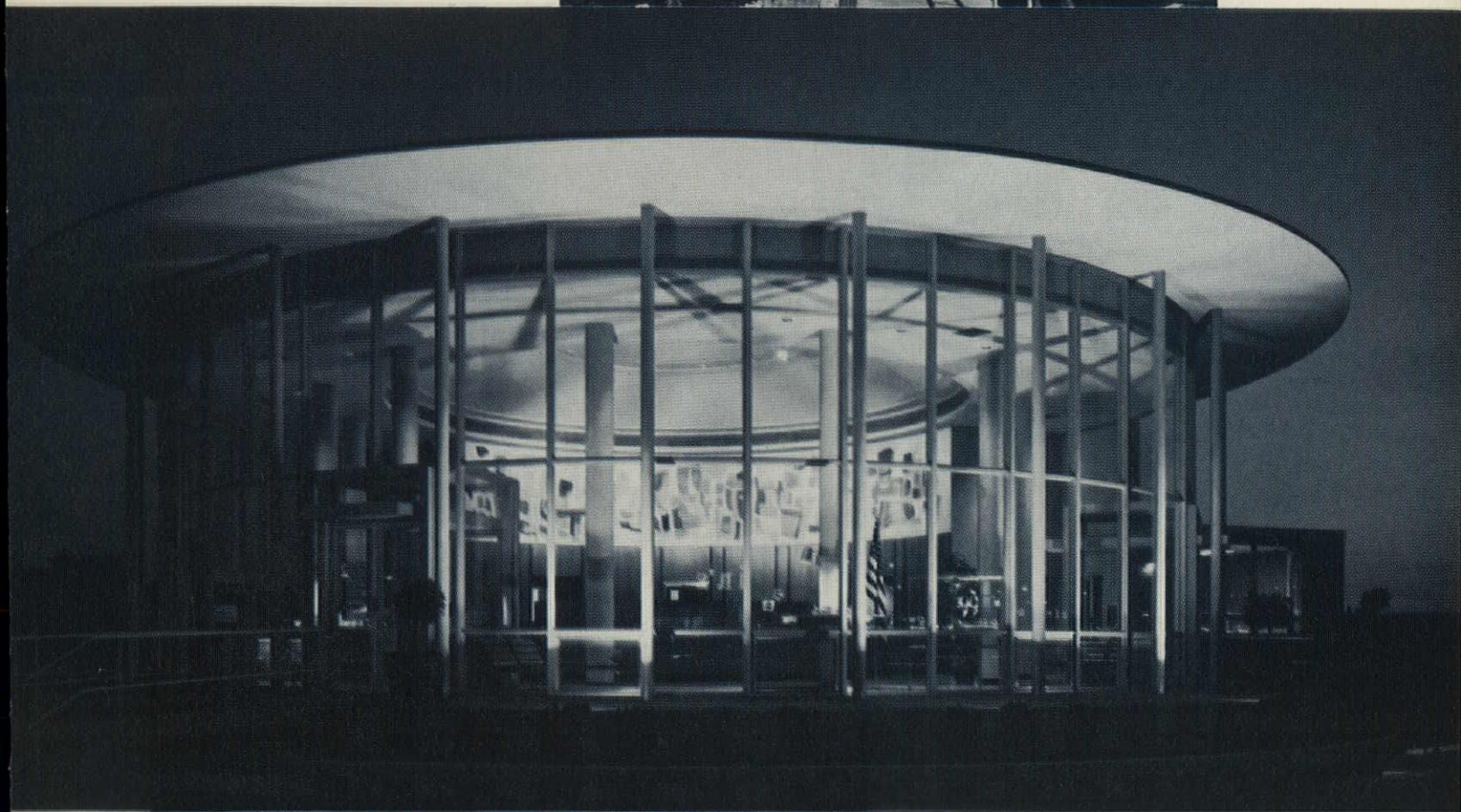

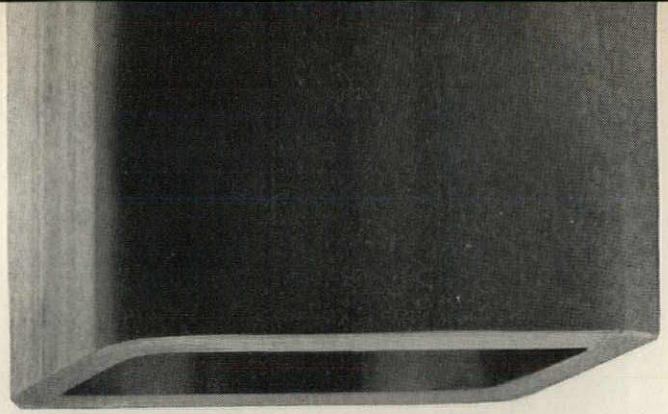

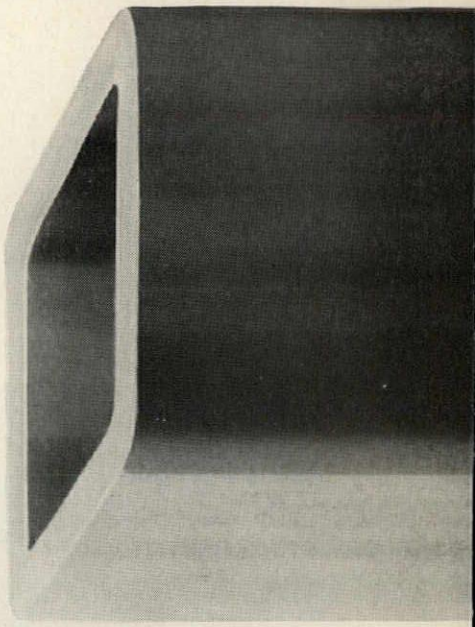

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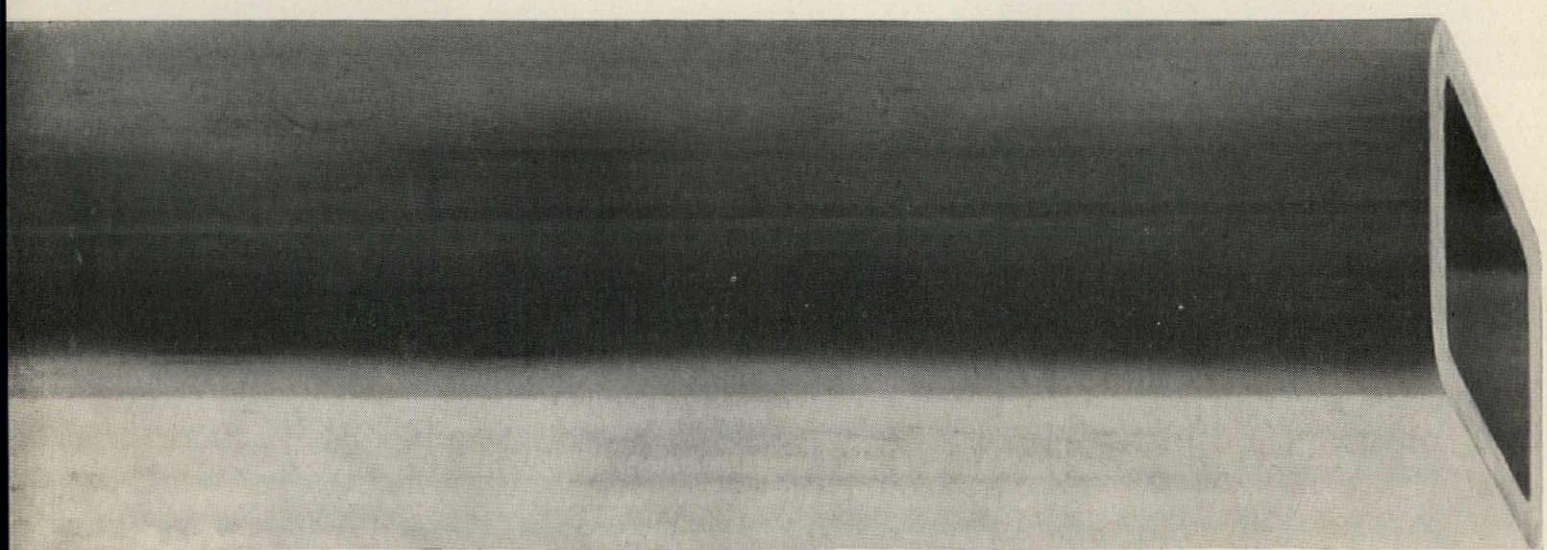

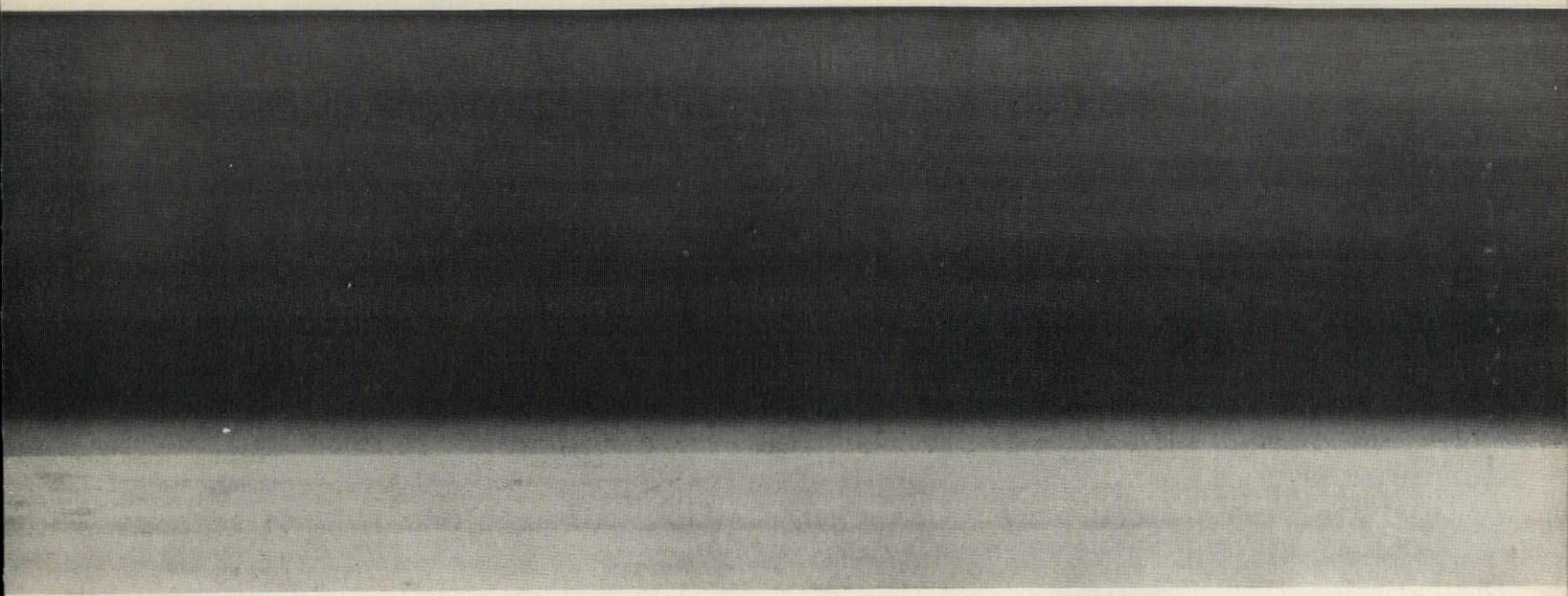

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Yield point, min, psi	33,000	42,000
Elongation in 2 in, min, percent	25[a]	23[b]

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Tensile strength, min, psi	45,000	58,000
Yield point, min, psi	39,000	46,000
Elongation in 2 in, min, percent	25[a]	23[b]

(a) Applies to specified wall thicknesses 0.120 in. and over. For wall thicknesses under 0.120 in., the minimum elongation shall be calculated by the formula: percent elongation in 2 in. = $56t + 17.5$.

(b) Applies to specified wall thicknesses 0.180 in. and over. For wall thicknesses under 0.180 in., the minimum elongation shall be calculated by the formula: percent elongation in 2 in. = $61t + 12$.

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Continued from page 218

colors were made with the same dyes used for coloring fabric for clothing. One may realize in this way how extraordinary the stylistic and chromatic harmony of all the environment must have been.

In a time like ours, in which architecture often seeks distinction through the careful elimination of color, at least of applied color, these churches are both a revelation and a lesson—a revelation, since the painted wall gives a tangible reality to the light, framed as it is between the definition of the base and the deep shadow of the eave; a lesson of style of the same integrity as the Greek temple. The color does not conceal any desire to transform the consistency of the wall. The color stands on its own merits without playing either an overwhelming role or one of secondary function, as is so often true today. On the contrary, the directness of communication of these painted walls forces the architecture to be equally clearly stated in its totality as well as in the details.

