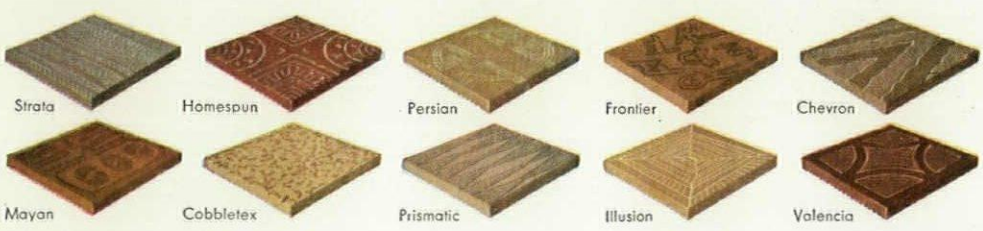
PA-1961-10


PROGRESSIVE ARCHITECTURE October 1961

Textured Quarry Tile by Summitville is unique in the ceramic field. *No* other product offers such a combination of sparkling color, pattern and texture, long wear and versatility. Easy-to-clean textured quarry tiles are available in 10 designs . . . a choice to complement any architectural style. Twelve color combinations provide a selection to harmonize with any color scheme.

For the full story on how to specify beautiful, "unequalled" floors and walls, contact your local ceramic tile contractor or write direct.



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For brighter, easier-to-maintain walls, it's Koroseal

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International Arrival Building, New York International Airport—Skidmore, Owings & Merrill, Architects

26 Rotary Oildraulic® Elevators and Lifts

KLM offices and passenger lounge in Airline Wing Building are served by two Oildraulic passenger elevators.

Efficient vertical transportation that contributes to freer architectural design (and often enhances it) is the contribution of Rotary Oildraulic Elevators to fabulous New York International Airport at Idlewild.

Because they're pushed up from below, not pulled from above, Rotary Oildraulic Elevators require no overhead machinery and no objectionable penthouse. This makes them compatible with the sweeping jet-age lines which characterize much of the architecture at this aerial gateway to the United States.

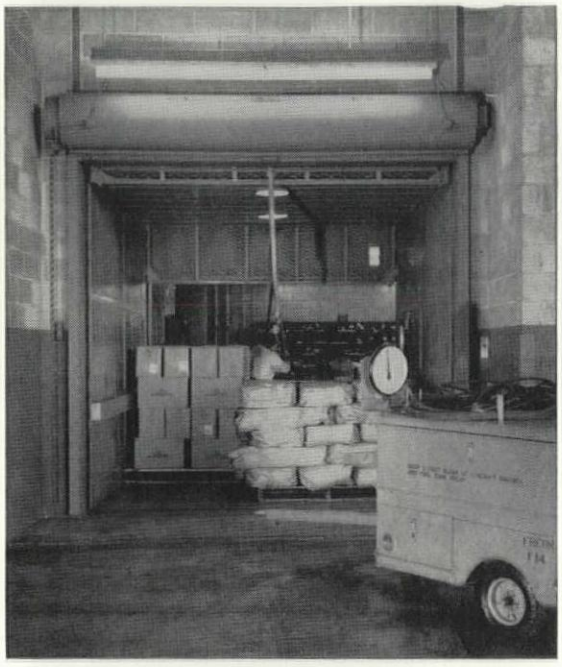
TRUNCATED SHAFT — Pan American's "umbr[illegible] terminal has a center island which stops short of the huge cantilevered roof. Only hydraulic elevators (two were required) would suit this design and Rotary Oildraulic was the choice. In the International Arrival Building there are six Oildraulic passenger and freight elevators manufactured by Rotary.

In addition to elevators with capacities to 15,000 lbs., Rotary equipment installed at the various terminals and hangars includes Levelator Lifts for handling heavy freight and Leva-Dock Ramps for speeding cargo movement across truck docks. The total of 26 installations includes buildings designed by seven architectural firms for The Port of New York Authority and these airlines: American, K.L.M. Royal Dutch, Pan American, Scandinavian, Swissair, T.W.A., United.

ECONOMICAL, DEPENDABLE — For any building to six stories Rotary Oildraulic Elevators offer important design advantages and construction economy. Building owners benefit by efficient, dependable vertical transportation service.

Right: Two Rotary Oildraulic passenger elevators serve "island" in center of Pan American World Airways Terminal Building.

Below: General freight in American Airlines hangar is moved between floors by 15,000 lb. capacity Rotary Oildraulic Elevator.



serve New York's Idlewild Airport

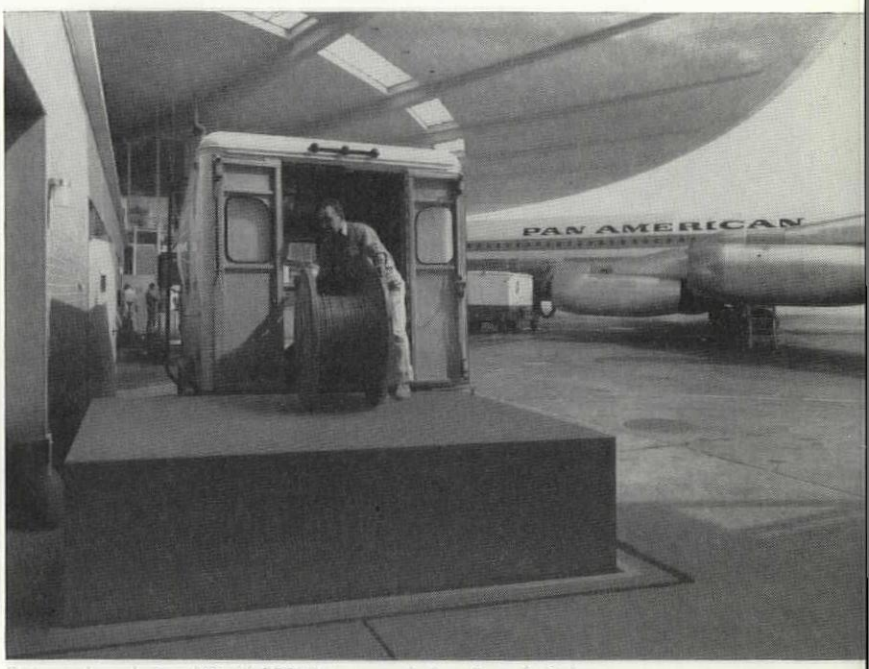
Information on Rotary Oildraulic Elevators and Lifts is available through distributors listed in the phone book yellow pages. See our catalog in Sweet's Files or write for more information.

DOVER CORPORATION
Rotary Lift Division
1011 Kentucky, Memphis 2, Tenn. • Chatham, Ontario

Rotary Oildraulic equipment used in Idlewild buildings designed by these architectural and engineering firms

AMMANN & WHITNEY
BURNS & ROE
KAHN & JACOBS, Architects, ROY S. BENT, Associate
ANTONIN RAYMOND and L. L. RADO
EERO SAARINEN & ASSOCIATES
SKIDMORE, OWINGS & MERRILL
TIPPETTS-ABBETT-McCARTHY-STRATTON and IVES, TURANO & GARDNER, Associates

Rotary Oildraulic equipment installed by
BURLINGTON ELEVATORS, INC., NEW YORK



Rotary Levelator Lift (6,000 lb. capacity) raises freight to truck bed height for fast transfer to Pan American plane.

Rotary® Oildraulic® Elevators · *Passenger and Freight*

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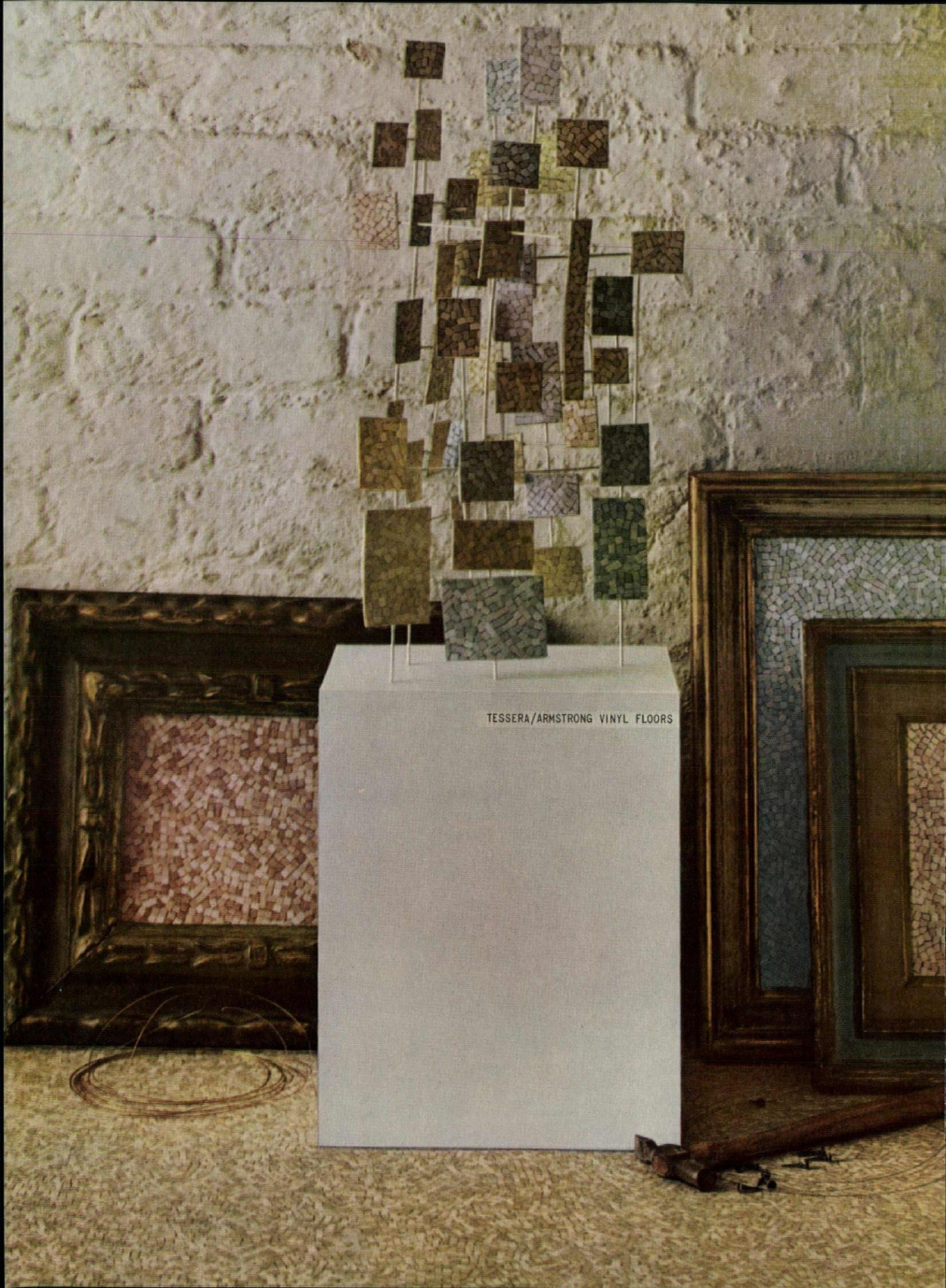
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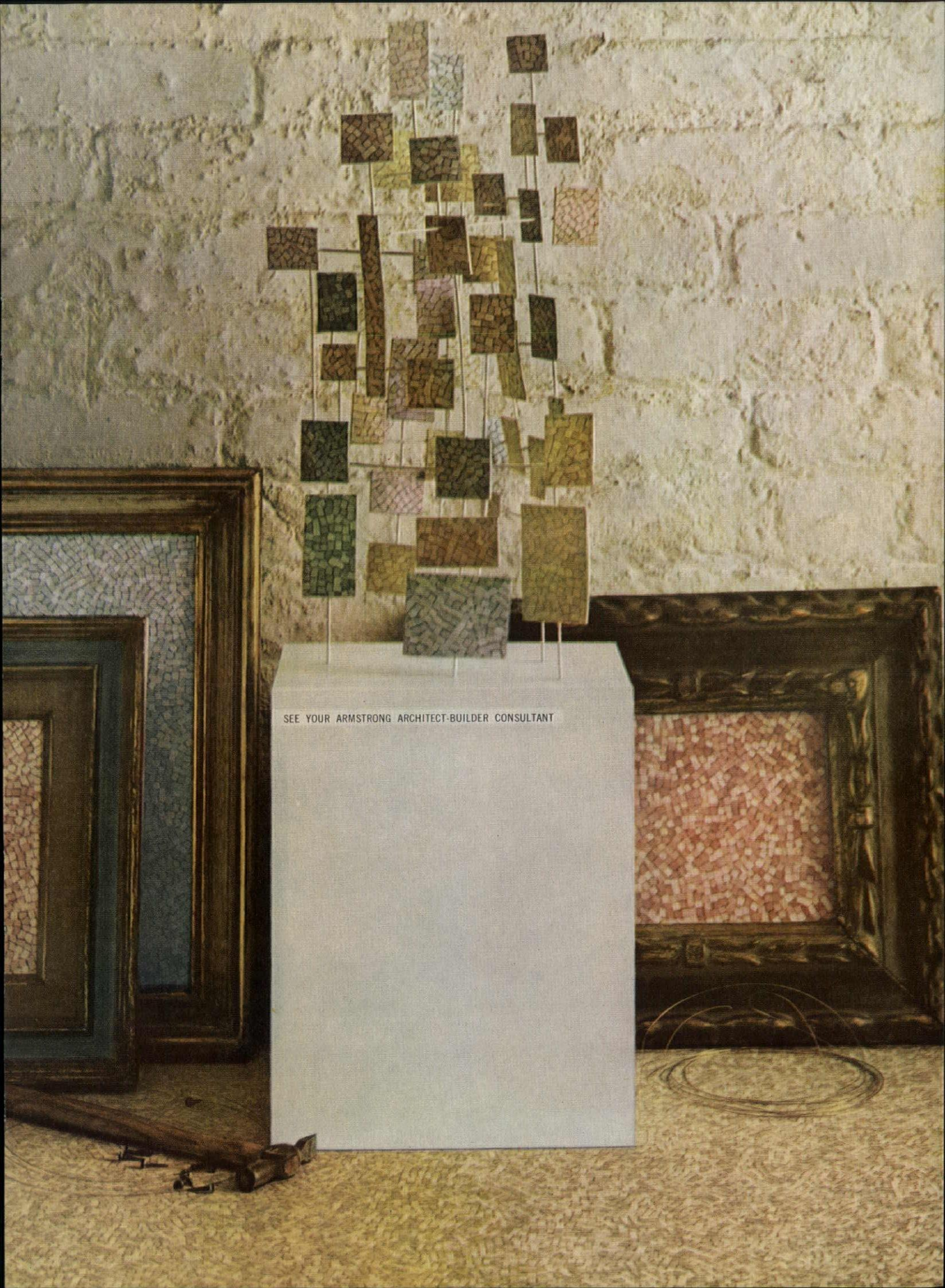
SEE YOUR ARMSTRONG ARCHITECT-BUILDER CONSULTANT

British Embassy, Washington, D. C.
Architect: Eric Bedford, Chief Architect and W. S. Bryant, Superintending Architect, British Ministry of Works.

UNDER TWO FLAGS . . .

Lehigh Mortar Cement

Swiss Embassy, Washington, D. C.
Architect: William Lescaze, New York, N. Y.

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They know from long experience that the workability and plasticity of Lehigh Mortar Cement help masons do top quality work—that its uniformity and durability contribute to clean, strong, weathertight walls.

Whether you design embassies or ranchers, traditional or modern, you can approve Lehigh Mortar Cement with assurance that it exceeds the most rigid Federal and A. S. T. M. specifications. Lehigh Portland Cement Company, Allentown, Pa.

Contractor: John McShain, Inc., Philadelphia, Pa. and Washington, D. C.
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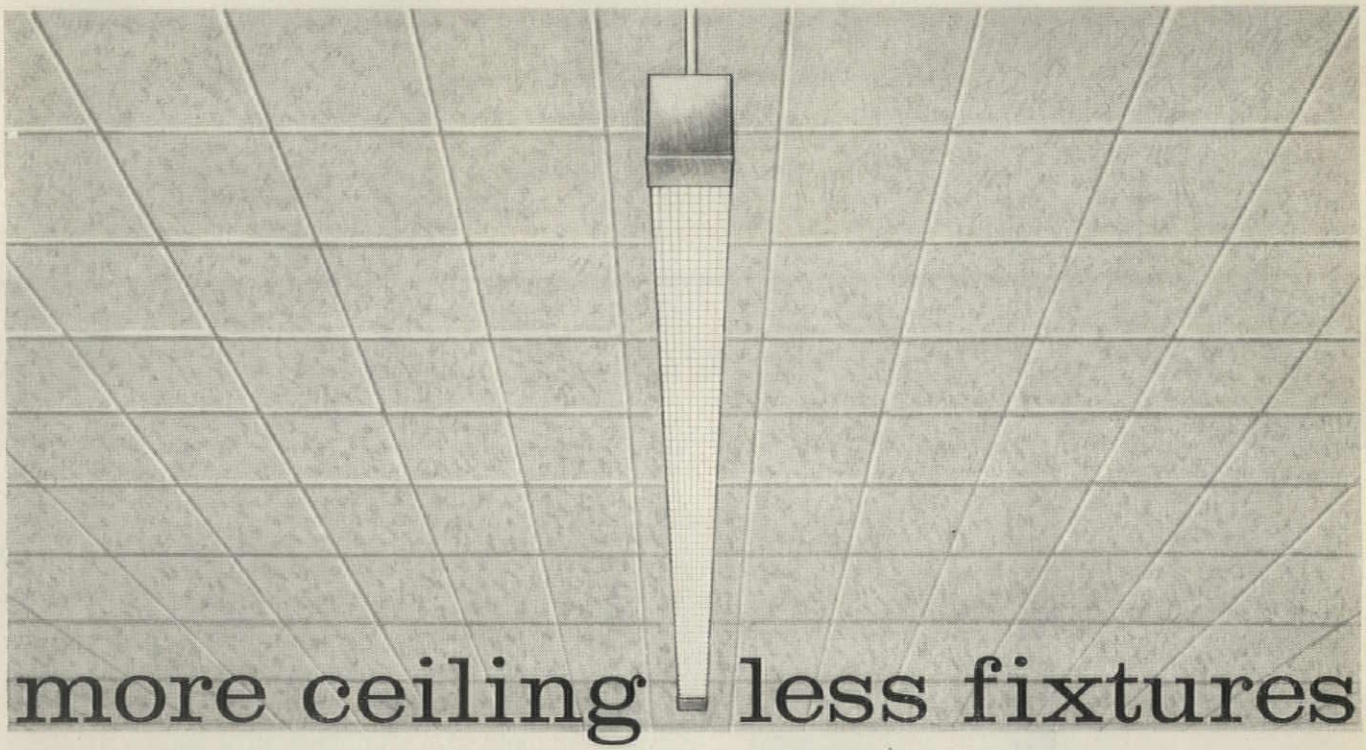

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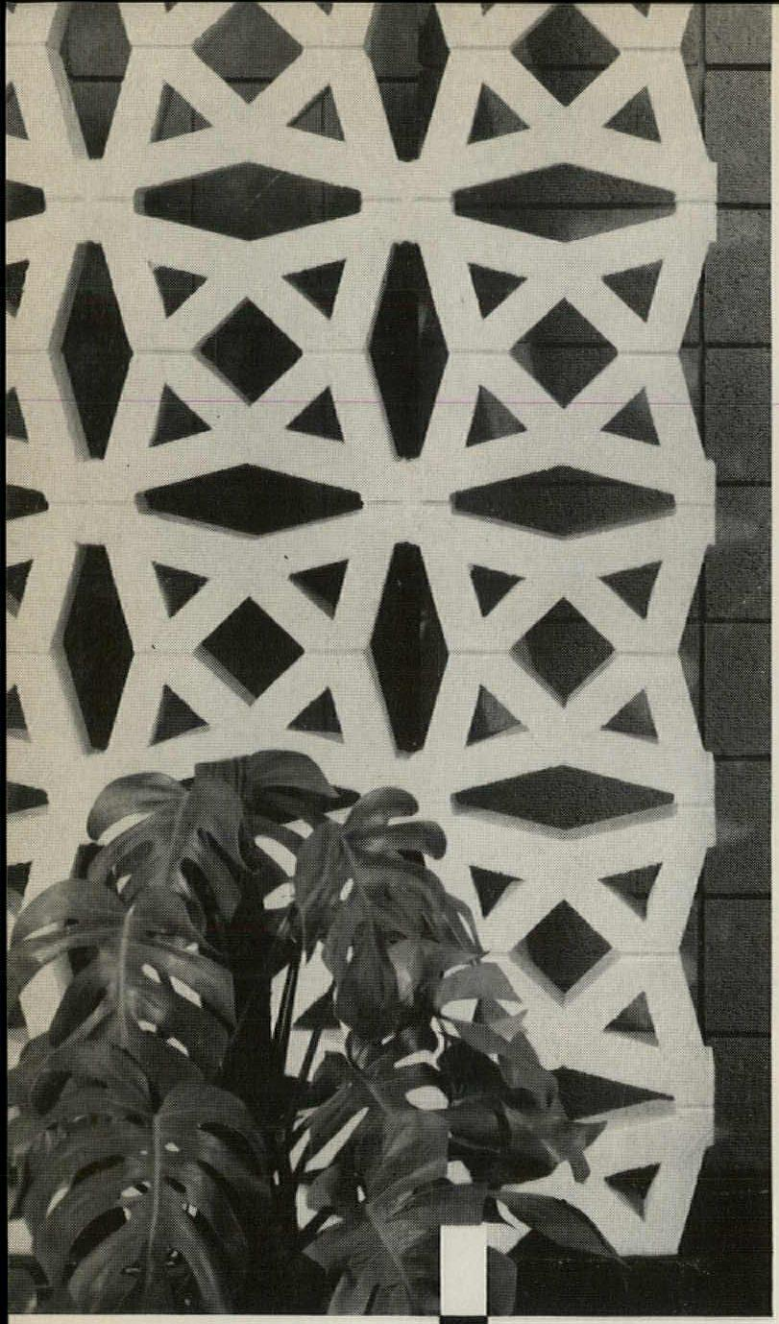
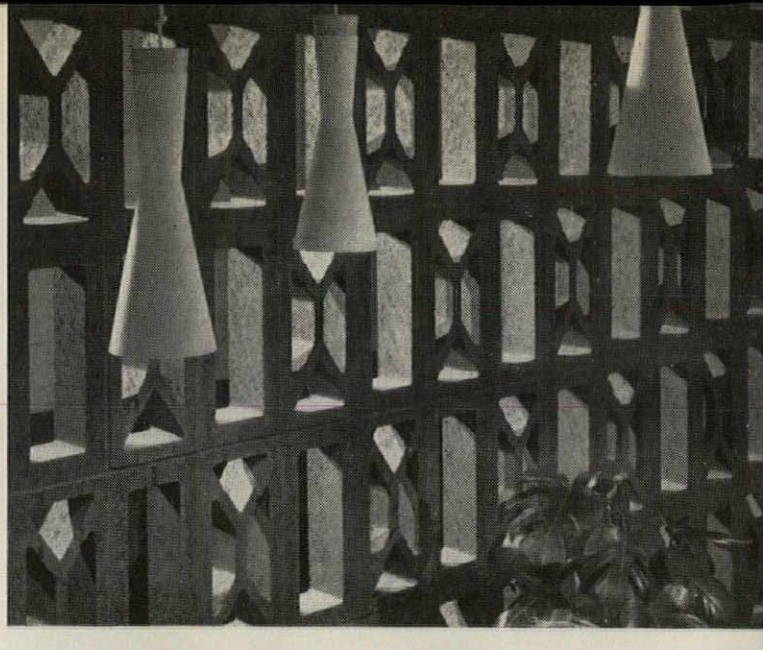
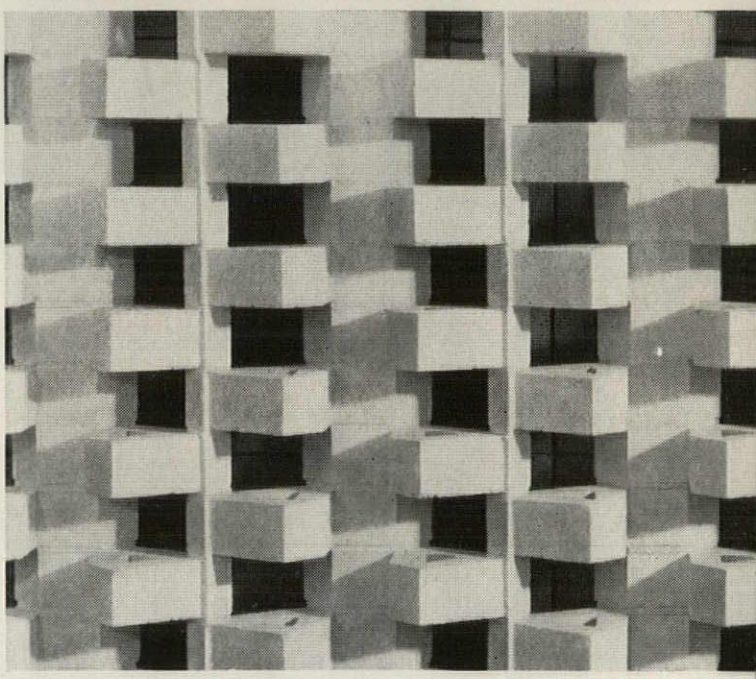






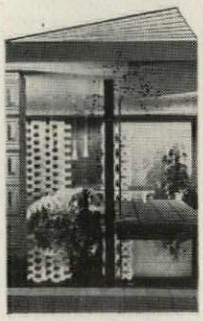
ABOVE: Charles Walton of Jones & Emmons, Los Angeles, created this unusual screen of grille units. Useful either as a decorative sun screen or as a fence for patios. Each section of this eye-catching screen is devised from just two block units.

UPPER RIGHT: Hellmuth, Obata & Kassabaum, St. Louis, took 4" x 8" x 16" grille and hollowcore units, stacked them vertically and achieved this impressive wall. Smart as a room divider or an interesting decorative note for special emphasis.

LOWER RIGHT: Victor Lundy of Sarasota, took the same perforated concrete block units responsible for the screen pictured above, laid them on their sides and at angles. The result: this unusually beautiful and intricate screen design. Flexibility unlimited with concrete masonry!

Architects' idea walls

from the wonderful new world of **BLOCK**



Leading architectural firms were asked to create new concrete masonry walls from units now available from the industry. Their answer was a series of designs of new dimension, use and beauty—opening a whole new wonderful world of block. "The complete story—designs, specifications, and a host of new block wall patterns are vividly described in Vol. 15, No. 2 of 'Pictorial.' Send 20c for your copy."

National Concrete Masonry Association 1015 Wisconsin Ave., N.W., Washington 7, D.C.

Watch for Concrete Industries Horizon Homes program

in the two newest states...

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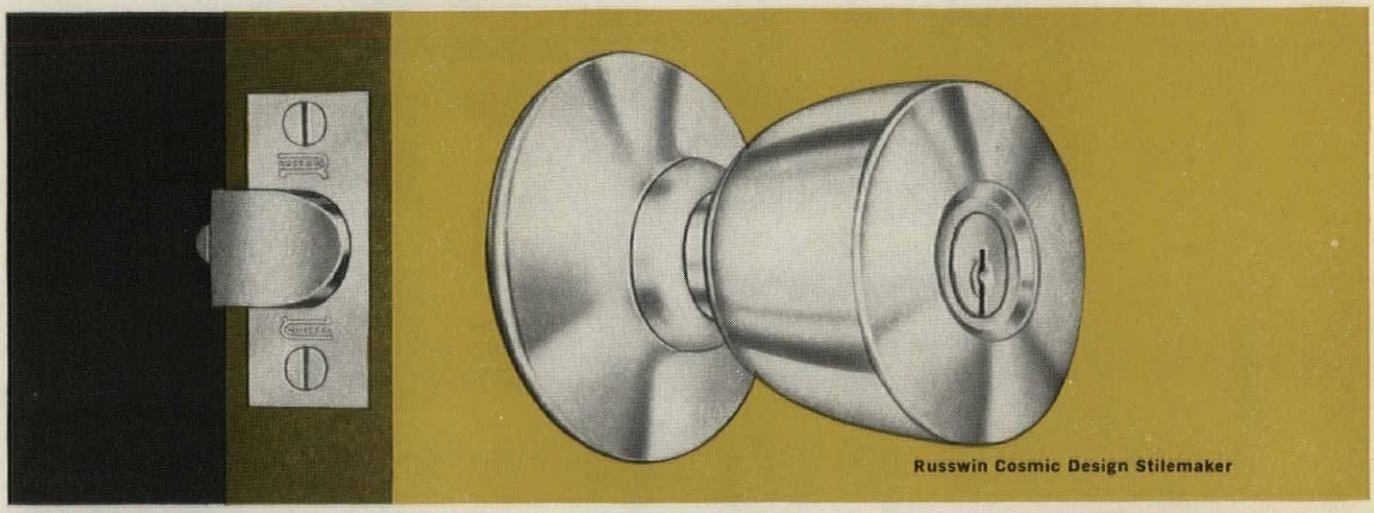
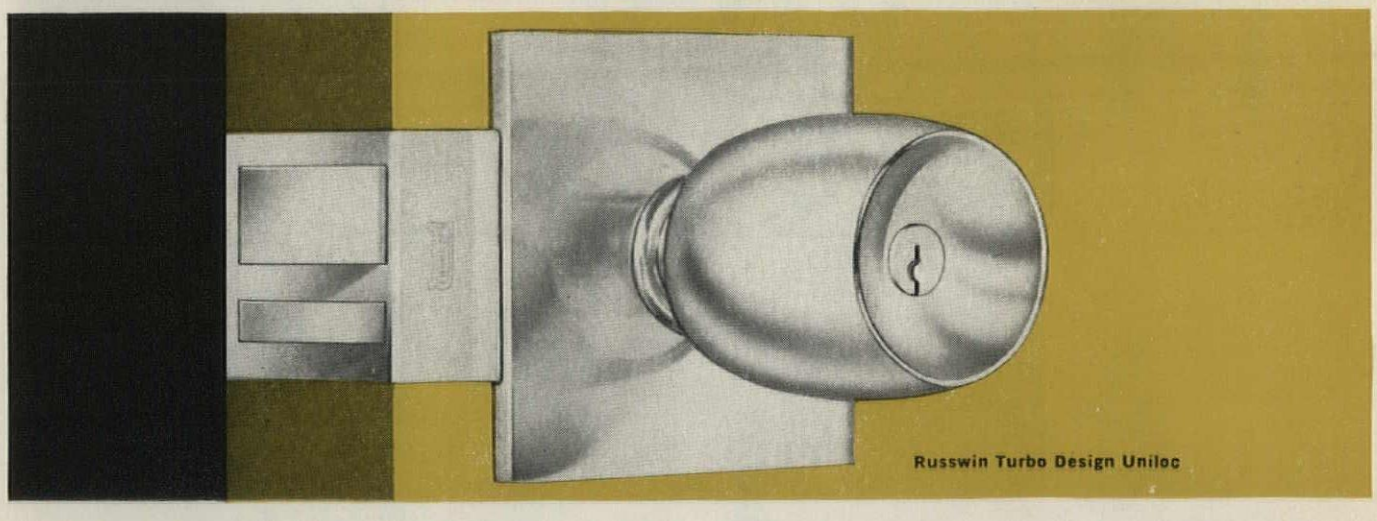
Architect & Assoc.: Edwin Crittenden, Anchorage, Alaska
Hardware: Glass, Sash & Door Supply Co., Anchorage, Alaska

The Ala Moana Building, Honolulu
Architect: John Graham & Co., Seattle and New York
Hardware: Theo. H. Davies & Co., Ltd., Honolulu, Hawaii
Owner-Contractor: Hawaiian Land Company, Ltd., Honolulu



Russwin Cosmic Design Stilemaker



Russwin Turbo Design Uniloc

it's russwin, the doorware that "speaks for the architect"!

In Alaska, in Hawaii . . . *wherever* doorware is chosen for beauty and stamina, architects choose Russwin Doorware.

Handsome Turbo Design Unilocs with award-winning knobs and heavy-duty "unit construction" are the choice for Honolulu's new Ala Moana Building with its distinctive roof-top revolving lounge. In the new Anchorage Public Safety Building, Russwin's popular Stilemaker Heavy Duty Cylindrical Locks, Cosmic Design, are used.

Look to Russwin when *you* want doorware with flair . . . doorware that lasts . . . doorware that speaks for itself and *you*. Write Russell & Erwin Division, The American Hardware Corporation, New Britain, Conn.

RUSSWIN

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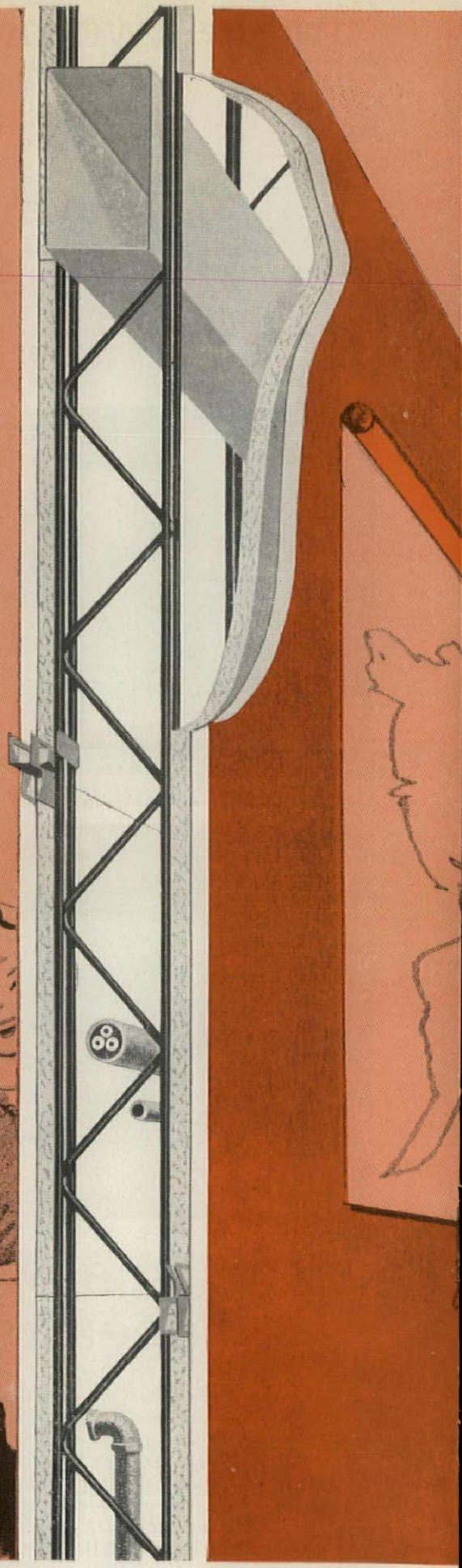
Now, the partition with 46 db sound loss and 1-hour fire rating... costs even less!



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is the low-cost way to obtain both high sound transmission loss ratings and high fire ratings in a non-load-bearing partition. *And now it costs even less!*

The TRUSSTEEL* Stud Resilient Lathing System offers these unusually high ratings by attaching ROCKLATH* Plaster Base to steel studs with resilient metal clips. The result is a plaster slab held free of studs. This suspension greatly reduces sound transmission without loss of fire protection. Now, with simplified design requiring fewer parts, this system costs even less to build!

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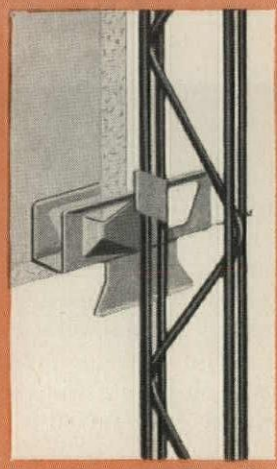

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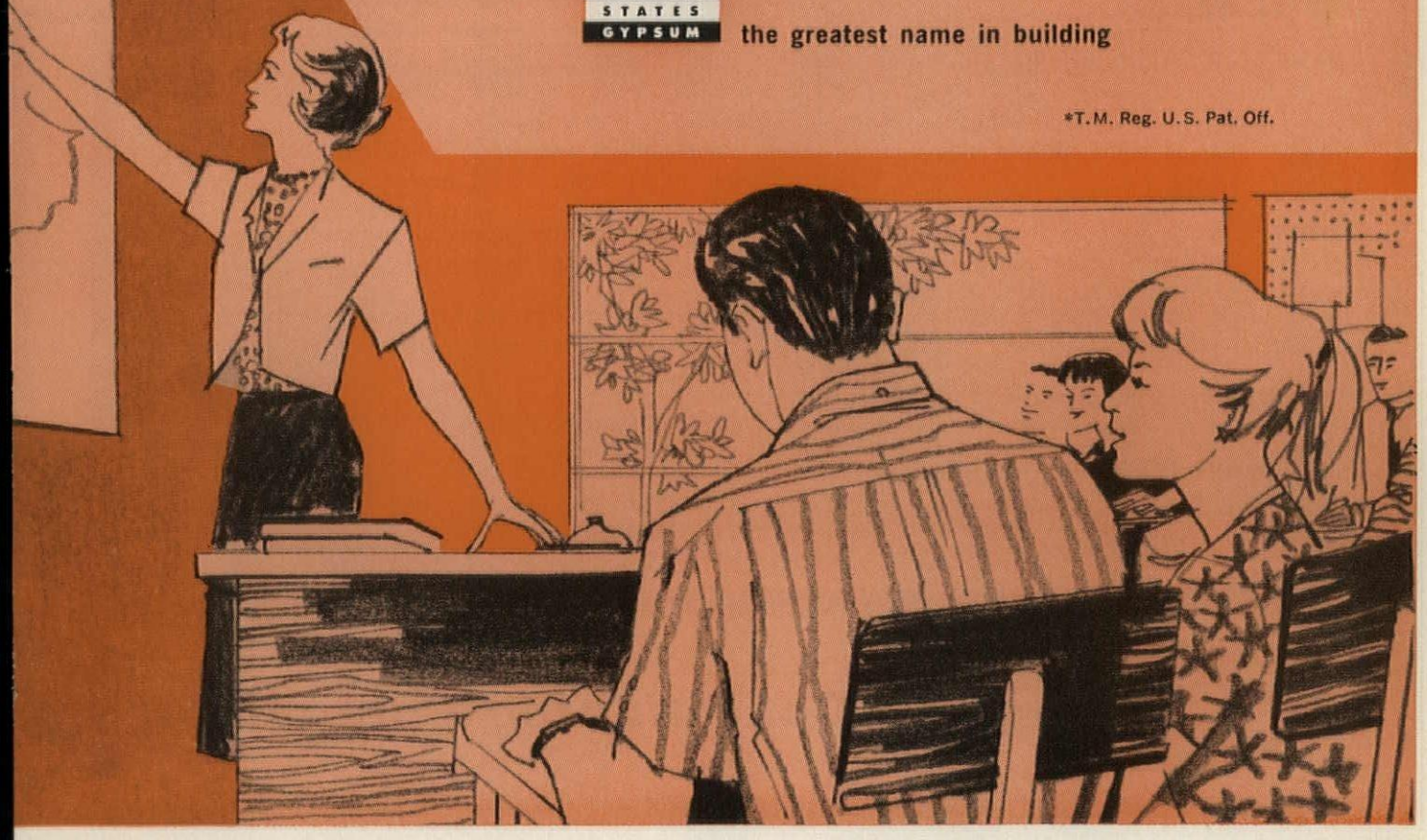
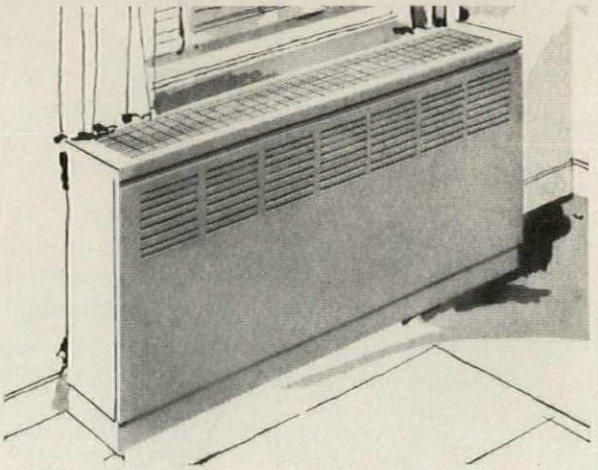


NEW CARRIER REHEAT WEATHERMASTER SYSTEM

...WHERE and WHY you can use it to advantage!

Now you can capitalize more often on the unique advantages inherent in all single duct, constant volume air conditioning systems with reheat at room terminals. The new Carrier 36BA Reheat Weathermasters* permit use of either high or normal velocity primary air. Four reheat coils are now available in each unit size. And you have a wide selection of new modular cabinets and furred-in arrangements.

You can select units more economically to meet cooling capacity and sound control requirements, with the assurance that they will also be able to match almost any heating load —regardless of geographical location, exterior glass area, or limitations of existing steam or hot water plants. For complete information on the new Carrier Reheat Weathermasters,



write for the 8-page catalog, 36BA86. Carrier Air Conditioning Company, Syracuse 1, N. Y.

WHERE:

Existing office buildings, hospitals and hotels, regardless of size, where present steam and hot water services are in good condition. Units replace radiators; only supply air duct system need be added.

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Constant volume supply air speeds system balancing, maintains constant air motion.

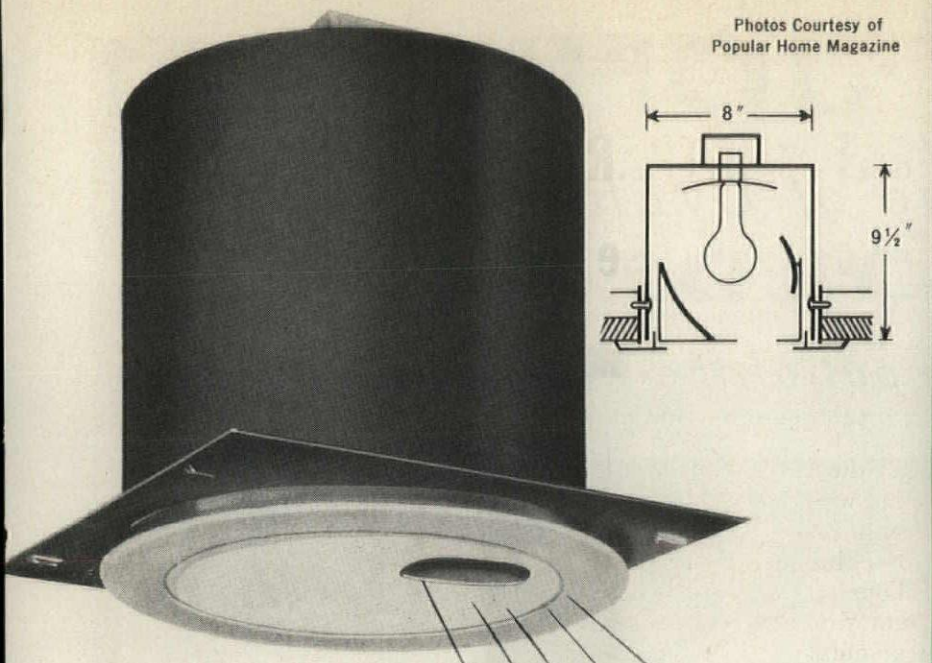
Constant temperature supply air simplifies central station apparatus, provides maximum humidity control.

Central station design eliminates service in occupied spaces.

Reheat at unit provides best possible control, solves zoning problems.

Carrier ***Air Conditioning Company***

Photos Courtesy of
Popular Home Magazine



the light that beams with pride!

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with 360° rotation

NO. H4160

$28.31* LIST PRICE

It's the latest attention-getter in recessed lighting circles . . . Halo's new Wall-Wash Lite featuring an inner frame that rotates 360° to cast soft accent light on "special interest" wall areas. Outer frame remains stationary . . . lamp reflectors rotate with inner frame. 1 x 4" aperture opening emits light from 150 Watt general service lamp. Entire fixture is 8" wide, 9½" high, with eggshell frame finish. For dramatic, efficient—low-cost—wall lighting, use the *light that beams with pride* . . . Halo's H4160 Wall-Wash Lite.

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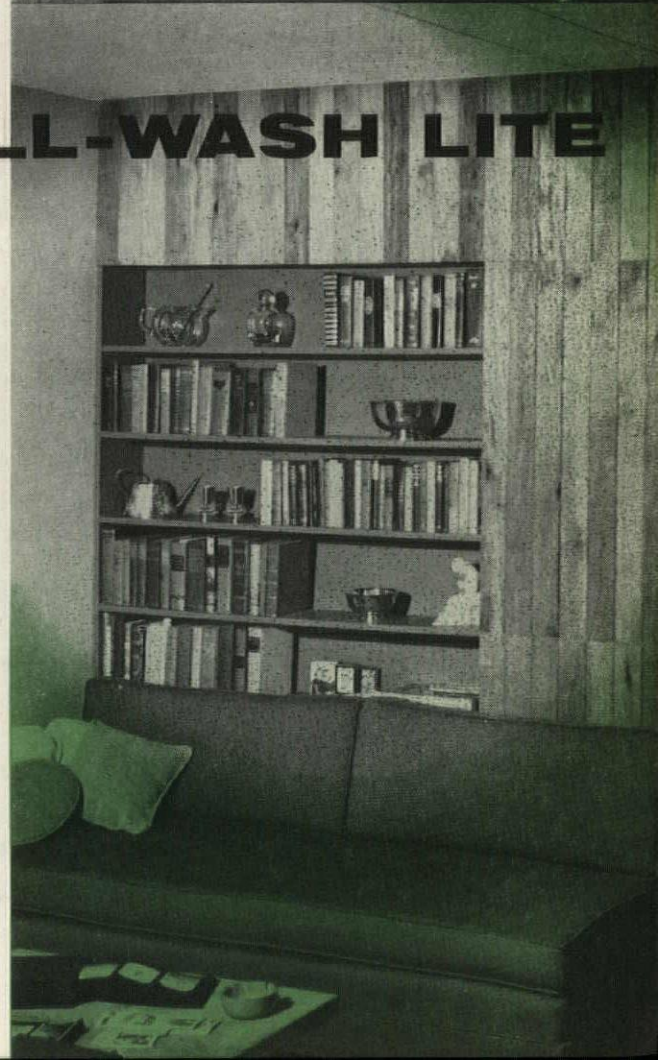

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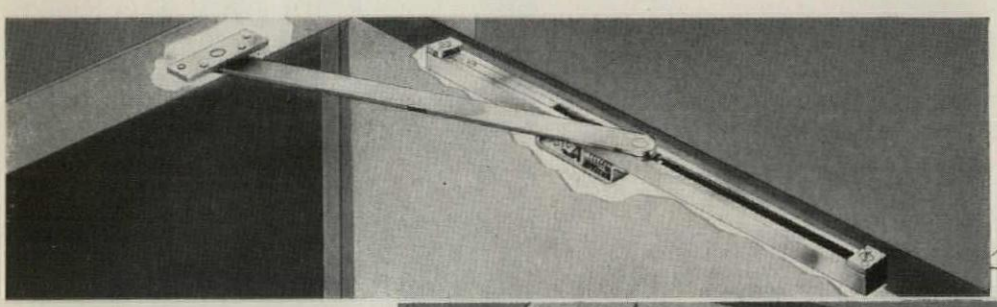
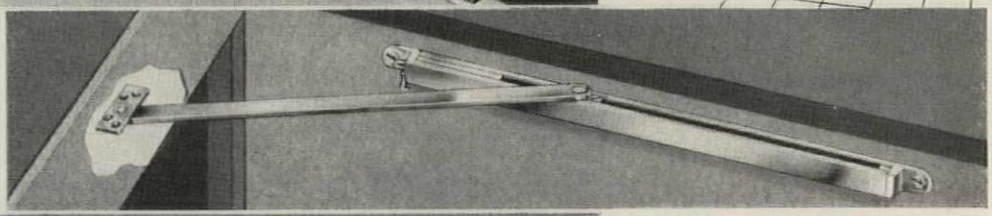
the complete line of OVERHEAD DOOR HOLDERS

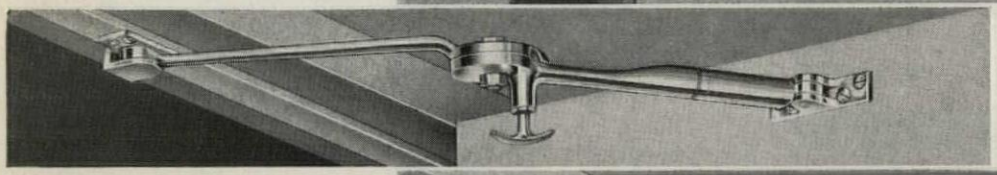
*overhead means out-of-the-way...

no stumbling hazards—no interference with cleaning



▲**GJ 100** **concealed (non-handed)** **GJ 90**▶ **surface type (handed)** **for single and double acting doors.** The finest in appearance and long, trouble-free wear.





◀**GJ ARISTOCRAT** **(non-handed) for single acting doors.** Ruggedly built for hard, practical usage.

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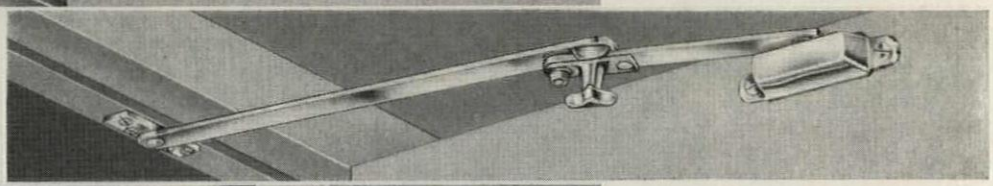
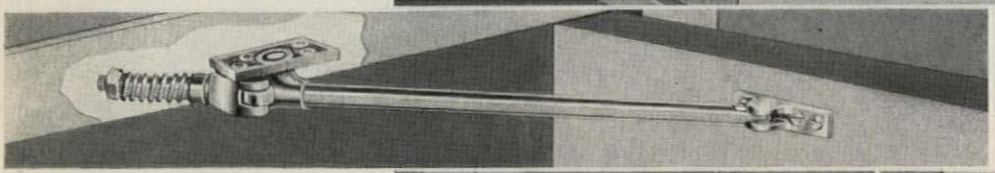
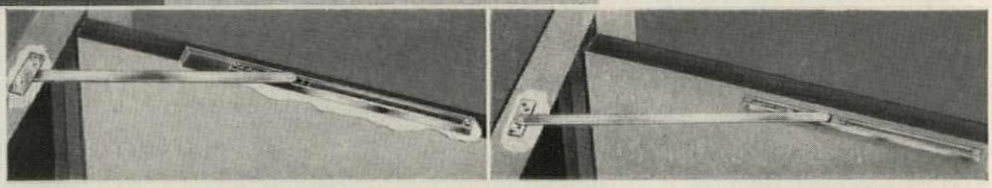




◀ **GJ 70 (non-handed) for single acting doors.** Inexpensive for low-cost installations.

GJ 300 and GJ 500 series▶ **(non-handed)** concealed for single and double acting interior doors. Surface type for single acting doors. Spring cushion types and friction holder type.



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HOLD THE DOOR... hold-open engages silently... holds firmly... releases easily.

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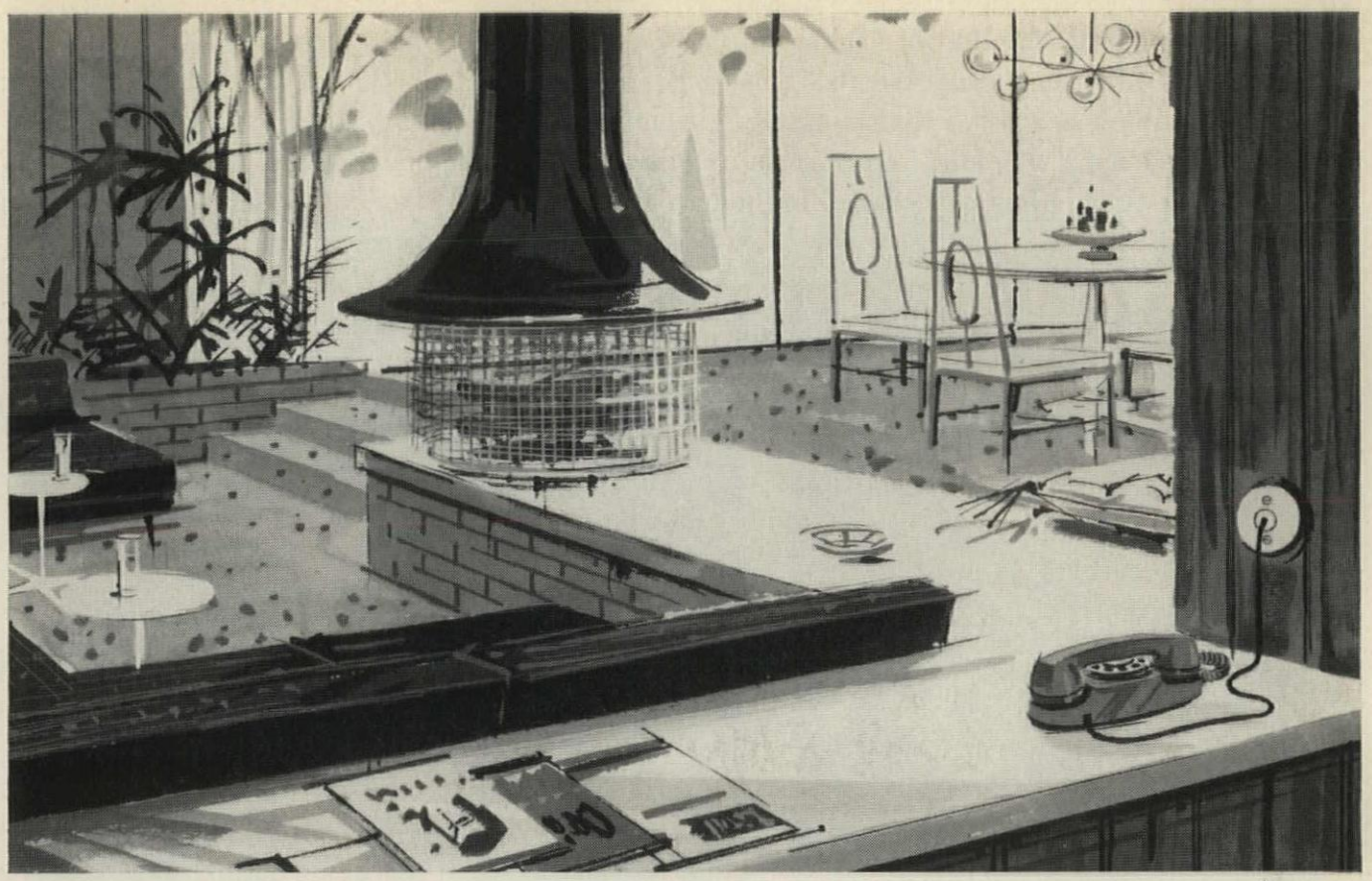

For details of home installations, see Sweet's Light Construction File, 11c/Be.

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and built-in outlets keep telephone service flexible, protect the interior beauty of homes, and add to their resale value.

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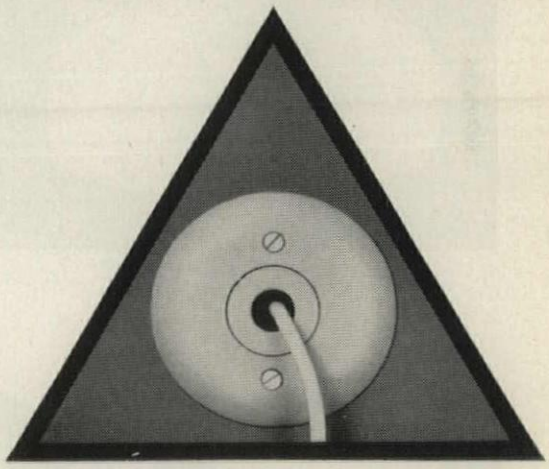
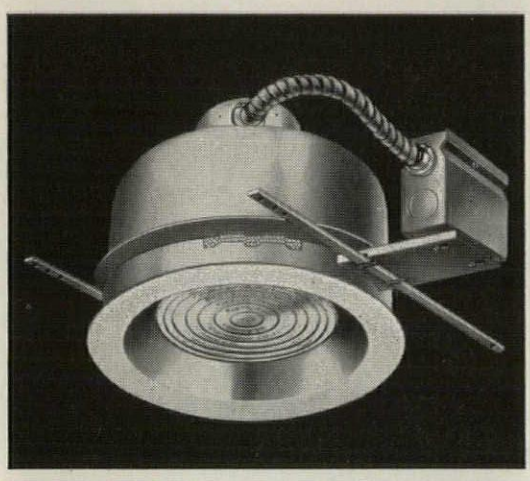


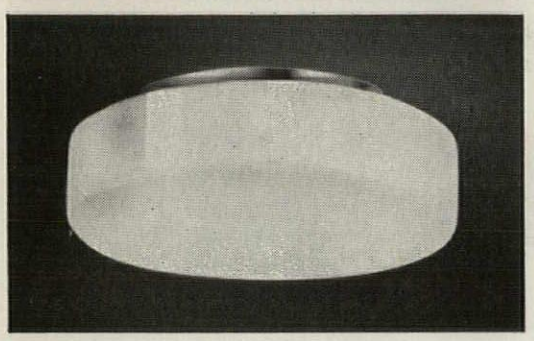
Bell Telephone System

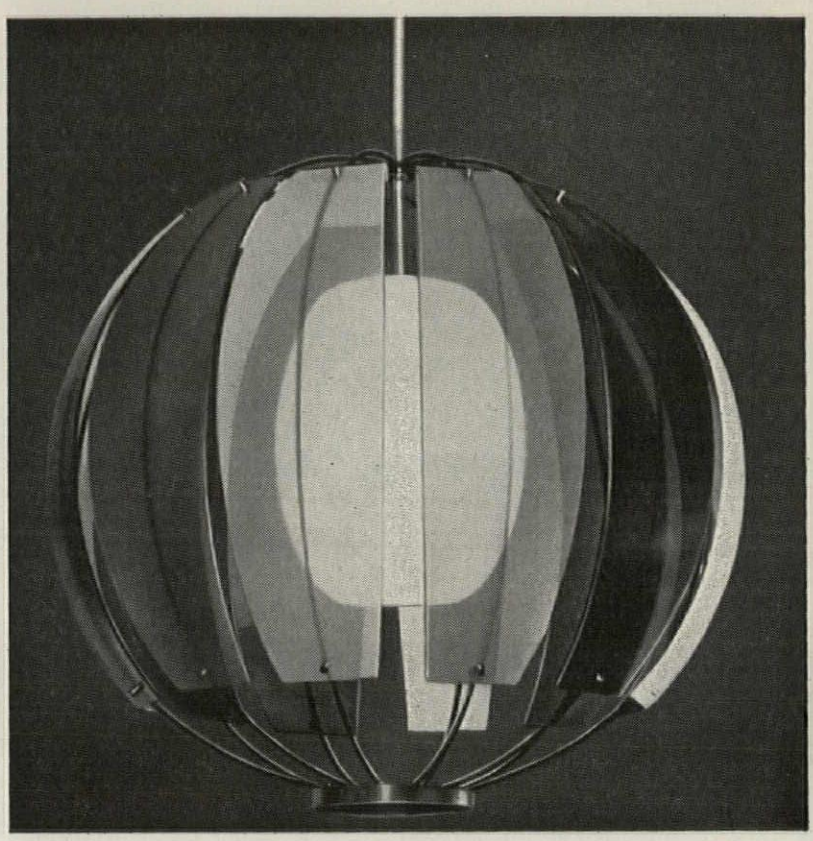
For more information, turn to Reader Service card, circle No. 319

Below: a modest sampling of Lightolier's 1,000-plus array of lighting devices... so varied that it includes functional fluorescents, glittering chandeliers, and all that lies between. Virtually every Lightolier expresses that more-than-common sense of design and imaginative engineering that makes even a standard fixture seem exceptional. Look at the recessed fixture at left. Tiny, champagne-tinted glass beads fused to the lens risers filter out glare components. Or the optically

1000 LIGHTOLIERS POSE A







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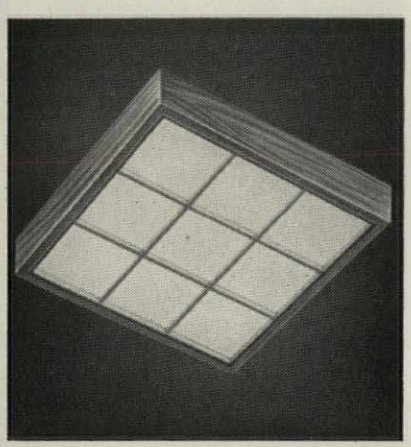

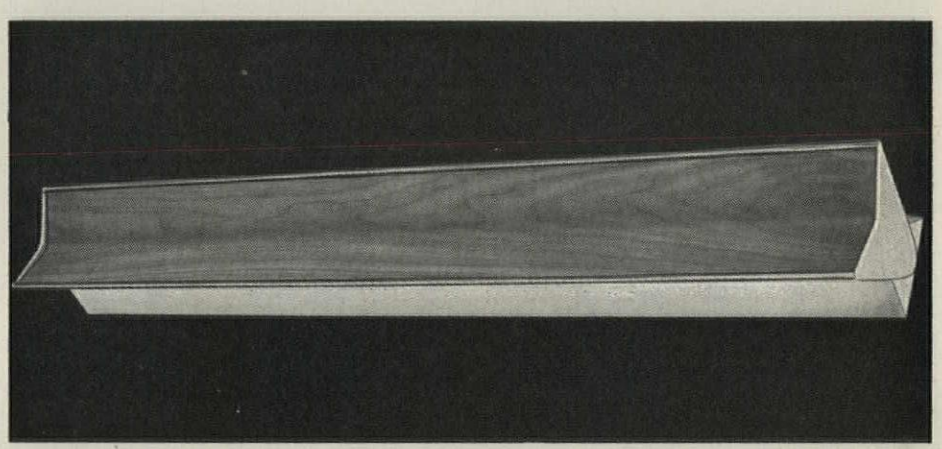

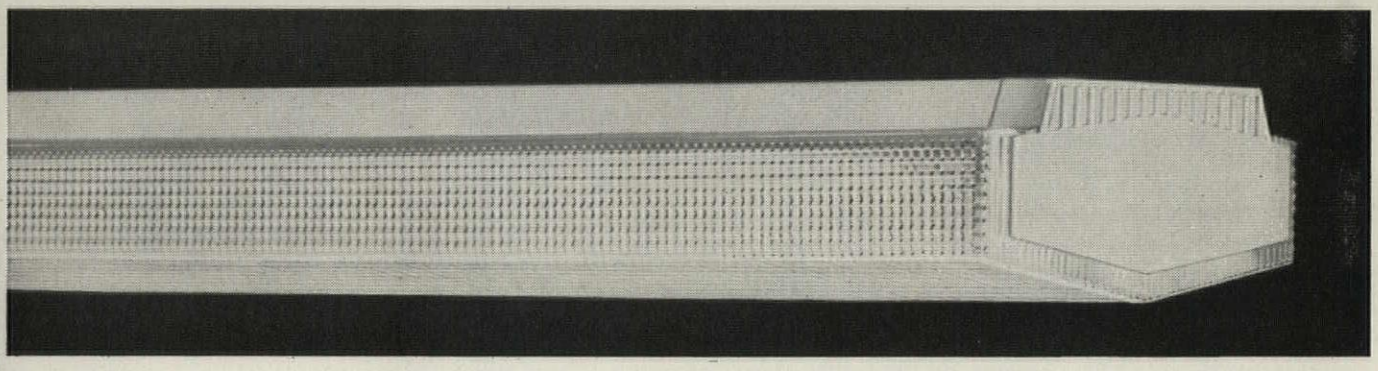

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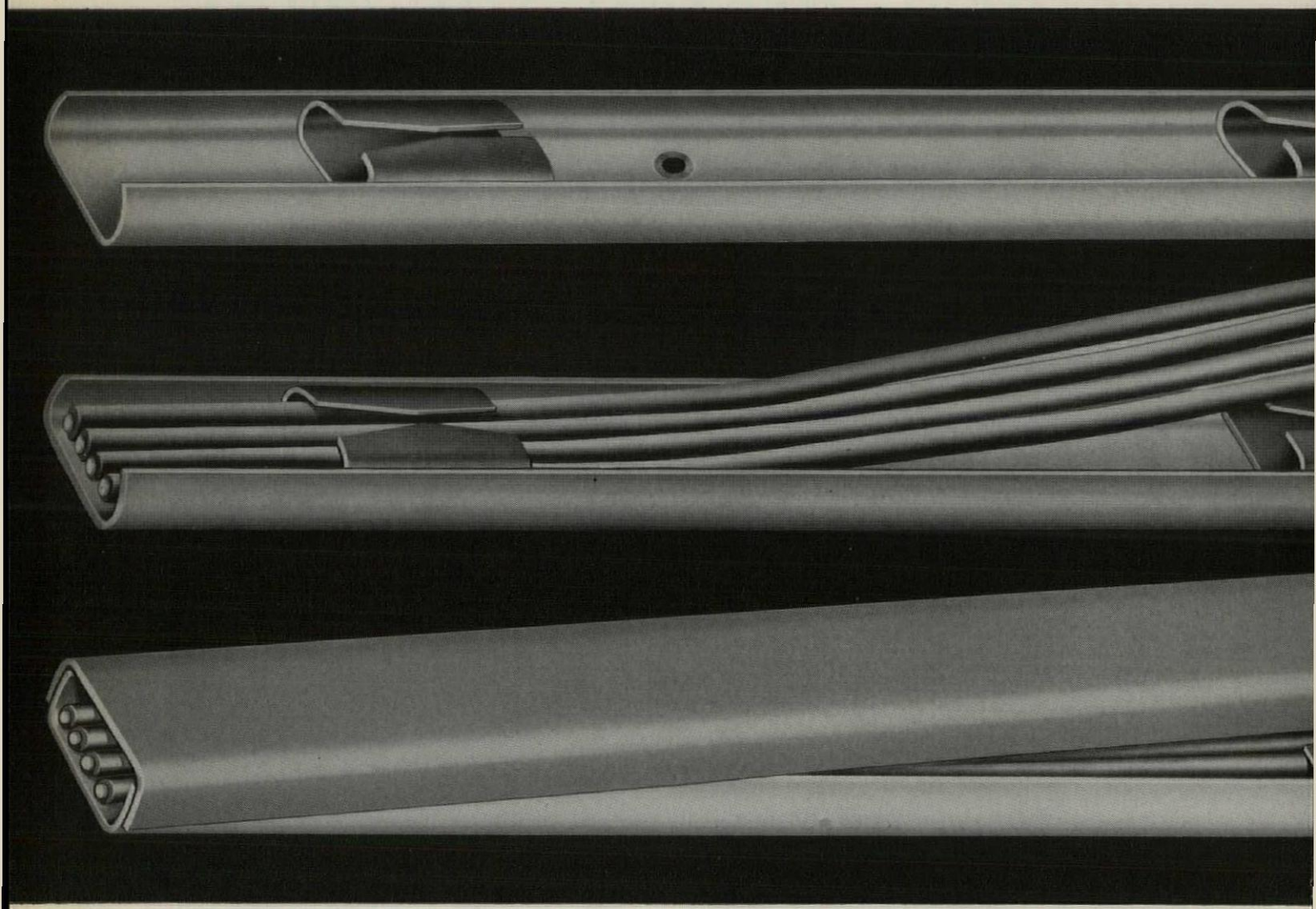

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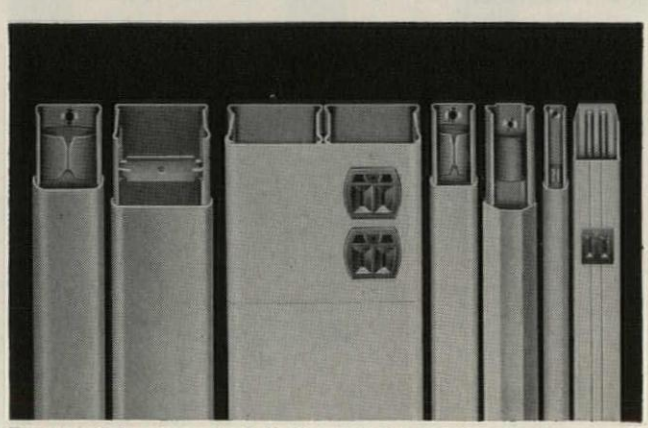

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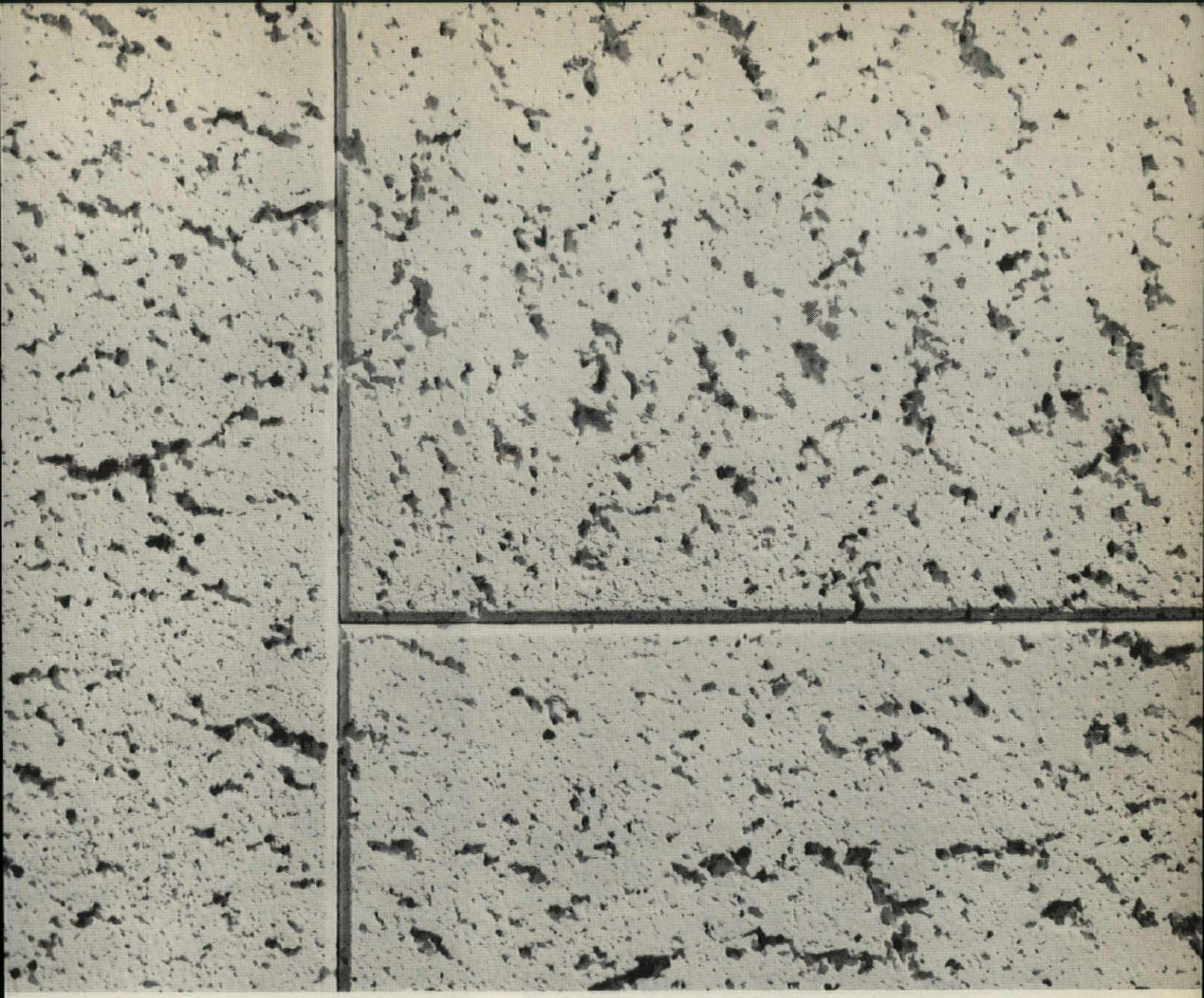

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Use of thin shell concrete for spanning areas in this $500,000 project varies from simple barrel shells for classrooms to more complex paraboloids for the auditorium and administration areas.

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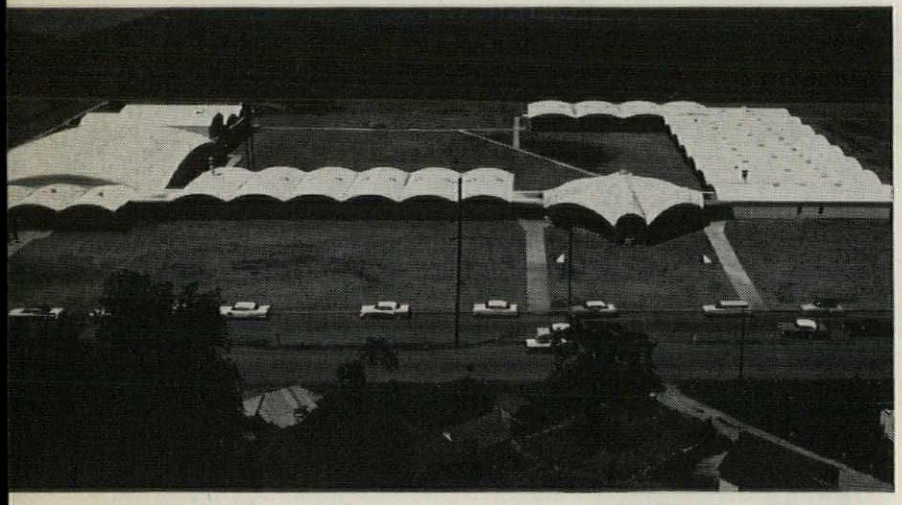

PAULS VALLEY HIGH SCHOOL, Pauls Valley, Oklahoma. Thin shell 53,000 sq. ft. complex includes 87′ x 112′ elliptical paraboloid auditorium (left), barrel shell classrooms and scalloped-dome administration building. Owners: Pauls Valley Board of Education • Architects and Engineers: Jack L. Scott and Associates, Oklahoma City, Oklahoma • General Contractor: E. P. Hudgens Construction Company, McAlester, Oklahoma.

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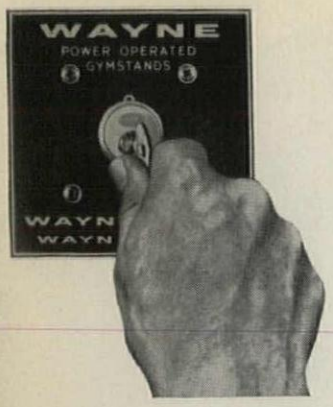
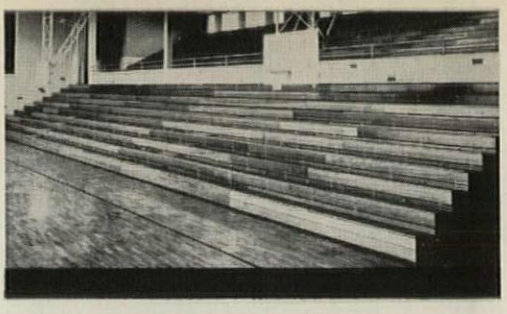


Gordon Technical High School—Chicago, Illinois
Architects: Fox and Fox—Chicago, Illinois



Inglewood High School—Inglewood, California
Architects: H. L. Gogerty—Los Angeles, California

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- in more seating per unit

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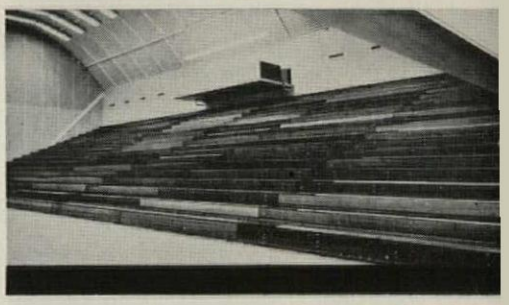
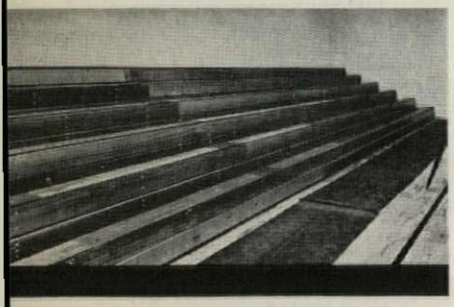
Architects: Kistner, Wright & Wright—Los Angeles, Calif.