Commendable Pilot Project

BY JAMES GROTE VAN DERPOOL

ARCHITECTURE WORTH SAVING IN ONONDAGA COUNTY. *Published under sponsorship of the New York State Council on the Arts. Directed by Harley J. McKee, assisted by Patricia Day Earle, Paul Malo, and Peter Andrews. Administered by Dean D. Kenneth Sargent, Syracuse University School of Architecture, Syracuse, N.Y. (1964. 200 pp., illus. no charge) paperbound. Reviewer is Executive Director of the Landmarks Preservation Commission of New York City.*

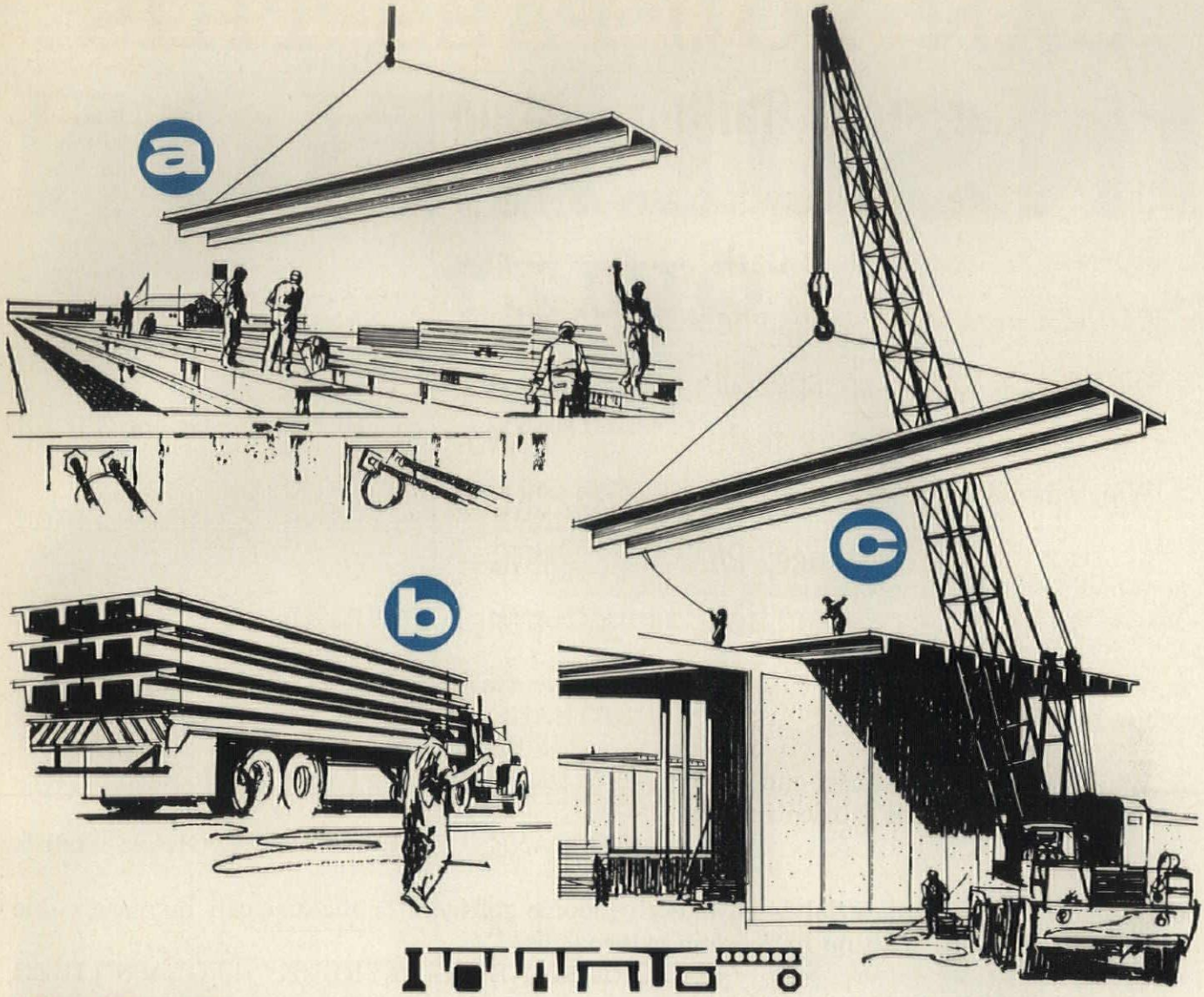
This book signals the start of a series of four related volumes.

Pocket-sized, handsomely illustrated, and with informative text, the present volume augurs well for the thoughtfully organized project initiated by William Hull as a part of the Visual Arts Program of the New York State Council on the Arts.

This volume results from the searching survey directed by the prominent architectural historian, Professor Harley McKee, and administered by Dean Kenneth Sargent of the School of Architecture at Syracuse University, aided by a small group of Graduate Fellows in architecture.

Timed to meet the needs of an increasingly mobile public interested in the local history of our country as interpreted through its architecture, *Architecture Worth Saving in Onondaga County*

Continued on page 228



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will sharpen the eye and stimulate critical judgment of the evolving architecture of the region. The survey yields very pleasant results in confirming how definitely Onondaga County kept in touch with the mainstream of architectural development in America from the Federal period on. Several local architects, such as Joseph Lyman Silsbee, architect of the 1876 Syracuse Savings Bank, Horatio N. White and Archimedes Russell, who worked in Renaissance Revival and Richardsonian styles, emerge with interest. Distinguished examples of earlier work, such as the highly attractive Federal-style Baptist Meeting House in Pompey (dated 1815), comparably distinguished residences of the same period, and a sequence of notable Greek Revival and Gothic Revival mansions, churches, and business structures, admirably express the evolving national styles.

While the present publishing venture is a pilot project, the results are so commendable that concerted effort should be made to extend the project, to assure equally useful coverage for the remaining counties in the state.

OTHER BOOKS TO BE NOTED

Habitation 3. J.H. van den Broek. American Elsevier Publishing Co., Inc., 52 Vanderbilt Ave., New York 17, N.Y., 1964. 350 pp., illus. $29.50
To be reviewed.

Arne Jacobsen. Tobias Faber. Frederick A. Praeger, 111 Fourth Ave., New York 3, N.Y., 1964. 100 pp., illus. $17.50
To be reviewed.

The Machine in the Garden: Technology and the Pastoral Ideal in America. Leo Marx. Oxford University Press, 417 Fifth Ave., New York, N.Y. 10016, 1964. 390 pp., illus. $6.75.
To be reviewed.

The Poetics of Space. Gaston Bachelard. The Orion Press, Inc., 116 E. 19 St., New York 3, N.Y., 1964. 241 pp. $6
To be reviewed.

Ruins in Jungles. Stella Snead. London House & Maxwell, 122 E. 55 St., New York 22, N.Y., 1964. 100 pp., illus. $12.95
Photographic studies of the sculpture and architecture from jungles throughout the world—Indian, Southeast Asian, and Central American. Short introductory text to each section gives a brief picture of the history and distinctive culture of each civilization. Photos are fascinating in content, only fair in quality.

World Conference on Shell Structures, October 1962. W.J. Medwadowski, Chairman, Editorial Committee. National Academy of Sciences, National Research Council, 2101 Constitution Ave., Washington 25, D.C., 1964. 690 pp., illus. $20
To be reviewed.