Institut des Technologie—Trois-Rivieres, Canada
Architects: Denoncourt & Denoncourt—Trois-Rivieres, P/Q.



Darien High School—Darien, Connecticut
Architects: Ketchum & Sharp—New York, New York

The elbow-grease is gone at these twelve handsome gymnasiums because they recognized the inherent advantages in Wayne Power Operated Gymstands. Here is the only Gymnasium Seating System in the industry offering this combination of features plus a choice of two basic types. (1) *Power Operation* in exclusive *Continuous* seat and footboard design with no breaks between sections. (2) *Power Operation* in "*Unit Connected*" seat and footboard design where gaps between sections are reduced to ¼"!

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Next, the controlled, smooth, steady force of Wayne's Power System stops Gymstand banging, jarring and bumping during opening and closing, materially reduces stress and strain, increases Gymstand life.

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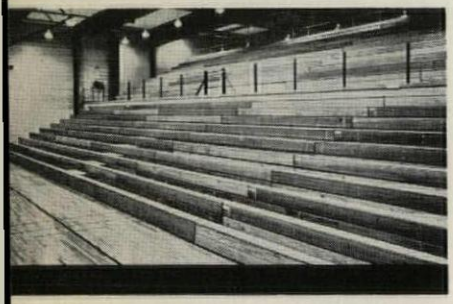
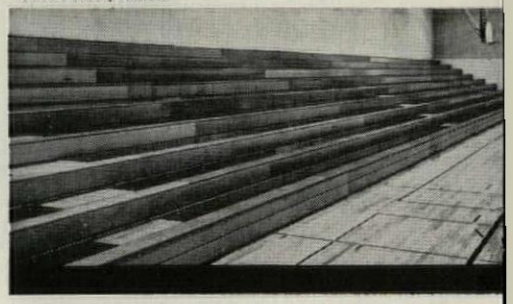
Are you planning a gym? Then talk to the folks at Wayne. For new 32-page full-color catalog, write direct to—

North Bend Junior-Senior High School—North Bend, Ore.
Architects: Hamlin & Martin—Eugene, Oregon

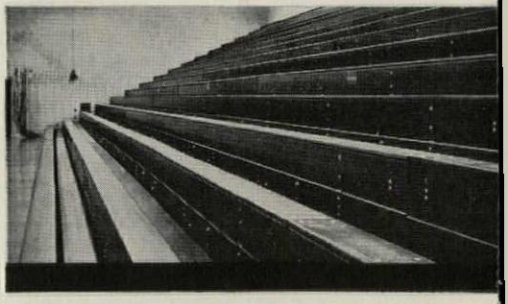


Lake Forest High School—Lake Forest, Illinois
Architects: Stanley D. Anderson Associates, Inc.—Lake Forest, Illinois



Millard Junior-Senior High School—Millard, Nebraska
Architects: Hollis and Miller—Overland Park, Kansas

Hamilton J. Robichaud High School—Inkster, Michigan
Architects: Bennett & Straight, Inc.—Dearborn, Mich.



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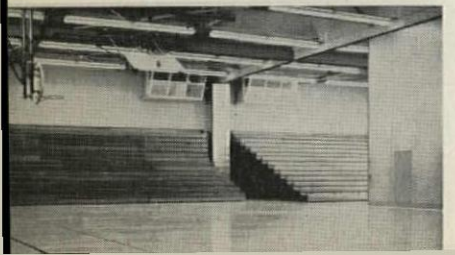
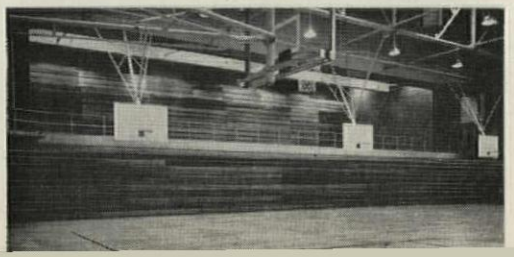
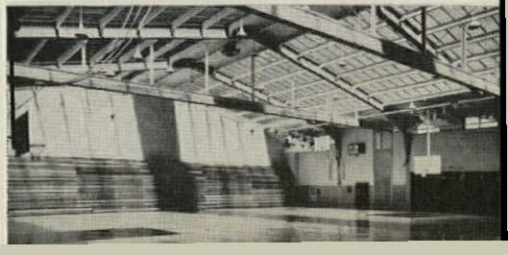
Pottstown Senior High School—Pottstown, Pennsylvania
Architects: Sanders & Thomas Associates—Pottstown, Pa.



Weber County High School—Ogden, Utah
Architects: Keith W. Wilcox and Associates—Ogden, Utah



Whitehall High School—Lehigh County, Pennsylvania
Architects: Wolf & Hahn—Allentown, Pennsylvania



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The Anemostat HV mixing box requires **only one** pneumatic operator; the mechanical constant volume device* does the rest. This all metal device offers these unique design and construction features:

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2 Allows for simple field adjustment to meet changing air requirements.

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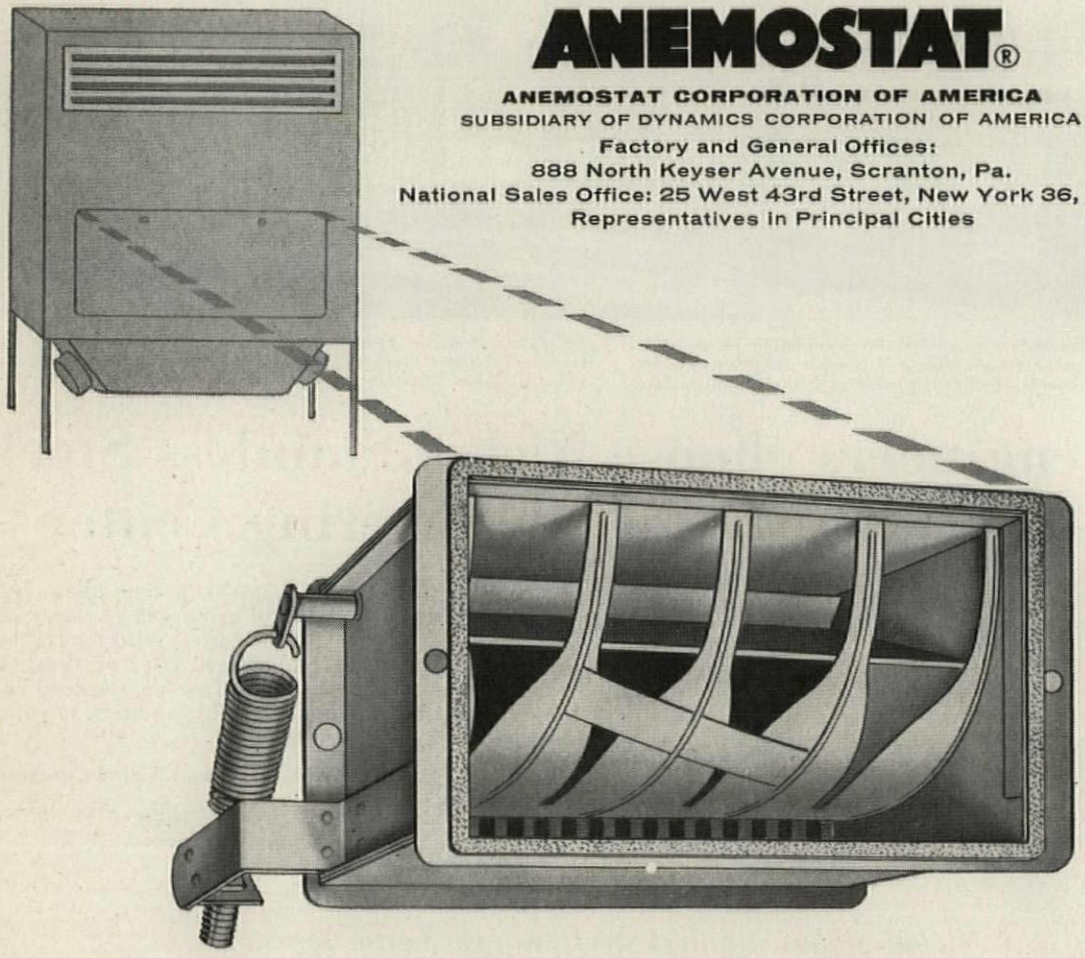

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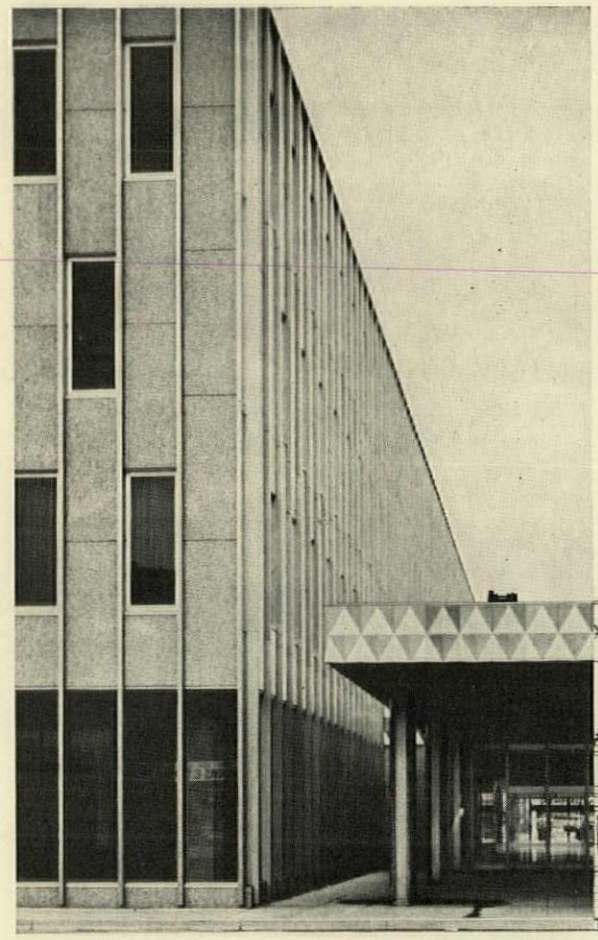
NEWS REPORT

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

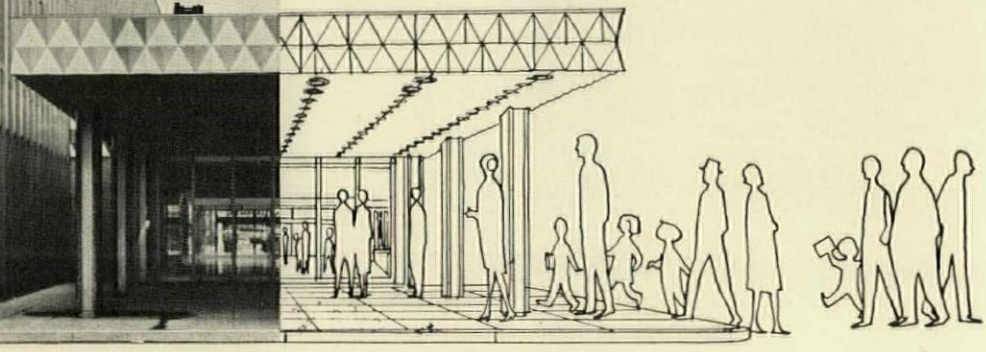
Photo: Ezra Stoller

Slim, muted shaft of Saarinen's CBS Building will stand as his only high-rise office building.



Architects:
Lang & Raugland; McEnary & Krafft — Minneapolis

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



New Minneapolis public library . . .

sound planned with

WEBSTER ELECTRIC
telecom

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

And it's *sound planned* with a Webster Electric Telecom intercommunication system!

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* *Listed in the Yellow Pages under "Intercommunications Systems"*

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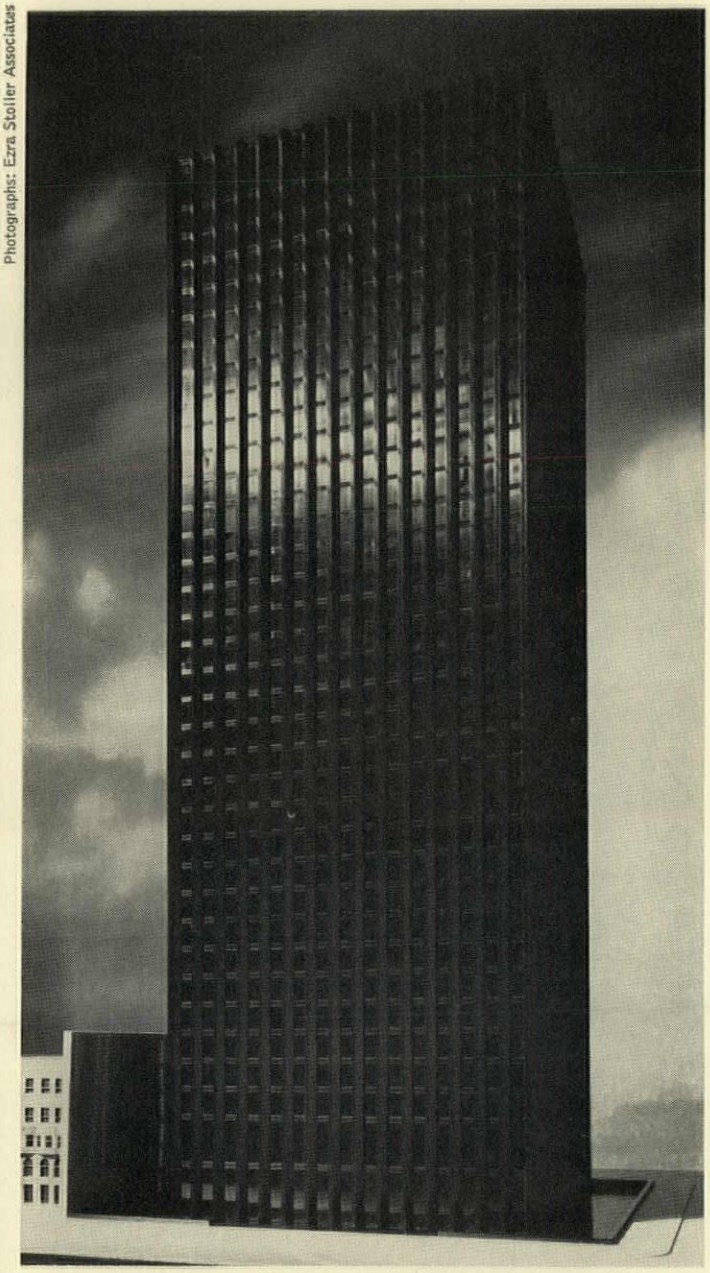
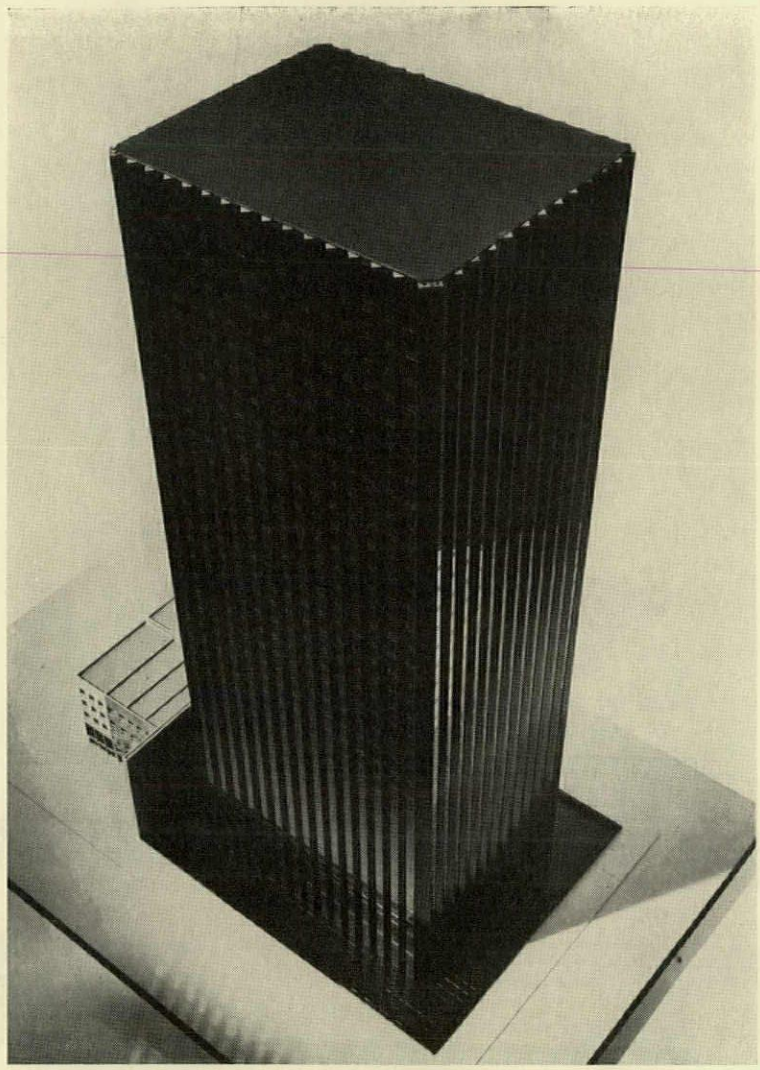
Photographs: Ezra Stoller Associates



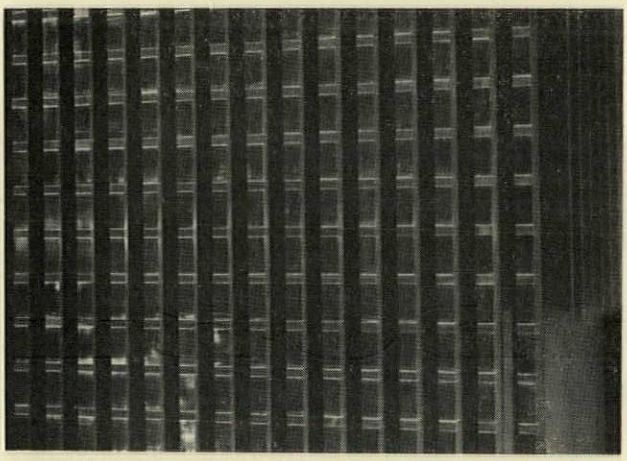
Saarinen's Sophisticated Skyscraper For CBS

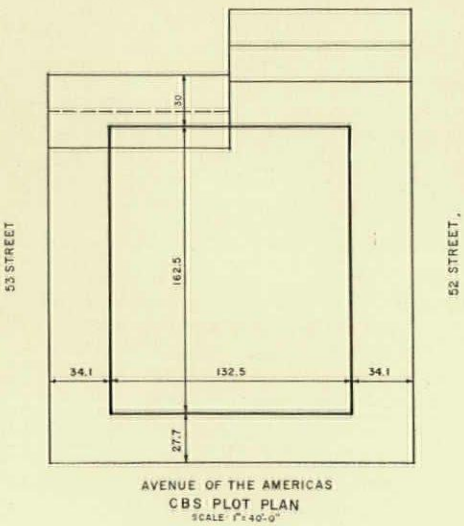
NEW YORK, N.Y. A sculptured shaft that will make most high-rise buildings appear hulking and graceless will be Eero Saarinen's legacy to New York. The building, to house the international headquarters of the Columbia Broadcasting System, is due for completion in 1964. Saarinen worked on the project right up to the time of his brief, fatal illness. According to CBS spokesmen, of the number of schemes proposed for the building, this was the one to which Saarinen always returned. John Dinkeloo, partner in the Saarinen firm, said that this design embodied the late architect's idea of what a high-rise office tower should be. "He was especially excited about this design," Dinkeloo said. "He felt he was going back to the tradition of Louis Sullivan and making a step forward from that dramatic and optimistic moment in the design of tall buildings."

The 38-story, free-standing structure will thrust upward from a generous sunken plaza covering about 50 per cent of the site. It will be one of the few—if not the first—sheer, free-standing towers in New York. The sophistication of its vertical emphasis will be accentuated by the use of dark gray stone on the piers and spandrels, and gray-tinted glass for the glazing. The plaza will be finished with the same material as the piers. Bays will be worked out on a 5-ft module, and entrances—on 52nd and 53rd Streets—will be between bays,



Low-rise buildings to rear will actually be flush with edge of wall





CBS PLOT PLAN
SCALE: 1"=40'-0"

giving a monumental feeling to the act of entering the building. The main façade, on the Avenue of the Americas, will have no entrances, and will have the appearance of a sheer, vertical leap of masonry and glass—the *idea* of the skyscraper translated into visual actuality.

The section in which the CBS Building is to stand includes, or will include, such neighbors as Rockefeller Center, the Time-Life Building, the Equitable Life Assurance Society Building, and the future 50-story Hilton Hotel. In order to create identity and individualism for his CBS Building in this polyglot surrounding, it was Saarinen's idea to make it as subtle and refined as possible. In this he certainly seems to have succeeded.

To permit the tower to be totally free-standing, an opaque five-story building for traffic and loading will be built behind it across the plaza. Air conditioning and heating elements will be carried in the triangular piers, which expand to a square shape on the ground floor and, above, on the first mechanical floor. The triangular shape of the piers is expected to give a changing, faceted effect to the building as one walks past or around it. In order to provide for future CBS expansion, there will be some rental space in the building, which will house administrative staffs of all eight CBS operating divisions.

Structural Engineer for the project is Paul Weidlinger; Mechanical Engineer is Cosentini Associates.

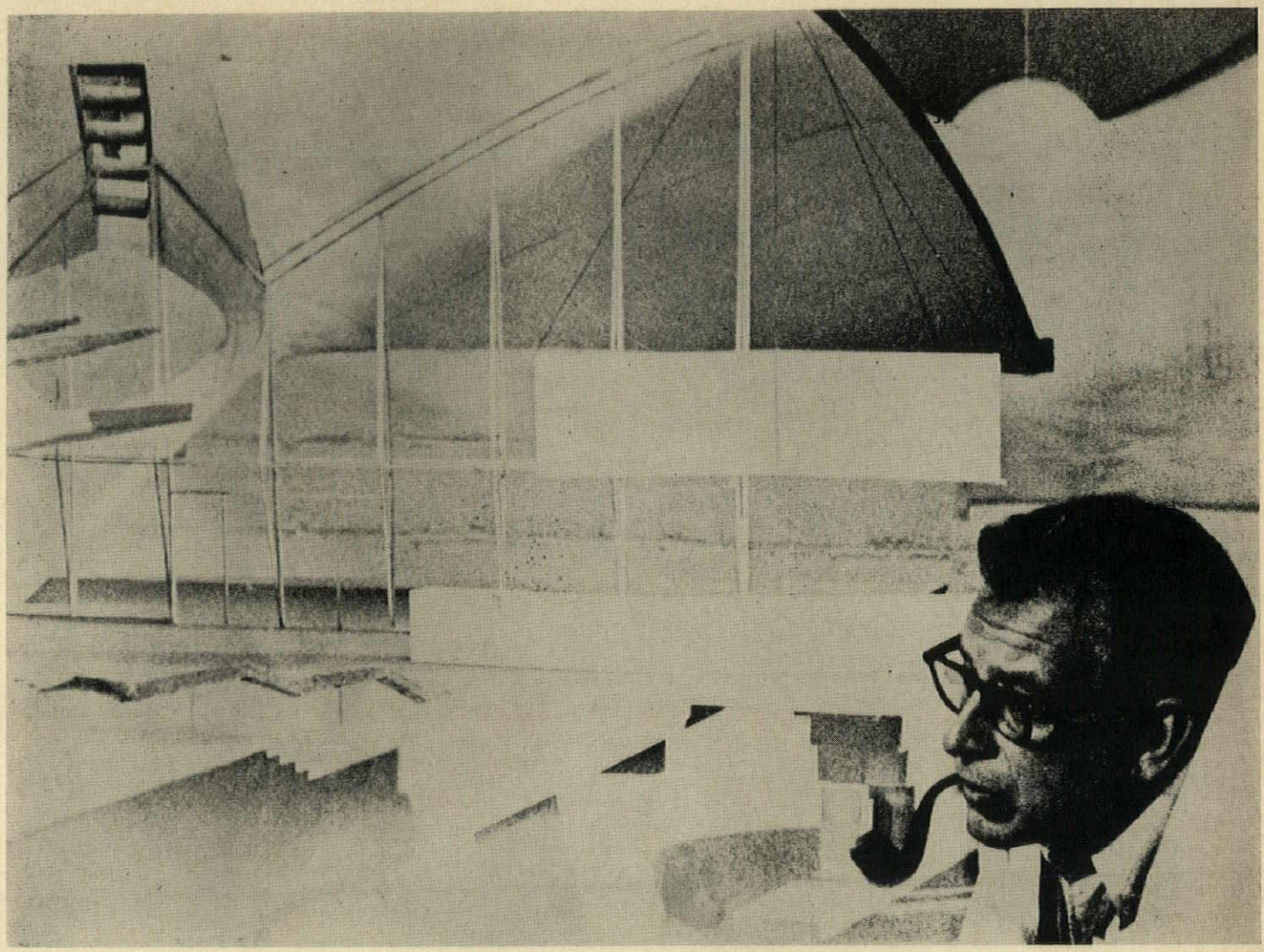


Photo: Baltazar Korab

EERO SAARINEN

1910–1961

News of the recent tragic death of Eero Saarinen at the age of 51 was received by the architectural community with a great sense of shock. When Frank Lloyd Wright died in his eighty-ninth year, there was sorrow at the loss of an outstanding figure, but certainly no grief at lack of fulfillment. Through his long practice, Wright had developed his philosophy of design to the highest point it was likely to reach, and had put it into practice in hundreds of commissions. Saarinen's death, however, is particularly tragic because it was the abrupt termination of a career that not only had accomplished much in a short span, but which also promised who knows what riches in the years to come. Head of his own practice only since the death of his father Eliel, in 1950, Saarinen showed himself to be always the careful, humble, inventive practitioner of his profession. His courage in undertaking and seeing through such recent mileposts on the path of architectural progress as the General Motors Technical Center, the MIT chapel and auditorium, and the TWA terminal at Idlewild, distinguished one who, while perhaps not yet a major "form-giver" such as Wright or Le Corbusier, nevertheless operated at all times with the conviction and dedication that mark the truly creative artist.

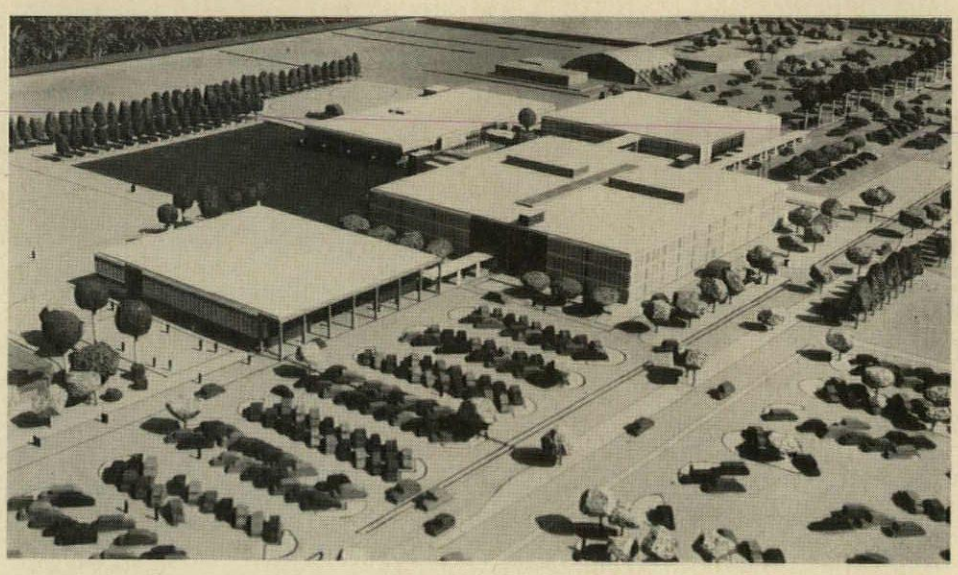
The contemplated move of the Saarinen office from Bloomfield Hills to Hamden, Connecticut, will take place as scheduled. Joseph N. Lacy, partner in the firm, says that there are 10 major jobs, including the CBS Building, now on the boards. "We all believe," Lacy stated, "that if we allowed his untimely and sudden death to disrupt the plans in which we were in such enthusiastic agreement, we would be doing him an act of disrespect."

A personal tribute to Saarinen appears on page 238 of this issue of P/A.

Miami Junior College—Air Conditioned, Of Course

MIAMI, FLA. Plans by the Miami firm of Pancoast, Ferendino, Skeels & Burnham for the proposed Dade County Junior College here call for an all air-conditioned school (except for the gymnasium) of four major initial elements. Considerations of air conditioning have resulted in a compact grouping of buildings with minimum exterior openings.

School buildings, which will center around a man-made lake, will include the academic-library-administration building, fine arts and technology classroom and laboratory building, student center, and physical education building. A small planetarium will be attached to the first-named unit. Cost of entire project will be about $5,250,000. Student body will number 3000.



CONCRETE TECHNOLOGY IN HAWAII

Photo: Bob Johnson

HONOLULU, HAWAII An apartment-hotel proposed for construction on Ala Wai Boulevard will be a notable example of the use of "concrete technology" in design. The building, designed by Bassetti & Morse's new Hawaiian office (John Tatom, partner-in-charge), will use a system of precast units, eliminating all poured-in-place beams and columns.

Structure will have a prestressed piling foundation, precast concrete bents on lower floors, precast wall panels, and precast, prestressed joists. Elevator tower will be slip formed, and stairs and thin slab floors will be poured in place. Interior walls will be cement-washed, light-weight aggregate concrete block, and non-bearing. Concrete panels and joists will be painted. Ceilings will be acoustical plaster. Other materials will be redwood mill-work throughout, and terrazzo floors in all except permanent carpet areas.

The building will have eight two-bedroom units, 56 one-bedroom units, and 16 studio units. Air-conditioning will be by individual units; there will be a central gas hot water heater. Cost is estimated at $14.50 per gross sq ft, including entire ground floor parking area, second floor plaza, and exterior stairs and walkways. Surface of building will "move" under the sun.

TAC Goes Academic in Andover

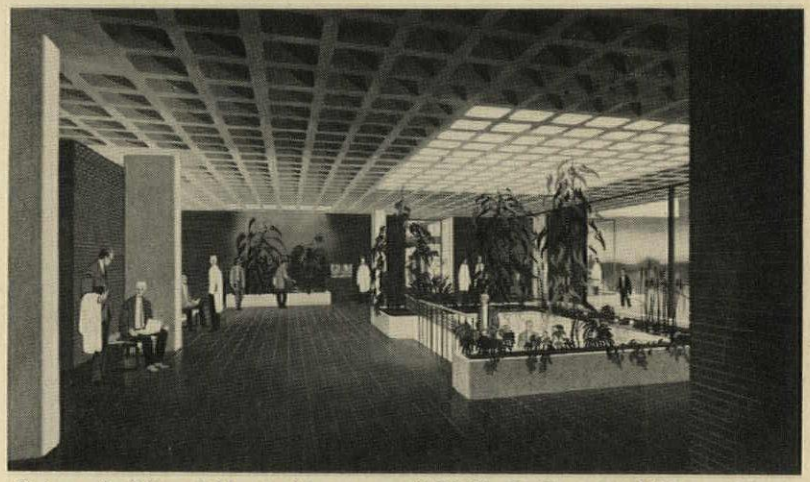
ANDOVER, MASS. Currently under construction at Phillips Academy here are the latest elements in the over-all program designed for the school by The Architects Collaborative. The units are the Thomas M. Evans Science Building and the Art and Communication Center. The two buildings join three new dormitories (with another to come), a library addition, a chapel addition, new athletic facilities, and extensive remodeling.

The science building is a one-story structure designed with utmost flexibility in mind. To accommodate a changing curriculum and staff, interior spaces may be made by the academy's maintenance staff without the aid of professional labor or tools. Bench equipment has been designed with "quick disconnect" service connections, and partitions are plaster board and staggered studs, materials easily handled by the maintenance men. Structure is poured concrete, bush hammered where exposed. Floor and roof slabs use a 2′ x 2′ pan system. Exterior walls are waterstruck brick and glass. Since the building actually houses three elements—chemistry, biology, and physics—joined at the lobby, there is an area on the roof of each unit for outside experimental work. This area is enclosed with a large precast concrete wall.

The Art and Communication Center, also of poured concrete with selected aggregate, will provide an active workshop for Andover's art gallery, the Addison Gallery of American Art. Studios for painting, sculpture, metal working, and weaving are included. The new structure connects with an existing auditorium stage to provide improved drama facilities. The building has an audio-visual center for the production of film strips for use by the entire school. Up-to-date audio-viewing and listening rooms have been incorporated. Inclusion of the school snack bar brings all students into closer contact with this cultural unit. Once again, exterior walls are waterstruck brick and glass. Large beams running across the building carry a flat floor and roof slab. Parapets, columns, and all other poured concrete are bush hammered in a manner similar to the science building.

Costs are expected to be $1,100,000 for the science building and $1,000,000 for the art center. Benjamin Thompson of the TAC office is partner in charge of the project, and J. Timothy Anderson is job captain.

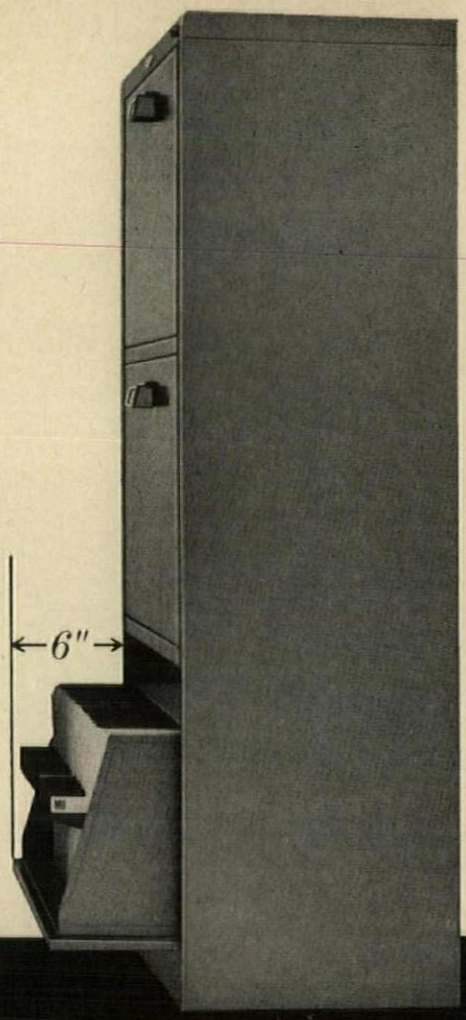
TAC's Thomas M. Evans Science Building for Phillips Academy.



Science building lobby looking toward Philip B. Stewart Biology Wing.

The John B. White Auditorium of the Evans Science Building.

The Art and Communication Center. Note passageway penetrating building.



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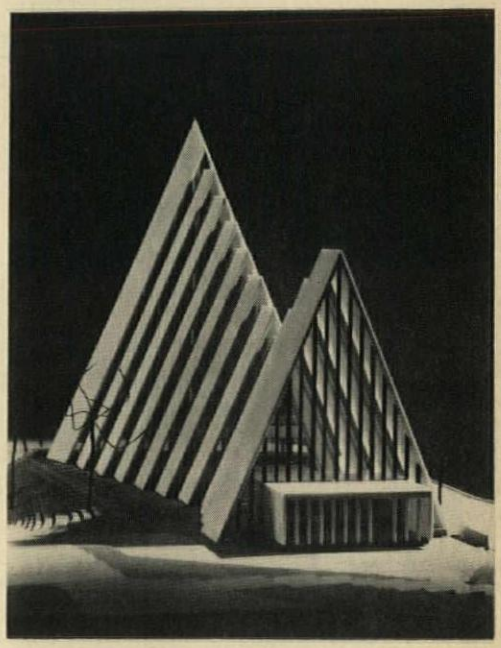
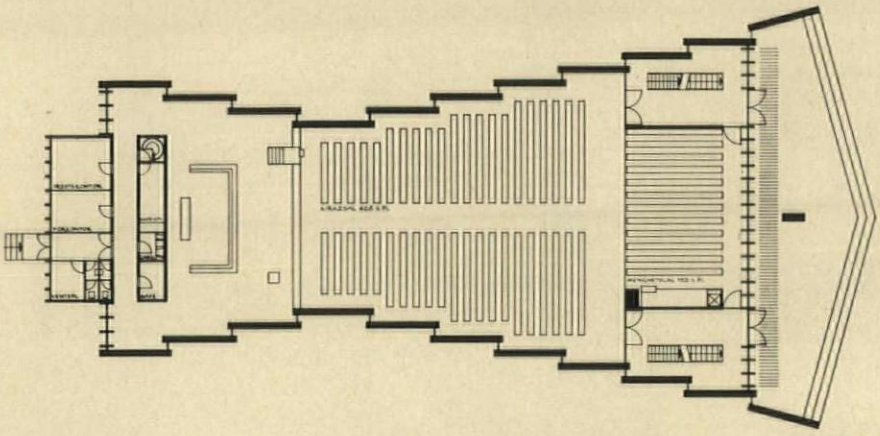


Photos: Teigens Fotoatelier



A-FRAMES FOR THE ARCTIC CIRCLE

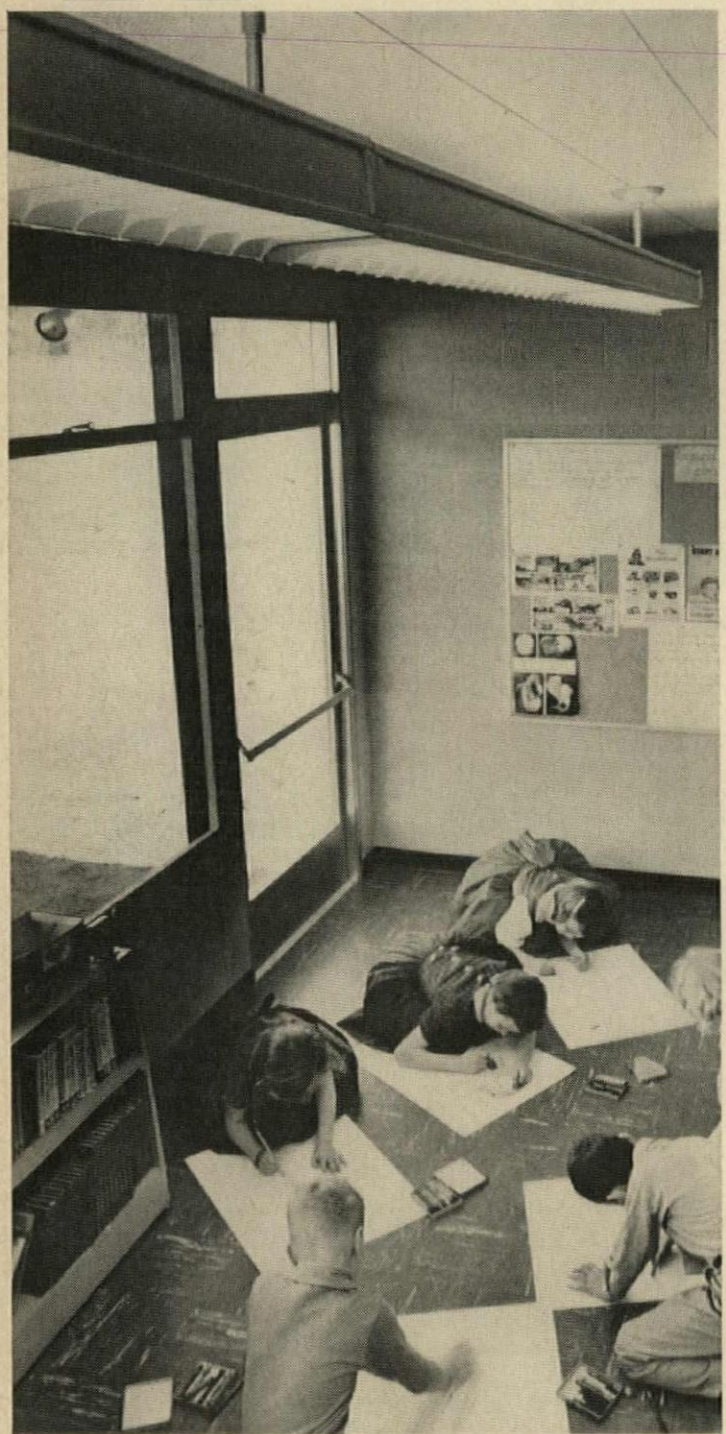
TROMSO, NORWAY At a dramatic point where a major road will fork east and west after crossing a long bridge, a church will rise against the snowy backdrop of Tromsdalstinden mountain. Designed by Jan Inge Hovig, the church will be perhaps the zenith of A-frame designs, consisting of 11 graduated, pointed arches framing the mountain aspect behind the altar, and serving as a towering announcement to motorists approaching from the highway end. From the highest frame at the entrance, the frames will step down separately toward the choir, then rise again to a new peak at the rear of the church. Clerestories created between the arches will be glazed for admission of light in this city, which lies within the Arctic Circle.

The frames will be constructed of a form of concrete made from the "Naturbetong" method, which combines injection and sandblasting. According to the architect's description, the method is similar to the one Saarinen specified for his colleges at Yale. The aggregate to be used consists of rocks and pebbles collected from the beaches of nearby fjords. Floor of the church will be gray tile.

According to Hovig, his intention was to design "a church which will appear as a sculpture in the countryside, one which will present a clear and definite major form in order to create, with simple effects, a sacred atmosphere." During the night, and indeed all during the region's "eternal night" from November through January, it is planned to illuminate the entire church, making a bright torch in the Norwegian darkness for travelers on the road and the river.

Roy Holm was Hovig's assistant.

"H" is for heating...



H An HCS ceiling heats like the sun, radiating heat energy downward. It keeps people comfortably warm, and warms the surfaces around them. This no-draft heating provides maximum winter comfort.
Martinsville Elementary School, Bridgewater Township, N. J. Architects: Merchant-Seidel-Hickey

"C" is for cooling...

C Here is no-draft cooling for greatest comfort in summer. The HCS ceiling soaks up excess heat . . . lowers temperature of room surfaces . . . and absorbs excess heat from the human body.
State Office Building, Philadelphia, Pa. Collaborating Architects: Carroll Grisdale and Van Alen; Harbeson Hough Livingston and Larson; Nolen and Swinburne

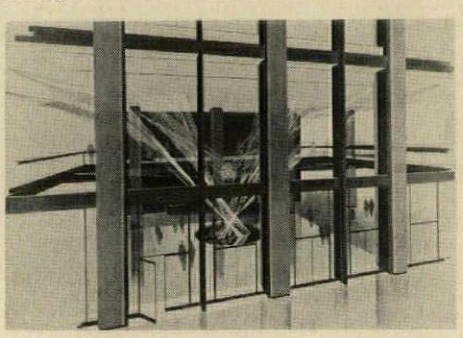
Photo: Courtesy Gypsum Association

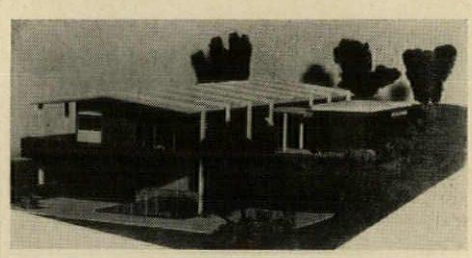
Hotel Overlooks Chicago's Water Tower

The mid-19th-Century Chicago Water Tower, survivor of The Fire, has given its name to an inn (p. 68, JUNE 1960 P/A) which opens this fall in downtown Chicago. Designed by Hausner & Macsai, the Water Tower Inn is a 15-story, reinforced-concrete structure with a concrete and glass curtain wall. Its rectangular simplicity forms a strong contrast with the old water tower's whimsical crenelated neo-Gothic shape. Protruding window frames give the inn's façade a geometrical light-and-shade pattern, a formal variation on the tower's sculptural quality. Some of the amenities include a third-floor swimming pool, underground parking, and a terrace overlooking the old water tower. All 300 rooms will be on the outside with full-length picture windows.

Great Big Sculpture for Great Big Building

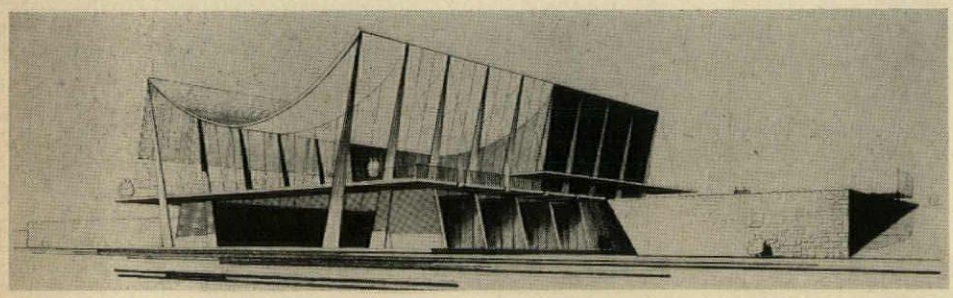
A three-story-high, gold and stainless-steel wire sculpture by sculptor Richard Lippold will occupy the main lobby of New York's Pan Am Building (Gropius-Belluschi-Roth). It will be 40′ deep, will extend 80′ across the lobby, and will be viewed from a surrounding mezzanine as well as from the ground floor. The sculptor says that "the forms in this work are derived from the performances and shapes of modern aircraft, except for a sphere of the world in the center." A seven-pointed star of stainless-steel wire, symbolizing the seven continents, will radiate from the gold sphere. Great circle routes, flight patterns, and wing-and-tail sections of planes will be suggested by the pattern of the wires. Walking under the tall, sweeping forms will suggest "the excitement of passing under the great sweeps of wings and tails during boarding and disembarking." The whole sculpture will rise from a round reflecting pool.





House to Act as "Living Effects Lab"

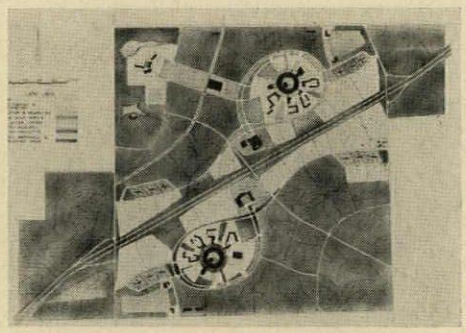
House under construction at St. Louis headquarters of Emerson Electric Company will provide home environment for testing and research of products made by the company and its subsidiaries: Emerson-Pryne, Emerson-Imperial, and Day-Brite Lighting, and by Rittenhouse, Incorporated. Designed by industrial designers Obata & Associates, with Consulting Architects Earl Frey and Russell T. Stokes, the house will have 1400 sq ft of living area at the upper level, with a large deck for meetings or expansion, and 1300 sq ft at the lower level, opening onto a patio. Flexibility has been designed into the house, so that partitions may be moved around to provide varying conditions.



CATENARY ON A HOT TIN ROOF

St. Louis has taken on quite a glow of activity lately. Its new planetarium is going up; there is a proposed new stadium; Saarinen's arch in Jefferson National Expansion Memorial Park is awaited anxiously; and Gyo Obata, visiting P/A recently, reported on a commendable revival of jazz, cabaret, and *haute cuisine* downtown.

The St. Louis Chamber of Commerce, perhaps reflecting a little of this action, has proposed a structure to show off St. Louis as a major center for the production of working metals. The building would contain permanent and temporary exhibition space, an auditorium, meeting rooms, a permanent exhibit of shaft-mining operations, and a restaurant. The metal catenary roof would be lifted over the restaurant to provide a striking view of the Saarinen arch and the Mississippi River. In its use of materials, including the roof, the building, designed by Burks & Landberg, would be a showplace for metals. Sponsor hopes that the metal industry will put up the building to open in time for the Jefferson National Expansion celebration in 1964.



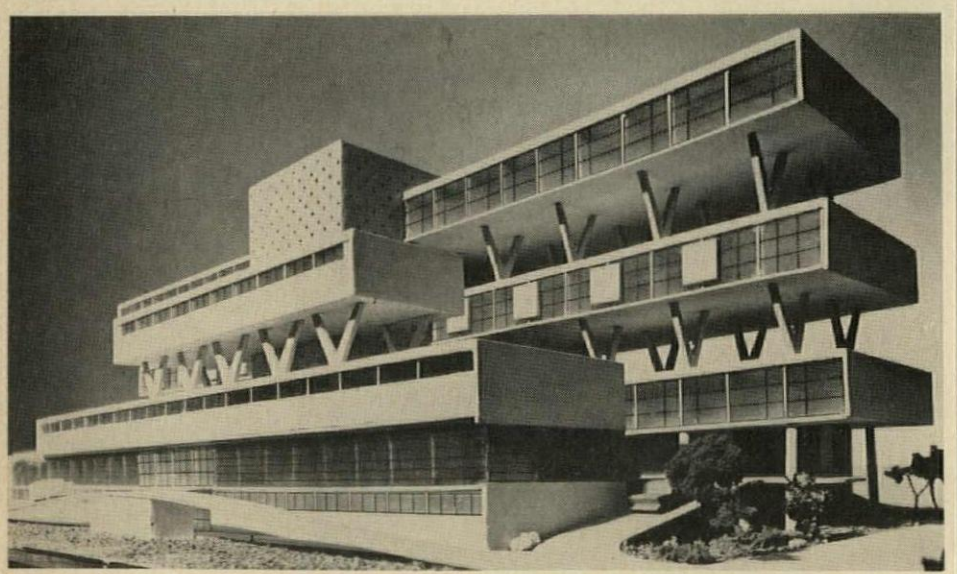
Developments Pervert Proper Use of Highways

Today's high-speed highways, designed as a means of getting swiftly from one place to another, have been seized upon by the ever-alert land cannibals as another source to bleed

for profits and revenue. A prime example is the recently announced Twin Parks project on Interstate Highway 71, about 38 miles southwest of Cleveland. Here, two giant commercial, recreational, and industrial complexes would cling like leeches to either side of the highway, turning what was meant to be a rapid-transit thoroughfare into little more than a congested street in a "built-up" area. Traffic would drain from the major artery into the "motorparks" via interchanges built (with the taxpayer's money) to serve natural local traffic. Sad to relate, there are architects connected with this "rape of the fair country." They are Robert E. Schwartz and Henry W. Stone of New York, who, with planner J. Marshall Miller, form Miller Associates, the planners of the project.

Fortress-like Structure for Pennsylvania Seminary

St. Joseph's Hall, a live-in teaching element for the Christian Brothers at LaSalle College in Elkins Park, Pa., will sit like a low fortress on a wooded hill. The project will be arranged around two interior courts. Ringing the trapezoidal main court will be the commons, chapel, refectory and kitchen, faculty rooms, visitors' rooms, classroom, laundry, and barber. The cloistered, hexagonal recreation court will be bounded on both sides by a double row of students' cells. Architect: Carroll, Grisdale & Van Alen.



Skip-Floor Hospital for South Brazil

A hospital proposed for Pelotas, at the southern tip of Brazil, will raise its nursing units to the air and sun on immense concrete "V's." The double-loaded corridors of the nursing floors will have clerestory windows furnishing extra light and air to the patients' rooms, which will face north and south through window walls. Each nursing floor will have a centrally located supply and administration element, supplemented by nurses' stations, none more than 20′ from patients' rooms. The lower floors of the hospital will contain private consultation offices and examining rooms, admissions, laboratories, library, chapel, and public spaces. Architects: Jarbas Carman and Alfredo Willer of São Paolo.

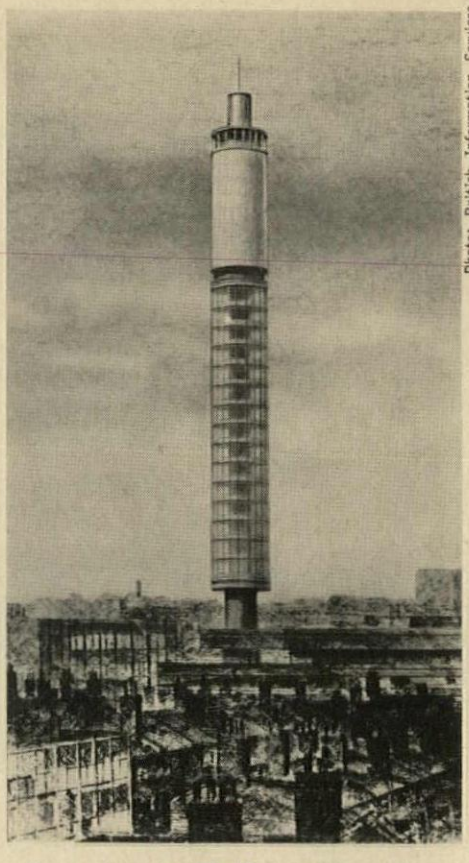


Photo: British Information Services

London's Tallest May Be 500′ Microwave Tower

A 500′ radio tower, partially sheathed in glass, will be the tallest structure in London if plans of Britain's General Post Office materialize. It would be used for long-distance telephone and television services, part of Eurovision, the system which enables European countries to exchange programs and cross the English Channel by microwave transmission. Architect: Chief Architects Division, Minister of Works.

World's Fair Follies: Word from Washington

Old Bob Moses got a jolt the other day that was almost enough to dislodge his hand from inside the breast of his tunic. Senator Frank J. Lausche (D., Ohio) announced that he intended to block consideration of a resolution now before the Senate Foreign Relations Committee to investigate what the Government would spend at the New York World's Fair. Lausche opined that he thought the fair's backers guilty of a "breach of commitment" since Congress had approved New York as the site with the understanding that no Federal spending would be at stake; now Moses & Company are asking for a

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$30,000,000 Federal building at the extravaganza. Moses' cry of outraged innocence could be heard for miles. We do not want any Federal money, he intoned, we only want the Government to "provide a pavilion or exhibit as a focal point in the fair." More on this cosmic clash of wills later.

Design Departures in Yama's Newest Project

The recent design trend of Minoru Yamasaki, which is away from the delicacy of his "vertical Gothic" to a more emphatic show of structure, can be seen in one of his most important current projects, the Behavioral Sciences Building at Harvard University. In this design, use of poured-in-place concrete columns and precast concrete panels create a strong visual impression.

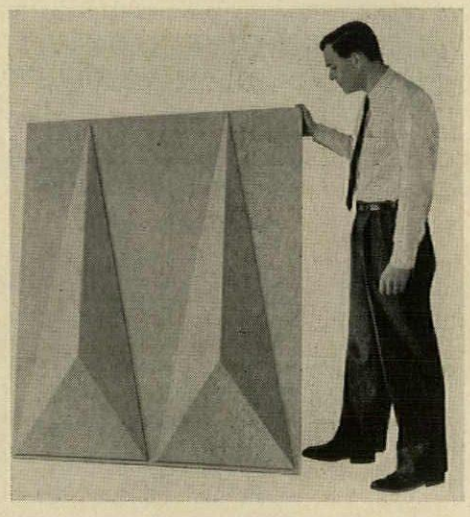
The 14-story building will house the disciplines concerned with the study of man, his society, and his culture. In addition to offices, labs, classrooms, libraries, shops, animal quarters and computer facilities, the structure will contain the Psycho-Acoustic Laboratory, the Center for the Study of Personality, and the Center for Cognitive Studies. Largest tenant will be the Department of Social Relations.

Huge Aluminum Castings Roof Seminary Chapel

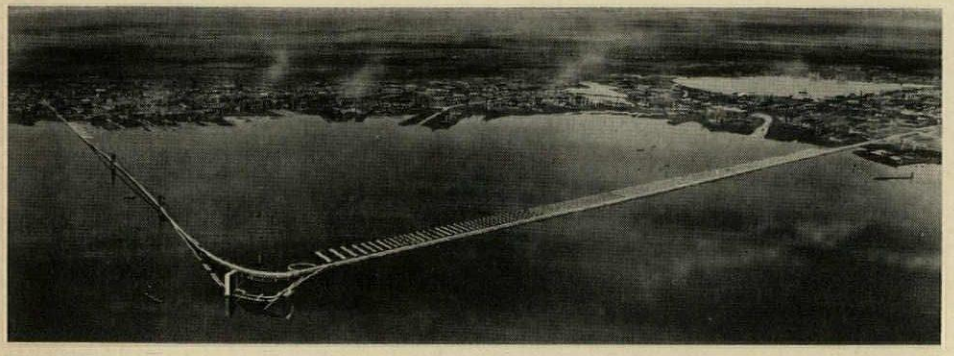
Focal point of the proposed new campus for Louisville (Ky.) Presbyterian Theological Seminary will be its chapel. First phase of the project will include the chapel, library, administration-classroom building, student services building, power house, men's dormitory, and married student's housing. Architect: Hartstern, Louis & Henry.

Notable feature of the chapel will

be its roof, which will be faced with large aluminum castings fabricated by Michaels Art Bronze. Detail shot shows size of the castings, of which representatives of Michaels state:



"To our knowledge, this is the first time aluminum castings of such size have been used in this way." The spire was also made by Michaels.



Architect's Idea to Save Dunes, Chicago Lakefront

The creation of the St. Lawrence Seaway has had at least two possible results that are distressing to architects and others who care what our cities and national parks look like. One is that Chicago's notable lakefront is threatened with the maze of docks and wharfs which disfigure most port cities. The other is that increased industrialization in the area between Chicago and Gary might threaten the famed Indiana Dunes, recently made a national park. Since 1958, Chicago Architect R. Donald Jaye has been advancing a proposal that would remove the threat from both areas by creating a deep-water port out in Lake Michigan itself. Jaye suggests a 15-mile causeway, extending east from 79th Street in Chicago to a point approximately eight miles into the lake, then south to a point east of Gary. This would create a 54-square-mile port area which ocean-going ships would enter under a mile-and-a-half long suspension bridge. Docks, wharves, and administrative facilities would all be along the length of this man-made port. Jaye's proposal has had some support, the most recent coming from Senator Paul Douglas.

Egypt's Monuments in Danger Again

The House Appropriations Committee, which could always pinch a penny with the worst of them, has killed President Kennedy's request for $4,000,000 as the United States' contribution toward helping preserve the ancient monuments due to be engulfed by waters of the Aswan High Dam (p. 53, DECEMBER 1960 P/A; p. 58, APRIL 1961 P/A). The purblind group wielded the axe in the face of cordial world reception of Kennedy's announcement that he would ask for the funds. The Soviet Union, which is paying for the dam, is not giving money for preservation, either.

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PROFITS FOR ARCHITECTS IN PUBLIC WORKS

by E. E. Halmos, Jr.

A fertile area for architects to check, in their search for future business, is that of municipal and other public works. There's ample evidence that this field is opening up fast, and with large amounts of money, as a result of diligent bush-beating by the Community Facilities Administration of the Housing and Home Finance Agency.

Within the first seven months of 1961, CFA had approved 265 planning advances for such projects for a total of $9.8 million.

Significant fact is that these advances will spark construction estimated to cost $555 million, nationwide. And Washington is flooded with requests for almost as much more.

Now armed with $650 million provided in the new housing bill (p. 46, AUGUST 1961 P/A), the agency is well prepared to loan money at low interest rates to see to it that the planned construction is actually completed.

Here's a bit of background on this whirlwind activity:

CFA has a revolving fund (now topping $58 million) which is used for the planning advances. These advances are made to towns, cities, and institutions to finance preparation of plans and specifications for approved public works. These can include schools, hospitals, college housing, dining halls, administration buildings, bridges, municipal offices, sewerage, waterworks, and some highway work.

If a community of 50,000 or less, having completed its planning, can't get money in the private market at "reasonable" rates, CFA can lend at rates of 3⅝ per cent. If a community has less than 150,000 population and is in an area of "persistent labor surplus," it can get funds at 3⅜ per cent.

So far—in addition to the planning advances—CFA has already lent construction money to the tune of $292 million for college housing, dining halls, service buildings; and has enough applications on hand to swallow its entire $45 million appropriation for direct loans for housing for "senior citizens."

The agency has another new function upcoming: a "major administrative role" in the newly authorized Area Redevelopment Agency loan and grant program.

Credit for the push in public works goes back to a program started by CFA in February, when it urged its regional representatives to push local officials on public works construction, as an antirecession measure.

The School-Aid Bill Debacle

The final defeat of even vestiges of the Administration's school-aid proposals (except for impacted areas aid, as predicted) produced such a stunning show of opposition strength that you can figure the whole issue is dead for another two years.

That takes the matter out of political consideration next year by the simple device of a two-year extension of the impacted area program and the National Defense Education Act. If a one-year extension had been approved, school-aid proponents could have used these measures next year for an attempt to hang on broadening amendments that would come close to President Kennedy's original proposals.

House action killing the school bills immediately chopped some $325 million of prospective construction money out of Government spending in the next two fiscal years.

But voters on a local level continue to support school construction, and there's ample work ahead for architects and construction men in this area.

For instance, the Investment Bankers Association reports that in the first six months of this calendar year, voters approved a total of $443 million in bonds for secondary and elementary school construction, and $9.8 million for college and other higher educational institution work. That's more, of course, than was included in the defeated legislation, and IBA sees no sign of a slackening of the taxpayer's willingness to support such efforts on the local level.

Congress Winds Up

Although Congress was obviously standing in the hallway with its bags packed and waiting to go home, one couldn't, in early September, write a complete summary of what the first session had done.

One major bill of interest to architects—the omnibus public works appropriation (containing $1 billion for Army civil works, $287 million for the Bureau of Reclamation, plus other funds for other agencies)—still awaited final action, and was obviously being held as a last-minute spur by the Congressional leadership.

But over-all, the shape of the session was clear enough:

President Kennedy had managed to get—with the exception of the school bill—just about what P/A predicted in January, though he had to compromise on almost every measure.

Congress had approved the following: $394 million in loans and grants for area redevelopment; an eventual $100 million a year for stream pollution control; $1 billion-odd for military construction and nearly $47 billion for general defense purposes. It also increased the minimum wage, approved the huge new housing bill, okayed more work in the desalinization of water, and gave the President more than $7 billion for foreign aid, to be spent over a 5-year period, but with Congress keeping specific controls over spending.

As noted, none of these (except the housing bill) represents any clear-cut victory for either the Administration or its opposition.

And as predicted, the trend in Congress has been more and more toward the conservative side, and toward greatly increased opposition to any attempt by the Executive branch to encroach on Congressional privileges of control of the purse.

With all this, as noted previously, there has been little action on many other matters of direct concern to architects and their industry. Indications are that not much more will happen next year.

But there are several somewhat smaller concerns on which chances of eventual action look good:

1. The long-standing attempt (thoroughly backed by AIA and other professional groups) to give relief to the self-employed in the form of tax deductions for retirement programs.

The Senate Finance Committee rewrote a bill (HR 10), passed by the House, to liberalize provisions for deductions in a number of details, and hoped to get approval in early September.

2. Congress trimmed down Administration proposals severely, but did pass a bill to insure U.S. businessmen against "political risks" in doing business abroad—specifically for losses incurred by war, inconvertibility of

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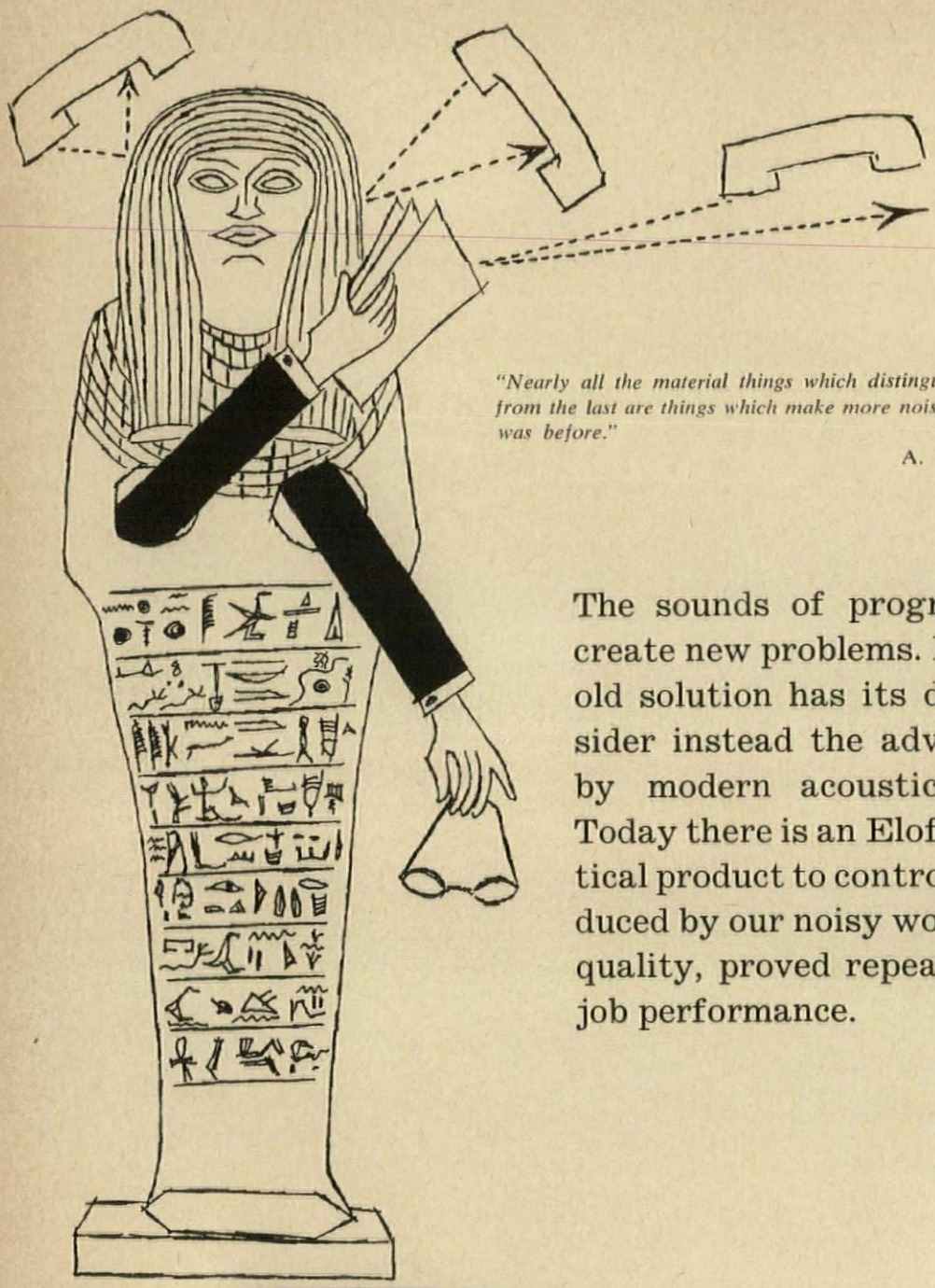

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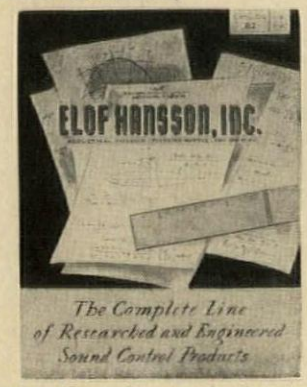

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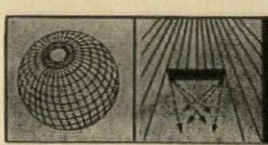

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Continued from page 73

currency, and expropriation. Administration proposals had included aid in financing, so that U.S. contracting, engineering, and architectural firms could compete with foreign outfits prepared to offer "package" jobs.

3. Professionals—engineers in this instance—could take heart at recognition of professional abilities in an obscure paragraph in the Foreign Assistance Bill. It provides that several of the nine Assistant Secretaries (of State) should be men with qualifications as professional engineers. Their job will be to oversee construction, engineering, and similar work abroad.

The Suspect Architect

Washington architects are unhappy about being lumped with barbers, plumbers, and palmists (as well as engineers) in the procedures of the District's Department of Occupations and Professions.

They are particularly unhappy about a Department requirement that license applicants be checked by the police as a preliminary to proceedings of a licensing board.

But they don't plan a protest of the type that has resulted in the resignation of the secretary of the Board of Engineering Registration.

Reason, according to John McLeod, president of the local AIA chapter and a member of the registration board, is that architects have written "understandings" with the Department that such police checks (not fingerprinting, but routine checks for any criminal record) will specifically have no effect on the Board's determinations.

"It sounds rather horrible, of course," said McLeod to P/A. "But actually we'd look pretty silly to award a license to an applicant with a long police record.

Real background for the city's sudden enforcement of the police-check requirement is the recent case of a "lawyer" who was no lawyer at all, but represented criminal clients in local courts over a period of more than a year before his qualifications were ever questioned.

FINANCIAL

The general business picture, judged by every barometer kept by the Federal Government, continued to show evidence of very strong recovery.

Despite a normal seasonal dip, general business activity in July, for example, registered advances over June in income and employment, in industrial production and construction activity.

Another example: The gross national product was at an annual rate of $516 billion in the second quarter of 1961, up by a sharp $15 billion from the first quarter. Personal income in all states for 1960 totaled $400 billion—up 5 per cent over 1959—and gave every indication of continuing the climb in 1961.

On construction, specifically: value of new construction put in place during August was set at $5.4 billion—up about 1 per cent over July, and 4 per cent over 1960 levels.

For the first eight months of 1961, spending for new construction totaled $37.0 billion, as compared to $36.1 billion in the same period of 1960.

During the month of June, incidentally, voters approved bonds totaling $56,541,000 for school construction alone.

And during the month of August, private firms reported to the Securities and Exchange Commission plans for new construction having an aggregate value (including utilities) of $261.95 million.

ELBOW-BENDING MADE EFFICIENT, HANDSOME

The weakest points in an insulated piping system are its ell joints. Here insulation may crack and splay, causing endless problems of maintenance. Aesthetically, many current applications for finishing these joints leave much to be desired. Introduction of an aluminum elbow jacket has made these considerations negligible.

"Gasco Humped Aluminum Elbows" are two-piece, heavy gage (.025-.032) aluminum elbow jackets which diminish ell joint cracks and provide a handsome appearance for piping systems. A special feature is the "humped" design which compensates for difference in radii, permitting accommodation by 13 elbow sizes of 109 pipe sizes and insulation thicknesses. The jackets, which are supplied in two halves, fit screwed or socket-welded fittings, and may be attached by metal bands, screws, or pop rivets. There is no cutting away of the insulation to fit the elbow. In one installation, the jackets acted as mold forms for asbestos cement, allowing application of insulation and ell cover as a unit. General Aluminum Supply Corp., 1506 Eastern Ave., Kansas City 26, Mo.

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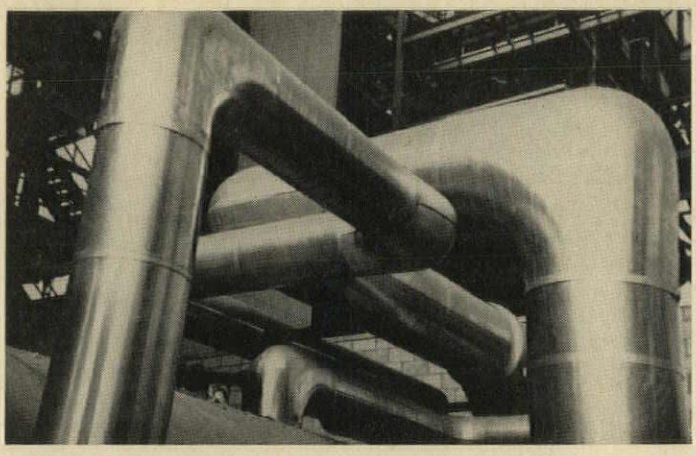

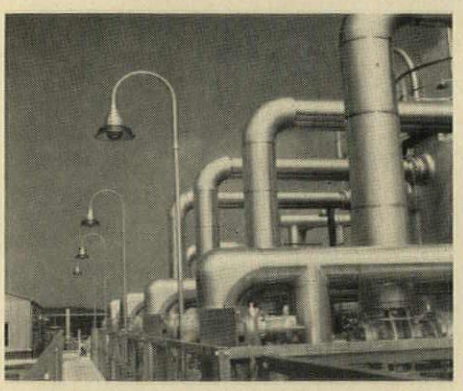

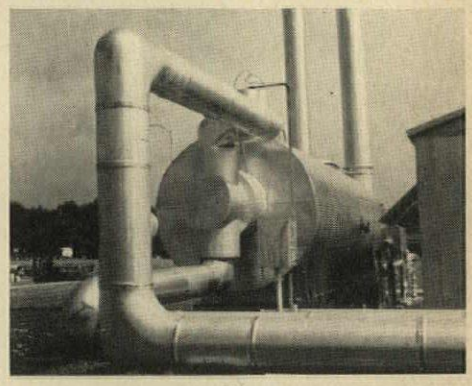

Shavings Bring Savings to Interior Walls

Once considered a waste product of carpentry, wood shavings are now being manufactured at National Gypsum by the million. They are literally the core of new "Spiral-Core" partition system, in which a complete nonload-bearing wall is erected in one operation. Economies in home building are substantial: interior walls are erected in hours, not days, and at 50% space saving over conventional stud walls.

The 4′ x 8′ panels are 2⅜″ thick, with precision-cut, hardwood shavings pressed between two pieces of fire-resistant gypsum wallboard. Erection is either panel-by-panel or by preassembling entire walls; panels are positioned on a floor track, then raised to a ceiling track for nailing. Connections at joints are with wood blocks nailed common to both panels.

Finished with joint tape, the sturdy wall withstands greater impact than between-stud areas of 2 x 4 walls. When rapped, the sound is solid. For support of heavy shelves or cupboards, wood rails are inserted into the edges of panels. Electrical runs are easily made in any direction by pushing cable through the wood spirals.

The system is intended for roof-truss construction that does not require load-bearing partitions; it permits installation of the ceiling in one operation, followed by all inside walls (except those for plumbing) in another. Such increased production efficiency without loss of quality is the key to meeting the housing challenge, manufacturer has said. Distribution of Spiral-Core begins in the economical shipping area of New Orleans. National Gypsum Co., 325 Delaware Ave., Buffalo 2, N. Y.

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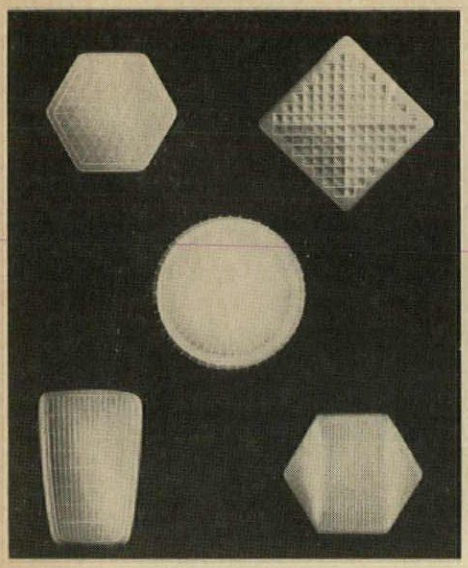

Patterns of Light With Geometric Shapes

Glowing geometric shapes for the first time combine light source and surface decoration into one architectural unit, in hand-blown, satin-etched glass. Called "Light-Forms," the shapes can be used individually or in combinations to create varied patterns of light. They can be integrated into interior or exterior wall surfaces for a new look in decorative and functional lighting. The units are 3½" deep, and can be mounted to any standard electrical outlet box. Prescolite Manufacturing Corp., 2229 Fourth St., Berkeley 10, Calif.