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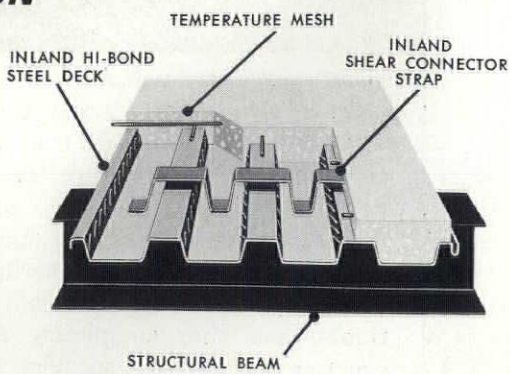

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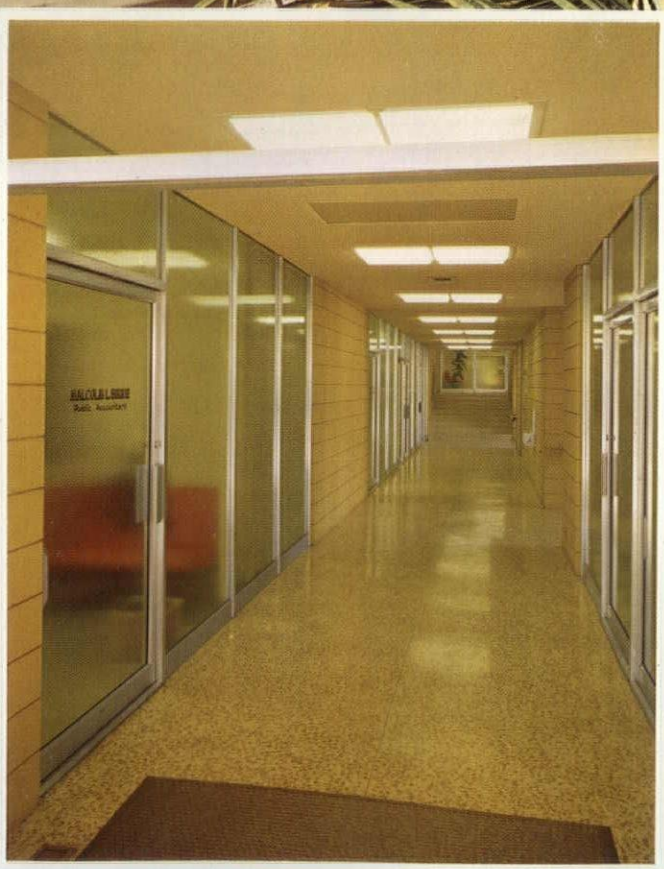

7/32" HYLITE in entrance and office partitions, Pomona, Calif. *Glazing:* City Mirror & Beveling Works, Inc., San Gabriel, Calif.

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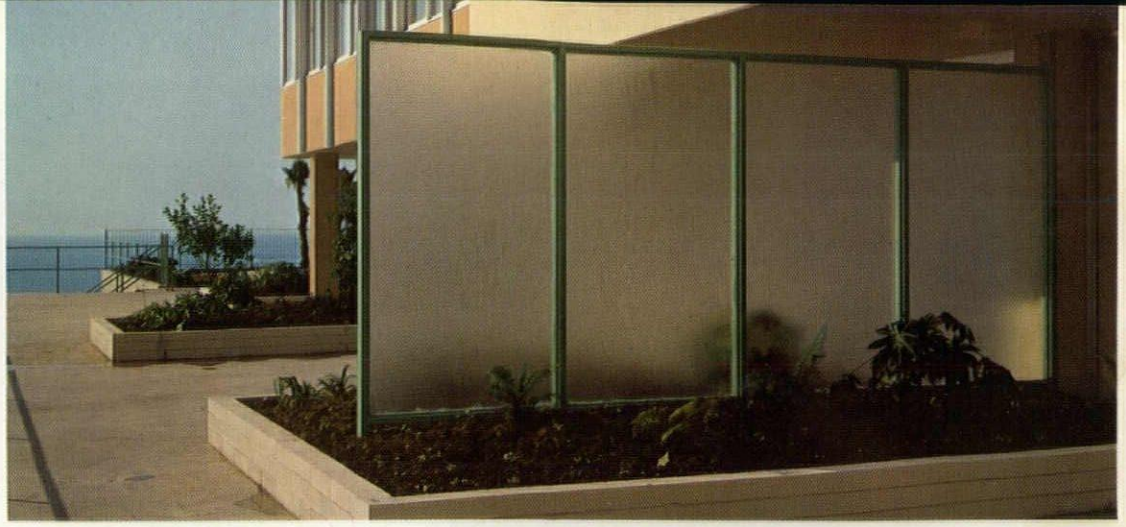

Patio courts in the Wilson Park Apartments, Castellamare, Calif., are divided with light for privacy and wind protection with partitions of 7/32″ textured BURLAP and ¼″ BURLAP MISCO (wire).
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Lustrous, obscure 7/32″ BURLAP glass in office building, Bellflower, Calif.
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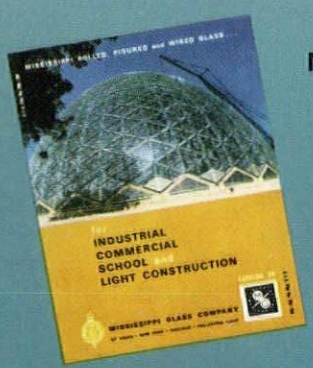

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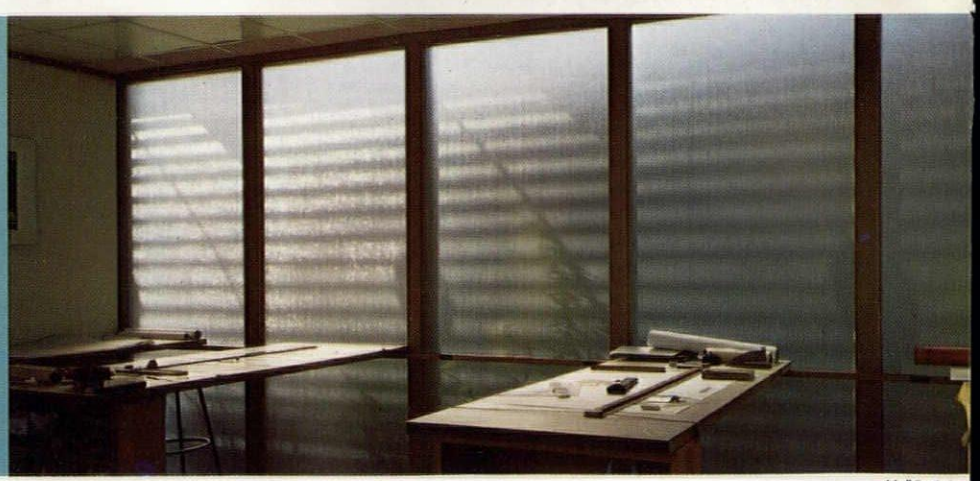

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EX-TEN 60	60,000	80,000 min.
EX-TEN 50	50,000	70,000 min.
EX-TEN 42	**42,000**	**63,000 min.**
A36	36,000	58,000 to 80,000