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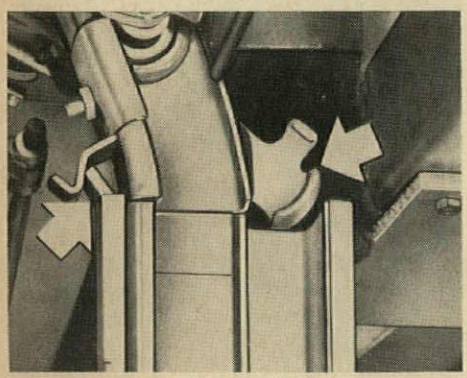

Removable Mullions for Wide, Upward-Acting Doors

The use of removable mullions now makes it possible to install regular upward-acting doors in multiple to provide closure for almost any width of opening. A recent installation, for instance, gives a 60′ clear-span opening in an airplane hangar with three such doors. There is no stacking of doors, or spur tracks extending beyond the building. The entire installation is within the building and completely protected against damage from wind, weather, and traffic.

A stationary floor plate secures the bottom of the mullion, while the top is locked securely in position with a spring-loaded safety latch *(see photo)*. To open doors, a chain is pulled to unlatch the mullion from the bracket and tilt its top end inward. As the mullion top disengages, a mechanical safety latch swings down under the now open end of the track to prevent the doors from descending while the mullion is out of position. Crawford Door Co., 20263 Hoover Rd., Detroit 5, Mich.

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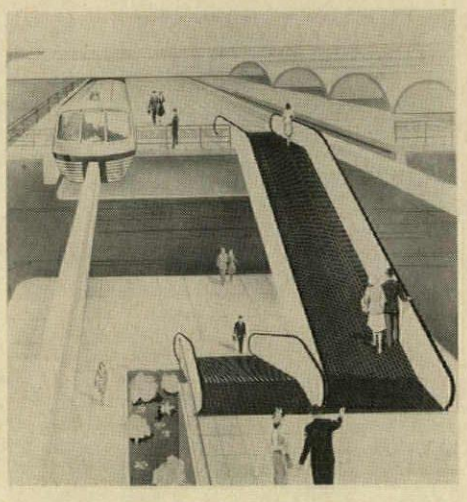


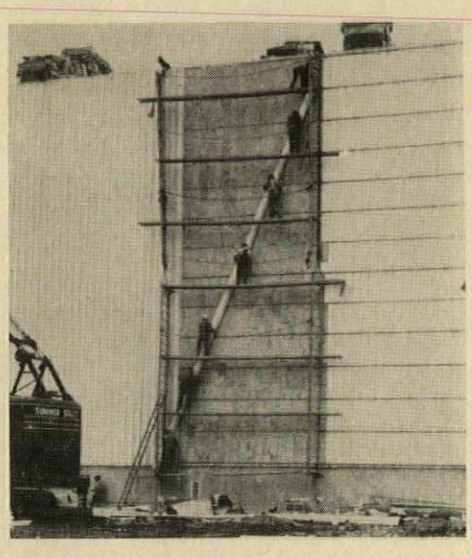
Moving into the Future

Visitors to Seattle's "Century 21" exposition, opening next April, will be literally transported into the 21st Century, even before their arrival at the fair. Four "Speedramp" moving sidewalks will carry passengers from street level in downtown Seattle to the elevated monorail station. The monorail will then carry its passengers to the fair site, 1.2 miles away, in 95 seconds. More than 10,000,000 people are expected to visit "Century 21," with most of them beginning their trip into the future on the moving ramps and monorail system. Stephens-Adamson Manufacturing Co., 45 Ridgeway Ave., Aurora, Ill.

On Free Data Card, Circle **104**

The Sky's the Limit

Insulated metal wall panels can now cover an entire building height of 60′ or more, with transportation to the building site the only limiting factor to ultimate panel length. Photo of a recent installation (walls are 51′ high) shows an eight-man crew; seven are at spaced scaffold levels and one on the ground to begin the panel lift to the lowest scaffold. Lifted and swung into position, the panel is secured simultaneously through its entire height to the previous panel. Completion of the wall proceeds from left to right. The finished portion appears at left; center portion shows rigid,



glass-fiber insulation; at right, interior wall of smooth panels and subgirts are exposed to view. Fast erection technique secures interior panel, insulation, subgirts, and exterior panel, to form a rigid and durable wall with no trace of fasteners. The speed of erection makes for a substantial economy in man-hours.

Wall panels are roller-coated with "Colorgard," a hard, color finish that is chemically inert and self-cleaning. Panel surface is covered with "Peelcote," a strippable plastic skin, for protection during construction. Elwin G. Smith & Co., Inc., Williams St., Pittsburgh 2, Pa.

On Free Data Card, Circle **105**

Spray-on Wall Coating Is Fire Resistant

"Glazetite," a spray-applied, interior wall coating, has a high gloss finish which is said to diffuse light and eliminate glare. Underwriters Laboratories rated it "0" for flamespread and "0" to "10" for "smoke developed factor," a rating which is said to make it four to five times more effective than any other wall finish. The coating is said to be unaffected by deterioration due to oxidation, moisture, abrasion, or impact. Blended or spotted finish is available in a range of colors. Application may be made over all forms of masonry backings, and the material can be patched or extended without

detection. Desco International Assn., Box 74, Buffalo, N.Y.

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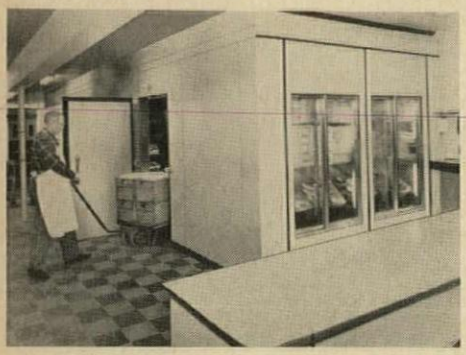

Walk-In Units at Wholesale Center

A congregation of wholesale food stores in suburban Philadelphia provides an integrated source for grocers, delicatessens, clubs, hospitals, schools, restaurants, hotels, and retail commission men. Unit run by a meat packer employs walk-in refrigerator units to store and display his wares. The all-metal, sectional walk-in is 10′ wide and 38′ deep, with large sliding glass doors on one 10′ side. On one 38′ side are two walk-in doors opening into the general area used for bulk storage. Other recent installations by the manufacturer have included a pharmaceutical plant, a rubber sneaker factory, and storage units for an ice cream distributor. Bally Case & Cooler, Inc., Bally, Pa.

On Free Data Card, Circle **107**

WC Support System Stays Completely Above Slab

New "Monolithic" system of wall closet supports allows up to 19 off-the-floor siphon-jet closets in a horizontal battery on a single vertical stack. Units stay completely above the slab, eliminating need for recessing or chipping into the slab at low points in the drainage run. With thicker slab-and-fill decks, the system eliminates the expanse of depressing slabs, pouring floor fills, and making on-the-job alterations to structural slabs. Unit accommodates all manufacturers' siphon-jet bowls and features one universal face plate which adjusts to all closet roughing heights within a prescribed range of standard drainage pitches and closet spacing dimensions. Zurn Industries, Inc., Hydromechanics Div., 1801 Pittsburgh Ave., Erie, Pa.

On Free Data Card, Circle **108**

Koppers Coal Tar Pitch Roofs Have 25-Year Bond

A new plan for bonding built-up coal tar pitch roofs increases the bond coverage period from 20 to 25 years with no increase in bond charges, Koppers Company announced recently. The new plan, called "Plus-25," was made possible in view of many existing 25-year and 30-year maintenance-free installations. Outstanding characteristics of the product are its water resistance and self-healing properties. Surface cracks are said to heal themselves in a coal tar pitch roof due to a natural property called "cold flow." Koppers Co., Inc., Tar Products Div., Koppers Bldg., Pittsburgh 19, Pa.

On Free Data Card, Circle **109**

Closet Doors Are Floor-to-Ceiling

Ceiling-height closet doors feature easy and wide opening, silent operation, and increase in storage space. Available in louvered, colonial, and flush panel styles, doors have oak threshold and furniture-grade wood top track, are furnished with a prime coat. Flush panels are also available with birch or luaun mahogany grain. Float-Away Door Co., 1173 Zonolite Rd. N.E., Atlanta 6, Ga.

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Mortar Is Preblended —Just Add Water

New preblended cement product brings to masonry the efficiencies, economies, and controls that ready-mix brought to the concrete industry. "Instant Crete" makes it practical for the first time to deliver to a construction site a cement blend that includes *all* the ingredients needed for mortar: cement, sand, lime, waterproofer,

bonding chemicals, plasticizing agents, and coloring. Only water is added at the site. Responsible for the successful preblending, which coats virtually every grain of sand with cement, and evenly distributes the smallest quantities of additives, is a new high-speed process called "Cyclo-Blending."

With this control over mortar, an architect can be sure that a masonry job will have the same perfection as any manufactured item of a building. The results of improper blending—crumbling, leaks, sandy surfaces, cracks in cement, excessive efflorescence—are eliminated. Color variations previously tolerated as an inherent problem in cement are also eliminated. Since material is stored at the site in 94 lb or 70 lb bags, there is minimal waste, dirt, inconvenience, safety hazard, and traffic congestion. Present distribution of the product is New England and the Middle Atlantic states down to Virginia. Instant Crete Corp., 1130 E. St. George Ave., Linden, N. J.

On Free Data Card, Circle **111**

Ceramic Mosaic Tiles Are Colorful, Flexible

Size, color, pattern, and "body" are the highlights of the new "Precedent" collection of ceramic mosaic tiles by American Olean. The mosaics are in three basic sizes: 1″ x 1″, 2″ x 1″, and 2″ x 2″. Illustrations show uses and combinations of all three sizes. Color range of the new line is very

NEWS from Dow Corning

This Brick Stays Beautiful

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The chief cause of brick discoloration is water that carries soil, soot and other dirt *into* the brick . . . actually embeds the dirt in brick surfaces. Once inside, water also leaches salts *out* of the brick, forming efflorescence. But Silaneal treatment *controls* the absorption rate of high suction brick. Result: brick turns back water, keeps dirt outside where surface discoloration is rain-washed away. And when water cannot penetrate, ugly efflorescence is minimized.

How Silaneal Improves Construction

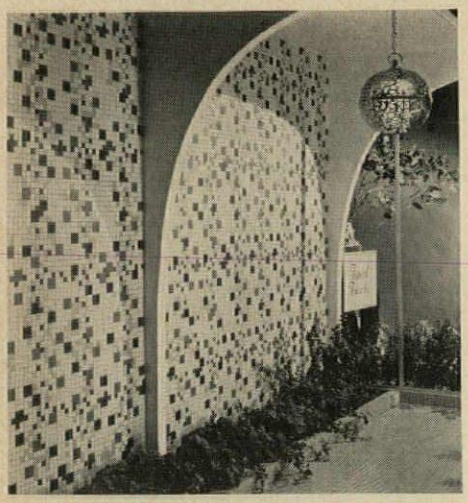
When high suction rate brick is placed on fresh mortar it immediately sucks considerable water out of the mortar. Thus, the mortar dries too quickly and shrinks, leaving a hairline crack at the interface of mortar and brick. But by treating bedding surfaces with Silaneal, suction rate is controlled; proper mortar hydration is permitted; shrinkage and cracks are eliminated; a stronger bond results; water leakage through the finished wall is reduced. Clean-up seldom requires more than just simple brushing. And maintenance is minimized because mortar does not crumble.

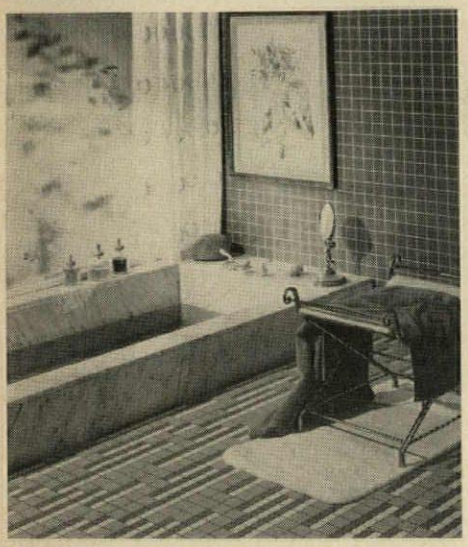
If you want more information on this new aid to constructing better brick buildings — including a list of leading brick manufacturers now supplying Silaneal-treated brick — write Dow Corning, Department 6822.

NOTE: There are several brick manufacturers who produce brick having low suction which already perform similar to a Silaneal-treated brick. Little improvement in efflorescence control and reduction of dirt pickup could be accomplished by treating this type of brick with Silaneal. Silaneal treatment would not improve the laying properties of this type of brick.

SILANEAL®
keeps brick clean

Dow Corning CORPORATION
MIDLAND, MICHIGAN





broad, encompassing 54 hues: 28 "Clearline" colors, bright and pastel; 14 "Texline" colors, featuring a textural effect with flecks of white; and 12 glazed accent colors. Innumerable patterns and blends can be achieved with the tiles, but 53 patterns are being featured at this time. The "body" of the new tiles is said to be denser and finer grained than heretofore manufactured, making them more stain-resistant and easier to clean. New techniques of manufacture make accurate control of tile size and color possible. American Olean Tile Co., Lansdale, Pa.

On Free Data Card, Circle **112**

Pigmented Concrete Curing Compound Is Homogenized

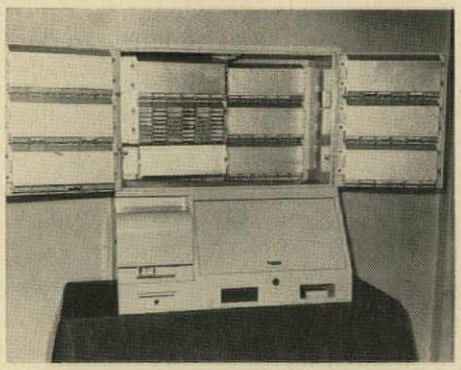
A homogenized concrete curing compound with "Suspensoid" additive is designed to keep the pigment in the compound in suspension. This eliminates contractor's need to agitate drums of the cure, which was unsatisfactory because it left unassimilated pigment in the bottom of the drum and clogged spraying equipment. The new system keeps the pigment in suspension for a longer period, thus saving time spent cleaning nozzles and saving pigment that was left unused. It makes a thin, uniform film free of air bubbles, and uses titanium type A white pigment. W. R. Meadows, Inc., 26 Kimball Street, Elgin, Ill.

On Free Data Card, Circle **113**

Door with a Memory

New door remembers a single important fact—160 F heat. If a fire should start in its vicinity, the door will automatically close when the temperature reaches 160 F, closing off corridors and stair wells which otherwise could spread the fire disastrously. The brain behind this door is a special metal link that melts at 160 F, a temperature that is low enough to appear in the early stages of a fire. As soon as superheated air from the fire melts this link, a spring held under tension is released, and the door shuts. Fenestra Inc., 11801 Mack Ave., Detroit 14, Mich.

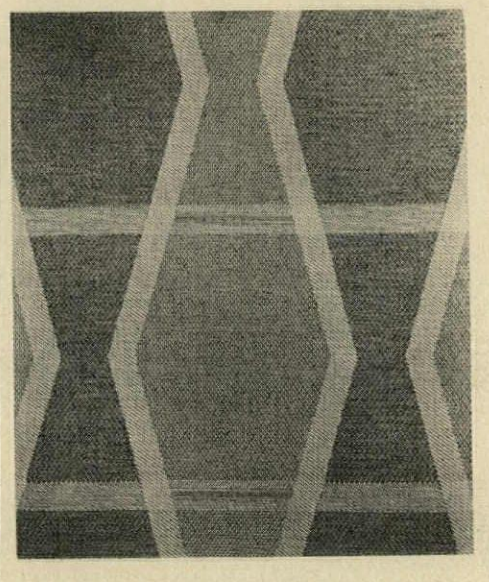
On Free Data Card, Circle **114**



Electronic System for Drug Dispensing

The distribution and custody of hospital drugs has been automated in the new "Brewer System." The system comprises a "Drug Station" for each nursing floor, which is electronically controlled to dispense and record the proper medication for each patient, and a "Drug Cart" which is similarly geared for accuracy and simplicity. Among the many benefits to patient, medical staff, and hospital management are the following: 24-hour pharmacy service, maximum drug control, more nursing time for direct patient care, protection against medication errors, simplified accounting, and savings in the entire pharmaceutical service. Brewer Pharmal Engineering Corp., 9138 West Chester Pike, Upper Darby, Pa.

On Free Data Card, Circle **115**



Lobster Pot

One of the fabrics in Thorp's new line is a large-scale geometric design, which is derived from the outline of a lobster pot. Imported from Sweden, the fabric has a handwoven look and is suitable for both upholstery and drapery use. One colorway only in beige tones; 60″ wide; 29″ repeat. J. H. Thorp & Co., 425 E. 53 St., New York 22, N. Y.

On Free Data Card, Circle **116**

Lav Is Double for Half the Trouble

"America's first 2-in-1 bathroom lavatory" is the new "Dulavoir." A full 45″ x 17″, this twin-bowl lavatory has a 9″ x 17″ counter space between basins. Other features are concealed overflows at the front and individual soap dishes. The one-piece unit can be tiled in or mounted with frame. Its vitreous enameled cast-iron surface lasts the life of the home. Universal-Rundle Corp., New Castle, Pa.

On Free Data Card, Circle **117**

on the one hand **economy**

and on the other **beautiful durable floors**

Let the Hillyard "Maintaineer"... an experienced floor specialist... prove to you that the best floor treatments not only give your floors the deepest, most durable beauty—but also prove *most economical* for your client to maintain.

On TERRAZZO • WOOD • CONCRETE • ASPHALT VINYL • RUBBER or GYMNASIUM

YOU'LL FINISH AHEAD WITH

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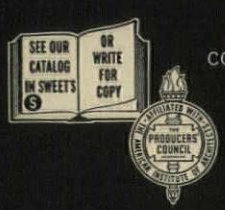
Proprietary Chemists Since 1907

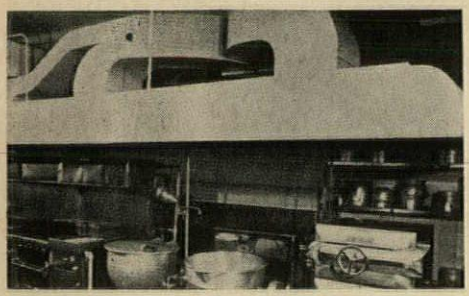


Write for Hillyard A.I.A. Files... contain draft specifications and treating instructions for each type of flooring.

BRANCHES AND WAREHOUSES IN PRINCIPAL CITIES

For more information, turn to Reader Service card, circle No. 348

AIR/TEMPERATURE



Make-Up Air Systems

Design Considerations for Make-Up Air Systems, 8 pages, is the first in a series of handbooks on direct-fired gas heating equipment. This booklet points up the need for tempered make-up air to replace room air that is expelled from a building by fans or forced-air exhaust systems, which in turn often causes undesirable drafts and infiltration of dust and fumes. Illustrated sections discuss the need for make-up air systems, their planning and design, the selection of component equipment, and the design of control arrangements. Reznor duct furnaces and blower assemblies especially suited to make-up air systems are presented. Reznor Manufacturing Co., 62 Union St., Mercer, Pa.

On Free Data Card, Circle **200**

Hydronic Heating

New 72-page source book, *Hydronics Design and Application,* contains detailed piping diagrams for six basic house plans, plus simplified tables for calculating heat loss. There is also information on starting and checking the system after installation, and on remedying any operation difficulty. The manual is intended primarily, but not exclusively, for use with the 1961 line of Bryant residential boilers. Write (enclosing $2.50) to: Bryant Manufacturing Co., 2020 Montcalm St., Indianapolis 7, Ind.

Looking for a Roommate?

New air-conditioning unit—"Roommate II" combines two engineering firsts with new high styling. Through its "Humid-a-Guard Control System," the unit controls room temperature and humidity conditions regardless of outside conditions. This patented feature is not available in any other unit. The other exclusive feature of the Roommate II is "Air Volume Stabilizer Damper" which controls the volume of outside air admitted to the room. Full description of these features, and technical data, are contained in 6-page folder. John J. Nesbitt, Inc., State Rd. and Rhawn St., Philadelphia 36, Pa.

On Free Data Card, Circle **201**

Ventilators for the Home

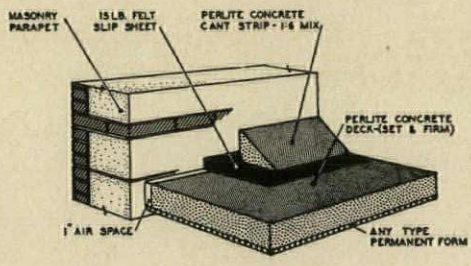
New 12-page catalog presents Fasco's ventilators for baths and kitchens: units for wall and ceiling installation, and combination ventilator-light and ventilator-light-heater units. Specifications and construction data are included for each model; wiring and ducting are illustrated in color diagrams. All units are certified and rated by the Home Ventilating Institute. Fasco Industries, 255 N. Union St., Rochester 2, N.Y.

On Free Data Card, Circle **202**

CONSTRUCTION

Perlite Concrete

Revised section of the *Perlite Design Manual* is 4-page folder entitled *Perlite Concrete: Application Information*



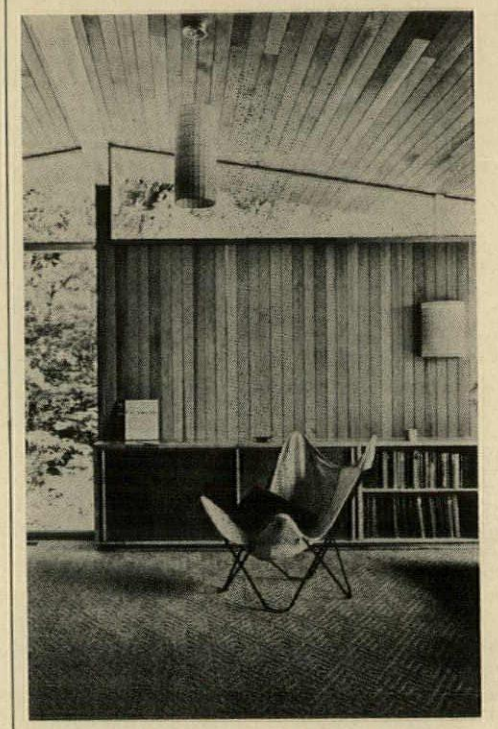
on Mixing and Placing. Although perlite insulating concrete is mixed in the same equipment and by similar methods as sand-gravel concrete, there are some considerations that must be given to materials and timing in order to assure correct properties and adequate yield. The bulletin gives technical information on proper mixing, placing, and curing, and the use of air-entraining agents. Expansion joints and cant strips are also discussed. Perlite Institute, Inc., 45 W. 45 St., New York 17, N.Y.

On Free Data Card, Circle **203**

Fire-Safe Chimneys

Information on the construction of safe chimneys and fireplaces, and advisory help on building codes, is available. The CFLI, distributor of the literature, is an association of manufacturers dedicated to fire prevention through safe flue and chimney construction. Titles are *I'll Take This One,* describing approved chimney construction; *Home Is Where the Hearth Is,* featuring fireplaces; and *Recommended Building Code Text for Chimneys and Flues.* Clay Flue Lining Institute, 161 Ash St., Akron 8, Ohio.

On Free Data Card, Circle **204**



Red Cedar Paneling

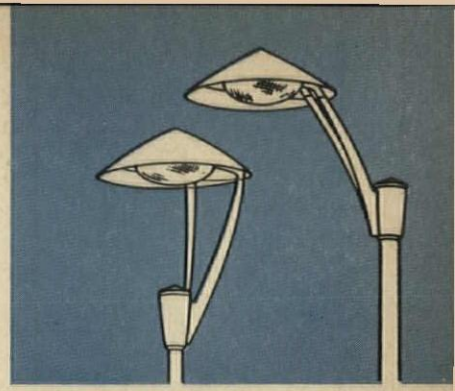
Information package, totaling 14 pages, presents Western Red Cedar paneling—patterns, application, and finishing. Titles of data sheets are *Tongue and Groove, Channel Pattern, Paneling Interior and Exterior, Paneling Patterns and Finishes, and Finishing.* They include introductory descriptions, tables of data, attractive color photos, and installation sketches. Western Red Cedar Lumber Assn., 4403 White-Henry-Stuart Bldg., Seattle 1, Wash.

On Free Data Card, Circle **205**

Built-Up Roofing Specs

New manual, *Built-Up Roofing Specifications for 1961,* has been published. The 28-page catalog opens with a roof-selector guide, an arrangement in tabular form of the appropiate roofing construction for specific U/L rating, incline, guarantee, and deck material. Then follow general requirements for specifications on nailable and non-nailable decks, with information also on steep decks, dead-level roofs, and roofing over existing roofs. Extensive

L-M PTL'S AT HOLIDAY INN MOTEL, Springfield, Missouri. PTL luminaires are weatherproof, in brushed aluminum or choice of six decorator colors. Exceptionally easy to install. Top reflector simply tilts for maintenance or relamping. With or without photocontrol, for incandescent or mercury with built-in ballast. Choice of seven IES light patterns.



L-M'S STYLED MERCURY, the ultimate in styling for streets, parking areas, malls, shopping centers, etc. Available in 1000, 700 or 400 watt luminaires.

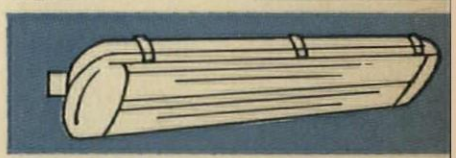
L-M LAWN-GLO LUMINAIRE available in traditional or three contemporary designs. For homes and commercial applications where soft, low-level lighting is desired. High grade, all-aluminum unit with many desirable features; weatherproof; easily installed.

Increase Nighttime Traffic With L-M's Modern, Efficient PTL(TM) Luminaire

Contemporary styling and high lighting efficiency are combined in L-M's Post Top Light. The PTL luminaire has a scientifically designed optical system, with reflector-refractor combination that directs light down, not up and out where it is annoying.

PTL'S can be installed anywhere; replace old-style units, or provide efficient lighting for new installations. Excellent for public and private applications for hotels, motels, pools, parks, marinas, driveways, amusement parks, shopping centers, churches, hospitals, and airports, because it directs the light down, not up.

L-M SUBURBANAIRE is available in mercury or incandescent. For farms, neighborhood streets, church grounds, parking lots, many other areas where medium-intensity efficient lighting is desirable.



L-M FLUORESCENT LUMINAIRES are available in a wide variety of styles for street, airport, subway and tunnel lighting. In choice of deep or shallow units.

Get Information on L-M Outdoor Lighting

L-M equipment is specifically designed for the application. L-M provides a complete line of luminaires, in a wide variety of types, in fluorescent, mercury, and incandescent. Also Lighting Application Engineering Service, available through Authorized L-M Distributors. Ask your electrical wholesaler, or mail the coupon.

533

LINE MATERIAL® Industries

McGRAW-EDISON COMPANY

Outdoor Lighting

McGRAW EDISON

DISTRIBUTION TRANSFORMERS · RECLOSERS, SECTIONALIZERS AND OIL SWITCHES · FUSE CUTOUTS AND FUSE LINKS
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OUTDOOR LIGHTING · LINE CONSTRUCTION MATERIALS · PORCELAIN INSULATORS · FIBRE PIPE AND CONDUIT

For more information, turn to Reader Service card, circle No. 421

MAIL THIS COUPON PA-1

Line Material Industries,
Milwaukee 1, Wisconsin

Please send me information on the PTL, L-M's complete lighti line, and name of nearest Authorized L-M Distributor.

Name_____

Company_____

Address_____

City_____ State_____

Type of Business_____

specifications for roofing, plus several pages of flashing details and construction details, conclude the manual. The Philip Carey Manufacturing Co., 320 S. Wayne Ave., Cincinnati 15, Ohio.
On Free Data Card, Circle **206**

Concrete-Forming System

New catalog, 24 pages, explains the "Steel-Ply" form system in detail. The lightweight panels weigh 5 psf, are made of plywood completely encased in rigid welded-steel frames. All panels are equipped with handles for easy carrying. With proper care, the painted steel frames last indefinitely; the plywood may be easily reversed or replaced. The simple arrangement of hardware is shown; photos also show panels and fillers in various combinations—horizontal or vertical, for any shape or size of concrete work. Along with descriptions of the standard forms and accessories, several new products are presented, among them a cantilever bracket and a haunch bracket. Symons Clamp & Manufacturing Co., 4249 W. Diversey Ave., Chicago 39, Ill.
On Free Data Card, Circle **207**

Fire-Protected Studding

Fire-Safe Construction Ideas in Action, 4 pages, shows the savings in money and time that resulted from using "Non-Com" fire-protected wood as studding in a recent project. On-the-job photos show Non-Com being installed in the same manner as untreated wood; no wiring or clips are required. Protection is permanent against fire, termites, and decay. Wood Preserving Div., Koppers Co., Inc., 752 Koppers Bldg., Pittsburgh 19, Pa.
On Free Data Card, Circle **208**

DOORS/WINDOWS

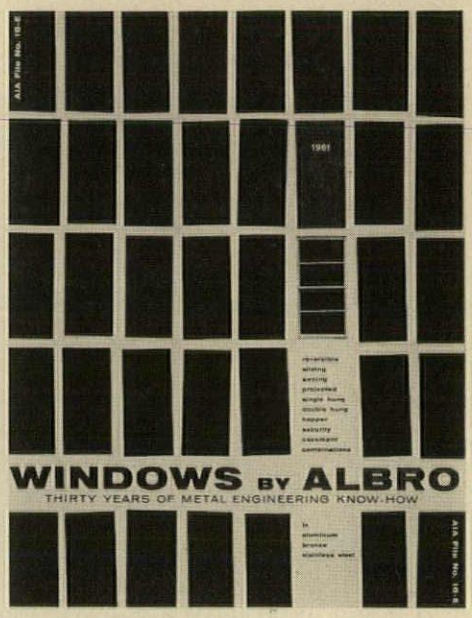
Aluminum on Outside, Wood on Inside

"Aluh" windows and curtain-wall elements, composed of aluminum on the

outside and wood on the inside, are presented in 6-page folder. Several representative European buildings having these units are illustrated; scale details of the sections are also shown. The windows are supplied in various combinations of fixed and opening sash, with either single or double glazing. The use of aluminum on the exterior assures light weight, strength, corrosion-resistance, and no maintenance, while wood on the interior gives heat and sound insulation and a "warm" appearance. Folder describes the construction technique of these West German windows which assures that the two materials, expanding at different rates, will form a perfectly balanced unit. American Representative: Juergen Estrich, 4451 W. Washington Blvd., Chicago 24, Ill.
On Free Data Card, Circle **209**

Fire Doors and Exit Hardware

Recent advances in the design of fire-door barriers, and the application of new fire-exit hardware, are described in 8-page technical booklet. 1961 edition of *Fire Doorater* contains a review of the company's labeled products which derive from more than 10 years of testing by the Underwriters' Laboratories. Examples of Overly's 90 different door styles are shown, and complete information is provided on UL-label requirements for hollow metal doors. A guide to the proper selection of hardware appears in chart form for easy reference. Overly Manufacturing Co., 580 W. Otterman, Greensburg, Pa.
On Free Data Card, Circle **210**



Metal Windows

New catalog, 20 pages, illustrates windows by Albro in aluminum, bronze, and stainless steel. Catalog gives cross-sectional drawings, data on key features, and detailed specifications on the many types—reversible, sliding, awning, projected, single hung, double hung, hopper, security, and casement. Albro Metal Products Corp., 944 Longfellow Ave., New York 59, N.Y.
On Free Data Card, Circle **211**

Glazing with Plexiglas

New guide for the use of "Plexiglas" acrylic plastic as a glazing material is entitled *Plexiglas Replacement Window Glazing* and is intended for those who are concerned with glazing or reglazing in high-breakage areas. The material is rigid, resilient, and weather-resistant; it is supplied as a colorless, transparent sheet and in a variety of tints and translucent colors. Brochure, 8 pages, describes various methods of installing the plastic in windows, doors, skylights, and partitions. Plastics Sales Dept., Rohm & Haas Co., 222 W. Washington Sq., Philadelphia 5, Pa.
On Free Data Card, Circle **212**

ELECTRICAL EQUIPMENT

Residential Loadcenters

Selection and application information on residential loadcenters, plus new

price lists for complete line of fusible equipment, are features of new 1961 catalog. The 36-page catalog illustrates the various loadcenters—both fusible and circuit-breaker types—small fusible devices, and special application units. Ratings and wiring diagrams are provided. Walker Div., I-T-E Circuit Breaker Co., P. O. Box 2384, Atlanta 18, Ga.

On Free Data Card, Circle 213

Using Slabs as Raceways

New 16-page manual explains the use of hollow-core, precast-concrete floor and roof slabs as raceways for electrical wiring. Covered in the book are: (1) getting wiring in and out of the hollow "Flexicore" cells at various locations; (2) feeding fixtures from the cell; and (3) other methods commonly used for electrical wiring. Numerous details, clearly drawn, illustrate specific recommendations. The Flexicore Co., Inc., 1932 E. Monument Ave., Dayton 1, Ohio.

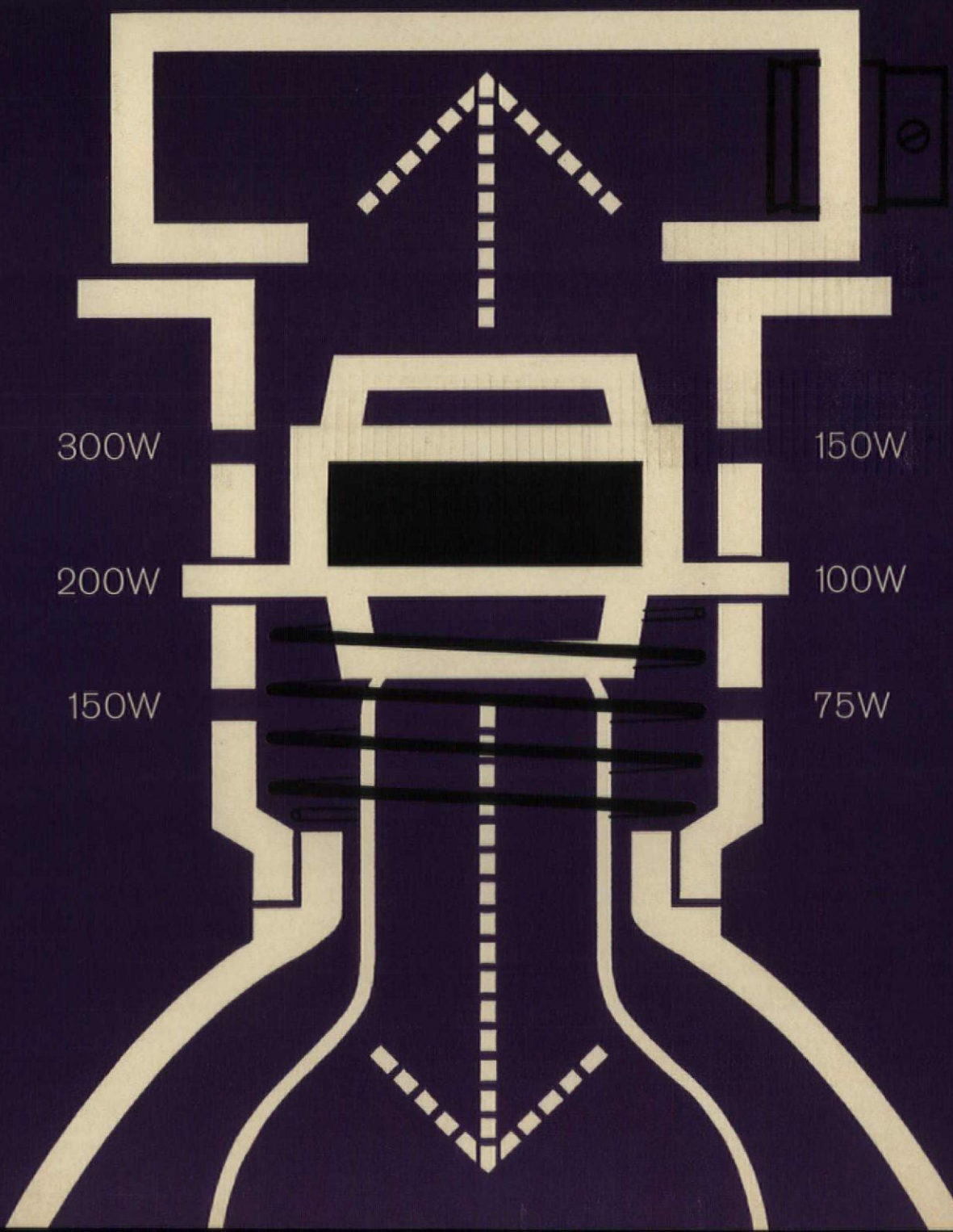
On Free Data Card, Circle 214

New Troffers Have Frameless Lenses

Handbook of recessed-flourescent equipment, 44 pages, illustrates, new "Miracle Door Troffers." The modular troffer units have frameless plastic lenses and a wide variety of other shieldings; all exposed hardware and spring catches have been eliminated. Light leakage is impossible. The catalog contains illustrations of the var-

ADJUSTOMATIC HUB One of many innovations in our new Marco collection. Three J-slots, plus a compression spring, permit changes in sizes and positions of bulbs. Result: great flexibility in quantity and quality of illumination, often necessary after an installation has been made. Write for handsome catalog illustrating over 100 new recessed incandescent lighting fixtures.

MARCO



ious sizes and types, plus installation data for many contemporary ceiling types. Globe Lighting Products, Inc., 1710 Flushing Ave., Brooklyn 37, N.Y.

On Free Data Card, Circle **215**

Sports Lighting for Gyms

Indoor Sports Lighting for Educational Institutions, 4 pages, illustrates gymnasium applications of "Lobay" and "Hibay" units with either mercury-vapor or incandescent lamps. Booklet describes construction details of the fixtures, giving light-distribution curves and other data for specifiers. It discusses compactness of light source, output/wattage relationship, life, shielding, installation, and maintenance. Manufacturer states that Lobay and Hibay units using mercury-vapor lamps offer "the least costly illumination available anywhere with all the required characteristics"; incandescent lamps are "the lowest first-cost units." Holophane Co., Inc., 342 Madison Ave., New York 17, N. Y.

On Free Data Card, Circle **216**

FINISHERS/PROTECTORS

Corrosion-Proof Cements

Catalog, 16 pages presents complete line of 17 corrosion-proof cements, flooring materials, interliners, coatings, and rigid plastic fabrications. Complete data on physical properties and application methods, plus details for tank and floor constructions, are provided. An extensive chart shows the resistance of each product to 166 common corrosives. Atlas Mineral Products Co., Mertztown, Pa.

On Free Data Card, Circle **217**

Floors without Flaws

A comprehensive yet concise 4-page catalog presents all products concerned

Continued on page 102

FOAMGLAS-BOARD®:

the benefits of FOAMGLAS in large board size

The proven insulation benefits of FOAMGLAS are available now in a special 2′ x 4′ unit, a board size that speeds roofing installation and cuts labor costs.

The qualities of FOAMGLAS—moistureproof, vaporproof, strong, rigid, dimensionally stable, incombustible—are retained in this new package that makes it faster and easier to handle on the job. Multiple sections of FOAMGLAS are sandwiched between a special asphalt-laminated paper.

New FOAMGLAS-BOARD reduces the number of insulation joints on a roof. It is easily cut and shaped on the job to provide a tight fit around drains, vents or other obstructions.

For more complete information on how FOAMGLAS-BOARD provides weathertight roofing protection for the life of a building, send for a free copy of our catalog: Pittsburgh Corning Corporation, Department AB-101, One Gateway Center, Pittsburgh 22, Pennsylvania. In Canada: 3333 Cavendish Boulevard, Montreal, Quebec.

PITTSBURGH

PC

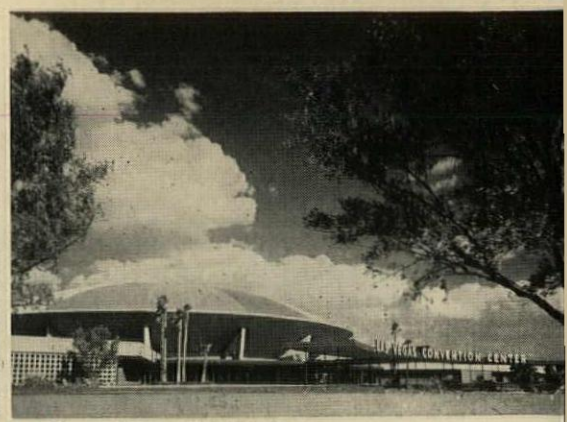
CORNING

Only Onan has solved

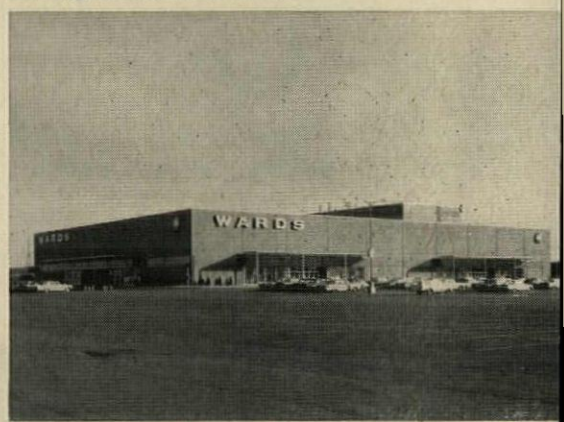
HERE ARE A FEW OF THOUSANDS OF BUILDINGS THAT HAVE INSTALLED ONAN STANDBY POWER

Halle Bros. Department Stores
Middleburgh Heights, Ohio
Rothrock Bldg. • Erie, Pa.
Forbes & Wallace Dept. Store
Springfield, Mass.
Newspaper—La Presse
Montreal, Canada
Parking Ramp—Pigeon Hole Parking
Montreal, Canada
Phillip's Supermarket • Auburn, Mass.
Loveman's Dept. Store
Birmingham, Ala.
Hudson's Bay Company
Winnipeg, Canada
Newfoundland Radio Station VOCM
Newfoundland
Radio Station CJAD • Montreal, Canada
Tediskis Supermarket
Plymouth, Mass.
Chellels Supermarket
Barrington, R.I.
Howard Johnson Restaurant
Portsmouth, N.H.
Radio Station WEEL • Medford, Mass.
Birch Street Garage • Cranston, R.I.
Hugo Hillstrom Hatchery
Cokato, Minn.
Ford Motor Co.—Twin Cities
Assembly Plant • St. Paul, Minn.
University of Minnesota
Minneapolis, Minn.
Jesuitez Fathers Church
St. Jerome, Quebec
Pako Co. • Golden Valley, Minn.
Vanderbilt Univ. • Nashville, Tenn.
Sunbeam Farm Greenhouse
Westlake, Ohio
Lines Orchids, Inc.
Signal Mountain, Tenn.
Rhode Island Milk Assn. Bldg.
Warwich, R.I.
Beauchamp Dairies • Winter Haven, Fla.
Rider College • Lawrence, N.J.
Central Service Station • Editson, N.Y.
Gulf Power Co. • Fort Walton, Fla.
Bessemer Electric Service
Bessemer, Ala.
City of Nashville • Nashville, Tenn.
Water Resources Board (State of New
Hampshire) • Manchester, N.H.
R E A (Clay Union Electric Corp.)
Vermillion, S. Dak.
Michigan Bell • Detroit, Mich.
Wisconsin Southern Gas Co., Inc.
Lake Geneva, Wisc.
California Interstate
Carson City, Nevada
Toll Road Service Area—Near Ohio Line,
Ohio Turnpike • Lorain, Ohio
KVOO-TV • Tulsa, Oklahoma
Troy Elementary School • Troy, Pa.
Chambersburg High School
Chambersburg, Pa.
Sioux Falls School (Axtell Park Jr. H.S.)
Sioux Falls, S. Dak.
St. Lukes Elementary School • Erie, Pa.
Pure Oil Station • Cable, Minn.
Wold Chamberlain Field
Minneapolis, Minn.
Police Bldg. • Lexington, Mass.
Barrington Town Hall • Barrington, R.I.
Radio Station WGL • Ft. Wayne, Indiana
Southeast Colorado Power Assn.
La Junta, Colo.
Radio Station WPBC
Minneapolis, Minn.
Radio Station WBRY • Waterbury, Conn.
Radio Station KSTL • St. Louis, Mo.
Fire Station • Minneapolis, Minn.
Sewage Disposal
Columbia Heights, Minn.

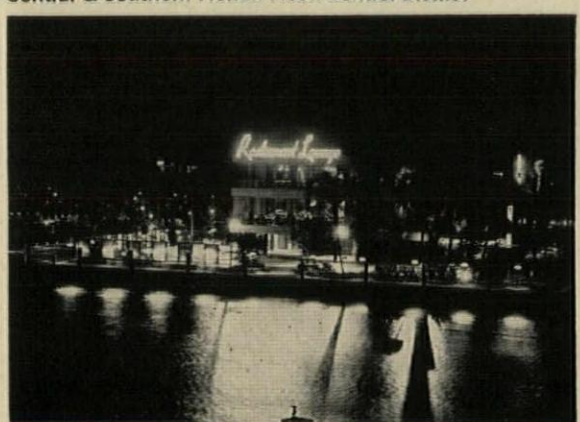
First Federal Savings & Loan, La Crosse, Wisc.


Las Vegas Convention Center

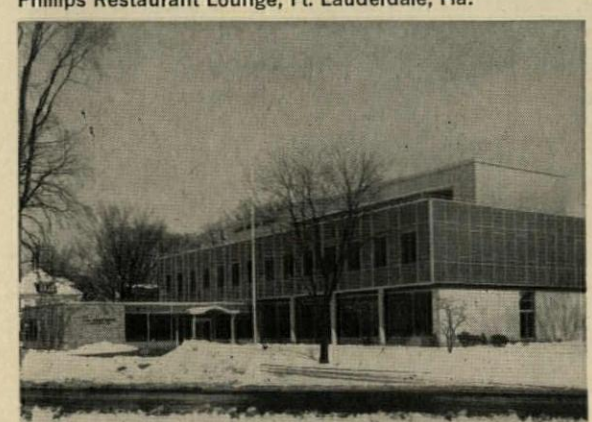

Central & Southern Florida Flood Control District



Montgomery Ward, Minneapolis, Minn.


Phillips Restaurant Lounge, Ft. Lauderdale, Fla.

Amityville Theatre, Amityville, L.I., N.Y.


Farm Bureau Mutual Insurance, Concord, N.H.


Shadowbrook Jesuit Noviate, Lenox, Mass.

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

Continued from page 96

with floors, new or old, wood or concrete. Floor hardeners, patching and resurfacing compounds, chemical-resistant coatings, primers, and slip-resistant coatings are tabulated. Information on each product includes purposes, advantages, method of application, preparation, time required before reopening floor to traffic, coverage, and special precautions. A. C. Horn Co., Div. of Sun Chemical Corp., 2133 85th St., North Bergen, N.J.

On Free Data Card, Circle **218**

Form Coating for Exposed Aggregate

Technical bulletin, 2 pages, describes "Aggretex F," a coating for wood or metal forms to obtain exposed aggregate surfaces on freshly poured concrete. The material is also used to provide a rough bonding surface for subsequent concrete or stucco coatings and pargings. Bulletin discusses surface preparation for wood and metal forms, method of application, and coverage. A.C. Horn Co., Div. of Sun Chemical Corp., 2133 85 St., North Bergen, N.J.

On Free Data Card, Circle **219**

INSULATION

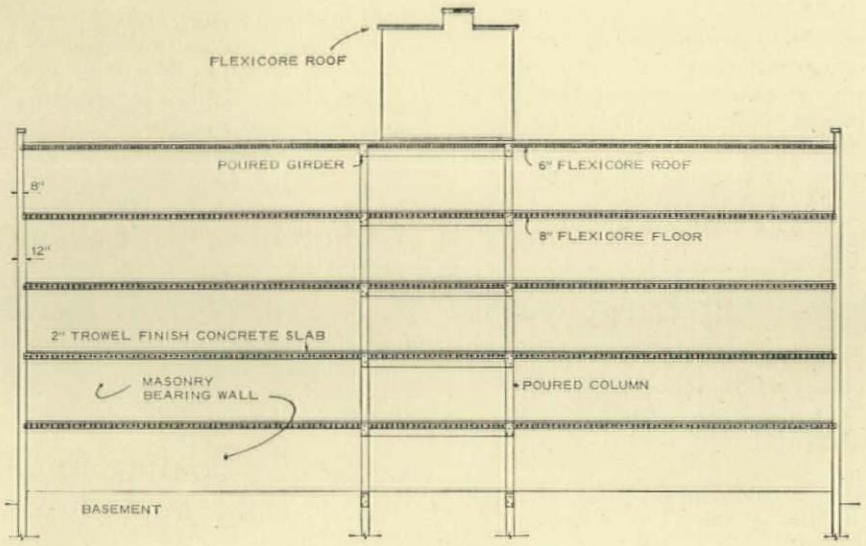
Economies with Insulating Roof Deck

Brochure entitled *Exposed Beam Roof Construction* describes the advantages of "Celotex" insulating roof deck for faster and more economical construction. The 8-page booklet includes a 4-page cost analysis, enabling one to compare local costs of fiberboard insulating roof deck against three other typical roof systems: pitched roof with vented attic space, flat roof, and exposed beam roof without insulating roof deck. Celotex combines roof deck, finished ceiling, and insulation in a single versatile unit, which is available in sound-quieting "Fissured" and high light-reflecting "Linen White." The Celotex Corp., 120 S. La Salle St., Chicago 3, Ill.

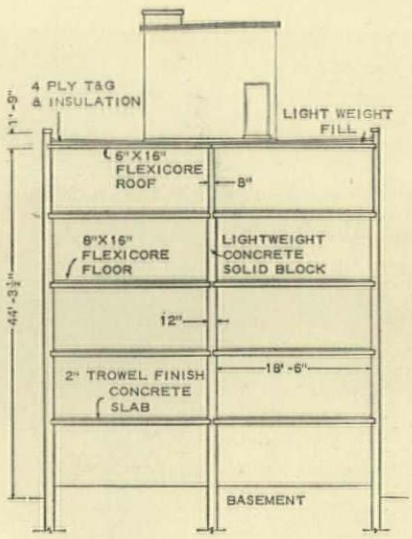
On Free Data Card, Circle **220**

Insulating Concrete for Floors on Grade

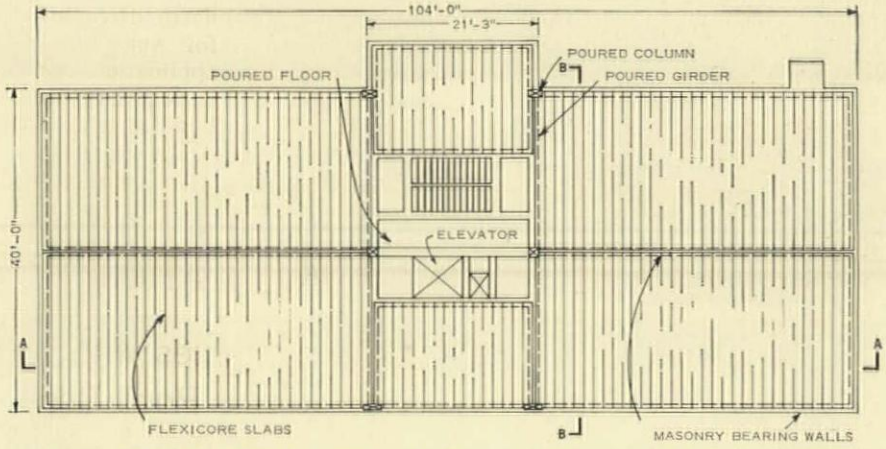
Specifications for vermiculite insulating concrete floors on grade, with or



SECTION AA. Precast cellular concrete Flexicore decks provide fireproof structural floors and roofs at Fairmay Apartments, Chicago. The five buildings are masonry wall-bearing except for reinforced concrete stairway and elevator core. Design called for 75 psf live load.

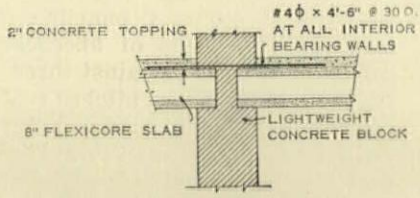


SECTION BB. Clear span of 18'-6" between masonry bearing walls permits simplified design and fast construction. Underside of Flexicore deck is exposed for finished ceiling.

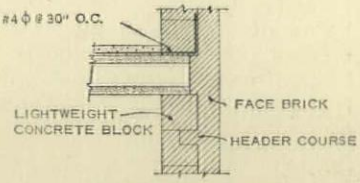


TYPICAL FLOOR FRAMING. Each 3800-sq. ft. Flexicore deck was placed, leveled and grouted in two days. Available on third day as work deck for erection of walls and frame for next story.

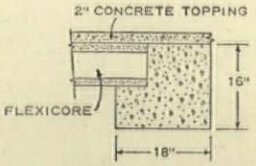
How to Design a Low-Cost, Fireproof Apartment Building



FLOOR ANCHOR RODS INTERIOR WALLS



FLOOR ANCHOR RODS EXTERIOR WALLS



BEARING OF FLEXICORE ON TYPICAL POURED BEAM

Edward Marks, Architect, Evanston, Illinois

The use of Flexicore precast decks permitted Fairmay Apartments to meet Chicago's strict fire code, and resulted in substantial savings to the owners. High-speed erection permitted earlier occupancy and exposed Flexicore slabs eliminated ceiling plaster.

For more information on this project, ask for Flexicore Facts No. 78. Write The Flexicore Co., Inc., Dayton, Ohio, the Flexicore Manufacturers Association, 297 S. High St., Columbus 15, Ohio or look under "Flexicore" in the white pages of your telephone book.

without radiant heating, have been issued. The 4-page folder covers mixing, placing, and curing of vermiculite concrete, as well as preparation of the base and application of a sand-concrete topping. Isometric detail drawings are provided. Vermiculite Institute, 208 S. LaSalle St., Chicago 4, Ill.

On Free Data Card, Circle 221

LIGHTING

Custom Design from Standard Elements

Unique catalog enables designer to visualize the many pendant fixtures possible with the Lightolier "Carnival" line. Multiple flaps of the catalog show the 13 pendant styles — metal cones, glass teardrops, wicker, etc. — while fixed page shows new metal spreader. The fixture can accommodate from 3 to 12 lights. Also illustrated in 12-page catalog is the new "Interplay" chandelier, with its varied brackets, mounting, and shades visualized by spinning a disc. Lightolier Inc., 346 Claremont Ave., Jersey City 5, N. J.

On Free Data Card, Circle 222

SANITATION/PLUMBING

Unbreakable Fixtures for Institutions

Complete specifications sheets are available for each of manufacturer's many unbreakable plumbing fixtures, including the unique water closet and lavatory combination, and the solid one-piece stall shower. Also available are more than 20 different layout sheets for institutional plumbing, showing details of piping and connections. These sheets have been compiled from actual institutional jobs, and show plans, elevations, and sections. Aluminum Plumbing Fixture Corp., 778 Burlway Rd., Burlingame, Calif.

On Free Data Card, Circle 223

Hospital Layouts

New guide to the selection of plumbing products for hospitals has been issued. The booklet, 44 pages, is divided into two parts: the first contains floor plans and general descriptions of hospital areas, with appropiate products for each area; the second section contains specifications on the fixtures and fittings illustrated. Of special interest are new fixtures, such as surgeons' lavatories, surgeons' scrub-up sinks, and a pediatric bath. Plumbing & Heating Div., American-Standard, 40 W. 40 St., New York 18, N.Y.

On Free Data Card, Circle 224

Sketchbook for Clients

Sketchbook of Plumbing, Heating, and Air Conditioning Ideas contains 20 pages of ideas for bathrooms, kitchens, garden centers, pools, cabanas, etc. Each watercolor sketch suggests a layout, colorscheme, and particular fixtures. Accompanying the sketches are plans and isometric views. Crane Co., 300 Park Ave., New York 22, N. Y.

On Free Data Card, Circle 225

SURFACING MATERIALS

Specs for Installing Ceramic Tile

Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar, 20 pages, has received approval by the American Standards Assn. As such, the document represents the nationally authoritative standard in its immediate field of application. Specifications cover general requirements for materials; for inspection, preparation, and protection; and for workmanship and application. Tile Council of America, Inc., 800 Second Ave., New York 17, N. Y.

On Free Data Card, Circle 226

Static-Conductive Floor Covering

Technical Data Manual on Static-Conductive Linoleum is available. The manual, 16 pages, concerns the hazards of static electricity in the presence of explosive vapors and combustible substances. It covers all pertinent facts on this life-saving floor covering. Congoleum-Nairn Inc., 195 Belgrove Dr., Kearny, N. J.

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PROGRESSIVE ARCHITECTURE NEWS REPORT

REINHOLD PUBLISHING CORPORATION

430 PARK AVENUE NEW YORK 22, N.Y.

Publisher.....D. Bradford Wilkin

Editor.....Thomas H. Creighton

News Editor.....James T. Burns, Jr.

REDUCES AIR CONDITIONING COSTS

Nineteen large central fan systems were required to air condition Armstrong Cork Company's home offices in Lancaster, Pa. With equipment dispersed among ten locations in three buildings, supervising and operating the numerous systems posed a major cost problem.

The answer was the installation of a Johnson Pneumatic Control System with a control center for convenient, centralized supervision and regulation of the equipment in all three buildings. The panel provides the engineer with a total of 323 visual data checks and remote controls, plus diagrams of the air handling systems and refrigeration circuits.

The advantages of this control center are impressive. It enables just two full-time men to handle a complex job. Through increased productivity alone, the first cost of the center is expected to be recovered in about 10 years. In addition, it provides the means to minimize power consumption and prolong equipment life. On several occasions, the immediate detection of off-normal conditions has prevented down-time and equipment damage.

And, in conjunction with some 480 Johnson Room Thermostats in the offices, it assures an ideal thermal environment at all times for Armstrong employees.

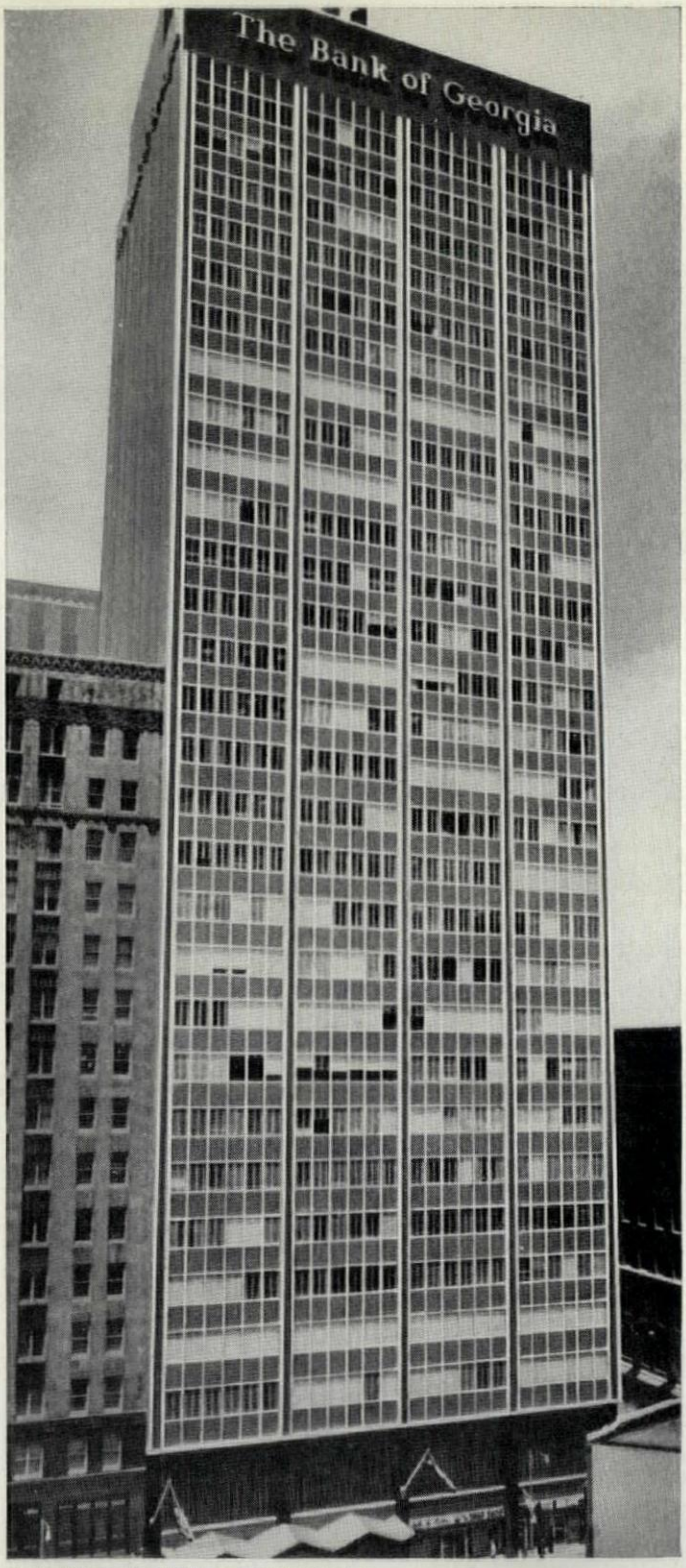
Leading buildings everywhere rely on Johnson Pneumatic Control. A Johnson representative will gladly explain how the unmatched performance and lifetime economy features of a Johnson System can be applied to any building, small or large. Johnson Service Company, Milwaukee 1, Wisconsin. 110 Direct Branch Offices.

*Johnson Pneumatic Control Center designed by consulting engineer Charles S. Leopold, Philadelphia. Eugene D. Scribner of Armstrong Cork Company was the project engineer.

JOHNSON CONTROL

PNEUMATIC SYSTEMS

DESIGN • MANUFACTURE • INSTALLATION • SINCE 1885



Bank of Georgia Building, Atlanta, Georgia
Building Owner: C. J. C. Realty Company, Atlanta, Georgia—Dallas, Texas
Architects & Engineers: Hedrick & Stanley, Dallas, Texas
General Contractor: Henry C. Beck Co., Atlanta, Georgia

Atlanta sets a new high in REINFORCED Concrete Building Construction

Dwarfing all surrounding structures, the new Bank of Georgia Building rises 390 ft out of the heart of Atlanta. The city's newest and tallest office building, it establishes a new record for concrete framed buildings in the U.S.—a record formerly held by Chicago's Executive House.

The use of monolithic reinforced concrete for this new high-rise building—and for many other new buildings—resulted in structural savings through reduction of foundation and framing costs. Investigate the many superior advantages of this versatile material and low cost method of construction.

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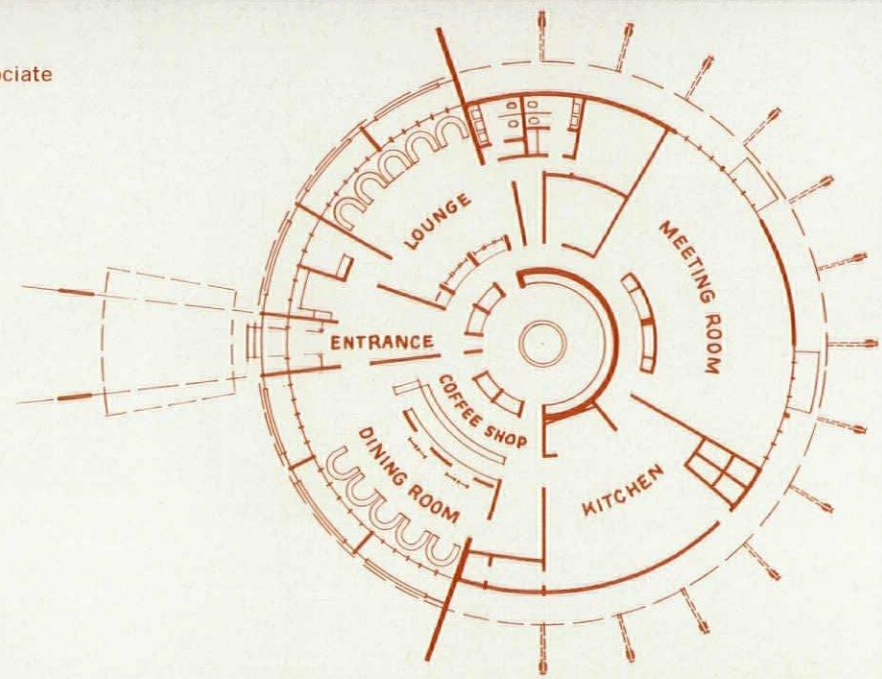
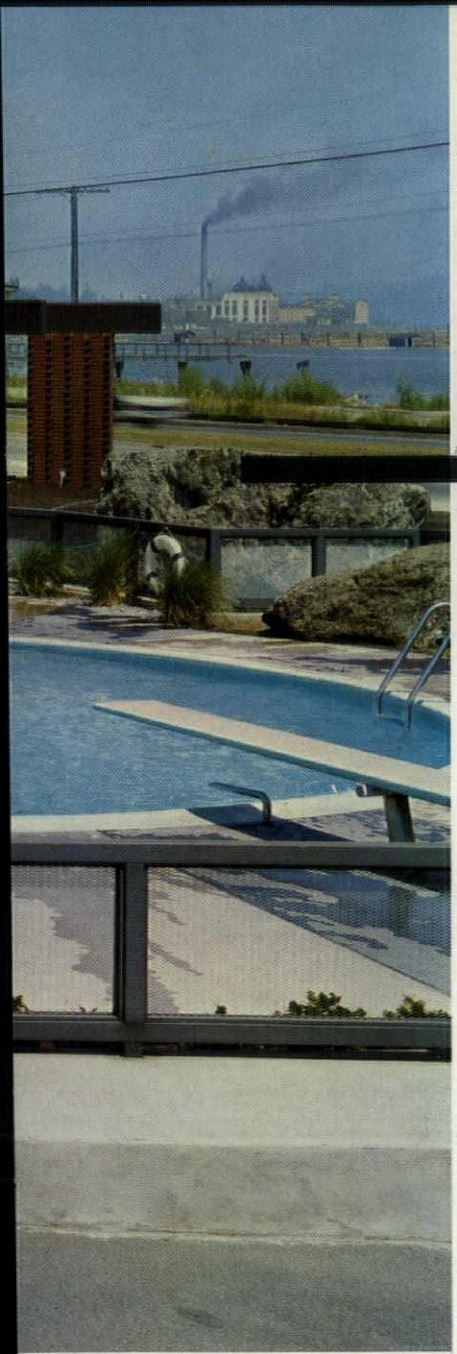
For more information, circle No. 309 ➤

Architect: David Jacobson, Jr., A.I.A.
James Coppedge, Design Associate





MODERN DESIGN

USES WEST COAST LUMBER

A design idea that utilizes the full commercial advantages of distinctive shape has been accomplished at no increase in cost over conventional forms with this interesting courtel office-restaurant in which West Coast Lumber is the principal building material. Thanks to versatile use of space, the building also functions as a community banquet hall, which can be partitioned for meeting rooms.

The round building form, offering excellent traffic circulation plus the pleasing effect of an open patio in the center, demonstrates the design flexibility available with West Coast Lumber. Exterior walls are a combination of masonry and West Coast Douglas Fir. Glue laminated beams, 7″ x 28″ alternated with 4″ x 16¼″, provide basic roof support. Into these are framed 2″ x 12″ West Coast Douglas Fir joists to carry the flat roof.

By carefully coordinated building and landscape planning, it was possible to eliminate special roof drains, since the broad overhang on both outside and inside perimeters drains directly on areas designed to receive rain water.

A variety of West Coast Lumber species were used for the building interior, with stains and clear finishes on natural wood paneling offering room-to-room variety while maintaining pleasing harmony throughout.

Whatever building shape excites your imagination, you'll find that versatile, practical West Coast Lumber offers you freedom to execute your ideas . . . with economy that will give your clients an extra bonus. Ask your nearby lumber dealer about the wide variety of sizes, grades and species of high-performance West Coast Lumber.

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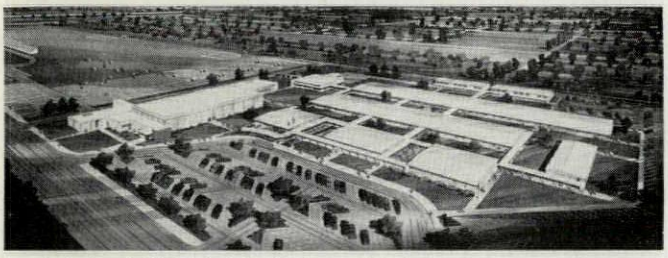
Salt Lake City Air Terminal
Ashton, Evans & Brazier, Architect, Salt Lake City
Christiansen Brothers, Gen. Contractor, Salt Lake City
Ralph Andersen Co., Builders' Hardware Contractor, Salt Lake City



Bolsa-Grande High School, Garden Grove, California
James H. Van Dyke, Architect, Los Angeles
Noyes Roach Co., Gen. Contractor, Los Angeles
Montgomery Hardware Co., Builders' Hardware Contractor, Los Angeles

Pittsburgh Hilton, Pittsburgh
William B. Tabler, Architect, New York
Turner Construction Co., Gen. Contractor, Philadelphia
Hardware Engineers & Contractors, Builders' Hardware Contractor, Greensburg, Pa.

Qualitatively, the locksets specified for your projects may be of the highest order. *Functionally,* they are worthless without the keys that operate them. That's why Architectural Hardware Consultants recommend TELKEE Key Control on these and thousands of other projects of every type and size.

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See TELKEE Catalog 18e/Moo in Sweet's Architectural File, or write for 54 page TELKEE AIA Manual.

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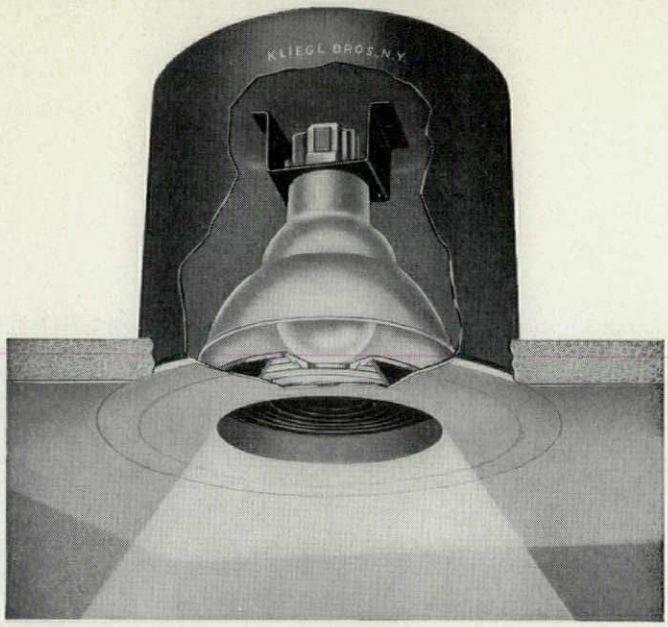

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Kliegl Regressed Lens Downlights are optically designed to give excellent performance and easy maintenance. A special flush face plate design produces the distinctive "clean look" when installed.

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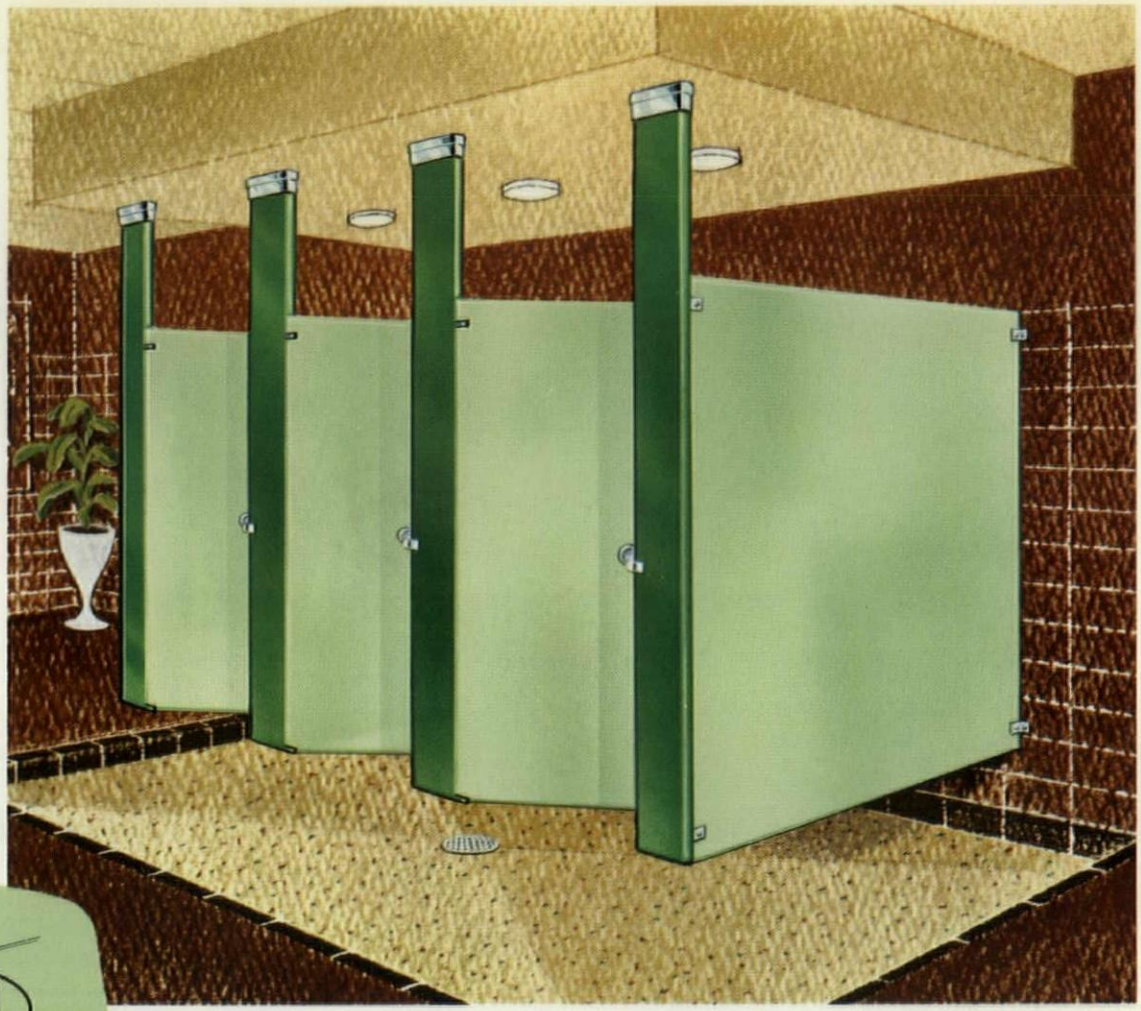
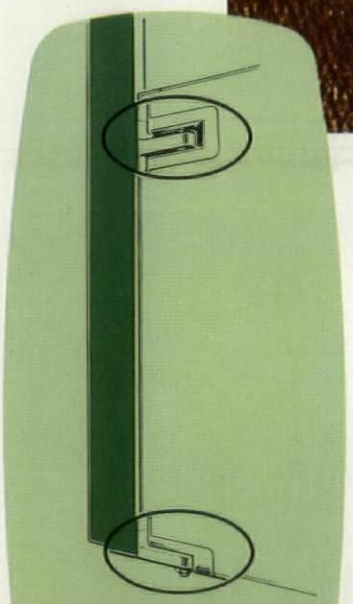


One idea from the imaginative new, full-color brochure "Design Studies", showing recessed area for easy floor cleaning.