Product Availability

Grade	Plates & Bars Thickness, Inches	Structural Shapes	Sheet & Strip
70	to ⅜ incl.	——	.0284-.125
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50	to 1½ incl.	All sections up to 426 # /ft.	.0284-.2299
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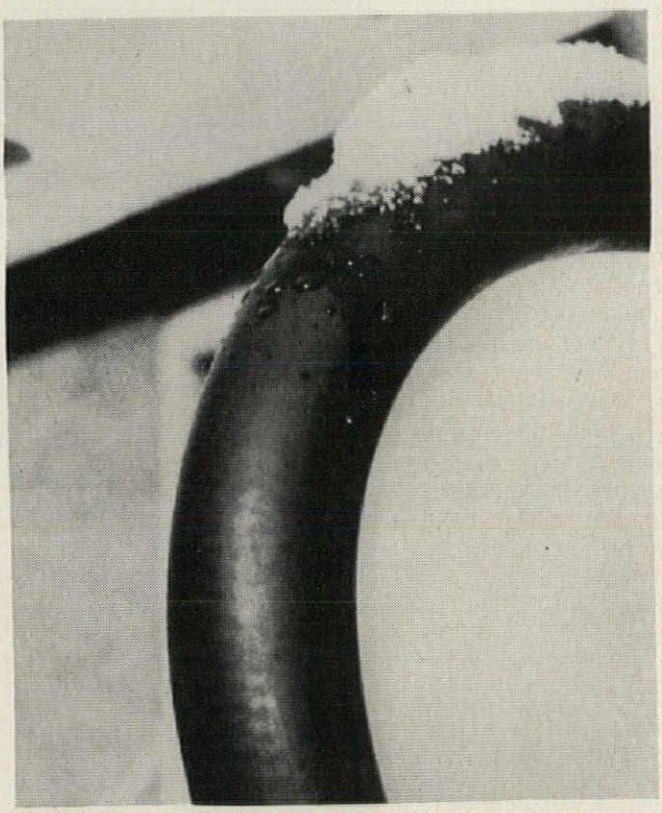
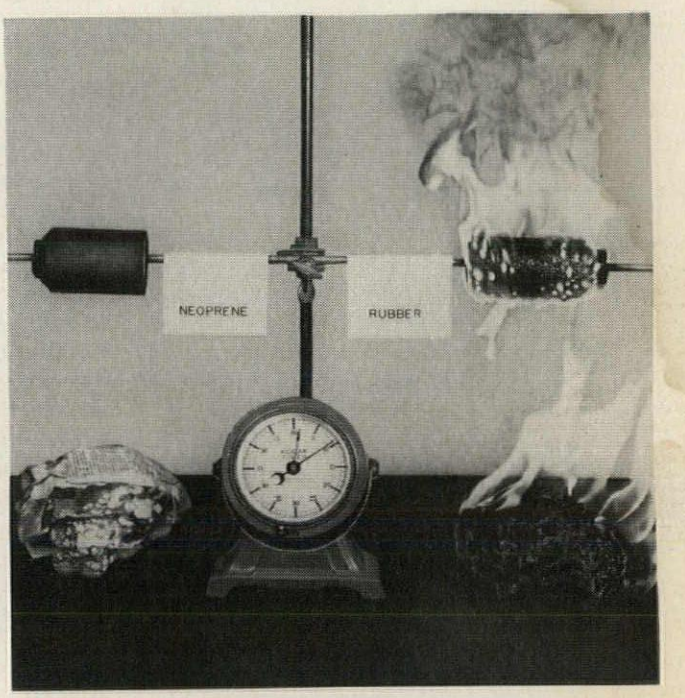


1. NEOPRENE HAS PROVEN WEATHERABILITY

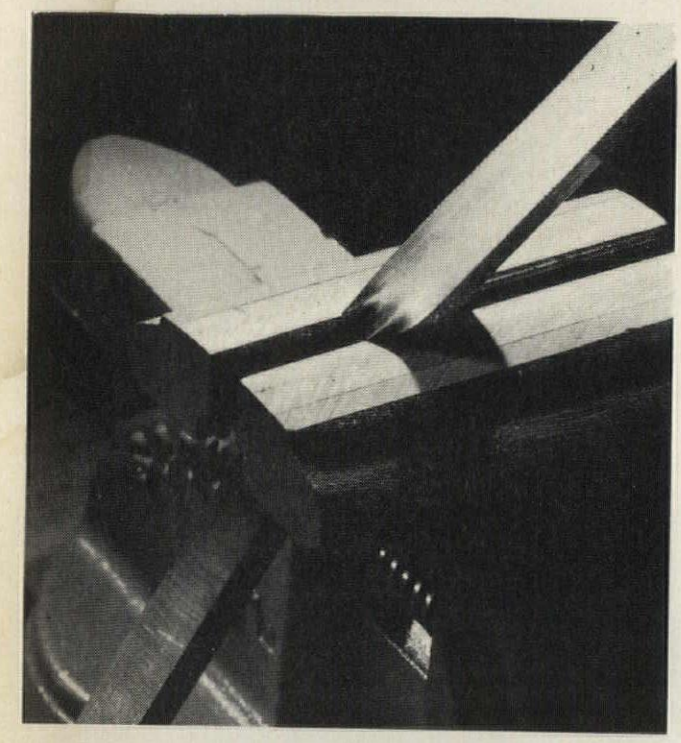
Remains tough and resilient in all seasons, in all climates. Stays maintenance-free for years. Want proof? The Neoprene-jacketed cable, above, has been exposed to all kinds of weather since *1935*. It's still in excellent condition. But ordinary rubber exposed with it deteriorated years ago to the point of complete uselessness. That's one of several good reasons to specify Du Pont Neoprene, the *time-proven rubber* for dependable building seals.



2. NEOPRENE RESISTS FLAME

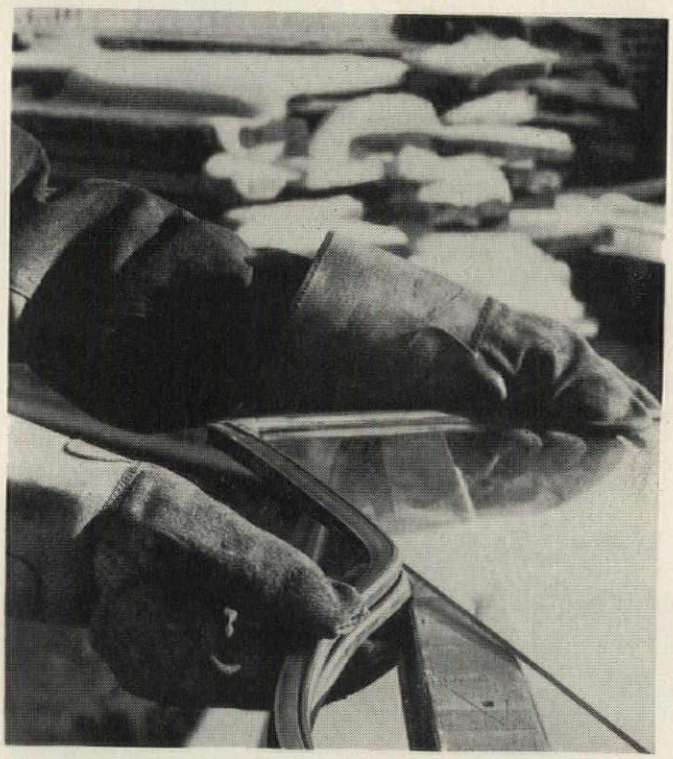
This picture shows samples of Neoprene and ordinary rubber, only seconds after the flame of a Bunsen burner was applied to both. When the flame was removed, the Neoprene extinguished itself so quickly that the fire did not have a chance to spread to the wadded paper below it. Not so with the ordinary rubber. It's both a blazing torch AND a fire-spreader. These are important facts to keep in mind when designing any building. Neoprene is inherently flame-resistant.

SEALED WITH NEOPRENE



3. NEOPRENE RESISTS COMPRESSION SET

As soon as it's compressed, Neoprene makes a seal that holds its grip. Stays tight, leakproof. Neoprene doesn't get "lazy"...doesn't relax through years of service. That's why seals of Neoprene give buildings—and their owners and tenants—maximum protection against wind, water and weather.



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The roof of the central portion of this circular school and church building is composed of huge precast concrete folded plates. Support for the roof is provided by a tension ring of concrete and steel at the outer perimeter and a compression ring at the peak. The 24 folded plate units were erected in just two days.

The roof provides a circular church area, 76′ in diameter, which is entirely free of supporting columns. Schoolrooms and administrative areas are arranged in wedge-shaped sections around the provisional church area which eventually will become the school auditorium when a permanent church is built.

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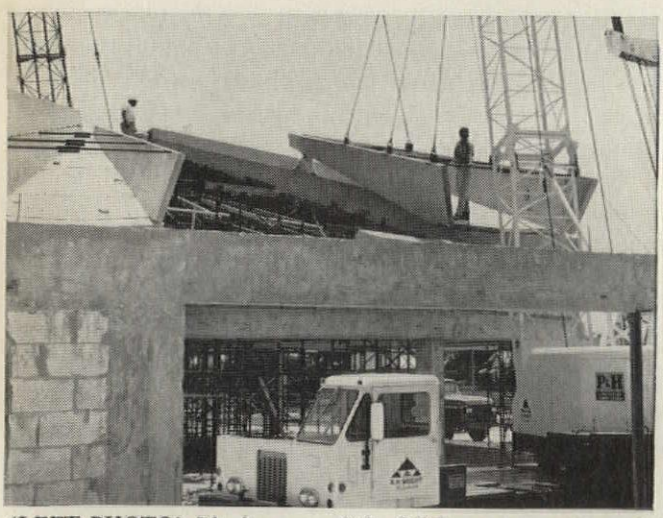
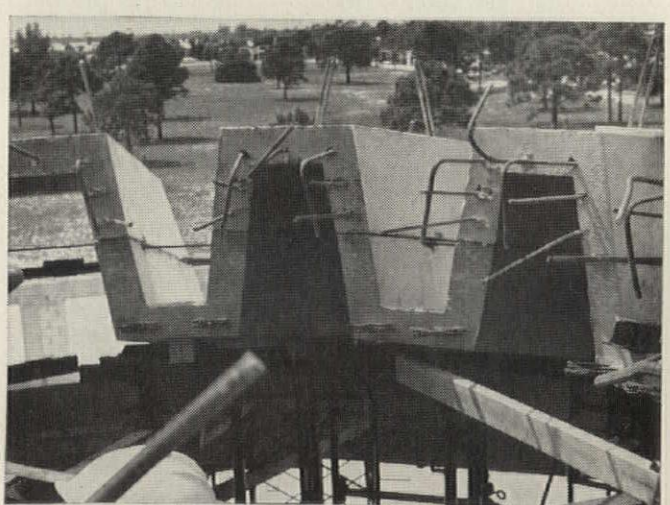
Owner: St. Ambrose School and Provisional Roman Catholic Church, Deerfield Beach, Florida
Architect: Romano & Sullan, Pompano Beach, Florida
Structural Engineers: Nicholas G. Dracos & Associates, Boca Raton, Florida
General Contractor: Pagliara Builders, Inc., Fort Lauderdale, Florida
Precast Roof Units: R. H. Wright, Inc., a unit of Houdaille Industries, Inc., Fort Lauderdale, Florida

LEHIGH CEMENTS





(LEFT PHOTO) Placing one of the 36′ long precast concrete tapered folded plates. Only two days were required to place the 24 roof units. (RIGHT PHOTO) Deep folded plate design is formed by placement of top units on identical inverted bottom units, demanding close tolerances. Protruding re-bars will be anchored into the poured concrete compression ring.

Philharmonic Hall, Lincoln Center, New York City. Architect: Harrison & Abramovitz

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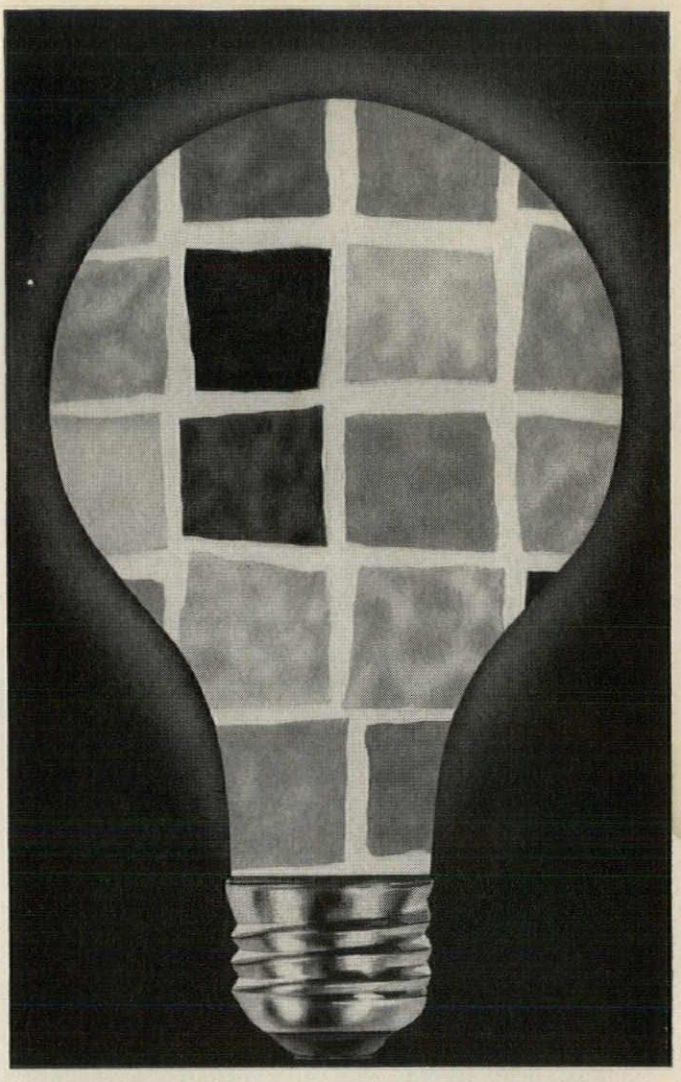