All Sanymetal hinges are fully recessed — flush with door surface . . . no protrusions to catch dirt; tamper proof and easily cleaned.

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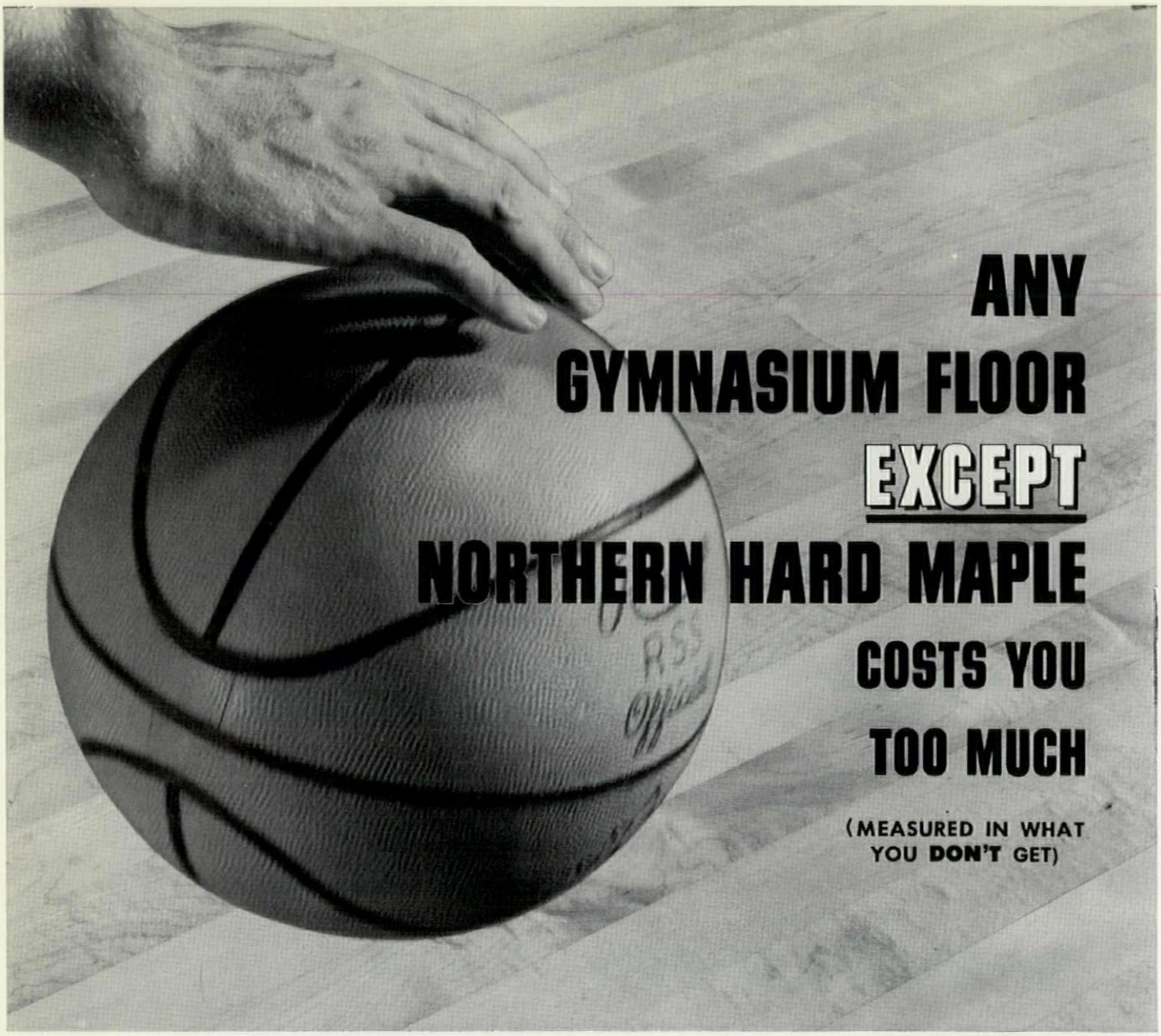

The facts of life about gymnasium floors are: any floor which CAN'T deliver everything a properly laid floor of Northern Hard Maple DOES deliver is inadequate.

Physical education authorities—coaches—in overwhelming majority, declare a good gymnasium floor must be smooth, non-chipping, non-splintering, non-abrasive, bright, tight, tough, with *true resilience* to fight off dents, scuffs and scars. Maintenance must be simple, quick, economical, effective. And *all* these values should endure for the life of the building. That describes a well-laid floor of genuine Northern Hard Maple (*acer saccharum*).

Carrying the 65-year-old MFMA millmark, this superb flooring guarantees scrupulous wood selection, scientific drying, precision milling, rigid inspection and grading. To insure the *final* essential, your own prudence must take over. Make sure your floor is laid by men who have honest pride in their skill and reputation. Such craftsmen are not usually the very lowest bidders (nor yet the highest). But the work they do, *and the floor you get*, is always a bargain.

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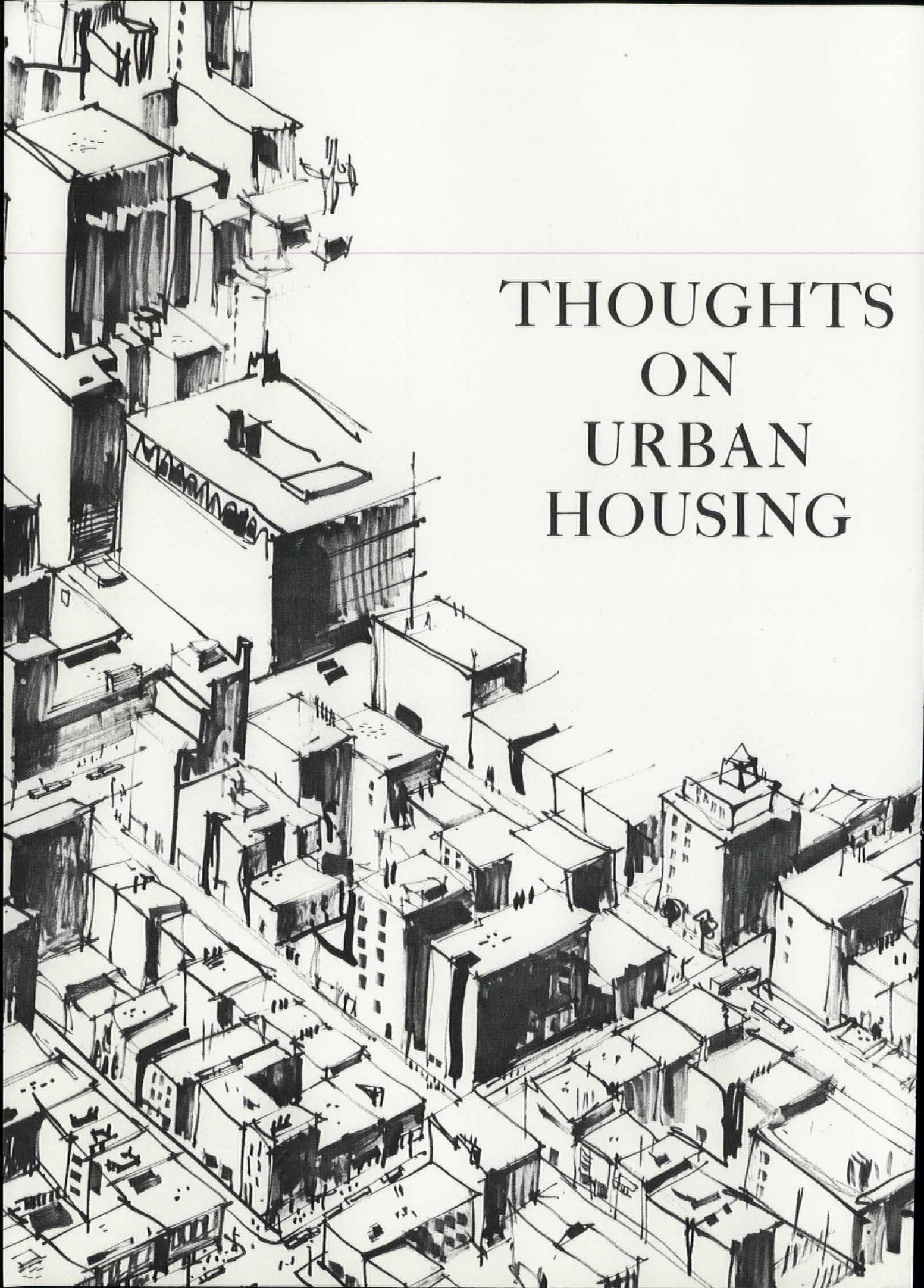
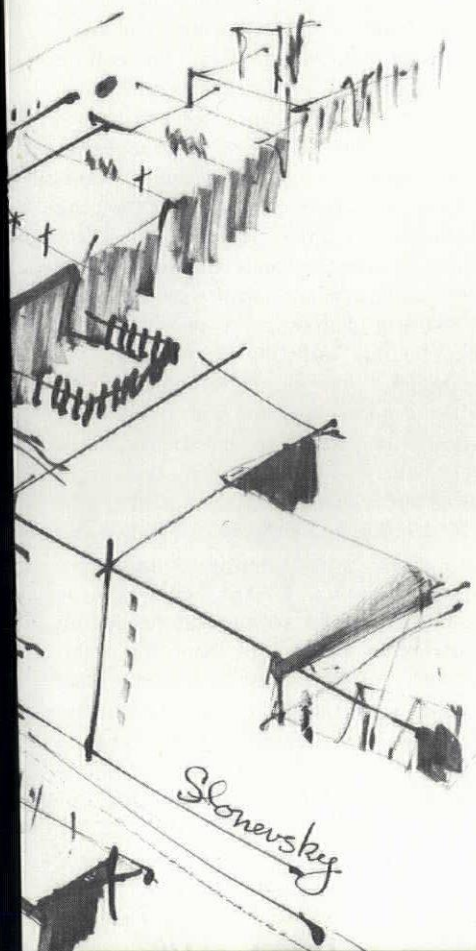
EDITORIAL FEATURES



THOUGHTS ON URBAN HOUSING

Most architects would agree that, with few exceptions, the architecture of urban housing since the end of World War II has lacked imagination and offered no real solution to high-density urban living. On the following pages, P/A presents a five-part discussion on urban housing that consists of: an analysis of some of the factors responsible for this situation; examples of several attempts at better satisfying basic human needs; an example of the possibility of individual choice within a larger building envelope; a discussion of various methods of storing the automobile; and a description of what seems to be the emergence of new design approaches. Except for the last part, this presentation was prepared by P/A's contributing editor, Ilse Meissner Reese.

NON-ARCHITECTURE



It has become increasingly obvious in recent years that the form of urban housing is almost totally the province and plaything of the real estate operator. The architect, whether a "captive" of the speculative builder or an outside consultant, is usually relegated to a technical role, such as calculating the maximum cubage permissible within the prescribed zoning regulations and building laws, preparing working drawings, and writing specifications. Within this predetermined and arbitrary envelope, he must dovetail as many apartments as possible, not forgetting a luxurious space on the street floor for a glittering lobby. The result is a building, but very seldom architecture. Such an approach is diametrically opposed to the training the architect has received in school, where he was taught that his first concern must be the relative welfare and comfort of the people who are to occupy the building. It is therefore no surprise that most creative architects have deserted the urban housing field in great numbers to go on to less frustrating and usually more lucrative fields. Fortunately, however, there are in the remaining group a number of responsible architects who have not as yet given up hope, and whose conscience and sense of civic responsibility impels them to continue despite great odds. "I am really quite at a loss," writes one of the architects of the latter group, a man of outstanding reputation, "to know whether my present frustrations are due to being a poor salesman, or a poor businessman, or a poor architect." Like many of his colleagues, he is hopeful that the interest of the Kennedy Administration in urban renewal will mean a change for the better. "I hope," he continues—and he is a man who has devoted to urban renewal work many years of painful and painstaking endeavor—"that I live long enough, and have enough energy left to be useful."

That the present sad and disreputable state of affairs in multifamily housing is not basically the fault of the architectural profession is sufficiently evidenced by projects shown later in this issue, where many imaginative solutions to urban housing are demonstrated.

The blame for the present situation can be attributed to many causes, the most important of which is undoubtedly an expression of the workings of our national economy. To the extent to which the growth of cities and the development of urban housing are determined by the unlimited profit they yield to their investors, the cities and the majority of their inhabitants are the losers—in the present and, even more regrettably, in the future. Profit, in terms of today's economy, always means immediate profit, which explains the ubiquitous presence on the scene of the big-time real-estate operator and his alter ego, the "spec" builder. These individuals continue to pile up one financial "killing" after another by exploiting inequities in the Federal income tax structure, outmoded and self-defeating zoning and building regulations, and compliant architects whose venality has overwhelmed any scruples of social responsibility; they are helped, most significantly of all, by a public that accepts without question the destruction of the values inherent in urban living. Daniel M. Friedenberg, an articulate and knowledgeable real estate operator, put it this way in a recent article in *Harper's Magazine:* "When the public allows the quest for profit to dominate architectural values and the municipal

interest almost completely, as it has done, it is accepting a monetary perversion which seems beyond that of any known previous civilization."

President Kennedy's housing message early this year dramatized the national need for housing. Fourteen million Americans, he stated, are living in substandard or deteriorating houses. His subsequent appointment of William Larew Slayton as chief of urban renewal emphasized the Administration's concern with urban housing.

Let us hope that the architect will have more of a part in this program. The increasing turbulence and uncertainty of today's world makes it all the more imperative that the individual and his family have available the retreat of a quiet, private world, symbolized by their home. It is the architect, and not the real estate man, who is best equipped by training to shape this private world and the whole human environment.

However, before the architect can begin to apply his talent toward solutions based on values of human welfare and good design, he must circumvent so many nonarchitectural factors that his task becomes almost impossible. Factors such as the following have assumed an entirely undue importance in present-day urban housing:

Economic Factors. As has already been pointed out, of all the nonarchitectural considerations involved, the economic ones far outweigh any others. A building must, of course, be an economic success, and must yield a worthwhile profit; otherwise private enterprise must be written off as the main financial source of urban housing. But what constitutes a reasonable minimum return to the entrepreneur—15 per cent? 50 per cent? Must the backer, before he can be induced to build, be given fair assurance of recouping a multimillion dollar cash outlay in a few years' time? As Daniel Friedenberg noted, in the article previously referred to: "The cheaper the product, the higher the return. As costs of construction have been rising, builders have found formulas to substitute tinsel for quality, squeezing out every penny of profit they can."

The architect is seriously affected by this squeeze. It must be recognized that in the majority of cases his services are considered inconsequential, almost dispensable; thus his fee is kept to a minimum. One conscientious and professionally esteemed architect, after devoting three years to the design of an urban redevelopment program, was thrown overboard when the builder considered a fee of $50 per dwelling too high; his customary fee to architects was half that amount. At this fee, can we expect the best of the architect?

Controls by Lending and Financial Institutions. It is logical that the institutions which make their financial resources available should wish to have some say in the safety, appearance, and sales appeal of a building. FHA, as a Government loan insurance agency, has set specific, if not invariably pertinent, minimum standards to which architects must adhere. Unfortunately, these minimum standards have almost universally become the norm. For example, the width of a living room in an FHA-insured apartment house seldom exceeds 11 feet, the smallest allowable dimension. In New York State, the State Division of Housing has its own regulations. The conservatism of most banks and mortgage institutions is well known. A single architectural adviser on the staff of a bank can yield tremendous influence for or against good design. What is badly needed by the architect is a more effective method of convincing lenders and guarantors that more imaginative design pays.

Zoning Restrictions. Municipal restrictions on land use and building size are absolutely necessary to maintain physical, social, and economic order within a city. Only recently, New York's obsolescent zoning law was brought up-to-date, although the revised law was passed against formidable opposition. As in other instances, the maximum allowable zoning outlines have generally become the norm. New York's apartment houses reflect these restrictions very clearly in their contours. Zoning law experts are employed to determine the greatest possible bulk permissible for a building to be erected in a given zone on a given plot. The architect starts from there. Fettered by arbitrary building lines and setbacks, it is extremely difficult to develop any architectural order. For example, a modular system finds limited application when columns must be stepped back at odd intervals, and the orderly stacking of mechanical services becomes a major problem. Skidmore, Owings & Merrill's Manhattan House, designed soon after World War II, is a notable exception to the theory that New York City housing, in order to be financially successful, must exploit every square inch of allowable space. In the long run, *quality of living space,* not *bulk,* must become the criterion by which our urban housing is judged. Zoning laws are only part of the answer.

Multiple Dwelling Laws. These laws are designed to insure the safety and health of those inhabiting multifamily housing. Like the zoning ordinances, the multiple dwelling laws govern size and bulk of buildings. Although, like all building laws, they are a body of well-intentioned restrictions, adherence to them does not necessarily result in good architecture.

Building Codes. "Building Codes," wrote Charles Abrams in 1946 in his book *The Future of Housing,* "are often either too detailed to be practical or too general to be enforceable. They call for needlessly expensive construction methods, vary illogically between one city and another, do not keep pace with change, limit architectural ingenuity, are frequently wasteful, too often are written to protect special interest groups." Our building codes of 1961 still fit this description, and indeed, in most cases, are still the same codes Abrams was discussing 15 years ago, even though great technical advances, comparable to the achievement of placing in orbit manned space vehicles, have been made in the meantime. Why should it still be next to impossible to effect a simple change in fire resistance specifications, when such a change would be for the better? An architect involved in the design of an urban project recently questioned the wisdom of a code allowing wood floors and wood interior partitions, but calling for two and three hour exterior walls. "The code seems to have been written to prevent the spread of fire," he suggested, "but it seems to me that in any forward-looking project, we should aim at stopping the fire at its source." Yet who is to carry on the lengthy, expensive, and intricate political and administrative negotiations to secure a change in the code? "I can't help feeling awfully discouraged," he continued, "that we are left to carry the ball with no backing and with tremendous pressure to give in to expediency, since every hour we fight against it comes right out of our own pocket."

Restrictive Labor Practices. Labor and contracting restrictions have long been a major hindrance toward achieving the most efficient and economical residential construction. Because of them, the architect has not been free to use the most suitable materials or construction methods. It was encouraging, however, to see a news item concerning progress in this area make headlines in a recent issue of

The New York Times: "Concessions in New Union Pact to Speed Housing in Pittsburgh. Crafts Permit Pre-fabrication and Other Labor-Saving Methods at a Project for Middle-Income Families." The pact gives the builder and his subcontractors the sole right to manage their respective businesses, including the right to decide the machines, tools and equipment to be used, as well as construction methods, assembly processes and the right to use factory-fabricated units. Unfortunately, there was no mention that it is the architect who will be the person to implement the realization of all the potential benefits of these concessions by the unions.

Transitory Fashion Trends. Both client and tenant share the blame here. Housing, especially luxury housing, has become a highly changeable market, not unlike women's fashions, and it is the exceptional architect who can afford to disregard the current pressure of fashions. One year may be the year of the sculptured and gilded lobby; the next may be the year of the built-in swimming pool. Such frills have little to do with genuine housing values. For the tenant and his family, the comfort, convenience, and security found within his own living unit should logically be of paramount importance. For the client, these factors will determine, in the long run, the lasting and long-range worth of his apartment house.

After this attempt to determine and analyze the most prominent of the "outside" factors which influence the design of urban housing, it might be useful to quote some of the leading architects in this field. Their observations may suggest directions toward solutions of some of the problems discussed earlier.

That there is perhaps no real answer to high-density housing—particularly high-rise housing for low-income groups—is a possibility suggested by Henry Shimamoto of Kelly & Gruzen, an architect concerned with the design of such buildings in the New York City area. Too many obstacles exist, not only those imposed by authorities and economics, but also by the tenants who are to use the facilities. In public housing, for example, there is little regard for someone else's property and the attitude often is: the city owes me a decent living accommodation. *The trend toward tenant co-operatives, therefore, is a healthy one.* In New York, several state-aided public housing developments have been converted into nonprofit tenant co-operatives and the change-over has brought about definite improvements, which were inspired by the tenant's new sense of ownership and responsibility. In this case the co-operative owners assume the entire development costs—10 per cent in the form of down-payments, the balance to be amortized over 50 years. Mortgage loans are made by the city through the Housing and Redevelopment Board.

Another great stumbling block in urban housing seems to be the lack of co-ordination between architect, entrepreneur, and Government agency. Samuel Paul, of Paul & Jarmul, architects of many apartment houses throughout the New York area, feels this is basically an "understanding" gap. Closer co-operation and a more unified approach can be achieved, he suggests, *if all concerned will communicate with each other in an effort to work out possible solutions.* Initial steps in this direction have already been taken in New York, in the formation of the Metropolitan Multi-Dwelling FHA Committee headed by attorney Mitchel Siegel, and the Committee on Fees for Mitchell Lama Middle Income Housing under the leadership of architect Frederick G. Frost, Jr.

On the other hand, one Government official concerned with urban housing, an architect by training, has no use for such round-table discussions. He believes that very little is ever resolved and that the "working" architect, who has the ideas but seldom the facilities to express them, is rarely invited to these meetings. He favors *a department of urbanism, composed of designers, theoreticians, and persons with construction know-how,* which would develop its own ideas and then direct the work of individual architects and entrepreneurs. Such a group, he believes, could also develop recommended standards, rather than a rigid code. To the question of whether or not it would be helpful to have a universal Federal code, he answers that there is no need for such a code, but that an appropriate and flexible regional code, such as one proposed recently for New York State, would serve a very real purpose.

Carl Koch, one of the pioneers in the residential field, found the difficulty of changing existing municipal building codes one of the obvious "outside" factors which hamper the architect in the design of multifamily housing. FHA he places second. Restrictive labor practices seem to be third. "To ease the path toward well-designed, livable residential quarters," he says, *"I can think of no better way than to provide some real demonstration neighborhoods.* No doubt a Federal, unified building code could be very helpful. More helpful, though, than anything should be the *opportunity to do something with the help of our really powerful building interests,* which have the most to gain if we do a good job, and plenty to lose if we continue to slide downhill."

Oskar Stonorov, another pioneer in this field, suggests that *public housing be the pace-setter,* because private enterprise will not customarily take the initiative in providing opportunity for untried architectural ideas.

A *return to human considerations* is advocated by Victor Gruen, who feels that entirely too much emphasis is placed on technical considerations. Money spent on mechanical equipment, he maintains, must be offset by smaller living spaces and cheaper construction, to the detriment of the average project as a whole.

In summing up the role of the architect in housing, Julian Whittlesey, of Whittlesey & Conklin, writes: "The difficulties of the architect engaged in commercial housing, or, for that matter, in public housing, transcend those of the architect concerned with any other type of building if only because the product of his work is the final product of the venture. He is thus working directly between the grinding stones of commerce rather than being once removed, as is the case with the factory, school, office, or store building. Here the venture does not hinge solely upon the building which is the architect's product, but rather upon the success made within it, be this a cake of soap, or an education, or some other enterprise. If housing finance were based not upon reproduction cost of the house, but upon the likelihood of success of what is to be produced in the building—call this individual or family happiness or what you will—the architect, not to mention the housing merchant, would face quite a different and better situation. If, to accomplish this, he had in addition something better than our most inept industry to help him, the picture would be even brighter. Meantime, *there is plenty of room for the architect in the housing field, though few may find room in it for the practice of architecture, except, as matters presently stand, on behalf of those merchants who are genuinely concerned with purveying something more than a building, and who are willing to take a risk on a value on which they cannot borrow or secure insurance.*"

SATISFYING HUMAN NEEDS

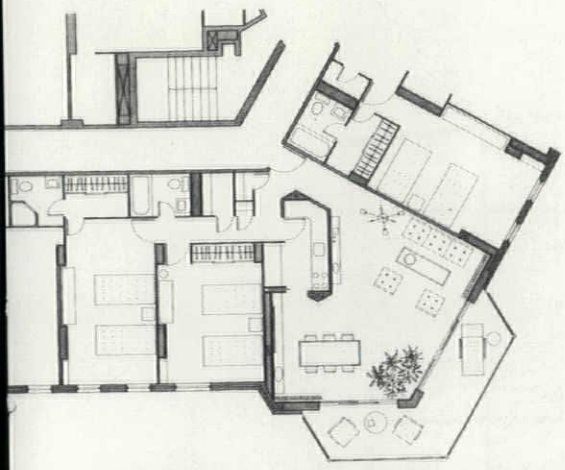
When we observe the present crop of urban residential construction, it is not surprising to find that many critics question the ability of the architect to provide a salutary living environment. In his address to the American Institute of Architects in Philadelphia, Lewis Mumford, one of the most outspoken critics, made this comment: "If architects don't know how to keep our cities together, they ought to give up the practice of architecture." All the sterile and bureaucratic images of the city of the future, which many of the greatest architects of our time have put forward, must be erased, he said, if the city is to be preserved as a center of culture. "Think on the human scale," he advocated, "... the culture will come by itself."

Whether the fault lies in the teachings of some of the masters of modern architecture, as Mumford implies, or with the "nonarchitectural factors" outlined previously, there are strong indications that a new awakening to human considerations is in progress. The following examples, some of them competition designs, others already under construction, should prove, in answer to the critics, that, given a chance, architects will succeed in shaping a livable environment. In all of these examples, the requirements of the human being—his need for sunlight, air, and nature, and his need for privacy as well as sociability—have been given first consideration.

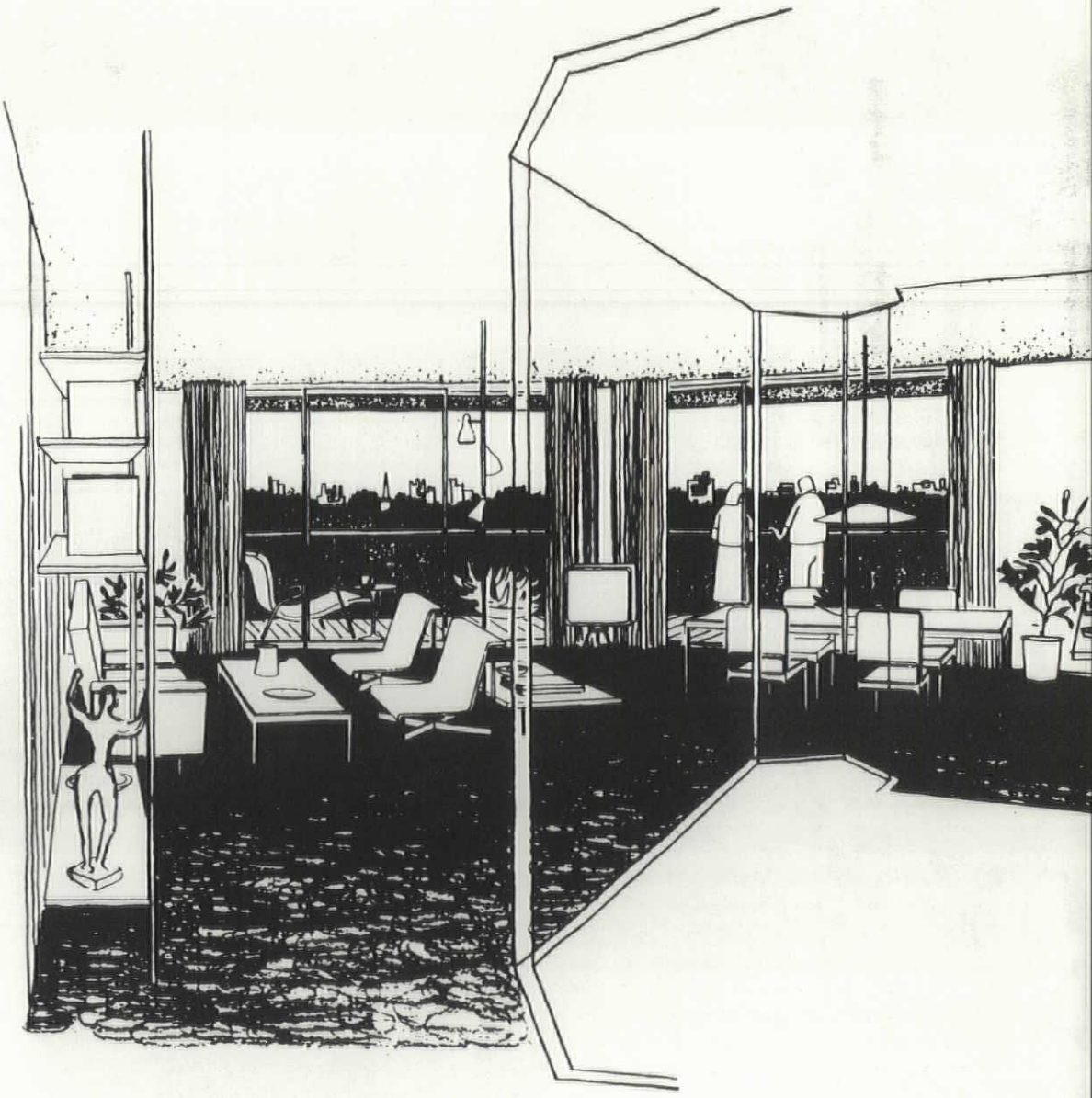
A proposal by Geddes-Brecher-Qualls-Cunningham (*next page*) for an apartment house on the edge of Philadelphia's Fairmount Park is particularly successful in answering these desiderata. The tie with sun, fresh air, and nature has been achieved by loosening the fabric of the building, by letting arms of the structure "finger into the surrounding trees," by the design of a fan-shaped living-dining room from whose balcony "views of 180 degrees may be enjoyed." Privacy as well as sociability have been architecturally expressed by juxtaposing the free and expansive living area with the more confined and well-isolated bedrooms.

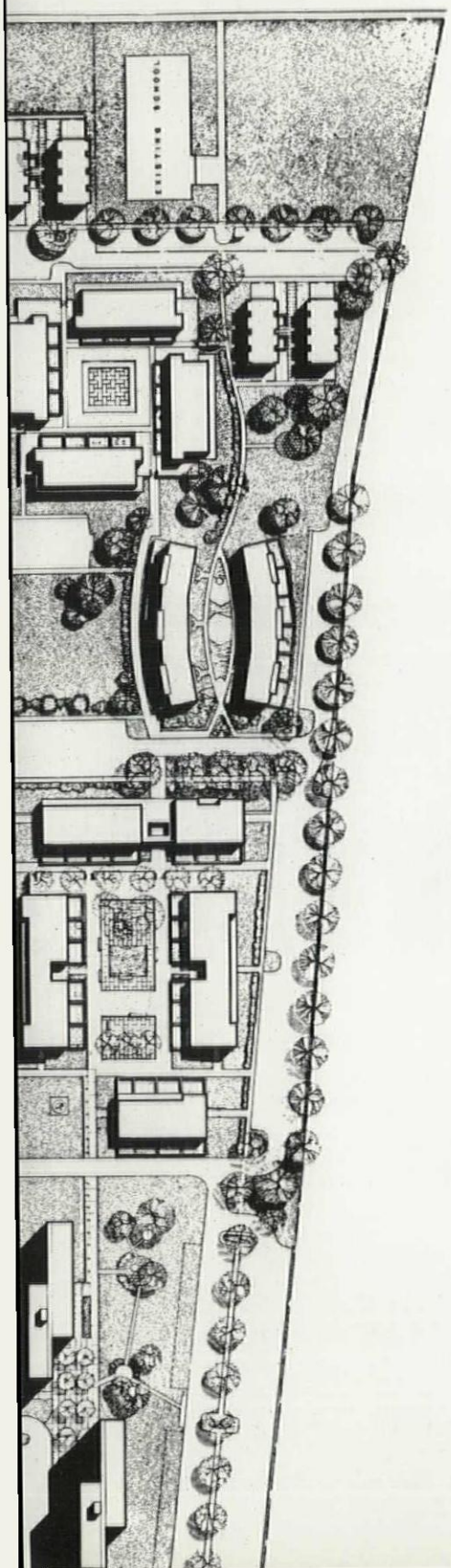
A similarly propitious location, in this case an area of 35 acres along the Hudson River with singular views of the Manhattan skyline and the George Washington Bridge, prompted the architects of Horizon House, Kelly & Gruzen (*page 123*), to orient as many living rooms as possible toward this view. At the same time, use of the double-loaded "skip" corridor system made it possible to give at least half of the apartments through-floors with views of the mountains on the opposite side, and the coincident advantages of cross-ventilation. In effect, these through-floor apartments, with their clear separation of living and sleeping spaces, private and social areas, are not unlike the one-family residence. The privacy of the individual residence is further defined by 8-in. reinforced-concrete bearing walls on a 24 ft module, the width of the residence, and 8-in. concrete floor slabs. A total of seven buildings, each providing 180 apartments, are to be constructed. Two are presently under way.

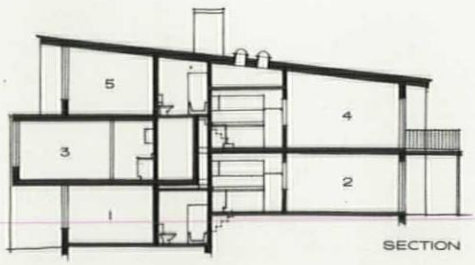
Another multilevel solution, though low-rise, is the basis of the design for a portion of the Mill Creek Redevelopment project for St. Louis (*page 122*) for which Leo A. Daly Company are the architects, and Mayer, Whittlesey & Glass the consulting architects and planners. "The maisonette plan," according to Whittlesey, "arose from a density requirement born of land economics which required something more than two-story housing, and from the provisions of an outworn local building code which ruled out any conventional three-story solutions, other than ubiquitous varieties of which we wanted no part." The five-level plan that was developed answered not only the demands of density, but offered also through-ventilation for most units, balconies, or garden terraces for all, and a generous ratio of efficiencies and low bedroom-count units, as required. All of the units are accessible from an interior fireproof corridor (for economy, other parts of the building had to be of nonfireproof wood construction). Families on the ground floor, says Whittlesey, "enjoy the advantages of direct outside approach via the atrium side gardens while at the same time having the amenity of an apartment type access with mail box vestibule, and heated public corridor, useful to service as well as guests, or others who wish to avoid the uncovered outside approach." The maisonette blocks are to be grouped around a raised atrium court onto which all of the living rooms, except the efficiency unit ones, will face.



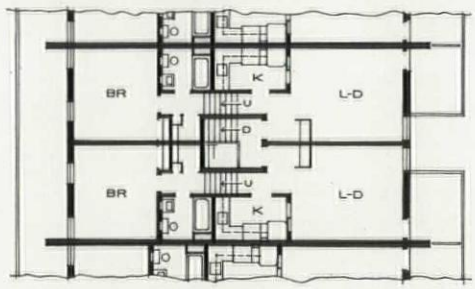
Recognition of the freer function of the living area, as contrasted with the fixed-furniture needs of the bedrooms, leads to a loosening of the fabric of this building, and provides opportunities for sociability as well as privacy. Geddes-Brecher-Qualls-Cunningham, Architects.





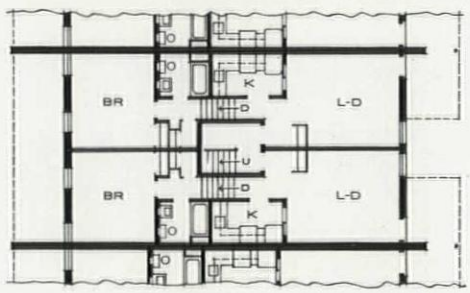


SECTION

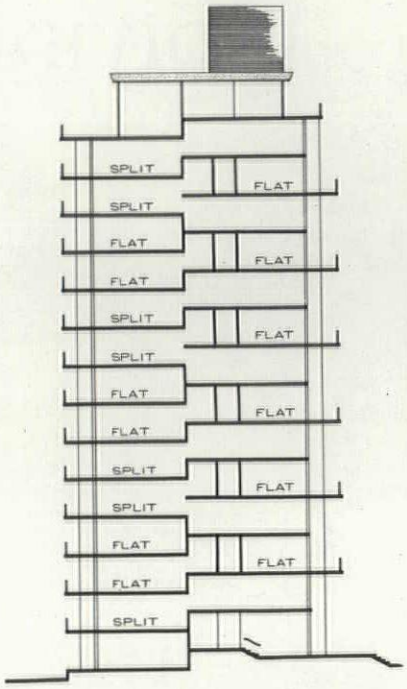


4TH AND 5TH LEVEL

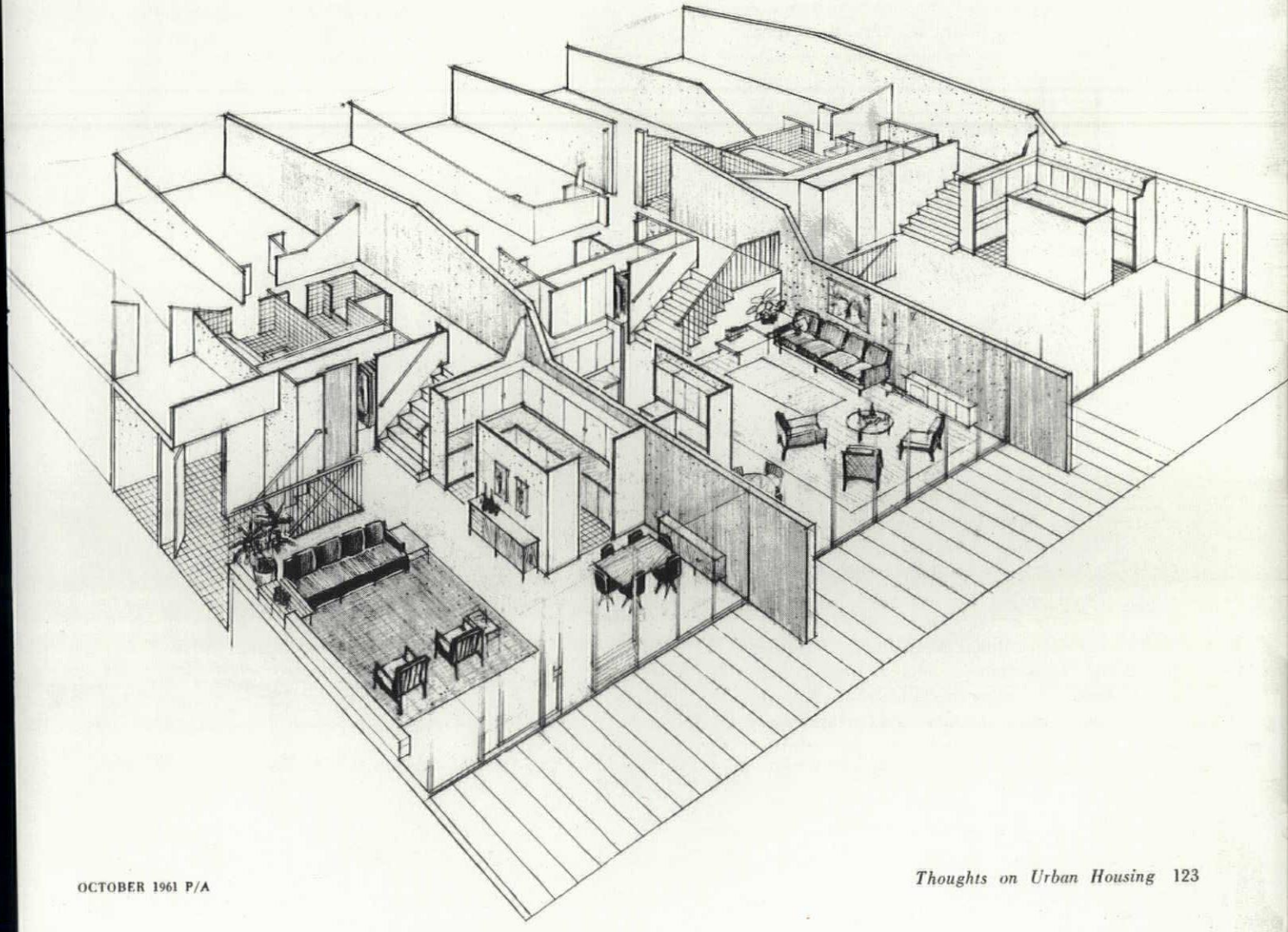
1ST AND 2ND LEVEL



This five-level plan solves not only specific demands of density and room distribution, but provides through-ventilation for most units, private open-air spaces for all, and pleasant public spaces. Leo A. Daly Company, Architects; Mayer, Whittlesey & Glass, Consulting Architects and Planners.



Shifting of floor levels and the use of the double-loaded, skip-corridor system made it possible to orient almost all living rooms toward the river view, and to achieve the effect of residence-like, through-floor apartments for most units. Kelly & Gruzen, Architects.



POSSIBILITIES FOR INDIVIDUAL CHOICE

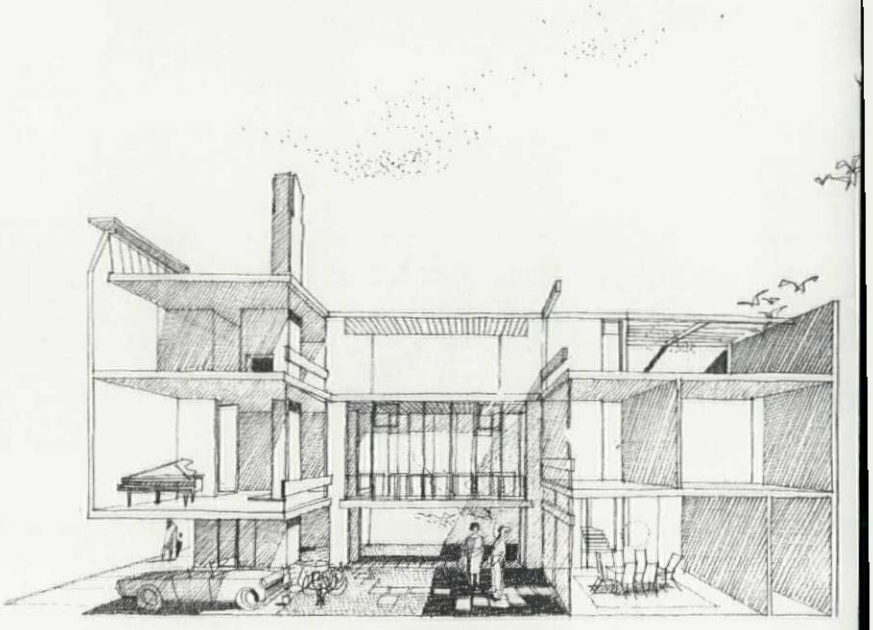
The aspects of culture which make a city livable, said Mumford in his Philadelphia address, cannot be effectively pursued where personal individuality and choice are absent. Today's buildings, he suggested, should invite a warm, human response, avoiding designs based on standardization and mechanical repetition.

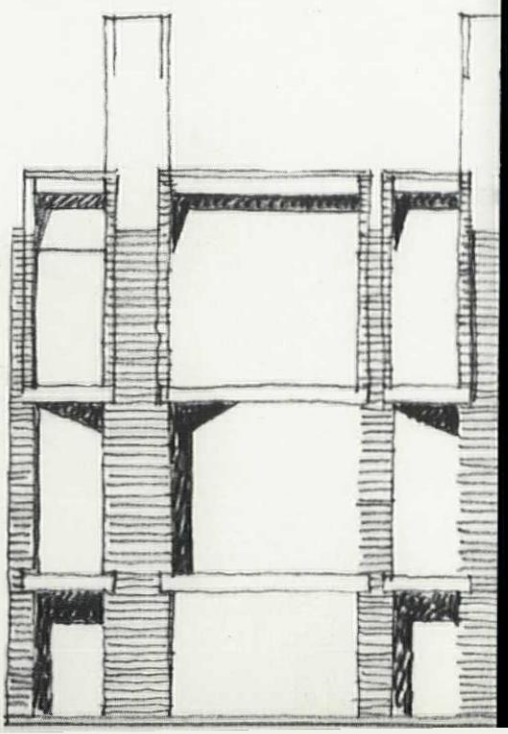
On the other hand, there is no question that some standardization is necessary today in order to meet the great and unfulfilled demands of low- and middle-income housing.

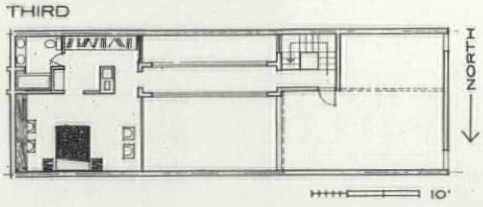
Though designed for upper-middle income groups, the schemes for a series of houses for Philadelphia by Wilhelm V. von Moltke and Mitchell-Giurgola Associates (*acrosspage* and *pages* **126, 127**) do suggest a way of resolving the problem architecturally. The existing neighborhood, the typical city building lot, uniform height requirements, and the use of standardized building components determined the building discipline. Yet within these limitations, the architects have demonstrated that many variations are possible. Some of the units are designed for single occupancy, others for combined professional and living use, and still others offer owner occupancy with an additional rental unit. In contrast to the traditional house, which opens onto street and rear walkway, the new houses will focus inward onto a central court, thus offering a much greater degree of privacy, quiet, and spaciousness than is possible in the traditional house. The court also serves to define and separate the social areas from the more private spaces.

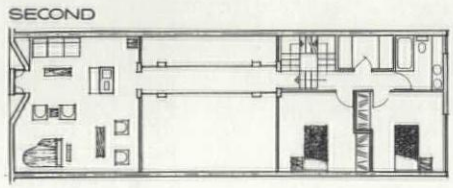
In the earlier schemes **(A, B** and **C)** the connecting link between the two parts of the house is placed to the side of the court, while in the final scheme the connection actually bridges the courtyard. This ultimate solution was found to be more economical and adhered more closely to the building code.

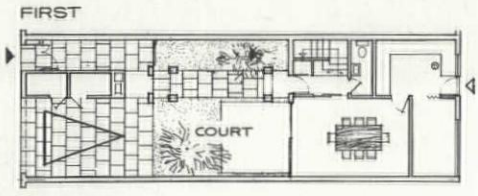
That a certain degree of standardization is desirable is made sharply apparent by Philadelphia's older residential sections. This reinterpretation of the historic houses illustrates that architectural ingenuity can provide individual choice within a larger building discipline.



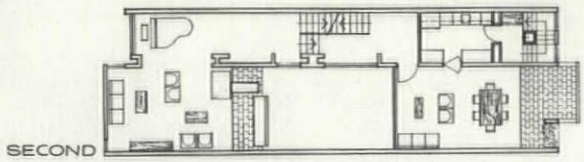


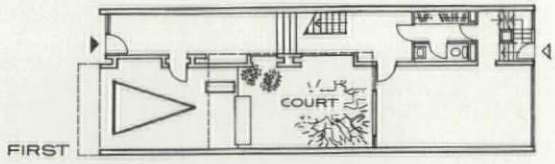




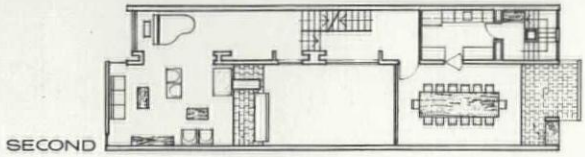


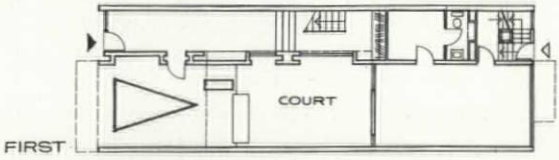
final scheme



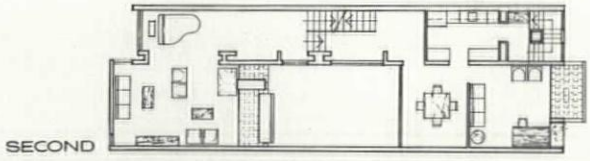


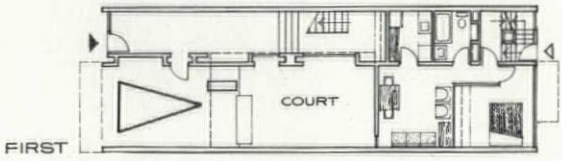
scheme A





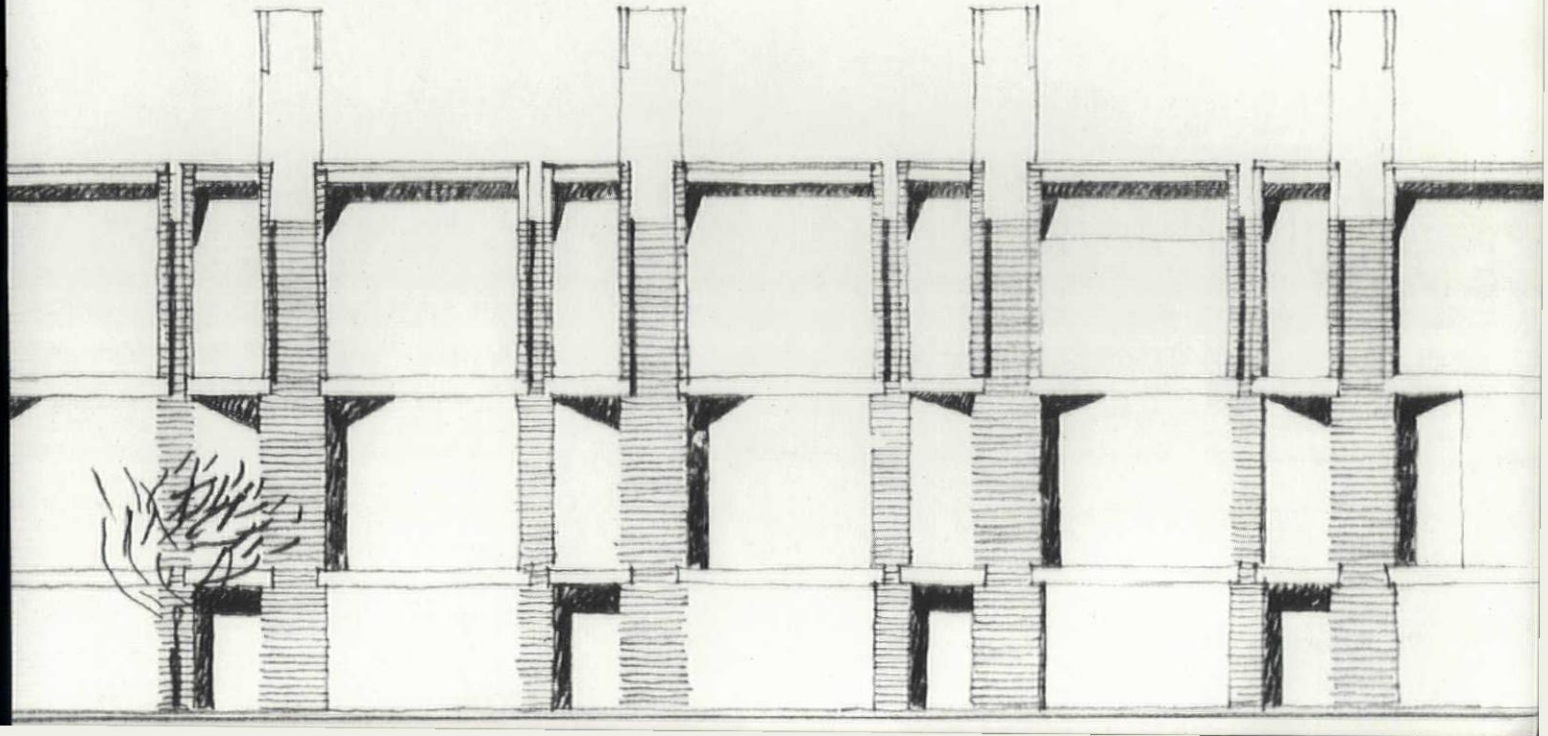
scheme B

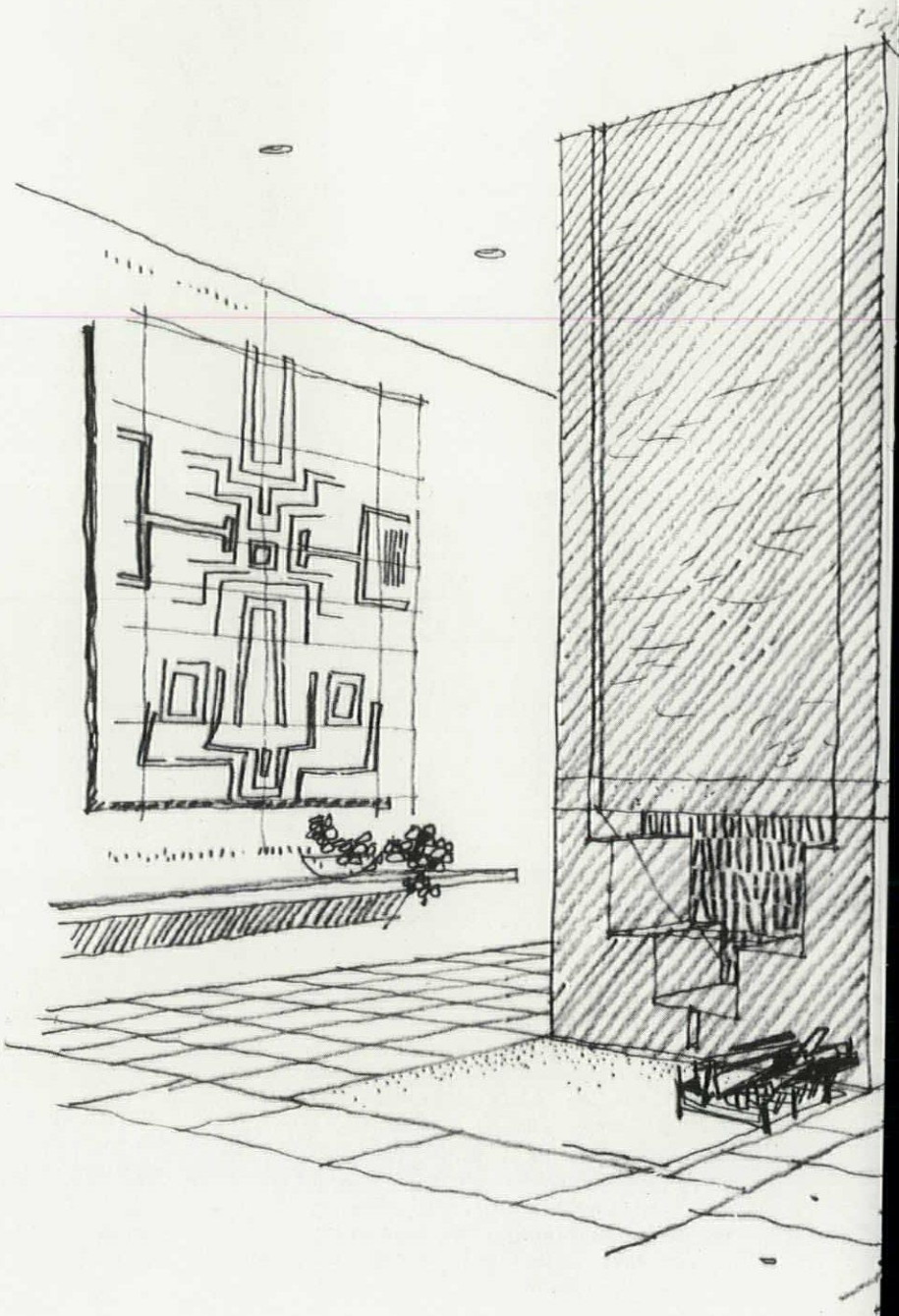


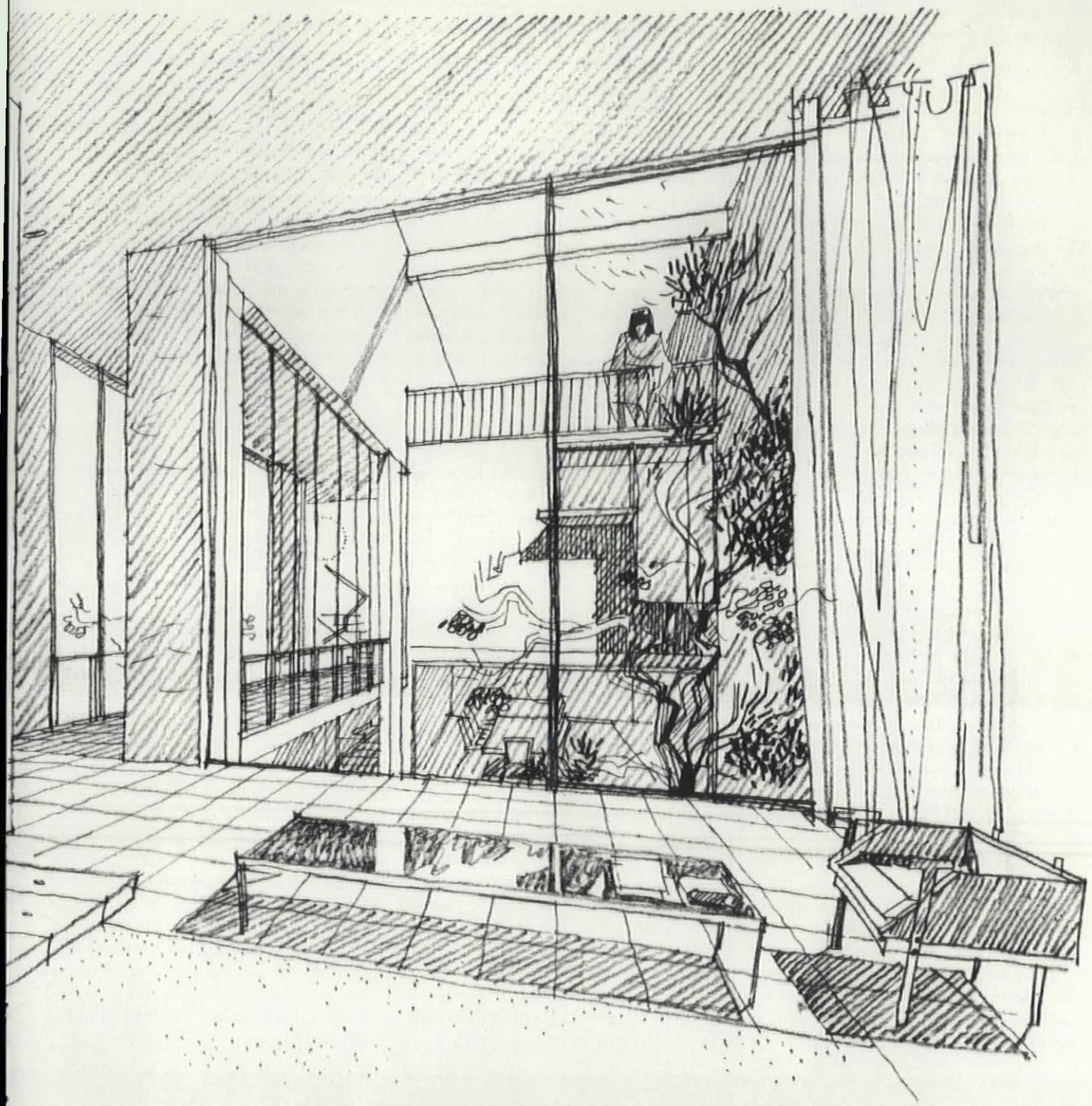


scheme C

Despite standardization of building parts, and rigidity of building width and height, numerous interior arrangements are possible, as suggested in schemes **A, B** *and* **C** (right). *In the final scheme (shown in plan* above, *section* acrosspage, *and elevation* below), *an enclosed passage bridges the courtyard to connect the two parts of the house. Wilhelm V. von Moltke and Mitchell-Giurgola Associates.*







The central court lends interiors of Philadelphia houses a sense of spaciousness and individuality.

STORING THE AUTOMOBILE

Where and how should the automobile be stored within the residential neighborhood? Three almost classic solutions that have been proposed within the last several years are shown here. So simple and effective are these means that one wonders why they have never found application. In all three cases, available surface area permitted a horizontal separation of cars and housing.

In 1955, Yamasaki, Stonorov and Gruen developed the town house cluster (*across-page bottom*) in connection with a redevelopment proposal for downtown Detroit. The town houses were arranged around a central pedestrian court, while a forecourt served as automobile storage. Automobiles and living units were separated very simply, yet within close proximity of each other.

Carl Koch's scheme (*below*), designed in 1957 for a redevelopment area in Buffalo, was a similar approach with short rows of houses placed perpendicular to the street. Cars are again within easy reach, yet kept out of sight in off-street parking spaces. This scheme, however, was at variance with FHA requirements and could not be realized.

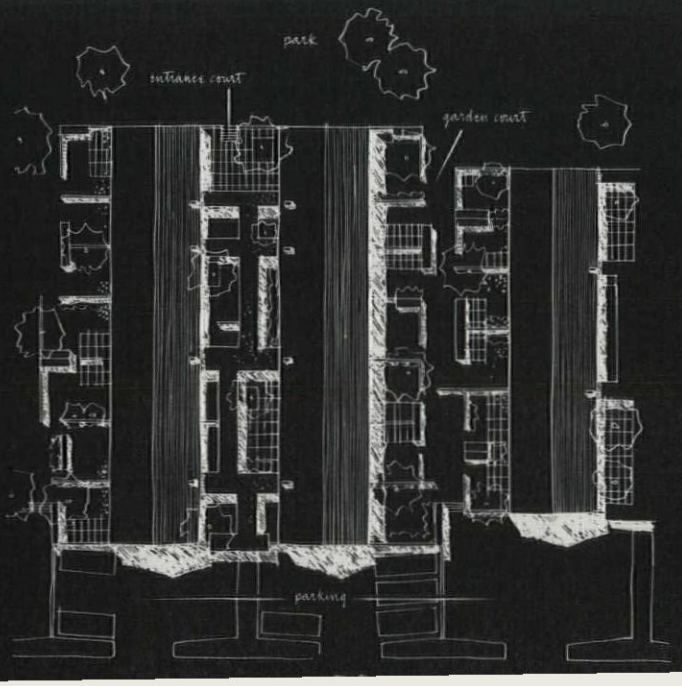
The Eastwick plan for Philadelphia, by Geddes-Brecher-Qualls-Cunningham (*acrosspage top*), gave recognition for the first time to the importance of the car in the form of an automobile court on the service side of the house. The turning radius of the car determined the dimensions of the court. Garages were provided within the houses as well as parking spaces within the court. It was the intention of the architects to emphasize "activity" on one side of the house by collecting all service facilities and traffic in the "activity court" while insuring privacy and quiet on the opposite side of the house.

A provocative scheme by Birkerts & Straub (*pages* 130 and 131) for a section of the Gratiot Redevelopment area in Detroit proposed complete underground parking for high-rise buildings as well as town houses. The surface level was to be developed into "a pattern of 'streets and plazas' in which genuine pedestrian traffic would be generated by 1600 inhabitants and the people servicing them." Town houses were to be reached from the underground parking areas via stair towers and the surface-level, pedestrian streets. The houses were entered from the street side; on the opposite side they opened onto private patios and landscaped green areas. In a later revised scheme, the disposition of the building masses is generally the same, though some underground parking has been converted to surface parking. The demand for more surface parking has been thoughtfully met by depressing the level of the open parking areas.

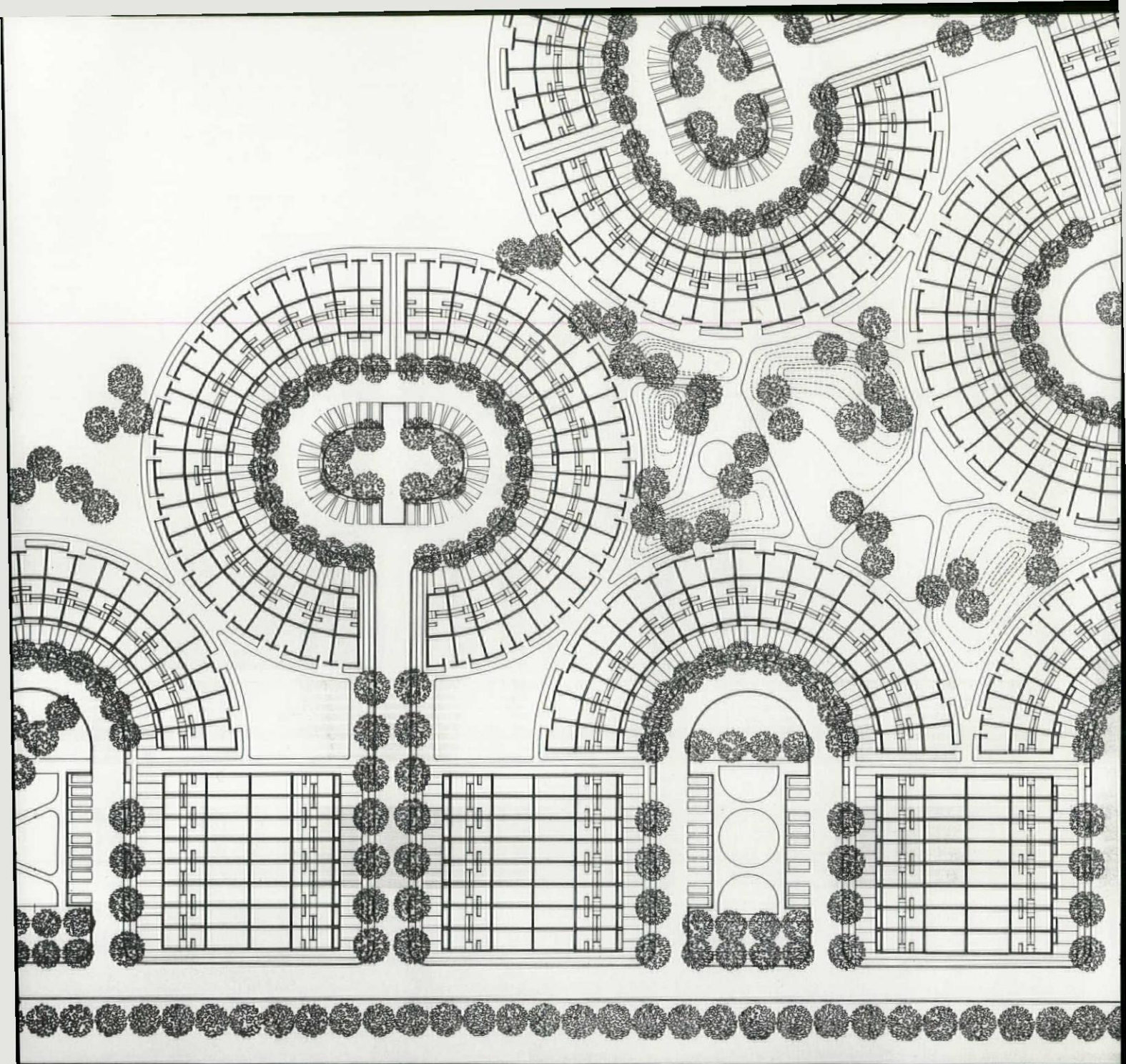
The problem of storing the automobile becomes increasingly difficult, of course, as buildings rise higher. Vertical stacking appears to be the only solution. A rather unique example of vertical stacking is scheduled for completion in 1962 in Chicago. Two circular towers, designed by Bertrand Goldberg Associates (*page* 132), have a ratio of 20 floors of parking to 40 floors of apartments. The circular plan lends itself admirably to the manipulating and storing of automobiles along a continuous ramp, and the circle proves also to be a practical plan form for apartments and their services.

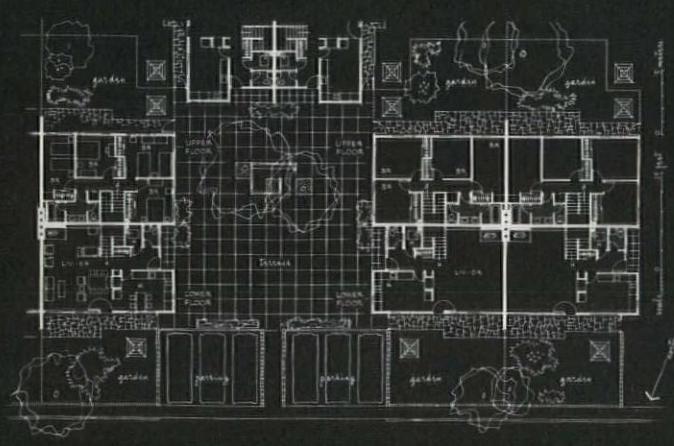
Cadman Plaza, a plan for a downtown Brooklyn area by Architects M. Milton Glass and Whittlesey & Conklin (*page* 133 *top*) is another instance of integrated planning for pedestrians and cars. "The design of the Cadman Plaza Co-operative," according to the architects, "involves a new concept of urban residential construction, combining town houses and high-rise apartments in one structure." Of particular interest is the broad two-level base which serves four functions: (1) it provides space for covered parking in its interior; (2) it permits the erection of rows of two-story town houses with private front yards at the street side; (3) its roof offers small, private terraces for another layer of town houses in the base of the high-rise; (4) its roof provides a continuous terrace level for public recreation purposes and pedestrian walks, free of vehicular traffic, interconnecting the various high-rise towers.

Another interesting and workable stacking solution, in this instance in the form of a man-made "hill," has been proposed by DeMars & Reay (*page* 133 *bottom*) in connection with the Santa Monica Redevelopment competition. The design of the "hills" was based on three practical factors: (1) the required population density for the area; (2) the necessary car storage capacity; (3) the inherent economy of placing all structures above ground. The sides of the garage structures are devoted to terraced apartment units as well as individual houses. Garage space on the interior side of the hill is directly accessible from each terrace apartment. Parking for tower residents is provided near elevators which connect directly with the high-rise floors.



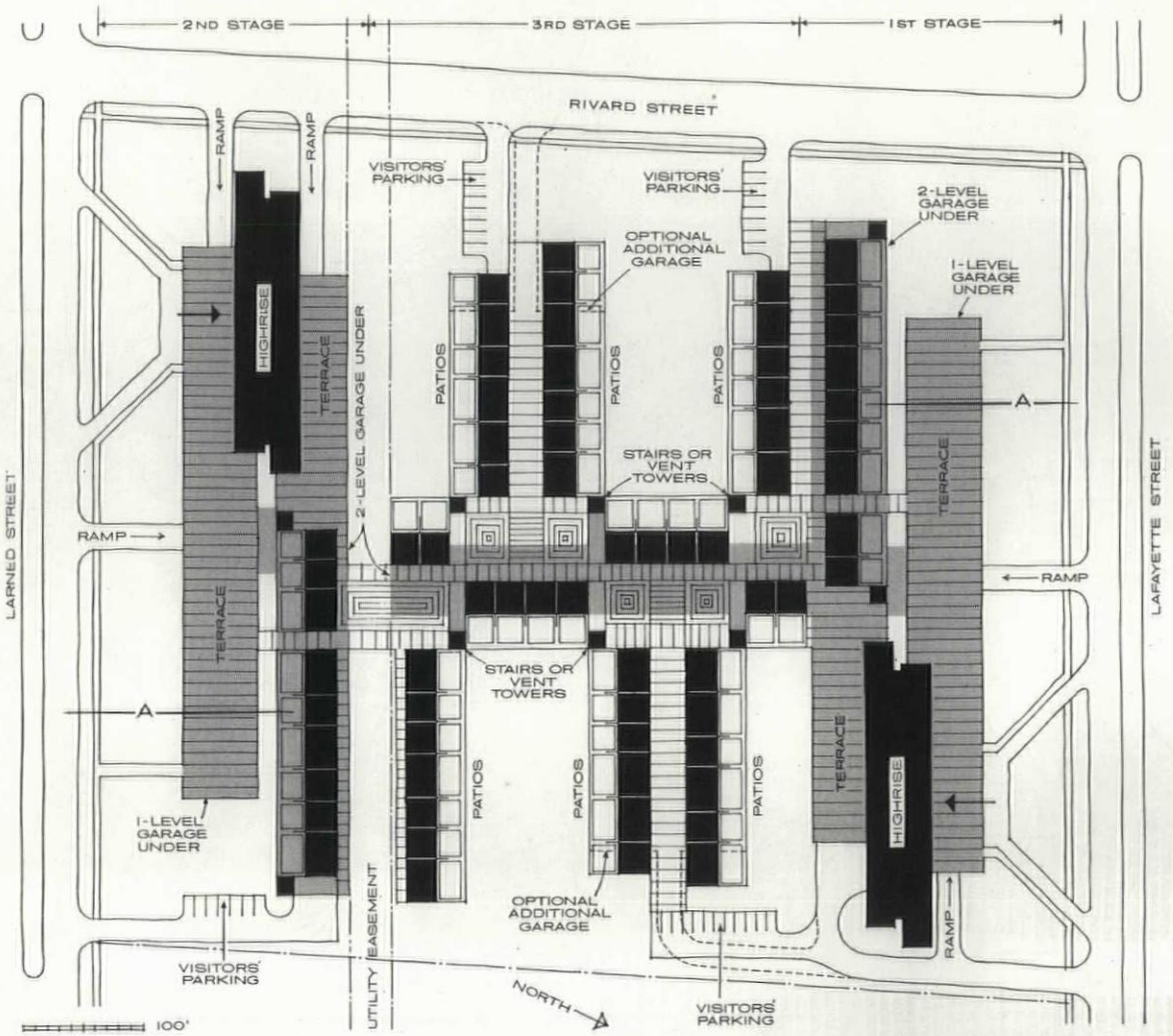
In the Buffalo scheme (right) *rows of houses are placed perpendicularly to the thoroughfare to diminish traffic nuisances; parking strip serves as a further buffer between street and living quarters. Carl Koch & Associates, Inc., Architects.*



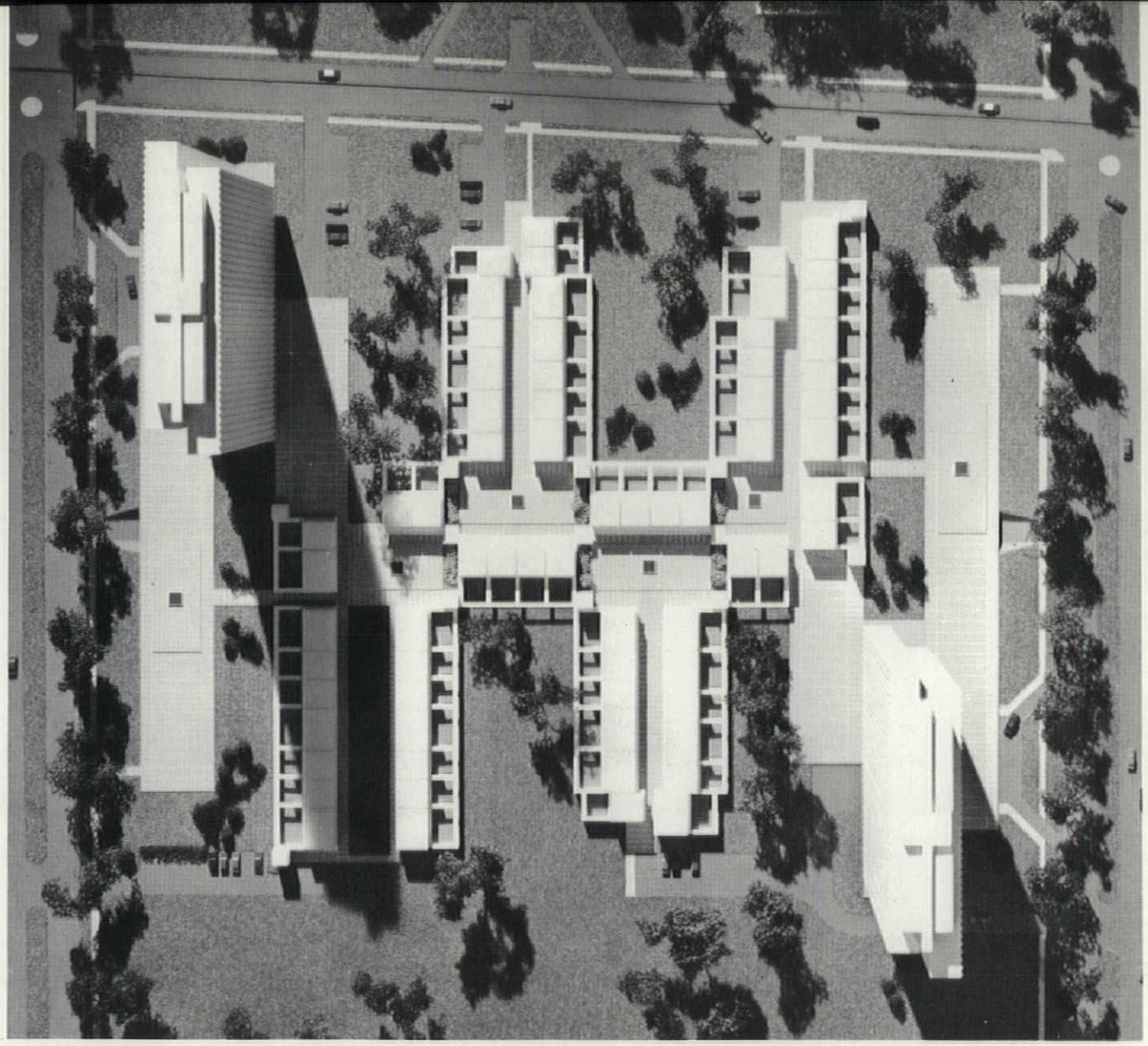


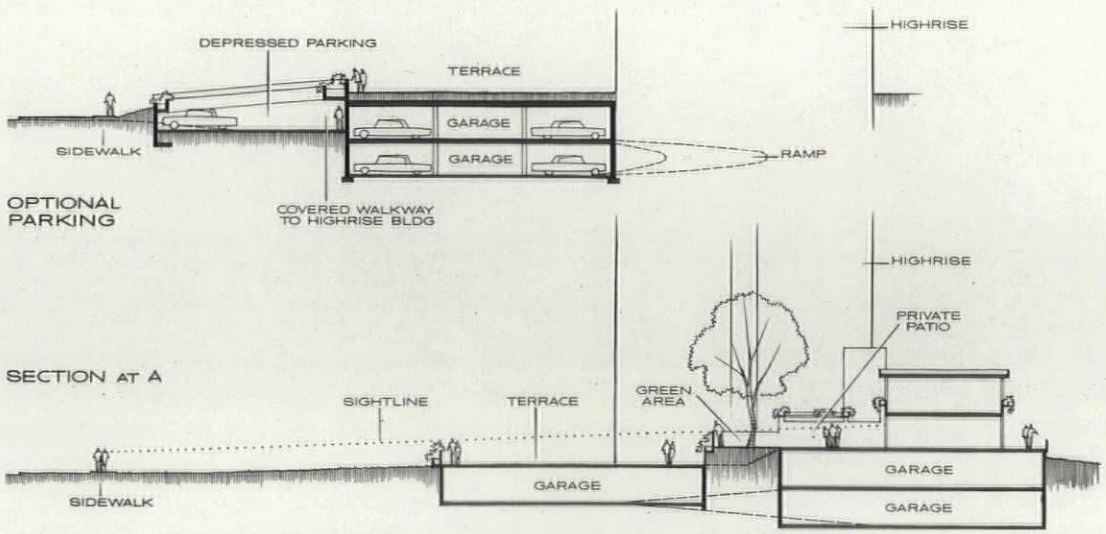
Vehicles in this Eastwick scheme for Philadelphia (above) *are restricted to "activity courts" which follow the easy turning radius of a car. Garage space is available within the houses; visitors' parking is provided at center islands. Geddes-Brecher-Qualls-Cunningham, Architects.*

In the Detroit scheme (left) *houses cluster around a pedestrian court, shielded from the street by off-street parking spaces. Yamasaki, Stonorov and Gruen, Associated Architects.*



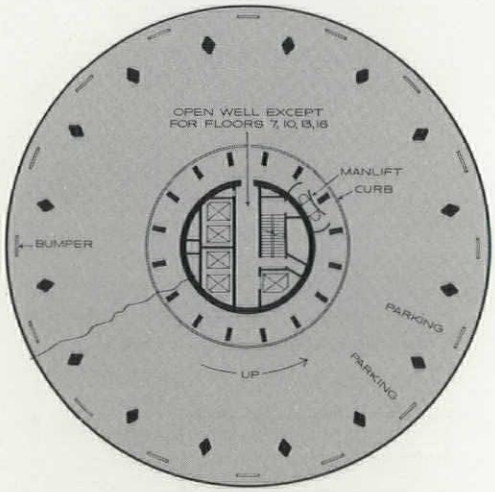
This proposal for Detroit advocates complete isolation of the automobile by providing underground streets and parking spaces for high-rise buildings as well as town houses. The two high-rise structures are accessible from the parking garage by means of elevators. Town houses are entered from the pedestrian streets and plazas, which, in turn, are connected to the underground parking garages by stair towers. A small proportion of visitor parking is provided at surface level. To accommodate FHA requirements for a larger proportion of surface parking spaces, the architects have suggested depressed parking in some areas. Birkerts & Straub, Architects.



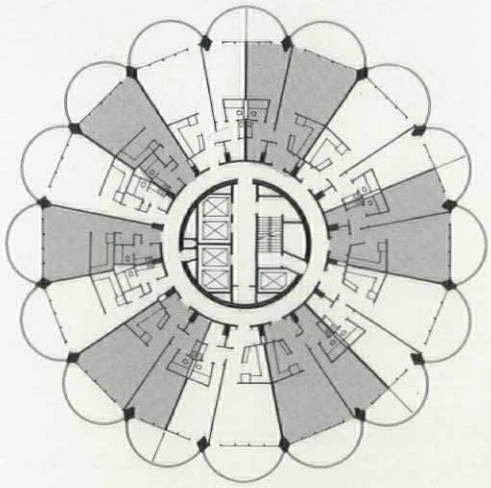


Section through underground parking, as originally proposed for first building phase (top); *section as revised to accommodate FHA requirements* (bottom).

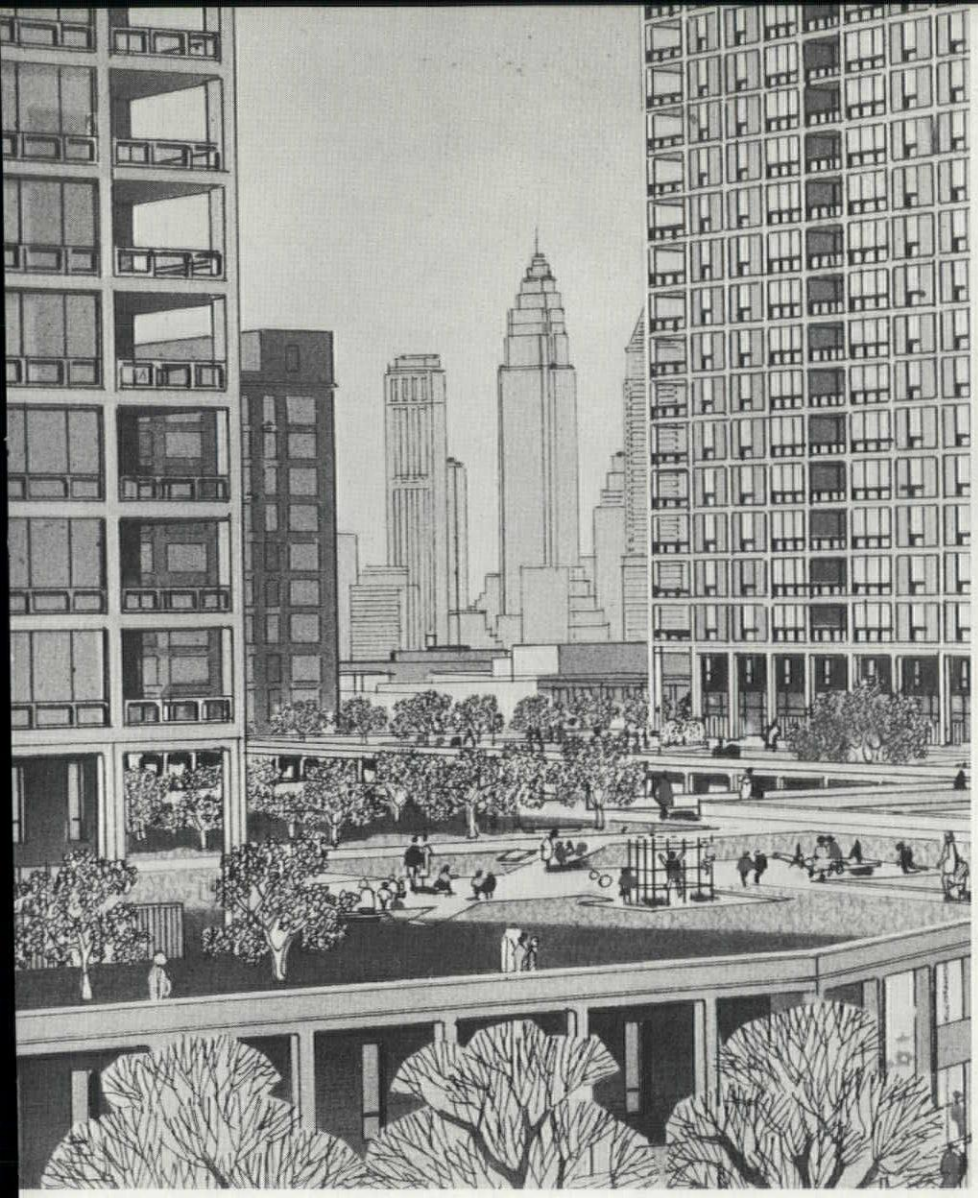
Vertical separation of automobiles and living quarters is effected by devoting bottom 20 floors to parking (typical plan, below left), *the upper 40 floors to apartments (typical plan,* below right). *Circular plan and uniform structural module are suitable for both parking and housing requirements. Bertrand Goldberg Associates, Architects.*



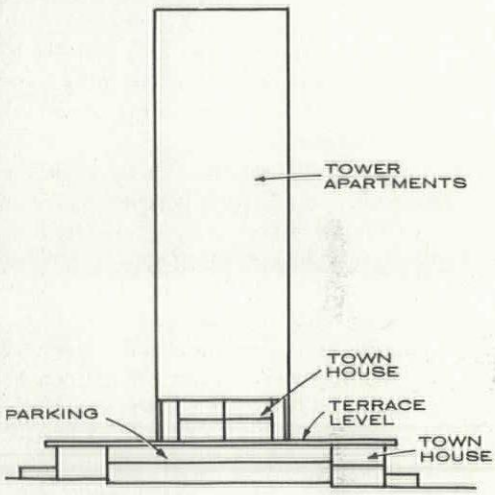
TYPICAL RAMP LEVEL



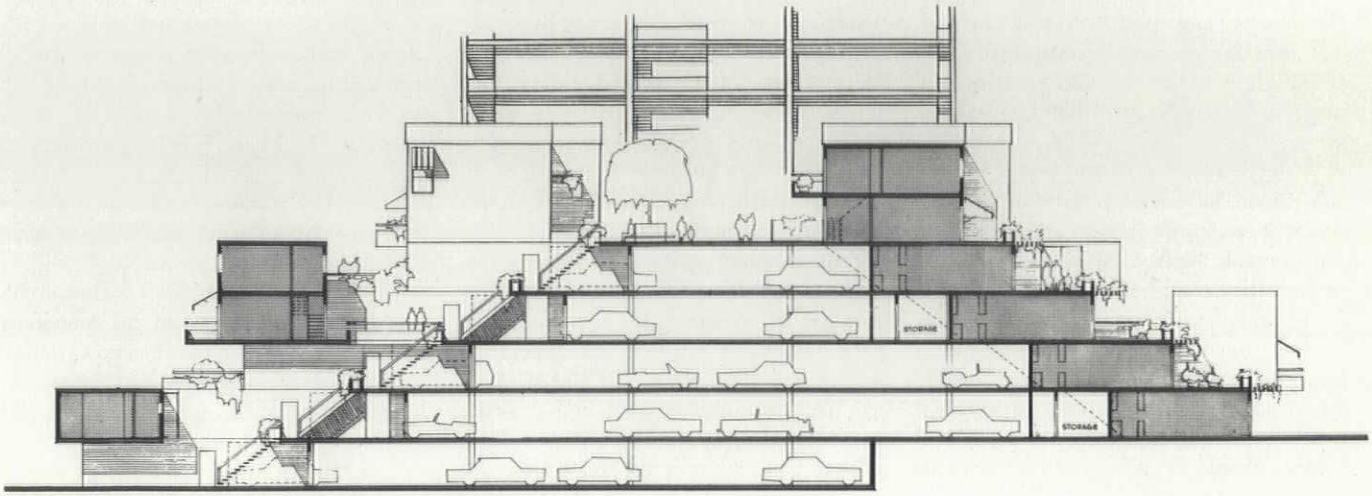
TYPICAL FLOOR 21 THRU 52



Car storage is provided in broad two-story base for high-rise buildings and for two layers of town houses, one at street level, the other at terrace level (section, below). Garage roofs of several high-rise blocks are interconnected to provide elevated pedestrian walkways and traffic-free recreation spaces. M. Milton Glass and Whittlesey & Conklin, Architects.



Interior of man-made mountain contains parking spaces for high-rise building, terrace apartments, and maisonettes. Car storage is directly adjacent to terraced units; parking spaces for high-rise building are at center near elevators to high floors. DeMars & Reay, Architects.



NEW BLUES AND NEW TRENDS

BY JAN C. ROWAN

In this last part of the discussion on urban housing, P/A's Managing Editor traces the changes in design approach.

In a recent report reviewing the first ten years of the famous English "New Towns," the British Ministry of Housing concluded: "People moving to a New Town from a congested area have missed the friendliness of city life, the intimacy of living at close quarters with neighbors and relatives, the convenience of the shop, public house, cinema, or dance hall a few steps around the corner. The malady known as 'New Town blues' undoubtedly exists . . . The New Towns of the future may well find it important to aim at a more truly urban design than would generally have been thought acceptable in the immediate postwar years."

The "New Town blues" is by no means an exclusively British phenomenon. The vast volume of new housing to be built in the U.S.A. makes it imperative that we pause to think about what went wrong with the modern urban theory.

In the days when the means of ground locomotion were either pedestrian or horsedrawn, the urban pattern was rigidly fixed. Broadly speaking, cities were composed of a system of streets lined by sidewalks, which, in turn, were lined by rows of buildings. Density was self-limited by the walk-up height. Commerce and industry consisted of small, family-owned enterprises. Streets, backyards or courts, and squares, piazzas, and similar public areas provided meeting and breathing spaces. Some of these areas were quiet and restful; others, not far distant, were noisy and stimulating. When one moved through a city, there was a constant change of tempo. The result was an urban atmosphere distinctly different from a rural atmosphere. Such variety and vitality of visual, mental, and emotional experiences attracted many people. It is to the city that creative men gravitated, and it is there that civilizations grew.

With the advent of steam power and the subsequent Industrial Revolution, disruption of this pattern began. Industrial production took the form of large, noisy, and evil-smelling complexes manned by anonymous proletarian masses, and commerce started concentrating into ever-growing impersonal establishments. Inventions in building construction and in vertical transportation changed the city's physical scale, and with the advent of new methods of horizontal transportation the urban sprawl began. As a result, a typical metropolitan area became a vast, monotonous, overscaled, uninspiring conglomerate of residences intermixed with industrial and commercial complexes.

Within such a cancerous growth, most of the advantages of an urban environment were lost and the stage for what one could call the first reaction was set. Fast horizontal transportation, besides promoting urban spread, also made it possible for people to live outside the city. Therefore, at the turn of the century, the residential garden city concept was born and an exodus into the pseudorural suburbia began.

In the 1920's, further structural advances, the automobile, and the prevailing social and aesthetic theories prompted the second reaction. In an age of interest in cubism, constructivism, machine-romanticism, and social regimentation, it was inevitable that many architects would consider the cottagy garden city antonymous to all their visions of a new and different civilization. That is when the concept of a city composed of tall towers and slabs set in a vast parkland was born. In *Space, Time and Architecture*, that bible of modern architecture now one generation old, Sigfried Giedion wrote that "in order to achieve in densely populated districts the placement of living quarters amidst greenery, which is imperative, there must be concentration in groups of high buildings which will stand in parks or, at any rate, in open spaces. Only in such a way can the necessary distance between buildings be secured. Giedion also noted that "these slender buildings encountered great opposition. The reason is that their form, being based on purely functional calculations, is an expression coincident with the new space conception of today. . . . Standing like rectangles on end, without the spread and heavy volume of the usual building, they appear all too immaterial to those whose feeling is only for the sprawling solid mass. They have been met by an emotional resistance which has been responsible for their slow acceptance."

Today, twenty years after these words were written, the acceptance is no longer slow. On the contrary, the old revolutionaries, as well as a whole new generation of architects brought up on CIAM ideology, have been influential enough to swing town planning concepts entirely to this point of view. All over the world cities are being built or rebuilt according to the original CIAM precepts. This is unfortunate, because the "emotional resistance" Giedion mentions was well grounded.

There is no reason why buildings must be "rectangles on end." The argument that their form is "based on purely functional calculation" is classic double talk, as is reference to "the new space conception." Just because Mondrian decided to paint a few black stripes at right angles to each other on a piece of canvas, this does not mean that the way we shall live has been permanently decided. Oversized boxes scattered among stretches of grass and trees undoubtedly make for a most healthy environment; but they also create an environment that is antiurban and boring to the extreme. It is basically a rural environment translated into a different scale—a sort of high-rise suburbia with a cultural and emotional climate not much different from one existing in a typical low-rise development.

In the many instances where urban developments planned along these lines have already been built, the inadequacy of this solution is quite evident. To live pigeonholed within a "rectangle standing on end" from which there is nowhere to go except into a car and onto a highway, or for a walk along a continuous stretch of grass, is not urban living at all. An urban environment is made up not of buildings, but of spaces within buildings and between buildings, of life on both sides of the wall, so to speak. In an urban environment one should be able to lead, on both sides of the wall, a life that has a complete gamut of experiences—a life that is pleasant as well as interesting, reposeful as well as exciting. Modern urbanism, reacting to the squalor of the typical 19th-Century cityscape, eliminated the traditional street pattern without offering a satisfactory substitute, and in doing so, it eliminated the interest and excitement from city life; it managed to create a grassy, well-lit, windswept, kindergartenish utopia in which real adults feel lost. This has precipitated what seems to be the beginning of a third reaction. The purpose of this final part of the discussion on urban housing is to document some of its symptoms.

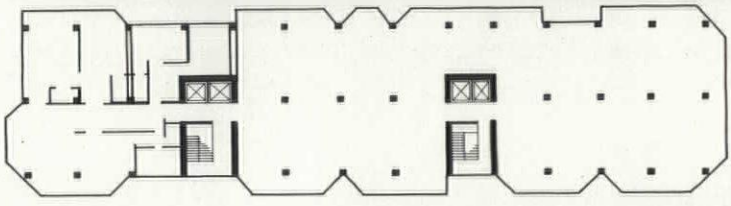
The first symptom appeared when architects became conscious of the monotony inherent in a scheme that has no variation in the scale and sequences of spaces. At this point, the ideal of maximum possible open area was abandoned and the concept of mixing low-rise buildings among

high-rise buildings was introduced. Thus evolved a typical urban redevelopment project consisting of a mixture of towers and townhouses. Although very few mixed low- and high-rise projects have been completed, this solution is by now stereotyped and considered almost outdated. This is due to the realization that it is a rather unimaginative and sterile compromise.

Coincidentally, there is a growing understanding that a sheer rectilinear slab or tower is not necessarily the only desirable architectural form. As has been mentioned previously, a *sine qua non* of a satisfactory urban environment are livable and stimulating spaces, both interior and exterior; and to achieve such spaces a design freedom in spacial and volumetric composition is necessary. Now, when such freedom exists, it is only natural that new concepts are quickly emerging.

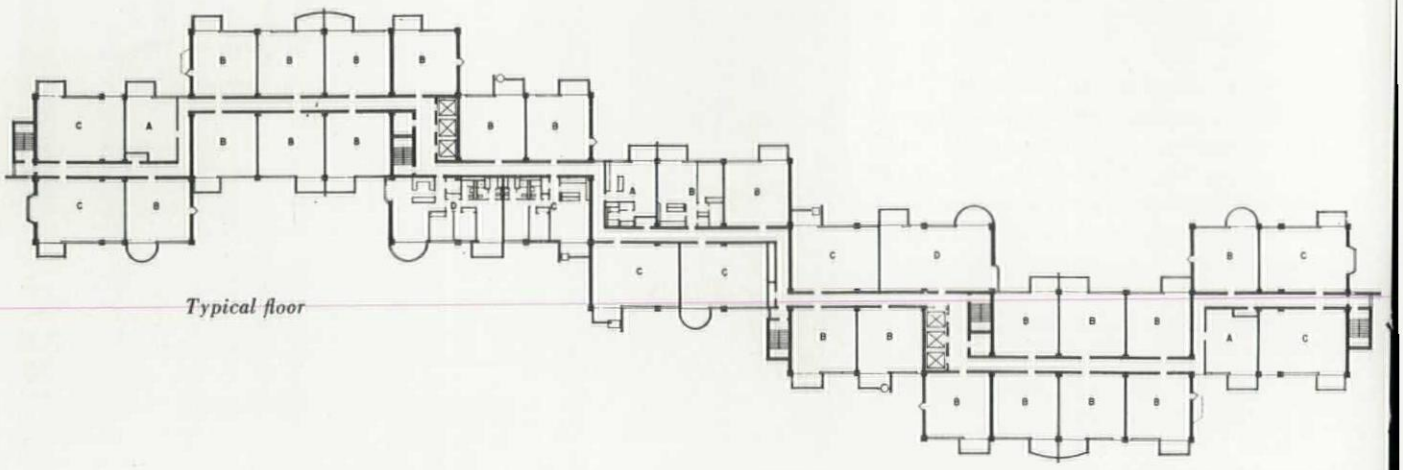
Some of these new approaches to the design of urban housing are illustrated on the following pages. They indicate a further evolution of the third reaction. The "functionalist" upbringing is difficult to eradicate, and the architects, in explaining their designs, often emphasize specific conditions of site or climate. It is significant, however, that the design trends exhibited in these projects do have a common denominator: they all search for an answer to high-density housing whose spirit is truly urban, in opposition to the rules and regulations imposed by CIAM doctrinaires. This would indicate that a widely shared new way of thinking about urban housing is in the offing.

One of the tendencies is to break up the rigidity of a conventional residential parallelepiped. Among several recent proposals that lean in this direction is a design for a building in Montreal (shown on this page) by architects Ponti-Fornarolli-Rosselli and Nathan Shapira. According to the designers of this project, "The office building, oriented toward a single occupancy, expresses a unified motif in its façade; the residental building, on the contrary, emphasizes in its elevation the individual character of each apartment as an identifiable personality. This is an obvious reaction against the monotony and oppressive impact of some recent apartment houses. In our scheme, each apartment can be easily identified in the façade through . . . free interplay of volumes created by a complex composition of windows, balconies, loggias, terraces, and the materials used." Of importance here is the refusal to consider a residential building

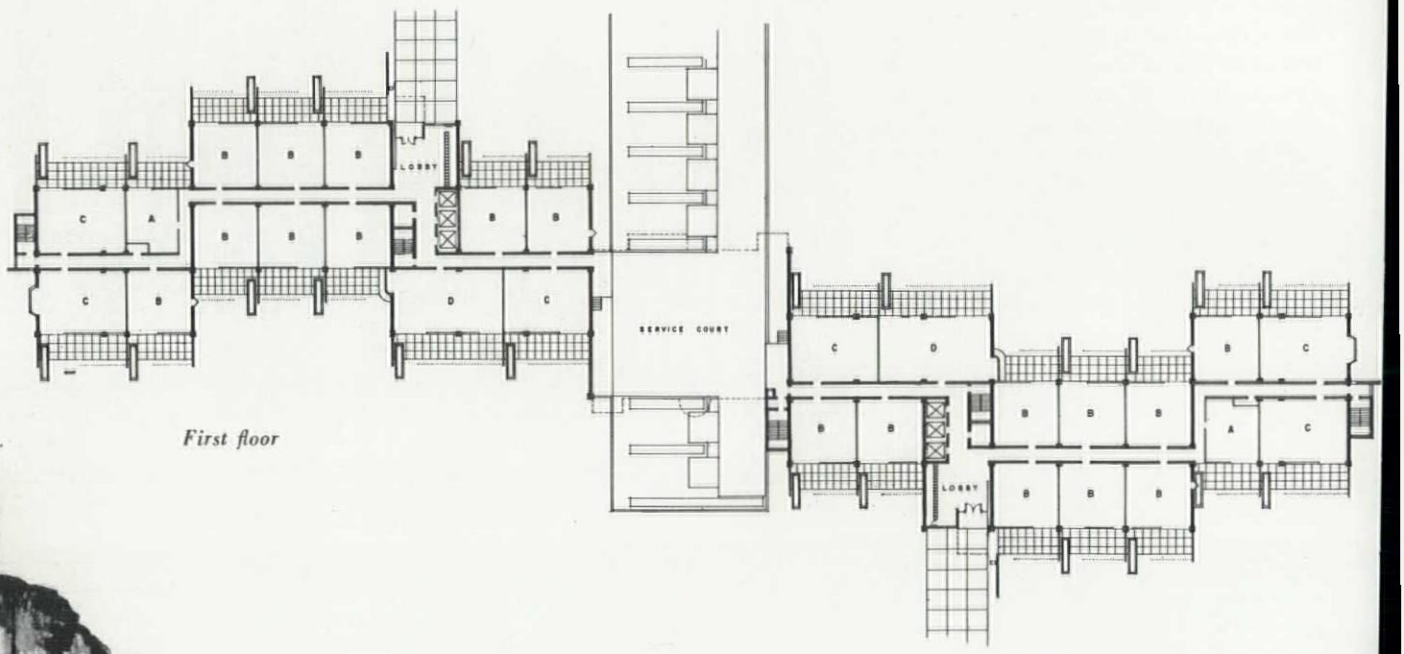


An attempt at plastic expression of individual apartments within a tower building. Photos show detail of the façade and partial view of the building juxtaposed with a loftlike office tower. Ponti-Fornarolli-Roselli and Nathan Shapira, Architects.

Photos this page: Casati



Typical floor



First floor

as being similar to a loft-type office building.

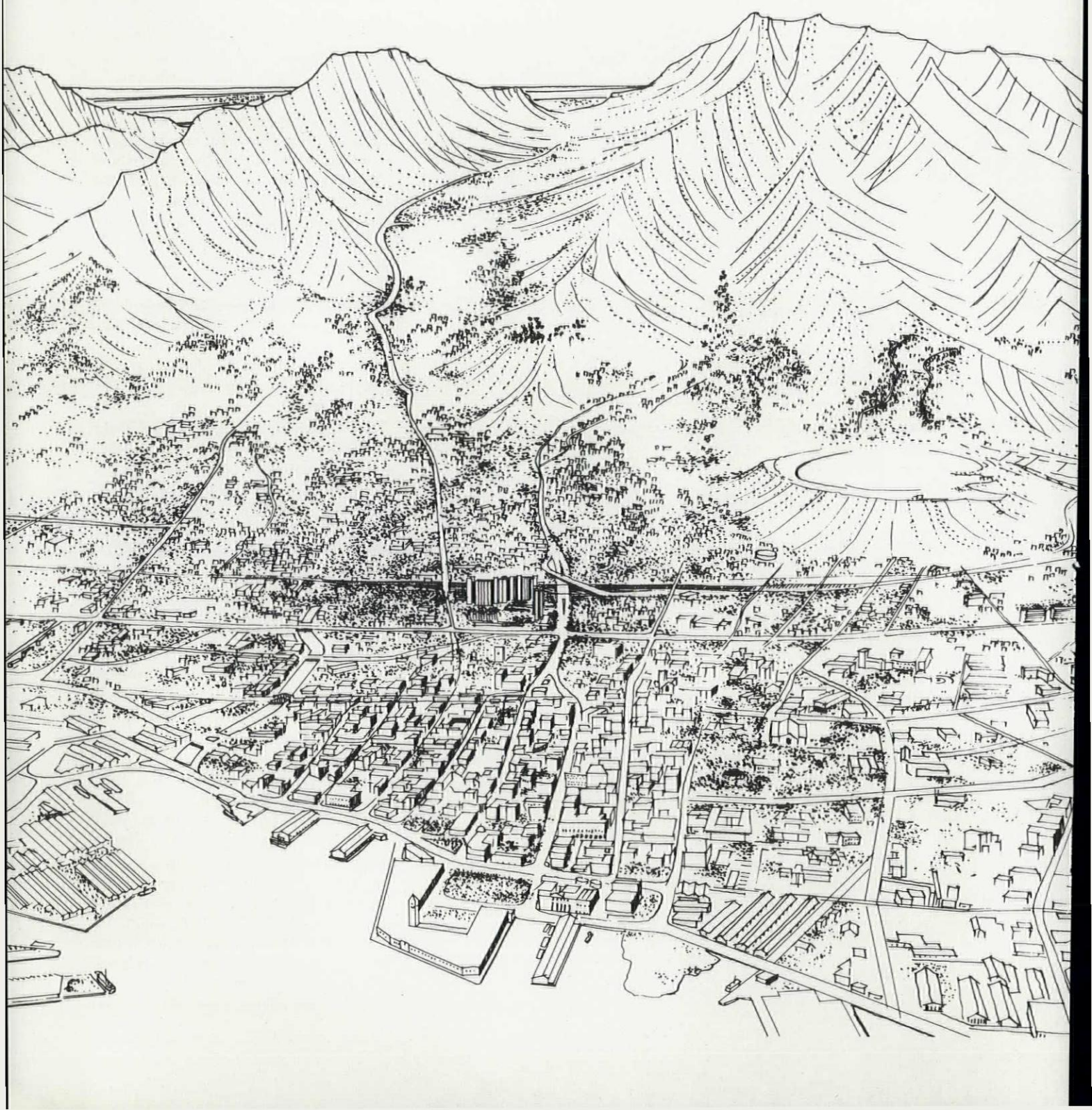
A sociological rationale was used by architects Krokyn & Krokyn in explaining their approach to designing an apartment building, which, they say, "is not a box of pigeonholes ready for the insertion of a species of humans. It is wasteful of penny-wise square footage from the shortsighted speculative landlord standards, but no more than frugal in the use of all-important psychological space in which children can grow happily and families can expand socially with pride in their surroundings and their accomplishments. . . . In a democracy, people cannot be regimented. The pride a person has in personal freedom is an inspired pride, and the restrictions imposed by the conformities of an architecture based entirely upon stuffing families into a structural, monumental grid do nothing to recognize man as an individual with a soul, but only make him aware of his limitations as a by-product of a predominantly economically oriented society. It is our part, as architects, to help redirect society toward the individual. An individual should be a part of the structure; a building, when seen from afar, is only alive when people are present on the galleries and on the terraces; the building is an extension of the street and the city, and the appearance of the individuals on the exterior walls, the flowers they grow in their boxes, make it an active, valid part of the metropolis."

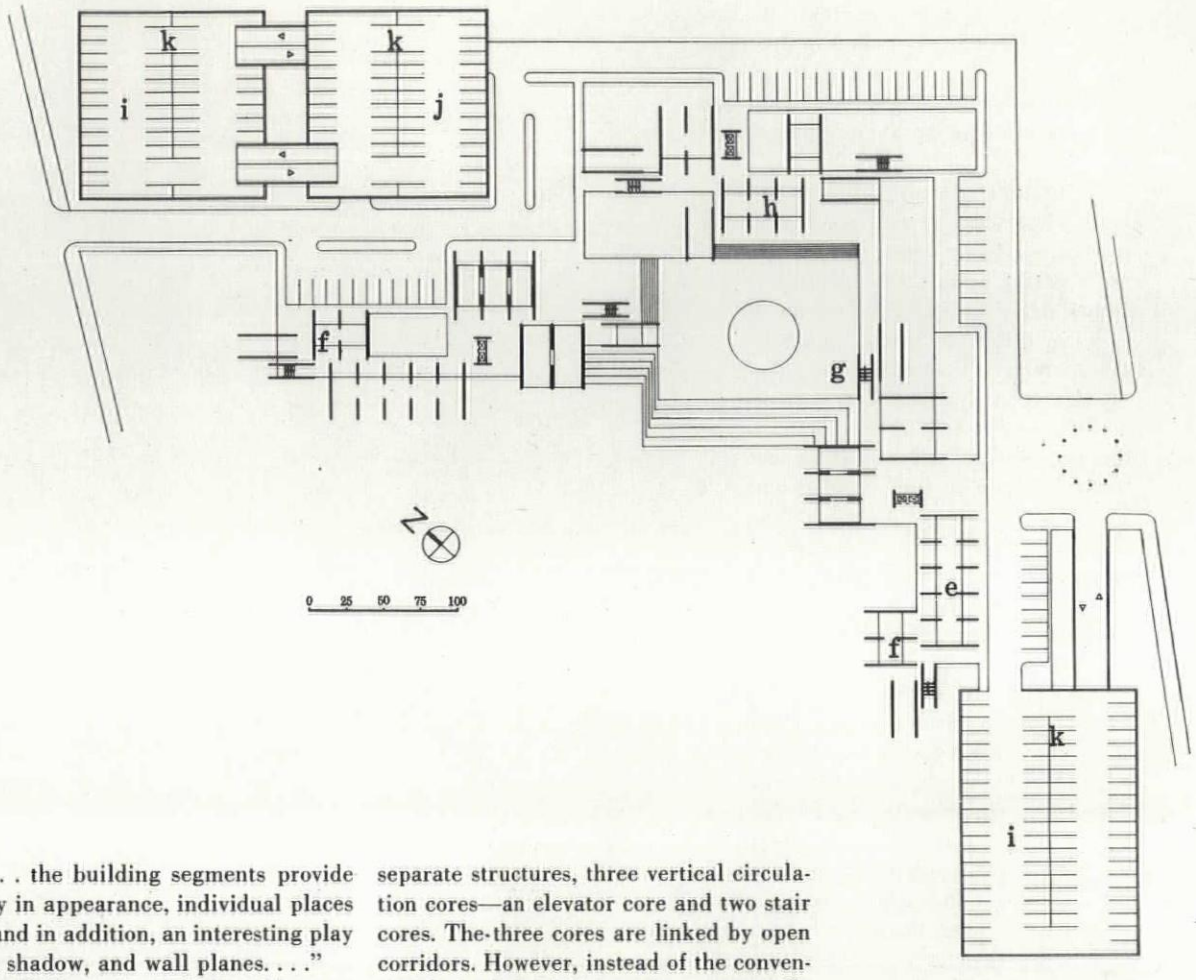
For the redevelopment of Golden Gateway in San Francisco, architects Anshen & Allen submitted a project consisting of four high-rise towers. The plans of one of the towers (*left*) and an elevation view of the whole cluster illustrate clearly a radical departure from the "clean façade" approach. According to the architects, they were motivated by the particular character of San Francisco's existing cityscape: "The site, in total concept, is the city itself; against this backdrop will the buildings rise. The surroundings are all that the eye can see, in a city of rich and varied texture, of angular contrasts of light and shadow, of sweeping view and of sudden, confined vista."

The towers are composed of four basic apartment types combined in different ways and varied by several treatments of windows, balconies, and railings. The result is a richly diverse façade. To quote the architects again: "The motif is San Francisco and it reflects the city's arched windows, epitomized in Coit Tower, the thousands of bay windows, uniquely suited for a city opulent with views, the irregular skyline against which the buildings are placed—mass against mass, plane against

One of the proposals for the redevelopment of San Francisco's Golden Gateway had a group of four irregular high-rise towers. Each tower (left) *was composed of four basic apartment types (A, B, C, and D) combined in different ways and varied by several treatments of windows, balconies, and railings. The massing of the buildings and the architects' concept of the façades, where "the building segments provide a variety in appearance, individual places to live, and in addition, an interesting play of light, shadow, and wall planes . . ." can be seen in the drawing below. Anshen & Allen, Architects.*

The design aim in one of the original proposals for the development of Honolulu's Queen Emma Plaza was to break up the structure into segments, thus eliminating the "sterile, smooth expanse of the flat slab" characteristic of conventional high-rise apartment buildings. Sketch below shows the project in relation to the city. I. M. Pei & Associates, Architects.





In Pei's proposal for Queen Emma Plaza, the first floor was kept mostly open: (e) office, (f) laundry, (g) pool, (h) bathhouse, (i) two-level parking, (j) three-level parking, (k) trellis.

plane . . . the building segments provide a variety in appearance, individual places to live, and in addition, an interesting play of light, shadow, and wall planes. . . ."

Although the rationale is based here on the specific character of San Francisco, the emphasis is on a more romantic, more exciting, and more human living environment. Old San Francisco happens to have such an environment.

Another example of the "breaking up" of residential towers can be seen in one of the more interesting designs recently submitted for consideration by another redevelopment agency — the late Queen Emma Plaza project for Honolulu, Hawaii, by I. M. Pei & Associates.

Pei's proposal (above and following pages) calls for three high-rise towers. Parking is concentrated next to the major thoroughfares in two low garage structures at extreme corners of the site. Between the towers is a platform with a decorative swimming pool. Most of the first floor areas of the towers are left open.

What makes this scheme especially noteworthy is the design concept of the towers. Each of the three buildings has, in almost separate structures, three vertical circulation cores—an elevator core and two stair cores. The three cores are linked by open corridors. However, instead of the conventional single-loaded corridor, a partially double-loaded corridor has been used, although there is only minor overlapping of units.

The units themselves were designed in a rather unorthodox way. The architects felt that apartments of different room counts have their own peculiar optimum dimensions both in width and in depth, and that the squeezing of various apartments into a perimeter strip of a constant dimension is not a satisfactory design procedure. They therefore designed the four required apartment types separately, each one a clean rectangle of different dimensions. The next step was to arrange the units along the access corridor in groups from one to five. The units within each group are identical. Construction is box-type with six-inch concrete slabs supported by eight-inch concrete walls.

All apartments have full-length balconies big enough for outdoor dining, landscaped entrance patios, and cross-

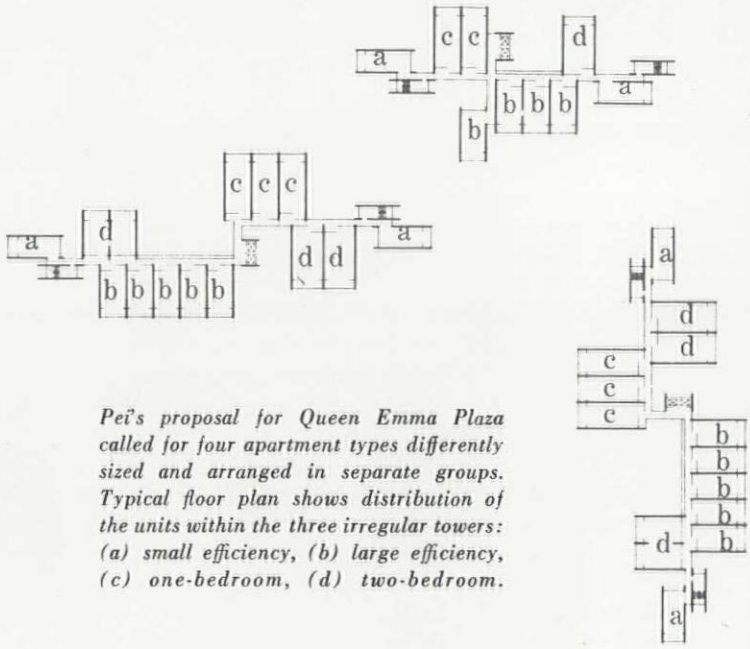
ventilation. Most apartments also have a view in both directions. The concrete rails of the open corridors contain planting troughs with built-in water supply; these will hopefully "create a verdant growth high in the air, adding natural color and ornamentation to both the corridor and the façade of the building."

In submitting this proposal to The Honolulu Redevelopment Agency, the architects stated that their design "permits the breaking up of the structure into segments, thus eliminating the sterile, smooth expanse of the flat slabs so antithetical to the character of tropical living. The slim façades, the frequent shifts in orientation, and the all but separate structures of the elevator core and stairs create a changing plane of exterior wall. The result is a lightness of spirit and the stimulating contrast of open and enclosed spaces." If one disregards the word "tropical" (this was written for the benefit of climate-proud Hawaiians), then the architects aim was to avoid the "sterile, smooth expanse of the flat slab so antithetical to the character of living." Such a statement, coming from an office that had its beginnings deep in the Miesian camp, is significant indeed.

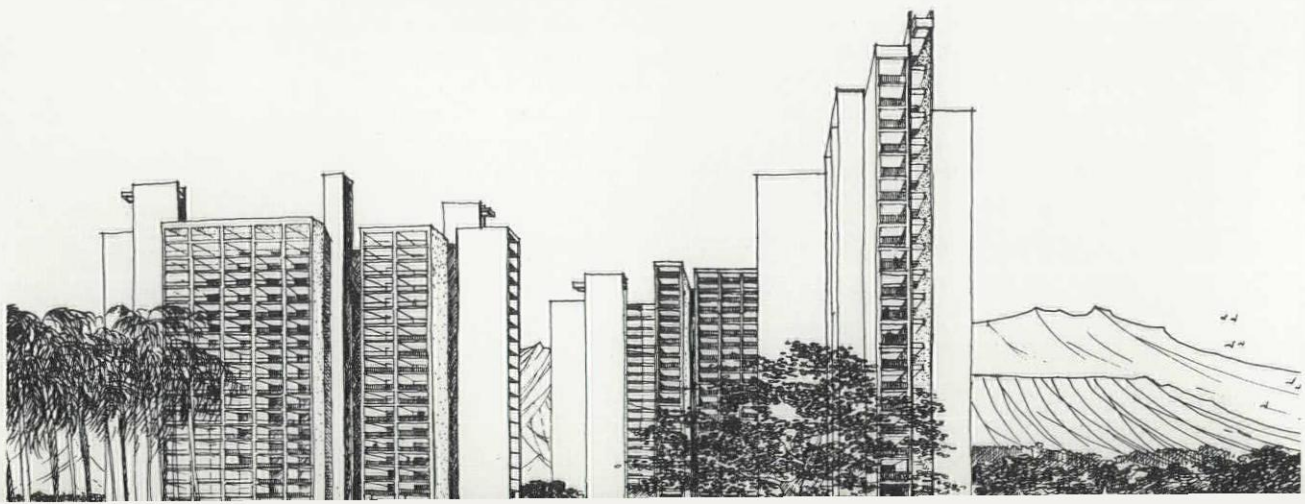
Although the projects shown so far indicate a tendency to design the towers as less slablike masses, they still adhere to the ideal of minimum land coverage. The buildings are slim, the grounds kept free of structures as much as possible, and the "parklike setting" predominates.

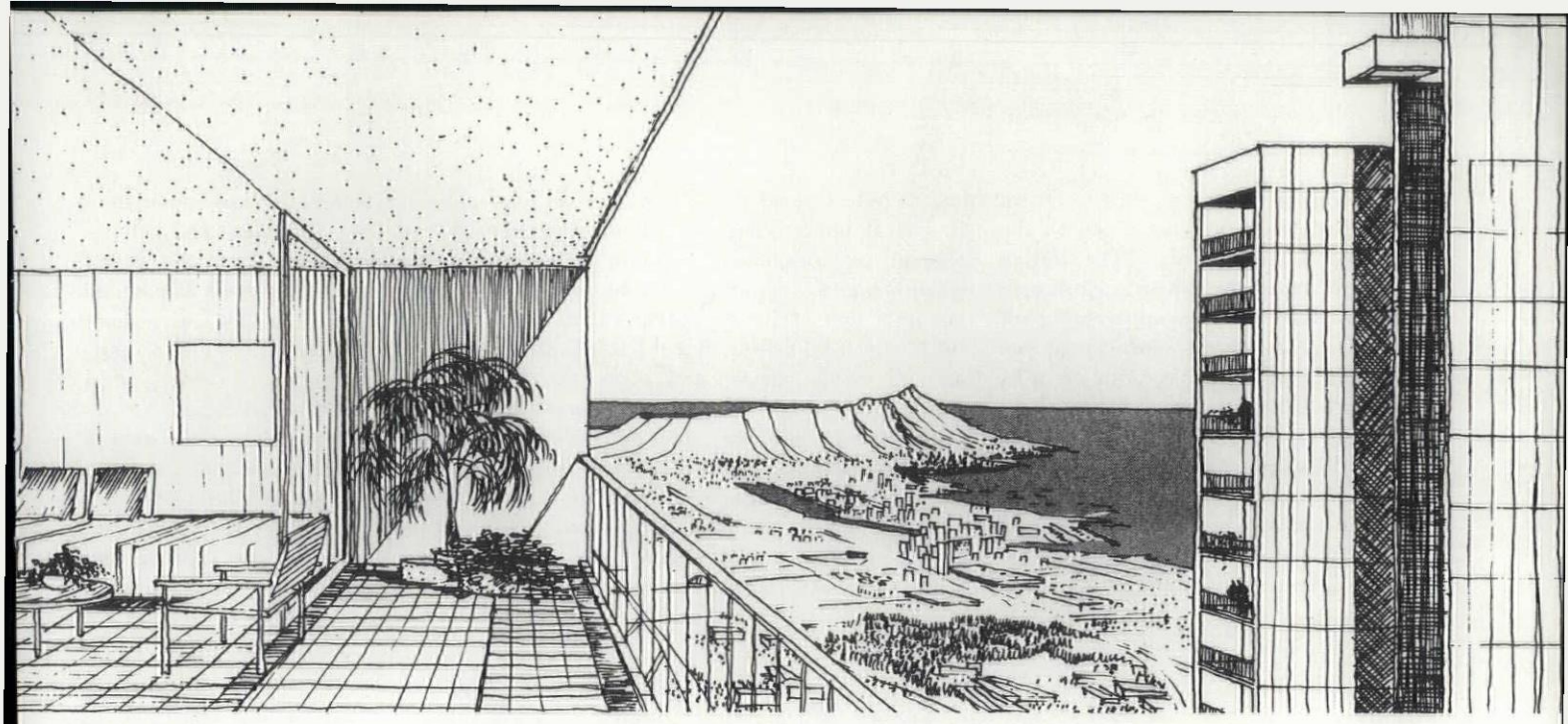
In the projects shown next, another tendency is evident: a partial or complete abandonment of the residential slab or tower concept.

A typical section through one of a group of buildings designed by DeMars and Reay for the redevelopment of Santa Monica's Ocean Park area has already been shown on p. 133 in the discussion of the automobile storage problem. Perspec-



Pei's proposal for Queen Emma Plaza called for four apartment types differently sized and arranged in separate groups. Typical floor plan shows distribution of the units within the three irregular towers: (a) small efficiency, (b) large efficiency, (c) one-bedroom, (d) two-bedroom.






a
lanai
living—sleeping
dining
foyer
patio
kitchen
b
lanai
sleeping
living
kitchen
foyer
entrance patio
c
lanai
bedroom
dining
living
foyer
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d
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living
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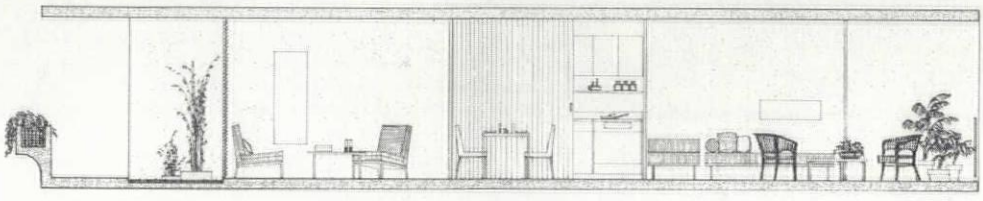
kitchen
foyer
entrance patio
open corridor
0
10'
20'


Corridor
Patio
Living
Dining-Kitchen
Bedroom
Lanai

tive drawing of a typical view is shown below. The design was explained by the architects in these words: "The Italian and Mexican towns whose picturesque aspects so delight visitors are largely built on hills that go steeply down to the sea below; the houses tumble down the hills in a dazzling assortment of forms—light and shadow sharpening their outlines, their roofs adding color, their walls and an occasional shrub or tree meeting first the steps which serve as streets and then the edge of the water itself.

"Santa Monica's wide and sandy beach and the redevelopment area's almost level site—ideal for building but without the inherent picturesqueness of more hilly terrain—suggests a quite different solution from that of Italian fishing villages and Mexican hill towns. But the solution can and should borrow, and apply, the same warmth and human scale, the same appreciation for aesthetic values that make these European and Mexican places so entrancing to visitors, especially Americans, who find in them something lacking in most of their own communities.

"From the careful consideration of three completely practical factors—population density, parking garages and above-ground structures—and from the strong desire to use the land as much as possible for people rather than for cars, there evolved a solution combining tower apartments and parking garages which led to the unique aspect of this design.

"By terracing the sides of the garage structures so that they become man-made "hills," we have made sites for a new kind of living unit: the terrace apartment. The "hills" have five levels—six, counting the roof; steps climb the terrace from street

Perspective drawing of a typical view in one of the designs submitted for redevelopment of Santa Monica's Ocean Park. This proposal consists of a series of towers rising from apexes of man-made mounds. The terraced mounds contain five layers of parking areas and are fringed by yards and housing. DeMars & Reay, Architects.

to roof at frequent intervals with landings at the entrances to apartments. Within the "hills," cars are parked immediately adjacent to the owner's apartment, an accessibility paralleled only in private residence.

"What is proposed here continues the small scale of the city as it is, at the same time that it introduces the larger scale of urban density."

A somewhat similar idea is evident in the proposal by the students of Columbia University's School of Architecture (shown below) for the redevelopment of Welfare Island in New York City. The project, which was carried out under the guidance of Percival Goodman, consists of commercial as well as residential areas. Goodman calls this design approach a "Terrace City." It is based on a theorem that proportion of circulation space to habitable space establishes density and that these vary according to use. Some of the characteristics are: density is based on total built area instead of land area; built areas are of two kinds—that in which natural light and air is desirable (living quarters and some health, civic, recreational, educational and work facilities), and that in which a totally artificial climate is acceptable (work, shopping, service, parking, and so on); use zoning is mixed, except for nuisance activities; traffic zoning is strictly segregated.

A typical section through a residential part is shown below. It shows a "hill" of service roads and parking layers fringed by terraced housing and topped by high-rise apartment buildings.

A proposal by Paul Rudolph (next page) for housing married students at Yale University is a somewhat purer example of the non-slab approach to resi-

View of model of another mixture of terraces and towers: a proposal for redevelopment of New York's Welfare Island that follows Percival Goodman's "Terrace City" concept. Typical section through a residential part shows housing (shaded areas) at edges of layers of parking and service areas. Designed by students at Columbia University.

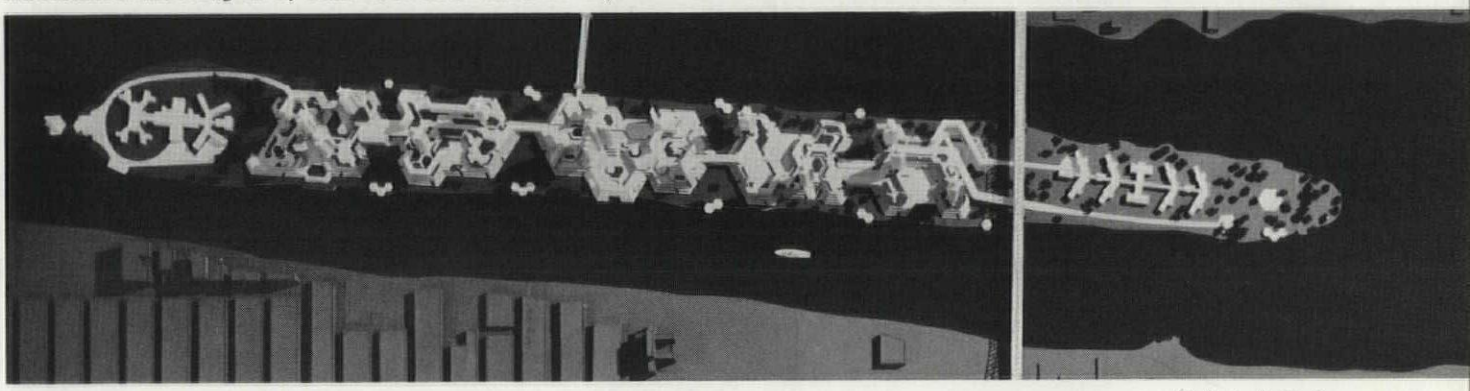
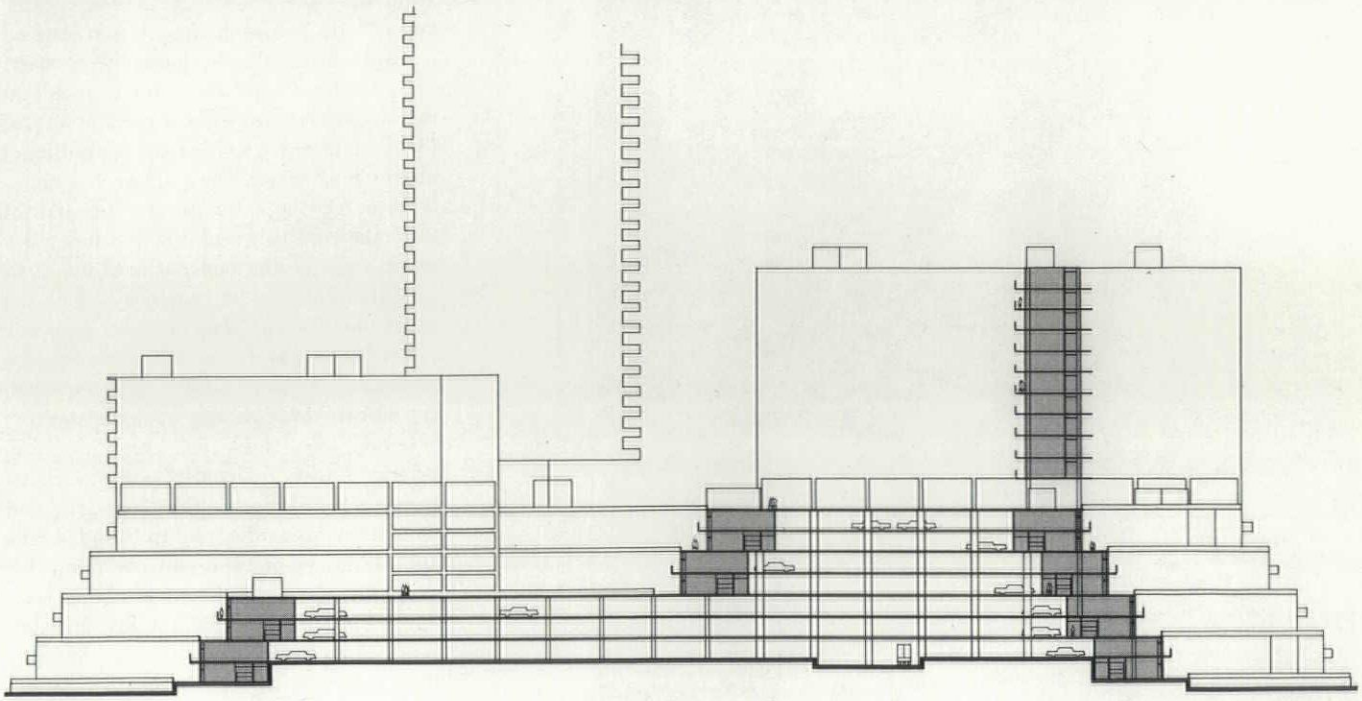
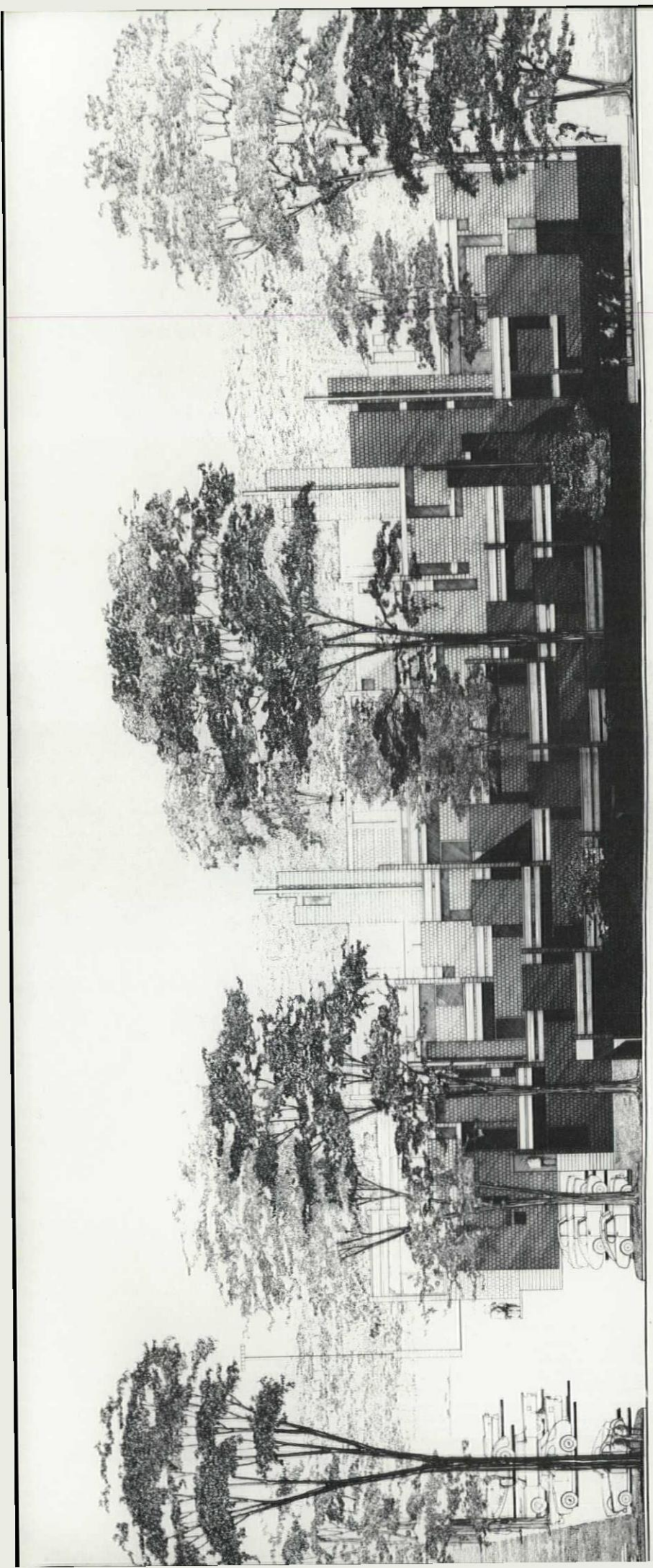


Photo: Louis Checkman





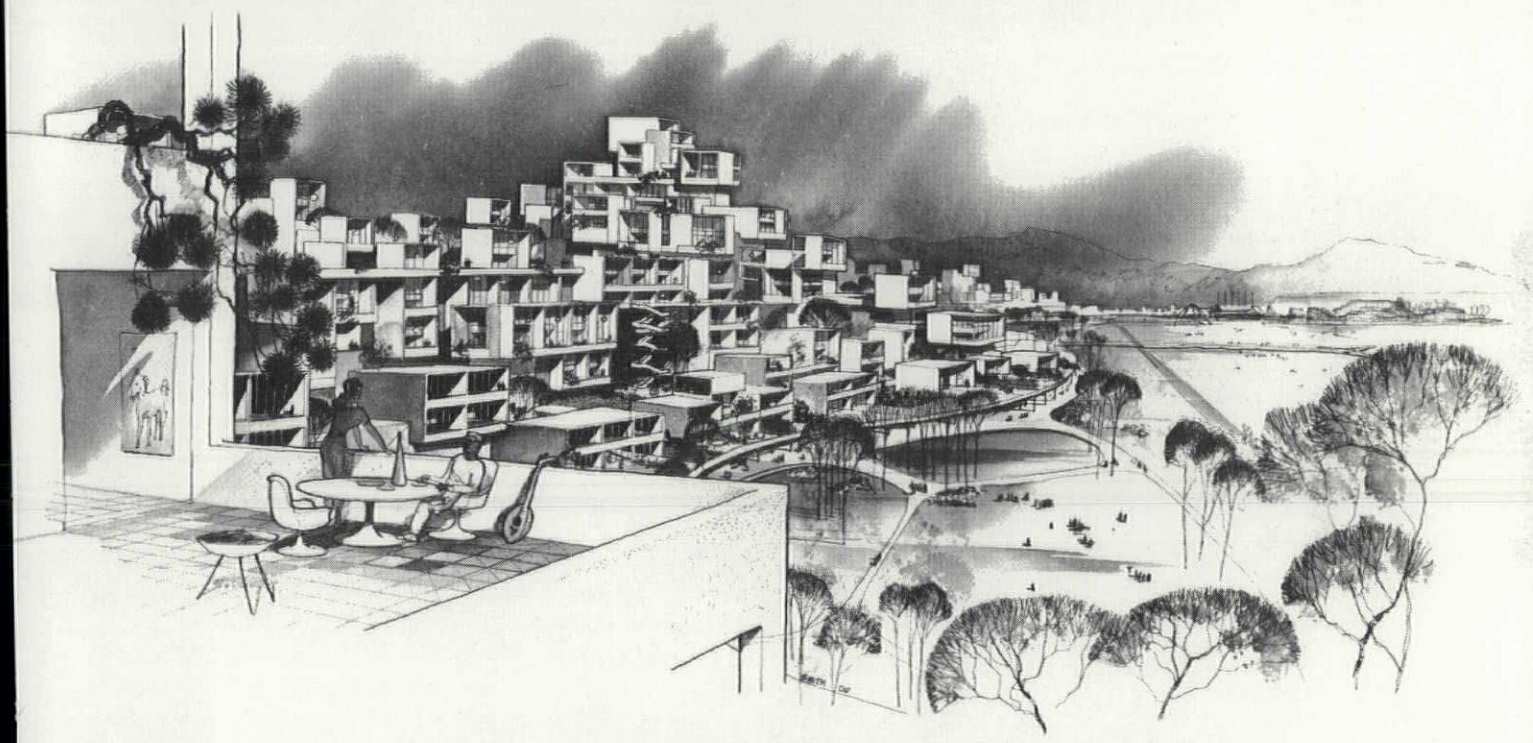
A "non-slab" approach: married students' dormitories for Yale University; Paul Rudolph, Architect.

dential design. Deciding that "it should look like a village, not housing," Rudolph designed a spread-out, low-rise group one to three stories high.

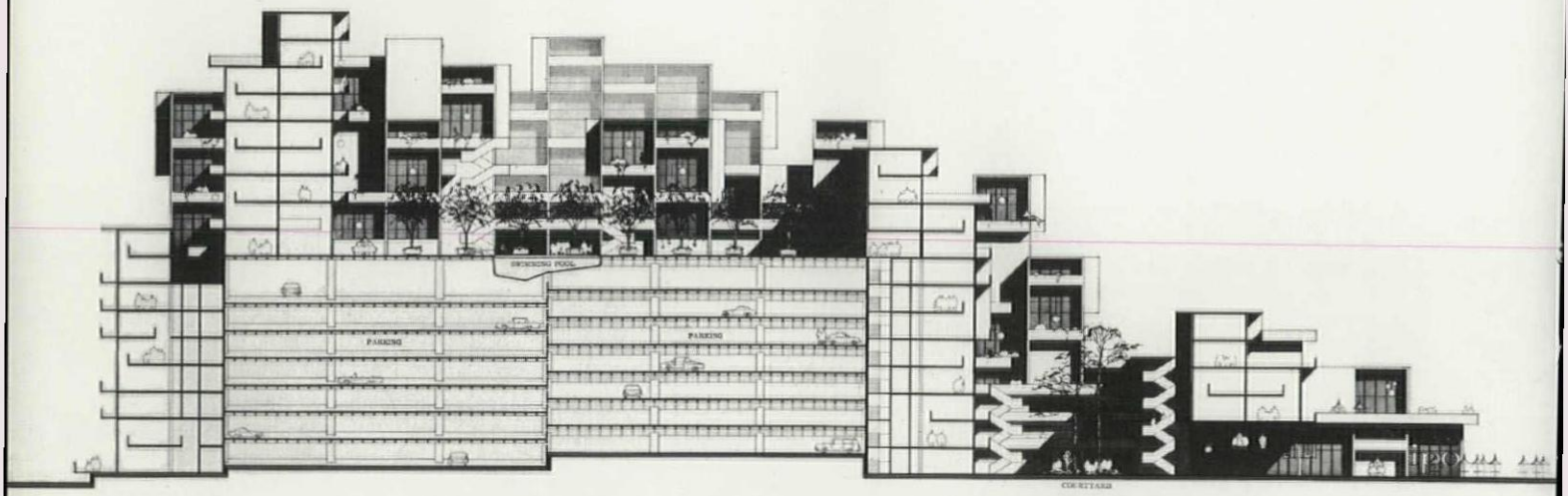
He located the buildings so as to emphasize the natural, gentle slope of the site. Roofs and spaces between buildings provide outdoor living areas. Rudolph's aim to achieve the spatial and sculptural feeling of Mediterranean hillside villages is clearly evident.

A still more extreme example of a "slab-less" solution is another proposal for the redevelopment of Santa Monica's Ocean Park. William L. Pereira & Associates submitted a scheme (right and following pages) where the "hill" concept is carried to an extreme. All living units are pyramided on top of seven-layer, ramped-slab garages shaped into three large mounds interconnected by two narrower spines. Open parking or separate garage structures were thus completely eliminated, and direct access from apartment to the car was achieved. The top of each garage is to be a landscaped roof garden with a swimming pool. The ground floor is to be devoted to stores, services, and a pedestrian promenade. The apartments slope back from the base of the mounds toward the summit and are designed so that each can have its own identity; they all have considerable expanses of glass and large balconies or terraces whose overhangs provide shade as well as privacy, both from below and from above. The apartment types range from efficiency to three bedrooms, with one or two level plans.

The architects' explanation of their design is again in terms of an indigenous approach—the need to satisfy a specific "way of life"—and the inspiration claimed is again from the Mediterranean area: "Californians who make their homes at the seaside are seeking a certain way of life that is not provided by conventional apartment houses. The philosophy underlying our concept for the development of this site was to avoid the commonplace application of the conventional tower or slab building . . . a transposition of the usual monotonous slab or tower complex to the beach simply doesn't work. Surface parking, or great parking structures which cut into the available open space and blot out valuable landscape, are not appropriate. Large balconies and terraces, through ventilation, angles of view, and recreation areas for children and adults are all important for oceanside living. We have, therefore, developed a unique solution, which provides the comforts and convenience of urban living and at the same time is specifically designed to take ad-

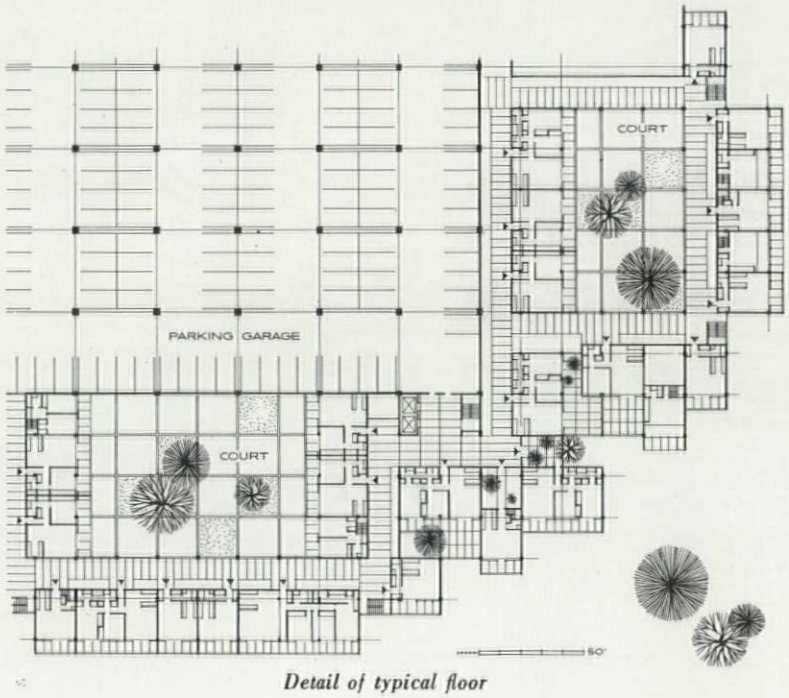


Proposal by William L. Pereira & Associates for redevelopment of Santa Monica's Ocean Park—an extreme example of the "non-slab" approach.



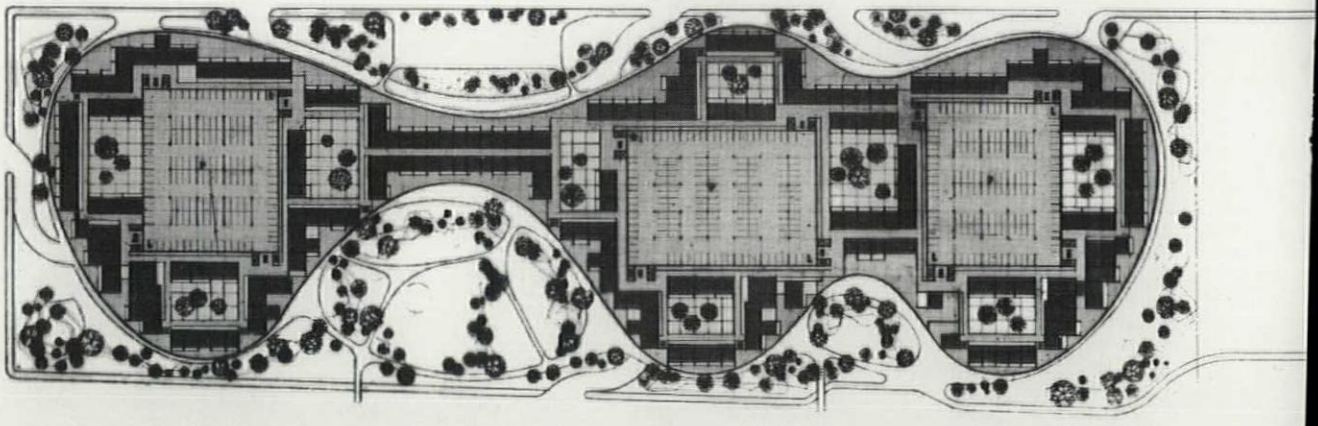
Typical cross-section

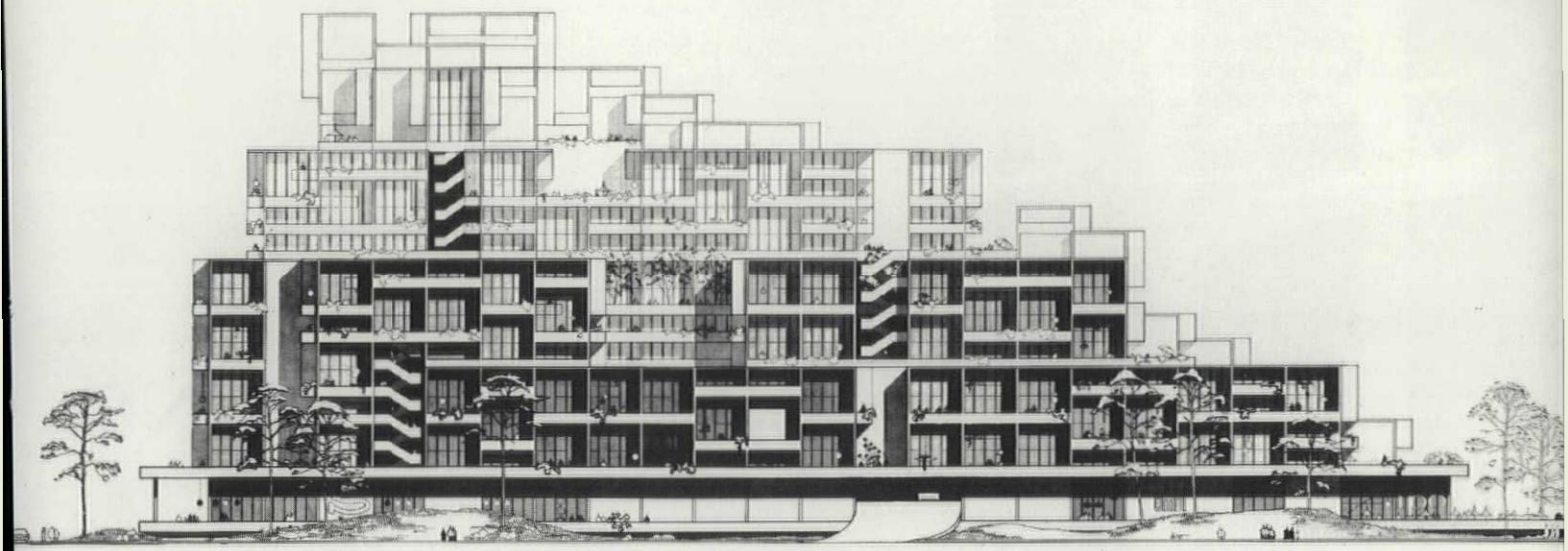
Pereira's scheme for redevelopment of Santa Monica's Ocean Park consists of seven-layer ramped-slab garages shaped into three large mounds interconnected by two narrower spines. On the ground floor are stores, services, and circulation. Apartments and courtyards slope back along the edges of the mounds.



Detail of typical floor

Typical horizontal section





Typical elevation

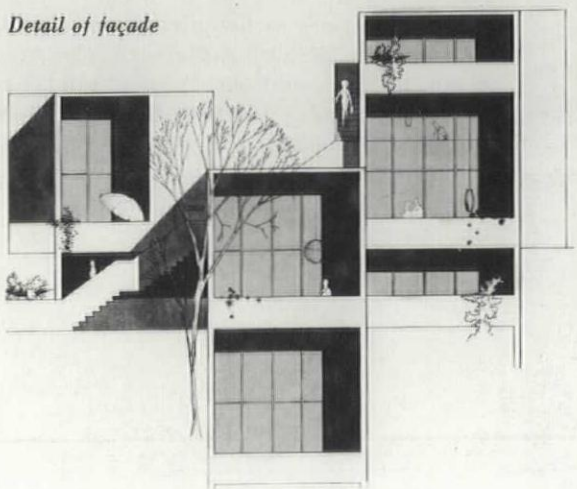
vantage of the benefits and pleasures of living at the beach.

"Our design concept . . . is intended to create the aura of a Mediterranean seaport with homes tumbing down the hillside to the sea, affording every resident a beautiful view. At the same time, a community is created in a balanced architectural and social composition to stand through the years as a noteworthy contribution to Santa Monica, combining the advantages of urban life with the uniquely attractive pattern of living as it is enjoyed in southern California."

Of the projects shown in this article, only one still has a chance of being executed. When economic "reality" rears its ugly head, dreams all too often fall by the wayside. Designs conceived in terms not of least quantities of materials but of most livable spaces are bound to have a somewhat higher construction cost figure. Whether this extra cost is prohibitive, when considered in terms of the total standard of living, is open to question. With modern technology, one can certainly construct urban housing different from the recent crop of "monotonous slabs and towers," perhaps not at a lowest but at a *reasonable* cost. Yet as long as "economic reality" means the free spending of billions of dollars for a gadget-full, deodorized, puerile way of life propelled up and down gleaming eight-lane super highways, it is unlikely that more imaginative solutions to the most basic aspect of human life, the habitable shelter itself, will find ready acceptance.

These and many other recent projects not shown here indicate that a new trend in the design of high density urban housing does exist and that architects are at last searching for solutions suitable to the present age. Their designs demonstrate that urban living can be conceived in terms superior to a traditional parallelepiped house blown up to tremendous, inhuman proportions, subdivided into numbered cells, and set within a pseudorural meadowland. In designing houses, architects have tended for quite some time to create spaces where life is freed from the "four walls" space and mass concept. And, as Louis Kahn likes to say, an apartment building is nothing else but a house upon a house upon a house upon a house upon a house.