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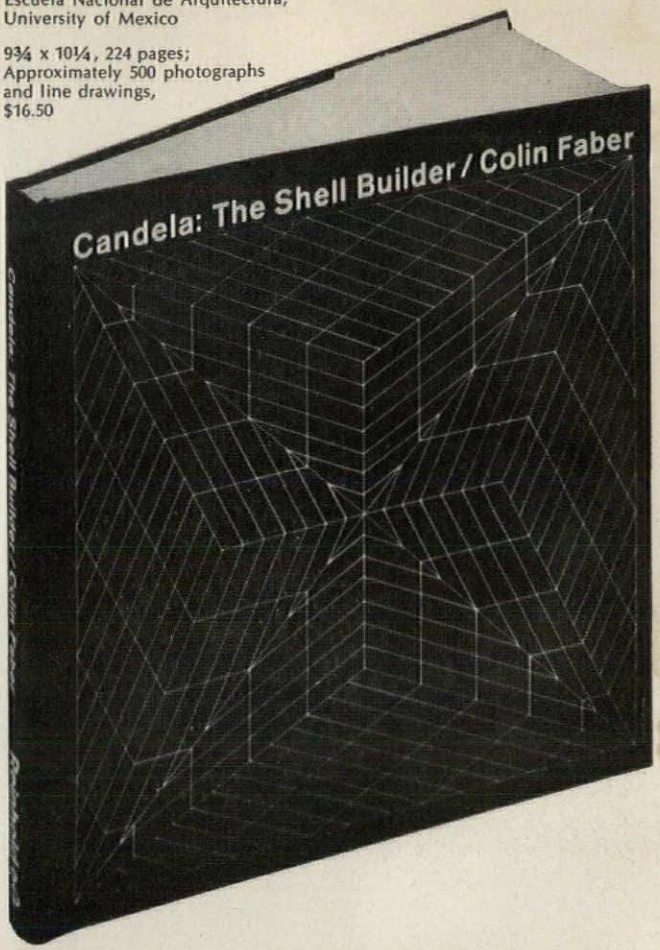
Here is the biography of Candela, master-builder and construction poet, famous throughout the world of architecture and engineering as developer of the hyperbolic form. The book tells in chronological sequence the story of Candela, the man – his background and work. Contained within this fascinating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

Candela: The Shell Builder

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

9¾ x 10¼, 224 pages;
Approximately 500 photographs
and line drawings,
$16.50



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

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

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

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Shell Architecture:
Documents of Modern Architecture

Edited by Jürgen Joedicke
9 x 11, 305 pages, $22.50

This book constitutes a successful attempt to present a comprehensive treatment of the complex problems of shell construction. It furnishes the architect and the engineer with an insight into a broad field, which is not easily accessible in the literature. The architect's typical mode of thinking is brought closer to the engineer, thus contributing to a better understanding between architect and engineer.

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Owner: Greater Baton Rouge Port Commission
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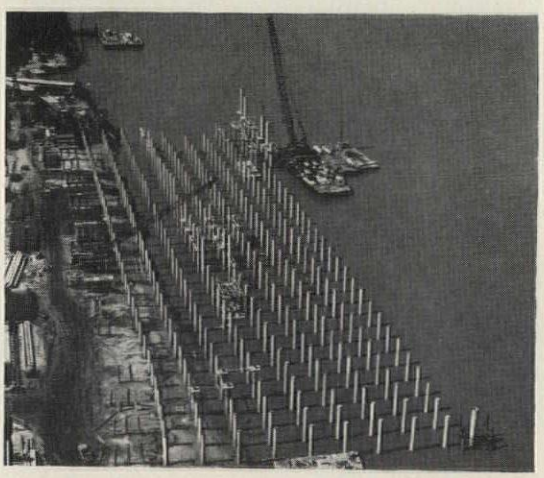
Contractors: Steers-Morrison-Knudsen, Port Allen, Louisiana
Consultants on Prestressed Pipe Manufacture: Ben C. Gerwick, Inc., San Francisco, Calif.

Prestressed Concrete Piles selected for new Mississippi River dock

A new 220,000 square-foot dock facility at Port Allen, Louisiana, will have a complete foundation of prestressed concrete members. Pile bents for the ramps are 20-inch square piles. Main floor area of the dock will be supported by approximately 270 round 36-inch-diameter piles. Outboard section of the dock has heavier 54-inch-diameter piles. Selection of prestressed concrete for this project is another example of the variety of design and construction needs this material meets. It saves weight, speeds construction, simplifies finishing, reduces maintenance costs — and is readily available.

For this dock project, more than 400 tons of dependable Union TUFWIRE Strand were used by the prestressed concrete fabricator. TUFWIRE Strand and other Union Wire Rope products are made by **Armco Steel Corporation, Steel Division, Department S-1744, 7000 Roberts Street, Kansas City, Missouri 64125.**

Send for helpful new book on TUFWIRE products for prestressed concrete



Entire foundation of new Mississippi River dock at Port Allen, Louisiana, will be of prestressed concrete piling.