Detail of façade



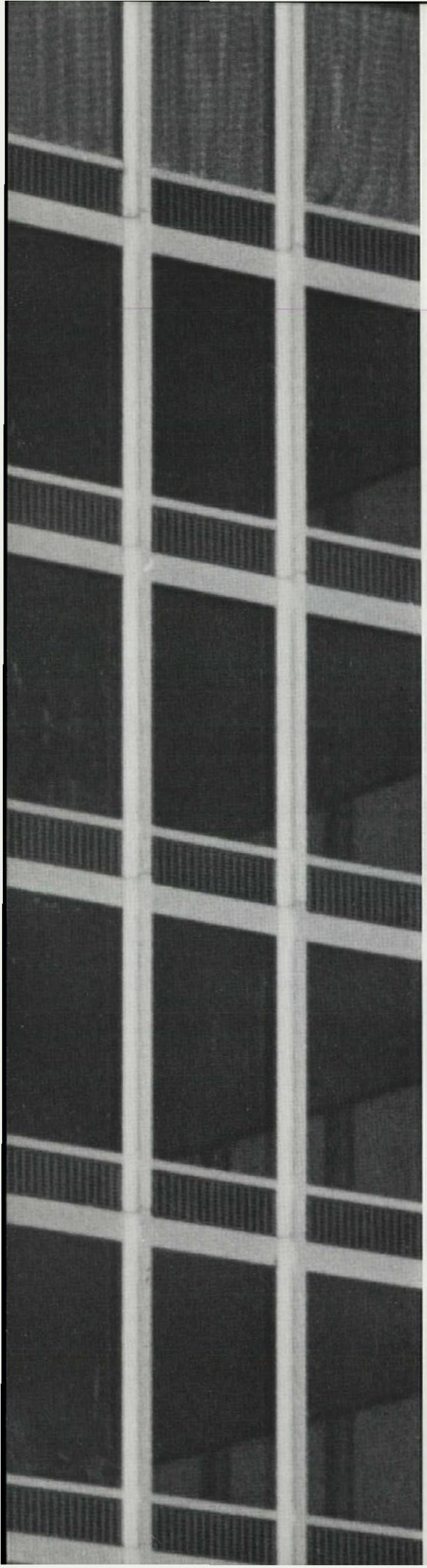


Photo: Baltazar Korab

DOMESTICATING

Large expanses of glass wall have met with general approval in the modern office building because of the quantities of light they admit and the liberating vistas they afford, but in urban apartment buildings they have been exploited with notable reluctance.

The New York area has recently acquired two high-rise residential developments of real distinction, both using floor-to-ceiling window walls: Ludwig Mies van der Rohe's Colonnade Park in Newark, New Jersey, (*left*), and I. M. Pei's Kips Bay Plaza in Manhattan (*acrosspage*).

One reason for the sluggish acceptance by the public of glass walls in urban apartments has been the general inability to design convenient and effective interior window treatments. The proper treatment should permit both the broadest possible view and complete privacy; it should provide control of sun and glare; and it must allow for mechanical equipment (convectors, registers, etc.) and for operable vents. Three further refinements in the design concept should be considered: (1) There is a need in some cases to have a feeling of added security at the "precipice" edge of low windows. (2) It should be possible to provide partial privacy and at the same time permit a partial view. (3) A sensitive treatment should allow full expression of any distinctive architectural detail of the building.

At Colonnade Park, the aluminum curtain wall (*left*) articulates single-paned, nonoperable windows. Below the windows is a benchlike enclosure that accommodates convectors, air-conditioning units, and lift-up panels for natural ventilation. Outside air is admitted through grilles beneath the windows. (See SELECTED DETAIL on closing page of this article.)

At Kips Bay Plaza, there are two significant differences: (1) The deep concrete bearing wall, which acts to some extent as a sun screen (*right*), has curved corners at the tops of the windows. (2) The grilles are mostly dummies and are used only as fresh air inlets for air-conditioning units; fresh air is otherwise admitted by glass hoppers that open inward beneath the large panes. Both these considerations narrow the choice of proper window covering.

The most popular contemporary window treatment has been the floor-length traverse drapery, but alternative methods deserve more careful attention. Methods of shielding windows can be divided into two basic types: those that open with a horizontal action and those that move vertically. In the first category, besides simple traverse draperies of various lengths, are vertical venetian blinds and sliding panels. In the second group are standard venetian blinds, pull-down shades, and shades that pull up from the bottom.

The popular ceiling-hung traverse drapery is a straightforward treatment that is compatible with the architecture of

GLASS WALLS

purely rectilinear buildings like those at Colonnade Park; but at Kips Bay it shields the two end "arches" even when open, and when closed conceals this detail entirely. Although this method does permit a wide view, almost no covering that closes horizontally can be drawn back far enough to reveal the full window. Furthermore, a simple traverse drapery achieves no satisfactory partial privacy. Tiered traverse curtains, on the other hand, would make this possible when only the lower pair is closed. The lengths of the tiers could be unequal, leaving only a clerestory-like strip at the top to retain a view of skyline and, at Kips Bay, the arches.

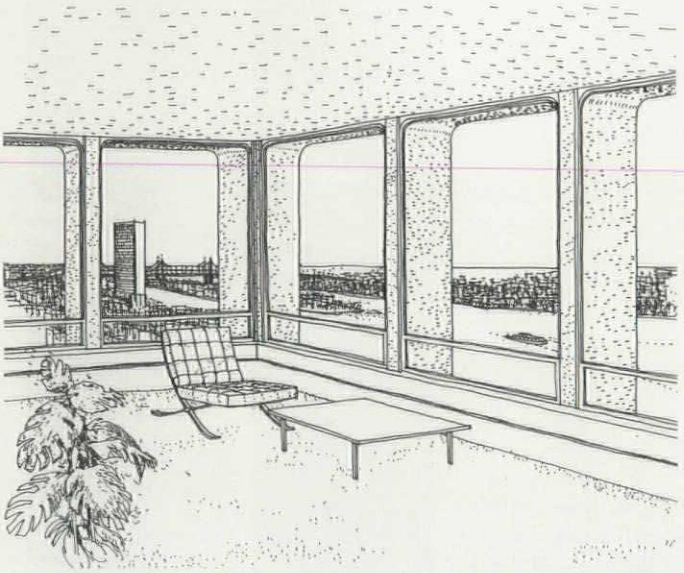
Operable, inswinging vents are physical elements that require the closest consideration. A window treatment must be either adjustable in length, so as to miss vents when they are open, or hung farther inside the room, so as to clear them. The latter method obviously cuts off a considerable space. For instance, vertical venetian blinds, which permit a partial view except when the slats are fully closed, would prevent opening the lift-up vents (at Colonnade Park) or the hoppers (at Kips Bay) unless they are hung inside the line of the convectors.

The problem of glass walls, then, would seem to call for a treatment with a vertical closure. At Colonnade Park, a ceiling-hung, adjustable-length covering, such as standard venetian blinds, would meet most conditions. At Kips Bay Plaza, perhaps the most effective solution would be a combination of two pull-up shades: one hung at the bottom of the hopper to cover the hopper only, and one at transom level to cover the large pane. These coverings could be attached in the conventional way, or set between posts or behind narrow panels. Since the lower shade could slant with the hopper, such a separate treatment of the two differently functioning window parts would permit free action of the hoppers while both shades are closed. The adjustable height of the top shade would provide partial privacy while retaining a view of skyline and arches at the top. When fully open, the shades would obstruct the view only slightly. Furthermore, the lower one would give a feeling of security to those who miss the higher window sill.

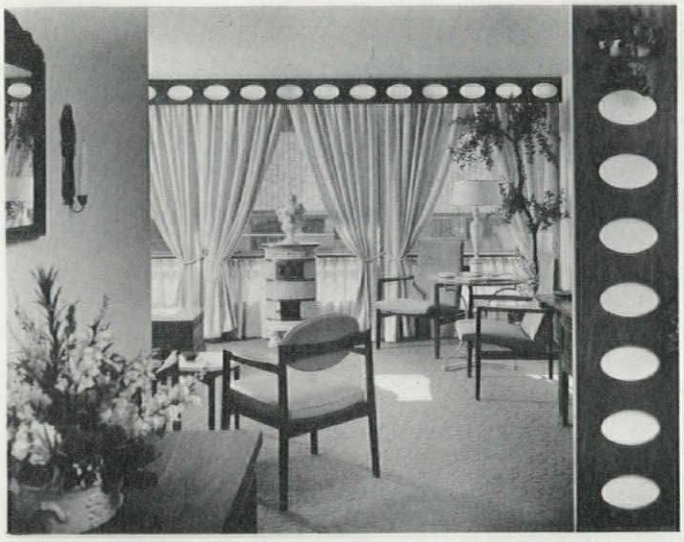
There are also architectural solutions which would simplify the problem, though these lie outside the scope of this discussion: continuous balconies or overhangs, for instance, can, without limiting the view, provide sun protection and a degree of privacy, and form a secure outside guard to the precipice.

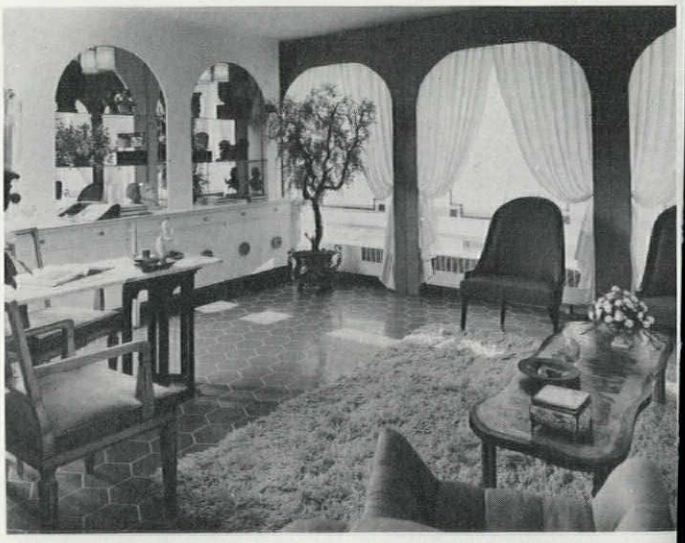
It should be apparent to builders and agents that model apartments in such buildings ought to demonstrate to prospective tenants how to take advantage of large glass walls. Solutions that really do answer the human needs of those who are to live behind glass walls would accelerate their acceptance by the public.

Photo: George Cserna



At Kips Bay Plaza, although the view and the arches have been left magnificently exposed in the architect's sketch (above), *the problem of daily living with glass walls has been ignored by the architects. The decorators of the model apartments, such as those by C. Eugene Stephenson* (below) *and Ethyl G. Alper* (below, right) *have gone to the opposite extreme, achieving a claustrophobic privacy like that of an overstuffed, lambrequined, Victorian parlor. Three coverings are used where one or two would do. There is no appreciation of the advantages peculiar to the building and, worse, the completely con-*





Photos: Courtesy Kips Bay Plaza

cealed windows make the rooms look like those in any undistinguished brick pile. Open expanses of glass will confront tenants inspecting empty apartments. Heavily covered "model" windows are, therefore, only a temporary deception — and one that might make a tenant uncomfortable later if he is unable to treat the windows properly. Though no pretense is made about the "Shibui" model apartment by Ruth Strauss (acrosspage) *as an example of good contemporary design, the merits of the window treatment should not be ignored. Pull-up roller shades can provide partial privacy yet leave the arches and dramatic skyline in view. The mechanical problem of opening the hoppers for natural ventilation, however, is not solved: when blinds are up above transom height, hoppers must be closed.*

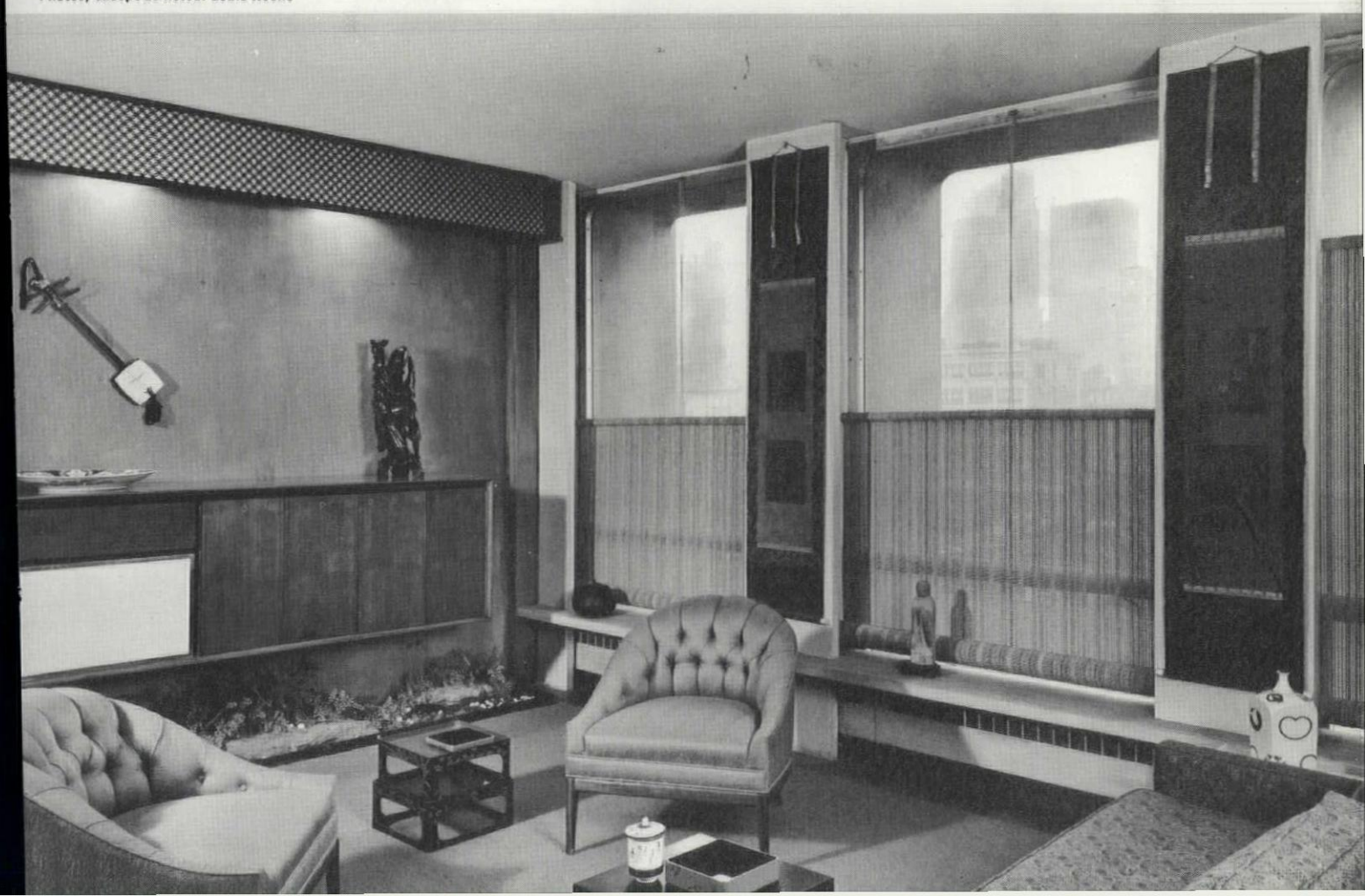
DATA: descriptions and sources of the major materials and furnishings shown.

MODEL APARTMENT
BY C. EUGENE STEPHENSON, F.A.I.D.
Window treatment: pull-back/floor length draperies; pull-down shades; cafe curtains/hung at hopper transom height; all, linen casement/natural/Greeff Fabrics. **Cornice:** walnut/plastic backed oval cutouts "repeating motif of oval chair back." **Chairs:** walnut/vinyl/Jens Risom Design Inc.

MODEL APARTMENT
BY ETHYL G. ALPER, A.I.D.
Window arches: plywood/fabric covered/blue/Stroheim & Romann. **Draperies:** silk, Fortisan/white/John McHugh. **Shades:** pull-down/linen/white/blue tapes/Window Shade Mfrs. Assoc. **Floor:** octagonal tile/vinyl/blue/Amtico. **Carpet:** wool/blue/V'Soske Inc. **Tub chairs:** mahogany/blue fabric/Harvey Probber.

MODEL APARTMENT BY RUTH STRAUSS, A.I.D.
Shades: pull-up/fabric/rattan/multicolor/Tropicraft of San Francisco. **Panels between windows:** plywood/paint/pale yellow. **Hi-fi cabinet:** wall-hung/walnut/cane/Fabry Associates. **Carpet:** wool/burnt orange/Patterson, Flynn & Johnson. **Sofa upholstery:** black/pale yellow/F. Schumacher & Co.

Photos, except as noted: Louis Reens



The New York skyline provides a wall decoration at Kips Bay Plaza that is hard to ignore. An apartment designed by Kenneth Resen (left and above) *uses traverse draperies hung to the top of the convector. A royal blue rug gives the handsome gray, white, and walnut room a rich focus.*

APARTMENT, KIPS BAY PLAZA
Walls: paint/white. **Floor:** walnut parquet. **Drapery:** dacron/champagne/Kravet Fabrics. **Sofa:** walnut/beige wool/Herman Miller Inc. **Carpet:** wool/cut pile/royal blue/Dylan Carpets, Inc.; oriental/Bokara/orange, black. **Tables:** steel/Formica/walnut grain/Knoll Associates; round/slate/black, polished aluminum base/Herman Miller Inc. **Chairs:** steel/plastic/black and gray wool/Herman Miller Inc. **Hi-fi bench:** black steel/birch/Knoll Associates. **Lighting:** standard/chrome base/white linen shade/Nessen Studios; uplight/white/Harry Gitlin. **Plants:** (left to right) Asparagus Fern/Finger Aralia/Papyrus/Ficus Nitida/The Greenhouse. **Pot:** for Ficus tree/handthrown stoneware/tan/by Didier Journeaux/The Greenhouse. **Paintings:** Kenneth Resen.

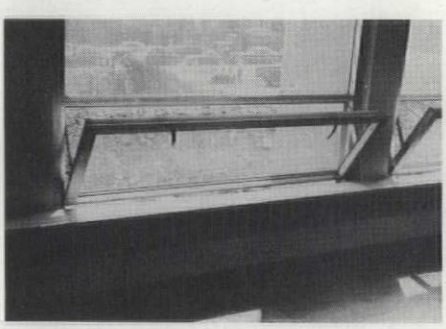
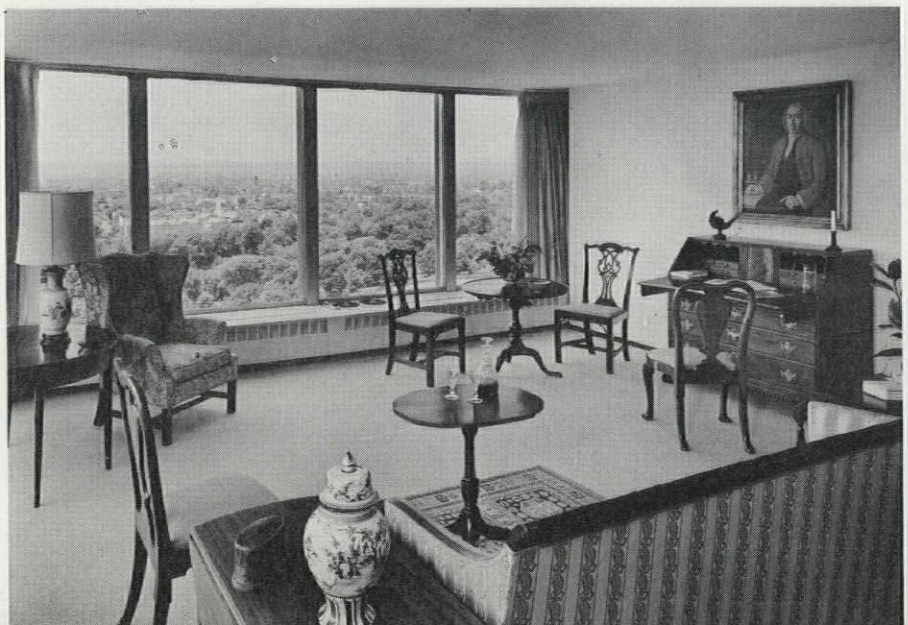


Photo: C. R. Smith

Typical Kips Bay window with narrow convectors and inward opening hoppers.

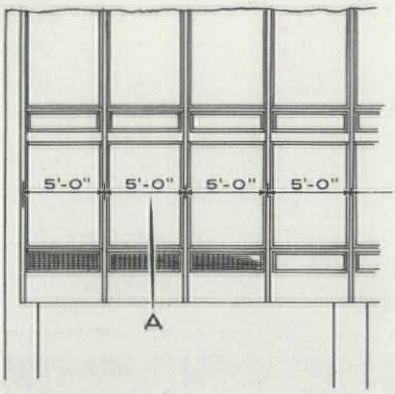
At Colonnade Park, the model apartments (left and below) *use ceiling-hung traverse draperies that touch the top of the convectors. Here, the model apartments are more honest than those at Kips Bay in capitalizing on their assets. From the "Danish" apartment* (left) *there is a view of the other buildings in the development and of the New York skyline in the distance. The mesh drapery is drawn on one side to soften the light at the table.*

For those who like traditional furnishings, Colonnade Park has had the imagination and taste to show how authentic period pieces look and work within a modern building. It was felt that this could also make a contribution to the cultural continuity of the region; the Heritage apartment (below) *uses 18th Century furniture that was either made in New Jersey or long owned by families resident there. It has a panoramic view over an appropriately Georgian tower, and the dogwood and cherry trees of an adjoining park.*

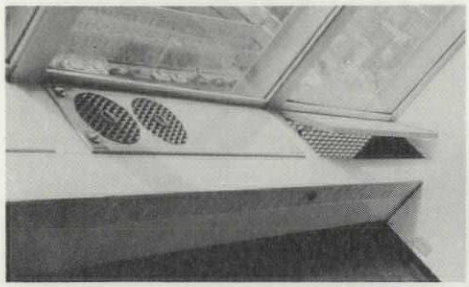


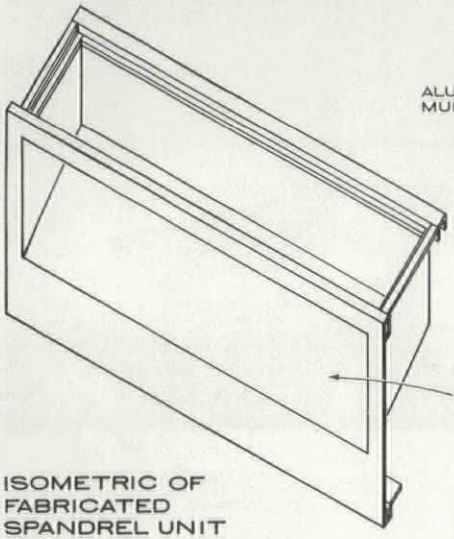
MODEL APARTMENT, COLONNADE PARK, BY INGE CARLSSON
Drapery: linen casement/beige/Belgian Linen Association. **Carpet:** wool pile/beige. **Furniture:** teak/oak/all George Tanier Inc. **Fabrics:** sofa/dark brown wool; lounge chair/deep blue; open chair/turquoise; dining chairs/green; convector cushion/yellow-green; pillows orange, turquoise/all George Tanier Inc. **Lighting:** teak/white opaline/George Tanier Inc. **Plants:** Philodendrum Panduriform/The Washington Florist, Newark, N. J.

"HERITAGE" MODEL APARTMENT, COLONNADE PARK
Draperies: silk, Fortisan/white/Stroheim & Romann. **Furniture:** mahogany, walnut/18th Century/collections of the Newark Museum and New Jersey Historical Society. **Fabrics:** celanese fibers/blue/blue and white/blue and silver stripe/Stroheim & Romann/Scalamandre/Greeff Fabrics Inc. **Carpet:** creslan/beige/Archibald Holmes & Son. **Curtain wall:** Cuppels Products Corp. **Convector:** Slant-fin Radiator Corp. **Air conditioner:** Amana Refrigeration Inc.



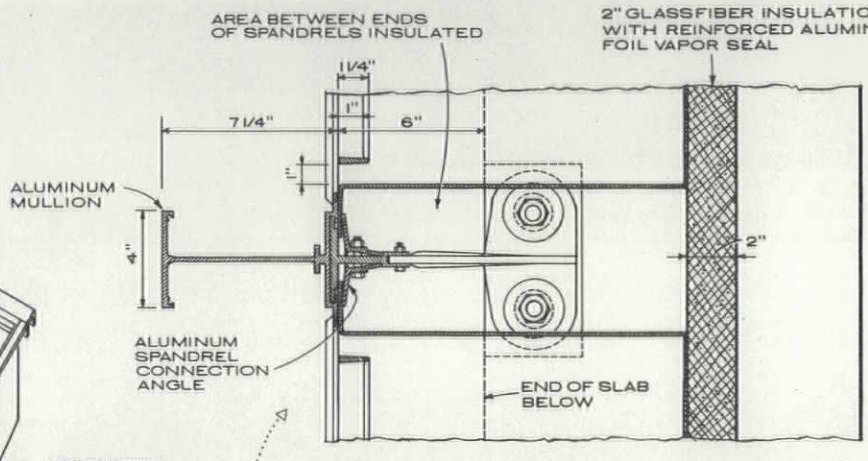
EXTERIOR ELEVATION



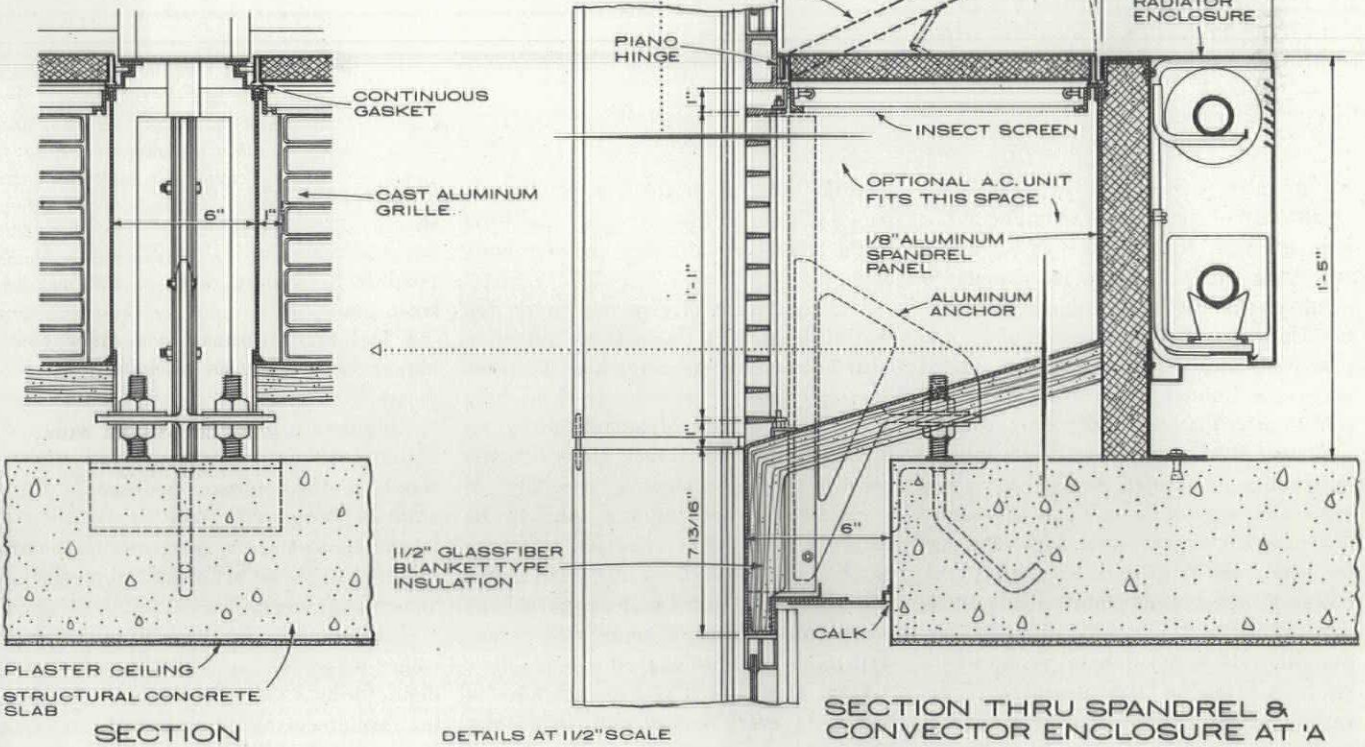


ISOMETRIC OF FABRICATED SPANDREL UNIT

1/8" SHEET ALUMINUM, PRESS BRAKE FORMED AND WELDED CONTINUOUSLY



PLAN SECTION AT MULLION



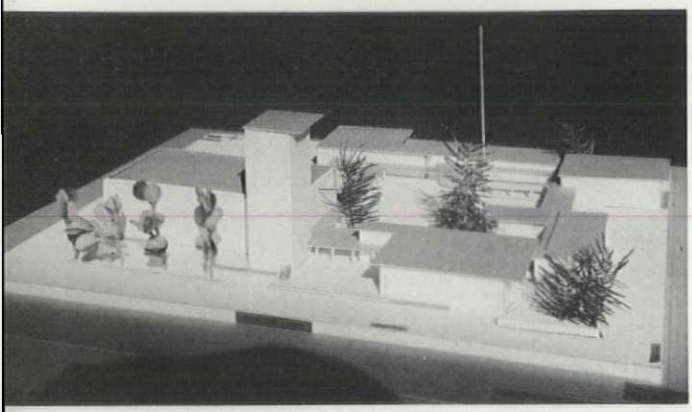
SECTION

DETAILS AT 1 1/2" SCALE

SECTION THRU SPANDREL & CONVECTOR ENCLOSURE AT 'A

COLONNADE PARK: Newark, N. J. LUDWIG MIES VAN DER ROHE, Architect	SELECTED DETAIL CONVECTOR AND CURTAIN WALL

The Small Office



Photos this page: Dearborn-Massar

Model for Civic Center group for Mt. Vernon, Wash. (above). *Wells residence, Mt. Vernon* (right). *Henry Klein, Architect.*

IN THE TOWN. ***A small-town practice described by Henry Klein, Architect, of Mount Vernon, Washington.***

My practice is in a town of 8000 in the northwestern part of Washington. The area is rural, with some logging and a scattering of industry; our county is mountainous and in parts quite inaccessible. Until I came in 1952, no architect had practiced here. My practice was started with very limited funds; there are still seldom more than two at work in the office.

There are advantages and disadvantages to practice in a small, somewhat remote town. Exchange of thought on architecture is denied me, except when a friend comes for some periods to work with me. I feel, however, that my opportunities for putting some order and harmony into our surroundings is as good here as anywhere else. And one of the pleasures is the variety of work which comes to one. I could list almost every type of building as part of our work during the last eight years. I consider this variety essential to an architectural practice; each problem is new, and requires a fresh start. My clients are usually unfamiliar with current popular solutions to their types of problem, and there is less pressure to conform to the stereotypes of others, or even one's own.

I do not want to give the impression that all local work comes to me automatically by reason of my being here. Distance has its lures—or perhaps everyone here knows me too well. Many jobs are given to architects from larger cities, usually because they have made a "specialty" of a certain type of building. And by its nature a small office often has to forego large commissions. Does this mean that it will always be limited in its scope? I hope not; combinations of small offices may well be the defense against this problem.

I am often asked if I do not have to belong to every service club in a town like mine. I do not. I am not a good "mixer," and I have never found this to be a handicap. After the usual interval, people accept you as you are. However, in a small town, you do know the mayor, the councilmen, the leading businessmen, the newspapermen. And when these people see the practicality and sense to visual improvements on a public scale, it is possible to achieve more in the way of basic planning.

I feel that information on new techniques and "innovations" is as available to me here as anywhere. But I feel that techniques are only a part of our tools and limitations; as important is an understanding of the human condition. It takes patience, compassion, and perseverance to let the client and the place set the theme, rather than recent architectural precedent or personal mood.

Only a devoted involvement in the place where he works can give the architect a depth for his vision. Yet the most challenging architectural commissions are far-flung, and they do not come easily to the average architectural office in a small town. The temptations of the unfamiliar are great, and I doubt that I, more than anyone else, could resist them if ever they should come my way.

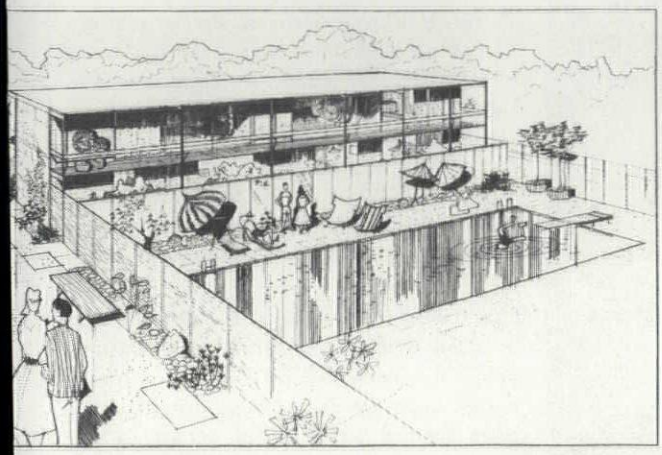
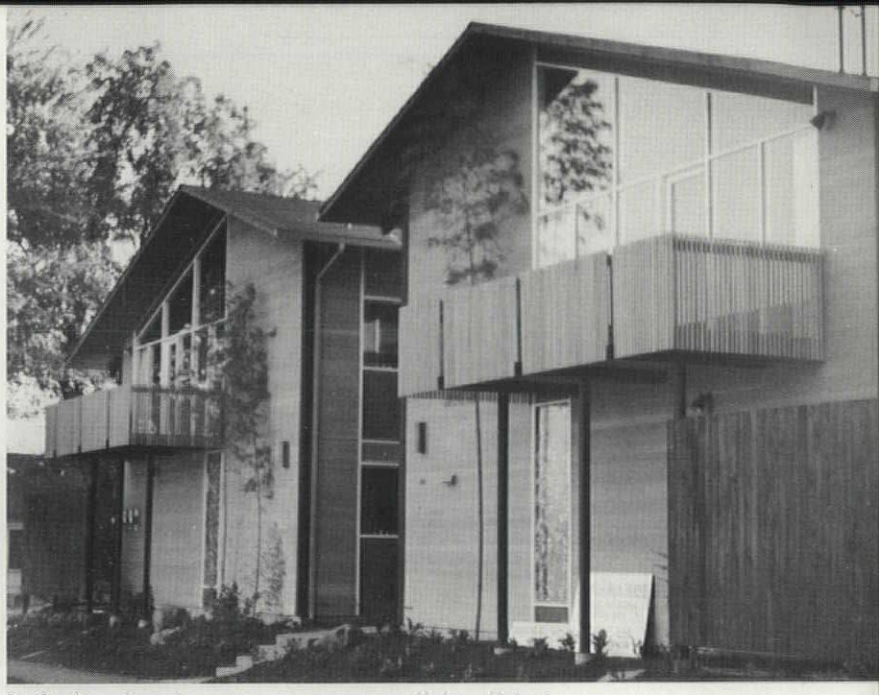


Photo: J. C. Rowan



Study for six-unit apartment structure (left). *Paired apartment units* (above), *Oswego, Ore. Saul Zaik & Donald Blair, Architects.*

IN THE CITY. ***Co-operative practice described by Saul Zaik, Architect, of Portland, Oregon.***

About five years ago, several of us who were then working for others, or who had been carrying on in miserable space of our own, decided to get together to find a suitable structure where we could have our own place to work. Our idea was to create an identity on a co-operative basis rather than actually establish a firm or a corporation. We were fortunate enough to find on the fringe of the downtown area a 100-year old house of two floors, with sufficient space, and with some off-street parking. The house was cleaned of a century of dust, and the owner agreed to reduce the rent due to alterations we made.

At that time, the group was composed of Donald Blair, William Fletcher (who later left), John Reese, and myself. In addition, we now have with us Alex Pierce, Frank Blachly, Jr., George Seeley, Designers, and Michael Parker, Landscape Architect.

Our objective was — and still is — to assemble design talent capable of offering a complete service. When we do our own work, we exchange ideas and drafting help. Sometimes we hire each other as draftsmen. When the opportunity comes to do larger work—our first collaboration was an apartment house—one of us is asked to assume design control, and we all work on the job. On collaborative work, we keep track of hourly time, and fees are divided according to time spent. Contractual relationships are, of course, established for each such job.

We share all overhead costs: rent, electricity, light, the services of a girl who attends to office business routines, and so on. Equipment—such as ozalid machine, other office machines, furniture—is paid for out of a "kitty" to which we all contribute. The house space is now divided into seven office spaces.

From the beginning we realized the problem of integrating personalities, philosophies, and differing criteria, and at the same time keeping individual identities. On some jobs, such as a church, personality differences have been sharp, despite the fact that we are all of similar age, education (most of us are University of Oregon graduates), and background. We have found that on certain types of jobs, two of us pull together better than the entire group. At present, we are doing a large variety of work, from kitchen remodeling to houses, apartments, and newspaper plants. We like the variety.

We have tried to maintain a philosophy of design, and we have tried to keep an atmosphere were we all can grow through mutual exchange. Objectivity is very necessary to us: the awareness of one another's individuality and uniqueness. We are still often perplexed, still underdeveloped in our capacities, still faced by many unsolved problems. The satisfying thing about our setup (aside from its obvious economic advantages) is that we are on our own and responsible for our own actions, and yet each of us can count on team work, with the help and assurance that comes with it, when the opportunity and the need come along.

TOWER

Photo: Jay Bee Studios

Pertinent observations on the structural design of a 10-story apartment building —nine floors of which are supported by reinforced-concrete arches—are found in this discussion.

Neville House, a 10-story, 50-family apartment building designed by Architect Tasso Katselas and located in the cultural center of Pittsburgh, is a rental project for a client who fully realizes the importance of good architecture in the speculative field. Of special interest is the structural design of its tower and supporting colonnade formed by a series of arches at ground level. Difficulties associated with the rental of ground-floor apartments and the possibility of tenants being able to drive under the structure for entry were used as arguments to convince the client of the feasibility of this use of ostensibly valuable ground area.

The tapered form and precise dimensioning of the arches furnish the required wind bracing and stiffness as well as support for columns of the upper floors which interlock with the entire superstructure. Arches span 32′ and have 6′-6″ continuous cantilevers at both sides. Narrow columns above are 1′ x 7″ and in most cases become room dividers or screens. Flexibility of planning allows four, five, and six apartments per floor with no major changes in plumbing or mechanical stacks. Nine-in.

ON ARCHES

structural slabs form both finished floor and ceiling and read through to the exterior of the tower as structural ribbons. The concrete arches are sandblasted, while interior concrete has an architectural finish.

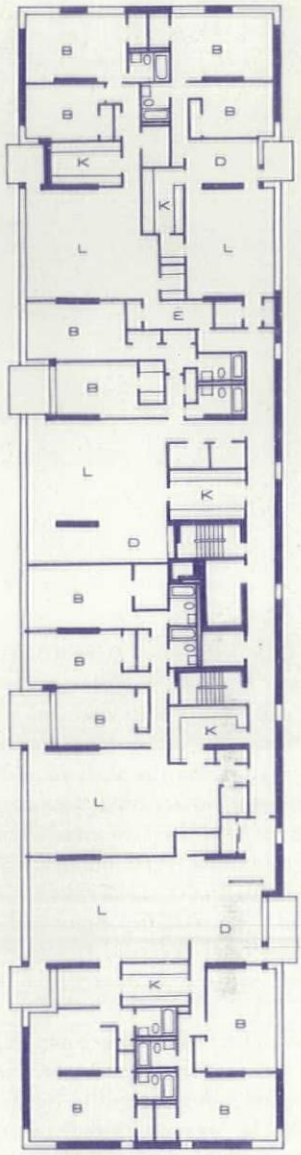
In more detailed observations about the structure, the architect says: "As is often the case with structures of this type, it is sometimes necessary to make a model analysis with the hope of confirming an intuitive estimate of the flow of stresses and their resulting strains. The two-column bents with supporting arches presented a problem in determining a reasonable evaluation of their mode of structural behavior. Since the columns are 100 times stiffer than the slabs, it was obvious that a typical portal with inflection points at the midheights of the columns was not present. It appeared that the columns might be acting as cantilevers supported on a rigid compression arch or shear wall with the slabs merely transmitting wind thrusts from windward to leeward columns. On the other hand, the support for the columns might be a rigid frame with several possibilities for locations of hinges.

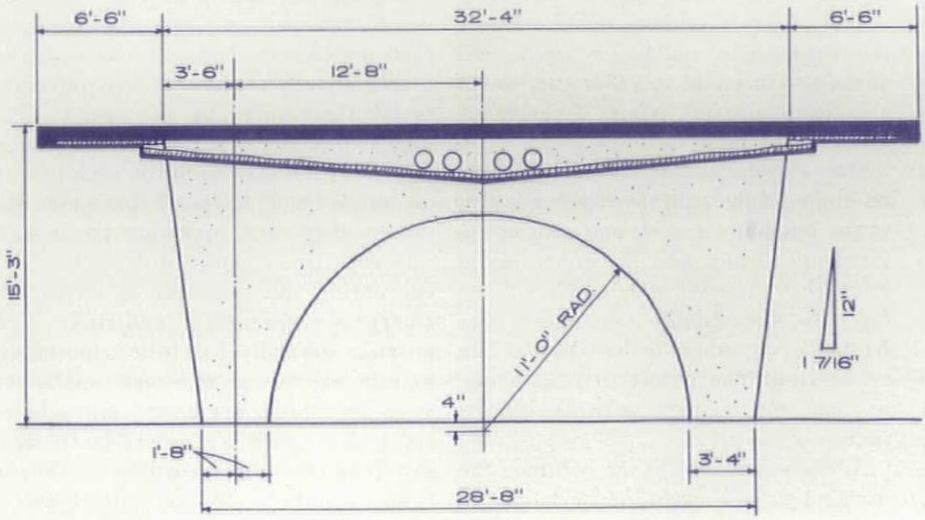
"Any intuitive approach to an engineering analysis must of necessity be based upon a conservative interpretation of the structure's behavior; however, this does not mean that an unreasonable factor of safety should be used. For the supporting bents of this apartment building, moments were proportioned to the arch by considering a hinge at the base of each arch leg, and a wind moment plus wind shear acting at the top of each arch in conjunction with the uniform load from the first floor. This concept gives a maximum moment condition at the haunch. Reinforcing the base of the arch with maximum steel (eight per cent) will reduce the moments at the haunch by the equivalent amount of moment that can be absorbed at the base.

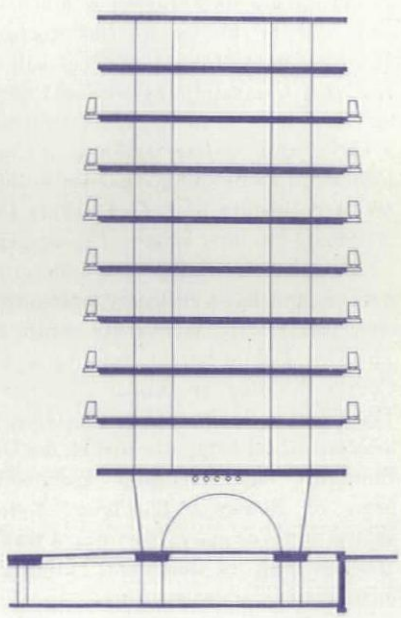
"The slabs were considered as struts between the freely cantilevered columns. Nevertheless, the slabs were checked for a moment that was based upon wind shears at midspan, much as in the case of a simple portal. A visual re-evaluation of the arch for a possible shear failure indicated that the weakest section would occur at the crown. By considering a hinge at the crown, the structure was made statically determinate, and the corresponding shear stress was computed.

"Results of a model analysis accomplished two things of general engineering interest: first, the confirmation of a conjectural design; and second, that the typical portal analysis which is often resorted to would not have been a correct solution for this particular building frame."

Structural Engineers for this building were Gensert, Williams & Associates of Cleveland.







Continuous Power for

BY D. S. BAKER & B. F. WINCKOWSKI

A new building complex, to contain the city and county governmental functions of Rochester, N. Y., will have an electrical-distribution system with virtually continuous power. Discussing the several unique features of this system, and the high level of performance that they assure, are the Chicago District Application Engineer of General Electric Company and the Chief of Electrical Division, Voorhees, Walker, Smith, Smith & Haines.

A $50-million building complex, to house city and county governmental functions, is presently being erected in Rochester, New York. It was designed by Voorhees, Walker, Smith, Smith & Haines and Associated Architects Faragher & Macomber, and will be known as the Rochester-Monroe County Civic Center. It will consist of a Central Plaza with a 1200-car, two-level underground garage flanked by a City Public Safety Building, a County Public Safety Building, a Courts Building, and a multistory joint City-County Office Building. The first phase of construction, which takes in the plaza, underground garage, and basic utilities, including the electrical system, is nearing completion. The City Public Safety Building and the Courts Building are under construction. The County Public Safety Building will be constructed next, followed by the Office Building. The Rochester architectural firms of Bohacket & Flynn, Todd & Wiard, and Waasdorp, Northrup & Kaelber are executing the individual buildings as members of the design team.

The electrical distribution system in the Civic Center possesses several unique features which serve to make it literally a synonym for continuous power. Several basic criteria were required to obtain the high level of performance desired. Specifically, these were: optimum in service reliability, simplicity of operation, flexibility for load growth, and ease of maintenance. These will be reviewed briefly.

Reliability

Increased demand for electrical power to provide services, necessities, and loads not previously served in commercial buildings has dictated the requirements for continuous power. The ventilation-system supply and exhaust fans, garage lighting, central air conditioning, passenger elevators, police communications, jail lighting and controls, and data-processing machines are typical of the critical loads to be served. A loss of power to these would not only inconvenience the building occupants and affect governmental operation, but would also jeopardize the safety of the many people using these facilities.

Over-all reliability is determined by the reliability of the utility service in addition to the reliability and arrangement of the distribution equipment. The utility service establishes the level of reliability; therefore, its susceptibility to outages from lightning or other faults requires an evaluation. The result will influence whether one or more services will be necessary.

Shutdowns caused by the failure of the distribution equipment, or its failure to operate correctly, can be minimized or eliminated by selection of quality equipment and its arrangement in the system. An important aspect of this is the selective co-ordination of circuit protective devices. This means that a fault in a given circuit would be cleared by the protective device nearest to it, and all other "upstream" protective devices would remain closed, thus insuring continuous power to the unaffected circuits.

During the infrequent outages of the power system, continuous power can be assured by circuit arrangements which permit connection with an alternate power source to the critical loads.

Simplicity of Operation

A corollary of system reliability is that the system should be simple to operate. This involves keeping the number of switching functions in alternate paths of power flow to a minimum, so that if a fault does occur, its location in a circuit is immediately obvious without resorting to laborious switching procedures. This applies principally to the medium-voltage portion of the system, but is equally true at all voltage levels. Experience has proven that most operating errors and accidents, hence extended downtimes, occur during the pressures of infrequent emergency operating conditions. The operator normally has little opportunity to gain experience at system operation, since switching operations are seldom required (or even permitted) except during these emergency conditions. Thus a system simple to operate will be safer.

Civic Center

Flexibility

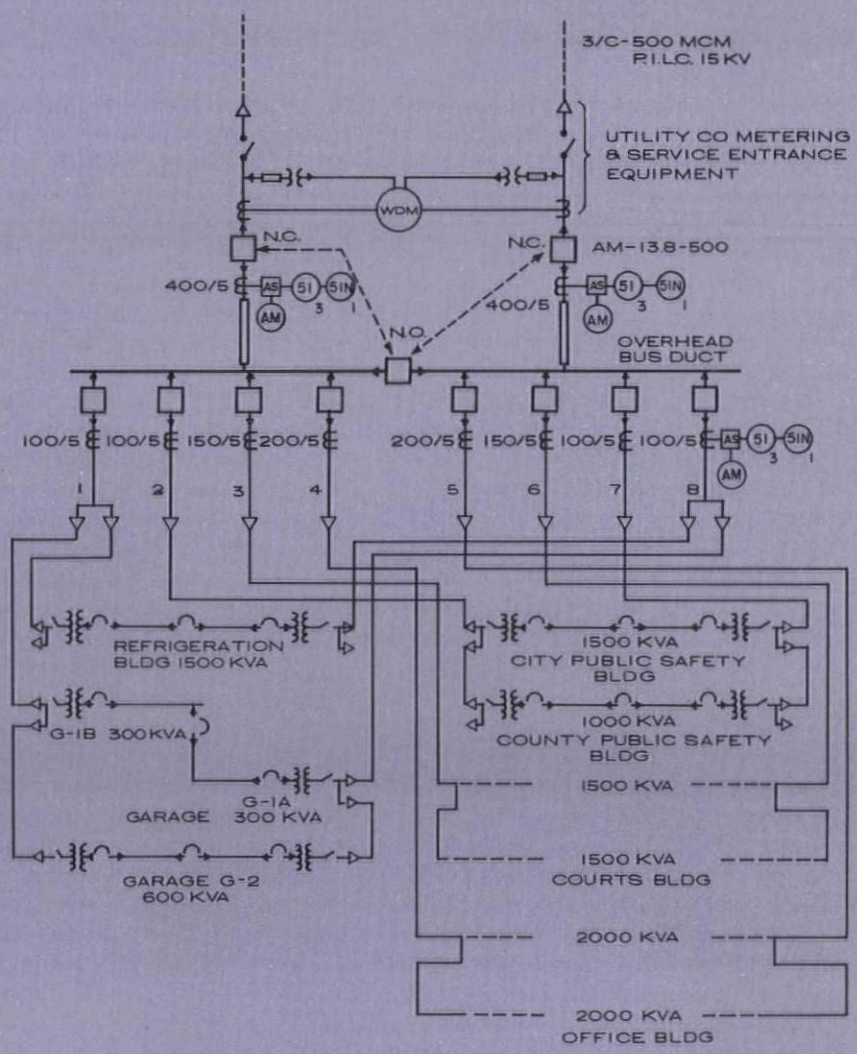
System flexibility is measured in terms of its ability to expand easily to meet load growth without imposing necessary costs for scrapping equipment made obsolete by a growing load. As new lighting methods are developed, new business methods of using modern data-processing equipment are adopted, and wider use of air conditioning is made, the building loads will continue to grow. Short-term load-growth requirements can be satisfied by initially installing transformers which have 20 to 35 per cent reserve capacity and/or making provisions for additional capacity by employing forced-air cooling. Long-term growth planning can easily be accomplished by considering the distribution system for two or three times the initial load, scaling it down to the initial requirements, and then allowing it to grow by prescribed steps to the larger system.

Ease of Maintenance

The maintenance staff will be limited at the Civic Center; therefore, it was imperative that maintenance and operational procedures be kept simple, safe, and not time-consuming. Several of the features incorporated to meet these criteria are the use of metal-enclosed drawout switching equipment, adequately rated circuit breakers, solidly-ground neutral in the unit substations, and electric operation of switching equipment from the mezzanine level of the refrigeration building.

Achieving These Criteria

With the basic criteria in mind, let us



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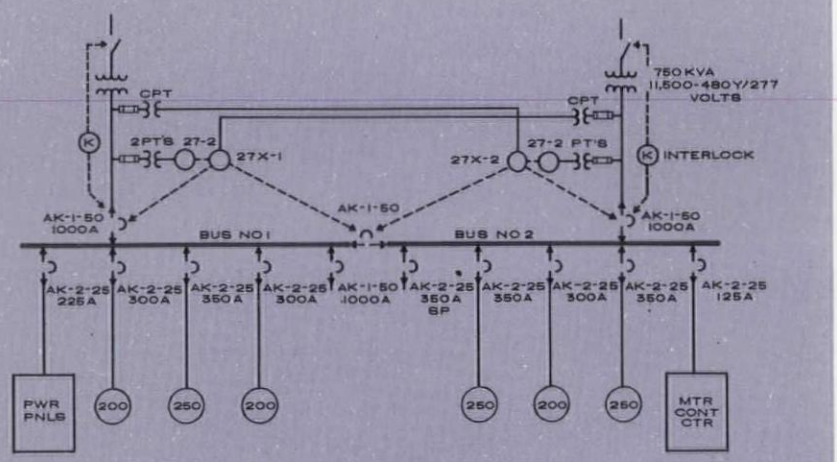
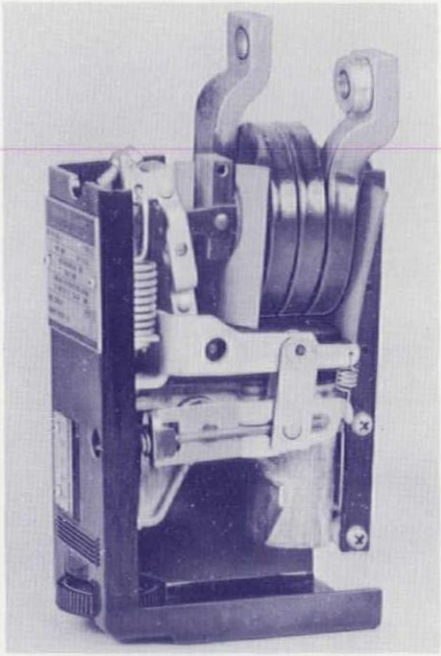


ONE-LINE DIAGRAM OF REFRIGERATION BUILDING LOAD-CENTER UNIT SUBSTATION SHOWING MOTOR AND BREAKER SIZES AND THE AUTOMATIC BUSTRANSFER SCHEME.

3



consider in some detail the actual design of the distribution system to see how its features meet the desired requirements.

Service from the utility company, Rochester Gas and Electric Company, is from two 11,500-v underground feeders which originate from a generator bus in a nearby generating station. Each service feeder is a three-conductor, 500 MCM, paper-insulated, lead-covered 15-kv cable fully rated to carry the entire Civic Center load. The total demand load of the Civic Center is estimated at 8400 kva. Lightning protection for the electrical system was not deemed necessary, since all feeders in the power-distribution system from the utility bus to the branch circuits are underground, and thus adequately shielded from lightning. Excellent reliability is thus obtained from the power company.

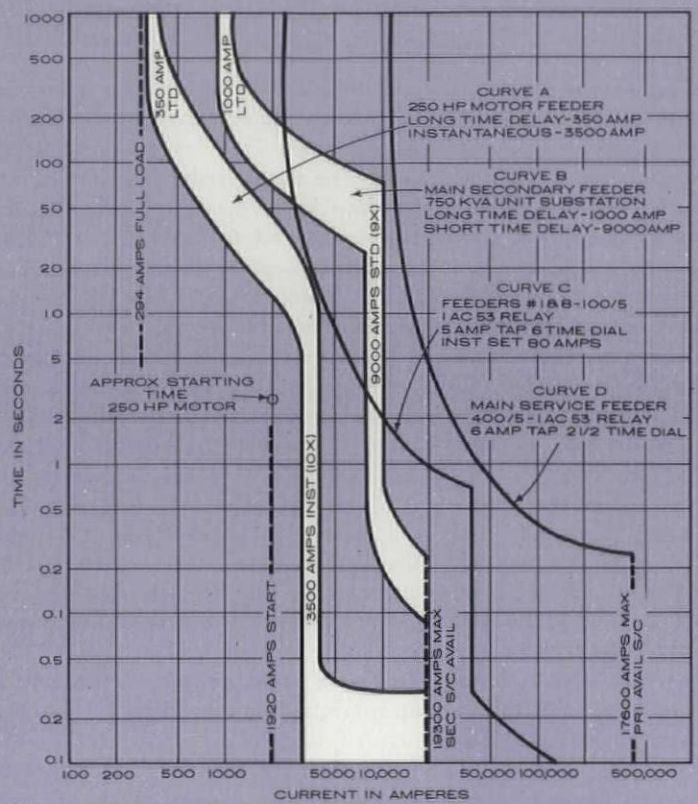
Circuit Breakers

Power is metered and distributed at medium voltage of 11.5 kv from metal-clad switchgear as shown in the one-line diagrams **(1, 5)**. The two main- and bus-tie circuit breakers are electrically interlocked so that when an incoming service feeder is lost, the bus tie can be closed to serve the entire Civic Center from a single feeder. Circuit breakers were selected over fused-switch equipment because they provide electrical control, prevent single-phase operation, and eliminate the time-consuming procedure of fuse replacement. Single-phase operation of primary circuits feeding low-voltage polyphase motors through a step-down transformer will cause unbalanced currents to flow into these motors. The additional heating caused by these currents is difficult to detect and can, if allowed to go uncorrected, cause burn-out of the motors. The small additional cost of circuit breakers can be justified by the time and expense required to rewind one or more motors, if such a burn-out were to occur. These features can conserve the manpower which is available for operation and maintenance of the electrical system.

In addition, the circuit breakers improve the continuity of service over fuses in several other ways. Since all the circuit breakers are electrically operated, they can be reclosed immediately following a trip out, after the cause of the trip out has been found. Circuit protection is provided by three inverse-time overcurrent relays (device 51) with instantaneous overcurrent attachments (device 50) and a residual time overcurrent relay (device 51N) on each primary load feeder **(2)**. These can be closely co-ordinated with the other protective devices in the system to attain over-all system selectivity and good system protection. Selectivity will be discussed in greater scope in a succeeding paragraph. Three phase-relays will "see" overloads and faults not involving ground, and the residual relay can be set to be sensitive to line-to-ground faults since it is insensitive to load currents. For instance, with a load current of 60 amp in the primary load feeder and a current-transformer ratio of 100/5, the phase relays must be set above the equivalent secondary load current of 3.0 amp. Since the balanced three-phase load currents add to zero in the neutral, the setting of the residual relay may be as low as 0.5 amp.

Load-center Unit Substations

Power is stepped down to utilization voltage from nine Load-center Unit Substations conveniently located about the Civic Center. By distributing the power at the primary voltage to the load centers, the number and size of the secondary feeders is greatly reduced when compared with serving the entire load from the service point at utilization voltage. This is adequately illustrated when the sizes of load centers, from 1000 to 2000 kva, and distances of 200 to 1000 ft are considered. The utilization-system voltage is 460Y/265 or 208Y/120, depending upon load requirements. The secondary of the transformer is rated 480Y/277-v and is a wye-connected winding with the neutral solidly grounded to provide immediate detection and fast clearing of all faults which involve ground. The grounded system also



TIME-CURRENT COORDINATION CURVE SHOWING SELECTIVE COORDINATION BETWEEN LARGEST MOTOR FEEDER AND MAIN SECONDARY, AND BETWEEN THE PRIMARY FEEDER RELAYS

4

will limit the magnitude of overvoltages which could cause an insulation failure.

Each Load-center Unit Substation consists of two transformers each energized from a separate primary bus in a double-ended arrangement with two main breakers, two low-voltage busses, and a normally open tie breaker between the low-voltage busses to form a secondary-selective system. With this arrangement, upon the loss of power from one transformer due to loss of utility service or fault in the primary feeder or transformer, the affected low-voltage bus can be re-energized through the bus-tie breaker after the main secondary breaker has been opened. This provides an alternate source of power during outages caused by faults or by downtime for maintenance.

Since operation with all loads of both low-voltage busses on a single transformer is an emergency condition only, it was not justifiable to add spare transformer capacity for this contingency. In the initial design, sufficient capacity for short-term load growth was allowed. As an example, the estimated initial demand of the 1500-kva refrigeration building Load-center Unit Substation is 462 kva per transformer from a connected load of 680 kva, providing 288 kva spare capacity. Provisions have also been incorporated so that auxiliary cooling fans can be installed on the transformers, which will increase the transformer capacity by 33 per cent. The loading of the single transformer during an emergency condition can be controlled by disconnecting certain nonessential loads.

To perform the switching operation of the main and tie breakers upon loss of power to one transformer, the control circuit was designed to transfer automatically the de-energized low-voltage bus upon loss of voltage to the other normal circuit. This improves the continuity of service over a manual operation, since the outage duration on the affected bus is approximately two seconds. At the same time, it relieves the operator of having to assess the situation and manually perform the required switching.

Operation Upon Voltage Loss

Upon loss of voltage to a given bus, the following sequence of events occurs. Assume, for this description, that voltage on bus No. 2, as indicated (2), fails. The undervoltage relay 27-2 drops out, which picks up the auxiliary relay 27X-2, which is energized from bus No. 1 potential. This relay trips the main secondary breaker No. 2, and after it is open the bus-tie breaker is closed. As long as there is no voltage at the transformer No. 2 secondary terminals, both busses will be served from transformer No. 1. When voltage is restored, undervoltage relay 27-2 picks up and drops out 27X-2, which immediately closes the main secondary breaker. After this breaker has closed, the bus tie is tripped so that there is no momentary loss of power during the retransfer. This is possible since this is a nonsynchronous tie; that is, the two utility service feeders are solidly connected in the primary. A lockout mechanism is provided on each main secondary breaker to prevent the transfer in the event that the breaker was tripped by its series trip device. This would indicate an overload or fault on the bus, and it is definitely not desirable to transfer a faulty bus to a healthy one. The lockout mechanism will lock open the circuit breaker if it is tripped by any device other than the manual trip button or a shunt trip device, and must be hand-reset by pushing the manual trip button. A selector switch is provided to select either manual or automatic operation. In the manual position, the operator has control of all three breakers without any interlocking.

Selective Co-ordination

Selective co-ordination has been mentioned earlier as a significant factor in providing a high degree of service continuity. It refers to the co-ordination of the overcurrent protective device characteristics both in time and in current, beginning with the branch circuit device at the load and pro-

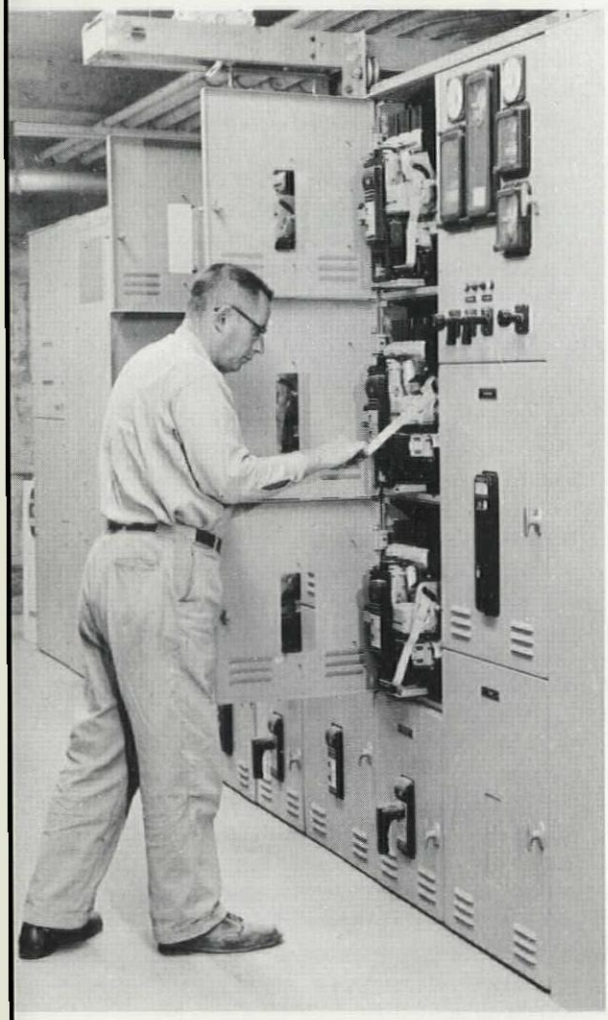
ceeding up through the relays on the 11.5 kv main service feeders. The keys to system selectivity are the magnetic series trip devices (3) on the power circuit breakers in the Load-center Unit Substations. Although frequently overlooked or taken for granted, these devices offer a choice of characteristics and flexibility of adjustments to meet a variety of applications and changing field conditions.

These series trip devices (3) are available with three specific magnetic trip elements in any combination which may be desired. The *long time-delay* provides overcurrent protection to circuit conductors and equipment, and is obtained with a sealed positive displacement oil piston. It is adjustable for both the magnitude of pick-up current and the length of time delay at a specific current value, normally six times the coil rating. The *short time-delay*, which introduces an intentional short time interval before operating to permit a "load-side" protective device to operate, is obtained with a mechanical escapement. It is available with current pick-up ratings from 2½ to 10 times the coil rating and with factory-set time delay from 8 to 24 cycles measured at 2½ times its pick-up current. The *instantaneous* trip is obtained with a tension spring in series with the long time-delay piston. Usually it is calibrated in the factory at 12 times the coil rating, but may be adjusted over a range, from 4-times minimum to 15-times maximum coil rating, depending upon the range of adjustment involved. Consider now how these can be combined to obtain the desired selectivity.

Selectivity between protective devices can best be shown by plotting their characteristics of time versus current. Co-ordination of protective devices in the refrigeration building Load-center Unit Substation and in the primary switchgear is shown (4). Referring to the one-line diagram of the refrigeration building load center (2), the main secondary breaker should co-ordinate in time and current with the largest feeder, rated 350 amp, which feeds a 250-hp air-conditioning compressor motor. The starting and running characteristics are shown as dotted lines. The motor feeder is protected by a 350-amp long time-delay and an instantaneous trip set for 3500 amp (10 times coil rating), shown as curve A. Thus the motor feeder breaker will not trip for normal operation of the motor. To co-ordinate with it, the main secondary breaker has long time-delay and short time-delay characteristics as illustrated by curve B. The long time-delay is selected for 1000 amp, to carry the transformer full-load current of 902 amp. The short time-delay is set at 9000 amp (nine times the coil rating) and a minimum time delay of five cycles with the maximum available short circuit current of 19,300 amp flowing. Thus the main breaker "waits" until the feeder breaker trips, providing back-up protection on the feeder in the event that it fails to trip.

The next set of protective devices are the overcurrent relays in the 11.5 kv feeder circuits to the unit substations. These devices provide short-circuit protection to the transformers and feeder cable, and according to NEC rules may be set to pick up not greater than six times the rating of the smallest transformer. Since this is a 300-kva unit serving the underground garage, the maximum setting is 1800 kva, which corresponds to 100 primary amp (5 amp tap on the relay). This is curve C (4) and the pick-up current corresponds to 2400 amp at 480 v. The instantaneous unit is set for 1600 primary amp (80 amp relay pick-up, 38,400 amp at 480 v) and will "reach" into the transformer to provide fast clearing of transformer faults exceeding 1600 amp. On lower currents, the time overcurrent device will clear the fault in one second or less.

The incoming service-feeder relay setting should be greater than the maximum demand of the entire civic center. This is estimated to be approximately 8400 kva. Curve D shows the characteristic for a pick-up current corresponding to 9600 kva. No instantaneous protection is provided at this point, since it would unnecessarily trip on high-current faults (above 1600 primary amp) in the feeders to the load centers. Thus the over-all picture of the selectively co-ordinated system is represented by the plot of curves A, B, C, and D. One exception can be noted by the overlap of curve C across the characteristic of curve B. The setting of the relay (curve C) is fixed by the NEC six-times rule. A larger minimum transformer size would have permitted a higher relay setting, thus allowing greater co-ordination.



5

OVERCOMING THE LIGHTING THERMAL BARRIER

BY MURRAY L. QUIN

As footcandle levels increase to provide more desirable illumination, a lighting system can become an effective secondary heat source creating a thermal barrier. The author, a member of the research staff of Day-Brite Lighting, Inc., analyzes this phenomenon and proposes an integrated system to overcome this obstacle.

With the introduction of more desirable levels of illumination in present-day structures, the words *lighting* and *heating* have become increasingly similar in meaning. As footcandle levels increase, the electrical energy consumed is increased proportionally and the lighting system has again assumed the role of an effective secondary source of heat. Originally, the fluorescent lamp, with its more efficient lumen-per-watt ratio, was termed "cold light" by comparison with the heat generated by incandescent light sources. Although this luminous efficiency advantage is now three- to fourfold, continued research into fluorescent lamp, ballast, and lighting equipment design has been stimulated by the need to squeeze more useful light from each watt of electrical energy consumed.

True, technology has advanced in each of these fields, until today the rule of thumb for calculating footcandles by the watts-per-sq-ft method has moved into a 25-to-1 range. The fact remains, however, that normally headlined technological gains in light output have been leapfrogged by psychophysiological findings which are showing the need for higher levels of illumination in many everyday tasks. To produce the levels within generally accepted standards for visual comfort (Table I), input wattage must be substantially increased until the resulting heat energy generated by the lighting system becomes a primary factor of consideration in thermal comfort calculations.

Impact of the Lighting Heat Load

The latest fluorescent lamps produce 70 lm for each watt of power consumed by the lamp-ballast circuit. Even so, the luminous efficacy of the energy conversion is only 18 per cent of the theoretical for satisfactory color. Factors of equipment design and operating conditions further reduce this product until the amount of light actually delivered with any degree of comfort is a relatively small percentage of the total input wattage. Regardless of the system efficiency, however, heat energy is generated at the rate of 3413 Btu per hour for each kilowatt of power consumed. Whether dissipated by convection, conduction, or radiation, lighting heat is considered an instantaneous heat gain within the structure in cooling-load calculations.

Engineering consultants have shown that 50 ft-c of illumination will account for 25 to 30 per cent of the total air-conditioning load in an average office building. An increase to 100 ft-c can require a 30 per cent increase in refrigeration plant capacity. The air-distribution system within the building may increase 50 per cent to provide the air-handling capacity necessary to offset the added load based upon a conventional 20 F temperature differential. Should the lighting level be doubled again, to 200 ft-c, the initial refrigeration plant must be doubled in size, and the air-distribution system must handle 2½ times the original capacity. Theoretically, the higher heat load produced by the lighting system could be countered by raising the temperature differential of supply air up to 30 F and increasing the number of air changes beyond 20 per hour. In practice, however, established comfort standards within the occupancy zone would be difficult to maintain. Moreover, the added costs of installing and operating such systems would appear to more than nullify most calculable benefits from increased illumination in the average building.

Although circumstances may vary, it becomes obvious that a thermal barrier

TABLE I: RECOMMENDED ILLUMINATION LEVELS*

Location and Area	Minimum ft-c	Watts per sq ft
BANKS		
Lobbies, Writing Areas	50–70	2–3
Teller's Stations	150	6
Posting and Keypunch	150	6
OFFICES		
Drafting Rooms	200	8
Accounting, Bookkeeping, and Business Machines	150	6
General Office	70–100	3–4
Private Office	70–100	3–4
Conference Room	30	1
COURT ROOMS	30–70	1–3
HOSPITALS		
Examination and Treatment	50–100	2–4
Operating Rooms (General)	100	4
LIBRARIES		
Stacks	30	1
Reading Room	70	3
LABORATORIES		
Work Tables	50	2
Close Work	100	4
STORES		
Circulation Areas	30	1
Merchandising Areas	100–200	4–8
RESTAURANTS	20–70	.8–3
SCHOOLS		
Classrooms	70–150	3–6
MANUFACTURING		
Medium Assembly and Testing	100–200	4–8

* Minimum illumination levels recommended by the Illuminating Engineering Society for typical spaces and related tasks, with approximate wattage per square foot required with recessed lighting.

exists for lighting in the 100-plus ft-c region not unlike the thermal barrier to ultrasonic flight. If the efforts of illuminating engineers to provide the illumination necessary for visual needs are not to be eclipsed by this cost deterrent, a method is needed whereby we may: (1) increase the amount of light energy and reduce the amount of heat energy transmitted into the occupied space; and (2) utilize the rejected heat energy more effectively where needed.

Uncontrolled Energy Distribution

Because fluorescent lamps are extremely temperature-sensitive, a relationship exists between the amount of light generated and the ambient temperature of their immediate surround. Lumen values for lamps are rated for operation in a still air 77 F ambient. This is the condition under which the ratio of watt input to bulb area is designed to produce the bulb-wall temperature and internal mercury-vapor pressure for the efficient emission of light from phosphors. Lamps rarely enjoy these optimum conditions within recessed troffers because of unrestricted convection currents for cooling, and because of heat gain from ballasts, from adjacent lamps, and often from the heat build-up in unvented ceiling cavities.

Combinations of these adverse influences, generally regarded as normal, will increase bulb-wall temperatures considerably beyond the 100 to 110 F design temperature, particularly in enclosed multilamp troffers. Internal factors controlling the conversion of energy into light are changed, resulting in an increase in thermal activity and a corresponding decrease in light output. Bulb-wall temperatures in the range of 120 to 130 F, for example, are not uncommon in such fixtures. Losses in potential light output can run as high as 15 to 20 per cent—an efficiency loss which becomes a serious economic penalty when reflected in air-conditioning costs.

As previously stated, energy consumed by the lighting system is dissipated by processes of convection, conduction, and radiation. Of the wattage consumed by a fluorescent lamp and ballast circuit, slightly less than one-half is emitted as radiant energy having a greater proportion of invisible short-wave infrared to visible light energy (1). Since only 18 per cent of the total input wattage is converted into light, the actual distribution of absolute energy, both light and heat, becomes an important consideration in heat-transfer studies. This should be true in any system analysis, whether visual or thermal, because of its ultimate effect on the space to be conditioned.

It is obvious from the temperature-sensitivity characteristics of fluorescent lamps that a relationship exists between the lighting efficiency and the heating ability of lighting equipment. Lighting efficiency is an inverse measure of the amount of light absorbed within the fixture. Since short-wave infrared energy follows the path of light, this, too, is absorbed and re-radiated, along with convection-conduction heat, to the room surfaces and, in the case of recessed troffers, into the ceiling cavity. Uncontrolled heat build-up within the troffer can only result in a greater proportion of the power consumed being converted into heat rather than light energy.

Actual heat-distribution curves for recessed troffers, plotted for static conditions above and below the ceiling line, will vary with fixtures configuration. Factors influencing the isotherm will include the number of lamps, type of enclosure, and the material and shape of the troffer housing. Of the total heat gain from a 2′ x 4′ enclosed troffer with four 40-w lamps, as much as 70 per cent will enter the room, with the balance distributed upwardly into the ceiling cavity (2). A complete reversal of this curve would be the immediate goal of any heat-transfer system.

Convective Heat-Transfer Methods

The most obvious method of reducing the effect of the lighting load is through removal of heat energy at the source. In addition to a reversal of the heat penetration curve, a transfer system could interject a temperature-controlling influence within the lighting equipment to achieve as near optimum operating conditions as possible. Properly controlled temperatures within a lamp compartment will produce maximum light in the downward radiant-energy component.

In general, central plant conditioning systems may be placed in either an "all-air" or "air-water" category. Each type utilizes a basic element which may be used to effect convective heat transfer (3). In an "air-water" conditioning system, the primary coolant is chilled water, which may also be directed through coils affixed to or integral with the outer surfaces of recessed troffers. Heat energy transferred to the water by radiation and conduction can be piped to cooling towers for dissipation, or to the coils of terminal units or radiant panels in exterior building zones to supplement heating requirements. In an "all-air" conditioning system, as the term implies, all of the cooling is accomplished by air, the return of which may be induced to flow through the housing of recessed troffers. Heat energy transferred to the return air by radiation

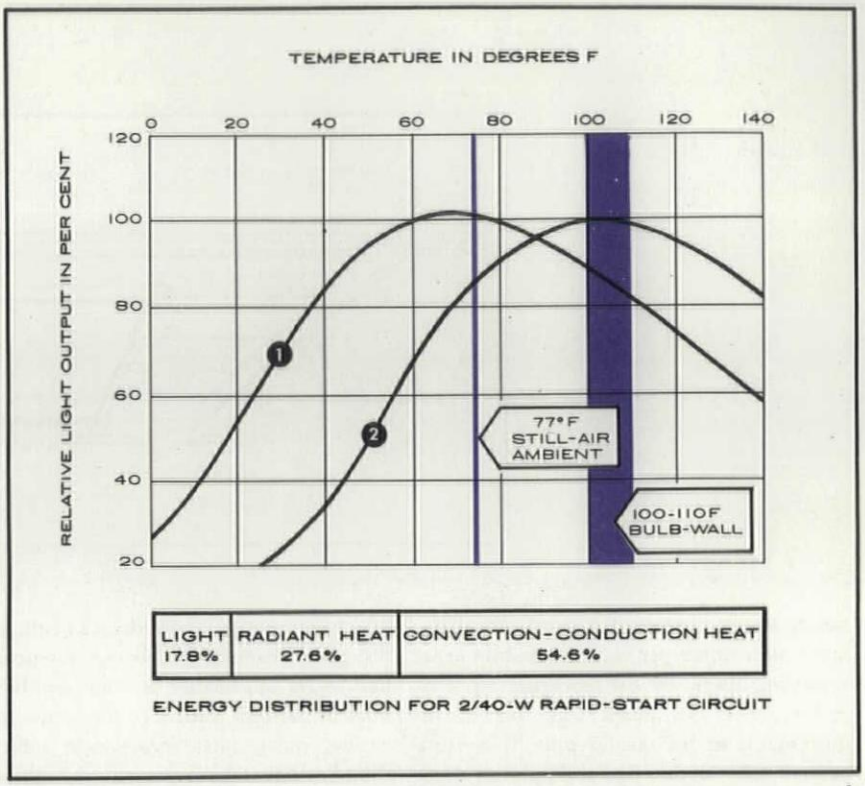
and convection can be expelled outside the building or filtered and mixed with primary air to supplement heating requirements in exterior building zones.

A further analysis of "air-water" and "all-air" central systems reveals that both types have a common denominator. Although water is the cooling agent in an "air-water" system, sufficient air must also be circulated for proper ventilation and dehumidification of the occupied space. If ventilating air were to be returned through troffers in the manner of the "all-air" system, the obvious expense of many water coil connections will have been circumvented. Although water is over 200 times more efficient than air as a thermal conductor, air is considerably cheaper to provide. Also, the utilization of return air for heat transfer offers an additional bonus in the ease with which quantities of air may be moved within the plenum created by a suspended-ceiling cavity.

Role of Air-Diffusing Troffers

Combination light-and-air-diffusing troffers are the product of two separate developments in building technology. The architectural trend toward modular planning principles in building design introduced the requirement for a greater degree of integration in the ceiling plane. Flexibility in space planning through expandable modules, as visualized by this concept, dictated placement of a lighting element in each ceiling module. Extensive research into illumination levels resulted in findings which, when put into practice, paralleled this trend by establishing the visual need for an individual lighting element in each average-size module.

Practical application of these planning principles became a merry-go-round of more light area per sq ft of ceiling requir-



ENERGY DISTRIBUTION FOR 2/40-W RAPID-START CIRCUIT

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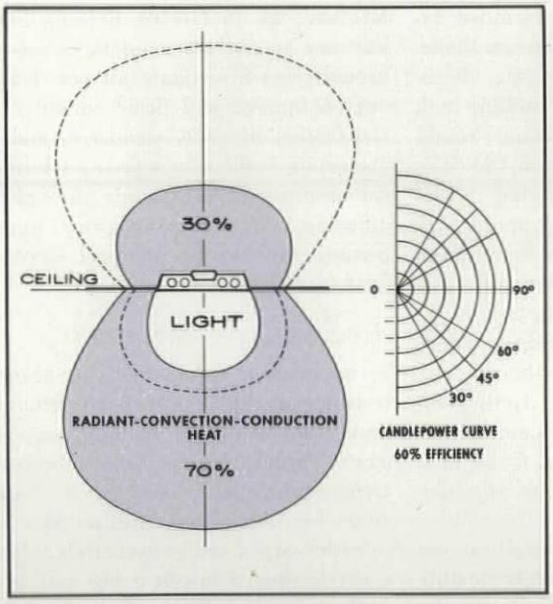

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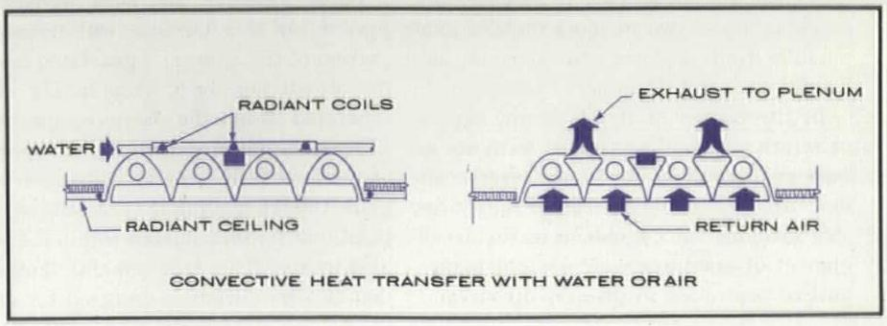
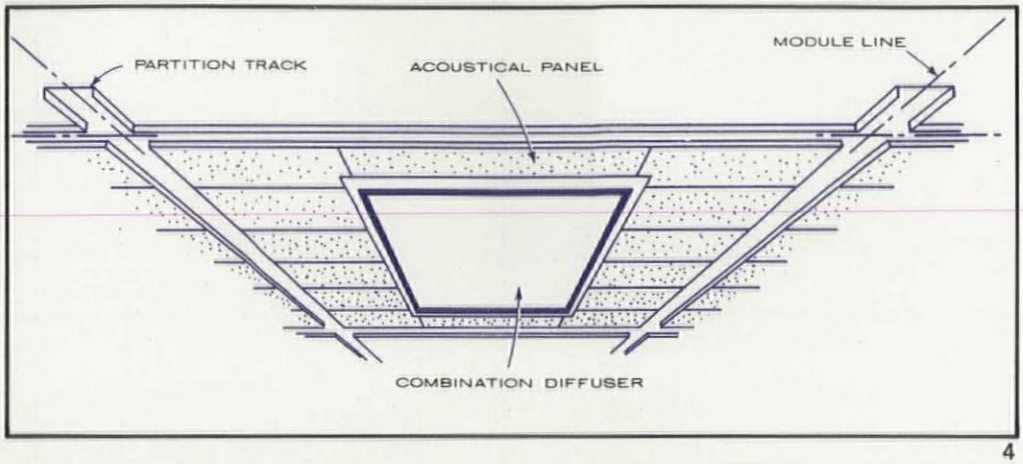


CONVECTIVE HEAT TRANSFER WITH WATER OR AIR



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ing more air changes per hour, requiring more air volume per sq ft of module area, requiring more air diffusers per sq ft of ceiling area. Consistent with flexible requirements of the master plan, it became evident that service demands placed upon the system could best be achieved if air diffusers were also placed in each ceiling module. Unfortunately, already objectionable ceiling clutter was compounded beyond aesthetic as well as economic limits. It was apparent that a single, flush-mounted element capable of handling both light and air-diffusing functions would provide a much-needed solution **(4)**. The technological merry-go-round had circled back to pick up a concept of product integration that had been introduced more than a decade ahead of its time: the combination light-and-air-diffusing troffer.

In coming of age, air-diffusing troffers were initially introduced for the singular purpose of supplying air. Application studies revealed that if the demands of flexible space planning were to be met, the troffer must be capable of selective use either as a supply-air outlet or as a return-air inlet. Since floor or wall returns are not applicable to completely flexible interiors, the availability of a single element in each module (handling either supply or return-air flow interchangeably) could make "all-air" systems flexible on an expandable basis **(5)**. In essence, any combination of two or more interior-zone modules could become self-sufficient, air-conditioned, and illuminated spaces.

In the course of development, supply or return-air-handling troffers were not as easy to perfect as a simple reverse air flow direction would indicate. Product design included such problems as the development of apertures which would induce desired aspiration in primary air streams and minimum pressure drop in return-air flow. For interchangeable use, the product had to be applicable to duct supply and duct or plenum return. In the latter application, units must incorporate sufficient sound attenuation to prevent objectionable over-the-partition sound transmission.

Of equal importance was the requirement that the troffer maintain proper performance as an electric lighting fixture. For use as air-return inlets, it was also necessary to investigate all possible hazards of smoke and flame spread to the satisfaction of code, standards, and fire-protection bodies. In a final analysis, the achievement of air return through air-diffusing troffers as a recognized function became the key to practical convective heat transfer.

Air-Exchanger Parameters

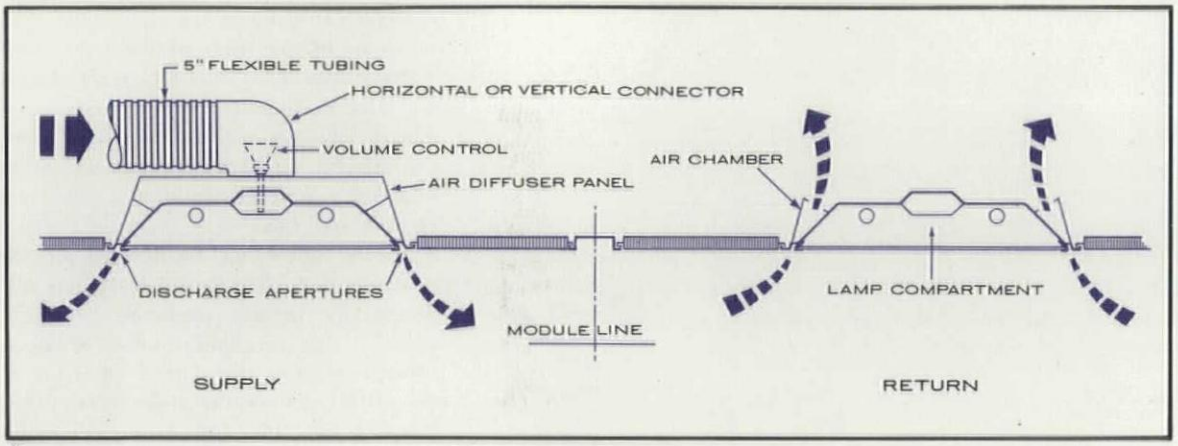
Two schools of application have branched from the air-diffusing troffer development, both recognizing the lighting heat problem to varying degrees. One embraces the architectural and mechanical requirements for which these multipurpose units were developed and has generally followed a checkerboard layout using half of the troffers for supply and half for return. The other turns to the complete utilization of all troffers in a layout for air return to accomplish heat removal.

When handling air, most troffers approved for this purpose will transfer a portion of the internally generated heat to the air stream, even when supply air is separated from the lamp compartment **(5)**. In supply applications, that portion of the heat load is being converted internally, thus cancelling the necessity of compensating for its influence within the occupied space. The fact remains, however, that troffers currently designed for selective supply or return are not very efficient for heat transfer and cannot be effective heat converters. Heat-transfer efficiency requires maximum temperature rise in a return-air stream entering the troffer at 0 F temperature differential. The same design handling a supply-air stream at a 20 F temperature differential would impart severe cooling of fluorescent lamps.

Research into the parameters of integrated lighting, cooling, and heat transfer has developed a design which accomplishes all three functions at one time—an air-exchanging troffer combining simultaneous air supply and return with increased light-producing characteristics.

As illustrated, the exchanger delivers air in a manner normal to air-diffusing troffers **(6)**. Room air is exchanged by inducing return flow through the troffer housing from end-to-end. Thus, supply air is delivered in a crosswise direction and returned in a lengthwise direction with respect to lamp orientation. Maximum heat rise in the return-air stream is accomplished by convective transfer throughout the length of heated surfaces within the enclosed lamp compartment, i.e., the hot glass walls and cathode ends of fluorescent lamps, reflecting metal surfaces, and glass enclosure. Conditioned air is delivered through a bridgelike air panel straddling the midportion of the exchanger. Heat rise in the supply-air stream is prevented by spacing walls of the air panel apart from the troffer. The air panel may then be further insulated from the heated cavity ambient by wrapping with an insulating blanket.

Heat-transfer characteristics of the air exchanger may be applied to both "air-water" and "all-air" systems. Approximately .4 cfm per sq ft of supply air is needed with induction systems to provide



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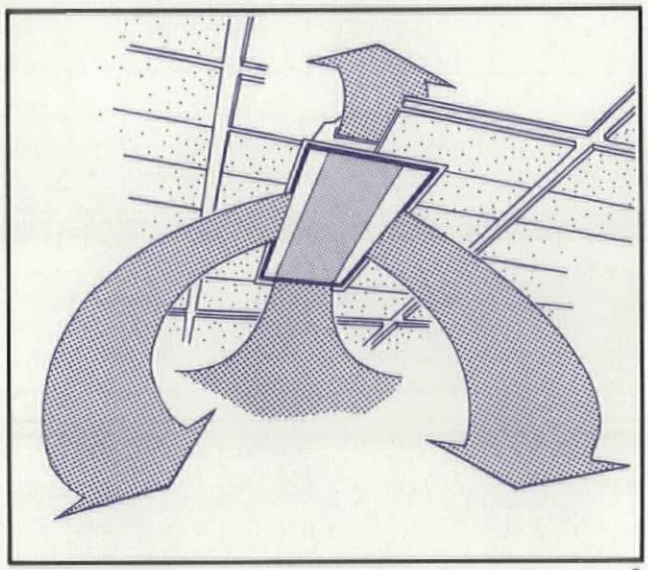
for ample dehumidification and removal of odors. In "all-air" systems, necessary air movement for six to eight air changes per hour can be achieved with 1 to 1.3 cfm per sq ft. Based upon office building modules averaging from 18 to 25 sq ft in area, and 9 ft ceilings, the volume of air available for return through the exchanger will range from approximately 10 to 30 cfm. Considering one exchanger per module, effective heat transfer can be achieved in this volume range. For example, a 2′ x 4′ exchanger can transfer the equivalent of 45 per cent of the lamp wattage to a 20 cfm return-air stream.

In terms of relative light output, performance of the air exchanger yields an equally important dividend. The effect of uncontrolled heat build-up within a troffer, and resulting losses in the light-producing potential of fluorescent lamps, has been described. Through heat removal, the lamp compartment of the exchanger is cooled and bulb-wall temperatures are maintained at near optimum for maximum light output. By comparison with static conditions, operating units can produce at least 15 per cent more light than identical units with exhaust dampers closed.

The air exchanger introduces for the first time a capability of removing a heretofore untouched segment of the lighting heat load: invisible infrared radiation. By employing techniques developed to filter out the heat in motion picture, television, and photographic studio lighting, prismatic-glass panels can be employed which separate light and heat. The heat-reflecting filter is produced by applying an optical interference coating to the prismatic panel by vacuum deposition. The coating is essentially transparent to visible light but reflects almost all of the long-wave infrared energy back into the ex-



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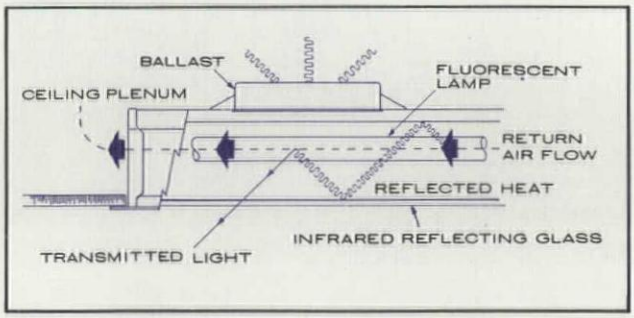

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changer, where it is absorbed and picked up by the return-air stream. By combining the heat-transfer mechanisms of thermal convection and thermal radiation, an exchanger can transfer the equivalent of as much as 60 per cent of the total lamp wattage into a 20 cfm return-air stream (7). Discounting that portion of consumed energy which is emitted as visible light, the product would be 70 per cent of the total lamp wattage available in the form of generated heat.

Special allowance factors for air exchangers in cooling-load calculations will necessarily include variables for individual design, size, and number of lamps utilized. Heat is transferred by virtue of an existing temperature differential. Since temperature difference is the potential which causes transfer, these factors must be included in the thermal-convection equation. In radiant-heat transfer, a change in energy form takes place, from internal energy within the lamp to electromagnetic energy for transmission, then back to internal energy in the exchanger housing. The amount of radiant energy absorbed for convective transfer is again proportional to the number of lamps and surface area. For example, a 2′ x 4′ exchanger with four 40-w lamps can transfer 30 per cent more heat with infrared-reflecting glass than with an identical uncoated glass enclosure. When equipped with two 40-w lamps, the transfer percentage would be reduced to a little less than half of that amount.

It may be concluded that the heat-transfer function of an air exchanger becomes increasingly important as foot-candle levels increase. Similarly, as numbers of lamps increase, shielding of infrared energy from the conditioned space becomes increasingly attractive. It should be observed that the use of infrared-reflecting enclosures and the cooling effect of convective air currents become inseparable, otherwise light output losses from the increased internal thermal activity would offset any possible advantages from filtering alone.

Engineering of Systems Design

The introduction of air-exchanger lighting to commercial buildings indicates the need for a re-evaluation of electrical and mechanical service systems. Because of many variables of building type and geographic location, a complete economic analysis is not feasible. For individual project analysis, studies should include: (1) the effect upon conditioned spaces; and (2) the effect upon conditioning systems.

Two interrelated environmental effects are produced by the air exchanger. The

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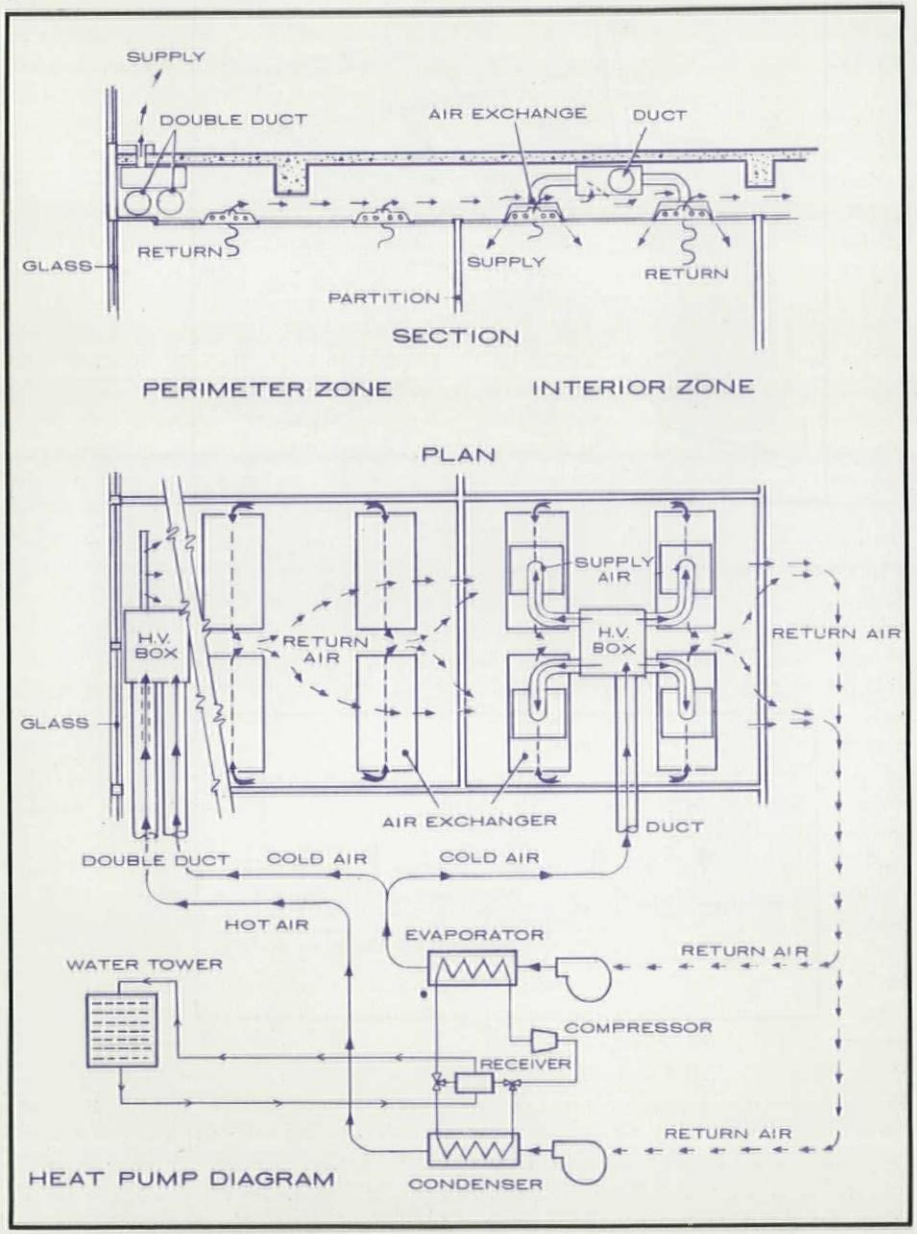


required illumination level for visual needs can be provided with up to 15 per cent less wattage than before. At the same time, the conditioned space receives only one-third of the heat energy normally radiated into it. Removal of this sensible heat gain by controlled energy distribution reduces cooling-load requirements. When applied to interior-zone conditioning, the result may be calculated in terms of lower air quantities or temperature differentials to be handled by the supply cycle of those exchangers selected for primary air supply.

Reduction in refrigeration plant capacity as a result of reduced cooling-load requirements is only one part of the total energy-distribution diagram. Unless the heat energy which has been removed from the illuminated space can be utilized, it will again become waste energy. One of the paradoxes in building today is the method wherein energy is used to cool the heat generated in one part of a building, while additional energy is consumed to simultaneously provide heat for other parts of the building.

Most building codes specify the amount of outside air which must be introduced for ventilation. Usually, an almost equal amount of waste air must be exhausted to allow for air intake. Many large air-conditioning systems revert to the total use of outside air for cooling when the outside temperature reaches about 50 F, to reduce the cost of cooling high interior-zone loads. Since this intake volume must also be exhausted in one manner or another, some installations have adopted the principle of exhausting through troffers to remove the lighting heat load. Although these systems can no doubt effect economies at certain periods and locations, it must be remembered that, at temperatures below 50 F, heating will usually be required in some exterior zones of the building. Thus, the left hand is throwing away heat while the right hand is busily providing it.

The use of outside air as a replacement for air exhausting of lighting heat loads has additional, and perhaps more hidden, economic wastes. Experts in the field of air purification are pointing to the growing contamination of air in metropolitan areas which are, in fact, the building centers of our country. Examples are being found wherein dust filters and activated-charcoal cells load up much faster purifying outside air than handling return air inside the building. In consideration of the costs involved in heating and cooling the enormous quantities of outside air and our growing ability to achieve total treatment and subsequent re-use of inside air, perhaps the sealed building environment, not unlike that of a modern submarine, is in the not too distant future.

Designing for the separation of outdoor influences on indoor comfort emphasizes a need for the development of more efficient heat-pump systems for total conditioning. It is in combination with the closed reverse-cycle conditioning system that air-exchanger designs offer the greatest potential in effecting economies. Air-to-air heat pumps, operating on a reverse-cycle principle, are utilized to pump heat out of a space during warm weather, and by automatic switching, reverse the cycle by extracting latent heat from air and transferring it to the space during cold weather. Due to average temperature gradients between indoor-outdoor conditions, summer differentials amount to only 15 to 20 F, whereas 70 to 75 F differences can be common in winter. Thus, if the pump is sized for the cooling load, electrical-resistance heating or supplemental boilers must be installed to provide the additional heating needed in winter. If, on the other hand, the heat pump is installed to meet the greater indoor-outdoor temperature differences in winter, lower summer gradients represent excess cooling capacity.

The availability of a constant source of heat energy, 90 F air for example, delivered from air exchangers to heat pumps of the staged-cycle type should materially reduce installation and operating costs. Optimum efficiency would be realized if an over-all balance of heating and cooling requirements could be achieved by automatic transfer or removal of heat within the building. During winter operation, the pump can extract heat from air delivered to it from interior zones and transfer the heat in stages to satisfy the requirements of any number of exterior zones (8). In summer operation, excess heat would be extracted from the return air and transferred to a cooling tower. The adaptability of such systems to the many variables wherein solar influences require cooling on one side of a building and heating on the opposite side are readily apparent.

Although load patterns vary more widely in exterior zones, it is often desirable to introduce interior-zone control or satisfy changing space conditions. Thermostat-controlled mixing of cold air and warm air from high-velocity, double-duct systems is usually employed to obtain the desired supply-air temperature. Variations in air temperature are also achieved by terminal reheat, with coils tempering supply air at the outlet. With a constant heat source readily available from air exchangers, it is possible to achieve interior-zone control without resorting to double duct or terminal reheat. Induction boxes which filter and mix the air returned to the ceiling plenum with primary air delivered in a single-duct system can easily provide the small temperature differences usually required to satisfy interior-zone conditions.

Regularly scheduled in-service maintenance of air exchangers should be observed for continued bonus in light output. Although relatively small quantities of return air are handled by each unit in the average installation, depreciation due to dirt can be expected to be somewhat greater than that attributed to normal convective infiltration in recessed troffers. Until the hermetically-sealed building becomes a practicality, outside-air contaminates and those brought into the building by people will continue to be a problem solved only by good housekeeping. Great strides have already been made, however, in the field of electronic air purification. Electrostatic filters are capable of removing 90 per cent of the particulate matter from supply air. Another system may best be described as electronic disintegration of dust and dirt into particles so small that they literally become a part of the atmosphere. In passing through a high-voltage static field, dirt and dust borne by the air stream are bombarded to minute size. At the same time, the negative charge developed in the static field negatively ionizes the particles, causing them to be repelled from interior surfaces.

The development of new products and new methods which depart from the old represent a positive approach to one of the building industry's greatest problems —a feudal system wherein subindustries operate within very limited fields, each surrounded by a moat of tradition. The air exchanger is, perhaps, indicative of a co-ordinated trend of thinking being advanced through research. As may be expected, when pooled interests are applied to a problem, these same interests may be identified in the solution. From a lighting viewpoint, the thermal barrier can be pushed back, possibly far enough to gain time for the perfection of efficient electroluminescent sources. A new dimension in flexibility is achieved in the field of air-distribution engineering. Architectural desires have produced a blending of three separate ceiling-plane components into a single functional, yet aesthetic, design. And, as systems analysts, the architect and consulting engineer will both find a component for potential economy and improvement in the operation of environmental systems.

Re Kiesler: Additional Comments

Dear Editor: I knew you were preparing something on Frederick Kiesler but I was pleasantly surprised by the importance and quality of your article (JULY, 1961 P/A). I congratulate you most sincerely.

It is heartening to see that a professional magazine is still able to break its material bondage to devote almost a complete issue to the spiritual gratification of pure creativeness, foresight, and courage.

I have often been amazed to see how little architects really know about the work of Frederick Kiesler. Yet what would we do without the Kieslers? It is the old, sad story of the unaccepted creator and the successful executants (or executioners?).

Congratulations to P/A.

PAUL F. DAMAZ
New York, N. Y.

Dear Editor: Your article on Frederick Kiesler is a worthwhile and sparklingly handled piece. Kiesler, to be sure, isn't quite what he thinks he is, but that is true of us all. You very wisely did not particularly endorse his reading of past events. What you did succeed in doing was to bring out the valuable aspects of a long and devoted career of teaching the ideas that can feed architecture.

It would be peculiar to write this note without commenting on P/A as a whole. I believe it has contributed in a most signal way to the remarkable improvement in U.S. architectural reporting that, three or four years ago, I would not have believed possible. What I particularly like about P/A is that it follows no formula that I am aware of—particularly no foreign one—and thus can be construed as a genuine native manifestation, symptomatic of our potentials.

If you could only find a way now of making the magazine easier to read through without offending your advertisers. Whether or not this is possible, please rest assured that you have one more enthusiastic reader.

EDGAR KAUFMANN, JR.
New York, N. Y.

Dear Editor: I have kept myself with considerable effort from crying out loud about your New Sensualism, New Chaoticism, and I shall hold on to myself even now that you have discovered the past of Friedrich Kiesler. You must have been the last man alive who had not heard about it.

Apropos Perret's "first building with a concrete frame in 1921"—what does Kiesler think held up Hennebique's Tourcoing Mill in 1895 or Perret's Rue Franklin in 1903—*korsettstangerin?*

SIBYL MOHOLY-NAGY
New Milford, Conn.

Dear Editor: A good piece. Had Howard Myers lived, Kiesler would have risen higher. Glad to see you're Howard's executor. Incidentally, the Eighth Street Theater was my investment when I was 22 and I still have it.

CHARLES ABRAMS
New York, N. Y.

Dear Editor: I took great delight in your article on Kiesler. A man so full of wonder, capacity to think, and desire to invent is the maker of other men. Through his work he teaches.

LOUIS I. KAHN
Philadelphia, Pa.

Dear Editor: Congratulations on your interesting piece on Kiesler! It helped many of us to get to know this interesting artist.

I. M. PEI
New York, N. Y.

Dear Editor: Your interview with Frederick Kiesler is a long overdue acknowledgment of his enormous vision and creativity.

Louis Sullivan called the Sagrada Family Church of Gaudí "the greatest piece of creative architecture in the last twenty-five years"—this in 1922. ("Lieber Meister" passes over the house for the Coonleys.) What would he have said of Kiesler? The touchstone of Kiesler is his concept of continuity. Can this be what Sullivan meant?

You are considering architecture now. As Bassetti said, "Modern architecture is dead." What a wealth of history you can now present in your pages. Walter Griffen and Marion Mahoney, Bruce Goff, Utzon, all deserve recognition. It must be clear that not everyone is confused or distressed about architecture. Kiesler proves that—and in plain English, too!

JOHN C. McEWEN
Rodriguez Design Associates
St. Louis, Mo.

Dear Editor: As one of his oldest friends and a sometime collaborator, your article on Kiesler gave me great pleasure.

To my surprise, I found on page 114 the reproduction of one of the snapshots taken at the "Internationale Austellung neuer Theatertechnik," Vienna, 1924. The caption, unfortunately, contains a mistake. The four people shown are: Kiesler (seated in foreground); the man standing behind him on a chair is not van Doesburg but Enrico Prampolini, the Italian futurist; van Doesburg is shown standing on the floor at the left, in a light suit and white spats, and is back to back *with myself.*

B. F. DOLBIN
Jackson Heights, N. Y.

Space, Form, and Architecture

Dear Editor: Donald Leslie Johnson's article on Form and Architecture (JUNE 1961 P/A), along with a previous article on Louis I. Kahn's work and philosophy of architecture (APRIL 1961 P/A), foreshadow a renaissance in right thinking, a turn to meaningful reality in design which promises a future development in architecture that can cope with and effectively express the changing multiplicity of our life and culture and at the same time emphasize its essential oneness.

Mr. Johnson considers the universality of form as the underlying, unifying factor in architecture and that which determines beauty in buildings without which they would not be architecture. He does well to destroy the narrow, unimaginative interpretation of the phrase "form follows function." But that phrase, we must remember, did good service in that it liberated form from its absolutist connotation. Human function, we know, is infinitely varied; therefore form, which, as Mr. Johnson would have it, must be organically coordinated with function, must be infinitely varied also. In this sense the phrase still holds true.

So far, all the discussion has been about form. Our old friend space—organized space, interpretation of space, continuity in space and time—all these concepts seem to have fallen by the wayside of our thinking. Mr. Johnson does mention at the end of his article "all the mutually interacting material, *spatial* and *temporal* configurations" and combines them with function to "make them one so that form and content are inseparable."

My feeling is that form and space are inseparable. The universe, according to Albert Einstein, is a "space-time continuum," and all phenomena take place in space and time. Certainly the architect, in planning his building, is conscious of space relations and, in his imagination, must be conscious of movement in time—the days, the seasons, and people in their

comings and goings and in their activities. Thus the building takes "form" in space and time.

To explain what I mean, I will rewrite Mr. Johnson's paragraph in which he describes Mr. Wright's work and will underline my interpolations.

"Wright's sense of the organic forms necessary to produce a building involved, for him, consideration of what was to be seen in *the spaces that we call* its rooms, what was done *in those spaces* and how people arrived *in space time*. Look at the magnificent corridors in his houses where his knowledge of the forms of motion *in time*, of light and its patterns *in space time*, and of matter arranged in repetition or sequence *in space* are dramatically developed."

I cannot help thinking that Mr. Wright himself considered matter as *space*—hence the continuity and the oneness of form and space in his buildings.

SILVIO ZANETTI
Cambridge, Mass.

Moses Achieves Biblical Stature

Dear Editor: I have always looked to your editorials on the last page of P/A for a goodly bit of motivation in this era of madly competitive architecture.

Bravo for your (JULY 1961 P/A) "P.S." Little Seattle will outshine the New York conglomeration. The New York World's Fair will be a real "circus." Cheer up: every great metropolis, it seems, has its "Moses." I have always believed the Commandments were entrusted to Moses for some kind of orderly society.

LOUIS F. PACHECO
Chicago, Ill.

Penn Station Demolition Deplored

[*For additional comments on Penn Station, see last month's* NEWS REPORT—ED.]

Dear Editor: The proposal to tear down Pennsylvania Station to provide a site for the new Madison Square Garden is of serious concern to the National Trust for Historic Preservation. The City of New York has already been extremely reckless with its architectural monuments and can ill afford to sacrifice another.

A scholarly and extensive six-year survey of the major historical and architectural monuments of the city, inaugurated by the Municipal Art Society, was completed in 1956. In that interim, more than one third of the buildings scheduled to be appraised as worthy of preservation had been razed, including many that had been given the carefully evaluated designation of "Nationally Significant."

The National Trust is a nonprofit educational organization chartered by Congress but supported wholly by private dues and donations. We are charged with the responsibility of encouraging public participation in the preservation of sites, buildings, and objects significant in American history and culture. Ours is a role of friendly persuasion rather than legislative action, but we have in that role the support of more than 340 powerful and dedicated organizations including the American Institute of Architects and small groups formed to preserve single sites or structures.

It is on their behalf that we shall seek public opposition to the proposal to raze Pennsylvania Station. Surely, as part of well considered city planning, there are sites far more suitable to the uses of the new Madison Square Garden whose location would be more felicitous in the terms of handling the traffic volume involved.

In the Municipal Art report, Pennsylvania Railroad Station was placed in Category 3 in the list of buildings in the Borough of Manhattan which they nominated for protection. This terminal, designed by McKim, Mead & White in 1906, is an architectural monument worthy of preservation. The financial problems of the railroads no doubt are having some influence in their seeking to dispose of these expensive investments; or, as in the case of Grand Central Station, to seek to chop up the handsome interior into bowling alleys and other income-producing units.

The need for these two great terminals will remain. The problem of the financial relief of the railroads, especially those serving commuters, is for those who are concerned with the growing crisis in the problems of mass transportation in all of our metropolitan areas today.

On behalf of those who are concerned for the preservation of structures of great architectural merit, the National Trust for Historic Preservation would urge a serious reconsideration of the proposal to demolish Pennsylvania Station.

ROBERT R. GARVEY, JR.
Executive Director
National Trust for Historic Preservation
Washington, D.C.

Dear Editor: The announcement that Pennsylvania Station is to be razed to street level and replaced with a sports arena and a congeries of unrelated but profitable enterprises, brings three issues to focus: (1) Have the railroads so completely capitulated to the airlines that a series of low-ceilinged, concession-strewn rat mazes is the best gateway to New York which they now can offer? (2) Can the City afford to leave problems of transportation, transit, and the major traffic of sport spectacles to chance and private choice? (3) Do enough New Yorkers feel sufficiently strongly that this is a monument worth saving for its own sake?

The first point is so complex only experts should attempt an answer. But technicians are apt to overlook the obvious. The railroads' future will depend in part on how the public feels about them. How the public will respond, though perhaps unconsciously, to the degradation of railroad service will have its effect on the terms of their franchises, their tax status, and hoped-for subsidies.

To decide the suitability of this site for a sports arena, the City, fortunately, has an effective Planning Commission. Even a Master Plan no longer seems an obtainable dream. Meanwhile, the Commission can be relied on for honest, able, and impartial answers.

To approach the last question, the Mayor has recently appointed a committee to devise ways and means of preserving structures whose historic and aesthetic importance has real value to the community. New Orleans, Boston, Providence, Charleston, and Philadelphia—not to mention Paris and London—have pointed the way. Naturally, an official list of protected structures and districts must be prepared with caution, after open hearing, and with due consideration of private interests. When adopted, it should soon be accepted as a normal part of the controls on land use, such as the zoning restriction and the building code. There will no longer be the need, as each crisis develops, for an aroused citizenry to hurl itself into the path of the bulldozers.

In the meantime, while awaiting these answers, one further and more fundamental question can be asked: Is the proposed new building, for its own purpose in its own idiom, going to be as inspiring a design as McKim, Mead and White's was for its purpose in 1906? There is no reason why it cannot be. There is an opportunity and an obligation here to give the public something more than a run-of-the-mill commercial structure.

If the challenge is met boldly, imaginatively and generously, then, certainly, it will be preferable to the slow death by desecration that is taking place at Grand Central. If, however, the promoters are timid and pinch-penny, we will all be the losers. Once more New Yorkers will have stood idly by while old grandeur is sold for new shoddy.

HARMON H. GOLDSTONE
President, The Municipal Art Society
New York, N. Y.

Extent of Architect's Liability in Construction Financed by Bond Issue

BY JUDGE BERNARD TOMSON AND NORMAN COPLAN

P/A's legal team discusses a recent court decision that involves the extent of an architect's liability to his engineer if costs exceed amount specified by bond issue.

Is an architect liable to his mechanical or electrical engineer if the cost of executing the engineer's plans, when added to the structural cost, exceeds the bond issue? The Supreme Court of Michigan has recently answered this question in connection with plans which were furnished to a school board for a high school building (*George Wagshal Associates, Inc.* v. *West*, 107 N.W. 2d 874).

In this case, a school district had authorized a bond issue in the sum of $750,000 for the construction of a new high school. The plaintiff, an engineering firm, had been retained by the project architect to furnish the design for the electrical, plumbing, heating, air-conditioning and ventilating facilities for the school. Plaintiff was advised, prior to the drafting of any plans, that the funds available for actual construction would be approximately $620,000. When bids were taken after the completion of plans and specifications, the lowest bid totaled $842,750. Consequently, the high school, as designed, was never constructed. The engineer, who had not been paid, instituted an action against the architect and the school board for the monies allegedly due as compensation for services rendered. The trial court dismissed the action, and an appeal was taken.

The total bid of $842,750 was composed of $509,750 for the structural work, $67,000 for the electrical work, and $266,000 for the mechanical work. The electrical and mechanical phases totaled $333,000, or 39.4 per cent of the total construction cost, as compared to 60.6 per cent for the structural phase of such cost. On the basis of the availability of $620,000 for actual construction, the structural phase amounted to 80 per cent of the available funds, and the electrical and mechanical phases amounted to 55 per cent of such funds.

The defendants contended that the engineer had "overdesigned" his part of the work. The plaintiff, on the other hand, argued that the building was too large, and the facilities required too great to be built with the available funds. The Court, in summarizing the plaintiff's argument, stated:

"Plaintiff contends that because the school was located in a semiurban area and outside the limits of the village of Romeo, unusual problems were presented, consisting of extensions of water lines and sewer lines from the village to the school property, extensive yard drainage, water tower and pumps because of inadequate pressure, and installation of a water-softening system. Plaintiff further claimed the school board required certain other installations which plaintiff considered to be more costly to design and install, such as wall-hung water closets as contrasted with floor-mounted water closets, and numerous other installations. . .

"Appellant [plaintiff] further contends the court erred in finding that the mechanical and electrical aspects in the construction of the school should not have been more than 33 per cent of the total construction, and, if in excess thereof, the plans were 'overdesigned.' Plaintiff contends the size of the structure designed and the facilities required by such design and/or by the school board should be taken into consideration in determining whether or not 33 per cent of the total construction cost was a reasonable figure. It also contends that the unusual circumstances of the construction of the school outside the village should be considered."

The Appellate Court, in affirming the judgment of the trial court, which denied any compensation to the engineer, ruled that the trial court was not in error "in holding the job was overengineered when the figure reached 55 per cent of the amount available for construction." In this connection, defendants had presented expert witnesses who testified in substance that engineering, electrical, and mechanical costs, on the average, should run between 25 per cent and 35 per cent of the total cost.

In any event, however, the Appellate Court stated that the principal issue involved was the question of whether an engineering firm that designs plans for a school building was legally obligated to present plans with a construction cost within the budget of the school board, regardless of the design of the building and the facilities demanded. In this connection, the Appellate Court stated:

"In its opinion denying relief, the trial court relied upon [citing cases]; all of which hold that an architect is obligated to bring in plans which will permit the building to be constructed at a cost not to exceed that set by the owner.

"Appellant [plaintiff] does not dispute these authorities, but contends that, while it is true an architect is obligated in this fashion, no such duty is placed upon the engineer.

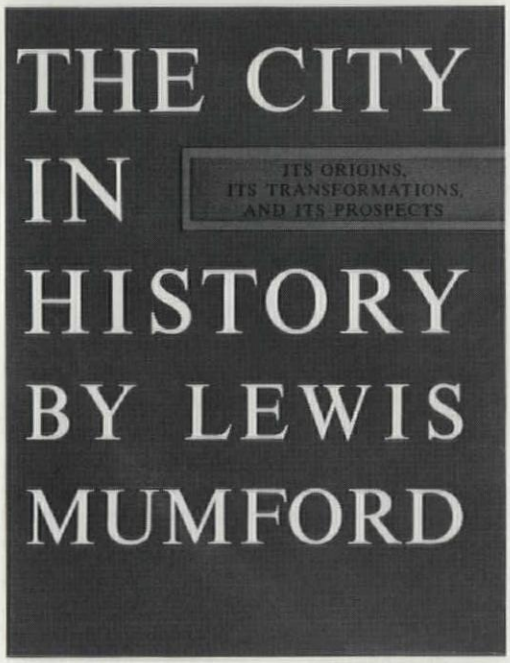
"We think the trial court was correct in relying upon the rule established in these cases where, as here, the engineer and the architect were engaged in a joint project. In this instance, the engineer was present with the owner school board and the architect throughout the discussions, and, therefore, had first-hand information as to the amount of money available for the construction. We think it is bound under these circumstances to the same rule of law."

The Michigan Court's statement in this case, that an architect is obligated to furnish plans which will permit the building to be constructed for the amount of the bond issue, is appropriate to public works. However, unless the architect has guaranteed the construction cost of the project in his contract, the general rule in connection with private construction is that he will not be denied recovery of his fee unless the cost of erecting a building exceeds unreasonably his estimate of cost. The present decision, of course, does not discuss the responsibility of the architect to his engineer when the total cost of the project unreasonably exceeds the budget in nonpublic work.

Sticks and Stones *May* Break Our Bones

BY HENRY S. CHURCHILL, FAIA, AIP

A review of Lewis Mumford's new work, The City in History: Its Origins, its Transformations, and Its Prospects. *Harcourt, Brace & World, Inc., 750 Third Ave., New York 17, N. Y., 1961. 657 pp., illus. $11.50*



Lewis Mumford's *The City in History* is not for those architects and planners who are looking for a formula into which they can cast their own lack of ideas. For Mumford is not so much concerned with physical form as he is with spiritual and moral content. This content is contained in The City, which is a shell that has grown around man: it is man, and from it there is no escape. The City has pursued man down the ages; it has formed his civilization and been the instrument of his debasement and folly.

The sweep of the book is broad, the approach is synoptic, the point of view highly personal. As readers of Mumford's previous books (and particularly his critical articles) well know, it is the social and biological implications of architecture and city planning that interest him most. He cares little for aesthetics and nothing for structural or operational techniques; what matters, and what is essential, is how well human needs are served.

The City, which in his view is the formative factor of civilization, has not done this very well. In fact, it has done it very badly. He says that The City was first of all a place where people met to worship their gods, a place of mystery and fear, presided over by priests who soon became secular tyrants. How well this thesis would stand the test of anthropological scrutiny I do not know, nor do I think it matters, because this is the theme of the book and it must be accepted as such: that the origin of The City was a trauma of such magnitude that it has been its controlling illness ever since.

Therein lies all the strength, as well as most of the weakness, of the book, for in order to prove that there is trauma, and to remedy it, emphasis must be placed on what is ill and not on what is healthy. Thus the most brilliant passages are the ones describing the seamier sides of ancient cities, their filth, physical and moral, and their almost complete lack of human dignity. Only for a few brief moments, in Athens, was this dubiously not so. Rome was utterly vile.

It was not until the Middle Ages that there appeared anything like social consciousness and social responsibility. These brought with them a whole series of new social functions and appropriate new—or modified—physical forms, among them hospitals, almshouses, city halls, new uses for the market place, universities.

These gains, moral and material, were wiped out by the final victory of the despots of the 17th and 18th Centuries. The physical order and political control which The City brought into the baroque way of life produced only a nullity of life, political sycophancy, and war. The rise of industrialism only shifted despotism from the ownership of land to the ownership of tools; *laissez faire* brought about a quite complete demoralization of whatever qualities the baroque city possessed.

Today, Mumford warns us, we must get back to human fundamentals. If the city is to survive, if civilization is to survive, we must discard our superficial well-being and assume hard virtue.

All this being true, it is of very little help to the architect or city planner. The omission of any aesthetic considerations raises sharply the question of the value of beauty as human worth: is all that we think of the Visual City as something uplifting to the spirit of man really nothing in the face of man's inhumanity to man? Mumford seems to answer in the affirmative.

The planner is also left in a dilemma. The City—and hence our civilization—is scabrous and worthless, and can only be redeemed by moral reform. But moral reform is not a function of the planner, although moral—i.e. Mumfordian sociological—understanding might be. Yet nowhere in *The City in History* is there any relation shown betwen the *form* of the city and moral values, no guide to the planner

Continued on p. 181

Reduction of Heating-Cooling Cost

BY WILLIAM J. McGUINNESS

A simplified system of studying economic benefits of insulation for various types of occupancies, as its use affects required size of mechanical equipment and annual operating costs, is discussed by the Chairman, Department of Structural Design, School of Architecture, Pratt Institute.

A performance partnership for thermal regulation exists between the skin of a building and the interior equipment that provides the indoor climate during the uncontrollable and often unpredictable changes in weather. In general, there are only two kinds of skin materials: glass (or similar material), and surfaces opaque to light. In conventional buildings, the latter may be referred to as roofs and walls.

In the design process of a building, a consideration of the mass-relationship between glass and opaque areas must be included. Similarly, the quality of resistance to heat flow out of a building in cold weather, and into it in warm weather, is also a vital part of planning.

Dealing with glass is like holding a tiger by the tail. Its instantaneous response to solar energy, its high transmission factor, and its varying behavior in various orientations all contribute to the problem of handling it well.

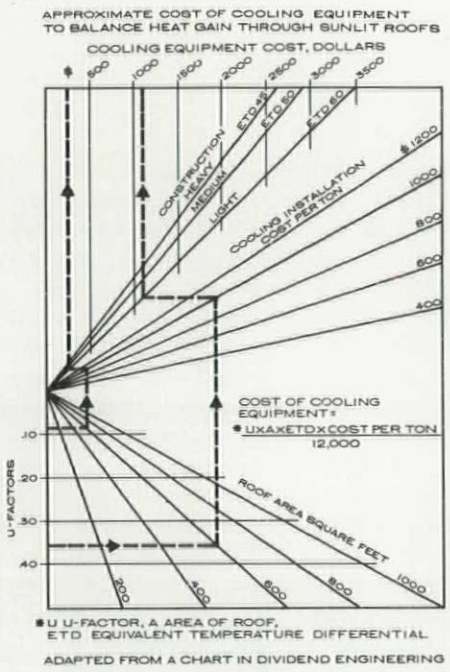
The roofs and walls of a building present a more sober and stable problem. Texture, durability, weather-tightness, weight, fire resistance, economy, and a low thermal conductivity are all to be considered.

Architects and engineers have been weighing the economic effects of insulation, and it seems quite clear that it is economically desirable to achieve a U-factor of 0.10 Btu/hr/sq ft/deg F or better for walls as well as roofs. Frequently this can be done with only a few inches of insulation. The profitable effects, of course, are to decrease the cost and size of heating and cooling equipment and to reduce its operating costs. These benefits, so well known and customarily used in frame residences, are applicable with equal importance to industrial and commercial buildings. Their acceptance, however, has been surprisingly slow.

The Owens-Corning Fiberglas Corporation has developed a service, in operation since January 1961, to advise and assist architects and engineers in the economic appraisal of the use of proper insulation in roofs and walls. Now, they are also studying the evaluation of pipe insulation and other related applications.

In conjunction with the application of their system, known as Dividend Engineering, they recommend that their nearest office be called for assistance in the use of standard evaluation forms that they have developed.

Recently, Guy B. Panero Engineers, New York, used Dividend Engineering data to analyze various possible roof insulation thicknesses for the new Singer Distribution Center Building, Syosset, N. Y. This analysis revealed that $38,000 of additional insulation (4 in. vs. 1 in., U-factors of 0.063 and 0.21 respectively) would reflect itself in a $91,000 savings on smaller heating and cooling equipment, because of the large reduction of heat loss and gain through the roof. The added insulation would also produce annual operating-cost savings of $8930. Therefore, the cost of the added insulation is paid back to the owner in about four years. After that, there is a clear $8930 annual return in addition to the original $91,000 savings.



ADAPTED FROM A CHART IN DIVIDEND ENGINEERING

The importance of better insulation in masonry, metal, and other incombustible surfaces has been greatly stressed by Professor John Hancock Callender of Pratt Institute, and the late Charles Neergaard, Hospital Consultant. Their recommendations have often been reported on this page.

The chart shown is an example of the numerous charts included in Dividend Engineering. It indicates the savings in the cost of cooling equipment for 600 sq ft of roof, if the U-factor is improved from .36 to .09. The saving of $850 ($1100 minus $250) is one of the many items that would enter the evaluation worksheets. It would be partly offset, of course, by the cost of the increased insulation.

Continued from page 175

who wishes to act thoughtfully, but who must act anyhow, because that is his job. And, if The City is of and in itself the product of an ineradicable trauma, if there is no escape, why struggle?

Mumford overlooks the fact that never before in history has there been such an effort made to deal with The City as a place for people. Never have there been so many studies trying to illuminate the things, physical and human, that make up the city pattern. The creature called "Urban Man" is just in his genesis, and we have much to learn about him. The process of learning is fun, and may even be worthwhile just because it is fun—i.e., man doing his damnedest to do something for himself.

The City in History is full of insights and penetrating observations. It is a difficult book, but worth the effort. It must be thought about; it should have been fun to write.

An Intellectual Plum Pudding

The Golden House of Nero: Some Aspects of Roman Architecture. *Axel Boethius. University of Michigan Press, Ann Arbor, Mich., 1960. 195 pp., illus. $15*

This is an odd book. It is odd in that the reader has no clear-cut conception of what he is embarking upon when he begins to read. "The Golden House of Nero," the Domus Airea from which the title derives, is not mentioned until the third section of the book and then only casually; bringing this point home is the fact that out of 109 illustrations only three relate to this edifice and even these are incomplete. Actually, the subtitle of the book, "Some Aspects of Roman Architecture," is more revealing.

The author's primary preoccupation is with the evolution of town planning and architecture in Rome from the earliest times (or, as the chapter heading puts it, "From Earliest Roman Villages to Etruscan Urbanization") to Imperial Rome and its legacy of town architecture to the Middle Ages. In time, Dr. Boethius thus covers well over a thousand years of Roman architecture. Even this, however, seems confining to him, since in the process of following the emergence of Roman town architecture he explores a most bewildering array of items that impinge on his primary subject. One is treated to sudden digression and references into the fields of history, literature, husbandry, art, business, and government. This is a most pleasant ramble

Continued on page 186

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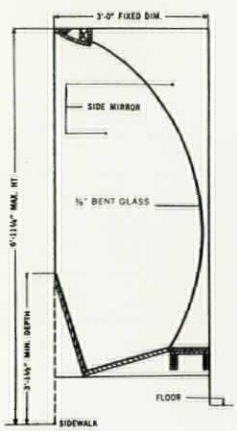

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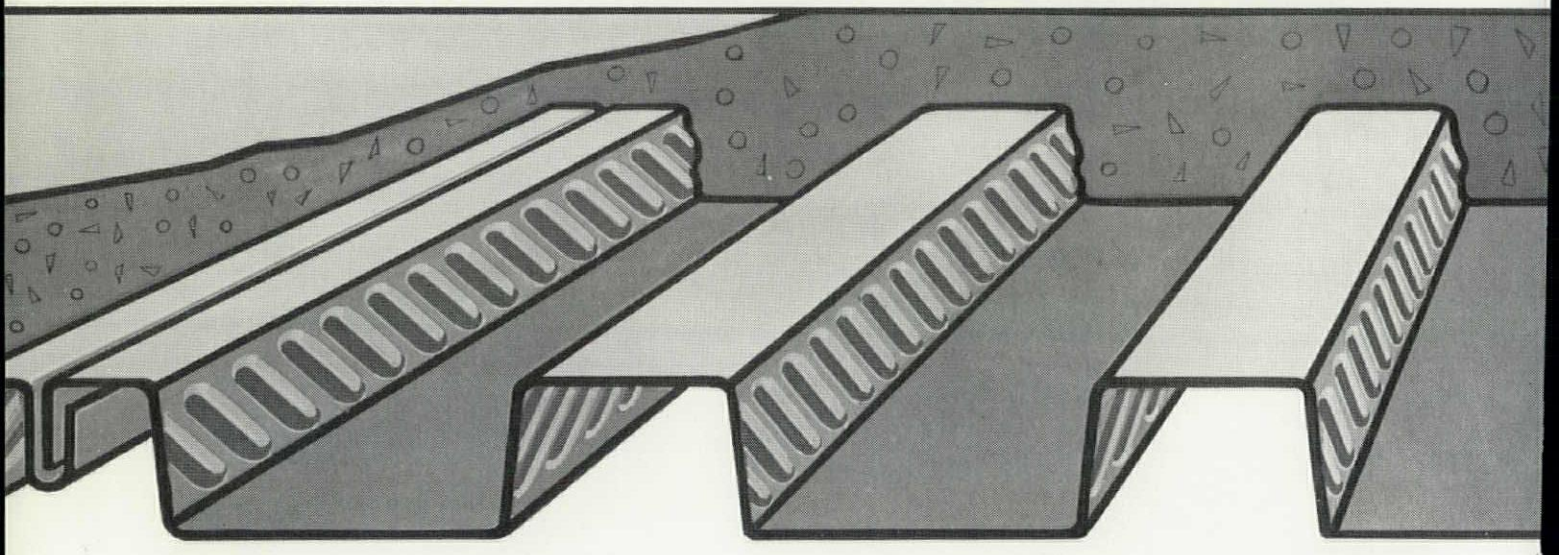

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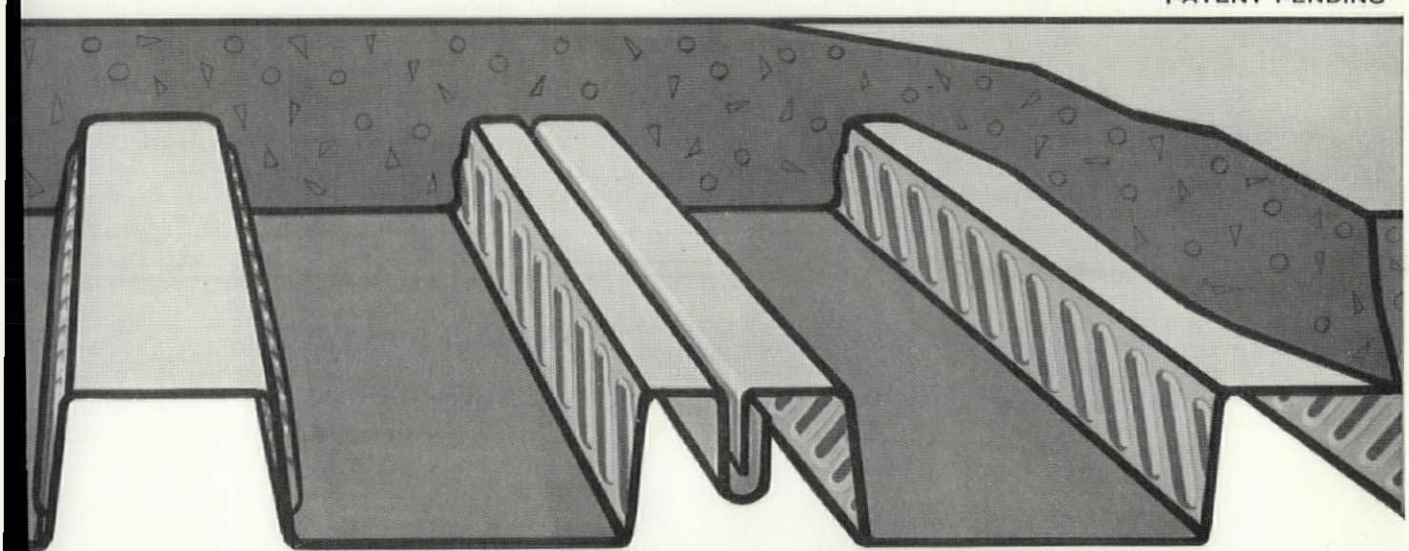

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Continued from page 181

through man's multitudinous interests, but it is a considerable strain if one tries to perceive in Boethius' work a clear and continuous evolution of ideas. One feels as if one is sticking one's fingers into an intellectual plum pudding, never knowing what morsel will be found stuck to them when they are pulled out. Boethius also has a tendency to ascribe his own great erudition to all his readers. He most carefully credits every source and refers to every work relating to the particular subject he is discussing. Unfortunately, to take full advantage of these references, one would have to be fluent in half a dozen languages, be a specialist in several sciences, and have access to publications which are probably only found in two or three places in this country. Lacking this, the reader will often find himself facinated and swamped at one and the same time.

One may well ask just what the author is after. This is not a book on architectural history. His first three chapters are, if anything, an attempt to ascertain and explore certain trends in the evolution of certain Roman structures and the Roman concepts of urban organization. His views contain a great deal of conjecture. Some, such as the Oriental derivations, may not find ready acceptance, despite the fact that the author, where he is dealing with conjecture, supports it with extensive documentation. Perhaps his main contribution, then, is to throw out the intellectual leaven to stimulate further exploration along the lines he indicates.

After reading the first three chapters of *The Golden House of Nero*, one gets a real start with Chapter Four. This chapter, "The Domestic Architecture of the Imperial Age and Its Importance for Medieval Town Planning," is a brilliant piece of writing. Here the author puts aside the ramblings and digressions of the earliest sections and devotes his whole effort to an examination of the tenement house-shop building of Rome, and more particularly of Ostia. In his analysis of these edifices, which have been neglected by most writers in favor of the more sumptuous structures of the period, Boethius has added a substantial contribution to the field of architectural history.

His book is not an easy one to read. In effect, casual browsing may be more rewarding than trying to go from cover to cover. One needs to approach this book with a sense of exploration and discovery; one then finds it a facinating experience that yields dividends in the most unexpected places. Inasmuch as Boethius approaches his subject matter not from the narrow point of view but from the interrelation of all aspects of human life, his book is a real experience in liberal education as distinct from a technical treatise.

FREDERICK HERMAN, Architect
Department of Social Studies
College of William & Mary
Norfolk, Va.

The Year of the Coal Shed

'60 Annual of Architecture in Japan. *Edited by Yoshihisa Miyauchi. Bijitsu Shuppan-sha, 15 Ichigaya Honmura-cho, Shinjuku-ku, Tokyo, 1960. 432 pp., illus. $15 (boxed)*

This book is the first of a projected series that is intended to provide a comprehensive annual survey of architectural activity, problems, and prospects in Japan. The period covered in this edition includes 1958 and the first half of 1959.

Continued on page 194

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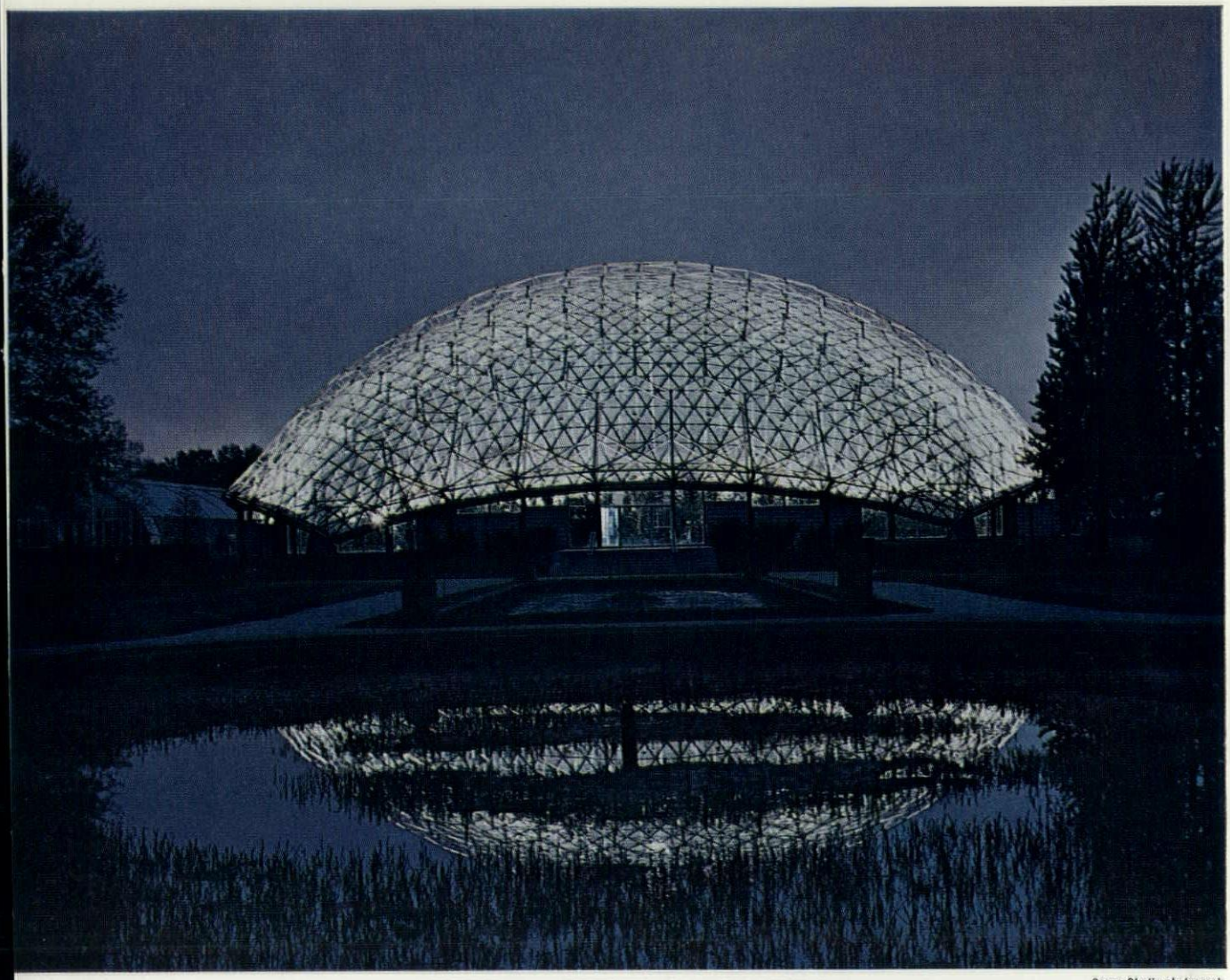

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Architects: Walter Hook Associates; *Structural Engineers:* R. V. Wasdell and J. R. Armstrong; *General Contractors:* Southeastern Construction Co., Goode Construction Corp., F. N. Thompson, Inc., and McDevitt & Street Co. Structural steel was fabricated by Southern Engineering Co., Charlotte, N.C., and Bristol Steel and Iron Works ,Bristol, Va. Bristol erected all steel.

all columns outside clear space inside

When completed, the North Carolina National Bank Building in Charlotte will be the largest and tallest all-welded, steel-framed building in the Southeast.

The building will have 16 floors plus a 2-story penthouse. The tower will be in two sections: a main tower for bank personnel and leased offices; a service tower for elevators and stairs.

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Using these heavy sections as the column core, the columns are welded, built-up members with a 20-in. x 2¾-in. cover plate welded flat on one flange, and two 30-in. x 2¾-in. plates welded perpendicularly to the edges of the other flange. The finished, fabricated columns weigh 1,100 lb per lineal foot.

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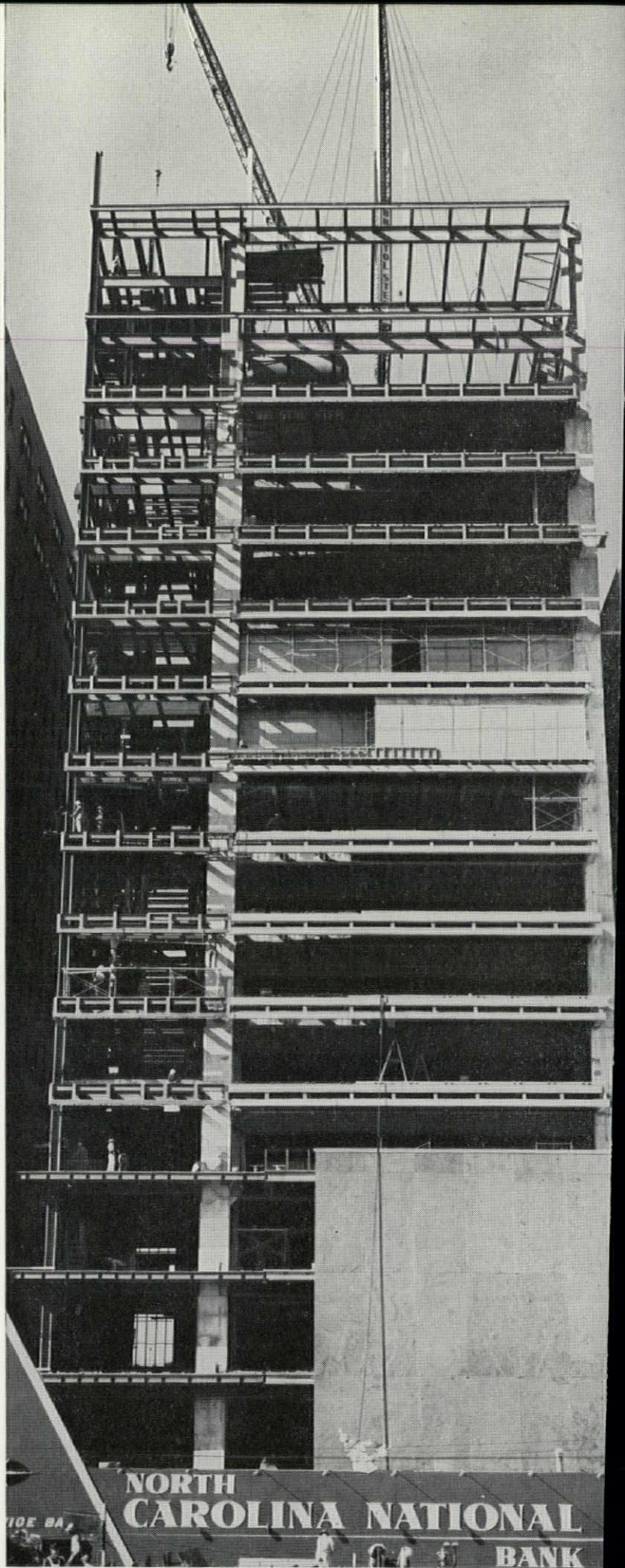

ALL-WELDED. *150,000 lb of welding rods were used in shop fabricating, and 35,000 lb were used in erecting 3,800 tons of Bethlehem structural steel.*

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Continued from page 186

English summaries merely hint at the contents of the articles on such topics as design theory, urban renewal, technological developments. The major part of the book, and the part most accessible to those who cannot read Japanese, is the "Selection of Works" — 54 completed works of architecture presented in handsome color and black-and-white photographs.

These works were selected by a jury of distinguished architects and critics from a field of about 1000 submissions. In awarding the Annual of Architecture Prize for the "best in show," the jury passed over many well-known buildings by prominent architects to honor a coal shed for a steam-power station in the remote northern city of Hachinobe. It was designed (as are so many industrial and commercial buildings in Japan) by the company's own architectural department. The selection is surprising not only for the unusual program — shelter for coal and nothing more—but for its unaffected use of exposed steel structure in a time when Japanese architects are becoming increasingly devoted to exposed concrete.

The runner-up for the prize, Kenzo Tange's Kagawa Prefectural Office, is one of the most impressive buildings in this prevailing concrete mode yet constructed, and has already been widely published in Japanese and foreign magazines. The jury felt that its concrete bulk might suggest "the image of a ruler who dominates the masses." But the many handsome (and more sympathetic) photographs of it seem to express instead the genius of an architect who governs masses of concrete with a grace not yet achieved in the West.

J.M.D.