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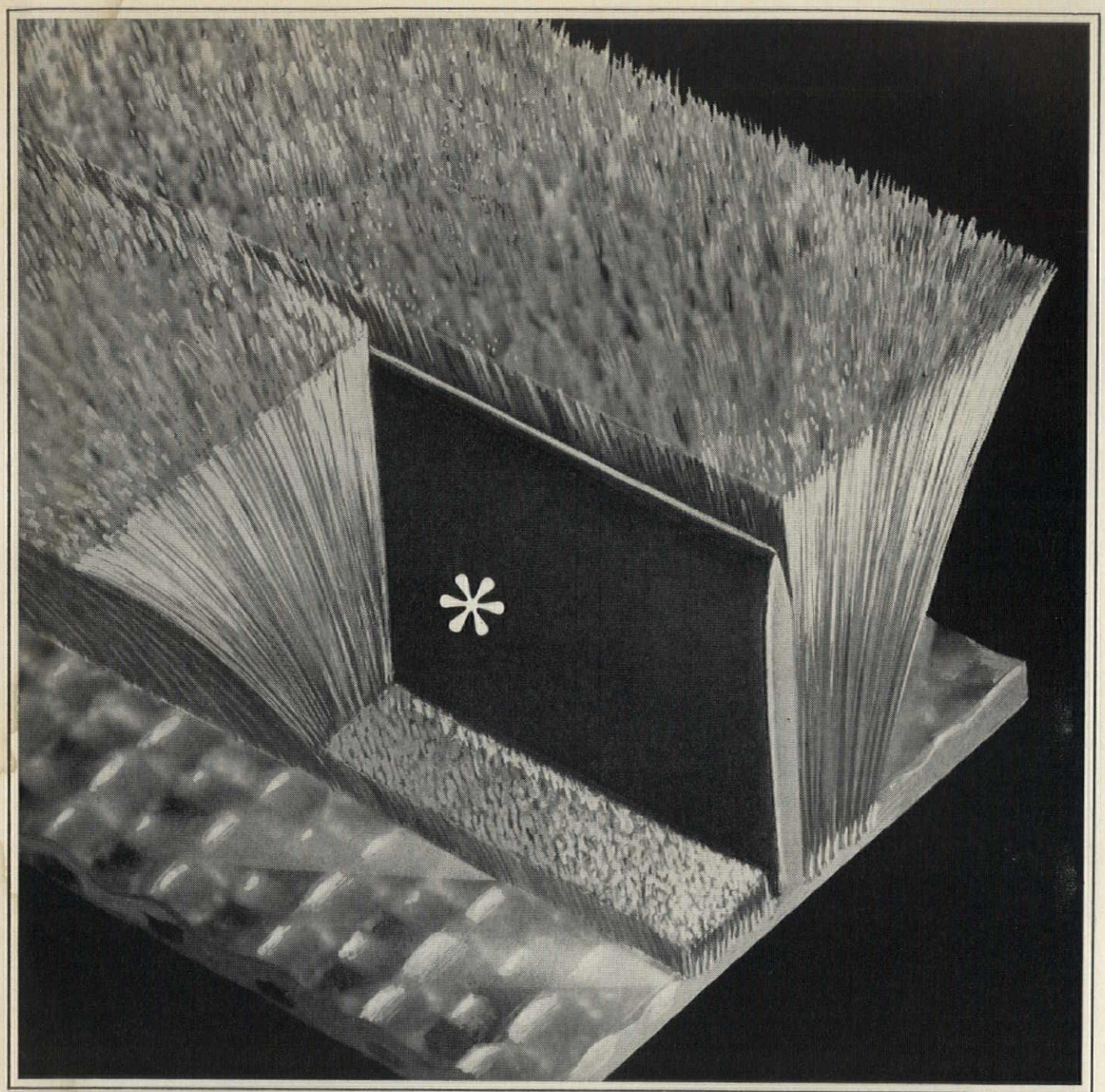

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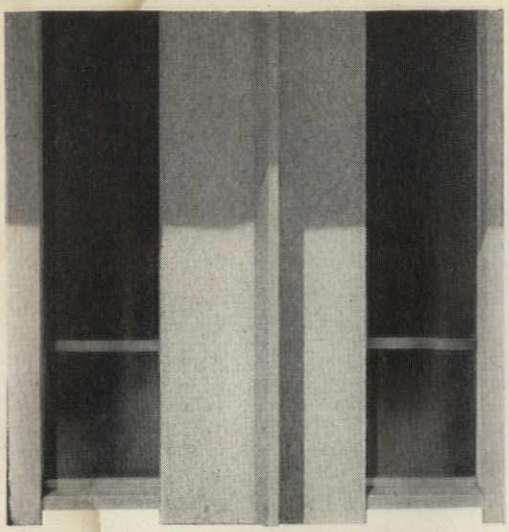

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DESIGN AND FORM: THE BASIC COURSE AT THE BAUHAUS
by Johannes Itten.
7¾ x 10¾. 200 pages. 160 illustrations. $12

A complete description of the content and purpose of the famous "Introductory Course" at the Bauhaus, by the man who established it. Used as a trial semester to judge incoming students of varying educational backgrounds, the purpose of this course was threefold: to determine creative talent; to facilitate choice of career; to teach elementary design.

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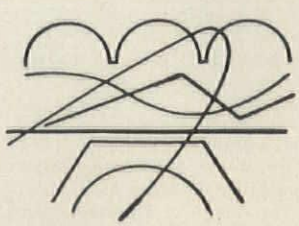

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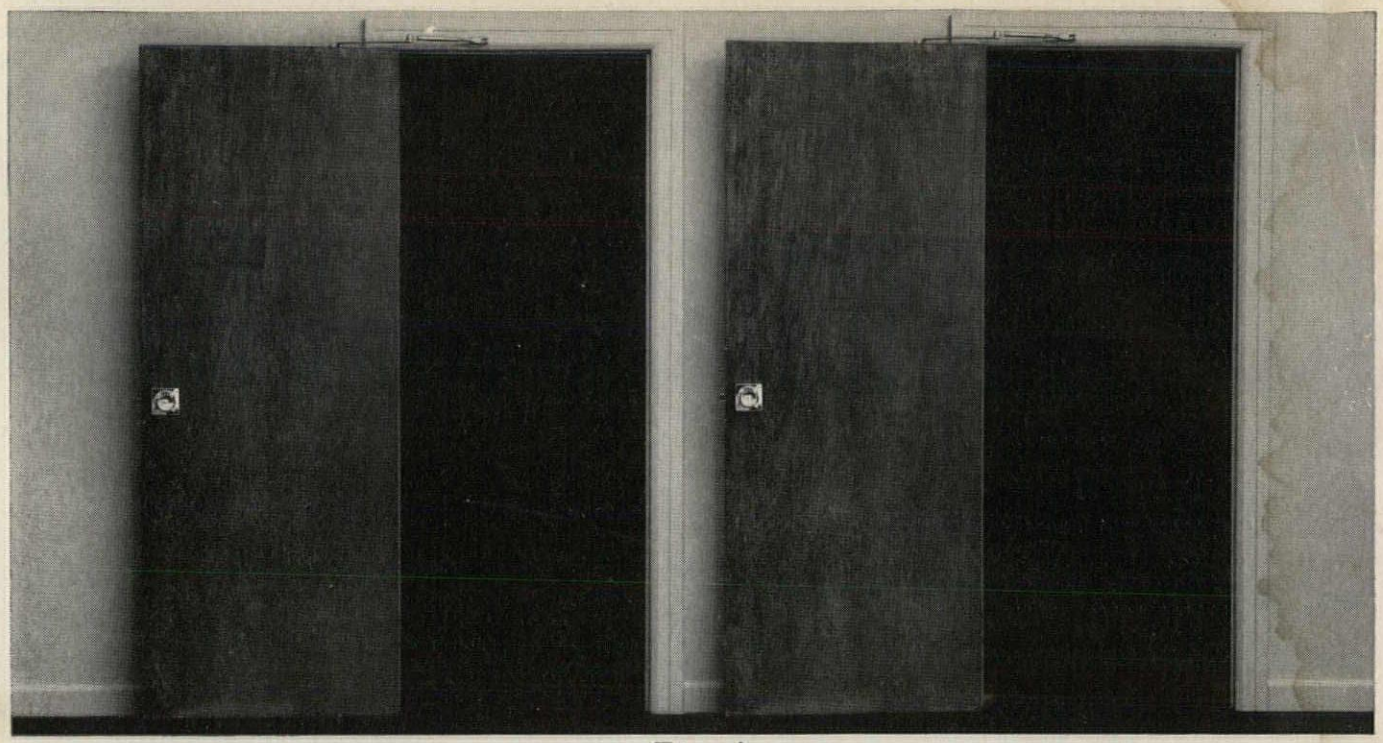

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