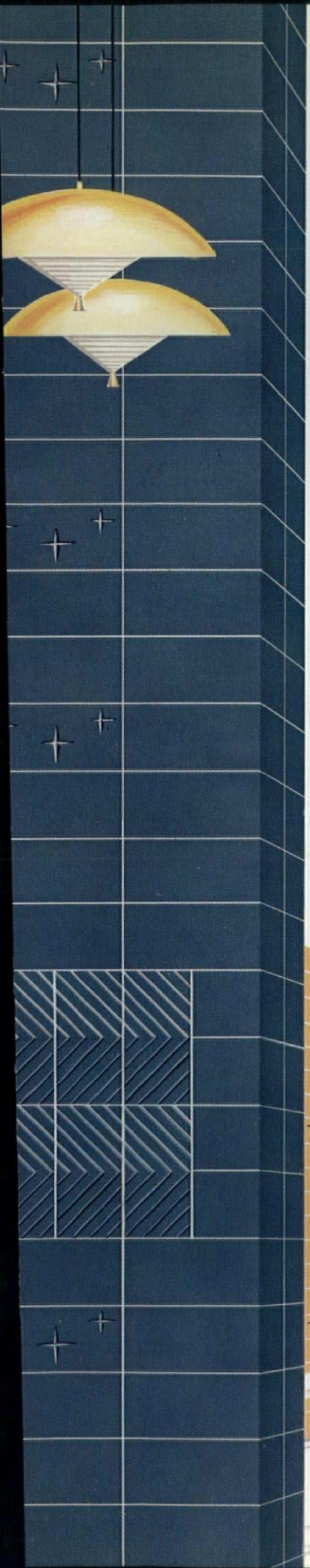
Appraisal of an Anthology

An Anthology of Houses. *Monica Pidgeon and Theo Crosby. Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y., 1960. 174 pp., illus. $10.95*

Occasionally, I assume, it is the unhappy lot of magazine editors to survey the vast amount of material which has already been published, and to face the temptation of getting more mileage out of it. To achieve unity of theme under these circumstances is an almost impossible task. So we have anthologies, this one by the editors of the British magazine, *Architectural Design.*

The only hope for many an anthology is that it be a visually provocative and stimulating book. *An Anthology of*

Continued on page 202



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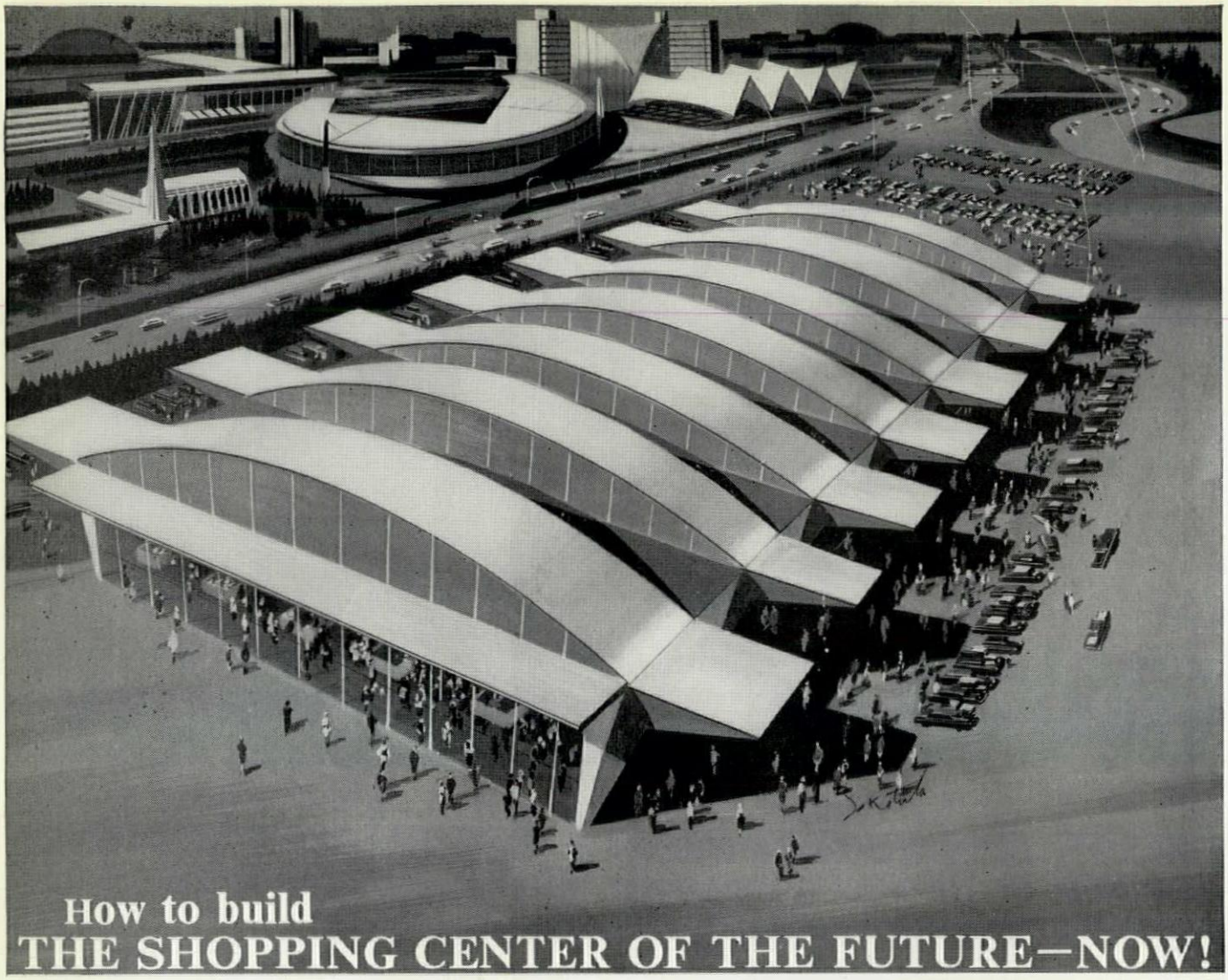

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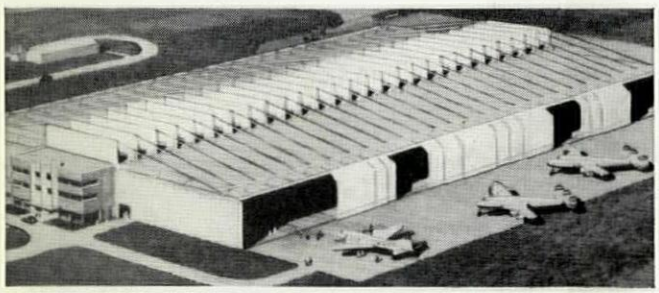

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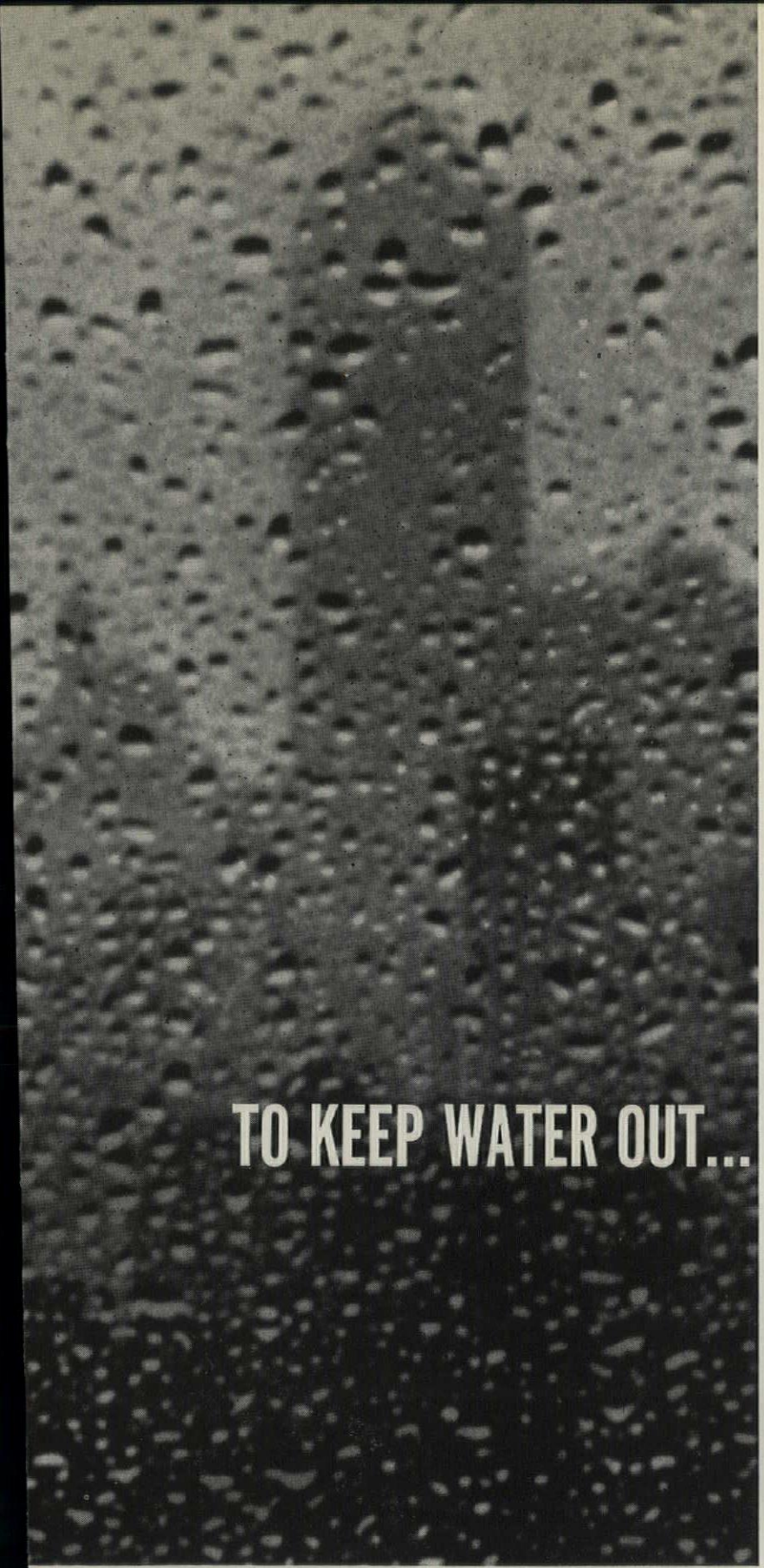

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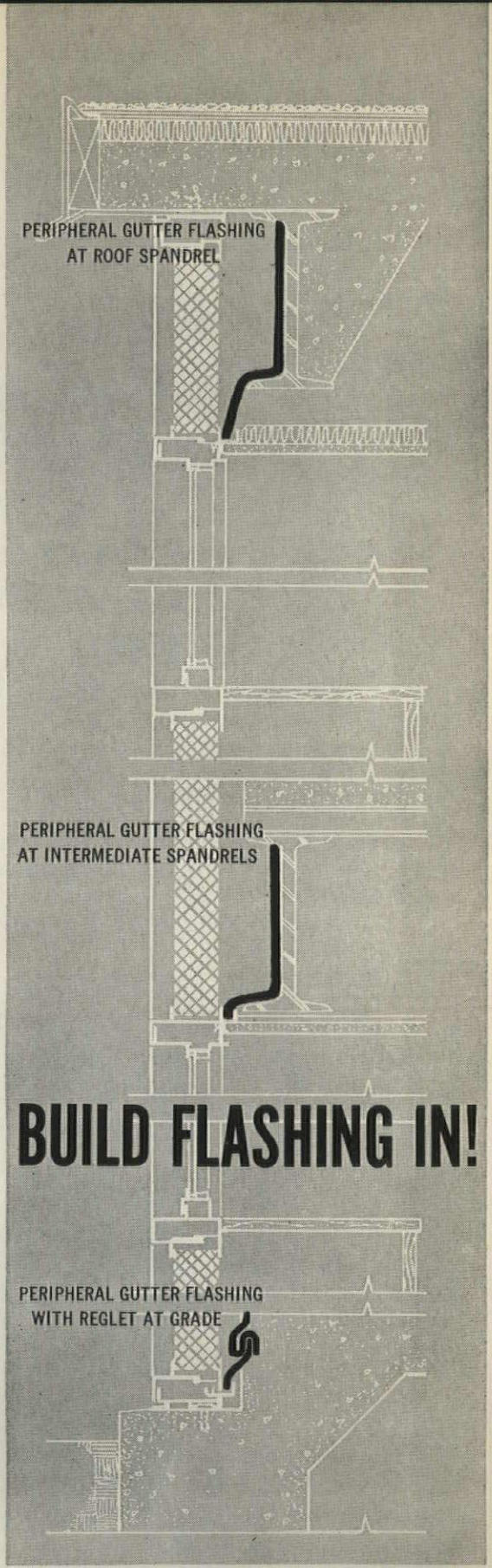

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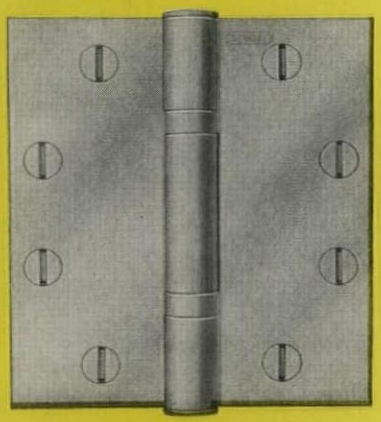

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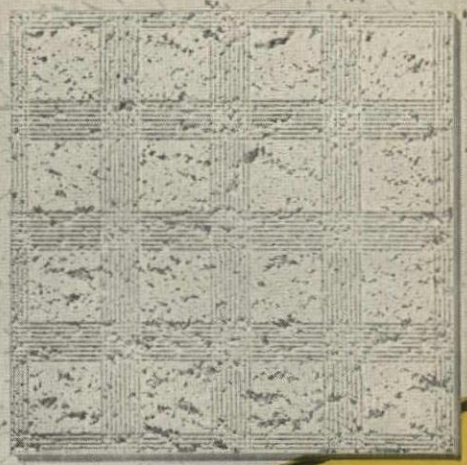

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Continued from page 194

Houses, unhappily, fails to entice in this crucial area. The fifty houses are illustrated with a profusion of photographs too small to carry. The houses are explained with plans of postage-stamp size, equipped with plan keys, against which a law should be passed. If nothing else, a house is an exercise in scale, and the unfortunate decision to draw fifty miniature plans, each at a different scale, makes illuminating comparisons impossible. The editorial structure of an alphabetical listing of architects under headings of individual countries is too meager to satisfy this reviewer.

On the whole, the houses presented are of reasonable quality, and some are of importance. The completely reinforced-concrete house by Atelier 5 in Rothrist, Switzerland, is a sophisticated exercise in *beton brut.* It is fun to compare this work to Stirling and Gowan's house on the Isle of Wight, which is brutalist theory but not architecture. The method of building is so carefully articulated that a loss of scale results. The hopper sash annoyingly placed at eye level for the seated person creates at first glance an elevation two stories high, which then transforms itself into a modest single story upon examination.

Where the Atelier 5 house has assurance, and with it a lively sense of the main objective of all modern architecture —a spatial composition—the Stirling-Gowan house is intellectualized. The English house has what appear to be narrow and pinched spaces, imposed on the hallmark of New England modern: the binuclear plan.

In spite of the great quantity of material, this anthology is not representative. Perhaps no anthology can be, but where are Aalto, Albini, Corbusier, Johnson, Dochi, Koenig, etc.? The work illustrated confirms what we have known all along, such as Craig Ellwood's mastery of the light steel frame, and the fine tradition (always refreshing to encounter) of detailing in Denmark.

This anthology of houses, worldwide in scope, illustrates convincingly the continuing international character of modern architecture. The lack of regionalism in all first-rate work is self-evident. The book jacket correctly appeals to U.S. purchasers by stating that, with few exceptions, these houses can be built anywhere.

For those who like to do puzzles, this volume can be neatly used in a game called "What's My Site?" I attempted it and could not even pinpoint the continent on which the particular work is situated. It is a telling game for anyone who clings to the belief that a building should express man's environment rather than his spirit.

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OTHER BOOKS TO BE NOTED

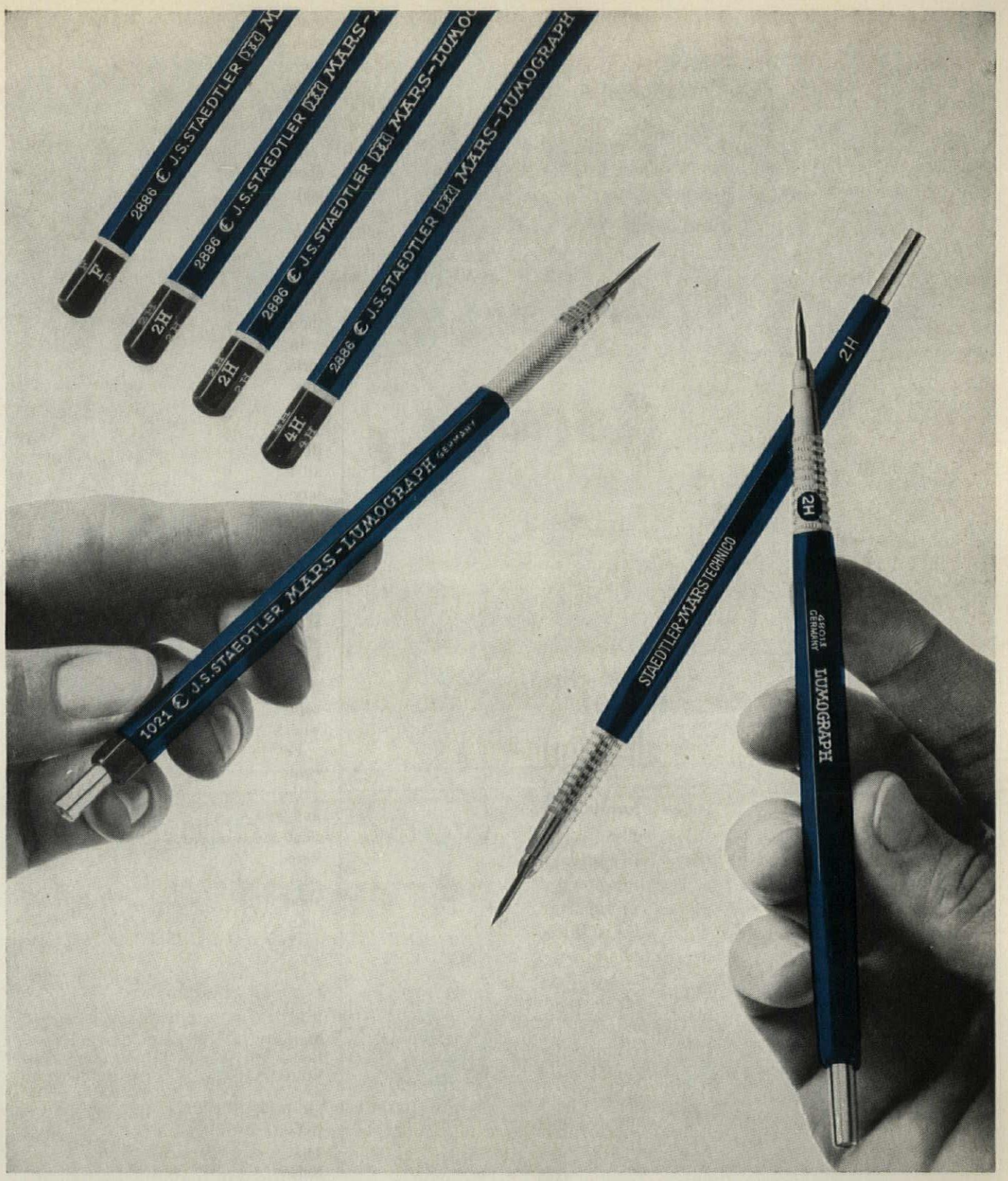
Marinas; Recommendations for Design, Construction and Maintenance (Second Edition). Charles A. Chaney. National Association of Engine and Boat Manufacturers, Inc., 420 Lexington Ave., New York 17, N.Y., 1961. 247 pp., illus. $7.50

The New Architecture of Europe. G.E. Kidder Smith. Meridian Books, Inc., 12 E. 22 St., New York 10, N.Y., 1961. 361 pp., illus. $1.95 (original paperbound)

Photography and Architecture. Eric de Maré. Frederick A. Praeger, 64 University Pl., New York 3, N.Y., 1961. 208 pp., illus. $13.50

Retirement Villages. Edited by Ernest W. Burgess. Division of Gerontology, 1510 Rackham Bldg., University of Michigan, Ann Arbor, Mich., 1961. 156 pp., illus. $3.50 (paperbound)

Continued on page 212



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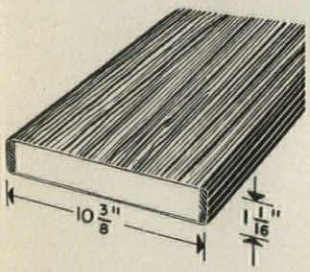

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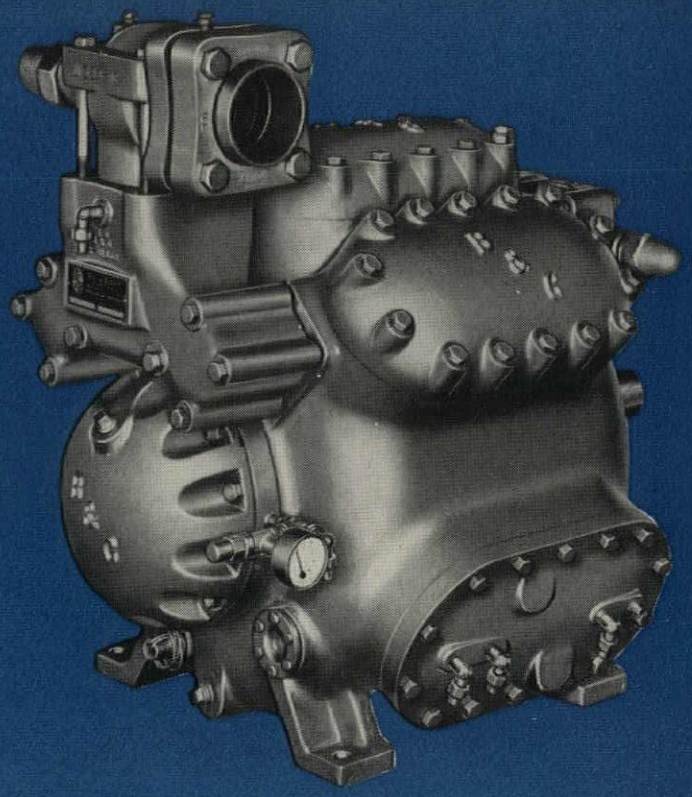

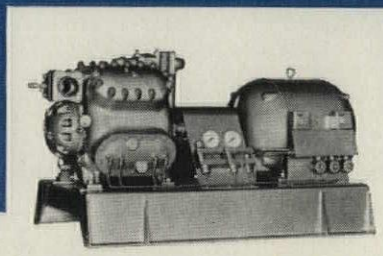

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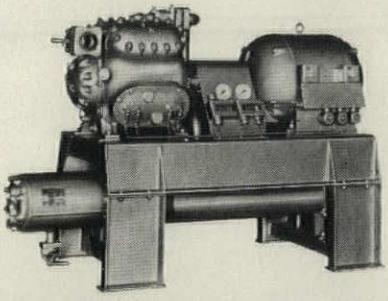

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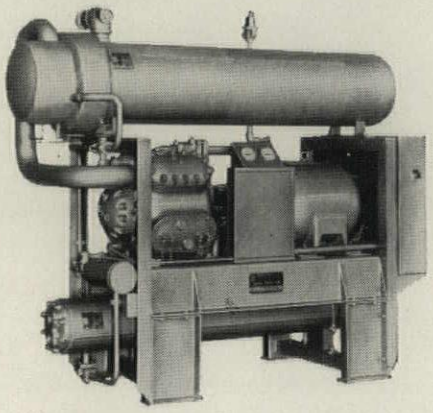

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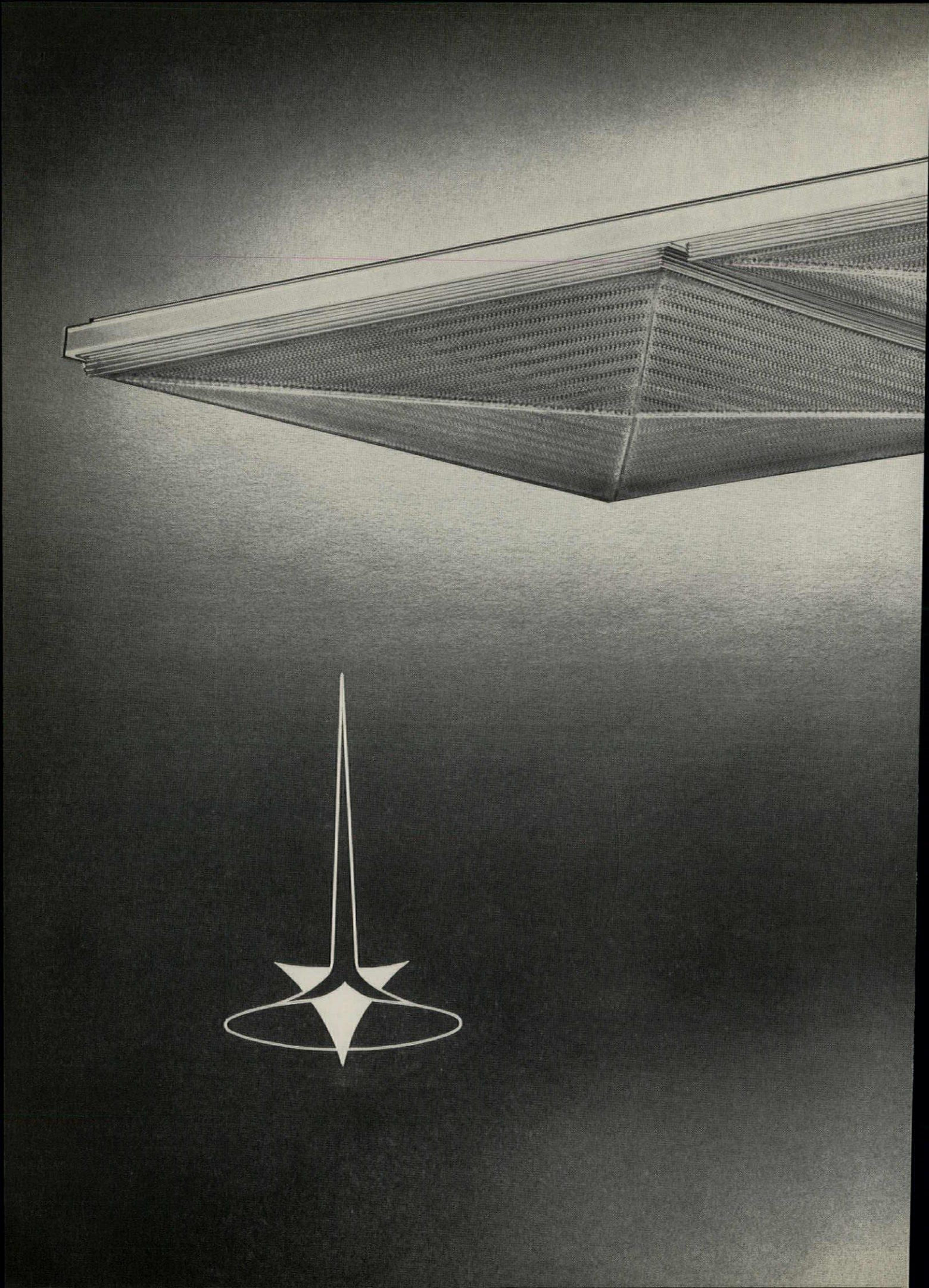

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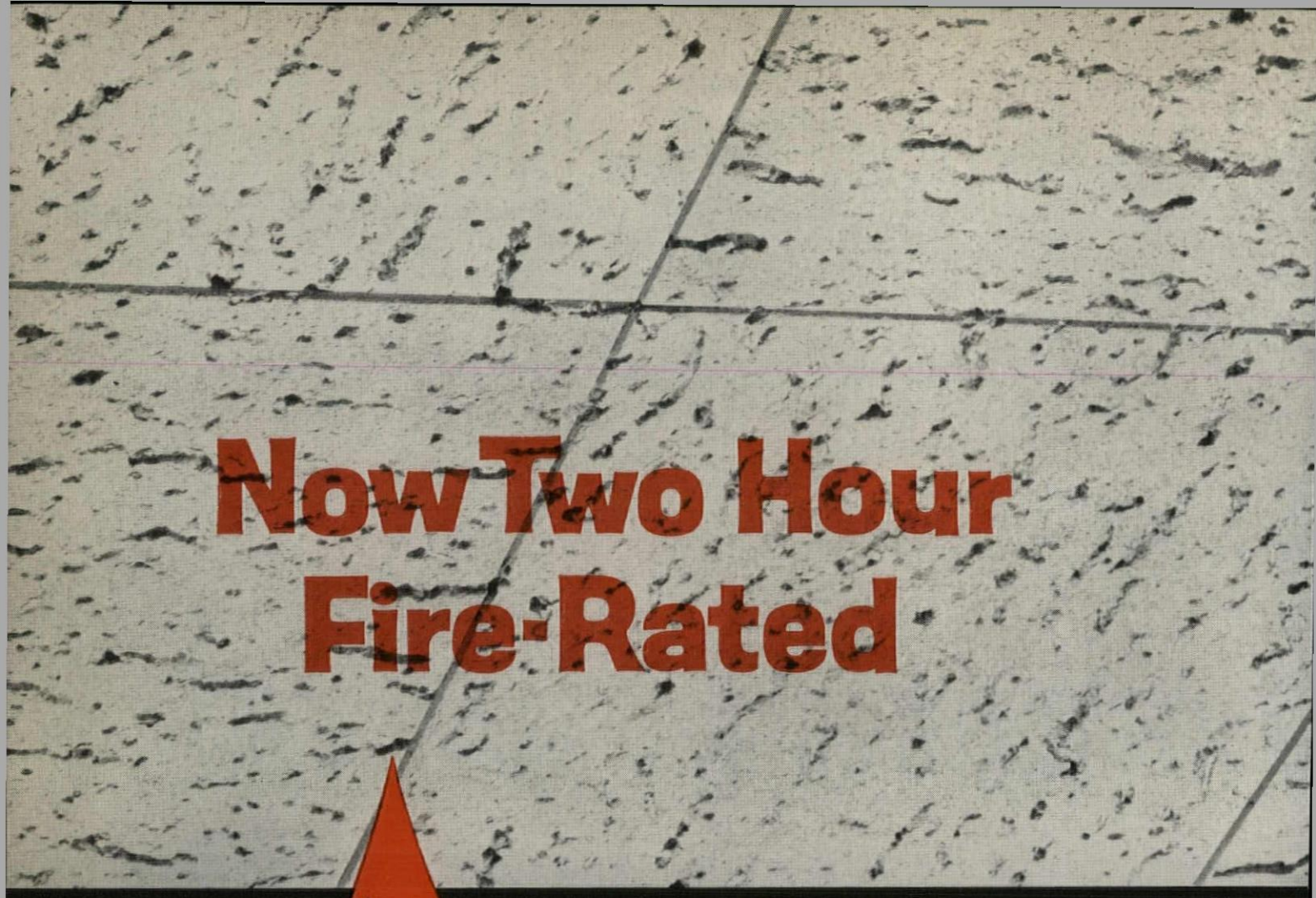

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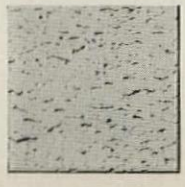

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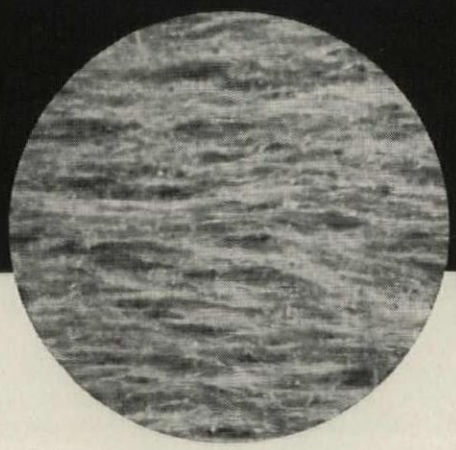

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Continued from page 202

A Guide to Planning Literature. Etta Arntzen. Department of City and Regional Planning, College of Architecture, Cornell University, Ithaca, N.Y., 1961. 35 pp., illus. $1 (paperbound)

An aid to those doing research in planning, prepared for graduate students by the former librarian of Cornell's College of Architecture. The booklet lists professional and Governmental agencies that publish material, also lists pertinent periodicals.

Program. Student publication. School of Architecture, Columbia University, New York 27, N.Y., 1961. 61 pp., illus. Subscription rates: $10 contributing, $3 regular

New journal "to provide analytical and creative criticism of architecture and planning . . . and a platform for comment." Current issue reprints two events from the recent Four Great Makers Program—Gropius' address and the recorded remarks by Mies. Other articles are by Percival and Paul Goodman, Ernest van den Haag, Martin James, Mary Perot Nichols, and Werner Ruhnau.

BRI Publications. Building Research Institute. National Academy of Sciences—National Research Council, 2101 Constitution Ave., Washington 25, D.C., 1961. 16 pp.

List of publications, most of which are collections of papers from the semiannual BRI conferences.

Practical Design of Structural Members. Thomas A. Lucy. F.W. Dodge Corp., 119 W. 40 St., New York 18, N.Y., 1961. 432 pp., illus. $12

Manual of design data enabling the designer to eliminate involved formulas and tedious calculations. The many time-saving short cuts are applicable to all basic members and connections.

The Future of Our Cities. Robert A. Futterman. Doubleday & Co., Inc., 575 Madison Ave., New York 22, N.Y., 1961. 360 pp., illus. $4.95

BRAB List of Publications. Building Research Advisory Board. National Academy of Sciences—National Research Council, 2101 Constitution Ave., Washington 25, D.C., 1961. 10 pp.

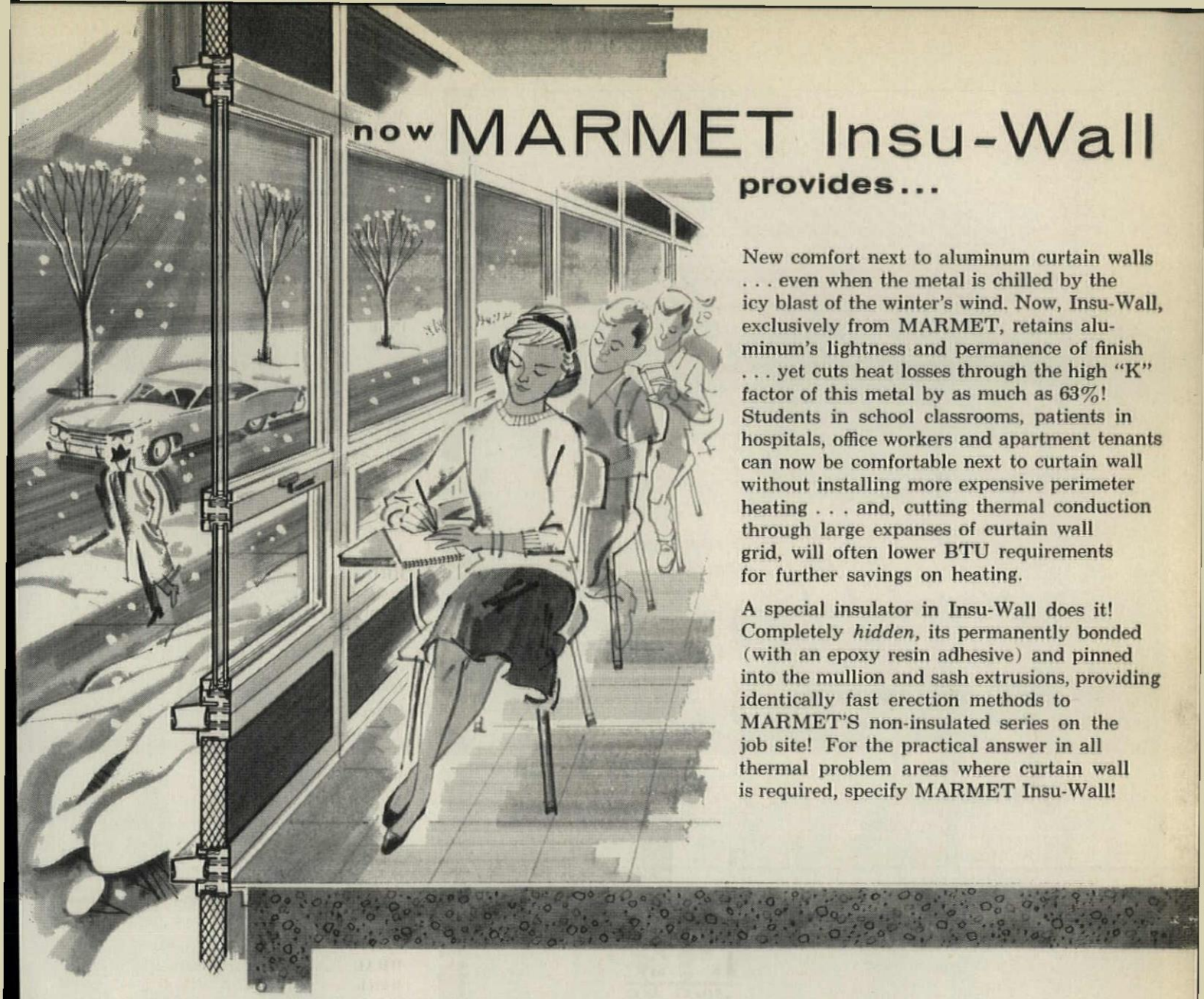
Annotated list of BRAB publications on building methods and materials. Three recent titles—reports from the Federal Construction Council—are Soil Compaction for Buildings, Criteria for the Acceptance of Cast Iron Soil Pipe, *and* Evaluation of Components for Underground Heat Distribution Systems.

Linear Perspective without Vanishing Points. Stanley Brampton Parker. Harvard University Press, Cambridge 38, Mass., 1961. 40 pp., illus. $2.50 (paperbound)

A concise presentation for those who wish to use a quick and dramatic method of picturing the three dimensions of objects at an accurate scale. Author is a practicing architect in Cambridge, Mass.

New Schools for New Education: A Report from Ann Arbor. Department of Architecture, University of Michigan. Educational Facilities Laboratories, 477 Madison Ave., New York 22, N.Y., 1961. 56 pp., illus. (paperbound)

Le Corbusier Talks with Students. Translated by Pierre Chase. The Orion Press, 116 East 19 St., New York 3, N.Y., 1961. 88 pp., $3.50



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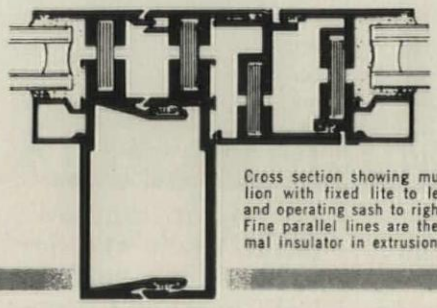

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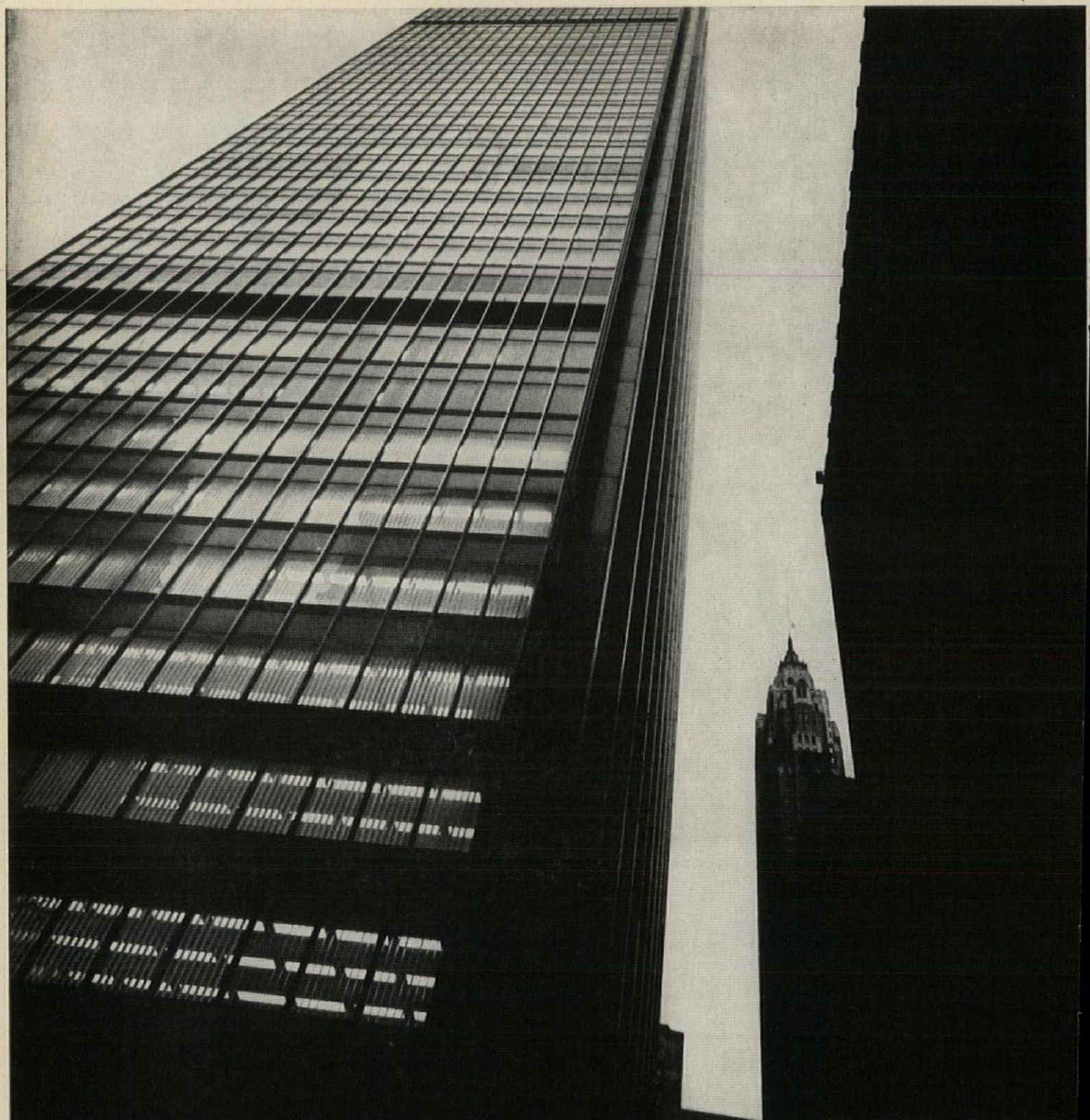

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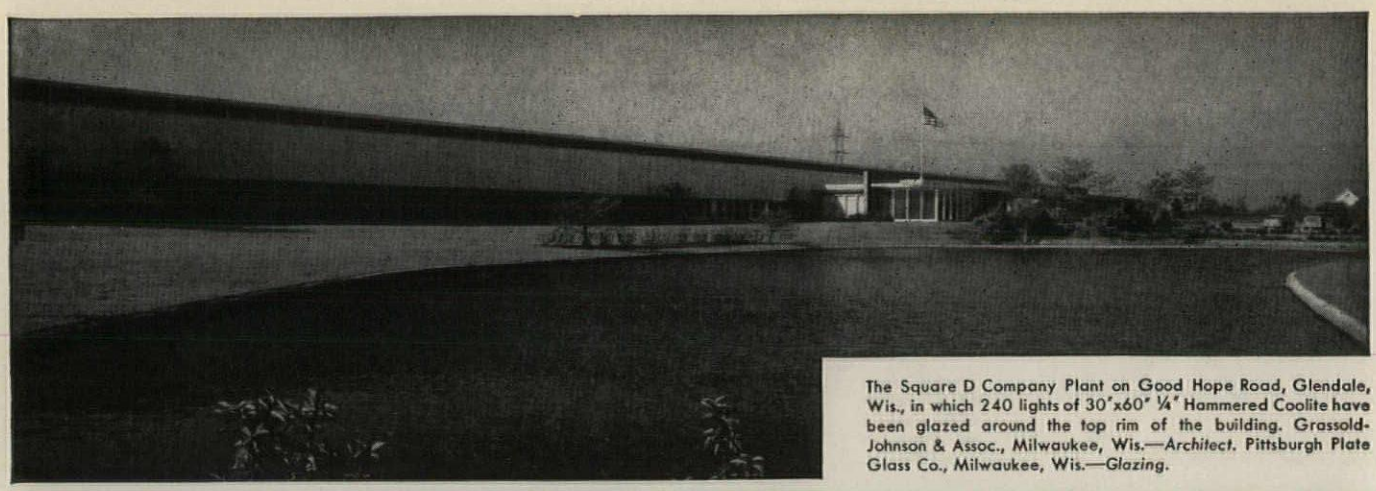

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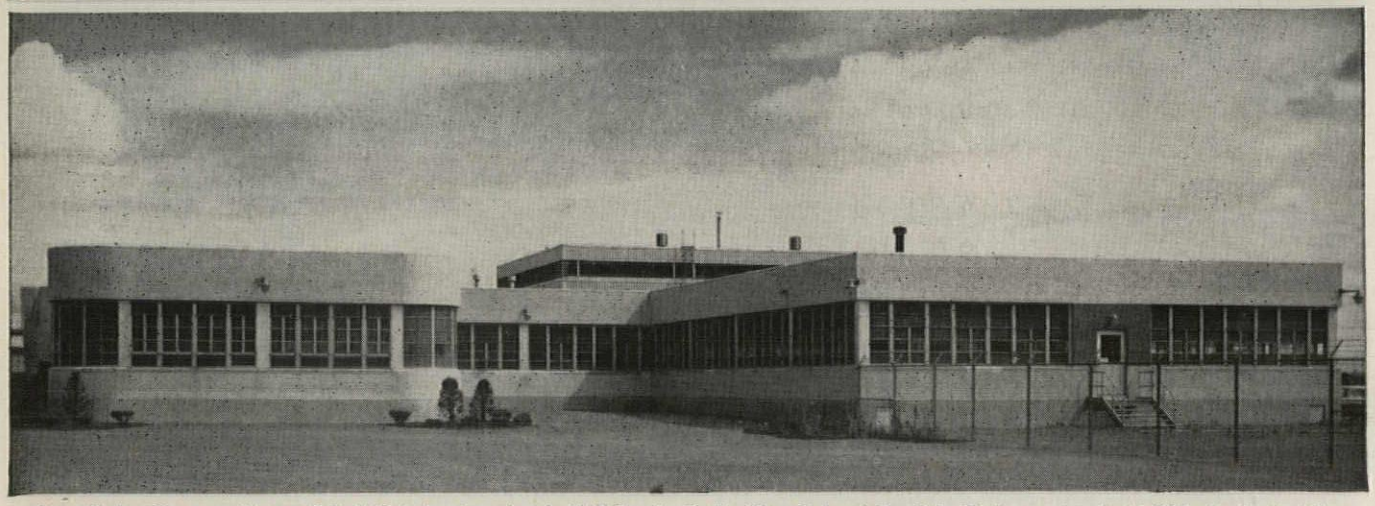

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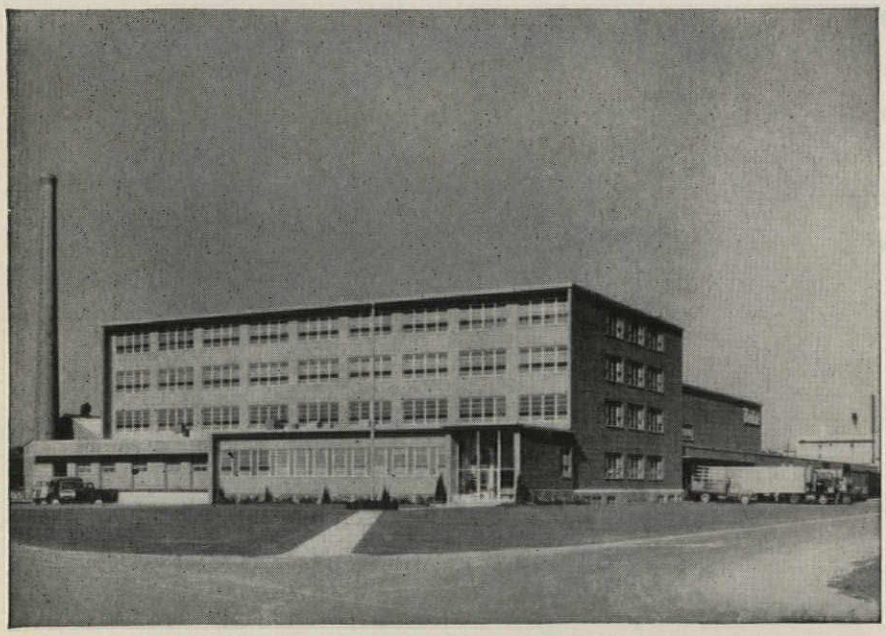

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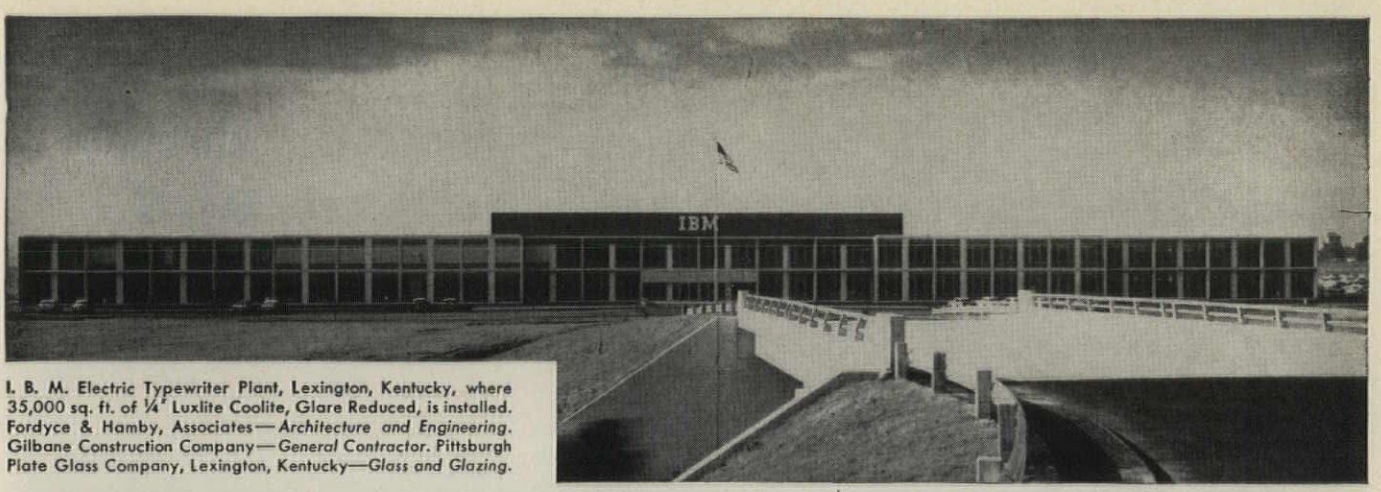

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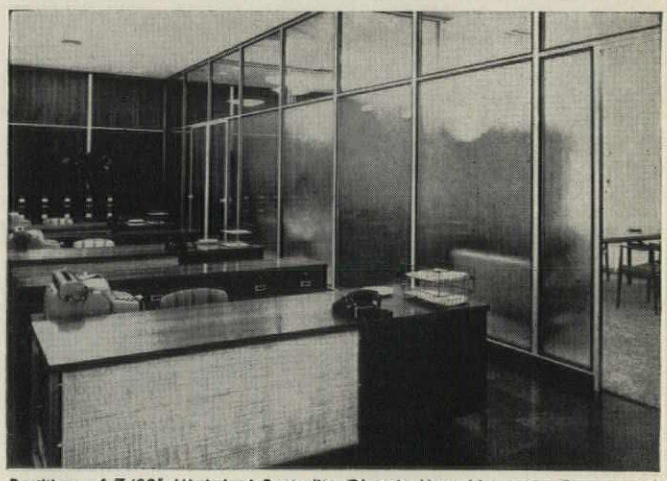

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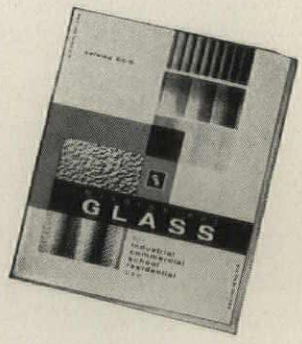

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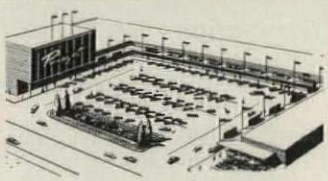

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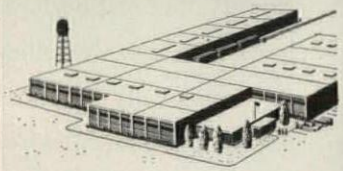

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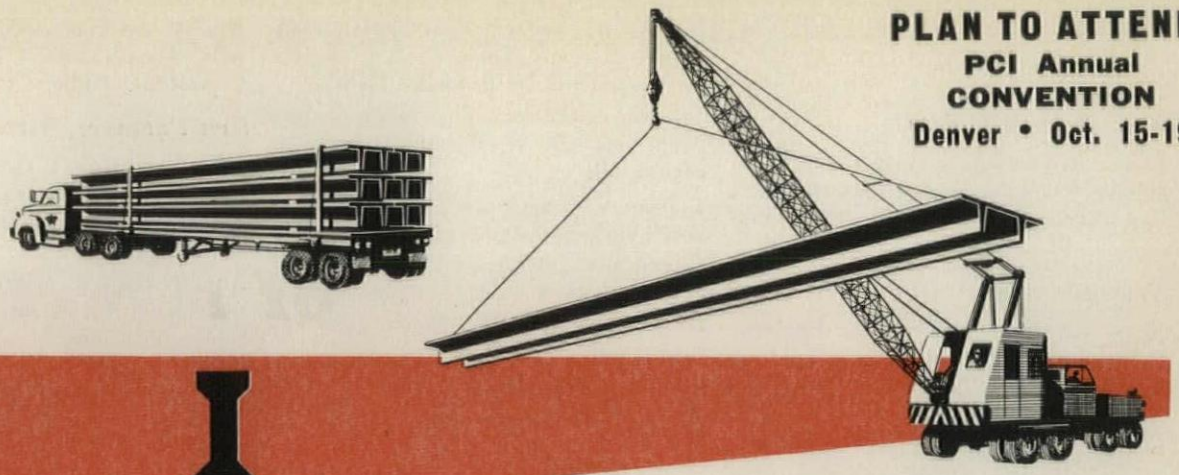

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FORDYCE AND HAMBY ASSOCIATES, 717 Fifth Ave., New York 22, N.Y.

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HENNEBERG & HENNEBERG, Architects and City Planners, 806 Massachusetts Ave., Cambridge 39, Mass.

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HENRY T. HEY, Architect, Rt. 3, Box 67, Marianna, Fla.

ROBERT MUNCASTER, Architect, 205 Avenue I, Redwood Beach, Calif.

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RIDGLEY & WEXLER, Architects, 4623 Gloria Ave., Encino, Calif.

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ERIC W. SMITH, JR., ROBERT ENTZEROTH, Architects, 10 S. Hanley Road, Clayton 5, Mo.

CYRIL TUCKER, Architect, 329 Miami Ave., Rochester, N.Y.

CECIL H. WELLS, JR., Consulting Engineer, 2031 Pioneer Court, Suite 12, San Mateo, Calif.

New Firms

ROBERT E. DES LAURIERS, JOHN T. SIGURDSON, principals in firm of DES LAURIERS-SIGURDSON, Architects, 4052 Calavo Drive, La Mesa, Calif.

LAURENCE FARRANT ASSOCIATES, Planning-Architecture-Engineering, Virginia Building, Suite 16, Riverside, Calif.

FRIEDMAN, OMARZU, ZION & LUNDGOOT, Architects, 150 N. Wacker Drive, Chicago 6, Ill.

LAUREN V. POHLMAN, ROMAN N. CHAPELSKY, principals in firm of POHLMAN & CHAPELSKY, Architects, 1140 E. Jersey St., Elizabeth 4, N.J.

RICHARD O. STANLEY, Architect, 31 Exchange St., Lynn, Mass.

ROLLAND D. THOMPSON, Architect, 33 E. 61 St., New York 21, N.Y.

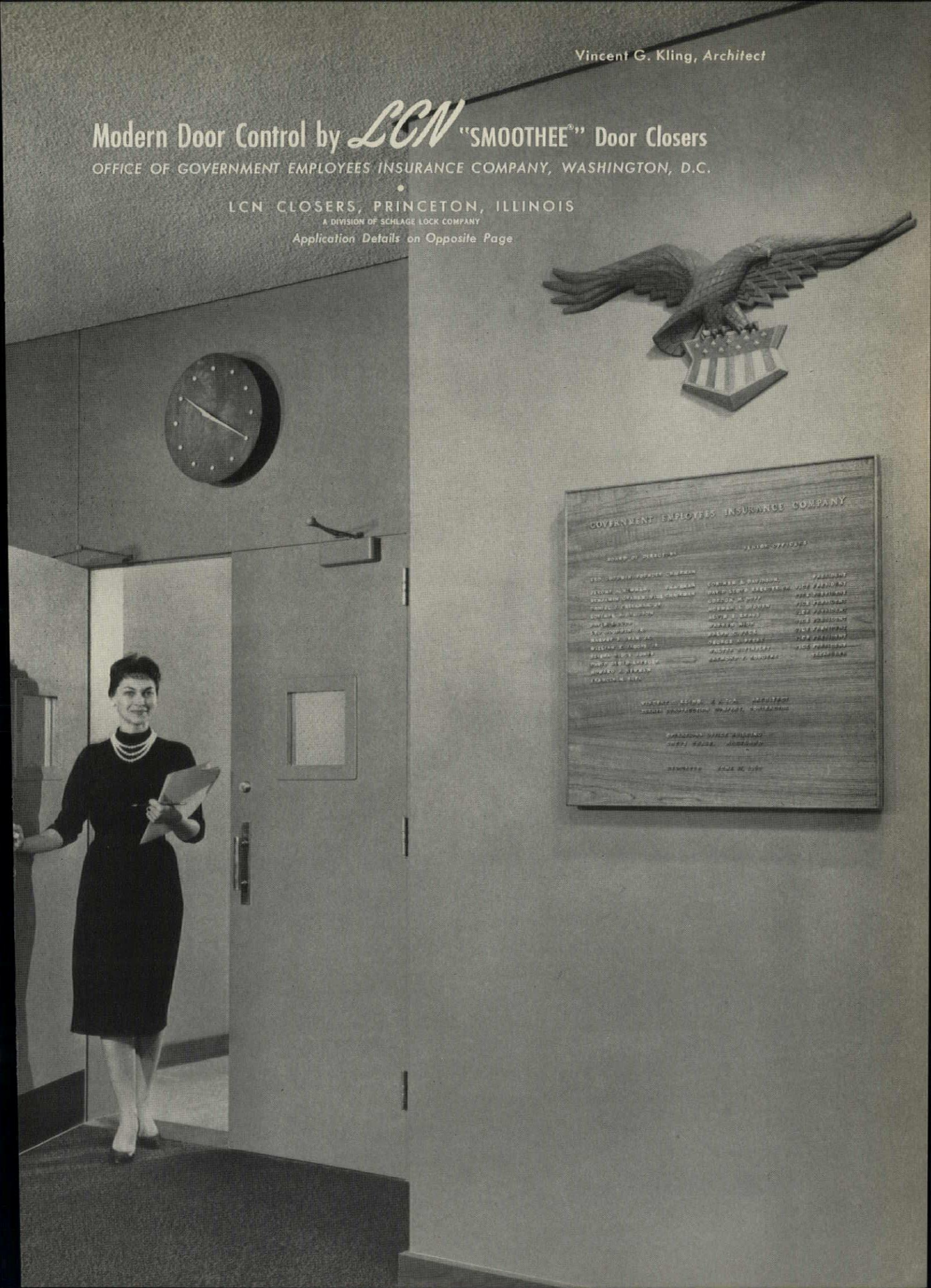
WILLIAM I. WILLIAMS ASSOCIATES, Architects, Mayer Central Building, 3033 N. Central Ave., Phoenix 12, Ariz.

New Partners, Associates

GEORGE L. BONVALLET, appointed Associate in firm of HOWARD C. HARDY AND ASSOCIATES, Consultants in Acoustics, Chicago, Ill.

JOSEPH BELSER, SAMUEL TULCHINSKY, FEREYDOON GHAFFARI, VICTOR PRESTON, made Associates in firm of VICTOR GRUEN ASSOCIATES, Architects-Engineers-Planners, Beverly Hills, Calif.

Continued on page 222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Continued from page 220

ELEANOR LARRABEE, ERIC JOSEPH PICK, made Associates in firm of WARNER, BURNS, TOAN, LUNDE, Architects, 724 Fifth Ave., New York 19, N.Y.

C. HERBERT PASEUR, made Partner in firm of CAUDILL, ROWLETT & SCOTT, Architects, Houston, Texas.

Elections, Appointments

JOHN G. CAPPOZZO, named Vice-President of the Architectural Division of JOHNSON & JOHNSON ENGINEERS-ARCHITECTS, INC., Chicago, Ill.

JOHN CLABBY, appointed Vice-President of the Systems Division in firm of DANIEL, MANN, JOHNSON & MENDENHALL, Planners - Architects - Engineers, Los Angeles, Calif. The firm also announces the appointment of BYRON E. BARNES as Staff Planning Consultant.

HELEN HUTCHINS, owner of the HELEN HUTCHINS PERSONNEL AGENCY, specialist in personnel for the architectural, interior, and industrial design fields, has been elected to the Board of Directors of the Association of Commercial and Professional Personnel Agencies.

SAMUEL B. LINCOLN, elected Honorary Chairman of the Board; WILLIAM J. HEISER, elected Chairman of the Board; J. ROBERT POTTER, elected President and Treasurer, in firm of LOCKWOOD GREENE ENGINEERS, INC., of Boston, Mass., New York, N.Y., Spartanburg, S.C.

SERGE P. PETROFF, elected a Vice-President in firm of CHARLES LUCKMAN ASSOCIATES, Los Angeles, Calif.

Name Changes

BOHLEN & BURNS, Architects AND Engineers, 1308 N. Meridian St., Indianapolis 2, Ind. Formerly D. A. BOHLEN & SON and BURNS & BURNS.

ELLIS, ARNDT & TRUESDELL, Architect-Consulting Engineers-Landscape Architects 614 MacArthur Building, 114 W. Union St., Flint 2, Mich. Formerly DEANE M. TRUESDELL, Architect, and ELLIS, ARNDT & ASSOCIATES, Consulting Engineers.

OLMSTED ASSOCIATES, Landscape Architects, 99 Warren St., Brookline 46, Mass. Formerly OLMSTED BROTHERS, Landscape Architects.

WALTER H. SOBEL AND ASSOCIATES, Architects, Engineers, Consultants, 450 E. Ohio St., Chicago 11, Ill. Formerly WALTER H. SOBEL AND J. STEWART STEIN, which has been dissolved.

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New G-E Division

The formation of a new GENERAL ELECTRIC PRODUCT SECTION, the CENTRAL AIR CONDITIONER SECTION, comprised of G-E's Tyler, Texas, Central Air Conditioner Plant and their Trenton, N.J., Furnace Plant, was announced. W. J. MCCULLOUGH has been appointed as General Manager of this Section.

New Design Center

THE B. F. GOODRICH COMPANY's new design center at 300 Park Ave., New York, is being established for the designing, styling, and packaging of products in the home furnishings, flooring, housewares, footwear, marine, construction, industrial, and automotive fields. The center is under the management of JAMES D. FLORIA.

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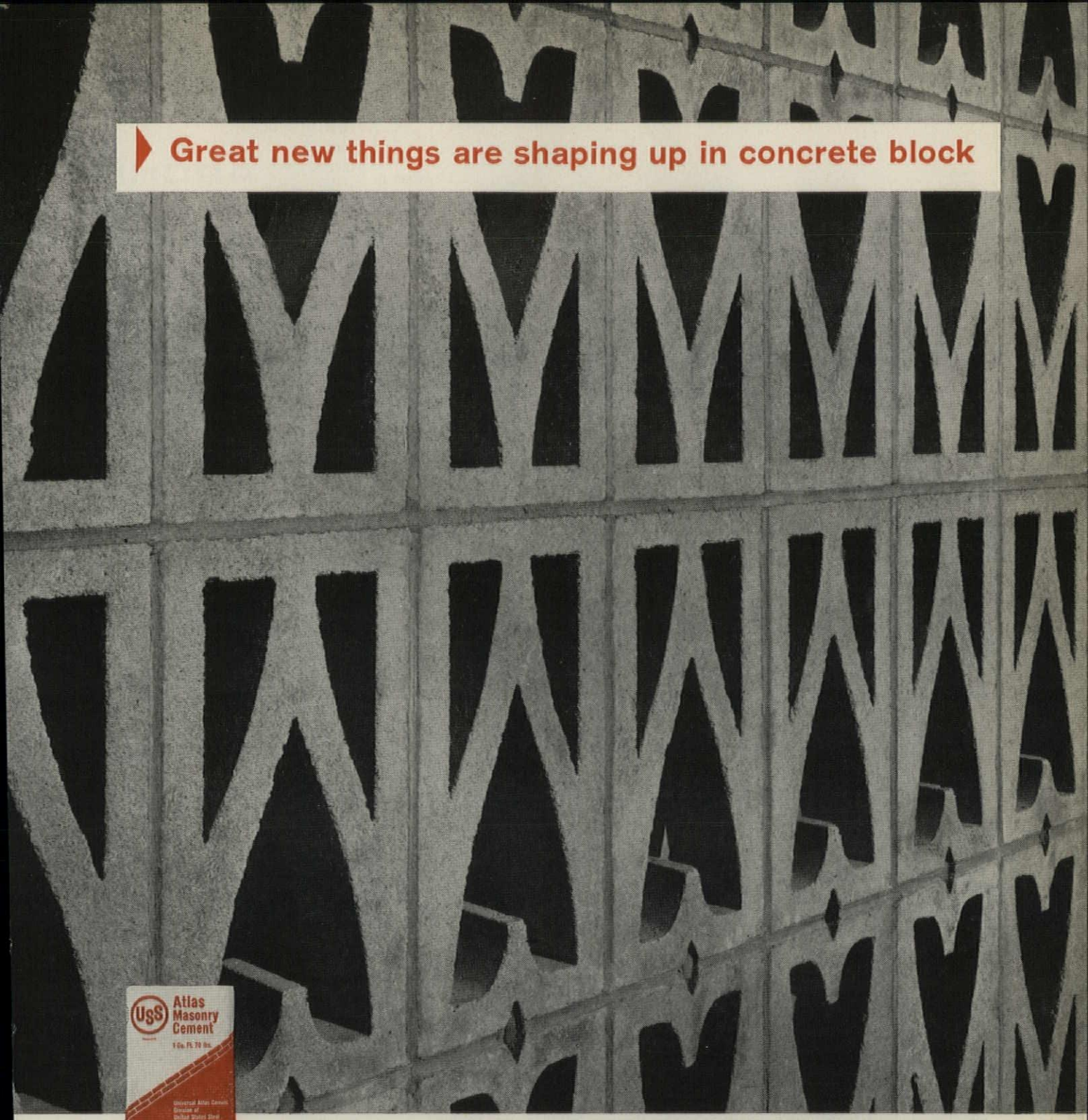

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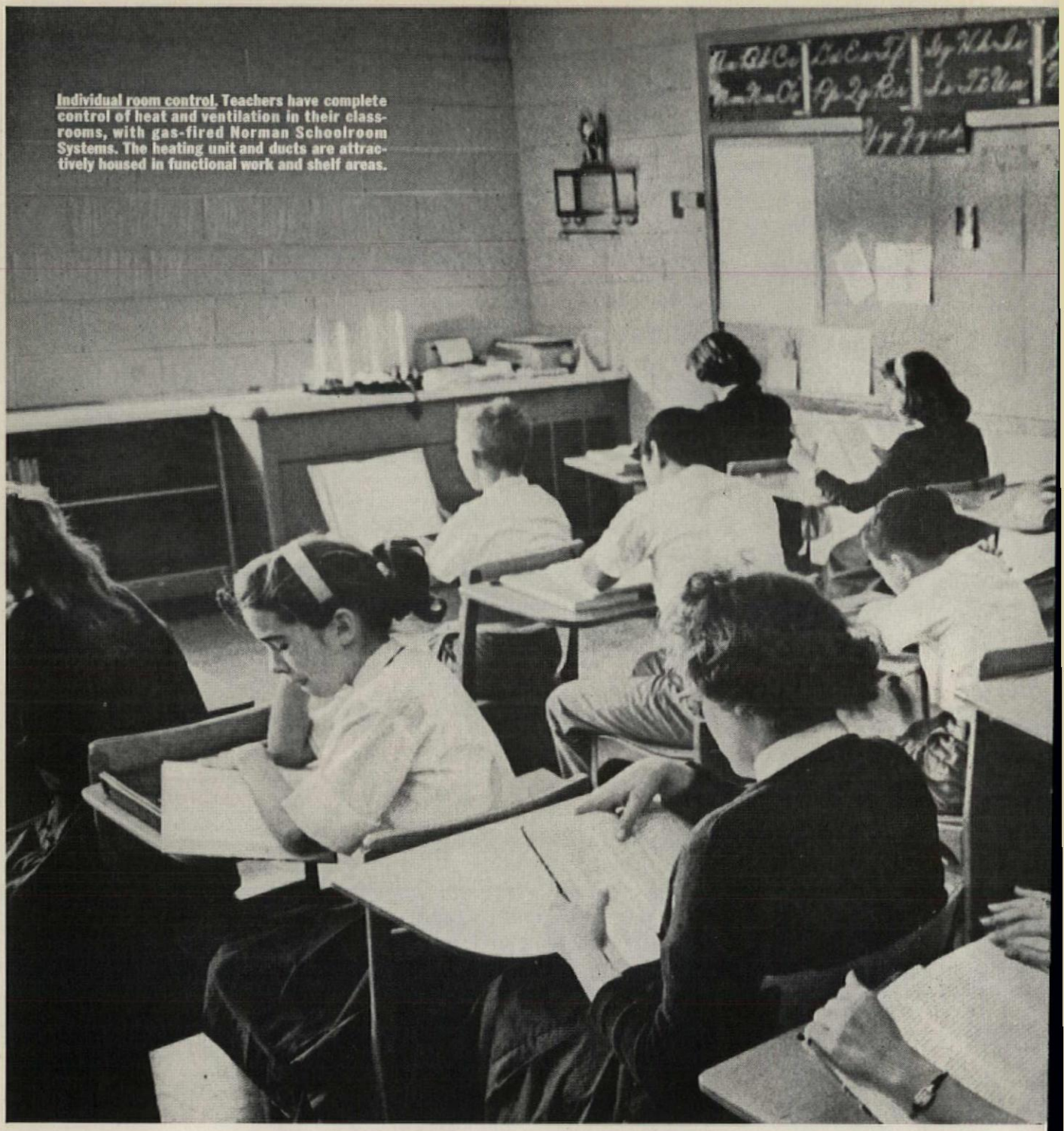

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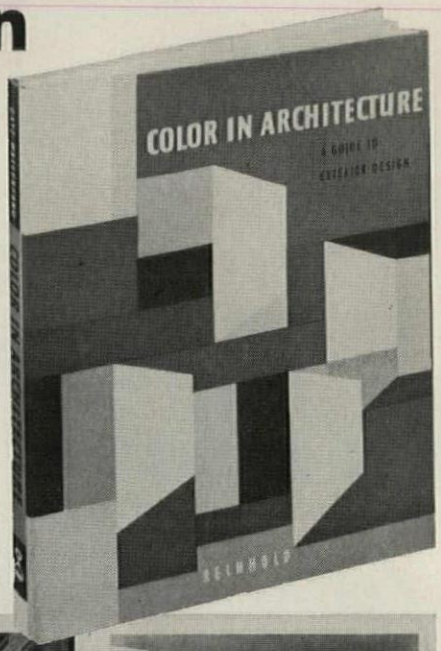

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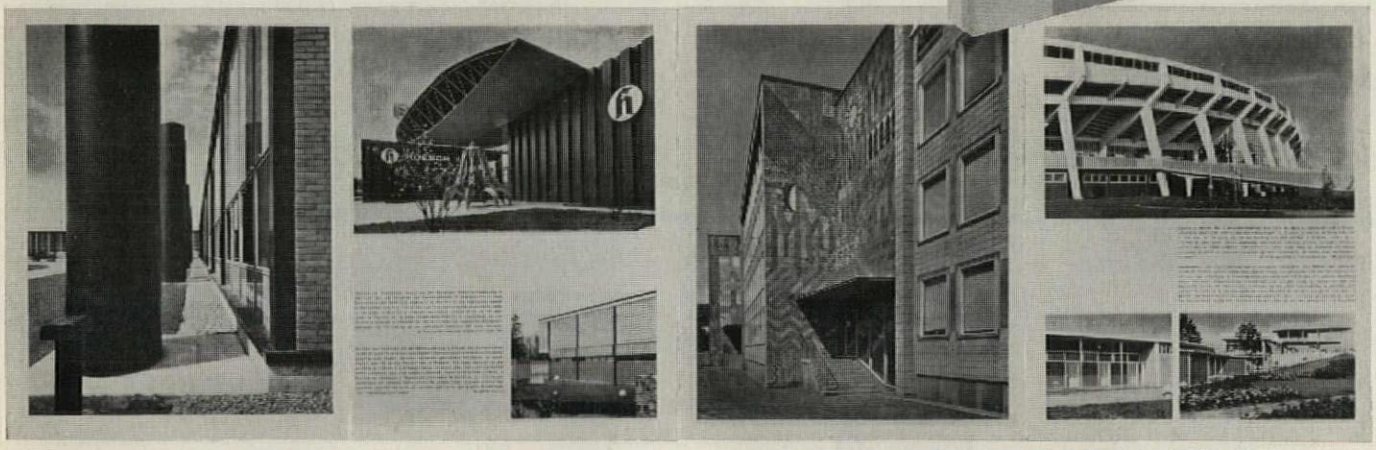

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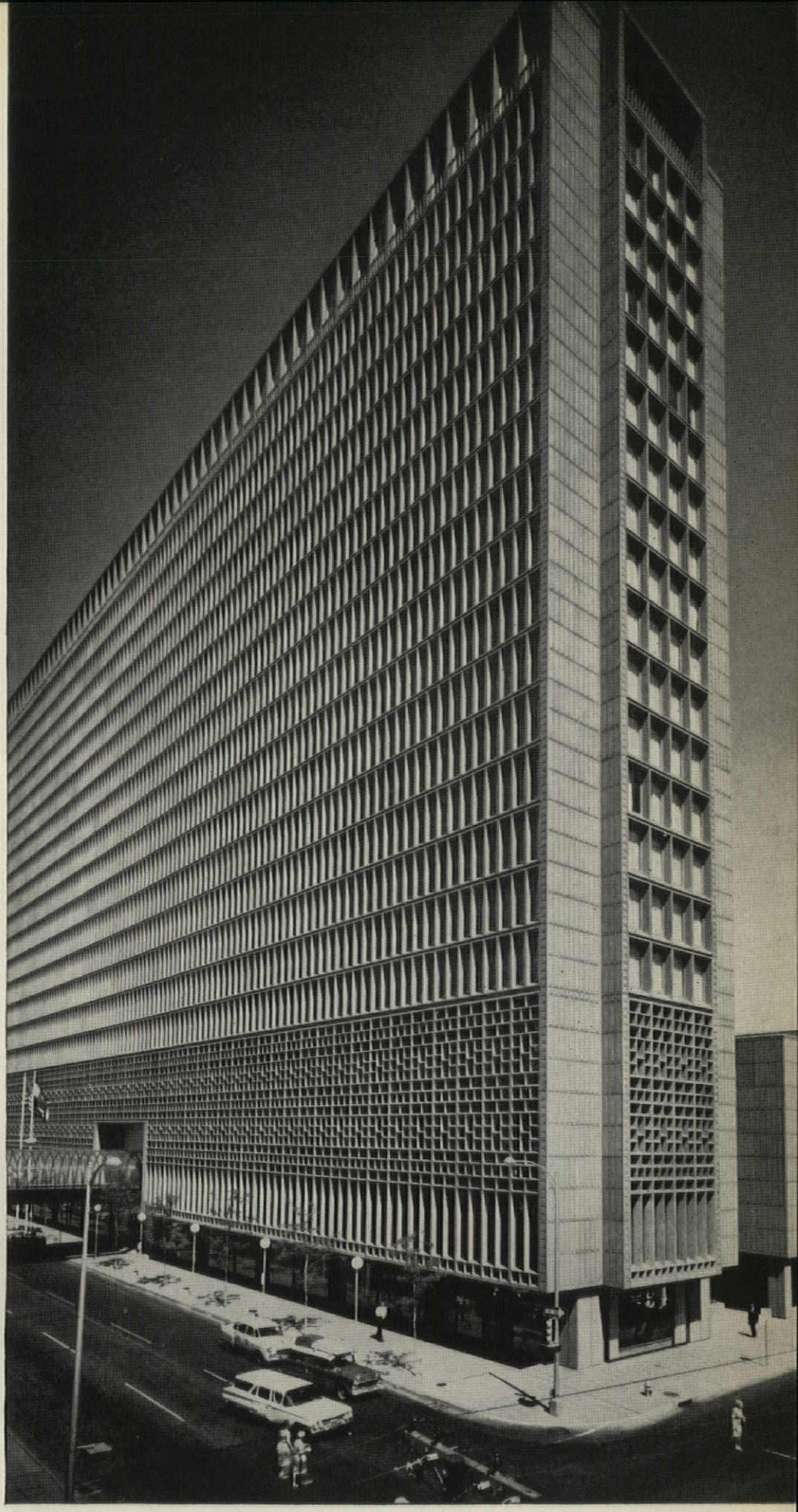

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Continued from page 232

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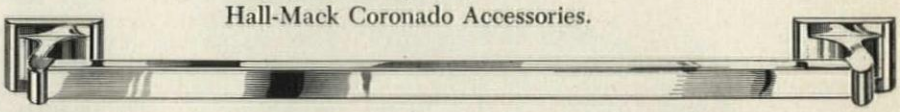

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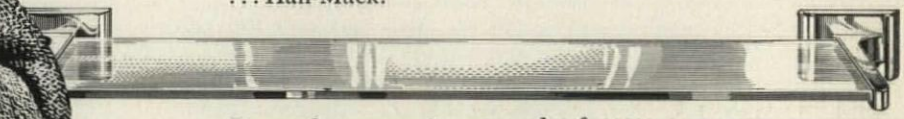

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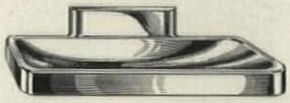

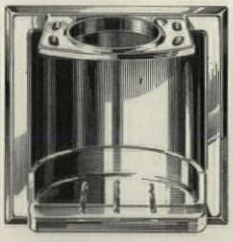

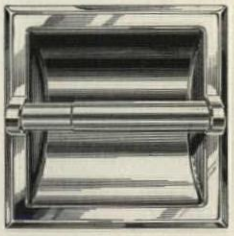

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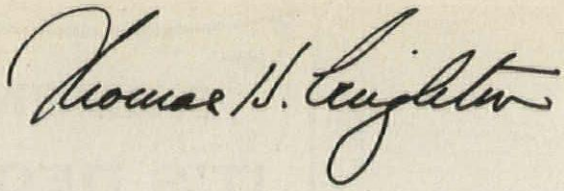

P.S.

A Memorial Service for Eero Saarinen was held the week after his death in the chapel at M.I.T. which he had designed. It was very simple and moving. The chaplain who conducted the service began by suggesting, "Let us speak of a good man," and he read a psalm which described beautifully the value of the life of one who was basically good in all his relations. He then asked, "Let us speak of a loving man," and read an appropriate poem of Elizabeth Browning's. Next he admonished us, "Let us speak of a great man," and followed with a dissertation of Aristotle's on the special remembrance granted those who are justly famous. The rest of the service was given to the reading of a very stirring, very thoughtful statement that Saarinen had made in answer to the question, "What is architecture?"

These were three essential characteristics of Eero Saarinen, unquestionably. He was an innately good, a warmly loving, and a modestly great person. I would simply add two additional, related qualities to these, which always had seemed to me to distinguish him. He was tremendously enthusiastic, and he was utterly tireless. Other attributes he had too, and I am sure they will be remembered in the appreciations that will follow his tragic death: he was a perfectionist; he had a great good humor; he enjoyed life to the full, in both its emotional and its sensual offerings; he was generous and helpful to others; he was loyal and devoted to those he admired. But it seems to me that the driving, untiring enthusiasm for creation is what many of us will particularly remember about Eero.

There was a great sensitivity about him, and some of the recent critical comments had hurt. And yet the criticism only made him the more determined to prove that he was on the right road; only made him want to work harder (if that was possible) and show by his works that architecture is perfection of every commission. I was happy to see a good deal of him recently on an extended visit to Detroit, and I was struck again by his ability to work long hours, and to relax when the time came with a good drink, a good meal, a good pipe, and good talk. But always he worked, and he rested, to an end; always with a purpose. This was a man who knew how to use his time, how to create and how to relax so that he could create again. The great tragedy of his untimely death is that he was, just now, tremendously happy. The criticisms that I spoke of he had begun to answer, and his answers would not have been either angry or contentious, but filled with pride and enthusiasm for what he was producing. (We spent a long evening discussing the implications of the Symposium articles referring to chaoticism that P/A ran in the spring, and he was mapping a response by showing works underway rather than by using words.)

Eero's deliberateness, his thoughtful, considered manner of speaking (and of drawing), his slow smile, his nearly ponderous delivery in public speech, all were consistent with the determined, enthusiastic devotion to convictions carefully arrived at. He chewed on a problem, he ruminated carefully the approaches to its answer, and then when he had digested its implications and found his response, he was untiring, persistent, and ardent in carrying it through to a creative conclusion. This was certainly true in his work, and it was equally true in a discussion or even in a conversation.

It is heartening that despite today's apparent acceptance of the superficial, the slick, the glib, there was so much genuine love for Eero Saarinen and his quietly dogged, devotedly straightforward approach to life. I have heard many expressions of shock at his death; while they regret the loss to the profession, and to the community, of a great architect, they most deeply mourn the passing of a devoted, enthusiastic, tireless person, an understanding friend of all who truly invoke the creative spirit and understand the plugging hard work that the Muse demands.